NOAA Atlas 14

Precipitation-Frequency Atlas of the United States

Volume 8 Version 2.0: Midwestern States (Colorado, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Oklahoma, South Dakota, Wisconsin)

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffrey Bonnin

U.S. Department of Commerce

National Oceanic and Atmospheric Administration

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Table of Contents

1. Abstract 1
2. Preface to Volume 8 1
3. Introduction 3
    3.1. Objective 3
    3.2. Approach and deliverables 3
4. Frequency analysis 5
    4.1. Project area 5
    4.2. Precipitation data collection and formatting 8
    4.3. Annual maximum series extraction 9
    4.4. Station screening 12
    4.5. AMS screening and quality control 16
        4.5.1. Outliers 16
        4.5.2. Correction for constrained observations 16
        4.5.3. Inconsistencies across durations 17
        4.5.4. Trend analysis 17
    4.6. Precipitation frequency estimates with confidence limits at stations 18
        4.6.1. Overview of methodology and related terminology 18
        4.6.2. Regionalization 19
        4.6.3. AMS-based estimates 22
        4.6.4. PDS-based estimates 24
        4.6.5. Confidence limits 24
    4.7. Rainfall frequency estimates with confidence limits at stations 24
        4.7.1. Background 24
        4.7.2. Extraction of rainfall data 25
        4.7.3. Rainfall frequency estimates 25
        4.7.4. Confidence limits 27
    4.8. Derivation of grids 27
        4.8.1. Mean annual maximum precipitation 27
        4.8.2. Precipitation frequency estimates with confidence limits 28
        4.8.3. Rainfall frequency estimates with confidence limits 31
        4.8.4. Estimates for 10-year ARI for extended durations for Missouri 31
5. Precipitation Frequency Data Server 32
    5.1. Introduction 32
    5.2. Underlying data 32
    5.3. Products available on the Precipitation Frequency Data Server 33
6. Peer review 41
7. Comparison with previous NOAA publications 41
Acknowledgements acknowledgements-1
A.1 List of stations used to prepare precipitation frequency estimates A.1-1
A.2 Annual maximum series trend analysis A.2-1
A.3 PRISM report A.3-1
A.4 Peer review comments and responses A.4-1
A.5 Temporal distributions of heavy precipitation A.5-1
A.6 Seasonality A.6-1
Glossary glossary-1
References references-1

1. Abstract

NOAA Atlas 14 contains precipitation frequency estimates for the United States and U.S. affiliated territories with associated 90% confidence intervals and supplementary information on temporal distribution of heavy precipitation, analysis of seasonality and trends in annual maximum series data, etc. It includes pertinent information on development methodologies and intermediate results. The results are published through the Precipitation Frequency Data Server (http://hdsc.nws.noaa.gov/hdsc/pfds).

The Atlas is divided into volumes based on geographic sections of the country. The Atlas is intended as the U.S. Government source of precipitation frequency estimates and associated information for the United States and U.S. affiliated territories.

2. Preface to Volume 8

NOAA Atlas 14 Volume 8 contains precipitation frequency estimates for selected durations and frequencies with 90% confidence intervals and supplementary information on temporal distribution of heavy precipitation, analysis of seasonality and trends in annual maximum series data, etc., for eleven midwestern states: Colorado, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Oklahoma, South Dakota, and Wisconsin. The results are published through the Precipitation Frequency Data Server (http://hdsc.nws.noaa.gov/hdsc/pfds).

NOAA Atlas 14 Volume 8 was developed by the Hydrometeorological Design Studies Center within the Office of Hydrologic Development of the National Oceanic and Atmospheric Administration's National Weather Service. Any use of trade names in this publication is for descriptive purposes only and does not imply endorsement by the U.S. Government.

Citation and version history. This documentation and associated artifacts such as maps, grids, and point-and-click results from the PFDS are part of a whole with a single version number and can be referenced as:

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffrey Bonnin (2013). NOAA Atlas 14 Volume 8 Version 2, *Precipitation-Frequency Atlas of the United States, Midwestern States*. NOAA, National Weather Service, Silver Spring, MD.

The version number has the format P.S where P is a primary version number representing a number of successive releases of primary information. Primary information is essentially the data. S is a secondary version number representing successive releases of secondary information. Secondary information includes documentation and metadata. S reverts to zero (or nothing; i.e., Version 2 and Version 2.0 are equivalent) when P is incremented. When documentation is completed and added without changing any prior information, the version number is not incremented.

The primary version number is stamped on the artifact or is included as part of the filename where the format does not allow for a version stamp (for example, files with gridded precipitation frequency estimates). All location-specific output from the PFDS is stamped with the version number and date of download.

Table 2.1 lists the version history associated with the NOAA Atlas 14 Volume 8 precipitation frequency project and indicates the nature of changes made.

Table 2.1. Version history of NOAA Atlas 14, Volume 8.

Version no.	**Date**	**Notes**
Version 1.0	October 2012	Draft data used in peer review
Version 2.0	April 2013	Final data released

3. Introduction

3.1. Objective

NOAA Atlas 14 Volume 8 provides precipitation frequency estimates for durations of 5-minutes through 60-days at average recurrence intervals of 1-year through 1,000-year for eleven midwestern states: Colorado, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Oklahoma, South Dakota, and Wisconsin. The estimates and associated bounds of 90% confidence intervals are provided at 30-arc seconds resolution. The Atlas also includes information on temporal distributions for heavy precipitation amounts for selected durations and seasonal information for annual maxima data used in the frequency analysis. In addition, the potential effects of climate change as trends in historic annual maximum series were examined.

The information in NOAA Atlas 14 Volume 8 supersedes precipitation frequency estimates for Colorado, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Oklahoma, South Dakota, and Wisconsin contained in the following publications:

a. Weather Bureau's Technical Paper No. 40, *Rainfall Frequency Atlas of the United States for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 Years* (Hershfield, 1961);
b. Weather Bureau's Technical Paper No. 49, *Two- to Ten-Day Precipitation for Return Periods of 2 to 100 Years in the Contiguous United States* (Miller, 1964);
c. NOAA Atlas 2, Volume III, *Precipitation Frequency Atlas of the Western United States, Colorado* (Miller et al., 1973);
d. NOAA Technical Memorandum NWS HYDRO-35, *Five- to 60-Minute Precipitation Frequency for the Eastern and Central United States* (Frederick et al., 1977).

3.2. Approach and deliverables

Precipitation frequency estimates have been computed for a range of frequencies and durations using a regional frequency analysis approach based on L-moment statistics calculated from annual maximum series. This section provides an overview of the approach; greater detail is provided in Section 4.

The annual maximum series were extracted from precipitation measurements recorded at variable or constant time increments from 1-minute to 1-day obtained from various sources. The table in Appendix A.1 gives detailed information on all stations whose data were used in the frequency analysis. The annual maximum series data were screened for data quality. The 1-day and 1-hour annual maximum series data were also analyzed for potential trends (Appendix A.2).

A region of influence approach was used for the regional L-moments computation at each station across all selected durations between 15-minute and 60-day. A variety of probability distribution functions were examined for each region and duration and the most suitable distribution was selected. Distribution parameters, and consequently precipitation frequency estimates, were determined based on the mean of the annual maximum series at the station and the regionally determined higher order L-moments. Precipitation frequency estimates were smoothed across durations to ensure consistency. Partial duration series-based precipitation frequency estimates were calculated indirectly using Langbein's formula.

Empirical equations were developed to calculate frequency estimates for rainfall (i.e., liquid precipitation only) from corresponding precipitation frequency estimates for selected durations up to 24-hours in areas where contribution of snowfall to the total precipitation amount is significant.

A Monte-Carlo simulation approach was used to produce upper and lower bounds of the 90% confidence intervals for the precipitation frequency estimates. 5-minute and 10-minute precipitation frequency estimates and confidence intervals were computed by applying scaling factors to corresponding 15-minute estimates.

Grids of precipitation frequency estimates and 90% confidence intervals were determined based on grids of mean annual maxima and at-station precipitation frequency estimates. The mean annual maxima grid for each duration was derived from at-station mean annual maxima using PRISM interpolation methodology (Appendix A.3). The grids of precipitation frequency estimates and confidence limits for all frequencies were then derived in an iterative process using the inherently strong linear relationship that exists between mean annual maxima and precipitation frequency estimates at the 2-year recurrence interval and between precipitation frequency estimates at consecutive frequencies for a given duration (Section 4.8.2). The resulting grids were examined and adjusted in cases where inconsistencies occurred between durations and frequencies. Both spatially interpolated and point estimates for selected durations and frequencies were subject to external peer review (Appendix A.4).

Climate regions were delineated based on characteristics of annual maxima data. The regions were used in the extraction of annual maximum series, calculations of temporal distributions of heavy precipitation, and in a seasonality analysis of annual maxima. Temporal distributions, expressed in probability terms as cumulative percentages of precipitation totals, were computed for precipitation magnitudes exceeding precipitation frequency estimates for the 2-year recurrence interval for selected durations (Appendix A.5). The seasonality analysis was done by tabulating the number of annual maxima exceeding precipitation frequency estimates for several selected threshold frequencies (Appendix A.6).

NOAA Atlas 14 Volume 8 precipitation frequency estimates for any location in the project area are available in a variety of formats through the Precipitation Frequency Data Server (PFDS) at http://hdsc.nws.noaa.gov/hdsc/pfds (via a point-and-click interface); more details are provided in Section 5. Additional results and information available there include:

- ASCII grids of partial duration series-based and annual maximum series-based precipitation frequency estimates and related confidence limits for a range of durations and frequencies with associated Federal Geographic Data Committee-compliant metadata;
- ASCII grids of partial duration series-based and annual maximum series-based rainfall frequency estimates and associated confidence limits for a range of frequencies and durations up to 24 hours;
- cartographic maps of partial duration series-based precipitation frequency estimates for selected frequencies and durations;
- final, quality controlled annual maximum series for all observing locations used in the analysis;
- temporal distributions;
- seasonality analysis of annual maxima.

Cartographic maps were created to serve as visual aids and are not recommended for estimating precipitation frequency estimates. Users are advised to take advantage of the PFDS interface or the downloadable underlying ASCII grids for obtaining precipitation frequency estimates.

Precipitation frequency estimates from this Atlas are estimates for a point location and are not directly applicable for an area. Precipitation frequency estimates for each volume of NOAA Atlas 14 were computed independently using all available data at the time. Some discrepancies between volumes at project boundaries are inevitable and they will generally be more pronounced for rarer frequencies.

4. Frequency analysis

4.1. Project area

The project area, shown in Figure 4.1.1, encompasses Colorado, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Oklahoma, South Dakota, and Wisconsin, and covers about 857,000 square miles (2,219,620 square kilometers). During the analysis, a 1-degree buffer around these core states was also included. With the exception of western Colorado, the project area has flat to rolling terrain and falls within two topographic divisions of the Interior Plains: the Great Plains and the Central Lowlands.

The Great Plains covers eastern Colorado and most of Kansas, Nebraska, North Dakota, Oklahoma, and South Dakota. Elevation increases gradually from about 1,600 feet (488 meters) along the eastern margin to over 7,000 feet (2,134 meters) in the west where the Rocky Mountains begin. The higher elevations in the western region of the Great Plains are also referred to as the High Plains. They include southwestern South Dakota, western Nebraska, eastern Colorado, western Kansas, and western Oklahoma from the project area.

Exceptions to the flat terrain of the plains include the small isolated mountain range, the Black Hills in South Dakota (and extending into Wyoming) which reaches an elevation of 7,244 feet (2,208 meters) and the Ozark Plateau and Ouachita Mountains with summits at 2,560 feet (780 meters) and valleys as low as 500 feet (152 meters) in southern Missouri and eastern Oklahoma (and Arkansas), often called the Interior Highlands.

The Great Plains end in Colorado on the eastern face of the Rocky Mountains, known as the Front Range, where most of the state's population resides. The entire state of Colorado is above 3,315 feet (1,010 meters). The highest peak in the Rocky Mountains is Mount Elbert in Colorado at 14,440 feet (4,401 meters). There are 54 peaks that are above 14,000 feet (4,267 meters) commonly known as "fourteeners"; Pikes Peak near Colorado Springs is the eastern-most of these. Even so, only a few peaks in Colorado are snow-covered year round. The Continental Divide runs along the crest of the mountains and separates eastward draining rivers from westward draining rivers such as the Colorado River. The arid San Luis Valley is 74 miles (119 kilometers)-wide basin in the Rockies located east of the Divide between San Juan Mountains to the west and the Sangre De Cristo Mountains to the east. The Rio Grande originates in the San Juan Mountains and travels through the Valley southward.

In the northern part of the project area, Minnesota, Wisconsin and Michigan each have at least one border touching one of the Great Lakes. Minnesota's greatest variation in topography is along the coast of Lake Superior where Eagle Mountain, which reaches 2,301 feet (701 meters) in elevation, is 13 miles (21 kilometers) away from the lowest elevations of 600 feet (183 meters). Wisconsin has some relatively diverse topography consisting of highlands in the north and west and lowlands that stretch southeast to the shore of Lake Michigan. The state of Michigan consists of a Lower Peninsula that is generally flat with low-lying hills, and an Upper Peninsula in the northwest connected to Wisconsin that is relatively mountainous.

The project area comprises much of the Mississippi River watershed, including the Missouri and Arkansas River basins. The largest, most-populated urban areas include Denver (CO), Detroit (MI), Kansas City (MO), Milwaukee (WI), Minneapolis–St. Paul (MN), Oklahoma City (OK) and St. Louis (MO). Other large cities by population in the project area include Colorado Springs (CO), Omaha (NE), Tulsa (OK) and Wichita (KS).

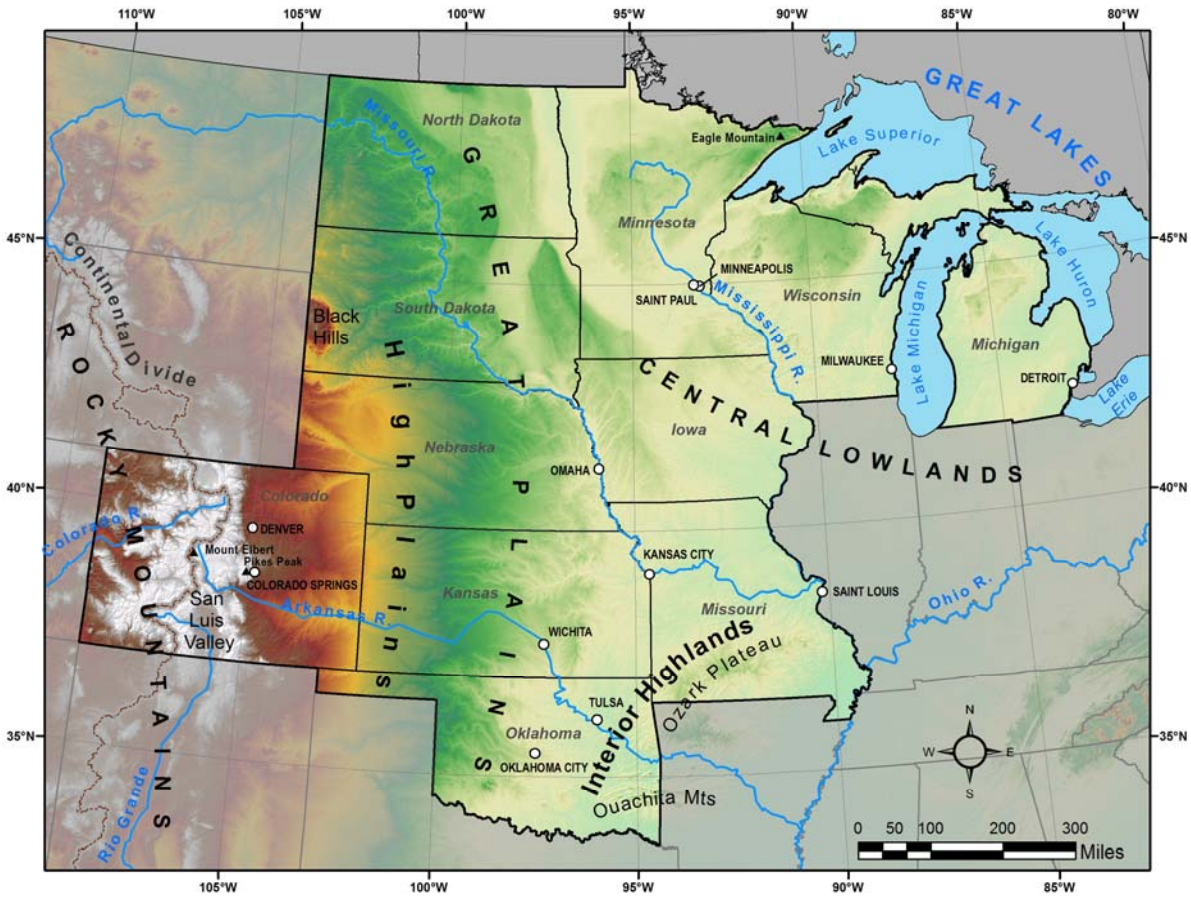


Figure 4.1.1. Project area for NOAA Atlas 14 Volume 8.
(The shaded relief was obtained from USGS EROS Data Center.)

Climatology of heavy precipitation. The climatology in the project area varies gradually from semiarid to humid across the wide and expansive Great Plains. Variations in heavy precipitation (as indicated by values of mean annual precipitation and mean annual maxima) strongly depend on longitude and the distance from the Gulf of Mexico, which is the major supplier of moisture for this area. Magnitudes of heavy precipitation tend to increase from west to east, and even more so, from north to the south. Western Colorado, the Black Hills, the Ozark Plateau and the Ouachita Mountains are the main areas with large changes in elevation that result in stronger orographic variations in heavy precipitation.

Most of the midwestern states experience a majority of their heavy precipitation (or annual maxima) between the spring and fall. This is when, under the right large-scale pressure pattern, strong low-level southerly flow can transport warm moist subtropical air from the Gulf of Mexico over the southern plains. This moist warm air meets with the cold dry air from the Rockies. The combination creates an environment of high instability and wind shear. Severe convective storms are triggered and intensified by the combination of this unstable atmosphere and dynamic forcing through the passing of an upper-level trough, convergence boundary, dry line, or cold front. These fronts tend to have a north-south alignment but can shift more east-west and become stationary, producing heavy rain over one area for several days. Thunderstorms that develop in this region can become more organized, forming squall lines that may mature into larger mesoscale convective complexes (MCCs). MCCs can persist through the night producing heavy stratiform rainfall. Heavy rainfall can also result from training thunderstorms, where consecutive storms follow the path of the preceding storm

within a given system, which can lead to rainfall over one area for several hours. Strong cold fronts and other dynamic forces are more prevalent in the spring and fall, but they can occur any time of year. During the summer months when there is weaker dynamic forcing, solar insolation tends to be the dominant factor for convective development of brief heavy storms.

In the north, the Plains have the shortest season of heavy precipitation events with a majority occurring in the late spring and in the summer months. In the south, the Plains have a longer warm season and are closer to the moisture from the Gulf of Mexico which allows for a longer rainy season from early spring to late fall. Since the midwestern states are landlocked, they are not directly affected by hurricanes; however, the remnants of these tropical systems tend to slow down as they move inland dispensing torrential amounts of rain over southeastern portions of the project area during the late summer and early fall.

The higher elevation areas in the most eastern Oklahoma and southern Missouri (the Ozark Plateau and Ouachita Mountains) have enough orography and are far enough south that they can experience heavy rain events throughout the year. The higher elevations of western Colorado also encounter heavy precipitation throughout the year with events during the winter months in the form of snow for daily durations.

Based on the climatology of heavy precipitation and precipitation mechanisms influencing the project area, four climate regions (shown in Figure 4.1.2) were delineated and used to assign a rainy season during the AMS extraction (Section 4.3), analysis of trends in AMS (Appendix A.2), analysis of temporal distributions of heavy precipitation (Appendix A.5), and in portraying the seasonality of annual maxima data (Appendix A.6).

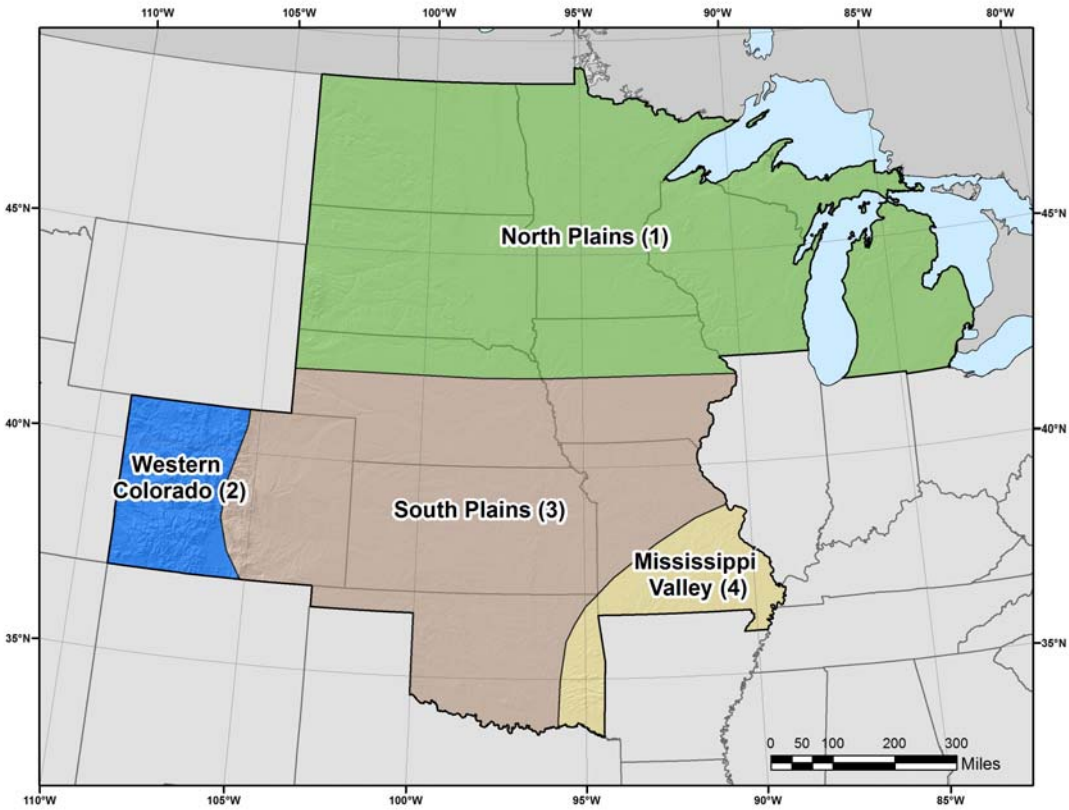


Figure 4.1.2. Four climate regions delineated for NOAA Atlas 14 Volume 8.

4.2. Precipitation data collection and formatting

Precipitation measurements were obtained for 16,227 stations from a number of U.S. federal, state, and local agencies and from Environment Canada. The majority of the stations were from the NWS Cooperative Observer Program's database maintained by the NOAA's National Climatic Data Center (NCDC). In order to have a uniform system of numbering, each station was assigned a unique six-digit identification number (station ID) where the first two digits were common for all stations from the same data provider. Except for NCDC stations, assigned identification numbers do not match identification numbers assigned by agencies that provided the data. A list of all agencies that provided the data for this project together with agencies' abbreviated names used in this document and the first two digits of stations' identification numbers are shown in Table 4.2.1.

All data were formatted to a common format at one of three base durations that corresponded to the original reporting period: 15-minute, 1-hour, or 1-day. Data recorded at variable time steps, were formatted at 15-minute increments. Where available, records extended through October 2011 with some stations updated through December 2012. Table 4.2.2 lists the total number of stations that were obtained and formatted for each reporting interval.

In addition, monthly maxima for various n-minute durations (5-minute through 60-minute) were obtained for 135 NCDC stations to which any available data from the NWS and Federal Aviation Administration's Automated Surface Observing System (ASOS) network were added; they were used to develop scaling factors used for generation of precipitation frequency estimates grids at 5-minute and 10-minute durations (Section 4.8.2).

Table 4.2.1. Agencies that provided data for the project with their abbreviations, dataset names, data reporting interval, and assigned common first two digits of station identification numbers.

Data provider	Abbreviation	Dataset name	Reporting interval	Common digits
Colorado Climate Center	COAGMET CO	Colorado Agricultural Meteorological Network (CoAgMet)	1-hour	70
Environment Canada	CANADA	DLY04 DLY03	1-day varies	52
Fountain Creek Watershed, City of Colorado Springs	FOUNTAIN CREEK CO	N/A	1-hour	69
High Plains Regional Climate Center (HPRCC)	HPRCC	Automated Weather Data Network (AWDN)	1-hour 1-day	61
Illinois State Water Survey	NADP	National Atmospheric Deposition Program (NADP)	1-day	54
Kansas Department of Transportation, City of Overland Park, Kansas	ALERT OVERLAND PARK KS	Automatic Local Evaluation in Real Time (ALERT) Network	15-min	78
Michigan State University	MAWN	Michigan Automated Weather Network (MAWN)	15-min	79
Midwestern Regional Climate Center	FORTS	19th Century Forts and Voluntary Observers Database	1-day	62, 63
Minnesota Department of Natural Resources, State Climatology Office	MN DNR	N/A	1-day	80
National Climatic Data Center	NCDC	DSI-3200 DSI-3240 DSI-3260	1-day 1-hour 15-min	02-48*
National Interagency Fire Center, Western Region Climate Center	RAWS	Remote Automatic Weather Stations	1-hour	60

Data provider	Abbreviation	Dataset name	Reporting interval	Common digits
Natural Resources Conservation Service	SNOTEL	SNOwpack TELemetry	1-day	55
North Dakota State Climate Office	NDAWN	North Dakota Agricultural Weather Network	1-hour 1-day	85
North Dakota State Water Commission (NDSWC)	NDSWC	N/A	1-day	84
Northern Colorado Water Conservancy District (NCWCD)	NCWCD CO	N/A	1-day	72
Water Resources Commissioner, Oakland County, MI	OAKLAND COUNTY MI	N/A	15-min	65
Oklahoma Climatological Survey	OK MESONET	Oklahoma Mesonet	1-day	86
Southeast Michigan Council of Governments (SEMCOG)	SEMCOG	N/A	1-hour	76
U.S. Army Corps of Engineers, St. Louis District Office	USACE ST LOUIS	N/A	1-hour	59
U.S. Bureau of Reclamation, Great Plains Region	USBR	Automated Hydrologic and Meteorologic Monitoring (Hydromet) Network	1-day	57
U.S. Geological Survey	USGS	National Water Information System data	15-min 1-day	53
University of Missouri Extension	CAAWSN MO	Commercial Agriculture Automated Weather Station Network	1-hour 1-day	83

*NCDC IDs by state: 02 (Arizona), 03 (Arkansas), 05 (Colorado), 11 (Illinois), 12 (Indiana), 13 (Iowa), 14 (Kansas), 15 (Kentucky), 16 (Louisiana), 20 (Michigan), 21 (Minnesota), 23 (Missouri), 24 (Montana), 25 (Nebraska), 29 (New Mexico), 32 (North Dakota), 33 (Ohio), 34 (Oklahoma), 39 (South Dakota), 40 (Tennessee), 41 (Texas), 42 (Utah), 47 (Wisconsin), 48 (Wyoming)

Table 4.2.2. The number of stations that were obtained per reporting interval.

Data reporting interval	Number of stations
1-day	11,918
1-hour	2,657
15-minute or variable	1,652

4.3. Annual maximum series extraction

The precipitation frequency analysis approach used in this project is based on analysis of annual maximum series (AMS) across a range of durations. AMS for each station were obtained by extracting the highest precipitation amount for a particular duration in each successive calendar year. Calendar year was used in this project area, rather than a standard water year (October - September), based on the distribution of heavy precipitation events so that a year begins and ends during a relatively dry season. AMS at stations were extracted for all durations equal to and longer than the base duration (or reporting interval) up to 60 days. AMS for the 1-day through 60-day durations were compiled from daily, hourly, and 15-minute records. To accomplish this, 15-minute and hourly data were first aggregated to constrained 1-day (hours 0 to 24) values before extracting 1-day and longer duration annual maxima. Hourly and 15-minute data were used to compile AMS for 1-hour through

12-hour durations, where, 15-minute data were aggregated first to constrained 1-hour (0 to 60 minutes) values before extracting AMS. 15-minute data were also used to compile AMS for 15-minute and 30-minute durations.

The procedure for developing an AMS from a precipitation dataset used specific criteria designed to extract only reasonable maxima if a year was incomplete or had accumulated data. Accumulated data occurred in some records where observations were not taken regularly, so recorded numbers represent accumulated amounts over extended periods of time. Since the precipitation distribution over the period is unknown, the total amount was distributed uniformly across the whole period. All annual maxima that resulted from accumulated data were flagged and went through screening to ensure that the incomplete data did not result in erroneously low maxima (Section 4.5.1).

The criteria for AMS extraction were designed to exclude maxima if there were too many missing or accumulated data during the year and more specifically during critical months when precipitation maxima were most likely to occur ("wet season"). Wet seasons were resolved by assessing the periods in which two-thirds of annual maxima occurred at each station and by inspecting histograms of annual maxima for the 1-day and 1-hour durations in a region. The final wet season months were determined using the climate regions as depicted in Figure 4.1.2. The assigned wet season months are shown in Table 4.3.1.

Table 4.3.1. Wet season months for each region for daily and sub-daily durations.

Region	**Wet season months**	
	Daily durations	**Sub-daily durations**
North Plains (1)	May – September	May – September
Western Colorado (2)	March – November	May – October
South Plains (3)	April – October	May – September
Mississippi Valley (4)	January – December	April – October

The flowchart in Figure 4.3.1 depicts the AMS extraction criteria for all durations. Various thresholds for acceptable amounts of missing or accumulated data were applied to the year and wet season. The extracted maximum value of a given duration for a given year had to pass through all of the criteria in the flowchart to be accepted. Various codes were assigned to both accepted and rejected maxima based on the amount of missing and accumulated data in each year (see Figure 4.3.1) to assist in further quality control of AMS as described in Section 4.5.1.

For example, in a year with less than 20% of the measurements missing in the whole year and during the assigned wet season, if more than 66% of the measurements were accumulated, then the maxima for that year was (conditionally) rejected, and assigned code 130. If the year had between 33% and 66% accumulated data, then it was further screened by assessing the lengths of the accumulation periods. If the lengths of the accumulation periods for more than 33% of the accumulated data were equal to or longer than threshold accumulation period lengths (D_{thresh}), then the maximum for that year was (conditionally) rejected (code 140). Threshold accumulation period lengths were defined as matching the selected duration for durations less than 2 days, as equal to half of duration period for durations between 2 days and 20 days, and as equal to 15 days for durations equal to or longer than 30 days. If the year had less than 33% accumulated data, the extracted maximum was passed to another set of criteria for accumulations during its wet season, etc.

If a rejected annual maximum was higher than 95% of the accepted maxima at that station, then it was kept in the series (code 30). Also, if a rejected 1-day annual maximum was higher than any accumulated amount in a year, then it was kept in the series and assigned code 40. Years in which a maximum was rejected were marked as missing in the series.

Lastly, several data sets required special treatment to allow for meaningful extraction but still include the data. In Minnesota and North Dakota, data are not always collected during the cold, dry winter months. Assuming that annual maxima were most likely to occur during wet months and that missing data during cold months can be neglected, the criterion for missing data within the entire year was omitted for three data sets. Those data sets were MN DNR (80-), NDSWC (84-), and NDAWN (85-). The same criterion was also applied to two NCDC stations in Minnesota and North Dakota (21-3808 and 32-5833) which had missing cold season measurements.

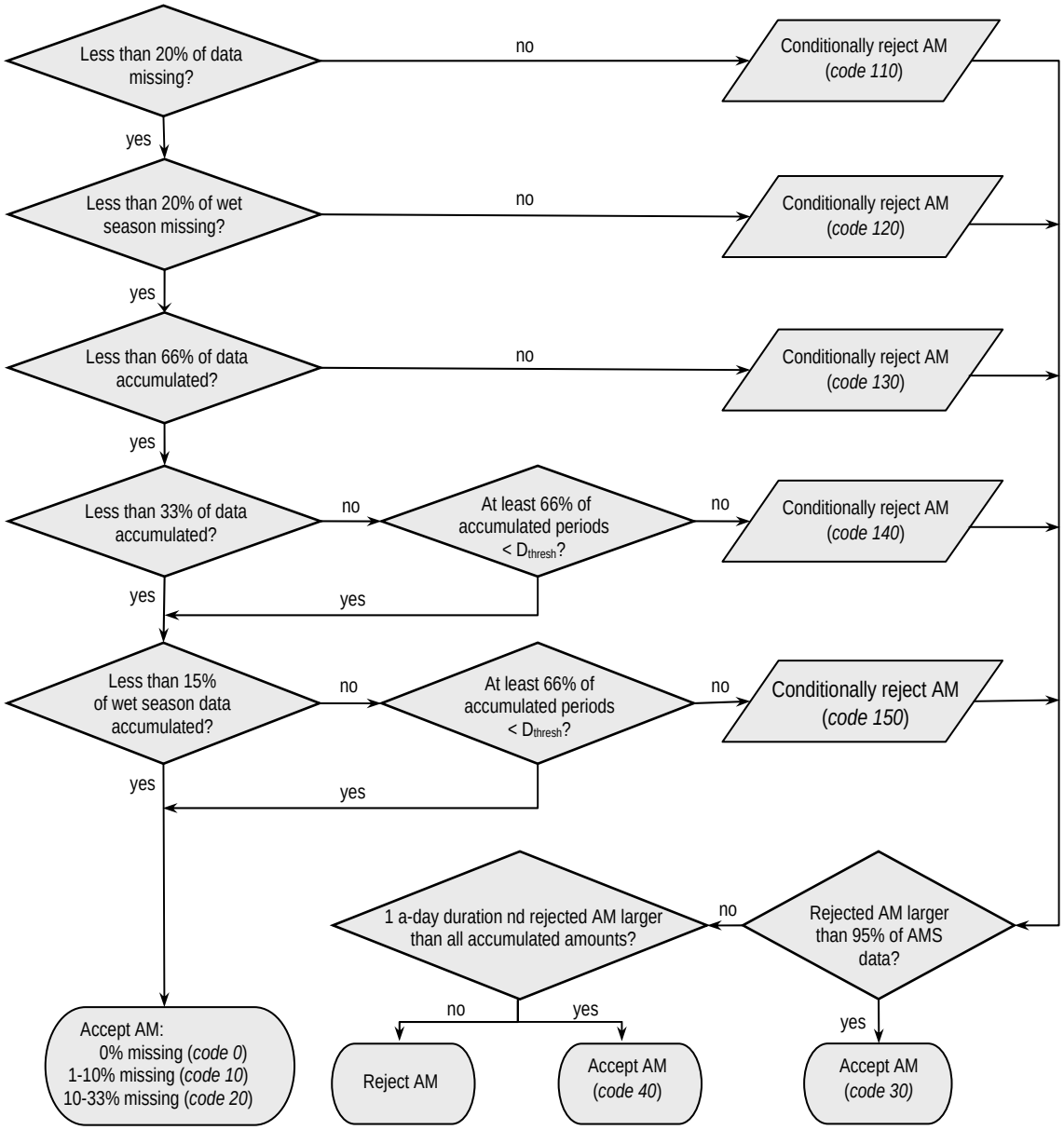


Figure 4.3.1. Criteria used to extract annual maxima. Data quality codes were assigned based on acceptance and rejection; D_{thresh} depends on duration.

4.4. Station screening

Station screening was done in the following order: a) examination of geospatial data, b) screening for duplicate records at co-located daily, hourly, and/or 15-minute stations and extending records using data from co-located stations, c) screening nearby stations for potentially merging records or removing shorter, less reliable records in station dense areas, and d) screening for sufficient number of years with usable data.

Geospatial data. Latitude, longitude, and elevation data for all stations were screened for errors. Several stations had to be re-located because they plotted in a different state or were clearly misplaced based on inspection of satellite images and maps. Misplacement was typically the result of no seconds recorded in latitude and longitude data. There were also several stations with no elevation data; for those stations, elevation was estimated from high-resolution digital elevation model (DEM) grids. Several corrections to metadata were also made based on input received during the peer review (see Appendix A.4)

Co-located stations. Co-located stations were defined as stations that have the same geospatial data, but report precipitation amounts at different time intervals. The screening of co-located stations was done as follows:

- If co-located 15-minute and hourly stations provided data for the same period and there were no differences in AMS for constrained 1-hour maxima (15-minute data aggregated on the clock hour), only the 15-minute station was retained and used to extract AMS for all longer durations.
- If a 15-minute or hourly station provided data for the same period as a co-located daily station and there were no differences in AMS for constrained 1-day maxima (15-minute or 1-hour data aggregated from 0 to 24 hours), only the 15-minute or hourly station was retained and used to extract AMS for all longer durations.
- If periods of record at co-located stations were consistent but did not completely overlap, aggregated data from the station with the shorter reporting interval were used to extend the record of the station with the longer reporting interval.
- If the station with the longer reporting interval had a longer period of record, then it was retained in the dataset in addition to the co-located station with the shorter reporting interval.

AMS data consistency across durations was ensured in later quality control procedures (Section 4.5.3).

Nearby stations. Nearby stations were defined as stations located within three miles with consideration to elevation differences. However, in areas of flat terrain, stations up to five miles apart or farther may have been considered. The records of nearby stations were considered for merging to increase record lengths. In station-dense areas, such as in the Twin Cities area in Minnesota, some stations were removed from the analysis if a nearby station had a longer overlapping record or better quality data.

Record length. Record length was characterized by the number of years for which annual maxima could be extracted (i.e., data years) rather than the entire period of record. Only stations with at least 30 data years were considered for frequency analysis. Allowances were made for isolated stations or stations recording at very short intervals, particularly in Colorado where there is significant terrain. A minimum of 20 data years was used for hourly stations.

Figure 4.4.1 shows histograms for the number of data years of stations available for frequency analysis across daily, hourly, and sub-hourly durations after all the screenings were done. The average and median record lengths as well as corresponding ranges of record lengths are given in Table 4.4.1.

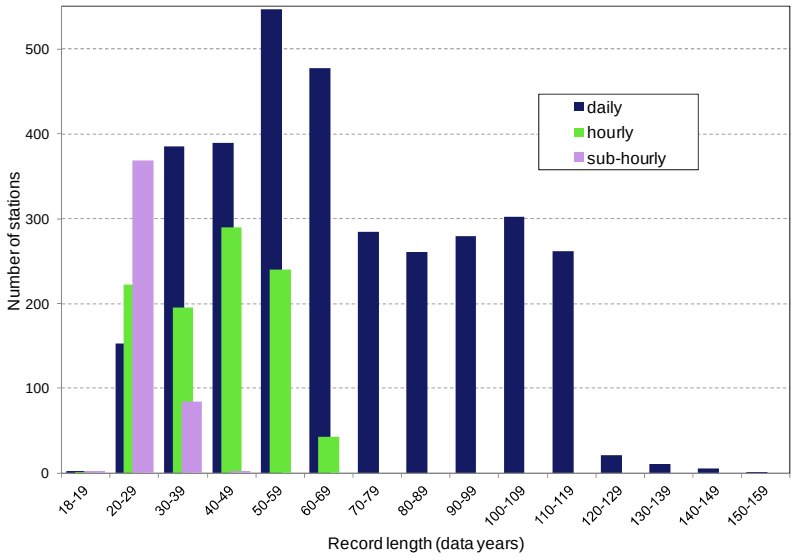


Figure 4.4.1. Number of stations used for precipitation frequency analysis grouped by record length for daily, hourly and sub-hourly durations.

Table 4.4.1. Record length statistics for stations used in frequency analysis for different durations.

Duration (D)	**Number of stations**	**Record length (data years)**		
		average	**median**	**range**
Daily (1-day ≤ D ≤ 60-day)	3,382	68	63	18 – 159
Hourly (1-hr ≤ D < 24-hr)	992	41	43	19 – 69
Sub-hourly (15-min ≤ D < 60-min)	458	26	25	19 – 43

Locations of stations recording precipitation data at 1-day intervals that were used in the frequency analysis are shown in Figure 4.4.2 and locations of stations recording at 1-hour and sub-hourly intervals are shown in Figure 4.4.3. More detailed information on each station whose data were used to calculate precipitation frequency estimates is given in three tables in Appendix A.1. The first table in the appendix lists stations in the core states of Colorado, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Oklahoma, South Dakota, and Wisconsin. The second table lists stations in the approximately 1 degree buffer surrounding the core states. Those stations were used in the regionalization task (Section 4.6.2) and to assist with interpolation of at-station estimates (Section 4.8). The third table lists n-minute stations that were not directly used in frequency analysis but assisted in development of precipitation frequency estimates at 5-minute and 10-minute durations (Section 4.8.2). Information provided for each station includes: source, name, identification number and data reporting interval, as well as latitude, longitude, elevation, and period of record. All adjusted geospatial data are shown in bold font in the latitude, longitude, and/or elevation columns. Bold font in the period of record column was used to indicate stations whose records were extended with the data from co-located stations or whose records were lengthened by merging with another station. The metadata from the station listed as the 'Post-merge station ID' was retained in the dataset for the merged record; the metadata for this station will reflect the combined periods of records in bold text. If an hourly and a daily station with different IDs were co-located, then the metadata, including ID, of the daily station shown in the 'Co-located station ID' column of the table should be used to locate the hourly (or 15-minute) station on the PFDS web page.

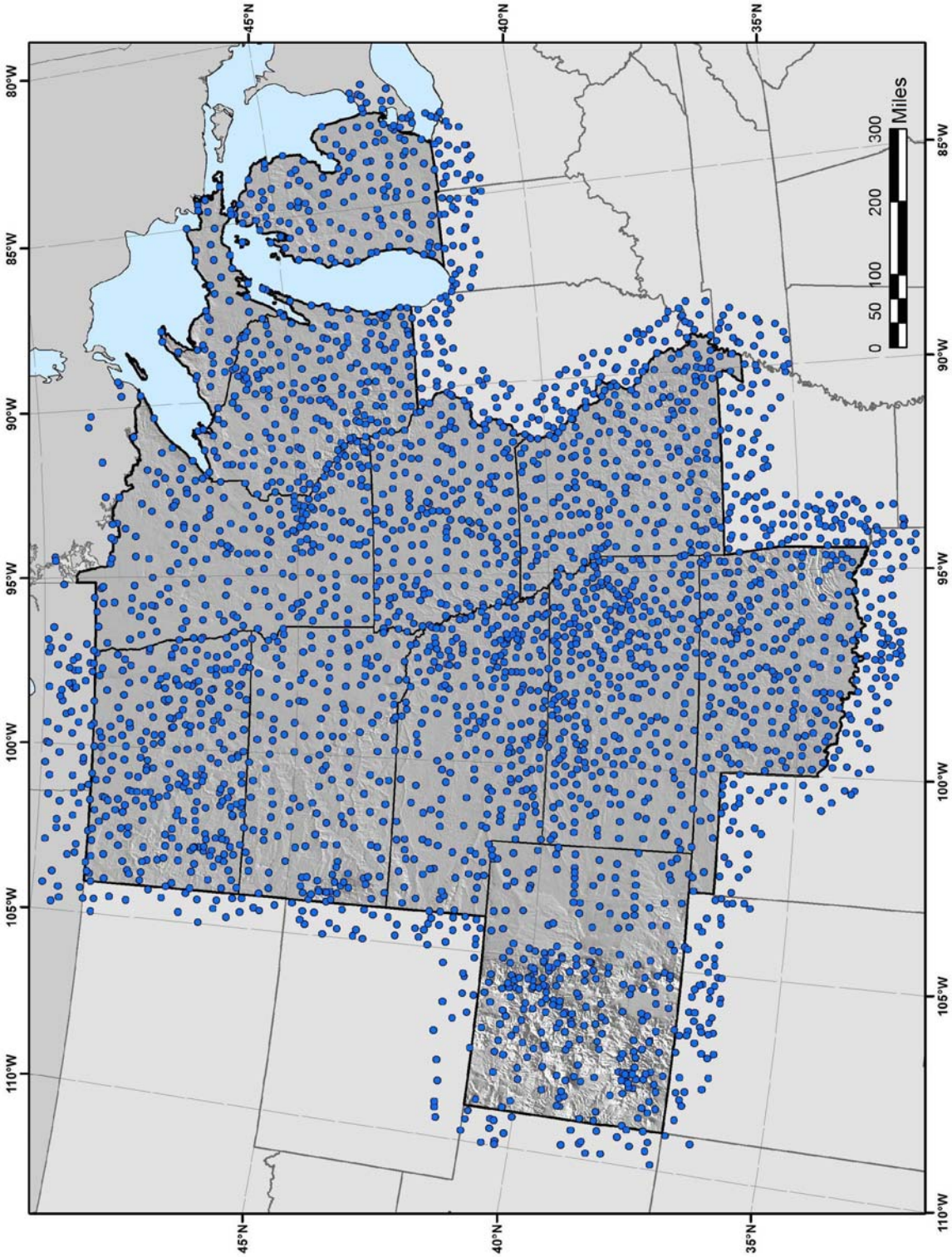


Figure 4.4.2. Map of stations recording at 1-day intervals used in frequency analysis.

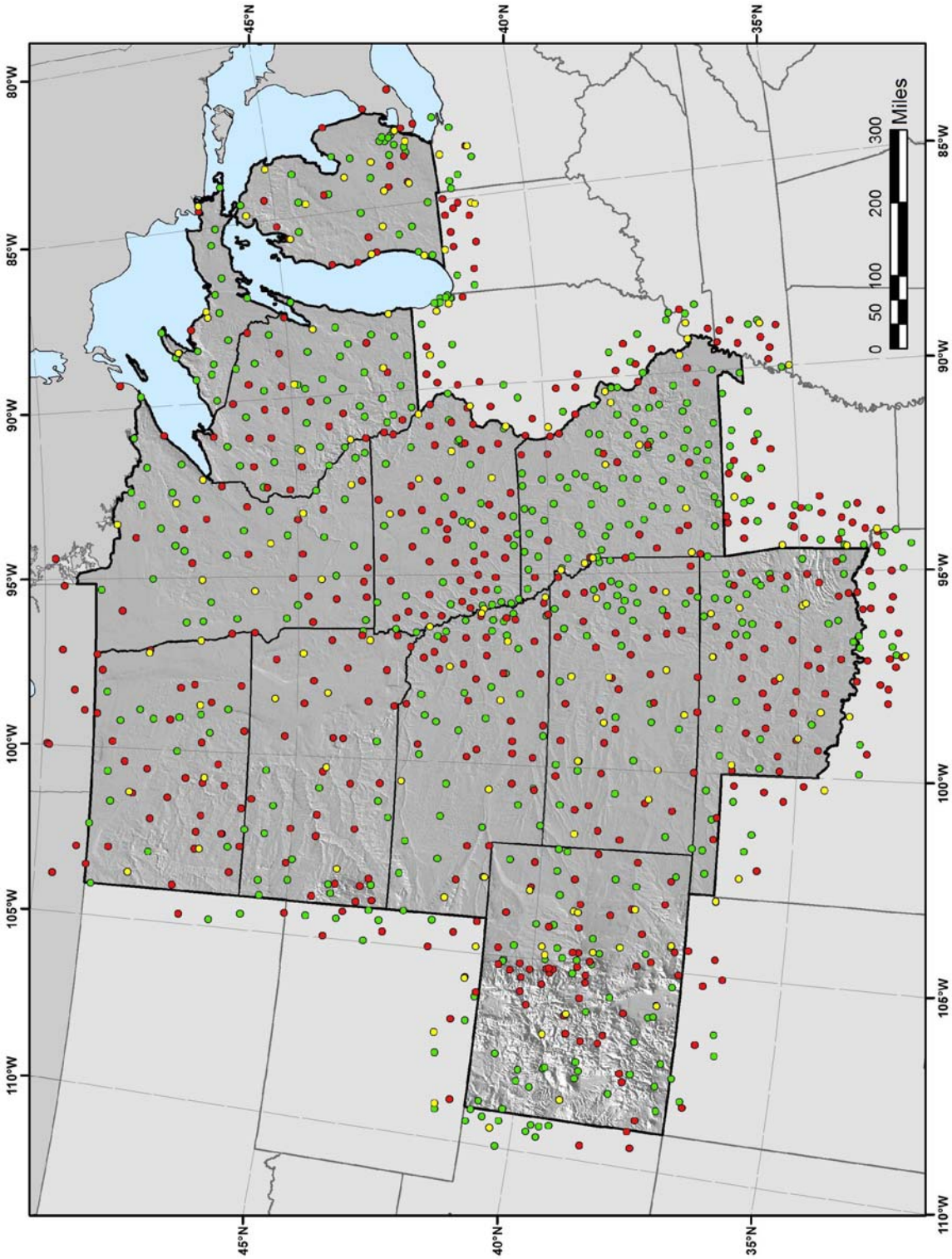


Figure 4.4.3. Map of stations recording at 1-hour (green circles) and 15-minute (or variable intervals and formatted to 15-minute; red circles) used in the analysis. Also, shown n-minute stations (yellow circles) used in the analysis.

4.5. AMS screening and quality control

4.5.1. Outliers

For this project, outliers are defined as annual maxima which depart significantly from the trend of the corresponding remaining maxima. Since data at both high and low extremities can considerably affect precipitation frequency estimates, they have to be carefully investigated and either corrected or removed from the AMS if due to measurement errors. The high and low outliers thresholds from the Grubbs-Beck statistical test (Interagency Advisory Committee on Water Data, 1982) and the median +/- two standard deviations thresholds were used to identify low and high outliers for all durations. Low outliers, which frequently came from years with missing and/or accumulated data, were typically removed from the annual maximum series. All values identified as high outliers were mapped with concurrent measurements at nearby stations. Questionable values that could not be confirmed were investigated further using climatological observation forms, monthly storm data reports and other historical weather event publications. Depending on the outcome of each investigation, values were either kept as is, corrected, or removed from the datasets. An example of outlier examination is shown in Figure 4.5.1: statistical tests identified a 24-hour amount of 14.22 inches recorded on July 27, 1949 at Blanchard Power station in Minnesota (21-0826) as an outlier. Further investigation of the original observation form for that date showed that the recorded value was instead 1.42 inches, and so the recorded value was used in the dataset.

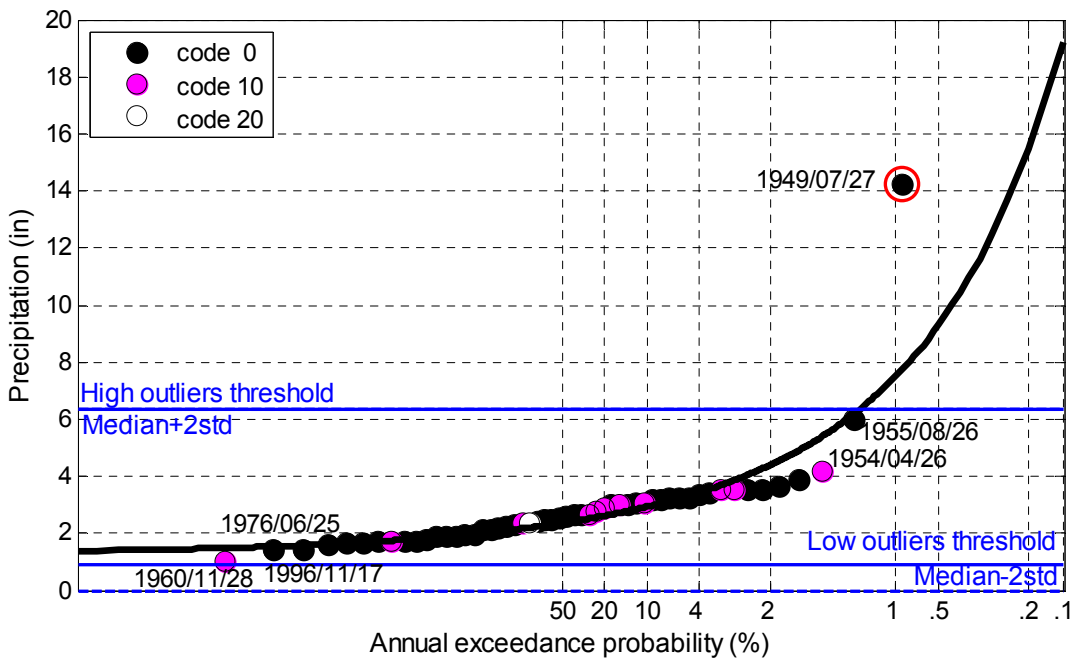


Figure 4.5.1. Outlier tests for 24-hour AMS at station 21-0826. Data quality codes were assigned to annual maxima during the extraction process (Section 4.3).

4.5.2. Correction for constrained observations

Daily durations. The majority of daily AMS data used in this project came from daily stations at which readings were taken once every day at fixed times (constrained observations). Due to the fixed beginning and ending of observation times at daily stations, it is to be expected that extracted (constrained) annual maxima were lower than the true (unconstrained) maxima, especially for shorter daily durations. To account for the likely failure of capturing the true-interval maxima, correction

factors were applied to constrained AMS. The correction factor for each daily duration was estimated as the coefficient of a zero-intercept regression model using concurrent (occurring within +/- 1 day) constrained and unconstrained annual maxima from hourly stations as independent and dependent model variables, respectively. Correction factors for all daily durations are given in Table 4.5.1.

Table 4.5.1. Correction factors applied to constrained AMS data across daily durations.

Duration (days)	1	2	3	4	7	>7
Correction factor	1.12	1.04	1.03	1.02	1.01	1.00

Hourly durations. Similar adjustments were needed on hourly AMS data to account for the effects of constrained 'clock hour' on observations. The correction factors for hourly AMS were developed using co-located hourly (constrained) and 15-minute (unconstrained) concurrent (occurring within +/- 1 hour) annual maxima; they are shown in Table 4.5.2.

Table 4.5.2. Correction factors applied to constrained AMS data across hourly durations.

Duration (hours)	1	2	3	6	>6
Correction factor	1.09	1.04	1.02	1.01	1.00

Sub-hourly durations. No correction factors were applied to durations under 1-hour.

4.5.3. Inconsistencies across durations

At co-located stations, it was not unusual that corresponding annual maxima differed for some years during their overlapping periods of record. Related 1-day AMS at co-located daily and hourly stations were compared and each pair of significantly different estimates was investigated. Effort was made to identify the source of the error and to correct erroneous observations across all durations that were affected.

Annual maxima at each station were also compared across all durations in each year to ensure that the extracted amount for a longer duration was at least equal to the corresponding amount for the successive shorter duration. Inconsistencies of this type occurred at stations with a significant number of missing and/or accumulated data and resulted from different AMS extraction rules applied for different durations (Section 4.3), or from the correction for constrained observations (Section 4.5.2). In those cases, shorter duration annual maxima were used to replace annual maxima extracted for longer durations. Typically, adjustments of this type were very small.

4.5.4. Trend analysis

Precipitation frequency analysis methods used in NOAA Atlas 14 volumes are based on the assumption of a stationary climate over the period of observation (and application). Statistical tests for trends in AMS and the main findings for this project area are described in more detail in Appendix A.2. Briefly, the stationarity assumption was tested by applying a parametric *t*-test and non-parametric Mann-Kendal test for trends in means and Levene's test for trends in variance in the 1-day and 1-hour annual maximum series data at the 5% significance level. For the 1-day duration, testing was done on stations with at least 70 years of data; for the 1-hour duration, the minimum number of data years was lowered to 40 to increase sample size. Man-Kendall test and *t*-test results were generally in agreement; for the 1-hour duration, no trends in the means were detected at about 93% of the stations and for the 1-day duration, at about 86% of the stations. Levene's test did not detect trends in variance at any station at the 1-hour duration and in about 92% of stations at 1-day. Spatial maps did not reveal any spatial coherence in trend results.

The relative magnitude of any trend in the AMS means was also assessed for each climate region (see Figure 4.1.2). AMS were rescaled by corresponding mean values and then regressed against time. The regression results were tested as a set against a null hypothesis of zero serial correlation. The null hypothesis of no trends in AMS data could not be rejected at 5% significance level.

Therefore, the assumption of stationary AMS was accepted for this project area and no adjustment of AMS magnitudes was made.

4.6. Precipitation frequency estimates with confidence limits at stations

4.6.1. Overview of methodology and related terminology

Precipitation magnitude-frequency relationships at individual stations have been computed using a regional frequency analysis approach based on L-moment statistics. Frequency analyses were carried out on annual maximum series (AMS) for the following seventeen durations: 15-minute, 30-minute, 1-hour, 2-hour, 3-hour, 6-hour, 12-hour, 1-day, 2-day, 3-day, 4-day, 7-day, 10-day, 20-day, 30-day, 45-day and 60-day. Frequency estimates based on partial duration series (PDS), which include all amounts for a specified duration at a given station above a pre-defined threshold regardless of year, were developed from AMS data using a formula that allows for conversion between AMS and PDS frequencies. Precipitation frequency estimates at 5-minute and 10-minute durations were derived from corresponding 15-minute estimates. To assess the uncertainty in estimates, 90% confidence intervals were constructed on both AMS and PDS frequency curves.

Frequency analysis involves fitting an assumed distribution function to the data. The following distribution functions were analyzed in this project with the aim to identify a distribution that provides the best precipitation frequency estimates for the project area across all frequencies and durations: 3-parameter Generalized Extreme Value (GEV), Generalized Normal, Generalized Pareto, Generalized Logistic and Pearson Type III distributions; 4-parameter Kappa distribution; and 5-parameter Wakeby distribution.

When fitting a distribution to a precipitation annual maximum series extracted at a given location (and selected duration), the result is a frequency distribution relating precipitation magnitude to its annual exceedance probability (AEP). The inverse of the AEP is frequently referred to as the average recurrence interval (ARI), also known as return period. When used with the AMS-based frequency analysis, ARI does not represent the "true" average period between exceedance of a given precipitation magnitude, but the average period between years in which a given precipitation magnitude is exceeded at least once. Those two average periods can be considerably different for more frequent events. The "true" average recurrence interval (ARI) between exceedance of a particular magnitude can be obtained through frequency analysis of PDS.

Differences in magnitudes of corresponding frequency estimates (i.e., quantiles) from the two series are negligible for ARIs greater than about 15 years, but notable at smaller ARIs (especially for ARI $\leq$ 5 years). Because the PDS can include more than one event in any particular year, the results from a PDS analysis are considered to be more reliable for designs based on frequent events (e.g., Laurenson, 1987). To avoid confusion, herein the term AEP is used with AMS frequency analysis and ARI with PDS frequency analysis. The term "frequency" is interchangeably used to specify the ARI and AEP.

L-moments (Hosking and Wallis, 1997) provide an alternative way of describing frequency distributions to traditional product moments (conventional moments) or maximum likelihood approach. Since sample estimators of L-moments are linear combinations of ranked observations, they are less susceptible to the presence of outliers in the data than conventional moments and are well suited for the analysis of data that exhibit significant skewness. L-moments typically used to calculate parameters of various frequency distributions include 1st and 2nd order L-moments: L-location (λ_1) and L-scale (λ_2), and the following L-moment ratios: L-CV (τ), L-skewness (τ_3), and L-

kurtosis (τ_4). L-CV, which stands for "coefficient of L-variation", is calculated as the ratio of L-scale to L-location (λ_2/λ_1). L-skewness and L-kurtosis represent ratios of the 3rd order (λ_3) and 4th order (λ_4) L-moments to the 2nd order (λ_2) L-moment, respectively, and thus are independent of scale.

One of the primary problems in precipitation frequency analysis is the need to provide estimates for average recurrence intervals that are significantly longer than available records. Regional approaches, which use data from stations that are expected to have similar frequency distributions, have been shown to yield more accurate estimates of extreme quantiles than approaches that use only data from a single station. The number of stations used to define a region should be large enough to smooth variability in at-station estimates, but also small enough that regional estimates still adequately represent local conditions. The region of influence approach (Burn, 1990) used in this volume defines regions such that each station has its own region with a potentially unique combination of nearby stations. Stations are selected based on the maximum allowable distance from the target station that is defined in a geographic space and in a space of selected statistical attribute variables. Like with other regionalization approaches, there is level of subjectivity involved in the process, for example, in choosing attribute variables, selecting the maximum allowable distance as well as attributes' weights and transformations for similarity distance algorithms. One of the advantages of the region of influence approach is that it results in a smooth transition in estimates across regional boundaries, which is relevant for the mapping of precipitation frequency estimates.

A frequency curve that is calculated from sample data represents some average estimate of the population frequency curve, but there is a high probability that the true value actually lies above or below the sample estimate. Confidence limits provide a measure of the uncertainty. They represent values between which one would expect the true value to lie with a certain confidence; they are not necessarily equidistant from the estimates. The width of a confidence interval between the upper and lower confidence limits is affected by a number of factors, such as the degree of confidence, sample size, exceedance probability, and so on. In this volume, simulation-based procedures were used to estimate confidence limits of a 90% confidence interval.

Precipitation frequency estimates from NOAA Atlas 14 are point estimates, and are not directly applicable to an area. The conversion of a point to an areal estimate is usually done by applying an appropriate areal reduction factor to the average of the point estimates within the subject area. Areal reduction factors are generally a function of the size of an area and the duration of the precipitation. The depth-area-duration curves from the Technical Paper No. 29 (U.S. Weather Bureau, 1960) developed for the contiguous United States, can be used for this purpose.

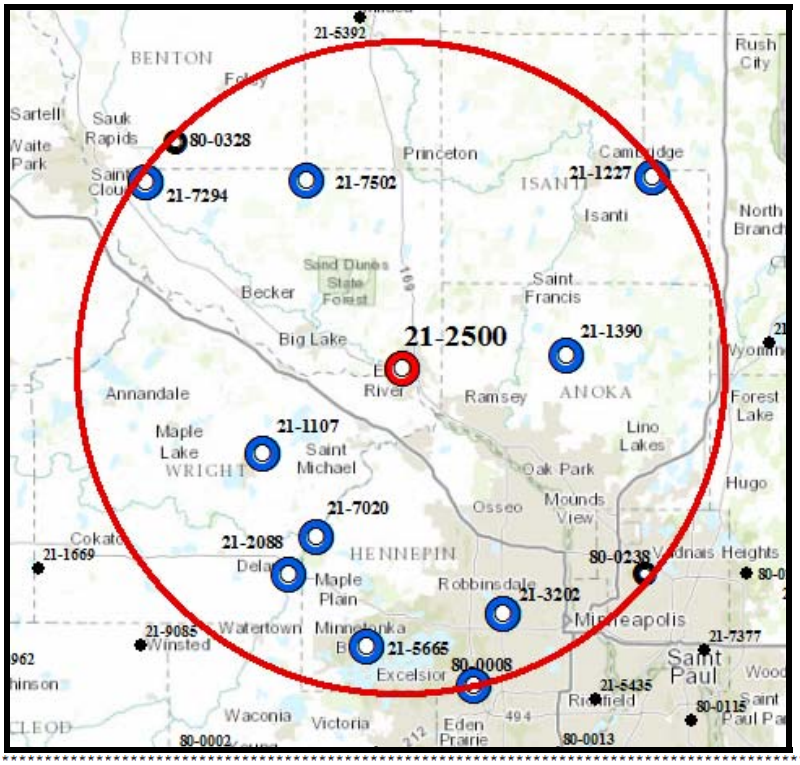
Precipitation frequency estimates for each NOAA Atlas 14 volume were computed independently using all available data at the time. Some discrepancies between volumes at project boundaries are inevitable and they will generally be more pronounced for more rare frequencies.

4.6.2. Regionalization

Initial regions for each station were created by grouping the closest 10 stations. Stations were then added to or removed from regions based on examination of their distance from a target station, elevation difference, difference in MAMs at various durations, inspection of their locations with respect to mountain ridges, etc. (see an example in Figure 4.6.1) and assessment of similarities/dissimilarities in the progression of relevant L-moment statistics across durations compared with other stations in the region (see Figure 4.6.2). Typically, final regions included between 8 and 16 stations with a cumulative number of data years between 600 and 1,100 for daily durations and 100 and 250 for hourly durations. However, in some areas of low station density, final numbers of data years for some regions were as low as 400 for daily durations and 50 for hourly durations.

Regional L-moments calculation. For a given duration, regional estimates of L-moment ratios (L-CV, L-skewness and L-kurtosis) were obtained by averaging corresponding station-specific estimates

weighted by record lengths. Regional L-moment ratios were then used to estimate higher order L-moments at each station.



REGIONAL ANALYSIS FOR STATION 21-2500

i	ind	site_id	dist(mi)	elev	elev_diff	mam24hr	mam_diff	max1hr	max3hr	max6hr	max24hr	max48hr	n_24hr	n_1hr
Deleted stations:														
13	4374	80-0328	28.40	1099	189	2.81	-0.01	NaN	NaN	NaN	5.26	6.16	31	0
12	4363	80-0238	28.37	938	28	2.98	0.15	NaN	NaN	NaN	6.78	6.78	41	0
2	4373	80-0318	13.42	866	-44	2.54	-0.28	NaN	NaN	NaN	4.23	6.71	45	0
Backup stations														
24	4343	80-0002	39.70	988	78	3.04	0.22	NaN	NaN	NaN	7.28	8.22	52	0
23	2233	21-1669	36.98	1069	159	2.70	-0.12	NaN	NaN	NaN	5.80	6.71	56	0
22	4345	80-0013	36.79	797	-113	2.87	0.04	NaN	NaN	NaN	8.38	8.38	47	0
21	2346	21-7377	36.72	900	-10	2.66	-0.17	NaN	NaN	NaN	6.24	6.24	128	0
20	4370	80-0295	35.68	932	22	2.95	0.13	NaN	NaN	NaN	6.94	7.07	49	0
19	2230	21-1468	34.05	923	13	2.94	0.11	NaN	NaN	NaN	8.77	8.77	79	0
18	2306	21-5435	33.92	872	-38	2.81	-0.02	2.94	7.73	10.10	10.10	10.10	159	62
17	2381	21-9085	33.83	1030	120	2.70	-0.12	NaN	NaN	NaN	6.44	6.44	47	0
16	2251	21-2881	32.81	960	50	2.75	-0.07	NaN	NaN	NaN	7.28	7.28	52	0
15	2304	21-5392	31.19	1064	154	2.65	-0.17	NaN	NaN	NaN	6.03	6.08	98	0
Selected stations														
14	4344	80-0008	28.77	942	32	2.97	0.15	NaN	NaN	NaN	11.20	11.20	35	0
11	2344	21-7294	28.05	1018	108	2.57	-0.26	3.30	3.30	4.43	5.60	6.14	114	62
10	2224	21-1227	27.99	960	50	2.74	-0.08	2.73	3.98	4.34	6.13	7.18	75	37
9	2315	21-5665	24.72	935	25	2.73	-0.10	NaN	NaN	NaN	5.86	8.84	94	0
8	2257	21-3202	23.51	910	0	3.00	0.18	2.90	6.43	7.47	7.50	8.22	53	33
7	2239	21-2088	20.78	930	20	2.64	-0.18	NaN	NaN	NaN	6.24	8.96	31	0
6	2349	21-7502	18.65	1010	100	2.73	-0.10	NaN	NaN	NaN	4.19	4.84	49	0
5	2338	21-7020	16.72	950	40	2.45	-0.38	NaN	NaN	NaN	4.98	5.73	32	0
4	2229	21-1390	14.66	907	-3	2.57	-0.26	NaN	NaN	NaN	5.32	6.00	41	0
3	2222	21-1107	14.54	992	82	2.96	0.14	2.53	3.67	5.76	7.11	7.11	61	48
1	2245	21-2500	0.00	910	0	2.82	0.00	NaN	NaN	NaN	7.39	7.43	66	0

total number of years: 651 180

Figure 4.6.1. An example of spatial plot with accompanying table used in an interactive process for adding or removing stations from a region for station Elk River, MN (21-2500).

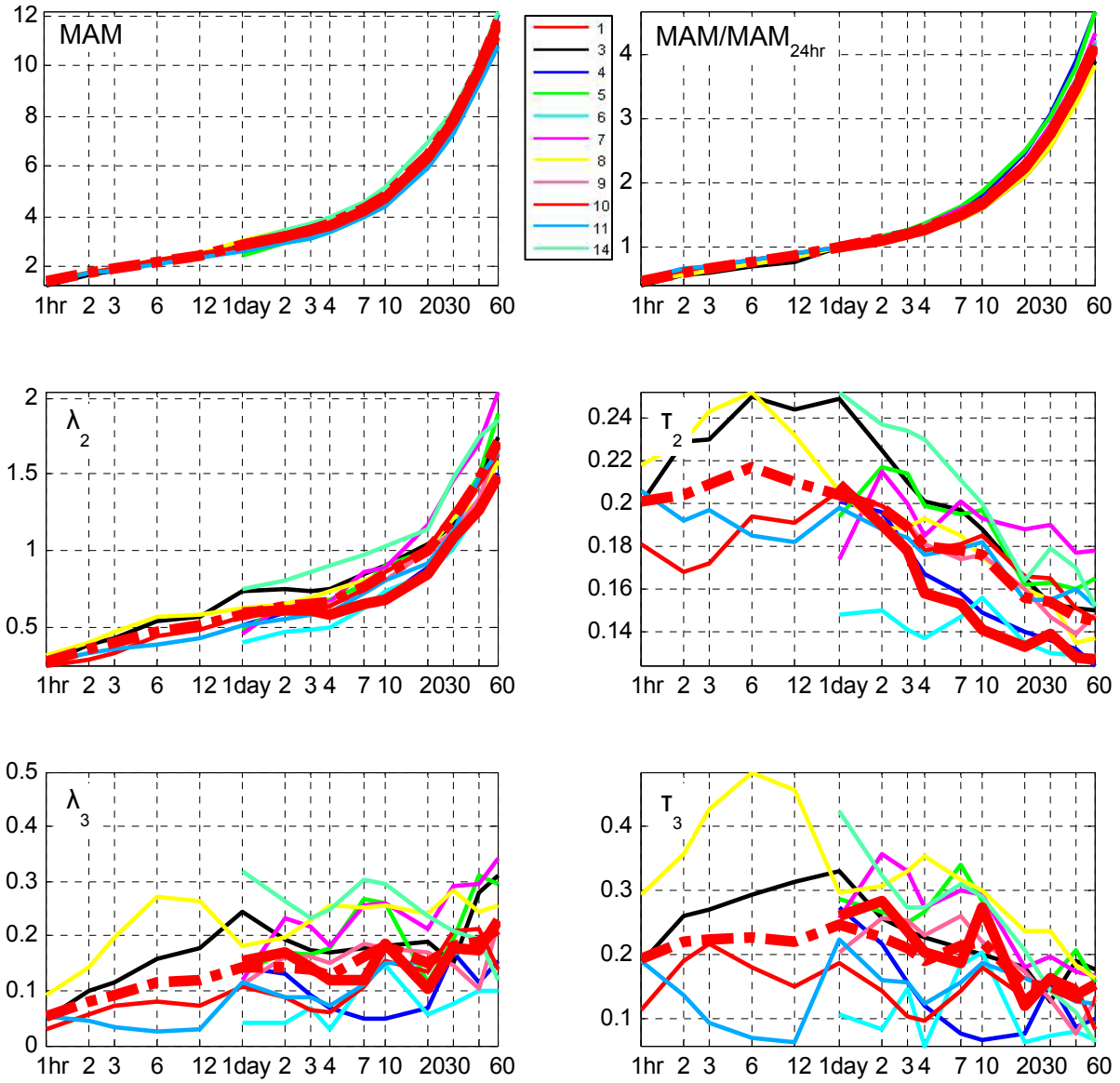


Figure 4.6.2. An example of plots of L-moments (left panels), MAM/MAM_{24hr} and L-moment ratios (right panels) across hourly and daily durations for a region. Thick red lines show statistics for the target station (daily station 21-2500); thin colored lines show statistics for other stations in the region; thick dashed red lines show corresponding regional estimates.

Station dependence. Since stations were selected based on geographic proximity to a target station, it was likely that some of the extracted annual maxima at nearby stations came from the same storm events. Dependence in AMS data for stations within a region was analyzed using a *t*-test for the significance of a correlation coefficient at the 5% level. Analysis indicated that cross-correlation among stations was often statistically significant in areas with a dense network of rain gauges and that the number of dependent station pairs increased with duration length. The impact of station dependence on precipitation frequency estimates is considered to be minimal (e.g., Hosking and Wallis, 1997), so it was not addressed in the calculation of precipitation frequency estimates.

However, it was accounted for during the construction of confidence intervals on estimates where it could have noticeable influence (see Section 4.6.5).

4.6.3. AMS-based estimates

Choice of distribution. A goodness-of-fit test based on L-moment statistics for 3-parameter distributions, as suggested by Hosking and Wallis (1997), was used to assess which of the five 3-parameter distributions listed in Section 4.6.1 provide acceptable fit to the AMS data. Results of χ^2- and Kolmogorov-Smirnov tests and visual inspection of probability plots for all seven distributions for 1-hour, 1-day and 10-day durations, like the one shown in Figure 4.6.3, were considered during distribution selection. The GEV distribution was adopted across all stations and for all durations for several reasons. GEV is a distribution generally recommended for analysis of extreme events. Based on the test results, the GEV distribution provided an acceptable fit to data more frequently than any other distribution. Finally, although it is not required to use the same type of distribution across all durations and/or regions, changes in distribution type for different durations or regions often lead to considerable discontinuities in frequency estimates across durations or between nearby locations, particularly at more rare frequencies.

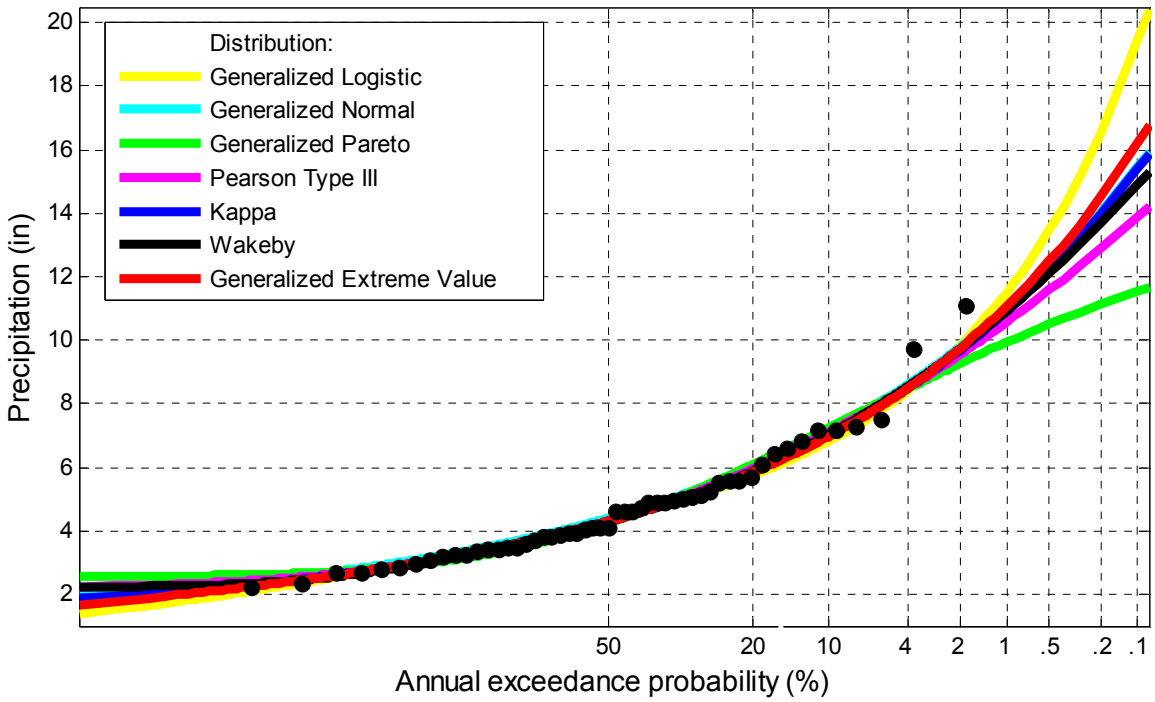


Figure 4.6.3. Probability plots for selected distributions for 1-day AMS at station Nowata (34-6485) in Oklahoma.

Frequency estimates for hourly and daily durations. For each station and for each hourly and daily duration, L-moment statistics were used to calculate the parameters of the GEV distribution and to produce precipitation frequency estimates for the following annual exceedance probabilities (AEPs): 1/2 (50%), 1/5, 1/10, 1/25, 1/50, 1/100, 1/200, 1/500 and 1/1000. This calculation was repeated for all durations and for all stations. Since L-moments, and consequently, precipitation frequency estimates, were calculated independently for each duration, the resulting depth-duration-frequency (DDF) curves did not always look smooth. Smoothing of quantiles by cubic spline

functions improved the shape of DDF curves. Figure 4.6.4 illustrates precipitation depth-duration-frequency curves before and after smoothing for Alexandria, SD (39-0128).

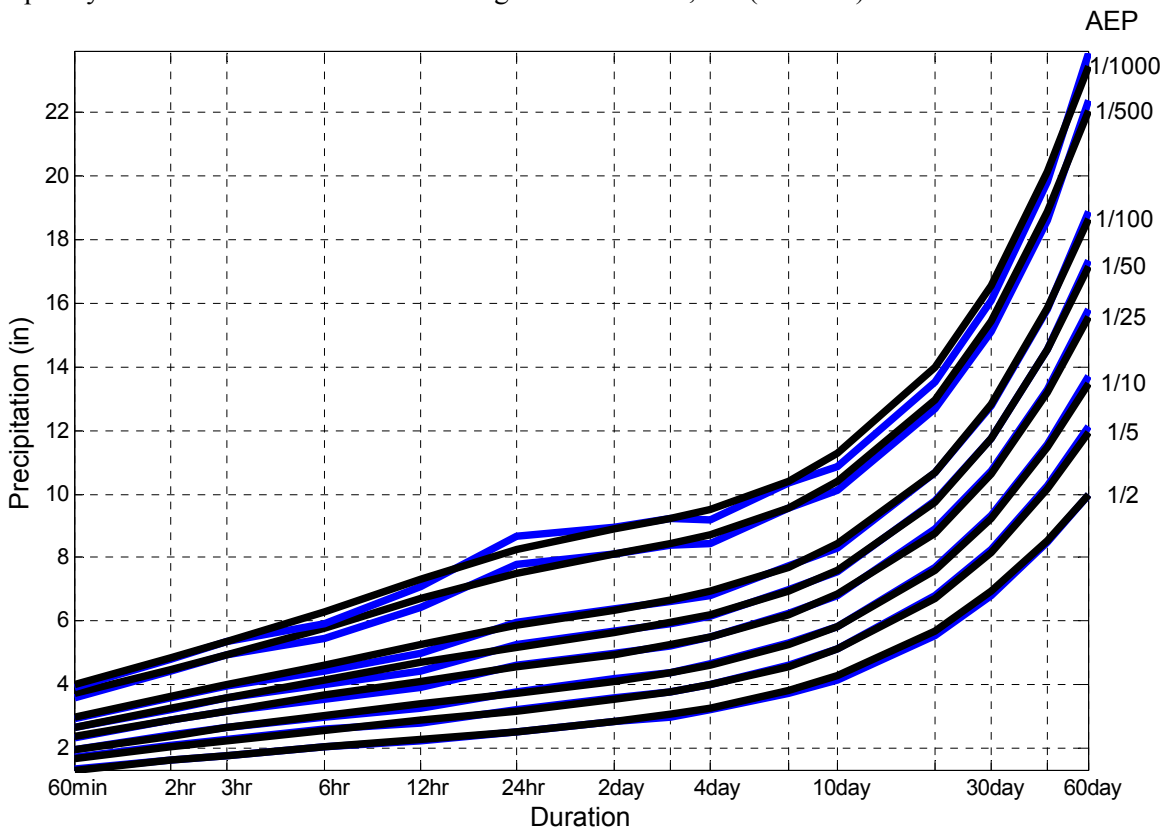


Figure 4.6.4. Precipitation frequency estimates for a range of durations for selected AEPs for station Alexandria, SD (39-0128). Blue lines represent original estimates; black lines represent estimates obtained after quantiles were smoothed across durations.

Frequency estimates for sub-hourly durations. The shortest duration at which AMS data were extracted was 15 minutes. L-moments were calculated for the 15-minute and 30-minute durations at stations that had 15-minute AMS data available for at least one station assigned to their region. L-moments were then used to produce precipitation frequency estimates in the same manner as for hourly and daily durations. However, in a number of cases, it was observed that resulting precipitation frequency estimates were implausible, especially for AEPs of 1/100 (1%) or less. The primary cause of this was the sample size, as very few stations with measurements at sub-hourly durations were available, and when they were available, they typically had short periods of record. This resulted in unreliable moments (especially higher-order moments), and consequently, unreliable precipitation frequency estimates. λ_1 moments (i.e., mean annual maxima) were less sensitive to a sample size and were generally in line with corresponding estimates at nearby stations. λ_1 moments were also, for the most part, consistent with the expected progression across hourly and daily durations (see top left panel of Figure 4.6.2). For that reason, mean annual maxima at 15-minute and 30-minute durations were retained for derivation of MAM grids (see Section 4.8.1). At-station quantiles, which were assessed as unreliable, were not interpolated to create precipitation frequency grids; an alternative approach, described in Section 4.8.2 was used for that purpose.

Similarly, for the 5-minute and 10-minute durations, very few n-minute stations were available to compute precipitation frequency estimates using regional L-moments or to develop MAM grids.

Therefore, an alternative approach described in Section 4.8.2 was used to develop these estimates, as well.

4.6.4. PDS-based estimates

PDS-based precipitation frequency estimates were calculated indirectly from Langbein's formula (Langbein, 1949) which transforms a PDS-based average recurrence interval (ARI) to an annual exceedance probability (AEP):

$$\mathrm{AEP} = 1 - \exp\left(-\frac{1}{\mathrm{ARI}}\right).$$

PDS-based frequency estimates were calculated for the same durations as AMS-based estimates for 1-, 2-, 5-, 10-, 25-, 50-, 100-, 200-, 500- and 1,000-year ARIs. Selected ARIs were first converted to AEPs using the above formula and then precipitation frequency estimates were calculated for those AEPs following the same approach that was used in the AMS analysis.

4.6.5. Confidence limits

A Monte Carlo simulation procedure that accounts for inter-station dependence, as described in Hosking and Wallis (1997), was used to construct 90% confidence intervals (i.e., 5% and 95% confidence limits) on both AMS-based and PDS-based precipitation frequency curves. It should be noted that confidence intervals constructed through this approach account for uncertainties in distribution parameters, but not for other sources of uncertainties (for example, distribution selection), that could also significantly impact the total error, particularly at more rare frequencies.

Since the station dependence analysis (Section 4.6.2) indicated that for regions with a more dense station network, AMS data from different stations could be dependent (especially for longer durations), the simulation algorithm that accounts for inter-station correlation was used. At each station, 1,000 simulated data sets per duration were used to generate precipitation quantiles. Estimates were sorted from smallest to largest and the 50th value was selected as the lower confidence limit and the 950th value was selected as the upper confidence limit.

Due to differences in record lengths across hourly and daily durations, confidence intervals for hourly durations were wider than corresponding intervals at daily durations for some stations; therefore, they were restricted by the corresponding values at 24-hour duration. Confidence limits for sub-hourly durations were calculated using similar approaches that were used to calculate frequency estimates. Since confidence limits were derived for each duration independently, like precipitation frequency estimates, confidence limits could fluctuate from duration to duration; they were smoothed across durations using cubic spline functions.

4.7. Rainfall frequency estimates with confidence limits at stations

4.7.1. Background

Precipitation frequency estimates from Section 4.6 represent precipitation magnitudes regardless of the type of precipitation. For some applications it may be important to know frequency estimates from liquid precipitation (i.e., rainfall) only. For example, rainfall is treated differently from snowfall in watershed modeling because of different runoff producing mechanisms. While the rainfall generates runoff almost immediately, snowfall generally goes into storage until it melts and produces runoff at a later time.

For some areas in NOAA Atlas Volume 8, particularly for high elevation areas, the contribution of snowfall to the total yearly precipitation amount is significant. However, that does not necessarily directly translate to its significant participation in precipitation annual maximum series (AMS). To explore differences in total and liquid-only precipitation frequency estimates, concurrent rainfall and

precipitation AMS were extracted at stations with information useful for distinguishing the type of precipitation. Rainfall frequency analysis was done for durations up to 24 hours, which are of most interest to design projects relying on peak flows.

4.7.2. Extraction of rainfall data

For the 24-hour duration, concurrent daily precipitation and snowfall measurements were available from NCDC's DSI-3200 dataset. Recorded snowfall amounts were first converted to snow water equivalent using the 10 to 1 rule, which assumes that the density of water is 10 times the density of snowfall. Rainfall amounts were then calculated as the difference between precipitation and snow water equivalent. AMS were extracted from both the rainfall and precipitation datasets.

For shorter hourly durations, however, there were a very limited number of stations with hourly information on the type of precipitation or temperature observations that could assist in this analysis. Therefore, precipitation measurements at hourly stations from NCDC's DSI-3240 dataset that were used in precipitation frequency analysis were categorized as rainfall or snowfall based on a maximum daily temperature recorded at co-located daily stations using the following rule: if the maximum daily temperature was above 34^0 F, measurements were classified as rainfall; otherwise, they were classified as snowfall. AMS were then extracted from rainfall and precipitation datasets for the 1-hour, 2-hour, 3-hour, 6-hour and 12-hour durations.

4.7.3. Rainfall frequency estimates

Only stations with at least 25 years of concurrent precipitation and rainfall AMS data were used for the 24-hour analysis. This criterion was lowered to 20 years to increase sample sizes for the shorter hourly durations. Frequency analysis was done on both rainfall and precipitation AMS using the Generalized Extreme Value (GEV) distribution with parameters estimated from L-moment statistics.

Results showed that differences in corresponding precipitation and rainfall frequency estimates across all durations and frequencies were non-trivial only for stations above 4,000 feet in Colorado and South Dakota; one such example using the 24-hour duration is shown in Figure 4.7.1 for station Buena Vista (05-1071) in Colorado which has an elevation of 7,946 feet. For the 24-hour duration, there were 318 stations above 4,000 feet elevation available for analysis; for shorter durations, there were 69 available stations. The locations of stations used in the analysis are shown in Figure 4.7.2.

Various regression models were investigated to relate rainfall frequency estimates to precipitation frequency estimates for stations above 4,000 feet at a given duration. Non-linear models did not perform better than a linear model; also, the inclusion of elevation did not improve model accuracy. For the linear model, correlation coefficients for all durations were above 0.94, and relationships further improved when separate equations were developed for each AEP. Intercept coefficients were negligible at all times, so a zero-intercept regression model was adopted to convert precipitation quantiles to rainfall quantiles for all durations and frequencies. This also ensured that in Colorado, where precipitation magnitudes for hourly durations could be low, rainfall estimates do not surpass precipitation estimates. Slope coefficients of the zero-intercept model for all durations and AEPs are given in Table 4.7.1. Also shown in the table are coefficients for ARIs, to be used with partial duration series-based estimates. The same approaches used to convert AMS-based results to PDS-based results for precipitation were used for the rainfall estimates (Section 4.6.4).

The results can be interpreted in terms of ratios of corresponding rainfall and precipitation frequency estimates. For example, for locations above 4,000 feet, 2-year 24-hour rainfall frequency estimates are about 5.6% lower than corresponding precipitation frequency estimates. The ratios approach 100% for larger ARIs (smaller AEPs) - meaning that for less frequent amounts, the difference between rainfall and precipitation frequency estimates is negligible. Also, differences between the two increase with duration and are trivial for sub-hourly durations.

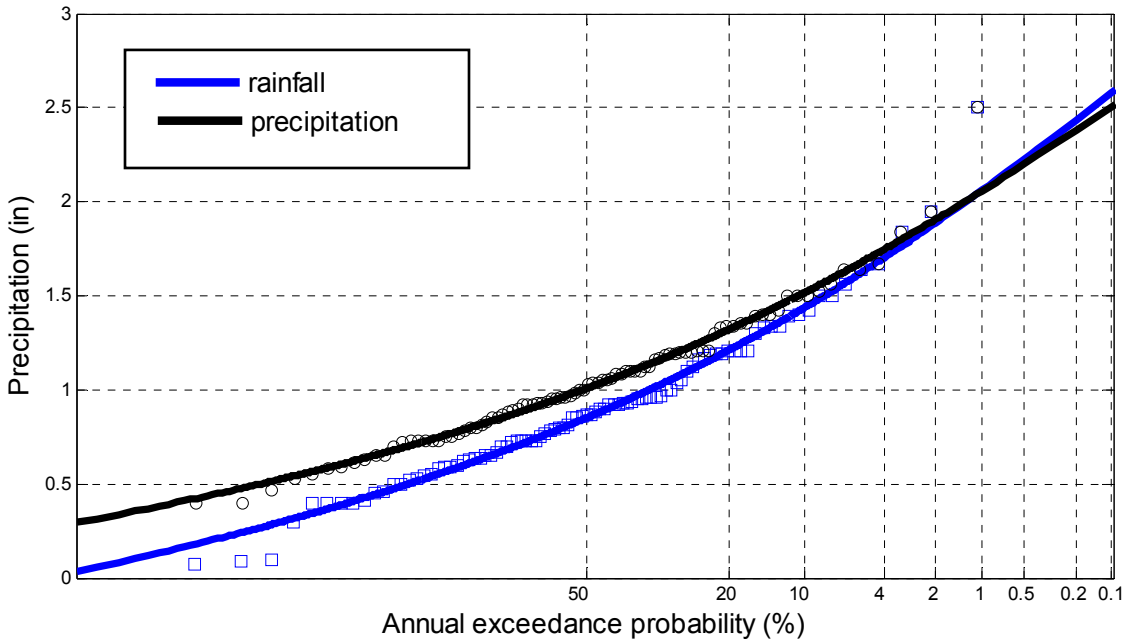


Figure 4.7.1. Probability distributions for the 24-hour rainfall and precipitation annual maximum series at station 05-1071 (elevation 7,946 ft).

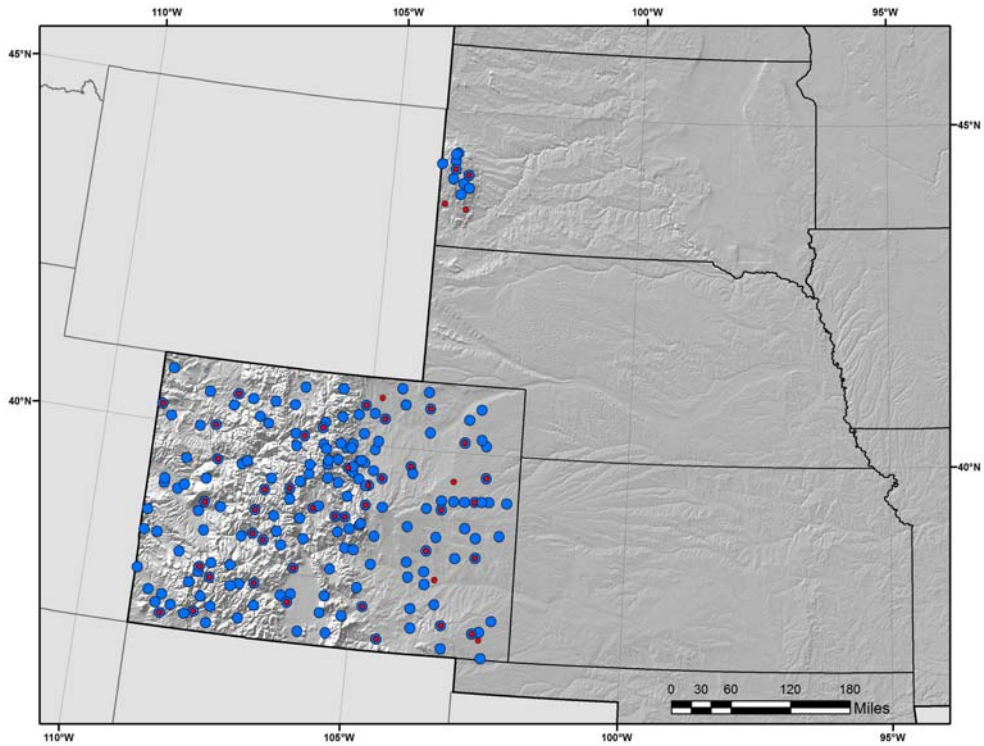


Figure 4.7.2. Map of stations above 4,000 feet used in rainfall frequency analysis. Blue dots indicate stations available for the 24-hour analysis and red dots indicate stations available for shorter durations.

Table 4.7.1. Slope coefficients for hourly durations for locations above 4,000 feet. For locations below 4,000 feet, slope coefficient equals 1 for all durations and frequencies.

Frequency		Duration					
AEP	**ARI (years)**	**1-hour**	**2-hour**	**3-hour**	**6-hour**	**12-hour**	**24-hour**
-	1	0.975	0.967	0.963	0.955	0.947	0.939
1/2	-	0.976	0.969	0.964	0.957	0.949	0.941
-	2	0.977	0.970	0.966	0.958	0.951	0.944
1/5	-	0.980	0.974	0.970	0.964	0.957	0.951
-	5	0.981	0.974	0.971	0.965	0.958	0.952
1/10	-	0.983	0.978	0.975	0.969	0.964	0.958
-	10	0.983	0.978	0.975	0.970	0.964	0.959
1/25	25	0.987	0.983	0.981	0.976	0.972	0.968
1/50	50	0.990	0.987	0.985	0.982	0.979	0.976
1/100	100	0.993	0.991	0.990	0.987	0.985	0.983
1/200	200	0.995	0.993	0.992	0.991	0.989	0.987
1/500	500	1	1	1	1	1	1
1/1000	1000	1	1	1	1	1	1

4.7.4. Confidence limits

The equations developed for rainfall frequency estimates in Table 4.7.1 were also used to estimate confidence limits for AMS-based and PDS-based rainfall frequency estimates from their corresponding upper and lower confidence limits of precipitation frequency estimates.

4.8. Derivation of grids

4.8.1. Mean annual maximum precipitation

Grids of mean annual maxima (MAM) served as the basis for deriving gridded precipitation frequency estimates at different frequencies and durations. The station mean annual maximum values for the 17 selected durations between 15 minutes and 60 days were spatially interpolated to produce corresponding mean annual maximum grids at 30 arc-seconds resolution using a hybrid statistical-geographic approach for mapping climate data named Parameter-elevation Regressions on Independent Slopes Model (PRISM) developed by Oregon State University's PRISM Climate Group (e.g., Daly et al., 2002). The MAM grids were developed at the same time for both, Volume 8 and Volume 9.

Several iterations with the PRISM Climate Group were made to ensure satisfactory MAM patterns. In particular, gauged locations where interpolated MAMs for selected base durations (15-minute, 1-hour, 1-day, 10-day) were more than 10% different (determined by jackknife analysis) than the expected at-station MAMs were carefully re-examined. As a result of those reviews, some MAM estimates were adjusted. MAMs were also estimated for a couple of locations to better anchor the spatial interpolation in areas of varied terrain and/or where the lack of stations with sufficiently long records unduly influenced expected spatial patterns, particularly at hourly durations. Three notable changes to the MAM dataset to improve patterns were:

1) daily-only stations with less than 50 years of data in areas of flat terrain and/or areas with a high density of stations were excluded from the MAM interpolation to reduce a number of station-driven contours in MAM maps. In other words, the pattern should reflect the climatology and not the characteristics of the gauge network;

2) daily SNOTEL stations, which were not used in frequency analysis because of relatively short records, were included in the MAM dataset to improve the interpolation in the Colorado mountains if they had at least 20 years of data and their MAM estimates were in line with expectations;
3) MAMs were estimated for a couple of locations in the Black Hills of South Dakota to anchor the interpolation in this area and improve spatial patterns.

Appendix A.3 provides detailed information on the PRISM-based methodology for creating the mean annual maximum grids. In summary, a unique regression function was developed for each target grid cell to derive mean annual maximum values for each duration that accounted for the difference between an observing station's and the target cell's mean annual precipitation, topographic facet, coastal proximity, the distance of an observing station to the target cell, etc. Jacknife cross-validation indicated that overall bias for project areas in Volumes 8 and 9 combined was less than one percent for all durations except for 15-minute which had a bias of -1.8%. The mean absolute error was less than 5 percent across all durations.

4.8.2. Precipitation frequency estimates with confidence limits

Estimates for 60-minute through 60-day durations. The spatial interpolation technique used in this volume developed grids of AMS-based and PDS-based precipitation frequency estimates along the frequency dimension for a given duration. Hence, the evolution of frequency-dependent spatial patterns for a given duration was independent of other durations. The technique utilizes the inherently strong linear relationship that was found to exist between precipitation frequency estimates for consecutive frequencies, as well as mean annual maxima and 2-year precipitation frequency estimates. For example, Figure 4.8.1 shows the relationship between the 50-year and 100-year estimates for the 24-hour duration for this project area together with regression lines for a linear model and zero-intercept model. The R^2 value of 0.996 for both models is very close to 1.0, which was common for all relationships. Another common occurrence was a negligible intercept coefficient in the linear model regression equations, so a zero-intercept model was adopted for all frequencies and durations. The slope coefficient of the zero-intercept model represents an average domain-wide ratio between consecutive quantiles; in this case, 1.1384 is an average ratio between 100-year and 50-year quantiles for the 24-hour duration for the whole project area. Although the correlation coefficients were very high, when plotted on a map, at-station ratios showed some regional features (as shown in Figure 4.8.2 for the same example); this finding was used in the grid generation process.

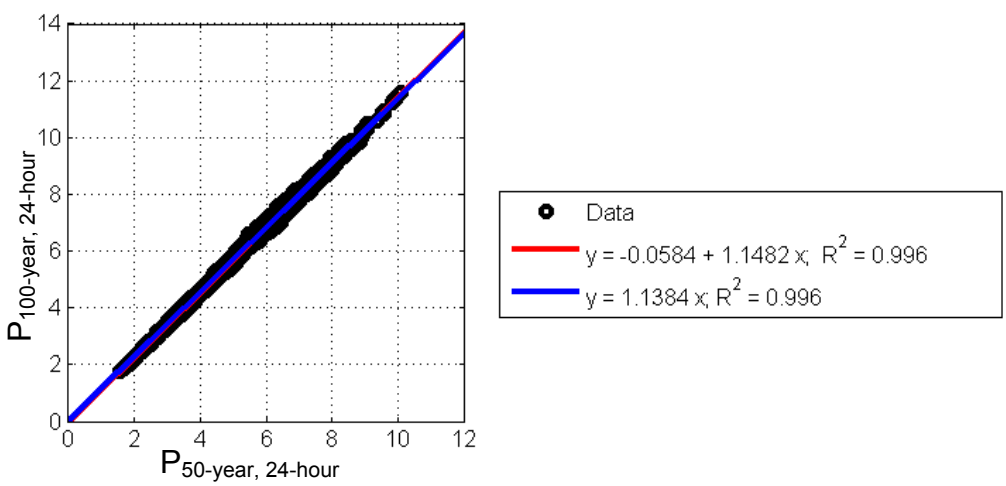


Figure 4.8.1. Scatter plot of 100-year versus 50-year precipitation frequency estimates based on 24-hour annual maximum series. Linear model and zero-intercept model regression lines are also shown.

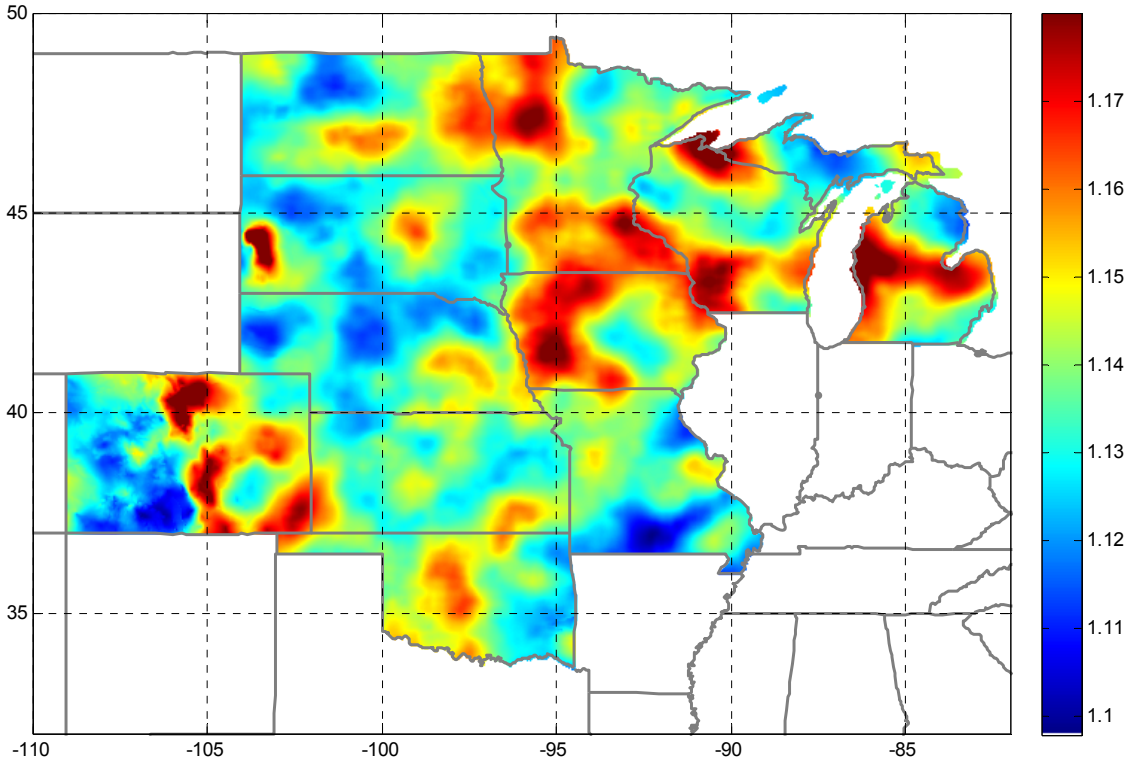


Figure 4.8.2. Spatially interpolated ratios used to calculate 24-hour 100-year precipitation frequency grid from the 24-hour 50-year grid.

For each duration, the calculation began with the PRISM-derived mean annual maximum (MAM) grid as the initial predictor grid and the grid of 2-year precipitation frequency estimates as the resulting subsequent grid. At-station ratios between the 2-year estimates and corresponding MAM estimates were spatially interpolated to a grid using a natural neighbor interpolation method, which is based on construction of Thiessen polygons from the Delauney triangulation of irregularly spaced gauged locations. The advantage of this method is that it remains true to the at-station estimates; the resulting function is continuous everywhere within the project area and also has a continuous first derivative everywhere except at the data points themselves. Gridded MAM estimates were then multiplied by corresponding gridded ratios to create a grid of 2-year precipitation frequency estimates. In the subsequent run, ratios between the 5-year and 2-year estimates were interpolated and used to calculate 5-year precipitation grid from the 2-year grid, and so forth. The grid of 2-year precipitation frequency estimates was also used to create a grid of 1-year estimates. The same process was repeated for all hourly and daily durations.

During the review process, several reviewers commented on station-driven contour lines that were showing up in cartographic maps in flat terrain areas (see reviewers' comments 3.17 to 3.26 in Appendix A.4). The majority of these was driven by small differences in MAM estimates at nearby stations and selected mapping contour intervals, but to reduce a number of station-driven contours in the final cartographic maps, a dynamic filter was applied to the precipitation frequency grids. Parameters of the filter, which controlled the amount of smoothing, were a function of elevation gradients and proximity to the coastline. Parameters were selected such that no smoothing was applied at the coastline or in the mountains, maximum smoothing was applied in flat terrain, and the transition from one to another was gradual. The resulting smoothed grid then served in the subsequent run as the basis for the derivation of the next grid.

To ensure consistency in grid cell values across all durations and frequencies (e.g., 24-hour estimate has to be at least equal to 12-hour estimate), duration-based internal consistency checks were conducted. For inconsistent cases, the longer duration grid cell value was adjusted by multiplying the shorter duration grid cell value by 1.01 to provide a one percent difference between the values. After grid cell consistency was ensured across durations, it was performed across frequencies to ensure that there were no frequency-based inconsistencies caused by the adjustment across durations.

A jacknife cross-validation technique (Shao and Tu, 1995) was used to evaluate the spatial interpolation technique's performance for interpolating precipitation frequency estimates. It was cost prohibitive to re-create the PRISM mean annual maximum grids for each cross-validation iteration. For this reason, the cross-validation results reflect the accuracy of the interpolation procedure based on the same mean annual maximum grids. Figure 4.8.3 shows validation results for 100-year estimates for the 1-hour and 24-hour durations as histograms showing the distribution of differences in estimates with and without each station (errors). Overall, the spatial interpolation technique adequately reproduced values. For the 1-hour duration, differences were less than ±5% at 97% of the stations; for the 24-hour duration, differences were less than ±5% at 99% of the stations. Larger errors of up to ±15% occurred at couple of stations scattered throughout the project area.

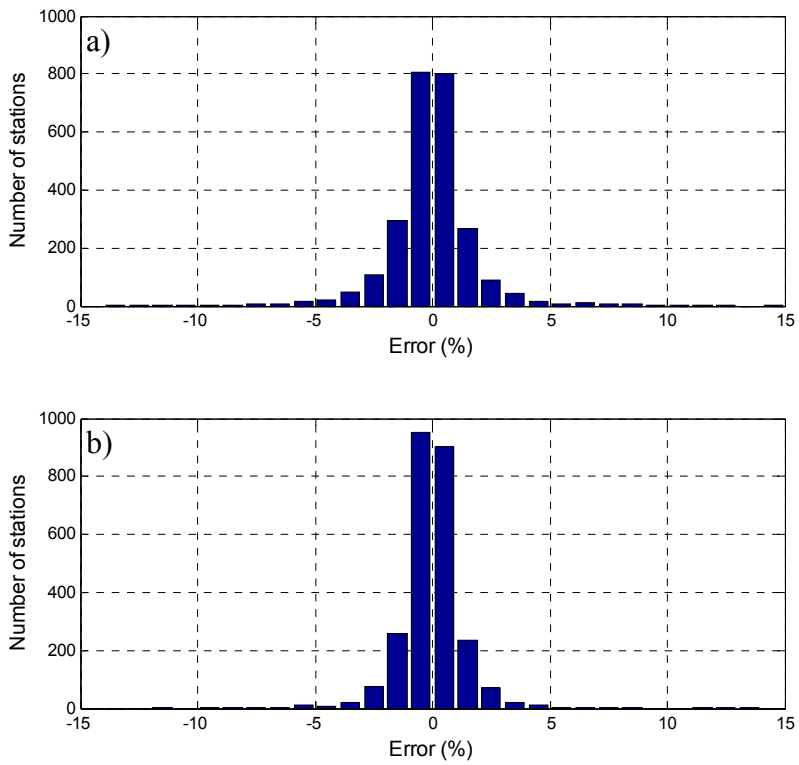


Figure 4.8.3. NOAA Atlas 14 Volume 8 jackknife cross-validation results for:
a) 100-year 1-hour estimates, and b) 100-year 24-hour estimates.

Estimates for 5-minute through 30-minute durations. A similar approach to the one used to derive grids of precipitation frequency estimates for hourly and daily durations was used to derive gridded estimates for the 15-minute and 30-minute durations. For 15-minute, a grid of 2-year precipitation frequency estimates was calculated by multiplying the 15-minute MAM grid with a grid of ratios between the 2-year estimates and corresponding MAM estimates. In the subsequent run, a grid of ratios between the 5-year and 2-year estimates was used to calculate 5-year grid from the 2-year grid,

and so forth. The main difference is that, due to concerns about the soundness of at-station precipitation frequency estimates computed directly from AMS for sub-hourly durations, instead of interpolating gridded ratios from sub-hourly estimates, corresponding 60-minute ratio grids were assumed to characterize 15-minute ratio grids. The same process was used for 30-minute duration, as well.

Precipitation frequency grids for 5-minute and 10-minute durations were derived by multiplying the 15-minute precipitation frequency grids by scaling factors. Scaling factors were obtained from n-minute stations; they were calculated as average ratios of 5-minute and 10-minute annual maxima to corresponding 15-minute annual maxima. Given that relatively few n-minute stations were available and that at-station scaling factors varied little across the project area, they were assumed to be uniform for the whole area: 0.57 for 5-minute duration and 0.82 for 10-minute duration. The scaling factors were applied to the 15-minute precipitation frequency grids for all frequencies to create matching 5-minute and 10-minute grids.

Confidence limits. Grids of upper and lower limits of the 90% confidence interval for the precipitation frequency estimates between 5-minutes and 60-day durations were derived using same procedures that were used to create grids of precipitation frequency estimates.

4.8.3. Rainfall frequency estimates with confidence limits

The regression equations described in Section 4.7 were applied to the final grids of precipitation frequency estimates and upper and lower confidence limits to develop corresponding grids for rainfall. The grids were created for 1-, 2-, 3-, 6-, 12- and 24-hour durations for Colorado and South Dakota only and are used by the PFDS to display rainfall frequency estimates.

4.8.4. Estimates for 10-year ARI for extended durations for Missouri

Missouri's design criteria for animal feeding operations include magnitudes of the 10-year average recurrence interval for 90-day, 180-day and 365-day durations. To accommodate the need for these values, additional at-station frequency analysis was done for stations in Missouri for these durations using the same regional L-moment frequency analysis approaches described in Section 4.6. Spatial interpolation techniques described in Section 4.8.2 could not be applied for these three durations, as corresponding grids of mean annual maxima were not available. Various regression models were tested to relate 10-year precipitation frequency estimates for 90-day, 180-day and 365-day durations with 60-day MAM and precipitation frequency estimates; elevation, latitude and longitude were also explored as additional predictor variables. The most accurate results were obtained from the following regression models:

$$P_{90} = -4.315 + 1.282\,P_{60} - 0.018\,X + 0.064\,Y \quad (R^2 = 0.88) \qquad (1)$$

$$P_{180} = 30.476 + 1.545\,P_{90} + 0.258\,X - 0.185\,Y \quad (R^2 = 0.85) \qquad (2)$$

$$P_{365} = 137.267 + 1.178\,P_{180} + 0.793\,X - 1.451\,Y \quad (R^2 = 0.94) \qquad (3)$$

where P_D is 10-year precipitation frequency estimate for duration D (inches/hour), X is longitude (decimal degrees as a negative number) and Y is latitude (decimal degrees). Equation (1) was used to create a grid of 10-year 90-day estimates for Missouri from corresponding 10-year 60-day gridded estimates, where coordinates of the center of each grid cell were used as latitudes and longitudes. This grid was then used to create the grid of 10-year 180-day estimates using equation (2); which was then used to create the grid of 10-year 365-day estimates using equation (3).

5. Precipitation Frequency Data Server

5.1. Introduction

NOAA Atlas 14 precipitation frequency estimates are delivered entirely in digital form in order to make the estimates more widely available and to provide them in various formats. The Precipitation Frequency Data Server (PFDS; http://hdsc.nws.noaa.gov/hdsc/pfds/) provides a point-and-click web portal for precipitation frequency estimates and associated information.

5.2. Underlying data

The PFDS operates from a set of grids of precipitation frequency estimates and lower and upper bounds of the 90% confidence interval. The grids can be downloaded from the website and imported into a Geographical Information System (GIS). Table 5.2.1 shows the complete set of average recurrence intervals and durations for which PDS-based frequency estimates with upper and lower bounds of 90% confidence intervals are available from the PFDS for any location in the project area. Similarly, Table 5.2.2 shows the complete set of annual exceedance probabilities and durations for which AMS-based frequency estimates with confidence limits are available for any location.
The ASCII grids, which represent the official estimates, have the following pertinent metadata:

- Resolution: 30 arc-seconds;
- Units: inches*1000 (integer);
- Projection: geographic (longitude/latitude);
- Datum: NAD 83.

Files containing a complete set of metadata in Federal Geographic Data Committee (FGDC) compliant XML format are available for download on the grid download page.

Table 5.2.1. Average recurrence intervals and durations for which PDS-based precipitation frequency estimates with upper and lower bounds of 90% confidence intervals are available from the PFDS.

Duration	**Average recurrence interval (ARI)**									
	1-yr	**2-yr**	**5-yr**	**10-yr**	**25-yr**	**50-yr**	**100-yr**	**200-yr**	**500-yr**	**1,000-yr**
5-minute	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
10-minute	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
15-minute	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
30-minute	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
60-minute	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2-hour	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
3-hour	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
6-hour	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
12-hour	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
24-hour	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2-day	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
3-day	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
4-day	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
7-day	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
10-day	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
20-day	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
30-day	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
45-day	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
60-day	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Table 5.2.2. Annual exceedance probabilities and durations for which AMS-based precipitation frequency estimates with bounds of 90% confidence intervals are available from the PFDS.

Duration	**Annual exceedance probability (AEP)**								
	1/2	**1/5**	**1/10**	**1/25**	**1/50**	**1/100**	**1/200**	**1/500**	**1/1000**
5-minute	✓	✓	✓	✓	✓	✓	✓	✓	✓
10-minute	✓	✓	✓	✓	✓	✓	✓	✓	✓
15-minute	✓	✓	✓	✓	✓	✓	✓	✓	✓
30-minute	✓	✓	✓	✓	✓	✓	✓	✓	✓
60-minute	✓	✓	✓	✓	✓	✓	✓	✓	✓
2-hour	✓	✓	✓	✓	✓	✓	✓	✓	✓
3-hour	✓	✓	✓	✓	✓	✓	✓	✓	✓
6-hour	✓	✓	✓	✓	✓	✓	✓	✓	✓
12-hour	✓	✓	✓	✓	✓	✓	✓	✓	✓
24-hour	✓	✓	✓	✓	✓	✓	✓	✓	✓
2-day	✓	✓	✓	✓	✓	✓	✓	✓	✓
3-day	✓	✓	✓	✓	✓	✓	✓	✓	✓
4-day	✓	✓	✓	✓	✓	✓	✓	✓	✓
7-day	✓	✓	✓	✓	✓	✓	✓	✓	✓
10-day	✓	✓	✓	✓	✓	✓	✓	✓	✓
20-day	✓	✓	✓	✓	✓	✓	✓	✓	✓
30-day	✓	✓	✓	✓	✓	✓	✓	✓	✓
45-day	✓	✓	✓	✓	✓	✓	✓	✓	✓
60-day	✓	✓	✓	✓	✓	✓	✓	✓	✓

5.3. Products available on the Precipitation Frequency Data Server

The PFDS homepage (http://hdsc.nws.noaa.gov/hdsc/pfds/) has a clickable map of the United States. Clicking on a state in the project area or selecting the state name from the drop-down menu will cause an interactive map of that state and its surrounding area to be displayed (see Figure 5.3.1). A location for which precipitation frequency estimates are needed can be selected by:

- Manually entering latitude and longitude coordinates in decimal degrees (negative numbers should be entered for southern hemisphere latitudes and for western hemisphere longitudes);
- Selecting a station from a pull-down list;
- Dragging the red cursor to a location on the map;
- Double clicking anywhere on the map;
- Clicking on an observing station on the map (after selecting “show stations on map” and zooming in).

From the menu at the top of the page, a user can select PDS-based or AMS-based precipitation frequency estimates, units and whether estimates should be displayed as precipitation depths or intensities.

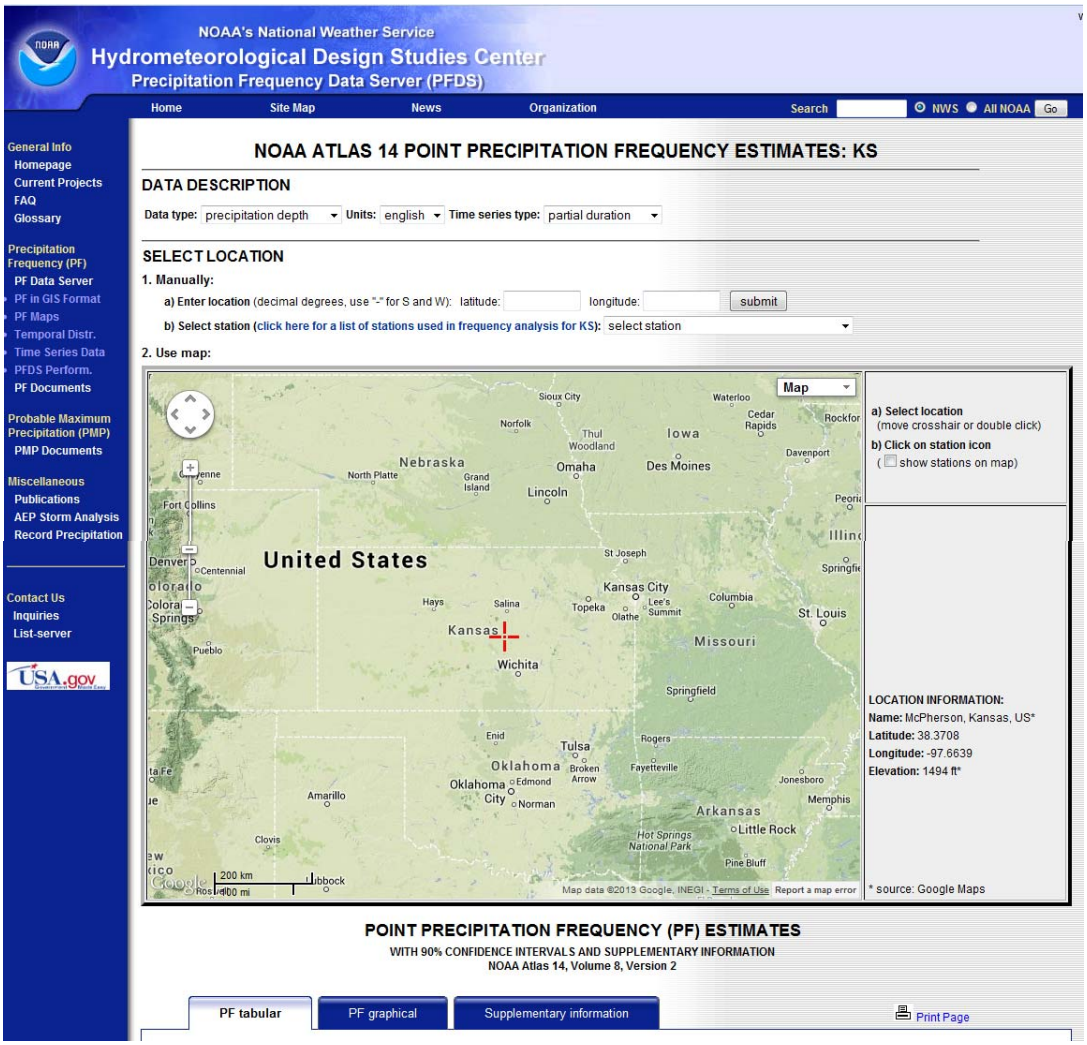


Figure 5.3.1. Initial view of the interactive map when Kansas is selected.

After a location is selected, all precipitation frequency and confidence limit estimates from the underlying grids are extracted and the output is displayed directly below the map in three separate tabs: "PF tabular", "PF graphical" and "Supplementary information". A printer-friendly version of the precipitation frequency estimates with some supplementary information can be obtained by selecting the "Print Page" icon above the output display (see Figure 5.3.2). The printed page will include metadata information about the selected point in the header, tabular and graphical representations of the estimates, the date it was downloaded, and maps of the location.

The "PF tabular" tab provides data tables of the precipitation frequency depths (or intensities) showing also the lower and upper bounds of the 90% confidence interval. These data can be downloaded as comma-separated values (csv format) from a link beneath the tables.

PF tabular | PF graphical | Supplementary information | Print Page

PDS-based precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.411 (0.326-0.521)	0.474 (0.376-0.601)	0.576 (0.456-0.731)	0.660 (0.521-0.839)	0.774 (0.597-0.992)	0.860 (0.655-1.11)	0.946 (0.705-1.23)	1.03 (0.749-1.35)	1.14 (0.811-1.51)	1.23 (0.857-1.64)
10-min	0.601 (0.478-0.763)	0.694 (0.551-0.880)	0.843 (0.668-1.07)	0.966 (0.763-1.23)	1.13 (0.874-1.45)	1.26 (0.959-1.62)	1.39 (1.03-1.80)	1.51 (1.10-1.98)	1.68 (1.19-2.22)	1.80 (1.25-2.40)
15-min	0.733 (0.583-0.930)	0.846 (0.672-1.07)	1.03 (0.815-1.31)	1.18 (0.930-1.50)	1.38 (1.07-1.77)	1.54 (1.17-1.98)	1.69 (1.26-2.19)	1.84 (1.34-2.42)	2.04 (1.45-2.70)	2.19 (1.53-2.92)
30-min	1.03 (0.821-1.31)	1.20 (0.951-1.52)	1.46 (1.16-1.86)	1.68 (1.33-2.14)	1.98 (1.52-2.53)	2.20 (1.67-2.83)	2.42 (1.80-3.15)	2.64 (1.92-3.46)	2.93 (2.08-3.88)	3.14 (2.19-4.19)
60-min	1.32 (1.05-1.68)	1.54 (1.22-1.95)	1.90 (1.51-2.41)	2.21 (1.75-2.81)	2.65 (2.06-3.42)	3.00 (2.29-3.89)	3.36 (2.51-4.39)	3.74 (2.72-4.92)	4.25 (3.02-5.64)	4.64 (3.24-6.19)
2-hr	1.61 (1.30-2.02)	1.88 (1.51-2.35)	2.34 (1.88-2.93)	2.74 (2.19-3.44)	3.33 (2.62-4.26)	3.80 (2.94-4.88)	4.30 (3.25-5.58)	4.83 (3.56-6.32)	5.56 (3.99-7.35)	6.14 (4.32-8.13)
3-hr	1.77 (1.44-2.20)	2.07 (1.68-2.57)	2.60 (2.10-3.23)	3.07 (2.47-3.82)	3.77 (3.00-4.82)	4.36 (3.40-5.58)	4.98 (3.80-6.44)	5.65 (4.19-7.38)	6.60 (4.76-8.70)	7.36 (5.19-9.71)
6-hr	2.06 (1.69-2.52)	2.41 (1.98-2.95)	3.04 (2.49-3.73)	3.62 (2.95-4.44)	4.49 (3.62-5.68)	5.22 (4.13-6.62)	6.01 (4.64-7.70)	6.87 (5.14-8.90)	8.09 (5.88-10.6)	9.07 (6.44-11.9)
12-hr	2.37 (1.97-2.85)	2.77 (2.31-3.35)	3.49 (2.90-4.22)	4.14 (3.42-5.01)	5.10 (4.15-6.36)	5.90 (4.71-7.38)	6.75 (5.25-8.55)	7.67 (5.79-9.83)	8.96 (6.56-11.6)	10.0 (7.15-13.0)
24-hr	2.72 (2.29-3.23)	3.17 (2.67-3.76)	3.94 (3.31-4.70)	4.63 (3.87-5.52)	5.63 (4.62-6.91)	6.45 (5.19-7.95)	7.31 (5.74-9.14)	8.23 (6.25-10.4)	9.51 (7.01-12.2)	10.5 (7.58-13.6)
2-day	3.13 (2.67-3.66)	3.61 (3.08-4.23)	4.43 (3.77-5.20)	5.15 (4.36-6.06)	6.19 (5.14-7.48)	7.03 (5.72-8.55)	7.92 (6.27-9.77)	8.85 (6.78-11.1)	10.1 (7.53-12.9)	11.2 (8.10-14.3)
3-day	3.38 (2.92-3.93)	3.91 (3.36-4.54)	4.79 (4.12-5.58)	5.56 (4.75-6.49)	6.65 (5.55-7.96)	7.53 (6.16-9.07)	8.43 (6.71-10.3)	9.38 (7.22-11.7)	10.7 (7.96-13.5)	11.7 (8.52-14.9)
4-day	3.61 (3.12-4.16)	4.16 (3.60-4.81)	5.10 (4.40-5.90)	5.90 (5.06-6.84)	7.03 (5.89-8.36)	7.93 (6.52-9.51)	8.86 (7.08-10.8)	9.83 (7.58-12.2)	11.1 (8.32-14.1)	12.2 (8.88-15.5)
7-day	4.22 (3.69-4.81)	4.82 (4.21-5.49)	5.83 (5.08-6.66)	6.69 (5.81-7.67)	7.91 (6.70-9.30)	8.89 (7.37-10.5)	9.89 (7.96-11.9)	10.9 (8.50-13.4)	12.3 (9.29-15.5)	13.5 (9.88-17.0)
10-day	4.76 (4.20-5.38)	5.41 (4.77-6.12)	6.50 (5.71-7.37)	7.44 (6.50-8.46)	8.77 (7.47-10.2)	9.83 (8.20-11.6)	10.9 (8.85-13.1)	12.1 (9.43-14.8)	13.6 (10.3-17.0)	14.8 (10.9-18.7)
20-day	6.29 (5.63-7.00)	7.16 (6.40-7.98)	8.61 (7.67-9.61)	9.84 (8.72-11.0)	11.6 (9.97-13.3)	12.9 (10.9-15.0)	14.3 (11.7-17.0)	15.8 (12.4-19.1)	17.7 (13.5-22.0)	19.3 (14.3-24.1)
30-day	7.61 (6.86-8.40)	8.69 (7.83-9.59)	10.4 (9.39-11.6)	11.9 (10.7-13.2)	14.0 (12.1-15.9)	15.5 (13.2-17.9)	17.1 (14.1-20.1)	18.8 (14.8-22.5)	20.9 (16.0-25.7)	22.5 (16.8-28.1)
45-day	9.35 (8.51-10.2)	10.7 (9.71-11.7)	12.8 (11.6-14.1)	14.6 (13.1-16.0)	16.9 (14.7-19.0)	18.7 (15.9-21.3)	20.4 (16.9-23.8)	22.2 (17.6-26.4)	24.4 (18.7-29.8)	26.0 (19.5-32.3)
60-day	10.9 (9.96-11.8)	12.4 (11.4-13.5)	14.9 (13.6-16.2)	16.8 (15.3-18.4)	19.4 (16.9-21.6)	21.3 (18.2-24.0)	23.1 (19.1-26.6)	24.8 (19.7-29.3)	26.9 (20.7-32.7)	28.5 (21.4-35.3)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Figure 5.3.2. Precipitation frequency data for a selected location in tabular format.

The "PF graphical" tab has two sub-tabs. The first, "Curves", shows two common graphic forms based on the user's selection of data type: depth-duration-frequency (DDF) or intensity-duration-frequency (IDF). The PFDS provides DDF and IDF graphs in two different formats: with duration and with frequency on x-axis. An example of the DDF graph in both formats is given in Figure 5.3.3; an example of the IDF graph with duration on x-axis is shown in Figure 5.3.4. Both, DDF and IDF graphs can be built from either AMS or PDS data, depending on the user's selection of time series type. The second sub-tab, "PF estimates with confidence intervals" shows plots of the precipitation magnitude-frequency curve with upper and lower confidence limits for the selected duration (see example in Figure 5.3.5).

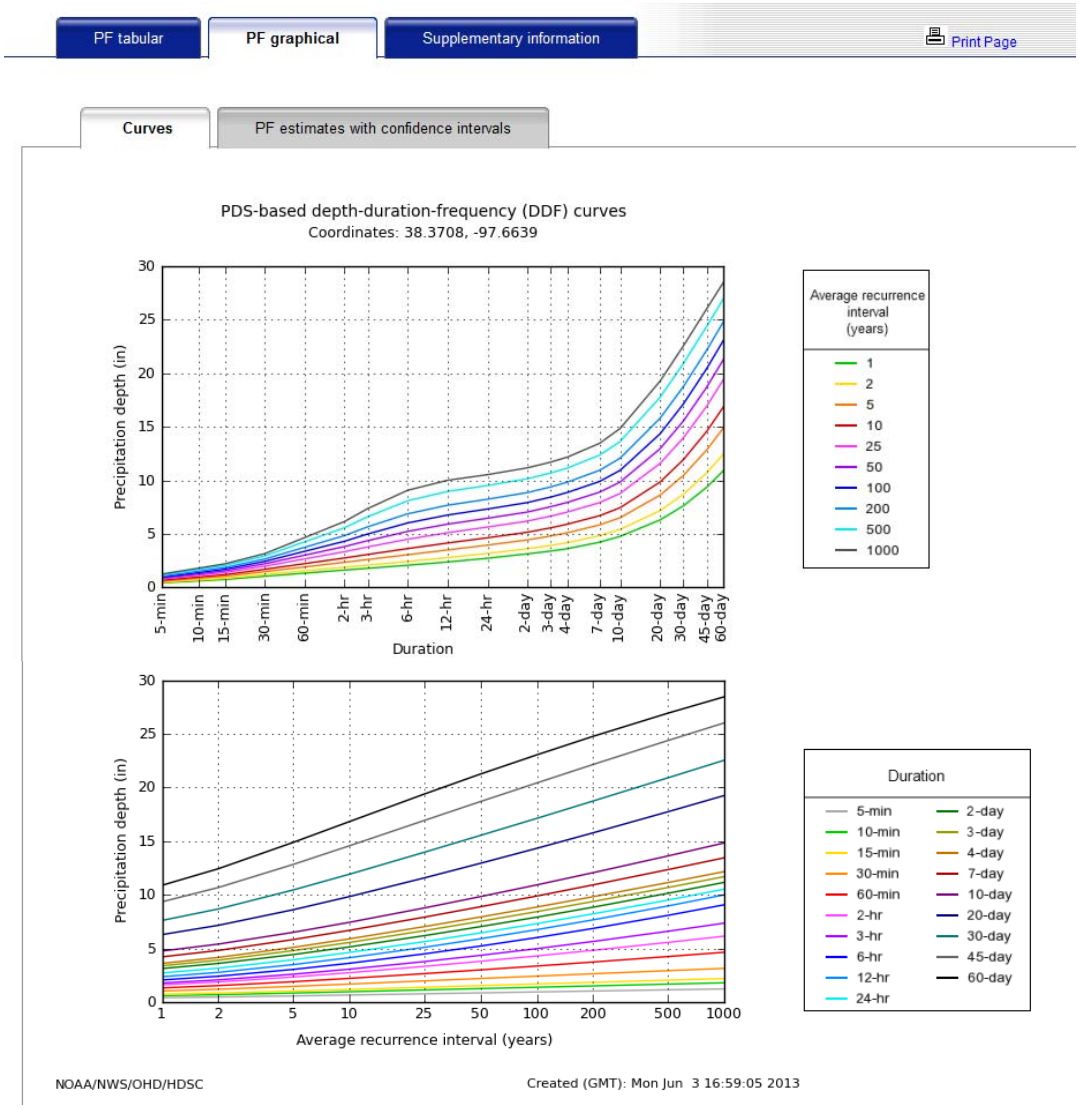


Figure 5.3.3. Sample depth-duration-frequency curves built from the PDS data with duration on the x-axis (top figure) and average recurrence interval on the x-axis (bottom figure).

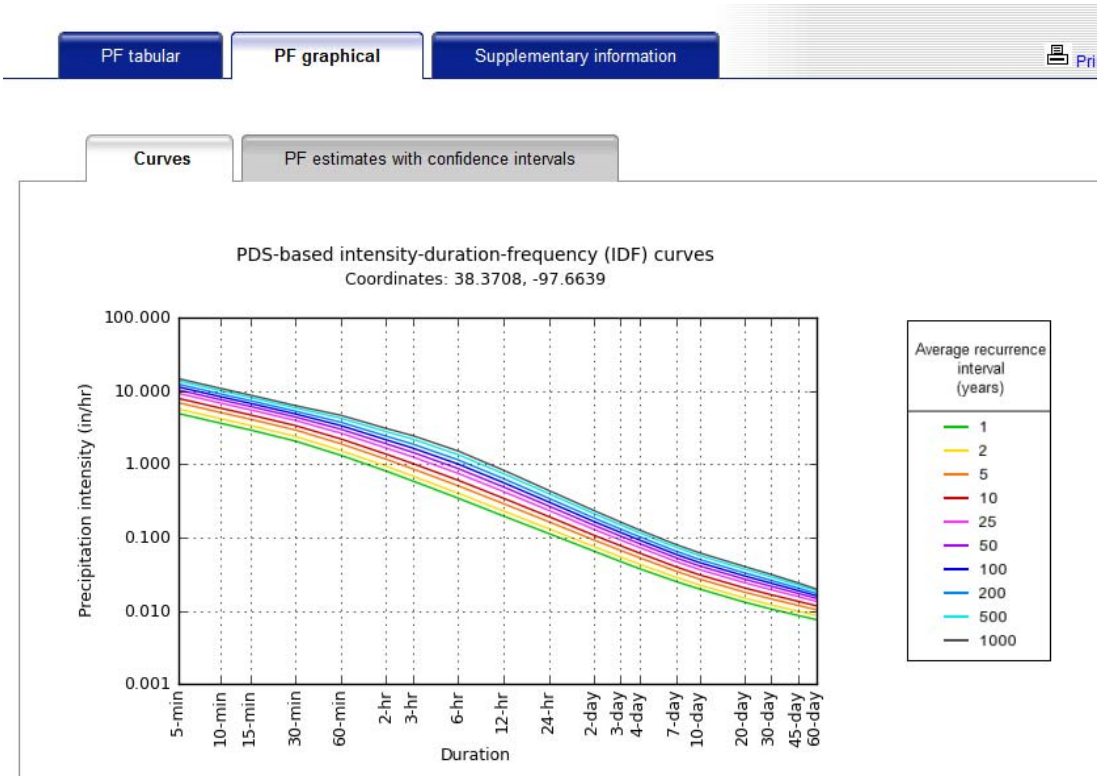


Figure 5.3.4. Sample intensity-duration-frequency (IDF) graph with duration on the x-axis.

