Finding Plate Boundary Observatory GPS Location and Velocity Data from the UNAVCO Website

Name: _____

Resources:

You can find the PBO GPS stations that you are interested in, using the interactive map available via
https://www.unavco.org/instrumentation/networks/status/pbo

To get the data for each station, type "http://www.unavco.org/instrumentation/networks/status/pbo/overview/" then insert 4-letter station ID; for example, to access the data for PBO site P395, go to the following page:
https://www.unavco.org/instrumentation/networks/status/pbo/overview/P395

NAM08 reference frame -- velocities relative to the stable cratonic interior of the North American plate.
IGS08 reference frame -- velocities relative to a "no net rotation" reference frame in which all of the lithospheric plates are moving

Site	Decimal Latitude	Decimal Longitude	Elevation
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Site	North Velocity ± Uncert		East Velocity ± Uncert		Up Velocity ± Uncert	
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____

Instrumentation
- Help with Instrumentation
- **Network Monitoring**
  - All Networks & Stations
    - All Real-time GNSS/GPS Networks
  - PBO Networks
    - PBO GNSS/GPS Network
      - PBO GNSS/GPS Real-time
    - PBO Strainmeter Network
    - PBO Seismic Network
  - Polar GNSS/GPS Networks
    - ANET
    - GNET
    - Polar Networks State of Health
  - NASA-GGN GNSS/GPS Network
  - COCONet GNSS/GPS Network
    - COCONet GNSS/GPS Real-time
  - TLALOCNet GNSS/GPS Network
    - TLALOCNet GNSS/GPS Real-time
  - Principal Investigator GNSS/GPS Stations

Related Links
- *PBO Project Overview*

PBO Network Monitoring

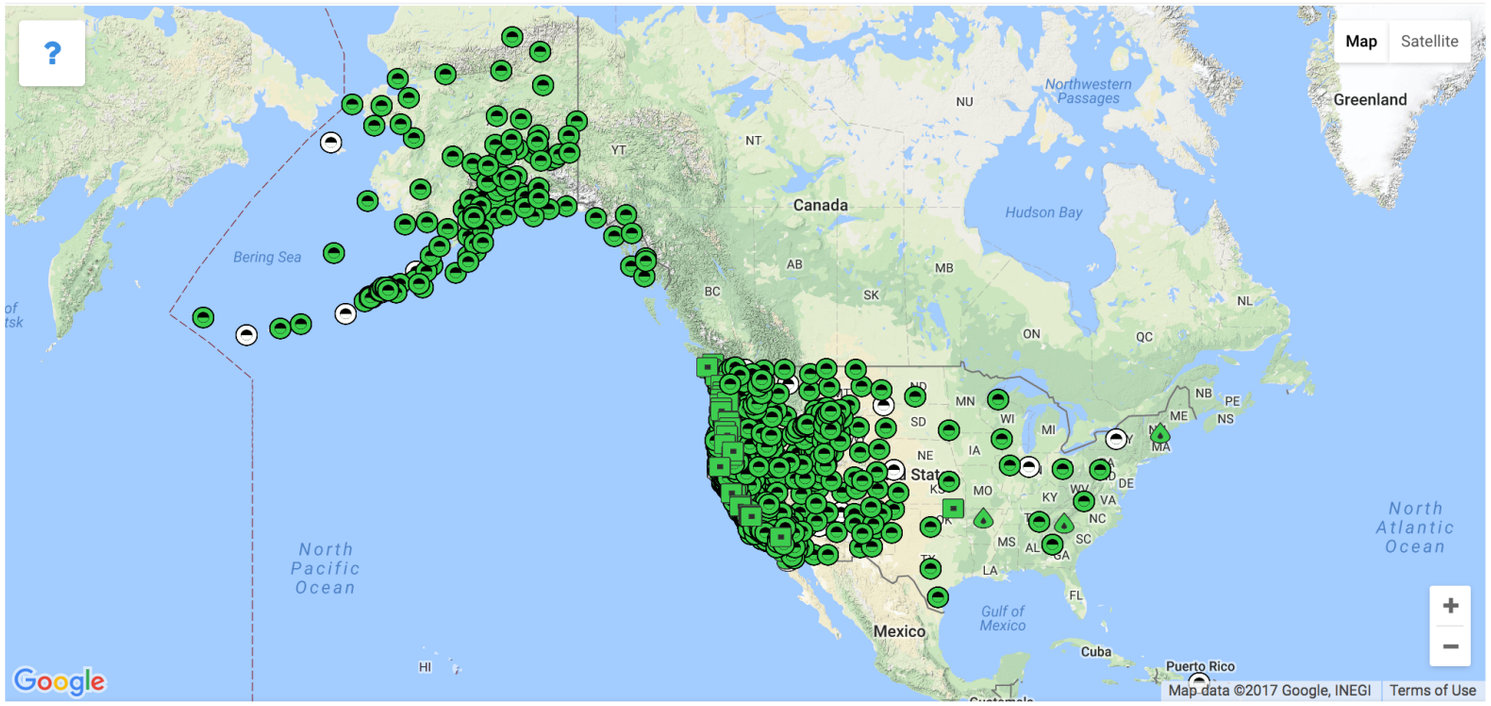
This section of our web site provides network monitoring (instrument state of health) information for the PBO network of instruments to our engineers, principal investigators, and the public at large. PBO is a network comprised of the following sensor instrumentation: GNSS/GPS, borehole strainmeters and seismometers, and long-baseline surface laser strainmeters. See the PBO project page for more information about the PBO network.

Please note: This area is not for data access, please see the Data section of our website to access data acquired from these instruments.

See also:
Show only PBO Real-time GNSS/GPS Stations

PBO NETWORK MAP - 1220 STATIONS DISPLAYED

Full Screen Views : Map | Table



Filter...

