

NOAA's **National Geodetic Survey** Positioning America for the Future www.ngs.noaa.gov

OPUS Projects Manager Training

Step 3 : Session Processing

ngs.opus.projects@noaa.gov

2013-08-07 Step 3 : Session Processing 1

NOAA's **National Geodetic Survey** Positioning America for the Future www.ngs.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?

2013-05-16 Introduction 2

NOAA's **National Geodetic Survey** Positioning America for the Future www.ngs.noaa.gov

Outline

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

2013-08-07 Step 3 : Session Processing 3

NOAA's **National Geodetic Survey** Positioning America for the Future www.ngs.noaa.gov

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.

2013-08-07 Step 3 : Session Processing 4

NOAA's **National Geodetic Survey** Positioning America for the Future www.ngs.noaa.gov

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.

2013-08-07 Step 3 : Session Processing 5


NOAA's **National Geodetic Survey** Positioning America for the Future www.ngs.noaa.gov

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.

2013-08-07 Step 3 : Session Processing 6


NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov



OPUS Projects

National Geodetic Survey

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



Tools/OPUS Menu

- Upload
- About OPUS
- Project
- Published

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.

[Create](#) **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.

[Session](#) Project Identifier:

Session Keyword:

Your Email:


Manage, edit, process, and publish the project.

[Manage](#) 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.

2013-08-07 Step 3 : Session Processing 7


NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov



OPUS Projects

National Geodetic Survey

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



Tools/OPUS Menu

- Upload
- About OPUS
- Projects
- Published Solutions

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

Session Keyword:

Your Email:

Manage, edit, process, and publish the project.

[Manage](#) Project Identifier:

Manager Keyword:

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

2013-08-07 Step 3 : Session Processing 8

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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

Add MARKS

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 | DEL (%) | DEL (%) | DEL (m) | DEL (m) | DEL (m) | HGT (m) |
|-----------------------------|---------|------------|----------|---------|---------|---------|---------|---------|---------|
| Step 3 : Session Processing | | | | | | | | | |

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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

Add MARKS

CORS

▲ covg

▲ dstr

▲ hamm

▲ msht

Lets explore this session web page. The web page is too long to fit and be readable on a single slide, so we'll first focus on the top.

Solution Quality Indicators

| MARKS | ANTENNA | HEIGHT (m) | EPH TYPE | DEL (%) | DEL (%) | DEL (m) | DEL (m) | DEL (m) | HGT (m) |
|-----------------------------|---------|------------|----------|---------|---------|---------|---------|---------|---------|
| Step 3 : Session Processing | | | | | | | | | |

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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: [blue line]

Map Satellite Terrain

MARKS: 2126, 2137

2013-08-07

Step 3 : Session Processing

The web page is built around a Google Map Services™ interactive map showing the locations of marks and included CORS. The map is centered on the project's marks.

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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: [blue line]

Map Satellite Terrain

MARKS: 2126, 2137

2013-08-07

Step 3 : Session Processing

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

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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

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

2013-08-07 Step 3 : Session Processing

| MARKS | ANTENNA | HEIGHT (m) | EPH TYPE (%) (%) | DEL (m) (m) | HGT (m) (m) |
|-------|---------|------------|------------------|-------------|-------------|
| | | | | | |

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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

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

2013-08-07 Step 3 : Session Processing

| MARKS | ANTENNA | HEIGHT (m) | EPH TYPE (%) (%) | DEL (m) (m) | HGT (m) (m) |
|-------|---------|------------|------------------|-------------|-------------|
| | | | | | |

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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

LEGEND MARKS: ● meet preferences ● exceed preferences ● not included ● have error
CORs: ● meet preferences ● exceed preferences ● not included
Baselines: —

Map Satellite Terrain

2013-08-07 Solution Quality Indicators Step 3 : Session Processing

| MARKS | ANTENNA | HEIGHT (m) | EPH TYPE | DOB (%) | DOB (%) | DOB (m) | DOB (m) | DOB (m) | HGT (m) |
|-------|---------|------------|----------|---------|---------|---------|---------|---------|---------|
|-------|---------|------------|----------|---------|---------|---------|---------|---------|---------|

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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

LEGEND MARKS: ● meet preferences ● exceed preferences ● not included ● have error
CORs: ● meet preferences ● exceed preferences ● not included
Baselines: —

Map Satellite Terrain

2013-08-07 Solution Quality Indicators Step 3 : Session Processing

| MARKS | ANTENNA | HEIGHT (m) | EPH TYPE | DOB (%) | DOB (%) | DOB (m) | DOB (m) | DOB (m) | HGT (m) |
|-------|---------|------------|----------|---------|---------|---------|---------|---------|---------|
|-------|---------|------------|----------|---------|---------|---------|---------|---------|---------|

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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: [blue line]

Map | Satellite | Terrain

2013-08-07 Solution Quality Indicators Step 3 : Session Processing

| MARKS | ANTENNA | HEIGHT (m) | EPH TYPE (%) | DEP (%) | DEL (m) | HTG (m) |
|-------|---------|------------|--------------|---------|---------|---------|
|-------|---------|------------|--------------|---------|---------|---------|

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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: [blue line]

Map | Satellite | Terrain

2013-08-07 Solution Quality Indicators Step 3 : Session Processing

| MARKS | ANTENNA | HEIGHT (m) | EPH TYPE (%) | DEP (%) | DEL (m) | HTG (m) |
|-------|---------|------------|--------------|---------|---------|---------|
|-------|---------|------------|--------------|---------|---------|---------|

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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

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

2013-08-07 Step 3 : Session Processing

| MARKS | ANTENNA | HEIGHT (m) | EPH TYPE | DEP (%) | DEL (%) | DD (m) | DD (m) | DD (m) | HGT (m) |
|-------|---------|------------|----------|---------|---------|--------|--------|--------|---------|
| | | | | | | | | | |

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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

2137

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

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

2013-08-07 Step 3 : Session Processing

| MARKS | ANTENNA | HEIGHT (m) | EPH TYPE | DEP (%) | DEL (%) | DD (m) | DD (m) | DD (m) | HGT (m) |
|-------|---------|------------|----------|---------|---------|--------|--------|--------|---------|
| | | | | | | | | | |

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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

CORS

- ▲ covg
- ▲ dstr
- ▲ hamm
- ▲ msht

Add MARKS

Add CORS

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

Solution Quality Indicators

| MARKS | ANTENNA | HEIGHT (m) | EPH TYPE | DEP (%) | DEL (%) | HDOP (m) | VDOP (m) | HGT (m) |
|-----------------------------|---------|------------|----------|---------|---------|----------|----------|---------|
| Step 3 : Session Processing | | | | | | | | |

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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

CORS

- ▲ covg
- ▲ dstr
- ▲ hamm
- ▲ msht

Add MARKS

Add CORS

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

Solution Quality Indicators

| MARKS | ANTENNA | HEIGHT (m) | EPH TYPE | DEP (%) | DEL (%) | HDOP (m) | VDOP (m) | HGT (m) |
|-----------------------------|---------|------------|----------|---------|---------|----------|----------|---------|
| Step 3 : Session Processing | | | | | | | | |

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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

LEGEND

CORS

covg

dstr

hamm

msht

| STATUS | ANTENNA | HEIGHT | DATA FILE | UPLOADED | OBSERVER |
|--------------------------------------|-------------|--------|-----------|--------------|--------------------------------------|
| ● | TRM41249.00 | NONE | 2.000 m | 2126274w.060 | 2011-06-13T14:16 UTC mark.sohenevark |

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

Solution Quality Indicators

2013-08-07

Step 3 : Session Processing

25

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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

LEGEND

CORS

covg

dstr

hamm

msht

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

Solution Quality Indicators

2013-08-07

Step 3 : Session Processing

26

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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

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

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

Map: Satellite Terrain

2013-08-07

| MARKS | ANTENNA | HEIGHT (m) | EPH TYPE | OB (%) | Step 3 : Session Processing | HGT (m) |
|-------|---------|------------|----------|--------|-----------------------------|---------|
| | | | | | | |

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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.