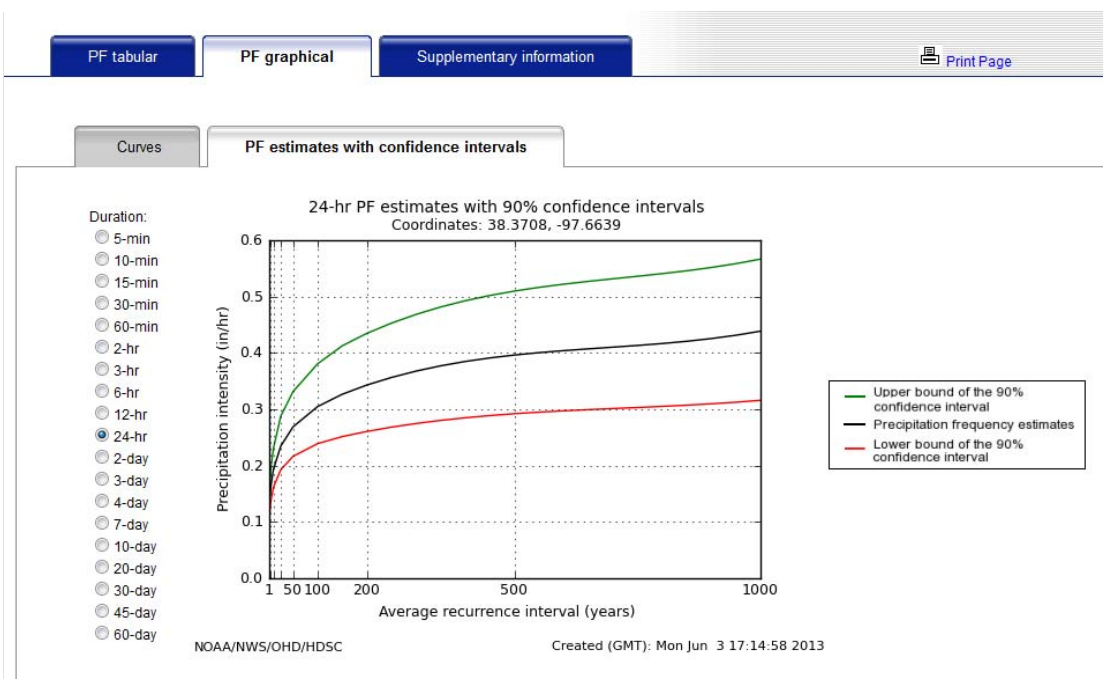


Figure 5.3.5. Sample of a magnitude-frequency plot with the upper and lower bounds of the 90% confidence interval for 24-hour duration.

Lastly, the "Supplementary information" tab provides links to additional data and information for that location:

- **NOAA Atlas 14 Volume 8 documentation.**

- **Precipitation frequency grids in GIS compatible formats.** Grids are available for AMS- and PDS-based estimates for all combinations of durations and average recurrence intervals or annual exceedance probabilities, respectively (as shown in Tables 5.2.1 and 5.2.2). Users are advised to review the Federal Geographic Data Committee (FGDC) compliant metadata before using any of the GIS datasets (http://hdsc.nws.noaa.gov/hdsc/pfds/meta/na14_vol8_mw_grid_metadata.xml).

- **Cartographic maps of precipitation frequency estimates.** Cartographic maps show contour lines created from gridded PDS-based precipitation frequency estimates for selected durations and average recurrence intervals. Figure 5.3.6 shows an excerpt from a cartographic map. Maps were created to serve as visual aids and are not recommended for interpolating precipitation frequency estimates. Users are advised to retrieve point precipitation frequency values from the PFDS interface which accesses the gridded data directly.

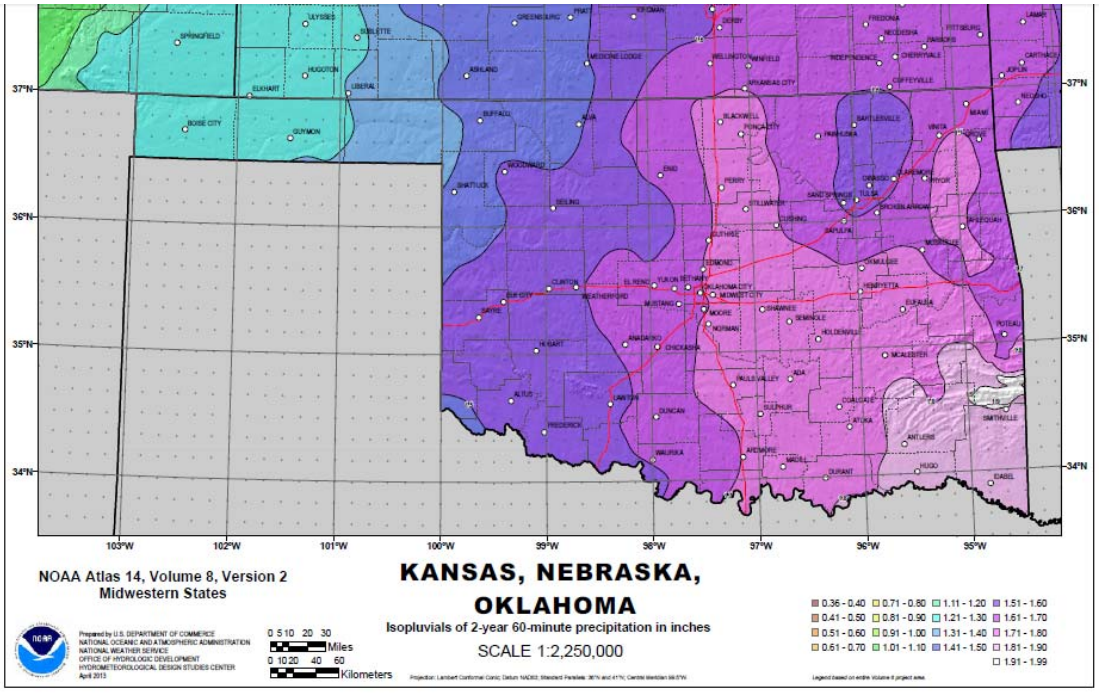


Figure 5.3.6. An excerpt of a cartographic map for 2-year ARI and 60-minute duration covering Kansas, Nebraska and Oklahoma.

- **Temporal distributions.** Temporal distributions of precipitation amounts exceeding precipitation frequency estimates for the 2-year recurrence interval are provided for 6-hour, 12-hour, 24-hour, and 96-hour durations for delineated climate regions. The temporal distributions for the duration are expressed in probability terms as cumulative percentages of precipitation totals. To provide detailed information on the varying temporal distributions, separate temporal distributions were derived for four precipitation cases defined by the duration quartile in which the greatest percentage of the total precipitation occurred. Figure 5.3.7 shows an example of the regional temporal distribution curves of all precipitation cases (computed for all quartiles) for the 6-hour and 12-hour durations. See Appendix A.5 for more information.

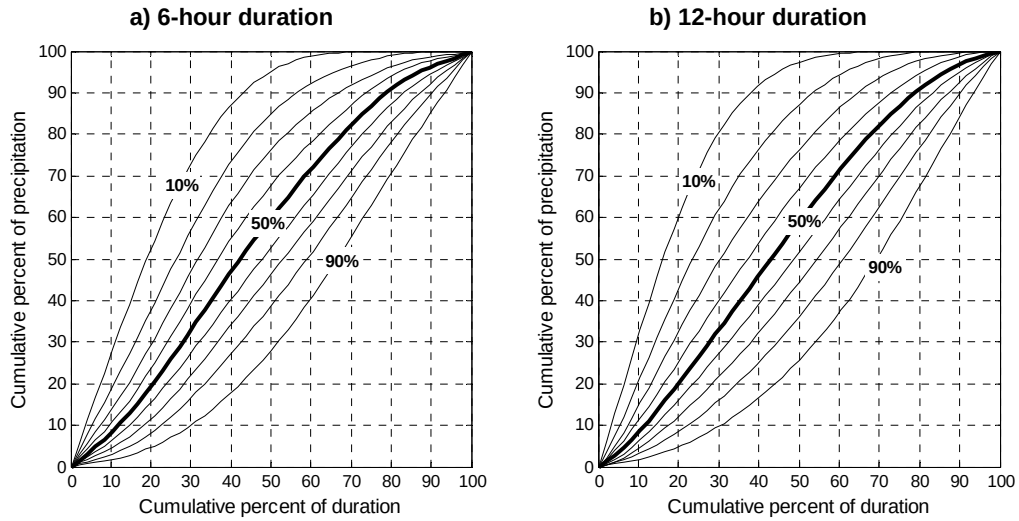


Figure 5.3.7. Sample temporal distribution curves for 6-hour and 12-hour durations.

- **Seasonality analysis.** The seasonality graphs (an example is shown in Figure 5.3.8) show the percentage of annual maxima for a given duration that exceeded the NOAA Atlas 14 precipitation frequency estimates for the duration and selected annual exceedance probabilities in each month for various climate regions. Results are provided for the 60-minute, 24-hour, 2-day, and 10-day durations and for annual exceedance probabilities of 1/2, 1/5, 1/10, 1/25, 1/50, and 1/100. Seasonality graphs are not intended to be used to derive seasonal precipitation frequency estimates. See Appendix A.6 for more information.

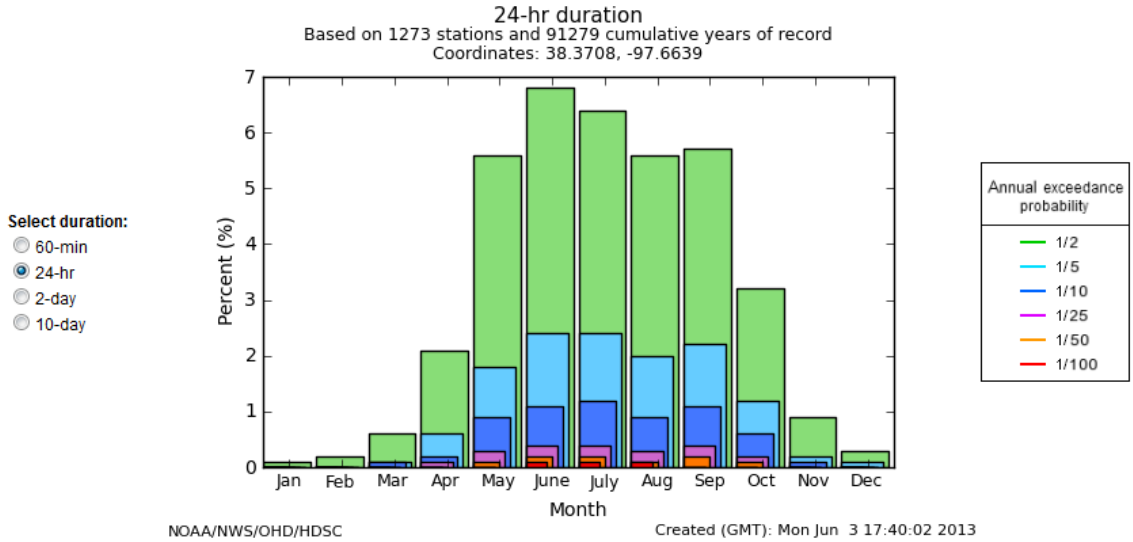


Figure 5.3.8. Sample 24-hour seasonal exceedance graph.

- **Rainfall frequency estimates.** PDS-based and AMS-based rainfall frequency estimates with 90% confidence intervals are provided for durations between 1 and 24 hours (Figure 5.3.9) for Colorado and South Dakota. Estimates are also available in a comma separated (.csv) format. For elevations in Colorado and South Dakota below 4,000 feet and for other states there is no

appreciable difference between rainfall and precipitation frequency estimates. See Section 4.7 for more information.

VI. Rainfall frequency estimates

Rainfall (liquid precipitation only) frequency estimates are provided for durations between 1 and 24 hours in addition to precipitation frequency estimates. Please refer to NOAA Atlast 14 document for more information.

PDS-based rainfall frequency (RF) estimates with 90% confidence intervals (in inches)[1]										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
60-min	0.275 (0.215-0.351)	0.365 (0.284-0.467)	0.509 (0.396-0.654)	0.627 (0.485-0.810)	0.787 (0.583-1.06)	0.908 (0.659-1.24)	1.03 (0.720-1.45)	1.14 (0.769-1.68)	1.30 (0.840-1.98)	1.41 (0.890-2.20)
2-hr	0.340 (0.269-0.431)	0.434 (0.342-0.550)	0.587 (0.461-0.747)	0.713 (0.557-0.912)	0.885 (0.664-1.18)	1.02 (0.746-1.38)	1.15 (0.813-1.61)	1.27 (0.867-1.85)	1.45 (0.947-2.18)	1.57 (1.00-2.42)
3-hr	0.397 (0.315-0.500)	0.481 (0.382-0.606)	0.621 (0.490-0.785)	0.739 (0.580-0.939)	0.904 (0.686-1.20)	1.03 (0.767-1.40)	1.17 (0.836-1.63)	1.30 (0.894-1.89)	1.49 (0.983-2.24)	1.63 (1.04-2.49)
6-hr	0.529 (0.424-0.659)	0.605 (0.485-0.755)	0.740 (0.591-0.926)	0.861 (0.684-1.08)	1.04 (0.805-1.38)	1.19 (0.897-1.61)	1.35 (0.983-1.88)	1.52 (1.06-2.19)	1.77 (1.18-2.64)	1.96 (1.27-2.96)
12-hr	0.681 (0.553-0.840)	0.798 (0.646-0.985)	0.999 (0.807-1.24)	1.18 (0.944-1.47)	1.44 (1.12-1.87)	1.65 (1.25-2.19)	1.87 (1.37-2.56)	2.10 (1.48-2.98)	2.43 (1.65-3.58)	2.68 (1.76-4.01)
24-hr	0.860 (0.705-1.05)	1.01 (0.830-1.24)	1.28 (1.04-1.57)	1.51 (1.23-1.87)	1.86 (1.46-2.40)	2.14 (1.64-2.81)	2.43 (1.80-3.30)	2.74 (1.95-3.85)	3.19 (2.18-4.64)	3.52 (2.34-5.20)

[1] Rainfall frequency (RF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are RF estimates at lower and upper bounds of the 90% confidence interval. The probability that rainfall frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Estimates from the table in csv format: Rainfall frequency estimates Submit

Figure 5.3.9. Rainfall frequency estimates for a selected location in tabular form.

- **Time series data.** The final, quality controlled annual maximum series data used in making these precipitation frequency estimates is available for all observing sites used in this project.

- **Information on nearby climate stations** (via NCDC).

- **Watershed information** (via the Environmental Protection Agency).

Some of the NOAA Atlas 14 data products can also be accessed through the left menu bar on the PFDS web page, including:

- ASCII grids of precipitation frequency estimates,
- cartographic maps,
- temporal distributions,
- annual maximum series datasets,
- associated documentation.

Answers to frequently asked questions (FAQ) are available via links on the PFDS web site. Inquiries regarding the use of the PFDS or its data can be made by emailing HDSC.Questions@noaa.gov.

6. Peer review

A peer review of preliminary results for the NOAA Atlas 14 Volume 8 precipitation frequency project was carried out during a five week period starting on October 15, 2012. The request for review was sent via email to the members of the HDSC list-server from all over the United States and other interested parties. Potential reviewers were asked to evaluate the reasonableness of point precipitation frequency estimates as well as their spatial patterns. The review included the following items:

a. Metadata for stations whose data were used to prepare mean annual maximum precipitation maps and/or in precipitation frequency analysis. The table included information on station name, state, source of data, assigned station ID, latitude, longitude, elevation, and period of record. It also showed if the station was merged with another station, if the station was co-located with another station with a different ID, and if metadata at the station were changed. (Station IDs were assigned by HDSC and do not match station IDs assigned by the agency that provided the data, except for National Climatic Data Center.)
b. Metadata for stations whose data were collected, but not used in the analysis. The table contained metadata for stations that were examined, but not used, with brief comments on why the data were not used. Generally, stations were not used because there was another station with a longer period of record nearby, station data were assessed as not reliable for this specific purpose, or the station's period of record was not long enough and it was not a candidate for merging with any nearby station.
c. At-station depth-duration-frequency (DDF) curves for 60-minute to 10-day durations and for 2-year to 100-year ARIs.
d. Maps of spatially-interpolated estimates of mean annual maximum precipitation for 60-minute, 24-hour and 10-day durations.
e. Maps of spatially-interpolated precipitation frequency estimates for 60-minute, 24-hour and 10-day durations and for 2-year and 100-year average recurrence intervals.

Comments were received from 40 individuals or offices and agencies including the U.S. Army Corps of Engineers; U.S. Geological Survey; several State Climatology Offices and Weather Forecast Offices. The reviews provided critical feedback that improved the estimates. Reviewers' comments regarding station metadata, at-station precipitation frequency estimates and their spatial patterns, and supplemental information along with HDSC responses can be found in Appendix A.4.

7. Comparison with previous NOAA publications

Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Oklahoma, South Dakota, and Wisconsin

The precipitation frequency estimates in NOAA Atlas 14 Volume 8 supersede the estimates for Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Oklahoma, South Dakota, and Wisconsin published in the following publications:

a. NOAA Technical Memorandum NWS HYDRO-35, *Five- to 60-Minute Precipitation Frequency for the Eastern and Central United States* (Frederick et al., 1977) for 5-minute to 60-minute durations;
b. Weather Bureau Technical Paper No. 40, *Rainfall Frequency Atlas of the United States for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 Years* (Hershfield, 1961) for 2-hour to 24-hour durations;
c. Weather Bureau Technical Paper No. 49, *Two- to Ten-Day Precipitation for Return Periods of 2 to 100 Years in the Contiguous United States* (Miller, 1964) for 2-day to 10-day durations.

Precipitation frequency estimates at the 100-year average recurrence interval from NOAA Atlas 14 (NA14) Volume 8 (for all states but Colorado which was covered by NOAA Atlas 2) were examined in relation to corresponding estimates from NOAA Technical Memorandum NWS HYDRO-35 (HYDRO35) for the 60-minute duration and the Weather Bureau's Technical Paper No. 40 (TP40) for the 24-hour duration. Corresponding grids from HYDRO35 and TP40, which were used in the comparison, were obtained by interpolating digitized isopluvials from paper cartographic maps using the standard spatial interpolation tools available in ArcGIS.

The maps in Figures 7.1 and 7.2 illustrate the differences between NA14 and HYDRO35 100-year 60-minute estimates in inches and in percentages, respectively. The contour lines superimposed on the maps represent isopluvials from HYDRO35. On average, 100-year 60-minute precipitation frequency estimates across the project area (without Colorado) did not change much, decreasing only 0.08 inches (less than 3%), but at specific locations estimates changed between -0.88 and 0.87 inches or up to ± 30%. The maximum increase was observed in the Black Hills of South Dakota. Other areas that experienced significant increases of up to 0.75 inches are southwestern Oklahoma, southeastern Minnesota, western Wisconsin, and western Michigan. The areas with the most significant decreases in estimates are south of the Ozark Plateau in Missouri where estimates were up to up to 0.74 inches lower, and in western Nebraska where estimates decreased by up to 0.88 inches near the border with Wyoming.

The differences in estimates between the two publications are attributed to a number of factors. Firstly, differences in data quality control procedures and frequency analysis approaches (distribution selection, parameter estimation method, regional versus at-station methods) affect estimates, especially at higher ARIs. Section 4 of this document describes methods used in NA14 and their advantages. Secondly, differences in spatial interpolation techniques impact estimates at ungauged locations. Isopluvials in HYDRO35 were based solely on station data without incorporating topographic features; NA14 estimates were based on PRISM products that integrate topography (see Section 4.8 for more details). Consequently, one of the areas with the largest differences in estimates is in the Black Hills. Finally, the increase in the amount of available data from HYDRO35 to NA14, both in the number of stations and their record lengths, has a considerable effect on estimates. HYDRO35 was published in 1977, so potentially more than 35 additional years of data at existing stations were available for the NA14 analyses. Also, many stations that were not suitable for frequency analysis in HYDRO35 due to short records could be included in NA14. A detailed comparison of the numbers of stations and record lengths available to each of the two projects could not be provided since the HYDRO35 project covered a significantly larger area and the necessary information was not available in the HYDRO35 document.

The maps in Figure 7.3 and 7.4 illustrate the differences between NA14 and TP40 100-year 24-hour estimates in inches and in percentages, respectively. The contour lines superimposed on the maps represent isopluvials from TP40. On average, for the whole project area (without Colorado), estimates increased about 0.5 inches (9%); with differences ranging from -1.22 to 3.54 inches, and from -16% to 80%. Some of the largest differences in precipitation frequency estimates are in areas where TP40 did not account for orographic influence, such as in the Ouachita Mountains in Oklahoma and the Black Hills of South Dakota, where estimates have increased as much as 2.5 and 3.5 inches, respectively. Because of the different magnitudes of the estimates, this amounts to an increase of 30% in the Ouachita Mountains in Oklahoma and up to 80% in the Black Hills of South Dakota. The states of Wisconsin, Michigan, Minnesota, and Iowa have the largest extent of magnitude increases across the entire Midwest. In both northern Wisconsin and western Michigan, magnitudes increased as much as 2.7 inches which is an almost 50% increase over TP40. Estimates in large portions of southern Minnesota and southwestern Wisconsin increased as much as 2 inches (around 30%), and on average around 1 inch for Iowa.

Differences in estimates can be attributed to similar factors as for the 60-minute duration: different data quality control techniques and frequency analysis approaches; different spatial

interpolation techniques; and an increase in a number of available stations and record lengths for NA14 relative to TP40. Since TP40 was published in 1961, potentially more than 50 additional data years were available for the NA14 analyses. A more detailed comparison of the numbers of stations and their record lengths between two projects could not be provided since the necessary information was not available in the TP40 document.

Colorado

The precipitation frequency estimates in NOAA Atlas 14 Volume 8 supersede the estimates for Colorado previously published in the following publications:

a. NOAA Atlas 2 Volume III, *Precipitation Frequency Atlas of the Western United States, Colorado* (Miller et al., 1973) for 5-minute to 24-hour durations;

b. Weather Bureau Technical Paper No. 49, *Two- to Ten-Day Precipitation for Return Periods of 2 to 100 Years in the Contiguous United States* (Miller, 1964) for 2-day to 10-day durations.

NOAA Atlas 14 (NA14) Volume 8 estimates were compared with the corresponding NOAA Atlas 2 (NA2) Volume III estimates for Colorado. Since precipitation frequency estimates in NA2 were developed for two base durations, 6-hour and 24-hour, with other durations being derived from these, comparisons were done on 100-year 6-hour and 100-year 24-hour estimates. Digitized NA2 grids were available from the Western Regional Climate Center. The maps in Figures 7.5 and 7.6 illustrate the differences between the new NA14 and old NA2 100-year 6-hour estimates for the state of Colorado in inches and in percent, respectively. Similarly, the maps in Figures 7.7 and 7.8 illustrate the difference in inches and in percent for 100-year 24-hour estimates, respectively.

For the 6-hour duration, differences in 100-year estimates range between -1.3 and 1.62 inches or between -41 to 64%, but on average estimates changed very little, increasing only 0.08 inches (less than 3%). The largest 6-hour differences are in the Fort Collins area with an increase of up to 1.62 inches, which corresponds to about 40%. There is also a significant increase of up to 1.5 inches (60%) in the mountains near Canon City.

Differences in 100-year 24-hour estimates range between -1.89 and 2.65 inches (-32% to 77%), but on average estimates changed only by 0.05 inches (2%). The largest increases of up to 2.65 inches (77%) occurred in the mountains southwest of Pueblo, up to 2.0 inches (45%) northwest of Colorado Springs, and up to a 2.5 inches (50%) in the northern portions of the Front Range, northwest of Denver.

Just as described above for the comparison between NA14 and HYDRO35, the differences in estimates between NA14 and NA2 are the cumulative outcome of different data quality control techniques, frequency analysis methods and spatial interpolation techniques, and differences in the number of stations and their periods of record used in each study. It is worth noting that, unlike HYDRO35 and TP40, NA2 accounted for some topographic effects in the contouring of the data. Since NA2 was published in 1973, potentially about 40 years of additional data were available for existing stations and some stations that were not previously suitable for statistical analysis due to short records could now be included. For example, for the 6-hour duration, 98 stations with an average of 39 data years (ranging from 19 to 61 years) were used in NA14 for Colorado. In NA2, 84 stations with an average of 19 data years (ranging from 10 to 24 years) were used. For daily durations, 292 stations were available in Colorado for the NA14 frequency analysis with an average of 59 data years (ranging from 20 to 129 years). 262 stations with an average of 30 data years (ranging from 10 to 74 years) were available for NA2 for Colorado.

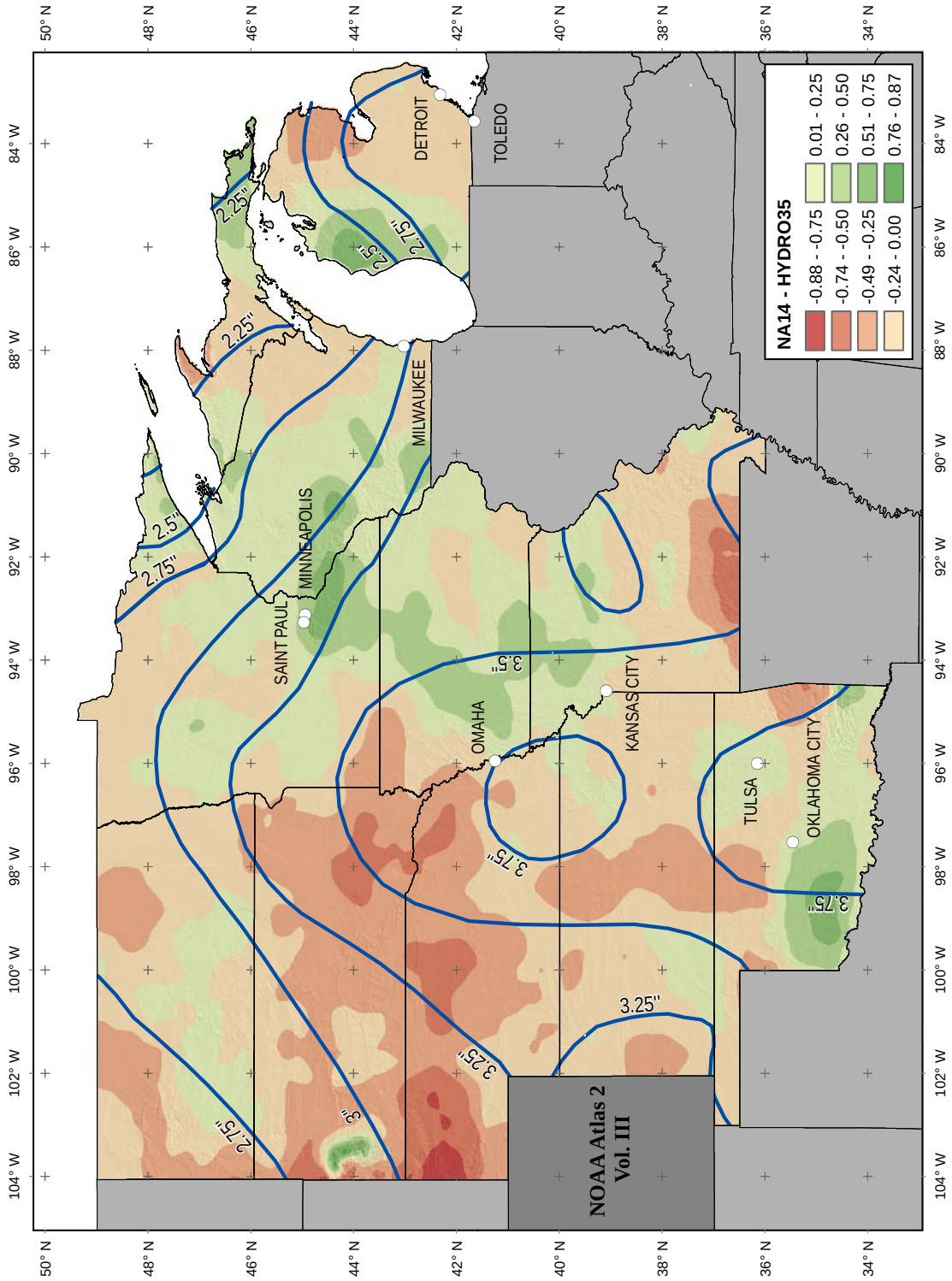


Figure 7.1. Map showing differences in 100-year 60-minute estimates (in inches) between NOAA Atlas 14 Volume 8 and HYDRO35 (excluding Colorado). Superimposed on the map are isopluvials (blue lines) from HYDRO35.

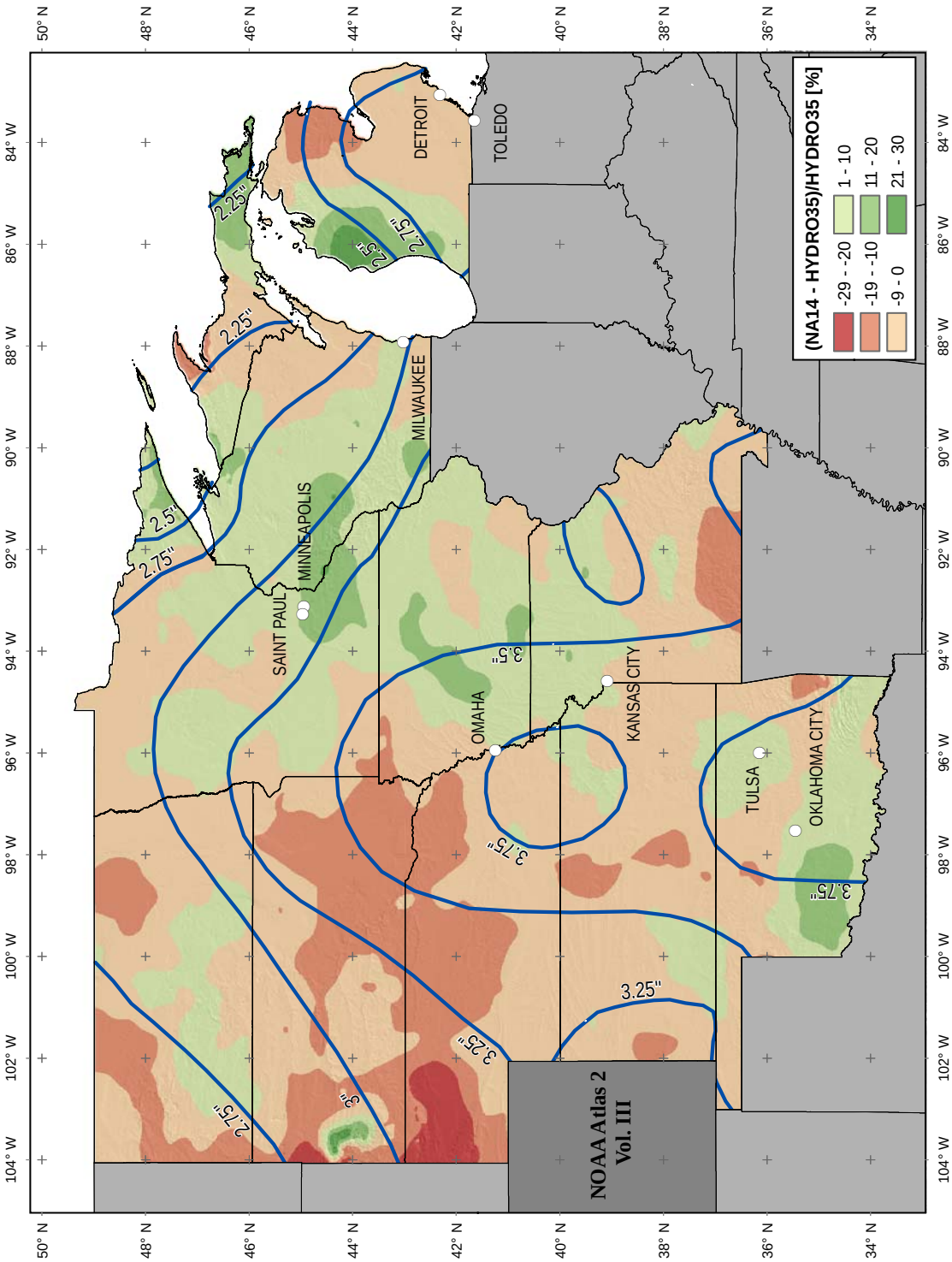


Figure 7.2. Map showing percent differences in 100-year 60-minute estimates between NOAA Atlas 14 Volume 8 and HYDRO35 (excluding Colorado). Superimposed on the map are isopluvials (blue lines) from HYDRO35.

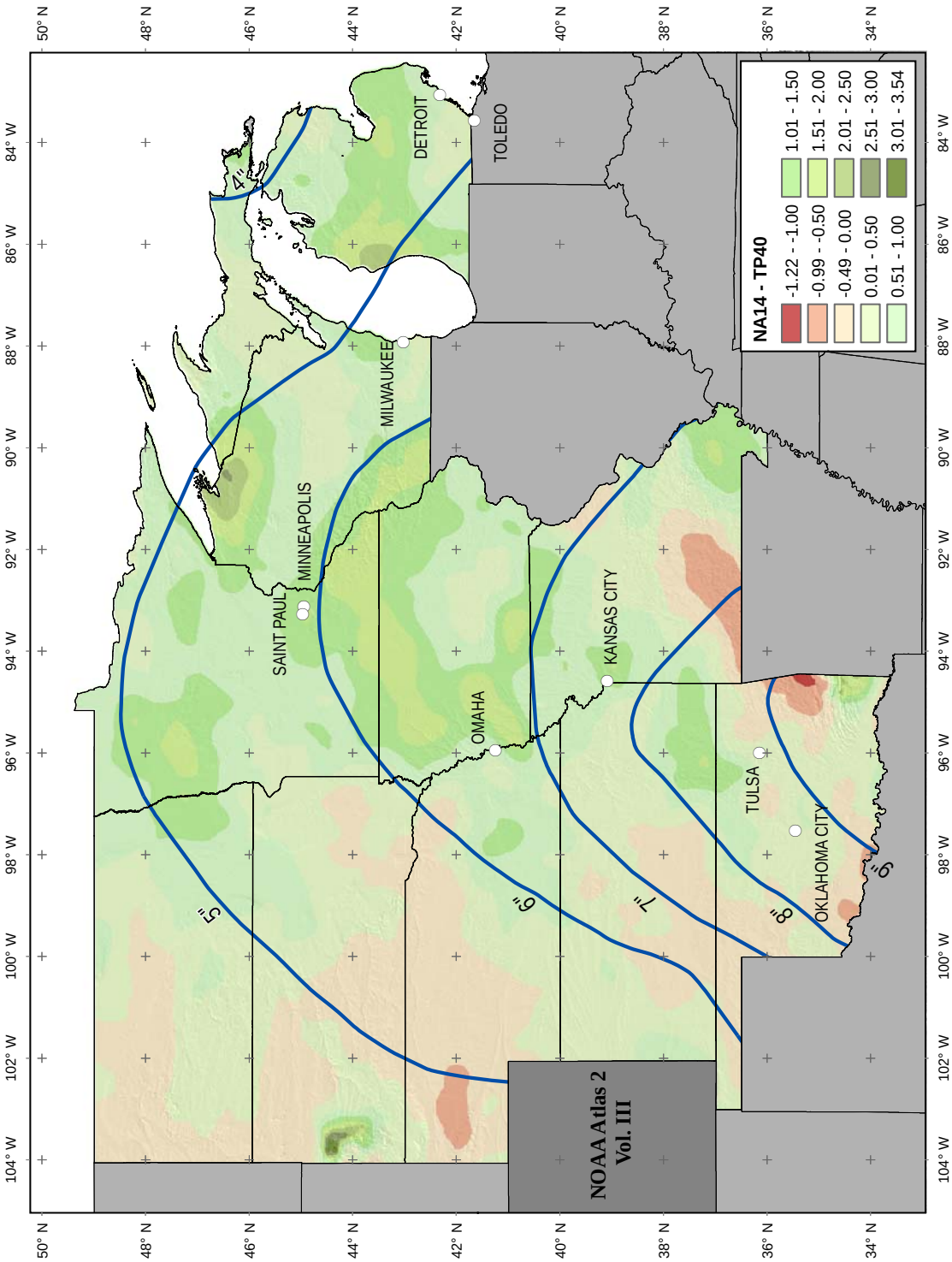


Figure 7.3. Map showing differences in 100-year 24-hour estimates (in inches) between NOAA Atlas 14 Volume 8 and TP40 (excluding Colorado). Superimposed on the map are isopluvials (blue lines) from TP40.

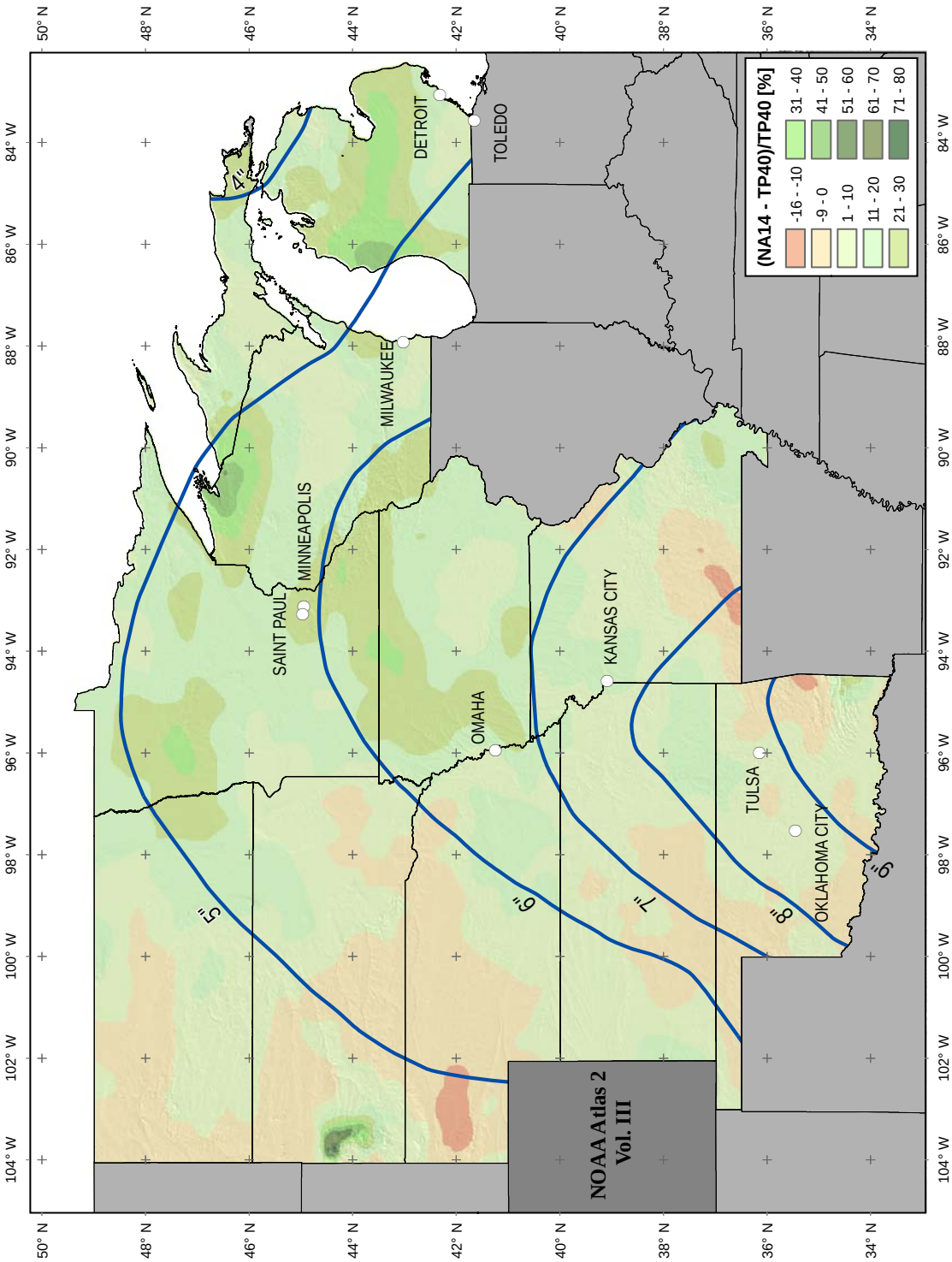


Figure 7.4. Map showing percent differences in 100-year 24-hour estimates between NOAA Atlas 14 Volume 8 and TP40 (excluding Colorado). Superimposed on the map are isopluvials (blue lines) from TP40.

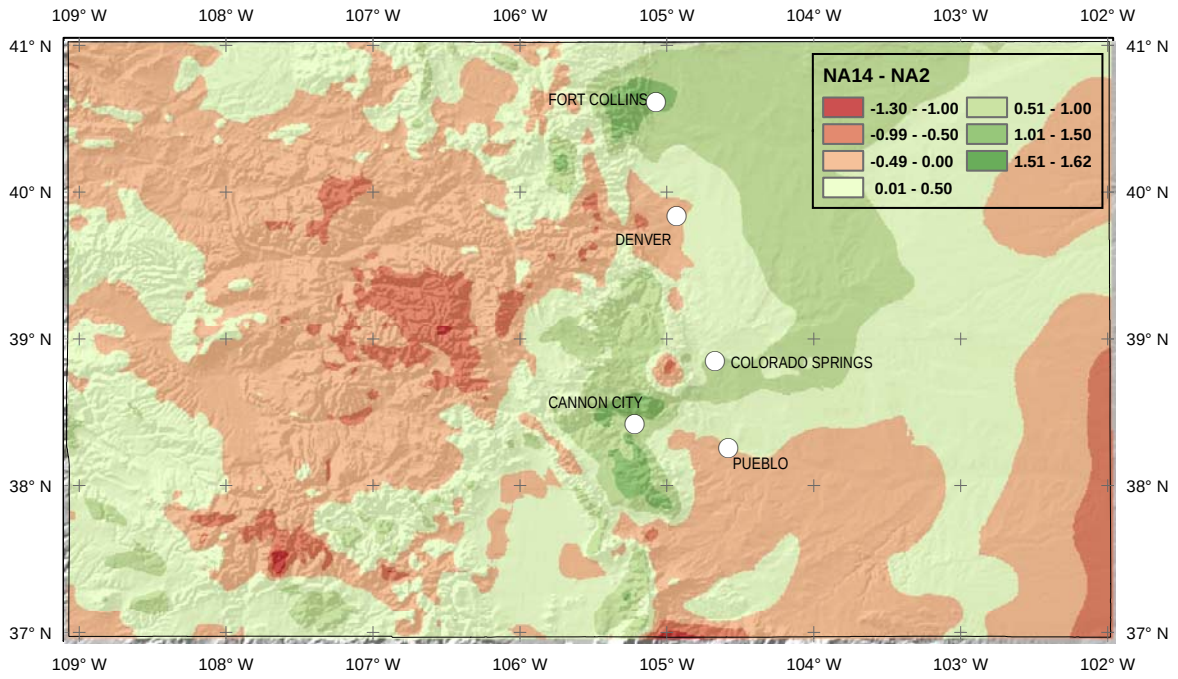


Figure 7.5. Map showing differences in 100-year 6-hour estimates (in inches) between NA14 and NA2 for Colorado.

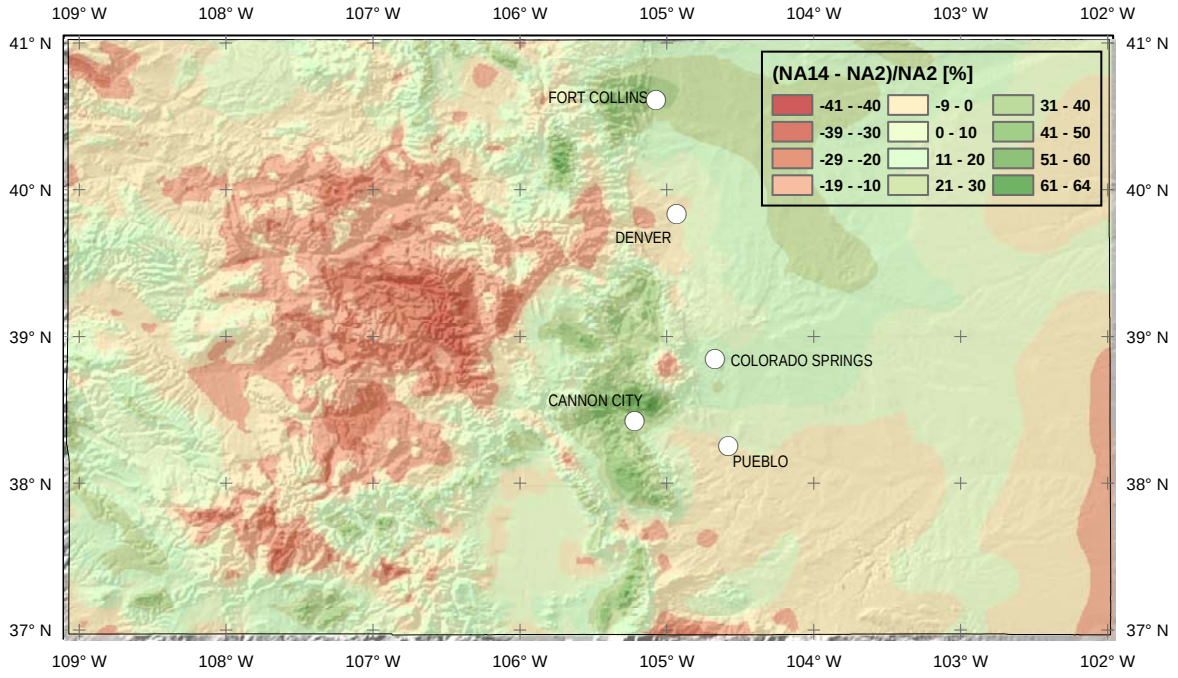


Figure 7.6. Map showing differences in 100-year 6-hour estimates (in percent) between NA14 and NA2 for Colorado.

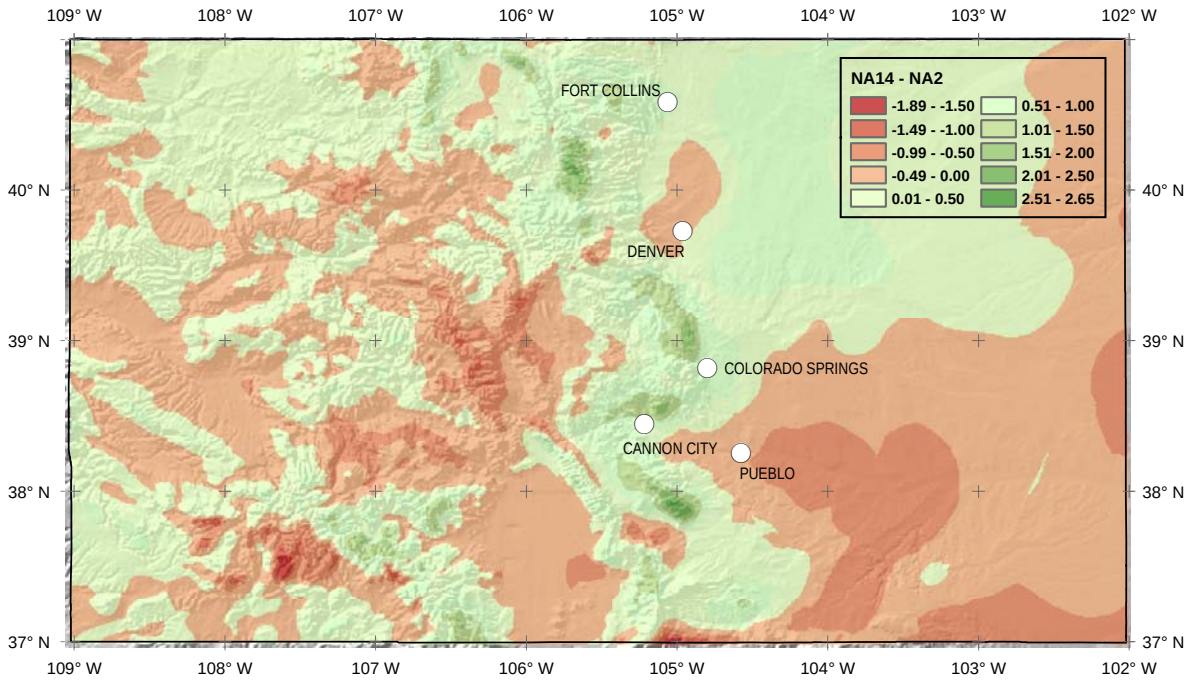


Figure 7. 7. Map showing differences in 100-year 24-hour estimates (in inches) between NA14 and NA2 for Colorado.

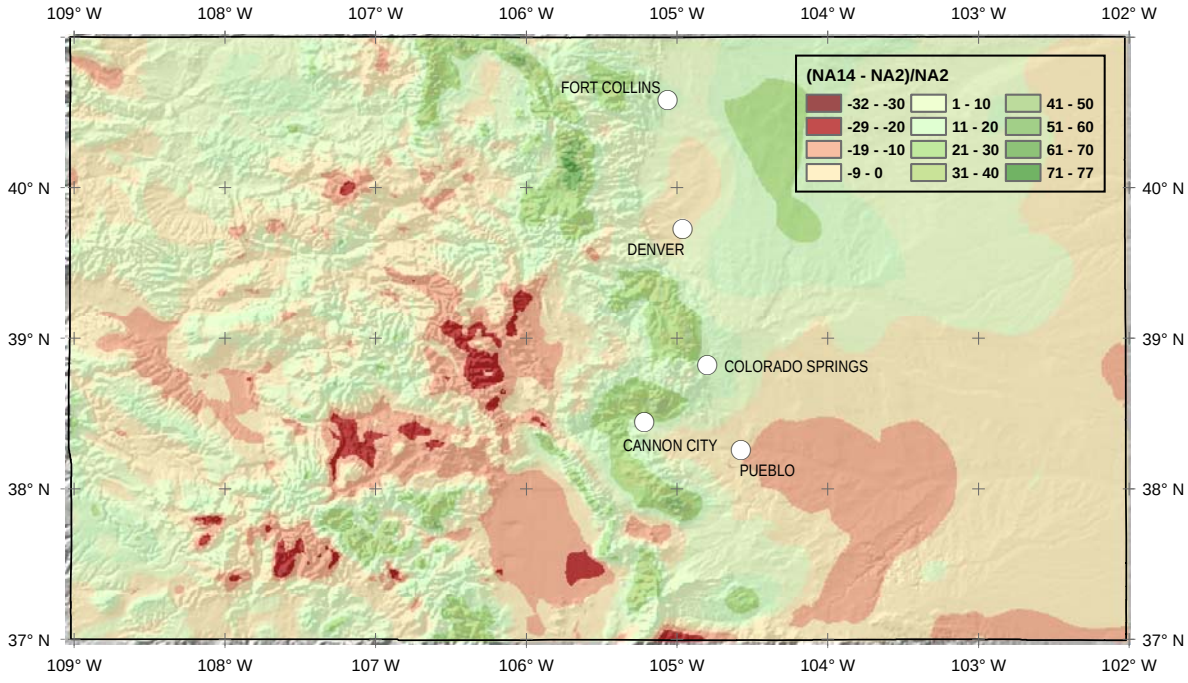


Figure 7.8. Map showing differences in 100-year 24-hour estimates (in percent) between NA14 and NA2 for Colorado.

Acknowledgments

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Appendix A.1 List of stations used to prepare precipitation frequency estimates

Table A.1.1. List of stations in the states of Colorado, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Oklahoma, South Dakota, and Wisconsin used in the analysis showing station name, station ID, post-merge station ID, co-located daily station ID, base duration, source of data, latitude, longitude, elevation, and period of record. Bold font in the latitude, longitude, and elevation fields indicates information that has been adjusted. Bold font in the 'Period of record' field indicates that the station data was extended using data from station that has the same ID in 'Post-merge station ID' column. For an hourly station co-located with a daily station with a different ID, the daily station's ID shown in the 'Co-located station ID' column should be used to locate the hourly station on the PFDS web page.

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
CO	AKRON 1 N	05-0114			1-day	NCDC	40.1717	-103.2317	4662	3/1937-6/1999
CO	AKRON 4 E	05-0109			1-day	NCDC	40.1550	-103.1417	4540	6/1893-10/2011
CO	AKRON 4 E	05-0109			1-hour	NCDC	40.1550	-103.1417	4540	8/1948-12/2010
CO	AKRON 4 E	05-0109			15-min	NCDC	40.1550	-103.1417	4540	1/1984-12/2010
CO	ALAMOSA	05-0125	05-0130		1-day	NCDC	37.4667	-105.8833	7536	5/1906-12/1949
CO	ALAMOSA BERGMAN FLD	05-0130			1-day	NCDC	37.4389	-105.8614	7533	**5/1906-10/2010**
CO	ALAMOSA BERGMAN FLD	05-0130		05-0130	1-hour	NCDC	37.4389	-105.8614	7533	9/1948-12/2010
CO	ALLENSPARK 2SE	05-0183	55-0412		1-day	NCDC	40.1881	-105.5019	8215	11/1944-12/1993
CO	ALLENSPARK 2SE	05-0183		55-0412	1-hour	NCDC	40.1881	-105.5019	8215	8/1948-12/2010
CO	ALLENSPARK 2SE	05-0183		55-0412	15-min	NCDC	40.1881	-105.5019	8215	5/1973-12/2010
CO	ALTENBERN	05-0214			1-day	NCDC	39.5008	-108.3794	5682	7/1947-10/2011
CO	AMES	05-0228			1-day	NCDC	37.8667	-107.8833	8700	12/1914-3/1986
CO	ANTERO RSVR	05-0263			1-day	NCDC	38.9933	-105.8919	8920	6/1961-10/2011
CO	ANTERO RSVR	05-0263			1-hour	NCDC	38.9933	-105.8919	8920	5/1968-12/2010
CO	ANTERO RSVR	05-0263			15-min	NCDC	38.9933	-105.8919	8920	5/1971-12/2010
CO	APISHAPA	55-0303			1-day	SNOTEL	**37.3306**	**-105.0675**	10000	10/1979-9/2008
CO	ARAPAHOE	05-0304			1-hour	NCDC	38.8528	-102.1764	4020	8/1948-12/2010
CO	ARAPAHOE	05-0304			15-min	NCDC	38.8528	-102.1764	4020	9/1971-12/2010
CO	AROYA 6 NE	05-0343	05-9058		1-day	NCDC	38.9167	-103.0833	4793	12/1940-9/1972
CO	ARRIBA	05-0348			1-day	NCDC	**39.2833**	**-103.2667**	**5241**	1/1907-10/1958
CO	ARROW	55-0305			1-day	SNOTEL	**39.9155**	**-105.7608**	9680	10/1978-9/2008
CO	ARTESIA 2 E	05-0354	05-2286		1-hour	NCDC	40.2333	-108.9667	5925	8/1948-5/1965
CO	ASPEN	05-0370	05-0372		1-day	NCDC	39.1833	-106.8333	7936	8/1899-11/1979
CO	ASPEN	05-0370	05-0372		1-hour	NCDC	39.1833	-106.8333	7936	8/1948-7/1980

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
CO	ASPEN	05-0370		05-0372	15-min	NCDC	39.1833	-106.8333	7936	**4/1972-4/2010**
CO	ASPEN 1 SW	05-0372			1-day	NCDC	39.1881	-106.8361	8163	**8/1899-8/2011**
CO	ASPEN 1 SW	05-0372		05-0372	1-hour	NCDC	39.1881	-106.8361	8163	**8/1948-12/2010**
CO	ASPEN 1 SW	05-0372	05-0370		15-min	NCDC	39.1881	-106.8361	8163	6/1980-3/2009
CO	BAILEY	05-0454			1-day	NCDC	39.4047	-105.4767	7730	4/1901-10/2011
CO	BEAR LAKE	55-0322			1-day	SNOTEL	**40.3112**	**-105.6448**	9500	10/1980-9/2008
CO	BEARTOWN	55-0327			1-day	SNOTEL	**37.7141**	**-107.5121**	11600	10/1982-9/2008
CO	BERTHOUD PASS	05-0674	55-0335		1-day	NCDC	39.8000	-105.7833	11313	1/1950-4/1985
CO	BERTHOUD SUMMIT	55-0335			1-day	SNOTEL	**39.8039**	**-105.7779**	11300	1/1950-9/2008
CO	BIG SPRINGS RCH	05-0712	05-2667		1-hour	NCDC	38.8667	-104.3167	6043	8/1948-5/1967
CO	BISON LAKE	55-0345			1-day	SNOTEL	**39.7649**	**-107.3568**	10880	10/1985-9/2008
CO	BLANCA 4 NW	05-0776			1-day	NCDC	37.4786	-105.5717	7709	3/1909-3/2010
CO	BLOOM	05-0784	05-2178		1-day	NCDC	41.1367	-103.9544	4848	2/1927-1/1954
CO	BLUE MESA LAKE	05-0797			1-day	NCDC	38.4667	-107.1678	7600	11/1967-10/2011
CO	BONNY DAM 2NE	05-0834			1-day	NCDC	39.6569	-102.1183	3717	6/1949-9/2011
CO	BONNY DAM 2NE	05-0834		05-0834	1-hour	NCDC	39.6569	-102.1183	3717	6/1951-12/2010
CO	BOULDER	05-0848			1-day	NCDC	39.9919	-105.2667	5484	10/1893-10/2011
CO	BOULDER 2	05-0843		05-0848	1-hour	NCDC	40.0339	-105.2811	5415	8/1948-12/2010
CO	BOULDER 2	05-0843		05-0848	15-min	NCDC	40.0339	-105.2811	5415	5/1971-12/2010
CO	BRANDON	05-0895			1-day	NCDC	38.4597	-102.4361	3925	2/1955-12/1999
CO	BRECKENRIDGE	05-0909			1-day	NCDC	39.4861	-106.0431	9580	2/1893-10/2011
CO	BRIGGSDALE	05-0945			1-day	NCDC	40.6350	-104.3267	4834	8/1948-3/2011
CO	BRIGHTON 3 SE	05-0950			1-day	NCDC	39.9436	-104.8361	5016	10/1973-10/2011
CO	BROWNS PARK REFUGE	05-1017	05-1018		1-day	NCDC	40.8008	-108.9172	5354	4/1966-7/1997
CO	BROWNS PARK STORE	05-1018			1-day	NCDC	40.7839	-108.8539	5564	**4/1966-11/2010**
CO	BRUMLEY	55-0369			1-day	SNOTEL	**39.0877**	**-106.5417**	10600	7/1947-9/2008
CO	BUENA VISTA 2S	05-1071			1-day	NCDC	38.8247	-106.1275	7946	8/1899-10/2011
CO	BURLINGTON	05-1121			1-day	NCDC	39.3061	-102.2631	4230	11/1903-10/2011
CO	BURLINGTON 12 NNE	05-1126		05-1126	1-hour	NCDC	39.4833	-102.1667	4232	8/1948-5/1978
CO	BURRO MOUNTAIN	55-0378			1-day	SNOTEL	**39.8751**	**-107.5985**	9400	10/1978-9/2008
CO	BYERS 5 ENE	05-1179			1-day	NCDC	39.7403	-104.1275	5100	1/1893-10/2011
CO	BYERS 5 ENE	05-1179			1-hour	NCDC	39.7403	-104.1275	5100	8/1948-12/2010

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
CO	BYERS 5 ENE	05-1179			15-min	NCDC	39.7403	-104.1275	5100	5/1971-12/2010
CO	CABIN CREEK	05-1186			1-day	NCDC	39.6553	-105.7089	10020	1/1968-10/2011
CO	CAMPO 7 S	05-1268			1-day	NCDC	37.0158	-102.5550	4118	4/1954-7/2011
CO	CANON CITY	05-1294			1-day	NCDC	38.4600	-105.2256	5366	3/1893-10/2011
CO	CARIBOU RCH	05-1342	05-5878		1-day	NCDC	39.9985	-105.5124	8366	12/1962-2/1970
CO	CASCADE	55-0386			1-day	SNOTEL	**37.6580**	**-107.8027**	8880	9/1906-9/2008
CO	CASCADE	05-1384	55-0386		1-day	NCDC	37.6591	-107.7955	8855	9/1906-10/1958
CO	CASTLE ROCK	05-1401			1-day	NCDC	39.4106	-104.9058	6185	1/1893-10/2011
CO	CASTLE ROCK	05-1401		05-1401	1-hour	NCDC	39.4106	-104.9058	6185	8/1948-12/2010
CO	CEDAREDGE	05-1440			1-day	NCDC	38.9000	-107.9333	6244	2/1898-5/1994
CO	CEDAREDGE	05-1440		05-1440	1-hour	NCDC	38.9000	-107.9333	6244	8/1948-5/1994
CO	CENTER 4 SSW	05-1458			1-day	NCDC	37.7067	-106.1444	7673	8/1941-10/2011
CO	CHAMA	05-1520		05-7430	1-hour	NCDC	37.1636	-105.3706	8233	**8/1948-10/2008**
CO	CHEESEMAN	60-0007		05-1528	1-hour	RAWS	39.1814	-105.2672	7500	2/1987-2/2011
CO	CHEESMAN	05-1528			1-day	NCDC	39.2203	-105.2783	6880	8/1902-10/2011
CO	CHERAW 1 N	05-1539			1-hour	NCDC	38.1150	-103.5100	4147	8/1948-12/2010
CO	CHERAW 1 N	05-1539			15-min	NCDC	38.1150	-103.5100	4147	1/1984-12/2010
CO	CHERRY CREEK DAM	05-1547			1-day	NCDC	39.6261	-104.8319	5647	10/1951-2/2009
CO	CHEYENNE WELLS	05-1564			1-day	NCDC	38.8178	-102.3608	4250	1/1893-10/2011
CO	CLIMAX	05-1660			1-day	NCDC	39.3672	-106.1897	11294	1/1893-10/2011
CO	COALDALE 1 NW	05-1693		05-1693	1-hour	NCDC	38.3833	-105.7833	6535	8/1948-12/1974
CO	COCHETOPA CREEK	05-1713			1-day	NCDC	38.4461	-106.7611	8000	6/1909-7/2011
CO	COCHETOPA CREEK	05-1713			1-hour	NCDC	38.4461	-106.7611	8000	8/1948-12/2010
CO	COCHETOPA CREEK	05-1713			15-min	NCDC	38.4461	-106.7611	8000	1/1984-12/2010
CO	COLLBRAN	05-1741			1-day	NCDC	39.2425	-107.9631	5980	1/1893-12/1999
CO	COLORADO NM	05-1772			1-day	NCDC	39.1014	-108.7339	5780	3/1940-10/2011
CO	COLORADO SPGS MUNI AP	05-1778			1-day	NCDC	38.8100	-104.6883	6181	11/1894-2/2013
CO	COLORADO SPGS MUNI AP	05-1778		05-1778	1-hour	NCDC	38.8100	-104.6883	6181	7/1949-12/2010
CO	COLUMBINE	55-0408			1-day	SNOTEL	**40.3948**	**-106.6041**	9160	10/1979-9/2008
CO	COLUMBINE	05-1792	55-0467		1-day	NCDC	40.8500	-106.9667	8707	10/1909-9/1949
CO	CONIFER 3 NE	05-1826	05-4293		1-hour	NCDC	**39.5420**	**-105.2589**	7776	2/1965-4/1981
CO	CONIFER 3 NE	05-1826	05-4293		15-min	NCDC	**39.5420**	**-105.2589**	7776	5/1971-4/1981

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
CO	COPELAND LAKE	55-0412			1-day	SNOTEL	**40.2078**	**-105.5686**	8600	11/1944-9/2008
CO	COPPER MOUNTAIN	55-0415			1-day	SNOTEL	**39.4895**	**-106.1710**	10550	10/1978-9/2008
CO	CORTEZ	05-1886			1-day	NCDC	37.3444	-108.5931	6153	4/1911-10/2011
CO	CRAIG	05-1928			1-day	NCDC	40.5333	-107.5500	6280	4/1894-10/1976
CO	CRAIG	05-1928		05-1928	1-hour	NCDC	40.5333	-107.5500	6280	8/1948-9/1976
CO	CRESTED BUTTE	05-1959			1-day	NCDC	38.8742	-106.9764	8851	6/1909-10/2011
CO	CRESTED BUTTE	05-1959			1-hour	NCDC	38.8742	-106.9764	8851	8/1948-12/2010
CO	CRESTED BUTTE	05-1959			15-min	NCDC	38.8742	-106.9764	8851	7/1972-12/2010
CO	CRESTONE 2 SE	05-1964			1-day	NCDC	37.9806	-105.6897	8004	3/1982-10/2011
CO	CRIPPLE CREEK	05-1973			1-day	NCDC	38.7497	-105.1797	9550	9/1896-1/2003
CO	CROWDER RCH	05-2000			1-day	NCDC	37.3833	-103.8833	5131	**9/1939-3/1983**
CO	CUB CREEK BELOW BLUE CR	73-2270			15-min	ALERT DENVER	39.5928	-105.3439	7560	5/1995-7/2009
CO	CUCHARAS DAM	05-2040		05-2040	1-hour	NCDC	37.7500	-104.6000	5845	8/1948-4/1988
CO	CULEBRA #2	55-0430			1-day	SNOTEL	**37.2094**	**-105.1996**	10500	10/1979-9/2008
CO	CUMBRES	05-2048	55-0431		1-day	NCDC	37.0167	-106.4500	10026	2/1893-8/1951
CO	CUMBRES TRESTLE	55-0431			1-day	SNOTEL	**37.0188**	**-106.4518**	10040	2/1893-9/2008
CO	DEADMAN HILL	55-0438			1-day	SNOTEL	**40.8057**	**-105.7699**	10220	10/1978-9/2008
CO	DEER TRAIL 3 NW	05-2162			1-day	NCDC	39.6419	-104.0775	5100	1/1893-7/2001
CO	DEER TRAIL 3 NW	05-2162		05-2162	1-hour	NCDC	39.6419	-104.0775	5100	8/1948-7/2001
CO	DEL NORTE 2E	05-2184			1-day	NCDC	37.6742	-106.3247	7864	1/1893-10/2011
CO	DELHI	05-2178	05-8290		1-day	NCDC	37.6333	-104.0167	5092	7/1923-9/1980
CO	DELTA	05-2192	05-2196		1-day	NCDC	38.7531	-108.0783	4930	2/1893-12/1999
CO	DELTA 3E	05-2196			1-day	NCDC	38.7539	-108.0278	5010	**2/1893-10/2011**
CO	DENVER	62-0088	62-2211		1-day	FORTS	39.7492	-105.0025	5193	12/1869-12/1873
CO	DENVER	62-2211	05-2223		1-day	FORTS	39.7483	-104.9947	5219	11/1871-12/1892
CO	DENVER WATER DEPT	05-2223			1-day	NCDC	39.7294	-105.0083	5228	**1/1872-10/2011**
CO	DENVER WSO CITY	05-2225	05-2223		1-day	NCDC	39.7500	-104.9833	5325	1/1921-3/1974
CO	DENVER WSO CITY	05-2225		05-2223	1-hour	NCDC	39.7500	-104.9833	5325	8/1948-12/1973
CO	DENVER-STAPELTON	05-2220			1-day	NCDC	39.7633	-104.8694	5286	1/1948-8/2010
CO	DENVER-STAPELTON	05-2220		05-2220	1-hour	NCDC	39.7633	-104.8694	5286	8/1948-12/2010
CO	DEVIL MTN	60-0013		60-0013	1-hour	RAWS	37.2269	-107.3047	7360	8/1989-2/2011
CO	DILLON 1 E	05-2281			1-day	NCDC	39.6261	-106.0353	9065	1/1893-10/2011

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
CO	DINOSAUR NATL MONUMNT	05-2286			1-day	NCDC	40.2442	-108.9719	5924	8/1948-9/2011
CO	DINOSAUR NATL MONUMNT	05-2286		05-2286	1-hour	NCDC	40.2442	-108.9719	5924	**8/1948-12/2010**
CO	DOHERTY RCH	05-2312	05-2000		1-day	NCDC	37.3833	-103.8833	5135	9/1939-9/1980
CO	DOLORES	05-2326			1-day	NCDC	37.4753	-108.4975	6950	10/1908-11/2004
CO	DRAKE	05-2354			15-min	NCDC	40.4333	-105.3394	6170	2/1975-12/2010
CO	DURANGO	05-2432			1-day	NCDC	37.2833	-107.8833	6600	**10/1894-8/2010**
CO	DURANGO	05-2441	05-2432		1-day	NCDC	37.2911	-107.8564	6754	3/1991-8/2010
CO	DURANGO	05-2432		05-2432	1-hour	NCDC	37.2833	-107.8833	6600	8/1948-9/1980
CO	EADS	05-2446			1-day	NCDC	38.4775	-102.7808	4215	4/1907-10/2011
CO	EADS	05-2446		05-2446	1-hour	NCDC	38.4775	-102.7808	4215	8/1948-9/1988
CO	EAGLE FAA AP	05-2454			1-day	NCDC	39.6500	-106.9167	6497	7/1904-6/1994
CO	EAGLE FAA AP	05-2454		05-2454	1-hour	NCDC	39.6500	-106.9167	6497	8/1948-6/1994
CO	EASTONVILLE 2 NNW	05-2494			1-day	NCDC	39.1092	-104.5997	7210	4/1956-10/2011
CO	ECKLEY	05-2535			1-hour	NCDC	40.1089	-102.4867	3913	8/1948-12/2010
CO	ECKLEY	05-2535			15-min	NCDC	40.1089	-102.4867	3913	5/1973-12/2010
CO	EDGEWATER	05-2557	05-8995		1-day	NCDC	39.7500	-105.0833	5453	6/1908-4/1962
CO	EL DIENTE PEAK	55-0465			1-day	SNOTEL	**37.7862**	**-108.0215**	10000	10/1985-9/2008
CO	ELK CREEK	05-2633			1-hour	NCDC	39.4833	-105.3667	8435	8/1948-2/1965
CO	ELK RIVER	55-0467			1-day	SNOTEL	**40.8478**	**-106.9687**	8700	10/1909-9/2008
CO	ELLICOTT	05-2667		05-2667	1-hour	NCDC	38.8333	-104.3333	6024	**8/1948-9/1976**
CO	ERNIE GULCH	60-0018		05-5048	1-hour	RAWS	40.0458	-108.2000	7000	7/1984-2/2011
CO	ESTES PARK	05-2759	05-2761		1-day	NCDC	40.3767	-105.4858	7480	2/1896-6/2001
CO	ESTES PARK 1 SSE	05-2761			1-day	NCDC	40.3689	-105.5108	7785	**2/1896-10/2011**
CO	EVERGREEN	05-2790			1-day	NCDC	39.6381	-105.3150	6985	5/1961-10/2011
CO	EVERGREEN	05-2790			1-hour	NCDC	39.6381	-105.3150	6985	1/1968-12/2010
CO	EVERGREEN	05-2790			15-min	NCDC	39.6381	-105.3150	6985	4/1971-12/2010
CO	FLAGLER 1S	05-2932			1-day	NCDC	39.2814	-103.0614	4920	6/1919-10/2011
CO	FLEMING	05-2944	05-2947		1-day	NCDC	40.6844	-102.8397	4240	4/1894-10/1998
CO	FLEMING 3SW	05-2947			1-day	NCDC	40.6483	-102.8594	4256	**4/1894-10/2011**
CO	FLORISSANT FOSSIL BED	05-2965			1-day	NCDC	38.9128	-105.2850	8379	8/1948-10/2011
CO	FLORISSANT FOSSIL BED	05-2965			1-hour	NCDC	38.9128	-105.2850	8379	**8/1948-12/2010**
CO	FLORISSANT FOSSIL BED	05-2965			15-min	NCDC	38.9128	-105.2850	8379	10/1974-12/2010

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CO	FLORISSANT FOSSL BED	05-1978	05-2965		1-hour	NCDC	38.8667	-105.3000	8507	8/1948-10/1974
CO	FORDER 8 S	05-2997	05-6136		1-day	NCDC	38.5500	-103.6833	4783	1/1932-8/1979
CO	FORDER 8 S	05-2997	05-6136		1-hour	NCDC	38.5500	-103.6833	4783	1/1960-6/1980
CO	FORDER 8 S	05-2997	05-6136		15-min	NCDC	38.5500	-103.6833	4783	5/1971-6/1980
CO	FORT COLLINS	70-0016		70-0016	1-hour	COAGMET CO	40.5947	-105.1370	5120	2/1992-10/2011
CO	FORT LYON	62-3032	05-4834		1-day	FORTS	38.0744	-103.1328	3873	1/1867-10/1889
CO	FOUNTAIN	05-3063			1-day	NCDC	38.6778	-104.7014	5560	9/1943-9/1997
CO	FOUNTAIN	05-3063		05-3063	1-hour	NCDC	38.6778	-104.7014	5560	12/1953-10/1997
CO	FOWLER 1 SE	05-3079			1-day	NCDC	38.1236	-104.0083	4330	11/1903-10/2011
CO	FRASER	05-3113	05-3116		1-day	NCDC	39.9500	-105.8333	8563	6/1908-6/1974
CO	FRASER	05-3116			1-day	NCDC	39.9425	-105.8172	8560	**6/1908-10/2011**
CO	FRUITA	05-3146			1-day	NCDC	39.1653	-108.7331	4524	1/1893-8/2011
CO	FT COLLINS	05-3005			1-day	NCDC	**40.5762**	**-105.0857**	5004	1/1893-10/2011
CO	FT COLLINS	05-3005		05-3005	1-hour	NCDC	**40.5762**	**-105.0857**	5004	8/1948-12/2010
CO	FT COLLINS 9 NW	05-3007			1-hour	NCDC	40.6647	-105.2233	5220	2/1975-12/2010
CO	FT COLLINS 9 NW	05-3007			15-min	NCDC	40.6647	-105.2233	5220	2/1975-12/2010
CO	FT LEWIS	05-3016			1-day	NCDC	37.2342	-108.0497	7600	1/1915-10/2011
CO	FT LUPTON 2 SE	05-3027			1-day	NCDC	40.0667	-104.7833	5023	9/1910-3/1976
CO	FT MORGAN	05-3038			1-day	NCDC	40.2600	-103.8156	4359	12/1896-10/2011
CO	GARDNER	05-3222	05-7572		1-day	NCDC	37.7667	-105.1833	6965	6/1939-7/1971
CO	GATEWAY	05-3246			1-day	NCDC	38.6825	-108.9722	4554	9/1947-10/2011
CO	GENOA	05-3258			1-day	NCDC	39.2775	-103.4958	5608	8/1940-10/2011
CO	GEORGETOWN	05-3261			1-day	NCDC	39.7156	-105.6967	8520	1/1893-10/2011
CO	GLENWOOD SPGS #2	05-3359			1-day	NCDC	39.5181	-107.3172	5880	9/1893-8/2011
CO	GOLDEN 3 S	05-3386			1-hour	NCDC	39.7036	-105.2264	7120	5/1976-12/2010
CO	GOLDEN 3 S	05-3386			15-min	NCDC	39.7036	-105.2264	7120	5/1976-12/2010
CO	GRANADA	05-3477			1-hour	NCDC	38.0611	-102.3111	3484	8/1948-12/2010
CO	GRANADA	05-3477			15-min	NCDC	38.0611	-102.3111	3484	10/1979-12/2010
CO	GRAND JUNCTION 6 ESE	05-3489			1-day	NCDC	39.0422	-108.4664	4760	3/1962-10/2011
CO	GRAND JUNCTION WALKER	05-3488			1-day	NCDC	39.1342	-108.5400	4858	1/1900-10/2010
CO	GRAND JUNCTION WALKER	05-3488		05-3488	1-hour	NCDC	39.1342	-108.5400	4858	8/1948-12/2010
CO	GRAND LAKE 1 NW	05-3496			1-day	NCDC	40.2669	-105.8322	8720	10/1907-10/2011

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CO	GRAND LAKE 6 SSW	05-3500			1-day	NCDC	40.1850	-105.8667	8288	9/1948-10/2011
CO	GRAND LAKE 6 SSW	05-3500			1-hour	NCDC	40.1850	-105.8667	8288	8/1948-12/2010
CO	GRAND LAKE 6 SSW	05-3500			15-min	NCDC	40.1850	-105.8667	8288	1/1984-12/2010
CO	GRANT	05-3530			1-day	NCDC	39.4608	-105.6786	8675	9/1963-10/2011
CO	GREAT SAND DUNES NM	05-3541			1-day	NCDC	37.7333	-105.5119	8183	9/1950-10/2011
CO	GREELEY	05-3546	05-3553		1-day	NCDC	40.4167	-104.6833	4652	1/1893-2/1967
CO	GREELEY	05-3546	05-3553		1-hour	NCDC	40.4167	-104.6833	4652	8/1948-12/1988
CO	GREELEY UNC	05-3553			1-day	NCDC	40.4022	-104.6992	4715	**1/1893-10/2011**
CO	GREELEY UNC	05-3553		05-3553	1-hour	NCDC	40.4022	-104.6992	4715	**8/1948-12/2010**
CO	GREEN MT DAM	05-3592			1-day	NCDC	39.8789	-106.3333	7740	7/1939-10/2011
CO	GREENLAND 6 NE	05-3584			1-hour	NCDC	39.2167	-104.7383	6900	8/1948-12/2010
CO	GREENLAND 6 NE	05-3584			15-min	NCDC	39.2167	-104.7383	6900	11/1976-12/2010
CO	GREENLAND 9 SE	05-3579			1-hour	NCDC	39.1044	-104.7286	7480	8/1948-12/2010
CO	GREENLAND 9 SE	05-3579			15-min	NCDC	39.1044	-104.7286	7480	11/1976-12/2010
CO	GRIZZLY PEAK	55-0505			1-day	SNOTEL	**39.6463**	**-105.8697**	11100	10/1979-9/2008
CO	GROSS RSVR	05-3629			1-day	NCDC	39.9279	-105.3762	7970	5/1978-10/2011
CO	GROVER 10 W	05-3643			1-day	NCDC	40.8667	-104.4167	5082	2/1893-7/1970
CO	GUFFEY 10 SE	05-3656	05-3652		1-day	NCDC	38.6753	-105.3922	8595	7/1950-12/2006
CO	GUFFEY 9SE	05-3652			1-day	NCDC	38.6867	-105.3925	8915	**7/1950-10/2011**
CO	GUNNISON 3SW	05-3662			1-day	NCDC	38.5258	-106.9675	7648	7/1893-10/2011
CO	GUNNISON 3SW	05-3662			1-hour	NCDC	38.5258	-106.9675	7648	8/1948-12/2010
CO	GUNNISON 3SW	05-3662			15-min	NCDC	38.5258	-106.9675	7648	7/1972-12/2010
CO	HAMILTON	05-3738	05-3742		1-day	NCDC	40.3722	-107.6117	6230	7/1947-4/2007
CO	HAMILTON 1SSE	05-3742			1-day	NCDC	40.3581	-107.6081	6404	**7/1947-7/2011**
CO	HARTSEL	05-3811			1-day	NCDC	39.0333	-105.8000	8875	8/1909-1/1966
CO	HASWELL	05-3828			1-day	NCDC	38.4486	-103.1625	4525	6/1922-10/2011
CO	HAWTHORNE	05-3850			1-day	NCDC	39.9315	-105.2828	5925	8/1908-1/1976
CO	HAYDEN	05-3867			1-day	NCDC	40.4928	-107.2547	6440	3/1909-10/2011
CO	HERMIT 7 ESE	05-3951			1-day	NCDC	37.7717	-107.1097	9048	1/1920-7/2011
CO	HIGBEE 2 SW	05-3982	05-4726		1-day	NCDC	37.7500	-103.4667	4252	5/1906-5/1980
CO	HOEHNE	70-0022	05-4047		1-hour	COAGMET CO	37.2893	-104.3130	5625	2/2000-7/2009
CO	HOEHNE	05-4047		05-8434	1-hour	NCDC	37.2667	-104.3833	5705	**8/1948-4/2010**

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CO	HOLLY	05-4076			1-day	NCDC	38.0494	-102.1236	3390	3/1894-3/2009
CO	HOLYOKE	05-4082			1-day	NCDC	40.5453	-102.3411	3780	1/1893-10/2011
CO	HOOSIER PASS	55-0531			1-day	SNOTEL	**39.3613**	**-106.0598**	11400	10/1979-9/2008
CO	HOT SULPHUR SPGS 2 SW	05-4129	05-9096		1-day	NCDC	40.0500	-106.1333	7605	12/1941-6/1981
CO	HOT SULPHUR SPGS 2 SW	05-4129	05-9096		1-hour	NCDC	40.0500	-106.1333	7605	6/1953-2/1984
CO	HOYT	05-4155		05-4155	1-hour	NCDC	39.9875	-104.0847	4790	8/1948-12/2010
CO	HUGO 1 NW	05-4172			1-day	NCDC	39.1439	-103.4897	5025	1/1893-10/2011
CO	HUGO 1 NW	05-4172			1-hour	NCDC	39.1439	-103.4897	5025	8/1948-12/2010
CO	HUGO 1 NW	05-4172			15-min	NCDC	39.1439	-103.4897	5025	6/1982-12/2010
CO	HUNTER CREEK	60-0023		60-0023	1-hour	RAWS	39.7667	-108.3167	7320	7/1984-2/2011
CO	IDAHO SPRINGS	05-4234			1-day	NCDC	39.7430	-105.5138	7555	1/1893-6/1974
CO	IDALIA	05-4242			1-day	NCDC	39.6989	-102.2928	3965	8/1941-10/2011
CO	IDARADO	55-0538			1-day	SNOTEL	**37.9339**	**-107.6755**	9800	10/1979-9/2008
CO	IGNACIO 1 N	05-4250			1-day	NCDC	37.1364	-107.6264	6460	8/1909-7/1993
CO	INDEPENDENCE PASS	55-0542			1-day	SNOTEL	**39.0754**	**-106.6117**	10600	10/1980-9/2008
CO	INDEPENDENCE PASS 5 SW	05-4270	55-0369		1-day	NCDC	39.0833	-106.6167	10558	7/1947-1/1980
CO	INTER CANYON	05-4293			1-day	NCDC	39.5736	-105.2197	7040	2/1965-8/2011
CO	INTER CANYON	05-4293			1-hour	NCDC	39.5736	-105.2197	7040	**2/1965-12/2010**
CO	INTER CANYON	05-4293			15-min	NCDC	39.5736	-105.2197	7040	**5/1971-12/2010**
CO	JAY	60-0026		60-0026	1-hour	RAWS	38.8417	-107.7361	6200	7/1984-2/2011
CO	JOE WRIGHT	55-0551			1-day	SNOTEL	**40.5321**	**-105.8870**	10120	10/1978-9/2008
CO	JOES	05-4380			1-day	NCDC	39.6550	-102.6800	4251	5/1935-10/2011
CO	JOES	05-4380		05-4380	1-hour	NCDC	39.6550	-102.6800	4251	8/1948-12/2010
CO	JOHN MARTIN DAM	05-4388			1-day	NCDC	38.0633	-102.9297	3814	8/1941-10/2011
CO	JOHN MARTIN DAM	05-4388		05-4388	1-hour	NCDC	38.0633	-102.9297	3814	8/1948-12/2010
CO	JULESBURG	05-4413			1-day	NCDC	40.9867	-102.2706	3469	1/1893-10/2011
CO	KARVAL	05-4444			1-day	NCDC	38.7411	-103.5428	5075	8/1941-10/2011
CO	KASSLER	05-4452			1-day	NCDC	39.4900	-105.0953	5587	11/1918-10/2011
CO	KAUFFMAN 4 SSE	05-4460			1-day	NCDC	40.8500	-103.9000	5250	9/1936-2/1987
CO	KILN	55-0556			1-day	SNOTEL	**39.3172**	**-106.6145**	9600	10/1979-9/2008
CO	KIM 10SSE	05-4546			1-day	NCDC	37.1150	-103.2986	5300	**8/1941-10/2011**
CO	KIM 15 NNE	05-4538			1-day	NCDC	37.4536	-103.3219	5190	8/1948-10/2011

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CO	KIM 15 NNE	05-4538			1-hour	NCDC	37.4536	-103.3219	5190	8/1948-12/2010
CO	KIM 15 NNE	05-4538			15-min	NCDC	37.4536	-103.3219	5190	6/1972-12/2010
CO	KIT CARSON	05-4603			1-day	NCDC	38.7656	-102.8028	4320	1/1893-8/2011
CO	KREMMLING	05-4664			1-day	NCDC	40.0575	-106.3681	7460	1/1908-10/2011
CO	LA JUNTA	05-4719	05-4720		1-day	NCDC	38.0000	-103.5333	4060	9/1910-6/1929
CO	LA JUNTA 20 S	05-4726			1-day	NCDC	37.7511	-103.4775	4210	**5/1906-10/2011**
CO	LA JUNTA MUNI AP	05-4720			1-day	NCDC	38.0494	-103.5122	4194	**9/1910-10/2010**
CO	LA VETA PASS	05-4870			1-day	NCDC	37.4667	-105.1667	9245	3/1909-1/1954
CO	LADORE	60-0027		60-0027	1-hour	RAWS	40.7392	-108.8347	5900	6/1987-2/2011
CO	LAKE CITY	05-4734			1-day	NCDC	38.0247	-107.3147	8674	5/1905-5/2010
CO	LAKE ELDORA	55-0564			1-day	SNOTEL	**39.9368**	**-105.5896**	9700	10/1978-9/2008
CO	LAKE GEORGE 8 SW	05-4742			1-day	NCDC	38.9075	-105.4706	8550	8/1945-10/2011
CO	LAKE GEORGE 8 SW	05-4742			1-hour	NCDC	38.9075	-105.4706	8550	7/1945-12/2010
CO	LAKE GEORGE 8 SW	05-4742			15-min	NCDC	38.9075	-105.4706	8550	5/1971-12/2010
CO	LAKE IRENE	55-0565			1-day	SNOTEL	**40.4143**	**-105.8198**	10700	10/1978-9/2008
CO	LAKE MORAINE	05-4750			1-day	NCDC	38.8157	-104.9931	10262	5/1894-9/1991
CO	LAKE MORAINE	05-4750		05-4750	1-hour	NCDC	**38.8157**	**-104.9931**	10262	10/1958-9/1991
CO	LAKEWOOD	05-4762			1-day	NCDC	39.7489	-105.1206	5640	7/1962-10/2011
CO	LAMAR	05-4770			1-day	NCDC	38.0936	-102.6306	3627	1/1893-10/2011
CO	LAS ANIMAS	05-4834			1-day	NCDC	38.0636	-103.2153	3890	**1/1867-10/2011**
CO	LAWSON	05-4877			1-hour	NCDC	**39.7655**	**-105.6260**	8100	2/1975-12/2010
CO	LAWSON	05-4877			15-min	NCDC	**39.7655**	**-105.6260**	8100	2/1975-12/2010
CO	LEADVILLE	05-4884	05-4885		1-day	NCDC	39.2167	-106.3000	9941	9/1948-8/1982
CO	LEADVILLE 2 SW	05-4885			1-day	NCDC	39.2242	-106.3164	9938	**9/1948-12/2008**
CO	LEROY 9 WSW	05-4945			1-day	NCDC	40.4897	-103.0822	4550	1/1893-10/2011
CO	LILY POND	55-0580			1-day	SNOTEL	**37.3793**	**-106.5484**	11000	10/1979-9/2008
CO	LIMON 10 SSW	05-5015			1-day	NCDC	39.1500	-103.7667	5564	4/1907-1/1971
CO	LITTLE HILLS	05-5048			1-day	NCDC	40.0000	-108.2000	6140	7/1946-9/1991
CO	LIZARD HEAD PASS	55-0586			1-day	SNOTEL	**37.7993**	**-107.9243**	10200	4/1914-9/2008
CO	LONE CONE	55-0589			1-day	SNOTEL	**37.8918**	**-108.1954**	9600	10/1979-9/2008
CO	LONGMONT 2 ESE	05-5116			1-day	NCDC	40.1589	-105.0736	4950	1/1893-11/2004
CO	LONGMONT 6 NW	05-5121			1-hour	NCDC	40.2467	-105.1464	5150	8/1948-12/2010

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CO	LONGMONT 6 NW	05-5121			15-min	NCDC	40.2467	-105.1464	5150	5/1971-12/2010
CO	LYNX PASS	55-0607			1-day	SNOTEL	**40.0781**	**-106.6703**	8880	10/1980-9/2008
CO	MANASSA	05-5322			1-day	NCDC	37.1742	-105.9392	7690	1/1893-7/2011
CO	MANCOS	05-5327			1-day	NCDC	37.3350	-108.3161	6934	11/1898-8/2011
CO	MANITOU	54-0017			1-day	NADP	39.1008	-105.0933	7749	8/1948-12/2010
CO	MANITOU SPRINGS	69-0004		69-0004	1-hour	FOUNTAIN CREEK CO	38.8547	-104.9339	6630	5/1947-9/2006
CO	MANITOU SPRINGS	05-5352		69-0004	15-min	NCDC	38.8558	-104.9331	6630	5/1971-12/2010
CO	MAYBELL	05-5446			1-day	NCDC	40.5158	-108.0947	5908	6/1958-10/2011
CO	MC CLURE PASS	55-0618			1-day	SNOTEL	**39.1290**	**-107.2881**	9500	10/1979-9/2008
CO	MEEKER	05-5484			1-day	NCDC	40.0358	-107.9058	6230	1/1893-10/2011
CO	MEEKER	05-5484		05-5484	1-hour	NCDC	40.0358	-107.9058	6230	**8/1948-12/2010**
CO	MEEKER #2	05-5487	05-5484		1-hour	NCDC	40.0333	-107.9167	6347	10/1970-9/1992
CO	MEREDITH	05-5507			1-day	NCDC	39.3619	-106.7422	7825	8/1963-7/2007
CO	MESA LAKES	55-0622			1-day	SNOTEL	**39.0583**	**-108.0583**	10000	10/1986-9/2008
CO	MESA VERDE NP	05-5531			1-day	NCDC	37.1986	-108.4883	7119	2/1922-10/2011
CO	MESA VERDE NP	05-5531		05-5531	1-hour	NCDC	37.1986	-108.4883	7119	8/1924-12/2010
CO	MIDDLE CREEK	55-0624			1-day	SNOTEL	**37.6198**	**-107.0348**	11250	10/1979-9/2008
CO	MINERAL CREEK	55-0629			1-day	SNOTEL	**37.8475**	**-107.7266**	10040	10/1978-9/2008
CO	MOLAS LAKE	55-0632			1-day	SNOTEL	**37.7493**	**-107.6887**	10500	10/1985-9/2008
CO	MONTE VISTA 2W	05-5706			1-day	NCDC	37.5811	-106.1872	7692	5/1893-10/2011
CO	MONTE VISTA 2W	05-5706		05-5706	1-hour	NCDC	37.5811	-106.1872	7692	8/1948-12/2010
CO	MONTE VISTA REFUGE	05-5711		05-5711	1-hour	NCDC	37.4833	-106.1500	7675	5/1965-3/1999
CO	MONTROSE	62-5717	05-5722		1-day	FORTS	38.4758	-107.8764	5811	2/1885-12/1892
CO	MONTROSE #2	05-5722			1-day	NCDC	38.4858	-107.8792	5789	**2/1885-10/2011**
CO	MONUMENT	05-5734	05-6280		1-day	NCDC	39.1025	-104.8675	7080	7/1988-5/2003
CO	MONUMENT 2 WSW	05-5730	05-6280		1-day	NCDC	39.0802	-104.9118	7346	1/1911-9/1964
CO	MONUMENT 2 WSW	05-5730	05-6280		1-hour	NCDC	**39.0802**	**-104.9118**	7346	8/1948-7/1965
CO	MORRISON 1 SW	05-5765		05-5805	1-hour	NCDC	39.6528	-105.2031	5840	**8/1948-12/2010**
CO	MORRISON 1 SW	05-5765		05-5805	15-min	NCDC	39.6528	-105.2031	5840	5/1971-12/2010
CO	MT MORRISON 1 SW	05-5805			1-day	NCDC	39.6573	-105.2226	6004	3/1920-4/2010
CO	MT MORRISON 1 SW	05-5805	05-5765		1-hour	NCDC	**39.6573**	**-105.2226**	6004	8/1948-12/1957

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CO	NEDERLAND 2 NNE	05-5878			1-day	NCDC	39.9833	-105.5000	8240	**12/1962-3/2009**
CO	NEW RAYMER	05-5922			1-day	NCDC	40.6089	-103.8461	4783	8/1948-12/2004
CO	NEW RAYMER	05-5922			1-hour	NCDC	40.6089	-103.8461	4783	8/1948-12/2004
CO	NEW RAYMER	05-5922			15-min	NCDC	40.6089	-103.8461	4783	5/1971-12/2004
CO	NIWOT	55-0663			1-day	SNOTEL	**40.0352**	**-105.5443**	**9910**	10/1980-9/2008
CO	NORTH LAKE	05-5990	55-0857		1-day	NCDC	37.2167	-105.0500	8806	9/1909-10/1980
CO	NORTH LOST TRAIL	55-0669			1-day	SNOTEL	**39.0781**	**-107.1439**	9200	10/1985-9/2008
CO	NORTHDALE	05-5970			1-day	NCDC	37.8139	-109.0108	6680	6/1930-12/2002
CO	NORWOOD	05-6012			1-day	NCDC	38.1317	-108.2864	7020	4/1924-8/2008
CO	NUNN	05-6023			1-hour	NCDC	40.7064	-104.7833	5196	8/1948-12/2010
CO	NUNN	05-6023			15-min	NCDC	40.7064	-104.7833	5196	4/1973-12/2010
CO	ORDWAY 2 ENE	05-6131			1-day	NCDC	38.2222	-103.7219	4315	7/1915-10/2011
CO	ORDWAY 21 N	05-6136			1-day	NCDC	38.5300	-103.7058	4767	**1/1932-10/2011**
CO	ORDWAY 21 N	05-6136			1-hour	NCDC	38.5300	-103.7058	4767	**1/1960-12/2010**
CO	ORDWAY 21 N	05-6136			15-min	NCDC	38.5300	-103.7058	4767	**5/1971-12/2010**
CO	OTIS 11 NE	05-6192	05-9297		1-day	NCDC	40.2667	-102.8333	4180	8/1941-1/1989
CO	OURAY	05-6203			1-day	NCDC	38.0206	-107.6686	7840	6/1893-5/2006
CO	OURAY	05-6203	05-6205		1-hour	NCDC	38.0206	-107.6686	7840	8/1948-8/2006
CO	OURAY	05-6203	05-6205		15-min	NCDC	38.0206	-107.6686	7840	1/1984-8/2006
CO	OURAY #2	05-6205		05-6203	1-hour	NCDC	38.0261	-107.6725	7740	**8/1948-12/2010**
CO	OURAY #2	05-6205		05-6203	15-min	NCDC	38.0261	-107.6725	7740	**1/1984-12/2010**
CO	OVID	72-0011			1-day	NCDWCD CO	40.9676	-102.4378	3510	8/1941-7/2009
CO	OVID	05-6225	72-0011		1-day	NCDC	40.9667	-102.3833	3533	8/1941-11/1959
CO	PAGOSA SPRINGS	05-6258	05-6259		1-day	NCDC	37.2425	-107.0169	7250	12/1906-11/1998
CO	PAGOSA SPRINGS 2W	05-6259			1-day	NCDC	37.2658	-107.0531	7602	**12/1906-10/2010**
CO	PALISADE	05-6266			1-day	NCDC	39.1136	-108.3506	4810	5/1911-7/2011
CO	PALMER LAKE	05-6280			1-day	NCDC	39.1203	-104.9169	7260	**8/1899-7/2011**
CO	PALMER LAKE	05-6280		05-6280	1-hour	NCDC	39.1203	-104.9169	7260	**8/1948-4/1986**
CO	PAOLI	05-6299		05-6299	1-hour	NCDC	40.6167	-102.4667	3904	8/1948-6/1977
CO	PAONIA	05-6307	05-6306		1-day	NCDC	38.8667	-107.5833	5693	5/1930-4/1957
CO	PAONIA 1 SW	05-6306			1-day	NCDC	38.8522	-107.6236	5580	**1/1893-8/2011**
CO	PARADOX 1 E	05-6315	05-6318		1-day	NCDC	38.3667	-108.9500	5282	9/1948-10/1977

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CO	PARADOX 1 W	05-6318			1-day	NCDC	38.3833	-108.9833	5530	**9/1948-9/1995**
CO	PARKER 6 E	05-6326			1-day	NCDC	39.5289	-104.6567	6310	5/1922-12/1997
CO	PARKER 6 E	05-6326		05-6326	1-hour	NCDC	39.5289	-104.6567	6310	8/1948-1/1998
CO	PENROSE 3 NNW	05-6410			1-day	NCDC	38.4500	-105.0667	5413	6/1921-1/1973
CO	PHANTOM VALLEY	55-0688			1-day	SNOTEL	**40.3994**	**-105.8476**	9030	10/1980-9/2008
CO	PITKIN	05-6513			1-day	NCDC	38.5997	-106.5325	9199	6/1909-6/1986
CO	PLEASANT VIEW 1W	05-6591			1-hour	NCDC	37.5875	-108.7842	6860	8/1950-3/2008
CO	PLEASANT VIEW 1W	05-6591			15-min	NCDC	37.5875	-108.7842	6860	11/1975-3/2008
CO	PORPHYRY CREEK	55-0701			1-day	SNOTEL	**38.4888**	**-106.3397**	10760	10/1978-9/2008
CO	PRITCHETT 5 ESE	05-6705	05-7871		1-day	NCDC	37.3167	-102.7167	4393	11/1943-2/1951
CO	PUEBLO CITY RSVR	05-6743	05-6765		1-day	NCDC	38.2833	-104.6500	4692	5/1905-9/1970
CO	PUEBLO MEM AP	05-6740		05-6740	1-hour	NCDC	38.2900	-104.4983	4720	6/1954-12/2010
CO	PUEBLO RSVR	05-6765			1-day	NCDC	38.2597	-104.7169	4855	**5/1905-10/2011**
CO	PYRAMID	05-6797			1-day	NCDC	40.2411	-107.0864	8009	11/1910-6/2005
CO	RANGELY 1 E	05-6832			1-day	NCDC	40.0894	-108.7717	5294	7/1894-10/2011
CO	RED DEER	60-0041		60-0041	1-hour	RAWS	38.8272	-106.2111	8800	1/1985-2/2011
CO	RED FEATHER LAKES 2 SE	05-6925			1-day	NCDC	40.7833	-105.5500	8165	9/1941-6/1990
CO	RED MOUNTAIN PASS	55-0713			1-day	SNOTEL	**37.8918**	**-107.7134**	11200	10/1980-9/2008
CO	RED WING 1 WSW	05-6977	05-7572		1-day	NCDC	37.7167	-105.3167	7900	5/1982-12/1995
CO	RICO	05-7017			1-day	NCDC	37.7055	-108.0319	8800	1/1893-8/2001
CO	RIFLE	05-7031			1-day	NCDC	39.5447	-107.7853	5435	10/1910-11/2007
CO	RIFLE	60-0043		60-0043	1-hour	RAWS	39.5122	-107.7492	6120	3/1986-2/2011
CO	RIFLE	05-7031		05-7031	1-hour	NCDC	39.5447	-107.7853	5435	8/1948-11/2004
CO	RIO GRANDE RSVR	05-7050			1-day	NCDC	37.7256	-107.2678	9688	9/1977-8/2011
CO	ROACH	55-0718			1-day	SNOTEL	**40.8750**	**-106.0460**	9700	10/1980-9/2008
CO	ROCKY FORD 2 SE	05-7167			1-day	NCDC	38.0392	-103.6933	4170	2/1893-7/2011
CO	RUSH 1N	05-7287			1-day	NCDC	38.8611	-104.0939	6054	9/1916-10/2011
CO	RUXTON PARK	05-7309			1-day	NCDC	38.8417	-104.9742	9050	9/1959-10/2011
CO	RYE	05-7315			1-day	NCDC	37.9000	-104.9333	6850	**12/1940-10/2011**
CO	RYE 1 SW	05-7317	05-7315		1-day	NCDC	37.9136	-104.9483	7141	2/1997-8/2010
CO	RYE SCHOOL	05-7320	05-7315	05-7315	1-hour	NCDC	37.9258	-104.9292	6745	7/1985-12/2010
CO	RYE SCHOOL	05-7320		05-7315	15-min	NCDC	37.9258	-104.9292	6745	7/1985-12/2010

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CO	SAGUACHE	05-7337			1-day	NCDC	38.0858	-106.1444	7701	4/1894-3/2009
CO	SAGUACHE	05-7337			1-hour	NCDC	38.0858	-106.1444	7701	8/1948-3/2009
CO	SAGUACHE	05-7337			15-min	NCDC	38.0858	-106.1444	7701	10/1979-3/2009
CO	SALIDA	05-7370			1-day	NCDC	38.5328	-106.0158	7160	**10/1897-12/2010**
CO	SALIDA 3 W	05-7371	05-7370		1-day	NCDC	38.5333	-106.0500	7488	12/1970-5/1984
CO	SAN LUIS 1 S	05-7428	05-7430		1-day	NCDC	37.1953	-105.4242	7943	1/1893-4/1951
CO	SAN LUIS 1 S	05-7430			1-day	NCDC	37.1953	-105.4244	7943	**1/1893-10/2008**
CO	SAN LUIS 1 S	05-7428	05-1520		1-hour	NCDC	37.1953	-105.4242	7943	8/1948-8/2006
CO	SANBORN PARK	60-0045		60-0045	1-hour	RAWS	38.1917	-108.2167	7930	7/1985-2/2011
CO	SARGENTS	05-7460			1-day	NCDC	38.4039	-106.4236	8460	8/1899-7/2011
CO	SEDALIA 4 SSE	05-7510			1-day	NCDC	39.4036	-104.9522	5975	5/1956-8/2011
CO	SEDGWICK	05-7513			1-day	NCDC	40.9383	-102.5253	3584	8/1908-12/2006
CO	SEDGWICK 5 S	05-7515			1-day	NCDC	40.8592	-102.5167	3990	10/1952-10/2011
CO	SEIBERT	05-7519			1-day	NCDC	39.2950	-102.8675	4740	5/1935-7/2011
CO	SEIBERT	05-7519			1-hour	NCDC	39.2950	-102.8675	4740	5/1955-12/2010
CO	SEIBERT	05-7519			15-min	NCDC	39.2950	-102.8675	4740	10/1975-12/2010
CO	SHAW 2 E	05-7557	05-7560		1-hour	NCDC	39.5500	-103.3500	5180	8/1948-12/1996
CO	SHAW 4ENE	05-7560		05-7560	1-hour	NCDC	39.5719	-103.2922	5000	**8/1948-12/2010**
CO	SHEEP MTN	05-7572			1-day	NCDC	37.7150	-105.2353	7754	**6/1939-9/2011**
CO	SHOSHONE	05-7618			1-day	NCDC	39.5699	-107.2265	5930	1/1910-6/2007
CO	SILVER LAKE	05-7648	55-0838		1-day	NCDC	40.0328	-105.5758	10360	6/1910-11/1955
CO	SILVERTON	05-7656			1-day	NCDC	37.8089	-107.6633	9235	3/1899-7/2011
CO	SILVERTON	05-7656		05-7656	1-hour	NCDC	37.8089	-107.6633	9235	8/1948-4/1986
CO	SIMLA	05-7664			1-hour	NCDC	39.1397	-104.0878	5999	8/1948-12/2010
CO	SIMLA	05-7664			15-min	NCDC	39.1397	-104.0878	5999	1/1984-12/2010
CO	SLUMGULLION	55-0762			1-day	SNOTEL	**37.9908**	**-107.2033**	11440	10/1979-9/2008
CO	SOUTH COLONY	55-0773			1-day	SNOTEL	**37.9659**	**-105.5319**	10800	10/1991-9/2012
CO	SPICER	05-7848			1-day	NCDC	40.4725	-106.4475	8385	11/1909-1/2003
CO	SPORTS COMPLEX	73-0320			15-min	ALERT DENVER	39.8017	-105.1178	5420	10/1992-7/2009
CO	SPRINGFIELD	05-7862			1-day	NCDC	37.4000	-102.6167	4411	4/1893-7/1985
CO	SPRINGFIELD 7 WSW	05-7866			1-day	NCDC	37.3694	-102.7428	4622	**11/1943-5/2002**
CO	SPRINGFIELD 7 WSW	05-7866			1-hour	NCDC	37.3694	-102.7428	4622	5/1972-9/2002

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CO	SPRINGFIELD 7 WSW	05-7866			15-min	NCDC	37.3694	-102.7428	4622	5/1976-9/2002
CO	SPRINGFIELD 8 S	05-7867		05-7867	1-hour	NCDC	37.2833	-102.6167	4505	8/1948-5/1972
CO	SPRINGFIELD 8 SW	05-7871	05-7866		1-day	NCDC	37.3167	-102.7167	4393	3/1951-8/1956
CO	STEAMBOAT SPRINGS	05-7936			1-day	NCDC	40.4883	-106.8233	6870	2/1893-10/2011
CO	STERLING	05-7950			1-day	NCDC	40.6286	-103.2083	3933	4/1895-4/2011
CO	STONINGTON	05-7992	61-0104		1-day	NCDC	37.2931	-102.1864	3802	1/1941-7/1999
CO	STRATTON	05-8008			1-day	NCDC	39.3047	-102.6003	4399	6/1934-5/2011
CO	STUMP LAKES	55-0797			1-day	SNOTEL	**37.4762**	**-107.6330**	11200	10/1986-9/2008
CO	SUGARLOAF	54-0023	05-5878		1-day	NADP	39.9939	-105.4800	8281	11/1986-3/2009
CO	SUGARLOAF RSVR	05-8064			1-day	NCDC	39.2494	-106.3714	9738	5/1900-10/2011
CO	SUGARLOAF RSVR	05-8064			1-hour	NCDC	39.2494	-106.3714	9738	10/1950-12/2010
CO	SUGARLOAF RSVR	05-8064			15-min	NCDC	39.2494	-106.3714	9738	8/1971-12/2010
CO	SUMMIT RANCH	55-0802			1-day	SNOTEL	**39.7180**	**-106.1580**	9400	10/1979-9/2008
CO	TACOMA	05-8154			1-day	NCDC	37.5169	-107.7845	7300	1/1908-8/1987
CO	TACONY 13 SE	05-8157			1-day	NCDC	38.3422	-104.0567	4882	10/1955-10/2011
CO	TAYLOR PARK	05-8184			1-day	NCDC	38.8183	-106.6086	9179	10/1940-10/2011
CO	TELLURIDE 4WNW	05-8204			1-day	NCDC	37.9492	-107.8733	8672	12/1900-11/2008
CO	TELLURIDE 4WNW	05-8204			1-hour	NCDC	37.9492	-107.8733	8672	8/1948-11/2008
CO	TELLURIDE 4WNW	05-8204			15-min	NCDC	37.9492	-107.8733	8672	8/1973-11/2008
CO	TERCIO 4 NW	05-8220			1-hour	NCDC	37.0708	-105.0572	8270	8/1948-12/2010
CO	TERCIO 4 NW	05-8220			15-min	NCDC	37.0708	-105.0572	8270	1/1979-12/2010
CO	TIMPAS 13 SW	05-8290			1-day	NCDC	37.6667	-103.9167	4830	**7/1923-9/1993**
CO	TRAPPER LAKE	55-0827			1-day	SNOTEL	**39.9988**	**-107.2362**	9700	10/1985-9/2008
CO	TRINIDAD	05-8429			1-day	NCDC	37.1786	-104.4869	6030	8/1898-7/2011
CO	TRINIDAD	05-8429			1-hour	NCDC	37.1786	-104.4869	6030	**5/1973-12/2010**
CO	TRINIDAD	05-8429			15-min	NCDC	37.1786	-104.4869	6030	5/1973-12/2010
CO	TRINIDAD AP	05-8434			1-day	NCDC	37.2622	-104.3378	5741	1/1948-10/2010
CO	TRINIDAD AP	05-8434	05-4047		1-hour	NCDC	37.2622	-104.3378	5741	8/1948-2/2009
CO	TRINIDAD LAKE	05-8436	05-8429		1-hour	NCDC	37.1503	-104.5567	6310	3/1987-2/2009
CO	TROUT LAKE	05-8454	55-0586		1-day	NCDC	37.8333	-107.8833	9699	4/1914-3/1986
CO	TROY 1 SE	05-8468	05-4546		1-day	NCDC	37.1333	-103.3000	5608	8/1941-9/1987
CO	TWIN LAKES RESERVOIR	05-8501			1-day	NCDC	39.0936	-106.3514	9205	8/1949-10/2011

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CO	TWO BUTTES	05-8510			1-day	NCDC	37.5667	-102.4000	4134	9/1900-3/1972
CO	UNIVERSITY CAMP	55-0838			1-day	SNOTEL	**40.0328**	**-105.5761**	10300	6/1910-9/2008
CO	UPPER RIO GRANDE	55-0839			1-day	SNOTEL	**37.7219**	**-107.2601**	9400	10/1986-9/2008
CO	UPPER SAN JUAN	55-0840			1-day	SNOTEL	**37.4858**	**-106.8353**	10200	8/1939-9/2008
CO	URAVAN	05-8560			1-day	NCDC	38.3761	-108.7422	5010	11/1960-8/2011
CO	VAIL MOUNTAIN	55-0842			1-day	SNOTEL	**39.6168**	**-106.3801**	10300	10/1978-9/2008
CO	VALLECITO DAM	05-8582			1-day	NCDC	37.3842	-107.5822	7654	4/1917-10/2011
CO	VICTOR	05-8649	05-1973		1-day	NCDC	38.7167	-105.1500	9708	2/1904-2/1976
CO	VONA	05-8722			1-day	NCDC	39.3000	-102.7333	4505	7/1941-10/1982
CO	WAGON WHEEL GAP 3 N	05-8742			1-day	NCDC	37.8000	-106.8333	8507	9/1948-3/1972
CO	WAGON WHEEL GAP 3 N	05-8742		05-8742	1-hour	NCDC	37.8000	-106.8333	8507	8/1948-2/1975
CO	WALDEN	05-8756			1-day	NCDC	40.7442	-106.2792	8056	1/1897-10/2011
CO	WALSENBURG 1 NW	05-8781			1-day	NCDC	37.6303	-104.7956	6300	4/1934-10/2011
CO	WALSENBURG 1 NW	05-8781			1-hour	NCDC	37.6303	-104.7956	6300	8/1948-12/2010
CO	WALSENBURG 1 NW	05-8781			15-min	NCDC	37.6303	-104.7956	6300	5/1971-12/2010
CO	WALSH	61-0104			1-day	HPRCC	37.2833	-102.2000	3970	1/1941-7/2009
CO	WALSH 1 W	05-8793			1-day	NCDC	37.3822	-102.2986	3978	12/1940-10/2011
CO	WATER TREATMENT PLANT WEA	74-6270			15-min	ALERT FT COLLINS	40.5950	-105.1553	5216	2/2001-8/2009
CO	WATERDALE	05-8839			1-day	NCDC	40.4256	-105.2103	5230	2/1902-10/2011
CO	WESTCLIFFE	05-8931			1-day	NCDC	38.1311	-105.4661	7860	7/1895-7/2011
CO	WHEAT RIDGE 2	05-8995			1-day	NCDC	39.7636	-105.0731	5466	**6/1908-10/2011**
CO	WHISKEY CK	55-0857			1-day	SNOTEL	**37.2141**	**-105.1224**	10220	9/1909-9/2008
CO	WHITE ROCK	05-8997			1-hour	NCDC	37.8672	-104.1139	4730	8/1948-12/2010
CO	WHITE ROCK	05-8997			15-min	NCDC	37.8672	-104.1139	4730	1/1984-12/2010
CO	WILCOX RCH	05-9045		05-9045	1-hour	NCDC	38.9167	-107.5167	5901	8/1948-8/1983
CO	WILD HORSE 6N	05-9058			1-day	NCDC	38.9025	-103.0189	4720	**12/1940-10/2011**
CO	WILLIAMS FORK DAM	05-9096			1-day	NCDC	40.0375	-106.2039	7618	**12/1941-10/2011**
CO	WILLIAMS FORK DAM	05-9096			1-hour	NCDC	40.0375	-106.2039	7618	**6/1953-12/2010**
CO	WILLIAMS FORK DAM	05-9096			15-min	NCDC	40.0375	-106.2039	7618	6/1982-12/2010
CO	WILLOW CREEK PASS	55-0869			1-day	SNOTEL	**40.3470**	**-106.0943**	9540	10/1978-9/2008
CO	WILLOW PARK	55-0870			1-day	SNOTEL	**40.4325**	**-105.7334**	10700	10/1979-9/2008

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CO	WINDSOR	05-9147			1-day	NCDC	40.4667	-104.9000	4781	7/1941-3/1990
CO	WINTER PARK	05-9175			1-day	NCDC	39.8850	-105.7617	9108	3/1942-10/2011
CO	WOLF CREEK PASS 1 E	05-9181			1-day	NCDC	37.4744	-106.7906	10640	12/1957-11/2001
CO	WOLF CREEK PASS 4 W	05-9183	55-0840		1-day	NCDC	37.4733	-106.8708	9436	8/1939-8/1971
CO	WOODLAND PARK 8 NNW	05-9210		54-0017	1-hour	NCDC	39.1006	-105.0942	7760	8/1948-12/2010
CO	WOODLAND PARK 8 NNW	05-9210		54-0017	15-min	NCDC	39.1006	-105.0942	7760	5/1971-12/2010
CO	WRAY	05-9243			1-day	NCDC	40.0614	-102.2203	3680	4/1893-10/2011
CO	YAMPA	05-9265			1-day	NCDC	40.1561	-106.9092	7890	3/1909-10/2011
CO	YELLOW JACKET 2 W	05-9275			1-day	NCDC	37.5206	-108.7561	6860	5/1962-12/2002
CO	YUMA	05-9295			1-day	NCDC	40.1239	-102.7208	4140	1/1893-10/2011
CO	YUMA 10 NW	05-9297			1-day	NCDC	40.2094	-102.8117	4110	**8/1941-10/2011**
IA	ADAIR	13-0046			1-hour	NCDC	41.5014	-94.6356	1360	**10/1950-12/2010**
IA	ADAIR	13-0046			15-min	NCDC	41.5014	-94.6356	1360	5/1971-12/2010
IA	AFTON	13-0064			1-day	NCDC	41.0333	-94.2000	1201	6/1894-2/1950
IA	AKRON	13-0088			1-day	NCDC	42.8269	-96.5558	1125	**9/1900-10/2011**
IA	ALBIA 3 NNE	13-0112			1-day	NCDC	41.0656	-92.7867	880	3/1894-10/2011
IA	ALGONA 3 W	13-0133			1-day	NCDC	43.0683	-94.3053	1239	1/1893-10/2011
IA	ALLERTON	13-0149			1-day	NCDC	40.7039	-93.3639	1090	**1/1896-10/2011**
IA	ALLISON	13-0157			1-day	NCDC	42.7536	-92.8022	1048	2/1914-10/2011
IA	ALTA	13-0173			1-day	NCDC	42.6667	-95.3000	1512	1/1893-10/1959
IA	ALTON	13-0181			1-day	NCDC	42.9981	-96.0175	1355	5/1905-8/2011
IA	AMES 3 SW	13-0205	13-0203		1-day	NCDC	42.0000	-93.6500	1001	1/1893-8/1964
IA	AMES 5 SE	13-0203			1-day	NCDC	41.9519	-93.5656	870	**1/1893-10/2011**
IA	AMES 8 WSW	13-0200			1-day	NCDC	42.0208	-93.7742	1099	11/1964-10/2011
IA	AMES 8 WSW	13-0200			1-hour	NCDC	42.0208	-93.7742	1099	9/1964-12/2010
IA	AMES 8 WSW	13-0200			15-min	NCDC	42.0208	-93.7742	1099	1/1984-12/2010
IA	ANAMOSA 1 WNW	13-0213			1-day	NCDC	42.1117	-91.2933	805	5/1937-5/2011
IA	ANKENY	13-0241			1-day	NCDC	41.7183	-93.5742	940	5/1950-10/2011
IA	ANKENY	13-0241		13-0241	1-hour	NCDC	41.7183	-93.5742	940	5/1950-4/1978
IA	ATLANTIC 1 NE	13-0364			1-day	NCDC	41.4175	-95.0039	1160	1/1893-10/2011
IA	ATLANTIC 1 NE	13-0364			1-hour	NCDC	41.4175	-95.0039	1160	1/1951-12/2010
IA	ATLANTIC 1 NE	13-0364			15-min	NCDC	41.4175	-95.0039	1160	8/1979-12/2010

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IA	AUDUBON	13-0385			1-day	NCDC	41.7069	-94.9222	1280	1/1893-10/2011
IA	BAXTER	13-0513			1-day	NCDC	41.8167	-93.1333	991	4/1899-12/1939
IA	BEACONSFIELD	13-0536			1-day	NCDC	40.8236	-94.0475	1200	5/1951-10/2011
IA	BEACONSFIELD	13-0536			1-hour	NCDC	40.8236	-94.0475	1200	7/1969-12/2010
IA	BEACONSFIELD	13-0536			15-min	NCDC	40.8236	-94.0475	1200	5/1971-12/2010
IA	BEDFORD	13-0576			1-day	NCDC	40.6719	-94.7181	1170	10/1898-10/2011
IA	BELLE PLAINE	13-0600			1-day	NCDC	41.8814	-92.2764	810	1/1893-10/2011
IA	BELLEVUE L&D 12	13-0608			1-day	NCDC	42.2614	-90.4233	603	5/1937-8/2011
IA	BELLEVUE L&D 12	13-0608			1-hour	NCDC	42.2614	-90.4233	603	8/1948-12/2010
IA	BELLEVUE L&D 12	13-0608			15-min	NCDC	42.2614	-90.4233	603	5/1971-12/2010
IA	BELMOND	13-0612			1-day	NCDC	42.8667	-93.5500	1181	12/1909-1/1946
IA	BLOCKTON 1W	13-0745			1-day	NCDC	40.6189	-94.5050	1120	1/1893-10/2011
IA	BLOOMFIELD 1 WNW	13-0753			1-day	NCDC	40.7597	-92.4394	812	8/1906-10/2011
IA	BONAPARTE 5 NE	13-0793			1-day	NCDC	40.7667	-91.7667	571	1/1893-3/1939
IA	BOONE	13-0807			1-day	NCDC	42.0417	-93.8906	1051	12/1904-10/2011
IA	BOYER 4 SE	13-0853		13-0853	1-hour	NCDC	42.1256	-95.1886	1450	10/1950-12/2010
IA	BRITT	13-0923			1-day	NCDC	43.1017	-93.8014	1240	1/1897-10/2011
IA	BUCKEYE	13-0999			1-day	NCDC	42.4164	-93.3744	1150	7/1973-9/2010
IA	BUCKINGHAM	13-1005			1-day	NCDC	42.2500	-92.4667	916	9/1899-3/1913
IA	BURLINGTON AP	13-1063	13-1060		1-day	NCDC	40.7808	-91.1192	692	7/1897-12/2009
IA	BURLINGTON AP	13-1063	13-1060		1-hour	NCDC	40.7808	-91.1192	692	8/1948-12/1964
IA	BURLINGTON RADIO KBUR	13-1060			1-day	NCDC	40.8167	-91.1667	703	**7/1897-7/2011**
IA	BURLINGTON RADIO KBUR	13-1060		13-1060	1-hour	NCDC	40.8167	-91.1667	703	**8/1948-12/2009**
IA	CARROLL	13-1233			1-day	NCDC	42.0650	-94.8500	1240	1/1893-10/2011
IA	CARSON 3NNE	13-1245			1-hour	NCDC	41.2739	-95.4025	1090	10/1950-12/2010
IA	CARSON 3NNE	13-1245			15-min	NCDC	41.2739	-95.4025	1090	5/1980-12/2010
IA	CASCADE	13-1257			1-day	NCDC	42.2989	-90.9983	870	7/1942-10/2011
IA	CASCADE	13-1257			1-hour	NCDC	42.2989	-90.9983	870	8/1948-12/2010
IA	CASCADE	13-1257			15-min	NCDC	42.2989	-90.9983	870	9/1977-12/2010
IA	CASTANA EXP FARM	13-1277			1-day	NCDC	42.0633	-95.8364	1450	7/1948-10/2011
IA	CEDAR FALLS	13-1300	13-8706		1-day	NCDC	42.5378	-92.4431	763	1/1893-12/1962
IA	CEDAR RAPIDS	62-1324	13-1324		1-day	FORTS	41.9739	-91.6828	730	12/1884-12/1892

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IA	CEDAR RAPIDS 2	13-1324			1-day	NCDC	41.9667	-91.6667	751	**12/1884-6/1966**
IA	CEDAR RAPIDS AP	13-1314			1-day	NCDC	41.8844	-91.7086	840	6/1953-10/2010
IA	CEDAR RAPIDS NO 1	13-1319			1-day	NCDC	42.0500	-91.5881	810	1/1892-10/2011
IA	CENTERVILLE	13-1354			1-day	NCDC	40.7364	-92.8692	980	1/1893-10/2011
IA	CENTERVILLE	13-1354			1-hour	NCDC	40.7364	-92.8692	980	8/1948-12/2010
IA	CENTERVILLE	13-1354			15-min	NCDC	40.7364	-92.8692	980	1/1979-12/2010
IA	CENTRAL CITY	13-1363			1-hour	NCDC	42.2147	-91.5222	870	12/1955-12/2010
IA	CENTRAL CITY	13-1363			15-min	NCDC	42.2147	-91.5222	870	4/1971-12/2010
IA	CHARITON 1 E	13-1394			1-day	NCDC	41.0164	-93.2792	940	2/1895-10/2011
IA	CHARLES CITY	13-1402			1-day	NCDC	43.0775	-92.6714	1014	1/1893-10/2011
IA	CHEROKEE	13-1442			1-day	NCDC	42.7572	-95.5378	1180	11/1921-10/2011
IA	CLARENCE	13-1528			1-day	NCDC	41.8833	-91.0667	840	1/1934-6/1978
IA	CLARINDA	13-1533			1-day	NCDC	40.7244	-95.0192	980	1/1893-10/2011
IA	CLARION	13-1541			1-day	NCDC	42.7200	-93.7336	1156	8/1944-10/2011
IA	CLEAR LAKE	13-1586	13-5235		1-day	NCDC	43.1333	-93.3500	1240	4/1898-4/1913
IA	CLINTON #1	13-1635			1-day	NCDC	41.7947	-90.2639	585	1/1893-10/2011
IA	CLINTON 2	13-1640			1-day	NCDC	41.8333	-90.2167	600	7/1904-10/1985
IA	CLIO 4 NW	13-1651		13-0149	1-hour	NCDC	40.7000	-93.4833	1110	**7/1950-9/1997**
IA	COLO	13-1710			1-day	NCDC	42.0169	-93.3189	1000	10/1964-2/2009
IA	COLUMBIA	13-1724			1-hour	NCDC	41.1756	-93.1522	950	1/1971-12/2010
IA	COLUMBIA	13-1724			15-min	NCDC	41.1756	-93.1522	950	4/1971-12/2010
IA	COLUMBUS JUNCT 1 N	13-1731			1-day	NCDC	41.2864	-91.3611	595	10/1900-9/2008
IA	COON RAPIDS	13-1793			1-hour	NCDC	41.8747	-94.6706	1185	8/1948-12/2010
IA	COON RAPIDS	13-1793			15-min	NCDC	41.8747	-94.6706	1185	5/1971-12/2010
IA	CORNING	13-1833			1-day	NCDC	40.9886	-94.7492	1215	1/1893-9/2011
IA	CORYDON 8 W	13-1848	13-0149		1-day	NCDC	40.7500	-93.4833	1080	2/1903-8/1991
IA	CORYDON 8 W	13-1848	13-1651		1-hour	NCDC	40.7500	-93.4833	1080	7/1950-8/1991
IA	COUNCIL BLUFFS 6 NE	13-1889			1-day	NCDC	41.3167	-95.8167	1079	7/1893-2/1972
IA	COUNCIL BLUFFS 6 NNE	13-1888		13-1889	1-hour	NCDC	41.3333	-95.8167	1211	8/1948-2/1972
IA	CRESCO	62-1954	13-1954		1-day	FORTS	43.3764	-92.1411	1280	10/1871-12/1892
IA	CRESCO 1 NE	13-1954			1-day	NCDC	43.3894	-92.0939	1255	**10/1871-10/2011**
IA	CRESTON 2 SW	13-1962			1-day	NCDC	41.0372	-94.3942	1320	4/1905-10/2011

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IA	CUMBERLAND	13-2007	13-5250		1-day	NCDC	41.2667	-94.8667	1332	3/1899-10/1978
IA	CUSHING	13-2026	13-3909		1-day	NCDC	42.4667	-95.6667	1316	1/1934-11/1950
IA	DAKOTA CITY	13-2037	13-3985		1-day	NCDC	42.7333	-94.2000	1142	9/1939-3/1956
IA	DAKOTA CITY	13-2037	13-3980		1-hour	NCDC	42.7333	-94.2000	1142	8/1948-4/1956
IA	DAVENPORT	13-2068	13-2069		1-day	NCDC	41.5000	-90.6333	579	1/1896-3/1948
IA	DAVENPORT L&D 15	13-2069	11-7391		1-day	NCDC	41.5167	-90.5667	568	5/1937-5/1984
IA	DAVENPORT L&D 15	13-2069	11-7391		1-hour	NCDC	41.5167	-90.5667	568	8/1948-5/1984
IA	DAVENPORT L&D 15	13-2069	11-7391		15-min	NCDC	41.5167	-90.5667	568	7/1972-5/1984
IA	DE SOTO	13-2212	13-8490		1-day	NCDC	41.5500	-94.0000	991	11/1897-11/1910
IA	DE WITT	13-2235			1-day	NCDC	41.8111	-90.5406	685	9/1954-9/2011
IA	DECORAH	13-2110			1-day	NCDC	43.3042	-91.7953	860	**3/1893-10/2011**
IA	DECORAH 2 S	13-2112	13-2110		1-day	NCDC	43.2833	-91.7833	879	1/1896-10/1950
IA	DELAWARE 3 WSW	13-2136	13-5086		1-day	NCDC	42.4667	-91.4167	981	1/1893-12/1975
IA	DENISON	13-2171			1-day	NCDC	42.0364	-95.3289	1401	1/1893-10/2011
IA	DERBY	13-2195			1-hour	NCDC	40.9308	-93.4581	1190	8/1948-8/2005
IA	DERBY	13-2195			15-min	NCDC	40.9308	-93.4581	1190	9/1972-8/2005
IA	DES MOINES AP	13-2203			1-day	NCDC	41.5339	-93.6531	957	5/1937-10/2010
IA	DES MOINES AP	13-2203		13-2203	1-hour	NCDC	41.5339	-93.6531	957	8/1948-12/2010
IA	DES MOINES SE 6TH ST	13-2208			1-day	NCDC	41.5783	-93.6056	815	8/1878-12/1973
IA	DES MOINES SE 6TH ST	13-2208		13-2208	1-hour	NCDC	41.5783	-93.6056	815	8/1948-1/1975
IA	DEXTER	13-2240		13-2240	1-hour	NCDC	41.5078	-94.2269	1132	8/1948-12/2010
IA	DONNELLSON	13-2299			1-day	NCDC	40.6458	-91.5639	705	1/1938-10/2011
IA	DORCHESTER	13-2311			1-day	NCDC	43.4706	-91.5108	758	4/1947-10/2011
IA	DUBUQUE	62-2369	13-2369		1-day	FORTS	42.4983	-90.6656	633	1/1851-12/1892
IA	DUBUQUE L&D 11	13-2364			1-day	NCDC	42.5397	-90.6464	620	5/1937-8/2011
IA	DUBUQUE RIVER	13-2367			1-day	NCDC	**42.4563**	**-90.6199**	**581**	1/1851-12/2011
IA	DUBUQUE RIVER	13-2369			1-day	NCDC	42.4563	-90.6199	581	1/1896-1/1952
IA	DUBUQUE WB CITY	13-2367		13-2367	1-hour	NCDC	**42.5000**	**-90.6667**	1056	2/1951-7/2011
IA	DUMONT	13-2388			1-day	NCDC	42.7544	-92.9764	1025	1/1934-8/2011
IA	EDDYVILLE	13-2541			1-day	NCDC	41.1500	-92.6333	650	3/1939-7/1984
IA	ELDORA	13-2573			1-day	NCDC	42.3619	-93.0989	1144	2/1896-10/2011
IA	ELKADER 6 SSW	13-2603			1-day	NCDC	42.7753	-91.4536	788	2/1893-10/2011

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IA	EMERSON	13-2676		13-2676	1-hour	NCDC	41.0333	-95.4000	**1181**	10/1950-6/1972
IA	EMMETSBURG	13-2689			1-day	NCDC	43.1053	-94.6825	1230	1/1893-10/2011
IA	ESTHERVILLE 2 N	13-2724			1-day	NCDC	43.4300	-94.8219	1302	4/1893-10/2011
IA	EXIRA 7 SE	13-2768	13-0046		1-hour	NCDC	41.5667	-94.7833	1352	10/1950-6/1972
IA	FAIRFIELD	13-2789			1-day	NCDC	41.0211	-91.9553	740	1/1893-10/2011
IA	FAYETTE	13-2864			1-day	NCDC	42.8503	-91.8158	1130	1/1893-10/2011
IA	FOREST CITY 2 NNE	13-2977			1-day	NCDC	43.2844	-93.6306	1300	3/1894-10/2011
IA	FOREST CITY 2 NNE	13-2977		13-2977	1-hour	NCDC	43.2844	-93.6306	1300	8/1948-12/2010
IA	FORT MADISON	62-3007	13-3007		1-day	FORTS	40.6342	-91.3194	558	8/1853-12/1892
IA	FT DODGE	13-2999			1-day	NCDC	42.4953	-94.2075	1115	12/1899-10/2011
IA	FT MADISON	13-3007			1-day	NCDC	40.6239	-91.3325	530	**8/1853-8/2011**
IA	GALVA	13-3108			1-day	NCDC	42.5028	-95.4183	1400	8/1907-8/2010
IA	GILMAN	13-3239			1-day	NCDC	41.8781	-92.7786	1040	4/1899-10/2011
IA	GLENWOOD 3SW	13-3290			1-day	NCDC	41.0097	-95.7736	980	1/1893-8/2008
IA	GREENFIELD	13-3438			1-day	NCDC	41.2981	-94.4561	1340	1/1893-10/2011
IA	GREENFIELD	13-3438			1-hour	NCDC	41.2981	-94.4561	1340	8/1948-12/2010
IA	GREENFIELD	13-3438			15-min	NCDC	41.2981	-94.4561	1340	5/1971-12/2010
IA	GRINNELL 3 SW	13-3473			1-day	NCDC	41.7203	-92.7489	905	1/1893-10/2011
IA	GRINNELL 3 SW	13-3473			1-hour	NCDC	41.7203	-92.7489	905	8/1948-12/2010
IA	GRINNELL 3 SW	13-3473			15-min	NCDC	41.7203	-92.7489	905	5/1971-12/2010
IA	GRUNDY CTR	13-3487			1-day	NCDC	42.3647	-92.7594	1045	1/1893-10/2011
IA	GUTHRIE CTR	13-3509			1-day	NCDC	41.6686	-94.4972	1075	2/1895-10/2011
IA	GUTTENBERG L&D 10	13-3517			1-day	NCDC	42.7858	-91.0958	618	5/1937-10/2011
IA	HAMBURG	13-3562		13-3562	1-hour	NCDC	40.6153	-95.6533	900	8/1948-6/2009
IA	HAMPTON	13-3584			1-day	NCDC	42.7561	-93.2011	1230	1/1893-10/2011
IA	HARLAN 1N	13-3632			1-day	NCDC	41.6789	-95.3219	1300	2/1899-10/2011
IA	HAWARDEN	13-3718			1-day	NCDC	43.0031	-96.4850	1190	8/1926-9/2011
IA	HAWARDEN 6 NNE	13-3720		13-3720	1-hour	NCDC	43.0667	-96.4500	1391	10/1950-6/1972
IA	HINTON 4 W	13-3877		13-3877	1-hour	NCDC	42.6500	-96.5333	**1138**	8/1948-8/1972
IA	HOLSTEIN	13-3909			1-day	NCDC	42.4897	-95.5489	1370	**1/1934-10/2011**
IA	HORNICK 5S	13-3944			1-hour	NCDC	42.1558	-96.0831	1070	8/1948-12/2010
IA	HORNICK 5S	13-3944			15-min	NCDC	42.1558	-96.0831	1070	1/1984-12/2010

