

# OPUS Projects Manager Training

## Step 3 : Session Processing

[ngs.opus.projects@noaa.gov](mailto:ngs.opus.projects@noaa.gov)

I've advanced to the second slide and I'm reading it.

- Can you read this slide and hear me as I read it?
- Can you access the web?
- Is everyone comfortable?
- Does anyone have any questions before we begin?

# Outline

- Introduction
- Step 1 : Creating a Project
- Step 2 : Uploading Data
- **Step 3 : Session Processing**
- Step 4 : Network Adjustment

# A few words before beginning.

OPUS Projects is a web-based utility implying that access to the internet and use of a web browser are required. JavaScript must be enabled in your browser and pop-up blocking may have to be turned off. If you have difficulty configuring your browser, contact your instructor or the OPUS Projects team.

# The OPUS Projects look and feel.

The overall layout and appearance of OPUS-Projects will be very similar to that shown here regardless of the browser you use. For this reason, the browser window's frame is not shown in the figures.

# What's in this training?

This presentation begins after all data for session 2006-274-A have been uploaded. Using that session as an example, it describes the session web pages and how to process the data in a session. The format is as a series of steps like a cookbook. Like most cookbooks, the justification for and discussion of variations in those steps will be minimal. The intent is to get you started quickly, then leave you free to explore OPUS Projects on your own.



## OPUS Projects

National Geodetic Survey

NGS Home About NGS Data & Imagery Tools Surveys Science & Education  Search



OPUS Projects gives users web-based access to simple management and processing tools for projects involving multiple sites and multiple occupations. The advantages of OPUS-Projects are:

- Data uploading through OPUS.
- Customizable data processing via the PAGES software suite.
- Visualization and management aids.

Create a new project.

**RESTRICTED** to trained project managers. If you have completed OPUS Projects training, you are registered and may create a new project. All others, see the **Training Schedule**.

Configure, edit, and process individual network sessions.

**Project Identifier:**   
**Session Keyword:**   
**Your Email:**

Manage, edit, process, and publish the project.

**Project Identifier:**



Although you, being the project manager, would usually navigate to a session web page from the manager's web page, others can access your project's sessions from the OPUS Projects gateway web page. They would require the project ID and session keyword that you would provide, and a valid email address.



# OPUS Projects

National Geodetic Survey

- NGS Home
- About NGS
- Data & Imagery
- Tools
- Surveys
- Science & Education
- Search



## Scanning Project

**Your project is being scanned and web page prepared.**

This is a normal operation, but may take a few moments to several minutes depending upon the size of the project and the number of changes.

Website Owner: National Geodetic Survey / \$Revision: 51114 \$Created: 2010-12-13

### Tools/OPUS Menu

- Upload
- About OPUS
- Projects
- Published Solutions

Session Keyword:

Your Email:

Manage, edit, process, and publish the project.

Project Identifier:

Manager Keyword:

The project is always scanned for changes when accessed so the information will be up-to-date.



Session: 2006-274-A Results From: OPUS Solutions

**Controls**

? ← ↻

Show File

Send Email

Set up Processing

**MARKS:** ● meet preferences ● exceed preferences ● not included ● have error

**CORS:** ▲ meet preferences ▲ exceed preferences ▲ not included

**Baselines:** —

Map Satellite Terrain

**LEGEND**

**MARKS**

● 2126

● 2137

**LEGEND**

**CORS**

▲ covg

▲ dstr

▲ hamm

▲ msht

In a few moments, the web page for the earliest session in the project, session 2006-274-A in this case, will appear.

Solution Quality Indicators

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	PRD (%)	RES (m)	LR (m)	CR (m)	HGT (m)
Step 3 : Session Processing									





Session: 2006-274-A Results From: OPUS Solutions

**Controls**

? ← ↻

Show File

Send Email

Set up Processing

**LEGEND**

**MARKS:** ● meet preferences ● exceed preferences ⊗ not included ⊗ have error

**CORS:** ▲ meet preferences ▲ exceed preferences ⊗ not included

Baselines: \_\_\_\_\_

Map Satellite Terrain

**LEGEND**

**MARKS**

○ 2126

○ 2137

---

Add MARKS

**CORS**

▲ covg

▲ dstr

▲ hamm

▲ msht

---

Add CORS

You can use the controls on the map to zoom in (+) or out (-) ...

POWERED BY Google

10 mi Springfield Ponchatoula Madisonville Diamond

10 km Killian Mandeville

Map data ©2011 Google - Terms of Use

Solution Quality Indicators

2013-08-07

Step 3 : Session Processing

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	PRD (%)	CORR (m)	LR (m)	CR (m)	HGT (m)

Session: 2006-274-A Results From: OPUS Solutions

**Controls**

? ← ↻

Show File

Send Email

Set up Processing

**LEGEND**

**MARKS:** ● meet preferences ● exceed preferences ⊗ not included ⊗ have error

**CORS:** ▲ meet preferences ▲ exceed preferences ⊗ not included

**Baselines:**

Map Satellite Terrain

Map view showing project marks (green circles) and CORS stations (▲) in the Amite, Louisiana area. A mouse cursor is pointing at the 'Marks' tab in the top map controls.

**LEGEND**

**MARKS**

○ 2126

○ 2137

**MARKS**

▲ Add MARKS

**CORS**

▲ covg

▲ dstr

▲ hamm

▲ msht

▲ Add CORS

... center and zoom to show the project's marks in this session ...

Solution Quality Indicators

2013-08-07

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	PRD (%)	COGS (m)	LA (m)	ED (m)	HGT (m)
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Step 3: Session Processing

Session: 2006-274-A Results From: OPUS Solutions

**Controls**

? ← ↻

Show File

Send Email

Set up Processing

**LEGEND**

**MARKS:** ● meet preferences ● exceed preferences ⊗ not included ⊗ have error

**CORS:** ▲ meet preferences ▲ exceed preferences ⊗ not included

**Baselines:** —

**LEGEND**

**MARKS**

● 2126

● 2137

---

**MARKS**

▲ covg

▲ dstr

▲ hamm

▲ msht

+ Marks Marks&CORS -

Map Satellite Terrain

20 mi / 20 km

Map data ©2011 Google - Terms of Use

... or center and zoom to show the marks and included CORS.

Solution Quality Indicators

2013-08-07

Step 3 : Session Processing

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	PRD (%)	COGS (m)	LA (m)	LO (m)	HGT (m)

Session: 2006-274-A Results From: OPUS Solutions

**Controls**  
 ? ← ↻  
 Show File  
 Send Email  
 Set up Processing

**LEGEND**  
**MARKS:** ● meet preferences ● exceed preferences ⊗ not included ⊗ have error  
**CORS:** ▲ meet preferences ▲ exceed preferences ⊗ not included  
**Baselines:** —

**Map** **Satellite** **Terrain**

**LEGEND**  
 ● 2126  
 ● 2137

**MARKS**  
 Add MARKS

**CORS**  
 ▲ covg  
 ▲ dstr  
 ▲ hamm  
 ▲ msht

You can set the map's background to look like a digital elevation terrain rendering with towns and roads indicated ...

Solution Quality Indicators

2013-08-07

Step 3 : Session Processing

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	PRD (%)	RTN (m)	LA (m)	LO (m)	HGT (m)
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Session: 2006-274-A Results From: OPUS Solutions

**Controls**  
 ? ← ↻  
 Show File  
 Send Email  
 Set up Processing

**LEGEND**  
**MARKS:** ● meet preferences ● exceed preferences ⊗ not included ⊗ have error  
**CORS:** ▲ meet preferences ▲ exceed preferences ⊗ not included  
**Baselines:** —

Map **Satellite** Terrain

20 mi / 20 km

Terms of Use Add CORS

**MARKS**  
 ○ 2126  
 ○ 2137

**CORS**  
 ▲ covg  
 ▲ dstr  
 ▲ hamm  
 ▲ msht

... satellite imagery (if available) ...

Solution Quality Indicators

2013-08-07

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	PRD (%)	PDG (m)	LR (m)	CR (m)	HGT (m)
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Step 3 : Session Processing



Session : 2006-274-A Results From : OPUS Solutions

**Controls**

? ← ↻

Show File

Send Email

Set up Processing

**LEGEND**

**MARKS:** ● meet preferences ● exceed preferences ⊗ not included ⊗ have error

**CORS:** ▲ meet preferences ▲ exceed preferences ⊗ not included

**Baselines:** —

**LEGEND**

○ 2126

○ 2137

Add MARKS

**CORS**

▲ covg

▲ dstr

▲ hamm

▲ msht

Add CORS

Map Satellite Terrain

... or a simple map.

POWERED BY Google

20 mi / 20 km

Map data ©2011 Google - Terms of Use

Solution Quality Indicators

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	PRD (%)	CORR (m)	LR (m)	CR (m)	HGT (m)
Step 3 : Session Processing									

Session : 2006-274-A Results From : OPUS Solutions

**Controls**

? ← ↻

Show File

Send Email

Set up Processing

**LEGEND**

**MARKS:** ● meet preferences ● exceed preferences ⊗ not included ⊗ have error

**CORS:** ▲ meet preferences ▲ exceed preferences ⊗ not included

**Baselines:**

Map Satellite Terrain

**MARKS**

○ 2126

○ 2137

Add MARKS

**CORS**

▲ covg

▲ dstr

▲ hamm

▲ msht

Add CORS

You can "drag" the map if you'd like to examine a nearby area.

POWERED BY Google

20 mi / 20 km

Atchafalaya Delta State Wildlife Management Area

Map data ©2011 Google - Terms of Use

Solution Quality Indicators

2013-08-07

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	PRD (%)	PDOP (m)	HDOP (m)	VDOP (m)	HGT (m)
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Step 3 : Session Processing

Session: 2006-274-A Results From: OPUS Solutions

**Controls**

? ← ↻

Show File

Send Email

Set up Processing

**LEGEND**

**MARKS:** ● meet preferences ● exceed preferences ⊗ not included ⊗ have error

**CORS:** ▲ meet preferences ▲ exceed preferences ▲ not included

**Baselines:** —

Map Satellite Terrain

**LEGEND**

**MARKS**

● 2126

● 2137

**MARKS**

▲ covg

▲ dstr

▲ hamm

▲ msht

Add MARKS

**CORS**

Add CORS

Holding the cursor over a map icon causes its mark ID to appear.

Google 5 mi 5 km Map data ©2011 Google - Terms of Use Add CORS

Solution Quality Indicators

2013-08-07 Step 3 : Session Processing

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	PRD (%)	PDG (m)	LR (m)	CR (m)	HGT (m)
-------	---------	------------	----------	---------	---------	---------	--------	--------	---------

Session : 2006-274-A Results From : OPUS Solutions

**Controls**

? ← ↻

Show File

Send Email

Set up Processing

**LEGEND**

**MARKS:** ● meet preferences ● exceed preferences ⊗ not included ⊗ have error

**CORS:** ▲ meet preferences ▲ exceed preferences ⊗ not included

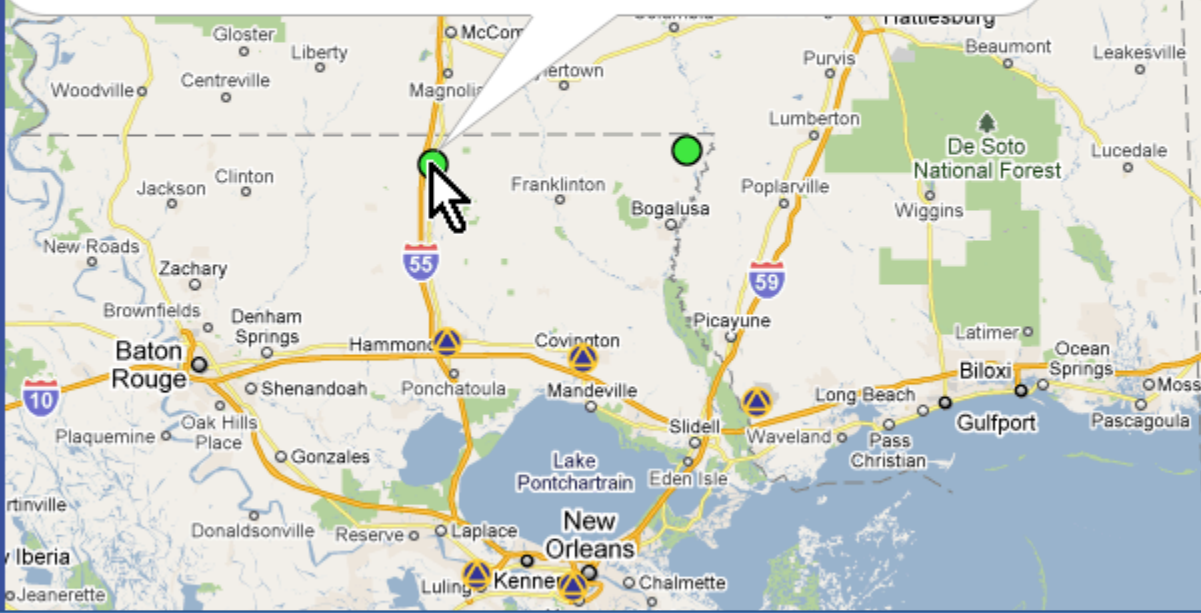
**Baselines:** —

+ Marks Marks&CORS -

Map Satellite Terrain

**2137**

STATUS	ANTENNA	HEIGHT	DATA FILE	UPLOADED	OBSERVER
●	TRM55971.00 NONE	2.000 m	2137274u.06o	2011-06-13T15:12 UTC	mark.schenewerk



**LEGEND**

● 2126

● 2137

Add MARKS

**CORS**

- ▲ covg
- ▲ dstr
- ▲ hamm
- ▲ msht

Clicking on a map icon will cause information about the data file for that mark to be shown in an information "bubble."

Solution Quality Indicators

2013-08-07

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	PRD (%)	CORS (m)	LR (m)	CR (m)	HGT (m)
-------	---------	------------	----------	---------	---------	----------	--------	--------	---------

Step 3 : Session Processing

Session: 2006-274-A Results From: OPUS Solutions

**Controls**

? ← ↻

Show File

Send Email

Set up Processing

**MARKS:**  meet preferences  exceed preferences  not included  have error

**CORS:**  meet preferences  exceed preferences  not included

**Baselines:** \_\_\_\_\_

LEGEND

Map Satellite Terrain

**2137**

STATUS	ANTENNA	HEIGHT	DATA FILE	UPLOADED	OBSERVER
<input type="radio"/>	TRM55971.00 NONE	2.000 m	2137274u.06o	2011-06-13T15:12 UTC	mark.schenewerk

LEGEND

**MARKS**

- 2126
- 2137

Add MARKS

**CORS**

- covg
- dstr
- hamm
- msht

In this bubble, the mark's ID is a convenience link to navigate to the summary web page for that mark ...

Solution Quality Indicators

2013-08-07

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	PRD (%)	RES (m)	LR (m)	CR (m)	HGT (m)
-------	---------	------------	----------	---------	---------	---------	--------	--------	---------

Step 3 : Session Processing

Session: 2006-274-A Results From: OPUS Solutions

**Controls**  
 ? ← ↻  
 Show File  
 Send Email  
 Set up Processing

**MARKS:**  meet preferences  exceed preferences  not included  have error  
**CORS:**  meet preferences  exceed preferences  not included  
**Baselines:** \_\_\_\_\_

**LEGEND**  
 MARKS  
 2126  
 2137

**Map** Satellite Terrain

2137

STATUS	ANTENNA	HEIGHT	DATA FILE	UPLOADED	OBSERVER
<input type="radio"/>	TRM55971.00 NONE	2.000 m	2137274u.06o	2011-06-13T15:12 UTC	<a href="mailto:mark.schenewerk">mark.schenewerk</a>

**LEGEND**  
**MARKS**  
 covg  
 dstr  
 hamm  
 msht

Add MARKS

... and the observer's name is a convenience link to send that person an email.

Solution Quality Indicators

2013-08-07

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	PRD (%)	CORS (m)	LR (m)	CR (m)	HGT (m)
-------	---------	------------	----------	---------	---------	----------	--------	--------	---------

Step 3 : Session Processing

Session: 2006-274-A Results From: OPUS Solutions

**Controls**

? ← ↻

Show File

Send Email

Set up Processing

**MARKS:**  meet preferences  exceed preferences  not included  have error

**CORS:**  meet preferences  exceed preferences  not included

**Baselines:** \_\_\_\_\_

**LEGEND**

**MARKS**

- 2126
- 2137

+

Marks

Marks&CORS

-

Map Satellite Terrain

**LEGEND**

**MARKS**

- covg
- dstr
- hamm
- msht

To the right of the map is a list of the marks in this session.

5 mi / 5 km

Map data ©2011 Google - Terms of Use

Add CORS

Solution Quality Indicators

2013-08-07

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	PRD (%)	RTS (m)	LA (m)	LO (m)	HGT (m)
-------	---------	------------	----------	---------	---------	---------	--------	--------	---------

Step 3 : Session Processing

Session: 2006-274-A Results From: OPUS Solutions

**Controls**

? ← ↻

Show File

Send Email

Set up Processing

**LEGEND**

**MARKS:** ● meet preferences ● exceed preferences ⊗ not included ⊗ have error

**CORS:** ▲ meet preferences ▲ exceed preferences ▲ not included

**Baselines:** —

**LEGEND**

**MARKS**

● 2126

● 2137

+ Marks Marks&CORS -

Map Satellite Terrain

**Add MARKS**

**CORS**

- ▲ covg
- ▲ dst
- ▲ hamm
- ▲ msht

Although difficult to show here, moving the cursor over a mark or CORS ID causes the corresponding map icon to “lighten.”

Solution Quality Indicators

2013-08-07

Step 3 : Session Processing

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	PRD (%)	STG (m)	LR (m)	CR (m)	HGT (m)
-------	---------	------------	----------	---------	---------	---------	--------	--------	---------



Session : 2006-274-A Results From : OPUS Solutions

**Controls**

? ← ↻

Show File

Send Email

Set up Processing

**MARKS:** ● meet preferences ● exceed preferences ⊗ not included ⊗ have error

**CORS:** ▲ meet preferences ▲ exceed preferences ⊗ not included

Baselines: \_\_\_\_\_

+ Marks Marks&CORS -

Map Satellite Terrain

**2126**

STATUS	ANTENNA	HEIGHT	DATA FILE	UPLOADED	OBSERVER
●	TRM41249.00 NONE	2.000 m	2126274w.06o	2011-06-13T14:15 UTC	mark.schenewerk

**LEGEND**

**MARKS**

● 2126

● 2137

**LEGEND**

**CORS**

▲ covg

▲ dstr

▲ hamm

▲ msht

Add MARKS

Clicking on a list entry also causes that mark's information bubble to appear on the map.

Solution Quality Indicators

2013-08-07

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	PRD (%)	PRD (m)	LR (m)	CR (m)	HGT (m)
-------	---------	------------	----------	---------	---------	---------	--------	--------	---------

Step 3 : Session Processing

Session: 2006-274-A Results From: OPUS Solutions

**Controls**  
 ? ← ↻  
 Show File  
 Send Email  
 Set up Processing

**MARKS:**  meet preferences  exceed preferences  not included  have error  
**CORS:**  meet preferences  exceed preferences  not included  
**Baselines:** \_\_\_\_\_

**LEGEND**  
 MARKS  
 ● 2126  
 ● 2137

**Map** Satellite Terrain

**LEGEND**  
**CORS**  
 ▲ covg  
 ▲ dstr  
 ▲ hamm  
 ▲ msht

**Add MARKS**

The “Add MARKS” button acts as a link to the OPUS upload web page.

Solution Quality Indicators

2013-08-07

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	PRD (%)	TIME (m)	LR (m)	CR (m)	HGT (m)
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Session: 2006-274-A Results From: OPUS Solutions

Below that is a list of the CORS included in this session.

The screenshot shows a web-based mapping application interface. At the top, there are dropdown menus for 'Session: 2006-274-A' and 'Results From: OPUS Solutions'. Below these are radio buttons for 'Controls' and 'MARKS', with options like 'meet preferences', 'exceed preferences', 'not included', and 'have error'. A blue banner with white text reads 'Below that is a list of the CORS included in this session.' The main area is a map of Louisiana, showing major cities like Baton Rouge, New Orleans, and Hattiesburg, along with highways (55, 59, 57, 17) and national forests. A sidebar on the right contains a list of CORS stations, each with a yellow triangle icon and a text label: 'covg', 'dstr', 'hamm', 'msht', 'mssc', and 'nola'. Above the list is a button 'Add MARKS' and below it is 'Add CORS'. The map includes a scale bar (20 mi / 20 km) and 'Map data ©2011 Google - Terms of Use'.

Solution Quality Indicators

2013-08-07

Step 3 : Session Processing

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	PRD (%)	TIME (m)	LR (m)	CR (m)	HGT (m)
-------	---------	------------	----------	---------	---------	----------	--------	--------	---------

Session: 2006-274-A Results From: OPUS Solutions

Controls MARKS:  meet preferences  exceed preferences  not included  have error MARKS

At the bottom-right is the "Add CORS" button. Clicking that opens a window with controls to add other CORS to this session.

The screenshot shows the OPUS web interface. At the top, there are dropdown menus for 'Session' (2006-274-A) and 'Results From' (OPUS Solutions). Below these are radio buttons for 'Controls' and 'MARKS' options. The main area is a map of Louisiana with several CORS stations marked with triangle icons. A blue box highlights the 'Add CORS' button in the bottom right corner of the interface. To the left of the map is a 'Set up Processing' button. To the right of the map is a 'CORS' list containing 'covg', 'dstr', 'hamm', 'msht', 'mssc', and 'nola', with an 'Add CORS' button below it.

Solution Quality Indicators

2013-08-07

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	PRD (%)	HTG (m)	LA (m)	EL (m)	HGT (m)
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Step 3 : Session Processing

Session: 2006-274-A Results From: OPLIS Solutions

## Session 2006-274-A CORS

Let's take a moment to explore this new window.



Add Cors



Enter the 4-char site IDs of, or click its marker on the map, to make the corresponding CORS available to your project.

**LEGEND**

**CORS:**

- existed > 7 years (recommended)
- existed < 7 years (use freely)
- existed < 5 years (use with caution)
- existed < 3 years (avoid if possible)

To Be Added:



Website Owner: National Geodetic Survey / \$Revision: 54585 \$Created: 2011-04-26

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MARKS

CORS

avg

str

amm

sht

ssc

pla

CORS

Solution Quality Indicators

2013-08-07

Step 3 : Session Processing

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	PREP (%)	CORS (m)	LA (m)	ED (m)	HGT (m)
-------	---------	------------	----------	---------	----------	----------	--------	--------	---------

Session: 2006-274-A Results From: CORS Solutions

## Session 2006-274-A CORS

The map in this window is similar to the map on the primary web page: you can zoom in and out, drag the map to other areas ...

Enter the 4-char site IDs of, or click its marker on the map, to make the corresponding CORS available to your project.

**LEGEND**

**CORS:**

- existed > 7 years (recommended)
- existed < 7 years (use freely)
- existed < 5 years (use with caution)
- existed < 3 years (avoid if possible)

**To Be Added:**

Map data ©2011 Europa Technologies, Google - [Terms of Use](#)

Website Owner: National Geodetic Survey / \$Revision: 54585 \$Created: 2011-04-26

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Solution Quality Indicators

2013-08-07

Step 3 : Session Processing

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	PRE (%)	CORS (m)	LA (m)	ED (m)	HGT (m)
-------	---------	------------	----------	---------	---------	----------	--------	--------	---------

Session: 2006-274-A Results From: OPUS Solutions

### Session 2006-274-A CORS

... you can move the cursor over a map icon to see the mark's ID or click on it for more information.

Enter the 4-char site IDs of, or click its marker on the map, to make the corresponding CORS available to your project.

**LEGEND**

**CORS:**

- 📍 existed > 7 years (recommended)
- 📍 existed < 7 years (use freely)
- 📍 existed < 5 years (use with caution)
- 📍 existed < 3 years (avoid if possible)

To Be Added:

**MOB1**  
 civil name: 49863S001; Mobile Point 1; Mobile, Alabama USA  
 antenna: ASH700829.3 SNOW  
 ARP height: 0.0000 m  
 has existed: 17.0584 years

[Add to List](#)

**MARKS**

**CORS**

- avg
- str
- amm
- sht
- ssc
- pla

**CORS**

Website Owner: National Geodetic Survey / \$Revision: 54585 \$Created: 2011-04-26

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Solution Quality Indicators

2013-08-07

Step 3 : Session Processing

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	PREL (%)	CORS (m)	LA (m)	LO (m)	HGT (m)
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Session: 2006-274-A Results From: OPLIS Solutions

Session 2006-274-A CORS

To add a CORS to this session, click the "Add to List" button in its information bubble or type its four character ID into the "To Be Added" box on the left.

**LEGEND**

**CORS:**

- existed > 7 years (recommended)
- existed < 7 years (use freely)
- existed < 5 years (use with caution)
- existed < 3 years (avoid if possible)

**To Be Added:**

**MOB1**

civil name: 49863S001; Mobile Point 1; Mobile, Alabama USA  
 antenna: ASH700829.3 SNOW  
 ARP height: 0.0000 m  
 has existed: 17.0584 years

**MARKS**

**CORS**

- avg
- str
- amm
- sht
- ssc
- pla

**CORS**

Website Owner: National Geodetic Survey / \$Revision: 54585 \$Created: 2011-04-26

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Solution Quality Indicators

2013-08-07

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	PREP (%)	CORS (m)	LA (m)	LO (m)	HGT (m)
-------	---------	------------	----------	---------	----------	----------	--------	--------	---------

Step 3 : Session Processing



Session: 2006-274-A Results From: CORS Solutions

## Session 2006-274-A CORS

?
Add Cors
X

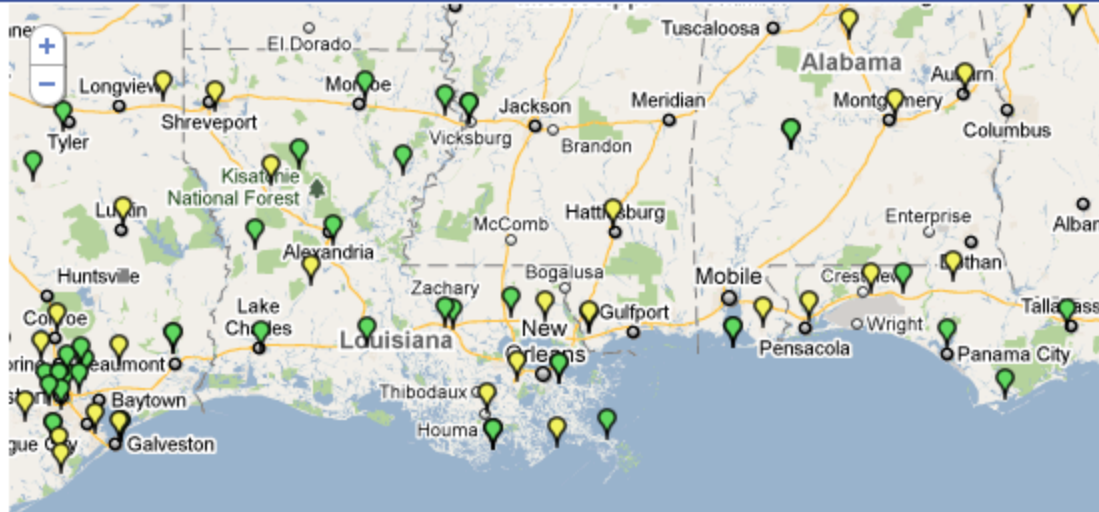
Enter the 4-char site IDs of, or click its marker on the map, to make the corresponding CORS available to your project.

**LEGEND**

**CORS:**

- existed > 7 years (recommended)
- existed < 7 years (use freely)
- existed < 5 years (use with caution)
- existed < 3 years (avoid if possible)

To Be Added:



RKS
26
37

MARKS

CORS
avg
str
amm

When the list of CORS to be added is complete, click the "Add CORS" button on the control bar near the top of the window to begin the process. In this example, we'll just close the window.

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	PRE (%)	CORS (m)	LA (m)	EL (m)	HGT (m)
-------	---------	------------	----------	---------	---------	----------	--------	--------	---------

Session:  Results From:

**Controls**

? ← ↻

Show File

Send Email

Set up Processing

**LEGEND**

**MARKS:** ● meet preferences ● exceed preferences ⊗ not included ⊗ have error

**CORS:** ▲ meet preferences ▲ exceed preferences ▲ not included

**Baselines:** \_\_\_\_\_

Map Satellite Terrain

MARKS: 2126 2137

Add MARKS

CORS: ▲ covg ▲ dstr

The pull-down menus at the top of the web page identify the session and solution results shown on this web page: OPUS solutions from session 2006-274-A in this case.

Solution Quality Indicators

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	PRD (%)	TIME (m)	LR (m)	CR (m)	HGT (m)
-------	---------	------------	----------	---------	---------	----------	--------	--------	---------

Step 3 : Session Processing

Session: **2006-274-A** Results From: **OPUS Solutions**

meet preferences  exceed preferences  not included  have error  
 meet preferences  exceed preferences  not included

Baselines: \_\_\_\_\_

Marks  Marks&CORS  -

Map Satellite Terrain

Legend: MARKS  
 2126  
 2137

Add MARKS  
 CORS  
 covg  
 dstr  
 hamm  
 msht  
 msc

5 km | Map data ©2011 Google - Terms of Use | Add CORS

You can use the session menu to navigate to another session...

Solution Quality Indicators

2013-08-07

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	PRD (%)	CORS (m)	LA (m)	SL (m)	HGT (m)
-------	---------	------------	----------	---------	---------	----------	--------	--------	---------

Session: 2006-274-A Results From: OPUS Solutions

**Controls**

? ← ↻

Show File

Send Email

Set up Processing

**LEGEND**

**MARKS:** ● OPUS Solutions  exceed preferences  not included  have error

**CORS:** ▲ meet preferences ▲ exceed preferences ▲ not included

**Baselines:**

**LEGEND**

**MARKS**

- 2126
- 2137

Map Satellite Terrain

**LEGEND**

**MARKS**

- ▲ covg
- ▲ dsr
- ▲ hamm
- ▲ msht
- ▲ mssc

**LEGEND**

**MARKS**

Add MARKS

**CORS**

Add CORS

5 km

Map data ©2011 Google - Terms of Use

...or review other processing results for this session.

