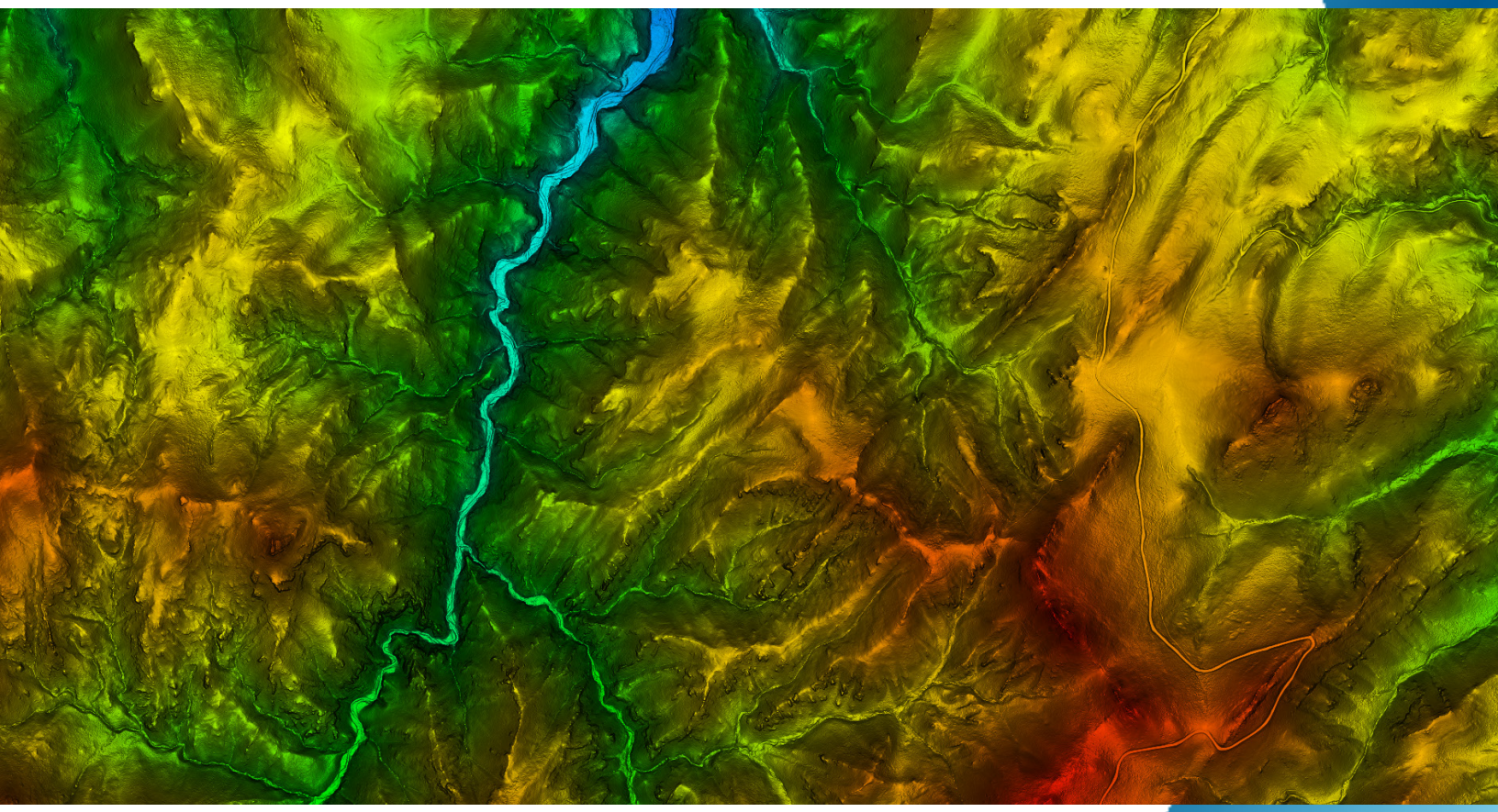
NV5 GEOSPATIAL



MT Statewide Phase 5 D23 LIDAR PROCESSING REPORT

2025

Submitted: January 13, 2026

Project ID: 300119
Work Unit: 300897

Prepared for:

USGS
science for a changing world

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1. Summary / Scope

1.1. Summary

This report contains a summary of the MT Statewide Phase 5 D23, Work Unit 300897 lidar acquisition task order, issued by USGS under their Contract 140G0221D0012 on June 25, 2023. The task order yielded a work unit area covering 2,981 square miles over Montana at Quality Level 2. The intent of this document is only to provide specific validation information for the data acquisition/collection, processing, and production of deliverables completed as specified in the task order.

1.2. Scope

Aerial topographic lidar was acquired using state of the art technology along with the necessary surveyed ground control points (GCPs) and airborne GPS and inertial navigation systems. The aerial data collection was designed with the following specifications listed in Table 1 below.

Table 1. Originally Planned Lidar Specifications

Average Point Density	Flight Altitude (AGL)	Field of View	Minimum Side Overlap	RMSEz
2 pts / m2	2700 m	58.5°	20%	≤ 10 cm

1.3. Coverage

The work unit boundary covers 2,981 square miles over Montana. Work unit extents are shown in Figure 1.

1.4. Duration

Lidar data was acquired from July 20, 2023 to August 25, 2023 in 15 total lifts. See “Section: 2.4. Time Period” for more details.

1.5. Issues

There are areas that have been designated as low confidence due a lower density of ground points. These areas have been identified and a low-confidence polygon was created to locate these spots within the work unit.

MT Statewide Phase 5 D23 Work Unit 300897 Projected Coordinate System: Montana State Plane Horizontal Datum: NAD83 (2011) Vertical Datum: NAVD88 (GEOID 18) Units: Meters	
Lidar Point Cloud	Classified Point Cloud in .LAZ 1.4 format
Rasters	• 1-meter Hydro-flattened Bare Earth Digital Elevation Model (DEM) in GeoTIFF format • 1-meter Intensity images in GeoTIFF format • 2-meter Maximum Surface Height Raster • 2-meter Swath Seperation Images
Vectors	Shapefiles (*.shp) • Project Boundary • Lidar Tile Index • Low Confidence Polygon Geodatabase (*.gdb) • Flightlines Swath Geopackage (*.gpkg) • Calibration and QC Checkpoints (NVA/VVA) • Continuous Hydro-flattened Breaklines
Reports	Reports in PDF format • Focus on Delivery • Focus on Accuracy • Survey Report • Processing Report
Metadata	XML Files (*.xml) • Breaklines • Classified Point Cloud • DEM • Intensity Imagery

MT Statewide Phase 5 D23
Work Unit 300897 Boundary

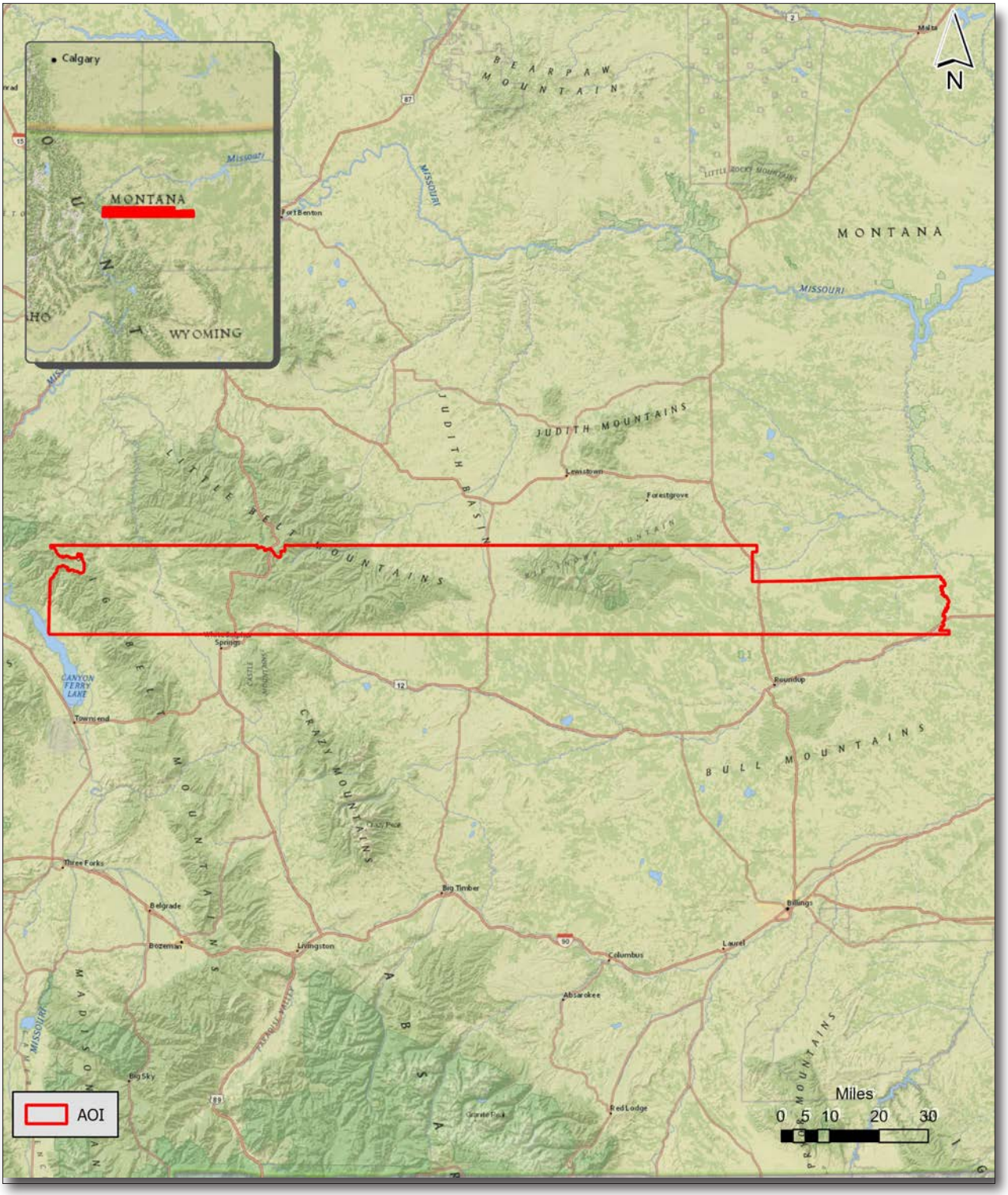


Figure 1. Work Unit Boundary

2. Planning / Equipment

2.1. Flight Planning

Flight planning was based on the unique project requirements and characteristics of the project site. The basis of planning included: required accuracies, type of development, amount / type of vegetation within project area, required data posting, and potential altitude restrictions for flights in project vicinity.

Detailed project flight planning calculations were performed for the project using RiPARAMETER planning software.

2.2. Lidar Sensor

NV5 Geospatial utilized Riegl VQ1560iiS lidar sensors (Figure 2), serial number(s) 3541, 3543, 4051, and 4891, for data acquisition.

The Riegl 1560iiS system (System ID: R15S) is a dual channel waveform processing airborne scanning system with a pulse repetition rate of 4MHz, or up to 3900m AGL at a pulse repetition rate of 540kHz. This improved range increases the system's productivity. The system also utilizes a Multi-Pulse in the Air option (MPIA) and an integrated IMU/GNSS unit.

A brief summary of the aerial acquisition parameters for the project are shown in the lidar System Specifications in Table 2.

Table 2. Lidar System Specifications

		Riegl VQ1560iiS
Terrain and Aircraft Scanner	Flying Height	2700 m
	Recommended Ground Speed	140 kts
Scanner	Field of View	58.5°
	Scan Rate Setting Used	2 x 71.1 Hz
Laser	Laser Pulse Rate Used	800 kHz
	Multi Pulse in Air Mode	Yes
Coverage	Full Swath Width	3025 m
	Line Spacing	0.983 m
Point Spacing and Density	Average Nominal Point Spacing	0.71 m
	Average Point Density	2 pts / m^2

Figure 2. Riegl VQ1560iiS Lidar Sensor



2.3. Aircraft

All flights for the project were accomplished through the use of customized aircraft. Plane type and tail numbers are listed below.

Lidar Collection Planes

- Cessna 208B, Tail Number(s): N529AB
- Piper PA-31-325, Tail Number(s): N22GE
- Cessna 208, Tail Number(s): N124RF
- Cessna Caravan, Tail Number(s): N108RF

These aircraft provided an ideal, stable aerial base for lidar acquisition. These aerial platforms have relatively fast cruise speeds, which are beneficial for project mobilization / demobilization while maintaining relatively slow stall speeds, proving ideal for collection of high-density, consistent data posting using a state-of-the-art lidar system. NV5 Geospatial's operating aircraft can be seen in Figure 3 below.

Figure 3. NV5 Geospatial's Aircraft



2.4. Time Period

Project specific flights were conducted between July 20, 2023 and August 25, 2023. Fifteen aircraft lifts were completed. Accomplished lifts are listed below.

Lift
07202023A_4891_N529AB
07212023A_4891_N529AB
07222023A_4891_N529AB
07232023A_4891_N529AB
07232023B_4891_N529AB
07232023C_4891_N529AB
07242023A_4891_N529AB
07292023A_4051_N22GE
08112023A_4051_N22GE
08122023B_4051_N22GE
08142023A_4051_N22GE
08142023B_4051_N22GE
08212023A_3543_N108RF
08222023A_3541_N124RF
08252023A_3541_N124RF

3. Processing Summary

3.1. Flight Logs

Flight logs were completed by Lidar sensor technicians for each mission during acquisition. These logs depict a variety of information, including:

- Job / Project #
- Flight Date / Lift Number
- FOV (Field of View)
- Scan Rate (HZ)
- Pulse Rate Frequency (Hz)
- Ground Speed
- Altitude
- Base Station
- PDOP avoidance times
- Flight Line #
- Flight Line Start and Stop Times
- Flight Line Altitude (AMSL)
- Heading
- Speed
- Returns
- Crab

Notes: (Visibility, winds, ride, weather, temperature, dew point, pressure, etc). Project specific flight logs for each sortie are available in Appendix A.

3.2. Lidar Processing

Applanix + POSPac software was used for post-processing of airborne GPS and inertial data (IMU), which is critical to the positioning and orientation of the lidar sensor during all flights. Applanix POSPac combines aircraft raw trajectory data with Trimble's RTX technology yielding a "Smoothed Best Estimate Trajectory" (SBET) necessary for additional post processing software to develop the resulting geo-referenced point cloud from the lidar missions. Using data from a dedicated global network of tracking stations, POSPac PP-RTX uses this data to post-process the GNSS-Inertial Trajectory. The default processing reference frame for PP-RTX is WGS84. We then utilize proprietary software to convert the SBET to NAD83(2011) before we process the raw data to LAS.

During the sensor trajectory processing (combining GPS & IMU datasets) certain statistical graphs and tables are generated within the Applanix POSPac processing environment which are commonly used as indicators of processing stability and accuracy. This data for analysis include: max horizontal / vertical GPS variance, separation plot, altitude plot, PDOP plot, base station baseline length, processing mode, number of satellite vehicles, and mission trajectory.

Each sensor is initially factory calibrated. Further adjustment is performed on each sensor by periodically flying boresight locations and using this data to update boresight values used in data processing. Various proprietary tools and methodologies are used during this process. Once all data has been processed with updated boresight values, FL to FL match is performed by using strip align and other proprietary tools/processes.

Point clouds in flightline swath format were created using the RiPROCESS software. The generated point cloud is the mathematical three dimensional composite of all returns from all laser pulses as determined from the aerial mission. Each flightline swath point cloud was calibrated using Strip Align software that corrects systematic geometric errors and improves the relative and absolute accuracy of the flightline swath point cloud. The calibrated point cloud swaths were imported into GeoCue distributive processing software and the imported data was then tiled so further processing could take place in TerraScan software. Using TerraScan, the vertical accuracy of the surveyed ground control was tested and any vertical bias was removed from the data. TerraScan and TerraModeler software packages were then used for automated data classification and manual cleanup. The data were manually reviewed and any remaining artifacts removed using functionality provided by TerraScan and TerraModeler.

DEMs and Intensity Images are then generated using proprietary software. In the bare earth surface model, above-ground features are excluded from the data set. Global Mapper is used as a final check of the bare earth dataset.

Finally, proprietary software is used to perform statistical analysis of the LAS files.

Software	Version
Applanix + POSPac	8.9
RiPROCESS	1.9.3.6
Microstation Connect	10.16.02.34
GeoCue	2020.1.22.3
Global Mapper	19.1;20.1
TerraModeler	23.013
TerraScan	23.025
TerraMatch	23.013
StripAlign	2.21

3.3. LAS Classification Scheme

The classification classes are determined by Lidar Base Specifications 2024 Rev. A and are an industry standard for the classification of lidar point clouds. All data starts the process as Class 1 (Unclassified), and then through automated classification routines, the classifications are determined using TerraScan macro processing.

The classes used in the dataset are as follows and have the following descriptions:

Table 3. LAS Classifications

	Classification Name	Description
1	Processed, but Unclassified	Laser returns that are not included in the bare earth class, or any other project classification.
2	Bare earth	Laser returns that are determined to be bare earth using automated and manual cleaning algorithms.
7	Low Noise	Laser returns that are often associated with scattering from reflective surfaces, or artificial points below the bare earth surface.
9	Water	Laser returns that are found inside of hydro features.
17	Bridge Deck	Laser returns falling on bridge decks.
18	High Noise	Laser returns that are often associated with birds or artificial points above the bare earth surface.
20	Ignored Ground	Bare earth points that fall within the given threshold of a collected hydro feature.

3.4. Classified LAS Processing

The bare earth surface is then manually reviewed to ensure correct classification on the Class 2 (Ground) points. After the bare- earth surface is finalized; it is then used to generate all hydro-breaklines through heads-up digitization.

All ground (ASPRS Class 2) lidar data inside of the Lake Pond and Double Line Drain hydro flattening breaklines were then classified to water (ASPRS Class 9) using proprietary tools. A buffer of 3 feet/1 meter was also used around each hydro flattened feature to classify these ground (ASPRS Class 2) points to Ignored ground (ASPRS Class 20). All Lake Pond Island and Double Line Drain Island features were checked to ensure that the ground (ASPRS Class 2) points were reclassified to the correct classification after the automated classification was completed.

Any noise that was identified either through manual review or automated routines was classified to the appropriate class (ASPRS Class 7 and/or ASPRS Class 18) followed by flagging with the withheld bit.

All data was manually reviewed and any remaining artifacts removed using functionality provided by TerraScan and TerraModeler. Global Mapper is used as a final check of the bare earth dataset. GeoCue was then used to create the deliverable industry-standard LAS files for all point cloud data. NV5 Geospatial's proprietary software was used to perform final statistical analysis of the classes in the LAS files, on a per tile level to verify final classification metrics and full LAS header information.

3.5. Hydro-Flattened Breakline Processing

Using heads-up digitization, all Lake-Ponds, Double Line Drains, and Islands are manually collected that are within the project size specification. This includes Lake-Ponds greater than 2 acres in size, Double Line Drains with greater than a 100 foot nominal width, and Islands greater than 1 acre in size within a collected hydro feature. Lidar intensity imagery and bare-earth surface models are used to ensure appropriate and complete collection of these features.

Elevation values are assigned to all collected hydro features via NV5 Geospatial's proprietary software. This software sets Lake-Ponds to an appropriate, single elevation to allow for the generation of hydro-flattened digital elevation models (DEM). Double Line Drain elevations are assigned based on lidar elevations and surrounding terrain feature to ensure all breaklines match the lidar within acceptable tolerances. Some deviation is expected between breakline and lidar elevations due to monotonicity, connectivity, and flattening rules that are enforced on the breaklines. Once complete, horizontal placement, and vertical variances are reviewed, all breaklines are evaluated for topological consistency and data integrity using a combination of proprietary tools and manual review of hydro-flattened DEMs.

Breaklines are combined into one seamless shapefile, clipped to the project boundary, and imported into an Esri file geopackage for delivery.

3.6. Hydro-Flattened Raster DEM Processing

Hydro-Flattened DEMs (topographic) represent a lidar-derived product illustrating the grounded terrain and associated breaklines (as described above) in raster form. NV5 Geospatial's proprietary software was used to take all input sources (bare earth lidar points, bridge and hydro breaklines, etc.) and create a Triangulated Irregular Network (TIN) on a tile-by-tile basis. Data extending past the tile edge is incorporated in this process so that proper triangulation can occur. From the TIN, linear interpolation is used to calculate the cell values for the raster product. The raster product is then clipped back to the tile edge so that no overlapping cells remain across the project area. A 32-bit floating point GeoTIFF DEM was generated for each tile with a pixel size of 1-meter. NV5 Geospatial's proprietary software was used to write appropriate horizontal and vertical projection information as well as applicable header values into the file during product generation. Each DEM is reviewed in Global Mapper to check for any surface anomalies and to ensure a seamless dataset. NV5 Geospatial ensures there are no void or no-data values (-999999) in each derived DEM. This is achieved by using propriety software checking all cell values that fall within the project boundary. NV5 Geospatial uses a proprietary tool called FOCUS on Delivery to check all formatting requirements of the DEMs against what is required before final delivery.

3.7. Intensity Image Processing

Intensity images represent reflectivity values collected by the lidar sensor during acquisition. Proprietary software generates intensity images using first returns and excluding those flagged with a withheld bit. Intensity images are linearly scaled to a value range specific to the project area to standardize the images and reduce differences between individual tiles. Appropriate horizontal projection information as well as applicable header values are written during product generation.

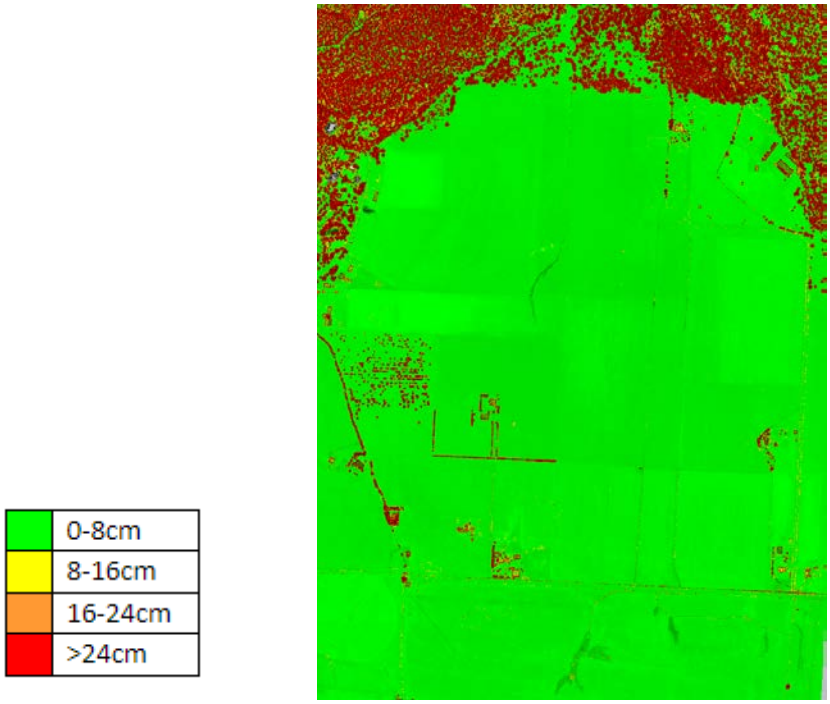
3.8. Maximum Surface Height Raster Processing

Maximum Surface Height rasters (topographic) represent a lidar-derived product illustrating natural and built-up features. NV5 Geospatial's proprietary software was used to take all classified lidar points, excluding those flagged with a withheld bit, and create a raster on a tile-by-tile basis. Data extending past the tile edge is incorporated in this process so that proper gridding can occur. The raster is created by laying a 2-meter DEM cell size over the area and assigning the values to cells by using the maximum lidar point that intersects that grid cell. The raster product is then clipped back to the tile edge so that no overlapping cells remain across the project area. A 32-bit floating point GeoTIFF was then generated for each tile with a pixel size of 2-meter. There is no interpolation type being used in creating the raster product. NV5 Geospatial's proprietary software was used to write appropriate horizontal and vertical projection information as well as applicable header values into the file during product generation. Each maximum surface height raster is reviewed in Global Mapper to check for any anomalies and to ensure a seamless dataset. NV5 Geospatial uses a proprietary tool called FOCUS on Delivery to check all formatting requirements of the DEMs against what is required before final delivery.

3.9. Swath Separation Raster Processing

Swath Separation Images are rasters that represent the interswath alignment between flight lines and provide a qualitative evaluation of the positional quality of the point cloud. NV5 Geospatial proprietary software generated 2-meter raster images in GeoTIFF format using last returns, excluding points flagged with the withheld bit, and using a point-in-cell algorithm. Images are generated with a 75% intensity opacity and (4) absolute 8-cm intervals, see below for interval coloring. Intensity images are linearly scaled to a value range specific to the project area to standardize the images and reduce differences between individual tiles. Appropriate horizontal projection information as well as applicable header values are written to the file during product generation. NV5 Geospatial uses a proprietary tool called FOCUS on Delivery to check all formatting requirements of the images against what is required before final delivery.

Figure 4. Example of Swath Separation Raster



3.11. Point Density

The acquisition parameters were designed to acquire an average first-return density of 2 points/m2. First return density describes the density of pulses emitted from the laser that return at least one echo to the system. Multiple returns greater than 1 from a single pulse were not considered in first return density analysis. Some types of surfaces (e.g., breaks in terrain, water, and steep slopes) may have returned fewer pulses than originally emitted by the laser. First returns typically reflect off the highest feature on the landscape within the footprint of the pulse. In forested or urban areas, the highest feature could be a tree, building or power line, while in areas of unobstructed ground, the first return will be the only echo and represents the bare earth surface.

The density of ground-classified lidar returns was also analyzed for this project. Terrain character, land cover, and ground surface reflectivity all influenced the density of ground surface returns. In vegetated areas, fewer pulses may penetrate the canopy, resulting in lower ground density.

The average first-return density of lidar data for the project was 5.46 points/m2 while the average ground classified density was 3.72 points/m2. The statistical and spatial distributions of first return densities and classified ground return densities per 100 m x 100 m cell are portrayed in Figures 5 and 6.

MT Statewide Phase 5 D23
Work Unit 300897 First Return Point Density

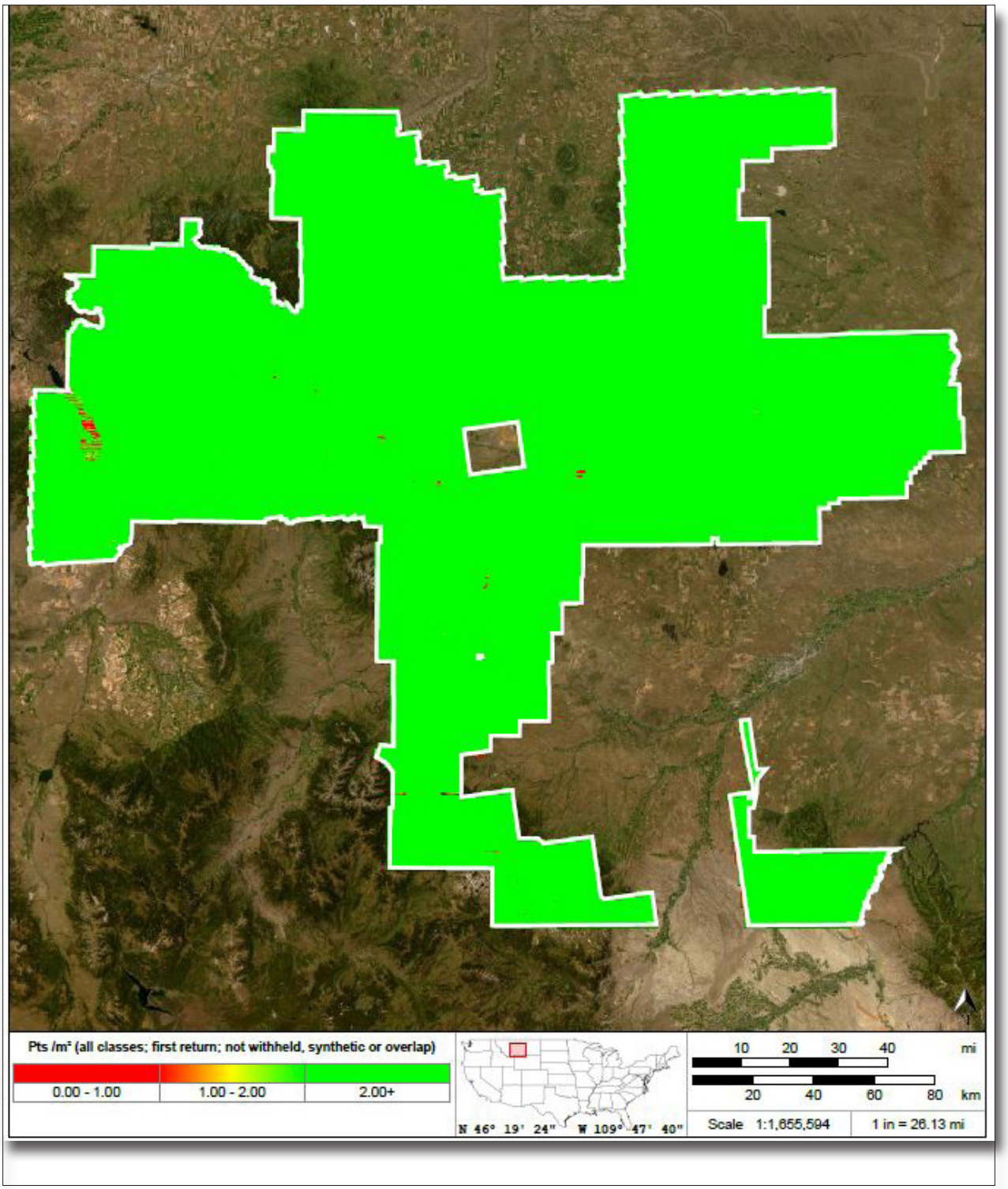


Figure 5. First Return Point Density

MT Statewide Phase 5 D23
Work Unit 300897 Ground Point Density

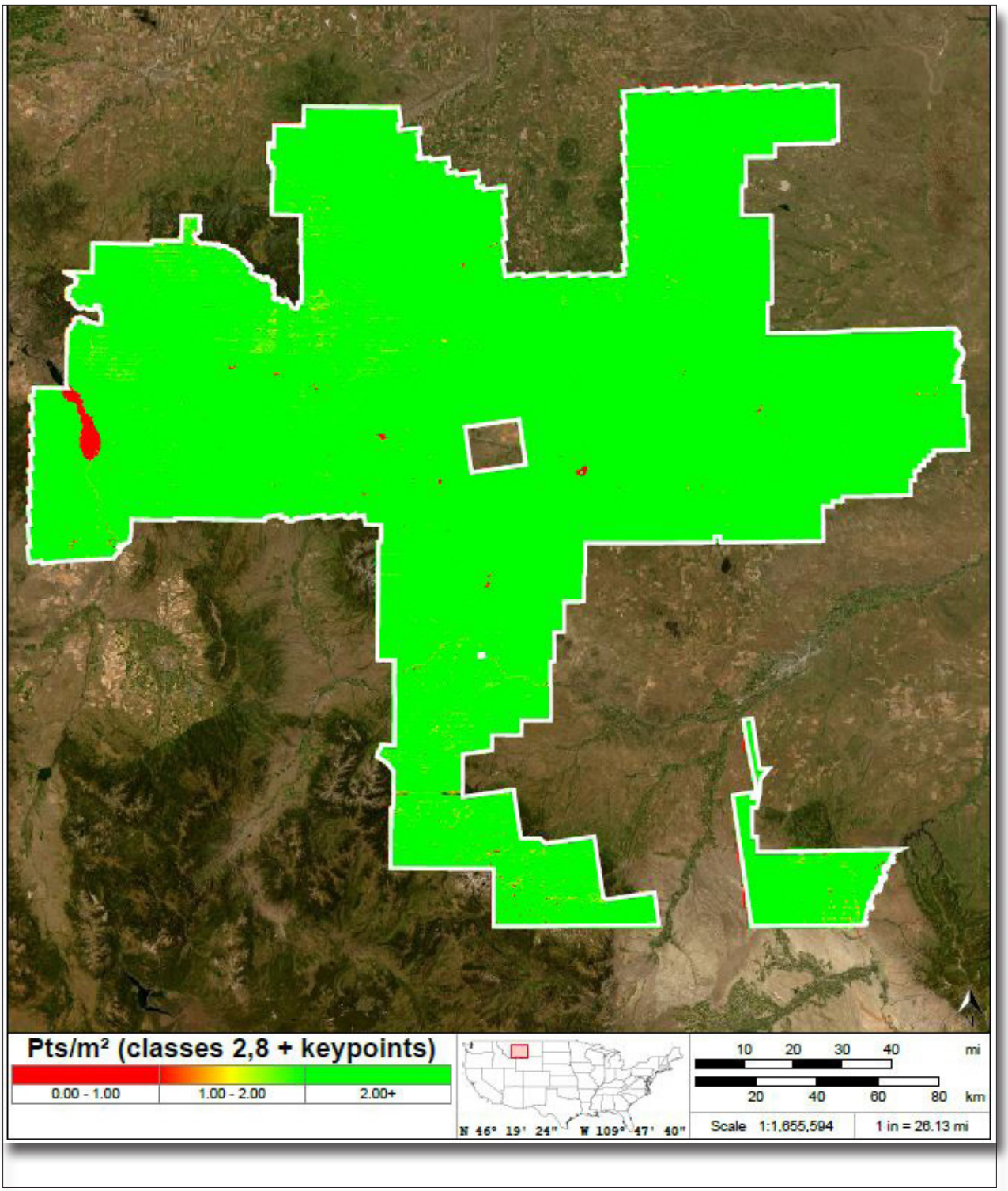


Figure 6. Ground First Return Point Density

MT Statewide Phase 5 D23
Work Unit 300897 Tile Layout

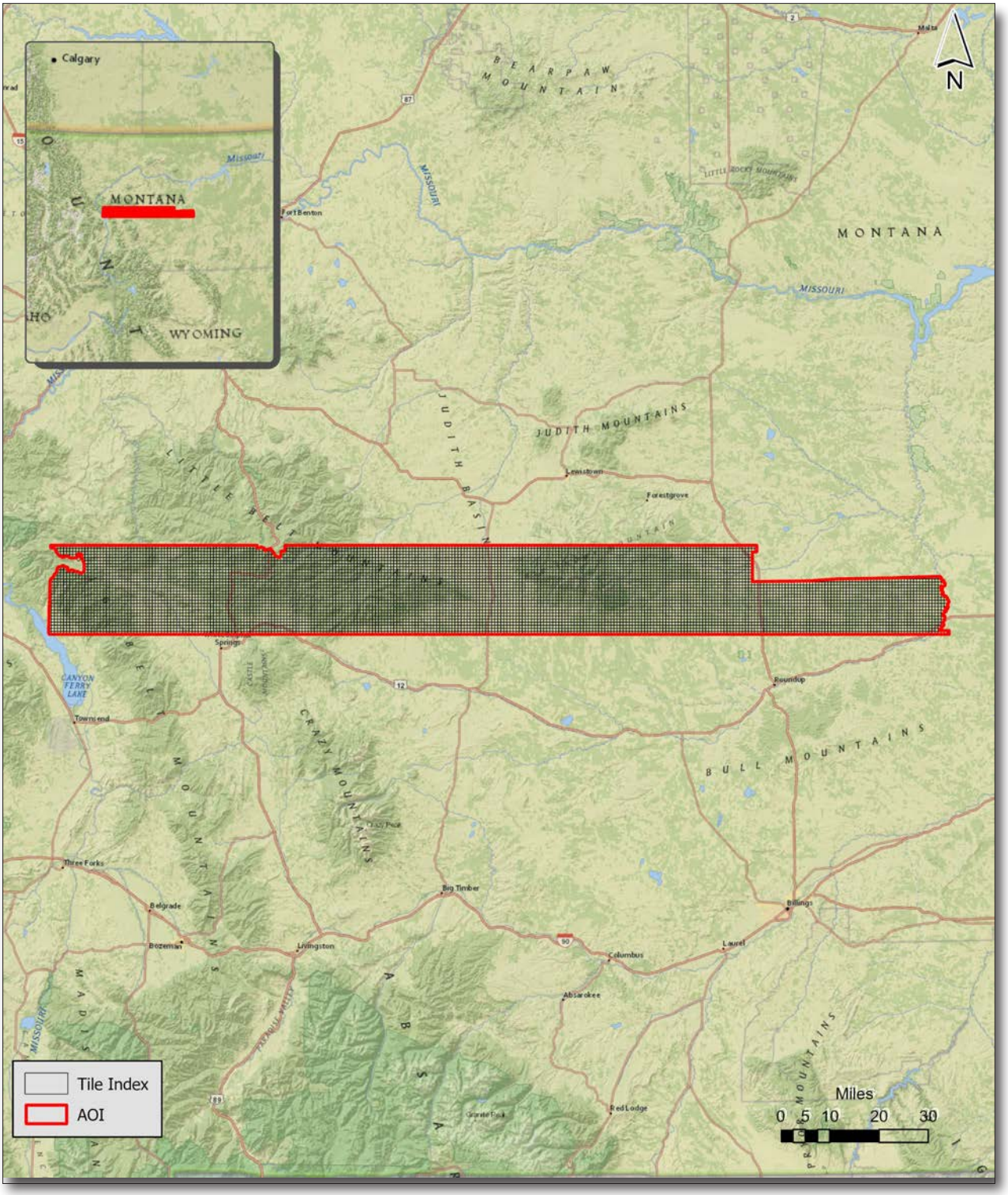


Figure 7. Lidar Tile Layout

4. Project Coverage Verification

A proprietary tool (FOCUS on Flight) produces grid-based polygons of each flightline, depicting exactly where lidar points exist. These swath polygons are reviewed against the project boundary to verify adequate project coverage. Please refer to Figure 8.

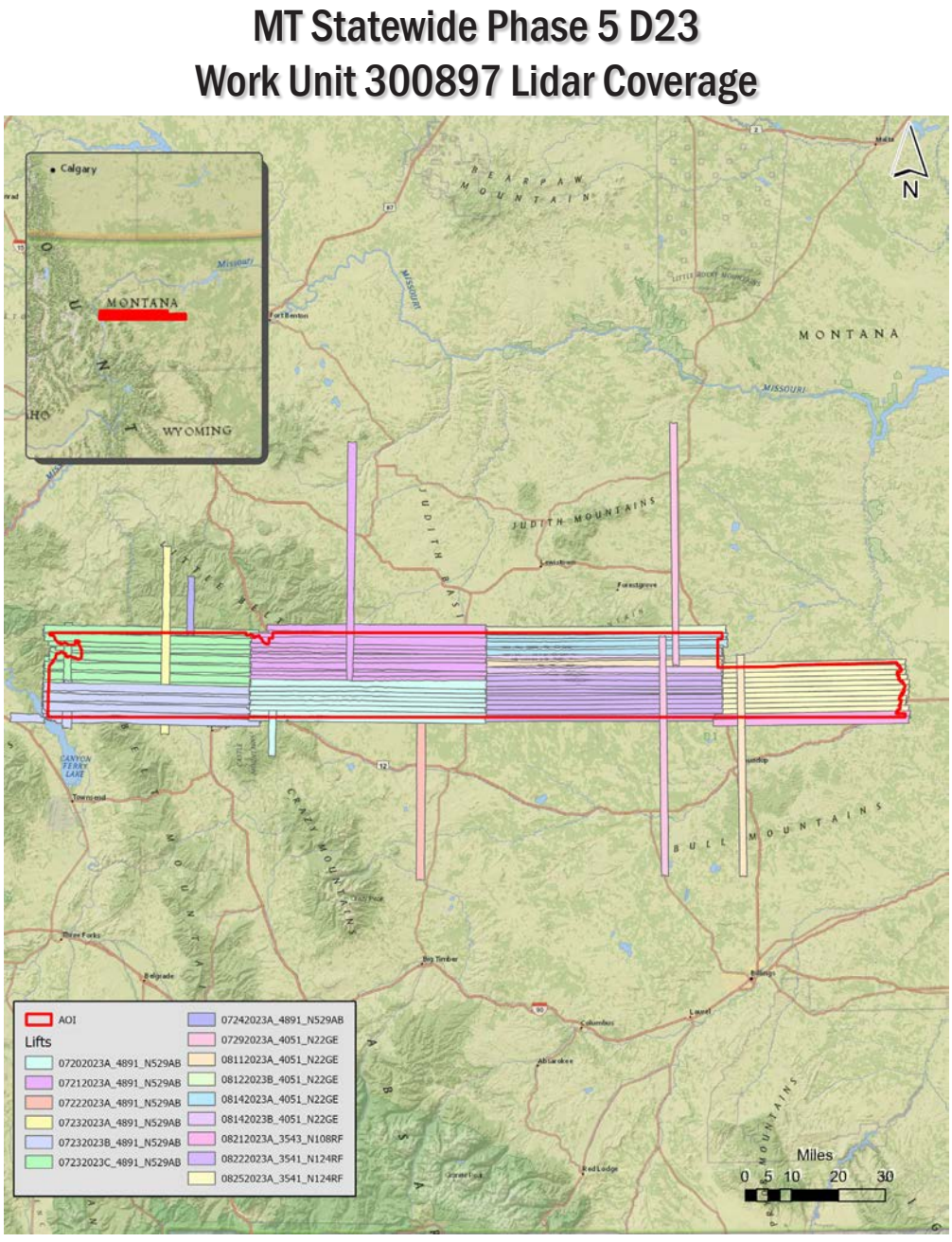


Figure 8. Lidar Coverage

5. Geometric Accuracy

5.1. Horizontal Accuracy

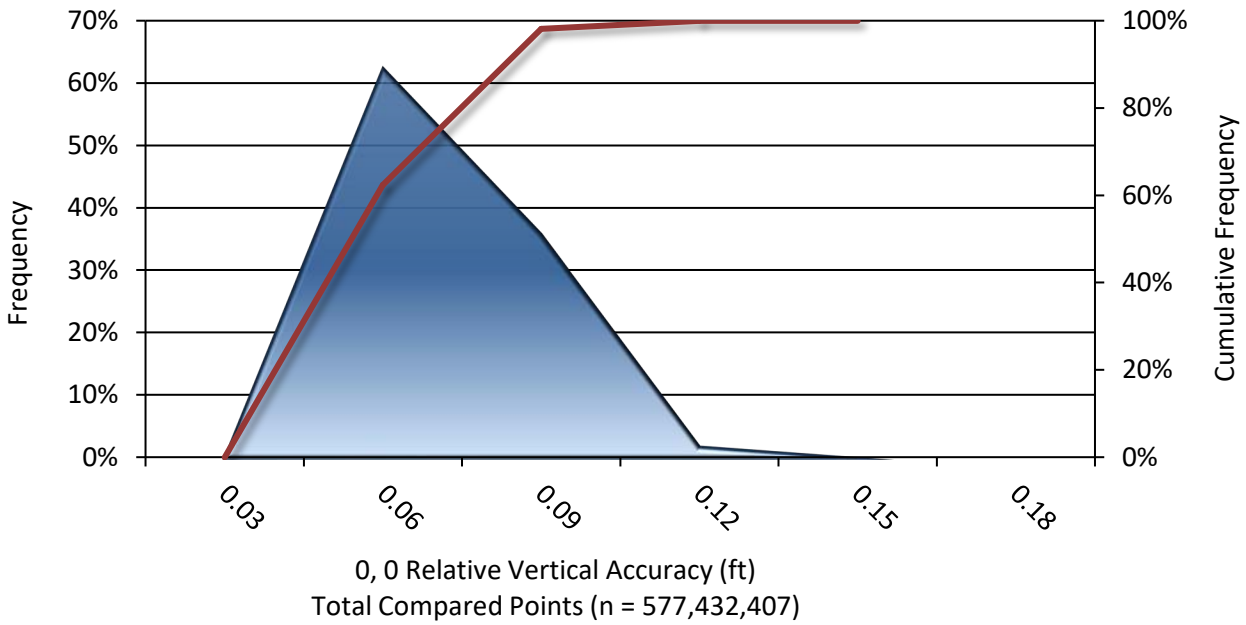
Lidar horizontal accuracy is a function of Global Navigation Satellite System (GNSS) derived positional error, flying altitude, and INS derived attitude error. The obtained $RMSE_r$ value is multiplied by a conversion factor of 1.7308 to yield the horizontal component of the National Standards for Spatial Data Accuracy (NSSDA) reporting standard where a theoretical point will fall within the obtained radius 95% of the time. Based on a flying altitude of 2,700 meters, an IMU error of 0.003 decimal degrees, and a GNSS positional error of 0.292 meters, this project was compiled to meet 0.67 meter horizontal accuracy at the 95% confidence level. A summary is shown below.

Horizontal Accuracy	
$RMSE_r$	1.27 ft
	0.38 m
ACC_r	2.19 ft
	0.67 m

5.2. Relative Vertical Accuracy (Interswath Accuracy)

Relative vertical accuracy refers to the internal consistency of the data set as a whole: the ability to place an object in the same location given multiple flight lines, GPS conditions, and aircraft attitudes. When the lidar system is well calibrated, the swath-to-swath vertical divergence is low (<0.10 meters). The relative vertical accuracy was computed by comparing the ground surface model of each individual flight line with its neighbors in overlapping regions. The average (mean) line to line relative vertical accuracy for the MT Statewide Phase 5 D23 project was 0.049 feet (0.015 meters). A summary is shown below.

Relative Vertical Accuracy	
Sample	162 flight line surfaces
Average	0.049 ft
	0.015 m
Median	0.055 ft
	0.017 m
RMSE	0.059 ft
	0.018 m
Standard Deviation (1σ)	0.015 ft
	0.005 m
1.96σ	0.029 ft
	0.009 m



5.3. Intraswath Precision (Smooth Surface Precision)

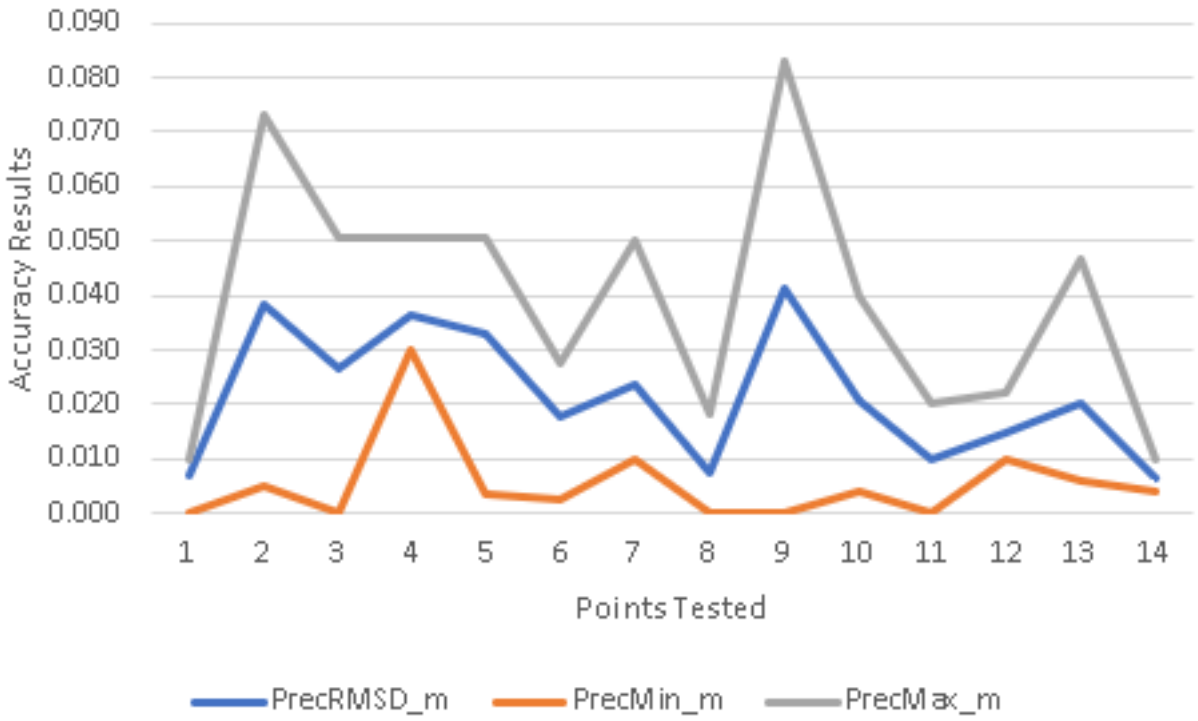
Intraswath Precision (smooth surface precision) is the measure of reliability of the lidar point cloud elevations along a planar surface. This measurement is performed on hard surfaces against a single flightline. NV5 digitized several large parking lots as polygons across the project area. These polygons were then used to calculate precision on a single FL basis using the below formula:

Precision = Range – (Slope x Cellsize x 1.414)

Range – Is the difference between the highest and lowest lidar points in each cell
Slope – is the maximum slope of the cell to its 8 neighbors
Cellsize – is set to the ANPS, rounded up to the next integer, and then doubled

NV5 calculated the RMSDz to be 2.17 cm, minimum slope-corrected range to be 0.5 cm, and the maximum slope-corrected range to be 3.9 cm.

Table 4. Intraswath Accuracy Results



Project Report Appendices

The following section contains the appendices as listed in the MT Statewide Phase 5 D23 Lidar Project Report.

Appendix A

Flight Logs

Project	4719223-R041003.00 MT_Statewide_Phase5_D23
Flightplan	3301_MT_41003_QL2 Block 03_04

Mission Name	S2224051_20230729_F1	**Mission Notes**
Mission Date	7/29/2023	Flt
Aircraft	N22GE	
Pilot	(Subcontractor)	
Co-Pilot		
Operator	(Subcontractor)	
Co-Operator		
Vendor	BARR Geospatial	
Base Airport	NV5 Geospatial	
Departure (Local Time)		
Arrival (Local Time)		

Line	Heading	Start Time (UTC)	Stop Time (UTC)	Speed (kt)	Notes
06001	E	12:00:00	12:30:00		
06002	E	12:00:00	12:30:00		
06003	E	12:00:00	12:30:00		
06004	E	12:00:00	12:30:00		
06005	E	12:00:00	12:30:00		
06006	E	12:00:00	12:30:00		
06007	E	12:00:00	12:30:00		
09601	S	12:00:00	12:30:00		
09602	S	12:00:00	12:30:00		

Project	4719223-R041003.00 MT_Statewide_Phase5_D23
Flightplan	3301_MT_41003_QL2 Block 03_04

Mission Name	S2224051_20230811_F1	**Mission Notes**
Mission Date	8/11/2023	Flight
Aircraft	N22GE	
Pilot	(Subcontractor)	
Co-Pilot		
Operator	(Subcontractor)	
Co-Operator		
Vendor	BARR Geospatial	
Base Airport	NV5 Geospatial	
Departure (Local Time)		
Arrival (Local Time)		

Line	Heading	Start Time (UTC)	Stop Time (UTC)	Speed (kt)	Notes
06011	E	12:00:00	12:30:00		
06012	E	12:00:00	12:30:00		Refly 20-26 statute miles FWE due to clouds
06013	E	12:00:00	12:30:00		Refly 2-32 statute miles FWE due to clouds
06056	E	12:00:00	12:30:00		
06057	E	12:00:00	12:30:00		Refly 9-14 statute miles FEE due to clouds
09701	S	12:00:00	12:30:00		

Project	4719223-R041003.00 MT_Statewide_Phase5_D23
Flightplan	3301_MT_41003_QL2 Block 03_04

Mission Name	S2224051_20230812_F1	**Mission Notes**
Mission Date	8/12/2023	Flight
Aircraft	N22GE	
Pilot	(Subcontractor)	
Co-Pilot		
Operator	(Subcontractor)	
Co-Operator		
Vendor	BARR Geospatial	
Base Airport	NV5 Geospatial	
Departure (Local Time)		
Arrival (Local Time)		

Line	Heading	Start Time (UTC)	Stop Time (UTC)	Speed (kt)	Notes
06029	E	12:00:00	12:30:00		
06030	E	12:00:00	12:30:00		
06031	E	12:00:00	12:30:00		
06032	E	12:00:00	12:30:00		
06033	E	12:00:00	12:30:00		
06034	E	12:00:00	12:30:00		
06035	E	12:00:00	12:30:00		
06036	E	12:00:00	12:30:00		
06037	E	12:00:00	12:30:00		
06038	E	12:00:00	12:30:00		
06039	E	12:00:00	12:30:00		

Project	4719223-R041003.00 MT_Statewide_Phase5_D23
Flightplan	3301_MT_41003_QL2 Block 03_04

Mission Name	S2224051_20230814_F1	**Mission Notes**
Mission Date	8/14/2023	Flight
Aircraft	N22GE	
Pilot	(Subcontractor)	
Co-Pilot		
Operator	(Subcontractor)	
Co-Operator		
Vendor	BARR Geospatial	
Base Airport	NV5 Geospatial	
Departure (Local Time)		
Arrival (Local Time)		

Line	Heading	Start Time (UTC)	Stop Time (UTC)	Speed (kt)	Notes
06046	E	12:00:00	12:30:00		
06047	E	12:00:00	12:30:00		
06048	E	12:00:00	12:30:00		
06049	E	12:00:00	12:30:00		
06050	E	12:00:00	12:30:00		
06051	E	12:00:00	12:30:00		
06052	E	12:00:00	12:30:00		

Project	4719223-R041003.00 MT_Statewide_Phase5_D23
Flightplan	3301_MT_41003_QL2 Block 03_04

Mission Name	S2224051_20230814_F2	**Mission Notes**
Mission Date	8/14/2023	Flight
Aircraft	N22GE	
Pilot	(Subcontractor)	
Co-Pilot		
Operator	(Subcontractor)	
Co-Operator		
Vendor	BARR Geospatial	
Base Airport	NV5 Geospatial	
Departure (Local Time)		
Arrival (Local Time)		

Line	Heading	Start Time (UTC)	Stop Time (UTC)	Speed (kt)	Notes
06053	E	12:00:00	12:30:00		
06054	E	12:00:00	12:30:00		
06055	E	12:00:00	12:30:00		
06058	E	12:00:00	12:30:00		
06059	E	12:00:00	12:30:00		
06060	E	12:00:00	12:30:00		
06061	E	12:00:00	12:30:00		

Project	4719223-R041003.00 MT_Statewide_Phase5_D23
Flightplan	3301_MT_41003_QL2 Block 03_04

Mission Name	SN41_20230822_F1	**Mission Notes**
Mission Date	8/22/2023	Flight
Aircraft	N124RF	
Pilot	(Subcontractor)	
Co-Pilot		
Operator	(Subcontractor)	
Co-Operator		
Vendor	BARR Geospatial	
Base Airport	NV5 Geospatial	
Departure (Local Time)		
Arrival (Local Time)		

Line	Heading	Start Time (UTC)	Stop Time (UTC)	Speed (kt)	Notes
06057	E	12:00:00	12:30:00		
06062	E	12:00:00	12:30:00		
06063	E	12:00:00	12:30:00		
06064	E	12:00:00	12:30:00		
06065	E	12:00:00	12:30:00		
06066	E	12:00:00	12:30:00		
06067	E	12:00:00	12:30:00		
06068	E	12:00:00	12:30:00		
06069	E	12:00:00	12:30:00		
06070	E	12:00:00	12:30:00		
06071	E	12:00:00	12:30:00		
06072	E	12:00:00	12:30:00		
06073	E	12:00:00	12:30:00		

Project	4719223-R041003.00 MT_Statewide_Phase5_D23
Flightplan	3301_MT_41003_QL2 Block 03_04

Mission Name	SN41_20230825_F1	**Mission Notes**
Mission Date	8/25/2023	Flt
Aircraft	N124RF	
Pilot	(Subcontractor)	
Co-Pilot		
Operator	(Subcontractor)	
Co-Operator		
Vendor	BARR Geospatial	
Base Airport	NV5 Geospatial	
Departure (Local Time)		
Arrival (Local Time)		

Line	Heading	Start Time (UTC)	Stop Time (UTC)	Speed (kt)	Notes
06087	E	12:00:00	12:30:00		
06088	E	12:00:00	12:30:00		
06089	E	12:00:00	12:30:00		
07001	E	12:00:00	12:30:00		
07002	E	12:00:00	12:30:00		
07003	E	12:00:00	12:30:00		
07004	E	12:00:00	12:30:00		
07005	E	12:00:00	12:30:00		
07006	E	12:00:00	12:30:00		
07007	E	12:00:00	12:30:00		
07008	E	12:00:00	12:30:00		
07009	E	12:00:00	12:30:00		
07010	E	12:00:00	12:30:00		

Project	4719223-R041003.00 MT_Statewide_Phase5_D23
Flightplan	3301_MT_41003_QL2 Block 03_04

Mission Name	SN43_20230821_F1	**Mission Notes**
Mission Date	8/21/2023	Flight
Aircraft	N108RF	
Pilot	(Subcontractor)	
Co-Pilot		
Operator	(Subcontractor)	
Co-Operator		
Vendor	BARR Geospatial	
Base Airport	NV5 Geospatial	
Departure (Local Time)		
Arrival (Local Time)		

Line	Heading	Start Time (UTC)	Stop Time (UTC)	Speed (kt)	Notes
07011	E	12:00:00	12:30:00		
07012	E	12:00:00	12:30:00		
07013	E	12:00:00	12:30:00		
07014	E	12:00:00	12:30:00		
07015	E	12:00:00	12:30:00		
07016	E	12:00:00	12:30:00		
07017	E	12:00:00	12:30:00		
07030	E	12:00:00	12:30:00		

Project	4719223-R041003.00	MT_Statewide_Phase5_D23
Flightplan	41003_MTPh5_1560S_2ppsm_02	

Mission Name	SN4891_20230720_F1	**Mission Notes**
Mission Date	7/20/2023	Flight
Aircraft	N529AB	
Pilot	(Subcontractor)	
Co-Pilot		
Operator	(Subcontractor)	
Co-Operator		
Vendor	95 West	
Base Airport	NV5 Geospatial	
Departure (Local Time)		
Arrival (Local Time)		

Line	Heading	Start Time (UTC)	Stop Time (UTC)	Speed (kt)	Notes
02013	E	12:00:00	12:30:00		
02014	E	12:00:00	12:30:00		
02015	E	12:00:00	12:30:00		
02019	E	12:00:00	12:30:00		
02020	E	12:00:00	12:30:00		
02021	E	12:00:00	12:30:00		
02022	E	12:00:00	12:30:00		
02028	E	12:00:00	12:30:00		
02029	E	12:00:00	12:30:00		
02030	E	12:00:00	12:30:00		
02031	E	12:00:00	12:30:00		
02032	E	12:00:00	12:30:00		
02033	E	12:00:00	12:30:00		
02034	E	12:00:00	12:30:00		
02035	E	12:00:00	12:30:00		
02036	E	12:00:00	12:30:00		
02037	E	12:00:00	12:30:00		
02038	E	12:00:00	12:30:00		
02039	E	12:00:00	12:30:00		
02040	E	12:00:00	12:30:00		
02041	E	12:00:00	12:30:00		

Project	4719223-R041003.00	MT_Statewide_Phase5_D23
Flightplan	41003_MTPh5_1560S_2ppsm_02	

Mission Name	SN4891_20230721_F1	**Mission Notes**
Mission Date	7/21/2023	Flight
Aircraft	N529AB	
Pilot	(Subcontractor)	
Co-Pilot		
Operator	(Subcontractor)	
Co-Operator		
Vendor	95 West	
Base Airport	NV5 Geospatial	
Departure (Local Time)		
Arrival (Local Time)		

Line	Heading	Start Time (UTC)	Stop Time (UTC)	Speed (kt)	Notes
02042	E	12:00:00	12:30:00		
02043	E	12:00:00	12:30:00		
02044	E	12:00:00	12:30:00		
02045	E	12:00:00	12:30:00		
02046	E	12:00:00	12:30:00		
02047	E	12:00:00	12:30:00		
02048	E	12:00:00	12:30:00		
02049	E	12:00:00	12:30:00		
02050	E	12:00:00	12:30:00		
02051	E	12:00:00	12:30:00		
02052	E	12:00:00	12:30:00		
02053	E	12:00:00	12:30:00		
02054	E	12:00:00	12:30:00		
02055	E	12:00:00	12:30:00		
02056	E	12:00:00	12:30:00		
02057	E	12:00:00	12:30:00		
02094	S	12:00:00	12:30:00		

Project	4719223-R041003.00	MT_Statewide_Phase5_D23
Flightplan	41003_MTPh5_1560S_2ppsm_02	

Mission Name	SN4891_20230722_F1	**Mission Notes**
Mission Date	7/22/2023	Flight
Aircraft	N529AB	
Pilot	(Subcontractor)	
Co-Pilot		
Operator	(Subcontractor)	
Co-Operator		
Vendor	95 West	
Base Airport	NV5 Geospatial	
Departure (Local Time)		
Arrival (Local Time)		

Line	Heading	Start Time (UTC)	Stop Time (UTC)	Speed (kt)	Notes
02001	E	12:00:00	12:30:00		
02002	E	12:00:00	12:30:00		
02003	E	12:00:00	12:30:00		
02004	E	12:00:00	12:30:00		
02005	E	12:00:00	12:30:00		
02006	E	12:00:00	12:30:00		
02007	E	12:00:00	12:30:00		
02008	E	12:00:00	12:30:00		
02009	E	12:00:00	12:30:00		
02010	E	12:00:00	12:30:00		
02011	E	12:00:00	12:30:00		
02012	E	12:00:00	12:30:00		
02093	S	12:00:00	12:30:00		

Project	4719223-R041003.00	MT_Statewide_Phase5_D23
Flightplan	41003_MTPh5_1560S_2ppsm_01	

Mission Name	SN4891_20230723_F1	**Mission Notes**
Mission Date	7/23/2023	Flight
Aircraft	N529AB	
Pilot	(Subcontractor)	
Co-Pilot		
Operator	(Subcontractor)	
Co-Operator		
Vendor	95 West	
Base Airport	NV5 Geospatial	
Departure (Local Time)		
Arrival (Local Time)		

Line	Heading	Start Time (UTC)	Stop Time (UTC)	Speed (kt)	Notes
01078	S	12:00:00	12:30:00		

Project	4719223-R041003.00	MT_Statewide_Phase5_D23
Flightplan	41003_MTPh5_1560S_2ppsm_01	

Mission Name	SN4891_20230723_F2	**Mission Notes**
Mission Date	7/23/2023	Flight
Aircraft	N529AB	
Pilot	(Subcontractor)	
Co-Pilot		
Operator	(Subcontractor)	
Co-Operator		
Vendor	95 West	
Base Airport	NV5 Geospatial	
Departure (Local Time)		
Arrival (Local Time)		

Line	Heading	Start Time (UTC)	Stop Time (UTC)	Speed (kt)	Notes
01026	E	12:00:00	12:30:00		
01027	E	12:00:00	12:30:00		
01028	E	12:00:00	12:30:00		
01029	E	12:00:00	12:30:00		
01040	E	12:00:00	12:30:00		
01041	E	12:00:00	12:30:00		
01042	E	12:00:00	12:30:00		
01043	E	12:00:00	12:30:00		
01044	E	12:00:00	12:30:00		
01045	E	12:00:00	12:30:00		
01046	E	12:00:00	12:30:00		
01047	E	12:00:00	12:30:00		
01048	E	12:00:00	12:30:00		

Project	4719223-R041003.00	MT_Statewide_Phase5_D23
Flightplan	41003_MTPh5_1560S_2ppsm_01	

Mission Name	SN4891_20230724_F1	**Mission Notes**
Mission Date	7/24/2023	Flight
Aircraft	N529AB	
Pilot	(Subcontractor)	
Co-Pilot		
Operator	(Subcontractor)	
Co-Operator		
Vendor	95 West	
Base Airport	NV5 Geospatial	
Departure (Local Time)		
Arrival (Local Time)		

Line	Heading	Start Time (UTC)	Stop Time (UTC)	Speed (kt)	Notes
01061	E	12:00:00	12:30:00		
01062	E	12:00:00	12:30:00		
01063	E	12:00:00	12:30:00		
01064	E	12:00:00	12:30:00		
01065	E	12:00:00	12:30:00		
01066	E	12:00:00	12:30:00		
01067	E	12:00:00	12:30:00		
01068	E	12:00:00	12:30:00		
01069	E	12:00:00	12:30:00		
01070	E	12:00:00	12:30:00		
01071	E	12:00:00	12:30:00		

Appendix B

SBET and POSPac Reports

General Information

Mission Information

Project name	07202023A_4891
Processing date	2023-07-21 15:13:18
Mission date	2023-07-20 12:30:54
Mission duration	06:34:04.375
Processing mode	IN-Fusion PP-RTX

Rover Hardware Information

Product	POS AV 610 VER6 HW2.5-12
Serial number	S/N11883
IMU type	57
Receiver type	BD982
Antenna type	AV59

Project File List

Rover Data Files

File name	File type
N6275603122201.692	POS Data
N6275603122201.693	POS Data
N6275603122201.694	POS Data
N6275603122201.695	POS Data
N6275603122201.696	POS Data
N6275603122201.697	POS Data
N6275603122201.698	POS Data
N6275603122201.699	POS Data
N6275603122201.700	POS Data
N6275603122201.701	POS Data
N6275603122201.702	POS Data
N6275603122201.703	POS Data
N6275603122201.704	POS Data
N6275603122201.705	POS Data
N6275603122201.706	POS Data
N6275603122201.707	POS Data
N6275603122201.708	POS Data
N6275603122201.709	POS Data
N6275603122201.710	POS Data
N6275603122201.711	POS Data
N6275603122201.712	POS Data
N6275603122201.713	POS Data
N6275603122201.714	POS Data
N6275603122201.715	POS Data
N6275603122201.716	POS Data
N6275603122201.717	POS Data
N6275603122201.718	POS Data
N6275603122201.719	POS Data
N6275603122201.720	POS Data
N6275603122201.721	POS Data
N6275603122201.722	POS Data
N6275603122201.723	POS Data
N6275603122201.724	POS Data
N6275603122201.725	POS Data
N6275603122201.726	POS Data
N6275603122201.727	POS Data
N6275603122201.728	POS Data
N6275603122201.729	POS Data
N6275603122201.730	POS Data
N6275603122201.731	POS Data
N6275603122201.732	POS Data
N6275603122201.733	POS Data
N6275603122201.734	POS Data
N6275603122201.735	POS Data
N6275603122201.736	POS Data
N6275603122201.737	POS Data
N6275603122201.738	POS Data
N6275603122201.739	POS Data
N6275603122201.740	POS Data
N6275603122201.741	POS Data
N6275603122201.742	POS Data
N6275603122201.743	POS Data
N6275603122201.744	POS Data
N6275603122201.745	POS Data
N6275603122201.746	POS Data
N6275603122201.747	POS Data
N6275603122201.748	POS Data
N6275603122201.749	POS Data
N6275603122201.750	POS Data

File name	File type
N6275603122201.751	POS Data
N6275603122201.752	POS Data
N6275603122201.753	POS Data
N6275603122201.754	POS Data
N6275603122201.755	POS Data
N6275603122201.756	POS Data
N6275603122201.757	POS Data
N6275603122201.758	POS Data
N6275603122201.759	POS Data
N6275603122201.760	POS Data
N6275603122201.761	POS Data
N6275603122201.762	POS Data
N6275603122201.763	POS Data
N6275603122201.764	POS Data
N6275603122201.765	POS Data
N6275603122201.766	POS Data
N6275603122201.767	POS Data

Input Files

File Name	File Type
Ephm2010.23g	GLONASS Broadcast Ephemeris
Ephm2010.23n	GPS Broadcast Ephemeris

Output Files

Filename	File type
sbet_07202023A_4891.out	SBET Trajectory File

Rover Data Summary

First raw data file	N6275603122201.692		
Last raw data file	N6275603122201.767		
Start GPS week	2271		
Start time	390635.996 (7/20/2023 12:30:35 PM)		
End time	414280.371 (7/20/2023 7:04:40 PM)		
Start of fine alignment	390659.220 (7/20/2023 12:30:59 PM)		
Available subsystems	Primary GNSS, Gimbal, IMU		
POS Event Input	None		
Correction data	None		
IMU Installation Lever Arms & Mounting Angles			
Gimbal to IMU lever arm (m)	-0.034	-0.010	-0.374
Gimbal to IMU mounting angles (deg)	0.000	0.000	0.000
Gimbal to Primary GNSS lever arm (m)	-0.135	0.064	-1.339
Gimbal to Primary GNSS lever arm std dev (m)	-1.000		
Aircraft to Reference mounting angles (deg)	0.000	0.000	0.000

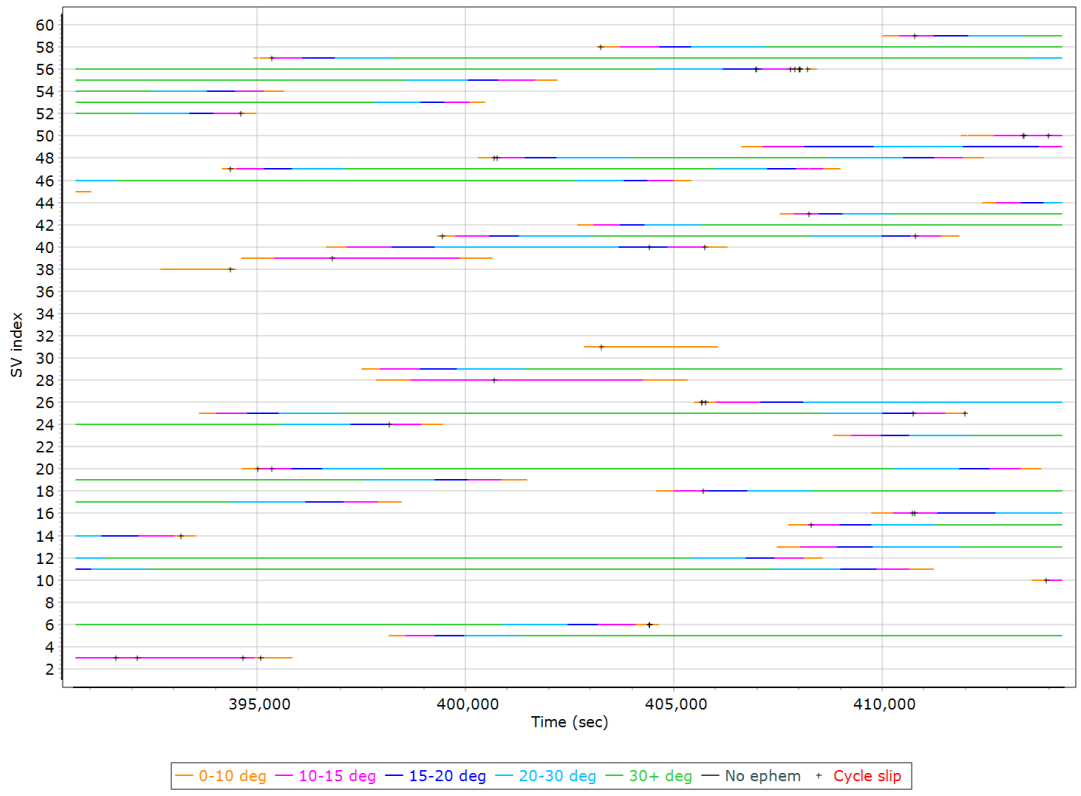
Rover Data QC

Raw IMU Import QC Summary

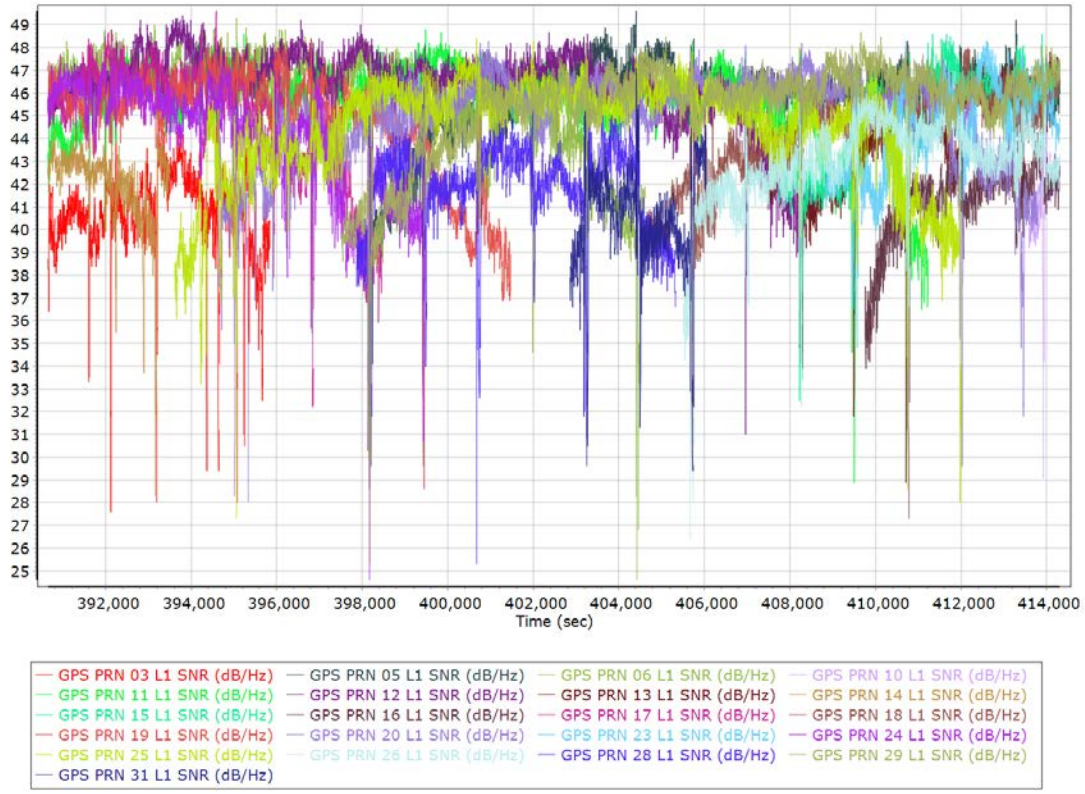
IMU data input file	imu_Mission 1.dat
IMU data check log file	imudt_07202023A_4891.log
IMU Records Processed	4729975
Termination Status	Normal
IMU Anomalies	0

Primary Observables & Satellite Data

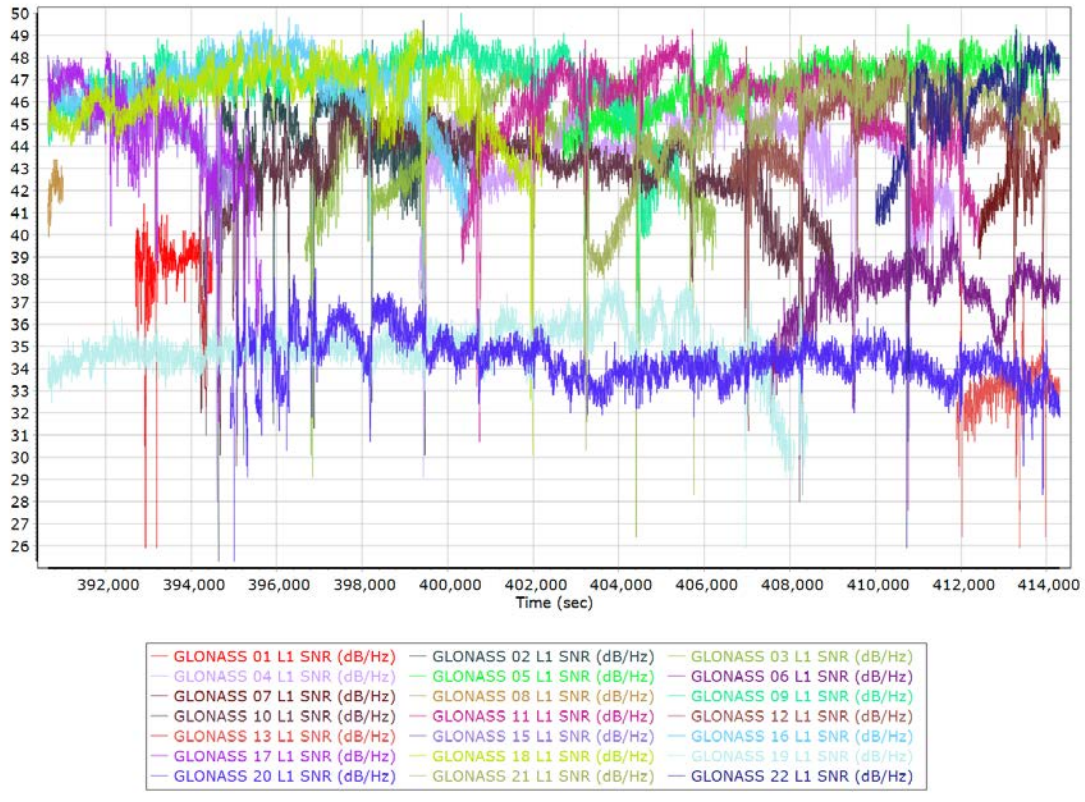
GPS/GLONASS L1 Satellite Lock/Elevation



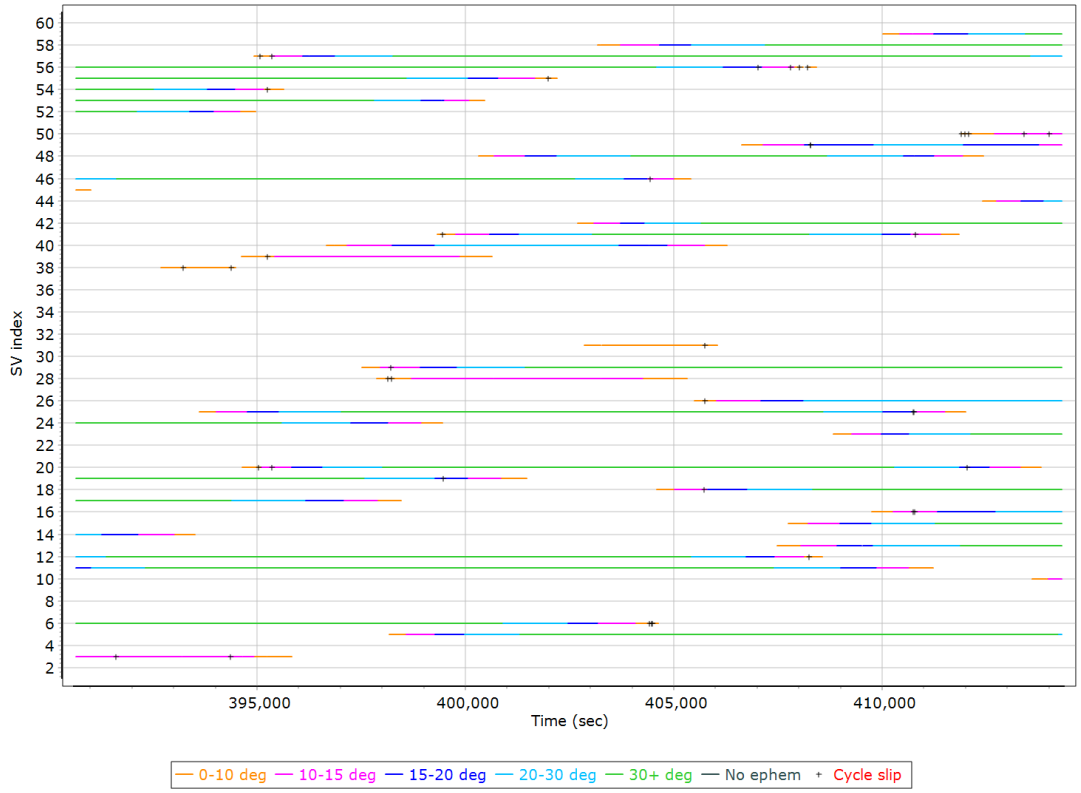
GPS L1 SNR



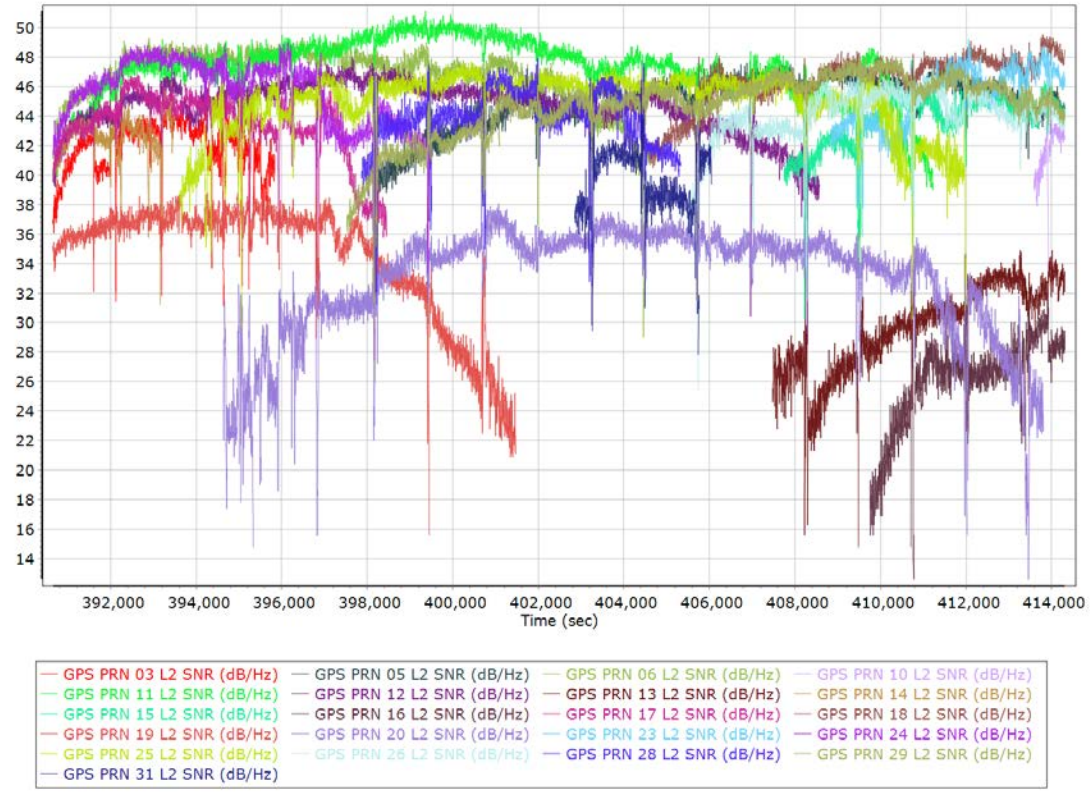
GLONASS L1 SNR



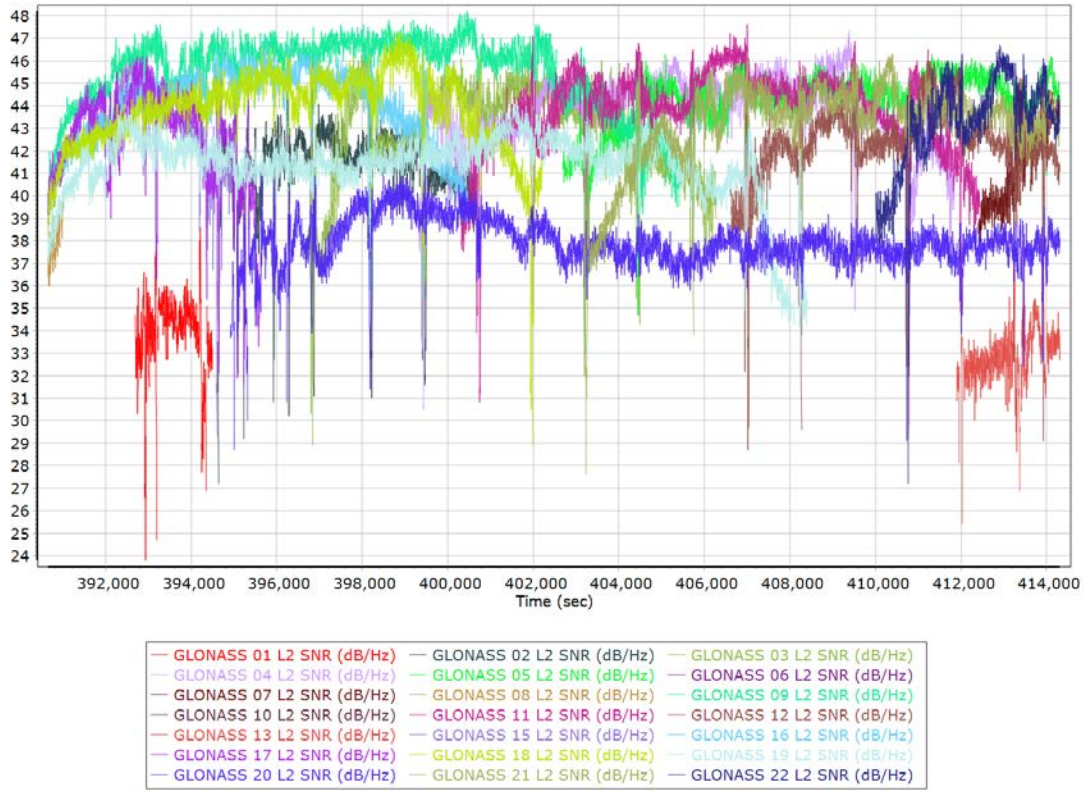
GPS/GLONASS L2 Satellite Lock/Elevation



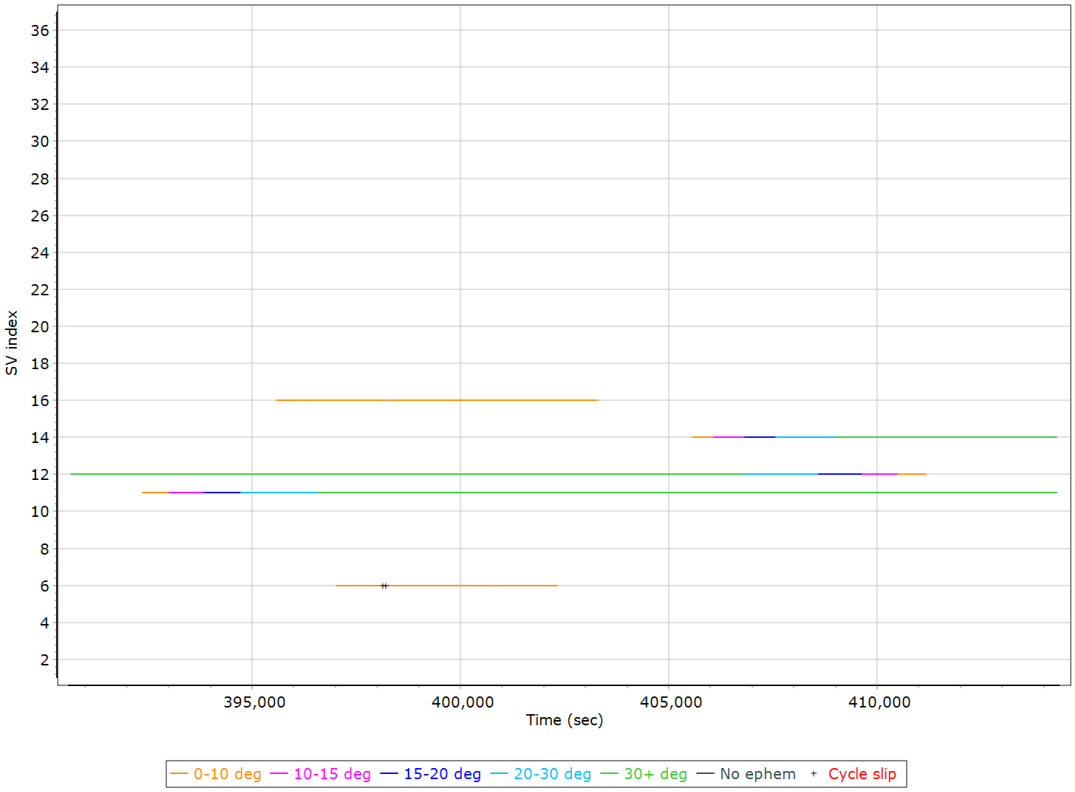
GPS L2 SNR



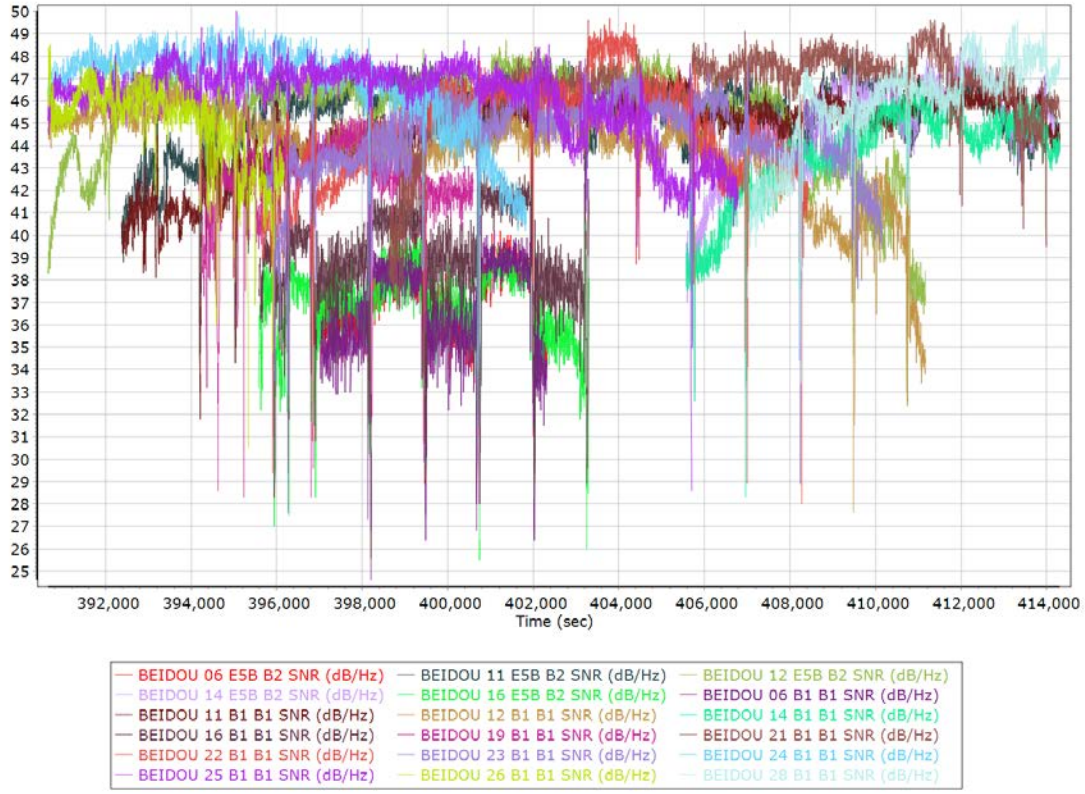
GLONASS L2 SNR



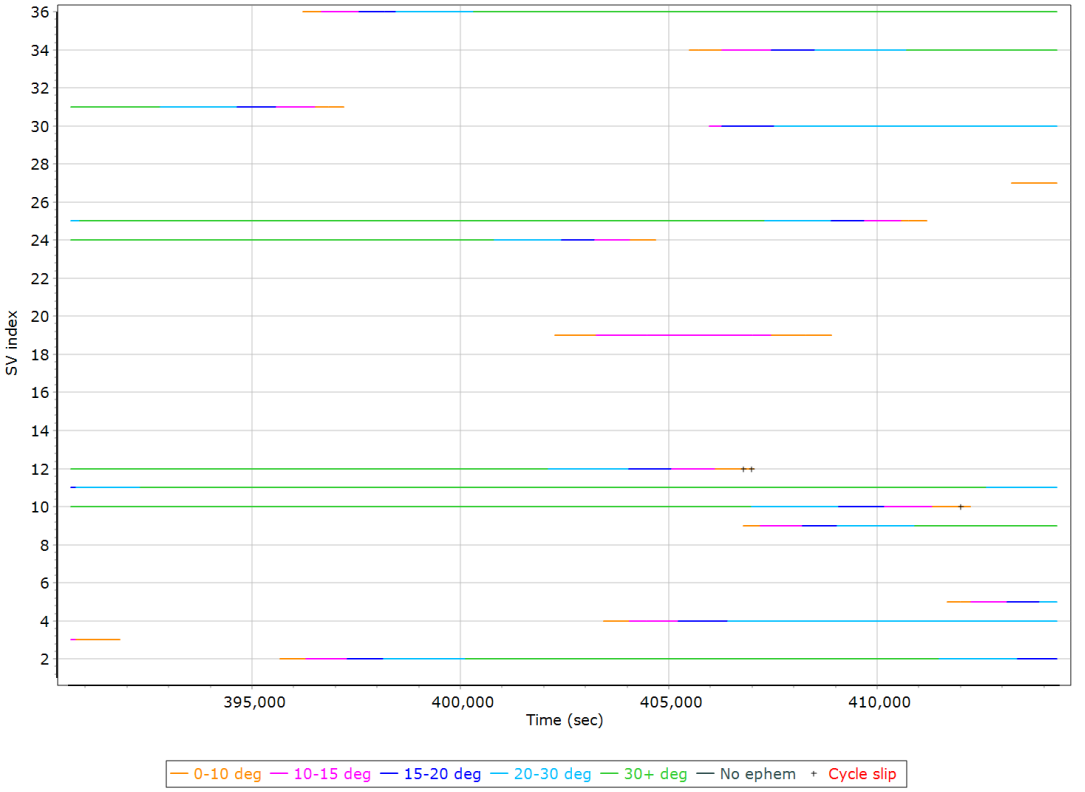
BEIDOU Satellite Lock/Elevation



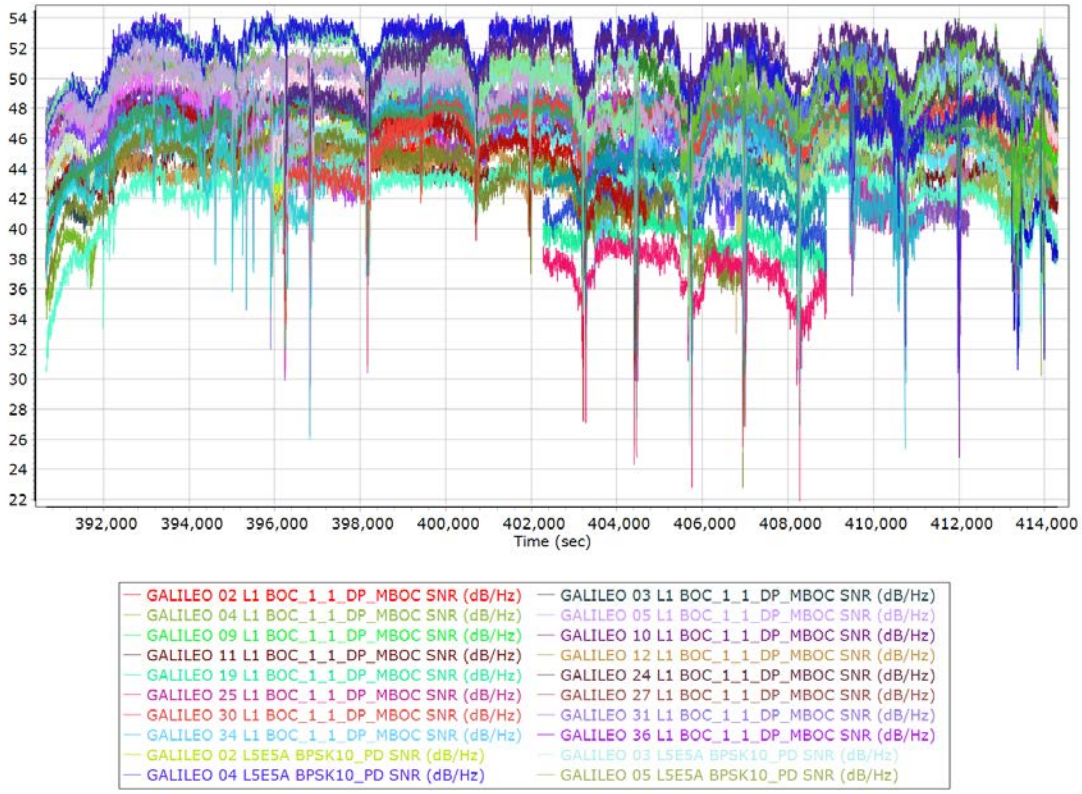
BEIDOU SNR



GALILEO Satellite Lock/Elevation



GALILEO SNR

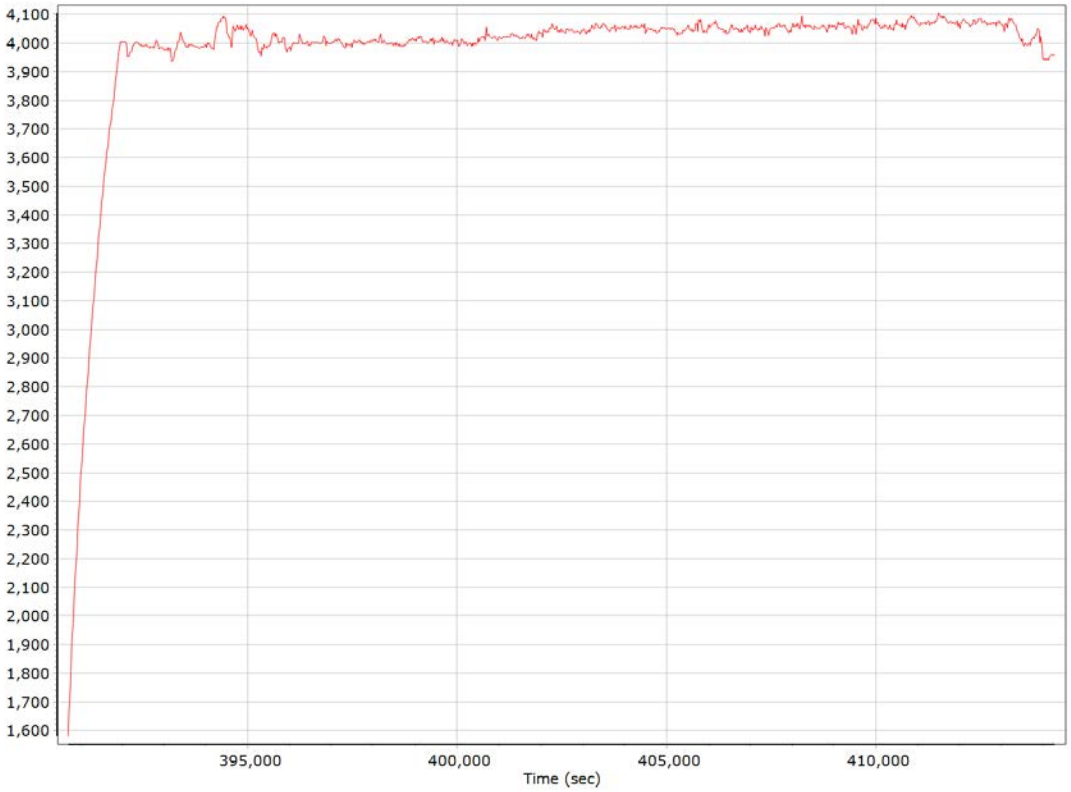

54
52
50
48
46
44
42
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38
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30
28
26
24
22
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394,000
396,000
398,000
400,000
402,000
404,000
406,000
408,000
410,000
412,000
414,000
Time (sec)
GALILEO 02 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 03 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 04 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 05 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 09 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 10 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 11 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 12 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 19 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 24 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 25 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 27 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 30 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 31 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 34 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 36 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 02 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 03 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 04 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 05 L5E5A BPSK10_PD SNR (dB/Hz)

Smoothed Trajectory Information

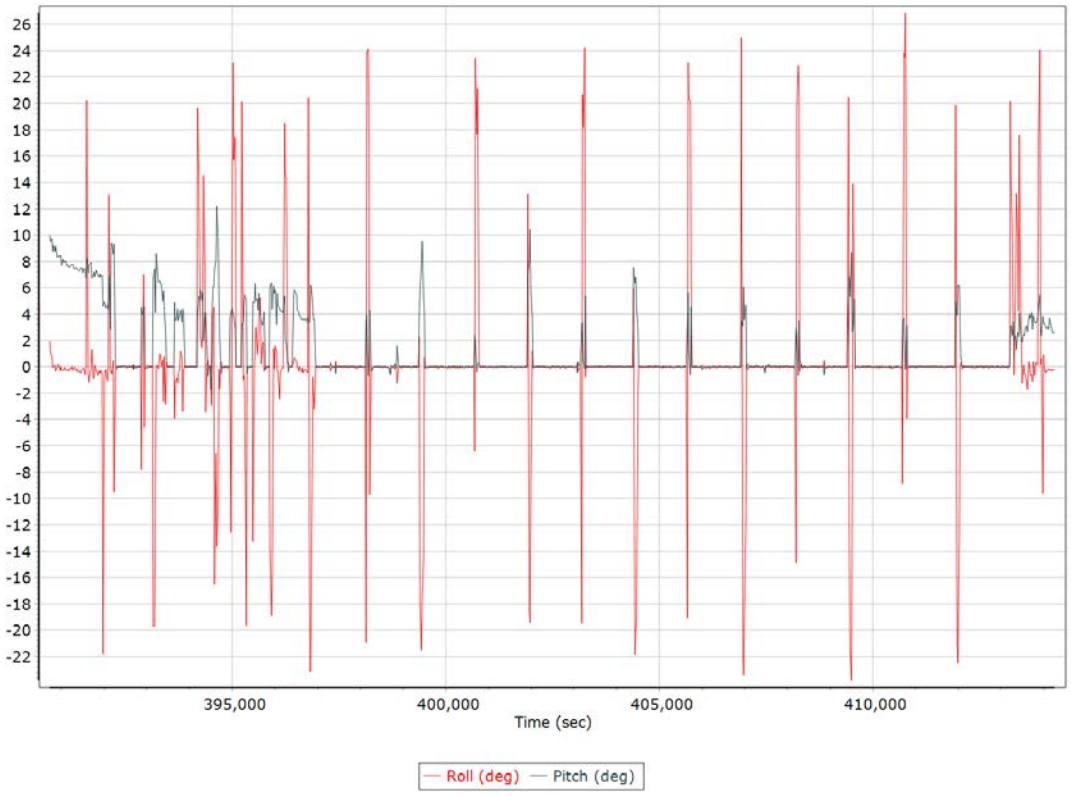
Top View



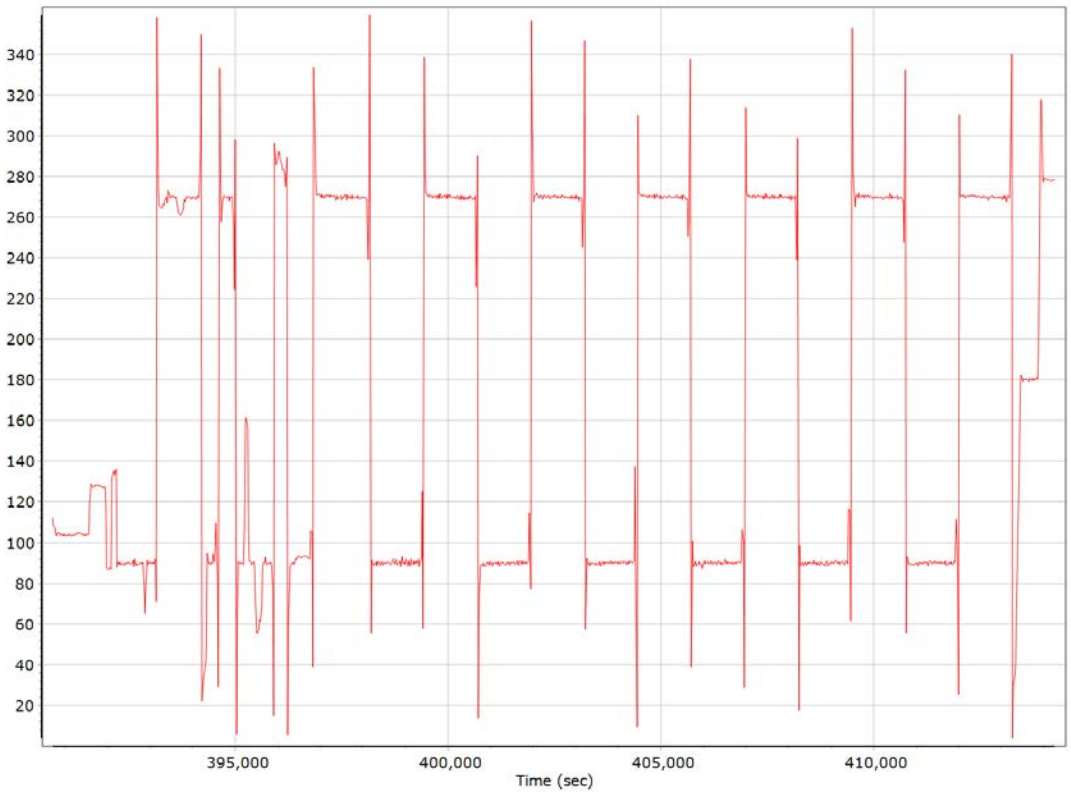
Altitude



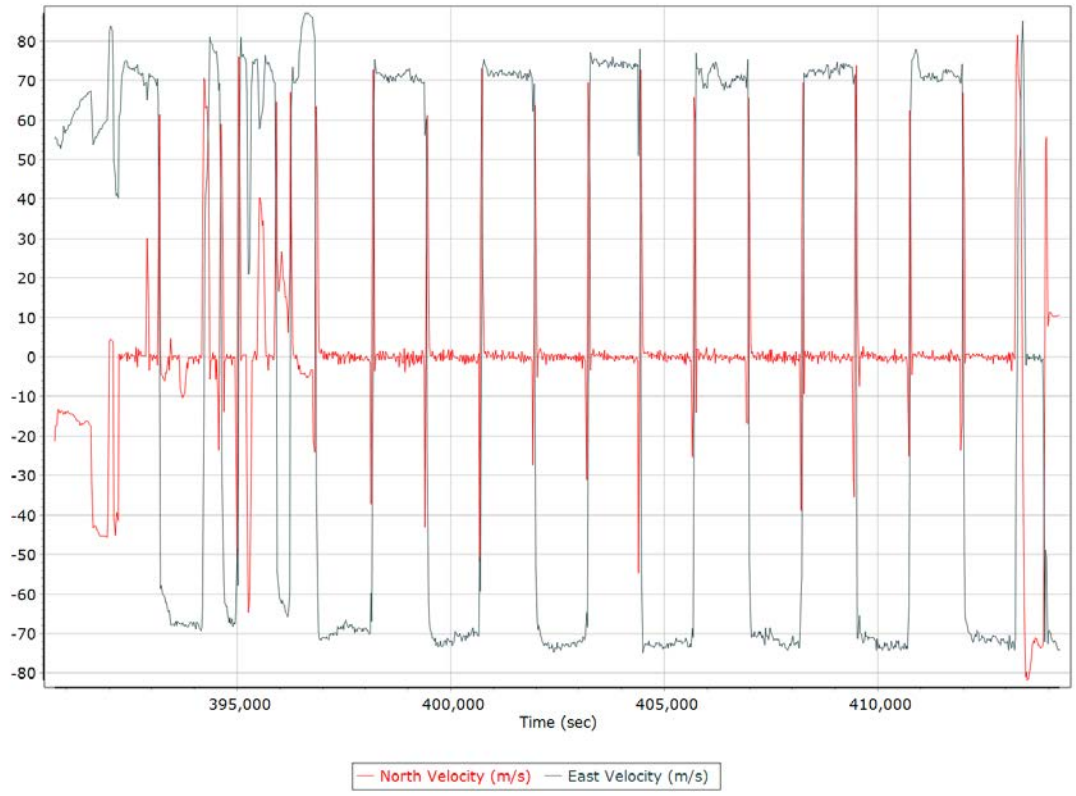
Roll/Pitch



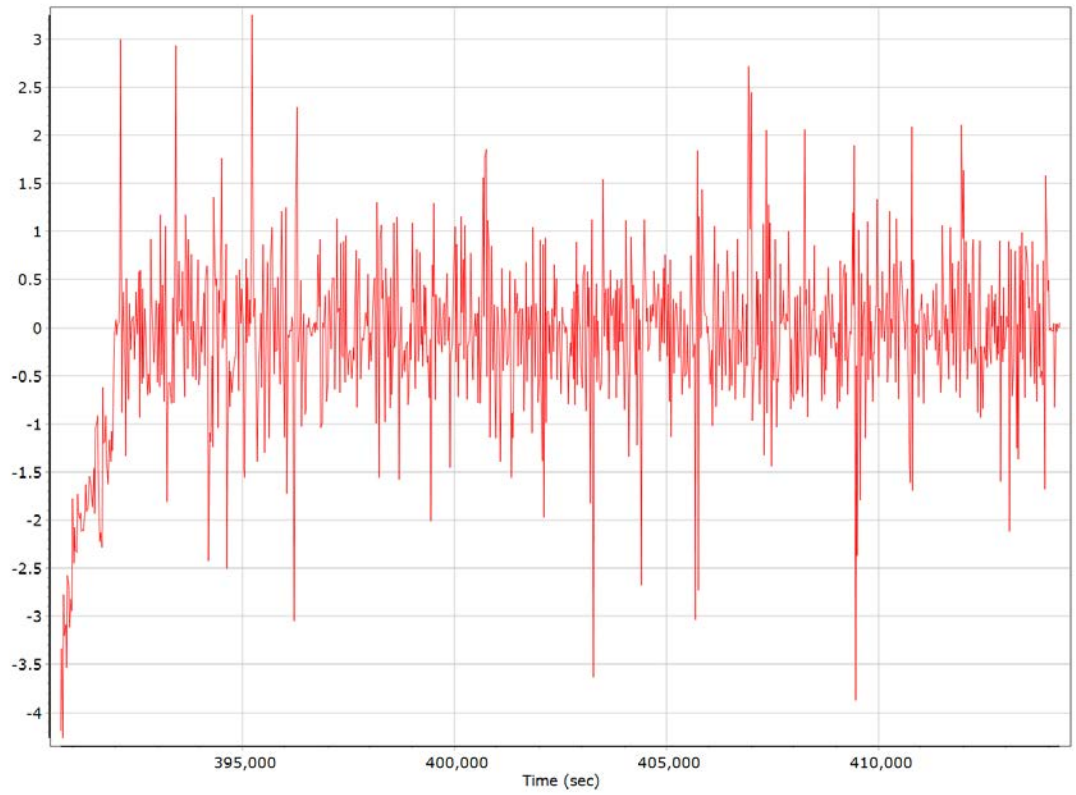
Heading



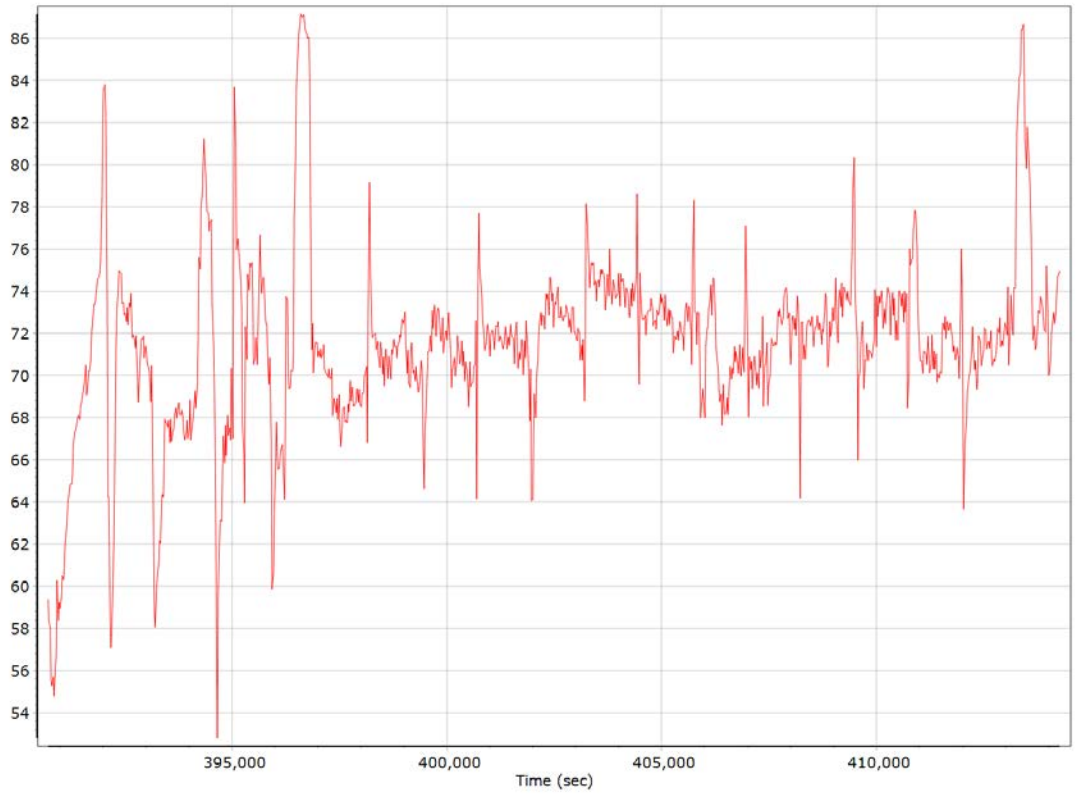
North/East Velocity



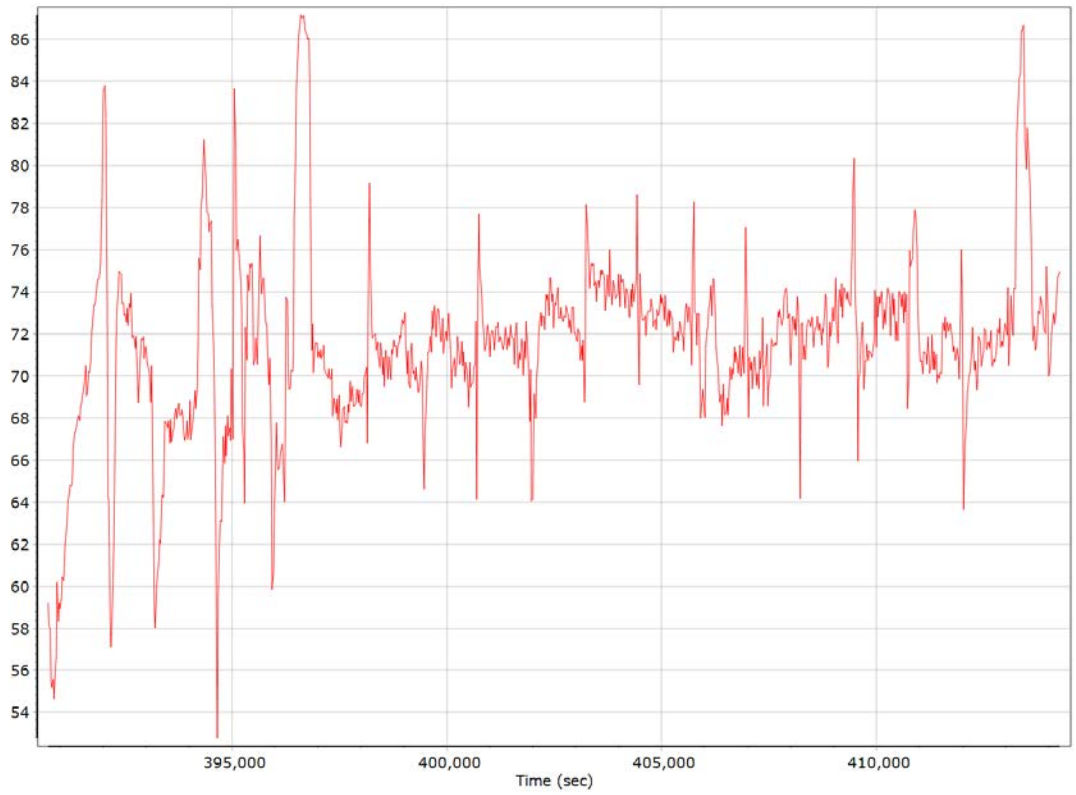
Down Velocity



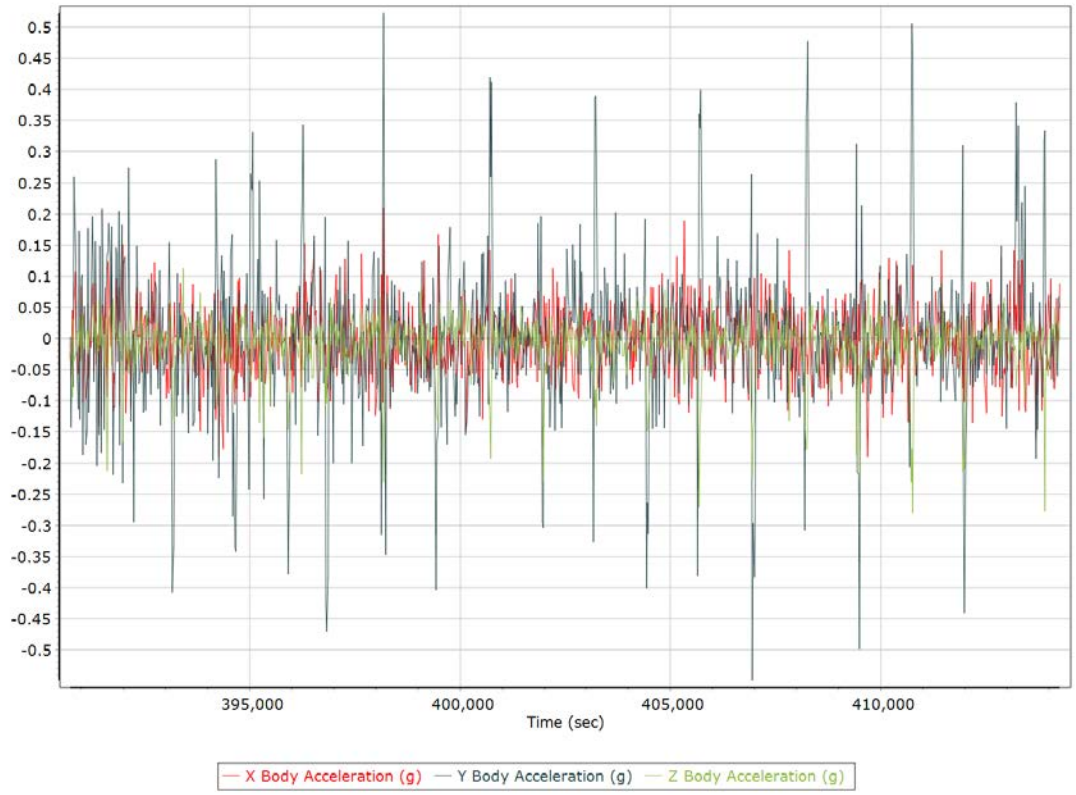
Total Speed



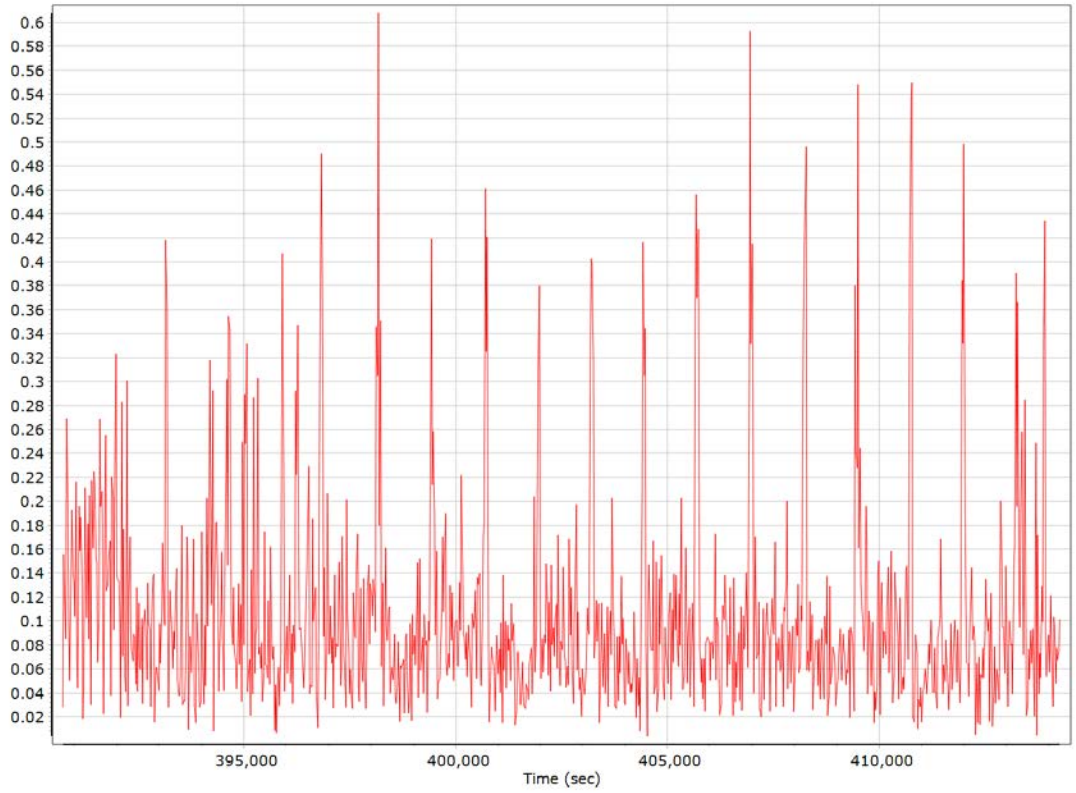
Ground Speed



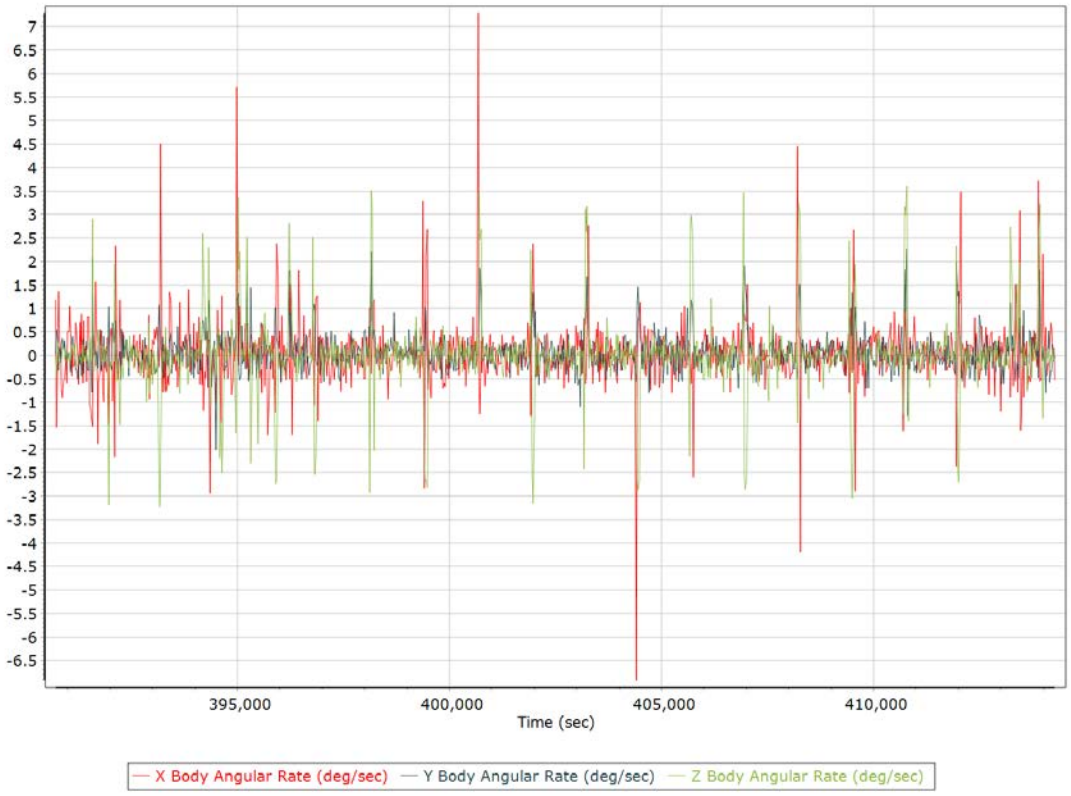
Body Acceleration



Total Body Acceleration



Body Angular Rate

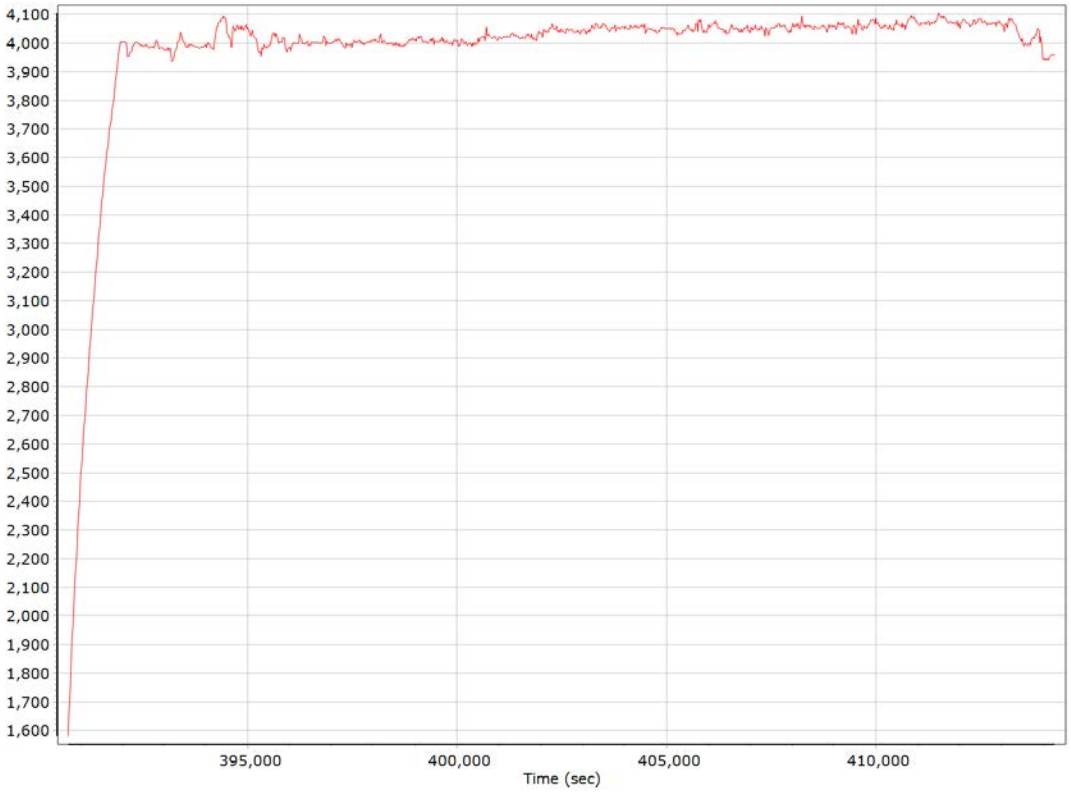


Forward Processed Trajectory Information

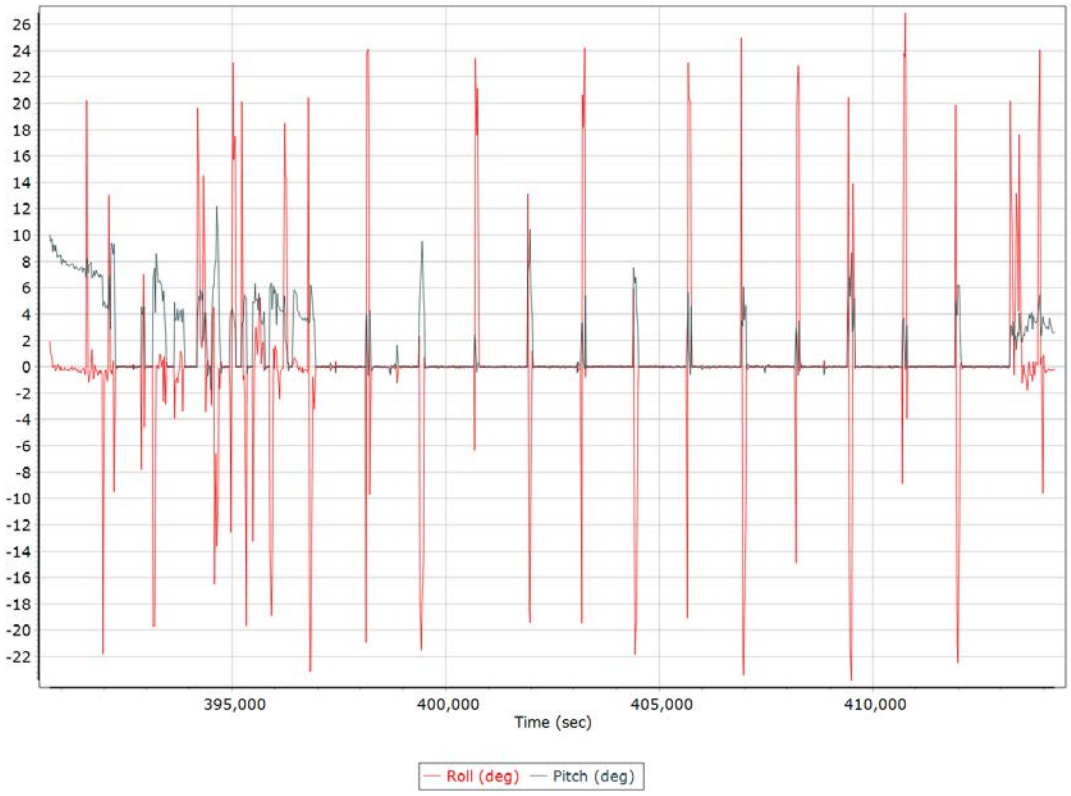
Top View



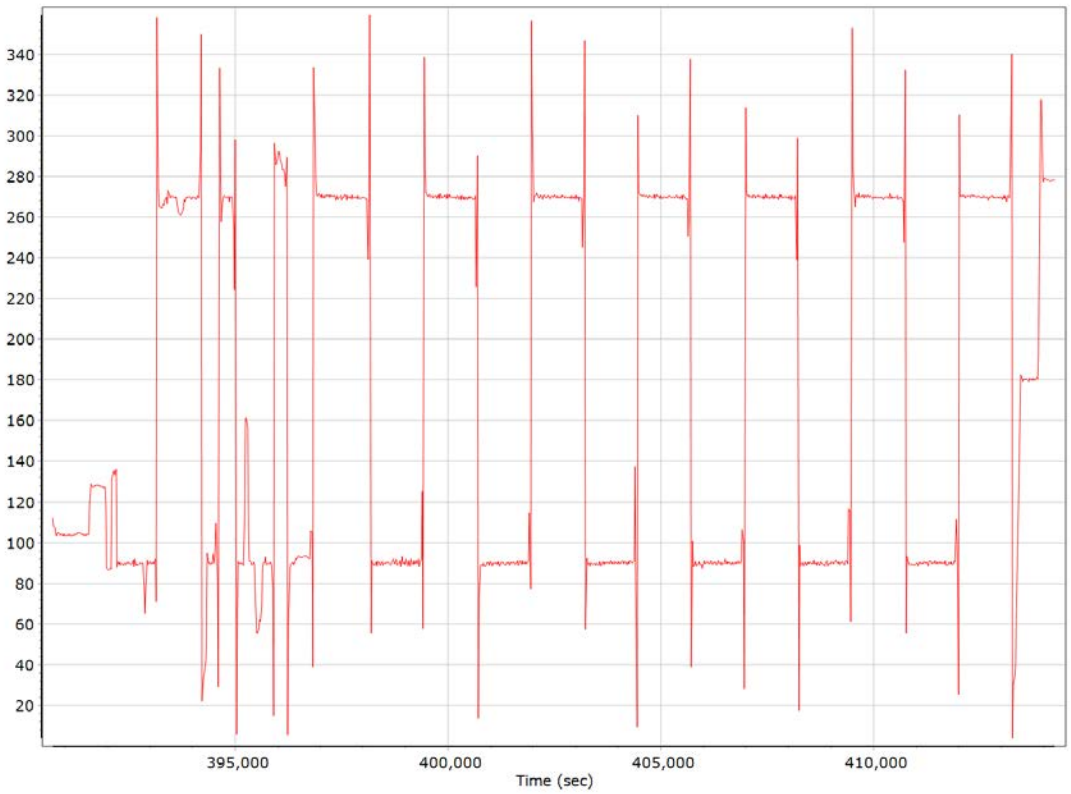
Altitude



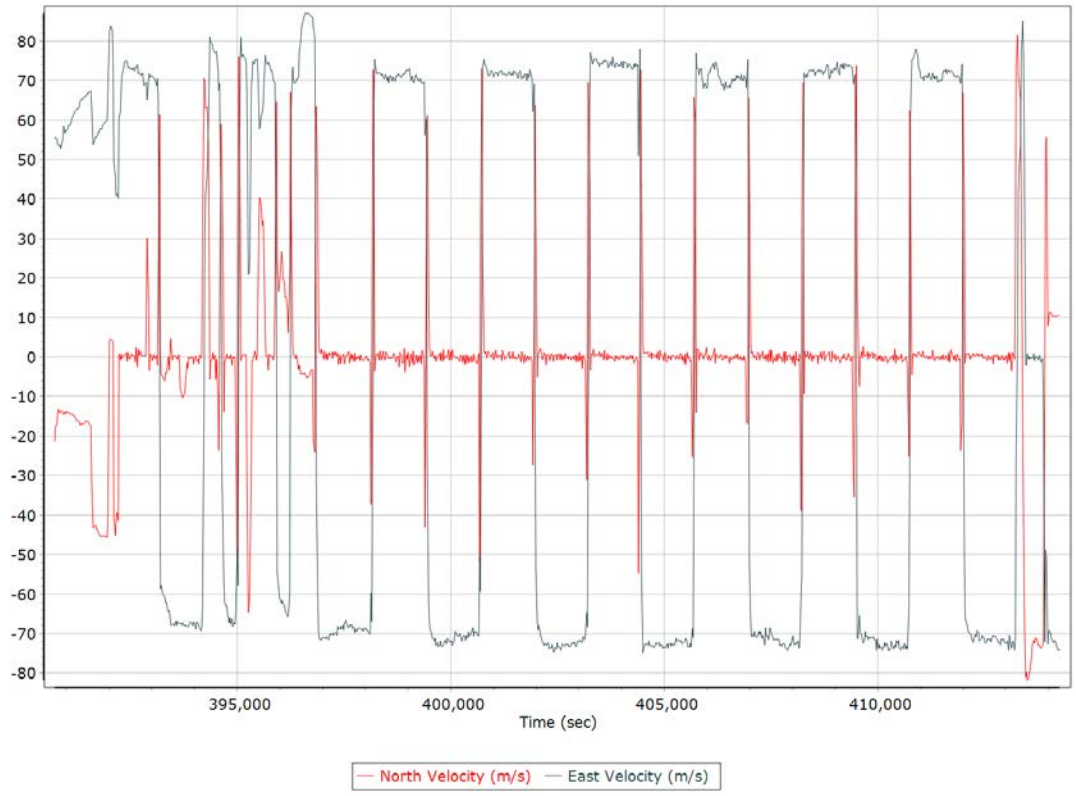
Roll/Pitch



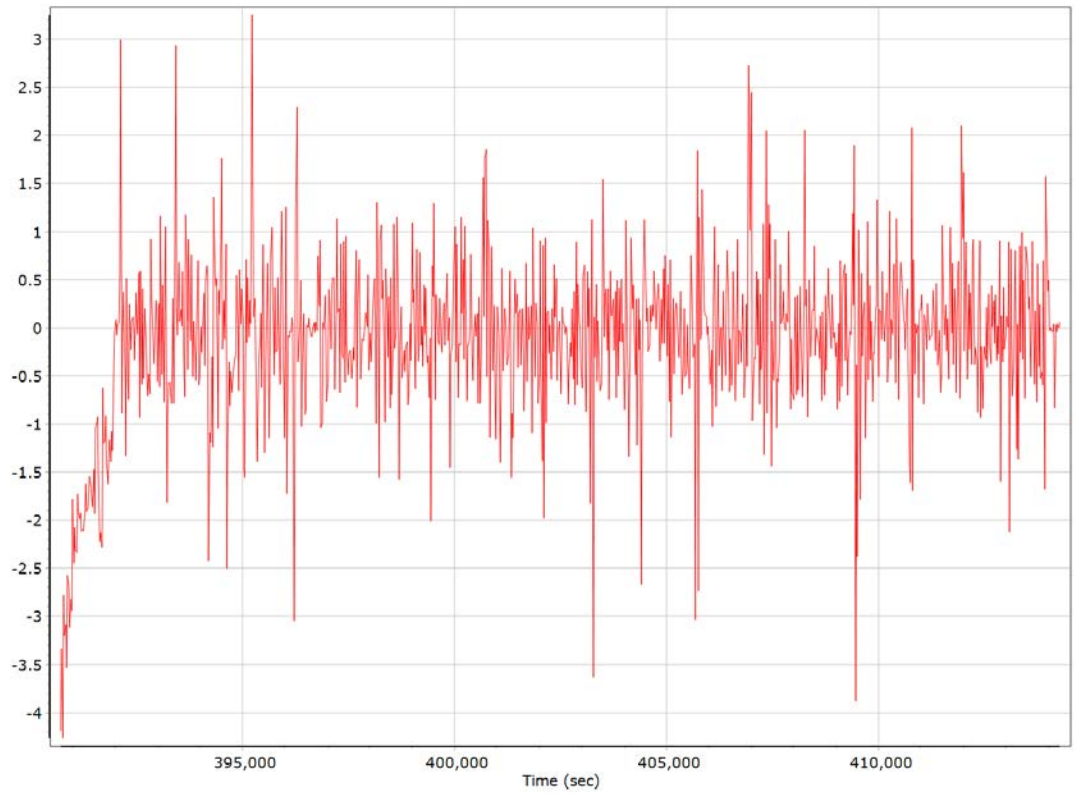
Heading



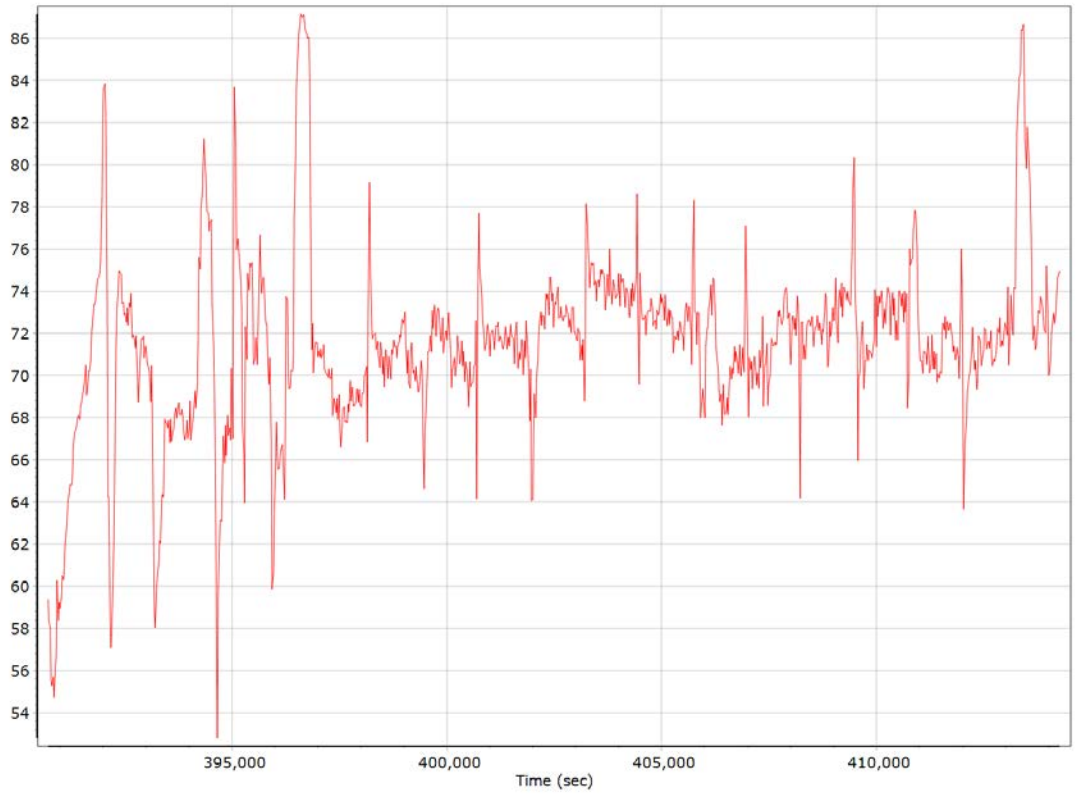
North/East Velocity



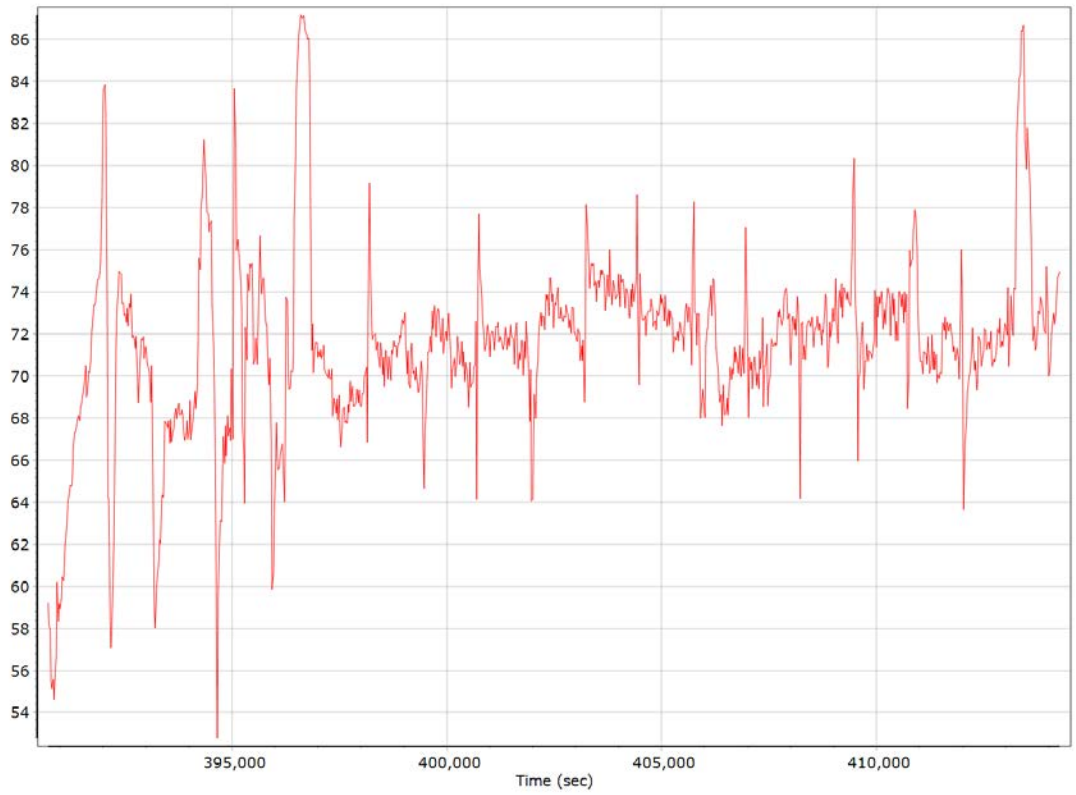
Down Velocity



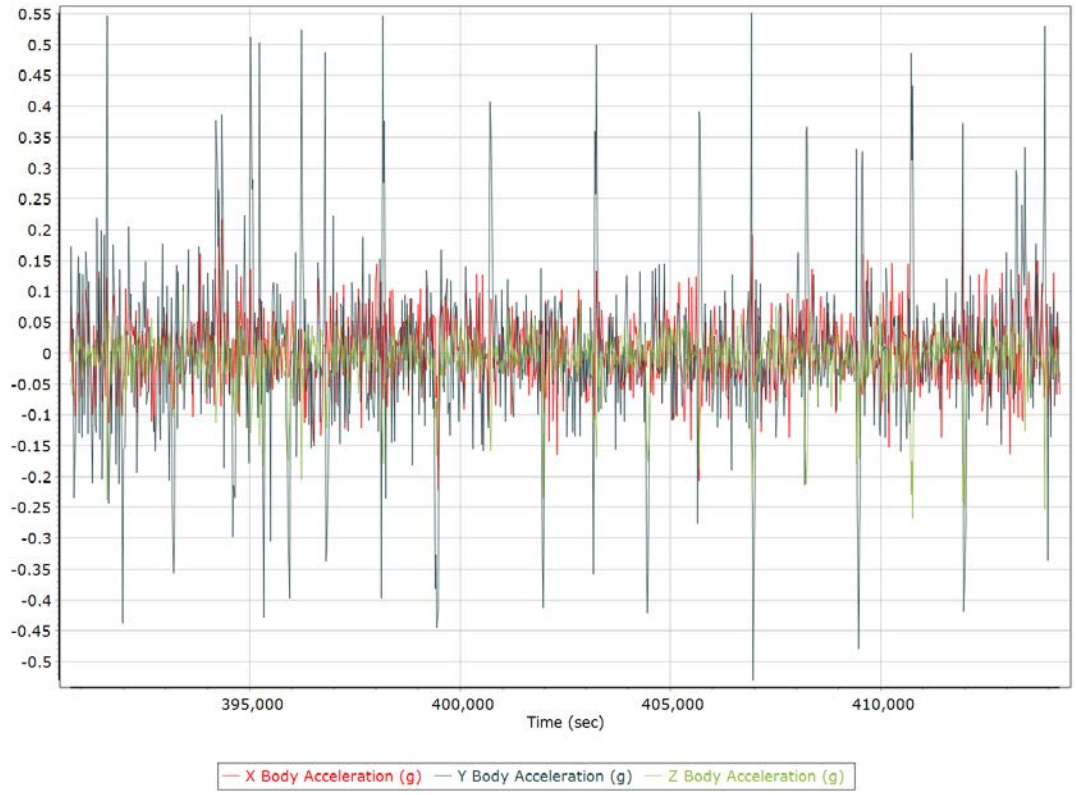
Total Speed



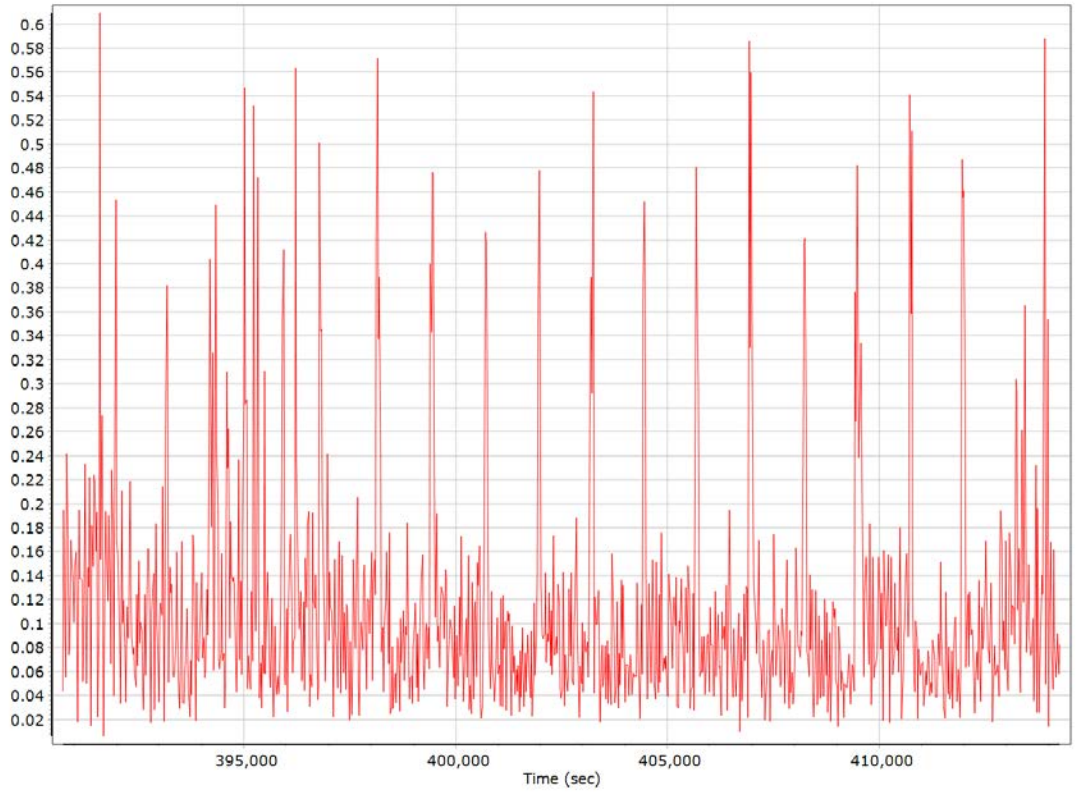
Ground Speed



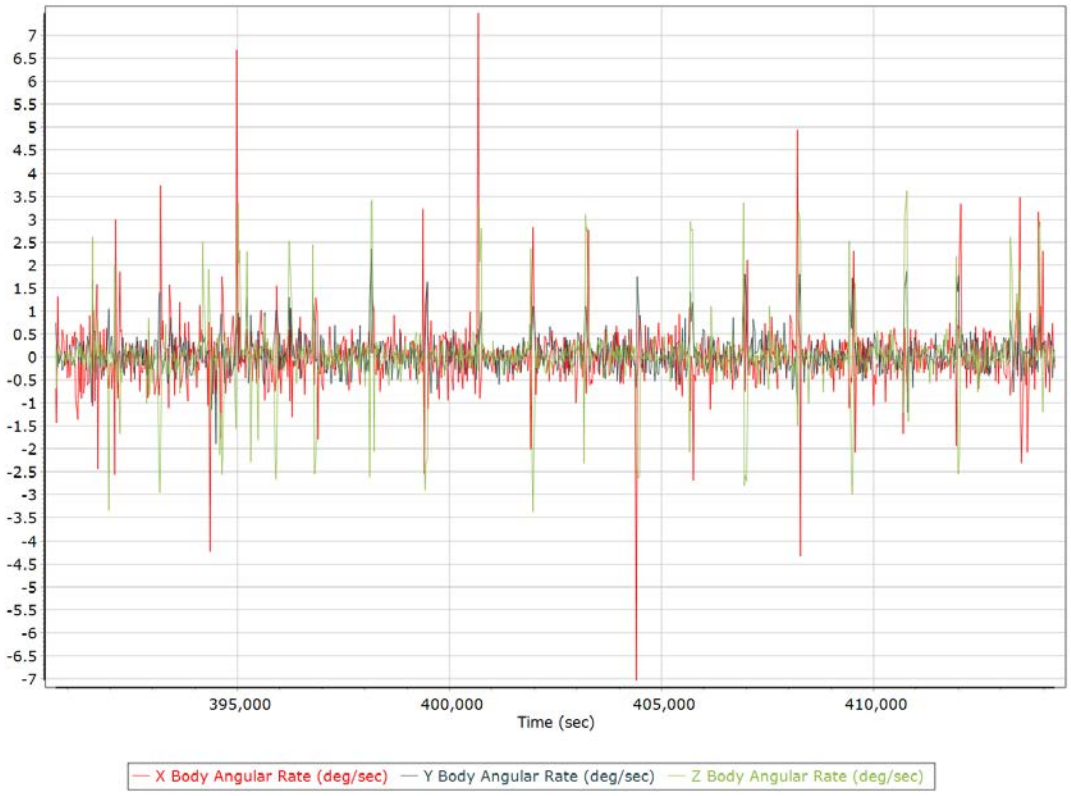
Body Acceleration



Total Body Acceleration



Body Angular Rate

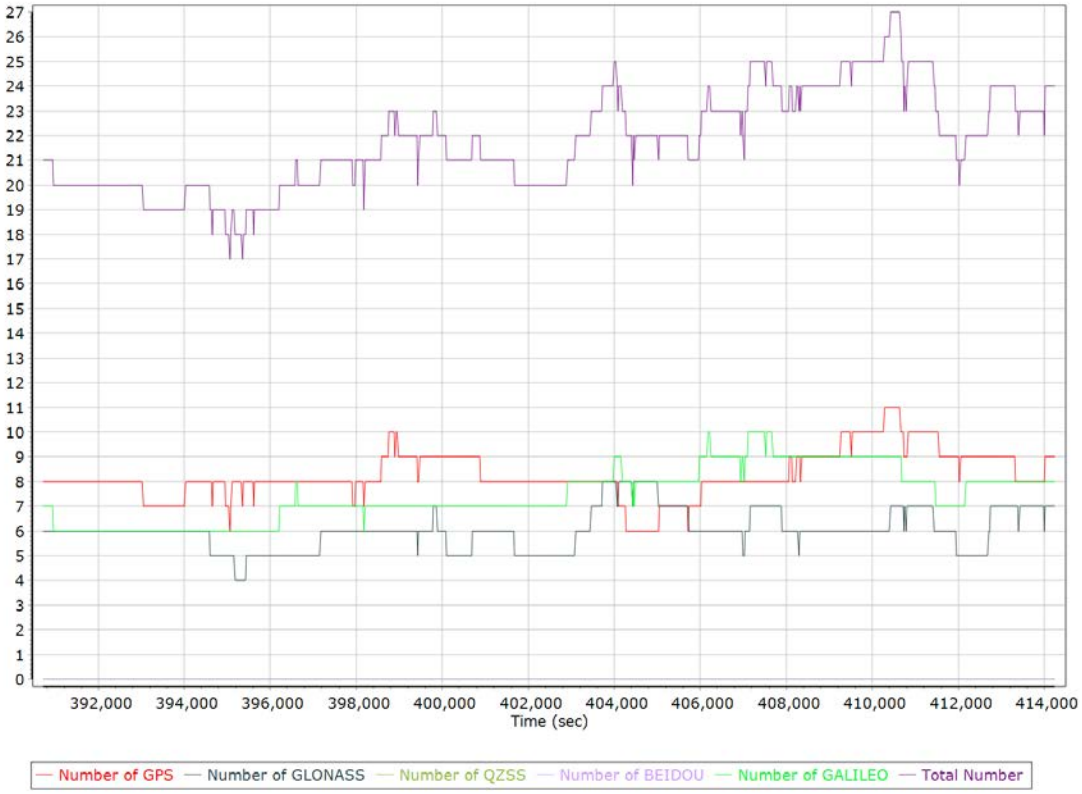


GNSS QC

GNSS QC Statistics

Statistics	Min	Max	Mean
Baseline length (km)	0.00	0.00	
Number of GPS SV	5	11	8
Number of GLONASS SV	4	8	6
Number of QZSS SV	0	0	0
Number of BEIDOU SV	0	0	0
Number of GALILEO SV	6	10	7
Total number of SV	16	27	22
PDOP	0.95	1.83	1.14
QC Solution Gaps	0.00	0.00	
Solution Type	Fixed	Float	No solution
Epoch (sec)	23603.00	0.00	0.00
Percentage	100.00	0.00	0.00

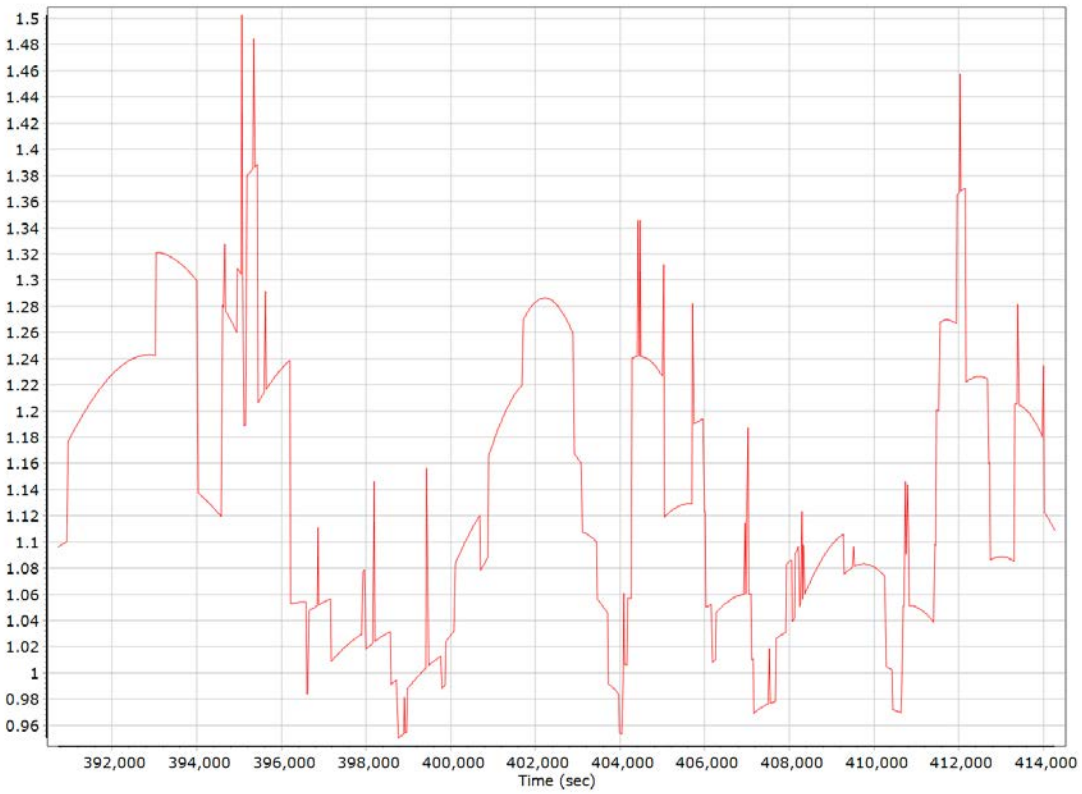
Num SVs in solution



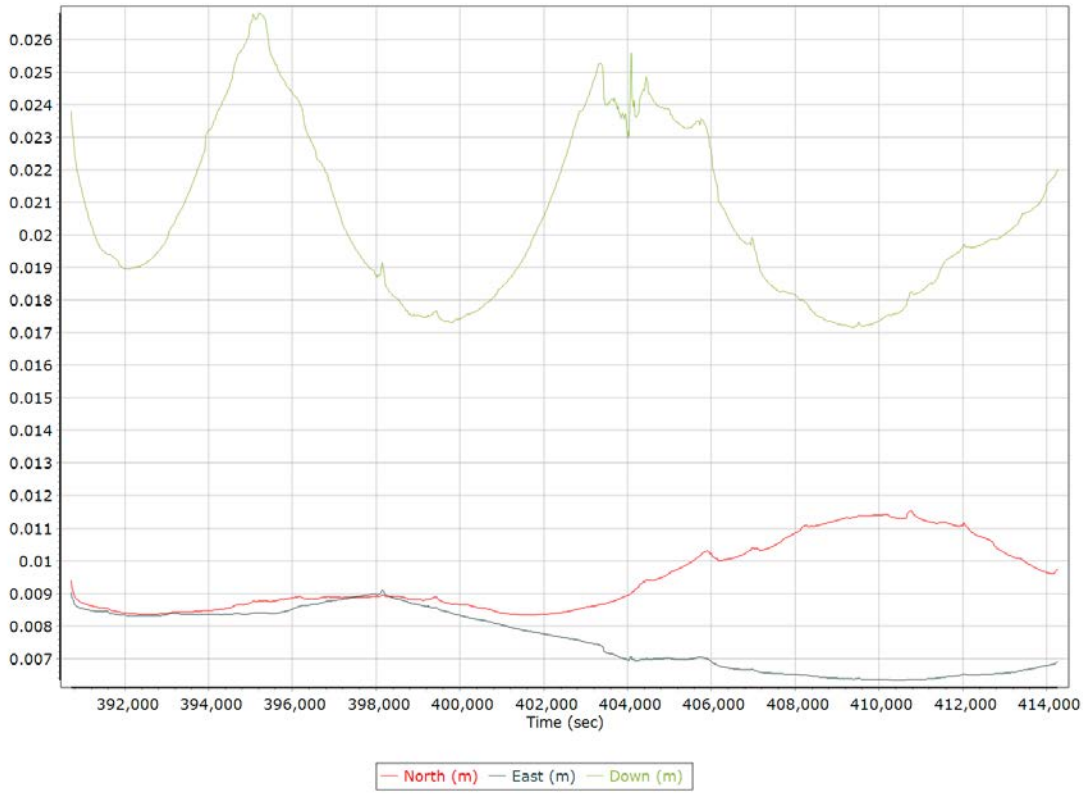
Forward/Reverse Separation



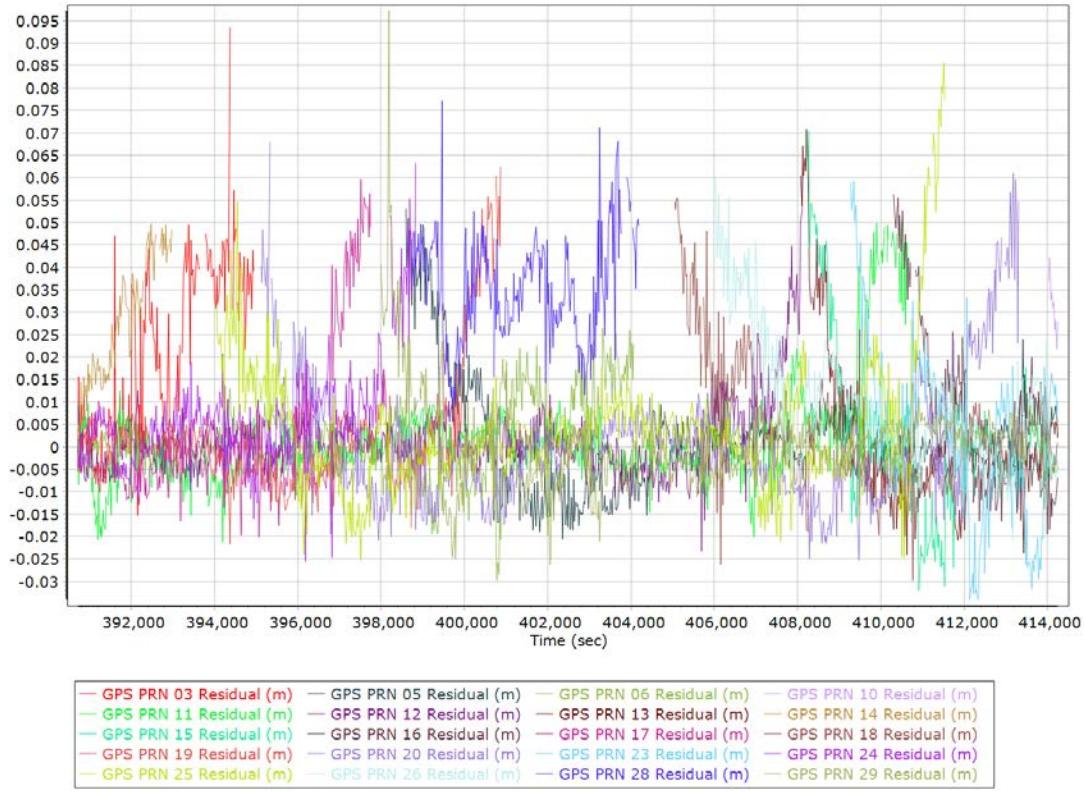
PDOP



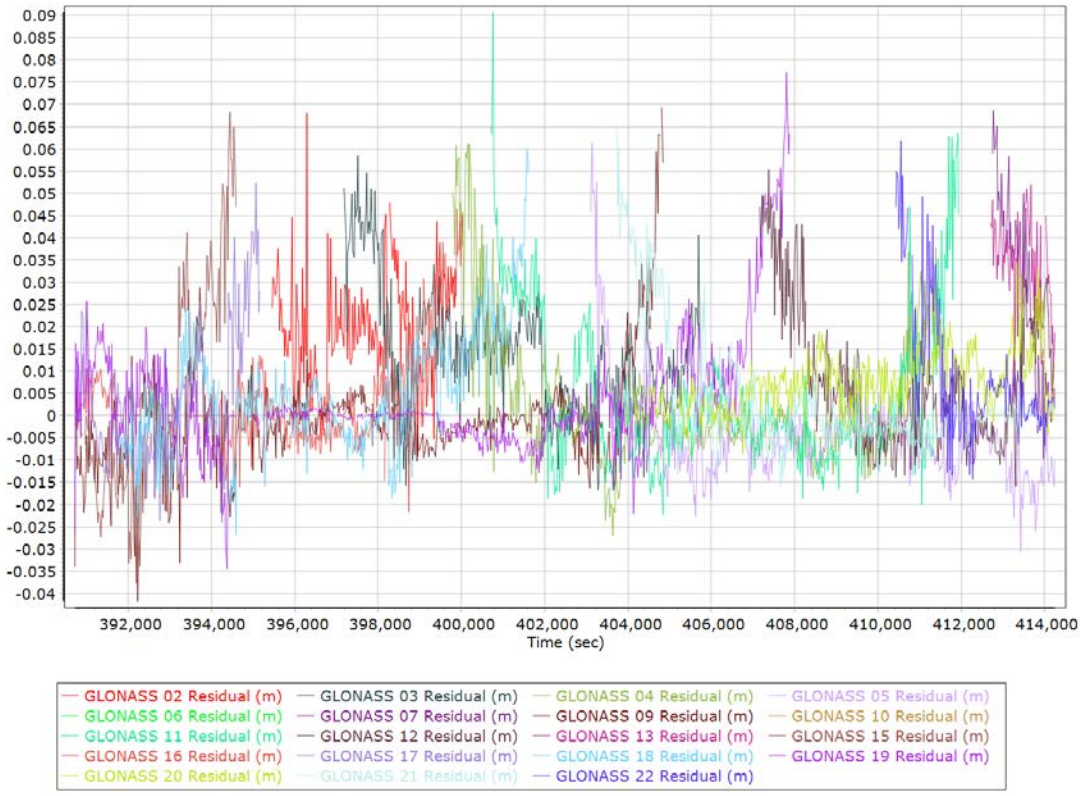
Estimated Position Accuracy



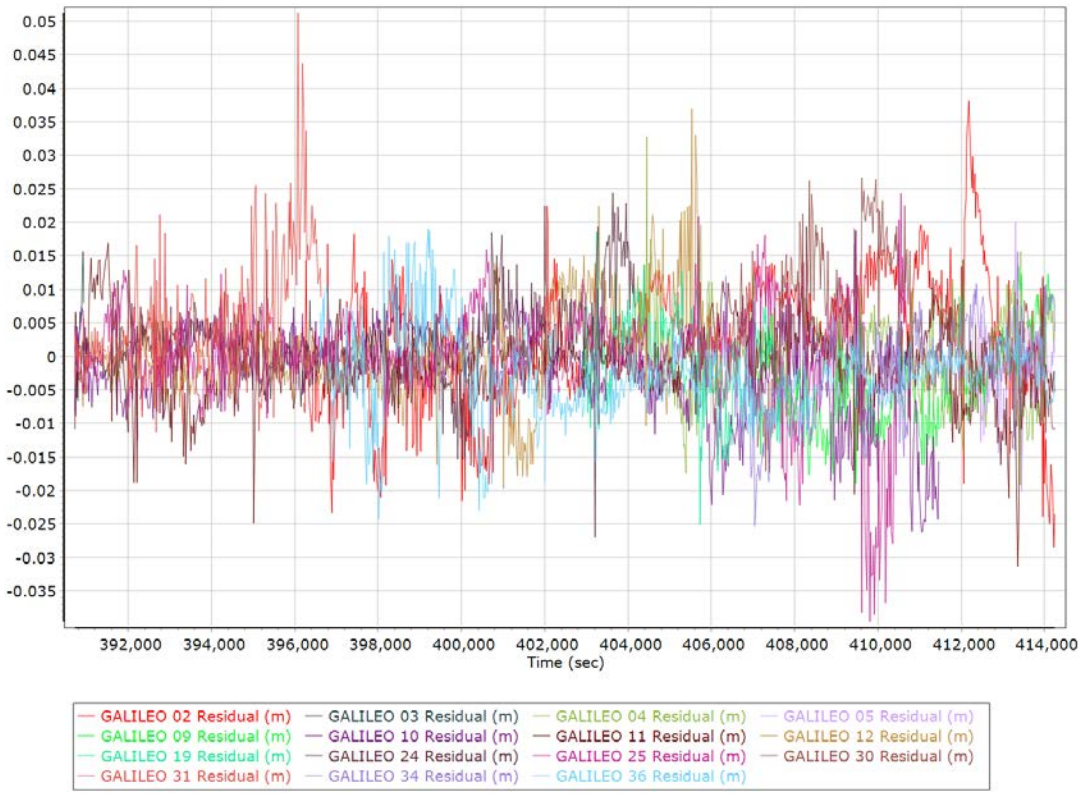
GPS Residuals



GLONASS Residuals



GALILEO Residuals



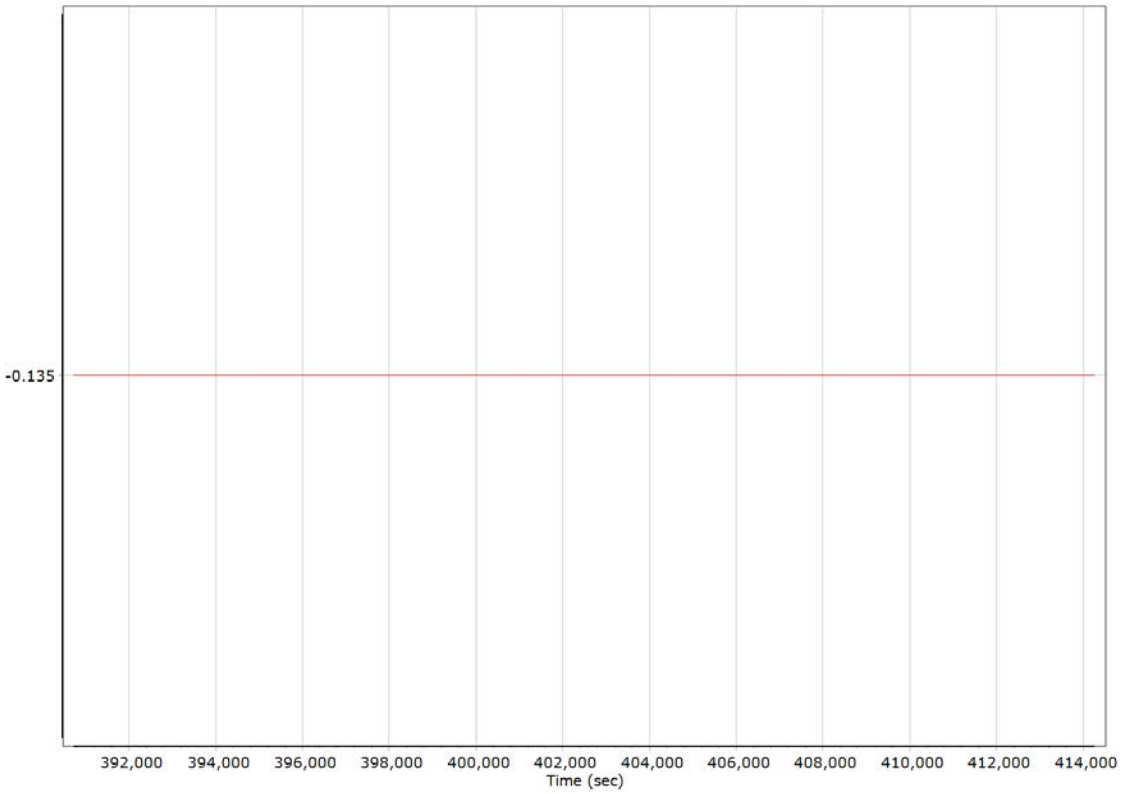
GNSS-Inertial Processor Configuration

Processing mode	IN-Fusion PP-RTX		
Stabilized mount	True		
Processing start time	390636.000 (7/20/2023 12:30:36 PM)		
Processing end time	414289.000 (7/20/2023 7:04:49 PM)		
Initial attitude source	Primary GNSS Track		
IMU Sensor Context	Processing with Onboard IMU		
Gimbal to IMU lever arm (m)	-0.034	-0.010	-0.374
Gimbal to IMU mounting angles (deg)	0.000	0.000	0.000
Gimbal to Primary GNSS lever arm (m)	-0.135	0.064	-1.339
Gimbal to Primary GNSS lever arm std dev (m)	0.030	0.030	0.030
Aircraft to Reference mounting angles (deg)	0.000	0.000	0.000