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
IA	HUBBARD	13-3960			1-day	NCDC	42.3008	-93.3008	1089	6/1973-8/2011
IA	HUMBOLDT 3 W	13-3985	13-3980		1-day	NCDC	42.7181	-94.2689	1110	5/1893-5/1997
IA	HUMBOLDT 3 W	13-3985	13-2037		1-hour	NCDC	42.7181	-94.2689	1110	4/1956-5/1997
IA	HUMBOLDT 3 W	13-3985	13-3980		15-min	NCDC	42.7181	-94.2689	1110	5/1971-5/1997
IA	HUMBOLDT WTP	13-3980			1-day	NCDC	42.7211	-94.2244	1075	**5/1893-4/2009**
IA	HUMBOLDT WTP	13-3980			1-hour	NCDC	42.7211	-94.2244	1075	**8/1948-5/2009**
IA	HUMBOLDT WTP	13-3980			15-min	NCDC	42.7211	-94.2244	1075	**5/1971-5/2009**
IA	IDA GROVE 5NW	13-4038			1-day	NCDC	42.3942	-95.5150	1320	10/1902-12/2007
IA	IDA GROVE 5NW	13-4038			1-hour	NCDC	42.3942	-95.5150	1320	8/1948-2/2008
IA	IDA GROVE 5NW	13-4038			15-min	NCDC	42.3942	-95.5150	1320	10/1977-2/2008
IA	INDEPENDENCE	62-4049	13-4052		1-day	FORTS	42.4569	-91.9256	967	5/1867-12/1892
IA	INDEPENDENCE	13-4052	13-4049		1-day	NCDC	42.5069	-91.9014	903	1/1893-3/1981
IA	INDEPENDENCE #1	13-4049			1-day	NCDC	42.5269	-91.8781	1010	**5/1867-5/2009**
IA	INDIANOLA 2W	13-4063			1-day	NCDC	41.3656	-93.6481	942	1/1893-10/2011
IA	INWOOD 2 SW	13-4087			1-day	NCDC	43.3000	-96.4667	1460	5/1902-1/1973
IA	IOWA CITY	13-4101			1-day	NCDC	41.6092	-91.5050	640	1/1893-10/2011
IA	IOWA CITY	13-4101			1-hour	NCDC	41.6092	-91.5050	640	**8/1948-12/2010**
IA	IOWA CITY	13-4101			15-min	NCDC	41.6092	-91.5050	640	9/1979-12/2010
IA	IOWA CY RALSTON CK	13-4111	13-4133		1-hour	NCDC	41.6667	-91.5000	**741**	8/1948-12/1974
IA	IOWA CY RALSTON CK	13-4116	13-4101		1-hour	NCDC	41.6833	-91.4667	**791**	8/1948-12/1982
IA	IOWA CY RALSTON CK	13-4131		13-4131	1-hour	NCDC	41.6833	-91.5167	**745**	8/1948-12/1982
IA	IOWA CY RALSTON CK	13-4133		13-4133	1-hour	NCDC	41.6500	-91.5000	712	**8/1948-12/1982**
IA	IOWA FALLS	13-4142			1-day	NCDC	42.5189	-93.2536	1130	1/1893-10/2011
IA	IOWA FALLS	13-4142			1-hour	NCDC	42.5189	-93.2536	1130	8/1948-12/2010
IA	IOWA FALLS	13-4142			15-min	NCDC	42.5189	-93.2536	1130	10/1974-12/2010
IA	IRWIN 3 ESE	13-4174			1-hour	NCDC	41.7750	-95.1525	1310	10/1950-12/2010
IA	IRWIN 3 ESE	13-4174			15-min	NCDC	41.7750	-95.1525	1310	1/1984-12/2010
IA	JEFFERSON	13-4228			1-day	NCDC	42.0347	-94.4114	1055	2/1893-10/2011
IA	JEWELL	13-4244			1-day	NCDC	42.3072	-93.6392	1080	3/1949-10/2011
IA	KANAWHA	13-4308			1-day	NCDC	42.9311	-93.7933	1185	8/1941-10/2011
IA	KEOKUK	62-4372	13-4381		1-day	FORTS	40.3933	-91.3808	575	10/1866-12/1892
IA	KEOKUK LOCK DAM 19	13-4381			1-day	NCDC	40.3969	-91.3767	527	**10/1866-8/2011**

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
IA	KEOKUK LOCK DAM 19	13-4381			1-hour	NCDC	40.3969	-91.3767	527	8/1948-12/2010
IA	KEOKUK LOCK DAM 19	13-4381			15-min	NCDC	40.3969	-91.3767	527	5/1971-12/2010
IA	KEOSAUQUA	13-4389			1-day	NCDC	40.7308	-91.9608	581	1/1893-10/2011
IA	KNOXVILLE	13-4502			1-day	NCDC	41.3336	-93.1117	920	6/1893-10/2011
IA	KNOXVILLE	13-4502		13-4502	1-hour	NCDC	41.3336	-93.1117	920	8/1948-12/2010
IA	LACONA	13-4523			1-day	NCDC	41.1833	-93.3667	820	4/1899-10/1937
IA	LAKE MILLS	13-4557			1-day	NCDC	43.4178	-93.5347	1260	5/1955-10/2011
IA	LAKE PARK	13-4561			1-day	NCDC	43.4483	-95.3247	1465	8/1912-10/2011
IA	LAMONI	13-4585			1-day	NCDC	40.6233	-93.9508	1128	8/1897-10/2011
IA	LAMONI	13-4585		13-4585	1-hour	NCDC	40.6233	-93.9508	1128	**8/1948-12/2010**
IA	LAMONI	13-4587	13-4585		1-hour	NCDC	40.6500	-94.0000	1168	12/1949-1/1962
IA	LANSING	13-4620			1-day	NCDC	43.3633	-91.2161	643	6/1896-1/2003
IA	LARRABEE	13-4644			1-day	NCDC	42.8644	-95.5467	1345	6/1891-10/2000
IA	LARRABEE	13-4644		13-4644	1-hour	NCDC	42.8644	-95.5467	1345	8/1948-10/2000
IA	LE CLAIRE	13-4700	13-4705		1-day	NCDC	41.6000	-90.3500	581	2/1893-6/1955
IA	LE CLAIRE L&D 14	13-4705			1-day	NCDC	41.5697	-90.3956	577	**2/1893-8/2011**
IA	LE MARS	13-4735			1-day	NCDC	42.7817	-96.1458	1195	3/1896-10/2011
IA	LENOX	13-4746			1-day	NCDC	40.8761	-94.5614	1295	5/1895-4/2010
IA	LENOX	13-4746			1-hour	NCDC	40.8761	-94.5614	1295	8/1948-12/2010
IA	LENOX	13-4746			15-min	NCDC	40.8761	-94.5614	1295	5/1971-12/2010
IA	LEON 6 ESE	13-4758			1-day	NCDC	40.7244	-93.6453	1000	4/1902-10/2011
IA	LITTLE ROCK	13-4863	13-7664		1-hour	NCDC	43.4500	-95.8833	1500	10/1950-12/1990
IA	LITTLE SIOUX	13-4867	13-6634		1-day	NCDC	41.8167	-96.0167	1040	8/1904-3/1949
IA	LOGAN	62-4894	13-4894		1-day	FORTS	41.6422	-95.7928	1100	5/1866-12/1892
IA	LOGAN	13-4894			1-day	NCDC	41.6381	-95.7883	990	**5/1866-10/2011**
IA	LORIMOR	13-4926			1-day	NCDC	41.1247	-94.0514	1230	**2/1893-10/2011**
IA	LOWDEN	13-4963			1-day	NCDC	41.8564	-90.9300	715	6/1987-10/2011
IA	LOWDEN	13-4963	13-8303		1-hour	NCDC	41.8564	-90.9300	715	6/1987-2/2009
IA	LOWDEN	13-4963			15-min	NCDC	41.8564	-90.9300	715	6/1987-12/2010
IA	MALVERN 4 W	13-5075			1-hour	NCDC	41.0000	-95.4833	1191	1/1956-6/1969
IA	MANCHESTER #2	13-5086			1-day	NCDC	42.4731	-91.4517	990	**1/1893-10/2011**
IA	MAPLETON NO.2	13-5123			1-day	NCDC	42.1667	-95.7869	1185	11/1937-10/2011

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IA	MAQUOKETA 4 W	13-5131			1-day	NCDC	42.0494	-90.7489	762	5/1896-10/2011
IA	MARSHALLTOWN	13-5198			1-day	NCDC	42.0647	-92.9244	870	1/1893-10/2011
IA	MARSHALLTOWN	13-5198		13-5198	1-hour	NCDC	42.0647	-92.9244	870	8/1948-12/2010
IA	MASON CITY	13-5230			1-day	NCDC	43.1631	-93.1953	1105	5/1893-10/2011
IA	MASON CITY MUNI AP	13-5235			1-day	NCDC	43.1544	-93.3269	1225	**4/1898-10/2010**
IA	MASSENA	13-5250			1-day	NCDC	41.2553	-94.7650	1325	**3/1899-10/2011**
IA	MAXWELL	13-5295			1-hour	NCDC	41.8875	-93.3919	875	1/1971-12/2010
IA	MAXWELL	13-5295			15-min	NCDC	41.8875	-93.3919	875	1/1971-12/2010
IA	MCGREGOR	13-5315			1-hour	NCDC	43.0239	-91.1747	627	**8/1948-12/2010**
IA	MCGREGOR	13-5315			15-min	NCDC	43.0239	-91.1747	627	1/1984-12/2010
IA	MERRILL 4 WSW	13-5418			1-day	NCDC	42.7000	-96.3333	1381	5/1907-12/1977
IA	MILFORD 4 NW	13-5493			1-day	NCDC	43.3828	-95.1842	1402	**7/1893-8/2011**
IA	MINEOLA 4 WNW	13-5549		13-5549	1-hour	NCDC	41.1500	-95.8000	**1043**	10/1950-6/1972
IA	MISSOURI VALLEY 1 NNE	13-5584			1-day	NCDC	41.5742	-95.8822	1230	9/1940-4/2010
IA	MISSOURI VALLEY 1 NNE	13-5584			1-hour	NCDC	41.5742	-95.8822	1230	8/1948-12/2010
IA	MISSOURI VALLEY 1 NNE	13-5584			15-min	NCDC	41.5742	-95.8822	1230	5/1971-12/2010
IA	MONONA	13-5630	13-5315		1-hour	NCDC	43.0500	-91.3667	**1175**	8/1948-10/1951
IA	MONTEZUMA 1 W	13-5650			1-day	NCDC	41.5836	-92.5497	965	7/1896-10/2011
IA	MONTICELLO	62-5664	13-5669		1-day	FORTS	42.2375	-91.2011	909	7/1864-12/1892
IA	MORSE	13-5732		13-5732	1-hour	NCDC	41.7500	-91.4333	751	8/1948-2/1979
IA	MOVILLE	13-5823			1-hour	NCDC	42.4981	-96.0692	1200	8/1948-12/2010
IA	MOVILLE	13-5823			15-min	NCDC	42.4981	-96.0692	1200	5/1971-12/2010
IA	MT AYR	13-5769			1-day	NCDC	40.7053	-94.2428	1180	1/1893-10/2011
IA	MT AYR	13-5769		13-5769	1-hour	NCDC	40.7053	-94.2428	1180	8/1948-12/2010
IA	MT PLEASANT 1 SSW	13-5796			1-day	NCDC	40.9486	-91.5647	730	1/1893-8/2011
IA	MT PLEASANT 1 SSW	13-5796			1-hour	NCDC	40.9486	-91.5647	730	8/1948-12/2010
IA	MT PLEASANT 1 SSW	13-5796			15-min	NCDC	40.9486	-91.5647	730	8/1972-12/2010
IA	MURRAY	13-5834	13-4926		1-day	NCDC	41.0833	-93.9833	1119	2/1893-5/1921
IA	MUSCATINE	62-5837	13-5837		1-day	FORTS	41.4275	-91.0475	585	4/1849-10/1891
IA	MUSCATINE	13-5837			1-day	NCDC	41.4078	-91.0717	549	**4/1849-8/2011**
IA	MUSCATINE 2	13-5842	13-5837		1-day	NCDC	**41.4204**	**-91.0461**	551	7/1895-6/1982
IA	NEW HAMPTON	13-5952			1-day	NCDC	43.0453	-92.3122	1148	4/1897-10/2011

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IA	NEWTON	13-5992			1-day	NCDC	41.7117	-93.0297	960	1/1893-10/2011
IA	NORTH ENGLISH	13-6076		13-6076	1-hour	NCDC	41.5119	-92.0725	797	8/1948-12/2010
IA	NORTHWOOD	13-6103			1-day	NCDC	43.4386	-93.2253	1190	4/1896-10/2011
IA	OAKLAND	13-6151			1-day	NCDC	41.3044	-95.3844	1260	1/1919-10/2011
IA	OASIS 1 NW	13-6186		13-6186	1-hour	NCDC	41.7167	-91.4000	810	8/1948-3/1979
IA	OELWEIN 1E	13-6199			1-day	NCDC	42.6800	-91.8750	1165	**5/1923-10/2011**
IA	OELWEIN 2 S	13-6200	13-6199		1-day	NCDC	42.6467	-91.9131	1010	5/1923-10/2005
IA	OGDEN	13-6205			1-day	NCDC	42.0500	-94.0500	1112	7/1894-9/1959
IA	OGDEN	13-6205	13-6209		1-hour	NCDC	42.0500	-94.0500	1112	1/1953-8/1972
IA	OGDEN	13-6209			1-hour	NCDC	42.0389	-94.0419	1100	**1/1953-12/2010**
IA	OGDEN	13-6209			15-min	NCDC	42.0389	-94.0419	1100	9/1972-12/2010
IA	OGDEN	13-6209			1-day	NCDC	42.0389	-94.0419	1100	9/1907-4/2010
IA	OLIN	13-6225			1-day	NCDC	42.0000	-91.1333	751	3/1898-6/1944
IA	ONAWA 3NW	13-6243			1-day	NCDC	42.0697	-96.1258	1060	2/1899-10/2011
IA	OSAGE	13-6305			1-day	NCDC	43.2794	-92.8106	1170	1/1893-10/2011
IA	OSCEOLA	13-6316			1-day	NCDC	41.0194	-93.7503	1028	6/1894-10/2011
IA	OSKALOOSA	13-6327			1-day	NCDC	41.3214	-92.6467	830	1/1893-10/2011
IA	OTTUMWA	13-6391	13-6389		1-day	NCDC	41.0167	-92.4333	650	4/1917-12/1964
IA	OTTUMWA 1 WSW	13-6386			1-day	NCDC	41.0167	-92.4333	640	1/1894-11/1949
IA	OTTUMWA INDUSTRIAL AP	13-6389			1-day	NCDC	41.1078	-92.4467	842	**4/1917-10/2010**
IA	OTTUMWA INDUSTRIAL AP	13-6389		13-6389	1-hour	NCDC	41.1078	-92.4467	842	8/1948-12/2010
IA	OVID	13-6412	13-0149		1-day	NCDC	40.7333	-93.3333	1100	1/1896-1/1903
IA	PACIFIC JUNCTION	13-6440	13-3290		1-day	NCDC	41.0167	-95.8000	975	3/1899-7/1915
IA	PELLA 1S	13-6527			1-day	NCDC	41.3761	-92.9203	780	5/1898-10/2011
IA	PERRY	13-6566			1-day	NCDC	41.8394	-94.1106	965	10/1900-10/2011
IA	PETERSON	13-6590			1-day	NCDC	42.9183	-95.3369	1230	7/1942-9/2011
IA	PISGAH	13-6634			1-day	NCDC	41.8306	-95.9311	1072	**8/1904-4/1974**
IA	POCAHONTAS	13-6719			1-day	NCDC	42.7292	-94.6614	1212	5/1904-10/2011
IA	POPEJOY 1S	13-6755			1-day	NCDC	42.5864	-93.4364	1175	8/1974-10/2011
IA	POSTVILLE	13-6766			1-day	NCDC	43.0900	-91.5581	1165	4/1893-10/2011
IA	PRIMGHAR	13-6800			1-day	NCDC	43.0864	-95.6292	1520	4/1895-9/2011
IA	RANDOLPH	13-6891			1-day	NCDC	40.8744	-95.5667	980	5/1953-10/2011

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IA	RATHBUN DAM	13-6910			1-day	NCDC	40.8250	-92.8925	965	4/1970-10/2011
IA	RED OAK	13-6940			1-day	NCDC	41.0036	-95.2419	1040	2/1897-10/2011
IA	REMSEN	13-6975			1-hour	NCDC	42.8169	-95.9711	1330	8/1948-12/2010
IA	REMSEN	13-6975			15-min	NCDC	42.8169	-95.9711	1330	6/1982-12/2010
IA	RIDGEWAY	13-7035	13-1954		1-day	NCDC	43.3667	-92.0000	1220	3/1898-10/1912
IA	RINGSTED	13-7058			1-hour	NCDC	43.2947	-94.5117	1220	8/1948-12/2010
IA	RINGSTED	13-7058			15-min	NCDC	43.2947	-94.5117	1220	5/1971-12/2010
IA	RIVERTON	13-7085			1-day	NCDC	40.6833	-95.5667	922	4/1926-2/1960
IA	ROCK RAPIDS	13-7147			1-day	NCDC	43.4300	-96.1686	1350	4/1893-8/2011
IA	ROCK VALLEY	13-7152			1-day	NCDC	43.2044	-96.3061	1246	10/1977-10/2011
IA	ROCKWELL CITY	13-7161			1-day	NCDC	42.3969	-94.6292	1195	1/1894-10/2011
IA	ROCKWELL CITY	13-7161	13-7167		1-hour	NCDC	42.3969	-94.6292	1195	8/1948-6/1968
IA	ROCKWELL CITY #2	13-7167		13-7161	1-hour	NCDC	42.3911	-94.6289	1220	**8/1948-12/2010**
IA	ROCKWELL CITY #2	13-7167		13-7161	15-min	NCDC	42.3911	-94.6289	1220	5/1971-12/2010
IA	SAC CITY	13-7312			1-day	NCDC	42.4242	-94.9917	1200	1/1893-10/2011
IA	SANBORN	13-7386			1-day	NCDC	43.1792	-95.6603	1551	4/1914-10/2011
IA	SHEFFIELD 3 NW	13-7572			1-hour	NCDC	42.9217	-93.2828	1045	8/1948-12/2010
IA	SHEFFIELD 3 NW	13-7572			15-min	NCDC	42.9217	-93.2828	1045	6/1971-12/2010
IA	SHELBY	13-7582			1-hour	NCDC	41.5117	-95.4414	1280	10/1950-12/2010
IA	SHELBY	13-7582			15-min	NCDC	41.5117	-95.4414	1280	1/1984-12/2010
IA	SHELDON	13-7594			1-day	NCDC	43.1808	-95.8528	1420	3/1899-10/2011
IA	SHELL ROCK	13-7602			1-hour	NCDC	42.7117	-92.5847	912	8/1948-12/2010
IA	SHELL ROCK	13-7602			15-min	NCDC	42.7117	-92.5847	912	8/1980-12/2010
IA	SHENANDOAH	13-7613			1-day	NCDC	40.7647	-95.3803	975	6/1918-10/2011
IA	SIBLEY 3 NE	13-7664			1-day	NCDC	43.4403	-95.7225	1598	5/1893-10/2011
IA	SIBLEY 3 NE	13-7664		13-7664	1-hour	NCDC	43.4403	-95.7225	1598	**10/1950-6/2006**
IA	SIDNEY	13-7669			1-day	NCDC	40.7453	-95.6422	1120	4/1895-10/2011
IA	SIGOURNEY	13-7678			1-day	NCDC	41.3328	-92.1975	800	2/1896-8/2011
IA	SIOUX CITY AP	13-7708			1-day	NCDC	42.3914	-96.3792	1095	1/1896-10/2010
IA	SIOUX CITY AP	13-7708		13-7708	1-hour	NCDC	42.3914	-96.3792	1095	8/1948-12/2010
IA	SIOUX CITY PERRY CREEK	13-7713			1-day	NCDC	42.5356	-96.4108	1200	2/1946-11/2004
IA	SIOUX CTR 2 SE	13-7700			1-day	NCDC	43.0558	-96.1525	1360	5/1899-10/2011

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IA	SIOUX CTR 2 SE	13-7700			1-hour	NCDC	43.0558	-96.1525	1360	8/1948-12/2010
IA	SIOUX CTR 2 SE	13-7700			15-min	NCDC	43.0558	-96.1525	1360	5/1971-12/2010
IA	SIOUX RAPIDS 4 E	13-7726			1-day	NCDC	42.8931	-95.0653	1420	6/1941-10/2011
IA	SOLDIER	13-7774		13-7774	1-hour	NCDC	41.9811	-95.7769	1125	8/1948-12/2010
IA	SPENCER	13-7840	13-7844		1-hour	NCDC	43.1333	-95.1333	**1332**	7/1969-11/1994
IA	SPENCER	13-7840	13-7844		15-min	NCDC	43.1333	-95.1333	**1332**	7/1975-11/1994
IA	SPENCER 1 N	13-7844			1-day	NCDC	43.1653	-95.1467	1326	2/1895-9/2011
IA	SPENCER 1 N	13-7844			1-hour	NCDC	43.1653	-95.1467	1326	**9/1948-12/2010**
IA	SPENCER 1 N	13-7844			15-min	NCDC	43.1653	-95.1467	1326	**7/1975-12/2010**
IA	SPILLVILLE	13-7855		13-7855	1-hour	NCDC	43.2053	-91.9536	1080	8/1948-5/2007
IA	SPIRIT LAKE	13-7859	13-5493		1-day	NCDC	43.4231	-95.1394	1420	7/1893-8/2010
IA	ST ANSGAR	13-7326			1-hour	NCDC	43.3817	-92.9233	1139	8/1948-12/2010
IA	ST ANSGAR	13-7326			15-min	NCDC	43.3817	-92.9233	1139	11/1972-12/2010
IA	ST CHARLES	13-7340			1-day	NCDC	41.2878	-93.8064	1060	8/1896-4/2010
IA	ST CHARLES	13-7340			1-hour	NCDC	41.2878	-93.8064	1060	8/1948-12/2010
IA	ST CHARLES	13-7340			15-min	NCDC	41.2878	-93.8064	1060	5/1971-12/2010
IA	STEAMBOAT ROCK	13-7932			1-day	NCDC	42.4069	-93.0697	980	7/1956-8/2011
IA	STOCKPORT	13-7955			1-day	NCDC	40.8333	-91.8333	751	10/1901-2/1948
IA	STORM LAKE 2 E	13-7979			1-day	NCDC	42.6347	-95.1694	1425	1/1893-8/2011
IA	STORY CITY	13-7985			1-hour	NCDC	42.1792	-93.5817	975	1/1971-12/2010
IA	STORY CITY	13-7985			15-min	NCDC	42.1792	-93.5817	975	1/1971-12/2010
IA	STRAWBERRY POINT	13-8009			1-day	NCDC	42.6853	-91.5336	1210	8/1948-10/2011
IA	STRAWBERRY POINT	13-8009		13-8009	1-hour	NCDC	42.6853	-91.5336	1210	8/1948-12/2010
IA	SWEA CITY 4W	13-8026			1-day	NCDC	43.4022	-94.3831	1239	11/1954-10/2011
IA	TABOR 6 NNW	13-8131		13-8131	1-hour	NCDC	40.9667	-95.7167	**1191**	8/1948-9/1972
IA	THURMAN	13-8231			1-day	NCDC	40.8167	-95.7500	971	6/1897-6/1972
IA	THURMAN 4 S	13-8233		13-8231	1-hour	NCDC	40.7667	-95.7500	**938**	10/1950-6/1972
IA	TIPTON	13-8266			1-day	NCDC	41.7797	-91.1269	820	1/1893-6/2010
IA	TITONKA	13-8270			1-day	NCDC	43.2353	-94.0417	1170	12/1949-1/2009
IA	TOLEDO 3N	13-8296			1-day	NCDC	42.0356	-92.5806	949	1/1894-10/2011
IA	TORANTO	13-8303		13-8303	1-hour	NCDC	41.9000	-90.8667	712	**8/1948-4/2010**
IA	TRAER	13-8315			1-day	NCDC	42.1869	-92.4728	950	9/1899-10/2011

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
IA	TRAER	13-8315			1-hour	NCDC	42.1869	-92.4728	950	8/1948-12/2010
IA	TRAER	13-8315			15-min	NCDC	42.1869	-92.4728	950	1/1984-12/2010
IA	TRIPOLI	13-8339			1-day	NCDC	42.8133	-92.2575	960	9/1946-10/2011
IA	VAN METER	13-8490			1-day	NCDC	41.5339	-93.9503	880	**11/1897-3/1966**
IA	VINTON	13-8568			1-day	NCDC	42.1703	-92.0078	850	1/1893-8/2011
IA	WALFORD 2 SE	13-8632			1-day	NCDC	41.8611	-91.8022	790	4/1904-10/2011
IA	WALLIN 1NW	13-8646			1-hour	NCDC	41.0781	-95.0717	1250	8/1948-12/2010
IA	WALLIN 1NW	13-8646			15-min	NCDC	41.0781	-95.0717	1250	5/1971-12/2010
IA	WAPELLO	13-8668			1-day	NCDC	41.1764	-91.1908	590	8/1898-5/2011
IA	WASHINGTON	13-8688			1-day	NCDC	41.2828	-91.7069	690	1/1893-10/2011
IA	WASHINGTON	13-8688			1-hour	NCDC	41.2828	-91.7069	690	8/1948-12/2010
IA	WASHINGTON	13-8688			15-min	NCDC	41.2828	-91.7069	690	4/1978-12/2010
IA	WASHTA	13-8693			1-day	NCDC	42.5750	-95.7153	1160	5/1897-12/1994
IA	WATERLOO	13-8704	13-8706		1-day	NCDC	42.5167	-92.3333	840	1/1895-2/1950
IA	WATERLOO #1	13-8705	13-8704		1-day	NCDC	42.5006	-92.3319	848	10/1997-12/2004
IA	WATERLOO MUNI AP	13-8706			1-day	NCDC	42.5544	-92.4011	868	**1/1893-10/2010**
IA	WATERLOO MUNI AP	13-8706		13-8706	1-hour	NCDC	42.5544	-92.4011	868	5/1956-12/2010
IA	WAUCOMA 3SE	13-8742			1-day	NCDC	43.0239	-91.9786	1015	12/1954-10/2011
IA	WAUKEE	13-8747			1-day	NCDC	41.6167	-93.8833	1030	10/1894-3/1953
IA	WAUKON	13-8755			1-day	NCDC	43.2742	-91.4711	1275	10/1934-10/2011
IA	WEBSTER CITY	13-8806			1-day	NCDC	42.4686	-93.7972	1170	1/1893-10/2011
IA	WEBSTER CITY	13-8806		13-8806	1-hour	NCDC	42.4686	-93.7972	1170	8/1948-12/2010
IA	WHEATLAND	13-8989	13-8303		1-hour	NCDC	41.8333	-90.8333	**735**	8/1948-5/1962
IA	WILLIAMSBURG	13-9067			1-day	NCDC	41.6767	-92.0925	870	1/1893-10/2011
IA	WINTERSET 2NNW	13-9132			1-day	NCDC	41.3606	-94.0269	1070	1/1893-10/2011
IA	WOODBINE	13-9164			1-hour	NCDC	41.7450	-95.7092	1090	8/1948-12/2010
IA	WOODBINE	13-9164			15-min	NCDC	41.7450	-95.7092	1090	5/1971-12/2010
IA	ZEARING	13-9750			1-day	NCDC	42.1669	-93.3097	1116	4/1904-10/2011
KS	ABILENE	14-0010			1-day	NCDC	38.9267	-97.2131	1170	2/1893-10/2011
KS	AETNA 2 S	14-0069			1-day	NCDC	37.0667	-98.9667	1572	3/1938-1/1985
KS	ALEXANDER	14-0135			1-day	NCDC	38.4694	-99.5519	2070	11/1940-8/2011
KS	ALTA VISTA	14-0195			1-day	NCDC	38.8619	-96.4725	1430	9/1948-10/2011

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KS	ALTON 1 W	14-0201	14-0200		1-day	NCDC	39.4767	-98.9714	1685	11/1902-10/2007
KS	ALTON 2SW	14-0200			1-day	NCDC	39.4481	-98.9700	1710	**11/1902-10/2011**
KS	ANTHONY 2 W	14-0264			1-day	NCDC	37.1550	-98.0283	1340	10/1896-8/2010
KS	ARKANSAS CITY	14-0313			1-day	NCDC	37.0631	-97.0400	1118	7/1916-10/2011
KS	ARLINGTON 5 W	14-0326			1-hour	NCDC	37.8967	-98.2711	1620	10/1978-12/2010
KS	ARLINGTON 5 W	14-0326			15-min	NCDC	37.8967	-98.2711	1620	10/1978-12/2010
KS	ASHLAND	14-0365			1-day	NCDC	37.1942	-99.7633	1970	1/1900-10/2011
KS	ATCHISON	14-0405			1-day	NCDC	39.5756	-95.1108	945	1/1893-10/2011
KS	ATLANTA	14-0424			1-day	NCDC	37.4372	-96.7669	1430	10/1953-8/2011
KS	ATTICA 6 WNW	14-0431			1-day	NCDC	37.2667	-98.3167	1440	3/1938-6/1993
KS	ATWOOD	14-0439			1-day	NCDC	39.8086	-101.0778	2857	**5/1908-10/2011**
KS	ATWOOD 8SSE	14-0441			1-day	NCDC	39.6978	-100.9708	2980	5/1964-7/2011
KS	ATWOOD 8SSE	14-0441		14-0441	1-hour	NCDC	39.6978	-100.9708	2980	4/1964-12/2010
KS	AUBURN	14-0443			1-day	NCDC	38.9019	-95.8167	1083	4/1960-10/2011
KS	AUGUSTA	14-0447			1-day	NCDC	37.6983	-96.9706	1230	1/1896-10/2011
KS	AXTELL	14-0471			1-day	NCDC	39.8678	-96.2547	1365	9/1953-10/2011
KS	BALDWIN	14-0496		14-8427	1-hour	NCDC	38.7667	-95.2000	1020	8/1948-2/1982
KS	BARNARD	14-0532			1-day	NCDC	39.1886	-98.0467	1332	9/1948-10/2011
KS	BAZINE 13 SSW	14-0620			1-day	NCDC	38.2661	-99.7514	2184	8/1948-4/2004
KS	BAZINE 13 SSW	14-0620		14-0620	1-hour	NCDC	38.2661	-99.7514	2184	8/1948-4/2004
KS	BEAUMONT	14-0637			1-day	NCDC	37.6556	-96.5353	1590	9/1943-9/2011
KS	BEAUMONT	14-0637			1-hour	NCDC	37.6556	-96.5353	1590	8/1948-12/2010
KS	BEAUMONT	14-0637			15-min	NCDC	37.6556	-96.5353	1590	5/1971-12/2010
KS	BEAVER	14-0645			1-day	NCDC	38.6500	-98.6667	1923	5/1922-2/1984
KS	BEAVER	14-0645		14-0645	1-hour	NCDC	38.6500	-98.6667	1923	8/1948-2/1984
KS	BELLAIRE 8 N	14-0673			1-day	NCDC	39.9167	-98.7000	1980	9/1951-7/1993
KS	BELLEVILLE	14-0682			1-day	NCDC	39.8186	-97.6378	1535	4/1935-10/2011
KS	BELOIT	14-0693			1-day	NCDC	39.4575	-98.1125	1405	3/1893-10/2011
KS	BETHEL 1 NW	14-0782	14-2380		1-day	NCDC	39.1500	-94.7833	869	1/1941-11/1959
KS	BIG BOW 2 S	14-0800			1-day	NCDC	37.5333	-101.5667	3170	**1/1894-10/1991**
KS	BIG BOW 4 WSW	14-0802			1-day	NCDC	37.5514	-101.6344	3230	4/1940-8/2011
KS	BIG BOW 4 WSW	14-0802		14-0802	1-hour	NCDC	37.5514	-101.6344	3230	8/1948-1/2000

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KS	BIRD CITY 10S	14-0836			1-day	NCDC	39.6197	-101.5442	3400	10/1916-8/2011
KS	BISON 3NW	14-0865			1-day	NCDC	38.5636	-99.2350	2040	**1/1893-10/2011**
KS	BLAINE 4E	14-0877			1-day	NCDC	39.5025	-96.3169	1540	**9/1948-12/2004**
KS	BLAKEMAN	14-0883	14-0439		1-day	NCDC	39.8167	-101.1333	2894	5/1908-8/1920
KS	BLUE RAPIDS	14-0911			1-day	NCDC	39.6844	-96.6597	1075	2/1905-10/2011
KS	BONNER SPRINGS	14-0957			1-day	NCDC	39.0636	-94.8958	830	1/1938-10/2011
KS	BREMEN 1 E	14-1003			1-day	NCDC	39.9031	-96.7656	1298	5/1944-10/2011
KS	BREWSTER 4W	14-1029			1-day	NCDC	39.3686	-101.4467	3437	4/1940-10/2011
KS	BROOKVILLE	14-1057			1-day	NCDC	38.7711	-97.8564	1370	11/1889-7/2011
KS	BUCKLIN	14-1104			1-day	NCDC	37.5433	-99.6383	2410	1/1893-8/2011
KS	BURDETT 1 NW	14-1141			1-day	NCDC	38.2006	-99.5344	2104	2/1941-10/2011
KS	BURLINGAME 5 NNW SCS 2	14-1158	14-1162		1-hour	NCDC	38.8167	-95.8667	1201	6/1955-6/1961
KS	BURLINGAME 6 N	14-1162		14-0443	1-hour	NCDC	38.8492	-95.8331	1120	**6/1955-12/1981**
KS	BURLINGTON	14-1164	14-4104		1-day	NCDC	38.1944	-95.7361	984	1/1894-5/1966
KS	BURNS	14-1173			1-day	NCDC	38.0917	-96.8900	1500	10/1975-10/2011
KS	BURR OAK 1N	14-1179			1-day	NCDC	39.8775	-98.3036	1680	11/1900-8/2011
KS	BUSHONG 5 W	14-1202			1-day	NCDC	38.6453	-96.3506	1390	3/1961-8/2011
KS	CALDWELL	14-1233			1-day	NCDC	37.0247	-97.6092	1140	2/1940-10/2011
KS	CALDWELL	14-1233			1-hour	NCDC	37.0247	-97.6092	1140	8/1948-12/2010
KS	CALDWELL	14-1233			15-min	NCDC	37.0247	-97.6092	1140	5/1971-12/2010
KS	CASSODAY	14-1351			1-day	NCDC	38.0528	-96.6378	1460	5/1947-10/2011
KS	CASSODAY	14-1351			1-hour	NCDC	38.0528	-96.6378	1460	8/1948-12/2010
KS	CASSODAY	14-1351			15-min	NCDC	38.0528	-96.6378	1460	5/1971-12/2010
KS	CAWKER CITY	14-1371			1-day	NCDC	39.5147	-98.4353	1470	1/1893-10/2011
KS	CEDAR BLUFF DAM	14-1383			1-day	NCDC	38.7978	-99.7231	2230	8/1949-10/2011
KS	CEDAR VALE 5SSE	14-1395			1-day	NCDC	37.0347	-96.4631	880	4/1955-10/2011
KS	CENTRALIA	14-1408			1-day	NCDC	39.7242	-96.1258	1320	4/1909-4/2011
KS	CHALK	14-1425			1-day	NCDC	38.7675	-96.2567	1480	4/1963-8/2011
KS	CHANUTE FAA AP	14-1427			1-day	NCDC	37.6703	-95.4842	979	1/1894-5/2004
KS	CHAPMAN	14-1435			1-day	NCDC	38.9722	-97.0239	1115	2/1904-10/2011
KS	CIMARRON	14-1522			1-day	NCDC	37.8131	-100.3456	2690	9/1911-10/2011
KS	CIRCLEVILLE 7 SW	14-1529			1-day	NCDC	39.4269	-95.9156	1200	3/1971-8/2011

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KS	CLAFLIN	14-1536			1-day	NCDC	38.5214	-98.5358	1795	1/1930-10/2011
KS	CLAY CTR	14-1559			1-day	NCDC	39.3736	-97.1275	1200	4/1902-10/2011
KS	CLIFTON	14-1593			1-day	NCDC	39.5639	-97.2881	1295	4/1931-10/2011
KS	CLINTON	14-1608	14-1612		15-min	NCDC	38.9167	-95.4000	930	5/1971-3/1989
KS	CLINTON LAKE	14-1612			1-day	NCDC	38.9406	-95.3397	979	8/1977-10/2011
KS	CLINTON LAKE	14-1612			1-hour	NCDC	38.9406	-95.3397	979	5/1971-12/2010
KS	CLINTON LAKE	14-1612			15-min	NCDC	38.9406	-95.3397	979	**5/1971-12/2010**
KS	CLYDE RIVER	14-1635	14-4708		1-day	NCDC	39.5833	-96.4000	1230	5/1918-3/1930
KS	COFFEYVILLE	14-1668			1-day	NCDC	37.0333	-95.6167	741	**5/1894-8/2010**
KS	COFFEYVILLE	14-1668		14-1668	1-hour	NCDC	37.0333	-95.6167	741	8/1948-3/1969
KS	COFFEYVILLE WTR WRKS	14-1673	14-1668		1-day	NCDC	37.0614	-95.6356	700	9/1948-8/2010
KS	COFFEYVILLE WTR WRKS	14-1673	14-1668		1-hour	NCDC	37.0614	-95.6356	700	4/1950-2/1951
KS	COLBY	14-1696	14-1699		1-day	NCDC	39.4000	-101.0500	3143	1/1893-3/1957
KS	COLBY 1SW	14-1699			1-day	NCDC	39.3925	-101.0689	3170	**1/1893-10/2011**
KS	COLBY 1SW	14-1699			1-hour	NCDC	39.3925	-101.0689	3170	1/1950-12/2010
KS	COLBY 1SW	14-1699			15-min	NCDC	39.3925	-101.0689	3170	5/1971-12/2010
KS	COLDWATER	14-1704			1-day	NCDC	37.2706	-99.3272	2083	1/1893-10/2011
KS	COLLYER 10 S	14-1730			1-day	NCDC	38.8972	-100.1136	2407	6/1940-10/2011
KS	COLLYER 10 S	14-1730			1-hour	NCDC	38.8972	-100.1136	2407	8/1949-12/2010
KS	COLLYER 10 S	14-1730			15-min	NCDC	38.8972	-100.1136	2407	1/1984-12/2010
KS	COLUMBUS	14-1740			1-day	NCDC	37.1764	-94.8397	905	12/1892-10/2011
KS	COLUMBUS	14-1740			1-hour	NCDC	37.1764	-94.8397	905	8/1948-12/2010
KS	COLUMBUS	14-1740			15-min	NCDC	37.1764	-94.8397	905	1/1984-12/2010
KS	CONCORDIA 1 W	14-1761	14-1767		1-day	NCDC	39.5589	-97.6694	1469	1/2003-8/2010
KS	CONCORDIA 2 N	14-1765	14-1761		1-day	NCDC	39.5883	-97.6581	1334	4/1930-10/1948
KS	CONCORDIA BLOSSER MUNI	14-1767			1-day	NCDC	39.5514	-97.6508	1469	**4/1930-10/2010**
KS	CONCORDIA BLOSSER MUNI	14-1767		14-1767	1-hour	NCDC	39.5514	-97.6508	1469	**8/1948-12/2010**
KS	CONCORDIA WBO	14-1769	14-1761		1-day	NCDC	39.5667	-97.6667	1394	1/1948-5/1962
KS	CONCORDIA WBO	14-1769	14-1767		1-hour	NCDC	39.5667	-97.6667	1394	8/1948-5/1962
KS	CONWAY SPRINGS	14-1795			1-day	NCDC	37.3842	-97.6431	1370	12/1944-10/2011
KS	COTTONWOOD FALLS	14-1858			1-day	NCDC	38.3689	-96.5442	1210	12/1902-10/2011
KS	COUNCIL GROVE	14-1866	14-1867		1-day	NCDC	38.6667	-96.5000	1312	10/1908-9/1963

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KS	COUNCIL GROVE LAKE	14-1867			1-day	NCDC	38.6753	-96.5258	1320	**10/1908-10/2011**
KS	COUNCIL GROVE LAKE	14-1867			1-hour	NCDC	38.6753	-96.5258	1320	4/1961-9/2004
KS	COUNCIL GROVE LAKE	14-1867			15-min	NCDC	38.6753	-96.5258	1320	11/1979-9/2004
KS	COVERT	14-1875			1-day	NCDC	39.2425	-98.8678	1880	6/1940-8/2011
KS	DAMAR	14-1999			1-day	NCDC	39.3214	-99.5886	2100	9/1953-10/2011
KS	DEERFIELD 10 NNW	14-2040			1-day	NCDC	38.1167	-101.2000	3217	10/1915-12/1975
KS	DENSMORE 2N	14-2086			1-day	NCDC	39.6689	-99.7319	2196	5/1909-10/2011
KS	DEXTER	14-2126			1-day	NCDC	37.1833	-96.7167	1142	5/1940-3/1982
KS	DIAMOND SPRINGS 5 W	14-2135			1-day	NCDC	38.5656	-96.8483	1510	9/1948-10/2011
KS	DIAMOND SPRINGS 5 W	14-2135		14-2135	1-hour	NCDC	38.5656	-96.8483	1510	8/1948-8/1983
KS	DODGE CITY	62-2164	14-2164		1-day	FORTS	37.7531	-100.0186	2498	9/1874-12/1892
KS	DODGE CITY RGNL AP	14-2164			1-day	NCDC	37.7686	-99.9678	2582	**9/1874-8/2010**
KS	DODGE CITY RGNL AP	14-2164		14-2164	1-hour	NCDC	37.7686	-99.9678	2582	8/1948-4/2011
KS	DODGE CITY RIVER	14-2158	14-2164		1-day	NCDC	37.7447	-100.0328	2469	4/1909-4/1945
KS	DRESDEN	14-2213			1-day	NCDC	39.6231	-100.4233	2730	3/1895-10/2011
KS	DUNLAP 2 N	14-2267			1-day	NCDC	38.5867	-96.3908	1170	3/1963-8/2011
KS	E4 : PLEVNA	87-0006			15-min	ARM SOUTHERN GREAT PLAINS	37.9530	-98.3290	1683	1/1993-12/2009
KS	EDWARDSVILLE 3 NNW	14-2380			1-day	NCDC	39.1000	-94.8333	960	**1/1941-9/1987**
KS	EFFINGHAM	14-2388			1-day	NCDC	39.5300	-95.3967	1150	4/1960-10/2011
KS	EL DORADO	14-2401			1-day	NCDC	37.8183	-96.8444	1290	3/1893-10/2011
KS	ELGIN	14-2409			1-day	NCDC	37.0072	-96.2722	800	3/1896-5/2007
KS	ELK	14-2417	14-2470		1-day	NCDC	38.4167	-96.8167	1270	7/1959-3/1974
KS	ELK CITY LAKE	14-2430			1-day	NCDC	37.2775	-95.7769	849	4/1964-2/2011
KS	ELK CITY LAKE	14-2430		14-2430	1-hour	NCDC	37.2775	-95.7769	849	4/1964-5/1996
KS	ELKHART	14-2432			1-day	NCDC	37.0058	-101.8867	3599	1/1900-10/2011
KS	ELKHART	14-2432		14-2432	1-hour	NCDC	37.0058	-101.8867	3599	**8/1948-12/2010**
KS	ELKHART 3 N	14-2437	14-2432		1-hour	NCDC	37.0500	-101.9000	3543	8/1948-6/1967
KS	ELLIS	14-2452			1-day	NCDC	38.9486	-99.5647	2140	8/1894-8/2011
KS	ELLSWORTH	14-2459			1-day	NCDC	38.7278	-98.2267	1530	4/1904-10/2011
KS	ELMDALE	14-2468	14-2472		1-day	NCDC	38.3667	-96.6500	1201	10/1932-6/1959
KS	ELMDALE 3 NE	14-2472			1-day	NCDC	38.4086	-96.6175	1190	**10/1932-8/2011**

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KS	ELMDALE 8 WNW	14-2470			1-day	NCDC	38.4128	-96.7669	1300	**7/1959-12/2009**
KS	ELMO 1 SW	14-2478			1-day	NCDC	38.6833	-97.2333	1310	9/1948-11/2006
KS	EMMETT	14-2519			1-day	NCDC	39.3069	-96.0567	1030	6/1912-2/2005
KS	EMPORIA 1 S	14-2541	14-2543		1-day	NCDC	38.3858	-96.1819	1077	1/1893-9/1961
KS	EMPORIA FAA AP	14-2543			1-day	NCDC	38.3333	-96.2000	1209	**1/1893-6/1980**
KS	EMPORIA FAA AP	14-2543		14-2543	1-hour	NCDC	38.3333	-96.2000	1209	10/1950-9/1973
KS	ENGLEWOOD 1 NW	14-2560			1-day	NCDC	37.0458	-99.9964	1970	12/1890-10/2008
KS	ENGLEWOOD 1 NW	14-2560			1-hour	NCDC	37.0458	-99.9964	1970	8/1948-10/2008
KS	ENGLEWOOD 1 NW	14-2560			15-min	NCDC	37.0458	-99.9964	1970	1/1984-10/2008
KS	ENTERPRISE	14-2574			1-day	NCDC	38.9067	-97.1200	1150	10/1903-10/2011
KS	ESBON 7 N	14-2592			1-day	NCDC	39.9303	-98.4269	1870	9/1951-3/2001
KS	ESKRIDGE	14-2602			1-day	NCDC	38.8592	-96.1058	1414	7/1897-10/2011
KS	EUREKA 1E	14-2622			1-day	NCDC	37.8253	-96.2644	1100	5/1895-10/2011
KS	FACT 3W	14-2652			1-day	NCDC	39.5539	-97.0628	1340	4/1958-10/2011
KS	FALL RIVER LAKE	14-2686			1-day	NCDC	37.6475	-96.0781	1020	11/1896-9/2011
KS	FALL RIVER LAKE	14-2686			1-hour	NCDC	37.6475	-96.0781	1020	11/1948-12/2010
KS	FALL RIVER LAKE	14-2686			15-min	NCDC	37.6475	-96.0781	1020	8/1982-12/2010
KS	FANNING	14-2721	14-8250		1-day	NCDC	39.8333	-95.1667	886	12/1897-7/1901
KS	FLORENCE	14-2773			1-day	NCDC	38.2422	-96.9242	1290	10/1925-4/2009
KS	FORT LEAVENWORTH	62-2830	14-4588		1-day	FORTS	39.3544	-94.9200	890	5/1836-12/1891
KS	FORT SCOTT KS	62-2835	14-2835		1-day	FORTS	37.8433	-94.7047	835	1/1843-4/1892
KS	FOSTORIA 7 NW	14-2848			1-day	NCDC	39.5250	-96.5569	1200	6/1959-10/2011
KS	FOWLER 3 NNE	14-2855			1-day	NCDC	37.4167	-100.1833	2480	1/1946-1/1987
KS	FRANKFORT	14-2872			1-day	NCDC	39.7067	-96.4186	1140	11/1894-9/2011
KS	FRANKFORT	14-2872		14-2872	1-hour	NCDC	39.7067	-96.4186	1140	8/1948-8/1983
KS	FREDONIA	14-2894			1-day	NCDC	37.5222	-95.8250	880	4/1902-10/2011
KS	FT SCOTT	14-2835			1-day	NCDC	37.8428	-94.7086	845	**1/1843-10/2011**
KS	GALATIA 1 NW	14-2938			1-hour	NCDC	38.6511	-98.9719	**1995**	10/1982-12/2010
KS	GALATIA 1 NW	14-2938			15-min	NCDC	38.6511	-98.9719	**1995**	11/1982-12/2010
KS	GARDEN CITY	14-2972	14-2980		1-day	NCDC	37.9667	-100.8667	2836	9/1893-2/1947
KS	GARDEN CITY 9 ESE	14-2975			1-day	NCDC	37.9264	-100.7189	2882	3/1947-6/1999
KS	GARDEN CITY EXP STN	14-2980			1-day	NCDC	37.9931	-100.8122	2868	**9/1893-10/2011**

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KS	GARDEN CITY EXP STN	14-2980			1-hour	NCDC	37.9931	-100.8122	2868	8/1948-12/2010
KS	GARDEN CITY EXP STN	14-2980			15-min	NCDC	37.9931	-100.8122	2868	5/1971-12/2010
KS	GARNETT 1 E	14-3008			1-day	NCDC	38.2800	-95.2178	980	1/1906-10/2011
KS	GENESEO	14-3037			1-day	NCDC	38.5375	-98.1611	1750	3/1939-8/2011
KS	GIRARD	14-3074			1-day	NCDC	37.5081	-94.8392	985	4/1957-10/2011
KS	GLEN ELDER LAKE	14-3100			1-day	NCDC	39.5039	-98.3150	1500	8/1964-8/2011
KS	GOESSEL 2 NW	14-3134			1-day	NCDC	38.2656	-97.3883	1500	8/1968-10/2011
KS	GOODLAND RENNER FLD	14-3153			1-day	NCDC	39.3706	-101.6986	3656	6/1895-8/2010
KS	GOODLAND RENNER FLD	14-3153		14-3153	1-hour	NCDC	39.3706	-101.6986	3656	8/1948-12/2010
KS	GOVE 4W	14-3175			1-day	NCDC	38.9606	-100.5483	2685	1/1893-10/2011
KS	GREAT BEND	14-3218			1-day	NCDC	38.3758	-98.7803	1860	4/1909-10/2011
KS	GREENSBURG	14-3239			1-day	NCDC	37.6019	-99.3000	2240	1/1893-10/2011
KS	GRENOLA 1 N	14-3248			1-day	NCDC	37.3589	-96.4483	1155	1/1893-9/2011
KS	GRENOLA 1 N	14-3248			1-hour	NCDC	37.3589	-96.4483	1155	8/1948-12/2010
KS	GRENOLA 1 N	14-3248			15-min	NCDC	37.3589	-96.4483	1155	5/1971-12/2010
KS	GRIDLEY	14-3257			1-day	NCDC	38.1014	-95.8839	1110	9/1944-10/2011
KS	HADDAM	14-3323			1-day	NCDC	39.8589	-97.2947	1440	8/1922-10/2011
KS	HALSTEAD 3 SW	14-3366			1-hour	NCDC	37.9697	-97.5547	1414	8/1960-12/2010
KS	HALSTEAD 3 SW	14-3366			15-min	NCDC	37.9697	-97.5547	1414	7/1982-12/2010
KS	HANOVER 4 S	14-3398			1-day	NCDC	39.8333	-96.8667	1220	5/1918-9/1992
KS	HARLAN	14-3432			1-day	NCDC	39.6000	-98.7667	1590	6/1940-1/1994
KS	HARRIS 3 ENE	14-3441			1-day	NCDC	38.3306	-95.3783	975	8/1948-1/2003
KS	HARRIS 3 ENE	14-3441		14-3441	1-hour	NCDC	38.3306	-95.3783	975	8/1948-12/1981
KS	HARVEYVILLE	14-3467			1-day	NCDC	38.7833	-95.9667	1180	4/1945-5/2000
KS	HAYS 1 S	14-3527			1-day	NCDC	38.8586	-99.3358	2010	7/1892-10/2011
KS	HAYS 1 S	14-3527			1-hour	NCDC	38.8586	-99.3358	2010	8/1948-12/2010
KS	HAYS 1 S	14-3527			15-min	NCDC	38.8586	-99.3358	2010	4/1972-12/2010
KS	HEALY	14-3554			1-day	NCDC	38.6003	-100.6197	2850	4/1901-10/2011
KS	HEALY	14-3554		14-3554	1-hour	NCDC	38.6003	-100.6197	2850	8/1948-12/2010
KS	HERINGTON	14-3594			1-day	NCDC	38.6653	-96.9494	1350	2/1918-10/2011
KS	HESSTON	61-0304	14-3620		1-day	HPRCC	38.1333	-97.4000	1351	1/1985-7/2009
KS	HESSTON	14-3620			1-day	NCDC	38.1386	-97.4350	1475	**1/1893-10/2011**

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KS	HIAWATHA 9 ESE	14-3634			1-day	NCDC	39.8125	-95.3542	1090	10/1947-10/2011
KS	HIGHLAND	14-3646			1-day	NCDC	39.8500	-95.2667	961	1/1941-3/1980
KS	HILL CITY 1 NE	14-3660	14-3665		1-day	NCDC	39.3756	-99.8297	2188	3/1907-9/2001
KS	HILL CITY 1 NE	14-3660	14-3665		1-hour	NCDC	39.3756	-99.8297	2188	8/1948-11/1984
KS	HILL CITY 1E	14-3665			1-day	NCDC	39.3600	-99.8292	2147	**3/1907-10/2011**
KS	HILL CITY 1E	14-3665		14-3665	1-hour	NCDC	39.3600	-99.8292	2147	**8/1948-12/2010**
KS	HILLSBORO	14-3667			1-day	NCDC	38.3569	-97.2025	1430	1/1945-10/2011
KS	HOLTON	14-3759			1-day	NCDC	39.4578	-95.7550	1085	9/1902-10/2011
KS	HORTON	14-3810			1-day	NCDC	39.6703	-95.5225	1030	2/1891-10/2011
KS	HORTON	14-3810			1-hour	NCDC	39.6703	-95.5225	1030	8/1948-12/2004
KS	HORTON	14-3810			15-min	NCDC	39.6703	-95.5225	1030	5/1971-12/2004
KS	HOWARD 5 NE	14-3822			1-day	NCDC	37.5192	-96.1936	1100	3/1907-10/2011
KS	HOXIE	14-3837			1-day	NCDC	39.3644	-100.4578	2706	10/1897-10/2011
KS	HOYT	14-3842			1-day	NCDC	39.2500	-95.7000	1140	9/1948-2/1998
KS	HUDSON	14-3847			1-day	NCDC	38.1042	-98.6592	1867	4/1922-7/2011
KS	HUGOTON	14-3855			1-day	NCDC	37.1644	-101.3397	3110	5/1904-10/2011
KS	HUNTER	14-3897			1-day	NCDC	39.2333	-98.3933	1625	3/1957-10/2011
KS	HUTCHINSON 10 SW	14-3930			1-day	NCDC	37.9311	-98.0297	1570	5/1953-9/2011
KS	HUTCHINSON 2 E	14-3929			1-day	NCDC	38.0694	-97.8339	1580	**2/1893-10/2011**
KS	HUTCHINSON RIVER	14-3921	14-3929		1-day	NCDC	38.0389	-97.9325	1516	2/1893-3/1949
KS	IMPERIAL	14-3946			1-day	NCDC	38.2833	-100.6500	2812	4/1940-11/1983
KS	INDEPENDENCE	62-3954	14-3954		1-day	FORTS	37.1758	-95.7103	800	5/1876-12/1892
KS	INDEPENDENCE	14-3954			1-day	NCDC	37.2364	-95.7003	805	**5/1876-10/2011**
KS	INMAN	14-3974			1-day	NCDC	38.1869	-97.8417	1525	**4/1909-10/2011**
KS	IOLA	14-3989	14-3984		1-hour	NCDC	37.9167	-95.4000	961	8/1948-1/1959
KS	IOLA 1 W	14-3984			1-day	NCDC	37.9233	-95.4242	954	9/1904-10/2011
KS	IOLA 1 W	14-3984			1-hour	NCDC	37.9233	-95.4242	954	**8/1948-12/2010**
KS	IOLA 1 W	14-3984			15-min	NCDC	37.9233	-95.4242	954	5/1971-12/2010
KS	IONIA	14-3997			1-day	NCDC	39.6611	-98.3483	1580	1/1894-10/2011
KS	IONIA	14-3997			1-hour	NCDC	39.6611	-98.3483	1580	8/1948-12/2010
KS	IONIA	14-3997			15-min	NCDC	39.6611	-98.3483	1580	4/1972-12/2010
KS	JEROME 2 S	14-4073			1-day	NCDC	38.7203	-100.5264	2565	6/1940-3/2002

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KS	JETMORE	14-4081			1-day	NCDC	38.0833	-99.9000	2302	12/1900-5/1985
KS	JEWELL	14-4089			1-day	NCDC	39.6678	-98.1567	1600	4/1905-8/2011
KS	JOHN REDMOND LAKE	14-4104			1-day	NCDC	38.2556	-95.7494	1091	**1/1894-7/2011**
KS	JOHN REDMOND LAKE	14-4104		14-4104	1-hour	NCDC	38.2556	-95.7494	1091	8/1960-12/2004
KS	JOHNSON 11 ESE	14-4109	14-0800		1-day	NCDC	37.5333	-101.5667	3173	1/1894-1/1981
KS	JUNCTION CITY	14-4138	14-5306		1-day	NCDC	39.0500	-96.8333	1040	5/1925-12/1975
KS	JUNCTION CITY	14-4138	14-5306		1-hour	NCDC	39.0500	-96.8333	1040	7/1950-7/1967
KS	KALVESTA 1 W	14-4161			1-day	NCDC	38.0586	-100.2989	2670	9/1963-8/2011
KS	KANOPOLIS LAKE	14-4178			1-day	NCDC	38.6078	-97.9597	1492	3/1941-10/2011
KS	KANOPOLIS LAKE	14-4178			1-hour	NCDC	38.6078	-97.9597	1492	8/1948-12/2010
KS	KANOPOLIS LAKE	14-4178			15-min	NCDC	38.6078	-97.9597	1492	5/1971-12/2010
KS	KEITH SEBELIUS LAKE (NORT	57-0005	14-5852		1-day	USBR	39.8075	-99.9342	2347	10/1966-4/2009
KS	KINGMAN	14-4313			1-day	NCDC	37.6361	-98.1136	1545	12/1907-10/2011
KS	KINSLEY 2E	14-4333			1-day	NCDC	37.9283	-99.3656	2159	11/1935-3/2010
KS	KIOWA	14-4341			1-hour	NCDC	37.0175	-98.4900	1325	8/1948-12/2010
KS	KIOWA	14-4341			15-min	NCDC	37.0175	-98.4900	1325	4/1973-12/2010
KS	KIRWIN DAM	14-4357			1-day	NCDC	39.6619	-99.1228	1697	**6/1949-8/2011**
KS	KIRWIN RESERVOIR AT KIRWI	57-0008	14-4357		1-day	USBR	39.6636	-99.1247	1730	1/1976-4/2009
KS	LA CYGNE	14-4421			1-day	NCDC	38.3261	-94.6956	843	8/1929-9/2011
KS	LACROSSE	14-4401	14-0865		1-day	NCDC	38.5333	-99.3000	2061	1/1893-12/1922
KS	LAKE SCOTT STATE PARK	54-0050			1-day	NADP	38.6717	-100.9164	2831	8/1931-4/2009
KS	LAKIN	14-4464			1-day	NCDC	37.9411	-101.2492	2998	1/1893-10/2011
KS	LARNED	62-4530	14-4530		1-day	FORTS	38.8333	-99.8833	2004	12/1860-10/1891
KS	LARNED	14-4530			1-day	NCDC	38.1817	-99.0994	1995	**12/1860-5/2008**
KS	LAWRENCE	62-4559	14-4559		1-day	FORTS	38.9572	-95.2447	1010	4/1857-7/1882
KS	LAWRENCE	14-4559			1-day	NCDC	38.9581	-95.2511	980	**4/1857-10/2011**
KS	LE ROY	14-4675			1-day	NCDC	38.0967	-95.6392	1010	11/1908-8/2011
KS	LEAVENWORTH	14-4588			1-day	NCDC	39.3256	-94.9189	870	**5/1836-8/2011**
KS	LEBANON	14-4598			1-day	NCDC	39.8125	-98.5558	1874	3/1898-10/2011
KS	LEBO	14-4608			1-day	NCDC	38.4161	-95.8508	1170	1/1893-10/2011
KS	LECOMPTON	14-4613			1-day	NCDC	39.0517	-95.3858	870	5/1936-10/2011
KS	LENORA	14-4642			1-day	NCDC	39.6114	-100.0053	2260	5/1913-10/2011

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
KS	LEOTI	14-4665			1-day	NCDC	38.4667	-101.3572	3312	1/1893-10/2011
KS	LIBERAL	14-4695			1-day	NCDC	37.0222	-100.9294	2834	1/1893-10/2011
KS	LILLIS	14-4708			1-day	NCDC	39.5931	-96.3328	1350	**5/1918-10/2011**
KS	LINCOLN 1 SE	14-4712			1-day	NCDC	39.0294	-98.1300	1390	1/1912-10/2011
KS	LINDSBORG	14-4735			1-day	NCDC	38.5781	-97.6781	1340	2/1905-10/2011
KS	LOGAN	14-4775			1-day	NCDC	39.6658	-99.5772	1940	9/1951-10/2011
KS	LONG ISLAND 1N	14-4807			1-day	NCDC	39.9694	-99.5339	2110	5/1941-7/2011
KS	LONGFORD	14-4802			1-day	NCDC	39.1542	-97.3353	1335	**9/1948-10/2011**
KS	LONGTON	14-4812			1-day	NCDC	37.3833	-96.0814	940	5/1951-10/2011
KS	LORETTA	14-4821			1-day	NCDC	38.6539	-99.1797	2000	6/1940-10/2011
KS	LOVEWELL DAM	14-4857			1-day	NCDC	39.9000	-98.0256	1602	9/1955-12/2010
KS	LUCERNE 2 SE	14-4877	14-7904		1-day	NCDC	39.4667	-100.1833	2503	9/1951-9/1969
KS	LYNDON	14-4910	14-4912		1-day	NCDC	38.6167	-95.6833	1010	9/1948-4/1967
KS	LYNDON 3 ENE	14-4912			1-day	NCDC	38.6228	-95.6322	1040	**9/1948-6/2003**
KS	LYONS 3 S	14-4920			1-day	NCDC	38.3056	-98.1889	1628	12/1895-11/1976
KS	MACKSVILLE 8 NNE	14-4932			1-day	NCDC	38.0667	-98.9167	1991	4/1893-3/1977
KS	MADISON	14-4937			1-day	NCDC	38.1353	-96.1400	1170	2/1900-10/2011
KS	MANCHESTER	14-4969	14-4802		1-day	NCDC	39.1000	-97.3167	1302	9/1948-4/1958
KS	MANHATTAN	14-4972			1-day	NCDC	39.1972	-96.5814	1065	1/1893-10/2011
KS	MANHATTAN AGRONOMY FM	14-4977	14-8259		1-day	NCDC	39.2000	-96.6000	1112	9/1948-2/1970
KS	MANHATTAN AGRONOMY FM	14-4977	14-8259		1-hour	NCDC	39.2000	-96.6000	1112	9/1948-2/1970
KS	MANKATO	14-4982			1-day	NCDC	39.7889	-98.2039	1755	1/1893-10/2011
KS	MARION	14-5037	14-5039		1-day	NCDC	38.3500	-97.0000	1352	9/1948-3/1968
KS	MARION RSVR	14-5039			1-day	NCDC	38.3778	-97.0753	1369	**9/1948-10/2011**
KS	MARION RSVR	14-5039			1-hour	NCDC	38.3778	-97.0753	1369	5/1966-12/2010
KS	MARION RSVR	14-5039			15-min	NCDC	38.3778	-97.0753	1369	5/1971-12/2010
KS	MARYSVILLE	14-5063			1-day	NCDC	39.8383	-96.6364	1180	4/1941-10/2011
KS	MARYSVILLE	14-5063			1-hour	NCDC	39.8383	-96.6364	1180	8/1948-1/2003
KS	MARYSVILLE	14-5063			15-min	NCDC	39.8383	-96.6364	1180	5/1971-1/2003
KS	MATFIELD GREEN 2 N	14-5069			1-day	NCDC	38.1847	-96.5692	1300	5/1952-10/2011
KS	MC CUNE 6 SW	14-5123			1-day	NCDC	37.3000	-95.1000	830	7/1953-4/1992
KS	MC DONALD	14-5127			1-day	NCDC	39.7844	-101.3686	3364	10/1954-7/2011

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
KS	MC FARLAND	14-5132			1-day	NCDC	39.0542	-96.2364	1030	3/1918-10/2011
KS	MCCRACKEN	14-5115			1-day	NCDC	38.5872	-99.5731	2150	10/1911-10/2011
KS	MCPHERSON	14-5152			1-day	NCDC	38.3758	-97.6431	1495	1/1893-10/2011
KS	MEADE	14-5171			1-day	NCDC	37.2850	-100.3450	2477	3/1895-8/2011
KS	MEDICINE LODGE	14-5173	14-5175		1-day	NCDC	37.2767	-98.5800	1470	1/1893-12/1998
KS	MEDICINE LODGE 1E	14-5175			1-day	NCDC	37.2839	-98.5528	1535	**1/1893-10/2010**
KS	MEDORA	14-5180	14-3974		1-day	NCDC	38.1500	-97.8500	1484	4/1909-10/1942
KS	MELVERN 3 WNW	14-5206	14-5210		1-day	NCDC	38.5167	-95.6833	1001	1/1962-6/1972
KS	MELVERN LAKE	14-5210			1-day	NCDC	38.5039	-95.7033	1093	**1/1962-10/2011**
KS	MELVERN LAKE	14-5210		14-5210	1-hour	NCDC	38.5039	-95.7033	1093	4/1973-12/2010
KS	MERRIAM	14-5245			1-day	NCDC	39.0167	-94.6667	1040	1/1950-2/1965
KS	MILFORD LAKE	14-5306			1-day	NCDC	39.0747	-96.8981	1210	**5/1925-10/2011**
KS	MILFORD LAKE	14-5306			1-hour	NCDC	39.0747	-96.8981	1210	**7/1950-12/2010**
KS	MILFORD LAKE	14-5306			15-min	NCDC	39.0747	-96.8981	1210	5/1971-12/2010
KS	MILLER 4 SSW	14-5321			1-day	NCDC	38.5814	-96.0189	1073	8/1948-10/2011
KS	MILTONVALE	14-5335			1-day	NCDC	39.3506	-97.4547	1375	9/1948-10/2011
KS	MINGO 6E	14-5355			1-day	NCDC	39.2700	-100.8300	3025	4/1941-10/2011
KS	MINNEAPOLIS	14-5363			1-day	NCDC	39.1244	-97.7044	1310	1/1892-10/2011
KS	MINNEOLA	14-5371			1-day	NCDC	37.4500	-100.0167	2552	6/1912-10/1974
KS	MORAN	14-5463			1-day	NCDC	37.9158	-95.1681	1100	11/1895-9/2009
KS	MORLAND 2N	14-5483			1-day	NCDC	39.3769	-100.0719	2394	1/1893-8/2011
KS	MORLAND 2N	14-5483		14-5483	1-hour	NCDC	39.3769	-100.0719	2394	8/1948-12/2010
KS	MORSE	14-5508	14-7756		1-hour	NCDC	38.8333	-94.7167	1040	8/1948-2/1982
KS	MOUND CITY	14-5528			1-day	NCDC	38.1433	-94.8233	840	10/1949-3/2008
KS	MOUND VALLEY 3 WSW	14-5536			1-day	NCDC	37.1872	-95.4508	800	11/1951-10/2011
KS	MOUND VALLEY 3 WSW	14-5536			1-hour	NCDC	37.1872	-95.4508	800	10/1957-12/2010
KS	MOUND VALLEY 3 WSW	14-5536			15-min	NCDC	37.1872	-95.4508	800	1/1984-12/2010
KS	MT HOPE	14-5539			1-day	NCDC	37.8658	-97.6647	1440	3/1893-10/2011
KS	NATOMA	14-5628			1-day	NCDC	39.1850	-99.0250	1830	11/1909-10/2011
KS	NEOSHO RAPIDS	14-5680			1-day	NCDC	38.3706	-95.9892	1085	4/1905-8/2011
KS	NESS CITY	14-5692			1-day	NCDC	38.4478	-99.9100	2250	4/1893-10/2011
KS	NEWTON	14-5744			1-day	NCDC	38.0344	-97.3431	1440	4/1897-10/2011

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
KS	NILES	14-5768			1-day	NCDC	38.9667	-97.4667	1200	2/1943-10/1998
KS	NORCATUR 3WSW	14-5787			1-day	NCDC	39.8133	-100.2411	2540	9/1948-8/2011
KS	NORCATUR 3WSW	14-5787			1-hour	NCDC	39.8133	-100.2411	2540	8/1948-12/2010
KS	NORCATUR 3WSW	14-5787			15-min	NCDC	39.8133	-100.2411	2540	4/1978-12/2010
KS	NORTON	14-5854	14-5852		1-day	NCDC	39.8333	-99.9000	2303	10/1950-11/1964
KS	NORTON 9SSE	14-5856			1-day	NCDC	39.7408	-99.8356	2360	4/1893-8/2011
KS	NORTON DAM	14-5852			1-day	NCDC	39.8114	-99.9386	2340	**10/1950-8/2010**
KS	NORTON DAM	14-5852		14-5852	1-hour	NCDC	39.8114	-99.9386	2340	4/1963-12/2010
KS	NORWICH	14-5870			1-day	NCDC	37.4550	-97.8486	1500	7/1895-10/2011
KS	OAKLEY 4W	14-5888			1-day	NCDC	39.1128	-100.9453	3100	1/1892-10/2011
KS	OAKLEY 4W	14-5888			1-hour	NCDC	39.1128	-100.9453	3100	8/1949-12/2010
KS	OAKLEY 4W	14-5888			15-min	NCDC	39.1128	-100.9453	3100	9/1978-12/2010
KS	OBERLIN	14-5906			1-day	NCDC	39.8200	-100.5336	2610	1/1893-10/2011
KS	OFFERLE 5 S	14-5920			1-day	NCDC	37.8167	-99.5611	2250	7/1973-10/2011
KS	OLATHE 3 E	14-5972			1-day	NCDC	38.8875	-94.7603	1055	5/1893-9/2009
KS	ONAGA	14-6014			1-day	NCDC	39.4931	-96.1758	1120	12/1954-10/2011
KS	ONAGA 12 SSW	14-6024			1-hour	NCDC	39.3275	-96.2225	1050	5/1966-9/2002
KS	ONAGA 12 SSW	14-6024			15-min	NCDC	39.3275	-96.2225	1050	5/1971-9/2002
KS	OSAGE CITY 4 NW	14-6076			1-day	NCDC	38.6667	-95.8667	1170	5/1896-10/2011
KS	OSAWATOMIE	14-6084			1-day	NCDC	38.5019	-94.9597	860	7/1944-10/2011
KS	OSBORNE	14-6085	14-6088		1-day	NCDC	39.4333	-98.7000	1549	6/1897-11/1905
KS	OSBORNE	14-6088			1-day	NCDC	39.4286	-98.6944	1610	**6/1897-2/1995**
KS	OSKALOOSA	14-6098	14-6100		1-day	NCDC	39.2153	-95.3128	1119	12/1912-11/1917
KS	OSKALOOSA 4 NE	14-6100			1-day	NCDC	39.2419	-95.2725	918	**12/1912-1/2011**
KS	OSWEGO 1 N	14-6115			1-day	NCDC	37.1750	-95.1039	835	1/1893-9/2011
KS	OTTAWA	14-6128			1-day	NCDC	38.6131	-95.2808	900	5/1895-10/2011
KS	OTTAWA	14-6128		14-6128	1-hour	NCDC	38.6131	-95.2808	900	8/1948-12/2004
KS	OTTAWA WTP	14-6140	14-6128		1-hour	NCDC	38.6167	-95.2833	902	12/1964-5/1973
KS	OVERBROOK 7 SE	14-6154			1-day	NCDC	38.7317	-95.4428	1074	3/1928-10/2011
KS	OVERBROOK 9 E	14-6159	14-9040		1-day	NCDC	38.7833	-95.4000	1102	4/1922-5/1950
KS	OXFORD	14-6169			1-day	NCDC	37.2778	-97.1631	1155	2/1943-7/2011
KS	PALCO	14-6192			1-day	NCDC	39.2542	-99.5625	2280	9/1948-10/2011

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
KS	PAOLA	14-6209			1-day	NCDC	38.5911	-94.8778	860	8/1895-8/2009
KS	PARALLEL	14-6217			1-day	NCDC	39.5533	-96.8750	1265	8/1959-10/2011
KS	PARSONS 2 NW	14-6242			1-day	NCDC	37.3678	-95.2892	910	1/1925-10/2011
KS	PECK 2 S	14-6305			1-day	NCDC	37.4347	-97.3922	1227	4/1943-10/2011
KS	PERRY LAKE	14-6333			1-day	NCDC	39.1167	-95.4167	960	6/1967-10/2011
KS	PERRY LAKE	14-6333		14-6333	1-hour	NCDC	39.1167	-95.4167	960	2/1970-12/2010
KS	PHILLIPSBURG #2	14-6378			1-day	NCDC	39.7433	-99.3158	1889	**1/1893-7/2010**
KS	PHILLIPSBURG 1 SSE	14-6374	14-6378		1-day	NCDC	39.7394	-99.3186	1907	1/1893-2/1996
KS	PHILLIPSBURG 1 SSE	14-6374		14-6378	1-hour	NCDC	39.7394	-99.3186	1907	8/1948-12/2010
KS	PHILLIPSBURG 1 SSE	14-6374		14-6378	15-min	NCDC	39.7394	-99.3186	1907	10/1972-12/2010
KS	PITTSBURG	14-6414			1-day	NCDC	37.3578	-94.6389	930	9/1948-10/2011
KS	PLAINS	14-6427			1-day	NCDC	37.2667	-100.6000	2762	5/1910-10/1974
KS	PLAINVILLE 4WNW	14-6435			1-day	NCDC	39.2450	-99.3808	2083	3/1893-10/2011
KS	PLEASANTON	14-6455			1-day	NCDC	38.1833	-94.7000	869	2/1903-9/1959
KS	PLEVNA	14-6469		14-6469	1-hour	NCDC	37.9667	-98.3000	1690	8/1948-12/2009
KS	POMONA LAKE	14-6498			1-day	NCDC	38.6456	-95.5656	1063	**9/1948-10/2011**
KS	POMONA LAKE	14-6498		14-6498	1-hour	NCDC	38.6456	-95.5656	1063	7/1963-12/2010
KS	POTWIN 3N	14-6524			1-day	NCDC	37.9856	-97.0347	1340	10/1953-10/2011
KS	PRATT	14-6549			1-day	NCDC	37.6456	-98.7281	1875	11/1895-10/2011
KS	PRESTON 7 NW	14-6563			1-day	NCDC	37.8000	-98.6667	1880	5/1940-7/1978
KS	QUENEMO 2	14-6618	14-6498		1-day	NCDC	38.5833	-95.5333	942	9/1948-10/1970
KS	QUINTER	14-6637			1-day	NCDC	39.0597	-100.2367	2678	3/1893-10/2011
KS	RANDOLPH	14-6677			1-day	NCDC	39.4500	-96.7333	1070	5/1918-11/1959
KS	RANDOLPH 4 WNW	14-6679			1-day	NCDC	39.4564	-96.8333	1170	**6/1959-8/2011**
KS	RANSOM 2NE	14-6685			1-day	NCDC	38.6533	-99.9003	2490	3/1946-10/2011
KS	READING	14-6719	14-6725		1-day	NCDC	38.5167	-95.9667	1102	9/1948-2/1971
KS	READING	14-6719	14-6725		1-hour	NCDC	38.5167	-95.9667	1102	8/1948-6/1971
KS	READING 2 N	14-6725			1-day	NCDC	38.5500	-95.9500	1050	**9/1948-10/1998**
KS	READING 2 N	14-6725		14-6725	1-hour	NCDC	38.5500	-95.9500	1050	**8/1948-7/1983**
KS	REXFORD 1SW	14-6787			1-day	NCDC	39.4578	-100.7575	2950	10/1951-10/2011
KS	RICHFIELD 1 NE	14-6808			1-day	NCDC	37.2811	-101.7719	3410	1/1893-10/2011
KS	RICHFIELD 10 WSW	14-6813			1-day	NCDC	37.2294	-101.9511	3530	1/1941-8/2011

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
KS	ROSALIA	14-6979			1-day	NCDC	37.8142	-96.6197	1525	10/1953-10/2011
KS	ROSSVILLE	14-7007			1-day	NCDC	39.1333	-95.9486	920	**5/1929-10/2011**
KS	RUSSELL 1 E	14-7046			1-day	NCDC	38.8761	-98.8092	1858	9/1949-5/2011
KS	RUSSELL SPRINGS	14-7049	14-7050		1-day	NCDC	38.9117	-101.1711	2910	5/1910-3/2000
KS	RUSSELL SPRINGS 3N	14-7050			1-day	NCDC	38.9606	-101.1667	3065	**5/1910-10/2011**
KS	SABETHA LAKE	14-7073			1-day	NCDC	39.9000	-95.9000	1250	2/1953-9/1983
KS	SABETHA LAKE	14-7073		14-7073	1-hour	NCDC	39.9000	-95.9000	1250	2/1953-11/1984
KS	SAINT FRANCIS	14-7093			1-day	NCDC	39.7675	-101.8097	3362	5/1908-8/2011
KS	SAINT PETER 4ENE	14-7140			1-day	NCDC	39.2044	-100.0272	2500	9/1953-8/2011
KS	SALINA MUNI AP	14-7160			1-day	NCDC	38.7972	-97.6517	1261	1/1952-5/2004
KS	SALINA MUNI AP	14-7160	14-7551		1-hour	NCDC	38.7972	-97.6517	1261	12/1951-4/2004
KS	SALINA MUNI AP	14-7160	14-7551		15-min	NCDC	38.7972	-97.6517	1261	5/1976-11/2001
KS	SCANDIA	14-7248			1-day	NCDC	39.7989	-97.7736	1436	7/1940-10/2011
KS	SCANDIA	61-0311		14-7248	1-hour	HPRCC	39.7833	-97.7833	1480	3/1985-7/2009
KS	SCOTT CITY	14-7271			1-day	NCDC	38.4819	-100.9189	2970	7/1895-10/2011
KS	SCOTT CITY 13 N	14-7273	54-0050		1-day	NCDC	38.6667	-100.9167	2851	8/1931-2/1972
KS	SEDAN	14-7305			1-day	NCDC	37.1317	-96.1861	900	1/1893-10/2011
KS	SEDGWICK	14-7313			1-day	NCDC	37.9150	-97.4381	1375	11/1916-4/2006
KS	SHARON SPRINGS	14-7397			1-day	NCDC	38.8964	-101.7500	3450	3/1893-10/2011
KS	SHAWNEE 2 S	14-7420		14-7420	1-hour	NCDC	38.9933	-94.7147	1060	1/1971-9/2001
KS	SHAWNEE 2 S	14-7420			1-day	NCDC	38.9933	-94.7147	1060	1/1950-9/2001
KS	SMITH CTR	14-7542			1-day	NCDC	39.7772	-98.7783	1780	1/1910-10/2011
KS	SMOLAN 1NE	14-7551			1-hour	NCDC	38.7431	-97.6678	1280	**12/1951-12/2010**
KS	SMOLAN 1NE	14-7551			15-min	NCDC	38.7431	-97.6678	1280	**5/1976-12/2010**
KS	ST FRANCIS 8NW	14-7095			1-day	NCDC	39.8303	-101.9189	3612	5/1935-9/2011
KS	ST JOHN	61-0313			1-day	HPRCC	37.9333	-98.7667	1850	1/1985-7/2009
KS	ST JOHN	61-0313		61-0313	1-hour	HPRCC	37.9333	-98.7667	1850	3/1985-7/2009
KS	STANLEY 1S	14-7756		14-7809	1-hour	NCDC	38.7747	-94.6669	1030	**8/1948-12/2010**
KS	STERLING	14-7796			1-day	NCDC	38.2144	-98.2078	1636	1/1893-10/2011
KS	STILWELL	14-7809			1-day	NCDC	38.7694	-94.6683	1100	9/1939-3/2010
KS	STOCKTON 1 E	14-7832			1-day	NCDC	39.4453	-99.2453	1771	7/1936-8/2001
KS	STUDLEY 9NNW	14-7904			1-day	NCDC	39.4767	-100.2200	2510	**9/1951-10/2011**

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KS	SUBLETTE 7WSW	14-7922			1-day	NCDC	37.4414	-100.9792	2949	9/1918-10/2011
KS	SUBLETTE 7WSW	14-7922			1-hour	NCDC	37.4414	-100.9792	2949	2/1958-12/2010
KS	SUBLETTE 7WSW	14-7922			15-min	NCDC	37.4414	-100.9792	2949	8/1971-12/2010
KS	SUN CITY	14-7965			1-day	NCDC	37.3797	-98.9192	1689	7/1943-8/2011
KS	SUN CITY	14-7965		14-7965	1-hour	NCDC	37.3797	-98.9192	1689	8/1948-5/1997
KS	SYRACUSE	14-8038			1-day	NCDC	37.9831	-101.7511	3245	1/1893-10/2011
KS	TESCOTT	14-8086			1-day	NCDC	39.0106	-97.8794	1300	9/1948-10/2011
KS	THRALL 4S	14-8114			1-day	NCDC	37.9394	-96.3067	1420	5/1951-10/2011
KS	TONGANOXIE 3 W	14-8157			1-day	NCDC	39.1167	-95.1500	830	1/1932-3/2011
KS	TONGANOXIE 5 SE	14-8156			1-day	NCDC	39.0314	-95.0522	830	4/1949-8/2011
KS	TOPEKA	14-8163	14-8167		1-day	NCDC	39.0667	-95.6500	852	2/1893-12/1944
KS	TOPEKA BILLARD MUNI AP	14-8167			1-day	NCDC	39.0689	-95.6389	881	**2/1893-10/2010**
KS	TOPEKA BILLARD MUNI AP	14-8167		14-8167	1-hour	NCDC	39.0689	-95.6389	881	9/1948-12/2010
KS	TORONTO	14-8186	14-8191		1-day	NCDC	37.8000	-95.9500	942	9/1948-11/1962
KS	TORONTO	14-8186	14-8191		1-hour	NCDC	37.8000	-95.9500	942	8/1948-11/1962
KS	TORONTO LAKE	14-8191			1-day	NCDC	37.7417	-95.9333	950	**9/1948-2/2011**
KS	TORONTO LAKE	14-8191		14-8191	1-hour	NCDC	37.7417	-95.9333	950	**8/1948-6/1997**
KS	TRIBUNE	61-0314	14-8235		1-hour	HPRCC	38.4667	-101.7667	3612	3/1985-7/2009
KS	TRIBUNE 1W	14-8235			1-day	NCDC	38.4661	-101.7758	3636	1/1893-10/2011
KS	TRIBUNE 1W	14-8235			1-hour	NCDC	38.4661	-101.7758	3636	**8/1948-12/2010**
KS	TRIBUNE 1W	14-8235			15-min	NCDC	38.4661	-101.7758	3636	9/1971-12/2010
KS	TROUSDALE 1 NE	14-8245			1-day	NCDC	37.8236	-99.0781	2050	8/1916-10/2011
KS	TROY 2	14-8252	14-8250		1-hour	NCDC	39.7833	-95.1000	1140	1/1971-3/1988
KS	TROY 2	14-8252	14-8250		15-min	NCDC	39.7833	-95.1000	1140	5/1971-3/1988
KS	TROY 3N	14-8250			1-day	NCDC	39.8283	-95.0881	1040	**12/1897-8/2011**
KS	TROY 3N	14-8250			1-hour	NCDC	39.8283	-95.0881	1040	**1/1971-12/2010**
KS	TROY 3N	14-8250			15-min	NCDC	39.8283	-95.0881	1040	**5/1971-12/2010**
KS	TUTTLE CREEK LAKE	14-8259			1-day	NCDC	39.2475	-96.5992	1057	**6/1959-10/2011**
KS	TUTTLE CREEK LAKE	14-8259		14-8259	1-hour	NCDC	39.2475	-96.5992	1057	**9/1948-12/2004**
KS	ULYSSES 3NE	14-8287			1-day	NCDC	37.5983	-101.2908	3060	1/1893-10/2011
KS	UTICA	14-8323			1-day	NCDC	38.6397	-100.1675	2620	1/1916-10/2011
KS	VALLEY FALLS 3 SW	14-8341			1-day	NCDC	39.3033	-95.4861	982	1/1950-10/2011

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KS	VALLEY FALLS 3 SW	14-8341			1-hour	NCDC	39.3033	-95.4861	982	4/1966-3/2000
KS	VALLEY FALLS 3 SW	14-8341			15-min	NCDC	39.3033	-95.4861	982	5/1971-3/2000
KS	VINLAND	14-8427			1-day	NCDC	38.8333	-95.1833	880	5/1909-2/1982
KS	VIRGIL	14-8436			1-day	NCDC	37.9831	-96.0086	1060	5/1952-10/2011
KS	WAKEENEY	14-8495			1-day	NCDC	39.0297	-99.8831	2460	**7/1892-10/2011**
KS	WAKEENEY 16N	14-8498			1-day	NCDC	39.2300	-99.8800	2370	9/1953-10/2011
KS	WAKEENEY NEAR	14-8496	14-8495		1-day	NCDC	39.0250	-99.8794	2448	9/1899-12/1907
KS	WAKEFIELD 4 W	14-8503			1-day	NCDC	39.2303	-97.0894	1240	1/1893-10/2011
KS	WALLACE	14-8535			1-day	NCDC	38.9011	-101.5831	3260	6/1874-10/2011
KS	WALLACE	14-8535			1-hour	NCDC	38.9011	-101.5831	3260	8/1948-12/2010
KS	WALLACE	14-8535			15-min	NCDC	38.9011	-101.5831	3260	6/1974-12/2010
KS	WALNUT 4S	14-8549			1-day	NCDC	37.5578	-95.0600	905	12/1902-10/2011
KS	WAMEGO 4 W	14-8563			1-day	NCDC	39.2142	-96.3703	1100	1/1893-10/2011
KS	WASHINGTON	14-8578			1-day	NCDC	39.8219	-97.0572	1304	4/1893-10/2011
KS	WAVERLY	14-8608			1-day	NCDC	38.4000	-95.6000	1120	9/1948-5/1993
KS	WEBSTER DAM	14-8648			1-day	NCDC	39.4031	-99.4192	1863	9/1953-8/2011
KS	WELLINGTON	14-8670			1-day	NCDC	37.2778	-97.4097	1230	4/1894-10/2011
KS	WESTMORELAND	14-8719			1-day	NCDC	39.3997	-96.4103	1168	8/1894-1/2011
KS	WHEATON	14-8769	14-0877		1-day	NCDC	39.5000	-96.3167	1490	9/1948-11/1954
KS	WHITE CITY	14-8802			1-day	NCDC	38.7967	-96.7286	1462	3/1961-10/2011
KS	WICHITA	62-8828	14-8828		1-day	FORTS	37.6878	-97.3367	1300	1/1873-12/1892
KS	WICHITA	14-8828	14-8830		1-day	NCDC	37.6833	-97.3500	1270	10/1897-11/1953
KS	WICHITA MID-CONTINENT	14-8830			1-day	NCDC	37.6553	-97.4431	1321	**1/1873-8/2010**
KS	WICHITA MID-CONTINENT	14-8830		14-8830	1-hour	NCDC	37.6553	-97.4431	1321	12/1953-12/2010
KS	WILLARD	14-8886	14-7007		1-day	NCDC	39.0833	-95.9333	922	5/1929-8/1957
KS	WILLIAMSBURG	14-8892			1-day	NCDC	38.4772	-95.4706	1140	10/1970-7/2011
KS	WILSON 8 NW	14-8941	14-8946		1-day	NCDC	38.9500	-98.5167	1552	2/1950-5/1963
KS	WILSON LAKE	14-8946			1-day	NCDC	38.9667	-98.4889	1512	**2/1950-10/2011**
KS	WILSON LAKE	14-8946			1-hour	NCDC	38.9667	-98.4889	1512	9/1964-12/2010
KS	WILSON LAKE	14-8946			15-min	NCDC	38.9667	-98.4889	1512	9/1983-12/2010
KS	WINFIELD 4 E	14-8964			1-day	NCDC	37.2453	-96.8969	1280	3/1894-10/2011
KS	WINKLER	14-8970	14-6679		1-day	NCDC	39.4667	-96.8333	1070	6/1959-3/1989

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
KS	WINONA	14-8988			1-day	NCDC	39.0636	-101.2472	3323	3/1893-7/2011
KS	WOODLAWN 2 W	14-9026			1-day	NCDC	39.7831	-95.9017	1220	10/1966-11/2009
KS	WORDEN	14-9040			1-day	NCDC	38.8000	-95.3667	1100	**4/1922-7/1992**
KS	YATES CTR	14-9080			1-day	NCDC	37.8728	-95.7247	1080	1/1893-8/2011
KS	ZOOK 9 E	14-9121	14-4932		1-day	NCDC	38.0500	-98.9333	1952	2/1941-8/1971
MI	ADA	20-0015	20-3333		1-day	NCDC	42.9500	-85.5000	638	1/1927-12/1939
MI	ADRIAN 2 NNE	20-0032			1-day	NCDC	41.9164	-84.0158	760	7/1887-10/2011
MI	ALBERTA FORD FOR CTR	20-0089			1-day	NCDC	46.6447	-88.4811	1310	10/1956-10/2011
MI	ALBION	20-0094			1-day	NCDC	42.2486	-84.7736	940	2/1888-8/2011
MI	ALCONA DAM	20-0098			1-day	NCDC	44.5667	-83.8000	730	8/1926-7/2004
MI	ALLEGAN 5NE	20-0128			1-day	NCDC	42.5800	-85.7892	750	10/1888-5/2007
MI	ALLEGAN 5NE	20-0128		20-0128	1-hour	NCDC	42.5800	-85.7892	750	7/1948-10/2007
MI	ALMA	20-0146			1-day	NCDC	43.3864	-84.6492	735	6/1887-10/2011
MI	ALMONT	20-0159	20-6982		1-day	NCDC	42.9167	-83.0333	824	5/1978-8/1990
MI	ALPENA CO RGNL AP	20-0164			1-day	NCDC	45.0717	-83.5644	684	10/1916-10/2010
MI	ALPENA CO RGNL AP	20-0164		20-0164	1-hour	NCDC	45.0717	-83.5644	684	1/1961-12/2010
MI	ALPENA WWTP	20-0169			1-day	NCDC	45.0606	-83.4281	590	10/1872-8/2010
MI	ANN ARBOR U OF MICH	20-0230			1-day	NCDC	42.2947	-83.7108	900	1/1880-10/2011
MI	ANN ARBOR U OF MICH	20-0230			1-hour	NCDC	42.2947	-83.7108	900	7/1948-12/2010
MI	ANN ARBOR U OF MICH	20-0230			15-min	NCDC	42.2947	-83.7108	900	10/1974-12/2010
MI	ARMADA	76-0017			1-hour	SEMCOG	42.8369	-82.8844	735	1/1988-6/2005
MI	ATLANTA 1SW	20-0342			1-day	NCDC	44.9933	-84.1625	895	**1/1927-10/2011**
MI	ATLANTA 5 WNW	20-0343	20-0342		1-day	NCDC	45.0283	-84.2331	1180	1/1927-11/2004
MI	BAD AXE	20-0417			1-day	NCDC	43.8081	-82.9939	715	11/1887-10/2011
MI	BALDWIN	20-0446			1-day	NCDC	43.9006	-85.8506	835	8/1896-10/2011
MI	BARAGA	20-0485			1-day	NCDC	46.7833	-88.4833	640	**1/1896-3/1987**
MI	BARAGA 1 N	20-0489	20-0485		1-day	NCDC	46.7833	-88.4833	801	1/1896-11/1980
MI	BARAGA 1 N	20-0489		20-0485	1-hour	NCDC	46.7833	-88.4833	801	7/1948-6/1987
MI	BATTLE CREEK 5NW	20-0552			1-day	NCDC	42.3667	-85.2667	930	1/1895-8/2010
MI	BAY CITY	20-0568	20-2631		1-day	NCDC	43.6167	-83.8667	591	6/1887-10/1978
MI	BEAVERTON	20-0631		20-0632	1-hour	NCDC	43.8833	-84.4833	722	7/1948-7/1975
MI	BEAVERTON 1ESE	20-0632			1-day	NCDC	43.8797	-84.4742	683	7/1948-11/1999

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MI	BEECHWOOD 7 WNW	20-0647			1-day	NCDC	46.1833	-88.8833	1660	7/1949-10/1990
MI	BELLAIRE	20-0662			1-hour	NCDC	44.9758	-85.1981	625	7/1948-12/2010
MI	BELLAIRE	20-0662			15-min	NCDC	44.9758	-85.1981	625	5/1971-12/2010
MI	BENTON HARBOR AP	20-0710			1-day	NCDC	42.1292	-86.4222	628	6/1887-8/2010
MI	BERGLAND DAM	20-0718			1-day	NCDC	46.5869	-89.5475	1300	11/1888-10/2011
MI	BERRIEN SPRINGS 5 W	20-0735			1-day	NCDC	41.9647	-86.4369	750	4/1892-8/1997
MI	BERRIEN SPRINGS 5 W	20-0735		20-0735	1-hour	NCDC	41.9647	-86.4369	750	7/1948-8/1997
MI	BIG BAY 8 NW	20-0766			1-hour	NCDC	46.8864	-87.8639	612	**9/1949-12/2010**
MI	BIG BAY 8 NW	20-0766			15-min	NCDC	46.8864	-87.8639	612	5/1972-12/2010
MI	BIG RAPIDS WTR WKS	20-0779			1-day	NCDC	43.7072	-85.4822	930	4/1896-10/2011
MI	BIRMINGHAM RETENTION TRE	65-0836			15-min	MI_OAKLAND	42.5419	-83.2277	-999	12/1997-12/2012
MI	BLOOMINGDALE	20-0864			1-day	NCDC	42.3842	-85.9625	725	4/1904-10/2011
MI	BOYNE FALLS	20-0925			1-day	NCDC	45.1672	-84.9139	728	5/1961-8/2011
MI	BRUCE CROSSING	20-1088		20-1088	1-hour	NCDC	46.5436	-89.1839	1135	**7/1948-12/2010**
MI	BRUCE CROSSING	20-1088			1-day	NCDC	46.5436	-89.1839	1135	10/1890-4/2010
MI	CADILLAC	20-1176			1-day	NCDC	44.2656	-85.3967	1295	1/1909-8/2010
MI	CAMP OAKLAND	65-0827			15-min	MI_OAKLAND	42.8106	-83.2342	-999	12/1995-12/2012
MI	CARO WWTP	20-1299			1-day	NCDC	43.4839	-83.3919	690	1/1928-10/2011
MI	CASNOVIA 2 NW	20-1352	20-4320		1-hour	NCDC	43.2500	-85.8167	850	7/1948-2/1986
MI	CASNOVIA 2 NW	20-1352	20-4320		15-min	NCDC	43.2500	-85.8167	850	9/1971-2/1986
MI	CASS CITY 1 SSW	20-1361			1-day	NCDC	43.5861	-83.1806	698	5/1959-8/2011
MI	CHAMPION VAN RIPER PK	20-1439			1-day	NCDC	46.5192	-87.9858	1599	12/1949-4/2010
MI	CHARLEVOIX	20-1468			1-day	NCDC	45.3172	-85.2672	593	12/1891-10/2011
MI	CHARLOTTE	20-1476			1-day	NCDC	42.5503	-84.8258	902	2/1902-10/2011
MI	CHATHAM EXP FA	20-1484	20-1486		1-day	NCDC	46.3500	-86.9333	880	8/1900-6/1988
MI	CHATHAM EXP FA	20-1484	20-1486		1-hour	NCDC	46.3500	-86.9333	880	11/1973-3/1989
MI	CHATHAM EXP FARM 2	20-1486			1-day	NCDC	46.3414	-86.9242	870	**3/1905-10/2011**
MI	CHATHAM EXP FARM 2	20-1486		20-1486	1-hour	NCDC	46.3414	-86.9242	870	**11/1973-12/2010**
MI	CHEBOYGAN	20-1492			1-day	NCDC	45.6528	-84.4725	588	7/1890-10/2011
MI	CHEBOYGAN	20-1492		20-1492	1-hour	NCDC	45.6528	-84.4725	588	**7/1948-9/2000**
MI	CHEBOYGAN PWR PLT	20-1497	20-1492		1-hour	NCDC	45.6500	-84.4833	610	7/1948-9/1976
MI	CHELSEA	20-1502			1-day	NCDC	42.3264	-84.0133	900	5/1978-10/2011

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MI	COLDWATER ST SCHOOL	20-1675			1-day	NCDC	41.9622	-84.9925	984	3/1897-8/2011
MI	COLDWTR WASTEWTR PLT	20-1680		20-1675	1-hour	NCDC	41.9397	-85.0183	950	7/1940-12/2010
MI	COLOMA 3 NNW	20-1704		20-1704	1-hour	NCDC	42.2333	-86.3167	700	7/1948-9/1999
MI	COPPER HBR FT WILKINS	20-1780			1-day	NCDC	47.4675	-87.8669	625	7/1948-10/2011
MI	COPPER HBR FT WILKINS	20-1780		20-1780	1-hour	NCDC	47.4675	-87.8669	625	7/1948-12/2010
MI	CROSS VILLAGE 1E	20-1896			1-day	NCDC	45.6414	-85.0142	721	9/1953-8/2011
MI	CRYSTAL FALLS 6 NE	20-1922			1-day	NCDC	46.1667	-88.2333	1360	2/1893-12/1989
MI	CRYSTAL FALLS 6 NE	20-1922		20-1922	1-hour	NCDC	46.1667	-88.2333	1360	7/1948-7/1990
MI	DE TOUR	20-2089	20-2094		1-hour	NCDC	45.9833	-83.9167	591	7/1948-8/1952
MI	DEARBORN	20-2015			1-day	NCDC	42.3167	-83.2314	605	8/1952-10/2011
MI	DEER PARK SF	20-2028			1-day	NCDC	46.6167	-85.6167	669	6/1900-4/1954
MI	DETOUR VILLAGE	20-2094			1-day	NCDC	45.9983	-83.9014	595	8/1900-10/2011
MI	DETOUR VILLAGE	20-2094		20-2094	1-hour	NCDC	45.9983	-83.9014	595	**7/1948-12/2010**
MI	DETROIT	62-2102	20-2102		1-day	FORTS	42.3306	-83.0472	600	1/1840-12/1892
MI	DETROIT	76-0078		20-2102	1-hour	SEMCOG	42.4444	-83.0117	627	7/1948-6/2005
MI	DETROIT CITY AP	20-2102			1-day	NCDC	42.4072	-83.0083	625	**1/1840-12/2005**
MI	DETROIT CITY AP	20-2102	76-0078		1-hour	NCDC	42.4072	-83.0083	625	7/1948-11/2000
MI	DETROIT METRO AP	20-2103			1-day	NCDC	42.2314	-83.3308	631	**3/1897-10/2010**
MI	DETROIT METRO AP	20-2103		20-2103	1-hour	NCDC	42.2314	-83.3308	631	10/1959-12/2010
MI	DETROIT WBAS WILLOW	20-2104	20-9218		1-day	NCDC	42.2333	-83.5333	777	3/1950-12/1968
MI	DETROIT WBAS WILLOW	20-2104	76-0004		1-hour	NCDC	42.2333	-83.5333	777	3/1950-9/1968
MI	DOWAGIAC 1 W	20-2250			1-day	NCDC	41.9844	-86.1317	740	**6/1939-7/2011**
MI	DOWAGIAC 2 E	20-2248	20-2250		1-day	NCDC	41.9833	-86.0833	760	6/1939-5/1953
MI	DUNBAR FOREST EXP STN	20-2298			1-day	NCDC	46.3167	-84.2333	600	1/1942-8/1990
MI	EAGLE HARBOR	20-2332			1-day	NCDC	47.4595	-88.1600	613	5/1899-6/1972
MI	EAST JORDAN	20-2381			1-day	NCDC	45.1519	-85.1322	585	6/1926-8/2011
MI	EAST LANSING 1	20-2392	20-2393		1-day	NCDC	42.7333	-84.4667	853	4/1863-4/1910
MI	EAST LANSING 4 S	20-2395			1-day	NCDC	42.6742	-84.4850	880	**4/1863-3/2010**
MI	EAST LANSING 4 S	20-2395			1-hour	NCDC	42.6742	-84.4850	880	4/1957-12/2010
MI	EAST LANSING 4 S	20-2395			15-min	NCDC	42.6742	-84.4850	880	**1/1984-12/2010**
MI	EAST LANSING EXP FARM	20-2393	20-2395		1-day	NCDC	42.7000	-84.4667	889	5/1910-10/1960
MI	EAST LANSING MSUHORT	79-0001	20-2395		15-min	MAWN	42.6734	-84.4870	866	1/1996-9/2009

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MI	EAST TAWAS	20-2423			1-day	NCDC	44.2839	-83.5036	586	4/1890-10/2011
MI	EASTPOINTE	20-2427			1-day	NCDC	42.4589	-82.9439	600	1/1988-10/2011
MI	EATON RAPIDS	20-2437			1-day	NCDC	42.5175	-84.6528	870	2/1905-10/2011
MI	EAU CLAIRE 4 NE	20-2445			1-day	NCDC	42.0136	-86.2419	870	5/1924-8/2011
MI	ELBERTA	20-2497			1-day	NCDC	44.6167	-86.2167	598	**8/1898-8/2010**
MI	ESCANABA	62-2626	20-2626		1-day	FORTS	45.7458	-87.0542	597	11/1871-2/1888
MI	ESCANABA	20-2626			1-day	NCDC	45.7181	-87.0953	595	**11/1871-6/2009**
MI	ESCANABA	20-2626		20-2626	1-hour	NCDC	45.7181	-87.0953	595	8/1948-12/2010
MI	ESSEXVILLE	20-2631			1-day	NCDC	43.6156	-83.8450	588	**6/1887-3/2010**
MI	EVART	20-2671			1-day	NCDC	43.9167	-85.2667	1025	9/1891-2/1994
MI	EWEN 5 E	20-2674			1-day	NCDC	46.5333	-89.1833	1142	10/1890-7/1955
MI	EWEN 5 E	20-2674	20-1088		1-hour	NCDC	46.5333	-89.1833	1142	7/1948-4/1978
MI	FARMINGTON	76-0059		76-0059	1-hour	SEMCOG	42.4556	-83.3756	719	1/1988-12/2012
MI	FAYETTE 4 SW	20-2737			1-day	NCDC	45.6667	-86.7167	745	12/1920-10/1996
MI	FIFE LAKE 3WSW	20-2788		20-2784	1-hour	NCDC	44.5650	-85.4133	1112	**7/1948-8/2006**
MI	FIFE LAKE 4 SW	20-2784			1-day	NCDC	44.5500	-85.4167	1079	2/1919-12/1983
MI	FIFE LAKE 4 SW	20-2784	20-2788		1-hour	NCDC	44.5500	-85.4167	1079	7/1948-1/1985
MI	FLINT 7 W	20-2851			1-day	NCDC	43.0378	-83.7694	679	5/1948-10/2011
MI	FLINT BISHOP INTL AP	20-2846			1-day	NCDC	42.9667	-83.7494	770	1/1893-5/2012
MI	FLINT BISHOP INTL AP	20-2846		20-2846	1-hour	NCDC	42.9667	-83.7494	770	7/1948-5/2012
MI	FORT BRADY	62-0210	20-7366		1-day	FORTS	46.5008	-84.3431	593	7/1836-2/1892
MI	FORT MACKINAC	62-4997	20-4997		1-day	FORTS	45.8519	-84.6183	728	7/1836-3/1892
MI	FRANKFORT 2NE	20-2984	20-2497		1-day	NCDC	44.6481	-86.2100	948	8/1898-8/2010
MI	GAYLORD	20-3096			1-day	NCDC	45.0303	-84.6781	1353	1/1893-10/2011
MI	GLADWIN	20-3170			1-day	NCDC	43.9758	-84.4908	775	12/1892-8/2010
MI	GLADWIN	20-3170			1-hour	NCDC	43.9758	-84.4908	775	7/1948-12/2010
MI	GLADWIN	20-3170			15-min	NCDC	43.9758	-84.4908	775	7/1975-12/2010
MI	GLENNIE ALCONA DAM	20-3199		20-0098	1-hour	NCDC	44.5617	-83.8031	805	7/1948-7/2004
MI	GRAND HAVEN FIRE DEPT	20-3290			1-day	NCDC	43.0622	-86.2244	620	7/1903-8/2001
MI	GRAND HAVEN WWTP	20-3295		20-3290	1-hour	NCDC	43.0608	-86.2047	605	7/1948-12/2010
MI	GRAND HAVEN WWTP	20-3295		20-3290	15-min	NCDC	43.0608	-86.2047	605	5/1971-12/2010
MI	GRAND LEDGE 1 NW	20-3306			1-day	NCDC	42.7631	-84.7622	800	7/1948-10/2011

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MI	GRAND MARAIS 2 E	20-3319			1-day	NCDC	46.6667	-85.9500	624	6/1900-10/2006
MI	GRAND RAPIDS INTL AP	20-3333			1-day	NCDC	42.8825	-85.5239	803	1/1892-8/2010
MI	GRAND RAPIDS INTL AP	20-3333		20-3333	1-hour	NCDC	42.8825	-85.5239	803	11/1963-12/2010
MI	GRAND RAPIDS WB CITY	20-3337	20-3333		1-day	NCDC	42.9667	-85.6667	676	5/1948-1/1956
MI	GRAYLING	20-3391			1-day	NCDC	44.6542	-84.6994	1136	10/1891-8/2011
MI	GREENVILLE 2 NNE	20-3429			1-day	NCDC	43.2025	-85.2422	882	8/1912-8/2011
MI	GROSSE POINTE FARMS	20-3477			1-day	NCDC	42.4078	-82.8892	613	11/1950-10/2011
MI	GULL LK BIOLOGICAL STN	20-3504			1-day	NCDC	42.3833	-85.3828	910	4/1929-9/2011
MI	GWINN 1 W	20-3516		20-3516	1-hour	NCDC	46.2864	-87.4511	1162	7/1949-12/2010
MI	GWK RTF	65-0880			15-min	MI_OAKLAND	42.5060	-83.1179	-999	12/2002-12/2012
MI	HALE LOUD DAM	20-3529			1-day	NCDC	44.4633	-83.7217	728	4/1913-8/2011
MI	HANCOCK MCLAIN SP	20-3551		20-3551	1-hour	NCDC	47.2333	-88.6167	620	**9/1952-10/2001**
MI	HARBOR BEACH	20-3580	20-3585		1-hour	NCDC	43.8322	-82.6428	600	7/1948-4/2001
MI	HARBOR BEACH	20-3580	20-3585		15-min	NCDC	43.8322	-82.6428	600	1/1974-4/2001
MI	HARBOR BEACH 1 SSE	20-3585			1-day	NCDC	43.8322	-82.6428	595	7/1899-10/2011
MI	HARBOR BEACH 1 SSE	20-3585			1-hour	NCDC	43.8322	-82.6428	595	**7/1948-12/2010**
MI	HARBOR BEACH 1 SSE	20-3585			15-min	NCDC	43.8322	-82.6428	595	**1/1974-12/2010**
MI	HARRISON 1 NNW	20-3616			1-day	NCDC	44.0333	-84.8000	1156	1/1893-3/1985
MI	HARRISVILLE	20-3624	20-3627		1-day	NCDC	44.6500	-83.3000	650	10/1891-4/1965
MI	HARRISVILLE	20-3627	20-3628		1-day	NCDC	44.6500	-83.3000	650	5/1965-10/1971
MI	HARRISVILLE 2NNE	20-3628			1-day	NCDC	44.6819	-83.2808	585	**10/1891-8/2010**
MI	HART 3 WSW	20-3632			1-day	NCDC	43.6747	-86.4239	770	1/1893-10/2011
MI	HASTINGS	20-3661			1-day	NCDC	42.6422	-85.2875	820	1/1893-10/2011
MI	HERMAN	20-3744			1-day	NCDC	46.6667	-88.3500	1740	4/1968-10/2011
MI	HERMANSVILLE	20-3749	20-7742		1-day	NCDC	45.7167	-87.5833	860	6/1890-6/1953
MI	HESPERIA 4 WNW	20-3769			1-day	NCDC	43.5908	-86.1056	780	8/1894-10/2011
MI	HIGGINS LAKE	20-3785			1-day	NCDC	44.5167	-84.7500	1191	1/1908-4/1978
MI	HIGHLAND	20-3796			1-day	NCDC	42.6167	-83.6000	830	1/1893-4/1921
MI	HILLSDALE	20-3823			1-day	NCDC	41.9353	-84.6411	1080	9/1891-8/2011
MI	HOLLAND	20-3858			1-day	NCDC	42.7869	-86.1231	610	6/1905-10/2011
MI	HOUGHTON FAA AP	20-1213	20-3908		1-day	NCDC	47.1667	-88.5000	1086	7/1887-7/1952
MI	HOUGHTON FAA AP	20-3908			1-day	NCDC	47.1683	-88.4892	1074	**7/1887-1/2010**

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
MI	HOUGHTON LAKE 6 WSW	20-3932			1-day	NCDC	44.3119	-84.8922	1135	1/1913-8/2011
MI	HOUGHTON PORTAGE LT ST	20-3922	20-3551		1-hour	NCDC	47.2333	-88.6167	630	9/1952-8/1967
MI	HOUGHTON ROSCOMMON AP	20-3936			1-day	NCDC	44.3592	-84.6739	1151	7/1964-10/2010
MI	HOUGHTON ROSCOMMON AP	20-3936		20-3936	1-hour	NCDC	44.3592	-84.6739	1151	7/1964-12/2010
MI	HOWELL	76-0016	20-3947		1-hour	SEMCOG	42.5964	-83.9075	938	10/1997-6/2005
MI	HOWELL WWTP	20-3947			1-day	NCDC	42.5939	-83.9325	917	9/1891-10/2011
MI	HOWELL WWTP	20-3947			1-hour	NCDC	42.5939	-83.9325	917	**4/1961-12/2010**
MI	HOWELL WWTP	20-3947			15-min	NCDC	42.5939	-83.9325	917	5/1971-12/2010
MI	HURON MTN	20-4006	20-0766		1-hour	NCDC	46.8833	-87.8667	620	9/1949-9/1960
MI	I-696	65-0843			15-min	MI_OAKLAND	42.4984	-83.3847	-999	12/1992-12/2012
MI	IONIA 2 SSW	20-4078			1-day	NCDC	42.9531	-85.0778	805	9/1896-10/2011
MI	IRON MT KINGSFORD WWTP	20-4090			1-day	NCDC	45.7858	-88.0842	1071	2/1899-7/2011
MI	IRON MT KINGSFORD WWTP	20-4090			1-hour	NCDC	45.7858	-88.0842	1071	7/1948-12/2010
MI	IRON MT KINGSFORD WWTP	20-4090			15-min	NCDC	45.7858	-88.0842	1071	9/1974-12/2010
MI	IRONWOOD	20-4104			1-day	NCDC	46.4656	-90.1892	1430	7/1901-10/2011
MI	ISHPEMING	20-4127			1-day	NCDC	46.4833	-87.6500	1440	8/1898-10/1987
MI	JACKSON 3 N	20-4155		20-4150	1-hour	NCDC	42.2883	-84.4236	950	7/1948-12/2010
MI	JACKSON 3 N	20-4155		20-4150	15-min	NCDC	42.2883	-84.4236	950	5/1971-12/2010
MI	JACKSON AP	20-4150			1-day	NCDC	42.2597	-84.4594	998	3/1897-10/2010
MI	KALAMAZOO	62-4244	20-4244		1-day	FORTS	42.2789	-85.6039	909	2/1879-12/1892
MI	KALAMAZOO	20-4239		20-4244	1-hour	NCDC	42.3000	-85.6167	900	7/1948-8/1992
MI	KALAMAZOO STATE HOSP	20-4244			1-day	NCDC	42.2833	-85.6000	950	**2/1879-11/1995**
MI	KALKASKA	20-4257			1-day	NCDC	44.7281	-85.1728	1035	12/1938-10/2011
MI	KENT CITY 2 SW	20-4320			1-day	NCDC	43.1994	-85.7717	840	6/1919-8/2011
MI	KENT CITY 2 SW	20-4320			1-hour	NCDC	43.1994	-85.7717	840	**7/1948-12/2010**
MI	KENT CITY 2 SW	20-4320			15-min	NCDC	43.1994	-85.7717	840	**9/1971-12/2010**
MI	KENTON	20-4328			1-day	NCDC	46.4864	-88.8917	1167	8/1907-10/2002
MI	KENTON	20-4328		20-4328	1-hour	NCDC	46.4864	-88.8917	1167	7/1950-12/2010
MI	LAKE CITY EXP FARM	20-4502			1-day	NCDC	44.3089	-85.2050	1230	7/1892-10/2011
MI	LAKE ORION	76-0044		76-0044	1-hour	SEMCOG	42.7422	-83.2353	951	1/1988-12/2012
MI	LANSING CAPITAL CY AP	20-4641			1-day	NCDC	42.7803	-84.5789	841	1/1948-10/2010
MI	LANSING CAPITAL CY AP	20-4641		20-4641	1-hour	NCDC	42.7803	-84.5789	841	7/1948-12/2010

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
MI	LAPEER 2 SE	20-4660	20-4655		1-day	NCDC	43.0333	-83.2833	830	1/1897-12/1949
MI	LAPEER WWTP	20-4655			1-day	NCDC	43.0608	-83.3075	820	**1/1897-10/2011**
MI	LONEDALE AND SQUIRREL RO	65-0802			15-min	MI_OAKLAND	42.6680	-83.2168	-999	12/1992-12/2012
MI	LOWELL	20-4944			1-day	NCDC	42.9292	-85.3403	640	5/1915-10/2011
MI	LUDINGTON 4 SE	20-4954			1-day	NCDC	43.9067	-86.3942	690	10/1896-8/2011
MI	LUDINGTON AP	20-4959		20-4954	1-hour	NCDC	43.9636	-86.4164	640	7/1948-12/2010
MI	LUDINGTON AP	20-4959		20-4954	15-min	NCDC	43.9636	-86.4164	640	10/1971-12/2010
MI	LUPTON 1S	20-4967			1-day	NCDC	44.4200	-84.0233	908	5/1951-10/2011
MI	MACKINAC ISLAND	20-4997			1-day	NCDC	45.8500	-84.6167	830	**7/1836-12/1938**
MI	MACKINAW CITY 2	20-5000			1-day	NCDC	45.7833	-84.7333	591	6/1896-12/1972
MI	MADISON HEIGHTS	76-0057		76-0057	1-hour	SEMCOG	42.5047	-83.1186	640	1/1988-12/2012
MI	MANCELONA	20-5043			1-day	NCDC	44.9000	-85.0833	1112	6/1896-9/1953
MI	MANISTEE 3SE	20-5065			1-day	NCDC	44.2114	-86.2939	670	7/1888-8/2011
MI	MANISTIQUE WWTP	20-5073			1-day	NCDC	45.9511	-86.2514	600	1/1896-10/2011
MI	MAPLE CITY 1E	20-5097			1-day	NCDC	44.8550	-85.8353	799	1/1959-10/2011
MI	MARQUETTE	62-5178	20-5178		1-day	FORTS	46.5436	-87.3953	686	9/1857-12/1892
MI	MARQUETTE	20-5178			1-day	NCDC	46.5456	-87.3794	665	**9/1857-8/2010**
MI	MARQUETTE	20-5178		20-5178	1-hour	NCDC	46.5456	-87.3794	665	7/1948-12/1978
MI	MARQUETTE WSO AP	20-5184			1-day	NCDC	46.5314	-87.5492	1415	10/1959-8/2010
MI	MARQUETTE WSO AP	20-5184		20-5184	1-hour	NCDC	46.5314	-87.5492	1415	2/1979-12/2010
MI	MENOMINEE	20-5381	47-5091		1-day	NCDC	45.1167	-87.6000	581	5/1899-7/1926
MI	MIDLAND	20-5434			1-day	NCDC	43.6089	-84.2011	640	**6/1896-10/2011**
MI	MIDLAND 2	20-5436	20-5434		1-day	NCDC	43.5950	-84.2361	645	6/1896-9/1970
MI	MILAN 4 ESE	20-5450	20-5451		1-day	NCDC	42.0664	-83.6186	670	8/1984-11/2006
MI	MILAN WWTP	20-5451			1-day	NCDC	42.0811	-83.6769	680	**12/1929-8/2010**
MI	MILFORD	76-0045		20-5452	1-hour	SEMCOG	42.5831	-83.6308	938	7/1948-6/2005
MI	MILFORD GM PROVING GRD	20-5452			1-day	NCDC	42.5794	-83.6844	990	1/1893-10/2011
MI	MILFORD GM PROVING GRD	20-5452	76-0045		1-hour	NCDC	42.5794	-83.6844	990	7/1948-12/1964
MI	MILLINGTON 3 SE	20-5488			1-day	NCDC	43.2836	-83.4792	820	9/1891-7/2011
MI	MIO HYDRO PLT	20-5531	20-5533		1-day	NCDC	44.6614	-84.1317	960	9/1887-12/2006
MI	MIO WWTP	20-5533			1-day	NCDC	44.6467	-84.1158	1037	**9/1887-10/2011**
MI	MONROE	20-5558	20-5563		1-day	NCDC	41.9139	-83.3942	590	3/1917-2/2004

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MI	MONROE WWTP	20-5563			1-day	NCDC	41.9025	-83.3697	575	**3/1917-10/2011**
MI	MONTAGUE 2 N	20-5569	20-5567		1-hour	NCDC	43.4500	-86.3500	669	7/1948-6/1978
MI	MONTAGUE 4 NW	20-5567			1-day	NCDC	43.4614	-86.4175	650	5/1893-8/2011
MI	MONTAGUE 4 NW	20-5567			1-hour	NCDC	43.4614	-86.4175	650	**7/1948-12/2010**
MI	MONTAGUE 4 NW	20-5567			15-min	NCDC	43.4614	-86.4175	650	6/1978-12/2010
MI	MORENCI	20-5601	20-5603		1-day	NCDC	41.7500	-84.2167	811	3/1907-8/1940
MI	MORENCI	20-5603			1-day	NCDC	41.7217	-84.2147	770	**3/1907-10/2011**
MI	MT CLEMENS ANG BASE	20-5650			1-day	NCDC	42.6083	-82.8183	580	8/1896-8/2010
MI	MT PLEASANT UNIV	20-5662			1-day	NCDC	43.5858	-84.7697	796	8/1895-7/2011
MI	MUNISING	20-5690			1-day	NCDC	46.4122	-86.6625	680	5/1911-10/2011
MI	MUSKEGON CO AP	20-5712			1-day	NCDC	43.1711	-86.2367	625	6/1896-10/2010
MI	MUSKEGON CO AP	20-5712		20-5712	1-hour	NCDC	43.1711	-86.2367	625	7/1948-12/2010
MI	NEWAYGO HARDY DAM	20-5803			1-day	NCDC	43.4833	-85.6333	761	11/1907-10/1974
MI	NEWBERRY 3S	20-5816			1-day	NCDC	46.3133	-85.5106	850	10/1896-10/2006
MI	NEWBERRY 3S	20-5816		20-5816	1-hour	NCDC	46.3133	-85.5106	850	6/1951-9/2007
MI	NILES	20-5892			1-day	NCDC	41.8406	-86.2658	650	3/1943-10/2011
MI	NORTHPORT	20-6003	20-8034		1-day	NCDC	45.1333	-85.6167	643	3/1894-10/1933
MI	NORTHPORT 2W	20-6007			1-day	NCDC	45.1322	-85.6472	746	**3/1894-8/2010**
MI	NORTHPORT 5 S	20-6005	20-6007		1-day	NCDC	45.0500	-85.6167	725	12/1972-5/1984
MI	NOTTAWA 3 SE	20-6020			1-day	NCDC	41.8833	-85.4167	860	**12/1896-12/1993**
MI	OLD MISSION	20-6156	20-6158		1-day	NCDC	44.9500	-85.4833	848	2/1894-11/1930
MI	OLD MISSION 3SSW	20-6158			1-day	NCDC	44.9214	-85.5161	656	**2/1894-10/2011**
MI	ONAWAY 12 S	20-6189			1-day	NCDC	45.1833	-84.2000	889	12/1900-6/1955
MI	ONAWAY 4N	20-6184			1-day	NCDC	45.4108	-84.2233	745	12/1900-10/2011
MI	ONTONAGON	20-6210			1-day	NCDC	46.8667	-89.3167	702	4/1900-5/1977
MI	ONTONAGON	20-6215			1-day	NCDC	46.8561	-89.3119	673	4/1900-4/2010
MI	ONTONAGON	20-6215		20-6215	1-hour	NCDC	46.8561	-89.3119	673	9/1948-12/2010
MI	ONTONAGON 6 SE	20-6220			1-day	NCDC	46.8342	-89.2072	790	10/1977-10/2011
MI	OWOSSO WWTP	20-6300			1-day	NCDC	43.0161	-84.1800	730	1/1896-10/2011
MI	OWOSSO WWTP	20-6300		20-6300	1-hour	NCDC	43.0161	-84.1800	730	8/1955-12/2010
MI	OXFORD 1S	20-6303			1-day	NCDC	42.8094	-83.2569	1040	11/1978-12/2012
MI	PELLSTON RGNL AP	20-6438			1-day	NCDC	45.5644	-84.7928	705	1/1948-10/2010

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MI	PETOSKEY	20-6507			1-day	NCDC	45.3725	-84.9767	599	11/1891-8/2011
MI	PONTIAC	76-0043		20-6658	1-hour	SEMCOG	42.6392	-83.2494	892	1/1988-12/2012
MI	PONTIAC WWTP	20-6658			1-day	NCDC	42.6389	-83.2556	890	6/1894-10/2011
MI	PORT HURON	20-6680			1-day	NCDC	42.9750	-82.4194	590	**7/1882-10/2011**
MI	PORT INLAND	20-6686			1-day	NCDC	45.9667	-85.8667	610	9/1953-10/1989
MI	RICHMOND 4 NNW	20-6982			1-day	NCDC	42.8783	-82.7958	765	**5/1978-10/2011**
MI	ROCHESTER	76-0062		76-0062	1-hour	SEMCOG	42.6789	-83.1333	745	1/1988-12/2012
MI	ROCK 1 E	20-7068			1-day	NCDC	46.0667	-87.1500	940	11/1905-6/1990
MI	ROGERS CITY	20-7094			1-day	NCDC	45.4169	-83.8158	615	**3/1896-6/2009**
MI	ROGERS CITY 3 S	20-7089	20-7094		1-day	NCDC	45.3833	-83.8333	738	3/1896-5/1978
MI	ROMEO 1 N	20-7097	20-7521		1-day	NCDC	42.8167	-83.0167	801	5/1889-12/1973
MI	ROSCOMMON	20-7122			1-day	NCDC	44.5000	-84.6000	1132	7/1889-3/1989
MI	ROSCOMMON	20-7122		20-7122	1-hour	NCDC	44.5000	-84.6000	1132	7/1948-3/1989
MI	RUDYARD	20-7187	20-7190		1-day	NCDC	46.2333	-84.6000	620	11/1938-8/1953
MI	RUDYARD 4N	20-7190			1-day	NCDC	46.2964	-84.5761	753	**11/1938-10/2009**
MI	SAGINAW #3	20-7222			1-day	NCDC	43.4122	-83.9561	600	**2/1910-10/2011**
MI	SAGINAW AP	20-7227			1-day	NCDC	43.5331	-84.0797	660	4/1896-6/2001
MI	SAGINAW CONSUMERS PWR	20-7217	20-7222		1-day	NCDC	43.4500	-83.9667	600	3/1955-9/1987
MI	SAINT CHARLES	20-7253			1-day	NCDC	43.3000	-84.1667	600	5/1940-4/1997
MI	SAINT JOHNS	20-7280			1-day	NCDC	43.0114	-84.5542	743	3/1894-6/2011
MI	SANDUSKY	20-7350			1-day	NCDC	43.4194	-82.8192	774	3/1909-10/2011
MI	SAULT STE MARIE SNDRSN	20-7366			1-day	NCDC	46.4794	-84.3572	722	**7/1836-10/2010**
MI	SAULT STE MARIE SNDRSN	20-7366		20-7366	1-hour	NCDC	46.4794	-84.3572	722	7/1948-12/2010
MI	SCOTTVILLE 1 NE	20-7405			1-day	NCDC	43.9667	-86.2667	679	6/1917-9/1978
MI	SEBEWAING	20-7419			1-day	NCDC	43.7319	-83.4592	584	12/1940-11/2010
MI	SEBEWAING	20-7419		20-7419	1-hour	NCDC	43.7319	-83.4592	584	**7/1948-9/1992**
MI	SEBEWAING	20-7424	20-7419		1-hour	NCDC	43.7167	-83.4500	610	7/1948-11/1964
MI	SENEY NATIONAL WILDLIFE R	54-0059			1-day	NADP	46.2875	-85.9541	709	1/1948-3/2009
MI	SENEY NATL WILDLIFE RE	20-3123	54-0059		1-day	NCDC	46.2833	-85.9500	712	1/1948-8/1961
MI	SENEY WR	20-7515	54-0059		1-day	NCDC	46.2833	-85.9500	710	9/1961-3/2001
MI	SIDNAW	20-7559	20-8706		1-day	NCDC	46.4833	-88.7167	1381	2/1896-10/1940
MI	SOUTH HAVEN	20-7690			1-day	NCDC	42.4011	-86.2833	620	9/1895-10/2011

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MI	SPALDING 1 NW	20-7742			1-day	NCDC	45.7019	-87.5256	860	**6/1890-5/2006**
MI	ST IGNACE	20-7271	20-7274		1-day	NCDC	45.8833	-84.7333	663	10/1891-12/1946
MI	ST IGNACE MACKINAC BR	20-7274			1-day	NCDC	45.8489	-84.7228	595	**10/1891-3/2010**
MI	ST JAMES 4SSW BEAVER	20-7277			1-day	NCDC	45.6911	-85.5464	672	8/1905-9/2011
MI	ST. CLAIR SHORES	76-0019			1-hour	SEMCOG	42.4711	-82.9142	587	1/1988-6/2005
MI	STAMBAUGH 2SSE	20-7812			1-day	NCDC	46.0556	-88.6275	1450	2/1896-10/2011
MI	STANDISH 5SW	20-7820			1-day	NCDC	43.9472	-84.0378	645	3/1895-10/2011
MI	STANTON	20-7828		20-7828	1-hour	NCDC	43.2908	-85.0922	930	6/1956-12/2010
MI	STEPHENSON 8 WNW	20-7867			1-day	NCDC	45.4500	-87.7500	710	12/1938-10/2008
MI	STEUBEN	20-7880			1-day	NCDC	46.1833	-86.4667	740	1/1939-12/1989
MI	STEUBEN	20-7880		20-7880	1-hour	NCDC	46.1833	-86.4667	740	7/1948-9/1990
MI	STONY CREEK PARK	76-0023			1-hour	SEMCOG	42.7636	-83.0694	850	1/1988-6/2005
MI	SUTTONS BAY 10 N	20-8034	20-6007		1-day	NCDC	45.1167	-85.6167	722	10/1968-11/1972
MI	SUTTONS BAY 4 NW	20-8032	20-6005		1-day	NCDC	45.0167	-85.7000	860	1/1939-12/1968
MI	THOMPSONVILLE	20-8167			1-day	NCDC	44.5167	-85.9333	794	12/1938-2/1984
MI	THREE RIVERS	20-8184			1-day	NCDC	41.9300	-85.6386	810	9/1895-10/2011
MI	TIENKEN ROAD	65-0810			15-min	MI_OAKLAND	42.6965	-83.1289	-999	12/1992-12/2012
MI	TRAVERSE CITY	62-8246	20-8251		1-day	FORTS	44.7500	-85.6667	598	11/1872-9/1889
MI	TRAVERSE CITY	20-8246		20-8251	1-hour	NCDC	44.7686	-85.5764	604	4/1958-12/2010
MI	TRAVERSE CITY	20-8246		20-8251	15-min	NCDC	44.7686	-85.5764	604	5/1971-12/2010
MI	TRAVERSE CITY FAA AP	20-8251			1-day	NCDC	44.7408	-85.5825	618	**11/1872-4/2005**
MI	TROUT LAKE 2WNW	20-8293			1-day	NCDC	46.1989	-85.0728	871	7/1948-10/2011
MI	TROUT LAKE 2WNW	20-8293		20-8293	1-hour	NCDC	46.1989	-85.0728	871	7/1948-12/2010
MI	TROY-ROCKWELL	76-0060		76-0060	1-hour	SEMCOG	42.5475	-83.1742	705	1/1988-12/2012
MI	VANDERBILT 11ENE	20-8417			1-day	NCDC	45.1703	-84.4397	905	2/1913-8/2011
MI	VANDERBILT 11ENE	20-8417			1-hour	NCDC	45.1703	-84.4397	905	7/1948-12/2010
MI	VANDERBILT 11ENE	20-8417			15-min	NCDC	45.1703	-84.4397	905	5/1971-12/2010
MI	VASSAR	20-8434	20-8443		1-day	NCDC	43.3667	-83.5500	641	11/1897-6/1917
MI	VASSAR	20-8443			1-day	NCDC	43.3656	-83.5828	630	**11/1897-12/2010**
MI	VASSAR	20-8443		20-8443	1-hour	NCDC	43.3656	-83.5828	630	**1/1959-12/2010**
MI	VASSAR	20-8443			15-min	NCDC	43.3656	-83.5828	630	7/1977-3/2009
MI	VASSAR 1 W	20-8438	20-8443		1-hour	NCDC	43.3667	-83.6167	669	1/1959-6/1977