2013-08-07

Solution Quality Indicators

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	PRD (%)	RTS (m)	LA (m)	LR (m)	HGT (m)
-------	---------	------------	----------	---------	---------	---------	--------	--------	---------

Step 3 : Session Processing

Session: 2006-274-A Results From: OPUS Solutions

**Controls**

? ← ↻

Show File

Send Email

Set up Processing

**MARKS:**  meet preferences  exceed preferences  not included  have error

**CORS:**  meet preferences  exceed preferences  not included

**Baselines:** \_\_\_\_\_

LEGEND

MARKS

2126

2137

Map Satellite Terrain

LEGEND

MARKS

2126

2137

Add MARKS

CORS

covg

dstr

hamm

msht

mscc

Add CORS

The controls for this web page are to the left of the map.

Solution Quality Indicators

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	PRD (%)	CODE (m)	LR (m)	CR (m)	HGT (m)

Step 3 : Session Processing



"my project @ 2006-10-01"

Session: 2006-274-A

OPUS Solution
2126
2126274w.06o
Show File
X

2126274w.06o.txt created: 2013-05-22 15:33 UTC downloaded: 2013-05-22 20:19 UTC

NGS OPUS SOLUTION REPORT  
=====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: mark.schenewerk@noaa.gov	DATE: May 22, 2013
RINEX FILE: 2126274w.06o	TIME: 15:33:11 UTC

SOFTWARE: page5 1209.04 master12.pl 082112	START: 2006/10/01 22:07:00
EPHEMERIS: igs13950.eph [precise]	STOP: 2006/10/02 01:45:00
NAV FILE: brdc2740.06n	OBS USED: 8062 / 8267 : 98%
ANT NAME: TRM41249.00 NONE	# FIXED AMB: 39 / 41 : 95%
ARP HEIGHT: 2.00	OVERALL RMS: 0.013 (m)

REF FRAME: NAD_83 (2011) (EPOCH:2010.0000)	IGS08 (EPOCH:2006.7507)
--	-------------------------

	X:	18197.041 (m)	0.005 (m)	18196.361 (m)	0.005 (m)
	Y:	-5473864.221 (m)	0.007 (m)	-5473862.729 (m)	0.007 (m)
	Z:	3262753.708 (m)	0.010 (m)	3262753.542 (m)	0.010 (m)

LAT:	30 58	0.78029	0.007 (m)	30 58	0.80064	0.007 (m)
E LON:	270 11	25.69390	0.005 (m)	270 11	25.66846	0.005 (m)
W LON:	89 48	34.30610	0.005 (m)	89 48	34.33154	0.005 (m)
EL HGT:		15.394 (m)	0.009 (m)		14.027 (m)	0.009 (m)

The OPUS solution and other processing reports can be reviewed in a separate window using the "Show File" button.

Solution Quality Indicators

2013-08-07

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	PRD (%)	FIXS (m)	LR (m)	CR (m)	HGT (m)
-------	---------	------------	----------	---------	---------	----------	--------	--------	---------

Step 3 : Session Processing

39





"my project @ 2006 10 01"

If you wish to print this report, click somewhere on the report, then right-click. In Mozilla based browsers, the “standard” browser web page menu should appear. On this, you’ll see the “This Frame” entry. Following that, you can “Print Frame”.

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information, see [http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy](#)

USER: mark.sch  
RINEX FILE: 2126274w

SOFTWARE: page5 1  
EPHEMERIS: igs13950  
NAV FILE: brdc2740  
ANT NAME: TRM41249  
ARP HEIGHT: 2.00

REF FRAME: NAD\_83(2)

X: 1  
Y: -547  
Z: 326

LAT: 30 58 0.78029 0.007 (m)  
E LON: 270 11 25.69390 0.005 (m)  
W LON: 89 48 34.30610 0.005 (m)  
EL HGT: 15.394 (m) 0.009 (m)  
ORTHO HGT: 43.050 (m) 0.020 (m) [NA]

UTM COORDINATES STA  
UTM (Zone 16) SEC (1702 LA 5)

DATE: May 22, 2013  
TIME: 15:33:11 UTC

START: 2006/10/01 22:07:00  
STOP: 2006/10/02 01:45:00  
OBS USED: 8062 / 8267 : 98%  
FIXED AMB: 39 / 41 : 95%  
OVERALL RMS: 0.013 (m)

- Back
- Forward
- Reload
- Bookmark This Page
- Save Page As...
- View Background Image
- Select All
- This Frame
- View Page Source
- View Page Info
- Inspect Element (Q)

- Show Only This Frame
- Open Frame in New Tab
- Open Frame in New Window
- Reload Frame
- Bookmark This Frame
- Save Frame As...
- Print Frame...
- View Frame Source
- View Frame Info

With Internet Explorer, you'll have to select the report's text. Then, by right-clicking on the text, you can "Convert to Adobe PDF".

2126274w.06o.txt created: 2013-05-22 15:33 UTC downloaded: 2013-05-22 20:35 UTC

NGS OPUS SOLUTION REPORT  
=====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov>

USER: mark.schenewerk@noaa.gov  
RINEX FILE: 2126274w.06o

SOFTWARE: page5 1209.04 master12.pl 082112  
EPHEMERIS: igs13950.eph [precise]  
NAV FILE: brdc2740.06n  
ANT NAME: TRM41249.00 NONE # F  
ARP HEIGHT: 2.00 OVE

REF FRAME: NAD 83 (2011) (EPOCH:2010.0000)

X:	18197.041 (m)	0.005 (m)
Y:	-5473864.221 (m)	0.007 (m)
Z:	3262753.708 (m)	0.010 (m)

LAT: 30 58 0.78029 0.007 (m)  
E LON: 270 11 25.69390 0.005 (m)  
W LON: 89 48 34.30610 0.005 (m)  
EL HGT: 15.394 (m) 0.009 (m)  
ORTHO HGT: 43.050 (m) 0.020 (m) [NAVD

UTM COORDINATES STATE  
UTM (Zone 16) S

- Cut
- Copy
- Paste
- Select All
- Print...
- Print Preview...
- Blog with Windows Live
- E-mail with Windows Live
- Map with Bing
- Search with Bing
- Translate with Bing
- All Accelerators
- Append Link Target to Existing PDF
- Append to Existing PDF
- Convert Link Target to Adobe PDF
- Convert to Adobe PDF
- Send to OneNote

With Google Chrome, allegedly there is an extension to allow you to print the text box frame, but this has not been tested. Without this extension, you'll have to select the report's text and copy it into a file for printing.



Session: 2006-274-A Results From: OPUS Solutions

### Session 2006-274-A Email

**Controls**

- Show File
- Send Email**
- Set up Processing

**To:**  Me  Project Manager  All Field Members  OPUS-Projects Team

**Subject:** Re: project "my project @ 2006-10-01"

**Attach:** OPUS Solution 2126  
 2126274w.06o

**Message:**

Website Owner: National Geodetic Survey / \$Revision: 54743 \$Created: 2011-04-05

[NDS Home](#) [NGS Employees](#) [Privacy Policy](#) [Disclaimer](#) [USA.gov](#) [Ready.gov](#) [Site Map](#) [Contact Webmaster](#)

The "Send Email" button gives you a limited means to send an email to others in the project.

Solution Quality Indicators

2013-08-07

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	PRD (%)	TOGS (m)	LR (m)	ED (m)	HGT (m)
-------	---------	------------	----------	---------	---------	----------	--------	--------	---------

Step 3 : Session Processing

Session: 2006-274-A Results From: OPUS Solutions

### Session 2006-274-A Email

Controls: ? ← ↻ Show File Send Email Set up Processing

LEGEND

? ↻ Send Email X

To:  Me  Project Manager  All Field Members  OPUS-Projects Team


Subject: Re: project "my project @ 2006-10-01"

Attach: OPUS Solution 2126  2126274w.06o

Message:

Website Owner: National Geodetic Survey / \$Revision: 54743 \$Created: 2011-04-05

NOS Home ▪ NGS Employees ▪ Privacy Policy ▪ Disclaimer ▪ USA.gov ▪ Ready.gov ▪ Site Map ▪ Contact Webmaster



Notice that you can send the email to yourself, the project manager, other project members and the OPUS Projects team.

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	PRD (%)	TGS (m)	LR (m)	CR (m)	HGT (m)
-------	---------	------------	----------	---------	---------	---------	--------	--------	---------

Session: 2006-274-A Results From: OPUS Solutions

**Controls**

? ← ↻

Show File

Send Email

Set up Processing

### Session 2006-274-A Email

? ↻ Send Email ✕

To:  Me  Project Manager  All Field Members  OPUS-Projects Team

Subject: Re: project "my project @ 2006-10-01"

Attach: OPUS Solution 2126  
 2126274w.06o

Message:

Website Owner: National Geodetic Survey / \$Revision: 54743 \$Created: 2011-04-05

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You can also attach processing reports to the email.

Map showing locations: Donaldsonville, Reserve, Laplace, Orleans, Luling, Kenner, Chalmette

powered by Google 5 mi 5 km

Map data ©2011 Google - Terms of Use Add CORS

Solution Quality Indicators

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	PRD (%)	RMSS (m)	LR (m)	ELL (m)	HGT (m)
-------	---------	------------	----------	---------	---------	----------	--------	---------	---------

Step 3 : Session Processing

2013-08-07

Session: 2006-274-A Results From: OPUS Solutions

**Controls**

? ← ↻

Show File

Send Email

Set up Processing

**MARKS:**  meet preferences  exceed preferences  not included  have error

**CORS:**  meet preferences  exceed preferences  not included

**Baselines:** \_\_\_\_\_

LEGEND

Map Satellite Terrain

**MARKS**

● 2126

● 2137

**LEGEND**

**Add MARKS**

**CORS**

- covg
- dstr
- hamm

The “Set up Processing” button displays the session processing controls. Let’s leave this until we finish exploring the web page.

Solution Quality Indicators

2013-08-07

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	PRD (%)	PRM (m)	LR (m)	LR2 (m)	HGT (m)
-------	---------	------------	----------	---------	---------	---------	--------	---------	---------

Scrolling to the bottom of the web page, we see a table below the map with the solution values that are checked against the solution quality thresholds. If a value exceeds its threshold, the value is highlighted using an orange color and the mark's icon is changed to reflect this condition. This table shows that the OPUS solutions for this session meet the project's preferences.



**Solution Quality Indicators**

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	FIXED (%)	RMS (m)	LAT (m)	LON (m)	HGT (m)	
2126	TRM41249.00	NONE	2.000	precise	98.6	85.7	0.012	0.017	0.015	0.021
2137	TRM55971.00	NONE	2.000	precise	95.5	86.5	0.015	0.015	0.010	0.023
PREFERENCES:				Best Available	≥80.0	≥80.0	≤0.025	≤0.030	≤0.030	≤0.060

**Data Availability**

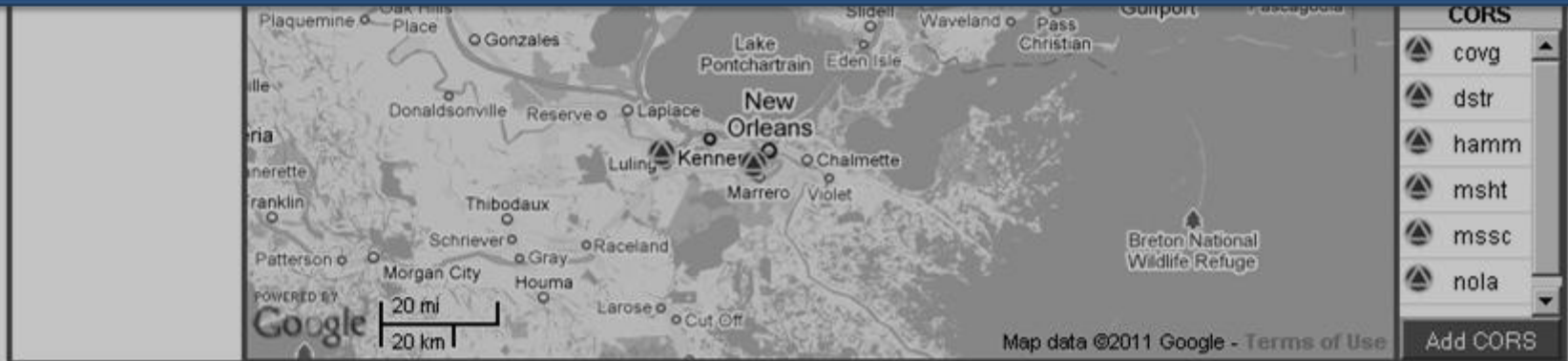
2006-10-01T20:00:00 GPST to 2006-10-02T02:00:00 GPST in 10 minute cells

MARKS	2006-10-01								2006-10-02																								
	20	21	22	23	00	01	02	03	00	01	02	03																					
2126	0	0	0	0	0	0	0	0	0	0	0	0	0	7	7	8	8	8	7	8	8	8	7	7	7	7	7	8	7	8	8	7	0
2137	7	7	7	7	8	7	8	7	7	8	8	9	9	A	A	8	8	8	9	9	8	8	8	7	7	7	7	8	8	8	7	8	7

Website Owner: National Geodetic Survey / Last modified by the OPUS-Projects Team



At the bottom of the web page is a graph indicating the satellite availability in each data file.



#### Solution Quality Indicators

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	FIXED (%)	RMS (m)	LAT (m)	LON (m)	HGT (m)	
2126	TRM41249.00	NONE	2.000	precise	98.6	85.7	0.012	0.017	0.015	0.021
2137	TRM55971.00	NONE	2.000	precise	95.5	86.5	0.015	0.015	0.010	0.023
PREFERENCES:			Best Available	$\geq 80.0$	$\geq 80.0$	$\leq 0.025$	$\leq 0.030$	$\leq 0.030$	$\leq 0.060$	

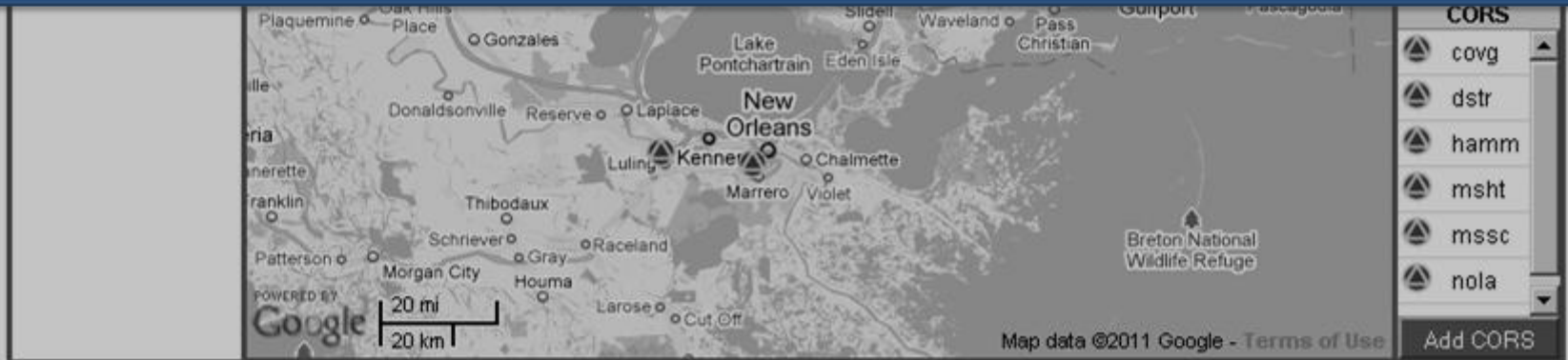
#### Data Availability

2006-10-01T20:00:00 GPST to 2006-10-02T02:00:00 GPST in 10 minute cells

MARKS	2006-10-01								2006-10-02																								
	20	21	22	23	00	01																											
2126	0	0	0	0	0	0	0	0	7	7	8	8	8	7	7	7	7	7	8	7	7	8	8	7	0								
2137	7	7	7	7	8	7	8	7	7	8	8	9	9	A	A	8	8	8	9	9	8	8	7	7	7	8	8	8	7	8	8	7	7

Website Owner: National Geodetic Survey / Last modified by the DPUS-Projects Team

The mark ID's labeling each row are more convenience links to navigate to the mark summary web pages.



#### Solution Quality Indicators

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	FIXED (%)	RMS (m)	LAT (m)	LON (m)	HGT (m)	
2126	TRM41249.00	NONE	2.000	precise	98.6	85.7	0.012	0.017	0.015	0.021
2137	TRM55971.00	NONE	2.000	precise	95.5	86.5	0.015	0.015	0.010	0.023
PREFERENCES:			Best Available	$\geq 80.0$	$\geq 80.0$	$\leq 0.025$	$\leq 0.030$	$\leq 0.030$	$\leq 0.060$	

#### Data Availability

2006-10-01T20:00:00 GPST to 2006-10-02T02:00:00 GPST in 10 minute cells

MARKS	2006-10-01								2006-10-02																						
	20	21	22	23	00	01																									
2126	0	0	0	0	0	0	0	0	0	7	7	8	8	8	7	8	8	8	7	7	7	7	7	8	7	8	8	7	0		
2137	7	7	7	7	8	7	8	7	7	8	9	9	A	A	8	8	8	9	9	8	8	8	7	7	7	7	8	8	8	7	7

Website Owner: National Geodetic Survey / Last modified by the OPUS-Projects Team

Session: 2006-274-A Results From: OPUS Solutions

**Controls**

? ← ↻

Show File

Send Email

Set up Processing

**MARKS:**  meet preferences  exceed preferences  not included  have error

**CORS:**  meet preferences  exceed preferences  not included

**Baselines:** \_\_\_\_\_

LEGEND

Map Satellite Terrain

**MARKS**

● 2126

● 2137

**LEGEND**

**MARKS**

▲ covg

▲ dstr

▲ hamm

**LEGEND**

**MARKS**

▲ covg

▲ dstr

▲ hamm

Now let's scroll back to the top of the web page and describe the processing controls.

Solution Quality Indicators

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	PRD (%)	RTS (m)	LR (m)	CR (m)	HGT (m)

Session: 2006-274-A Results From: OPLIS Solutions

## "2006-274-A" Session Processing

?  ↺   X

SOLUTION NAME (30 char max): A

SOLUTION SPAN  
2006-10-01T20:01:30 GPS to 2006-10-02T01:59:30 GPS

MARK	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° ' ")	LONGITUDE (° ' ")	REF. FRAME
<input checked="" type="checkbox"/> 2126	<input checked="" type="checkbox"/>	<input type="checkbox"/> NONE	EL HGT 14.019	N30:58:00.80116	W089:48:34.33127	IGS08 (2006.7507)
<input checked="" type="checkbox"/> 2137	<input checked="" type="checkbox"/>	<input type="checkbox"/> NONE	EL HGT 33.196	N30:56:11.58242	W090:30:25.29761	IGS08 (2006.7506)
CORS	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° ' ")	LONGITUDE (° ' ")	REF. FRAME
<input checked="" type="checkbox"/> covg	<input checked="" type="checkbox"/>	<input type="checkbox"/> 3-D	EL HGT -5.932	N30:28:33.28953	W090:05:43.94752	IGS08 (2005.0000)
<input checked="" type="checkbox"/> distr	<input checked="" type="checkbox"/>	<input type="checkbox"/> 3-D	EL HGT -20.028	N29:57:52.41516	W090:22:56.03140	IGS08 (2005.0000)
<input checked="" type="checkbox"/> hamm	<input checked="" type="checkbox"/>	<input type="checkbox"/> 3-D	EL HGT 5.820	N30:30:47.07133	W090:28:03.45357	IGS08 (2005.0000)
<input checked="" type="checkbox"/> msht	<input checked="" type="checkbox"/>	<input type="checkbox"/> 3-D	EL HGT 64.476	N31:19:39.16104	W089:20:10.65121	IGS08 (2005.0000)
<input checked="" type="checkbox"/> mssc	<input checked="" type="checkbox"/>	<input type="checkbox"/> 3-D	EL HGT -13.084	N30:22:30.81443	W089:36:49.92726	IGS08 (2005.0000)
<input checked="" type="checkbox"/> nola	<input checked="" type="checkbox"/>	<input type="checkbox"/> 3-D	EL HGT -1.581	N29:56:03.75236	W090:07:12.67094	IGS08 (2005.0000)

PROCESSING PREFERENCES  
Output RefFrame: LET OPLIS CHOOSE

Clicking the "Set up Processing" button causes two things to happen: the processing set up window appears and the baselines implied by the processing selections are shown on the session map.

Session: 2006-274-A Results From: OPUS Solutions

Controls MARKS: meet preferences exceed preferences not included have error  
 et preferences exceed preferences not included

### "2006-274-A" Session Processing

Perform Processing

SOLUTION NAME (30 char max): A

SOLUTION SPAN  
 2006-10-01T20:01:30 GPS to 2006-10-02T01:59:30 GPS

MARK	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° ' ")	LONGITUDE (° ' ")	REF. FRAME
<input checked="" type="checkbox"/> 2126		NONE	EL HGT	14.019	N30:58:00.80116 W089:48:34.33127	IGS08 (2006.7507)
<input checked="" type="checkbox"/> 2137		NONE	EL HGT	33.196	N30:56:11.58242 W090:30:25.29761	IGS08 (2006.7506)
CORS						
MARK	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° ' ")	LONGITUDE (° ' ")	REF. FRAME
<input checked="" type="checkbox"/> covg		3-D	EL HGT	-5.932	N30:28:33.28953 W090:05:43.94752	IGS08 (2005.0000)
<input checked="" type="checkbox"/> dstz		3-D	EL HGT	-20.028	N29:57:52.41516 W090:22:56.03140	IGS08 (2005.0000)
<input checked="" type="checkbox"/> hamm		3-D	EL HGT	5.820	N30:30:47.07133 W090:28:03.45357	IGS08 (2005.0000)
<input checked="" type="checkbox"/> msht		3-D	EL HGT	64.476	N31:19:39.16104 W089:20:10.65121	IGS08 (2005.0000)
<input checked="" type="checkbox"/> mssc		3-D	EL HGT	-13.084	N30:22:30.81443 W089:36:49.92726	IGS08 (2005.0000)
<input checked="" type="checkbox"/> nola		3-D	EL HGT	-1.581	N29:56:03.75236 W090:07:12.67094	IGS08 (2005.0000)

PROCESSING PREFERENCES

Output Ref Frame: LET OPUS CHOOSE

Output Geoid Model: LET OPUS CHOOSE

GNSS: G (GPS-only)

Tropo Model: Piecewise Linear

Tropo Interval (s): 7200

Elevation Cutoff (deg): 15.0

Constraint Weights:  LOOSE  NORMAL  TIGHT

Network Design:  USER  CORS  MST  TRI

Map Satellite Terrain

LEGEND

MARKS

- 2126
- 2137

MARKS

- 2126
- 2137

ADD MARKS

CORS

- covg
- dstz
- hamm
- msht
- mssc
- nola

ADD CORS

Map data ©2011 Google - Terms of Use

Solution Quality Indicators

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	FIXED (%)	RMS (m)	LAT (m)	LOH (m)	HGT (m)
2126	TRM44349.00	NONE	2.000	species	98.6	85.7	0.012	0.017	0.015

After shrinking both windows and placing them side by side, we see that the baselines are indeed drawn on the map. Let's focus on the session processing form, but keep a small copy of the map for the remainder of this discussion.

## "2006-274-A" Session Processing

? ↺
Perform Processing
✕

SOLUTION NAME (30 char max): A

**SOLUTION SPAN**  
 2006-10-01T20:01:30 GPS to 2006-10-02T01:59:30 GPS

MARK	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> 2126	<span style="color: green;">●</span>	<input type="checkbox"/> NONE	EL HGT	14.019	N30:58:00.80116 W089:48:34.33127	IGS08 (2006.7507)
<input checked="" type="checkbox"/> 2137	<span style="color: green;">●</span>	<input type="checkbox"/> NONE	EL HGT	33.196	N30:56:11.58242 W090:30:25.29761	IGS08 (2006.7506)
CORS	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> covg	<span style="color: blue;">▲</span>	<input checked="" type="checkbox"/> 3-D	EL HGT	-5.932	N30:28:33.28953 W090:05:43.94752	IGS08 (2005.0000)
<input checked="" type="checkbox"/> dstr	<span style="color: blue;">▲</span>	<input checked="" type="checkbox"/> 3-D	EL HGT	-20.028	N29:57:52.41516 W090:22:56.03140	IGS08 (2005.0000)
<input checked="" type="checkbox"/> hamm	<span style="color: blue;">▲</span>	<input checked="" type="checkbox"/> 3-D	EL HGT	5.820	N30:30:47.07133 W090:28:03.45357	IGS08 (2005.0000)
<input checked="" type="checkbox"/> msht	<span style="color: blue;">▲</span>	<input checked="" type="checkbox"/> 3-D	EL HGT	64.476	N31:19:39.16104 W089:20:10.65121	IGS08 (2005.0000)
<input checked="" type="checkbox"/> mssc	<span style="color: blue;">▲</span>	<input checked="" type="checkbox"/> 3-D	EL HGT	-13.084	N30:22:30.81443 W089:36:49.92726	IGS08 (2005.0000)
<input checked="" type="checkbox"/> no1a	<span style="color: blue;">▲</span>	<input checked="" type="checkbox"/> 3-D	EL HGT	-1.581	N29:56:03.75236 W090:07:12.67094	IGS08 (2005.0000)

**PROCESSING PREFERENCES**

Output Ref Frame: LET OPUS CHOOSE

Output Geoid Model: LET OPUS CHOOSE

GNSS: G (GPS-only)

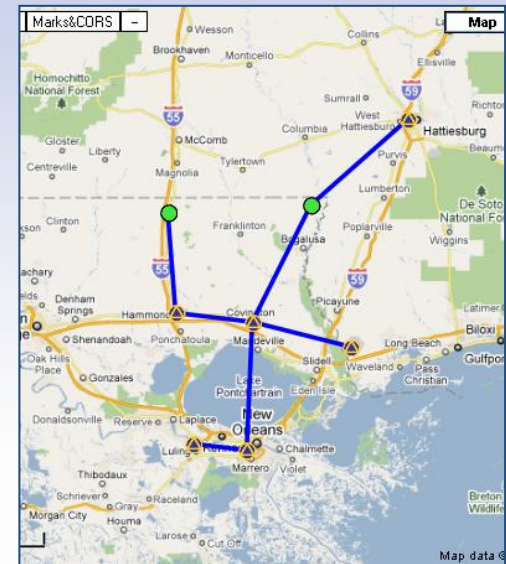
Tropo Model: Piecewise Linear

Tropo Interval (s): 7200

Elevation Cutoff (deg): 15.0

Constraint Weights:  LOOSE  NORMAL  TIGHT

Network Design:  USER  CORS  MST  TRI



If no processing has been performed in this session, the default selections are used as is the case here: all data are included, the CORS are hubs and constrained, ...

## "2006-274-A" Session Processing

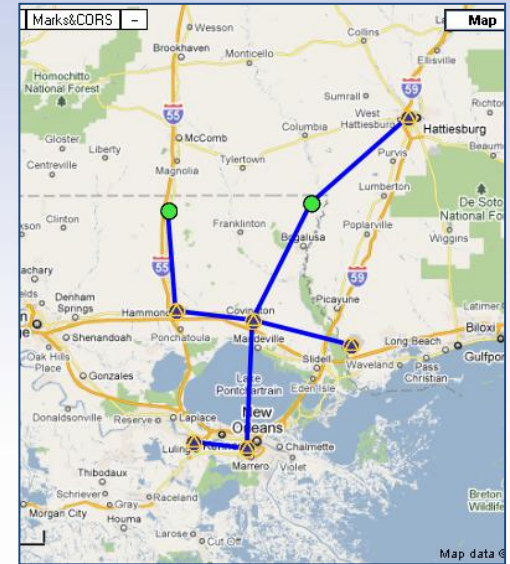
SOLUTION NAME (30 char max): A

**SOLUTION SPAN**  
 2006-10-01T20:01:30 GPS to 2006-10-02T01:59:30 GPS

MARK	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME	
<input checked="" type="checkbox"/> 2126		<input type="checkbox"/> NONE	EL HGT	14.019	N30:58:00.80116	W089:48:34.33127	IGS08 (2006.7507)
<input checked="" type="checkbox"/> 2137		<input type="checkbox"/> NONE	EL HGT	33.196	N30:56:11.58242	W090:30:25.29761	IGS08 (2006.7506)
CORS	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME	
<input checked="" type="checkbox"/> covg		<input checked="" type="checkbox"/> 3-D	EL HGT	-5.932	N30:28:33.28953	W090:05:43.94752	IGS08 (2005.0000)
<input checked="" type="checkbox"/> dstr		<input checked="" type="checkbox"/> 3-D	EL HGT	-20.028	N29:57:52.41516	W090:22:56.03140	IGS08 (2005.0000)
<input checked="" type="checkbox"/> hamm		<input checked="" type="checkbox"/> 3-D	EL HGT	5.820	N30:30:47.07133	W090:28:03.45357	IGS08 (2005.0000)
<input checked="" type="checkbox"/> msht		<input checked="" type="checkbox"/> 3-D	EL HGT	64.476	N31:19:39.16104	W089:20:10.65121	IGS08 (2005.0000)
<input checked="" type="checkbox"/> mssc		<input checked="" type="checkbox"/> 3-D	EL HGT	-13.084	N30:22:30.81443	W089:36:49.92726	IGS08 (2005.0000)
<input checked="" type="checkbox"/> no1a		<input checked="" type="checkbox"/> 3-D	EL HGT	-1.581	N29:56:03.75236	W090:07:12.67094	IGS08 (2005.0000)

**PROCESSING PREFERENCES**

Output Ref Frame: 
  
 Output Geoid Model: 
  
 GNSS: 
  
 Tropo Model: 
  
 Tropo Interval (s): 
  
 Elevation Cutoff (deg): 
  
 Constraint Weights:  LOOSE  NORMAL  TIGHT
   
 Network Design:  USER  CORS  MST  TRI



... and the PROCESSING PREFERENCES located at the bottom of the window are the defaults chosen when we initially set the project preferences.

