

NOAA's Coastal Mapping Mission, Data,  
and Partnerships

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The National Geodetic Survey (NGS) manages the coastal mapping mission of National Oceanic and Atmospheric Administration (NOAA) to provide accurate positions of the shoreline and terrestrial features in order to support commerce in the coastal zone. Mapping the coastal zone is one of the NGS' strategic goals. The NOAA publication, "National Geodetic Survey: Its Mission, Vision and Strategic Goals" is available in printed form or over INTERNET address of: [http:// www.ngs.noaa.gov](http://www.ngs.noaa.gov).

NGS' determination of the precise location of the shoreline is extremely important because the shoreline is the boundary that defines private, state, and Federal ownership. In areas where adequate water level datums have been established, photogrammetric methods are often the best approach for delineating the mean-lower-low-water lines that are used to define boundaries such as the 3- and 12-mile territory sea limits, the 200-mile limit of the Exclusive Economic Zone, the marine segment of state boundaries, and riparian property lines.

NGS' area of photogrammetric responsibility includes all the coastal regions of the United States and its possessions, and the Great Lakes and their connecting navigable waterways. Overall coverage consists of approximately 95,000 miles of shoreline. Mapping information and photography are reacquired on varying

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cycles depending on the amount of change caused by cultural or natural forces. One of its principal responsibilities is to survey the coastline and provide accurate positions of the shoreline and other features that are used to produce NOAA's nautical charts. Early coastal maps were based on topographic surveys performed with a plane table and alidade. Today, aerial photographs and photogrammetric methods are being used almost exclusively to survey the shoreline and provide topographic and planimetric data for nautical charting.

To this end, NGS has developed techniques for precisely delineating coastal features using aerial photographs and analytical stereo photogrammetry. Techniques are currently being developed to utilize multispectral imagery for this purpose.

NOAA's final photogrammetric product consists of digital files tied to at least second-order geodetic control from which electronic or paper charts and maps are derived. The data are seamless across the files, making it possible to construct a variety of high-accuracy map products. The digital files are created using sophisticated technologies that capture information contained in photographic images. These files may also be used to create very precise geographic information system (GIS) base maps as well as GIS layers depicting natural resources and cultural features. Multispectral imaging will be very useful in this regard. Other products generated from these activities include the aerial photographs themselves, digital multispectral imagery, and hard-copy maps.

NGS, through its NOAA cooperative agreements and participation with the Federal Geographic Data Committee, works with other Federal and state agencies to define and disseminate data and information concerning these coastal zone features in the true sense of partnerships. These activities support the National Information Infrastructure, in particular the National Spatial Data Infrastructure. Some of NGS' recent data sharing and partnership activities within the Coastal Zone GIS community involving Federal, state, and local governments and the private sector will be discussed.