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
MI	WAKEFIELD	20-8559		20-8559	1-hour	NCDC	46.4792	-89.9322	1600	7/1948-3/2008
MI	WASEPI	20-8631	20-6020		1-day	NCDC	41.9333	-85.4667	842	12/1896-12/1922
MI	WASHINGTON	20-7521			1-day	NCDC	**42.7333**	**-83.0333**	**745**	**5/1889-7/2009**
MI	WASHINGTON	20-8650	20-7521		1-day	NCDC	42.7333	-83.0333	745	12/1973-11/1987
MI	WATERSMEET	20-8680			1-day	NCDC	46.2778	-89.1742	1590	3/1909-10/2011
MI	WATTON	20-8706			1-day	NCDC	46.5100	-88.6664	1427	**1/1900-10/2011**
MI	WAYNE	20-8725	20-2103		1-day	NCDC	42.2667	-83.3500	630	3/1897-6/1956
MI	WAYNE - CANTON	76-0065		76-0065	1-hour	SEMCOG	42.2706	-83.4753	679	3/1950-12/2001
MI	WEBBERVILLE	20-8751	20-9006		1-day	NCDC	42.6833	-84.2500	884	12/1901-12/1910
MI	WELLSTON TIPPY DAM	20-8772			1-day	NCDC	44.2586	-85.9394	650	4/1917-8/2011
MI	WEST BRANCH 3SE	20-8800			1-day	NCDC	44.2542	-84.2011	885	3/1900-10/2011
MI	WHITEFISH POINT	20-8920			1-day	NCDC	46.7531	-84.9789	605	3/1900-8/2011
MI	WILLIAMSTON 3NE	20-9006			1-day	NCDC	42.7103	-84.2503	895	**9/1892-12/2010**
MI	WILLIS 5 SSW	20-9014	20-5450		1-day	NCDC	42.0833	-83.5833	660	12/1929-10/1983
MI	WOLVERINE SF	20-9105			1-day	NCDC	45.2833	-84.6167	771	6/1928-6/1949
MI	YALE 1 NNW	20-9188			1-day	NCDC	43.1447	-82.8011	820	9/1926-10/2011
MI	YPSILANTI	76-0004	20-9218		1-hour	SEMCOG	42.2314	-83.6086	692	1/1988-3/2000
MI	YPSILANTI	76-0005	20-9218		1-hour	SEMCOG	42.2472	-83.6250	751	3/1988-6/2005
MI	YPSILANTI E MICH U	20-9218			1-day	NCDC	42.2475	-83.6253	780	9/1891-4/2008
MI	YPSILANTI E MICH U	20-9218		20-9218	1-hour	NCDC	42.2475	-83.6253	780	**1/1948-12/2010**
MN	ADA	21-0018			1-day	NCDC	47.2992	-96.5161	907	11/1892-8/2011
MN	AGASSIZ REFUGE	21-0050			1-day	NCDC	48.3006	-95.9817	1142	4/1957-5/2011
MN	AITKIN 2E	21-0059			1-day	NCDC	46.5339	-93.7031	1215	6/1940-8/2011
MN	ALBERT LEA 3 SE	21-0075			1-day	NCDC	43.6064	-93.3019	1230	3/1885-10/2011
MN	ALEXANDRIA	21-0110	21-0112		1-day	NCDC	45.8667	-95.4000	1391	9/1886-1/1948
MN	ALEXANDRIA CHANDLER FL	21-0112			1-day	NCDC	45.8686	-95.3942	1416	**9/1886-10/2010**
MN	ALEXANDRIA CHANDLER FL	21-0112		21-0112	1-hour	NCDC	45.8686	-95.3942	1416	**8/1948-4/2011**
MN	ALEXANDRIA WTR TWR PLT	21-0116	21-0112		1-hour	NCDC	45.8967	-95.3658	1400	9/1971-2/2009
MN	AMBOY	21-0157			1-day	NCDC	43.8836	-94.1667	1030	**10/1894-12/2010**
MN	AMBOY	21-0157		21-0157	1-hour	NCDC	43.8836	-94.1667	1030	8/1948-12/2010
MN	ANGUS 1 N	21-0195			1-day	NCDC	48.1000	-96.7000	869	4/1902-12/1975
MN	ARGYLE	21-0252			1-day	NCDC	48.3311	-96.8253	847	10/1887-9/2011

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MN	ARTICHOKE LAKE	21-0287			1-day	NCDC	45.3783	-96.1542	1093	4/1917-10/2011
MN	AUSTIN WWT FAC	21-0355			1-day	NCDC	43.6542	-92.9739	1199	4/1937-10/2011
MN	BABBITT	21-0387			1-day	NCDC	47.7103	-91.9442	1492	**2/1920-10/2011**
MN	BABBITT 2 SE	21-0390	21-0387		1-day	NCDC	47.6833	-91.9167	1615	2/1920-7/1986
MN	BAGLEY	21-0432	80-0105		1-day	NCDC	47.5167	-95.3833	1446	1/1906-10/1941
MN	BAUDETTE	21-0515			1-day	NCDC	48.7094	-94.5869	1062	12/1908-12/2009
MN	BEARDSLEY	21-0541	80-0331		1-day	NCDC	45.5500	-96.7167	1089	5/1893-5/1973
MN	BEAULIEU	21-0546	80-0180		1-day	NCDC	47.3333	-95.7667	1200	10/1900-5/1912
MN	BEAVER	21-0559			1-day	NCDC	44.1500	-92.0167	722	11/1936-9/1989
MN	BEMIDJI	21-0643			1-day	NCDC	47.5369	-94.8297	1360	1/1896-10/2011
MN	BENSON	21-0667			1-day	NCDC	45.3167	-95.6167	1040	9/1952-7/2011
MN	BIG FALLS	21-0746			1-day	NCDC	48.1969	-93.7994	1220	7/1930-10/2011
MN	BIG FALLS	21-0746			1-hour	NCDC	48.1969	-93.7994	1220	8/1948-12/2010
MN	BIG FALLS	21-0746			15-min	NCDC	48.1969	-93.7994	1220	6/1980-12/2010
MN	BIGFORK 5 ESE	21-0754		21-0754	1-hour	NCDC	47.7000	-93.5500	1411	8/1948-6/1981
MN	BIRD ISLAND	21-0783	21-6152		1-day	NCDC	44.7667	-94.9000	1089	2/1885-5/1976
MN	BLANCHARD PWR STN	21-0826	21-7157		1-day	NCDC	45.8667	-94.3500	1079	9/1948-12/1985
MN	BLUE EARTH	21-0852			1-day	NCDC	43.6453	-94.0936	1065	9/1948-8/2009
MN	BRAINERD	21-0934	80-0051		1-day	NCDC	46.3667	-94.1833	1220	8/1887-4/1955
MN	BRAINERD	21-0939			1-day	NCDC	46.3433	-94.2100	1180	1/1908-10/2011
MN	BRECKENRIDGE MN	21-0973			1-day	NCDC	46.2681	-96.5914	960	**1/1893-10/2011**
MN	BRICELYN	21-0981			1-day	NCDC	43.5439	-93.8422	1170	5/1940-7/2011
MN	BRIMSON 2S	21-0989			1-day	NCDC	47.2472	-91.8625	1486	9/1948-10/2011
MN	BROWNS VALLEY	21-1063			1-day	NCDC	45.5939	-96.8278	990	12/1973-10/2011
MN	BROWNTON WWTP	21-1065			1-day	NCDC	44.7336	-94.3417	1040	**5/1957-10/2011**
MN	BUFFALO 2NE	21-1107			1-day	NCDC	45.1969	-93.8400	992	5/1940-10/2011
MN	BUFFALO 2NE	21-1107		21-1107	1-hour	NCDC	45.1969	-93.8400	992	8/1948-12/2010
MN	BYRG_10_116N_26W_31_STILE	80-0002			1-day	MN DNR	44.8113	-94.0000	988	12/1954-10/2007
MN	BYRG_19__28N_23W_26_YAEGE	80-0004	80-0115		1-day	MN DNR	44.8836	-93.1366	902	7/1974-10/1992
MN	BYRG_25_113N_16W_30_ANDER	80-0006	80-0114		1-day	MN DNR	44.5647	-92.7824	984	6/1970-10/1989
MN	BYRG_27__27N_24W_20_THOMP	80-0012	80-0013		1-day	MN DNR	44.8121	-93.3195	830	5/1981-10/2008
MN	BYRG_27__27N_24W_21_SMITH	80-0013			1-day	MN DNR	44.8120	-93.2990	797	7/1958-10/2008

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MN	BYRG_27_117N_22W_34_CECKA	80-0008			1-day	MN DNR	44.8990	-93.4522	942	6/1970-1/2009
MN	BYRG_62__29N_22W__1_KOLLE	80-0030	80-0295		1-day	MN DNR	45.0282	-92.9947	1014	6/1970-10/1994
MN	BYRG_62__30N_22W_36_CLARK	80-0035	80-0295		1-day	MN DNR	45.0430	-92.9949	1033	1/1978-8/1998
MN	CALEDONIA	21-1198			1-day	NCDC	43.6308	-91.5028	1166	3/1892-10/2011
MN	CAMBRIDGE 5ESE	21-1227			1-day	NCDC	45.5506	-93.1264	960	5/1892-10/2011
MN	CAMBRIDGE 5ESE	21-1227		21-1227	1-hour	NCDC	45.5506	-93.1264	960	8/1948-12/2010
MN	CAMPBELL	21-1245			1-day	NCDC	46.0958	-96.4092	972	1/1894-12/2005
MN	CANBY	21-1263			1-day	NCDC	44.7183	-96.2697	1243	8/1887-7/2011
MN	CANBY	21-1263			1-hour	NCDC	44.7183	-96.2697	1243	8/1948-12/2010
MN	CANBY	21-1263			15-min	NCDC	44.7183	-96.2697	1243	5/1971-4/2010
MN	CARIBOU 2 S	21-1303			1-day	NCDC	48.9511	-96.4639	1020	4/1939-2/2002
MN	CASS LAKE	21-1374			1-day	NCDC	47.3847	-94.6147	1296	4/1906-10/2011
MN	CEDAR	21-1390			1-day	NCDC	45.3222	-93.2844	907	11/1962-11/2005
MN	CHANHASSEN WSFO	21-1448	21-1468		1-day	NCDC	44.8497	-93.5639	946	1/1996-8/2010
MN	CHASKA	21-1465	21-1448		1-day	NCDC	44.8000	-93.5833	720	8/1911-7/2004
MN	CHASKA 2NW	21-1468			1-day	NCDC	44.8131	-93.6311	923	**8/1911-10/2011**
MN	CLEMENTSON	21-1589			1-day	NCDC	48.6833	-94.4333	1072	8/1951-5/1998
MN	CLEMENTSON	21-1589			1-hour	NCDC	48.6833	-94.4333	1072	8/1951-5/1998
MN	CLOQUET	21-1630			1-day	NCDC	46.7047	-92.5253	1265	1/1900-10/2011
MN	COKATO	21-1669			1-day	NCDC	45.0500	-94.2500	1069	**12/1892-8/2002**
MN	COLLEGEVILLE ST JOHN	21-1691			1-day	NCDC	45.5872	-94.4047	1225	12/1892-10/2011
MN	COOK 18 W	21-1776			1-day	NCDC	47.8667	-93.0667	1315	9/1959-9/1995
MN	CORRELL	21-1812		21-1812	1-hour	NCDC	45.2333	-96.1667	981	8/1948-5/1981
MN	COTTON	21-1840			1-day	NCDC	47.1700	-92.4667	1329	9/1962-11/2002
MN	CRANE LAKE RS	21-1857		21-1857	1-hour	NCDC	48.2667	-92.4667	1122	8/1948-1/1978
MN	CROOKSTON NW EXP STN	21-1891			1-day	NCDC	47.8014	-96.6028	888	1/1890-6/2011
MN	DAWSON	21-2038			1-day	NCDC	44.9317	-96.0447	1055	7/1893-7/2011
MN	DELANO	21-2088			1-day	NCDC	45.0417	-93.7903	930	**4/1973-9/2011**
MN	DETROIT LAKES 1 NNE	21-2142			1-day	NCDC	46.8372	-95.8372	1355	12/1895-8/2011
MN	DNR___1__49N_23W_16_SANDY	80-0071			1-day	MN DNR	46.7325	-93.2652	1227	4/1974-11/2008
MN	DNR___1__52N_26W_14_HILL_	80-0072			1-day	MN DNR	46.9939	-93.6026	1339	4/1974-11/2008
MN	DNR__11_139N_30W_32_BACKU	80-0048			1-day	MN DNR	46.8130	-94.5028	1345	8/1974-11/2008

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MN	DNR__18__45N_30W__9_BRAIN	80-0051			1-day	MN DNR	46.3955	-94.1371	1220	8/1887-11/2008
MN	DNR__31__58N_25W_12_MARCE	80-0054	54-0069		1-day	MN DNR	47.5219	-93.4597	1348	1/1975-5/2004
MN	DNR__36__68N_25W__9_LTL_F	80-0058			1-day	MN DNR	48.3959	-93.5603	1115	3/1910-11/2008
MN	DNR__38__57N__7W_20_FINLA	80-0061			1-day	MN DNR	47.4074	-91.2464	1299	4/1974-11/2008
MN	DNR__45_156N_39W_26_GRYGL	80-0063	21-3397		1-day	MN DNR	48.3038	-95.6263	1171	4/1974-12/2008
MN	DNR__62__30N_23W_35_KUEHN	80-0064	80-0238		1-day	MN DNR	45.0430	-93.1367	951	6/1968-10/1988
MN	DNR__68_160N_40W_36_WANNA	80-0065			1-day	MN DNR	48.6346	-95.7458	1109	11/1963-11/2008
MN	DNR__69__54N_17W_16_COTTO	80-0068	80-0262		1-day	MN DNR	47.1616	-92.5048	1322	4/1974-11/2008
MN	DNR__69__57N_20W_18_HIBBI	80-0069			1-day	MN DNR	47.4218	-92.9312	1490	9/1948-11/2008
MN	DNR__69__64N_20W__1_ORR_D	80-0070			1-day	MN DNR	48.0580	-92.8411	1289	1/1926-11/2008
MN	DODGE CTR	21-2166		21-2166	1-hour	NCDC	44.0419	-92.8814	1250	8/1948-12/2010
MN	DULUTH HARBOR STN	21-2246			1-day	NCDC	46.7681	-92.0903	610	**8/1871-6/2012**
MN	DULUTH INTL AP	21-2248			1-day	NCDC	46.8369	-92.1833	1433	6/1941-6/2012
MN	DULUTH INTL AP	21-2248		21-2248	1-hour	NCDC	46.8369	-92.1833	1433	8/1948-4/2011
MN	DULUTH WB CITY	21-2253	21-2246		1-day	NCDC	46.7838	-92.1424	1161	5/1893-9/1959
MN	ELBOW LAKE 5 E	21-2476			1-day	NCDC	46.0108	-95.8756	1330	5/1940-12/1988
MN	ELGIN 2 SSW	21-2486			1-day	NCDC	44.0969	-92.2703	1110	4/1939-10/2011
MN	ELK RIVER	21-2500			1-day	NCDC	45.3050	-93.5842	910	5/1940-10/2011
MN	ELY	21-2543			1-day	NCDC	47.9239	-91.8586	1382	**11/1913-10/2011**
MN	EVELETH WWTP	21-2645	21-8543		1-day	NCDC	47.4581	-92.5303	1445	10/1986-8/2010
MN	EVELETH WWTP	21-2645		21-8543	1-hour	NCDC	47.4581	-92.5303	1445	**8/1948-12/2010**
MN	FAIRMONT	21-2698			1-day	NCDC	43.6447	-94.4656	1187	4/1887-10/2011
MN	FARIBAULT	21-2721			1-day	NCDC	44.3161	-93.2753	940	10/1890-6/2011
MN	FARMINGTON 3 NW	21-2737			1-day	NCDC	44.6697	-93.1700	980	4/1888-10/2010
MN	FERGUS FALLS	21-2768			1-day	NCDC	46.2919	-96.1172	1250	1/1892-12/2006
MN	FOREST LAKE 5NE	21-2881			1-day	NCDC	45.3397	-92.9125	960	10/1958-10/2011
MN	FORT PEMBINA	62-6957	62-7410		1-day	FORTS	48.9656	-97.2403	786	8/1871-2/1892
MN	FORT RIPLEY	62-2904	21-2904		1-day	FORTS	46.1753	-94.3739	1161	12/1849-7/1877
MN	FORT SNELLING	62-0212	21-5435		1-day	FORTS	44.8924	-93.1814	804	7/1836-2/1892
MN	FOSSTON 1 E	21-2916			1-day	NCDC	47.5636	-95.7244	1310	7/1909-2/2009
MN	FRAZEE	21-2964		21-2964	1-hour	NCDC	46.7336	-95.7064	1380	8/1948-12/2010
MN	FT RIPLEY	21-2904			1-day	NCDC	46.1806	-94.3656	1134	**12/1849-6/1990**

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MN	GAYLORD	21-3076			1-day	NCDC	44.5564	-94.2206	1018	10/1956-10/2011
MN	GEORGETOWN 1 E	21-3104			1-day	NCDC	47.0792	-96.7758	885	11/1962-2/2009
MN	GLENCOE	21-3169	80-0280		1-day	NCDC	44.7500	-94.1333	1006	11/1895-5/1921
MN	GLENWOOD 2 WNW	21-3174			1-day	NCDC	45.6583	-95.4392	1198	8/1887-10/2011
MN	GOLDEN VALLEY	21-3202			1-hour	NCDC	44.9908	-93.3989	910	4/1963-12/2010
MN	GOLDEN VALLEY	21-3202			15-min	NCDC	44.9908	-93.3989	910	5/1971-12/2010
MN	GOLDEN VALLEY	21-3202			1-day	NCDC	44.9908	-93.3989	910	12/1887-4/2010
MN	GONVICK 2 W	21-3206			1-day	NCDC	47.7333	-95.5167	1436	1/1919-10/1990
MN	GRAND MARAIS	21-3282			1-day	NCDC	47.7394	-90.3606	612	5/1900-10/2011
MN	GRAND MEADOW	21-3290			1-day	NCDC	43.7047	-92.5644	1350	7/1887-10/2011
MN	GRAND PORTAGE RNG STN	21-3296			1-day	NCDC	47.9708	-89.6906	730	**2/1895-9/2011**
MN	GRAND PORTAGE RNG STN	21-3296		21-3296	1-hour	NCDC	47.9708	-89.6906	730	7/1950-12/2010
MN	GRAND RPDS FOREST LAB	21-3303			1-day	NCDC	47.2436	-93.4975	1310	6/1915-10/2011
MN	GRANITE FALLS	21-3311			1-day	NCDC	44.8136	-95.5517	1000	2/1892-7/2011
MN	GRANITE FALLS	21-3311			1-hour	NCDC	44.8136	-95.5517	1000	8/1948-12/2010
MN	GRANITE FALLS	21-3311			15-min	NCDC	44.8136	-95.5517	1000	5/1971-12/2010
MN	GRYGLA	21-3397			1-day	NCDC	48.2833	-95.6167	1178	**1/1920-12/2008**
MN	GULL LAKE DAM	21-3411			1-day	NCDC	46.4119	-94.3608	1215	2/1911-10/2011
MN	GULL LAKE DAM	21-3411		21-3411	1-hour	NCDC	46.4119	-94.3608	1215	8/1948-12/2010
MN	GUNFLINT LAKE 10 NW	21-3417			1-day	NCDC	48.1603	-90.8842	1455	4/1894-10/2011
MN	GUNFLINT LAKE 10 NW	21-3417		21-3417	1-hour	NCDC	48.1603	-90.8842	1455	8/1951-12/2010
MN	HALLOCK	21-3455			1-day	NCDC	48.7714	-96.9406	815	6/1899-8/2011
MN	HALSTAD	21-3463			1-day	NCDC	47.3536	-96.8336	850	5/1905-9/2010
MN	HARMONY	21-3520			1-day	NCDC	43.5458	-92.0122	1350	9/1939-9/2011
MN	HASTINGS DAM 2	21-3567			1-day	NCDC	44.7597	-92.8689	695	8/1893-10/2011
MN	HAWLEY 3 NE	21-3587			1-day	NCDC	46.8833	-96.2500	1165	9/1948-11/1989
MN	HAWLEY 3 NE	21-3587		21-3587	1-hour	NCDC	46.8833	-96.2500	1165	9/1948-11/1989
MN	HIBBING FAA AP	21-3730			1-day	NCDC	47.3867	-92.8389	1347	11/1962-6/2009
MN	HIBBING PWR SUBSTN	21-3727	80-0069		1-day	NCDC	47.4333	-92.9667	1532	9/1948-9/1981
MN	HIGH LANDING 2 NW	21-3756			1-day	NCDC	48.0667	-95.8500	1150	9/1939-12/1993
MN	HINCKLEY	21-3793			1-day	NCDC	45.9919	-92.9928	1035	2/1893-10/2011
MN	HINCKLEY	21-3793			1-hour	NCDC	45.9919	-92.9928	1035	8/1948-10/2004

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MN	HINCKLEY	21-3795	21-3793		1-hour	NCDC	46.0167	-92.9500	1040	3/1951-5/1960
MN	HINCKLEY	21-3793			15-min	NCDC	45.9919	-92.9928	1035	5/1971-10/2004
MN	HOKAH 1S	21-3808			1-day	NCDC	43.7464	-91.3550	705	7/1948-3/2011
MN	HOLYOKE	21-3863			1-hour	NCDC	46.4675	-92.3903	1034	9/1948-12/2010
MN	HOLYOKE	21-3863			15-min	NCDC	46.4675	-92.3903	1034	5/1971-12/2010
MN	HOYT LAKES 5 N	21-3921			1-day	NCDC	47.5833	-92.1333	1522	**12/1906-2/1984**
MN	HUTCHINSON 1 N	21-3962			1-day	NCDC	44.9089	-94.3675	1095	9/1893-11/2009
MN	HUTCHINSON 1 N	21-3962			1-hour	NCDC	44.9089	-94.3675	1095	9/1948-11/2009
MN	HUTCHINSON 1 N	21-3962			15-min	NCDC	44.9089	-94.3675	1095	5/1971-11/2009
MN	INDUS 3 W	21-4008			1-day	NCDC	48.6236	-93.8992	1095	8/1943-10/2011
MN	INTERNATIONAL FALLS AP	21-4026			1-day	NCDC	48.5614	-93.3981	1183	3/1895-10/2010
MN	INTERNATIONAL FALLS AP	21-4026		21-4026	1-hour	NCDC	48.5614	-93.3981	1183	8/1948-12/2010
MN	ISABELLA 1 W	21-4068			1-day	NCDC	47.6181	-91.3753	2010	1/1926-7/2005
MN	ISLAND LAKE RSVR	21-4096			1-day	NCDC	46.9833	-92.2333	1372	9/1948-9/1995
MN	ISLE 12N	21-4103			1-day	NCDC	46.3197	-93.5014	1285	4/1936-10/2011
MN	ITASCA UNIV OF MINN	21-4106			1-day	NCDC	47.2256	-95.1919	1490	5/1911-10/2011
MN	JORDAN 2E	21-4176			1-day	NCDC	44.6622	-93.5933	930	1/1942-10/2011
MN	KELLIHER	21-4233			1-day	NCDC	47.9422	-94.4553	1390	3/1909-8/2011
MN	KETTLE FALLS	21-4306			1-day	NCDC	48.5011	-92.6444	1122	8/1943-8/2011
MN	KSTP_86_118N_25W__4_BAUMA	80-0082	21-2088		1-day	MN DNR	45.0575	-93.8377	919	4/1973-4/1990
MN	LA CRESCENT DAM 7	21-4418			1-day	NCDC	43.8658	-91.3100	647	1/1939-10/2011
MN	LA CRESCENT DAM 7	21-4418	47-4370		1-hour	NCDC	43.8658	-91.3100	647	11/1969-2/2009
MN	LAC QUI PARLE DAM	21-4410			1-day	NCDC	45.0167	-95.8667	1050	7/1948-9/1953
MN	LAKE CITY	21-4438			1-day	NCDC	44.4308	-92.2786	708	4/1896-10/2011
MN	LAKE JENNIE	21-4445	21-1669		1-day	NCDC	45.0000	-94.2500	1089	12/1892-4/1902
MN	LAKE WILSON	21-4534			1-day	NCDC	43.9981	-95.9572	1650	5/1973-8/2011
MN	LAKEFIELD 2NE	21-4453			1-day	NCDC	43.7019	-95.1517	1530	8/1948-10/2011
MN	LAKEFIELD 2NE	21-4453			1-hour	NCDC	43.7019	-95.1517	1530	8/1948-12/2010
MN	LAKEFIELD 2NE	21-4453			15-min	NCDC	43.7019	-95.1517	1530	5/1971-12/2010
MN	LAMBERTON SW EXP STN	21-4546			1-day	NCDC	44.2394	-95.3153	1144	1/1961-10/2011
MN	LANESBORO	21-4563			1-day	NCDC	43.7203	-91.9717	955	5/1939-10/2011
MN	LE SUEUR	21-4721		21-4721	1-hour	NCDC	44.4697	-93.9025	845	8/1948-12/2010

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MN	LEECH LAKE	21-4652			1-day	NCDC	47.2467	-94.2228	1302	4/1887-10/2011
MN	LEECH LAKE	21-4652		21-4652	1-hour	NCDC	47.2467	-94.2228	1302	3/1953-12/2010
MN	LITCHFIELD	21-4778			1-day	NCDC	45.1278	-94.5347	1132	5/1887-10/2011
MN	LITTLE FALLS 1 N	21-4793			1-day	NCDC	45.9933	-94.3508	1120	2/1895-7/2011
MN	LITTLE FALLS 1 N	21-4793			1-hour	NCDC	45.9933	-94.3508	1120	**8/1948-12/2010**
MN	LITTLE FALLS 1 N	21-4793			15-min	NCDC	45.9933	-94.3508	1120	6/1974-12/2010
MN	LITTLE FALLS WTR WKS	21-4798	21-4793		1-hour	NCDC	45.9833	-94.3500	1122	8/1948-10/1972
MN	LITTLEFORK RS	21-4806	80-0058		1-day	NCDC	48.4000	-93.5500	1181	3/1910-10/1952
MN	LONG PRAIRIE	21-4861			1-day	NCDC	45.9675	-94.8778	1340	3/1892-10/2011
MN	LUVERNE	21-4937			1-day	NCDC	43.6658	-96.2022	1500	6/1893-4/2010
MN	LUVERNE	21-4937		21-4937	1-hour	NCDC	43.6658	-96.2022	1500	10/1950-12/2010
MN	MADISON SEWAGE PLT	21-4994			1-day	NCDC	45.0025	-96.1661	1080	5/1940-10/2011
MN	MAHNOMEN 1 W	21-5012	80-0180		1-day	NCDC	47.3167	-95.9833	1203	7/1924-8/2010
MN	MAHONING MINE	21-5020			1-day	NCDC	47.4667	-92.9833	1581	1/1931-4/1962
MN	MANKATO	21-5073			1-day	NCDC	44.1542	-94.0211	850	**9/1904-8/2010**
MN	MANKATO	21-5088	21-5073		1-day	NCDC	44.1667	-94.0167	781	9/1904-7/1954
MN	MAPLE PLAIN	21-5136	21-5665		1-day	NCDC	45.0000	-93.6500	970	1/1892-11/1986
MN	MARCELL EXPERIMENTAL FORE	54-0069			1-day	NADP	47.5311	-93.4686	1414	1/1975-3/2009
MN	MARSHALL	21-5204			1-day	NCDC	44.4706	-95.7908	1152	4/1935-10/2011
MN	MEADOWLANDS 9 S	21-5298			1-day	NCDC	46.9833	-92.7333	1269	12/1915-12/1985
MN	MEADOWLANDS 9 S	21-5298		21-5298	1-hour	NCDC	46.9833	-92.7333	1269	8/1948-6/1986
MN	MELROSE	21-5325			1-day	NCDC	45.6775	-94.8022	1200	12/1954-10/2011
MN	MILACA	21-5392			1-day	NCDC	45.7533	-93.6617	1064	2/1897-10/2011
MN	MILAN 1 NW	21-5400			1-day	NCDC	45.1219	-95.9269	1020	8/1893-10/2011
MN	MINNEAPOLIS ASCHENBECK	21-5437			1-day	NCDC	45.0000	-93.3167	955	12/1887-12/1920
MN	MINNEAPOLIS/ST PAUL INTL	21-5435			1-day	NCDC	44.8831	-93.2289	872	**7/1836-10/2010**
MN	MINNEAPOLIS/ST PAUL INTL	21-5435		21-5435	1-hour	NCDC	44.8831	-93.2289	872	8/1948-12/2010
MN	MINNEOTA	21-5482			1-day	NCDC	44.5631	-95.9969	1211	7/1948-8/2011
MN	MINNESOTA CITY	21-5490	21-5488		1-day	NCDC	44.0833	-91.8000	740	5/1893-8/1900
MN	MINNESOTA CITY DAM 5	21-5488			1-day	NCDC	44.1600	-91.8122	670	**5/1893-10/2011**
MN	MONTEVIDEO 1 SW	21-5563			1-day	NCDC	44.9364	-95.7536	985	8/1889-10/2011
MN	MONTGOMERY	21-5571			1-day	NCDC	44.4597	-93.6631	1100	9/1948-10/2011

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MN	MOORHEAD	62-5586	21-5586		1-day	FORTS	46.8750	-96.7708	906	6/1875-12/1892
MN	MOORHEAD	21-5586			1-day	NCDC	46.8875	-96.7478	890	**6/1875-10/2011**
MN	MOORHEAD ST TEACHERS C	21-5589	21-5586		1-day	NCDC	46.8667	-96.7500	942	5/1893-7/1953
MN	MOOSE LAKE 1 SSE	21-5598			1-day	NCDC	46.4378	-92.7578	1110	**12/1913-10/2011**
MN	MOOSE LAKE RS	21-5603	21-5598		1-day	NCDC	46.4500	-92.7667	1060	9/1948-2/1960
MN	MORA	21-5615			1-day	NCDC	45.8775	-93.3147	1018	6/1904-10/2011
MN	MORRIS WC EXP STN	21-5638			1-day	NCDC	45.5903	-95.8747	1140	5/1885-10/2011
MN	MOSQ_27_116N_21W_33_MPLS_	80-0087	80-0012		1-day	MN DNR	44.8115	-93.3483	863	7/1958-9/1972
MN	MOSQ_82__29N_21W_13_OAKDA	80-0092	80-0295		1-day	MN DNR	44.9997	-92.8731	925	5/1959-10/1986
MN	MOUND	21-5665			1-day	NCDC	44.9500	-93.6500	935	**1/1892-4/2003**
MN	MTN IRON	21-5650	80-0270		1-day	NCDC	47.5333	-92.6000	1510	11/1893-8/1910
MN	NEW LONDON	21-5842			1-day	NCDC	45.3050	-94.9392	1250	4/1893-7/2009
MN	NEW RICHLAND	21-5870	80-0290		1-day	NCDC	43.8833	-93.5000	1180	1/1902-11/1919
MN	NEW ULM 2 SE	21-5887			1-day	NCDC	44.3006	-94.4897	890	9/1887-10/2010
MN	NORTH MANKATO	21-6007	21-5073		1-day	NCDC	44.1667	-94.0333	785	9/1954-8/1984
MN	NORTHFIELD 2 NNE	21-5987			1-day	NCDC	44.4761	-93.1486	890	9/1881-6/2012
MN	NORTHFIELD 2 NNE	21-5987			1-hour	NCDC	44.4761	-93.1486	890	8/1948-12/2010
MN	NORTHFIELD 2 NNE	21-5987			15-min	NCDC	44.4761	-93.1486	890	5/1971-12/2010
MN	OKLEE	21-6148			1-day	NCDC	47.8333	-95.8500	1150	9/1939-6/1996
MN	OLIVIA 3E	21-6152			1-day	NCDC	44.7628	-94.9297	1100	**2/1885-7/2011**
MN	ONAMIA RS	21-6166			1-day	NCDC	46.0675	-93.6672	1260	2/1935-10/2011
MN	ONAMIA RS	21-6166		21-6166	1-hour	NCDC	46.0675	-93.6672	1260	8/1948-12/2010
MN	ORR	21-6213	80-0070		1-day	NCDC	48.0553	-92.8425	1390	1/1926-7/1954
MN	ORR	21-6213		80-0070	1-hour	NCDC	48.0553	-92.8425	1390	8/1948-9/2005
MN	ORTONVILLE	21-6224	39-0662		1-day	NCDC	45.3000	-96.4500	981	1/1892-3/1983
MN	ORWELL DAM	21-6228			1-day	NCDC	46.2147	-96.1783	1080	3/1953-8/2011
MN	ORWELL DAM	21-6228		21-6228	1-hour	NCDC	46.2147	-96.1783	1080	3/1953-12/2010
MN	OTTERTAIL	21-6276			1-day	NCDC	46.4314	-95.5464	1357	5/1940-10/2011
MN	OWATONNA	21-6287			1-day	NCDC	44.0981	-93.2308	1150	3/1961-10/2011
MN	PARK RAPIDS 2 S	21-6360			1-day	NCDC	46.9006	-95.0678	1434	1/1885-6/2001
MN	PELICAN RAPIDS	21-6405			1-day	NCDC	46.5689	-96.0886	1370	5/1940-10/2011
MN	PIGEON RIVER BRG	21-6505	21-3296		1-day	NCDC	48.0000	-89.7000	951	8/1924-6/1950

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MN	PINE RIVER DAM	21-6547			1-day	NCDC	46.6694	-94.1089	1250	3/1887-10/2011
MN	PIPESTONE	21-6565			1-day	NCDC	44.0139	-96.3258	1705	8/1877-10/2011
MN	PLEASANT MOUNDS	21-6570	21-0157		1-day	NCDC	43.8667	-94.1333	1014	10/1894-12/1904
MN	POKEGAMA DAM	21-6612			1-day	NCDC	47.2508	-93.5861	1280	4/1887-10/2011
MN	POKEGAMA DAM	21-6612			1-hour	NCDC	47.2508	-93.5861	1280	8/1948-12/2010
MN	POKEGAMA DAM	21-6612			15-min	NCDC	47.2508	-93.5861	1280	5/1971-12/2010
MN	PRESTON	21-6654			1-day	NCDC	43.6725	-92.0747	930	6/1952-10/2011
MN	READS LANDING	21-6777	21-8552		1-day	NCDC	44.4000	-92.0833	751	4/1895-12/1955
MN	RED LAKE FALLS	21-6787			1-day	NCDC	47.8881	-96.2658	1090	10/1913-10/2011
MN	RED LAKE INDIAN AGENCY	21-6795			1-day	NCDC	47.8769	-95.0161	1220	11/1893-8/2011
MN	RED LAKE INDIAN AGENCY	21-6795		21-6795	1-hour	NCDC	47.8769	-95.0161	1220	8/1948-6/2007
MN	RED WING	21-6817			1-day	NCDC	44.5714	-92.5283	688	5/1893-7/2011
MN	RED WING DAM 3	21-6822			1-day	NCDC	44.6103	-92.6100	677	7/1948-10/2011
MN	RED WING DAM 3	21-6822		21-6822	1-hour	NCDC	44.6103	-92.6100	677	8/1948-12/2010
MN	REDWOOD FALLS FAA AP	21-6835			1-day	NCDC	44.5472	-95.0822	1025	1/1892-5/2009
MN	REMER	21-6848	21-6849		1-day	NCDC	47.0500	-93.9000	1342	9/1948-12/1956
MN	REMER #2	21-6849			1-day	NCDC	47.0622	-93.9150	1345	**9/1948-5/2000**
MN	RIVERTON	21-6972	80-0113		1-day	NCDC	46.4667	-94.0500	1161	9/1948-12/1989
MN	ROCHESTER INTL AP	21-7004			1-day	NCDC	43.9042	-92.4917	1304	3/1893-10/2010
MN	ROCHESTER INTL AP	21-7004		21-7004	1-hour	NCDC	43.9042	-92.4917	1304	8/1948-12/2010
MN	ROCKFORD	21-7020			1-day	NCDC	45.0894	-93.7400	950	**7/1969-10/2011**
MN	ROSEAU	21-7087			1-day	NCDC	48.8486	-95.7675	1047	2/1894-12/2006
MN	ROSEMOUNT AGR EXP STN	21-7107			1-day	NCDC	44.7178	-93.0975	950	1/1951-10/2011
MN	ROTHSAY	21-7149			1-day	NCDC	46.4808	-96.2869	1236	7/1959-10/2011
MN	ROYALTON 5W	21-7157			1-day	NCDC	45.8333	-94.3667	1090	**9/1948-7/2003**
MN	RUSHFORD	21-7184			1-day	NCDC	43.8053	-91.7500	770	8/1948-10/2011
MN	RUSHFORD	21-7184		21-7184	1-hour	NCDC	43.8053	-91.7500	770	8/1948-12/2010
MN	SANDY LAKE DAM LIBBY	21-7460			1-day	NCDC	46.7953	-93.3211	1234	8/1892-9/2011
MN	SANDY LAKE DAM LIBBY	21-7460			1-hour	NCDC	46.7953	-93.3211	1234	8/1948-12/2010
MN	SANDY LAKE DAM LIBBY	21-7460			15-min	NCDC	46.7953	-93.3211	1234	5/1971-12/2010
MN	SANTIAGO 3 E	21-7502			1-day	NCDC	45.5461	-93.7572	1010	9/1959-7/2011
MN	SHERBURN 3 WSW	21-7602			1-hour	NCDC	43.6303	-94.7744	1320	8/1948-12/2010

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
MN	SHERBURN 3 WSW	21-7602			15-min	NCDC	43.6303	-94.7744	1320	8/1971-12/2010
MN	SHOREWOOD METER M415	82-0019			15-min	MCES MN	44.8997	-93.5234	890	9/2000-1/2009
MN	SPRING GROVE	21-7915			1-day	NCDC	43.5619	-91.6447	1375	3/1935-4/2001
MN	SPRING GROVE	21-7915	21-7917		1-hour	NCDC	43.5619	-91.6447	1375	8/1948-4/2001
MN	SPRING GROVE 4 N	21-7917			1-day	NCDC	43.6125	-91.6222	1145	8/1948-10/2011
MN	SPRING GROVE 4 N	21-7917		21-7917	1-hour	NCDC	43.6125	-91.6222	1145	**8/1948-12/2010**
MN	SPRING VALLEY	21-7941			1-day	NCDC	43.6933	-92.3925	1275	3/1886-10/2011
MN	SPRING VALLEY	21-7941			1-hour	NCDC	43.6933	-92.3925	1275	8/1948-12/2010
MN	SPRING VALLEY	21-7941			15-min	NCDC	43.6933	-92.3925	1275	5/1971-12/2010
MN	SPRINGFIELD 1 NW	21-7907			1-day	NCDC	44.2469	-94.9864	1066	5/1937-10/2011
MN	SPRINGFIELD 1 NW	21-7907		21-7907	1-hour	NCDC	44.2469	-94.9864	1066	8/1948-12/2010
MN	ST CHARLES	21-7277	80-0299		1-day	NCDC	43.9488	-92.0665	1319	8/1889-5/1923
MN	ST CLOUD MUNI AP	21-7294			1-day	NCDC	45.5433	-94.0514	1018	3/1893-10/2010
MN	ST CLOUD MUNI AP	21-7294		21-7294	1-hour	NCDC	45.5433	-94.0514	1018	8/1948-12/2010
MN	ST JAMES FILT PLT	21-7326			1-day	NCDC	43.9908	-94.6122	1100	5/1940-9/2011
MN	ST PAUL	21-7377			1-day	NCDC	44.9461	-93.0300	900	**6/1862-5/2006**
MN	ST PAUL WB AP	21-7386	21-7377		1-day	NCDC	44.9333	-93.0667	722	1/1937-5/1953
MN	ST PETER	21-7405			1-day	NCDC	44.3222	-93.9656	850	5/1893-7/2011
MN	ST. PAUL	62-7377	62-7386		1-day	FORTS	44.9525	-93.0000	770	6/1862-1/1874
MN	ST. PAUL	62-7386	21-7377		1-day	FORTS	44.9481	-93.0000	766	11/1871-12/1892
MN	ST. VINCENT	62-7410	32-6947		1-day	FORTS	48.9675	-97.2219	793	9/1880-12/1892
MN	STEPHENS MINE	21-8011	21-3921		1-day	NCDC	47.5667	-92.2000	1500	12/1906-3/1914
MN	STEWART	21-8025	21-1065		1-day	NCDC	44.7344	-94.3425	1040	5/1957-7/2003
MN	STILLWATER 1 SE	21-8037			1-day	NCDC	45.0417	-92.7975	710	2/1905-3/2010
MN	SWCD__5__36N_29W_19_ADELM	80-0328			1-day	MN DNR	45.5958	-93.9974	1099	6/1978-11/2008
MN	SWCD__6_123N_48W__8_GRAUM	80-0331			1-day	MN DNR	45.4804	-96.7100	1099	5/1893-7/2005
MN	SWCD_15_147N_37W__2_EYSTE	80-0105			1-day	MN DNR	47.5806	-95.3310	1473	1/1906-12/2008
MN	SWCD_18__47N_29W_31_SIPPE	80-0113			1-day	MN DNR	46.5116	-94.0521	1207	9/1948-6/2004
MN	SWCD_19__27N_22W__4_EGGIN	80-0115			1-day	MN DNR	44.8551	-93.0549	909	7/1974-11/2008
MN	SWCD_19_113N_17W_22_DUNCO	80-0114			1-day	MN DNR	44.5794	-92.8430	886	6/1970-10/2000
MN	SWCD_25_112N_16W_31_ANDER	80-0128			1-day	MN DNR	44.4636	-92.7804	1096	9/1978-6/2012
MN	SWCD_28_101N__7W__1_TREAN	80-0131	21-7915		1-day	MN DNR	43.5800	-91.6209	1204	1/1980-8/1999

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MN	SWCD_44_144N_41W_19_BUSCH	80-0180			1-day	MN DNR	47.2750	-95.9231	1230	10/1900-8/2010
MN	SWCD_50_101N_15W__2_ARNDO	80-0189			1-day	MN DNR	43.5797	-92.5989	1375	5/1979-10/2008
MN	SWCD_62__30N_23W_35_WEDEL	80-0238			1-day	MN DNR	45.0430	-93.1367	938	6/1968-11/2008
MN	SWCD_63_151N_40W_18_KVASA	80-0240			1-day	MN DNR	47.8995	-95.8271	1158	8/1978-11/2008
MN	SWCD_68_162N_36W_15_KNUDS	80-0250			1-day	MN DNR	48.8509	-95.2758	1106	8/1978-10/2008
MN	SWCD_68_163N_42W__1_ROSEA	80-0253			1-day	MN DNR	48.9714	-96.0190	1040	1/1974-1/2009
MN	SWCD_69__54N_18W_14_JANZE	80-0262			1-day	MN DNR	47.1609	-92.5887	1309	4/1974-11/2008
MN	SWCD_69__58N_17W__5_HAFDA	80-0270	21-8543		1-day	MN DNR	47.5380	-92.5313	1558	7/1997-11/2008
MN	SWCD_72_114N_28W_12_SCHAU	80-0280			1-day	MN DNR	44.6957	-94.1425	1004	11/1895-12/2008
MN	SWCD_81_105N_23W__2_MILLE	80-0290			1-day	MN DNR	43.9281	-93.5569	1138	1/1902-10/2008
MN	SWCD_82__30N_21W_32_SCHIL	80-0295			1-day	MN DNR	45.0430	-92.9545	932	5/1959-10/2008
MN	SWCD_85_105N_10W__3_DECKE	80-0299			1-day	MN DNR	43.9263	-92.0091	1257	8/1889-10/2008
MN	SWCD_85_106N__8W_12_REDIG	80-0300			1-day	MN DNR	43.9978	-91.7299	1224	5/1982-10/2008
MN	SWCD_86_119N_24W__7_BOOTH	80-0302	21-7020		1-day	MN DNR	45.1297	-93.7559	1037	7/1987-12/1999
MN	TAYLORS FALLS 1 NE	21-8204	47-7464		1-day	NCDC	45.4167	-92.6500	761	9/1906-12/1949
MN	THEILMAN 1SSW	21-8227			1-day	NCDC	44.2814	-92.1942	800	8/1938-10/2011
MN	THIEF LAKE REFUGE	21-8235			1-hour	NCDC	48.4867	-95.9536	1142	8/1948-12/2010
MN	THIEF LAKE REFUGE	21-8235			15-min	NCDC	48.4867	-95.9536	1142	8/1976-12/2010
MN	THIEF RIVER FALLS	21-8243	21-8247		1-day	NCDC	48.0667	-96.1833	1115	5/1899-10/1972
MN	THIEF RIVER FALLS 2	21-8247			1-day	NCDC	48.1331	-96.1667	1130	**5/1899-12/2009**
MN	THORHULT	21-8254			1-day	NCDC	48.2325	-95.2481	1180	2/1945-8/2011
MN	TOFTE RS	21-8280			1-hour	NCDC	47.5681	-90.8500	680	8/1948-12/2010
MN	TOFTE RS	21-8280			15-min	NCDC	47.5681	-90.8500	680	9/1971-12/2010
MN	TOWER 3 S	21-8311			1-day	NCDC	47.7642	-92.2811	1485	6/1895-10/2011
MN	TRACY	21-8323			1-day	NCDC	44.2394	-95.6308	1403	7/1887-8/2011
MN	TRACY	21-8323			1-hour	NCDC	44.2394	-95.6308	1403	8/1948-12/2010
MN	TRACY	21-8323			15-min	NCDC	44.2394	-95.6308	1403	5/1971-12/2010
MN	TWIN VALLEY 3 SW	21-8411			1-day	NCDC	47.2236	-96.2922	1075	8/1941-4/2010
MN	TWIN VALLEY 3 SW	21-8411		21-8411	1-hour	NCDC	47.2236	-96.2922	1075	12/1948-12/2010
MN	TWO HARBORS	21-8419			1-day	NCDC	47.0258	-91.6653	625	3/1894-6/2012
MN	TYLER	21-8429			1-day	NCDC	44.2781	-96.1281	1735	7/1916-8/2008
MN	VESTA	21-8520			1-day	NCDC	44.5081	-95.4111	1075	5/1940-10/2011

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MN	VIRGINIA	21-8543			1-day	NCDC	47.5000	-92.5500	1440	**11/1893-11/2008**
MN	VIRGINIA	21-8543	21-2645		1-hour	NCDC	47.5000	-92.5500	1440	8/1948-1/1987
MN	WABASHA	21-8552			1-day	NCDC	44.3850	-92.0486	700	**7/1892-10/2011**
MN	WACONIA LIFT STATION L70	82-0014			15-min	MCES MN	44.8461	-93.7675	969	9/2000-1/2009
MN	WADENA 3 S	21-8579			1-day	NCDC	**46.4011**	**-95.1497**	1372	3/1885-10/2011
MN	WALES 2E	21-8613		21-8613	1-hour	NCDC	47.2561	-91.7017	1675	8/1948-12/2010
MN	WALKER AH GWAH CHING	21-8618			1-day	NCDC	47.0744	-94.5700	1410	12/1907-4/2008
MN	WALKER RS	21-8621		21-8618	1-hour	NCDC	47.0994	-94.5722	1360	8/1948-12/2010
MN	WALKER RS	21-8621		21-8618	15-min	NCDC	47.0994	-94.5722	1360	5/1971-12/2010
MN	WANNASKA 1 S	21-8656	80-0065		1-day	NCDC	48.6500	-95.7500	1190	11/1963-9/1991
MN	WARROAD	21-8679			1-day	NCDC	48.8947	-95.3300	1073	3/1901-10/2011
MN	WARROAD	21-8679		21-8679	1-hour	NCDC	48.8947	-95.3300	1073	8/1948-12/2010
MN	WASECA EXP STN	21-8692			1-day	NCDC	44.0725	-93.5328	1153	8/1914-10/2011
MN	WASKISH 4NE	21-8700			1-day	NCDC	48.2064	-94.3939	1200	7/1923-10/2011
MN	WATSON 1 NE	21-8729		21-8729	1-hour	NCDC	45.0225	-95.7894	1070	5/1954-12/2010
MN	WATSON 1 NE	21-8729			1-day	NCDC	45.0225	-95.7894	1070	7/1948-4/2010
MN	WELLS	21-8808			1-day	NCDC	43.7461	-93.7364	1197	1/1942-10/2011
MN	WHEATON	21-8907			1-day	NCDC	45.8081	-96.5042	1018	5/1914-10/2011
MN	WHITE ROCK DAM	21-8947			1-hour	NCDC	45.8619	-96.5650	1024	8/1948-12/2010
MN	WHITE ROCK DAM	21-8947			15-min	NCDC	45.8619	-96.5650	1024	5/1971-12/2010
MN	WHITEFACE RSVR	21-8939			1-day	NCDC	47.2833	-92.1833	1492	9/1948-9/1995
MN	WILLMAR AP	21-8999	21-9004		1-hour	NCDC	45.1167	-95.0833	1132	8/1948-8/1973
MN	WILLMAR WWTP	21-9004			1-day	NCDC	45.1078	-95.0358	1100	3/1893-7/2010
MN	WILLMAR WWTP	21-9004			1-hour	NCDC	45.1078	-95.0358	1100	**8/1948-7/2010**
MN	WILLMAR WWTP	21-9004			15-min	NCDC	45.1078	-95.0358	1100	8/1973-7/2010
MN	WINDOM	21-9033			1-day	NCDC	43.8736	-95.1194	1375	8/1905-10/2011
MN	WINNEBAGO	21-9046			1-day	NCDC	43.7692	-94.1872	1110	10/1898-10/2011
MN	WINNIBIGOSHISH DAM	21-9059			1-day	NCDC	47.4306	-94.0586	1315	4/1887-7/2011
MN	WINNIBIGOSHISH DAM	21-9059		21-9059	1-hour	NCDC	47.4306	-94.0586	1315	3/1953-12/2010
MN	WINONA	21-9067			1-day	NCDC	44.0422	-91.6364	652	11/1885-3/2011
MN	WINONA DAM 5 A	21-9072			1-day	NCDC	44.0875	-91.6703	663	1/1939-10/2011
MN	WINSTED	21-9085			1-day	NCDC	44.9511	-94.0628	1030	9/1948-2/2006

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MN	WINTON PWR PLT	21-9101	21-2543		1-day	NCDC	47.9333	-91.7667	1337	11/1913-9/1995
MN	WINTON PWR PLT	21-9101		21-2543	1-hour	NCDC	47.9333	-91.7667	1337	8/1948-7/1995
MN	WORTHINGTON	21-9166	21-9170		1-day	NCDC	43.6167	-95.6000	1591	12/1893-10/1971
MN	WORTHINGTON	21-9166	21-9170		1-hour	NCDC	43.6167	-95.6000	1591	8/1948-10/1971
MN	WORTHINGTON 2 NNE	21-9170			1-day	NCDC	43.6450	-95.5803	1570	**12/1893-10/2011**
MN	WORTHINGTON 2 NNE	21-9170			1-hour	NCDC	43.6450	-95.5803	1570	**8/1948-12/2010**
MN	WORTHINGTON 2 NNE	21-9170			15-min	NCDC	43.6450	-95.5803	1570	7/1971-12/2010
MN	WRIGHT 4 NW	21-9173			1-day	NCDC	46.7181	-93.0700	1295	7/1961-10/2011
MN	YOUNG AMERICA 1SW	21-9208	80-0002		1-day	NCDC	44.8056	-94.0167	1110	12/1954-9/1995
MN	ZUMBROTA	21-9249			1-day	NCDC	44.2992	-92.6661	985	7/1903-10/2011
MO	ADVANCE 1 S	23-0022			1-day	NCDC	37.0956	-89.9161	360	1/1948-11/2003
MO	ADVANCE 1 S	23-0022			1-hour	NCDC	37.0956	-89.9161	360	8/1948-12/2010
MO	ADVANCE 1 S	23-0022			15-min	NCDC	37.0956	-89.9161	360	5/1971-12/2010
MO	ALBANY	23-0051			1-day	NCDC	40.2486	-94.3308	875	2/1905-10/2011
MO	ALBANY	83-0012			1-hour	CAAWSN MO	40.2411	-94.3435	854	1/1993-10/2009
MO	ALLEY SPRING RGR STN	23-0088		23-0088	1-hour	NCDC	37.1528	-91.4439	700	**8/1948-12/2010**
MO	ALTON 6 SE	23-0127			1-day	NCDC	36.6300	-91.3042	810	3/1940-8/2011
MO	ALTON 6 SE	23-0127		23-0127	1-hour	NCDC	36.6300	-91.3042	810	8/1948-2/1990
MO	AMITY 4 NE	23-0143			1-day	NCDC	39.8914	-94.3600	974	4/1935-10/2011
MO	AMSTERDAM	23-0151		23-0151	1-hour	NCDC	38.3500	-94.5833	860	8/1948-8/1973
MO	ANDERSON	23-0164			1-day	NCDC	36.6519	-94.4386	1050	**1/1899-7/2008**
MO	ANDERSON	23-0165	23-0164		1-day	NCDC	36.6500	-94.5167	1050	1/1899-5/1943
MO	ANNAPOLIS 3 SW	23-0179			1-day	NCDC	37.3000	-90.7667	591	8/1923-12/1978
MO	APPLETON CITY	23-0204			1-day	NCDC	38.1869	-94.0281	852	1/1890-10/2011
MO	APPLETON CITY	23-0204			1-hour	NCDC	38.1869	-94.0281	852	8/1948-12/2010
MO	APPLETON CITY	23-0204			15-min	NCDC	38.1869	-94.0281	852	5/1971-12/2010
MO	ARCADIA	23-0224			1-day	NCDC	37.5981	-90.6264	918	1/1893-3/2010
MO	ASHTON 1 W	23-0312	23-5130		1-hour	NCDC	40.4500	-91.8167	**715**	8/1948-11/1961
MO	BELLEVIEW 2 E	23-0539			1-day	NCDC	37.6900	-90.7800	1085	10/1936-2/2011
MO	BELLEVIEW 2 E	23-0539		23-0539	1-hour	NCDC	37.6900	-90.7800	1085	8/1948-10/1999
MO	BERNIE	23-0595			1-day	NCDC	36.6717	-89.9717	300	7/1944-11/2006
MO	BETHANY	23-0608			1-day	NCDC	40.2575	-94.0269	949	1/1893-10/2011

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MO	BILLINGS 1SW	23-0657			1-day	NCDC	37.0536	-93.5750	1332	5/1962-8/2011
MO	BIRCH TREE	23-0668			1-day	NCDC	36.9833	-91.5000	1001	8/1893-10/1968
MO	BLOOMFIELD	23-0735			1-day	NCDC	36.8908	-89.9311	440	7/1944-4/2007
MO	BOLIVAR 1 NE	23-0789			1-day	NCDC	37.6167	-93.3911	1034	1/1900-10/2011
MO	BOLIVAR 1 NE	23-0789		23-0789	1-hour	NCDC	37.6167	-93.3911	1034	8/1948-12/2010
MO	BOONVILLE	23-0812	23-0817		1-day	NCDC	38.9667	-92.7500	663	1/1893-10/1950
MO	BOONVILLE	23-0817			1-day	NCDC	38.9708	-92.7603	744	**1/1893-8/2008**
MO	BOWLING GREEN 4 NW	23-0856			1-day	NCDC	39.3839	-91.2594	792	**1/1893-10/2011**
MO	BROOKFIELD	23-0980			1-day	NCDC	39.7650	-93.0594	767	9/1941-10/2011
MO	BRUNSWICK	23-1037			1-day	NCDC	39.4247	-93.1331	662	1/1890-10/2011
MO	BUFFALO 2N	23-1087			1-day	NCDC	37.6667	-93.1067	1086	3/1931-10/2011
MO	BUNKER 4N	23-1101			1-day	NCDC	37.5139	-91.1939	1200	8/1923-8/2011
MO	BURLINGTON JUNCTION	23-1141			1-day	NCDC	40.4450	-95.0894	960	9/1948-10/2011
MO	BUTLER 4W	23-1145			1-day	NCDC	38.2611	-94.4050	790	6/1940-10/2011
MO	BYNUMVILLE 1 E	23-1156			1-day	NCDC	39.5833	-92.8167	840	8/1948-7/1989
MO	CALIFORNIA	23-1189			1-day	NCDC	38.6278	-92.5544	879	8/1954-10/2011
MO	CAMDENTON 2 NW	23-1212			1-day	NCDC	**38.0090**	**-92.7447**	**1040**	4/1946-3/1995
MO	CANTON L&D 20	23-1275			1-day	NCDC	40.1433	-91.5158	490	1/1893-10/2011
MO	CAP AU GRIS L&D 25	23-1283		23-1283	1-hour	NCDC	**39.0053**	**-90.6912**	450	**8/1948-12/2010**
MO	CAPE GIRARDEAU	23-1296	23-1289		1-day	NCDC	37.3061	-89.5300	300	1/1892-1/1969
MO	CAPE GIRARDEAU RGNL AP	23-1289			1-day	NCDC	37.2253	-89.5706	336	**1/1892-10/2010**
MO	CAPLINGER MILLS	23-1304			1-day	NCDC	37.7947	-93.8019	827	7/1926-8/2011
MO	CARROLLTON	23-1340			1-day	NCDC	39.3594	-93.4886	705	1/1893-10/2011
MO	CARTHAGE	23-1356			1-day	NCDC	37.1772	-94.3047	978	3/1893-10/2011
MO	CARUTHERSVILLE	23-1364			1-day	NCDC	36.1686	-89.6642	270	1/1893-6/2011
MO	CASSVILLE RANGER STN	23-1383			1-day	NCDC	36.6728	-93.8578	1340	1/1911-10/2011
MO	CASSVILLE RANGER STN	23-1383		23-1383	1-hour	NCDC	36.6728	-93.8578	1340	8/1948-12/2010
MO	CENTERVILLE	23-1467			1-day	NCDC	37.4367	-90.9644	840	**1/1893-7/2010**
MO	CENTERVILLE RS	23-1472	23-1467		1-day	NCDC	37.4333	-90.9500	823	11/1936-8/1960
MO	CENTRALIA	23-1482			1-day	NCDC	39.1678	-92.1419	892	9/1938-10/2011
MO	CHARLESTON	23-1540			1-day	NCDC	36.9272	-89.3536	330	5/1951-10/2002
MO	CHILLICOTHE 2S	23-1580			1-day	NCDC	39.7750	-93.5358	780	2/1915-10/2011

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MO	CLARKSVILLE L&D 24	23-1640			1-day	NCDC	39.3731	-90.9053	460	8/1948-10/2011
MO	CLARKSVILLE L&D 24	23-1640			1-hour	NCDC	39.3731	-90.9053	460	8/1948-12/2010
MO	CLARKSVILLE L&D 24	23-1640			15-min	NCDC	39.3731	-90.9053	460	5/1971-12/2010
MO	CLEARWATER DAM	23-1674			1-day	NCDC	37.1319	-90.7756	660	11/1946-10/2011
MO	CLEARWATER DAM	23-1674		23-1674	1-hour	NCDC	37.1319	-90.7756	660	8/1948-12/2010
MO	CLIFTON CITY	23-1704			1-day	NCDC	38.7500	-93.0167	730	7/1948-12/1996
MO	CLIFTON HILL	23-1708			1-day	NCDC	39.4500	-92.6667	732	6/1902-4/1946
MO	CLINTON	23-1711			1-day	NCDC	38.3950	-93.7711	770	10/1906-10/2011
MO	CLINTON	23-1711		23-1711	1-hour	NCDC	38.3950	-93.7711	770	8/1948-12/2010
MO	COLOMA	23-1773			1-day	NCDC	39.5378	-93.5222	780	8/1949-10/2011
MO	COLUMBIA RGNL AP	23-1791			1-day	NCDC	**38.8170**	**-92.2147**	893	9/1889-10/2010
MO	COLUMBIA RGNL AP	23-1791		23-1791	1-hour	NCDC	**38.8170**	**-92.2147**	893	**8/1948-12/2010**
MO	COLUMBIA SANBORN FIELD	83-0005	23-1791		1-day	CAAWSN MO	38.9425	-92.3205	770	1/1890-10/2009
MO	COLUMBIA SANBORN FIELD	83-0005	23-1791		1-hour	CAAWSN MO	38.9425	-92.3205	770	5/1994-10/2009
MO	COLUMBIA WB CITY	23-1795	23-1790		1-day	NCDC	38.9500	-92.3333	758	1/1890-4/1951
MO	COLUMBIA WB CITY	23-1795	23-1790		1-hour	NCDC	38.9500	-92.3333	758	8/1948-4/1951
MO	COLUMBIA WSO AP	23-1790			1-day	NCDC	38.9667	-92.3667	778	1/1948-10/1969
MO	COLUMBIA WSO AP	23-1790	83-0005		1-hour	NCDC	38.9667	-92.3667	778	9/1948-9/1969
MO	CONCEPTION	23-1822			1-day	NCDC	40.2394	-94.6833	1108	1/1890-10/2011
MO	CONCORDIA	23-1837			1-day	NCDC	38.9783	-93.5703	765	1/1893-10/2011
MO	CONEHATTA 1 NE	22-1900			15-min	NCDC	32.4608	-89.2708	523	6/1980-12/2010
MO	COOK STATION	83-0009			1-day	CAAWSN MO	37.7980	-91.4298	925	11/1943-10/2009
MO	COOK STATION	83-0009			1-hour	CAAWSN MO	37.7980	-91.4298	925	1/1993-10/2009
MO	COOK STN	23-1870			1-day	NCDC	37.8167	-91.4333	991	11/1943-12/1984
MO	CRANE MTN	23-1980			1-day	NCDC	37.4500	-90.6333	951	6/1940-7/2009
MO	CROCKER	23-2004	23-4136		1-day	NCDC	37.9500	-92.2667	1089	7/1911-10/1973
MO	CRYSTAL CITY	23-2031	23-2850		1-day	NCDC	38.2333	-90.3833	420	5/1934-1/1959
MO	DANVILLE 1 ENE	23-2095	23-6009		1-hour	NCDC	38.9167	-91.5167	830	8/1953-10/1962
MO	DE SOTO	23-2220			1-day	NCDC	38.1403	-90.5058	731	3/1901-10/2011
MO	DEXTER	23-2235			1-day	NCDC	36.8000	-89.9667	381	9/1923-3/1986
MO	DIAMOND 2W	23-2240			1-day	NCDC	36.9858	-94.3519	1070	**9/1943-10/2011**
MO	DONIPHAN	23-2289			1-day	NCDC	36.6206	-90.8125	289	4/1904-10/2011

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MO	DORA 1N	23-2302			1-day	NCDC	36.7900	-92.2192	1011	9/1948-10/2011
MO	DORA 1N	23-2302		23-2302	1-hour	NCDC	36.7900	-92.2192	1011	8/1948-12/2010
MO	DOWNING	23-2318			1-day	NCDC	40.4906	-92.3706	870	8/1893-10/2011
MO	DOWNING	23-2318		23-2318	1-hour	NCDC	40.4906	-92.3706	870	8/1948-12/2010
MO	DREXEL	23-2331			1-hour	NCDC	38.4767	-94.6103	990	1/1971-12/2010
MO	DREXEL	23-2331			15-min	NCDC	38.4767	-94.6103	990	**5/1971-12/2010**
MO	EDGERTON	23-2474			1-day	NCDC	39.5075	-94.6328	840	11/1919-8/2011
MO	EDINA	23-2482			1-day	NCDC	40.1692	-92.1678	780	1/1893-10/2011
MO	ELDON	23-2503			1-day	NCDC	38.3486	-92.5808	930	2/1893-10/2011
MO	ELDORADO SPRINGS	23-2511			1-day	NCDC	37.8639	-94.0156	920	5/1905-10/2011
MO	ELLINGTON	23-2547			1-day	NCDC	37.2333	-90.9700	730	6/1939-10/2011
MO	ELLINGTON	23-2547		23-2547	1-hour	NCDC	37.2333	-90.9700	730	8/1948-6/1990
MO	ELM	23-2568			1-day	NCDC	38.8681	-94.0353	850	8/1956-10/2011
MO	ELM	23-2568		23-2568	1-hour	NCDC	38.8681	-94.0353	850	8/1956-12/2010
MO	ELSBERRY 1 S	23-2591			1-day	NCDC	39.1506	-90.7847	450	1/1931-10/2011
MO	EMINENCE 5 WNW	23-2617	23-0088		1-hour	NCDC	37.1500	-91.4500	702	8/1948-5/1973
MO	FAIRFAX	23-2729			1-day	NCDC	40.3389	-95.3911	930	9/1948-3/2010
MO	FARMINGTON	23-2809			1-day	NCDC	37.7922	-90.4103	928	12/1906-10/2011
MO	FARMINGTON	23-2809			1-hour	NCDC	37.7922	-90.4103	928	8/1948-12/2010
MO	FARMINGTON	23-2809			15-min	NCDC	37.7922	-90.4103	928	5/1971-12/2010
MO	FAYETTE	23-2823			1-day	NCDC	39.1333	-92.7000	751	1/1893-9/1978
MO	FESTUS	23-2850			1-day	NCDC	38.2306	-90.3981	600	**5/1934-10/2011**
MO	FISK	23-2881	53-0329		1-day	NCDC	36.7828	-90.2033	330	11/1930-4/1981
MO	FORSYTH	23-2975	23-6460		1-hour	NCDC	36.7000	-93.1167	850	8/1948-11/1968
MO	FREDERICKTOWN	23-3038			1-day	NCDC	37.5739	-90.3086	719	7/1923-10/2011
MO	FREEDOM	23-3043			1-day	NCDC	38.4583	-91.7028	805	7/1962-10/2011
MO	FULTON	23-3079			1-day	NCDC	38.8472	-91.9414	784	2/1893-10/2011
MO	FULTON	23-3079			1-hour	NCDC	38.8472	-91.9414	784	8/1948-12/2010
MO	FULTON	23-3079			15-min	NCDC	38.8472	-91.9414	784	1/1984-12/2010
MO	GALENA	23-3094			1-day	NCDC	36.8061	-93.4661	1046	12/1898-10/2011
MO	GALLATIN 1W	23-3102			1-day	NCDC	39.9133	-93.9803	925	1/1893-10/2011
MO	GERALD	23-3178	23-7300		1-day	NCDC	38.4000	-91.3333	889	6/1940-11/1978

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
MO	GLADSTONE	23-3219			1-hour	NCDC	39.1753	-94.5936	930	**8/1948-12/2010**
MO	GLADSTONE	23-3219			15-min	NCDC	39.1753	-94.5936	930	2/1971-12/2010
MO	GLOVER ST FRANCIS RIVER	59-0020			1-hour	USACE ST LOUIS	**37.4836**	**-90.6894**	**825**	5/2003-7/2009
MO	GORIN	23-3290			1-day	NCDC	40.2500	-92.0833	702	1/1893-1/1942
MO	GOWER 2 N	23-3300		23-3300	1-hour	NCDC	39.6333	-94.6000	981	8/1950-1/1977
MO	GRANBY	23-3341	23-2240		1-day	NCDC	36.9667	-94.2833	1132	9/1943-7/1973
MO	GRANT CITY	23-3369			1-day	NCDC	40.4861	-94.4139	1130	1/1893-12/2008
MO	GRANT CITY	23-3369		23-3369	1-hour	NCDC	40.4861	-94.4139	1130	8/1948-1/2009
MO	GREENVILLE 6 N	23-3451			1-day	NCDC	37.2000	-90.4500	490	6/1894-7/2009
MO	GREGORY LANDING	23-3463			1-day	NCDC	40.2823	-91.4949	487	9/1950-6/1986
MO	GROVESPRING 1NE	23-3483			1-day	NCDC	37.4078	-92.5931	1388	4/1949-11/2006
MO	HAILEY 3 WSW	23-3537			1-day	NCDC	36.7000	-93.7667	1312	**3/1893-10/1969**
MO	HAMDEN 2 NE	23-3565		23-1156	1-hour	NCDC	39.6000	-92.7833	722	8/1948-4/1980
MO	HAMILTON 2 W	23-3568			1-day	NCDC	39.7425	-94.0347	900	**1/1918-10/2011**
MO	HANNIBAL WTR WKS	23-3601			1-day	NCDC	**39.7231**	**-91.3748**	712	1/1902-10/2011
MO	HANNIBAL WTR WKS	23-3601			1-hour	NCDC	**39.7231**	**-91.3748**	712	4/1950-12/2010
MO	HANNIBAL WTR WKS	23-3601			15-min	NCDC	39.7233	-91.3719	712	4/1972-12/2010
MO	HARRIS	23-3641		23-3641	1-hour	NCDC	40.3167	-93.3500	970	8/1948-2/1990
MO	HARRISONVILLE	62-3649	23-3649		1-day	FORTS	38.6547	-94.3481	970	7/1861-12/1892
MO	HARRISONVILLE	23-3649			1-day	NCDC	38.6494	-94.3567	900	**7/1861-10/2011**
MO	HERMANN	23-3793			1-day	NCDC	38.7017	-91.4314	514	7/1892-10/2011
MO	HERMITAGE	23-3799	23-6777		1-day	NCDC	37.9500	-93.3167	820	7/1950-6/1973
MO	HIGBEE 4 S	23-3835			1-day	NCDC	39.2414	-92.5067	845	5/1949-8/2011
MO	HIGBEE 4 S	23-3835		23-3835	1-hour	NCDC	39.2414	-92.5067	845	5/1949-8/1992
MO	HIGH POINT	23-3849		23-3849	1-hour	NCDC	38.4844	-92.5881	910	11/1948-1/1997
MO	HOLLISTER	23-3940			1-day	NCDC	36.6167	-93.2333	896	6/1908-4/2010
MO	HORNERSVILLE	23-3999		23-3999	1-hour	NCDC	36.0436	-90.1114	250	8/1948-12/2010
MO	HOUSTON 2 W	23-4023			1-day	NCDC	37.3344	-92.0058	1075	1/1975-8/2011
MO	HOUSTON 2NE	23-4019			1-day	NCDC	37.3519	-91.9281	1263	1/1893-10/2011
MO	IBERIA	23-4136			1-day	NCDC	38.0892	-92.2889	932	**7/1911-10/2011**
MO	INDEPENDENCE	23-4154			1-day	NCDC	39.0647	-94.3861	985	**9/1973-10/2011**
MO	INDEPENDENCE 2	23-4158	23-4154		1-day	NCDC	39.0667	-94.3833	1010	9/1973-9/1989

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
MO	JACKSON	23-4226			1-day	NCDC	37.3781	-89.6678	440	1/1893-10/2011
MO	JEFFERSON	23-4272			1-day	NCDC	38.5167	-90.2667	490	2/1942-10/1946
MO	JEFFERSON BARRACKS	62-4273	23-4273		1-day	FORTS	38.5033	-90.2806	475	3/1840-2/1892
MO	JEFFERSON BARRACKS	23-4273		23-4273	1-hour	NCDC	38.5039	-90.2800	490	4/1959-12/2010
MO	JEFFERSON BARRACKS	23-4273			1-day	NCDC	38.5039	-90.2800	490	3/1840-4/2010
MO	JEFFERSON CITY WTP	23-4271			1-day	NCDC	38.5850	-92.1825	670	10/1890-10/2011
MO	JEFFERSON CITY WTP	23-4271			1-hour	NCDC	38.5850	-92.1825	670	12/1948-12/2010
MO	JEFFERSON CITY WTP	23-4271			15-min	NCDC	38.5850	-92.1825	670	5/1971-12/2010
MO	JEROME	23-4291			1-day	NCDC	37.9233	-91.9769	710	4/1892-6/2000
MO	JEWETT 7 E	23-4301	59-0014		1-hour	NCDC	37.3656	-90.3631	620	9/1955-12/1996
MO	JOHNSON DR. AND K-7	78-3190			15-min	ALERT OVERLAND PARK KS	39.0139	-94.5105	**833**	9/1999-12/2008
MO	JOPLIN RGNL AP	23-4315			1-day	NCDC	37.1467	-94.5022	980	1/1902-12/2008
MO	KAHOKA	23-4349			1-day	NCDC	40.4167	-91.7333	689	10/1930-4/1983
MO	KANSAS CITY INTL AP	23-4358			1-day	NCDC	39.2972	-94.7306	1005	10/1972-10/2010
MO	KANSAS CITY INTL AP	23-4358		23-4358	1-hour	NCDC	39.2972	-94.7306	1005	11/1972-12/2010
MO	KANSAS CITY SWOPE PARK	23-4374	23-4379		1-hour	NCDC	39.0000	-94.5333	869	8/1948-5/1977
MO	KANSAS CITY UNIV OF MO	23-4379			1-day	NCDC	39.0333	-94.5833	850	10/1937-12/2008
MO	KANSAS CITY UNIV OF MO	23-4379		23-4379	1-hour	NCDC	39.0333	-94.5833	850	**8/1948-12/2008**
MO	KENNETT RADIO KBOA	23-4417			1-day	NCDC	36.2253	-90.0750	270	3/1953-5/2011
MO	KIDDER	23-4481	23-3568		1-day	NCDC	39.7833	-94.1000	1010	1/1918-4/1953
MO	KING CITY	23-4505			1-day	NCDC	40.0547	-94.5219	1050	10/1925-12/2010
MO	KIRKSVILLE	23-4544			1-day	NCDC	40.2058	-92.5747	970	2/1893-10/2011
MO	KIRKSVILLE FAA AP	23-4549			1-day	NCDC	40.1000	-92.5500	971	1/1948-4/1973
MO	KIRKSVILLE FAA AP	23-4549		23-4549	1-hour	NCDC	40.1000	-92.5500	971	8/1948-7/1971
MO	KOSHKONONG	23-4625			1-day	NCDC	36.6000	-91.6500	961	6/1900-7/1960
MO	KS CITY DWTN AP	23-4359			1-day	NCDC	39.1208	-94.5969	742	1/1893-8/2010
MO	KS CITY DWTN AP	23-4359	23-3219		1-hour	NCDC	39.1208	-94.5969	742	8/1948-2/2009
MO	L&D 24 MISSISSIPPI RIVER	59-0052	23-1283		1-hour	USACE ST LOUIS	39.0008	-90.6878	407	12/1996-7/2009
MO	L&D 25 MISSISSIPPI RIVER	59-0053			1-hour	USACE ST LOUIS	38.9681	-90.4289	404	12/1996-7/2009
MO	LA MONTE	23-4722			1-day	NCDC	38.7833	-93.4000	863	1/1893-12/1936
MO	LABELLE	23-4637			1-day	NCDC	40.1231	-91.9228	770	3/1931-2/2008

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MO	LAKESIDE	23-4694			1-day	NCDC	38.2044	-92.6208	592	11/1931-10/2011
MO	LAKESIDE	23-4694		23-4694	1-hour	NCDC	38.2044	-92.6208	592	8/1948-2/1999
MO	LAMAR	23-4705			1-day	NCDC	37.4994	-94.2697	980	5/1890-10/2011
MO	LEBANON 2W	23-4825			1-day	NCDC	37.6850	-92.6936	1279	1/1892-10/2011
MO	LEBANON 2W	23-4825		23-4825	1-hour	NCDC	37.6850	-92.6936	1279	8/1948-12/2010
MO	LEES SUMMIT 2 NNW	23-4846	23-8524		1-hour	NCDC	38.9333	-94.3833	991	5/1949-3/1966
MO	LEES SUMMIT REED WR	23-4850			1-day	NCDC	38.8803	-94.3358	1000	4/1962-10/2011
MO	LEXINGTON 3E	23-4904			1-day	NCDC	39.1828	-93.8550	825	6/1892-7/2010
MO	LICKING 4N	23-4919			1-day	NCDC	37.5544	-91.8831	1180	9/1936-10/2011
MO	LINNEUS	23-4978			1-day	NCDC	39.8833	-93.1833	837	1/1908-10/2011
MO	LINNEUS	83-0014	23-4978		1-hour	CAAWSN MO	39.8577	-93.1478	829	5/1996-10/2009
MO	LINNEUS	23-4978		23-4978	1-hour	NCDC	39.8833	-93.1833	837	**8/1948-10/2009**
MO	LIVONIA	23-5014		23-5014	1-hour	NCDC	40.4900	-92.6961	820	8/1948-11/1985
MO	LOCKWOOD	23-5027			1-day	NCDC	37.3908	-93.9489	1070	12/1903-10/2011
MO	LOCKWOOD	23-5027			1-hour	NCDC	37.3908	-93.9489	1070	8/1948-12/2010
MO	LOCKWOOD	23-5027			15-min	NCDC	37.3908	-93.9489	1070	3/1972-12/2010
MO	LONG BRANCH RSVR	23-5050			1-day	NCDC	39.7506	-92.5064	820	**9/1899-10/2011**
MO	LONG BRANCH RSVR	23-5050		23-5050	1-hour	NCDC	39.7506	-92.5064	820	**8/1948-12/2010**
MO	LOUISIANA	23-5098			1-day	NCDC	39.4514	-91.0464	512	6/1938-10/2011
MO	LOUISIANA STARKS NURSE	23-5093			1-day	NCDC	39.4333	-91.0667	466	11/1897-3/1986
MO	LUCERNE	23-5121			1-day	NCDC	40.4667	-93.3000	948	9/1923-6/1982
MO	LUCERNE	23-5121		23-5121	1-hour	NCDC	40.4667	-93.3000	948	8/1948-10/1984
MO	LURAY 2 N	23-5130			1-day	NCDC	40.4892	-91.8781	740	9/1923-8/2011
MO	LURAY 2 N	23-5130			1-hour	NCDC	40.4892	-91.8781	740	**8/1948-12/2010**
MO	LURAY 2 N	23-5130			15-min	NCDC	40.4892	-91.8781	740	11/1971-12/2010
MO	MACON	23-5175	23-5050		1-day	NCDC	39.7167	-92.4667	860	9/1899-5/1984
MO	MACON	23-5175	23-5050		1-hour	NCDC	39.7167	-92.4667	860	8/1948-10/1984
MO	MADISON	23-5183			1-day	NCDC	39.4725	-92.0306	800	4/1934-11/2001
MO	MALDEN FAA AP	23-5205	23-5207		1-hour	NCDC	36.6000	-89.9833	302	8/1948-1/1954
MO	MALDEN MUNI AP	23-5207			1-day	NCDC	36.5994	-89.9894	290	8/1948-10/2011
MO	MALDEN MUNI AP	23-5207		23-5207	1-hour	NCDC	36.5994	-89.9894	290	**8/1948-12/2010**
MO	MANSFIELD	23-5227			1-day	NCDC	37.1089	-92.5789	1520	1/1893-10/2011

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MO	MARBLE HILL	23-5253			1-day	NCDC	37.3036	-89.9664	390	1/1893-10/2011
MO	MARSHALL	23-5298			1-day	NCDC	39.1342	-93.2225	790	1/1893-8/2010
MO	MARSHALL	23-5298		23-5298	1-hour	NCDC	39.1342	-93.2225	790	8/1948-12/2010
MO	MARSHFIELD	23-5307			1-day	NCDC	37.3339	-92.9097	1490	10/1908-10/2011
MO	MARSHFIELD	23-5307		23-5307	1-hour	NCDC	37.3339	-92.9097	1490	12/1950-8/2008
MO	MARTINSBURG	23-5319			1-day	NCDC	39.1000	-91.6500	810	6/1944-4/1986
MO	MARYVILLE 2 E	23-5340			1-day	NCDC	40.3458	-94.8342	985	7/1894-10/2011
MO	MARYVILLE 7 NNW	23-5345		23-5345	1-hour	NCDC	40.4167	-94.8833	1142	8/1948-9/1970
MO	MC CREDIE EXP STN	23-5415		23-5415	1-hour	NCDC	38.9500	-91.9000	850	8/1948-6/2005
MO	MCCUNE STATION	23-5418	23-0856		1-day	NCDC	39.4056	-91.2461	550	1/1893-2/1902
MO	MEMPHIS	23-5492			1-day	NCDC	40.4575	-92.1822	770	11/1930-10/2011
MO	MERAMEC RIVER AT PACIFIC	59-0045			1-hour	USACE ST LOUIS	38.4667	-90.7350	433	2/2000-7/2009
MO	MEXICO	23-5541			1-day	NCDC	39.1756	-91.8861	802	1/1893-10/2011
MO	MIDDLETOWN	23-5562		23-5562	1-hour	NCDC	39.1244	-91.4142	680	**8/1948-12/2010**
MO	MIDDLETOWN 5 ENE	23-5565	23-5562		1-hour	NCDC	39.1500	-91.3333	761	8/1948-10/1972
MO	MILAN	23-5578			1-day	NCDC	40.2211	-93.1097	840	4/1923-9/2011
MO	MILLER 1 E	23-5594			1-hour	NCDC	37.2147	-93.8228	1296	1/1951-12/2010
MO	MILLER 1 E	23-5594			15-min	NCDC	37.2147	-93.8228	1296	1/1984-12/2010
MO	MINERAL SPRING	23-5579	23-3537		1-day	NCDC	36.6833	-93.8000	1480	3/1893-12/1904
MO	MOBERLY	23-5671			1-day	NCDC	39.4194	-92.4369	860	7/1936-10/2011
MO	MOBERLY	23-5671		23-5671	1-hour	NCDC	39.4194	-92.4369	860	9/1948-12/2010
MO	MONETT	23-5700	23-5704		1-day	NCDC	36.9167	-93.9333	1280	12/1946-8/1972
MO	MONETT 4SW	23-5704			1-day	NCDC	36.8619	-93.9619	1380	**12/1946-8/2011**
MO	MONROE CITY	23-5708			1-day	NCDC	39.6500	-91.7333	720	8/1901-10/2011
MO	MORA	23-5754		23-5754	1-hour	NCDC	38.5333	-93.2167	1000	8/1948-2/1990
MO	MOREHOUSE	23-5762			1-day	NCDC	36.8500	-89.7000	302	1/1926-4/1972
MO	MT VERNON 3 SW	23-5861	23-5862		1-day	NCDC	37.0667	-93.8667	1161	1/1893-8/1968
MO	MT VERNON M U SW CTR	23-5862			1-day	NCDC	37.0733	-93.8789	1190	**1/1893-10/2011**
MO	MTN GROVE 2 N	23-5834			1-day	NCDC	37.1528	-92.2636	1450	4/1901-10/2011
MO	MTN GROVE 2 N	23-5834			1-hour	NCDC	37.1528	-92.2636	1450	8/1948-12/2010
MO	MTN GROVE 2 N	23-5834			15-min	NCDC	37.1528	-92.2636	1450	11/1980-12/2010
MO	NEOSHO	23-5976			1-day	NCDC	36.8639	-94.3600	1011	1/1893-10/2011

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MO	NEVADA WTP	23-5987			1-day	NCDC	37.8394	-94.3736	820	3/1894-10/2011
MO	NEVADA WTP	23-5987			1-hour	NCDC	37.8394	-94.3736	820	8/1948-12/2010
MO	NEVADA WTP	23-5987			15-min	NCDC	37.8394	-94.3736	820	4/1972-12/2010
MO	NEW FLORENCE	23-6007	23-6009		1-day	NCDC	38.9167	-91.4500	879	1/1942-12/1978
MO	NEW FLORENCE	23-6007	23-2095		1-hour	NCDC	38.9167	-91.4500	879	8/1948-8/1953
MO	NEW FLORENCE 2	23-6009			1-day	NCDC	38.9167	-91.4500	870	**1/1942-10/2011**
MO	NEW FLORENCE 2	23-6009		23-6009	1-hour	NCDC	38.9167	-91.4500	870	**8/1948-2/1990**
MO	NEW FRANKLIN 1 W	23-6012			1-day	NCDC	39.0172	-92.7558	641	4/1956-10/2011
MO	NEW FRANKLIN 1 W	23-6012		23-6012	1-hour	NCDC	39.0172	-92.7558	641	8/1957-12/2010
MO	NEW MADRID	23-6040	23-6045		1-day	NCDC	36.5833	-89.5167	302	8/1893-9/1965
MO	NEW MADRID	23-6045			1-day	NCDC	36.5869	-89.5325	302	**8/1893-10/2011**
MO	NEW PALESTINE	23-6052			1-day	NCDC	38.8500	-92.8000	795	1/1893-2/1910
MO	ODESSA 4 SE	23-6269			1-day	NCDC	38.9525	-93.8261	910	7/1948-10/2010
MO	OLDFIELD	23-6302			1-day	NCDC	36.9756	-93.0239	1240	10/1955-11/2004
MO	OSCEOLA	23-6402			1-day	NCDC	38.0492	-93.7036	712	**4/1893-8/2011**
MO	OSCEOLA 3 NE	23-6407	23-6402		1-day	NCDC	38.0833	-93.6500	840	4/1893-4/1980
MO	OSCEOLA 3 NE	23-6407		23-6402	1-hour	NCDC	38.0833	-93.6500	840	8/1948-4/1980
MO	OWENSVILLE	23-6438			1-day	NCDC	38.3500	-91.5000	942	10/1923-1/1979
MO	OWENSVILLE	23-6438		23-6438	1-hour	NCDC	38.3500	-91.5000	942	8/1948-8/1979
MO	OZARK	23-6452			1-day	NCDC	37.0194	-93.2339	1134	1/1946-8/2011
MO	OZARK BEACH	23-6460			1-day	NCDC	36.6597	-93.1261	700	7/1924-10/2011
MO	OZARK BEACH	23-6460		23-6460	1-hour	NCDC	36.6597	-93.1261	700	**8/1948-12/2010**
MO	PACIFIC	23-6468			1-day	NCDC	38.4858	-90.7700	565	11/1916-9/2011
MO	PALMYRA	23-6493			1-day	NCDC	39.8053	-91.5267	646	1/1893-4/2010
MO	PARIS 5 S	23-6509			1-day	NCDC	39.4142	-92.0039	767	1/1893-10/2011
MO	PARMA	23-6532			1-day	NCDC	36.6125	-89.8161	280	10/1920-12/1998
MO	PATTERSON ST FRANCIS RV	59-0016			1-hour	USACE ST LOUIS	37.1947	-90.5036	370	12/1996-7/2009
MO	PATTONSBURG 2S	23-6563			1-day	NCDC	40.0147	-94.1294	825	3/1910-10/2011
MO	PATTONSBURG 2S	23-6563			1-hour	NCDC	40.0147	-94.1294	825	8/1948-12/2010
MO	PATTONSBURG 2S	23-6563			15-min	NCDC	40.0147	-94.1294	825	5/1971-12/2010
MO	PERRY	23-6633			1-day	NCDC	39.4333	-91.6667	710	10/1930-10/1984
MO	PERRYVILLE WTP	23-6641			1-day	NCDC	37.7342	-89.9200	502	11/1907-10/2011

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MO	PIERCE CITY	23-6678			1-day	NCDC	36.9494	-94.0078	1230	4/1940-12/2010
MO	PLATTSBURG	23-6739			1-day	NCDC	39.5669	-94.4544	905	6/1966-10/2009
MO	PLEASANT HILL	23-6748	23-6745		1-day	NCDC	38.7833	-94.2833	942	8/1938-10/1972
MO	PLEASANT HILL WFO	23-6745			1-day	NCDC	38.8100	-94.2647	1000	**8/1938-10/2011**
MO	POLO	23-6775			1-day	NCDC	39.5361	-94.0408	997	6/1946-10/2011
MO	POMME DE TERRE DAM	23-6777			1-day	NCDC	37.9050	-93.3169	900	**7/1950-10/2011**
MO	POMME DE TERRE DAM	23-6777		23-6777	1-hour	NCDC	37.9050	-93.3169	900	11/1963-12/2010
MO	POPLAR BLUFF	23-6791			1-day	NCDC	36.7578	-90.4056	370	1/1893-10/2011
MO	PORTAGEVILLE	23-6799	23-6804		1-day	NCDC	36.4333	-89.6833	279	3/1952-6/1965
MO	PORTAGEVILLE	23-6804			1-day	NCDC	36.4136	-89.6997	280	**3/1952-10/2011**
MO	POTOSI 4 SW	23-6826			1-day	NCDC	37.8958	-90.8411	1105	8/1893-10/2011
MO	POTOSI 4 SW	23-6826		23-6826	1-hour	NCDC	37.8958	-90.8411	1105	8/1948-12/2010
MO	PRINCETON	23-6866			1-day	NCDC	40.3986	-93.5839	980	1/1893-10/2011
MO	PUXICO 1 SE	23-6934			1-day	NCDC	36.9333	-90.1500	400	6/1944-12/1994
MO	QULIN	23-6970			1-day	NCDC	36.5928	-90.2319	318	6/1944-8/2011
MO	REYNOLDS	23-7094			1-day	NCDC	37.4008	-91.0794	1240	7/1941-7/2011
MO	RICHMOND 4N	23-7114			1-day	NCDC	39.3328	-93.9800	810	2/1952-12/1999
MO	RICHMOND 4N	23-7114		23-7114	1-hour	NCDC	39.3328	-93.9800	810	2/1952-12/1999
MO	RICHWOODS	23-7122			1-day	NCDC	38.1500	-90.8333	807	2/1937-5/1982
MO	RICHWOODS	23-7122		23-7122	1-hour	NCDC	38.1500	-90.8333	807	8/1948-10/1984
MO	RIDGEWAY	23-7130		23-7130	1-hour	NCDC	40.3842	-93.9414	1050	8/1948-12/2010
MO	ROBY	23-7214			1-day	NCDC	37.5000	-92.1333	1401	7/1941-9/1978
MO	ROBY	23-7214		23-7214	1-hour	NCDC	37.5000	-92.1333	1401	9/1955-2/1979
MO	ROLLA (MERAMEC RIVER)	59-0042		59-0042	1-hour	USACE ST LOUIS	37.9061	-91.6908	**1014**	8/1948-7/2009
MO	ROLLA 3 W	23-7265		23-7265	1-hour	NCDC	37.9500	-91.8333	869	8/1948-1/1977
MO	ROLLA 5 SE	23-7264	59-0042		1-hour	NCDC	37.9000	-91.7167	1102	8/1948-1/1977
MO	ROLLA UNI OF MISSOURI	23-7263			1-day	NCDC	37.9572	-91.7758	1167	1/1893-10/2011
MO	ROLLA UNI OF MISSOURI	23-7263			1-hour	NCDC	37.9572	-91.7758	1167	8/1948-12/2010
MO	ROLLA UNI OF MISSOURI	23-7263			15-min	NCDC	37.9572	-91.7758	1167	1/1984-12/2010
MO	ROSEBUD	23-7300			1-day	NCDC	38.4506	-91.3756	960	**6/1940-10/2011**
MO	ROUND SPRING 2SW	23-7309			1-day	NCDC	37.2597	-91.4278	818	2/1893-10/2011
MO	SALEM	23-7506			1-day	NCDC	37.6331	-91.5364	1200	9/1903-10/2011

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
MO	SALEM	23-7506		23-7506	1-hour	NCDC	37.6331	-91.5364	1200	8/1948-12/2010
MO	SALISBURY	23-7514			1-day	NCDC	39.4247	-92.8106	730	7/1946-10/2011
MO	SAVERTON L&D 22	23-7578			1-day	NCDC	39.6361	-91.2494	472	7/1948-12/2010
MO	SEDALIA WTP	23-7632			1-day	NCDC	38.6753	-93.2228	780	1/1893-10/2011
MO	SELIGMAN	23-7645			1-day	NCDC	36.5419	-93.9367	1530	11/1921-2/2009
MO	SENECA 1W	23-7656			1-day	NCDC	36.8333	-94.6214	863	7/1945-8/2011
MO	SENECA 1W	23-7656		23-7656	1-hour	NCDC	**36.8338**	**-94.6166**	863	8/1948-12/2010
MO	SEYMOUR 1 NNW	23-7674			1-day	NCDC	37.1500	-92.7667	1644	1/1896-9/1960
MO	SHELBINA	23-7720			1-day	NCDC	39.6989	-92.0456	740	1/1893-10/2011
MO	SIKESTON	23-7770	23-7772		1-day	NCDC	36.8667	-89.6000	302	5/1894-4/1959
MO	SIKESTON PWR STN	23-7772			1-day	NCDC	36.8775	-89.6231	310	**5/1894-10/2011**
MO	SILOAM SPRINGS 1E	23-7780			1-day	NCDC	36.8097	-92.0550	1080	6/1940-2/2011
MO	SKIDMORE	23-7813			1-hour	NCDC	40.2867	-95.0828	930	8/1948-10/2002
MO	SKIDMORE	23-7813			15-min	NCDC	40.2867	-95.0828	930	7/1972-10/2002
MO	SPEED 2 NW	23-7960			1-day	NCDC	38.8667	-92.8333	761	1/1893-6/1976
MO	SPEED 2 NW	23-7960		23-7960	1-hour	NCDC	38.8667	-92.8333	761	11/1948-6/1976
MO	SPICKARD 7 W	23-7963			1-day	NCDC	40.2472	-93.7158	875	3/1957-10/2011
MO	SPRING CITY	23-7967			1-hour	NCDC	36.9839	-94.5356	1110	8/1948-12/2010
MO	SPRING CITY	23-7967			15-min	NCDC	36.9839	-94.5356	1110	5/1971-12/2010
MO	SPRINGFIELD RGNL AP	23-7976			1-day	NCDC	37.2397	-93.3897	1259	1/1897-9/2009
MO	SPRINGFIELD RGNL AP	23-7976		23-7976	1-hour	NCDC	37.2397	-93.3897	1259	8/1948-12/2010
MO	ST CHARLES ELM POINT	23-7397			1-day	NCDC	38.8147	-90.5169	467	1/1893-10/2011
MO	ST JOE	61-0502	23-7445		1-hour	HPRCC	39.7667	-94.9167	827	1/1992-7/2009
MO	ST JOSEPH	23-7445		23-7435	1-hour	NCDC	39.7533	-94.8578	**801**	**8/1948-10/2009**
MO	ST JOSEPH	23-7445			15-min	NCDC	**39.7500**	**-94.8500**	**781**	5/1971-12/1992
MO	ST JOSEPH ROSECRANS AP	23-7435			1-day	NCDC	39.7736	-94.9067	818	**1/1897-10/2010**
MO	ST JOSEPH WB AP	23-7440	23-7435		1-day	NCDC	39.7667	-94.9167	811	1/1897-1/1965
MO	ST JOSEPH WB AP	23-7440	61-0502		1-hour	NCDC	39.7667	-94.9167	811	8/1948-12/1964
MO	ST LOUIS	62-0066	62-7452		1-day	FORTS	38.6311	-90.1928	469	9/1861-2/1874
MO	ST LOUIS	62-7452	23-7452		1-day	FORTS	38.6289	-90.1928	462	1/1845-12/1892
MO	ST LOUIS ARSENAL	62-7457	62-7452		1-day	FORTS	38.5917	-90.2092	435	7/1836-11/1856
MO	ST LOUIS EADS BRG	23-7460			1-day	NCDC	38.6289	-90.1797	404	1/1893-7/1968

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MO	ST LOUIS EADS BRG	23-7460	23-7452		1-hour	NCDC	38.6289	-90.1797	404	8/1948-6/1968
MO	ST LOUIS LAMBERT AP	23-7455			1-day	NCDC	38.7525	-90.3736	531	11/1941-10/2010
MO	ST LOUIS LAMBERT AP	23-7455		23-7455	1-hour	NCDC	38.7525	-90.3736	531	8/1948-12/2010
MO	ST LOUIS SCI CTR	23-7452			1-day	NCDC	**38.6308**	**-90.2707**	545	**7/1836-10/2011**
MO	ST LOUIS SCI CTR	23-7452		23-7452	1-hour	NCDC	**38.6308**	**-90.2707**	545	**8/1948-12/2010**
MO	ST LOUIS ST LOUIS UNIV	23-7465	23-7452		1-day	NCDC	38.6333	-90.2333	561	8/1911-4/1973
MO	ST. FRANCIS RIVER AT FISK	53-0329			1-day	USGS	36.7903	-90.2017	**328**	11/1930-7/2009
MO	ST. JOSEPH	83-0006	23-7445		1-hour	CAAWSN MO	39.7578	-94.7946	1046	1/1993-10/2009
MO	STANBERRY	23-8003			1-day	NCDC	40.2200	-94.5444	890	1/1893-10/2011
MO	STANBERRY	23-8003		23-8003	1-hour	NCDC	40.2200	-94.5444	890	8/1948-12/2010
MO	STEELVILLE 2 N	23-8043			1-day	NCDC	38.0053	-91.3706	700	1/1893-4/2010
MO	STEELVILLE 2 N	23-8043		23-8043	1-hour	NCDC	38.0053	-91.3706	700	**8/1948-12/1996**
MO	STEELVILLE MERAMEC RIVER	59-0043	23-8043		1-hour	USACE ST LOUIS	37.9983	-91.3611	682	12/1996-7/2009
MO	STEFFENVILLE	23-8051			1-day	NCDC	39.9714	-91.8872	690	1/1893-10/2011
MO	STEFFENVILLE	23-8051			1-hour	NCDC	39.9714	-91.8872	690	8/1948-12/2010
MO	STEFFENVILLE	23-8051			15-min	NCDC	39.9714	-91.8872	690	3/1972-12/2010
MO	STET 1 S	23-8063		23-8063	1-hour	NCDC	39.4000	-93.7667	770	5/1949-8/1992
MO	STOCKTON DAM	23-8082			1-day	NCDC	37.6967	-93.7722	873	7/1970-10/2011
MO	STOVER	23-8112			1-day	NCDC	38.4408	-92.9950	1050	9/1923-11/2004
MO	SULLIVAN	23-8171			1-day	NCDC	38.2131	-91.1886	972	3/1922-10/2011
MO	SULLIVAN	23-8171		23-8171	1-hour	NCDC	38.2131	-91.1886	972	8/1948-8/1997
MO	SUMMERSVILLE	23-8184			1-day	NCDC	37.1778	-91.6533	1180	4/1940-8/2011
MO	SUMNER 3 SW	23-8188			1-day	NCDC	39.6367	-93.2900	690	12/1948-12/2010
MO	SWEET SPRINGS	23-8223			1-day	NCDC	38.9664	-93.4194	675	10/1940-10/2011
MO	TABLE ROCK DAM	23-8252		23-3940	1-hour	NCDC	36.5972	-93.3075	820	8/1956-12/2010
MO	TARKIO	23-8289			1-day	NCDC	40.4344	-95.3883	1045	6/1912-8/2008
MO	TARKIO	23-8289		23-8289	1-hour	NCDC	40.4344	-95.3883	1045	8/1948-8/2008
MO	TECUMSEH	23-8313			1-day	NCDC	36.5886	-92.2567	600	9/1941-10/2011
MO	TOPAZ 4 NE	23-8412	23-8583		1-day	NCDC	36.9667	-92.2000	1102	6/1939-2/1969
MO	TRENTON	23-8444			1-day	NCDC	40.0825	-93.6086	837	5/1895-10/2011
MO	TRENTON	23-8444		23-8444	1-hour	NCDC	40.0825	-93.6086	837	8/1948-2/1990
MO	TROY	23-8456			1-day	NCDC	38.9500	-91.0000	560	3/1931-10/2011

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MO	TRUMAN DAM & RSVR	23-8466			1-day	NCDC	38.2581	-93.3989	632	**1/1893-8/2011**
MO	TYRONE 2 NNW	23-8498		23-8498	1-hour	NCDC	37.2333	-91.8833	1322	9/1949-12/1977
MO	UNION	23-8515			1-day	NCDC	38.4444	-91.0042	540	10/1916-8/2009
MO	UNIONVILLE	23-8523			1-day	NCDC	40.4750	-93.0031	1060	3/1893-10/2011
MO	UNITY VILLAGE	23-8524			1-day	NCDC	38.9483	-94.3969	942	5/1949-10/2011
MO	UNITY VILLAGE	23-8524		23-8524	1-hour	NCDC	38.9483	-94.3969	942	**5/1949-12/2010**
MO	UNITY VILLAGE	23-8524			15-min	NCDC	38.9483	-94.3969	942	4/1979-3/2009
MO	VALLEY PARK	23-8561			1-day	NCDC	38.5572	-90.4922	531	8/1916-10/2011
MO	VAN BUREN 1 NE	23-8569			1-day	NCDC	36.9986	-91.0106	496	2/1937-5/2006
MO	VAN BUREN RS	23-8571	23-8569		1-day	NCDC	36.9753	-91.0186	1000	8/1963-1/1995
MO	VANDALIA	23-8577			1-day	NCDC	39.3167	-91.4833	764	3/1911-10/2011
MO	VANZANT 5E	23-8583			1-day	NCDC	36.9858	-92.2058	1123	**6/1939-8/2011**
MO	VERSAILLES 2W	23-8603			1-day	NCDC	38.4400	-92.8519	985	3/1895-10/2011
MO	VICHY ROLLA NATL AP	23-8614			1-day	NCDC	38.1311	-91.7683	1127	5/1897-12/2008
MO	VIENNA 2 WNW	23-8620			1-day	NCDC	38.2017	-91.9811	770	11/1948-10/2011
MO	VIENNA 2 WNW	23-8620		23-8620	1-hour	NCDC	38.2017	-91.9811	770	11/1948-12/2010
MO	WACO 4N	23-8664			1-day	NCDC	37.2900	-94.6042	899	9/1943-10/2011
MO	WAPPAPELLO DAM	23-8700			1-day	NCDC	36.9231	-90.2836	410	1/1939-10/2011
MO	WAPPAPELLO DAM	23-8700			1-hour	NCDC	36.9231	-90.2836	410	8/1948-12/2010
MO	WAPPAPELLO DAM	23-8700			15-min	NCDC	36.9231	-90.2836	410	5/1971-12/2010
MO	WARRENSBURG 4 NW	23-8712			1-day	NCDC	38.7842	-93.8008	796	1/1893-10/2011
MO	WARRENSBURG 4 NW	23-8712		23-8712	1-hour	NCDC	38.7842	-93.8008	796	3/1953-12/2010
MO	WARRENTON 1 N	23-8725			1-day	NCDC	38.8350	-91.1386	827	1/1893-10/2011
MO	WARSAW 1	23-8733	23-8466		1-day	NCDC	38.2500	-93.3667	705	1/1893-7/1984
MO	WASHINGTON	23-8746			1-day	NCDC	38.5425	-90.9719	490	8/1948-10/2011
MO	WASHINGTON	23-8746		23-8746	1-hour	NCDC	38.5425	-90.9719	490	8/1948-12/2010
MO	WASOLA 5N	23-8754			1-day	NCDC	36.8581	-92.5875	1190	6/1939-10/2011
MO	WASOLA 5N	23-8754		23-8754	1-hour	NCDC	36.8581	-92.5875	1190	8/1948-10/1993
MO	WAVERLY	23-8768			1-day	NCDC	39.2167	-93.5167	800	1/1915-8/2011
MO	WAYNESVILLE 5 W	23-8777			1-day	NCDC	37.7822	-92.2689	905	7/1941-9/2011
MO	WELDON SPRING NWS	23-8805			1-day	NCDC	38.6989	-90.6828	584	6/1957-10/2011
MO	WEST PLAINS	23-8880			1-day	NCDC	36.7425	-91.8347	1010	7/1948-10/2011

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MO	WEST PLAINS	23-8880		23-8880	1-hour	NCDC	36.7425	-91.8347	1010	8/1948-12/2010
MO	WILLIAMSVILLE	23-8984			1-day	NCDC	36.9708	-90.5586	510	2/1924-10/2011
MO	WILLOW SPRG RADIO KUKU	23-8995			1-day	NCDC	36.9811	-91.9914	1310	2/1895-4/2001
MO	WILLOW SPRINGS FS	23-9000		23-8995	1-hour	NCDC	36.9833	-91.9833	1302	1/1948-9/1973
MO	WINDSOR	23-9032			1-day	NCDC	38.5319	-93.5242	840	1/1893-11/2009
MO	ZALMA 4 E	23-9178			1-day	NCDC	37.1564	-90.0106	420	9/1936-10/2011
MO	ZION	59-0014		59-0014	1-hour	USACE ST LOUIS	37.3906	-90.3281	**690**	9/1955-7/2009
MO	191ST AND DILLIE ROAD	78-3440	23-2331		15-min	ALERT OVERLAND PARK KS	38.4725	-94.5923	**988**	10/1999-12/2008
MO	69TH ST. @ TURKEY CREEK	78-3020	23-8524		15-min	ALERT OVERLAND PARK KS	39.0006	-94.4137	**863**	9/1999-12/2008
ND	ABERCROMBIE	32-0005	84-0692		1-day	NCDC	46.4500	-96.7333	935	3/1956-8/1994
ND	ADAMS 7 SSW	32-0022			1-day	NCDC	48.3308	-98.1189	1554	9/1948-8/2011
ND	ALEXANDER 4 NNW	32-0096			1-day	NCDC	47.9022	-103.6608	2140	6/1916-8/2011
ND	ALMONT 7 W	32-0136			1-day	NCDC	46.7167	-101.6500	2303	9/1943-9/1984
ND	AMBROSE 3 N	32-0189			1-day	NCDC	48.9975	-103.4878	2027	5/1950-10/2010
ND	AMBROSE 3 N	32-0189			1-hour	NCDC	48.9975	-103.4878	2027	11/1977-12/2010
ND	AMBROSE 3 N	32-0189			15-min	NCDC	48.9975	-103.4878	2027	11/1977-12/2010
ND	AMENIA	32-0196	61-0832		1-day	NCDC	47.0000	-97.2167	961	9/1895-1/1979
ND	AMIDON	32-0209			1-day	NCDC	46.4819	-103.3222	2910	12/1920-11/2010
ND	ASHLEY	32-0382			1-day	NCDC	46.0358	-99.3775	2001	1/1893-10/2011
ND	ASHLEY	32-0382			1-hour	NCDC	46.0358	-99.3775	2001	8/1948-12/2010
ND	ASHLEY	32-0382			15-min	NCDC	46.0358	-99.3775	2001	12/1976-12/2010
ND	BALDHILL DAM	32-0450			1-day	NCDC	47.0367	-98.0833	1300	7/1948-4/2010
ND	BALDHILL DAM	32-0450			1-hour	NCDC	47.0367	-98.0833	1300	1/1954-12/2010
ND	BALDHILL DAM	32-0450			15-min	NCDC	47.0367	-98.0833	1300	11/1976-12/2010
ND	BALFOUR 3 SW	32-0492			1-day	NCDC	47.9197	-100.5669	1615	8/1948-10/2010
ND	BALFOUR 3 SW	32-0492			1-hour	NCDC	47.9197	-100.5669	1615	8/1948-12/2010
ND	BALFOUR 3 SW	32-0492			15-min	NCDC	47.9197	-100.5669	1615	6/1974-12/2010
ND	BEACH	32-0590			1-day	NCDC	46.9128	-104.0069	2790	8/1906-6/2011
ND	BELCOURT KEYA RADIO	32-0626			1-day	NCDC	48.8411	-99.7508	1960	6/1945-9/2010

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ND	BERTHOLD	32-0729			1-day	NCDC	48.3139	-101.7328	2080	5/1950-10/2005
ND	BEULAH 1 W	32-0766			1-day	NCDC	47.2622	-101.7906	1785	5/1916-4/2007
ND	BISBEE 6 NE	32-0796	84-0818		1-day	NCDC	48.6167	-99.3667	1591	4/1937-3/1982
ND	BISMARCK 7 N	32-0827			1-day	NCDC	46.9367	-100.7444	2050	4/1953-11/2005
ND	BISMARCK MUNI AP	32-0819			1-day	NCDC	46.7825	-100.7572	1651	10/1874-8/2010
ND	BISMARCK MUNI AP	32-0819		32-0819	1-hour	NCDC	46.7825	-100.7572	1651	8/1948-12/2010
ND	BOTTINEAU	32-0941			1-day	NCDC	48.8214	-100.4447	1628	1/1893-10/2011
ND	BOWBELLS	32-0961			1-day	NCDC	48.8008	-102.2500	1958	4/1912-8/2011
ND	BOWMAN	32-0995			1-day	NCDC	46.1825	-103.4061	2980	1/1915-10/2011
ND	BOWMAN	32-0995			1-hour	NCDC	46.1825	-103.4061	2980	8/1948-12/2010
ND	BOWMAN	32-0995			15-min	NCDC	46.1825	-103.4061	2980	5/1971-12/2010
ND	BREIEN	32-1052			1-day	NCDC	46.3797	-100.9408	1720	9/1948-10/2004
ND	BREIEN	32-1052			1-hour	NCDC	46.3797	-100.9408	1720	8/1949-11/2004
ND	BREIEN	32-1052			15-min	NCDC	46.3797	-100.9408	1720	6/1977-11/2004
ND	BUTTE 5 SE	32-1225			1-day	NCDC	47.7947	-100.5847	1720	10/1925-12/2009
ND	CANDO	61-0805	32-1288		1-hour	HPRCC	48.4667	-99.1667	1490	3/1994-7/2009
ND	CANDO 1E	32-1288			1-day	NCDC	48.4878	-99.1831	1493	3/1901-10/2010
ND	CANDO 1E	32-1288		32-1288	1-hour	NCDC	48.4878	-99.1831	1493	**9/1950-12/2010**
ND	CARRINGTON	32-1360			1-day	NCDC	47.4494	-99.1294	1586	8/1929-5/2004
ND	CARRINGTON	61-0806	32-1362		1-hour	HPRCC	47.5167	-99.1333	1565	1/1989-7/2009
ND	CARRINGTON 4 N	32-1362			1-day	NCDC	47.5089	-99.1211	1560	4/1967-10/2011
ND	CARRINGTON 4 N	32-1362			1-hour	NCDC	47.5089	-99.1211	1560	**6/1974-12/2010**
ND	CARRINGTON 4 N	32-1362			15-min	NCDC	47.5089	-99.1211	1560	11/1976-12/2010
ND	CARSON	32-1370			1-day	NCDC	46.4250	-101.5742	2335	2/1912-10/2011
ND	CAVALIER 7NW	32-1435			1-day	NCDC	48.8628	-97.7014	890	8/1927-10/2011
ND	CAVALIER 7NW	32-1435			1-hour	NCDC	48.8628	-97.7014	890	6/1977-12/2010
ND	CAVALIER 7NW	32-1435			15-min	NCDC	48.8628	-97.7014	890	6/1977-12/2010
ND	CENTER 4SE	32-1456			1-day	NCDC	47.0644	-101.2119	1990	4/1938-8/2011
ND	CHAFFEE 5 NE	32-1477			1-day	NCDC	46.7958	-97.2686	965	12/1962-8/2011
ND	COLGATE	32-1686			1-day	NCDC	47.2428	-97.6561	1180	1/1914-8/2011
ND	COLUMBUS	32-1699			1-day	NCDC	48.9167	-102.8333	1950	**5/1950-8/1998**
ND	COLUMBUS 2 SW	32-1696	32-1699		1-day	NCDC	48.8833	-102.8000	1932	5/1950-1/1974

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
ND	COOPERSTOWN	32-1766			1-day	NCDC	47.4050	-98.0381	1380	10/1903-10/2011
ND	COURTENAY 1 NW	32-1816			1-day	NCDC	47.2408	-98.5839	1515	7/1930-8/2011
ND	CROSBY	32-1871			1-day	NCDC	48.9075	-103.2944	1952	4/1907-10/2011
ND	DAWSON	32-2018			1-hour	NCDC	46.8661	-99.7492	1730	8/1948-12/2010
ND	DAWSON	32-2018			15-min	NCDC	46.8661	-99.7492	1730	6/1977-12/2010
ND	DAZEY	85-0017			1-day	NDAWN	47.1830	-98.1380	1441	4/1977-12/2009
ND	DEVILS LAKE KDLR	32-2158			1-day	NCDC	48.1069	-98.8417	1464	1/1921-10/2008
ND	DEVILS LAKE KDLR	32-2158		32-2158	1-hour	NCDC	48.1069	-98.8417	1464	8/1948-2/1979
ND	DICKINSON	85-0018	32-2188		1-hour	NDAWN	46.8950	-102.8130	2557	7/1990-12/2009
ND	DICKINSON EXP STN	32-2188			1-day	NCDC	46.8911	-102.8111	2460	1/1893-8/2011
ND	DICKINSON EXP STN	32-2188			1-hour	NCDC	46.8911	-102.8111	2460	**6/1971-12/2010**
ND	DICKINSON EXP STN	32-2188			15-min	NCDC	46.8911	-102.8111	2460	6/1977-12/2010
ND	DICKINSON RCH HQ	32-2193			1-day	NCDC	47.1944	-102.8414	2380	9/1951-8/2011
ND	DONNYBROOK 4 SE	32-2242	84-0853		1-day	NCDC	48.5167	-101.8833	1982	6/1950-8/1973
ND	DRAKE	32-2298			1-day	NCDC	47.9167	-100.3667	1640	4/1929-7/1982
ND	DRAKE 9 NE	32-2304			1-day	NCDC	48.0475	-100.3100	1530	8/1964-8/2011
ND	DRAYTON	32-2312	84-0594		1-day	NCDC	48.5608	-97.1808	800	3/1967-12/2000
ND	DUNN CTR 1E	32-2365			1-day	NCDC	47.3467	-102.5869	2204	2/1918-10/2011
ND	ECKMAN 2 SE	32-2472	84-0079		1-day	NCDC	48.6500	-101.0167	1503	6/1905-1/1975
ND	EDGELEY	85-0020	32-2482		1-hour	NDAWN	46.3200	-98.7650	1669	9/1993-12/2009
ND	EDGELEY 3 WNW	32-2482			1-day	NCDC	46.3694	-98.7661	1558	5/1901-8/2011
ND	EDGELEY 3 WNW	32-2482		32-2482	1-hour	NCDC	46.3694	-98.7661	1558	**8/1948-12/2009**
ND	EDGELY	61-0811	32-2482		1-hour	HPRCC	46.3167	-98.7667	1650	6/1993-7/2009
ND	EDMORE 1NW	32-2525			1-day	NCDC	48.4267	-98.4700	1535	5/1905-10/2011
ND	EDMUNDS ARROWWOOD REF	32-2536			1-day	NCDC	47.2653	-98.8578	1460	**7/1948-6/2009**
ND	EDMUNDS ARROWWOOD REF	32-4656	32-2536		1-day	NCDC	47.2667	-98.8667	1450	7/1948-2/1974
ND	ELLENDALE	32-2605			1-day	NCDC	46.0108	-98.5261	1455	1/1893-6/2011
ND	ENDERLIN 2W	32-2695			1-day	NCDC	46.6167	-97.6383	1150	**4/1952-8/2011**
ND	EPPING	32-2735			1-day	NCDC	48.2833	-103.3667	2220	4/1908-11/1996
ND	ESMOND	32-2767			1-hour	NCDC	48.0333	-99.7667	1650	11/1949-6/1958
ND	FAIRFIELD	32-2809			1-day	NCDC	47.1906	-103.2247	2750	8/1928-8/2011
ND	FARGO HECTOR INTL AP	32-2859			1-day	NCDC	46.9253	-96.8111	900	1/1942-10/2010

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
ND	FARGO HECTOR INTL AP	32-2859		32-2859	1-hour	NCDC	46.9253	-96.8111	900	8/1948-12/2010
ND	FESSENDEN	32-2949			1-day	NCDC	47.6456	-99.6219	1620	10/1911-8/2011
ND	FLASHER	32-3004			1-day	NCDC	46.4581	-101.2000	1980	**1/1906-10/2011**
ND	FLASHER 4 SE	32-3009	32-3004		1-day	NCDC	46.4000	-101.2000	1880	1/1906-5/1975
ND	FORBES 10 NW	32-3064			1-day	NCDC	46.0347	-98.9436	2060	5/1951-7/2011
ND	FOREST RIVER	85-0026			1-day	NDAWN	48.2960	-97.6030	893	4/1977-12/2009
ND	FORMAN 5 SSE	32-3117			1-day	NCDC	46.0333	-97.5950	1250	1/1893-10/2011
ND	FORT STEVENSON ND	62-3376	32-7585		1-day	FORTS	47.5650	-101.4058	1734	8/1867-11/1892
ND	FORTUNA 1 W	32-3196			1-day	NCDC	48.9081	-103.8056	2350	10/1963-8/2011
ND	FOXHOLM 7 N	32-3217			1-day	NCDC	48.4583	-101.5697	1675	7/1897-10/2011
ND	FRYBURG 1 SSE	32-3277			1-day	NCDC	46.8667	-103.3000	2733	4/1918-6/1958
ND	FT YATES 4 SW	32-3207			1-day	NCDC	46.0500	-100.6667	1675	1/1893-2/2000
ND	FULLERTON 1 ESE	32-3287			1-day	NCDC	46.1581	-98.4000	1435	2/1898-10/2011
ND	GACKLE	32-3309	84-2919		1-day	NCDC	46.6275	-99.1383	1951	7/1948-9/2002
ND	GARRISON 1NNW	32-3376			1-day	NCDC	47.6506	-101.4169	1935	7/1948-10/2011
ND	GLEN ULLIN	32-3496			1-hour	NCDC	46.8117	-101.8303	2088	8/1948-12/2010
ND	GLEN ULLIN	32-3496			15-min	NCDC	46.8117	-101.8303	2088	5/1971-12/2010
ND	GOLDEN VALLEY 9S	32-3529			1-day	NCDC	47.1550	-102.0706	1860	8/1950-8/2011
ND	GRAFTON	32-3594			1-day	NCDC	48.4181	-97.4247	827	1/1893-3/2011
ND	GRAND FORKS INTL AP	32-3616			1-day	NCDC	47.9428	-97.1839	842	9/1948-10/2010
ND	GRAND FORKS INTL AP	32-3616		32-3616	1-hour	NCDC	47.9428	-97.1839	842	**8/1948-12/2010**
ND	GRAND FORKS UNIV NWS	32-3621			1-day	NCDC	47.9217	-97.0981	830	1/1893-10/2011
ND	GRAND FORKS UNIV NWS	32-3621	32-3616		1-hour	NCDC	47.9217	-97.0981	830	11/1960-2/2009
ND	GRAND FORKS UNIV NWS	32-3621			15-min	NCDC	47.9217	-97.0981	830	8/1970-10/2010
ND	GRANO	32-3676		84-0660	1-hour	NCDC	48.6167	-101.5833	1631	8/1948-2/1984
ND	GRANVILLE	32-3686			1-day	NCDC	48.2675	-100.8439	1510	3/1907-2/2004
ND	GRASSY BUTTE 10 N	32-3701	84-0447		1-day	NCDC	47.5167	-103.2333	2503	3/1950-8/1957
ND	GRENORA	32-3736			1-day	NCDC	48.6167	-103.9333	2129	10/1906-6/1990
ND	HAGUE	32-3826			1-day	NCDC	46.0250	-99.9911	1898	8/1954-8/2011
ND	HALLIDAY	32-3846			1-day	NCDC	47.3544	-102.3372	2060	1/1941-6/2011
ND	HANKINSON	32-3908			1-day	NCDC	46.0667	-96.9000	1070	4/1929-9/1993
ND	HANNAFORD	32-3926			1-hour	NCDC	47.3111	-98.1856	1440	8/1948-12/2010

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
ND	HANNAFORD	32-3926			15-min	NCDC	47.3111	-98.1856	1440	8/1973-12/2010
ND	HANNAH 2 N	32-3936			1-day	NCDC	49.0000	-98.6833	1575	8/1905-10/1985
ND	HANSBORO 4 NNE	32-3963			1-day	NCDC	48.9989	-99.3464	1540	3/1908-5/2011
ND	HARVEY 4NE	32-4013			1-day	NCDC	47.8083	-99.8758	1611	5/1942-8/2011
ND	HAZELTON 4NW	32-4083			1-day	NCDC	46.5172	-100.3486	1982	6/1914-9/2011
ND	HAZELTON 4NW	32-4083			1-hour	NCDC	46.5172	-100.3486	1982	8/1948-12/2010
ND	HAZELTON 4NW	32-4083			15-min	NCDC	46.5172	-100.3486	1982	5/1971-12/2010
ND	HEBRON	32-4102			1-day	NCDC	46.9028	-102.0478	2167	10/1963-8/2011
ND	HETTINGER	32-4178			1-day	NCDC	45.9925	-102.6442	2680	1/1908-4/2010
ND	HETTINGER 17 N	32-4186		32-4186	1-hour	NCDC	46.2500	-102.6833	2582	5/1951-8/1980
ND	HETTINGER EXP STN	32-4180		32-4178	1-hour	NCDC	46.0044	-102.6472	2703	8/1980-12/2010
ND	HETTINGER EXP STN	32-4180		32-4178	15-min	NCDC	46.0044	-102.6472	2703	8/1980-12/2010
ND	HILLSBORO 3 N	32-4203			1-day	NCDC	47.4389	-97.0664	910	**11/1905-7/2011**
ND	HURDSFIELD 8 SW	32-4343			1-day	NCDC	47.3500	-100.0167	1940	8/1948-6/1997
ND	HURDSFIELD 8 SW	32-4343		32-4343	1-hour	NCDC	47.3500	-100.0167	1940	8/1948-6/1997
ND	JAMESTOWN	61-0821			1-day	HPRCC	46.9000	-98.9333	1624	1/1988-7/2009
ND	JAMESTOWN	61-0821		61-0821	1-hour	HPRCC	46.9000	-98.9333	1624	3/1989-7/2009
ND	JAMESTOWN MUNI AP	32-4413			1-day	NCDC	46.9258	-98.6692	1494	7/1948-10/2010
ND	JAMESTOWN MUNI AP	32-4413		32-4413	1-hour	NCDC	46.9258	-98.6692	1494	8/1948-12/2010
ND	JAMESTOWN STATE HOSP	32-4418			1-day	NCDC	46.8844	-98.6850	1467	6/1881-10/2011
ND	KEENE 3 S	32-4571			1-day	NCDC	47.8967	-102.9208	2470	8/1950-8/2011
ND	KENMARE 1 WSW	32-4646			1-day	NCDC	48.6692	-102.0975	1810	7/1932-8/2011
ND	KILLDEER 8 NW	32-4726			1-day	NCDC	47.4687	-102.8332	2395	4/1893-10/1996
ND	KRAMER 2 N	32-4823		32-4823	1-hour	NCDC	48.7000	-100.7000	1444	8/1948-9/1985
ND	LA MOURE	32-4937			1-day	NCDC	46.3547	-98.2928	1316	7/1948-10/2010
ND	LANGDON	61-0822	32-4958		1-hour	HPRCC	48.7667	-98.3500	1624	1/1989-7/2009
ND	LANGDON EXP FARM	32-4958			1-day	NCDC	48.7622	-98.3447	1615	4/1897-10/2011
ND	LANGDON EXP FARM	32-4958		32-4958	1-hour	NCDC	48.7622	-98.3447	1615	**7/1978-12/2010**
ND	LARIMORE 4SW	32-5013			1-day	NCDC	47.8742	-97.7106	1152	5/1893-10/2006
ND	LEEDS	32-5078			1-day	NCDC	48.2881	-99.4317	1530	9/1935-5/2007
ND	LINTON	32-5210	84-2850		1-day	NCDC	46.2667	-100.2306	1690	9/1917-4/2008
ND	LISBON	32-5220			1-day	NCDC	46.4522	-97.6822	1104	4/1903-6/2011

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
ND	LITCHVILLE 2NW	32-5230			1-day	NCDC	46.6611	-98.2267	1482	5/1951-8/2011
ND	MADDOCK	32-5434			1-day	NCDC	47.9619	-99.5261	1615	1/1915-11/2004
ND	MANDAN EXP STN	32-5479			1-day	NCDC	46.8128	-100.9097	1750	7/1913-8/2011
ND	MANDAN EXP STN	32-5479			1-hour	NCDC	46.8128	-100.9097	1750	10/1948-12/2010
ND	MANDAN EXP STN	32-5479			15-min	NCDC	46.8128	-100.9097	1750	4/1980-12/2010
ND	MANFRED	32-5492	84-0876		1-day	NCDC	47.6667	-99.7500	1605	6/1903-2/1942
ND	MANNING	32-5519			1-hour	NCDC	47.2333	-102.7667	2221	9/1951-11/1961
ND	MARMARTH	32-5573	32-5575		1-day	NCDC	46.3000	-103.9167	2713	3/1909-3/1957
ND	MARMARTH	32-5575			1-day	NCDC	46.2911	-103.9214	2710	**3/1909-8/2011**
ND	MAX	32-5638			1-day	NCDC	47.8214	-101.2922	2110	4/1929-8/2011
ND	MAYVILLE	85-0048			1-day	NDAWN	47.4980	-97.2620	952	4/1979-12/2009
ND	MAYVILLE	32-5660			1-day	NCDC	47.4989	-97.3514	946	1/1893-10/2011
ND	MC CLUSKY	32-5710			1-day	NCDC	47.4842	-100.4394	1925	9/1917-8/2011
ND	MC GREGOR	32-5720			1-hour	NCDC	48.5969	-102.9283	2221	8/1948-12/2010
ND	MC GREGOR	32-5720			15-min	NCDC	48.5969	-102.9283	2221	10/1971-12/2010
ND	MC HENRY 3 W	32-5730			1-day	NCDC	47.5808	-98.6422	1555	12/1909-8/2011
ND	MC LEOD 3 E	32-5754			1-day	NCDC	46.4025	-97.2381	1075	4/1912-10/2011
ND	MC VILLE	32-5764			1-day	NCDC	47.7619	-98.1817	1467	5/1941-5/1996
ND	MEDINA	32-5798			1-day	NCDC	46.8897	-99.3019	1785	6/1905-3/2010
ND	MEDORA	32-5803	32-5813		1-day	NCDC	46.9167	-103.5167	2270	1/1893-12/1952
ND	MEDORA	32-5813			1-day	NCDC	46.9161	-103.5264	2268	**1/1893-10/2011**
ND	MELVILLE	32-5833			1-day	NCDC	47.3333	-99.0333	1621	**2/1898-6/2009**
ND	MELVILLE	32-5833		32-5833	1-hour	NCDC	47.3333	-99.0333	1621	11/1949-6/1974
ND	MINOT EXP STN	32-5993			1-day	NCDC	48.1803	-101.2964	1769	6/1905-10/2011
ND	MINOT EXP STN	32-5993			1-hour	NCDC	48.1803	-101.2964	1769	9/1952-12/2010
ND	MINOT EXP STN	32-5993			15-min	NCDC	48.1803	-101.2964	1769	5/1971-12/2010
ND	MINOT INTL AP	32-5988			1-day	NCDC	48.2553	-101.2733	1665	7/1948-10/2010
ND	MOFFIT 3 SE	32-6015			1-day	NCDC	46.6706	-100.2294	1800	6/1943-8/2011
ND	MOHALL	32-6025			1-day	NCDC	48.7603	-101.5089	1641	9/1893-8/2011
ND	MONTPELIER	32-6105			1-day	NCDC	46.7006	-98.5839	1405	9/1948-10/2011
ND	MONTPELIER	32-6105			1-hour	NCDC	46.7006	-98.5839	1405	4/1978-12/2010
ND	MONTPELIER	32-6105			15-min	NCDC	46.7006	-98.5839	1405	6/1978-12/2010

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
ND	MOTT	32-6155			1-day	NCDC	46.3719	-102.3164	2535	8/1907-3/2008
ND	MOTT	32-6155		32-6155	1-hour	NCDC	46.3719	-102.3164	2535	8/1948-4/2008
ND	MOTT	32-6155	32-6158		15-min	NCDC	46.3719	-102.3164	2535	5/1971-4/2008
ND	MOTT 1N	32-6158		32-6155	15-min	NCDC	46.3858	-102.3183	2453	**5/1971-12/2010**
ND	MUNICH 1 SSW	32-6195	84-0627		1-day	NCDC	48.5167	-98.9167	1532	5/1947-12/1982
ND	NAPOLEON	32-6255			1-day	NCDC	46.5067	-99.7692	1980	1/1893-10/2011
ND	NEW ENGLAND	32-6315			1-day	NCDC	46.5414	-102.8692	2639	3/1894-8/2011
ND	NEW SALEM 5NW	32-6365			1-day	NCDC	46.8925	-101.4897	2150	6/1893-10/2011
ND	NORTHGATE	32-6535		32-6535	1-hour	NCDC	49.0000	-102.2667	1850	6/1950-4/1975
ND	OAKES 2 S	32-6620			1-day	NCDC	46.1197	-98.0889	1310	9/1922-10/2011
ND	OAKES 2 S	32-6620			1-hour	NCDC	46.1197	-98.0889	1310	8/1948-12/2010
ND	OAKES 2 S	32-6620			15-min	NCDC	46.1197	-98.0889	1310	5/1976-12/2010
ND	PARK RIVER	32-6857	84-0848		1-day	NCDC	48.4000	-97.7500	970	11/1903-11/1995
ND	PARSHALL	32-6867			1-day	NCDC	47.9500	-102.1333	1952	6/1916-8/1979
ND	PEMBINA	32-6947			1-day	NCDC	48.9711	-97.2417	790	**8/1871-8/2010**
ND	PEMBINA	32-6947			1-hour	NCDC	48.9711	-97.2417	790	8/1948-12/2010
ND	PEMBINA	32-6947			15-min	NCDC	48.9711	-97.2417	790	5/1971-12/2010
ND	PETERSBURG 2 N	32-7027			1-day	NCDC	48.0356	-98.0100	1530	6/1930-8/2011
ND	PETTIBONE	32-7047			1-day	NCDC	47.1167	-99.5333	1850	4/1919-9/1998
ND	PLAZA	85-0059	32-7405		1-hour	NDAWN	47.8620	-101.9580	2117	5/2002-12/2009
ND	PORTAL	32-7201			1-day	NCDC	49.0000	-102.5500	1952	12/1893-10/1973
ND	POWER	32-7270	84-0647		1-day	NCDC	46.6167	-97.2667	1020	2/1893-12/1930
ND	POWERS LAKE 1N	32-7281			1-day	NCDC	48.5722	-102.6467	2205	8/1914-3/2006
ND	PRETTY ROCK	32-7311			1-day	NCDC	46.1758	-101.8561	2480	9/1948-9/2011
ND	PROSPER	61-0832			1-day	HPRCC	47.0000	-97.1167	928	9/1895-7/2009
ND	RAUB 5 NNE	32-7405			1-hour	NCDC	47.8133	-102.0233	1975	**8/1948-12/2010**
ND	RAUB 5 NNE	32-7405			15-min	NCDC	47.8133	-102.0233	1975	10/1976-12/2010
ND	REEDER	32-7450			1-day	NCDC	46.1089	-102.9447	2835	6/1950-8/2011
ND	REEDER 13 N	32-7452			1-day	NCDC	46.2856	-102.9511	2755	8/1949-9/2002
ND	RICHARDTON ABBEY	32-7530			1-day	NCDC	46.8886	-102.3192	2470	4/1916-8/2011
ND	RICHARDTON ABBEY	32-7530			1-hour	NCDC	46.8886	-102.3192	2470	12/1949-12/2010
ND	RICHARDTON ABBEY	32-7530			15-min	NCDC	46.8886	-102.3192	2470	6/1977-12/2010

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
ND	RIVERDALE	32-7585			1-day	NCDC	47.4981	-101.3750	1977	**8/1867-7/2011**
ND	RIVERDALE	32-7585			1-hour	NCDC	47.4981	-101.3750	1977	10/1948-12/2010
ND	RIVERDALE	32-7585			15-min	NCDC	47.4981	-101.3750	1977	10/1971-12/2010
ND	ROLETTE 3SE	32-7655			1-day	NCDC	48.6297	-99.8069	1620	11/1949-10/2011
ND	ROLETTE 3SE	32-7655			1-hour	NCDC	48.6297	-99.8069	1620	11/1949-12/2010
ND	ROLETTE 3SE	32-7655			15-min	NCDC	48.6297	-99.8069	1620	6/1974-12/2010
ND	ROLLA 1NE	32-7664			1-day	NCDC	48.8811	-99.5861	1833	4/1904-7/2009
ND	RUGBY	32-7704			1-day	NCDC	48.3542	-99.9925	1550	5/1904-8/2011
ND	RYDER 1 NNW	32-7749	84-3264		1-day	NCDC	47.9333	-101.6833	2113	7/1948-6/1973
ND	SAN HAVEN	32-2385	32-7824		1-day	NCDC	48.8333	-100.0333	2001	7/1948-9/1951
ND	SAN HAVEN	32-7824			1-day	NCDC	48.8333	-100.0333	1923	**7/1948-11/1985**
ND	SARLES	32-7844			1-hour	NCDC	48.9450	-98.9947	1587	8/1948-10/2010
ND	SARLES	32-7844			15-min	NCDC	48.9450	-98.9947	1587	6/1972-10/2010
ND	SELFRIDGE 2 NE	32-7952	84-0737		1-day	NCDC	46.0667	-100.9167	2182	1/1919-4/1975
ND	SHARON	32-7986			1-day	NCDC	47.5983	-97.9000	1525	1/1923-4/2002
ND	SHERWOOD 3 N	32-8047			1-day	NCDC	48.9992	-101.6278	1647	7/1948-7/2011
ND	SHEYENNE	32-8057			1-day	NCDC	47.8333	-99.1167	1480	7/1893-11/1984
ND	SHEYENNE	32-8057		32-8057	1-hour	NCDC	47.8333	-99.1167	1480	11/1949-11/1984
ND	SHIELDS	32-8065			1-day	NCDC	46.2331	-101.1292	1806	7/1950-8/2011
ND	STANLEY 3 NNW	32-8276			1-day	NCDC	48.3567	-102.4117	2280	1/1938-8/2011
ND	STEELE 3 N	32-8366			1-day	NCDC	46.8917	-99.9325	1885	4/1894-8/2011
ND	STREETER	61-0835		61-0835	1-hour	HPRCC	46.7167	-99.4500	1801	1/1989-7/2009
ND	SYKESTON	32-8608			1-day	NCDC	47.4647	-99.3983	1634	4/1951-8/2011
ND	TAGUS	32-8627			1-day	NCDC	48.3475	-101.9336	2170	8/1928-8/2011
ND	THEODORE ROOSEVELT AP	32-2183			1-day	NCDC	46.7994	-102.7972	2580	11/1938-10/2010
ND	THEODORE ROOSEVELT AP	32-2183		32-2183	1-hour	NCDC	46.7994	-102.7972	2580	8/1948-12/2010
ND	TIOGA 1 E	32-8737			1-day	NCDC	48.3989	-102.9181	2245	5/1905-8/2011
ND	TOWNER 2 NE	32-8792			1-day	NCDC	48.3706	-100.3908	1480	2/1896-8/2011
ND	TOWNER 2 NE	32-8792			1-hour	NCDC	48.3706	-100.3908	1480	10/1977-12/2010
ND	TOWNER 2 NE	32-8792			15-min	NCDC	48.3706	-100.3908	1480	10/1977-12/2010
ND	TROTTERS 3 SSE	32-8812			1-day	NCDC	47.2842	-103.9006	2420	**1/1926-8/2011**
ND	TROTTERS 3 SSE	32-8812			1-hour	NCDC	47.2842	-103.9006	2420	1/1950-12/2010