## "2006-274-A" Session Processing

? ↺
Perform Processing
✕

SOLUTION NAME (30 char max): A

SOLUTION SPAN  
2006-10-01T20:01:30 GPS to 2006-10-02T01:59:30 GPS

MARK	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> 2126	<span style="color: green;">●</span>	<input type="checkbox"/> NONE	EL HGT 14.019	N30:58:00.80116	W089:48:34.33127	IGS08 (2006.7507)
<input checked="" type="checkbox"/> 2137	<span style="color: green;">●</span>	<input type="checkbox"/> NONE	EL HGT 33.196	N30:56:11.58242	W090:30:25.29761	IGS08 (2006.7506)
CORS	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> covg	<span style="color: blue;">▲</span>	<input checked="" type="checkbox"/> 3-D	EL HGT -5.932	N30:28:33.28953	W090:05:43.94752	IGS08 (2005.0000)
<input checked="" type="checkbox"/> dstr	<span style="color: blue;">▲</span>	<input checked="" type="checkbox"/> 3-D	EL HGT -20.028	N29:57:52.41516	W090:22:56.03140	IGS08 (2005.0000)
<input checked="" type="checkbox"/> hamm	<span style="color: blue;">▲</span>	<input checked="" type="checkbox"/> 3-D	EL HGT 5.820	N30:30:47.07133	W090:28:03.45357	IGS08 (2005.0000)
<input checked="" type="checkbox"/> msht	<span style="color: blue;">▲</span>	<input checked="" type="checkbox"/> 3-D	EL HGT 64.476	N31:19:39.16104	W089:20:10.65121	IGS08 (2005.0000)
<input checked="" type="checkbox"/> mssc	<span style="color: blue;">▲</span>	<input checked="" type="checkbox"/> 3-D	EL HGT -13.084	N30:22:30.81443	W089:36:49.92726	IGS08 (2005.0000)
<input checked="" type="checkbox"/> no1a	<span style="color: blue;">▲</span>	<input checked="" type="checkbox"/> 3-D	EL HGT -1.581	N29:56:03.75236	W090:07:12.67094	IGS08 (2005.0000)

**PROCESSING PREFERENCES**

Output Ref Frame: LET OPUS CHOOSE

Output Geoid Model: LET OPUS CHOOSE

GNSS: G (GPS-only)

Tropo Model: Piecewise Linear

Tropo Interval (s): 7200

Elevation Cutoff (deg): 15.0

Constraint Weights:  LOOSE  NORMAL  TIGHT

Network Design:  USER  CORS  MST  TRI

But if processing *has* occurred in this session, the previous processing selections will become the defaults.

2013-08-07

Step 3 : Session Processing

56



## "2006-274-A" Session Processing

? ↺ Perform Processing X

SOLUTION NAME (30 char max): A

**SOLUTION SPAN**  
2006-10-01T20:01:30 GPS to 2006-10-02T01:59:30 GPS

MARK	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> 2126	<input type="radio"/>	<input type="checkbox"/> NONE	EL HGT 14.019	N30:58:00.80116	W089:48:34.33127	IGS08 (2006.7507)
<input checked="" type="checkbox"/> 2137	<input type="radio"/>	<input type="checkbox"/> NONE	EL HGT 33.196	N30:56:11.58242	W090:30:25.29761	IGS08 (2006.7506)
CORS	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> covg	<input checked="" type="checkbox"/>	<input type="checkbox"/> 3-D	EL HGT -5.932	N30:28:33.28953	W090:05:43.94752	IGS08 (2005.0000)
<input checked="" type="checkbox"/> distr	<input checked="" type="checkbox"/>	<input type="checkbox"/> 3-D	EL HGT -20.028	N29:57:52.41516	W090:22:56.03140	IGS08 (2005.0000)
<input checked="" type="checkbox"/> hamm	<input checked="" type="checkbox"/>	<input type="checkbox"/> 3-D	EL HGT 5.820	N30:30:47.07133	W090:28:03.45357	IGS08 (2005.0000)
<input checked="" type="checkbox"/> msht	<input checked="" type="checkbox"/>	<input type="checkbox"/> 3-D	EL HGT 64.476	N31:19:39.16104	W089:20:10.65121	IGS08 (2005.0000)
<input checked="" type="checkbox"/> mssc	<input checked="" type="checkbox"/>	<input type="checkbox"/> 3-D	EL HGT -13.084	N30:22:30.81443	W089:36:49.92726	IGS08 (2005.0000)
<input checked="" type="checkbox"/> no1a	<input checked="" type="checkbox"/>	<input type="checkbox"/> 3-D	EL HGT -1.581	N29:56:03.75236	W090:07:12.67094	IGS08 (2005.0000)

**PROCESSING PREFERENCES**

Output Ref Frame: LET OPUS CHOOSE

Output Geoid Model: LET OPUS CHOOSE

GNSS: G (GPS-only)

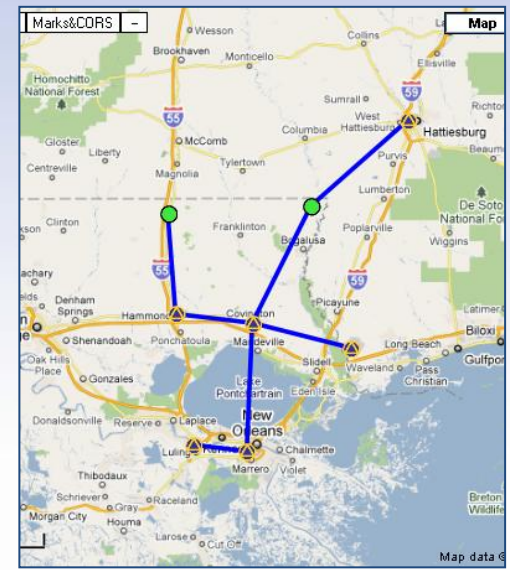
Tropo Model: Piecewise Linear

Tropo Interval (s): 7200

Elevation Cutoff (deg): 15.0

Constraint Weights:  LOOSE  NORMAL  TIGHT

Network Design:  USER  CORS  MST  TRI



Use the SOLUTION NAME as a reminder about this solution. Normally, you'll leave it as the letter identifier for this session: "A" from 2006-274-A in this case. If you're experimenting with alternate processing configurations, use a name like "A test 1."

# Session Naming

- OPUS Projects creates a session name for each session as you submit files via the OPUS interface.
- When you PROCESS a session, OPUS Projects allows you to specify a name for the processed session.
- I suggest that you retain the “root” name and add a logical extender name.

# Session Naming

- Example:
- Submitted session “root” name: 2006-274-A
  - Suggested extender name: 2006-274-A-Trial 1
  - Suggested extender name: 2006-274-A-No ALDR2
- Bad idea to not retain the root in your naming.

## "2006-274-A" Session Processing

? ↺ Perform Processing X

SOLUTION NAME (30 char max): A

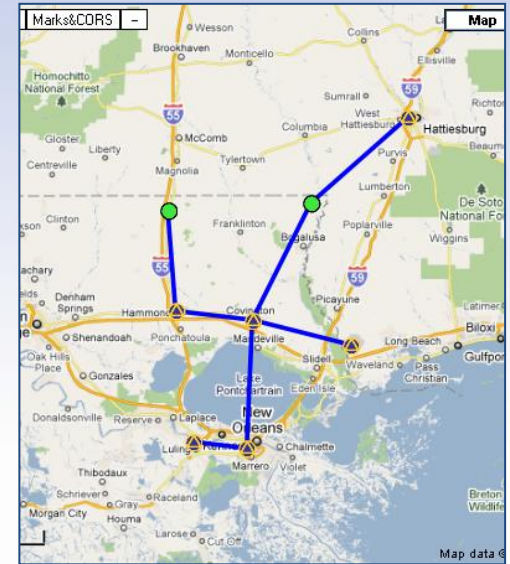
### SOLUTION SPAN

2006-10-01T20:01:30 GPS to 2006-10-02T01:59:30 GPS

MARK	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> 2126	<input type="radio"/>	<input type="checkbox"/> NONE	EL HGT	14.019	N30:58:00.80116 W089:48:34.33127	IGS08 (2006.7507)
<input checked="" type="checkbox"/> 2137	<input type="radio"/>	<input type="checkbox"/> NONE	EL HGT	33.196	N30:56:11.58242 W090:30:25.29761	IGS08 (2006.7506)
CORS	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> covg	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-5.932	N30:28:33.28953 W090:05:43.94752	IGS08 (2005.0000)
<input checked="" type="checkbox"/> distr	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-20.028	N29:57:52.41516 W090:22:56.03140	IGS08 (2005.0000)
<input checked="" type="checkbox"/> hamm	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	5.820	N30:30:47.07133 W090:28:03.45357	IGS08 (2005.0000)
<input checked="" type="checkbox"/> msht	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	64.476	N31:19:39.16104 W089:20:10.65121	IGS08 (2005.0000)
<input checked="" type="checkbox"/> mssc	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-13.084	N30:22:30.81443 W089:36:49.92726	IGS08 (2005.0000)
<input checked="" type="checkbox"/> no1a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-1.581	N29:56:03.75236 W090:07:12.67094	IGS08 (2005.0000)

### PROCESSING PREFERENCES

- Output Ref Frame: LET OPUS CHOOSE
- Output Geoid Model: LET OPUS CHOOSE
- GNSS: G (GPS-only)
- Tropo Model: Piecewise Linear
- Tropo Interval (s): 7200
- Elevation Cutoff (deg): 15.0
- Constraint Weights:  LOOSE  NORMAL  TIGHT
- Network Design:  USER  CORS  MST  TRI



The SOLUTION SPAN is informational, not an input field. It gives the time span of the data, excluding the CORS, in this session.

## "2006-274-A" Session Processing

? ↺ Perform Processing X

SOLUTION NAME (30 char max): A

SOLUTION SPAN  
2006-10-01T20:01:30 GPS to 2006-10-02T01:59:30 GPS

MARK	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> 2126		<input type="checkbox"/> NONE	EL HGT	14.019	N30:58:00.80116 W089:48:34.33127	IGS08 (2006.7507)
<input checked="" type="checkbox"/> 2137		<input type="checkbox"/> NONE	EL HGT	33.196	N30:56:11.58242 W090:30:25.29761	IGS08 (2006.7506)
CORS	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> covg		<input checked="" type="checkbox"/> 3-D	EL HGT	-5.932	N30:28:33.28953 W090:05:43.94752	IGS08 (2005.0000)
<input checked="" type="checkbox"/> distr		<input checked="" type="checkbox"/> 3-D	EL HGT	-20.028	N29:57:52.41516 W090:22:56.03140	IGS08 (2005.0000)
<input checked="" type="checkbox"/> hamm		<input checked="" type="checkbox"/> 3-D	EL HGT	5.820	N30:30:47.07133 W090:28:03.45357	IGS08 (2005.0000)
<input checked="" type="checkbox"/> msht		<input checked="" type="checkbox"/> 3-D	EL HGT	64.476	N31:19:39.16104 W089:20:10.65121	IGS08 (2005.0000)
<input checked="" type="checkbox"/> mssc		<input checked="" type="checkbox"/> 3-D	EL HGT	-13.084	N30:22:30.81443 W089:36:49.92726	IGS08 (2005.0000)
<input checked="" type="checkbox"/> nola		<input checked="" type="checkbox"/> 3-D	EL HGT	-1.581	N29:56:03.75236 W090:07:12.67094	IGS08 (2005.0000)

**PROCESSING PREFERENCES**

Output Ref Frame: LET OPUS CHOOSE

Output Geoid Model: LET OPUS CHOOSE

GNSS: G (GPS-only)

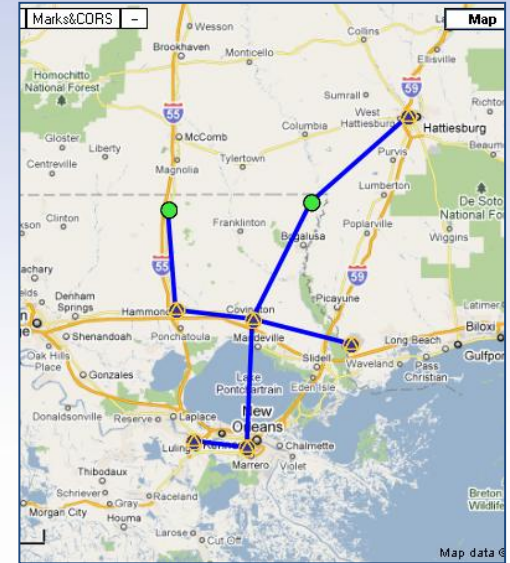
Tropo Model: Piecewise Linear

Tropo Interval (s): 7200

Elevation Cutoff (deg): 15.0

Constraint Weights:  LOOSE  NORMAL  TIGHT

Network Design:  USER  CORS  MST  TRI



The MARK and CORS tables control information about the marks for the processing.

### "2006-274-A" Session Processing

?  ↺

SOLUTION NAME (30 char max): A

SOLUTION SPAN  
2006-10-01T20:01:30 GPS to 2006-10-02T01:59:30 GPS

MARK	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> 2126	<input type="radio"/>	NONE	EL HGT 14.019	N30:58:00.80116	W089:48:34.33127	IGS08 (2006.7507)
<input checked="" type="checkbox"/> 2137	<input type="radio"/>	NONE	EL HGT 33.196	N30:56:11.58242	W090:30:25.29761	IGS08 (2006.7506)
CORS	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> covg	<input checked="" type="radio"/>	3-D	EL HGT -5.932	N30:28:33.28953	W090:05:43.94752	IGS08 (2005.0000)
<input checked="" type="checkbox"/> distr	<input checked="" type="radio"/>	3-D	EL HGT -20.028	N29:57:52.41516	W090:22:56.03140	IGS08 (2005.0000)
<input checked="" type="checkbox"/> hamm	<input checked="" type="radio"/>	3-D	EL HGT 5.820	N30:30:47.07133	W090:28:03.45357	IGS08 (2005.0000)
<input checked="" type="checkbox"/> msht	<input checked="" type="radio"/>	3-D	EL HGT 64.476	N31:19:39.16104	W089:20:10.65121	IGS08 (2005.0000)
<input checked="" type="checkbox"/> mssc	<input checked="" type="radio"/>	3-D	EL HGT -13.084	N30:22:30.81443	W089:36:49.92726	IGS08 (2005.0000)
<input checked="" type="checkbox"/> nola	<input checked="" type="radio"/>	3-D	EL HGT -1.581	N29:56:03.75236	W090:07:12.67094	IGS08 (2005.0000)

**PROCESSING PREFERENCES**

Output Ref Frame: LET OPUS CHOOSE

Output Geoid Model: LET OPUS CHOOSE

GNSS: G (GPS-only)

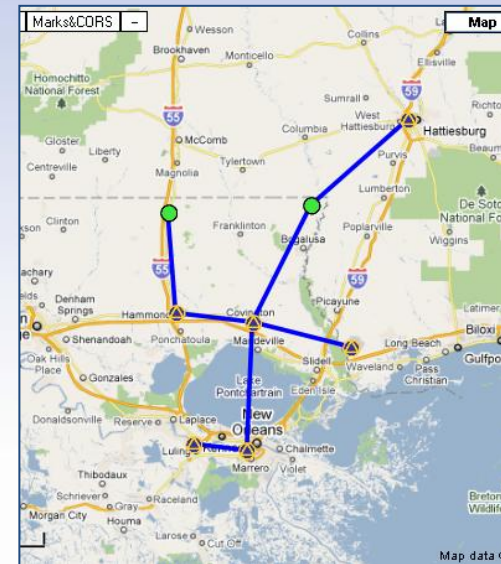
Tropo Model: Piecewise Linear

Tropo Interval (s): 7200

Elevation Cutoff (deg): 15.0

Constraint Weights:  LOOSE  NORMAL  TIGHT

Network Design:  USER  CORS  MST  TRI



You can select marks to be included or excluded from the processing. All are included here. To change a mark's status, click the checkbox.

## "2006-274-A" Session Processing

? ↺ Perform Processing X

SOLUTION NAME (30 char max): A

SOLUTION SPAN  
2006-10-01T20:01:30 GPS to 2006-10-02T01:59:30 GPS

MARK	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> 2126	<input type="radio"/>	NONE	EL HGT	14.019	N30:58:00.80116 W089:48:34.33127	IGS08 (2006.7507)
<input checked="" type="checkbox"/> 2137	<input type="radio"/>	NONE	EL HGT	33.196	N30:56:11.58242 W090:30:25.29761	IGS08 (2006.7506)
CORS	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> covg	<input checked="" type="checkbox"/>	3-D	EL HGT	-5.932	N30:28:33.28953 W090:05:43.94752	IGS08 (2005.0000)
<input checked="" type="checkbox"/> dstr	<input checked="" type="checkbox"/>	3-D	EL HGT	-20.028	N29:57:52.41516 W090:22:56.03140	IGS08 (2005.0000)
<input checked="" type="checkbox"/> ham	<input checked="" type="checkbox"/>	3-D	EL HGT	5.820	N30:30:47.07133 W090:28:03.45357	IGS08 (2005.0000)
<input checked="" type="checkbox"/> lght	<input checked="" type="checkbox"/>	3-D	EL HGT	64.476	N31:19:39.16104 W089:20:10.65121	IGS08 (2005.0000)
<input checked="" type="checkbox"/> msc	<input checked="" type="checkbox"/>	3-D	EL HGT	-13.084	N30:22:30.81443 W089:36:49.92726	IGS08 (2005.0000)
<input checked="" type="checkbox"/> nola	<input checked="" type="checkbox"/>	3-D	EL HGT	-1.581	N29:56:03.75236 W090:07:12.67094	IGS08 (2005.0000)

PROCESSING PREFERENCES

Output Ref Frame: LET OPUS CHOOSE

Output Geoid Model: LET OPUS CHOOSE

GNSS: G (GPS-only)

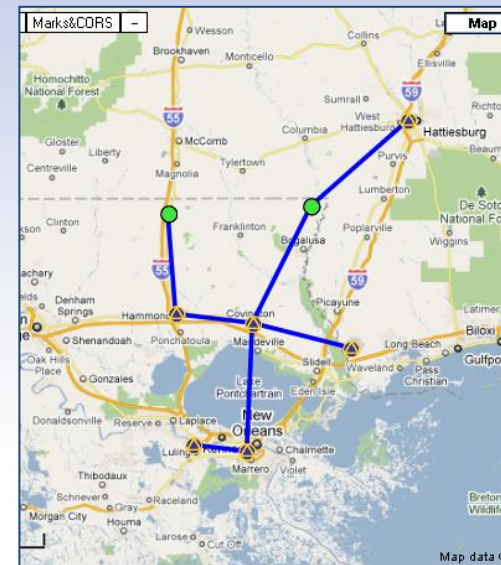
Tropo Model: Piecewise Linear

Tropo Interval (s): 7200

Elevation Cutoff (deg): 15.0

Constraint Weights:  LOOSE  NORMAL  TIGHT

Network Design:  USER  CORS  MST  TRI



For this training, let's exclude the CORS DSTR and NOLA.

### "2006-274-A" Session Processing

? ↺ Perform Processing X

SOLUTION NAME (30 char max): A

SOLUTION SPAN  
2006-10-01T20:01:30 GPS to 2006-10-02T01:59:30 GPS

MARK	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> 2126	<input type="radio"/>	<input type="checkbox"/> NONE	EL HGT	14.019	N30:58:00.80116 W089:48:34.33127	IGS08 (2006.7507)
<input checked="" type="checkbox"/> 2137	<input type="radio"/>	<input type="checkbox"/> NONE	EL HGT	33.196	N30:56:11.58242 W090:30:25.29761	IGS08 (2006.7506)
CORS	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> covg	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-5.932	N30:28:33.28953 W090:05:43.94752	IGS08 (2005.0000)
<input type="checkbox"/> distr	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-20.028	N29:57:52.41516 W090:22:56.03140	IGS08 (2005.0000)
<input type="checkbox"/> hamn	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	5.820	N30:30:47.07133 W090:28:03.45357	IGS08 (2005.0000)
<input checked="" type="checkbox"/> shst	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	64.476	N31:19:39.16104 W089:20:10.65121	IGS08 (2005.0000)
<input checked="" type="checkbox"/> mssc	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-13.084	N30:22:30.81443 W089:36:49.92726	IGS08 (2005.0000)
<input type="checkbox"/> nola	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-1.581	N29:56:03.75236 W090:07:12.67094	IGS08 (2005.0000)

**PROCESSING PREFERENCES**

Output Ref Frame: LET OPUS CHOOSE

Output Geoid Model: LET OPUS CHOOSE

GNSS: G (GPS-only)

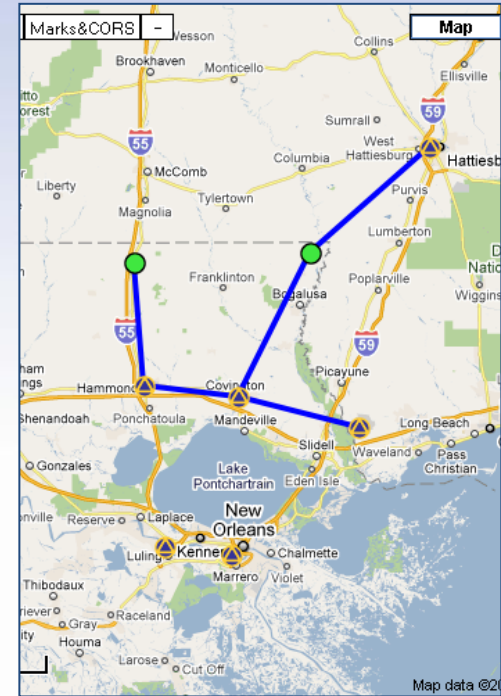
Tropo Model: Piecewise Linear

Tropo Interval (s): 7200

Elevation Cutoff (deg): 15.0

Constraint Weights:  LOOSE  NORMAL  TIGHT

Network Design:  USER  CORS  MST  TRI



First, note how the baselines changed in response. Also note that the DSTR and NOLA rows are disabled now they're excluded.



## "2006-274-A" Session Processing

SOLUTION NAME (30 char max): A

SOLUTION SPAN  
2006-10-01T20:01:30 GPS to 2006-10-02T01:59:30 GPS

MARK	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> 2126	<input checked="" type="checkbox"/>	<input type="checkbox"/> NONE	EL HGT	14.019	N30:58:00.80116 W089:48:34.33127	IGS08 (2006.7507)
<input checked="" type="checkbox"/> 2137	<input checked="" type="checkbox"/>	<input type="checkbox"/> NONE	EL HGT	33.196	N30:56:11.58242 W090:30:25.29761	IGS08 (2006.7506)
CORS	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> covg	<input checked="" type="checkbox"/>	<input type="checkbox"/> 3-D	EL HGT	-5.932	N30:28:33.28953 W090:05:43.94752	IGS08 (2005.0000)
<input type="checkbox"/> dstr	<input checked="" type="checkbox"/>	<input type="checkbox"/> 3-D	EL HGT	-20.028	N29:57:52.41516 W090:22:56.03140	IGS08 (2005.0000)
<input checked="" type="checkbox"/> hamm	<input checked="" type="checkbox"/>	<input type="checkbox"/> 3-D	EL HGT	5.820	N30:30:47.07133 W090:28:03.45357	IGS08 (2005.0000)
<input checked="" type="checkbox"/> msht	<input checked="" type="checkbox"/>	<input type="checkbox"/> 3-D	EL HGT	64.476	N31:19:39.16104 W089:20:10.65121	IGS08 (2005.0000)
<input checked="" type="checkbox"/> mssc	<input checked="" type="checkbox"/>	<input type="checkbox"/> 3-D	EL HGT	-13.084	N30:22:30.81443 W089:36:49.92726	IGS08 (2005.0000)
<input type="checkbox"/> nola	<input checked="" type="checkbox"/>	<input type="checkbox"/> 3-D	EL HGT	-1.581	N29:56:03.75236 W090:07:12.67094	IGS08 (2005.0000)

**PROCESSING PREFERENCES**

Output Ref Frame: LET OPUS CHOOSE

Output Geoid Model: LET OPUS CHOOSE

GNSS: G (GPS-only)

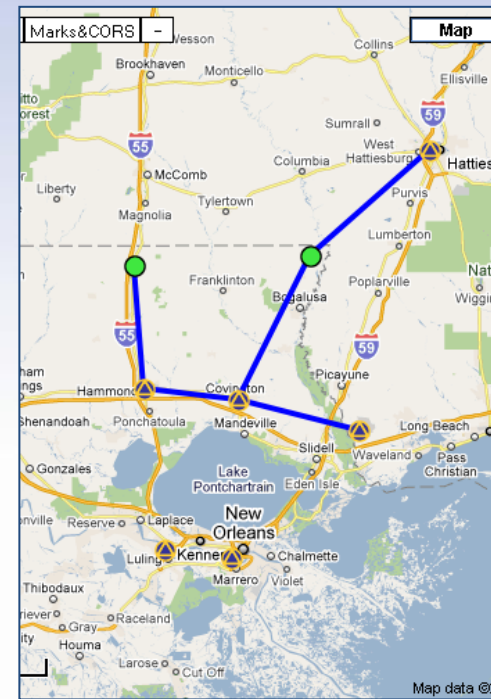
Tropo Model: Piecewise Linear

Tropo Interval (s): 7200

Elevation Cutoff (deg): 15.0

Constraint Weights:  LOOSE  NORMAL  TIGHT

Network Design:  USER  CORS  MST  TRI



Marks can be designated hubs.

### "2006-274-A" Session Processing

? ↺ Perform Processing X

SOLUTION NAME (30 char max): A

SOLUTION SPAN  
2006-10-01T20:01:30 GPS to 2006-10-02T01:59:30 GPS

MARK	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> 2126	<input checked="" type="radio"/>	<input type="checkbox"/> NONE	EL HGT	14.019	N30:58:00.80116 W089:48:34.33127	IGS08 (2006.7507)
<input checked="" type="checkbox"/> 2137	<input checked="" type="radio"/>	<input type="checkbox"/> NONE	EL HGT	33.196	N30:56:11.58242 W090:30:25.29761	IGS08 (2006.7506)
CORS	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> covg	<input checked="" type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-5.932	N30:28:33.28953 W090:05:43.94752	IGS08 (2005.0000)
<input type="checkbox"/> dstr	<input checked="" type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-20.028	N29:57:52.41516 W090:22:56.03140	IGS08 (2005.0000)
<input checked="" type="checkbox"/> hamm	<input checked="" type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	5.820	N30:30:47.07133 W090:28:03.45357	IGS08 (2005.0000)
<input checked="" type="checkbox"/> msht	<input checked="" type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	64.476	N31:19:39.16104 W089:20:10.65121	IGS08 (2005.0000)
<input checked="" type="checkbox"/> mssc	<input checked="" type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-13.084	N30:22:30.81443 W089:36:49.92726	IGS08 (2005.0000)
<input type="checkbox"/> nola	<input checked="" type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-1.581	N29:56:03.75236 W090:07:12.67094	IGS08 (2005.0000)

**PROCESSING PREFERENCES**

Output Ref Frame: LET OPUS CHOOSE

Output Geoid Model: LET OPUS CHOOSE

GNSS: G (GPS-only)

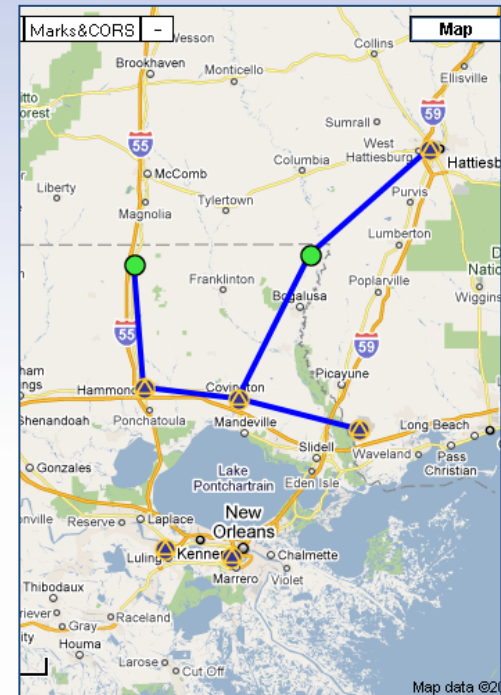
Tropo Model: Piecewise Linear

Tropo Interval (s): 7200

Elevation Cutoff (deg): 15.0

Constraint Weights:  LOOSE  NORMAL  TIGHT

Network Design:  USER  CORS  MST  TRI



Hub marks are preferentially selected for baselines. If designated a hub, a mark will often be included in more than two baselines. Non-hub marks will be included in only one or two baselines.