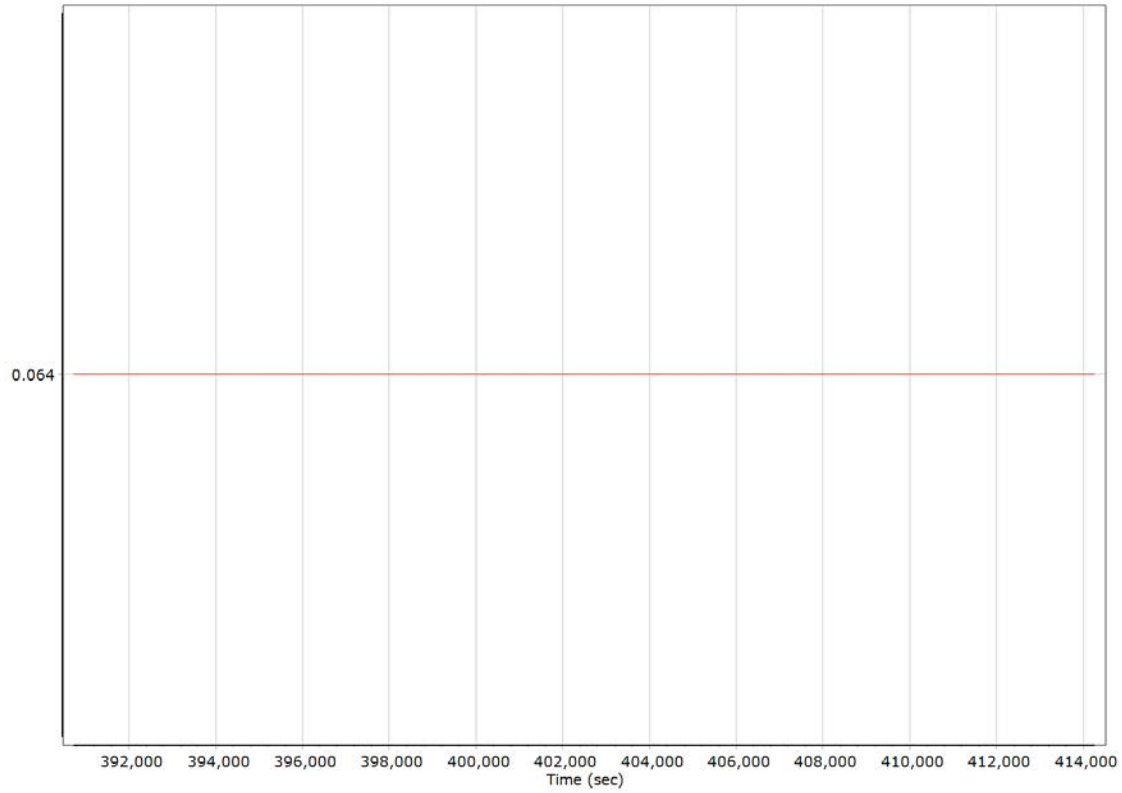
Calibrated Installation Parameters

Reference-Primary GNSS Lever Arm (m)

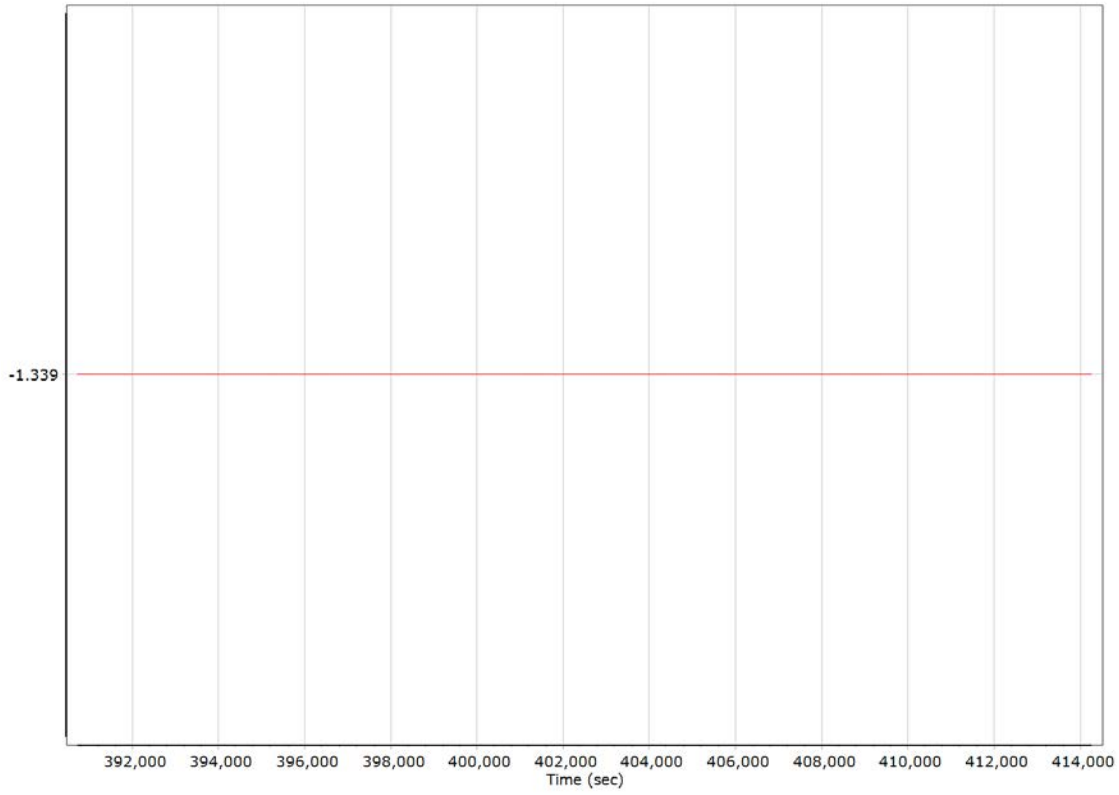
X Reference-Primary GNSS Lever Arm (m)



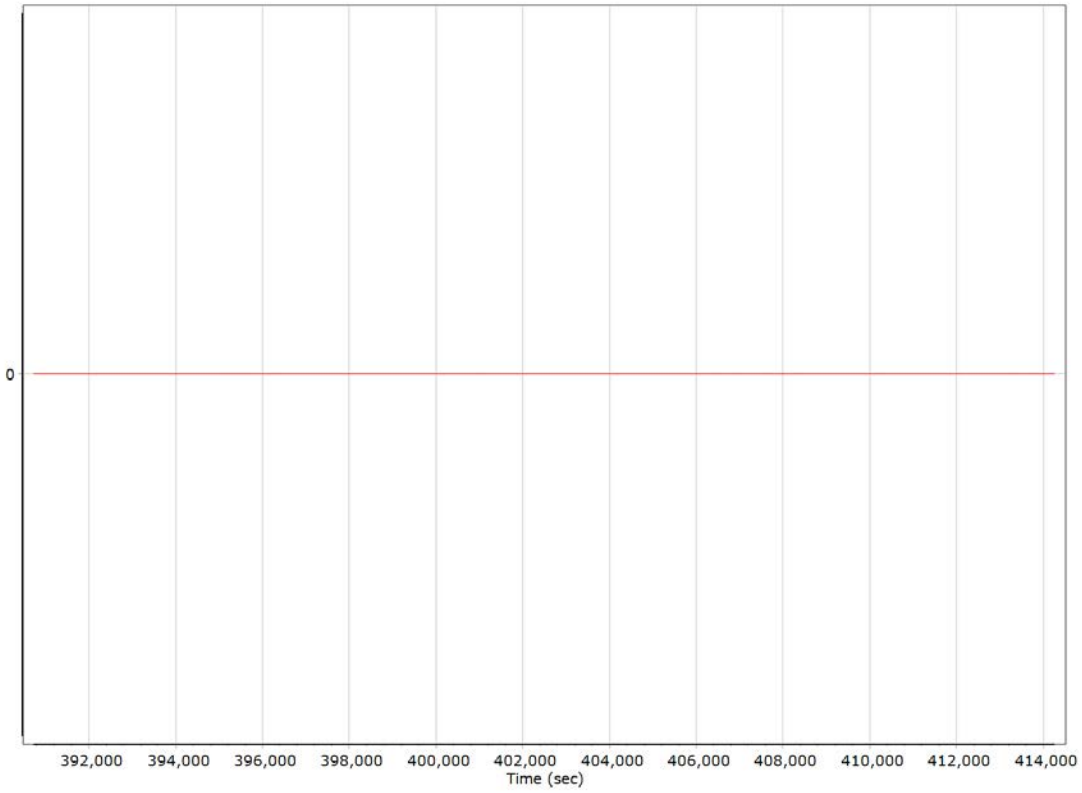
Y Reference-Primary GNSS Lever Arm (m)



Z Reference-Primary GNSS Lever Arm (m)



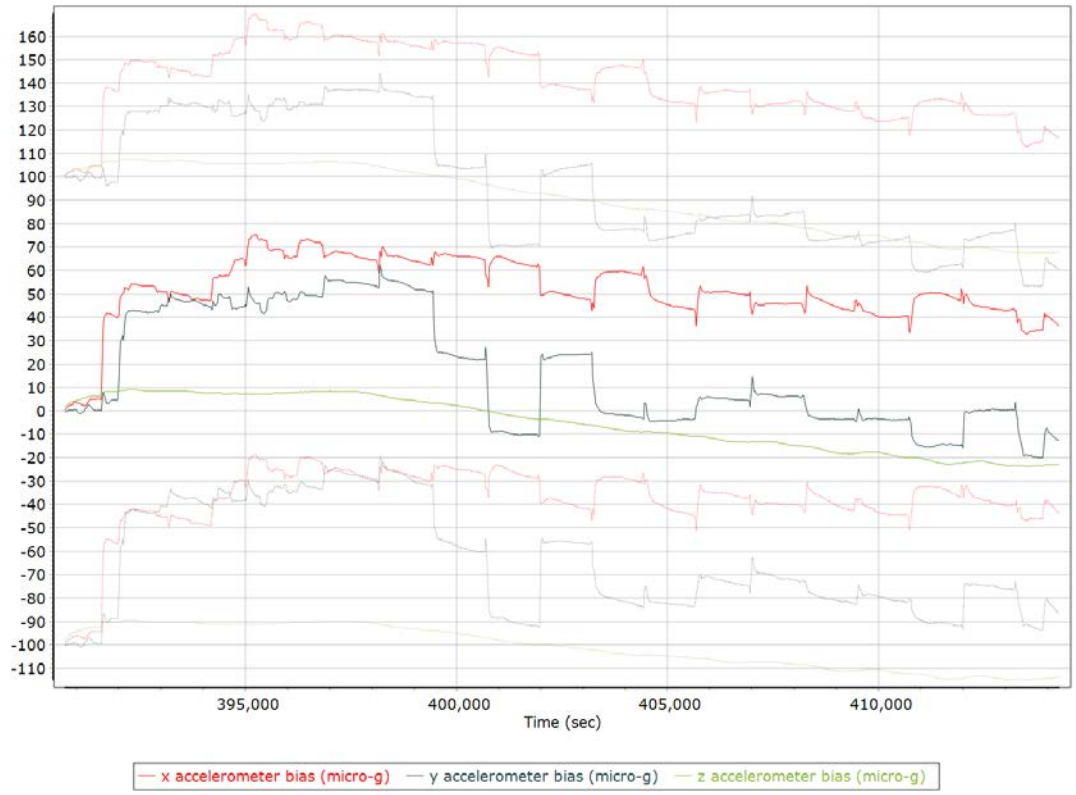
Reference-Primary GNSS Lever Arm Figure of Merit



IN-Fusion QC

Forward Processed Estimated Errors, Reference Frame

Accelerometer Bias (micro-g)



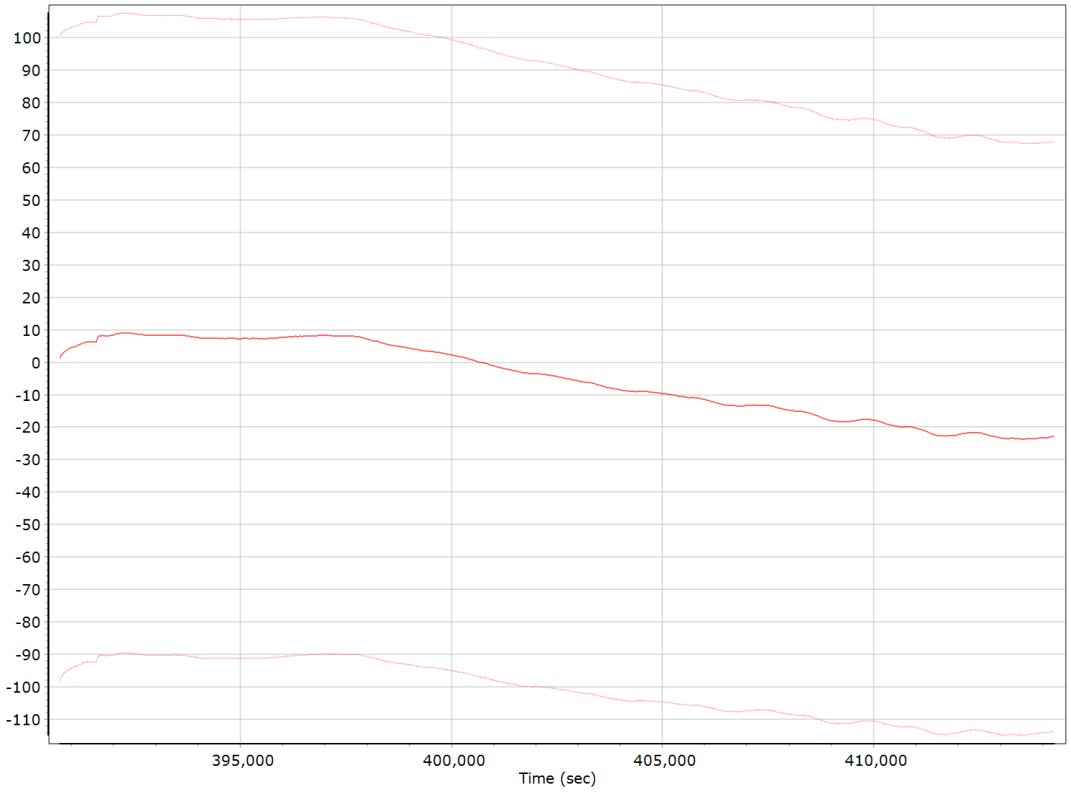
X Accelerometer Bias (micro-g)



Y Accelerometer Bias (micro-g)



Z Accelerometer Bias (micro-g)



Accelerometer Scale Error (ppm)



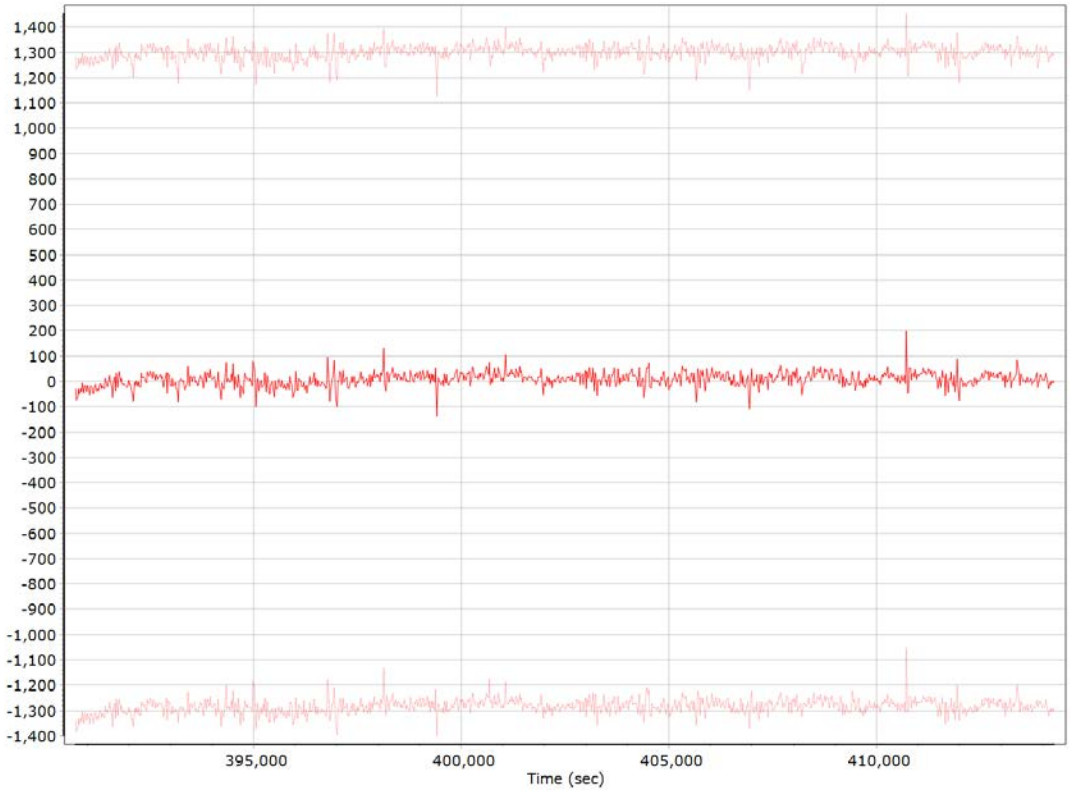
X Accelerometer Scale Error (ppm)



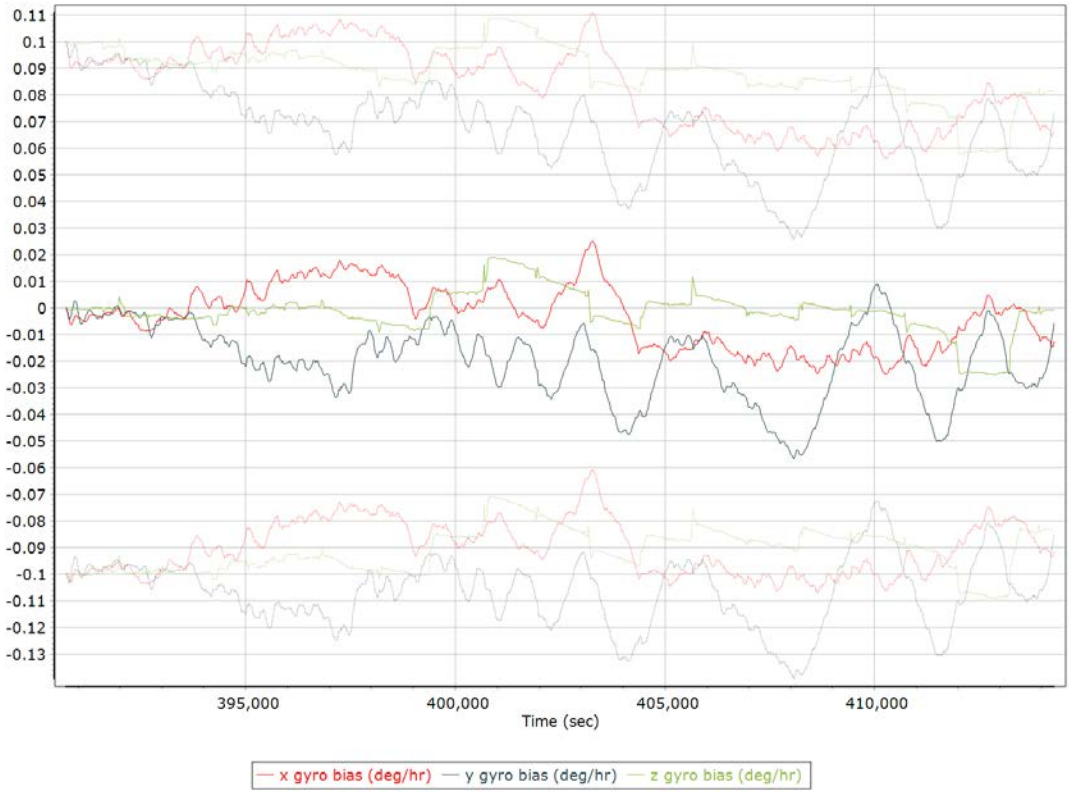
Y Accelerometer Scale Error (ppm)



Z Accelerometer Scale Error (ppm)



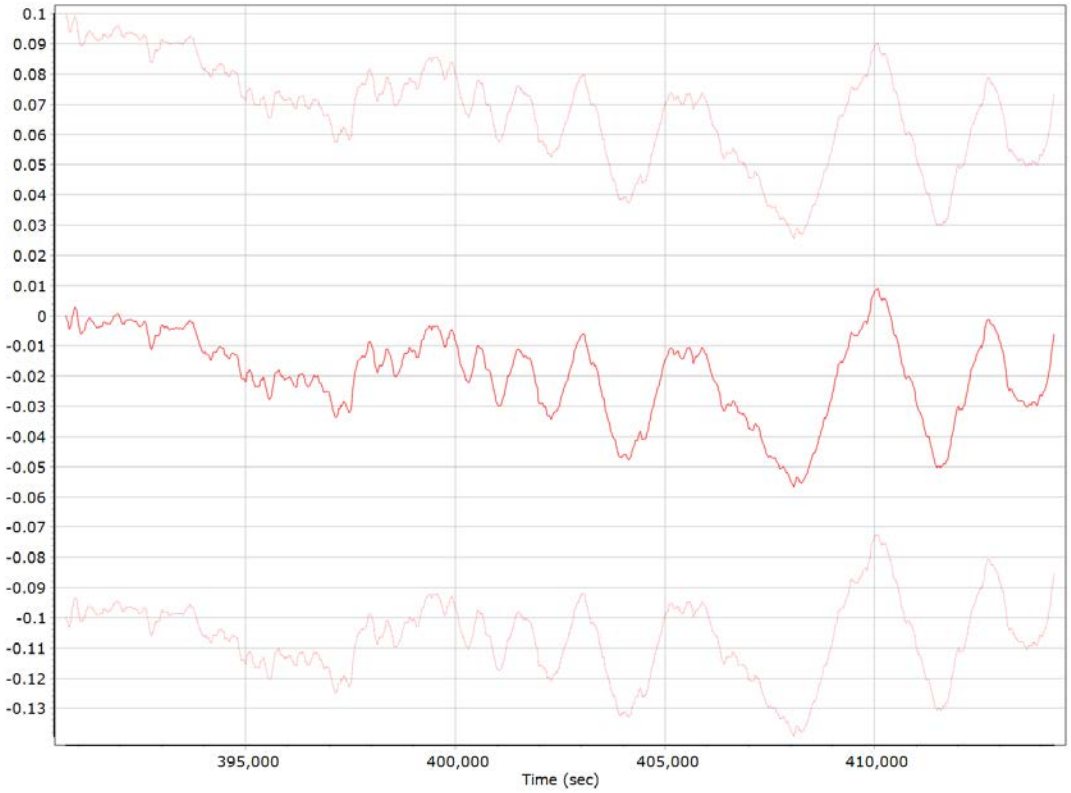
Gyro Bias (deg/h)



X Gyro Bias (deg/h)



Y Gyro Bias (deg/h)



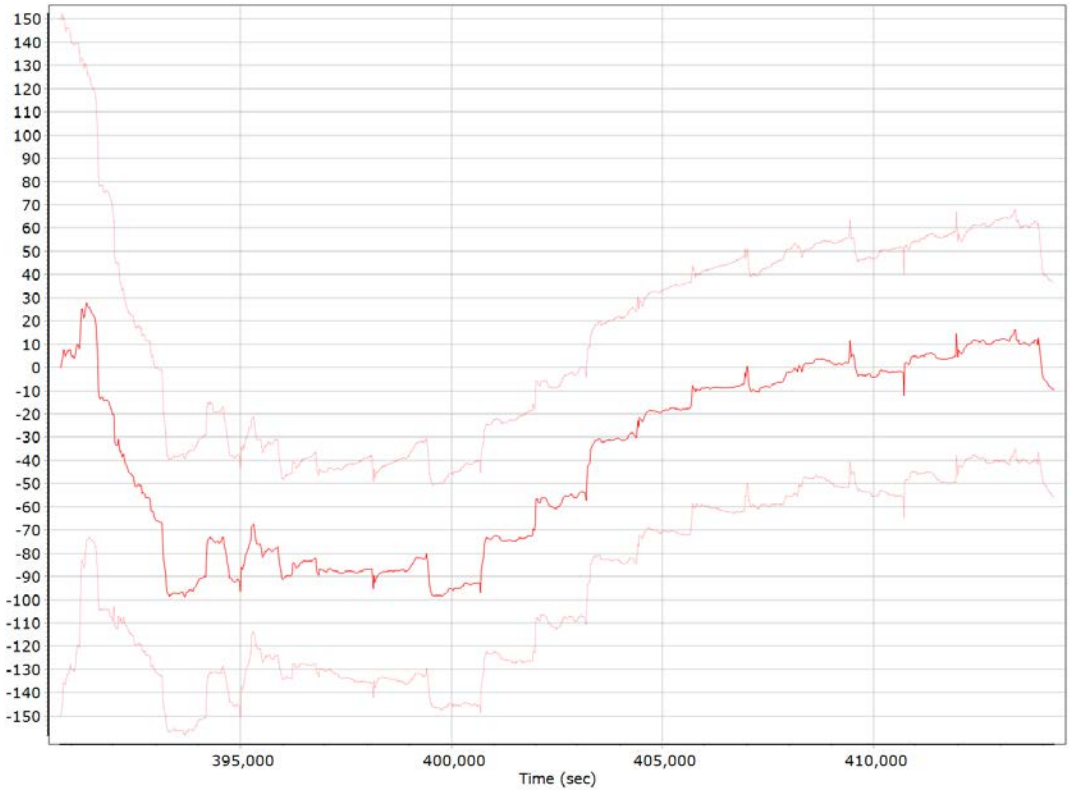
Z Gyro Bias (deg/h)



Gyro Scale Error (ppm)



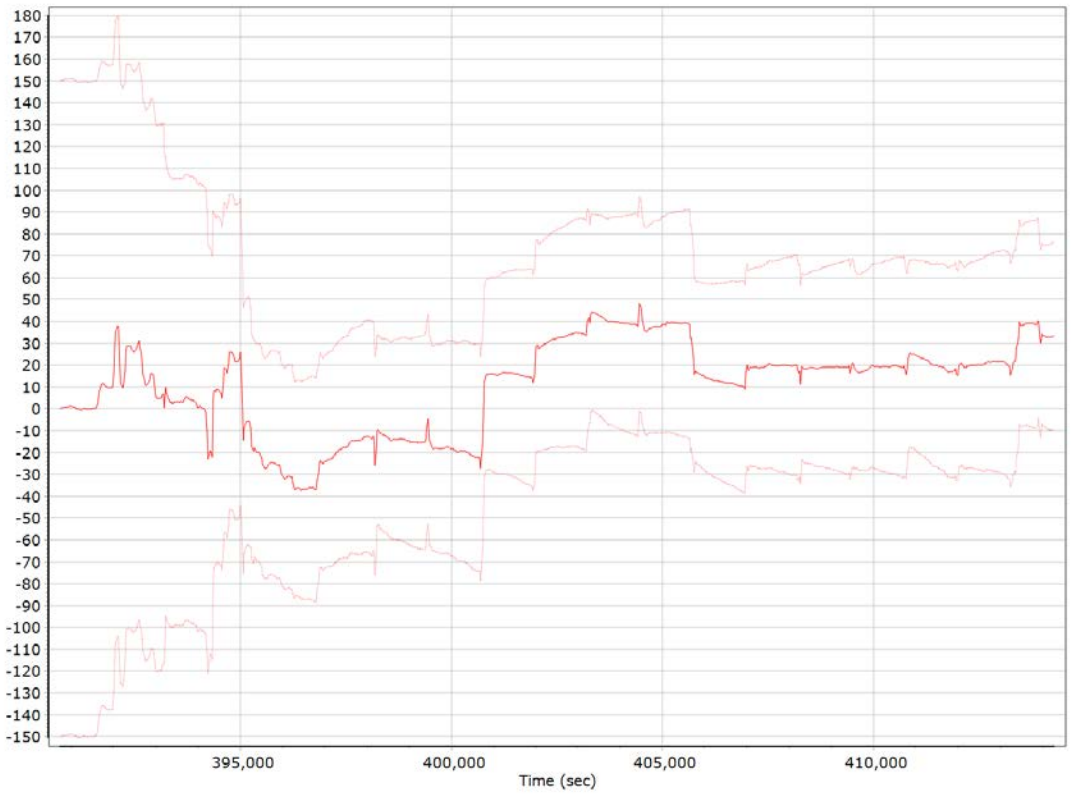
X Gyro Scale Error (ppm)



Y Gyro Scale Error (ppm)

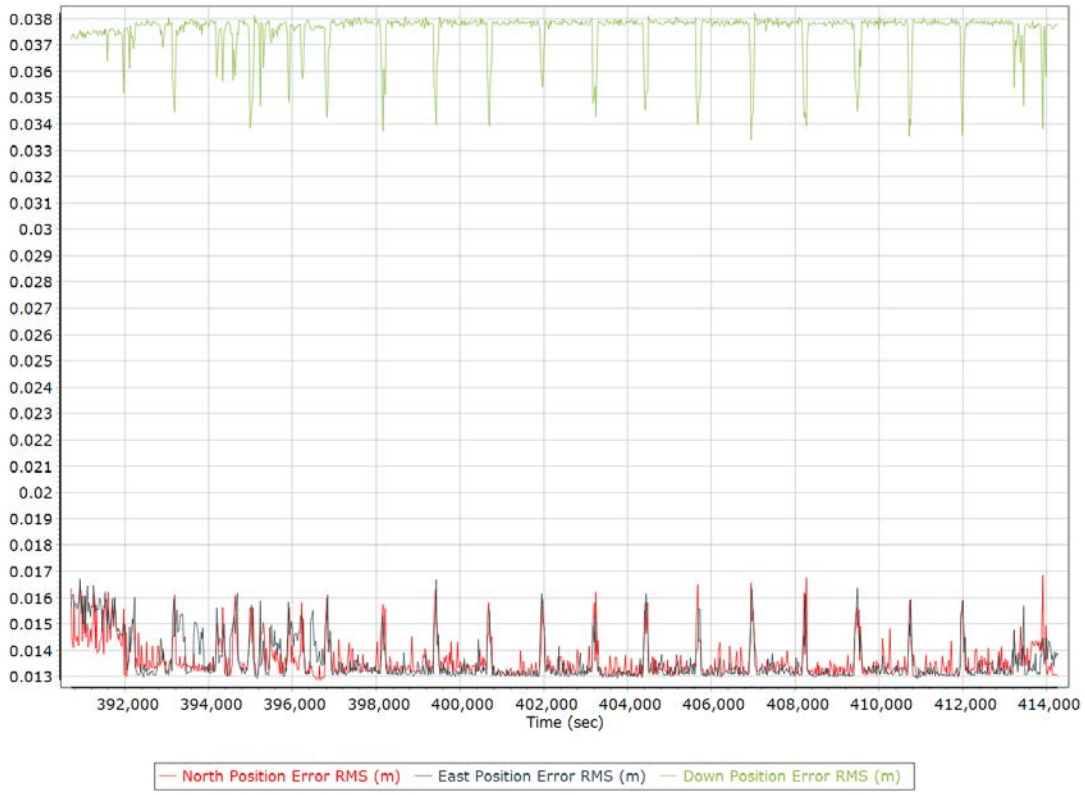


Z Gyro Scale Error (ppm)

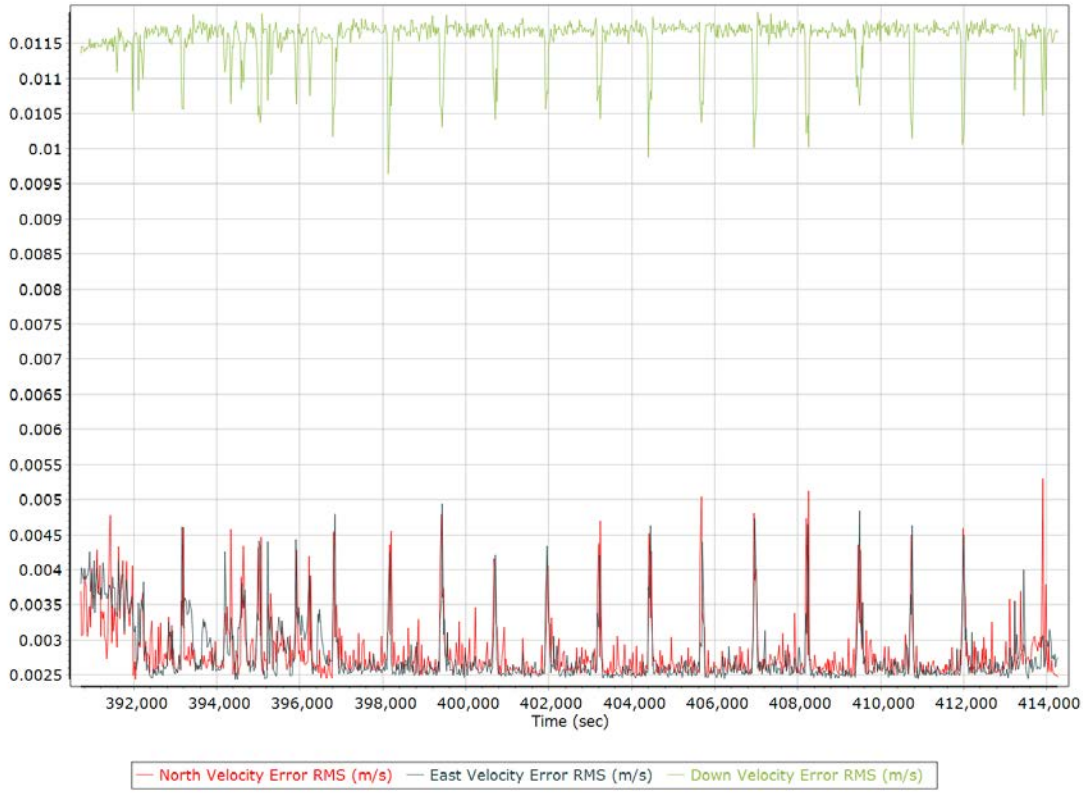


Smoothed Performance Metrics

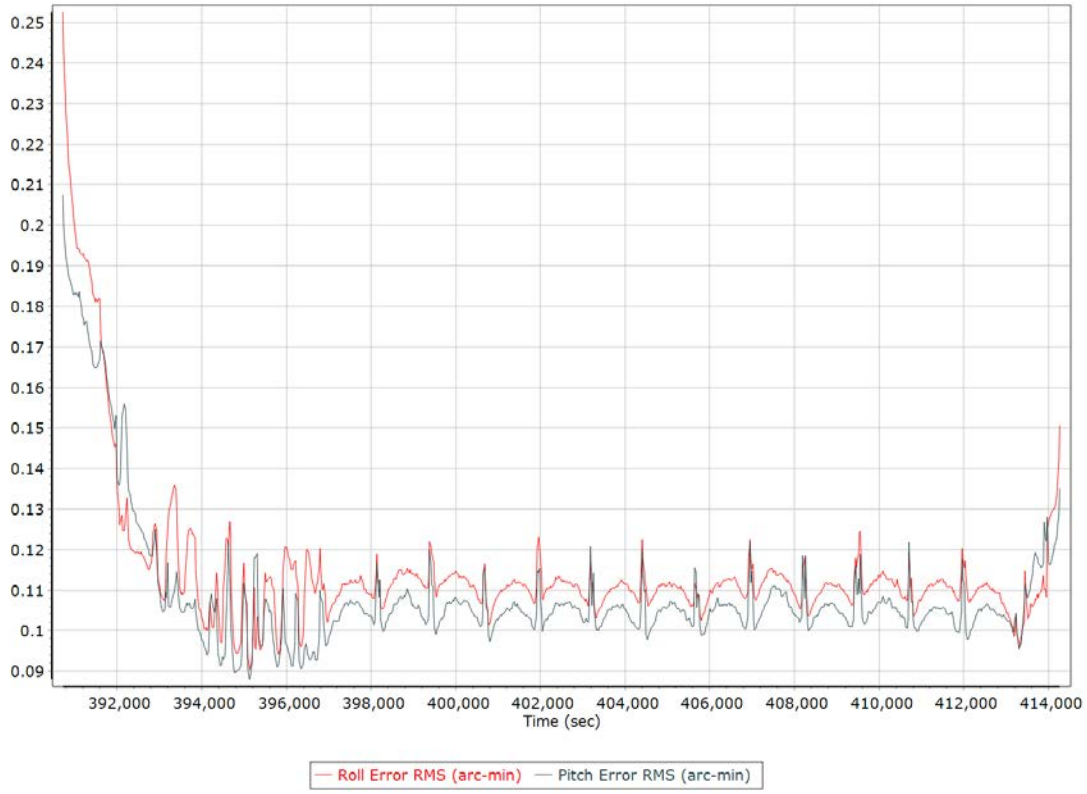
Position Error RMS (m)



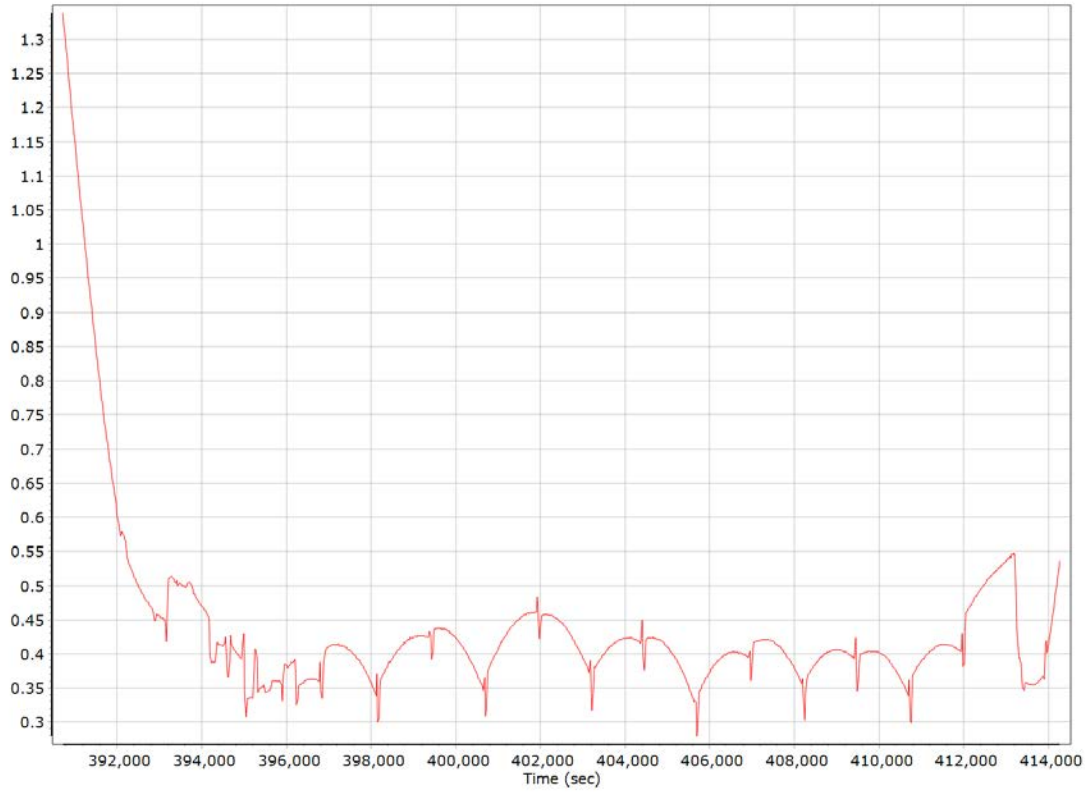
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)



Heading Error RMS (arc-min)

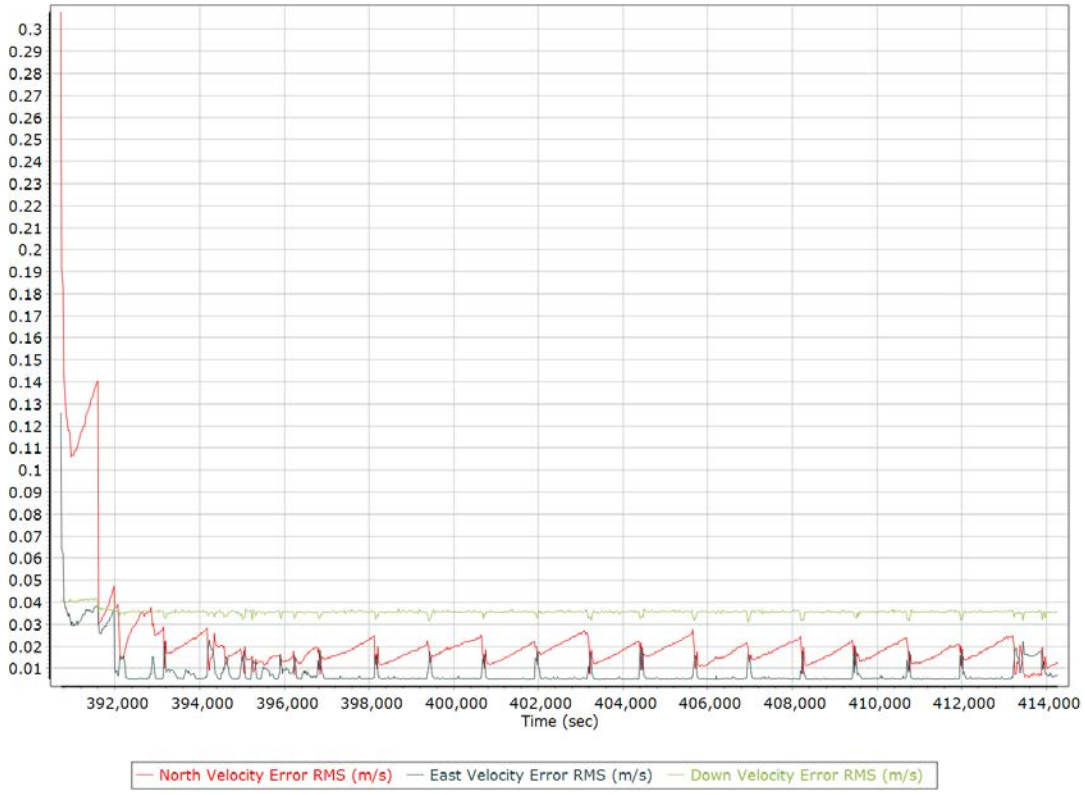


Forward Processed Performance Metrics

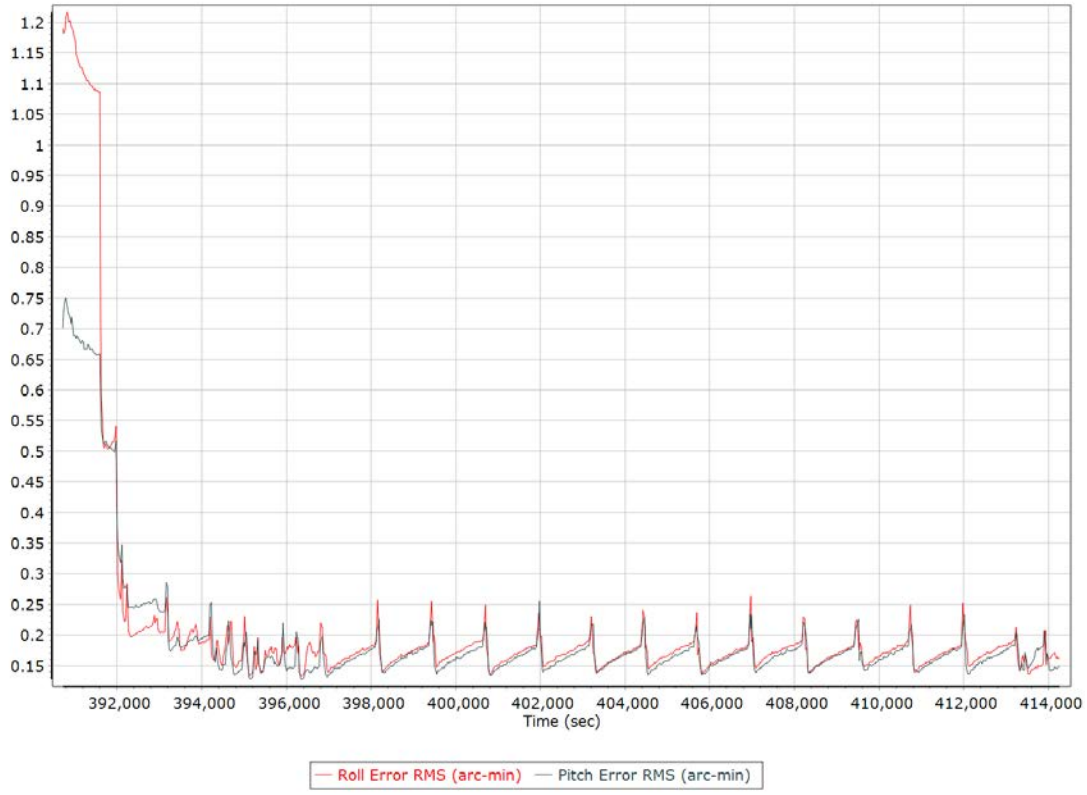
Position Error RMS (m)



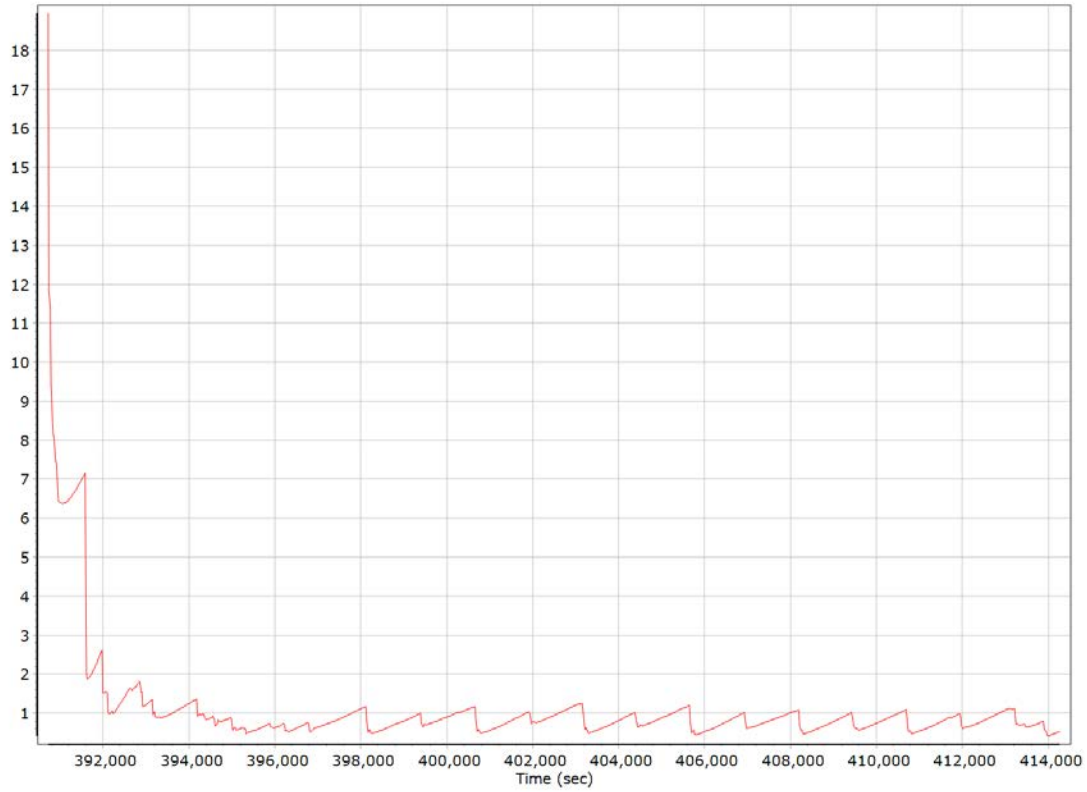
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

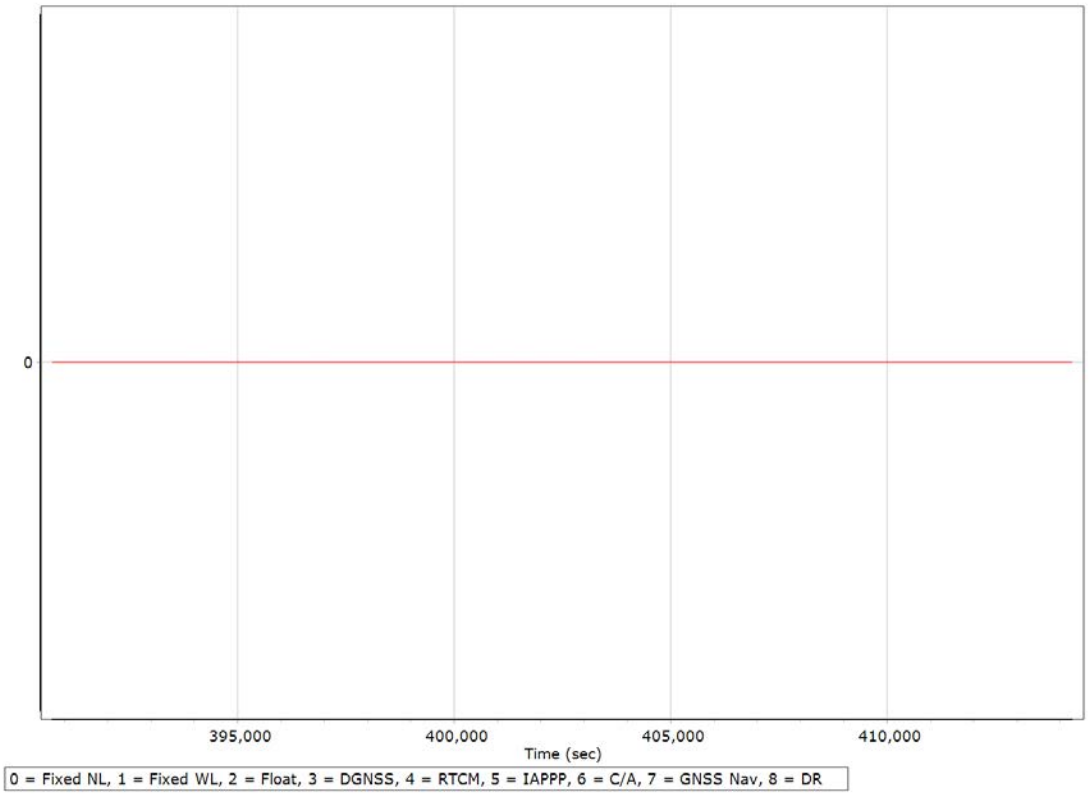


Heading Error RMS (arc-min)

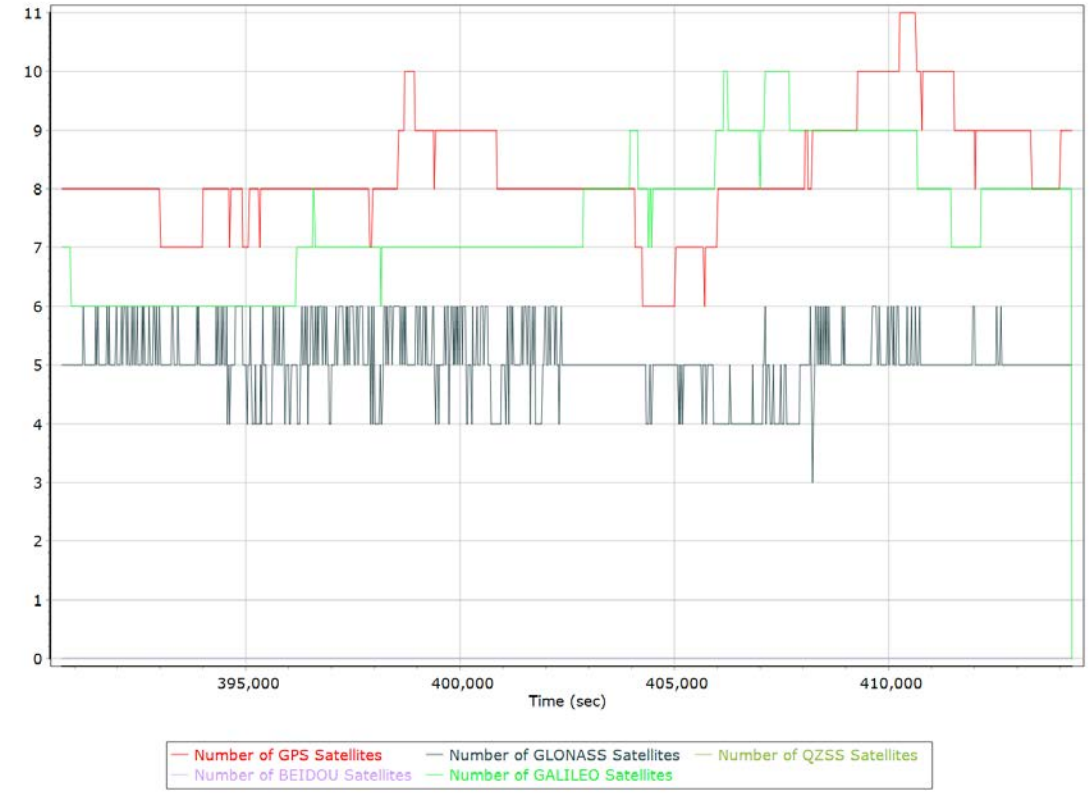


Forward Processed Solution Status

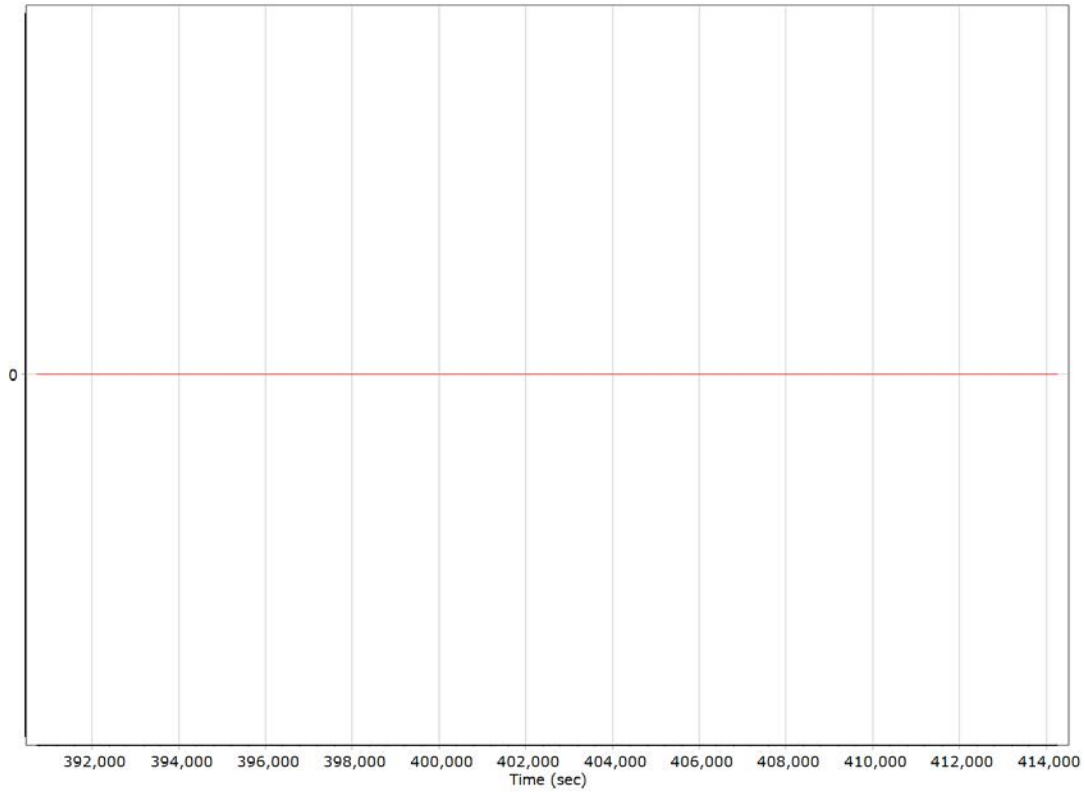
Processing Mode



Number of Satellites



Baseline Length



General Information

Mission Information

Project name	07212023A_4891
Processing date	2023-07-25 21:23:28
Mission date	2023-07-21 12:28:57
Mission duration	06:27:04.282
Processing mode	IN-Fusion PP-RTX

Rover Hardware Information

Product	POS AV 610 VER6 HW2.5-12
Serial number	S/N11883
IMU type	57
Receiver type	BD982
Antenna type	AV59

Project File List

Rover Data Files

File name	File type
N6275603122201.769	POS Data
N6275603122201.770	POS Data
N6275603122201.771	POS Data
N6275603122201.772	POS Data
N6275603122201.773	POS Data
N6275603122201.774	POS Data
N6275603122201.775	POS Data
N6275603122201.776	POS Data
N6275603122201.777	POS Data
N6275603122201.778	POS Data
N6275603122201.779	POS Data
N6275603122201.780	POS Data
N6275603122201.781	POS Data
N6275603122201.782	POS Data
N6275603122201.783	POS Data
N6275603122201.784	POS Data
N6275603122201.785	POS Data
N6275603122201.786	POS Data
N6275603122201.787	POS Data
N6275603122201.788	POS Data
N6275603122201.789	POS Data
N6275603122201.790	POS Data
N6275603122201.791	POS Data
N6275603122201.792	POS Data
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N6275603122201.818	POS Data
N6275603122201.819	POS Data
N6275603122201.820	POS Data
N6275603122201.821	POS Data
N6275603122201.822	POS Data
N6275603122201.823	POS Data
N6275603122201.824	POS Data
N6275603122201.825	POS Data
N6275603122201.826	POS Data
N6275603122201.827	POS Data

File name	File type
N6275603122201.828	POS Data
N6275603122201.829	POS Data
N6275603122201.830	POS Data
N6275603122201.831	POS Data
N6275603122201.832	POS Data
N6275603122201.833	POS Data
N6275603122201.834	POS Data
N6275603122201.835	POS Data
N6275603122201.836	POS Data
N6275603122201.837	POS Data
N6275603122201.838	POS Data
N6275603122201.839	POS Data
N6275603122201.840	POS Data

Input Files

File Name	File Type
Ephm2020.23g	GLONASS Broadcast Ephemeris
Ephm2020.23n	GPS Broadcast Ephemeris

Output Files

Filename	File type
sbet_07212023A_4891.out	SBET Trajectory File

Rover Data Summary

First raw data file	N6275603122201.769		
Last raw data file	N6275603122201.840		
Start GPS week	2271		
Start time	476918.439 (7/21/2023 12:28:38 PM)		
End time	500142.721 (7/21/2023 6:55:42 PM)		
Start of fine alignment	476942.069 (7/21/2023 12:29:02 PM)		
Available subsystems	Primary GNSS, Gimbal, IMU		
POS Event Input	None		
Correction data	None		
IMU Installation Lever Arms & Mounting Angles			
Gimbal to IMU lever arm (m)	-0.034	-0.010	-0.374
Gimbal to IMU mounting angles (deg)	0.000	0.000	0.000
Gimbal to Primary GNSS lever arm (m)	-0.135	0.064	-1.339
Gimbal to Primary GNSS lever arm std dev (m)	-1.000		
Aircraft to Reference mounting angles (deg)	0.000	0.000	0.000

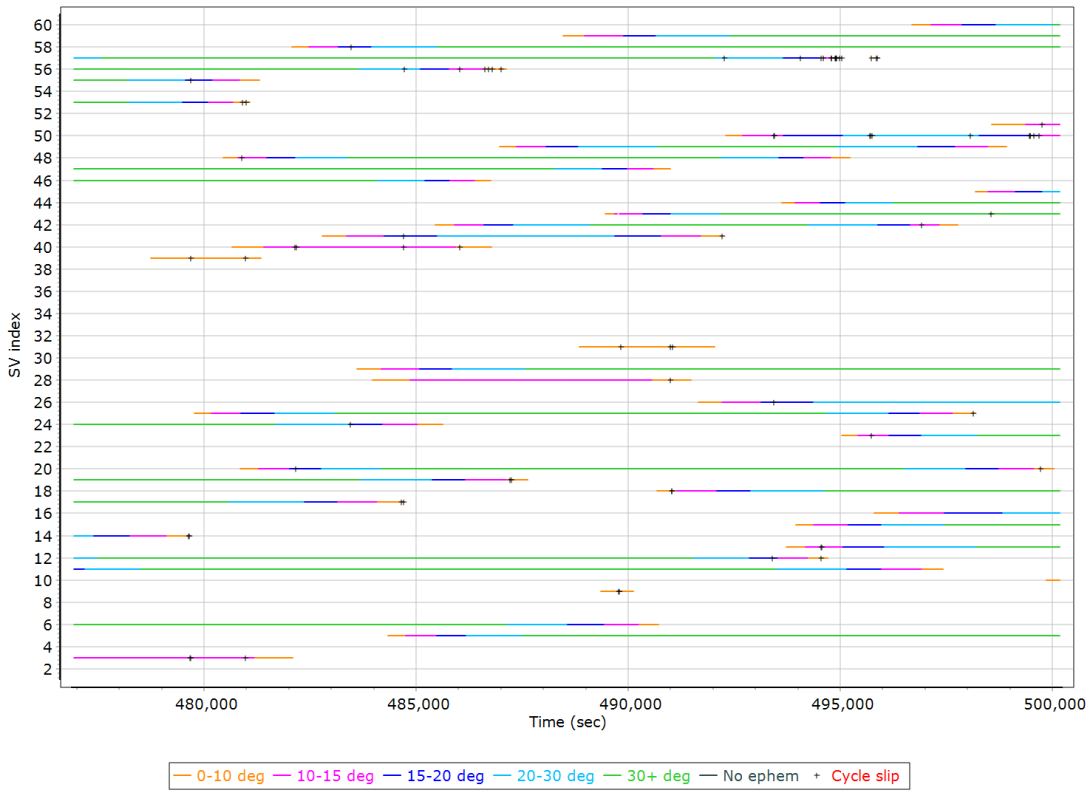
Rover Data QC

Raw IMU Import QC Summary

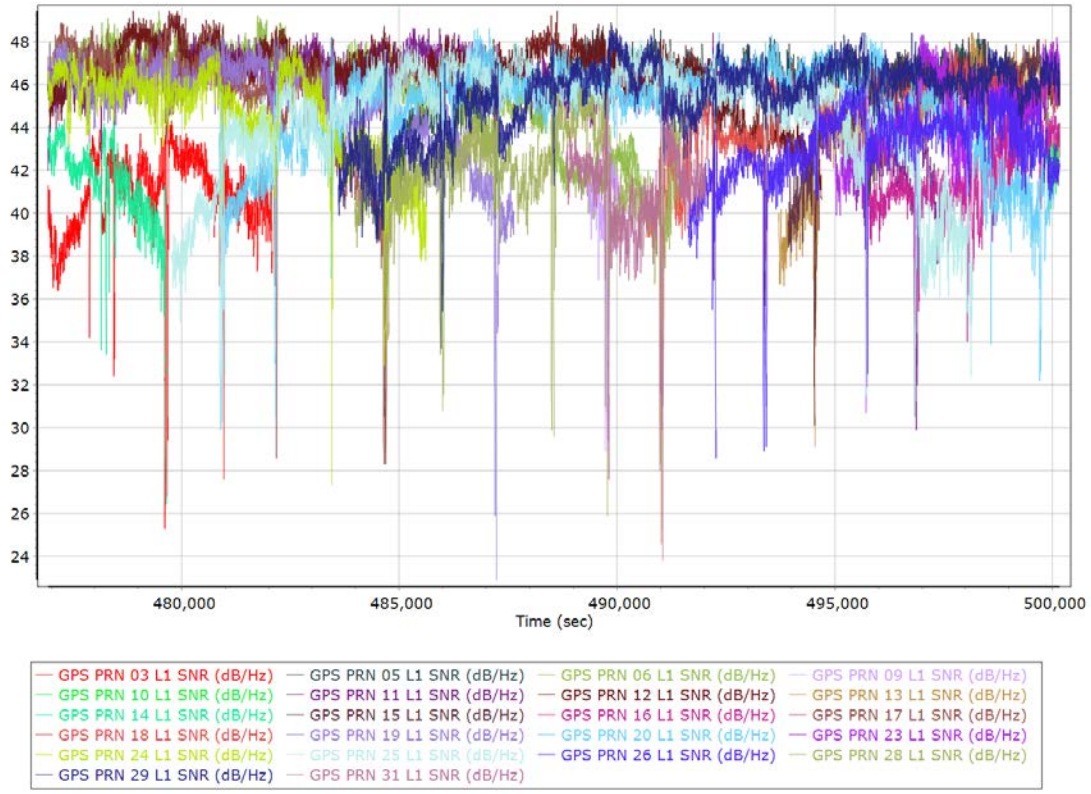
IMU data input file	imu_Mission 1.dat
IMU data check log file	imudt_07212023A_4891.log
IMU Records Processed	4645514
Termination Status	Normal
IMU Anomalies	0

Primary Observables & Satellite Data

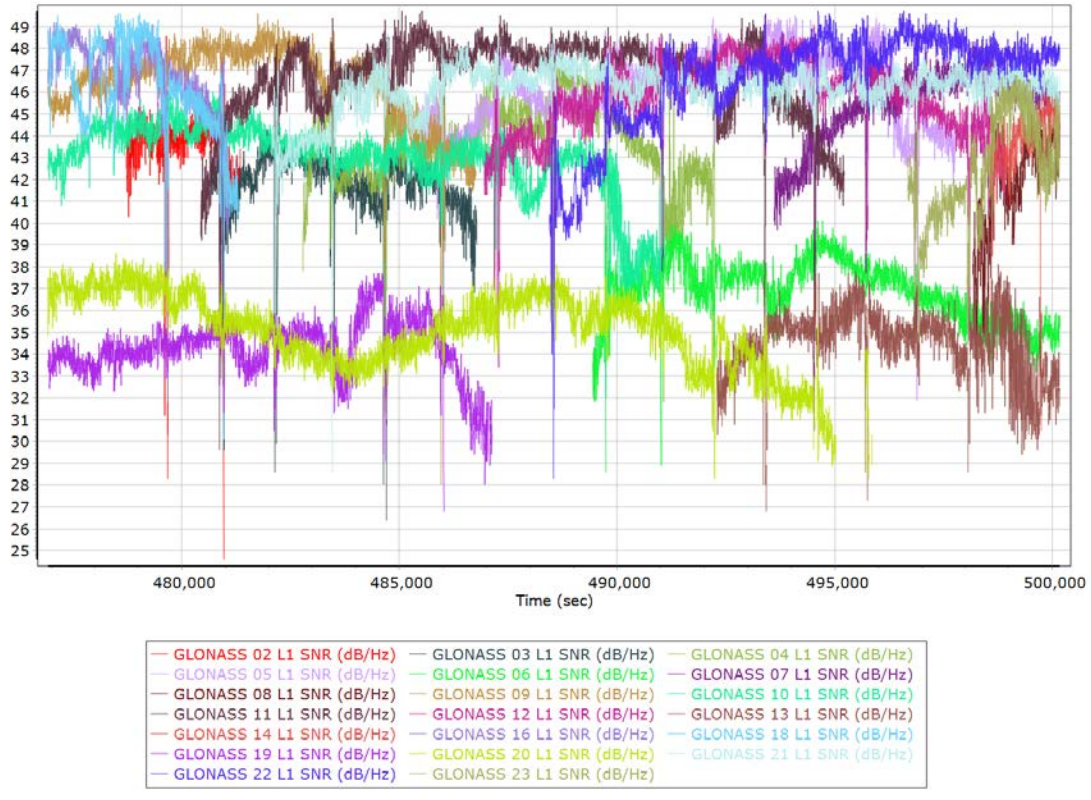
GPS/GLONASS L1 Satellite Lock/Elevation



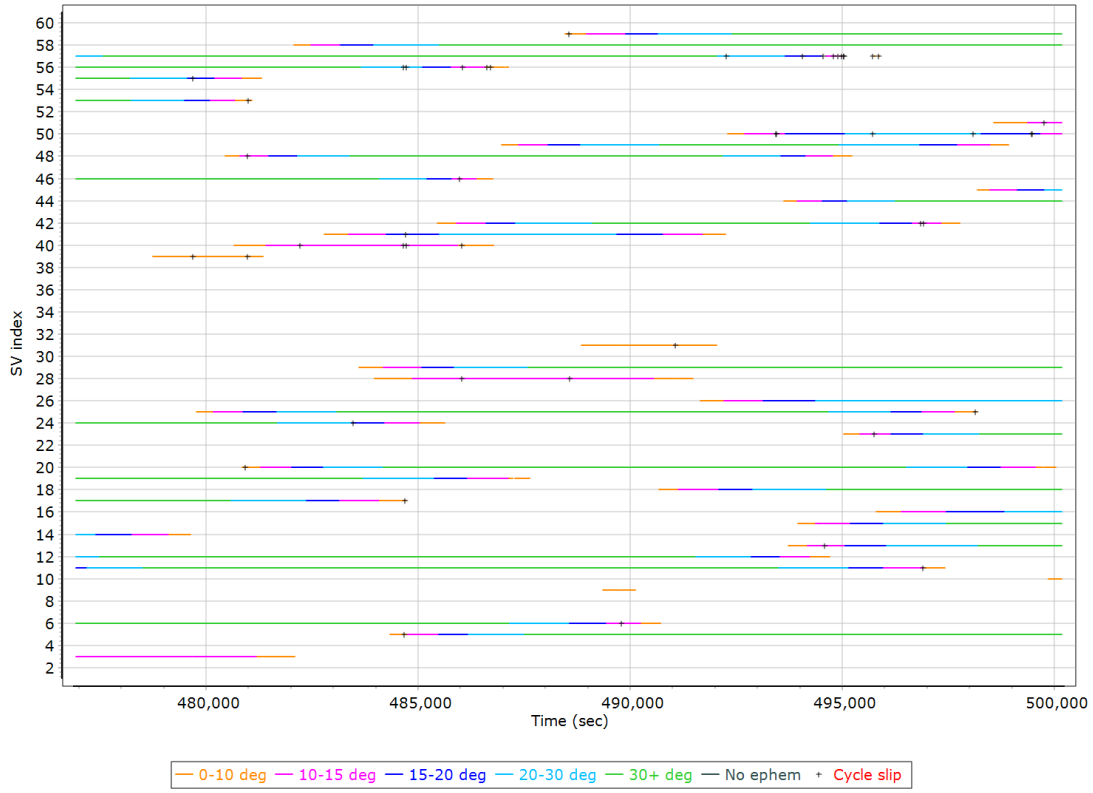
GPS L1 SNR



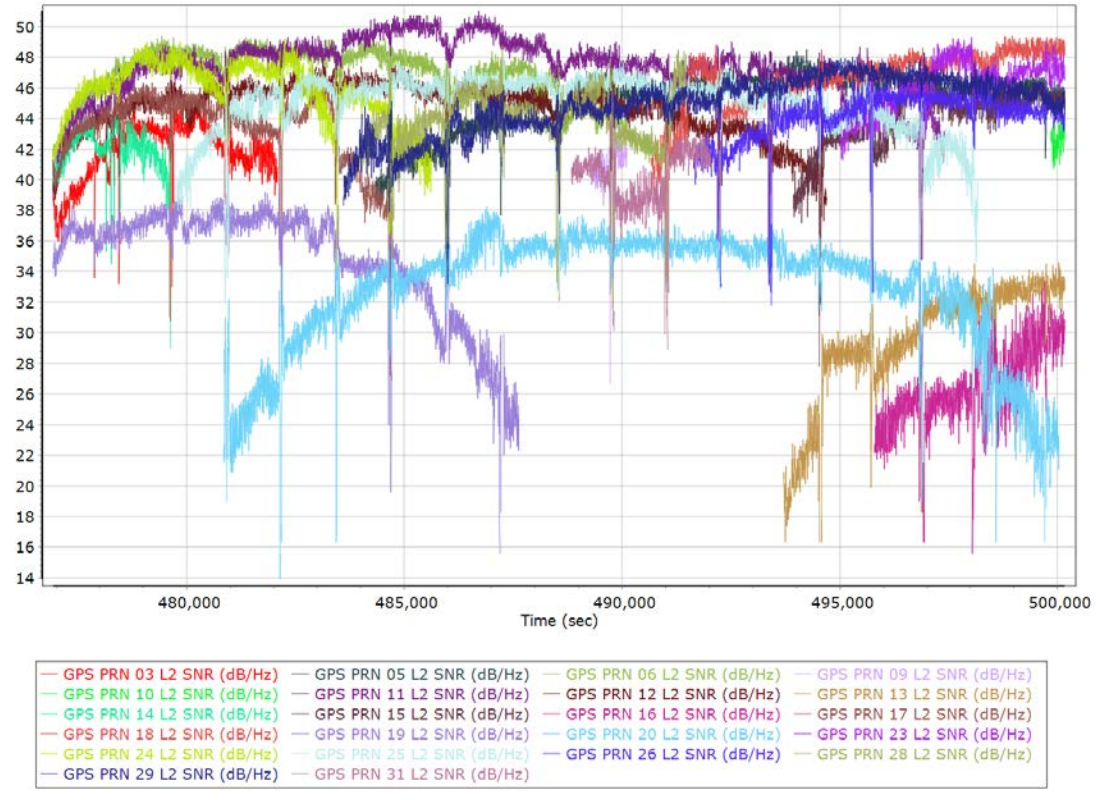
GLONASS L1 SNR



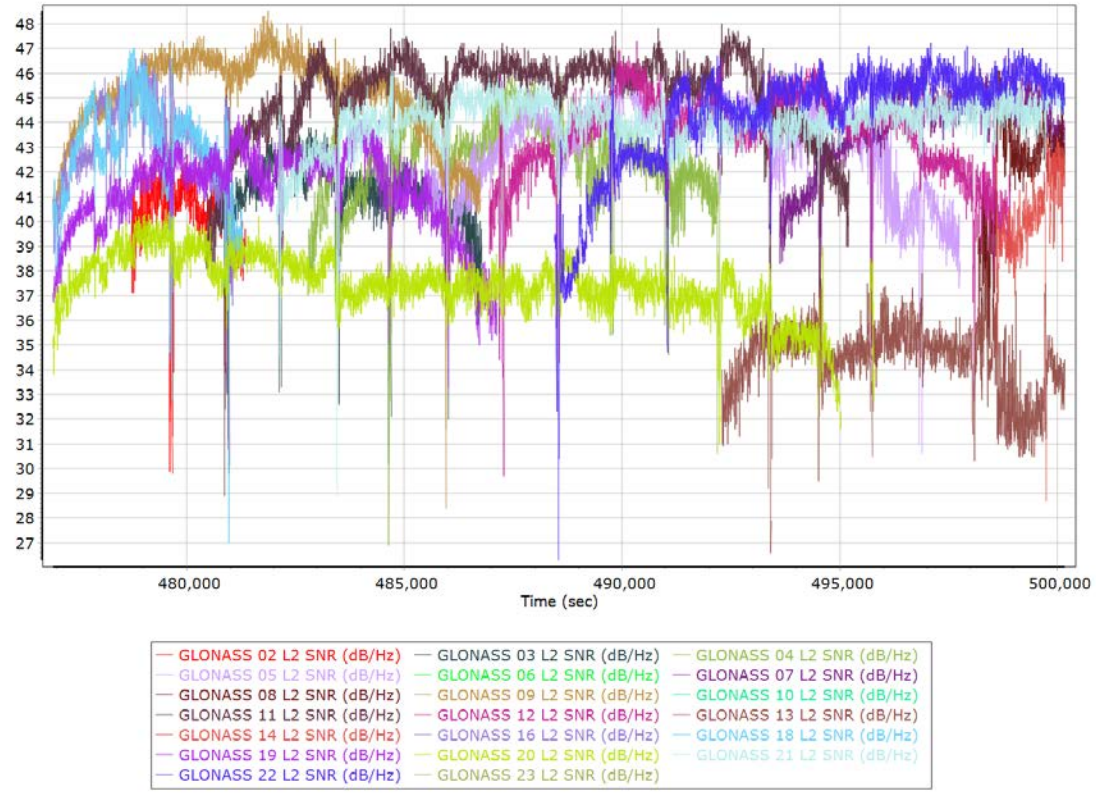
GPS/GLONASS L2 Satellite Lock/Elevation



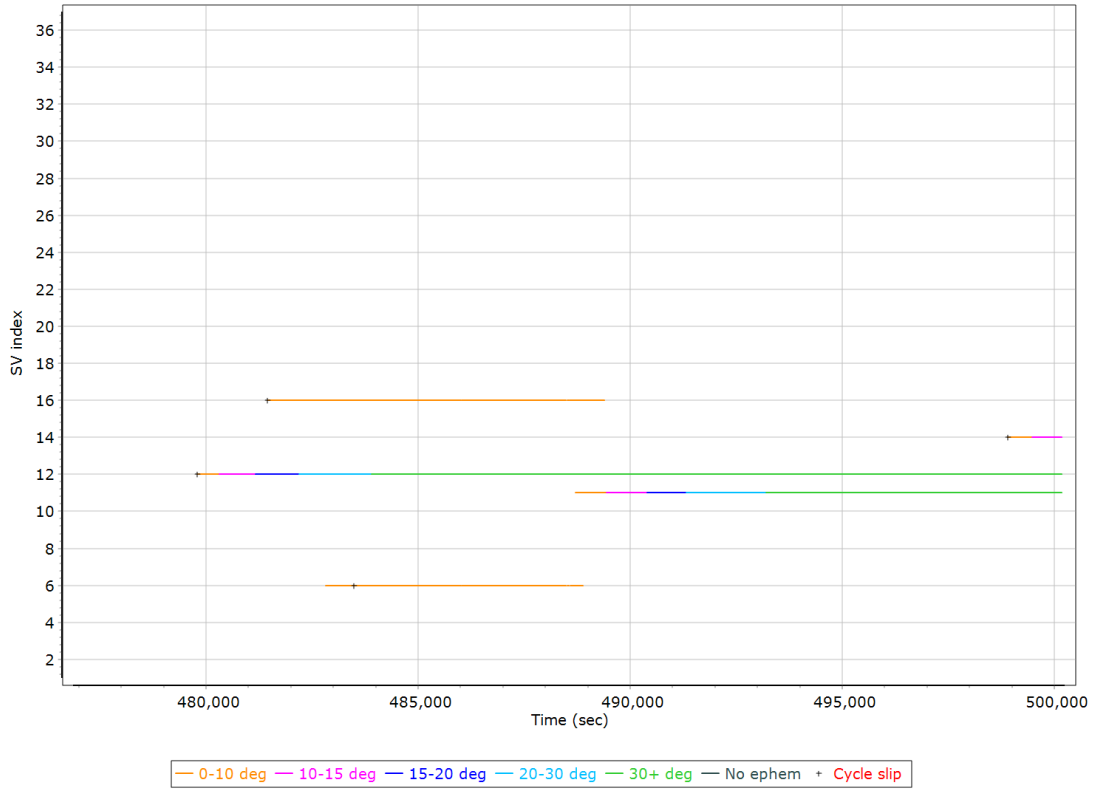
GPS L2 SNR



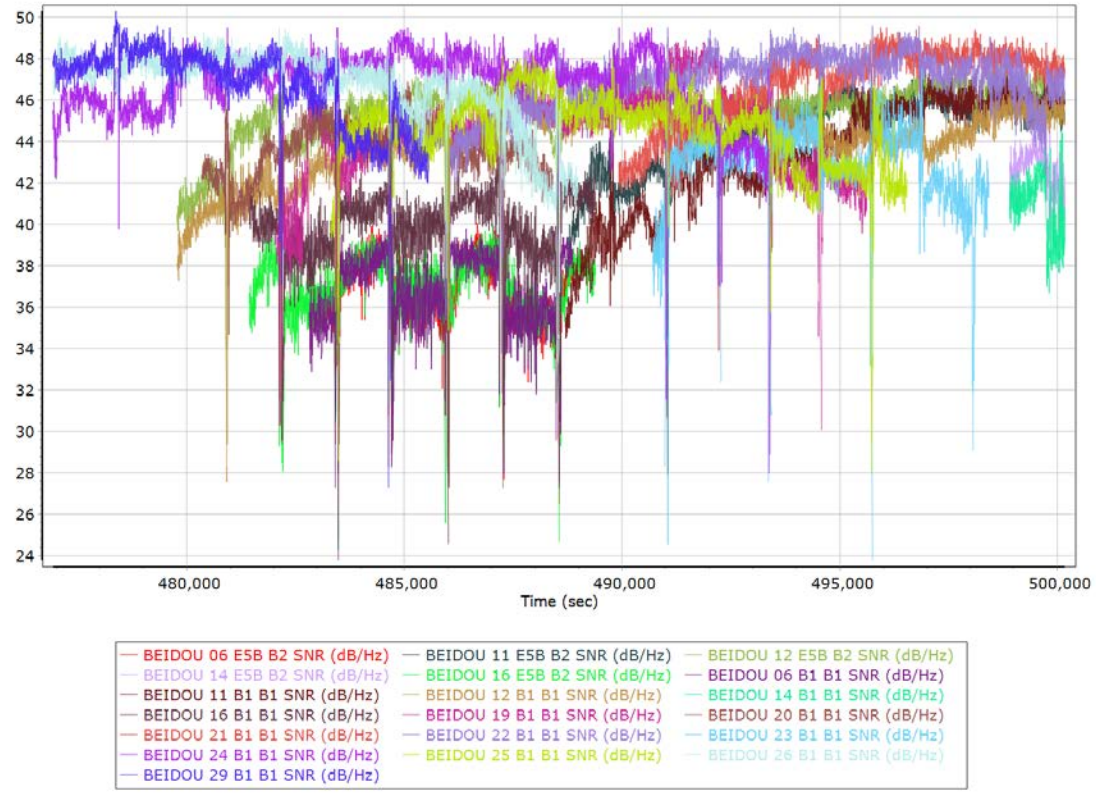
GLONASS L2 SNR



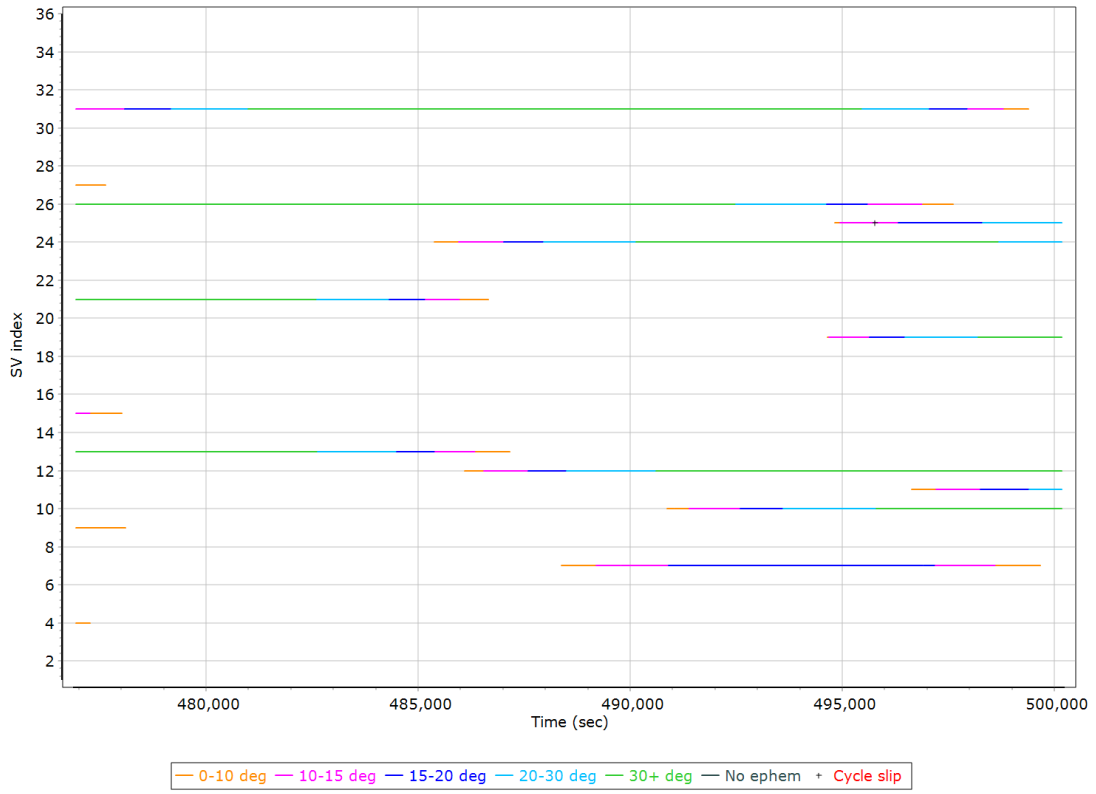
BEIDOU Satellite Lock/Elevation



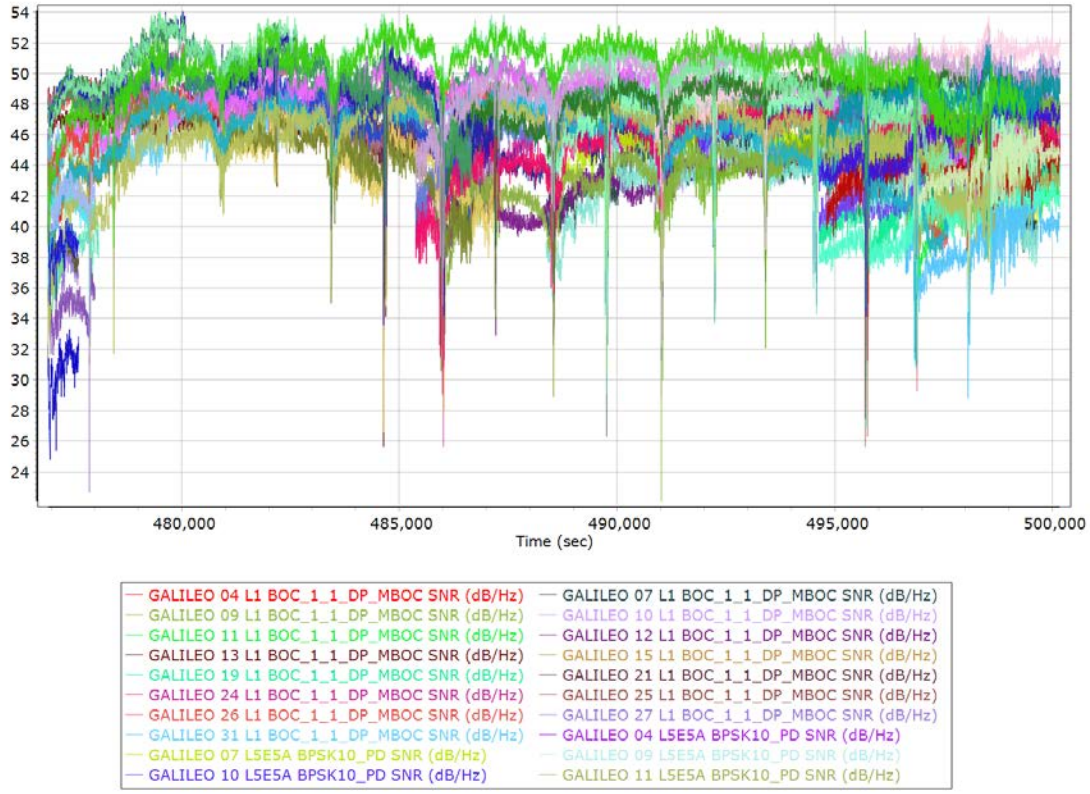
BEIDOU SNR



GALILEO Satellite Lock/Elevation

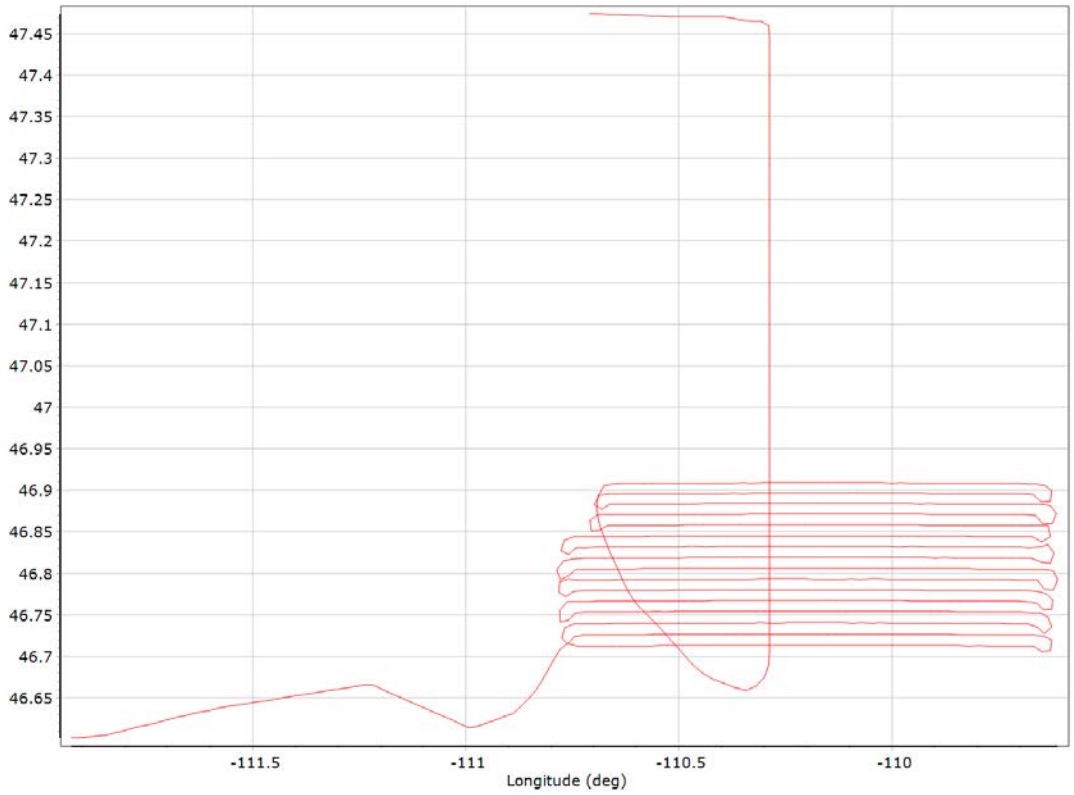


GALILEO SNR


54
52
50
48
46
44
42
40
38
36
34
32
30
28
26
24
480,000
485,000
490,000
495,000
500,000
Time (sec)
GALILEO 04 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 07 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 09 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 10 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 11 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 12 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 13 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 15 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 19 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 21 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 24 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 25 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 26 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 27 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 31 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 04 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 07 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 09 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 10 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 11 L5E5A BPSK10_PD SNR (dB/Hz)

Smoothed Trajectory Information

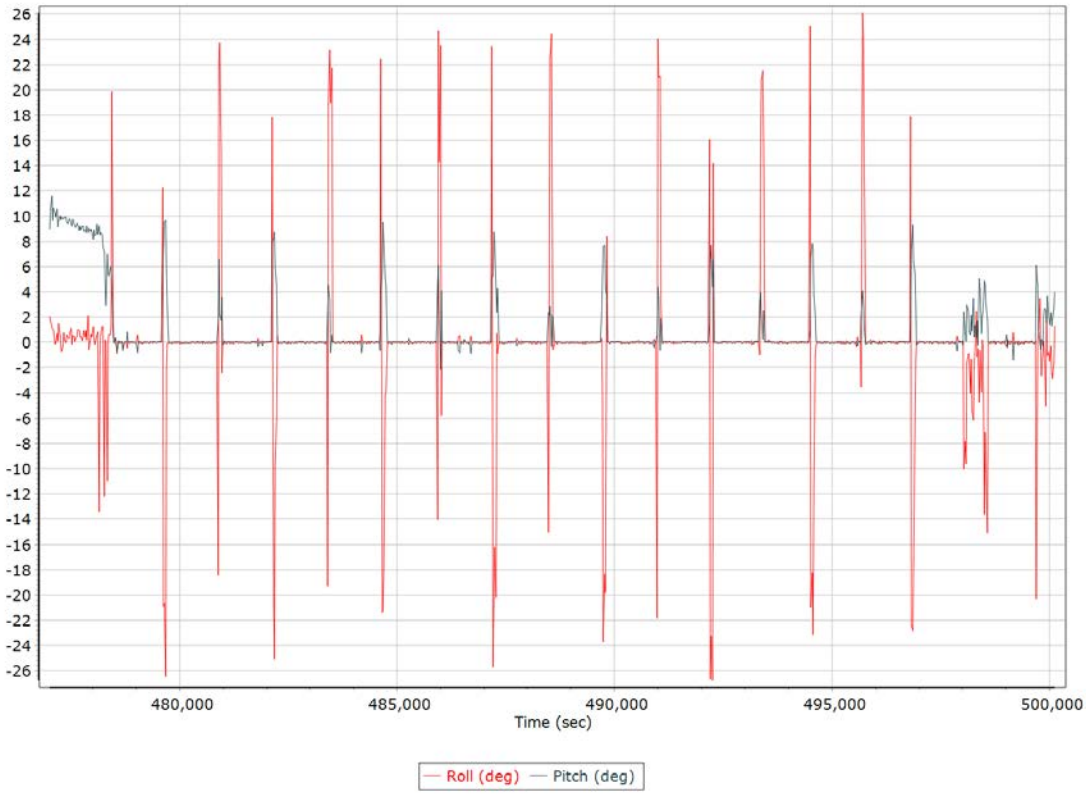
Top View



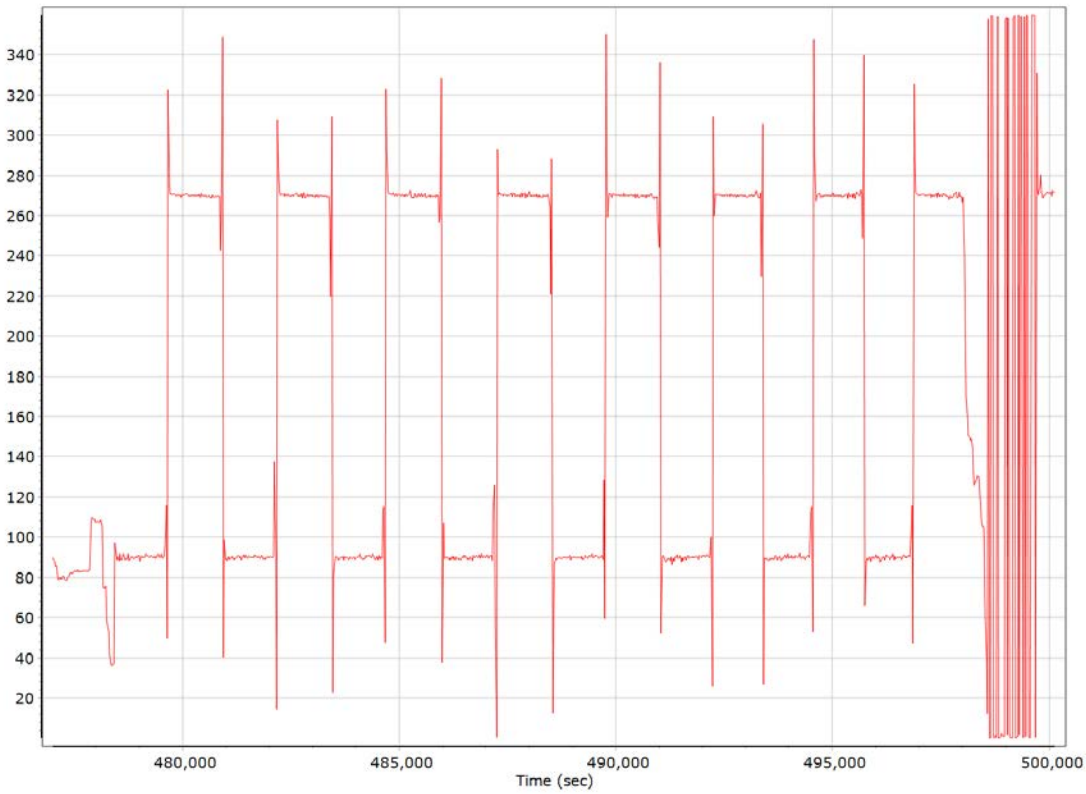
Altitude



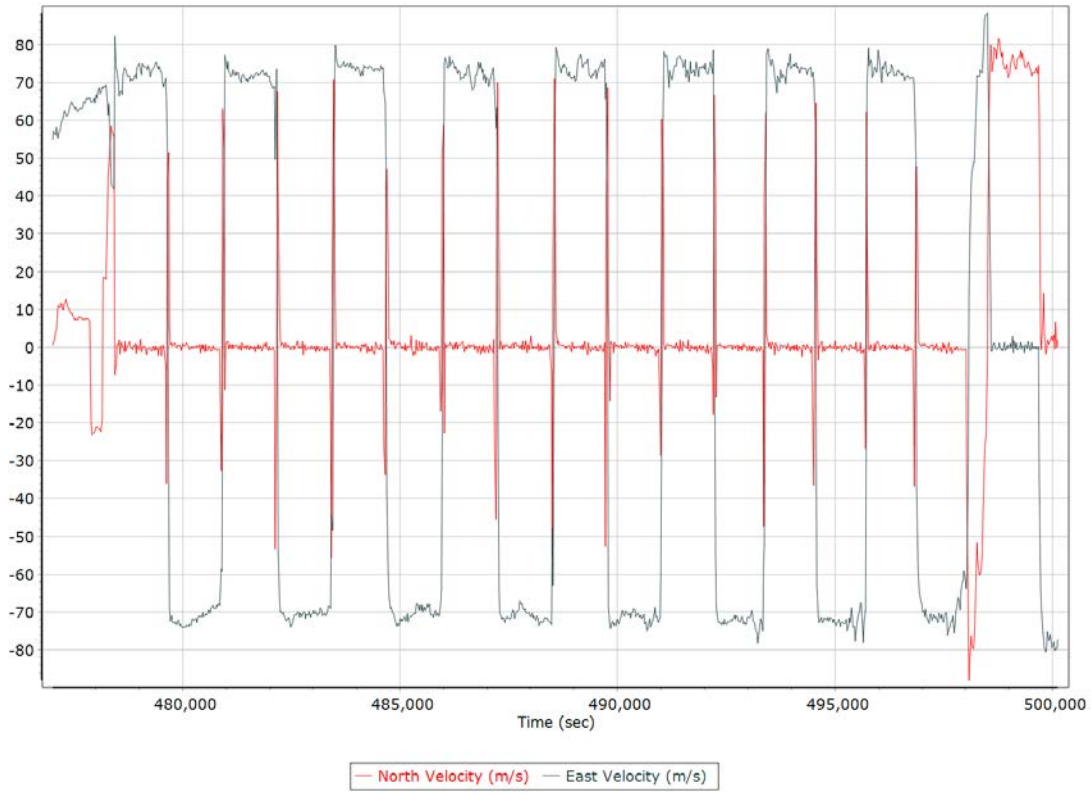
Roll/Pitch



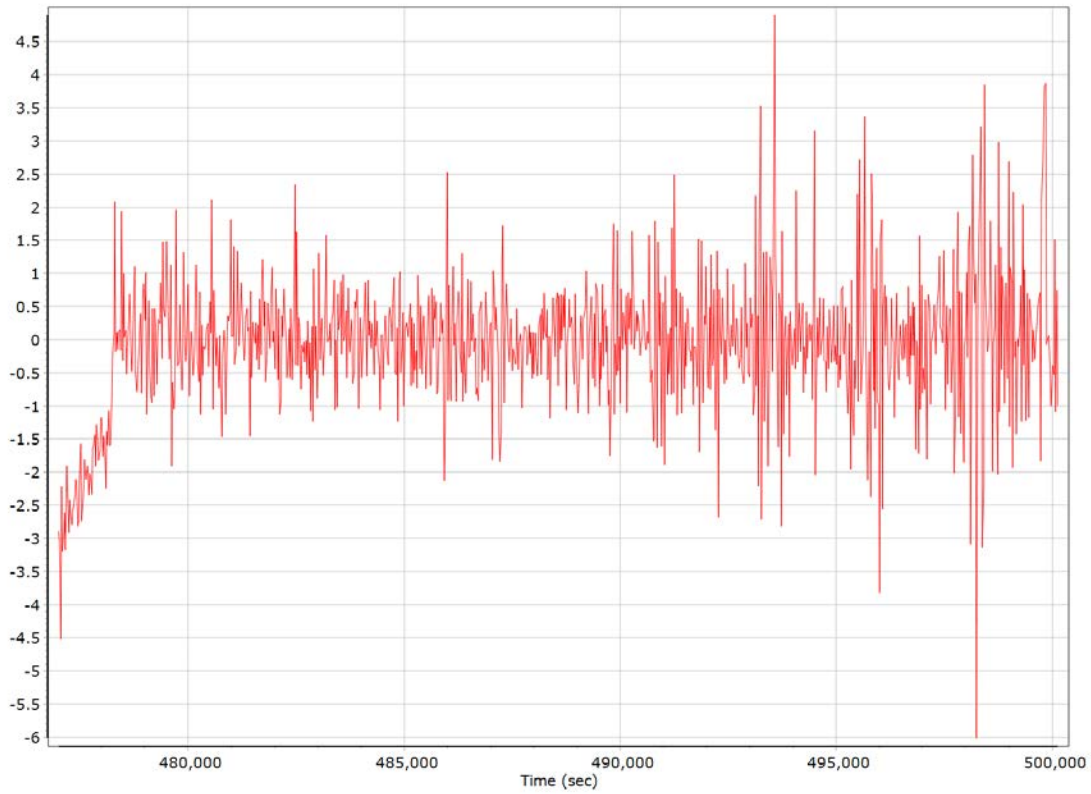
Heading



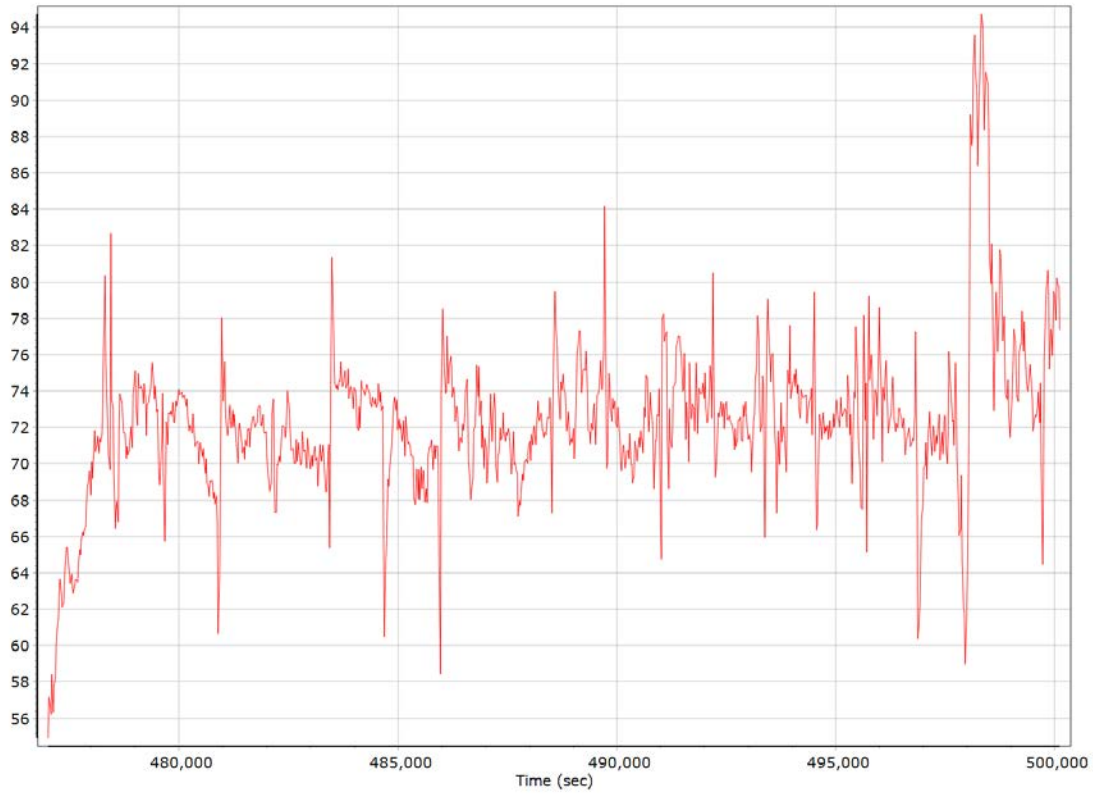
North/East Velocity



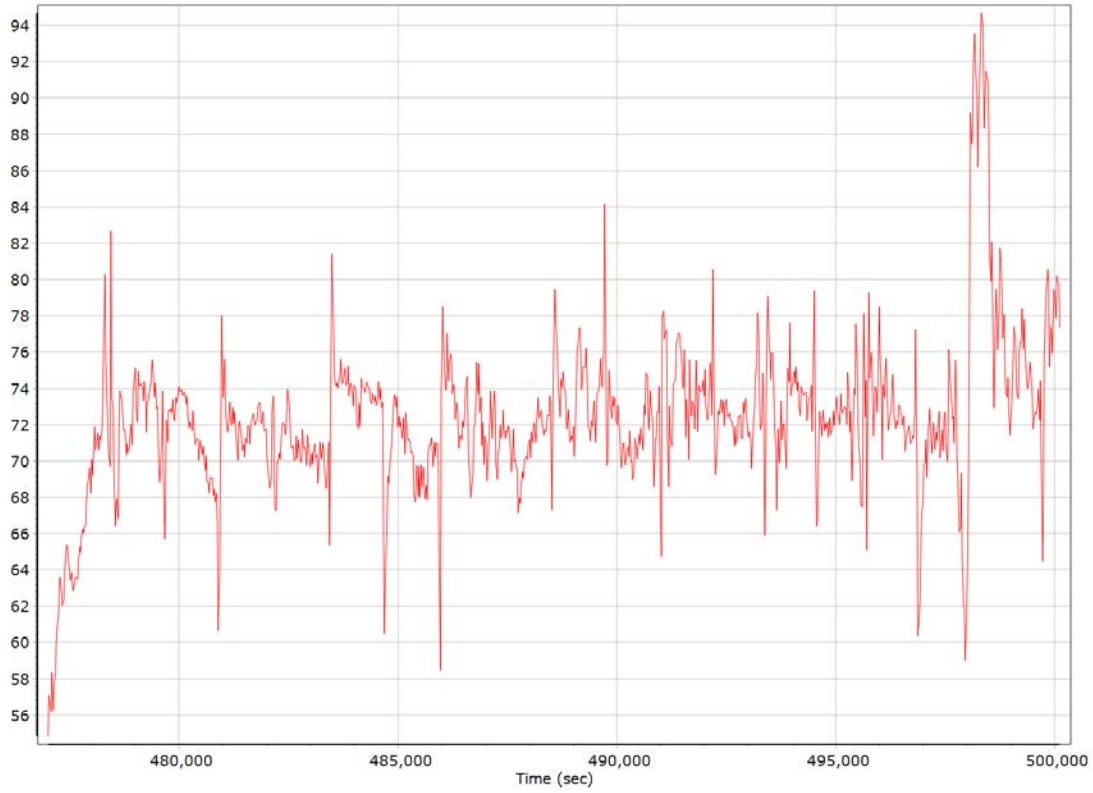
Down Velocity



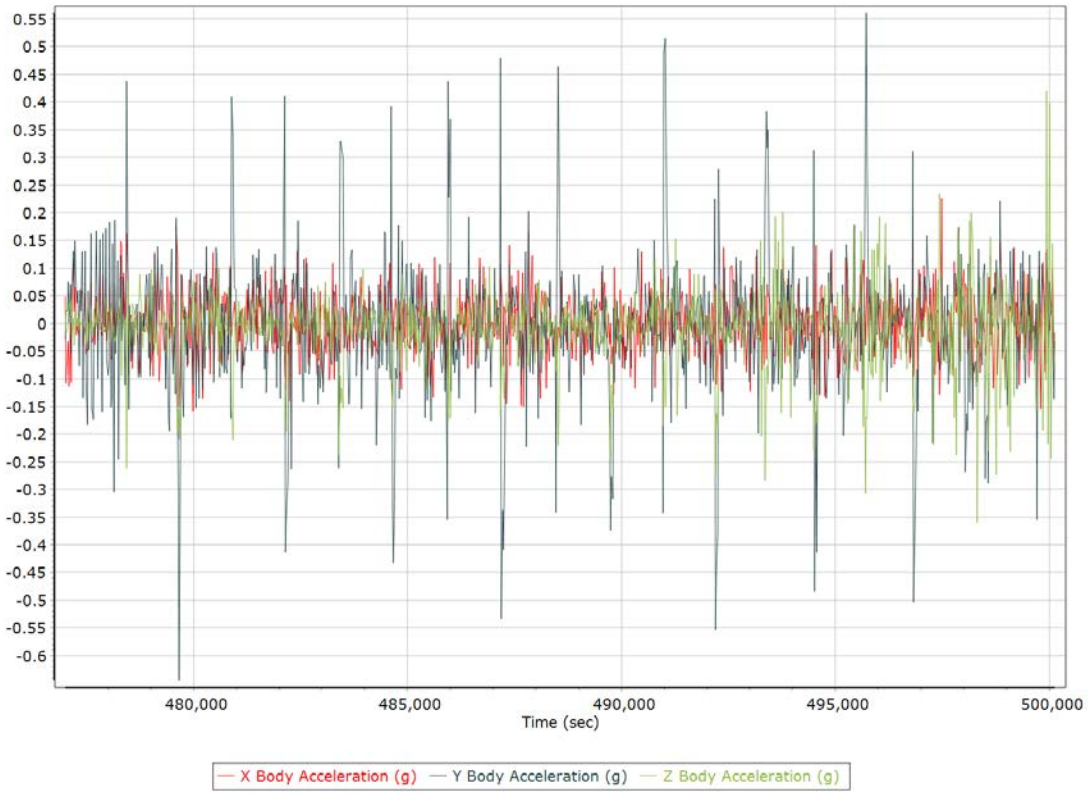
Total Speed



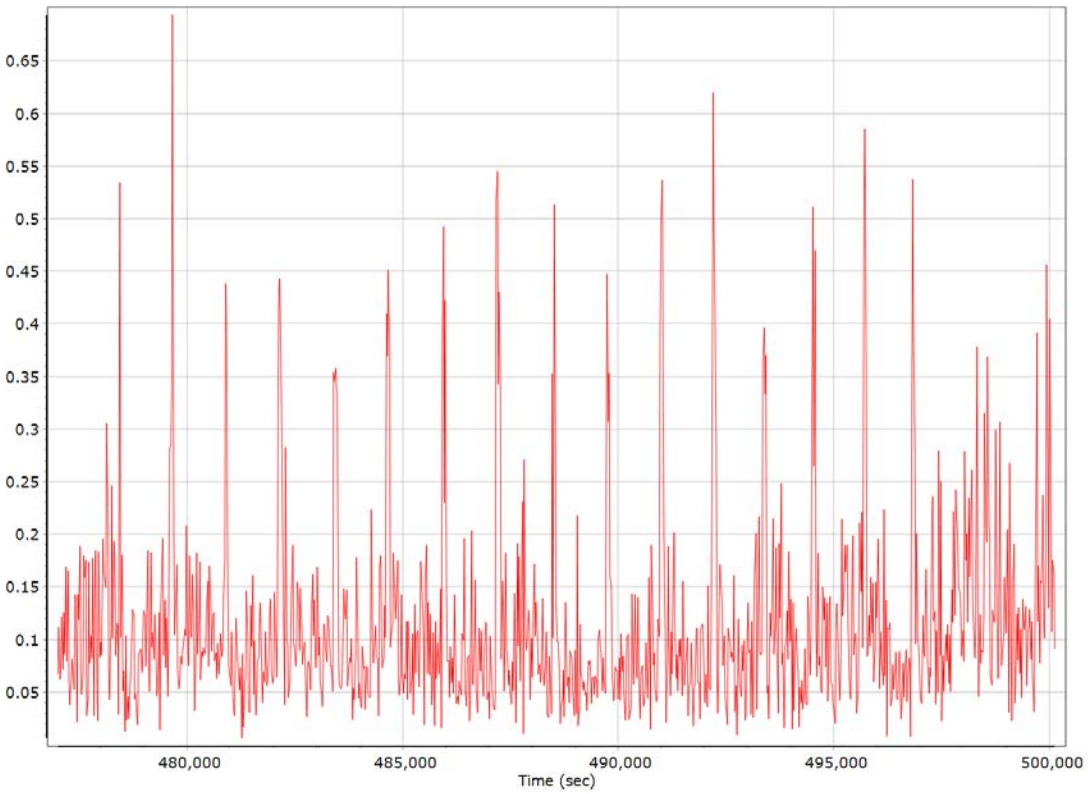
Ground Speed



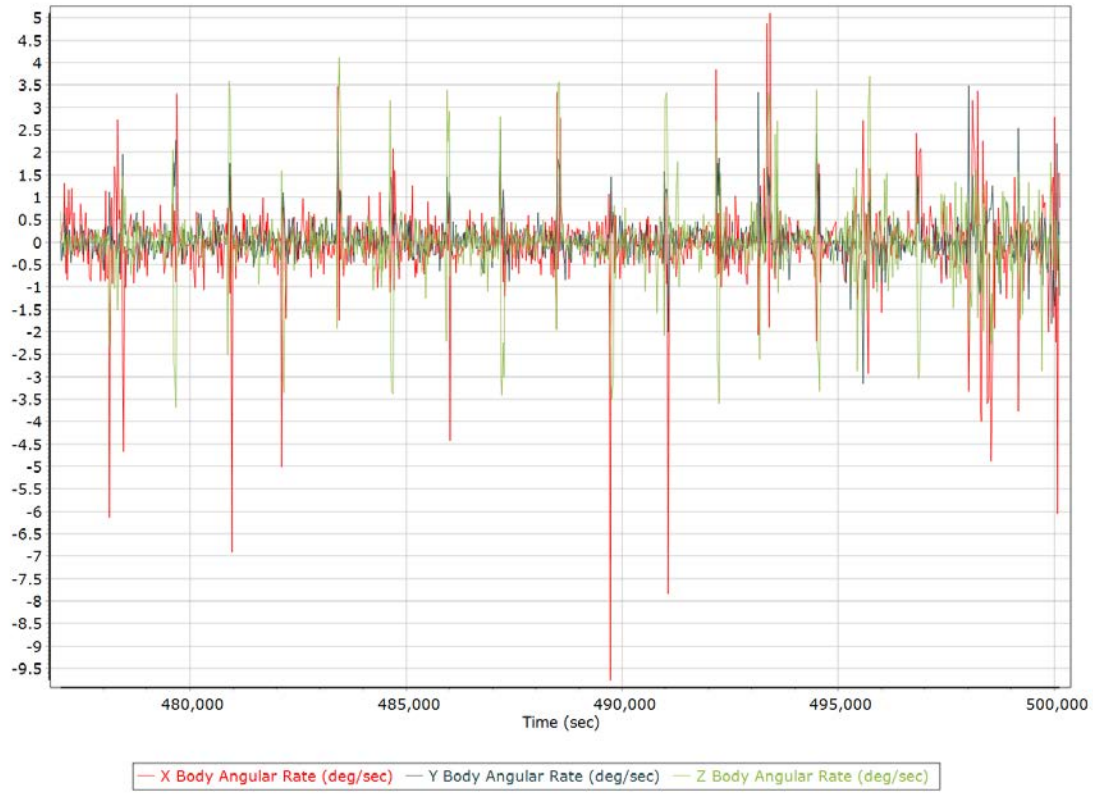
Body Acceleration



Total Body Acceleration

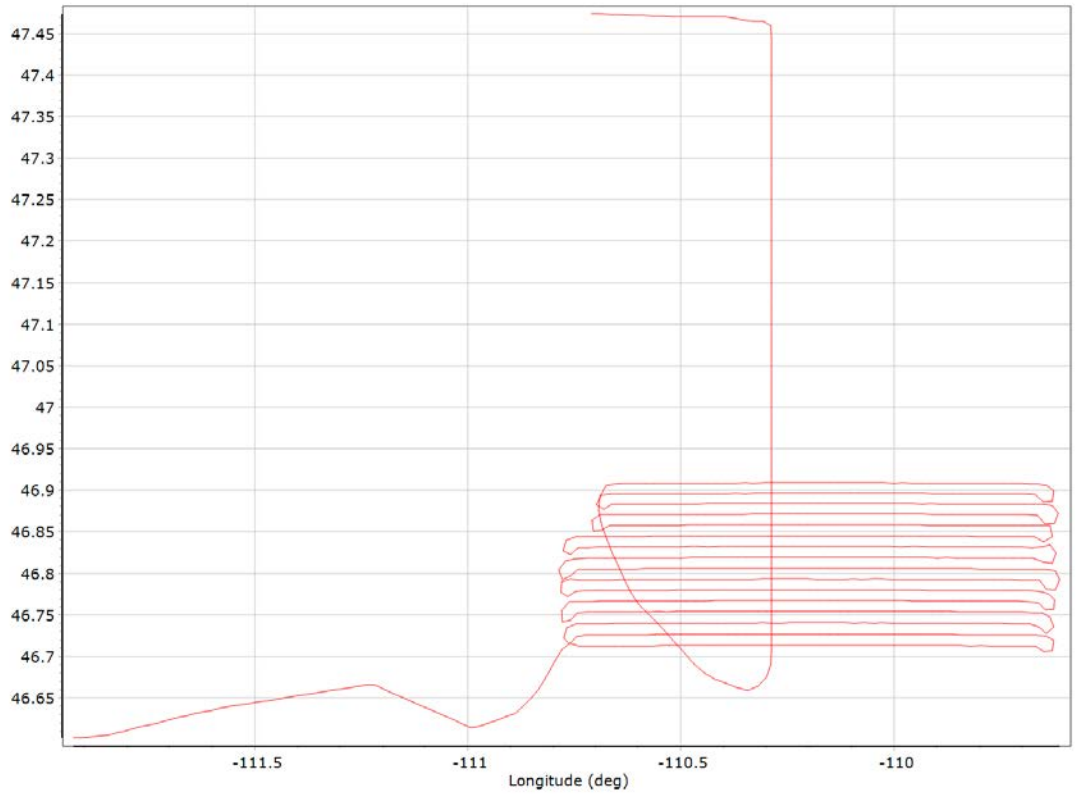


Body Angular Rate



Forward Processed Trajectory Information

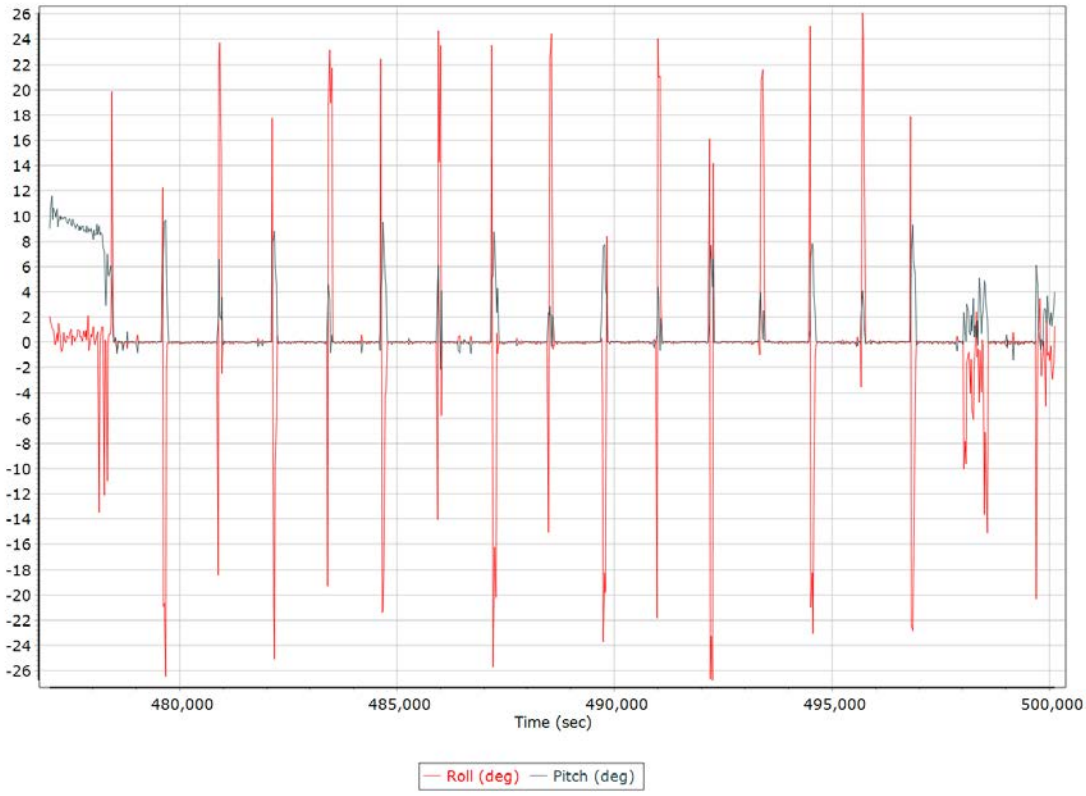
Top View



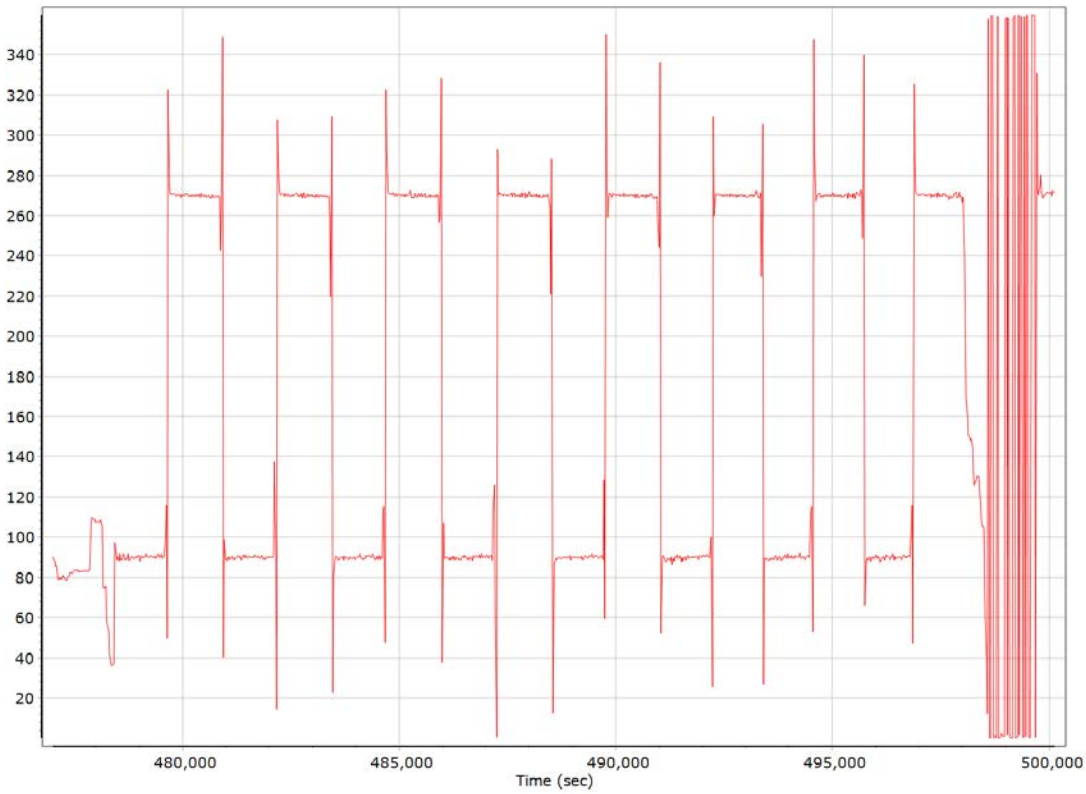
Altitude



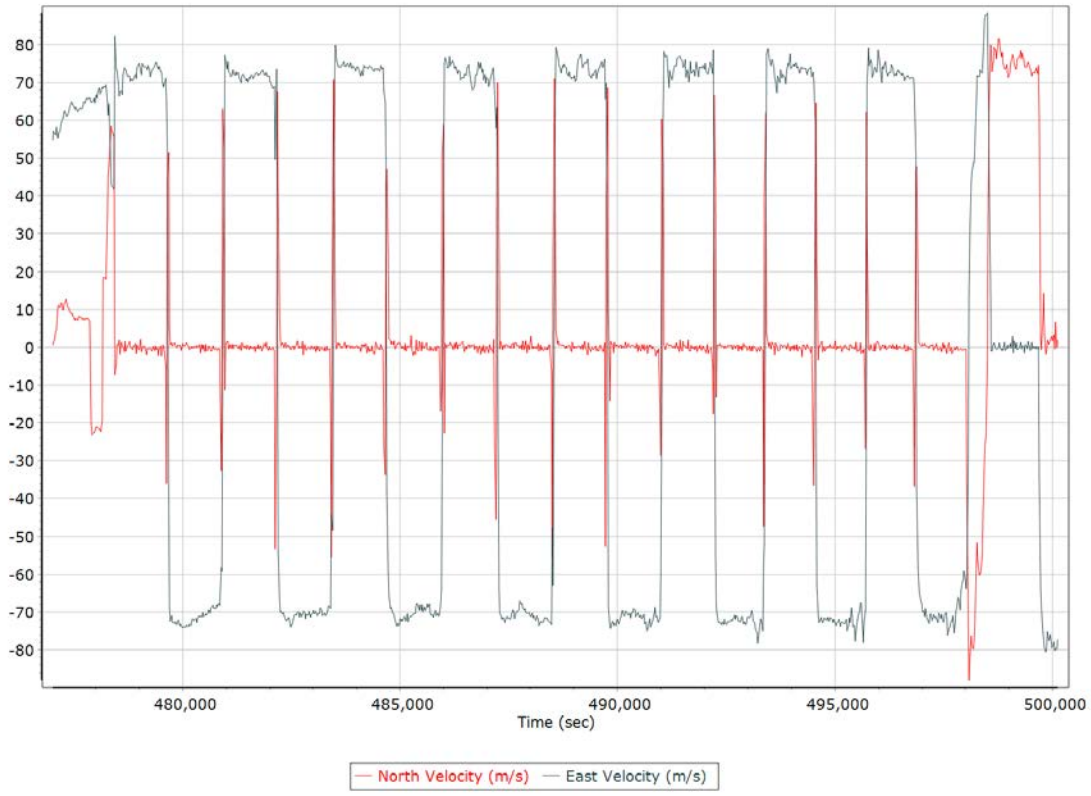
Roll/Pitch



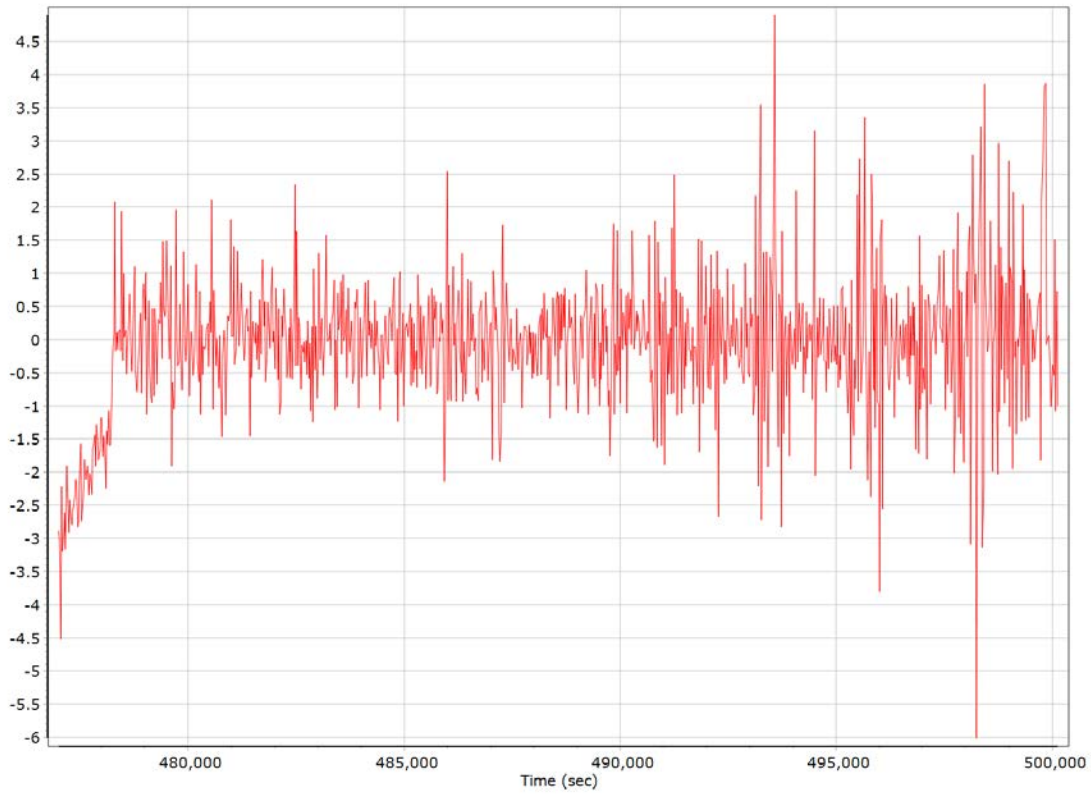
Heading



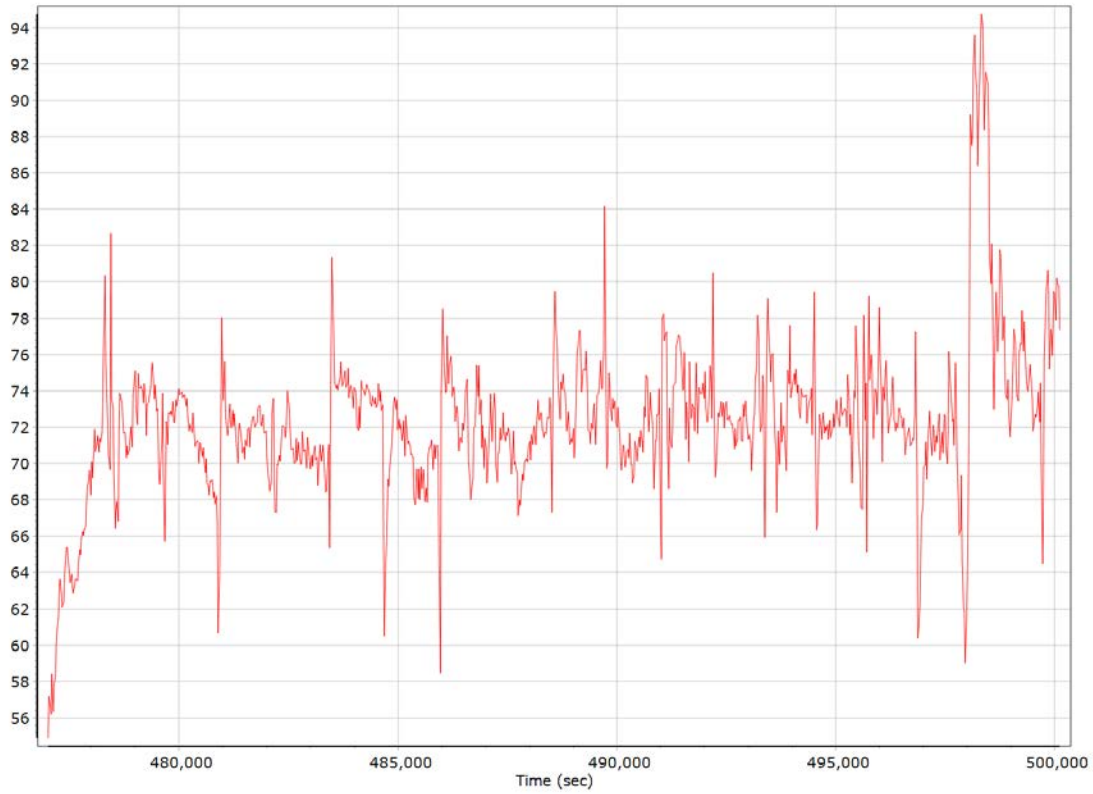
North/East Velocity



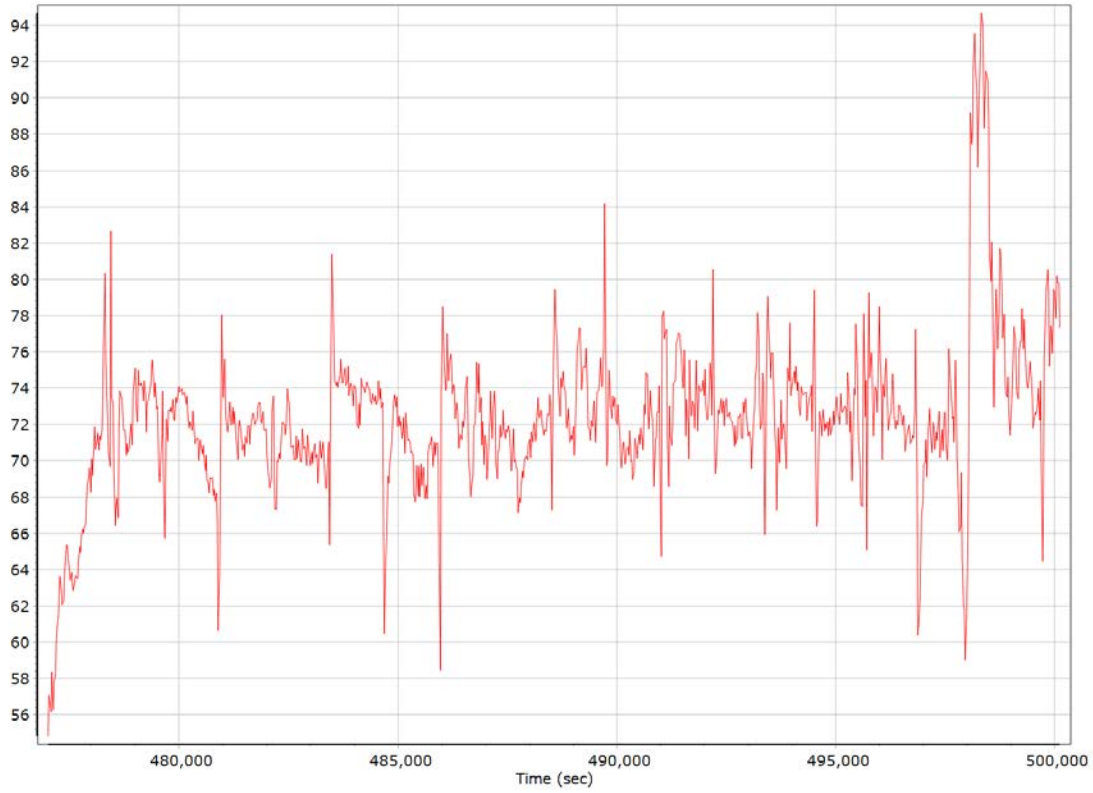
Down Velocity



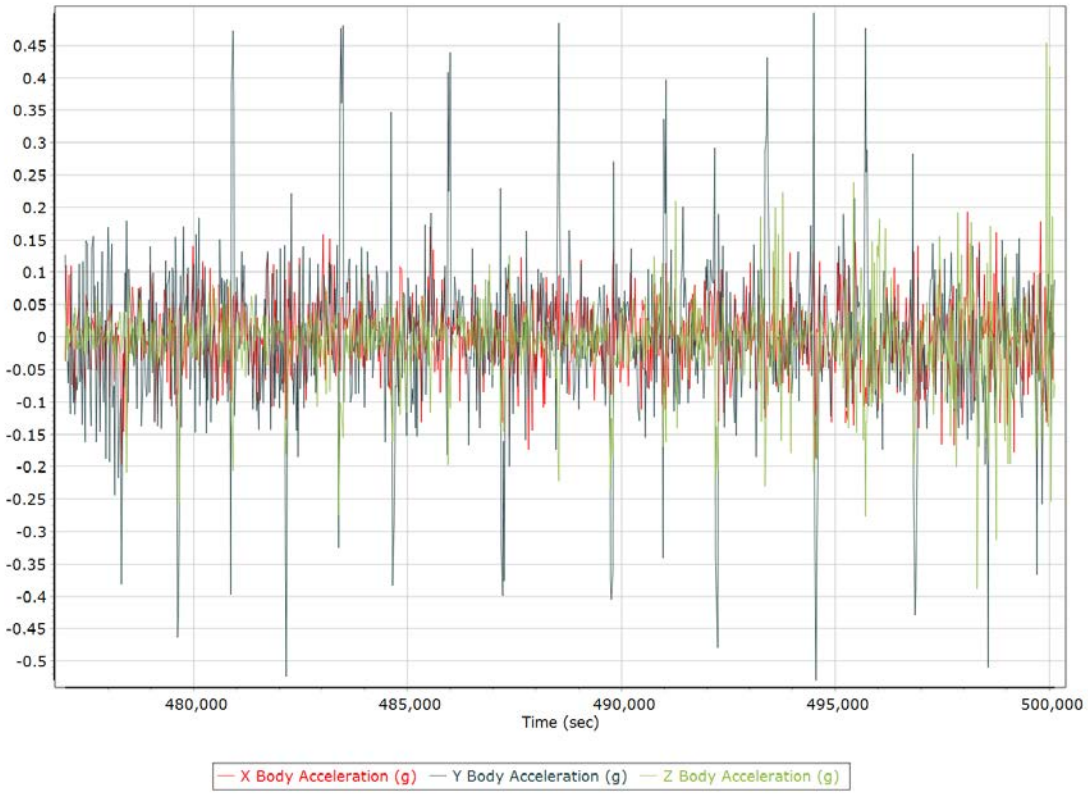
Total Speed



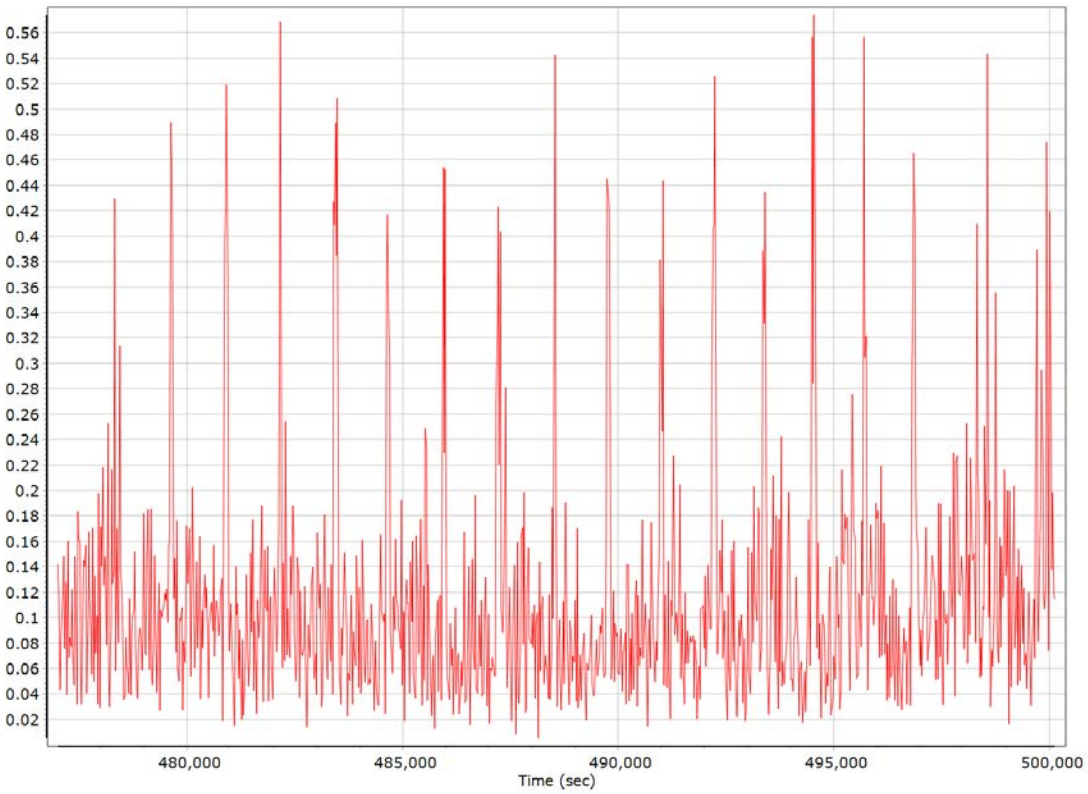
Ground Speed



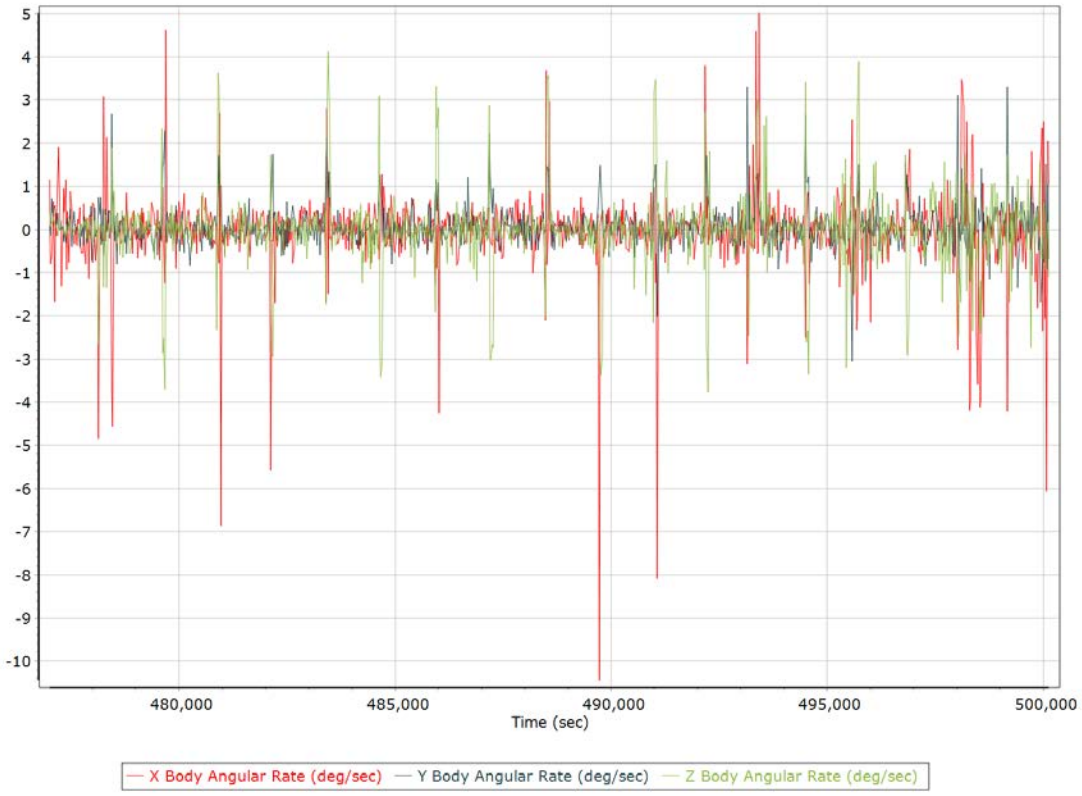
Body Acceleration



Total Body Acceleration



Body Angular Rate

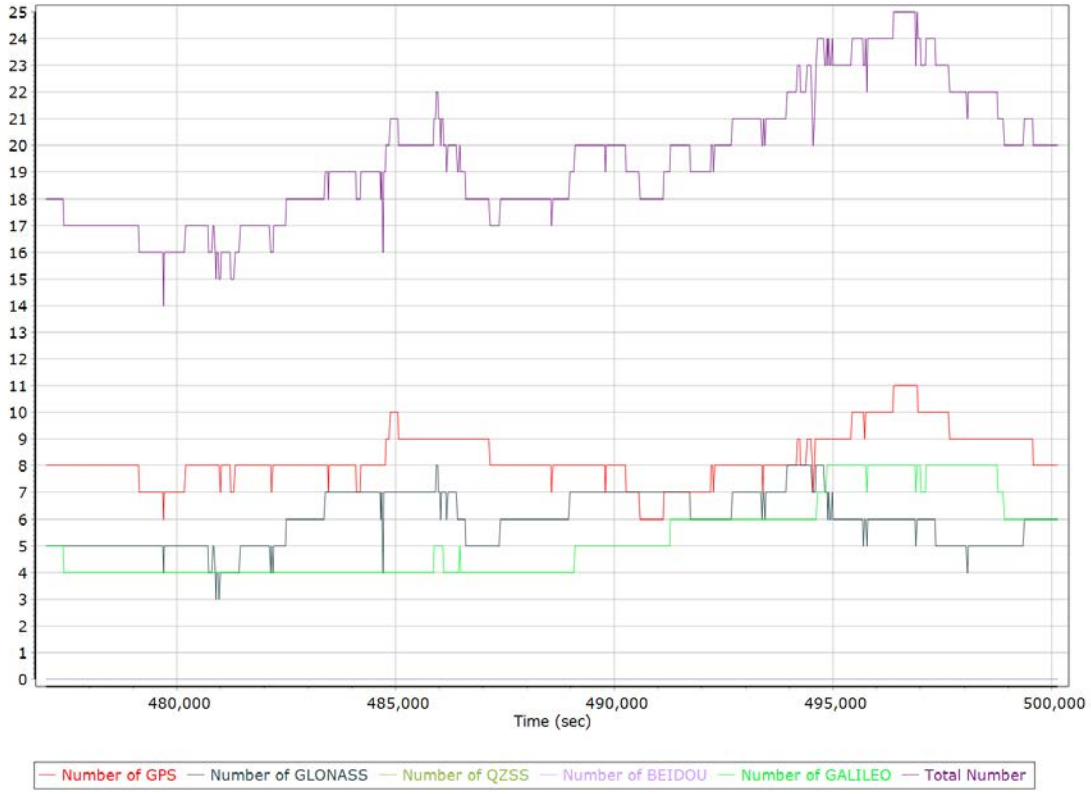


GNSS QC

GNSS QC Statistics

Statistics	Min	Max	Mean
Baseline length (km)	0.00	0.00	
Number of GPS SV	6	11	8
Number of GLONASS SV	3	8	6
Number of QZSS SV	0	0	0
Number of BEIDOU SV	0	0	0
Number of GALILEO SV	3	8	5
Total number of SV	14	25	19
PDOP	0.94	1.92	1.22
QC Solution Gaps	0.00	0.00	
Solution Type	Fixed	Float	No solution
Epoch (sec)	23205.00	0.00	0.00
Percentage	100.00	0.00	0.00

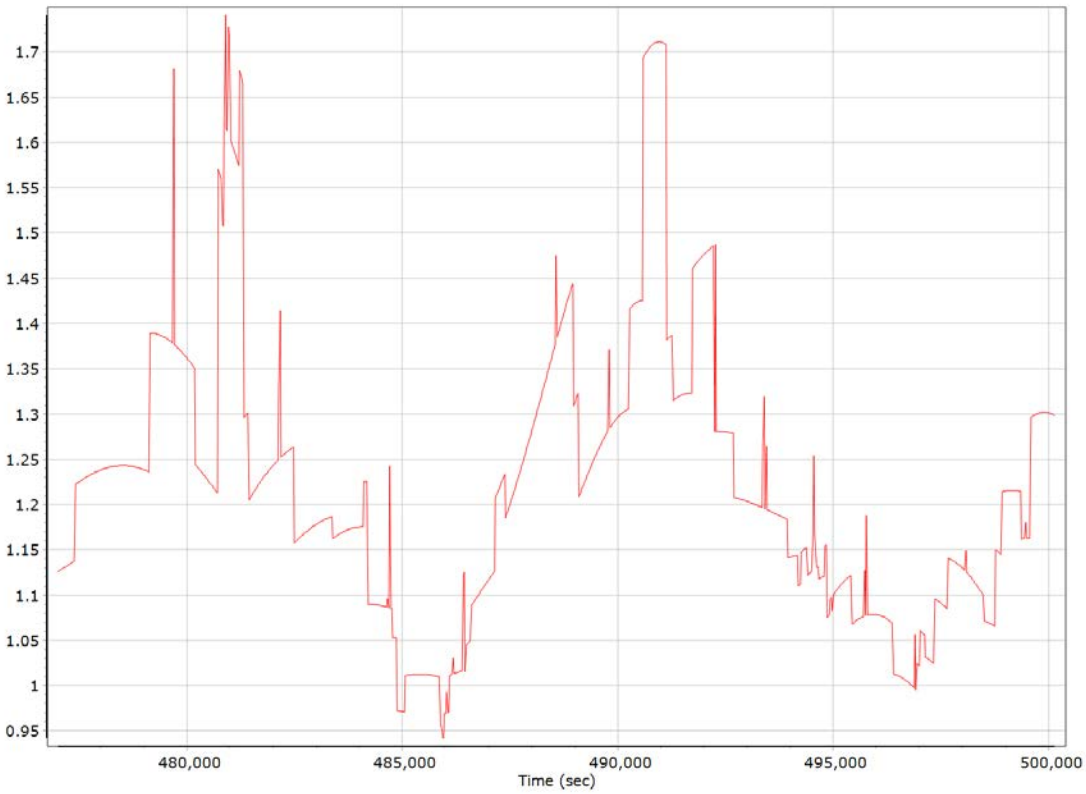
Num SVs in solution



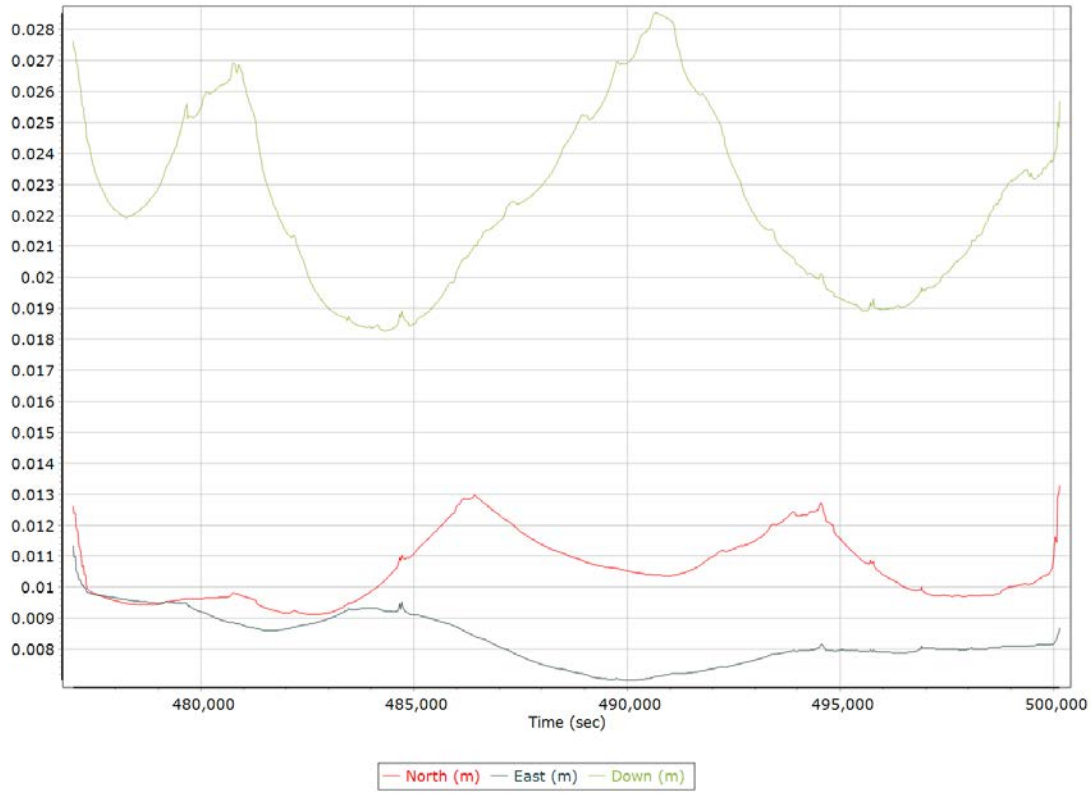
Forward/Reverse Separation



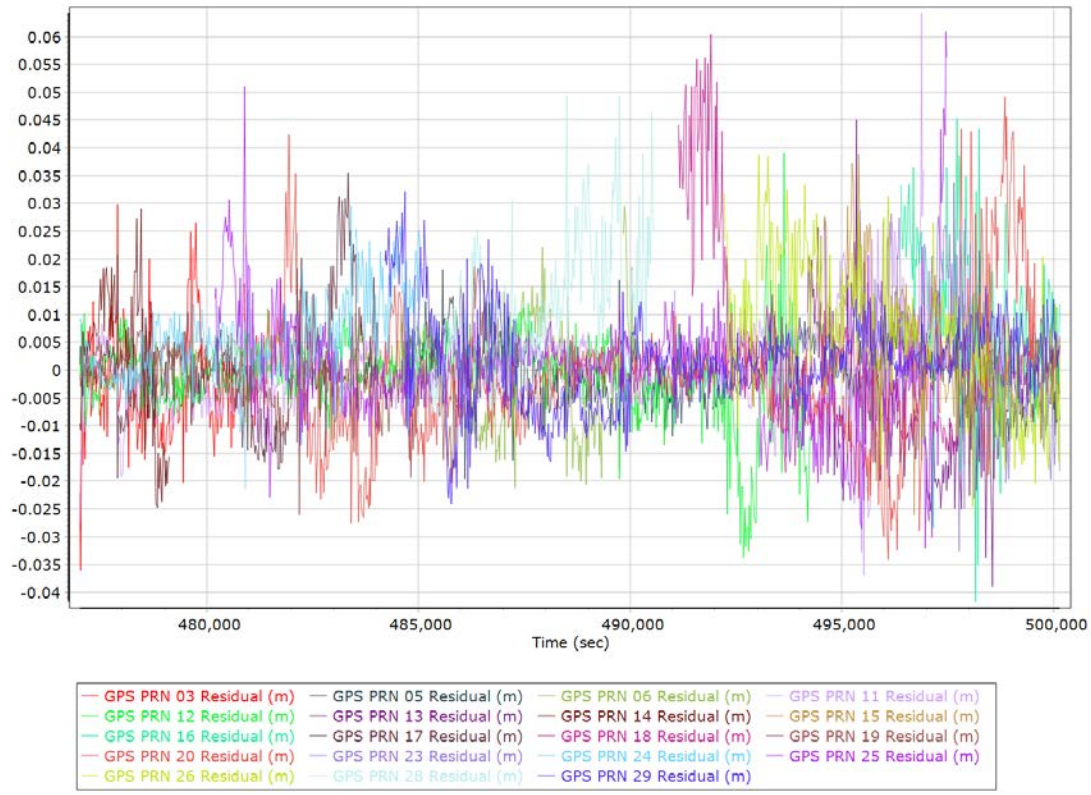
PDOP



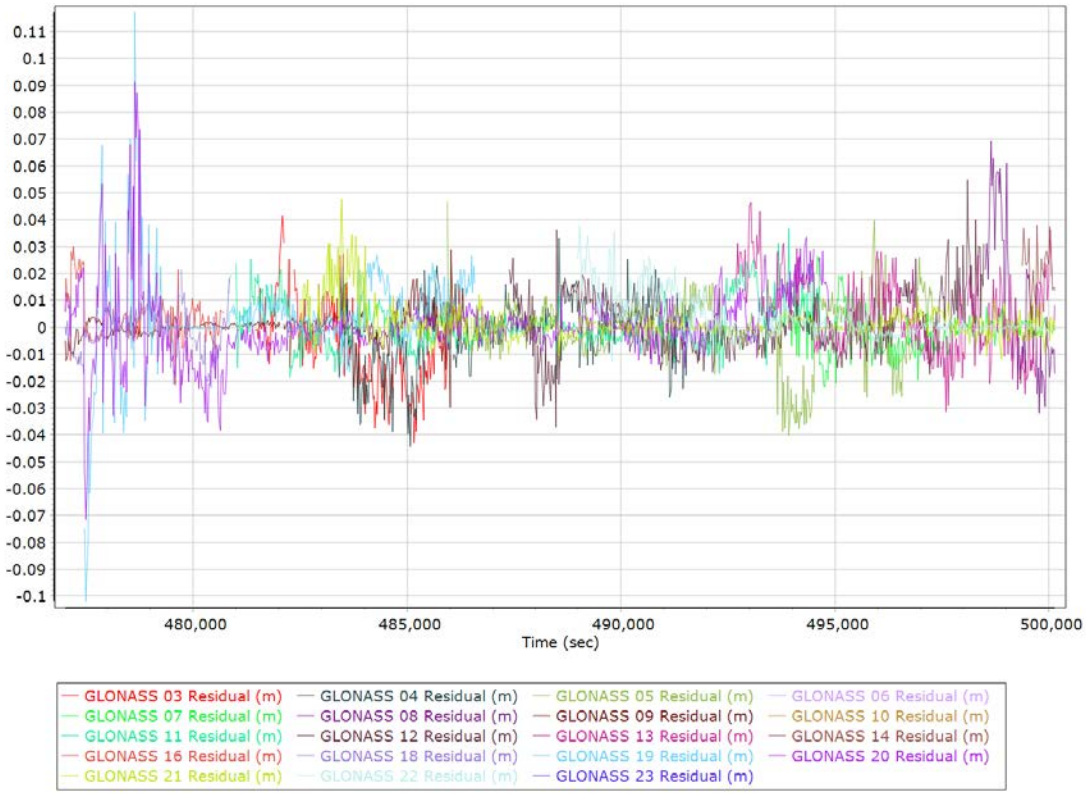
Estimated Position Accuracy



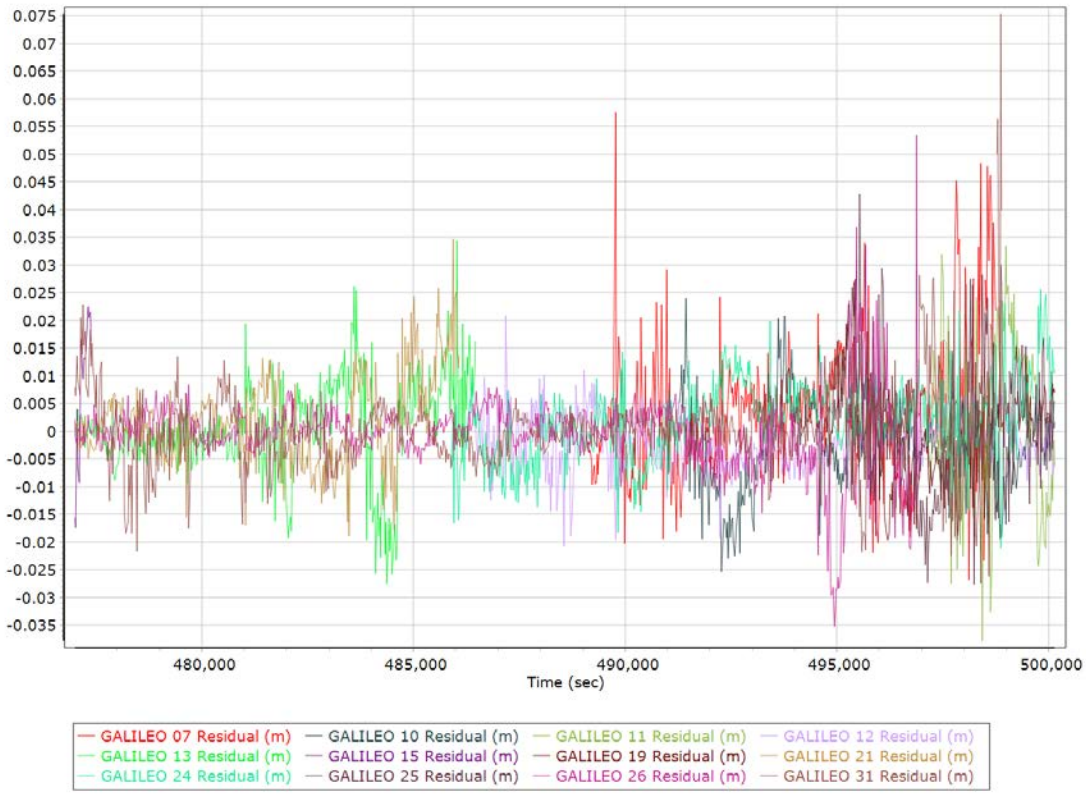
GPS Residuals



GLONASS Residuals



GALILEO Residuals



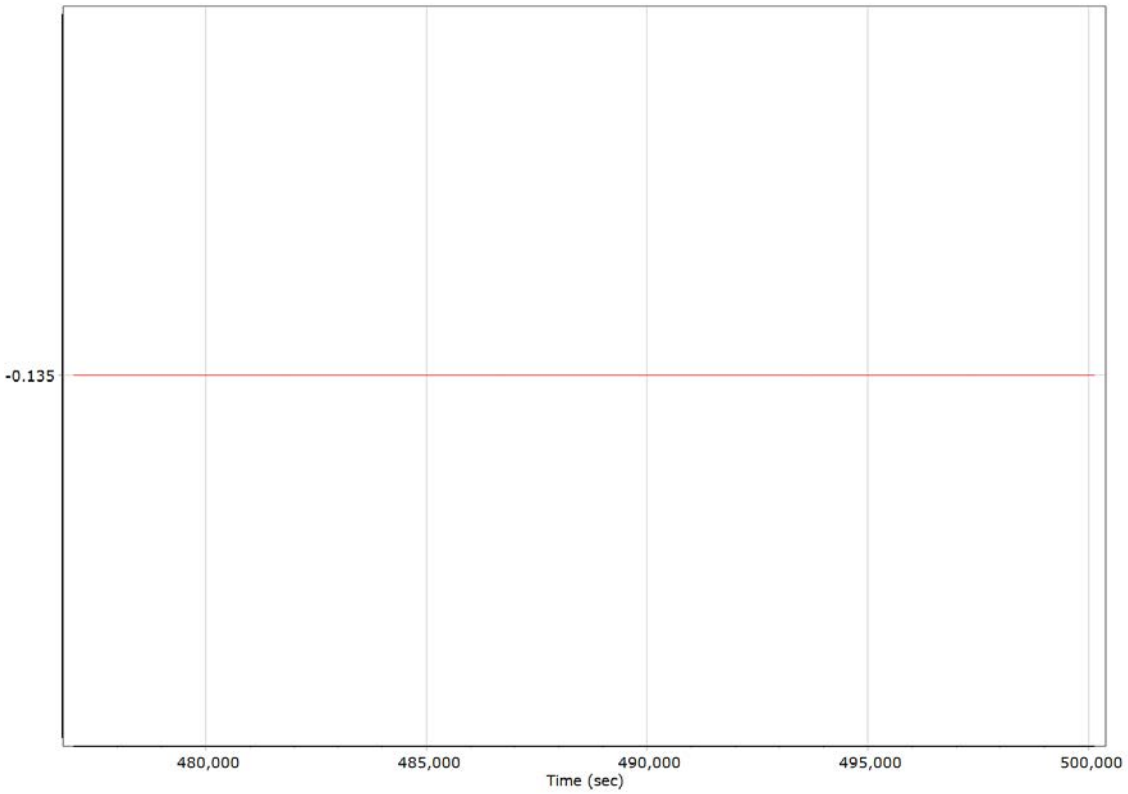
GNSS-Inertial Processor Configuration

Processing mode	IN-Fusion PP-RTX		
Stabilized mount	True		
Processing start time	476919.000 (7/21/2023 12:28:39 PM)		
Processing end time	500150.000 (7/21/2023 6:55:50 PM)		
Initial attitude source	Primary GNSS Track		
IMU Sensor Context	Processing with Onboard IMU		
Gimbal to IMU lever arm (m)	-0.034	-0.010	-0.374
Gimbal to IMU mounting angles (deg)	0.000	0.000	0.000
Gimbal to Primary GNSS lever arm (m)	-0.135	0.064	-1.339
Gimbal to Primary GNSS lever arm std dev (m)	0.030	0.030	0.030
Aircraft to Reference mounting angles (deg)	0.000	0.000	0.000