Localization						Status		
▲ ID	Project	Stati…	Classification	Station Name	Region	Station St…	Operation…	Health
AB01	PBO	GPS	GPS	AtkaIslandAK2007	AK	Installed	Operable	Healthy
AB02	PBO	GPS	GPS	Nikolski__AK2007	AK	Installed	Operable	Status Unavaila
AB04	PBO	GPS	GPS	Savoonga__AK2007	AK	Installed	Operable	Status Unavaila
AB06	PBO	GPS	GPS	FalsePass_AK2005	AK	Installed	Operable	Healthy
AB07	PBO	GPS	GPS	SandPoint_AK2004	AK	Installed	Operable	Healthy
AB08	PBO	GPS	GPS	Mekoryuk__AK2008	AK	Installed	Operable	Healthy
AB09	PBO	GPS	GPS	Razorback_AK2007	AK	Installed	Operable	Healthy
AB11	PBO	GPS	GPS	Nome_AnvilAK2006	AK	Installed	Operable	Healthy
AB12	PBO	GPS	GPS	Platinum__AK2007	AK	Installed	Operable	Healthy

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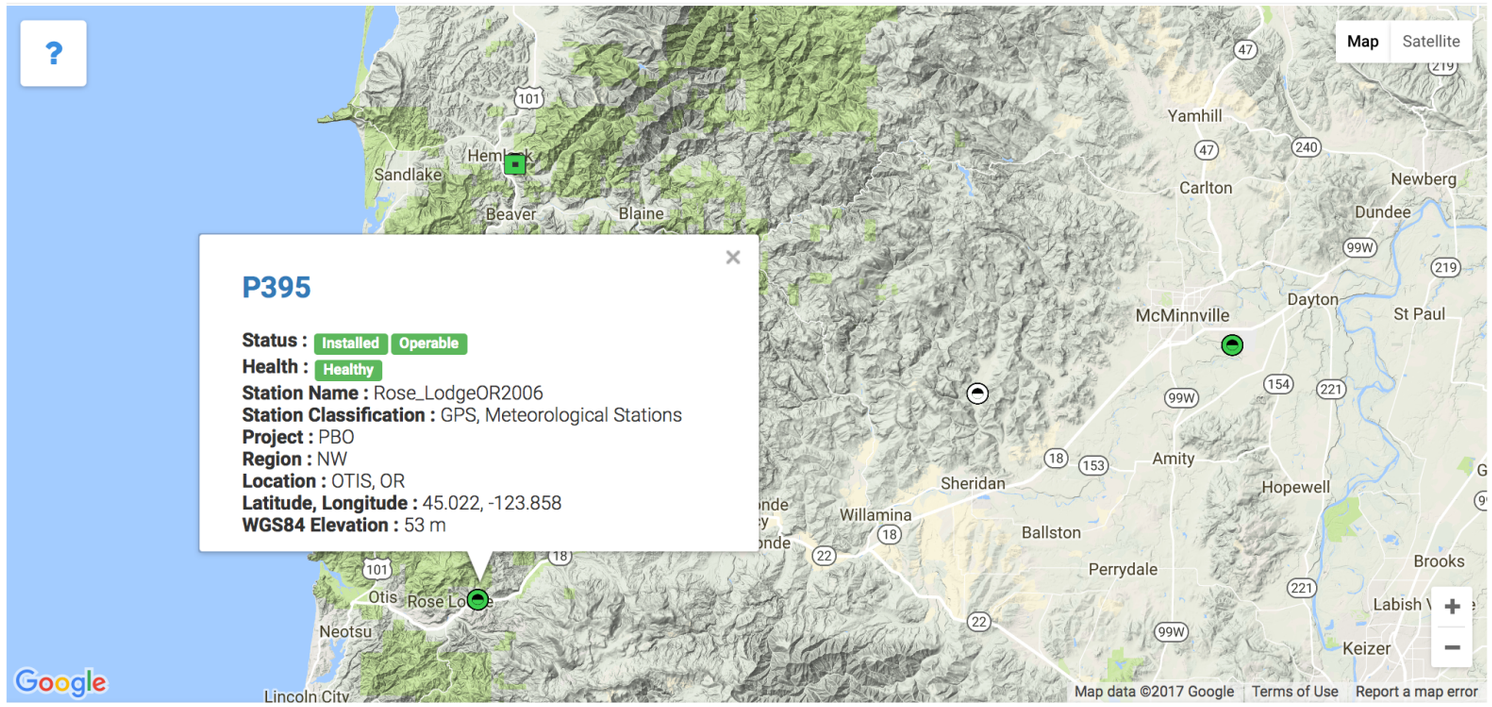
PBO NETWORK MAP - 1220 STATIONS DISPLAYED

Full Screen Views : Map | Table



Filter...

Localization						Status		
▲ ID	Project	Stati…	Classification	Station Name	Region	Station St…	Operation…	Health
AB01	PBO	GPS	GPS	AtkaIslandAK2007	AK	Installed	Operable	Healthy
AB02	PBO	GPS	GPS	Nikolski__AK2007	AK	Installed	Operable	Status Unavail
AB04	PBO	GPS	GPS	Savoonga__AK2007	AK	Installed	Operable	Status Unavail
AB06	PBO	GPS	GPS	FalsePass_AK2005	AK	Installed	Operable	Healthy
AB07	PBO	GPS	GPS	SandPoint_AK2004	AK	Installed	Operable	Healthy
AB08	PBO	GPS	GPS	Mekoryuk__AK2008	AK	Installed	Operable	Healthy
AB09	PBO	GPS	GPS	Razorback_AK2007	AK	Installed	Operable	Healthy
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Instrumentation

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Related Links

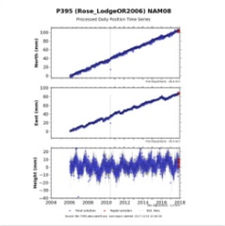
- *PBO Project Overview*

P395 - Overview | PBO Station Page

Overview | Data Products | Station Health | Maintenance | Photos

P395 Overview

Station Position



Station Type: GPS

Station Information

4-Char ID:	P395 - GPS
Station Status:	Installed / Operable
Station Name:	Rose_LodgeOR2006
Project:	PBO
Location (City, State):	OTIS, OR
Latitude, Longitude:	45.022, -123.858
Elevation:	53 m
Monument Type:	DDBM
Station Install Date:	2006/01/24
Monument Install Date:	2006/01/24
Current Status:	OK