## "2006-274-A" Session Processing

? ↺ Perform Processing X

SOLUTION NAME (30 char max): A

SOLUTION SPAN  
2006-10-01T20:01:30 GPS to 2006-10-02T01:59:30 GPS

MARK	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME	
<input checked="" type="checkbox"/> 2126	<input checked="" type="checkbox"/>	<input type="checkbox"/> NONE	EL HGT	14.019	N30:58:00.80116	W089:48:34.33127	IGS08 (2006.7507)
<input checked="" type="checkbox"/> 2137	<input checked="" type="checkbox"/>	<input type="checkbox"/> NONE	EL HGT	33.196	N30:56:11.58242	W090:30:25.29761	IGS08 (2006.7506)
CORS	H	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME	
<input checked="" type="checkbox"/> covg	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-5.932	N30:28:33.28953	W090:05:43.94752	IGS08 (2005.0000)
<input type="checkbox"/> distr	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-20.028	N29:57:52.41516	W090:22:56.03140	IGS08 (2005.0000)
<input checked="" type="checkbox"/> hamm	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	5.820	N30:30:47.07133	W090:28:03.45357	IGS08 (2005.0000)
<input checked="" type="checkbox"/> msht	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	64.476	N31:19:39.16104	W089:20:10.65121	IGS08 (2005.0000)
<input checked="" type="checkbox"/> mssc	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-13.084	N30:22:30.81443	W089:36:49.92726	IGS08 (2005.0000)
<input type="checkbox"/> nola	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-1.581	N29:56:03.75236	W090:07:12.67094	IGS08 (2005.0000)

**PROCESSING PREFERENCES**

Output Ref Frame: LET OPUS CHOOSE

Output Geoid Model: LET OPUS CHOOSE

GNSS: G (GPS-only)

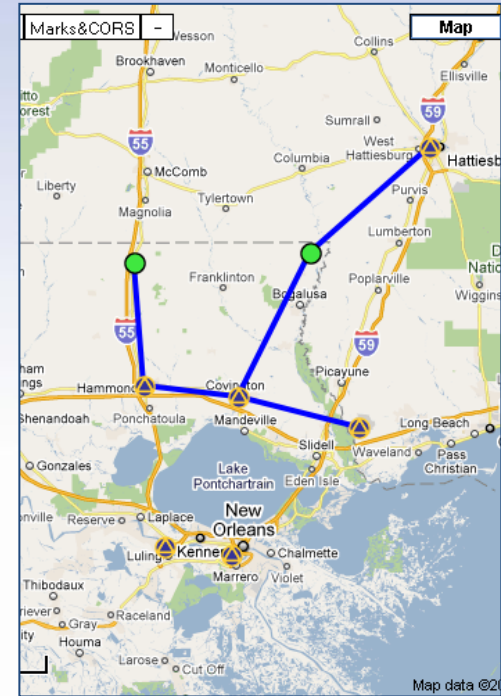
Tropo Model: Piecewise Linear

Tropo Interval (s): 7200

Elevation Cutoff (deg): 15.0

Constraint Weights:  LOOSE  NORMAL  TIGHT

Network Design:  USER  CORS  MST  TRI



For dramatic effect, let's make the project marks hubs and the CORS non-hubs. Like including or excluding marks, we do that by clicking the checkboxes.

### "2006-274-A" Session Processing

? ↺ Perform Processing ✕

SOLUTION NAME (30 char max): A

SOLUTION SPAN  
2006-10-01T20:01:30 GPS to 2006-10-02T01:59:30 GPS

MARK	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° ''')	LONGITUDE (° ''')	REF. FRAME
<input checked="" type="checkbox"/> 2126	<input type="radio"/>	<input checked="" type="checkbox"/> NONE	EL HGT	14.019	N30:58:00.80116 W089:48:34.33127	IGS08 (2006.7507)
<input checked="" type="checkbox"/> 2137	<input type="radio"/>	<input checked="" type="checkbox"/> NONE	EL HGT	33.196	N30:56:11.58242 W090:30:25.29761	IGS08 (2006.7506)
CORS	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° ''')	LONGITUDE (° ''')	REF. FRAME
<input checked="" type="checkbox"/> covg	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	-5.932	N30:28:33.28953 W090:05:43.94752	IGS08 (2005.0000)
<input type="checkbox"/> dstr	<input type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-20.028	N29:57:52.41516 W090:22:56.03140	IGS08 (2005.0000)
<input checked="" type="checkbox"/> hamm	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	5.820	N30:30:47.07133 W090:28:03.45357	IGS08 (2005.0000)
<input checked="" type="checkbox"/> msht	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	64.476	N31:19:39.16104 W089:20:10.65121	IGS08 (2005.0000)
<input checked="" type="checkbox"/> mssc	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	-13.084	N30:22:30.81443 W089:36:49.92726	IGS08 (2005.0000)
<input type="checkbox"/> nola	<input type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-1.581	N29:56:03.75236 W090:07:12.67094	IGS08 (2005.0000)

**PROCESSING PREFERENCES**

Output Ref Frame: LET OPUS CHOOSE

Output Geoid Model: LET OPUS CHOOSE

GNSS: G (GPS-only)

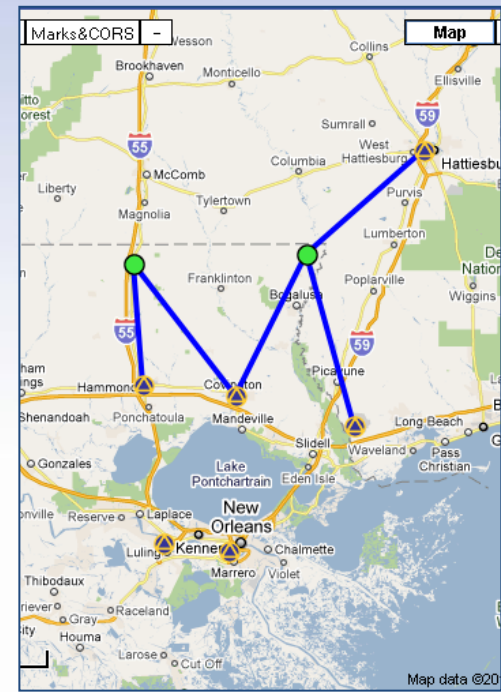
Tropo Model: Piecewise Linear

Tropo Interval (s): 7200

Elevation Cutoff (deg): 15.0

Constraint Weights:  LOOSE  NORMAL  TIGHT

Network Design:  USER  CORS  MST  TRI



After the changes, the baselines for this session are radically different.

## "2006-274-A" Session Processing

? ↺ Perform Processing ✕

SOLUTION NAME (30 char max): A

SOLUTION SPAN  
2006-10-01T20:01:30 GPS to 2006-10-02T01:59:30 GPS

MARK	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> 2126	<input type="radio"/>	<input checked="" type="checkbox"/> NONE	EL HGT	14.019	N30:58:00.80116 W089:48:34.33127	IGS08 (2006.7507)
<input checked="" type="checkbox"/> 2137	<input type="radio"/>	<input checked="" type="checkbox"/> NONE	EL HGT	33.196	N30:56:11.58242 W090:30:25.29761	IGS08 (2006.7506)
CORS	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> covg	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	-5.932	N30:28:33.28953 W090:05:43.94752	IGS08 (2005.0000)
<input type="checkbox"/> dstr	<input type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-20.028	N29:57:52.41516 W090:22:56.03140	IGS08 (2005.0000)
<input checked="" type="checkbox"/> hamm	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	5.820	N30:30:47.07133 W090:28:03.45357	IGS08 (2005.0000)
<input checked="" type="checkbox"/> msht	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	64.476	N31:19:39.16104 W089:20:10.65121	IGS08 (2005.0000)
<input checked="" type="checkbox"/> mssc	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	-13.084	N30:22:30.81443 W089:36:49.92726	IGS08 (2005.0000)
<input type="checkbox"/> nola	<input type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-1.581	N29:56:03.75236 W090:07:12.67094	IGS08 (2005.0000)

**PROCESSING PREFERENCES**

Output Ref Frame: LET OPUS CHOOSE

Output Geoid Model: LET OPUS CHOOSE

GNSS: G (GPS-only)

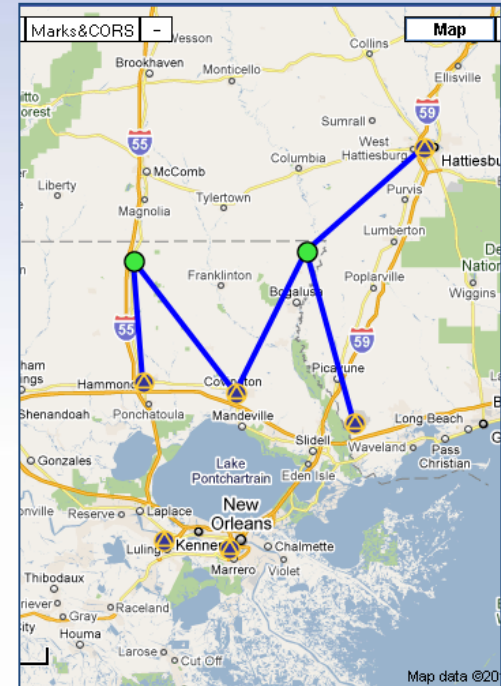
Tropo Model: Piecewise Linear

Tropo Interval (s): 7200

Elevation Cutoff (deg): 15.0

Constraint Weights:  LOOSE  NORMAL  TIGHT

Network Design:  USER  CORS  MST  TRI



You can also select which marks will be constrained. In other words, limit the adjustments to their coordinates in the processing.

## "2006-274-A" Session Processing

? ↺ Perform Processing ✕

SOLUTION NAME (30 char max): A

SOLUTION SPAN  
2006-10-01T20:01:30 GPS to 2006-10-02T01:59:30 GPS

MARK	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° ''')	LONGITUDE (° ''')	REF. FRAME
<input checked="" type="checkbox"/> 2126	<input type="radio"/>	<input checked="" type="checkbox"/> NONE	EL HGT	14.019	N30:58:00.80116 W089:48:34.33127	IGS08 (2006.7507)
<input checked="" type="checkbox"/> 2137	<input type="radio"/>	<input checked="" type="checkbox"/> NONE	EL HGT	33.196	N30:56:11.58242 W090:30:25.29761	IGS08 (2006.7506)
CORS	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° ''')	LONGITUDE (° ''')	REF. FRAME
<input checked="" type="checkbox"/> covg	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	-5.932	N30:28:33.28953 W090:05:43.94752	IGS08 (2005.0000)
<input type="checkbox"/> dstr	<input type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-20.028	N29:57:52.41516 W090:22:56.03140	IGS08 (2005.0000)
<input checked="" type="checkbox"/> hamm	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	5.820	N30:30:47.07133 W090:28:03.45357	IGS08 (2005.0000)
<input checked="" type="checkbox"/> msht	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	64.476	N31:19:39.16104 W089:20:10.65121	IGS08 (2005.0000)
<input checked="" type="checkbox"/> mssc	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	-13.084	N30:22:30.81443 W089:36:49.92726	IGS08 (2005.0000)
<input type="checkbox"/> nola	<input type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-1.581	N29:56:03.75236 W090:07:12.67094	IGS08 (2005.0000)

**PROCESSING PREFERENCES**

Output Ref Frame: LET OPUS CHOOSE

Output Geoid Model: LET OPUS CHOOSE

GNSS: G (GPS-only)

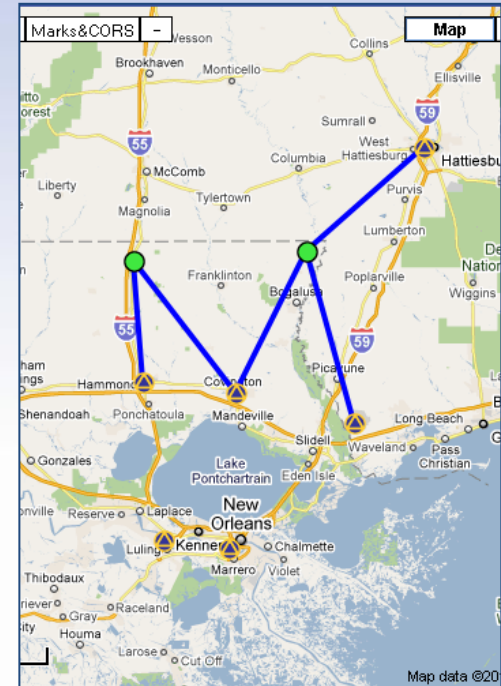
Tropo Model: Piecewise Linear

Tropo Interval (s): 7200

Elevation Cutoff (deg): 15.0

Constraint Weights:  LOOSE  NORMAL  TIGHT

Network Design:  USER  CORS  MST  TRI



Four options are available: NONE (no constraint).  
 HOR-ONLY (constrain only the horizontal coordinates).  
 VER-ONLY (constrain only the vertical coordinate).  
 3-D (constrain the horizontal and vertical coordinates).

### "2006-274-A" Session Processing

? ↺ Perform Processing ✕

SOLUTION NAME (30 char max): A

SOLUTION SPAN  
2006-10-01T20:01:30 GPS to 2006-10-02T01:59:30 GPS

MARK	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° ' ")	LONGITUDE (° ' ")	REF. FRAME
<input checked="" type="checkbox"/> 2126	<input type="radio"/>	<input checked="" type="checkbox"/> NONE	EL HGT 14.019	N30:58:00.80116	W089:48:34.33127	IGS08 (2006.7507)
<input checked="" type="checkbox"/> 2137	<input type="radio"/>	<input checked="" type="checkbox"/> NONE	EL HGT 33.196	N30:56:11.58242	W090:30:25.29761	IGS08 (2006.7506)
CORS	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° ' ")	LONGITUDE (° ' ")	REF. FRAME
<input checked="" type="checkbox"/> covg	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT -5.932	N30:28:33.28953	W090:05:43.94752	IGS08 (2005.0000)
<input type="checkbox"/> dstr	<input type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT -20.028	N29:57:52.41516	W090:22:56.03140	IGS08 (2005.0000)
<input checked="" type="checkbox"/> hamm	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT 5.820	N30:30:47.07133	W090:28:03.45357	IGS08 (2005.0000)
<input checked="" type="checkbox"/> msht	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT 64.476	N31:19:39.16104	W089:20:10.65121	IGS08 (2005.0000)
<input checked="" type="checkbox"/> mssc	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT -13.084	N30:22:30.81443	W089:36:49.92726	IGS08 (2005.0000)
<input type="checkbox"/> nola	<input type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT -1.581	N29:56:03.75236	W090:07:12.67094	IGS08 (2005.0000)

**PROCESSING PREFERENCES**

Output Ref Frame: LET OPUS CHOOSE

Output Geoid Model: LET OPUS CHOOSE

GNSS: G (GPS-only)

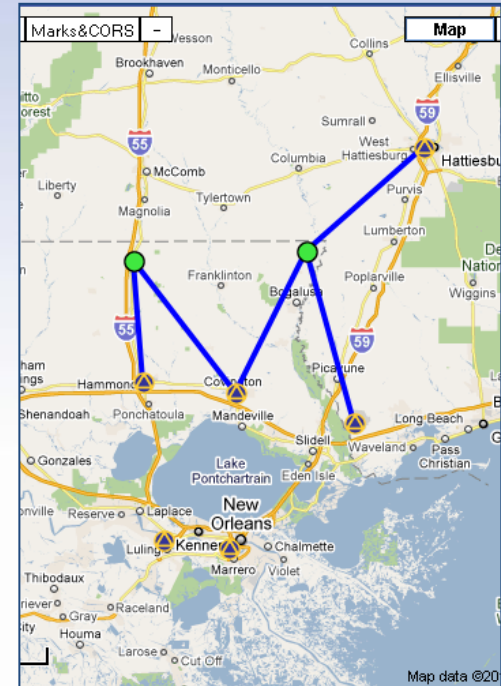
Tropo Model: Piecewise Linear

Tropo Interval (s): 7200

Elevation Cutoff (deg): 15.0

Constraint Weights:  LOOSE  NORMAL  TIGHT

Network Design:  USER  CORS  MST  TRI



OPUS solution values are used as the a priori coordinates for the project's marks; the accepted coordinates are used for the CORS.

## "2006-274-A" Session Processing

? ↺ Perform Processing X

SOLUTION NAME (30 char max): A

SOLUTION SPAN  
2006-10-01T20:01:30 GPS to 2006-10-02T01:59:30 GPS

MARK	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME	
<input checked="" type="checkbox"/>	2126	<input checked="" type="checkbox"/> NONE	EL HGT	14.019	N30:58:00.80116	W089:48:34.33127	IGS08 (2006.7507)
<input checked="" type="checkbox"/>	2137	<input checked="" type="checkbox"/> 3-D	EL HGT	33.196	N30:56:11.58242	W090:30:25.29761	IGS08 (2006.7506)
CORS	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME	
<input checked="" type="checkbox"/>	covg	<input type="checkbox"/> 3-D	EL HGT	14.032	N30:28:33.28953	W090:05:43.94752	IGS08 (2005.0000)
<input type="checkbox"/>	dstr	<input checked="" type="checkbox"/> 3-D	EL HGT	-20.028	N29:57:52.41516	W090:22:56.03140	IGS08 (2005.0000)
<input checked="" type="checkbox"/>	hamm	<input type="checkbox"/> 3-D	EL HGT	5.820	N30:30:47.07133	W090:28:03.45357	IGS08 (2005.0000)
<input checked="" type="checkbox"/>	msht	<input type="checkbox"/> 3-D	EL HGT	64.476	N31:19:39.16104	W089:20:10.65121	IGS08 (2005.0000)
<input checked="" type="checkbox"/>	msc	<input type="checkbox"/> 3-D	EL HGT	-13.084	N30:22:30.81443	W089:36:49.92726	IGS08 (2005.0000)
<input type="checkbox"/>	nola	<input checked="" type="checkbox"/> 3-D	EL HGT	-1.581	N29:56:03.75236	W090:07:12.67094	IGS08 (2005.0000)

**PROCESSING PREFERENCES**

Output Ref Frame: LET OPUS CHOOSE

Output Geoid Model: LET OPUS CHOOSE

GNSS: G (GPS-only)

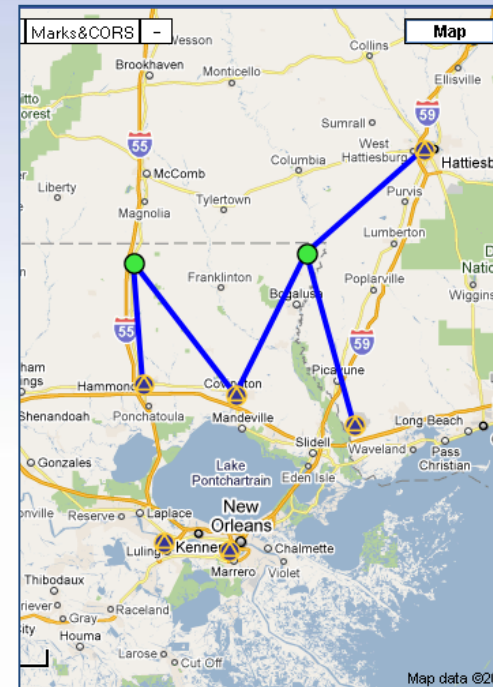
Tropo Model: Piecewise Linear

Tropo Interval (s): 7200

Elevation Cutoff (deg): 15.0

Constraint Weights:  LOOSE  NORMAL  TIGHT

Network Design:  USER  CORS  MST  TRI



The ellipsoid or orthometric height can be used for the constraint. The orthometric height is represented by the name of the geoid or hybrid-geoid model used to compute the orthometric height.



## "2006-274-A" Session Processing

? ↺ Perform Processing ✕

SOLUTION NAME (30 char max): A

SOLUTION SPAN  
2006-10-01T20:01:30 GPS to 2006-10-02T01:59:30 GPS

MARK	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° ' ")	LONGITUDE (° ' ")	REF. FRAME
<input checked="" type="checkbox"/> 2126	<input type="radio"/>	<input checked="" type="checkbox"/> NONE	EL HGT 14.019	N30:58:00.80116	W089:48:34.33127	IGS08 (2006.7507)
<input checked="" type="checkbox"/> 2137	<input type="radio"/>	<input checked="" type="checkbox"/> NONE	EL HGT 33.196	N30:56:11.58242	W090:30:25.29761	IGS08 (2006.7506)
CORS	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° ' ")	LONGITUDE (° ' ")	REF. FRAME
<input checked="" type="checkbox"/> covg	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT -5.932	N30:28:33.28953	W090:05:43.94752	IGS08 (2005.0000)
<input type="checkbox"/> dstr	<input type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT -20.028	N29:57:52.41516	W090:22:56.03140	IGS08 (2005.0000)
<input checked="" type="checkbox"/> hamm	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT 5.820	N30:30:47.07133	W090:28:03.45357	IGS08 (2005.0000)
<input checked="" type="checkbox"/> msht	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT 64.476	N31:19:39.16104	W089:20:10.65121	IGS08 (2005.0000)
<input checked="" type="checkbox"/> mssc	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT -13.084	N30:22:30.81443	W089:36:49.92726	IGS08 (2005.0000)
<input type="checkbox"/> nola	<input type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT -1.581	N29:56:03.75236	W090:07:12.67094	IGS08 (2005.0000)

**PROCESSING PREFERENCES**

Output Ref Frame: LET OPUS CHOOSE

Output Geoid Model: LET OPUS CHOOSE

GNSS: G (GPS-only)

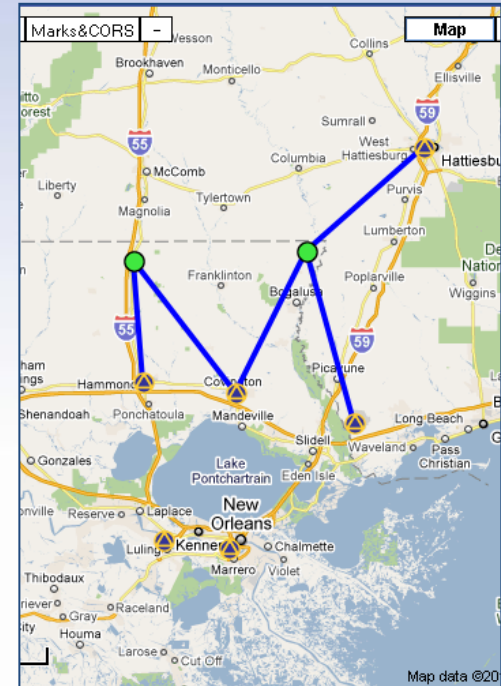
Tropo Model: Piecewise Linear

Tropo Interval (s): 7200

Elevation Cutoff (deg): 15.0

Constraint Weights:  LOOSE  NORMAL  TIGHT

Network Design:  USER  CORS  MST  TRI



Although a priori coordinates are provided, alternate ellipsoid or orthometric HEIGHT, LATITUDE and LONGITUDE values can be entered and, in this manner, used in the constraints.

## "2006-274-A" Session Processing

? ↺ Perform Processing ✕

SOLUTION NAME (30 char max): A

SOLUTION SPAN  
2006-10-01T20:01:30 GPS to 2006-10-02T01:59:30 GPS

MARK	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> 2126	<input type="radio"/>	<input checked="" type="checkbox"/> NONE	EL HGT	14.019	N30:58:00.80116 W089:48:34.33127	IGS08 (2006.7507)
<input checked="" type="checkbox"/> 2137	<input type="radio"/>	<input checked="" type="checkbox"/> NONE	EL HGT	33.196	N30:56:11.58242 W090:30:25.29761	IGS08 (2006.7506)
CORS	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> covg	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	-5.932	N30:28:33.28953 W090:05:43.94752	IGS08 (2005.0000)
<input type="checkbox"/> dstr	<input type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-20.028	N29:57:52.41516 W090:22:56.03140	IGS08 (2005.0000)
<input checked="" type="checkbox"/> hamm	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	5.820	N30:30:47.07133 W090:28:03.45357	IGS08 (2005.0000)
<input checked="" type="checkbox"/> msht	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	64.476	N31:19:39.16104 W089:20:10.65121	IGS08 (2005.0000)
<input checked="" type="checkbox"/> mssc	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	-13.084	N30:22:30.81443 W089:36:49.92726	IGS08 (2005.0000)
<input type="checkbox"/> nola	<input type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-1.581	N29:56:03.75236 W090:07:12.67094	IGS08 (2005.0000)

**PROCESSING PREFERENCES**

Output Ref Frame: LET OPUS CHOOSE

Output Geoid Model: LET OPUS CHOOSE

GNSS: G (GPS-only)

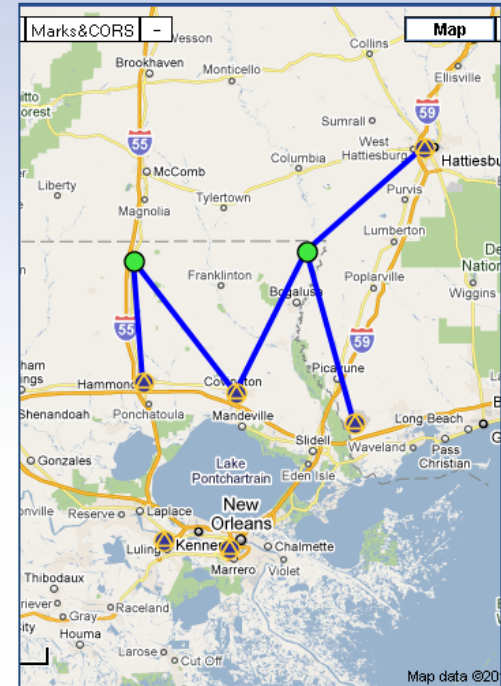
Tropo Model: Piecewise Linear

Tropo Interval (s): 7200

Elevation Cutoff (deg): 15.0

Constraint Weights:  LOOSE  NORMAL  TIGHT

Network Design:  USER  CORS  MST  TRI



OPUS computations are always in best available international terrestrial reference frame (ITRF) at the epoch of the data, so the solution results are always given in that frame.

## "2006-274-A" Session Processing

? ↺ Perform Processing ✕

SOLUTION NAME (30 char max): A

SOLUTION SPAN  
2006-10-01T20:01:30 GPS to 2006-10-02T01:59:30 GPS

MARK	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> 2126	<input type="radio"/>	<input checked="" type="checkbox"/> NONE	EL HGT	14.019	N30:58:00.80116 W089:48:34.33127	IGS08 (2006.7507)
<input checked="" type="checkbox"/> 2137	<input type="radio"/>	<input checked="" type="checkbox"/> NONE	EL HGT	33.196	N30:56:11.58242 W090:30:25.29761	IGS08 (2006.7506)
CORS	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> covg	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	-5.932	N30:28:33.28953 W090:05:43.94752	IGS08 (2005.0000)
<input type="checkbox"/> dstr	<input type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-20.028	N29:57:52.41516 W090:22:56.03140	IGS08 (2005.0000)
<input checked="" type="checkbox"/> hamm	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	5.820	N30:30:47.07133 W090:28:03.45357	IGS08 (2005.0000)
<input checked="" type="checkbox"/> msht	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	64.476	N31:19:39.16104 W089:20:10.65121	IGS08 (2005.0000)
<input checked="" type="checkbox"/> mssc	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	-13.084	N30:22:30.81443 W089:36:49.92726	IGS08 (2005.0000)
<input type="checkbox"/> nola	<input type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-1.581	N29:56:03.75236 W090:07:12.67094	IGS08 (2005.0000)

**PROCESSING PREFERENCES**

Output Ref Frame: LET OPUS CHOOSE

Output Geoid Model: LET OPUS CHOOSE

GNSS: G (GPS-only)

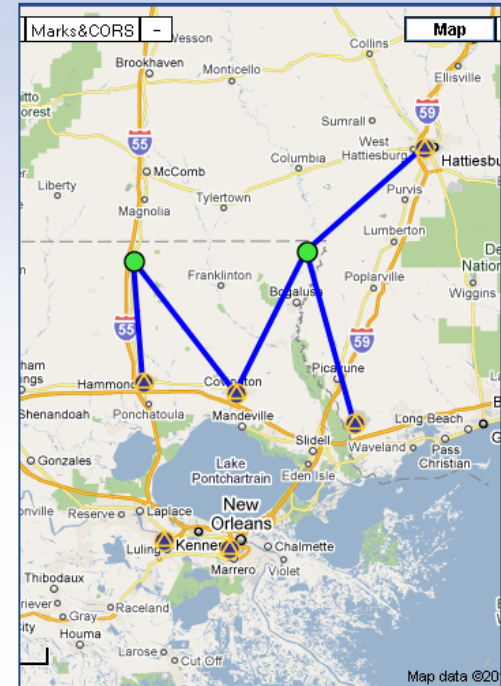
Tropo Model: Piecewise Linear

Tropo Interval (s): 7200

Elevation Cutoff (deg): 15.0

Constraint Weights:  LOOSE  NORMAL  TIGHT

Network Design:  USER  CORS  MST  TRI



However, an alternate reference frame can be specified. If it is possible, the ITRF coordinates will be transformed into the selected reference frame and included in the processing report.

### "2006-274-A" Session Processing

? ↺ Perform Processing ✕

SOLUTION NAME (30 char max): A

SOLUTION SPAN  
2006-10-01T20:01:30 GPS to 2006-10-02T01:59:30 GPS

MARK	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> 2126	<input type="radio"/>	<input checked="" type="checkbox"/> NONE	EL HGT	14.019	N30:58:00.80116 W089:48:34.33127	IGS08 (2006.7507)
<input checked="" type="checkbox"/> 2137	<input type="radio"/>	<input checked="" type="checkbox"/> NONE	EL HGT	33.196	N30:56:11.58242 W090:30:25.29761	IGS08 (2006.7506)
CORS	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> covg	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	-5.932	N30:28:33.28953 W090:05:43.94752	IGS08 (2005.0000)
<input type="checkbox"/> dstr	<input type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-20.028	N29:57:52.41516 W090:22:56.03140	IGS08 (2005.0000)
<input checked="" type="checkbox"/> hamm	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	5.820	N30:30:47.07133 W090:28:03.45357	IGS08 (2005.0000)
<input checked="" type="checkbox"/> msht	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	64.476	N31:19:39.16104 W089:20:10.65121	IGS08 (2005.0000)
<input checked="" type="checkbox"/> mssc	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	-13.084	N30:22:30.81443 W089:36:49.92726	IGS08 (2005.0000)
<input type="checkbox"/> nola	<input type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-1.581	N29:56:03.75236 W090:07:12.67094	IGS08 (2005.0000)

**PROCESSING PREFERENCES**

Output Ref Frame: LET OPUS CHOOSE

Output Geoid Model: LET OPUS CHOOSE

GNSS: G (GPS-only)

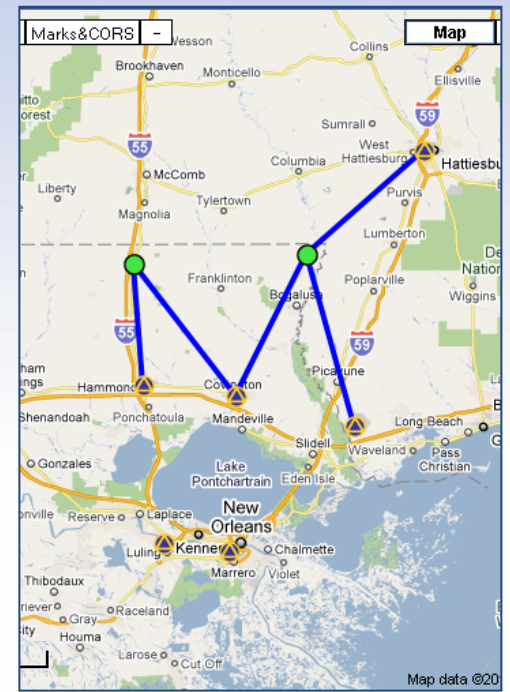
Tropo Model: Piecewise Linear

Tropo Interval (s): 7200

Elevation Cutoff (deg): 15.0

Constraint Weights:  LOOSE  NORMAL  TIGHT

Network Design:  USER  CORS  MST  TRI



“LET OPUS CHOOSE” implies the NAD 83 datum realization that best corresponds to the constraint reference frame will be used.