Map: Satellite Terrain

2013-08-07

| MARKS | ANTENNA | HEIGHT (m) | EPH TYPE | OB (%) | Step 3 : Session Processing | HGT (m) |
|-------|---------|------------|----------|--------|-----------------------------|---------|
| | | | | | | |

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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

Session 2006-274-A CORS

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

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:

2013-08-07

| MARKS | ANTENNA | HEIGHT (m) | EPH TYPE | OB (S) | (S) | (M) | (M) | (M) | HGT (M) |
|-----------------------------|---------|------------|----------|--------|-----|-----|-----|-----|---------|
| Step 3 : Session Processing | | | | | | | | | |

29

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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

2013-08-07

| MARKS | ANTENNA | HEIGHT (m) | EPH TYPE | OB (S) | (S) | (M) | (M) | (M) | HGT (M) |
|-----------------------------|---------|------------|----------|--------|-----|-----|-----|-----|---------|
| Step 3 : Session Processing | | | | | | | | | |

30

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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, 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

Website Owner: National Geodetic Survey / \$Revision: 54685 \$Created: 2011-04-26

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

Solution Quality Indicators

| MARKS | ANTENNA | HEIGHT (m) | EPH TYPE | OB (%) | PH (%) | (m) | (m) | (m) | HGT (m) |
|------------|---------|------------|----------|--------|--------|-----|-----|-----|---------|
| 2013-08-07 | | | | | | | | | |

31

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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

Enter the 4-char site IDs, 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

Website Owner: National Geodetic Survey / \$Revision: 54685 \$Created: 2011-04-26

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

Solution Quality Indicators

| MARKS | ANTENNA | HEIGHT (m) | EPH TYPE | OB (%) | PH (%) | (m) | (m) | (m) | HGT (m) |
|------------|---------|------------|----------|--------|--------|-----|-----|-----|---------|
| 2013-08-07 | | | | | | | | | |

32

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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

Session 2006-274-A CORS

MARKS
26
37

Add Cors

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

LEGEND

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

To Be Added:

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.

2013-08-07 33

| MARKS | ANTENNA | HEIGHT (m) | EPH TYPE | OB (S) | OP (S) | OR (m) | OS (m) | OT (m) | |
|-----------------------------|---------|------------|----------|--------|--------|--------|--------|--------|--|
| Step 3 : Session Processing | | | | | | | | | |

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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

Controls

MARKS: meet preferences exceed preferences not included have error

CORS: meet preferences exceed preferences not included

Baselines: meet preferences exceed preferences not included

Map Satellite Terrain

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.

2013-08-07 34

| MARKS | ANTENNA | HEIGHT (m) | EPH TYPE | OB (S) | OP (S) | OR (m) | OS (m) | OT (m) | |
|-----------------------------|---------|------------|----------|--------|--------|--------|--------|--------|--|
| Step 3 : Session Processing | | | | | | | | | |

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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

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

Baselines: meet preferences exceed preferences not included

Map Satellite Terrain

2006-274-A
 2006-275-A
 2006-276-B
 2006-276-A
 2006-277-A

Set up Processing

Solution Quality Indicators

| MARKS | ANTENNA | HEIGHT (m) | EPH TYPE (%) | DOB (%) | Step 3 : Session Processing | HGT (m) |
|------------|---------|------------|--------------|---------|-----------------------------|---------|
| 2013-08-07 | | | | | | |

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

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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

MARKS: OPUS Solutions exceed preferences not included have error
 CORS: meet preferences exceed preferences not included

Baselines: meet preferences exceed preferences not included

Map Satellite Terrain

2006-274-A
 2006-275-A
 2006-276-B
 2006-276-A
 2006-277-A

Set up Processing

Solution Quality Indicators

| MARKS | ANTENNA | HEIGHT (m) | EPH TYPE (%) | DOB (%) | Step 3 : Session Processing | HGT (m) |
|------------|---------|------------|--------------|---------|-----------------------------|---------|
| 2013-08-07 | | | | | | |

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

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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
CORS: covg, distr, hamm, msht, pscg

Map Satellite Terrain

Table:

| MARKS | ANTENNA | HEIGHT (m) | EPH TYPE (%) | DEP (%) | Step 3 : Session Processing | HGT (m) |
|------------|---------|------------|--------------|---------|-----------------------------|---------|
| 2013-08-07 | | | | | | |

37

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

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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
CORS: covg, distr, hamm

Map Satellite Terrain

Table:

| MARKS | ANTENNA | HEIGHT (m) | EPH TYPE (%) | DEP (%) | Step 3 : Session Processing | HGT (m) |
|------------|---------|------------|--------------|---------|-----------------------------|---------|
| 2013-08-07 | | | | | | |

38

The controls include help, back and refresh controls. If you navigated here from the manager's web page, a button to return to the manager's web page will appear too.

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

Session: 2006-274-A

"my project @ 2006-10-01"

OPUS Solution 2126 2126274w.060 Show File

2126274w.060.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.060 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 ANTS: 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)

2013-08-07 Step 3 : Session Processing

| MARKS | ANTENNA | HEIGHT (m) | EPH TYPE | OB (%) | PR (%) | PD (m) | PP (m) | PH (m) | HGT (m) |
|-------|---------|------------|----------|--------|--------|--------|--------|--------|---------|
|-------|---------|------------|----------|--------|--------|--------|--------|--------|---------|

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

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

Session: 2006-274-A

"my project @ 2006-10-01"

OPUS Solution 2126 2126274w.060 Show File

2126274w.060.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.060 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 ANTS: 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)

2013-08-07 Step 3 : Session Processing

| MARKS | ANTENNA | HEIGHT (m) | EPH TYPE | OB (%) | PR (%) | PD (m) | PP (m) | PH (m) | HGT (m) |
|-------|---------|------------|----------|--------|--------|--------|--------|--------|---------|
|-------|---------|------------|----------|--------|--------|--------|--------|--------|---------|

Any available report for this session can be displayed using the menus in the control bar.

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

"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: www.ngs.noaa.gov/OPUS/about.jsp#accuracy

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

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

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

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)

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) |

UTM COORDINATES STATE
UTM (Zone 16)

2013-08-07 Step 3 : Session Processing 41

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

"my project @ 2006 10 01"

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/OPUS/about.jsp#accuracy>

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

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

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

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)

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) |

UTM COORDINATES STATE
UTM (Zone 16)

2013-08-07 Step 3 : Session Processing 42

NOAA's **National Geodetic Survey** Positioning America for the Future www.ngs.noaa.gov

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.

↔

2013-08-07 Step 3 : Session Processing 43

NOAA's **National Geodetic Survey** Positioning America for the Future www.ngs.noaa.gov

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

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

[NOS 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

| MARKS | ANTENNA | HEIGHT (mm) | EPH TYPE | DOB (S) | DOB (F) | DOB (M) | DOB (D) | HGT (mm) |
|------------|---------|-------------|----------|---------|---------|---------|---------|----------|
| 2013-08-07 | | | | | | | | |

2013-08-07 Step 3 : Session Processing 44

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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

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

2013-08-07 Solution Quality Indicators Step 3 : Session Processing

| MARKS | ANTENNA | HEIGHT (m) | EPH TYPE | DOB (%) | DOB (%) | DOB (m) | DOB (m) | DOB (m) | HGT (m) |
|-------|---------|------------|----------|---------|---------|---------|---------|---------|---------|
|-------|---------|------------|----------|---------|---------|---------|---------|---------|---------|

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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

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

2013-08-07 Solution Quality Indicators Step 3 : Session Processing

| MARKS | ANTENNA | HEIGHT (m) | EPH TYPE | DOB (%) | DOB (%) | DOB (m) | DOB (m) | DOB (m) | HGT (m) |
|-------|---------|------------|----------|---------|---------|---------|---------|---------|---------|
|-------|---------|------------|----------|---------|---------|---------|---------|---------|---------|

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 ≥ 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 | 04 | 05 | | | | | | | | | | | | | | | | | | | |
| 2126 | 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 | 8 | 8 | 8 | 9 | 9 | 8 | 8 | 7 | 7 | 7 | 8 | 8 | 8 | 7 | 7 |