Station Data

Station Report:	Text File
Installation Report:	VPN or Internal Access Only
Time Series Data:	NAM08 CSV | IGS08 CSV
Time Series Plot Viewer:	Nearby GPS Plots
Realtime Dataflow:	Available
Meteorologic Plots:	Available

Colocated Instruments

P395:	GPS_RECEIVER
P395:	WEATHER_STATION

GPS Monument Coordinates

Approximate Geographic Coordinates

lat/lon/elev (d/d/m)*:	45.02228	-123.85753	53

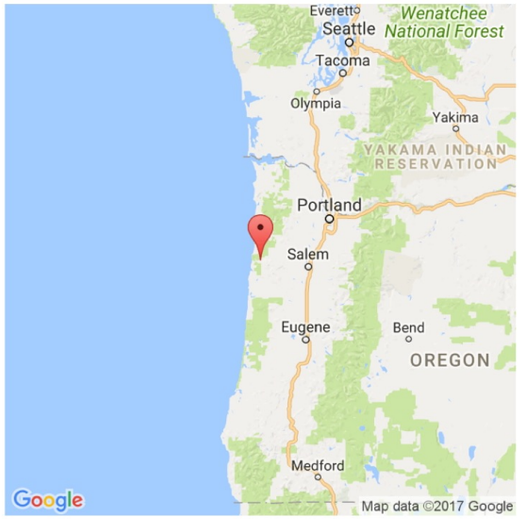
IGS08 Reference Frame

X/Y/Z (m/m/m):	-2515929.3087	-3750099.6779	4489136.3225
Ref Epoch:**	2017.852		

*Approximate latitude and longitude are in decimal degrees and elevation is in meters, where "elevation" is the vertical topocentric distance from the reference ellipsoid to the antenna reference point (ARP). See CORS for legal positions.

**Station position based on the most recent full 7 days of final orbit solutions available, with the reported epoch being the middle day of this 7 day period.

Map



Local Weather Data

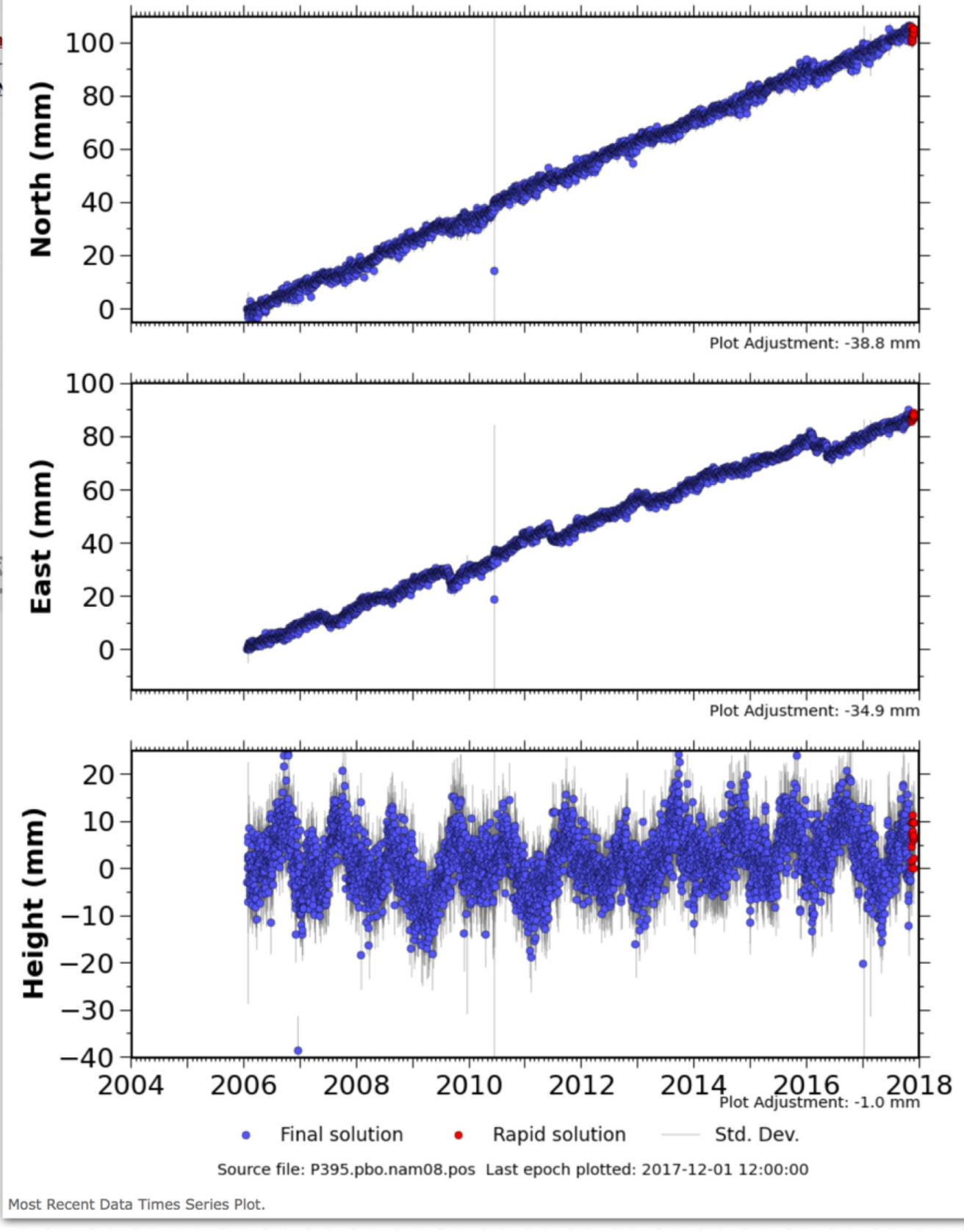
METAR: KPFC	**DATE:** unavailable
COND: unavailable	**TEMP:** unavailable
HUMIDITY: unavailable	**WIND:** unavailable