IGS08 ↔ NAD 83(2011)

ITRF2000 ↔ NAD 83(2007)

## "2006-274-A" Session Processing

? ↺ Perform Processing ✕

SOLUTION NAME (30 char max): A

SOLUTION SPAN  
2006-10-01T20:01:30 GPS to 2006-10-02T01:59:30 GPS

MARK	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> 2126	<input type="radio"/>	<input checked="" type="checkbox"/> NONE	EL HGT	14.019	N30:58:00.80116 W089:48:34.33127	IGS08 (2006.7507)
<input checked="" type="checkbox"/> 2137	<input type="radio"/>	<input checked="" type="checkbox"/> NONE	EL HGT	33.196	N30:56:11.58242 W090:30:25.29761	IGS08 (2006.7506)
CORS	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> covg	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	-5.932	N30:28:33.28953 W090:05:43.94752	IGS08 (2005.0000)
<input type="checkbox"/> dstr	<input type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-20.028	N29:57:52.41516 W090:22:56.03140	IGS08 (2005.0000)
<input checked="" type="checkbox"/> hamm	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	5.820	N30:30:47.07133 W090:28:03.45357	IGS08 (2005.0000)
<input checked="" type="checkbox"/> msht	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	64.476	N31:19:39.16104 W089:20:10.65121	IGS08 (2005.0000)
<input checked="" type="checkbox"/> mssc	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	-13.084	N30:22:30.81443 W089:36:49.92726	IGS08 (2005.0000)
<input type="checkbox"/> nola	<input type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-1.581	N29:56:03.75236 W090:07:12.67094	IGS08 (2005.0000)

**PROCESSING PREFERENCES**

Output Ref Frame: LET OPUS CHOOSE

Output Geoid Model: LET OPUS CHOOSE

GNSS: G (GPS-only)

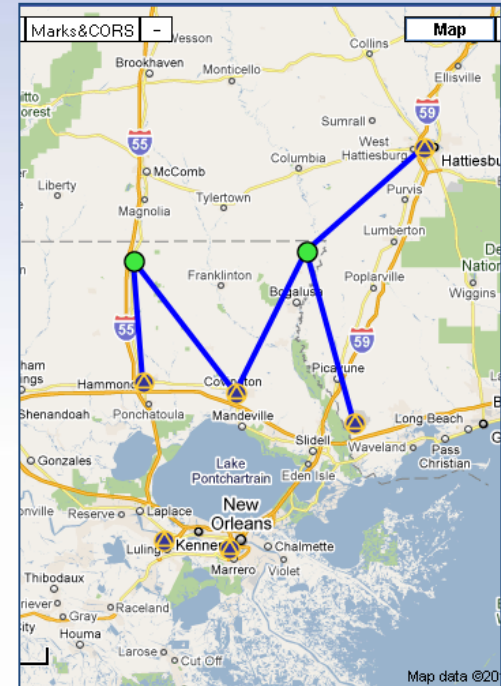
Tropo Model: Piecewise Linear

Tropo Interval (s): 7200

Elevation Cutoff (deg): 15.0

Constraint Weights:  LOOSE  NORMAL  TIGHT

Network Design:  USER  CORS  MST  TRI



The computed ellipsoid heights are transformed to orthometric heights using a geoid or hybrid-geoid model when possible. The model used in those transformations can also be selected.

## "2006-274-A" Session Processing

SOLUTION NAME (30 char max): A

SOLUTION SPAN  
2006-10-01T20:01:30 GPS to 2006-10-02T01:59:30 GPS

MARK	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> 2126	<input type="radio"/>	<input checked="" type="checkbox"/> NONE	EL HGT	14.019	N30:58:00.80116 W089:48:34.33127	IGS08 (2006.7507)
<input checked="" type="checkbox"/> 2137	<input type="radio"/>	<input checked="" type="checkbox"/> NONE	EL HGT	33.196	N30:56:11.58242 W090:30:25.29761	IGS08 (2006.7506)
CORS	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> covg	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	-5.932	N30:28:33.28953 W090:05:43.94752	IGS08 (2005.0000)
<input type="checkbox"/> dstr	<input type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-20.028	N29:57:52.41516 W090:22:56.03140	IGS08 (2005.0000)
<input checked="" type="checkbox"/> hamm	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	5.820	N30:30:47.07133 W090:28:03.45357	IGS08 (2005.0000)
<input checked="" type="checkbox"/> msht	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	64.476	N31:19:39.16104 W089:20:10.65121	IGS08 (2005.0000)
<input checked="" type="checkbox"/> mssc	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	-13.084	N30:22:30.81443 W089:36:49.92726	IGS08 (2005.0000)
<input type="checkbox"/> nola	<input type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-1.581	N29:56:03.75236 W090:07:12.67094	IGS08 (2005.0000)

**PROCESSING PREFERENCES**

Output Ref Frame: LET OPUS CHOOSE

Output Geoid Model: LET OPUS CHOOSE

GNSS: G (GPS-only)

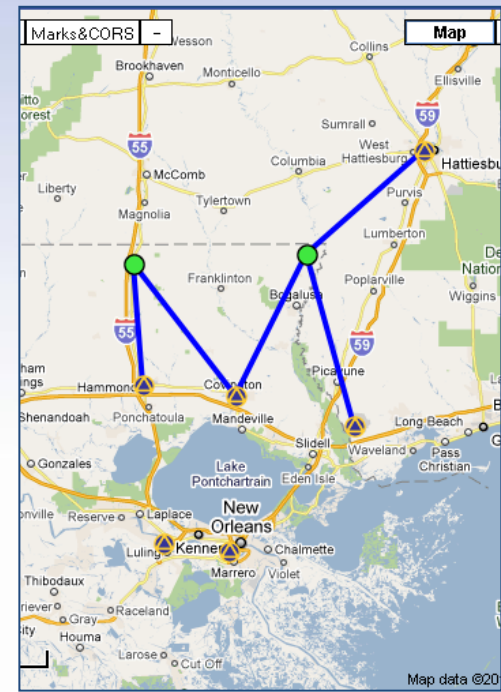
Tropo Model: Piecewise Linear

Tropo Interval (s): 7200

Elevation Cutoff (deg): 15.0

Constraint Weights:  LOOSE  NORMAL  TIGHT

Network Design:  USER  CORS  MST  TRI



“LET OPUS CHOOSE” implies the hybrid geoid model that best corresponds to the constraint reference frame will be used.

IGS08 ↔ NAD 83(2011) ↔ GEOID12A

ITRF2000 ↔ NAD 83(2007) ↔ GEOID09

## "2006-274-A" Session Processing

? ↺ Perform Processing ✕

SOLUTION NAME (30 char max): A

SOLUTION SPAN  
2006-10-01T20:01:30 GPS to 2006-10-02T01:59:30 GPS

MARK	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° ''')	LONGITUDE (° ''')	REF. FRAME
<input checked="" type="checkbox"/> 2126	<input type="radio"/>	<input checked="" type="checkbox"/> NONE	EL HGT	14.019	N30:58:00.80116 W089:48:34.33127	IGS08 (2006.7507)
<input checked="" type="checkbox"/> 2137	<input type="radio"/>	<input checked="" type="checkbox"/> NONE	EL HGT	33.196	N30:56:11.58242 W090:30:25.29761	IGS08 (2006.7506)
CORS	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° ''')	LONGITUDE (° ''')	REF. FRAME
<input checked="" type="checkbox"/> covg	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	-5.932	N30:28:33.28953 W090:05:43.94752	IGS08 (2005.0000)
<input type="checkbox"/> dstr	<input type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-20.028	N29:57:52.41516 W090:22:56.03140	IGS08 (2005.0000)
<input checked="" type="checkbox"/> hamm	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	5.820	N30:30:47.07133 W090:28:03.45357	IGS08 (2005.0000)
<input checked="" type="checkbox"/> msht	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	64.476	N31:19:39.16104 W089:20:10.65121	IGS08 (2005.0000)
<input checked="" type="checkbox"/> mssc	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	-13.084	N30:22:30.81443 W089:36:49.92726	IGS08 (2005.0000)
<input type="checkbox"/> nola	<input type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-1.581	N29:56:03.75236 W090:07:12.67094	IGS08 (2005.0000)

**PROCESSING PREFERENCES**

Output Ref Frame: LET OPUS CHOOSE

Output Geoid Model: LET OPUS CHOOSE

GNSS: G (GPS-only)

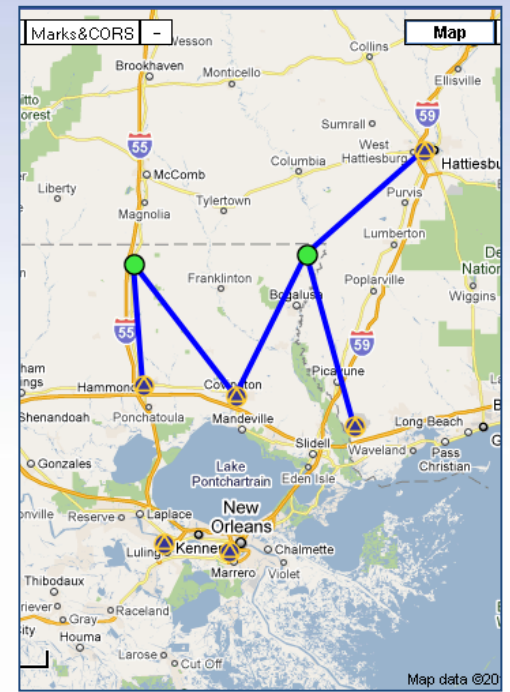
Tropo Model: Piecewise Linear

Tropo Interval (s): 7200

Elevation Cutoff (deg): 15.0

Constraint Weights:  LOOSE  NORMAL  TIGHT

Network Design:  USER  CORS  MST  TRI



The satellite system or systems whose data are to be used in the processing can be selected. The only option is GPS-only at this time.

## "2006-274-A" Session Processing

? ↺ Perform Processing ✕

SOLUTION NAME (30 char max): A

SOLUTION SPAN  
2006-10-01T20:01:30 GPS to 2006-10-02T01:59:30 GPS

MARK	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> 2126	<input type="radio"/>	<input checked="" type="checkbox"/> NONE	EL HGT	14.019	N30:58:00.80116 W089:48:34.33127	IGS08 (2006.7507)
<input checked="" type="checkbox"/> 2137	<input type="radio"/>	<input checked="" type="checkbox"/> NONE	EL HGT	33.196	N30:56:11.58242 W090:30:25.29761	IGS08 (2006.7506)
CORS	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> covg	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	-5.932	N30:28:33.28953 W090:05:43.94752	IGS08 (2005.0000)
<input type="checkbox"/> dstr	<input type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-20.028	N29:57:52.41516 W090:22:56.03140	IGS08 (2005.0000)
<input checked="" type="checkbox"/> hamm	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	5.820	N30:30:47.07133 W090:28:03.45357	IGS08 (2005.0000)
<input checked="" type="checkbox"/> msht	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	64.476	N31:19:39.16104 W089:20:10.65121	IGS08 (2005.0000)
<input checked="" type="checkbox"/> mssc	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	-13.084	N30:22:30.81443 W089:36:49.92726	IGS08 (2005.0000)
<input type="checkbox"/> nola	<input type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-1.581	N29:56:03.75236 W090:07:12.67094	IGS08 (2005.0000)

**PROCESSING PREFERENCES**

Output Ref Frame: LET OPUS CHOOSE

Output Geoid Model: LET OPUS CHOOSE

GNSS: G (GPS-only)

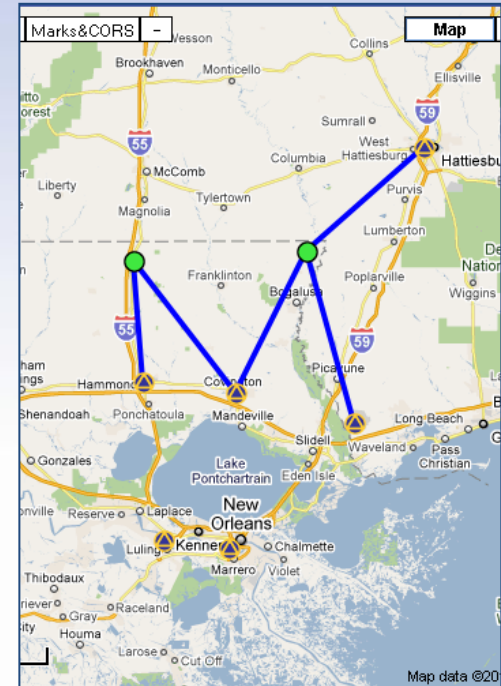
Tropo Model: Piecewise Linear

Tropo Interval (s): 7200

Elevation Cutoff (deg): 15.0

Constraint Weights:  LOOSE  NORMAL  TIGHT

Network Design:  USER  CORS  MST  TRI



Some control over the tropo (wet, neutral atmospheric) correction is available via two parameters: the model or “shape” of the correction and the interval for updating the correction.



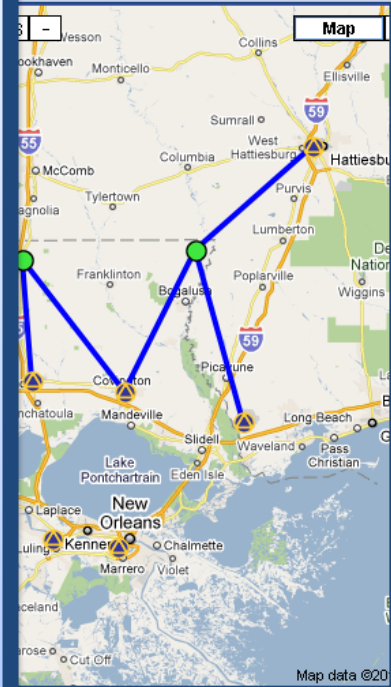
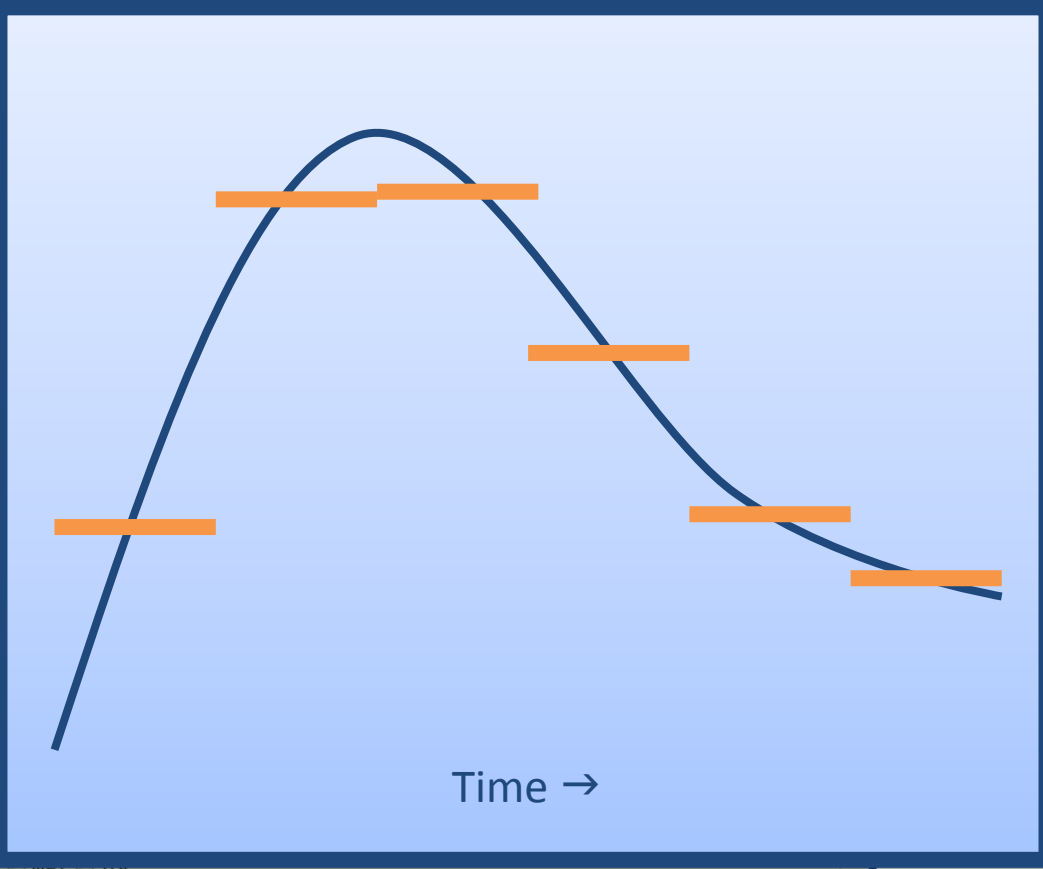
"2006\_274\_A" Session Processing

?  ↺  
 SOLUTION NAME (30 char max): A  
 SOLUTION SPAN  
 2006-10-01T20:01:30 GPS to 2006-10-02

MARK	HUB	CONSTRAINT
<input checked="" type="checkbox"/> 2126	<input type="radio"/>	<input checked="" type="checkbox"/> NONE
<input checked="" type="checkbox"/> 2137	<input type="radio"/>	<input checked="" type="checkbox"/> NONE

CORS	HUB	CONSTRAINT
<input checked="" type="checkbox"/> covg	<input type="checkbox"/>	<input type="checkbox"/> 3-D
<input type="checkbox"/> dstr	<input checked="" type="checkbox"/>	<input type="checkbox"/> 3-D
<input checked="" type="checkbox"/> hamm	<input type="checkbox"/>	<input type="checkbox"/> 3-D
<input checked="" type="checkbox"/> msht	<input type="checkbox"/>	<input type="checkbox"/> 3-D
<input checked="" type="checkbox"/> mssc	<input type="checkbox"/>	<input type="checkbox"/> 3-D
<input type="checkbox"/> nola	<input checked="" type="checkbox"/>	<input type="checkbox"/> 3-D

PROCESSING PREFERENCES  
 Output Ref Frame: LET OPUS CHOO  
 Output Geoid Model: LET OPUS CHOO  
 GNSS: G (GPS-only)  
 Tropo Model: Piecewise Linear  
 Tropo Interval (s): 7200  
 Elevation Cutoff (deg): 15.0  
 Constraint Weights:  LOOSE  NOF  
 Network Design:  USER  CORS



The Tropo Model correction can be constructed as a simple offsets for each interval. When plotted, these adjustments reminiscent of a staircase. Thus the name Step-Offset.

"2006 274 A" Session Processing

SOLUTION NAME (30 char max): A

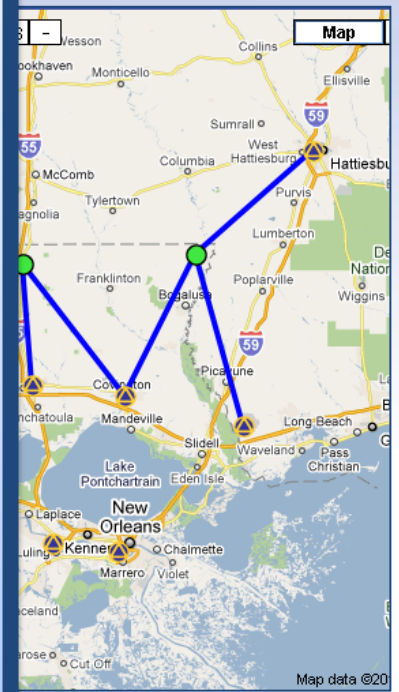
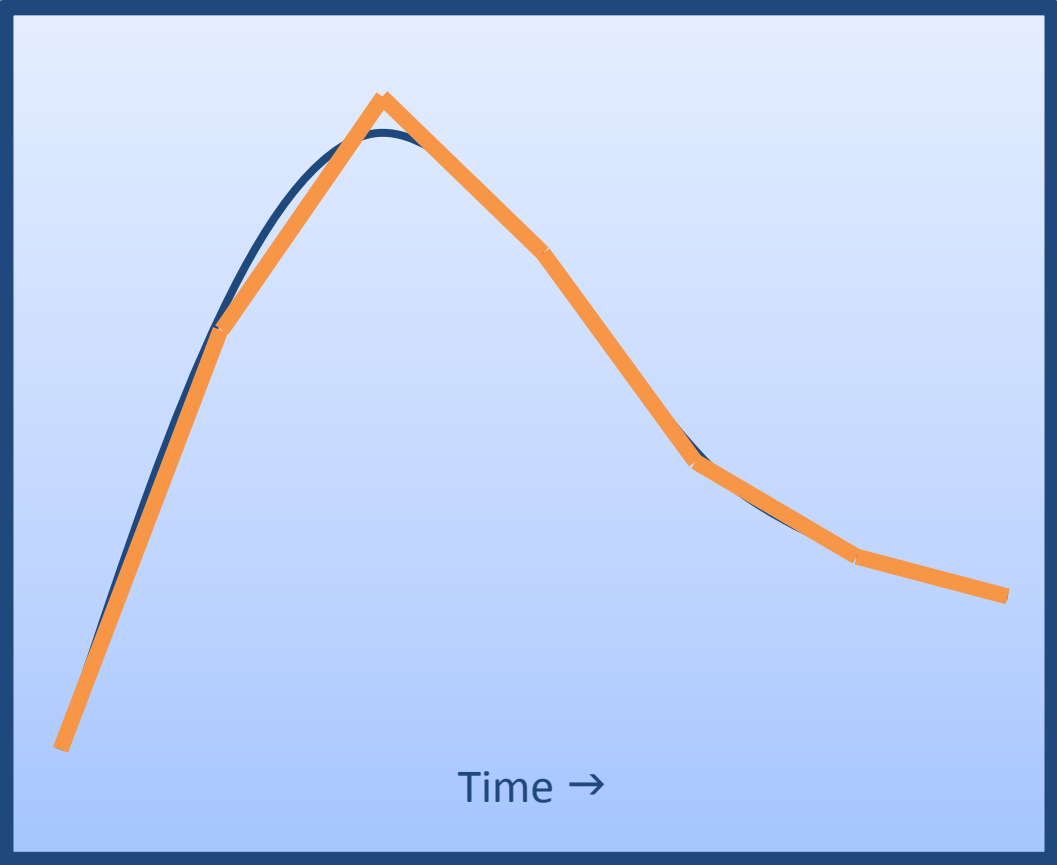
SOLUTION SPAN  
2006-10-01T20:01:30 GPS to 2006-10-02

MARK	HUB	CONSTRAINT
<input checked="" type="checkbox"/> 2126	<input type="radio"/>	<input checked="" type="checkbox"/> NONE
<input checked="" type="checkbox"/> 2137	<input type="radio"/>	<input checked="" type="checkbox"/> NONE

CORS	HUB	CONSTRAINT
<input checked="" type="checkbox"/> covg	<input type="checkbox"/>	<input type="checkbox"/> 3-D
<input type="checkbox"/> dstr	<input checked="" type="checkbox"/>	<input type="checkbox"/> 3-D
<input checked="" type="checkbox"/> hamm	<input type="checkbox"/>	<input type="checkbox"/> 3-D
<input checked="" type="checkbox"/> msht	<input type="checkbox"/>	<input type="checkbox"/> 3-D
<input checked="" type="checkbox"/> mssc	<input type="checkbox"/>	<input type="checkbox"/> 3-D
<input type="checkbox"/> nola	<input checked="" type="checkbox"/>	<input type="checkbox"/> 3-D

PROCESSING PREFERENCES

Output Ref Frame: LET OPUS CHOO  
Output Geoid Model: LET OPUS CHOO  
GNSS: G (GPS-only)  
Tropo Model: Piecewise Linear  
Tropo Interval (s): 7200  
Elevation Cutoff (deg): 15.0  
Constraint Weights:  LOOSE  NOF  
Network Design:  USER  CORS



Alternately, the Tropo Model can be corrected as a series of straight line segments whose ends connect. Thus, the name Piecewise Linear.

## "2006-274-A" Session Processing

? ↺ Perform Processing ✕

SOLUTION NAME (30 char max): A

SOLUTION SPAN  
2006-10-01T20:01:30 GPS to 2006-10-02T01:59:30 GPS

MARK	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> 2126	<input type="radio"/>	<input checked="" type="checkbox"/> NONE	EL HGT	14.019	N30:58:00.80116 W089:48:34.33127	IGS08 (2006.7507)
<input checked="" type="checkbox"/> 2137	<input type="radio"/>	<input checked="" type="checkbox"/> NONE	EL HGT	33.196	N30:56:11.58242 W090:30:25.29761	IGS08 (2006.7506)
CORS	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> covg	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	-5.932	N30:28:33.28953 W090:05:43.94752	IGS08 (2005.0000)
<input type="checkbox"/> dstr	<input type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-20.028	N29:57:52.41516 W090:22:56.03140	IGS08 (2005.0000)
<input checked="" type="checkbox"/> hamm	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	5.820	N30:30:47.07133 W090:28:03.45357	IGS08 (2005.0000)
<input checked="" type="checkbox"/> msht	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	64.476	N31:19:39.16104 W089:20:10.65121	IGS08 (2005.0000)
<input checked="" type="checkbox"/> mssc	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	-13.084	N30:22:30.81443 W089:36:49.92726	IGS08 (2005.0000)
<input type="checkbox"/> nola	<input type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-1.581	N29:56:03.75236 W090:07:12.67094	IGS08 (2005.0000)

**PROCESSING PREFERENCES**

Output Ref Frame: LET OPUS CHOOSE

Output Geoid Model: LET OPUS CHOOSE

GNSS: G (GPS-only)

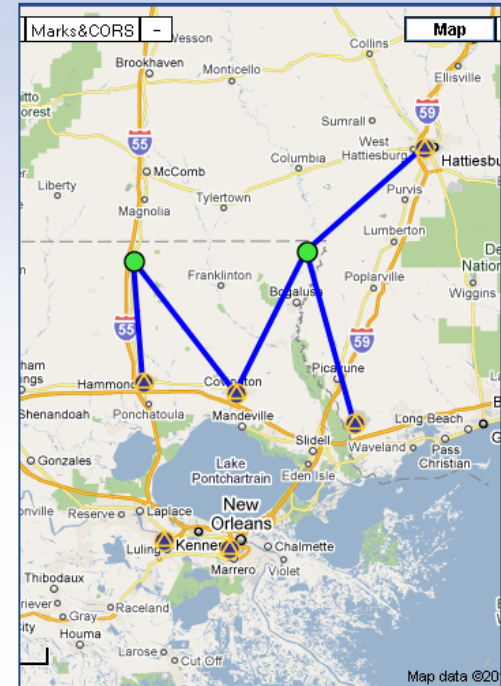
Tropo Model: Piecewise Linear

Tropo Interval (s): 7200

Elevation Cutoff (deg): 15.0

Constraint Weights:  LOOSE  NORMAL  TIGHT

Network Design:  USER  CORS  MST  TRI



These selections are excellent general choices but some projects (or data) may require a different parameterization.

## "2006-274-A" Session Processing

? ↺ Perform Processing ✕

SOLUTION NAME (30 char max): A

SOLUTION SPAN  
2006-10-01T20:01:30 GPS to 2006-10-02T01:59:30 GPS

MARK	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> 2126	<input type="radio"/>	<input checked="" type="checkbox"/> NONE	EL HGT	14.019	N30:58:00.80116 W089:48:34.33127	IGS08 (2006.7507)
<input checked="" type="checkbox"/> 2137	<input type="radio"/>	<input checked="" type="checkbox"/> NONE	EL HGT	33.196	N30:56:11.58242 W090:30:25.29761	IGS08 (2006.7506)
CORS	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> covg	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	-5.932	N30:28:33.28953 W090:05:43.94752	IGS08 (2005.0000)
<input type="checkbox"/> dstr	<input type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-20.028	N29:57:52.41516 W090:22:56.03140	IGS08 (2005.0000)
<input checked="" type="checkbox"/> hamm	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	5.820	N30:30:47.07133 W090:28:03.45357	IGS08 (2005.0000)
<input checked="" type="checkbox"/> msht	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	64.476	N31:19:39.16104 W089:20:10.65121	IGS08 (2005.0000)
<input checked="" type="checkbox"/> mssc	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	-13.084	N30:22:30.81443 W089:36:49.92726	IGS08 (2005.0000)
<input type="checkbox"/> nola	<input type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-1.581	N29:56:03.75236 W090:07:12.67094	IGS08 (2005.0000)

**PROCESSING PREFERENCES**

Output Ref Frame: LET OPUS CHOOSE

Output Geoid Model: LET OPUS CHOOSE

GNSS: G (GPS-only)

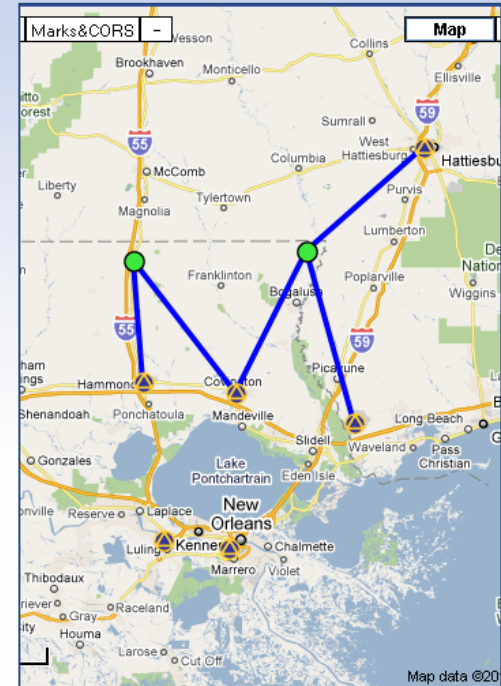
Tropo Model: Piecewise Linear

Tropo Interval (s): 7200

Elevation Cutoff (deg): 15.0

Constraint Weights:  LOOSE  NORMAL  TIGHT

Network Design:  USER  CORS  MST  TRI



The Elevation Cutoff forces data from satellites whose elevations are below this limit to be omitted. Common choices are 12° and 15°. Here again, your project may specify this limit.