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
ND	TROTTERS 3 SSE	32-8812			15-min	NCDC	47.2842	-103.9006	2420	10/1976-12/2010
ND	TROTTERS 6 SE	32-8807	32-8812		1-day	NCDC	47.3000	-103.8667	2431	1/1926-10/1958
ND	TURTLE LAKE	32-8840			1-day	NCDC	47.5214	-100.8883	1893	9/1912-10/2011
ND	TUTTLE	32-8850			1-day	NCDC	47.1333	-100.0000	1879	1/1930-10/1995
ND	UNDERWOOD	32-8872			1-day	NCDC	47.4550	-101.1461	2045	7/1954-10/2011
ND	UNDERWOOD 12 W	32-8877	32-7585		1-day	NCDC	47.4333	-101.4000	1752	2/1912-6/1954
ND	UPHAM 3 N	32-8913			1-day	NCDC	48.6147	-100.7264	1425	7/1940-9/2011
ND	VALLEY CITY 3 NNW	32-8937			1-day	NCDC	46.9558	-98.0203	1210	5/1893-9/2011
ND	VELVA 3 NE	32-8990			1-day	NCDC	48.0797	-100.8750	1535	11/1926-3/2011
ND	VERONA	32-9035			1-day	NCDC	46.3639	-98.0758	1370	9/1948-8/2011
ND	WAHPETON 3 N	32-9100	21-0973		1-day	NCDC	46.3233	-96.6108	956	1/1893-10/1999
ND	WAHPETON 3 N	32-9100		21-0973	1-hour	NCDC	46.3233	-96.6108	956	**8/1948-10/1999**
ND	WAHPETON 3 N	32-9100		21-0973	15-min	NCDC	46.3233	-96.6108	956	**5/1971-10/1999**
ND	WAHPETON PWR PLT	32-9095	32-9100		1-hour	NCDC	46.2833	-96.6000	961	8/1948-8/1977
ND	WAHPETON PWR PLT	32-9095	32-9100		15-min	NCDC	46.2833	-96.6000	961	5/1971-8/1977
ND	WALHALLA 1 SW	32-9155			1-day	NCDC	48.9133	-97.9181	940	5/1904-8/1998
ND	WARWICK	32-9185	84-0048		1-day	NCDC	47.8500	-98.7000	1480	6/1951-12/1981
ND	WASHBURN	32-9195			1-day	NCDC	47.2844	-101.0267	1735	8/1893-7/2011
ND	WATAUGA S DAK 8 N	32-9219			1-day	NCDC	46.0233	-101.5664	2070	7/1950-8/2011
ND	WATAUGA S DAK 8 N	32-9219			1-hour	NCDC	46.0233	-101.5664	2070	10/1977-12/2010
ND	WATAUGA S DAK 8 N	32-9219			15-min	NCDC	46.0233	-101.5664	2070	10/1977-12/2010
ND	WATFORD CITY	32-9233			1-day	NCDC	47.8039	-103.2892	2170	1/1912-10/2011
ND	WATFORD CITY 12 E	32-9238		32-9238	1-hour	NCDC	47.8000	-102.9833	2100	8/1950-10/1995
ND	WATFORD CITY 14S	32-9246			1-day	NCDC	47.6000	-103.2597	2027	6/1951-10/2011
ND	WESTHOPE	32-9333			1-day	NCDC	48.9097	-101.0192	1502	8/1904-8/2011
ND	WILDROSE 3 NW	32-9400			1-day	NCDC	48.6631	-103.2131	2260	8/1928-7/2011
ND	WILLISTON 5SW	32-9420	32-9430		1-day	NCDC	48.1081	-103.7142	1830	11/1908-9/1948
ND	WILLISTON EXP FARM	32-9430			1-day	NCDC	48.1375	-103.7372	2105	**11/1908-10/2011**
ND	WILLISTON SLOULIN FLD	32-9425			1-day	NCDC	48.1739	-103.6367	1902	1/1894-10/2010
ND	WILLISTON SLOULIN FLD	32-9425		32-9425	1-hour	NCDC	48.1739	-103.6367	1902	8/1948-12/2010
ND	WILLOW CITY	32-9445			1-day	NCDC	48.6061	-100.2911	1473	1/1893-10/2011
ND	WILTON	32-9455			1-day	NCDC	47.1603	-100.7892	2188	1/1927-10/2011

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
ND	WILTON	32-9455			1-hour	NCDC	47.1603	-100.7892	2188	6/1977-2/2009
ND	WILTON	32-9455			15-min	NCDC	47.1603	-100.7892	2188	6/1977-12/2008
ND	WISHEK	32-9515			1-day	NCDC	46.2608	-99.5600	2037	5/1903-10/2011
ND	WOODWORTH 3NE	32-9575			1-day	NCDC	47.1844	-99.2917	1920	6/1951-4/2005
ND	ZAP	32-9650			1-day	NCDC	47.2878	-101.9339	1825	1/1914-8/2010
ND	12905310	84-0705			1-day	NDSWC	45.9659	-97.2889	1181	4/1977-9/2006
ND	12905529	84-0703			1-day	NDSWC	45.9511	-97.6023	1282	4/1977-6/2009
ND	12908610	84-0728			1-day	NDSWC	46.0092	-101.4273	2162	4/1977-6/2009
ND	12908923	84-0730			1-day	NDSWC	45.9805	-101.7806	2332	4/1978-6/2009
ND	12910510	84-0086	84-0083		1-day	NDSWC	46.0103	-103.7949	3037	4/1977-7/2009
ND	12910613	84-0083			1-day	NDSWC	45.9959	-103.8780	3037	4/1977-7/2009
ND	13005605	84-3015			1-day	NDSWC	46.1025	-97.7268	1292	4/1977-9/2008
ND	13008236	84-0737			1-day	NDSWC	46.0377	-100.8870	2211	1/1919-6/2009
ND	13008606	84-0313			1-day	NDSWC	46.1106	-101.4897	2217	4/1979-6/2009
ND	13010403	84-0094			1-day	NDSWC	46.1118	-103.6707	3201	5/1977-6/2009
ND	13105629	84-0706	84-3015		1-day	NDSWC	46.1315	-97.7269	1305	4/1977-8/2000
ND	13105910	84-0186	84-3083		1-day	NDSWC	46.1749	-98.0590	1348	5/1977-9/2002
ND	13106013	84-3083			1-day	NDSWC	46.1607	-98.1419	1338	5/1977-6/2009
ND	13107529	84-0252			1-day	NDSWC	46.1381	-100.0983	1879	4/1977-6/2009
ND	13107626	84-0254			1-day	NDSWC	46.1382	-100.1602	1804	4/1977-6/2009
ND	13108910	84-0307			1-day	NDSWC	46.1834	-101.8014	2463	4/1977-6/2009
ND	13109607	84-3060			1-day	NDSWC	46.1841	-102.7361	2719	5/1977-7/2009
ND	13109710	84-0005	84-3060		1-day	NDSWC	46.1841	-102.7983	2752	5/1977-7/2009
ND	13205112	84-0690			1-day	NDSWC	46.2616	-97.0209	1036	4/1978-6/2009
ND	13205429	84-0707			1-day	NDSWC	46.2179	-97.4780	1155	5/1977-9/2006
ND	13207607	84-0263	84-2850		1-day	NDSWC	46.2689	-100.2422	1709	4/1992-9/1996
ND	13207607	84-1526	84-0263		1-day	NDSWC	46.2689	-100.2422	1709	4/1987-9/1992
ND	13207617	84-2850			1-day	NDSWC	46.2543	-100.2223	1702	9/1917-6/2009
ND	13208729	84-0310			1-day	NDSWC	46.2261	-101.5938	2034	4/1977-6/2009
ND	13209510	84-0004			1-day	NDSWC	46.2711	-102.5496	2693	4/1977-7/2009
ND	13210010	84-0084	84-0751		1-day	NDSWC	46.2709	-103.1722	2831	4/1977-9/1999
ND	13305506	84-0641	84-2899		1-day	NDSWC	46.3621	-97.6476	1171	4/1977-7/1999

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
ND	13305613	84-2899			1-day	NDSWC	46.3332	-97.6687	1220	4/1977-6/2009
ND	13308529	84-1630	84-0308		1-day	NDSWC	46.3063	-101.3927	2204	4/1977-6/1990
ND	13308535	84-0308			1-day	NDSWC	46.2918	-101.3302	2335	4/1977-6/2009
ND	13308610	84-0305	84-0311		1-day	NDSWC	46.3498	-101.4766	2378	5/1977-6/1998
ND	13309408	84-0340			1-day	NDSWC	46.3483	-102.5170	2499	4/1977-6/2009
ND	13309932	84-0751			1-day	NDSWC	46.2871	-103.1438	2804	4/1977-6/2009
ND	13404818	84-0692			1-day	NDSWC	46.4203	-96.7673	928	3/1956-6/2009
ND	13407329	84-0384	84-0260		1-day	NDSWC	46.3922	-99.8850	2017	4/1977-9/1999
ND	13407414	84-0260			1-day	NDSWC	46.4216	-99.9483	2034	4/1977-6/2009
ND	13408310	84-0521			1-day	NDSWC	46.4366	-101.1008	1906	4/1977-6/2009
ND	13408625	84-0311			1-day	NDSWC	46.3932	-101.4347	2224	5/1977-6/2009
ND	13409526	84-0331	84-0340		1-day	NDSWC	46.3914	-102.5811	2526	4/1977-6/2009
ND	13409927	84-0747			1-day	NDSWC	46.3885	-103.1033	2811	4/1978-6/2009
ND	13506826	84-0387			1-day	NDSWC	46.4788	-99.1941	1916	4/1977-6/2009
ND	13509428	84-0332			1-day	NDSWC	46.4787	-102.4962	2539	5/1977-6/2009
ND	13605311	84-0647			1-day	NDSWC	46.6082	-97.3115	1063	2/1893-4/2006
ND	13605602	84-0971	32-2695		1-day	NDSWC	46.6230	-97.6894	1194	4/1995-6/2009
ND	13605610	84-0642	84-0971		1-day	NDSWC	46.6089	-97.7104	1200	4/1977-9/1994
ND	13605710	84-0643			1-day	NDSWC	46.6091	-97.8359	1371	4/1977-6/2009
ND	13606633	84-0796			1-day	NDSWC	46.5514	-98.9861	1942	5/1977-6/2009
ND	13607010	84-0386	84-0927		1-day	NDSWC	46.6091	-99.4656	1870	4/1977-9/1995
ND	13609410	84-1708	84-0769		1-day	NDSWC	46.6094	-102.4752	2588	4/1977-8/1988
ND	13609829	84-0741			1-day	NDSWC	46.5623	-103.0200	2690	5/1977-6/2009
ND	13610409	84-0744	84-2952		1-day	NDSWC	46.6058	-103.7491	2516	5/1977-9/2000
ND	13610426	84-2952			1-day	NDSWC	46.5622	-103.7073	2834	5/1977-6/2009
ND	13706009	84-0027			1-day	NDSWC	46.6965	-98.2597	1453	4/1978-6/2009
ND	13706733	84-2919			1-day	NDSWC	46.6379	-99.1445	1916	7/1948-6/2009
ND	13706920	84-0811	84-0927		1-day	NDSWC	46.6678	-99.4179	1853	4/1985-9/1994
ND	13706928	84-0927			1-day	NDSWC	46.6533	-99.3970	1883	4/1977-7/2009
ND	13709310	84-0760			1-day	NDSWC	46.6955	-102.4007	2447	4/1977-7/2009
ND	13709420	84-0765			1-day	NDSWC	46.6663	-102.5697	2627	4/1977-6/2009
ND	13709434	84-0769	84-0765		1-day	NDSWC	46.6371	-102.5271	2585	4/1992-6/2009

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
ND	13709610	84-0761			1-day	NDSWC	46.6952	-102.7792	2591	4/1977-6/2009
ND	13709710	84-0759			1-day	NDSWC	46.6953	-102.9044	2663	5/1977-6/2009
ND	13805634	84-0023	84-2998		1-day	NDSWC	46.7243	-97.7345	1210	4/1977-9/1999
ND	13805636	84-2998			1-day	NDSWC	46.7242	-97.6923	1187	4/1977-6/2009
ND	13806228	84-0803			1-day	NDSWC	46.7398	-98.5130	1384	4/1979-6/2009
ND	13907829	84-0118			1-day	NDSWC	46.8305	-100.5518	1722	4/1977-6/2009
ND	13908210	84-2071	84-0520		1-day	NDSWC	46.8709	-101.0189	1965	5/1977-9/1992
ND	14006113	84-0019			1-day	NDSWC	46.9435	-98.3224	1453	4/1977-9/2008
ND	14008228	84-0520			1-day	NDSWC	46.9142	-101.0401	1961	5/1977-6/2009
ND	14008822	84-0523			1-day	NDSWC	46.9276	-101.7704	2289	4/1978-6/2009
ND	14009629	84-0758			1-day	NDSWC	46.9122	-102.8213	2470	4/1977-6/2009
ND	14009710	84-0757			1-day	NDSWC	46.9559	-102.9047	2529	5/1977-6/2009
ND	14105414	84-0149			1-day	NDSWC	47.0288	-97.4834	1181	4/1978-6/2009
ND	14205602	84-0026			1-day	NDSWC	47.1456	-97.7376	1191	4/1977-9/2008
ND	14205928	84-0024			1-day	NDSWC	47.0887	-98.1613	1410	4/1977-8/2008
ND	14206036	84-0029	84-0024		1-day	NDSWC	47.0740	-98.2240	1420	4/1977-9/1995
ND	14206829	84-0799			1-day	NDSWC	47.0885	-99.3232	1899	4/1977-6/2009
ND	14208108	84-0584			1-day	NDSWC	47.1343	-100.9709	1712	4/1977-6/2009
ND	14305929	84-1085	85-0017		1-day	NDSWC	47.1756	-98.1845	1430	4/1977-9/1989
ND	14308129	84-2001	84-0584		1-day	NDSWC	47.1786	-100.9713	1676	4/1977-9/1992
ND	14308229	84-0578			1-day	NDSWC	47.1773	-101.0980	2011	4/1977-6/2009
ND	14405110	84-2648	84-0833		1-day	NDSWC	47.3038	-97.1234	912	4/1979-9/1982
ND	14405128	84-0833			1-day	NDSWC	47.2605	-97.1445	918	4/1979-6/2009
ND	14406523	84-0812	32-2536		1-day	NDSWC	47.2766	-98.8797	1522	4/1991-6/2009
ND	14406621	84-0789	32-5833		1-day	NDSWC	47.2767	-99.0489	1571	4/1990-6/2009
ND	14407933	84-0125			1-day	NDSWC	47.2516	-100.6964	1906	4/1978-6/2009
ND	14408228	84-0579	84-0589		1-day	NDSWC	47.2641	-101.0768	1696	4/1978-9/1994
ND	14505011	84-0828	32-4203		1-day	NDSWC	47.3892	-96.9960	889	4/1992-4/2009
ND	14505706	84-0770			1-day	NDSWC	47.4057	-97.9753	1433	5/1977-6/2009
ND	14505926	84-0320			1-day	NDSWC	47.3483	-98.1466	1417	4/1977-6/2009
ND	14510512	84-0449			1-day	NDSWC	47.3952	-104.0013	2322	4/1977-6/2009
ND	14605205	84-0832	85-0048		1-day	NDSWC	47.4908	-97.3153	948	4/1993-9/1997

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
ND	14605314	84-2651	84-0832		1-day	NDSWC	47.4620	-97.3784	1000	4/1979-9/1991
ND	14606829	84-0877			1-day	NDSWC	47.4359	-99.3624	1640	4/1977-6/2009
ND	14609310	84-0233			1-day	NDSWC	47.4807	-102.5139	2362	4/1977-6/2009
ND	14609808	84-0447			1-day	NDSWC	47.4802	-103.1952	2594	3/1950-6/2009
ND	14706221	84-2812			1-day	NDSWC	47.5365	-98.5747	1479	4/1978-9/2007
ND	14706301	84-0268	84-2812		1-day	NDSWC	47.5800	-98.6386	1532	4/1978-7/1997
ND	14806024	84-0321			1-day	NDSWC	47.6234	-98.2548	1453	4/1977-6/2009
ND	14806220	84-0241			1-day	NDSWC	47.6234	-98.5963	1512	5/1977-6/2009
ND	14807210	84-0876			1-day	NDSWC	47.6534	-99.8307	1604	6/1903-7/2008
ND	14905720	84-0572			1-day	NDSWC	47.7084	-97.9789	1492	5/1977-6/2009
ND	14908609	84-2848			1-day	NDSWC	47.7392	-101.6898	2125	4/1977-6/2009
ND	14908610	84-0492	84-2848		1-day	NDSWC	47.7392	-101.6684	2109	4/1977-9/1995
ND	15007021	84-0889			1-day	NDSWC	47.7964	-99.6295	1555	4/1979-6/2009
ND	15008535	84-0477			1-day	NDSWC	47.7682	-101.5182	2060	4/1977-6/2009
ND	15106317	84-0048			1-day	NDSWC	47.8982	-98.7489	1479	6/1951-6/2009
ND	15107031	84-1176	84-0889		1-day	NDSWC	47.8543	-99.6726	1581	4/1979-9/1985
ND	15107805	84-3023			1-day	NDSWC	47.9275	-100.6819	1597	4/1977-6/2009
ND	15107810	84-0402	84-3023		1-day	NDSWC	47.9129	-100.6388	1597	4/1977-9/2000
ND	15108304	84-0852			1-day	NDSWC	47.9280	-101.3040	2234	4/1977-9/2008
ND	15109915	84-0472			1-day	NDSWC	47.8988	-103.3368	2280	4/1977-6/2009
ND	15109929	84-0444	84-0472		1-day	NDSWC	47.8699	-103.3799	2135	4/1977-9/2001
ND	15110304	84-1926	84-0458		1-day	NDSWC	47.9278	-103.8725	2165	5/1977-9/1992
ND	15110308	84-0469			1-day	NDSWC	47.9133	-103.8940	2175	5/1977-5/2007
ND	15207318	84-0603			1-day	NDSWC	47.9849	-100.0587	1558	4/1978-6/2009
ND	15208629	84-0856	84-3264		1-day	NDSWC	47.9564	-101.7114	2093	4/1977-9/2006
ND	15208631	84-3264			1-day	NDSWC	47.9418	-101.7325	2060	7/1948-7/2009
ND	15210331	84-0458	84-0469		1-day	NDSWC	47.9422	-103.9153	2116	4/1991-8/2001
ND	15307120	84-0046			1-day	NDSWC	48.0576	-99.8156	1568	11/1949-6/2009
ND	15307129	84-1166	84-0046		1-day	NDSWC	48.0432	-99.8157	1551	5/1977-9/1992
ND	15308311	84-0851			1-day	NDSWC	48.0881	-101.3066	1896	5/1977-8/2008
ND	15308502	84-0850			1-day	NDSWC	48.1026	-101.5663	2132	4/1977-6/2009
ND	15509127	84-0545			1-day	NDSWC	48.2186	-102.3642	2296	4/1977-6/2009

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ND	15509325	84-0546			1-day	NDSWC	48.2186	-102.5799	2391	4/1977-6/2009
ND	15605431	84-0835	85-0026		1-day	NDSWC	48.2890	-97.6330	922	4/1977-8/2001
ND	15606729	84-0047			1-day	NDSWC	48.3035	-99.2977	1502	4/1977-6/2009
ND	15705508	84-0844	84-0848		1-day	NDSWC	48.4344	-97.7642	1043	4/1992-9/1997
ND	15705528	84-2673	84-0844		1-day	NDSWC	48.3910	-97.7425	997	5/1978-9/1992
ND	15707010	84-0602			1-day	NDSWC	48.4363	-99.6781	1607	4/1977-6/2009
ND	15805532	84-0848			1-day	NDSWC	48.4633	-97.7644	1036	11/1903-6/2009
ND	15806401	84-0627			1-day	NDSWC	48.5367	-98.8510	1522	5/1947-4/2002
ND	15808723	84-0853			1-day	NDSWC	48.4957	-101.8757	1961	6/1950-9/2003
ND	15905225	84-0594			1-day	NDSWC	48.5644	-97.2889	800	3/1967-6/2009
ND	16006822	84-0818			1-day	NDSWC	48.6678	-99.4168	1653	4/1937-6/2009
ND	16008009	84-0079			1-day	NDSWC	48.6978	-101.0050	1479	6/1905-7/2009
ND	16008111	84-1236	84-0079		1-day	NDSWC	48.6976	-101.0921	1489	4/1984-9/1991
ND	16008404	84-0659			1-day	NDSWC	48.7127	-101.5277	1660	5/1977-6/2009
ND	16008526	84-0660			1-day	NDSWC	48.6547	-101.6145	1738	8/1948-7/2009
ND	16209115	84-0105	84-0116		1-day	NDSWC	48.8580	-102.4695	1955	4/1977-9/2000
ND	16307206	84-3090			1-day	NDSWC	48.9719	-100.0411	2312	9/1961-7/2009
ND	16307808	84-1237	84-0082		1-day	NDSWC	48.9590	-100.8082	1515	4/1984-4/1990
ND	16308735	84-0661			1-day	NDSWC	48.9009	-101.9227	1771	4/1978-9/2008
ND	16309128	84-0116			1-day	NDSWC	48.9160	-102.4912	1925	4/1977-5/2009
ND	16310102	84-1402	84-0199		1-day	NDSWC	48.9744	-103.7608	2273	4/1977-9/1987
ND	16310111	84-0199			1-day	NDSWC	48.9600	-103.7608	2286	4/1977-9/2008
ND	16407831	84-0082			1-day	NDSWC	48.9881	-100.8300	1515	4/1924-6/2009
NE	AGATE 3 E	25-0030			1-day	NCDC	42.4244	-103.7347	4670	4/1900-10/2011
NE	AINSWORTH	25-0050			1-day	NCDC	42.5522	-99.8556	2510	11/1905-10/2011
NE	AINSWORTH	61-0701		25-0050	1-hour	HPRCC	42.5500	-99.8167	2510	6/1984-7/2009
NE	ALBION	25-0070			1-day	NCDC	41.6867	-98.0036	1790	1/1893-4/2010
NE	ALBION 7W	25-0075		25-0075	1-hour	NCDC	41.6833	-98.1303	1910	9/1948-12/2010
NE	ALLIANCE 1WNW	25-0130			1-day	NCDC	42.1103	-102.8967	3994	11/1894-10/2011
NE	ALLIANCE NORTH	61-0702			1-day	HPRCC	42.1833	-102.9167	3980	4/1931-7/2009
NE	ALMA	25-0145			1-day	NCDC	40.1000	-99.3667	2001	4/1895-4/1978
NE	AMELIA	25-0180		25-0180	1-hour	NCDC	42.2342	-98.9156	2179	8/1948-12/2010

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NE	ANSELMO 2 SE	25-0245			1-day	NCDC	41.5975	-99.8258	2605	6/1948-10/2011
NE	ANSELMO 2 SE	25-0245			1-hour	NCDC	41.5975	-99.8258	2605	8/1948-12/2010
NE	ANSELMO 2 SE	25-0245			15-min	NCDC	41.5975	-99.8258	2605	5/1971-12/2010
NE	ANTIOCH	25-0260		25-0260	1-hour	NCDC	42.0686	-102.5844	3885	8/1948-10/1999
NE	ARBORVILLE	25-0310	25-6837		1-day	NCDC	41.0333	-97.7833	1713	1/1893-12/1902
NE	ARCADIA	25-0320			1-day	NCDC	41.4261	-99.1272	2160	1/1893-10/2011
NE	ARNOLD	25-0355			1-day	NCDC	41.4236	-100.1931	2760	7/1943-7/2011
NE	ARTHUR	25-0365			1-day	NCDC	41.5697	-101.6914	3500	5/1929-10/2011
NE	ASHLAND #2	25-0375			1-day	NCDC	41.0406	-96.3775	1070	1/1893-8/2011
NE	ASHTON	25-0385			1-day	NCDC	41.2481	-98.7989	2035	1/1893-1/2002
NE	ASHTON	25-0385		25-0385	1-hour	NCDC	41.2481	-98.7989	2035	8/1948-1/2002
NE	ATKINSON 3SW	25-0420			1-day	NCDC	42.5136	-99.0303	2090	6/1906-8/2011
NE	ATLANTA 2 WNW	25-0427			1-day	NCDC	40.3794	-99.4992	2350	12/1952-4/2000
NE	AUBURN 5 ESE	25-0435			1-day	NCDC	40.3706	-95.7469	930	**1/1893-10/2011**
NE	AURORA	25-0445			1-day	NCDC	40.8586	-97.9958	1785	11/1894-5/2008
NE	BARNESTON	25-0520			1-day	NCDC	40.0489	-96.5747	1200	8/1950-7/2005
NE	BARTLETT 4S	25-0525			1-day	NCDC	41.8278	-98.5494	2140	9/1948-10/2011
NE	BASSETT	25-0580			1-day	NCDC	42.5800	-99.5400	2320	1/1893-4/2010
NE	BASSETT	25-0580			1-hour	NCDC	42.5800	-99.5400	2320	8/1948-12/2010
NE	BASSETT	25-0580			15-min	NCDC	42.5800	-99.5400	2320	2/1971-12/2010
NE	BEATRICE	25-0620	25-0622		1-day	NCDC	40.2500	-96.7500	1220	1/1893-10/1984
NE	BEATRICE	25-0620	25-0622		15-min	NCDC	40.2500	-96.7500	1220	11/1979-10/1984
NE	BEATRICE 1N	25-0622			1-day	NCDC	40.2994	-96.7500	1297	**1/1893-10/2011**
NE	BEATRICE 1N	25-0622			1-hour	NCDC	40.2994	-96.7500	1297	**8/1948-12/2010**
NE	BEATRICE 1N	25-0622			15-min	NCDC	40.2994	-96.7500	1297	**11/1979-12/2010**
NE	BEATRICE 2	25-0625	25-0622		1-hour	NCDC	40.2667	-96.7333	1312	8/1948-7/1979
NE	BEAVER CITY	25-0640			1-day	NCDC	40.1306	-99.8278	2160	1/1893-10/2011
NE	BEEMER	25-0680			1-day	NCDC	41.9325	-96.8108	1360	6/1948-9/2001
NE	BENKELMAN	25-0760			1-day	NCDC	40.0533	-101.5417	3025	11/1894-10/2011
NE	BENKELMAN	25-0760		25-0760	1-hour	NCDC	40.0533	-101.5417	3025	8/1948-12/2010
NE	BENNET	25-0770			1-day	NCDC	40.6794	-96.5064	1280	2/1942-9/2000
NE	BENNINGTON 3 E	25-0777			1-hour	NCDC	41.3686	-96.0950	1215	11/1950-1/2005

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NE	BENNINGTON 3 E	25-0777			15-min	NCDC	41.3686	-96.0950	1215	11/1972-1/2005
NE	BERTRAND	25-0810			1-day	NCDC	40.5283	-99.6353	2520	9/1908-3/2011
NE	BIG SPRINGS	25-0865			1-day	NCDC	41.0469	-102.1467	3678	5/1916-10/2011
NE	BIG SPRINGS	25-0865			1-hour	NCDC	41.0469	-102.1467	3678	8/1948-12/2010
NE	BIG SPRINGS	25-0865			15-min	NCDC	41.0469	-102.1467	3678	9/1973-12/2010
NE	BLAIR	25-0930			1-day	NCDC	41.5536	-96.1406	1090	**5/1867-12/2001**
NE	BLOOMFIELD	25-0945			1-day	NCDC	42.5939	-97.6436	1740	12/1905-10/2011
NE	BLUE HILL	25-0960	25-0961		1-day	NCDC	40.3333	-98.4333	1967	11/1894-8/1909
NE	BLUE HILL 4 SW	25-0961			1-day	NCDC	40.3058	-98.5047	2000	**11/1894-10/2011**
NE	BOX BUTTE EXP STN	25-1045	61-0702		1-day	NCDC	42.1333	-102.9500	4022	4/1931-2/1981
NE	BOYS TOWN	25-1052			1-day	NCDC	41.2622	-96.1419	1240	6/1964-6/2001
NE	BRADSHAW	25-1065			1-day	NCDC	40.8836	-97.7497	1720	4/1898-7/2011
NE	BREWSTER	25-1130			1-day	NCDC	41.9375	-99.8628	2495	9/1912-9/2001
NE	BRIDGEPORT	25-1145			1-day	NCDC	41.6675	-103.1042	3666	5/1897-10/2011
NE	BRIDGEPORT	25-1145			1-hour	NCDC	41.6675	-103.1042	3666	8/1948-12/2010
NE	BRIDGEPORT	25-1145			15-min	NCDC	41.6675	-103.1042	3666	5/1971-12/2010
NE	BROKEN BOW #2	25-1205		25-1200	1-hour	NCDC	41.4028	-99.6322	2470	8/1948-12/2010
NE	BROKEN BOW #2	25-1205		25-1200	15-min	NCDC	41.4028	-99.6322	2470	9/1971-12/2010
NE	BROKEN BOW 2 W	25-1200			1-day	NCDC	41.4083	-99.6750	2500	11/1894-8/2011
NE	BRUNING	25-1240			1-day	NCDC	40.3328	-97.5653	1580	11/1894-10/2011
NE	BURWELL	25-1345			1-day	NCDC	41.7769	-99.1433	2176	6/1948-8/2011
NE	BURWELL	25-1345		25-1345	1-hour	NCDC	41.7769	-99.1433	2176	8/1948-12/2010
NE	BUTTE	25-1365			1-day	NCDC	42.9131	-98.8511	1811	5/1906-10/2011
NE	CAIRO	25-1390			1-day	NCDC	41.0000	-98.6167	2001	8/1909-7/1947
NE	CAMBRIDGE	25-1415			1-day	NCDC	40.2847	-100.1433	2239	8/1898-10/2011
NE	CANADAY STEAM PLT	25-1450			1-day	NCDC	40.6944	-99.7008	2362	**9/1948-10/2011**
NE	CANADAY STEAM PLT	25-1450			1-hour	NCDC	40.6944	-99.7008	2362	**8/1948-12/2010**
NE	CANADAY STEAM PLT	25-1450			15-min	NCDC	40.6944	-99.7008	2362	4/1971-12/2010
NE	CENTRAL CITY	25-1560			1-day	NCDC	41.1156	-98.0064	1695	5/1878-8/2011
NE	CENTRALCITY	61-0710		61-0710	1-hour	HPRCC	41.1500	-97.9667	1696	9/1986-7/2009
NE	CHADRON 3SW	25-1575			1-day	NCDC	42.8083	-103.0533	3383	8/1894-8/2010
NE	CHADRON 3SW	25-1575		25-1575	1-hour	NCDC	42.8083	-103.0533	3383	8/1948-12/2010

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NE	CHAMBERS	25-1590			1-day	NCDC	42.2031	-98.7467	2129	7/1911-10/2011
NE	CLARKSON	25-1660			1-day	NCDC	41.7239	-97.1256	1550	11/1940-4/2004
NE	CLAY CENTER	61-0712			1-day	HPRCC	40.5667	-98.1333	1811	1/1982-7/2009
NE	CLAY CENTER	61-0712		61-0712	1-hour	HPRCC	40.5667	-98.1333	1811	7/1982-7/2009
NE	CLAY CTR	25-1684			1-day	NCDC	40.5208	-98.0536	1750	7/1971-7/2011
NE	CLAY CTR 6 ESE	25-1680			1-day	NCDC	40.5033	-97.9372	1734	1/1915-10/2011
NE	COLERIDGE	25-1776			1-hour	NCDC	42.5056	-97.2086	1600	11/1950-12/2010
NE	COLERIDGE	25-1776			15-min	NCDC	42.5056	-97.2086	1600	1/1984-12/2010
NE	COLUMBUS 3 NE	25-1825			1-day	NCDC	41.4639	-97.3278	1450	7/1893-10/2011
NE	COMSTOCK	25-1835			1-day	NCDC	41.5569	-99.2372	2255	5/1941-8/2002
NE	CREIGHTON	25-1990			1-day	NCDC	42.4603	-97.9047	1660	1/1893-8/2011
NE	CRESCENT LAKE NWR	25-2000			1-day	NCDC	41.7608	-102.4372	3820	1/1935-8/2011
NE	CRESTON	25-2010			1-hour	NCDC	41.7103	-97.3697	1600	8/1948-12/2010
NE	CRESTON	25-2010			15-min	NCDC	41.7103	-97.3697	1600	5/1971-12/2010
NE	CRETE	62-2020	25-2020		1-day	FORTS	40.6225	-96.9508	1424	2/1883-12/1892
NE	CRETE	25-2020			1-day	NCDC	40.6194	-96.9469	1435	**2/1883-8/2011**
NE	CRETE	25-2020		25-2020	1-hour	NCDC	40.6194	-96.9469	1435	11/1971-12/2010
NE	CULBERTSON	25-2065			1-day	NCDC	40.2331	-100.8300	2614	6/1889-10/2011
NE	CURTIS 3NNE	25-2100			1-day	NCDC	40.6742	-100.4936	2721	**12/1893-10/2011**
NE	CURTIS 3NNE	25-2100			1-hour	NCDC	40.6742	-100.4936	2721	**8/1948-12/2010**
NE	CURTIS 3NNE	25-2100			15-min	NCDC	40.6742	-100.4936	2721	5/1971-12/2010
NE	CURTISUNSTA	61-0714	25-2100		1-day	HPRCC	40.6333	-100.5000	2572	1/1986-7/2009
NE	CURTISUNSTA	61-0714	25-2100		1-hour	HPRCC	40.6333	-100.5000	2572	8/1986-7/2009
NE	DALTON	25-2145			1-day	NCDC	41.4086	-102.9661	4278	5/1913-10/2011
NE	DAVID CITY	25-2205			1-day	NCDC	41.2492	-97.1328	1610	1/1889-10/2011
NE	DAVID CITY	25-2205			1-hour	NCDC	41.2492	-97.1328	1610	8/1948-12/2010
NE	DAVID CITY	25-2205			15-min	NCDC	41.2492	-97.1328	1610	9/1971-12/2010
NE	DAWSON 4ESE	25-2225			1-day	NCDC	40.1164	-95.7567	1000	6/1897-4/2010
NE	DAWSON 4ESE	25-2225			1-hour	NCDC	40.1164	-95.7567	1000	8/1948-12/2010
NE	DAWSON 4ESE	25-2225			15-min	NCDC	40.1164	-95.7567	1000	9/1971-12/2010
NE	DE SOTO	62-0936	25-0930		1-day	FORTS	41.4983	-96.0647	1100	5/1867-12/1891
NE	DEWEESE 4 SE	25-2306			1-day	NCDC	40.3497	-98.0592	1660	8/1957-10/2008

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NE	DODGE	25-2380			1-day	NCDC	41.7233	-96.8828	1400	10/1945-8/2010
NE	DU BOIS	25-2433			1-hour	NCDC	40.0364	-96.0444	1065	10/1970-12/2010
NE	DU BOIS	25-2433			15-min	NCDC	40.0364	-96.0444	1065	3/1971-12/2010
NE	DU BOIS	25-2433			1-day	NCDC	40.0364	-96.0444	1065	9/1905-4/2010
NE	DUBOIS 1	25-2430			1-day	NCDC	40.0333	-96.0500	1074	9/1905-11/1915
NE	DUNBAR 4 N	25-2442		25-2442	1-hour	NCDC	40.7261	-96.0275	1220	**11/1950-2/2009**
NE	EDISON	25-2560			1-hour	NCDC	40.2764	-99.7836	2120	8/1948-12/2010
NE	EDISON	25-2560			15-min	NCDC	40.2764	-99.7836	2120	5/1971-12/2010
NE	ELGIN	25-2595			1-day	NCDC	41.9872	-98.0747	1935	7/1911-10/2011
NE	ELKHORN 1 NW	25-2620	25-8980		1-day	NCDC	41.2833	-96.2500	1201	8/1944-5/1958
NE	ELLSWORTH	25-2645			1-day	NCDC	42.0633	-102.2819	3905	7/1943-10/2011
NE	ELLSWORTH 15 NNE	25-2647			1-day	NCDC	42.2650	-102.2133	3970	5/1963-5/2008
NE	ELLSWORTH 24 NNE	25-2646			1-day	NCDC	42.3833	-102.1500	3860	7/1954-2/1995
NE	ELM CREEK 1 SSW	25-2655			1-day	NCDC	40.6997	-99.3800	2250	5/1908-4/2010
NE	ELM CREEK 1 SSW	25-2655			1-hour	NCDC	40.6997	-99.3800	2250	8/1948-12/2010
NE	ELM CREEK 1 SSW	25-2655			15-min	NCDC	40.6997	-99.3800	2250	4/1976-12/2010
NE	ELSIE	25-2675			1-day	NCDC	40.8500	-101.4000	3383	10/1908-7/1948
NE	ELSMERE 9 ENE	25-2629	25-2680		1-day	NCDC	42.1667	-100.0167	2651	1/1960-4/1980
NE	ELSMERE 9 ENE	25-2680			1-day	NCDC	42.1717	-100.0106	2654	**6/1948-8/2010**
NE	ELWOOD 8 S	25-2690			1-day	NCDC	40.4767	-99.8861	2400	11/1894-10/2011
NE	EMERALD 1 W	25-2706			1-day	NCDC	40.8481	-96.8458	1270	7/1951-5/1997
NE	EMERSON	25-2715			1-day	NCDC	42.2822	-96.7261	1445	1/1944-8/2011
NE	EMERSON 5 SE	25-2720		25-2720	1-hour	NCDC	42.2333	-96.6333	1381	8/1948-4/1973
NE	ENDERS LAKE	25-2741			1-day	NCDC	40.4181	-101.5147	3078	9/1951-10/2011
NE	ERICSON 6 WNW	25-2770			1-day	NCDC	41.7986	-98.7842	2106	1/1893-10/2011
NE	EUSTIS 2 NW	25-2790			1-day	NCDC	40.6864	-100.0536	2690	10/1944-10/2011
NE	EWING	25-2805			1-day	NCDC	42.2611	-98.3417	1850	3/1893-8/2011
NE	EWING 12 S	25-2806			1-day	NCDC	42.0833	-98.3833	1952	9/1948-2/1979
NE	FAIRBURY	25-2820			1-day	NCDC	40.1356	-97.1714	1360	1/1893-10/2011
NE	FAIRMONT	25-2840			1-day	NCDC	40.6422	-97.5919	1640	11/1894-10/2011
NE	FALLS CITY 2 NE	25-2850			1-day	NCDC	40.0833	-95.6000	980	3/1912-12/2005
NE	FIRTH	25-2935			1-day	NCDC	40.5350	-96.6081	1340	7/1921-10/2000

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NE	FRANKLIN	25-3035	25-3037		1-day	NCDC	40.1000	-98.9667	1855	1/1888-8/1990
NE	FRANKLIN #2	25-3037			1-day	NCDC	40.0967	-98.9456	2010	**1/1888-10/2011**
NE	FRANKLIN #2	25-3037			1-hour	NCDC	40.0967	-98.9456	2010	**8/1948-12/2010**
NE	FRANKLIN #2	25-3037			15-min	NCDC	40.0967	-98.9456	2010	4/1983-12/2010
NE	FREMONT	25-3050			1-day	NCDC	41.4300	-96.4669	1180	1/1893-10/2011
NE	FRIEND 3E	25-3065			1-day	NCDC	40.6558	-97.2208	1535	1/1925-10/2011
NE	FT ROBINSON	25-3015			1-day	NCDC	42.6656	-103.4617	3812	2/1902-7/2011
NE	FULLERTON	25-3075			1-day	NCDC	41.3594	-97.9761	1650	3/1901-10/2011
NE	GENEVA	25-3175			1-day	NCDC	40.5314	-97.5964	1630	1/1893-10/2011
NE	GENOA 2 W	25-3185			1-day	NCDC	41.4514	-97.7644	1590	9/1887-8/2011
NE	GENOA 2 W	25-3185			1-hour	NCDC	41.4514	-97.7644	1590	8/1948-12/2010
NE	GENOA 2 W	25-3185			15-min	NCDC	41.4514	-97.7644	1590	5/1971-12/2010
NE	GIBBON	25-3205			1-hour	NCDC	40.7356	-98.8472	2060	8/1948-12/2010
NE	GIBBON	25-3205			15-min	NCDC	40.7356	-98.8472	2060	5/1971-12/2010
NE	GORDON	61-0718			1-day	HPRCC	42.7333	-102.1667	3638	1/1984-7/2009
NE	GORDON	61-0718		61-0718	1-hour	HPRCC	42.7333	-102.1667	3638	10/1984-7/2009
NE	GORDON 6N	25-3355			1-day	NCDC	42.8947	-102.2036	3700	1/1898-8/2011
NE	GOTHENBURG	25-3365			1-day	NCDC	40.9400	-100.1522	2585	9/1894-8/2011
NE	GRAND ISLAND #1	25-3394	25-3395		1-day	NCDC	40.9167	-98.3500	1841	4/1895-9/1921
NE	GRAND ISLAND 2W	25-3396	25-3394		1-day	NCDC	40.9167	-98.3500	1841	4/1899-2/1938
NE	GRAND ISLAND CTR NE AP	25-3395			1-day	NCDC	40.9611	-98.3136	1840	**4/1895-10/2010**
NE	GRAND ISLAND CTR NE AP	25-3395		25-3395	1-hour	NCDC	40.9611	-98.3136	1840	8/1948-12/2010
NE	GREELEY	25-3425			1-day	NCDC	41.5461	-98.5336	2020	2/1895-10/2011
NE	GRESHAM 3W	25-3461			1-day	NCDC	41.0308	-97.4694	1630	7/1914-8/2011
NE	GRETNA 3 ESE	25-3469		25-3469	1-hour	NCDC	41.1300	-96.1989	1150	11/1950-12/2010
NE	GUDMUNDSEN	61-0721			1-day	HPRCC	42.0667	-101.4333	3442	8/1948-12/2009
NE	GUDMUNDSEN	61-0721		61-0721	1-hour	HPRCC	42.0667	-101.4333	3442	8/1948-12/2009
NE	GUIDE ROCK	25-3485			1-day	NCDC	40.0692	-98.3331	1635	9/1900-4/2009
NE	HAIGLER	25-3515			1-day	NCDC	40.0136	-101.9408	3275	2/1893-9/2011
NE	HALLAM 2 N	25-3524			1-day	NCDC	40.5667	-96.7833	1450	**6/1948-11/1995**
NE	HALSEY 2 W	25-3540			1-day	NCDC	41.9000	-100.3167	2705	2/1903-2/1990
NE	HARBINE 1 WSW	25-3581			1-day	NCDC	40.1833	-97.0000	1460	4/1958-12/1994

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NE	HARDY	25-3589			1-day	NCDC	40.0136	-97.9289	1520	6/1918-12/2009
NE	HARLAN CO LAKE	25-3595			1-day	NCDC	40.0892	-99.2133	2000	12/1894-8/2011
NE	HARLAN CO LAKE	25-3595		25-3595	1-hour	NCDC	40.0892	-99.2133	2000	8/1948-12/2010
NE	HARRISBURG 12WNW	25-3605			1-day	NCDC	41.6331	-103.9542	4550	7/1911-10/2011
NE	HARRISON	25-3615			1-day	NCDC	42.6858	-103.8842	4850	3/1893-10/2011
NE	HARRISON 9W	25-3620		25-3620	1-hour	NCDC	42.6544	-104.0467	4710	11/1948-5/2010
NE	HARTINGTON	25-3630			1-day	NCDC	42.6167	-97.2608	1370	1/1893-10/2011
NE	HASKELL AGRICULTURAL LAB	25-3652			1-day	NCDC	42.3806	-96.9575	1460	**6/1957-8/2010**
NE	HASTINGS 4N	25-3660			1-day	NCDC	40.6475	-98.3833	1940	11/1894-10/2011
NE	HAVELOCK	61-0723			1-day	HPRCC	40.8500	-96.6000	1138	4/1921-7/2009
NE	HAVELOCK	61-0723		61-0723	1-hour	HPRCC	40.8500	-96.6000	1138	5/1983-7/2009
NE	HAY SPRINGS	25-3710			1-day	NCDC	42.6828	-102.6928	3855	1/1893-8/2011
NE	HAY SPRINGS 12 S	25-3715			1-day	NCDC	42.5119	-102.6944	3805	8/1951-7/2010
NE	HAYES CENTER 1NW	25-3690			1-day	NCDC	40.5233	-101.0344	3045	12/1894-8/2010
NE	HAYES CENTER 1NW	25-3690		25-3690	1-hour	NCDC	40.5233	-101.0344	3045	8/1948-12/2010
NE	HEBRON	25-3735			1-day	NCDC	40.1750	-97.5903	1480	1/1893-10/2011
NE	HEBRON	25-3735	25-3737		1-hour	NCDC	40.1750	-97.5903	1480	8/1948-9/1996
NE	HEBRON	25-3735	25-3737		15-min	NCDC	40.1750	-97.5903	1480	5/1971-9/1996
NE	HEBRON #2	25-3737		25-3735	1-hour	NCDC	40.1675	-97.5897	1480	**8/1948-12/2010**
NE	HEBRON #2	25-3737		25-3735	15-min	NCDC	40.1675	-97.5897	1480	**5/1971-12/2010**
NE	HEMINGFORD	25-3755			1-day	NCDC	42.3208	-103.0733	4270	**10/1909-10/2011**
NE	HEMINGFORD	25-3757	25-3755		1-day	NCDC	42.3167	-103.0167	3217	10/1909-3/1919
NE	HENRY 6 N	25-3785	53-0524		1-day	NCDC	42.0833	-104.0333	4203	7/1921-11/1952
NE	HERMAN	25-3800			1-day	NCDC	41.6667	-96.2167	1102	3/1946-3/1979
NE	HERMAN	25-3803		25-3803	1-hour	NCDC	41.6733	-96.2164	1045	**8/1948-8/2008**
NE	HERMAN	25-3803			1-day	NCDC	41.6733	-96.2164	1045	3/1946-8/2008
NE	HERSHEY 5 SSE	25-3810			1-day	NCDC	41.1056	-100.9775	2952	9/1941-10/2011
NE	HICKMAN	25-3825			1-day	NCDC	40.6219	-96.6283	1300	11/1894-10/2008
NE	HOLDREGE	25-3910			1-day	NCDC	40.4347	-99.3631	2320	12/1894-10/2011
NE	HOMER 3NE	25-3950			1-day	NCDC	42.3367	-96.4319	1082	3/1946-8/2008
NE	HOWELLS	25-4035			1-day	NCDC	41.7175	-97.0031	1520	10/1934-10/2011
NE	HUBBELL	25-4043			1-day	NCDC	40.0100	-97.4983	1470	2/1958-10/2011

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NE	HYANNIS	25-4100	25-4101		1-day	NCDC	42.0000	-101.7500	3770	9/1927-10/1996
NE	HYANNIS 5N	25-4101			1-day	NCDC	42.0542	-101.7561	3850	**9/1927-11/2010**
NE	IMPERIAL	25-4110			1-day	NCDC	40.5208	-101.6550	3280	1/1893-10/2011
NE	JOHNSON 2 PWR PLT	25-4260	25-1450		1-day	NCDC	40.6833	-99.7500	2470	9/1948-10/1961
NE	JOHNSON 2 PWR PLT	25-4260	25-1450		1-hour	NCDC	40.6833	-99.7500	2470	8/1948-10/1961
NE	KEARNEY	62-4335	25-4335		1-day	FORTS	40.6967	-99.0817	2150	3/1849-12/1892
NE	KEARNEY 4 NE	25-4335			1-day	NCDC	40.7258	-99.0133	2130	**3/1849-10/2011**
NE	KIMBALL 2NE	25-4440			1-day	NCDC	41.2453	-103.6344	4708	1/1893-10/2011
NE	KINGSLEY DAM	25-4455			1-day	NCDC	41.2097	-101.6706	3318	8/1938-10/2011
NE	KINGSLEY DAM	25-4455		25-4455	1-hour	NCDC	41.2097	-101.6706	3318	8/1948-12/2010
NE	KOSHOPAH 7 NE	25-4520	25-2629		1-day	NCDC	42.1667	-100.0167	2651	6/1948-11/1959
NE	KRAMER	25-4540	25-3524		1-day	NCDC	40.5833	-96.8667	1371	6/1948-6/1978
NE	LAMAR 3 SSE	25-4604			1-day	NCDC	40.5303	-101.9694	3540	6/1911-2/2009
NE	LAUREL	25-4655			1-day	NCDC	42.4264	-97.0911	1490	8/1940-6/1999
NE	LEXINGTON	61-0728			1-day	HPRCC	40.7667	-99.7333	2388	1/1893-7/2009
NE	LEXINGTON	25-4775	61-0728		1-day	NCDC	40.7833	-99.7500	2382	1/1893-8/1950
NE	LEXINGTON 7 ESE	25-4778	25-6439		1-day	NCDC	40.7500	-99.6167	2343	6/1951-3/1972
NE	LINCOLN AGRONOMY FARM	25-4790	61-0723		1-day	NCDC	40.8500	-96.6167	1201	4/1921-11/1968
NE	LINCOLN AP	25-4795		25-4795	1-hour	NCDC	40.8311	-96.7644	1170	**8/1948-12/2010**
NE	LINCOLN UNIV CAMPUS	25-4810			1-day	NCDC	40.8167	-96.7000	1181	1/1887-11/1957
NE	LINCOLN UNIV CAMPUS	25-4810	25-4795		1-hour	NCDC	40.8167	-96.7000	1181	8/1948-2/1956
NE	LINCOLN UNIV FARM	25-4795			1-day	NCDC	**40.8333**	**-96.7333**	**1181**	**2/1903-10/2010**
NE	LINCOLN UNIV FARM	25-4812	25-4795		1-day	NCDC	40.8333	-96.7333	1181	2/1903-4/1941
NE	LINCOLN UNIV PWR PLT	25-4815	25-4795		1-hour	NCDC	40.8233	-96.7025	1160	9/1955-12/1972
NE	LISCO	25-4865			1-day	NCDC	41.4983	-102.6222	3515	5/1978-8/2011
NE	LODGEPOLE	25-4900			1-day	NCDC	41.1489	-102.6361	3832	9/1894-9/2011
NE	LOUP CITY	25-4985			1-day	NCDC	41.2808	-98.9681	2058	11/1894-10/2011
NE	LOUP CITY 6 NNE	25-4986			1-day	NCDC	41.3611	-98.9222	2220	9/1948-11/2002
NE	LYMAN	25-5020			1-day	NCDC	41.9169	-104.0358	4050	12/1924-9/2006
NE	LYNCH	25-5040			1-day	NCDC	42.8294	-98.4583	1390	4/1893-8/2011
NE	LYNCH	25-5040			1-hour	NCDC	42.8294	-98.4583	1390	8/1948-12/2010
NE	LYNCH	25-5040			15-min	NCDC	42.8294	-98.4583	1390	9/1978-12/2010

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NE	LYONS	25-5050			1-day	NCDC	41.9378	-96.4789	1280	7/1895-10/2011
NE	MACON	25-5070	25-3037		1-hour	NCDC	40.2000	-98.9500	2113	8/1948-6/1982
NE	MADISON	25-5080			1-day	NCDC	41.8292	-97.4500	1580	10/1894-10/2011
NE	MADRID	25-5090			1-day	NCDC	40.8508	-101.5428	3200	1/1893-10/2011
NE	MALCOLM	25-5105			1-day	NCDC	40.9081	-96.8650	1310	8/1942-10/2011
NE	MALMO 3 E	25-5112			1-hour	NCDC	41.2628	-96.6581	1290	11/1950-12/2010
NE	MALMO 3 E	25-5112			15-min	NCDC	41.2628	-96.6581	1290	5/1982-12/2010
NE	MASON CITY	25-5250			1-day	NCDC	41.2200	-99.2981	2260	2/1893-10/2011
NE	MC COOK	25-5310	25-5312		1-day	NCDC	40.2150	-100.6200	2612	11/1894-8/2010
NE	MC COOK	25-5310	61-0735		1-hour	NCDC	40.2150	-100.6200	2612	8/1948-8/1967
NE	MC COOK #2	25-5312			1-day	NCDC	40.2156	-100.6294	2580	**11/1894-10/2011**
NE	MC COOK #2	25-5312	25-5310		1-hour	NCDC	40.2156	-100.6294	2580	9/1967-2/2009
NE	MC COOK #2	25-5312		25-5312	15-min	NCDC	40.2156	-100.6294	2580	5/1971-12/2010
NE	MC COOK 17 NNW	25-5311			1-day	NCDC	40.4389	-100.6961	2745	**10/1949-8/2011**
NE	MC COOL JUNCTION	25-5320			1-day	NCDC	40.7453	-97.5967	1550	9/1895-1/2008
NE	MCCOOK	61-0735		25-5312	1-hour	HPRCC	40.2333	-100.5833	2598	8/1948-4/2010
NE	MEAD	61-0736		25-5362	1-hour	HPRCC	41.1500	-96.4833	1201	5/1981-7/2009
NE	MEAD 6S	25-5362			1-day	NCDC	41.1431	-96.4808	1155	10/1968-8/2011
NE	MEADOW GROVE	25-5370			1-day	NCDC	42.0292	-97.7386	1630	4/1941-7/2000
NE	MEDICINE CREEK DAM	25-5388			1-day	NCDC	40.3761	-100.2228	2387	10/1951-10/2011
NE	MERRIMAN	25-5470			1-day	NCDC	42.9158	-101.7003	3250	11/1897-4/2011
NE	MILLER	25-5525			1-day	NCDC	40.9283	-99.3886	2310	5/1906-10/2011
NE	MINATARE DAM	25-5555	57-0033		1-day	NCDC	41.9178	-103.4842	4144	1/1925-4/1953
NE	MINDEN	25-5565			1-day	NCDC	40.5156	-98.9514	2160	1/1893-10/2011
NE	MITCHELL 5 E	25-5590			1-day	NCDC	41.9481	-103.7008	4080	6/1909-6/2009
NE	MOOREFIELD	25-5655			1-day	NCDC	40.6961	-100.3997	2826	8/1947-8/2011
NE	MULLEN	25-5700			1-day	NCDC	42.0500	-101.0500	3255	1/1893-10/2011
NE	MULLEN 21 NW	25-5702			1-day	NCDC	42.2506	-101.3364	3460	9/1948-5/2010
NE	NAPONEE	25-5780			1-day	NCDC	40.0783	-99.1386	1883	8/1940-10/2011
NE	NE NEBRASKA EXP STN	25-1849	25-3652		1-day	NCDC	42.3833	-96.9667	1480	6/1957-5/1964
NE	NE NEBRASKA EXP STN	25-6018	25-3652		1-day	NCDC	42.3803	-96.9578	1460	7/1964-1/1998
NE	NEBRASKA CITY 1 NW	25-5805	25-5810		1-day	NCDC	40.6833	-95.8833	1060	2/1895-4/1961

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NE	NEBRASKA CITY 2NW	25-5810			1-day	NCDC	40.6986	-95.8867	1055	**2/1895-7/2011**
NE	NEHAWKA 5 SW	25-5820	25-2442		1-hour	NCDC	40.7833	-96.0333	1122	11/1950-7/1987
NE	NELIGH	25-5830			1-day	NCDC	42.1303	-98.0275	1760	4/1918-7/2011
NE	NELSON	25-5840			1-day	NCDC	40.1983	-98.0733	1715	1/1910-8/2011
NE	NEMAHA	25-5850	25-0435		1-day	NCDC	40.3667	-95.6667	1079	12/1894-11/1908
NE	NENZEL 20 S	25-5860			1-day	NCDC	42.6500	-101.1667	3081	9/1916-7/1982
NE	NEWCASTLE	25-5895			1-day	NCDC	42.6531	-96.8731	1350	**10/1898-8/2011**
NE	NEWPORT	25-5925			1-day	NCDC	42.6008	-99.3333	2230	11/1895-8/2011
NE	NIOBRARA	25-5960			1-day	NCDC	42.7472	-98.0467	1234	2/1939-9/2005
NE	NORFOLK	25-5990			1-day	NCDC	42.0333	-97.4167	1532	2/1893-4/1965
NE	NORFOLK AP	25-5995			1-day	NCDC	41.9856	-97.4353	1551	1/1948-10/2010
NE	NORFOLK AP	25-5995		25-5995	1-hour	NCDC	41.9856	-97.4353	1551	8/1948-12/2010
NE	NORTH LOUP	25-6040			1-day	NCDC	41.4933	-98.7747	1960	2/1893-8/2009
NE	NORTH PLATTE EXP FARM	25-6075			1-day	NCDC	41.0569	-100.7494	3025	5/1917-10/2011
NE	NORTH PLATTE RGNL AP	25-6065			1-day	NCDC	41.1214	-100.6694	2778	**9/1874-10/2010**
NE	NORTH PLATTE RGNL AP	25-6065		25-6065	1-hour	NCDC	41.1214	-100.6694	2778	8/1948-12/2010
NE	NORTH PLATTE WB CITY	25-6070	25-6065		1-day	NCDC	41.1333	-100.7500	2812	6/1948-2/1950
NE	NW AG LAB	25-6100	61-0702		1-day	NCDC	42.1333	-102.9500	4020	3/1981-3/1988
NE	O NEILL	25-6290			1-day	NCDC	42.4594	-98.6564	1990	1/1893-10/2011
NE	OAKDALE	25-6135			1-day	NCDC	42.0678	-97.9675	1710	1/1893-10/2011
NE	OCONTO	25-6165	25-6167		1-day	NCDC	41.1333	-99.7667	2582	4/1939-6/1962
NE	OCONTO	25-6167			1-day	NCDC	41.1439	-99.7633	2580	**4/1939-8/2011**
NE	OGALLALA	25-6200			1-day	NCDC	41.1275	-101.7206	3230	5/1893-8/2011
NE	OMAHA #1	25-6260			1-day	NCDC	41.3536	-96.0233	1280	10/1954-2/2003
NE	OMAHA #1	25-6260		25-6260	1-hour	NCDC	41.3536	-96.0233	1280	12/1957-6/1994
NE	OMAHA EPPLEY AIRFIELD	25-6255			1-day	NCDC	41.3103	-95.8992	982	1/1871-10/2010
NE	OMAHA EPPLEY AIRFIELD	25-6255		25-6255	1-hour	NCDC	41.3103	-95.8992	982	8/1948-12/2010
NE	ONEILL	61-0744		25-6290	1-hour	HPRCC	42.4667	-98.7500	2051	7/1985-7/2009
NE	ORD	25-6335	25-6336		1-day	NCDC	41.6000	-98.9333	2070	7/1895-7/1977
NE	ORD #2	25-6336			1-day	NCDC	41.6028	-98.9269	2050	**7/1895-10/2011**
NE	ORLEANS 2 W	25-6365			1-day	NCDC	40.1314	-99.4558	1960	5/1908-10/2011
NE	OSCEOLA	25-6375			1-day	NCDC	41.1844	-97.5514	1660	7/1895-10/2011

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NE	OSHKOSH	25-6385			1-day	NCDC	41.4014	-102.3464	3390	6/1913-8/2011
NE	OSHKOSH 10 NE	25-6386			1-hour	NCDC	41.4953	-102.1844	3525	11/1958-12/2010
NE	OSHKOSH 10 NE	25-6386			15-min	NCDC	41.4953	-102.1844	3525	6/1972-12/2010
NE	OSHKOSH 8 SW	25-6390			1-day	NCDC	41.3039	-102.4375	3830	1/1952-8/2011
NE	OSMOND	25-6395			1-day	NCDC	42.3569	-97.5969	1650	7/1929-7/2010
NE	OVERTON 3 W	25-6439			1-day	NCDC	40.7456	-99.5900	2330	**6/1951-9/2000**
NE	PALISADE	25-6480			1-day	NCDC	40.3492	-101.1083	2770	3/1909-10/2011
NE	PAWNEE CITY	25-6570			1-day	NCDC	40.1217	-96.1558	1240	9/1902-10/2011
NE	PAWNEE CITY 5 SE	25-6575			1-day	NCDC	40.0667	-96.0833	1152	1/1940-4/2010
NE	PAWNEE CITY 5 SE	25-6575		25-6575	1-hour	NCDC	40.0667	-96.0833	1152	8/1948-4/2010
NE	PAXTON	25-6585			1-day	NCDC	41.1228	-101.3564	3075	9/1898-8/2011
NE	PENDER	25-6630			1-hour	NCDC	42.1153	-96.7058	1340	4/1949-12/2010
NE	PENDER	25-6630			15-min	NCDC	42.1153	-96.7058	1340	8/1973-12/2010
NE	PIERCE	25-6720			1-day	NCDC	42.1958	-97.5206	1591	3/1946-10/2011
NE	PIERCE	25-6720			1-hour	NCDC	42.1958	-97.5206	1591	8/1948-12/2010
NE	PIERCE	25-6720			15-min	NCDC	42.1958	-97.5206	1591	5/1971-12/2010
NE	PILGER	25-6735			1-day	NCDC	42.0067	-97.0561	1407	5/1944-12/2001
NE	PLATTSMOUTH 1E	25-6795			1-day	NCDC	41.0267	-95.8828	1005	9/1920-10/2011
NE	POLK	25-6837			1-day	NCDC	41.0756	-97.7875	1740	**1/1893-10/2011**
NE	POTTER	25-6880			1-day	NCDC	41.2183	-103.3206	4430	7/1895-5/2004
NE	PURDUM	25-6970			1-day	NCDC	42.0650	-100.2472	2690	3/1902-10/2011
NE	RAGAN	25-7002			1-day	NCDC	40.3119	-99.2903	2240	12/1952-11/2009
NE	RANDOLPH 6 S	25-7032			1-day	NCDC	42.2944	-97.3647	1775	1/1980-10/2011
NE	RAVENNA	25-7040			1-day	NCDC	41.0339	-98.9150	2050	1/1893-7/2011
NE	RAYMOND 2NE	25-7055			1-day	NCDC	40.9744	-96.7661	1320	8/1942-10/2011
NE	RED CLOUD	25-7070			1-day	NCDC	40.0978	-98.5197	1720	11/1894-8/2011
NE	RED WILLOW DAM	25-7110			1-day	NCDC	40.3575	-100.6608	2561	4/1962-10/2011
NE	ROCA 6NNE	25-7246			1-day	NCDC	40.7336	-96.6250	1300	10/1951-7/2009
NE	ROSALIE 1 NE	25-7305		25-7305	1-hour	NCDC	42.0667	-96.5000	1332	8/1948-7/1973
NE	RUSHVILLE	25-7415			1-day	NCDC	42.7167	-102.4522	3759	7/1941-3/2011
NE	SAINT PAUL 4N	25-7515			1-day	NCDC	41.2686	-98.4697	1775	7/1895-10/2011
NE	SANTEE	25-7555			1-day	NCDC	42.8333	-97.8500	1230	1/1893-9/1938

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NE	SCHUYLER	25-7640			1-day	NCDC	41.4428	-97.0669	1350	3/1905-10/2011
NE	SCOTTSBLUFF AP	25-7665			1-day	NCDC	41.8706	-103.5931	3945	1/1893-10/2010
NE	SCOTTSBLUFF AP	25-7665		25-7665	1-hour	NCDC	41.8706	-103.5931	3945	9/1948-12/2010
NE	SCRIBNER	25-7685			1-hour	NCDC	41.6678	-96.6689	1252	8/1948-12/2010
NE	SCRIBNER	25-7685			15-min	NCDC	41.6678	-96.6689	1252	12/1976-12/2010
NE	SEWARD	25-7715			1-day	NCDC	40.9000	-97.0908	1440	1/1893-10/2011
NE	SIDNEY 1 SSE	25-7827		25-7835	1-hour	NCDC	41.1272	-102.9706	4050	**8/1948-7/2009**
NE	SIDNEY 3 S	25-7835			1-day	NCDC	41.1000	-102.9833	4309	1/1948-7/2009
NE	SIDNEY 3 S	25-7835	25-7827		1-hour	NCDC	41.1000	-102.9833	4309	8/1948-10/1991
NE	SIDNEY 6 NNW	25-7830			1-day	NCDC	41.2294	-103.0214	4320	12/1908-10/2011
NE	SOWDERS RCH	25-7930	25-8650		1-day	NCDC	41.5667	-100.8833	3261	1/1983-1/1986
NE	SPALDING 5S	25-8025			1-hour	NCDC	41.6031	-98.3483	1895	8/1948-12/2010
NE	SPALDING 5S	25-8025			15-min	NCDC	41.6031	-98.3483	1895	4/1971-12/2010
NE	SPENCER 5 SSE	25-8040			1-day	NCDC	42.8103	-98.6558	1530	2/1895-10/2011
NE	SPIKER 3 NE	25-8055	25-3803		1-hour	NCDC	41.6167	-96.2500	1340	8/1948-2/1990
NE	SPRAGUE	25-8065			1-day	NCDC	40.6333	-96.7333	1250	8/1942-5/1999
NE	SPRINGVIEW	25-8090			1-day	NCDC	42.8222	-99.7467	2496	1/1893-10/2010
NE	ST ANN 3 ESE	25-7450	25-5311		1-day	NCDC	40.4167	-100.6833	2743	10/1949-5/1975
NE	STANTON	25-8110			1-day	NCDC	41.9564	-97.2222	1540	1/1893-4/2003
NE	STAPLEHURST	25-8120			1-day	NCDC	40.9667	-97.1667	1485	7/1949-11/1995
NE	STAPLETON 5 SSE	25-8130			1-day	NCDC	41.4167	-100.4667	3022	7/1913-10/1983
NE	STERLING	25-8202			1-day	NCDC	40.4578	-96.3767	1210	3/1949-2/2007
NE	STOCKVILLE	25-8215			1-day	NCDC	40.5247	-100.3817	2450	8/1947-9/2011
NE	STRATTON	25-8255			1-day	NCDC	40.1519	-101.2286	2827	12/1895-10/2011
NE	SUPERIOR 4E	25-8320			1-day	NCDC	40.0314	-97.9842	1620	1/1893-10/2011
NE	SURPRISE	25-8328			1-day	NCDC	41.1042	-97.3094	1545	6/1978-8/2011
NE	SYRACUSE	25-8395			1-day	NCDC	40.6825	-96.1886	1100	1/1893-10/2011
NE	SYRACUSE	25-8395			1-hour	NCDC	40.6825	-96.1886	1100	8/1948-12/2010
NE	SYRACUSE	25-8395			15-min	NCDC	40.6825	-96.1886	1100	5/1971-12/2010
NE	TABLE ROCK 4 N	25-8410			1-day	NCDC	40.2353	-96.0861	1110	2/1893-10/2011
NE	TAYLOR	25-8455			1-day	NCDC	41.7708	-99.3814	2270	10/1921-10/2011
NE	TECUMSEH 1S	25-8465			1-day	NCDC	40.3544	-96.1939	1110	8/1889-10/2011

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NE	TEKAMAH	25-8480			1-day	NCDC	41.7861	-96.2264	1110	1/1893-10/2011
NE	THEDFORD	25-8510			1-day	NCDC	41.9792	-100.5747	2930	1/1893-2/1996
NE	THEDFORD	25-8510		25-8510	1-hour	NCDC	41.9792	-100.5747	2930	8/1948-2/1996
NE	TRENTON DAM	25-8628			1-day	NCDC	40.1736	-101.0614	2810	3/1919-10/2011
NE	TRYON	25-8650			1-day	NCDC	41.5522	-100.9583	3247	9/1945-10/2002
NE	ULYSSES	25-8682			1-day	NCDC	41.0708	-97.2036	1523	**4/1947-4/2001**
NE	ULYSSES 3 NNE	25-8685	25-8682		1-day	NCDC	41.1000	-97.2000	1522	4/1947-12/1974
NE	UPLAND 4NE	25-8735			1-day	NCDC	40.3436	-98.8664	2286	9/1913-4/2011
NE	UTICA	25-8745			1-day	NCDC	40.8972	-97.3464	1600	10/1916-10/2011
NE	VALENTINE	62-8760	25-8760		1-day	FORTS	42.8761	-100.5506	2582	9/1885-11/1896
NE	VALENTINE MILLER AP	25-8760			1-day	NCDC	42.8783	-100.5500	2590	**9/1885-10/2010**
NE	VALENTINE MILLER AP	25-8760		25-8760	1-hour	NCDC	42.8783	-100.5500	2590	8/1948-12/2010
NE	VALENTINE NWR	25-8755			1-day	NCDC	42.5711	-100.6931	2930	4/1937-10/2011
NE	VALPARAISO	25-8790			1-day	NCDC	41.0833	-96.8333	1310	5/1897-4/1997
NE	VERDIGRE 9 WSW	25-8836		25-8836	1-hour	NCDC	42.5500	-98.2000	1665	**11/1950-3/1985**
NE	VIRGINIA	25-8875			1-day	NCDC	40.2444	-96.4983	1545	3/1926-2/2009
NE	WAHOO	25-8905			1-day	NCDC	41.2214	-96.6222	1220	5/1903-12/2003
NE	WAKEFIELD	25-8915			1-day	NCDC	42.2667	-96.8617	1390	10/1894-10/2011
NE	WALLACE 2W	25-8920			1-day	NCDC	40.8433	-101.2094	3100	2/1893-9/2011
NE	WALNUT 1 SE	25-8928	25-8836		1-hour	NCDC	42.5500	-98.2000	**1588**	11/1950-11/1963
NE	WALTHILL 1E	25-8935			1-day	NCDC	42.1506	-96.4756	1280	6/1909-10/2011
NE	WATERLOO	25-8980			1-day	NCDC	41.2833	-96.2833	1115	**8/1944-1/2000**
NE	WAUNETA	25-9020			1-day	NCDC	40.4122	-101.3611	2941	6/1898-8/2011
NE	WAYNE	25-9045			1-day	NCDC	42.2364	-97.0111	1465	4/1893-10/2011
NE	WAYNE 4 NW	25-9050			1-hour	NCDC	42.2950	-97.0569	1500	8/1948-12/2010
NE	WAYNE 4 NW	25-9050			15-min	NCDC	42.2950	-97.0569	1500	5/1971-12/2010
NE	WEATHER STN MINATARE	57-0033			1-day	USBR	41.9178	-103.4842	4144	1/1925-4/2009
NE	WEEPING WATER	25-9090			1-day	NCDC	40.8639	-96.1414	1100	1/1893-8/2010
NE	WEEPING WATER	25-9090			1-hour	NCDC	40.8639	-96.1414	1100	9/1982-9/2010
NE	WEEPING WATER	25-9090			15-min	NCDC	40.8639	-96.1414	1100	9/1982-9/2010
NE	WEEPING WATER 6 NW	25-9095		25-9095	1-hour	NCDC	40.9167	-96.2333	1260	8/1948-8/1982
NE	WELLFLEET	25-9115			1-day	NCDC	40.7558	-100.7300	2816	1/1899-8/2011

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NE	WEST POINT	25-9200			1-day	NCDC	41.8450	-96.7142	1310	1/1890-10/2011
NE	WESTERN	25-9150			1-day	NCDC	40.3950	-97.1931	1480	2/1910-10/2011
NE	WHITMAN	25-9265	25-9262		1-hour	NCDC	42.0500	-101.5167	3504	8/1948-5/1958
NE	WHITMAN 2 NE	25-9262	61-0721		1-hour	NCDC	42.0806	-101.4853	3570	6/1958-2/2009
NE	WHITMAN 24 N	25-9266			1-day	NCDC	42.4000	-101.4333	3442	9/1948-5/1984
NE	WILSONVILLE	25-9325			1-day	NCDC	40.1119	-100.1047	2300	11/1894-10/2011
NE	WINNEBAGO	25-9335			1-day	NCDC	42.2500	-96.4667	1191	2/1900-11/1972
NE	WINSIDE	25-9355			1-day	NCDC	42.1764	-97.1758	1590	7/1935-6/2001
NE	WYMORE	25-9475			1-day	NCDC	40.1269	-96.6711	1255	12/1897-10/2010
NE	YORK	25-9510			1-day	NCDC	40.8678	-97.5922	1610	6/1891-7/2008
NE	YORK	61-0756	25-9510		1-hour	HPRCC	40.8667	-97.6167	1608	4/1996-7/2009
NE	YORK	25-9510		25-9510	1-hour	NCDC	40.8678	-97.5922	1610	**8/1948-7/2009**
NE	YORK	25-9510	25-9513		15-min	NCDC	40.8678	-97.5922	1610	5/1971-8/2008
NE	YORK 3N	25-9513		25-9510	15-min	NCDC	40.9153	-97.5997	1613	**5/1971-12/2010**
NE	25N 58W13CDBC1 SHEEP CREE	53-0524			1-day	USGS	42.1322	-104.0468	4208	7/1921-7/2009
OK	ADA	34-0017			1-day	NCDC	34.7864	-96.6850	1015	1/1907-2/2011
OK	ADAIR 1 E	34-0026	34-0028		1-hour	NCDC	36.4333	-95.2500	679	10/1947-4/1969
OK	ADAIR 3SW	34-0028		34-0028	1-hour	NCDC	36.4008	-95.3000	647	**10/1947-12/2010**
OK	ALTUS DAM	34-0184			1-day	NCDC	34.8847	-99.2964	1525	8/1945-10/2011
OK	ALTUS IRIG RSCH STN	34-0179			1-day	NCDC	34.5903	-99.3344	1380	5/1903-10/2011
OK	ALTUS IRIG RSCH STN	34-0179			1-hour	NCDC	34.5903	-99.3344	1380	1/1948-12/2010
OK	ALTUS IRIG RSCH STN	34-0179			15-min	NCDC	34.5903	-99.3344	1380	11/1970-12/2010
OK	ALVA 1 NE	34-0193			1-day	NCDC	36.8186	-98.6447	1305	4/1894-10/2011
OK	AMES	34-0215			1-day	NCDC	36.2483	-98.1883	1195	5/1896-10/2011
OK	AMES	34-0215		34-0215	1-hour	NCDC	36.2483	-98.1883	1195	10/1947-5/2008
OK	ANADARKO	34-0224			1-day	NCDC	35.0667	-98.2500	1211	1/1893-8/2011
OK	ANTHON 6 W	34-0242		34-0242	1-hour	NCDC	35.7500	-99.1000	1821	10/1947-8/1973
OK	ANTLERS	34-0256			1-day	NCDC	34.2208	-95.6150	470	1/1918-10/2011
OK	ANTLERS	34-0256			1-hour	NCDC	34.2208	-95.6150	470	10/1947-3/2001
OK	ANTLERS	34-0256			15-min	NCDC	34.2208	-95.6150	470	5/1971-3/2001
OK	APACHE	34-0260			1-day	NCDC	34.8958	-98.3594	1250	8/1909-10/2011
OK	ARAPAHO	34-0277	34-1909		1-day	NCDC	35.5833	-98.9667	1624	7/1893-12/1930

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OK	ARCADIA 3 WSW	34-0288			1-day	NCDC	35.6542	-97.3658	1014	1/1897-9/2010
OK	ARDMORE	34-0292			1-day	NCDC	34.1714	-97.1294	880	1/1901-10/2011
OK	ARDMORE	34-0292			1-hour	NCDC	34.1714	-97.1294	880	**4/1957-12/2010**
OK	ARDMORE	34-0292			15-min	NCDC	34.1714	-97.1294	880	**5/1971-12/2010**
OK	ARDMORE #2	34-0293	34-0292		1-hour	NCDC	34.1500	-97.1500	850	8/1960-8/1994
OK	ARDMORE #2	34-0293	34-0292		15-min	NCDC	34.1500	-97.1500	850	5/1971-8/1994
OK	ARNETT	34-0332			1-day	NCDC	36.1350	-99.7639	2445	3/1911-10/2011
OK	ATOKA	34-0391			1-day	NCDC	34.3983	-96.1400	565	**4/1926-10/2011**
OK	ATOKA DAM	34-0394	34-0391		1-day	NCDC	34.4500	-96.0667	595	1/1963-12/1999
OK	BAIRD 4 N	34-0466	34-2668		1-day	NCDC	34.5333	-98.1667	1089	5/1952-7/1980
OK	BARNSDALL	34-0535			1-day	NCDC	36.5653	-96.1664	770	10/1943-11/2002
OK	BARTLESVILLE MUNI AP	34-0548			1-day	NCDC	36.7683	-96.0261	715	1/1920-2/2009
OK	BATTIEST	34-0562	34-1873		1-day	NCDC	34.4000	-94.9333	600	1/1948-12/1951
OK	BATTIEST	34-0567			1-day	NCDC	34.3850	-94.8981	822	**1/1948-8/2010**
OK	BEAR MTN TWR	34-0584			1-day	NCDC	34.1394	-94.9519	800	11/1938-1/1998
OK	BEAVER	34-0593			1-day	NCDC	36.8125	-100.5308	2465	2/1896-10/2011
OK	BENGAL 2 NNW	34-0670			1-hour	NCDC	34.8547	-95.0697	665	10/1947-12/2010
OK	BENGAL 2 NNW	34-0670			15-min	NCDC	34.8547	-95.0697	665	5/1971-12/2010
OK	BILLINGS	34-0755			1-day	NCDC	36.5297	-97.4472	1000	1/1914-10/2011
OK	BIXBY	34-0782			1-day	NCDC	35.9833	-95.8833	605	11/1943-10/2005
OK	BLACKWELL	34-0818			1-day	NCDC	36.8047	-97.2764	1010	**3/1916-10/2011**
OK	BLACKWELL 1 W	34-0814	34-0818		1-day	NCDC	36.8000	-97.3000	1040	3/1916-11/1974
OK	BLANCHARD 2 SSW	34-0830			1-day	NCDC	35.1183	-97.6700	1275	9/1952-10/2011
OK	BOISE CITY 2	34-0912	34-0908		1-hour	NCDC	36.7333	-102.5000	4163	7/1965-7/1983
OK	BOISE CITY 2 E	34-0908			1-day	NCDC	36.7236	-102.4803	4145	1/1908-10/2011
OK	BOISE CITY 2 E	34-0908		34-0908	1-hour	NCDC	36.7236	-102.4803	4145	**10/1947-12/2010**
OK	BOSWELL 1 S	34-0980			1-day	NCDC	34.0211	-95.8722	550	8/1941-8/1999
OK	BRISTOW	34-1144			1-day	NCDC	35.8292	-96.3917	830	11/1915-7/2011
OK	BROKEN ARROW 2 SW	34-1157	34-6713		1-day	NCDC	36.0333	-95.8167	689	8/1941-7/1975
OK	BROKEN BOW 1 N	34-1162			1-day	NCDC	34.0497	-94.7381	475	11/1917-10/2011
OK	BROKEN BOW DAM	34-1168		34-1168	1-hour	NCDC	34.1333	-94.7000	443	8/1964-7/1997
OK	BUFFALO 2 SSW	34-1243			1-day	NCDC	36.8003	-99.6403	1930	3/1907-8/2011

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OK	BURBANK	34-1256			1-day	NCDC	36.6928	-96.7319	975	1/1948-1/2011
OK	CALVIN	34-1391			1-day	NCDC	34.9642	-96.2492	800	9/1904-8/2011
OK	CAMARGO	86-0028	34-1396		1-day	OK MESONET	36.0287	-99.3465	1932	1/1994-7/2009
OK	CAMARGO	34-1396			1-day	NCDC	36.0167	-99.2833	1942	**1/1923-7/2009**
OK	CANEY 1 E	34-1437		34-1437	1-hour	NCDC	34.2300	-96.1950	565	**10/1947-1/2010**
OK	CANEY 1 NNE	34-1436	34-1437		1-hour	NCDC	34.2333	-96.2167	531	10/1947-4/1978
OK	CANTON	34-1441	34-1445		1-day	NCDC	36.0500	-98.5833	1611	3/1914-11/1953
OK	CANTON	34-1445			1-day	NCDC	36.0617	-98.5900	1590	**3/1914-8/2002**
OK	CARNASAW TWR	34-1499			1-day	NCDC	34.1442	-94.6378	1000	11/1938-10/2001
OK	CARNEGIE	34-1504			1-day	NCDC	35.1000	-98.6000	1503	4/1914-9/2005
OK	CARTER TWR	34-1544			1-day	NCDC	34.2661	-94.7753	1300	1/1939-4/2008
OK	CARTER TWR	34-1544			1-hour	NCDC	34.2661	-94.7753	1300	11/1947-8/2010
OK	CARTER TWR	34-1544			15-min	NCDC	34.2661	-94.7753	1300	5/1971-8/2010
OK	CHANDLER	34-1684			1-day	NCDC	35.7061	-96.8800	958	8/1901-10/2011
OK	CHANDLER	34-1684			1-hour	NCDC	35.7061	-96.8800	958	6/1953-12/2010
OK	CHANDLER	34-1684			15-min	NCDC	35.7061	-96.8800	958	5/1971-12/2010
OK	CHATTANOOGA 3 NE	34-1706			1-day	NCDC	34.4497	-98.6222	1154	12/1905-10/2011
OK	CHECOTAH	34-1711			1-day	NCDC	35.4667	-95.5333	638	10/1947-8/2004
OK	CHEROKEE	34-1724			1-day	NCDC	36.7747	-98.3583	1180	6/1915-10/2011
OK	CHEYENNE	86-0033			1-day	OK MESONET	35.5462	-99.7279	2277	7/1923-7/2009
OK	CHEYENNE	34-1738	86-0033		1-day	NCDC	35.6000	-99.6833	2005	7/1923-12/1994
OK	CHICKASAW NRA	34-1745			1-day	NCDC	34.5019	-96.9717	1055	**2/1917-9/2011**
OK	CHICKASHA	34-1747	34-1750		1-day	NCDC	35.0333	-97.9500	1089	1/1901-4/1966
OK	CHICKASHA EXP STATION	34-1750			1-day	NCDC	35.0489	-97.9158	1085	**1/1901-8/2011**
OK	CHICKASHA EXP STATION	34-1750			1-hour	NCDC	35.0489	-97.9158	1085	3/1958-12/2010
OK	CHICKASHA EXP STATION	34-1750			15-min	NCDC	35.0489	-97.9158	1085	5/1971-12/2010
OK	CLAREMORE 2 ENE	34-1828			1-day	NCDC	36.3225	-95.5808	588	5/1900-10/2011
OK	CLEBIT 2 ESE	34-1873	34-0567		1-day	NCDC	34.3833	-94.9833	830	5/1978-12/1982
OK	CLEVELAND	34-1900	34-1891		1-day	NCDC	36.3000	-96.4667	795	3/1948-11/1982
OK	CLEVELAND	34-1900	34-1902		1-hour	NCDC	36.3000	-96.4667	795	10/1947-12/1982
OK	CLEVELAND 1	34-1891	34-1902		1-day	NCDC	36.3167	-96.4667	801	5/1913-7/1952
OK	CLEVELAND 4 WSW	34-1902			1-day	NCDC	36.2903	-96.5369	920	**5/1913-4/2001**

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
OK	CLEVELAND 4 WSW	34-1902		34-1902	1-hour	NCDC	36.2903	-96.5369	920	**10/1947-6/2001**
OK	CLINTON	34-1909			1-day	NCDC	35.5014	-98.9772	1570	**7/1893-7/2005**
OK	CLOUD CHIEF	34-1927			1-day	NCDC	35.2333	-98.8167	1503	6/1893-6/1975
OK	COALGATE 1 WNW	34-1954			1-day	NCDC	34.5500	-96.2333	610	1/1904-5/1982
OK	COMANCHE	34-2054			1-day	NCDC	34.3622	-97.9736	1025	5/1952-10/2011
OK	CORDELL	34-2125			1-day	NCDC	35.2833	-98.9833	1532	7/1936-6/2011
OK	CRESCENT	34-2242			1-day	NCDC	35.9500	-97.5944	1145	9/1940-10/2011
OK	CUSHING	34-2318			1-day	NCDC	35.9803	-96.7758	950	9/1937-10/2011
OK	CUSTER CITY 3 SE	34-2334			1-hour	NCDC	35.6472	-98.8281	1755	8/1973-5/2004
OK	CUSTER CITY 3 SE	34-2334			15-min	NCDC	35.6472	-98.8281	1755	8/1973-5/2004
OK	DACOMA 2 NE	34-2341			1-day	NCDC	36.6833	-98.5500	1480	2/1898-10/1975
OK	DAISY 4 ENE	34-2354			1-day	NCDC	34.5433	-95.6764	755	7/1944-10/2011
OK	DEWAR 2 NE	34-2485			1-day	NCDC	35.4833	-95.8833	578	7/1947-4/2010
OK	DUNCAN	34-2660			1-day	NCDC	34.5011	-97.9592	1125	11/1936-10/2011
OK	DUNCAN 1 SSW	34-2665	34-2654		1-hour	NCDC	34.4833	-97.9667	1132	10/1947-8/1979
OK	DUNCAN 10 W	34-2668			1-day	NCDC	34.4933	-98.1419	1115	**5/1952-10/2011**
OK	DUNCAN AP	34-2654		34-2660	1-hour	NCDC	34.4831	-97.9578	1105	**10/1947-12/2010**
OK	DUNCAN AP	34-2654		34-2660	15-min	NCDC	34.4831	-97.9578	1105	9/1979-12/2010
OK	DURANT	34-2678			1-day	NCDC	34.0003	-96.3686	600	8/1901-10/2011
OK	EL RENO	86-0042	34-2818		1-day	OK MESONET	35.5485	-98.0365	1375	1/1994-7/2009
OK	EL RENO 1 N	34-2818			1-day	NCDC	35.5489	-97.9553	1325	**1/1893-7/2009**
OK	ELDORADO	34-2836			1-day	NCDC	34.4667	-99.6500	1460	5/1903-8/1975
OK	ELK CITY	34-2849			1-day	NCDC	35.4167	-99.4167	1957	5/1904-4/2008
OK	ELK CITY 2	34-2852	34-2849		15-min	NCDC	35.4167	-99.4333	2001	3/1976-11/1981
OK	ELK CITY 4 W	34-2849			1-hour	NCDC	35.3925	-99.5064	2120	10/1947-4/2008
OK	ELK CITY 4 W	34-2849			15-min	NCDC	35.3925	-99.5064	2120	5/1971-4/2008
OK	ELMORE CITY 3 SW	34-2872	34-4052		1-day	NCDC	34.6100	-97.4222	1020	7/1947-8/2010
OK	ENID	34-2912			1-day	NCDC	36.4194	-97.8747	1245	2/1894-10/2011
OK	ERICK 4 E	34-2944			1-day	NCDC	35.2000	-99.8000	1985	9/1904-10/2011
OK	EUFAULA	34-2993			1-day	NCDC	35.2833	-95.5833	640	4/1896-1/2002
OK	EUFAULA DAM	34-2994	34-2997		1-hour	NCDC	35.3000	-95.3333	541	3/1957-5/1965
OK	EUFAULA RSVR	34-2997	34-4975		1-hour	NCDC	35.3000	-95.3667	732	5/1965-8/1970

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OK	EVA	34-3002		34-3002	1-hour	NCDC	36.7975	-101.9075	3574	10/1947-12/2010
OK	FAIRVIEW	86-0045			1-day	OK MESONET	36.2635	-98.4977	1329	3/1932-7/2009
OK	FAIRVIEW	34-3047	86-0045		1-day	NCDC	36.2667	-98.4833	1302	3/1932-2/1977
OK	FANSHAWE	34-3065			1-day	NCDC	34.9511	-94.9081	547	9/1941-10/2011
OK	FARGO	34-3070			1-day	NCDC	36.3744	-99.6264	2110	6/1942-10/2011
OK	FARRIS 3 WNW	34-3083	34-5713		1-day	NCDC	34.2667	-95.9167	510	7/1944-2/1995
OK	FLASHMAN TWR	34-3182			1-day	NCDC	34.4833	-95.0000	1752	11/1938-2/1984
OK	FORAKER	34-3250			1-day	NCDC	36.8736	-96.5692	1265	8/1944-4/2001
OK	FORT COBB	86-0048	34-3281		1-day	OK MESONET	35.1489	-98.4661	1385	1/1994-7/2009
OK	FORT COBB	34-3281			1-day	NCDC	35.1000	-98.4333	1260	**7/1938-7/2009**
OK	FORT GIBSON	62-3283	34-3283		1-day	FORTS	35.8072	-95.2533	595	4/1836-9/1890
OK	FORT GIBSON	62-3284	62-3283		1-day	FORTS	35.7975	-95.2503	565	4/1873-5/1882
OK	FORT GIBSON	34-3283			1-day	NCDC	35.8000	-95.2500	528	**4/1836-8/1943**
OK	FORT SILL	63-3300	34-3300		1-day	FORTS	34.6658	-98.3814	1124	4/1870-12/1892
OK	FORT SILL	34-3300	34-5068		1-day	NCDC	34.6667	-98.3833	1200	1/1893-3/1908
OK	FORT SUPPLY 3SE	34-3304			1-day	NCDC	36.5442	-99.5350	2030	**2/1893-10/2011**
OK	FORT SUPPLY 3SE	34-3304		34-3304	1-hour	NCDC	36.5442	-99.5350	2030	10/1947-12/2010
OK	FREDERICK	34-3353			1-day	NCDC	34.3864	-99.0122	1285	5/1904-3/2011
OK	FREEDOM	34-3358			1-day	NCDC	36.7647	-99.1128	1515	1/1948-10/2011
OK	FT COBB	34-3281			1-hour	NCDC	35.1036	-98.4428	1285	12/1952-3/2007
OK	FT COBB	34-3281			15-min	NCDC	35.1036	-98.4428	1285	8/1977-3/2007
OK	FT GIBSON DAM	34-3286		34-3286	1-hour	NCDC	35.8667	-95.2333	531	5/1949-4/2001
OK	FT RENO	34-3295	34-2818		1-day	NCDC	35.5667	-98.0333	1391	1/1893-12/1951
OK	GAGE AP	34-3407			1-day	NCDC	36.2967	-99.7689	2191	5/1904-10/2010
OK	GARBER	34-3448			1-day	NCDC	36.4333	-97.5833	1181	10/1938-10/1975
OK	GATE	34-3489			1-day	NCDC	36.8500	-100.0569	2250	7/1959-7/2011
OK	GEARY	34-3497			1-day	NCDC	35.6267	-98.3225	1600	11/1911-10/2011
OK	GEARY	34-3497			1-hour	NCDC	35.6267	-98.3225	1600	10/1947-5/2009
OK	GEARY	34-3497			15-min	NCDC	35.6267	-98.3225	1600	5/1971-5/2009
OK	GOODWELL RSCH STN	34-3628			1-day	NCDC	36.5914	-101.6181	3310	2/1910-10/2011
OK	GOODWELL RSCH STN	34-3628			1-hour	NCDC	36.5914	-101.6181	3310	10/1947-12/2010
OK	GOODWELL RSCH STN	34-3628			15-min	NCDC	36.5914	-101.6181	3310	6/1978-12/2010

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OK	GRAND RIVER DAM	34-3700			1-day	NCDC	36.4667	-95.0500	771	**11/1923-6/1979**
OK	GRAND RIVER DAM	34-3700		34-3700	1-hour	NCDC	36.4667	-95.0500	771	10/1947-3/1980
OK	GRANDFIELD 4 NW	34-3709			1-day	NCDC	34.2833	-98.7333	1060	9/1941-11/1994
OK	GREAT SALT PLAINS DAM	34-3740			1-day	NCDC	36.7425	-98.1331	1200	3/1946-10/2011
OK	GREAT SALT PLAINS DAM	34-3740		34-3740	1-hour	NCDC	36.7425	-98.1331	1200	10/1947-12/2010
OK	GROVE	34-3794			1-day	NCDC	36.5806	-94.7681	770	5/1935-7/1975
OK	GUTHRIE 5S	34-3821			1-day	NCDC	35.8161	-97.3950	1110	1/1893-10/2011
OK	HALLETT 1 NW	34-3862			1-day	NCDC	36.2500	-96.6000	942	9/1940-3/1973
OK	HAMMON 3 SSW	34-3871			1-day	NCDC	35.5850	-99.3953	1820	1/1920-11/2005
OK	HANNA	34-3884			1-day	NCDC	35.2000	-95.8833	680	8/1941-12/2001
OK	HARDESTY	34-3902			1-day	NCDC	36.6167	-101.1833	2904	1/1941-11/1957
OK	HASKELL	34-3956			1-day	NCDC	35.8258	-95.6933	595	7/1943-1/2005
OK	HEALDTON 3 E	34-4001			1-day	NCDC	34.2331	-97.4203	902	1/1894-10/2011
OK	HEAVENER 2 N	34-4008			1-day	NCDC	34.9128	-94.5997	592	12/1951-9/2002
OK	HEE MTN TWR	34-4017			1-day	NCDC	34.3414	-94.6573	1503	12/1948-9/1995
OK	HELENA 1 SSE	34-4019			1-day	NCDC	36.5381	-98.2661	1350	1/1906-10/2011
OK	HENNEPIN	34-4051	34-4052		1-hour	NCDC	34.5167	-97.3500	942	4/1948-5/1974
OK	HENNEPIN	34-4051	34-4052		15-min	NCDC	34.5167	-97.3500	942	5/1971-5/1974
OK	HENNEPIN 5 N	34-4052			1-day	NCDC	34.5828	-97.3464	970	**7/1947-12/2010**
OK	HENNEPIN 5 N	34-4052			1-hour	NCDC	34.5828	-97.3464	970	**4/1948-12/2010**
OK	HENNEPIN 5 N	34-4052			15-min	NCDC	34.5828	-97.3464	970	**5/1971-12/2010**
OK	HENNESSEY 4 ESE	34-4055			1-day	NCDC	36.0942	-97.8350	1174	4/1895-10/2011
OK	HEYBURN DAM	34-4098		34-4098	1-hour	NCDC	35.9500	-96.2833	831	6/1949-7/1997
OK	HOBART	34-4202			1-hour	NCDC	35.0256	-99.0919	1547	3/1952-4/2010
OK	HOBART	34-4202			15-min	NCDC	35.0256	-99.0919	1547	5/1971-4/2010
OK	HOBART MUNI AP	34-4204			1-day	NCDC	34.9894	-99.0525	1556	1/1910-10/2010
OK	HOLDENVILLE 2SSE	34-4235			1-day	NCDC	35.0564	-96.3706	855	1/1901-8/2011
OK	HOLLIS	86-0059			1-day	OK MESONET	34.6855	-99.8333	1631	8/1922-8/2010
OK	HOLLIS 5E	34-4249	86-0059		1-day	NCDC	34.6808	-99.8136	1621	8/1922-8/2010
OK	HOLLOW	34-4258			1-day	NCDC	36.8806	-95.2867	910	4/1940-2/2006
OK	HOMINY	34-4289			1-day	NCDC	36.4031	-96.3911	773	8/1936-6/2007
OK	HOOKER	34-4298			1-day	NCDC	36.8589	-101.2172	2995	6/1906-10/2011

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OK	HUGO	34-4384			1-day	NCDC	34.0211	-95.5381	520	1/1915-4/2006
OK	HUGO	34-4384			1-hour	NCDC	34.0211	-95.5381	520	10/1947-9/1999
OK	HUGO	34-4384			15-min	NCDC	34.0211	-95.5381	520	12/1972-9/1999
OK	HULAH DAM	34-4393			1-day	NCDC	36.9167	-96.1000	744	6/1946-4/1997
OK	HULAH DAM	34-4393		34-4393	1-hour	NCDC	36.9167	-96.1000	744	12/1947-5/1997
OK	IDABEL	34-4451			1-day	NCDC	33.9336	-94.8278	365	3/1907-10/2011
OK	INOLA 6 SSW	34-4506		34-4506	1-hour	NCDC	36.0667	-95.5500	545	3/1968-1/1999
OK	JAY	86-0064			1-day	OK MESONET	36.4821	-94.7829	997	9/1940-7/2009
OK	JAY	34-4564	86-0064		1-day	NCDC	36.4167	-94.8000	1040	9/1940-9/1978
OK	JAY TWR	34-4567	34-4564		1-day	NCDC	36.4236	-94.7967	1050	8/1979-11/1996
OK	JEFFERSON	34-4573			1-day	NCDC	36.7222	-97.7903	1045	1/1894-10/2011
OK	KANSAS 2 NE	34-4672			1-day	NCDC	36.2133	-94.7725	1190	4/1959-7/2010
OK	KENTON	34-4766			1-day	NCDC	36.9031	-102.9650	4350	11/1900-6/2006
OK	KEYSTONE DAM	34-4812			1-day	NCDC	36.1500	-96.2500	705	8/1957-4/1997
OK	KEYSTONE DAM	34-4812		34-4812	1-hour	NCDC	36.1500	-96.2500	705	8/1957-6/1997
OK	KINGFISHER	34-4861			1-day	NCDC	35.8583	-97.9294	1050	4/1897-10/2011
OK	KINGSTON 5 SSE	34-4865			1-day	NCDC	33.9300	-96.6961	684	1/1946-8/2008
OK	KINGSTON 5 SSE	34-4865		34-4865	1-hour	NCDC	33.9300	-96.6961	684	10/1947-1/2009
OK	KONAWA	34-4915			1-day	NCDC	34.9614	-96.7500	975	9/1942-10/2011
OK	LAKE EUFAULA	34-4975			1-day	NCDC	35.2928	-95.4322	850	3/1957-9/2004
OK	LAKE EUFAULA	34-4975		34-4975	1-hour	NCDC	35.2928	-95.4322	850	**3/1957-9/2004**
OK	LAKE OVERHOLSER	34-4978			1-day	NCDC	35.4833	-97.6667	1260	8/1942-10/2011
OK	LAKE OVERHOLSER	34-4978			1-hour	NCDC	35.4878	-97.6644	1270	1/1952-12/2010
OK	LAKE OVERHOLSER	34-4978			15-min	NCDC	35.4878	-97.6644	1270	5/1971-12/2010
OK	LAVERNE	34-5045			1-day	NCDC	36.6992	-99.8967	2115	2/1939-9/2010
OK	LAWTON	34-5063			1-day	NCDC	34.6094	-98.4575	1150	4/1912-10/2011
OK	LAWTON 2N	34-5068			1-day	NCDC	34.6500	-98.4000	1122	**4/1870-8/1950**
OK	LEEDEY	34-5090			1-day	NCDC	35.8781	-99.3433	2080	8/1941-10/2011
OK	LEHIGH 4 SW	34-5108			1-day	NCDC	34.4339	-96.2717	695	1/1893-10/2011
OK	LEHIGH 4 SW	34-5108		34-5108	1-hour	NCDC	34.4339	-96.2717	695	10/1947-12/2010
OK	LENAPAH	34-5118			1-day	NCDC	36.8472	-95.6353	740	9/1951-6/2011
OK	LINDSAY 2 W	34-5216			1-day	NCDC	34.8261	-97.6386	980	4/1938-3/2010

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OK	LOOKEBA 1 N	34-5329			1-day	NCDC	35.3736	-98.3775	1442	2/1940-10/2010
OK	LYONS 2 N	34-5437			1-day	NCDC	35.7575	-94.7291	1025	6/1942-9/2003
OK	MACKIE 4 NNW	34-5463		34-5463	1-hour	NCDC	35.7481	-99.8178	2150	**10/1947-12/2002**
OK	MADILL	34-5468			1-day	NCDC	34.0919	-96.7708	770	12/1936-10/2011
OK	MANGUM	34-5509			1-day	NCDC	34.8911	-99.5017	1595	1/1920-10/2011
OK	MANNFORD 6 NW	34-5522			1-day	NCDC	36.1747	-96.4433	830	1/1943-10/2011
OK	MARAMEC	34-5540			1-day	NCDC	36.2461	-96.6839	955	9/1943-9/2003
OK	MARIETTA 5SW	34-5563			1-day	NCDC	33.8761	-97.1642	802	9/1937-10/2011
OK	MARLOW 1 WSW	34-5581			1-day	NCDC	34.6456	-97.9778	1250	10/1900-10/2011
OK	MARSHALL	34-5589			1-day	NCDC	36.1522	-97.6225	1041	2/1951-10/2011
OK	MARSHALL	34-5589			1-hour	NCDC	36.1522	-97.6225	1041	**10/1947-12/2010**
OK	MARSHALL	34-5589			15-min	NCDC	36.1522	-97.6225	1041	10/1975-12/2010
OK	MAYFIELD	34-5648			1-hour	NCDC	35.3392	-99.8769	2005	10/1947-12/2010
OK	MAYFIELD	34-5648			15-min	NCDC	35.3392	-99.8769	2005	5/1971-12/2010
OK	MC CURTAIN 1 SE	34-5693			1-day	NCDC	35.1500	-94.9500	571	7/1947-1/2009
OK	MCALESTER 4 W	34-5662	34-5664		1-day	NCDC	34.9500	-95.8333	670	1/1893-12/1954
OK	MCALESTER 4 W	34-5662	34-5664		1-hour	NCDC	34.9500	-95.8333	670	10/1947-8/1957
OK	MCALESTER RGNL AP	34-5664			1-day	NCDC	34.8822	-95.7831	770	**1/1893-10/2010**
OK	MCALESTER RGNL AP	34-5664		34-5664	1-hour	NCDC	34.8822	-95.7831	770	**10/1947-12/2010**
OK	MCCOMB	34-5688	34-8951		1-day	NCDC	35.1500	-97.0167	1200	1/1893-7/1911
OK	MCGEE CREEK DAM	34-5713			1-day	NCDC	34.3094	-95.8672	672	**7/1944-10/2011**
OK	MEEKER 5 W	34-5779			1-day	NCDC	35.5050	-96.9767	925	1/1894-10/2011
OK	MIAMI	86-0081			1-day	OK MESONET	36.8883	-94.8444	810	12/1917-8/2010
OK	MIAMI	34-5855	86-0081		1-day	NCDC	36.8833	-94.8833	805	12/1917-8/2010
OK	MORAVIA 2 NNE	34-6035			1-day	NCDC	35.1333	-99.5000	1740	8/1941-10/2011
OK	MUSKOGEE	34-6130			1-day	NCDC	35.7781	-95.3339	518	2/1905-10/2011
OK	MUSKOGEE	34-6130		34-6130	1-hour	NCDC	35.7781	-95.3339	518	10/1947-12/2010
OK	MUTUAL	34-6139			1-day	NCDC	36.2278	-99.1700	1890	1/1915-10/2011
OK	NEWKIRK 1 NW	34-6278			1-day	NCDC	36.8914	-97.0586	1140	1/1898-10/2011
OK	NORMAN 3 S	34-6386			1-day	NCDC	35.2167	-97.4667	1185	10/1894-10/2011
OK	NOWATA	34-6485			1-day	NCDC	36.6917	-95.6436	710	7/1936-12/2007
OK	NOWATA	34-6485		34-6485	1-hour	NCDC	36.6917	-95.6436	710	7/1949-3/2008

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
OK	OAKWOOD 3 SW	34-6562			1-day	NCDC	35.9000	-98.7333	1752	10/1909-9/1975
OK	OILTON	86-0090			1-day	OK MESONET	36.0313	-96.4975	837	11/1947-4/2010
OK	OILTON 2 SE	34-6616		86-0090	1-hour	NCDC	36.0667	-96.5667	880	11/1947-12/2010
OK	OKARCHE	34-6620			1-hour	NCDC	35.7272	-97.9811	1245	6/1981-12/2010
OK	OKARCHE	34-6620			15-min	NCDC	35.7272	-97.9811	1245	6/1981-12/2010
OK	OKAY 2 NE	34-3286			1-day	NCDC	**35.8833**	**-95.2833**	**551**	**1/1912-4/2001**
OK	OKAY 2 NE	34-6625	34-3286		1-day	NCDC	35.8833	-95.2833	551	1/1912-4/1949
OK	OKEENE	34-6629			1-day	NCDC	36.1217	-98.3150	1215	4/1903-2/2011
OK	OKEMAH	34-6638			1-day	NCDC	35.4333	-96.3000	800	4/1912-10/2011
OK	OKEMAH	34-6638			1-hour	NCDC	35.4253	-96.3033	935	**10/1947-12/2010**
OK	OKEMAH	34-6638			15-min	NCDC	35.4253	-96.3033	935	9/1980-12/2010
OK	OKEMAH 2	34-6643	34-6638		1-hour	NCDC	**35.4333**	-96.3000	**880**	11/1947-10/1950
OK	OKLAHOMA CITY EAST	34-6663	34-6656		1-day	NCDC	35.4667	-97.4500	1161	5/1935-5/1974
OK	OKLAHOMA CITY N DSPL	34-6664			1-day	NCDC	35.5333	-97.4667	1070	1/1944-6/1975
OK	OKLAHOMA CITY PENN AVE	34-6656			1-day	NCDC	35.4833	-97.5333	1263	**11/1890-1/1975**
OK	OKLAHOMA CITY WILL ROGERS	34-6661			1-day	NCDC	35.3889	-97.6006	1285	1/1948-10/2010
OK	OKLAHOMA CITY WILL ROGERS	34-6661		34-6661	1-hour	NCDC	35.3889	-97.6006	1285	10/1947-12/2010
OK	OKMULGEE WTR WKS	34-6670			1-day	NCDC	35.6239	-96.0250	647	1/1910-8/2011
OK	ONETA 1 WNW	34-6713			1-day	NCDC	36.0333	-95.7333	725	**8/1941-3/1994**
OK	OOLOGAH DAM	34-6729		34-6729	1-hour	NCDC	36.4333	-95.6833	683	8/1956-1/1999
OK	OPTIMA LAKE	34-6740			1-day	NCDC	36.6500	-101.1333	2834	1/1941-12/1994
OK	OPTIMA LAKE	34-6740		34-6740	1-hour	NCDC	36.6500	-101.1333	2834	10/1973-12/1994
OK	ORIENTA 1 SSW	34-6751			1-day	NCDC	36.3506	-98.4786	1260	5/1956-10/2011
OK	ORLANDO 1 NNE	34-6760	34-5589		1-hour	NCDC	36.1667	-97.3667	1089	10/1947-10/1975
OK	PAGE 2 SE	34-6842			1-day	NCDC	34.7200	-94.5692	980	**5/1951-12/2007**
OK	PAOLI 2 W	34-6859			1-hour	NCDC	34.8231	-97.2850	931	10/1947-12/2010
OK	PAOLI 2 W	34-6859			15-min	NCDC	34.8231	-97.2850	931	12/1972-12/2010
OK	PAULS VALLEY 4 WSW	34-6926			1-day	NCDC	34.7253	-97.2814	940	7/1899-2/2011
OK	PAWHUSKA	34-6935			1-day	NCDC	36.6692	-96.3472	835	1/1898-8/2011
OK	PAWHUSKA	34-6935			1-hour	NCDC	36.6692	-96.3472	835	2/1950-12/2010
OK	PAWHUSKA	34-6935			15-min	NCDC	36.6692	-96.3472	835	5/1971-12/2010
OK	PAWNEE	34-6940			1-day	NCDC	36.3567	-96.8108	835	10/1943-10/2011

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
OK	PAWNEE 5 N	34-6944			1-hour	NCDC	36.4075	-96.8144	1000	10/1947-12/2010
OK	PAWNEE 5 N	34-6944			15-min	NCDC	36.4075	-96.8144	1000	5/1971-12/2010
OK	PENSACOLA	34-6989	34-3700		1-day	NCDC	36.4500	-95.1333	640	11/1923-7/1948
OK	PERKINS	34-7003			1-day	NCDC	35.9686	-97.0319	880	4/1927-2/2011
OK	PERRY	34-7012			1-day	NCDC	36.2886	-97.2897	1025	11/1898-10/2011
OK	PINE CREEK DAM	34-7080		34-7080	1-hour	NCDC	34.1167	-95.0833	490	11/1965-6/1997
OK	PONCA CITY	34-7196	34-7201		1-day	NCDC	36.7247	-97.0947	1005	1/1893-8/2010
OK	PONCA CITY	34-7196	34-7201		1-hour	NCDC	36.7247	-97.0947	1005	3/1952-2/2009
OK	PONCA CITY	34-7196		34-7201	15-min	NCDC	36.7247	-97.0947	1005	6/1978-7/2009
OK	PONCA CITY MUNI AP	34-7201			1-day	NCDC	36.7367	-97.1019	1000	**1/1893-10/2010**
OK	PONCA CITY MUNI AP	34-7201		34-7201	1-hour	NCDC	36.7367	-97.1019	1000	**10/1947-12/2010**
OK	PONTOTOC	34-7214			1-day	NCDC	34.4997	-96.6275	1025	9/1941-10/2011
OK	POTEAU	34-7246	34-7254		1-day	NCDC	35.0500	-94.6167	479	9/1917-8/1985
OK	POTEAU WTR WKS	34-7254			1-day	NCDC	35.0539	-94.6264	440	**9/1917-8/2002**
OK	PRAGUE	34-7264			1-day	NCDC	35.4833	-96.6833	992	11/1943-10/2011
OK	PRYOR	34-7309			1-day	NCDC	36.3092	-95.3297	625	4/1926-3/2004
OK	PRYOR	34-7309			1-hour	NCDC	36.3092	-95.3297	625	2/1973-3/2004
OK	PRYOR	34-7309			15-min	NCDC	36.3092	-95.3297	625	2/1973-3/2004
OK	PURCELL	34-7327			1-day	NCDC	35.0325	-97.3733	1075	1/1893-2/2010
OK	QUAPAW	34-7358			1-day	NCDC	36.9667	-94.7833	850	12/1943-12/1989
OK	QUINTON	34-7372			1-day	NCDC	35.1167	-95.3667	639	9/1941-2/1998
OK	RALSTON	34-7390			1-day	NCDC	36.5044	-96.7439	825	6/1922-10/2011
OK	RANDLETT 8 E	34-7403			1-day	NCDC	34.1736	-98.3186	955	7/1941-9/2011
OK	RANGE	34-7412			1-hour	NCDC	36.5447	-101.0842	2710	10/1947-12/2010
OK	RANGE	34-7412			15-min	NCDC	36.5447	-101.0842	2710	3/1976-12/2010
OK	RED ROCK	34-7505			1-day	NCDC	36.4611	-97.1797	910	5/1951-5/2009
OK	REGNIER	34-7534			1-day	NCDC	36.9425	-102.6314	4020	4/1890-2/2006
OK	RENFROW 1 E	34-7556			1-day	NCDC	36.9264	-97.6314	1215	9/1941-1/2010
OK	REYDON 2SSE	34-7579			1-day	NCDC	35.6256	-99.9106	2385	11/1941-4/2007
OK	REYDON 7 NNE	34-7588	34-5463		1-hour	NCDC	35.7500	-99.8667	2172	10/1947-10/1965
OK	RIVERSIDE 4 W	34-7660		34-7660	1-hour	NCDC	36.7889	-100.4183	2450	10/1947-12/2010
OK	ROFF 2 WNW	34-7705			1-hour	NCDC	34.6403	-96.8783	1255	10/1947-12/2010

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OK	ROFF 2 WNW	34-7705			15-min	NCDC	34.6403	-96.8783	1255	5/1971-12/2010
OK	ROOSEVELT	34-7727			1-day	NCDC	34.8511	-99.0208	1462	11/1943-10/2011
OK	ROSE	34-7732			1-day	NCDC	36.2167	-95.0333	1001	5/1942-8/2003
OK	ROSE	34-7732	34-7739		1-hour	NCDC	36.2167	-95.0333	1001	2/1951-1/1974
OK	ROSE TWR	34-7739			1-hour	NCDC	36.1672	-95.0292	1250	**2/1951-8/2003**
OK	ROSE TWR	34-7739			15-min	NCDC	36.1672	-95.0292	1250	1/1974-8/2003
OK	SAGEEYAH	34-6729			1-day	NCDC	**36.3667**	**-95.6667**	**620**	**7/1928-1/1999**
OK	SAGEEYAH	34-7844	34-6729		1-day	NCDC	36.3667	-95.6667	620	7/1928-9/1957
OK	SALLISAW	34-7862			1-day	NCDC	35.4667	-94.7833	531	4/1893-8/2011
OK	SAPULPA 1W	34-7921			1-day	NCDC	36.0000	-96.1333	679	1/1899-7/1975
OK	SAYRE 1 NE	34-7952			1-day	NCDC	35.2833	-99.6333	1797	6/1936-10/2011
OK	SEMINOLE	34-8042			1-day	NCDC	35.2667	-96.6667	1010	2/1933-10/2011
OK	SHATTUCK 1NW	34-8101			1-hour	NCDC	36.2892	-99.8933	2195	10/1947-12/2010
OK	SHATTUCK 1NW	34-8101			15-min	NCDC	36.2892	-99.8933	2195	4/1976-12/2010
OK	SHAWNEE	34-8110			1-day	NCDC	35.3544	-96.9203	1095	8/1901-10/2011
OK	SKIATOOK	86-0109			1-day	OK MESONET	36.4153	-96.0371	925	1/1944-7/2009
OK	SKIATOOK	34-8258	86-0109		1-day	NCDC	36.3650	-96.0028	645	1/1944-2/2001
OK	SMITHVILLE	34-8285			1-day	NCDC	34.4678	-94.6428	822	2/1888-9/2008
OK	SNOMAC 2 NE	34-8290	34-9748		1-hour	NCDC	35.1000	-96.6167	590	10/1947-10/1980
OK	SNOMAC 2 NE	34-8290	34-9748		15-min	NCDC	35.1000	-96.6167	590	5/1971-10/1980
OK	SNYDER 1 N	34-8299			1-day	NCDC	34.6867	-98.9483	1370	9/1906-10/2011
OK	SPAVINAW	34-8380			1-day	NCDC	36.3894	-95.0597	685	2/1923-10/2011
OK	SPIRO	34-8416			1-day	NCDC	35.2500	-94.6167	494	9/1941-2/2009
OK	STIGLER 1 SE	34-8497			1-hour	NCDC	35.2453	-95.1144	570	10/1947-12/2004
OK	STIGLER 1 SE	34-8497			15-min	NCDC	35.2453	-95.1144	570	8/1972-12/2004
OK	STILLWATER 2 W	34-8501			1-day	NCDC	36.1175	-97.0950	895	1/1893-10/2011
OK	STILLWATER 2 W	34-8501			1-hour	NCDC	36.1175	-97.0950	895	3/1948-4/2010
OK	STILLWATER 2 W	34-8501			15-min	NCDC	36.1175	-97.0950	895	12/1972-4/2010
OK	STILWELL 5 NNW	34-8506			1-day	NCDC	35.8953	-94.6486	1000	10/1948-4/2003
OK	SULPHUR PLATT NAT'L PK	34-8587	34-1745		1-day	NCDC	34.5000	-96.9667	991	2/1917-10/1978
OK	SUPPLY 1 E	34-8627	34-3304		1-day	NCDC	36.5667	-99.5500	1972	2/1893-11/1975
OK	TAHLEQUAH	34-8677			1-day	NCDC	35.9369	-94.9644	850	2/1900-10/2008

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OK	TALOGA	34-8708			1-day	NCDC	36.0381	-98.9592	1705	6/1900-8/2011
OK	TALOGA	34-8708			1-hour	NCDC	36.0381	-98.9592	1705	4/1957-12/2010
OK	TALOGA	34-8708			15-min	NCDC	36.0381	-98.9592	1705	5/1971-12/2010
OK	TENKILLER FERRY DAM	34-8769			1-day	NCDC	35.6000	-95.0500	770	4/1949-4/2011
OK	TENKILLER FERRY DAM	34-8769		34-8769	1-hour	NCDC	35.6000	-95.0500	770	4/1949-1/1999
OK	TIPTON	86-0118			1-day	OK MESONET	34.4397	-99.1376	1270	7/1938-8/2010
OK	TIPTON 4 S	34-8879	86-0118		1-day	NCDC	34.4333	-99.1333	1362	7/1938-8/2010
OK	TISHOMINGO NATL WR	34-8884			1-day	NCDC	34.1925	-96.6439	642	12/1902-10/2011
OK	TRIBBEY 1 N	34-8951			1-day	NCDC	35.1000	-97.0667	1006	**1/1893-6/1965**
OK	TULSA	34-8987			1-day	NCDC	36.1500	-96.0000	679	1/1889-9/1959
OK	TULSA INTL AP	34-8992			1-day	NCDC	36.1994	-95.8872	650	12/1938-10/2010
OK	TULSA INTL AP	34-8992		34-8992	1-hour	NCDC	36.1994	-95.8872	650	10/1947-12/2010
OK	TUSKAHOMA	34-9023			1-day	NCDC	34.6147	-95.2803	600	11/1917-10/2011
OK	TUSKAHOMA	34-9023			1-hour	NCDC	34.6147	-95.2803	600	10/1947-12/2010
OK	TUSKAHOMA	34-9023			15-min	NCDC	34.6147	-95.2803	600	1/1984-12/2010
OK	UNION CITY	34-9086			1-day	NCDC	35.3667	-97.9333	1270	4/1914-10/2011
OK	VALLIANT 3 W	34-9118			1-day	NCDC	33.9981	-95.1433	475	9/1941-8/2011
OK	VICI	34-9172			1-day	NCDC	36.1508	-99.3003	2265	5/1955-8/2011
OK	VINITA 2 N	34-9203			1-day	NCDC	**36.6803**	-95.1322	735	6/1895-10/2011
OK	VINSON	34-9212			1-day	NCDC	34.9003	-99.8614	1880	2/1940-10/2011
OK	WAGONER	34-9247			1-day	NCDC	35.9675	-95.3739	590	4/1895-2/2003
OK	WALTERS	34-9278			1-day	NCDC	34.3603	-98.3006	1005	9/1914-10/2011
OK	WATONGA	34-9364			1-day	NCDC	35.8578	-98.4139	1530	11/1902-10/2011
OK	WATTS 5 N	34-9382	03-6624		1-day	NCDC	36.1833	-94.5667	1181	5/1922-8/1954
OK	WAUKOMIS	34-9391			1-day	NCDC	36.2833	-97.9000	1250	1/1897-7/1958
OK	WAURIKA	86-0126	34-9395		1-day	OK MESONET	34.1678	-97.9882	928	1/1994-7/2009
OK	WAURIKA	34-9395			1-day	NCDC	34.1747	-97.9964	912	**1/1910-7/2009**
OK	WAYNOKA	34-9404			1-day	NCDC	36.5758	-98.8797	1508	4/1938-10/2011
OK	WAYNOKA	34-9404		34-9404	1-hour	NCDC	36.5758	-98.8797	1508	10/1947-12/2010
OK	WEATHERFORD	34-9422			1-day	NCDC	35.5200	-98.6986	1618	2/1905-10/2011
OK	WEBBERS FALLS	34-9445			1-day	NCDC	35.5167	-95.1167	479	2/1900-5/2007
OK	WEBBERS FALLS DAM	34-9450			1-hour	NCDC	35.5872	-95.1683	520	6/1966-10/2001

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
OK	WEBBERS FALLS DAM	34-9450			15-min	NCDC	35.5872	-95.1683	520	5/1971-10/2001
OK	WETUMKA	34-9571			1-day	NCDC	35.2667	-96.2167	683	1/1945-9/2006
OK	WEWOKA	34-9575			1-day	NCDC	35.1500	-96.5000	791	4/1937-10/2011
OK	WICHITA MTN WR	34-9629			1-day	NCDC	34.7325	-98.7125	1665	1/1906-10/2011
OK	WICHITA MTN WR	34-9629		34-9629	1-hour	NCDC	34.7325	-98.7125	1665	10/1947-12/2010
OK	WILBURTON 9 ENE	34-9634			1-day	NCDC	34.9611	-95.1711	1613	2/1921-11/2004
OK	WISTER 3 NE	34-9719	34-9724		1-hour	NCDC	35.0000	-94.6833	499	7/1967-3/1989
OK	WISTER 3 S	34-9724			1-day	NCDC	34.9417	-94.7039	525	6/1946-8/2011
OK	WISTER 3 S	34-9724		34-9724	1-hour	NCDC	34.9417	-94.7039	525	**7/1967-12/2010**
OK	WOLF 4 N	34-9748			1-hour	NCDC	35.1419	-96.6758	900	**10/1947-12/2010**
OK	WOLF 4 N	34-9748			15-min	NCDC	35.1419	-96.6758	900	**5/1971-12/2010**
OK	WOODWARD	34-9760			1-day	NCDC	36.4408	-99.3817	1885	10/1895-10/2011
OK	WYANDOTTE 1 N	34-9773			1-day	NCDC	36.8167	-94.7167	761	12/1911-2/1968
OK	ZOE 1 S	34-9985	34-6842		1-day	NCDC	34.7500	-94.6333	640	5/1951-10/1987
SD	ABERDEEN RGNL AP	39-0020			1-day	NCDC	45.4433	-98.4131	1297	1/1893-8/2010
SD	ABERDEEN RGNL AP	39-0020		39-0020	1-hour	NCDC	45.4433	-98.4131	1297	8/1948-12/2010
SD	ACADEMY 2 NE	39-0043			1-day	NCDC	43.4892	-99.0631	1680	7/1898-10/2011
SD	ALCESTER	39-0113			1-hour	NCDC	43.0289	-96.6289	1415	8/1948-11/2002
SD	ALCESTER	39-0113			15-min	NCDC	43.0289	-96.6289	1415	5/1971-11/2002
SD	ALEXANDRIA	39-0128			1-day	NCDC	43.6567	-97.7853	1353	1/1893-8/2011
SD	ANDOVER	39-0198	39-0120		1-day	NCDC	45.4136	-97.9069	1400	4/1937-2/2005
SD	ANDOVER #2	39-0120			1-day	NCDC	45.4136	-97.9064	1470	**4/1937-10/2011**
SD	ANGOSTURA DAM	39-0217		39-0217	1-hour	NCDC	43.3500	-103.4333	3143	7/1949-5/1971
SD	ARDMORE 2 N	39-0236			1-day	NCDC	43.0539	-103.6525	3550	11/1908-8/2011
SD	ARLINGTON 1 W	39-0281			1-day	NCDC	44.3631	-97.1703	1824	10/1928-8/2011
SD	ARMOUR	39-0296			1-day	NCDC	43.3131	-98.3486	1510	4/1896-5/2008
SD	ASHTON	39-0346	39-0350		1-day	NCDC	44.9958	-98.4811	1244	10/1924-11/1968
SD	ASHTON 2S	39-0350			1-day	NCDC	44.9633	-98.5114	1280	**10/1924-1/2007**
SD	BELLE FOURCHE	39-0559			1-day	NCDC	44.6714	-103.8511	3020	6/1908-10/2011
SD	BIG BEND DAM	39-0649	39-4766		1-day	NCDC	44.0667	-99.4667	1460	4/1965-12/1971
SD	BIG STONE CITY 2 NW	39-0662			1-day	NCDC	45.2994	-96.4997	1117	**1/1892-10/2011**
SD	BISON	39-0701			1-day	NCDC	45.5286	-102.4650	2780	5/1916-10/2011

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
SD	BLIND PARK	55-0354			1-day	SNOTEL	44.1000	-103.9667	6890	1/1948-9/2008
SD	BLUNT	39-0760			1-day	NCDC	44.5169	-99.9894	1620	1/1913-5/2011
SD	BONESTEEL	39-0778			1-day	NCDC	43.0778	-98.9508	1985	5/1956-6/2004
SD	BOWDLE	39-0834			1-day	NCDC	45.4522	-99.6533	2005	1/1893-7/2011
SD	BRIDGEWATER	39-1032			1-day	NCDC	43.5547	-97.4981	1446	3/1948-8/2011
SD	BRITTON	39-1049			1-day	NCDC	45.7856	-97.7519	1340	**9/1866-10/2011**
SD	BROOKINGS 2 NE	39-1076			1-day	NCDC	44.3253	-96.7686	1632	2/1893-10/2011
SD	BROOKINGS 2 NE	39-1076			1-hour	NCDC	44.3253	-96.7686	1632	8/1948-12/2010
SD	BROOKINGS 2 NE	39-1076			15-min	NCDC	44.3253	-96.7686	1632	5/1971-12/2010
SD	BRYANT	39-1102			1-day	NCDC	44.5547	-97.4686	1830	10/1911-10/2011
SD	BUFFALO	39-1114		39-1114	1-hour	NCDC	45.5958	-103.5453	2925	8/1948-12/2005
SD	BUFFALO GAP	39-1124			1-day	NCDC	43.4917	-103.3131	3188	9/1951-2/2006
SD	BUSKALA RCH	39-1246	55-0920		1-day	NCDC	44.2102	-103.8104	6110	8/1909-11/1997
SD	CAMP CROOK	39-1294			1-day	NCDC	45.5489	-103.9744	3120	1/1893-10/2011
SD	CAMP CROOK	39-1294		39-1294	1-hour	NCDC	45.5489	-103.9744	3120	6/1975-12/2010
SD	CANISTOTA 2 N	39-1354			1-day	NCDC	43.6333	-97.3000	1555	9/1922-8/1986
SD	CANTON	39-1392			1-day	NCDC	43.3056	-96.5917	1345	4/1896-10/2011
SD	CARPENTER 4NNE	39-1452			1-hour	NCDC	44.6886	-97.8889	1490	8/1948-12/2010
SD	CARPENTER 4NNE	39-1452			15-min	NCDC	44.6886	-97.8889	1490	5/1971-12/2010
SD	CASTLE ROCK 4 NW	39-1504		39-1504	1-hour	NCDC	45.0100	-103.4828	3150	8/1949-6/1975
SD	CASTLEWOOD	39-1519			1-day	NCDC	44.7269	-97.0267	1685	1/1893-10/2011
SD	CEDAR BUTTE 1NE	39-1539			1-day	NCDC	43.5958	-101.0094	2250	6/1918-10/2011
SD	CENTERVILLE 6 SE	39-1579			1-day	NCDC	43.0431	-96.9033	1260	4/1897-10/2011
SD	CHAMBERLAIN	39-1609	39-1621		1-day	NCDC	43.8000	-99.3333	1401	8/1896-12/1978
SD	CHAMBERLAIN 5 S	39-1621			1-day	NCDC	43.7350	-99.3119	1660	**8/1896-10/2011**
SD	CLARK	39-1739			1-day	NCDC	44.8817	-97.7325	1804	4/1893-10/2011
SD	CLEAR LAKE	39-1777			1-day	NCDC	44.7542	-96.6864	1808	6/1903-10/2011
SD	COLTON	39-1851			1-day	NCDC	43.7847	-96.9275	1620	5/1978-7/2011
SD	COLUMBIA 8 N	39-1873			1-day	NCDC	45.7250	-98.3000	1300	9/1949-10/2011
SD	CONDE	39-1917			1-day	NCDC	45.1539	-98.1008	1330	6/1951-1/2008
SD	COTTONWOOD 2 E	39-1972			1-day	NCDC	43.9611	-101.8606	2414	6/1909-10/2011
SD	CUSTER	39-2087			1-day	NCDC	43.7744	-103.6119	5480	6/1911-10/2011

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
SD	DE SMET	39-2302			1-day	NCDC	44.3850	-97.5472	1720	1/1893-10/2011
SD	DEADWOOD	62-2207	39-2207		1-day	FORTS	44.3772	-103.7306	4549	12/1877-12/1887
SD	DEADWOOD	39-2207			1-day	NCDC	44.3736	-103.7314	4670	**12/1877-4/2006**
SD	DEERFIELD 3 SE	39-2231			1-day	NCDC	43.9944	-103.7858	6060	**8/1909-12/2002**
SD	DEERFIELD 4 NW	39-2228	55-0354		1-day	NCDC	44.0667	-103.9000	6220	1/1948-5/1980
SD	DEERFIELD DAM	39-2234	39-2231		1-day	NCDC	44.0167	-103.7833	5873	8/1909-11/1955
SD	DIXON 2 WNW	39-2334		39-2334	1-hour	NCDC	43.4000	-99.5167	1880	8/1948-6/1974
SD	DUMONT 2 ENE	39-2409			1-day	NCDC	44.2500	-103.7667	6145	5/1909-9/1969
SD	DUPREE	39-2429			1-day	NCDC	45.0481	-101.5992	2375	1/1922-10/2011
SD	DUPREE 15 SSE	39-2446			1-day	NCDC	44.8658	-101.4672	2100	7/1963-8/2011
SD	EAGLE BUTTE	39-2468			1-day	NCDC	44.9964	-101.2397	2412	11/1911-8/2011
SD	EDGEMONT	39-2557			1-day	NCDC	43.3036	-103.8458	3460	8/1948-10/2011
SD	EDGEMONT	39-2557			1-hour	NCDC	43.3036	-103.8458	3460	8/1948-12/2010
SD	EDGEMONT	39-2557			15-min	NCDC	43.3036	-103.8458	3460	9/1973-12/2010
SD	EDGEMONT 23 NNW	39-2565			1-hour	NCDC	43.6242	-103.9172	4402	11/1967-12/2010
SD	EDGEMONT 23 NNW	39-2565			15-min	NCDC	43.6242	-103.9172	4402	11/1977-12/2010
SD	ELK POINT	39-2618	25-5895		1-day	NCDC	42.6833	-96.6667	1127	10/1898-7/1911
SD	ELK POINT 13 NE	39-2622	13-0088		1-day	NCDC	42.8592	-96.5819	1200	2/1986-12/2000
SD	ELM SPRINGS 3 ESE	39-2647			1-day	NCDC	44.3186	-102.4683	2645	3/1923-10/2011
SD	EUREKA	39-2797			1-day	NCDC	45.7644	-99.6353	1860	3/1877-10/2011
SD	FAIRFAX	39-2820			1-day	NCDC	43.0333	-98.8833	1932	9/1902-4/1956
SD	FAITH	39-2852			1-day	NCDC	45.0203	-102.0367	2592	4/1913-8/2011
SD	FAITH	39-2852			1-hour	NCDC	45.0203	-102.0367	2592	8/1948-12/2010
SD	FAITH	39-2852			15-min	NCDC	45.0203	-102.0367	2592	9/1971-12/2010
SD	FARMINGDALE 4 N	39-2888			1-day	NCDC	44.0333	-102.9000	3153	12/1894-9/1981
SD	FAULKTON 1 NW	39-2927			1-day	NCDC	45.0361	-99.1344	1570	1/1893-10/2011
SD	FLANDREAU	39-2984			1-day	NCDC	44.0517	-96.5931	1560	2/1893-9/2011
SD	FORESTBURG 3 NE	39-3029			1-day	NCDC	44.0422	-98.0700	1230	3/1893-10/2011
SD	FORT RANDALL	62-3079	39-6574		1-day	FORTS	43.0506	-98.5589	1286	10/1856-10/1892
SD	FORT SISSETON	62-7326	39-1049		1-day	FORTS	45.6583	-97.5308	1830	9/1866-4/1889
SD	FT MEADE	39-3069			1-day	NCDC	44.4100	-103.4775	3300	1/1902-10/2011
SD	FT PIERRE 17 WSW	39-3076			1-day	NCDC	44.2444	-100.6592	1590	**5/1954-8/2011**