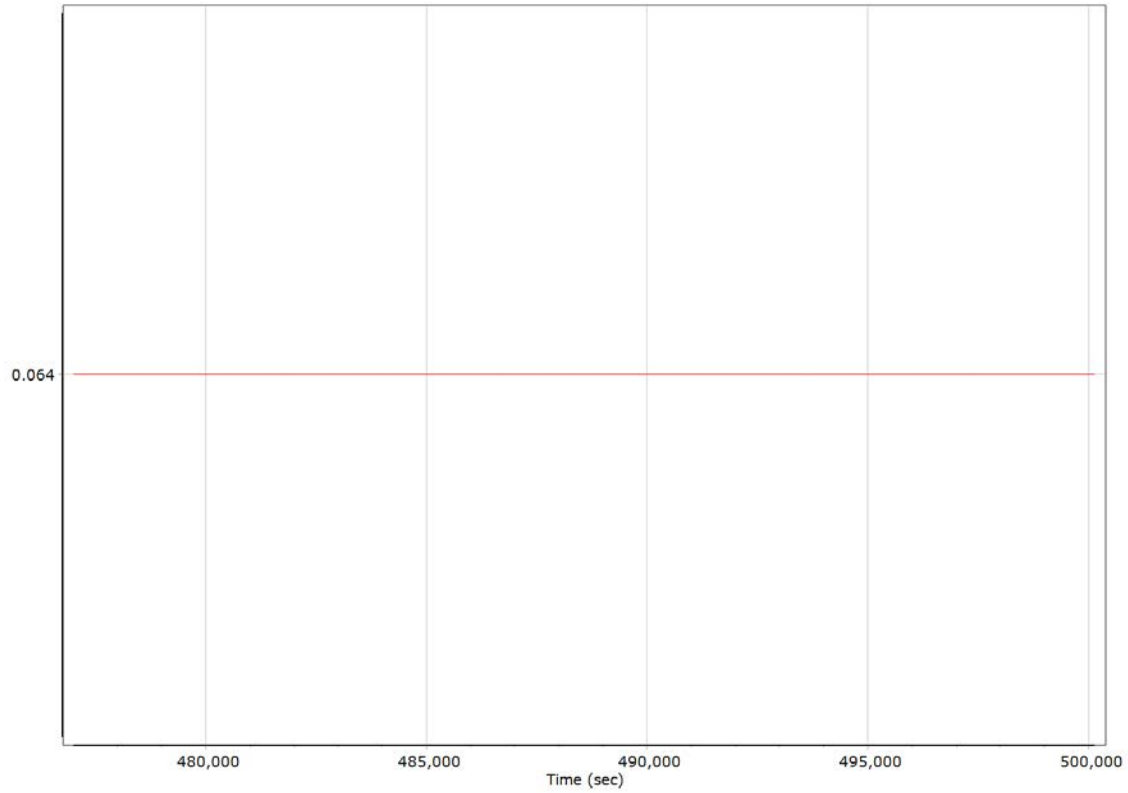
Calibrated Installation Parameters

Reference-Primary GNSS Lever Arm (m)

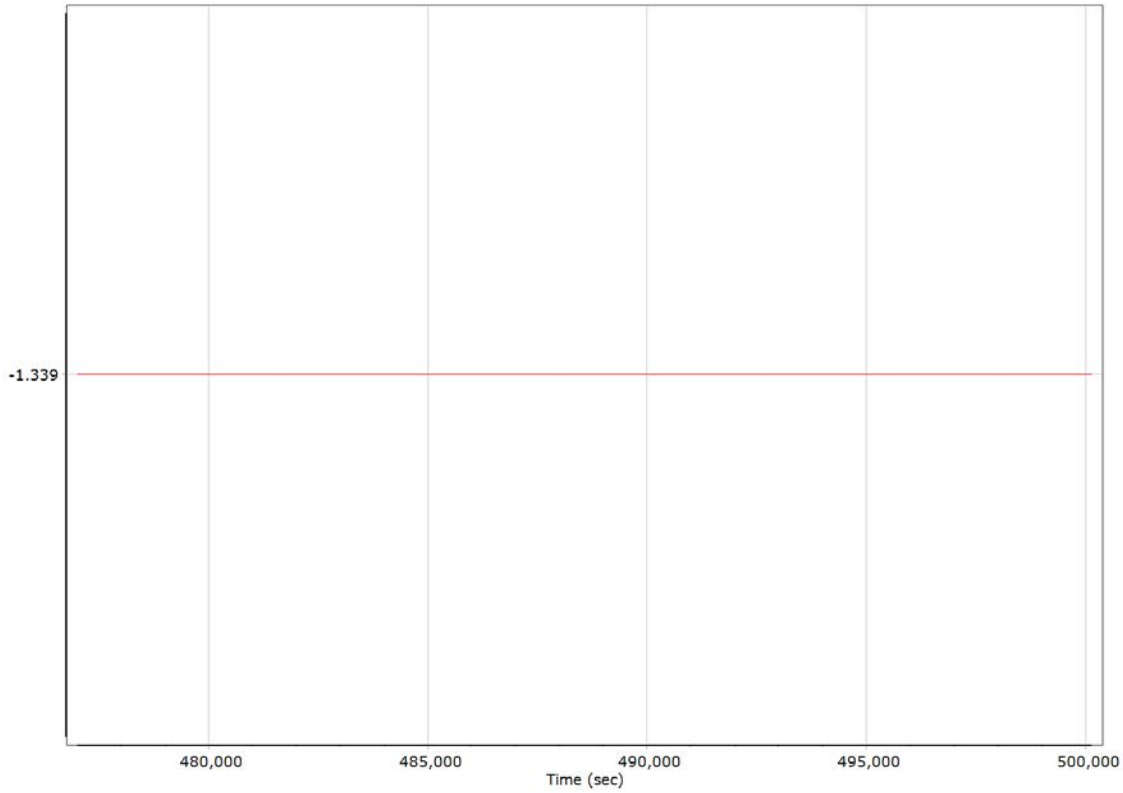
X Reference-Primary GNSS Lever Arm (m)



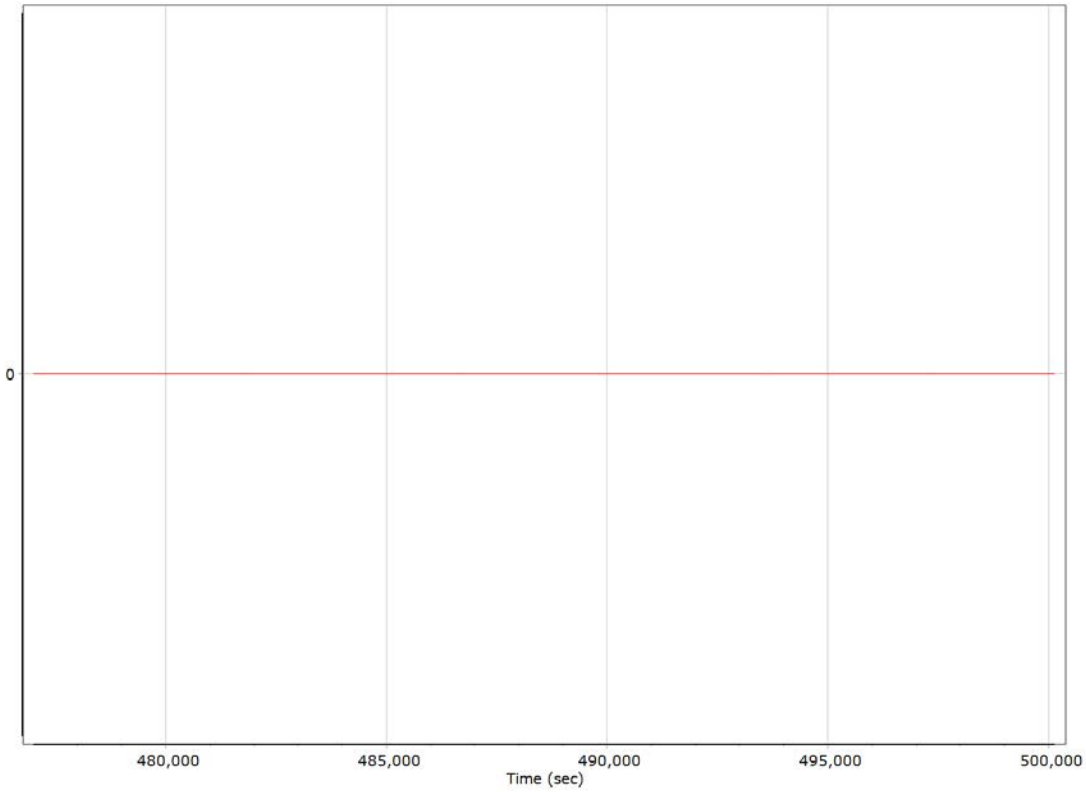
Y Reference-Primary GNSS Lever Arm (m)



Z Reference-Primary GNSS Lever Arm (m)



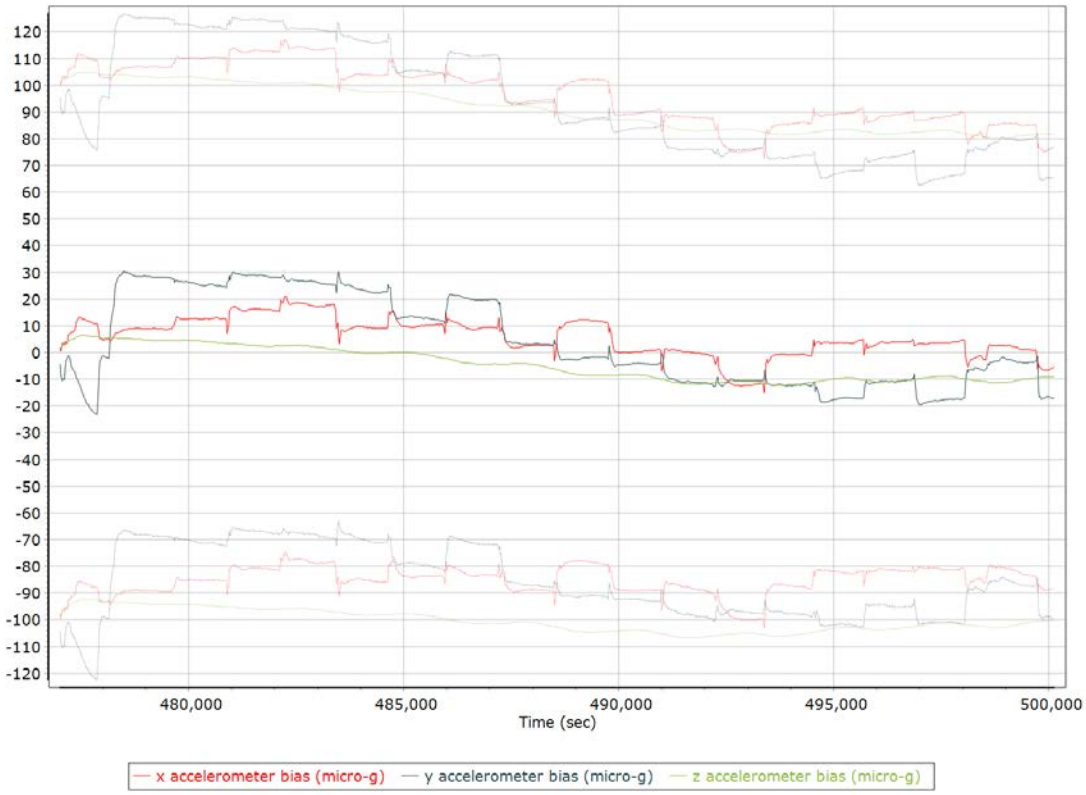
Reference-Primary GNSS Lever Arm Figure of Merit



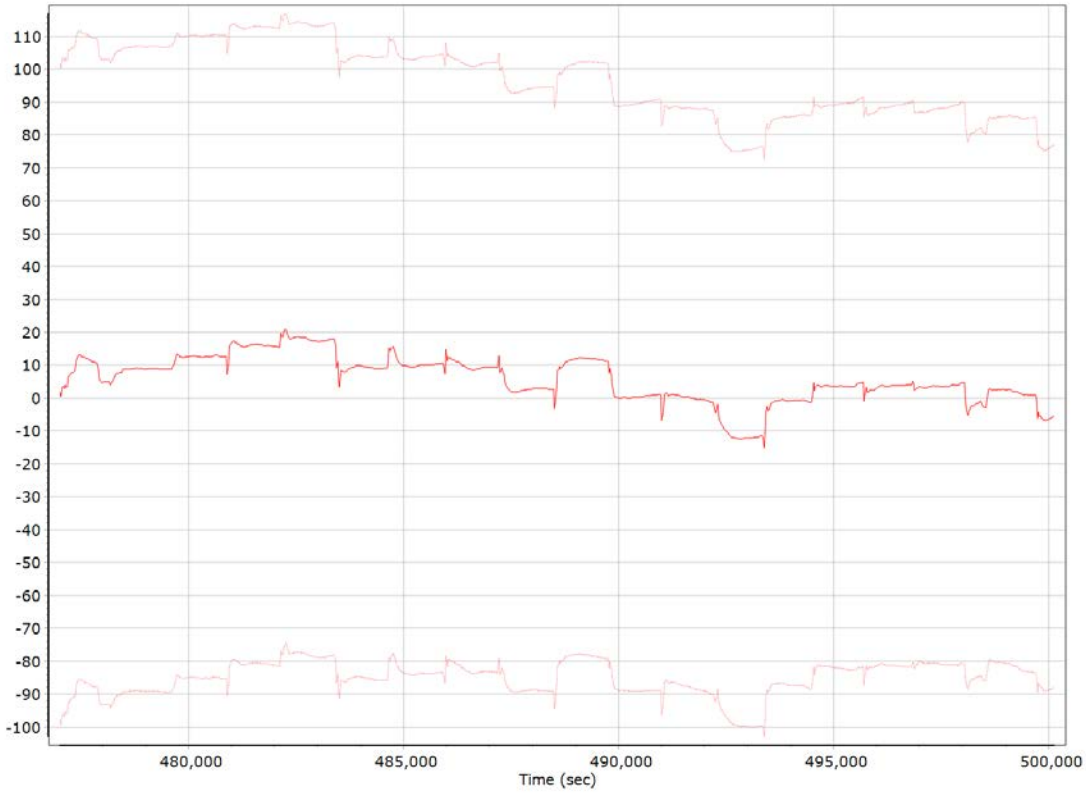
IN-Fusion QC

Forward Processed Estimated Errors, Reference Frame

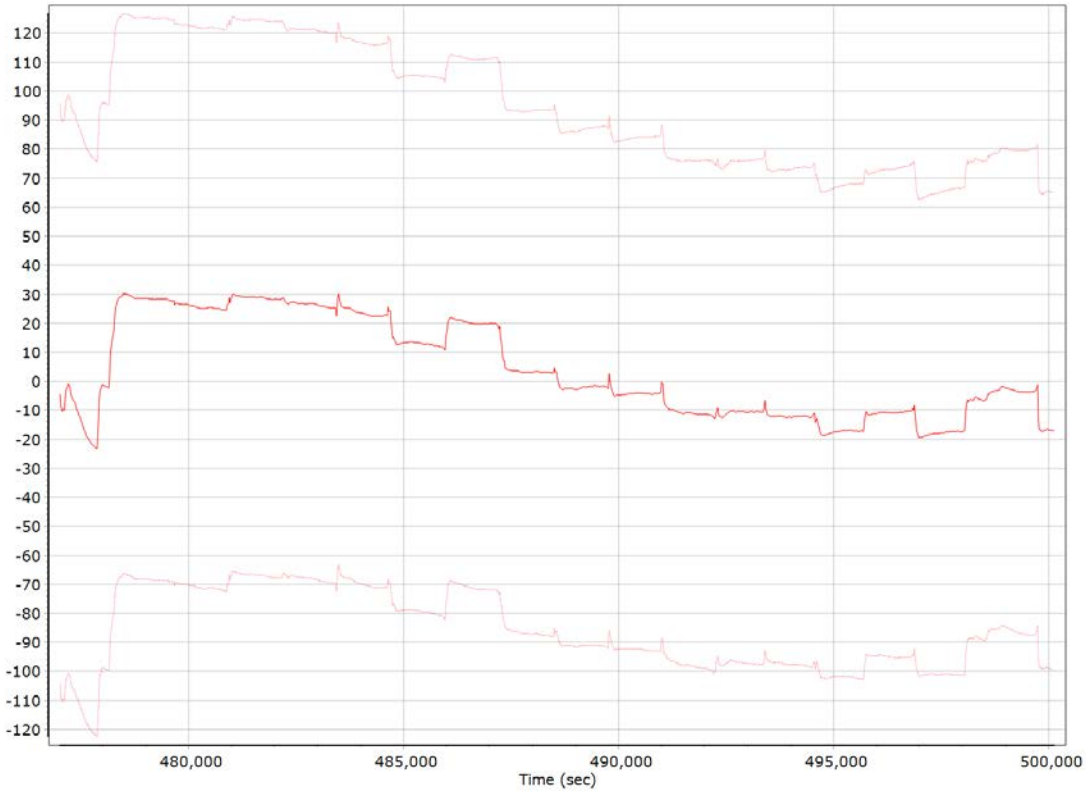
Accelerometer Bias (micro-g)



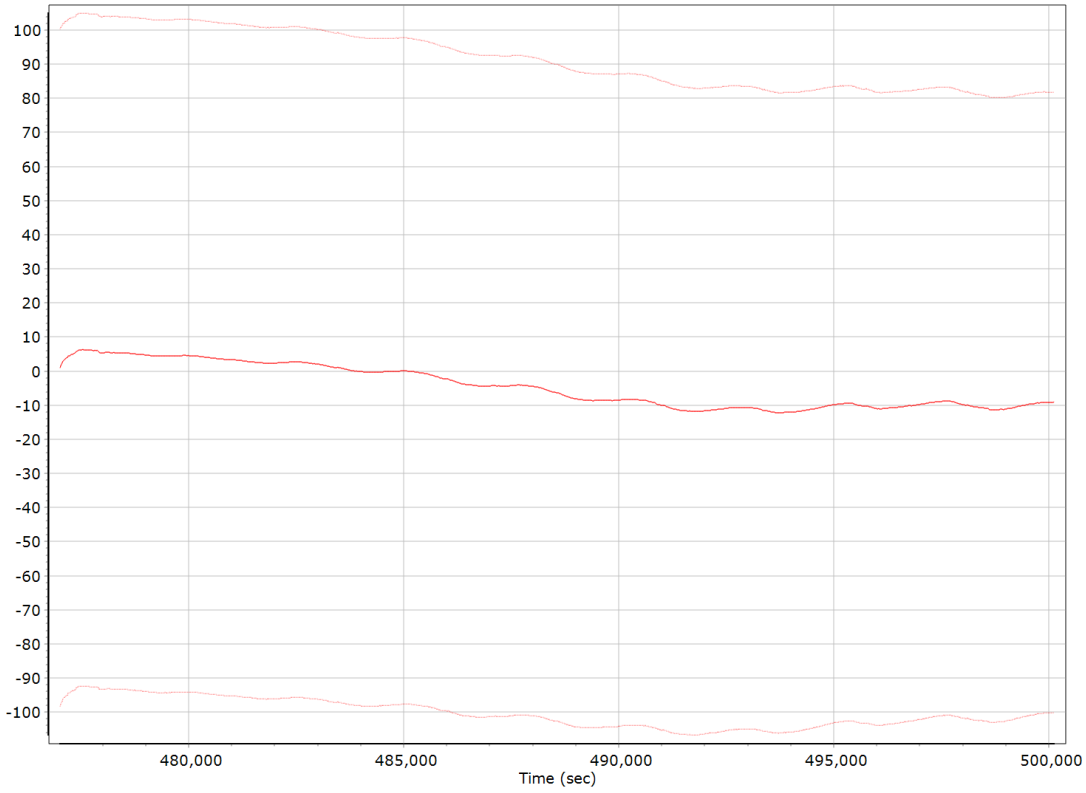
X Accelerometer Bias (micro-g)



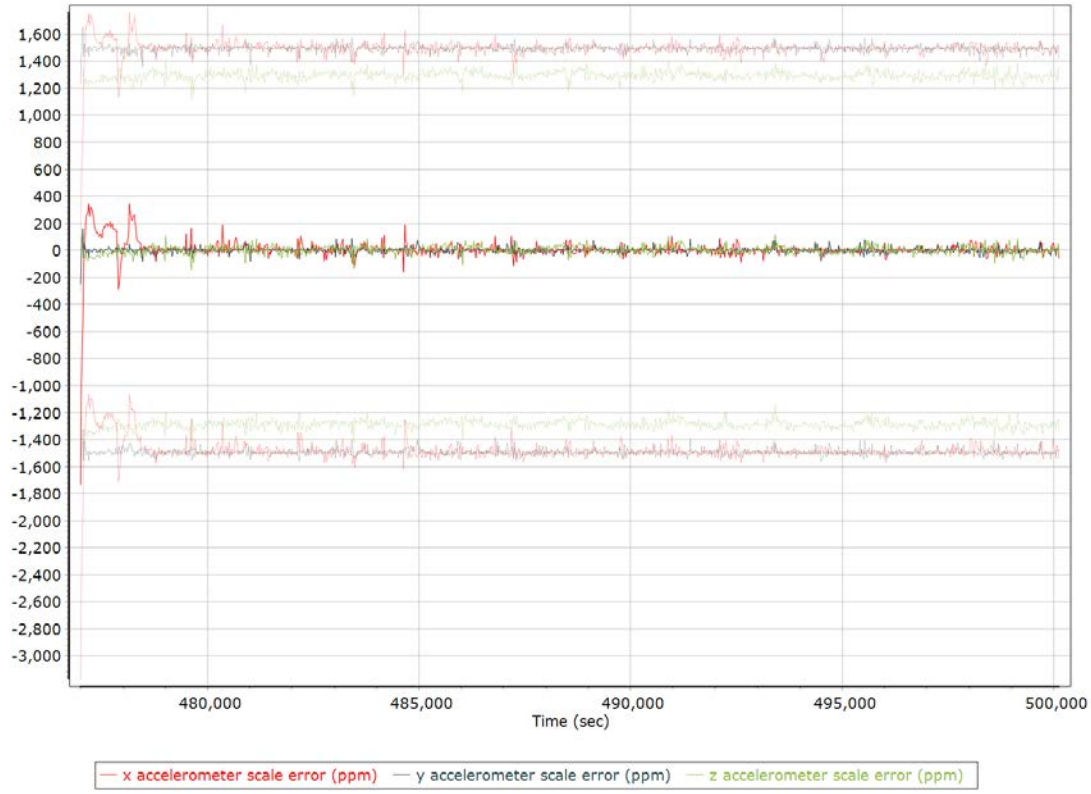
Y Accelerometer Bias (micro-g)



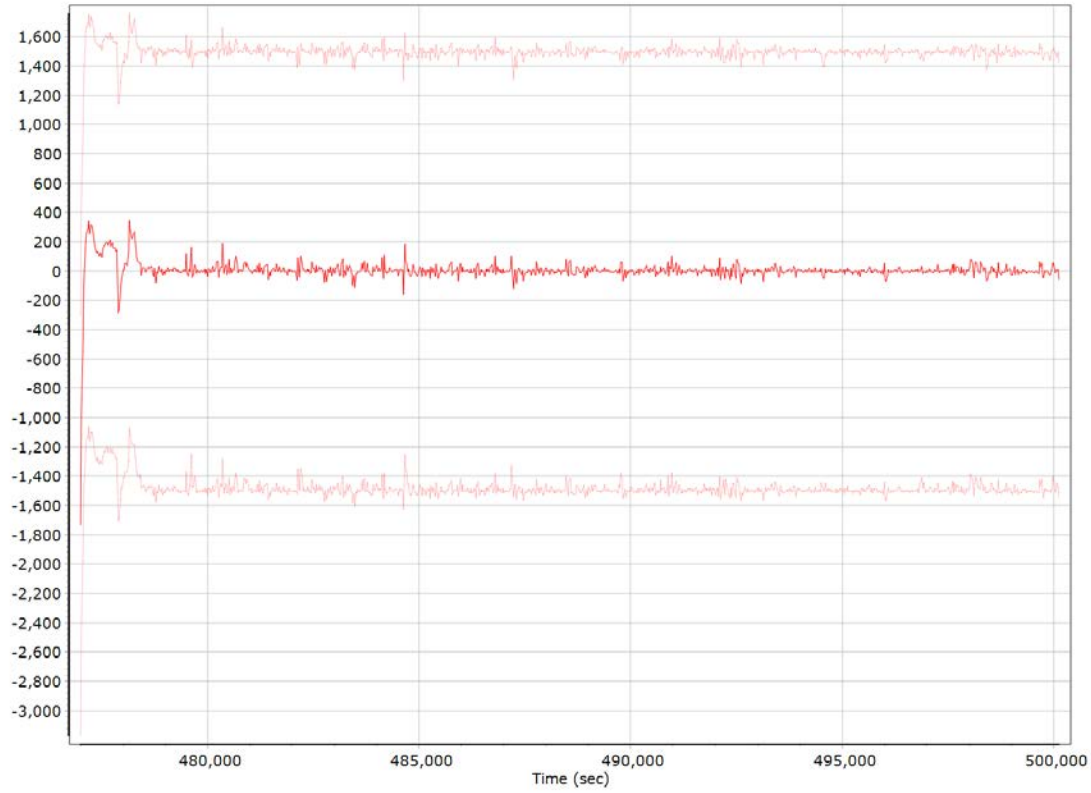
Z Accelerometer Bias (micro-g)



Accelerometer Scale Error (ppm)



X Accelerometer Scale Error (ppm)



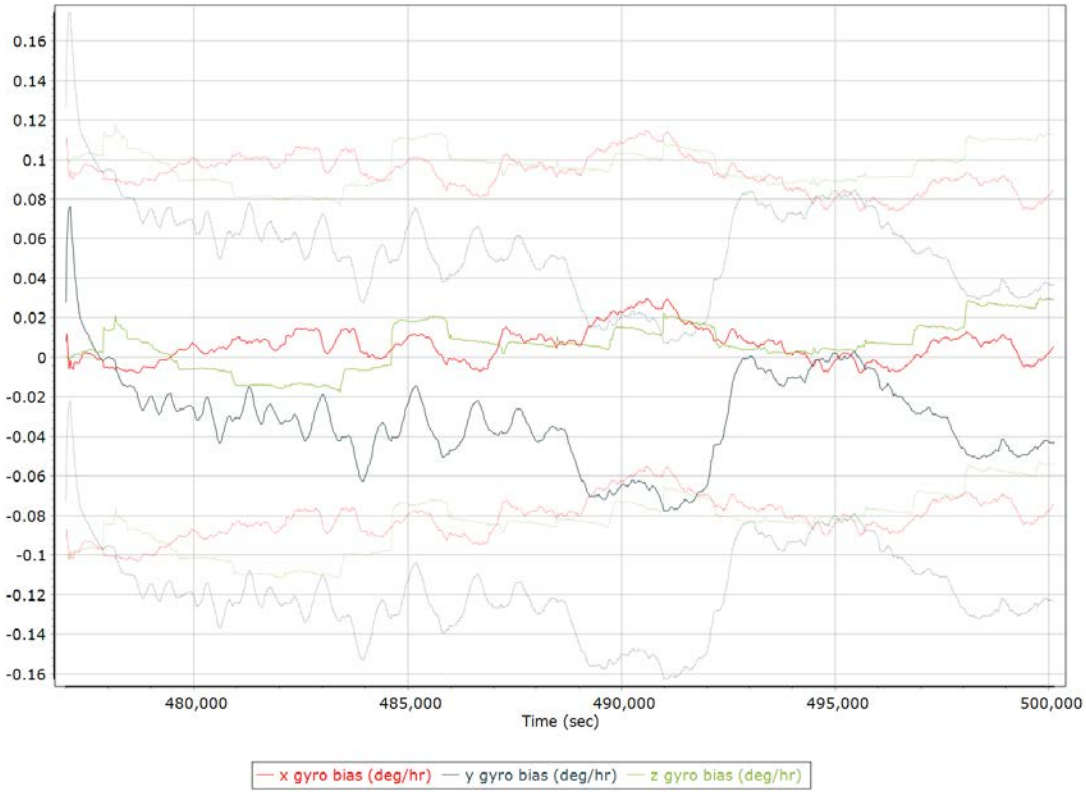
Y Accelerometer Scale Error (ppm)



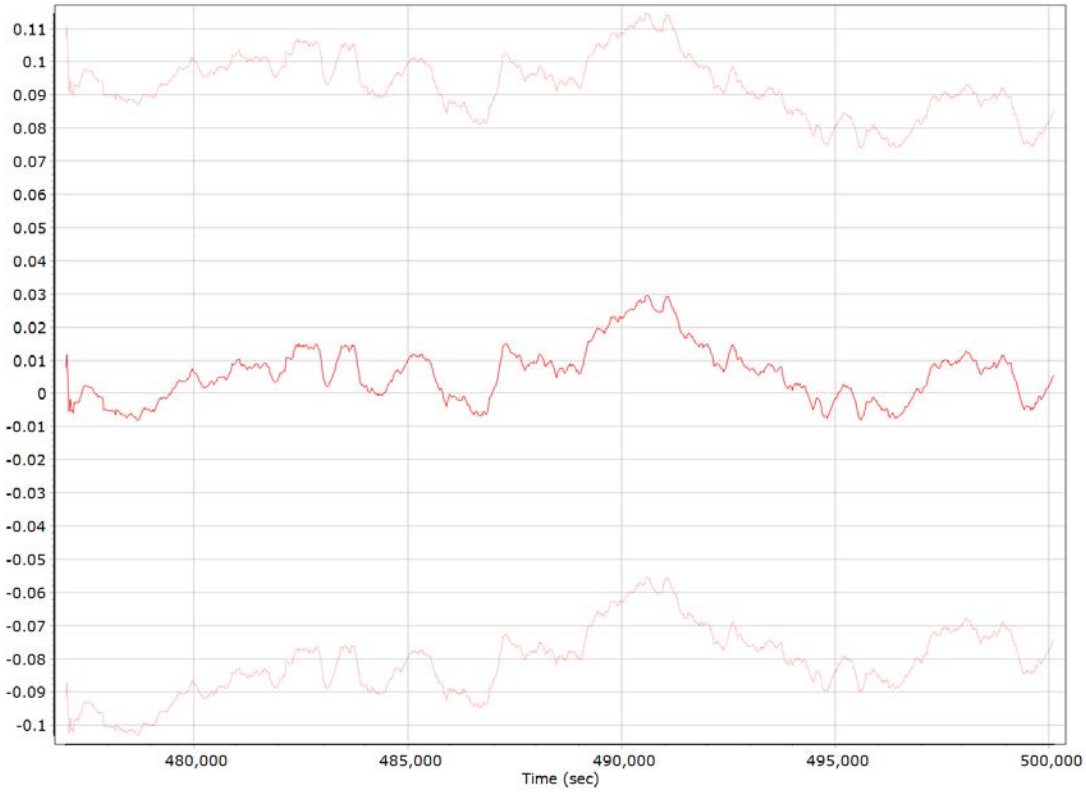
Z Accelerometer Scale Error (ppm)



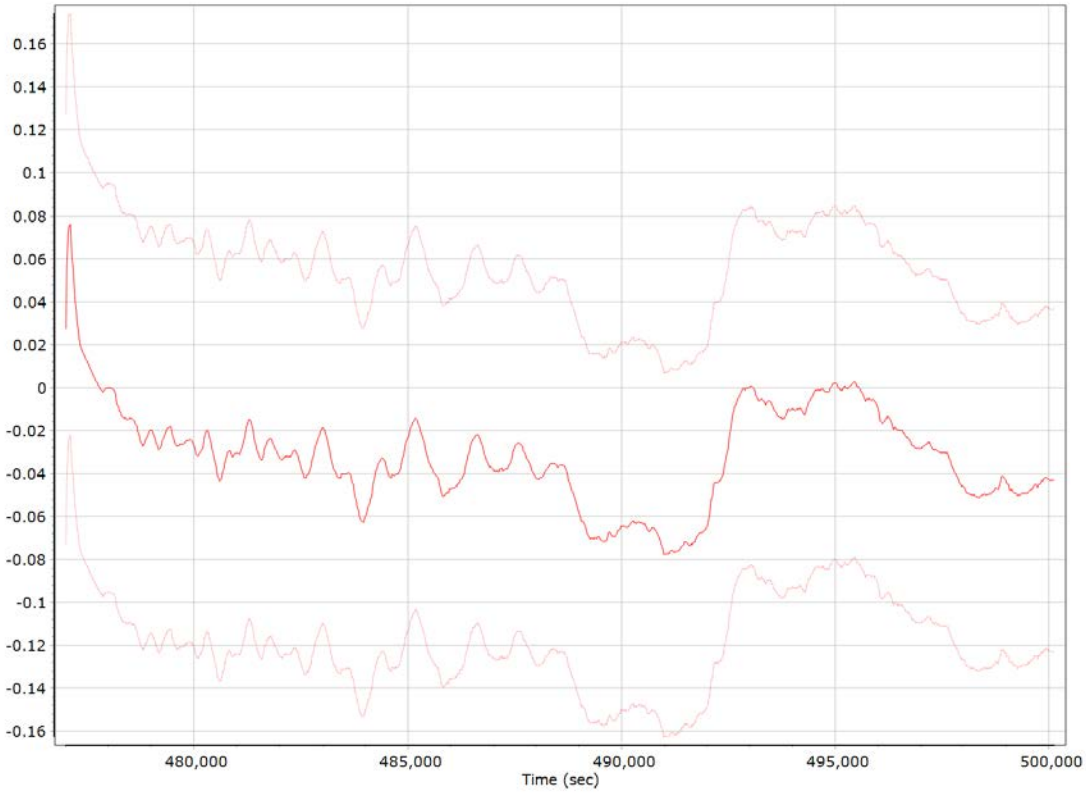
Gyro Bias (deg/h)



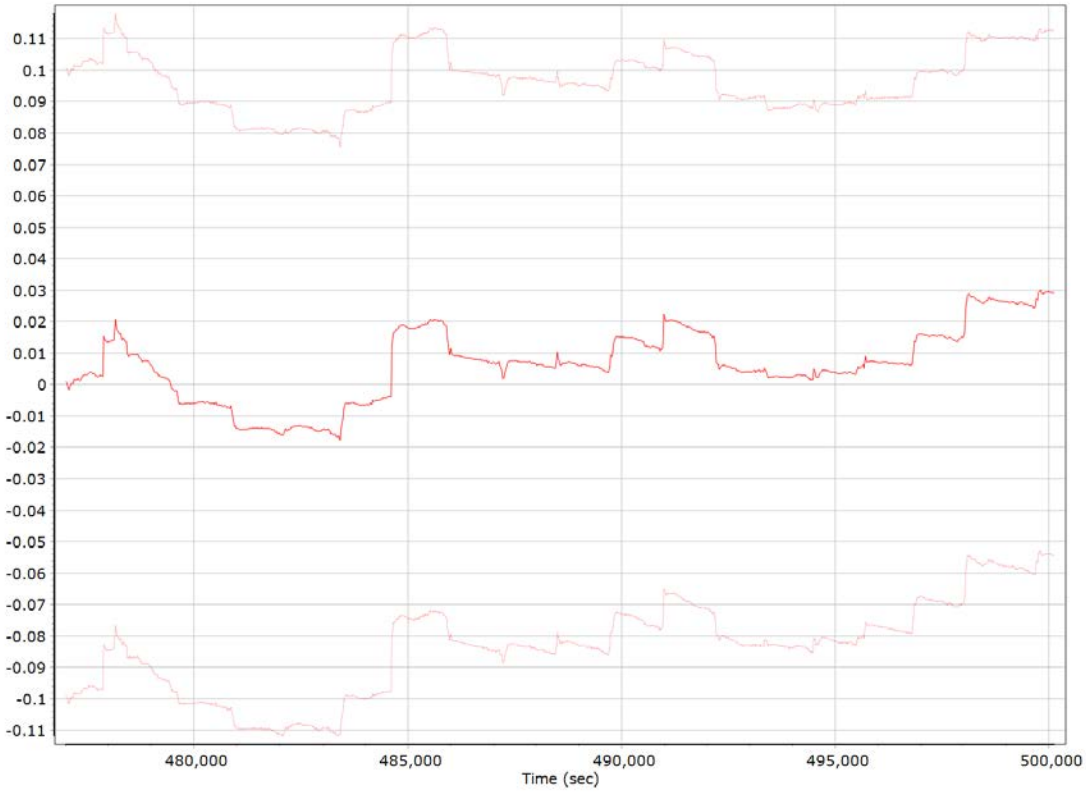
X Gyro Bias (deg/h)



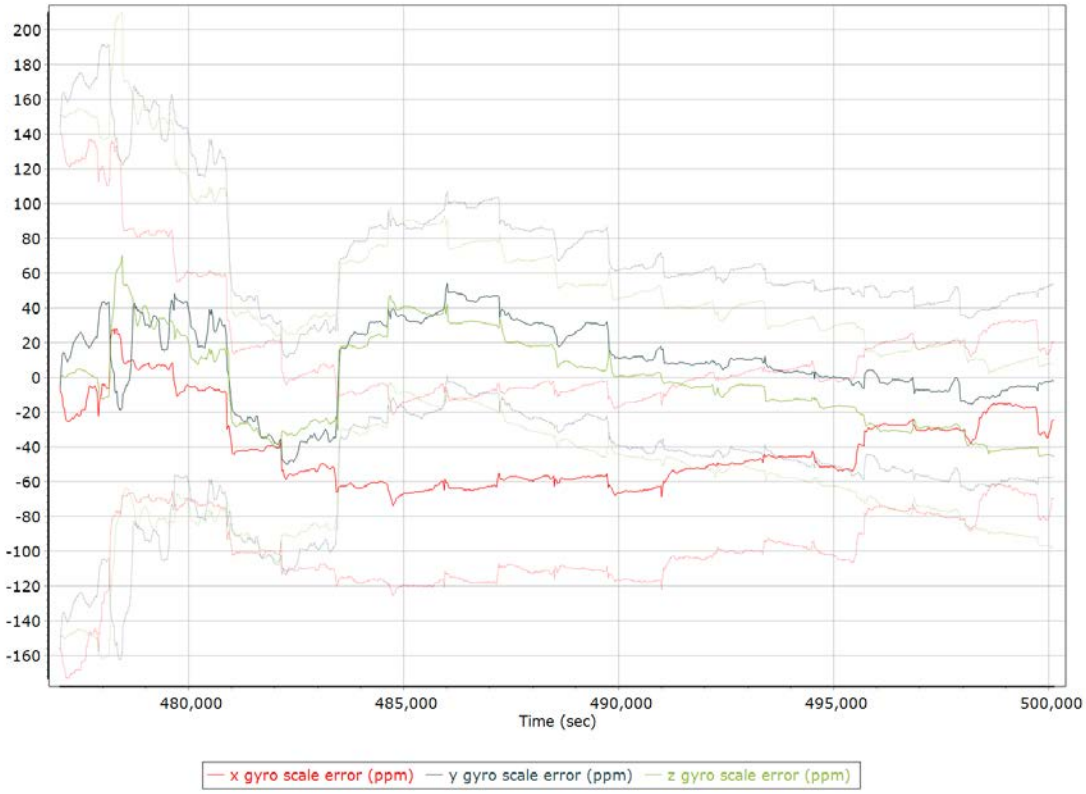
Y Gyro Bias (deg/h)



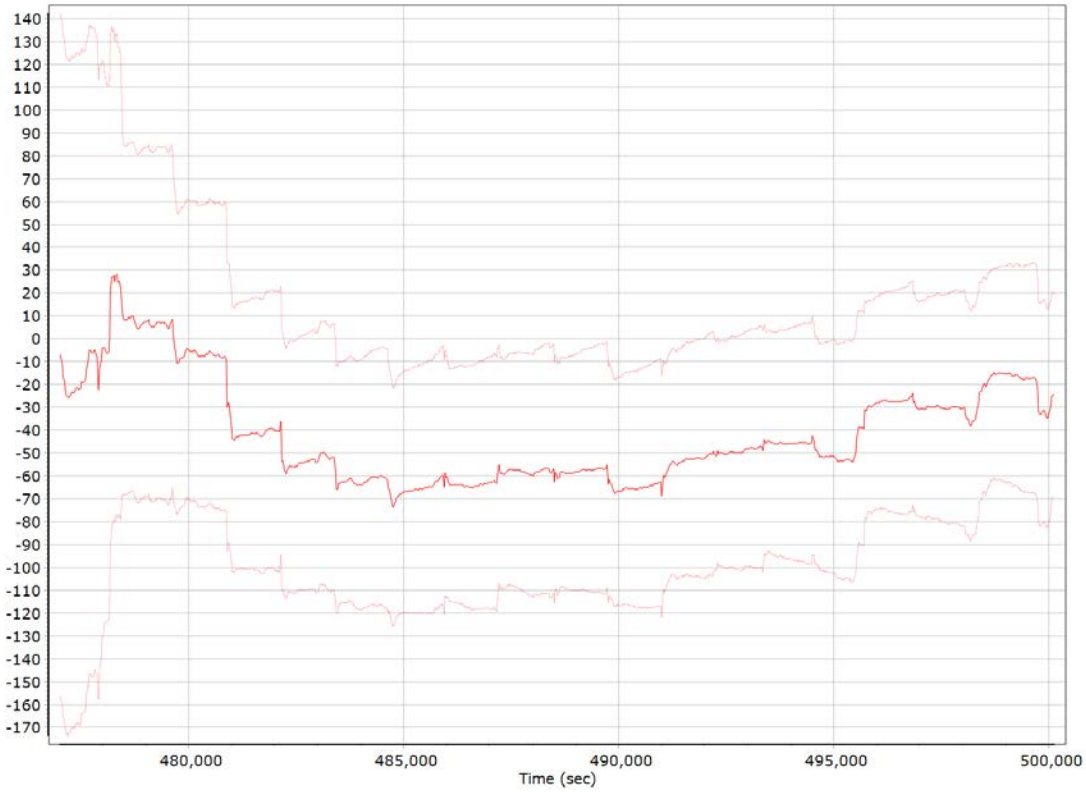
Z Gyro Bias (deg/h)



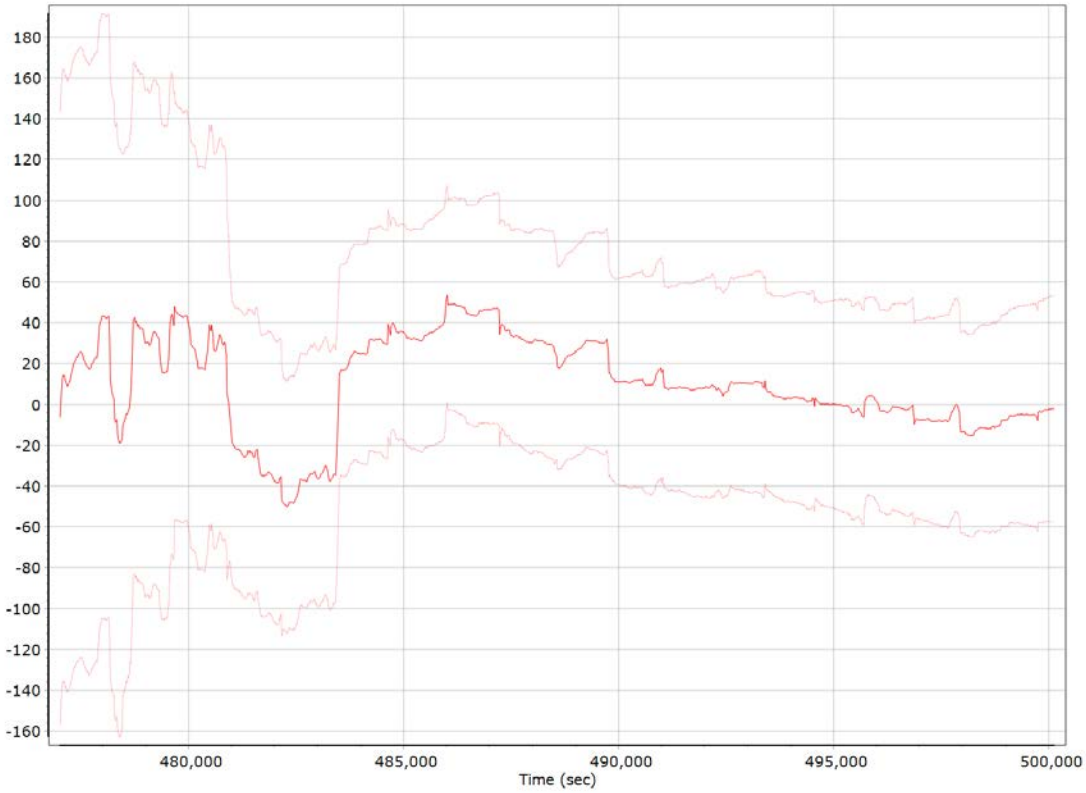
Gyro Scale Error (ppm)



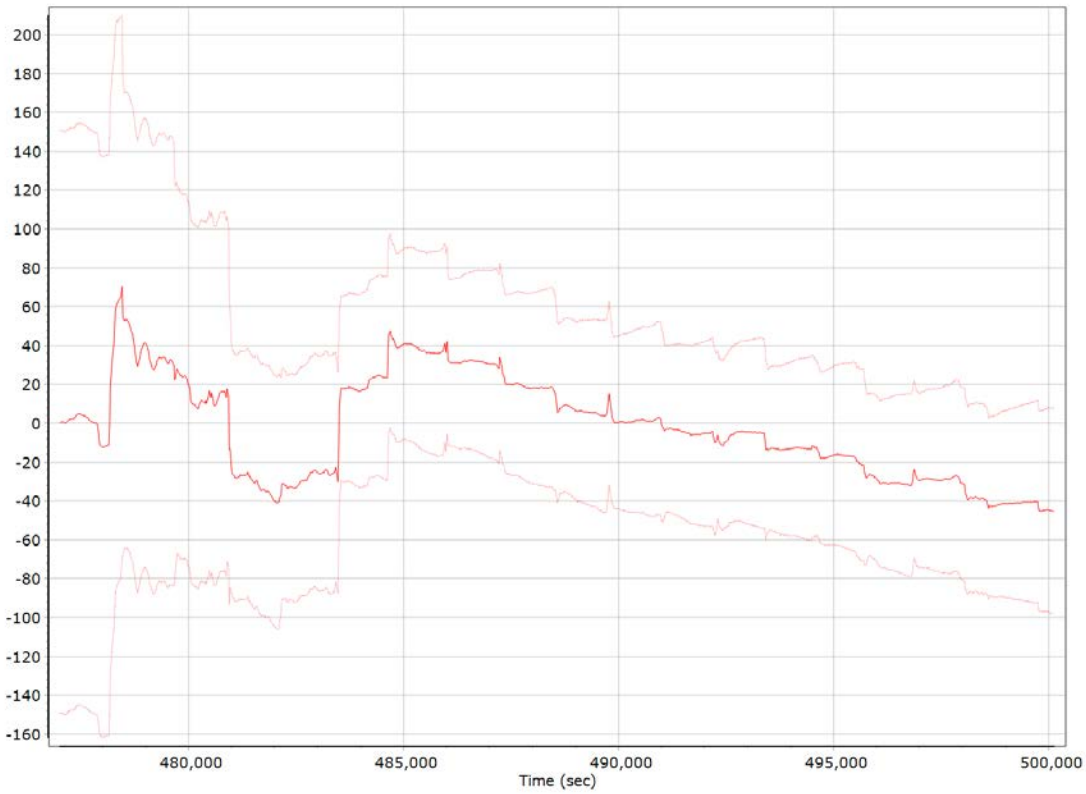
X Gyro Scale Error (ppm)



Y Gyro Scale Error (ppm)

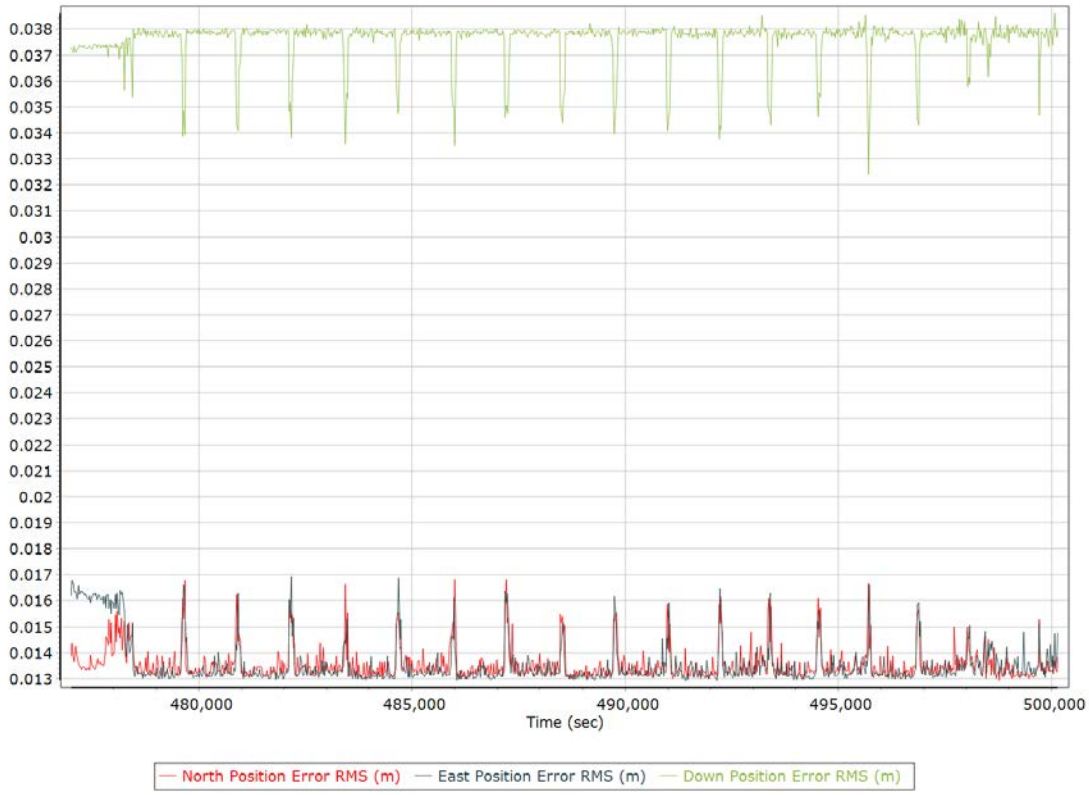


Z Gyro Scale Error (ppm)



Smoothed Performance Metrics

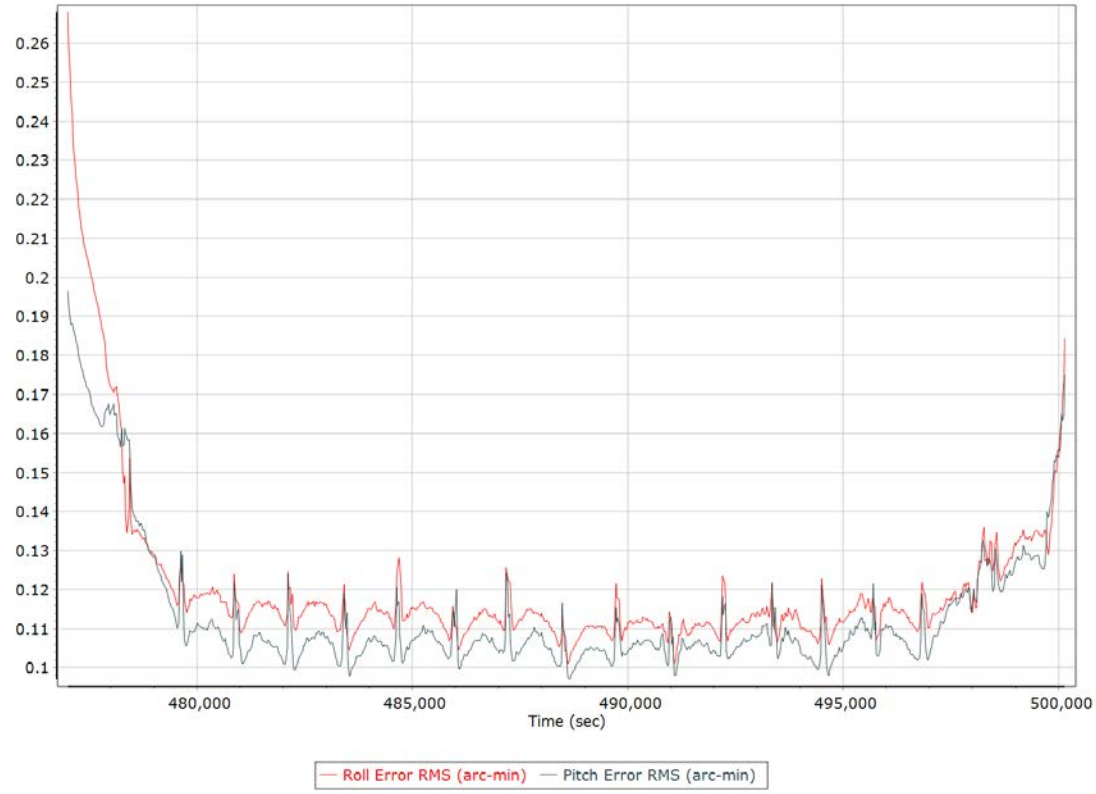
Position Error RMS (m)



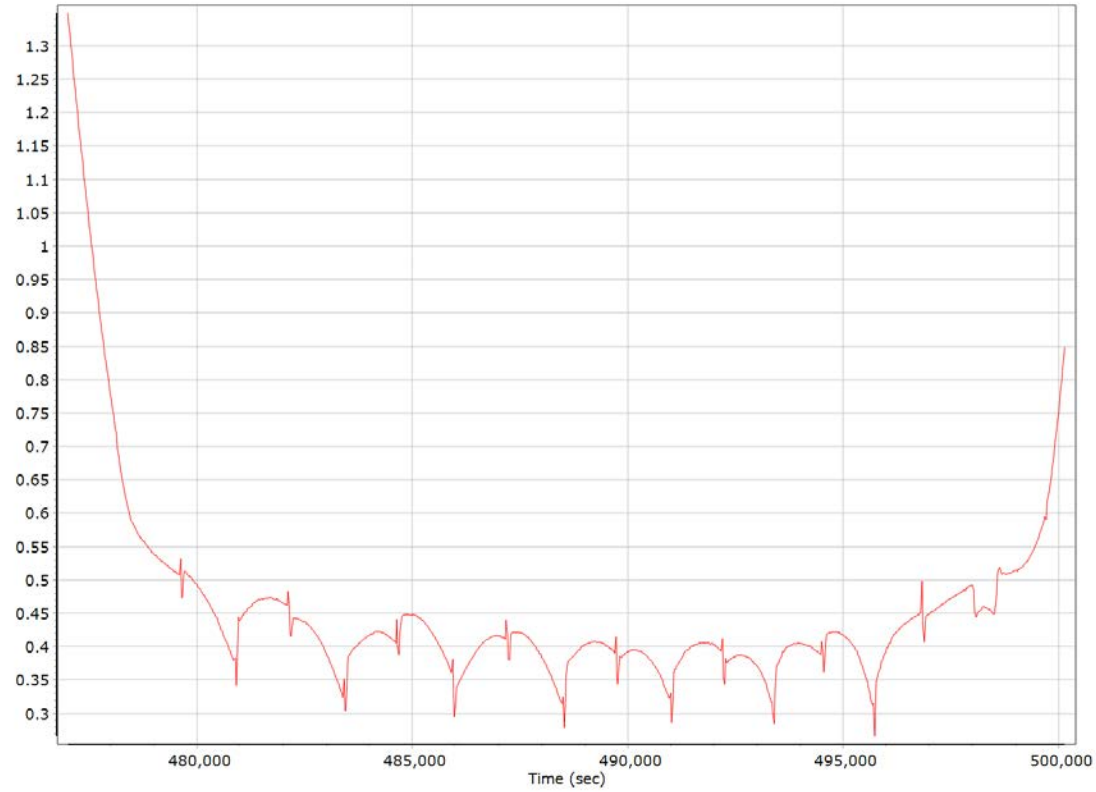
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

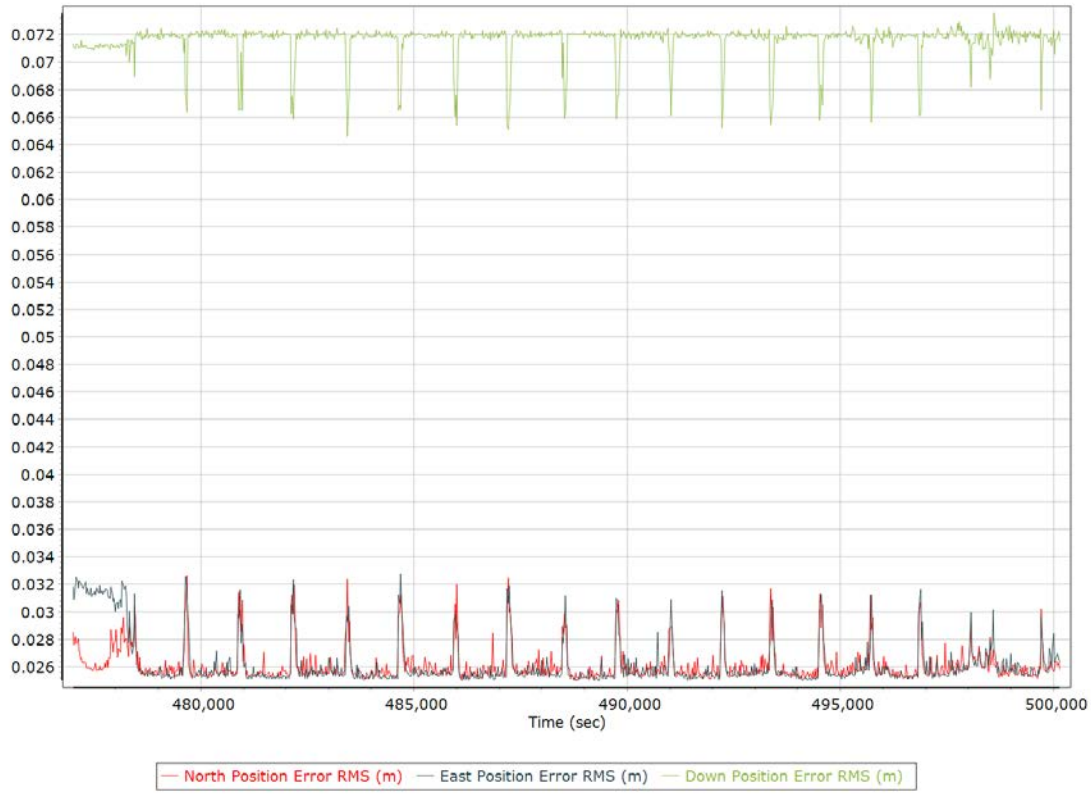


Heading Error RMS (arc-min)

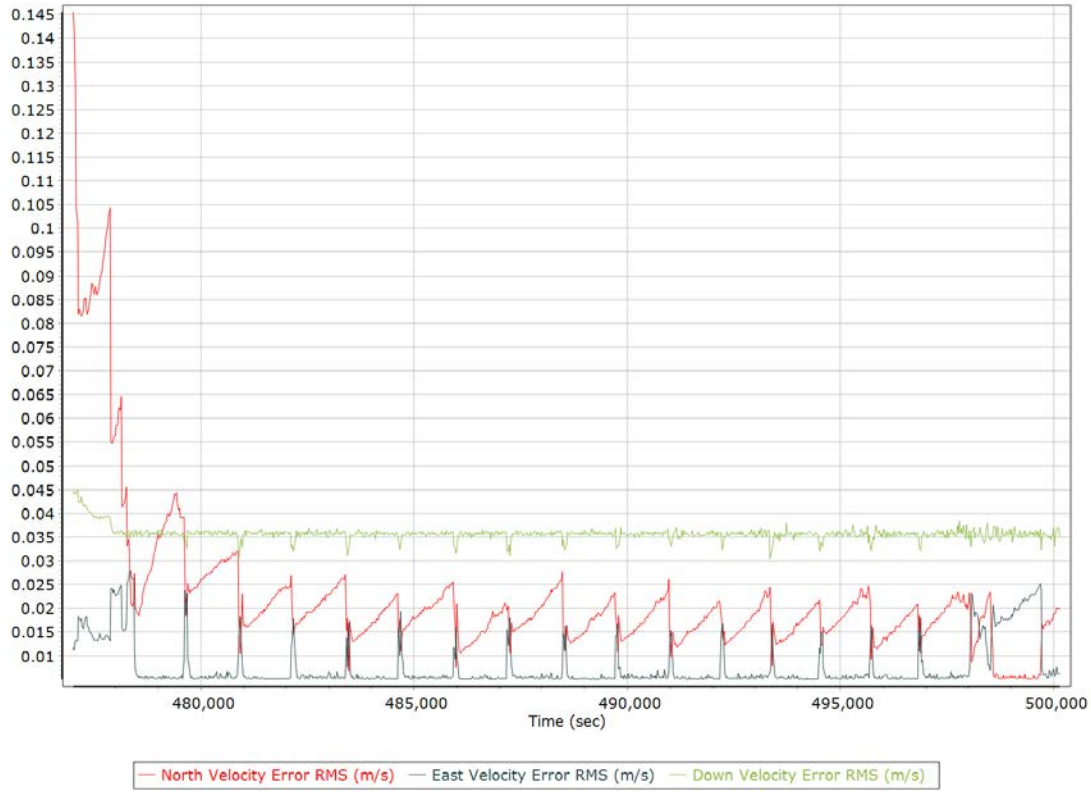


Forward Processed Performance Metrics

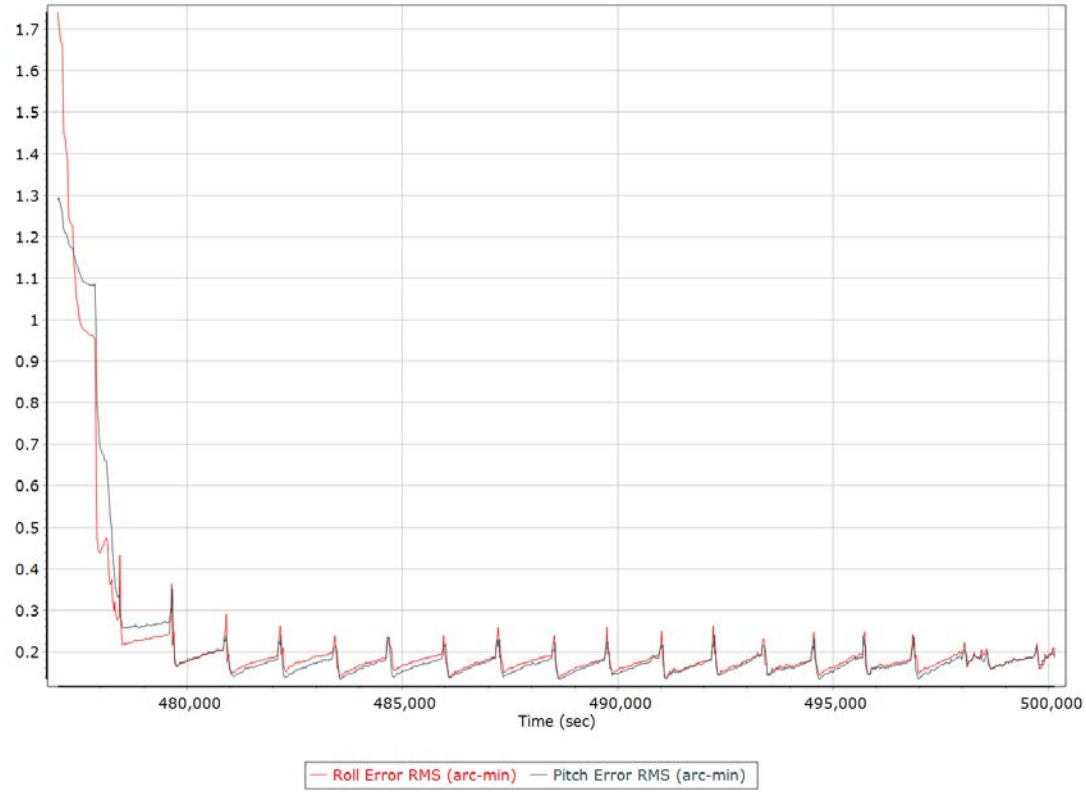
Position Error RMS (m)



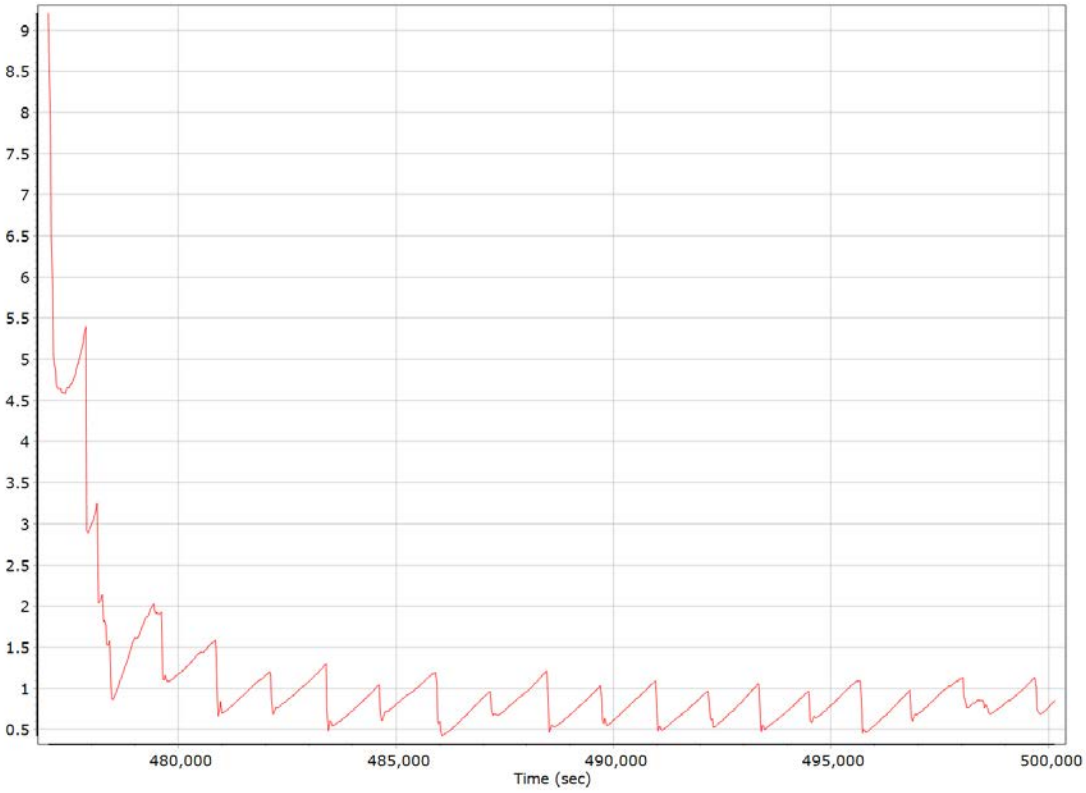
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

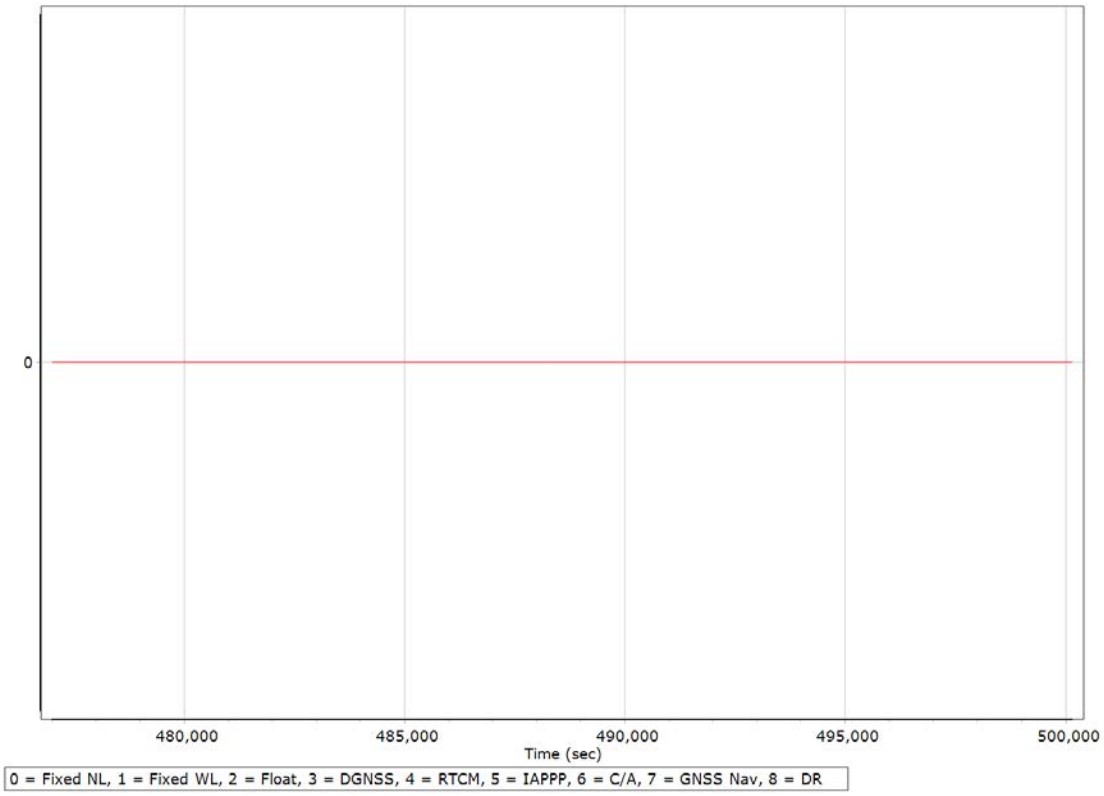


Heading Error RMS (arc-min)



Forward Processed Solution Status

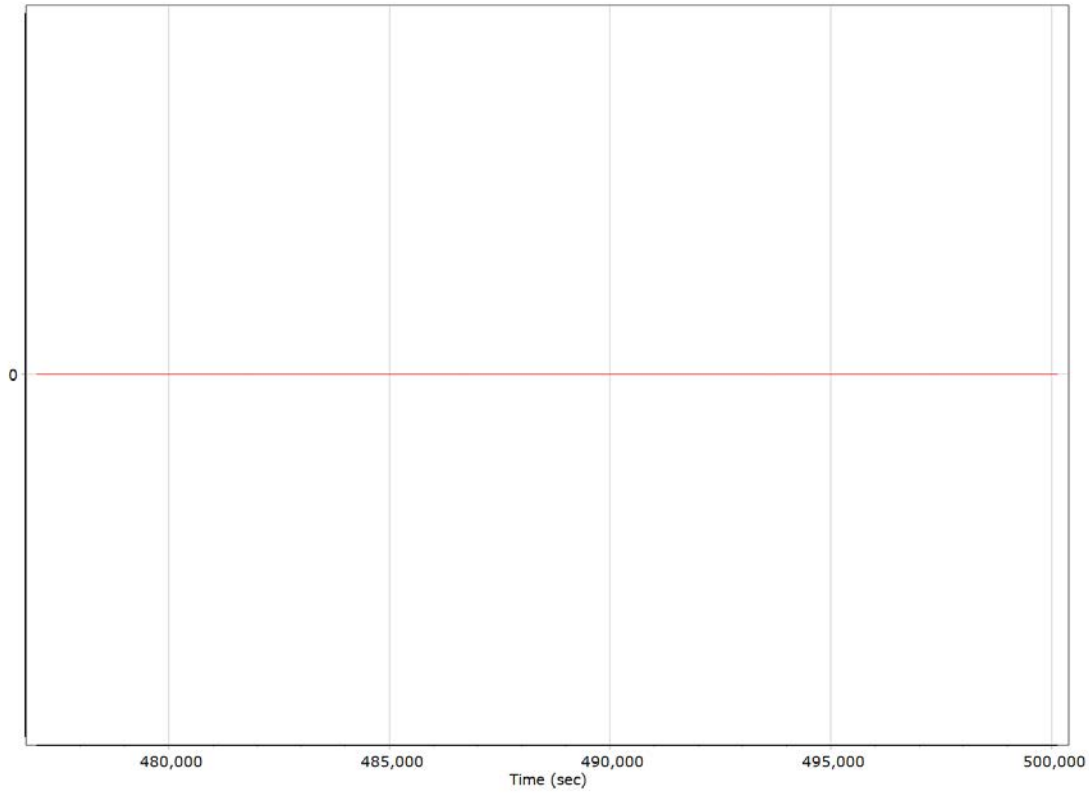
Processing Mode



Number of Satellites



Baseline Length



General Information

Mission Information

Project name	07222023A_4891
Processing date	2023-07-26 11:56:15
Mission date	2023-07-22 12:39:58
Mission duration	06:47:24.534
Processing mode	IN-Fusion PP-RTX

Rover Hardware Information

Product	POS AV 610 VER6 HW2.5-12
Serial number	S/N11883
IMU type	57
Receiver type	BD982
Antenna type	AV59

Project File List

Rover Data Files

File name	File type
N6275603122201.884	POS Data
N6275603122201.885	POS Data
N6275603122201.886	POS Data
N6275603122201.887	POS Data
N6275603122201.888	POS Data
N6275603122201.889	POS Data
N6275603122201.890	POS Data
N6275603122201.891	POS Data
N6275603122201.892	POS Data
N6275603122201.893	POS Data
N6275603122201.894	POS Data
N6275603122201.895	POS Data
N6275603122201.896	POS Data
N6275603122201.897	POS Data
N6275603122201.898	POS Data
N6275603122201.899	POS Data
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N6275603122201.904	POS Data
N6275603122201.905	POS Data
N6275603122201.906	POS Data
N6275603122201.907	POS Data
N6275603122201.908	POS Data
N6275603122201.909	POS Data
N6275603122201.910	POS Data
N6275603122201.911	POS Data
N6275603122201.912	POS Data
N6275603122201.913	POS Data
N6275603122201.914	POS Data
N6275603122201.915	POS Data
N6275603122201.916	POS Data
N6275603122201.917	POS Data
N6275603122201.918	POS Data
N6275603122201.919	POS Data
N6275603122201.920	POS Data
N6275603122201.921	POS Data
N6275603122201.922	POS Data
N6275603122201.923	POS Data
N6275603122201.924	POS Data
N6275603122201.925	POS Data
N6275603122201.926	POS Data
N6275603122201.927	POS Data
N6275603122201.928	POS Data
N6275603122201.929	POS Data
N6275603122201.930	POS Data
N6275603122201.931	POS Data
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N6275603122201.936	POS Data
N6275603122201.937	POS Data
N6275603122201.938	POS Data
N6275603122201.939	POS Data
N6275603122201.940	POS Data
N6275603122201.941	POS Data
N6275603122201.942	POS Data

File name	File type
N6275603122201.943	POS Data
N6275603122201.944	POS Data
N6275603122201.945	POS Data
N6275603122201.946	POS Data
N6275603122201.947	POS Data
N6275603122201.948	POS Data
N6275603122201.949	POS Data
N6275603122201.950	POS Data
N6275603122201.951	POS Data
N6275603122201.952	POS Data
N6275603122201.953	POS Data
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N6275603122201.955	POS Data
N6275603122201.956	POS Data
N6275603122201.957	POS Data
N6275603122201.958	POS Data
N6275603122201.959	POS Data
N6275603122201.960	POS Data

Input Files

File Name	File Type
Ephm2030.23g	GLONASS Broadcast Ephemeris
Ephm2030.23n	GPS Broadcast Ephemeris

Output Files

Filename	File type
sbet_07222023A_4891.out	SBET Trajectory File

Rover Data Summary

First raw data file	N6275603122201.884		
Last raw data file	N6275603122201.960		
Start GPS week	2271		
Start time	563979.306 (7/22/2023 12:39:39 PM)		
End time	588423.840 (7/22/2023 7:27:03 PM)		
Start of fine alignment	564003.795 (7/22/2023 12:40:03 PM)		
Available subsystems	Primary GNSS, Gimbal, IMU		
POS Event Input	None		
Correction data	None		
IMU Installation Lever Arms & Mounting Angles			
Gimbal to IMU lever arm (m)	-0.034	-0.010	-0.374
Gimbal to IMU mounting angles (deg)	0.000	0.000	0.000
Gimbal to Primary GNSS lever arm (m)	-0.135	0.064	-1.339
Gimbal to Primary GNSS lever arm std dev (m)	-1.000		
Aircraft to Reference mounting angles (deg)	0.000	0.000	0.000

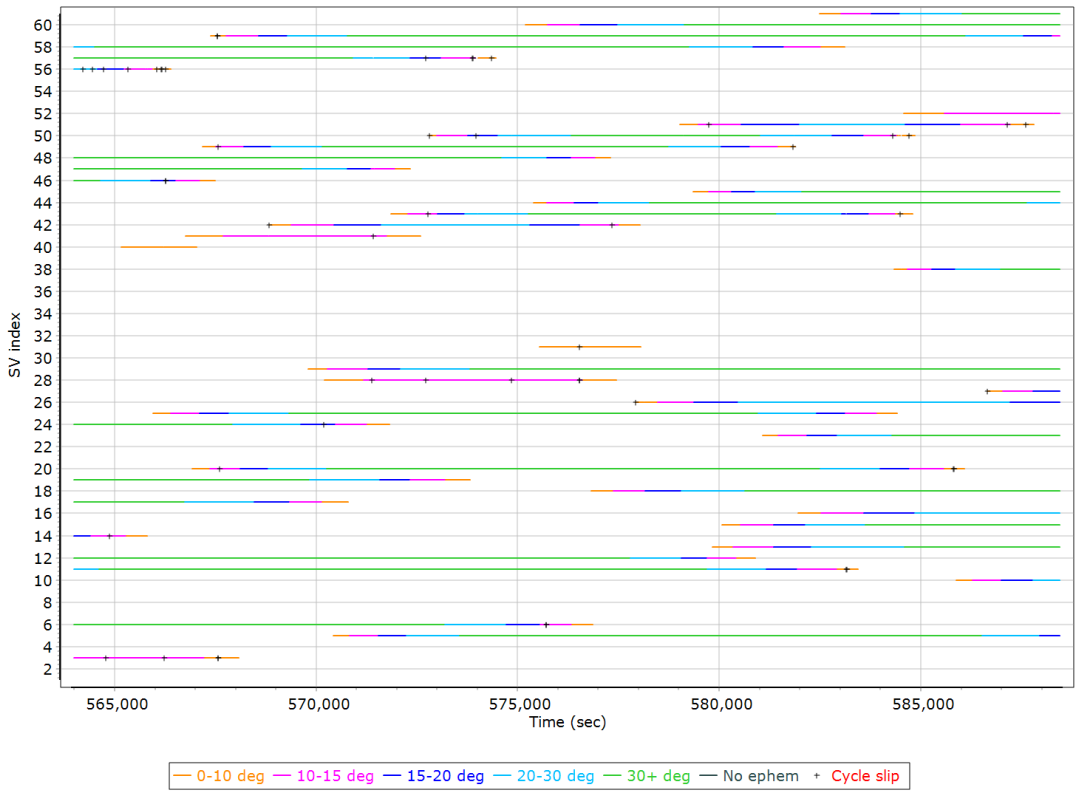
Rover Data QC

Raw IMU Import QC Summary

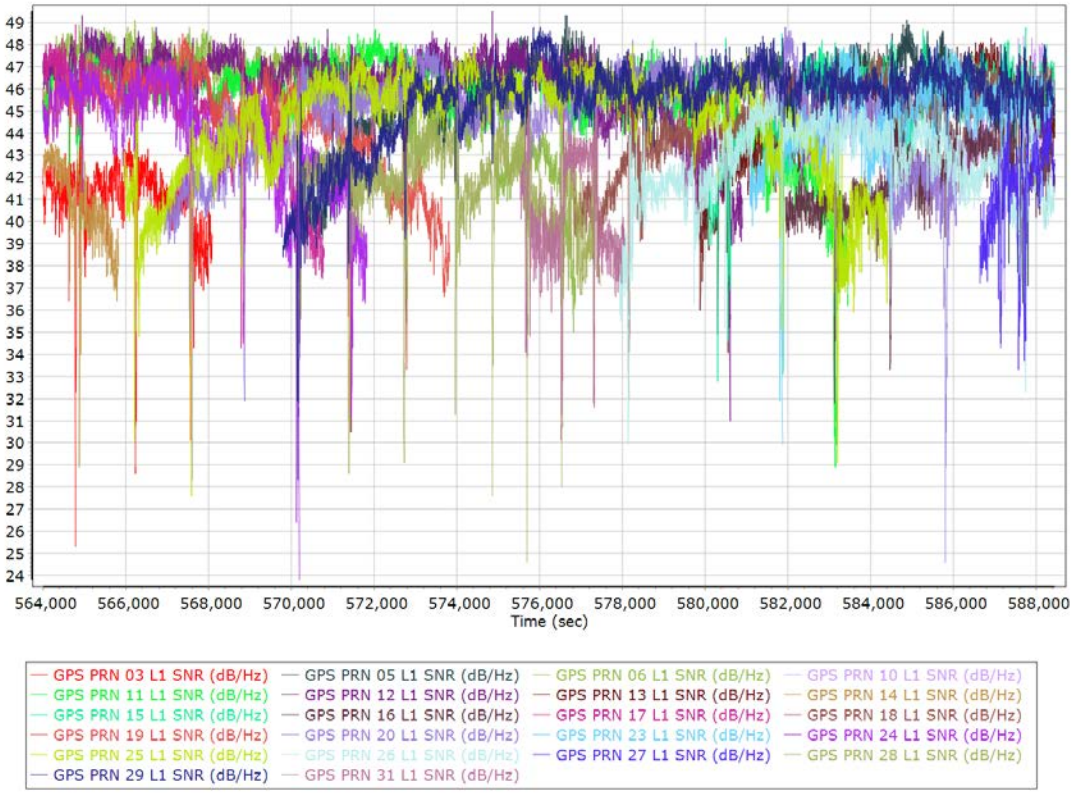
IMU data input file	imu_Mission 1.dat
IMU data check log file	imudt_07222023A_4891.log
IMU Records Processed	4888237
Termination Status	Normal
IMU Anomalies	0

Primary Observables & Satellite Data

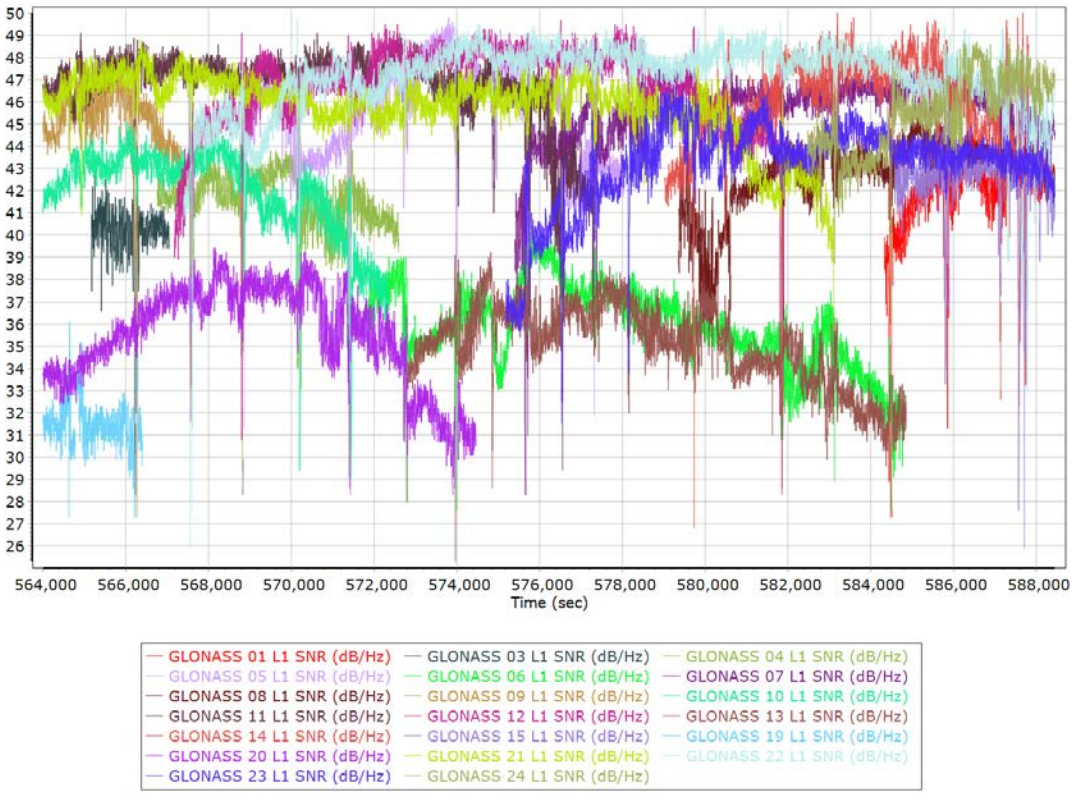
GPS/GLONASS L1 Satellite Lock/Elevation



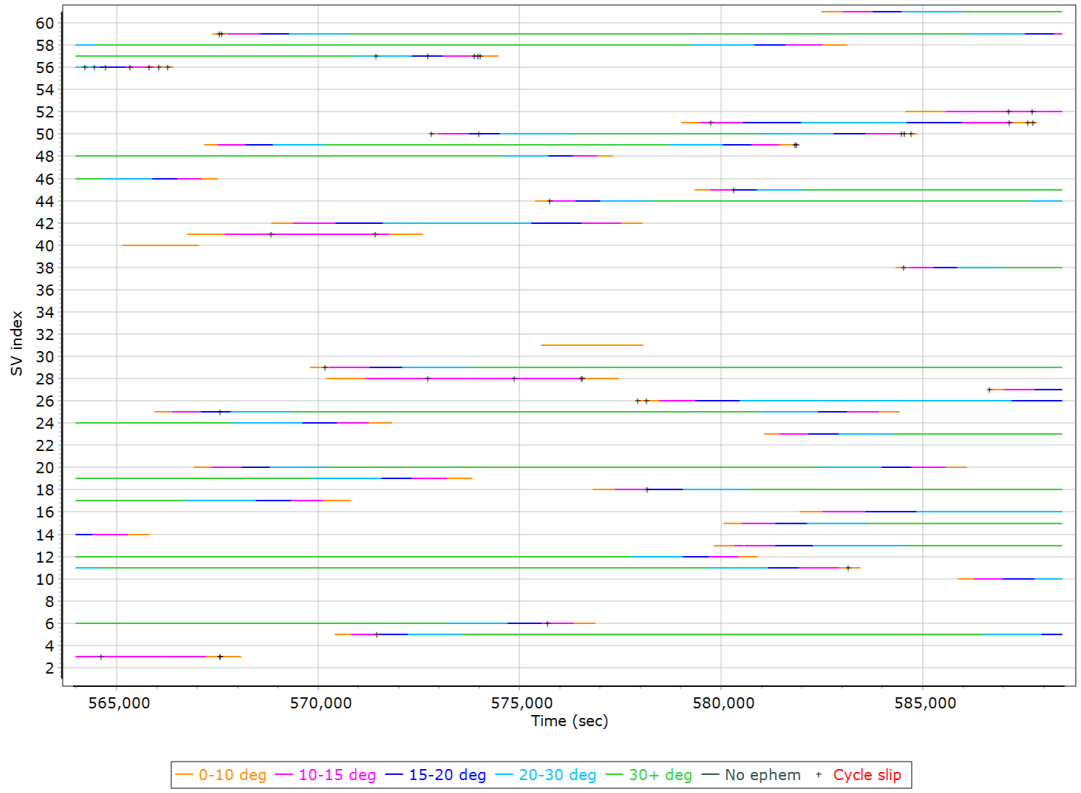
GPS L1 SNR



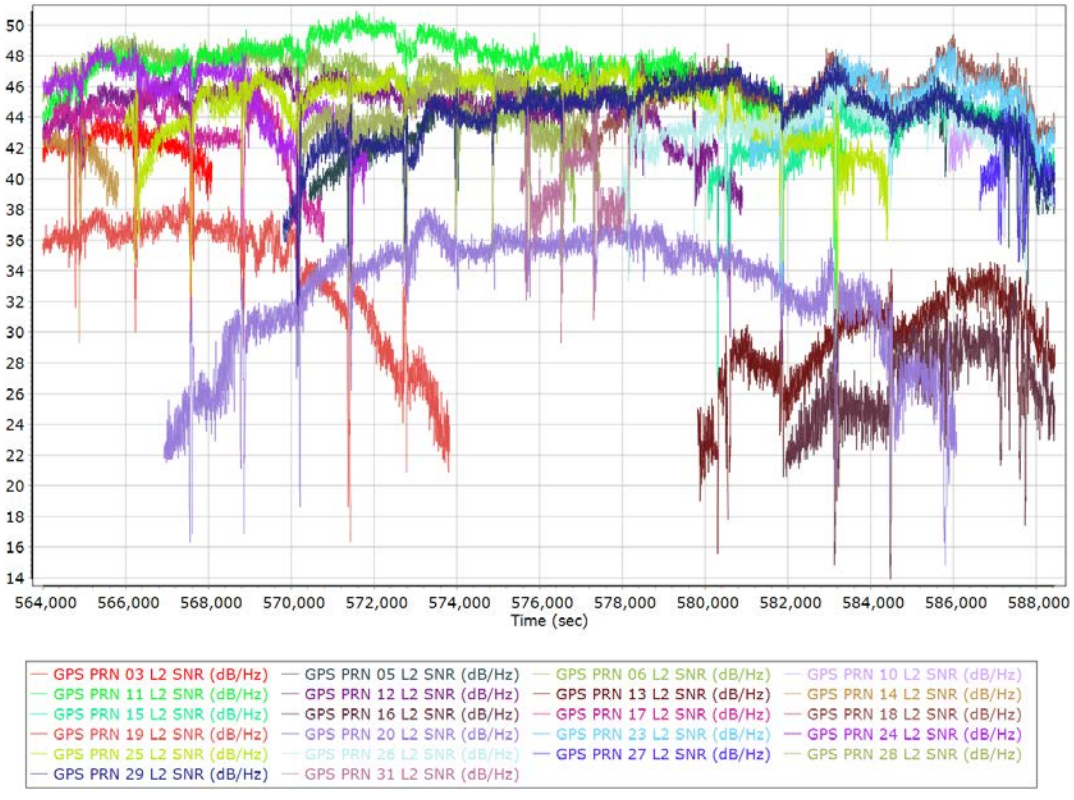
GLONASS L1 SNR



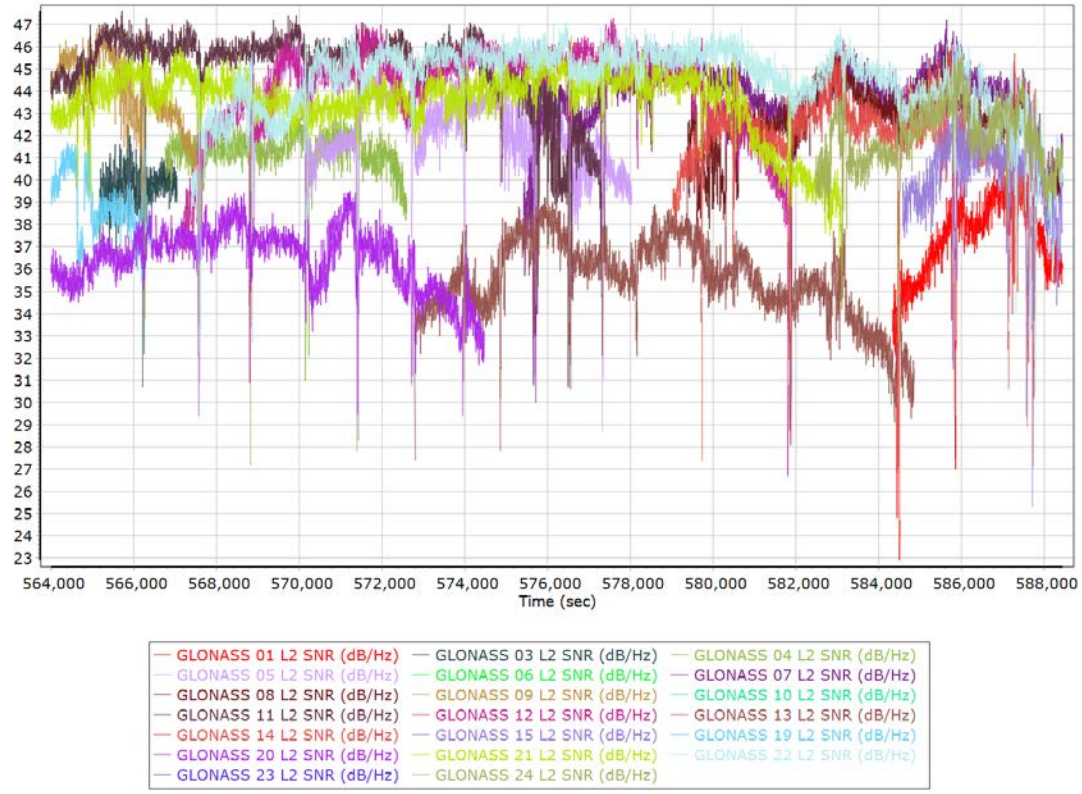
GPS/GLONASS L2 Satellite Lock/Elevation



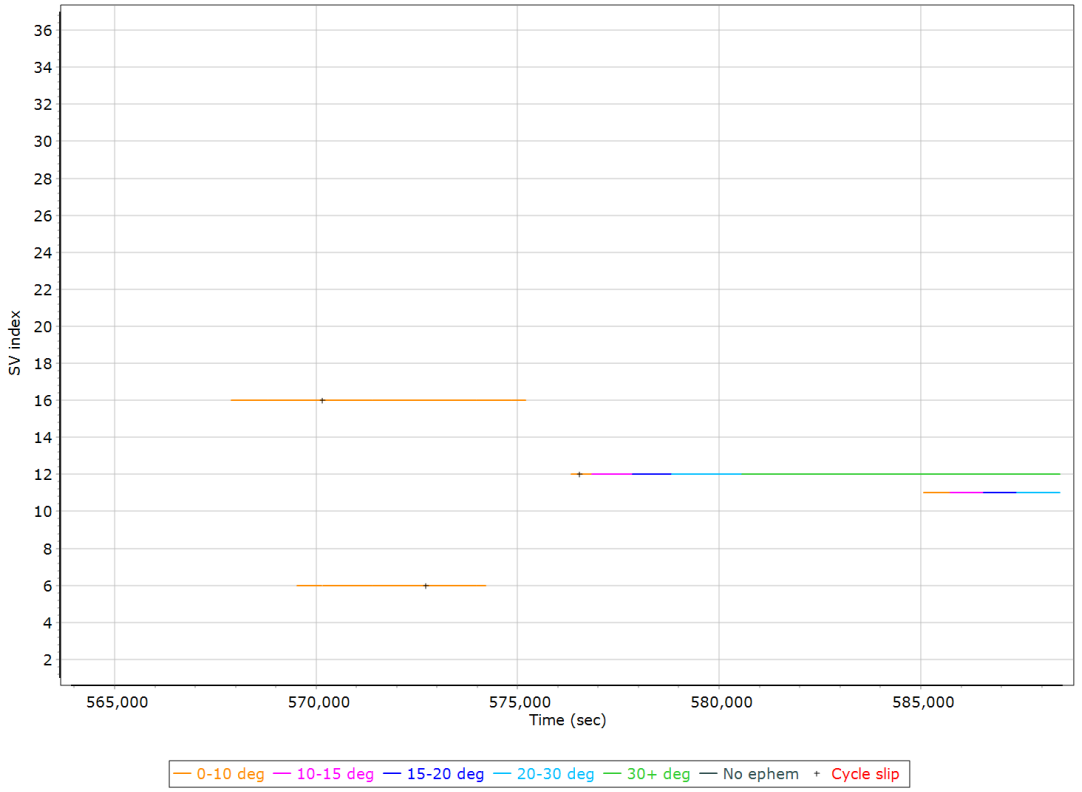
GPS L2 SNR



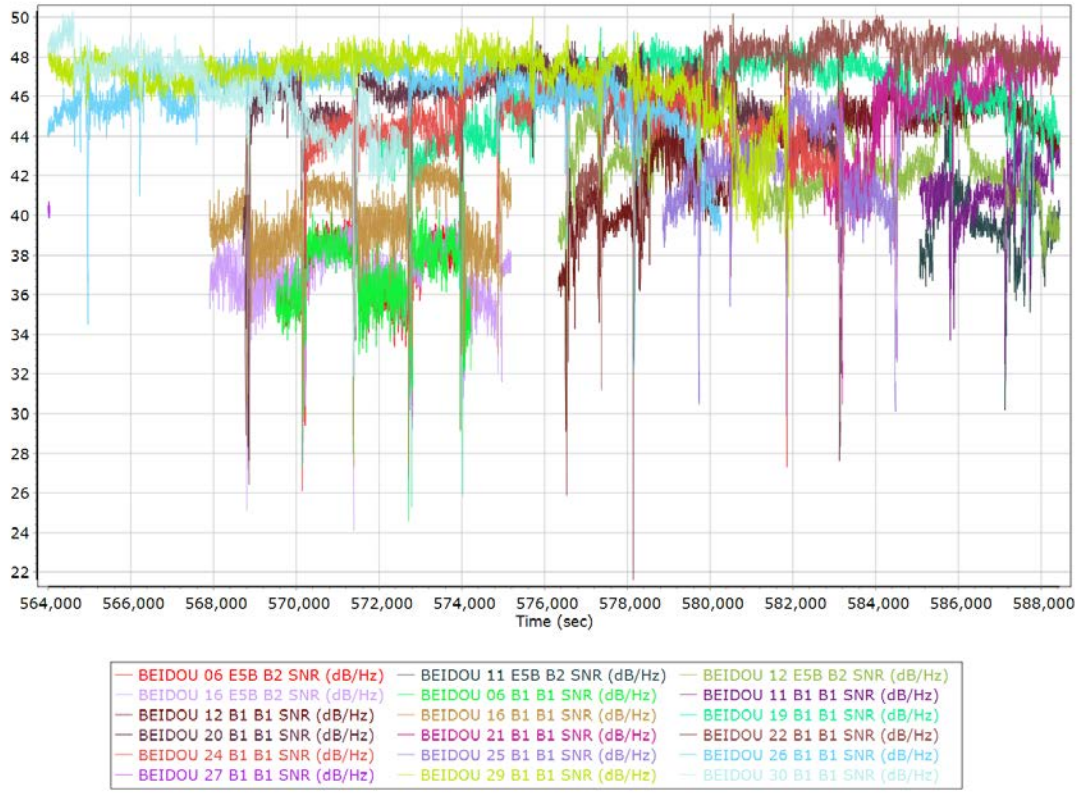
GLONASS L2 SNR



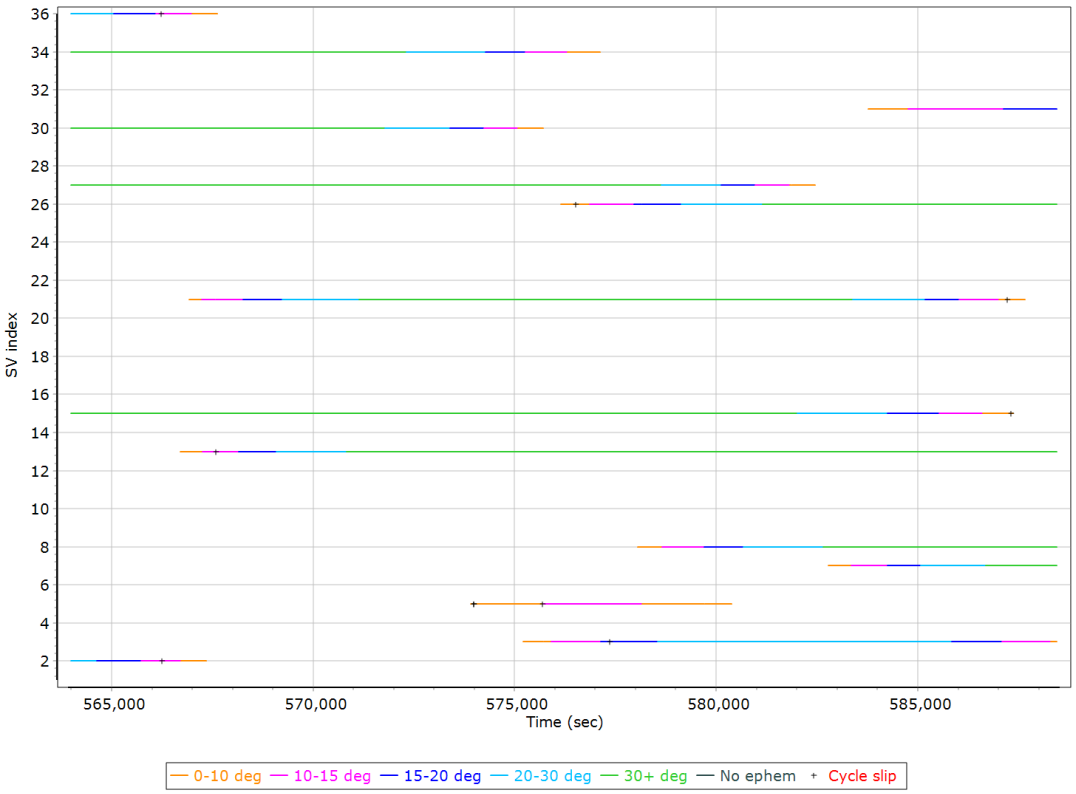
BEIDOU Satellite Lock/Elevation



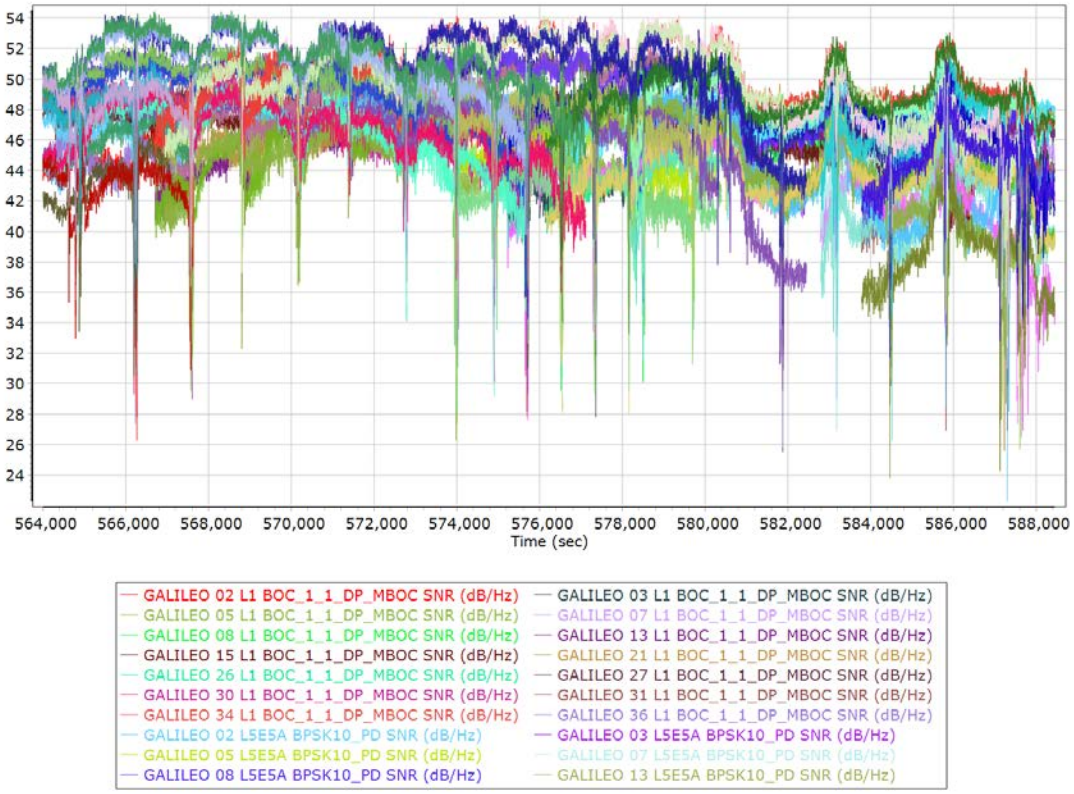
BEIDOU SNR



GALILEO Satellite Lock/Elevation

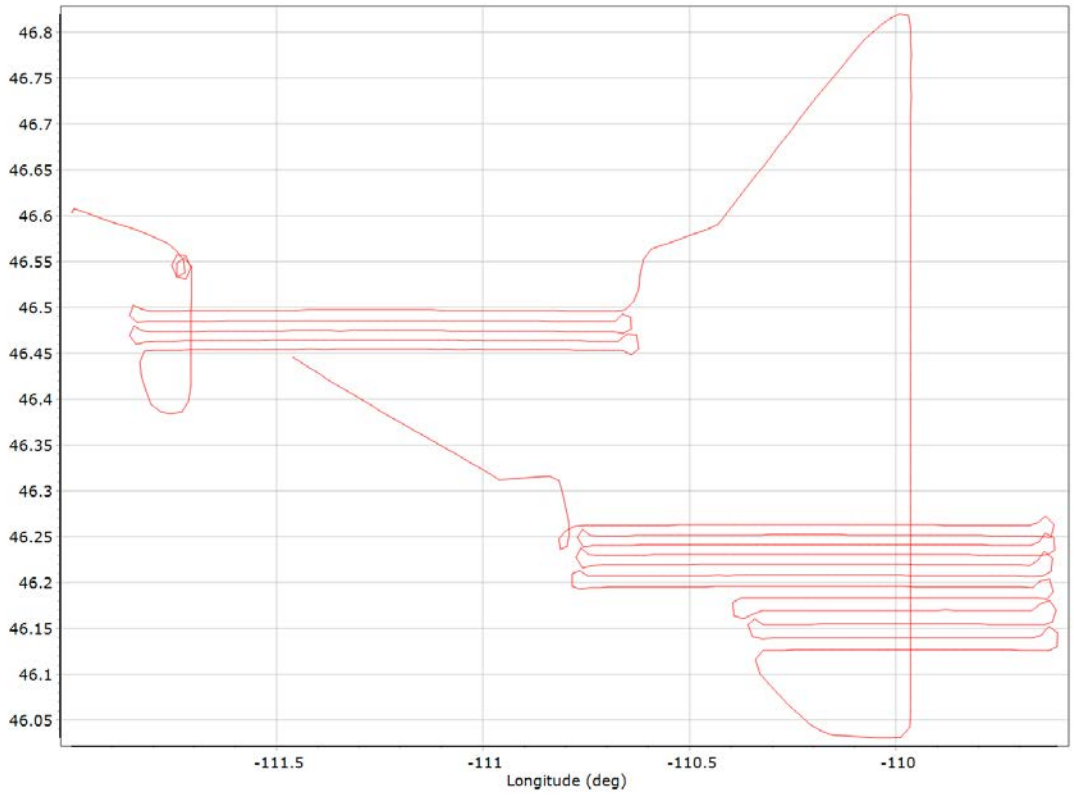


GALILEO SNR

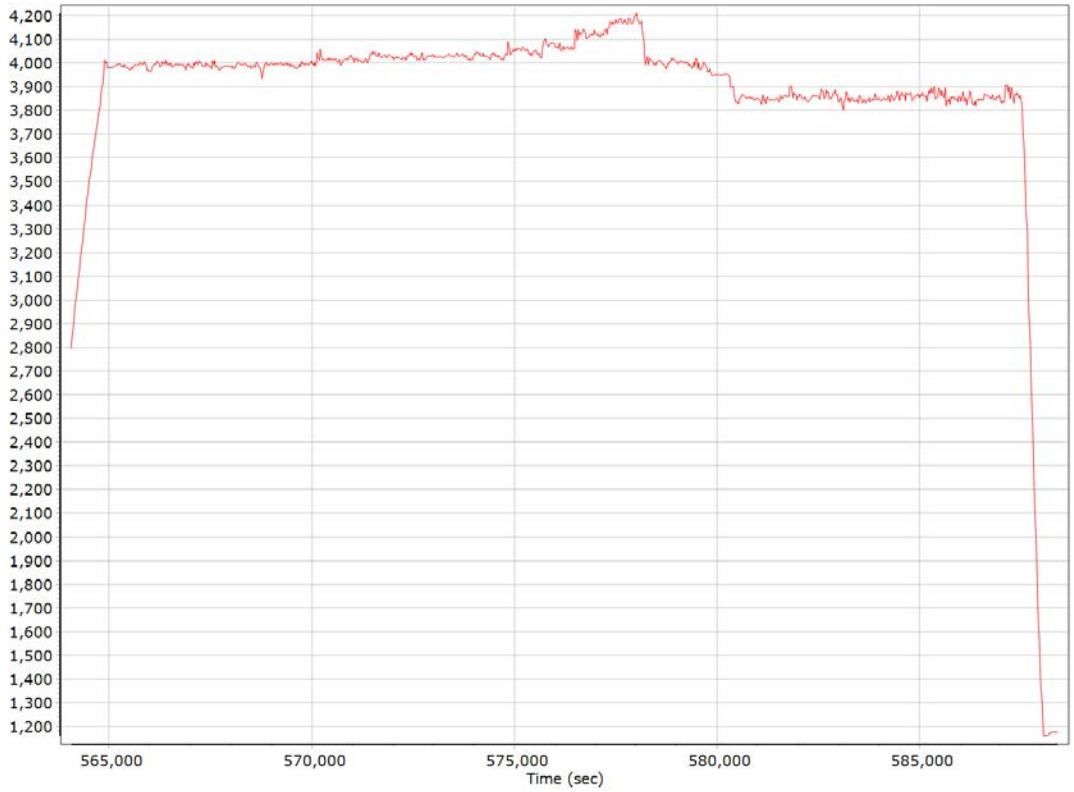

54
52
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570,000
572,000
574,000
576,000
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580,000
582,000
584,000
586,000
588,000
Time (sec)
GALILEO 02 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 03 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 05 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 07 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 08 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 13 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 15 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 21 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 26 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 27 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 30 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 31 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 34 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 36 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 02 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 03 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 05 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 07 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 08 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 13 L5E5A BPSK10_PD SNR (dB/Hz)

Smoothed Trajectory Information

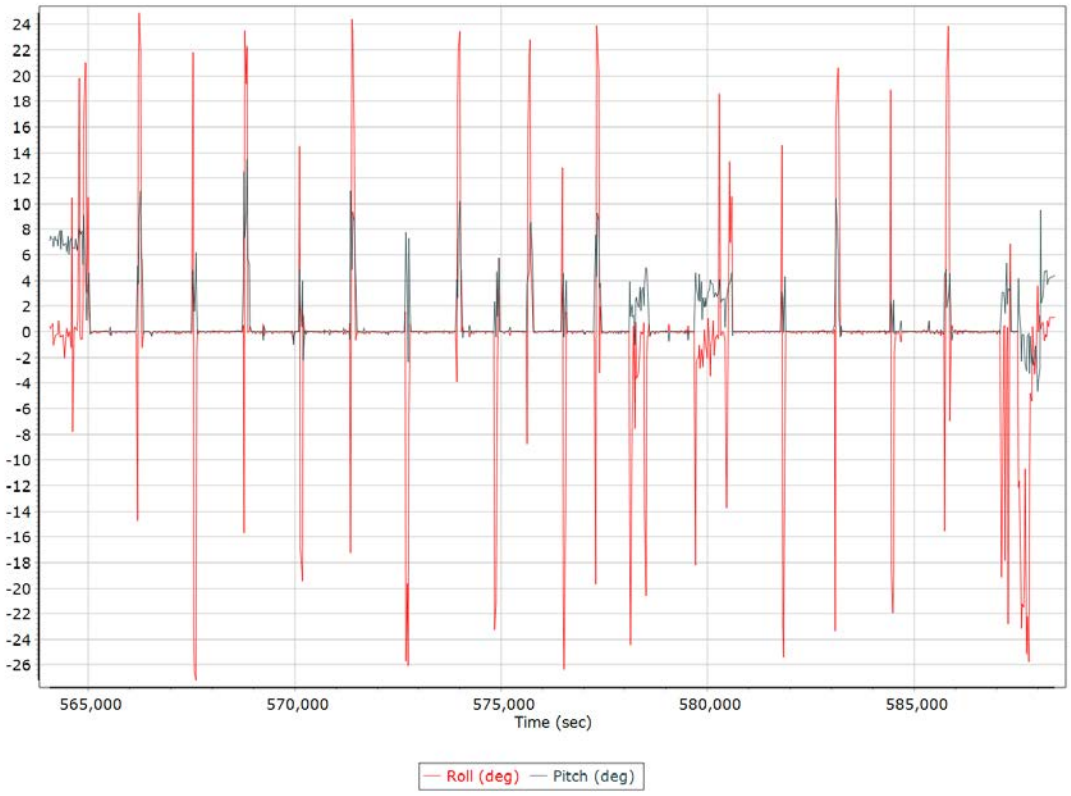
Top View



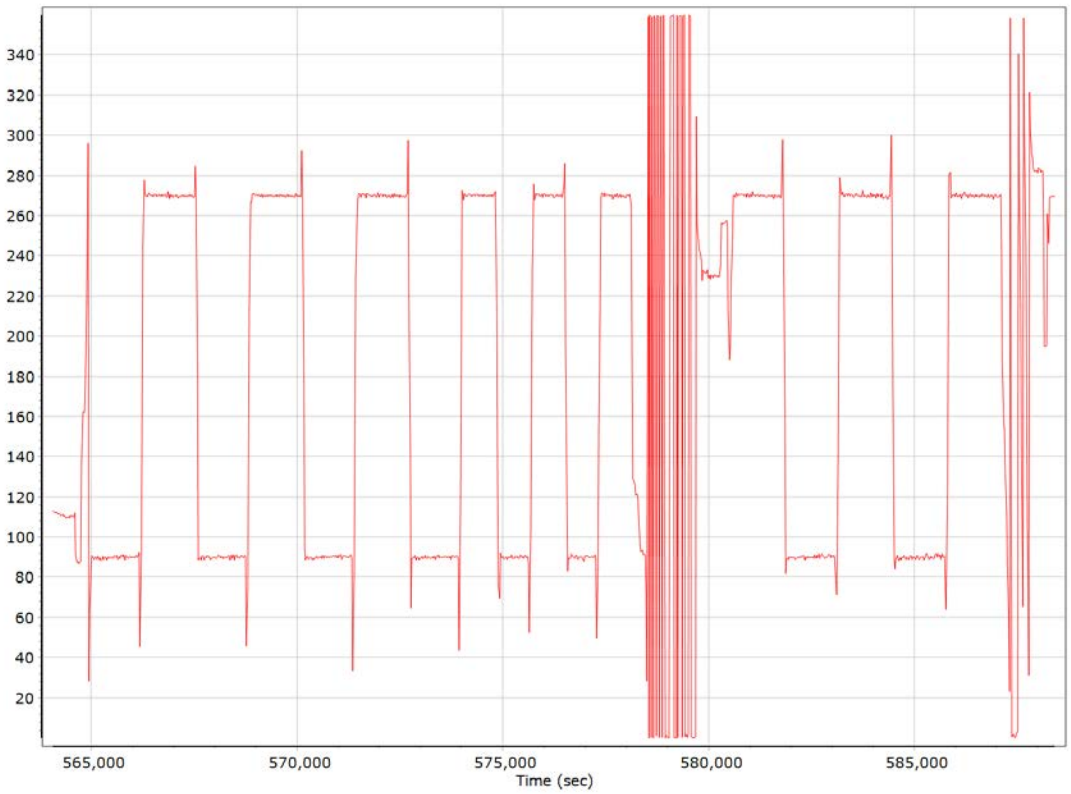
Altitude



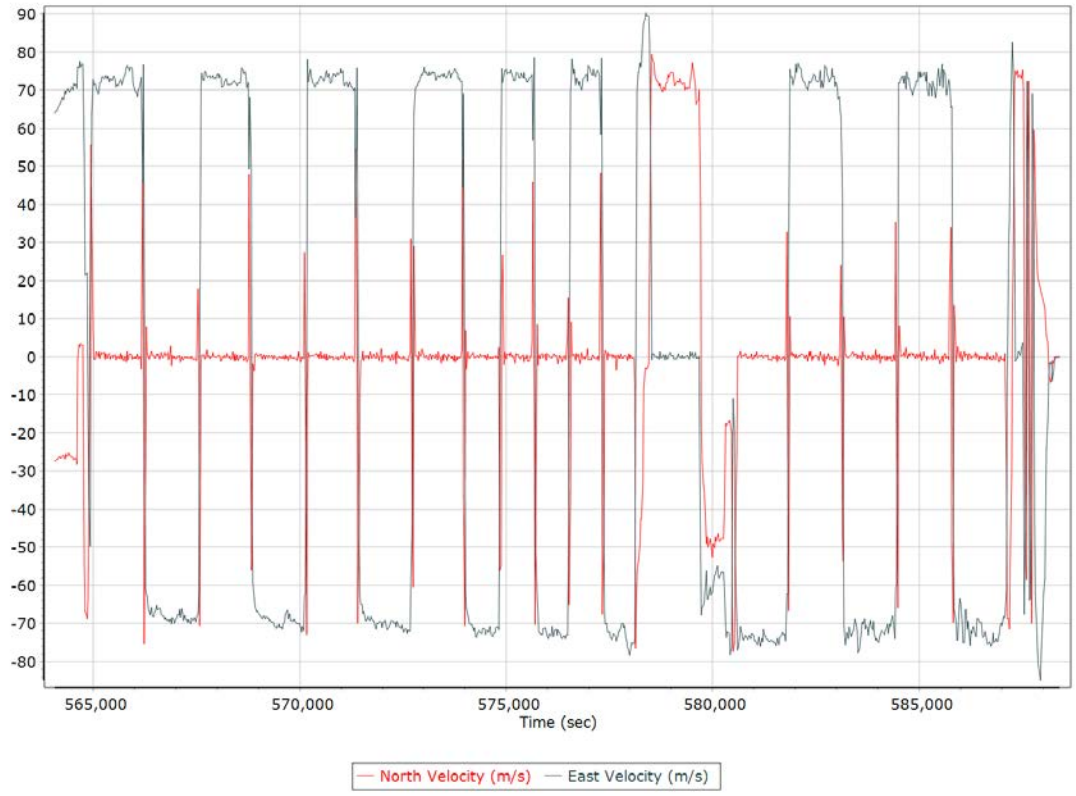
Roll/Pitch



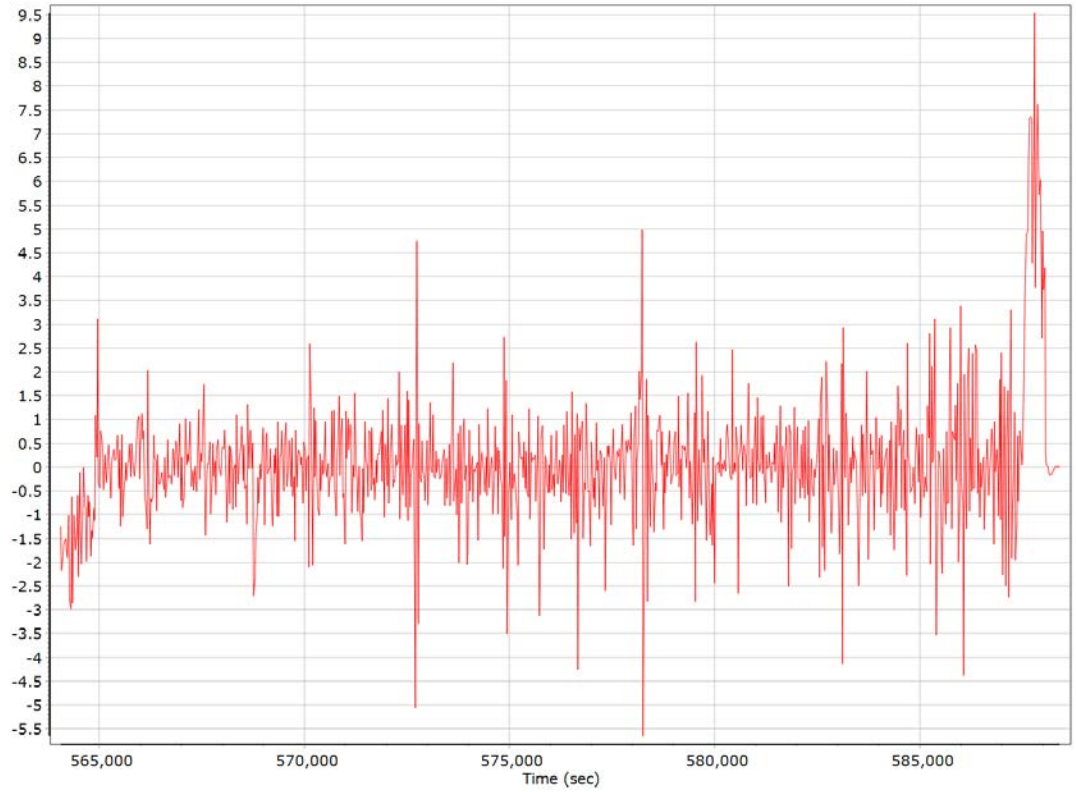
Heading



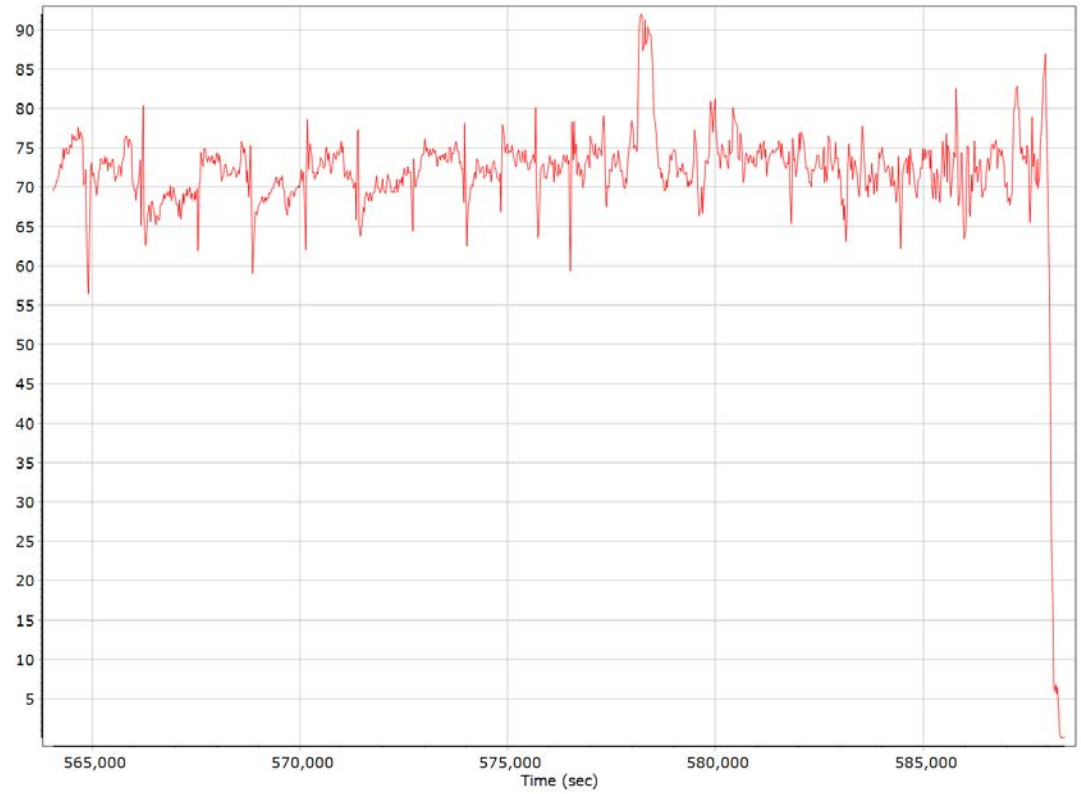
North/East Velocity



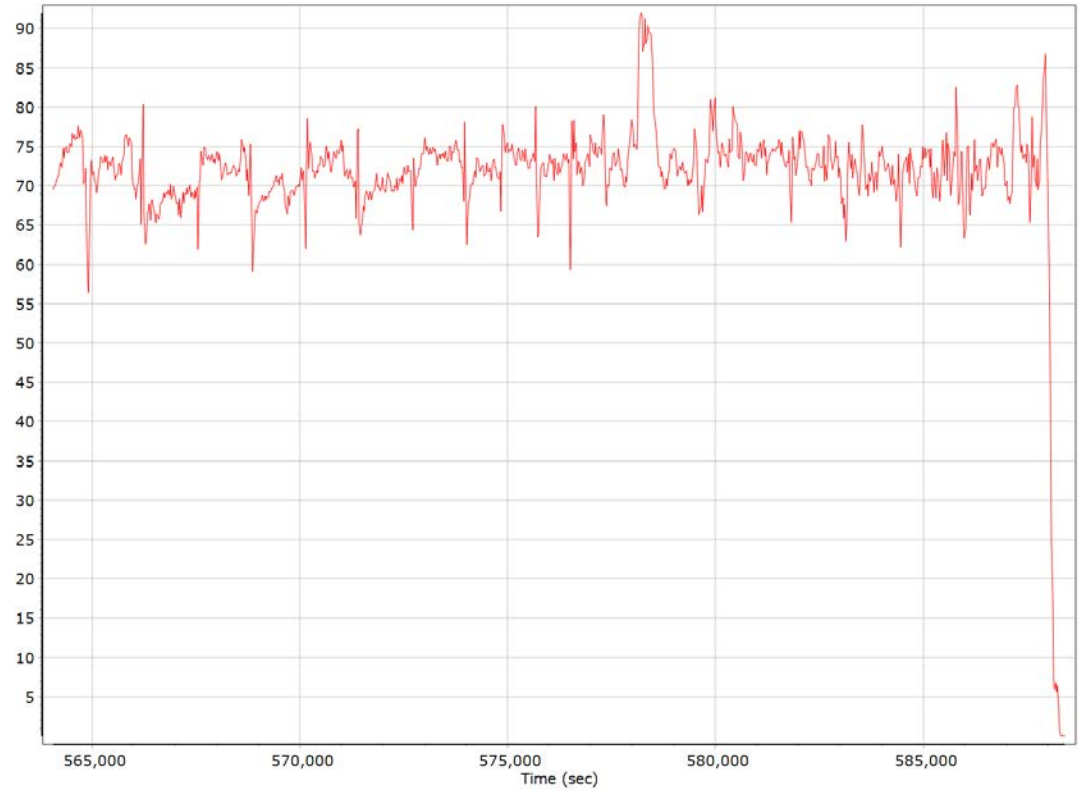
Down Velocity



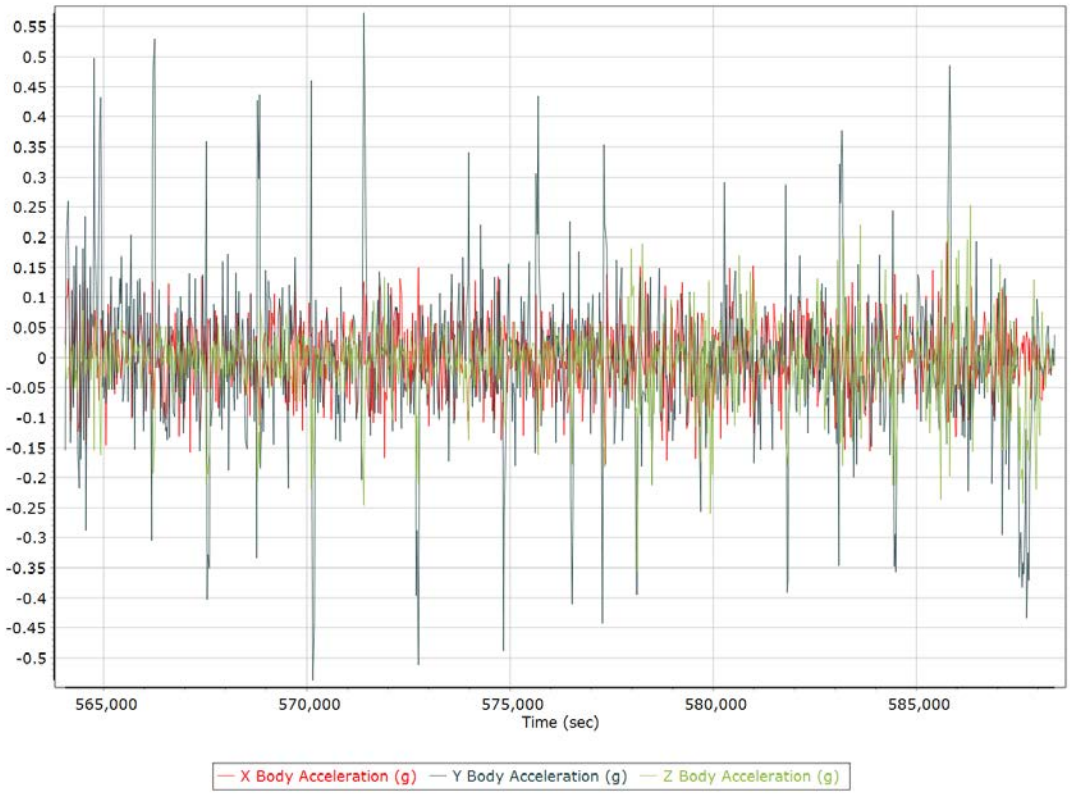
Total Speed



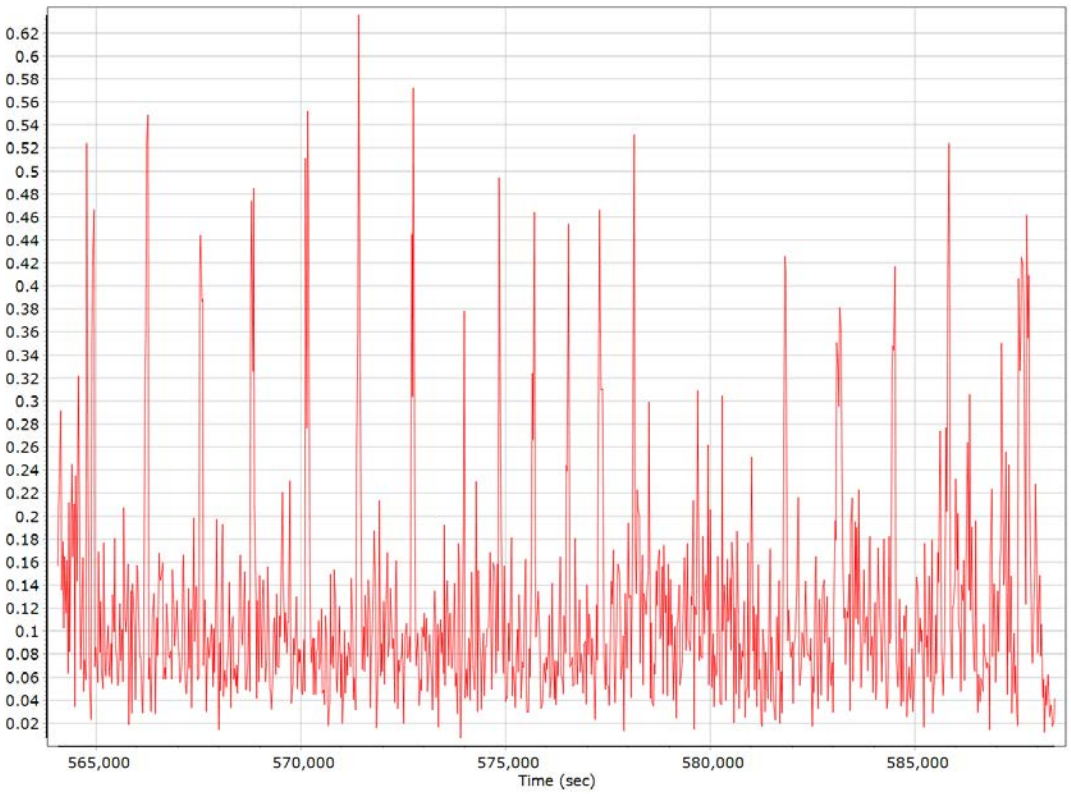
Ground Speed



Body Acceleration



Total Body Acceleration

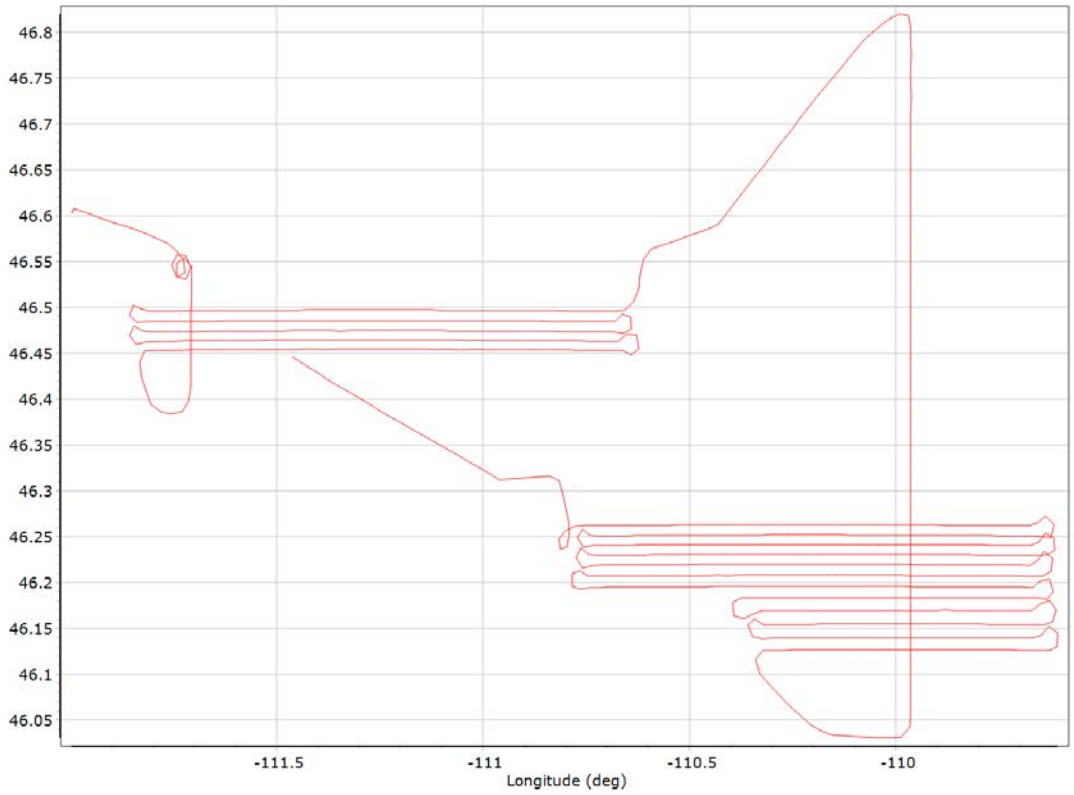


Body Angular Rate

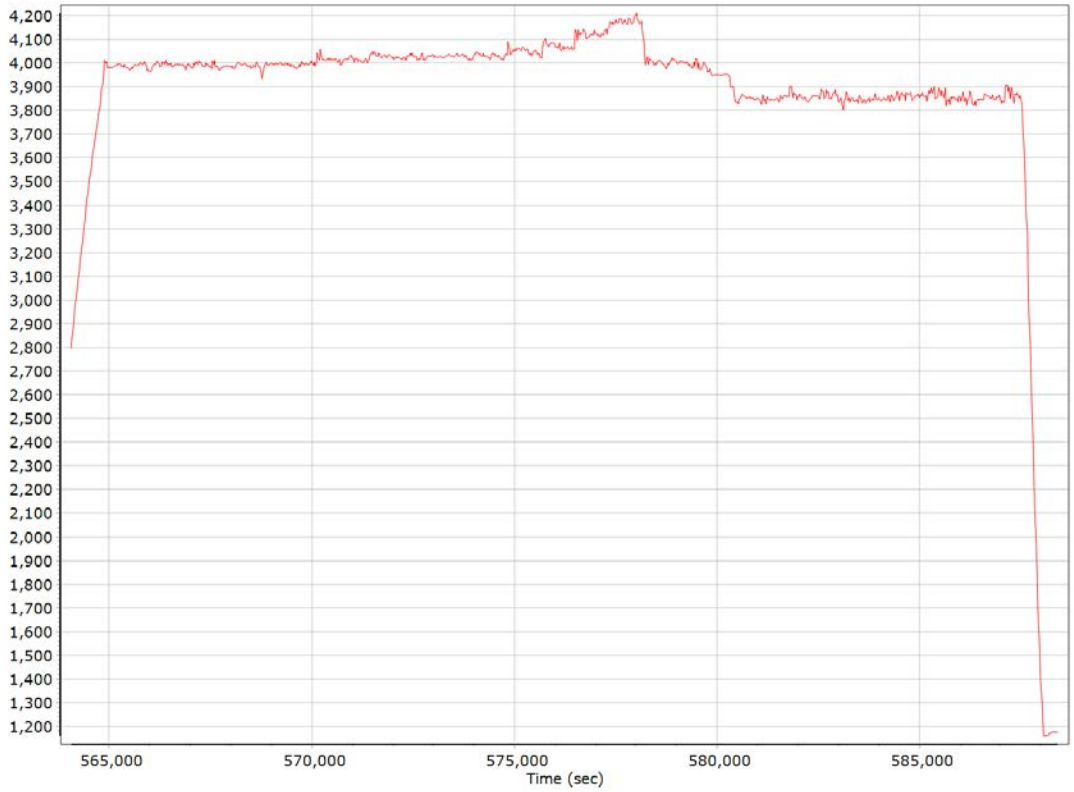


Forward Processed Trajectory Information

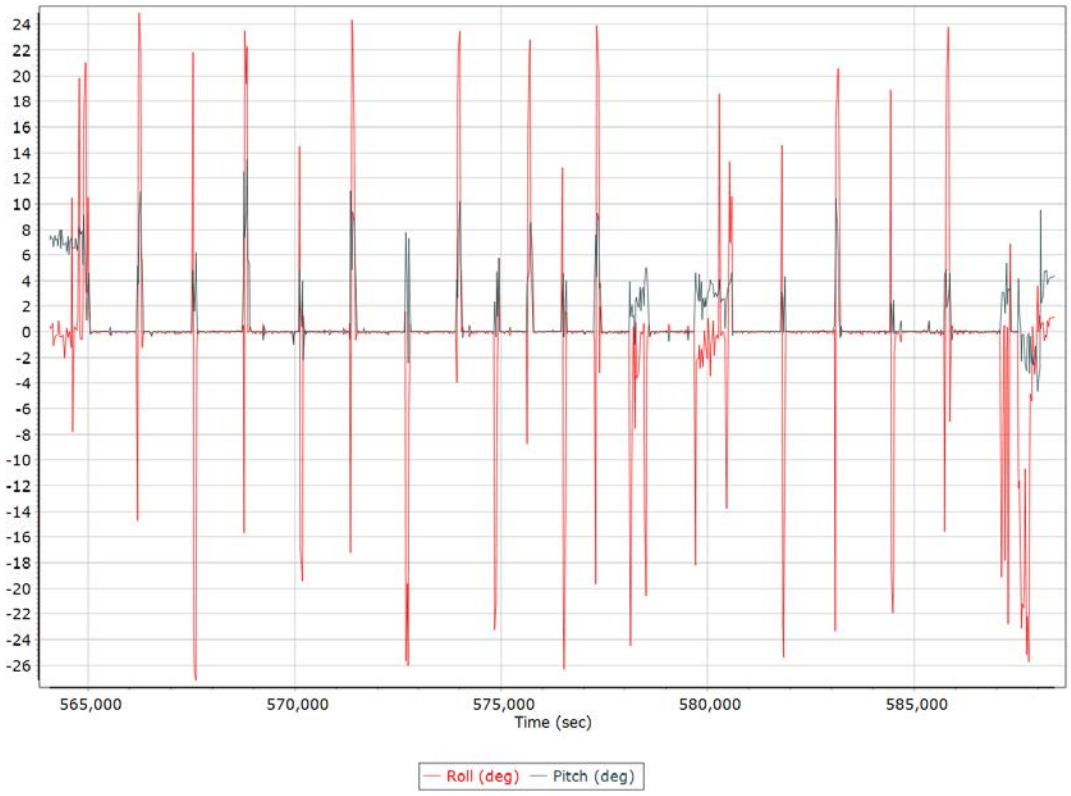
Top View



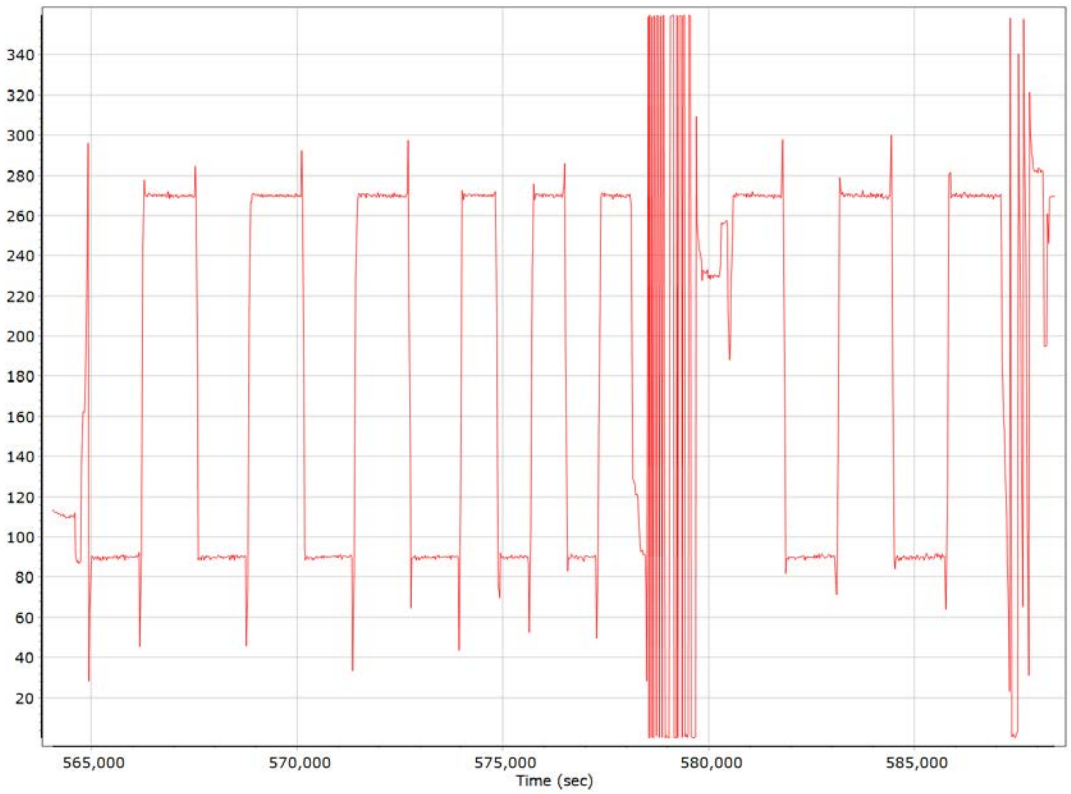
Altitude



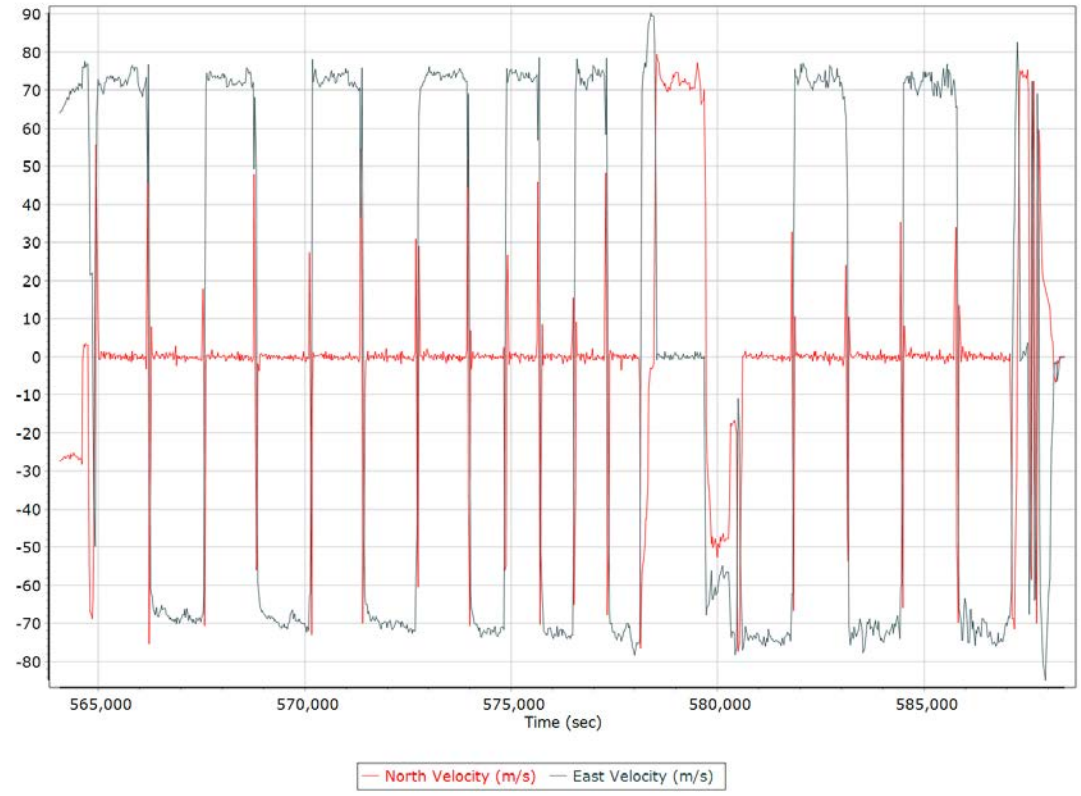
Roll/Pitch



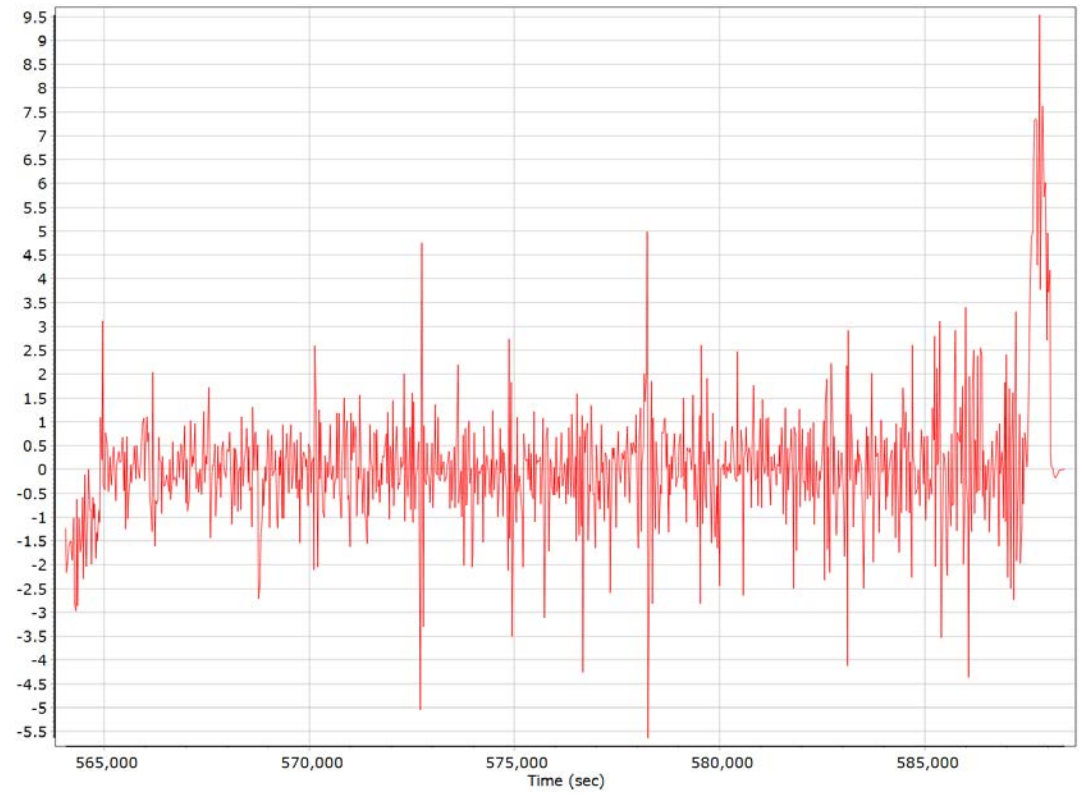
Heading



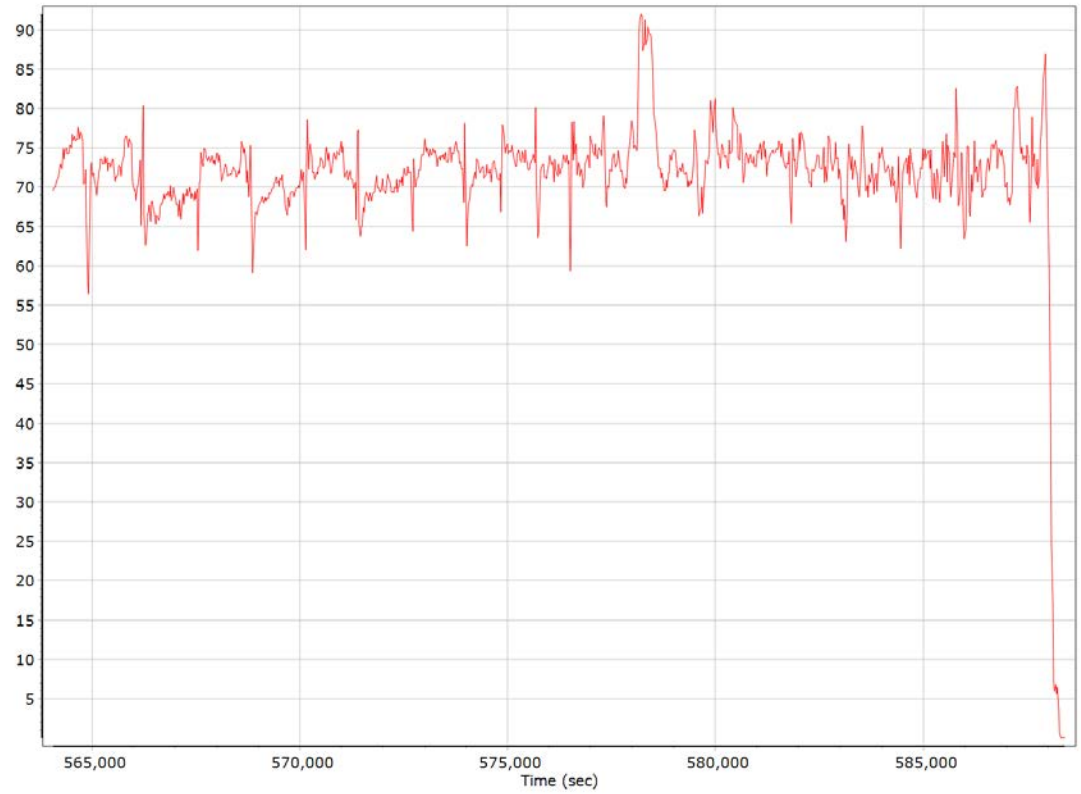
North/East Velocity



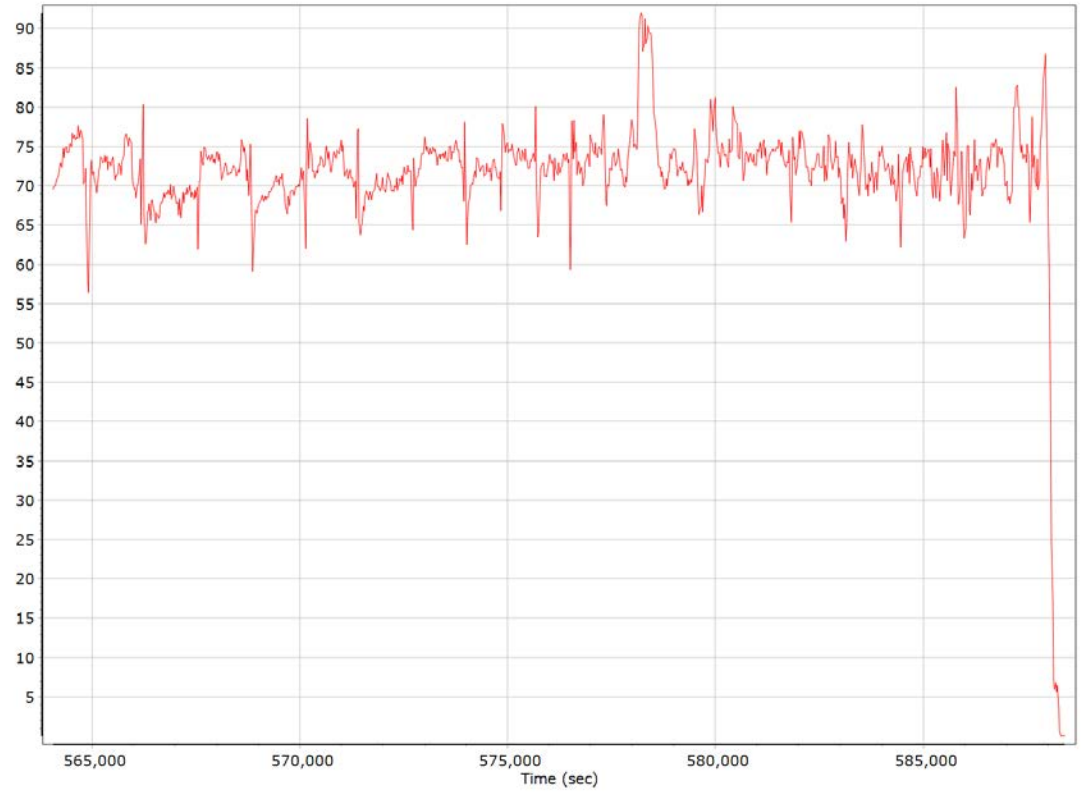
Down Velocity



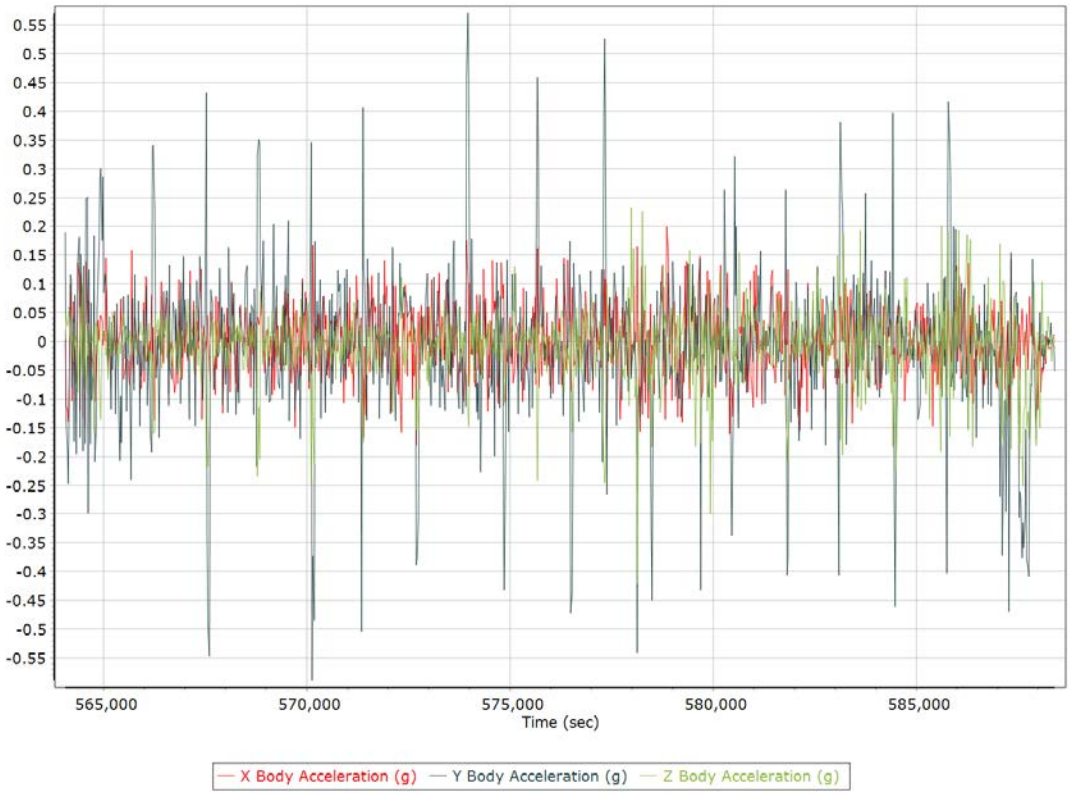
Total Speed



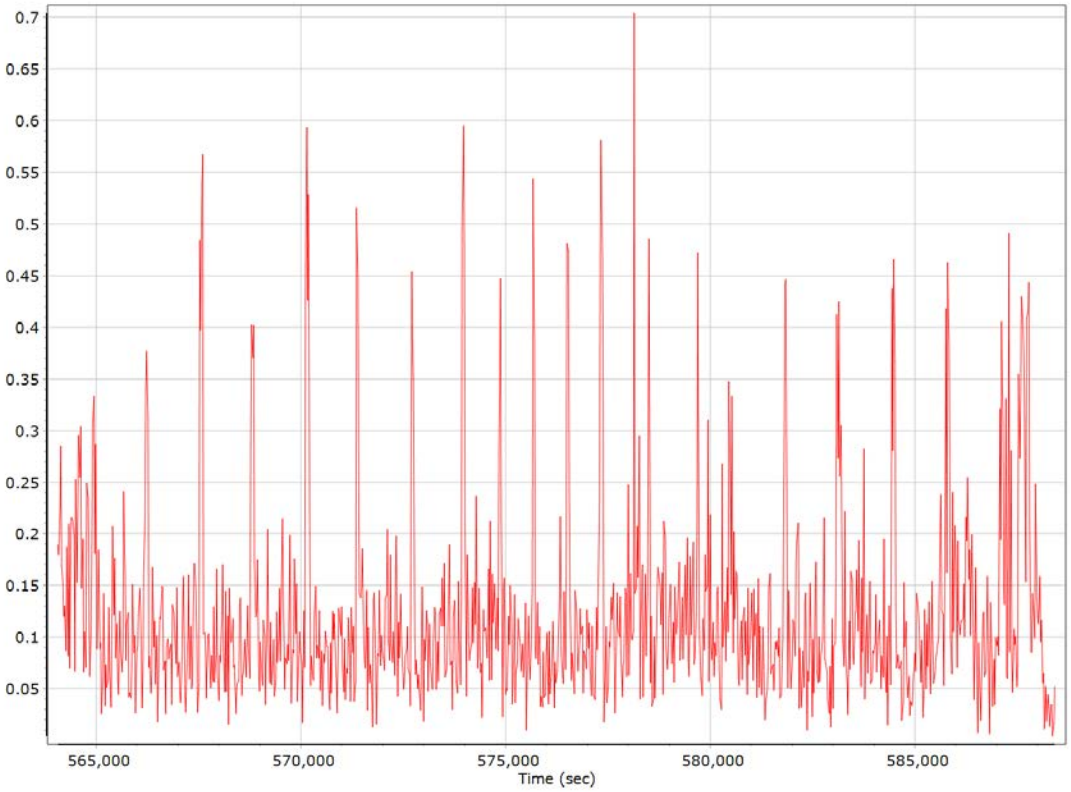
Ground Speed



Body Acceleration



Total Body Acceleration



Body Angular Rate

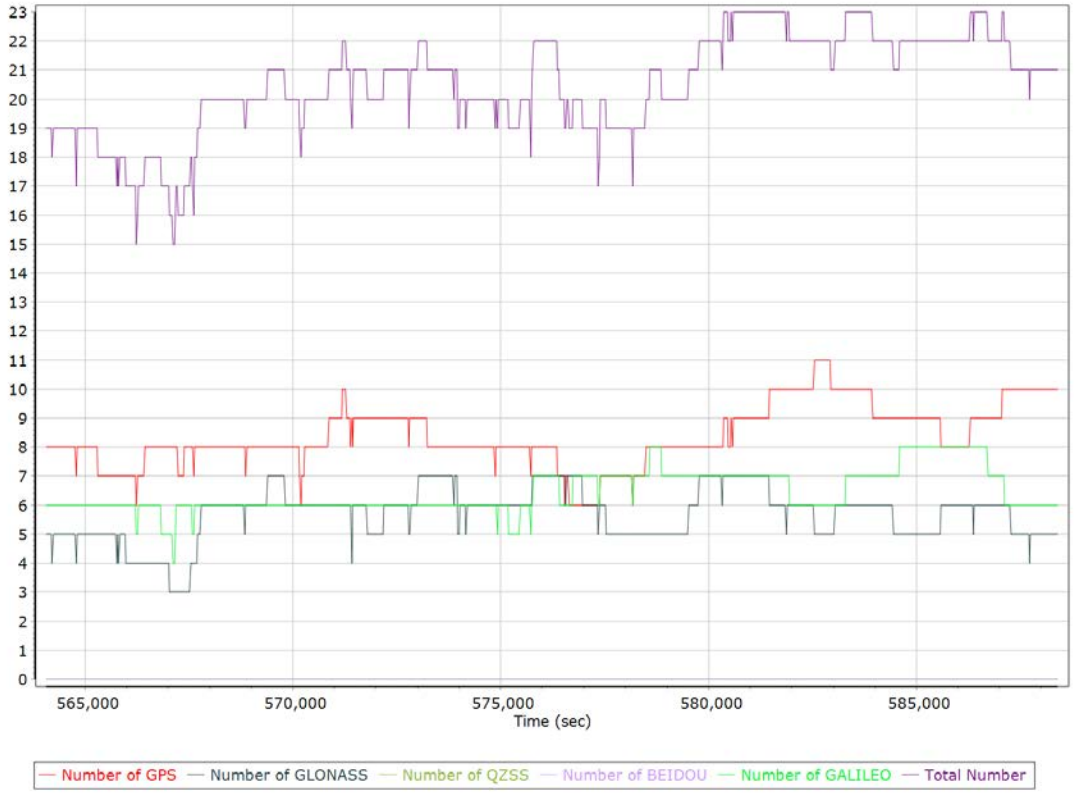


GNSS QC

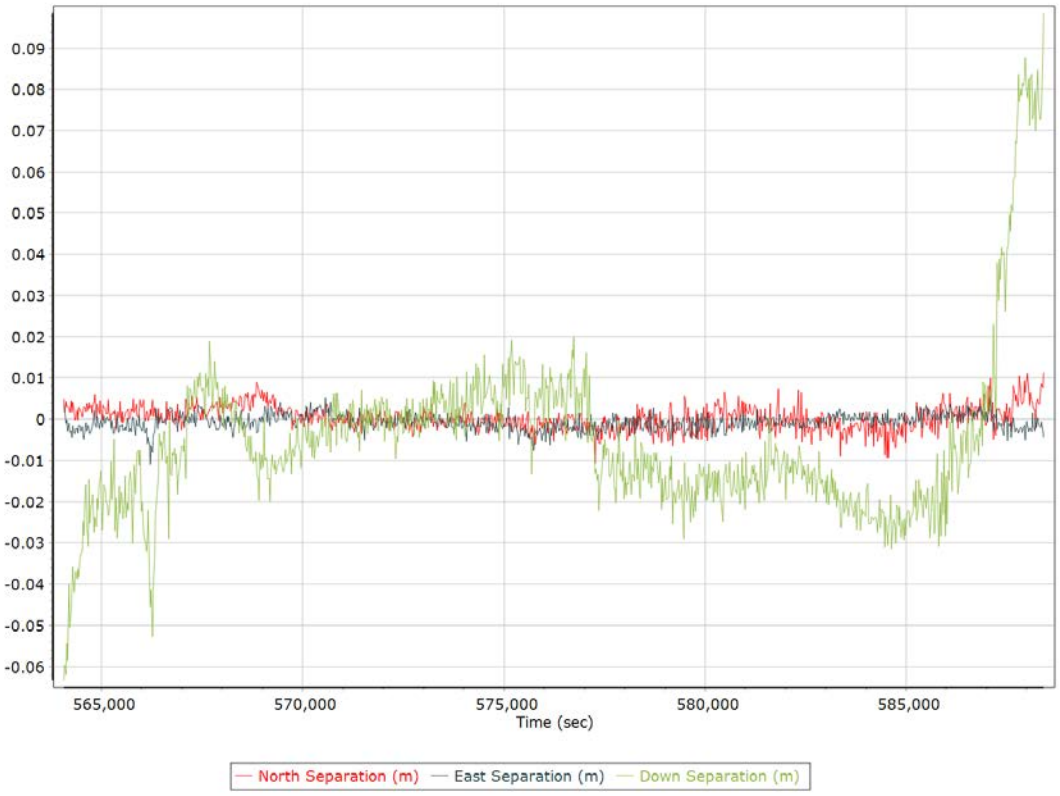
GNSS QC Statistics

Statistics	Min	Max	Mean
Baseline length (km)	0.00	0.00	
Number of GPS SV	6	11	8
Number of GLONASS SV	2	7	6
Number of QZSS SV	0	0	0
Number of BEIDOU SV	0	0	0
Number of GALILEO SV	4	8	6
Total number of SV	14	23	21
PDOP	0.99	1.90	1.15
QC Solution Gaps	0.00	0.00	
Solution Type	Fixed	Float	No solution
Epoch (sec)	24400.00	0.00	0.00
Percentage	100.00	0.00	0.00