Station Health Details

SYSTEM	DATE	DETAIL
Last Data Archived	20171204 00:10	p3953370.17_
Last Data Received	20171204 12:46	P395201712041000f.BNX
Last Rx Comms	20171204 12:42	V1: 0.0 V2: 12.9 27.0 C

P395 (Rose_LodgeOR2006) NAM08

Processed Daily Position Time Series

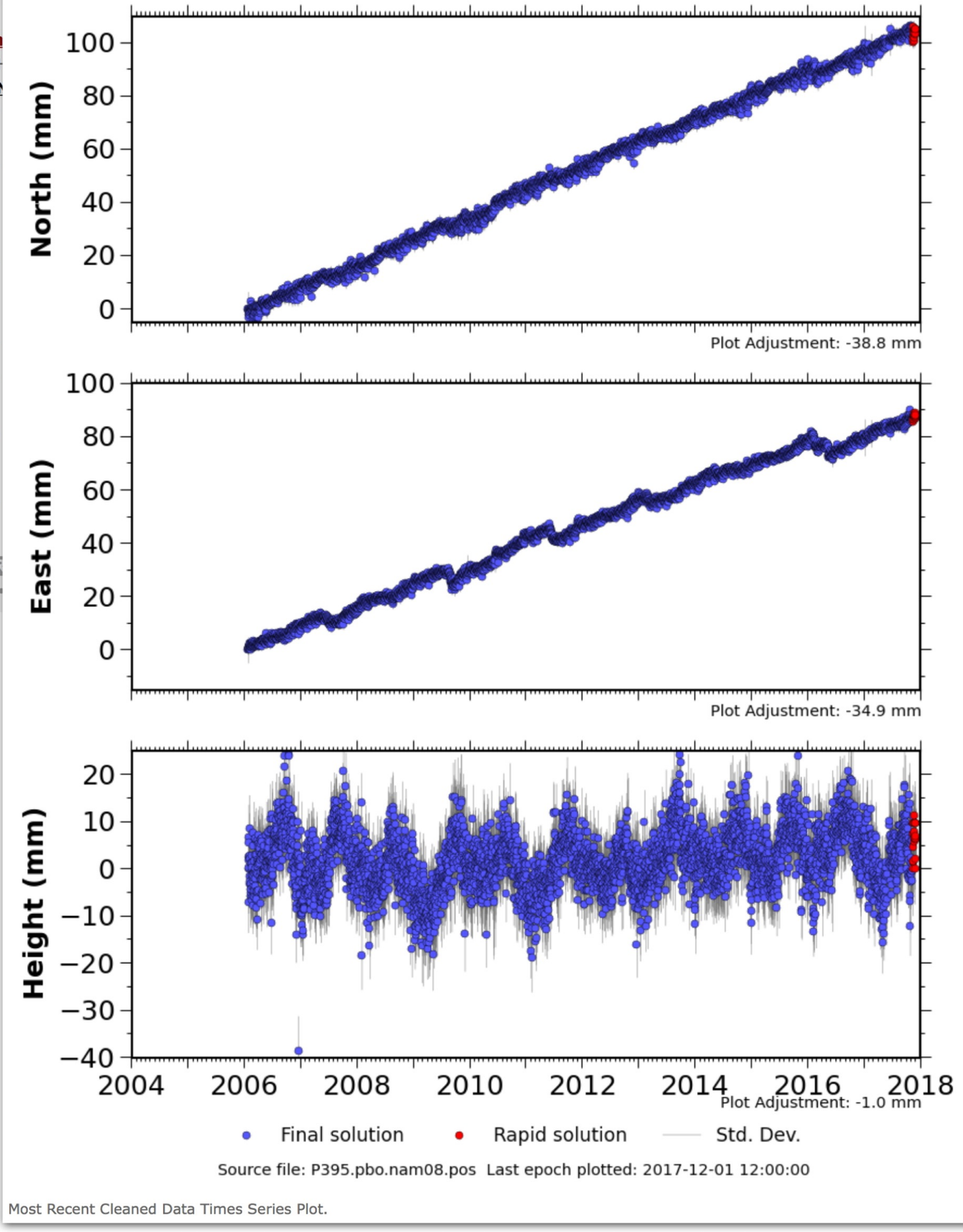


Source file: P395.pbo.nam08.pos Last epoch plotted: 2017-12-01 12:00:00

Most Recent Data Times Series Plot.

P395 (Rose_LodgeOR2006) NAM08

Processed Daily Position Time Series - Cleaned (Outliers Removed)