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

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

2013-08-07 Step 3 : Session Processing 49

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 ≥ 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 | 04 | 05 | | | | | | | | | | | | | | | | | | | |
| 2126 | 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 | 8 | 8 | 8 | 9 | 9 | 8 | 8 | 7 | 7 | 7 | 8 | 8 | 8 | 7 | 7 |

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

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

2013-08-07 Step 3 : Session Processing 50

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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

Controls: ? ← ↻

MARKS: meet preferences exceed preferences not included have error

CORS: meet preferences exceed preferences not included

Baselines:

Map Satellite Terrain

LEGEND MARKS: 2126 2137

Set up Processing

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

Solution Quality Indicator

2013-08-07 Step 3 : Session Processing

| MARKS | ANTENNA | HEIGHT (m) | EPH TYPE | DEL (%) | DEL (%) | DEL (m) | DEL (m) | HGT (m) |
|-------|---------|------------|----------|---------|---------|---------|---------|---------|
|-------|---------|------------|----------|---------|---------|---------|---------|---------|

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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

"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 | 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"/> | dstr | 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 W089:20:10.55121 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> | mscc | 3-D | EL HGT | -13.084 | N30:22:30.81443 W089:36:49.92726 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> | no1a | 3-D | EL HGT | -1.581 | N29:56:03.75236 W090:07:12.67094 | IGS08 (2005.0000) |

PROCESSING PREFERENCES

Output Ref Frame: LETOPUS.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.

2013-08-07 Step 3 : Session Processing

| MARKS | ANTENNA | HEIGHT (m) | EPH TYPE | DEL (%) | DEL (%) | DEL (m) | DEL (m) | HGT (m) |
|-------|---------|------------|----------|---------|---------|---------|---------|---------|
|-------|---------|------------|----------|---------|---------|---------|---------|---------|

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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

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

"2006-274-A" Session Processing

SOLUTION NAME (30 char max): A

SOLUTION SPAN
2006-10-11T20:13:30 GPS to 2006-10-02T01:59:30 GPS

| MARK | HUB | CONSTRAINT | HEIGHT (m) | LATITUDE (°) | LONGITUDE (°) | REF. FRAME |
|------|-----|------------|------------|-----------------|------------------|-------------------|
| 2124 | | NONE | 14.019 | N30 58.00 80116 | W099 48.34 33127 | IGS08 (2005 7507) |
| 2137 | | NONE | 33.196 | N30 56.11 58242 | W099 30.25 29781 | IGS08 (2005 7506) |
| CORS | | | | | | |
| MARK | HUB | CONSTRAINT | HEIGHT (m) | LATITUDE (°) | LONGITUDE (°) | REF. FRAME |
| covg | | 3-D | -5.932 | N30 28.33 28953 | W090 05.43 94752 | IGS08 (2005 0000) |
| datz | | 3-D | -20.028 | N29 57.52 41516 | W090 22.56 03140 | IGS08 (2005 0000) |
| hamn | | 3-D | 5.820 | N30 30.47 07133 | W090 28.03 45357 | IGS08 (2005 0000) |
| maht | | 3-D | 64.478 | N31 19.30 16104 | W089 20.10 65121 | IGS08 (2005 0000) |
| maac | | 3-D | -13.084 | N30 22.30 81443 | W089 36.49 92726 | IGS08 (2005 0000) |
| nola | | 3-D | -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
2126
2137

Add MARKS
covg
dstr
hamn
maht
maac
nola

| MARKS | ANTENNA | HEIGHT (m) | EPH TYPE | OBS (%) | FIXED (%) | RMS (m) | LAT (m) | LON (m) | HGT (m) |
|-------|---------|------------|----------|---------|-----------|---------|---------|---------|---------|
| 2124 | ZEPHRA | 14.019 | 0.00 | 99.8 | 0.0 | 0.003 | 0.003 | 0.006 | 0.001 |
| 2137 | ZEPHRA | 33.196 | 0.00 | 99.8 | 0.0 | 0.003 | 0.003 | 0.006 | 0.001 |

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.

2013-08-07 Step 3 : Session Processing 53

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

"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 |
|------|-----|------------|------------|-----------------|------------------|-------------------|
| 2124 | | NONE | 14.019 | N30 58.00 80116 | W099 48.34 33127 | IGS08 (2005 7507) |
| 2137 | | NONE | 33.196 | N30 56.11 58242 | W099 30.25 29781 | IGS08 (2005 7506) |
| CORS | | | | | | |
| MARK | HUB | CONSTRAINT | HEIGHT (m) | LATITUDE (°) | LONGITUDE (°) | REF. FRAME |
| covg | | 3-D | -5.932 | N30 28.33 28953 | W090 05.43 94752 | IGS08 (2005 0000) |
| datz | | 3-D | -20.028 | N29 57.52 41516 | W090 22.56 03140 | IGS08 (2005 0000) |
| hamn | | 3-D | 5.820 | N30 30.47 07133 | W090 28.03 45357 | IGS08 (2005 0000) |
| maht | | 3-D | 64.478 | N31 19.30 16104 | W089 20.10 65121 | IGS08 (2005 0000) |
| maac | | 3-D | -13.084 | N30 22.30 81443 | W089 36.49 92726 | IGS08 (2005 0000) |
| nola | | 3-D | -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, ...

2013-08-07 Step 3 : Session Processing 54

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

"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 | 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"/> | datz | 3-D | EL HGT | -20.028 | N29 57 52 41516 | W090 22 56 03140 | IGS08 (2005 0000) |
| <input checked="" type="checkbox"/> | hama | 3-D | EL HGT | 5.820 | N30 30 47 07133 | W090 28 03 45357 | IGS08 (2005 0000) |
| <input checked="" type="checkbox"/> | mhbc | 3-D | EL HGT | 64.476 | N31 19 38 16104 | W089 20 10 65121 | IGS08 (2005 0000) |
| <input checked="" type="checkbox"/> | masc | 3-D | EL HGT | -13.084 | N30 22 30 81443 | W089 36 49 92726 | IGS08 (2005 0000) |
| <input checked="" type="checkbox"/> | no1a | 3-D | EL HGT | -1.581 | N29 56 03 75236 | W090 07 12 87094 | IGS08 (2005 0000) |

PROCESSING PREFERENCES

Output Ref Frame: LET OPUS CHOOSE

Output Geoid Model: LET OPUS CHOOSE

GNSS: G (GPS-only)

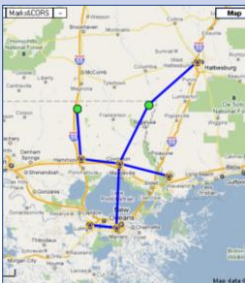
Tropo Model: Piecewise Linear

Tropo Interval (s): 7200

Elevation Cutoff (deg): 15.0

Constraint Weights: LOOSE NORMAL TIGHT

Network Design: USER CORS MST TRI



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

2013-08-07
Step 3 : Session Processing
55

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

"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 | 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"/> | datz | 3-D | EL HGT | -20.028 | N29 57 52 41516 | W090 22 56 03140 | IGS08 (2005 0000) |
| <input checked="" type="checkbox"/> | hama | 3-D | EL HGT | 5.820 | N30 30 47 07133 | W090 28 03 45357 | IGS08 (2005 0000) |
| <input checked="" type="checkbox"/> | mhbc | 3-D | EL HGT | 64.476 | N31 19 38 16104 | W089 20 10 65121 | IGS08 (2005 0000) |
| <input checked="" type="checkbox"/> | masc | 3-D | EL HGT | -13.084 | N30 22 30 81443 | W089 36 49 92726 | IGS08 (2005 0000) |
| <input checked="" type="checkbox"/> | no1a | 3-D | EL HGT | -1.581 | N29 56 03 75236 | W090 07 12 87094 | IGS08 (2005 0000) |

PROCESSING PREFERENCES

Output Ref Frame: LET OPUS CHOOSE

Output Geoid Model: LET OPUS CHOOSE

GNSS: G (GPS-only)