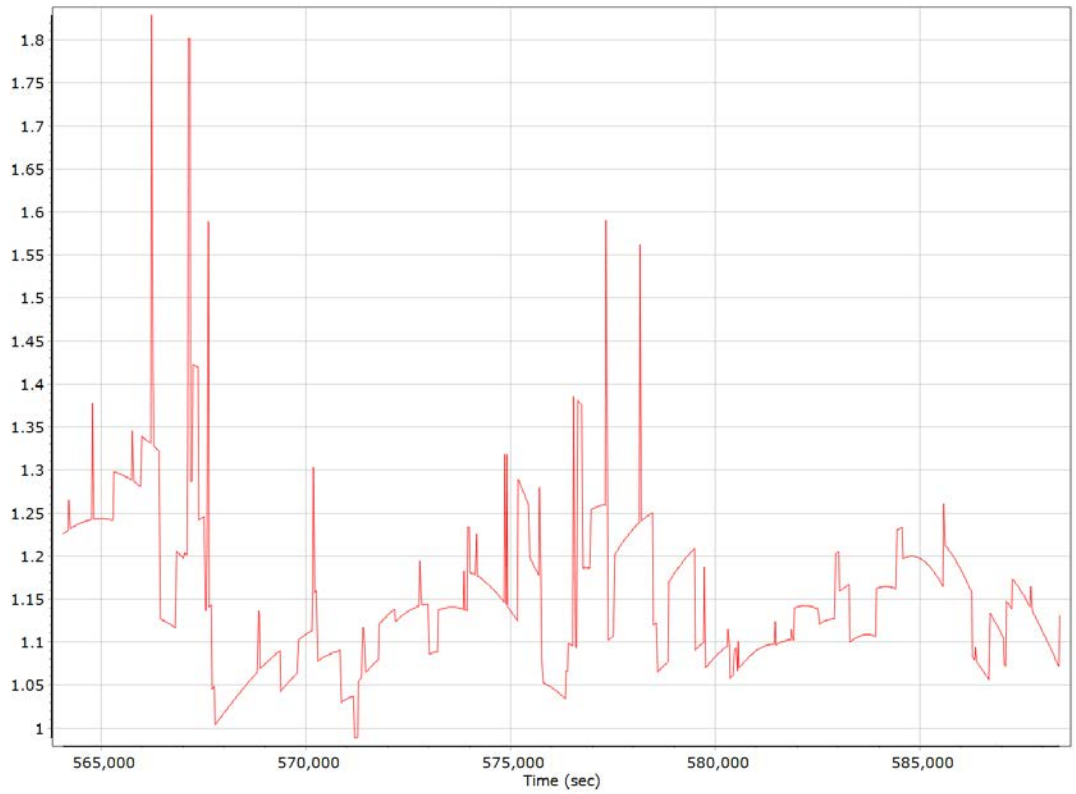
Num SVs in solution



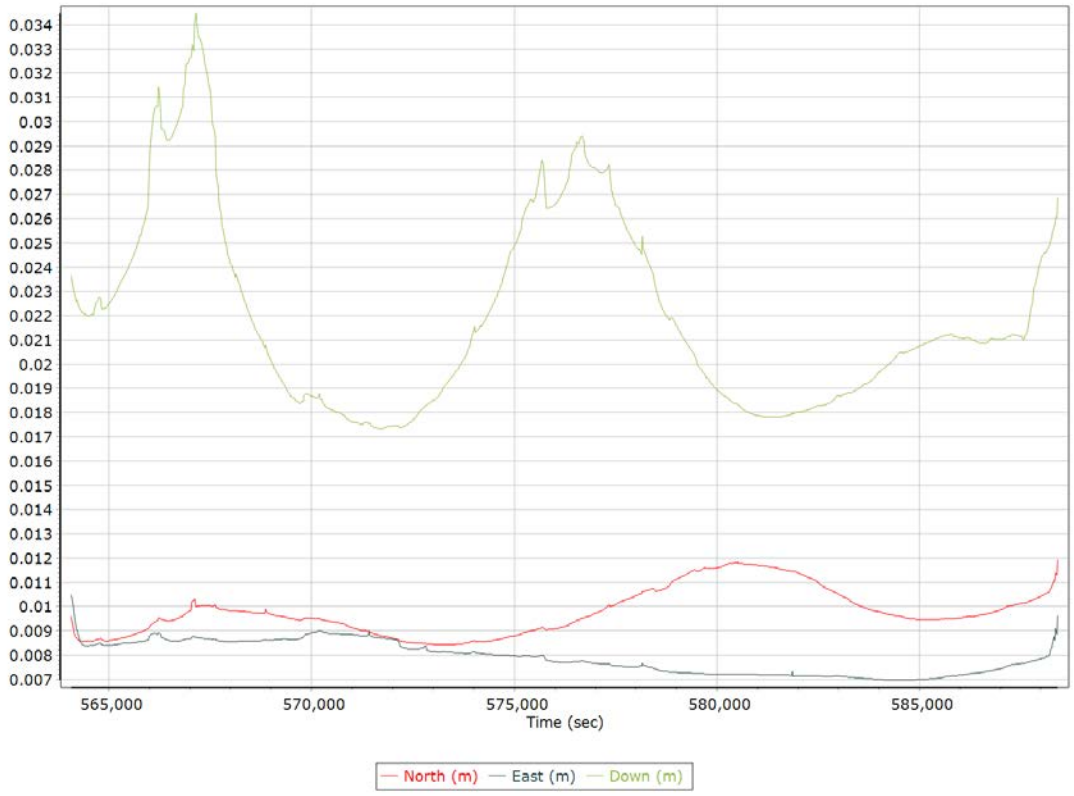
Forward/Reverse Separation



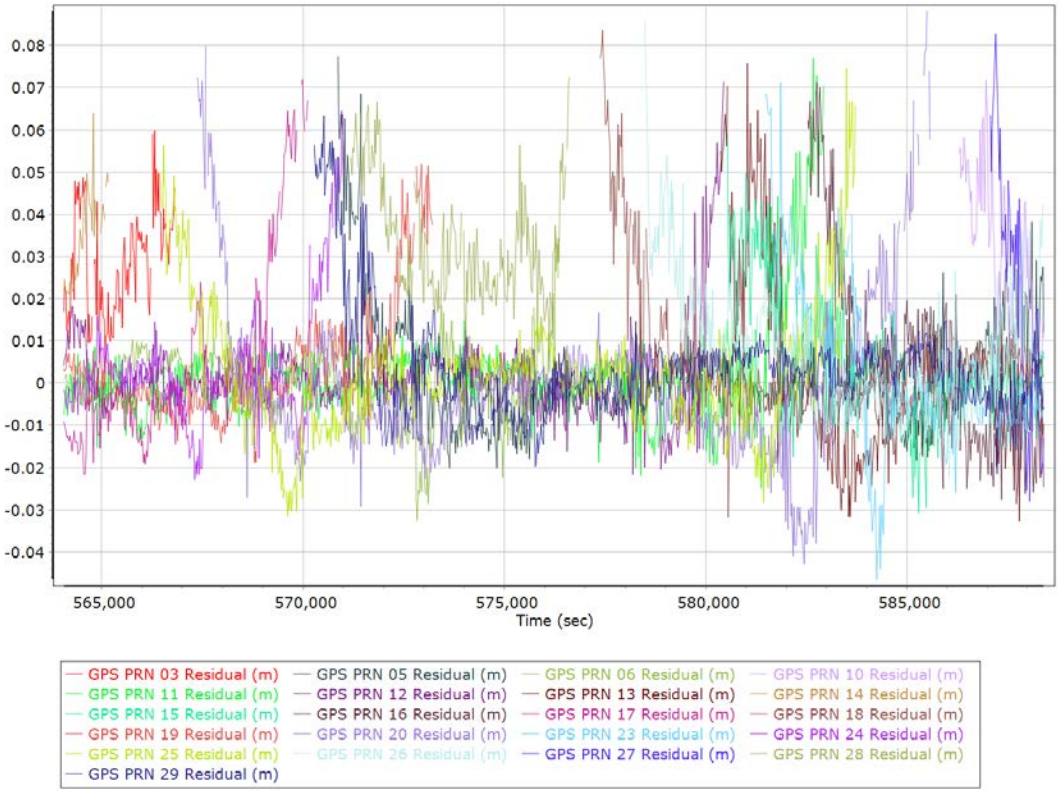
PDOP



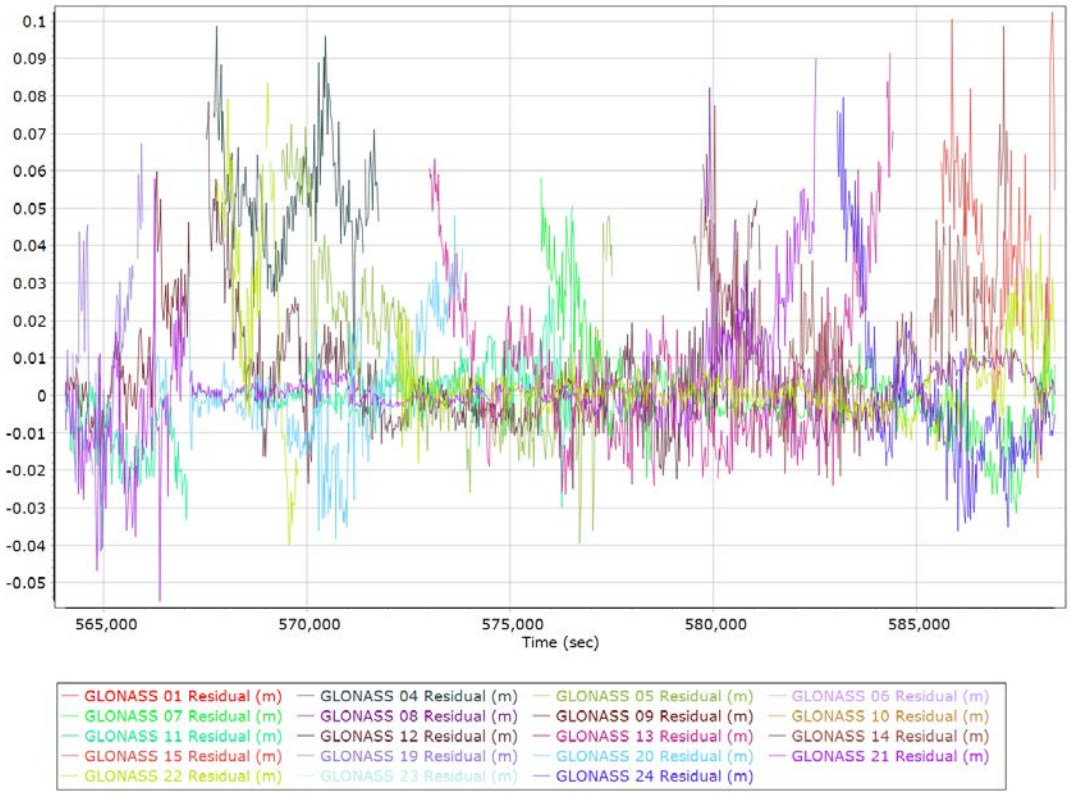
Estimated Position Accuracy



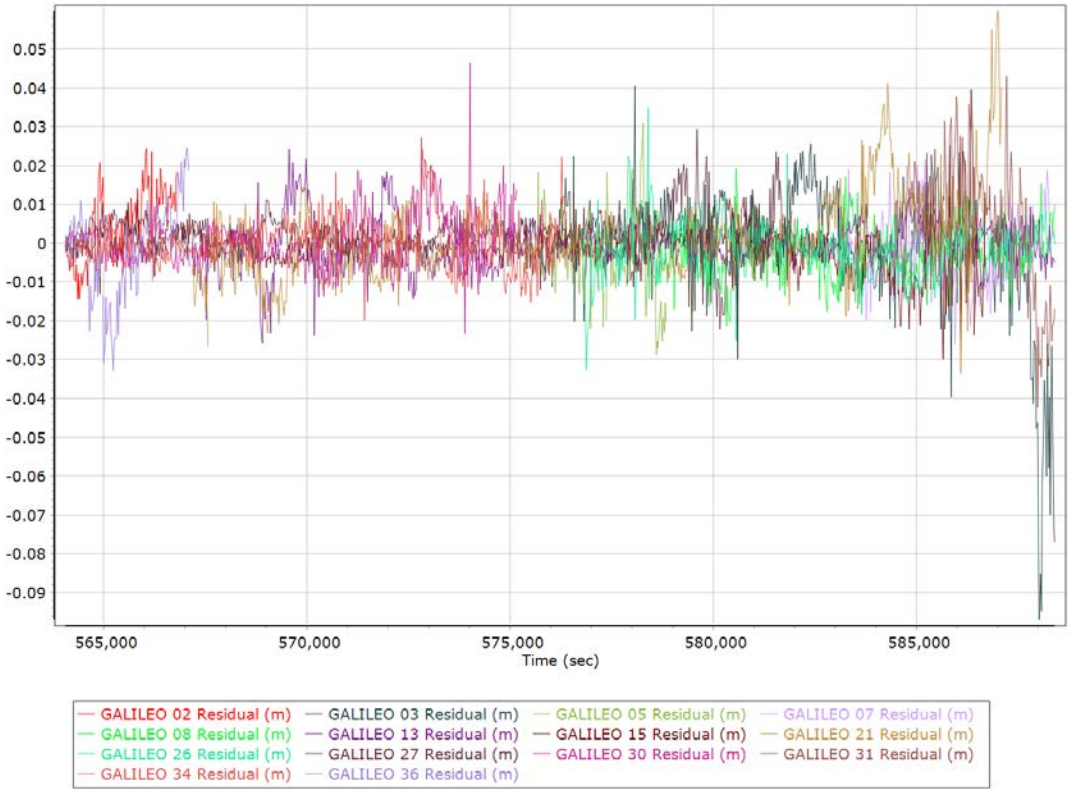
GPS Residuals



GLONASS Residuals



GALILEO Residuals



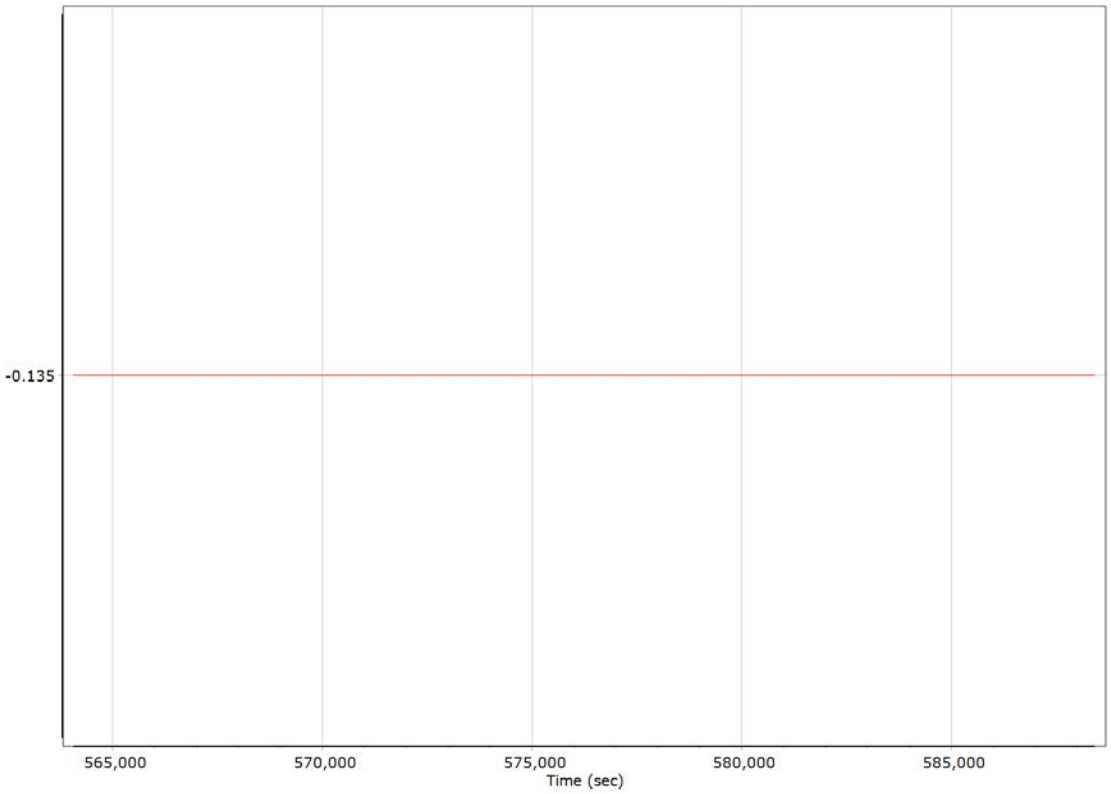
GNSS-Inertial Processor Configuration

Processing mode	IN-Fusion PP-RTX		
Stabilized mount	True		
Processing start time	563980.000 (7/22/2023 12:39:40 PM)		
Processing end time	588424.000 (7/22/2023 7:27:04 PM)		
Initial attitude source	Primary GNSS Track		
IMU Sensor Context	Processing with Onboard IMU		
Gimbal to IMU lever arm (m)	-0.034	-0.010	-0.374
Gimbal to IMU mounting angles (deg)	0.000	0.000	0.000
Gimbal to Primary GNSS lever arm (m)	-0.135	0.064	-1.339
Gimbal to Primary GNSS lever arm std dev (m)	0.030	0.030	0.030
Aircraft to Reference mounting angles (deg)	0.000	0.000	0.000

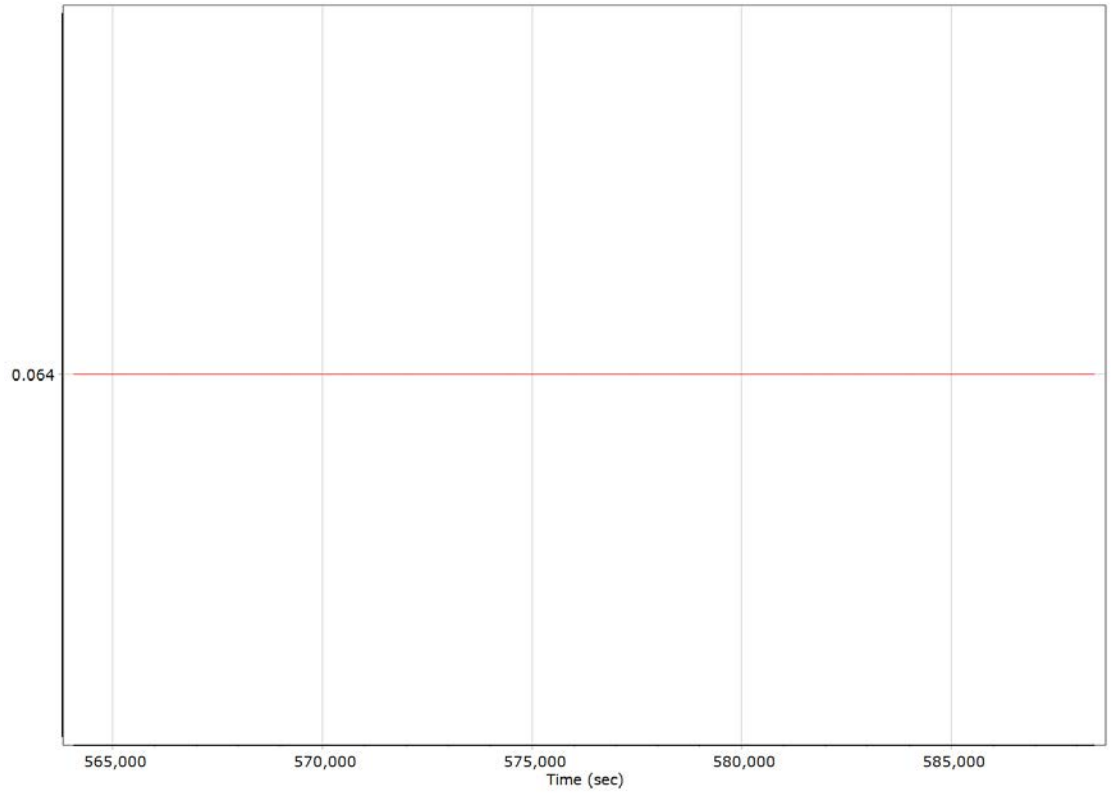
Calibrated Installation Parameters

Reference-Primary GNSS Lever Arm (m)

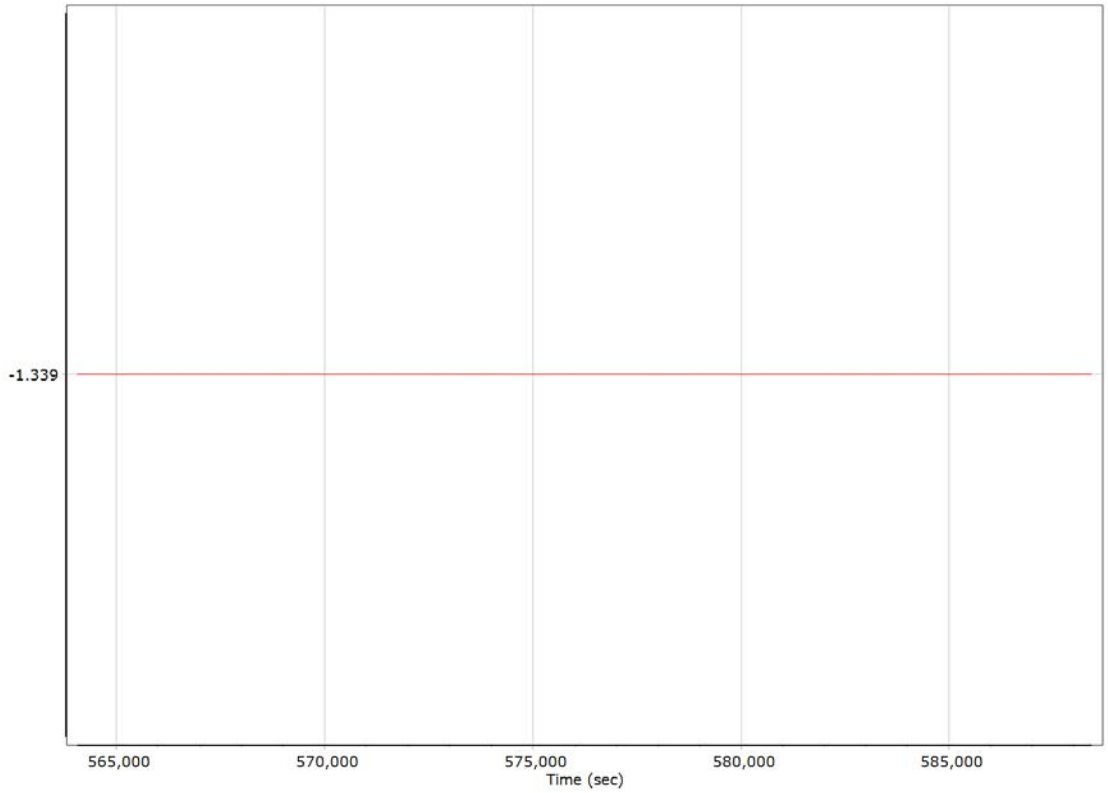
X Reference-Primary GNSS Lever Arm (m)



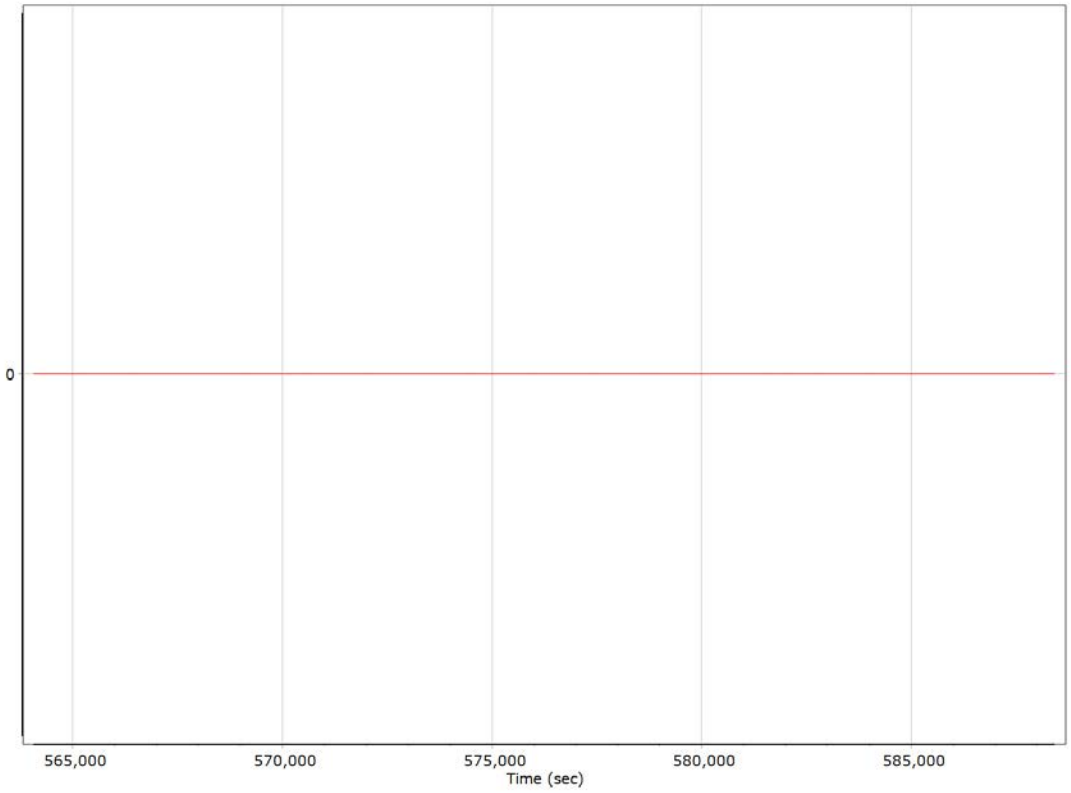
Y Reference-Primary GNSS Lever Arm (m)



Z Reference-Primary GNSS Lever Arm (m)



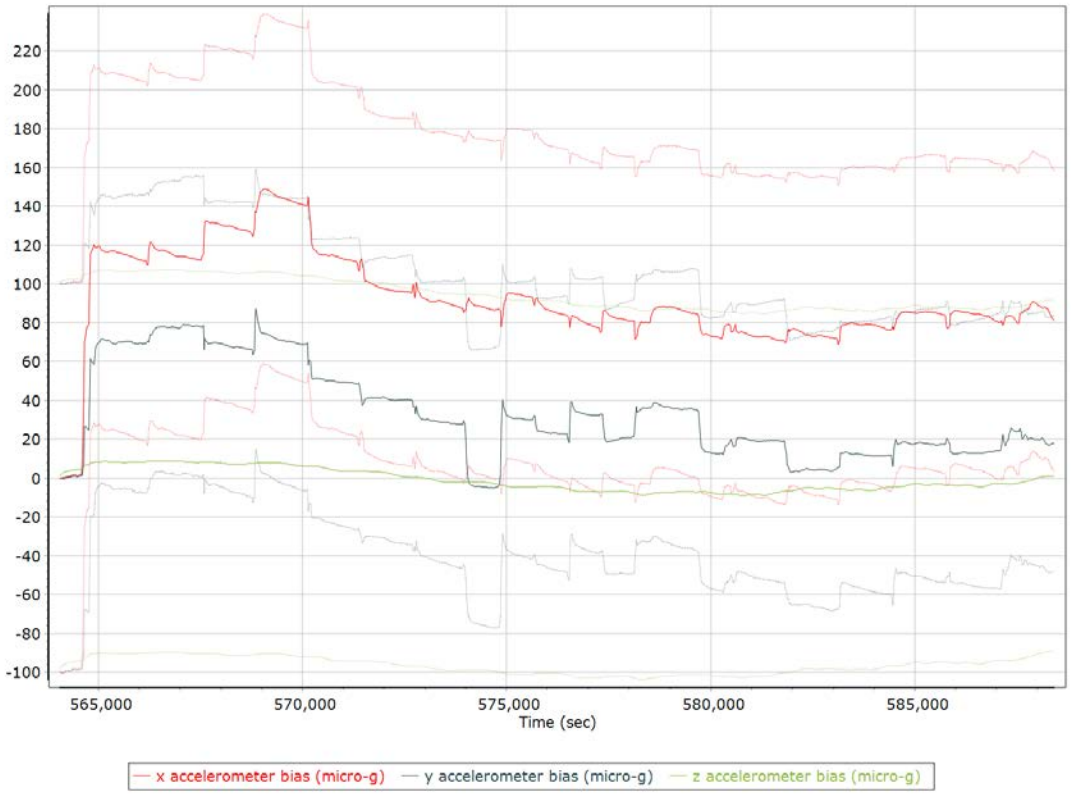
Reference-Primary GNSS Lever Arm Figure of Merit



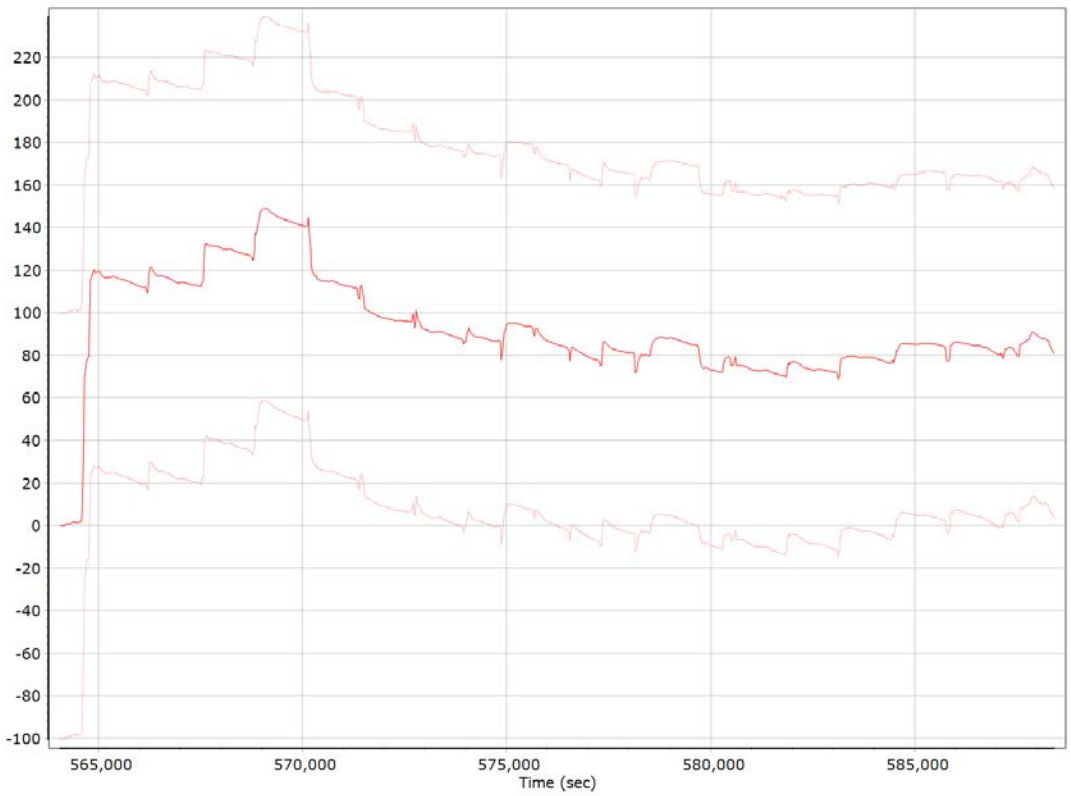
IN-Fusion QC

Forward Processed Estimated Errors, Reference Frame

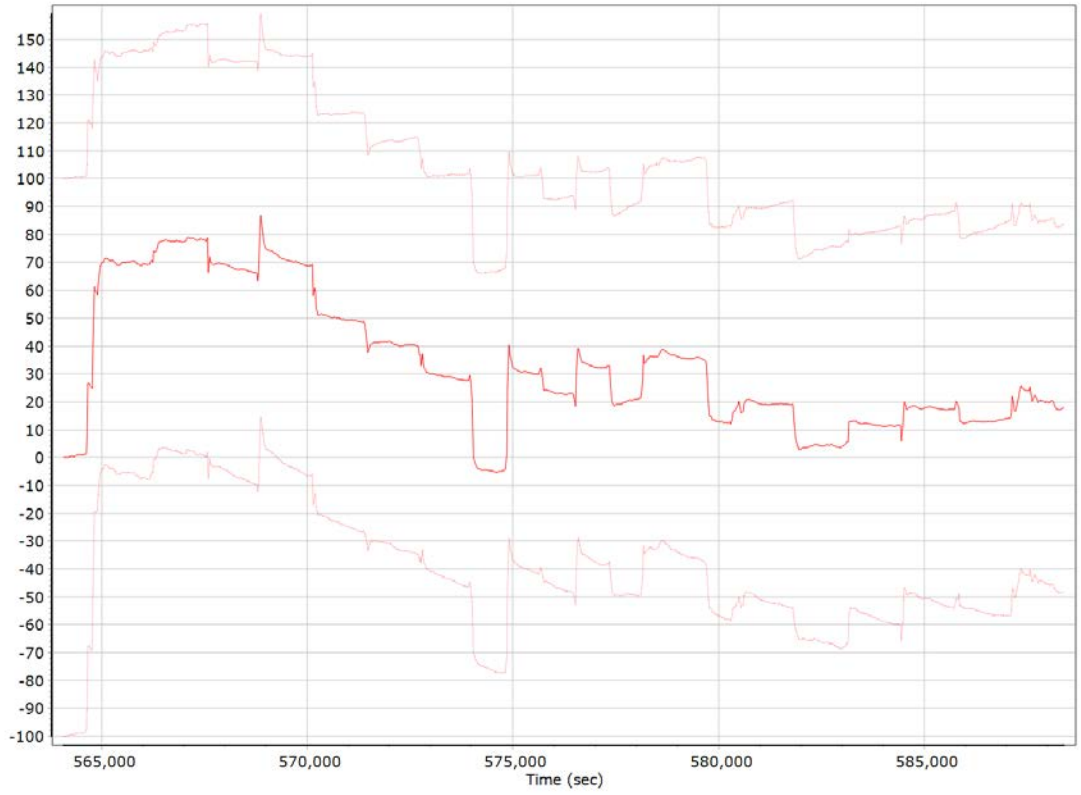
Accelerometer Bias (micro-g)



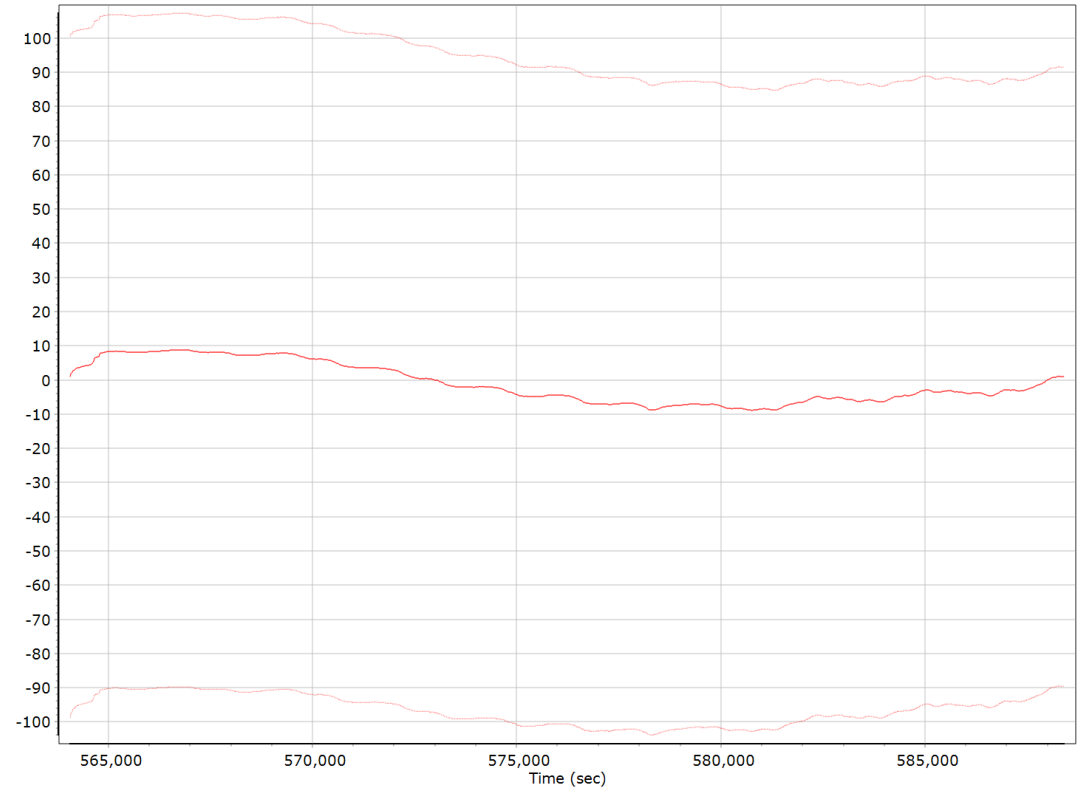
X Accelerometer Bias (micro-g)



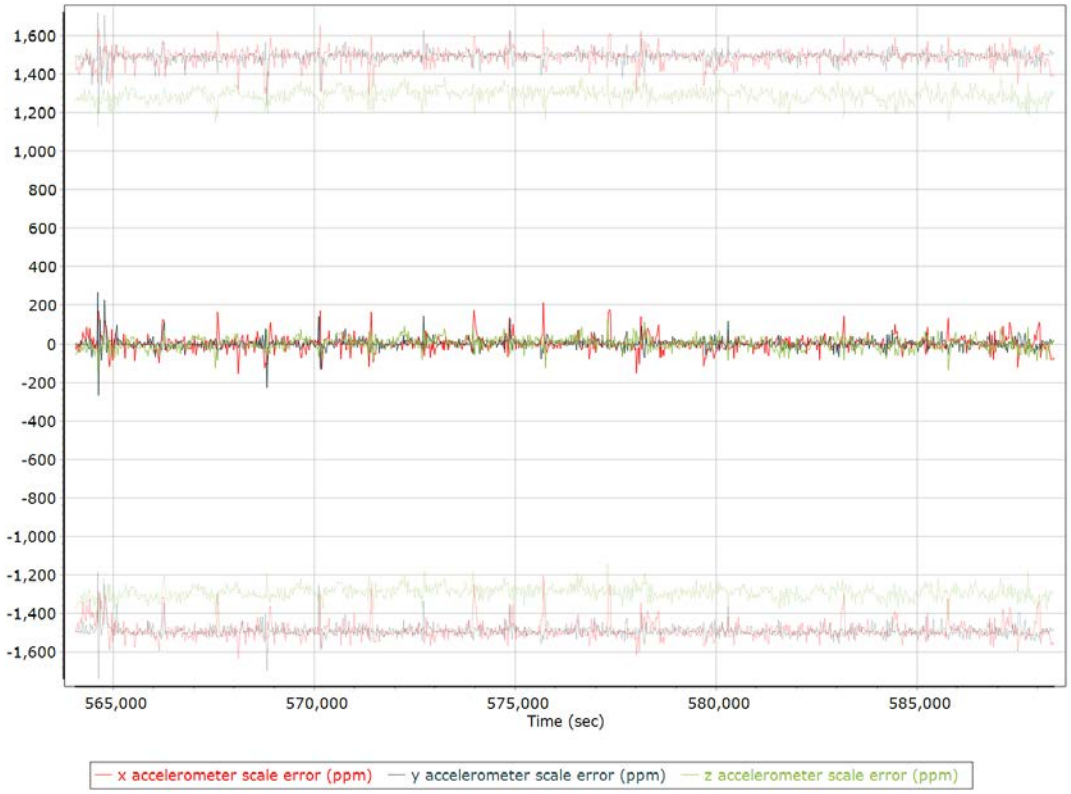
Y Accelerometer Bias (micro-g)



Z Accelerometer Bias (micro-g)



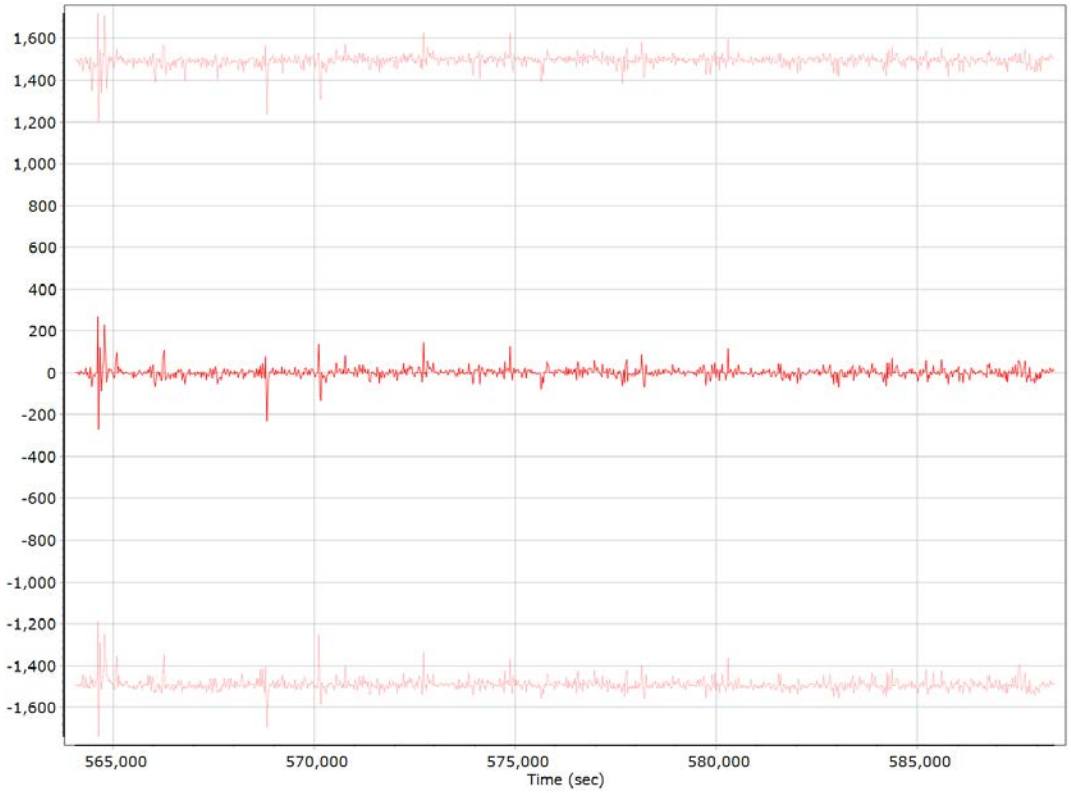
Accelerometer Scale Error (ppm)



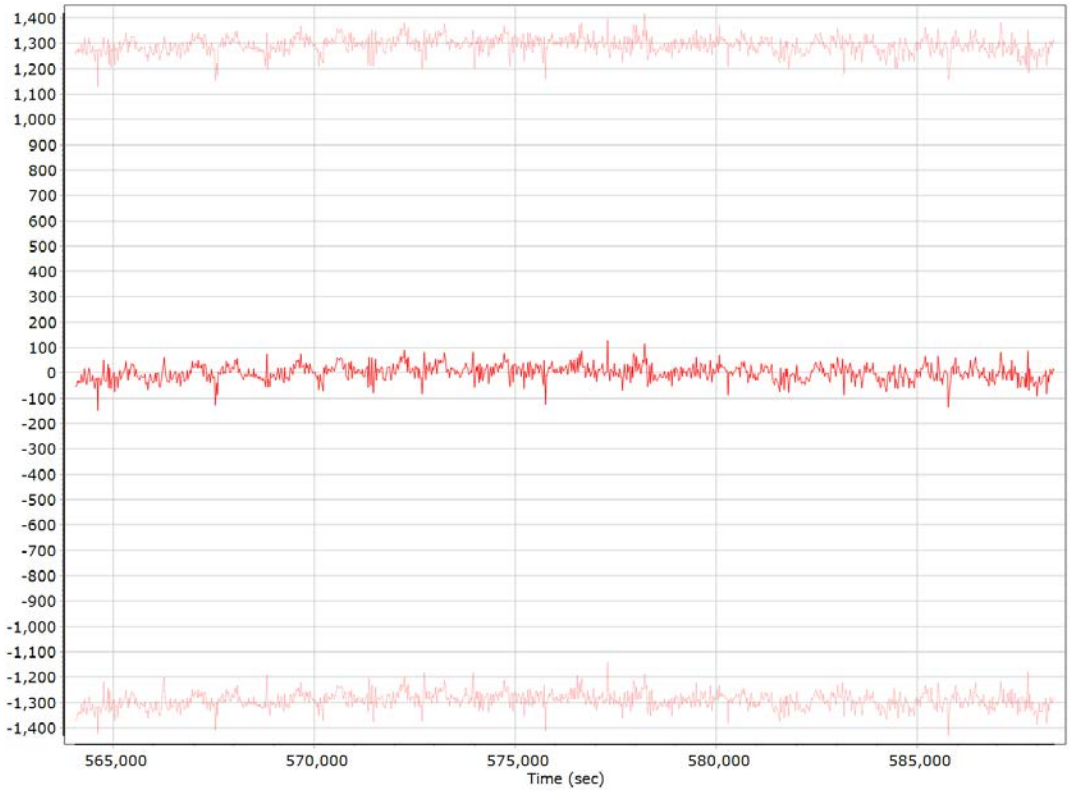
X Accelerometer Scale Error (ppm)



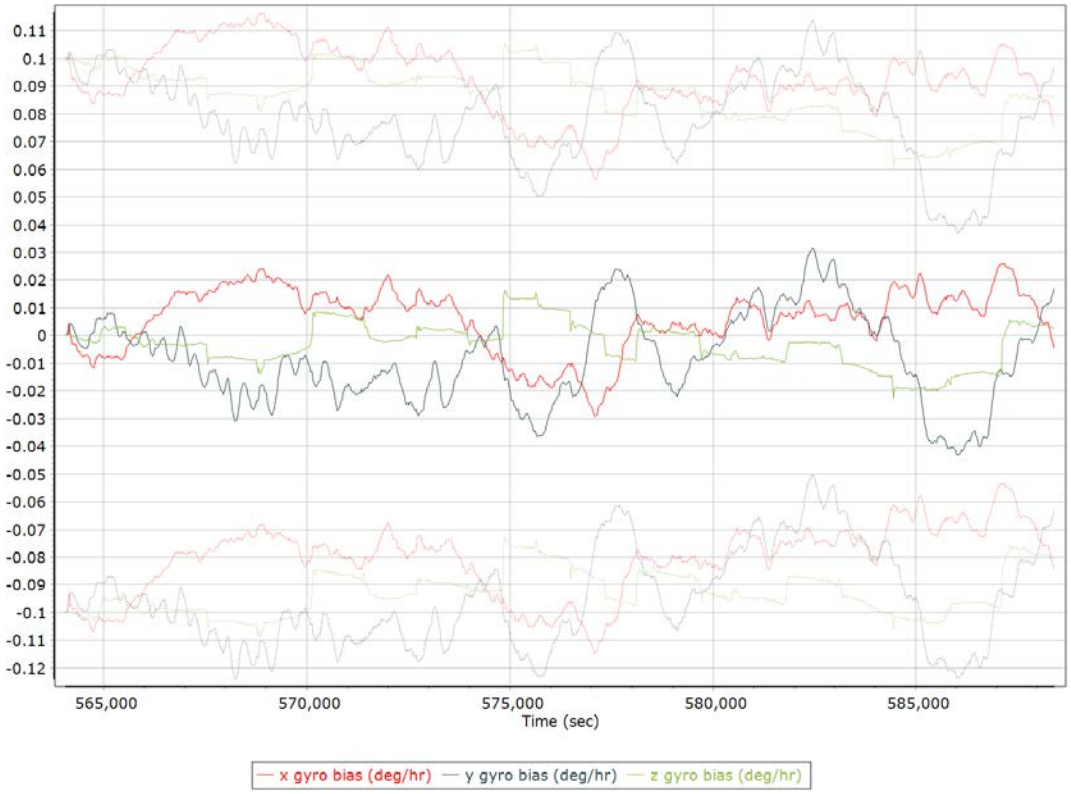
Y Accelerometer Scale Error (ppm)



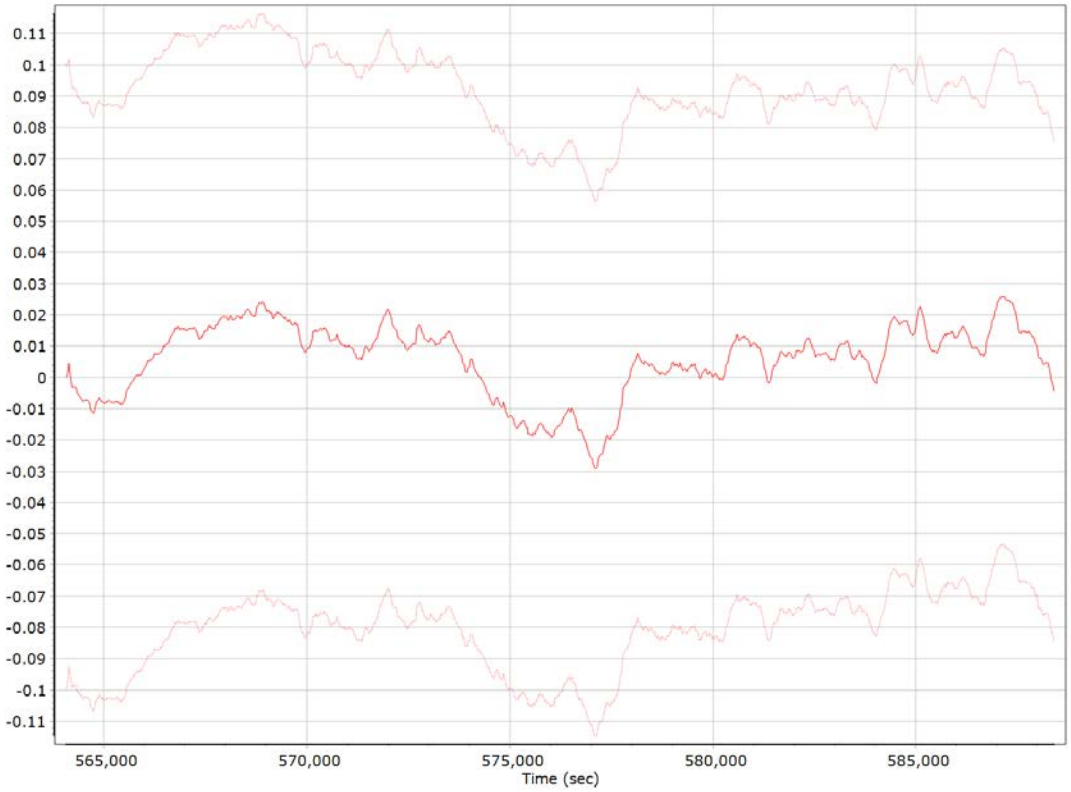
Z Accelerometer Scale Error (ppm)



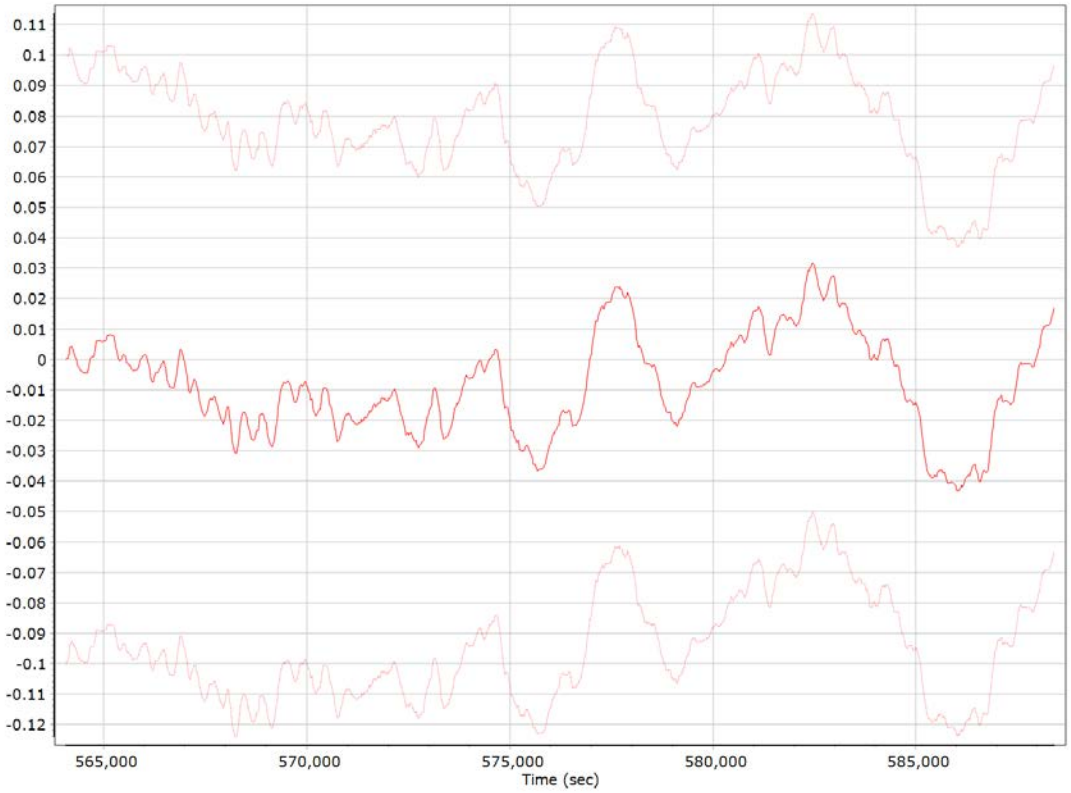
Gyro Bias (deg/h)



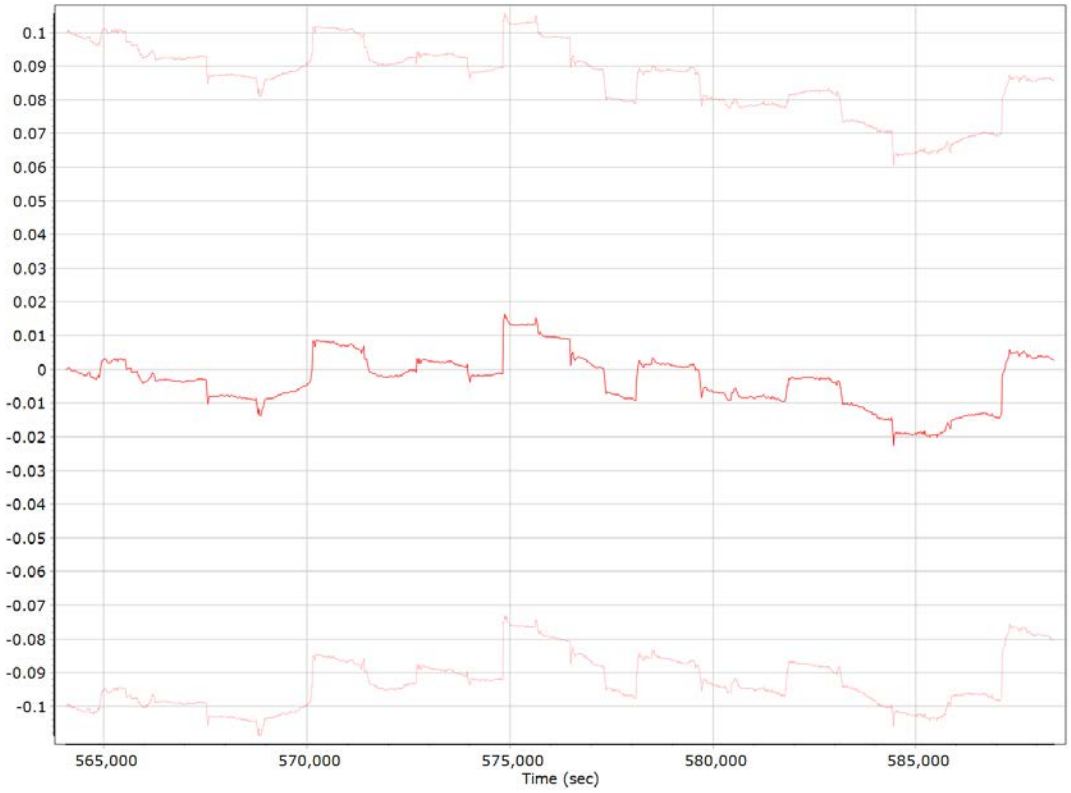
X Gyro Bias (deg/h)



Y Gyro Bias (deg/h)



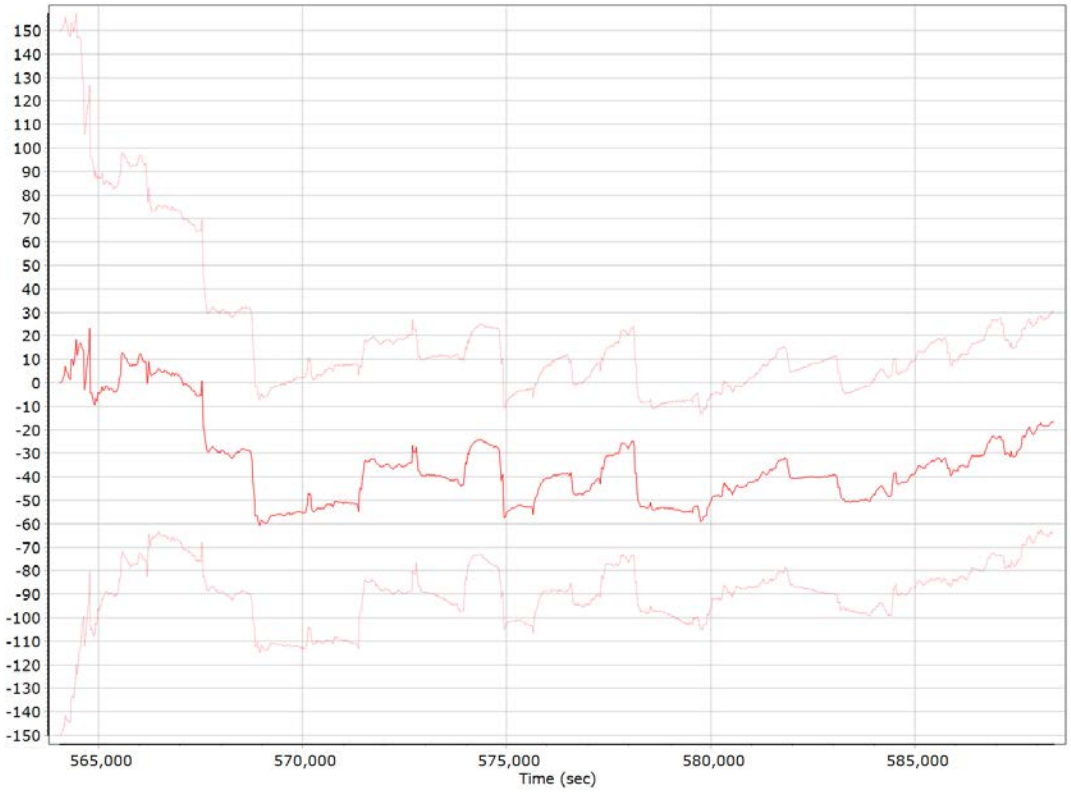
Z Gyro Bias (deg/h)



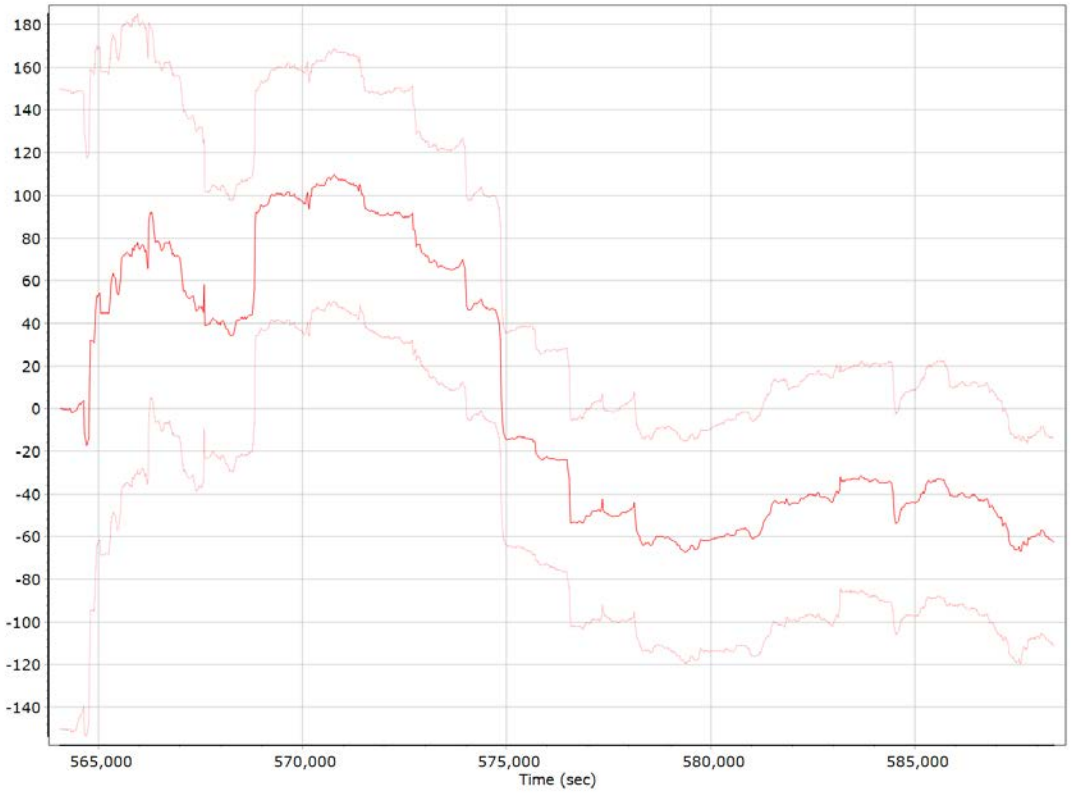
Gyro Scale Error (ppm)



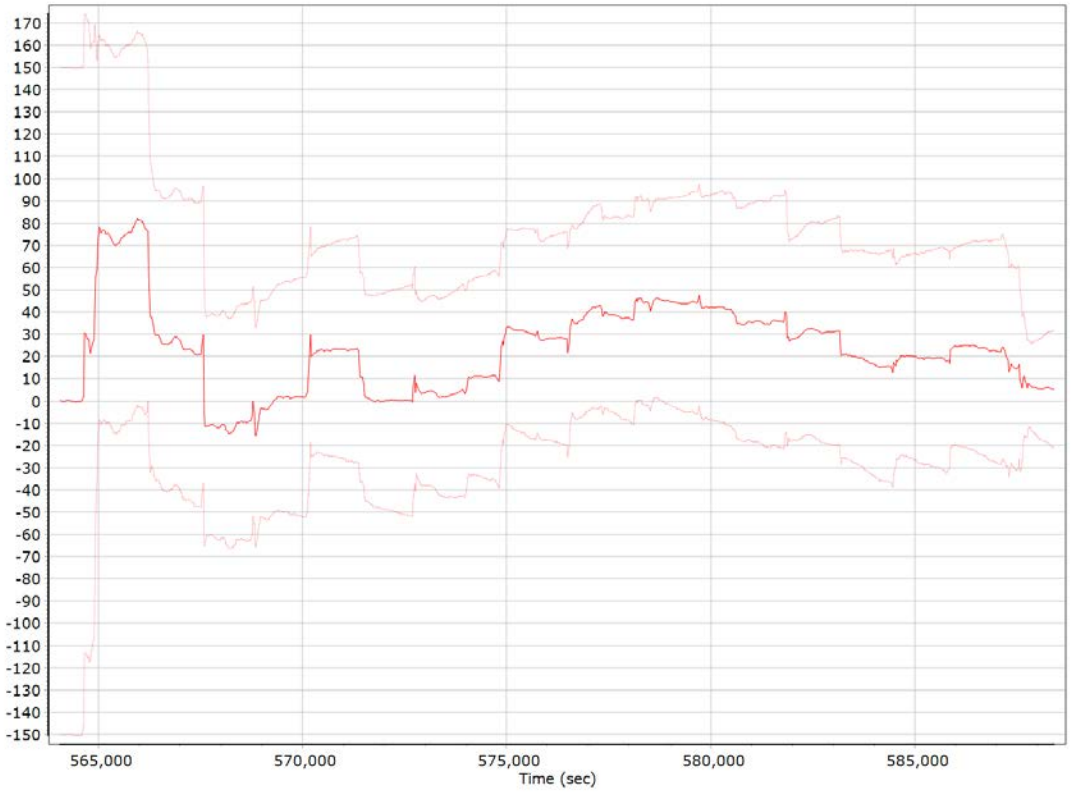
X Gyro Scale Error (ppm)



Y Gyro Scale Error (ppm)

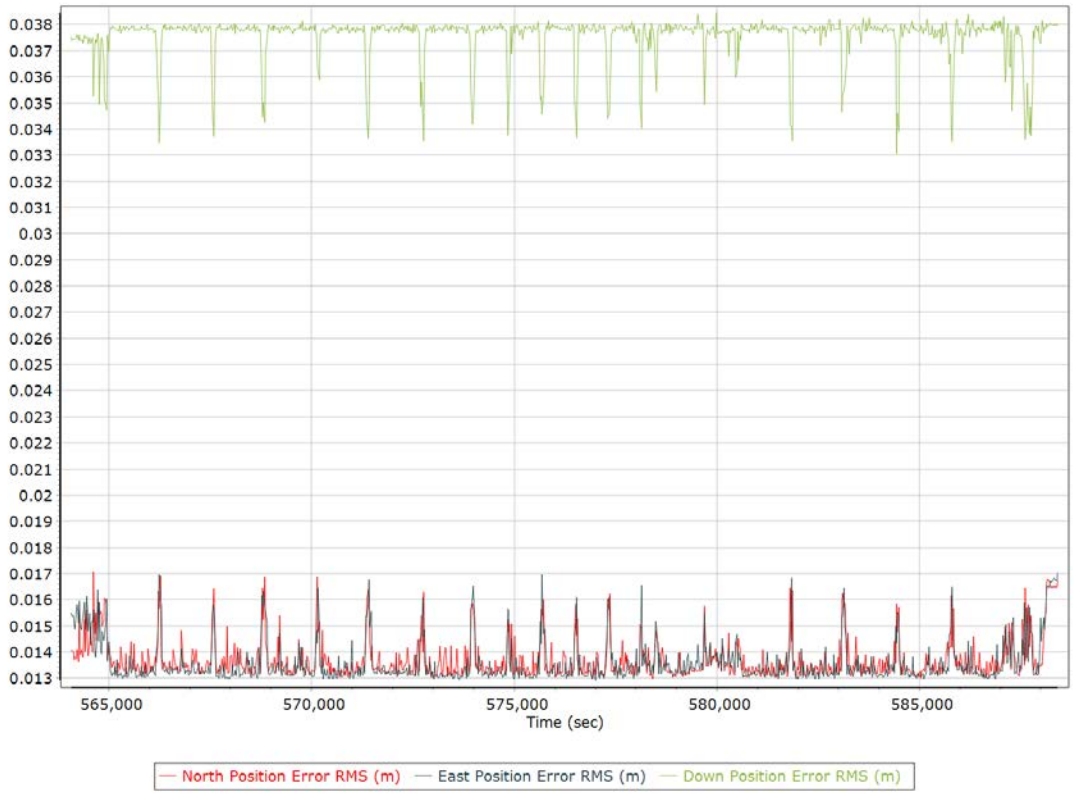


Z Gyro Scale Error (ppm)

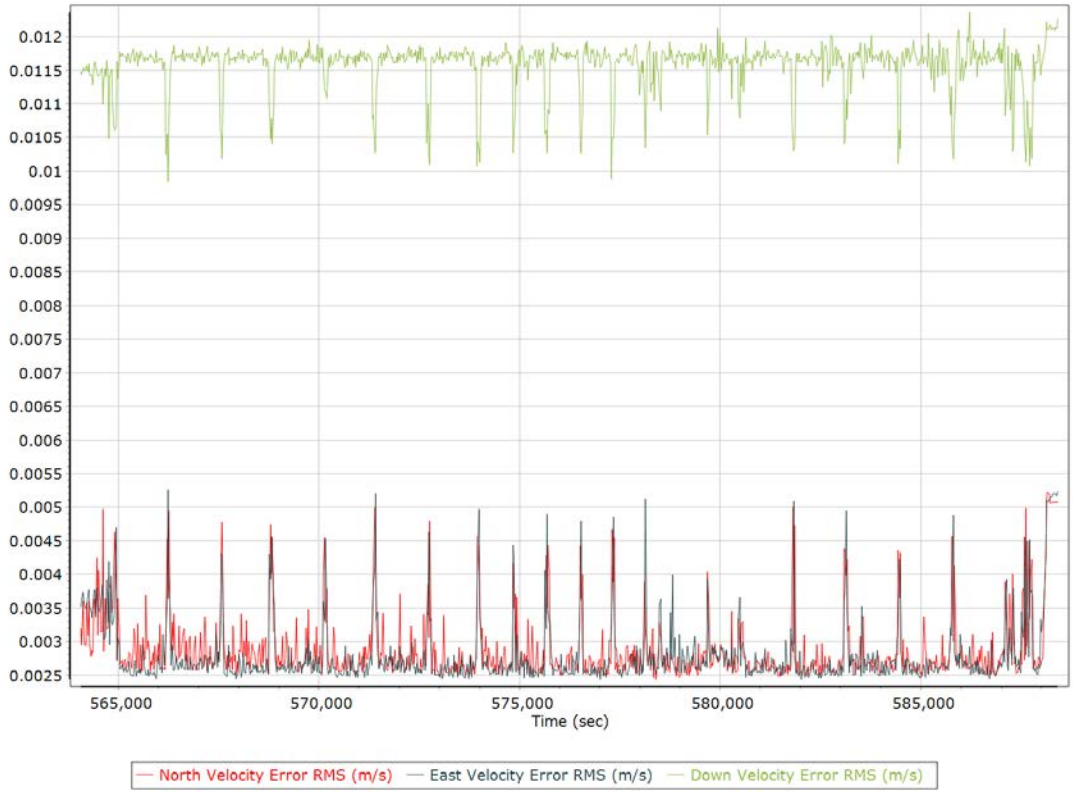


Smoothed Performance Metrics

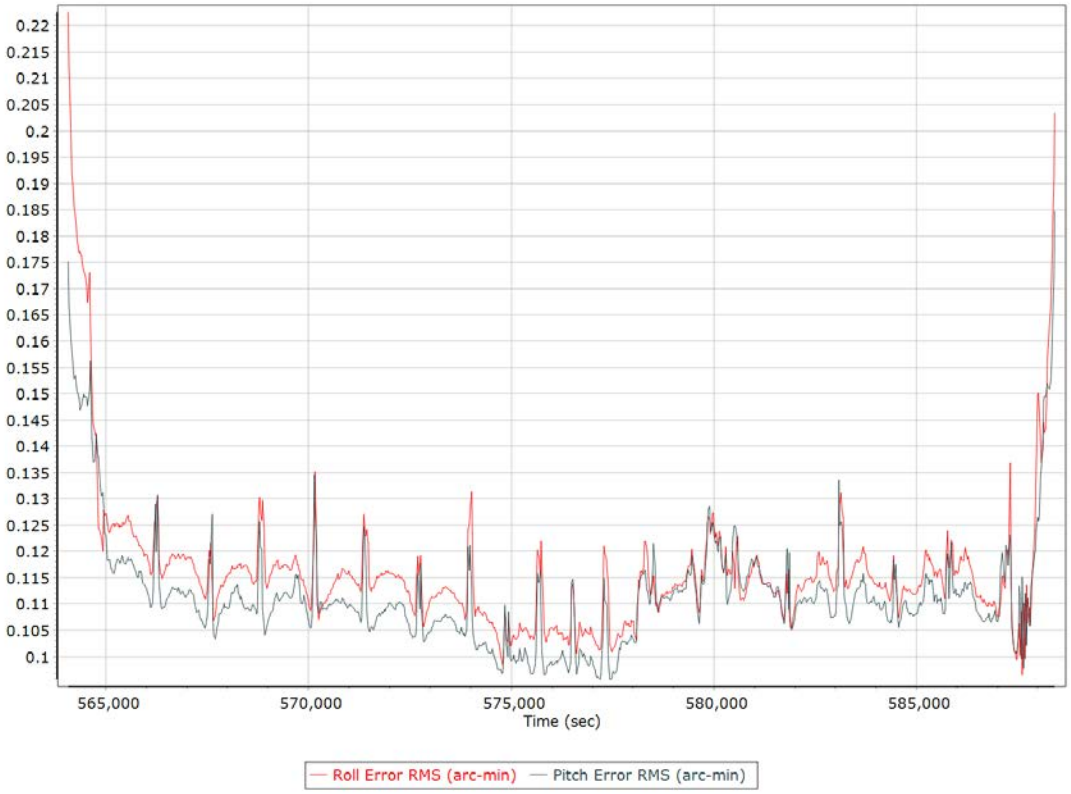
Position Error RMS (m)



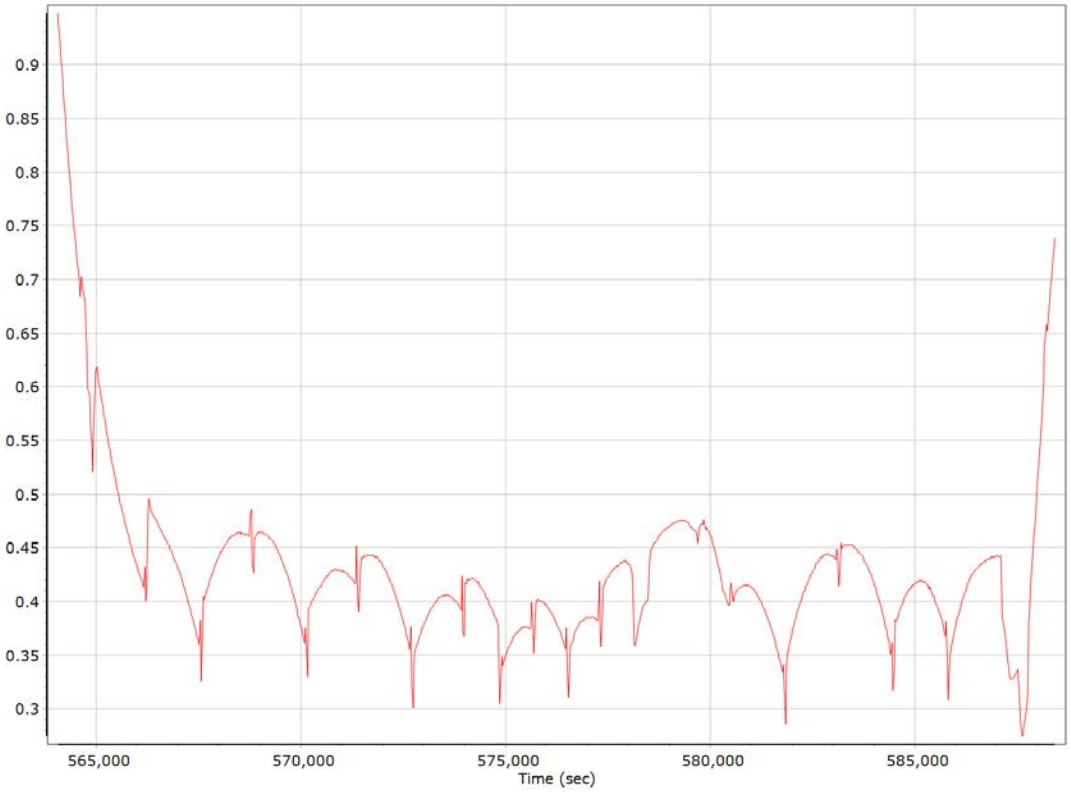
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

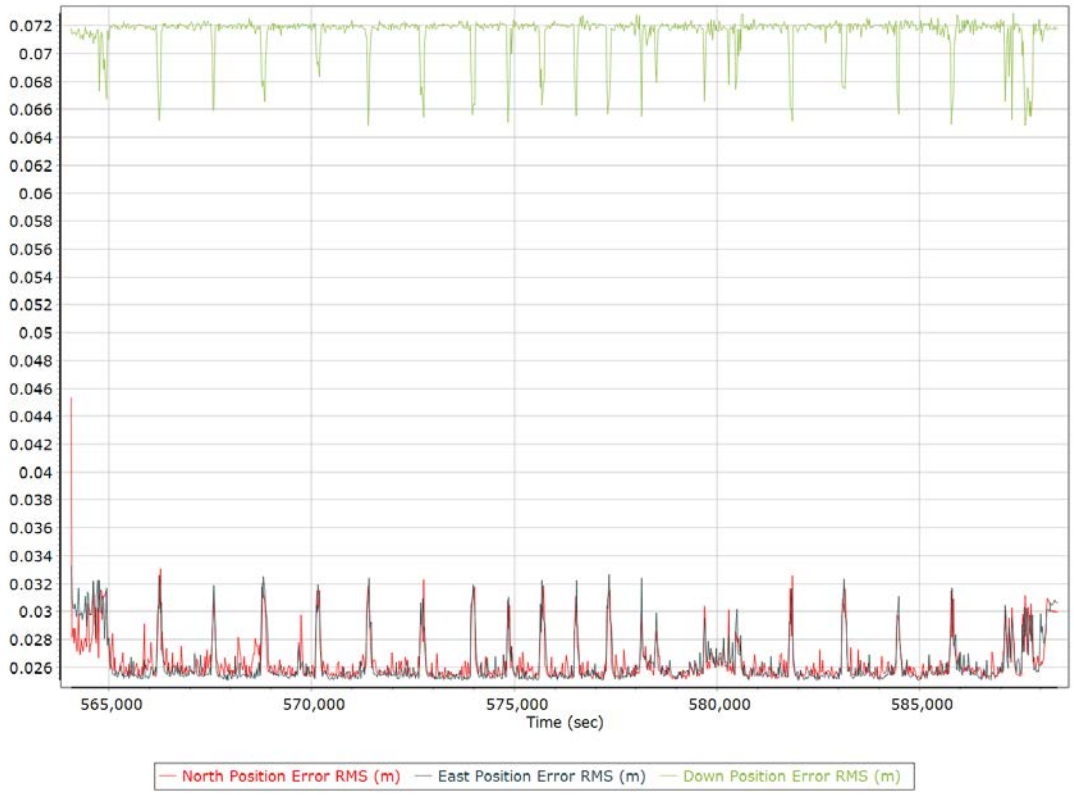


Heading Error RMS (arc-min)

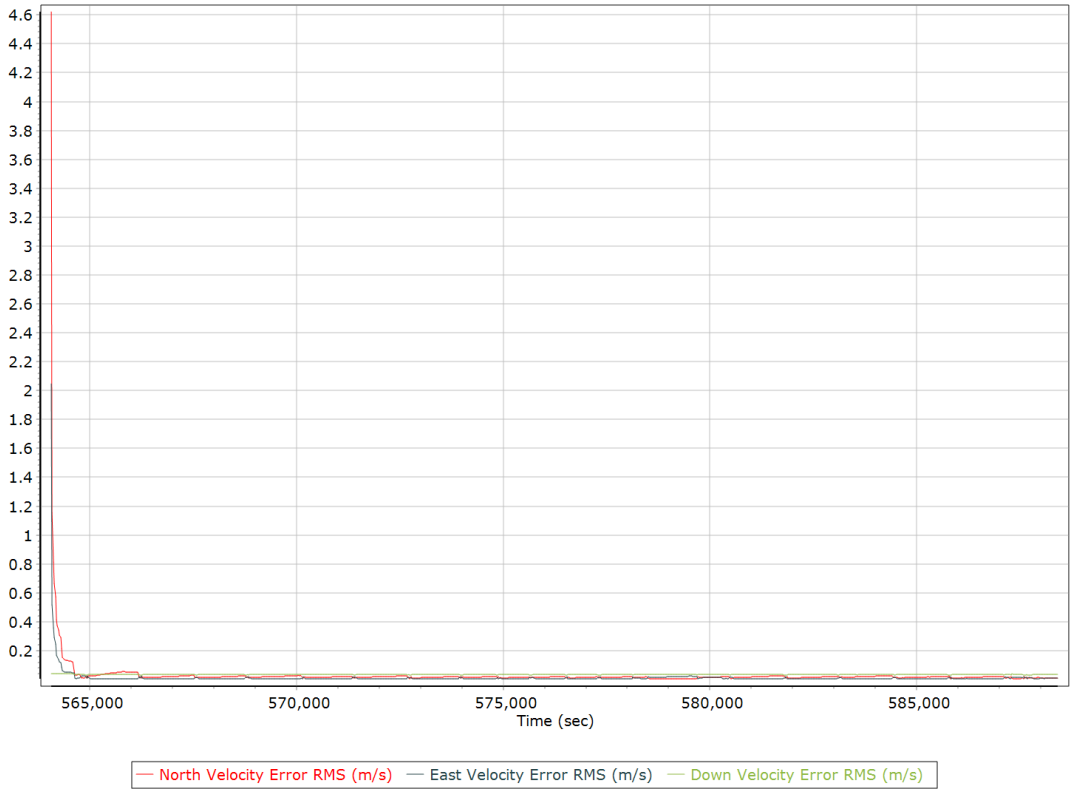


Forward Processed Performance Metrics

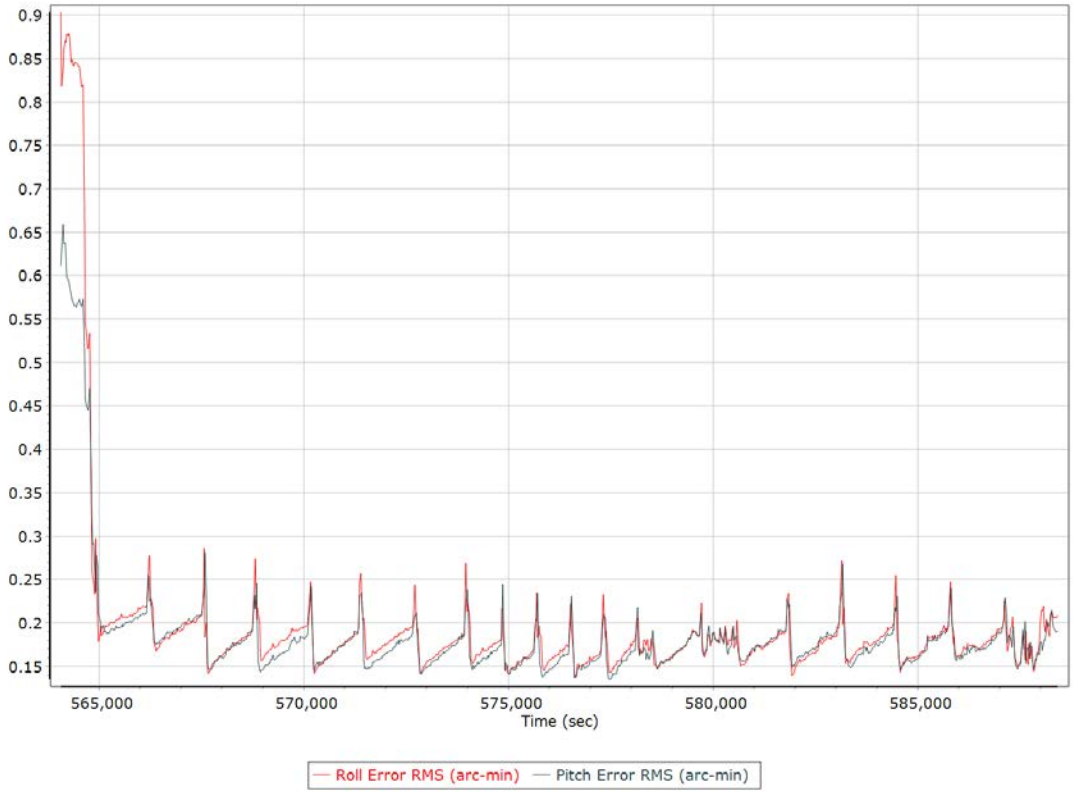
Position Error RMS (m)



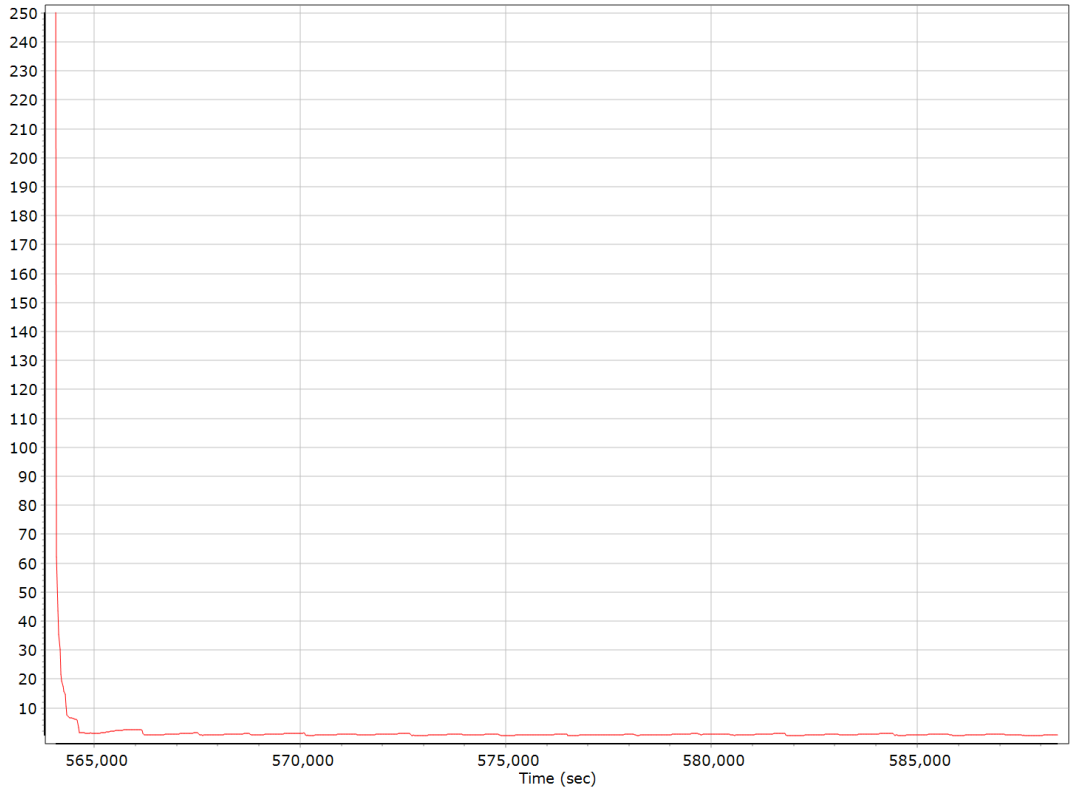
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

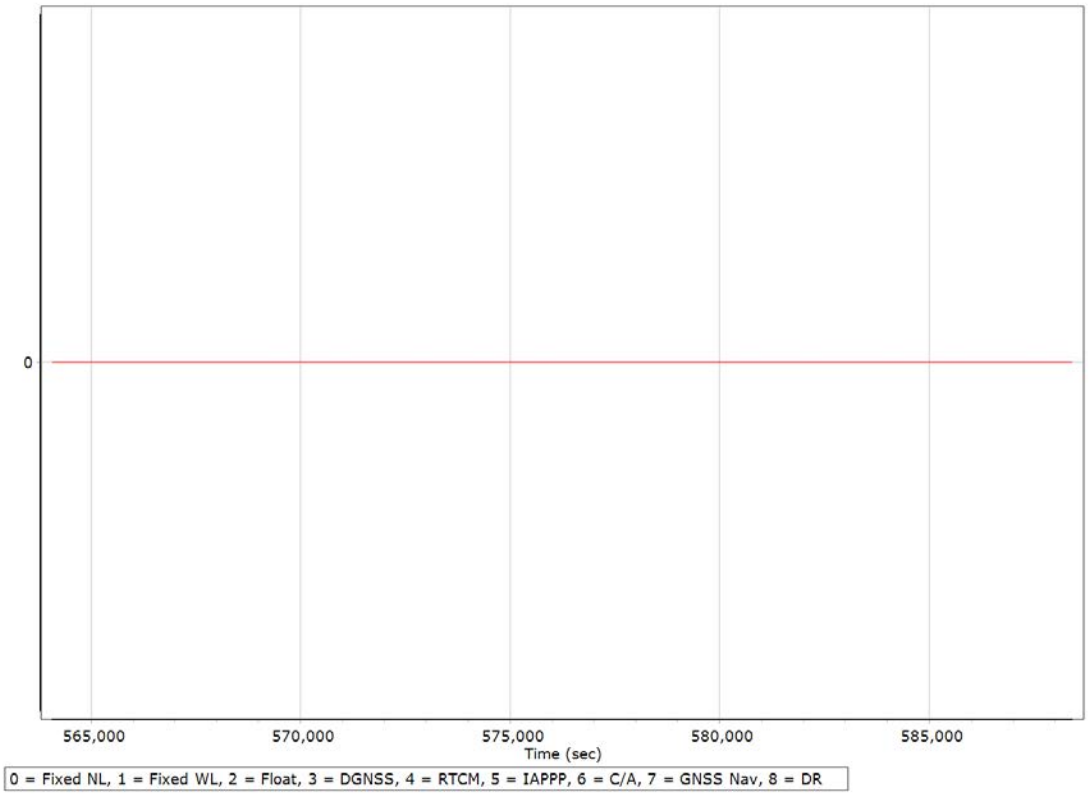


Heading Error RMS (arc-min)

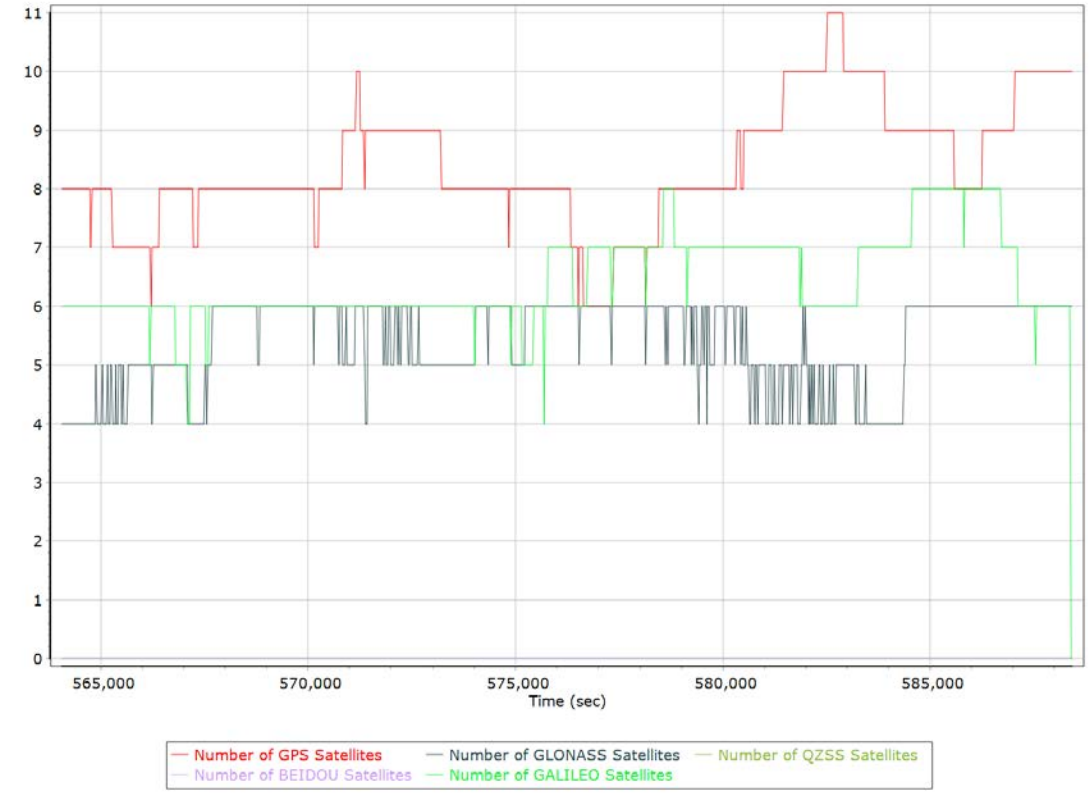


Forward Processed Solution Status

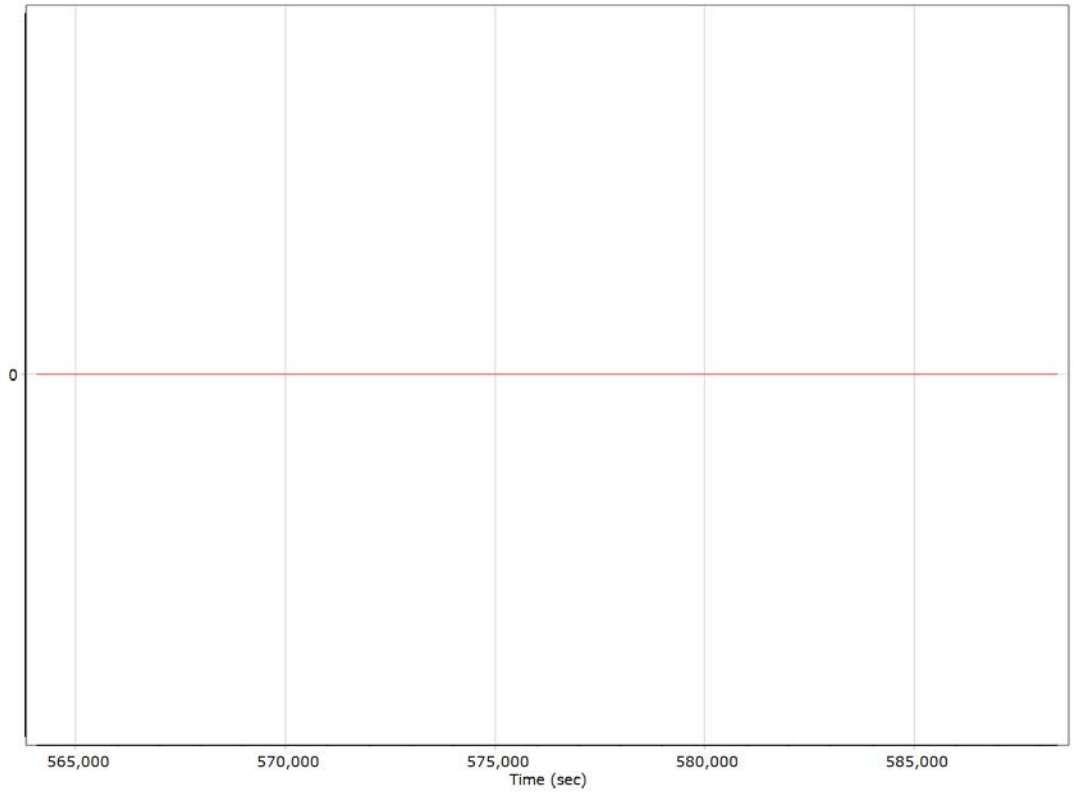
Processing Mode



Number of Satellites



Baseline Length



General Information

Mission Information

Project name	07232023A_4891
Processing date	2023-07-26 11:10:12
Mission date	2023-07-23 12:25:50
Mission duration	00:43:15.466
Processing mode	IN-Fusion PP-RTX

Rover Hardware Information

Product	POS AV 610 VER6 HW2.5-12
Serial number	S/N11883
IMU type	57
Receiver type	BD982
Antenna type	AV59

Project File List

Rover Data Files

File name	File type
N6275603122201.962	POS Data
N6275603122201.963	POS Data
N6275603122201.964	POS Data
N6275603122201.965	POS Data
N6275603122201.966	POS Data
N6275603122201.967	POS Data
N6275603122201.968	POS Data
N6275603122201.969	POS Data

Input Files

File Name	File Type
Ephm2040.23g	GLONASS Broadcast Ephemeris
Ephm2040.23n	GPS Broadcast Ephemeris

Output Files

Filename	File type
sbet_07232023A_4891.out	SBET Trajectory File

Rover Data Summary

First raw data file	N6275603122201.962		
Last raw data file	N6275603122201.969		
Start GPS week	2272		
Start time	44731.640 (7/23/2023 12:25:31 PM)		
End time	47327.106 (7/23/2023 1:08:47 PM)		
Start of fine alignment	44755.409 (7/23/2023 12:25:55 PM)		
Available subsystems	Primary GNSS, Gimbal, IMU		
POS Event Input	None		
Correction data	None		
IMU Installation Lever Arms & Mounting Angles			
Gimbal to IMU lever arm (m)	-0.034	-0.010	-0.374
Gimbal to IMU mounting angles (deg)	0.000	0.000	0.000
Gimbal to Primary GNSS lever arm (m)	-0.135	0.064	-1.339
Gimbal to Primary GNSS lever arm std dev (m)	-1.000		
Aircraft to Reference mounting angles (deg)	0.000	0.000	0.000

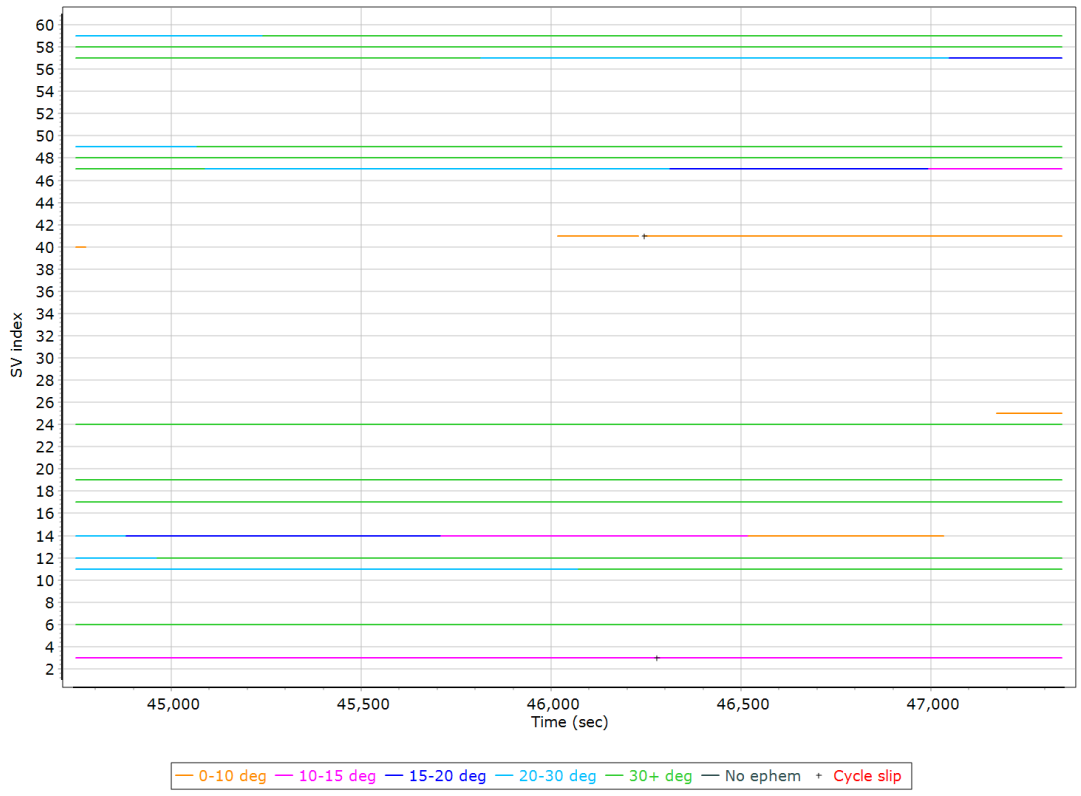
Rover Data QC

Raw IMU Import QC Summary

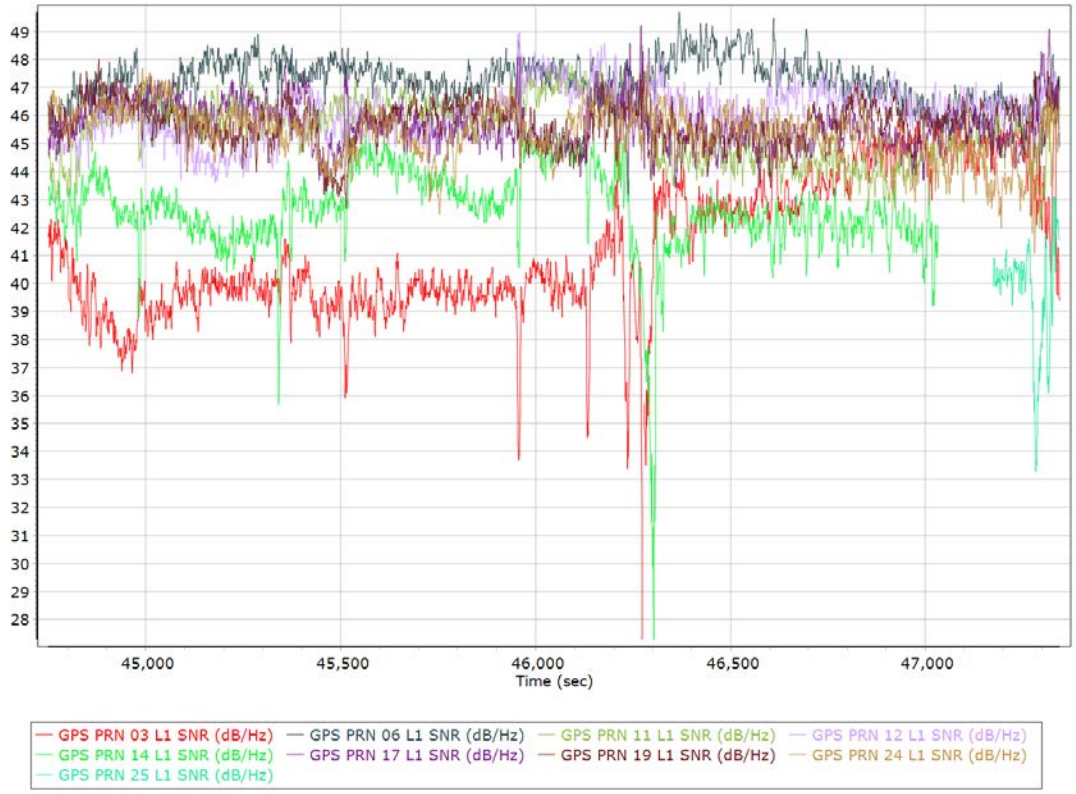
IMU data input file	imu_Mission 1.dat
IMU data check log file	imudt_07232023A_4891.log
IMU Records Processed	519027
Termination Status	Normal
IMU Anomalies	0

Primary Observables & Satellite Data

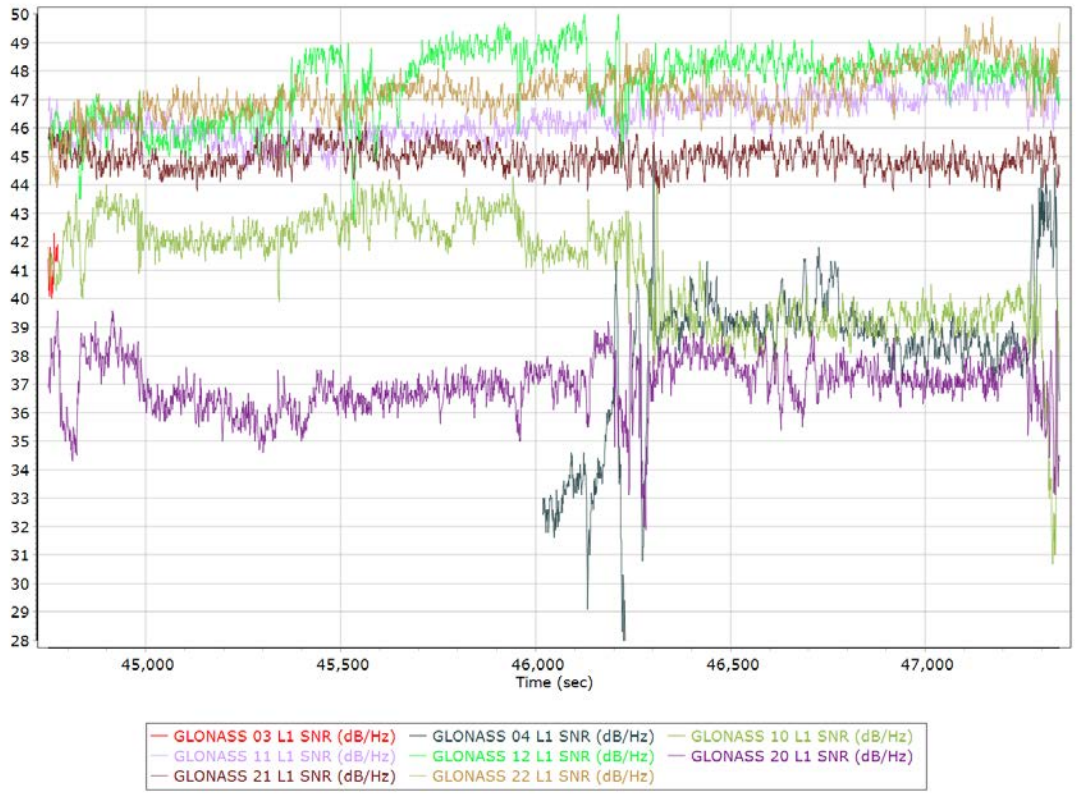
GPS/GLONASS L1 Satellite Lock/Elevation



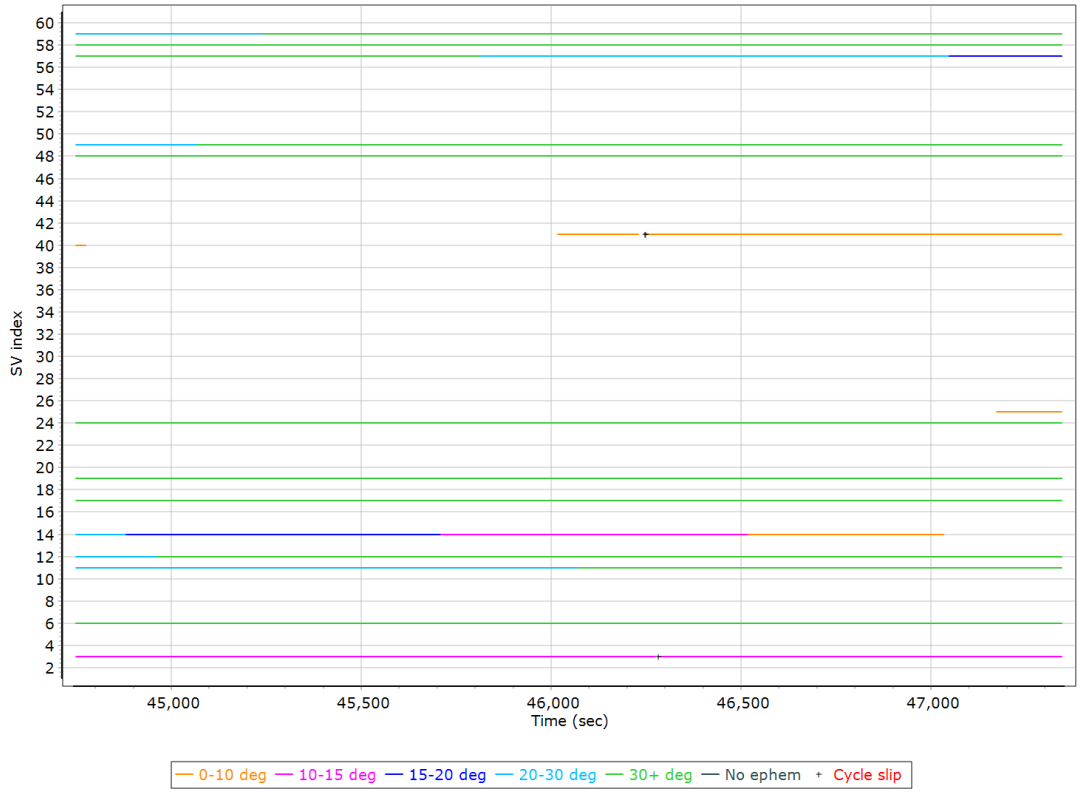
GPS L1 SNR



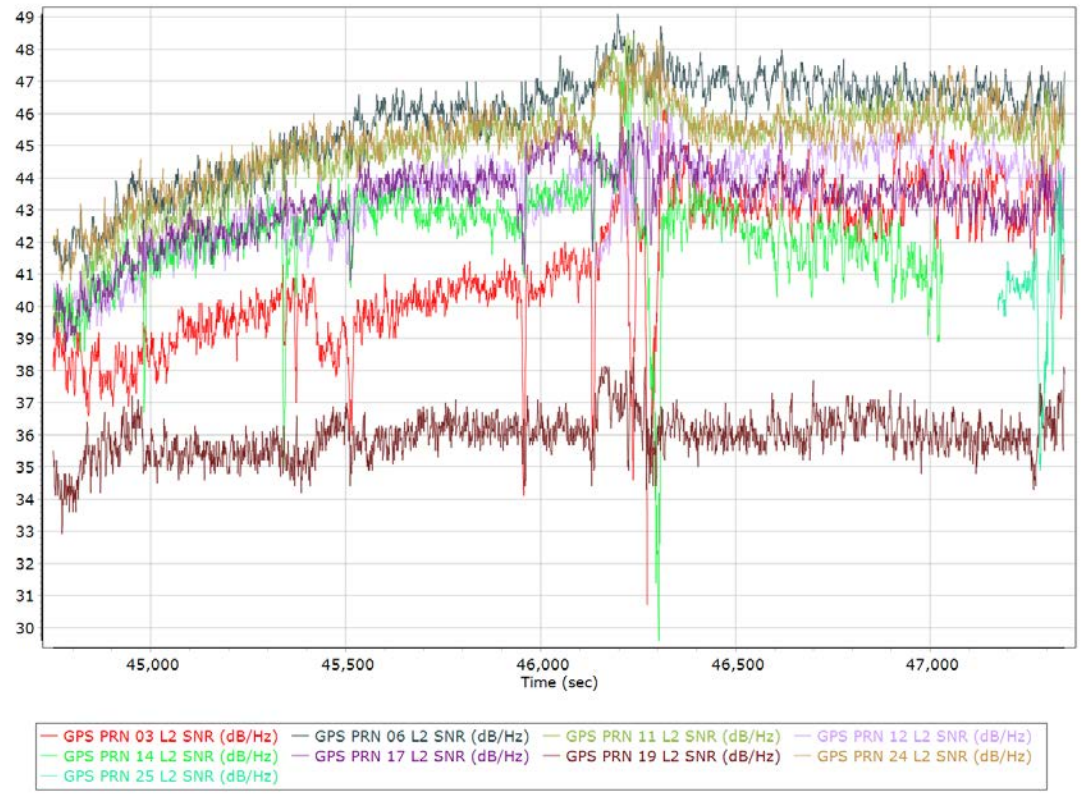
GLONASS L1 SNR



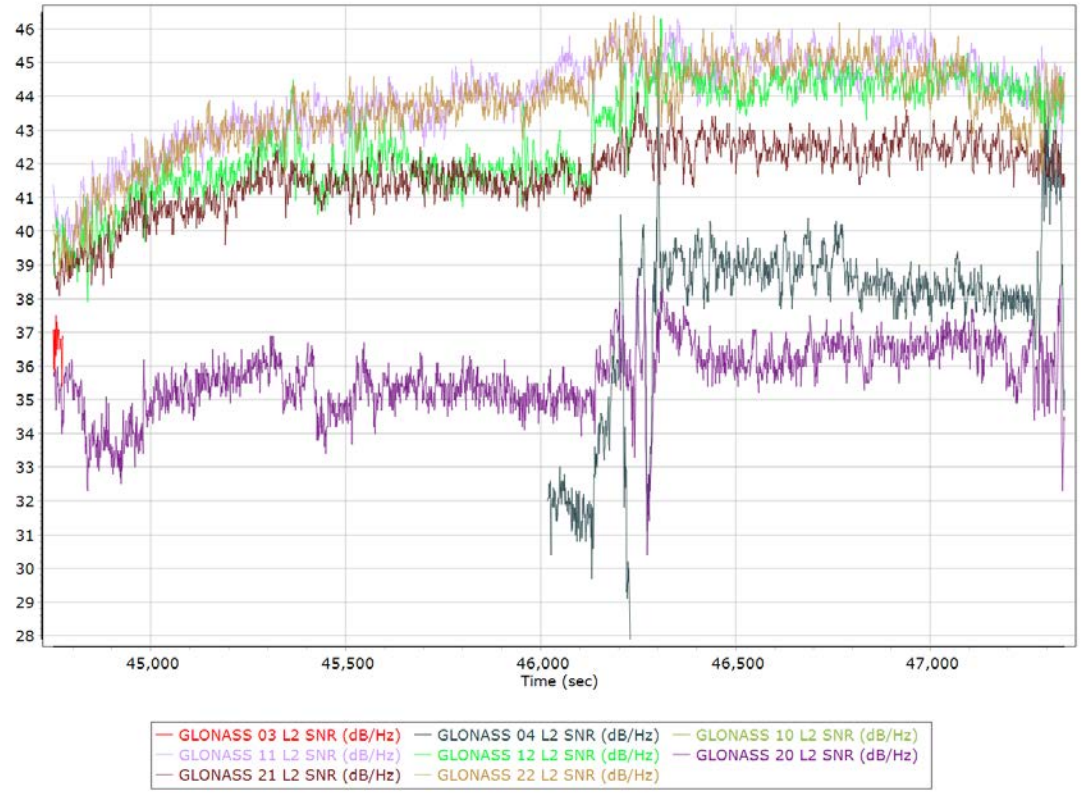
GPS/GLONASS L2 Satellite Lock/Elevation



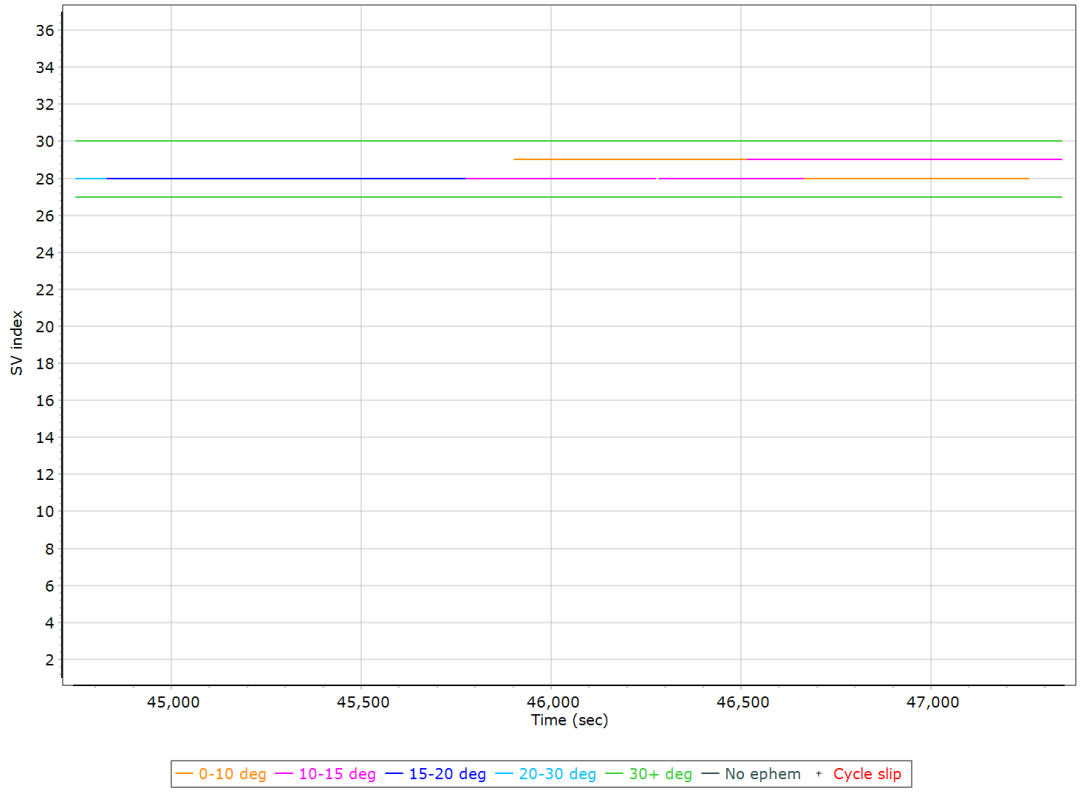
GPS L2 SNR



GLONASS L2 SNR



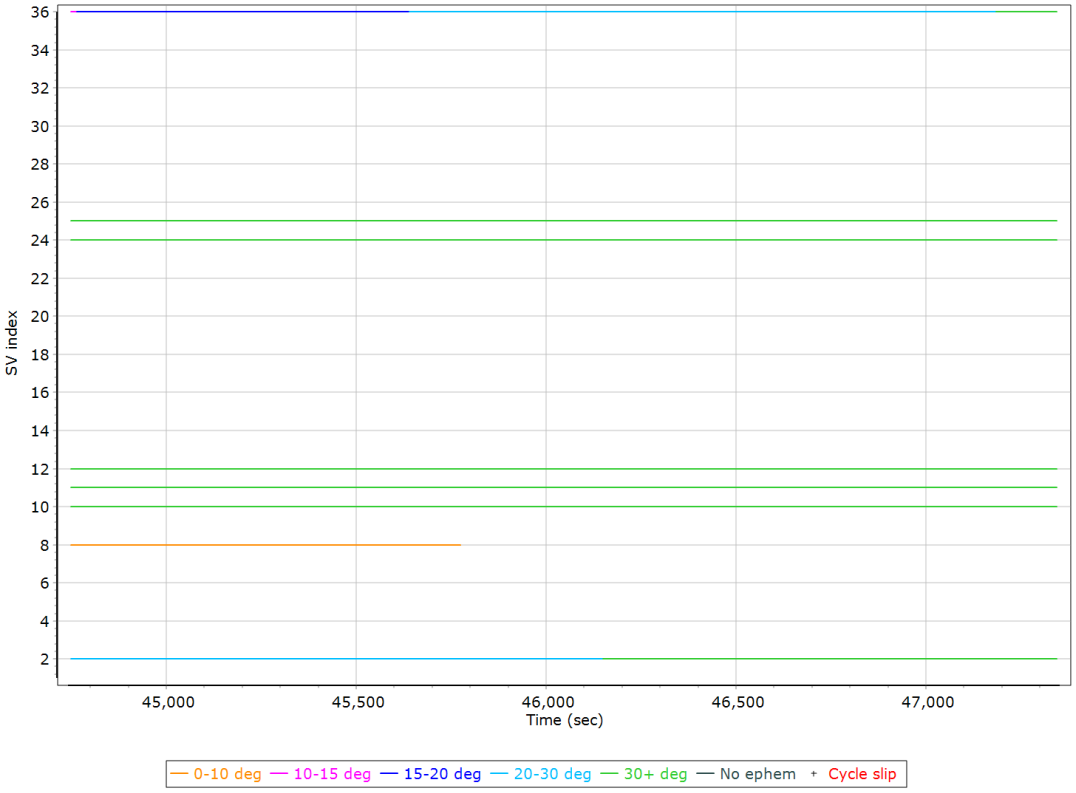
BEIDOU Satellite Lock/Elevation



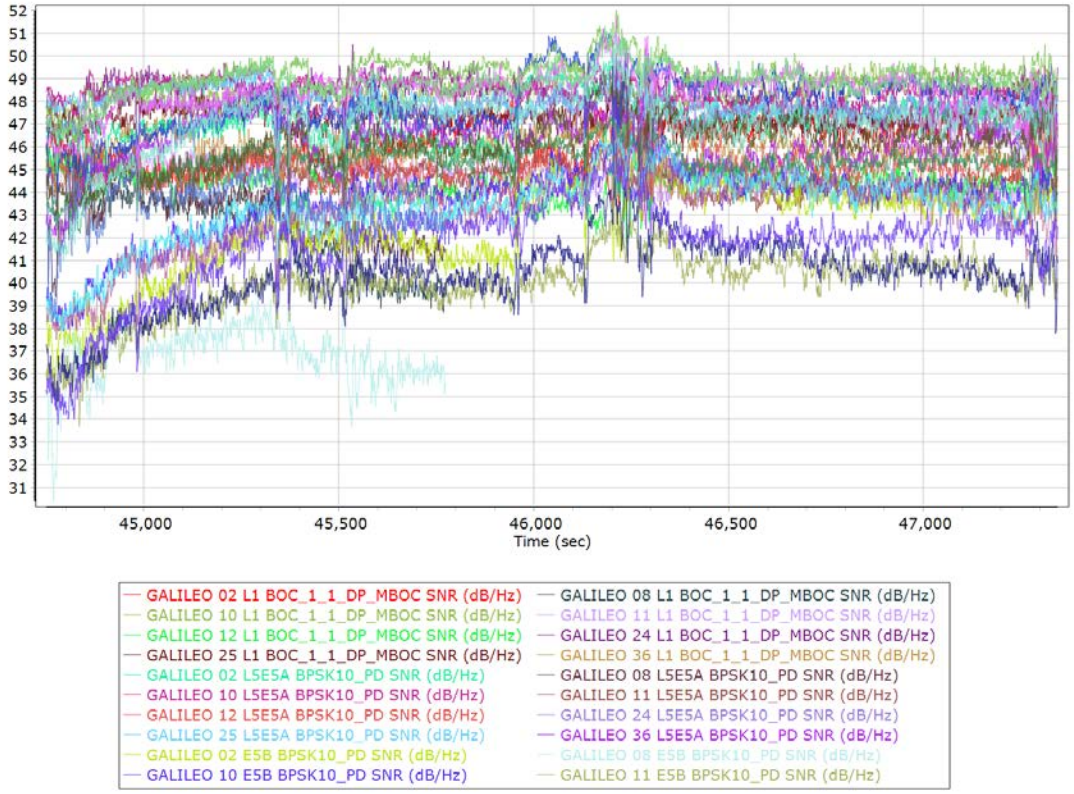
BEIDOU SNR



GALILEO Satellite Lock/Elevation

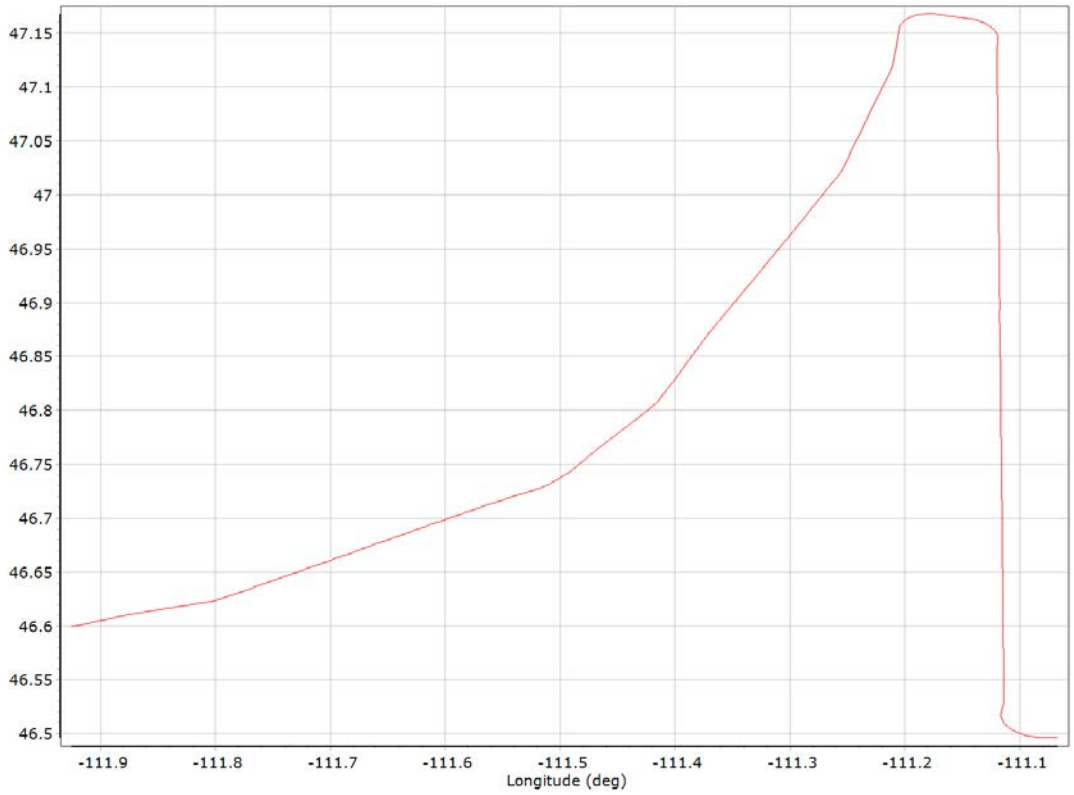


GALILEO SNR

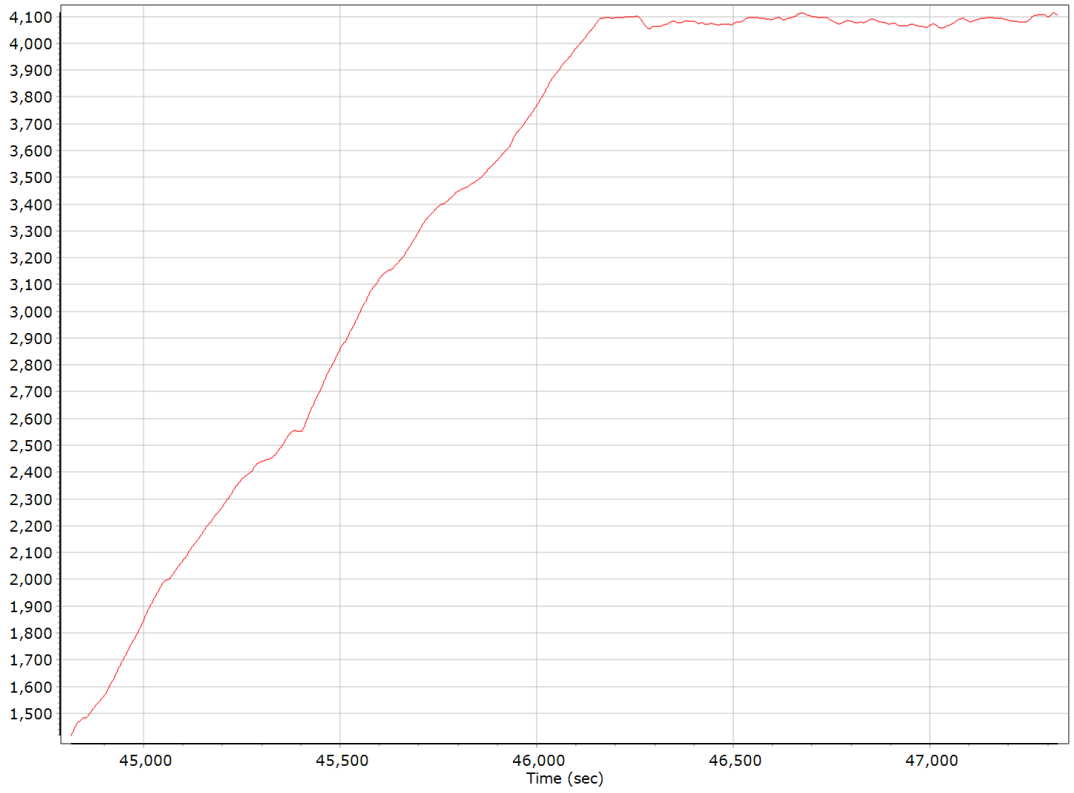

52
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38
37
36
35
34
33
32
31
45,000
45,500
46,000
46,500
47,000
Time (sec)
GALILEO 02 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 08 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 10 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 11 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 12 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 24 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 25 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 36 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 02 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 08 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 10 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 11 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 12 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 24 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 25 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 36 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 02 E5B BPSK10_PD SNR (dB/Hz)
GALILEO 08 E5B BPSK10_PD SNR (dB/Hz)
GALILEO 10 E5B BPSK10_PD SNR (dB/Hz)
GALILEO 11 E5B BPSK10_PD SNR (dB/Hz)

Smoothed Trajectory Information

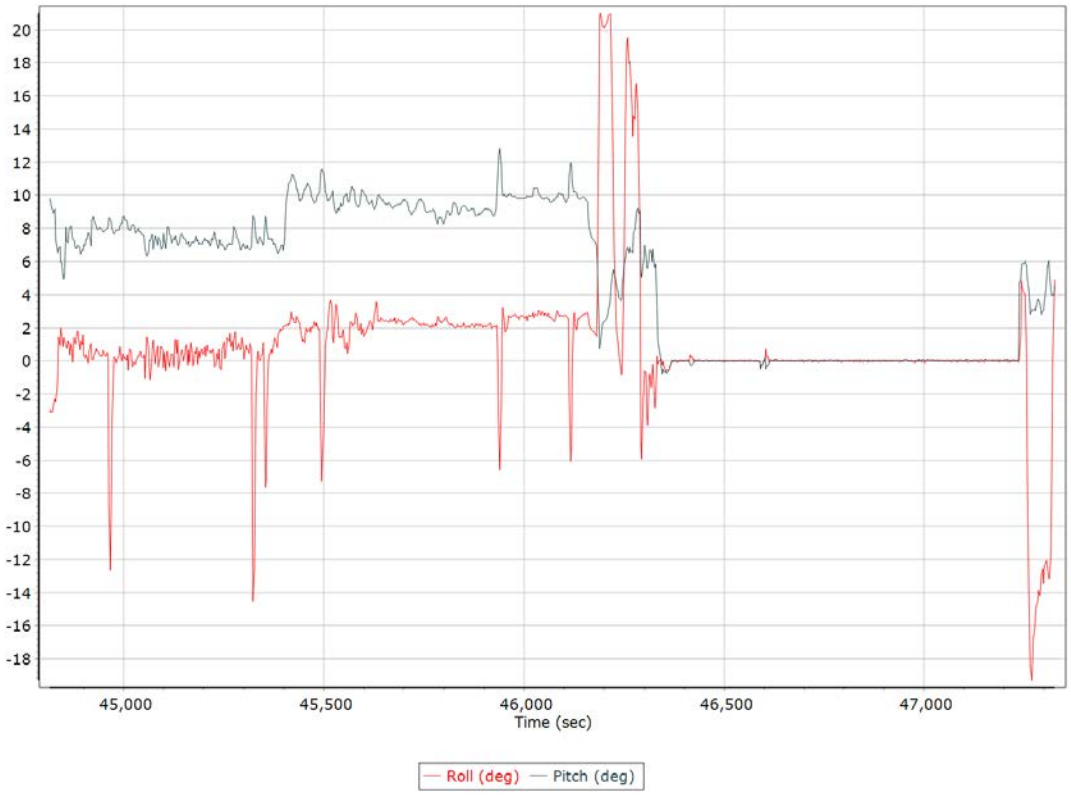
Top View



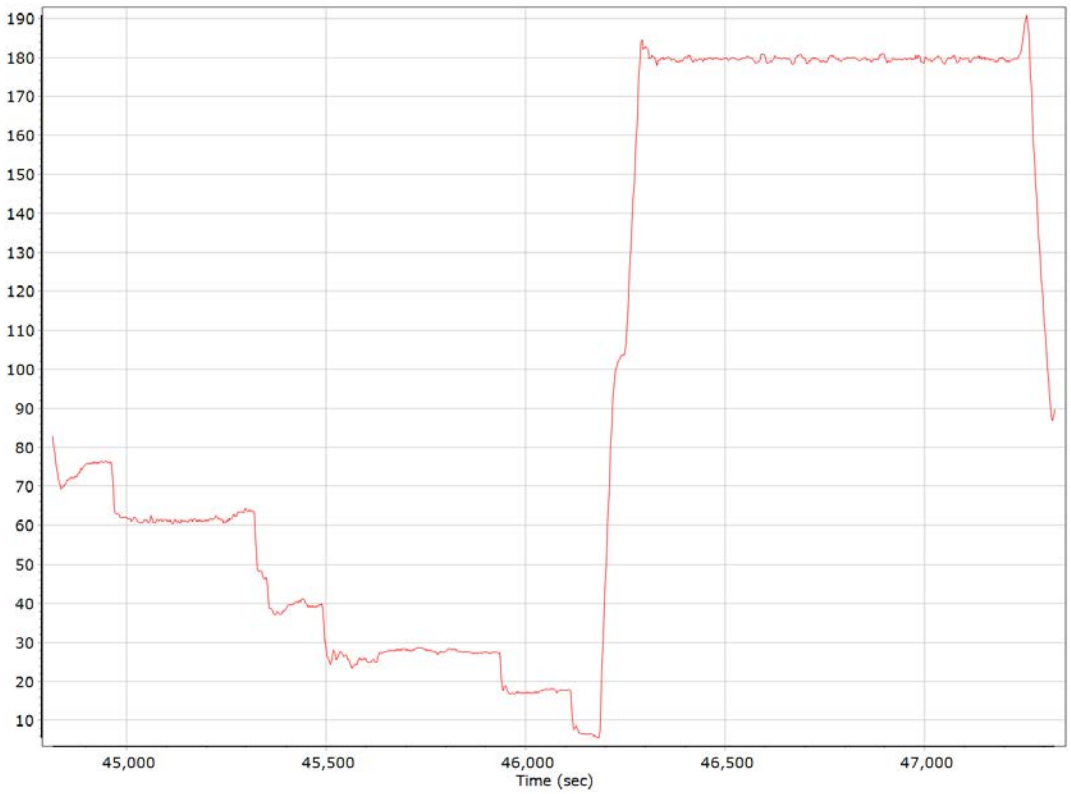
Altitude



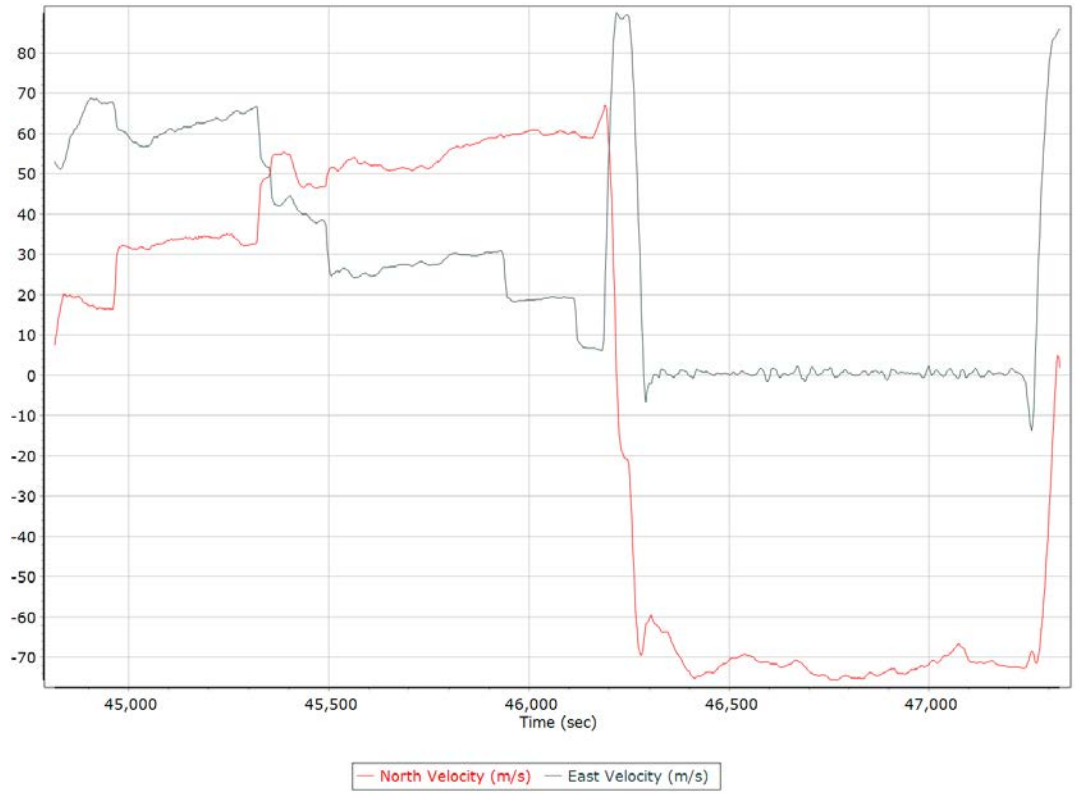
Roll/Pitch



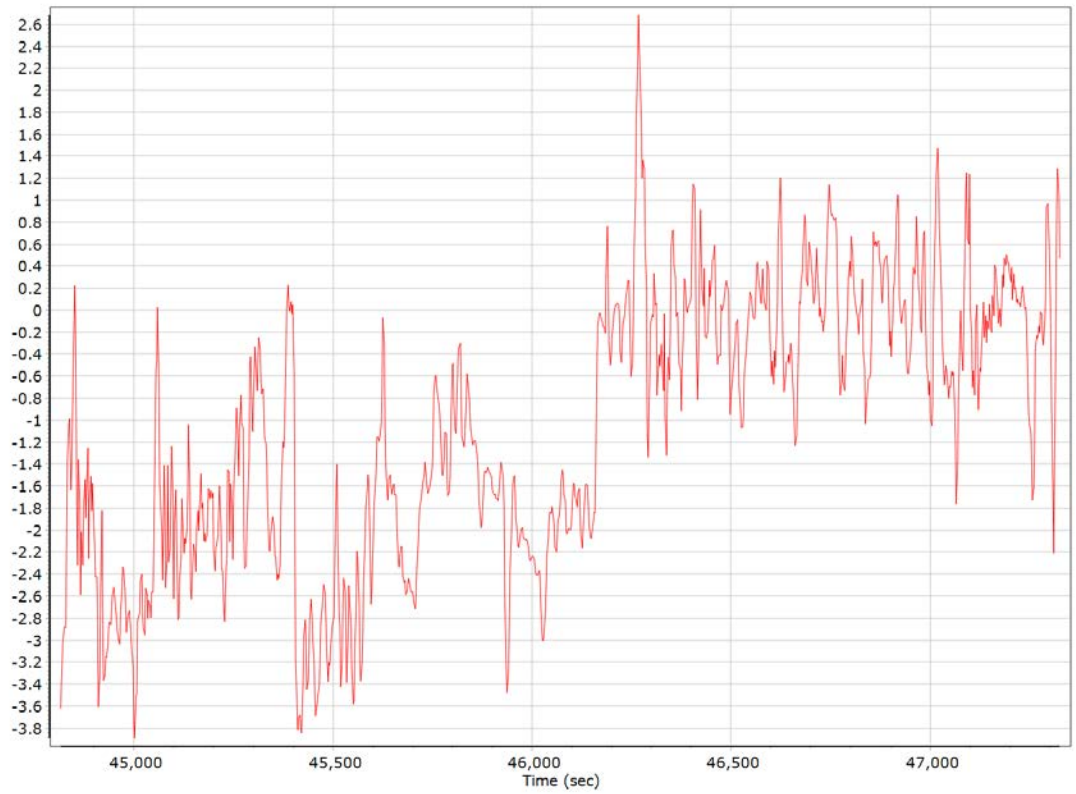
Heading



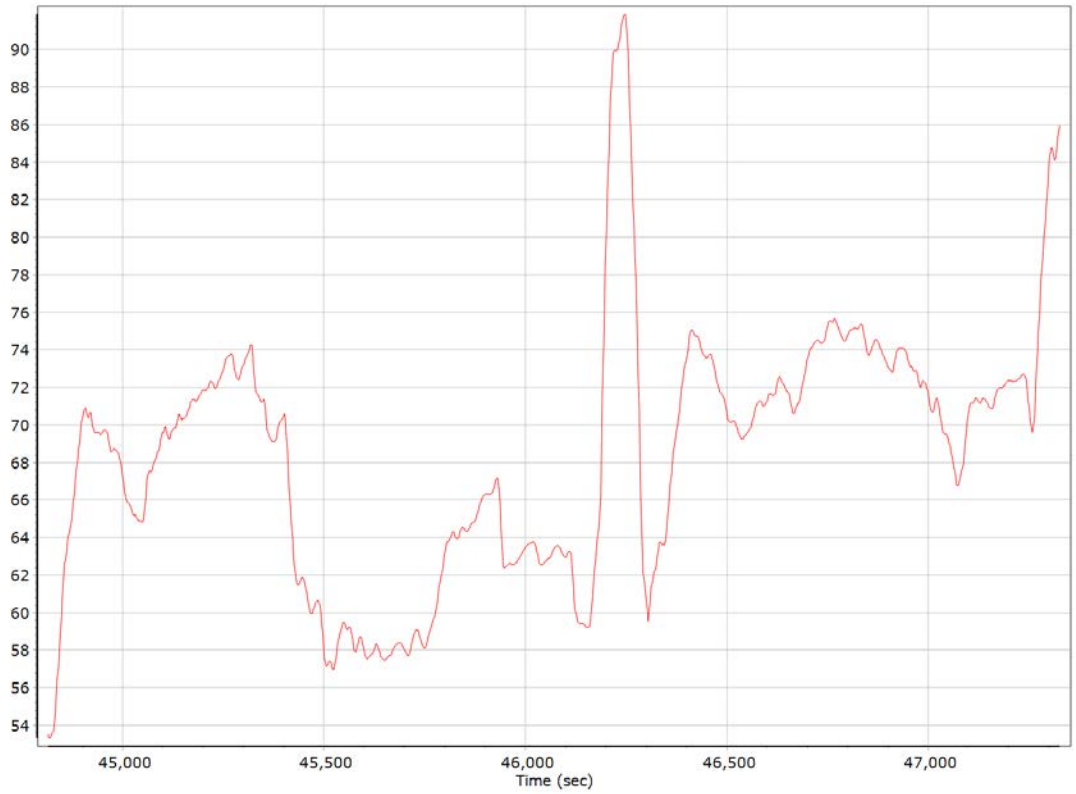
North/East Velocity



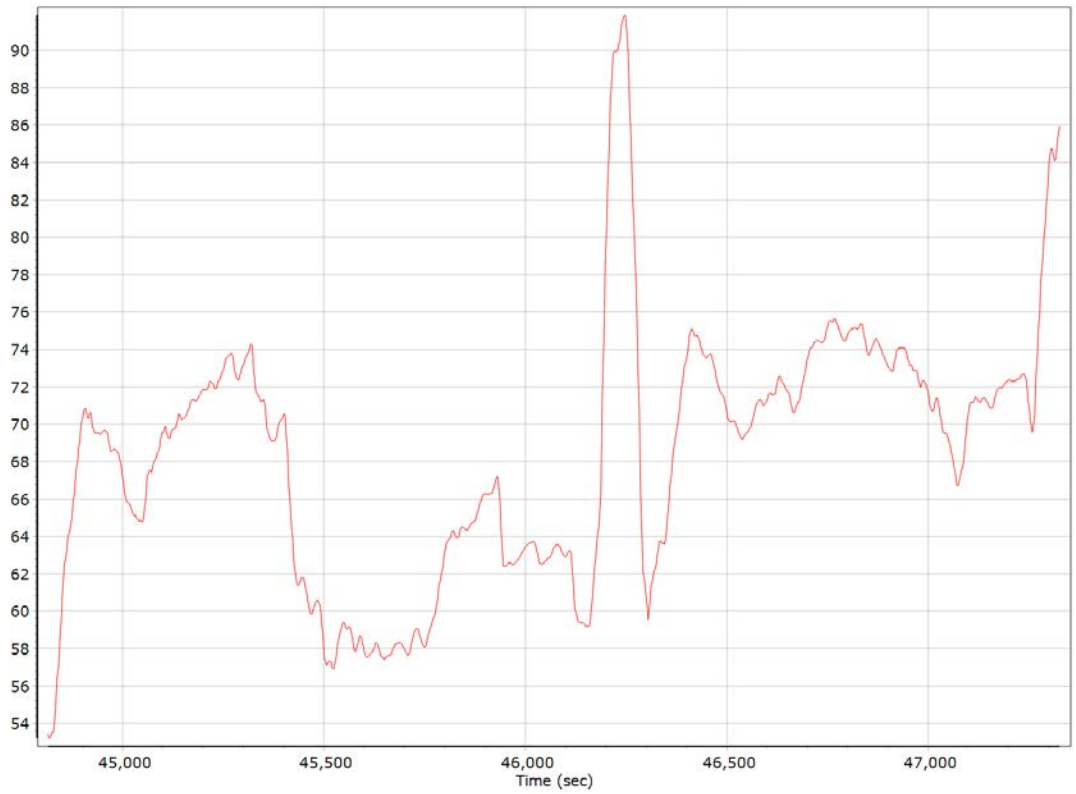
Down Velocity



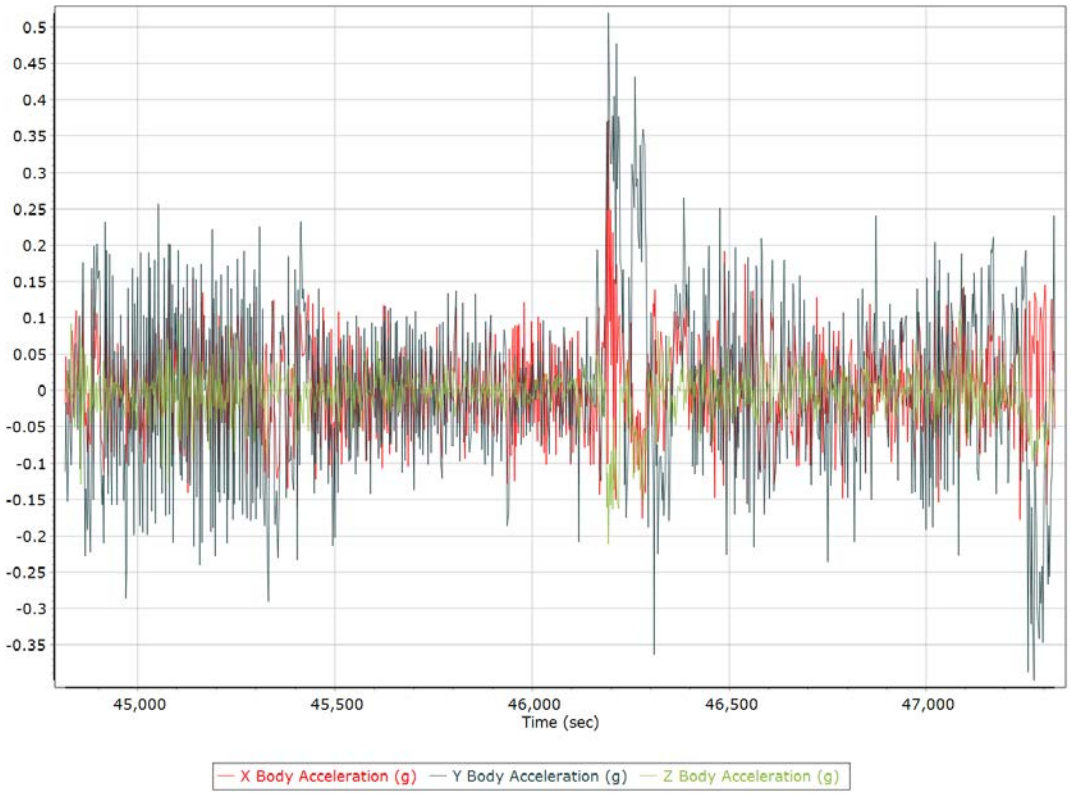
Total Speed



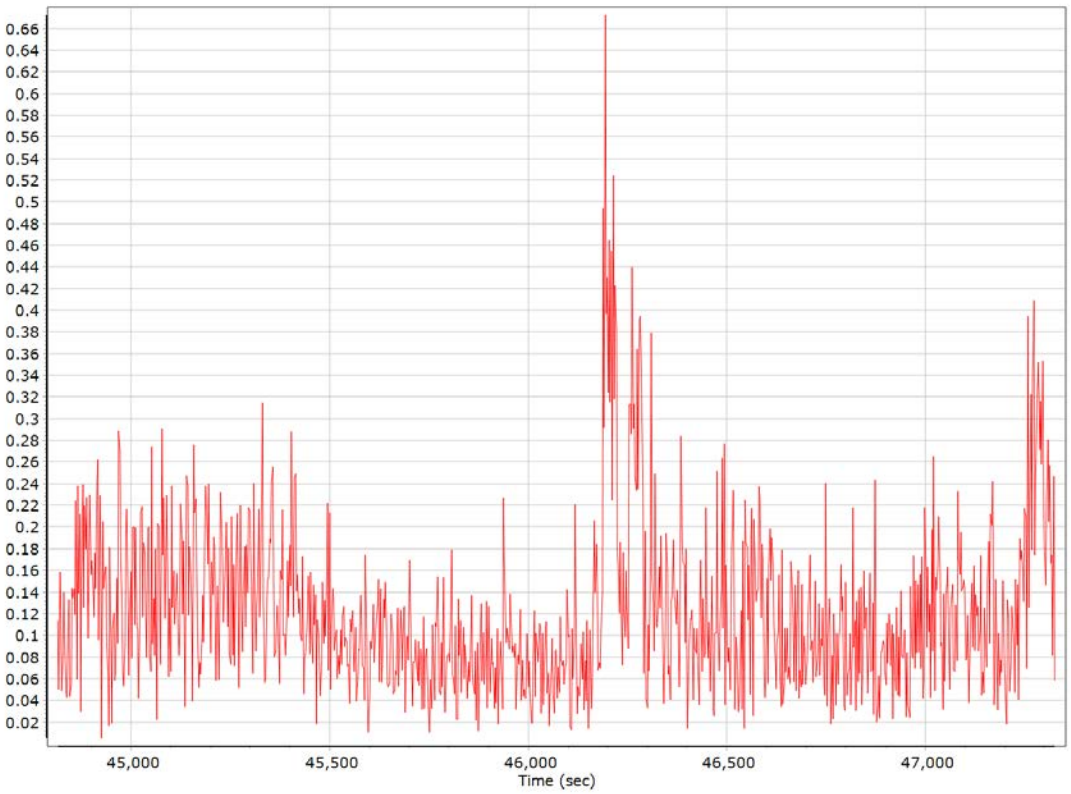
Ground Speed



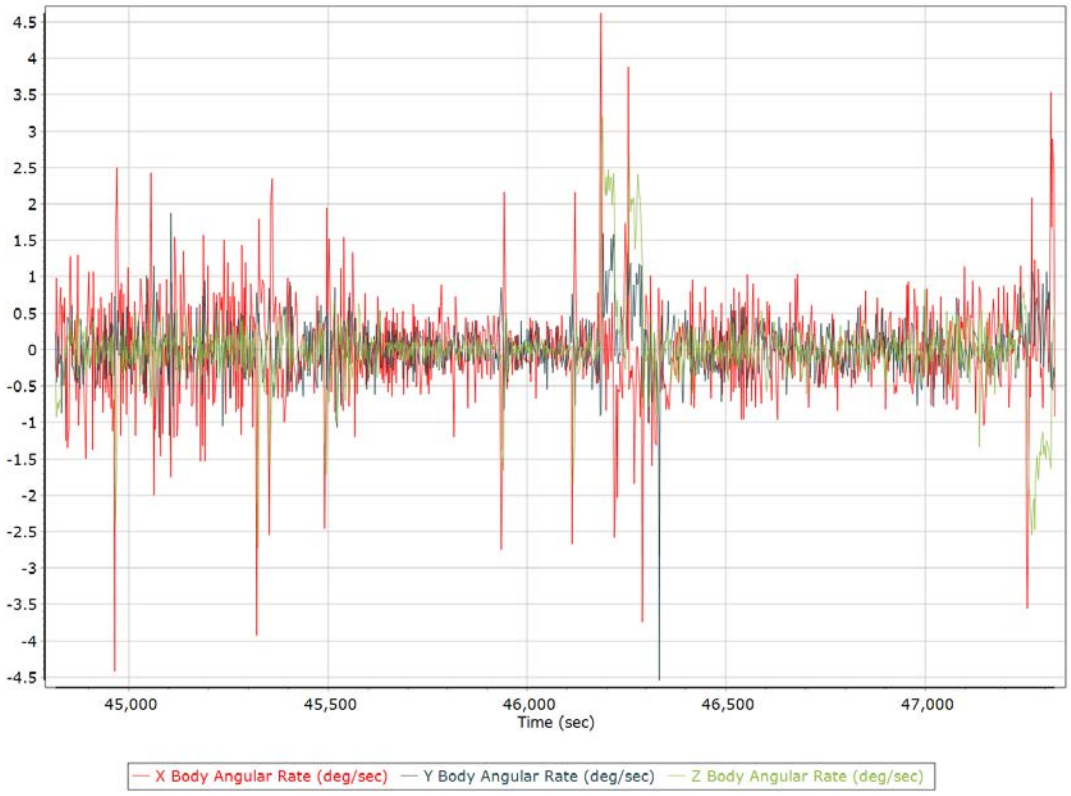
Body Acceleration



Total Body Acceleration

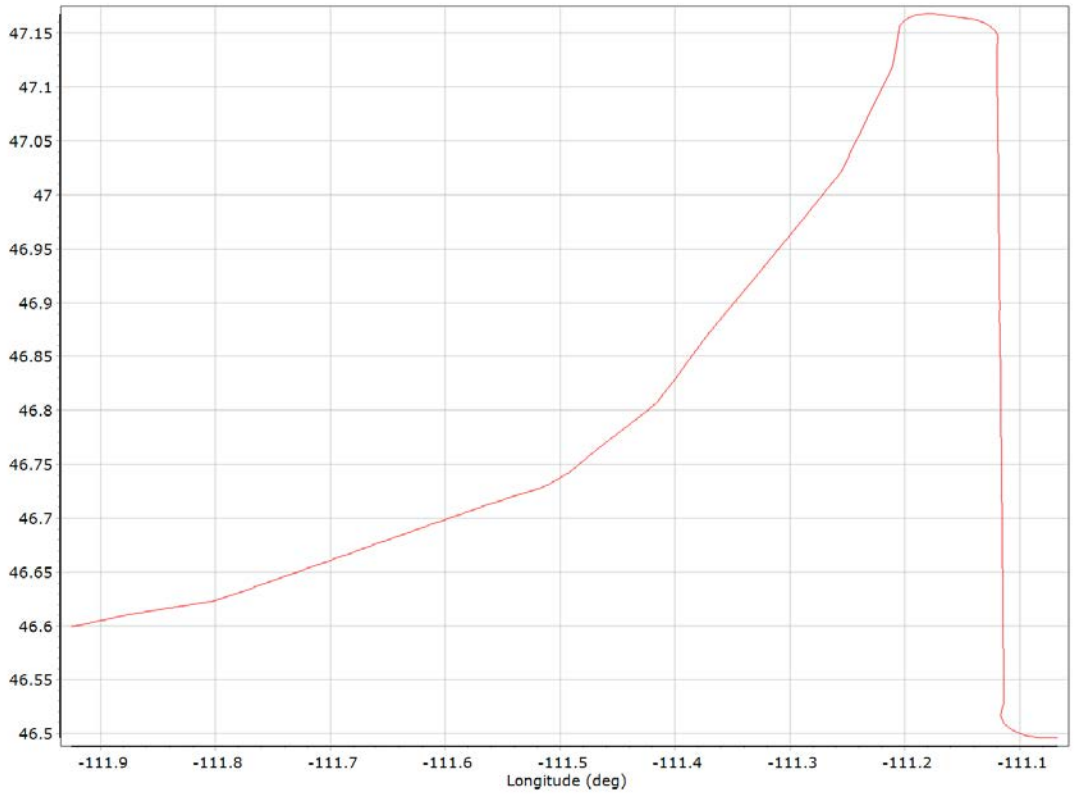


Body Angular Rate

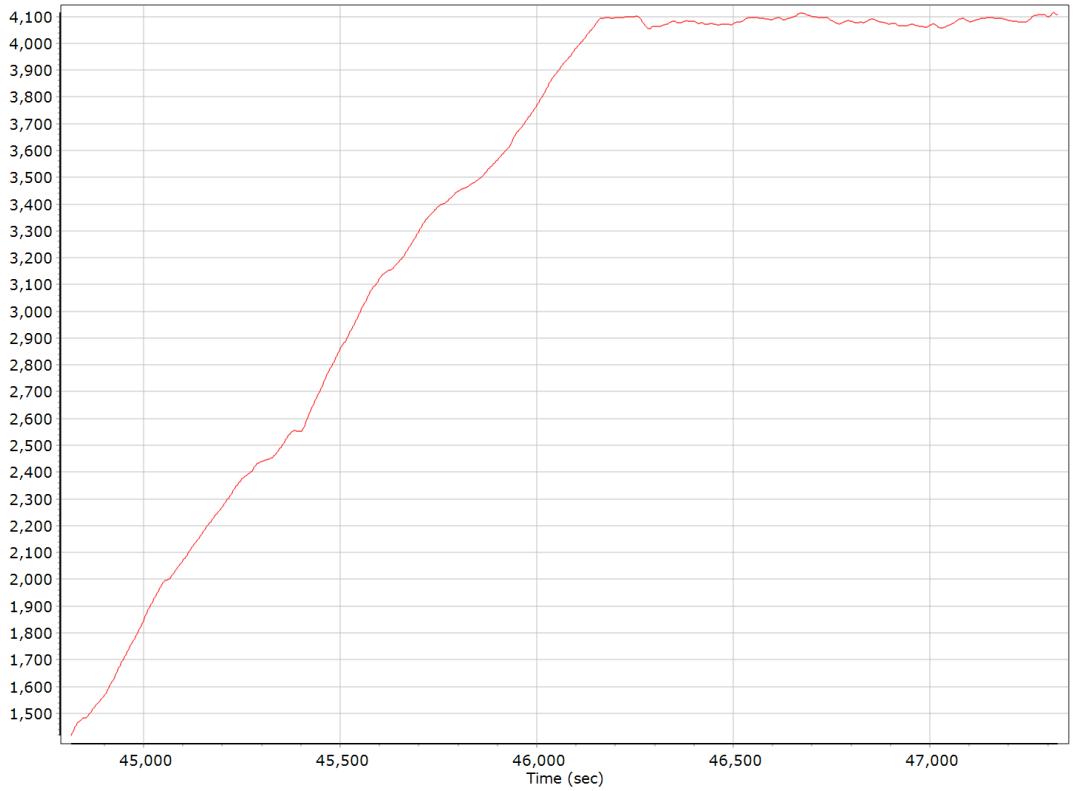


Forward Processed Trajectory Information

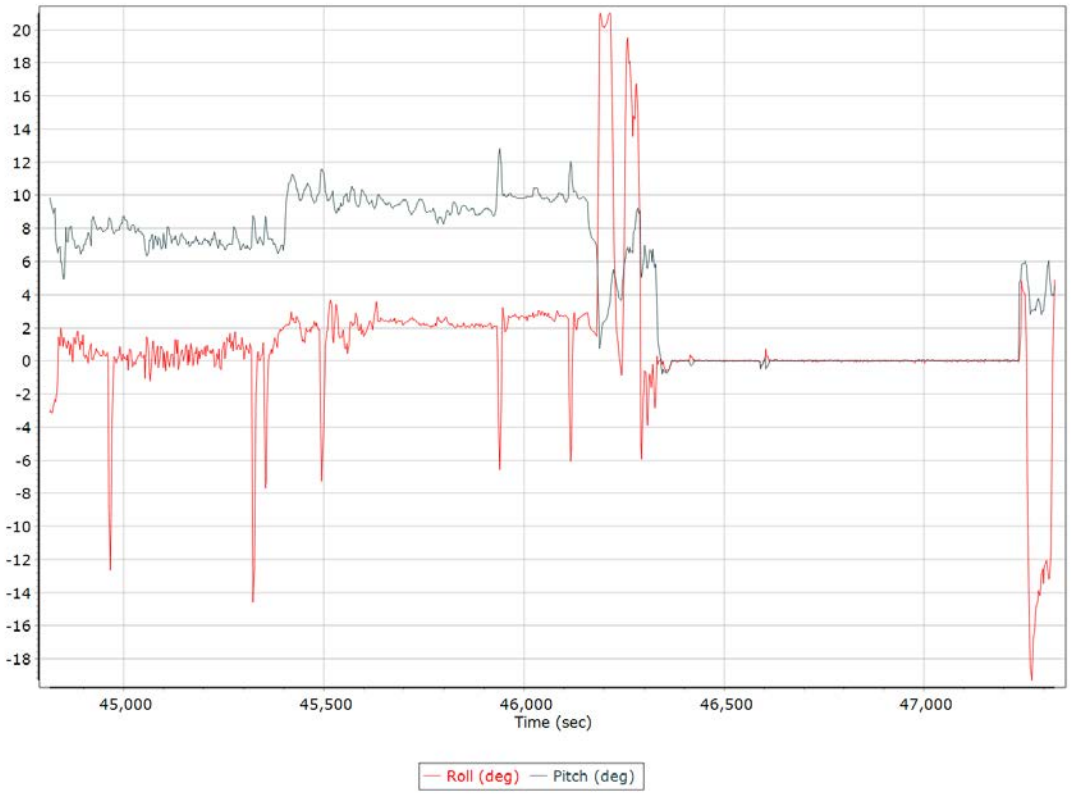
Top View



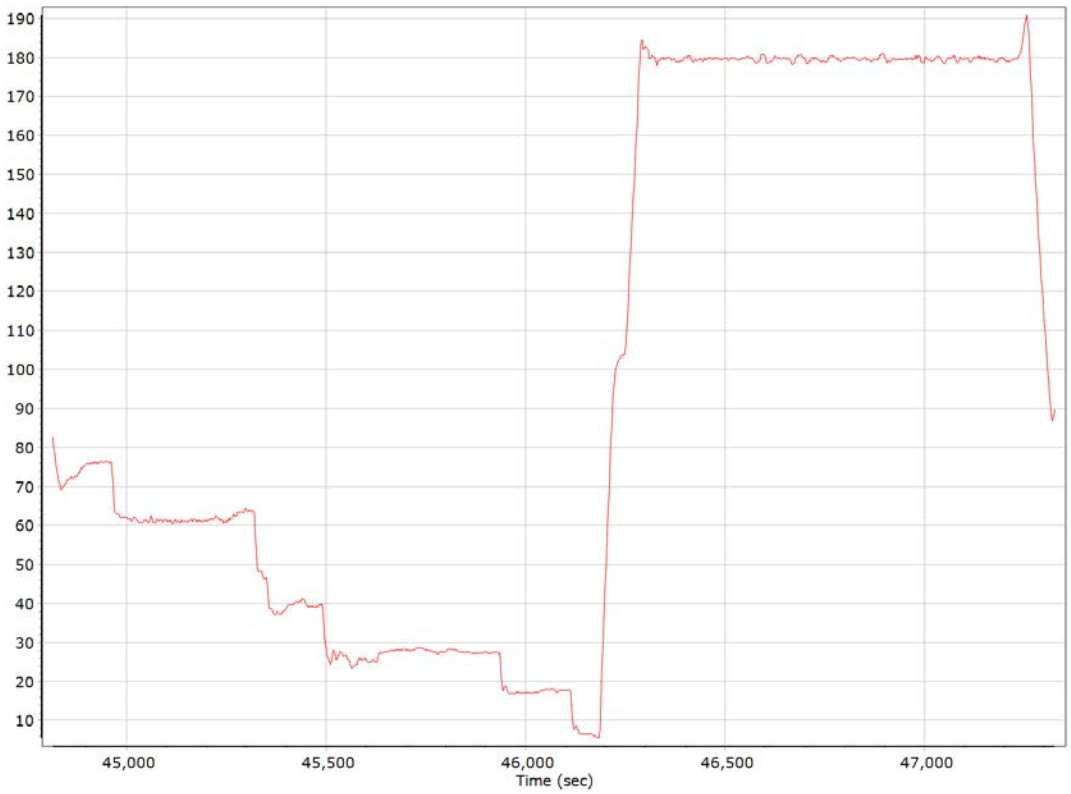
Altitude



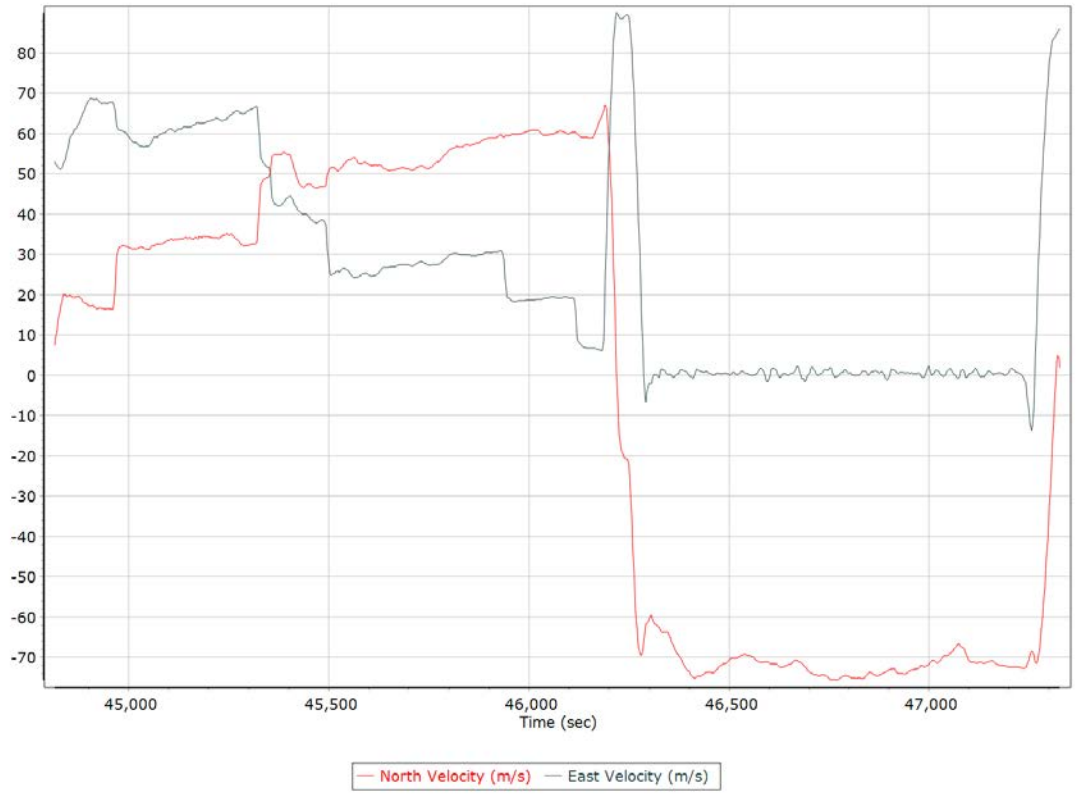
Roll/Pitch



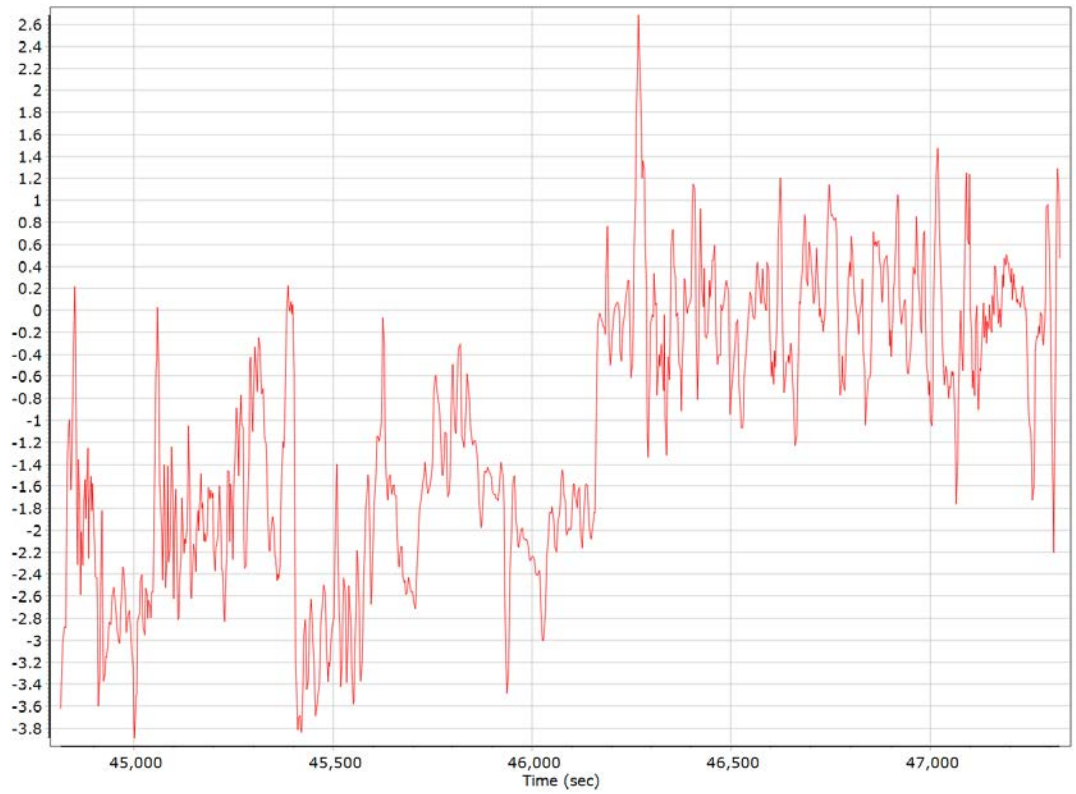
Heading



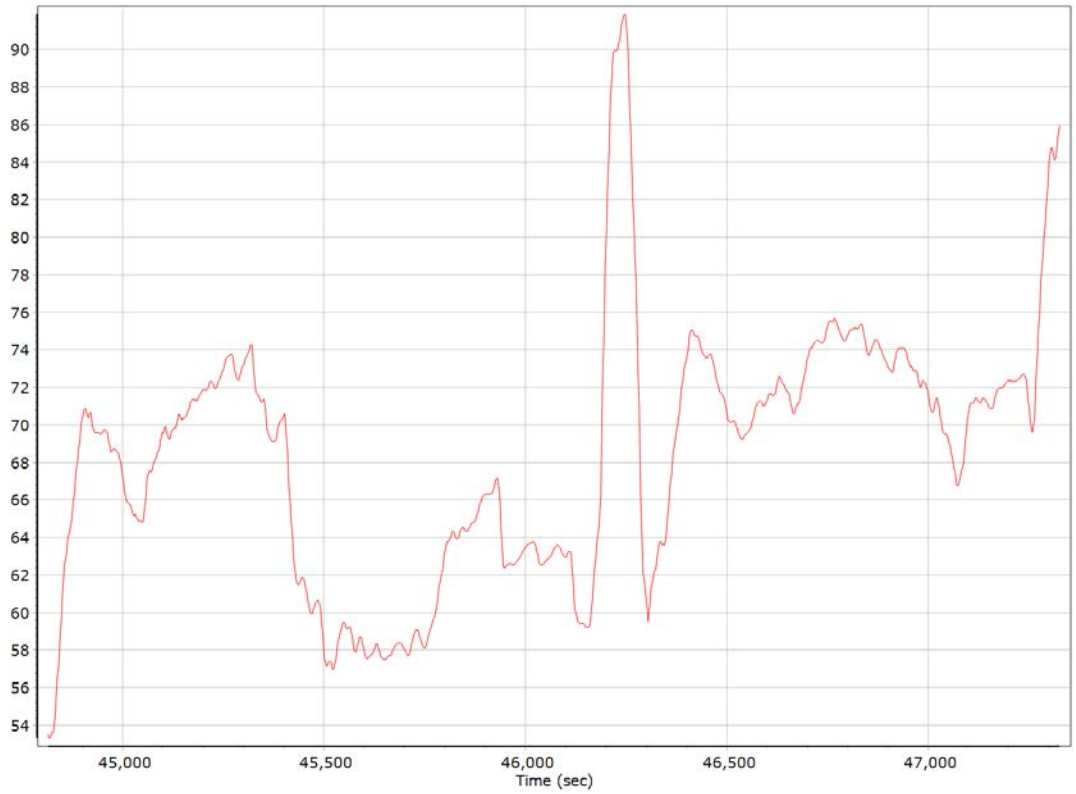
North/East Velocity



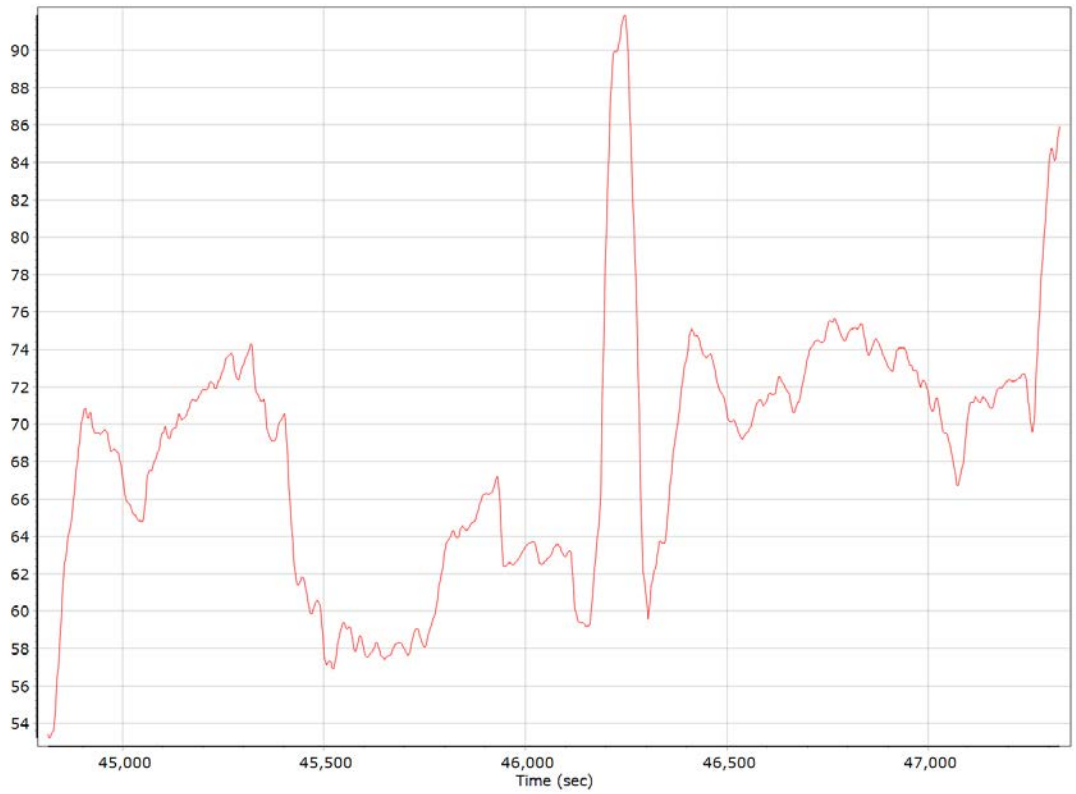
Down Velocity



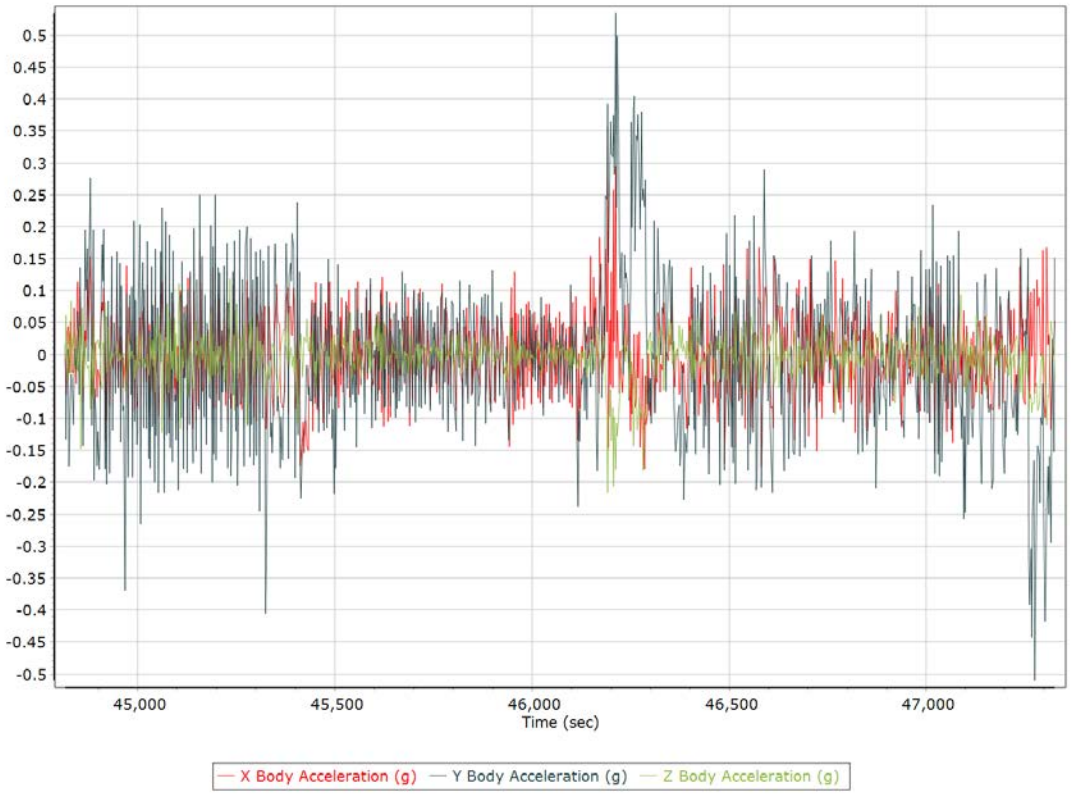
Total Speed



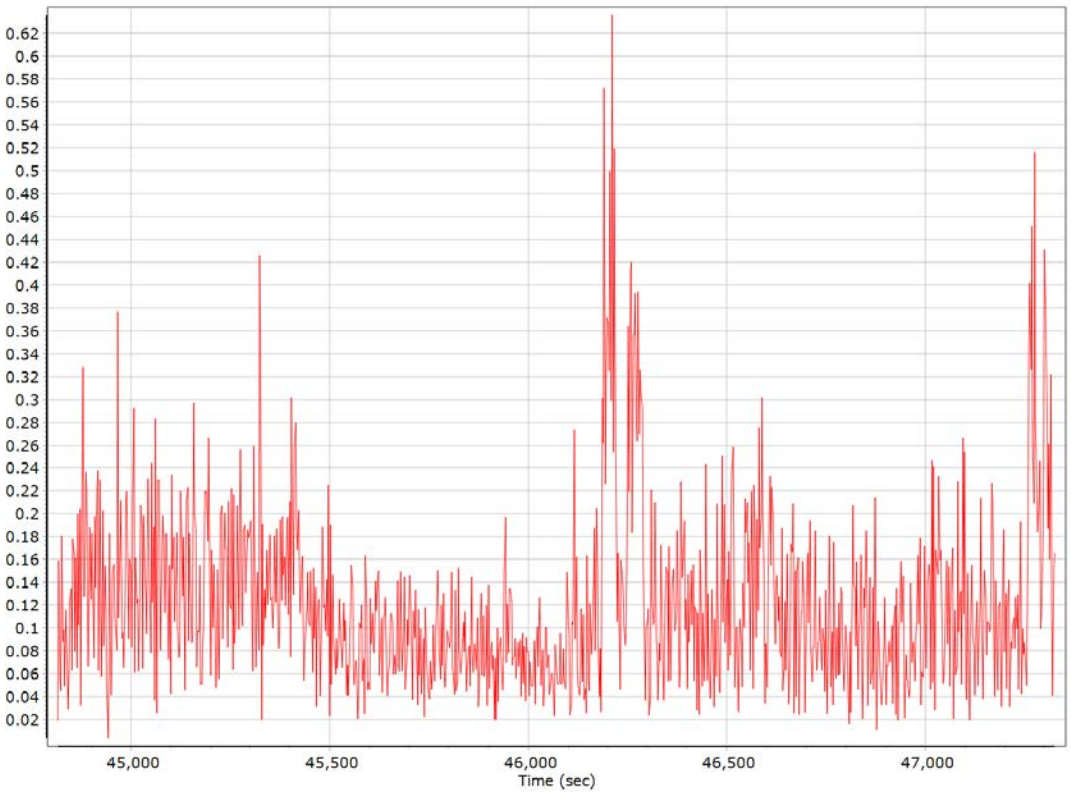
Ground Speed



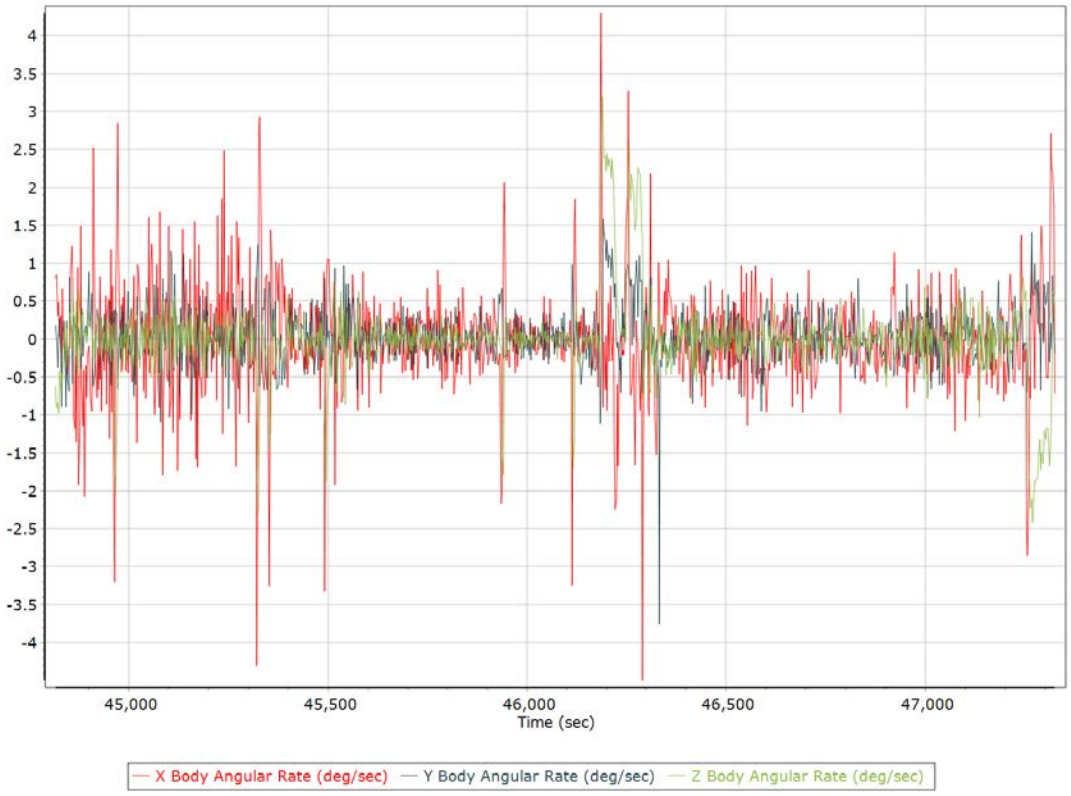
Body Acceleration



Total Body Acceleration



Body Angular Rate



GNSS QC

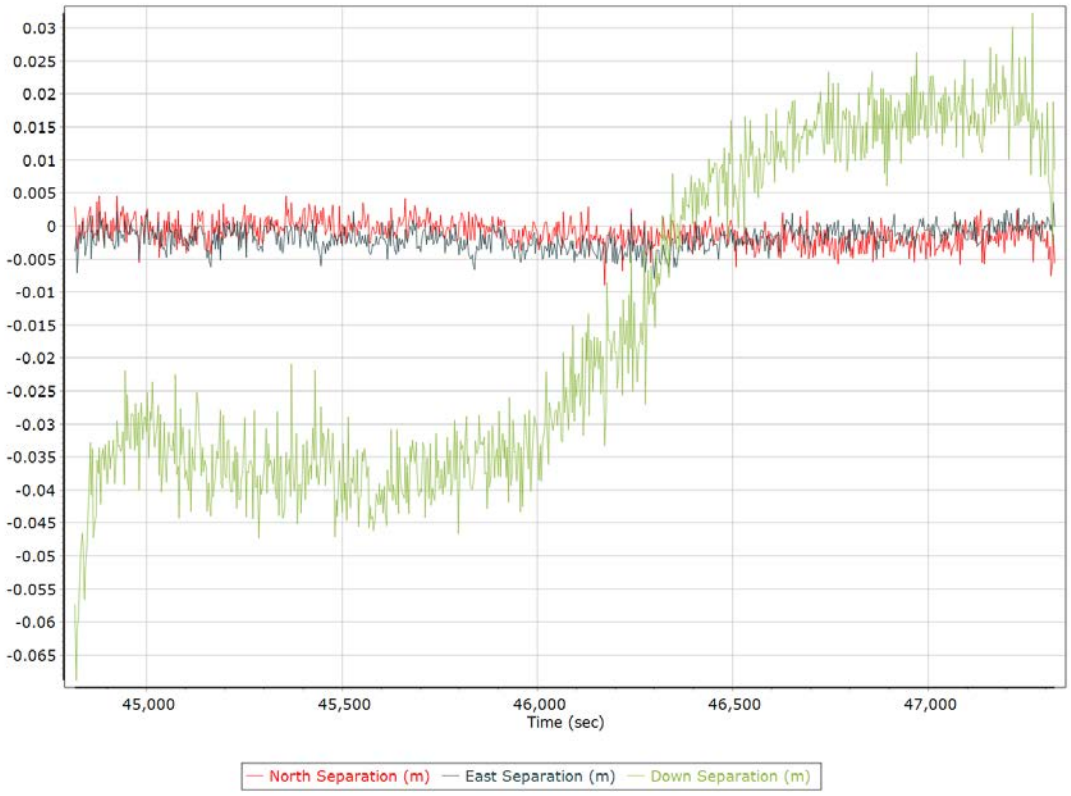
GNSS QC Statistics

Statistics	Min	Max	Mean
Baseline length (km)	0.00	0.00	
Number of GPS SV	7	8	8
Number of GLONASS SV	4	4	4
Number of QZSS SV	0	0	0
Number of BEIDOU SV	0	0	0
Number of GALILEO SV	7	7	7
Total number of SV	18	19	19
PDOP	1.16	1.50	1.30
QC Solution Gaps	0.00	0.00	
Solution Type	Fixed	Float	No solution
Epoch (sec)	2555.00	0.00	0.00
Percentage	100.00	0.00	0.00