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
SD	GANN VALLEY 4NW	39-3217			1-day	NCDC	44.0569	-99.0719	1720	9/1897-5/2009
SD	GARRETSON	39-3239		39-3239	1-hour	NCDC	43.7167	-96.5000	1490	10/1950-2/1974
SD	GETTYSBURG	39-3294			1-day	NCDC	45.0194	-99.9403	2090	3/1901-10/2011
SD	GETTYSBURG 13W	39-3302			1-hour	NCDC	45.0136	-100.2175	1854	5/1973-2/2009
SD	GLAD VALLEY 2 W	39-3316			1-day	NCDC	45.4178	-101.8100	2467	8/1949-8/2011
SD	GREGORY	39-3452			1-day	NCDC	43.2356	-99.4339	2160	12/1906-10/2011
SD	HARDING 3 SE	39-3560			1-day	NCDC	45.3600	-103.8117	3400	12/1951-8/2011
SD	HARDY RS	39-3572			1-day	NCDC	**44.1983**	**-104.0372**	6473	6/1909-9/1951
SD	HARRINGTON	39-3574			1-day	NCDC	43.1647	-101.2567	2980	10/1960-5/2007
SD	HARROLD 12 SSW	39-3608			1-day	NCDC	44.3628	-99.8033	1800	8/1963-8/2011
SD	HERMOSA 3 SSW	39-3775			1-day	NCDC	43.8069	-103.2131	3425	1/1906-8/2011
SD	HIGHMORE 1 W	39-3832			1-day	NCDC	44.5222	-99.4550	1890	1/1893-8/2011
SD	HIGHMORE 23 N	39-3838			1-day	NCDC	44.8444	-99.4894	1870	5/1952-7/2011
SD	HILL CITY	39-3868			1-day	NCDC	43.9383	-103.5711	4980	4/1909-10/2011
SD	HILLAND 2 NW	39-3857			1-day	NCDC	44.3083	-101.8683	2530	4/1909-2/2001
SD	HOPEWELL 1 SE	39-3987			1-day	NCDC	44.5000	-100.8667	1923	9/1909-12/1983
SD	HOPEWELL 1 SE	39-3987		39-3987	1-hour	NCDC	44.5000	-100.8667	1923	8/1950-2/1984
SD	HOT SPRINGS	39-4007			1-day	NCDC	43.4378	-103.4739	3560	2/1894-10/2011
SD	HOWARD	39-4037			1-day	NCDC	44.0122	-97.5242	1558	2/1893-8/2011
SD	HOWARD	39-4037			1-hour	NCDC	44.0122	-97.5242	1558	8/1948-12/2010
SD	HOWARD	39-4037			15-min	NCDC	44.0122	-97.5242	1558	5/1971-12/2010
SD	HURON AP	39-4127			1-day	NCDC	44.3981	-98.2231	1280	7/1881-10/2010
SD	HURON AP	39-4127		39-4127	1-hour	NCDC	44.3981	-98.2231	1280	8/1948-12/2010
SD	INTERIOR	39-4179	39-4184		1-day	NCDC	43.7333	-101.9833	2382	11/1897-9/1951
SD	INTERIOR	39-4179	39-4184		1-hour	NCDC	43.7333	-101.9833	2382	8/1948-8/1979
SD	INTERIOR 3 NE	39-4184			1-day	NCDC	43.7483	-101.9414	2440	**11/1897-10/2011**
SD	INTERIOR 3 NE	39-4184			1-hour	NCDC	43.7483	-101.9414	2440	**8/1948-12/2010**
SD	INTERIOR 3 NE	39-4184			15-min	NCDC	43.7483	-101.9414	2440	11/1979-12/2010
SD	IPSWICH	39-4206			1-day	NCDC	45.4478	-99.0383	1530	11/1894-10/2011
SD	IROQUOIS	39-4254			1-day	NCDC	44.3647	-97.8486	1400	6/1951-8/2011
SD	ISABEL	39-4268			1-day	NCDC	45.3953	-101.4292	2410	11/1920-10/2011
SD	ISABEL	39-4268		39-4268	1-hour	NCDC	45.3953	-101.4292	2410	8/1948-12/2010

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
SD	KADOKA	39-4413			1-day	NCDC	43.8353	-101.5147	2450	5/1909-6/2007
SD	KENNEBEC	39-4516			1-day	NCDC	43.9072	-99.8628	1700	1/1893-10/2011
SD	KEYA PAHA R AT WEWELA SD	53-2078			15-min	USGS	43.0271	-99.7809	2050	10/1993-12/2010
SD	KIRLEY 6 N	39-4596			1-day	NCDC	44.6122	-101.3369	2160	9/1970-8/2011
SD	LA CREEK NWR	39-4651		39-4651	1-hour	NCDC	43.1008	-101.5658	3280	8/1948-12/2010
SD	LA DELLE 7 NE	39-4661			1-day	NCDC	44.6833	-98.0000	1401	1/1897-10/1974
SD	LAKE SHARPE PROJECT	39-4766			1-day	NCDC	44.0644	-99.4603	1460	**4/1965-8/2011**
SD	LAKE SHARPE PROJECT	39-4766			1-hour	NCDC	44.0644	-99.4603	1460	4/1974-12/2010
SD	LAKE SHARPE PROJECT	39-4766			15-min	NCDC	44.0644	-99.4603	1460	5/1974-12/2010
SD	LEAD	39-4834			1-day	NCDC	44.3533	-103.7714	5350	3/1909-10/2011
SD	LEMMON	39-4864			1-day	NCDC	45.9397	-102.1575	2567	5/1908-10/2011
SD	LEMMON	39-4864		39-4864	1-hour	NCDC	45.9397	-102.1575	2567	8/1948-12/2010
SD	LEOLA	39-4891			1-day	NCDC	45.7192	-98.9439	1580	5/1899-6/2007
SD	LODGEPOLE 10 NW	39-2614	39-4960		1-day	NCDC	45.8833	-102.8500	2641	6/1909-8/1963
SD	LODGEPOLE 10 NW	39-4960			1-day	NCDC	45.8667	-102.8500	2620	**6/1909-2/1997**
SD	LONGVALLEY	39-4983			1-day	NCDC	43.4600	-101.4956	2470	7/1927-8/2011
SD	LUDLOW 3 SSE	39-5048			1-day	NCDC	45.7850	-103.3719	2990	3/1924-10/2011
SD	MADISON 1 WNW	39-5088	39-5090		1-day	NCDC	44.0000	-97.1333	1722	7/1940-4/1962
SD	MADISON 2SE	39-5090			1-day	NCDC	43.9906	-97.0925	1660	**7/1940-10/2011**
SD	MAGPIE CREEK	60-0162		60-0162	1-hour	RAWS	43.3181	-101.1444	2840	8/1948-3/2011
SD	MANDERSON 3 NE	39-5154			1-day	NCDC	43.2625	-102.4386	3095	5/1908-3/2004
SD	MARION	39-5228			1-day	NCDC	43.4206	-97.2567	1450	4/1901-10/2011
SD	MARTIN	39-5281			1-day	NCDC	43.1803	-101.7386	3330	2/1934-10/2011
SD	MAURINE 12SW	39-5325			1-day	NCDC	44.8933	-102.6125	2660	2/1975-10/2011
SD	MC INTOSH 6 SE	39-5381			1-day	NCDC	45.8383	-101.2767	2175	6/1915-10/2011
SD	MC INTOSH 6 SE	39-5381			1-hour	NCDC	45.8383	-101.2767	2175	8/1948-12/2010
SD	MC INTOSH 6 SE	39-5381			15-min	NCDC	45.8383	-101.2767	2175	10/1978-12/2010
SD	MC LAUGHLIN	39-5406			1-day	NCDC	45.8133	-100.8072	2000	7/1919-8/2011
SD	MEADOW	39-5421			1-day	NCDC	45.5333	-102.2167	2621	12/1912-8/1977
SD	MEADOW	39-5421		39-5421	1-hour	NCDC	45.5333	-102.2167	2621	8/1948-8/1977
SD	MELLETTE 4 W	39-5456			1-day	NCDC	45.1550	-98.5825	1302	2/1893-10/2011
SD	MENNO	39-5481			1-day	NCDC	43.2358	-97.5714	1324	5/1896-10/2011

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
SD	MENNO	39-5481			1-hour	NCDC	43.2358	-97.5714	1324	8/1948-12/2010
SD	MENNO	39-5481			15-min	NCDC	43.2358	-97.5714	1324	5/1971-12/2010
SD	MIDLAND	39-5506			1-day	NCDC	44.0667	-101.1500	1870	3/1895-12/2010
SD	MILBANK 4 NW	39-5536			1-day	NCDC	45.2836	-96.6689	1145	1/1893-8/2009
SD	MILESVILLE 5 NE	39-5544			1-day	NCDC	44.5208	-101.6192	2237	8/1911-10/2011
SD	MILESVILLE 5 NE	39-5544			1-hour	NCDC	44.5208	-101.6192	2237	8/1948-12/2010
SD	MILESVILLE 5 NE	39-5544			15-min	NCDC	44.5208	-101.6192	2237	12/1973-12/2010
SD	MILLER	39-5561			1-day	NCDC	44.5178	-98.9814	1590	2/1902-8/2011
SD	MISSION	39-5620			1-day	NCDC	43.3061	-100.6558	2587	6/1966-10/2011
SD	MISSION	39-5620			1-hour	NCDC	43.3061	-100.6558	2587	2/1973-12/2010
SD	MISSION	39-5620			15-min	NCDC	43.3061	-100.6558	2587	7/1976-12/2010
SD	MISSION 14 S	39-5638			1-day	NCDC	43.1114	-100.6083	2810	8/1951-10/2011
SD	MITCHELL 2 N	39-5671			1-day	NCDC	43.7381	-98.0244	1250	1/1893-3/2003
SD	MOBRIDGE 2NNW	39-5691			1-day	NCDC	45.5656	-100.4489	1696	1/1911-8/2011
SD	MOBRIDGE 2NNW	39-5691		39-5691	1-hour	NCDC	45.5656	-100.4489	1696	8/1948-2/2002
SD	MT RUSHMORE NATL MEM	39-5870			1-day	NCDC	43.8769	-103.4578	5250	2/1962-10/2011
SD	MUD BUTTE 4 SSW	39-5876		39-5876	1-hour	NCDC	44.9500	-102.9000	2851	10/1948-11/1975
SD	MURDO	39-5891			1-day	NCDC	43.8894	-100.7078	2320	12/1907-10/2011
SD	MURDO	39-5891			1-hour	NCDC	43.8894	-100.7078	2320	11/1950-12/2010
SD	MURDO	39-5891			15-min	NCDC	43.8894	-100.7078	2320	5/1976-12/2010
SD	NEMO	60-0164		60-0164	1-hour	RAWS	44.1917	-103.5097	4644	6/1972-11/2011
SD	NEWELL	39-6054			1-day	NCDC	44.7158	-103.4275	2860	9/1920-10/2011
SD	NORTH RAPID CREEK	55-0920			1-day	SNOTEL	44.2000	-103.7833	6130	8/1909-9/2008
SD	OAHE DAM	39-6170			1-day	NCDC	44.4419	-100.4175	1660	4/1960-10/2011
SD	OAHE DAM	39-6170			1-hour	NCDC	44.4419	-100.4175	1660	8/1960-12/2010
SD	OAHE DAM	39-6170			15-min	NCDC	44.4419	-100.4175	1660	5/1974-12/2010
SD	OELRICHS	39-6212			1-day	NCDC	43.1769	-103.2358	3348	1/1893-10/2011
SD	OGLALA 1S	39-6227			1-day	NCDC	43.1750	-102.7458	2995	8/1948-10/2011
SD	ONAKA 2N	39-6282			1-day	NCDC	45.2317	-99.4711	1610	7/1911-8/2011
SD	ONAKA 2N	39-6282			1-hour	NCDC	45.2317	-99.4711	1610	8/1948-12/2010
SD	ONAKA 2N	39-6282			15-min	NCDC	45.2317	-99.4711	1610	5/1971-12/2010
SD	ONIDA 4 NW	39-6292			1-day	NCDC	44.7317	-100.1447	1850	1/1913-10/2011

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SD	ORAL	39-6304			1-day	NCDC	43.4033	-103.2683	2960	5/1971-10/2011
SD	ORAL	39-6304			1-hour	NCDC	43.4033	-103.2683	2960	5/1971-12/2010
SD	ORAL	39-6304			15-min	NCDC	43.4033	-103.2683	2960	1/1984-12/2010
SD	ORMAN DAM	39-6357			1-day	NCDC	44.7333	-103.6667	2933	5/1906-6/1974
SD	PACTOLA DAM	39-6427			1-day	NCDC	44.0622	-103.4819	4720	8/1951-10/2011
SD	PACTOLA DAM	39-6427			1-hour	NCDC	44.0622	-103.4819	4720	8/1951-12/2010
SD	PACTOLA DAM	39-6427			15-min	NCDC	44.0622	-103.4819	4720	6/1978-12/2010
SD	PARKSTON 8 ENE	39-6462			1-day	NCDC	43.4333	-97.8333	1322	1/1893-8/1976
SD	PARMELEE	39-6477	60-0162		1-hour	NCDC	43.3333	-101.0333	2651	8/1948-1/1973
SD	PHILIP 1 S	39-6552			1-day	NCDC	44.0211	-101.6642	2250	11/1907-1/2000
SD	PICKSTOWN	39-6574			1-day	NCDC	43.0689	-98.5325	1490	**10/1856-10/2011**
SD	PICKSTOWN	39-6574			1-hour	NCDC	43.0689	-98.5325	1490	11/1948-12/2010
SD	PICKSTOWN	39-6574			15-min	NCDC	43.0689	-98.5325	1490	4/1973-12/2010
SD	PIERRE RGNL AP	39-6597			1-day	NCDC	44.3814	-100.2856	1742	1/1893-10/2010
SD	PLAINVIEW 6 SSW	39-6636			1-day	NCDC	44.5169	-102.2153	2377	8/1949-6/2011
SD	PLAINVIEW 6 SSW	39-6636			1-hour	NCDC	44.5169	-102.2153	2377	8/1949-12/2010
SD	PLAINVIEW 6 SSW	39-6636			15-min	NCDC	44.5169	-102.2153	2377	7/1979-12/2010
SD	PLATTE	39-6669			1-day	NCDC	43.3864	-98.8411	1610	11/1951-8/2011
SD	POLLOCK	39-6712			1-day	NCDC	45.9042	-100.2875	1635	11/1908-10/2011
SD	PORCUPINE 11 N	39-6736			1-day	NCDC	43.3950	-102.3894	2820	9/1963-10/2011
SD	RALPH 1 N	39-6907			1-day	NCDC	45.7842	-103.0656	2790	6/1941-7/2003
SD	RAPID CITY 4NW	39-6947			1-day	NCDC	44.1150	-103.2828	3450	1/1888-10/2011
SD	RAPID CITY RGNL AP	39-6937			1-day	NCDC	44.0433	-103.0536	3160	1/1948-3/2009
SD	RAPID CITY RGNL AP	39-6937		39-6937	1-hour	NCDC	44.0433	-103.0536	3160	8/1948-3/2009
SD	RAYMOND 3 NE	39-7007			1-day	NCDC	44.9439	-97.9247	1485	7/1931-8/2011
SD	RED OWL	39-7073			1-day	NCDC	44.6978	-102.5533	2770	8/1951-8/2011
SD	REDFIELD	39-7047	39-7052		1-day	NCDC	44.8667	-98.5333	1302	10/1897-11/1977
SD	REDFIELD	39-7052			1-day	NCDC	44.8656	-98.5253	1309	**10/1897-4/2011**
SD	REDFIELD	39-7052			1-hour	NCDC	44.8656	-98.5253	1309	8/1949-12/2010
SD	REDFIELD	39-7052			15-min	NCDC	44.8656	-98.5253	1309	5/1976-12/2010
SD	REDIG 11 NE	39-7062			1-day	NCDC	45.3767	-103.3675	3070	10/1914-8/2011
SD	REDWATER RIVER ABOVE BELL	53-2051			15-min	USGS	44.6672	-103.8394	3000	10/1997-12/2010

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
SD	ROCHFORD 2 WNW	39-7227			1-day	NCDC	44.1317	-103.7506	5450	10/1897-4/2005
SD	ROCHFORD 2 WNW	39-7227		39-7227	1-hour	NCDC	44.1317	-103.7506	5450	8/1948-2/1976
SD	ROSCOE	39-7277			1-day	NCDC	45.4525	-99.3358	1835	12/1934-10/2011
SD	SALEM 5 SW	39-7457			1-day	NCDC	43.6589	-97.4475	1460	4/1941-6/2001
SD	SELBY	39-7545			1-day	NCDC	45.5078	-100.0375	1877	9/1907-10/2011
SD	SHADEHILL DAM	39-7567	57-0020		1-day	NCDC	45.7667	-102.2000	2231	8/1950-3/1977
SD	SHADEHILL RESERVOIR ON TH	57-0020			1-day	USBR	45.7533	-102.2033	2320	8/1950-4/2009
SD	SIOUX FALLS AP	39-7667			1-day	NCDC	43.5778	-96.7539	1428	1/1893-8/2010
SD	SIOUX FALLS AP	39-7667		39-7667	1-hour	NCDC	43.5778	-96.7539	1428	8/1948-12/2010
SD	SIOUX FALLS EROS CTR	39-7662			1-hour	NCDC	43.7378	-96.6267	1590	2/1974-12/2010
SD	SIOUX FALLS EROS CTR	39-7662			15-min	NCDC	43.7378	-96.6267	1590	2/1974-12/2010
SD	SISSETON	39-7742			1-day	NCDC	45.6656	-97.0392	1220	2/1900-10/2011
SD	SPEARFISH	39-7882			1-day	NCDC	44.5139	-103.8722	3640	1/1893-10/2011
SD	SPEARFISH	39-7882			1-hour	NCDC	44.5139	-103.8722	3640	8/1948-12/2010
SD	SPEARFISH	39-7882			15-min	NCDC	44.5139	-103.8722	3640	12/1975-1/2010
SD	SPEARFISH 9 WNW	39-7877			1-day	NCDC	44.5500	-104.0167	3432	8/1909-7/1964
SD	STEPHAN 2 NW	39-7992			1-day	NCDC	44.2694	-99.4689	1805	9/1903-7/2011
SD	STEPHAN 2 NW	39-7992			1-hour	NCDC	44.2694	-99.4689	1805	8/1948-12/2010
SD	STEPHAN 2 NW	39-7992			15-min	NCDC	44.2694	-99.4689	1805	5/1971-12/2010
SD	STICKNEY	39-8007			1-hour	NCDC	43.5947	-98.4367	1624	8/1948-12/2010
SD	STICKNEY	39-8007			15-min	NCDC	43.5947	-98.4367	1624	7/1971-12/2010
SD	SUMMIT 1 W	39-8116			1-day	NCDC	45.3036	-97.0625	1955	9/1956-10/2011
SD	TIMBER LAKE	39-8307			1-day	NCDC	45.4283	-101.0764	2160	10/1911-10/2011
SD	TYNDALL	39-8472			1-day	NCDC	42.9939	-97.8619	1420	4/1893-10/2011
SD	USTA 8 WNW (KELLY RANCH)	39-8528			1-day	NCDC	45.2539	-102.3122	2380	7/1957-12/2009
SD	VALE	39-8552			1-day	NCDC	44.6167	-103.4000	2772	2/1908-7/1978
SD	VERMILLION 2 SE	39-8622			1-day	NCDC	42.7625	-96.9194	1190	2/1893-10/2011
SD	VERMILLION 2 SE	39-8622			1-hour	NCDC	42.7625	-96.9194	1190	8/1948-12/2010
SD	VERMILLION 2 SE	39-8622			15-min	NCDC	42.7625	-96.9194	1190	3/1971-12/2010
SD	VICTOR 4 NNE	39-8652			1-day	NCDC	45.9231	-96.7864	1080	6/1923-10/2011
SD	VIVIAN	39-8727			1-day	NCDC	43.9333	-100.3000	1913	9/1914-9/1975
SD	WAGNER	39-8767			1-day	NCDC	43.0825	-98.2972	1430	2/1916-4/2011

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
SD	WASTA	39-8911			1-day	NCDC	44.0697	-102.4472	2325	7/1925-8/2011
SD	WATERTOWN RGNL AP	39-8932			1-day	NCDC	44.9047	-97.1494	1748	1/1893-10/2010
SD	WATERTOWN RGNL AP	39-8932		39-8932	1-hour	NCDC	44.9047	-97.1494	1748	8/1948-12/2010
SD	WAUBAY NATL WILD LIFE	39-8980			1-day	NCDC	45.4247	-97.3269	1830	5/1952-10/2011
SD	WAUBAY NATL WILD LIFE	39-8980			1-hour	NCDC	45.4247	-97.3269	1830	5/1952-12/2010
SD	WAUBAY NATL WILD LIFE	39-8980			15-min	NCDC	45.4247	-97.3269	1830	4/1971-12/2010
SD	WEBSTER	39-9004			1-day	NCDC	45.3331	-97.5228	1855	1/1893-10/2011
SD	WENDTE	39-9032	39-3076		1-day	NCDC	44.2500	-100.6667	1588	5/1954-2/1964
SD	WENTWORTH 2.5 WNW	39-9042			1-day	NCDC	44.0083	-97.0042	1722	1/1893-9/2006
SD	WESSINGTON 2 SE	39-9064			1-day	NCDC	44.4256	-98.6819	1430	7/1929-8/2011
SD	WESSINGTON SPRINGS	39-9070			1-day	NCDC	44.0797	-98.5664	1650	1/1893-10/2011
SD	WESSINGTON SPRINGS 7SW	39-9077			1-day	NCDC	44.0433	-98.7089	1780	1/1948-11/1998
SD	WEWELA	39-9187			1-day	NCDC	43.0167	-99.7833	2162	8/1951-12/2010
SD	WHITE LAKE	39-9232			1-day	NCDC	43.7292	-98.7131	1650	3/1909-10/2011
SD	WILMOT	39-9337			1-day	NCDC	45.4081	-96.8600	1160	4/1943-10/2011
SD	WIND CAVE	39-9347			1-hour	NCDC	43.5606	-103.4881	4140	8/1948-12/2010
SD	WIND CAVE	39-9347			15-min	NCDC	43.5606	-103.4881	4140	9/1973-12/2010
SD	WINNER	39-9367			1-day	NCDC	43.3686	-99.8403	2016	3/1910-10/2011
SD	WOOD	39-9442			1-day	NCDC	43.4978	-100.4794	2180	1/1913-8/2011
SD	YANKTON	62-9502	39-9502		1-day	FORTS	42.8700	-97.3922	1232	4/1873-12/1892
SD	YANKTON 2 E	39-9502			1-day	NCDC	42.8783	-97.3633	1180	**4/1873-8/2010**
SD	ZEONA 10 SSW	39-9537			1-day	NCDC	45.0669	-102.9956	2730	8/1949-6/2002
SD	ZEONA 10 SSW	39-9537			1-hour	NCDC	45.0669	-102.9956	2730	5/1976-12/2004
SD	ZEONA 10 SSW	39-9537			15-min	NCDC	45.0669	-102.9956	2730	5/1976-12/2004
WI	AFTON	47-0045			1-day	NCDC	42.6475	-89.0644	742	**1/1893-10/2011**
WI	AFTON	47-0045		47-0045	1-hour	NCDC	42.6475	-89.0644	742	**8/1948-12/2010**
WI	ALMA DAM 4	47-0124			1-day	NCDC	44.3272	-91.9194	670	11/1936-10/2011
WI	ALMA DAM 4	47-0124		47-0124	1-hour	NCDC	44.3272	-91.9194	670	8/1948-12/2010
WI	AMERY	47-0175			1-day	NCDC	45.3011	-92.3631	1070	1/1922-7/2011
WI	ANTIGO	47-0239			1-day	NCDC	45.1603	-89.1128	1521	5/1894-10/2011
WI	APPLETON	47-0265			1-day	NCDC	44.2786	-88.4386	774	1/1893-10/2011
WI	ARBORETUM UNIV WIS	47-0273			1-day	NCDC	43.0411	-89.4286	865	10/1971-10/2011

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WI	ARLINGTON	47-0307	47-0308		1-day	NCDC	43.3333	-89.3667	1040	4/1931-2/1971
WI	ARLINGTON UNIV FARM	47-0308			1-day	NCDC	43.3008	-89.3269	1080	**4/1931-10/2011**
WI	ASHLAND EXP FARM	47-0349			1-day	NCDC	46.5831	-90.9678	650	**3/1893-3/2011**
WI	ASHLAND EXP FARM	47-0349			1-hour	NCDC	46.5831	-90.9678	650	8/1948-12/2010
WI	ASHLAND EXP FARM	47-0349			15-min	NCDC	46.5831	-90.9678	650	5/1971-12/2010
WI	BABCOCK 1 WNW	47-0456			1-day	NCDC	44.2994	-90.1306	980	8/1948-10/2011
WI	BABCOCK 1 WNW	47-0456		47-0456	1-hour	NCDC	44.2994	-90.1306	980	8/1948-12/2010
WI	BALDWIN	47-0486			1-day	NCDC	44.9633	-92.3906	1100	10/1947-10/2011
WI	BARABOO	47-0516			1-day	NCDC	43.4583	-89.7269	823	1/1893-10/2011
WI	BAYFIELD 6 N	47-0603			1-day	NCDC	46.8833	-90.8167	820	1/1893-4/2005
WI	BEAVER DAM	47-0645			1-day	NCDC	43.4447	-88.8478	840	1/1893-10/2011
WI	BELOIT	47-0696			1-day	NCDC	42.5039	-89.0311	780	**1/1851-10/2011**
WI	BELOIT WI	62-0696	47-0696		1-day	FORTS	42.5042	-89.0314	780	1/1851-11/1891
WI	BERLIN	47-0740		47-0735	1-hour	NCDC	43.9833	-88.9500	761	8/1948-2/1984
WI	BERLIN LOCK	47-0735			1-day	NCDC	43.9667	-88.9500	781	**12/1894-8/2010**
WI	BERLIN WWTP	47-0742	47-0735		1-day	NCDC	43.9900	-88.9411	766	11/2004-8/2010
WI	BIG FALLS HYDRO	47-0773			1-day	NCDC	45.5556	-90.9592	1220	2/1956-10/2011
WI	BIG ST GERMAIN DAM	47-0786	47-7480		1-day	NCDC	45.9167	-89.5333	1621	3/1910-11/1971
WI	BLACK RIVER FALLS SEWAGE	47-0855			1-day	NCDC	44.2903	-90.8539	810	1/1893-10/2011
WI	BLACK RIVER FALLS SEWAGE	47-0855			1-hour	NCDC	44.2903	-90.8539	810	8/1948-12/2010
WI	BLACK RIVER FALLS SEWAGE	47-0855			15-min	NCDC	44.2903	-90.8539	810	5/1971-12/2010
WI	BLAIR	47-0882			1-day	NCDC	44.2906	-91.2300	855	1/1896-7/2009
WI	BLANCHARDVILLE	47-0890		47-0892	1-hour	NCDC	42.8169	-89.8628	830	9/1948-12/2010
WI	BLANCHARDVILLE #2	47-0892			1-day	NCDC	42.8122	-89.8622	833	1/1954-10/2011
WI	BLOOMER	47-0904			1-day	NCDC	45.0956	-91.4886	980	8/1944-10/2011
WI	BLUE MOUNDS 6 SSE	47-0929	47-5674		1-day	NCDC	42.9511	-89.7903	1050	6/1962-12/2002
WI	BOWLER	47-0991	47-8190		1-day	NCDC	44.8558	-88.9889	1080	9/1948-6/2003
WI	BREAKWATER	47-1039	53-0090		1-day	NCDC	45.8667	-88.2333	1190	9/1922-7/1996
WI	BREED 6 SSE	47-1044	47-8376		1-day	NCDC	44.9878	-88.3769	860	9/1959-3/1998
WI	BRILLION	47-1064			1-day	NCDC	44.1617	-88.0803	810	9/1924-10/2011
WI	BRODHEAD	47-1078			1-day	NCDC	42.6181	-89.3861	790	11/1897-10/2011
WI	BRULE ISLAND	47-1139	47-2826		1-day	NCDC	45.9500	-88.2167	1250	9/1922-12/1989

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WI	BRULE RS	47-1131			1-day	NCDC	46.5378	-91.5919	1000	5/1928-10/2011
WI	BUCKATABON	47-1155			1-day	NCDC	46.0233	-89.3075	1650	1/1945-5/2011
WI	BURLINGTON	47-1205			1-day	NCDC	42.6508	-88.2544	751	9/1948-10/2011
WI	BURNETT 3 S	47-1213	47-3756		1-day	NCDC	43.4667	-88.7000	971	9/1903-10/1970
WI	BURNETT 3 S	47-1213	47-3756		1-hour	NCDC	43.4667	-88.7000	971	8/1948-11/1970
WI	BUTTERNUT	47-1245	47-6398		1-day	NCDC	46.0000	-90.5000	1508	1/1893-1/1909
WI	BYRG_90__34N_16W__5_ALEN_	80-0042			1-day	MN DNR	45.4600	-92.3600	1145	6/1970-9/2008
WI	CASHTON	47-1280			1-day	NCDC	43.7447	-90.7783	1370	5/1949-8/2011
WI	CECIL	47-1295	47-7708		1-day	NCDC	44.6667	-88.4500	804	4/1907-10/1924
WI	CEDAR FALLS HYDRO PL	47-1308			1-day	NCDC	44.9356	-91.8886	804	**2/1893-10/2011**
WI	CHARMANY FARM	47-1416			1-day	NCDC	43.0597	-89.4819	910	**1/1869-10/2011**
WI	CHARMANY FARM	47-1416			1-hour	NCDC	43.0597	-89.4819	910	**6/1950-12/2010**
WI	CHARMANY FARM	47-1416			15-min	NCDC	43.0597	-89.4819	910	1/1984-12/2010
WI	CHILTON	47-1568			1-day	NCDC	44.0328	-88.1469	840	1/1894-10/2011
WI	CHILTON	47-1568		47-1568	1-hour	NCDC	44.0328	-88.1469	840	8/1948-12/2010
WI	CHIPPEWA FALLS	47-1578			1-day	NCDC	44.9278	-91.4081	850	1/1889-10/2011
WI	CHIPPEWA FALLS	47-1578		47-1578	1-hour	NCDC	44.9278	-91.4081	850	8/1948-12/2010
WI	CLINTON	47-1667			1-day	NCDC	42.5492	-88.8753	960	9/1948-10/2011
WI	CLINTONVILLE	47-1676			1-day	NCDC	44.6228	-88.7475	800	9/1948-10/2011
WI	CLINTONVILLE	47-1676		47-1676	1-hour	NCDC	44.6228	-88.7475	800	8/1948-12/2010
WI	CODDINGTON 1 E	47-1708			1-day	NCDC	44.3667	-89.5333	1060	8/1921-4/1984
WI	CODDINGTON 1 E	47-1708		47-1708	1-hour	NCDC	44.3667	-89.5333	1060	8/1948-5/1984
WI	COUDERAY 7 W	47-1847			1-day	NCDC	45.8003	-91.4594	1300	9/1948-8/2011
WI	CRIVITZ HIGH FALLS	47-1897			1-day	NCDC	45.3575	-88.1919	950	10/1911-8/2011
WI	CRIVITZ HIGH FALLS	47-1897		47-1897	1-hour	NCDC	45.3575	-88.1919	950	8/1948-12/2010
WI	CUBA CITY 2NW	47-1913			1-day	NCDC	42.6253	-90.4592	900	7/1927-10/2011
WI	CUBA CITY 2NW	47-1913		47-1913	1-hour	NCDC	42.6253	-90.4592	900	8/1948-12/2010
WI	CUMBERLAND	47-1923			1-day	NCDC	45.5333	-92.0222	1240	12/1931-10/2011
WI	CURTISS	47-1931			1-day	NCDC	44.9500	-90.4333	1370	9/1948-11/1983
WI	DALTON	47-1970			1-day	NCDC	43.6561	-89.2028	860	8/1944-10/2007
WI	DANBURY	47-1978			1-day	NCDC	46.0075	-92.3700	925	9/1919-6/2011
WI	DARLINGTON	47-2001			1-day	NCDC	42.6708	-90.1183	960	3/1901-7/2011

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
WI	DODGE	47-2165			1-day	NCDC	44.1331	-91.5511	685	7/1948-8/2011
WI	DODGEVILLE	47-2173			1-day	NCDC	42.9608	-90.1161	1110	8/1896-10/2011
WI	DRUMMOND	47-2240			1-day	NCDC	46.3333	-91.2667	1340	8/1948-10/2005
WI	DRUMMOND	47-2240		47-2240	1-hour	NCDC	46.3333	-91.2667	1340	8/1948-12/1976
WI	EAGLE 2 W	47-2302		47-2302	1-hour	NCDC	42.8667	-88.5167	900	8/1948-3/1994
WI	EAGLE RIVER	47-2314			1-day	NCDC	45.9089	-89.2531	1645	11/1939-10/2011
WI	EAU CLAIRE	47-2423	47-2428		1-day	NCDC	44.8167	-91.5000	771	1/1893-12/1960
WI	EAU CLAIRE C V R AP	47-2428			1-day	NCDC	44.8653	-91.4850	885	**1/1893-8/2010**
WI	EAU PLEINE RSVR	47-2447			1-day	NCDC	44.7247	-89.7567	1138	**5/1915-10/2011**
WI	EAU PLEINE RSVR	47-2447		47-2447	1-hour	NCDC	44.7247	-89.7567	1138	**8/1948-12/2010**
WI	EL DORADO 1 SSW	47-2507			1-day	NCDC	43.8000	-88.6333	889	3/1939-6/1981
WI	EL DORADO 1 SSW	47-2507		47-2507	1-hour	NCDC	43.8000	-88.6333	889	8/1948-2/1984
WI	ELLSWORTH 1 E	47-2556			1-day	NCDC	44.7303	-92.4586	1030	3/1908-7/2011
WI	FAIRCHILD RS	47-2678			1-day	NCDC	44.6000	-90.9667	1080	9/1948-8/2002
WI	FENNIMORE 1 NE	47-2745		47-2745	1-hour	NCDC	43.0000	-90.6500	1181	8/1948-6/1970
WI	FLAMBEAU RSVR	47-2814			1-day	NCDC	46.0667	-90.2333	1571	5/1926-7/1981
WI	FLORENCE	47-2822	47-1139		1-day	NCDC	45.9000	-88.2667	1290	1/1893-8/1935
WI	FLORENCE	47-2826			1-day	NCDC	45.9250	-88.2569	1305	**1/1893-8/2010**
WI	FOND DU LAC	47-2839			1-day	NCDC	43.7961	-88.4506	760	1/1893-10/2011
WI	FOXBORO	47-2889			1-day	NCDC	46.4856	-92.2875	932	12/1963-7/2011
WI	FREDERIC	47-2934		47-2934	1-hour	NCDC	45.6500	-92.4667	1240	8/1948-5/1971
WI	FRIENDSHIP	47-2973			1-day	NCDC	43.9750	-89.8308	945	1/1930-10/2011
WI	FRIENDSHIP	47-2973		47-2973	1-hour	NCDC	43.9750	-89.8308	945	8/1948-12/2010
WI	FT ATKINSON	47-2869			1-day	NCDC	42.9050	-88.8589	800	9/1941-10/2011
WI	GALESVILLE 1 S	47-2996			1-day	NCDC	44.0625	-91.3642	708	8/1938-10/2009
WI	GAYS MILLS	47-3021	47-3022		1-day	NCDC	43.3333	-90.8333	732	3/1939-11/1956
WI	GAYS MILLS	47-3022			1-day	NCDC	43.3144	-90.8486	689	**3/1939-10/2011**
WI	GENOA DAM 8	47-3038			1-day	NCDC	43.5706	-91.2294	639	11/1936-10/2011
WI	GENOA DAM 8	47-3038			1-hour	NCDC	43.5706	-91.2294	639	8/1948-12/2010
WI	GENOA DAM 8	47-3038			15-min	NCDC	43.5706	-91.2294	639	5/1971-12/2010
WI	GERMANTOWN	47-3058			1-day	NCDC	43.2389	-88.1222	850	6/1944-10/2011
WI	GOODMAN SANITARY DIST	47-3174			1-day	NCDC	45.6208	-88.3572	1455	10/1959-12/2010

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
WI	GOODRICH 1 E	47-3182			1-day	NCDC	45.1489	-90.0667	1390	1/1945-1/2011
WI	GORDON	47-3186			1-day	NCDC	46.2450	-91.8047	1040	9/1951-10/2011
WI	GRAND RIVER LOCK	47-3214	47-5581		1-day	NCDC	43.7667	-89.3000	771	1/1896-8/1954
WI	GRANTSBURG	47-3242	47-3244		1-day	NCDC	45.7833	-92.6833	1102	1/1893-7/1950
WI	GRANTSBURG	47-3244			1-day	NCDC	45.7728	-92.6886	990	**8/1889-8/2010**
WI	GREEN BAY WI WBAP	53-0610	47-3269		1-day	USGS	44.4833	-88.1335	-999	10/1891-9/1972
WI	GREEN BAY A S INTL AP	47-3269			1-day	NCDC	44.4794	-88.1378	687	**10/1891-8/2010**
WI	GREEN BAY A S INTL AP	47-3269		47-3269	1-hour	NCDC	44.4794	-88.1378	687	8/1948-12/2010
WI	GURNEY	47-3332			1-day	NCDC	46.4739	-90.5108	970	7/1952-10/2011
WI	HANCOCK EXP FARM	47-3405			1-day	NCDC	44.1192	-89.5342	1076	10/1902-10/2011
WI	HARTFORD 2 W	47-3453			1-day	NCDC	43.3311	-88.4114	980	12/1893-10/2011
WI	HARTFORD 2 W	47-3453		47-3453	1-hour	NCDC	43.3311	-88.4114	980	8/1948-12/2010
WI	HATFIELD	47-3471			1-day	NCDC	44.4169	-90.7314	892	1/1896-4/2009
WI	HAYWARD RS	47-3511			1-day	NCDC	46.0003	-91.5075	1200	3/1893-8/2011
WI	HILES	47-3636			1-day	NCDC	45.6811	-88.9603	1633	**5/1944-12/2010**
WI	HILES	47-3636		47-3636	1-hour	NCDC	45.6811	-88.9603	1633	**8/1948-12/2010**
WI	HILLSBORO	47-3649	47-3654		1-day	NCDC	43.6500	-90.3333	1001	1/1893-12/1958
WI	HILLSBORO	47-3654			1-day	NCDC	43.6542	-90.3339	940	**1/1893-3/2011**
WI	HILLSBORO	47-3654		47-3654	1-hour	NCDC	43.6542	-90.3339	940	8/1948-10/1989
WI	HOLCOMBE	47-3698			1-day	NCDC	45.2294	-91.1353	1025	8/1929-10/2011
WI	HORICON	47-3756			1-day	NCDC	43.4406	-88.6325	880	**9/1903-10/2011**
WI	HORICON	47-3756			1-hour	NCDC	43.4406	-88.6325	880	**8/1948-12/2010**
WI	HORICON	47-3756			15-min	NCDC	43.4406	-88.6325	880	5/1971-12/2010
WI	IRON RIVER	47-3917			1-day	NCDC	46.5833	-91.4000	1102	8/1909-4/1947
WI	JANESVILLE	47-3979	47-0045		1-day	NCDC	42.6667	-89.0167	761	1/1893-2/1987
WI	JANESVILLE	47-3979	47-0045		1-hour	NCDC	42.6667	-89.0167	761	8/1948-6/1987
WI	JUMP RIVER 3E	47-4080			1-day	NCDC	45.3497	-90.7483	1265	9/1948-7/2011
WI	KENOSHA	47-4174			1-day	NCDC	42.5608	-87.8156	600	2/1944-10/2011
WI	KEWAUNEE	47-4195			1-day	NCDC	44.4628	-87.5050	588	12/1908-10/2011
WI	KNOWLTON 1 W	47-4282	47-2447		1-day	NCDC	44.7167	-89.7000	1122	5/1915-1/1953
WI	KNOWLTON 1 W	47-4282	47-2447		1-hour	NCDC	44.7167	-89.7000	1122	8/1948-3/1954
WI	LA CROSSE WI WBAP	53-0595	47-4370		1-day	USGS	43.9333	-91.2836	-999	10/1901-9/1972

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WI	LA CROSSE MUNI AP	47-4370			1-day	NCDC	43.8789	-91.2528	652	**10/1901-10/2010**
WI	LA CROSSE MUNI AP	47-4370		47-4370	1-hour	NCDC	43.8789	-91.2528	652	**8/1948-12/2010**
WI	LA CROSSE RIVER	47-4379	47-4367		1-day	NCDC	43.8122	-91.2578	630	1/1883-5/1990
WI	LA CROSSE STATE UNIV	47-4367			1-day	NCDC	43.8167	-91.2333	650	**1/1883-5/1990**
WI	LA FARGE	47-4404			1-day	NCDC	43.5753	-90.6417	810	1/1940-10/2011
WI	LA FARGE	47-4404		47-4404	1-hour	NCDC	43.5753	-90.6417	810	8/1948-12/2010
WI	LAC VIEUX DESERT	47-4383			1-day	NCDC	46.1206	-89.1186	1690	4/1908-10/2011
WI	LADYSMITH 3W	47-4391			1-day	NCDC	45.4653	-91.1236	1158	4/1901-10/2011
WI	LADYSMITH WTP	47-4396			1-hour	NCDC	45.4461	-91.0906	1160	8/1948-12/2010
WI	LADYSMITH WTP	47-4396			15-min	NCDC	45.4461	-91.0906	1160	5/1971-12/2010
WI	LAKE GENEVA	47-4457			1-day	NCDC	42.5936	-88.4347	846	4/1945-6/2003
WI	LAKE MILLS	47-4482			1-day	NCDC	43.0803	-88.8967	817	1/1893-10/2011
WI	LAKEWOOD 3 NE	47-4523			1-day	NCDC	45.3333	-88.4981	1196	8/1968-1/2008
WI	LANCASTER 4 WSW	47-4546			1-day	NCDC	42.8278	-90.7889	1040	1/1893-10/2011
WI	LANCASTER 4 WSW	47-4546			1-hour	NCDC	42.8278	-90.7889	1040	8/1948-12/2010
WI	LANCASTER 4 WSW	47-4546			15-min	NCDC	42.8278	-90.7889	1040	1/1984-12/2010
WI	LAONA 6 SW	47-4582			1-day	NCDC	45.5125	-88.7594	1525	9/1927-10/2011
WI	LONE ROCK TRI CO	47-4821			1-day	NCDC	43.2000	-90.1833	719	1/1944-1/1983
WI	LONE ROCK TRI CO	47-4821		47-4821	1-hour	NCDC	43.2000	-90.1833	719	8/1948-12/1983
WI	LONG LAKE DAM	47-4829			1-day	NCDC	45.8883	-89.1389	1630	1/1908-11/2001
WI	LUCK	47-4894			1-day	NCDC	45.5733	-92.4850	1220	5/1971-7/2011
WI	LUCK	47-4894			1-hour	NCDC	45.5733	-92.4850	1220	5/1971-12/2010
WI	LUCK	47-4894			15-min	NCDC	45.5733	-92.4850	1220	8/1971-12/2010
WI	LYNXVILLE DAM 9	47-4937			1-day	NCDC	43.2117	-91.0986	633	11/1936-10/2011
WI	LYNXVILLE DAM 9	47-4937			1-hour	NCDC	43.2117	-91.0986	633	8/1948-12/2010
WI	LYNXVILLE DAM 9	47-4937			15-min	NCDC	43.2117	-91.0986	633	5/1971-12/2010
WI	MADELINE ISLAND	47-4953			1-day	NCDC	46.7781	-90.7653	660	6/1944-10/2011
WI	MADISON WI WBAP	53-0578	47-4961		1-day	USGS	43.1333	-89.3336	-999	10/1903-9/1972
WI	MADISON DANE CO AP	47-4961			1-day	NCDC	43.1406	-89.3453	866	**10/1903-10/2010**
WI	MADISON DANE CO AP	47-4961		47-4961	1-hour	NCDC	43.1406	-89.3453	866	8/1948-12/2010
WI	MADISON WB CITY	47-4966	47-1416		1-day	NCDC	43.0833	-89.4000	974	5/1896-5/1963
WI	MADISON WB CITY	47-4966	47-1416		1-hour	NCDC	43.0833	-89.4000	974	6/1950-5/1963

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WI	MANITOWOC	62-5017	47-5017		1-day	FORTS	44.1000	-87.6839	625	3/1863-12/1892
WI	MANITOWOC	47-5017			1-day	NCDC	44.0692	-87.7386	726	**3/1863-10/2011**
WI	MARINETTE	47-5091			1-day	NCDC	45.0908	-87.6292	592	**5/1899-10/2011**
WI	MARSHFIELD EXP FARM	47-5120			1-day	NCDC	44.6322	-90.1314	1250	12/1912-10/2011
WI	MARSHFIELD EXP FARM	47-5120			1-hour	NCDC	44.6322	-90.1314	1250	12/1948-12/2010
WI	MARSHFIELD EXP FARM	47-5120			15-min	NCDC	44.6322	-90.1314	1250	5/1971-12/2010
WI	MATHER 3 NW	47-5164			1-day	NCDC	44.1747	-90.3483	978	1/1903-10/2011
WI	MAUSTON 1 SE	47-5178			1-day	NCDC	43.7900	-90.0597	865	2/1905-8/2011
WI	MEADOW VALLEY RS	47-5236			1-day	NCDC	44.2333	-90.2333	1001	1/1893-4/1953
WI	MEDFORD	47-5255			1-day	NCDC	45.1308	-90.3439	1470	6/1889-10/2011
WI	MEDFORD	47-5255			1-hour	NCDC	45.1308	-90.3439	1470	8/1948-12/2010
WI	MEDFORD	47-5255			15-min	NCDC	45.1308	-90.3439	1470	5/1971-12/2010
WI	MELLEN 4 NE	47-5286			1-day	NCDC	46.3689	-90.6417	1300	9/1926-8/2011
WI	MENASHA	47-5298			1-day	NCDC	44.2000	-88.4667	741	1/1896-12/1956
WI	MENOMONIE	47-5330	47-1308		1-day	NCDC	44.8667	-91.9167	889	2/1893-11/1956
WI	MENOMONIE	47-5335			1-day	NCDC	44.8742	-91.9364	780	12/1948-9/2011
WI	MENOMONIE	47-5335			1-hour	NCDC	44.8742	-91.9364	780	8/1948-12/2010
WI	MENOMONIE	47-5335			15-min	NCDC	44.8742	-91.9364	780	5/1971-12/2010
WI	MERCER RANGER STN	47-5352			1-day	NCDC	46.1683	-90.0722	1600	1/1940-10/2011
WI	MERCER RANGER STN	47-5352			1-hour	NCDC	46.1683	-90.0722	1600	8/1948-12/2010
WI	MERCER RANGER STN	47-5352			15-min	NCDC	46.1683	-90.0722	1600	5/1971-12/2010
WI	MERRILL	47-5364			1-day	NCDC	45.1786	-89.6617	1250	8/1905-8/2011
WI	MERRILL	47-5364			1-hour	NCDC	45.1786	-89.6617	1250	8/1948-12/2010
WI	MERRILL	47-5364			15-min	NCDC	45.1786	-89.6617	1250	5/1971-12/2010
WI	MILWAUKEE	62-0148	47-5479		1-day	FORTS	43.0411	-87.9097	595	1/1855-12/1867
WI	MILWAUKEE WI WBAP	53-0554	47-5479		1-day	USGS	42.9500	-87.9002	-999	10/1871-9/1972
WI	MILWAUKEE MITCHELL AP	47-5479			1-day	NCDC	42.9550	-87.9044	670	**1/1855-10/2010**
WI	MILWAUKEE MITCHELL AP	47-5479		47-5479	1-hour	NCDC	42.9550	-87.9044	670	9/1948-12/2010
WI	MILWAUKEE MT MARY COL	47-5474			1-day	NCDC	43.0719	-88.0294	726	10/1946-10/2011
WI	MILWAUKEE N SIDE	47-5477			1-day	NCDC	43.1167	-87.9333	630	**5/1896-8/1976**
WI	MILWAUKEE WB CITY	47-5484	47-5477		1-day	NCDC	43.0333	-87.9000	722	5/1896-3/1954
WI	MINOCQUA	47-5516			1-day	NCDC	45.8864	-89.7322	1604	9/1903-10/2011

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WI	MINONG 5 WSW	47-5525			1-day	NCDC	46.0667	-91.8667	1075	7/1961-10/2004
WI	MINONG RS	47-5524		47-5524	1-hour	NCDC	46.1006	-91.8178	1080	8/1948-12/2010
WI	MONDOVI	47-5563			1-day	NCDC	44.5647	-91.6719	830	4/1908-10/2011
WI	MONROE 1 W	47-5573			1-day	NCDC	42.5994	-89.6681	990	6/1940-10/2011
WI	MONTELLO	47-5581			1-day	NCDC	43.7806	-89.3169	786	**1/1896-10/2011**
WI	MT HOREB	47-5674			1-day	NCDC	42.9878	-89.7417	1031	**1/1904-8/2010**
WI	MT HOREB 1 WSW	47-5677	47-0929		1-day	NCDC	43.0000	-89.7667	1220	1/1904-1/1962
WI	MUSCODA	47-5718			1-day	NCDC	43.1772	-90.4272	685	11/1908-12/2000
WI	NECEDAH 2SE	47-5786			1-day	NCDC	43.9969	-90.0350	905	5/1953-10/2011
WI	NEILLSVILLE 3 SW	47-5808			1-day	NCDC	44.5297	-90.6383	1020	1/1893-10/2011
WI	NEW LONDON	47-5932			1-day	NCDC	44.3589	-88.7189	800	3/1896-10/2011
WI	NEW RICHMOND	47-5948			1-day	NCDC	45.1167	-92.5639	1000	12/1904-4/2010
WI	NEW RICHMOND	47-5948			1-hour	NCDC	45.1167	-92.5639	1000	7/1952-12/2010
WI	NEW RICHMOND	47-5948			15-min	NCDC	45.1167	-92.5639	1000	5/1971-12/2010
WI	NEWALD 4 N	47-5863			1-day	NCDC	45.7833	-88.7000	1540	10/1959-1/1997
WI	NORTH PELICAN	47-6122	47-7115		1-day	NCDC	45.6358	-89.2417	1610	1/1945-9/2004
WI	OCONOMOWOC	47-6200			1-day	NCDC	43.1003	-88.5036	856	1/1893-10/2011
WI	OCONTO 4 W	47-6208			1-day	NCDC	44.8836	-87.9539	660	1/1893-10/2011
WI	ONTARIO 3E	47-6280			1-day	NCDC	43.7194	-90.5300	960	**7/1975-10/2011**
WI	OSCEOLA	47-6320	47-7464		1-day	NCDC	45.3667	-92.6760	806	1/1893-1/1921
WI	OSHKOSH	47-6330			1-day	NCDC	44.0117	-88.5556	750	1/1893-10/2011
WI	OWEN 2N	47-6357			1-day	NCDC	44.9800	-90.5544	1280	7/1946-10/2011
WI	PARK FALLS DNR HQ	47-6398			1-day	NCDC	45.9336	-90.4506	1525	**1/1893-10/2011**
WI	PARK FALLS DNR HQ	47-6398		47-6398	1-hour	NCDC	45.9336	-90.4506	1525	8/1948-12/2010
WI	PESHTIGO	47-6510			1-day	NCDC	45.0281	-87.7356	600	8/1948-10/2011
WI	PESHTIGO	47-6510			1-hour	NCDC	45.0281	-87.7356	600	8/1948-12/2010
WI	PESHTIGO	47-6510			15-min	NCDC	45.0281	-87.7356	600	7/1979-12/2010
WI	PHELPS	47-6518			1-day	NCDC	46.0658	-89.0756	1776	3/1910-10/2011
WI	PHELPS	47-6518		47-6518	1-hour	NCDC	46.0658	-89.0756	1776	8/1948-12/2010
WI	PINE RIVER 3 NE	47-6594			1-day	NCDC	44.1833	-89.0333	902	10/1894-6/1982
WI	PINE RIVER BELOW PINE R P	53-0090			1-day	USGS	45.8372	-88.2255	1099	9/1922-7/2009
WI	PITTSVILLE	47-6622			1-day	NCDC	44.4333	-90.1333	1030	10/1938-1/1987

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
WI	PLATTEVILLE	47-6646			1-day	NCDC	42.7489	-90.4656	990	3/1936-7/2011
WI	PLUM ISLAND	47-6667			1-day	NCDC	45.3167	-86.9500	588	5/1908-5/1944
WI	PLYMOUTH	47-6678			1-day	NCDC	43.7300	-87.9714	834	3/1910-10/2011
WI	PORT WASHINGTON	47-6764			1-day	NCDC	43.3944	-87.8636	594	2/1893-10/2011
WI	PORT WING	47-6772			1-day	NCDC	46.7781	-91.3856	651	7/1947-12/2008
WI	PORTAGE	47-6718			1-day	NCDC	43.5278	-89.4342	775	1/1889-10/2011
WI	PORTAGE	47-6718		47-6718	1-hour	NCDC	43.5278	-89.4342	775	8/1948-12/2010
WI	PRAIRIE DU CHIEN	47-6827			1-day	NCDC	43.0514	-91.1350	658	1/1893-10/2011
WI	PRAIRIE DU SAC 2 N	47-6838			1-day	NCDC	43.3100	-89.7283	780	8/1908-10/2011
WI	PRENTICE	47-6854		47-6859	1-hour	NCDC	45.5478	-90.2883	1540	8/1948-12/2010
WI	PRENTICE	47-6854		47-6859	15-min	NCDC	45.5478	-90.2883	1540	5/1971-12/2010
WI	PRENTICE #2	47-6859			1-day	NCDC	**45.5447**	**-90.3017**	**1540**	5/1898-8/2011
WI	RACINE	47-6922			1-day	NCDC	42.7022	-87.7861	595	5/1896-10/2011
WI	RAINBOW RSVR TOMAHAWK	47-6939			1-day	NCDC	45.8342	-89.5494	1600	9/1946-4/2010
WI	RAINBOW RSVR TOMAHAWK	47-6939			1-hour	NCDC	45.8342	-89.5494	1600	8/1948-12/2010
WI	RAINBOW RSVR TOMAHAWK	47-6939			15-min	NCDC	45.8342	-89.5494	1600	1/1984-12/2010
WI	READSTOWN	47-7015			1-day	NCDC	43.4500	-90.7586	775	**4/1954-9/2011**
WI	REEDSBURG	47-7052			1-day	NCDC	43.5231	-90.0003	926	1/1893-10/2011
WI	REST LAKE	47-7092			1-day	NCDC	46.1208	-89.8761	1610	3/1913-8/2011
WI	RHINELANDER	47-7113			1-day	NCDC	45.6286	-89.4231	1533	2/1895-10/2011
WI	RHINELANDER 4 NE	47-7115			1-day	NCDC	45.6456	-89.3050	1585	**1/1945-10/2011**
WI	RIB FALLS	47-7121			1-day	NCDC	44.9672	-89.8961	1290	1/1945-7/2003
WI	RICE LAKE	47-7132			1-day	NCDC	45.4164	-91.7719	1103	9/1948-10/2011
WI	RICE LAKE	47-7132		47-7132	1-hour	NCDC	45.4164	-91.7719	1103	8/1948-12/2010
WI	RICE RSVR TOMAHAWK	47-7140			1-day	NCDC	45.5406	-89.7481	1465	2/1945-10/2011
WI	RICE RSVR TOMAHAWK	47-7140		47-7140	1-hour	NCDC	45.5406	-89.7481	1465	11/1949-12/2010
WI	RICHLAND CTR	47-7158			1-day	NCDC	43.3314	-90.3889	728	1/1908-10/2011
WI	RIDGELAND 1 NNE	47-7174			1-day	NCDC	45.2142	-91.8875	960	9/1948-7/2011
WI	RIPON 5 NE	47-7209			1-day	NCDC	43.8864	-88.7444	930	**8/1910-7/2011**
WI	RIPON NEAR	47-7202	47-7209		1-day	NCDC	43.8500	-88.8167	981	8/1910-4/1950
WI	RIVER FALLS	47-7226			1-day	NCDC	44.8542	-92.6122	933	4/1918-7/2011
WI	ROSHOLT 9 NNE	47-7349			1-day	NCDC	44.7514	-89.2447	1160	5/1941-10/2011

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
WI	SHAWANO 2 SSW	47-7708			1-day	NCDC	44.7642	-88.6181	810	**1/1893-10/2011**
WI	SHEBOYGAN	47-7725			1-day	NCDC	43.7500	-87.7167	648	9/1899-8/2008
WI	SHOREWOOD	47-7792	47-5477		1-day	NCDC	43.1000	-87.9000	659	6/1959-9/1966
WI	SOLDIERS GROVE	47-7869	47-7015		1-day	NCDC	43.3942	-90.7758	732	8/1978-9/1987
WI	SOLON SPRINGS	47-7892			1-day	NCDC	46.3500	-91.8167	1080	5/1906-10/2011
WI	SOUTH PELICAN	47-7980			1-day	NCDC	45.5178	-89.2028	1600	1/1945-9/1997
WI	SPARTA	47-7997			1-day	NCDC	43.9364	-90.8164	782	1/1893-10/2011
WI	SPIRIT FALLS	47-8018			1-day	NCDC	45.4489	-89.9675	1470	1/1945-8/2011
WI	SPOONER	54-0120	47-8027		1-day	NADP	45.8228	-91.8744	1086	6/1980-4/2009
WI	SPOONER AG RES STN	47-8027			1-day	NCDC	45.8236	-91.8761	1100	**4/1894-10/2011**
WI	SPOONER AG RES STN	47-8027			1-hour	NCDC	45.8236	-91.8761	1100	8/1948-12/2010
WI	SPOONER AG RES STN	47-8027			15-min	NCDC	45.8236	-91.8761	1100	5/1971-12/2010
WI	SPRING VALLEY	47-8080			1-day	NCDC	44.8411	-92.2456	915	3/1949-7/2010
WI	ST CROIX FALLS	47-7464			1-day	NCDC	45.4117	-92.6464	770	**1/1893-10/2011**
WI	ST GERMAIN 2 E	47-7480			1-day	NCDC	45.9072	-89.4358	1645	**3/1910-1/2011**
WI	STANLEY	47-8110			1-day	NCDC	44.9686	-90.9389	1090	9/1903-10/2011
WI	STEUBEN	47-8163	47-8164		1-day	NCDC	43.1833	-90.8667	685	4/1939-10/1954
WI	STEUBEN	47-8163	47-8164		1-hour	NCDC	43.1833	-90.8667	685	8/1948-6/1971
WI	STEUBEN 4 SE	47-8164			1-day	NCDC	43.1342	-90.8372	1015	**4/1939-10/2011**
WI	STEUBEN 4 SE	47-8164		47-8164	1-hour	NCDC	43.1342	-90.8372	1015	**8/1948-5/1997**
WI	STEVENS POINT	47-8171			1-day	NCDC	44.5103	-89.5856	1079	1/1893-10/2011
WI	STOCKBRIDGE-MUNSEE RSC	47-8190			1-day	NCDC	44.8706	-88.9050	1052	**9/1948-10/2011**
WI	STOUGHTON	47-8229			1-day	NCDC	42.9108	-89.2133	840	2/1931-10/2011
WI	STRATFORD 1 NW	47-8241			1-day	NCDC	44.8094	-90.0889	1310	1/1945-10/2011
WI	STRUM 4 S	47-8259		47-8259	1-hour	NCDC	44.4964	-91.3964	976	8/1948-12/2010
WI	STURGEON BAY EXP FARM	47-8267			1-day	NCDC	44.8722	-87.3353	656	3/1905-10/2011
WI	STURGEON BAY EXP FARM	47-8267		47-8267	1-hour	NCDC	44.8722	-87.3353	656	8/1948-12/2010
WI	SUGAR CAMP	47-8288			1-day	NCDC	45.8647	-89.3819	1605	3/1910-10/2003
WI	SUMMIT LAKE	47-8324			1-day	NCDC	45.3783	-89.1942	1732	9/1948-8/2011
WI	SUPERIOR	47-8349			1-day	NCDC	46.7000	-92.0167	630	3/1909-10/2011
WI	SURING	47-8376			1-day	NCDC	44.9878	-88.3769	860	**9/1959-10/2011**
WI	THREE LAKES 10 SE	47-8478	47-3636		1-day	NCDC	45.7131	-89.0028	1720	5/1944-6/1997

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
WI	THREE LAKES 10 SE	47-8478	47-3636		1-hour	NCDC	45.7131	-89.0028	1720	8/1948-6/1997
WI	TOMAH RS	47-8515			1-day	NCDC	43.9908	-90.5053	960	1/1893-4/2010
WI	TOMAH RS	47-8515			1-hour	NCDC	43.9908	-90.5053	960	8/1948-12/2010
WI	TOMAH RS	47-8515			15-min	NCDC	43.9908	-90.5053	960	5/1971-12/2010
WI	TOMAHAWK SPIRIT RSVR	47-8528			1-day	NCDC	45.4333	-89.7500	1440	9/1902-6/1977
WI	TREMPEALEAU DAM 6	47-8589			1-day	NCDC	43.9994	-91.4378	660	11/1936-10/2011
WI	TREMPEALEAU DAM 6	47-8589		47-8589	1-hour	NCDC	43.9994	-91.4378	660	8/1948-12/2010
WI	TWO RIVERS	47-8672			1-day	NCDC	44.1428	-87.5686	588	10/1950-10/2011
WI	UNION GROVE	47-8723			1-day	NCDC	42.6903	-88.0336	730	6/1941-10/2011
WI	VALLEY JUNCTION	47-8805			1-day	NCDC	44.0000	-90.4500	929	1/1893-6/1916
WI	VIROQUA	47-8827			1-day	NCDC	43.5594	-90.8761	1255	1/1893-10/2011
WI	WASHINGTON ISLAND	47-8905			1-day	NCDC	45.3858	-86.9106	714	10/1944-10/2011
WI	WATERTOWN	47-8919			1-day	NCDC	43.1742	-88.7364	825	1/1893-10/2011
WI	WAUKESHA	47-8937			1-day	NCDC	43.0064	-88.2492	830	1/1893-10/2011
WI	WAUPACA	47-8951			1-day	NCDC	44.3547	-89.0592	871	4/1895-10/2011
WI	WAUSAU 7 SSW	47-8963		47-8963	1-hour	NCDC	44.8667	-89.6500	1180	8/1948-2/1996
WI	WAUSAU FAA AP	47-8968			1-day	NCDC	44.9286	-89.6267	1196	**4/1895-3/2009**
WI	WAUSAU RECORD HERALD	47-8971	47-8968		1-day	NCDC	44.9500	-89.6167	1220	4/1895-12/1960
WI	WAUSAUKEE	47-8978			1-day	NCDC	45.3806	-87.9569	750	1/1897-10/2011
WI	WEST ALLIS	47-9046			1-day	NCDC	43.0175	-88.0017	723	10/1951-10/2011
WI	WEST BEND	47-9050			1-day	NCDC	43.3681	-88.0858	940	2/1895-11/2003
WI	WESTBY 3ENE	47-9062			1-day	NCDC	43.6750	-90.8078	1282	4/1956-10/2011
WI	WEYERHAEUSER 1N	47-9144			1-day	NCDC	45.4425	-91.4181	1195	10/1906-9/2007
WI	WHITE LAKE 3 NE	47-9176			1-day	NCDC	45.1817	-88.7344	1285	**10/1931-12/2010**
WI	WHITE LAKE 3 NE	47-9176			1-hour	NCDC	45.1817	-88.7344	1285	2/1958-12/2010
WI	WHITE LAKE 3 NE	47-9176			15-min	NCDC	45.1817	-88.7344	1285	5/1971-12/2010
WI	WHITEWATER	47-9190			1-day	NCDC	42.8508	-88.7247	875	6/1941-10/2011
WI	WHITTLESEY CREEK NEAR ASH	53-0085	47-0349		1-day	USGS	46.5943	-90.9634	**615**	5/1999-7/2009
WI	WILDCAT MOUNTAIN	54-0122	47-6280		1-day	NADP	43.7023	-90.5685	1266	8/1989-4/2009
WI	WILLARD	47-9218		47-9218	1-hour	NCDC	44.7314	-90.7217	**1181**	8/1948-12/2010
WI	WILLIAMS BAY	47-9226			1-day	NCDC	42.5833	-88.5333	889	4/1921-1/1958
WI	WILLOW RSVR	47-9236			1-day	NCDC	45.7081	-89.8489	1532	4/1934-10/2011

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
WI	WINTER	47-9304			1-day	NCDC	45.8833	-91.0700	1355	1/1915-10/2011
WI	WINTER	47-9304			1-hour	NCDC	45.8833	-91.0700	1355	5/1966-12/2010
WI	WINTER	47-9304			15-min	NCDC	45.8833	-91.0700	1355	5/1971-12/2010
WI	WISC RAPIDS GRAND AV B	47-9345			1-day	NCDC	44.3917	-89.8294	1002	1/1943-10/2011
WI	WISCONSIN DELLS	47-9319			1-day	NCDC	43.6089	-89.7667	835	5/1922-10/2011
WI	WISCONSIN RAPIDS	47-9335			1-day	NCDC	44.3881	-89.8056	1033	4/1903-10/2011
WI	WOLF RIVER AT LANGLADE W	53-0100	47-9176		1-day	USGS	45.1900	-88.7335	**1250**	12/1998-7/2009

Table A.1.2. List of stations used in the analysis in the buffer zone in the U.S. states of Arkansas, Arizona, Illinois, Indiana, Kentucky, Louisiana, Montana, New Mexico, Ohio, Tennessee, Texas, Utah, and Wyoming and in the Canadian provinces of Manitoba (MB), Ontario (ON), and Saskatchewan (SK). The table shows station name, station ID, post-merge station ID, co-located daily station ID, base duration, source of data, latitude, longitude, elevation, and period of record. Bold font in the latitude, longitude, and elevation fields indicates information that has been adjusted. Bold font in the 'Period of record' field indicates that the station data was extended using data from station that has the same ID in 'Post-merge station ID' column. For an hourly station co-located with a daily station with a different ID, the daily station's ID shown in the 'Co-located station ID' column should be used to locate the hourly station on the PFDS web page.

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
AR	ABBOTT	03-0006			1-day	NCDC	35.0764	-94.2025	624	7/1941-8/2011
AR	ALICIA	03-0064			1-day	NCDC	35.9000	-91.0833	256	5/1905-10/2011
AR	ALICIA 2NNE	03-0064		03-0064	1-hour	NCDC	35.9289	-91.0583	252	5/1948-12/2010
AR	ALY	03-0136			1-day	NCDC	34.8000	-93.4667	899	3/1946-3/1982
AR	ALY	03-0136		03-0136	1-hour	NCDC	34.8000	-93.4667	899	5/1948-2/1984
AR	AMITY 1N	03-0150			1-day	NCDC	34.2808	-93.4614	460	9/1896-10/2011
AR	ANTOINE	03-0178			1-day	NCDC	34.0292	-93.4211	285	3/1940-10/2011
AR	ANTOINE	03-0178		03-0178	1-hour	NCDC	34.0292	-93.4211	285	8/1950-12/2010
AR	ASHDOWN 4 SSE	03-0286			1-day	NCDC	33.6192	-94.0997	320	4/1893-10/2011
AR	ATHENS	03-0300			1-day	NCDC	34.3253	-93.9811	960	6/1948-10/2011
AR	BATESVILLE L&D 1	03-0460			1-day	NCDC	35.7500	-91.6333	277	7/1904-10/2011
AR	BATESVILLE L&D 1	03-0460		03-0460	1-hour	NCDC	35.7600	-91.6389	290	5/1948-2/1992
AR	BATESVILLE LIVESTOCK	03-0458			1-day	NCDC	35.8306	-91.7944	571	7/1941-10/2011
AR	BATESVILLE LIVESTOCK	03-0458			1-hour	NCDC	35.8306	-91.7944	571	8/1949-12/2010
AR	BATESVILLE LIVESTOCK	03-0458			15-min	NCDC	35.8306	-91.7944	571	1/1984-12/2010
AR	BEATY LAKE	03-0512	03-4528		1-day	NCDC	35.0833	-90.7167	400	11/1941-7/1960
AR	BEECH GROVE	03-0534			1-day	NCDC	36.1833	-90.6333	302	11/1941-4/1975
AR	BEEDEVILLE 4 NE	03-0536			1-day	NCDC	35.4583	-91.0561	240	3/1940-6/2011
AR	BENTONVILLE	03-0586			1-day	NCDC	36.3667	-94.2167	1302	6/1943-2/2007
AR	BERRYVILLE 5 NW	03-0616			1-hour	NCDC	36.4294	-93.6256	1180	5/1948-12/2010
AR	BERRYVILLE 5 NW	03-0616			15-min	NCDC	36.4294	-93.6256	1180	1/1984-12/2010
AR	BERRYVILLE 5NW	03-0616			1-day	NCDC	36.3667	-93.5667	1255	1/1946-10/2011
AR	BIG FORK 1 SSE	03-0664			1-day	NCDC	34.4692	-93.9567	1200	5/1944-10/2011
AR	BLACK ROCK	03-0746			1-day	NCDC	36.1167	-91.1000	259	2/1892-10/2011
AR	BLAKELY MTN DAM	03-0764			1-day	NCDC	34.5697	-93.1947	426	5/1950-10/2011

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
AR	BLAKELY MTN DAM	03-0764			1-hour	NCDC	34.5697	-93.1947	426	5/1950-12/2010
AR	BLAKELY MTN DAM	03-0764			15-min	NCDC	34.5697	-93.1947	426	5/1971-12/2010
AR	BLUE MTN DAM	03-0798			1-day	NCDC	35.1161	-93.6506	426	9/1939-10/2011
AR	BLUE MTN DAM	03-0798			1-hour	NCDC	35.1161	-93.6506	426	5/1948-12/2010
AR	BLUE MTN DAM	03-0798			15-min	NCDC	35.1161	-93.6506	426	1/1984-12/2010
AR	BLYTHEVILLE	03-0806			1-day	NCDC	35.9333	-89.9333	252	3/1926-10/2011
AR	BONNERDALE 4 SW	03-0820			1-day	NCDC	34.3667	-93.4231	635	10/1965-10/2011
AR	BOONEVILLE	60-0500		60-0500	1-hour	RAWS	35.1428	-93.8950	343	8/1949-3/2011
AR	BOONEVILLE 3 SSE	03-0830	03-0832		1-day	NCDC	35.1500	-93.9167	512	1/1948-3/1977
AR	BOONEVILLE 3 SSE	03-0832			1-day	NCDC	35.0931	-93.9258	600	**4/1915-8/2010**
AR	BOONEVILLE 3 SSE	03-0830	60-0500		1-hour	NCDC	35.1500	-93.9167	512	8/1949-4/1977
AR	BOONEVILLE 3 SSE	03-0832			1-hour	NCDC	35.0931	-93.9258	600	4/1978-12/2010
AR	BOONEVILLE 3 SSE	03-0832			15-min	NCDC	35.0931	-93.9258	600	6/1979-12/2010
AR	BOONEVILLE 3 W	03-0828	03-0832		1-day	NCDC	35.1500	-93.9667	459	4/1915-4/1949
AR	BOTKINBURG 2 S	03-0842			1-day	NCDC	35.6667	-92.5000	1411	6/1939-8/2011
AR	BOTKINBURG 3 NE	03-0842		03-0842	1-hour	NCDC	35.7200	-92.4708	1295	5/1948-12/2010
AR	BOUGHTON	03-0848			1-day	NCDC	33.8667	-93.3333	249	11/1935-10/1982
AR	BRIGGSVILLE	03-0900			1-hour	NCDC	34.9458	-93.4636	460	**5/1948-12/2010**
AR	BRIGGSVILLE	03-0900			15-min	NCDC	34.9458	-93.4636	460	**1/1984-12/2010**
AR	BUFFALO TWR	03-1010			1-day	NCDC	35.8640	-93.4930	2578	10/1948-8/1987
AR	BULL SHOALS DAM	03-1020			1-hour	NCDC	36.3647	-92.5781	480	5/1948-12/2010
AR	BULL SHOALS DAM	03-1020			15-min	NCDC	36.3647	-92.5781	480	5/1971-12/2010
AR	CALICO ROCK	03-1132			1-day	NCDC	36.1167	-92.1333	361	7/1904-10/2011
AR	CLARKSVILLE	03-1455	03-1457		1-day	NCDC	35.4833	-93.4500	454	7/1953-10/1993
AR	CLARKSVILLE 6 NE	03-1457			1-day	NCDC	35.5328	-93.4036	850	**7/1953-10/2011**
AR	CLARKSVILLE 6 NE	03-1457			1-hour	NCDC	35.5328	-93.4036	850	12/1961-12/2010
AR	CLARKSVILLE 6 NE	03-1457			15-min	NCDC	35.5328	-93.4036	850	6/1978-12/2010
AR	CLINTON	03-1492			1-day	NCDC	35.5833	-92.4667	512	10/1921-10/2011
AR	COMBS 3 SE	03-1574	03-6393		1-hour	NCDC	**35.8036**	**-93.7915**	1400	5/1948-10/1986
AR	COMPTON	03-1582		03-1582	1-hour	NCDC	36.0919	-93.3081	2166	5/1948-12/2010
AR	COMPTON 2 NE	03-1582			1-day	NCDC	36.0833	-93.3000	2198	6/1939-11/2010
AR	CORNING	03-1632			1-day	NCDC	36.4000	-90.5833	293	1/1893-10/2011

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
AR	CORNING	03-1632		03-1632	1-hour	NCDC	36.4197	-90.5858	300	5/1948-12/2010
AR	COVE	03-1666			1-day	NCDC	34.4314	-94.4175	1060	3/1946-10/2011
AR	CROOKED CREEK AT YELLVILL	53-0340			1-day	USGS	36.2231	-92.6797	**627**	12/1944-1/2008
AR	DANVILLE	03-1834			1-day	NCDC	35.0386	-93.3944	375	6/1916-10/2011
AR	DANVILLE	03-1834	03-1835		1-hour	NCDC	35.0386	-93.3944	375	5/1948-7/1954
AR	DANVILLE SCS	03-1835		03-1834	1-hour	NCDC	35.0667	-93.4000	370	**5/1948-3/1991**
AR	DARDANELLE	03-1838			1-day	NCDC	35.2342	-93.1675	370	8/1909-10/2011
AR	DE QUEEN DAM	03-1952		03-1952	1-hour	NCDC	34.1003	-94.3725	557	5/1973-4/2008
AR	DEER	03-1900			1-day	NCDC	35.8272	-93.2044	2375	6/1975-10/2011
AR	DEQUEEN	03-1948			1-day	NCDC	34.0464	-94.3481	407	6/1902-10/2011
AR	DIERKS	03-2015			1-day	NCDC	34.1267	-94.0172	470	7/1959-10/2011
AR	DIERKS DAM	03-2020		03-2020	1-hour	NCDC	34.1475	-94.0889	686	5/1973-6/2005
AR	EUREKA SPRINGS	03-2356			1-day	NCDC	36.4000	-93.7500	1470	4/1902-10/2011
AR	EUREKA SPRINGS 3 WNW	03-2356			1-hour	NCDC	36.4164	-93.7917	1420	7/1949-12/2010
AR	EUREKA SPRINGS 3 WNW	03-2356			15-min	NCDC	36.4164	-93.7917	1420	1/1984-12/2010
AR	EVENING SHADE	03-2366			1-day	NCDC	36.0833	-91.6167	489	1/1923-10/2011
AR	FAYETTEVILLE EXP STN	03-2444			1-day	NCDC	36.1006	-94.1744	1270	5/1890-10/2011
AR	FAYETTEVILLE EXP STN	03-2444			1-hour	NCDC	36.1006	-94.1744	1270	4/1966-12/2010
AR	FAYETTEVILLE EXP STN	03-2444			15-min	NCDC	36.1006	-94.1744	1270	5/1971-12/2010
AR	FOREMAN	03-2544			1-day	NCDC	33.7164	-94.3814	400	3/1917-10/2011
AR	FOREMAN	03-2544		03-2544	1-hour	NCDC	33.7164	-94.3814	400	5/1948-12/2010
AR	FORT SMITH WATER PLANT	03-2578	03-5018		1-day	NCDC	35.6500	-94.1500	791	10/1938-8/1985
AR	FT SMITH	03-2580	03-2574		1-day	NCDC	35.3667	-94.4000	518	10/1900-9/1945
AR	FT SMITH RGNL AP	03-2574			1-day	NCDC	35.3331	-94.3625	449	**4/1879-10/2010**
AR	FT SMITH RGNL AP	03-2574		03-2574	1-hour	NCDC	35.3331	-94.3625	449	5/1948-12/2010
AR	FULTON	03-2670			1-day	NCDC	33.6128	-93.8136	260	1/1892-5/2004
AR	GILBERT	03-2794			1-day	NCDC	35.9833	-92.7167	692	7/1924-10/2011
AR	GILBERT	03-2794			1-hour	NCDC	35.9914	-92.7147	620	5/1948-12/2010
AR	GILBERT	03-2794			15-min	NCDC	35.9914	-92.7147	620	1/1984-12/2010
AR	GILLHAM DAM	03-2810		03-2908	1-hour	NCDC	34.2056	-94.2464	520	6/1966-2/2002
AR	GILLHAM DAM	03-2810		03-2908	15-min	NCDC	34.2056	-94.2464	520	5/1971-3/2001
AR	GLENWOOD	03-2842			1-day	NCDC	34.3217	-93.5617	585	11/1935-10/2011

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
AR	GRANNIS	03-2908			1-day	NCDC	34.2500	-94.3333	922	5/1919-2/2002
AR	GRAVELLY 1 ESE	03-2922			1-day	NCDC	34.8758	-93.6761	461	5/1940-10/2011
AR	GRAVETTE	03-2930			1-day	NCDC	36.4000	-94.4667	1250	4/1898-10/2011
AR	GREEN FOREST	03-2946			1-day	NCDC	36.3333	-93.4333	1352	3/1940-10/2006
AR	GREENWOOD	03-2976			1-day	NCDC	35.2169	-94.2597	518	6/1939-10/2011
AR	GREERS FERRY DAM	03-2978			1-day	NCDC	35.5206	-91.9997	527	**11/1903-10/2011**
AR	GREERS FERRY DAM	03-2978			1-hour	NCDC	35.5206	-91.9997	527	**5/1948-12/2010**
AR	GREERS FERRY DAM	03-2978			15-min	NCDC	35.5206	-91.9997	527	2/1972-12/2010
AR	HARDY	03-3132		03-3132	1-hour	NCDC	36.2747	-91.5056	400	5/1948-12/2010
AR	HARDY 2 SW	03-3132			1-day	NCDC	36.3167	-91.4833	362	8/1897-10/2011
AR	HARRISON	03-3164			1-day	NCDC	36.2333	-93.1167	1130	**1/1892-8/2011**
AR	HARRISON BOONE CO AP	03-3165	03-3164		1-day	NCDC	36.2667	-93.1567	1374	9/1961-10/2010
AR	HEBER SPRINGS 3 NE	03-3228	03-2978		1-day	NCDC	35.5333	-92.0167	531	11/1903-9/1960
AR	HOPE 3 NE	03-3428			1-day	NCDC	33.7089	-93.5561	375	4/1892-10/2011
AR	HORATIO	03-3442			1-day	NCDC	33.9350	-94.3586	337	3/1946-10/2011
AR	HUNTSVILLE	03-3540	03-3544		1-hour	NCDC	36.0833	-93.7333	1450	5/1948-2/1984
AR	HUNTSVILLE 1 SSW	03-3544			1-day	NCDC	36.0700	-93.7522	1783	5/1948-8/2011
AR	HUNTSVILLE 1 SSW	03-3544			1-hour	NCDC	36.0700	-93.7522	1783	**5/1948-12/2010**
AR	HUNTSVILLE 1 SSW	03-3544			15-min	NCDC	36.0700	-93.7522	1783	1/1984-12/2010
AR	JASPER	03-3600			1-day	NCDC	36.0006	-93.1883	840	2/1948-10/2011
AR	JONESBORO 2 NE	03-3734			1-day	NCDC	35.8489	-90.6589	310	1/1890-10/2011
AR	KEISER	03-3821			1-day	NCDC	35.6872	-90.0964	232	5/1959-10/2011
AR	LAKE CITY	03-3998			1-day	NCDC	35.8000	-90.4500	230	1/1948-2/1997
AR	LANGLEY	03-4060			1-day	NCDC	34.2647	-93.8153	820	**3/1940-10/2011**
AR	LEAD HILL	03-4106			1-day	NCDC	36.4194	-92.9158	830	12/1927-10/2011
AR	LEWISVILLE	03-4185			1-hour	NCDC	33.3614	-93.5678	340	**12/1969-12/2010**
AR	LEWISVILLE	03-4185			15-min	NCDC	33.3614	-93.5678	340	**5/1971-10/2010**
AR	MAMMOTH SPRING	03-4572			1-day	NCDC	36.4833	-91.5333	600	4/1904-10/2011
AR	MARKED TREE	03-4654			1-day	NCDC	35.5333	-90.4167	230	1/1930-8/1973
AR	MARSHALL	03-4666			1-day	NCDC	35.9156	-92.6394	1013	1/1892-10/2011
AR	MAUMEE	03-4696		03-4696	1-hour	NCDC	36.0500	-92.6500	799	5/1948-1/1987
AR	MELBOURNE 5W	03-4746			1-day	NCDC	36.0822	-91.9822	500	1/1948-10/2011

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
AR	MENA	03-4756			1-day	NCDC	34.5731	-94.2494	1130	1/1892-10/2011
AR	MENA	03-4756		03-4756	1-hour	NCDC	34.5731	-94.2494	1130	5/1948-12/2010
AR	MILLWOOD DAM	03-4839			1-day	NCDC	33.6772	-93.9903	316	7/1963-10/2011
AR	MILLWOOD DAM	03-4839			1-hour	NCDC	33.6772	-93.9903	316	7/1963-12/2010
AR	MILLWOOD DAM	03-4839			15-min	NCDC	33.6772	-93.9903	316	1/1984-10/2010
AR	MOUNTAIN VIEW	03-5046			1-day	NCDC	35.8667	-92.1000	768	6/1924-10/2011
AR	MOUNTAINBURG 2 NE	03-5018			1-day	NCDC	35.6494	-94.1542	793	**10/1938-10/2011**
AR	MT IDA 3 SE	03-4988			1-day	NCDC	34.5408	-93.5878	697	2/1872-1/2010
AR	MT IDA 3 SE	03-4988			1-hour	NCDC	34.5408	-93.5878	697	5/1948-6/2010
AR	MT IDA 3 SE	03-4988			15-min	NCDC	34.5408	-93.5878	697	5/1971-11/2009
AR	MTN HOME 1 NNW	03-5036			1-day	NCDC	36.3458	-92.3939	800	3/1902-10/2011
AR	MTN HOME 1 NNW	03-5036	03-5038		1-hour	NCDC	36.3458	-92.3939	800	5/1948-5/1953
AR	MTN HOME C OF ENG	03-5038		03-5036	1-hour	NCDC	36.3333	-92.3833	800	**5/1948-1/1985**
AR	MULBERRY	03-5072	53-0391		1-day	NCDC	35.5667	-94.0167	500	10/1939-3/1984
AR	MURFREESBORO 1 W	03-5079			1-day	NCDC	34.0783	-93.7019	460	8/1970-10/2011
AR	NARROWS DAM	03-5110			1-hour	NCDC	34.1453	-93.7139	435	5/1950-12/2010
AR	NARROWS DAM	03-5110			15-min	NCDC	34.1453	-93.7139	435	5/1971-12/2010
AR	NASHVILLE	03-5112			1-day	NCDC	33.9303	-93.8514	400	6/1899-10/2011
AR	NASHVILLE	03-5112			1-hour	NCDC	33.9303	-93.8514	400	**5/1948-12/2010**
AR	NASHVILLE	03-5114	03-5112		1-hour	NCDC	33.9500	-93.8667	371	5/1948-2/1966
AR	NASHVILLE	03-5112			15-min	NCDC	33.9303	-93.8514	400	10/1975-8/2010
AR	NATHAN 4 WNW	03-5158	03-5177		1-day	NCDC	34.1167	-93.8667	541	6/1948-3/1985
AR	NATURAL DAM	03-5160			1-day	NCDC	35.5756	-94.3811	750	1/1963-10/2011
AR	NEWHOPE 3 E	03-5174	03-4060		1-day	NCDC	34.2333	-93.8333	850	3/1940-11/1983
AR	NEWHOPE 6 S	03-5177			1-day	NCDC	34.1469	-93.8936	630	**6/1948-10/2011**
AR	NEWPORT	03-5186			1-day	NCDC	35.6000	-91.2833	225	1/1892-10/2011
AR	NORFORK DAM	03-5228			1-hour	NCDC	36.2494	-92.2561	425	5/1948-12/2010
AR	NORFORK DAM	03-5228			15-min	NCDC	36.2494	-92.2561	425	5/1971-12/2010
AR	ODELL	03-5354			1-day	NCDC	35.8000	-94.4000	1503	6/1939-7/2011
AR	ODEN 1 SE	03-5358			1-day	NCDC	34.6008	-93.7667	800	1/1927-8/2011
AR	OKAY	03-5376			1-day	NCDC	33.7667	-93.9167	300	5/1915-9/1992
AR	OSCEOLA	03-5480			1-day	NCDC	35.7167	-89.9667	249	1/1892-4/1975

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
AR	OZARK	03-5508	03-5512		1-day	NCDC	35.4833	-93.8167	390	1/1892-2/1994
AR	OZARK 2	03-5512			1-day	NCDC	35.5125	-93.8683	830	**1/1892-10/2011**
AR	OZONE	03-5514			1-day	NCDC	35.6333	-93.4333	1860	8/1890-10/2011
AR	PARAGOULD	03-5562	03-5563		1-day	NCDC	36.0500	-90.4667	279	1/1892-6/1979
AR	PARAGOULD 1S	03-5563			1-day	NCDC	36.0336	-90.4978	270	**1/1892-10/2011**
AR	PARKS	03-5591			1-day	NCDC	34.8186	-93.9606	608	4/1956-10/2011
AR	PARTHENON	03-5602		03-5602	1-hour	NCDC	35.9547	-93.2419	900	5/1948-12/2010
AR	PINE RIDGE	03-5760			1-day	NCDC	34.5831	-93.9011	840	2/1925-10/2011
AR	PINEY GROVE	03-5770			1-day	NCDC	34.1728	-93.2050	380	2/1966-12/2002
AR	POCAHONTAS 1	03-5820			1-day	NCDC	36.2667	-90.9833	331	4/1894-10/2011
AR	PRESCOTT 2 NNW	03-5908			1-day	NCDC	33.8203	-93.3878	308	5/1890-10/2011
AR	PRESCOTT 2 NNW	03-5908			1-hour	NCDC	33.8203	-93.3878	308	**5/1948-12/2010**
AR	PRESCOTT 2 NNW	03-5908			15-min	NCDC	33.8203	-93.3878	308	1/1984-8/2010
AR	PRESCOTT SCS	03-5910	03-5908		1-hour	NCDC	33.8000	-93.3833	322	5/1948-7/1982
AR	RATCLIFF	03-6008			1-day	NCDC	35.3050	-93.8767	463	12/1944-10/2011
AR	RAVANA	03-6016		03-6016	1-hour	NCDC	33.0667	-94.0333	249	5/1948-3/1970
AR	ROGERS	03-6248			1-day	NCDC	36.3333	-94.1167	1391	1/1892-2/1975
AR	SALEM	03-6403			1-day	NCDC	36.3561	-91.8036	680	4/1955-10/2011
AR	SHIRLEY 3 SE	03-6586			1-day	NCDC	35.6333	-92.2833	912	6/1939-4/1988
AR	SILOAM SPRINGS	03-6624			1-day	NCDC	36.1833	-94.5500	1152	**5/1922-12/1987**
AR	ST FRANCIS	03-6380			1-day	NCDC	36.4500	-90.1500	300	4/1927-10/2011
AR	ST PAUL	03-6393			1-day	NCDC	35.8236	-93.7672	1390	5/1948-10/2011
AR	ST PAUL	03-6393		03-6393	1-hour	NCDC	35.8236	-93.7672	1390	**5/1948-12/2010**
AR	STAMPS	03-6804			1-day	NCDC	33.3667	-93.4833	270	4/1897-12/1987
AR	STAMPS	03-6804	03-4185		1-hour	NCDC	33.3667	-93.4833	270	12/1969-2/1990
AR	STAMPS	03-6804	03-4185		15-min	NCDC	33.3667	-93.4833	270	5/1971-2/1990
AR	STORY	03-6890	03-7592		1-day	NCDC	34.7000	-93.5167	650	1/1925-2/1970
AR	SUBIACO	03-6928			1-day	NCDC	35.3028	-93.6369	500	9/1897-10/2011
AR	TAYLOR	03-7038			1-day	NCDC	33.0986	-93.4647	250	10/1943-5/2001
AR	TEXARKANA WEBB FLD	03-7048			1-day	NCDC	33.4536	-94.0075	361	3/1892-4/2009
AR	TEXARKANA WEBB FLD	03-7048	41-8942	03-7048	1-hour	NCDC	33.4536	-94.0075	361	5/1948-12/1982
AR	TURNPIKE	03-7262			1-day	NCDC	35.6641	-93.0881	2090	1/1925-6/1960

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AR	WALDRON	03-7488			1-day	NCDC	34.8992	-94.1942	675	8/1919-10/2011
AR	WALDRON	03-7488			1-hour	NCDC	34.8992	-94.1942	675	5/1948-12/2010
AR	WALDRON	03-7488			15-min	NCDC	34.8992	-94.1942	675	5/1975-12/2010
AR	WASHITA	03-7592			1-day	NCDC	34.6508	-93.5350	610	**1/1925-10/2011**
AR	WEST MEMPHIS	03-7712			1-day	NCDC	35.1242	-90.1806	215	3/1962-10/2011
AR	WHEELING 3 W	03-7744		03-7744	1-hour	NCDC	36.3167	-91.9000	775	5/1948-6/1987
AR	WHITE ROCK	03-7772			1-day	NCDC	35.6892	-93.9565	2290	7/1937-12/1969
AR	WING	03-7950	03-0900		1-hour	NCDC	34.9500	-93.4667	351	5/1948-10/1985
AR	WING	03-7950	03-0900		15-min	NCDC	34.9500	-93.4667	351	1/1984-10/1985
AR	WYNNE	03-8052			1-day	NCDC	35.2547	-90.7964	260	7/1908-10/2011
AR	YELLVILLE	03-8084	53-0340		1-day	NCDC	36.2167	-92.6833	902	12/1944-3/1993
AZ	LUKACHUKAI	02-5129			1-day	NCDC	36.4192	-109.2269	6520	11/1914-10/2010
AZ	TEEC NOS POS	02-8468			1-day	NCDC	36.9233	-109.0900	5290	6/1962-7/2011
IL	ALEDO	11-0072			1-day	NCDC	41.1961	-90.7469	720	12/1900-10/2011
IL	ALEXIS 1 SW	11-0082			1-hour	NCDC	41.0639	-90.5639	680	7/1948-12/2010
IL	ALEXIS 1 SW	11-0082			15-min	NCDC	41.0639	-90.5639	680	3/1973-12/2010
IL	ALTON MELVIN PRICE L&D	11-0137			1-day	NCDC	38.8661	-90.1461	435	12/1892-10/2011
IL	ANNA 2 NNE	11-0187			1-day	NCDC	37.4814	-89.2344	640	12/1887-8/2011
IL	ANTIOCH	11-0203			1-day	NCDC	42.4811	-88.0994	750	7/1901-6/2010
IL	ARGONNE NATL LAB	11-0237			1-hour	NCDC	41.7000	-87.9833	746	5/1969-9/1983
IL	ARLINGTON HEIGTS 4 SS	11-0247	11-1549		1-day	NCDC	42.0333	-87.9667	679	7/1940-10/1962
IL	ASHLEY	11-0281			1-hour	NCDC	38.3306	-89.1814	555	**7/1948-12/2010**
IL	ASHLEY	11-0281			15-min	NCDC	38.3306	-89.1814	555	5/1971-12/2010
IL	AUGUSTA	11-0330			1-day	NCDC	40.2378	-90.9456	680	7/1948-10/2011
IL	AUGUSTA	11-0330			1-hour	NCDC	40.2378	-90.9456	680	7/1948-12/2010
IL	AUGUSTA	11-0330			15-min	NCDC	40.2378	-90.9456	680	10/1971-12/2010
IL	AURORA	11-0338			1-day	NCDC	41.7806	-88.3092	660	9/1887-10/2011
IL	AVON 5 NE	11-0356			1-day	NCDC	40.7086	-90.3628	640	11/1950-10/2011
IL	BARRINGTON 3SW	11-0442			1-day	NCDC	42.1153	-88.1639	875	11/1962-10/2011
IL	BARRY	11-0445			1-day	NCDC	39.6833	-91.0500	712	1/1941-5/1976
IL	BEARDSTOWN	11-0492			1-day	NCDC	40.0164	-90.4278	450	1/1896-10/2011
IL	BELLEVILLE SIU RSCH	11-0510			1-day	NCDC	38.5200	-89.8467	450	6/1948-8/2010

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IL	BELLEVILLE SIU RSCH	11-0510			1-hour	NCDC	38.5200	-89.8467	450	7/1948-12/2010
IL	BELLEVILLE SIU RSCH	11-0510			15-min	NCDC	38.5200	-89.8467	450	5/1971-12/2010
IL	BELVIDERE	11-0583			1-day	NCDC	42.2550	-88.8644	738	1/1941-10/2011
IL	BELVIDERE	11-0583			1-hour	NCDC	42.2550	-88.8644	738	7/1948-12/2010
IL	BELVIDERE	11-0583			15-min	NCDC	42.2550	-88.8644	738	5/1971-12/2010
IL	BENTLEY	11-0598			1-day	NCDC	40.3436	-91.1125	650	6/1948-10/2011
IL	BENTON 2 N	11-0608			1-day	NCDC	38.0336	-88.9203	445	12/1901-2/2009
IL	BIG MUD RIVER REND LAKE	59-0006		59-0006	1-hour	USACE ST LOUIS	38.0375	-88.9617	350	3/1972-4/2010
IL	BLUFFS	11-0781			1-day	NCDC	39.7500	-90.5333	540	6/1940-10/1986
IL	BRADFORD 3SSE	11-0868			1-day	NCDC	41.1492	-89.6233	780	8/1980-10/2011
IL	BROOKPORT DAM 52	11-0993			1-day	NCDC	37.1275	-88.6531	330	**9/1916-10/2011**
IL	CAHOKIA	11-1160			1-day	NCDC	38.5669	-90.1942	400	**7/1910-8/2011**
IL	CAIRO	62-1166	11-1166		1-day	FORTS	37.0031	-89.1719	316	2/1872-12/1892
IL	CAIRO 3N	11-1166			1-day	NCDC	37.0422	-89.1856	313	**2/1872-8/2010**
IL	CAIRO 3N	11-1166		11-1166	1-hour	NCDC	37.0422	-89.1856	313	7/1948-12/2010
IL	CARBONDALE SEWAGE PLT	11-1265			1-day	NCDC	37.7308	-89.1658	390	1/1894-10/2011
IL	CARLINVILLE	11-1280			1-day	NCDC	39.2883	-89.8703	621	2/1891-10/2011
IL	CARLINVILLE 2	11-1284			1-hour	NCDC	39.2881	-89.8700	621	9/1968-12/2010
IL	CARLINVILLE 2	11-1284			15-min	NCDC	39.2881	-89.8700	621	1/1971-12/2010
IL	CARLYLE	11-1288	11-1290		1-day	NCDC	38.6000	-89.3667	459	1/1893-2/1964
IL	CARLYLE RSVR	11-1290			1-day	NCDC	38.6308	-89.3658	501	**1/1893-10/2011**
IL	CARLYLE RSVR	11-1290		11-1290	1-hour	NCDC	38.6308	-89.3658	501	**7/1970-12/2010**
IL	CHESTER	11-1491			1-day	NCDC	37.9022	-89.8308	428	9/1896-10/2011
IL	CHICAGO	62-1582	11-1582		1-day	FORTS	41.8761	-87.6256	592	12/1856-12/1892
IL	CHICAGO C WTR FILT PLT	11-1523		11-1582	1-hour	NCDC	**41.8958**	**-87.6032**	**584**	**7/1948-7/1980**
IL	CHICAGO CAL TREAT WKS	11-1522		11-1522	1-hour	NCDC	41.6667	-87.6167	590	7/1948-12/1974
IL	CHICAGO HEIGHTS	11-1527	11-6616		1-day	NCDC	41.5000	-87.6333	630	7/1901-5/1952
IL	CHICAGO MAYFAIR PUMP S	11-1542		11-1542	1-hour	NCDC	41.9667	-87.7500	650	7/1948-7/1980
IL	CHICAGO MIDWAY AP 3SW	11-1577			1-day	NCDC	41.7372	-87.7775	620	2/1928-8/2010
IL	CHICAGO MIDWAY AP 3SW	11-1577		11-1577	1-hour	NCDC	41.7372	-87.7775	620	7/1948-12/2010
IL	CHICAGO OHARE AP	11-1549			1-day	NCDC	41.9950	-87.9336	658	**7/1940-10/2010**
IL	CHICAGO OHARE AP	11-1549		11-1549	1-hour	NCDC	41.9950	-87.9336	658	6/1962-12/2010

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IL	CHICAGO ROSELAND PUMP	11-1552		11-1552	1-hour	NCDC	41.7000	-87.6333	659	7/1948-7/1980
IL	CHICAGO S WTR FILT PLT	11-1564		11-1564	1-hour	NCDC	41.7500	-87.5500	610	7/1948-7/1980
IL	CHICAGO SPRINGFLD PUMP	11-1567		11-1567	1-hour	NCDC	41.9167	-87.7167	600	7/1948-7/1980
IL	CHICAGO UNIV	11-1572			1-day	NCDC	41.7833	-87.6000	594	7/1942-10/1994
IL	CHICAGO UNIV	11-1572		11-1572	1-hour	NCDC	41.7833	-87.6000	594	7/1948-1/1995
IL	CHICAGO WB CITY	11-1582			1-day	NCDC	41.8833	-87.6333	591	**12/1856-7/1980**
IL	CHICAGO WB CITY	11-1582	11-1523		1-hour	NCDC	41.8833	-87.6333	591	7/1948-11/1964
IL	CHICAGO WB CITY 2	11-1584	11-1582		1-hour	NCDC	41.8833	-87.6333	591	12/1964-10/1970
IL	COULTERVILLE 3 NW	11-1944		11-1944	1-hour	NCDC	38.2167	-89.6500	500	7/1948-5/1984
IL	CRETE	11-2011			1-hour	NCDC	41.4492	-87.6222	664	7/1948-12/2010
IL	CRETE	11-2011			15-min	NCDC	41.4492	-87.6222	664	11/1977-12/2010
IL	DE KALB	11-2223			1-day	NCDC	41.9342	-88.7756	873	3/1966-10/2011
IL	DIXON 1 NW	11-2348			1-day	NCDC	41.8472	-89.5047	700	1/1893-11/2009
IL	DIXON SPRINGS AG CTR	11-2353			1-day	NCDC	37.4367	-88.6672	540	**1/1941-9/2011**
IL	DIXON SPRINGS AG CTR	11-2353		11-2353	1-hour	NCDC	37.4367	-88.6672	540	**7/1948-12/2010**
IL	DIXON SPRINGS AGR CTR	11-3482	11-2353		1-day	NCDC	37.4333	-88.6667	479	1/1941-8/1967
IL	DIXON SPRINGS AGR CTR	11-3482	11-2353		1-hour	NCDC	37.4333	-88.6667	479	7/1948-9/1967
IL	DU QUOIN 4 SE	11-2483			1-day	NCDC	37.9878	-89.1931	420	1/1893-10/2011
IL	EAST ST LOUIS PARKS CL	11-2614	11-1160		1-day	NCDC	38.5667	-90.1833	410	7/1910-12/1968
IL	EDWARDSVILLE 2 W	11-2679			1-day	NCDC	38.8100	-90.0031	500	2/1893-10/2011
IL	ELGIN	11-2736			1-day	NCDC	42.0628	-88.2861	763	2/1898-10/2011
IL	FAIRVIEW	11-2958			1-day	NCDC	40.6333	-90.1667	732	11/1911-10/1948
IL	FREEPORT	11-3257	11-3262		1-day	NCDC	42.3000	-89.6167	781	11/1908-8/1973
IL	FREEPORT WASTE WTP	11-3262			1-day	NCDC	42.2972	-89.6039	750	**11/1908-10/2011**
IL	FREEPORT WASTE WTP	11-3262			1-hour	NCDC	42.2972	-89.6039	750	7/1948-12/2010
IL	FREEPORT WASTE WTP	11-3262			15-min	NCDC	42.2972	-89.6039	750	9/1973-12/2010
IL	FULTON L&D #13	11-3290			1-day	NCDC	41.8978	-90.1544	592	1/1938-8/2011
IL	FULTON L&D #13	11-3290		11-3290	1-hour	NCDC	41.8978	-90.1544	592	7/1948-12/2010
IL	GALENA	11-3312			1-day	NCDC	42.3994	-90.3861	753	8/1895-10/2011
IL	GALESBURG	11-3320			1-day	NCDC	40.9464	-90.3856	771	2/1895-10/2011
IL	GALVA	11-3335			1-day	NCDC	41.1744	-90.0356	810	1/1887-8/2011
IL	GENESEO	11-3384			1-day	NCDC	41.4511	-90.1486	639	2/1895-8/2011

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
IL	GLADSTONE DAM 18	11-3455			1-day	NCDC	40.8825	-91.0242	538	1/1938-8/2011
IL	GOLCONDA RIVER	11-3522			1-day	NCDC	37.3789	-88.4894	354	1/1893-9/1980
IL	GOLCONDA RIVER	11-3522		11-3522	1-hour	NCDC	37.3789	-88.4894	354	7/1948-9/1980
IL	GOLDEN	11-3530			1-day	NCDC	40.1064	-91.0222	718	5/1913-4/2010
IL	GRAFTON	11-3572			1-day	NCDC	38.9708	-90.4342	510	4/1894-8/2011
IL	GRAND CHAIN DAM 53	11-3580			1-day	NCDC	37.2036	-89.0422	385	7/1923-10/2011
IL	GRAND TWR 2 N	11-3595			1-day	NCDC	37.6592	-89.5103	383	7/1940-9/2009
IL	GREENFIELD	11-3666			1-day	NCDC	39.3425	-90.2058	548	7/1948-10/2011
IL	GREENFIELD	11-3666			1-hour	NCDC	39.3425	-90.2058	548	7/1948-12/2010
IL	GREENFIELD	11-3666			15-min	NCDC	39.3425	-90.2058	548	5/1971-12/2010
IL	GREENVILLE 2 NE	11-3693			1-day	NCDC	38.9261	-89.3972	580	9/1887-10/2011
IL	GRIGGSVILLE	11-3717			1-day	NCDC	39.7378	-90.7086	628	1/1890-10/2011
IL	HARDIN	11-3850			1-day	NCDC	39.1500	-90.6167	440	3/1933-7/2009
IL	HIGHLAND	11-4089			1-day	NCDC	38.7583	-89.6556	525	10/1977-10/2011
IL	HILLSBORO	11-4108			1-day	NCDC	39.1500	-89.4833	630	4/1895-10/2011
IL	ILLINOIS CITY DAM 16	11-4355			1-day	NCDC	41.4253	-91.0094	550	1/1940-7/2011
IL	ILLINOIS CITY DAM 16	11-4355			1-hour	NCDC	41.4253	-91.0094	550	7/1948-12/2010
IL	ILLINOIS CITY DAM 16	11-4355			15-min	NCDC	41.4253	-91.0094	550	5/1971-12/2010
IL	ILLINOIS RIVER AT HARDIN	59-0025			1-hour	USACE ST LOUIS	39.1603	-90.6158	400	12/1996-7/2009
IL	JACKSONVILLE 2	11-4447	11-4442		1-hour	NCDC	39.7136	-90.2289	600	7/1948-4/1963
IL	JACKSONVILLE 2E	11-4442			1-day	NCDC	39.7347	-90.1978	610	5/1895-10/2011
IL	JACKSONVILLE 2E	11-4442			1-hour	NCDC	39.7347	-90.1978	610	**7/1948-12/2010**
IL	JACKSONVILLE 2E	11-4442			15-min	NCDC	39.7347	-90.1978	610	2/1974-12/2010
IL	JERSEYVILLE 2 SW	11-4489			1-day	NCDC	39.1053	-90.3419	630	8/1940-10/2011
IL	KASKASKIA RIV NAV LOCK	11-4629			1-day	NCDC	37.9842	-89.9492	380	4/1974-10/2011
IL	KASKASKIA RIV NAV LOCK	11-4629		11-4629	1-hour	NCDC	37.9842	-89.9492	380	3/1974-12/2010
IL	KEITHSBURG	11-4655			1-day	NCDC	41.0994	-90.9394	550	3/1896-9/2009
IL	KEWANEE 1 E	11-4710			1-day	NCDC	41.2483	-89.8992	780	8/1939-10/2011
IL	KEWANEE 1 E	11-4710			1-hour	NCDC	41.2483	-89.8992	780	**7/1948-12/2010**
IL	KEWANEE 1 E	11-4710			15-min	NCDC	41.2483	-89.8992	780	2/1976-12/2010
IL	KEWANEE BAKER PARK	11-4715	11-4710		1-hour	NCDC	41.2500	-89.9167	801	7/1948-1/1976
IL	KISHWAUKEE	11-4770	11-7382		1-day	NCDC	42.1333	-89.1167	730	3/1896-3/1914

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
IL	L&D 27 MISSISSIPPI RIVER	59-0056			1-hour	USACE ST LOUIS	38.0833	-90.2000	358	12/1996-7/2009
IL	LA HARPE	11-4823			1-day	NCDC	40.5839	-90.9686	690	4/1895-10/2011
IL	LAKE CARLYLE KASKASKIA	59-0031	11-1290		1-hour	USACE ST LOUIS	38.6183	-89.3519	400	9/2003-7/2009
IL	LANARK	11-4879			1-day	NCDC	42.0925	-89.8422	830	7/1948-10/2011
IL	LANARK	11-4879			1-hour	NCDC	42.0925	-89.8422	830	7/1948-12/2010
IL	LANARK	11-4879			15-min	NCDC	42.0925	-89.8422	830	11/1973-12/2010
IL	LISLE-MORTON ARBORETUM	11-5097			1-day	NCDC	41.8128	-88.0728	680	**5/1895-8/2011**
IL	LOAMI	11-5111	11-5113		1-day	NCDC	39.6833	-89.8500	624	4/1895-12/1912
IL	LOAMI 3SSW	11-5113			1-day	NCDC	39.6372	-89.8819	600	**4/1895-8/2010**
IL	MACOMB	11-5280			1-day	NCDC	40.4792	-90.6692	610	8/1902-10/2011
IL	MARENGO	11-5326			1-day	NCDC	42.2928	-88.6469	815	1/1893-10/2011
IL	MARIETTA	11-5334		11-5334	1-hour	NCDC	40.5019	-90.3892	640	7/1948-12/2010
IL	MARION 4 NNE	11-5342			1-day	NCDC	37.7747	-88.8981	477	5/1942-4/1998
IL	MASCOUTAH	11-5405			1-day	NCDC	38.4833	-89.8000	430	1/1893-4/1954
IL	MC HENRY 2 S	11-5498	11-5493		1-day	NCDC	42.3167	-88.2500	741	8/1940-2/1960
IL	MCHENRY STRATTON L&D	11-5493			1-day	NCDC	42.3103	-88.2525	742	**8/1940-12/2010**
IL	MCHENRY STRATTON L&D	11-5493		11-5493	1-hour	NCDC	42.3103	-88.2525	742	7/1948-12/2010
IL	MEDORA	11-5539			1-day	NCDC	39.1564	-90.1392	607	6/1942-10/2011
IL	MOLINE WSO AP	11-5751			1-day	NCDC	41.4653	-90.5233	592	10/1926-10/2010
IL	MOLINE WSO AP	11-5751		11-5751	1-hour	NCDC	41.4653	-90.5233	592	7/1948-12/2010
IL	MONMOUTH	11-5768			1-day	NCDC	40.9247	-90.6392	745	2/1893-12/2010
IL	MORRISON	11-5833			1-day	NCDC	41.8039	-89.9744	603	5/1895-10/2011
IL	MT CARROLL	11-5901			1-day	NCDC	42.0969	-89.9842	640	4/1895-10/2011
IL	MT OLIVE 1 E	11-5917			1-day	NCDC	39.0719	-89.7008	690	10/1940-10/2011
IL	MT STERLING	11-5935			1-day	NCDC	39.9842	-90.7525	709	10/1942-10/2011
IL	MURPHYSBORO 2 SW	11-5983			1-hour	NCDC	37.7608	-89.3656	550	7/1948-12/2010
IL	MURPHYSBORO 2 SW	11-5983			15-min	NCDC	37.7608	-89.3656	550	5/1971-12/2010
IL	NASHVILLE 1 E	11-6011			1-day	NCDC	38.3431	-89.3586	513	8/1895-10/2011
IL	NEW BOSTON DAM 17	11-6080			1-day	NCDC	41.1922	-91.0578	548	1/1938-8/2011
IL	NEW BURNSIDE	11-6093			1-day	NCDC	37.5833	-88.7667	561	3/1895-11/1964
IL	OREGON 3 SW	11-6490			1-day	NCDC	41.9783	-89.3639	700	**1/1893-8/2010**
IL	OREGON 3 SW	11-6490		11-6490	1-hour	NCDC	41.9783	-89.3639	700	11/1949-8/2002

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IL	OREGON WTR WKS	11-6492	11-6490		1-day	NCDC	42.0167	-89.3333	702	1/1893-4/1956
IL	PARK FOREST	11-6616			1-day	NCDC	41.4947	-87.6803	710	**7/1901-10/2011**
IL	PAW PAW 2 NW	11-6661			1-day	NCDC	41.7122	-88.9989	950	9/1912-10/2011
IL	PAYSON	11-6670			1-day	NCDC	39.8208	-91.2436	764	6/1948-12/2010
IL	PITTSFIELD #2	11-6837			1-day	NCDC	39.6222	-90.8058	670	7/1948-10/2011
IL	PITTSFIELD #2	11-6837		11-6837	1-hour	NCDC	39.6222	-90.8058	670	**7/1948-12/2010**
IL	PITTSFIELD 3 NE	11-6833	11-6837		1-hour	NCDC	39.6167	-90.7500	640	7/1948-9/1968
IL	PLEASANT HILL	11-6861			1-day	NCDC	39.4500	-90.8667	469	1/1941-6/1976
IL	PLUMFIELD	11-6874			1-day	NCDC	37.9117	-89.0092	405	10/1974-10/2011
IL	PRAIRIE DU ROCHER 3 WN	11-6973			1-day	NCDC	38.0886	-90.1619	404	10/1948-10/2011
IL	PRAIRIE DU ROCHER 3 WN	11-6973			1-hour	NCDC	38.0886	-90.1619	404	7/1948-2/2007
IL	PRAIRIE DU ROCHER 3 WN	11-6973			15-min	NCDC	38.0886	-90.1619	404	5/1971-2/2007
IL	PROPHETSTOWN	11-7014			1-hour	NCDC	41.6808	-89.9403	605	7/1948-12/2010
IL	PROPHETSTOWN	11-7014			15-min	NCDC	41.6808	-89.9403	605	11/1973-12/2010
IL	QUINCY	11-7067	11-7077		1-day	NCDC	39.9500	-91.4000	600	1/1901-3/1977
IL	QUINCY DAM 21	11-7077			1-day	NCDC	39.9058	-91.4281	483	**1/1901-10/2011**
IL	QUINCY DAM 21	11-7077			1-hour	NCDC	39.9058	-91.4281	483	7/1948-12/2010
IL	QUINCY DAM 21	11-7077			15-min	NCDC	39.9058	-91.4281	483	5/1971-12/2010
IL	QUINCY RGNL AP	11-7072			1-day	NCDC	39.9369	-91.1919	769	6/1948-10/2010
IL	RED BUD 5 SE	11-7157			1-day	NCDC	38.1853	-89.9283	430	8/1947-10/2011
IL	REND LAKE DAM	11-7187			1-day	NCDC	38.0406	-88.9883	455	3/1974-8/2011
IL	REND LAKE DAM	11-7187	59-0006		1-hour	NCDC	38.0406	-88.9883	455	3/1972-2/2009
IL	RICHVIEW	11-7244	11-0281		1-hour	NCDC	38.3667	-89.1833	541	7/1948-11/1965
IL	ROCHELLE	11-7354			1-day	NCDC	41.9117	-89.0708	775	**9/1923-10/2011**
IL	ROCHELLE 6 NW	11-7349	11-7354		1-day	NCDC	41.9167	-89.0667	801	9/1923-9/1978
IL	ROCK ISLAND ARSENAL	62-7391	11-7391		1-day	FORTS	41.5228	-90.5494	560	2/1866-2/1892
IL	ROCK ISLAND L&D 15	11-7391			1-day	NCDC	41.5194	-90.5644	568	**2/1866-8/2011**
IL	ROCK ISLAND L&D 15	11-7391			1-hour	NCDC	41.5194	-90.5644	568	**8/1948-12/2010**
IL	ROCK ISLAND L&D 15	11-7391			15-min	NCDC	41.5194	-90.5644	568	**7/1972-12/2010**
IL	ROCKFORD	62-7375	11-7375		1-day	FORTS	42.2706	-89.0944	712	11/1872-12/1892
IL	ROCKFORD	11-7375			1-day	NCDC	42.2833	-89.0833	741	**11/1872-6/1957**
IL	ROCKFORD AP	11-7382			1-day	NCDC	42.1928	-89.0931	730	**3/1896-10/2010**

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IL	ROCKFORD AP	11-7382		11-7382	1-hour	NCDC	42.1928	-89.0931	730	1/1951-12/2010
IL	RUSHVILLE	11-7551			1-day	NCDC	40.1158	-90.5608	660	1/1890-10/2011
IL	SAWMILL CREEK NEAR LEMONT	53-0263			1-day	USGS	41.7078	-87.9628	641	5/1969-7/2009
IL	SHABBONA 3S	11-7833		11-7833	1-hour	NCDC	41.7322	-88.8653	850	12/1953-12/2010
IL	SKOKIE N S TREAT WKS	11-7990		11-7990	1-hour	NCDC	42.0167	-87.7167	600	7/1948-12/1974
IL	SMITHLAND L&D	11-8020			1-day	NCDC	37.1644	-88.4311	357	12/1980-10/2011
IL	SMITHLAND L&D	11-8020			15-min	NCDC	37.1644	-88.4311	357	10/1980-12/2010
IL	SPARTA 1 W	11-8147			1-day	NCDC	38.1167	-89.7167	535	1/1893-10/2011
IL	SPARTA 1 W	11-8147			1-hour	NCDC	38.1167	-89.7167	535	**1/1971-9/2010**
IL	SPARTA 1 W	11-8147			15-min	NCDC	38.1167	-89.7167	535	**5/1971-9/2010**
IL	SPARTA 2	11-8151	11-8147		1-hour	NCDC	38.1167	-89.7167	502	1/1971-1/1976
IL	SPARTA 2	11-8151	11-8147		15-min	NCDC	38.1167	-89.7167	502	5/1971-1/1976
IL	STOCKTON 3 NNE	11-8293			1-day	NCDC	42.4006	-89.9958	970	10/1943-10/2011
IL	SYCAMORE	11-8452			1-day	NCDC	41.9833	-88.6833	840	1/1893-9/1965
IL	TOULON	11-8630			1-day	NCDC	41.0911	-89.8614	700	5/1942-10/2011
IL	VIRDEN	11-8860			1-day	NCDC	39.5061	-89.7689	675	4/1941-9/2011
IL	VIRGINIA	11-8870			1-day	NCDC	39.9494	-90.2083	620	6/1963-10/2011
IL	WALNUT	11-8916			1-day	NCDC	41.5519	-89.5989	690	1/1893-6/2011
IL	WALTONVILLE	11-8932			1-day	NCDC	38.2133	-89.0850	511	3/1972-10/2011
IL	WARSAW	11-8976			1-day	NCDC	40.3500	-91.4333	489	4/1889-9/1962
IL	WATERLOO	11-9002			1-day	NCDC	38.3267	-90.1628	629	11/1911-3/2011
IL	WAUKEGAN	11-9029			1-day	NCDC	42.3492	-87.8828	700	1/1923-9/2002
IL	WAVERLY	11-9034	11-5113		1-day	NCDC	39.6833	-89.9500	674	9/1934-10/1945
IL	WHEATON 3 SE	11-9221	11-5097		1-day	NCDC	41.8128	-88.0728	680	5/1895-2/2007
IL	WHITE HALL 1 E	11-9241			1-day	NCDC	39.4411	-90.3789	580	10/1887-10/2011
IL	YATES CITY	11-9816			1-day	NCDC	40.7764	-90.0203	675	11/1948-5/2011
IL	YATES CITY	11-9816		11-9816	1-hour	NCDC	40.7764	-90.0203	675	12/1950-12/2010
IN	ALBION 5 E	12-0076			1-day	NCDC	41.4000	-85.3333	981	11/1916-4/1972
IN	ANGOLA	12-0200			1-day	NCDC	41.6397	-84.9897	1010	1/1893-10/2011
IN	ANGOLA	12-0200			1-hour	NCDC	41.6397	-84.9897	1010	5/1977-12/2010
IN	ANGOLA	12-0200			15-min	NCDC	41.6397	-84.9897	1010	1/1984-12/2010
IN	AUBURN 2 SSE	12-0334			1-day	NCDC	41.3333	-85.0500	875	7/1896-8/1988

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IN	COLUMBIA CITY	12-1734	12-1739		1-day	NCDC	41.1500	-85.4833	889	1/1893-9/1963
IN	COLUMBIA CITY	12-1739			1-day	NCDC	41.1453	-85.4897	845	**1/1893-10/2011**
IN	COLUMBIA CITY	12-1739			1-hour	NCDC	41.1453	-85.4897	845	7/1948-12/2010
IN	COLUMBIA CITY	12-1739			15-min	NCDC	41.1453	-85.4897	845	5/1971-12/2010
IN	DECATUR 1 N	12-2096			1-day	NCDC	40.8483	-84.9294	820	9/1931-10/2011
IN	FT WAYNE DISPOSAL PLT	12-3027			1-day	NCDC	41.1000	-85.1167	740	**9/1907-7/1990**
IN	FT WAYNE MAUMEE	12-3022	12-3027		1-day	NCDC	41.0817	-85.1147	760	9/1907-10/1954
IN	FT WAYNE WSO AP	12-3037			1-day	NCDC	41.0061	-85.2056	826	4/1897-10/2010
IN	FT WAYNE WSO AP	12-3037		12-3037	1-hour	NCDC	41.0061	-85.2056	826	7/1948-12/2010
IN	GARRETT	12-3206			1-hour	NCDC	41.3414	-85.1292	880	12/1960-12/2010
IN	GARRETT	12-3206			15-min	NCDC	41.3414	-85.1292	880	6/1978-12/2010
IN	GARY	12-3213			1-day	NCDC	41.6167	-87.3833	600	6/1936-1/1979
IN	GOSHEN 3W	12-3418			1-day	NCDC	41.5575	-85.8825	875	6/1914-8/2011
IN	GOSHEN 3W	12-3418			1-hour	NCDC	41.5575	-85.8825	875	**7/1948-12/2010**
IN	GOSHEN 3W	12-3418			15-min	NCDC	41.5575	-85.8825	875	1/1984-12/2010
IN	GOSHEN FAA AP	12-3413	12-3418		1-hour	NCDC	41.5333	-85.8000	827	7/1948-10/1961
IN	HOBART 2 WNW	12-4008			1-day	NCDC	41.5422	-87.2881	640	7/1919-2/2000
IN	HOWE	12-4113			1-day	NCDC	41.7167	-85.4167	879	11/1905-6/1953
IN	KENDALLVILLE	12-4492			1-day	NCDC	41.4500	-85.2500	1001	4/1947-3/2002
IN	KENDALLVILLE	12-4497		12-4492	1-hour	NCDC	41.4428	-85.2614	975	7/1948-3/2002
IN	KENDALLVILLE	12-4497		12-4492	15-min	NCDC	41.4428	-85.2614	975	4/1972-3/2002
IN	LAGRANGE	12-4729	12-4730		1-hour	NCDC	41.6500	-85.4333	879	7/1948-5/1962
IN	LAGRANGE 1 S	12-4730			1-day	NCDC	41.6292	-85.4142	930	1/1962-10/2011
IN	LAGRANGE 1 S	12-4730			1-hour	NCDC	41.6292	-85.4142	930	**7/1948-12/2010**
IN	LAGRANGE 1 S	12-4730			15-min	NCDC	41.6292	-85.4142	930	5/1971-12/2010
IN	LAKEVILLE	12-4782			1-day	NCDC	41.5269	-86.2692	841	7/1948-8/2011
IN	LAKEVILLE	12-4782			1-hour	NCDC	41.5269	-86.2692	841	7/1948-12/2010
IN	LAKEVILLE	12-4782			15-min	NCDC	41.5269	-86.2692	841	4/1978-12/2010
IN	LAPORTE	12-4837			1-day	NCDC	41.6117	-86.7297	845	4/1897-10/2011
IN	LOWELL	12-5174			1-day	NCDC	41.2647	-87.4178	665	7/1963-10/2011
IN	MEDARYVILLE 5 N	12-5535			1-day	NCDC	41.1589	-86.9014	695	7/1948-10/2011
IN	MEDARYVILLE 5 N	12-5535			1-hour	NCDC	41.1589	-86.9014	695	7/1948-12/2010

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IN	MEDARYVILLE 5 N	12-5535			15-min	NCDC	41.1589	-86.9014	695	4/1973-12/2010
IN	MONROEVILLE 1 NW	12-5815			1-day	NCDC	40.9867	-84.8836	795	5/1940-8/2000
IN	OGDEN DUNES	12-6542			1-day	NCDC	41.6167	-87.1833	610	10/1951-5/1989
IN	PLYMOUTH	12-6989			1-day	NCDC	41.3383	-86.3364	815	**4/1894-10/2011**
IN	PLYMOUTH PWR SUBSTN	12-7028	12-6989		1-day	NCDC	41.3333	-86.3167	785	4/1894-10/1989
IN	ROCHESTER	12-7482			1-day	NCDC	41.0658	-86.2094	770	4/1904-10/2011
IN	ROCHESTER	12-7482			1-hour	NCDC	41.0658	-86.2094	770	10/1948-12/2010
IN	ROCHESTER	12-7482			15-min	NCDC	41.0658	-86.2094	770	5/1971-12/2010
IN	SHELBY RIVER	12-7991		12-7991	1-hour	NCDC	41.1828	-87.3425	640	7/1948-6/1992
IN	SOUTH BEND WSO AP	12-8187			1-day	NCDC	41.7072	-86.3331	773	12/1893-10/2010
IN	SOUTH BEND WSO AP	12-8187		12-8187	1-hour	NCDC	41.7072	-86.3331	773	7/1948-12/2010
IN	VALPARAISO 5NNE	12-8992			1-day	NCDC	41.5436	-87.0319	869	**4/1893-10/2011**
IN	VALPARAISO WTR WKS	12-8999	12-8992		1-day	NCDC	41.5114	-87.0378	800	4/1893-3/2005
IN	VALPARAISO WTR WKS	12-8999		12-8992	1-hour	NCDC	41.5114	-87.0378	800	7/1948-8/2005
IN	WANATAH 2 WNW	12-9222			1-day	NCDC	41.4436	-86.9300	735	1/1961-10/2011
IN	WARSAW	12-9240			1-day	NCDC	41.2636	-85.8672	815	8/1896-10/2011
IN	WARSAW 4 S	12-9243			1-day	NCDC	41.1794	-85.8736	855	6/1992-8/2010
IN	WARSAW HWY GARAGE	12-9235			1-day	NCDC	41.2333	-85.8167	820	2/1908-8/2010
IN	WARSAW HWY GARAGE	12-9235			1-hour	NCDC	41.2333	-85.8167	820	7/1948-6/1957
IN	WATERLOO 2 NW	12-9271			1-day	NCDC	41.4931	-85.0453	940	1/1938-2/2003
IN	WHEATFIELD	12-9511			1-day	NCDC	41.1947	-87.0578	665	9/1916-12/2004
IN	WHITING	12-9570			1-day	NCDC	41.6500	-87.4833	620	10/1909-5/1962
IN	WINAMAC 2SSE	12-9670			1-day	NCDC	41.0267	-86.5867	690	4/1897-10/2011
IN	WINONA LAKE	12-9690	12-9243		1-day	NCDC	41.2167	-85.8167	810	2/1908-8/1946
KY	BARDWELL 2 E	15-0402			1-day	NCDC	36.8831	-88.9961	410	**3/1894-1/2010**
KY	BENTON	15-0611		15-0611	1-hour	NCDC	36.8581	-88.3364	365	8/1948-12/2010
KY	BLANDVILLE	15-0757	15-0402		1-day	NCDC	36.9000	-88.9667	445	3/1894-4/1928
KY	CLINTON 4 S	15-1631			1-hour	NCDC	36.6267	-88.9606	350	8/1948-12/2010
KY	CLINTON 4 S	15-1631			15-min	NCDC	36.6267	-88.9606	350	5/1971-12/2010
KY	GILBERTSVILLE KY DAM	15-3223			1-day	NCDC	37.0147	-88.2678	360	**10/1938-10/2011**
KY	HICKMAN 1 E	15-3816			1-day	NCDC	36.5667	-89.1667	381	8/1950-1/1981
KY	KENTUCKY DAM	15-4414	15-3223		1-day	NCDC	37.0167	-88.2667	361	1/1945-3/1962

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
KY	LOVELACEVILLE	15-4967			1-day	NCDC	36.9692	-88.8314	370	4/1925-3/2001
KY	MAYFIELD	15-5230	15-5233		1-day	NCDC	36.7333	-88.6500	361	1/1949-4/1967
KY	MAYFIELD 2 S	15-5232	15-5230		1-day	NCDC	36.7000	-88.6333	361	3/1902-6/1956
KY	MAYFIELD RADIO WLLE	15-5233			1-day	NCDC	36.7581	-88.6406	380	**3/1902-5/2002**
KY	MURRAY	15-5694			1-day	NCDC	36.6122	-88.3083	527	4/1926-7/2011
KY	PADUCAH	15-6115			1-day	NCDC	37.1000	-88.6167	341	1/1893-8/1970
KY	PADUCAH BARKLEY AP	15-6110			1-day	NCDC	37.0564	-88.7744	413	8/1949-8/2010
KY	PADUCAH BARKLEY AP	15-6110		15-6110	1-hour	NCDC	37.0564	-88.7744	413	8/1949-12/2010
KY	PADUCAH LONE OAKS	15-6113	11-0993		1-day	NCDC	37.0833	-88.7000	374	9/1916-12/1939
KY	PADUCAH WALKER BOAT YA	15-6117		15-6117	1-hour	NCDC	37.0500	-88.5500	340	8/1948-2/1996
MB	ALMASIPPI	52-0129	52-0142		1-day	CANADA	49.5500	-98.2000	900	5/1902-6/1925
MB	ALTONA	52-0130			1-day	CANADA	49.1000	-97.5500	813	11/1948-11/2007
MB	BALDUR	52-0083			1-day	CANADA	49.3000	-99.3300	1476	4/1962-11/2007
MB	BEDE	52-0084			1-day	CANADA	49.3700	-100.9300	1450	1/1936-7/1977
MB	BOISSEVAIN	52-0131			1-day	CANADA	49.2300	-100.0500	1674	4/1912-3/1981
MB	BOISSEVAIN 2	52-0132	52-0131		1-day	CANADA	49.2200	-100.0800	1725	11/1948-3/1970
MB	BRANDON A	52-0005			1-day	CANADA	49.9100	-99.9500	1343	7/1941-6/2009
MB	BRANDON A	52-0005			15-min	CANADA	49.9100	-99.9500	1342	5/1970-10/2008
MB	BRANDON CDA	52-0006			1-day	CANADA	49.8700	-99.9800	1190	1/1890-11/2007
MB	BRANDON CDA	52-0006			15-min	CANADA	49.8700	-99.9800	1191	6/1960-7/1996
MB	CARBERRY	52-0093	52-0092		1-day	CANADA	49.8700	-99.3500	1263	7/1962-11/1999
MB	CARBERRY CS	52-0092			1-day	CANADA	49.9100	-99.3600	1258	7/1962-11/2007
MB	CARMAN	52-0133			1-day	CANADA	49.4300	-98.1500	925	7/1964-11/2007
MB	CARTWRIGHT	52-0042			1-day	CANADA	49.0500	-99.4200	1548	4/1883-3/1992
MB	CARTWRIGHT	52-0135	52-0042		1-day	CANADA	49.1000	-99.3500	1514	4/1883-9/1976
MB	CYPRESS RIVER	52-0095			1-day	CANADA	49.5500	-99.0800	1228	6/1904-11/2007
MB	DEERWOOD	52-0009			1-day	CANADA	49.4000	-98.3200	1110	11/1951-4/1995
MB	DEERWOOD	52-0009			15-min	CANADA	49.4000	-98.3200	1109	4/1964-5/1995
MB	DELORAINE	52-0096			1-day	CANADA	49.1800	-100.5000	1642	1/1926-3/1994
MB	DELORAINE 2	52-0097			1-day	CANADA	49.1700	-100.4000	1750	6/1883-3/1976
MB	DUGALD	52-0137	52-0164		1-day	CANADA	49.8700	-96.8200	798	6/1962-3/1988
MB	EMERSON	52-0139			1-day	CANADA	49.0300	-97.1800	779	7/1877-7/1997

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MB	GLENLEA	52-0011			1-day	CANADA	49.6500	-97.1200	769	4/1967-9/2002
MB	GLENLEA	52-0011			15-min	CANADA	49.6500	-97.1200	768	5/1967-12/2001
MB	GRAYSVILLE	52-0142			1-day	CANADA	49.5000	-98.1700	930	5/1902-10/1988
MB	GREEN RIDGE	52-0143			1-day	CANADA	49.1700	-96.9800	825	5/1967-10/2004
MB	GRETNA (AUT)	52-0144			1-day	CANADA	49.0300	-97.5600	829	4/1885-10/2007
MB	HILLVIEW	52-0101			1-day	CANADA	49.9200	-100.5500	1400	6/1885-11/1920
MB	INDIAN BAY	52-0018			1-day	CANADA	49.6200	-95.2000	1072	4/1915-11/2007
MB	INDIAN BAY	52-0018			15-min	CANADA	49.6200	-95.2000	1073	5/1961-11/2003
MB	LYLETON	52-0103			1-day	CANADA	49.0500	-101.1800	1509	1/1951-6/1983
MB	MELITA	52-0104	52-0084		1-day	CANADA	49.3300	-101.0000	1450	1/1936-4/1960
MB	MIAMI ORCHARD	52-0152			1-day	CANADA	49.3700	-98.2800	1082	8/1964-11/2007
MB	MIAMI THIESSEN	52-0012			1-day	CANADA	49.4500	-98.2500	974	7/1964-11/2007
MB	MORDEN	52-0154	52-0013		1-day	CANADA	49.1800	-98.1000	991	5/1885-7/1971
MB	MORDEN CDA	52-0013			1-day	CANADA	49.1800	-98.0800	976	5/1885-11/1998
MB	MORRIS	52-0156			1-day	CANADA	49.3500	-97.3700	770	4/1883-10/1987
MB	MORRIS 2	52-0157			1-day	CANADA	49.4300	-97.4800	780	6/1961-11/2007
MB	MYRTLE	52-0158			1-day	CANADA	49.4000	-97.7800	813	6/1966-11/2003
MB	MYRTLE 2	52-0159			1-day	CANADA	49.3300	-97.7700	825	6/1968-9/1999
MB	NINETTE	52-0161	52-0044		1-day	CANADA	49.4000	-99.6300	1367	4/1885-3/1978
MB	NINETTE 1 NW	52-0044			1-day	CANADA	49.4200	-99.6500	1375	4/1885-5/1996
MB	OAKBANK	52-0164			1-day	CANADA	49.9300	-96.8500	806	4/1885-11/2007
MB	OSTENFELD	52-0047			1-day	CANADA	49.8200	-96.4800	900	6/1973-3/2005
MB	PEACE GARDENS	52-0165	84-3090		1-day	CANADA	49.0000	-100.0500	2274	9/1961-11/2000
MB	PIERSON	52-0106			1-day	CANADA	49.1800	-101.2700	1538	6/1904-3/2007
MB	PILOT MOUND	52-0167	52-0014		1-day	CANADA	49.2000	-98.8800	1557	5/1883-5/1957
MB	PILOT MOUND (AUT)	52-0014			1-day	CANADA	49.1900	-98.9000	1543	5/1883-11/2007
MB	PILOT MOUND (AUT)	52-0014			15-min	CANADA	49.1900	-98.9000	1542	5/1965-8/1986
MB	PINEY	52-0170	80-0253		1-day	CANADA	49.0300	-96.0200	1068	9/1980-11/2007
MB	PLUM COULEE	52-0171			1-day	CANADA	49.0500	-97.8000	870	6/1961-8/2003
MB	PORTAGE SOUTHPORT	52-0112			1-day	CANADA	49.9000	-98.2800	894	7/1941-11/2007
MB	PORTAGE SOUTHPORT A	52-0007	52-0112		1-day	CANADA	49.9000	-98.2700	885	7/1941-6/1992
MB	RATHWELL	52-0172			1-day	CANADA	49.6800	-98.5500	1063	5/1967-2/2001