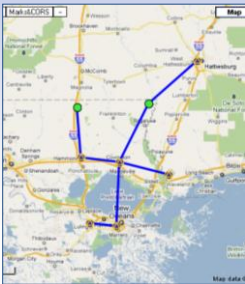
Tropo Model: Piecewise Linear

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

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

"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 | | NONE | EL HGT | 14.019 | N30 58 00.80116 | W089 48 34.33127 |
| <input checked="" type="checkbox"/> 2137 | | NONE | EL HGT | 33.196 | N30 56 11.58242 | W090 30 25.29761 |

| CORS | 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 |
| <input checked="" type="checkbox"/> datz | | 3-D | EL HGT | -20.028 | N29 57 52.41516 | W090 22 56.03140 |
| <input checked="" type="checkbox"/> hamc | | 3-D | EL HGT | 5.820 | N30 30 47.07133 | W090 28 03.45357 |
| <input checked="" type="checkbox"/> mahc | | 3-D | EL HGT | 64.476 | N31 19 38.16104 | W089 20 10.65121 |
| <input checked="" type="checkbox"/> maac | | 3-D | EL HGT | -13.084 | N30 22 30.81443 | W089 36 49.92726 |
| <input checked="" type="checkbox"/> no1a | | 3-D | EL HGT | -1.581 | N29 56 03.75236 | W090 07 12.67094 |

PROCESSING PREFERENCES

Output Ref Frame: LET OPLUS CHOOSE

Output Geoid Model: LET OPLUS 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."

2013-08-07
Step 3 : Session Processing
57

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

"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 | | NONE | EL HGT | 14.019 | N30 58 00.80116 | W089 48 34.33127 |
| <input checked="" type="checkbox"/> 2137 | | NONE | EL HGT | 33.196 | N30 56 11.58242 | W090 30 25.29761 |

| CORS | 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 |
| <input checked="" type="checkbox"/> datz | | 3-D | EL HGT | -20.028 | N29 57 52.41516 | W090 22 56.03140 |
| <input checked="" type="checkbox"/> hamc | | 3-D | EL HGT | 5.820 | N30 30 47.07133 | W090 28 03.45357 |
| <input checked="" type="checkbox"/> mahc | | 3-D | EL HGT | 64.476 | N31 19 38.16104 | W089 20 10.65121 |
| <input checked="" type="checkbox"/> maac | | 3-D | EL HGT | -13.084 | N30 22 30.81443 | W089 36 49.92726 |
| <input checked="" type="checkbox"/> no1a | | 3-D | EL HGT | -1.581 | N29 56 03.75236 | W090 07 12.67094 |

PROCESSING PREFERENCES

Output Ref Frame: LET OPLUS CHOOSE

Output Geoid Model: LET OPLUS 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.

2013-08-07
Step 3 : Session Processing
58

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

"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 | 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"/> datz | | 3-D | EL HGT | -20.028 | N29 57 52.41516 | W090 22 56.03140 | IGS08 (2005 0000) |
| <input checked="" type="checkbox"/> hams | | 3-D | EL HGT | 5.820 | N30 30 47.07133 | W090 28 03.45357 | IGS08 (2005 0000) |
| <input checked="" type="checkbox"/> mhzc | | 3-D | EL HGT | 64.476 | N31 19 38.16104 | W089 20 10.65121 | IGS08 (2005 0000) |
| <input checked="" type="checkbox"/> maso | | 3-D | EL HGT | -13.084 | N30 22 30.81443 | W089 36 49.92726 | IGS08 (2005 0000) |
| <input checked="" type="checkbox"/> no14 | | 3-D | EL HGT | -1.581 | N29 56 03.75236 | W090 07 12.87094 | IGS08 (2005 0000) |

PROCESSING PREFERENCES

Output Ref Frame: LET OPLUS CHOOSE

Output Geoid Model: LET OPLUS 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.

2013-08-07
Step 3 : Session Processing
59

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

"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 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 | 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"/> datz | | 3-D | EL HGT | -20.028 | N29 57 52.41516 | W090 22 56.03140 | IGS08 (2005 0000) |
| <input checked="" type="checkbox"/> hams | | 3-D | EL HGT | 5.820 | N30 30 47.07133 | W090 28 03.45357 | IGS08 (2005 0000) |
| <input checked="" type="checkbox"/> mhzc | | 3-D | EL HGT | 64.476 | N31 19 38.16104 | W089 20 10.65121 | IGS08 (2005 0000) |
| <input checked="" type="checkbox"/> maso | | 3-D | EL HGT | -13.084 | N30 22 30.81443 | W089 36 49.92726 | IGS08 (2005 0000) |
| <input checked="" type="checkbox"/> no14 | | 3-D | EL HGT | -1.581 | N29 56 03.75236 | W090 07 12.87094 | IGS08 (2005 0000) |

PROCESSING PREFERENCES

Output Ref Frame: LET OPLUS CHOOSE

Output Geoid Model: LET OPLUS 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.

2013-08-07
Step 3 : Session Processing
60

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

"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 | | 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"/> dstr | | 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"/> nola | | 3-D | EL HGT | 5.820 | N30 30 47 07133 W090 28 03 45357 | IGS08 (2005 0000) |
| <input checked="" type="checkbox"/> nbt | | 3-D | EL HGT | 64.476 | N31 19 39 16104 W089 20 10 65121 | IGS08 (2005 0000) |
| <input checked="" type="checkbox"/> nanc | | 3-D | EL HGT | -13.084 | N30 22 30 81443 W089 36 49 92726 | IGS08 (2005 0000) |
| <input checked="" type="checkbox"/> nsla | | 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.

2013-08-07
Step 3 : Session Processing
61

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

"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 | | 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"/> dstr | | 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"/> nola | | 3-D | EL HGT | 5.820 | N30 30 47 07133 W090 28 03 45357 | IGS08 (2005 0000) |
| <input checked="" type="checkbox"/> nbt | | 3-D | EL HGT | 64.476 | N31 19 39 16104 W089 20 10 65121 | IGS08 (2005 0000) |
| <input checked="" type="checkbox"/> nanc | | 3-D | EL HGT | -13.084 | N30 22 30 81443 W089 36 49 92726 | IGS08 (2005 0000) |
| <input checked="" type="checkbox"/> nsla | | 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.

2013-08-07
Step 3 : Session Processing
62

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

"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="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"/> covy | <input checked="" type="checkbox"/> | 3D | EL HGT | -5.932 | N30.28.33.28953 | W090.05.43.94752 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> datz | <input checked="" type="checkbox"/> | 3D | EL HGT | -20.028 | N29.57.52.41516 | W090.22.56.03140 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> hams | <input checked="" type="checkbox"/> | 3D | EL HGT | 5.820 | N30.30.47.07133 | W090.28.03.45357 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> mahc | <input checked="" type="checkbox"/> | 3D | EL HGT | 64.478 | N31.19.39.16104 | W089.20.10.65121 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> mase | <input checked="" type="checkbox"/> | 3D | EL HGT | -13.084 | N30.22.30.81443 | W089.36.49.92726 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> no1a | <input checked="" type="checkbox"/> | 3D | 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.

2013-08-07
Step 3 : Session Processing
63

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

"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="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"/> covy | <input checked="" type="checkbox"/> | 3D | EL HGT | -5.932 | N30.28.33.28953 | W090.05.43.94752 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> datz | <input checked="" type="checkbox"/> | 3D | EL HGT | -20.028 | N29.57.52.41516 | W090.22.56.03140 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> hams | <input checked="" type="checkbox"/> | 3D | EL HGT | 5.820 | N30.30.47.07133 | W090.28.03.45357 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> mahc | <input checked="" type="checkbox"/> | 3D | EL HGT | 64.478 | N31.19.39.16104 | W089.20.10.65121 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> mase | <input checked="" type="checkbox"/> | 3D | EL HGT | -13.084 | N30.22.30.81443 | W089.36.49.92726 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> no1a | <input checked="" type="checkbox"/> | 3D | 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.