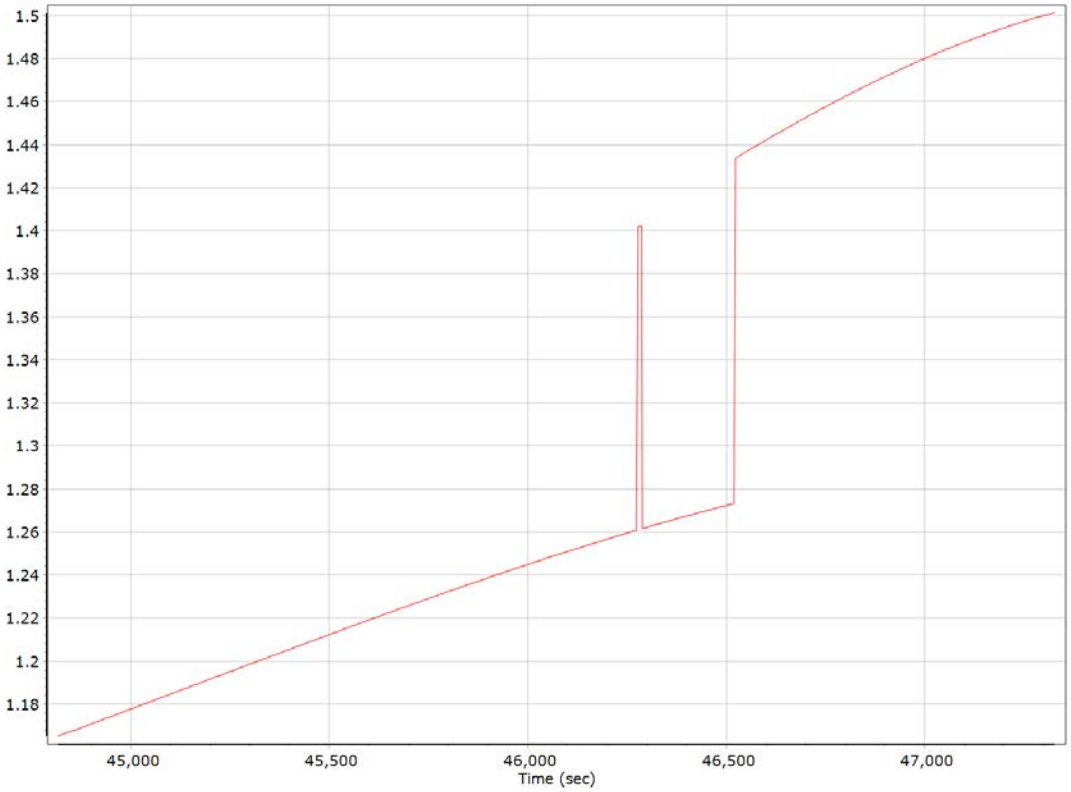
Num SVs in solution



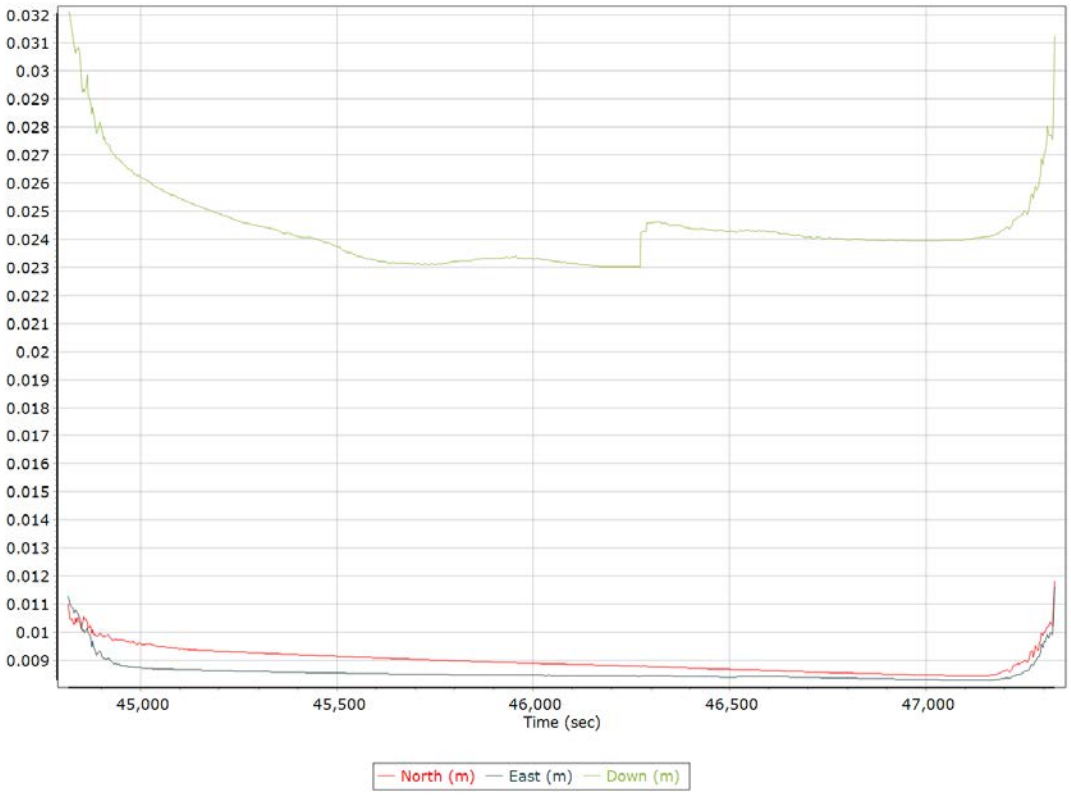
Forward/Reverse Separation



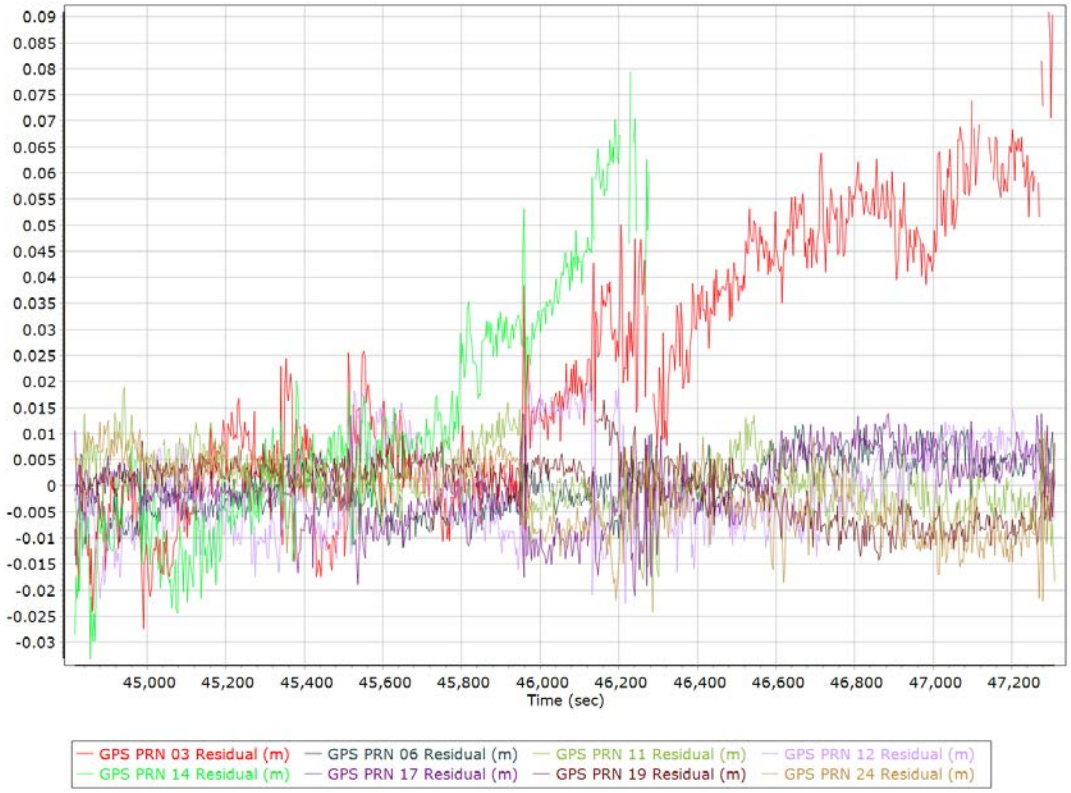
PDOP



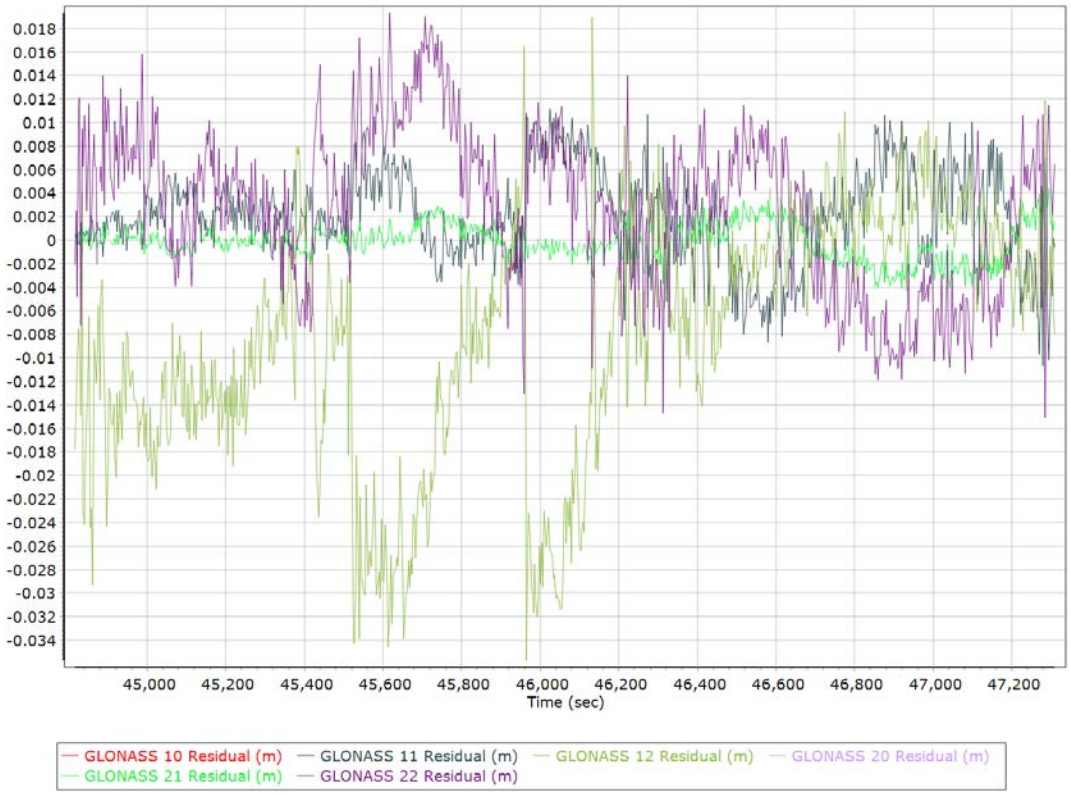
Estimated Position Accuracy



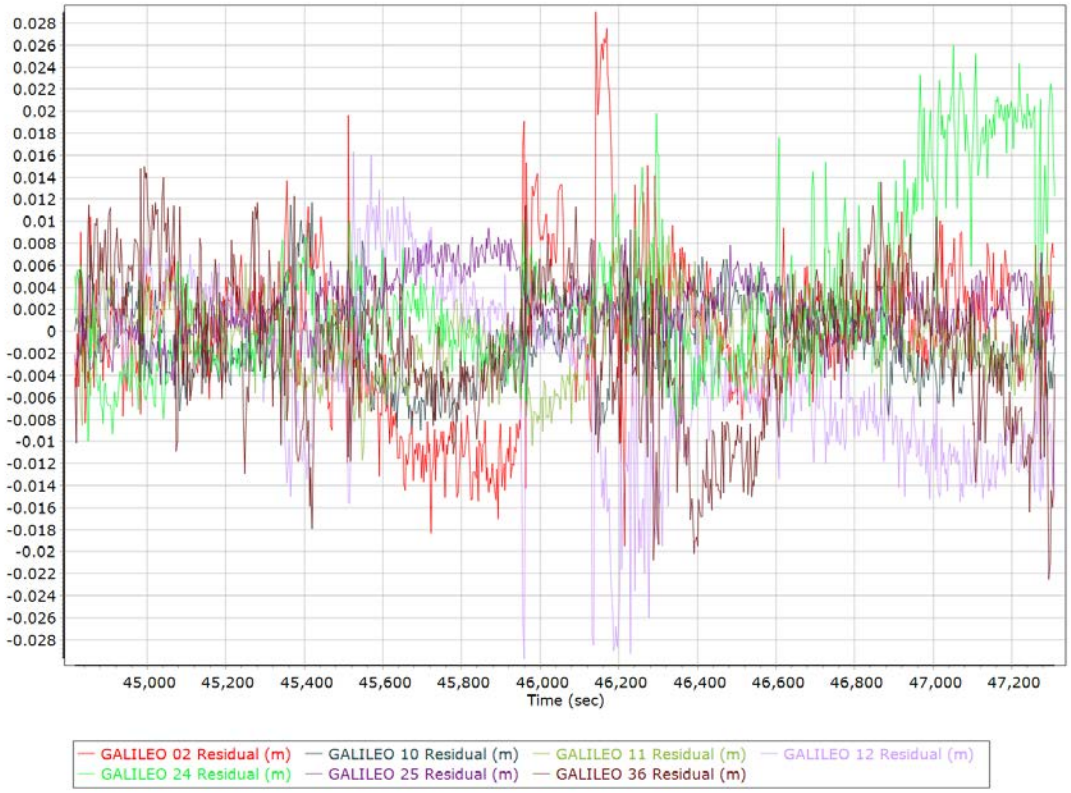
GPS Residuals



GLONASS Residuals



GALILEO Residuals



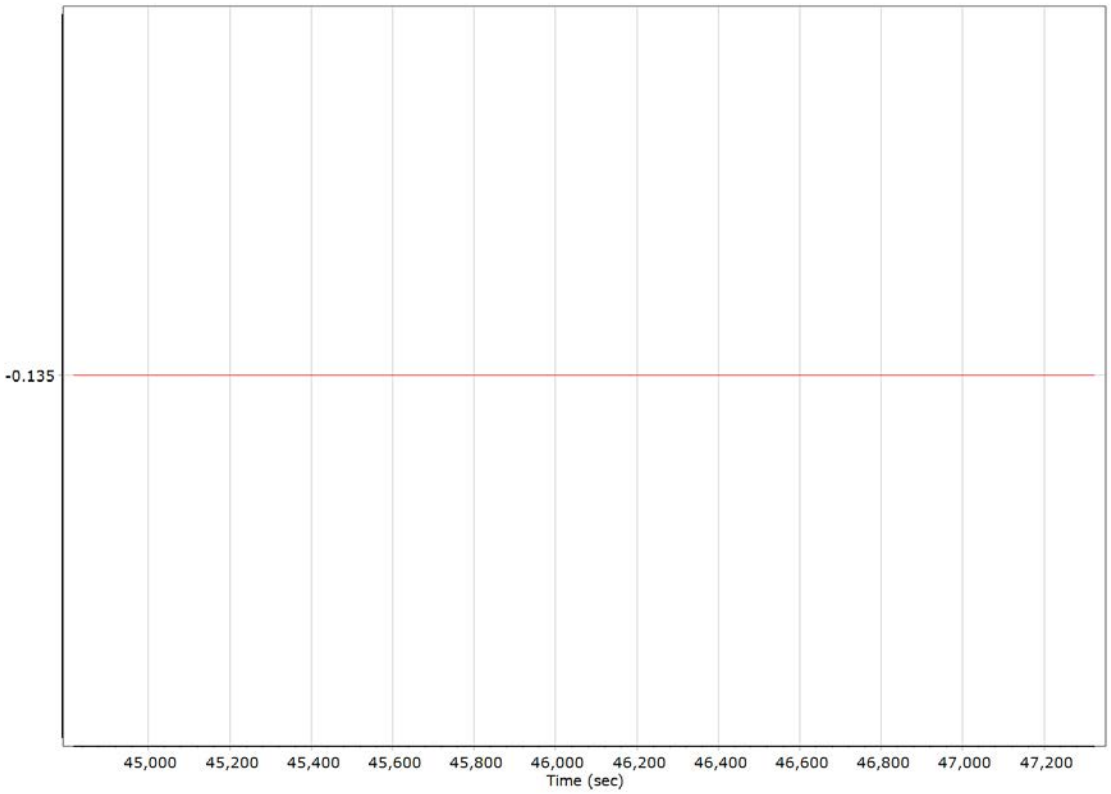
GNSS-Inertial Processor Configuration

Processing mode	IN-Fusion PP-RTX		
Stabilized mount	True		
Processing start time	44732.000 (7/23/2023 12:25:32 PM)		
Processing end time	47326.000 (7/23/2023 1:08:46 PM)		
Initial attitude source	Primary GNSS Track		
IMU Sensor Context	Processing with Onboard IMU		
Gimbal to IMU lever arm (m)	-0.034	-0.010	-0.374
Gimbal to IMU mounting angles (deg)	0.000	0.000	0.000
Gimbal to Primary GNSS lever arm (m)	-0.135	0.064	-1.339
Gimbal to Primary GNSS lever arm std dev (m)	0.030	0.030	0.030
Aircraft to Reference mounting angles (deg)	0.000	0.000	0.000

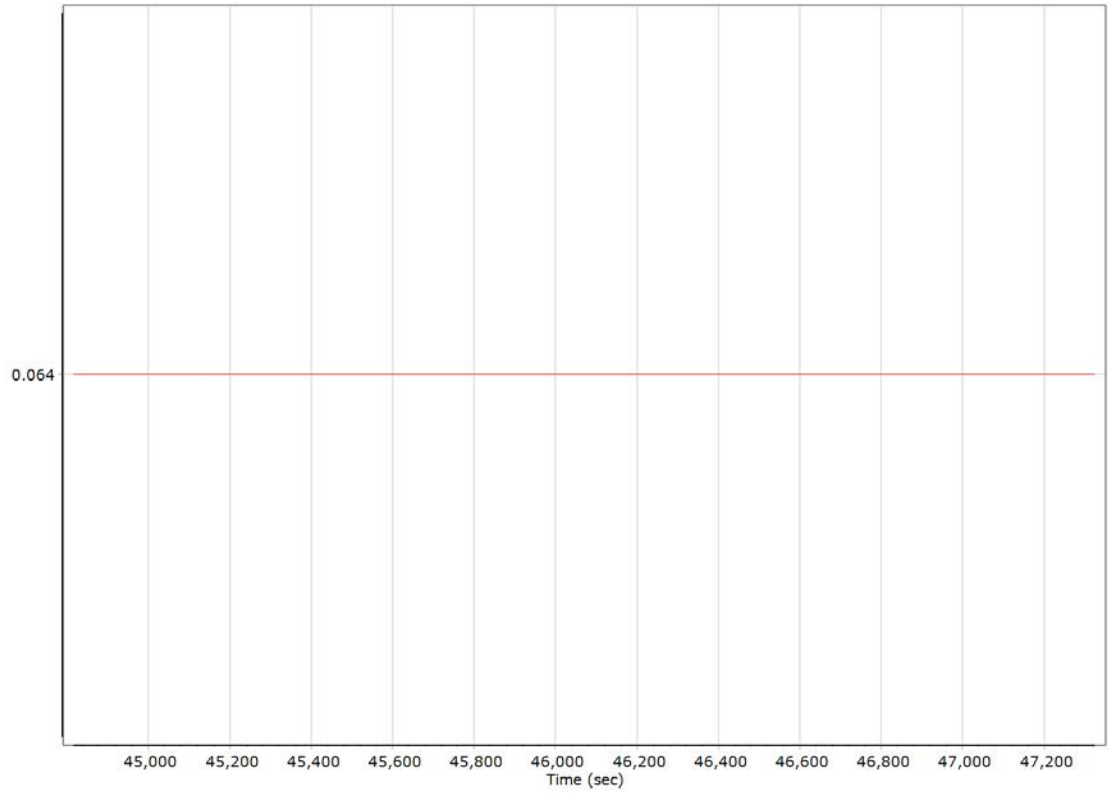
Calibrated Installation Parameters

Reference-Primary GNSS Lever Arm (m)

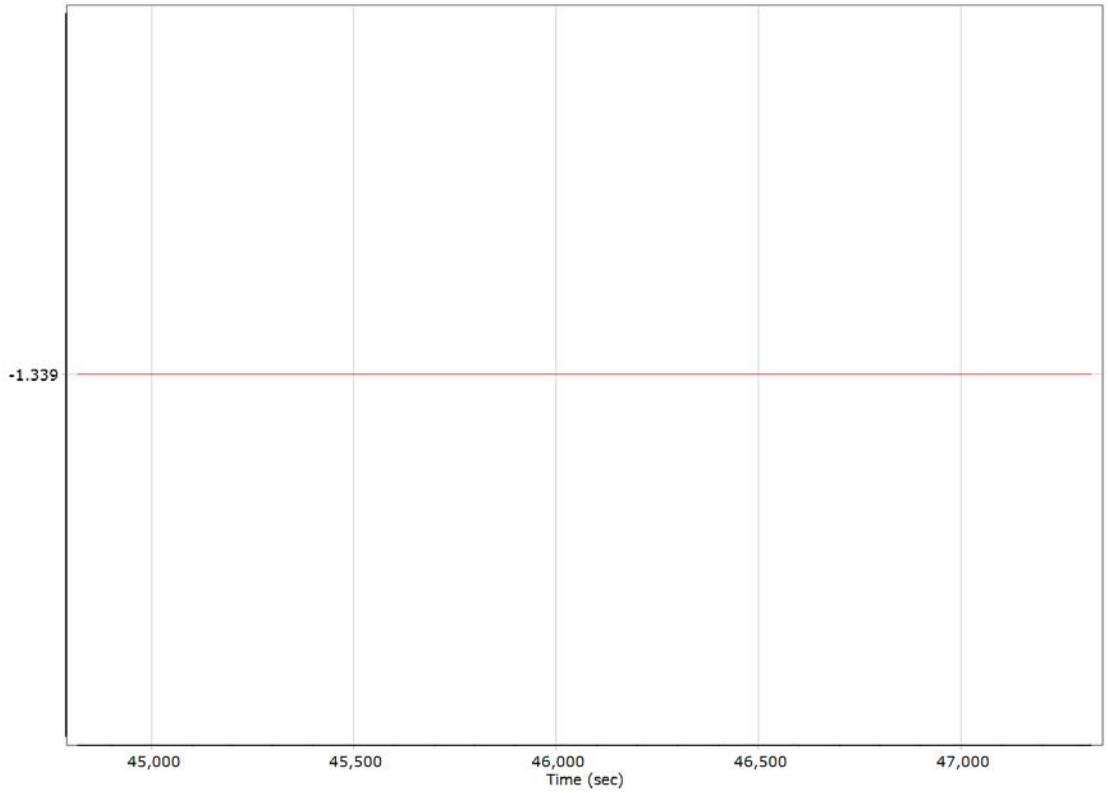
X Reference-Primary GNSS Lever Arm (m)



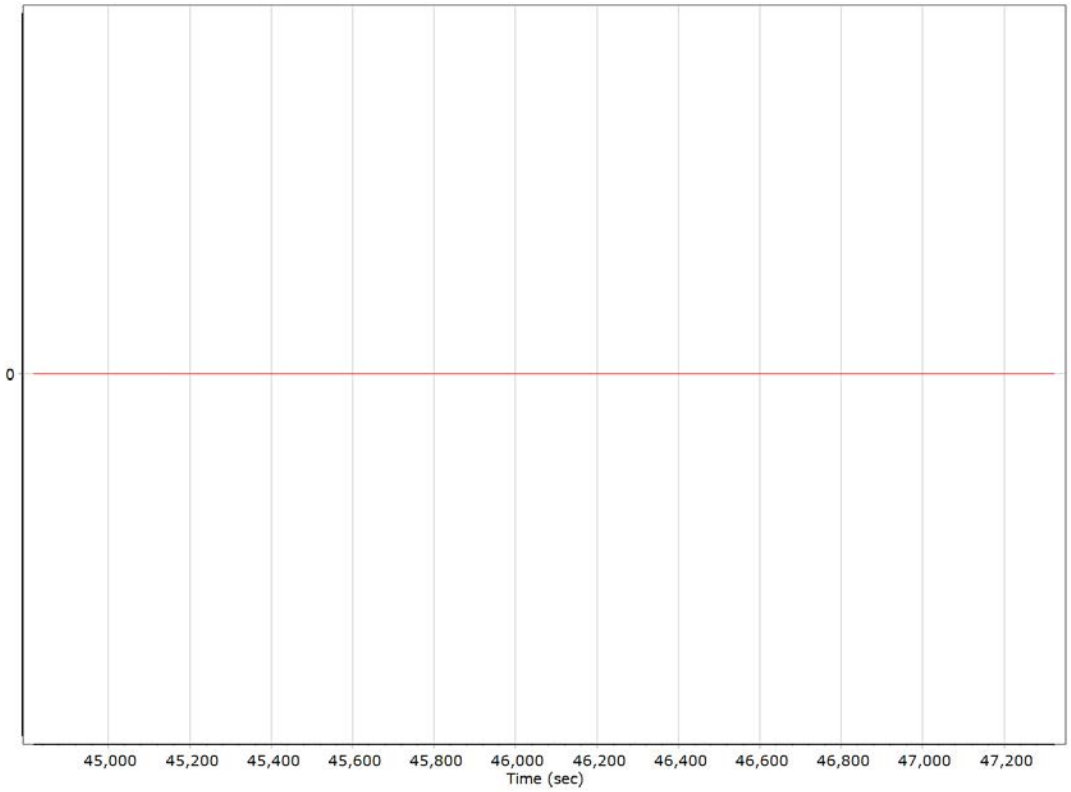
Y Reference-Primary GNSS Lever Arm (m)



Z Reference-Primary GNSS Lever Arm (m)



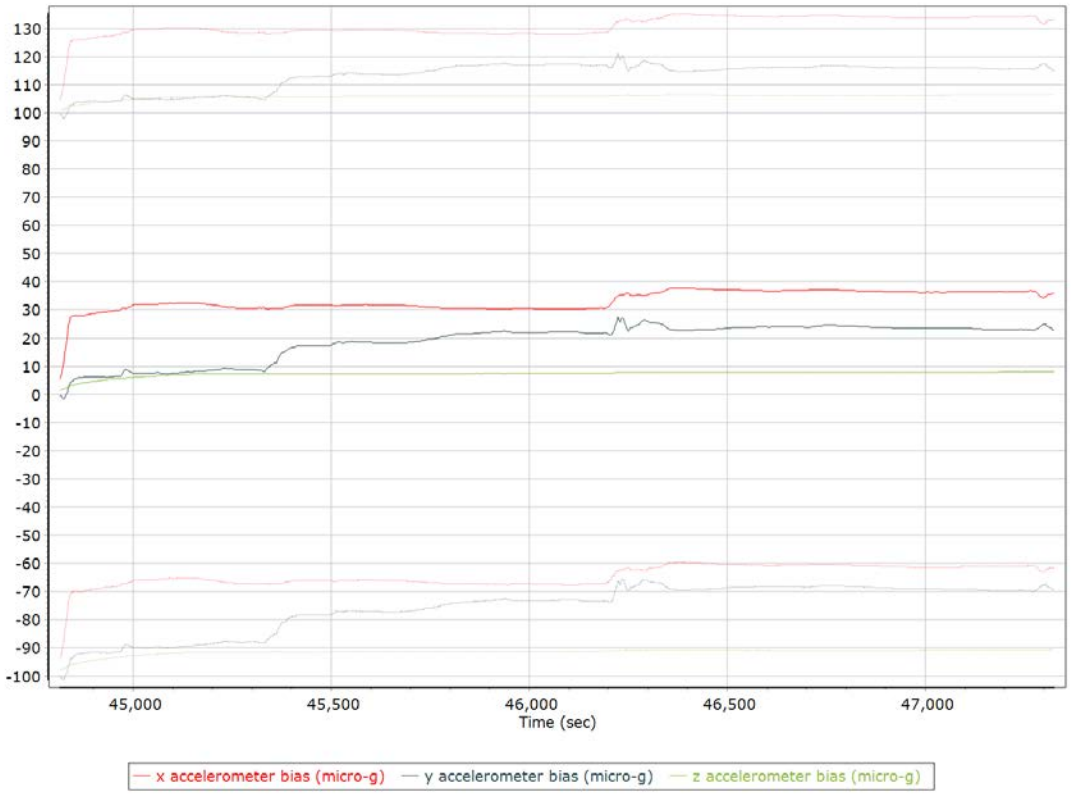
Reference-Primary GNSS Lever Arm Figure of Merit



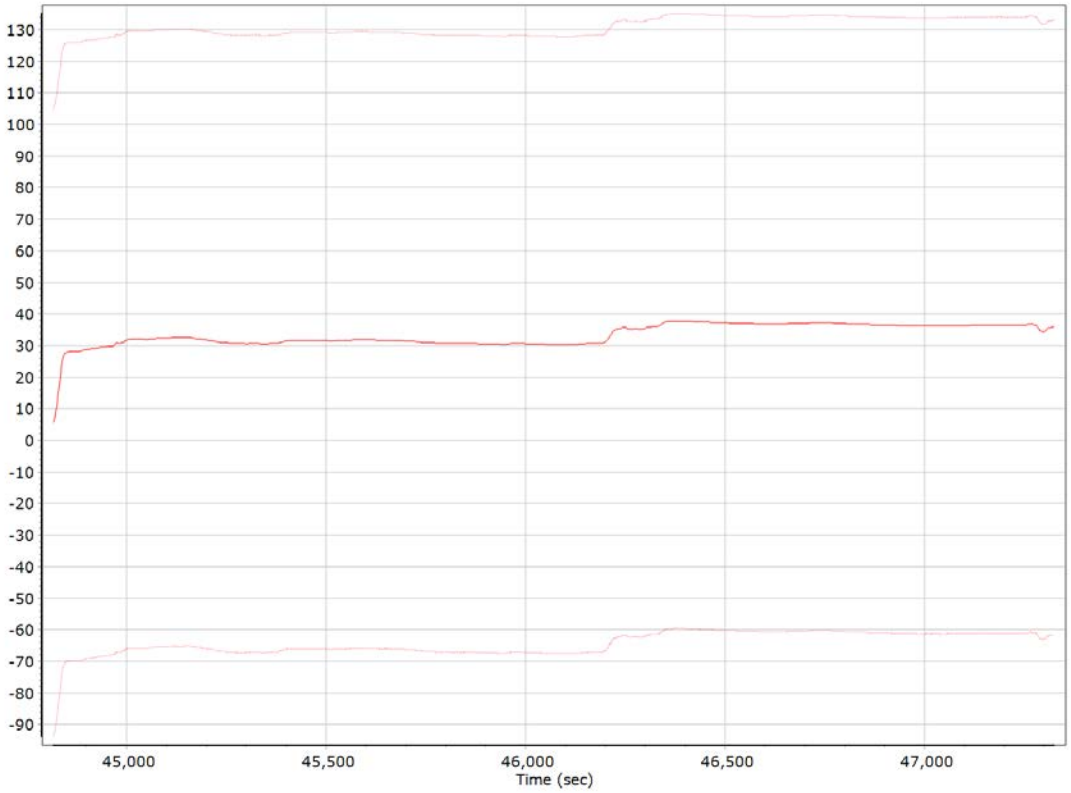
IN-Fusion QC

Forward Processed Estimated Errors, Reference Frame

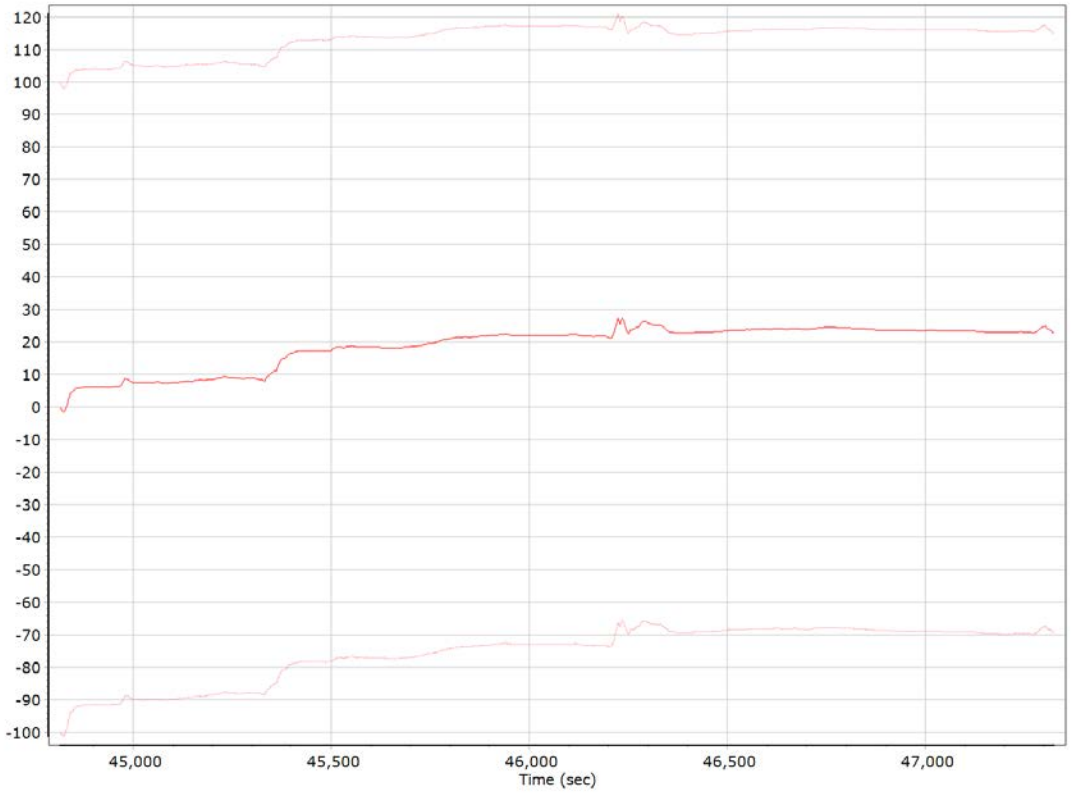
Accelerometer Bias (micro-g)



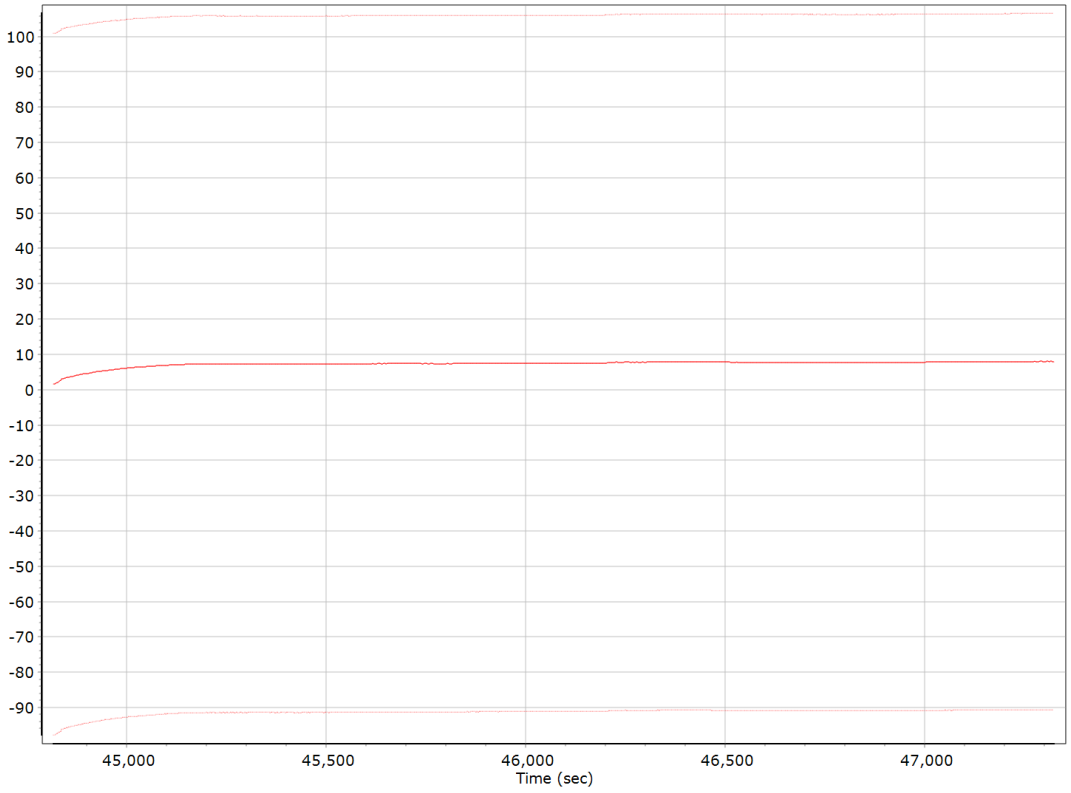
X Accelerometer Bias (micro-g)



Y Accelerometer Bias (micro-g)



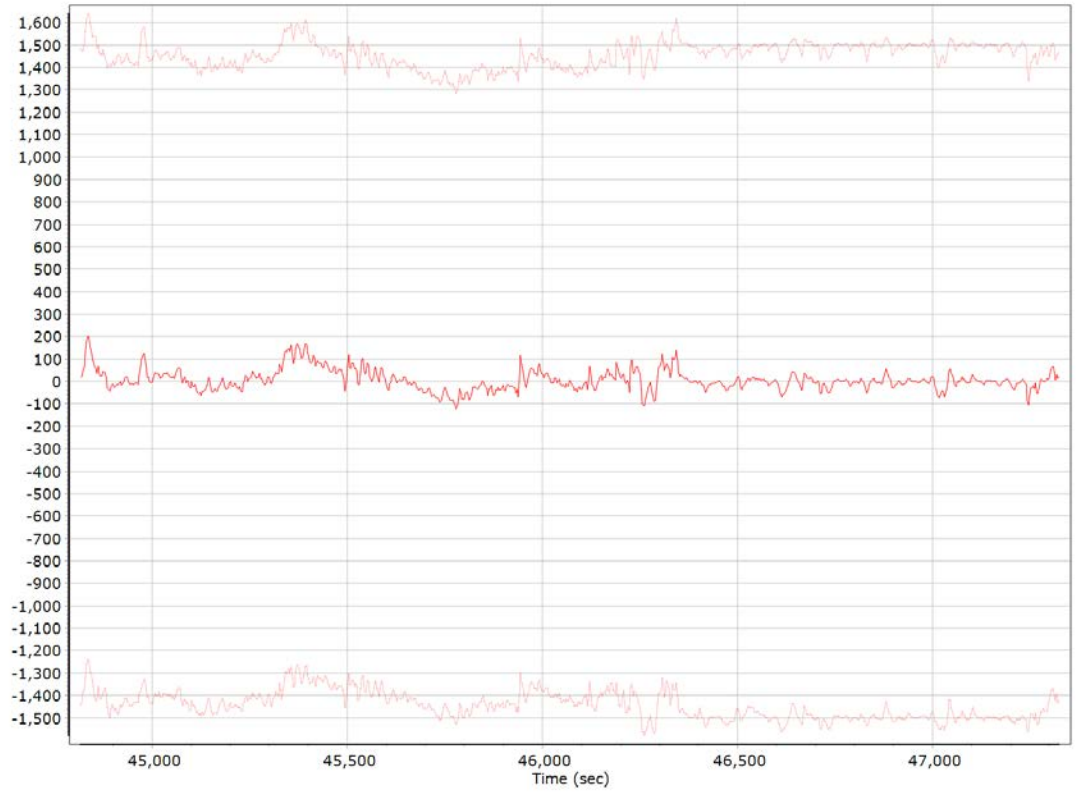
Z Accelerometer Bias (micro-g)



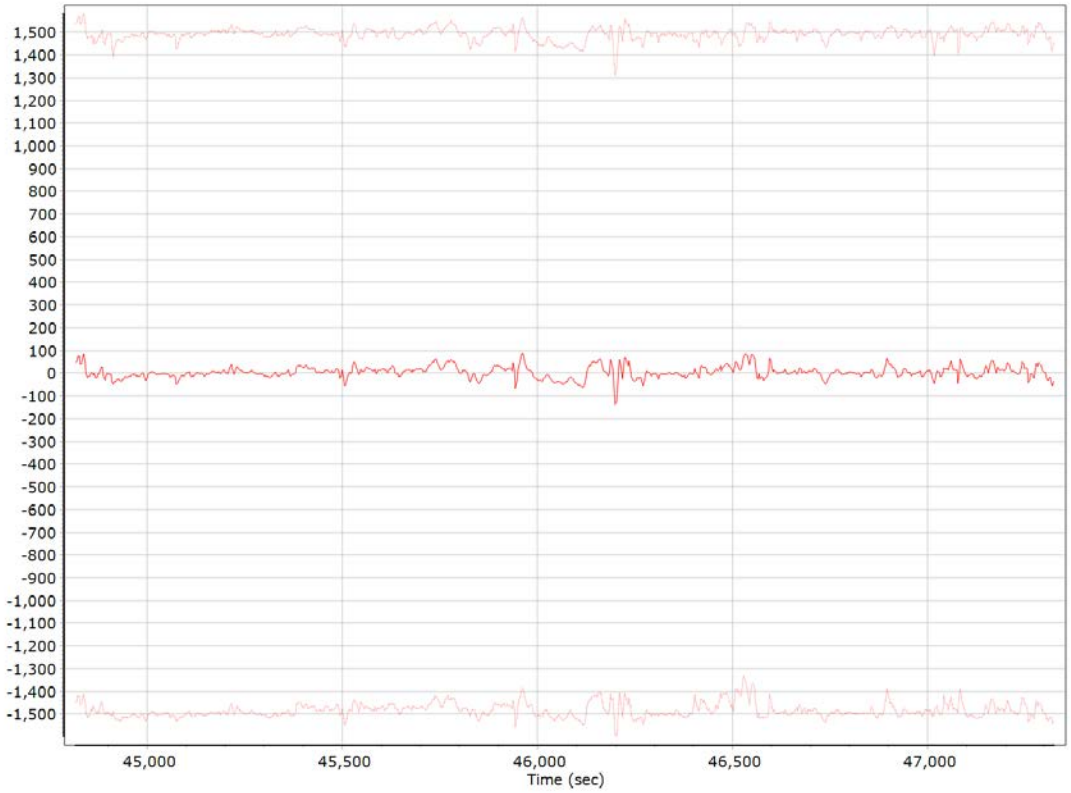
Accelerometer Scale Error (ppm)



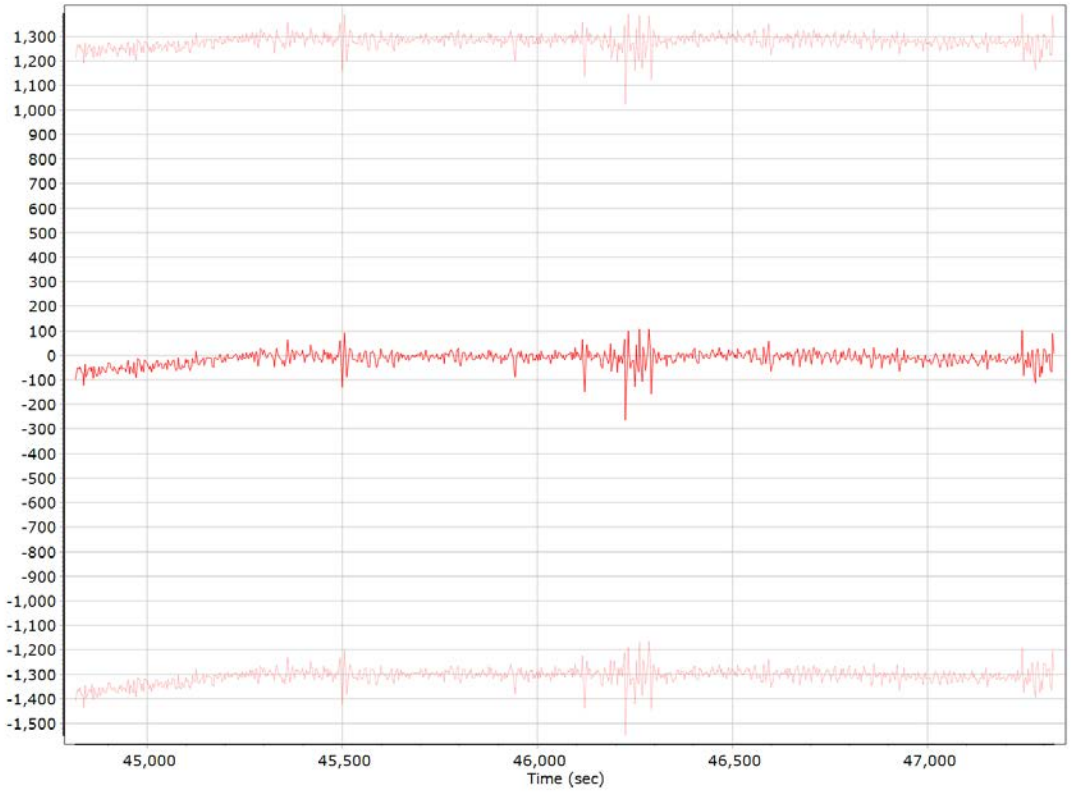
X Accelerometer Scale Error (ppm)



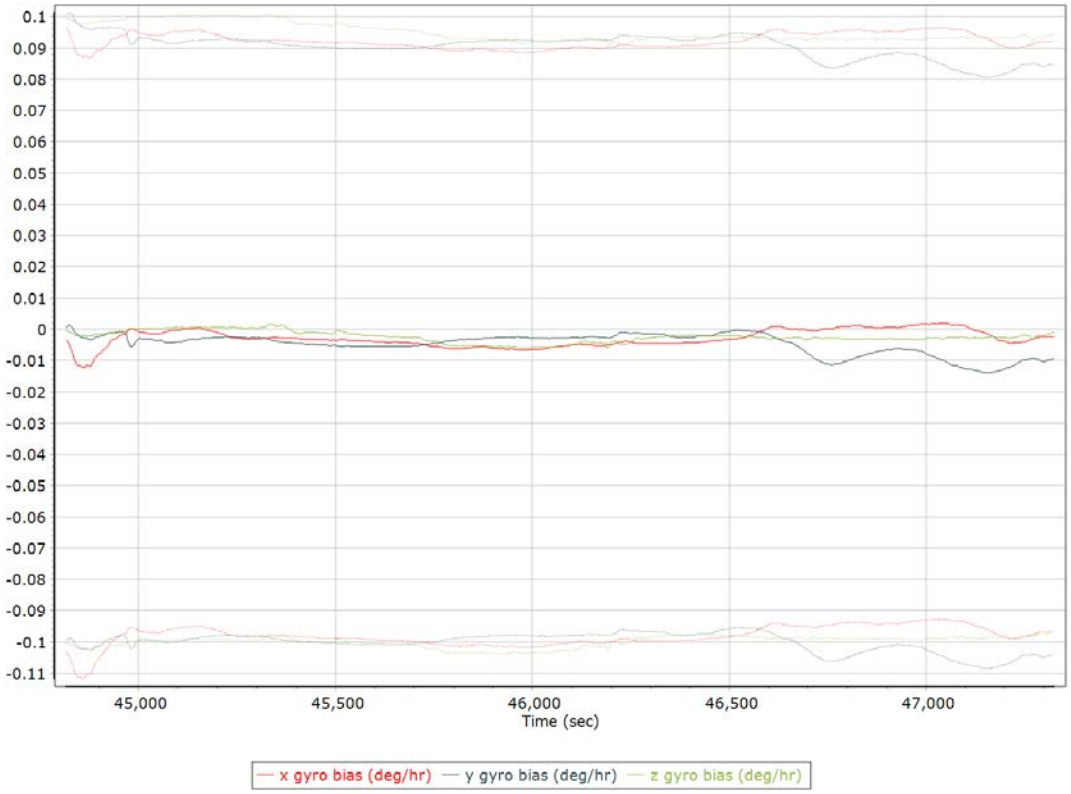
Y Accelerometer Scale Error (ppm)



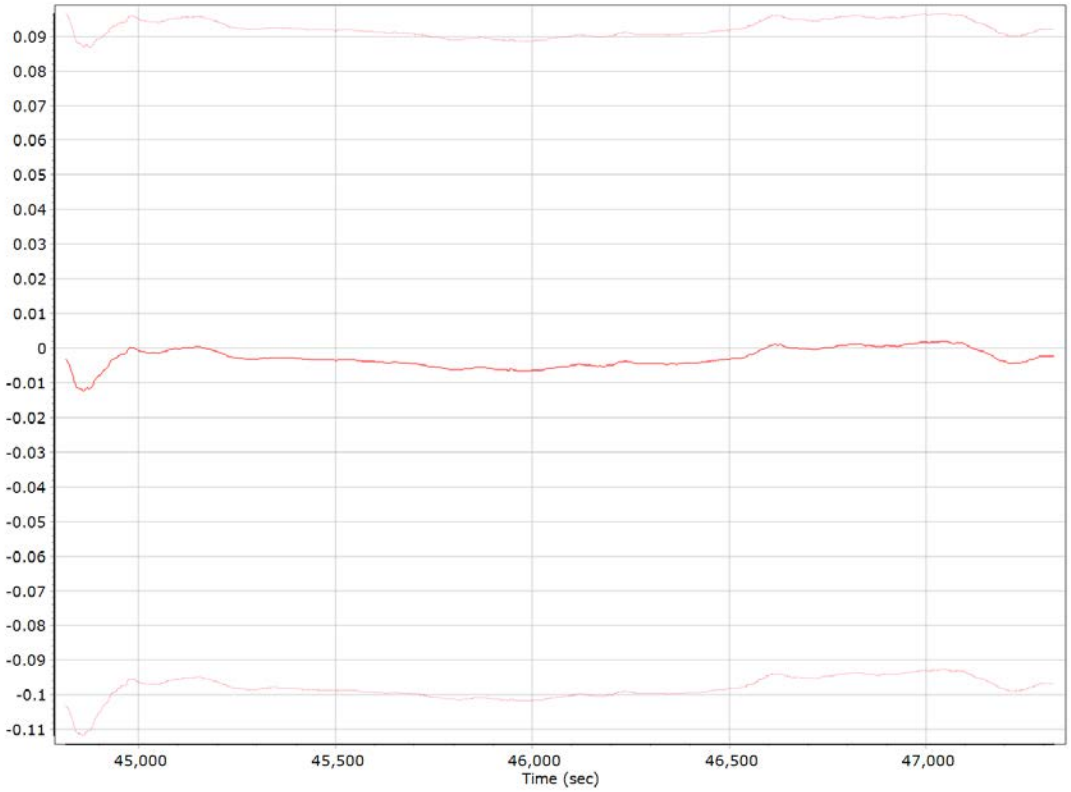
Z Accelerometer Scale Error (ppm)



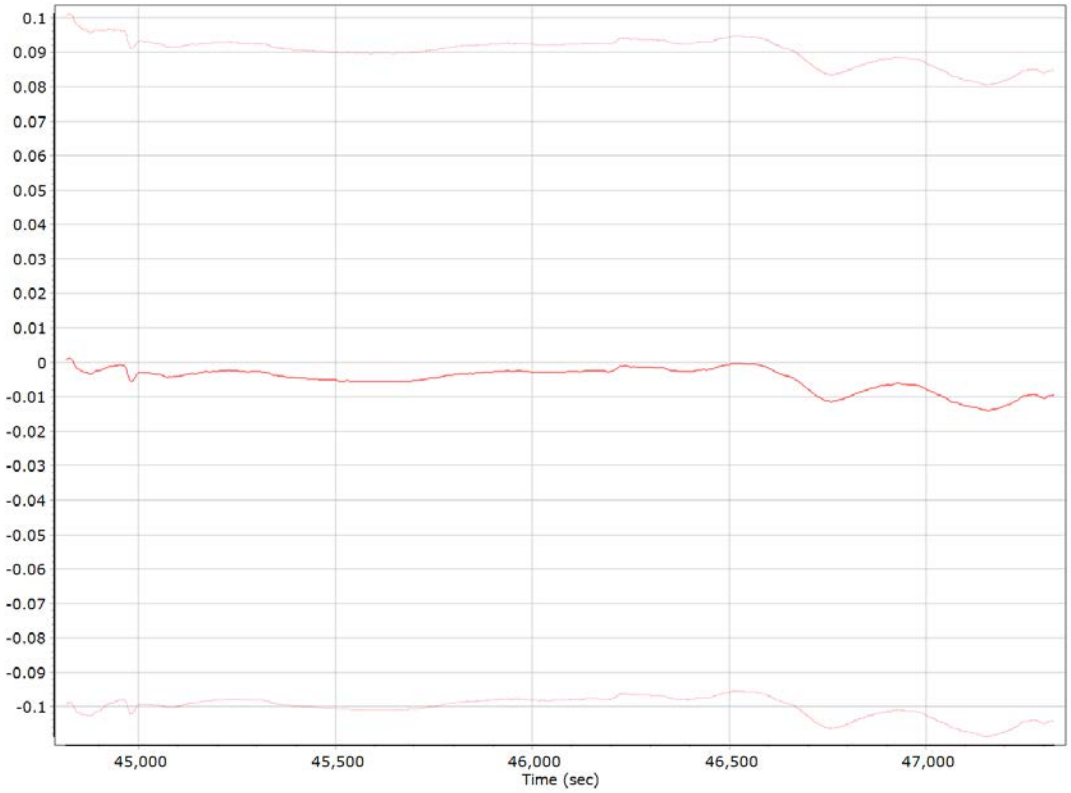
Gyro Bias (deg/h)



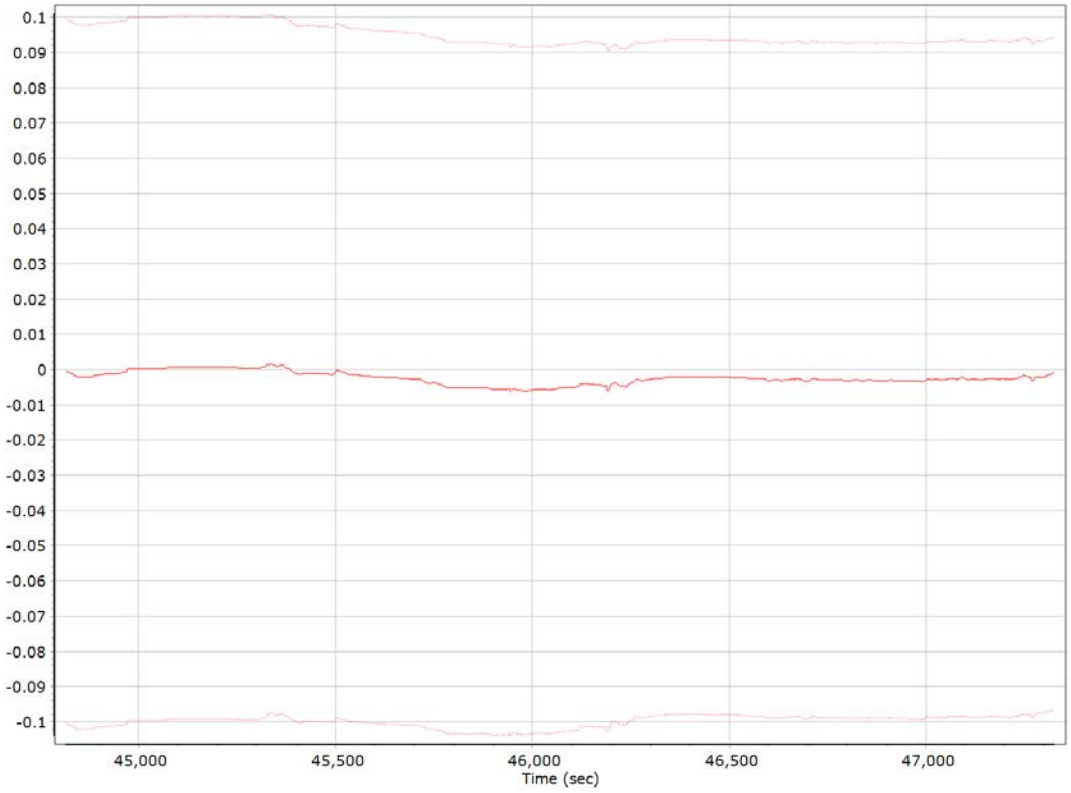
X Gyro Bias (deg/h)



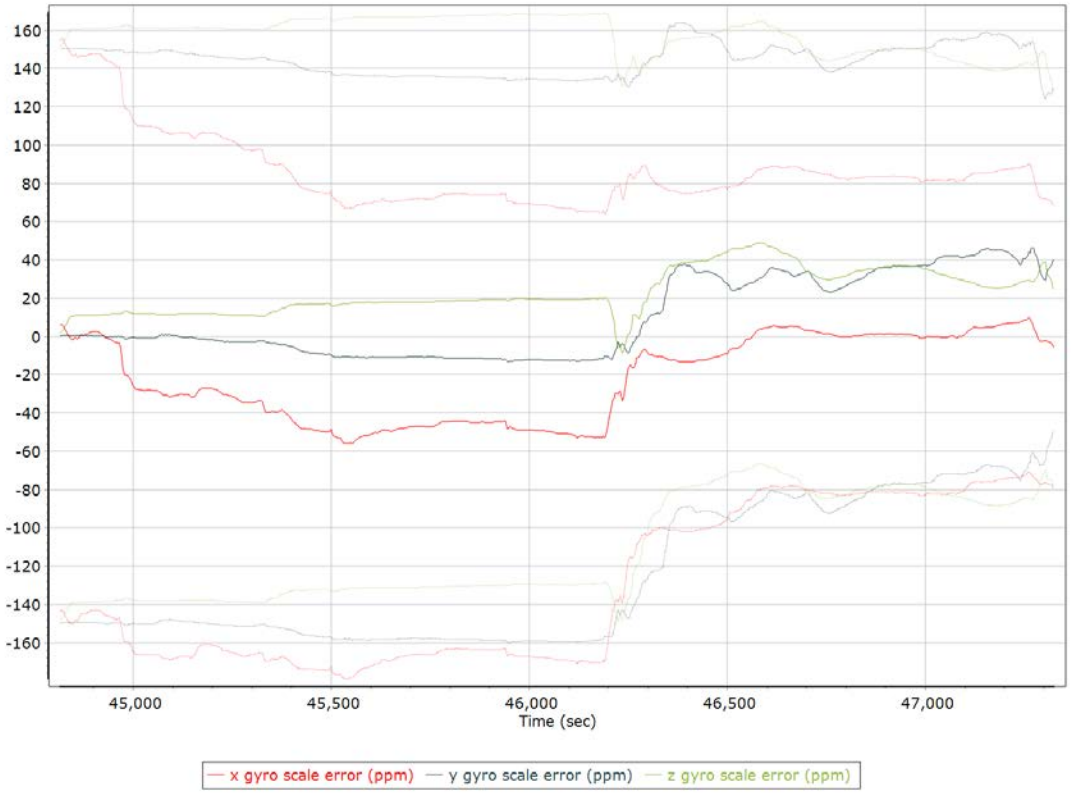
Y Gyro Bias (deg/h)



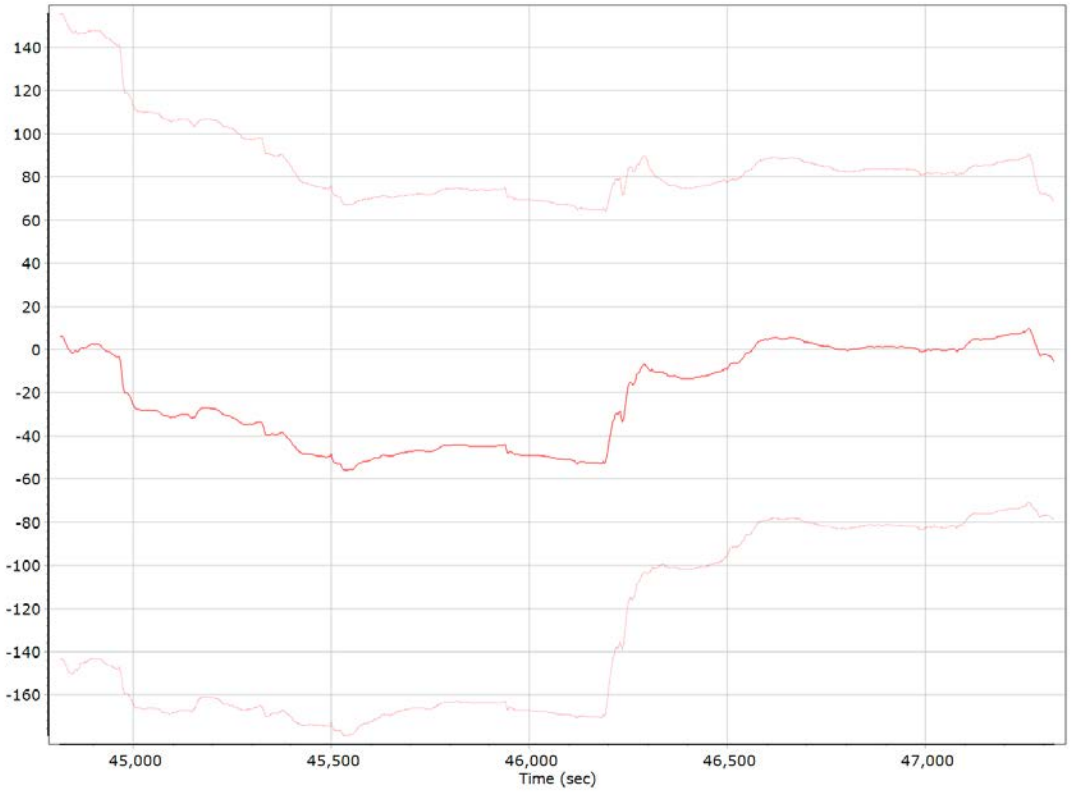
Z Gyro Bias (deg/h)



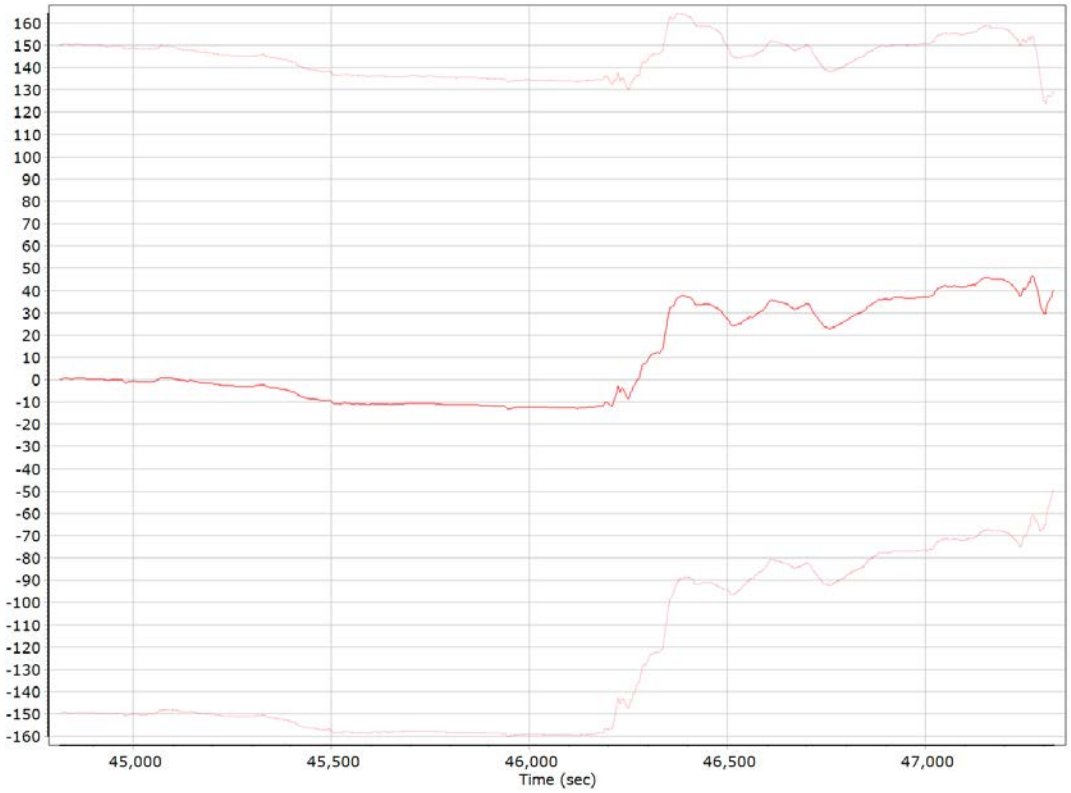
Gyro Scale Error (ppm)



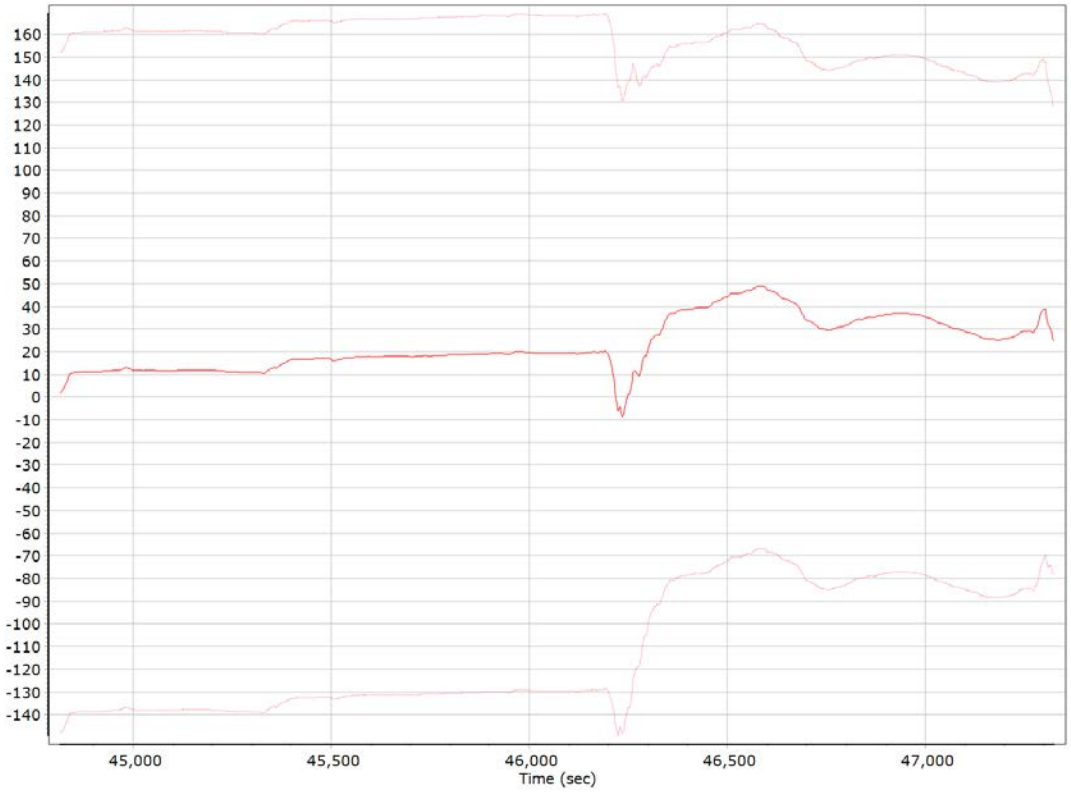
X Gyro Scale Error (ppm)



Y Gyro Scale Error (ppm)

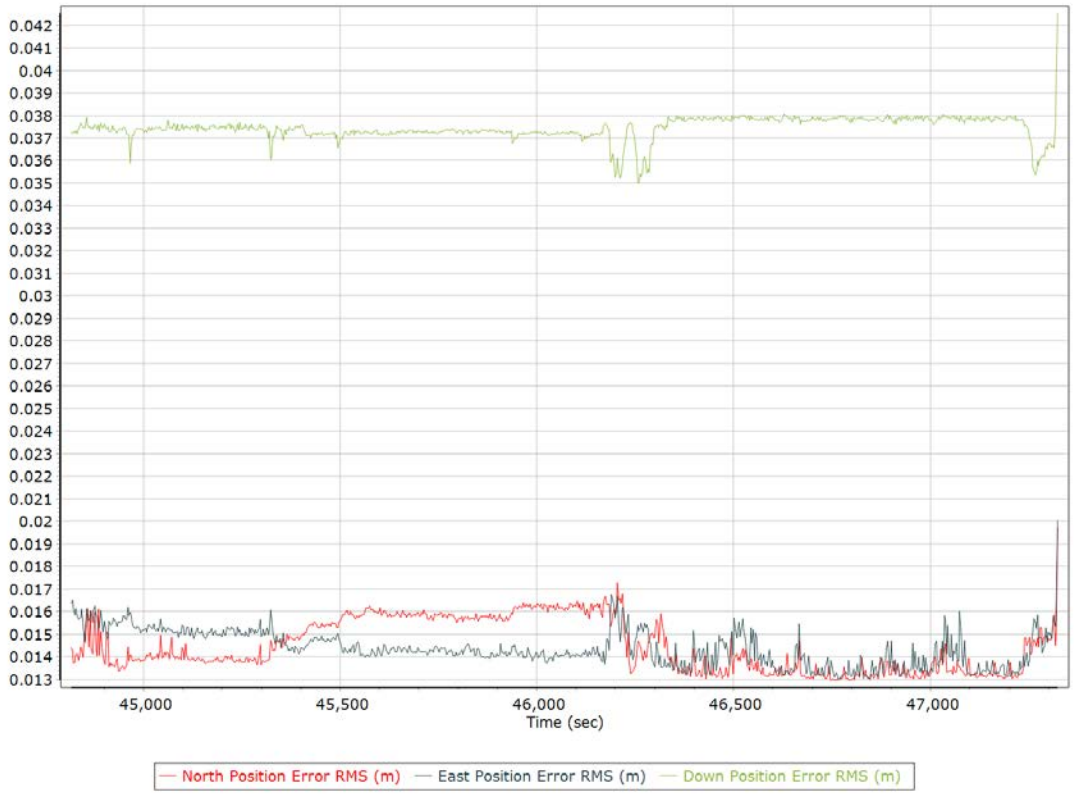


Z Gyro Scale Error (ppm)

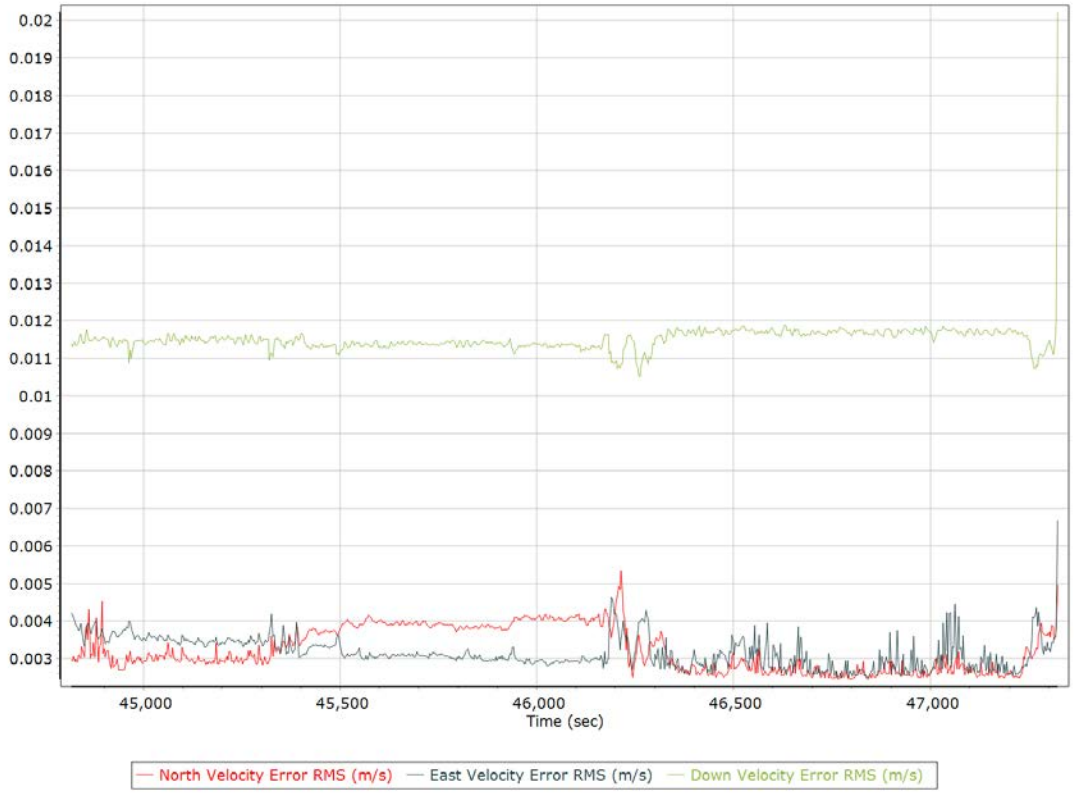


Smoothed Performance Metrics

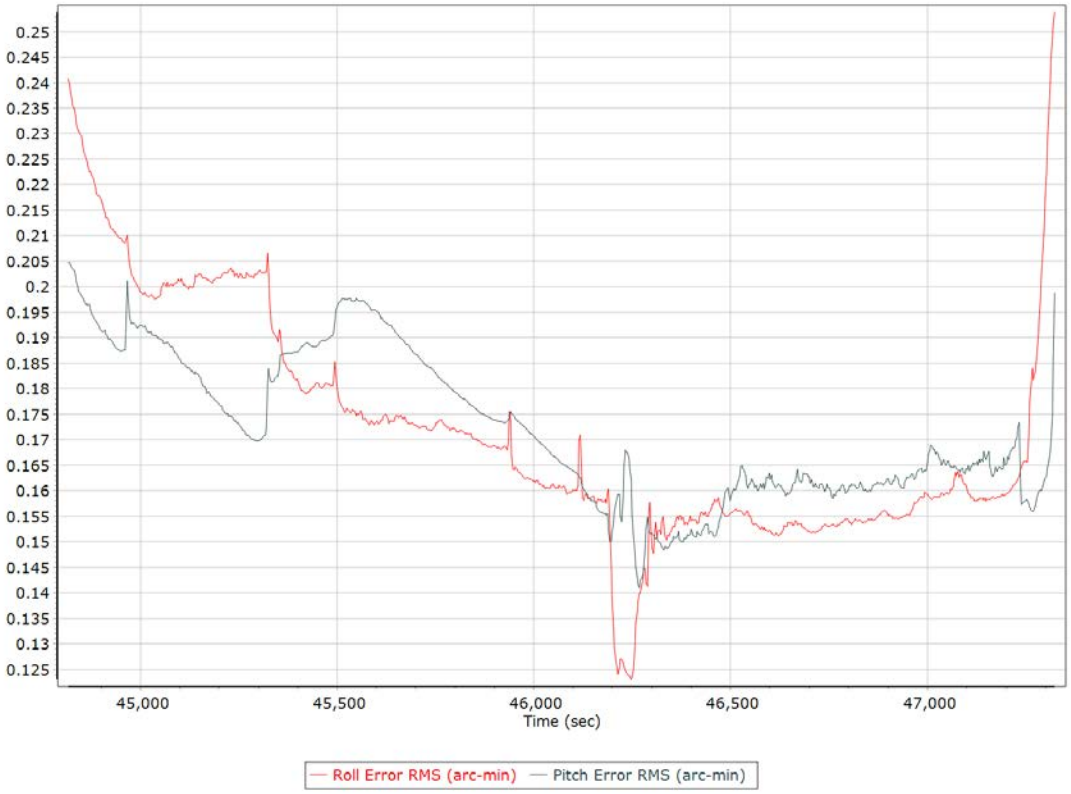
Position Error RMS (m)



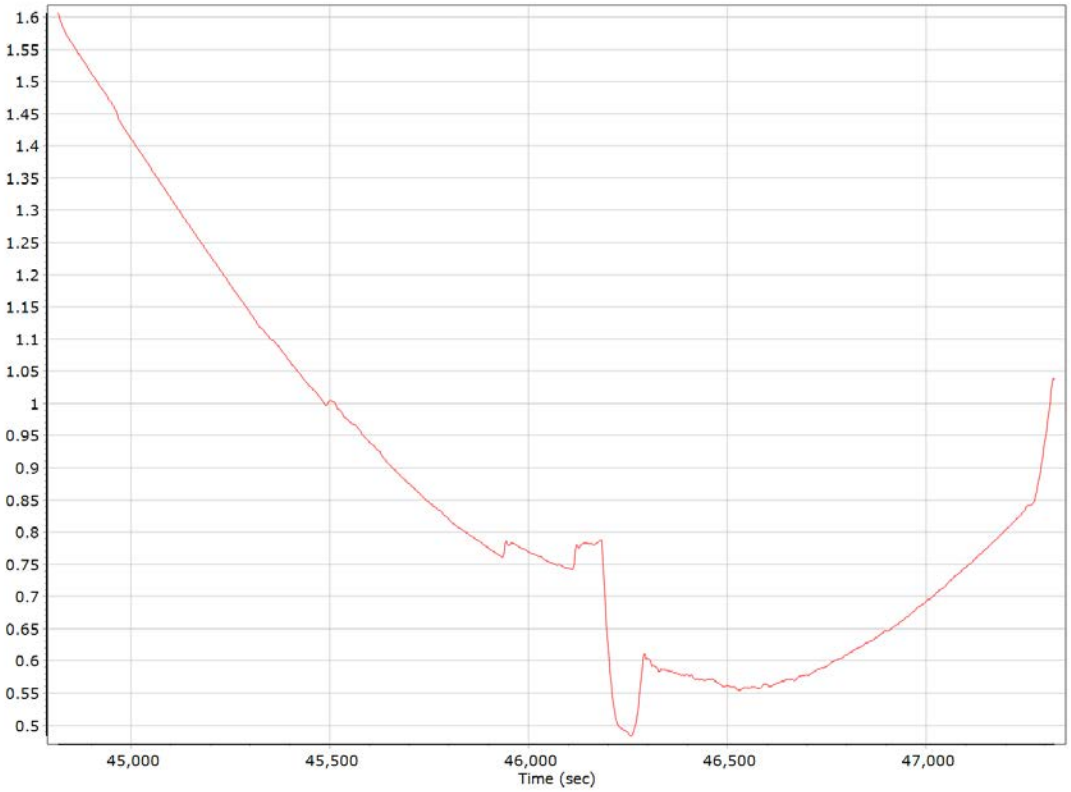
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

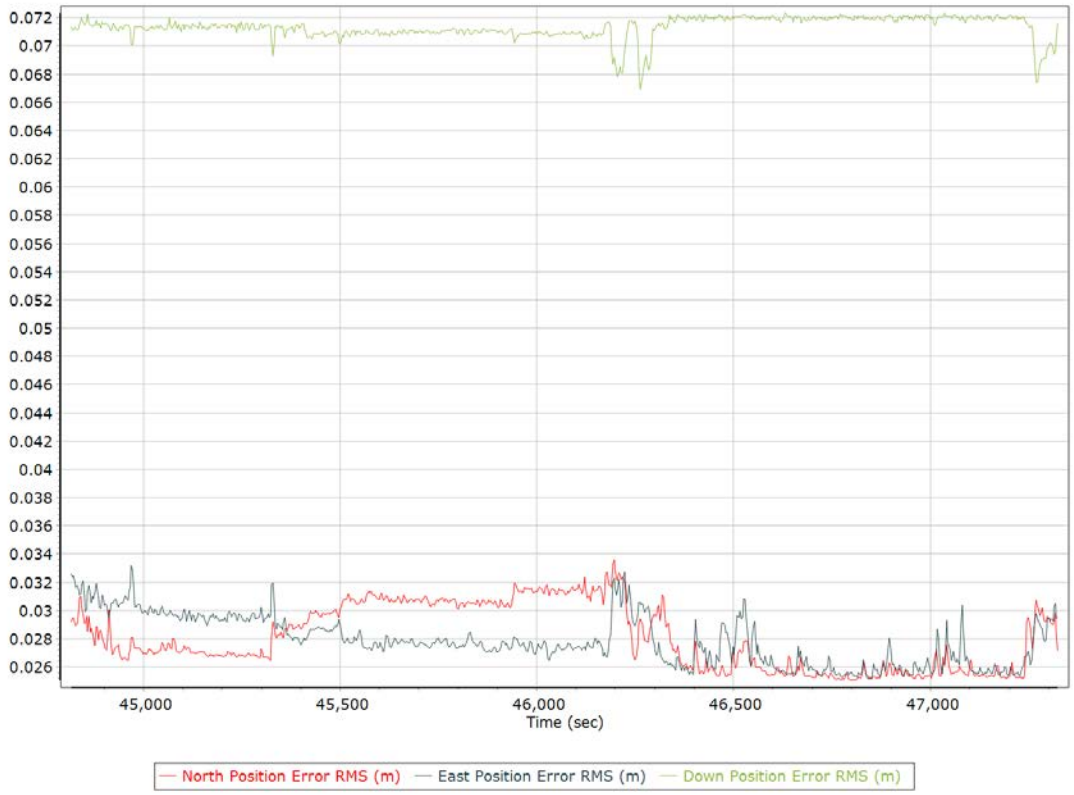


Heading Error RMS (arc-min)



Forward Processed Performance Metrics

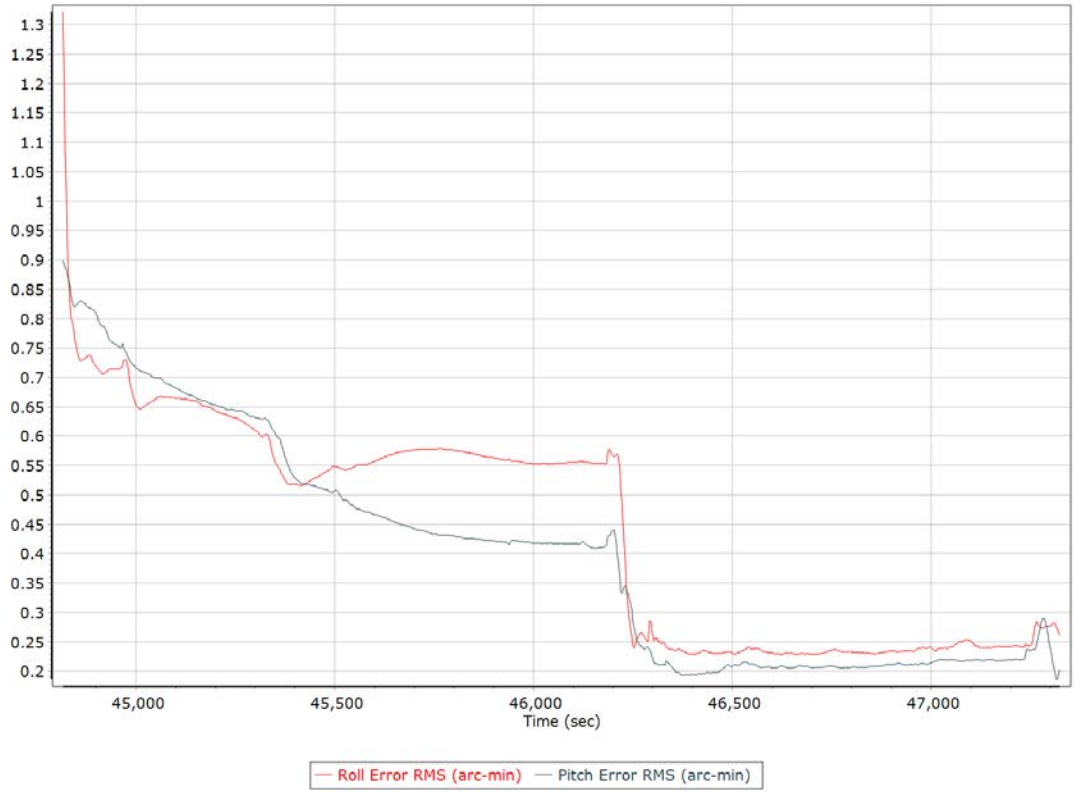
Position Error RMS (m)



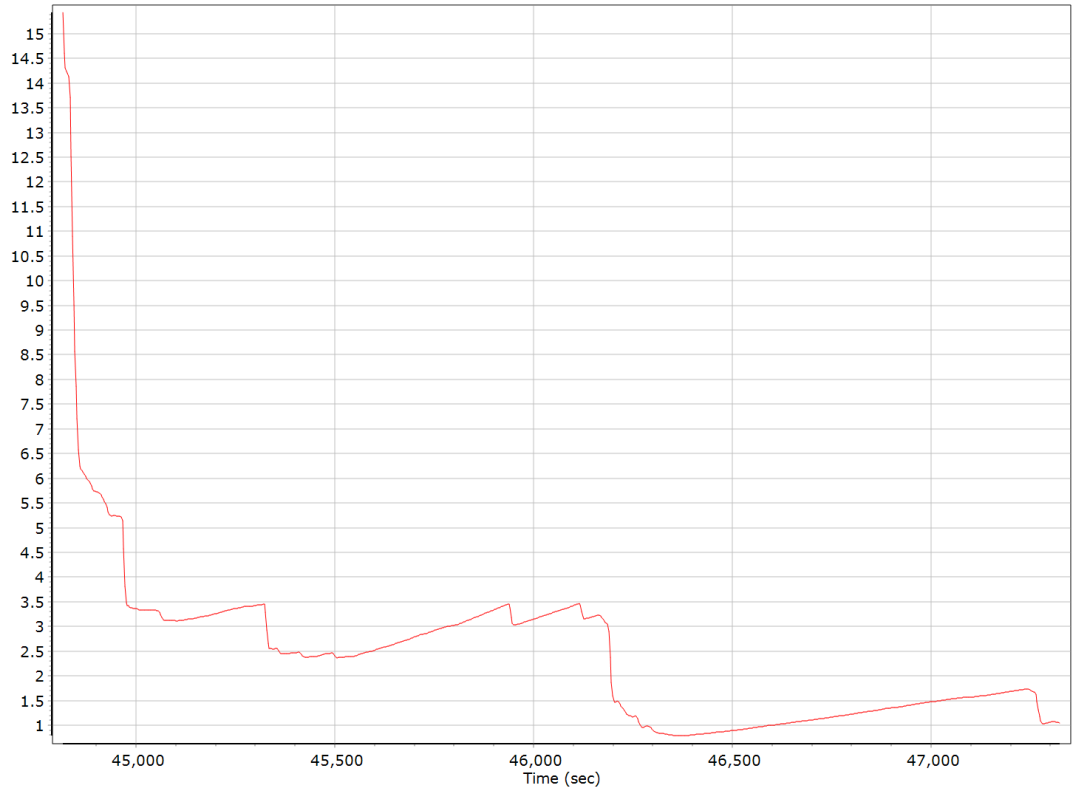
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

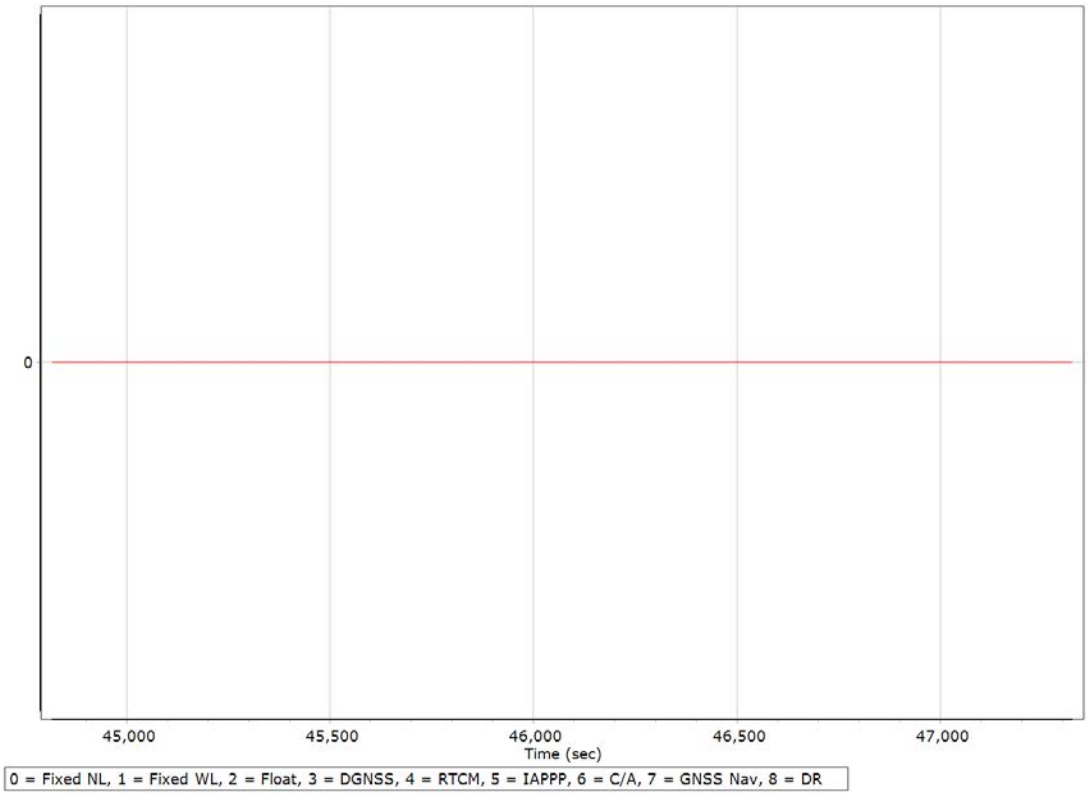


Heading Error RMS (arc-min)

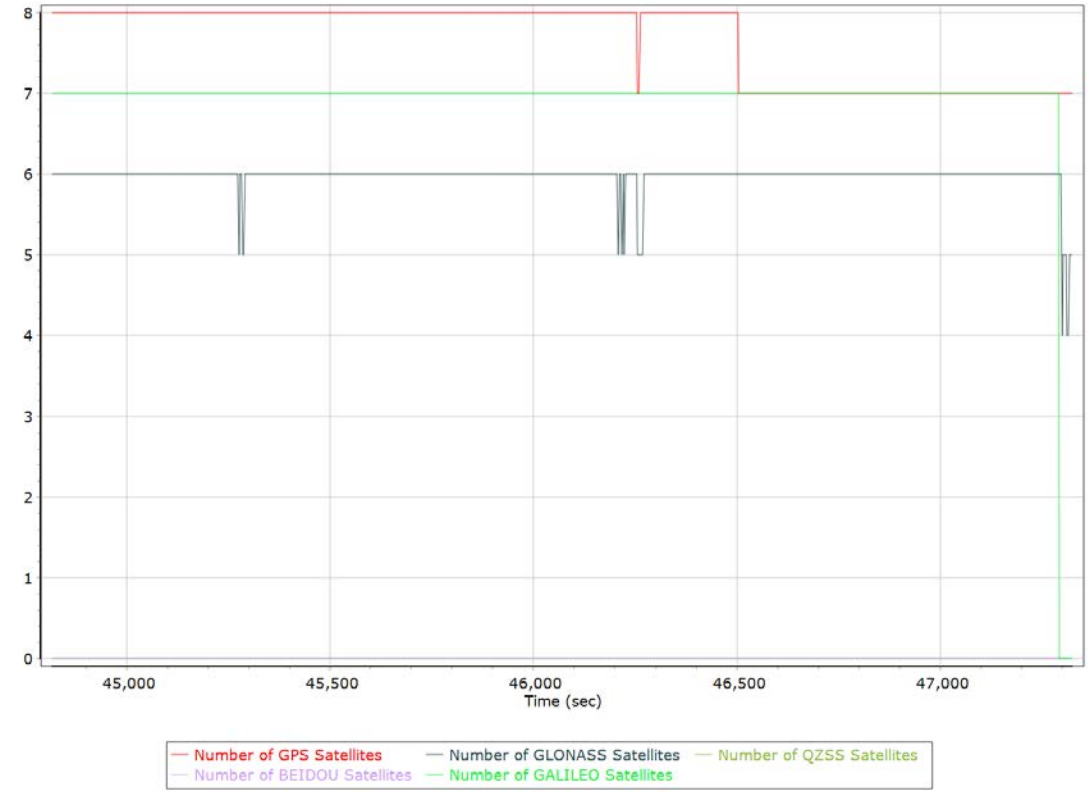


Forward Processed Solution Status

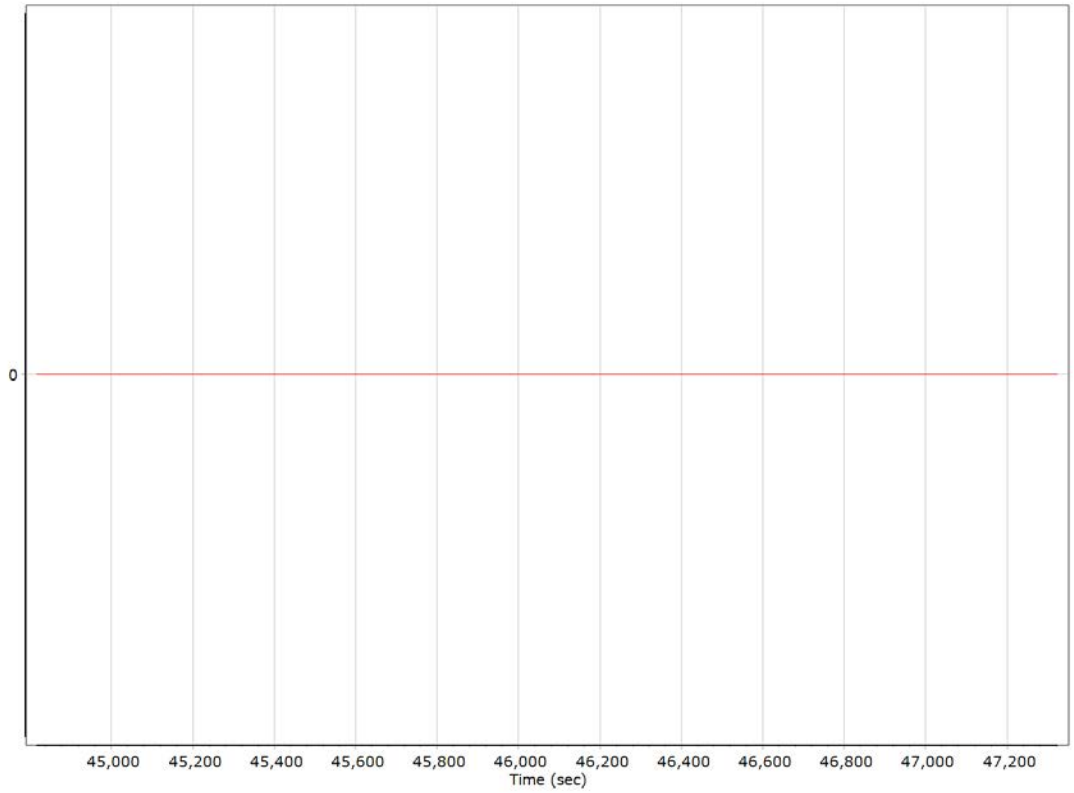
Processing Mode



Number of Satellites



Baseline Length



General Information

Mission Information

Project name	07232023B_4891
Processing date	2023-07-26 11:31:15
Mission date	2023-07-23 13:17:56
Mission duration	05:03:43.372
Processing mode	IN-Fusion PP-RTX

Rover Hardware Information

Product	POS AV 610 VER6 HW2.5-12
Serial number	S/N11883
IMU type	57
Receiver type	BD982
Antenna type	AV59

Project File List

Rover Data Files

File name	File type
N6275603122201.972	POS Data
N6275603122201.973	POS Data
N6275603122201.974	POS Data
N6275603122201.975	POS Data
N6275603122201.976	POS Data
N6275603122201.977	POS Data
N6275603122201.978	POS Data
N6275603122201.979	POS Data
N6275603122201.980	POS Data
N6275603122201.981	POS Data
N6275603122201.982	POS Data
N6275603122201.983	POS Data
N6275603122201.984	POS Data
N6275603122201.985	POS Data
N6275603122201.986	POS Data
N6275603122201.987	POS Data
N6275603122201.988	POS Data
N6275603122201.989	POS Data
N6275603122201.990	POS Data
N6275603122201.991	POS Data
N6275603122201.992	POS Data
N6275603122201.993	POS Data
N6275603122201.994	POS Data
N6275603122201.995	POS Data
N6275603122201.996	POS Data
N6275603122201.997	POS Data
N6275603122201.998	POS Data
N6275603122201.999	POS Data

Input Files

File Name	File Type
Ephm2040.23g	GLONASS Broadcast Ephemeris
Ephm2040.23n	GPS Broadcast Ephemeris

Output Files

Filename	File type
sbet_07232023B_4891.out	SBET Trajectory File

Rover Data Summary

First raw data file	N6275603122201.972		
Last raw data file	N6275603122201.999		
Start GPS week	2272		
Start time	47857.555 (7/23/2023 1:17:37 PM)		
End time	66080.927 (7/23/2023 6:21:20 PM)		
Start of fine alignment	47881.644 (7/23/2023 1:18:01 PM)		
Available subsystems	Primary GNSS, Gimbal, IMU		
POS Event Input	None		
Correction data	None		
IMU Installation Lever Arms & Mounting Angles			
Gimbal to IMU lever arm (m)	-0.034	-0.010	-0.374
Gimbal to IMU mounting angles (deg)	0.000	0.000	0.000
Gimbal to Primary GNSS lever arm (m)	-0.135	0.064	-1.339
Gimbal to Primary GNSS lever arm std dev (m)	-1.000		
Aircraft to Reference mounting angles (deg)	0.000	0.000	0.000

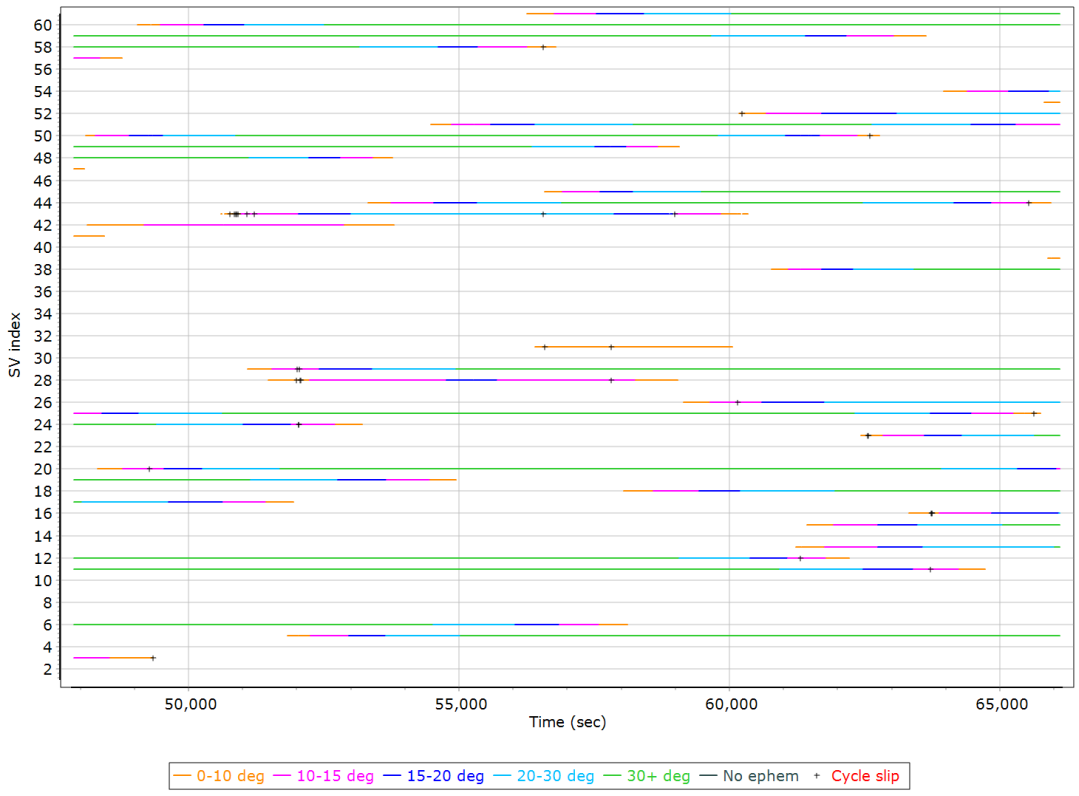
Rover Data QC

Raw IMU Import QC Summary

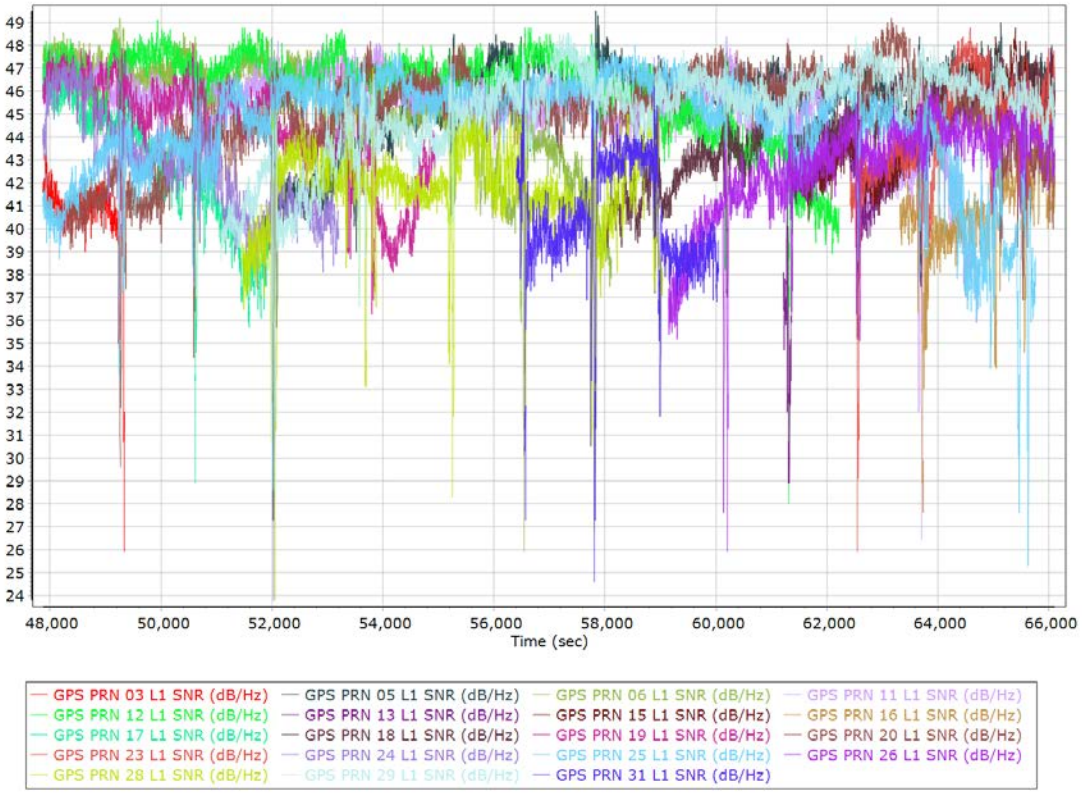
IMU data input file	imu_Mission 1.dat
IMU data check log file	imudt_07232023B_4891.log
IMU Records Processed	3644939
Termination Status	Normal
IMU Anomalies	0

Primary Observables & Satellite Data

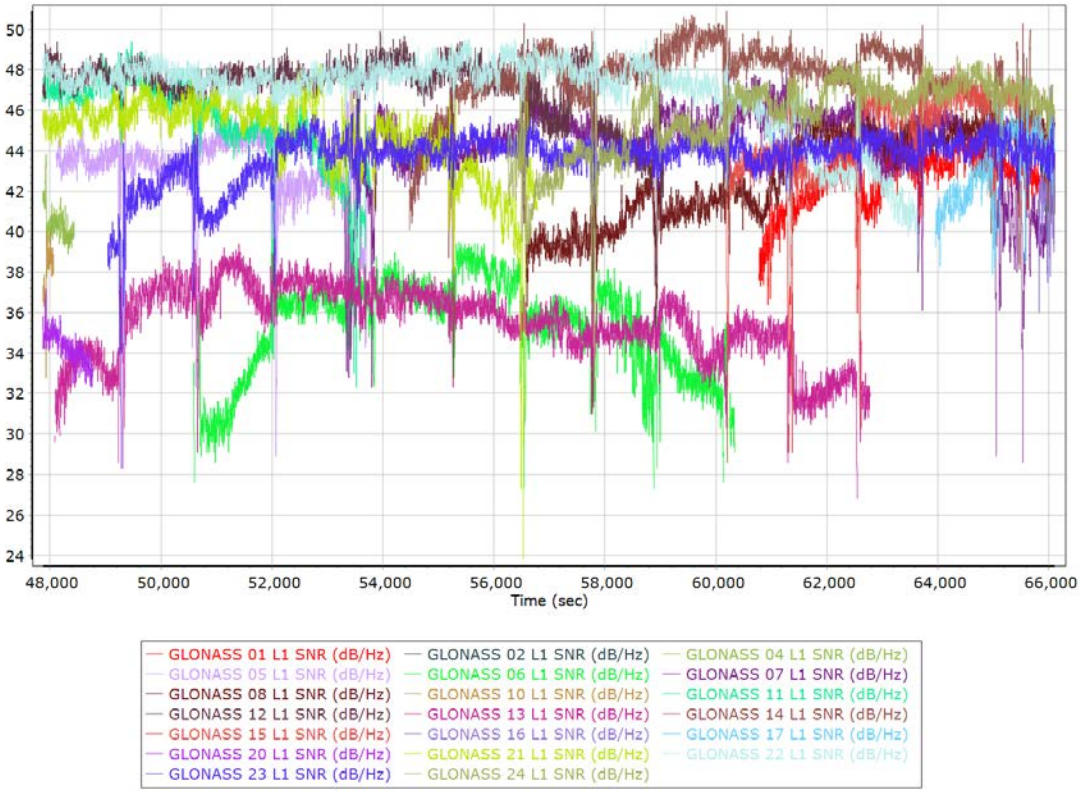
GPS/GLONASS L1 Satellite Lock/Elevation



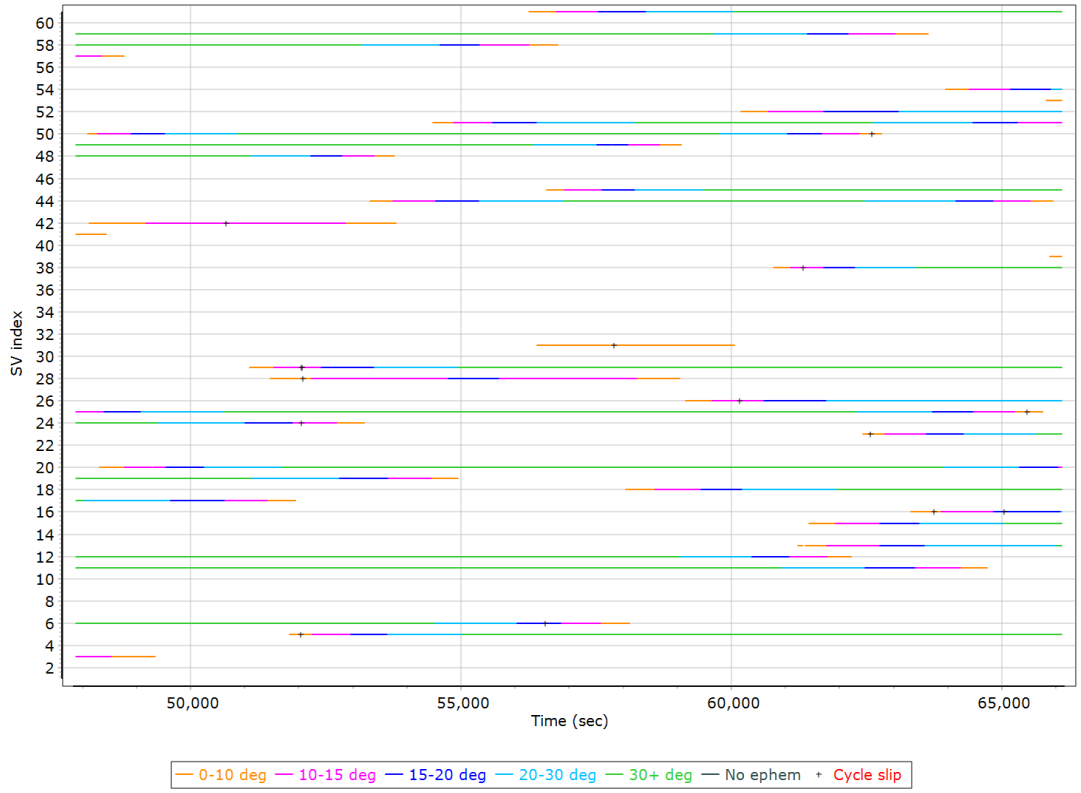
GPS L1 SNR



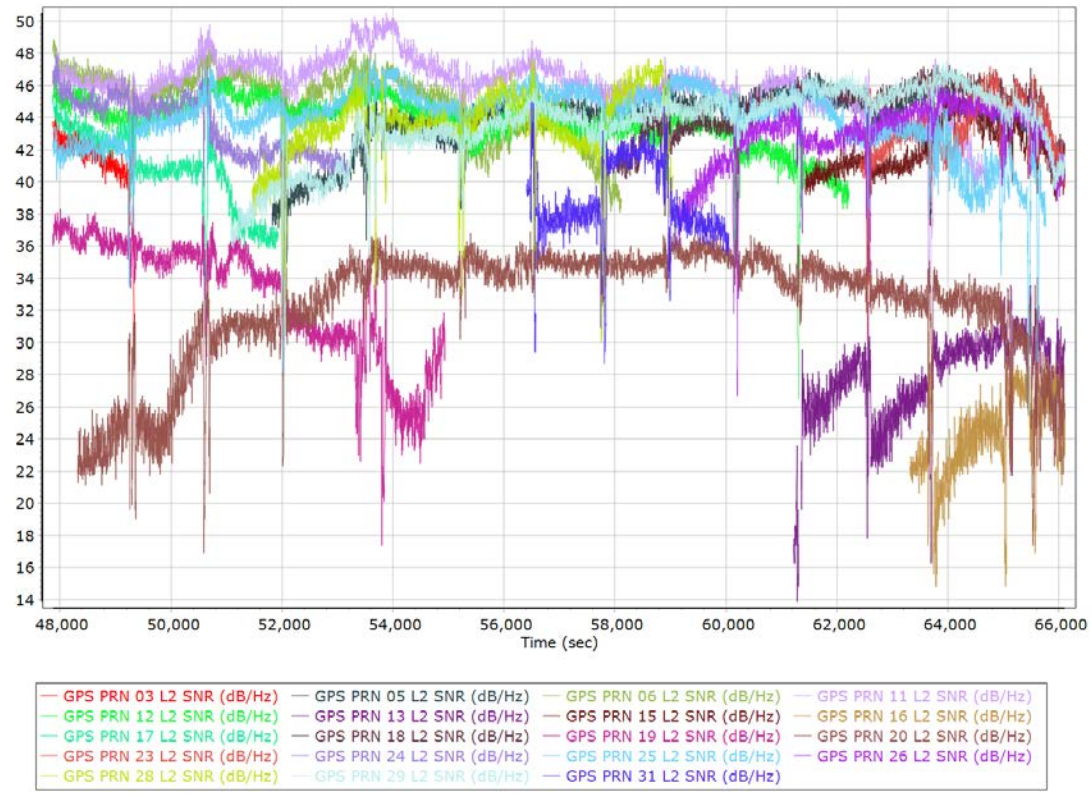
GLONASS L1 SNR



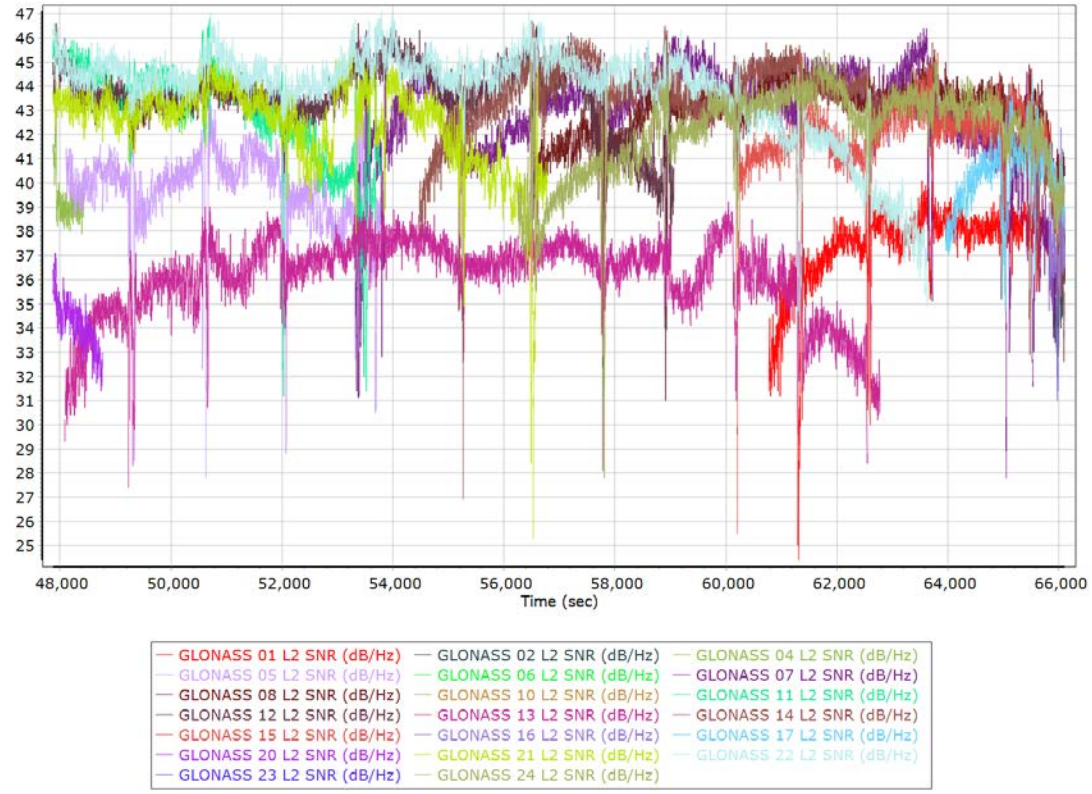
GPS/GLONASS L2 Satellite Lock/Elevation



GPS L2 SNR



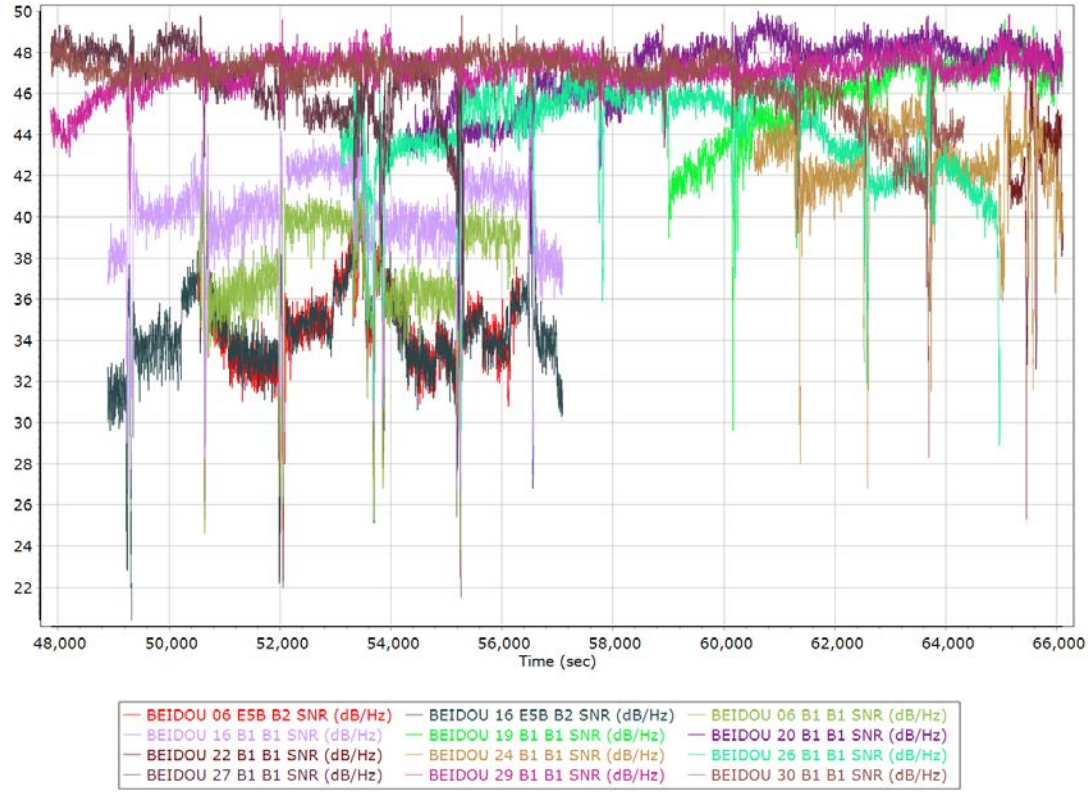
GLONASS L2 SNR



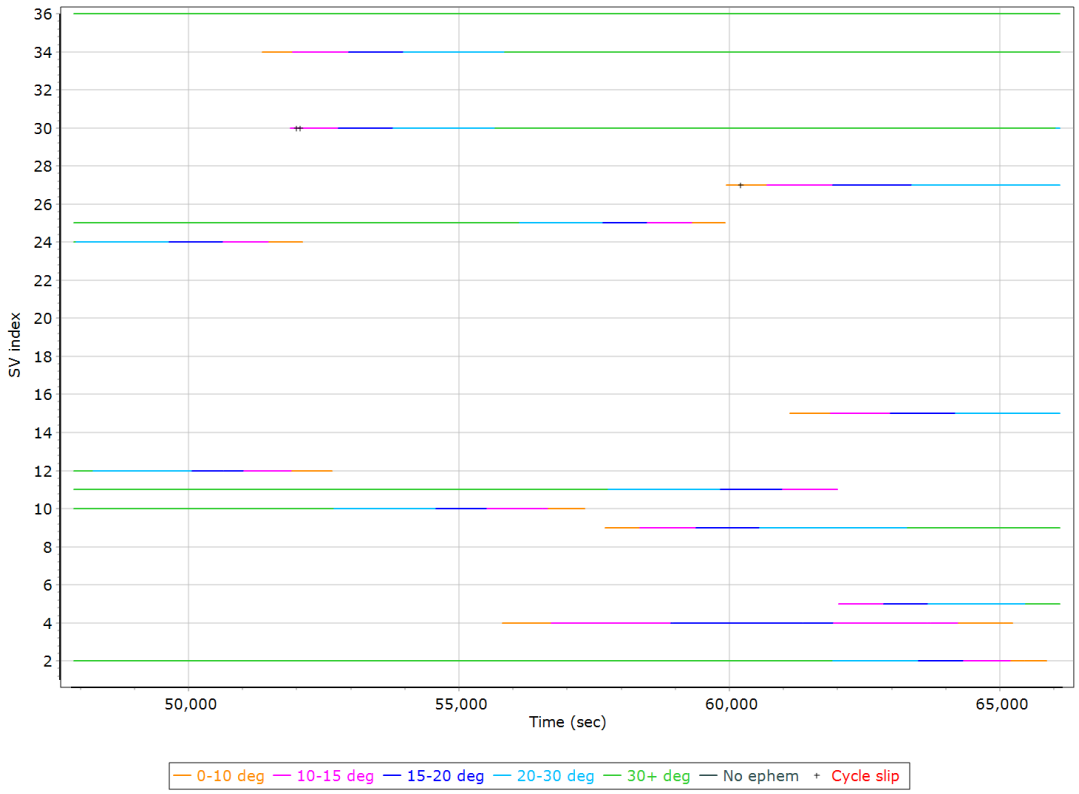
BEIDOU Satellite Lock/Elevation



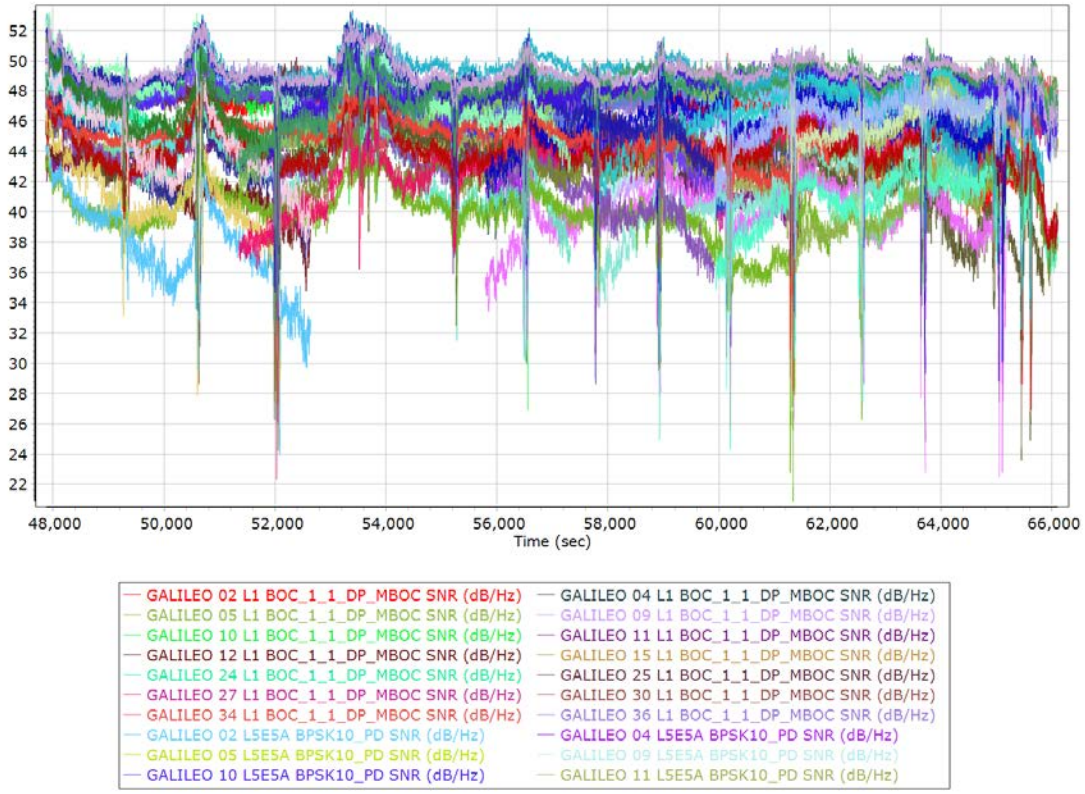
BEIDOU SNR



GALILEO Satellite Lock/Elevation

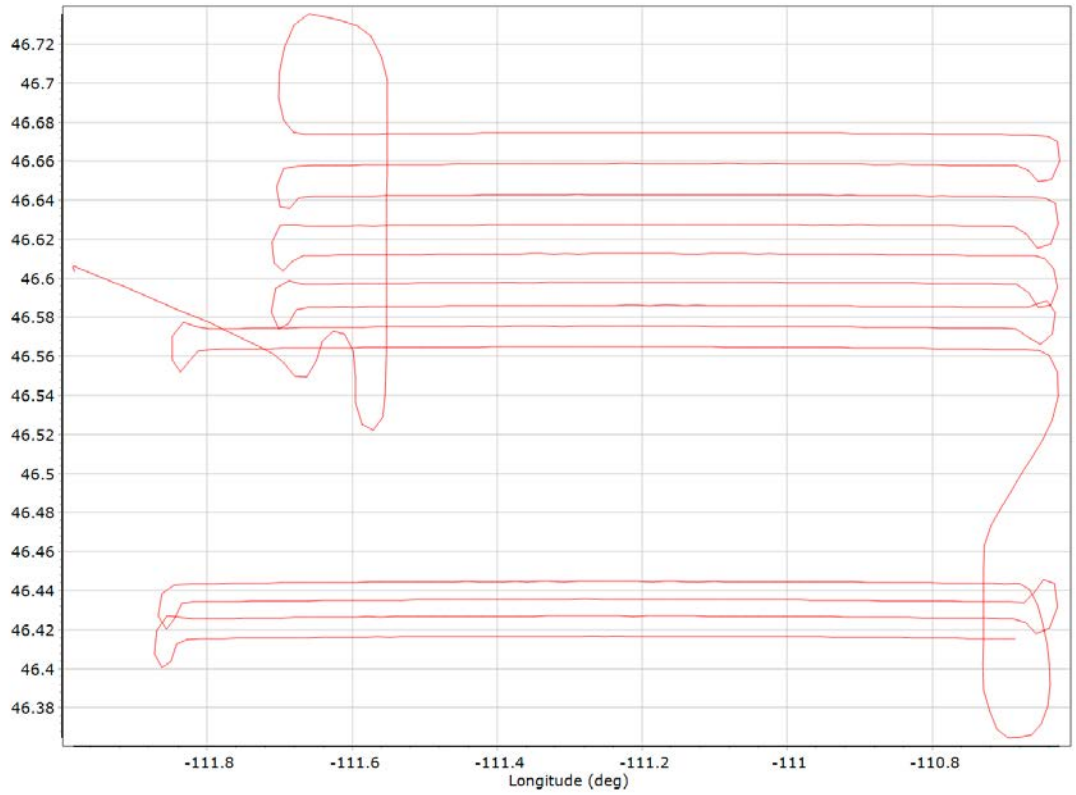


GALILEO SNR

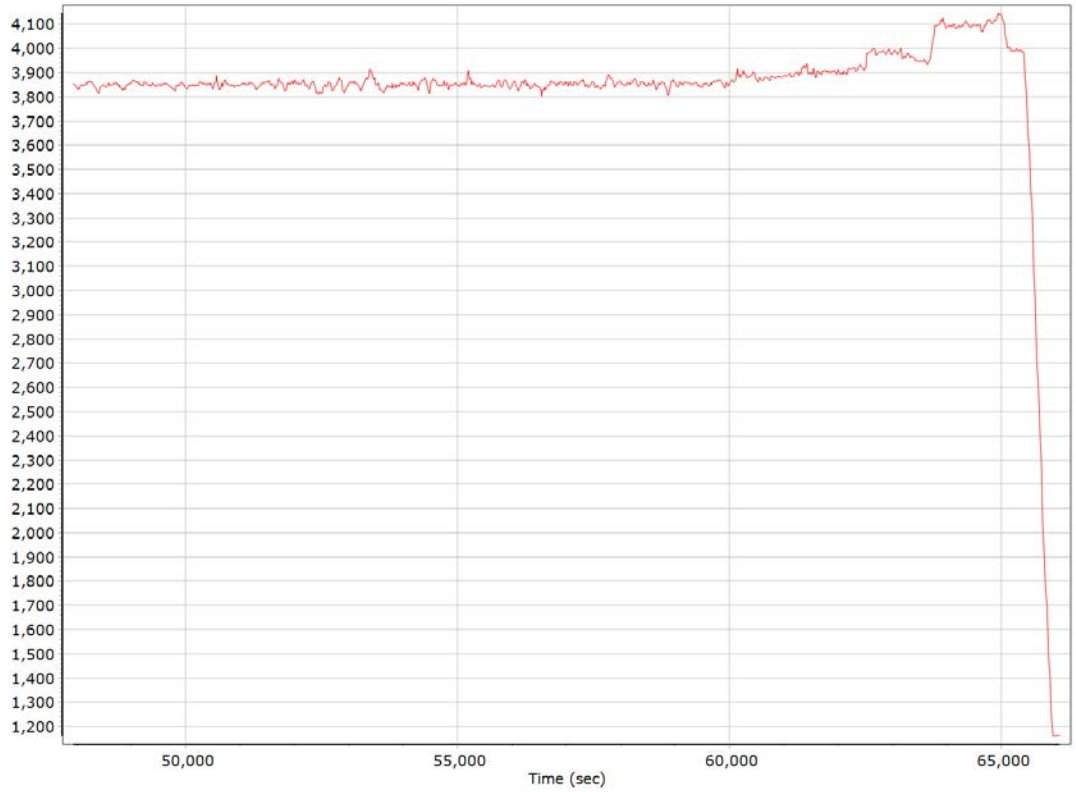

52
50
48
46
44
42
40
38
36
34
32
30
28
26
24
22
48,000
50,000
52,000
54,000
56,000
58,000
60,000
62,000
64,000
66,000
Time (sec)
GALILEO 02 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 04 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 05 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 09 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 10 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 11 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 12 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 15 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 24 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 25 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 27 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 30 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 34 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 36 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 02 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 04 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 05 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 09 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 10 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 11 L5E5A BPSK10_PD SNR (dB/Hz)