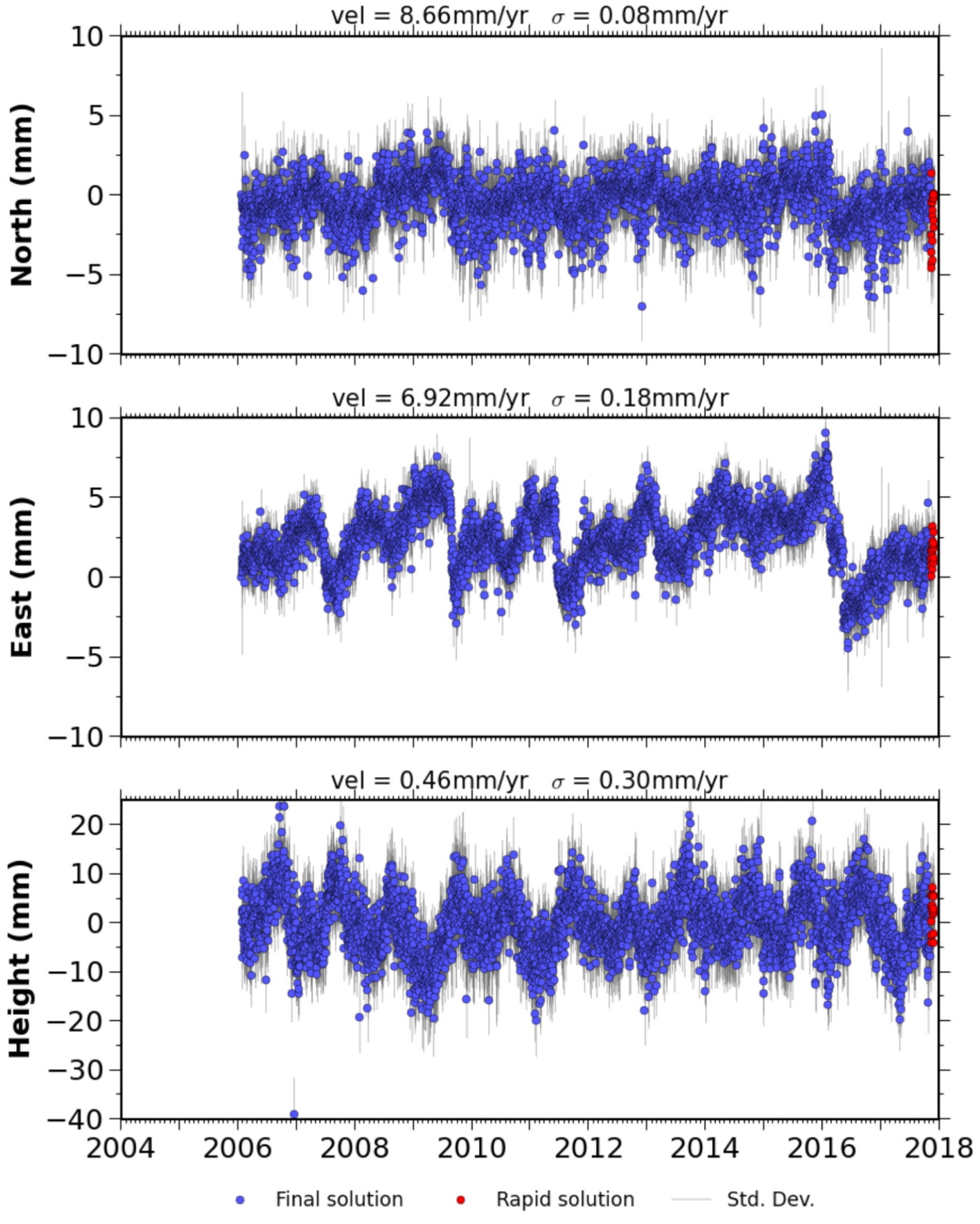


Source file: P395.pbo.nam08.pos Last epoch plotted: 2017-12-01 12:00:00

Most Recent Cleaned Data Times Series Plot.

P395 (Rose_LodgeOR2006) NAM08

Processed Daily Position Time Series - Cleaned (Outliers Removed) & Detrended



Source file: P395.pbo.nam08.pos Last epoch plotted: 2017-12-01 12:00:00

Most Recent Detrended Data Times Series Plot.

GPS Monument Coordinates

Approximate Geographic Coordinates

lat/lon/elev (d/d/m)*:	45.02228	-123.85753	53

IGS08 Reference Frame

X/Y/Z (m/m/m):	-2515929.3087	-3750099.6779	4489136.3225
Ref Epoch:**	2017.852		

*Approximate latitude and longitude are in decimal degrees and elevation is in meters, where "elevation" is the vertical topocentric distance from the reference ellipsoid to the antenna reference point (ARP). See CORS for legal positions.

**Station position based on the most recent full 7 days of final orbit solutions available, with the reported epoch being the middle day of this 7 day period.

Station Data

Station Report:	Text File
Installation Report:	VPN or Internal Access Only
Time Series Data:	NAM08 CSV | IGS08 CSV
Time Series Plot Viewer:	Nearby GPS Plots
Realtime Dataflow:	Available
Meteorologic Plots:	Available

PBO Station Position Time Series.
Format Version, 1.2.0
Reference Frame, NAM08
4-character ID, P395
Station name, Rose_LodgeOR2006
Begin Date, 2006-01-24
End Date, 2017-12-02
Release Date, 2017-12-03
Source file, P395.pbo.nam08.pos
Offset from source file, 38.78 mm North, 34.85 mm East, 3.98 mm Vertical
Reference position, 45.0222796408 North Latitude, -123.8575267537 East Longitude, 53.04555
meters elevation
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Instrumentation
- Help with Instrumentation
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  - All Networks & Stations
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    - PBO GNSS/GPS Network
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  - NASA-GGN GNSS/GPS Network
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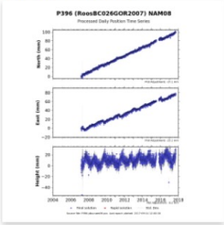
Related Links
- *PBO Project Overview*

P396 - Overview | PBO Station Page

Overview | Data Products | Station Health | Maintenance | Photos

P396 Overview

Station Position



Station Type: GPS

Station Information

4-Char ID:	P396 - GPS
Station Status:	Installed / Operable
Station Name:	RoosBC026GOR2007
Project:	PBO
Location (City, State):	Cloverdale, OR
Latitude, Longitude:	45.309, -123.823
Elevation:	232 m
Monument Type:	Wellhead
Station Install Date:	2006/02/24
Monument Install Date:	2006/02/24
Current Status:	OK

Station Data

Station Report:	Text File
Installation Report:	VPN or Internal Access Only
Time Series Data:	NAM08 CSV | IGS08 CSV
Time Series Plot Viewer:	Nearby GPS Plots
Realtime Dataflow:	Available
Meteorologic Plots:	Not Available

Colocated Instruments

P396:	GPS_RECEIVER
B026:	GTSM_STRAINMETER
B026:	SEISMOMETER
B026:	SETRA_PRESSURE_SENSOR

Map

Local Weather Data

METAR: KS47	**DATE:** unavailable
COND: unavailable	**TEMP:** unavailable
HUMIDITY: unavailable	**WIND:** unavailable