2013-08-07
Step 3 : Session Processing
64

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

"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="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"/> covy | <input type="checkbox"/> | 3D | EL HGT | -5.932 | N30:28:33.28953 W090:05:43.94752 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> datz | <input type="checkbox"/> | 3D | EL HGT | -20.028 | N29:57:52.41516 W090:22:56.03140 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> hams | <input type="checkbox"/> | 3D | EL HGT | 5.820 | N30:30:47.07133 W090:28:03.45357 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> mahc | <input type="checkbox"/> | 3D | EL HGT | 64.476 | N31:19:39.16104 W089:20:10.65121 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> mase | <input type="checkbox"/> | 3D | EL HGT | -13.084 | N30:22:30.81443 W089:36:49.92726 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> no1a | <input type="checkbox"/> | 3D | 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.

2013-08-07
Step 3 : Session Processing
65

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

"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"/> covy | <input checked="" type="checkbox"/> | 3D | EL HGT | -5.932 | N30:28:33.28953 W090:05:43.94752 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> datz | <input checked="" type="checkbox"/> | 3D | EL HGT | -20.028 | N29:57:52.41516 W090:22:56.03140 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> hams | <input checked="" type="checkbox"/> | 3D | EL HGT | 5.820 | N30:30:47.07133 W090:28:03.45357 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> mahc | <input checked="" type="checkbox"/> | 3D | EL HGT | 64.476 | N31:19:39.16104 W089:20:10.65121 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> mase | <input checked="" type="checkbox"/> | 3D | EL HGT | -13.084 | N30:22:30.81443 W089:36:49.92726 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> no1a | <input checked="" type="checkbox"/> | 3D | 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.

2013-08-07
Step 3 : Session Processing
66

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

"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 | NONE | ELHGT | 14.019 | N30 58.00 80116 W089 48.34 33127 | IGS08 (2006.7507) | |
| <input checked="" type="checkbox"/> | 2137 | NONE | ELHGT | 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 | 3-D | ELHGT | -5.932 | N30 28.33 28953 W090 06.43 94752 | IGS08 (2005.0000) | |
| <input checked="" type="checkbox"/> | datz | 3-D | ELHGT | -20.028 | N29 57.52 41516 W090 22.56 03140 | IGS08 (2005.0000) | |
| <input checked="" type="checkbox"/> | hams | 3-D | ELHGT | 5.820 | N30 30.47 07133 W090 28.03 45357 | IGS08 (2005.0000) | |
| <input checked="" type="checkbox"/> | mabz | 3-D | ELHGT | 64.476 | N31 19.39 16104 W089 20.10 65121 | IGS08 (2005.0000) | |
| <input checked="" type="checkbox"/> | masz | 3-D | ELHGT | -13.084 | N30 22.30 81443 W089 36.49 92726 | IGS08 (2005.0000) | |
| <input checked="" type="checkbox"/> | no1a | 3-D | ELHGT | -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.

2013-08-07
Step 3 : Session Processing
67

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

"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 | NONE | ELHGT | 14.019 | N30 58.00 80116 W089 48.34 33127 | IGS08 (2006.7507) | |
| <input checked="" type="checkbox"/> | 2137 | NONE | ELHGT | 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 | 3-D | ELHGT | -5.932 | N30 28.33 28953 W090 06.43 94752 | IGS08 (2005.0000) | |
| <input checked="" type="checkbox"/> | datz | 3-D | ELHGT | -20.028 | N29 57.52 41516 W090 22.56 03140 | IGS08 (2005.0000) | |
| <input checked="" type="checkbox"/> | hams | 3-D | ELHGT | 5.820 | N30 30.47 07133 W090 28.03 45357 | IGS08 (2005.0000) | |
| <input checked="" type="checkbox"/> | mabz | 3-D | ELHGT | 64.476 | N31 19.39 16104 W089 20.10 65121 | IGS08 (2005.0000) | |
| <input checked="" type="checkbox"/> | masz | 3-D | ELHGT | -13.084 | N30 22.30 81443 W089 36.49 92726 | IGS08 (2005.0000) | |
| <input checked="" type="checkbox"/> | no1a | 3-D | ELHGT | -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).

2013-08-07
Step 3 : Session Processing
68

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

"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"/> 2124 | | 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 | 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"/> datz | | 3-D | EL HGT | -20.028 | N29 57 52.41516 | W090 22 56.03140 | IGS08 (2005 0000) |
| <input checked="" type="checkbox"/> hams | | 3-D | EL HGT | 5.820 | N30 30 47.07133 | W090 28 03.45357 | IGS08 (2005 0000) |
| <input checked="" type="checkbox"/> mahc | | 3-D | EL HGT | 64.476 | N31 19 39.16104 | W089 20 10.65121 | IGS08 (2005 0000) |
| <input checked="" type="checkbox"/> mase | | 3-D | EL HGT | -13.084 | N30 22 30.81443 | W089 36 49.92726 | IGS08 (2005 0000) |
| <input checked="" type="checkbox"/> no14 | | 3-D | EL HGT | -1.581 | N29 56 03.75236 | W090 07 12.87094 | 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): 5.0

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.

2013-08-07
Step 3 : Session Processing
69

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

"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"/> 2124 | | NONE | EL HGT | 14.019 | N30 58 00.80116 | W089 48 34.33127 | IGS08 (2006 7507) |
| <input checked="" type="checkbox"/> 2137 | | 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 | | 3-D | GEOID12A | -5.932 | N30 28 33.28953 | W090 05 43.94752 | IGS08 (2005 0000) |
| <input checked="" type="checkbox"/> datz | | 3-D | EL HGT | -20.028 | N29 57 52.41516 | W090 22 56.03140 | IGS08 (2005 0000) |
| <input checked="" type="checkbox"/> hams | | 3-D | EL HGT | 5.820 | N30 30 47.07133 | W090 28 03.45357 | IGS08 (2005 0000) |
| <input checked="" type="checkbox"/> mahc | | 3-D | EL HGT | 64.476 | N31 19 39.16104 | W089 20 10.65121 | IGS08 (2005 0000) |
| <input checked="" type="checkbox"/> mase | | 3-D | EL HGT | -13.084 | N30 22 30.81443 | W089 36 49.92726 | IGS08 (2005 0000) |
| <input checked="" type="checkbox"/> no14 | | 3-D | EL HGT | -1.581 | N29 56 03.75236 | W090 07 12.87094 | 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): 5.0

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.

2013-08-07
Step 3 : Session Processing
70

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

"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 | | 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 | 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"/> datz | | 3-D | EL HGT | -20.028 | N29 57 52 41516 W090 22 56 03140 | IGS08 (2005 0000) |
| <input checked="" type="checkbox"/> hams | | 3-D | EL HGT | 5.820 | N30 30 47 07133 W090 28 03 45357 | IGS08 (2005 0000) |
| <input checked="" type="checkbox"/> mahc | | 3-D | EL HGT | 64.476 | N31 19 39 16104 W089 20 10 85121 | IGS08 (2005 0000) |
| <input checked="" type="checkbox"/> maso | | 3-D | EL HGT | -13.084 | N30 22 30 81443 W089 36 49 92726 | IGS08 (2005 0000) |
| <input checked="" type="checkbox"/> no14 | | 3-D | EL HGT | -1.581 | N29 56 03 75236 W090 07 12 87094 | 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.

2013-08-07
Step 3 : Session Processing
71

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

"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 | | 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 | 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"/> datz | | 3-D | EL HGT | -20.028 | N29 57 52 41516 W090 22 56 03140 | IGS08 (2005 0000) |
| <input checked="" type="checkbox"/> hams | | 3-D | EL HGT | 5.820 | N30 30 47 07133 W090 28 03 45357 | IGS08 (2005 0000) |
| <input checked="" type="checkbox"/> mahc | | 3-D | EL HGT | 64.476 | N31 19 39 16104 W089 20 10 85121 | IGS08 (2005 0000) |
| <input checked="" type="checkbox"/> maso | | 3-D | EL HGT | -13.084 | N30 22 30 81443 W089 36 49 92726 | IGS08 (2005 0000) |
| <input checked="" type="checkbox"/> no14 | | 3-D | EL HGT | -1.581 | N29 56 03 75236 W090 07 12 87094 | 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.