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MB	SOURIS	52-0120			1-day	CANADA	49.6500	-100.2500	1420	10/1912-9/2006
MB	SOURIS	52-0121	52-0120		1-day	CANADA	49.6200	-100.2700	1400	10/1912-10/1972
MB	SPERLING	52-0183			1-day	CANADA	49.5000	-97.7000	798	5/1969-10/2003
MB	SPRAGUE	52-0184			1-day	CANADA	49.0200	-95.6000	1078	9/1915-11/2007
MB	SPRAGUE	52-0185	52-0184		1-day	CANADA	49.0200	-95.6000	1080	9/1915-3/1998
MB	ST ALBANS	52-0116			1-day	CANADA	49.7000	-99.5500	1180	1/1885-10/1960
MB	ST ALPHONSE	52-0117			1-day	CANADA	49.4500	-99.0200	1323	10/1962-11/2007
MB	ST CLAUDE	52-0175			1-day	CANADA	49.6500	-98.3700	1019	5/1964-11/2007
MB	STARBUCK	52-0186			1-day	CANADA	49.7300	-97.6200	780	5/1962-4/2004
MB	STEINBACH	52-0187			1-day	CANADA	49.5300	-96.7700	832	1/1956-3/2005
MB	TREHERNE	52-0122			1-day	CANADA	49.6300	-98.7000	1225	4/1885-7/1978
MB	TURTLE MOUNTAIN	52-0123	52-0097		1-day	CANADA	49.1800	-100.3300	**1745**	6/1883-9/1907
MB	VIRDEN	52-0126			1-day	CANADA	49.8300	-100.9500	1461	10/1890-3/2005
MB	WASKADA	52-0128	84-0082		1-day	CANADA	49.0300	-100.7500	1540	4/1924-3/1987
MB	WINNIPEG RICHARDSON INT'L	52-0015			1-day	CANADA	49.9200	-97.2300	783	3/1938-11/2007
MB	WINNIPEG ST BONIFACE WW	52-0016			1-day	CANADA	49.8800	-97.1000	761	3/1872-7/1981
MB	WINNIPEG ST JOHNS COLL	52-0196	52-0016		1-day	CANADA	49.8800	-97.1200	760	3/1872-7/1938
MT	ALBION 1 N	24-0088			1-day	NCDC	45.2089	-104.2647	3312	6/1945-6/2011
MT	ALZADA	24-0165			1-hour	NCDC	45.0156	-104.4108	3450	7/1948-12/2010
MT	ALZADA	24-0165			15-min	NCDC	45.0156	-104.4108	3450	1/1984-12/2010
MT	BAKER 1 E	24-0412			1-day	NCDC	46.3647	-104.2750	2933	9/1922-8/2011
MT	BELLTOWER	24-0636			1-day	NCDC	45.6261	-104.3889	3320	6/1949-10/2011
MT	CARLYLE 13 NW	24-1518			1-day	NCDC	46.7447	-104.3089	3140	4/1962-8/2011
MT	CULBERTSON	24-2122			1-day	NCDC	48.1503	-104.5089	1942	12/1900-10/2011
MT	EKALAKA	24-2689			1-day	NCDC	45.8903	-104.5461	3425	11/1896-10/2011
MT	EKALAKA	24-2689		24-2689	1-hour	NCDC	45.8903	-104.5461	3425	9/1948-12/2010
MT	GLENDIVE	24-3581			1-day	NCDC	47.1064	-104.7183	2076	1/1893-10/2011
MT	GLENDIVE	24-3581			1-hour	NCDC	47.1064	-104.7183	2076	9/1948-12/2010
MT	GLENDIVE	24-3581			15-min	NCDC	47.1064	-104.7183	2076	4/1978-12/2010
MT	ISMAY	24-4442		24-4442	1-hour	NCDC	46.4997	-104.7997	2500	7/1948-12/2010
MT	KNOBS 4 SW	24-4715			1-day	NCDC	45.8728	-104.1583	3086	9/1951-8/2011
MT	MAC KENZIE	24-5303			1-day	NCDC	46.1422	-104.7353	2810	6/1950-8/2011

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MT	MEDICINE LAKE 3 SE	24-5572			1-day	NCDC	48.4828	-104.4514	1942	1/1911-8/2011
MT	MILDRED	24-5666			1-day	NCDC	46.6833	-104.9500	2411	4/1909-7/1978
MT	PLENTYWOOD	24-6586			1-day	NCDC	48.7789	-104.5561	2063	7/1906-2/2011
MT	PLEVNA	24-6601			1-day	NCDC	46.4178	-104.5164	2780	11/1910-10/2011
MT	RAYMOND BORDER STN	24-6893			1-day	NCDC	48.9947	-104.5753	2384	9/1950-10/2011
MT	REDSTONE	24-6927			1-day	NCDC	48.8197	-104.9428	2106	7/1951-6/2011
MT	RIDGEWAY 1 S	24-7034			1-day	NCDC	45.5022	-104.4478	3316	5/1952-10/2011
MT	SAVAGE	24-7382			1-day	NCDC	47.4536	-104.3378	1975	8/1905-8/2011
MT	SIDNEY	24-7560			1-day	NCDC	47.7283	-104.1467	1931	11/1910-10/2011
MT	WEBSTER 3 E	24-8732			1-day	NCDC	46.0558	-104.1853	3140	9/1951-8/2011
MT	WESTBY	24-8777			1-day	NCDC	48.8708	-104.0500	2120	1/1937-10/2011
MT	WESTBY	24-8777		24-8777	1-hour	NCDC	48.8708	-104.0500	2120	7/1948-12/2010
MT	WIBAUX 2 E	24-8957			1-day	NCDC	46.9878	-104.1567	2696	3/1895-10/2011
NM	ABBOTT 1 SE	29-0022			1-day	NCDC	36.3028	-104.2497	6150	8/1909-7/2011
NM	ABIQUIU DAM	29-0041			1-day	NCDC	36.2403	-106.4278	6380	6/1957-10/2011
NM	ABIQUIU DAM	29-0041		29-0041	1-hour	NCDC	36.2403	-106.4278	6380	10/1963-12/2010
NM	ALBINO CANYON	60-0560		60-0560	1-hour	RAWS	36.9769	-107.6283	**7173**	1/1985-3/2011
NM	AMISTAD 5 SSW	29-0377			1-day	NCDC	35.8742	-103.1819	4445	4/1925-7/2011
NM	ASPEN GROVE RCH 1 W	29-0606			1-day	NCDC	36.6500	-106.1833	9708	8/1909-12/1948
NM	AURORA	29-0646			1-day	NCDC	36.2667	-105.0500	8136	8/1909-8/1960
NM	AZTEC RUINS NM	29-0692			1-day	NCDC	36.8350	-108.0006	5644	2/1895-6/2011
NM	BATEMAN RCH	29-0795			1-day	NCDC	36.5167	-106.3167	8907	9/1909-2/1970
NM	BLACK LAKE	29-1000			1-day	NCDC	36.3119	-105.2692	8645	8/1909-11/2008
NM	BLOOMFIELD 3 SE	29-1063			1-day	NCDC	36.6669	-107.9603	5806	12/1892-4/2011
NM	BRAZOS LODGE	29-1180			1-day	NCDC	36.7444	-106.4472	8005	3/1970-1/2008
NM	CANJILON RS	29-1389			1-day	NCDC	36.4819	-106.4403	7828	9/1938-7/2011
NM	CAPULIN 6 SSE	29-1452			1-day	NCDC	36.6691	-103.9554	6777	1/1930-12/1969
NM	CERRO	29-1630			1-day	NCDC	36.7408	-105.5956	7650	5/1910-11/2010
NM	CHACON	29-1653			1-day	NCDC	36.1604	-105.5727	8502	8/1909-8/1985
NM	CHAMA	29-1664			1-day	NCDC	36.9178	-106.5781	7850	1/1893-10/2011
NM	CIMARRON 4 SW	29-1813			1-day	NCDC	36.4661	-104.9456	6540	5/1904-10/2011
NM	CLAYTON 9 SSE	29-1881			1-day	NCDC	36.3333	-103.1000	4905	8/1907-11/1959

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NM	CLAYTON MUNI ARPK AP	29-1887			1-day	NCDC	36.4486	-103.1539	4960	2/1896-10/2010
NM	CLAYTON MUNI ARPK AP	29-1887		29-1887	1-hour	NCDC	36.4486	-103.1539	4960	10/1947-12/2010
NM	DAWSON	29-2384			1-day	NCDC	36.6667	-104.7833	6404	6/1909-6/1961
NM	DES MOINES	29-2453			1-day	NCDC	36.7500	-103.8333	6620	4/1916-6/1994
NM	DULCE	29-2608			1-day	NCDC	36.9358	-107.0000	6793	5/1906-9/2011
NM	EAGLE NEST	29-2700			1-day	NCDC	36.5575	-105.2628	8280	4/1929-10/2011
NM	EAGLE NEST	29-2700			1-hour	NCDC	36.5575	-105.2628	8280	10/1947-12/2010
NM	EAGLE NEST	29-2700			15-min	NCDC	36.5575	-105.2628	8280	5/1971-12/2010
NM	EL RITO	29-2820			1-day	NCDC	36.3467	-106.1878	6870	1/1903-10/2011
NM	EL VADO DAM	29-2837			1-day	NCDC	36.5928	-106.7300	6740	2/1906-10/2011
NM	EL VADO DAM	29-2837			1-hour	NCDC	36.5928	-106.7300	6740	10/1947-12/2010
NM	EL VADO DAM	29-2837			15-min	NCDC	36.5928	-106.7300	6740	7/1974-12/2010
NM	ELIZABETHTOWN	29-2860			1-day	NCDC	36.6167	-105.2833	8474	2/1905-2/1948
NM	FARMINGTON 4 NE	29-3134			1-day	NCDC	36.7500	-108.1667	5404	2/1914-3/1978
NM	FARMINGTON 4 NE	29-3134		29-3134	1-hour	NCDC	36.7500	-108.1667	5404	7/1948-3/1978
NM	FARMINGTON AG SCI CTR	29-3142			1-day	NCDC	36.6897	-108.3086	5625	**1/1893-10/2011**
NM	FARMINGTON AG SCI CTR	29-3142			1-hour	NCDC	36.6897	-108.3086	5625	4/1978-12/2010
NM	FARMINGTON AG SCI CTR	29-3142			15-min	NCDC	36.6897	-108.3086	5625	1/1984-12/2010
NM	FRUITLAND	29-3340	29-3142		1-day	NCDC	36.7381	-108.3483	5130	1/1893-4/2010
NM	GAVILAN	29-3505			1-day	NCDC	36.4333	-106.9667	7425	7/1929-1/1970
NM	GHOST RCH	29-3511			1-day	NCDC	36.3336	-106.4744	6500	1/1942-7/2011
NM	GRENVILLE	29-3706			1-day	NCDC	36.5939	-103.6192	6002	11/1940-7/2011
NM	HAYDEN 6 NE	29-3878	29-8543		1-day	NCDC	36.0500	-103.2167	4803	5/1909-9/1965
NM	IONE	29-4306			1-day	NCDC	35.7500	-103.3000	4705	9/1910-3/1961
NM	LAKE ALICE NEAR	29-4728	29-4742		1-day	NCDC	36.9450	-104.3821	6955	3/1909-11/1941
NM	LAKE MALOYA	29-4742			1-day	NCDC	36.9825	-104.3753	7400	**3/1909-6/2011**
NM	LINDRITH	29-4958	29-4960		1-day	NCDC	36.3000	-107.0333	7300	1/1921-11/1931
NM	LINDRITH 1 WSW	29-4960			1-day	NCDC	36.3042	-107.0542	7220	**1/1921-7/2011**
NM	LYBROOK	29-5290			1-day	NCDC	36.2303	-107.5472	7150	5/1951-5/2010
NM	MAXWELL 3 NW	29-5490			1-day	NCDC	36.5697	-104.5867	6017	4/1905-10/2011
NM	MIAMI	29-5691			1-day	NCDC	36.3500	-104.7667	6306	11/1907-11/1959
NM	NAVAJO DAM	29-6061			1-day	NCDC	36.8047	-107.6214	5770	6/1963-10/2011

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
NM	OCATE 2 NW	29-6275			1-day	NCDC	36.1839	-105.0608	7655	1/1897-7/2011
NM	OCATE 2 NW	29-6275			1-hour	NCDC	36.1839	-105.0608	7655	8/1960-12/2010
NM	OCATE 2 NW	29-6275			15-min	NCDC	36.1839	-105.0608	7655	1/1984-12/2010
NM	OJO CALIENTE	29-6321			1-day	NCDC	36.3000	-106.0500	6296	6/1944-3/1982
NM	OTIS	29-6465			1-day	NCDC	36.3339	-107.8408	6880	11/1905-10/2011
NM	PASAMONTE	29-6619			1-day	NCDC	36.2994	-103.7408	5650	1/1910-10/2011
NM	PENASCO RS	29-6705			1-day	NCDC	36.1667	-105.6833	7927	7/1901-2/1976
NM	PENNINGTON	29-6728			1-day	NCDC	36.3167	-103.5833	5604	2/1925-11/1959
NM	RATON	29-7277	29-7279		1-day	NCDC	36.9000	-104.4333	6683	3/1894-9/1953
NM	RATON FLTR PLT	29-7279			1-day	NCDC	36.9194	-104.4325	6932	**3/1894-7/2011**
NM	RATON FLTR PLT	29-7279			1-hour	NCDC	36.9194	-104.4325	6932	9/1953-12/2010
NM	RATON FLTR PLT	29-7279			15-min	NCDC	36.9194	-104.4325	6932	5/1971-12/2010
NM	RED RIVER	29-7323			1-day	NCDC	36.7058	-105.4036	8676	6/1906-10/2011
NM	REGINA	29-7346			1-day	NCDC	36.1833	-106.9500	7454	7/1914-8/1969
NM	REGINA	29-7346		29-7346	1-hour	NCDC	36.1833	-106.9500	7454	11/1947-9/1969
NM	SEDAN 7 NW	29-8187			1-day	NCDC	36.2000	-103.2167	4774	3/1911-4/1960
NM	SHIPROCK	29-8284			1-day	NCDC	36.7950	-108.6917	4972	7/1926-10/2007
NM	SKARDA	29-8352			1-day	NCDC	36.7667	-105.9667	8284	7/1942-12/1983
NM	SPRINGER	29-8501			1-day	NCDC	36.3628	-104.5850	5888	1/1892-9/2011
NM	SPRINGER	29-8501			1-hour	NCDC	36.3628	-104.5850	5888	11/1947-12/2010
NM	SPRINGER	29-8501			15-min	NCDC	36.3628	-104.5850	5888	1/1984-12/2010
NM	STEAD	29-8543			1-day	NCDC	36.1000	-103.2000	4803	**5/1909-5/1975**
NM	TAOS	29-8668			1-day	NCDC	36.3906	-105.5864	6965	12/1892-12/2009
NM	TAOS CANYON	29-8673			1-day	NCDC	36.3749	-105.4107	8235	7/1909-4/1943
NM	TIERRA AMARILLA 4 N	29-8845			1-day	NCDC	36.7664	-106.5536	7464	9/1927-7/2011
NM	TRES PIEDRAS	29-9085			1-day	NCDC	36.6511	-105.9725	8139	4/1905-2/2011
OH	BOWLING GREEN WWTP	33-0862			1-day	NCDC	41.3831	-83.6111	675	6/1893-10/2011
OH	BRYAN 2 SE	33-1042		33-1042	1-hour	NCDC	41.4619	-84.5272	730	4/1970-12/2010
OH	CATAWBA ISLAND 1 SW	33-1353			1-day	NCDC	41.5500	-82.8500	600	5/1916-6/1959
OH	DEFIANCE	33-2098			1-day	NCDC	41.2778	-84.3853	700	3/1893-8/2011
OH	DEFIANCE	33-2098		33-2098	1-hour	NCDC	41.2778	-84.3853	700	**8/1948-12/2010**
OH	DEFIANCE PWR PLT	33-2103	33-2098		1-hour	NCDC	41.2333	-84.4000	660	8/1948-1/1963

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OH	DEFIANCE TOLEDO EDISON	33-2108	33-2098		1-hour	NCDC	41.2833	-84.3500	689	1/1963-12/1967
OH	EDGERTON	33-2512		33-2512	1-hour	NCDC	41.4500	-84.7333	830	8/1948-7/1975
OH	FINDLAY FAA AP	33-2786			1-day	NCDC	41.0136	-83.6686	800	1/1942-10/2010
OH	FINDLAY WPCC	33-2791			1-day	NCDC	41.0461	-83.6622	768	6/1893-10/2011
OH	FINDLAY WPCC	33-2791			1-hour	NCDC	41.0461	-83.6622	768	8/1948-12/2010
OH	FINDLAY WPCC	33-2791			15-min	NCDC	41.0461	-83.6622	768	5/1971-12/2010
OH	FREMONT	33-2974			1-day	NCDC	41.3333	-83.1167	600	7/1901-10/2011
OH	FREMONT	33-2974		33-2974	1-hour	NCDC	41.3333	-83.1167	600	8/1948-3/2009
OH	GIBRALTER ISLAND	33-3144	33-6882		1-hour	NCDC	41.6667	-82.8167	581	12/1953-8/1959
OH	GLANDORF	33-3180	33-6342		1-day	NCDC	41.0333	-84.0833	741	8/1953-2/1967
OH	GROVER HILL	33-3421			1-day	NCDC	41.0192	-84.4772	730	6/1955-10/2011
OH	HOYTVILLE 2 NE	33-3874			1-day	NCDC	41.2167	-83.7667	700	6/1952-7/2011
OH	MONTPELIER	33-5438			1-day	NCDC	41.5803	-84.6078	860	6/1893-10/2011
OH	NAPOLEON	33-5664	33-5669		1-day	NCDC	41.3833	-84.1167	679	4/1893-5/1962
OH	NAPOLEON	33-5669			1-day	NCDC	41.3939	-84.1144	682	**4/1893-6/2009**
OH	OTTAWA	33-6337	33-6342		1-day	NCDC	41.0167	-84.0500	722	5/1896-11/1949
OH	OTTAWA	33-6342			1-day	NCDC	41.0325	-84.0542	730	**5/1896-8/2010**
OH	PANDORA	33-6405			1-day	NCDC	40.9542	-83.9617	770	12/1949-10/2011
OH	PANDORA	33-6405		33-6405	1-hour	NCDC	40.9542	-83.9617	770	6/1953-2/2000
OH	PAULDING	33-6465			1-day	NCDC	41.1244	-84.5922	725	9/1914-10/2011
OH	PUT-IN-BAY	33-6882			1-day	NCDC	41.6500	-82.8000	580	4/1916-8/1997
OH	PUT-IN-BAY	33-6882		33-6882	1-hour	NCDC	41.6500	-82.8000	580	8/1948-8/1997
OH	SANDUSKY	33-7447			1-day	NCDC	41.4500	-82.7167	584	**8/1877-8/2010**
OH	SANDUSKY OH	62-7447	33-7447		1-day	FORTS	41.4561	-82.7117	592	8/1877-12/1892
OH	STRYKER	33-8110			1-day	NCDC	41.5042	-84.4300	700	1/1962-9/2005
OH	TIFFIN	33-8313			1-day	NCDC	41.1167	-83.1667	740	6/1893-10/2011
OH	TOLEDO ACME STN	33-8351	33-8366		1-day	NCDC	41.6500	-83.5167	620	2/1950-12/1951
OH	TOLEDO BLADE	33-8366			1-day	NCDC	41.6500	-83.5333	600	5/1948-8/1999
OH	TOLEDO EXPRESS WSO AP	33-8357			1-day	NCDC	41.5886	-83.8014	669	1/1955-10/2010
OH	TOLEDO EXPRESS WSO AP	33-8357		33-8357	1-hour	NCDC	41.5886	-83.8014	669	1/1955-12/2010
OH	TOLEDO WB AP	33-8356			1-day	NCDC	41.5667	-83.4667	636	5/1896-1/1955
OH	VAN WERT 1 S	33-8609			1-day	NCDC	40.8494	-84.5808	790	1/1893-10/2011

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OH	VICKERY 2 NW	33-8656			1-day	NCDC	41.3667	-82.9667	591	4/1893-3/1953
OH	WAUSEON WTP	33-8822			1-day	NCDC	41.5183	-84.1453	750	2/1893-10/2011
ON	ARKONA	52-0269			1-day	CANADA	43.0300	-81.9200	600	7/1882-3/1915
ON	ATIKOKAN	52-0019	52-0213		1-day	CANADA	48.7500	-91.6200	1297	7/1966-10/1988
ON	ATIKOKAN CLI	52-0212	52-0019		1-day	CANADA	48.7300	-91.6300	1284	8/1914-6/1971
ON	ATIKOKAN MARMION	52-0213			1-day	CANADA	48.8000	-91.5800	1450	8/1914-12/2006
ON	CHATHAM	52-0294	52-0298		1-day	CANADA	42.4000	-82.2000	600	10/1933-11/1967
ON	CHATHAM 2	52-0295	52-0294		1-day	CANADA	42.4000	-82.2000	595	2/1879-9/1946
ON	CHATHAM WATERWORKS	52-0298	52-0031		1-day	CANADA	42.4200	-82.1800	600	7/1965-5/1983
ON	CHATHAM WPCP	52-0031			1-day	CANADA	42.3900	-82.2200	590	2/1879-12/2006
ON	COTTAM	52-0299			1-day	CANADA	42.1200	-82.7500	606	6/1882-2/1922
ON	DRESDEN	52-0301			1-day	CANADA	42.5800	-82.1800	600	7/1956-12/1996
ON	EMO	52-0217	52-0041		1-day	CANADA	48.6300	-93.8000	1106	4/1922-6/1968
ON	EMO RADBOURNE	52-0041			1-day	CANADA	48.6800	-93.8300	1148	4/1922-11/2002
ON	FLINT	52-0039			1-day	CANADA	48.3500	-89.6800	899	11/1908-12/2006
ON	FOREST	52-0275			1-day	CANADA	43.1700	-82.0300	626	9/1924-10/1991
ON	FORT FRANCES	52-0218	52-0219		1-day	CANADA	48.6200	-93.4200	1126	1/1892-9/1995
ON	FORT FRANCES A	52-0219			1-day	CANADA	48.6500	-93.4300	1122	1/1892-12/2006
ON	HARROW CDA	52-0032			1-day	CANADA	42.0300	-82.9000	625	4/1917-6/1993
ON	HARROW CDA	52-0032			15-min	CANADA	42.0300	-82.9000	626	4/1966-11/2001
ON	KAKABEKA FALLS	52-0243	52-0039		1-day	CANADA	48.4000	-89.6200	912	11/1908-3/1977
ON	KENORA	52-0232	52-0234		1-day	CANADA	49.8000	-94.5300	1102	2/1883-3/1939
ON	KENORA A	52-0020			1-day	CANADA	49.7900	-94.3700	1344	8/1938-6/2009
ON	KENORA A	52-0020			15-min	CANADA	49.7900	-94.3700	1345	7/1965-10/2003
ON	KENORA TCPL 49	52-0234			1-day	CANADA	49.7800	-94.4800	1116	2/1883-4/1991
ON	KINGSVILLE MOE	52-0304			1-day	CANADA	42.0400	-82.6700	656	3/1916-12/2006
ON	LEAMINGTON	52-0305	52-0304		1-day	CANADA	42.0500	-82.6300	700	3/1916-11/1978
ON	MINE CENTRE	52-0221			1-day	CANADA	48.7700	-92.6200	1125	11/1914-9/2005
ON	PELEE ISLAND	52-0307			1-day	CANADA	41.7500	-82.6800	575	7/1888-8/1987
ON	PETROLIA TOWN	52-0282			1-day	CANADA	42.8800	-82.1700	660	9/1960-6/2005
ON	PORT ARTHUR	52-0245	52-0040		1-day	CANADA	48.4300	-89.2200	640	7/1877-7/1941
ON	RAINY RIVER	52-0223	21-0515		1-day	CANADA	48.7200	-94.5300	1036	2/1914-10/2003

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ON	RIDGETOWN	52-0033			1-day	CANADA	42.4500	-81.8800	675	4/1883-10/1999
ON	RIDGETOWN	52-0033			15-min	CANADA	42.4500	-81.8800	676	1/1960-10/1985
ON	SARNIA	52-0285	52-0287		1-day	CANADA	42.9700	-82.3700	625	7/1882-1/1961
ON	SARNIA AIRPORT	52-0030			1-day	CANADA	42.9900	-82.3000	592	12/1967-12/2006
ON	SARNIA AIRPORT	52-0030			15-min	CANADA	42.9900	-82.3000	594	6/1970-11/2003
ON	SARNIA POLYSAR	52-0287	20-6680		1-day	CANADA	42.9500	-82.4300	620	9/1959-12/1973
ON	SAULT STE MARIE A	52-0027			1-day	CANADA	46.4800	-84.5100	630	6/1945-5/2009
ON	SAULT STE MARIE A	52-0027			15-min	CANADA	46.4800	-84.5100	630	8/1961-11/2003
ON	SAVANNE	52-0247			1-day	CANADA	48.9700	-90.2000	1506	12/1884-9/1954
ON	SLEEMAN	52-0224			1-day	CANADA	48.7200	-94.4200	1100	1/1964-7/1991
ON	STRATHROY	52-0320			1-day	CANADA	42.9500	-81.6500	750	3/1879-6/1996
ON	THEDFORD	52-0038			1-day	CANADA	43.1800	-81.8600	656	4/1883-12/2006
ON	THEDFORD	52-0289	52-0038		1-day	CANADA	43.1500	-81.8300	682	4/1883-2/1897
ON	THUNDER BAY A	52-0023			1-day	CANADA	48.3700	-89.3300	653	8/1941-11/2003
ON	THUNDER BAY A	52-0023			15-min	CANADA	48.3700	-89.3300	653	4/1960-11/1994
ON	THUNDER BAY WPCP	52-0040			1-day	CANADA	48.4000	-89.2300	605	7/1877-12/1989
ON	UPSALA	52-0250	52-0251		1-day	CANADA	49.0500	-90.4700	1587	7/1947-1/1972
ON	UPSALA TCPL 62	52-0251			1-day	CANADA	49.0300	-90.5200	1617	7/1947-6/1986
ON	WALLACEBURG	52-0310			1-day	CANADA	42.5800	-82.4000	580	9/1905-4/1997
ON	WATFORD	52-0290			1-day	CANADA	42.9700	-81.9700	709	4/1883-8/1961
ON	WINDSOR A	52-0034			1-day	CANADA	42.2800	-82.9600	622	6/1866-6/2009
ON	WINDSOR A	52-0034			1-hour	CANADA	42.2800	-82.9600	623	4/1960-11/2003
ON	WINDSOR A	52-0034			15-min	CANADA	42.2800	-82.9600	623	4/1960-11/2003
ON	WINDSOR RIVERSIDE	52-0311	52-0034		1-day	CANADA	42.3300	-82.9300	618	6/1866-12/2006
ON	WOODSLEE CDA	52-0315	52-0316		1-day	CANADA	42.2200	-82.7300	600	10/1946-8/1986
ON	WOODSLEE CDA AUTOMATIC CL	52-0316			1-day	CANADA	42.2200	-82.7300	600	10/1946-12/1998
SK	AMULET	52-0052			1-day	CANADA	49.6200	-104.7300	2387	12/1970-5/2002
SK	ARCOLA CDA EPF	52-0053			1-day	CANADA	49.6300	-102.5300	1979	3/1952-6/1993
SK	CARLYLE	52-0055			1-day	CANADA	49.6300	-102.2700	2069	6/1922-10/1996
SK	CARNDUFF	52-0056			1-day	CANADA	49.2200	-101.7500	1690	6/1962-11/2007
SK	CEYLON	52-0057			1-day	CANADA	49.4700	-104.6000	2338	4/1922-6/1978
SK	ESTEVAN	52-0059	52-0003		1-day	CANADA	49.2000	-103.0700	1857	6/1899-10/1944

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
SK	ESTEVAN A	52-0003			1-day	CANADA	49.2200	-102.9700	1904	6/1899-6/2009
SK	ESTEVAN A	52-0003			15-min	CANADA	49.2200	-102.9700	1906	5/1964-11/2007
SK	FERTILE	52-0061			1-day	CANADA	49.3300	-101.4500	1674	7/1969-11/2007
SK	HANDSWORTH	52-0063			1-day	CANADA	49.8300	-102.8700	2224	12/1976-11/2007
SK	LAKE ALMA	52-0066			1-day	CANADA	49.0700	-104.2500	2374	5/1973-12/2006
SK	MACOUN	52-0067			1-day	CANADA	49.2300	-103.2300	1874	8/1971-11/2007
SK	MARYFIELD	52-0069			1-day	CANADA	49.8300	-101.5200	1890	6/1970-5/2005
SK	MIDALE	52-0070			1-day	CANADA	49.3800	-103.3000	1924	6/1922-11/2007
SK	MIDALE	52-0071	52-0070		1-day	CANADA	49.4000	-103.4000	1908	6/1922-10/1991
SK	OXBOW	52-0072			1-day	CANADA	49.3200	-102.1200	1889	8/1949-11/2007
SK	RADVILLE	52-0073			1-day	CANADA	49.5000	-104.2800	2076	9/1951-5/1996
SK	REDVERS	52-0074	52-0075		1-day	CANADA	49.5800	-101.7000	1948	6/1950-9/1973
SK	REDVERS	52-0075			1-day	CANADA	49.6000	-101.7200	1955	6/1950-11/2007
SK	WEYBURN	52-0004			1-day	CANADA	49.6500	-103.8300	1869	7/1900-11/2007
SK	WEYBURN	52-0004			15-min	CANADA	49.6500	-103.8300	1870	10/1960-6/2007
SK	WILLMAR	52-0079			1-day	CANADA	49.4200	-102.5000	1950	5/1948-7/2007
SK	YELLOW GRASS	52-0080			1-day	CANADA	49.8200	-104.1800	1901	8/1911-11/2007
TN	AMES PLANTATION	40-0137			1-day	NCDC	35.1131	-89.2122	460	1/1976-10/2011
TN	BOLIVAR	40-0871	40-0876		1-hour	NCDC	35.2500	-88.9667	449	6/1949-7/1957
TN	BOLIVAR WTR WKS	40-0876			1-day	NCDC	35.2622	-88.9892	455	1/1893-10/2011
TN	BOLIVAR WTR WKS	40-0876			1-hour	NCDC	35.2622	-88.9892	455	**9/1948-12/2010**
TN	BOLIVAR WTR WKS	40-0876			15-min	NCDC	35.2622	-88.9892	455	5/1971-12/2010
TN	BOLTON	40-0884			1-day	NCDC	35.3167	-89.7667	275	11/1902-10/1989
TN	BROWNSVILLE	40-1145			1-day	NCDC	35.5894	-89.2586	330	9/1895-10/2011
TN	BROWNSVILLE SWR PLT	40-1150		40-1145	1-hour	NCDC	35.5847	-89.2692	355	9/1948-12/2010
TN	BROWNSVILLE SWR PLT	40-1150		40-1145	15-min	NCDC	35.5847	-89.2692	355	5/1971-12/2010
TN	COVINGTON 3 SW	40-2108			1-day	NCDC	35.5497	-89.7000	385	5/1890-10/2011
TN	DRESDEN	40-2600			1-day	NCDC	36.2833	-88.7000	450	5/1924-10/2011
TN	DYERSBURG	40-2680			1-day	NCDC	36.0456	-89.3697	350	5/1893-7/2011
TN	DYERSBURG	40-2680			1-hour	NCDC	36.0456	-89.3697	350	9/1948-12/2010
TN	DYERSBURG	40-2680			15-min	NCDC	36.0456	-89.3697	350	7/1975-12/2010
TN	DYERSBURG III GOLF	40-2685			1-day	NCDC	36.0003	-89.4100	300	9/1948-8/2010

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TN	GREENFIELD	40-3697			1-hour	NCDC	36.1678	-88.7975	400	9/1948-12/2010
TN	GREENFIELD	40-3697			15-min	NCDC	36.1678	-88.7975	400	5/1971-12/2010
TN	HUMBOLDT	40-4392		40-4392	1-hour	NCDC	35.8167	-88.9333	331	9/1948-3/1989
TN	JACKSON EXP STN	40-4561			1-day	NCDC	35.6214	-88.8456	400	8/1891-10/2011
TN	JACKSON EXP STN	40-4561		40-4561	1-hour	NCDC	35.6214	-88.8456	400	**9/1948-12/2010**
TN	JACKSON MCKELLAR AP	40-4556			1-day	NCDC	35.5931	-88.9167	433	9/1948-10/2010
TN	JACKSON MCKELLAR AP	40-4556	40-4561		1-hour	NCDC	35.5931	-88.9167	433	9/1948-2/2009
TN	KENTON	40-4771			1-day	NCDC	36.2014	-88.9986	325	3/1902-10/2011
TN	MARTIN U OF T BRANCH E	40-5681			1-day	NCDC	36.3444	-88.8636	340	9/1936-10/2011
TN	MASON	40-5720			1-hour	NCDC	35.4156	-89.5314	319	10/1948-12/2010
TN	MASON	40-5720			15-min	NCDC	35.4156	-89.5314	319	5/1971-12/2010
TN	MC KENZIE	40-5862			1-day	NCDC	36.1500	-88.5167	522	5/1890-6/1965
TN	MEMPHIS INTL AP	40-5954			1-day	NCDC	35.0564	-89.9864	254	1/1940-10/2010
TN	MEMPHIS INTL AP	40-5954		40-5954	1-hour	NCDC	35.0564	-89.9864	254	9/1948-12/2010
TN	MEMPHIS INTL AP	40-0001		40-5954	15-min	NCDC	35.0564	-89.9864	254	**1/1984-5/2011**
TN	MEMPHIS INTL AP	40-5954	40-0001		15-min	NCDC	35.0564	-89.9864	254	1/1984-9/2000
TN	MEMPHIS PO BLDG	40-5964			1-day	NCDC	35.1500	-90.0500	384	1/1872-12/1985
TN	MEMPHIS PO BLDG	40-5964	40-5946		1-hour	NCDC	35.1500	-90.0500	384	9/1948-8/1965
TN	MEMPHIS SEWAGE PLT	40-5946		40-5964	1-hour	NCDC	35.2000	-90.0333	175	**9/1948-12/1985**
TN	MILAN EXP STN	40-6012			1-day	NCDC	35.9158	-88.7389	426	3/1883-10/2011
TN	MOSCOW	40-6274			1-day	NCDC	35.0667	-89.4000	352	5/1920-7/2011
TN	MUNFORD	40-6358			1-hour	NCDC	35.4556	-89.8114	448	9/1948-12/2010
TN	MUNFORD	40-6358			15-min	NCDC	35.4556	-89.8114	448	7/1981-12/2010
TN	NEWBERN	40-6471			1-day	NCDC	36.1167	-89.2667	371	4/1924-9/1993
TN	RIPLEY	40-7710			1-day	NCDC	35.7178	-89.4986	400	6/1962-10/2011
TN	SAMBURG WR	40-8065			1-day	NCDC	36.4528	-89.3028	310	5/1924-10/2011
TN	SAMBURG WR	40-8065			1-hour	NCDC	36.4528	-89.3028	310	9/1948-12/2010
TN	SAMBURG WR	40-8065			15-min	NCDC	36.4528	-89.3028	310	5/1971-12/2010
TN	UNION CITY	40-9219			1-day	NCDC	36.3925	-89.0317	350	8/1891-10/2011
TN	UNION CITY	40-9219			1-hour	NCDC	36.3925	-89.0317	350	**9/1948-12/2010**
TN	UNION CITY	40-9219			15-min	NCDC	36.3925	-89.0317	350	**5/1971-12/2010**
TN	UNION CITY SEWAGE PLT	40-9223	40-9219		1-hour	NCDC	36.4167	-89.0667	341	12/1969-8/1972

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
TN	UNION CITY SEWAGE PLT	40-9223	40-9219		15-min	NCDC	36.4167	-89.0667	341	5/1971-8/1972
TX	ALVORD 3 N	41-0206			1-hour	NCDC	33.3867	-97.7164	1010	4/1942-12/2010
TX	ALVORD 3 N	41-0206			15-min	NCDC	33.3867	-97.7164	1010	5/1971-12/2010
TX	ANNA	41-0262			1-day	NCDC	33.3500	-96.5167	680	6/1898-11/1995
TX	ANNA	41-0262		41-0262	1-hour	NCDC	33.3500	-96.5167	680	8/1946-10/1995
TX	ANTELOPE	41-0271			1-day	NCDC	33.4406	-98.3708	1040	9/1910-8/2011
TX	ARCHER CITY	41-0313			1-day	NCDC	33.5881	-98.6381	1040	4/1910-12/2010
TX	ARTHUR CITY	41-0367			1-day	NCDC	33.8756	-95.5022	425	3/1891-5/2004
TX	ATLANTA	41-0408			1-day	NCDC	33.1244	-94.1661	315	9/1930-10/2011
TX	BENJAMIN 4 SSE	41-0704			1-day	NCDC	33.5333	-99.7667	1401	6/1940-5/1975
TX	BONHAM 3NNE	41-0923			1-day	NCDC	33.6397	-96.1678	600	1/1903-7/2011
TX	BONITA 4NW	41-0926			1-day	NCDC	33.8472	-97.6528	985	2/1940-10/2011
TX	BONITA 4NW	41-0926			1-hour	NCDC	33.8472	-97.6528	985	2/1940-12/2010
TX	BONITA 4NW	41-0926			15-min	NCDC	33.8472	-97.6528	985	7/1978-12/2010
TX	BOOKER	41-0944			1-day	NCDC	36.4533	-100.5394	2750	5/1922-7/2011
TX	BORGER	41-0958			1-day	NCDC	35.6364	-101.4542	3067	2/1949-10/2011
TX	BOWIE	41-0984			1-day	NCDC	33.5511	-97.8472	1080	1/1897-10/2011
TX	BOXELDER 3 NNE	41-0991			1-day	NCDC	33.5164	-94.8608	440	4/1949-3/2002
TX	BOYD	41-0996			1-day	NCDC	33.0800	-97.5639	730	8/1946-6/1999
TX	BRIDGEPORT	41-1063			1-day	NCDC	33.2064	-97.7761	769	8/1908-10/2011
TX	BULER 4 NNW	41-1203			1-day	NCDC	36.1833	-100.8333	2972	1/1941-5/1977
TX	BUNKER HILL	41-1224			1-day	NCDC	36.1500	-102.9333	4348	1/1941-7/1990
TX	CANADIAN	41-1412			1-day	NCDC	35.9092	-100.3883	2300	11/1906-11/2001
TX	CARROLLTON	41-1490			1-day	NCDC	32.9850	-96.9258	545	11/1923-3/2001
TX	CELINA	41-1573			1-day	NCDC	33.3167	-96.8000	679	7/1946-2/1983
TX	CHANNING	41-1646			1-hour	NCDC	35.6869	-102.3342	3800	1/1941-12/2010
TX	CHANNING	41-1646			15-min	NCDC	35.6869	-102.3342	3800	5/1971-12/2010
TX	CHILDRESS 2	41-1694	41-0001		15-min	NCDC	34.4303	-100.2161	1940	11/1997-3/2009
TX	CHILDRESS 3 W	41-1696			1-day	NCDC	34.4333	-100.2500	1972	1/1893-4/2010
TX	CHILDRESS 3 W	41-1696	41-1698		1-hour	NCDC	34.4333	-100.2500	1972	2/1940-8/1975
TX	CHILDRESS MUNI AP	41-1698		41-1696	1-hour	NCDC	34.4272	-100.2831	1951	**2/1940-12/2010**
TX	CHILDRESS MUNI AP	41-0001		41-1696	15-min	NCDC	34.4272	-100.2831	1951	**10/1975-4/2011**

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
TX	CHILDRESS MUNI AP	41-1698	41-1694		15-min	NCDC	34.4272	-100.2831	1951	10/1975-12/1999
TX	CHILLICOTHE	41-1701			1-day	NCDC	34.2500	-99.5167	1401	5/1895-3/1975
TX	CLARKSVILLE 1W	41-1773			1-hour	NCDC	33.6100	-95.0217	426	9/1940-12/2010
TX	CLARKSVILLE 1W	41-1773			15-min	NCDC	33.6100	-95.0217	426	5/1971-10/2010
TX	CLARKSVILLE 2NE	41-1772			1-day	NCDC	33.6164	-95.0717	435	3/1903-10/2010
TX	COLDWATER	41-1874			1-day	NCDC	36.4000	-102.5667	4130	1/1893-10/1983
TX	COMMERCE 4SW	41-1921			1-hour	NCDC	33.1997	-95.9283	550	**5/1940-12/2010**
TX	COMMERCE 4SW	41-1921			15-min	NCDC	33.1997	-95.9283	550	8/1975-12/2010
TX	CONLEN	41-1946			1-day	NCDC	36.2353	-102.2406	3820	1/1941-10/2011
TX	COOPER	41-1970			1-day	NCDC	33.3694	-95.7069	476	2/1944-10/2011
TX	CROWELL	41-2142			1-day	NCDC	33.9883	-99.7283	1480	8/1916-10/2011
TX	DAINGERFIELD 9 S	41-2225			1-day	NCDC	32.9203	-94.7225	300	10/1944-10/2011
TX	DALHART	41-2238	41-2240		1-day	NCDC	36.0606	-102.5211	3984	8/1946-8/2010
TX	DALHART EXP STN	41-2239	41-2240		1-day	NCDC	36.0167	-102.5833	4003	11/1905-12/1953
TX	DALHART FAA AP	41-2240			1-day	NCDC	36.0167	-102.5500	3990	**11/1905-10/2010**
TX	DARROUZETT	41-2282			1-day	NCDC	36.4453	-100.3264	2540	11/1941-8/2011
TX	DECATUR	41-2334			1-day	NCDC	33.2733	-97.5769	977	10/1904-10/2011
TX	DEKALB	41-2352			1-day	NCDC	33.5139	-94.6164	414	2/1944-10/2011
TX	DENISON DAM	41-2394			1-day	NCDC	33.8167	-96.5667	613	**1/1906-10/2011**
TX	DENISON DAM	41-2394		41-2394	1-hour	NCDC	33.8167	-96.5667	613	1/1940-7/1997
TX	DENISON HWY 60 BRG	41-2397	41-2394		1-day	NCDC	33.8167	-96.5333	551	1/1906-5/1949
TX	DENTON 2 SE	41-2404			1-day	NCDC	33.1989	-97.1050	630	6/1913-10/2011
TX	DENTON 2 SE	41-2404			1-hour	NCDC	33.1989	-97.1050	630	8/1946-12/2010
TX	DENTON 2 SE	41-2404			15-min	NCDC	33.1989	-97.1050	630	1/1984-12/2010
TX	DEPORT 4 NW	41-2415		41-2415	1-hour	NCDC	33.5639	-95.3742	436	2/1944-4/2001
TX	DUMAS	41-2617			1-day	NCDC	35.8733	-101.9728	3655	1/1937-10/2011
TX	DUMAS 8 NE	41-2619	41-8761		1-hour	NCDC	35.9500	-101.8833	3553	10/1947-2/1955
TX	DUNDEE 6 NNW	41-2633			1-day	NCDC	33.8158	-98.9317	1051	6/1922-10/2011
TX	ELECTRA	41-2818			1-day	NCDC	34.0308	-98.9117	1216	4/1945-2/2005
TX	FARMERSVILLE	41-3080			1-day	NCDC	33.1414	-96.2933	628	7/1946-4/2009
TX	FOLLETT	41-3225			1-day	NCDC	36.4328	-100.1369	2770	6/1930-10/2011
TX	FORESTBURG 5 S	41-3247			1-day	NCDC	33.4661	-97.5825	1110	1/1893-10/2011

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TX	FORT ELLIOTT	62-5987	41-5987		1-day	FORTS	35.5103	-100.4417	2630	12/1879-9/1890
TX	FRISCO	41-3370			1-day	NCDC	33.1519	-96.8122	740	11/1966-10/2011
TX	FRISCO	41-3370		41-3370	1-hour	NCDC	33.1519	-96.8122	740	10/1966-12/2010
TX	GAGEBY 3 WNW	41-3410			1-hour	NCDC	35.6306	-100.3917	2800	4/1941-12/2010
TX	GAGEBY 3 WNW	41-3410			15-min	NCDC	35.6306	-100.3917	2800	5/1971-12/2010
TX	GAINESVILLE	41-3415	41-3420		1-day	NCDC	33.6358	-97.1444	780	1/1897-3/1987
TX	GAINESVILLE	41-3415		41-3420	1-hour	NCDC	33.6358	-97.1444	780	9/1941-12/2010
TX	GAINESVILLE	41-3415		41-3420	15-min	NCDC	33.6358	-97.1444	780	5/1971-12/2010
TX	GAINESVILLE 5 ENE	41-3420			1-day	NCDC	33.6461	-97.0592	870	**1/1897-10/2011**
TX	GORDONVILLE	41-3642		41-3642	1-hour	NCDC	33.7969	-96.8569	726	1/1942-12/2010
TX	GRAPEVINE DAM	41-3691			1-day	NCDC	32.9506	-97.0553	585	1/1897-10/2011
TX	GRAPEVINE DAM	41-3691			1-hour	NCDC	32.9506	-97.0553	585	6/1949-12/2010
TX	GRAPEVINE DAM	41-3691			15-min	NCDC	32.9506	-97.0553	585	5/1971-12/2010
TX	GREENVILLE KGVL RADIO	41-3734			1-day	NCDC	33.1678	-96.0983	545	3/1900-10/2011
TX	GRUVER	41-3787			1-day	NCDC	36.2631	-101.4050	3170	7/1941-10/2011
TX	GUNTER 5 S	41-3822			1-day	NCDC	33.3750	-96.7611	735	2/1948-11/2000
TX	HAGANSPORT	41-3846			1-day	NCDC	33.3361	-95.2486	360	12/1909-1/2009
TX	HARLETON	41-3941			1-day	NCDC	32.6758	-94.5675	345	5/1949-10/2011
TX	HARTLEY 4 ESE	41-3981			1-day	NCDC	35.8653	-102.3317	3905	1/1893-10/2011
TX	HENRIETTA	41-4093			1-day	NCDC	33.8128	-98.2003	930	6/1897-6/2006
TX	HIGGINS	41-4140			1-day	NCDC	36.1161	-100.0239	2564	11/1907-10/2011
TX	HONEY GROVE	41-4257			1-day	NCDC	33.5881	-95.9039	680	4/1898-9/2009
TX	HONEY GROVE	41-4257			1-hour	NCDC	33.5881	-95.9039	680	2/1944-9/2009
TX	HONEY GROVE	41-4257			15-min	NCDC	33.5881	-95.9039	680	**5/1971-9/2009**
TX	HONEY GROVE 2	41-4258	41-4257		15-min	NCDC	33.5833	-95.9000	659	3/1972-1/1975
TX	HURT	41-4392	41-1921		1-hour	NCDC	33.2167	-95.9667	679	5/1940-8/1948
TX	IOWA PARK EXP STN	41-4471	41-9730		1-day	NCDC	33.9167	-98.6500	981	7/1940-2/1964
TX	JACKSBORO	41-4517			1-day	NCDC	33.2231	-98.1608	1089	3/1941-10/2011
TX	JACKSBORO	41-4517			1-hour	NCDC	33.2231	-98.1608	1089	**5/1940-12/2010**
TX	JACKSBORO	41-4517			15-min	NCDC	33.2231	-98.1608	1089	**11/1977-12/2010**
TX	JACKSBORO 1 NNE	41-4520	41-4517		1-hour	NCDC	33.2381	-98.1444	1020	11/1977-9/2003
TX	JACKSBORO 1 NNE	41-4520	41-4517		15-min	NCDC	33.2381	-98.1444	1020	11/1977-9/2003

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TX	JEFFERSON	41-4577			1-day	NCDC	32.7681	-94.3561	205	11/1903-10/2011
TX	JEFFERSON	41-4577		41-4577	1-hour	NCDC	32.7681	-94.3561	205	2/1944-12/1978
TX	JUSTIN	41-4679			1-hour	NCDC	33.0797	-97.2967	640	1/1954-12/2010
TX	JUSTIN	41-4679			15-min	NCDC	33.0797	-97.2967	640	5/1971-12/2010
TX	KARNACK	41-4693			1-day	NCDC	32.6664	-94.1781	255	5/1942-3/2007
TX	LAKE BRIDGEPORT DAM	41-4972			1-hour	NCDC	33.2250	-97.8317	870	8/1946-12/2010
TX	LAKE BRIDGEPORT DAM	41-4972			15-min	NCDC	33.2250	-97.8317	870	7/1976-12/2010
TX	LAKE CROCKETT	41-4975			1-hour	NCDC	33.7411	-95.9217	530	8/1973-12/2010
TX	LAKE CROCKETT	41-4975			15-min	NCDC	33.7411	-95.9217	530	8/1973-12/2010
TX	LAKE KEMP	41-4982			1-day	NCDC	33.7542	-99.1442	1167	4/1962-10/2011
TX	LAKE KEMP	41-4982		41-4982	1-hour	NCDC	33.7542	-99.1442	1167	8/1974-12/2010
TX	LATIMER RCH	41-5086	41-6745		1-day	NCDC	33.8833	-100.3833	1950	4/1971-9/1994
TX	LAVON DAM	41-5094			1-day	NCDC	33.0353	-96.4861	510	7/1949-10/2011
TX	LAVON DAM	41-5094			1-hour	NCDC	33.0353	-96.4861	510	7/1949-12/2010
TX	LAVON DAM	41-5094			15-min	NCDC	33.0353	-96.4861	510	5/1971-12/2010
TX	LEWISVILLE	41-5191	41-5192		1-day	NCDC	33.0500	-97.0000	489	2/1941-11/1959
TX	LEWISVILLE DAM	41-5192			1-day	NCDC	33.0694	-97.0094	556	**2/1941-10/2011**
TX	LEWISVILLE DAM	41-3476	41-5192		1-hour	NCDC	33.0667	-97.0167	561	7/1949-1/1964
TX	LEWISVILLE DAM	41-5192		41-5192	1-hour	NCDC	33.0694	-97.0094	556	**7/1949-12/2010**
TX	LINDEN	41-5229			1-day	NCDC	33.0161	-94.3675	415	6/1940-10/2011
TX	LIPSCOMB	41-5247			1-day	NCDC	36.2358	-100.2675	2450	6/1948-10/2011
TX	LIPSCOMB	41-5247			1-hour	NCDC	36.2358	-100.2675	2450	1/1940-11/2005
TX	LIPSCOMB	41-5247			15-min	NCDC	36.2358	-100.2675	2450	5/1971-11/2005
TX	MAUD	41-5667			1-day	NCDC	33.3331	-94.3431	305	6/1940-10/2011
TX	MC CARTNEY BRG	41-5710	41-9916		1-day	NCDC	33.3167	-94.1667	230	8/1947-9/1954
TX	MC CARTNEY BRG	41-9916			1-day	NCDC	**33.3167**	**-94.1667**	**230**	**8/1947-8/2010**
TX	MC LEAN	41-5770			1-day	NCDC	35.2358	-100.6067	2860	3/1907-4/2010
TX	MC LEAN	41-5770			1-hour	NCDC	35.2358	-100.6067	2860	10/1940-12/2010
TX	MC LEAN	41-5770			15-min	NCDC	35.2358	-100.6067	2860	5/1971-12/2010
TX	MCKINNEY	41-5766			1-day	NCDC	33.2364	-96.6419	622	4/1903-4/2008
TX	MEMPHIS	41-5821			1-day	NCDC	34.7261	-100.5372	2090	7/1905-10/2011
TX	MIAMI	41-5875			1-day	NCDC	35.7000	-100.6436	2755	1/1889-2/2006

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TX	MOBEETIE	41-5987			1-day	NCDC	35.5333	-100.4333	2680	**12/1879-3/1974**
TX	MORSE	41-6070			1-day	NCDC	36.0608	-101.4747	3180	9/1941-1/1998
TX	MT PLEASANT	41-6108			1-day	NCDC	33.1689	-95.0056	425	3/1905-10/2011
TX	MT PLEASANT	41-6108			1-hour	NCDC	33.1689	-95.0056	425	2/1940-12/2010
TX	MT PLEASANT	41-6108			15-min	NCDC	33.1689	-95.0056	425	5/1971-10/2010
TX	MT VERNON	41-6119			1-day	NCDC	33.1953	-95.2233	447	5/1966-10/2011
TX	MUENSTER	41-6130			1-day	NCDC	33.6564	-97.3769	1036	3/1941-10/2011
TX	NAPLES 1 SW	41-6190	41-6195		1-day	NCDC	33.1833	-94.6833	361	12/1909-11/1981
TX	NAPLES 5 NE	41-6195			1-day	NCDC	33.2425	-94.6736	290	**12/1909-1/1997**
TX	NEGLEY 4 SSW	41-6247			1-day	NCDC	33.7042	-95.0700	405	6/1946-1/2003
TX	NEW BOSTON	41-6270			1-day	NCDC	33.4547	-94.4089	345	4/1980-10/2011
TX	NEW BOSTON	41-6270			1-hour	NCDC	33.4547	-94.4089	345	10/1973-12/2010
TX	NEW BOSTON	41-6270			15-min	NCDC	33.4547	-94.4089	345	10/1973-10/2010
TX	NEWPORT 1SW	41-6331			1-day	NCDC	33.4561	-98.0253	1060	10/1947-11/2006
TX	NORTHFIELD	41-6433			1-day	NCDC	34.2606	-100.6014	2070	4/1944-10/2011
TX	NOTLA 3 SE	41-6477			1-day	NCDC	36.1014	-100.5894	2900	1/1940-8/2011
TX	OLNEY	41-6636			1-day	NCDC	33.3733	-98.7664	1195	1/1956-8/2011
TX	OLNEY 5 NNW	41-6641			1-day	NCDC	33.4372	-98.7806	1184	5/1941-3/2004
TX	PADUCAH	41-6740			1-day	NCDC	34.0067	-100.2989	1900	**6/1913-10/2011**
TX	PADUCAH 10S	41-6745			1-day	NCDC	33.8758	-100.3831	1950	**4/1971-10/2011**
TX	PADUCAH 15 S	41-6742			1-day	NCDC	33.8083	-100.2981	1832	4/1971-10/2011
TX	PADUCAH 2 WNW	41-6743	41-6740		1-day	NCDC	34.0333	-100.3167	1890	6/1913-11/1950
TX	PARIS	41-6794			1-day	NCDC	33.6744	-95.5586	542	12/1896-10/2011
TX	PAT MAYSE DAM	41-6834		41-0367	1-hour	NCDC	33.8536	-95.5167	495	10/1966-5/2004
TX	PAT MAYSE DAM	41-6834		41-0367	15-min	NCDC	33.8536	-95.5167	495	5/1971-5/2004
TX	PERRYTON	41-6950			1-day	NCDC	36.3897	-100.8239	2942	1/1893-7/2011
TX	PERRYTON 11 WNW	41-6953			1-day	NCDC	36.4408	-100.9961	3010	1/1945-7/2011
TX	PERRYTON 21 S	41-6952			1-day	NCDC	36.1017	-100.7394	2985	4/1978-7/2011
TX	PILOT POINT ISL DU BOI	41-7028			1-day	NCDC	33.3658	-97.0122	690	1/1916-9/2003
TX	PITTSBURG 5 SSE	41-7066			1-day	NCDC	32.9258	-94.9397	345	4/1949-9/2011
TX	PITTSBURG 5 SSE	41-7066		41-7066	1-hour	NCDC	32.9258	-94.9397	345	5/1949-12/2010
TX	PLEMONS	41-7116			1-day	NCDC	35.7667	-101.3333	2802	9/1906-1/1959

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
TX	QUANAH 2 SW	41-7336			1-day	NCDC	34.2761	-99.7578	1602	3/1893-7/2008
TX	RED SPRINGS 3 N	41-7499			1-hour	NCDC	33.6100	-99.3831	1351	3/1943-12/2010
TX	RED SPRINGS 3 N	41-7499			15-min	NCDC	33.6100	-99.3831	1351	5/1971-12/2010
TX	RICHARDSON	41-7588			1-day	NCDC	32.9964	-96.7428	678	7/1946-10/2011
TX	RINGGOLD	41-7614			1-day	NCDC	33.8167	-97.9333	895	3/1940-9/1994
TX	ROANOKE	41-7659			1-day	NCDC	33.0050	-97.2331	641	11/1941-10/2011
TX	ROCKWALL	41-7707			1-day	NCDC	32.9331	-96.4647	543	11/1941-12/2009
TX	SANGER	41-8043			1-day	NCDC	33.3633	-97.1744	675	9/1941-7/1999
TX	SEYMOUR	41-8221			1-day	NCDC	33.5969	-99.2694	1287	6/1905-10/2011
TX	SHAMROCK	41-8235	41-8236		1-day	NCDC	35.2000	-100.2500	2323	7/1929-9/1987
TX	SHAMROCK 2	41-8236			1-day	NCDC	35.2150	-100.2503	2360	**7/1929-10/2011**
TX	SHERMAN	41-8274			1-day	NCDC	33.7033	-96.6419	760	5/1897-10/2011
TX	SIMMS 4 WNW	41-8335		41-8335	1-hour	NCDC	33.3667	-94.5667	322	3/1944-10/1973
TX	SLIDELL	41-8378			1-day	NCDC	33.3583	-97.3933	985	9/1947-11/2000
TX	SPEARMAN	41-8523			1-day	NCDC	36.1981	-101.1847	3095	8/1920-9/2003
TX	STINNETT	41-8647		41-8647	1-hour	NCDC	35.8333	-101.4500	3130	1/1959-4/1992
TX	STRATFORD	41-8692			1-day	NCDC	36.3372	-102.0753	3693	7/1911-10/2011
TX	SULPHUR SPRINGS	41-8743			1-day	NCDC	33.1481	-95.6269	495	1/1893-10/2011
TX	SULPHUR SPRINGS	41-8743			1-hour	NCDC	33.1481	-95.6269	495	10/1941-12/2010
TX	SULPHUR SPRINGS	41-8743			15-min	NCDC	33.1481	-95.6269	495	4/1978-12/2010
TX	SUNRAY 4 SW	41-8761		41-8761	1-hour	NCDC	35.9667	-101.8667	3543	**10/1947-8/1984**
TX	TAMPICO	41-8833			1-day	NCDC	34.4667	-100.8167	2251	6/1940-11/1984
TX	TEXARKANA	41-8942			1-day	NCDC	33.4367	-94.0772	390	10/1968-10/2011
TX	TEXARKANA	41-8942			15-min	NCDC	33.4367	-94.0772	390	9/1973-10/2010
TX	TEXARKANA DAM	41-8944	41-9916		1-hour	NCDC	33.3000	-94.1667	282	11/1955-5/1972
TX	TRENTON	41-9125			1-day	NCDC	33.4253	-96.3394	760	7/1946-8/2011
TX	TRUSCOTT 3 W	41-9163			1-day	NCDC	33.7572	-99.8617	1571	9/1948-10/2011
TX	TRUSCOTT 3 W	41-9163		41-9163	1-hour	NCDC	33.7572	-99.8617	1571	2/1940-12/2010
TX	VALLEY VIEW	41-9286			1-day	NCDC	33.4869	-97.1572	725	9/1947-8/2002
TX	VERNON	41-9346			1-day	NCDC	34.1550	-99.3256	1227	3/1904-10/2011
TX	WELLINGTON	41-9565			1-day	NCDC	34.8422	-100.2103	2040	4/1912-10/2011
TX	WELLINGTON	41-9565			1-hour	NCDC	34.8422	-100.2103	2040	**10/1949-12/2010**

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
TX	WELLINGTON	41-9565			15-min	NCDC	34.8422	-100.2103	2040	**12/1971-12/2010**
TX	WELLINGTON 2	41-9570	41-9565		1-hour	NCDC	34.8500	-100.2167	2031	8/1971-1/1983
TX	WELLINGTON 2	41-9570	41-9565		15-min	NCDC	34.8500	-100.2167	2031	12/1971-1/1983
TX	WHEELER	41-9662			1-day	NCDC	35.4375	-100.2753	2495	4/1979-7/2011
TX	WICHITA FALLS MUNICIPAL A	41-9729			1-day	NCDC	33.9786	-98.4928	1017	1/1897-10/2010
TX	WICHITA FALLS MUNICIPAL A	41-9729		41-9729	1-hour	NCDC	33.9786	-98.4928	1017	5/1940-12/2010
TX	WICHITA VALLEY FARM 29	41-9730			1-day	NCDC	33.9333	-98.5833	961	4/1939-8/1972
TX	WOLF CREEK DAM	41-9858		41-9858	1-hour	NCDC	36.2333	-100.6667	2703	5/1941-10/1974
TX	WOLFE CITY	41-9859			1-day	NCDC	33.3675	-96.0675	660	2/1944-4/2008
TX	WRIGHT PATMAN DM & LK	41-9916		41-9916	1-hour	NCDC	33.3042	-94.1728	282	**11/1955-12/2010**
UT	ALLEN'S RCH	42-0050	42-4321		1-day	NCDC	40.8997	-109.1528	5490	8/1962-10/2001
UT	ANETH PLT	42-0157			1-day	NCDC	37.2558	-109.3292	4576	5/1900-2/2008
UT	ARCHES NP HQS	42-0336			1-day	NCDC	38.6164	-109.6192	4134	7/1948-10/2011
UT	ARCHES NP HQS	42-0336			1-hour	NCDC	38.6164	-109.6192	4134	**7/1948-12/2010**
UT	ARCHES NP HQS	42-0336			15-min	NCDC	38.6164	-109.6192	4134	**11/1971-12/2010**
UT	BLANDING	42-0738			1-day	NCDC	37.6131	-109.4847	6085	12/1904-10/2011
UT	BLANDING	42-0738			1-hour	NCDC	37.6131	-109.4847	6085	7/1948-12/2010
UT	BLANDING	42-0738			15-min	NCDC	37.6131	-109.4847	6085	1/1984-12/2010
UT	BLUFF	42-0788			1-day	NCDC	37.2828	-109.5578	4324	6/1911-10/2011
UT	BONANZA	42-0802			1-day	NCDC	40.0167	-109.1833	5450	3/1938-2/1993
UT	BRYSON CANYON	60-0651		60-0651	1-hour	RAWS	**39.2789**	**-109.2211**	5320	9/1987-3/2011
UT	CANYONLANDS-THE NECK	42-1163			1-day	NCDC	38.4600	-109.8214	5934	6/1965-10/2011
UT	CANYONLANDS-THE NEEDLE	42-1168			1-day	NCDC	38.1506	-109.7822	5002	6/1965-10/2011
UT	CEDAR POINT	42-1308			1-day	NCDC	37.7158	-109.0828	6764	1/1957-10/2011
UT	CEDAR POINT	42-1308			1-hour	NCDC	37.7158	-109.0828	6764	7/1974-12/2010
UT	CEDAR POINT	42-1308			15-min	NCDC	37.7158	-109.0828	6764	7/1974-12/2010
UT	DEWEY	42-2150			1-day	NCDC	38.8128	-109.2997	4120	10/1967-6/2004
UT	DIAMOND RIM	60-0653		60-0653	1-hour	RAWS	40.6172	-109.2428	**7730**	11/1983-3/2011
UT	DINOSAUR NM	42-2172	42-2173		1-day	NCDC	40.4333	-109.3000	5082	1/1941-3/1958
UT	DINOSAUR QUARRY AREA	42-2173			1-day	NCDC	40.4378	-109.3044	4804	**12/1915-8/2011**
UT	ELKHORN ASHLEY RNGR ST	42-2429			1-day	NCDC	40.5500	-109.9500	6810	1/1910-4/1956
UT	FLAMING GORGE	42-2864			1-day	NCDC	40.9317	-109.4117	6274	12/1957-10/2011

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UT	FLAMING GORGE	42-2864		42-2864	1-hour	NCDC	40.9317	-109.4117	6274	2/1958-8/2001
UT	FORT DUCHESNE	62-2996	42-2996		1-day	FORTS	40.2894	-109.8561	4996	12/1887-11/1893
UT	FT DUCHESNE	42-2996			1-day	NCDC	40.2842	-109.8611	5050	**12/1887-10/2011**
UT	HOVENWEEP NM	42-4100			1-day	NCDC	37.3858	-109.0750	5214	4/1957-10/2011
UT	JARVIE RCH	42-4321			1-day	NCDC	40.8992	-109.1789	5516	**8/1962-10/2011**
UT	JENSEN	42-4342			1-day	NCDC	40.3642	-109.3450	4754	3/1925-10/2011
UT	KINGS POINT - DUTCH JOHN	60-0655		42-4321	1-hour	RAWS	40.8606	-109.1022	5670	9/1985-3/2011
UT	LA SAL	42-4946	42-4947		1-day	NCDC	38.3167	-109.2500	6985	4/1901-3/1978
UT	LA SAL 1SW	42-4947			1-day	NCDC	38.3011	-109.2336	6789	**4/1901-10/2011**
UT	MANILA	42-5377			1-day	NCDC	40.9900	-109.7258	6454	4/1910-10/2011
UT	MCCOOK RIDGE	60-0656		60-0656	1-hour	RAWS	39.6339	-109.2658	**6722**	6/1983-3/2011
UT	MEXICAN HAT	42-5582			1-day	NCDC	37.1497	-109.8675	4115	7/1940-10/2011
UT	MOAB	42-5733			1-day	NCDC	38.5744	-109.5458	4077	1/1893-10/2011
UT	MOAB	42-5733	42-0336		1-hour	NCDC	38.5744	-109.5458	4077	7/1948-5/1980
UT	MOAB	42-5733	42-0336		15-min	NCDC	38.5744	-109.5458	4077	11/1971-5/1980
UT	MONTICELLO 2E	42-5805			1-day	NCDC	37.8736	-109.3075	6822	4/1902-3/2011
UT	OURAY 4 NE	42-6568			1-day	NCDC	40.1342	-109.6422	4674	6/1941-8/2011
UT	ROOSEVELT RADIO	42-7395			1-day	NCDC	40.2878	-109.9586	5054	7/1948-10/2011
UT	ROOSEVELT RADIO	42-7395		42-7395	1-hour	NCDC	40.2878	-109.9586	5054	7/1948-12/2010
UT	THOMPSON	42-8705			1-day	NCDC	38.9667	-109.7167	5099	5/1911-11/1994
UT	UPPER P.R. CANYON	60-0658		60-0658	1-hour	RAWS	39.4678	-109.2836	8200	6/1983-3/2011
UT	UPPER SAND WASH	60-0659		60-0659	1-hour	RAWS	39.7136	-109.4461	6300	11/1983-3/2011
UT	VERNAL 2SW	42-9111			1-day	NCDC	40.4269	-109.5531	5474	12/1894-8/2010
UT	WINTER RIDGE	60-0661		60-0661	1-hour	RAWS	39.5033	-109.5572	7300	6/1983-3/2011
UT	YAMPA PLATEAU - JENSEN	60-0662		60-0662	1-hour	RAWS	40.2831	-109.2900	**5240**	2/1984-3/2011
WY	ALBIN	48-0080			1-day	NCDC	41.4000	-104.1017	5345	9/1948-6/2009
WY	ALVA 5 ESE	48-0200			1-day	NCDC	44.6522	-104.3492	4390	9/1948-11/2001
WY	ARCHER	48-0270			1-day	NCDC	41.1517	-104.6575	6010	7/1911-9/2005
WY	BEAR LODGE	60-0700		60-0700	1-hour	RAWS	44.5972	-104.4275	5280	1/1985-3/2011
WY	BITTER CREEK 4 NE	48-0761			1-day	NCDC	41.5894	-108.5086	6720	9/1962-8/2011
WY	CARPENTER 3N	48-1547			1-day	NCDC	41.0844	-104.3789	5437	11/1948-9/2006
WY	CENTENNIAL 1NE	48-1610			1-day	NCDC	41.3136	-106.1292	8170	2/1899-1/2010

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
WY	CHEYENNE WSFO AP	48-1675			1-day	NCDC	41.1500	-104.8167	6130	1/1915-8/2010
WY	CHEYENNE WSFO AP	48-1675		48-1675	1-hour	NCDC	41.1500	-104.8167	6130	8/1948-12/2010
WY	CHUGWATER	48-1730			1-day	NCDC	41.7592	-104.8219	5304	11/1900-10/2011
WY	COLONY	48-1905			1-day	NCDC	44.8711	-104.1533	3480	1/1915-8/2011
WY	CRESTON	48-2175		48-2175	1-hour	NCDC	41.7333	-107.7333	7044	8/1948-2/1984
WY	DEVILS TWR	48-2465	48-2466		1-day	NCDC	44.5833	-104.7167	4334	7/1932-12/1958
WY	DEVILS TWR #2	48-2466			1-day	NCDC	44.5833	-104.7147	3862	**7/1932-10/2011**
WY	DIXON	48-2610			1-day	NCDC	41.0333	-107.5333	6365	2/1922-4/1978
WY	DULL CTR 1SE	48-2725			1-day	NCDC	43.4117	-104.9614	4415	5/1926-8/2011
WY	DULL CTR 1SE	48-2725		48-2725	1-hour	NCDC	43.4117	-104.9614	4415	8/1948-12/2010
WY	ELK MTN	48-2995			1-day	NCDC	41.6878	-106.4136	7265	9/1948-8/2011
WY	ENCAMPMENT	48-3050		48-3050	1-hour	NCDC	41.2058	-106.7883	7290	8/1948-12/2010
WY	ENCAMPMENT 10 ESE	48-3045			1-day	NCDC	41.1833	-106.6167	7385	9/1948-10/1998
WY	FORT LARAMIE	48-3485	48-6852		1-day	NCDC	42.2167	-104.5167	4235	10/1894-8/1927
WY	FOXPARK	48-3630			1-day	NCDC	41.0833	-106.1500	9067	3/1911-2/1979
WY	FT LARAMIE 11 NNW	48-3490			1-day	NCDC	42.3833	-104.5333	4764	11/1927-3/1979
WY	GREEN RIVER	48-4065			1-day	NCDC	41.5314	-109.4767	6077	4/1897-10/2011
WY	GUERNSEY DAM	48-4125	48-4126		1-day	NCDC	42.3000	-104.7667	4505	9/1944-5/1962
WY	GUERNSEY DAM #2	48-4126			1-day	NCDC	42.2906	-104.7625	4355	**9/1944-9/1991**
WY	HAMPSHIRE 3 SW	48-4225			1-day	NCDC	43.5500	-104.7333	4144	3/1921-8/1955
WY	HAT CREEK	48-4300	48-4303		1-day	NCDC	42.9333	-104.3667	4505	9/1948-8/1967
WY	HAT CREEK 14 N	48-4310		48-4310	1-hour	NCDC	43.1333	-104.3667	4324	8/1950-1/1984
WY	HAT CREEK 5 E	48-4303			1-day	NCDC	42.9333	-104.3167	4383	**9/1948-11/1983**
WY	HECLA	48-4440	48-4442		1-day	NCDC	41.1500	-105.1833	6804	12/1898-3/1979
WY	HECLA 1 E	48-4442			1-day	NCDC	41.1500	-105.1667	6690	**12/1898-8/2011**
WY	HULETT	48-4760			1-day	NCDC	44.6856	-104.6028	3758	7/1941-8/2011
WY	JELM 2S	48-4930			1-hour	NCDC	**41.0589**	**-106.0126**	7580	8/1948-12/2010
WY	JELM 2S	48-4930			15-min	NCDC	**41.0589**	**-106.0126**	7580	10/1972-12/2010
WY	JIREH	48-4970	48-5085		1-day	NCDC	42.7833	-104.7000	5344	1/1910-10/1952
WY	KEELINE 3 W	48-5085			1-day	NCDC	42.7667	-104.7833	5280	**1/1910-2/1987**
WY	LA GRANGE	48-5260			1-day	NCDC	41.6378	-104.1669	4590	9/1948-3/2010
WY	LANCE CREEK 1 W	48-5371			1-hour	NCDC	43.0389	-104.6633	4412	8/1950-12/2010

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WY	LANCE CREEK 1 W	48-5371			15-min	NCDC	43.0389	-104.6633	4412	1/1984-12/2010
WY	LARAMIE	48-5410	48-5435		1-day	NCDC	41.3167	-105.5833	7205	1/1892-12/1961
WY	LARAMIE 2	48-5411	48-5410		1-day	NCDC	41.3167	-105.5833	7175	1/1962-2/1976
WY	LARAMIE 2 NW	48-5435			1-day	NCDC	41.3408	-105.6069	7140	**1/1892-2/2010**
WY	LARAMIE 2 WSW	48-5420			1-hour	NCDC	41.3042	-105.6408	7175	8/1948-5/2010
WY	LARAMIE 2 WSW	48-5420			15-min	NCDC	41.3042	-105.6408	7175	4/1971-5/2010
WY	LARAMIE RGNL AP	48-5415			1-day	NCDC	41.3125	-105.6744	7266	1/1948-1/2008
WY	LINGLE 2WSW	48-5612			1-day	NCDC	42.1297	-104.3900	4158	**1/1906-10/2011**
WY	LUSK 2 SW	48-5830			1-day	NCDC	42.7506	-104.4811	5090	1/1893-11/2007
WY	MOORCROFT 3S	48-6395			1-day	NCDC	44.2169	-104.9292	4325	3/1903-8/2010
WY	MOORCROFT 3S	48-6395			1-hour	NCDC	44.2169	-104.9292	4325	11/1948-12/2010
WY	MOORCROFT 3S	48-6395			15-min	NCDC	44.2169	-104.9292	4325	5/1971-12/2010
WY	MOORE	48-6422	48-8808		1-day	NCDC	41.7725	-105.3530	6000	7/1901-6/1917
WY	MUD SPRINGS	48-6597			1-hour	NCDC	41.3167	-108.9167	6736	5/1953-12/2010
WY	MUD SPRINGS	48-6597			15-min	NCDC	41.3167	-108.9167	6736	9/1971-12/2010
WY	MULE CREEK	48-6600		48-6600	1-hour	NCDC	43.3500	-104.1167	4124	12/1949-2/1984
WY	NEWCASTLE	48-6660			1-day	NCDC	43.8581	-104.2136	4315	7/1906-10/2011
WY	NEWCASTLE	48-6660			1-hour	NCDC	43.8581	-104.2136	4315	8/1948-12/2010
WY	NEWCASTLE	48-6660			15-min	NCDC	43.8581	-104.2136	4315	5/1971-12/2010
WY	OLD FT LARAMIE	48-6852			1-day	NCDC	42.2058	-104.5561	4250	**10/1894-10/2011**
WY	OSAGE	48-6935		48-6935	1-hour	NCDC	43.9781	-104.4194	4320	3/1950-12/2010
WY	PHILLIPS	48-7200			1-day	NCDC	41.6264	-104.4936	4982	9/1948-8/2011
WY	PHILLIPS	48-7200			1-hour	NCDC	41.6264	-104.4936	4982	8/1948-12/2010
WY	PHILLIPS	48-7200			15-min	NCDC	41.6264	-104.4936	4982	10/1971-12/2010
WY	PINE BLUFFS	48-7235	48-7240		1-day	NCDC	41.1833	-104.0667	5074	1/1919-2/1988
WY	PINE BLUFFS	48-7235	48-7240		15-min	NCDC	41.1833	-104.0667	5074	5/1979-3/1988
WY	PINE BLUFFS 5W	48-7240			1-day	NCDC	41.1722	-104.1583	5180	**1/1919-10/2009**
WY	PINE BLUFFS 5W	48-7240			1-hour	NCDC	41.1722	-104.1583	5180	8/1948-12/2009
WY	PINE BLUFFS 5W	48-7240			15-min	NCDC	41.1722	-104.1583	5180	**9/1974-12/2009**
WY	RAWLINS AP	48-7533			1-day	NCDC	41.8000	-107.2000	6736	3/1951-5/2008
WY	RAWLINS AP	48-7533		48-7533	1-hour	NCDC	41.8000	-107.2000	6736	3/1951-5/2008
WY	REDBIRD	48-7555			1-day	NCDC	43.2450	-104.2881	3890	9/1948-10/2011

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
WY	ROCHELLE 3 E	48-7810			1-day	NCDC	43.6056	-104.9042	4496	3/1927-3/2002
WY	ROCK SPRINGS	48-7840			1-day	NCDC	41.5833	-109.2167	6375	11/1898-5/1979
WY	ROCK SPRINGS	48-7840		48-7840	1-hour	NCDC	41.5833	-109.2167	6375	4/1954-5/1979
WY	ROCK SPRINGS AP	48-7845			1-day	NCDC	41.5942	-109.0653	6742	1/1948-10/2010
WY	ROCK SPRINGS AP	48-7845			1-hour	NCDC	41.5942	-109.0653	6742	8/1948-12/2010
WY	ROCK SPRINGS AP	48-7845			15-min	NCDC	41.5942	-109.0653	6742	5/1979-12/2010
WY	SARATOGA	48-7990			1-day	NCDC	41.4528	-106.8053	6790	9/1948-11/2007
WY	SARATOGA 4N	48-7995			1-hour	NCDC	41.5047	-106.7889	6801	8/1948-12/2010
WY	SARATOGA 4N	48-7995			15-min	NCDC	41.5047	-106.7889	6801	5/1971-12/2010
WY	SAW MILL PARK	60-0703		48-3630	1-hour	RAWS	41.0747	-106.1319	9055	12/1987-3/2011
WY	SPENCER 10 NE	48-8475			1-day	NCDC	43.4333	-104.1667	3802	8/1917-6/1974
WY	SUNDANCE	48-8705			1-day	NCDC	44.4125	-104.3606	4650	5/1893-10/2011
WY	SYBILLE RSCH UNIT	48-8808			1-day	NCDC	41.7628	-105.3756	6086	**7/1901-10/2011**
WY	TENNYSON	48-8845			1-day	NCDC	41.3500	-104.3833	5616	7/1941-2/1981
WY	TORRINGTON 1 S	48-9000	48-8995		1-hour	NCDC	42.0500	-104.1833	4091	8/1948-7/1979
WY	TORRINGTON EXP FARM	48-8995			1-day	NCDC	42.0803	-104.2236	4098	1/1922-6/2007
WY	TORRINGTON EXP FARM	48-8995		48-8995	1-hour	NCDC	42.0803	-104.2236	4098	**8/1948-3/2008**
WY	UPTON	48-9205			1-day	NCDC	44.0928	-104.6114	4320	9/1908-8/2011
WY	UPTON 13 SW	48-9207			1-day	NCDC	43.9269	-104.7456	4780	10/1948-12/2001
WY	WAMSUTTER	48-9459			1-day	NCDC	41.6667	-107.9667	6740	5/1897-8/2011
WY	WHALEN DAM USBR	48-9604	48-6852		1-day	NCDC	42.2494	-104.6281	4294	4/1949-9/1991
WY	WHEATLAND 4 N	48-9615			1-day	NCDC	42.1106	-104.9492	4638	1/1893-7/2011
WY	WHEATLAND 4 N	48-9615			1-hour	NCDC	42.1106	-104.9492	4638	8/1948-12/2010
WY	WHEATLAND 4 N	48-9615			15-min	NCDC	42.1106	-104.9492	4638	5/1971-12/2010
WY	WYNCOTE	48-9880	48-5612		1-day	NCDC	42.1500	-104.3833	4250	1/1906-12/1921
WY	YODER 5 W	48-9925			1-day	NCDC	41.9131	-104.3881	4330	10/1921-6/2011

Table A.1.3. List of stations used in the analysis for n-minute scaling factors (see Section 4.6.3) showing state, station name, station ID, source of data, latitude, longitude, elevation, and period of record.

State	Station name	Station ID	Source of data	Latitude	Longitude	Elevation (ft)	Period of Record
AR	DEQUEEN SEVIER CO AP	03-1953	NCDC	34.0500	-94.4006	355	3/2005-7/2009
AR	FT SMITH RGNL AP	03-2574	NCDC	35.3331	-94.3625	449	1/1973-7/2009
AR	HARRISON BOONE CO AP	03-3165	NCDC	36.2667	-93.1567	1374	1/1984-7/2009
AR	TEXARKANA WEBB FLD	03-7048	NCDC	33.4536	-94.0075	361	1/1984-7/2009
CO	AKRON 1 N	05-0114	NCDC	40.1717	-103.2317	4662	1/1984-7/2009
CO	ALAMOSA WSO AP	05-0130	NCDC	37.4361	-105.8656	7533	1/1973-7/2009
CO	COLORADO SPGS MUNI AP	05-1778	NCDC	38.8100	-104.6883	6181	1/1974-7/2009
CO	DENVER INTL AP	05-2211	NCDC	39.8328	-104.6575	5414	3/1995-7/2009
CO	DENVER-STAPELTON	05-2220	NCDC	39.7633	-104.8694	5286	1/1973-2/1995
CO	EAGLE FAA AP	05-2454	NCDC	39.6500	-106.9167	6497	1/1984-3/1989
CO	GRAND JUNCTION WSO AP	05-3488	NCDC	39.1342	-108.5375	4840	1/1973-7/2009
CO	LA JUNTA MUNI AP	05-4720	NCDC	38.0494	-103.5122	4194	1/1984-7/2009
CO	LEADVILLE 2 SW	05-4885	NCDC	39.2242	-106.3164	9938	3/2005-7/2009
CO	LIMON	05-5017	NCDC	39.2667	-103.6833	5371	1/1984-5/1995
CO	LIMON WSMO	05-5018	NCDC	39.1833	-103.7000	5562	3/2005-7/2009
CO	PUEBLO MEM AP	05-6740	NCDC	38.2900	-104.4983	4720	1/1973-7/2009
CO	TRINIDAD AP	05-8434	NCDC	37.2622	-104.3378	5746	1/1984-7/2009
IL	CAIRO 3N	11-1166	NCDC	37.0422	-89.1856	313	1/1973-1/1990
IL	CHICAGO OHARE AP	11-1549	NCDC	41.9950	-87.9336	658	1/1973-7/2009
IL	CHICAGO MIDWAY AP 3SW	11-1577	NCDC	41.7372	-87.7775	620	1/1973-12/1979
IL	MOLINE WSO AP	11-5751	NCDC	41.4653	-90.5233	592	1/1973-7/2009
IL	QUINCY RGNL AP	11-7072	NCDC	39.9369	-91.1919	769	1/1984-7/2009
IL	ROCKFORD AP	11-7382	NCDC	42.1928	-89.0931	730	1/1973-7/2009
IN	FT WAYNE CITY	12-3024	NCDC	41.0833	-85.1667	817	1/1984-5/1997
IN	FT WAYNE WSO AP	12-3037	NCDC	41.0061	-85.2056	826	1/1973-7/2009
IN	SOUTH BEND WSO AP	12-8187	NCDC	41.7072	-86.3331	773	1/1973-7/2009
IA	BURLINGTON AP	13-1063	NCDC	40.7808	-91.1192	692	7/1995-7/2009
IA	CEDAR RAPIDS AP	13-1314	NCDC	41.8844	-91.7086	840	1/1984-7/2009
IA	DES MOINES AP	13-2203	NCDC	41.5339	-93.6531	957	1/1973-7/2009
IA	DUBUQUE WB CITY	13-2367	NCDC	**42.5000**	**-90.6667**	1056	1/1973-7/2009
IA	MASON CITY MUNI AP	13-5235	NCDC	43.1544	-93.3269	1225	1/1984-7/2009
IA	OTTUMWA INDUSTRIAL AP	13-6389	NCDC	41.1078	-92.4467	842	1/1984-7/2009

State	Station name	Station ID	Source of data	Latitude	Longitude	Elevation (ft)	Period of Record
IA	SIOUX CITY AP	13-7708	NCDC	42.3914	-96.3792	1095	1/1973-7/2009
IA	WATERLOO MUNI AP	13-8706	NCDC	42.5544	-92.4011	868	1/1973-7/2009
KS	CHANUTE FAA AP	14-1427	NCDC	37.6703	-95.4842	979	12/1990-7/2009
KS	CONCORDIA BLOSSER MUNI	14-1767	NCDC	39.5514	-97.6508	1469	1/1973-7/2009
KS	DODGE CITY RGNL AP	14-2164	NCDC	37.7686	-99.9678	2582	1/1973-7/2009
KS	GARDEN CITY 9 ESE	14-2975	NCDC	37.9264	-100.7189	2882	1/1984-7/2009
KS	GOODLAND RENNER FLD	14-3153	NCDC	39.3706	-101.6986	3656	1/1973-7/2009
KS	HILL CITY 1 NE	14-3660	NCDC	39.3756	-99.8297	2188	3/2005-7/2009
KS	MEDICINE LODGE 1E	14-5175	NCDC	37.2839	-98.5528	1535	3/2005-7/2009
KS	RUSSELL 1 E	14-7046	NCDC	38.8761	-98.8092	1858	1/1984-7/2009
KS	SALINA MUNI AP	14-7160	NCDC	38.7972	-97.6517	1261	1/1984-7/2009
KS	TOPEKA BILLARD MUNI AP	14-8167	NCDC	39.0689	-95.6389	881	1/1973-7/2009
KS	WICHITA MID-CONTINENT	14-8830	NCDC	37.6553	-97.4431	1321	1/1973-7/2009
KY	PADUCAH BARKLEY AP	15-6110	NCDC	37.0564	-88.7744	413	1/1984-7/2009
MI	ALPENA CO RGNL AP	20-0164	NCDC	45.0717	-83.5644	684	1/1973-7/2009
MI	BENTON HARBOR AP	20-0710	NCDC	42.1292	-86.4222	628	3/2005-7/2009
MI	HOUGHTON FAA AP	20-1213	NCDC	47.1667	-88.5000	1086	12/1987-5/1997
MI	DETROIT CITY AP	20-2102	NCDC	42.4072	-83.0083	625	1/1973-7/2009
MI	DETROIT METRO AP	20-2103	NCDC	42.2314	-83.3308	631	1/1973-7/2009
MI	FLINT BISHOP INTL AP	20-2846	NCDC	42.9667	-83.7494	770	1/1973-7/2009
MI	GRAND RAPIDS INTL AP	20-3333	NCDC	42.8825	-85.5239	803	1/1973-7/2009
MI	HOUGHTON FAA AP	20-3908	NCDC	47.1683	-88.4892	1074	3/2005-7/2009
MI	HOUGHTON ROSCOMMON AP	20-3936	NCDC	44.3592	-84.6739	1151	1/1973-7/2009
MI	JACKSON AP	20-4150	NCDC	42.2597	-84.4594	998	1/1984-7/2009
MI	LANSING CAPITAL CY AP	20-4641	NCDC	42.7803	-84.5789	841	1/1973-7/2009
MI	MARQUETTE	20-5178	NCDC	46.5456	-87.3794	665	1/1973-12/1978
MI	MARQUETTE WSO AP	20-5184	NCDC	46.5314	-87.5492	1415	1/1979-5/1997
MI	MUSKEGON CO AP	20-5712	NCDC	43.1711	-86.2367	625	1/1973-7/2009
MI	PELLSTON RGNL AP	20-6438	NCDC	45.5644	-84.7928	705	7/1985-7/2009
MI	SAGINAW AP	20-7227	NCDC	43.5331	-84.0797	660	1/1984-7/2009
MI	SAULT STE MARIE SNDRSN	20-7366	NCDC	46.4794	-84.3572	722	1/1973-7/2009
MI	TRAVERSE CITY FAA AP	20-8251	NCDC	44.7408	-85.5825	618	1/1984-7/2009
MN	ALEXANDRIA CHANDLER FL	21-0112	NCDC	45.8686	-95.3942	1416	1/1984-7/2009
MN	DULUTH INTL AP	21-2248	NCDC	46.8369	-92.1833	1433	1/1973-7/2009

State	Station name	Station ID	Source of data	Latitude	Longitude	Elevation (ft)	Period of Record
MN	HIBBING FAA AP	21-3730	NCDC	47.3867	-92.8389	1347	1/1984-7/2009
MN	INTERNATIONAL FALLS AP	21-4026	NCDC	48.5614	-93.3981	1183	1/1973-7/2009
MN	MINNEAPOLIS/ST PAUL INTL	21-5435	NCDC	44.8831	-93.2289	872	1/1973-7/2009
MN	PARK RAPIDS 2 S	21-6360	NCDC	46.9006	-95.0678	1434	3/2005-7/2009
MN	REDWOOD FALLS FAA AP	21-6835	NCDC	44.5472	-95.0822	1025	1/1984-7/2009
MN	ROCHESTER INTL AP	21-7004	NCDC	43.9042	-92.4917	1304	1/1973-7/2009
MN	ST CLOUD MUNI AP	21-7294	NCDC	45.5433	-94.0514	1018	1/1973-7/2009
MO	CAPE GIRARDEAU RGNL AP	23-1289	NCDC	37.2253	-89.5706	336	1/1984-7/2009
MO	COLUMBIA RGNL AP	23-1791	NCDC	**38.8170**	**-92.2147**	893	1/1973-7/2009
MO	JOPLIN RGNL AP	23-4315	NCDC	37.1467	-94.5022	980	1/1984-7/2009
MO	KANSAS CITY INTL AP	23-4358	NCDC	39.2972	-94.7306	1005	1/1973-7/2009
MO	KS CITY DWTN AP	23-4359	NCDC	39.1208	-94.5969	742	1/1984-7/2009
MO	ST JOSEPH ROSECRANS AP	23-7435	NCDC	39.7736	-94.9067	818	3/2005-7/2009
MO	ST LOUIS LAMBERT AP	23-7455	NCDC	38.7525	-90.3736	531	1/1973-7/2009
MO	ST LOUIS SPRT OF S L A	23-7964	NCDC	**38.6575**	**-90.6557**	462	5/1988-9/1995
MO	SPRINGFIELD RGNL AP	23-7976	NCDC	37.2397	-93.3897	1259	1/1973-7/2009
MO	VICHY ROLLA NATL AP	23-8614	NCDC	38.1311	-91.7683	1127	3/2005-7/2009
NE	FALLS CITY 2 NE	25-2850	NCDC	40.0833	-95.6000	980	3/2005-7/2009
NE	GRAND ISLAND CTR NE AP	25-3395	NCDC	40.9611	-98.3136	1840	1/1973-7/2009
NE	LINCOLN AP	25-4795	NCDC	40.8311	-96.7644	1170	1/1973-7/2009
NE	NORFOLK AP	25-5995	NCDC	41.9856	-97.4353	1551	1/1973-7/2009
NE	NORTH PLATTE RGNL AP	25-6065	NCDC	41.1214	-100.6694	2778	1/1973-7/2009
NE	OMAHA EPPLEY AIRFIELD	25-6255	NCDC	41.3103	-95.8992	982	1/1973-7/2009
NE	OMAHA #1	25-6260	NCDC	41.3536	-96.0233	1280	6/1977-3/1995
NE	SCOTTSBLUFF AP	25-7665	NCDC	41.8706	-103.5931	3945	1/1973-7/2009
NE	SIDNEY 3 S	25-7835	NCDC	41.1000	-102.9833	4309	3/2005-7/2009
NE	VALENTINE MILLER AP	25-8760	NCDC	42.8783	-100.5500	2590	1/1973-7/2009
NM	CLAYTON WSO AIRPORT	29-1887	NCDC	36.4500	-103.1500	4970	1/1973-7/2009
ND	BISMARCK MUNI AP	32-0819	NCDC	46.7825	-100.7572	1651	1/1973-7/2009
ND	THEODORE ROOSEVELT AP	32-2183	NCDC	46.7994	-102.7972	2580	5/1986-7/2009
ND	FARGO HECTOR INTL AP	32-2859	NCDC	46.9253	-96.8111	900	1/1973-7/2009
ND	GRAND FORKS INTL AP	32-3616	NCDC	47.9428	-97.1839	842	1/1984-7/2009
ND	JAMESTOWN MUNI AP	32-4413	NCDC	46.9258	-98.6692	1494	1/1984-7/2009
ND	MINOT INTL AP	32-5988	NCDC	48.2553	-101.2733	1665	1/1984-7/2009

State	Station name	Station ID	Source of data	Latitude	Longitude	Elevation (ft)	Period of Record
ND	WILLISTON SLOULIN FLD	32-9425	NCDC	48.1739	-103.6367	1902	1/1973-7/2009
OH	FINDLAY FAA AP	33-2786	NCDC	41.0136	-83.6686	800	1/1984-7/2009
OH	TOLEDO EXPRESS WSO AP	33-8357	NCDC	41.5886	-83.8014	669	1/1973-7/2009
OK	BARTLESVILLE MUNI AP	34-0548	NCDC	36.7683	-96.0261	715	5/2009-7/2009
OK	GAGE AP	34-3407	NCDC	36.2967	-99.7689	2191	1/1988-7/2009
OK	HOBART MUNI AP	34-4204	NCDC	34.9894	-99.0525	1556	9/1988-7/2009
OK	LAWTON FT SILL RGNL AP	34-5066	NCDC	34.5583	-98.4172	1069	3/2005-7/2009
OK	MCALESTER 4 W	34-5662	NCDC	34.9500	-95.8333	670	1/1984-7/1996
OK	MCALESTER RGNL AP	34-5664	NCDC	34.8822	-95.7831	770	4/2005-7/2009
OK	OKLAHOMA CITY WILL ROGERS	34-6661	NCDC	35.3889	-97.6006	1285	1/1973-7/2009
OK	PONCA CITY MUNI AP	34-7201	NCDC	36.7367	-97.1019	1000	10/1988-5/1997
OK	TULSA INTL AP	34-8992	NCDC	36.1994	-95.8872	650	1/1973-7/2009
SD	ABERDEEN RGNL AP	39-0020	NCDC	45.4433	-98.4131	1297	1/1973-7/2009
SD	HURON AP	39-4127	NCDC	44.3981	-98.2231	1280	1/1973-7/2009
SD	PIERRE RGNL AP	39-6597	NCDC	44.3814	-100.2856	1742	1/1984-7/2009
SD	RAPID CITY RGNL AP	39-6937	NCDC	44.0433	-103.0536	3160	1/1973-7/2009
SD	SIOUX FALLS AP	39-7667	NCDC	43.5778	-96.7539	1428	1/1973-7/2009
SD	WATERTOWN RGNL AP	39-8932	NCDC	44.9047	-97.1494	1748	1/1984-7/2009
TN	JACKSON MCKELLAR AP	40-4556	NCDC	35.5931	-88.9167	433	1/1984-7/2009
TN	MEMPHIS INTL AP	40-5954	NCDC	35.0564	-89.9864	254	1/1973-7/2009
TX	CHILDRESS MUNI AP	41-1698	NCDC	34.4272	-100.2831	1951	9/1988-7/2009
TX	DALHART FAA AIRPORT	41-2240	NCDC	36.0233	-102.5472	3990	8/1989-7/2009
TX	DAL-FTW WSCMO AP	41-2242	NCDC	32.8978	-97.0189	560	1/1978-7/2009
TX	WICHITA FALLS MUNICIPAL A	41-9729	NCDC	33.9786	-98.4928	1017	1/1973-7/2009
UT	VERNAL AIRPORT	42-9111	NCDC	40.4411	-109.5092	5260	3/2005-7/2009
WI	EAU CLAIRE C V R AP	47-2428	NCDC	44.8653	-91.4850	885	1/1984-7/2009
WI	GREEN BAY A S INTL AP	47-3269	NCDC	44.4794	-88.1378	687	1/1973-7/2009
WI	LA CROSSE MUNI AP	47-4370	NCDC	43.8789	-91.2528	652	1/1984-7/2009
WI	MADISON DANE CO AP	47-4961	NCDC	43.1406	-89.3453	866	1/1973-7/2009
WI	MILWAUKEE MITCHELL AP	47-5479	NCDC	42.9550	-87.9044	670	1/1973-7/2009
WI	WAUSAU FAA AP	47-8968	NCDC	44.9286	-89.6267	1196	1/1984-7/2009
WY	CHEYENNE WSFO AP	48-1675	NCDC	41.1500	-104.8167	6130	1/1973-7/2009
WY	LARAMIE RGNL AP	48-5415	NCDC	41.3125	-105.6744	7266	9/1987-7/2009
WY	RAWLINS AP	48-7533	NCDC	41.8000	-107.2000	6736	3/2005-7/2009

State	Station name	Station ID	Source of data	Latitude	Longitude	Elevation (ft)	Period of Record
WY	ROCK SPRINGS AP	48-7845	NCDC	41.6000	-109.0667	6741	1/1984-7/2009

Appendix A.2 Annual maximum series trend analysis

1. Selection of statistical tests for detection of trends in AMS

Precipitation frequency analysis methods used in NOAA Atlas 14 volumes are based on the assumption that annual maximum series (AMS) data are stationary over the period of observation (and application). Several parametric and non-parametric statistical tests were used for the detection of trends in AMS mean and variance. The selection of statistical tests was made in consideration of the data tested and the limitations of each of the tests.

First, AMS were graphed to observe types of trends in the data for all stations in the project area at 1-hour and 1-day durations. Visual inspection of time series plots did not detect any abrupt changes or apparent cycles in the AMS, but suggested the possibility of slight trends at some locations. Changes appeared to be gradual and approximately linear.

The null hypotheses that there are no trends in AMS mean and/or variance was tested on 1-day and 1-hour AMS data at each station tested in the project area. The hypotheses were tested at the level of significance $\alpha = 5\%$. The hypothesis that there are no trends in AMS means was also tested for each climate region (see Figure 4.1.2) as a whole.

Levene's test (Levene, 1960) was used to test for homogeneity of variance in the AMS data. The test has been proven to be less sensitive to non-normality in data than some other commonly used tests (such as the Barlett test). The test statistic, W, is defined as follows:

$$W = \frac{(\mathrm{N}-\mathrm{k})\sum_{\mathrm{i}=1}^{\mathrm{k}} \mathrm{N_i}\ (\mathrm{Z_{i.}} - \mathrm{Z_{..}})^2}{(\mathrm{k}-1)\sum_{\mathrm{i}=1}^{\mathrm{k}}\sum_{\mathrm{j}=1}^{\mathrm{N_i}} \mathrm{N_i}\,(\mathrm{Z_{ij}} - \mathrm{Z_{i.}})^2}$$

where k is the number of sub-groups, N is the sample size, N_i is the sample size of the ith subgroup, Y_{ij} is the value of the jth sample from the ith subgroup, and Z_{ij} is the absolute deviation of Y_{ij} from the mean of the ith subgroup. Levene's test rejects the hypothesis that the variances are equal if

$$W > F_{\alpha,\, k\text{-}1,\, N\text{-}k}$$

where $F_{\alpha,\, k\text{-}1,\, N\text{-}k}$ is the upper critical value of the F distribution with k-1 and N-k degrees of freedom at a significance level of α.

At-station trends in AMS means were inspected using the parametric t-test and non-parametric Mann-Kendall test (e.g., Maidment, 1993). Both tests are extensively used for trend analysis in environmental sciences and are appropriate for records that have undergone a gradual change. The tests are fairly robust, readily available, and easy to use and interpret. Since each test is based on different assumptions and different test statistics, the rationale was that if both tests have similar outcomes there can be more confidence about the results, and if the outcomes are different, it would provide an opportunity to investigate reasons for discrepancies.

Parametric tests in general have been shown to be more powerful than non-parametric tests when the data are approximately normally distributed and when the assumption of homoscedasticity (homogeneous variance) holds (Hirsch et al., 1991), but are less reliable when those assumptions do not hold. The parametric t-test for trend detection is based on linear regression, and therefore checks only for a linear trend in data. A linear trend assumption seemed adequate here, since, time series plots indicated, if any, monotonic, linear changes in AMS. The Pearson correlation coefficient (r) was used as a measure of linear association between annual maximum series data and time for the t-test. The hypothesis that the data are not dependent on time (and also that they are independent and normally distributed values) was tested using the t-statistic that follows Student's distribution defined as:

$$t = \frac{r\sqrt{n-2}}{\sqrt{1-r^2}}$$

where n is the record length of the AMS. The hypothesis is rejected when the absolute value of the computed t-statistic is greater than the critical value obtained from Student's distribution with (n - 2) degrees of freedom and exceedance probability of α/2 %, where α is the significance level. The sign of the t-statistic indicates the direction of the trend, positive or negative.

Non-parametric tests have advantages over parametric tests since they make no assumption of probability distribution and are performed without specifying whether trend is linear or nonlinear. They are also more resilient to outliers in data because they do not operate on data directly. One of the disadvantages of non-parametric tests is that they do not account for the magnitude of the data. The Mann-Kendall test was selected among various non-parametric tests because it can accommodate missing values in a time series, which was a frequent occurrence in the AMS data. The Mann-Kendall test compares the relative magnitudes of annual maximum data. If annual maximum values are indexed based on time, and x_i is the annual maximum value that corresponds to year t_i, then the Mann-Kendall statistic is given by:

$$S = \sum_{k=1}^{n-1} \sum_{i=k+1}^{n} sign(x_i - x_k)$$

The test statistic Z is then computed using a normal approximation and standardization of the statistic S. The null hypothesis that there is no trend in the data is rejected at significance level α if the computed Z value is greater, in absolute terms, than the critical value obtained from a standard normal distribution that has probability of exceedance of α/2 %. The sign of the statistic indicates the direction of the trend, positive or negative.

In addition to an at-station trend analysis, the relative magnitude of any trend in AMS for each of four climate regions (see Figure 4.1.2) as a whole was assessed by linear regression techniques. 1-hour and 1-day station-specific AMS for stations with at least 70 years of data for the 1-day duration and with at least 40 years of data for the 1-hour duration were rescaled by corresponding mean annual maximum values and then regressed against time, where time was defined as year of occurrence minus 1900. The regression results from all stations were tested against a null hypothesis of zero serial correlation (zero regression slopes).

2. Trend analysis results and conclusion

The stationarity assumption was tested by applying a parametric t-test and non-parametric Mann-Kendal test for trends in means and the Levene's test for trends in variance in the 1-day and 1-hour AMS data at 5% significance level. For the 1-day duration, testing was done on stations with at least 70 years of data; for the 1-hour duration, the minimum number of data years was lowered to 40 to increase the sample size. 438 and 1,150 stations satisfied the record length criterion for the 1-hour duration and 1-day duration, respectively. For 1-hour, based on the Levene's test using two subgroups of equal length, the hypothesis that variance did not change could not be rejected for any of the stations. The t-test and Mann-Kendall test indicated no statistically significant trends in the mean at approximately 93% of stations. In the 1-day dataset, Levene's test indicated non-homogeneous variance in less than 1% of stations. Based on t-test and Mann-Kendall test results, respectively, positive trends were detected in 11 and 14% of stations, and negative trends in 2% and 1% of stations. More details are provided in Table A.2.1. The spatial distribution of the results for all three tests for 1-hour and 1-day AMS are shown in Figures A.2.1 and A.2.2, respectively. Small

clusters of stations where tests indicated positive trends are often due to AMS data sampled from the same storm events at several nearby locations.

Table A.3.1. Trend analysis results for 1-hour and 1-day AMS data.

Number of stations	**1-hour**			**1-day**		
	***t*-test**	**Mann-Kendall test**	**Levene's test**	***t*-test**	**Mann-Kendall test**	**Levene's test**
no trend	406	409	438	999	974	1055
positive trend	30	28	0	129	159	95
negative trend	2	1		22	17	
Total	438	438	438	1150	1150	1150

Results from the regional trend analysis also indicated that the null hypothesis, that there are no trends in AMS, could not be rejected at the 5% significance level for any of the four climate regions for the 1-hour and 1-day durations.

Because tests at both, the 1-hour and 1-day durations indicated no statistically significant trends in the data, the assumption of stationary AMS was accepted for this project area and no adjustment to AMS data was recommended.

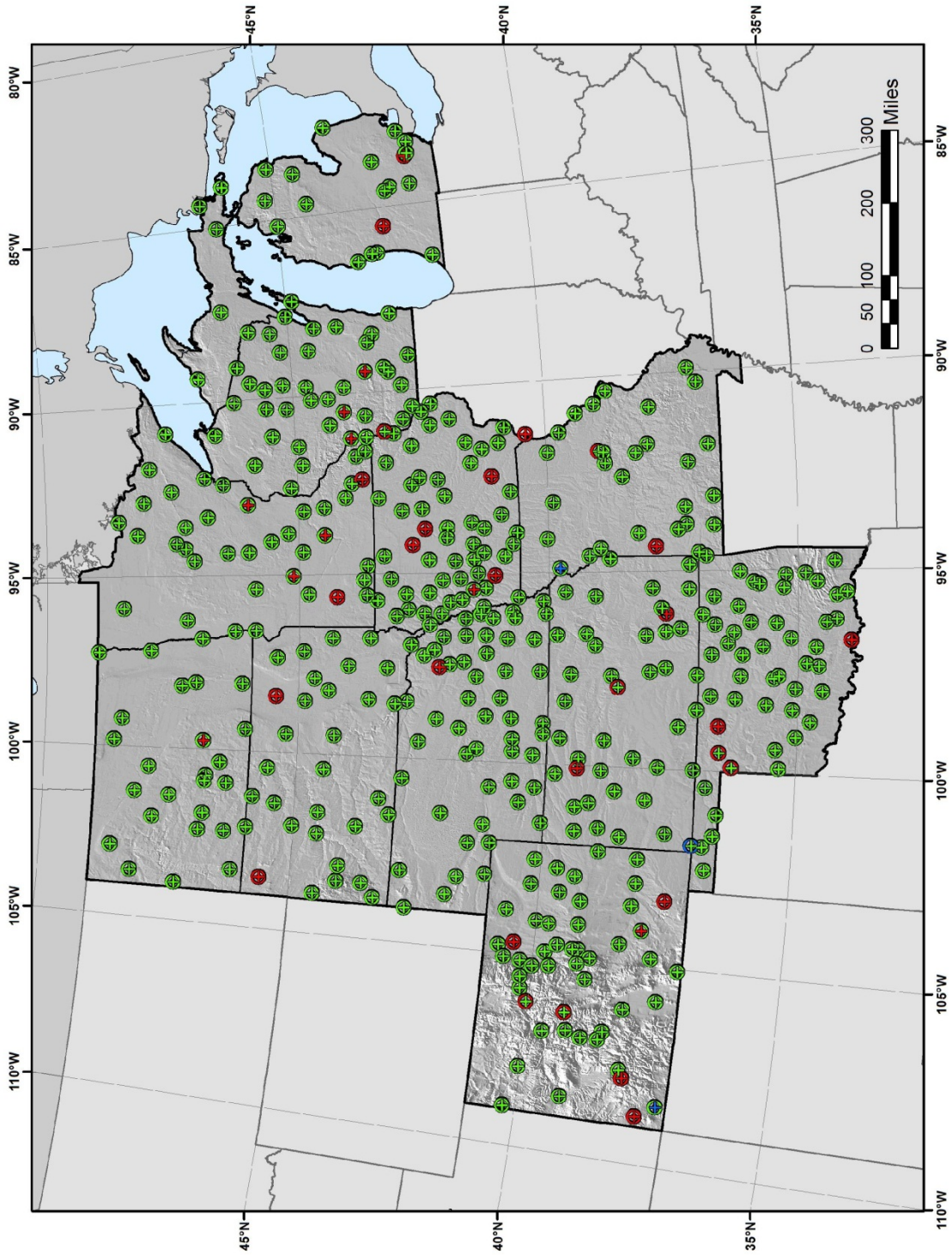

Figure A.2.1. Spatial distribution of results of *t*-, Mann-Kendall, and Levene's tests for 1-hour AMS. Circles were used to present *t*-test results and plus signs were used to present Mann-Kendal test results. Red color indicates positive trends, green no trend, and blue negative trends. There were no stations where Levene's test detected non-homogeneous variance.

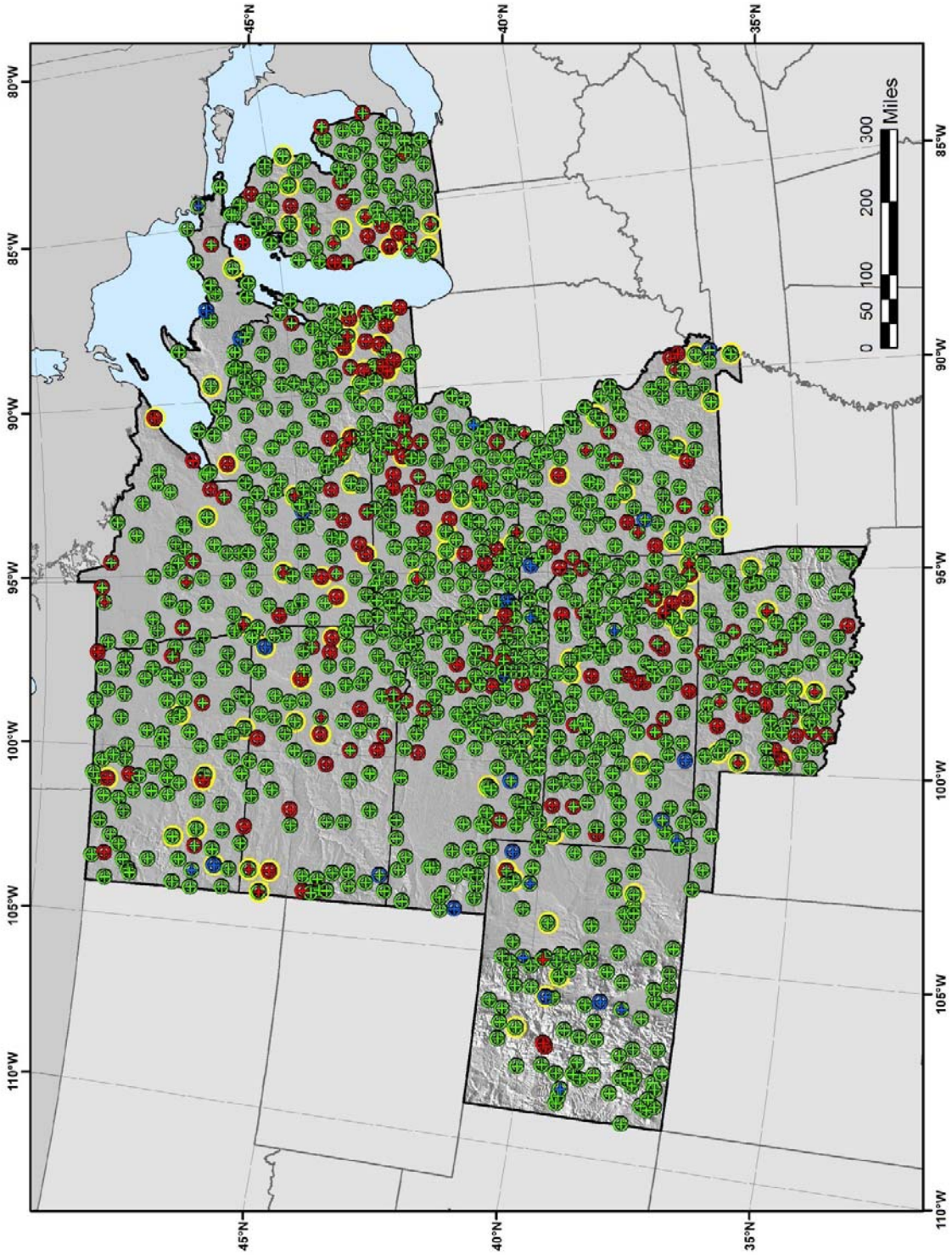

Figure A.2.2. Same as in Figure A.2.1, but for 1-day duration. Yellow circles show locations where Levene's test detected changes in variance.

Appendix A.3 PRISM report
[The results shown in this Appendix apply for Volumes 8 and 9. This report was formatted by HDSC.]

Final Report
Production of Mean Annual Maximum Grids for the Midwestern and Southeastern Regions Using a Specifically Optimized PRISM System

Prepared for
National Weather Service, Hydrologic Design Service Center
Silver Spring, Maryland

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February 2013

1. Project Goal

The Hydrometeorological Design Studies Center (HDSC) within the Office of Hydrologic Development of NOAA's National Weather Service is updating precipitation frequency estimates for the Midwest and Southeast regions (hereafter referred to as MWSE). In order to complete the spatial interpolation of point estimates, HDSC requires spatially interpolated grids of MAM (Mean Annual Maximum) precipitation. The contractor, the PRISM Climate Group at Oregon State University (OSU), was tasked with producing a series of grids for rainfall frequency estimation using an optimized system based on the Parameter-elevation Regressions on Independent Slopes Model (PRISM) and HDSC-calculated point estimates for the MWSE.

2. Background

HDSC used L-moment based regional frequency analysis approach to estimate precipitation frequencies. In this approach, the mean of the underlying precipitation frequency distribution is estimated at point locations with a sufficient history of observations. The form of the distribution and its parameters are estimated regionally. Once the form of the distribution has been selected and its parameters have been estimated, precipitation frequency estimates can be computed from grids of the MAM. The grids that are the subject of this report are spatially interpolated grids of the point estimates of the MAM for various precipitation durations. The point estimates of the MAM were provided by HDSC. HDSC selected an appropriate precipitation frequency distribution along with regionally estimated parameters and used this information with the grids of the MAM to derive grids of precipitation frequency estimates.

The PRISM Climate Group has performed similar work previously to produce spatially interpolated MAM grids for updates of precipitation frequency estimates in the Semiarid Southwest United States, the Ohio River Basin and Surrounding States, Puerto Rico/US Virgin Islands, Hawaiian Islands, California, and Alaska study areas.

3. Report

This report describes tasks performed to produce mean annual maximum (MAM) grids for 17 precipitation durations: 15 and 30 minutes; 1, 2, 3, 6, and 12 hours; and 1, 2, 3, 4, 7, 10, 20, 30, 45, and 60 days for the MWSE. The tasks described were not necessarily performed in the order described, nor were they performed just once. The process was dynamic and had numerous feedbacks.

3.1. Adapting the PRISM system

The PRISM modeling system was adapted for use in this project after a small investigation was performed for the Semiarid Southwest United States, and subsequently used in the Ohio River Basin and Surrounding States, Puerto Rico/Virgin Islands, Hawaiian Islands, California, and Alaska study areas. This investigation and adaptation procedure is summarized below.

PRISM is a knowledge-based system that uses point data, a digital elevation model (DEM), and many other geographic data sets to generate gridded estimates of climatic parameters (Daly et al. 1994, 2002, 2003, 2006, 2008) at monthly to daily time scales. Originally developed for precipitation estimation, PRISM has been generalized and applied successfully to temperature, among other parameters. PRISM has been used extensively to map precipitation, dew point, and minimum and maximum temperature over the United States, Canada, China, and other countries. Details on PRISM formulation can be found in Daly et al. (2002, 2003, 2008), which are available from http://prism.oregonstate.edu/docs/.

Adapting the PRISM system for mapping precipitation frequencies required an approach slightly different than the standard modeling procedure. The amount of station data available to HDSC for precipitation frequency was much less than that available for high-quality precipitation maps, such as the peer-reviewed PRISM 1971-2000 mean precipitation maps (Daly et al. 2008). Data sources suitable for long-term mean precipitation but not for precipitation frequency included snow courses, short-term COOP stations, remote storage gauges, and others. In addition, data for precipitation durations of less than 24 hours were available from hourly precipitation stations only. This meant that mapping precipitation frequency using HDSC stations would sacrifice a significant amount of the spatial detail present in the 1971-2000 mean precipitation maps.

A pilot project to identify ways of capturing more spatial detail in the precipitation frequency maps was undertaken. Early tests showed that mean annual precipitation (MAP) was an excellent predictor of precipitation frequency in a local area, much better than elevation, which is typically used as the underlying, gridded predictor variable in PRISM applications. In these initial tests, the DEM, the predictor grid in PRISM, was replaced by the official USDA digital map of MAP for the lower 48 states (USDA-NRCS 1998, Daly et al. 2000). Detailed information on the creation of the USDA PRISM precipitation grids is available from Daly and Johnson (1999). MAP was found to have superior predictive capability over the DEM for locations in the southwestern US. The relationships between MAP and precipitation frequency were strong because many of the effects of various physiographic features on mean precipitation patterns had already been incorporated into the MAP grid from PRISM. Preliminary PRISM maps of 2-year and 100-year, 24-hour precipitation were made for the Semiarid Southwest and compared to hand-drawn HDSC maps of the same statistics. Differences were minimal, and mostly related to differences in station data used.

Further investigation found that the square-root transformation of MAP produced somewhat more linear, tighter and cleaner regression functions, and hence, more stable predictions, than the untransformed values; this transformation was incorporated into subsequent model applications. Square-root MAP was a good local predictor of not only longer-duration precipitation frequency statistics, but for short-duration statistics, as well. Therefore, it was determined that a modified PRISM system that used square-root MAP as the predictive grid was suitable for producing high-quality precipitation frequency maps for this project.

For this study, an official USDA grid of MAP for the study region (1981-2010 average) was used (Figure 1). This grid was developed under funding from the USDA Natural Resources Conservation Service, and is an update to the 1971-2000 grids described in Daly et al. (2008).

3.2. PRISM configuration and operation for the MWSE

In general, PRISM interpolation consists of a local moving-window regression function between a predictor grid and station values of the element to be interpolated. The regression function is guided by an encoded knowledge base and inference engine (Daly et al., 2002, 2008). This knowledge base/inference engine is a series of rules, decisions and calculations that set weights for the station data points entering the regression function. In general, a weighting function contains knowledge about an important relationship between the climate field and a geographic or meteorological factor. The inference engine sets values for input parameters by using default values, or it may use the regression function to infer grid cell-specific parameter settings for the situation at hand. PRISM acquires knowledge through assimilation of station data, spatial data sets such as MAP and others, and a control file containing parameter settings.

The other center of knowledge and inference is that of the user. The user accesses literature, previously published maps, spatial data sets, and a graphical user interface to guide the model application. One of the most important roles of the user is to form expectations for the modeled climatic patterns, i.e., what is deemed "reasonable." Based on knowledgeable expectations, the user selects the station weighting algorithms to be used and determines whether any parameters should be changed from their default values. Through the graphical user interface, the user can click on any grid cell, run the model with a given set of algorithms and parameter settings, view the results graphically, and access a traceback of the decisions and calculations leading to the model prediction.

For each grid cell, the moving-window regression function for MAM vs. MAP took the form

$$\text{MAM value} = \beta_1 * \text{sqrt(MAP)} + \beta_0 \qquad (1)$$

where β_1 is the slope and β_0 is the intercept of the regression equation, and MAP is the grid cell value of mean annual precipitation.

Upon entering the regression function, each station was assigned a weight that is based on several factors. For PRISM MAP mapping (used as the predictor grid in this study), the combined weight of a station was a function of distance, elevation, cluster, vertical layer, topographic facet, coastal proximity, and effective terrain weights, respectively. A full discussion of the general PRISM station weighting functions is available from Daly et al. (2008).

Given that the MAP grid incorporated detailed information about the complex spatial patterns of precipitation, only a subset of these weighting functions was needed for this study. For the MWSE, the combined weight of a station was a function of distance and clustering, respectively. A station is down-weighted when it is relatively distant from the target grid cell, or when it is clustered with other stations (which can lead to over-representation).

The moving-window regression function was populated by station data provided by the HDSC. A PRISM GUI snapshot of the moving-window relationship between sqrt(MAP) and 24-hour MAM in south-central Colorado is shown in Figure 2.

There were relatively few stations with data for durations of 12 hours or less from which to perform the interpolation. In addition, it was clear that the spatial patterns of durations of 12 hours or less could be very different than those of durations of 24 hours or more. This issue was encountered in a previous study for Puerto Rico. During that study the following procedure was developed, and adopted here:

(1) Convert available ≤ 12-hour station values to an MAM/24-hr MAM ratio (termed R24) by dividing by the 24-hour values;

(2) using the station R24 data in (1), interpolate R24 values for each ≤ 12-hour duration (15, 30, and 60 minutes; and 2, 3, 6, and 12 hours) using PRISM in inverse-distance weighting mode;

(3) using bi-linear interpolation from the cells in the R24 grids from (2), estimate R24 at the location of each station having data for ≥ 24-hour durations only;

(4) multiply the estimated R24 values from (3) by the 24-hour value at each ≥ 24-hour station to obtain estimated ≤ 12-hour values;

(5) append the estimated stations from (4) to the ≤ 12-hour station list to generate a station list that matches the density of that for ≥ 24 hours; and

(6) interpolate MAM values for ≤ 12-hour durations with PRISM, using MAP as the predictor grid.

Investigation of the little available data failed to provide convincing evidence that the spatial patterns of R24 values in the MWSE were strongly affected by coastal proximity, topographic facets, or other factors. Therefore, the slope of the moving-window regression function for R24 vs. MAP of the form

$$R24 = \beta_1 * \text{sqrt}(MAP) + \beta_0 \qquad (2)$$

was forced to zero everywhere. This meant that the interpolated value of R24 was a function of distance and cluster weighting only (essentially inverse-distance weighting).

Relevant PRISM parameters for applications to 60-minute R24 and 24-hour MAM statistics are listed in Tables 1 and 2, respectively. Further explanations of these parameters and associated equations are available in Daly et al. (2002, 2008).

The values of radius of influence (*R)*, the minimum number of total (s_t) stations required in the regression were based on information from user assessment via the PRISM graphical user interface, and on a jackknife cross-validation exercise, in which each station was deleted from the data set one at a time, a prediction made in its absence, and mean absolute error statistics compiled (see Results section).

The input parameter that changed readily among the various durations was the default slope (β_{1d}) of the regression function. Slopes are expressed in units that are normalized by the average observed value of the precipitation in the regression data set for the target cell. Evidence gathered during PRISM model development indicates that this method of expression is relatively stable in both space and time (Daly et al. 1994).

Bounds are put on the slopes to minimize unreasonable slopes that might occasionally be generated due to local station data patterns; if the slope is out of bounds and cannot be brought within bounds by the PRISM outlier deletion algorithm, the default slope is invoked (Daly et al., 2002). The maximum slope bound was set to a uniformly high value of 30.0, to accommodate a large range of valid slopes; lower values were not needed to handle extreme values, because all values were within reasonable ranges. Slope default values were based on PRISM diagnostics that provided information on the distribution of slopes across the modeling region. The default value was set to approximate the average regression slope calculated by PRISM. For these applications, default slopes typically increased with increasing duration (Table 3). In general, the longer the duration, the larger the slope. This is primarily a result of higher precipitation amounts at the longer durations, and the tendency for longer-duration MAM statistics to bear a stronger and steeper relationship with MAP than shorter-duration statistics.

3.3. Preparation and review of draft grids

Draft grids for the 60-minute, 24-hour and 10-day durations were produced and made available to HDSC for evaluation. All of the necessary station data were provided by HDSC. The process began with a careful scrutiny of the station data and PRISM behavior. A version of PRISM which predicts for stations locations in the absence of each station (termed jackknifing) was run, and stations that were difficult for PRISM to predict for were identified, and sent to HDSC for review. HDSC removed the stations, modified their values, or determined that the stations were accurate as-is. This process was performed iteratively, until an acceptable station data set was produced. The draft PRISM grids were subsequently completed and submitted to HDSC for review. HDSC submitted the draft PRISM grids for external review, and revised the station data accordingly.

3.4. Final grids

Having found the revised draft grids acceptable, HDSC requested that grids for all durations be completed. Before delivering the final grids to HDSC, the PRISM Climate Group checked them for internal consistency. In other words, the value of the MAM at each grid point for each duration must have been greater than the value for shorter durations at the same grid point. If an inconsistency of this nature occurred, the convention was to start with the 24 duration as a baseline, and set longer durations to slightly higher values and shorter durations to slightly lower values.

The final delivered grids inherited the spatial resolution of the latest 1981-2010 PRISM mean annual precipitation grids for MWSE, which is 30 arc-seconds (~800 meters). The grid cell units are in mm*100. Final MAM grids delivered to HDSC are as follows:

15-minute
30-minute
60-minute
2-hour
3-hour
6-hour
12-hour
24-hour
48-hour
3-day
4-day
7-day
10-day
20-day
30-day
45-day
60-day
Total: 17

3.5. Performance evaluation

PRISM cross-validation statistics for 60-minute/24-hour MAM ratio and the 60-minute and 24-hour MAM intensities were compiled and summarized in Table 4. These errors were estimated using an omit-one jackknife method, where each station is omitted from the data set, estimated in its absence, then replaced. Since the 60-minute/24-hour MAM ratio was expressed as a percent, the percent bias and mean absolute error are the given as the bias and MAE in the original percent units (not as a percentage of the percent).

For the 60-minute/24-hour MAM ratio, the overall bias was near zero and the mean absolute error (MAE) about 3 percent. For the 60-minute, 24-hour, and 10-day MAM intensities, biases were less than 0.25 percent, and the MAE varied around the 4 percent mark. Biases for the 15- and 30-minute durations were slightly negative (-1.8 and -0.19 percent, respectively), while those for the other durations were slightly positive (ranging between 0.08 and 0.25 percent). MAEs for all durations were less than 5 percent, with most less than 4 percent. Given the lack of independent data at durations of less than 24 hours, one would have expected the 15-minute to 12-hour MAM errors to be substantially higher than those for the 24-hour to 60-day MAMs. A likely reason why this was not the case was that the addition of many synthesized stations, derived from a PRISM interpolation of R24 values, resulted in a station data set that was spatially consistent, and thus, somewhat easier to interpolate with each station deleted from the data set. Therefore, there is little doubt that the true interpolation errors for the 60-minute MAM are higher than those shown in Table 4.

Table 1. Values of relevant PRISM parameters for interpolation of 60-minute/24-hour mean annual maximum ratio (60-minute R24) for the MWSE. See Daly et al. (2002) for details on PRISM parameters.

Name	Description	Value
Regression Function		
R	Radius of influence	10 km*
s_t	Minimum number of total stations desired in regression	45 stations
β_{1m}	Minimum valid regression slope	0.0+
β_{1x}	Maximum valid regression slope	0.0+
β_{1d}	Default valid regression slope	0.0+
Distance Weighting		
A	Distance weighting exponent	2.0
F_d	Importance factor for distance weighting	1.0
D_m	Minimum allowable distance	0.0 km
Elevation Weighting		
B	MAP weighting exponent	NA/NA
F_z	Importance factor for MAP weighting	NA/NA
Δz_m	Minimum station-grid cell MAP difference below which MAP weighting is maximum	NA/NA
Δz_x	Maximum station-grid cell MAP difference above which MAP weight is zero	NA/NA

* Expands to encompass minimum number of total stations desired in regression (s_t).

\+ Slopes are expressed in units that are normalized by the average observed value of the precipitation in the regression data set for the target cell. Units here are 1/[sqrt(MAP(mm))*1000].

Table 2. Values of relevant PRISM parameters for modeling of 24-hour mean annual maximum statistics for the MWSE. See Daly et al. (2002) for details on PRISM parameters.

Name	Description	Value
Regression Function		
R	Radius of influence	3 km*
s_t	Minimum number of total stations desired in regression	25 stations
β_{1m}	Minimum valid regression slope	0.0^+
β_{1x}	Maximum valid regression slope	30.0^+
β_{1d}	Default valid regression slope	2.8^+
Distance Weighting		
A	Distance weighting exponent	2.0
F_d	Importance factor for distance weighting	1.0
D_m	Minimum allowable distance	0.0 km
Elevation Weighting		
B	Elevation weighting exponent	0.0
F_z	Importance factor for elev weighting	0.0
Δz_m	Minimum station-grid cell elev difference below which MAP weighting is maximum	NA
Δz_x	Maximum station-grid cell elevation difference above which station is eliminated from data set	NA

* Expands to encompass minimum number of total stations desired in regression (s_t).

$^+$ Slopes are expressed in units that are normalized by the average observed value of the precipitation in the regression data set for the target cell. Units here are 1/[sqrt(MAP(mm))*1000].

Table 3. Values of PRISM slope parameters for modeling of MAM statistics for the MWSE for all durations. For durations of 12 hours and below, station data were expressed as the ratio of the given duration's MAM value to the 24-hour MAM value, and interpolated; this was followed by an interpolation of the actual MAM values. See text for details. See Table 1 for definitions of parameters.

	MWSE		
Duration	β_{1m}	β_{1x}	β_{1d}
15m/24h ratio	0.0	0.0	0.0
30m/24h ratio	0.0	0.0	0.0
1h/24h ratio	0.0	0.0	0.0
2h/24h ratio	0.0	0.0	0.0
3h/24h ratio	0.0	0.0	0.0
6h/24h ratio	0.0	0.0	0.0
12h/24h ratio	0.0	0.0	0.0
15 minute MAM	0.0	30.0	2.3
30 minute MAM	0.0	30.0	2.3
1 hour MAM	0.0	30.0	2.3
2 hour MAM	0.0	30.0	2.3
3 hour MAM	0.0	30.0	2.4
6 hour MAM	0.0	30.0	2.5
12 hour MAM	0.0	30.0	2.7
24 hour MAM	0.0	30.0	2.8
48 hour MAM	0.0	30.0	3.0
3 day MAM	0.0	30.0	3.1
4 day MAM	0.0	30.0	3.2
7 day MAM	0.0	30.0	3.6
10 day MAM	0.0	30.0	3.8
20 day MAM	0.0	30.0	4.2
30 day MAM	0.0	30.0	4.5
45 day MAM	0.0	30.0	4.6
60 day MAM	0.0	30.0	4.8

Table 4. PRISM cross-validation errors for 60-minute/24-hour MAM ratio and 24-hour MAM applications to the MWSE. Since the 60-minute/24-hour MAM ratio was expressed as a percent, the percent bias and mean absolute error are the given as the bias and MAE in the original percent units (not as a percentage of the percent).

Statistic	**N**	**% Bias**	**% MAE**
60-min/24-hr MAM ratio	1222	-0.03	3.14
60-minute MAM	3712	0.08	3.98
24-hour MAM	3709	0.23	4.04
10-day MAM	3709	0.19	3.41

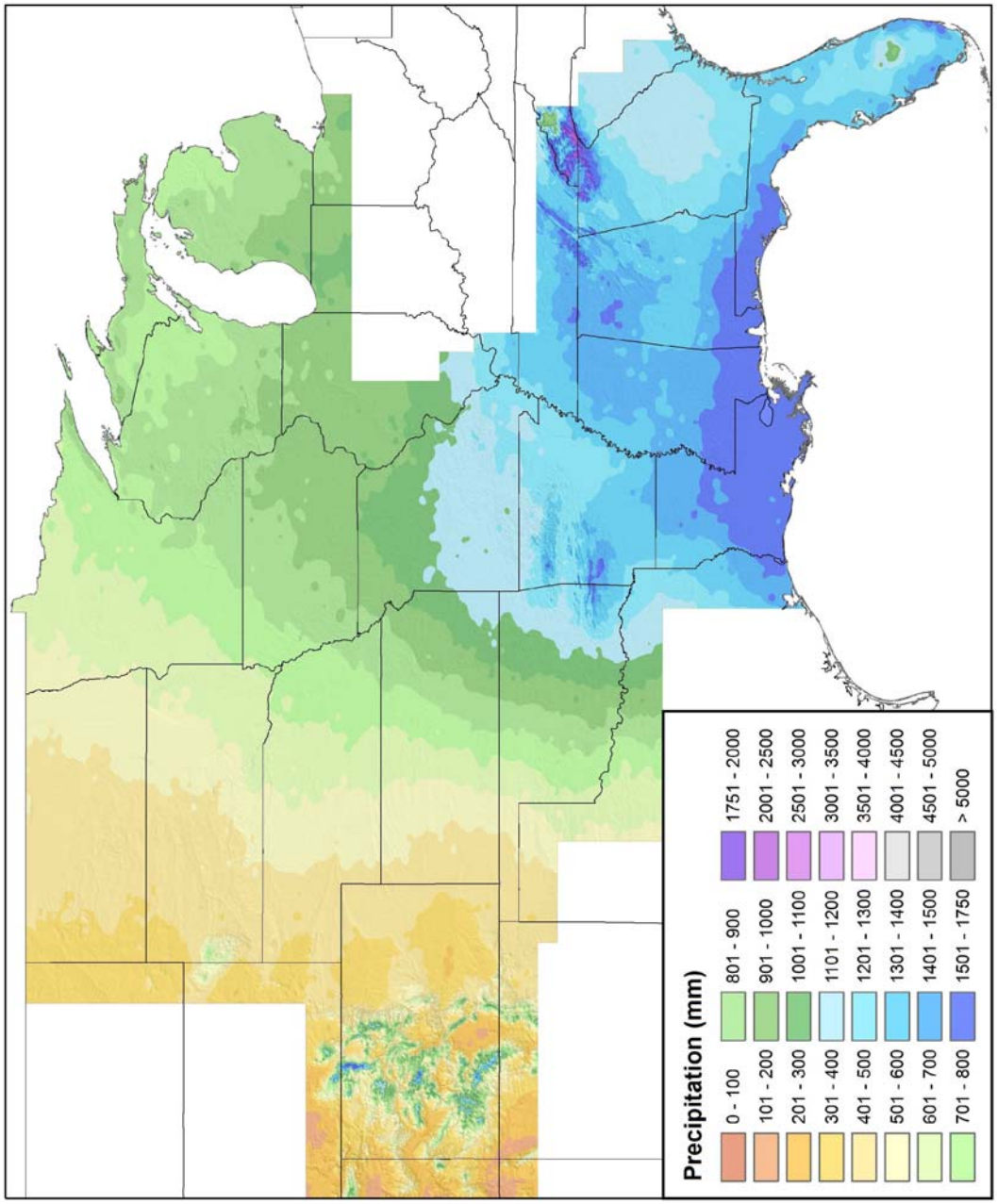

Figure 1. PRISM 1981-2010 mean annual precipitation (MAP) grid for the MWSE region.