Station Health Details

SYSTEM	DATE	DETAIL
Last Data Archived	20171203 12:01	P396201712020000f.BNX
Last Data Received	20171204 12:46	P396201712041000f.BNX
Last Rx Comms	20171204 12:21	V1: 0.17 V2: 13.31 21.0 C

GPS Monument Coordinates

Approximate Geographic Coordinates

lat/lon/elev (d/d/m)*:	45.30951	-123.82289	55

IGS08 Reference Frame

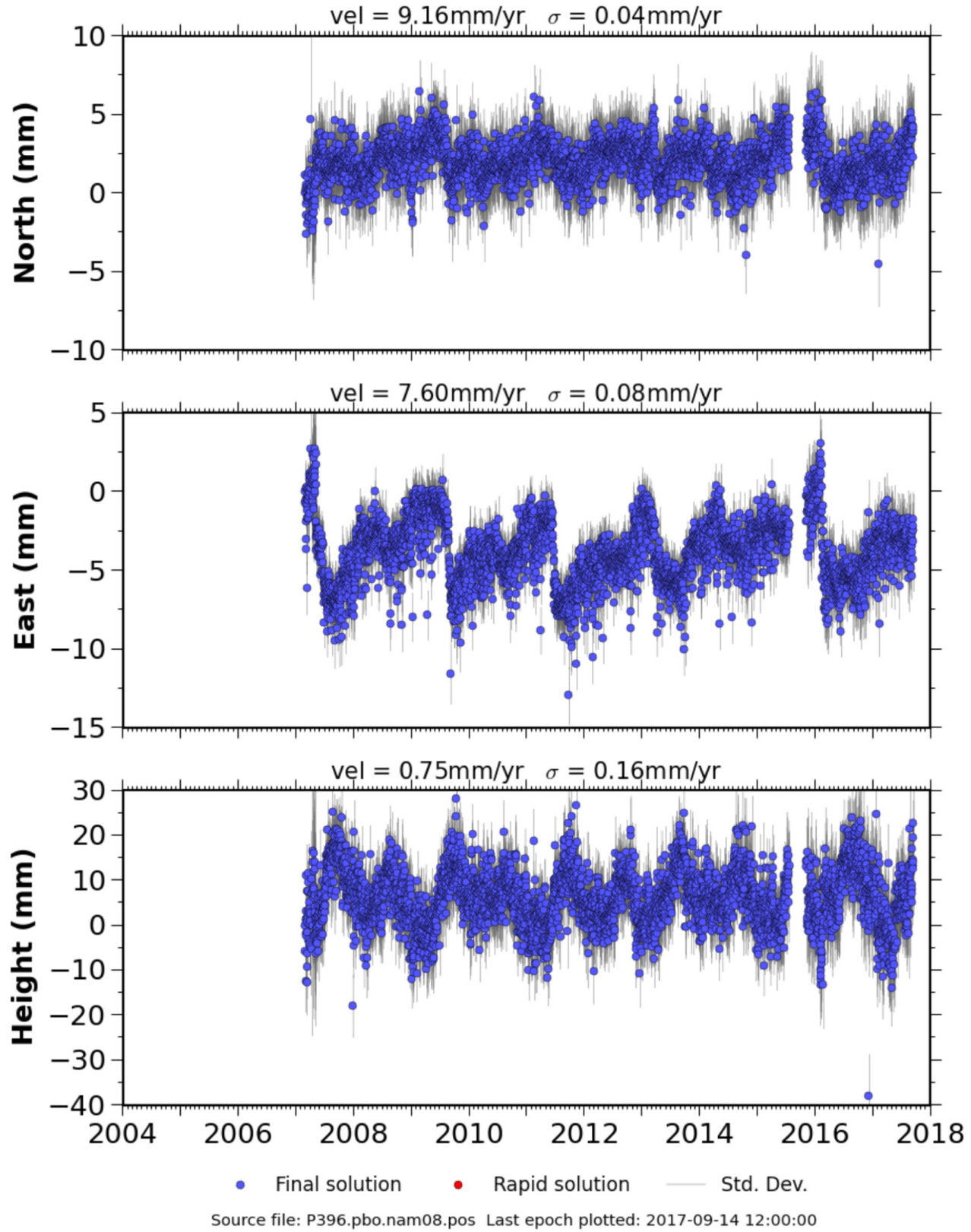
X/Y/Z (m/m/m):	-2501062.0884	-3732814.2062	4511644.2296
Ref Epoch:**	2017.693		

*Approximate latitude and longitude are in decimal degrees and elevation is in meters, where "elevation" is the vertical topocentric distance from the reference ellipsoid to the antenna reference point (ARP). See CORS for legal positions.

**Station position based on the most recent full 7 days of final orbit solutions available, with the reported epoch being the middle day of this 7 day period.

P396 (RoosBC026GOR2007) NAM08

Processed Daily Position Time Series - Cleaned (Outliers Removed) & Detrended



Source file: P396.pbo.nam08.pos Last epoch plotted: 2017-09-14 12:00:00

Most Recent Detrended Data Times Series Plot.

Instrumentation
- Help with Instrumentation
- **Network Monitoring**
  - All Networks & Stations
    - All Real-time GNSS/GPS Networks
  - PBO Networks
    - PBO GNSS/GPS Network
      - PBO GNSS/GPS Real-time
    - PBO Strainmeter Network
    - PBO Seismic Network
  - Polar GNSS/GPS Networks
    - ANET
    - GNET
    - Polar Networks State of Health
  - NASA-GGN GNSS/GPS Network
  - COCONet GNSS/GPS Network
    - COCONet GNSS/GPS Real-time
  - TLALOCNet GNSS/GPS Network
    - TLALOCNet GNSS/GPS Real-time
  - Principal Investigator GNSS/GPS Stations