2013-08-07
Step 3 : Session Processing
72

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

"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 | HUB | CONSTRAINT | HEIGHT (m) | LATITUDE (° '') | LONGITUDE (° '') | REF. FRAME |
|--|-----|------------|------------|------------------|----------------------------------|-------------------|
| <input checked="" type="checkbox"/> covg | | 3-D | EL HGT | -5.932 | N30:28:33.28953 W090:06:43.94752 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> datz | | 3-D | EL HGT | -20.028 | N29:57:52.41516 W090:22:56.03140 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> hams | | 3-D | EL HGT | 5.820 | N30:30:47.07133 W090:28:03.45357 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> mahs | | 3-D | EL HGT | 64.476 | N31:19:39.16104 W089:20:10.85121 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> masz | | 3-D | EL HGT | -13.084 | N30:22:30.81443 W089:36:49.92726 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> no1a | | 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.

2013-08-07
Step 3 : Session Processing
73

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

"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 | HUB | CONSTRAINT | HEIGHT (m) | LATITUDE (° '') | LONGITUDE (° '') | REF. FRAME |
|--|-----|------------|------------|------------------|----------------------------------|-------------------|
| <input checked="" type="checkbox"/> covg | | 3-D | EL HGT | -5.932 | N30:28:33.28953 W090:06:43.94752 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> datz | | 3-D | EL HGT | -20.028 | N29:57:52.41516 W090:22:56.03140 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> hams | | 3-D | EL HGT | 5.820 | N30:30:47.07133 W090:28:03.45357 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> mahs | | 3-D | EL HGT | 64.476 | N31:19:39.16104 W089:20:10.85121 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> masz | | 3-D | EL HGT | -13.084 | N30:22:30.81443 W089:36:49.92726 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> no1a | | 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)

2013-08-07
Step 3 : Session Processing
74

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

"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"/> | 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 W090:06:43.94752 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> datz | <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"/> hams | <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"/> mahs | <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"/> masz | <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: 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.

2013-08-07
Step 3 : Session Processing
75

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

"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"/> | 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 W090:06:43.94752 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> datz | <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"/> hams | <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"/> mahs | <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"/> masz | <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: 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

2013-08-07
Step 3 : Session Processing
76

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

"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 | HUB | CONSTRAINT | HEIGHT (m) | LATITUDE (° '' ''') | LONGITUDE (° '' ''') | REF. FRAME |
|--|-----|------------|------------|---------------------|----------------------------------|-------------------|
| <input checked="" type="checkbox"/> covg | | 3-D | EL HGT | -5.932 | N30 28:33.28953 W090 06:43.94752 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> datz | | 3-D | EL HGT | -20.028 | N29 57:52.41516 W090 22:56.03140 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> hams | | 3-D | EL HGT | 5.820 | N30 30:47.07133 W090 28:03.45357 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> mahs | | 3-D | EL HGT | 64.476 | N31 19:39.16104 W089 20:10.65121 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> masz | | 3-D | EL HGT | -13.084 | N30 22:30.81443 W089 36:49.92726 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> no1a | | 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.

2013-08-07
Step 3 : Session Processing
77

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

"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 | HUB | CONSTRAINT | HEIGHT (m) | LATITUDE (° '' ''') | LONGITUDE (° '' ''') | REF. FRAME |
|--|-----|------------|------------|---------------------|----------------------------------|-------------------|
| <input checked="" type="checkbox"/> covg | | 3-D | EL HGT | -5.932 | N30 28:33.28953 W090 06:43.94752 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> datz | | 3-D | EL HGT | -20.028 | N29 57:52.41516 W090 22:56.03140 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> hams | | 3-D | EL HGT | 5.820 | N30 30:47.07133 W090 28:03.45357 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> mahs | | 3-D | EL HGT | 64.476 | N31 19:39.16104 W089 20:10.65121 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> masz | | 3-D | EL HGT | -13.084 | N30 22:30.81443 W089 36:49.92726 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> no1a | | 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.

2013-08-07
Step 3 : Session Processing
78

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

"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 checked="" type="checkbox"/> NONE | <input type="text" value=""/> |
| <input checked="" type="checkbox"/> 2137 | <input checked="" type="checkbox"/> NONE | <input type="text" value=""/> |

| CORS | HUB | CONSTRAINT |
|--|------------------------------|-------------------------------|
| <input checked="" type="checkbox"/> covg | <input type="checkbox"/> 3-D | <input type="text" value=""/> |
| <input checked="" type="checkbox"/> datz | <input type="checkbox"/> 3-D | <input type="text" value=""/> |
| <input checked="" type="checkbox"/> hams | <input type="checkbox"/> 3-D | <input type="text" value=""/> |
| <input checked="" type="checkbox"/> mhst | <input type="checkbox"/> 3-D | <input type="text" value=""/> |
| <input checked="" type="checkbox"/> masc | <input type="checkbox"/> 3-D | <input type="text" value=""/> |
| <input type="checkbox"/> no14 | <input type="checkbox"/> 3-D | <input type="text" value=""/> |

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 NO

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.

2013-08-07 Step 3 : Session Processing 79

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

"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 checked="" type="checkbox"/> NONE | <input type="text" value=""/> |
| <input checked="" type="checkbox"/> 2137 | <input checked="" type="checkbox"/> NONE | <input type="text" value=""/> |

| CORS | HUB | CONSTRAINT |
|--|------------------------------|-------------------------------|
| <input checked="" type="checkbox"/> covg | <input type="checkbox"/> 3-D | <input type="text" value=""/> |
| <input checked="" type="checkbox"/> datz | <input type="checkbox"/> 3-D | <input type="text" value=""/> |
| <input checked="" type="checkbox"/> hams | <input type="checkbox"/> 3-D | <input type="text" value=""/> |
| <input checked="" type="checkbox"/> mhst | <input type="checkbox"/> 3-D | <input type="text" value=""/> |
| <input checked="" type="checkbox"/> masc | <input type="checkbox"/> 3-D | <input type="text" value=""/> |
| <input type="checkbox"/> no14 | <input type="checkbox"/> 3-D | <input type="text" value=""/> |

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 NO

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.

2013-08-07 Step 3 : Session Processing 80

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

"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 | HUB | CONSTRAINT | HEIGHT (m) | LATITUDE (° '' ''') | LONGITUDE (° '' ''') | REF. FRAME |
|--|-----|------------|------------|---------------------|----------------------------------|-------------------|
| <input checked="" type="checkbox"/> covg | | 3-D | EL HGT | -5.932 | N30 28.33 28953 W090 06.43 94752 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> datz | | 3-D | EL HGT | -20.028 | N29 57.52 41516 W090 22.56 03140 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> hams | | 3-D | EL HGT | 5.820 | N30 30.47 07133 W090 28.03 45357 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> mahs | | 3-D | EL HGT | 64.476 | N31 19.39 16104 W089 20.10 85121 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> masz | | 3-D | EL HGT | -13.084 | N30 22.30 81443 W089 36.49 92726 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> no1a | | 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.

2013-08-07
Step 3 : Session Processing
81

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

"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 | HUB | CONSTRAINT | HEIGHT (m) | LATITUDE (° '' ''') | LONGITUDE (° '' ''') | REF. FRAME |
|--|-----|------------|------------|---------------------|----------------------------------|-------------------|
| <input checked="" type="checkbox"/> covg | | 3-D | EL HGT | -5.932 | N30 28.33 28953 W090 06.43 94752 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> datz | | 3-D | EL HGT | -20.028 | N29 57.52 41516 W090 22.56 03140 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> hams | | 3-D | EL HGT | 5.820 | N30 30.47 07133 W090 28.03 45357 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> mahs | | 3-D | EL HGT | 64.476 | N31 19.39 16104 W089 20.10 85121 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> masz | | 3-D | EL HGT | -13.084 | N30 22.30 81443 W089 36.49 92726 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> no1a | | 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.