Smoothed Trajectory Information

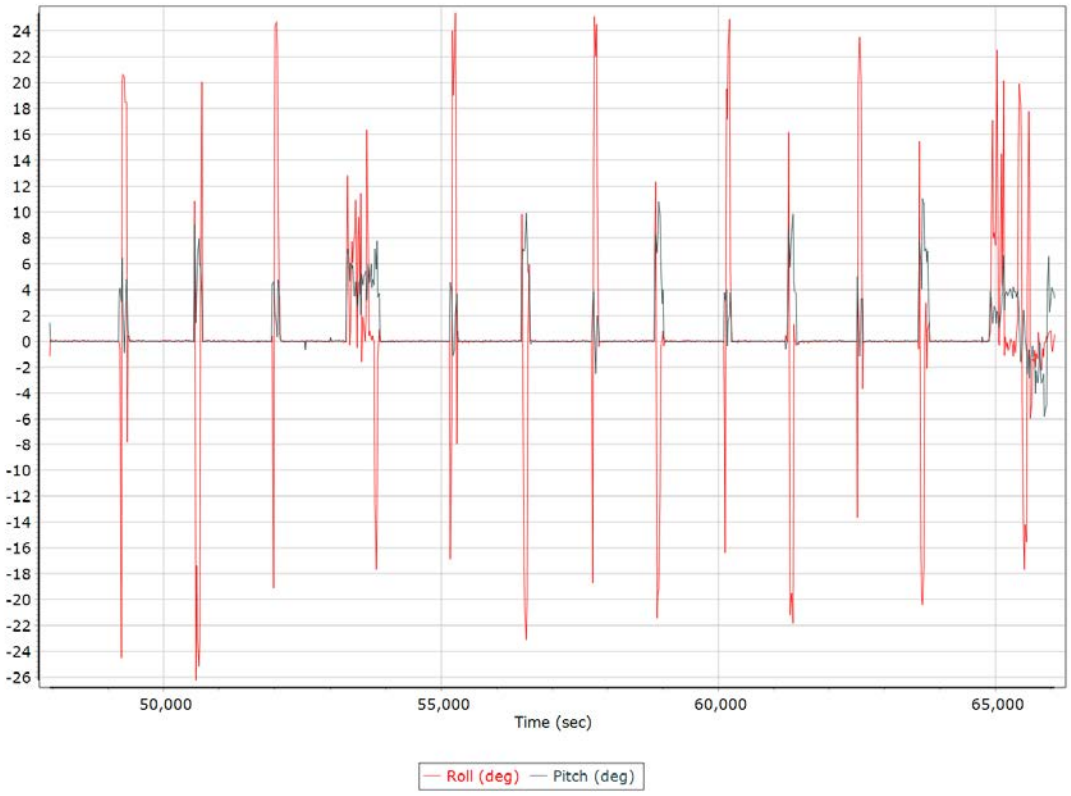
Top View



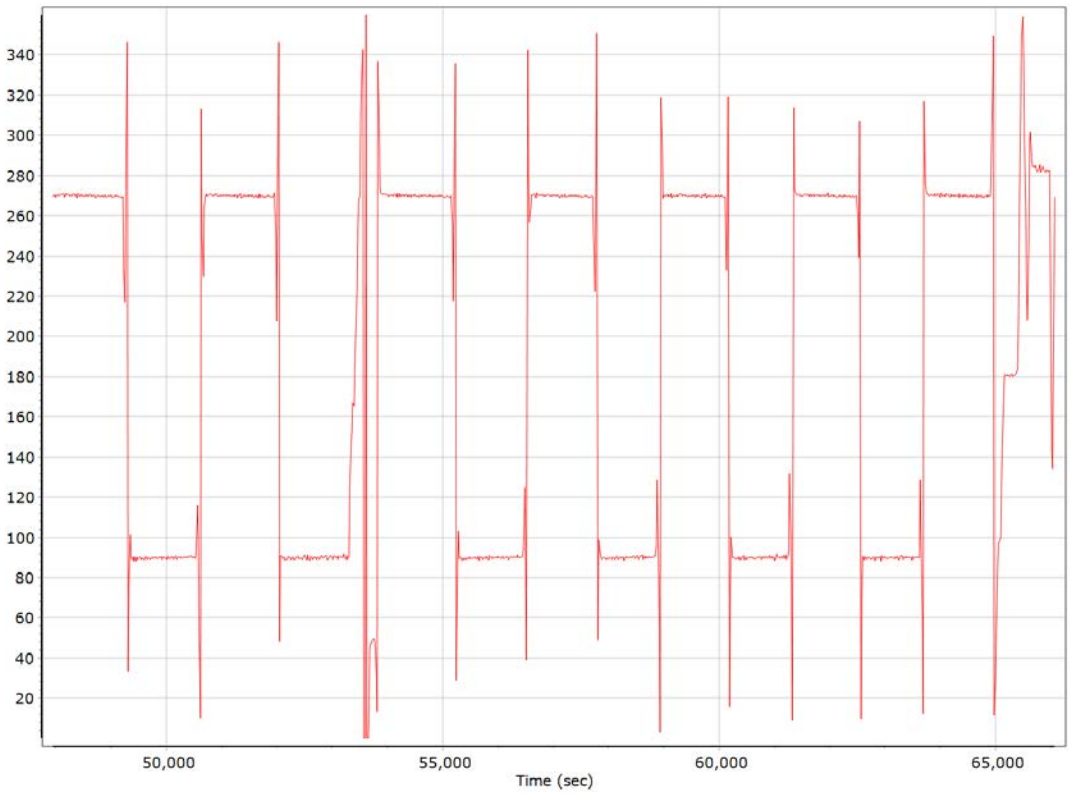
Altitude



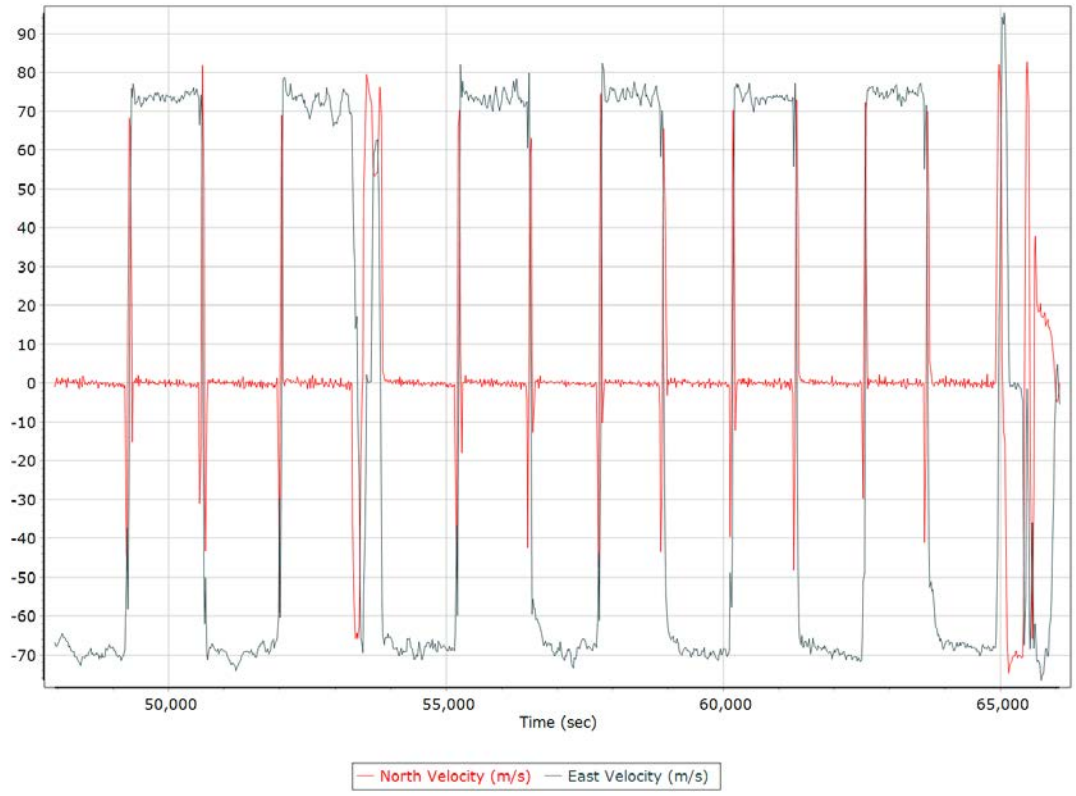
Roll/Pitch



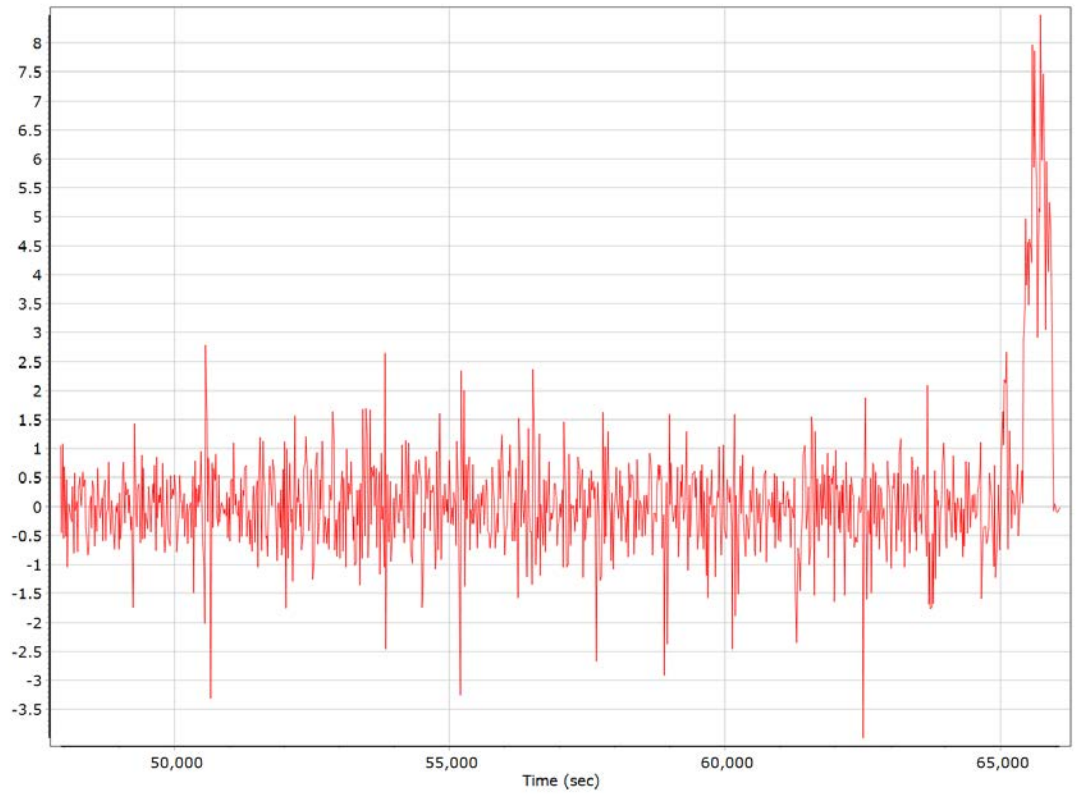
Heading



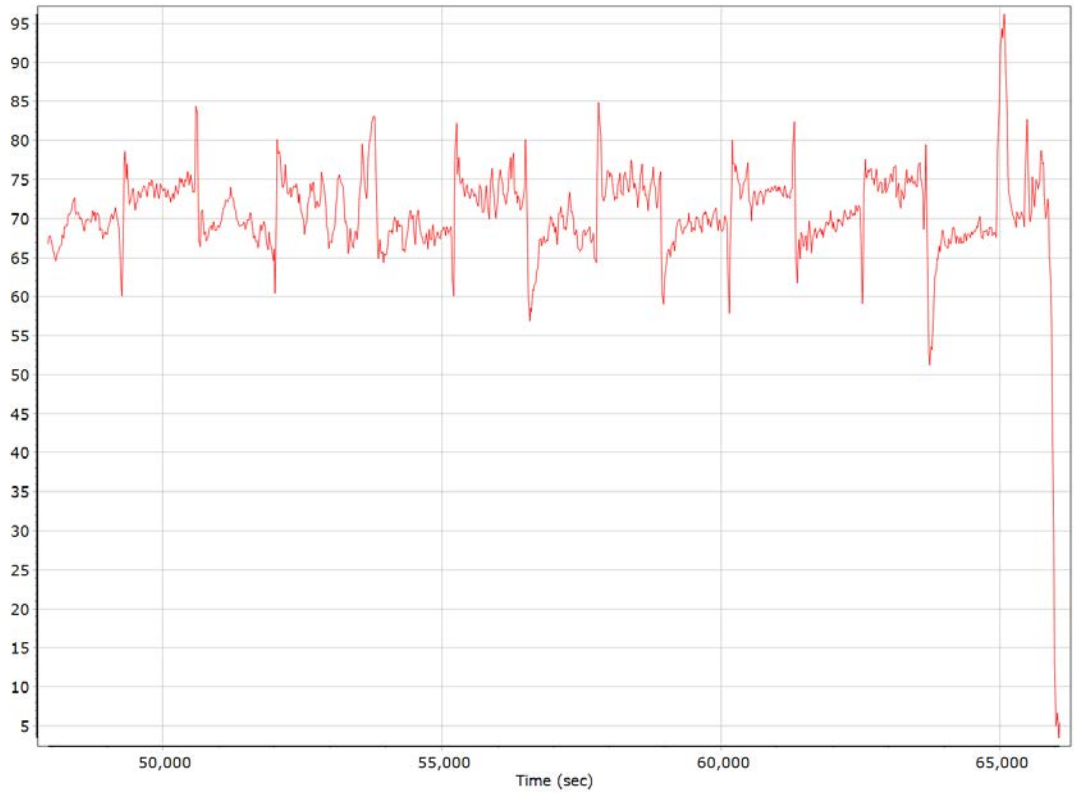
North/East Velocity



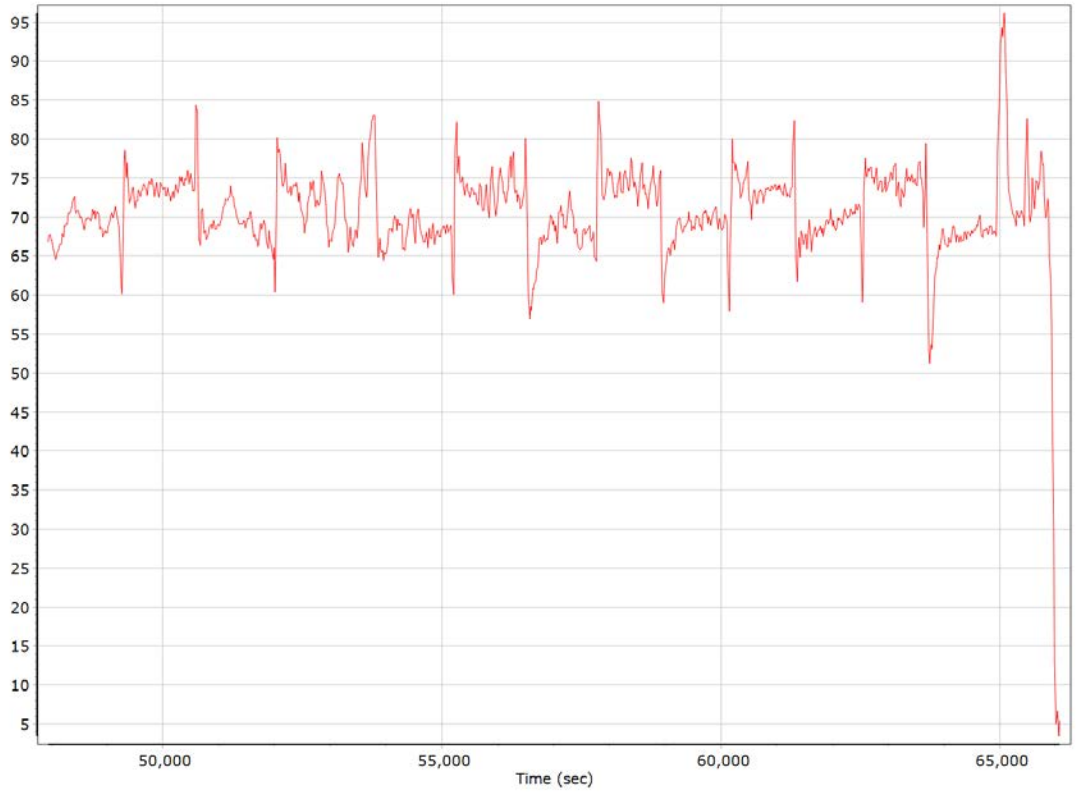
Down Velocity



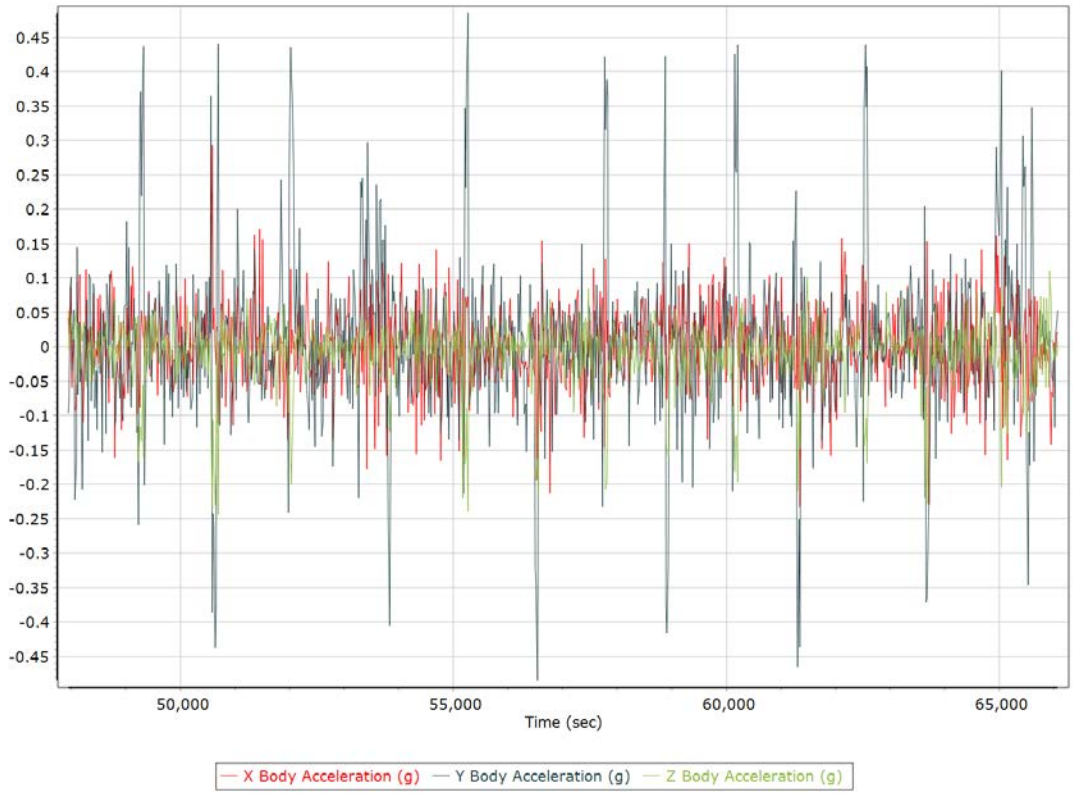
Total Speed



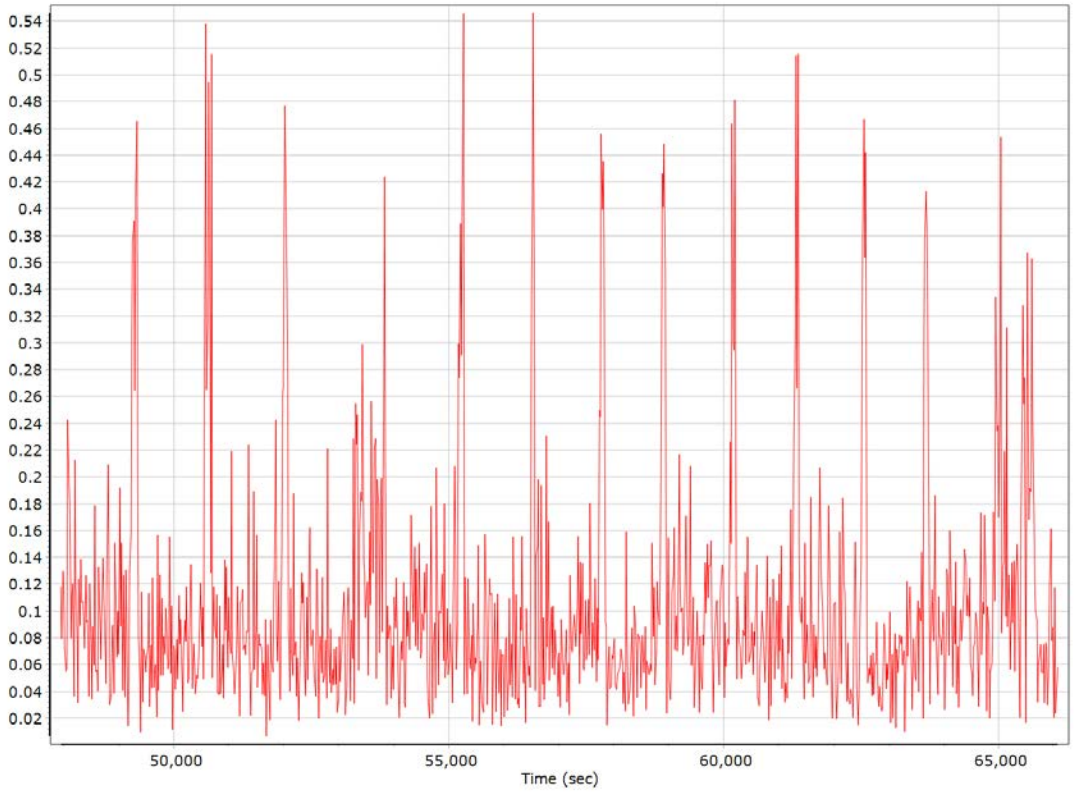
Ground Speed



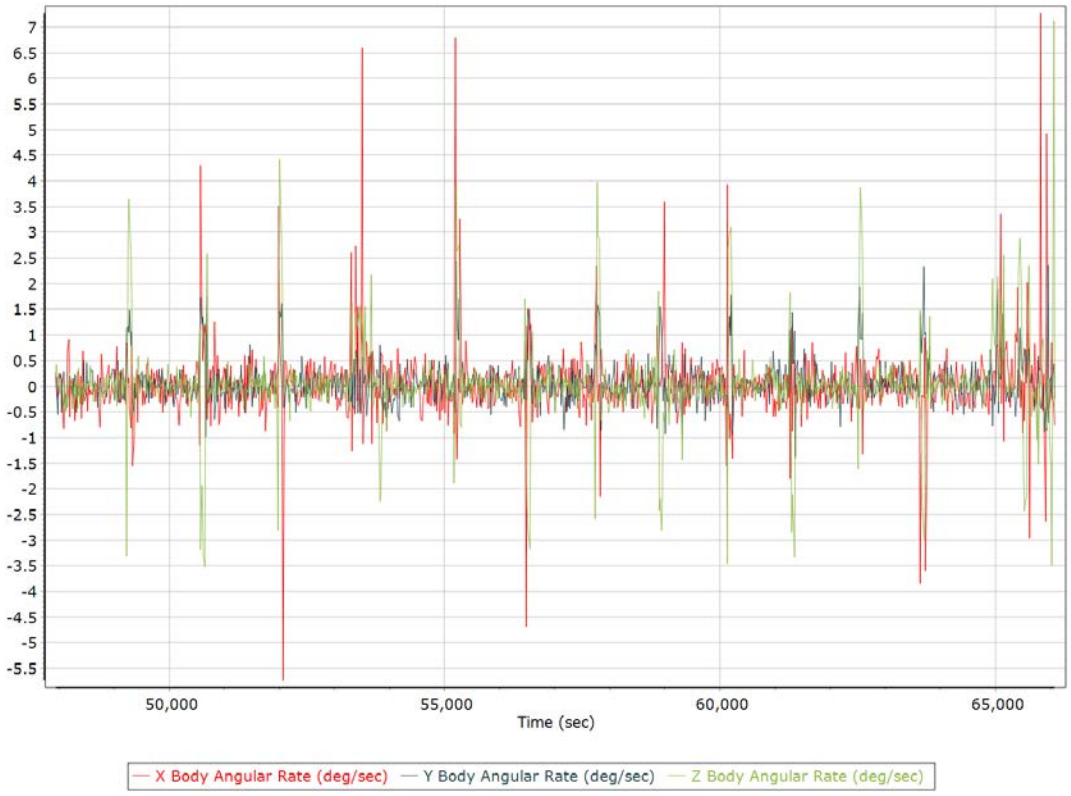
Body Acceleration



Total Body Acceleration

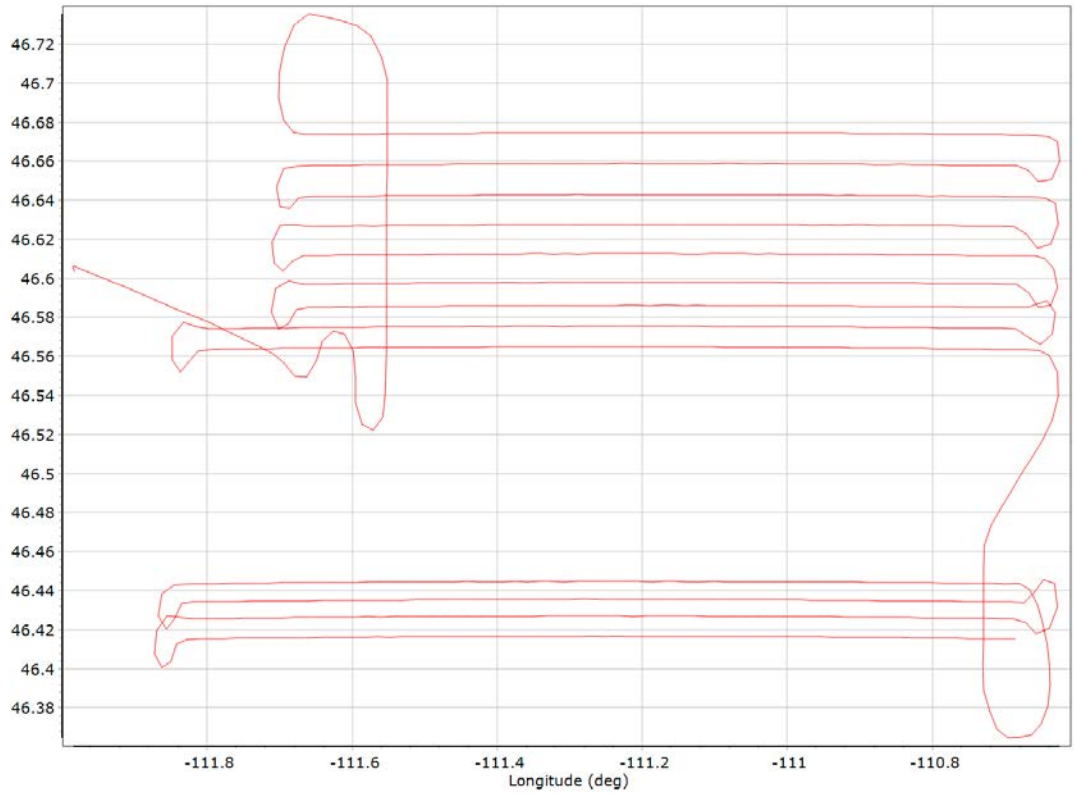


Body Angular Rate

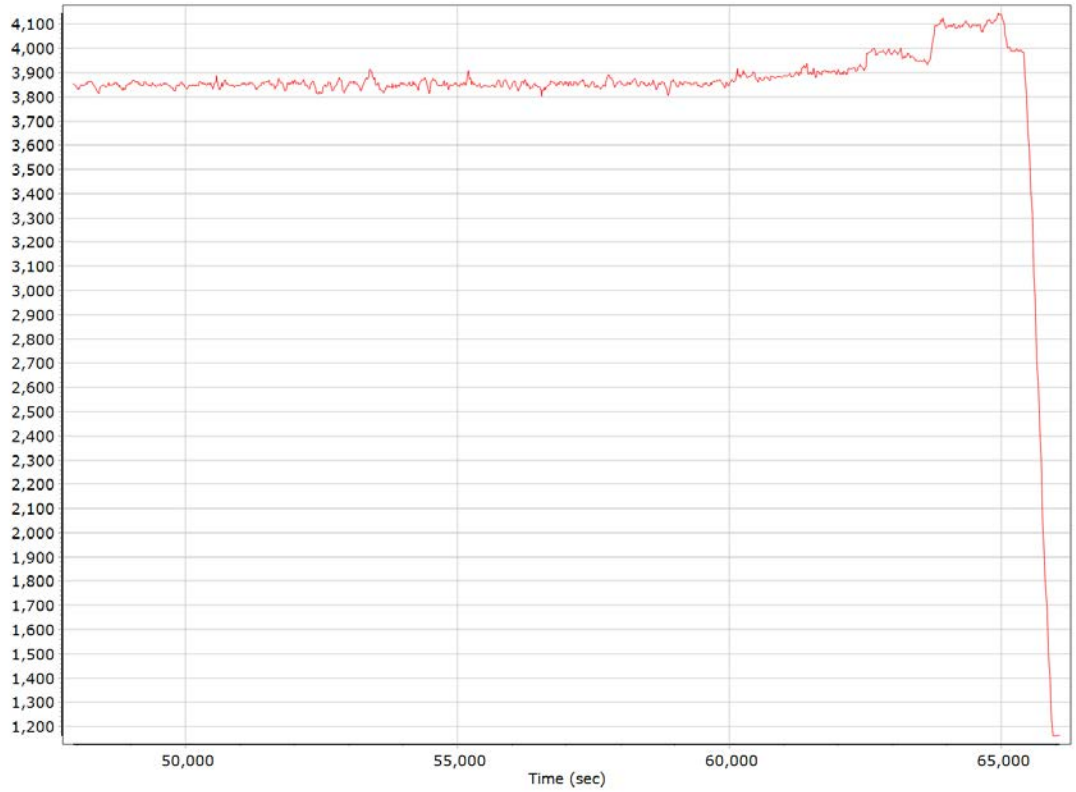


Forward Processed Trajectory Information

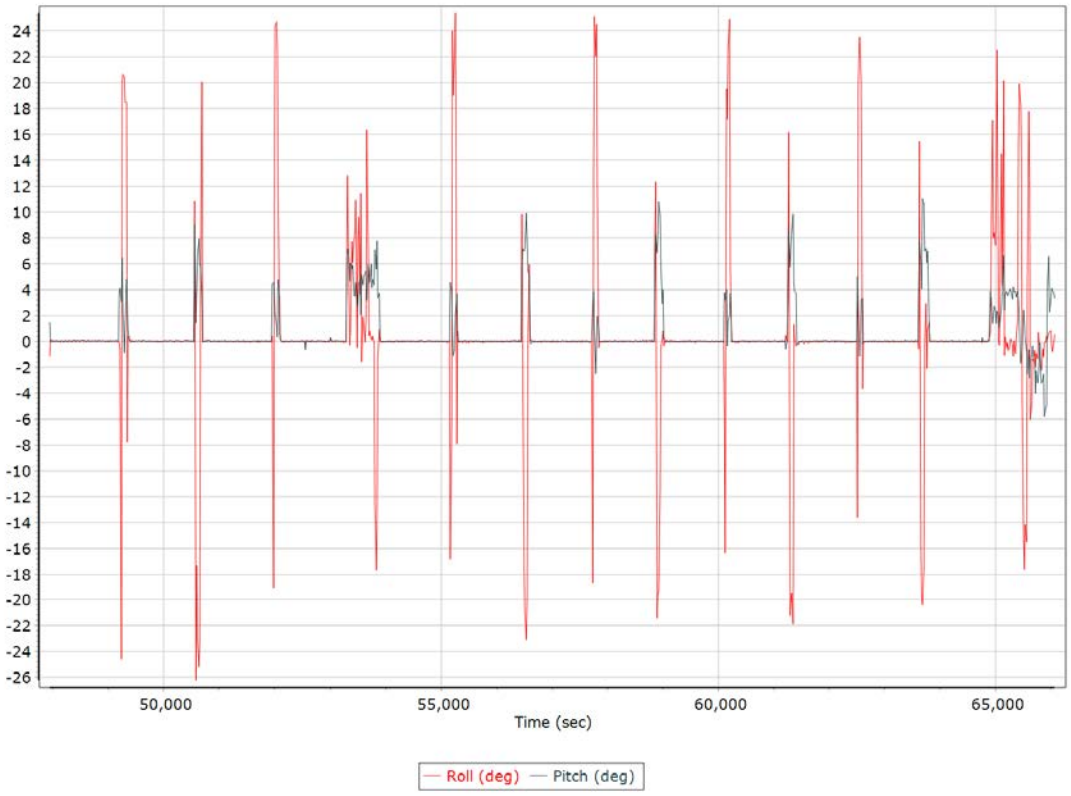
Top View



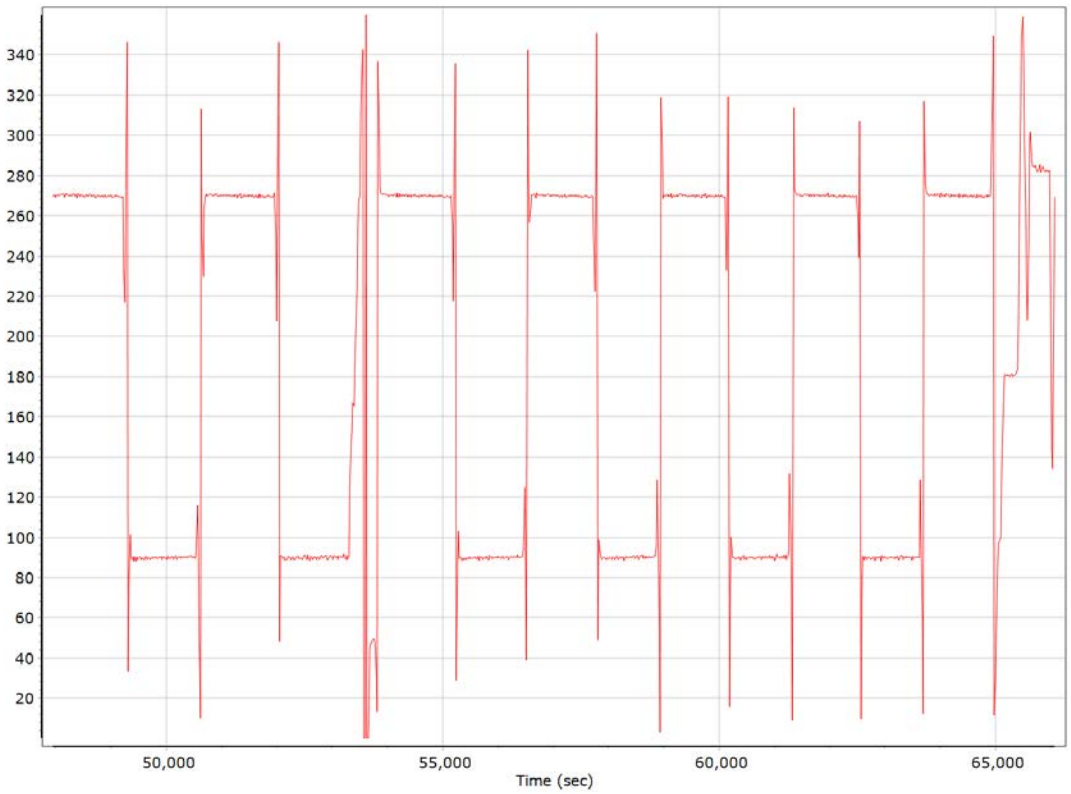
Altitude



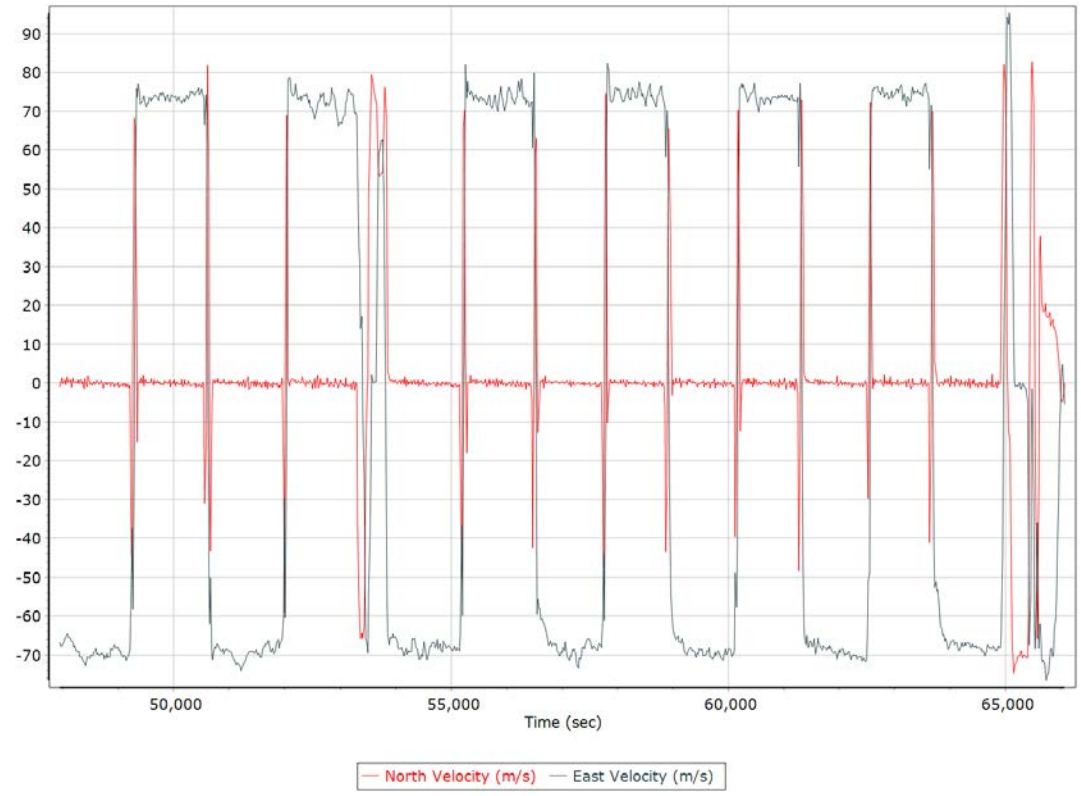
Roll/Pitch



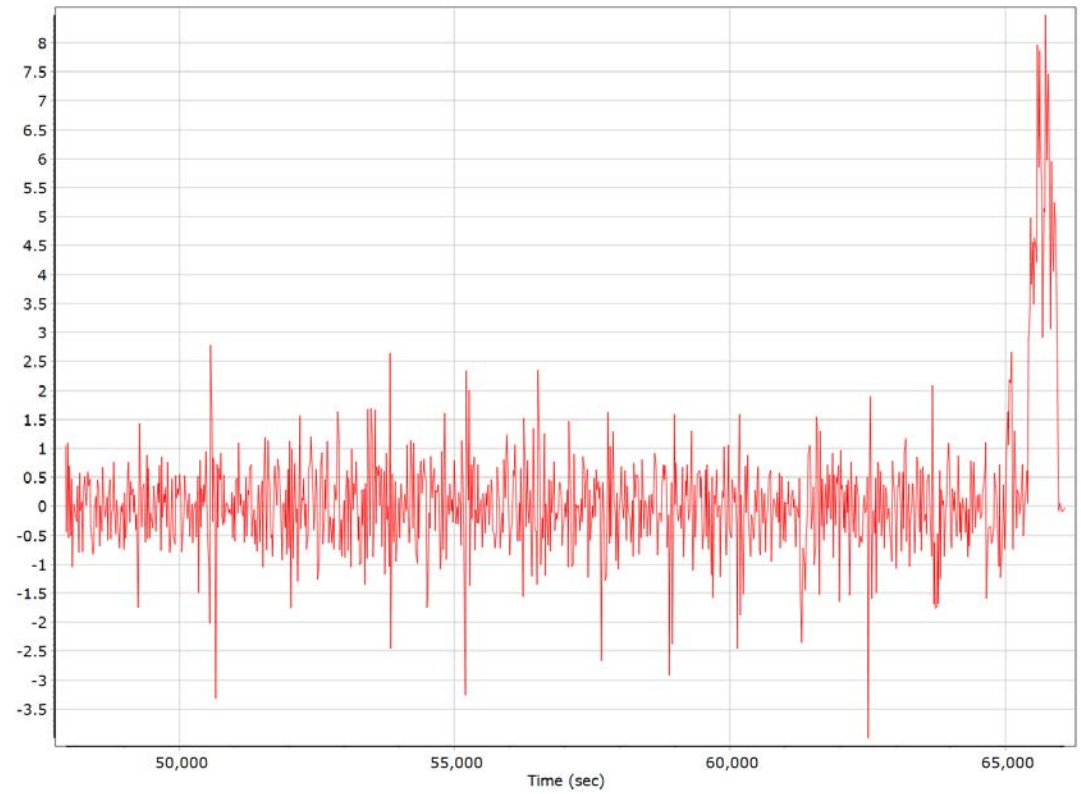
Heading



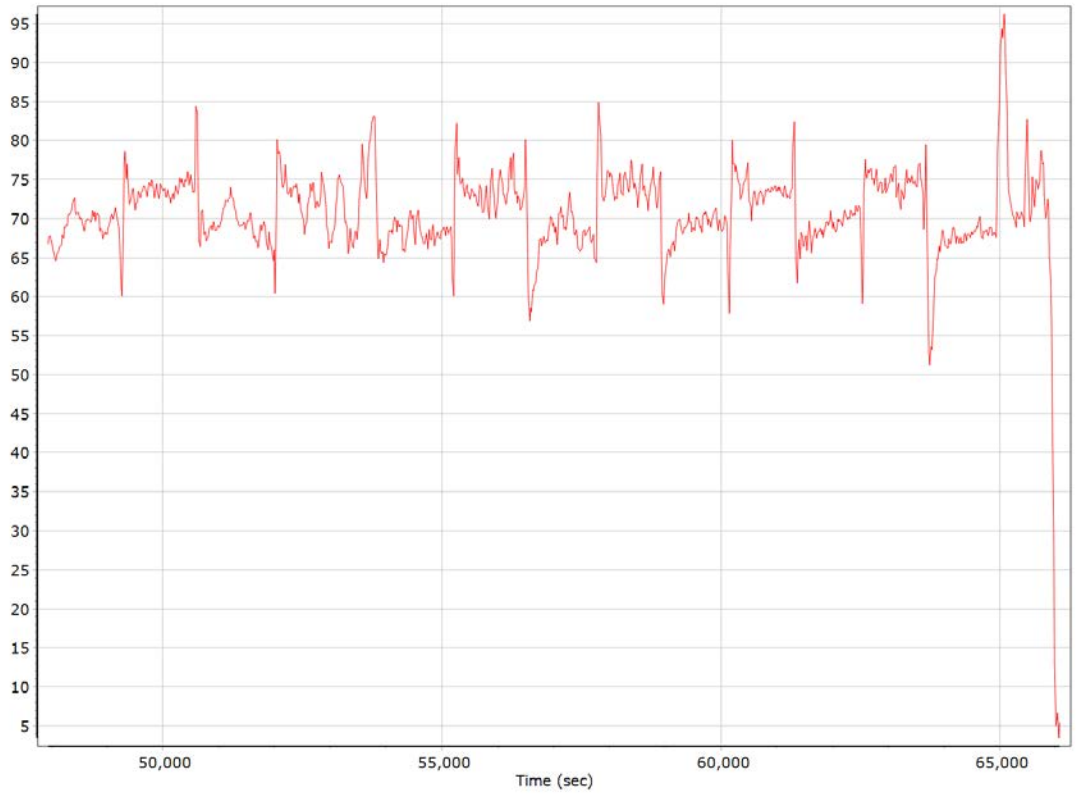
North/East Velocity



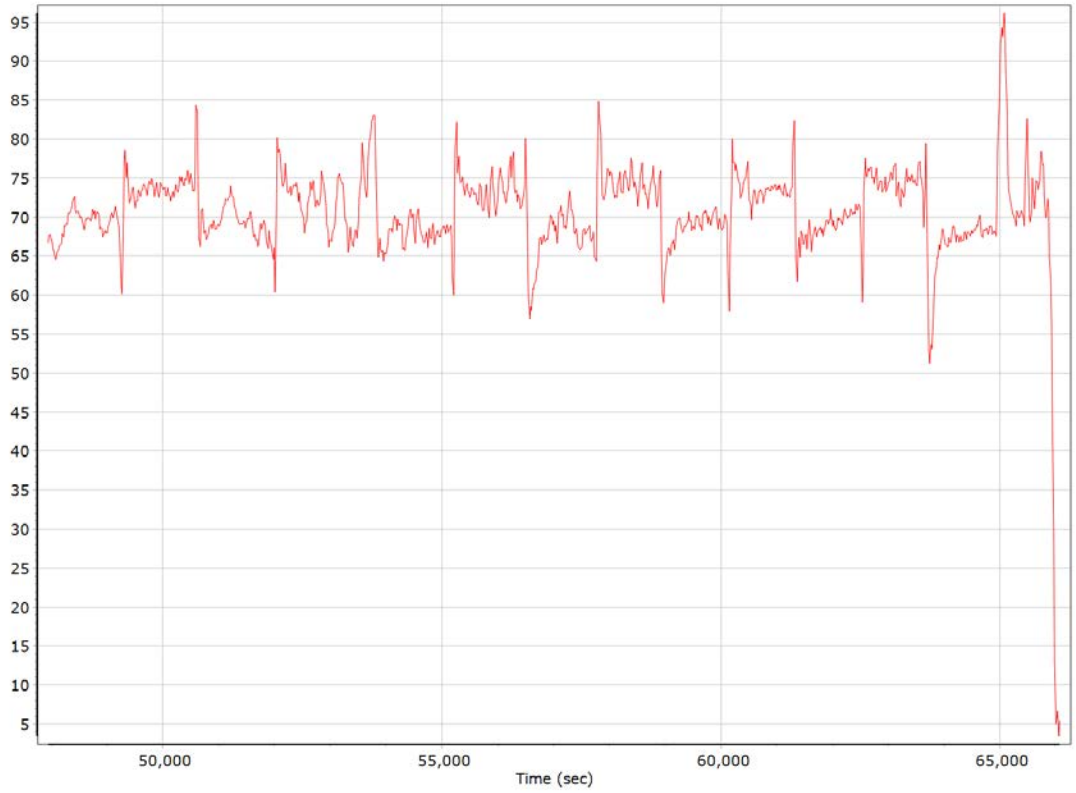
Down Velocity



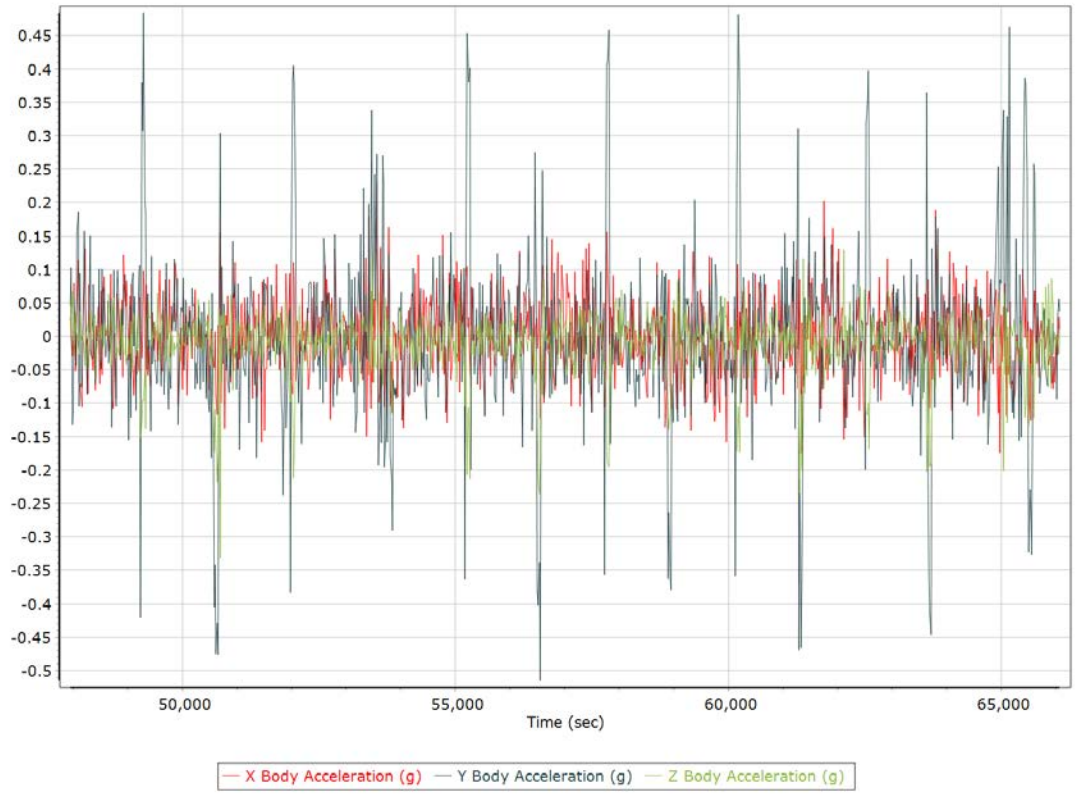
Total Speed



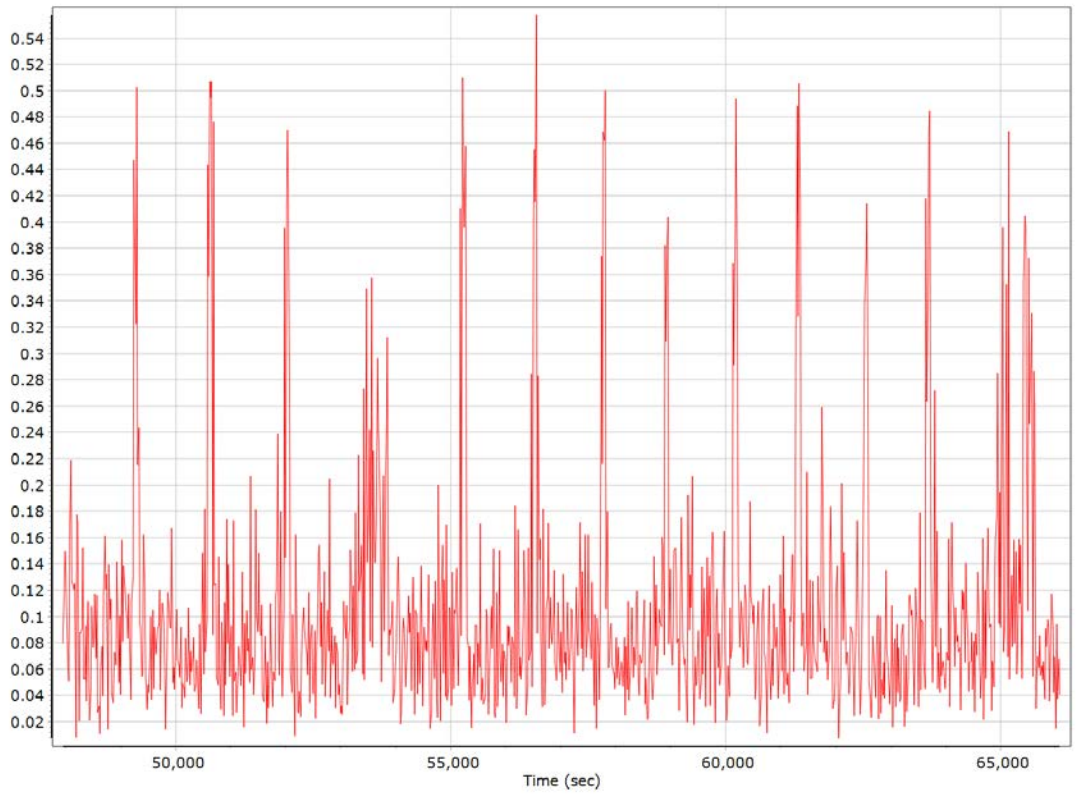
Ground Speed



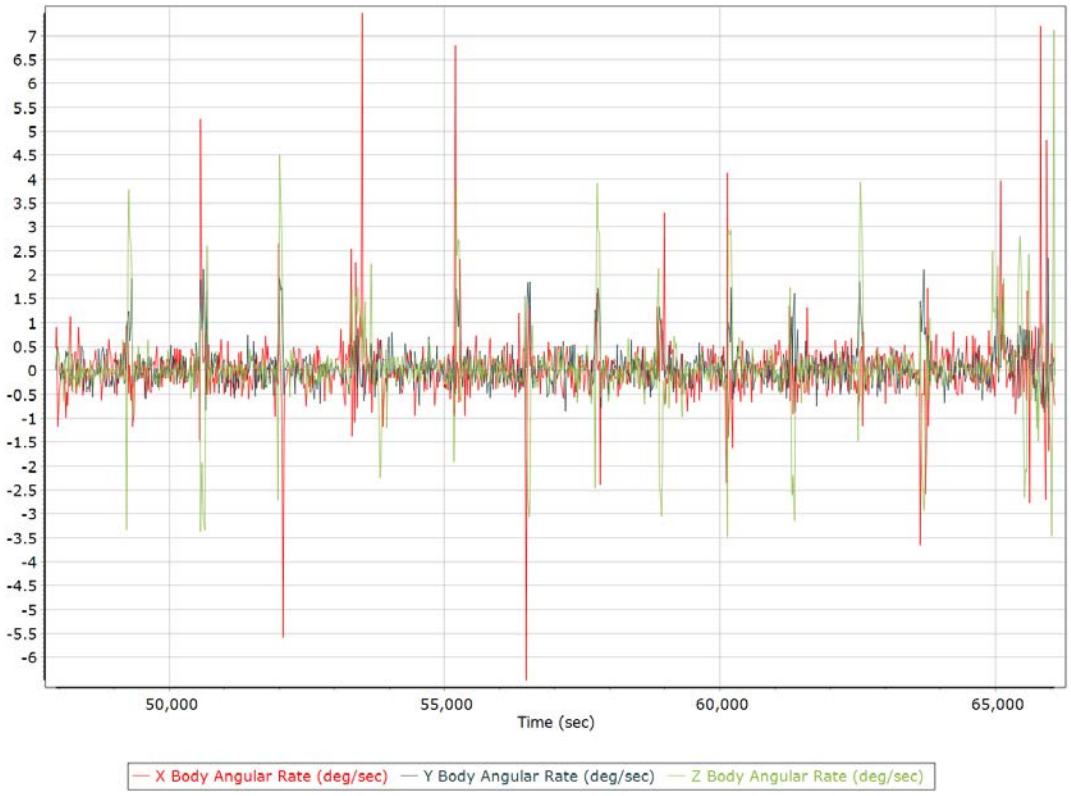
Body Acceleration



Total Body Acceleration



Body Angular Rate



GNSS QC

GNSS QC Statistics

Statistics	Min	Max	Mean
Baseline length (km)	0.00	0.00	
Number of GPS SV	6	11	8
Number of GLONASS SV	4	8	6
Number of QZSS SV	0	0	0
Number of BEIDOU SV	0	0	0
Number of GALILEO SV	6	9	7
Total number of SV	18	26	22
PDOP	0.92	1.44	1.12
QC Solution Gaps	0.00	0.00	
Solution Type	Fixed	Float	No solution
Epoch (sec)	18199.00	0.00	0.00
Percentage	100.00	0.00	0.00

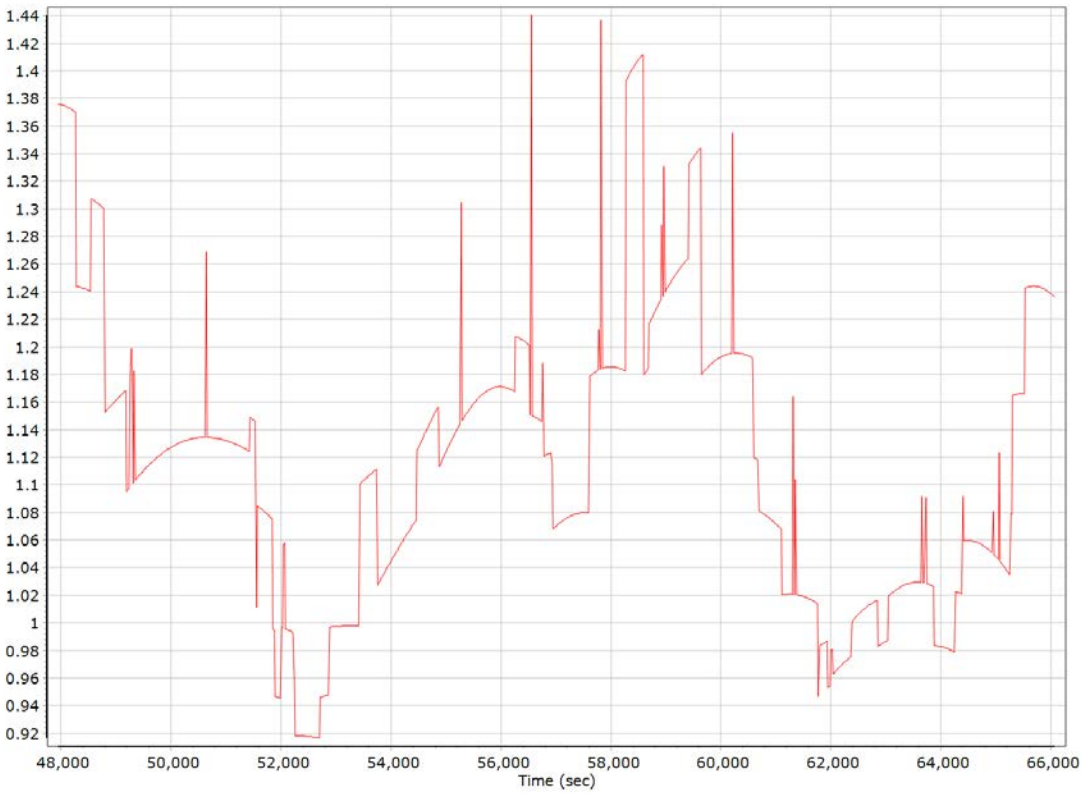
Num SVs in solution



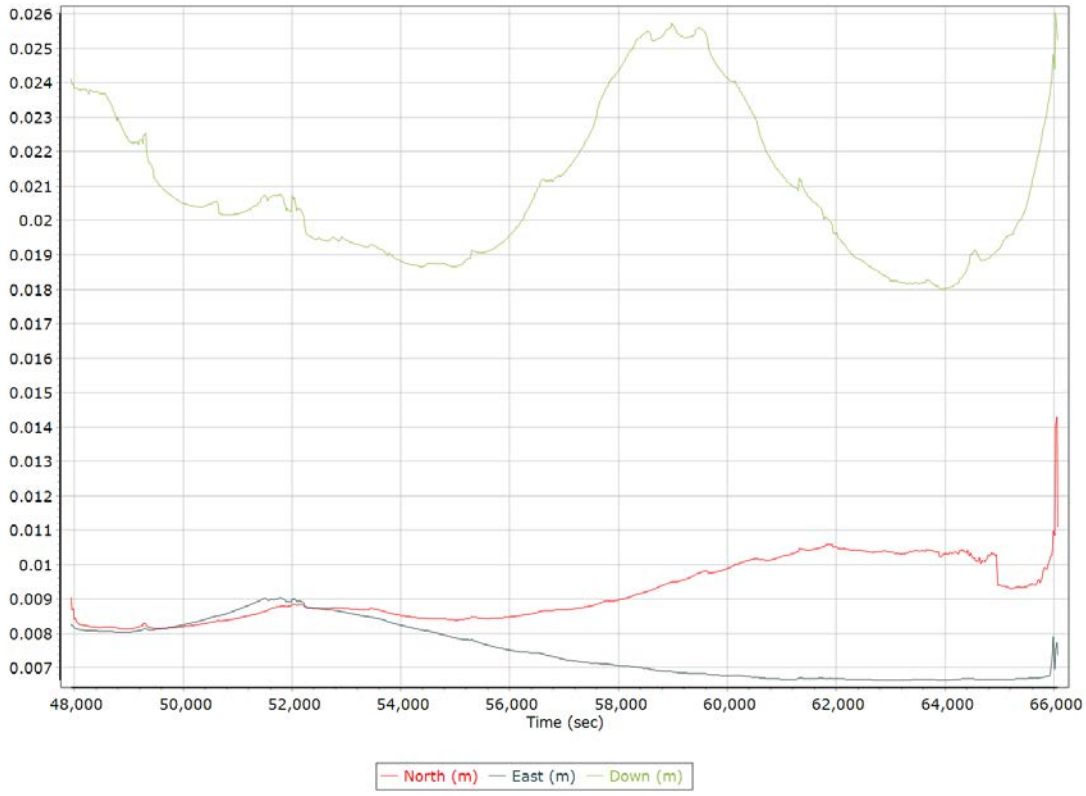
Forward/Reverse Separation



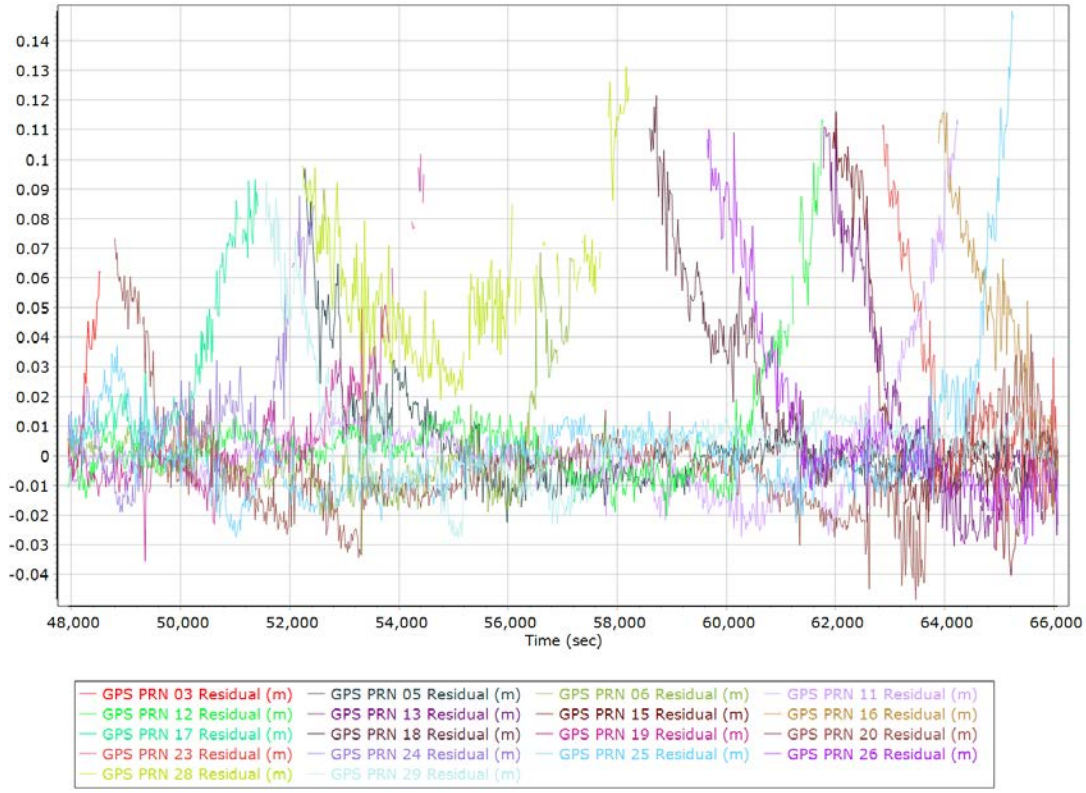
PDOP



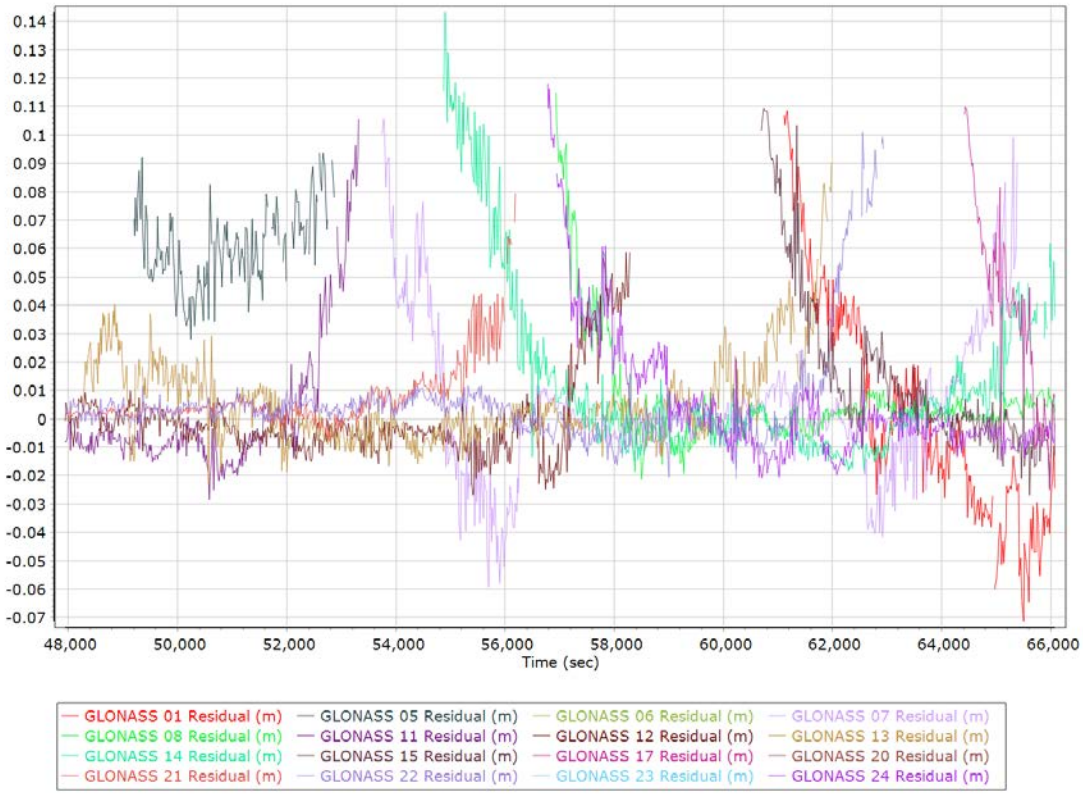
Estimated Position Accuracy



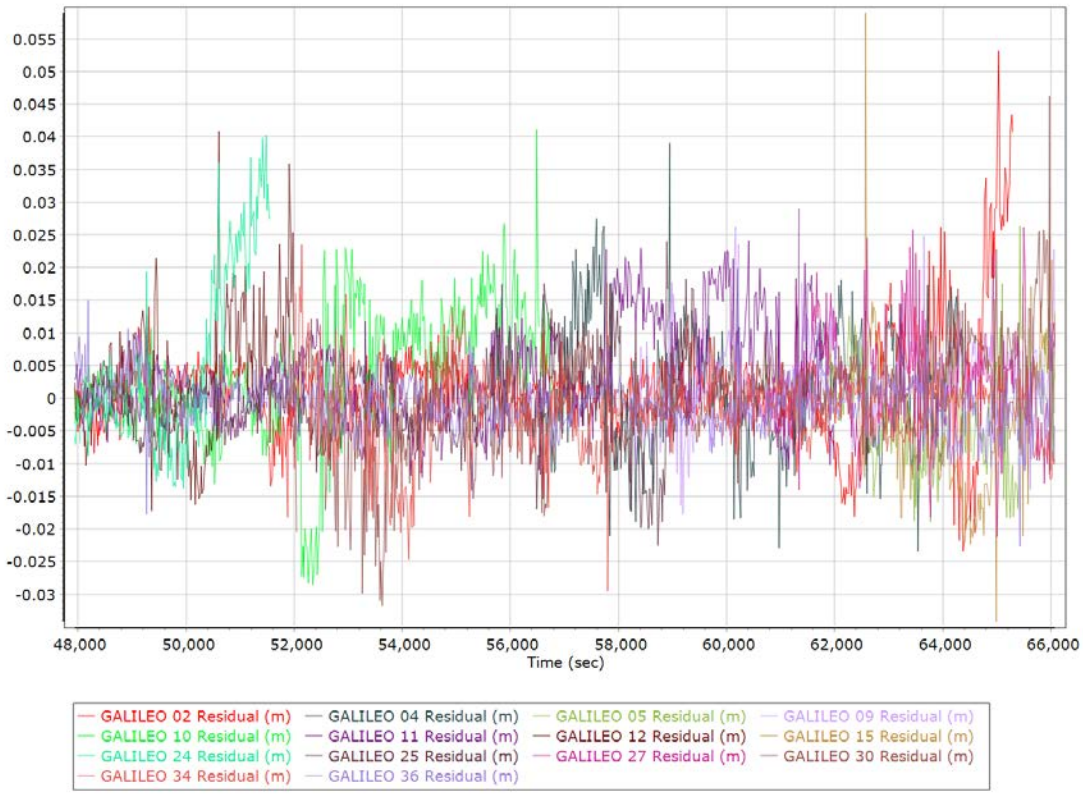
GPS Residuals



GLONASS Residuals



GALILEO Residuals



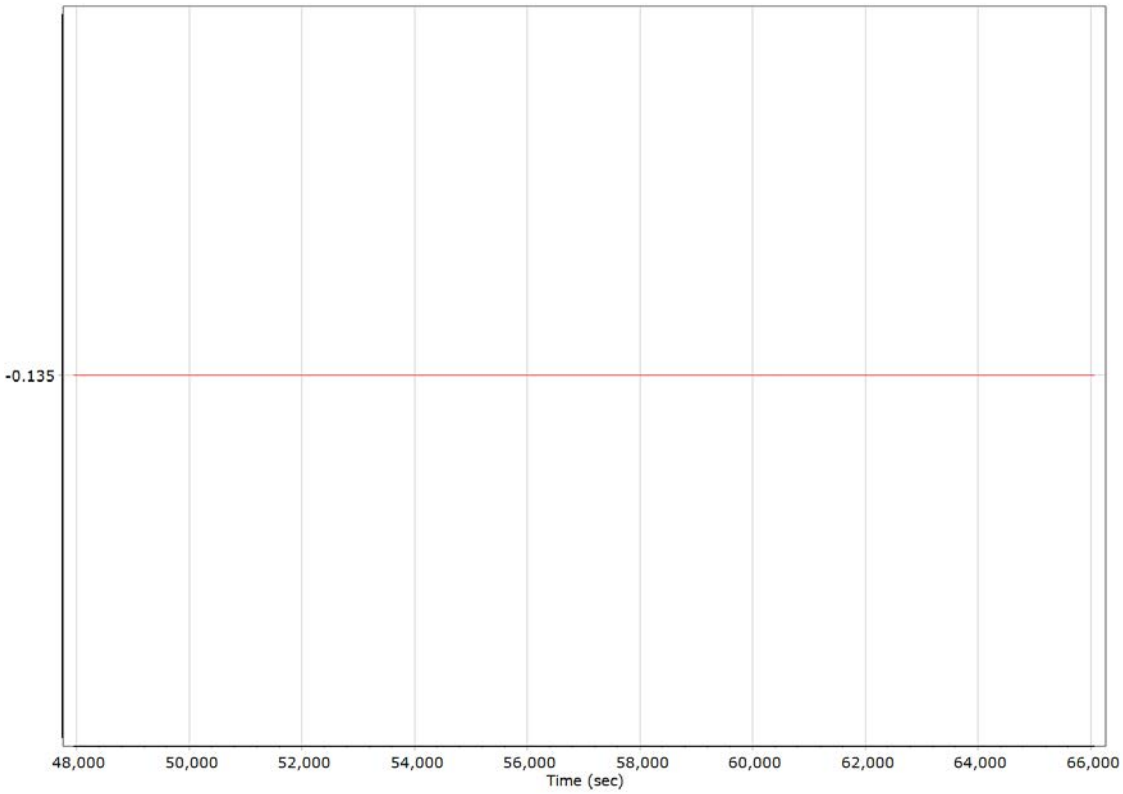
GNSS-Inertial Processor Configuration

Processing mode	IN-Fusion PP-RTX		
Stabilized mount	True		
Processing start time	47858.000 (7/23/2023 1:17:38 PM)		
Processing end time	66085.000 (7/23/2023 6:21:25 PM)		
Initial attitude source	Primary GNSS Track		
IMU Sensor Context	Processing with Onboard IMU		
Gimbal to IMU lever arm (m)	-0.034	-0.010	-0.374
Gimbal to IMU mounting angles (deg)	0.000	0.000	0.000
Gimbal to Primary GNSS lever arm (m)	-0.135	0.064	-1.339
Gimbal to Primary GNSS lever arm std dev (m)	0.030	0.030	0.030
Aircraft to Reference mounting angles (deg)	0.000	0.000	0.000

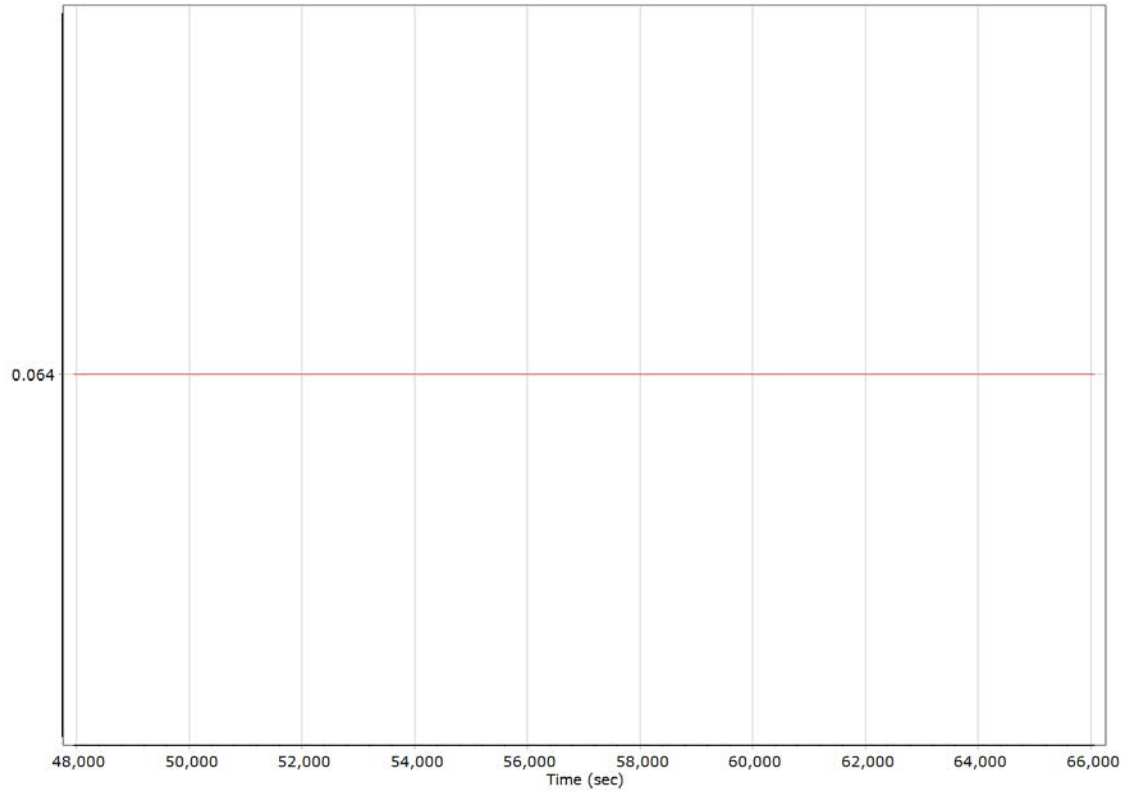
Calibrated Installation Parameters

Reference-Primary GNSS Lever Arm (m)

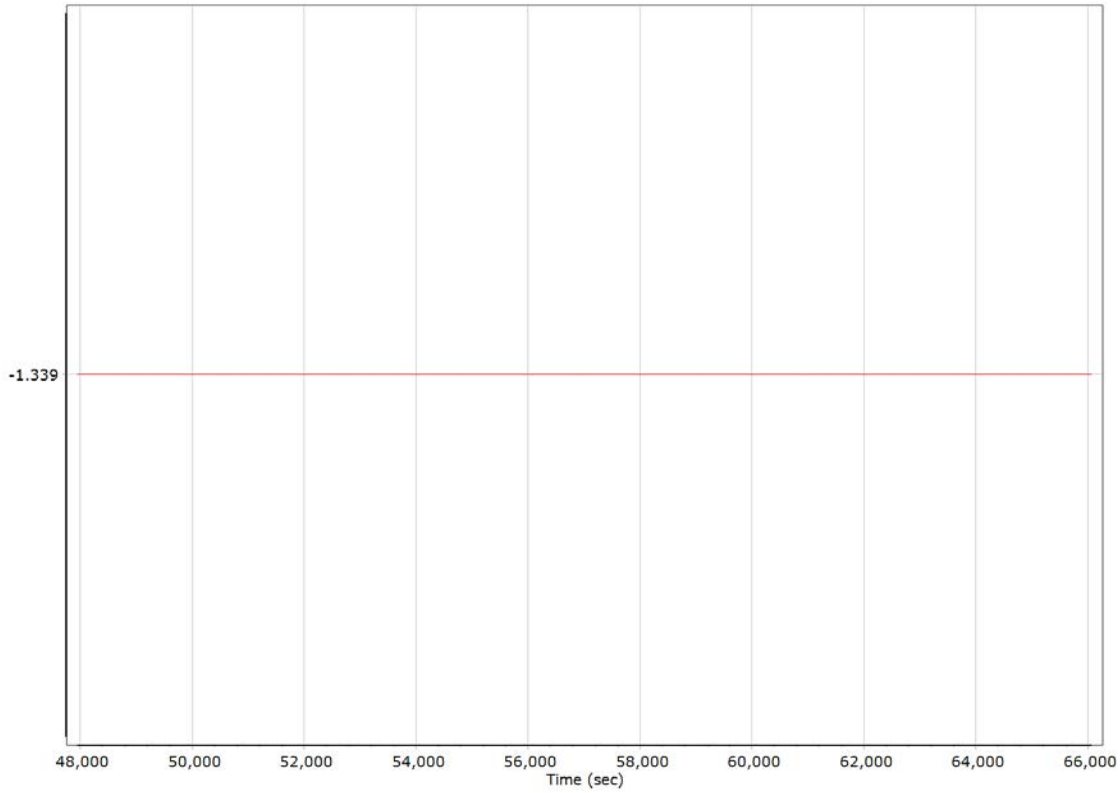
X Reference-Primary GNSS Lever Arm (m)



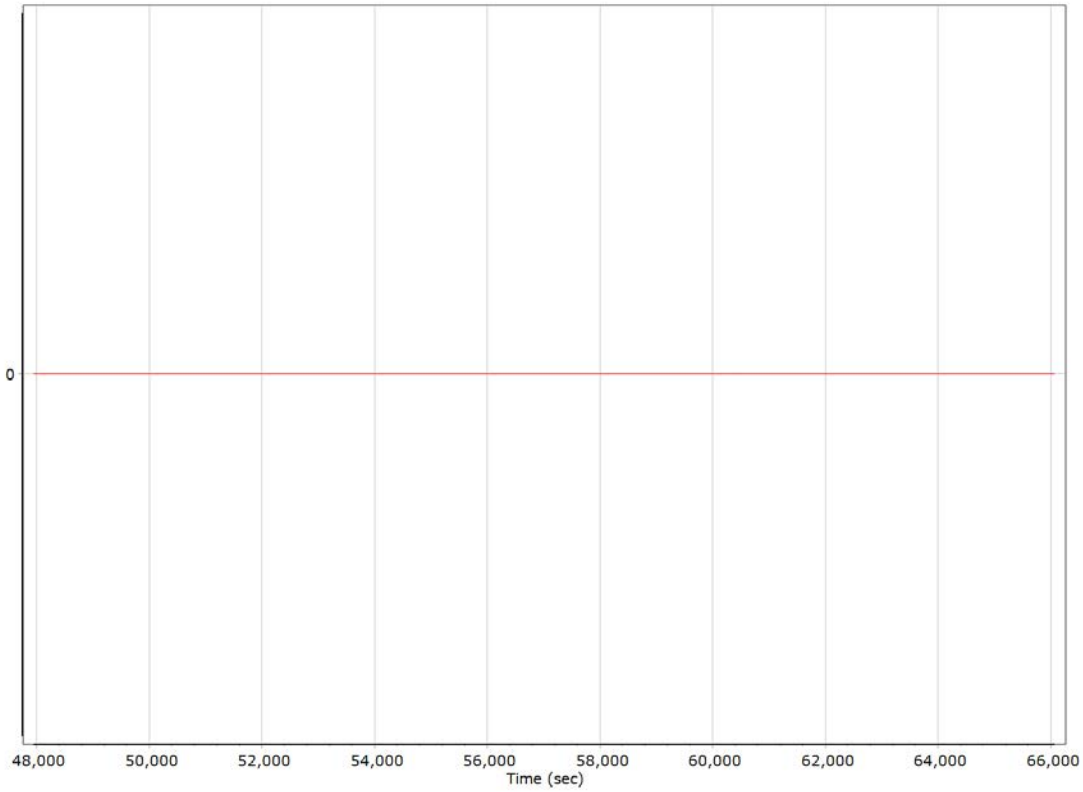
Y Reference-Primary GNSS Lever Arm (m)



Z Reference-Primary GNSS Lever Arm (m)



Reference-Primary GNSS Lever Arm Figure of Merit



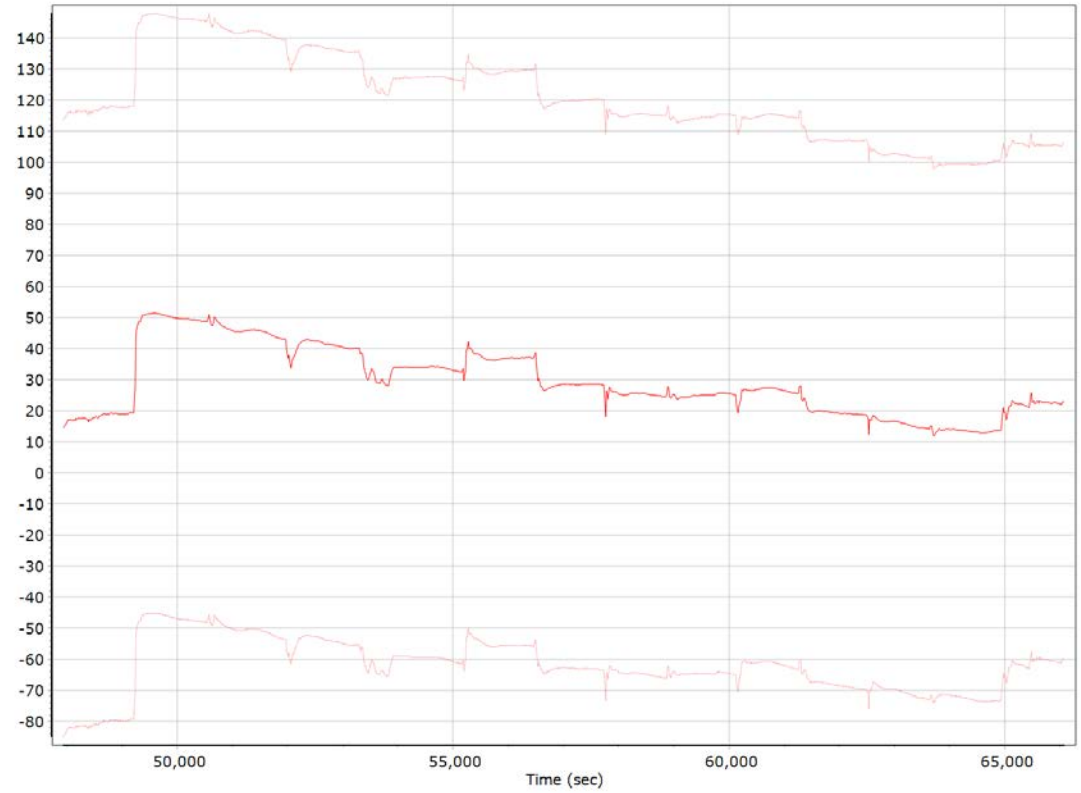
IN-Fusion QC

Forward Processed Estimated Errors, Reference Frame

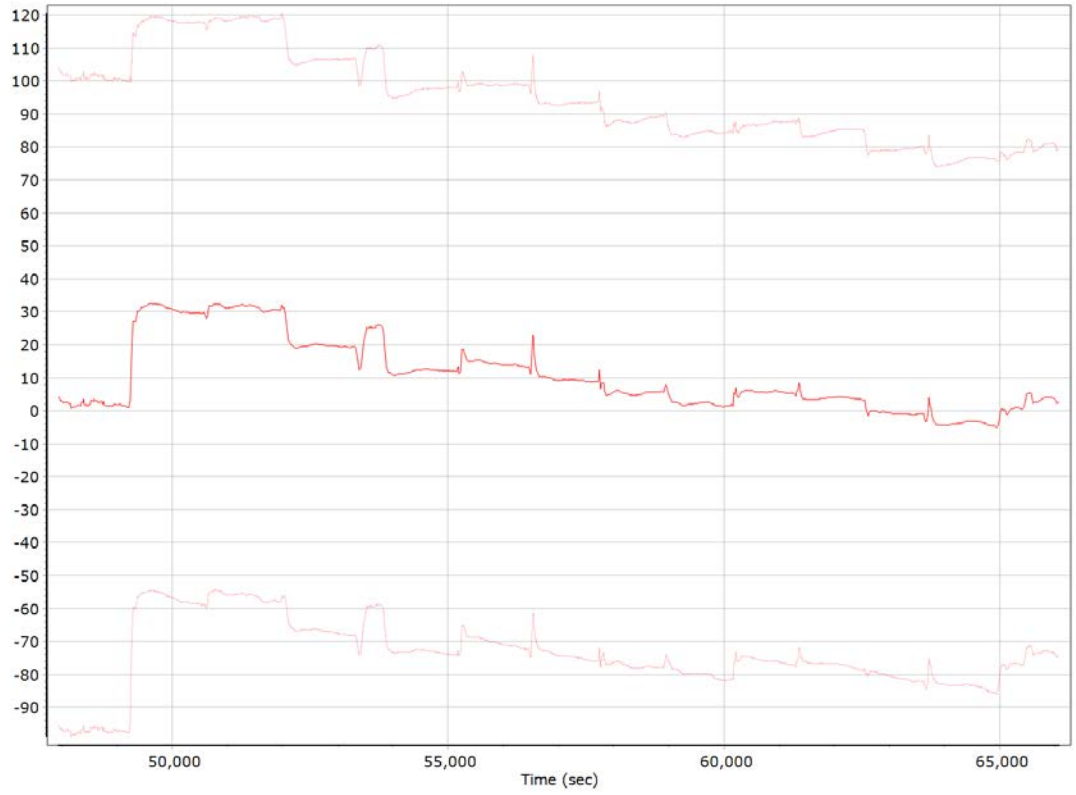
Accelerometer Bias (micro-g)



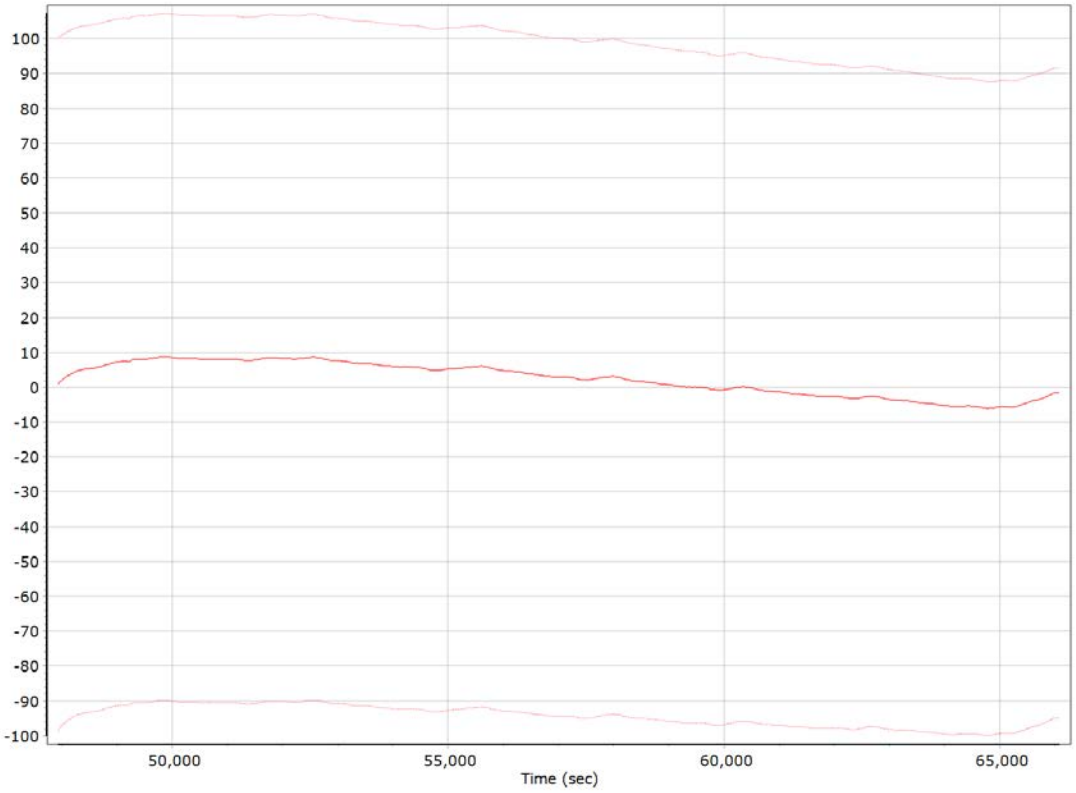
X Accelerometer Bias (micro-g)



Y Accelerometer Bias (micro-g)



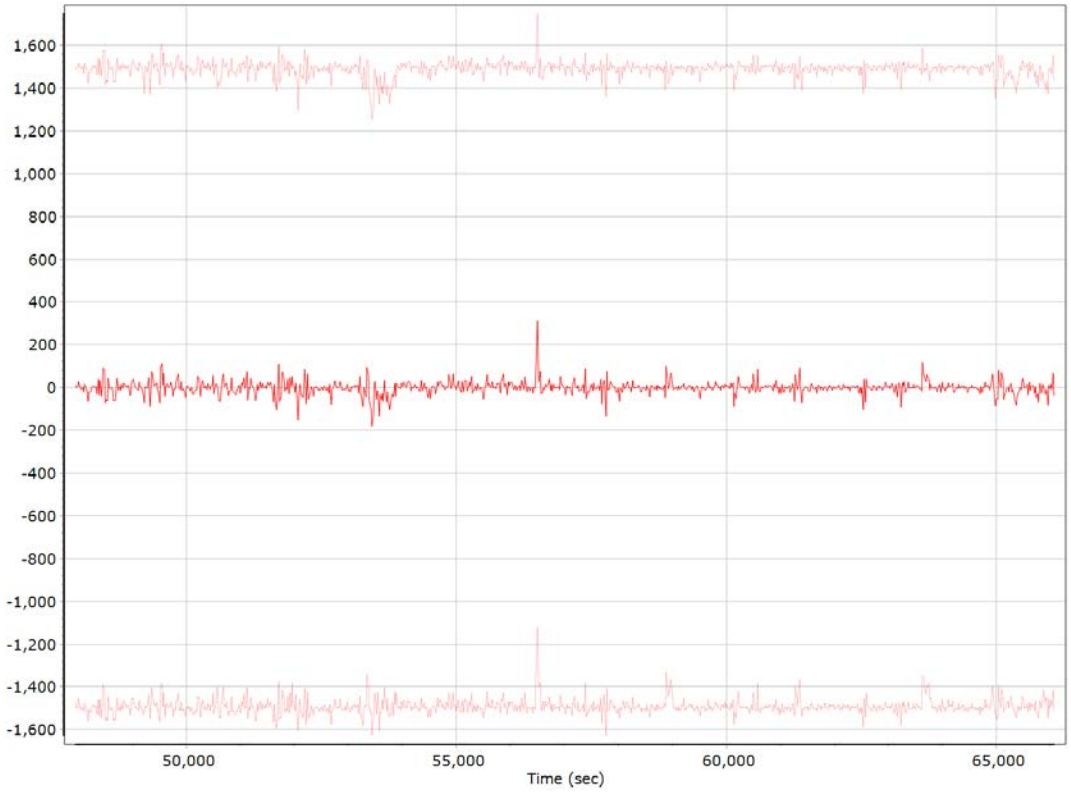
Z Accelerometer Bias (micro-g)



Accelerometer Scale Error (ppm)



X Accelerometer Scale Error (ppm)



Y Accelerometer Scale Error (ppm)



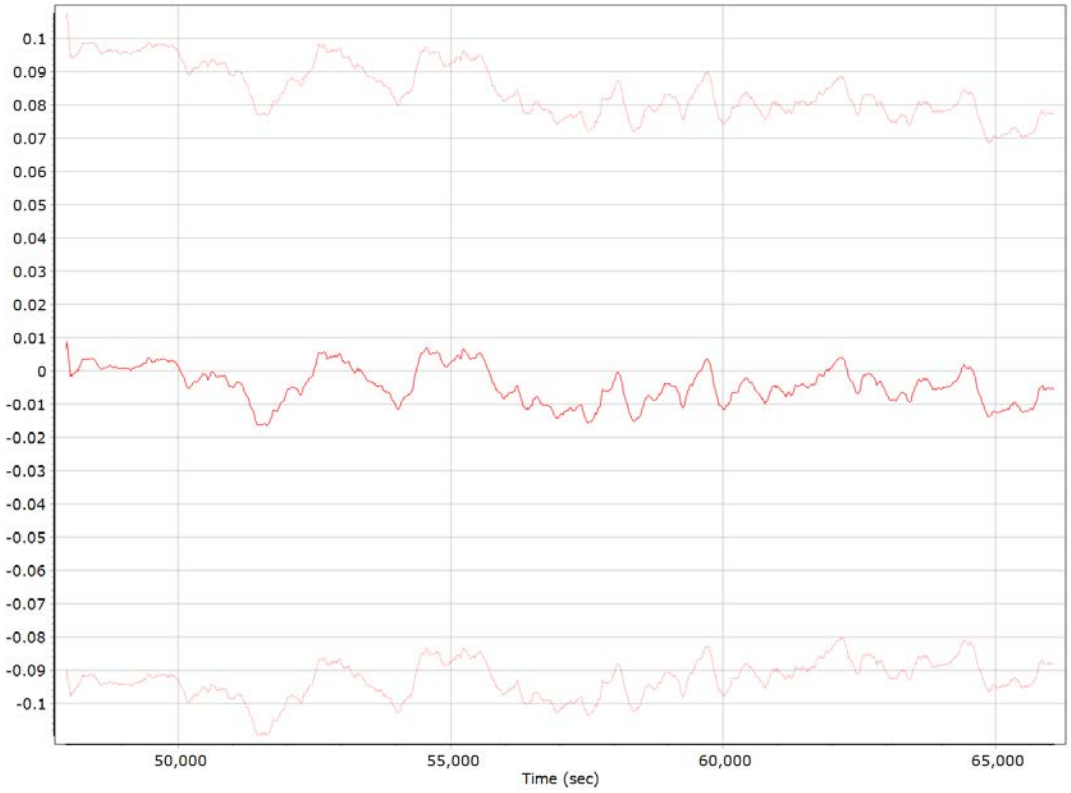
Z Accelerometer Scale Error (ppm)



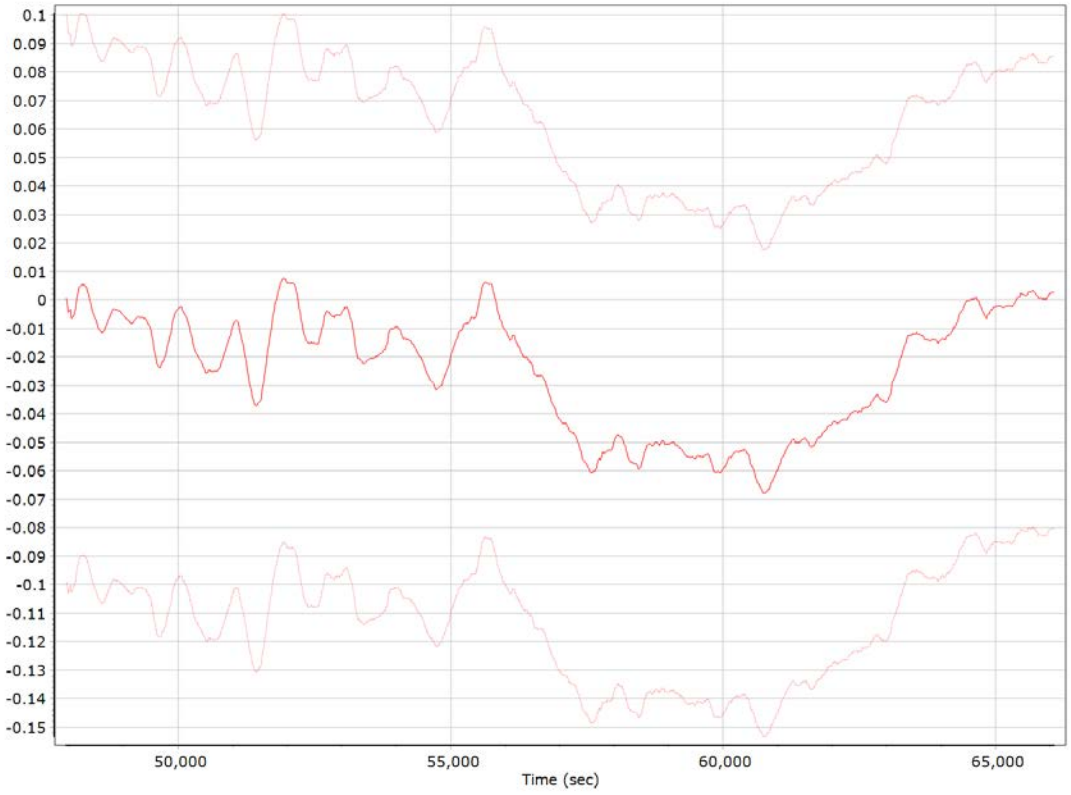
Gyro Bias (deg/h)



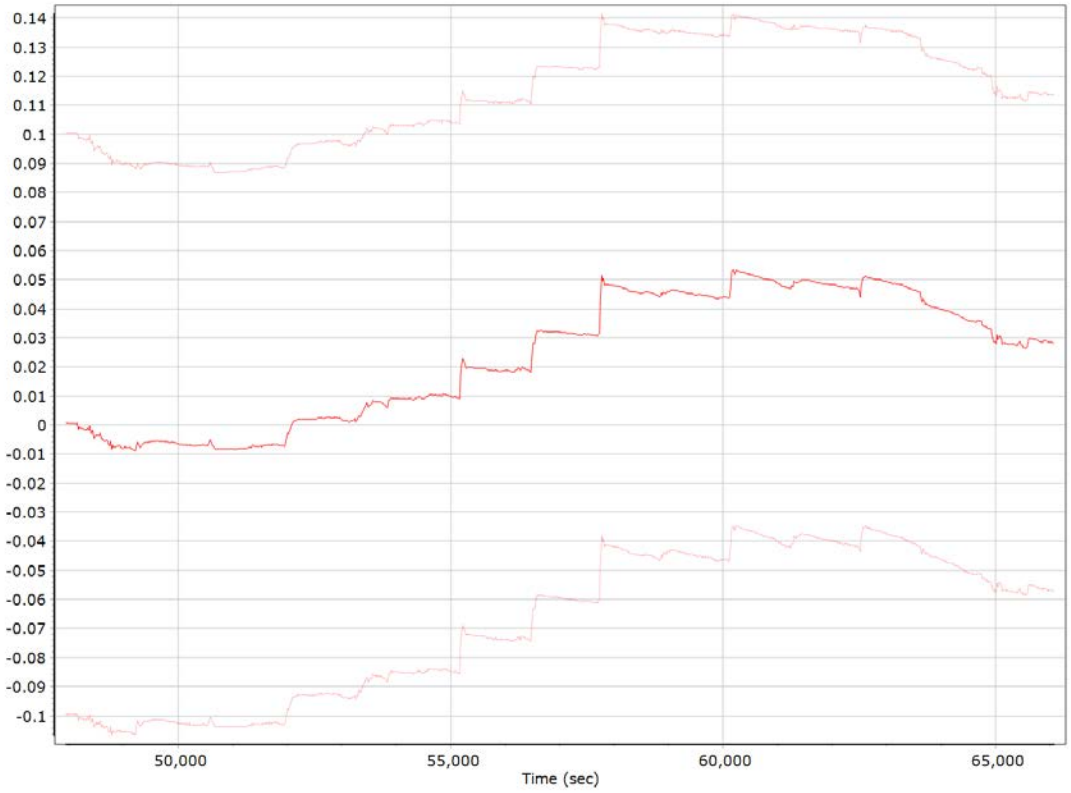
X Gyro Bias (deg/h)



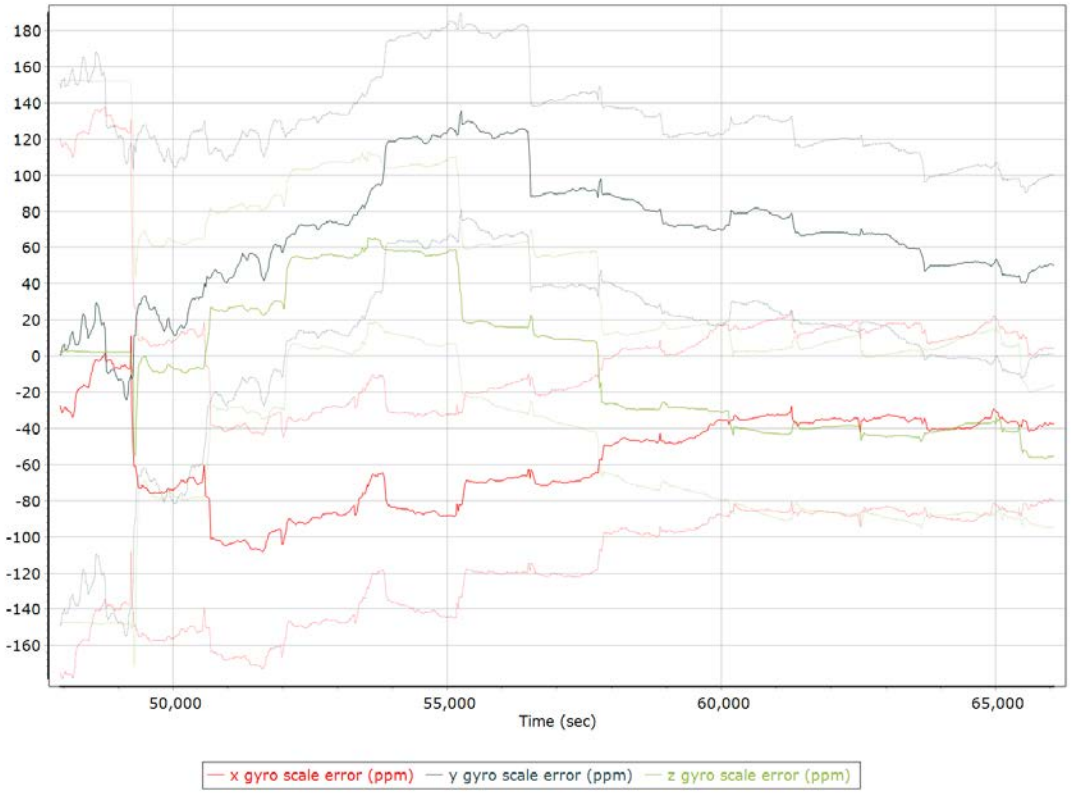
Y Gyro Bias (deg/h)



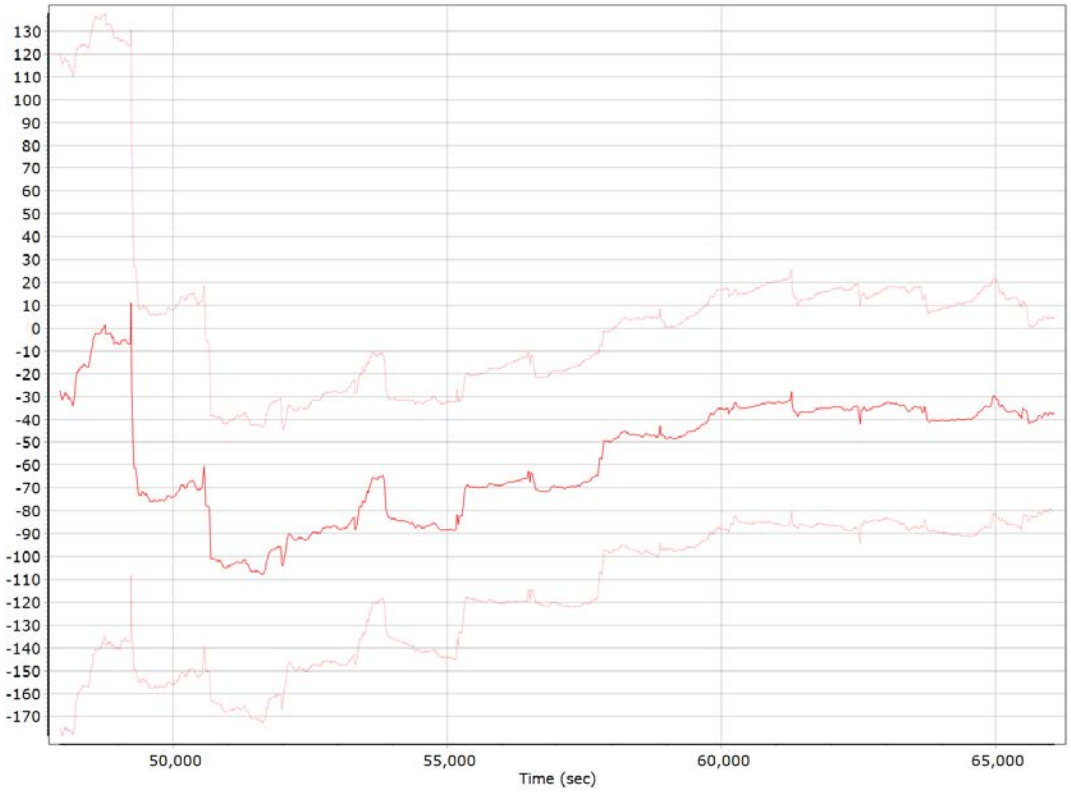
Z Gyro Bias (deg/h)



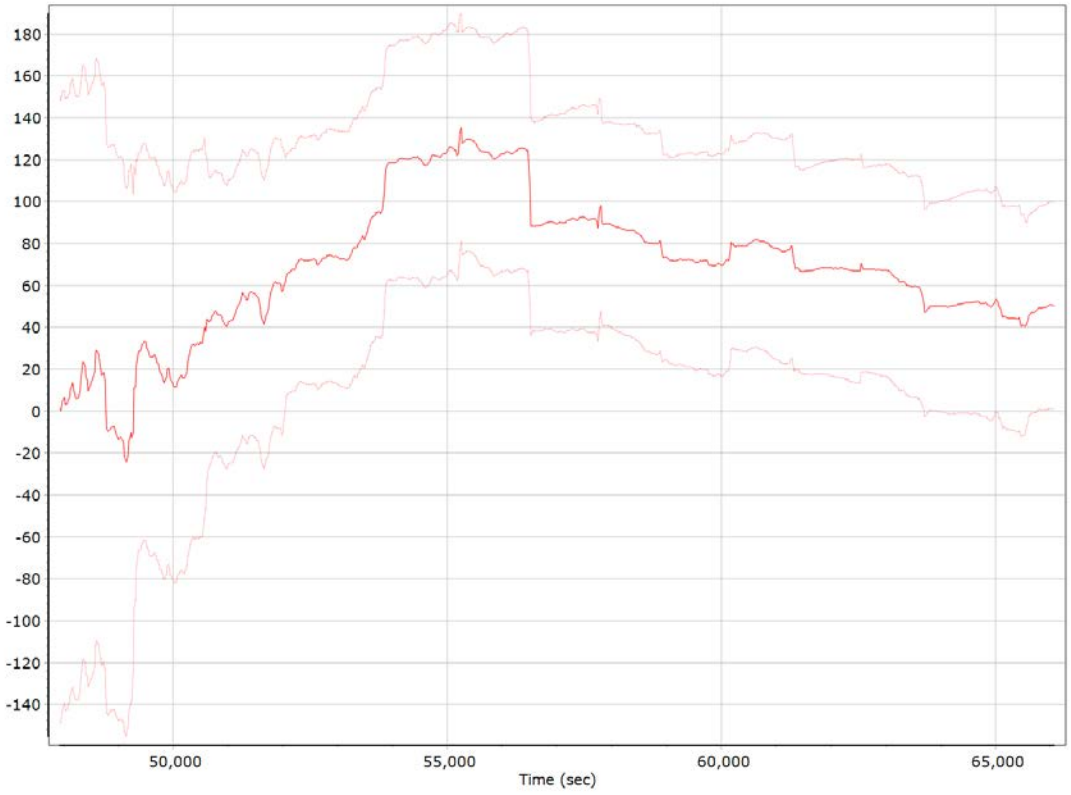
Gyro Scale Error (ppm)



X Gyro Scale Error (ppm)



Y Gyro Scale Error (ppm)

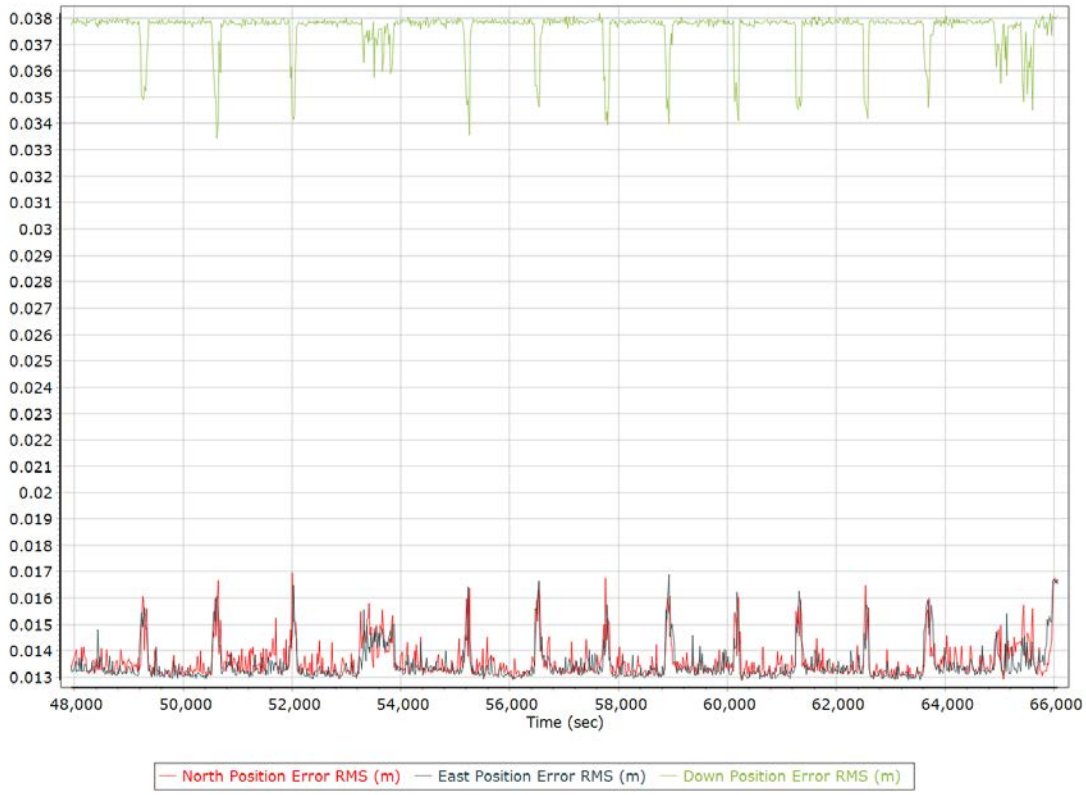


Z Gyro Scale Error (ppm)

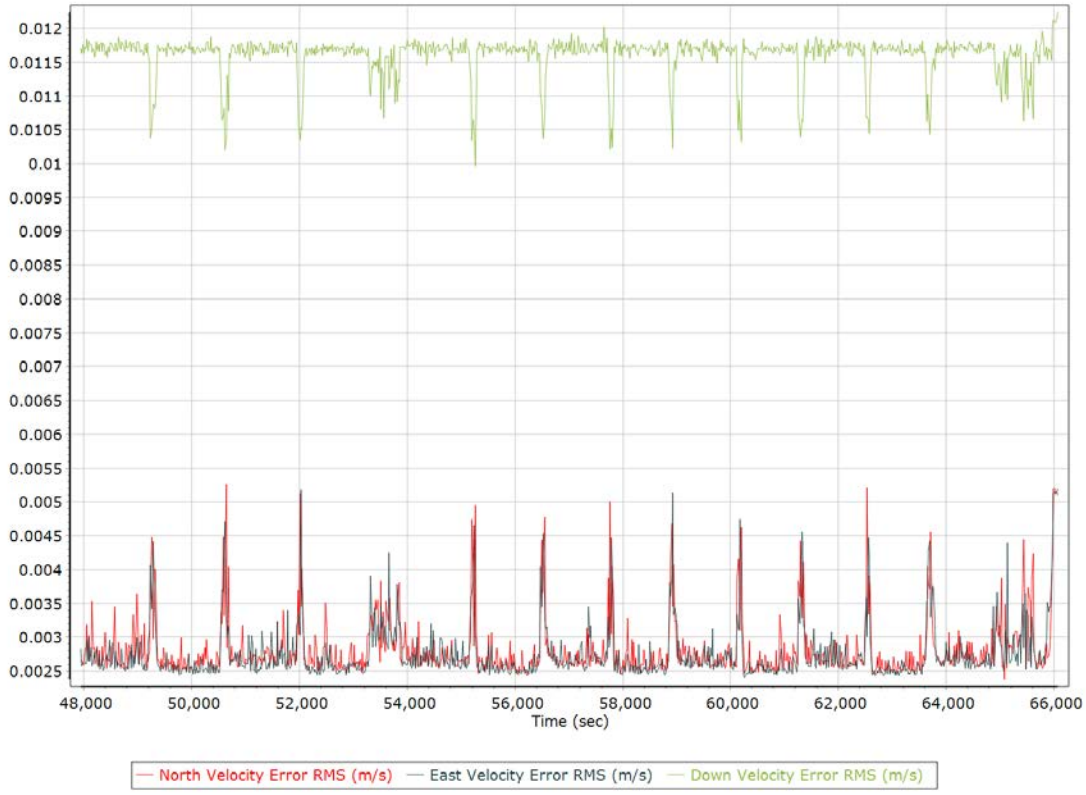


Smoothed Performance Metrics

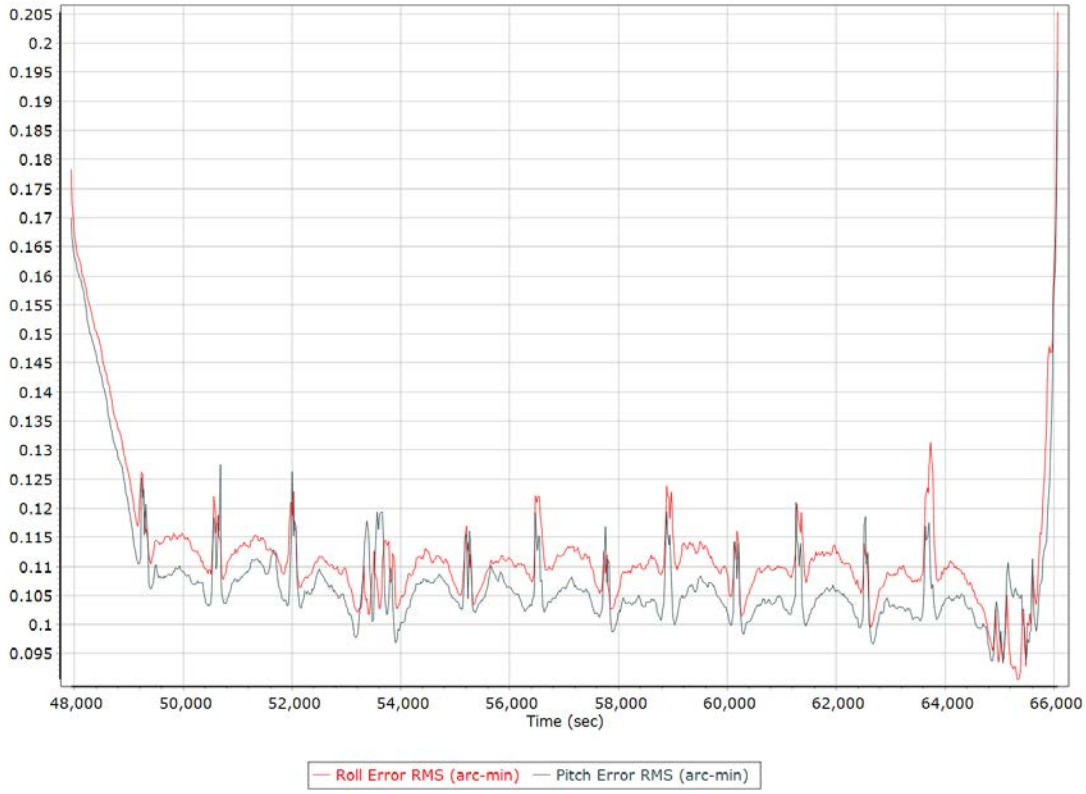
Position Error RMS (m)



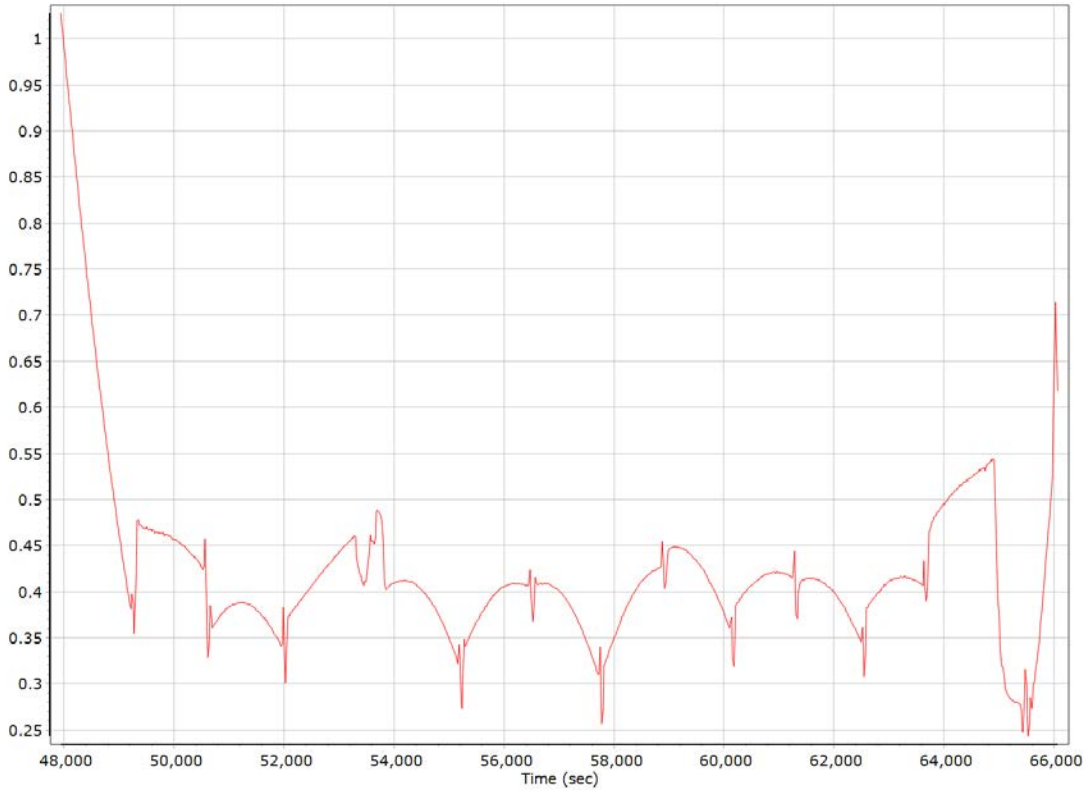
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

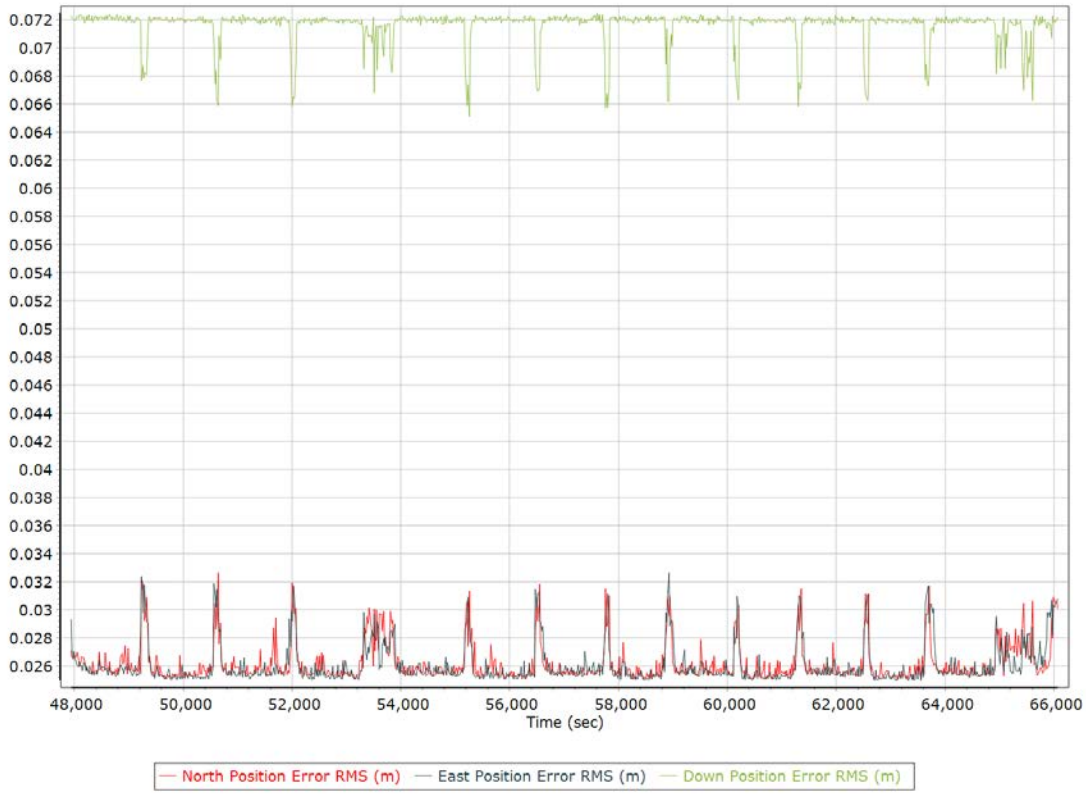


Heading Error RMS (arc-min)

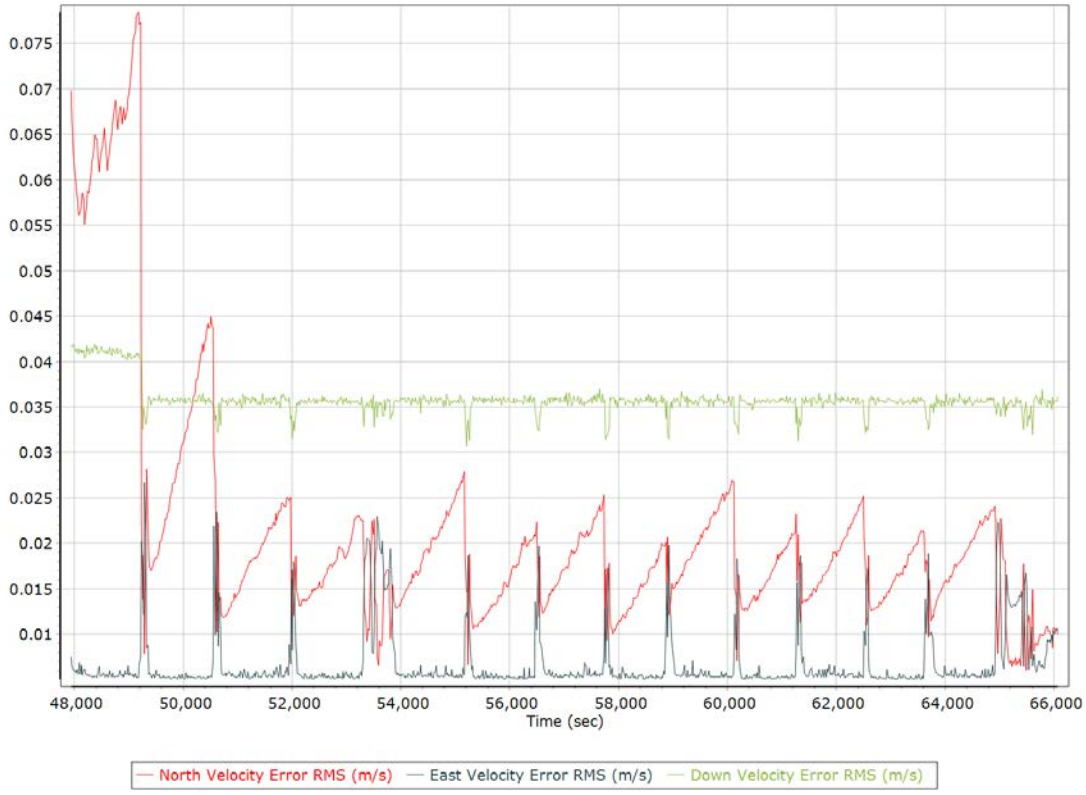


Forward Processed Performance Metrics

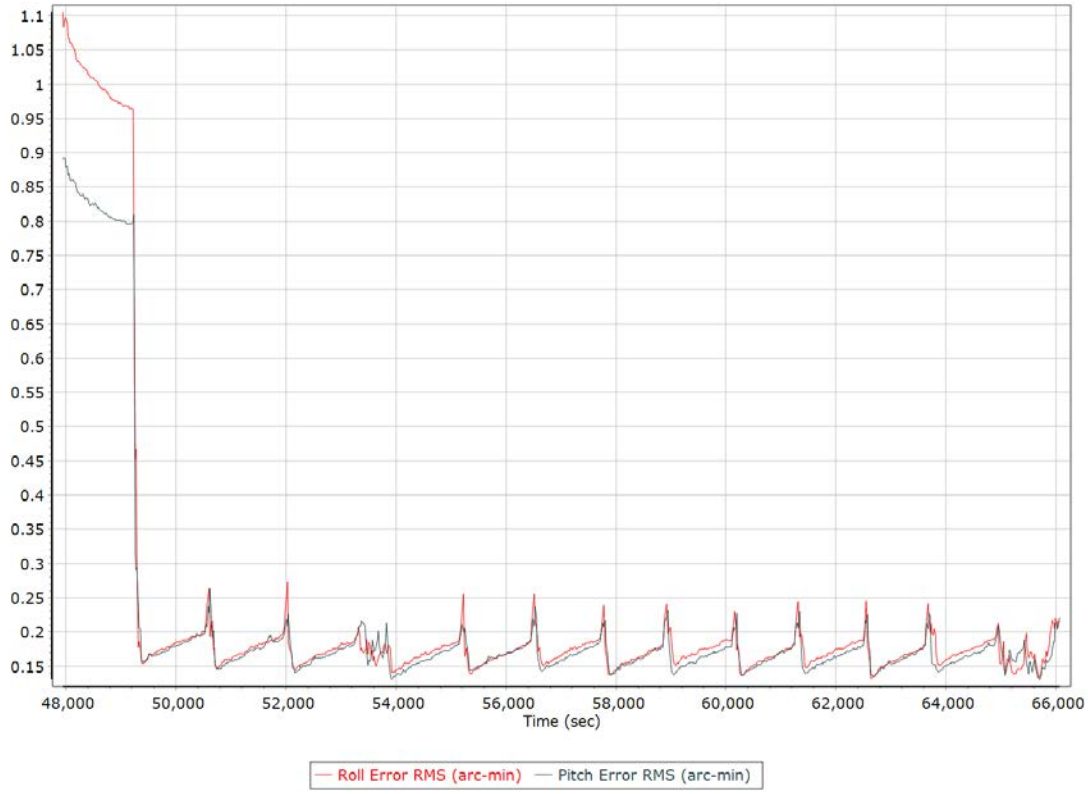
Position Error RMS (m)



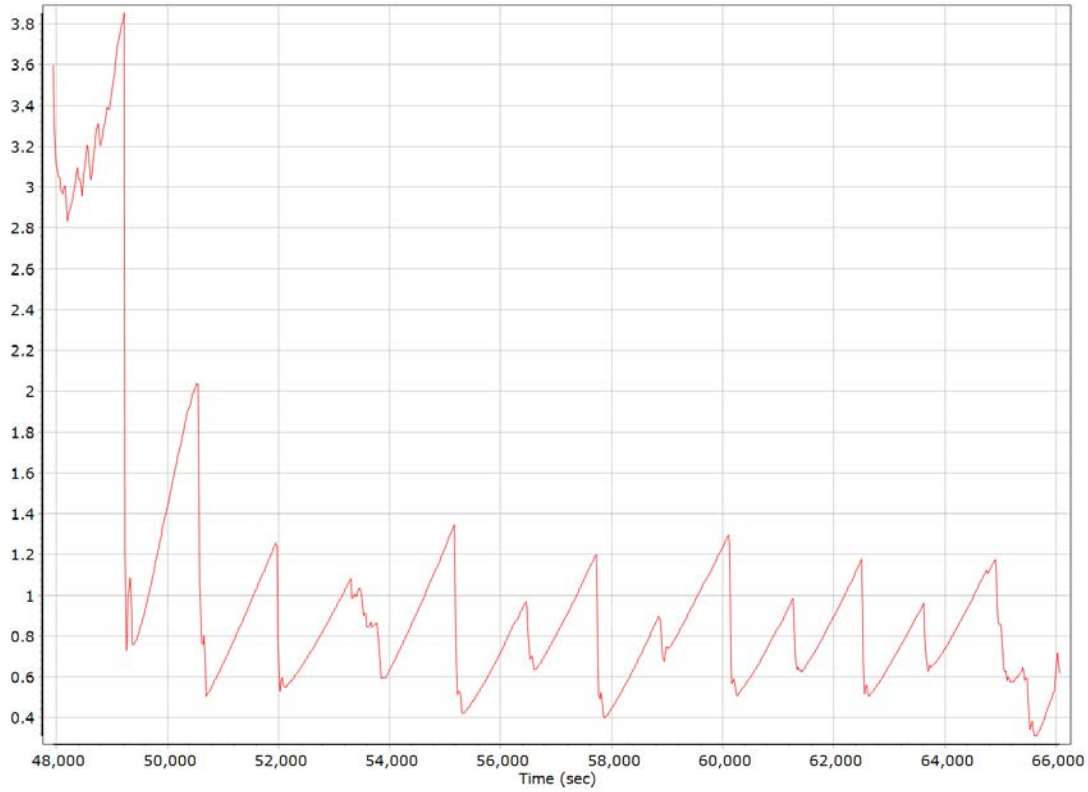
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

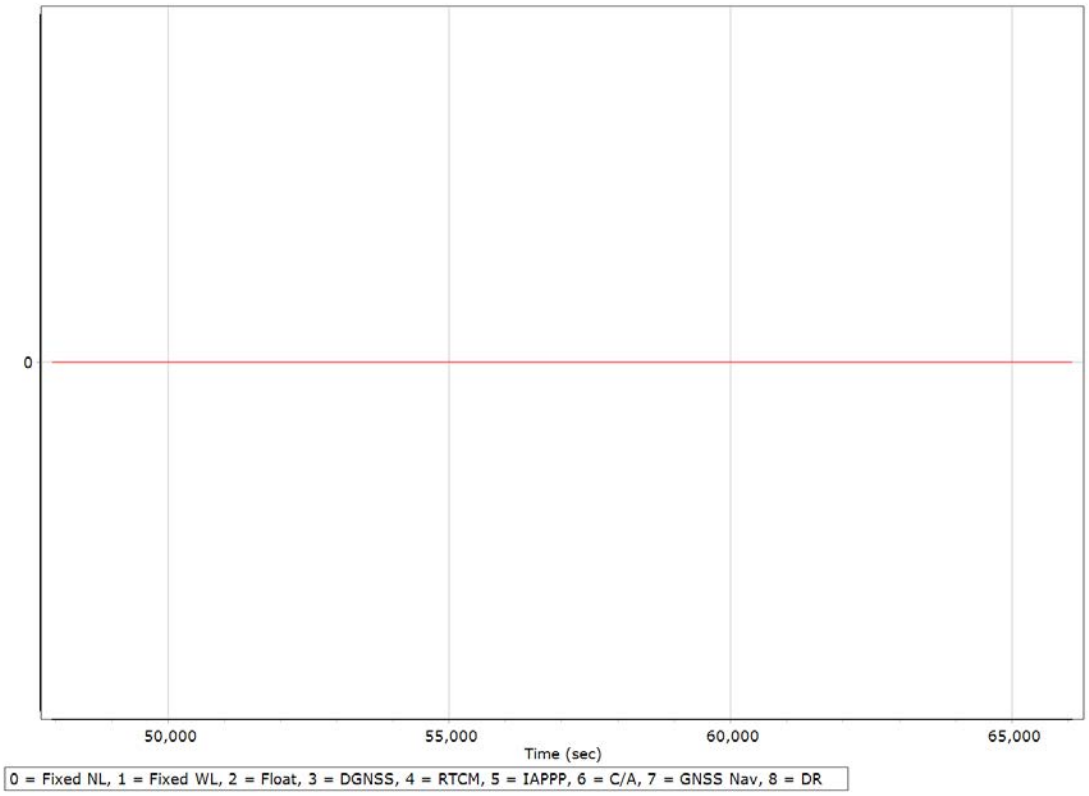


Heading Error RMS (arc-min)

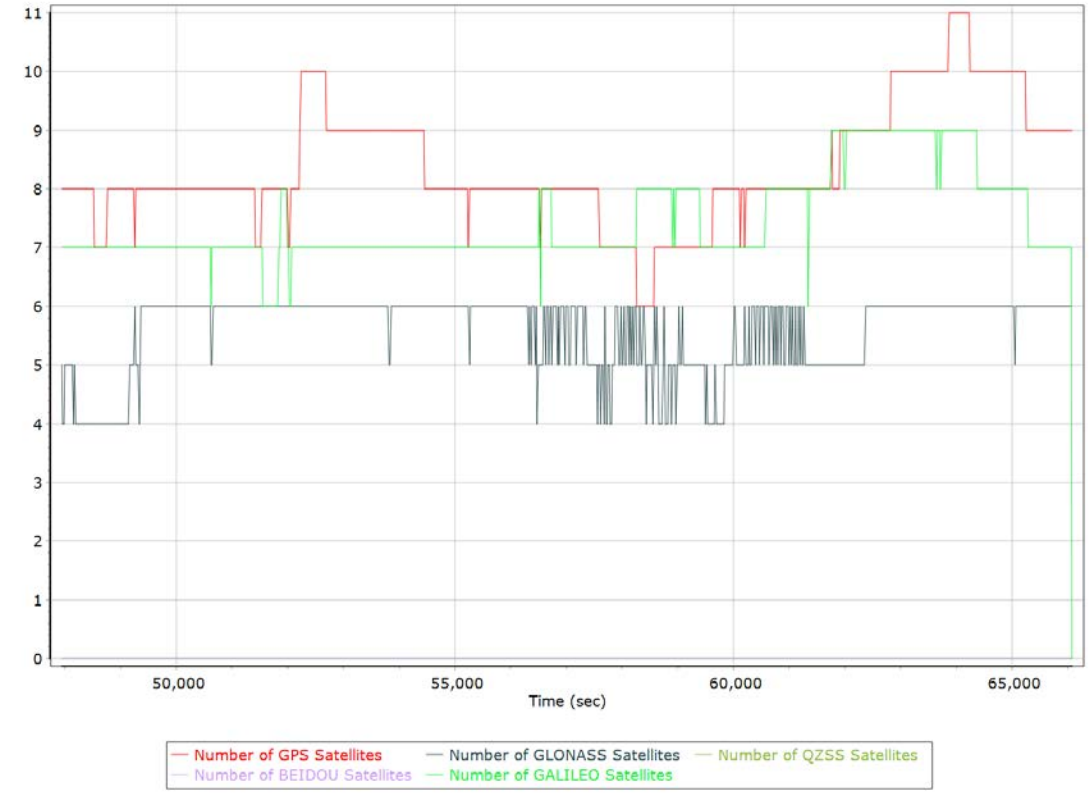


Forward Processed Solution Status

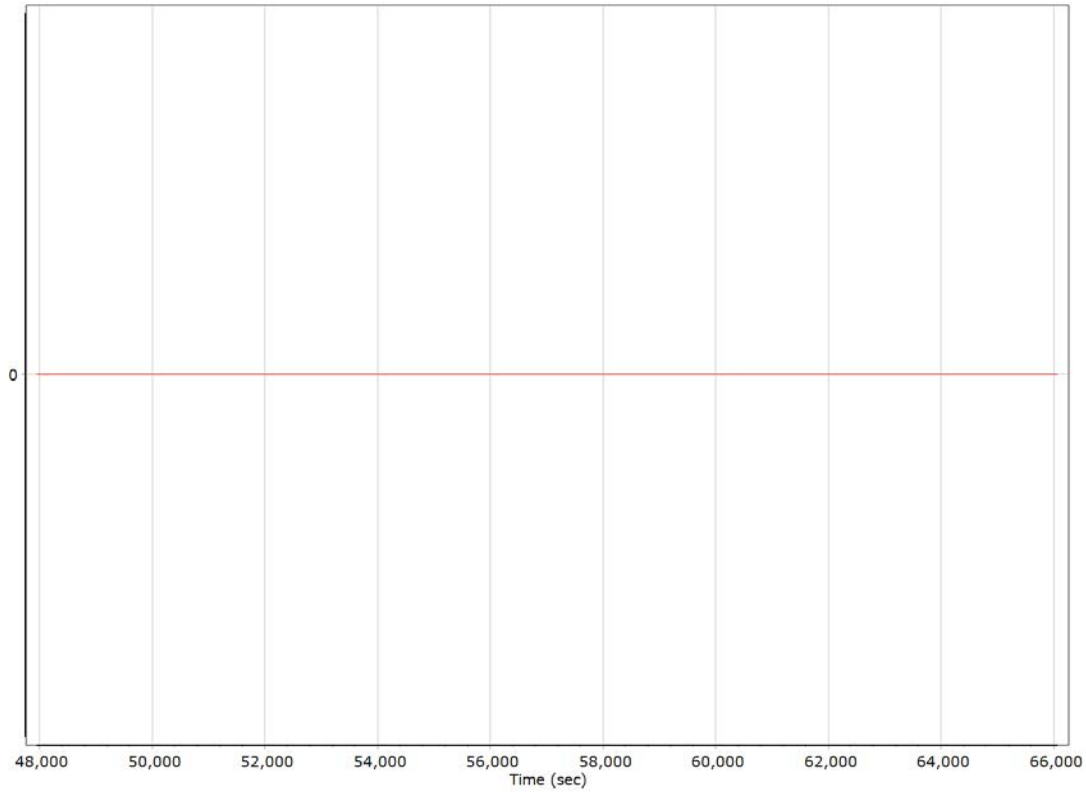
Processing Mode



Number of Satellites



Baseline Length



General Information

Mission Information

Project name	07232023C_4891
Processing date	2023-07-26 11:08:10
Mission date	2023-07-23 19:10:27
Mission duration	04:52:48.266
Processing mode	IN-Fusion PP-RTX

Rover Hardware Information

Product	POS AV 610 VER6 HW2.5-12
Serial number	S/N11883
IMU type	57
Receiver type	BD982
Antenna type	AV59

Project File List

Rover Data Files

File name	File type
N6275603122201.001	POS Data
N6275603122201.002	POS Data
N6275603122201.003	POS Data
N6275603122201.004	POS Data
N6275603122201.005	POS Data
N6275603122201.006	POS Data
N6275603122201.007	POS Data
N6275603122201.008	POS Data
N6275603122201.009	POS Data
N6275603122201.010	POS Data
N6275603122201.011	POS Data
N6275603122201.012	POS Data
N6275603122201.013	POS Data
N6275603122201.014	POS Data
N6275603122201.015	POS Data
N6275603122201.016	POS Data
N6275603122201.017	POS Data
N6275603122201.018	POS Data
N6275603122201.019	POS Data
N6275603122201.020	POS Data
N6275603122201.021	POS Data
N6275603122201.022	POS Data
N6275603122201.023	POS Data
N6275603122201.024	POS Data
N6275603122201.025	POS Data
N6275603122201.026	POS Data
N6275603122201.027	POS Data
N6275603122201.028	POS Data
N6275603122201.029	POS Data
N6275603122201.030	POS Data
N6275603122201.031	POS Data
N6275603122201.032	POS Data
N6275603122201.033	POS Data
N6275603122201.034	POS Data
N6275603122201.035	POS Data
N6275603122201.036	POS Data
N6275603122201.037	POS Data
N6275603122201.038	POS Data
N6275603122201.039	POS Data
N6275603122201.040	POS Data
N6275603122201.041	POS Data
N6275603122201.042	POS Data
N6275603122201.043	POS Data
N6275603122201.044	POS Data
N6275603122201.045	POS Data
N6275603122201.046	POS Data
N6275603122201.047	POS Data
N6275603122201.048	POS Data
N6275603122201.049	POS Data
N6275603122201.050	POS Data
N6275603122201.051	POS Data
N6275603122201.052	POS Data
N6275603122201.053	POS Data
N6275603122201.054	POS Data
N6275603122201.055	POS Data
N6275603122201.056	POS Data

Input Files

File Name	File Type
Ephm2040.23g	GLONASS Broadcast Ephemeris
Ephm2040.23n	GPS Broadcast Ephemeris
Ephm2050.23g	GLONASS Broadcast Ephemeris
Ephm2050.23n	GPS Broadcast Ephemeris

Output Files

Filename	File type
sbet_07232023C_4891.out	SBET Trajectory File

Rover Data Summary

First raw data file	N6275603122201.001		
Last raw data file	N6275603122201.056		
Start GPS week	2272		
Start time	69008.443 (7/23/2023 7:10:08 PM)		
End time	86576.709 (7/24/2023 12:02:56 AM)		
Start of fine alignment	69032.372 (7/23/2023 7:10:32 PM)		
Available subsystems	Primary GNSS, Gimbal, IMU		
POS Event Input	None		
Correction data	None		
IMU Installation Lever Arms & Mounting Angles			
Gimbal to IMU lever arm (m)	-0.034	-0.010	-0.374
Gimbal to IMU mounting angles (deg)	0.000	0.000	0.000
Gimbal to Primary GNSS lever arm (m)	-0.135	0.064	-1.339
Gimbal to Primary GNSS lever arm std dev (m)	-1.000		
Aircraft to Reference mounting angles (deg)	0.000	0.000	0.000

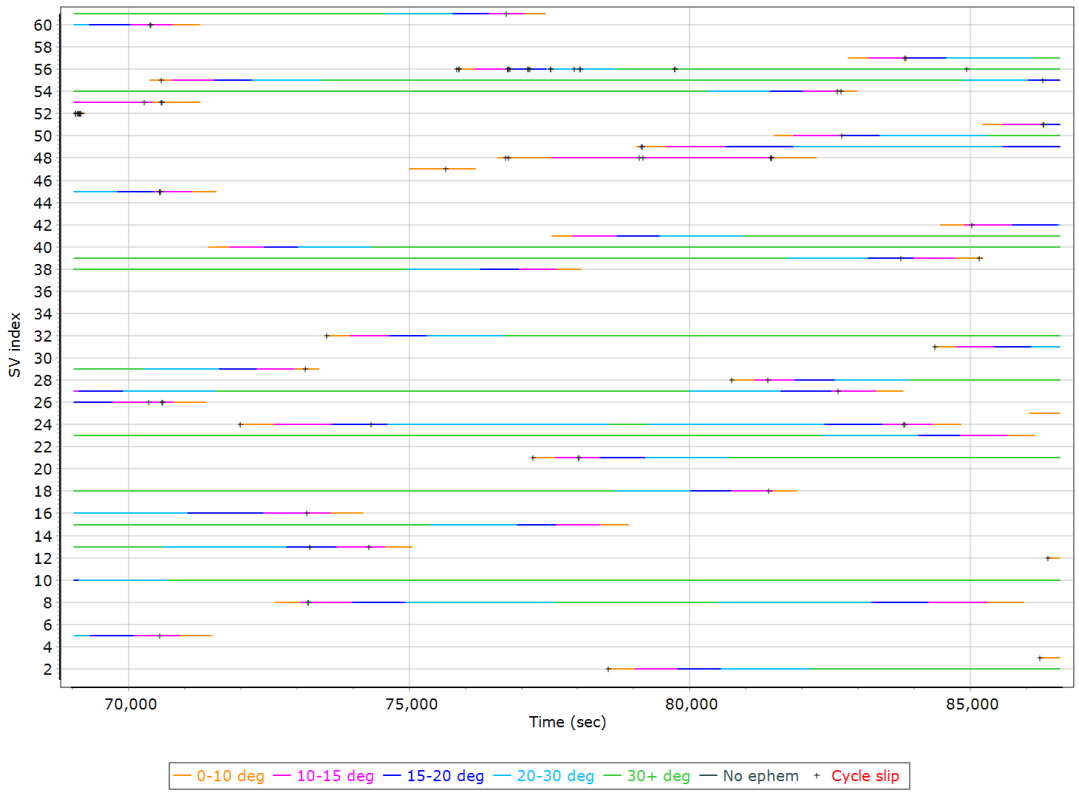
Rover Data QC

Raw IMU Import QC Summary

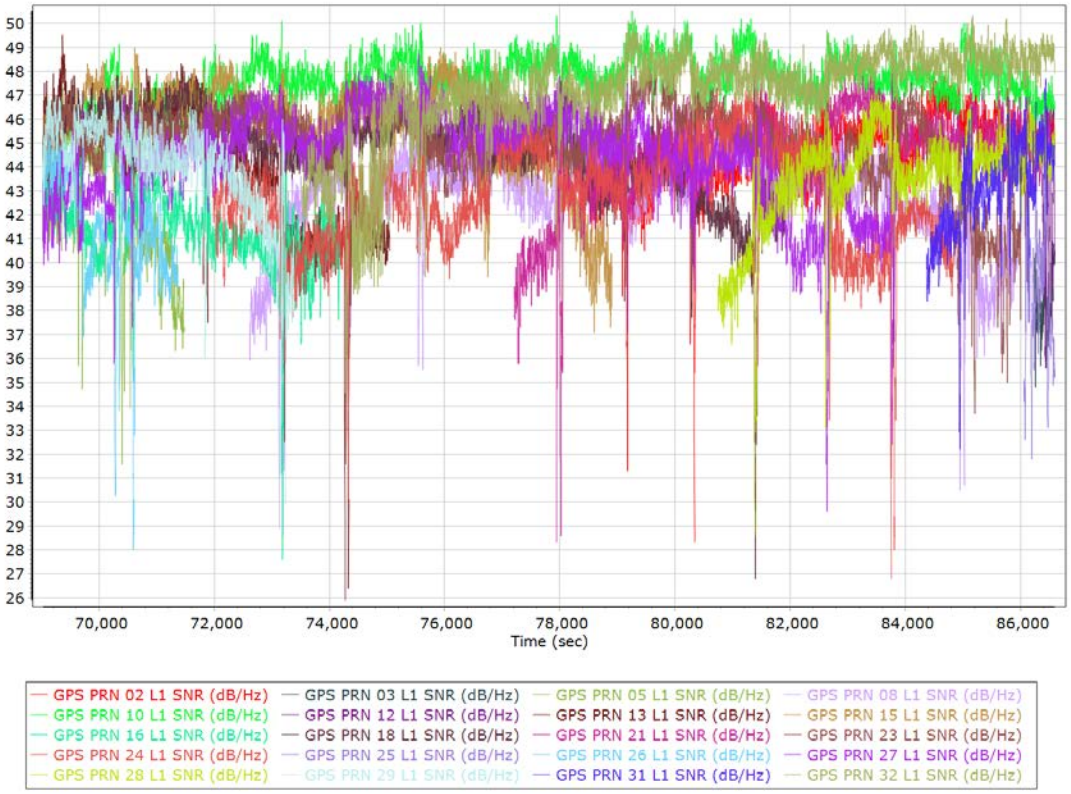
IMU data input file	imu_Mission 1.dat
IMU data check log file	imudt_07232023C_4891.log
IMU Records Processed	3513066
Termination Status	Normal
IMU Anomalies	0

Primary Observables & Satellite Data

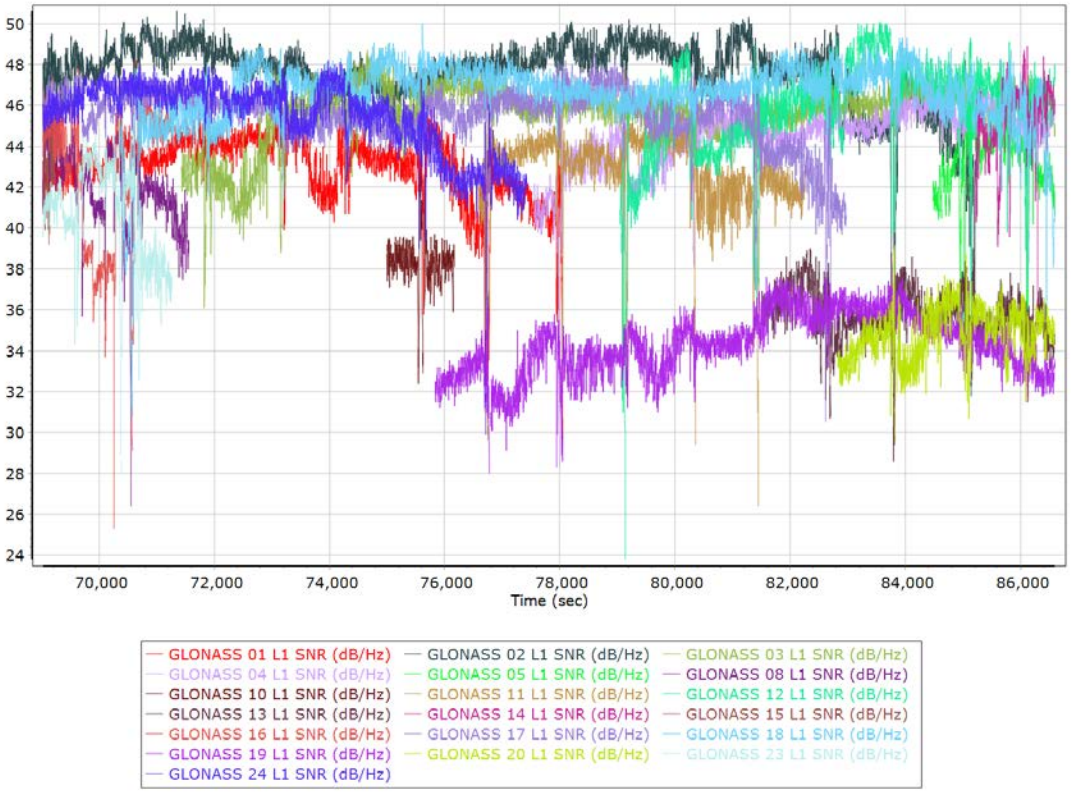
GPS/GLONASS L1 Satellite Lock/Elevation



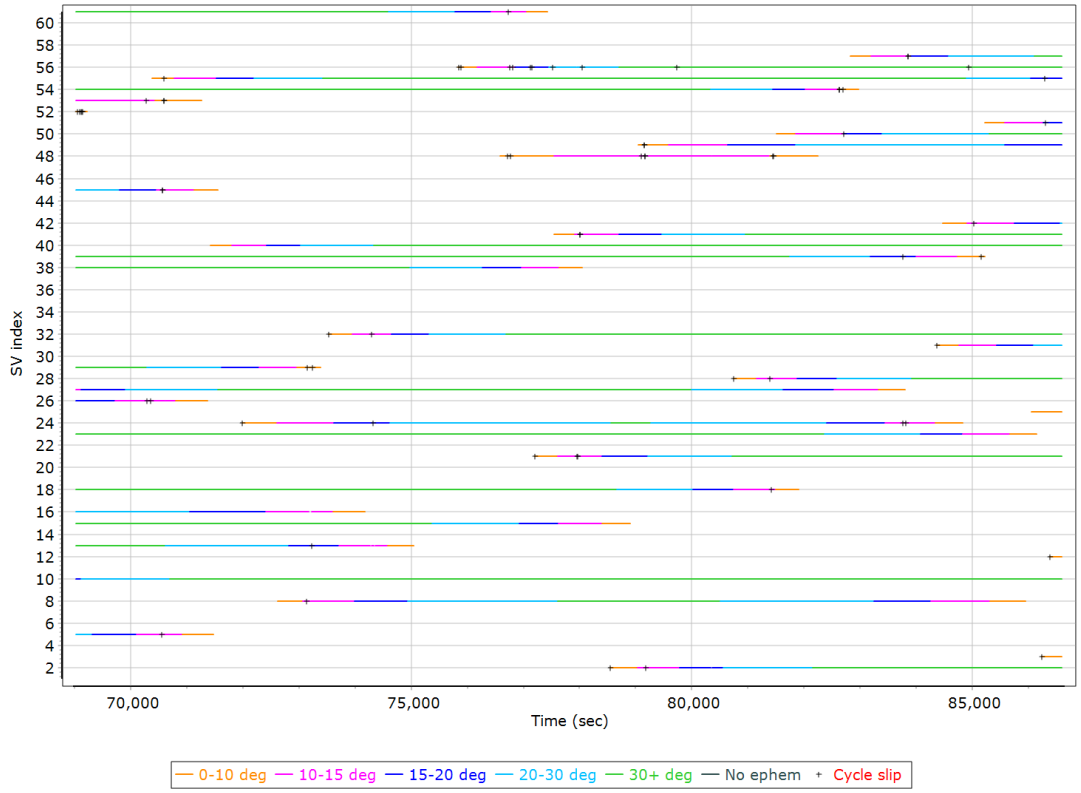
GPS L1 SNR



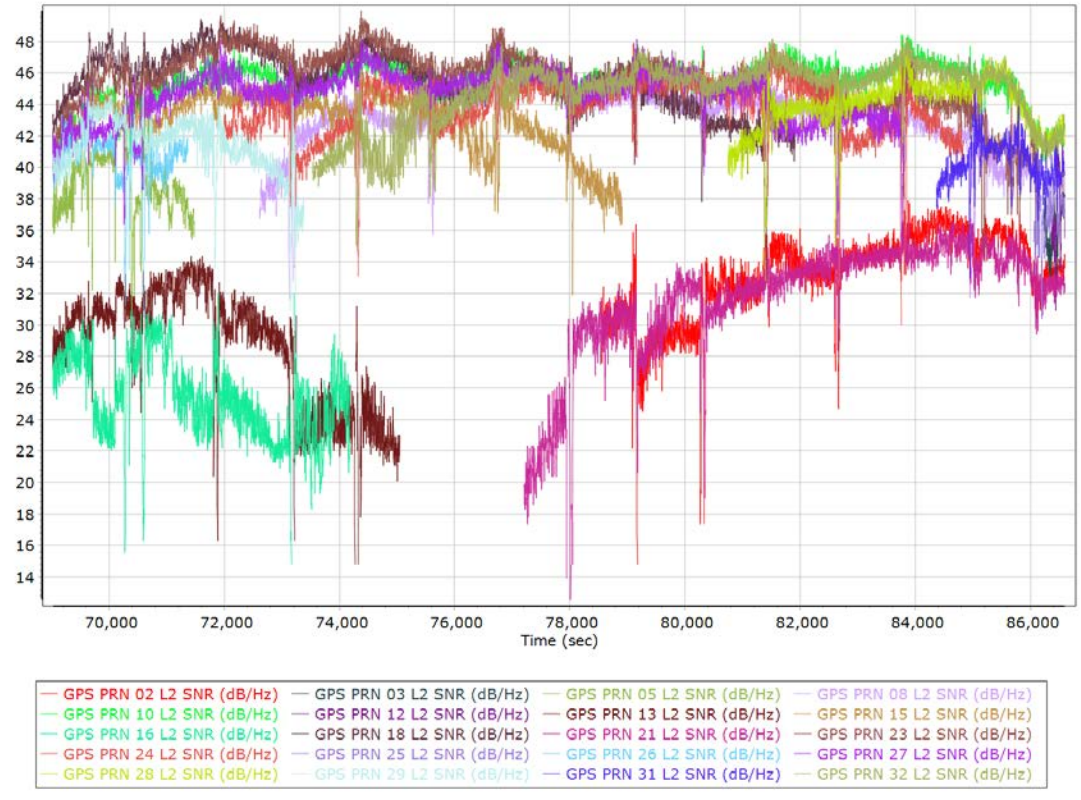
GLONASS L1 SNR



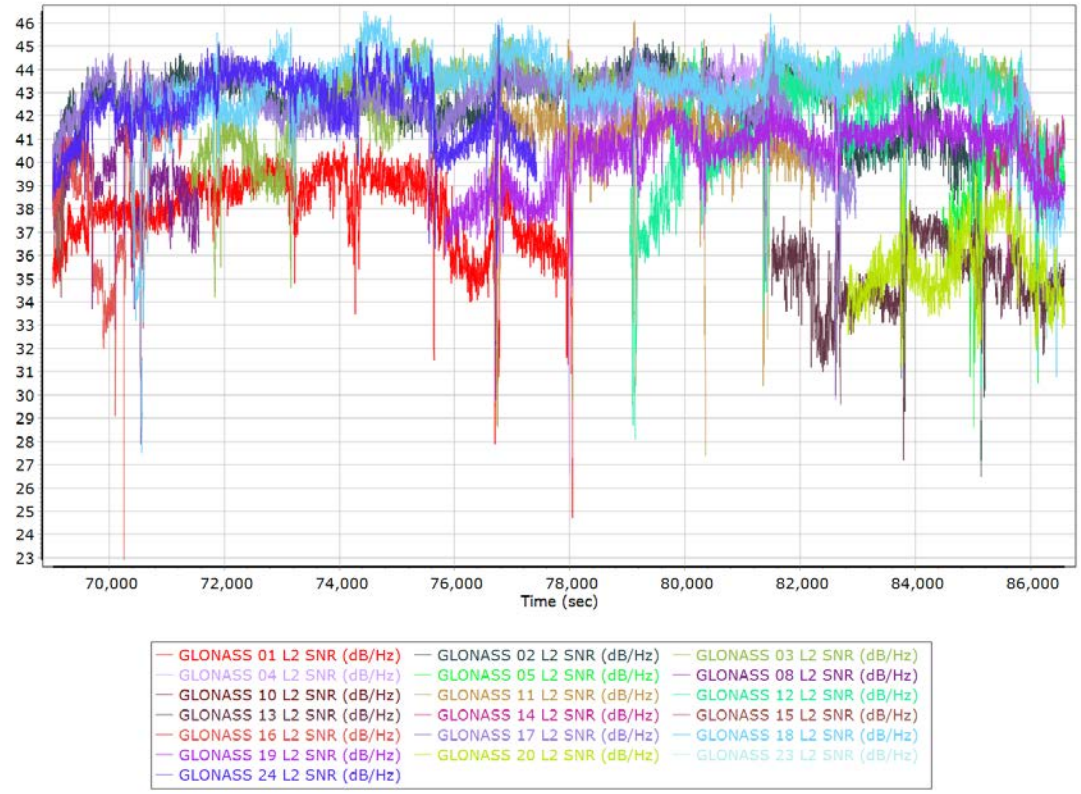
GPS/GLONASS L2 Satellite Lock/Elevation



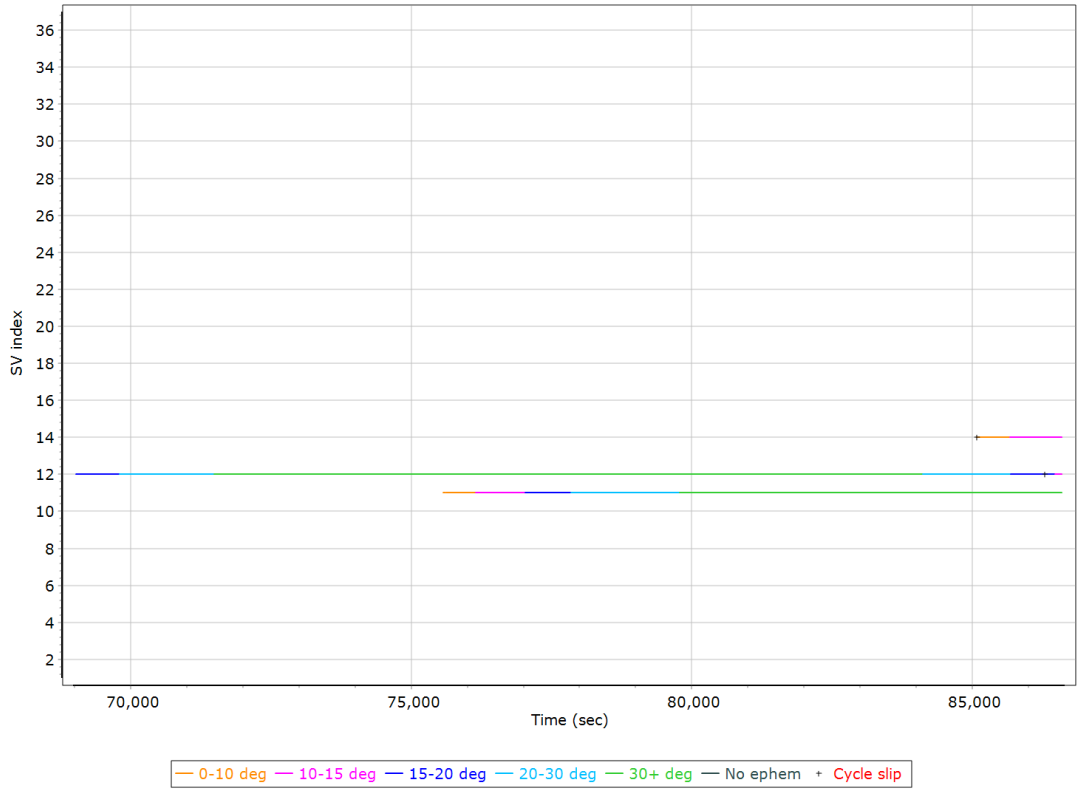
GPS L2 SNR



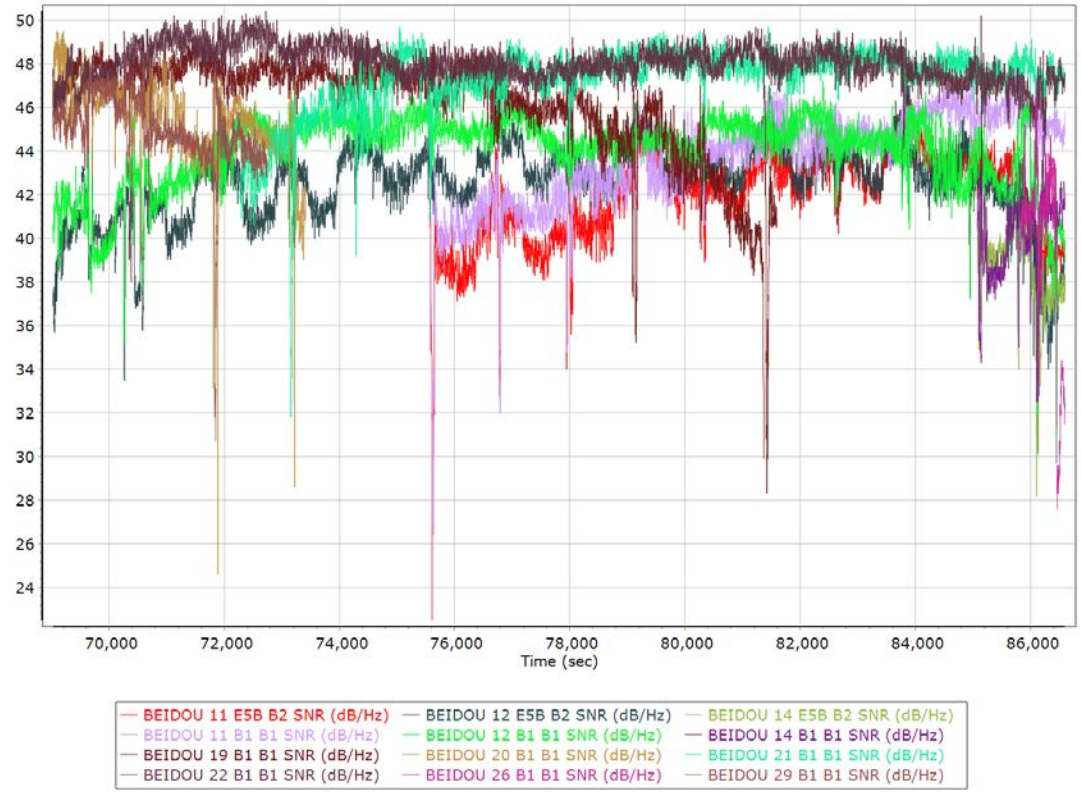
GLONASS L2 SNR



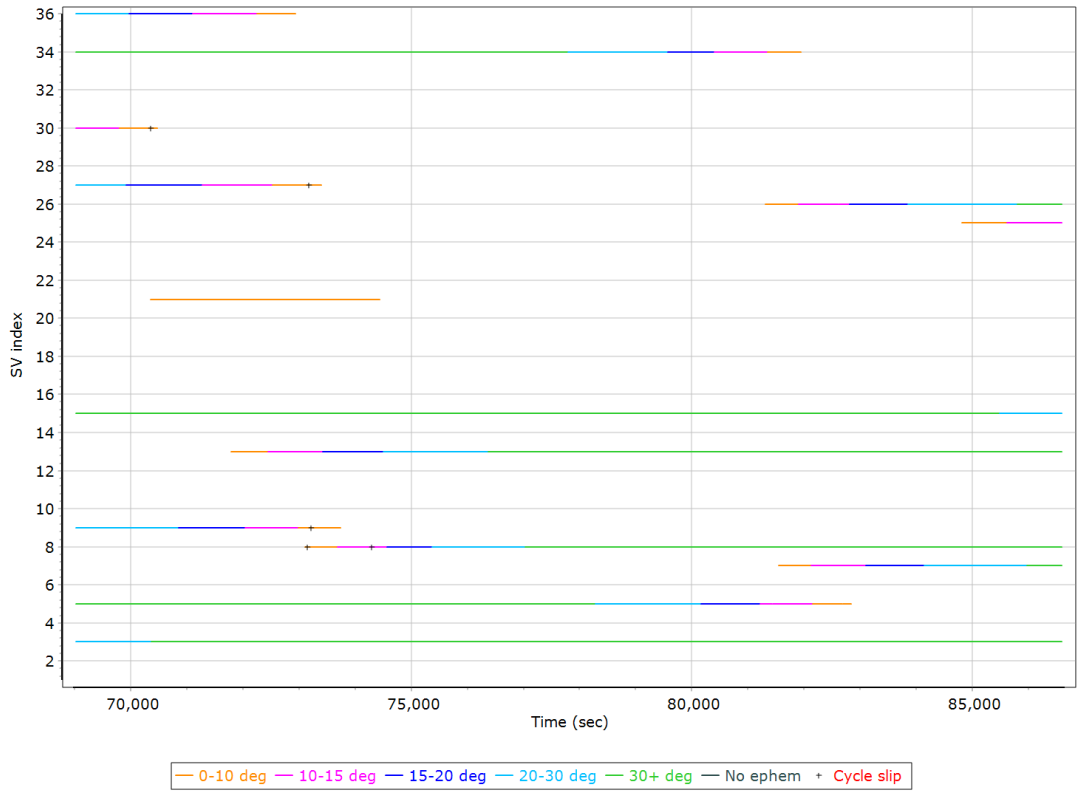
BEIDOU Satellite Lock/Elevation



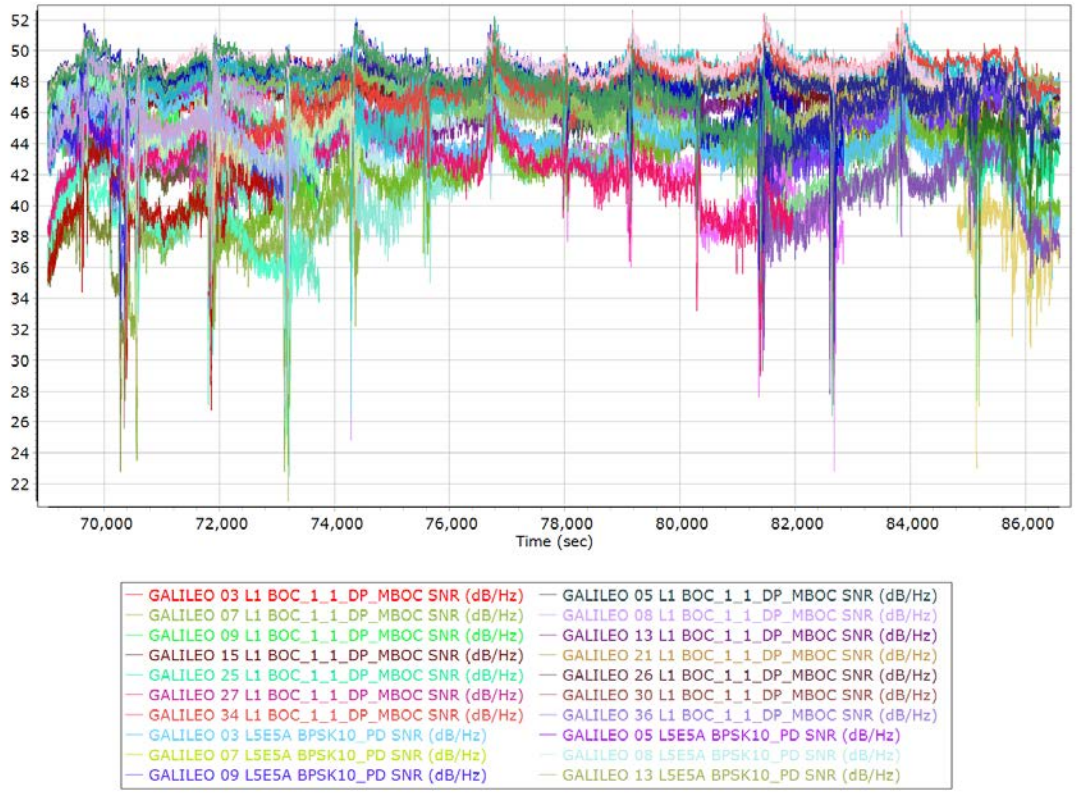
BEIDOU SNR



GALILEO Satellite Lock/Elevation

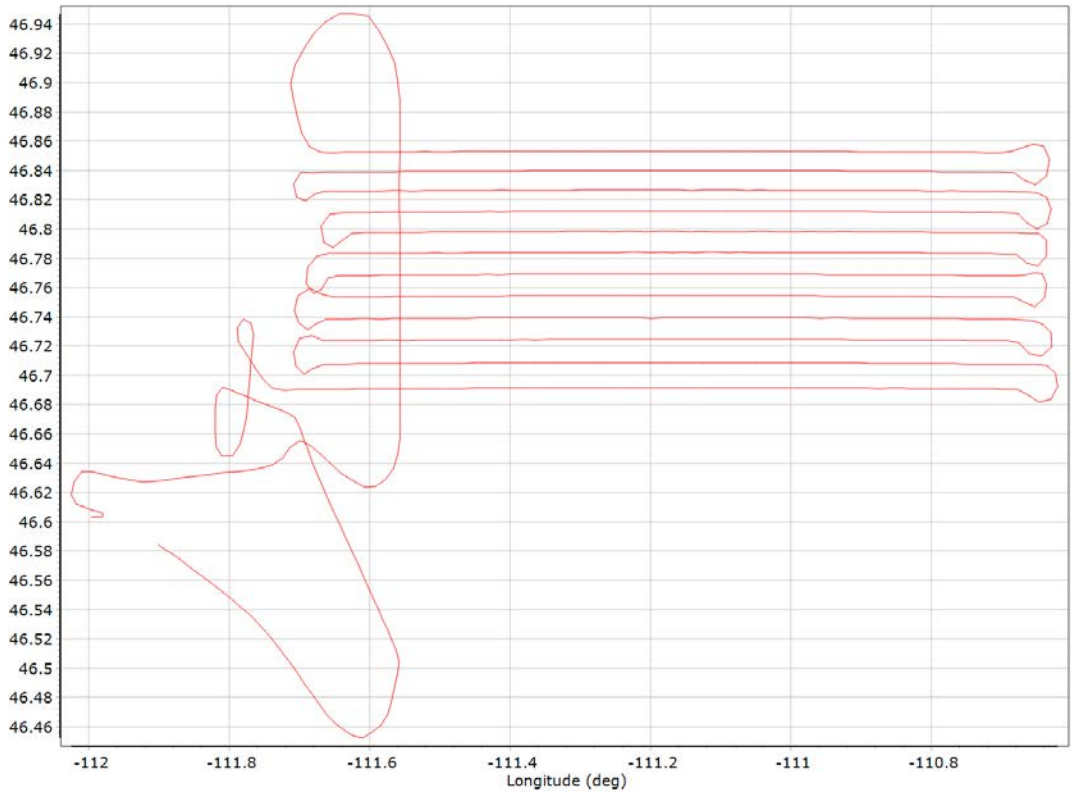


GALILEO SNR

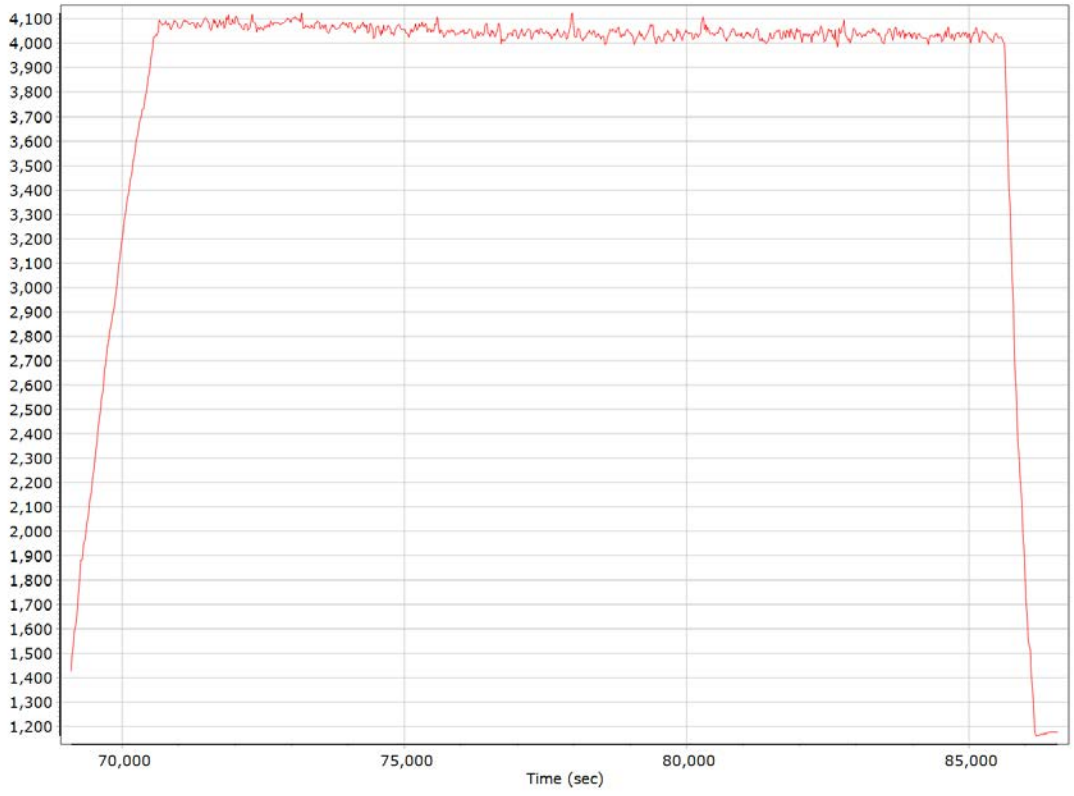

52
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22
70,000
72,000
74,000
76,000
78,000
80,000
82,000
84,000
86,000
Time (sec)
GALILEO 03 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 05 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 07 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 08 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 09 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 13 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 15 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 21 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 25 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 26 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 27 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 30 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 34 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 36 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 03 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 05 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 07 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 08 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 09 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 13 L5E5A BPSK10_PD SNR (dB/Hz)