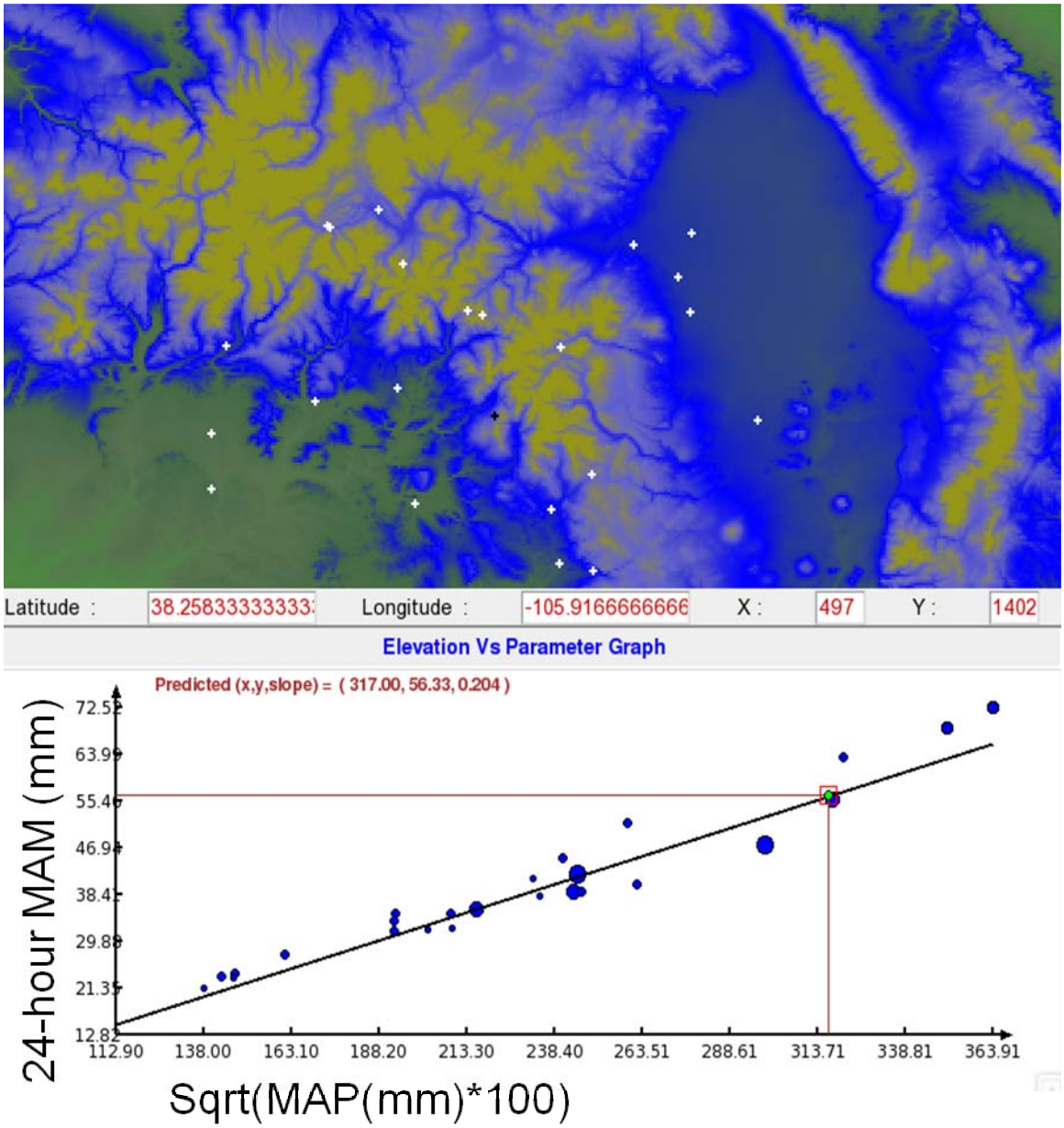

Figure 2. PRISM GUI snapshot of the moving-window weighted regression between the square root of mean annual precipitation and 24-hour mean annual maximum precipitation (MAM) in south-central Colorado.

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Appendix A.4 Peer review comments and responses

A peer review of preliminary results for the Volume 8 precipitation frequency project was carried out during a five week period starting on October 15, 2012. The request for review was sent via email to the over 700 members of the HDSC list-server from all over the United States and other interested parties. Potential reviewers were asked to evaluate the reasonableness of point precipitation frequency estimates as well as their spatial patterns. The review included the following items:

a. Metadata for stations whose data were used to prepare mean annual maximum precipitation maps and/or in precipitation frequency analysis. The table included information on station name, state, source of data, assigned station ID, latitude, longitude, elevation, and period of record. It also showed if the station was merged with another station, if the station was co-located with another station with a different ID, and if metadata at the station were changed. (Station IDs were assigned by HDSC and do not match station IDs assigned by the agency that provided the data, except for National Climatic Data Center.)

b. Metadata for stations whose data were collected, but not used in the analysis. The table contained metadata for stations that were examined, but not used, with brief comments on why the data were not used. Generally, stations were not used because there was another station with a longer period of record nearby, station data were assessed as not reliable for this specific purpose, or the station's period of record was not long enough and it was not a candidate for merging with any nearby station.

c. At-station depth-duration-frequency (DDF) curves for 60-minute to 10-day durations and for 2-year to 100-year ARIs.

d. Maps of spatially-interpolated estimates of mean annual maximum precipitation for 60-minute, 24-hour and 10-day durations.

e. Maps of spatially-interpolated precipitation frequency estimates for 60-minute, 24-hour and 10-day durations and for 2-year and 100-year average recurrence intervals (ARIs).

Comments were received from 40 individuals or offices and agencies including the U.S. Army Corps of Engineers; U.S. Geological Survey; several State Climatology Offices and Weather Forecast Offices. All reviewers' comments and HDSC's responses (in red) are shown below. The comments and their respective HDSC responses have been separated into four categories:

1. Station metadata
   a. Station location, name, and period of record
   b. Stations used versus not used and station merging
2. At-station precipitation frequency estimates
   a. Frequency analysis methods
   b. Depth-duration-frequency curves
   c. Comparison with other studies
3. Precipitation frequency grids/maps
   a. Spatial patterns
   b. Cartographic maps
   c. Comparison with other studies
4. Miscellaneous.

1. Station metadata

a. Station location, name, and period of record (POR)

1.1 Metadata on the Stations is valuable as a handy reference for POR of weather stations. Will this table be updated over time, or is the product static?
The product is static. Precipitation frequency work done by HDSC is funded by external contributions and we do not currently have funding mechanisms to update the estimates and supplementary information regularly.

1.2 [Nebraska] Metadata for stations (either used or not used) are adequate.
No response necessary.

1.3 [Missouri] I'm not sure of what spatial accuracy you are striving for. I realize some of the lat/lon pairs you have are still reflected in our local databases. However, I can tell you the following may have errors, based on Google Earth plotting, which of course has its own inherent errors.

Cap Au Gris L&D 25: This is close, about 250 feet off. Google Earth puts this spot over the Mississippi River below the dam. 39.002765 N, 90.689206 W
We implemented the recommended coordinates for Cap Au Gris L&D 25 (23-1283).

Columbia Regional AP: This may be about 1000 feet off. Google Earth plots this inside of the main runway, when it is located due east of this spot. 38.817031 N, 92.214742 W
We implemented the recommended coordinates for Columbia Regional AP (23-1791).

Columbia AP WSO: Not sure about this one. I believe WSO Columbia used to be located at the north airport location before moving to the newer regional airport. However, this lat/lon pair is in the middle of I-70. I'm guessing the old WSO was near the old airport, where the old runways are still visible from imagery. It's hard to guess where the instruments were, but this lat/lon could be 1000-1500 ft off. 38.9678 N, 92.3667 W (Just a guess, as I doubt there was a sensor in the middle of I-70 in the 1960s. The adjustment northward was very conservative, and could have been farther north and east.)
Since Columbia AP WSO (23-1790) was already merged with 23-1971 and coordinates of 23-1971 were adopted, no action was needed.

Hannibal Water Works: The gage is about 800 ft west of this spot. 39.723134 N, 91.3748 W
We implemented the recommended coordinates for Hannibal Water Works (23-3601).

Jefferson City Water Treatment Plant: This is pretty close, maybe 150 feet north of this spot.
Because the suggested location was so close to the original location, it was not necessary to adjust coordinates.

L&D 24 Mississippi River: I don't quite understand this one. First, it is mislabeled. This should be L&D 25. This is the same general location as Cap Au Gris L&D 25. Also, the lat/lon pair puts this at the tailwater gage, where there is no rain gage to my knowledge. There is a tipping bucket on the pool gage, but not on the tailwater gage. The pool gage lat/lon from Google Earth is 39.0054 -90.6912. If this is not a tipper, it could be referencing the F&P gage along the downstream end of the streamward lock wall. If that's the case, the lat/lon is about

500 ft too far south. 39.005270 N, 90.691252 W (I am assuming this is referencing the pool tipping gage on the upstream end of the lock wall, not the F&P gage located on the interior tailwater wall. If this is the F&P, the coordinates are: 39.002318 N, 90.688297 W)
Since L&D 24 Mississippi River (59-0052) was already merged with 23-1283 and the location of 23-1283 station was adopted, no action was needed.

St. Louis Lambert AP: For the ASOS and immediate predecessors (HO83?), this is only about 60 feet off. I am unsure of instrument location prior to the 70s, but I believe it was at the USWB office, likely a different location, though I am unsure of lat/lon here.
We could not obtain appropriate information for St. Louis Lambert AP station (23-7452). Given the uncertainty, the original coordinates obtained from NCDC records were kept.

St. Louis Science Center : This lat/lon pair is about 560 ft south of the gage location. I guess the threading of observations using this site with the others is okay. They appear to be within 5 miles of each other, though not much less. 38.630789 N, 90.270755 W
We implemented the recommended coordinates for St. Louis Science Center (23-7452).

St. Louis, Spirit of St. Louis Airport : This lat/lon is awful, more than a mile off. A better estimate would be 38.6575 -90.6557. Speaking of awful, rainfall from this site, on a monthly basis, has been notoriously low the past year or two. I'm not sure when the anomaly began, but we have not been able to correct the gage's low amounts to date. 38.657510 N, 90.655734 W
We implemented the recommended coordinates for St. Louis, Spirit of St. Louis Airport (23-7964). However, since this station has only n-minute data and it was not co-located with another 15-minute, hourly or daily station, we did not use this station in our analysis.

Weldon Spring NWS: Not bad, about 17 feet off!
No need to re-locate this station.

The others I found minor discrepancies with (Jeff City WP and Lambert) were less than 150 ft off.
No need to re-locate these stations.

1.4 [Michigan] Add Manistique WWTP 20-5073-2; I have documentation for this station index number and its predecessors to around 1953.
We have daily data for station 20-5073 (and its merged predecessors) that extend back to 1896. However, the available 15-minute and hourly data records were too short to be included in the analysis.

1.5 [Colorado] The SNOTEL lat lons in your Metadata are a bit different than what we have. An Excel spreadsheet (lat lons from NWSLI and our databases in red) of SNOTELS (from your MWSE used stations list) is attached along with a 2nd spreadsheet of our CO SNOTEL lat lons statewide.
We adopted the recommended coordinates for SNOTEL stations; coordinates we originally obtained did not have seconds.

1.6 [Colorado] Did anyone have the chance to double check the location of the Fort Collins Weather Station? If it was as it appeared, it was off several miles from its actual location in the heart of the campus of Colorado State University in the center of Fort Collins.

We noticed that our Fort Collins weather station 05-3005-4 (NCDC Co-op number) seems to be plotting north and west of it's true location.

The item that jumped out at me the most is what [was] already brought up about the CSU main campus gage either not being on the map or that is was in the wrong location.

Locations stated in the study spreadsheet lists the location for the FT COLLINS (CSU Main Campus) station (NCDC 05-3005) as N 40.6147 W 105.1314 and a more proper placement is N 40.5762 W 105.08571.

The coordinates we had (40.6147 -105.1314) are from NCDC records. We moved the station to the recommended coordinates (40.5762,-105.08571), which we found were also in agreement with coordinates found in the Western Region Climate Center's data inventory.

1.7 [Minnesota] For station names for MN DNR Backyard stations (BYRG) – it would be helpful to include more of the DNR's station name to facilitate finding the data. For example – Station 80-0009 is named Dibble_S in the metadata. The DNR name for this station is BYRG_27_118N_21W_6_DIBBLE_S. When looking at the online data records – the DNR/State Climatology site identified the station by the Township/Range/Section (27 118N 21W 6 BYRG) information.
We have changed the station names for MN DNR stations (80-) so that it is easier for those familiar with the dataset to find a station of interest.

1.8 [Nebraska] We only saw one error on one of our sites. The site Mina Nebraska in Scottsbluff County should be spelled Minatare. Otherwise, everything looks good.
We changed the name of station 57-0033 to "Weather Stn Minatare".

b. Stations used versus not used and station merging

1.9 [Iowa] I focused in particular on the State of Iowa. I am glad that metadata about the stations (whether included or not in the analyses) were provided. This piece of information is useful for the assessment of the inhomogeneity of the data.
No response necessary.

1.10 [Colorado (and Utah)] - add Castle Valley, 42-1241, has approx. 30 year data set.
- add Craig 4SW, 05-1932, site goes back to 1963.
- add Vail, 05-8575, site goes back to 1985.
While periods of record for these stations were longer than 30 years, actual number of data years for all of them was less than 30 and so they did not meet our minimum requirement of 30 data years for daily stations to be used in frequency analysis. Additionally, for station 05-1932 there was a nearby station (05-1928) with significantly longer AMS.

1.11 We noted that the Milwaukee Metropolitan Sewerage District rainfall data in Milwaukee and Waukesha Counties was excluded from the analysis because the period of record was determined to be too short. A spot check of other stations used in the study indicated that in some cases periods of record of 25 years were incorporated (e.g., Adairsville (GA) 5 SE, NCDC Station 09-0044). That period is comparable to the MMSD period of record. Were there considerations other than length of record that informed the decision to drop the MMSD gauges? If not, is it still practical to incorporate data from the MMSD gauges?
For hourly stations, only stations with at least 20 data years (years for which annual maximum series data were extracted) were used in frequency analysis. In order for an annual maximum

to be extracted for a year, the year's observations must meet certain criteria regarding the allowable amount of missing and accumulated data. Section 4.3 describes the extraction criteria. The MMSD data did not meet the minimum number of data years. We did review these stations to see if they could be merged with nearby stations to increase their data length, but unfortunately, none of the stations met the criteria for merging. We could not incorporate the data from these gauges.

1.12 [Minnesota] Did not see a second station at the same location for two of the 'duplicate data' station sites:
-Eagan #80-0086
-Ringer #80-0264
(Ringer at same location as Brimson 2S, but listed records in meta data are not identical – don't see anything right at same location as Eagan although other stations not too far away).
It would have been helpful to reviewers to be given the associated station for "co-located" and "duplicate data" in the file of Metadata for stations whose data were not used.
When we said "duplicate data" as the reason for a station not being used, we meant either that station data was provided by more than one source or that a relatively nearby station covers the same period and may have a longer record as well. Regarding 80-0086, which had less than 20 years of data, station 21-7107 was less than 5 miles away and had more than 50 years of data. Similarly, 21-0989, which was less than 1 mile away from 80-0264, covered the same period as 80-0264 and had a longer record. We apologize for the confusion.

1.13 [Minnesota] While I understand the strategy of placing a filter of at least 30 years required, I am concerned that in the future this may not be realistic. Since our society is becoming more and more mobile, the likelihood of having an observing site remain in one location for 30 +years is decreasing. The requirements for a compatible Coop station move are now very stringent, causing almost every Co-op station move to be incompatible over the past several years.
In only in a few cases we have been able to use the same COOP ID when we have relocated a station. NCDC has been able to mitigate the issues this causes with long term records by creating pseudo-normals (i.e. providing 30 year climate averages for Co-op sites with less than a 30 year record by taking into account data from surrounding locations for the missing years using a distance weighted function). They will use data for a station in their climate calculations if it has at least a 10 years of data during the 30 year period, through the pseudo-normal. This helps to fill in a lot of gaps across the country, and provides a much more robust data set.
In addition CoCoRaHS uses unique IDs, so we will never see a gauge move with that network.
In talking with … the MN State Climate office, many of the Hiden/MN Gauge Network gauges that were provided had a 15 to 20+ years historical record and they were confident in the quality of the data. So I wondered if you had considered doing a parallel analysis to include these additional gauges to see the impact of the shorter period of record. I wonder if the benefit of increasing the density, would outweigh the potential increase in the variability of the statistical analysis.
We agree with your concern about the future of the observing network. With respect to your comment about "taking into account data from surrounding locations for the missing years using a distance weighted function", we have deliberately avoided this approach in preparing precipitation frequency estimates. Estimating missing values from surrounding stations provides added weight to those surrounding stations without providing additional raw information for the statistical analysis. For a discussion about the minimum record length and

criteria used for merging stations (relocated or otherwise), please see our response in comment 2.1. Regarding the Minnesota Department of Natural Resources (DNR) data (i.e., "Hiden/MN Gauge Network gauges"), we did use quite a few of those stations, especially in the St. Paul-Minneapolis area. However, based on the comments we received during the peer review, we revisited this area and removed fourteen shorter daily stations from the analysis (see also response in comment 3.13).

1.14 [Wisconsin] We note that 416 stations were NOT used (vs. 245 USED) for the 1-DAY data. This was particularly a result of eliminating all 245 of the USGS 1-day data, and the 16 hourly RAWS data, apparently due to insufficient record lengths. We assume that the criteria for record length are consistent with the previous policy used for Vol. 2 (2003).
However, we have a general concern that the elimination of so much data from recent decades is likely to underestimate the frequency of strong events, which counteracts the intent of the frequency estimates. This is a difficult problem in these days of real trends in some extremes. But, in the long run we believe that frequency probabilities should ultimately be estimated using statistical techniques that allow the maximal amount of data to be used, regardless of duration. [For example, in the metro area of Madison, WI we have evidence of significant differences of heavy rain frequency between locations separated by less than 10 miles.] Perhaps these concerns must be left for the future.
Regarding the importance of sufficient record lengths, please see our response in comment 2.1. Regarding the trends in extreme precipitation - we look at trends in the mean and variance of the annual maximum series data that is relevant for precipitation frequency analysis. Appendix A.2 provides the details of that analysis. Because tests at both, 1-hour and 1-day durations indicated no statistically-significant trends in the data in the magnitudes of AMS, no adjustment to AMS data was recommended.

1.15 [Wisconsin] We concluded that the USED stations were primarily daily stations, apparent HPD stations, plus a few with 15-min data. We consider these sources to be compatible with our past choices for analyses, and generally reliable.
No response necessary.

1.16 [Colorado] I was not surprised but mildly disappointed no ALERT data was used from either UDFCD or from Fort Collins - but I am sure that will change as the period of record increases. Interesting that one Overland Park Kansas ALERT gage was used among all of their ALERT gages.
We were unable to use ALERT stations due to their short periods of record. During our station screening process, we reviewed all stations for potentially merging records with nearby stations to increase record lengths and retain the data in the analysis. We reviewed the Denver and Fort Collins ALERT gauges but could not find any suitable merges. Nearby stations had longer periods of record and overlapped the records at the ALERT stations. The Overland Park Kansas station was merged with an NCDC station that was about 1 mile away and did not completely overlap its period of record.

1.17 [Michigan] We are unsure where the station merges are coming from. For example for the Ann Arbor gauges, all 3 gauges indicate that data was merged; however, all 3 gauges have the same ID and coordinates, with different periods of record. Also, some of the merges appear to be of gauges that are fairly far apart; there are 331 gauges for Michigan, of which 69 are merged and 22-35 of the mergers are of gauges that are greater than 2 miles apart (with the largest merge being more than 8 miles away). Additionally, 65 of the merged sites have a change in elevation;

19 of which are greater than 50' difference with the largest difference being 350'. How is the data being merged? What criteria is used to merge the sites? Should gauges more than 2 miles away be merged? What are the elevation considerations? Generally, we feel gauges should not be merged if more than 2 miles apart or in very different land use settings. We would like to see more transparency as to rationale for merging gauges particularly those over greater distances or with significant elevation changes.

When stations have the same ID, they are generally co-located stations measuring precipitation at different intervals. Long records are essential for statistical methods used in frequency analysis, so there is definitely an advantage to combining time series from nearby stations to make one long record. Stations located within about 3 miles with elevation differences of less than 300 feet were candidates for merging upon comparison of their AMS statistics and examination of AMS for overlapping periods. In flatter terrain, or where a station measured critical event and station's data may not be used otherwise due to a short record, we made allowances and merged stations beyond these criteria.

1.18 [Wisconsin] I reviewed all the official COOP stations in the MKX service area in the NWS CSSA system that were used in this Frequency Atlas. All were presently active with good data with the exceptions below:

- WEST ALLIS 47-9046 station closed in 02/11
- N. SIDE OF MILWAUKEE 47-5477 No records found for this station. ??
- PT. WASHINGTON 47-6764 station closed in summer 2011
- WEST BEND 47-9050 station closed in 02/2005 nearby replacement station is WEST BEND PUBLIC WORKS 47-9052
- SHEBOYGAN 47-7725 station close in 09/2008 nearby replacement station is CITY OF SHEBOYGAN 47-1605
- ELDORADO 47-2507 No records found for this station ??
- DALTON 47-1970 station closed in 09/2008 nearby replacement station is MARKESAN 47-5096
- PRAIRIE DU SAC 47-6838 station closed in 03/2008 nearby replacement station is SAUK CITY WWTP 47-7576
- LK. GENEVA 47-4457 station closed in 06/2003
- WILLIAMS BAY 47-9226 No records found for this station ??
- EAGLE-2 W 47-2302 station closed 09/1994
- BLANCHARDVILLE 47-0892 station closed in 2012

We reviewed the data collected for these stations and what we have reflects what NCDC had available at the time of collection. We merged 47-5477 with 47-7792 and 47-5484 to create a longer record from 5/1896 to 8/1976. Since one of the criteria we used for merging stations was that a merged station must add at least 5 years of additional data, we did not merge the following stations with their replacement stations: 47-9050, 47-7725, 47-1970 and 47-6838. Each of these stations already had very long records (more than 60 years) and the replacement stations had fewer than 5 years of data to add.

1.19 [Iowa] Attached please find my comments of the requested review of stations used in the new precipitation frequency study for Iowa.

13-0001 Ottumwa Industrial Airport 1-HR; 15-minute, 3/2005 to 5/2011 incorrectly included under ID 13-0001.ASOS station; If added to correctly reported 13-6389 data may have enough data to use.

Merging these two stations only provided 18 years of data which did not meet the minimum of 20 data years to be included in the analysis.

13-0046 1-HR/15M Adair 1-HR; this station is a continuation of 13-2768 (Exira), distance more than 5 miles away but may be worth combining. Stations are nine miles apart with similar elevation.
After investigating, we merged 13-2768 (22 years) with 13-0046 (39 years).

13-0088 Akron 1-DAY; this station is a continuation of 39-2622 (Elk Point, SD) with same observer and very short distance of move from one side of the border to the other.
We had merged these stations previously.

13-0149 Allerton 1-HR; this is a complicated one with multiple station moves and station name changes. Distance of moves beyond 5 miles in some cases but there is no overlap of records. Other stations since 1940 beginning of record are Corydon (13-1848) and Clio (13-1651). Might be worth combining into one longer useable record.
13-1848 and 13-1651 are 7 miles and 6 miles away from 13-1049, respectively. After investigation, we merged the daily stations 13-1848 and 13-0149 and co-located it with hourly station 13-1651 to create a more comprehensive record to represent this area across all durations.

13-0149 Allerton 1-DAY; see above. Similar situation, even more station moves and name changes with some overlap of records. Going back prior to 1940 also includes Ovid (13-6412). Maybe this has already been done- hard to determine from spreadsheet.
See above. We had already merged the daily stations 13-0149 and 13-6412.

13-0203 Ames 5 SE 1-DAY; not sure that this site has a long enough period of record with only 1979 to present and one year back in 1901. Looks like this may have been combined with Ames 3 SW (13-0205); however, 13-0205 would be a better match with Ames 8 WSW (13-0200).
We had already merged 13-0203 and 13-0205 which were 5 miles apart. 13-0205 is 6.5 miles from 13-0200. Since 13-0203 was closer, we kept the merged pair as is.

13-0205 Ames 3 SW, 1-DAY and 1-HR; this is essentially a precursor of Ames 8 WSW (13-0200) but there is ~1 year of overlap of daily records. See station above (this station should be combined with 13-0200).
See response above.

13-0463 Bancroft 1-DAY; this is a precursor to Swea City (13-8026). No overlap of records. Might be a little too distant to combine records.
The stations are 11 miles apart so we did not merge them.

13-0549 Beaver 1-HR; this is a precursor to Ogden (13-6205). Nearby station with no overlap of records. Might be good to combine.
For 13-0549, we were able to extract only one annual maximum value, so we did not make recommended merge.

13-0853 Boyer 4 SE 1-HR; this is listed as too few years to use, but seems longer than some other 15-MIN stations that are being used. Hly station has 47-years of data.

We included the hourly record in the analysis, but the 15-min record only had 17 annual maxima extracted and did not meet the minimum of 20 data years to be used in frequency analysis. Other 15-minute stations with similar number of data years that were kept were used to extend records at co-located daily or hourly stations.

13-1060 Burlington 1-HR; there is some overlap between 13-1060 and 13-1063 in the ASOS era, otherwise these two stations should probably be combined into one record.
The hourly stations Burlington Airport (13-1063) and 13-1060 were previously merged but, mistakenly, corresponding daily stations were not. We merged the daily stations as well.

13-1314 Cedar Rapids Airport N-MIN; N-MIN data probably did not begin until ~2000 instead of 1984.
We agree; the data we had was flagged as missing through 2004.

13-1442 Cherokee 15-MIN & 1-HR; might be worth combining this record with Larrabee (13-4644) if not too distant.
We decided not to merge these stations - they were more than 7 miles apart and their 1-day data were not consistent for the overlapping period.

13-1888 Council Bluffs 6 NE 1-DAY; period of record looks too short to use.
That is correct; for that reason, this daily station was not used, but the hourly data were kept and used to extend daily data at 13-1889.

13-2026 Cushing 1-DAY; might be worth combining with nearby Holstein (13-3909).
We merged Cushing (13-2026) and Holstein (13-3909) stations.

13-2041 Dakota City 1-DAY, 1-HR, 15-MIN; this station should be combined with already combined sites of Dakota City (13-2037), Humboldt 3 W (13-3985) and Humboldt WTP (13-3980).
This station only had one year of data and so was not used in the study.

13-2069 Davenport L & D 15, 1-DAY, 1-HR, 15-MIN; this is the same station as Rock Island L & D 15 (11-7391). No move, just name & ID changed. Two records should be combined.
We had already merged these stations and the 11-7391 ID was kept.

13-2110 Decorah 1-DAY; the spreadsheet implies that both this and 13-2112 are being used. There is a very small overlap between the two very nearby locations but they should probably be combined into one station (if they have not been already).
We had already merged these stations and the 13-2110 ID was kept.

13-2240 Dexter 15-MIN; this is shown as having too few years to use, but appears to have longer period of record than other 15-MIN sites that are being used (might be a data completeness issue however).
This station only had 12 years of extracted annual maxima and did not meet the minimum of 20 data years to be used in frequency analysis. Other 15-minute stations with similar number of data years were kept and used to extend records at co-located stations.

13-2367 Dubuque WSO AP 1-DAY; the period of record would appear to include the 'Forts' data for 1/1851 to 1/1951. The 'forts' record should instead be combined with the data for

Dubuque River (also known as Dubuque WB-City) 13-2369. The Airport (13-2367) site should only be for 2/1951 to present as the city/forts locations are about seven miles away and at a much lower elevation. The combined city/forts site (13-2369) should be a separate record for 1/1851 to 1/1952 (there is a one-year overlap between the city and airport stations).
In order to produce the longest record possible, 13-2367 was merged with 13-2369; the 13-2367 ID was kept. This includes the Forts data. We felt the stations were close enough (within 5 miles) and their data consistent enough to be merged.

13-2638 Elma 1-DAY; period of record would appear to be too short to use (maybe this was combined with Cresco (13-1954) but Cresco is about 15 miles away).
This station was merged with 13-7410, but upon further inspection, we deleted it because it only had 28 data years with large gaps in the AMS record.

13-2977 Forest City 15-MIN; another 15-MIN site that is listed as too few data years, but which looks to have as long a period of record as other 15-MIN stations that were used (might be owing to incomplete data).
This station only had 16 years of extracted annual maxima and did not meet the minimum of 20 data years to be used in frequency analysis. Other 15-minute stations with similar number of data years that were kept were used to extend records at co-located stations.

13-3108 Galva 1-DAY; period of record looks to be too short to use. POR is from 1896-2010.
Although the POR for this station is 1896-2010, it only had 44 data years due to missing or incomplete years of data. This station was used in the final results.

13-3288 Glenwood 1-DAY; this site should probably be combined with the very nearby and already combined sites of Glenwood 3 SW (13-3290) and Pacific Junction (13-6440).
Glenwood (13-3288) had only three years of recent data to add to the record of the other two merged stations, so we did not merge it.

13-3562 Hamburg 15-MIN; another 15-MIN site that is listed as too few data years, but which looks to have as long a period of record as other 15-MIN stations that were used.
This station only had 18 years of extracted annual maxima and did not meet the minimum of 20 data years to be used in frequency analysis. Other 15-minute stations with similar number of data years that were kept were used to extend records at co-located stations.

13-3960 Hubbard 1-DAY; relatively short period of record and the quality of observations has been very poor for much of the period. I would recommend not using this site.
The AMS of this station was consistent with nearby stations. With 32 years of data, we kept it in the analysis.

13-4049 Independence #1 1-DAY; I would combine this station with the slightly overlapping record of nearby Independence (13-4052). I would use the 13-4049 data during the period of overlap. Perhaps this has already been done but it is hard to determine from the spreadsheet.
We had already merged these stations.

13-4376 Keokuk 1-DAY & 1-HR; there is a quirky overlap of data for 13-4376 and 13-4381. A portion of the 13-4376 record is taken at the Keokuk L & D which later became 13-4381 with no station move. Anyway, any gap in the 13-4381 record should be filled with the 13-

4376 record. This may have already been done but it is difficult to determine from the spreadsheet.
The daily data we collected for 13-4381did not have a gap; daily station 13-4376 was deleted for too few data years.

13-4502 Knoxville 15-MIN; this is listed as too few years to use, but seems longer than some other 15-MIN stations that are being used.
This station only had 17 years of extracted annual maxima and did not meet the minimum of 20 data years to be considered in frequency analysis. Other 15-minute stations with similar number of data years that were kept were used to extend records at co-located stations.

13-4585 Lamoni 1-DAY, 1-HR and 15-MIN; mostly non-overlapping and very nearby stations 13-4585, 13-4586 and 13-4587 should be combined. There is a small overlap in the 1-DAY data around 1960 and for all data in the ASOS era where the preference should be given to the non-ASOS data. This may have already been done but it is difficult to determine from the spreadsheet.
Out of these stations, the hourly stations 13-4587 and 13-4585 were already merged; other stations did not have enough non-overlapping data to be considered.

13-4620 Lansing 1-DAY; I'd suggest combining with nearby Lansing 5 SE (13-4624).
We did not merge these stations because 13-4624 only had 7 years with no significant events and 13-4620 already had 80 years of data.

13-4644 Larrabee 1-DAY; this would seem to be too short of a record to use but is not listed as such.
This station had 69 data years and so was included in the analysis.

13-4863 Little Rock 1-HR & 15-MIN; this site is precursor to Sibley (13-7664) and might be combined with that station if they are not considered too far apart.
We merged the hourly stations 13-4863 and 13-7664 which added 12 more years to 13-4863.

13-4874 Little Sioux 2 NW 1-DAY; this station might be combined with non-overlapping very nearby combined stations of Little Sioux (13-4867) and Pisgah (13-6634).
13-4867 1-DAY and 13-6634 1-DAY were already merged with over 60 years of data. 13-4874 was not merged because it would only add a few years with a 30 year gap in record.

13-5235 Mason City Airport N-MIN; N-MIN period of record does not actually start until ~1997.
Based on the NCDC record, the period of record for this station began in 1984, but the data were actually missing until March 2005. This n-minute station was not used directly in frequency analysis but to develop scaling factors to n-minute durations.

13-5584 Missouri Valley 1-DAY; period of record would appear to be much too short to use unless hourly data has been assembled to compute 1-day totals (doesn't look like that was done for other HPD stations).
For this station, data from co-located hourly data were aggregated to 1-day intervals and added to the daily data giving this station a total of 50 years of data at daily durations.

13-5630 Monona 1-HR; this station can be combined with very nearby McGregor (13-5315).
We reviewed and merged this pair, particularly because 13-5315 captured a significant event.

13-6076 North English 15-MIN; this is listed as too few years to use, but seems longer than some other 15-MIN stations that are being used.
This 15-minute station only had 19 years of extracted annual maxima and did not meet the minimum of 20 years to be included. We are however using the co-located hourly station which had 40 years.

13-6205 Ogden 1-DAY; doesn't look like there is a long enough POR for 1-DAY statistics to be used for 13-6205 and/or 13-6209).
We had previously merged hourly and daily stations 13-6205 and 13-6209 providing over 40 years of data for hourly durations and 70 years for daily durations.

13-6389 Ottumwa Industrial Airport N-MIN; N-MIN data would not have started until ~2000 with commissioning of ASOS.
Based on the NCDC files, the period of record for this station began in 1984, but the data were actually missing until March 2005. This n-minute station was not used directly in frequency analysis but to develop scaling factors to n-minute durations.

13-6590 Peterson 1-DAY; quality of data rather poor for much of this relatively short period station, I would recommend against using this station.
The AMS data and resulting statistics for this station were consistent with nearby daily stations with very long records. The extreme event in 1973 was checked against original COOP observation forms and Storm Data and was found to be reliable. For these reasons, we retained this station in the analysis.

13-7035 Ridgeway 1-DAY; period of record looks to be too short to use. However, perhaps this has been combined with Cresco (13-1954)… but is not clear from spreadsheet.
We had already merged this station with 13-1954 and 62-1954 resulting in a combined 108 years of AMS data.

13-7152 Rock Valley 1-DAY; seems like a very short period of record to use, but is in a somewhat data sparse geographic area.
This station was used in the analysis because it had 31 years of extracted annual maxima which met our criterion and was consistent with nearby stations.

13-7340 Saint Charles 1-DAY; period of record looks to be too short to use.
We had extended the record at this station using data from a co-located hourly station that were aggregated to 1-day resulting in more than 70 years of data for daily durations.

13-7774 Soldier 15-MIN; this is listed as too few years to use, but seems longer than some other 15-MIN stations that are being used.
This station only had 18 years of extracted annual maxima and did not meet the minimum of 20 data years to be used in frequency analysis. Other 15-minute stations with similar number of data years that were kept were used to extend records at co-located stations.

13-8009 Strawberry Point 15-MIN; this is listed as too few years to use, but seems longer than some other 15-MIN stations that are being used.

This station only had 19 years of extracted annual maxima and did not meet the minimum of 20 years to be used in frequency analysis. Other 15-minute stations with similar number of data years that were kept were used to extend records at co-located stations.

13-8231 Thurman 1-DAY; shows end of period of record used as being 6/1972. Not apparent where the last 20 years of data comes from as none is available at Thurman unless HPD data was used to compile daily stats.
The record for this station at daily durations was extended using the aggregated hourly data from 13-8233. The hourly and daily stations, which were about 3 miles apart, were then treated as co-located stations.

13-8315 Traer 1-DAY; does not appear to be enough 1-Day data available unless it has been derived from HPD data.
Aggregated hourly data from 13-8315 were used to extend the daily record at Traer station (13-1005). The daily station was then renamed as 13-8315 since the hourly data were more recent.

13-8632 Walford 2 SE 1-DAY; looks like this must have been combined with another station but it is not apparent what station that would be. Walford itself does not have a long POR.
The POR we obtained for this station from NCDC was 1904-2011 but it had a substantial amount of missing data.

13-8693 Washta 1-DAY; period of record looks too short to use. Washta POR only from 5/1897 to 7/1934. Don't see where data to 12/1994 would be from.
The POR we obtained for this station from NCDC was 1897-1994 but it had a substantial amount of missing data so that only 33 annual maxima were extracted.

13-8806 Webster City 15-MIN; this is listed as too few years to use, but seems longer than some other 15-MIN stations that are being used.
This station only had 19 years of extracted annual maxima and did not meet the minimum of 20 years to be used in frequency analysis. Other 15-minute stations with similar numbers of data years that were kept were used to extend records at co-located stations.

13-8852 West Bend 1-DAY; data sampling issue cited for not using, station generally thought of as having a good record but I couldn't guarantee it.
The AMS data and statistics at this station were inconsistent with nearby stations and so it was removed from the analysis.

13-9750 Zearing 1-DAY; period of record would appear to be too short to use. POR from 1904-2011.
Although this station had a long POR, it had a substantial amount of missing data; even so, 35 years of annual maxima were extracted and so the station was included in the analysis.

1.20 [Wisconsin] The West Bend station (Station ID 47-9050) is located a considerable distance east of the City of West Bend. Based on our review of NCDC station records, the station cited has a period of record from January 1, 1931 to November 1, 2003. The metadata indicate a period of record from February 1893 to November 2003, thus it appears that this is a station merge. We are not familiar with a station being at the location of the listed latitude and longitude (which are the same in the metadata as in the online NCDC station details). Other West Bend gauges

are located at a fire station and at the airport, which are considerably west of the location indicated for Station ID 47-9050. It would be helpful to us if you could provide a more complete location description. The indicated location is much closer to the Village of Newburg than the City of West Bend. It is suggested that the coordinates for the station be double-checked.

The data we obtained for West Bend (47-9050) was from NCDC (see http://www7.ncdc.noaa.gov/IPS/coop/coop.html) in its entirety and not merged with any other station. Data were available from 1/1894 to 11/2003. We double-checked the station's coordinates, and the coordinates we used (43.3681, -88.0858) are those provided by NCDC; also inspection of various maps suggests the station's location is within the city of West Bend.

1.21 [Minnesota] The station designated as 21-7377 (ST PAUL) is plotted using the coordinates of its merged partner, 21-7386 (ST PAUL WB AP). I recommend that the coordinates for 21-7377 (ST PAUL) be used instead. The preponderance of historical data were collected at the 21-7377 location. The station itself (21-7377) is a threaded station made up of numerous station moves that never quite exceeded the threshold for NWS to change the NCDC ID. The locations of the merged sites making up this thread were near or north of the geography offered in the 21-7377 metadata. Plotting the station using the 21-7377 coordinates will more accurately smooth the pattern in this critical metropolitan region.

We typically use the metadata for the station that had the most recent record in a merged pair, which was 21-7377 in this case. After the peer-review, we re-regionalized stations in Minneapolis/St. Paul area and applied smoothing filters on gridded estimates, so the final estimates are much smoother than those used in the peer review. Please see Section 4.8.2 for more information.

1.22 [Minnesota] Station 21-0195 (ANGUS) is a non-merged location whose record ends in 1975. My concern is that this region of Minnesota was extraordinarily wet in the final quarter of the 20th century, and this station will not reflect modern trends. I recommend that you consider merging this site with NDAWN location 85-0076 (WARREN).

Although the sampling periods were different, the 24-hour mean annual maximum (MAM) at 21-0195 was consistent with MAMs at nearby stations that had over 100 years of data. 21-0195 (4/1902-12/1975) and 85-0076 (5/1995-12/2009) were nearly 7 miles apart with a significant gap between record periods, so they did not meet our criteria for merging.

1.23 191ST AND DILLIE ROAD: incorrect location...maybe not enough years of data? What is the minimum period of record needed to be included in this study? The 191st and Dillie Road site goes back to 2000 and it was included the study. This gage is a part of the KC Metro ALERT network. There are other sites in this network that are as old or older than this site which was included.

191st and Dillie Road (78-3440) had a record from 10/1999 to 12/2008 and was merged with a nearby NCDC 15-minute station, 23-2331 which began in 1971. Together they had enough annual maxima extracted to be included in the analysis. The merge moved the data point from the location of the ALERT gauge to the location of the NCDC gauge. The other gauges in the ALERT network that were not kept did not have enough data and their data could not be used to extend records at other stations.

2. At-station precipitation frequency estimates

a. Frequency analysis methods

2.1 Is there a minimum period of record that is considered necessary to generate useful statistics for this study? And is it important that the period of observations be relatively contiguous (i.e., we've got some sites with data for about 1900-1910, then no other data until perhaps the 1970s).
Also, is there an advantage to combining time series for nearby stations to make one long record versus having several independent shorter records of 20 to 40 years each? And how far is too far, geographically speaking, for combining records from nearby locations?
Several steps in precipitation frequency analysis are statistical approaches and their accuracy depends on sample size. Statistics calculated from a small sample could be greatly skewed by a single estimate. That is especially true for higher order moments, and consequently, estimates for rarer frequencies (50-year ARI or more). As a rule of thumb, at least 50 years of data is needed to calculate 100-yr frequency estimates; generally, 30 years of data is considered an acceptable minimum for a meaningful statistical analysis. For sub-daily durations, we lowered that threshold to 20 years to retain as many stations as possible. For the statistical analysis, it was advantageous to combine time series for nearby stations to increase record lengths. During our initial station screening, we looked at nearby stations (usually within 3 miles, with consideration to elevation differences, climatological characteristics of extreme precipitation, etc.) to see if they could be merged to form a single longer record. We also increased sample size, and ultimately the reliability of the estimates, by using a regional approach that allows information from grouped stations to be used in the computation of the estimates so that no one location is represented by a single station.

2.2 I'm trying to figure out why some are left out and not all or nearly all are included? To make a precipitation map as much data is needed as possible. Rain can and often does not fall evenly over a regional area. We just don't get all day rains around here anymore it seems like. But what will be done will be done.
See response in 2.1.

2.3 Most stations in MN for which DDF curves are provided do not have data collected more frequently than daily. How are the depth values for less than 24 hours calculated? For stations with more frequent data than hourly – is the ddf based on the station data, or were the same techniques used as on the other stations?
For each station and for each duration, regional L-moment statistics were used to calculate the parameters of the GEV distribution and to produce precipitation frequency estimates for all recurrence intervals. This means that, for each station, hourly data from all 15-minute and hourly stations in its region were used to develop hourly estimates for that station. (See Section 4.6 for details.)

2.4 There was an expectation that in some areas precipitation estimates would increase, for the most part those were the areas that show increases. When looking at both 10 year and 50 year - 60 minute data the stations clustered around the Twin Cities Metro area particularly to the south and west part of the Metro area are higher than other areas of the state. Is there a theory as to what is causing this?
60-minute estimates to the south of the Twin Cities were higher than the north mostly due to higher mean annual maxima at stations there. Hourly stations there sampled a greater number

of large events (i.e., 3 inches or more in 1 hour). After the peer review, we re-regionalized all stations in this area, and removed some close-by stations that had short records that sampled the same periods. Estimates for hourly durations are now more in-line with expectations and have a smoother transition between north and south.

2.5 In addition to statistical tests, i.e. Kolmogorov-Smirnov and $\chi 2$-tests, have NOAA researchers used other methods, e.g. goodness of fit of the selected probability density functions to the data, to verify the suitability of the selected probability density functions?
We considered results of various goodness-of-fit tests, such as Kolmogorov-Smirnov, $\chi 2$, and a Hosking and Wallis test based on L-moment statistics for 3-parameter distributions. We also inspected probability plots of several distributions at three base durations (1-hour, 1-day and 10-day). Please see Section 4.6.3 for more information.

2.6 Another topic we identified is that the current study used ratios to convert 24-hour station data to shorter duration depths, such as a 1-hour depth, for filling in the gaps between stations where short duration data were available. Although we do not have your information on the ratios used in the draft Atlas, we are currently examining ALERT data collected throughout the Urban Drainage and Flood Control District (UDFCD) boundary. Some of these data go as far back as the 1980s. These ALERT data have a time stamp whenever a total of one millimeter of rainfall occurred and tipped the rain gage bucket. As a result, we can extract the maximum precipitation depths for any year for any time increment. We are currently working on determining the ratios between the 1-hour clock depths and the maximum depths recorded within 60 minutes (not hourly clock dependent), as well as the ratios between 24-hour) depths and the maximum 60 minute depths. We will provide you this information as soon as possible to determine if these local ratios differ from the ones used for the draft Atlas, but we do suspect that the semi-arid nature of Denver's meteorology may warrant the use of ratios that are different than those developed using Eastern or Midwestern precipitation data.
Annual 1-hour maximum depths recorded from eleven different ALERT gages, all located within a two-mile radius of the NCDC reported gage site, were compared to the annual maximum hourly clock depths of the nearest NOAA precipitation gage. Table 1 (below) provides a summary of this comparison.
Based on the results of Table 1, in every case except for ALERT gage Indian Hills (2360), the NOAA hourly clock-dependent annual maximum depths underestimate the actual 1-hour intensity (not clock dependent) by approximately 3% to 38%. This analysis may, at least in part, explain why the draft NOAA Atlas 14 1-hour depths have decreased within the UDFCD boundary.

Table 1. Comparison of ALERT Gage Arithmetic Mean of Annual Maximum 1-hour Precipitation Depths (not hourly clock dependent) to NOAA Gage Arithmetic Mean of Annual Maximum Hourly Clock Precipitation Depths.

ALERT Gage	NCDC Gage	Years of Coincident Gage Operation	ALERT Gage (inch)	NCDC Gage (inch)	Difference (%)
Justice Center (4360)	Boulder 2 (05-0843)	22	0.70	0.61	14.1%
Heritage Square (1060)	Golden 3 S (05-3386)	24	0.66	0.57	16.2%
Montview Park (400)	Denver-Stapleton (05-2220)	23	0.97	0.94	3.3%
Lena @ US Hwy 6 (1040)	Golden 3 S (05-3386)	24	0.72	0.57	26.6%
Urban Farm (1460)	Denver-Stapleton (05-2220)	7	1.05	0.77	36.9%
Bear Creek below Cub (2230)	Evergreen (05-2790)	17	0.62	0.61	2.7%
Bear Creek at Morrison (2330)	Morrison 1 SW (05-5765)	17	0.76	0.61	25.9%
Idledale (2350)	Morrison 1 SW (05-5765)	17	0.64	0.61	6.0%
Indian Hills (2360)	Morrison 1 SW (05-5765)	17	0.56	0.61	-7.7%
Red Rocks Park (2370)	Morrison 1 SW (05-5765)	17	0.76	0.61	26.2%
East Plum Creek at Haskins Gulch (2820)	Castle Rock (05-1401)	8	1.07	0.78	38.2%

We did not use ratios to convert 24-hour station data to shorter duration depths for filling in the gaps between stations where short duration data were available. We used regionalized L-moment statistics to develop estimates at locations with daily-only data. This means that, for each station, hourly data from all 15-minute and hourly stations in its region were used to develop hourly estimates for that station. (See Section 4.6 for details.) We did use ratios from co-located stations to develop correction factors to convert 1-day data to 24-hour and 1-hour data to 60-minute (Section 4.5.2). We looked at spatial trends in the at-station 60-minute to 1-hour average ratio and did not see any spatial coherency in the Denver area or in the entire project area. Regarding the conversion of 1-hour data to 60-minute presented in the table, the NCDC hourly mean annual maxima listed in this table are constrained values ("clock dependent"), while 60-minute maximum values from ALERT gauges are unconstrained values. This accounts for most of the large differences showing in the table. When 1-hour values are multiplied by the factor of 1.09 (see Section 4.5.2) to convert constrained 1-hour values to 60-minute values, in most cases NCDC MAM values are similar and in some cases greater than the means at the ALERT gauges. Statistics calculated from shorter records can be highly skewed by a single event which may result in less reliable conclusions. In the cases of the largest percentages of 38.2% and 36.9%, these are for gauges that have only 7 and 8 years of coincident data, respectively.

2.7 Upon examination of the 1-hour rainfall data available from the National Climatic Data Center at the Denver Stapleton gage, we discovered that in 1995 the minimum reporting depth changed from 0.01 inch to 0.10 inch. We found that change in the data very significantly decrease individual storm event depths, durations and duration of dry periods between storms. As a result, we are wondering if this change in the reported minimum depth may also have an effect on the analysis that resulted in the point rainfall depths shown in the draft Atlas.

The precipitation frequency analysis approach used in this project is based on analysis of annual maximum series which were obtained by extracting the highest precipitation amount for a particular duration in each successive year. The change in reporting depth from 0.01 inch to 0.10 inch should not significantly impact measurements of extreme storms and will have little quantifiable effect on precipitation frequency estimates. We checked AMS for this station and no noticeable shift was observed in the annual maximum series around 1995.

2.8 Crete (25-2020-09): This station over the years has had changing reporting times. Some years they used a reporting time in the afternoon and some years in the morning. So the concern is that over the period of record, we are not comparing apples to apples.
We convert 1-day estimates to 24-hour (unconstrained) estimates to account for differences in observation time or not capturing the maximum event in a constrained observation time.

b. Depth-duration-frequency curves

2.9 [Missouri] DDF curves: A cursory look at these revealed no eye-popping issues.
No response necessary.

2.10 [Nebraska] DDF for each gage is excellent.
No response necessary.

2.11 [Minnesota] I do not have any comments to specifically change any of the maps, DDF curves, or metadata.
No response necessary.

2.12 [Kansas, Nebraska] I reviewed the precipitation frequency curves for several stations across our forecast area, which includes south central Nebraska and north central Kansas. I compared some of these curves against our in house climate database, for such places as Grand Island, Nebraska. The precipitation curves I looked at appeared reasonable to me based on a few spot checks of the data.
No response necessary.

2.13 The depth-duration-frequency curves are very useful, and I would strongly encourage those to remain as part of the atlas. Could a tool be developed to generate these on demand by clicking on any point on a map?
Yes, DDF curves are available for any location in the project area. Please see our Precipitation Frequency Data Server (PFDS).

2.14 For areas with larger predicted rainfall (for example Decker_R near St. Charles 80-0299 where top of graph goes to 12 in) – DDF graph does not include label for depth at which graph starts – it is possible this could lead to some confusion.
The graphs used for the peer review were developed temporarily and specifically for the review. The final DDF curves show all durations and recurrence intervals; they are available via the Precipitation Frequency Data Server (PFDS).

2.15 At-Station Depth Duration Frequency Curves will be a useful resource. Please consider these enhancements to the station plots:
a). Consider using "percent chance exceedance" to communicate the risk rather than the recurrence interval ie 100-year.

b). IF ARI (years) is used, please be sure to spell out the acronym in a legend or note.?
When referring to frequency of estimates derived by fitting a distribution to an annual maximum series (AMS) we use the term "annual exceedance probability (AEP)". When we use the term "average recurrence interval (ARI)," we are referring to partial duration series (PDS) based estimates. We use the term "frequency" interchangeably for ARI and AEP; please see Section 4.6.1 for more information. For our users' reference, we also provide a glossary at the end of the document.

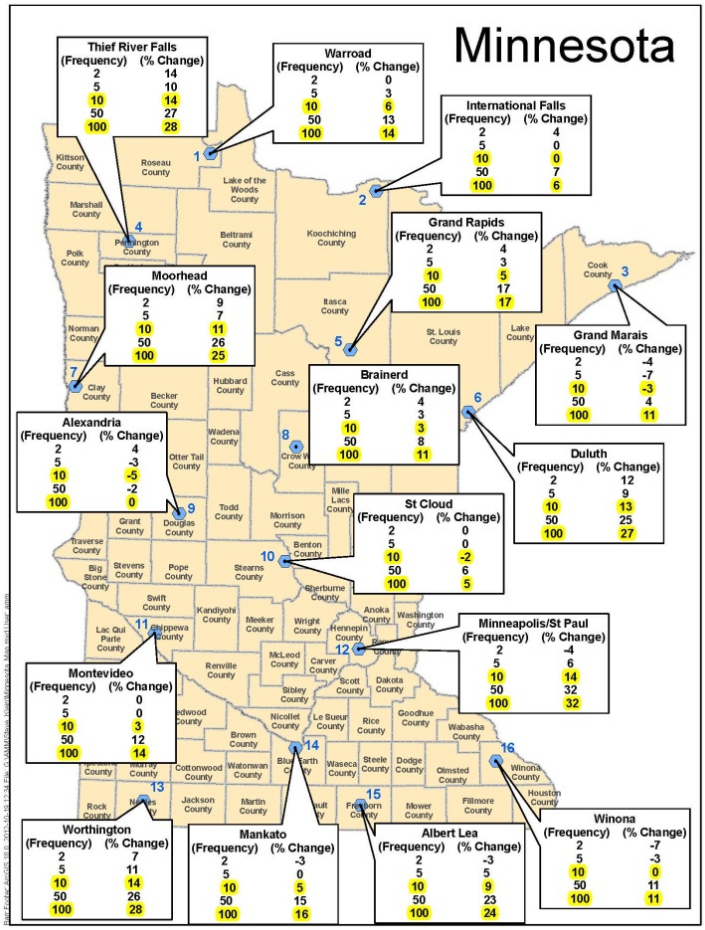
2.16 Consider listing the period of record used for the station DDF curves. (Will the curves be computed on the fly w/ each additional year of record, or is the set static?)
The data used in the analysis is static and the curves are created from a set of underlying grids of each frequency and duration combination. The period of record for each station is given in Appendix A.1 which provides a list of all stations used in the analysis. Please note that the period of record may be different from the actual number of data years, which also could vary with duration. Also, DDF curves were calculated based on regional approaches, where stations were grouped to increase sample size.

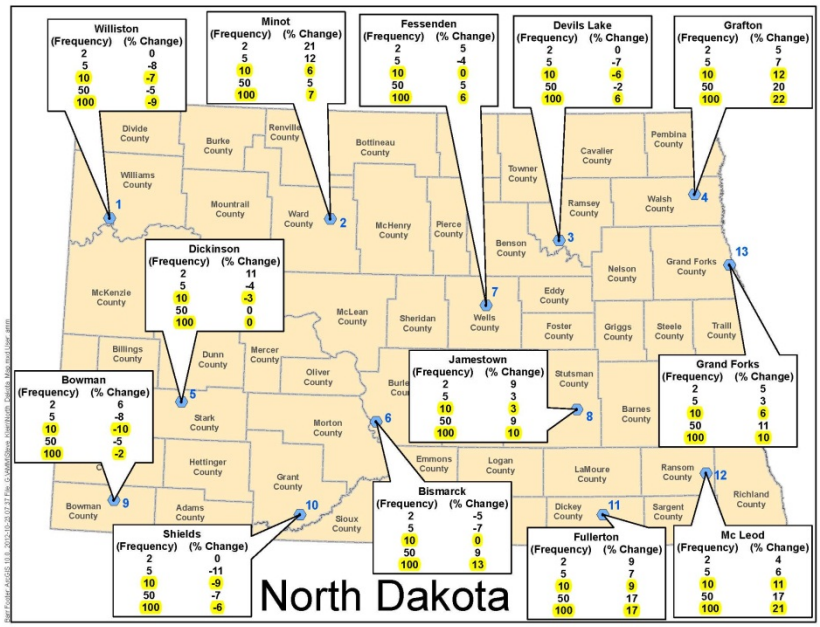
c. Comparison with other studies

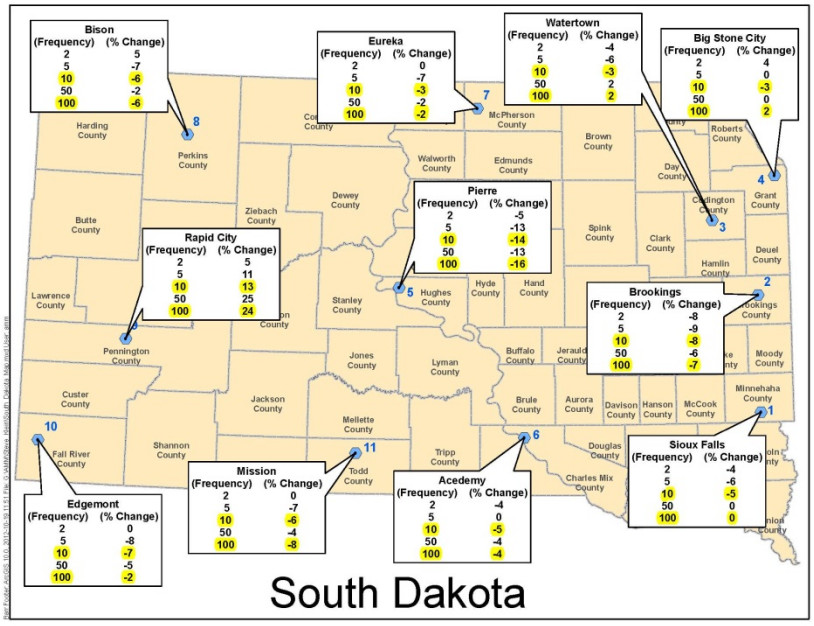
2.17 Retired Minnesota State Climatologist Jim Zandlo is a skilled mathematician, statistician, and programmer. Jim left behind a tool that incorporates Hosking L-moments routines into an Excel spreadsheet. I used this tool to evaluate 24-hour precipitation return periods for a long-term Minnesota COOP station, 21-3290 (GRAND MEADOW). I used the same period of record used by the NOAA Atlas 14 draft. I discovered that the Generalized Logistic distribution in Jim's routine came closest to the 24-hour values found in the draft HDSC DDF curves (see attached zip file). I found the values from Jim's routine to be consistently lower than the HDSC values by 0.1 to 0.4 inch. I make no claim that Jim's tool represents "truth, but thought you would like to know about this discrepancy. I've sent along an example spreadsheet and the library necessary to make it operate (see attached zip file). For the spreadsheet to work, you must first register the *.DLL found in the zip file (from a DOS prompt, use: REGSVR32 Lmoments.dll). Your Excel security must me adjusted to allow macros to run. You'll know if its "working" if you type one of the 3-letter distribution codes into cell C3 and all the numbers change.
Most likely, this discrepancy is caused by differences in frequency analysis approaches - we used a regional approach that pools the information from all stations that were assigned to a target station's region to compute its estimates. Other potential reasons for those discrepancies are different rules of AMS extraction, adjustments for constrained observations, different criteria for removing low and high outliers from AMS, etc.

2.18 Barr performed a brief comparison of the Atlas 14 and TP-40 results for a few key design storms, to develop a better understanding of the degree of change with the new Atlas 14 results compared to the previous TP-40 results within the 11-state study area. Specifically, we looked at the 2-year, 5-year, 10-year, 50-year and 100-year 24-hour duration events for spot locations in Minnesota, South Dakota, North Dakota, Wisconsin, Missouri and Michigan. Attached are the maps we prepared for three of those states (Minnesota, South Dakota and North Dakota). They represent the percent increase (+) or decrease (-) in rainfall amounts when comparing the Atlas 14 results to those shown in TP-40. Of particular interest are the comparative results for a) the southwest region of Minnesota and the southeast region of South Dakota, and b) the southeast region of North Dakota and the northeast region of South Dakota. For example, in

comparing information for Sioux Falls, SD and Worthington, MN, there is very little change, or even a decrease, in values in South Dakota while there is as much as a 28% increase a fairly short distance away in Minnesota. A similar phenomenon was noted for the southeast portion of North Dakota (McLeod, ND) and the northeast portions of South Dakota (Big Stone City, SD). Because there are significant differences within a very short distance, NOAA may want to explore this phenomenon a bit further.







Considering that the number of stations and periods of record across all durations used in frequency analysis significantly increased since TP-40 was published, it was expected that estimates in some areas will change. For comparison of the final estimates for the entire project area with TP-40 estimates, please see Section 7. However, we agree that the gradient was a bit too steep in the peer-reviewed estimates in the areas indicated. We have re-examined L-moment statistics for stations in those areas and adjusted the regions for some stations. Final estimates and spatial patterns are more in line with expectations. For example, in the first case presented, 100-year 24-hour estimates slightly increased at Sioux Falls, SD from 5.87" to 5.93" and decreased at Worthington, MN from 7.81" to 7.44". Patterns were similarly improved in northeast SD and southeast ND. For instance, at McLeod, ND estimates

decreased from 6.33" to 6.18", while at Big Stone City, SD estimates increased from 5.63" to 5.79". Note that there is still a gradient in estimates from east to west from MN and IA towards SD and ND. This pattern is supported by data at many stations in this. The pattern is evident in the more statistically-stable mean annual maxima as well.

2.19 [Minnesota] The precipitation depths shown on the hypothetical events maps appear to result in more rare rain events seem to have increased 1 to 2 inches over HYDRO-35, TP-40 and TP-49, depending on the location. (I was checking values across the MN River Watershed and it does reflect the increasing depths from west to east across the watershed, but the less frequent events had approx 1-2 in more precipitation than the legacy documents.) The more frequent events have increased less.
Considering that the number of stations and periods of record across all durations used in frequency analysis significantly increased since TP-40 and HYDRO-35 were published, it was expected that estimates in some areas will change. For comparison of the final estimates for the entire project area with estimates from previous NWS publications, please see Section 7.

2.20 [Michigan] Based on a comparison between the previous Bulletin-71 (B71) data (Huff, et al., 1992) and the current proposed data, there appears to be a general increase in depth of precipitation per recurrence interval especially for shorter duration events. The table below shows that as the duration increases, the difference between existing data and proposed decreases. The 10-day duration events for the proposed 2-year and 100-year frequencies are generally smaller than the existing data; it may be beneficial to re-evaluate the longer duration events to ensure the reduction in projected precipitation is justified.

Event	Isopluvial Depth of Precip. (in)		Difference	Isopluvial Depth of Precip. (in)		Difference
	Previous	Current		Previous	Current	
2-year, 1-hour	1.00	1.10	9.6%	1.10	1.17	6.2%
2-year, 24-hour	2.25	2.34	4.1%	2.50	2.52	0.8%
2-year, 10-day	4.00	4.02	0.5%	4.50	4.46	-0.9%
100-year, 1-hour	2.00	2.43	21.5%	2.50	2.66	6.2%
100-year, 24-hour	5.00	5.42	8.4%	6.00	6.38	6.3%
100-year, 10-day	8.00	7.89	-1.3%	9.00	8.55	-5.0%

After the peer review, we adjusted the regions for some stations in this area to improve their L-moment statistics, especially for longer daily durations. As the result, estimates have changed and the biggest changes were for longer durations. New estimates are now more consistent with estimates in the surrounding area. For example, the 100-year 10-day estimate for Pontiac WWTP (20-6658) increased from 7.41 to 8.12, and for Howell (20-3947) it increased from 8.02 to 8.23 inches.

2.21 For several years, the Wisconsin State Climatology Office has worked with DDF (and particularly DFD) graphs based upon the Huff-Angel tabulations for the 9 climate divisions. They are displayed on our web site. [We do not have graphs of the confidence intervals, of course.]
We note two interesting possible concerns for DDF curves:
(1) Within Atlas 14.8, Version 1: Comparing Madison, WI with Minneapolis, MN we note that Madison's curves are concave upward, with a smooth regularity between the curves for different ARI. This is somewhat in contrast to the curves for Minneapolis, which are more linear in this plot, and slightly convex upward for the longer ARI (eg, 100 years). We are not

necessarily surprised by spatial (geographical) variations, but it seems to be something to think about.
(2) Atlas 14.8 Version 1 vs. Atlas 14.2: Comparing Madison, WI vs Rockford, IL (for durations up to 10 days) we note that the regularity of the Madison curves are in contrast to those for Rockford, IL at very long ARI, where the curvature is convex upward for durations in the range (3 hours, 4 days). These two stations are located less than 60 miles apart, so perhaps more food for thought. Perhaps this is simply a manifestation of estimating ARI which exceed the data length?!
The shape of the DDF curves can be affected in several ways, including whether curves were plotted in a linear, semi-log or log-log scale and the type of interpolation used between durations. The DDF curves for the peer review were created using estimates anchored only at 1-hour, 1-day, and 10-day so that the interpolation between points is not very reliable. Final estimates include durations from 5-minutes through 60-days and the shape of DDF curves is generally consistent for nearby stations.

3. Comments pertaining to precipitation frequency grids/maps

a. Spatial patterns

3.1 [Missouri] Spatially Interpolated Estimates: These appear reasonable.
No response necessary.

3.2 [Nebraska] The statistics look good for our area.
No response necessary.

3.3 [Iowa] I wanted to let you know that at least from a NWS perspective, the data for Iowa was indeed reviewed. Here at the NWS Des Moines office, I reviewed the data, as did our Climate program leader. Since neither of us found any glaring issues with the data, we did not submit feedback ...
No response necessary.

3.4 [Oklahoma, Arkansas, Kansas] The HAS team at ABRFC reviewed the new Precipitation Frequency Estimates for our area for inclusion in Atlas 14. All maps (maximum and recurrence intervals) make sense for our area. The amounts and distribution are generally what we expected.
No response necessary.

3.5 [Minnesota] Most importantly, the values I see on the maps seem intuitively reasonable given the climate pattern we have been in for the last 20 or 30 years. More rare rain events seem to have increased 1 to 2 inches over HYDRO-35, TP-40 and TP-49, depending on the location. The more frequent events have increased less.
No response necessary.

3.6 [South Dakota] Some time ago I talked at length with [HDSC] about the substantial orographic influence of the Black Hills of western South Dakota on precipitation characteristics in this area. This area especially is prone to exceptional thunderstorms that can deliver very large rainfall amounts. This was the case for the devastating flash flooding of June 9-10, 1972, and a number of lesser storms and associated floods also have been documented. I came away with

the impression that [HDSC] had a very good grasp of the situation and had done everything possible to address this circumstance, within the given constraints of the mapping process. I focused my brief review primarily on the Black Hills area, and it does appear that the frequency curves and mapping do reflect this unusual circumstance and that a substantial improvement over the previous (and painfully outdated) mapping has been accomplished.
No response necessary.

3.7 [Iowa] I examined the maps with the 60-minute, 24-hour and 10-day durations. I also performed spot checks at few locations. The results are qualitatively consistent with what I would have expected based on the northwest-southeast gradient in rainfall climatology over the central US.
No response necessary.

3.8 [Michigan] The isopluvials presented seem to be an adequate approximation of what we experience in our region. What is critical is how these are translated into average values for an area. It is these interpolated values that are adopted by the State and by counties and form the basis for decision-making. In B71 climatic sections were established. If the same is planned in this revision we would like the opportunity to review these zones. For example, the climate zone that encompasses Ann Arbor assigned the 100-year, 24-hour event a 4.3" depth. In reality this municipality experiences far closer to a 5" depth for this event. Floodplain maps are determined for a major rainfall event that is smaller than actual resulting in maps that are inadequate for planning purposes.
No response necessary.

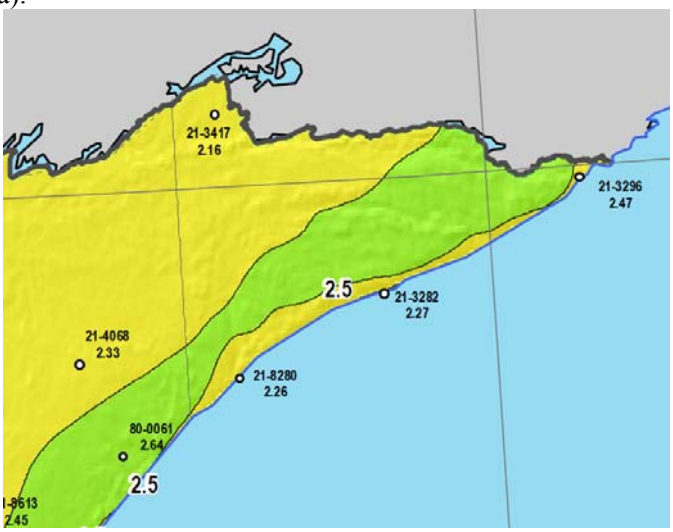
3.9 [Colorado] It appears to me that the far eastern plains are generally down, some areas significantly, but mostly within 10% [for 100-year, 24-hour]. The northeastern near plains (i.e. Greeley) appear to have taken a dramatic jump up with this new study. That's not hard for me to believe.
Fort Collins recently did a rainfall study for their own area (on their own), and they observed that the historic design rainfall was too low, and they voluntarily increased it, which would tend to back up this data. I believe a similar exercise was done down in Colorado Springs, although it was less formal. Again, that would tend to corroborate this.
No response necessary.

3.10 [Wisconsin] Upon my first look at the 100-yr, 24-hour map, my first thought for the area served by WFO La Crosse, WI (ARX) was that the map greatly reflected the August 2007 flood event. There is a WNW-ESE "line" of higher values that runs from southeast MN down into southwest/south-central WI. That was the axis of heavy rainfall from the event that year. While I am not discounting that info, nor am I suggesting anything be changed, it just seemed to me that the one particular event was playing a large role in the results for that region.
Many of the stations in this area have 60 to 100 years of data, so a single event would not be driving the estimates. There are actually several annual maxima in other years (e.g., 2005, 1992, 1990, 1978) that are higher than the 2007 annual maximum. The resulting pattern in this area is spatially consistent with values to the west.

3.11 [Wisconsin] In general, spatial patterns, relative magnitudes, and at-station estimates are reasonable with the exception of Eagle 2 W (47-2302) where the 100-year R.I. 24-hour and 10-day rainfall depths are considerably lower than at nearby stations. We suggest that the results for that station be reviewed.

Station 47-2302 has only hourly data and a relatively short record (38 years). Mean annual maxima (MAM) estimates at this station were lower than corresponding estimates at nearby stations and that affected estimates. Because the station has valuable hourly data, it was still used in frequency analysis, but was excluded from the MAM interpolation task. When interpolated MAMs were used for this station in the frequency analysis, the results were more consistent with nearby stations; for example, 100-year 10-day estimate increased from 8.26" in the peer reviewed results to 9.73" in the final results.

3.12 [Minnesota] The >2.5 in area in Cook Co looks odd since no stations shown within the area and stations on either side have values less than 2.5 in (similar bulls-eyes seen at this location and other locations on the 100hr 24 hr, and 100 yr 60 m maps with apparently no stations within the higher value area).



Mean annual maximum (MAM) grids served as the basis for deriving gridded precipitation frequency estimates for the different frequencies and durations. MAM grids were produced by the PRISM Climate Group using algorithms that account for elevation, aspect and distance from the coast, mean annual precipitation, among others (see Appendix A.3 for more details on the process). The estimates in this area were driven by terrain differences – the stations along the coast are only at 600-700 feet while the elevation quickly rises over 1500 feet.

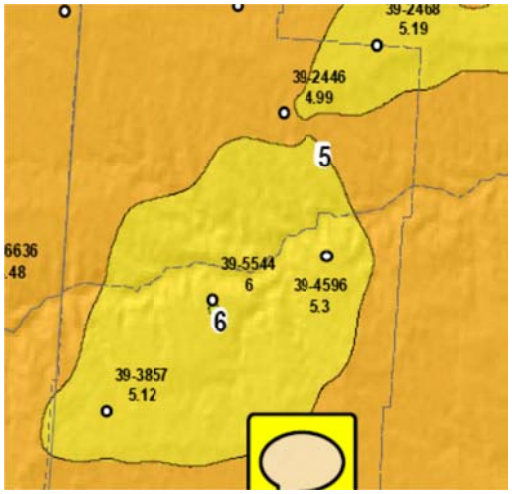
3.13 Given dense number of stations in Hennepin County Minnesota and with the fair amount of variation – seems like gridded results won't be very smooth. Although acknowledge value of dense network to verify trends, for design purposes, it would probably be better to have fewer stations and smoother results. Are some stations potentially better indicators either because of length of record, regular observation, NWS vs. volunteer network? Appears highest value for 24 hr – 100 yr comes from 80-0009 – backyard volunteer, when I try to pull the record from the DNR site, seems to be some missing values – how were these filled in? - Should try to compare to 21-3202.

Gridded results are generally smoother than what appears on cartographic maps that have a couple of selected contour intervals. The majority of the differences showed on maps were the result of small differences in MAM or precipitation frequency estimates at nearby stations and selected mapping contour intervals. To reduce a number of the station-driven contours in the final cartographic maps, we used only stations with at least 50 years of data in flat terrain to

interpolate MAMs (which means that the shorter MN DNR (80-) stations in this area were excluded) and applied a dynamic filter to smooth estimates; see Section 4.8.2 for more details. Regarding missing values: for the 80- dataset (DNR), we relaxed the criteria used to extract AMS (see Section 4.3) recognizing that observations were not collected in the winter when a maximum event was not likely to occur. So, we did not fill in missing data during the winter months, but assumed they did not contribute to the annual maximum series.

3.14 The Howell weather station (Station ID: 20-3947) is misleading in terms of rainfall analysis for the surrounding area. We watch for oncoming storms regularly and the more intense rainfall events in Livingston County come from Lake Michigan heading east, split up somewhere between Williamston and Fowlerville, and miss Howell with a substantial degree of consistency (Appendix A). This is a consistent pattern experienced for generations with few exceptions. To represent Livingston County adequately we recommend considering some of the not-used stations with shorter collection periods so that differences in weather patterns across that area are represented. The Milford and WWTP gauges (76-0045, 20-3947, 20-5452) alone may skew results toward less rainfall than experienced in the county as a whole. If there are no other appropriate stations this should be noted as a data gap.
The mentioned storm pattern may affect amounts from a given storm, but it does not seem to affect the annual maximum series values (the highest amounts in each year at a station for a given duration) which were used to calculate precipitation frequency estimates. Stations in this area had consistent mean annual maxima and L-moment statistics. Additionally, the regional approach (see Section 4.6) allowed information from nearby stations to be used in the computation of the estimates at a target station.

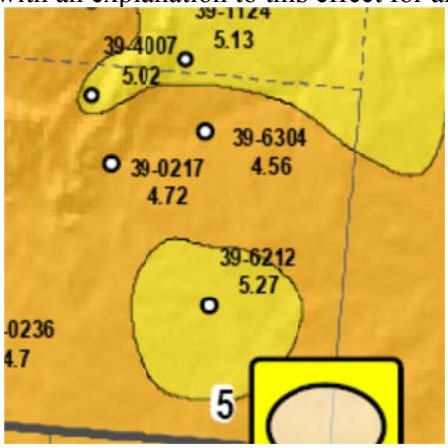
3.15 [South Dakota 100-year 24-hour] This area is defined by 3 stations, so I think it is reasonably justified to delineate it separately. However, I suggest expanding the polygon to the northeast to joining the polygon with similar characteristics.



What you see in a map is a result of the particular contouring interval selected to create the map. Estimates between two polygons are only slightly below 5 inches threshold. Also, after the final smoothing was applied, these areas were connected.

3.16 [South Dakota 100-year 24-hour] This area is defined by only 1 station, so I do not think it is reasonably justified to delineate it separately. I suspect this results from coincidence rather

than from an actual difference in precipitation characteristics, as I am not aware of any physical cause. If allowable, I would suggest not delineating the 5-inch iso-pluvial line here. Might it be possible to justify this with an explanation to this effect for areas defined by single stations?



This area was revisited and some changes in regionalization were made creating a more consistent pattern – estimates at 39-6304 increased to 5.07"and 39-6212 decreased to 5.10". .

b. Cartographic maps

3.17 [Oklahoma] Our only negative comment would be all of the bulls-eyes on the maps. For instance, looking at the 10-day MAX precip map in north-central Oklahoma, there are 4 gages (34-6940, 34-6944, 34-7390, and 34-1256) that are in their own 5.01"-6.00" bulls-eye. This area could have been redrawn more smoothly with no bulls-eyes. Another example, looking at the same map, occurs in Northwest Arkansas. Stations 03-5354, 03-5160, and 03-7772 each have their own bulls-eye. It would look much better if these were drawn together into one area of 7.01"-8.00", perhaps included in the area of the same amount to the east of these stations. These are just a couple of examples of this type of smoothing problem encountered in all of the maps.
We agree. Gridded results are generally smoother than what appears on cartographic maps that have a couple of selected contour intervals. The majority of the bullseyes were the result of small differences in MAM estimates at nearby stations and selected mapping contour intervals. To reduce a number of station-driven bullseyes in the final cartographic maps, we used only stations with at least 50 years of data to interpolate MAMs and applied a dynamic filter to smooth estimates. See Section 4.8.2 for more details.

3.18 [Nebraska] There appears to be many doughnuts and rough edges on the isopluvial maps that may be caused by outliers at individual stations. More regional smoothing of the isopluvial lines should be considered in order to provide smoother transitions between regions.
See response in 3.17.

3.19 [Nebraska] The following is feedback I heard from the Nebraska DNR and Army Corps Omaha District: Will the contouring on the precipitation maps be cleaned up? Some of the contours are closed contours based on one station. In a typical analysis these types of contours should be removed for clarity and readability.
http://hdsc.nws.noaa.gov/hdsc/pfds/peer_review/files/na14_vol8s_ver1_mam_24h.pdf.

In the above link, an example of what is described above would be in western Douglas County in Nebraska, eastern Knox County in Nebraska, northern Dodge County. There are many instances like this where a contour is closed based on one or two stations. The two agencies above were hoping this type of contouring would be cleaned up in the final product.
See response in 3.17.

3.20 [Nebraska] Cartographic maps: for the most often used isopluvials of 100-year 24-hour precipitation, I wonder if small "islands" should be removed and merged with surrounding areas.
See response in 3.17.

3.21 [South Dakota] My only other comment is regarding a large number of very small "bulls eye" iso-pluvial lines that are defined throughout the maps by single stations. I inserted a couple of comment blocks regarding this within the attached file. If allowable, I would suggest that iso-pluvial lines should not be delineated when defined only by single stations and that perhaps justification for doing so might be accomplished by a generic explanation to that effect.
See response in 3.17.

3.22 [Wisconsin] There are a number of stations that appear as little bulls-eyes around the map. While I'm sure the data is probably accurate, I would think that some of this data could be smoothed in the final report. There are obvious larger trends in the precipitation data, and these "holes" or isolated areas look odd on the map.
See response in 3.17.

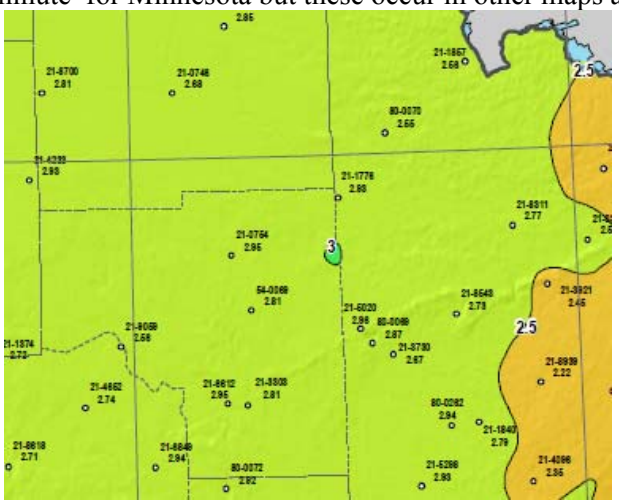
3.23 [Minnesota] Will the isopluvials be smoothed or left as-is? Leaving them as-is implies accuracy and confidence in the data and analysis. That is fine as long as the accuracy is justifiable, and also makes the need for the tool mentioned in comment 2 more important. I do not have a preference to smooth them if they are accurate. Related …, there seem to be isopluvial "bullseyes" around some of the precipitation data points. Are those bullseyes accurately representing the data, or is some bias occurring as a result of the data analysis methods or the data itself? Some of the larger bullseyes appear to be orographic (like the Black Hills in SD) and/or centered around several stations, and would be reasonable. Others seem to be centered around one station. It is the latter group that concerns me.
See response in 3.17.

3.24 [Minnesota] I wanted to ask about the final post processing procedures. I noticed that we have several maps that have a "spotted" look with the contours due to the "radius of influence" of the rain gauge… the 2 yr 24 hour is a good example… While I realized statistically this is valid, I question if it is an accurate representation of the precipitation frequency information to identify/contour those areas as a higher or lower values. With the exception of northeast MN, we have little in the way of terrain influences for precipitation. The bull-eyes seem to be scattered across the state. So I suspect they are an artifact of the statistical analysis and contouring vs. actually higher or lower amounts from a precipitation frequency perspective. Would it be possible to smooth the contour data so that these are not evident in the analysis?
See response in 3.17.

3.25 [Minnesota] In the maps of isopluvials of different frequencies and durations, in many areas localized effects are evident, i.e. there are changes by 0.5 inches for 100-yr 1-hr events, by 1 inch for 100-yr 24-hr events, and by 2 inches for 100-yr 10-days events shown in small closed

curves or polygons. Are these isolated areas of significant change in the amount of precipitation due to local climates, geographical boundaries, or due to presence of more rain gages in the area? If the latter is true, has NOAA decided to project a more realistic map for these areas (see the Twin Cities metropolitan area of Minnesota as an example)?
See response in 3.17.

3.26 There are some very small bulls eyes on some of the maps that do not seem to be reflective of the station data. Example below of 3" when all surrounding stations are less than 3 inches. Map is 100 year 60 minute for Minnesota but these occur in other maps and locations.



The artifact in the 100-year 60-minute map was due to minor differences in interpolated grid cells and the selected contour intervals. We applied a smoothing algorithm to remove these artifacts in the final product. (See response in 3.17 and Section 4.8.2 for more details.).

3.27 Was a geostatistical kriging done to incorporate geographic trends, or even multiple trends, in spatial interpolation?
Our process for deriving the spatially interpolated grids of precipitation frequency estimates is described fully in Section 4.8. Briefly, mean annual maximum (MAM) grids serve as the basis for deriving gridded precipitation frequency estimates at different frequencies and durations. MAM grids were produced for us by the PRISM Climate Group using algorithms that account for elevation, aspect and distance from the coast, and mean annual precipitation, among others (see Appendix A.3 for more details on the process).

3.28 Static maps of mean annual precipitation and other interpolated precipitation frequency estimates would be better shown with contour lines of 0.1 inch along with a color ramp, rather than the color ramp and 0.5" contour interval presented in these draft products. As is, it is difficult to interpolate values off the static map, or printout.
We do not recommend using the cartographic maps for estimating precipitation frequency estimates. They are created only to help visualize overall patterns. Ultimately, users are advised to take advantage of the PFDS interface or the underlying ASCII grids for obtaining precipitation frequency estimates.

c. Comparison with other studies

3.29 [Wisconsin] We evaluated the mapped data plots and contours for Atlas 14.8 Version 1 by comparisons with maps in (1) Huff & Angel (HA, 1993) for midwestern states, and (2) Atlas 14.2 for Illinois. The general proposed patterns looked reasonable, especially when keeping in mind that there is a question of comparison problems due to comparing "apples & oranges". The sources of uncertainty are (1) different years of data coverage among the three analyses; (2) trends in the statistics which would influence the Atlas 14.8, Version 1 relative to the earlier fields in HA and 14.2.
In addition, possible concerns are (1) Are the spatial interpolation schemes the same, or nearly so? (2) Are the techniques of groupings of individual stations data the same, or nearly so? (3) Does the analysis in any way reflect the confidence (or uncertainty) ranges for any of the plotted data? [If so, that should have increased the smoothness of the contours.]
The differences in estimates between various publications could be attributed to a number of factors, including, the difference in the number of stations used in analysis and their periods of record and differences in frequency analysis approaches and interpolation techniques. The Huff and Angel study was done in 1993, so about 20 more years of data were available for this NA14 analysis. NOAA Atlas 14 Volume 2 is a more recent publication than Huff and Angel study, but there was still an additional 10 years of data available for statistical analysis in Volume 8. While frequency analysis and interpolation methods are similar between the two volumes, there are some differences as we improve our methods in an effort to produce more reliable estimates. For example, we modified the spatial interpolation techniques to improve the evolution of patterns across frequencies and we now use a region-of-influence regionalization approach instead of fixed regions; we are now able to take advantage of data measured at variable data steps and use all data across all possible durations; we improved data quality control procedures; etc. As a result, the spatial transition from Volume 8 to Volume 2 estimates is not smooth; some discrepancies in precipitation frequency estimates at project boundaries are inevitable and they will generally be more pronounced at more rare frequencies. We are aware of the issue, and are considering different approaches to address the issue. We feel that adjusting estimates from more recent Volumes is not the right approach. Adjustment of estimates from previous Volumes at boundaries is not a trivial task as it requires the modification of all grids, cartographic maps and associated information. Ultimately, the optimal solution would be to update the whole continental USA at the same time.

3.30 A result of the differences between Atlas14.8 Version 1 and 14.2 is the production of discontinuities across the border between Wisconsin and Ilinois (and between Illinois and Iowa as well). [For example, the 100-year, 10-day precip values changed abruptly by up to 1.5 inches in some locations.] This is inevitable, given the inhomogeneous data sampling and probable climate trends between 14.2 and 14.8 Version 1. It is also a problem for risk assessments near such state borders, and reminds us of the importance that the confidence intervals are an important part of the metadata that should accompany the precipitation frequencies. Will this be shown in the atlases?
See response in 3.29. In response the question about whether confidence intervals will be provided, the answer is yes.

3.31 I noticed discontinuity between the 100-year, 24-hour Missouri map when compared with the Illinois datasets (no 8-inch isopleths in southern Illinois, for example), and with the 100-year, 10-day maps between the two states.
See response in 3.29.

3.32 [Colorado]Any changes made to point rainfall information by UDFCD in this Manual will affect the design of all stormwater management facilities within these local jurisdictions and the regulation of all future floodplain delineation and watershed master planning projects. After reviewing approximately 20 precipitation stations located within the UDFCD boundary, we found that the 2-year, 1-hour point precipitation depths in the new draft Atlas were 2% to 27% lower than were developed using the 1973 Atlas. The 100-year, 1-hour point precipitation depths in the new draft were from 4% higher to 24% lower than those obtained from the 1973 Atlas.

The precipitation depths for the "minor" (i.e., up to 5-year return period) storm events are used in the Denver region to size the "minor" storm management system, including storm sewers. Any changes in the official NOAA point rainfall depths could have a very significant effect on how these systems are sized in the future and the new information could result in facilities that provide less protection to the public. At the same time, using the new precipitation depths for the "major" (i.e., 50-, 100-, and 500-year) events that are used to delineate flood hazard zones and to manage FEMA-designated floodplains could result in less adequate safeguards against flood damages. As result, any significant changes to the point rainfall values have to be fully defensible for UDFCD to adopt the draft Atlas values. Having these considerations in mind, we offer the following comments:

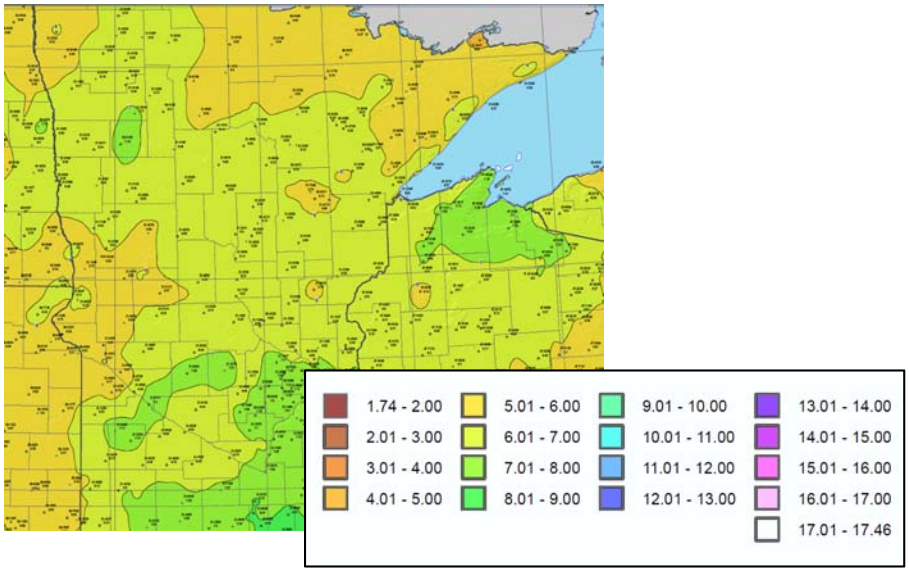
1. After looking at published 90% confidence limits for point rainfall depths for NOAA Atlas studies for other states, we ask you to consider showing changes in the point rainfall information in the draft Atlas only if the 90% confidence intervals for the point rainfall depths from the 1973 Atlas and the draft Atlas do not overlap. We realize that the 1973 Atlas does not have documented confidence values; however we suggest that similar confidence percentiles found in the draft Atlas be assigned to them. If anything, because of the shorter data periods used to develop the 1973 Atlas, this approach would understate the range in confidence bands of the point rainfall depths presented in the 1973 Atlas and, if the 1973 Atlas and the draft Atlas 90% confidence values do not overlap, a shift in the reported values would be defensible for us when we deal with local jurisdiction as well as for NOAA. Otherwise, a shift in values may not be statistically defensible. If the point rainfall depths in the draft Atlas had been higher than the 1973 Atlas, we would have made this same recommendation.

2. We do understand that the results for the 90% confidence limits for Colorado, which we alluded to above, are currently being analyzed by your office and are provisional in nature. We do, however, respectfully request this provisional information be provided to us so that we can test our premise and report to you what we find. This may help you in your own evaluation of the information that will be published for our state and especially for our region.

It is ultimately is at the discretion of regulatory agencies as to how to use the information we provide. However, the purpose of updating the estimates is to provide better precipitation frequency estimates. The reason the National Weather Service was chosen to do this on behalf of the Federal Government is that we don't regulate the design criteria in which the estimates are used and therefore we can provide estimates that are independent of considerations such those raised here. The estimates are based on the data and do not include considerations of whether change might be challenging in some way. We recognize there is inherent uncertainty in the estimates which is why NOAA Atlas 14 includes 90% confidence intervals about the estimates.

4. Miscellaneous comments

4.1 The coloring on the 100-year & 2-year – most of the lengths of time – is off (in MN, at least). For example, in the 100-year, 24-hour it goes from the lime greenish color showing 7.01 to 8 inches right to the orange that represents 4.01 to 5 inches, and skips the yellows in the 5.01 to 7 ranges. So the coloring seems to be off. The color changes also seem a bit too subtle (at least what's shown in the legend), but if the same scheme is used nationally, there may not be many options… My coworker is seeing things better in IE, but when I try to use IE it is really slow loading, and the map never comes up (the map came up eventually for my co-worker, but it was very delayed). In Firefox, the map comes up as a new tab immediately. I'm attaching screen prints of the way it looks in Firefox. I did not check it in Chrome, but know that's what many use now.



The color difference you saw was due to the gray hillshade relief in the background of the map. We do not recommend using the cartographic maps for estimating precipitation frequency estimates. They are created only to help visualize overall patterns. Ultimately, users are advised to take advantage of the PFDS interface or the underlying ASCII grids for obtaining precipitation frequency estimates.

4.2 I see you offer GIS data download options. Do you have plans to offer services of the data, so that they might be used in various displays? Not requiring me to download, process, and create my own services just to show this data side-by-side other relevant data (e.g. UDSM, forecast rainfall) would be tremendous.
We do not have current plans to offer services of the data other than what is currently provided via the PFDS. We are open to suggestions for improvement of all aspects of our product.

4.3 I would very much like to have access (download) to the draft Vol 8 and 9 data, but I don't see any download options for the Vol 8 and 9 data I presume is fairly far along in maturity. Would it be possible for you to give me access to, say, the Arkansas data, if not the entire Southeast, to create a demo service, so that I might work it into a display? What I have planned is a ESRI storytelling interface that would show, on one side, the record rainfall amounts for a period, and, on the other side, show a forecast rainfall display. Using the Swipe bar, one could easily

assess if a record is forecast to be exceeded, provided I can time-match the record data with the forecast data length of time. In this example (slow to load, I'm guessing), I compare the current US Drought Monitor status, with HPC's 5-day forecast rainfall guidance: http://www.srh.noaa.gov/rtimages/srh/stsd/Jack/swipe/DroughtRainfall.html.
This is a great example of use of the product we provide; we'll be happy to assist as we can. The gridded data are now available for download from PFDS as are the final quality controlled AMS at each observing site used in this study.

4.4 I see, for the present state's data you offer from 5-minute to 60-day data, including 3-, 4-, and 7-day data, but you skip a 5-day duration. Might you consider 5-day durations, so that one could easily compare that data with HPC's readily-available 5-day QPF guidance, which has been made available to create WMS layers from GIS data (unfortunately, they don't have their own geospatial services of their data, but also offer shapefiles from which we have created WMS services). http://www.hpc.ncep.noaa.gov/qpf/p120i12.gif
We are currently not able to accommodate this request but may be able to add the 5-day duration in the future.

4.5 Will there be a GIS tool developed that would allow the overlay of watershed boundary that would result in computation of an "average" rainfall over the basin or even an exact representation that could be imported into a rainfall-runoff model or other analysis tool? I think that could be done with the proper spatial query as long as the map data were digital and not simply an image, similar to what you can do with gridded or non-gridded DEM's. I'm not sure exactly how this would work, but it would be useful.
We have been looking to provide something similar to what you are requesting and may be able to add such functionality in the near future.

4.6 It would be helpful if NOAA would provide a Webinar for users of the new Atlas 14 to addressed what has changed (and if possible an explanation) and how to access and use the results. I believe that organizations who contributed financially to your efforts to complete the new Atlas 14 for this region would appreciate some sort of outreach.
We agree and are looking into setting up webinars (with the American Society of Civil Engineers) for this purpose. Please join our list server to receive any future announcements regarding this (see http://www.nws.noaa.gov/ohd/hdsc/listserver.html).

4.7 It would be very beneficial if NOAA would prepare and provide a single document describing the methodology and approach. Currently, readers have to search for the information in numerous progress reports.
We create a single document describing the data and methodology for each Volume of NOAA Atlas 14. The document is available online (http://www.nws.noaa.gov/oh/hdsc/currentpf.htm).

4.8 Consider making the hypothetical rainfall grids available for download.
Final precipitation frequency grids for all durations and frequencies are available for download from the Precipitation Frequency Data Server (PFDS).

Appendix A.5 Temporal distributions of heavy precipitation

1. Introduction

Temporal distributions of precipitation amounts exceeding precipitation frequency estimates for the 2-year recurrence interval are provided for 6-, 12-, 24-, and 96-hour durations. The temporal distributions are expressed in probability terms as cumulative percentages of precipitation totals at various time steps. To provide detailed information on the varying temporal distributions, separate temporal distributions were also derived for four precipitation cases defined by the duration quartile in which the greatest percentage of the total precipitation occurred.

Stations were grouped into four climate regions, shown in Figure 4.1.1, and separate temporal distributions were derived for each climate region. The Mississippi Valley region (region 4) also includes stations from the Mississippi Valley region (region 1) from NOAA Atlas 14 Volume 9 (see Figure 4.1.1 in Volume 9). Regions were delineated based on extreme precipitation characteristics expressed through 24-hour mean annual maximum (MAM) estimates, mean annual precipitation, elevation and latitude.

2. Methodology and results

The methodology used to produce the temporal distributions is similar to the one developed by Huff (1967) except in the definition of precipitation cases. In accordance with the way a precipitation case ("event") was defined for the precipitation frequency analysis, a precipitation case for the temporal distribution analysis was computed as the total accumulation over a specific duration (6-, 12-, 24-, or 96-hours). As a result, it may contain parts of one or more storms. Because of that, temporal distribution curves presented here may be different from corresponding temporal distribution curves obtained from the analysis of single storms. Also, precipitation cases for this project always start with precipitation but do not necessarily end with precipitation, resulting in potentially more front-loaded cases when compared with distributions derived from the single storm approach. Cases were selected from all events of a given duration that exceeded the 2-year average recurrence interval at each station. Table A.5.1 shows the total number of precipitation cases and number of cases in each quartile for each region and duration.

For each precipitation case, cumulative precipitation amounts were converted into percentages of the total precipitation amount at one hour time increments. All cases for a specific duration were then combined and probabilities of occurrence of precipitation totals were computed at each hour. The temporal distribution curves for nine deciles (10% to 90%) were smoothed using a linear programming method (Bonta and Rao, 1988) and plotted in the same graph. Figure A.5.1 shows, as an example, temporal distribution curves computed from all cases for the four selected durations for the Mississippi Valley region (region 4); time steps were converted into percentages of durations for easier comparison.

The cases were further divided into four categories by the quartile in which the greatest percentage of the total precipitation occurred. Table A.5.1 shows the numbers and proportion of precipitation cases used to derive the temporal distributions in each quartile. Unlike the cases of 12-, 24-, and 96-hour durations in which the number of data points can be equally divided by four, the cases of 6-hour duration contain only six data points and they cannot be evenly distributed into four quartiles. Therefore, in this analysis, for the 6-hour duration, the first quartile contains precipitation cases where the most precipitation occurred in the first hour, the second quartile contains precipitation cases where the most precipitation occurred in the second and third hours, the third quartile contains precipitation cases where the most precipitation occurred in the fourth hour, and the fourth quartile contains precipitation cases where the most precipitation occurred in the fifth and sixth hours. This uneven distribution affects the number of cases contained in each quartile for the 6-hour duration. Figures A.5.2 through A.5.5 show the Mississippi Valley region's temporal

distribution curves for the four quartile cases for 6-hour, 12-hour, 24-hour and 96-hour durations, respectively.

Table A.5.1. Total number of precipitation cases and number (and percent) of cases in each quartile for selected durations for each climate region: North Plains (1), Western Colorado (2), South Plains (3),and Mississippi Valley (4). Region 4 in this volume includes stations from region 1 of Volume 9.

Duration	Region	All cases	First quartile cases	Second quartile cases	Third quartile cases	Fourth quartile cases
6-hour	1	8,828	3,967 (45%)	2,547 (29%)	1,554 (17%)	760 (9%)
	2	1,300	755 (58%)	271 (21%)	178 (14%)	96 (7%)
	3	8,903	4,232 (48%)	2,619 (29%)	1,392 (16%)	660 (7%)
	4	9,142	3,050 (33%)	2,829 (31%)	2,087 (23%)	1,176 (13%)
12-hour	1	9,010	4,593 (51%)	2,110 (23%)	1,505 (17%)	802 (9%)
	2	1,356	710 (52%)	283 (21%)	215 (16%)	148 (11%)
	3	9,097	5,128 (56%)	1,988 (22%)	1,272 (14%)	709 (8%)
	4	9,631	3,519 (36%)	2,476 (26%)	2,203 (23%)	1,433 (15%)
24-hour	1	8,370	4,170 (50%)	1,765 (21%)	1,378 (16%)	1,057 (13%)
	2	1,025	503 (49%)	206 (20%)	155 (15%)	161 (16%)
	3	8,635	4,503 (52%)	1,527 (18%)	1,466 (17%)	1,139 (13%)
	4	9,325	3,316 (36%)	2,278 (24%)	2,171 (23%)	1,560 (17%)
96-hour	1	8,415	3,990 (47%)	1,551 (18%)	1,389 (17%)	1,485 (18%)
	2	1,134	542 (48%)	228 (20%)	188 (16%)	176 (16%)
	3	8,653	4,055 (47%)	1,720 (20%)	1,463 (17%)	1,415 (16%)
	4	8,908	3,696 (41%)	1,962 (22%)	1,653 (19%)	1,597 (18%)

From the Precipitation Frequency Data Server, regional temporal distribution data are available in a tabular form for a selected location under the "Supplementary information" tab or through the temporal distribution web page (http://hdsc.nws.noaa.gov/hdsc/pfds/pfds_temporal.html). For 6-, 12- and 24-hour durations, temporal distribution data are provided in 0.5-hour increments and for 96-hour duration in hourly increments.

3. Interpretation

Figure A.5.1 shows as an example the temporal distribution curves of all precipitation cases in the Mississippi Valley region for the 6-, 12-, 24-, and 96-hour durations. For these plots, time steps were converted into percentages of total durations for easier comparison. Figures A.5.2 through A.5.5 show temporal distribution curves for the first-, second-, third-, and fourth-quartile cases for 6-hour, 12-hour, 24-hour and 96-hour durations, respectively. First-quartile plots show temporal distribution curves for cases where the greatest percentage of the total precipitation fell during the first quarter of the duration (e.g., the first 3 hours of a 12-hour duration). The second, third, and fourth quartile plots are similarly for cases where the most precipitation fell in the second, third, or fourth quarter of the duration.

The temporal distribution curves represent averages of many cases and illustrate the temporal distribution patterns with 10% to 90% occurrence probabilities in 10% increments. For example, the 10% curve in any figure indicates that 10% of the corresponding precipitation cases had distributions that fell

above and to the left of the curve. Similarly, 10% of the cases had temporal distribution falling to the right and below the 90% curve. The 50% curve represents the median temporal distribution.

The following is an example of how to interpret the results using the figure in the upper left panel of Figure A.5.4 for 24-hour first-quartile cases in the Mississippi Valley region.

- In 10% of the first-quartile cases, 50% of the total precipitation fell in the first 2 hours and 90% of the total precipitation fell by 5.6 hours.
- A median case of this type will drop half of the precipitation (50% on the y-axis) in approximately 5.1 hours.
- In 90% of the cases, 50% of the total precipitation fell by 10.1 hours and 90% of precipitation fell by 22.1 hours.

Temporal distribution curves are provided in order to show the range of possibilities. Care should be taken in the interpretation and use of temporal distribution curves. For example, the use of different temporal distribution data in hydrologic models may result in very different peak flow estimates. Therefore, they should be selected and used in a way to reflect users' objectives.

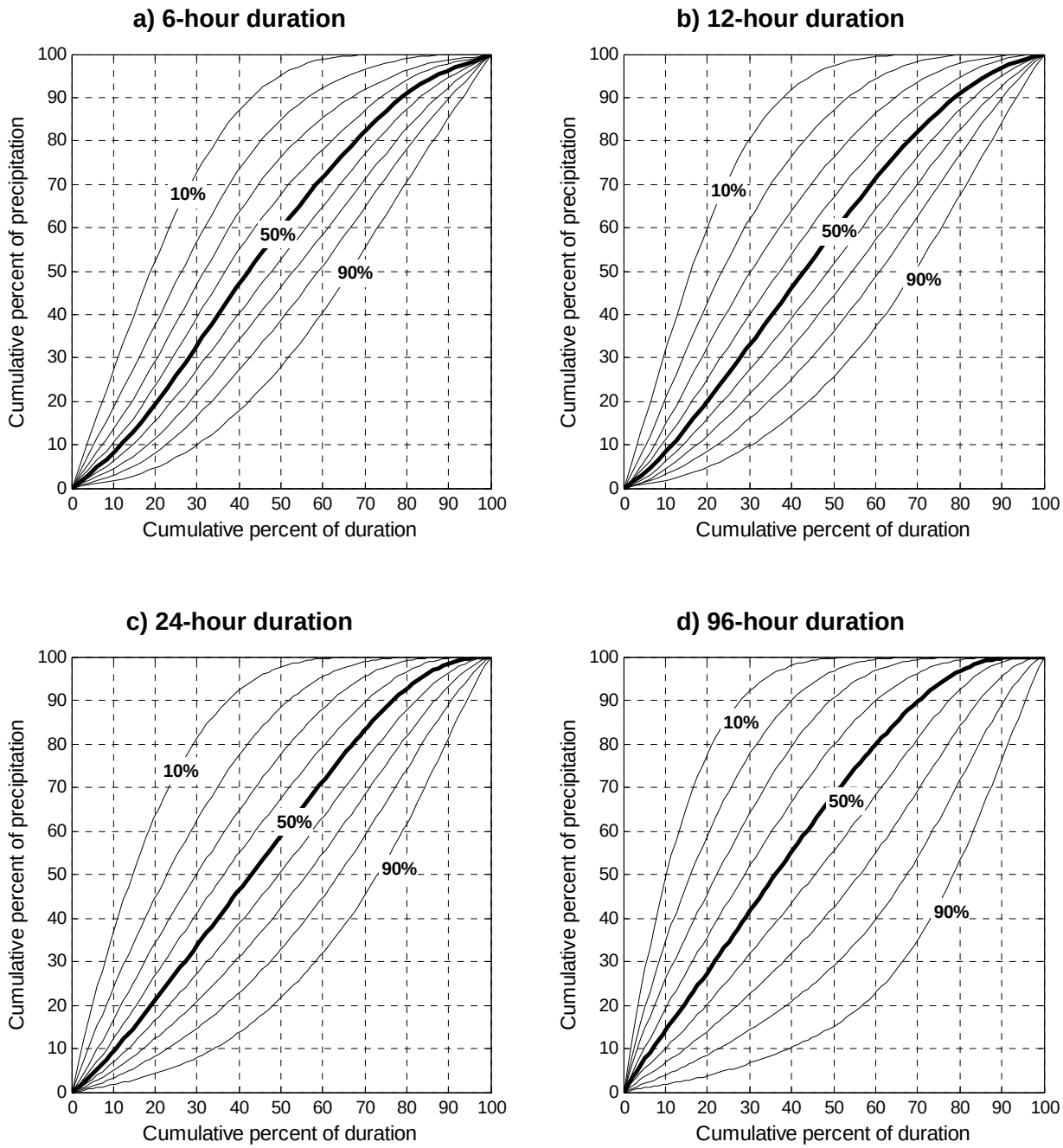


Figure A.5.1. Temporal distribution curves for the Mississippi Valley region (region 4) all cases for: a) 6-hour, b) 12-hour, c) 24-hour, and d) 96-hour durations.

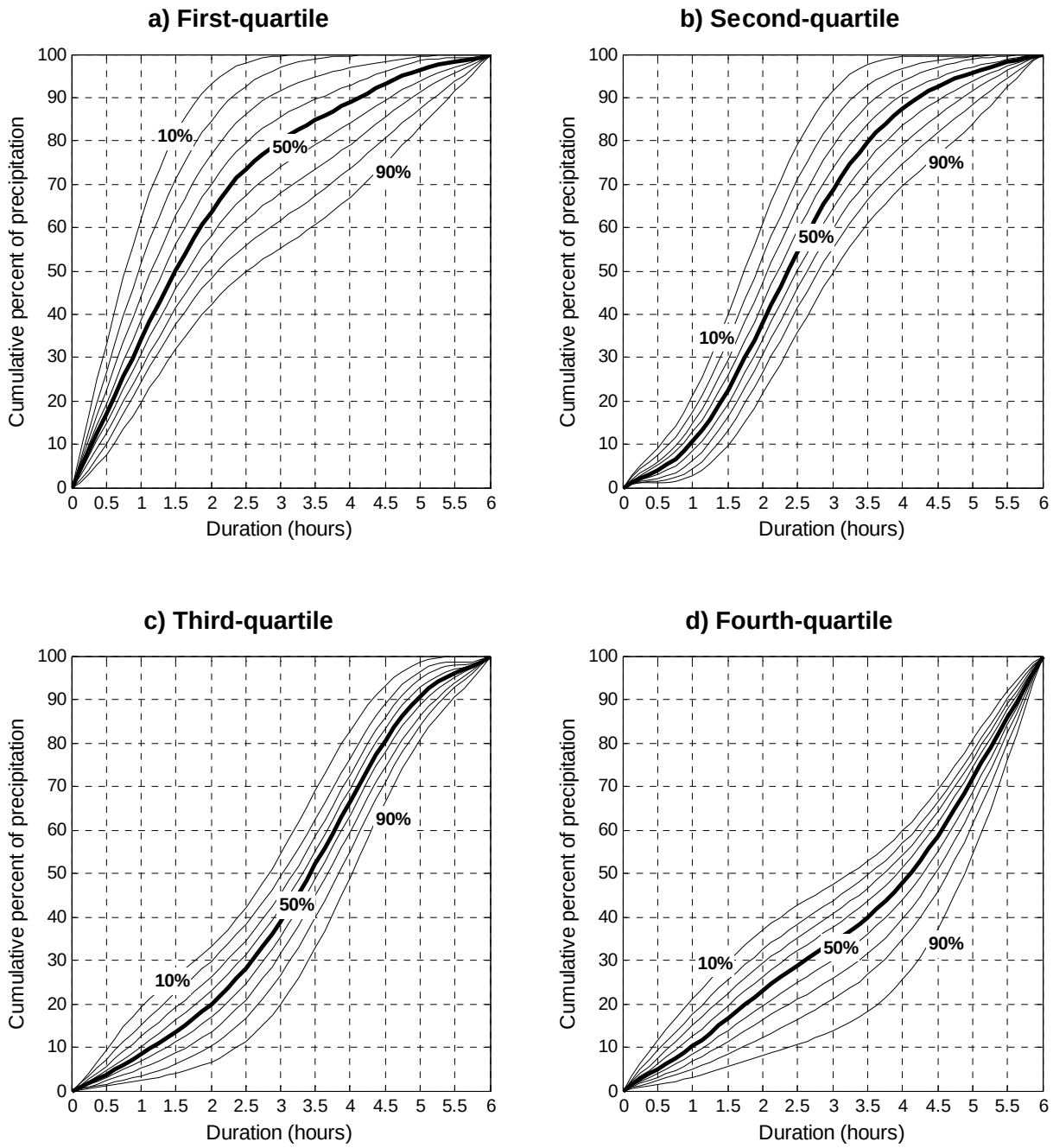


Figure A.5.2. 6-hour temporal distribution curves for the Mississippi Valley region (region 4)**:** a) first-quartile, b) second-quartile, c) third-quartile, and d) fourth-quartile cases.

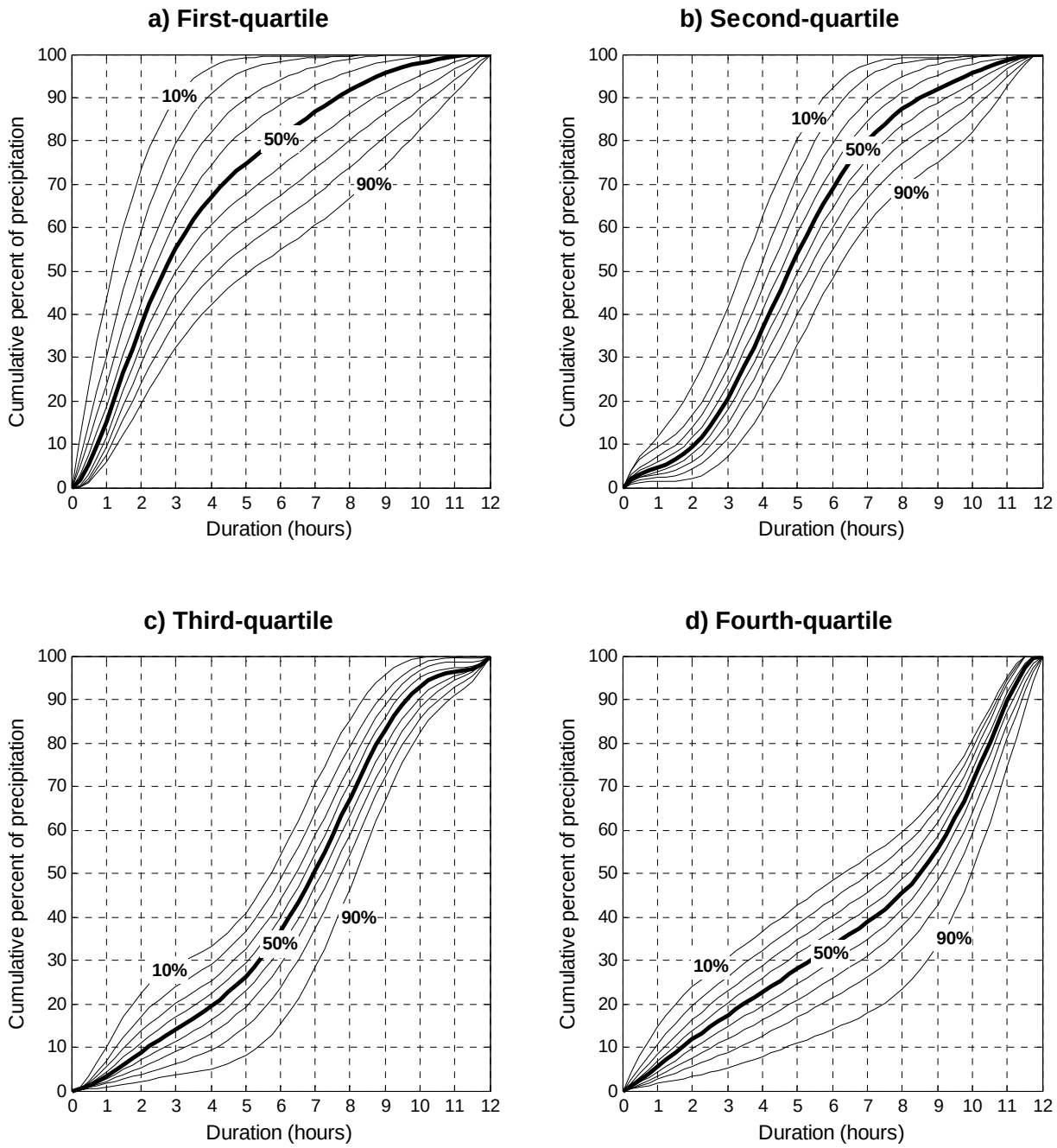


Figure A.5.3. 12-hour temporal distribution curves for the Mississippi Valley region (region 4): a) first-quartile, b) second-quartile, c) third-quartile, and d) fourth-quartile cases.

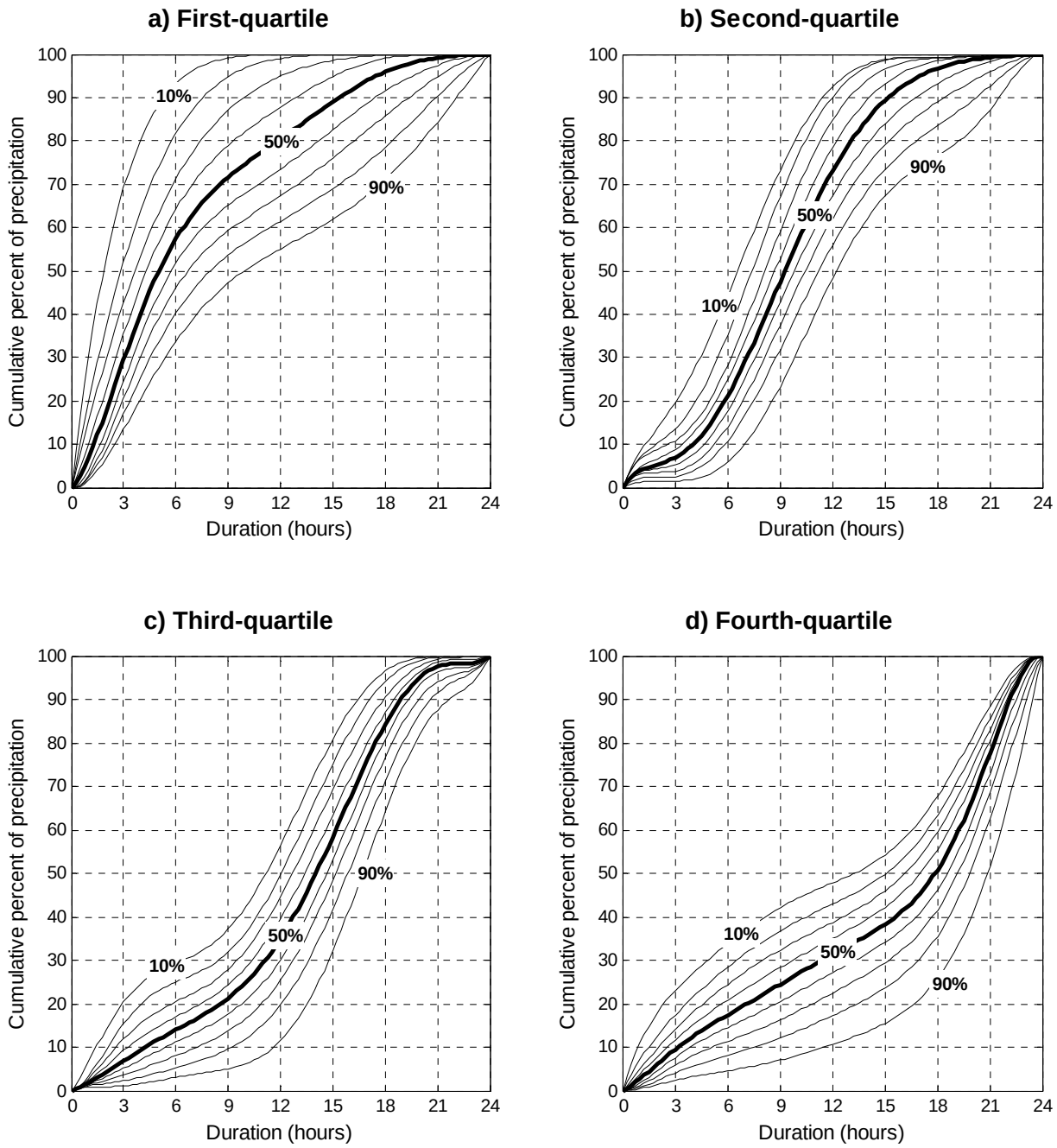


Figure A.5.4. 24-hour temporal distribution curves for the Mississippi Valley region (region 4): a) first-quartile, b) second-quartile, c) third-quartile, and d) fourth-quartile cases.

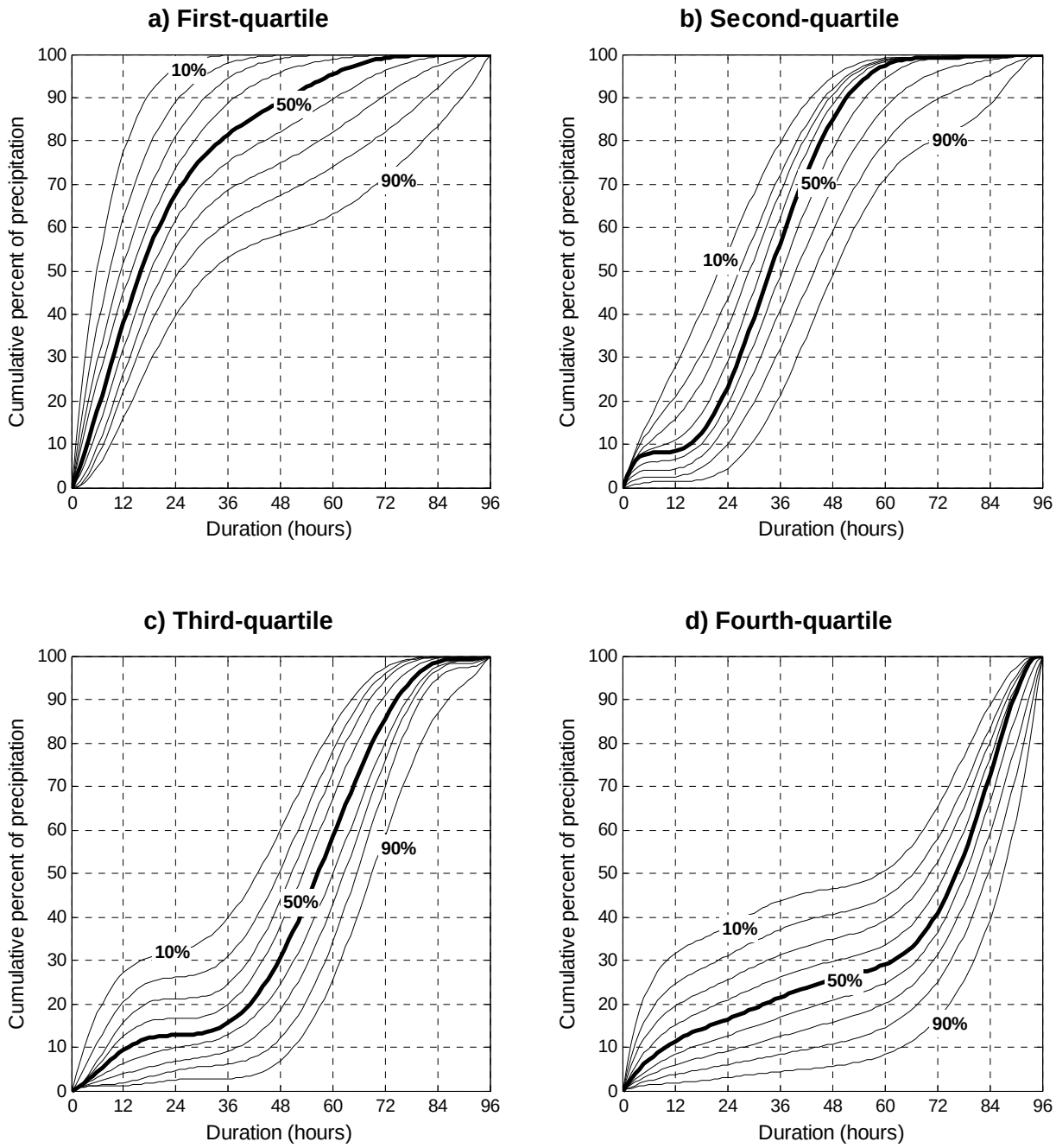


Figure A.5.5. 96-hour temporal distribution curves for the Mississippi Valley region (region 4): a) first-quartile b) second-quartile, c) third-quartile, and d) fourth-quartile cases.

Appendix A.6 Seasonality

1. Introduction

To portray the seasonality of extreme precipitation throughout the project area, annual maxima that exceeded precipitation frequency estimates (quantiles) with selected annual exceedance probabilities (AEPs) for chosen durations were examined for the four climate regions described in Section 4.1. Graphs showing the monthly variation of the exceedances for a region are provided for each location in the project area via the Precipitation Frequency Data Server (PFDS). For a selected location, seasonal exceedance graphs can be viewed by selecting "V. Seasonality analysis" of the "Supplementary information" tab on the output page.

2. Method

Separate seasonal exceedance graphs were created for the North Plains, Western Colorado, South Plains and Mississippi Valley climate regions (regions 1, 2, 3 and 4, respectively) shown in Figure 4.1.1. Note that the Mississippi Valley region (region 4) also includes stations from the Mississippi Valley region (region 1) from NOAA Atlas 14 Volume 9 (see Figure 4.1.1 in Volume 9). They show the percentage of annual maxima for a given duration from all stations in a region that exceeded corresponding precipitation frequency estimates at selected AEP levels in each month. Results are provided for unconstrained 60-minute, 24-hour, 2-day, and 10-day durations and for AEPs of 1/2, 1/5, 1/10, 1/25, 1/50, and 1/100.

To prepare the graphs, first, the number of annual maxima exceeding the precipitation frequency estimate at a station for a given AEP was tabulated for each duration. Those numbers were then combined for all stations in a given region, sorted by month, normalized by the total number of data years in the region, and finally plotted via the PFDS.

3. Results

The exceedance graphs for a selected location (see an example for a location in the Mississippi Valley region in Figure A.6.1) indicate percent of annual maxima exceeding the quantiles with selected AEPs for various durations. The percentages are based on regional statistics. On average, 1% of annual maxima for a given duration in a year (i.e., the sum of percentages of all twelve months) are expected to exceed the 1/100 AEP quantile, 4% is expected to exceed the 1/25 AEP quantile, etc.

Note that seasonality graphs are not intended to be used to derive seasonal precipitation frequency estimates.

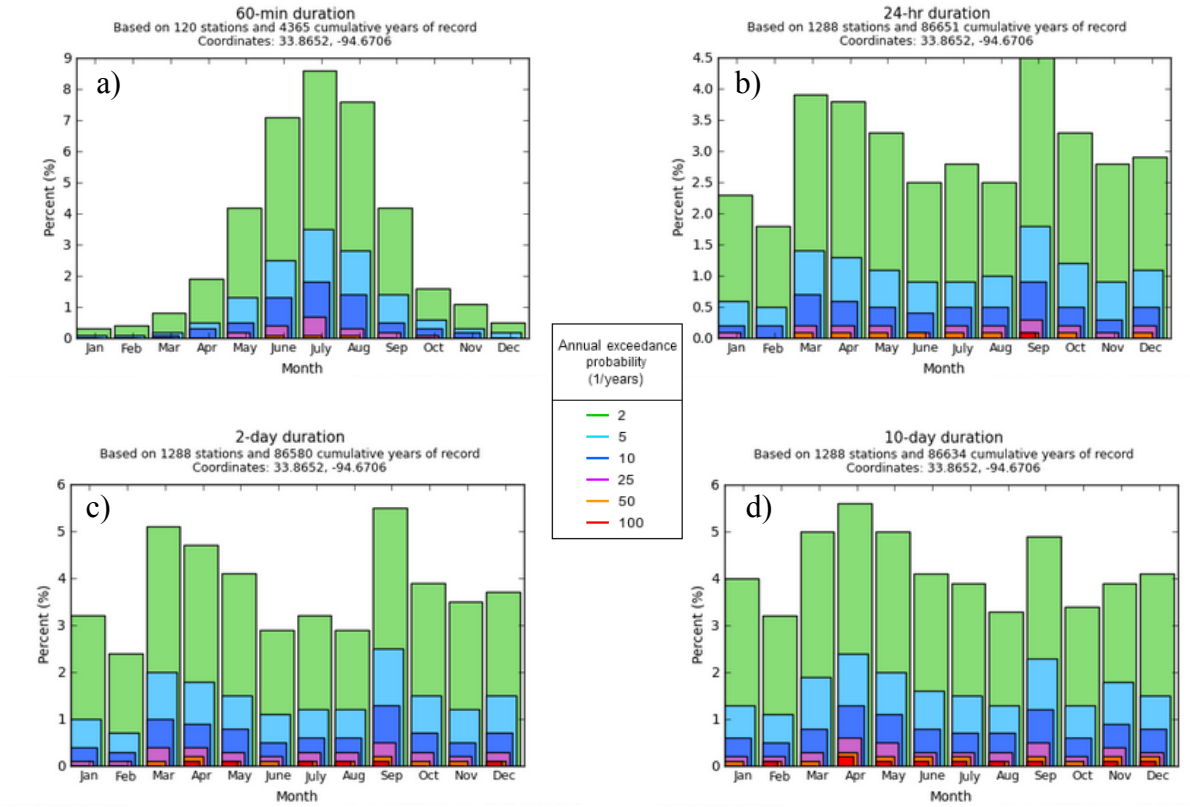


Figure A.6.1. Example of seasonal exceedance graphs for the Mississippi Valley climate region (region 4) for the: a) 60-minute, b) 24-hour, c) 2-day, and d) 10-day durations.

Glossary

(All definitions are given relative to precipitation frequency analyses in NOAA Atlas 14 Volume 8)

ANNUAL EXCEEDANCE PROBABILITY (AEP) – The probability associated with exceeding a given amount in any given year once or more than once; the inverse of AEP provides a measure of the average time between years (and not events) in which a particular value is exceeded at least once; the term is associated with analysis of annual maximum series (see also AVERAGE RECCURENCE INTERVAL).

ANNUAL MAXIMUM SERIES (AMS) – Time series of the largest precipitation amounts in a continuous 12-month period (calendar or water year) for a specified duration at a given station.

ASCII GRID – Grid format with a 6-line header, which provides location and size of the grid and precedes the actual grid data. The grid is written as a series of rows, which contain one ASCII integer or floating point value per column in the grid. The first element of the grid corresponds to the upper-left corner of the grid.

AVERAGE RECURRENCE INTERVAL (ARI; a.k.a. RETURN PERIOD, AVERAGE RETURN PERIOD) – Average time between *cases of a particular precipitation magnitude* for a specified duration and at a given location; the term is associated with the analysis of partial duration series. However, ARI is frequently calculated as the inverse of AEP for the annual maximum series; in this case it represents the average period between years in which a given precipitation magnitude is exceeded at least once.

CASCADE, RESIDUAL ADD-BACK (CRAB) – The HDSC-developed spatial interpolation procedure for deriving grids of precipitation frequency estimates from grids of mean annual maxima and point precipitation frequency estimates for a given duration.

CONSTRAINED OBSERVATION – A precipitation measurement or observation bound by clock hours and occurring in regular intervals. This observation requires conversion to an unconstrained value (see UNCONSTRAINED OBSERVATION) because maximum 60-minute or 24-hour amounts seldom fall within a single hourly or daily observation period.

DATA YEARS – See RECORD LENGTH.

DEPTH-DURATION-FREQUENCY (DDF) CURVE – Graphical depiction of precipitation frequency estimates in terms of depth, duration and frequency (ARI or AEP).

DISTRIBUTION FUNCTION (CUMULATIVE DISTRIBUTION FUNCTION) – Mathematical description that completely describes frequency distribution of a random variable, here precipitation. Distribution functions commonly used to describe precipitation data include 3-parameter distributions such as Generalized Extreme Value (GEV), Generalized Normal, Generalized Pareto, Generalized Logistic and Pearson type III, the 4-parameter Kappa distribution, and the 5-parameter Wakeby distribution.

FEDERAL GEOGRAPHIC DATA COMMITTEE (FGDC) COMPLIANT METADATA – A document that describes the content, quality, condition, and other characteristics of data and follows the guidelines set forth by the FGDC; metadata is “data about data.”

FREQUENCY – General term for specifying the average recurrence interval or annual exceedance probability associated with specific precipitation magnitude for a given duration.

FREQUENCY ANALYSIS – Process of derivation of a mathematical model that represents the relationship between precipitation magnitudes and their frequencies.

FREQUENCY ESTIMATE – Precipitation magnitude associated with specific average recurrence interval or annual exceedance probability for a given duration.

HEAVY PRECIPITATION – Precipitation with an average recurrence interval roughly between 1 year and 1,000 years for a given duration.

INTENSITY-DURATION-FREQUENCY (IDF) CURVE – Graphical depiction of precipitation frequency estimates in terms of intensity, duration and frequency.

INTERNAL CONSISTENCY – Term used to describe the required behavior of the precipitation frequency estimates from one duration to the next or from one frequency to the next. For instance, it is required that the 100-year 3-hour precipitation frequency estimates be greater than (or at least equal to) corresponding 100-year 2-hour estimates.

L-MOMENTS – L-moments are summary statistics for probability distributions and data samples. They are analogous to ordinary moments, providing measures of location, dispersion, skewness, kurtosis, and other aspects of the shape of probability distributions or data samples, but are computed from linear combinations of the ordered data values (hence the prefix L).

MEAN ANNUAL PRECIPITATION (MAP) – The average precipitation for a year (usually calendar) based on the whole period of record or for a selected period (usually 30 year period such as 1971-2000).

PARTIAL DURATION SERIES (PDS) – Time series that includes all precipitation amounts for a specified duration at a given station above a pre-defined threshold regardless of year; it can include more than one event in any particular year.

PRECIPITATION FREQUENCY DATA SERVER (PFDS) – The on-line portal for all NOAA Atlas 14 deliverables, documentation, and information; http://hdsc.nws.noaa.gov/hdsc/pfds/.

PARAMETER-ELEVATION REGRESSIONS ON INDEPENDENT SLOPES MODEL (PRISM) – Hybrid statistical-geographic approach to mapping climate data developed by Oregon State University's PRISM Climate Group.

QUANTILE – Generic term to indicate the precipitation frequency estimate associated with either ARI or AEP.

RECORD LENGTH – Number of years in which enough precipitation data existed to extract meaningful annual maxima in a station's period of record (or data years).

UNCONSTRAINED OBSERVATION – A precipitation measurement or observation for a defined duration. However the observation is not made at a specific repeating time, rather the duration is a moveable window through time.

WATER YEAR – Any 12-month period, usually selected to begin and end during a relatively dry season. In NOAA Atlas 14 Volume 8, it is defined as the calendar year (January 1 to December 31).

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