2013-08-07
Step 3 : Session Processing
82

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

"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 | HUB | CONSTRAINT | HEIGHT (m) | LATITUDE (° '') | LONGITUDE (° '') | REF. FRAME |
|--|-----|------------|------------|------------------|----------------------------------|-------------------|
| <input checked="" type="checkbox"/> covg | | 3-D | EL HGT | -5.932 | N30:28:33.28953 W090:06:43.94752 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> datz | | 3-D | EL HGT | -20.028 | N29:57:52.41516 W090:22:56.03140 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> hams | | 3-D | EL HGT | 5.820 | N30:30:47.07133 W090:28:03.45357 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> mahs | | 3-D | EL HGT | 64.476 | N31:19:39.16104 W089:20:10.65121 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> maso | | 3-D | EL HGT | -13.084 | N30:22:30.81443 W089:36:49.92726 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> no14 | | 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 (degs): 5.0

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.

2013-08-07
Step 3 : Session Processing
83

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

"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 | HUB | CONSTRAINT | HEIGHT (m) | LATITUDE (° '') | LONGITUDE (° '') | REF. FRAME |
|--|-----|------------|------------|------------------|----------------------------------|-------------------|
| <input checked="" type="checkbox"/> covg | | 3-D | EL HGT | -5.932 | N30:28:33.28953 W090:06:43.94752 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> datz | | 3-D | EL HGT | -20.028 | N29:57:52.41516 W090:22:56.03140 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> hams | | 3-D | EL HGT | 5.820 | N30:30:47.07133 W090:28:03.45357 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> mahs | | 3-D | EL HGT | 64.476 | N31:19:39.16104 W089:20:10.65121 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> maso | | 3-D | EL HGT | -13.084 | N30:22:30.81443 W089:36:49.92726 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> no14 | | 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 (degs): 5.0

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.

2013-08-07
Step 3 : Session Processing
84

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

"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 06.43 94752 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> datz | <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"/> hams | <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"/> mahc | <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"/> mase | <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: 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 data ©2013

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.

2013-08-07
Step 3 : Session Processing
85

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

"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 06.43 94752 | IGS08 (2005.0000) |
| <input checked="" type="checkbox"/> datz | <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"/> hams | <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"/> mahc | <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"/> mase | <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: 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 data ©2013

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.

2013-08-07
Step 3 : Session Processing
86

NOAA's National Geodetic Survey Positioning America for the Future

www.ngs.noaa.gov

"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 |
|------|-------------------------------------|------------|------------|----------------|----------------------------------|-------------------|
| 2126 | <input checked="" type="checkbox"/> | NONE | EL HGT | 14.019 | N30 58.00.80116 W089 48.34.33127 | IGS08 (2006 7507) |
| 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 |
|------|-------------------------------------|------------|------------|----------------|----------------------------------|-------------------|
| conv | <input checked="" type="checkbox"/> | 3-D | EL HGT | -5.932 | N30 28.33.28953 W090 05.43.94752 | IGS08 (2005 0000) |
| dstc | <input checked="" type="checkbox"/> | 3-D | EL HGT | -20.028 | N29 57.52.41516 W090 22.56.03140 | IGS08 (2005 0000) |
| hama | <input checked="" type="checkbox"/> | 3-D | EL HGT | 5.820 | N30 30.47.07133 W090 28.03.45357 | IGS08 (2005 0000) |
| mhst | <input checked="" type="checkbox"/> | 3-D | EL HGT | 64.476 | N31 19.39.16104 W089 20.10.65121 | IGS08 (2005 0000) |
| mzsc | <input checked="" type="checkbox"/> | 3-D | EL HGT | -13.084 | N30 22.30.81443 W089 36.49.92726 | IGS08 (2005 0000) |
| 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)

Topo Model: Piecewise Linear

Tropo Interval (s): 720

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.

2013-08-07 Step 3 : Session Processing 87

NOAA's National Geodetic Survey Positioning America for the Future

www.ngs.noaa.gov

"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 |
|------|-------------------------------------|------------|------------|----------------|----------------------------------|-------------------|
| 2126 | <input checked="" type="checkbox"/> | NONE | EL HGT | 14.019 | N30 58.00.80116 W089 48.34.33127 | IGS08 (2006 7507) |
| 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 |
|------|-------------------------------------|------------|------------|----------------|----------------------------------|-------------------|
| conv | <input checked="" type="checkbox"/> | 3-D | EL HGT | -5.932 | N30 28.33.28953 W090 05.43.94752 | IGS08 (2005 0000) |
| dstc | <input checked="" type="checkbox"/> | 3-D | EL HGT | -20.028 | N29 57.52.41516 W090 22.56.03140 | IGS08 (2005 0000) |
| hama | <input checked="" type="checkbox"/> | 3-D | EL HGT | 5.820 | N30 30.47.07133 W090 28.03.45357 | IGS08 (2005 0000) |
| mhst | <input checked="" type="checkbox"/> | 3-D | EL HGT | 64.476 | N31 19.39.16104 W089 20.10.65121 | IGS08 (2005 0000) |
| mzsc | <input checked="" type="checkbox"/> | 3-D | EL HGT | -13.084 | N30 22.30.81443 W089 36.49.92726 | IGS08 (2005 0000) |
| 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)

Topo Model: Piecewise Linear

Tropo Interval (s): 720

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.

2013-08-07 Step 3 : Session Processing 88

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

"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="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"/> | mscc | <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: 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.

2013-08-07
Step 3 : Session Processing
89

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

"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="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"/> | mscc | <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: 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.

2013-08-07
Step 3 : Session Processing
90

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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
    
```

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

2013-08-07 Step 3 : Session Processing 91

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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:       CN
    
```

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.

2013-08-07 Step 3 : Session Processing 92

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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
 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.

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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
 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-Hamm | 47.100 km | 1.3 cm | 3695 | 1.3% | 100.0% |
| mssc-covg | 47.602 km | 1.3 cm | 31676 | 2.4% | 98.3% |
| msh-2126 | 60.294 km | 1.4 cm | 2315 | 2.2% | 100.0% |

2013-08-07 Step 3 : Session Processing 94

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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
 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.

2013-08-07
Step 3 : Session Processing
95

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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
 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 ≤ 0.025 m or ≤ 2.5 cm.

2013-08-07
Step 3 : Session Processing
96

NOAA's **National Geodetic Survey** Positioning America for the Future www.ngs.noaa.gov

```

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 |
|------------|-----------|--------|-------|---------|--------|
| 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% |
| mshst-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 ≤ 2.5 cm.

2013-08-07 Step 3 : Session Processing 97

NOAA's **National Geodetic Survey** Positioning America for the Future www.ngs.noaa.gov

```

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

| BASELINE | LENGTH | RMS | OBS | OMITTED | FIXED |
|------------|-----------|--------|------|---------|--------|
| mshst-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 STANDARD ERROR OF UNIT WEIGHT should be ≈ 1 .

2013-08-07 Step 3 : Session Processing 98

NOAA's **National Geodetic Survey** Positioning America for the Future www.ngs.noaa.gov

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
 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.

2013-08-07
Step 3 : Session Processing
99

NOAA's **National Geodetic Survey** Positioning America for the Future www.ngs.noaa.gov

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 |
|-----------|-----------|--------|-------|---------|--------|
| 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.

2013-08-07
Step 3 : Session Processing
100

NOAA's **National Geodetic Survey** Positioning America for the Future www.ngs.noaa.gov

```

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 |
|-----------|-----------|--------|-------|---------|--------|
| 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 ≥80% OBS used implying ≤20% OBS omitted.

2013-08-07
Step 3 : Session Processing
101

NOAA's **National Geodetic Survey** Positioning America for the Future www.ngs.noaa.gov

```

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 |
|-----------|-----------|--------|-------|---------|--------|
| 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 ≥80%.