Smoothed Trajectory Information

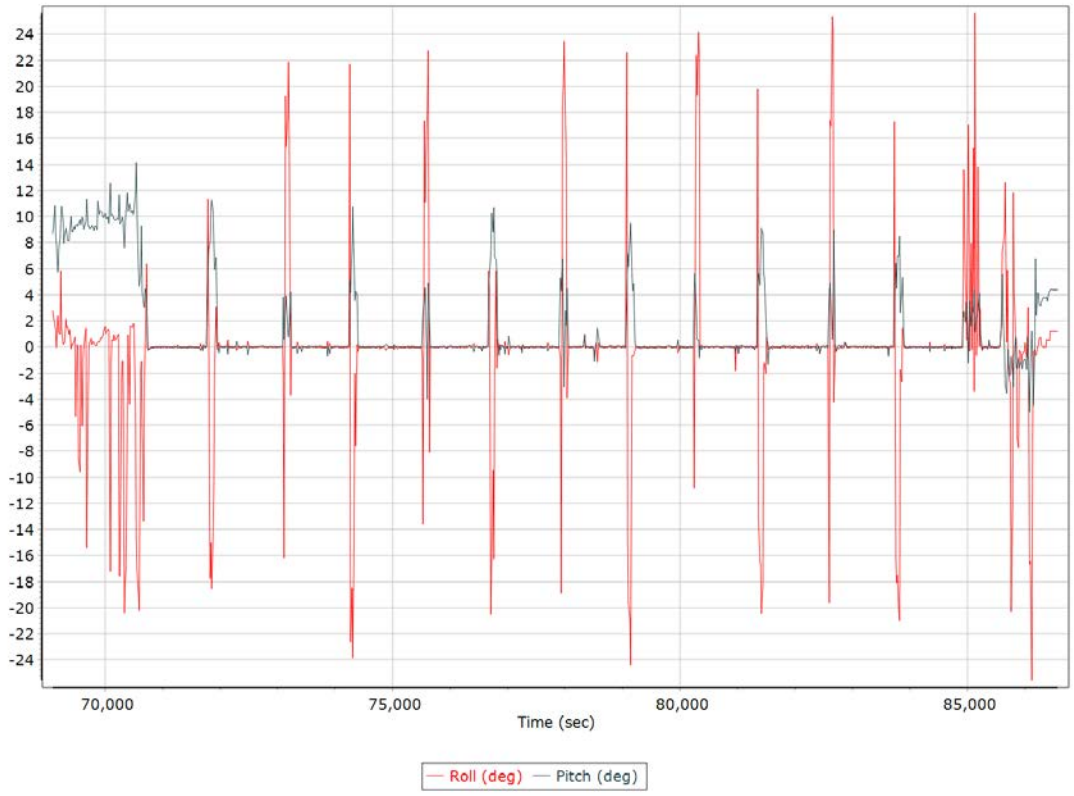
Top View



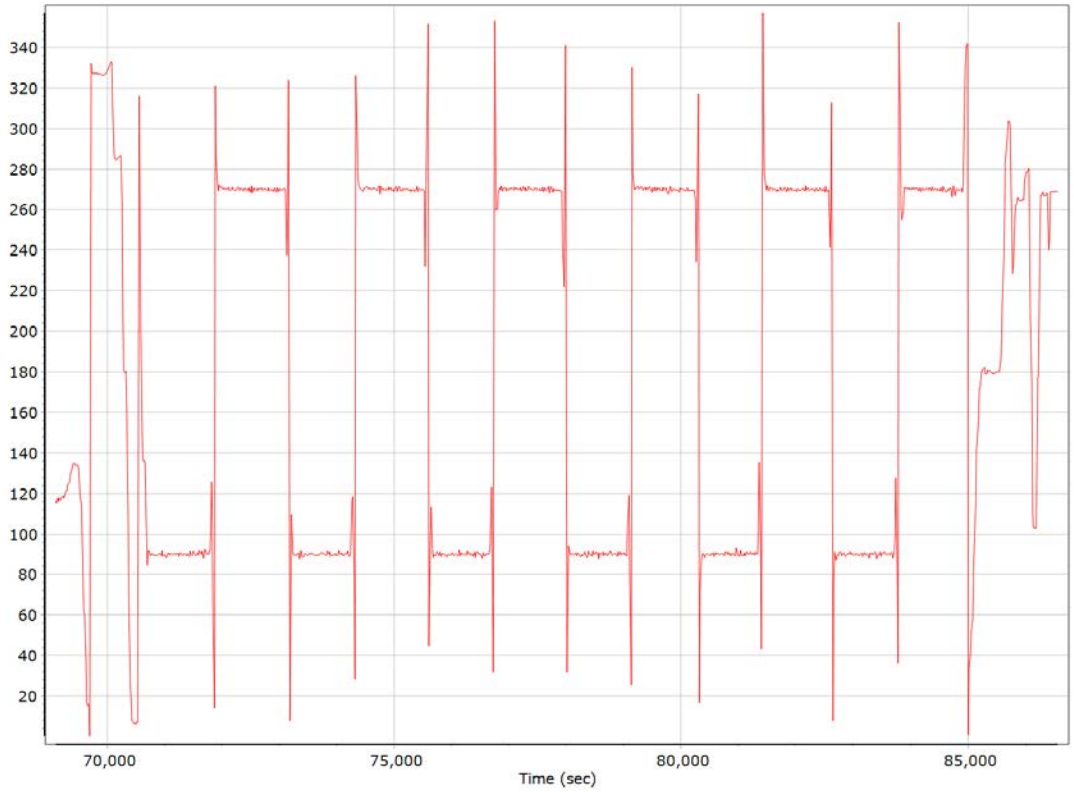
Altitude



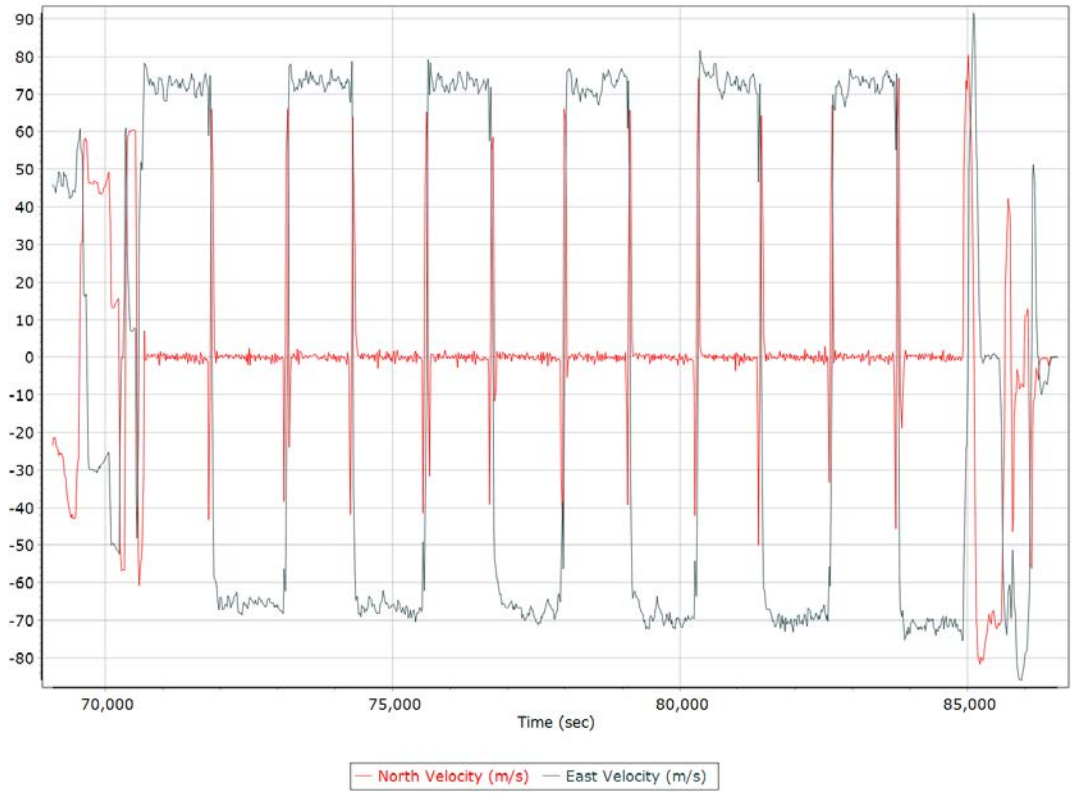
Roll/Pitch



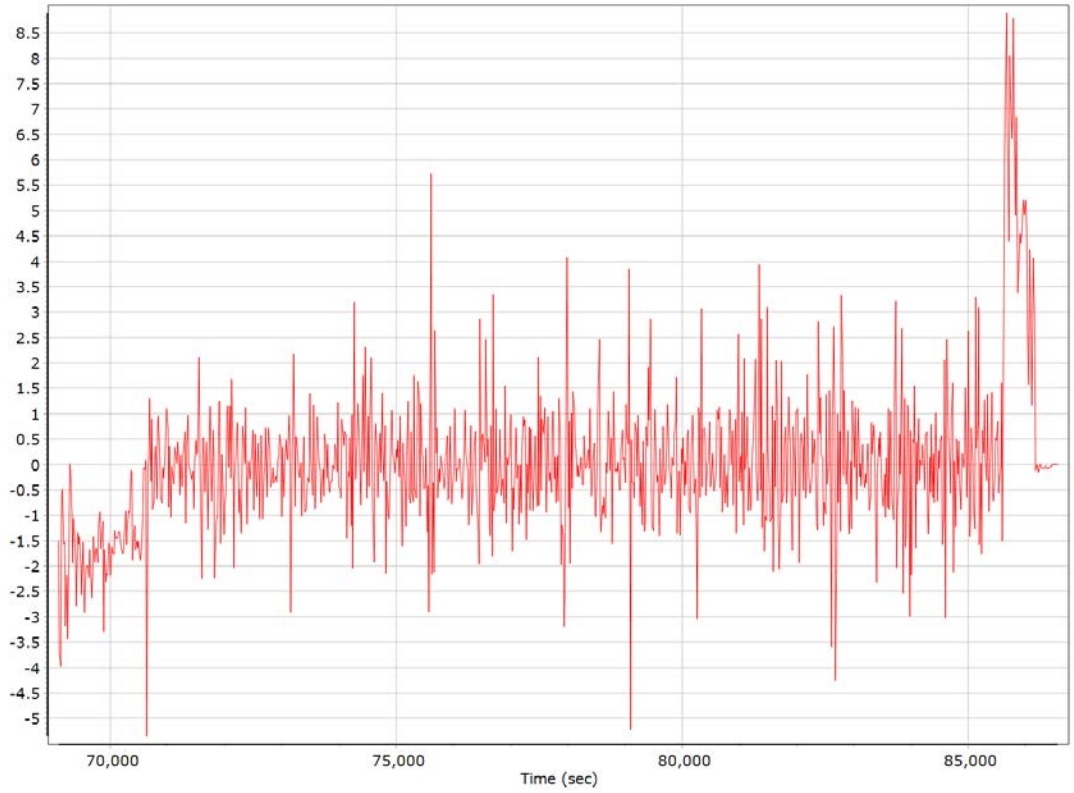
Heading



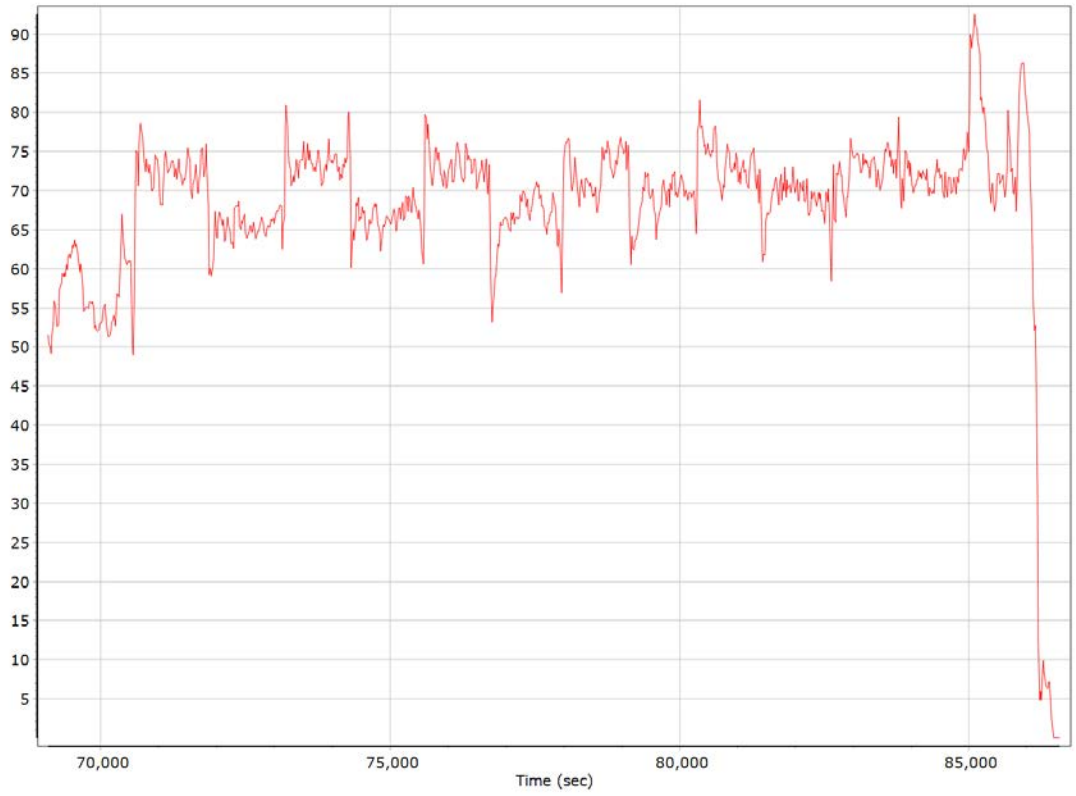
North/East Velocity



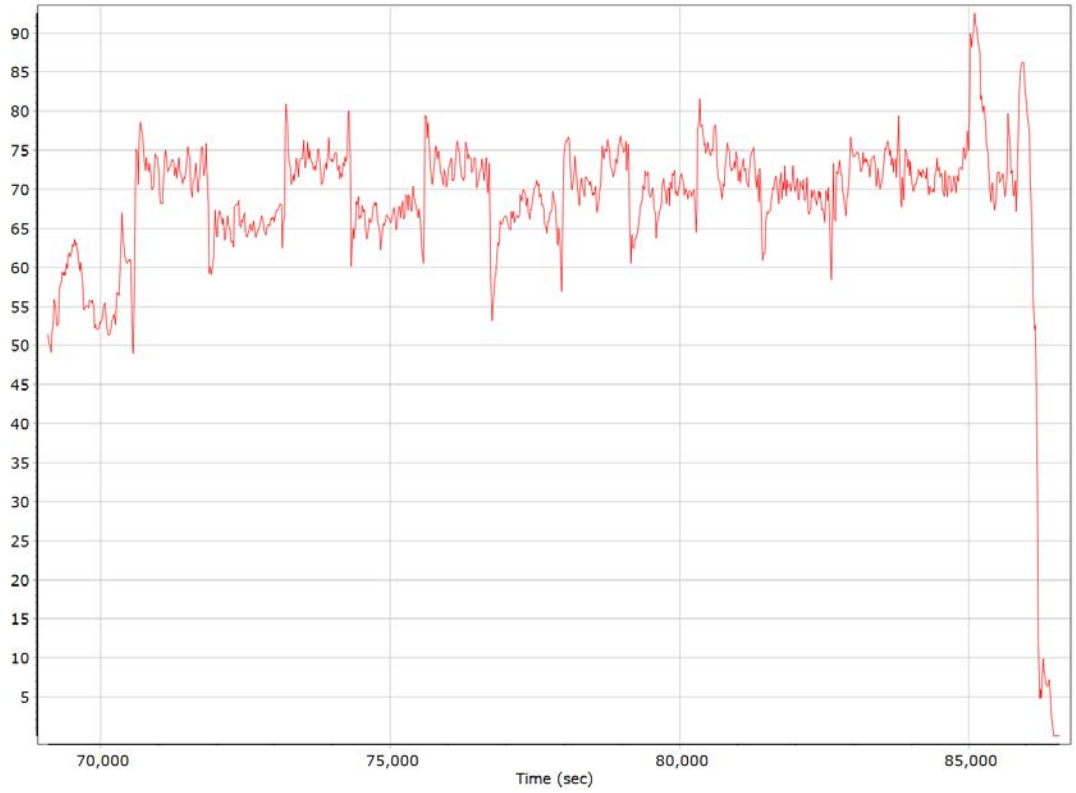
Down Velocity



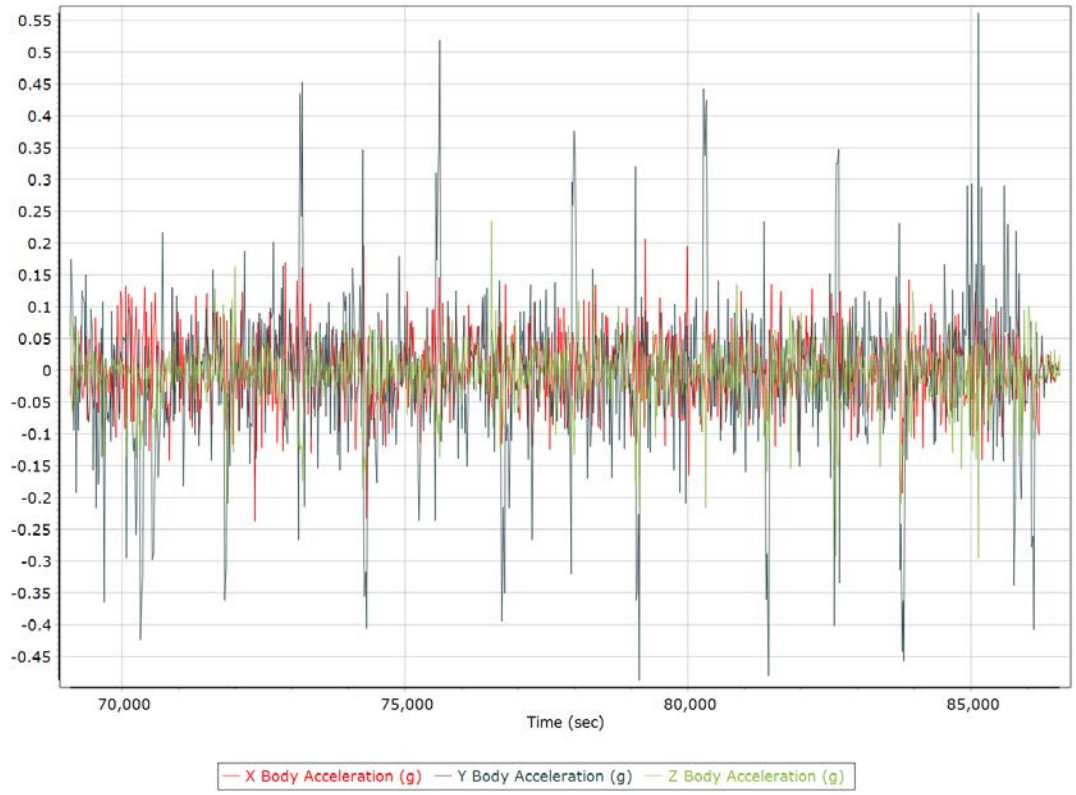
Total Speed



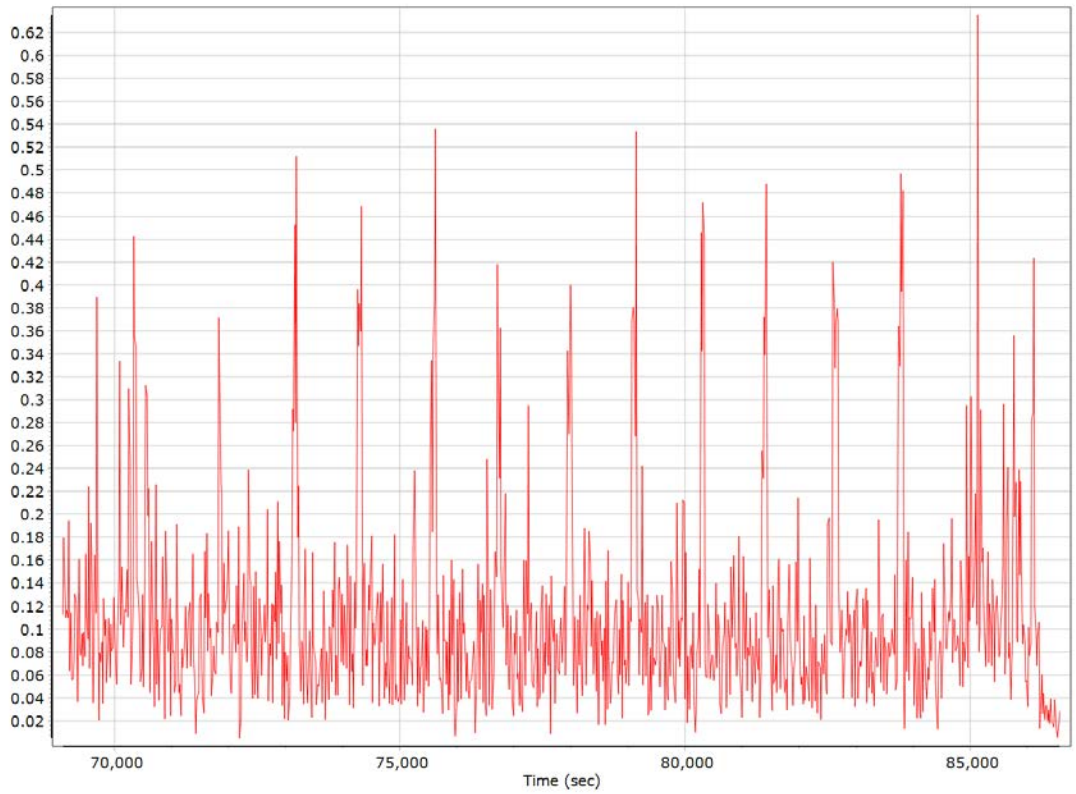
Ground Speed



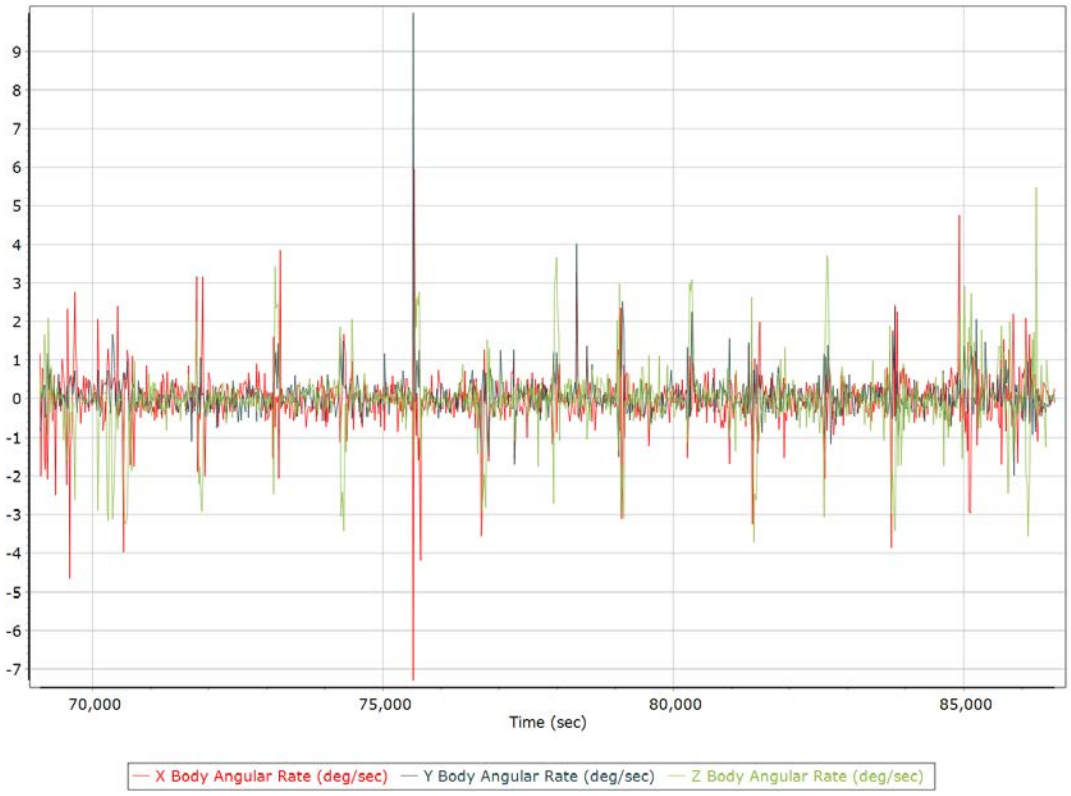
Body Acceleration



Total Body Acceleration

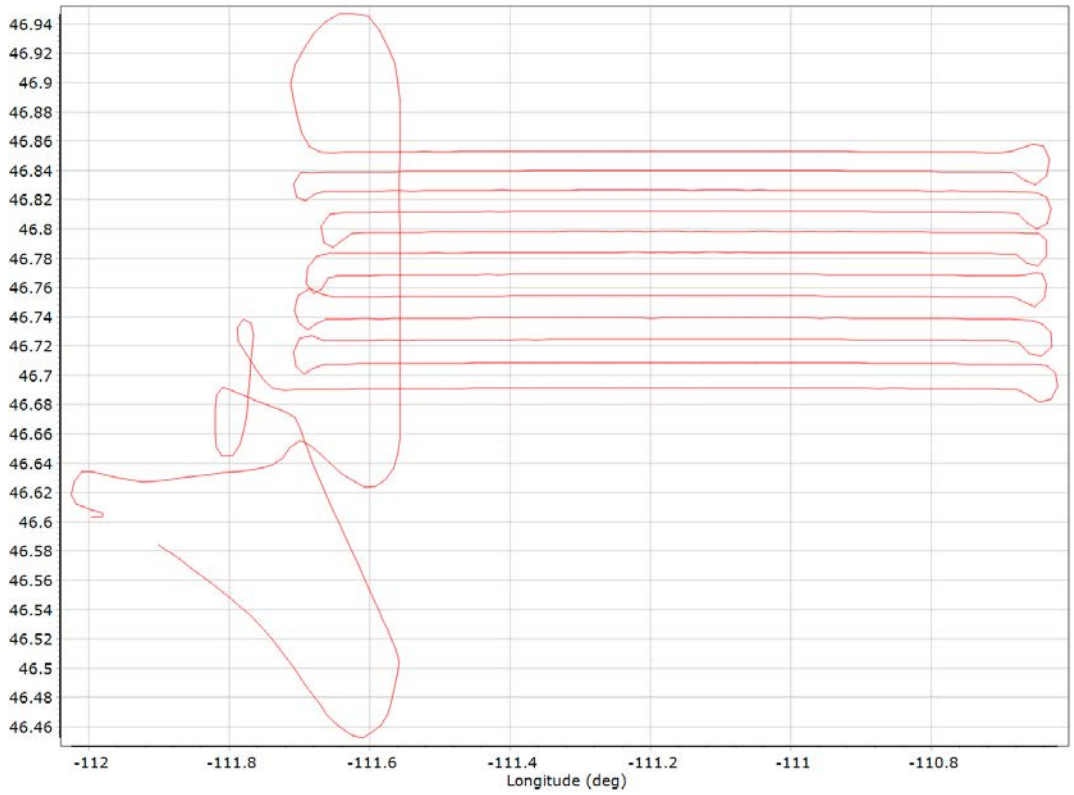


Body Angular Rate

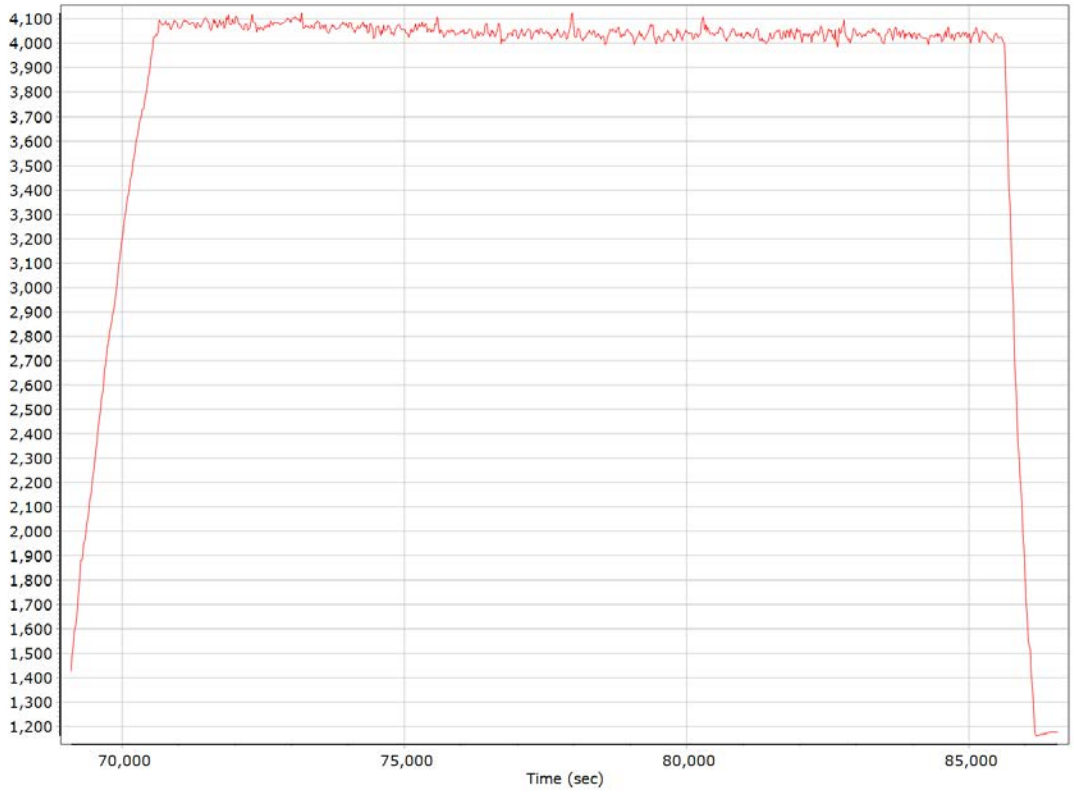


Forward Processed Trajectory Information

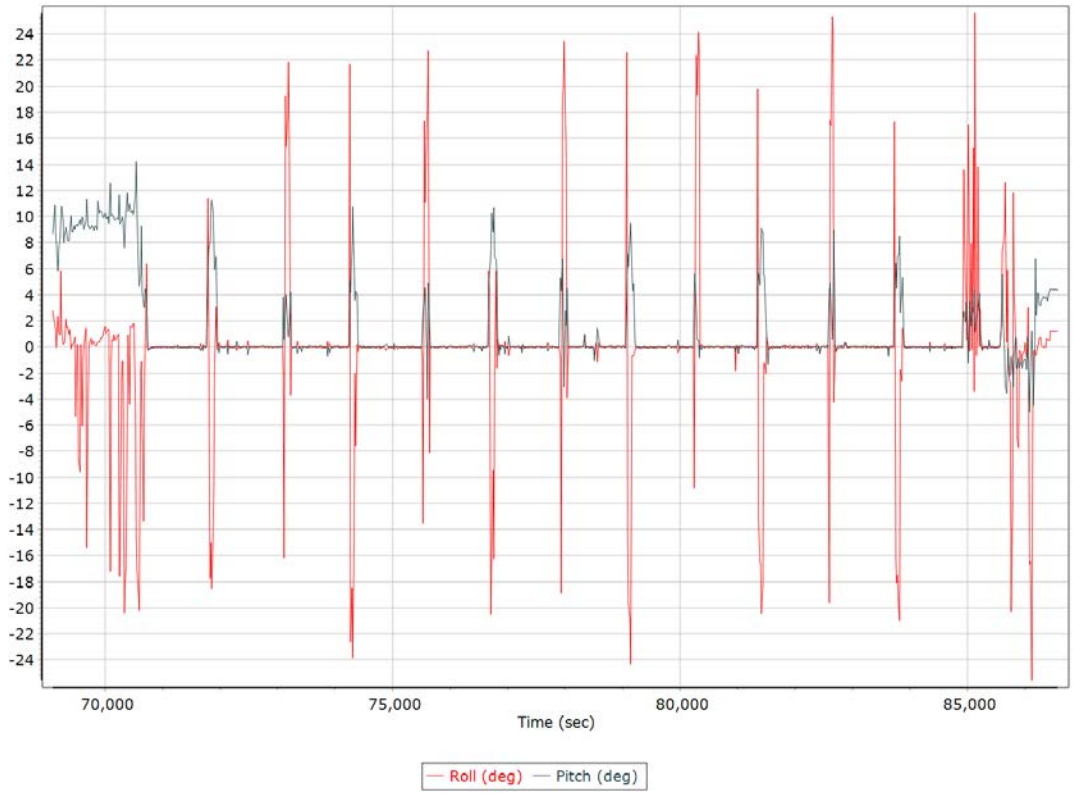
Top View



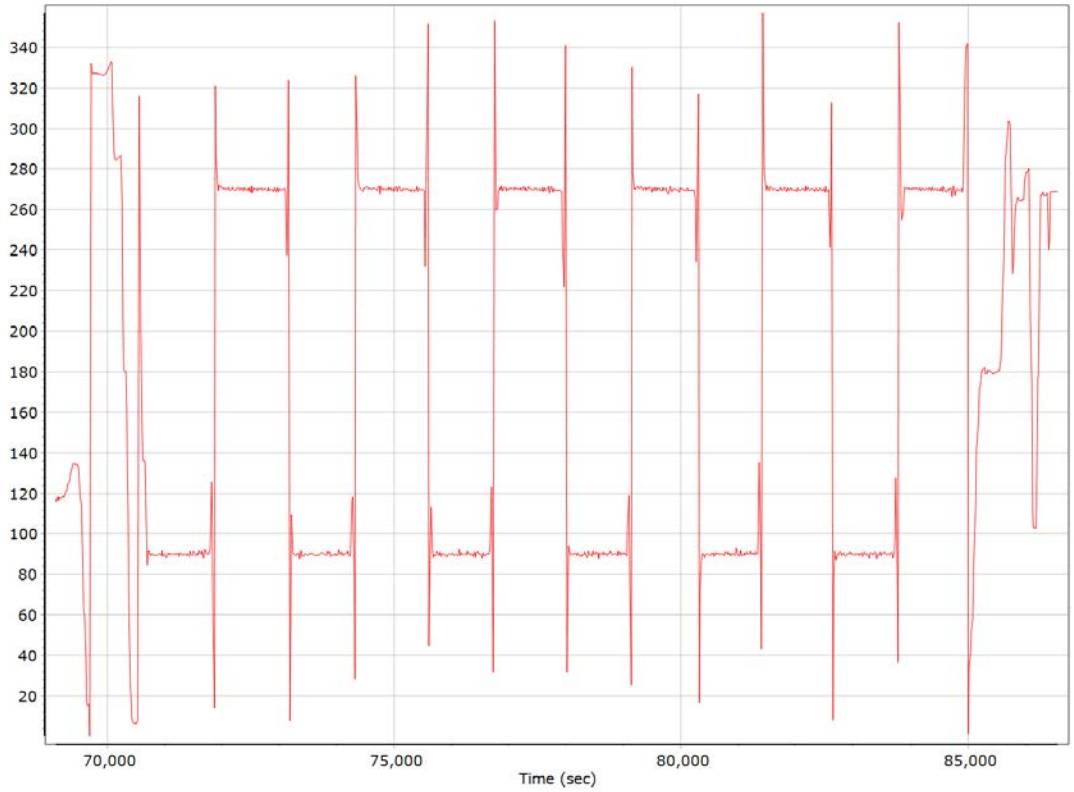
Altitude



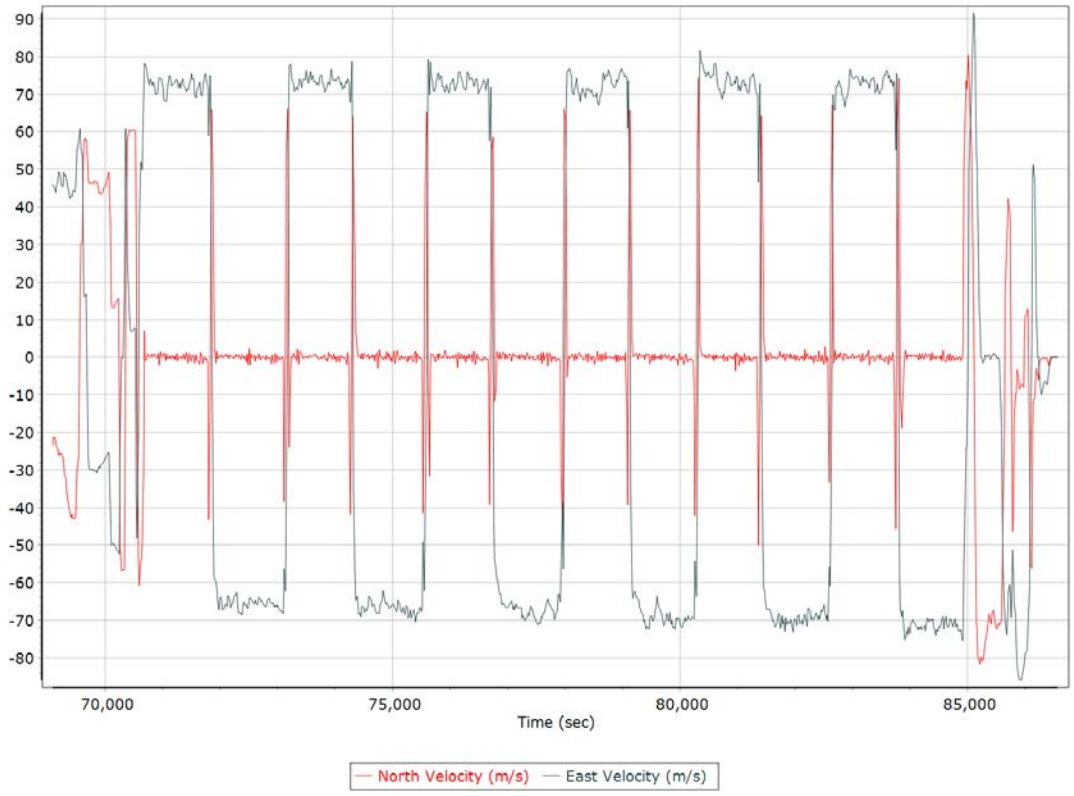
Roll/Pitch



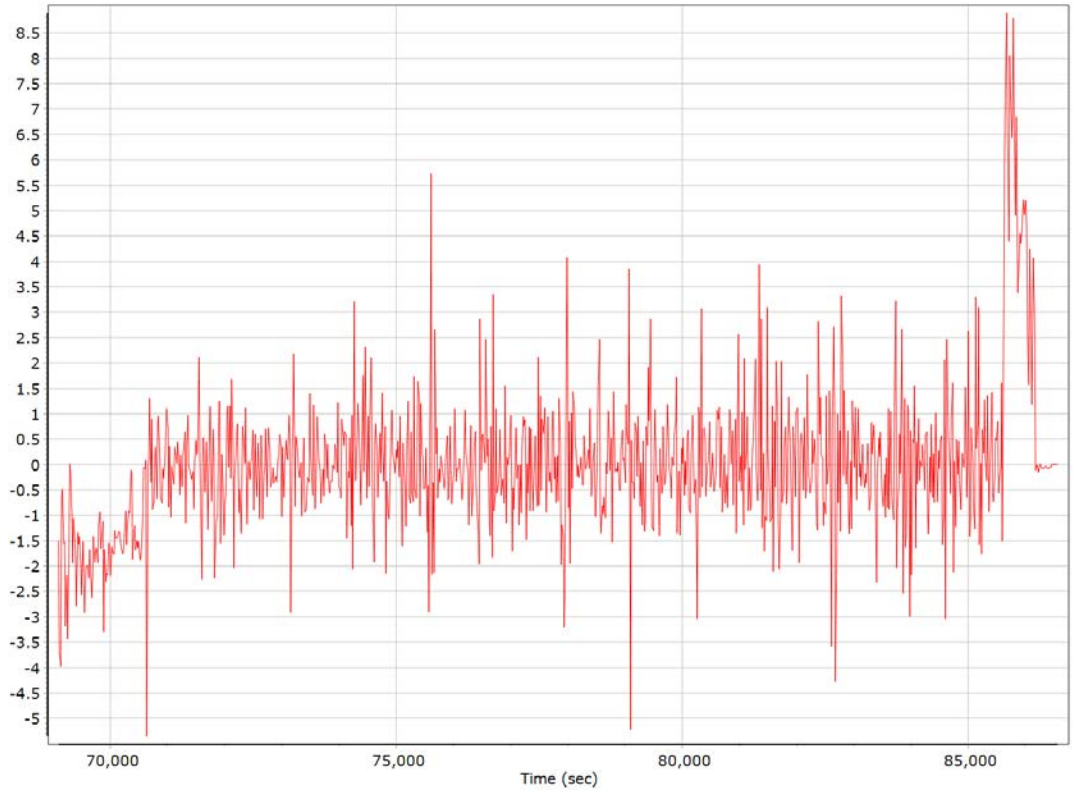
Heading



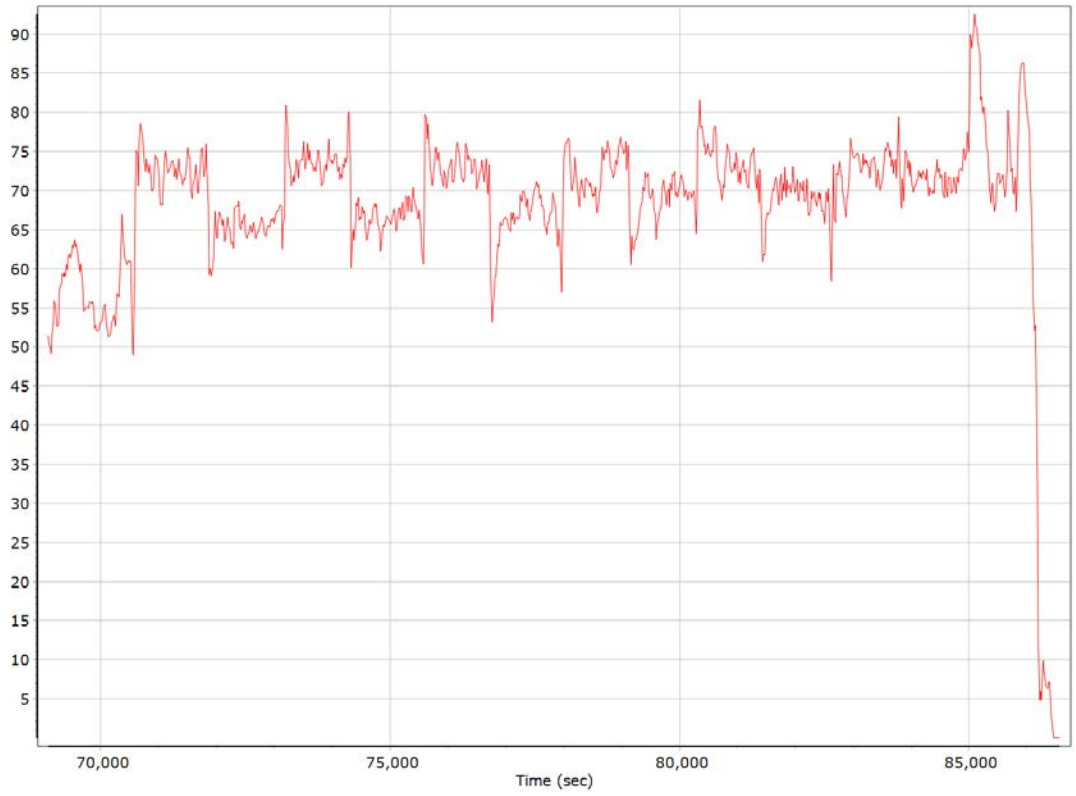
North/East Velocity



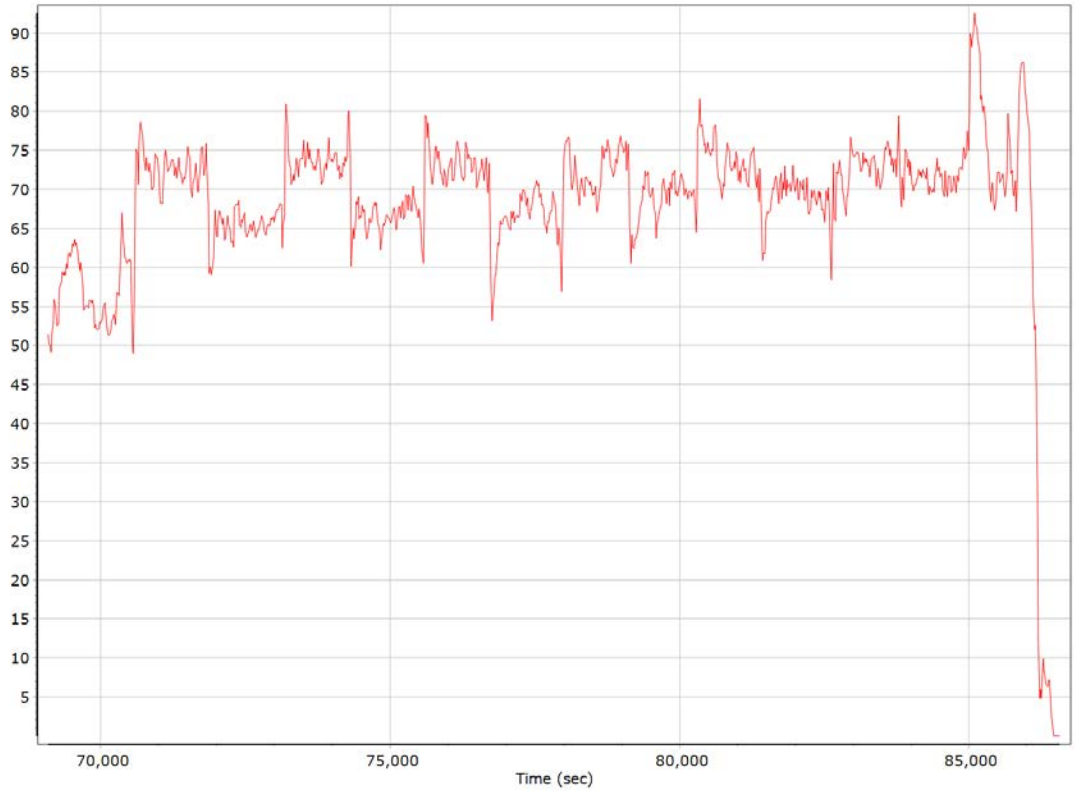
Down Velocity



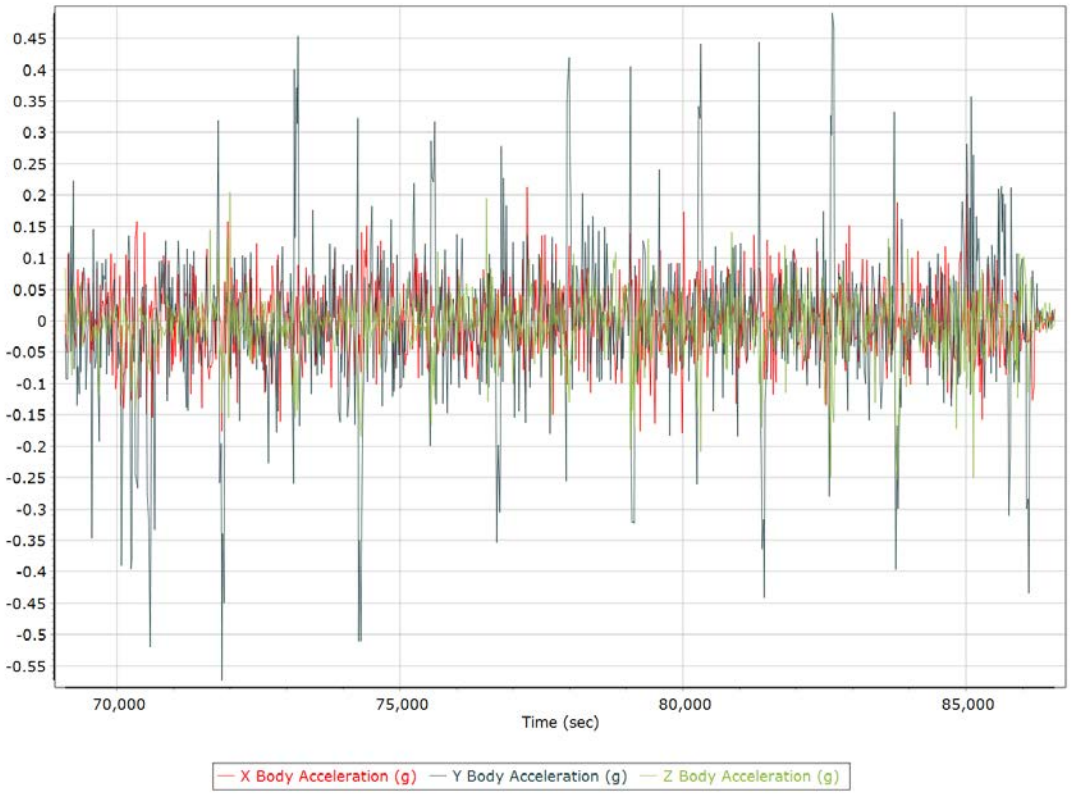
Total Speed



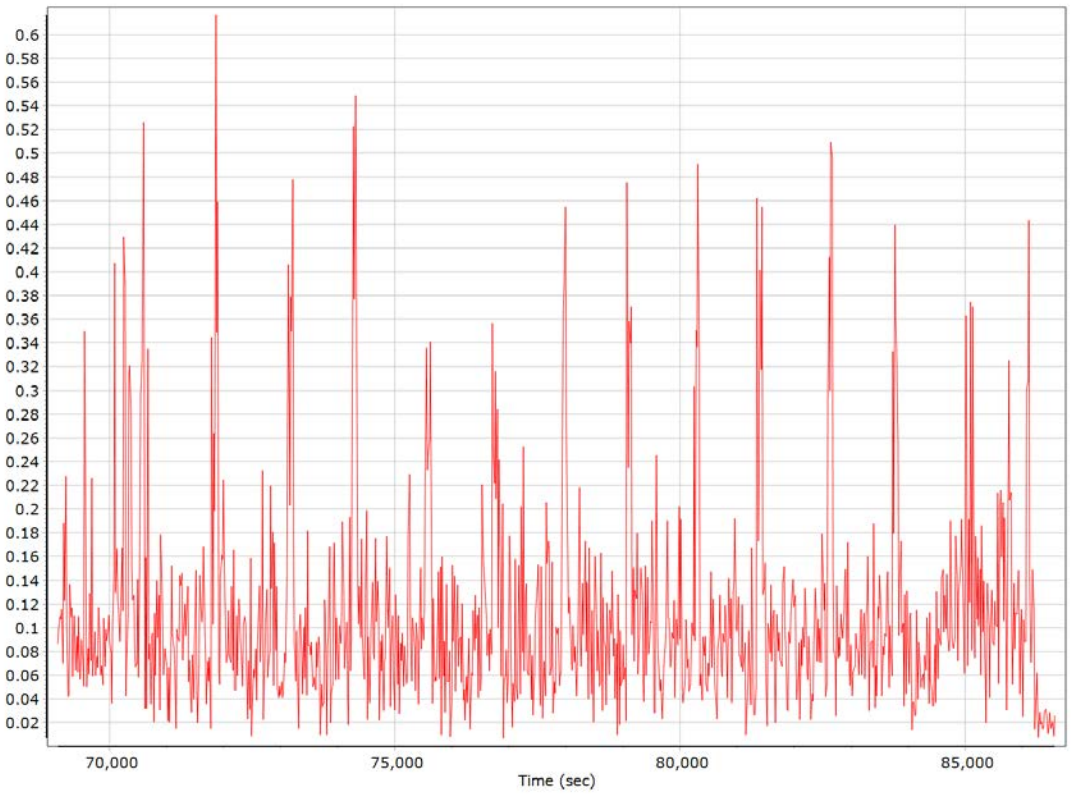
Ground Speed



Body Acceleration



Total Body Acceleration



Body Angular Rate

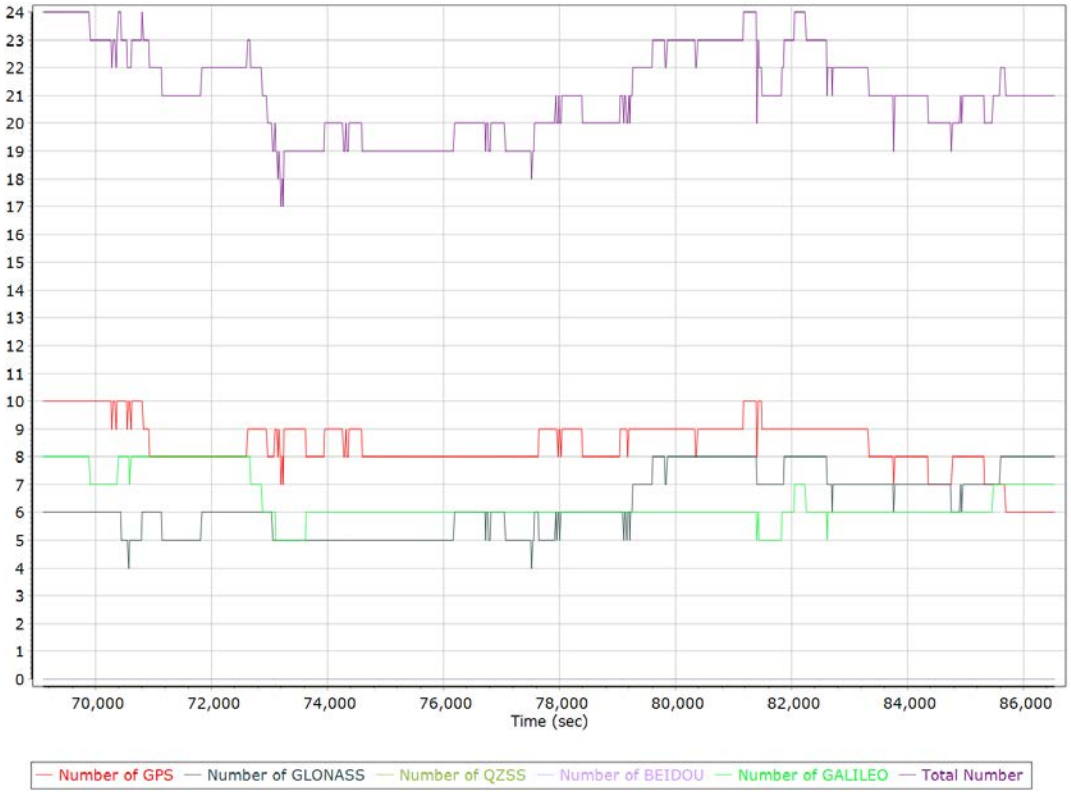


GNSS QC

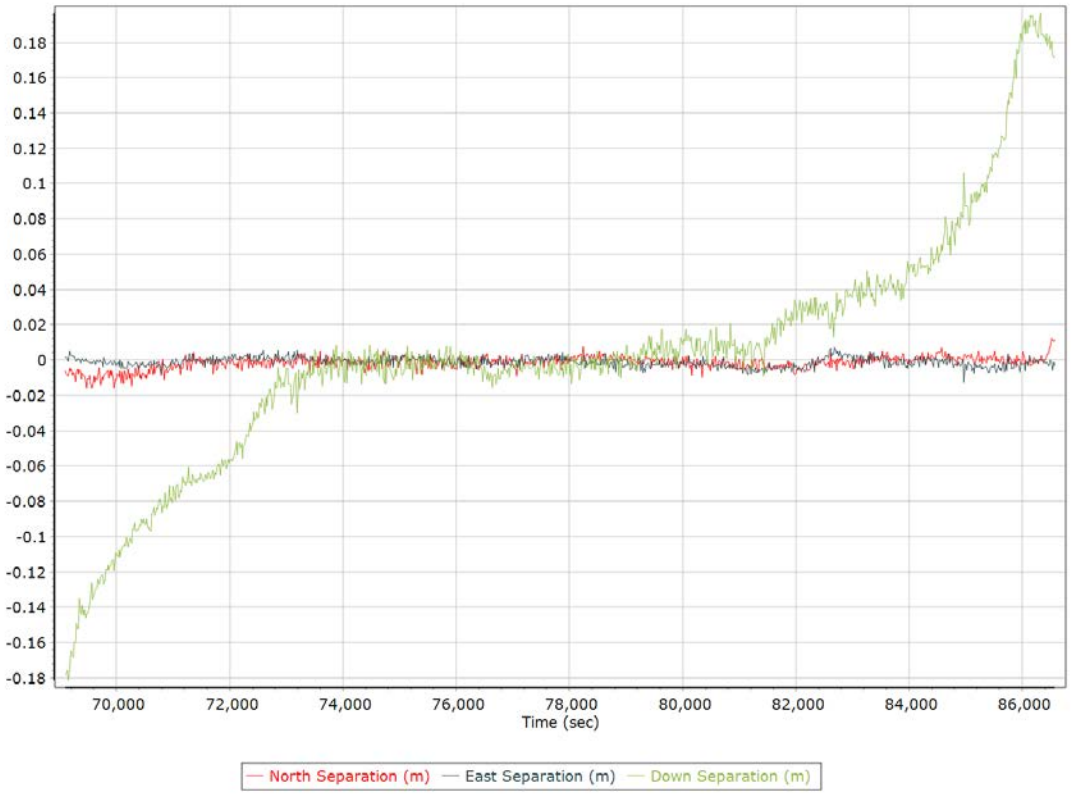
GNSS QC Statistics

Statistics	Min	Max	Mean
Baseline length (km)	0.00	0.00	
Number of GPS SV	6	10	8
Number of GLONASS SV	4	8	6
Number of QZSS SV	0	0	0
Number of BEIDOU SV	0	0	0
Number of GALILEO SV	4	8	6
Total number of SV	17	24	21
PDOP	0.92	1.35	1.10
QC Solution Gaps	0.00	0.00	
Solution Type	Fixed	Float	No solution
Epoch (sec)	17516.00	0.00	0.00
Percentage	100.00	0.00	0.00

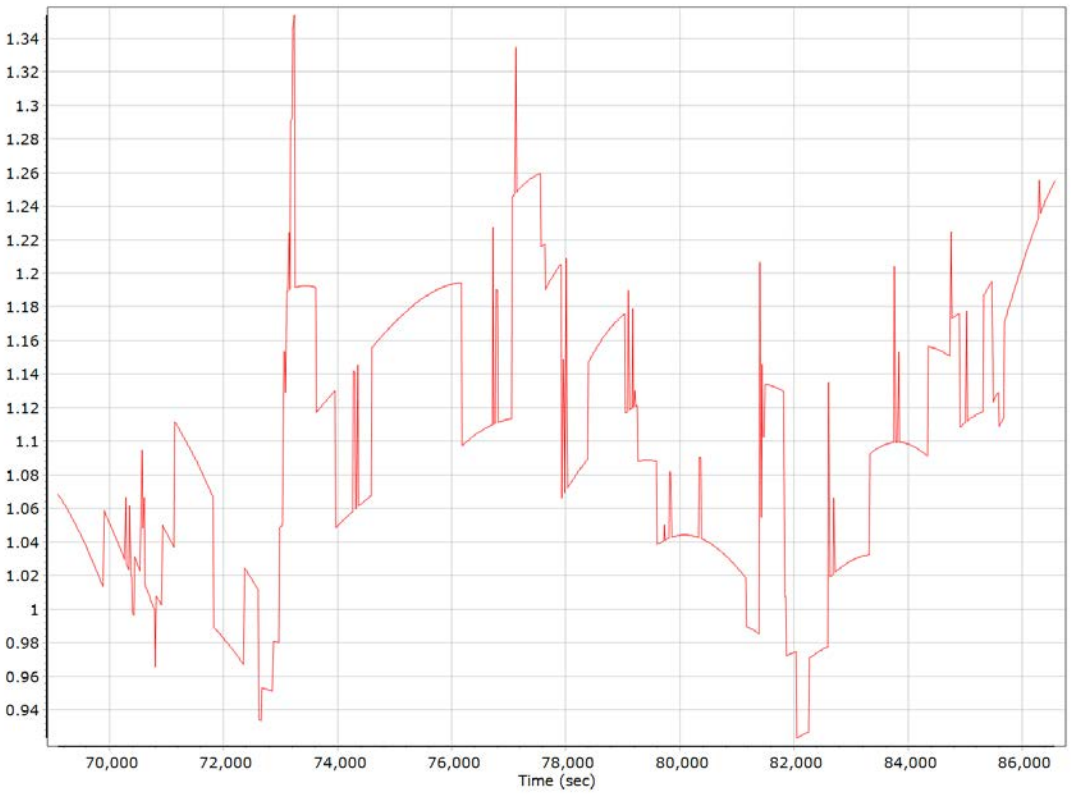
Num SVs in solution



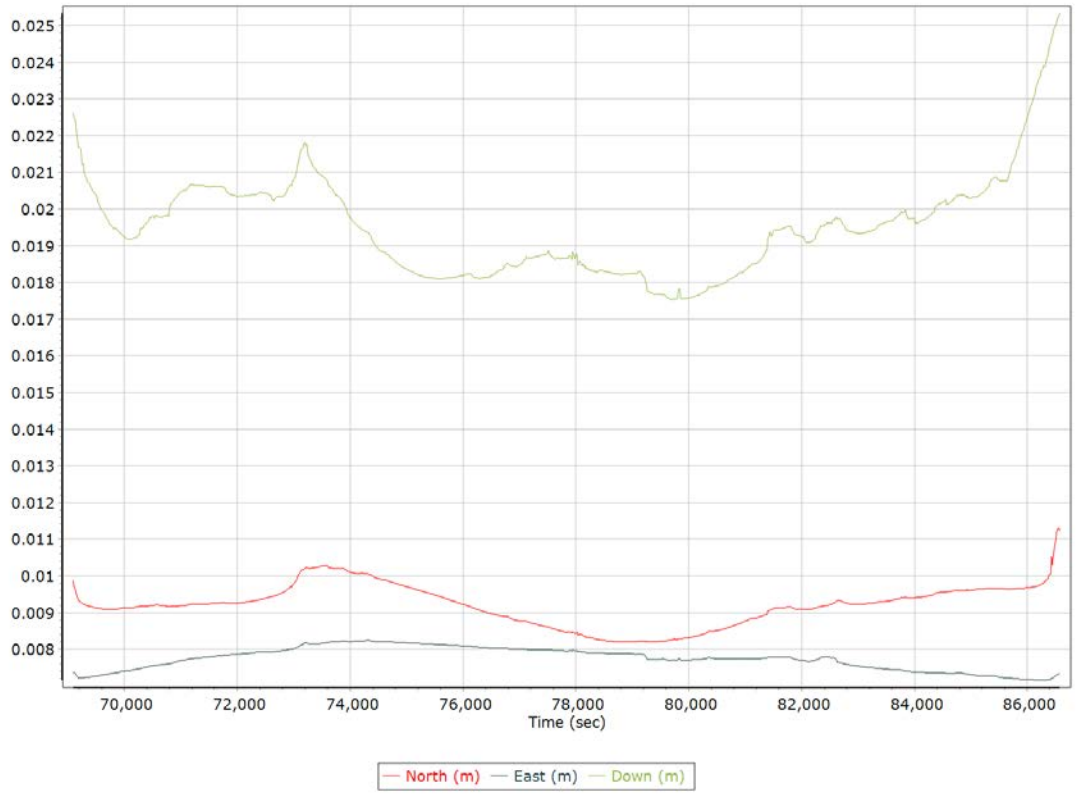
Forward/Reverse Separation



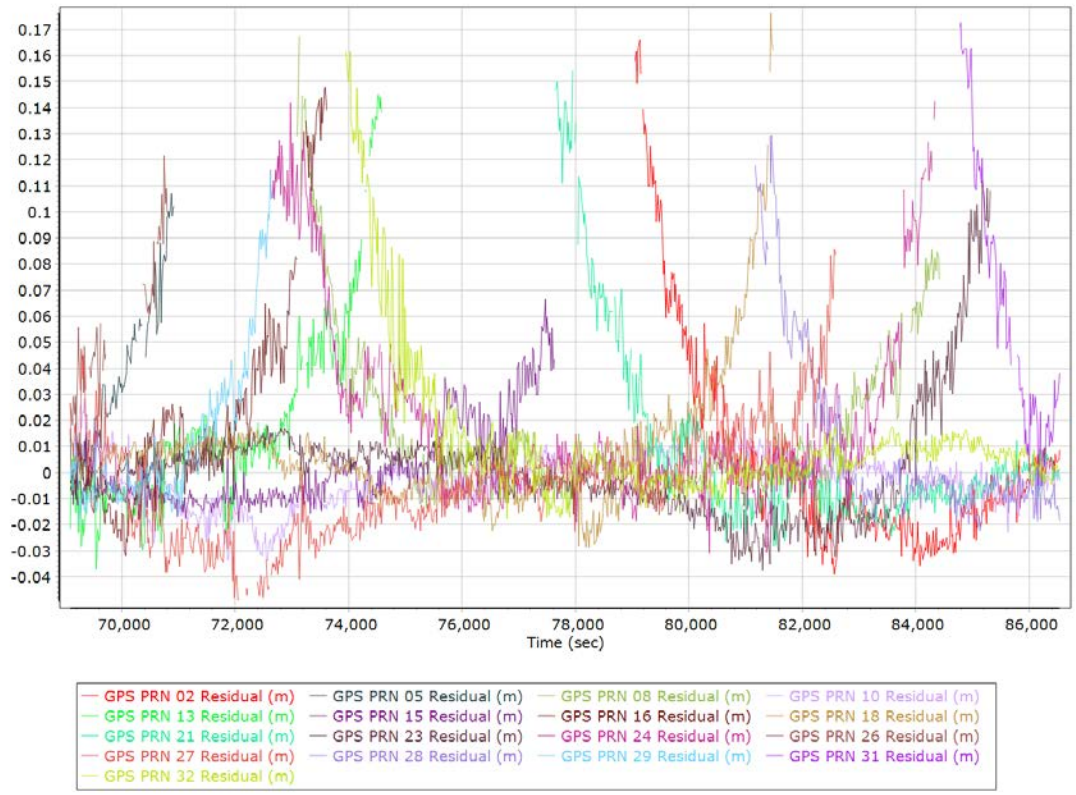
PDOP



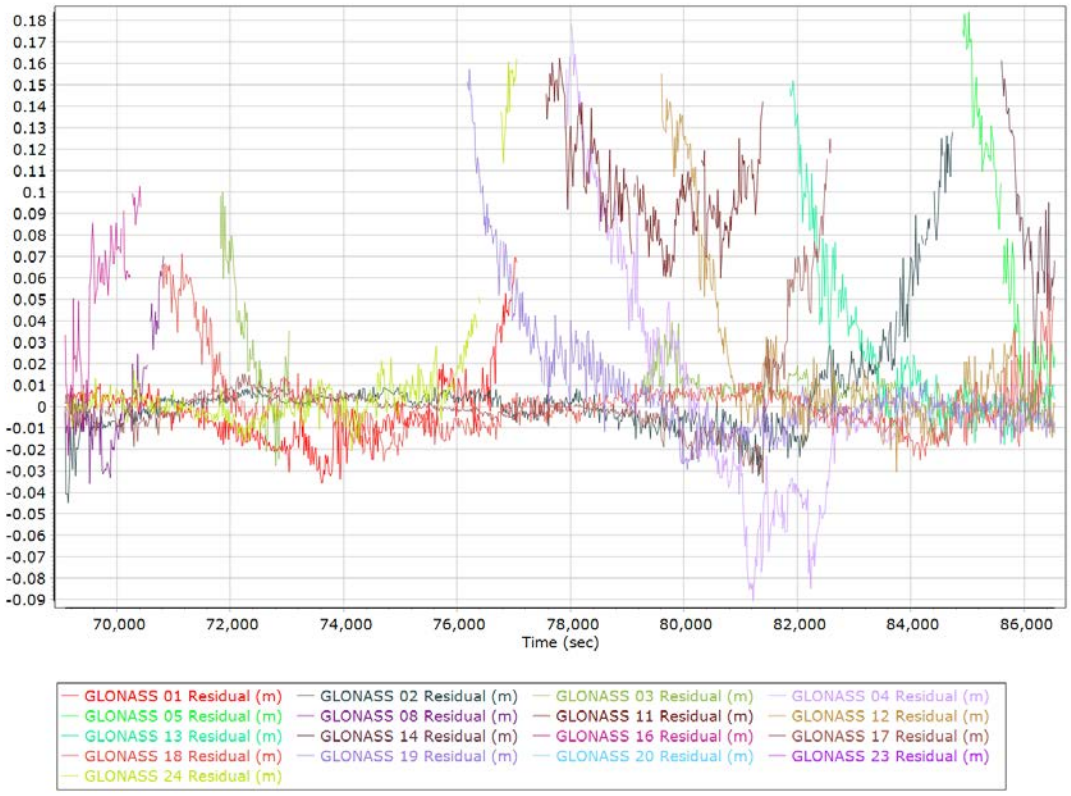
Estimated Position Accuracy



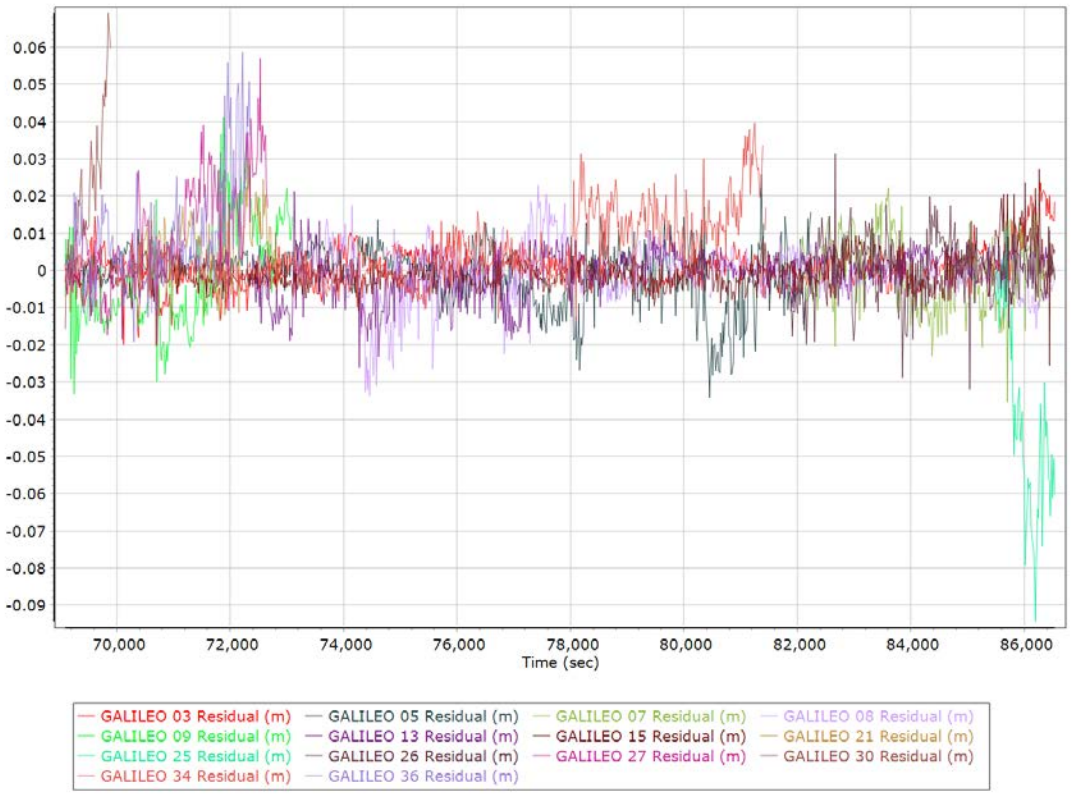
GPS Residuals



GLONASS Residuals



GALILEO Residuals



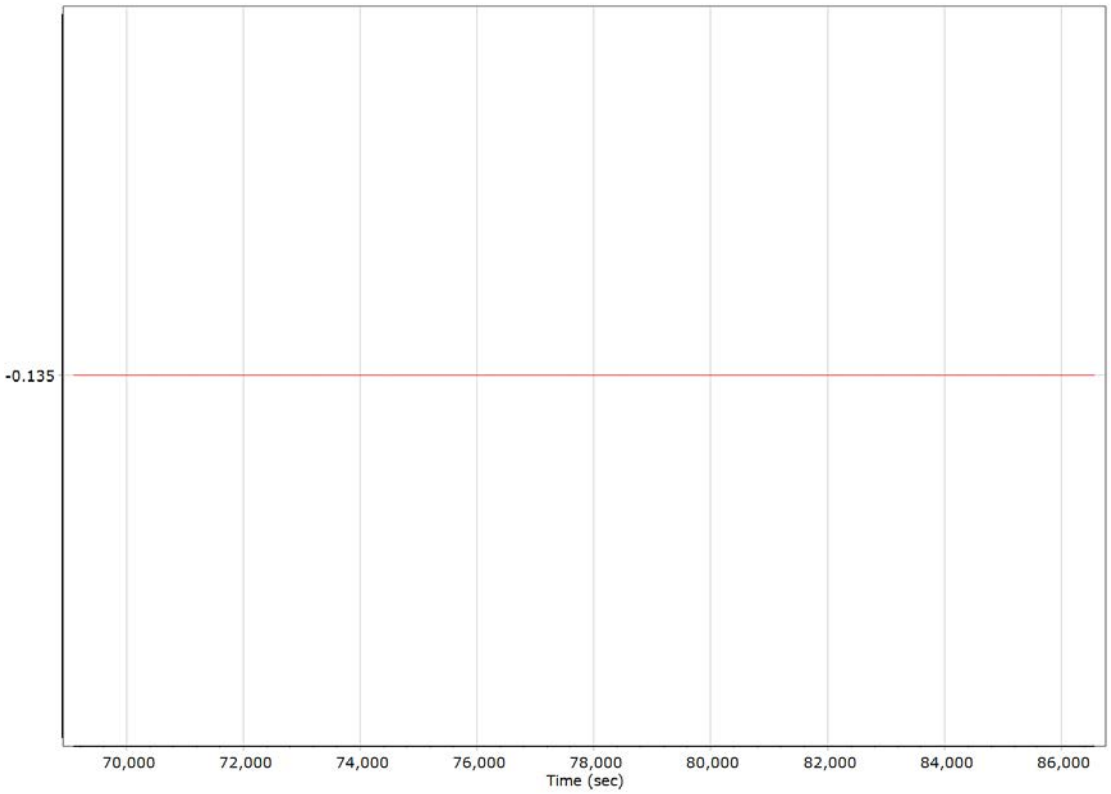
GNSS-Inertial Processor Configuration

Processing mode	IN-Fusion PP-RTX		
Stabilized mount	True		
Processing start time	69009.000 (7/23/2023 7:10:09 PM)		
Processing end time	86576.000 (7/24/2023 12:02:56 AM)		
Initial attitude source	Primary GNSS Track		
IMU Sensor Context	Processing with Onboard IMU		
Gimbal to IMU lever arm (m)	-0.034	-0.010	-0.374
Gimbal to IMU mounting angles (deg)	0.000	0.000	0.000
Gimbal to Primary GNSS lever arm (m)	-0.135	0.064	-1.339
Gimbal to Primary GNSS lever arm std dev (m)	0.030	0.030	0.030
Aircraft to Reference mounting angles (deg)	0.000	0.000	0.000

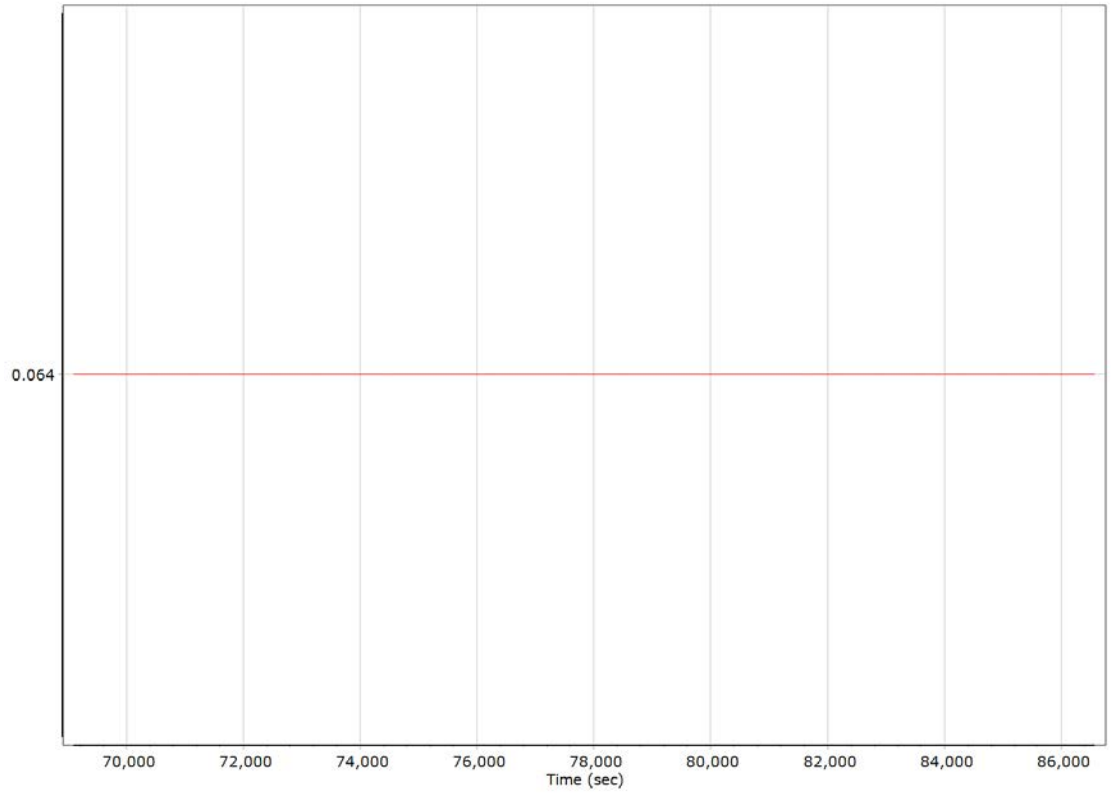
Calibrated Installation Parameters

Reference-Primary GNSS Lever Arm (m)

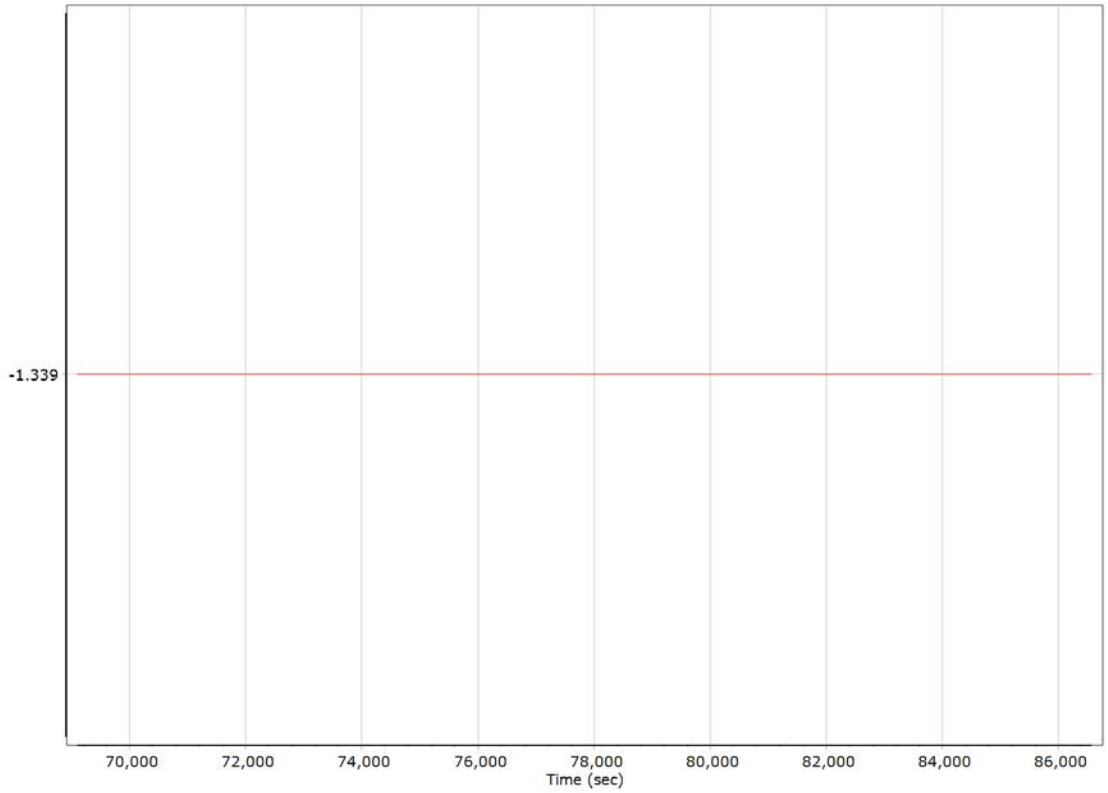
X Reference-Primary GNSS Lever Arm (m)



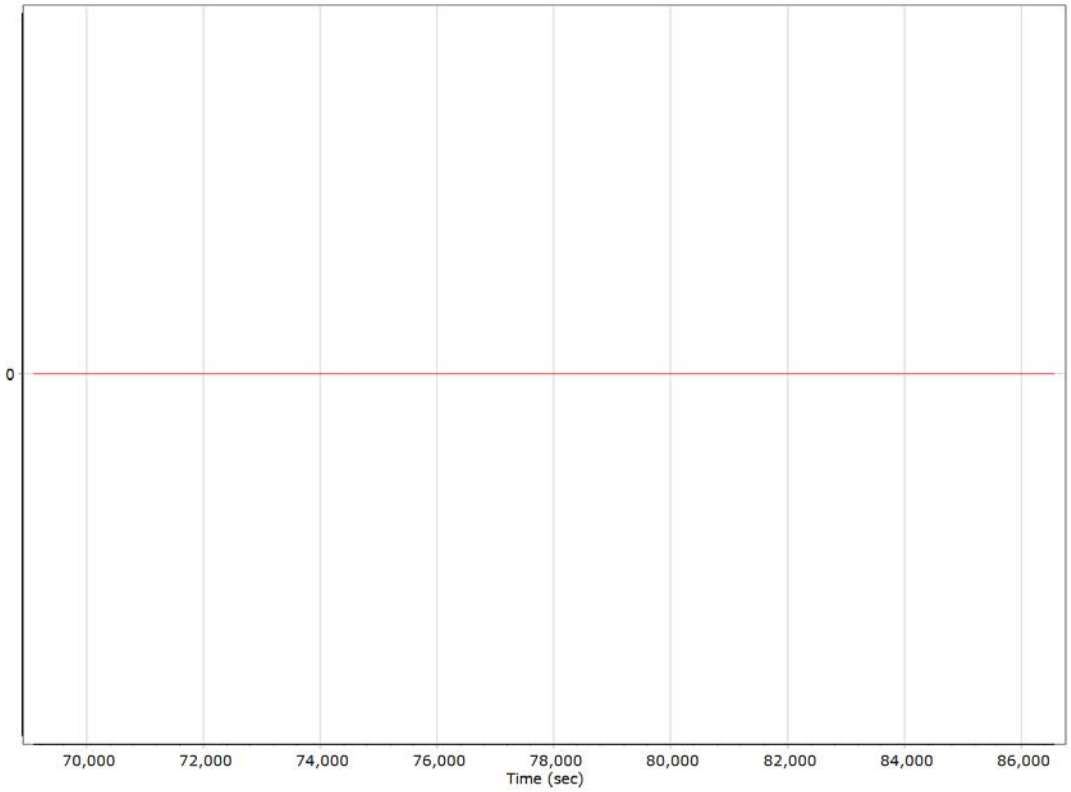
Y Reference-Primary GNSS Lever Arm (m)



Z Reference-Primary GNSS Lever Arm (m)



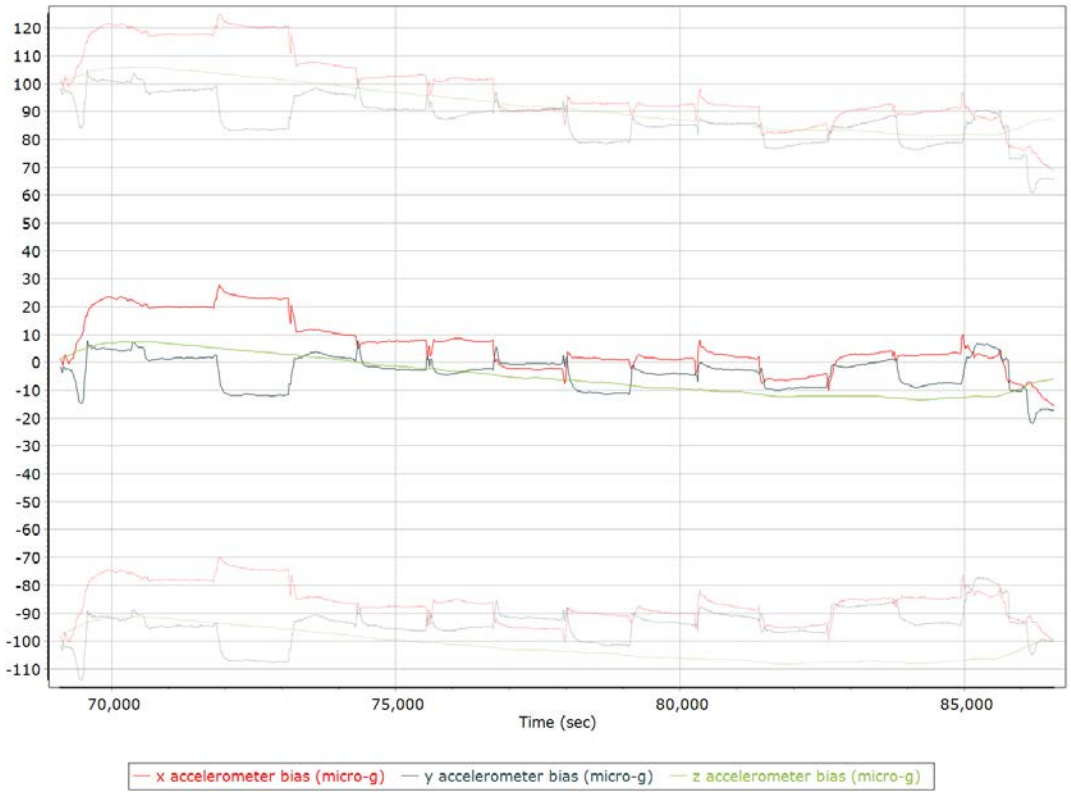
Reference-Primary GNSS Lever Arm Figure of Merit



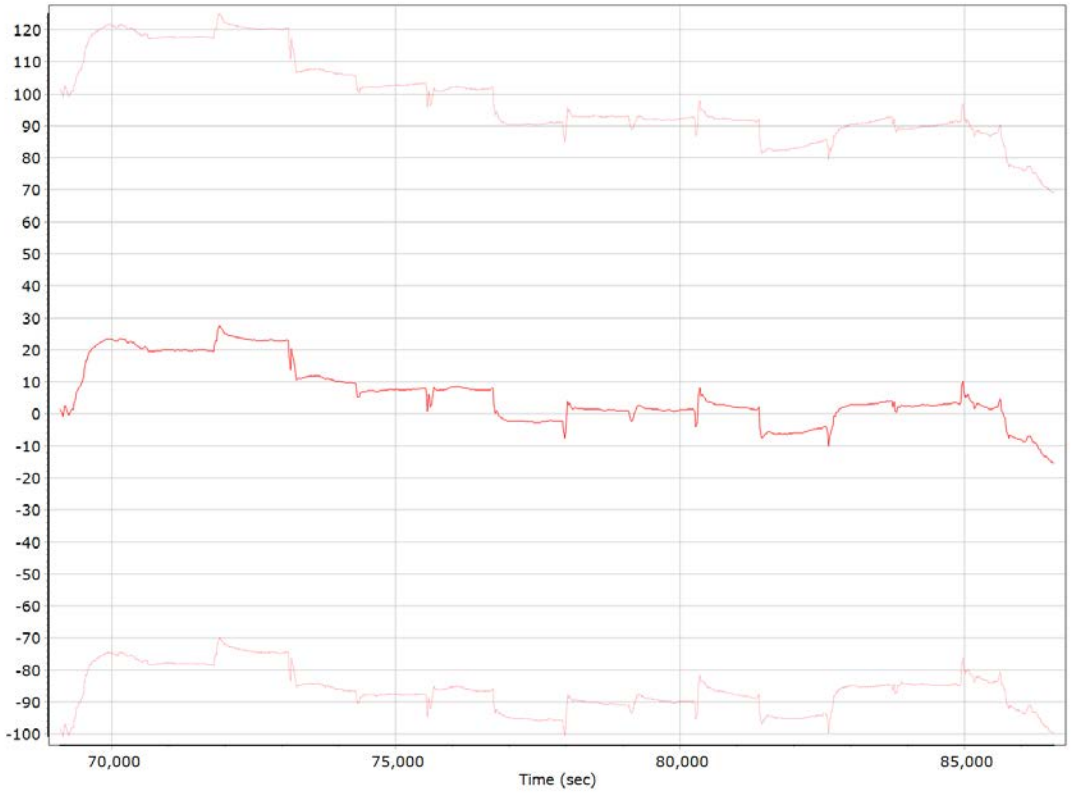
IN-Fusion QC

Forward Processed Estimated Errors, Reference Frame

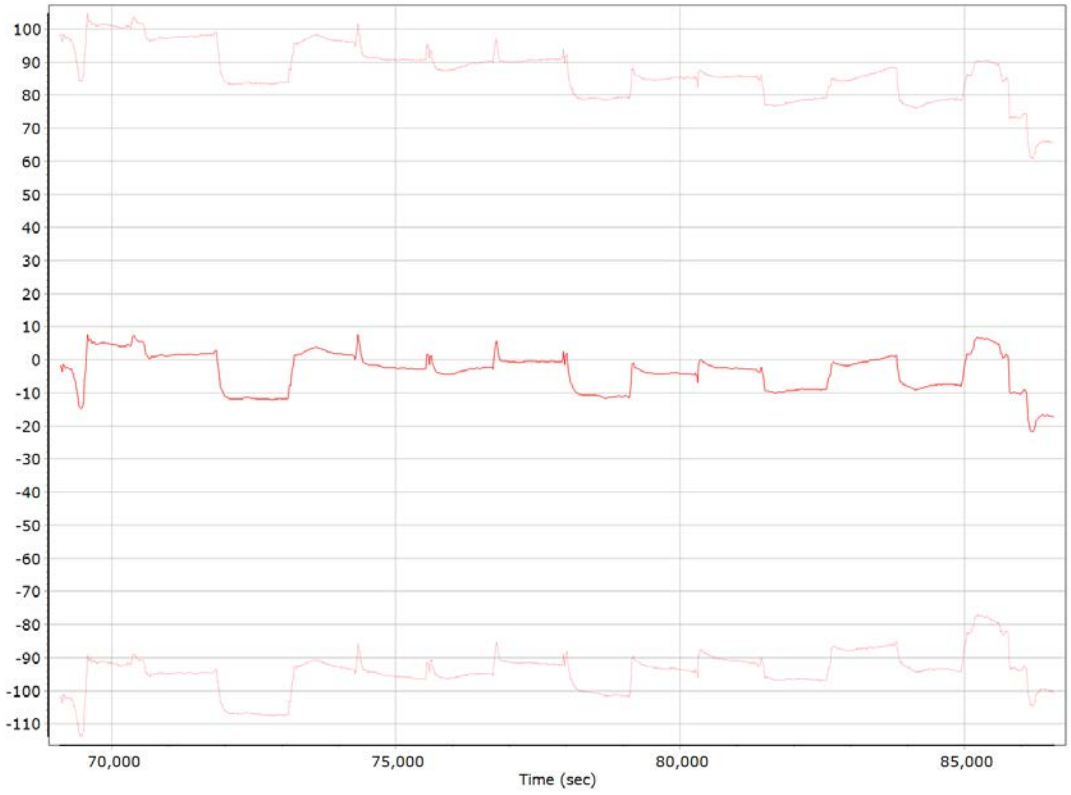
Accelerometer Bias (micro-g)



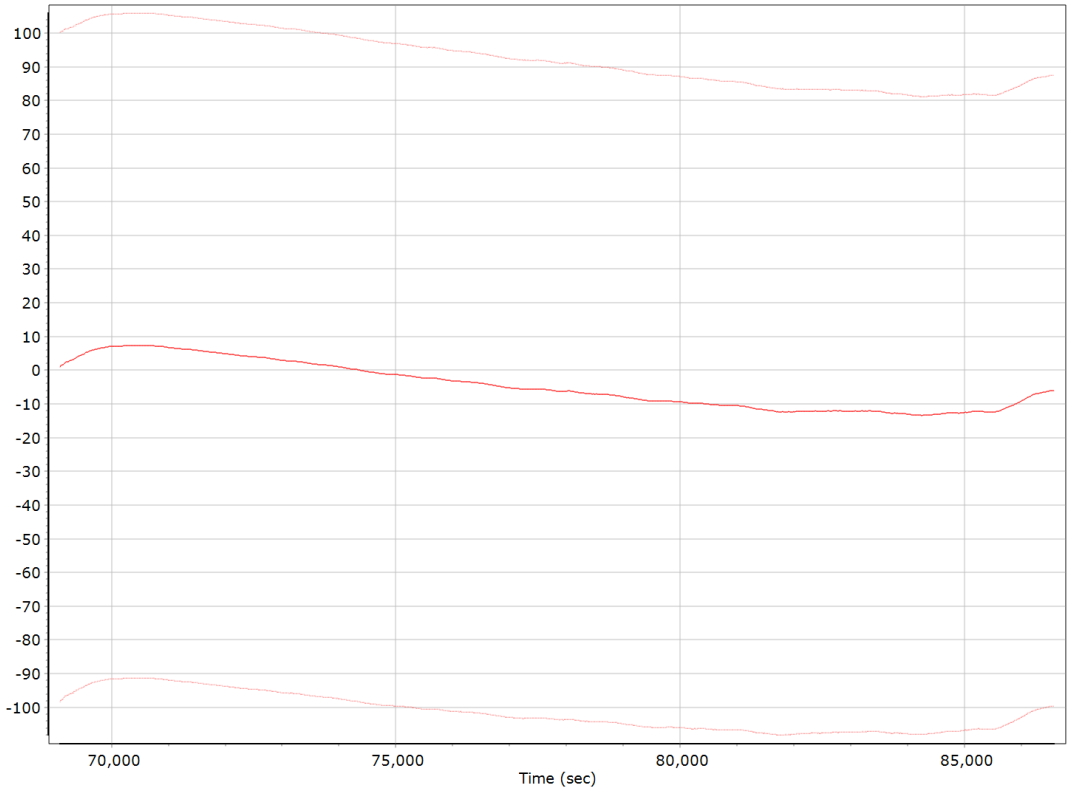
X Accelerometer Bias (micro-g)



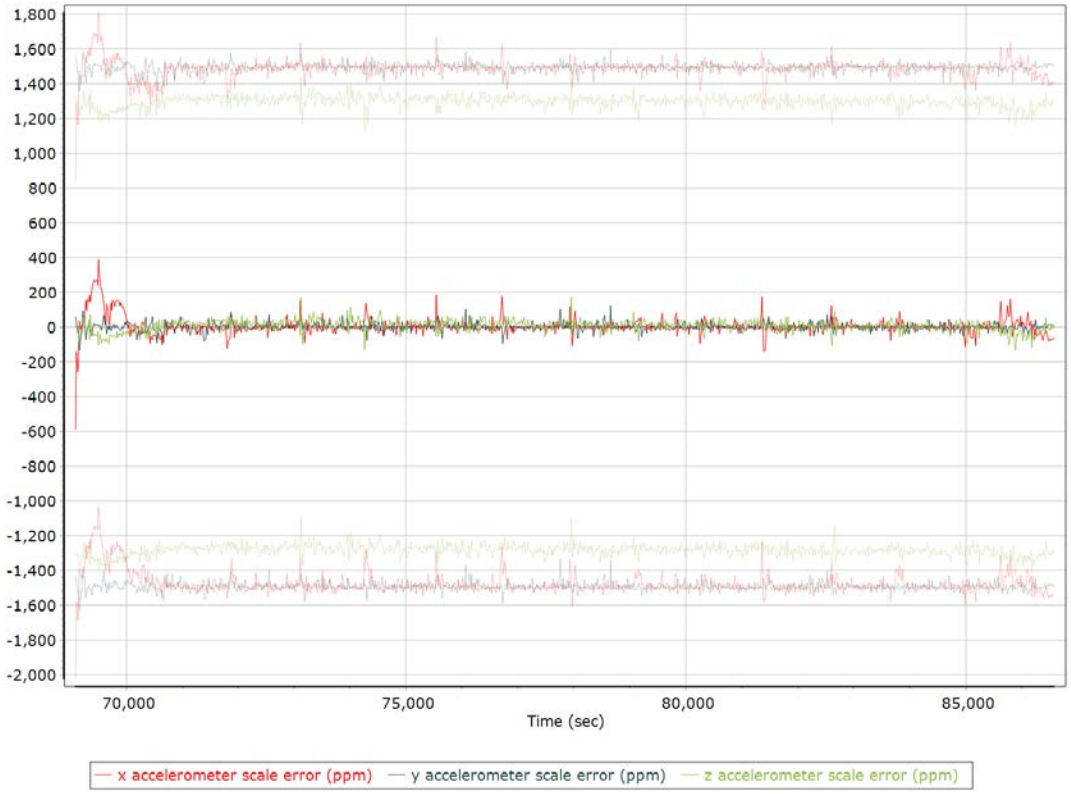
Y Accelerometer Bias (micro-g)



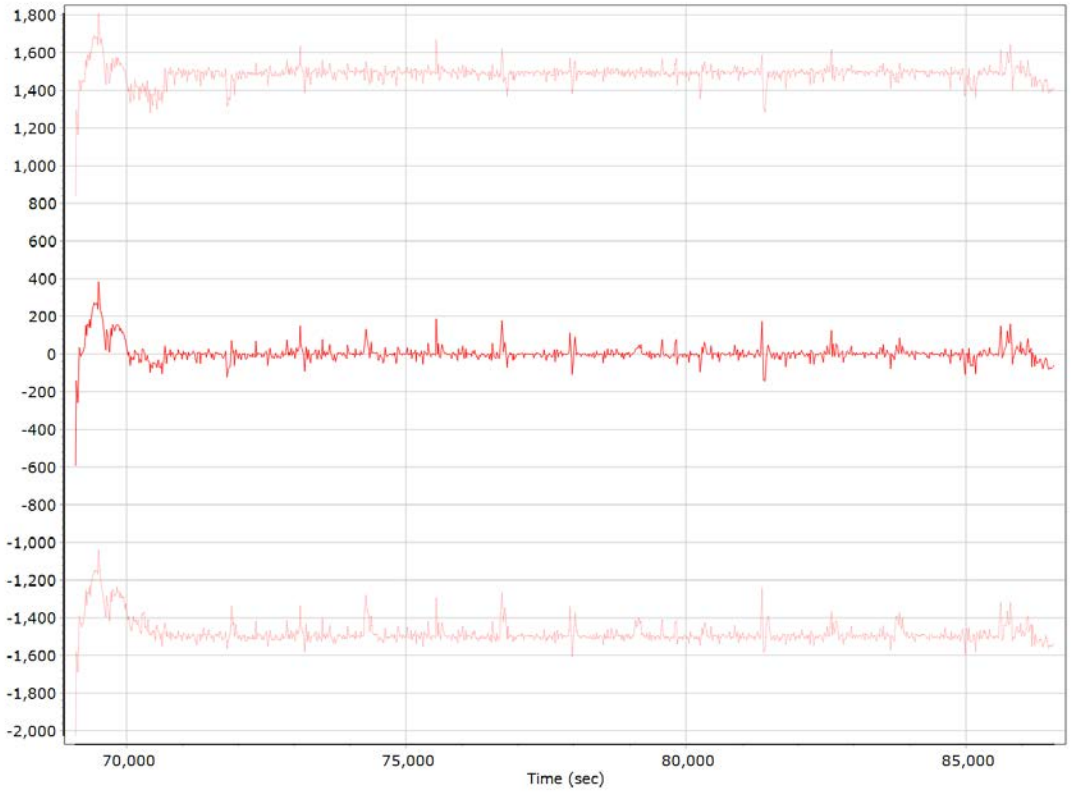
Z Accelerometer Bias (micro-g)



Accelerometer Scale Error (ppm)



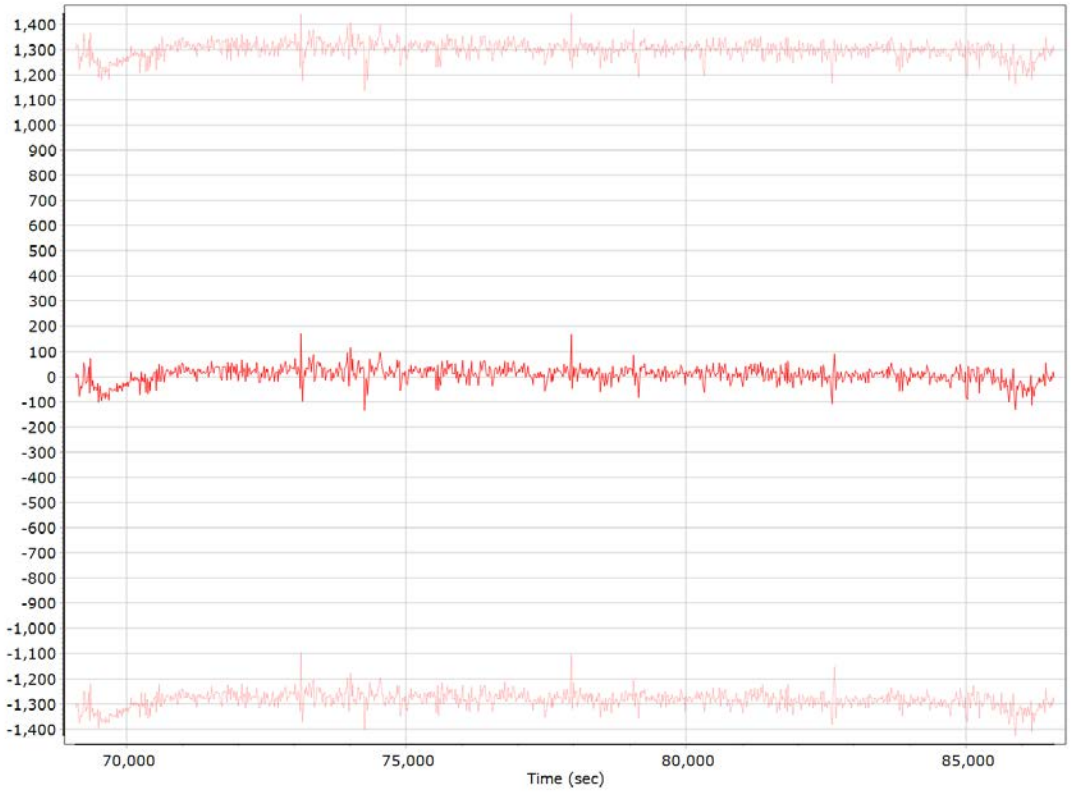
X Accelerometer Scale Error (ppm)



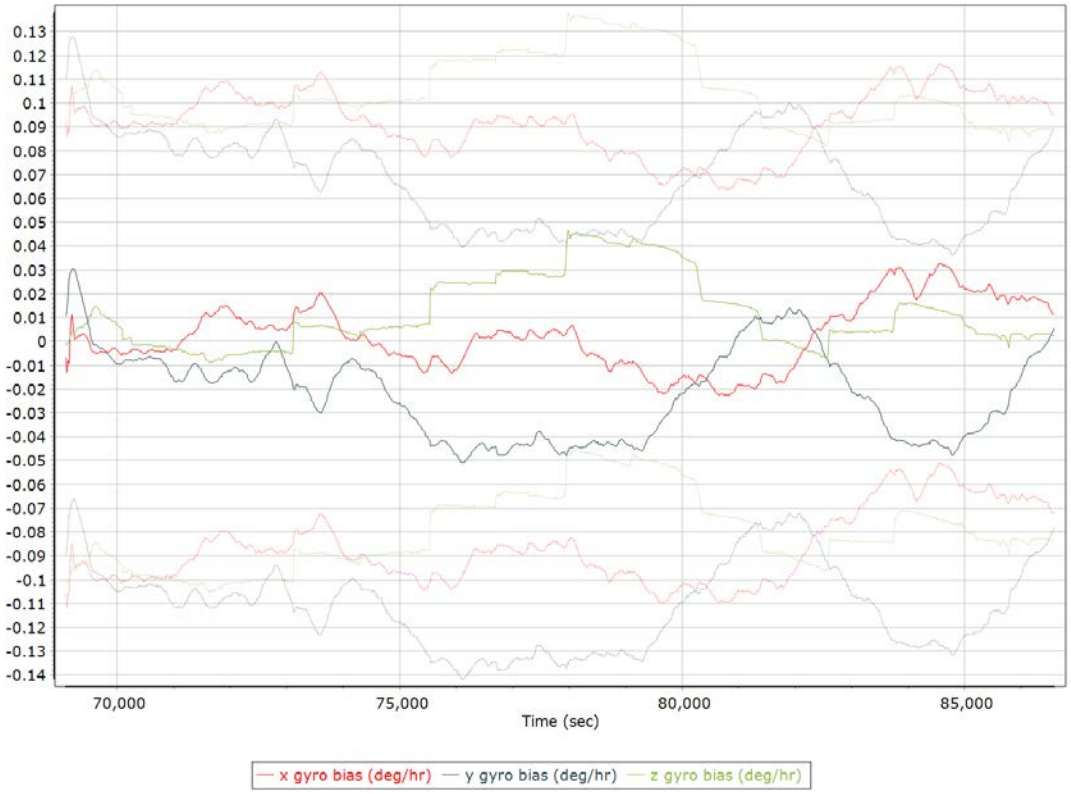
Y Accelerometer Scale Error (ppm)



Z Accelerometer Scale Error (ppm)



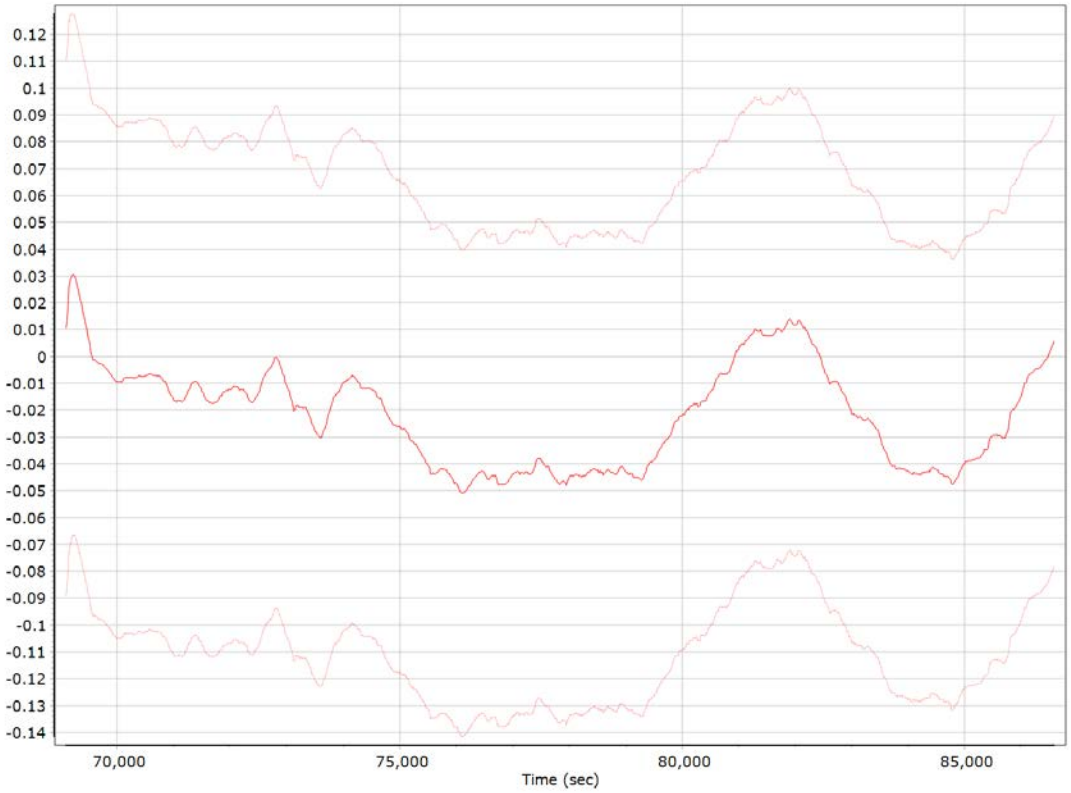
Gyro Bias (deg/h)



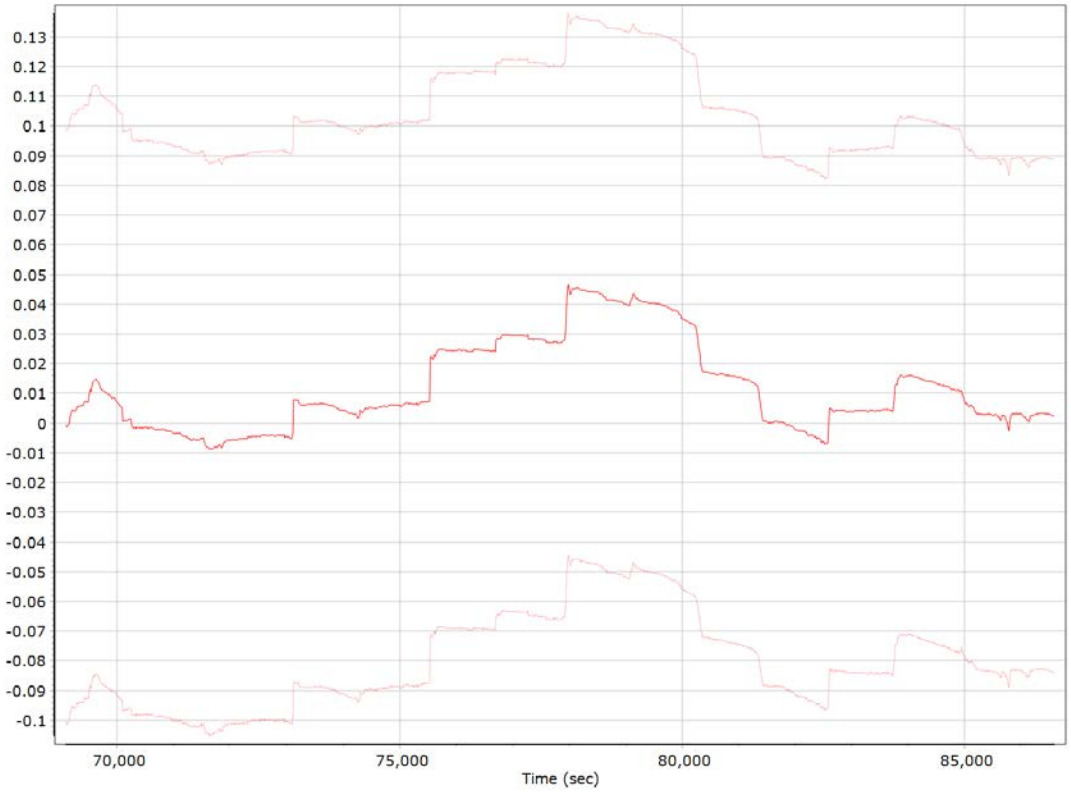
X Gyro Bias (deg/h)



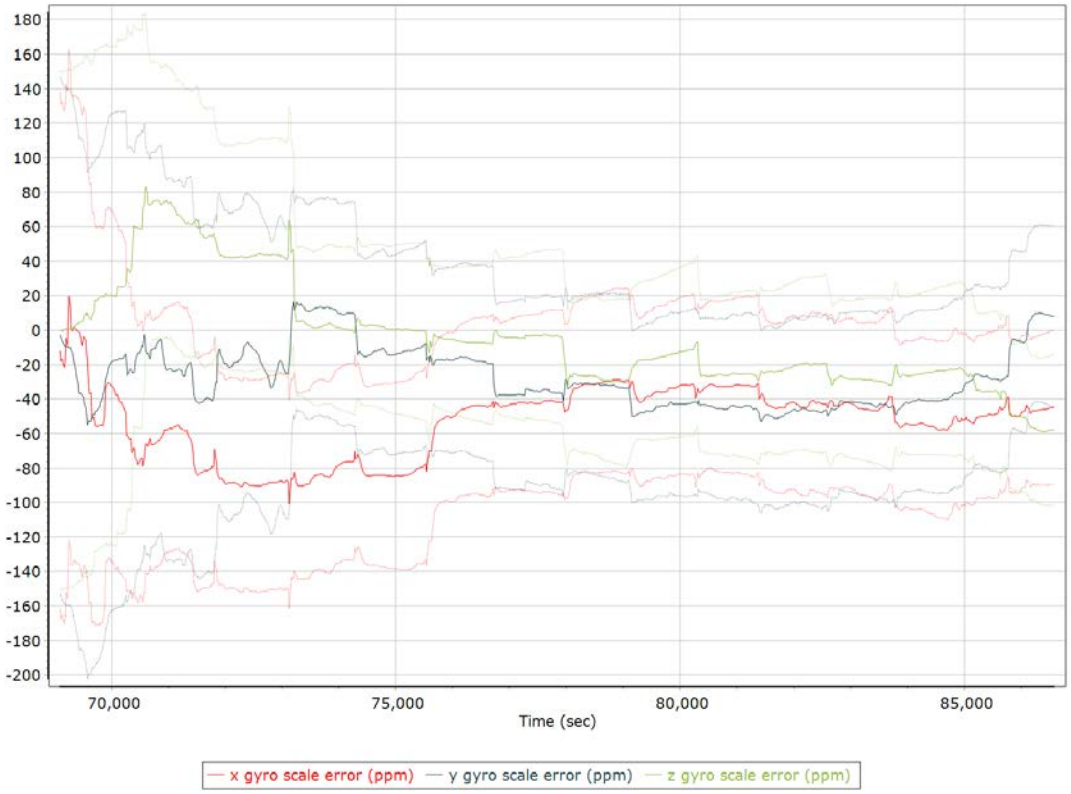
Y Gyro Bias (deg/h)



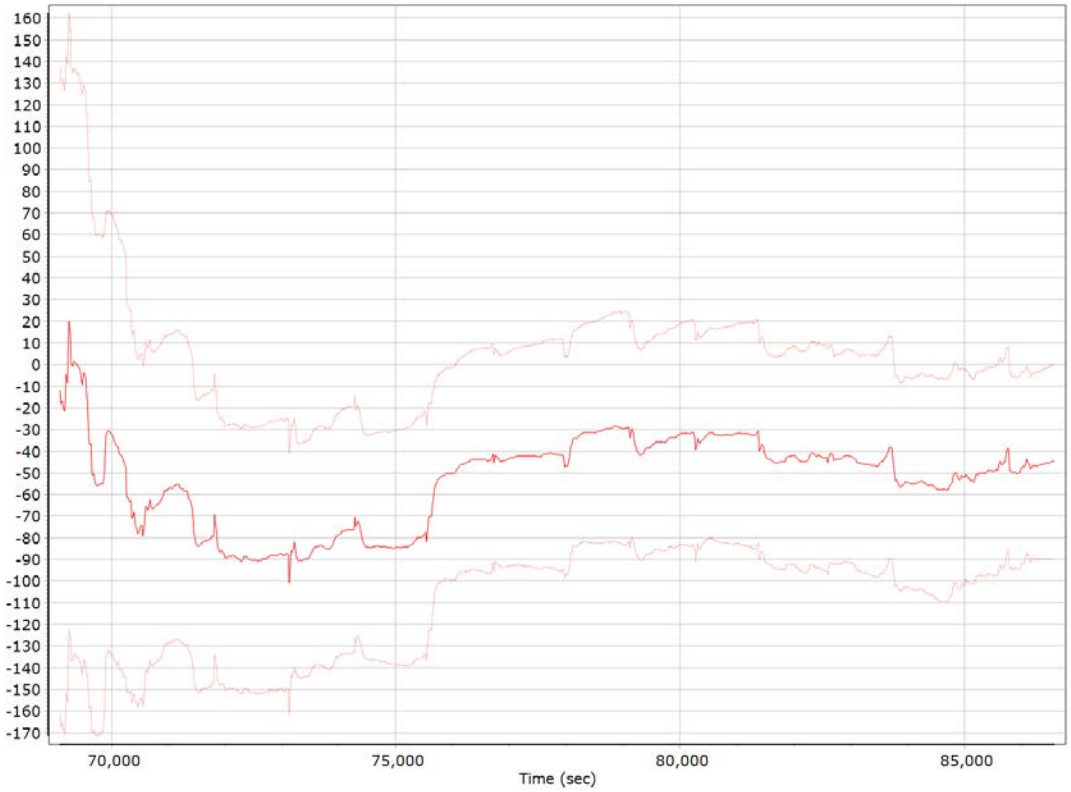
Z Gyro Bias (deg/h)



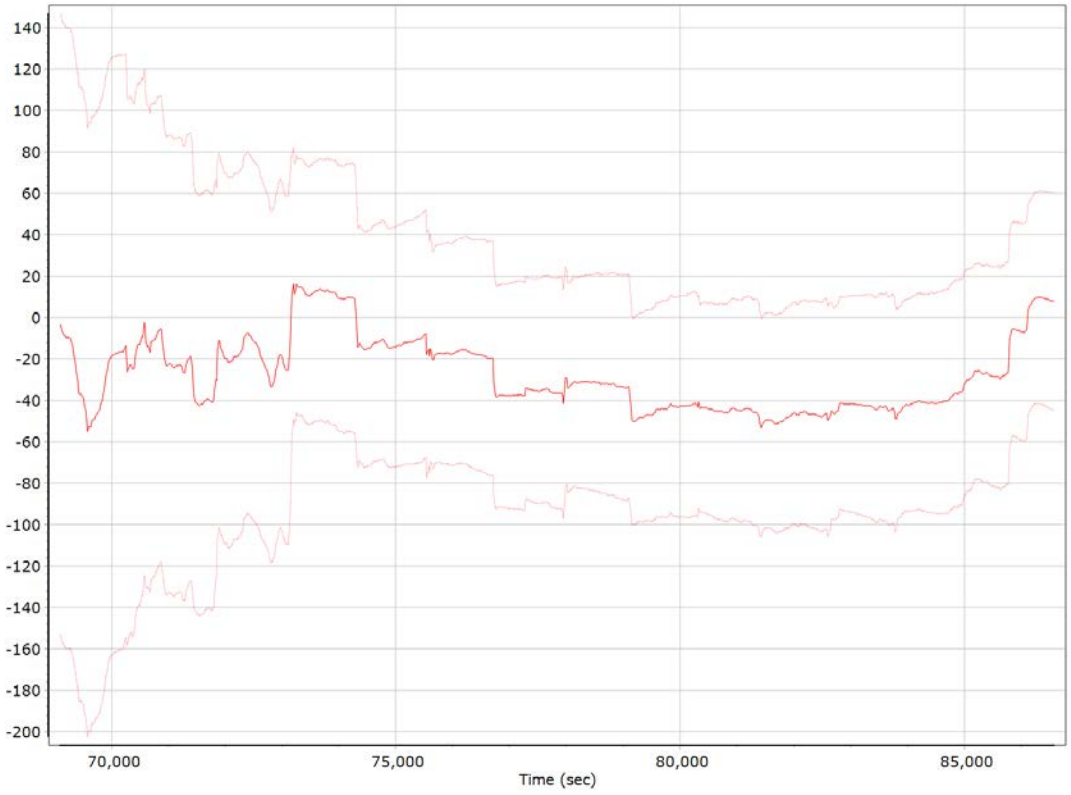
Gyro Scale Error (ppm)



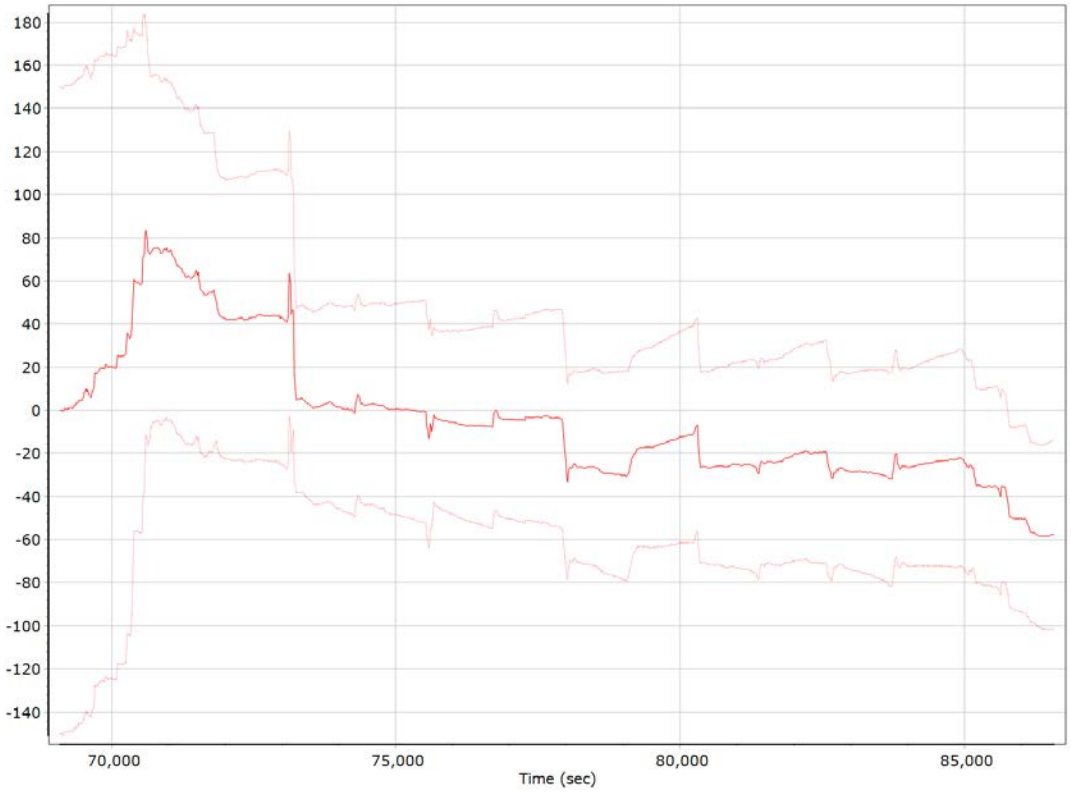
X Gyro Scale Error (ppm)



Y Gyro Scale Error (ppm)

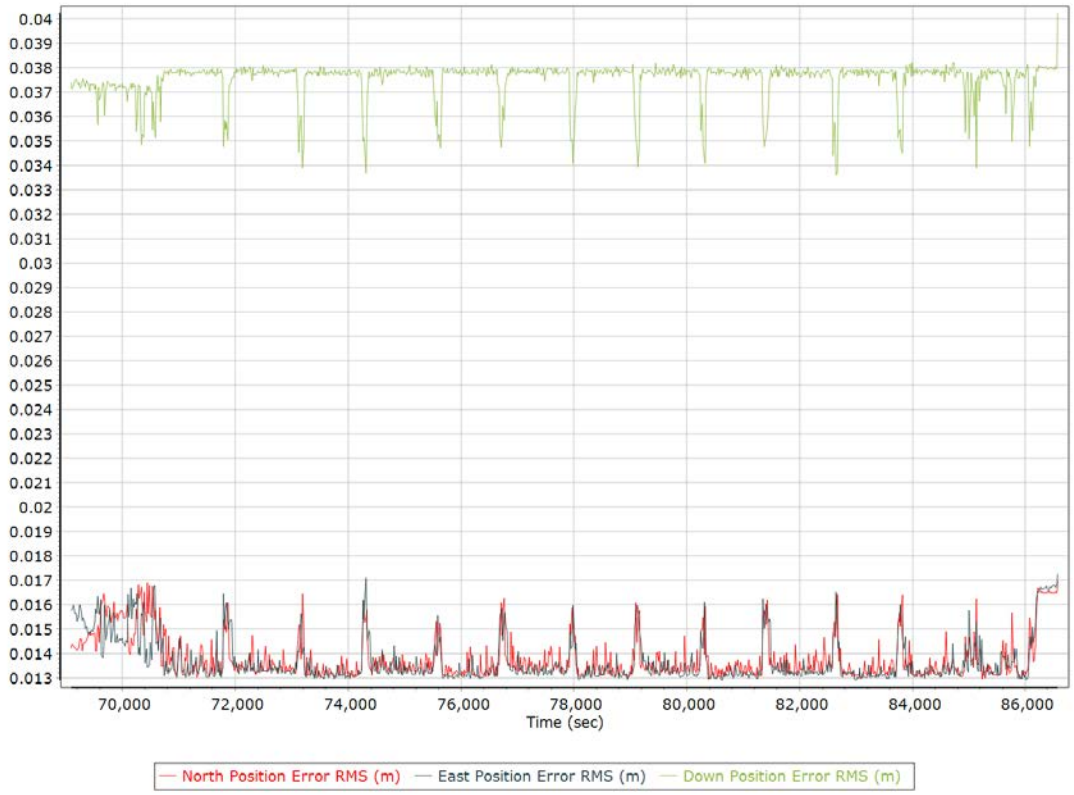


Z Gyro Scale Error (ppm)

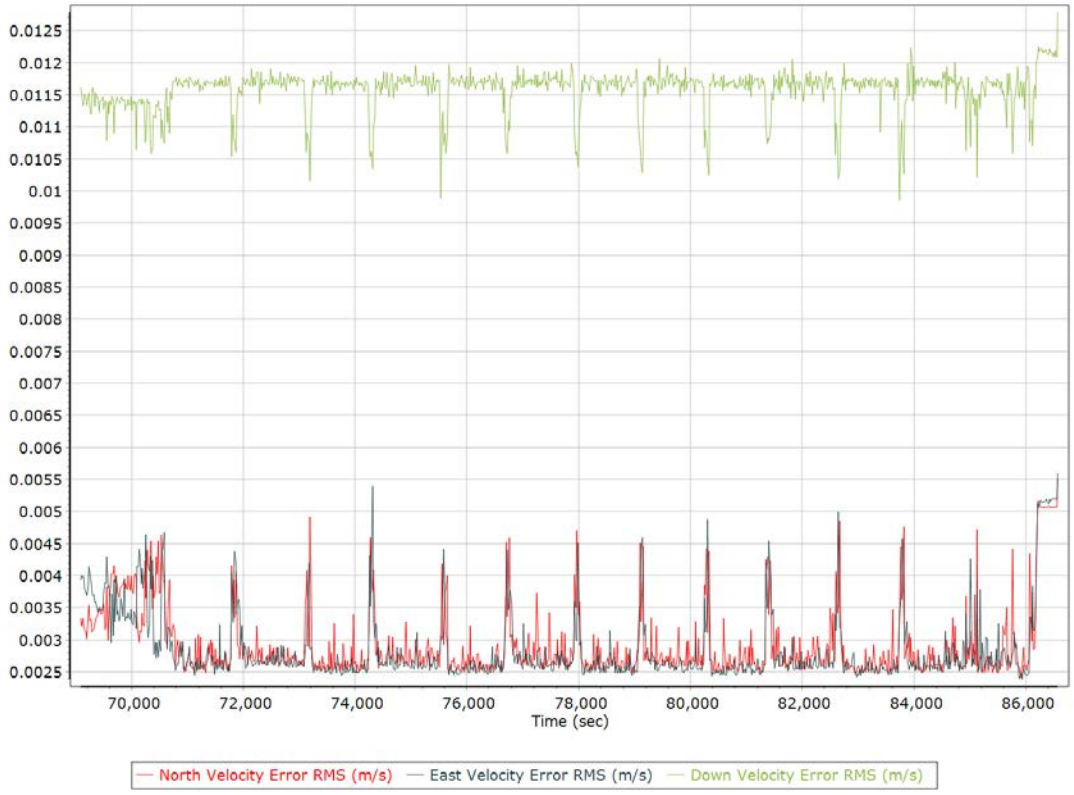


Smoothed Performance Metrics

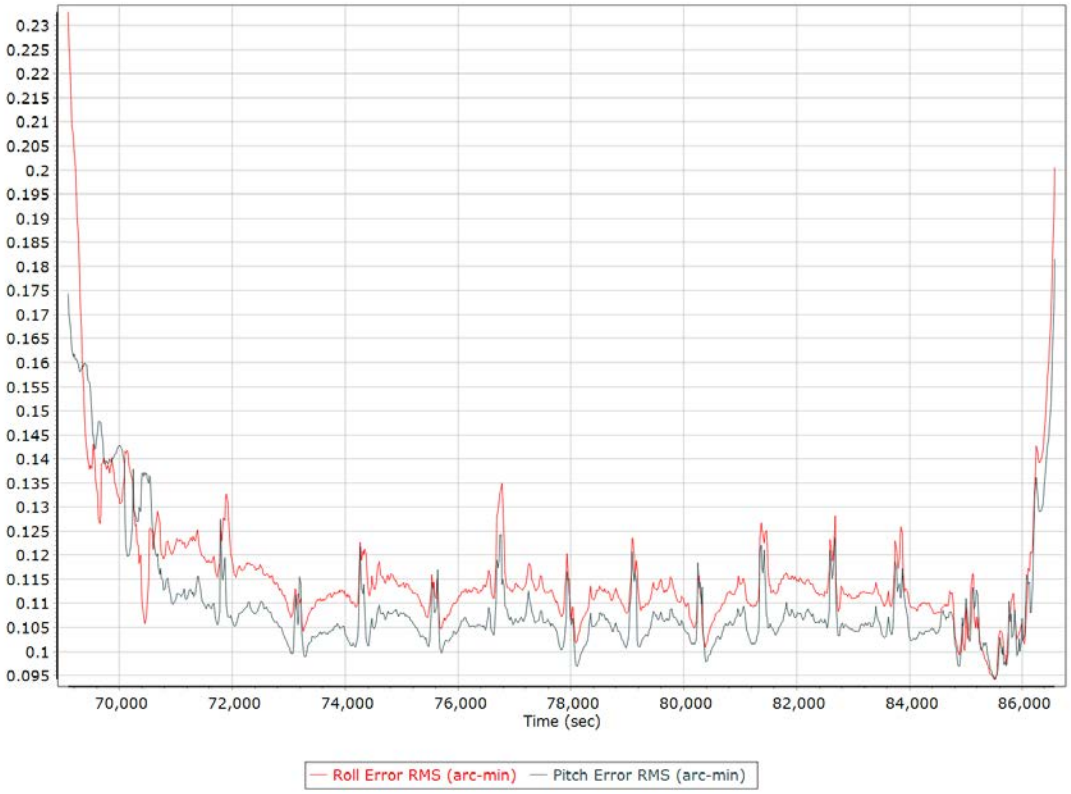
Position Error RMS (m)



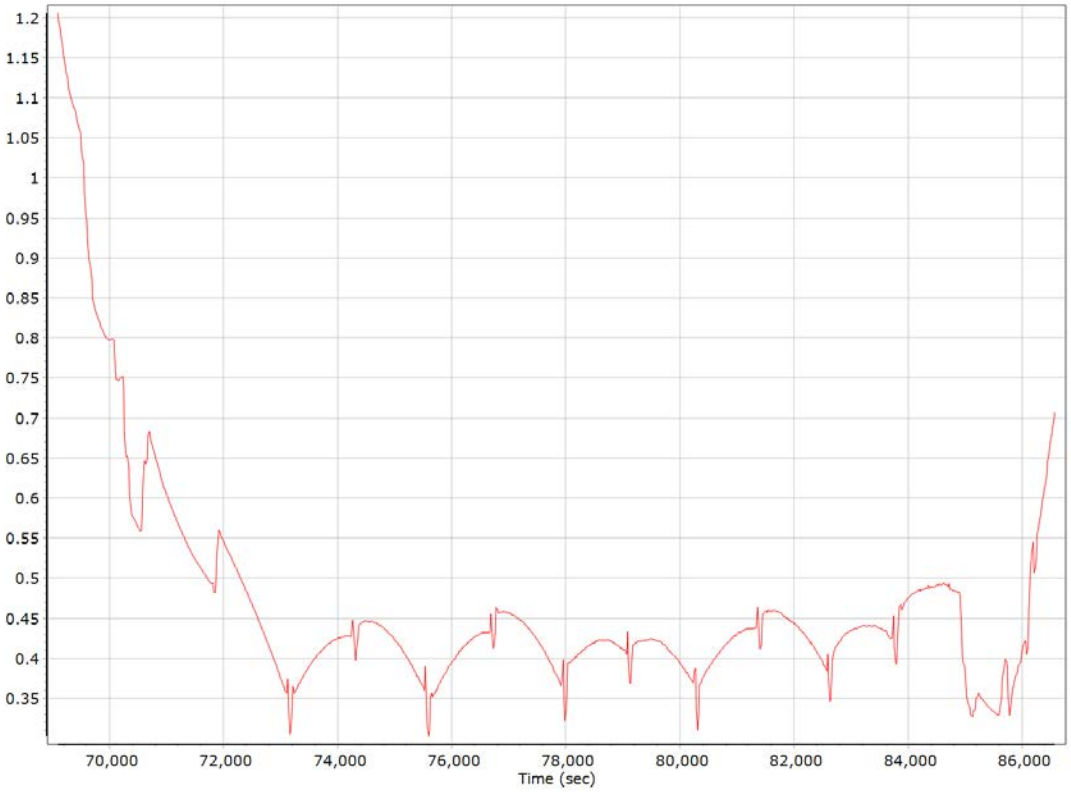
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

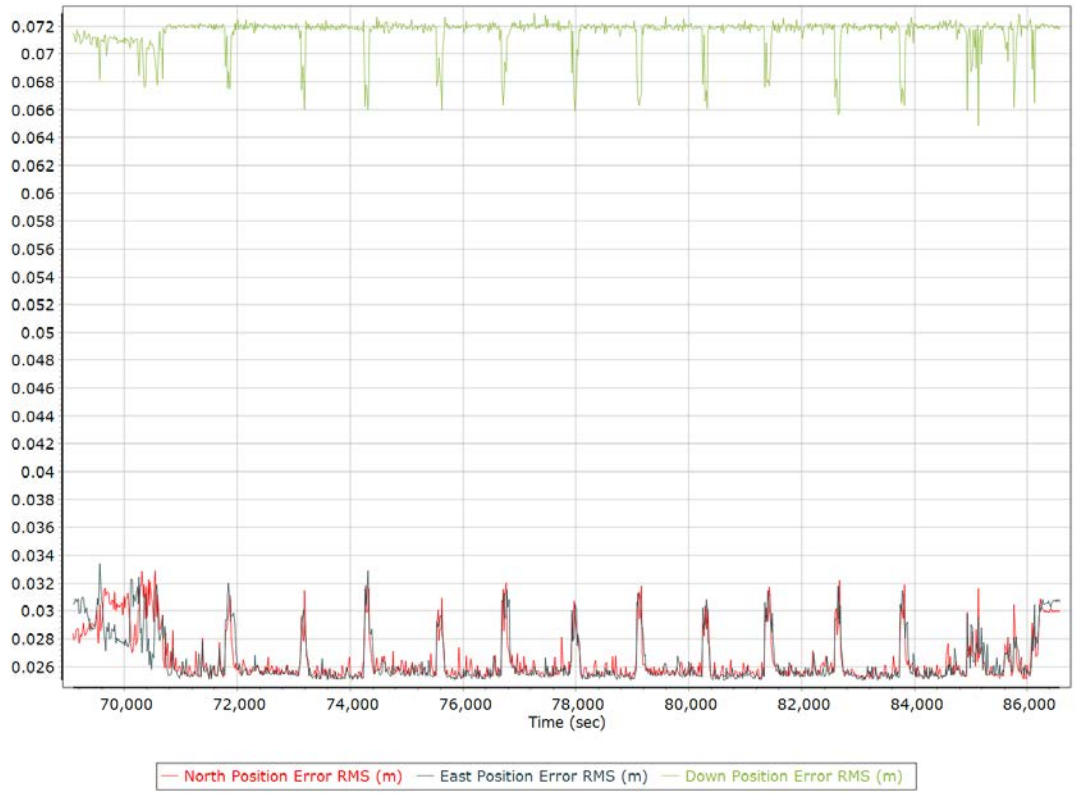


Heading Error RMS (arc-min)

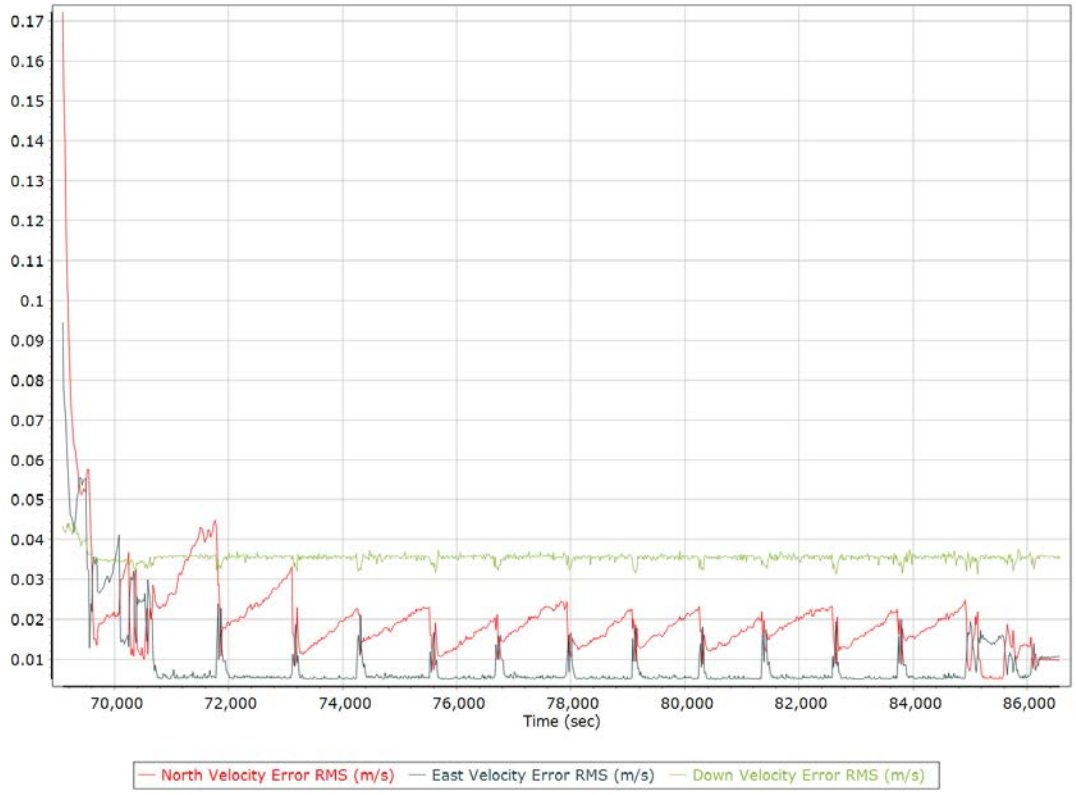


Forward Processed Performance Metrics

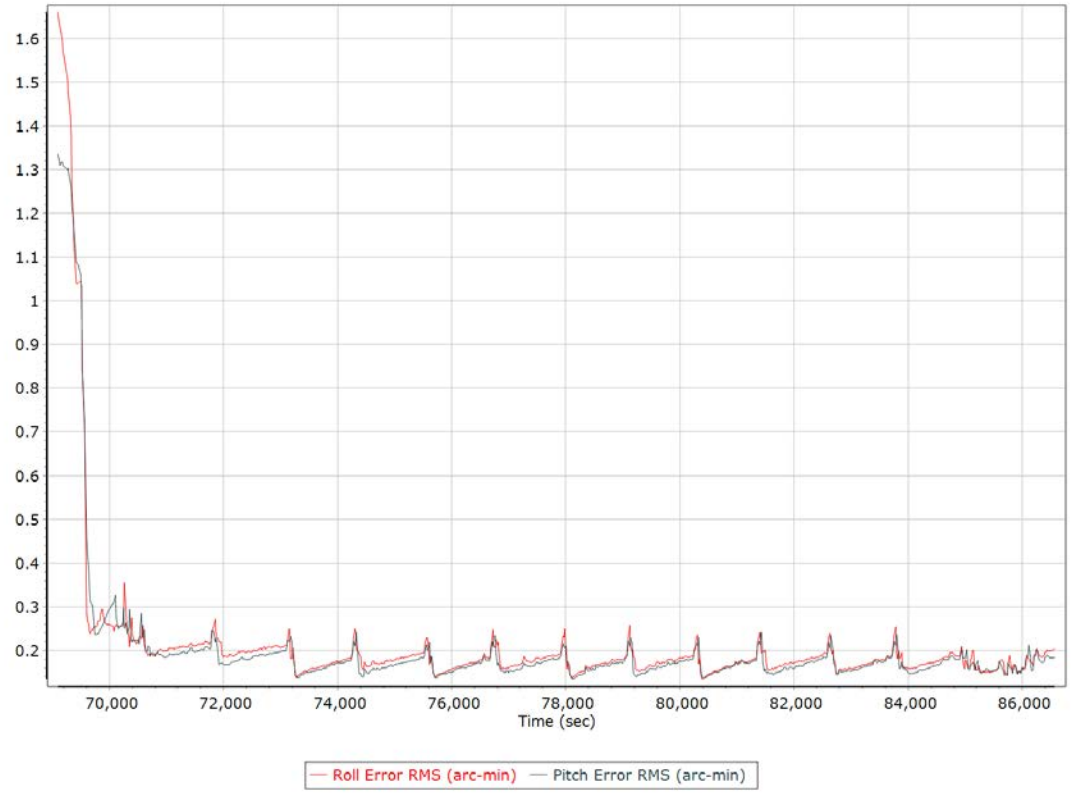
Position Error RMS (m)



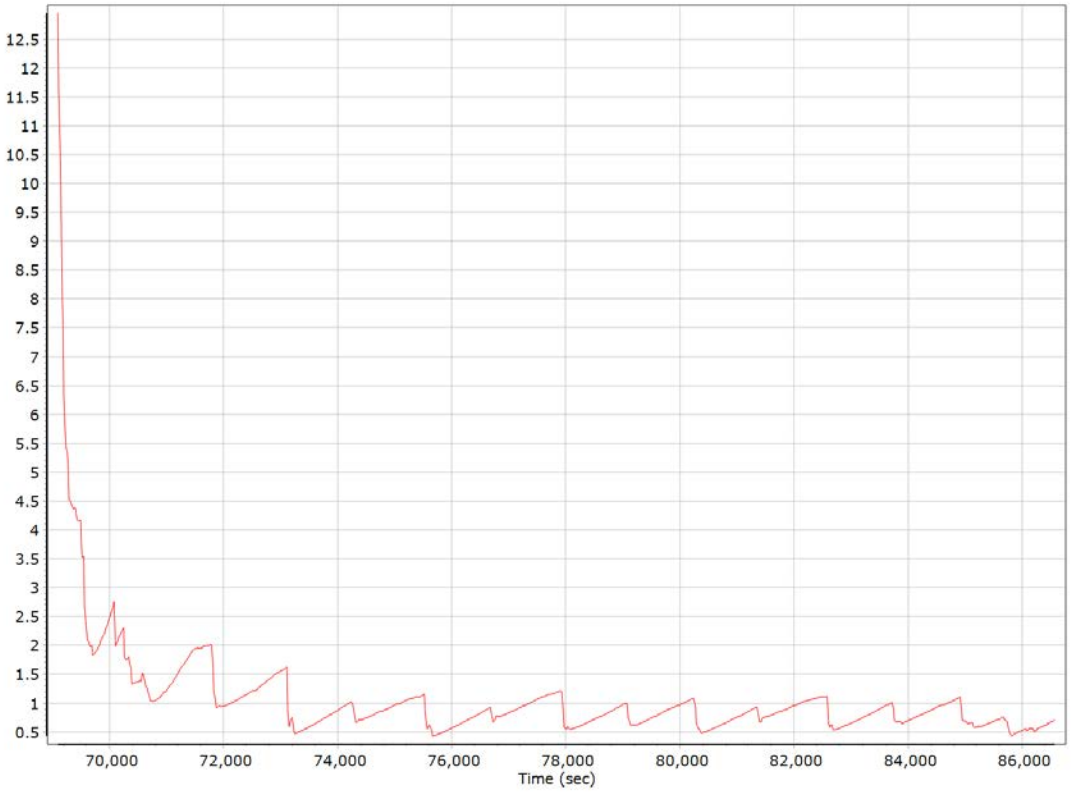
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

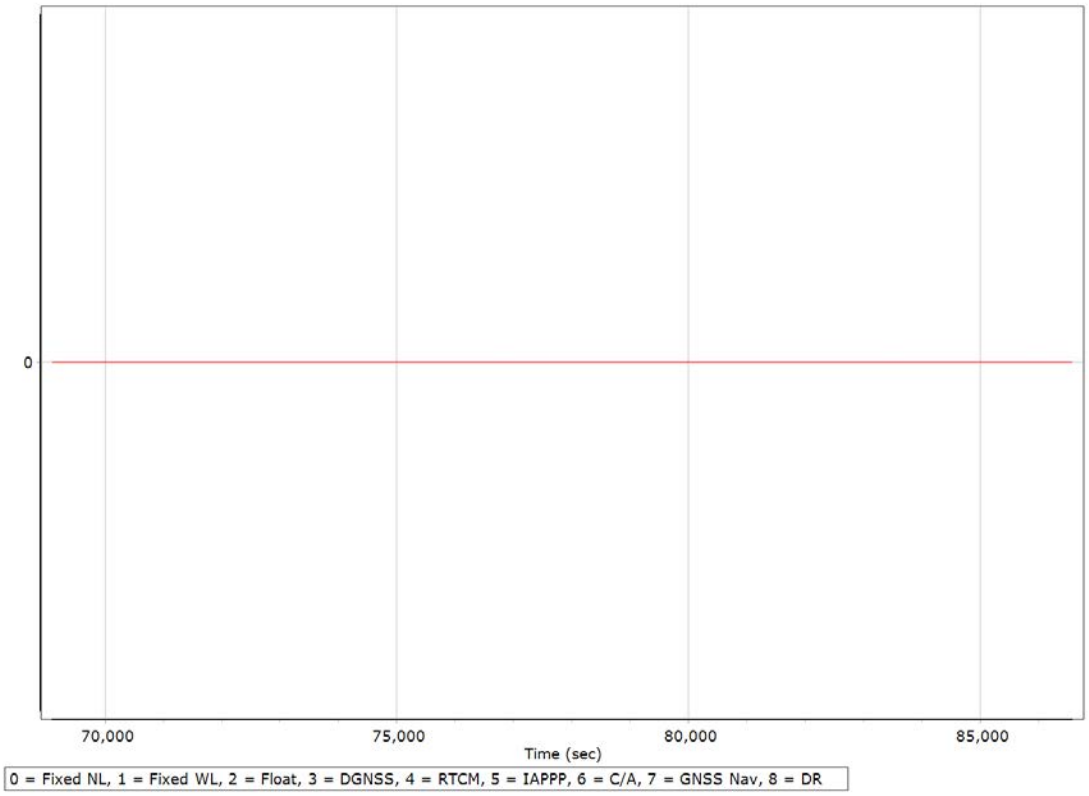


Heading Error RMS (arc-min)

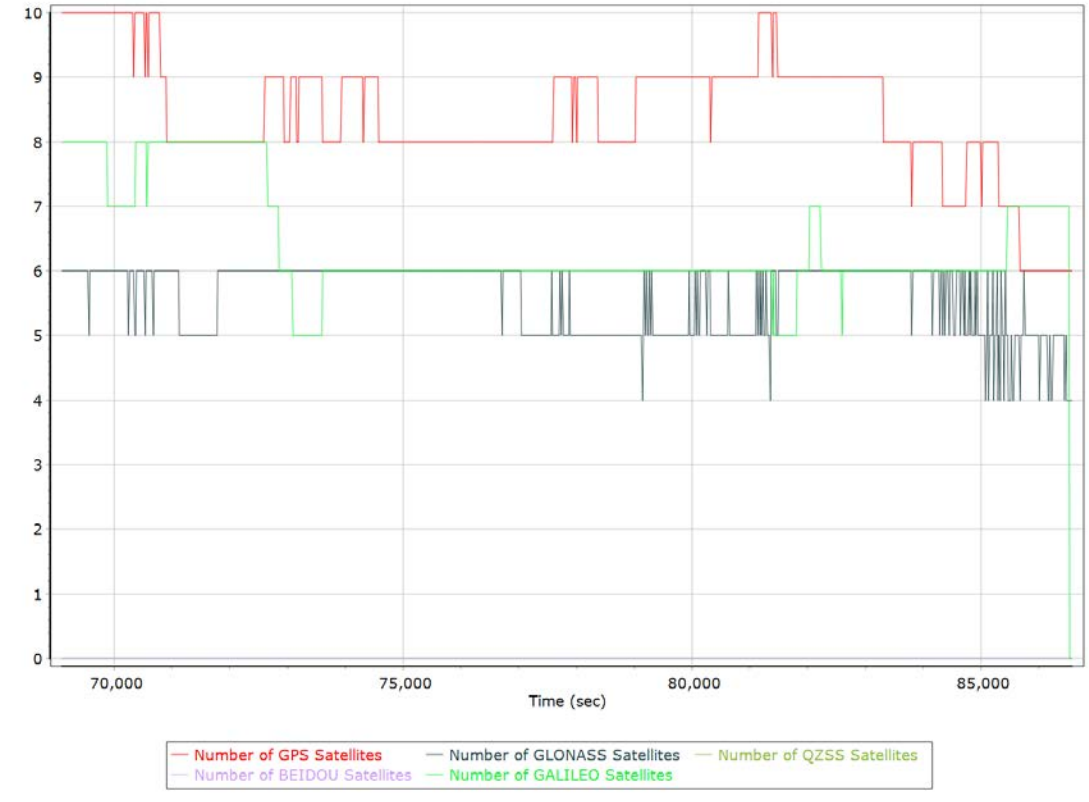


Forward Processed Solution Status

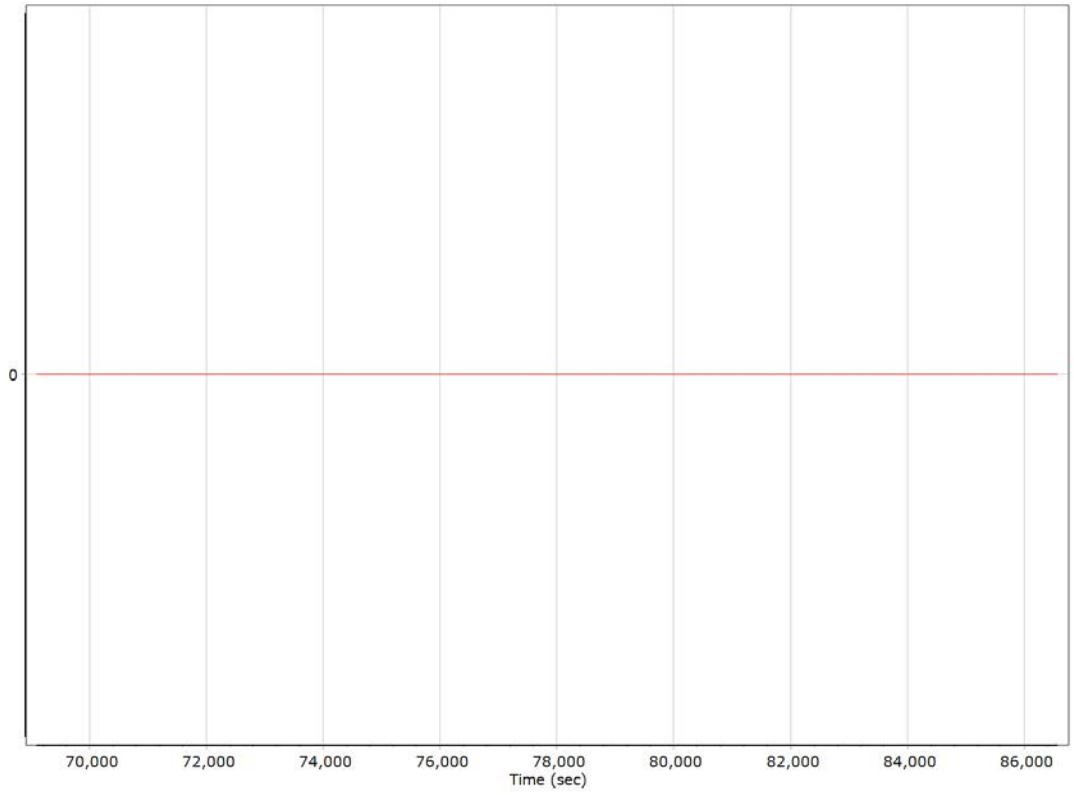
Processing Mode



Number of Satellites



Baseline Length



General Information

Mission Information

Project name	07242023B_4891
Processing date	2023-07-26 15:37:49
Mission date	2023-07-24 19:39:44
Mission duration	01:26:01.962
Processing mode	IN-Fusion PP-RTX

Rover Hardware Information

Product	POS AV 610 VER6 HW2.5-12
Serial number	S/N11883
IMU type	57
Receiver type	BD982
Antenna type	AV59

Project File List

Rover Data Files

File name	File type
N6275603122201.130	POS Data
N6275603122201.131	POS Data
N6275603122201.132	POS Data
N6275603122201.133	POS Data
N6275603122201.134	POS Data
N6275603122201.135	POS Data
N6275603122201.136	POS Data
N6275603122201.137	POS Data
N6275603122201.138	POS Data
N6275603122201.139	POS Data
N6275603122201.140	POS Data
N6275603122201.141	POS Data
N6275603122201.142	POS Data
N6275603122201.143	POS Data
N6275603122201.144	POS Data
N6275603122201.145	POS Data
N6275603122201.146	POS Data

Input Files

File Name	File Type
Ephm2050.23g	GLONASS Broadcast Ephemeris
Ephm2050.23n	GPS Broadcast Ephemeris

Output Files

Filename	File type
sbet_07242023B_4891.out	SBET Trajectory File

Rover Data Summary

First raw data file	N6275603122201.130		
Last raw data file	N6275603122201.146		
Start GPS week	2272		
Start time	157165.846 (7/24/2023 7:39:25 PM)		
End time	162327.808 (7/24/2023 9:05:27 PM)		
Start of fine alignment	157189.375 (7/24/2023 7:39:49 PM)		
Available subsystems	Primary GNSS, Gimbal, IMU		
POS Event Input	None		
Correction data	None		
IMU Installation Lever Arms & Mounting Angles			
Gimbal to IMU lever arm (m)	-0.034	-0.010	-0.374
Gimbal to IMU mounting angles (deg)	0.000	0.000	0.000
Gimbal to Primary GNSS lever arm (m)	-0.135	0.064	-1.339
Gimbal to Primary GNSS lever arm std dev (m)	-1.000		
Aircraft to Reference mounting angles (deg)	0.000	0.000	0.000

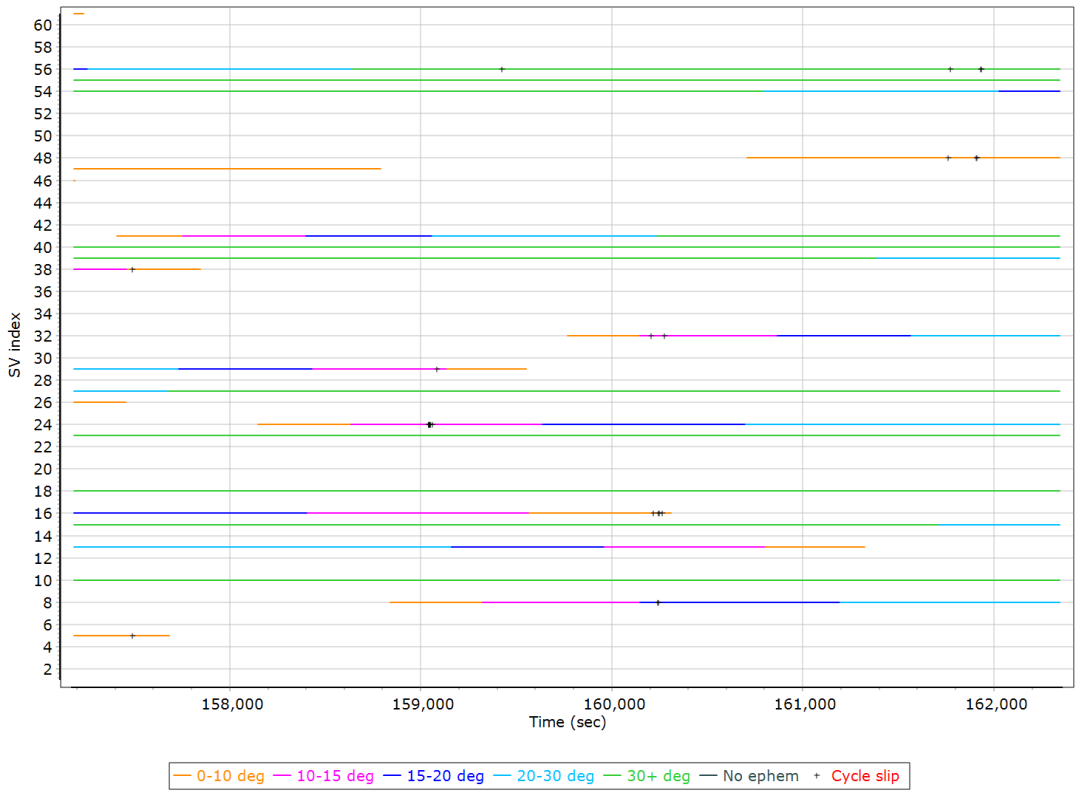
Rover Data QC

Raw IMU Import QC Summary

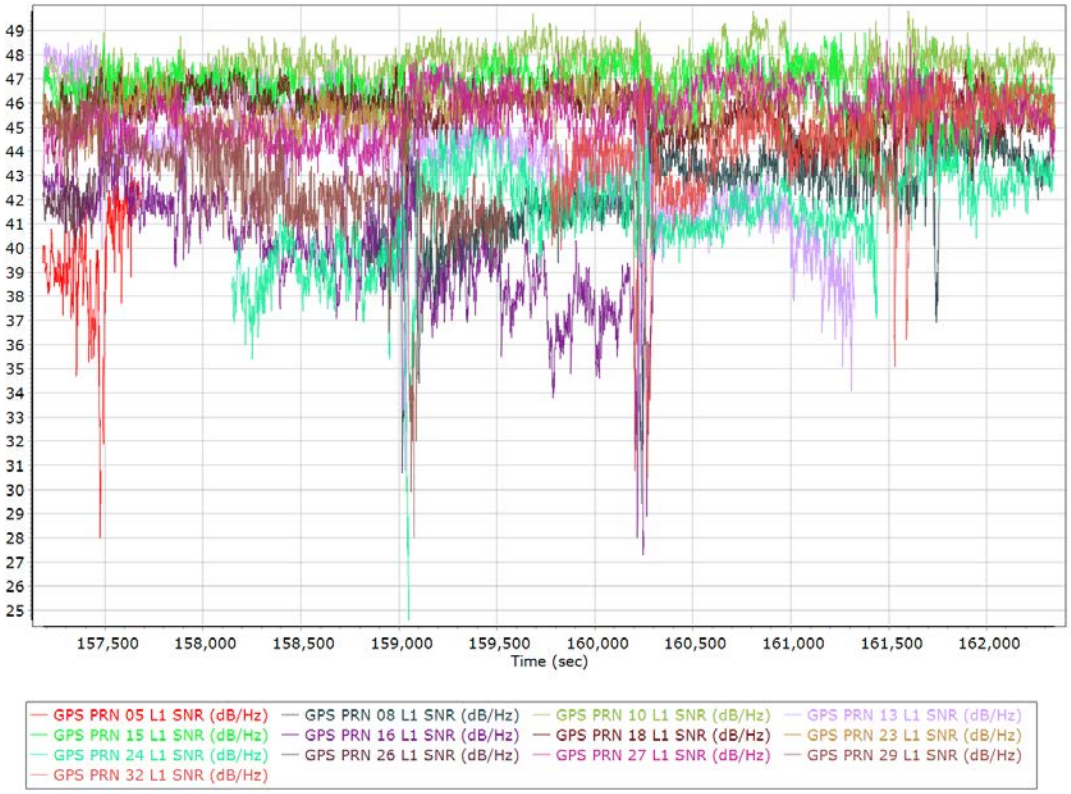
IMU data input file	imu_Mission 1.dat
IMU data check log file	imudt_07242023B_4891.log
IMU Records Processed	1032386
Termination Status	Normal
IMU Anomalies	0

