Notice to GAGE GNSS Data Product Users: Re-scaling of the Standard Deviation in GNSS Position Time Series

Tuesday, October 6, 2020
Update: Monday, October 12, 2020

To users of GAGE GNSS Time Series Position (*.POS) files,*.CSV files derived from .POS files, and SINEX (.SNX) files.

On October 6 2019 the GAGE GNSS Analysis Center transitioned from processing GNSS data with Gipsy GOA-II (v6.4) to processing with GipsyX 1.2. In doing so, the observation weighting methodology switched from elevation-independent (or constant) to elevation-angle-dependent weighting. As a result, the standard error of the positions generated using GipsyX (v1.2) from October 6th 2019 onwards have increased by factors of 1.6552, 1.6655, and 1.7509 in the north, east and vertical components, respectively, compared to those generated prior to October 6 2019 using GOA (6.4). The variance scaling factor will be reduced from 4.8 applied to the GOA (6.4) SINEX files to 1.66 for the GipsyX SINEX files. The component standard error ratios were calculated by taking the means of the standard deviation of the north, east, and vertical components in 340-day time windows before and after October 6th, 2020.

To make the standard errors consistent across the entire span of the position time-series, the GAGE ACC will be applying a new scale factor to the standard errors; a scaling factor is already applied when generating the final time series product that is based on the loosely constrained Gipsy processing, so this is simply the application of a different scaling factor before and after October 6th 2019. This notice will be updated when the exact switch over date is established.

Note, the actual positions in the POS, CSV, and SINEX files are not affected in any way and will not change.
2020 October 12: Status Update
The change in sigma scaling has been implemented in the position files. The new scaling will apply according to the following schedule.
Rapids: GPS Week 2126 Day 1, (October 5 2020)
Finals: GPS Week 2124
3 month supplementals: GPS Week 2113
6 month supplementals: GPS Week 2100

Affected Data Products:
This issue only affects POS, CSV and SINEX files based on Central Washington University (CWU) and distributed from October 6 2019 onwards. Examples of affected position time series files (using AB04 in NAM14 as an example) are :

- AB04.cwu.rapid_nam14.pos
- AB04.cwu.final_nam14.pos
- AB04.cwu. nam14.pos
- AB04.cwu. nam14.csv

The corresponding files in IGS08, IGS14 and NAM08 are affected similarly. SINEX files generated from October 6 2019, GPS week 2074, day 0 will also be replaced. Examples of these files , for week 274 , day 0 are:

- cwu20740.fanet_ant14.rms.gz
- cwu20740.fanet_ant14.snx.gz
- cwu20740.fanet_sub14.snx.gz
- cwu20740.final_lse14.snx.gz
- cwu20740.final_nam14.rms.gz
- cwu20740.final_nam14.snx.gz
- cwu20740.suppl_lse14.snx.gz
- cwu20740.suppl_nam14.rms.gz
- Cwu20740.suppl_nam14.snx.gz

UNAVCO will retain all files that were distributed with elevation-independent weighting in our long-term storage area. Users will be able to retrieve the original files upon request, email should be sent to data@unavco.org.

We sincerely apologize for any inconvenience caused by this issue. Please contact us if you have any questions: data@unavco.org.