## "2006-274-A" Session Processing

SOLUTION NAME (30 char max): A

SOLUTION SPAN  
2006-10-01T20:01:30 GPS to 2006-10-02T01:59:30 GPS

MARK	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> 2126	<input type="radio"/>	<input checked="" type="checkbox"/> NONE	EL HGT	14.019	N30:58:00.80116 W089:48:34.33127	IGS08 (2006.7507)
<input checked="" type="checkbox"/> 2137	<input type="radio"/>	<input checked="" type="checkbox"/> NONE	EL HGT	33.196	N30:56:11.58242 W090:30:25.29761	IGS08 (2006.7506)
CORS	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> covg	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	-5.932	N30:28:33.28953 W090:05:43.94752	IGS08 (2005.0000)
<input type="checkbox"/> dstr	<input type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-20.028	N29:57:52.41516 W090:22:56.03140	IGS08 (2005.0000)
<input checked="" type="checkbox"/> hamm	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	5.820	N30:30:47.07133 W090:28:03.45357	IGS08 (2005.0000)
<input checked="" type="checkbox"/> msht	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	64.476	N31:19:39.16104 W089:20:10.65121	IGS08 (2005.0000)
<input checked="" type="checkbox"/> mssc	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	-13.084	N30:22:30.81443 W089:36:49.92726	IGS08 (2005.0000)
<input type="checkbox"/> nola	<input type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-1.581	N29:56:03.75236 W090:07:12.67094	IGS08 (2005.0000)

**PROCESSING PREFERENCES**

Output Ref Frame: LET OPUS CHOOSE

Output Geoid Model: LET OPUS CHOOSE

GNSS: G (GPS-only)

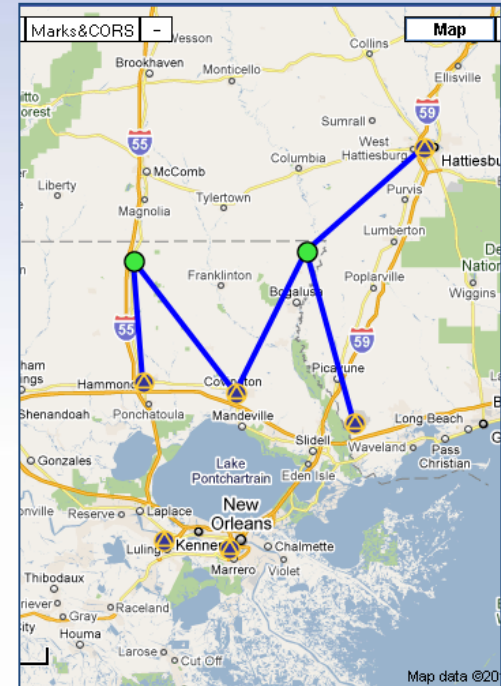
Tropo Model: Piecewise Linear

Tropo Interval (s): 7200

Elevation Cutoff (deg): 15.0

Constraint Weights:  LOOSE  NORMAL  TIGHT

Network Design:  USER  CORS  MST  TRI



The Constraint Weights specify how “tight” the coordinate constraints. In other words, these limit the maximum change in constrained coordinates. The weights are based upon the uncertainties associated with each coordinate.

## "2006-274-A" Session Processing

? ↺ Perform Processing ✕

SOLUTION NAME (30 char max): A

SOLUTION SPAN  
2006-10-01T20:01:30 GPS to 2006-10-02T01:59:30 GPS

MARK	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> 2126	<input type="radio"/>	<input checked="" type="checkbox"/> NONE	EL HGT	14.019	N30:58:00.80116 W089:48:34.33127	IGS08 (2006.7507)
<input checked="" type="checkbox"/> 2137	<input type="radio"/>	<input checked="" type="checkbox"/> NONE	EL HGT	33.196	N30:56:11.58242 W090:30:25.29761	IGS08 (2006.7506)
CORS	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> covg	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	-5.932	N30:28:33.28953 W090:05:43.94752	IGS08 (2005.0000)
<input type="checkbox"/> dstr	<input type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-20.028	N29:57:52.41516 W090:22:56.03140	IGS08 (2005.0000)
<input checked="" type="checkbox"/> hamm	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	5.820	N30:30:47.07133 W090:28:03.45357	IGS08 (2005.0000)
<input checked="" type="checkbox"/> msht	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	64.476	N31:19:39.16104 W089:20:10.65121	IGS08 (2005.0000)
<input checked="" type="checkbox"/> mssc	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	-13.084	N30:22:30.81443 W089:36:49.92726	IGS08 (2005.0000)
<input type="checkbox"/> nola	<input type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-1.581	N29:56:03.75236 W090:07:12.67094	IGS08 (2005.0000)

**PROCESSING PREFERENCES**

Output Ref Frame: LET OPUS CHOOSE

Output Geoid Model: LET OPUS CHOOSE

GNSS: G (GPS-only)

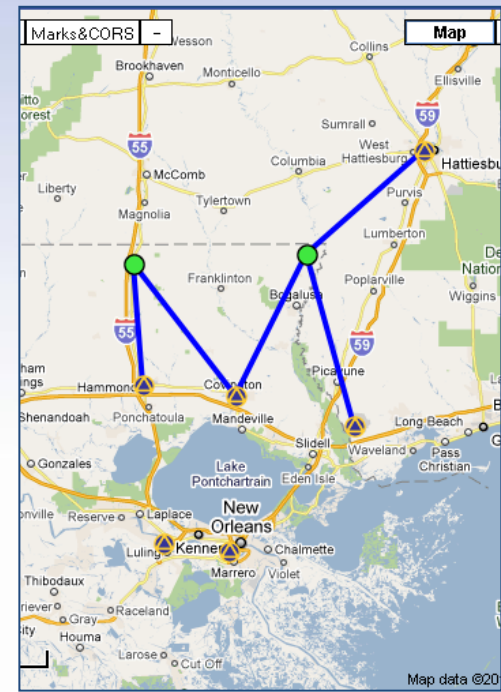
Tropo Model: Piecewise Linear

Tropo Interval (s): 7200

Elevation Cutoff (deg): 15.0

Constraint Weights:  LOOSE  NORMAL  TIGHT

Network Design:  USER  CORS  MST  TRI



Very broadly:

- LOOSE implies about 1 m.
- NORMAL implies about 1 cm.
- TIGHT implies 0.1 mm.

## "2006-274-A" Session Processing

? ↺ Perform Processing ✕

SOLUTION NAME (30 char max): A

SOLUTION SPAN  
2006-10-01T20:01:30 GPS to 2006-10-02T01:59:30 GPS

MARK	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> 2126	<input type="radio"/>	<input checked="" type="checkbox"/> NONE	EL HGT	14.019	N30:58:00.80116 W089:48:34.33127	IGS08 (2006.7507)
<input checked="" type="checkbox"/> 2137	<input type="radio"/>	<input checked="" type="checkbox"/> NONE	EL HGT	33.196	N30:56:11.58242 W090:30:25.29761	IGS08 (2006.7506)
CORS	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> covg	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	-5.932	N30:28:33.28953 W090:05:43.94752	IGS08 (2005.0000)
<input type="checkbox"/> dstr	<input type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-20.028	N29:57:52.41516 W090:22:56.03140	IGS08 (2005.0000)
<input checked="" type="checkbox"/> hamm	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	5.820	N30:30:47.07133 W090:28:03.45357	IGS08 (2005.0000)
<input checked="" type="checkbox"/> msht	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	64.476	N31:19:39.16104 W089:20:10.65121	IGS08 (2005.0000)
<input checked="" type="checkbox"/> mssc	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	-13.084	N30:22:30.81443 W089:36:49.92726	IGS08 (2005.0000)
<input type="checkbox"/> nola	<input type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-1.581	N29:56:03.75236 W090:07:12.67094	IGS08 (2005.0000)

**PROCESSING PREFERENCES**

Output Ref Frame: LET OPUS CHOOSE

Output Geoid Model: LET OPUS CHOOSE

GNSS: G (GPS-only)

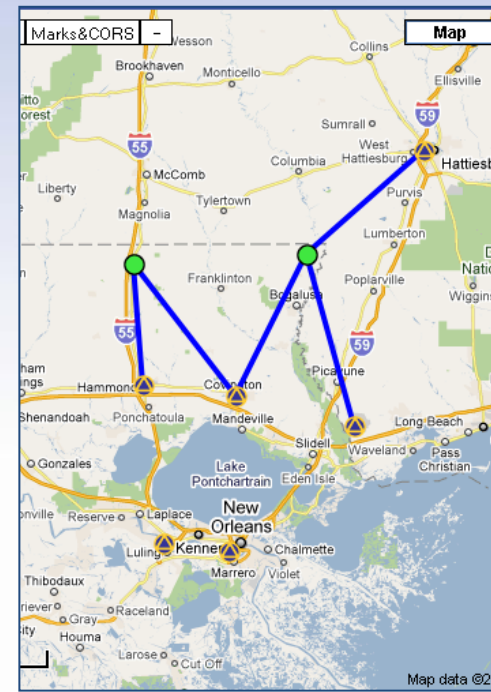
Tropo Model: Piecewise Linear

Tropo Interval (s): 7200

Elevation Cutoff (deg): 15.0

Constraint Weights:  LOOSE  NORMAL  TIGHT

Network Design:  USER  CORS  MST  TRI



The Network Design offers some common strategies for connecting marks via baselines in the processing. Picking one of these strategies may change the hub selections, but will never change which marks are included or their coordinates.

## "2006-274-A" Session Processing

? ↺ Perform Processing ✕

SOLUTION NAME (30 char max): A

SOLUTION SPAN  
2006-10-01T20:01:30 GPS to 2006-10-02T01:59:30 GPS

MARK	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> 2126	<input type="radio"/>	<input checked="" type="checkbox"/> NONE	EL HGT	14.019	N30:58:00.80116 W089:48:34.33127	IGS08 (2006.7507)
<input checked="" type="checkbox"/> 2137	<input type="radio"/>	<input checked="" type="checkbox"/> NONE	EL HGT	33.196	N30:56:11.58242 W090:30:25.29761	IGS08 (2006.7506)
CORS	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> covg	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	-5.932	N30:28:33.28953 W090:05:43.94752	IGS08 (2005.0000)
<input type="checkbox"/> dstr	<input type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-20.028	N29:57:52.41516 W090:22:56.03140	IGS08 (2005.0000)
<input checked="" type="checkbox"/> hamm	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	5.820	N30:30:47.07133 W090:28:03.45357	IGS08 (2005.0000)
<input checked="" type="checkbox"/> msht	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	64.476	N31:19:39.16104 W089:20:10.65121	IGS08 (2005.0000)
<input checked="" type="checkbox"/> mssc	<input type="radio"/>	<input type="checkbox"/> 3-D	EL HGT	-13.084	N30:22:30.81443 W089:36:49.92726	IGS08 (2005.0000)
<input type="checkbox"/> nola	<input type="radio"/>	<input checked="" type="checkbox"/> 3-D	EL HGT	-1.581	N29:56:03.75236 W090:07:12.67094	IGS08 (2005.0000)

**PROCESSING PREFERENCES**

Output Ref Frame: LET OPUS CHOOSE

Output Geoid Model: LET OPUS CHOOSE

GNSS: G (GPS-only)

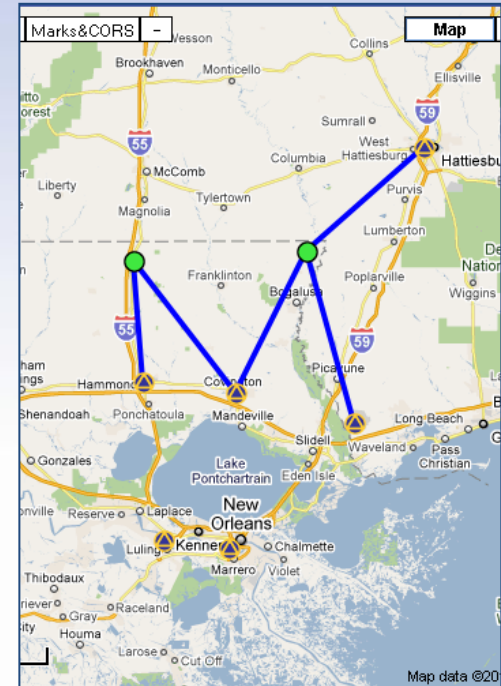
Tropo Model: Piecewise Linear

Tropo Interval (s): 7200

Elevation Cutoff (deg): 15.0

Constraint Weights:  LOOSE  NORMAL  TIGHT

Network Design:  USER  CORS  MST  TRI



Our changes have resulted in a USER strategy meaning we have deviated from one of the predefined strategies. Let's step through the predefined strategies and note the changes.



## "2006-274-A" Session Processing

? ↺
Perform Processing
✕

SOLUTION NAME (30 char max): A

**SOLUTION SPAN**  
2006-10-01T20:01:30 GPS to 2006-10-02T01:59:30 GPS

MARK	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> 2126	<input checked="" type="checkbox"/>	NONE	EL HGT	14.019	N30:58:00.80116 W089:48:34.33127	IGS08 (2006.7507)
<input checked="" type="checkbox"/> 2137	<input checked="" type="checkbox"/>	NONE	EL HGT	33.196	N30:56:11.58242 W090:30:25.29761	IGS08 (2006.7506)
CORS	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> covg	<input checked="" type="checkbox"/>	3-D	EL HGT	-5.932	N30:28:33.28953 W090:05:43.94752	IGS08 (2005.0000)
<input type="checkbox"/> dstr	<input checked="" type="checkbox"/>	3-D	EL HGT	-20.028	N29:57:52.41516 W090:22:56.03140	IGS08 (2005.0000)
<input checked="" type="checkbox"/> hamm	<input checked="" type="checkbox"/>	3-D	EL HGT	5.820	N30:30:47.07133 W090:28:03.45357	IGS08 (2005.0000)
<input checked="" type="checkbox"/> maht	<input checked="" type="checkbox"/>	3-D	EL HGT	64.476	N31:19:39.16104 W089:20:10.65121	IGS08 (2005.0000)
<input checked="" type="checkbox"/> mssc	<input checked="" type="checkbox"/>	3-D	EL HGT	-13.084	N30:22:30.81443 W089:36:49.92726	IGS08 (2005.0000)
<input type="checkbox"/> no1a	<input checked="" type="checkbox"/>	3-D	EL HGT	-1.581	N29:56:03.75236 W090:07:12.67094	IGS08 (2005.0000)

**PROCESSING PREFERENCES**

Output Ref Frame: LET OPUS CHOOSE

Output Geoid Model: LET OPUS CHOOSE

GNSS: G (GPS-only)

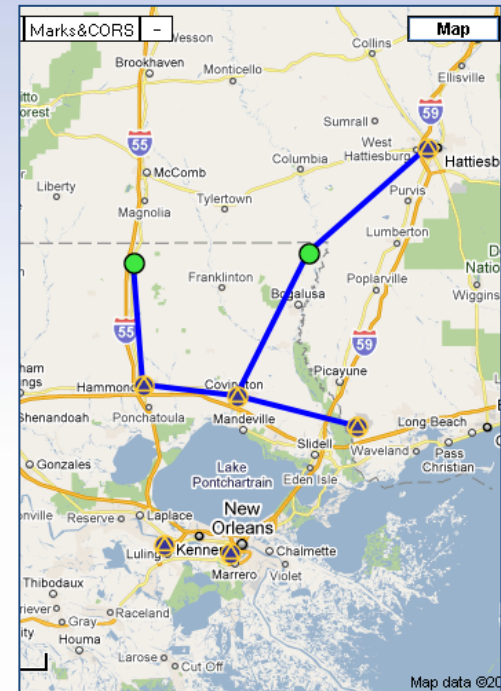
Tropo Model: Piecewise Linear

Tropo Interval (s): 7200

Elevation Cutoff (deg): 15.0

Constraint Weights:  LOOSE  NORMAL  TIGHT

Network Design:  USER  CORS  MST  TRI



As we saw originally, the CORS means that all CORS to be included in the processing are designated hubs.

## "2006-274-A" Session Processing

SOLUTION NAME (30 char max): A

SOLUTION SPAN  
2006-10-01T20:01:30 GPS to 2006-10-02T01:59:30 GPS

MARK	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> 2126	<input checked="" type="checkbox"/>	NONE	EL HGT	14.019	N30:58:00.80116 W089:48:34.33127	IGS08 (2006.7507)
<input checked="" type="checkbox"/> 2137	<input checked="" type="checkbox"/>	NONE	EL HGT	33.196	N30:56:11.58242 W090:30:25.29761	IGS08 (2006.7506)
CORS	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> covg	<input checked="" type="checkbox"/>	3-D	EL HGT	-5.932	N30:28:33.28953 W090:05:43.94752	IGS08 (2005.0000)
<input type="checkbox"/> dstr	<input checked="" type="checkbox"/>	3-D	EL HGT	-20.028	N29:57:52.41516 W090:22:56.03140	IGS08 (2005.0000)
<input checked="" type="checkbox"/> hamm	<input checked="" type="checkbox"/>	3-D	EL HGT	5.820	N30:30:47.07133 W090:28:03.45357	IGS08 (2005.0000)
<input checked="" type="checkbox"/> msht	<input checked="" type="checkbox"/>	3-D	EL HGT	64.476	N31:19:39.16104 W089:20:10.65121	IGS08 (2005.0000)
<input checked="" type="checkbox"/> mssc	<input checked="" type="checkbox"/>	3-D	EL HGT	-13.084	N30:22:30.81443 W089:36:49.92726	IGS08 (2005.0000)
<input type="checkbox"/> no1a	<input checked="" type="checkbox"/>	3-D	EL HGT	-1.581	N29:56:03.75236 W090:07:12.67094	IGS08 (2005.0000)

**PROCESSING PREFERENCES**

Output Ref Frame: LET OPUS CHOOSE

Output Geoid Model: LET OPUS CHOOSE

GNSS: G (GPS-only)

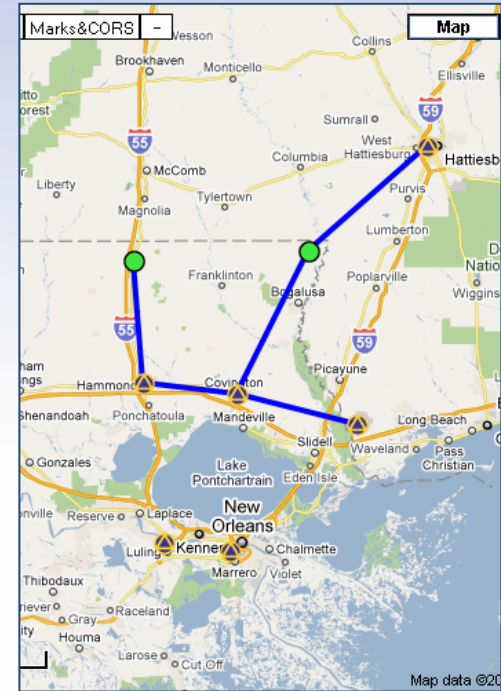
Tropo Model: Piecewise Linear

Tropo Interval (s): 7200

Elevation Cutoff (deg): 15.0

Constraint Weights:  LOOSE  NORMAL  TIGHT

Network Design:  USER  CORS  MST  TRI



MST or minimal spanning tree selects the set of shortest possible baselines between mark. All marks are designated hubs. By chance, the resulting baselines are identical to the CORS design.

## "2006-274-A" Session Processing

? ↺
Perform Processing
✕

SOLUTION NAME (30 char max): A

**SOLUTION SPAN**  
2006-10-01T20:01:30 GPS to 2006-10-02T01:59:30 GPS

MARK	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> 2126	<input checked="" type="checkbox"/>	NONE	EL HGT	14.019	N30:58:00.80116 W089:48:34.33127	IGS08 (2006.7507)
<input checked="" type="checkbox"/> 2137	<input checked="" type="checkbox"/>	NONE	EL HGT	33.196	N30:56:11.58242 W090:30:25.29761	IGS08 (2006.7506)
CORS	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° '' ''')	LONGITUDE (° '' ''')	REF. FRAME
<input checked="" type="checkbox"/> covg	<input checked="" type="checkbox"/>	3-D	EL HGT	-5.932	N30:28:33.28953 W090:05:43.94752	IGS08 (2005.0000)
<input type="checkbox"/> dstz	<input checked="" type="checkbox"/>	3-D	EL HGT	-20.028	N29:57:52.41516 W090:22:56.03140	IGS08 (2005.0000)
<input checked="" type="checkbox"/> hamm	<input checked="" type="checkbox"/>	3-D	EL HGT	5.820	N30:30:47.07133 W090:28:03.45357	IGS08 (2005.0000)
<input checked="" type="checkbox"/> msht	<input checked="" type="checkbox"/>	3-D	EL HGT	64.476	N31:19:39.16104 W089:20:10.65121	IGS08 (2005.0000)
<input checked="" type="checkbox"/> mssc	<input checked="" type="checkbox"/>	3-D	EL HGT	-13.084	N30:22:30.81443 W089:36:49.92726	IGS08 (2005.0000)
<input type="checkbox"/> no1a	<input checked="" type="checkbox"/>	3-D	EL HGT	-1.581	N29:56:03.75236 W090:07:12.67094	IGS08 (2005.0000)

**PROCESSING PREFERENCES**

Output Ref Frame: LET OPUS CHOOSE

Output Geoid Model: LET OPUS CHOOSE

GNSS: G (GPS-only)

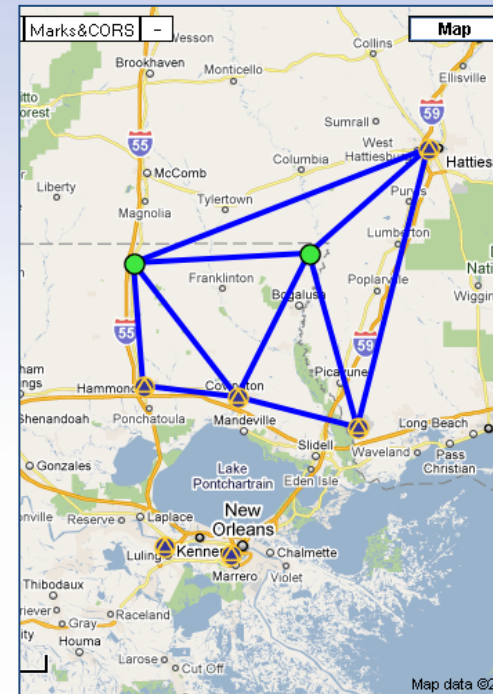
Tropo Model: Piecewise Linear

Tropo Interval (s): 7200

Elevation Cutoff (deg): 15.0

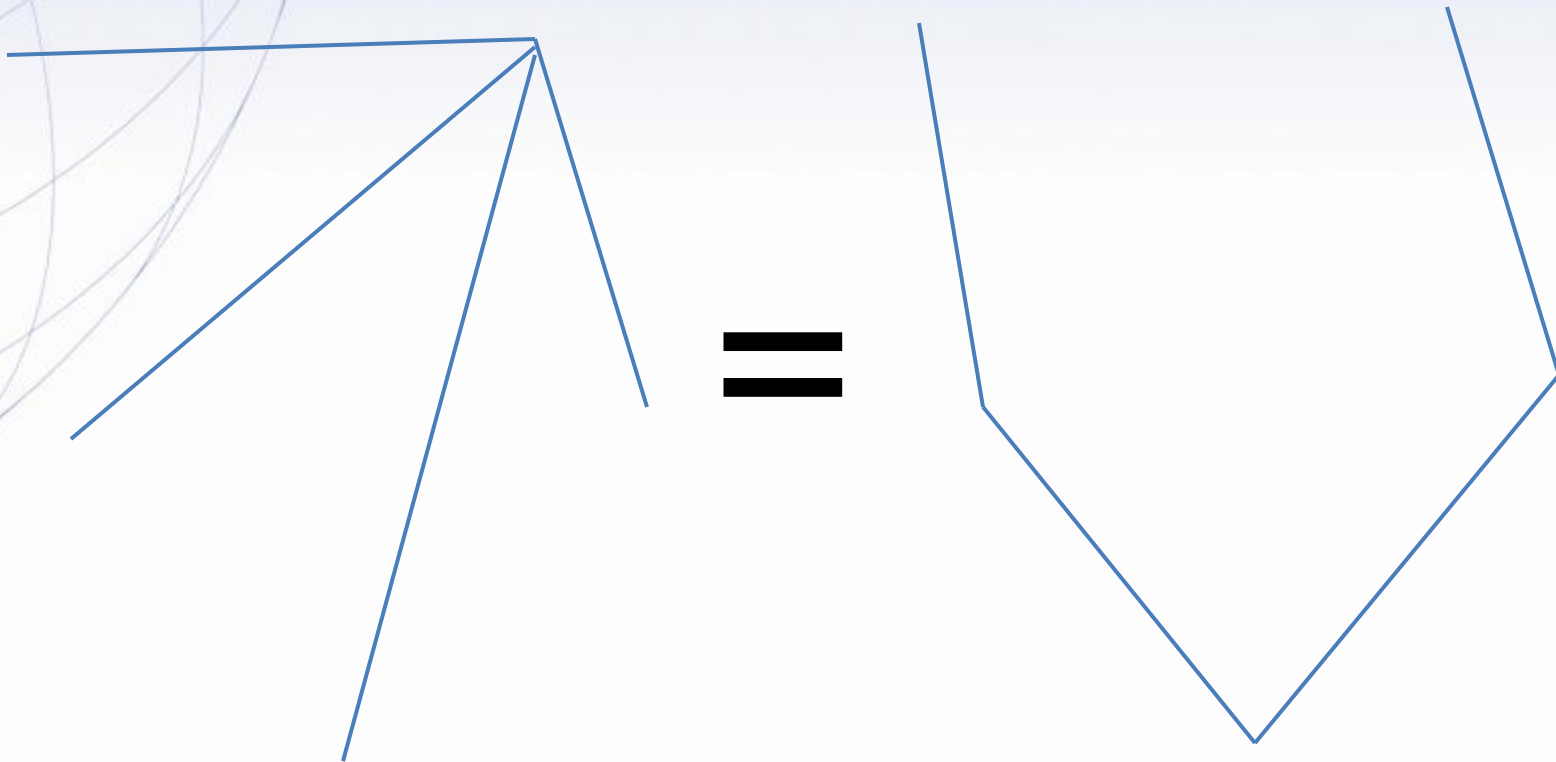
Constraint Weights:  LOOSE  NORMAL  TIGHT

Network Design:  USER  CORS  MST  TRI

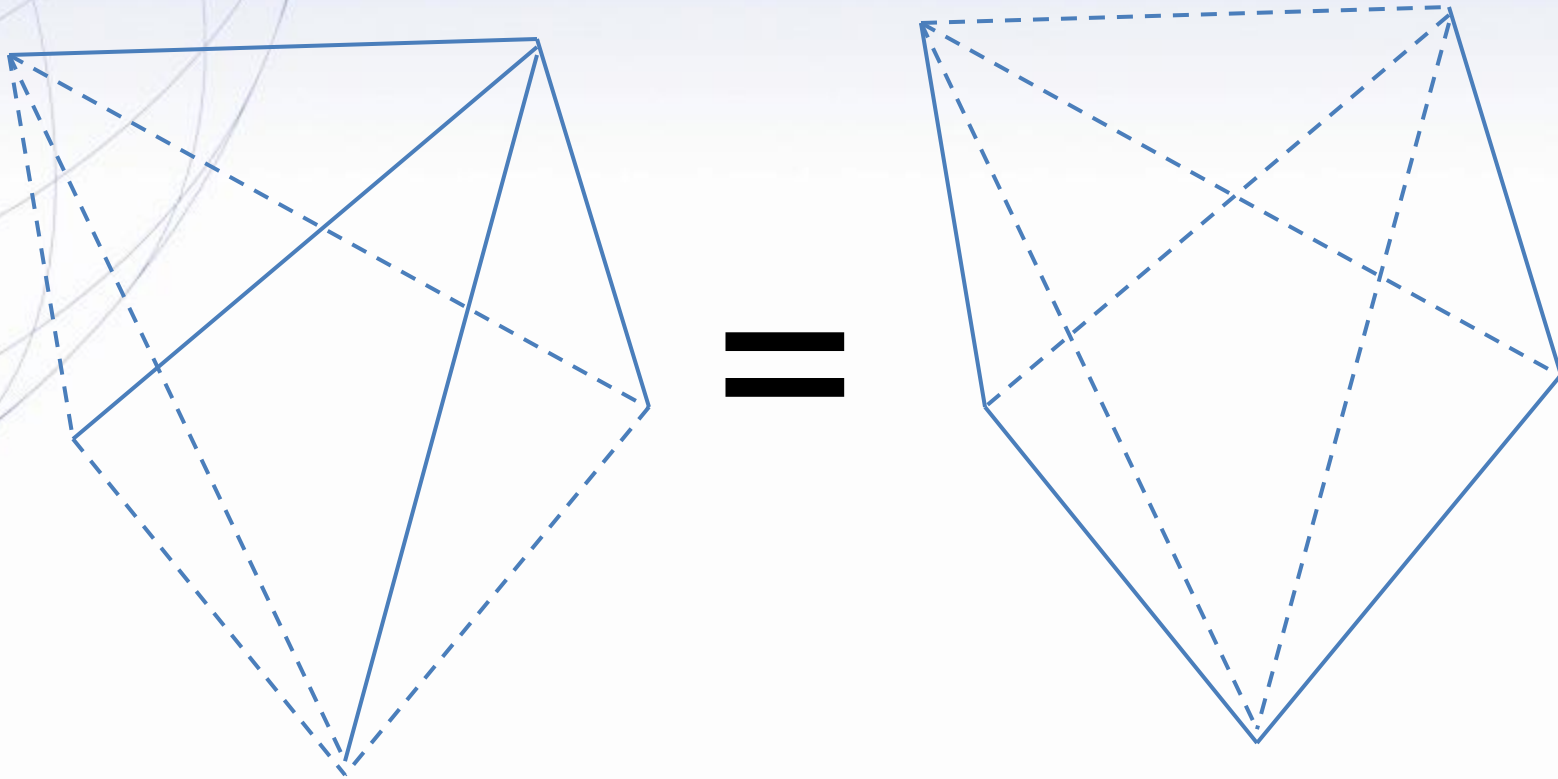


TRI design creates a set of closed-loops based upon the Delaunay triangulation algorithms.