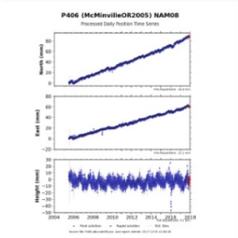
Related Links
- *PBO Project Overview*

P406 - Overview | PBO Station Page

Overview | Data Products | Station Health | Maintenance | Photos

P406 Overview

Station Position



Station Type: GPS

Station Information

4-Char ID:	P406 - GPS
Station Status:	Installed / Operable
Station Name:	McMinvilleOR2005
Project:	PBO
Location (City, State):	McMinnville, OR
Latitude, Longitude:	45.190, -123.152
Elevation:	27 m
Monument Type:	DDBM
Station Install Date:	2005/07/07
Monument Install Date:	2005/07/07
Current Status:	OK

Station Data

Station Report:	Text File
Installation Report:	VPN or Internal Access Only
Time Series Data:	NAM08 CSV | IGS08 CSV
Time Series Plot Viewer:	Nearby GPS Plots
Realtime Dataflow:	Available
Meteorologic Plots:	Not Available

Colocated Instruments

P406:	GPS_RECEIVER

GPS Monument Coordinates

Approximate Geographic Coordinates

lat/lon/elev (d/d/m)*:	45.19037	-123.15226	27

IGS08 Reference Frame

X/Y/Z (m/m/m):	-2462331.7191	-3769689.1678	4502302.9565
Ref Epoch:**	2017.852		

*Approximate latitude and longitude are in decimal degrees and elevation is in meters, where "elevation" is the vertical topocentric distance from the reference ellipsoid to the antenna reference point (ARP). See CORS for legal positions.

**Station position based on the most recent full 7 days of final orbit solutions available, with the reported epoch being the middle day of this 7 day period.

Map

Local Weather Data

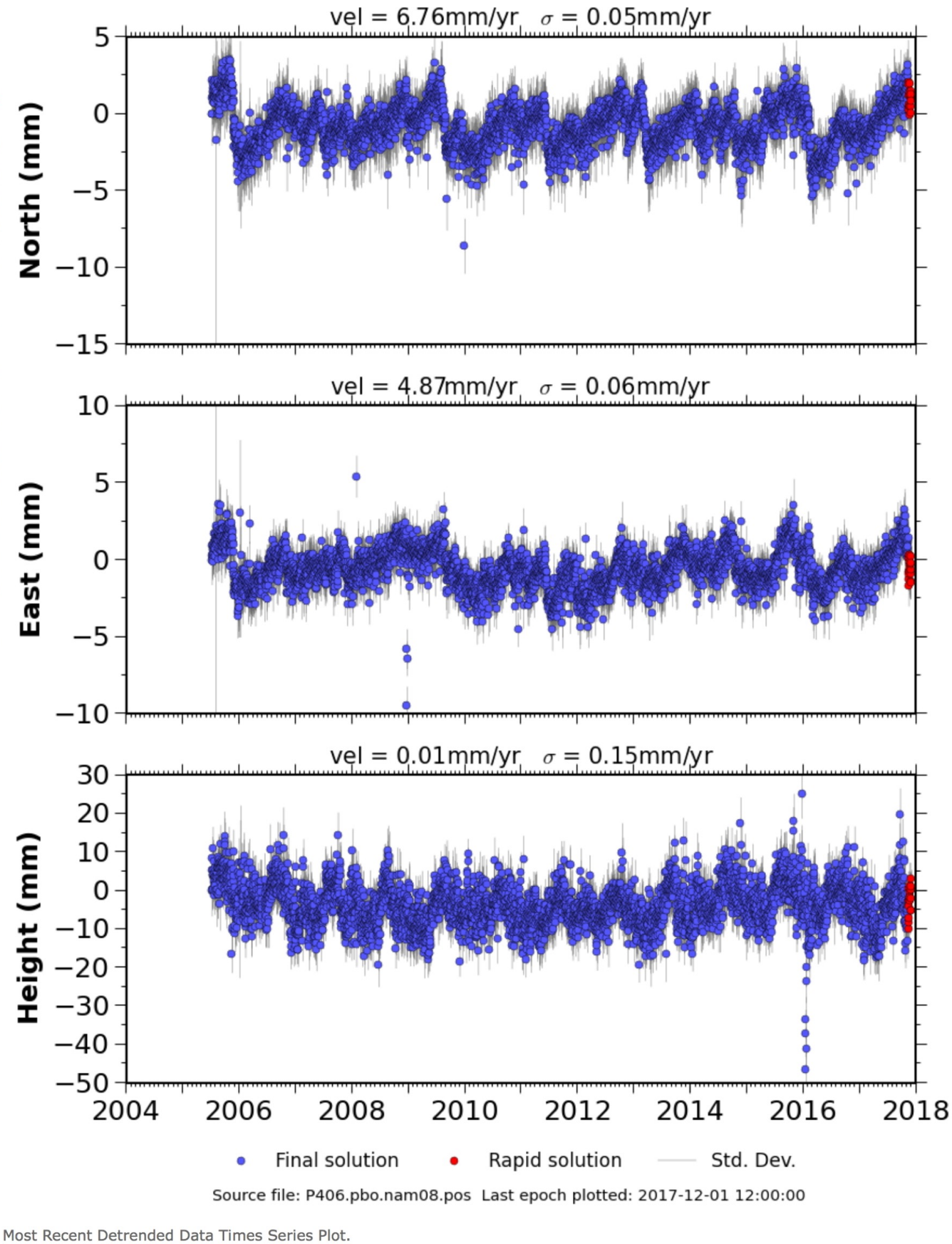
METAR: KMMV	**DATE:** unavailable
COND: unavailable	**TEMP:** unavailable
HUMIDITY: unavailable	**WIND:** unavailable

Station Health Details

SYSTEM	DATE	DETAIL
Last Data Archived	20171204 00:44	p4063370.17_
Last Data Received	20171204 11:45	P406201712040900f.BNX
Last Rx Comms	20171204 11:20	V1: 12.525 V2: 0.0 16.0 C

P406 (McMinvilleOR2005) NAM08

Processed Daily Position Time Series - Cleaned (Outliers Removed) & Detrended



Source file: P406.pbo.nam08.pos Last epoch plotted: 2017-12-01 12:00:00

Most Recent Detrended Data Times Series Plot.