2013-08-07
Step 3 : Session Processing
102

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

```

US NATIONAL GRID DESIGNATOR: 15RYQ3818825234 (NAD 83)

+++++
CONSTRAINED MARKS
+++++

MARK: 2126 (covg) 2137 (dstr) 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 = GEOID(LCA Ref))

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

2013-08-07 Step 3 : Session Processing 103

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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: + Marks, Marks&CORS -

Map, Satellite, Terrain

MARKS: 2126, 2137

Add MARKS: covg, dstr, hamm, msht, mpos

MARKS ANTENNA HEIGHT EPH OBS FIXED RMS LAT LON HGT

| MARKS | ANTENNA | HEIGHT (m) | EPH TYPE | OBS (%) | FIXED (%) | RMS (m) | LAT (m) | LOH (m) | HGT (m) |
|------------|------------|------------|----------|---------|-----------|---------|---------|---------|---------|
| 2126 | TRM1249 00 | NONE | 2.000 | precise | 98.4 | 100.0 | 0.013 | 0.002 | 0.012 |
| 2013-08-07 | MS5921 00 | NONE | 2.000 | precise | 98.5 | 100.0 | | | |

2013-08-07 Step 3 : Session Processing 104

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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: + Marks Mark-sCORS -

Map Satellite Terrain

MARKS: 2126 2137

2013-08-07 105

The default results are the Session Solution now ...

| MARKS | ANTENNA | HEIGHT (m) | EPH TYPE | PRECISE | OBS (%) | FIXED (%) | RMS (m) | LAT (m) | LOJ (m) | HGT (m) |
|-------|-------------|------------|----------|---------|---------|-----------|---------|---------|---------|---------|
| 2126 | TRM41249.00 | NONE | 2.000 | precise | 98.4 | 100.0 | 0.013 | 0.002 | 0.002 | 0.012 |
| 2137 | MS5971.00 | NONE | 2.000 | precise | 98.5 | 100.0 | 0.013 | 0.002 | 0.002 | 0.012 |

Step 3 : Session Processing

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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

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

LEGEND: MARKS: meet Session Solution exceed preferences not included have error
 CORS: meet OPUS Solutions exceed preferences not included
 Baselines: + Marks Mark-sCORS -

Map Satellite Terrain

MARKS: 2126 2137

2013-08-07 106

... although the OPUS results are still available.

| MARKS | ANTENNA | HEIGHT (m) | EPH TYPE | PRECISE | OBS (%) | FIXED (%) | RMS (m) | LAT (m) | LOJ (m) | HGT (m) |
|-------|-------------|------------|----------|---------|---------|-----------|---------|---------|---------|---------|
| 2126 | TRM41249.00 | NONE | 2.000 | precise | 98.4 | 100.0 | 0.013 | 0.002 | 0.002 | 0.012 |
| 2137 | MS5971.00 | NONE | 2.000 | precise | 98.5 | 100.0 | 0.013 | 0.002 | 0.002 | 0.012 |

Step 3 : Session Processing

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

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

LEGEND
 MARKS: ● meet preferences ● exceed preferences ● not included ● have error
 CORS: ● meet preferences ● exceed preferences ● not included

Baselines: —

+ Marks Marks&CORS - Map Satellite Terrain

The baselines you'd selected are shown.

| MARKS | ANTENNA | HEIGHT (m) | EPH TYPE | OBS (%) | FIXED (%) | RMS (m) | LAT (m) | LOH (m) | HGT (m) |
|------------|-------------|------------|----------|---------|-----------|---------|---------|---------|---------|
| 2126 | TRM41249 00 | NONE | 2.000 | precise | 98.4 | 100.0 | 0.013 | 0.002 | 0.012 |
| 2013-08-07 | MS5971 00 | NONE | 2.000 | precise | 98.5 | 100.0 | | | |

2013-08-07 Step 3 : Session Processing

NOAA's National Geodetic Survey Positioning America for the Future www.ngs.noaa.gov

Session: 2006-274-A

"my project @ 2006-10-01"

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

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 (1361.06)
 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.

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

| MARKS | ANTENNA | HEIGHT (m) | EPH TYPE | OBS (%) | FIXED (%) | RMS (m) | LAT (m) | LOH (m) | HGT (m) |
|------------|-------------|------------|----------|---------|-----------|---------|---------|---------|---------|
| 2126 | TRM41249 00 | NONE | 2.000 | precise | 98.4 | 100.0 | 0.013 | 0.002 | 0.012 |
| 2013-08-07 | MS5971 00 | NONE | 2.000 | precise | 98.5 | 100.0 | | | |

2013-08-07 Step 3 : Session Processing

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 |
| 2137 | TRM55971.00 | NONE | 2.000 | precise | 98.5 | 100.0 | 0.015 | 0.003 | 0.001 |
| 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 | 7 | 7 | 8 | 8 | 8 | 7 | 8 | 8 | 8 | 7 | 7 | 7 | 7 | 8 | 7 | 8 | 8 | 7 | 0 | |
| 2137 | 7 | 7 | 7 | 7 | 8 | 7 | 8 | 7 | 7 | 8 | 8 | 9 | 9 | 8 | 8 | 8 | 8 | 9 | 8 | 8 | 8 | 7 | 7 | 7 | 8 | 8 | 8 | 7 |

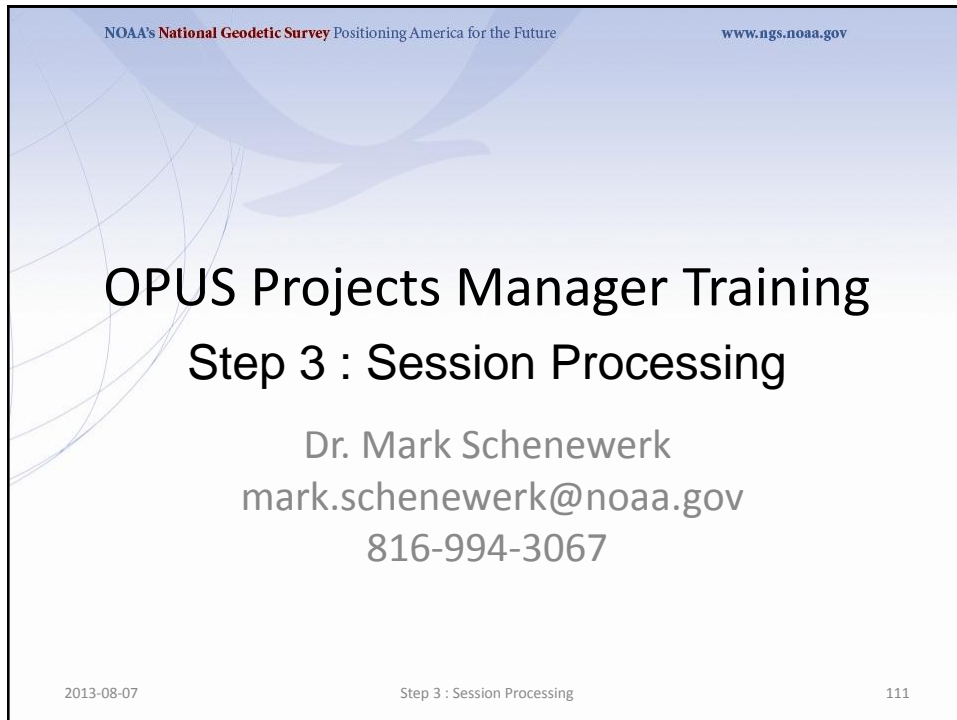
2013-08-07
Step 3 : Session Processing
109

Once satisfied with the OBS 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 |
| 2137 | TRM55971.00 | NONE | 2.000 | precise | 98.5 | 100.0 | 0.015 | 0.003 | 0.001 |
| 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 | 7 | 7 | 8 | 8 | 8 | 7 | 8 | 8 | 8 | 7 | 7 | 7 | 7 | 8 | 7 | 8 | 8 | 7 | 0 |
| 2137 | 7 | 7 | 7 | 7 | 8 | 7 | 8 | 7 | 7 | 8 | 8 | 9 | 9 | 8 | 8 | 8 | 9 | 8 | 8 | 8 | 7 | 7 | 7 | 8 | 8 | 8 | 7 |

2013-08-07
Step 3 : Session Processing
110



NOAA's **National Geodetic Survey** Positioning America for the Future www.ngs.noaa.gov

OPUS Projects Manager Training

Step 3 : Session Processing

Dr. Mark Schenewerk
mark.schenewerk@noaa.gov
816-994-3067

2013-08-07 Step 3 : Session Processing 111