# Mathematical, but not Graphical Equivalence



# Mathematical, but not Graphical Equivalence



## "2006-274-A" Session Processing

SOLUTION NAME (30 char max): A

**SOLUTION SPAN**  
 2006-10-01T20:01:30 GPS to 2006-10-02T01:59:30 GPS

MARK	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° ' ")	LONGITUDE (° ' ")	REF. FRAME
<input checked="" type="checkbox"/> 2126	<input checked="" type="checkbox"/>	<input type="checkbox"/> NONE	EL HGT 14.019	N30:58:00.80116	W089:48:34.33127	IGS08 (2006.7507)
<input checked="" type="checkbox"/> 2137	<input checked="" type="checkbox"/>	<input type="checkbox"/> NONE	EL HGT 33.196	N30:56:11.58242	W090:30:25.29761	IGS08 (2006.7506)
CORS	HUB	CONSTRAINT	HEIGHT (m)	LATITUDE (° ' ")	LONGITUDE (° ' ")	REF. FRAME
<input checked="" type="checkbox"/> covg	<input checked="" type="checkbox"/>	<input type="checkbox"/> 3-D	EL HGT -5.932	N30:28:33.28953	W090:05:43.94752	IGS08 (2005.0000)
<input checked="" type="checkbox"/> dstr	<input checked="" type="checkbox"/>	<input type="checkbox"/> 3-D	EL HGT -20.028	N29:57:52.41516	W090:22:56.03140	IGS08 (2005.0000)
<input checked="" type="checkbox"/> hamm	<input checked="" type="checkbox"/>	<input type="checkbox"/> 3-D	EL HGT 5.820	N30:30:47.07133	W090:28:03.45357	IGS08 (2005.0000)
<input checked="" type="checkbox"/> msht	<input checked="" type="checkbox"/>	<input type="checkbox"/> 3-D	EL HGT 64.476	N31:19:39.16104	W089:20:10.65121	IGS08 (2005.0000)
<input checked="" type="checkbox"/> mssc	<input checked="" type="checkbox"/>	<input type="checkbox"/> 3-D	EL HGT -13.084	N30:22:30.81443	W089:36:49.92726	IGS08 (2005.0000)
<input checked="" type="checkbox"/> nola	<input checked="" type="checkbox"/>	<input type="checkbox"/> 3-D	EL HGT -1.581	N29:56:03.75236	W090:07:12.67094	IGS08 (2005.0000)

**PROCESSING PREFERENCES**

Output Ref Frame: LET OPUS CHOOSE

Output Geoid Model: LET OPUS CHOOSE

GNSS: G (GPS-only)

Tropo Model: Piecewise Linear

Tropo Interval (s): 7200

Elevation Cutoff (deg): 15.0

Constraint Weights:  LOOSE  NORMAL  TIGHT

Let's return to the default design, CORS, and submit our selections for processing.

## OPUS Projects Processing Queue Confirmation

Session Processing "2006-274-A".  
Queued at 2013-05-20T16:38:42 UTC.  
Solution reports will be emailed to your.name@your.address

There are 0 processing requests in queue before yours.  
The estimated time to processing completion is 1 minute.  
Please be aware that this message was created when the request was queued  
and the time to completion will not be updated by refreshing this page.

The user data spans 2006-10-01T20:01:30 GPS to 2006-10-02T01:59:30 GPS.

The data contains 2 unconstrained and 4 constrained marks making 6 marks in total.

Unconstrained marks:

2126, 2137

Constrained marks:

covg 3-D	N30:28:33.28953 W090:05:43.94752	-5.932 m EL HGT IGS08 (2005.0000)
hamm 3-D	N30:30:47.07133 W090:28:03.45357	5.820 m EL HGT IGS08 (2005.0000)
msht 3-D	N31:19:39.16104 W089:20:10.65121	64.476 m EL HGT IGS08 (2005.0000)
mssc 3-D	N30:22:30.81443 W089:36:49.92726	-13.084 m EL HGT IGS08 (2005.0000)

CORS network design.

Hub marks:

covg, hamm, msht, mssc

Baselines:

msht-2126, covg-2126, hamm-covg, 2137-hamm, mssc-covg

Processing options

Constraint Weight = NORMAL

Elevation Cutoff = 15.0 deg

Session Model = IFT\_OPUS\_SESSION

The selections are checked, inserted in the processing queue and a printable summary is created.

OPUS Projects | hrdb86fc | 2006-274-A session processing

Inbox x

your.name@your.address May 17 (3 days ago) ☆

to me ▾

NGS OPUS-PROJECTS SESSION SOLUTION REPORT 2006-274-A  
FROM PROJECT my project @ 2006-10-01.  
SELECTED REPORTS ARE ATTACHED TO THIS EMAIL. ALL REPORTS ARE  
AVAILABLE THROUGH THE PROJECT'S WEB PAGE FOR THIS SOLUTION.

ABBREVIATED SUMMARY

SUBMITTED BY: your.name@your.address  
SOLUTION FILE NAME: 2006-274-A.sum  
SOLUTION SOFTWARE: page5 (1301.08)  
SOLUTION DATE: 2013-08-07T12:40:26 UTC  
STANDARD ERROR OF UNIT WEIGHT: 0.619  
TOTAL NUMBER OF OBSERVATIONS: 72609  
TOTAL NUMBER OF MARKS: 6  
NUMBER OF CONSTRAINED MARKS: 4

OVERALL RMS: 1.2 cm  
START TIME: 2006-10-01T00:00:00 GPS  
STOP TIME: 2006-10-02T23:59:30 GPS  
PROGRAM OPERATION: FULL RUN  
FREQUENCY: L1-ONLY TO ION-FREE [BY BASELINE LENGTH]  
OBSERVATION INTERVAL: 30 s  
ELEVATION CUTOFF: 15 deg  
TROPIC INTERVAL: 7200 s [PIECE-WISE LINEAR PARAMETERIZATION]  
DD CORRELATIONS: ON

In a few minutes (often longer depending upon the number of marks in the session), an email with the results will be sent. It is a summary of the results with full reports attached.



NGS OPUS-PROJECTS SESSION SOLUTION REPORT 2006-274-A  
FROM PROJECT my project @ 2006-10-01.  
SELECTED REPORTS ARE ATTACHED TO THIS EMAIL. ALL REPORTS ARE  
AVAILABLE THROUGH THE PROJECT'S WEB PAGE FOR THIS SOLUTION.

## ABBREVIATED SUMMARY

SUBMITTED BY: your.name@your.address  
SOLUTION FILE NAME: 2006-274-A.sum  
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SOLUTION DATE: 2013-08-07T12:40:26 UTC  
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OBSERVATION INTERVAL: 30 s  
ELEVATION CUTOFF: 15 deg  
TROPO INTERVAL: 7200 s [PIECE-WISE LINEAR PARAMETERIZATION]  
DD CORRELATIONS: ON

Using this summary, you should perform a minimal quality control evaluation of this solution. Later we'll see that some evaluations are indicated on the session web page, but it is always prudent to manually verify your results.

NGS OPUS-PROJECTS SESSION SOLUTION REPORT 2006-274-A  
 FROM PROJECT my project @ 2006-10-01.  
 SELECTED REPORTS ARE ATTACHED TO THIS EMAIL. ALL REPORTS ARE  
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## ABBREVIATED SUMMARY

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 OBSERVATION INTERVAL: 30 s  
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 TROPO INTERVAL: 7200 s [PIECE-WISE LINEAR PARAMETERIZATION]  
 DD CORRELATIONS: ON

Although the summary looks different than an OPUS solution, its evaluation is similar.

2137-nanum	47.100 km	1.3 cm	3693	1.3%	100.0%
mssc-covg	47.602 km	1.3 cm	31676	2.4%	98.3%
msht-2126	60.294 km	1.4 cm	2315	2.2%	100.0%

NGS OPUS-PROJECTS SESSION SOLUTION REPORT 2006-274-A  
 FROM PROJECT my project @ 2006-10-01.  
 SELECTED REPORTS ARE ATTACHED TO THIS EMAIL. ALL REPORTS ARE  
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ABBREVIATED SUMMARY

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 PROGRAM OPERATION: FULL RUN  
 FREQUENCY: L1-ONLY TO ION-FREE [BY BASELINE LENGTH]  
 OBSERVATION INTERVAL: 30 s  
 ELEVATION CUTOFF: 15 deg  
 TROPO INTERVAL: 7200 s [PIECE-WISE LINEAR PARAMETERIZATION]  
 DD CORRELATIONS: ON

BASELINE	LENGTH	RMS	OBS	OMITTED	FIXED
----------	--------	-----	-----	---------	-------

First, review processing option information. It should match your expectations and selections.

NGS OPUS-PROJECTS SESSION SOLUTION REPORT 2006-274-A  
 FROM PROJECT my project @ 2006-10-01.  
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ABBREVIATED SUMMARY

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 OBSERVATION INTERVAL: 30 s  
 ELEVATION CUTOFF: 15 deg  
 TROPO INTERVAL: 7200 s [PIECE-WISE LINEAR PARAMETERIZATION]  
 DD CORRELATIONS: ON

BASELINE	LENGTH	RMS	OBS	OMITTED	FIXED
----------	--------	-----	-----	---------	-------

The OVERALL RMS should be less than the preference threshold.  
 The threshold value we've selected is  $\leq 0.025$  m or  $\leq 2.5$  cm.

```

SUBMITTED BY:                your.name@your.address
SOLUTION FILE NAME:          2006-274-A.sum
SOLUTION SOFTWARE:           page5 (1301.08)
SOLUTION DATE:               2013-08-07T12:40:26 UTC
STANDARD ERROR OF UNIT WEIGHT: 0.619
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OVERALL RMS:                 1.2 cm
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PROGRAM OPERATION:           FULL RUN
FREQUENCY:                   L1-ONLY TO ION-FREE [BY BASELINE LENGTH]
OBSERVATION INTERVAL:       30 s
ELEVATION CUTOFF:           15 deg
TROPIC INTERVAL:            7200 s [PIECE-WISE LINEAR PARAMETERIZATION]
DD CORRELATIONS:            ON

```

BASELINE	LENGTH	RMS	OBS	OMITTED	FIXED
hamm-covg	35.958 km	1.0 cm	32581	0.2%	100.0%
2137-hamm	47.100 km	1.5 cm	3693	1.5%	100.0%
mssc-covg	47.602 km	1.3 cm	31676	2.4%	98.3%
msht-2126	60.294 km	1.4 cm	2315	2.2%	100.0%
covg-2126	60.936 km	1.1 cm	2344	1.1%	100.0%

Each baseline's RMS should meet our RMS preference threshold of  $\leq 2.5$  cm.

NGS OPUS-PROJECTS SESSION SOLUTION REPORT 2006-274-A  
 FROM PROJECT my project @ 2006-10-01.  
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ABBREVIATED SUMMARY

SUBMITTED BY: your.name@your.address  
 SOLUTION FILE NAME: 2006-274-A.sum  
 SOLUTION SOFTWARE: page5 (1301.08)  
 SOLUTION DATE: 2013-08-07T12:40:26 UTC

STANDARD ERROR OF UNIT WEIGHT: 0.619

TOTAL NUMBER OF OBSERVATIONS: 72609  
 TOTAL NUMBER OF MARKS: 6  
 NUMBER OF CONSTRAINED MARKS: 4

OVERALL RMS: 1.2 cm  
 START TIME: 2006-10-01T00:00:00 GPS  
 STOP TIME: 2006-10-02T23:59:30 GPS  
 PROGRAM OPERATION: FULL RUN  
 FREQUENCY: L1-ONLY TO ION-FREE [BY BASELINE LENGTH]  
 OBSERVATION INTERVAL: 30 s  
 ELEVATION CUTOFF: 15 deg  
 TROPO INTERVAL: 7200 s [PIECE-WISE LINEAR PARAMETERIZATION]  
 DD CORRELATIONS: ON

BASELINE	LENGTH	RMS	OBS	OMITTED	FIXED
----------	--------	-----	-----	---------	-------

**The STANDARD ERROR OF UNIT WEIGHT should be  $\approx 1$ .**

msht-2126	60.294 km	1.4 cm	2315	2.2%	100.0%
covg-2126	60.936 km	1.1 cm	2344	1.1%	100.0%

NGS OPUS-PROJECTS SESSION SOLUTION REPORT 2006-274-A  
 FROM PROJECT my project @ 2006-10-01.  
 SELECTED REPORTS ARE ATTACHED TO THIS EMAIL. ALL REPORTS ARE  
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ABBREVIATED SUMMARY

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 TOTAL NUMBER OF OBSERVATIONS: 72609  
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 OBSERVATION INTERVAL: 30 s  
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 TROPO INTERVAL: 7200 s [PIECE-WISE LINEAR PARAMETERIZATION]  
 DD CORRELATIONS: ON

BASELINE	LENGTH	RMS	OBS	OMITTED	FIXED
----------	--------	-----	-----	---------	-------

How close to 1 is good enough? Be wary of order of magnitude differences: 0.619 is OK; 6.19 or 0.062 are not.

```

SUBMITTED BY:                your.name@your.address
SOLUTION FILE NAME:          2006-274-A.sum
SOLUTION SOFTWARE:           page5 (1301.08)
SOLUTION DATE:               2013-08-07T12:40:26 UTC
STANDARD ERROR OF UNIT WEIGHT: 0.619
TOTAL NUMBER OF OBSERVATIONS: 72609
TOTAL NUMBER OF MARKS:       6
NUMBER OF CONSTRAINED MARKS: 4

OVERALL RMS:                 1.2 cm
START TIME:                  2006-10-01T00:00:00 GPS
STOP TIME:                   2006-10-02T23:59:30 GPS
PROGRAM OPERATION:           FULL RUN
FREQUENCY:                   L1-ONLY TO ION-FREE [BY BASELINE LENGTH]
OBSERVATION INTERVAL:        30 s
ELEVATION CUTOFF:            15 deg
TROPIC INTERVAL:             7200 s [PIECE-WISE LINEAR PARAMETERIZATION]
DD CORRELATIONS:             ON
    
```

BASELINE	LENGTH	RMS	OBS	OMITTED	FIXED
hamm-covg	35.958 km	1.0 cm	32581	0.2%	100.0%
2137-hamm	47.100 km	1.5 cm	3693	1.5%	100.0%
mssc-covg	47.602 km	1.3 cm	31676	2.4%	98.3%
msht-2126	60.294 km	1.4 cm	2315	2.2%	100.0%
covg-2126	60.936 km	1.1 cm	2344	1.1%	100.0%

**Make sure the TOTAL NUMBER OF OBSERVATIONS and the OBS by BASELINE are near our expectations.**



```

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SOLUTION SOFTWARE:           page5 (1301.08)
SOLUTION DATE:               2013-08-07T12:40:26 UTC
STANDARD ERROR OF UNIT WEIGHT: 0.619
TOTAL NUMBER OF OBSERVATIONS: 72609
TOTAL NUMBER OF MARKS:       6
NUMBER OF CONSTRAINED MARKS: 4

OVERALL RMS:                 1.2 cm
START TIME:                  2006-10-01T00:00:00 GPS
STOP TIME:                   2006-10-02T23:59:30 GPS
PROGRAM OPERATION:           FULL RUN
FREQUENCY:                   L1-ONLY TO ION-FREE [BY BASELINE LENGTH]
OBSERVATION INTERVAL:        30 s
ELEVATION CUTOFF:            15 deg
TROPIC INTERVAL:             7200 s [PIECE-WISE LINEAR PARAMETERIZATION]
DD CORRELATIONS:             ON

```

BASELINE	LENGTH	RMS	OBS	OMITTED	FIXED
hamm-covg	35.958 km	1.0 cm	32581	0.2%	100.0%
2137-hamm	47.100 km	1.5 cm	3693	1.5%	100.0%
mssc-covg	47.602 km	1.3 cm	31676	2.4%	98.3%
msht-2126	60.294 km	1.4 cm	2315	2.2%	100.0%
covg-2126	60.936 km	1.1 cm	2344	1.1%	100.0%

Truthfully, it's probably simpler to check the percentages of OMITTED observations rather than OBS by BASELINE. We have a preference of  $\geq 80\%$  OBS used implying  $\leq 20\%$  OBS omitted.

```

SUBMITTED BY:                your.name@your.address
SOLUTION FILE NAME:          2006-274-A.sum
SOLUTION SOFTWARE:           page5 (1301.08)
SOLUTION DATE:               2013-08-07T12:40:26 UTC
STANDARD ERROR OF UNIT WEIGHT: 0.619
TOTAL NUMBER OF OBSERVATIONS: 72609
TOTAL NUMBER OF MARKS:       6
NUMBER OF CONSTRAINED MARKS: 4

OVERALL RMS:                  1.2 cm
START TIME:                   2006-10-01T00:00:00 GPS
STOP TIME:                    2006-10-02T23:59:30 GPS
PROGRAM OPERATION:            FULL RUN
FREQUENCY:                    L1-ONLY TO ION-FREE [BY BASELINE LENGTH]
OBSERVATION INTERVAL:        30 s
ELEVATION CUTOFF:            15 deg
TROPIC INTERVAL:             7200 s [PIECE-WISE LINEAR PARAMETERIZATION]
DD CORRELATIONS:             ON

```

BASELINE	LENGTH	RMS	OBS	OMITTED	FIXED
hamm-covg	35.958 km	1.0 cm	32581	0.2%	100.0%
2137-hamm	47.100 km	1.5 cm	3693	1.5%	100.0%
mssc-covg	47.602 km	1.3 cm	31676	2.4%	98.3%
msht-2126	60.294 km	1.4 cm	2315	2.2%	100.0%
covg-2126	60.936 km	1.1 cm	2344	1.1%	100.0%

The number of ambiguities FIXED to integers should also meet our preference of  $\geq 80\%$ .

US NATIONAL GRID DESIGNATOR: 15RYQ3818825234 (NAD 83)

++++  
 CONSTRAINED MARKS  
 ++++

MARK: COVG (COVG a 4: COVINGTON: Covington, Louisiana, U.S.A)

CONSTRAIN: 3-D NORMAL

ADJUST X: -0.003m (0.001m) Y: -0.002m (0.002m) Z: -0.001m (0.002m)  
 ADJUST N: -0.001m (0.003m) E: -0.003m (0.001m) H: 0.001m (0.001m)

REF FRAME:	NAD_83 (2011) (2010.0000)	IGS08 (2006.7507)
X:	-9173.420 m 0.001 m	-9174.101 m 0.001 m
Y:	-5501676.857 m 0.002 m	-5501675.365 m 0.002 m
Z:	3215950.681 m 0.002 m	3215950.513 m 0.002 m
LAT:	30 28 33.26964 0.003 m	30 28 33.28947 0.003
E LON:	269 54 16.07723 0.001 m	269 54 16.05161 0.001
W LON:	90 05 43.92277 0.001 m	90 05 43.94839 0.001
EL HGT:	-4.563 m 0.001 m	-5.933 m 0.001
ORTHO HGT:	22.284 m 0.012 m	(H = h - N WHERE N = GEOIDIZA HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 15)	SPC (1702 LA S)
NORTHING (Y)	3375108.189 m	219662.520 m
EASTING (X)	778841.152 m	1118849.607 m
CONVERGENCE	1.47402740 deg	0.61891532 deg
POINT SCALE	1.00055931	0.99996000

Finally, scan through the rest of the summary checking for abnormally large coordinate uncertainties and, for constrained marks like the one shown here, adjustments.

Session: 2006-274-A Results From: Session Solution

**Controls**

? ← ↻

Show File

Send Email

Set up Processing

**LEGEND**

**MARKS:** ● meet preferences ● exceed preferences ⊗ not included ⊗ have error

**CORS:** ● meet preferences ● exceed preferences ⊗ not included

**Baselines:** —

Map Satellite Terrain

**LEGEND**

**MARKS**

● 2126

● 2137

Add MARKS

**CORS**

● covg

● dstr

● hamm

● msht

Returning to the session web page and refreshing it if needed, you'll see the results of our processing are now evident.

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	FIXED (%)	RMS (m)	LAT (m)	LOX (m)	HGT (m)	
2126	TRM41249.00	NONE	2 000	precise	98.4	100.0	0.013	0.002	0.002	0.012
2013-08-07	M55971.00	NONE	2 000	precise	98.5	100.0	0.013	0.002	0.002	0.012
<b>PREFERENCES:</b>				Best Available	≥80.0	≥80.0	≤0.025	≤0.030	≤0.030	≤0.060

Session: 2006-274-A Results From: Session Solution

**Controls**

? ← ↻

Show File

Send Email

Set up Processing

**LEGEND**

**MARKS:** ● meet preferences ● exceed preferences ● not included ● have error

**CORS:** ▲ meet preferences ▲ exceed preferences ▲ not included

**Baselines:**

Map Satellite Terrain

**LEGEND**

**MARKS**

○ 2126

○ 2137

**Add MARKS**

**CORS**

▲ covg

▲ dstr

▲ hamm

▲ msht

The default results are the Session Solution now ...

Solution Quality Indicators

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	FIXED (%)	RMS (m)	LAT (m)	LOX (m)	HGT (m)	
2126	TRM41249.00	NONE	2.000 precise	98.4	100.0	0.013	0.002	0.002	0.012	
2013-08-07	M55971.00	NONE	2.000 precise	98.5	100.0	0.013	0.002	0.002	0.012	
<b>PREFERENCES:</b>				Best Available	≥80.0	≥80.0	≤0.025	≤0.030	≤0.030	≤0.060

Session: 2006-274-A Results From: **Session Solution** (selected)  
 Session Solution  
 OPUS Solutions

MARKS:  met used preferences  not included  have error  
 CORS:  met used preferences  not included

Baselines: **Session Solution**

Controls: ? ← ↻  
 Show File  
 Send Email  
 Set up Processing

LEGEND MARKS  
 2126  
 2137

Map Satellite Terrain

LEGEND MARKS  
 Add MARKS  
 CORS  
 covg  
 dstr  
 hamm  
 msht

... although the OPUS results are still available.

Solution Quality Indicators

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	FIXED (%)	RMS (m)	LAT (m)	LON (m)	HGT (m)	
2126	TRM41249.00	NONE	2.000 precise	98.4	100.0	0.013	0.002	0.002	0.012	
2013-08-07	M55971.00	NONE	2.000 precise	98.5	100.0	0.013	0.002	0.002	0.012	
PREFERENCES:				Best Available	≥80.0	≥80.0	≤0.025	≤0.030	≤0.030	≤0.060

Session: 2006-274-A Results From: Session Solution

**Controls**

? ← ↻

Show File

Send Email

Set up Processing

**LEGEND**

**MARKS:** ● meet preferences ● exceed preferences ⊗ not included ⊗ have error

**CORS:** ▲ meet preferences ▲ exceed preferences ▲ not included

**Baselines:** —

**LEGEND**

**MARKS**

○ 2126

○ 2137

+ Marks Marks&CORS -

Map Satellite Terrain

**Add MARKS**

**CORS**

▲ covg

▲ dstr

▲ hamm

▲ msht

The baselines you'd selected are shown.




Solution Quality Indicators




MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	FIXED (%)	RMS (m)	LAT (m)	LON (m)	HGT (m)
2126	TRM41249.00	NONE	2 000 precise	98.4	100.0	0.013	0.002	0.002	0.012
2137	M55971.00	NONE	2 000 precise	98.5	100.0	0.013	0.002	0.002	0.012
<b>PREFERENCES:</b>			Best Available	≥80.0	≥80.0	≤0.025	≤0.030	≤0.030	≤0.060

## "my project @ 2006-10-01"

Session: 2006

Controls

-   
- Show File
- Send Email
- Set up Processing


 
 Session Solution ▾ 2006-274-A ▾ Summary ▾ Show File 

2006-274-A.txt created: 2013-05-20 16:54 UTC downloaded: 2013-05-20 18:23 UTC

NGS OPUS-PROJECTS SESSION SOLUTION REPORT

All coordinate accuracies reported here are 1 times the formal uncertainties from the solution. For additional information:  
[dev.ngs.noaa.gov/OPUS/Using\\_OPUS-Projects.html#accuracy](http://dev.ngs.noaa.gov/OPUS/Using_OPUS-Projects.html#accuracy)

These positions were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

```

SUBMITTED BY:          your.name@your.address
SOLUTION FILE NAME:    2006-274-A.sum
SOLUTION SOFTWARE:    page5(1301.08)
SOLUTION DATE:        2013-05-20T12:40:26 UTC
STANDARD ERROR OF UNIT WEIGHT: 0.619
TOTAL NUMBER OF OBSERVATIONS: 72609
TOTAL NUMBER OF MARKS: 6
NUMBER OF CONSTRAINED MARKS: 4

OVERALL RMS:          1.2 cm
START TIME:           2006-10-01T00:00:00 GPS
STOP TIME:            2006-10-02T23:59:30 GPS
PROGRAM OPERATION:    FULL RUN
FREQUENCY:            L1-ONLY TO ION-FREE [BY BASELINE LENGTH]
OBSERVATION INTERVAL: 30 s
    
```

The session processing reports are available.

Solution Quality

MARKS

BASELINE	LENGTH	RMS	OBS	OMITTED	FIXED
hamm-covg	35.958 km	1.0 cm	32581	0.2%	100.0%

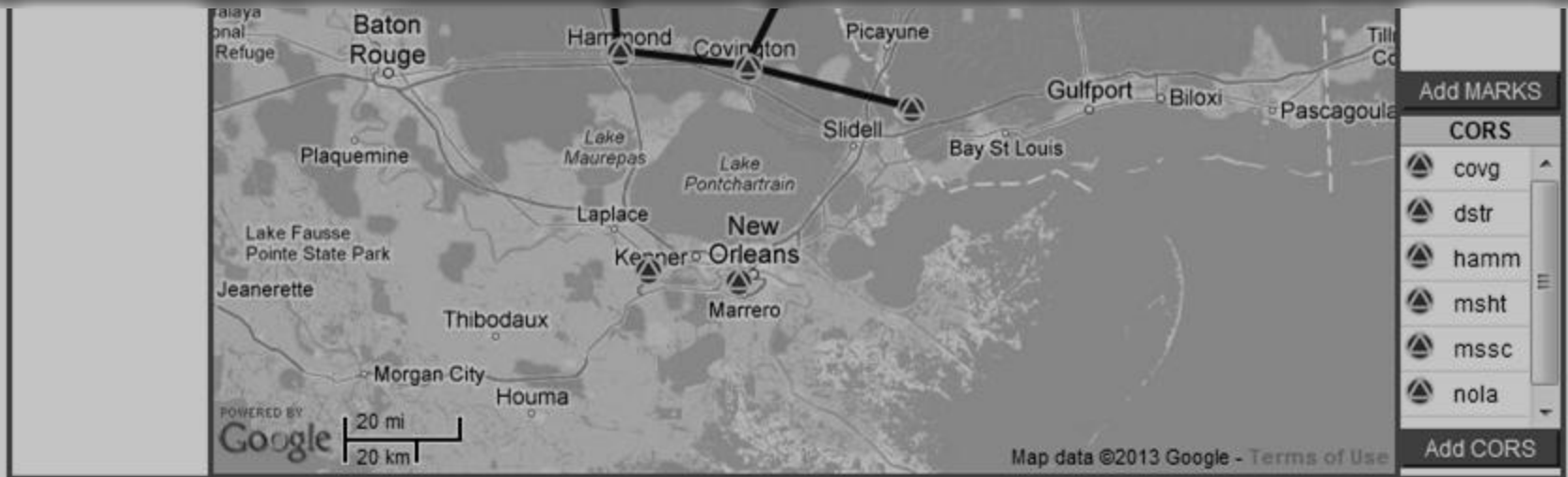
2126 TRM41249.00 NONE 2000 precise 98.4 100.0 0.013 0.002 0.002 0.012

2013-08-07 M55971.00 NONE 2000 precise 98.5 100.0 Step 3 : Session Processing

PREFERENCES Best Available ≥80.0 ≥80.0 ≤0.025 ≤0.030 ≤0.030 ≤0.060



And the solution quality table also reflects the session solution.