Finding Plate Boundary Observatory GPS Location and Velocity Data from the UNAVCO Website

Name: _____

Resources:

You can find the PBO GPS stations that you are interested in, using the interactive map available via
https://www.unavco.org/instrumentation/networks/status/pbo

To get the data for each station, type "http://www.unavco.org/instrumentation/networks/status/pbo/overview/" then insert 4-letter station ID; for example, to access the data for PBO site P395, go to the following page:
https://www.unavco.org/instrumentation/networks/status/pbo/overview/P395

NAM08 reference frame -- velocities relative to the stable cratonic interior of the North American plate.
IGS08 reference frame -- velocities relative to a "no net rotation" reference frame in which all of the lithospheric plates are moving

Site	Decimal Latitude	Decimal Longitude	Elevation
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Site	North Velocity ± Uncert		East Velocity ± Uncert		Up Velocity ± Uncert	
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____

Infinitesimal strain from GPS velocity data from sites in a triangular array

October 18, 2012

Send corrections, suggestions, comments to Vince_Cronin@baylor.edu

Instructions

(1) Input the name. location, and velocity data from three GPS sites in the yellow cells.

(2) When the required data have been input, the answers will appear in the Output Data section (blue cells).

Initial Input Data

Site Name	Longitude west is negative	Latitude south is negative	E velocity (mm/yr)	E vel uncert (mm/yr)	N velocity (mm/yr)	N vel uncert (mm/yr)

offline_content_module_live4036/pages/unit4/resources/gps_strain_calculator_excel.v3.xls

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Instructions

(1) Input the name. location, and velocity data from three GPS sites in the yellow cells.

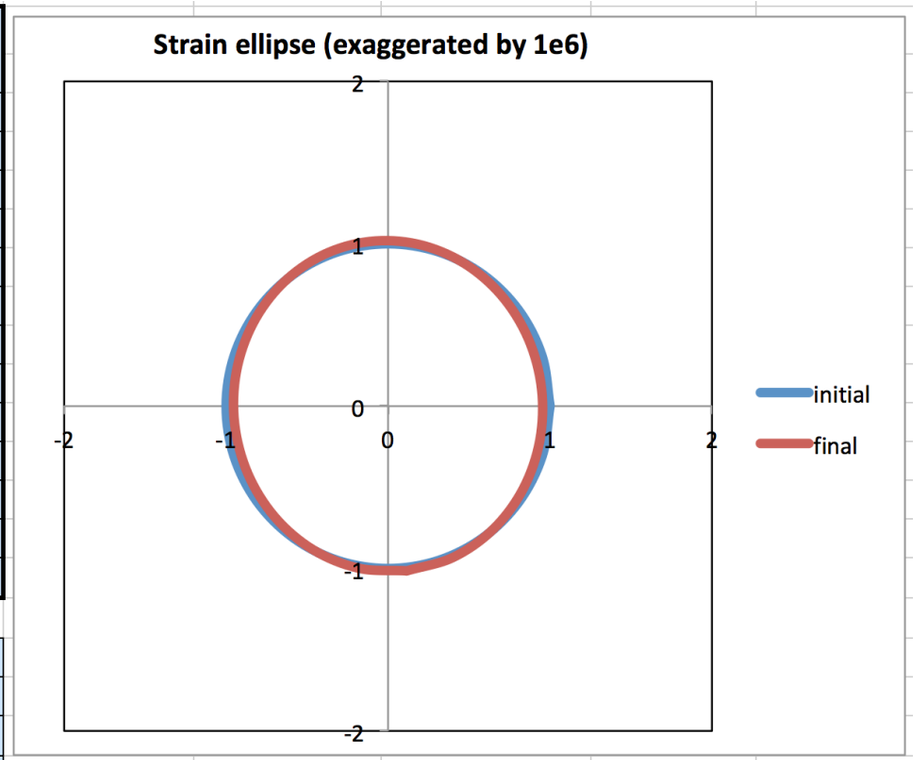
(2) When the required data have been input, the answers will appear in the Output Data section (blue cells).

Initial Input Data

Site Name	Longitude west is negative	Latitude south is negative	E velocity (mm/yr)	E vel uncert (mm/yr)	N velocity (mm/yr)	N vel uncert (mm/yr)
P395	-123.857530000	45.022800000	6.92	0.18	8.66	0.08
P396	-123.822890000	45.309510000	7.6	0.08	9.16	0.04
P406	-123.152260000	45.190370000	4.87	0.06	6.76	0.05

offline_content_module_live4036/pages/unit4/resources/gps_strain_calculator_excel.v3.xls

Primary Output Data			
Translation Vector			
E component ± uncert (m/yr)	0.0065	±	6.86375E-05
N component ± uncert (m/yr)	0.0082	±	3.41565E-05
Azimuth (degrees)	38.3		
Speed (m/yr)	0.0104		
Rotation ± uncertainty (degrees/yr)	-0.00000190	±	0.00000018
Rotation ± uncertainty (nano-rad/yr)	-33.1670	±	3.1089
Direction of rotation	clockwise		
Max horizontal extension (e1H) (nano-strain)	20.4533		
Azimuth of S1H (degrees)	173.5382	or	353.5382315
Min horizontal extension (e2H) (nano-strain)	-46.1651		
Azimuth of S2H (degrees)	83.5382	or	263.5382315
Max shear strain (nano-strain)	66.6184		
Area strain (nano-strain)	-25.7119		



Other Output			
Lagrangian strain-rate tensor			
εxx ± uncert (nano-strain)	-45.3214	±	1.9991
εxy ± uncert (nano-strain)	-7.4496	±	3.1089
εyy ± uncert (nano-strain)	19.6095	±	2.7768
First invariant of strain-rate tensor (nano-strain)	-25.7119		
Second invariant of strain-rate tensor (nano-strain)	-9.44227E-07		
Third invariant of strain-rate tensor (nano-strain)	-9.44227E-07		

see “**Explanation of Strain Calculator Output Data**” at offline_content_module_live4036/common/files/explanation_gps_strain_calcula.v3.docx