#### Solution Quality Indicators

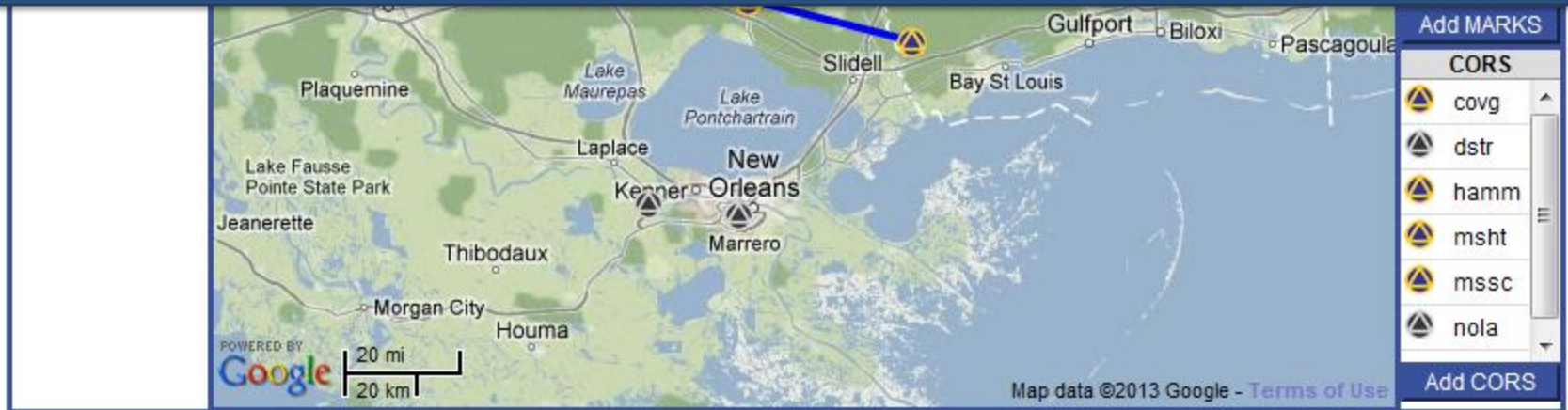
MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	FIXED (%)	RMS (m)	LAT (m)	LON (m)	HGT (m)	
2126	TRM41249.00	NONE	2.000	precise	98.4	100.0	0.013	0.003	0.001	0.003
2137	TRM55971.00	NONE	2.000	precise	98.5	100.0	0.015	0.003	0.001	0.002
PREFERENCES:			Best Available	≥80.0	≥80.0	≤0.025	≤0.030	≤0.030	≤0.060	

#### Data Availability

2006-10-01T20:00:00 GPST to 2006-10-02T02:00:00 GPST in 10 minute cells

MARKS	2006-10-01				2006-10-02	
	20	21	22	23	00	01
2126	00000000000000000000	77888878888877777778778870				
2137	77777878778899AA88889888777788878877					

Once satisfied with the quality of these results, you can start an alternate processing set up or another session.



#### Solution Quality Indicators

MARKS	ANTENNA	HEIGHT (m)	EPH TYPE	OBS (%)	FIXED (%)	RMS (m)	LAT (m)	LON (m)	HGT (m)	
2126	TRM41249.00	NONE	2.000	precise	98.4	100.0	0.013	0.003	0.001	0.003
2137	TRM55971.00	NONE	2.000	precise	98.5	100.0	0.015	0.003	0.001	0.002
PREFERENCES:			Best Available	≥80.0	≥80.0	≤0.025	≤0.030	≤0.030	≤0.060	

#### Data Availability

2006-10-01T20:00:00 GPST to 2006-10-02T02:00:00 GPST in 10 minute cells

MARKS	2006-10-01								2006-10-02																										
	20	21	22	23	00	01																													
2126	0	0	0	0	0	0	0	0	0	7	7	8	8	8	7	8	8	8	7	7	7	7	7	8	7	7	8	8	7	0					
2137	7	7	7	7	8	7	8	7	7	8	8	9	9	A	A	8	8	8	8	9	8	8	8	7	7	7	7	8	8	8	7	8	8	7	7

# Choosing a Network Design Method

- What's the “best” option?
  - USER, CORS, MST, or TRI
- Consider these topics:
  - Vector repeats between sessions
  - Coordinate position results
  - Redundancy
  - Lat/lon/ellht network accuracies

# Choosing a Network Design Method

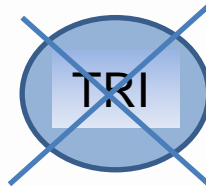
- USER, CORS, MST
  - Each produces  $(n-1)$  independent vectors
  - With careful choice of hub, one may get a few repeated vectors to compare between sessions.
- TRI
  - Extra vectors produced – can't all be independent
  - More repeated vectors for comparison

# Choosing a Network Design Method

- USER, CORS, MST, and TRI will yield similar coordinates (within error budgets)
- USER, CORS, MST will produce similar network accuracies.
- TRI will produce more “optimistic” network accuracies due to apparent extra redundancy
- Any of the 4 methods will produce more realistic network accuracies than the multi-baseline  $(n)(n-1)/2$  method.

# Choosing a Network Design Method

- USER, CORS, MST methods are ACCEPTABLE for bluebooking of projects.
- TRI is NOT acceptable for bluebooking of projects.



# Effect of Bad Occupation

- If local conditions reveal a “bad” occupation the session must be reprocessed without the bad occupation (see how on slide 61).
- Real world example of bad occupation caused by local conditions - USCG Cutter ALDER



# The ALDER Project Experience

- US Coast Guard Cutter ALDER needed marks on its dock to check its navigational systems.
  - Advisor installed 4 marks along dock.
  - Observed 2 sessions while ship was docked.
    - 307-A and 307-B
  - Multipath from ship caused concern – see results.
  - Re-observed 2 sessions with ship not present
    - 320-A and 320-B
    - 307-A and 307-B were also re-processed with ALDER 2 removed.
  - Compare with/without ship – see results



# The ALDER Project

- OPUS PROJECTS Network Diagram
- ALDER 1 is hub for all sessions

OPUS Projects BETA - Manage "Set Control Marks on Pier for US Coast Guard Cutter ALDER"

Results From: network-final

LEGEND  
 MARKS: ● meet preferences ● do not meet preferences ● are not included ● have error  
 CORS: ● meet preferences ● do not meet preferences ● are not included

MARKS	Sessions & Solutions						MARKS	
	2011-307 A	2011-307 A_(NO_ALD2)	2011-307 B	2011-307 B_(NO_ALD2)	2011-320 A	2011-320 B		network final
ald1	⊗	⊗	⊗	⊗	⊗	⊗	●	ald1
ald2	⊗	⊗	⊗	⊗	⊗	⊗	●	ald2
ald3	⊗	⊗	⊗	⊗	⊗	⊗	●	ald3
ald4	⊗	⊗	⊗	⊗	⊗	⊗	●	ald4

Website Owner: National Geodetic Survey / Last modified by the OPUS-Project

# The ALDER Project Experience

- Sessions 307-A and 307-B, obvious problem around ALDER 2 – was either one correct?

ST 1 TO ST 2	DELTA X	DELTA Y	DELTA Z	LENGTH	SESSION NAME
ald2 TO ald1	-22.8248	-6.5969	-6.6349	24.6681	2011-307-A *** ???
ald2 TO ald1	-23.0531	-6.4129	-6.6865	24.8451	2011-307-B *** ???
ald3 TO ald1	-42.5872	-12.1459	-12.7446	46.0827	2011-307-A ***
ald3 TO ald1	-42.5886	-12.1524	-12.7432	46.0854	2011-307-B ***
ald4 TO ald1	-62.1348	-16.9338	-18.1851	66.9193	2011-307-A ***
ald4 TO ald1	-62.1359	-16.9379	-18.1813	66.9202	2011-307-B ***
mnjc TO ald1	89213.5609	-20890.8441	-15902.8820	92996.7122	2011-307-A ***
mnjc TO ald1	89213.5614	-20890.8383	-15902.8895	92996.7126	2011-307-B ***
mnpl TO ald1	91270.6681	30722.0783	32831.5918	101745.2425	2011-307-A ***
mnpl TO ald1	91270.6693	30722.0799	32831.5857	101745.2421	2011-307-B ***
mnvi TO ald1	33107.2933	-62539.7505	-57078.8435	90913.7373	2011-307-A ***
mnvi TO ald1	33107.3182	-62539.8253	-57078.7923	90913.7657	2011-307-B ***
wis6 TO ald1	-5637.3052	5535.9629	5010.9973	9356.0776	2011-307-A ***
wis6 TO ald1	-5637.3065	5535.9632	5010.9928	9356.0762	2011-307-B ***
wisn TO ald1	24266.7450	75452.8563	72795.9242	107616.2396	2011-307-A ***
wisn TO ald1	24266.7443	75452.8578	72795.9177	107616.2360	2011-307-B ***

# The ALDER Project Experience

- Reprocessed Sessions 307-A and 307-B by excluding ALDER 2 data file
  - Results show that the presence or absence of a bad data file does have an effect on the whole session.
  - In this case, minimal effect
  - see results, next slide

# The ALDER Project Experience

ST 1 TO ST 2	DELTA X	DELTA Y	DELTA Z	LENGTH	SESSION NAME	
ald2 TO ald1	-22.8248	-6.5969	-6.6349	24.6681	2011-307-A	*** ???
ald2 TO ald1	-23.0531	-6.4129	-6.6865	24.8451	2011-307-B	*** ???
ald3 TO ald1	-42.5872	-12.1459	-12.7446	46.0827	2011-307-A	***
ald3 TO ald1	-42.5886	-12.1524	-12.7432	46.0854	2011-307-B	***
ald3 TO ald1	-42.5875	-12.0815	-12.8121	46.0848	2011-307-A	(NO ALD2)
ald3 TO ald1	-42.5862	-12.0977	-12.8035	46.0855	2011-307-B	(NO ALD2)
ald4 TO ald1	-62.1348	-16.9338	-18.1851	66.9193	2011-307-A	***
ald4 TO ald1	-62.1359	-16.9379	-18.1813	66.9202	2011-307-B	***
ald4 TO ald1	-62.1324	-16.8826	-18.2424	66.9197	2011-307-A	(NO ALD2)
ald4 TO ald1	-62.1335	-16.8838	-18.2410	66.9206	2011-307-B	(NO ALD2)
mnjc TO ald1	89213.5609	-20890.8441	-15902.8820	92996.7122	2011-307-A	***
mnjc TO ald1	89213.5614	-20890.8383	-15902.8895	92996.7126	2011-307-B	***
mnjc TO ald1	89213.5606	-20890.8013	-15902.9364	92996.7115	2011-307-A	(NO ALD2)
mnjc TO ald1	89213.5634	-20890.7962	-15902.9444	92996.7145	2011-307-B	(NO ALD2)
mnpl TO ald1	91270.6681	30722.0783	32831.5918	101745.2425	2011-307-A	***
mnpl TO ald1	91270.6693	30722.0799	32831.5857	101745.2421	2011-307-B	***
mnpl TO ald1	91270.6676	30722.1200	32831.5363	101745.2367	2011-307-A	(NO ALD2)
mnpl TO ald1	91270.6713	30722.1224	32831.5303	101745.2389	2011-307-B	(NO ALD2)
mnvi TO ald1	33107.2933	-62539.7505	-57078.8435	90913.7373	2011-307-A	***
mnvi TO ald1	33107.3182	-62539.8253	-57078.7923	90913.7657	2011-307-B	***
mnvi TO ald1	33107.2942	-62539.7076	-57078.8963	90913.7413	2011-307-A	(NO ALD2)
mnvi TO ald1	33107.3202	-62539.7832	-57078.8472	90913.7720	2011-307-B	(NO ALD2)
wis6 TO ald1	-5637.3052	5535.9629	5010.9973	9356.0776	2011-307-A	***
wis6 TO ald1	-5637.3065	5535.9632	5010.9928	9356.0762	2011-307-B	***
wis6 TO ald1	-5637.3028	5536.0123	5010.9393	9356.0744	2011-307-A	(NO ALD2)
wis6 TO ald1	-5637.3042	5536.0119	5010.9358	9356.0731	2011-307-B	(NO ALD2)
wisn TO ald1	24266.7450	75452.8563	72795.9242	107616.2396	2011-307-A	***
wisn TO ald1	24266.7443	75452.8578	72795.9177	107616.2360	2011-307-B	***
wisn TO ald1	24266.7462	75452.8970	72795.8678	107616.2302	2011-307-A	(NO ALD2)
wisn TO ald1	24266.7463	75452.9005	72795.8622	107616.2289	2011-307-B	(NO ALD2)

# The ALDER Project Experience

- Re-observe in Sessions 320-A and 320-B
  - Ship was away from the dock – no multipath
  - Needed a position for ALDER 2 anyway
  - Interesting results, next slide

# The ALDER Project Experience

MARK-TO-MARK COMPARISONS GROUPED BY MARKS AND SORTED BY LENGTH

ST 1 TO ST 2	DELTA X	DELTA Y	DELTA Z	LENGTH	SESSION NAME	
ald2 TO ald1	-22.8248	-6.5969	-6.6349	24.6681	2011-307-A	*** ???
ald2 TO ald1	-22.8866	-6.3808	-6.7963	24.7124	2011-320-B	
ald2 TO ald1	-22.8874	-6.3763	-6.8006	24.7131	2011-320-A	
ald2 TO ald1	-23.0531	-6.4129	-6.6865	24.8451	2011-307-B	*** ???
ald3 TO ald1	-42.5816	-12.0954	-12.7977	46.0789	2011-320-B	
ald3 TO ald1	-42.5815	-12.0927	-12.8037	46.0799	2011-320-A	
ald3 TO ald1	-42.5872	-12.1459	-12.7446	46.0827	2011-307-A	***
ald3 TO ald1	-42.5875	-12.0815	-12.8121	46.0848	2011-307-A	(NO ALD2)
ald3 TO ald1	-42.5886	-12.1524	-12.7432	46.0854	2011-307-B	***
ald3 TO ald1	-42.5862	-12.0977	-12.8035	46.0855	2011-307-B	(NO ALD2)
ald4 TO ald1	-62.1318	-16.8811	-18.2355	66.9168	2011-320-B	
ald4 TO ald1	-62.1327	-16.8805	-18.2371	66.9180	2011-320-A	
ald4 TO ald1	-62.1348	-16.9338	-18.1851	66.9193	2011-307-A	***
ald4 TO ald1	-62.1324	-16.8826	-18.2424	66.9197	2011-307-A	(NO ALD2)
ald4 TO ald1	-62.1359	-16.9379	-18.1813	66.9202	2011-307-B	***
ald4 TO ald1	-62.1335	-16.8838	-18.2410	66.9206	2011-307-B	(NO ALD2)

Advisor could have retained 307-A (NO ALD2) and 307-B (NO ALD2) sessions,  
But, chose to include only sessions 320-A and 320-B in final adjustment.

# The ALDER Project Experience

## MARK-TO-MARK COMPARISONS GROUPED BY MARKS AND SORTED BY LENGTH

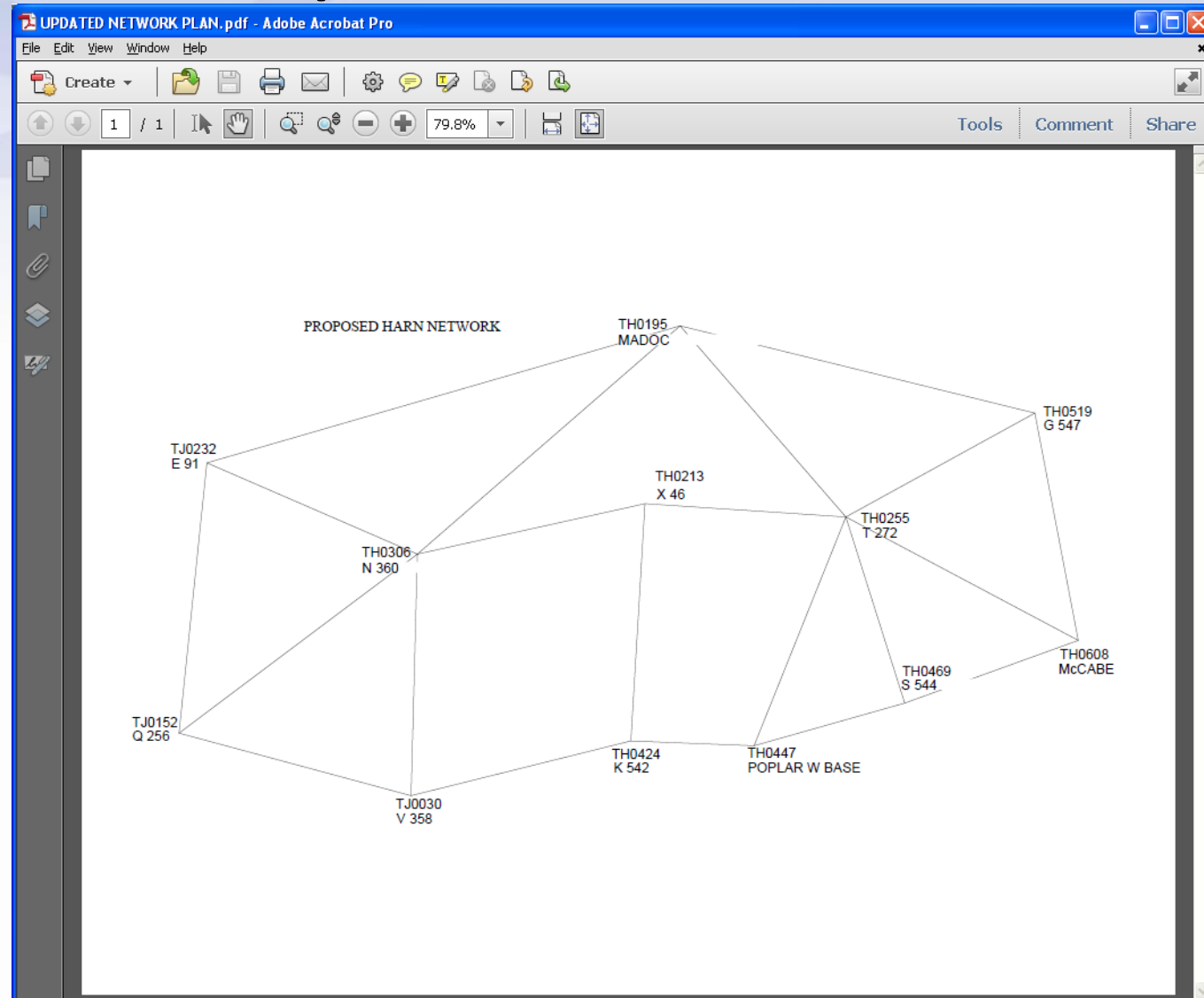
ST 1 TO ST 2	DELTA X	DELTA Y	DELTA Z	LENGTH	SESSION NAME
mnjc TO ald1	89213.5606	-20890.8013	-15902.9364	92996.7115	2011-307-A (NO ALD2)
mnjc TO ald1	89213.5609	-20890.8441	-15902.8820	92996.7122	2011-307-A ***
mnjc TO ald1	89213.5635	-20890.7806	-15902.9520	92996.7123	2011-320-B
mnjc TO ald1	89213.5614	-20890.8383	-15902.8895	92996.7126	2011-307-B ***
mnjc TO ald1	89213.5634	-20890.7962	-15902.9444	92996.7145	2011-307-B (NO ALD2)
mnjc TO ald1	89213.5707	-20890.8126	-15902.9396	92996.7243	2011-320-A
mnpl TO ald1	91270.6676	30722.1200	32831.5363	101745.2367	2011-307-A (NO ALD2)
mnpl TO ald1	91270.6713	30722.1224	32831.5303	101745.2389	2011-307-B (NO ALD2)
mnpl TO ald1	91270.6762	30722.1068	32831.5374	101745.2408	2011-320-A
mnpl TO ald1	91270.6693	30722.0799	32831.5857	101745.2421	2011-307-B ***
mnpl TO ald1	91270.6681	30722.0783	32831.5918	101745.2425	2011-307-A ***
mnpl TO ald1	91270.6800	30722.1235	32831.5258	101745.2455	2011-320-B
mnvi TO ald1	33107.2933	-62539.7505	-57078.8435	90913.7373	2011-307-A ***
mnvi TO ald1	33107.2942	-62539.7076	-57078.8963	90913.7413	2011-307-A (NO ALD2)
mnvi TO ald1	33107.3182	-62539.8253	-57078.7923	90913.7657	2011-307-B ***
mnvi TO ald1	33107.3202	-62539.7832	-57078.8472	90913.7720	2011-307-B (NO ALD2)
mnvi TO ald1	33107.3251	-62539.7871	-57078.8510	90913.7788	2011-320-A
mnvi TO ald1	33107.3278	-62539.7725	-57078.8681	90913.7805	2011-320-B
wis6 TO ald1	-5637.2984	5536.0170	5010.9158	9356.0619	2011-320-B
wis6 TO ald1	-5637.2981	5536.0051	5010.9305	9356.0626	2011-320-A
wis6 TO ald1	-5637.3042	5536.0119	5010.9358	9356.0731	2011-307-B (NO ALD2)
wis6 TO ald1	-5637.3028	5536.0123	5010.9393	9356.0744	2011-307-A (NO ALD2)
wis6 TO ald1	-5637.3065	5535.9632	5010.9928	9356.0762	2011-307-B ***
wis6 TO ald1	-5637.3052	5535.9629	5010.9973	9356.0776	2011-307-A ***
wisn TO ald1	24266.7275	75452.8971	72795.8331	107616.2026	2011-320-B
wisn TO ald1	24266.7524	75452.8831	72795.8755	107616.2271	2011-320-A
wisn TO ald1	24266.7463	75452.9005	72795.8622	107616.2289	2011-307-B (NO ALD2)
wisn TO ald1	24266.7462	75452.8970	72795.8678	107616.2302	2011-307-A (NO ALD2)
wisn TO ald1	24266.7443	75452.8578	72795.9177	107616.2360	2011-307-B ***
wisn TO ald1	24266.7450	75452.8563	72795.9242	107616.2396	2011-307-A ***

# The Fort Peck Experience

Surveyor was having trouble analyzing B-Order Survey near Fort Peck, Montana.

Local labor was used under surveyor's supervision.

Surveyor also needed help with Pages/Bluebooking





# The Fort Peck Experience

- Surveyor furnished field logs and data files.
- Advisor submitted them to OPUS PROJECTS.
- Advisor adopted a single hub network model to maximize vector comparisons.
  - Surveyor's original choice of network model had yielded insufficient comparability to track down problem occupations. He was suspicious but not certain of the flaws.
- Analysis showed which occupations were flawed and which ones needed to be re-observed.
- See Tables next slides

# The Fort Peck Experience

Advisor adopted a single hub network

The screenshot shows a web browser window titled "Manage 'Fort Peck HARN Project' - Mozilla Firefox". The address bar shows the URL "www.geodesy.noaa.gov/OPUS-cgi/OPUS/OpusProjects.prl". The main content area displays a map of the Fort Peck area with a network of blue lines connecting various points. The legend indicates that green circles represent "meet preferences" and yellow circles with a triangle represent "do not meet preferences". The map shows a central hub point connected to several other points, illustrating a single hub network.

Below the map, there is a table titled "Sessions & Solutions" with the following data:

MARKS	2011-061	2011-061	2011-062	2011-063	2011-068	2011-069	2011-074	2011-075	2011-173	2011-174	2011-199	network	network	MAF
	A	A-TRI	A	A	A	A	A	A	A	A	A	final	final-cors3d	

# The Fort Peck Experience

Note: All processing was done in OPUS-PROJECTS, using CORS station P052 as the hub. Sorted by "RANGE in L"

SESSION	ST 1 TO ST 2	DELTA X	DELTA Y	DELTA Z	LENGTH	RANGE in L
173-A	mtlw TO p052	182685.1452	-32364.7339	23935.9816	187067.5533	
174-A	ndmb TO p052	-433344.6983	20680.6358	-77363.9480	440681.8543	
174-A	mtms TO p052	158787.2319	-154181.3600	-86784.3878	237732.6371	
173-A	mtms TO p052	158787.2288	-154181.3678	-86784.3816	237732.6379	0.0008 m
199-A	p054 TO p052	-156525.7880	172507.3852	116557.7168	260470.3853	
174-A	p054 TO p052	-156525.7904	172507.3835	116557.7187	260470.3864	
173-A	p054 TO p052	-156525.7889	172507.3873	116557.7152	260470.3865	0.0012 m
173-A	mdr6 TO p052	-264157.1247	111089.6354	35524.7956	288759.2505	
199-A	mdr6 TO p052	-264157.1273	111089.6281	35524.8006	288759.2506	
174-A	mdr6 TO p052	-264157.1273	111089.6345	35524.7962	288759.2526	0.0021 m
174-A	p053 TO p052	16910.9182	-122424.2423	-100422.1062	159242.8135	
199-A	p053 TO p052	16910.9189	-122424.2388	-100422.1111	159242.8141	
173-A	p053 TO p052	16910.9194	-122424.2412	-100422.1082	159242.8141	
	p053 TO p052	16910.9188	-122424.2440	-100422.1067	159242.8152	
	p053 TO p052	16910.9180	-122424.2456	-100422.1051	159242.8154	
	p053 TO p052	16910.9180	-122424.2455	-100422.1055	159242.8156	
	p053 TO p052	16910.9191	-122424.2446	-100422.1067	159242.8157	
	p053 TO p052	16910.9184	-122424.2439	-100422.1077	159242.8158	
	p053 TO p052	16910.9184	-122424.2455	-100422.1059	159242.8158	
	p053 TO p052	16910.9180	-122424.2460	-100422.1052	159242.8158	0.0023 m
	p052 TO g547	212877.6529	46046.3610	91565.5799	236265.5664	
	g547 TO p052	-212877.6565	-46046.3675	-91565.5791	236265.5706	0.0042 m

# The Fort Peck Experience

SESSION	ST 1 TO ST 2	DELTA X	DELTA Y	DELTA Z	LENGTH	RANGE in L
173-A	p052 TO e091	59993.3863	80911.6084	85444.1892	132085.5944	
	e091 TO p052	-59993.3808	-80911.6265	-85444.1780	132085.5957	
	e091 TO p052	-59993.3802	-80911.6178	-85444.1912	132085.5987	0.0043 m
199-A	p055 TO p052	-164237.5554	68394.5250	19615.9937	178987.6332	
	p055 TO p052	-164237.5569	68394.5236	19615.9951	178987.6342	
	p055 TO p052	-164237.5569	68394.5235	19615.9962	178987.6343	
	p055 TO p052	-164237.5569	68394.5242	19615.9953	178987.6345	
	p055 TO p052	-164237.5570	68394.5245	19615.9948	178987.6347	
	p055 TO p052	-164237.5570	68394.5250	19615.9939	178987.6347	
	p055 TO p052	-164237.5567	68394.5253	19615.9944	178987.6347	
173-A	p055 TO p052	-164237.5574	68394.5243	19615.9954	178987.6350	
	p055 TO p052	-164237.5581	68394.5251	19615.9950	178987.6359	
174-A	p055 TO p052	-164237.5604	68394.5221	19616.0007	178987.6375	0.0043 m
	mcab TO p052	-210744.8646	-16575.0642	-65902.2585	221429.9853	
	mcab TO p052	-210744.8745	-16575.0713	-65902.2458	221429.9915	0.0062 m
	t272 TO p052	-167245.3299	-46585.0279	-82018.1592	192010.7904	
	t272 TO p052	-167245.3301	-46585.0011	-82018.1884	192010.7966	
	t272 TO p052	-167245.3345	-46585.0304	-82018.1667	192010.7983	0.0079 m
199-A	p052 TO powb	147758.4577	20206.2171	54520.8550	158787.2056	
	powb TO p052	-147758.4599	-20206.2161	-54520.8623	158787.2101	
	powb TO p052	-147758.4661	-20206.2290	-54520.8530	158787.2142	0.0086 m
	p052 TO s544	175777.7542	17654.4943	58911.7675	186225.9284	
	p052 TO s544	175777.7683	17654.4991	58911.7528	186225.9375	
	p052 TO s544	175777.7706	17654.4891	58911.7583	186225.9404	0.0120 m

# The Fort Peck Experience

SESSION	ST 1 TO ST 2	DELTA X	DELTA Y	DELTA Z	LENGTH	RANGE in L
174-A	v358 TO p052	-89340.0651	-32424.5444	-51031.5607	107875.9403	
	v358 TO p052	-89340.0717	-32424.5489	-51031.5548	107875.9444	
173-A	v358 TO p052	-89340.0733	-32424.5464	-51031.5673	107875.9508	
	v358 TO p052	-89340.0825	-32424.5465	-51031.5552	107875.9527	0.0124 m
173-A	todd TO p052	-107495.4336	-60846.1531	-80204.9437	147276.4597	
174-A	todd TO p052	-107495.4562	-60846.1805	-80204.9195	147276.4744	0.0147 m
174-A	p052 TO x046	140373.3911	57701.8269	85179.3582	174039.4002	
	x046 TO p052	-140373.3989	-57701.8641	-85179.3263	174039.4032	
	x046 TO p052	-140373.4149	-57701.8959	-85179.3160	174039.4216	0.0214 m
074-A	n360 TO p052	-104763.8174	-61617.4611	-80171.0096	145600.6859	<--- outlier
075-A	n360 TO p052	-104763.8242	-61617.4739	-80171.0221	145600.7031	
069-A	n360 TO p052	-104763.8303	-61617.4647	-80171.0316	145600.7088	0.0229 m
069-A	p052 TO mdoc	154657.5898	78643.5300	106426.9340	203544.7547	<--- outlier
062-A	mdoc TO p052	-154657.5838	-78643.5614	-106427.0019	203544.7978	
074-A	p052 TO mdoc	154657.5882	78643.5712	106426.9960	203544.8018	0.0471 m
199-A	k542 TO p052	-117344.4357	-28084.4376	-54102.7182	132232.9624	
068-A	k542 TO p052	-117344.4447	-28084.4617	-54102.6979	132232.9672	
075-A	p052 TO k542	117344.4782	28084.5421	54102.7293	132233.0268	<--- outlier 0.0644 m
074-A	q256 TO p052	-48494.3526	-54342.3166	-59620.0087	94124.0407	<--- outlier
173-A	q256 TO p052	-48494.3956	-54342.3199	-59620.0728	94124.1054	
069-A	q256 TO p052	-48494.3841	-54342.3423	-59620.0641	94124.1069	0.0662 m

Note: All processing was done in OPUS-PROJECTS, using CORS station P052 as the hub.

# The Fort Peck Experience

- In the Fort Peck case, OPUS PROJECTS revealed its power as a debugging/project management tool.
- Mobile field crews will be able to verify data quality in OPUS PROJECTS before demobilizing. Re-observe right away.

# OPUS Projects Manager Training

## Step 3 : Session Processing

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