Primary Observables & Satellite Data

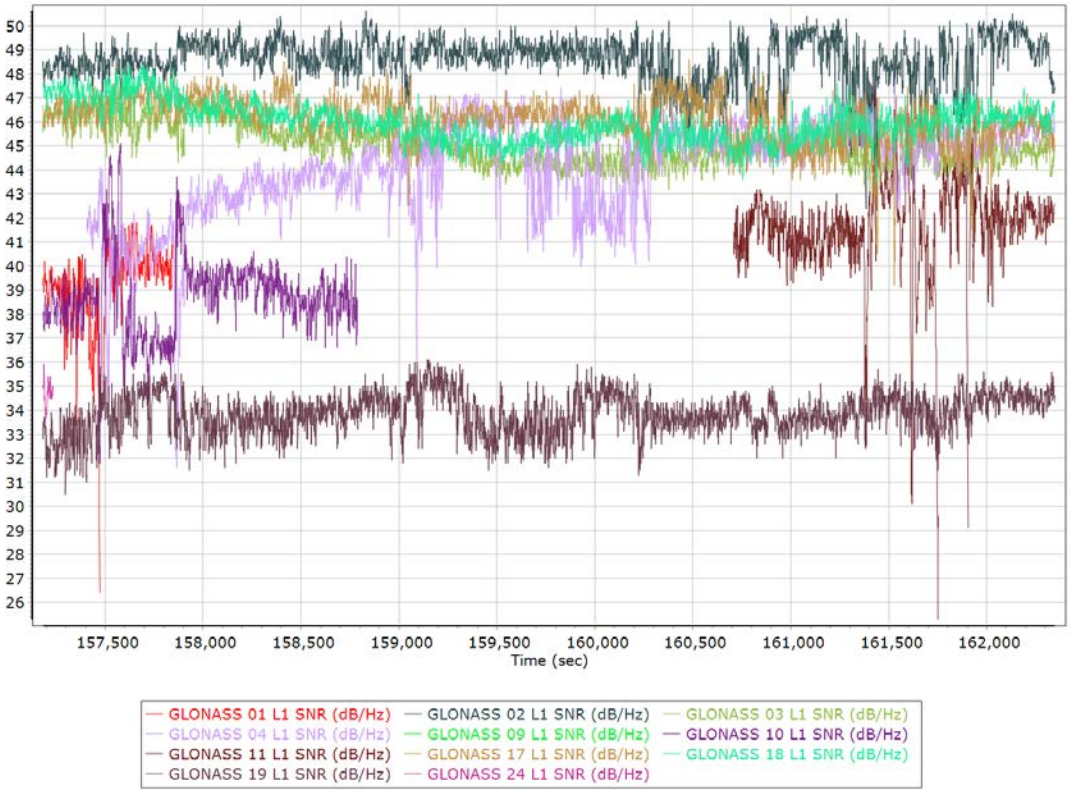
GPS/GLONASS L1 Satellite Lock/Elevation



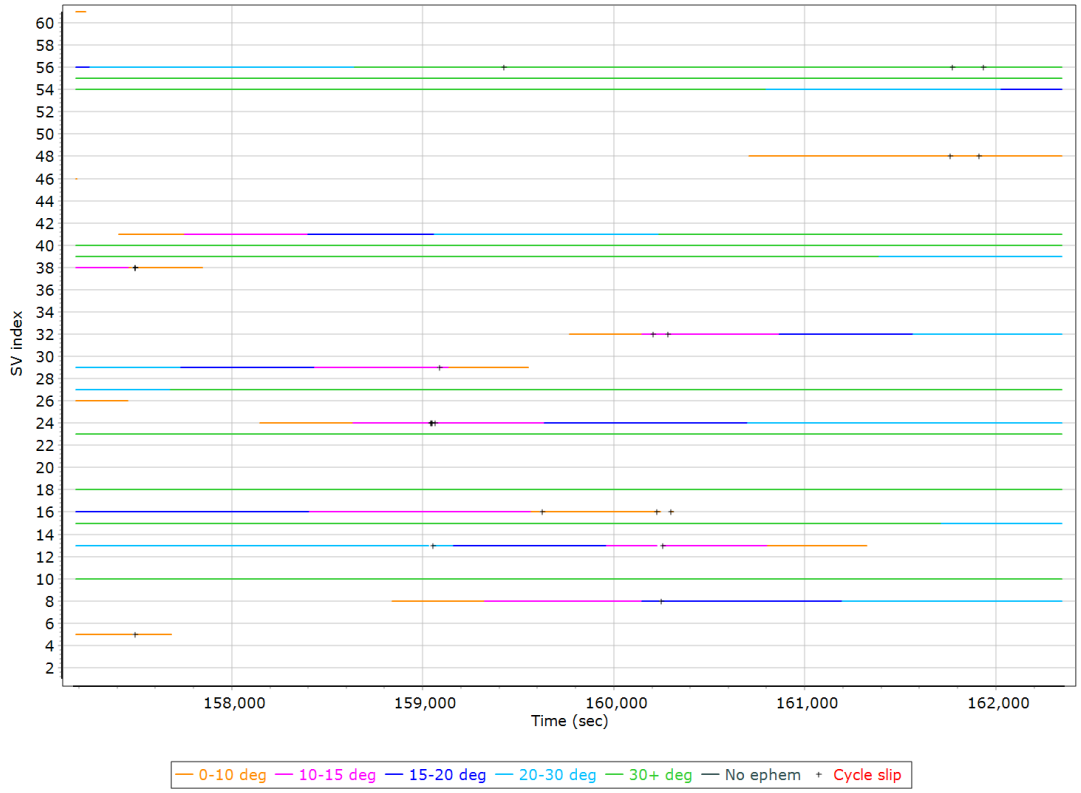
GPS L1 SNR



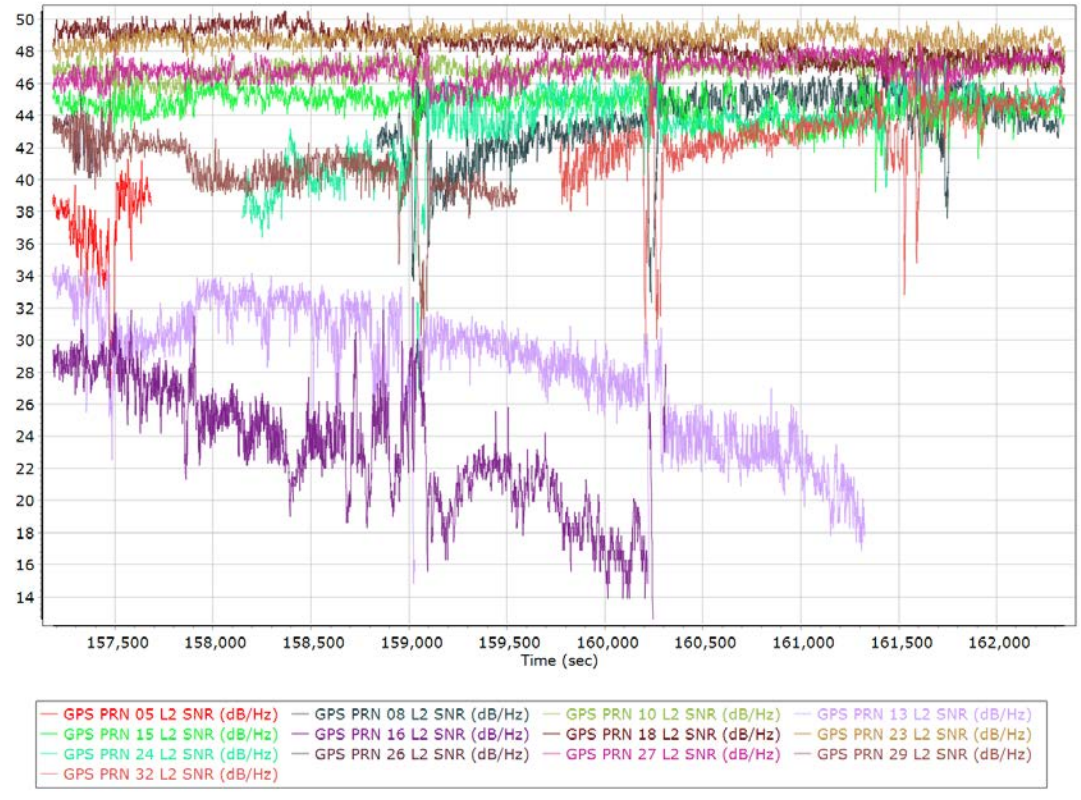
GLONASS L1 SNR



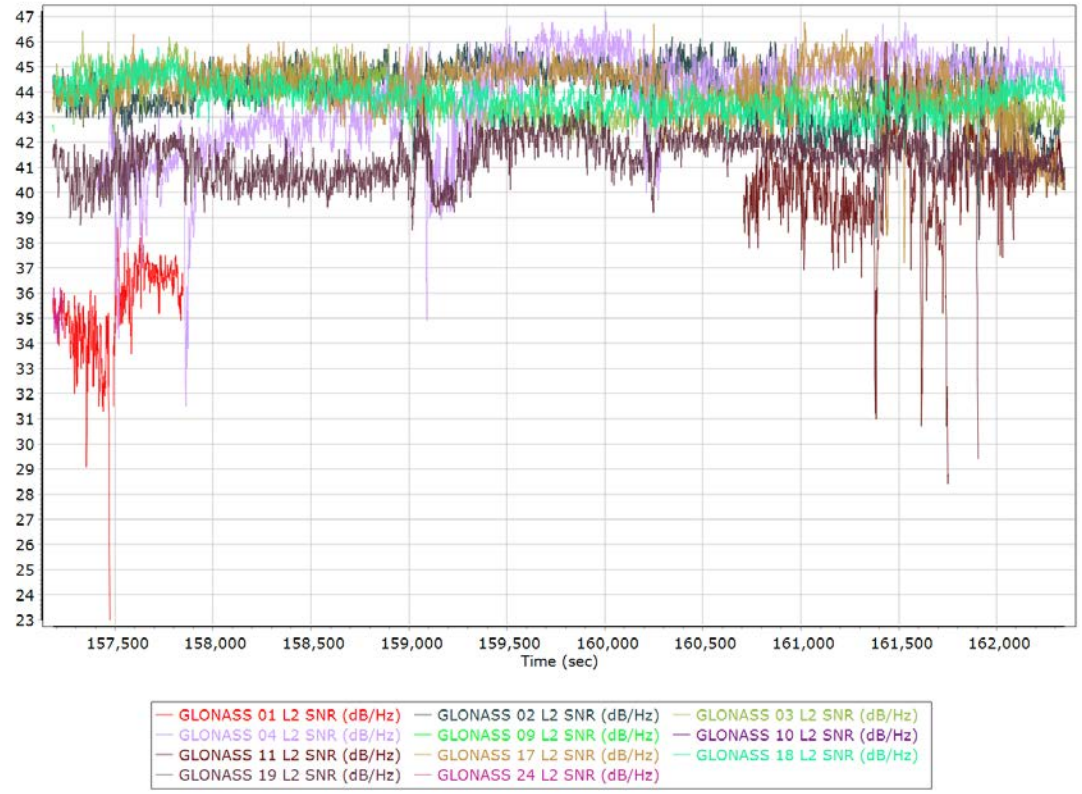
GPS/GLONASS L2 Satellite Lock/Elevation



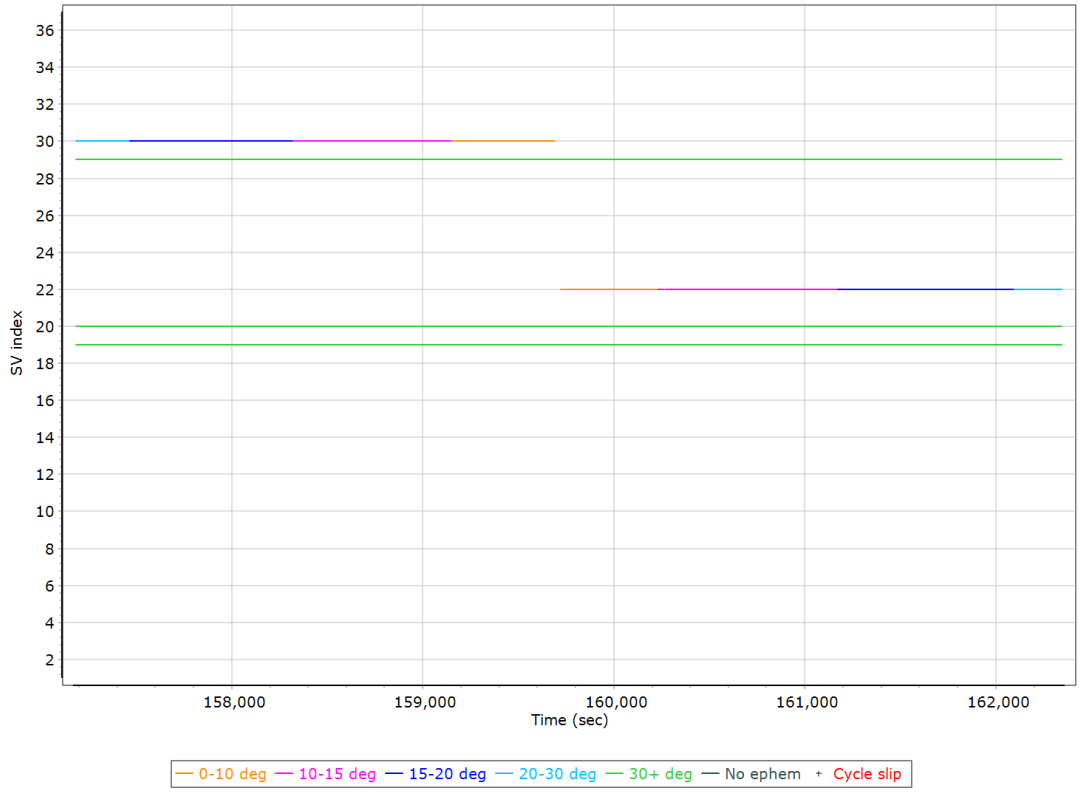
GPS L2 SNR



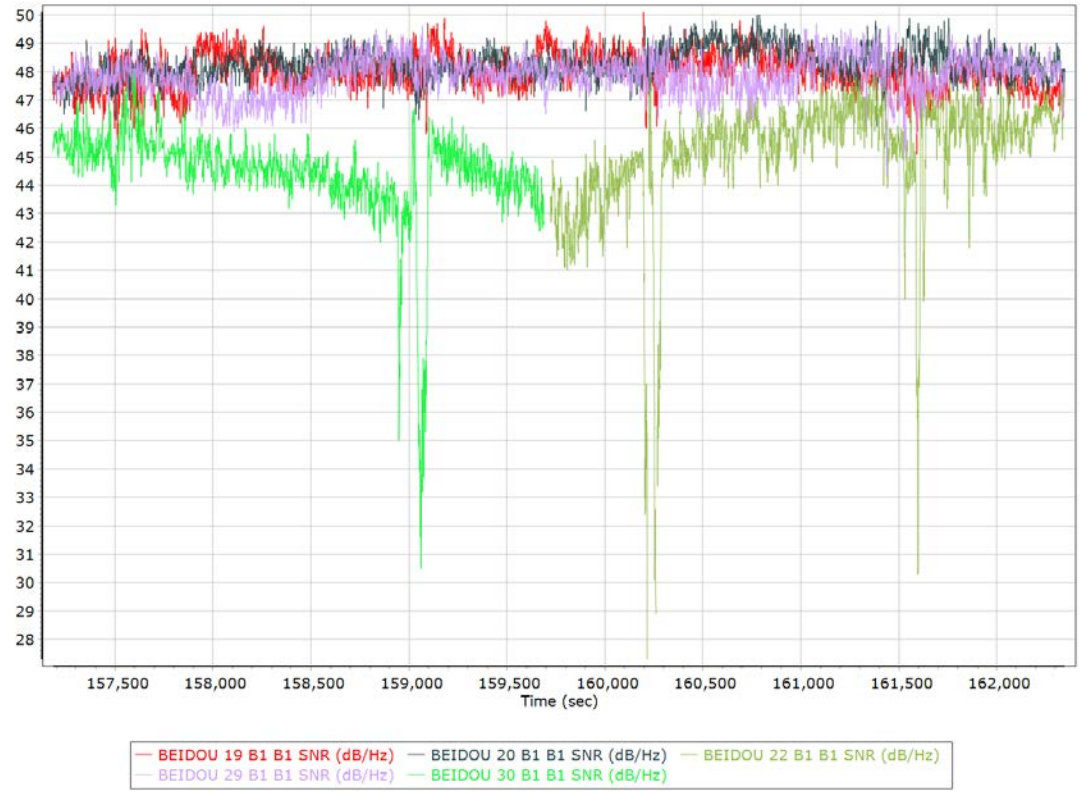
GLONASS L2 SNR



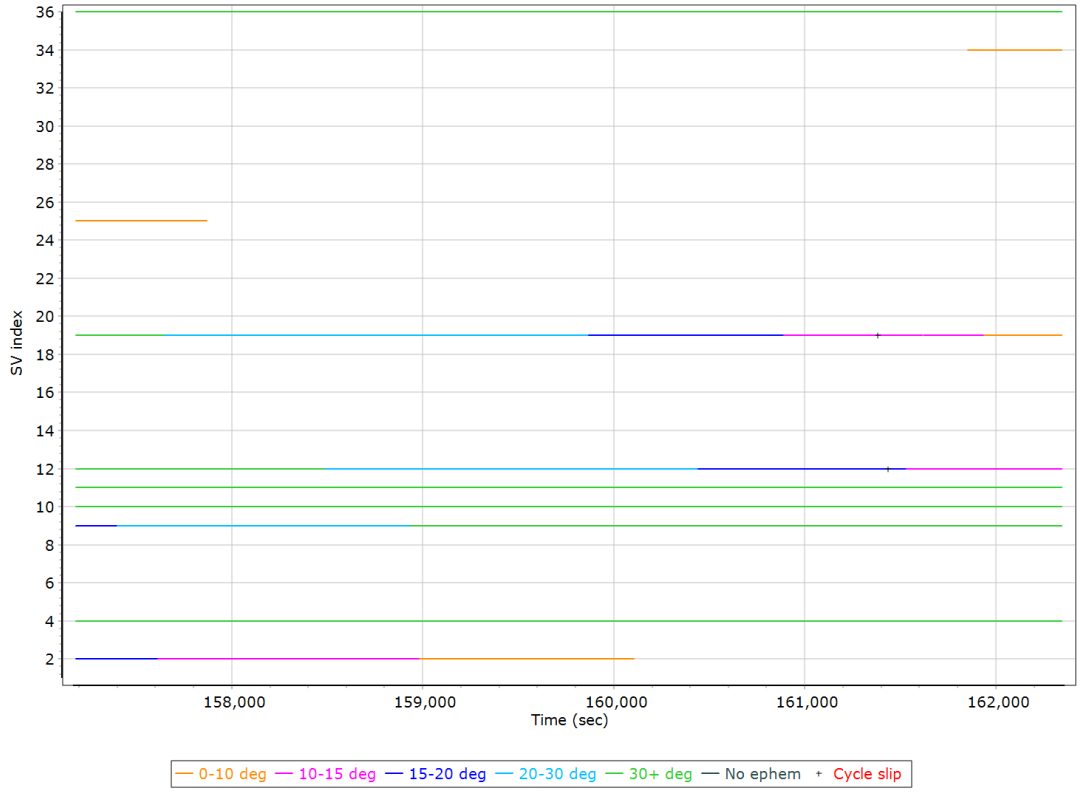
BEIDOU Satellite Lock/Elevation



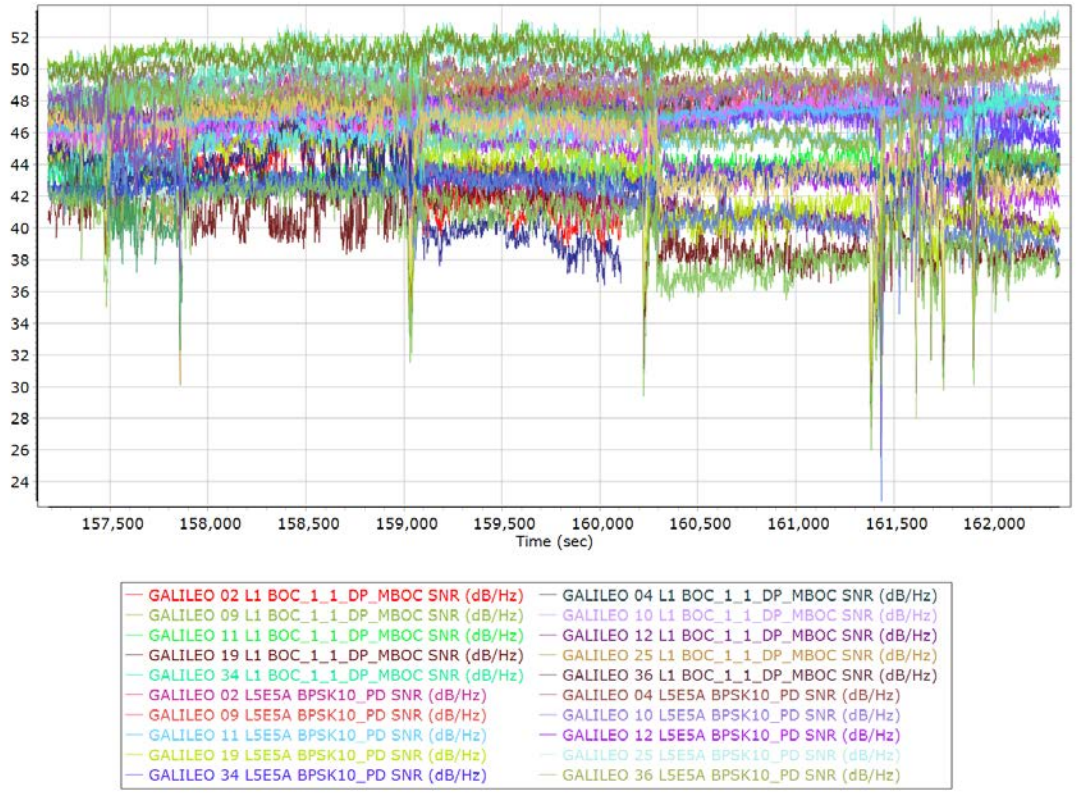
BEIDOU SNR



GALILEO Satellite Lock/Elevation

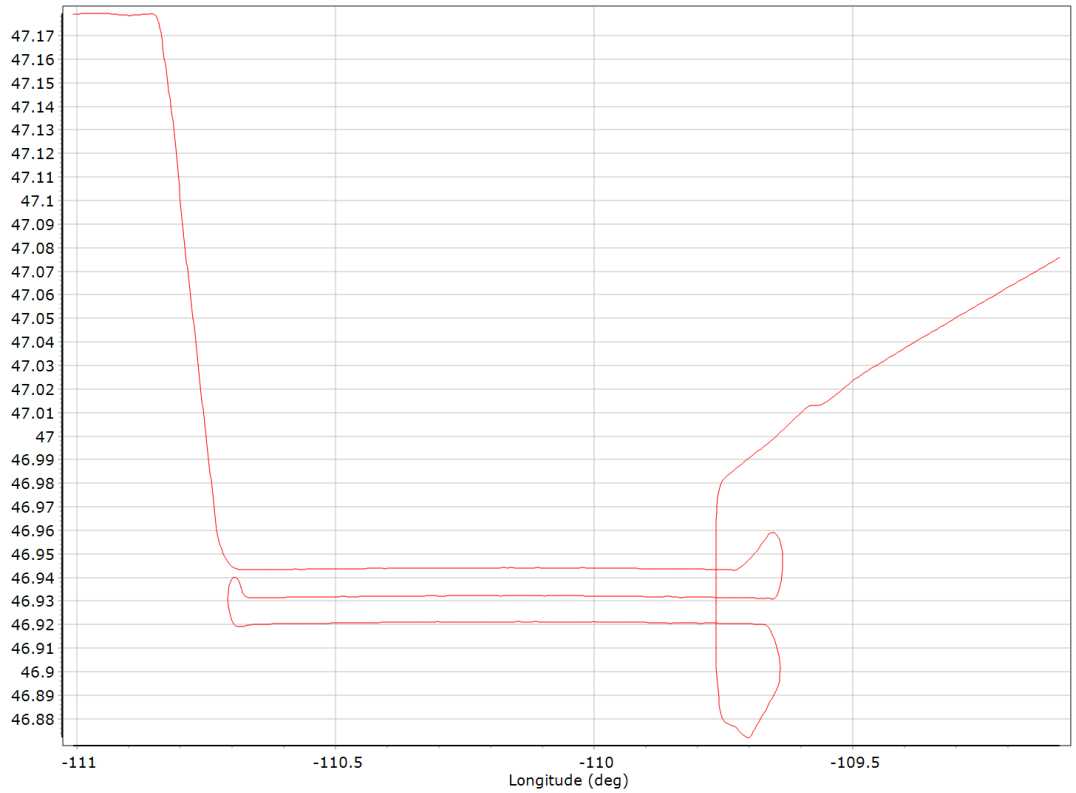


GALILEO SNR

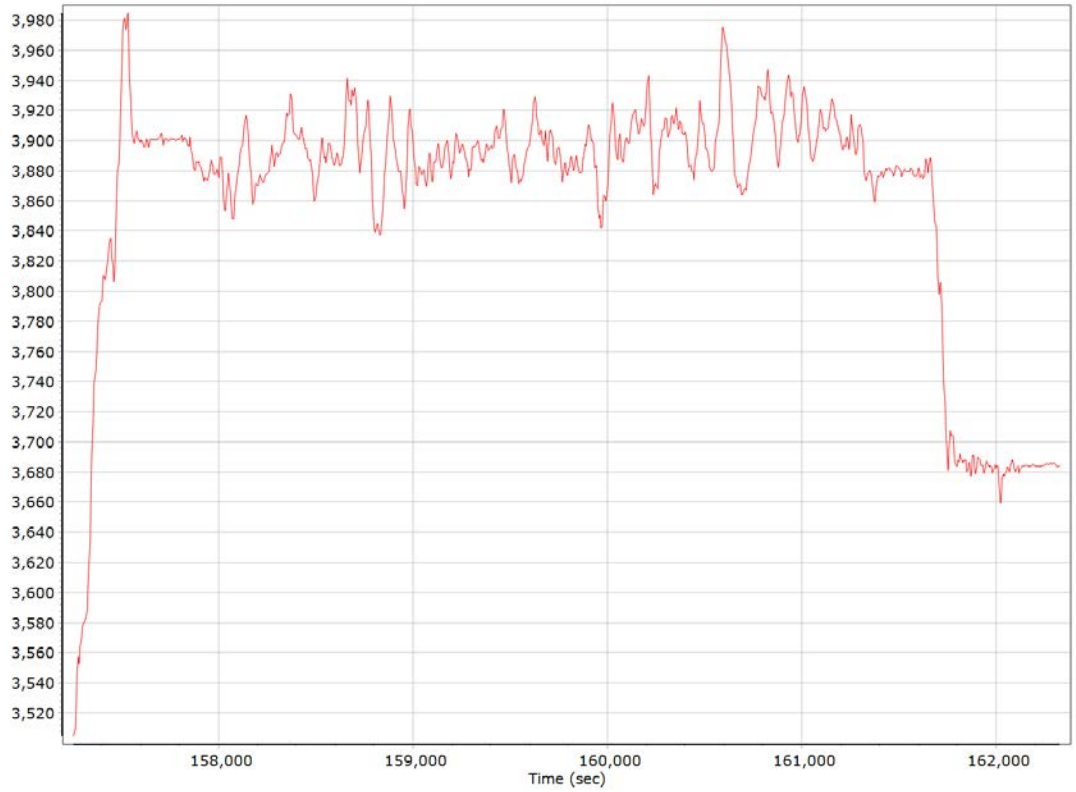

52
50
48
46
44
42
40
38
36
34
32
30
28
26
24
157,500
158,000
158,500
159,000
159,500
160,000
160,500
161,000
161,500
162,000
Time (sec)
GALILEO 02 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 04 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 09 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 10 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 11 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 12 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 19 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 25 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 34 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 36 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 02 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 04 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 09 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 10 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 11 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 12 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 19 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 25 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 34 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 36 L5E5A BPSK10_PD SNR (dB/Hz)

Smoothed Trajectory Information

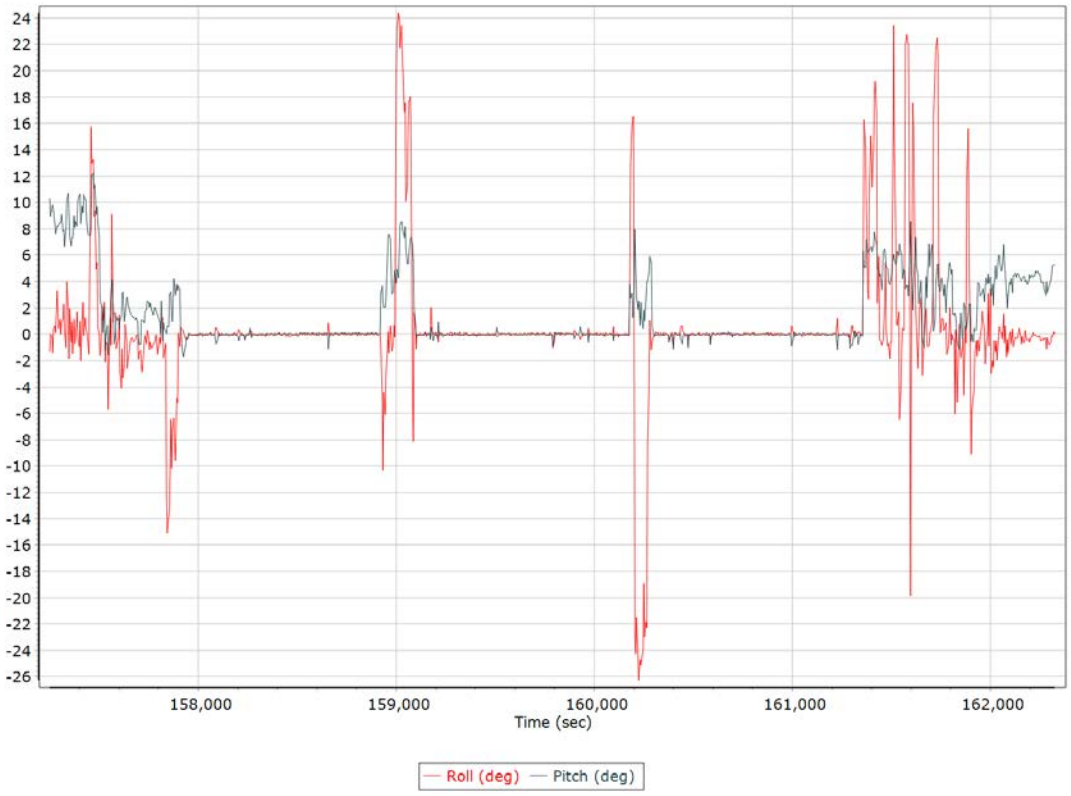
Top View



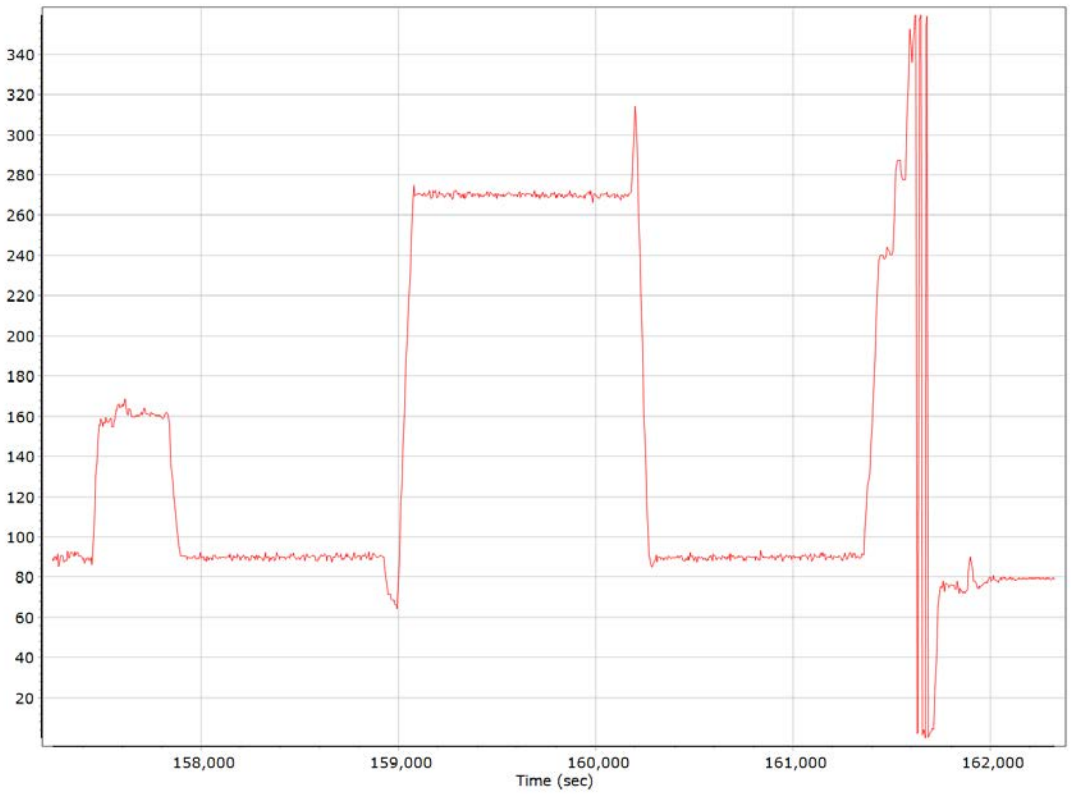
Altitude



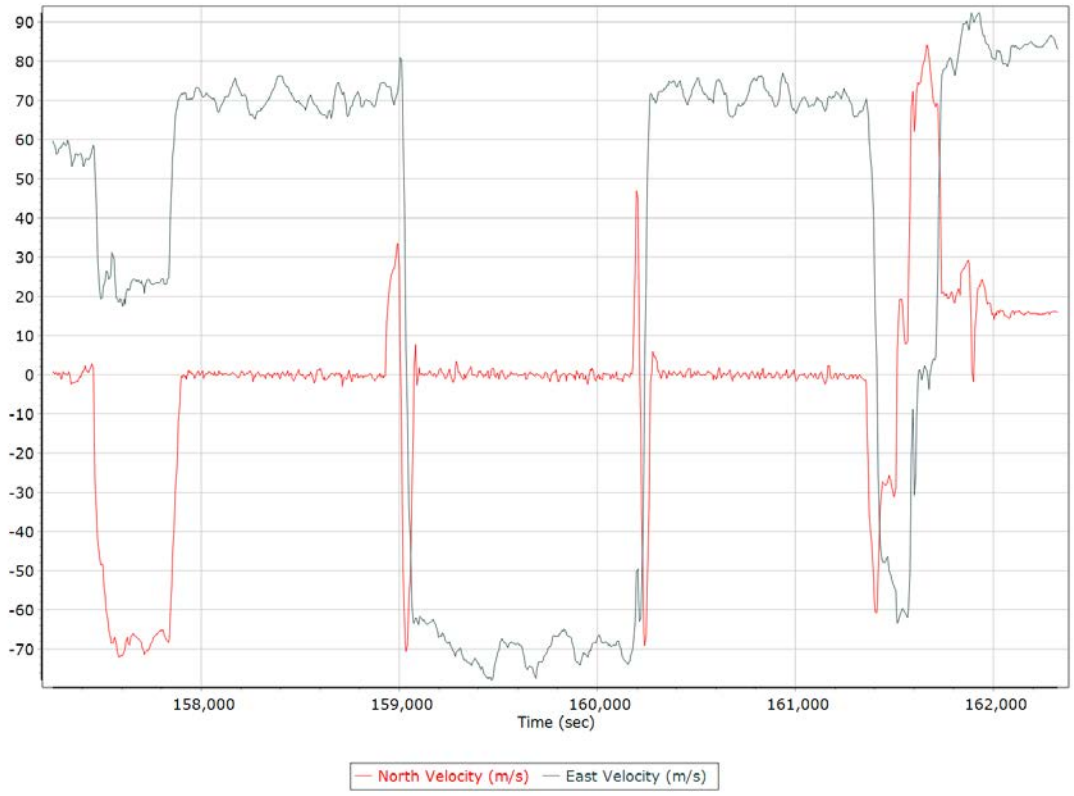
Roll/Pitch



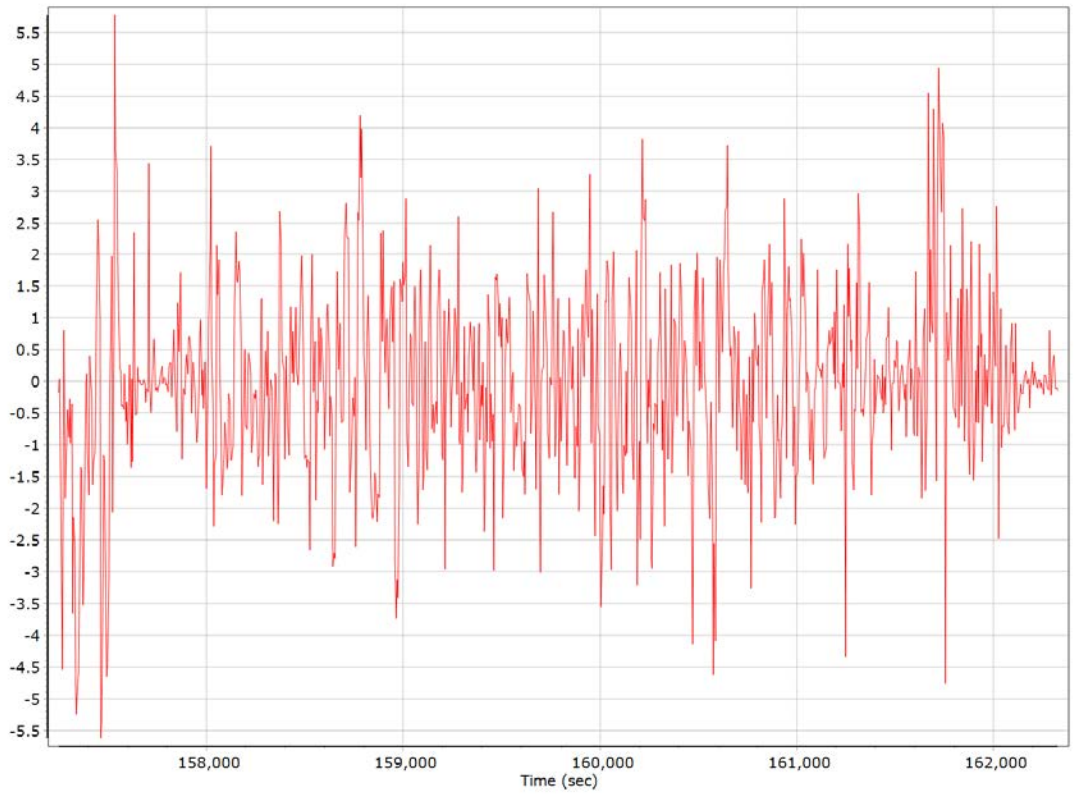
Heading



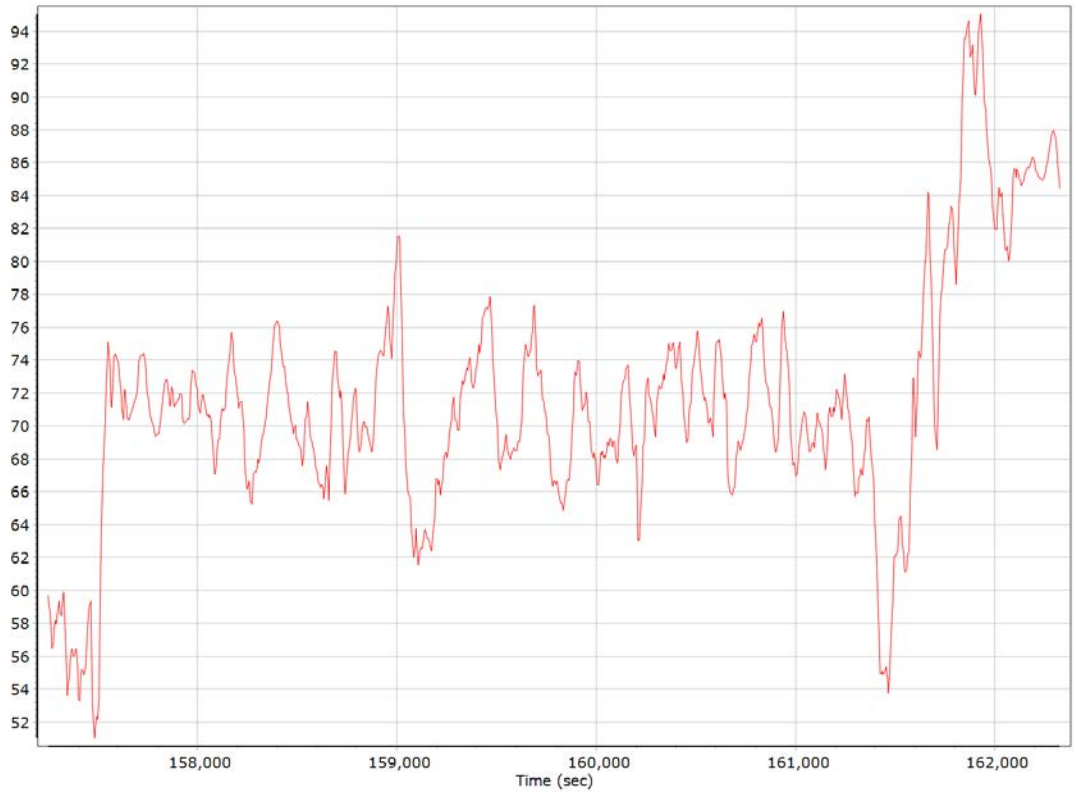
North/East Velocity



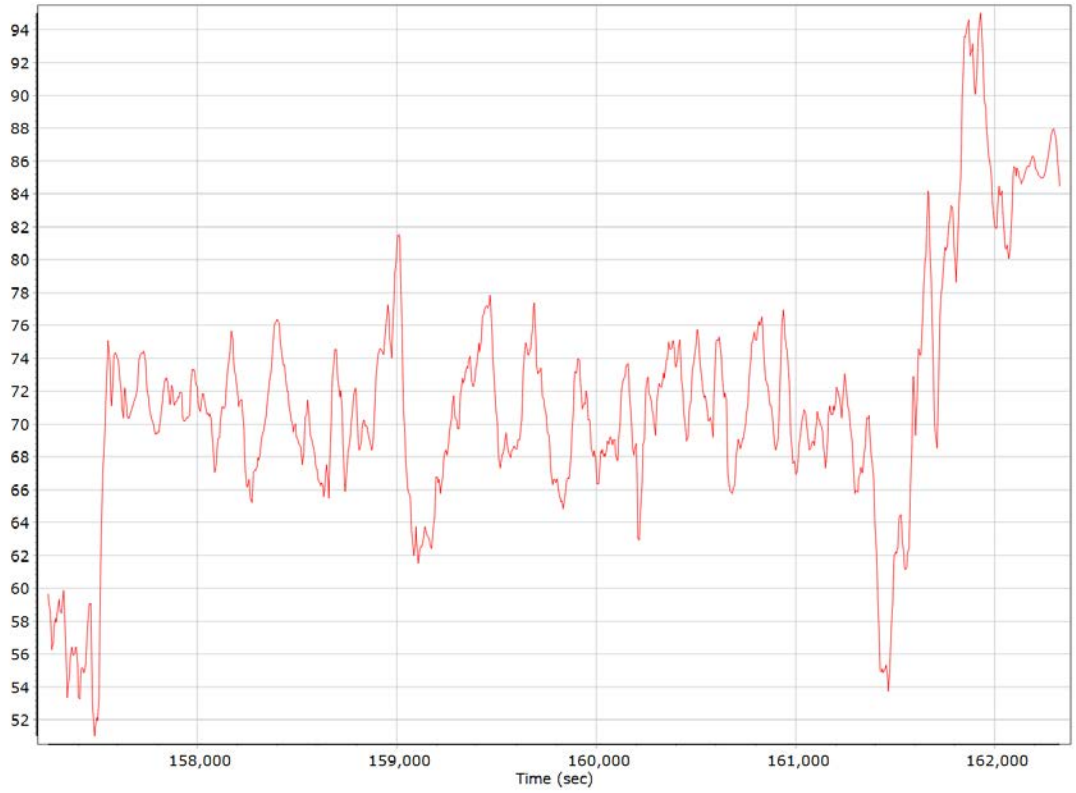
Down Velocity



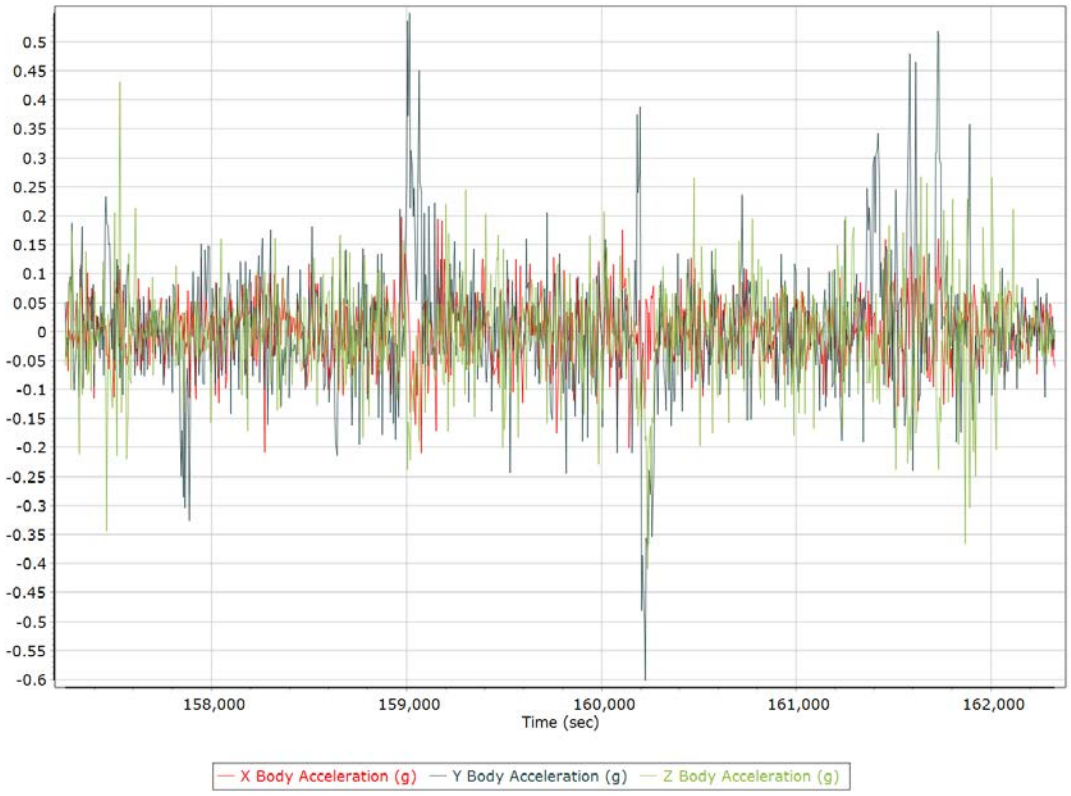
Total Speed



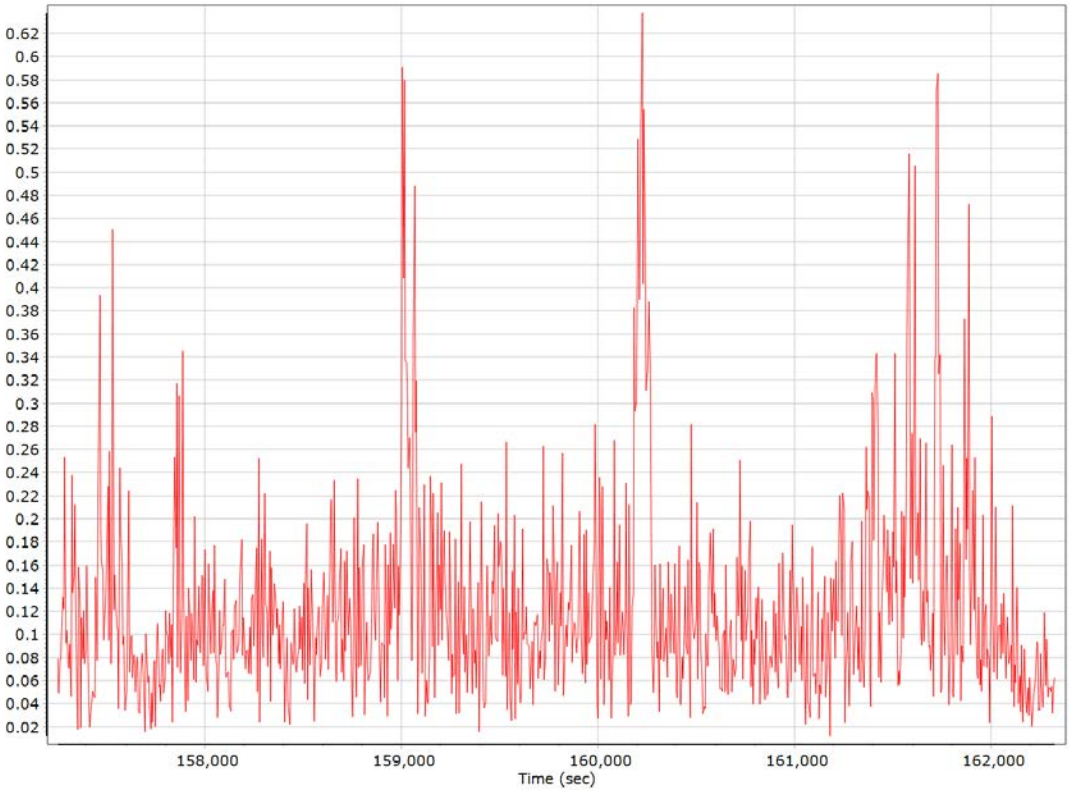
Ground Speed



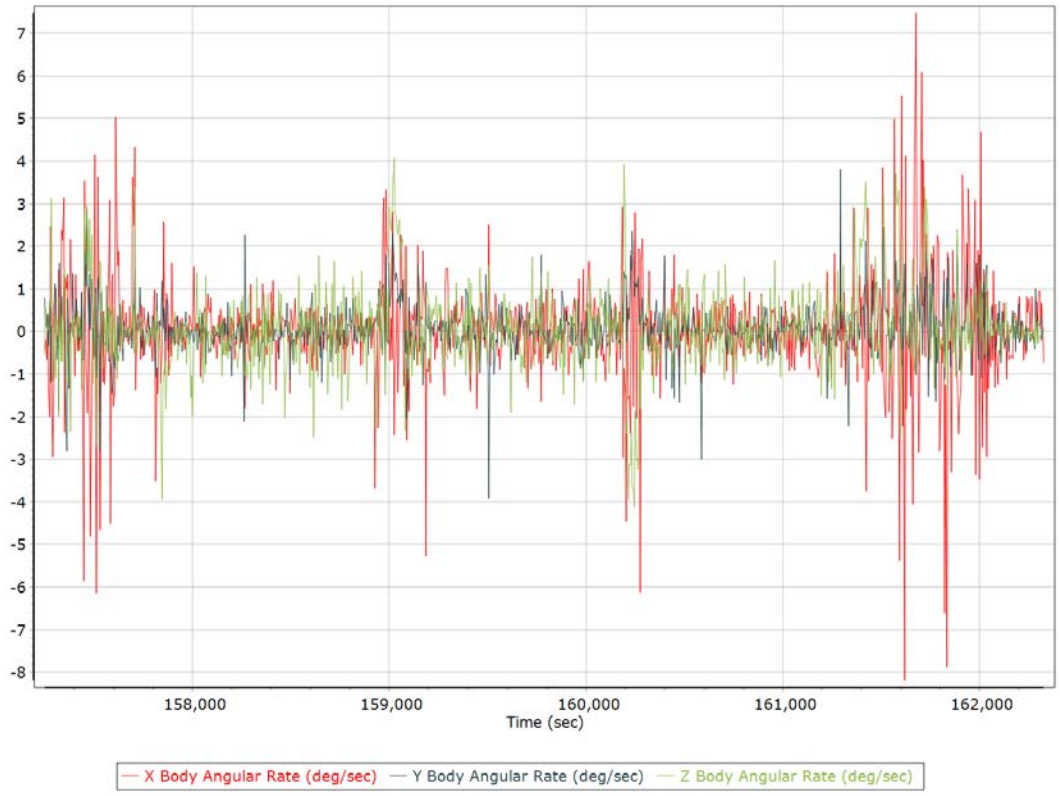
Body Acceleration



Total Body Acceleration

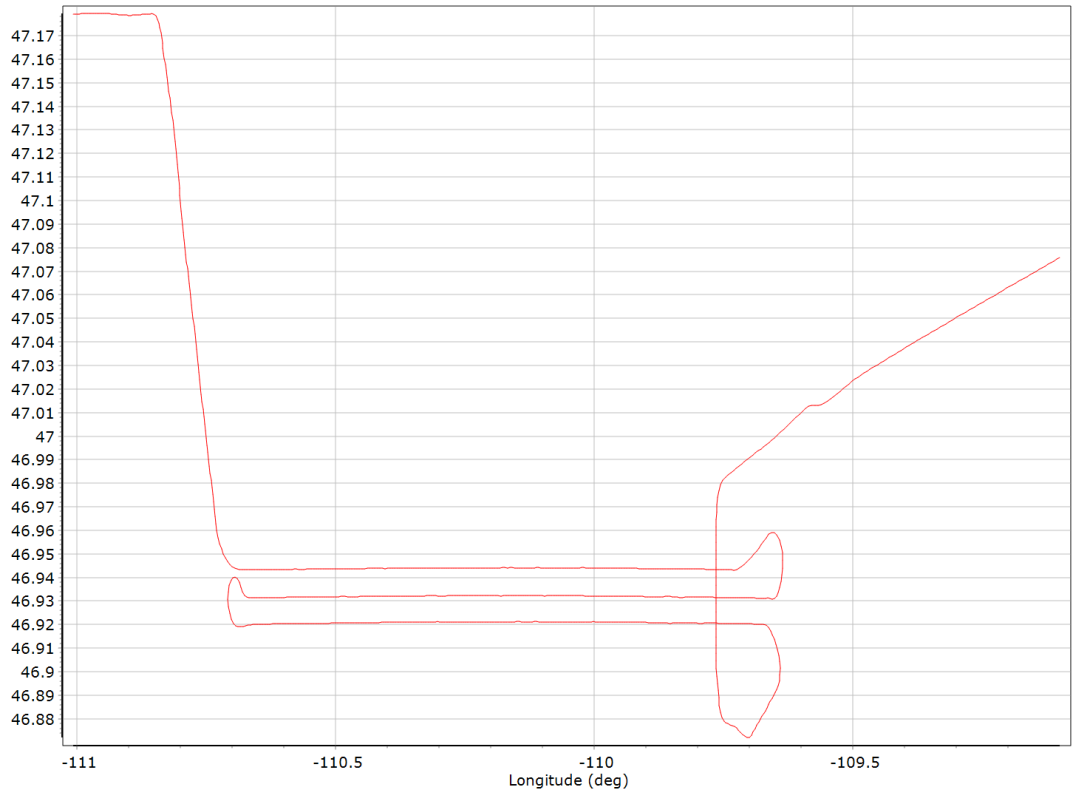


Body Angular Rate

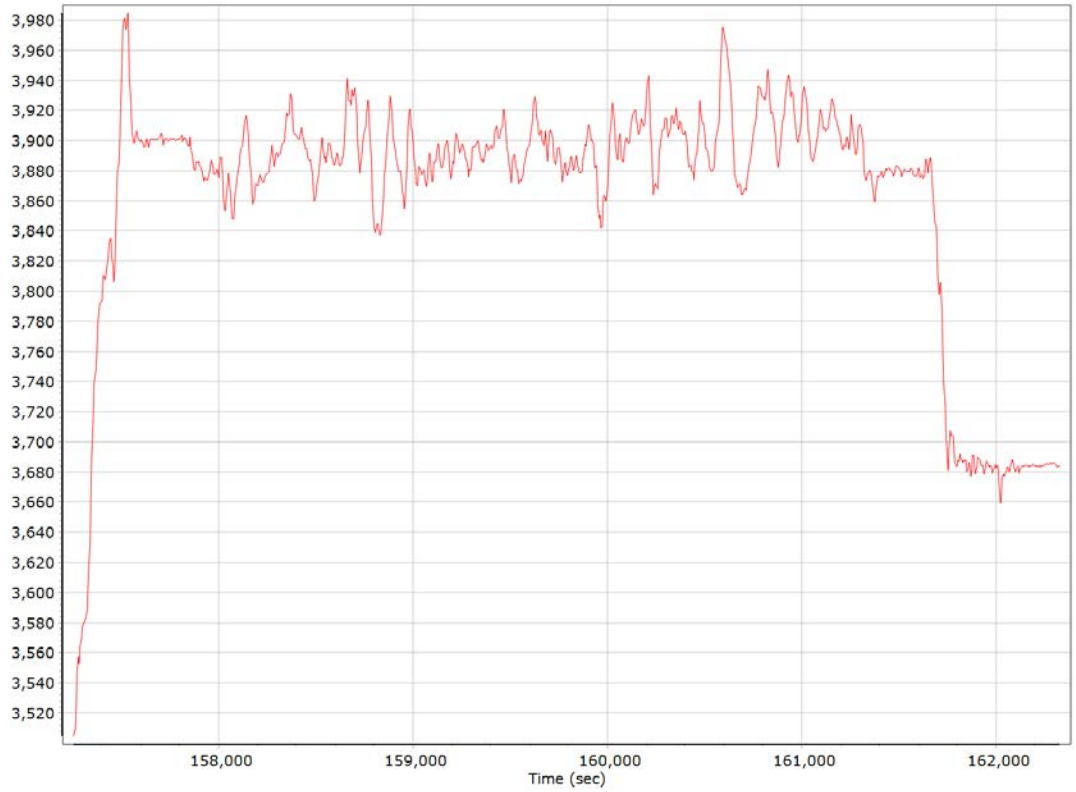


Forward Processed Trajectory Information

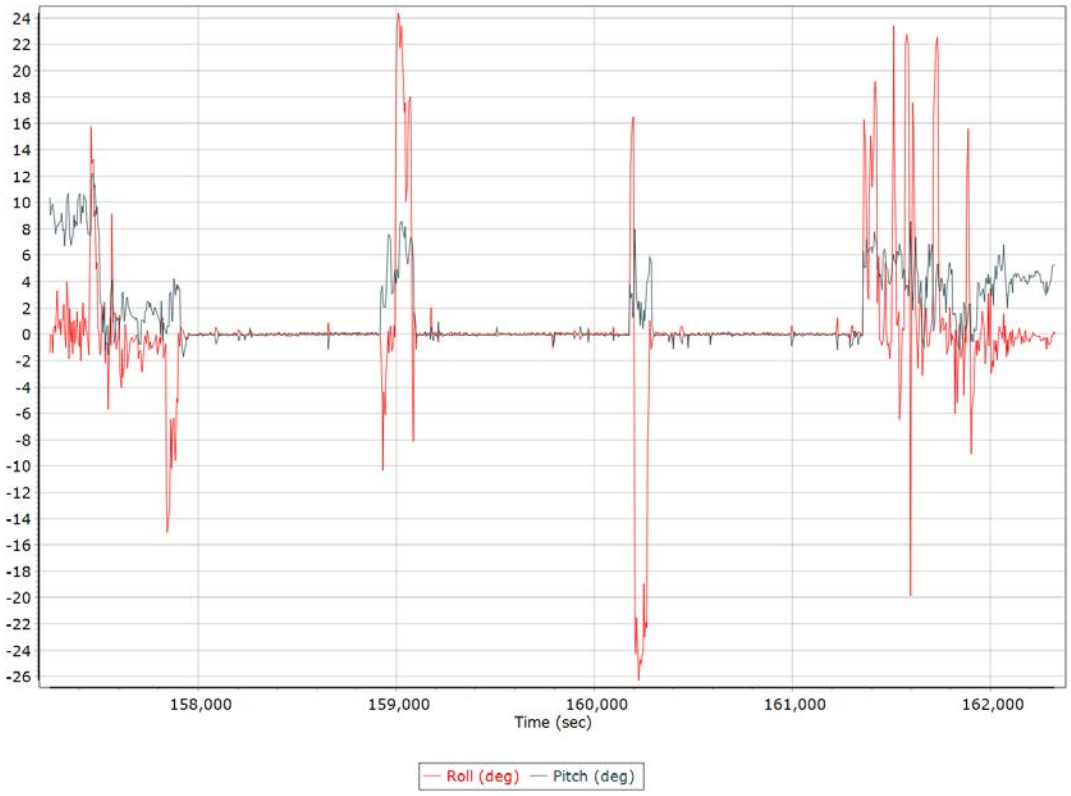
Top View



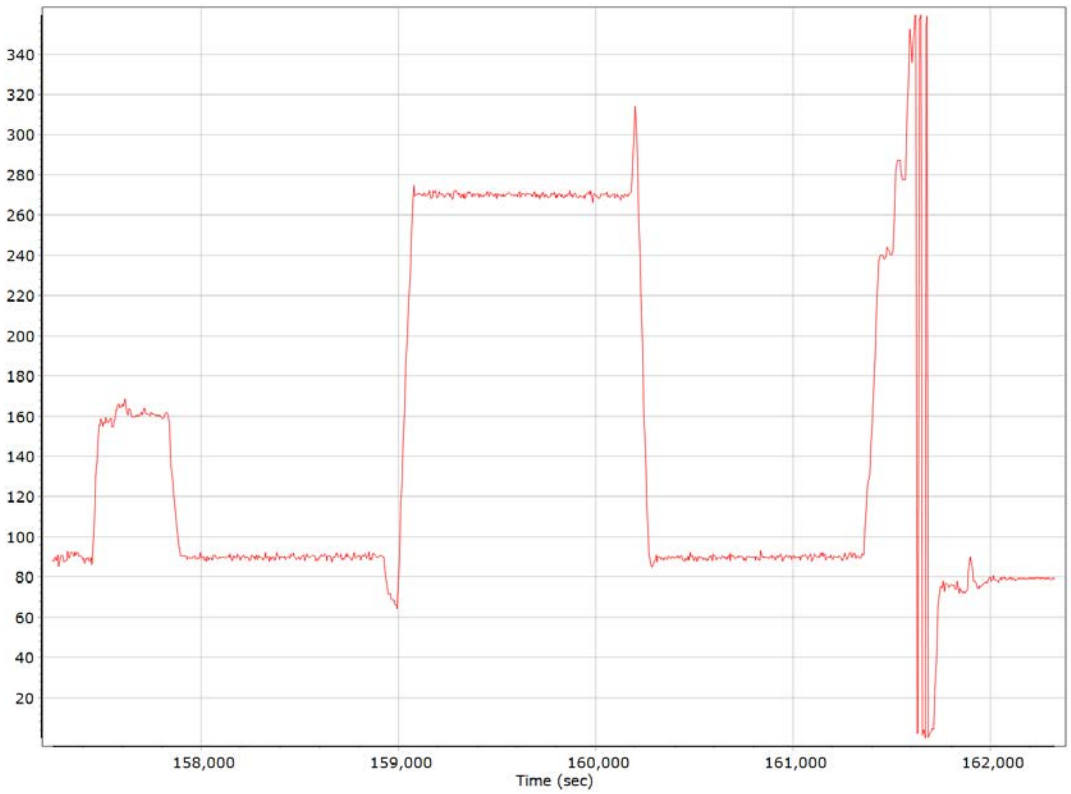
Altitude



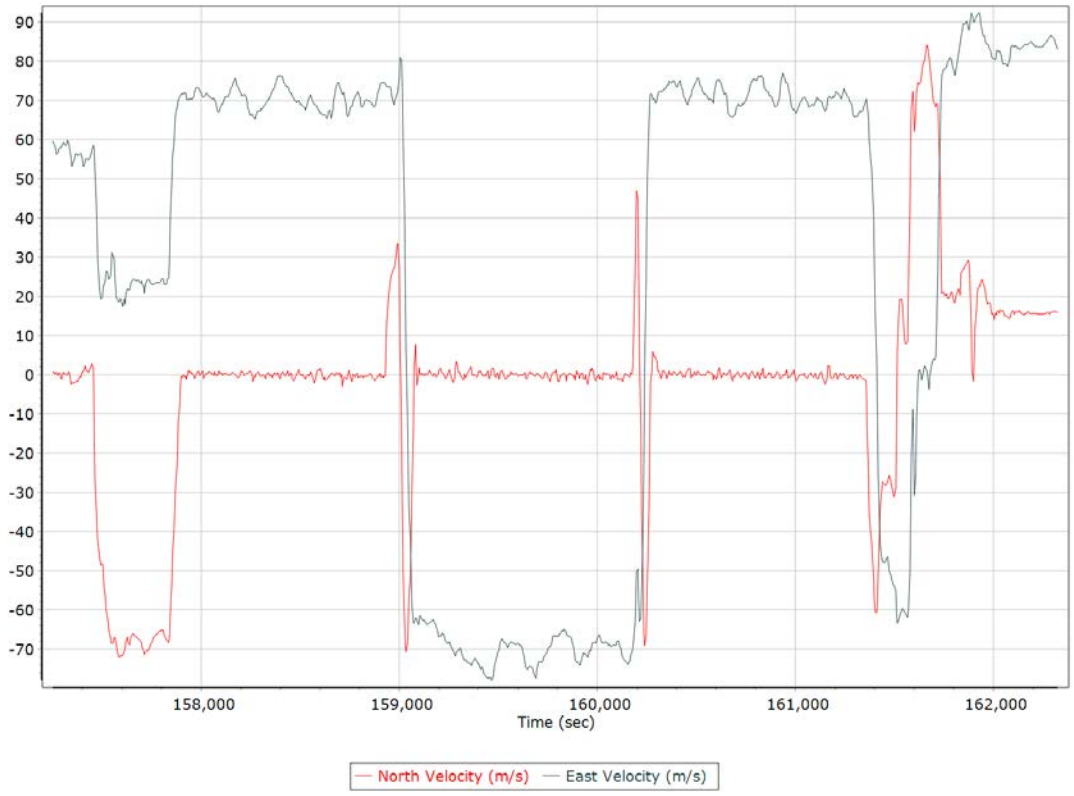
Roll/Pitch



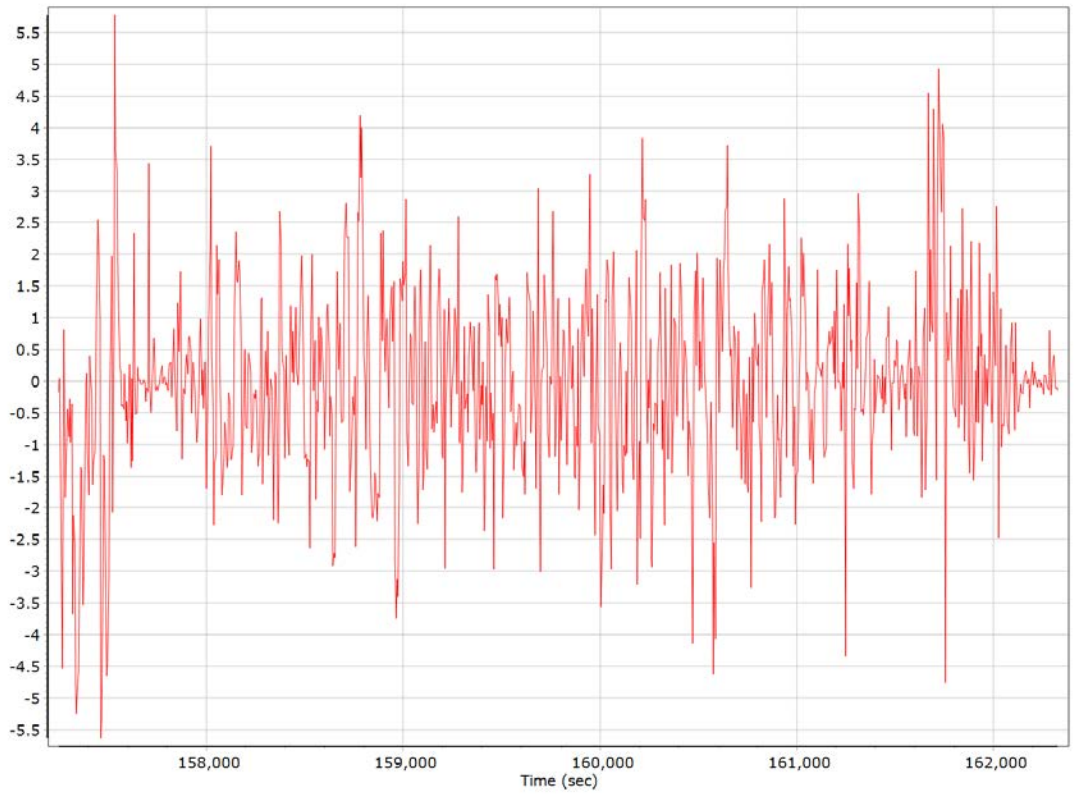
Heading



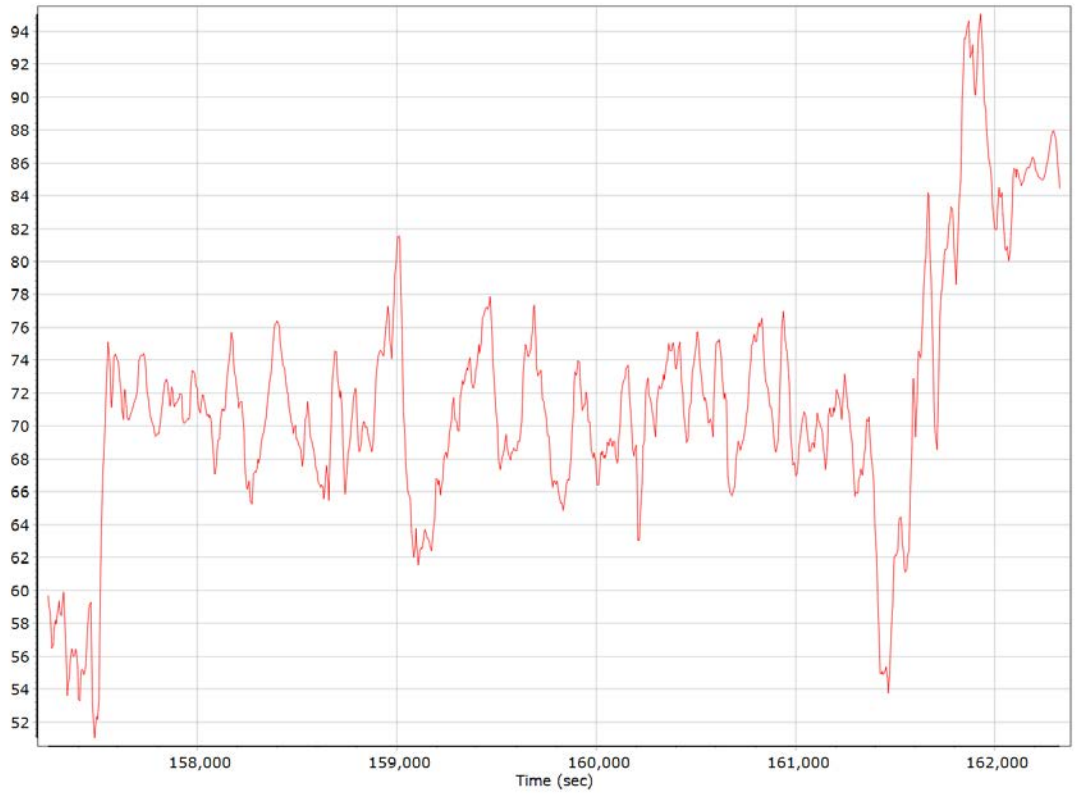
North/East Velocity



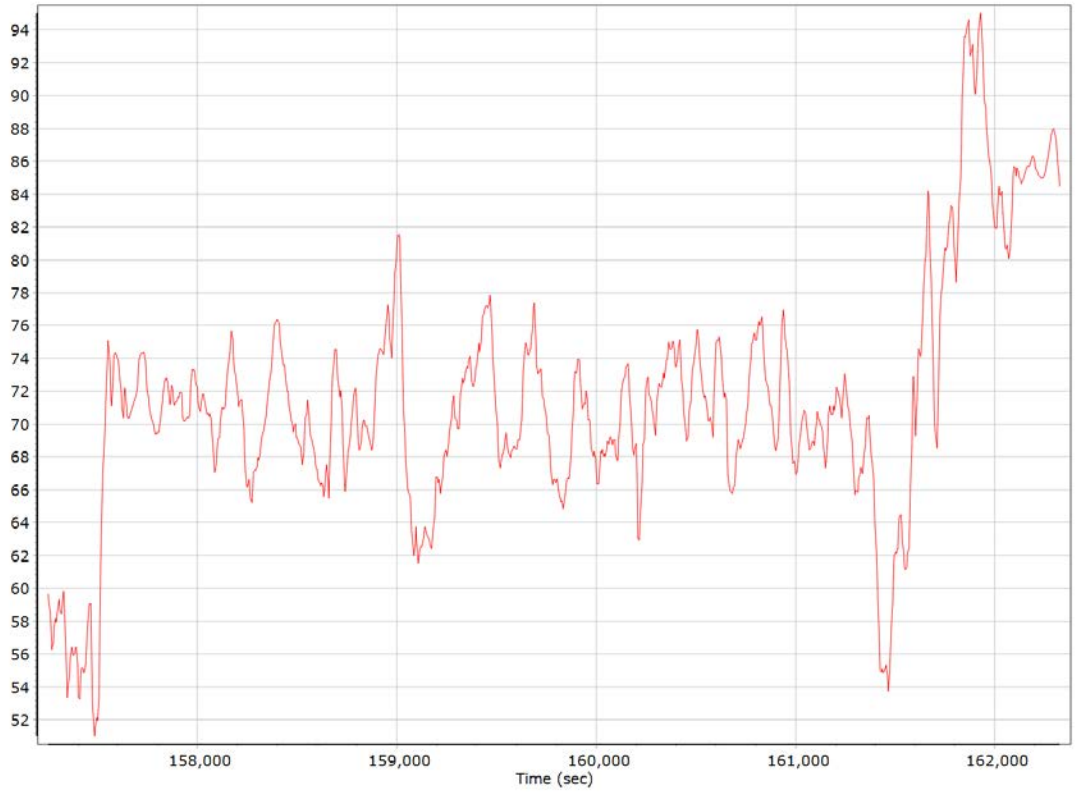
Down Velocity



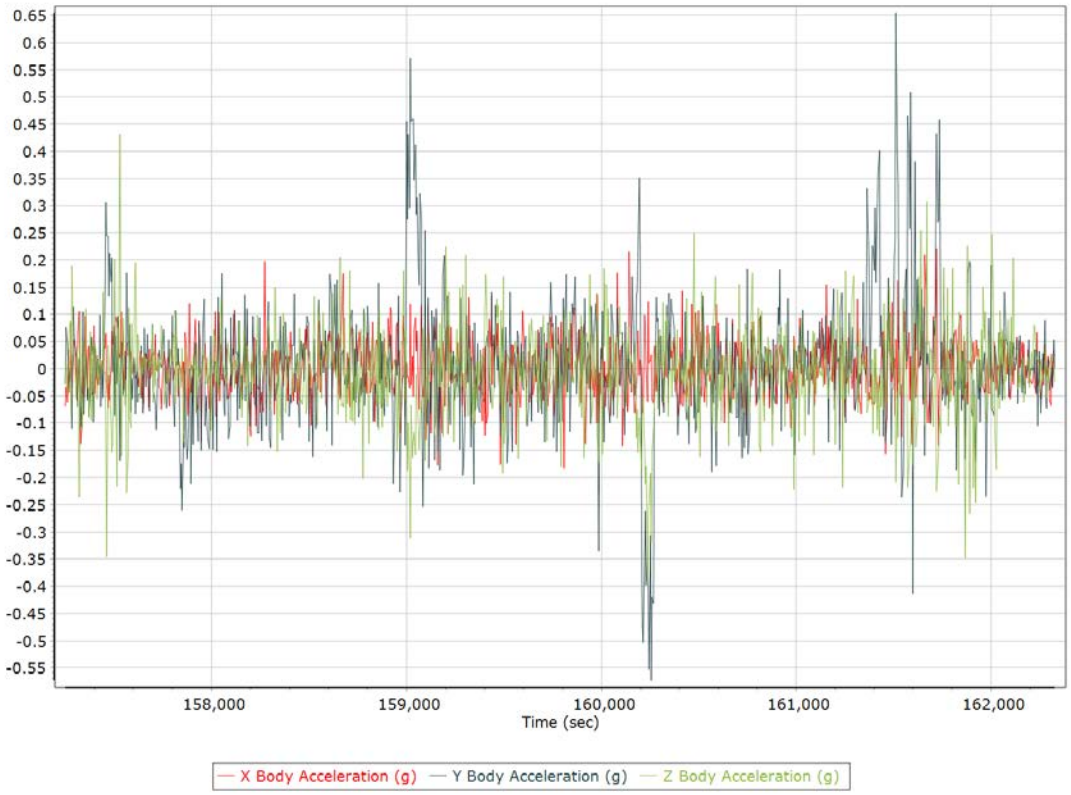
Total Speed



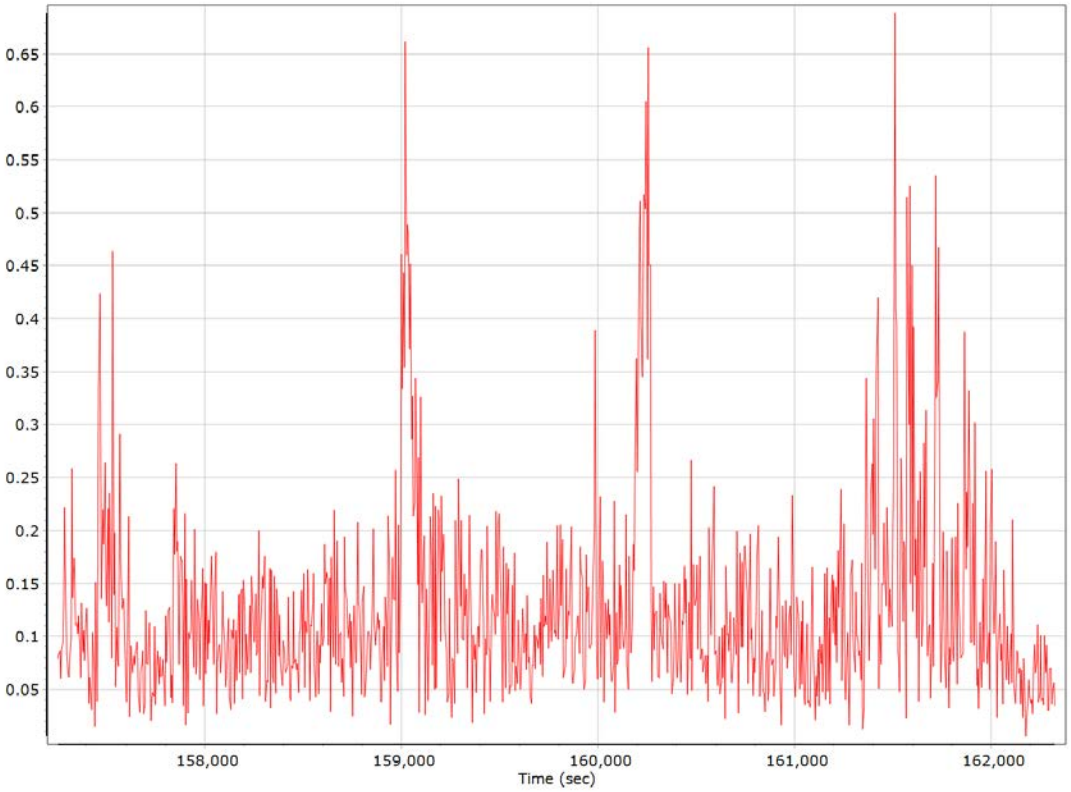
Ground Speed



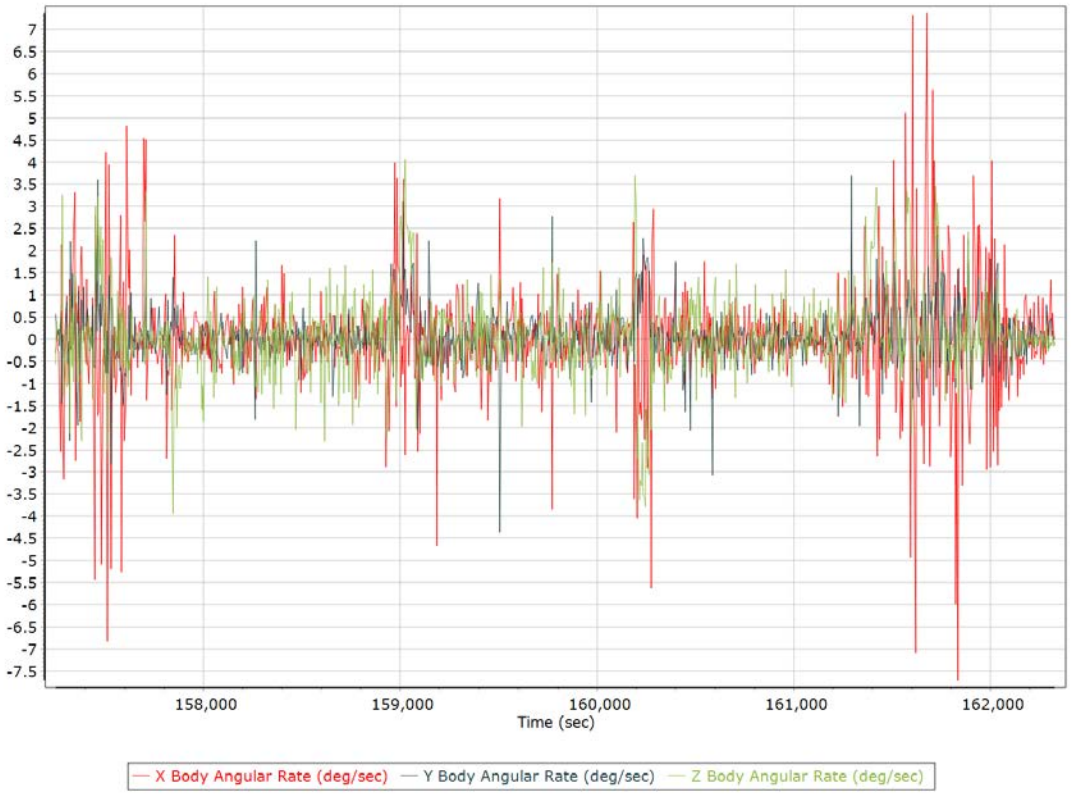
Body Acceleration



Total Body Acceleration



Body Angular Rate

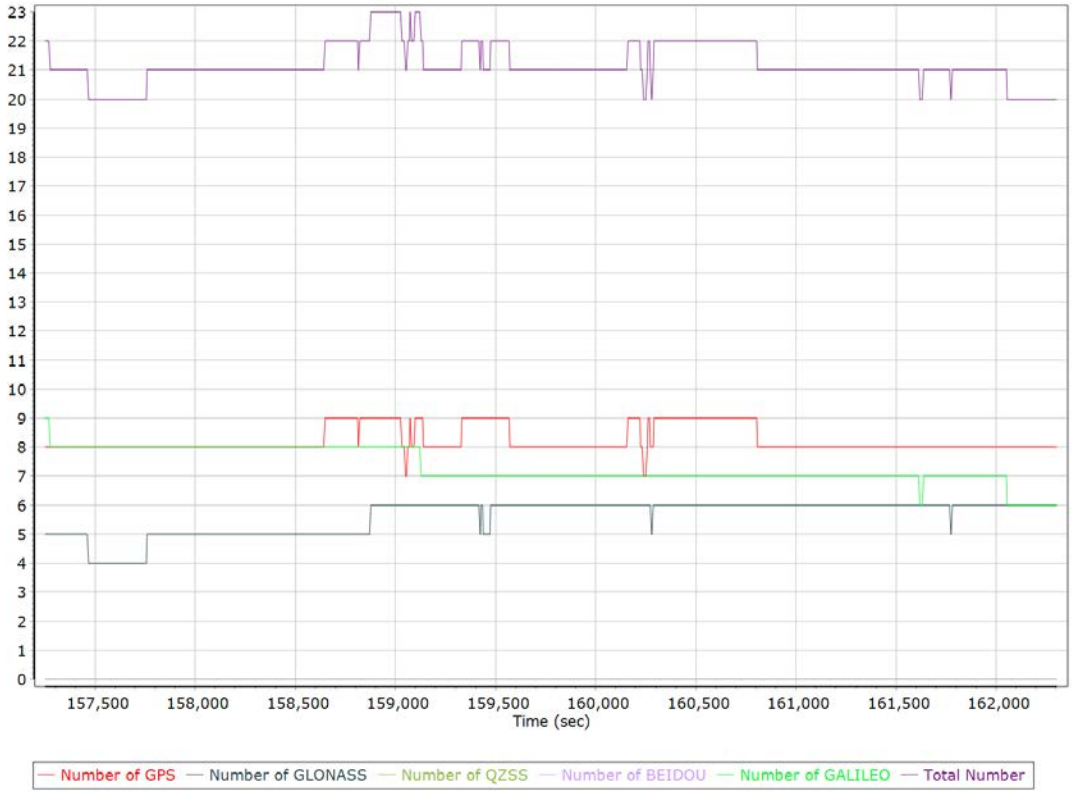


GNSS QC

GNSS QC Statistics

Statistics	Min	Max	Mean
Baseline length (km)	0.00	0.00	
Number of GPS SV	7	9	8
Number of GLONASS SV	4	6	6
Number of QZSS SV	0	0	0
Number of BEIDOU SV	0	0	0
Number of GALILEO SV	6	9	7
Total number of SV	20	23	21
PDOP	1.00	1.29	1.13
QC Solution Gaps	0.00	0.00	
Solution Type	Fixed	Float	No solution
Epoch (sec)	5115.00	0.00	0.00
Percentage	100.00	0.00	0.00

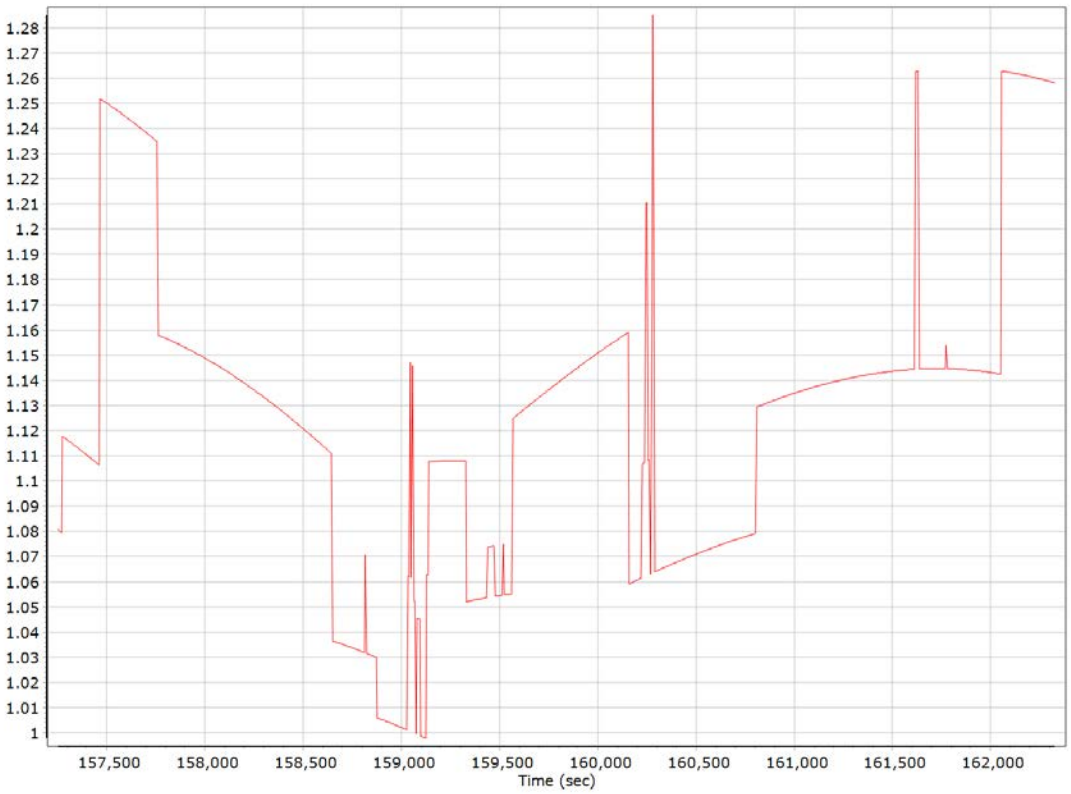
Num SVs in solution



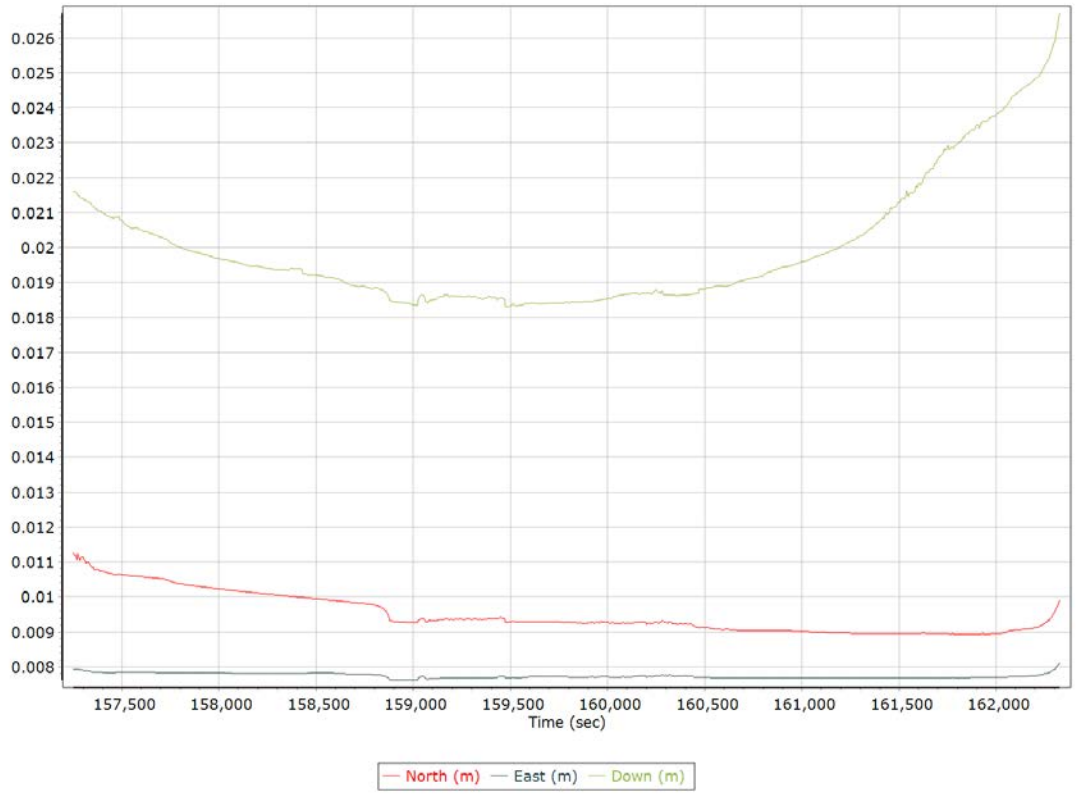
Forward/Reverse Separation



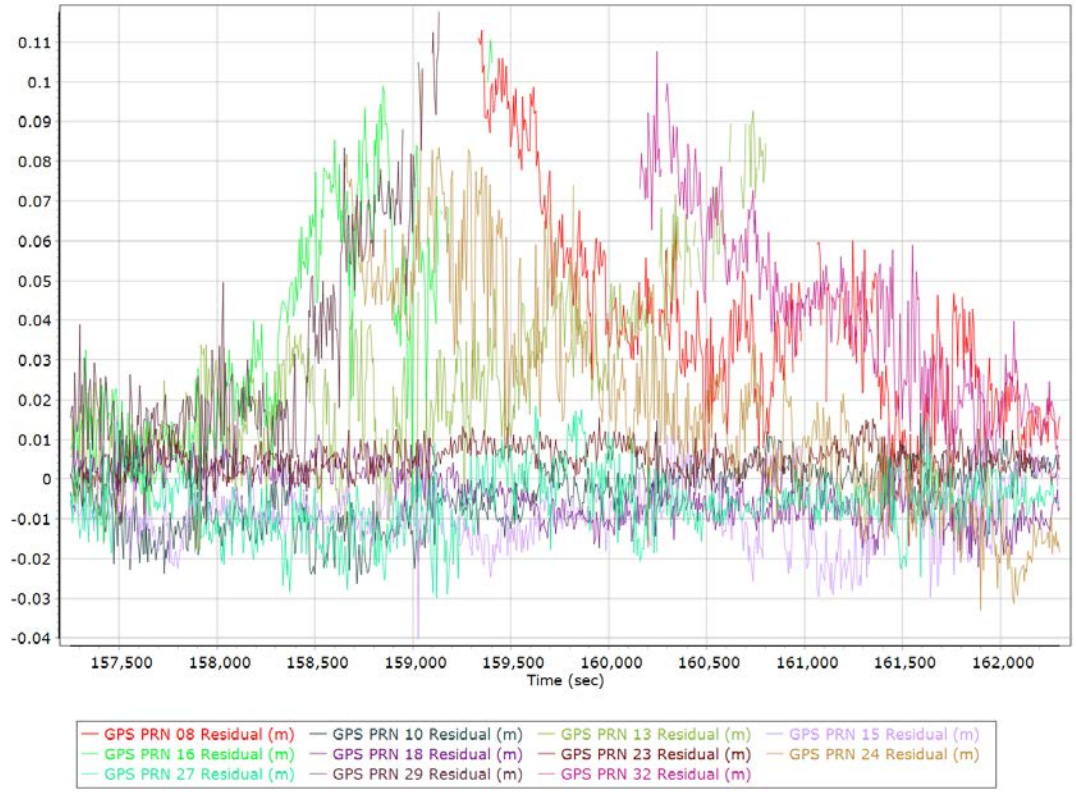
PDOP



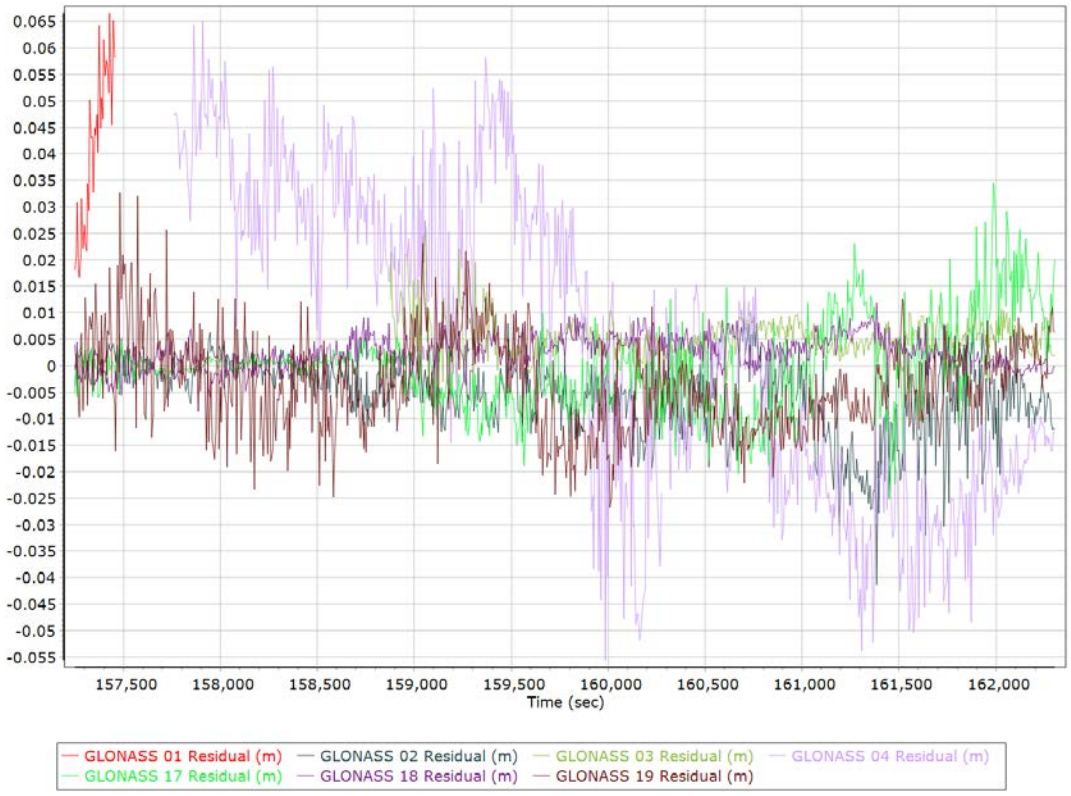
Estimated Position Accuracy



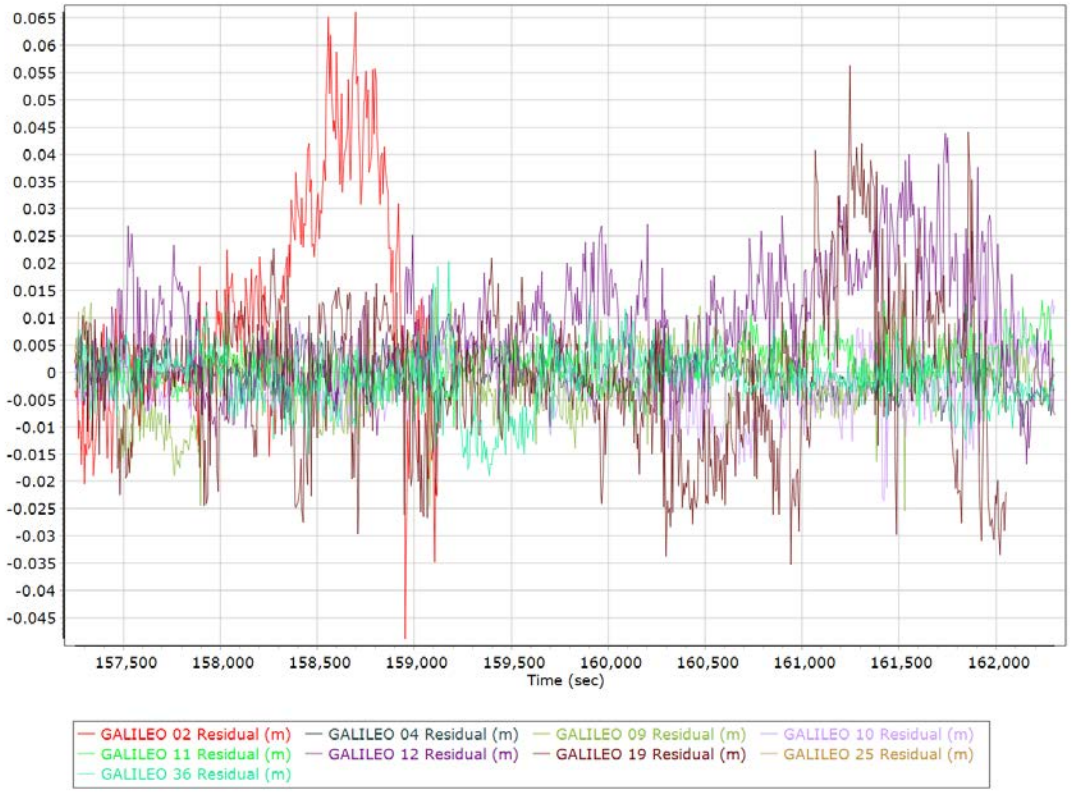
GPS Residuals



GLONASS Residuals



GALILEO Residuals



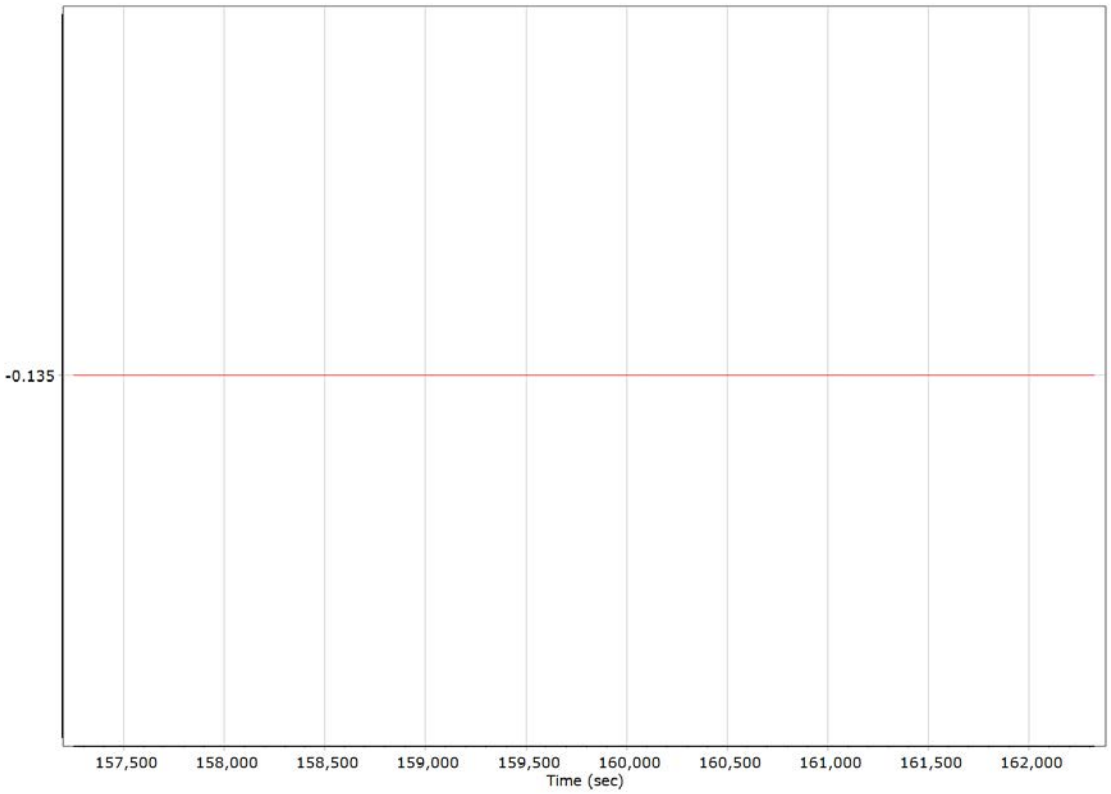
GNSS-Inertial Processor Configuration

Processing mode	IN-Fusion PP-RTX		
Stabilized mount	True		
Processing start time	157166.000 (7/24/2023 7:39:26 PM)		
Processing end time	162328.000 (7/24/2023 9:05:28 PM)		
Initial attitude source	Primary GNSS Track		
IMU Sensor Context	Processing with Onboard IMU		
Gimbal to IMU lever arm (m)	-0.034	-0.010	-0.374
Gimbal to IMU mounting angles (deg)	0.000	0.000	0.000
Gimbal to Primary GNSS lever arm (m)	-0.135	0.064	-1.339
Gimbal to Primary GNSS lever arm std dev (m)	0.030	0.030	0.030
Aircraft to Reference mounting angles (deg)	0.000	0.000	0.000

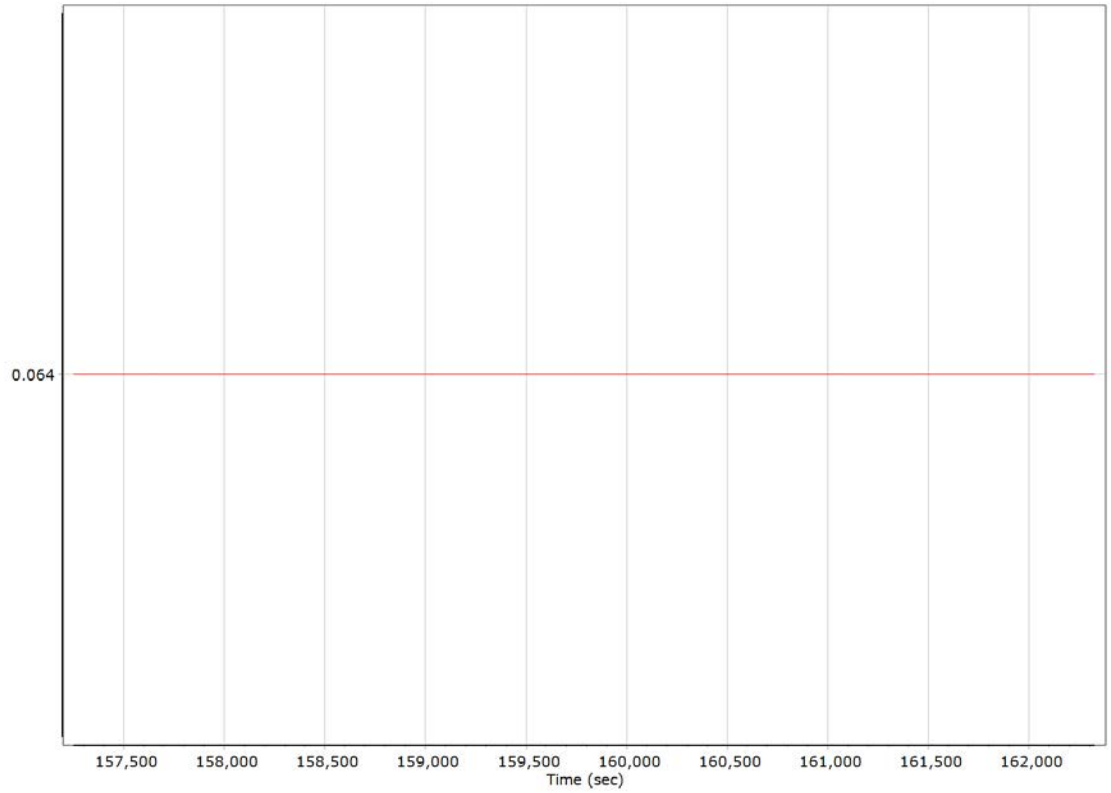
Calibrated Installation Parameters

Reference-Primary GNSS Lever Arm (m)

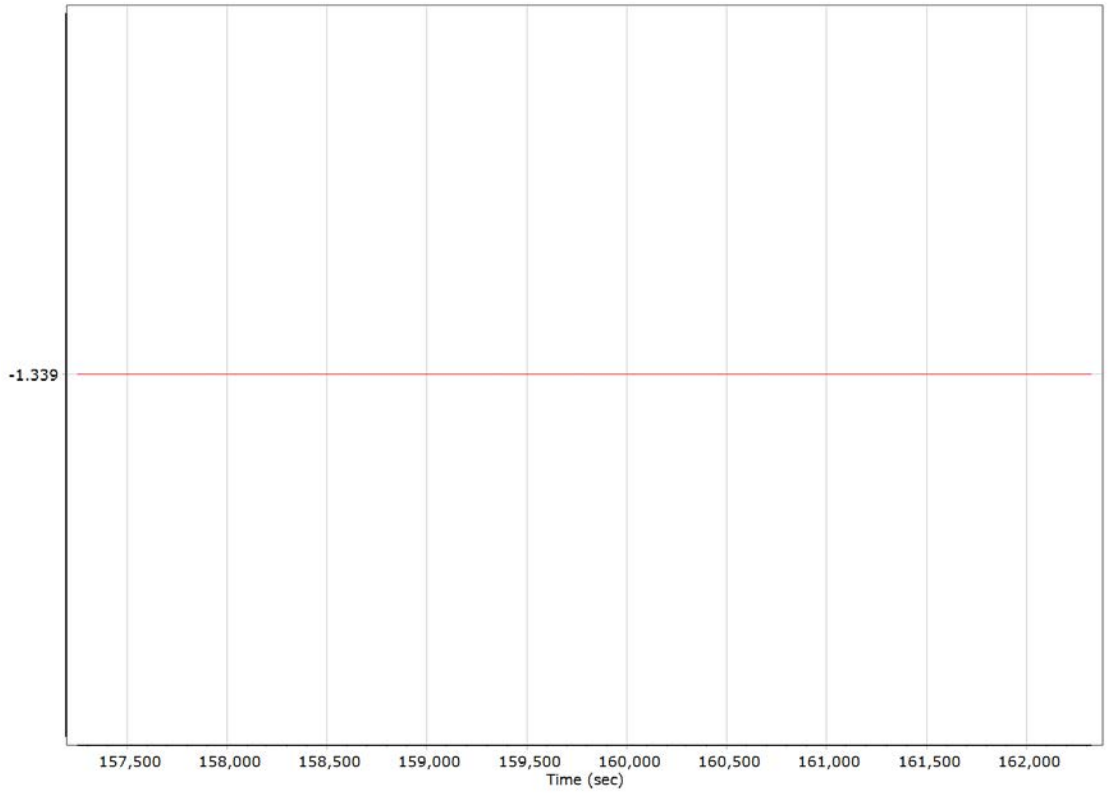
X Reference-Primary GNSS Lever Arm (m)



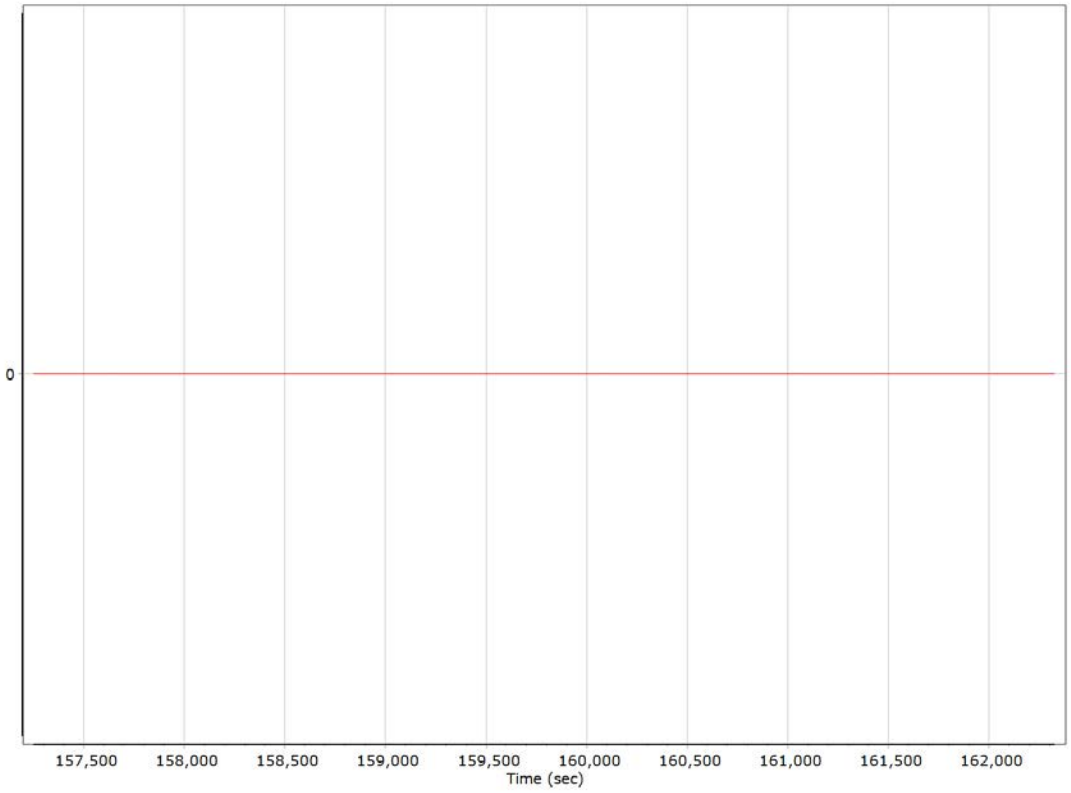
Y Reference-Primary GNSS Lever Arm (m)



Z Reference-Primary GNSS Lever Arm (m)



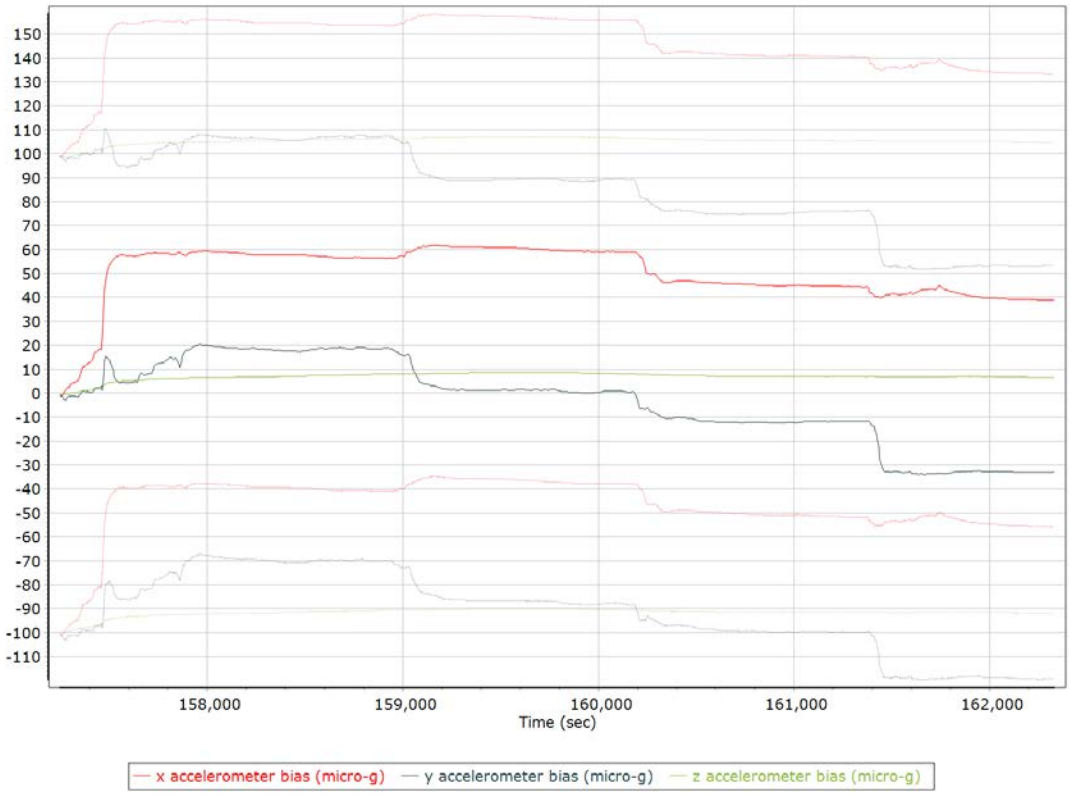
Reference-Primary GNSS Lever Arm Figure of Merit



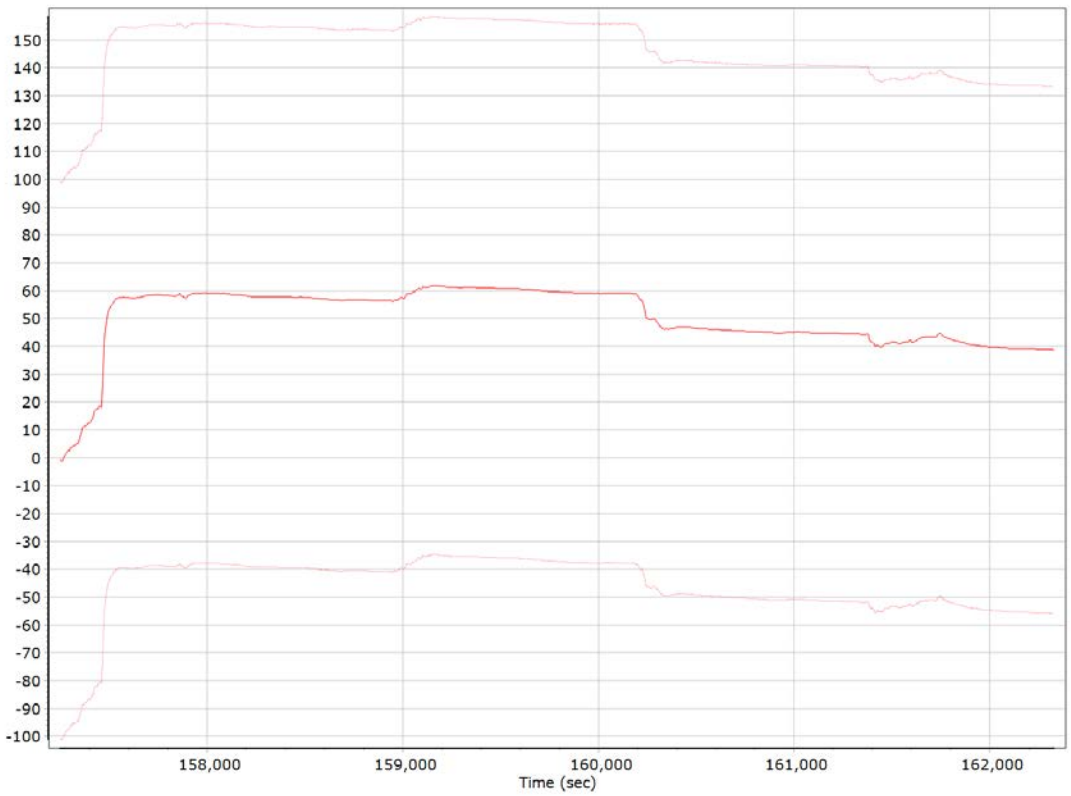
IN-Fusion QC

Forward Processed Estimated Errors, Reference Frame

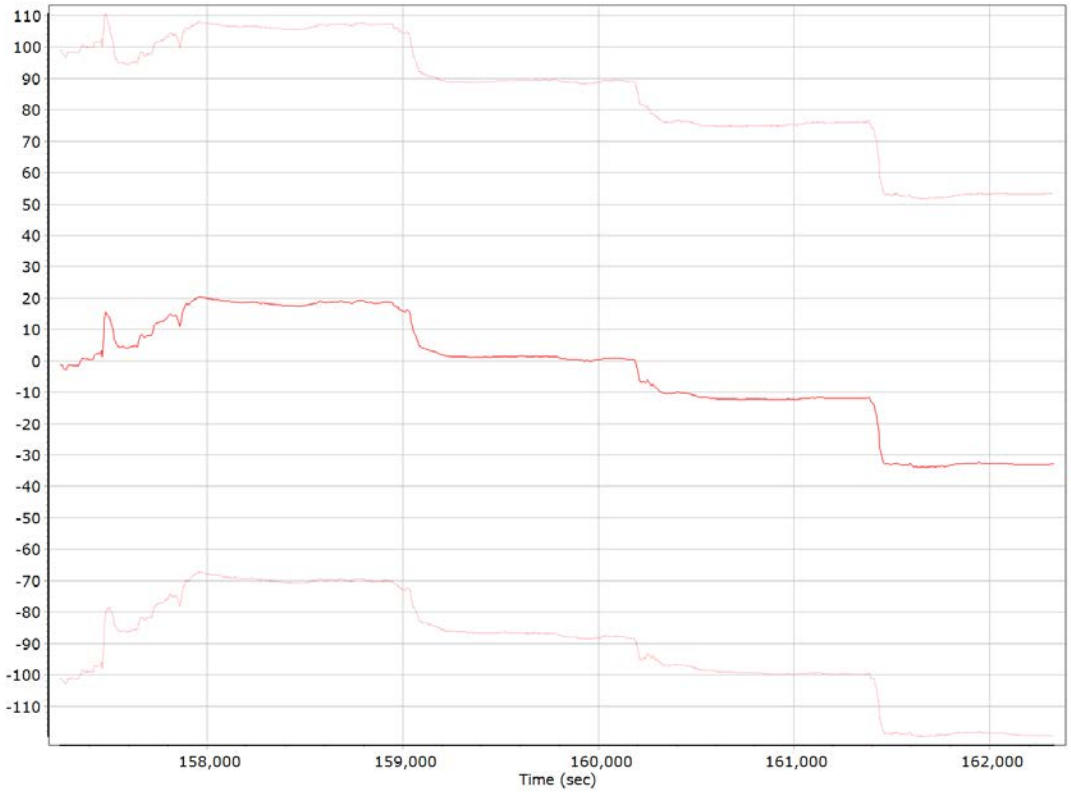
Accelerometer Bias (micro-g)



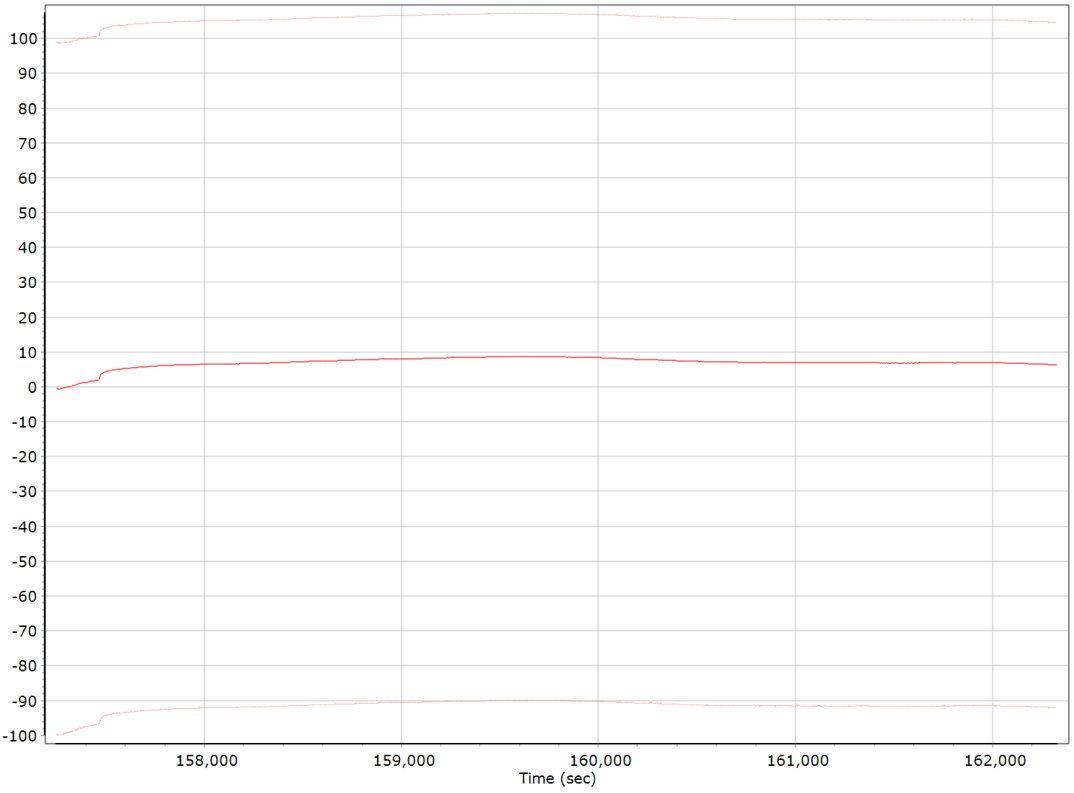
X Accelerometer Bias (micro-g)



Y Accelerometer Bias (micro-g)



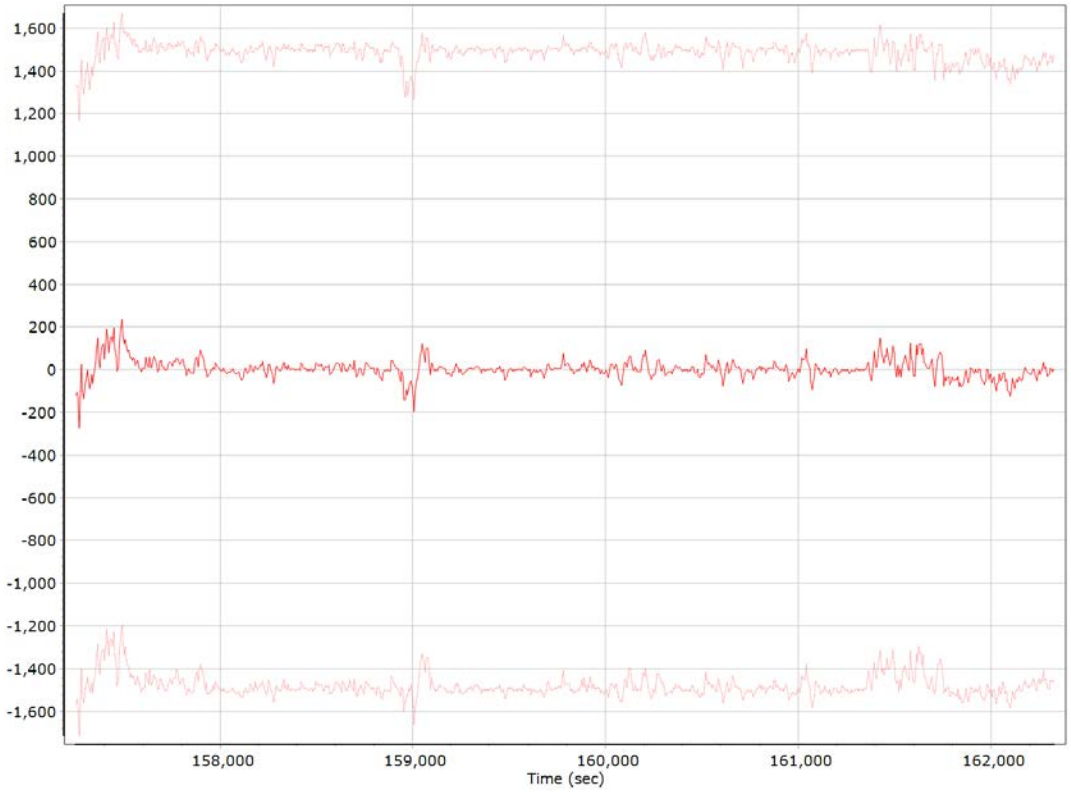
Z Accelerometer Bias (micro-g)



Accelerometer Scale Error (ppm)



X Accelerometer Scale Error (ppm)



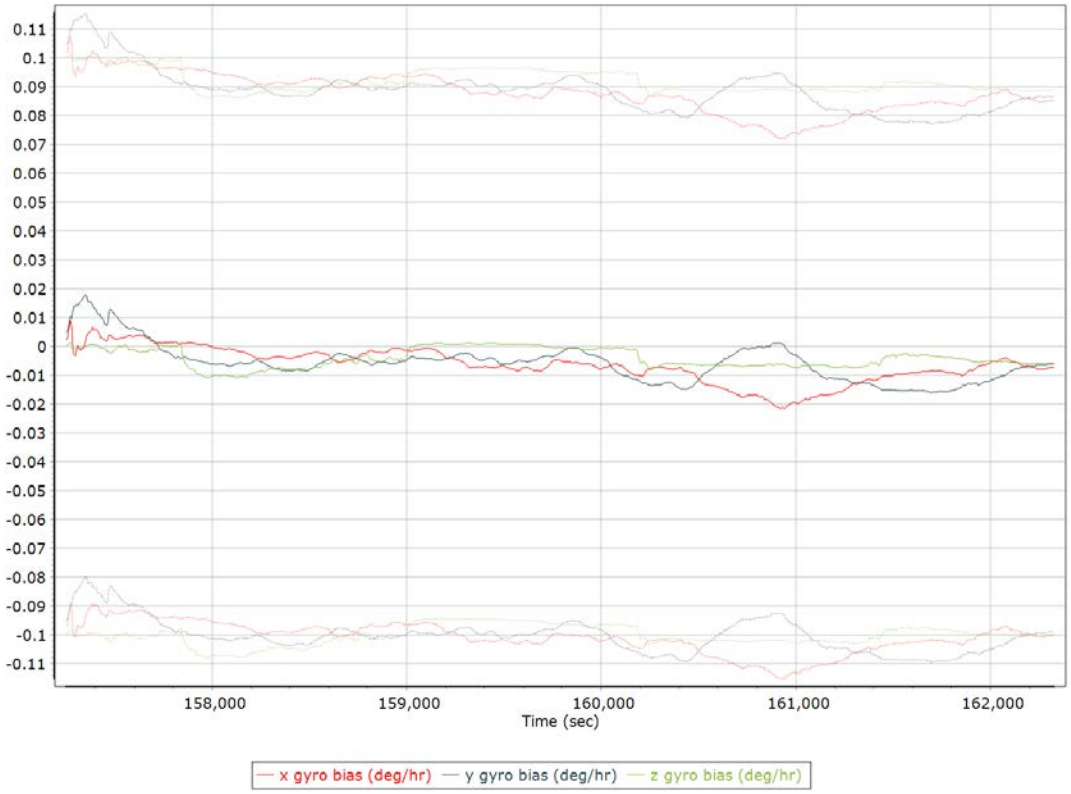
Y Accelerometer Scale Error (ppm)



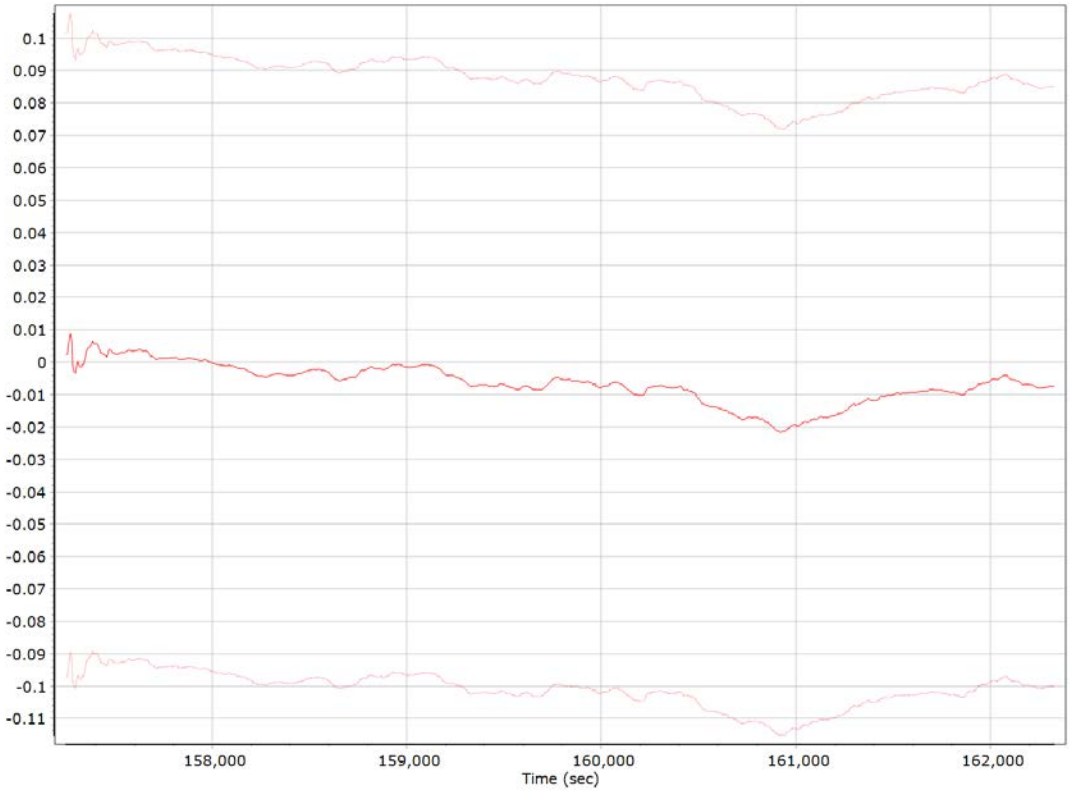
Z Accelerometer Scale Error (ppm)



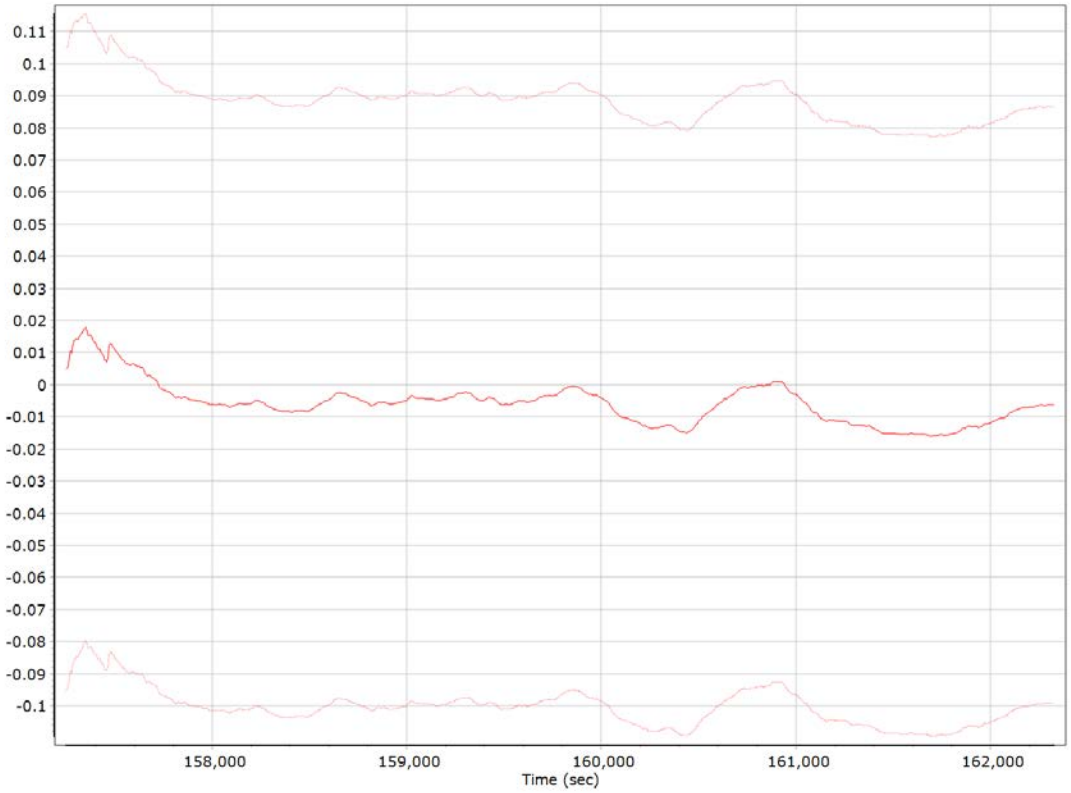
Gyro Bias (deg/h)



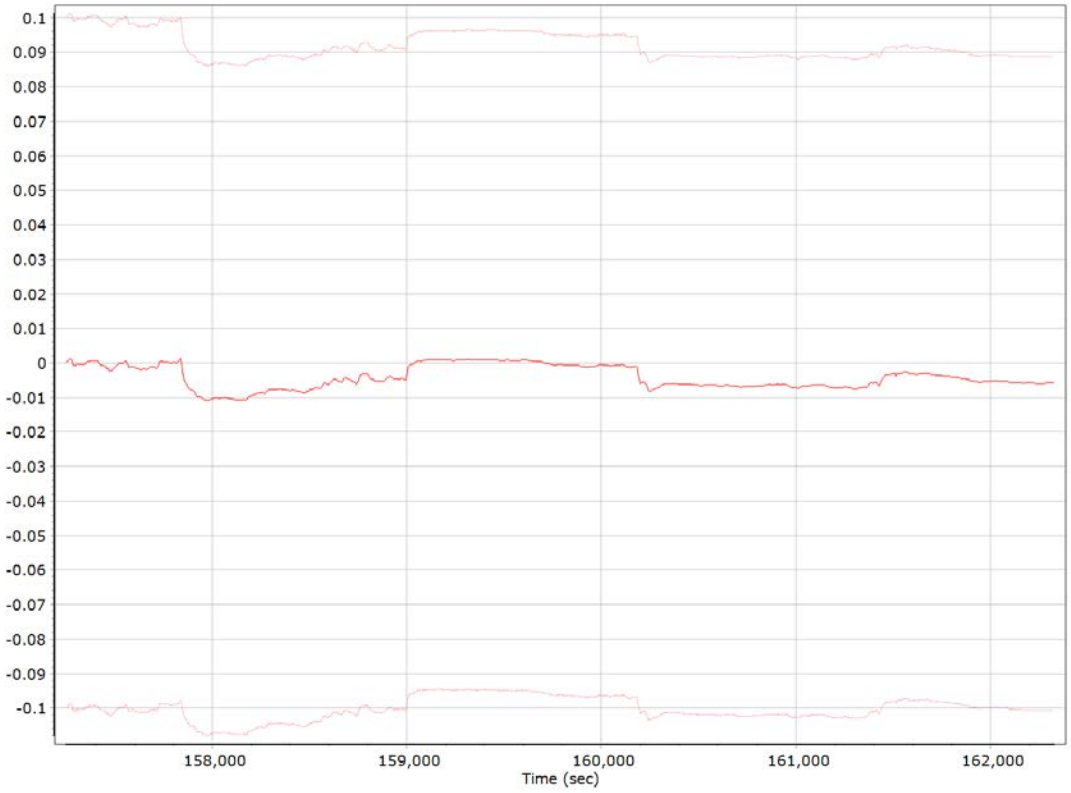
X Gyro Bias (deg/h)



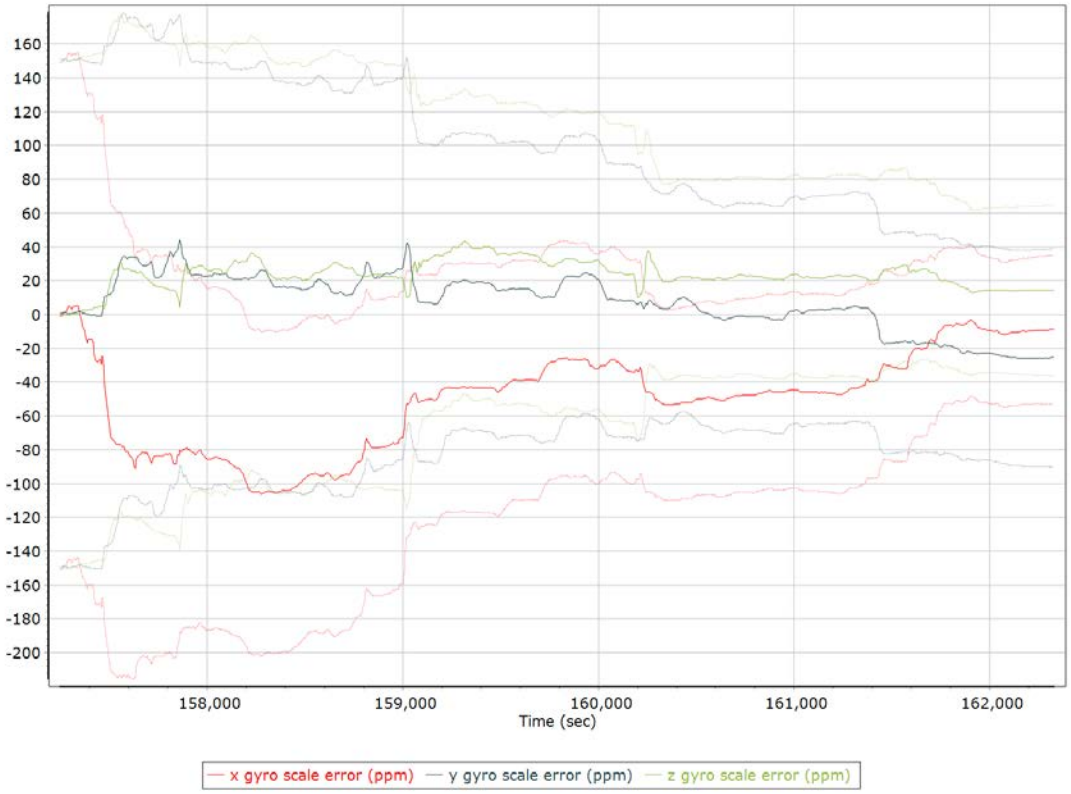
Y Gyro Bias (deg/h)



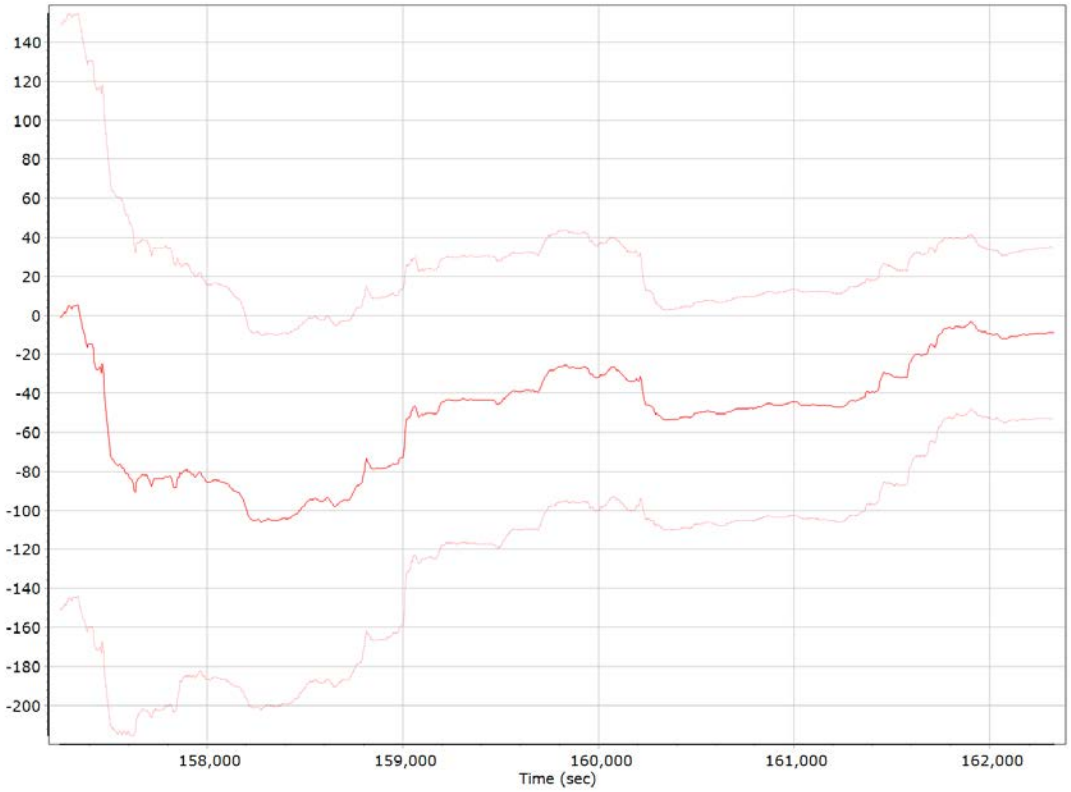
Z Gyro Bias (deg/h)



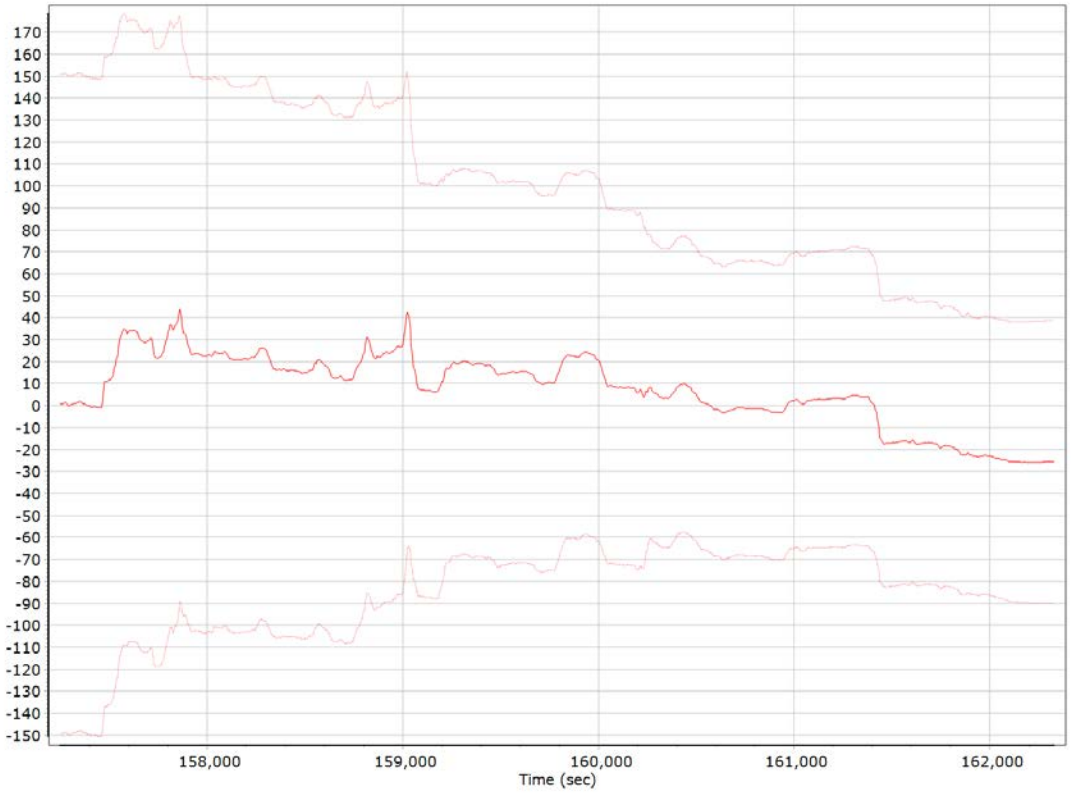
Gyro Scale Error (ppm)



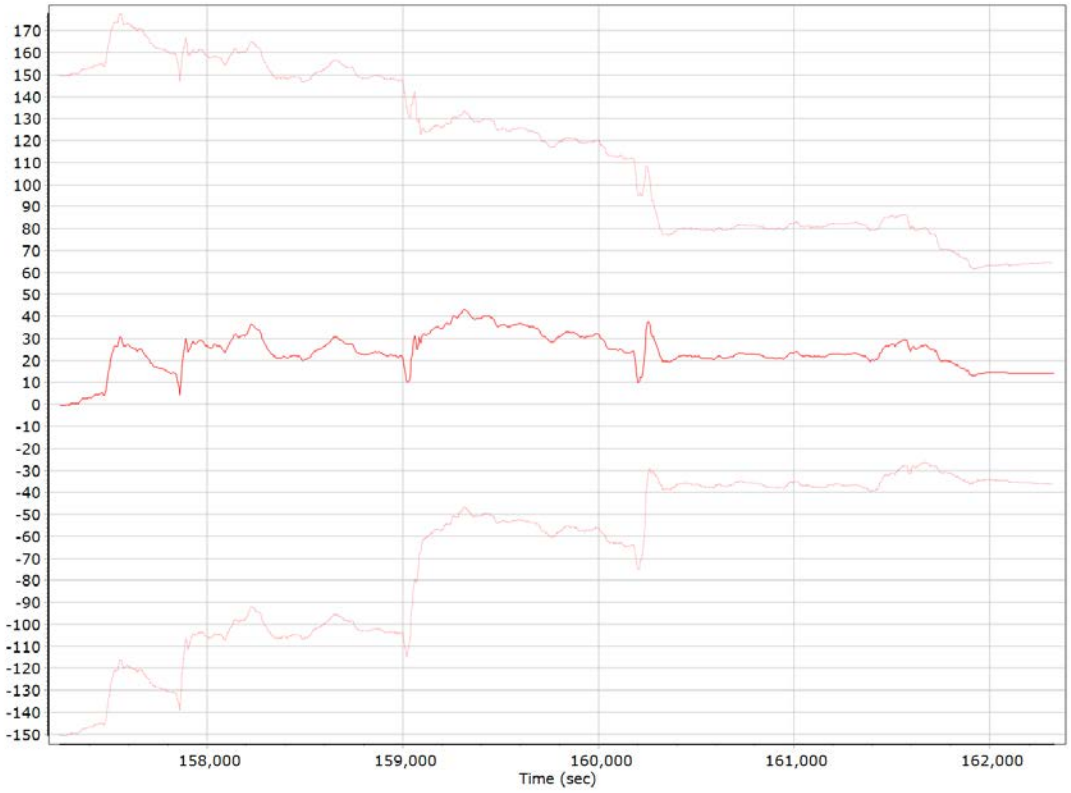
X Gyro Scale Error (ppm)



Y Gyro Scale Error (ppm)

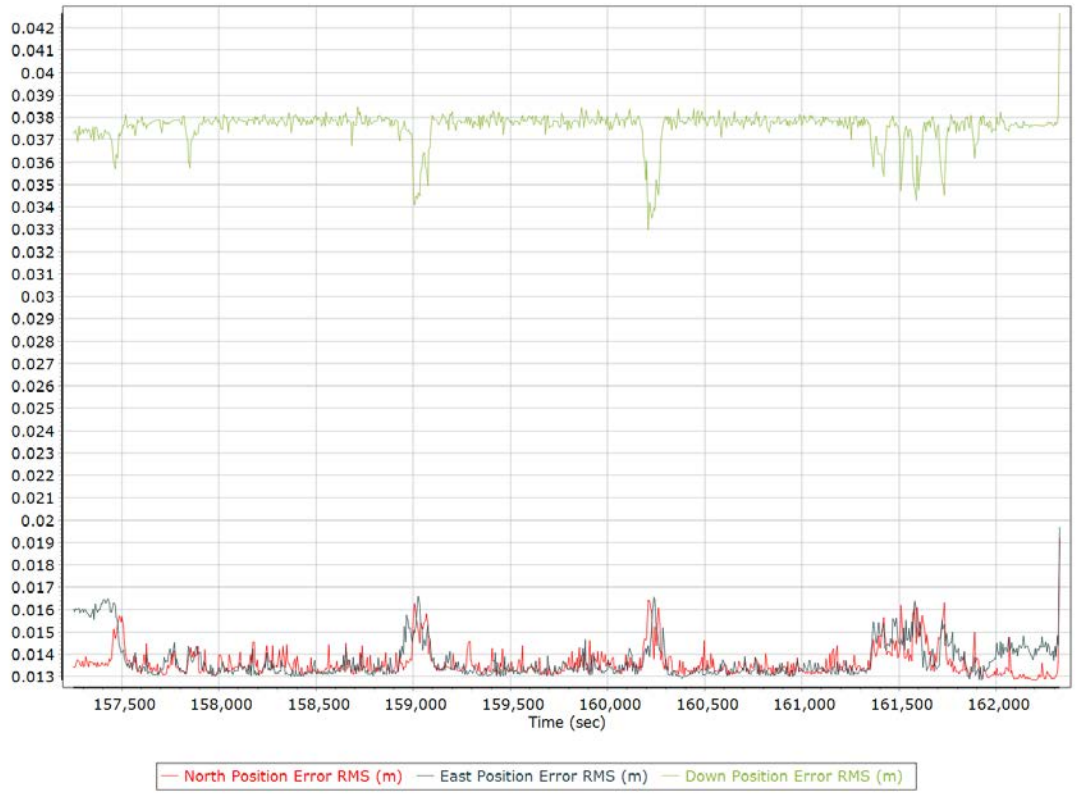


Z Gyro Scale Error (ppm)

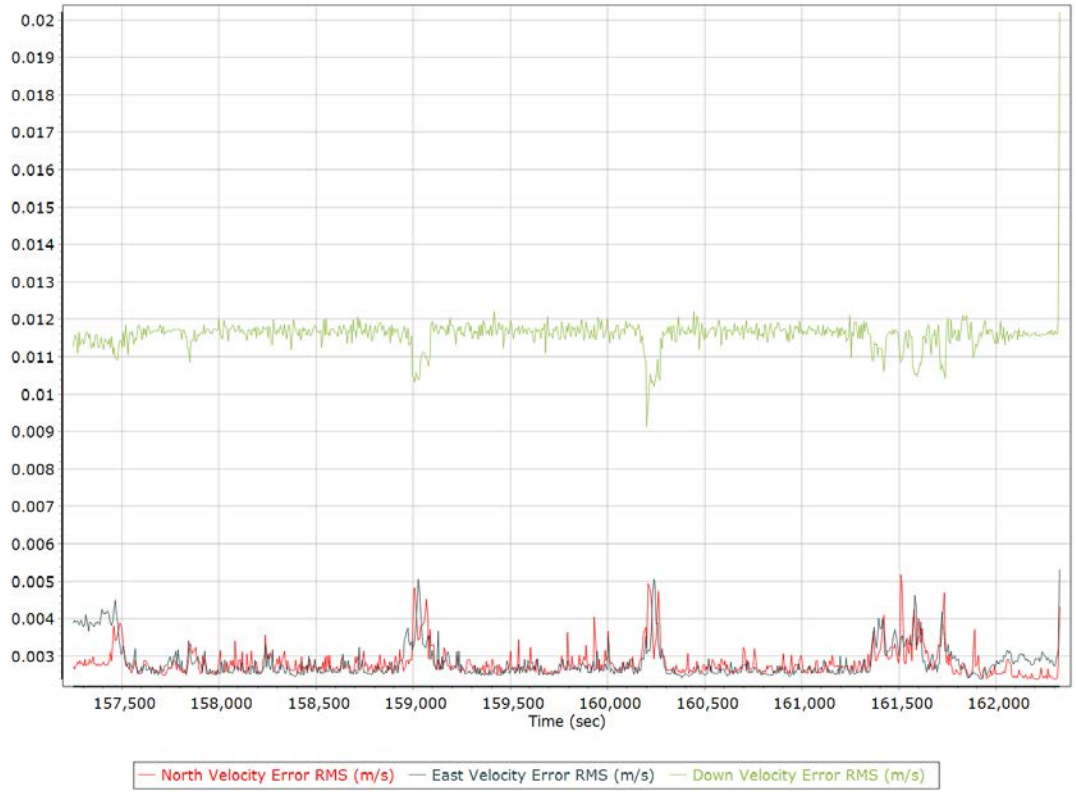


Smoothed Performance Metrics

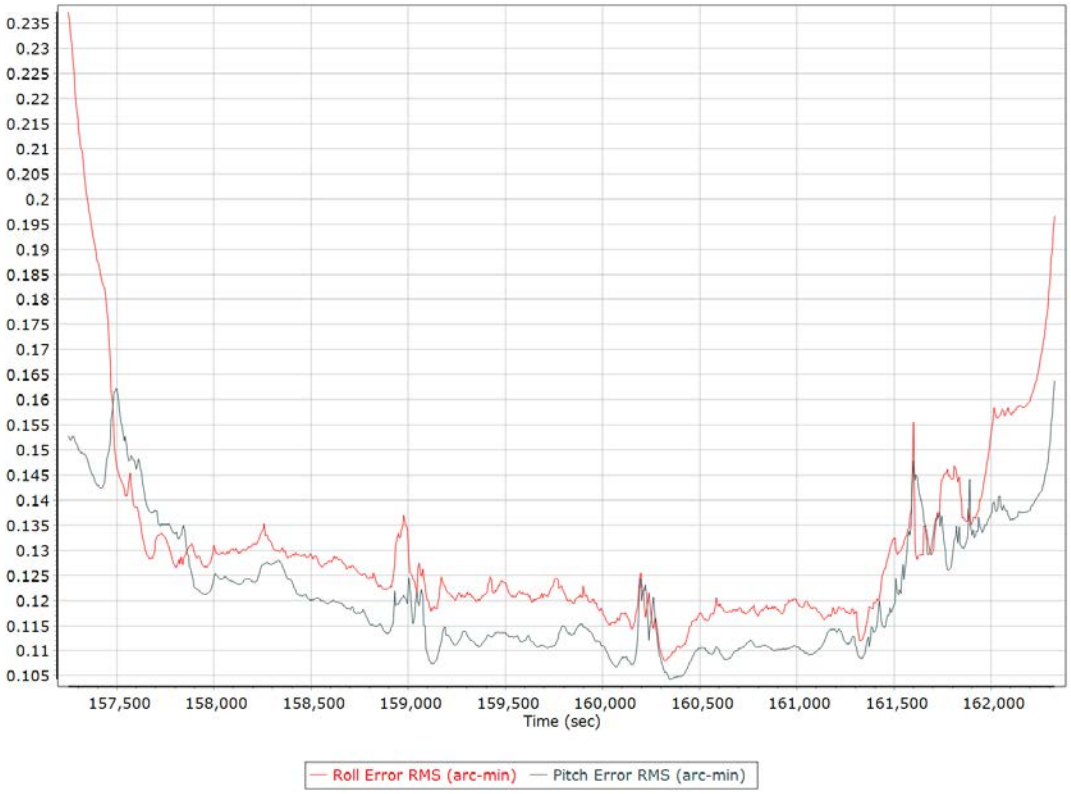
Position Error RMS (m)



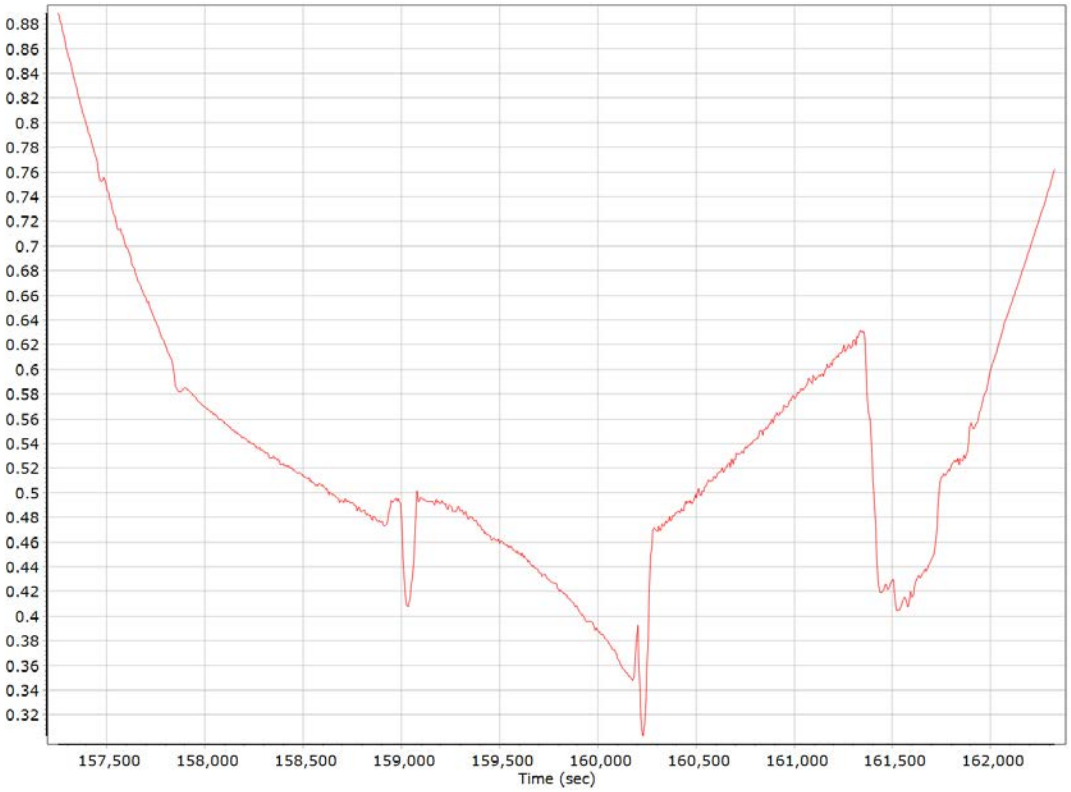
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

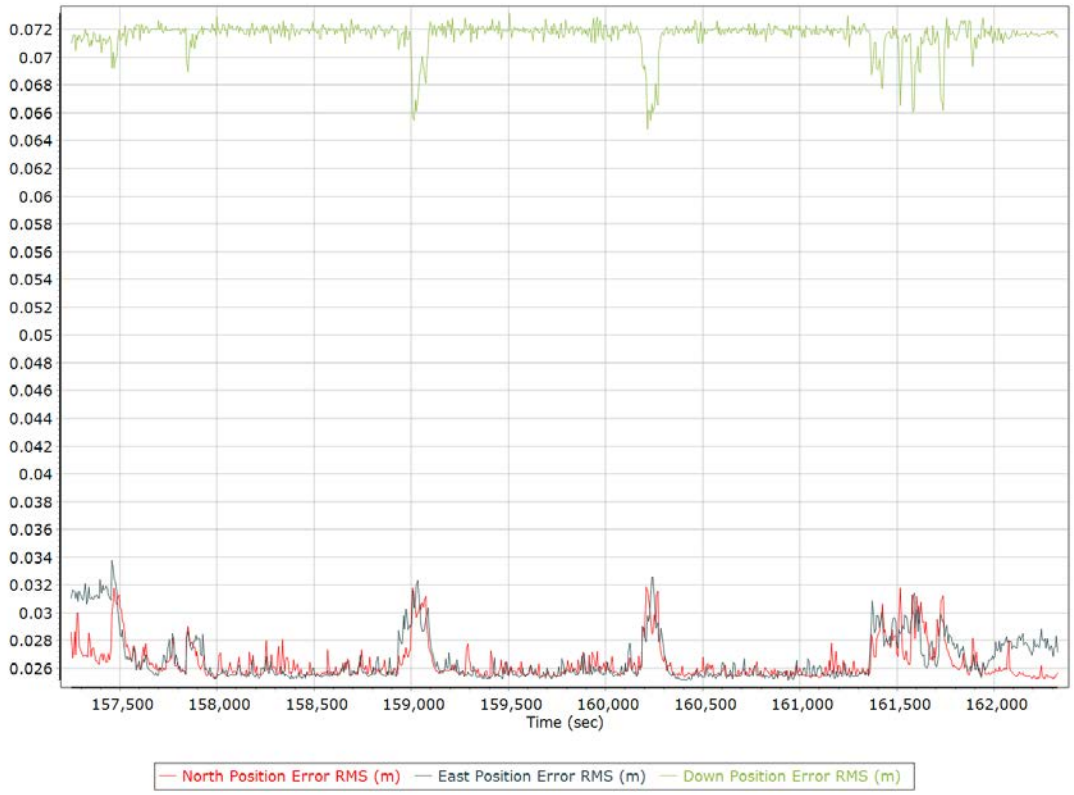


Heading Error RMS (arc-min)



Forward Processed Performance Metrics

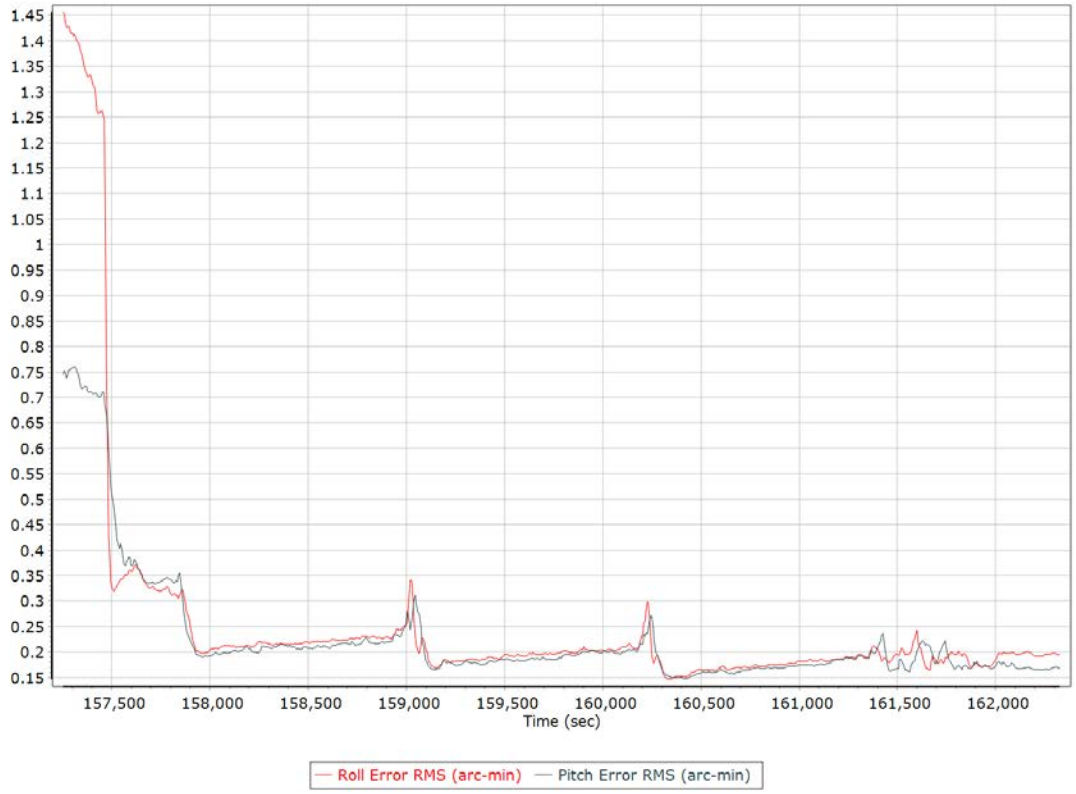
Position Error RMS (m)



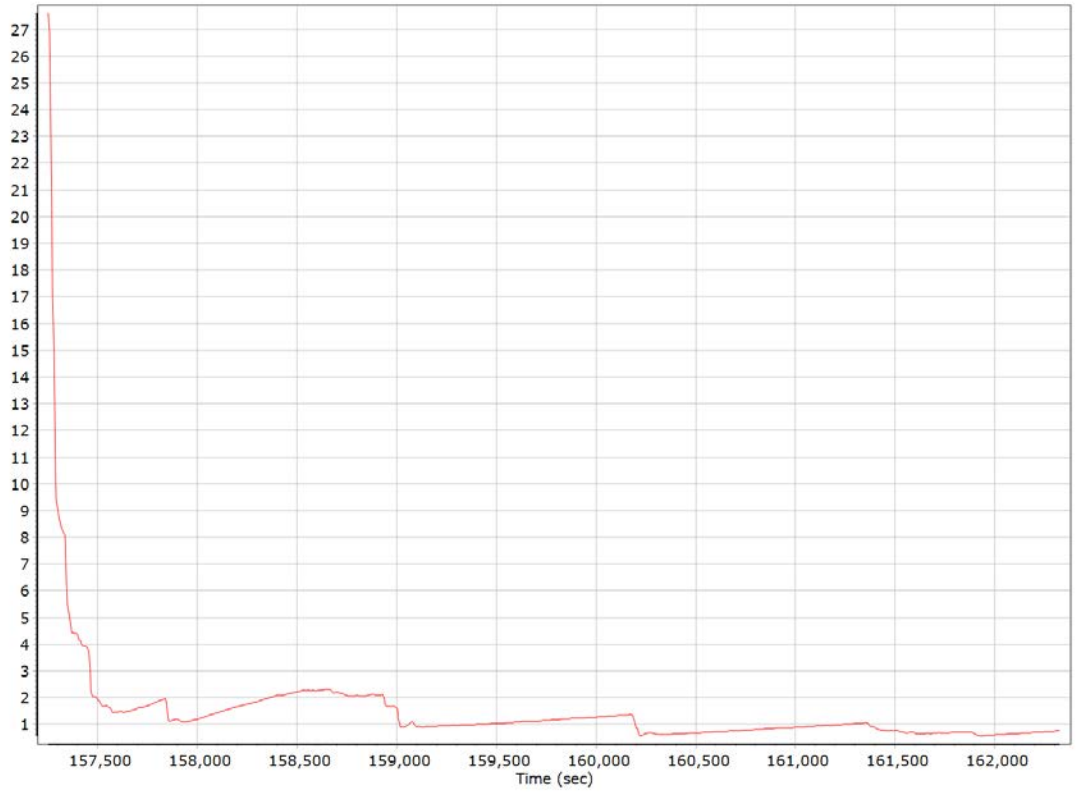
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

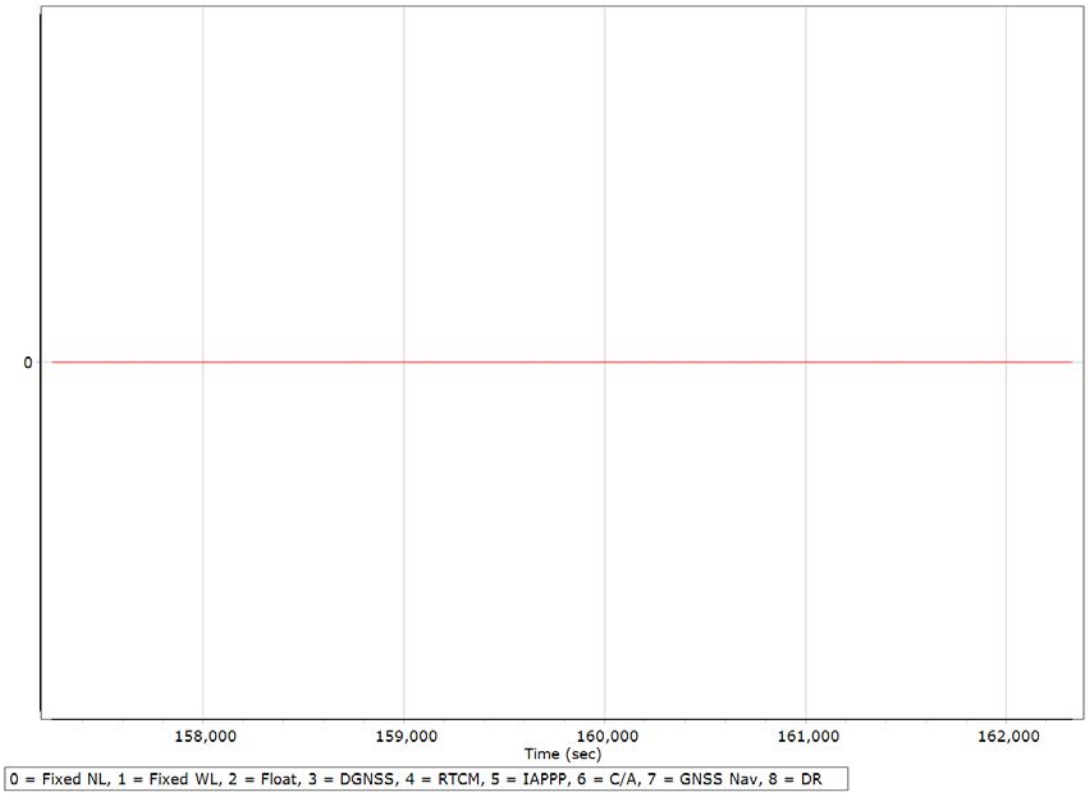


Heading Error RMS (arc-min)

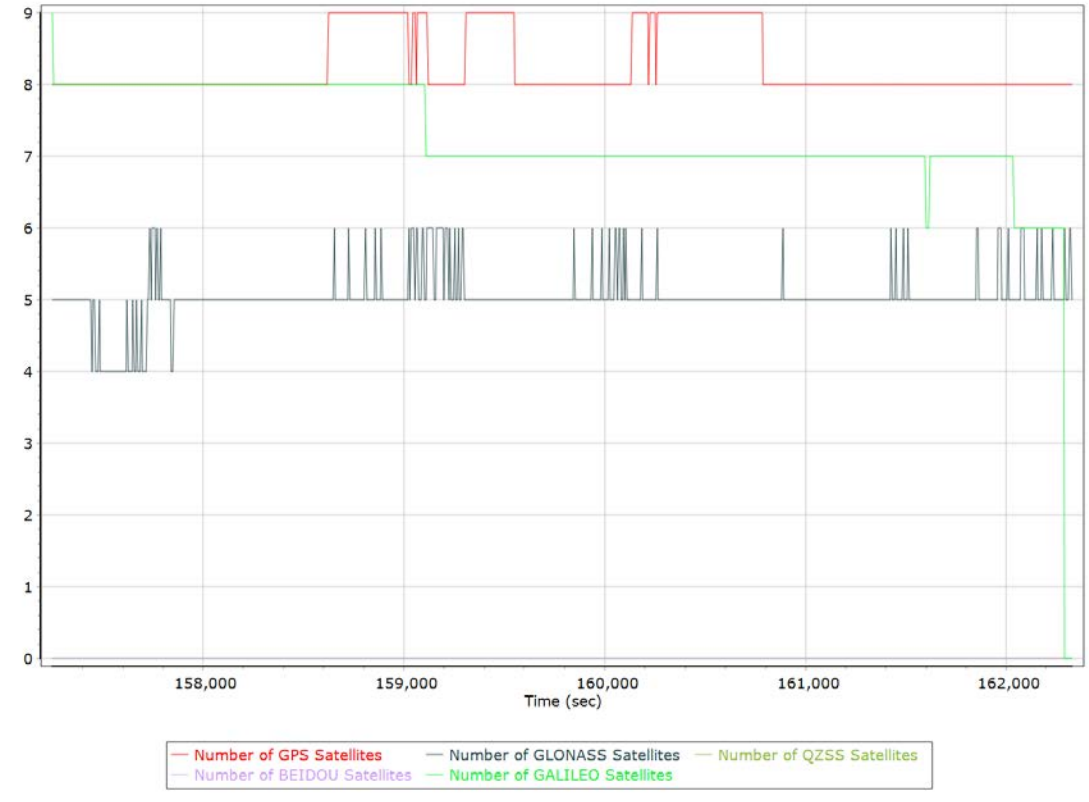


Forward Processed Solution Status

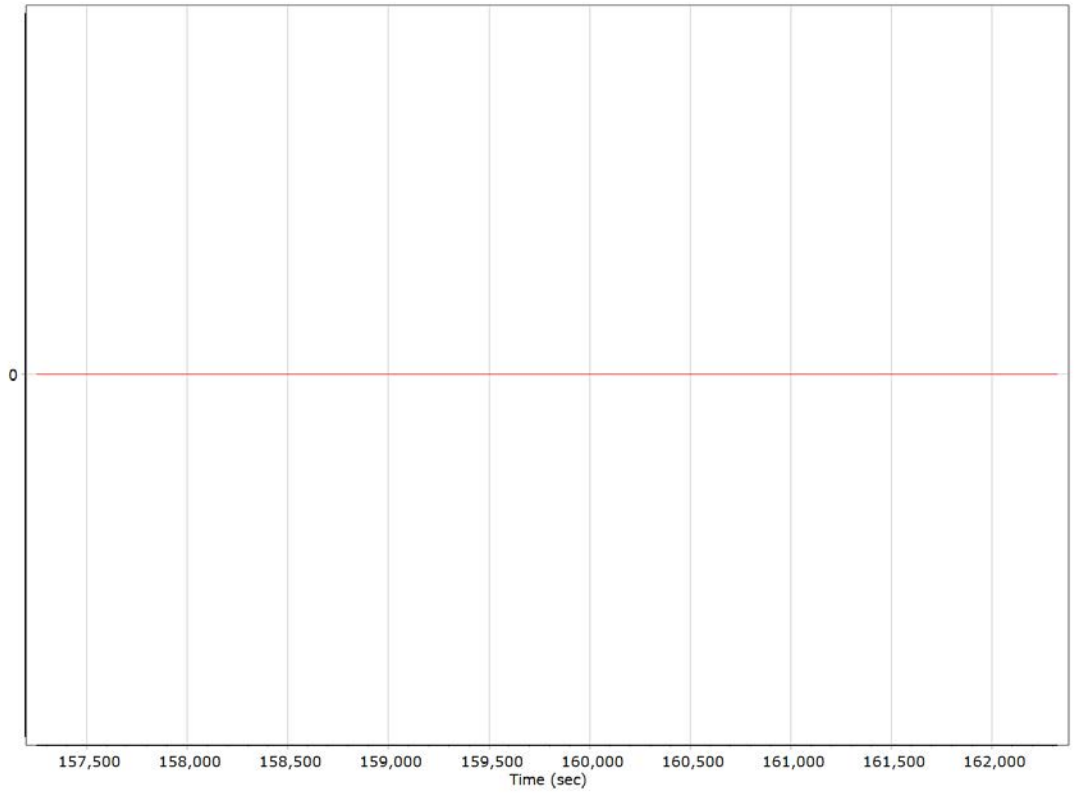
Processing Mode



Number of Satellites



Baseline Length



General Information

Mission Information

Project name	07292023B_4051
Processing date	2023-08-01 16:54:46
Mission date	2023-07-29 19:51:40
Mission duration	03:00:36.937
Processing mode	IN-Fusion PP-RTX

Rover Hardware Information

Product	POS AV 610 VER6 HW2.5-12
Serial number	S/N11221
IMU type	57
Receiver type	BD982
Antenna type	AV59

Project File List

Rover Data Files

File name	File type
CP780.170	POS Data
CP780.171	POS Data
CP780.172	POS Data
CP780.173	POS Data
CP780.174	POS Data
CP780.175	POS Data
CP780.176	POS Data
CP780.177	POS Data
CP780.178	POS Data
CP780.179	POS Data
CP780.180	POS Data
CP780.181	POS Data
CP780.182	POS Data
CP780.183	POS Data
CP780.184	POS Data
CP780.185	POS Data
CP780.186	POS Data
CP780.187	POS Data
CP780.188	POS Data
CP780.189	POS Data
CP780.190	POS Data
CP780.191	POS Data
CP780.192	POS Data
CP780.193	POS Data
CP780.194	POS Data

Input Files

File Name	File Type
Ephm2100.23g	GLONASS Broadcast Ephemeris
Ephm2100.23n	GPS Broadcast Ephemeris

Output Files

Filename	File type
sbet_07292023B_4051.out	SBET Trajectory File

Rover Data Summary

First raw data file	CP780.170		
Last raw data file	CP780.194		
Start GPS week	2272		
Start time	589881.790 (7/29/2023 7:51:21 PM)		
End time	600718.727 (7/29/2023 10:51:58 PM)		
Start of fine alignment	589905.799 (7/29/2023 7:51:45 PM)		
Available subsystems	Primary GNSS, Gimbal, IMU		
POS Event Input	None		
Correction data	None		
IMU Installation Lever Arms & Mounting Angles			
Gimbal to IMU lever arm (m)	-0.034	-0.010	-0.374
Gimbal to IMU mounting angles (deg)	0.000	0.000	0.000
Gimbal to Primary GNSS lever arm (m)	0.053	-0.183	-1.279
Gimbal to Primary GNSS lever arm std dev (m)	-1.000		
Aircraft to Reference mounting angles (deg)	0.000	0.000	0.000

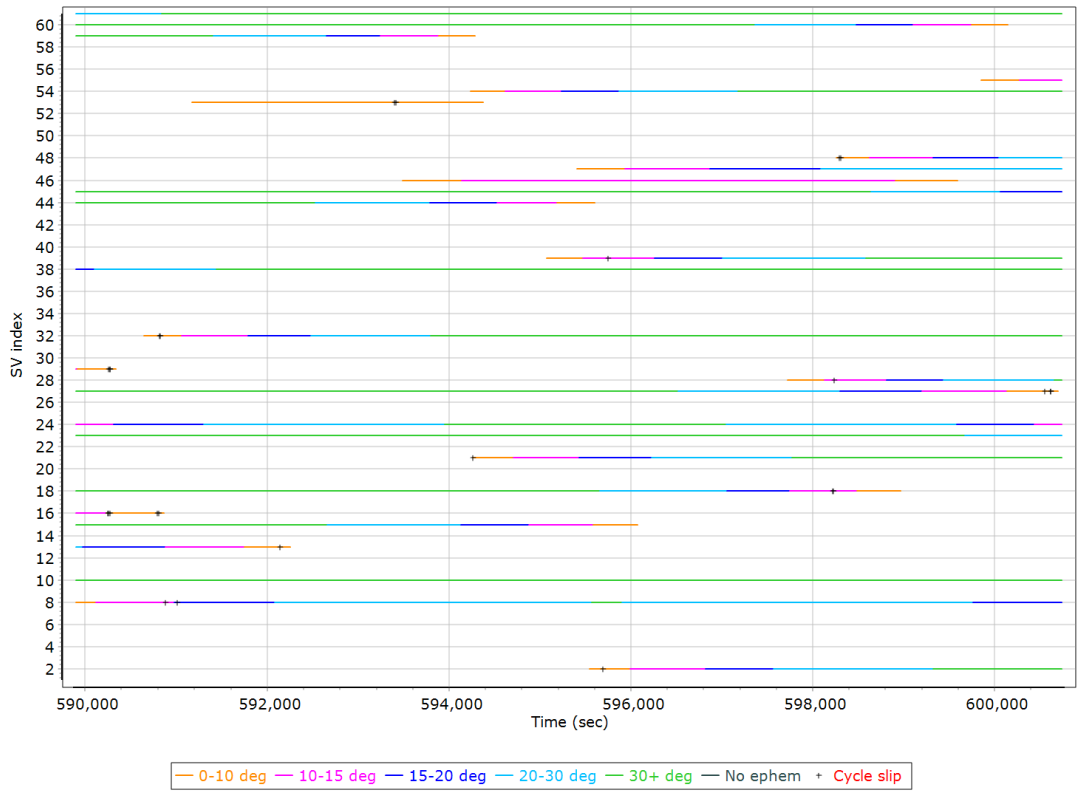
Rover Data QC

Raw IMU Import QC Summary

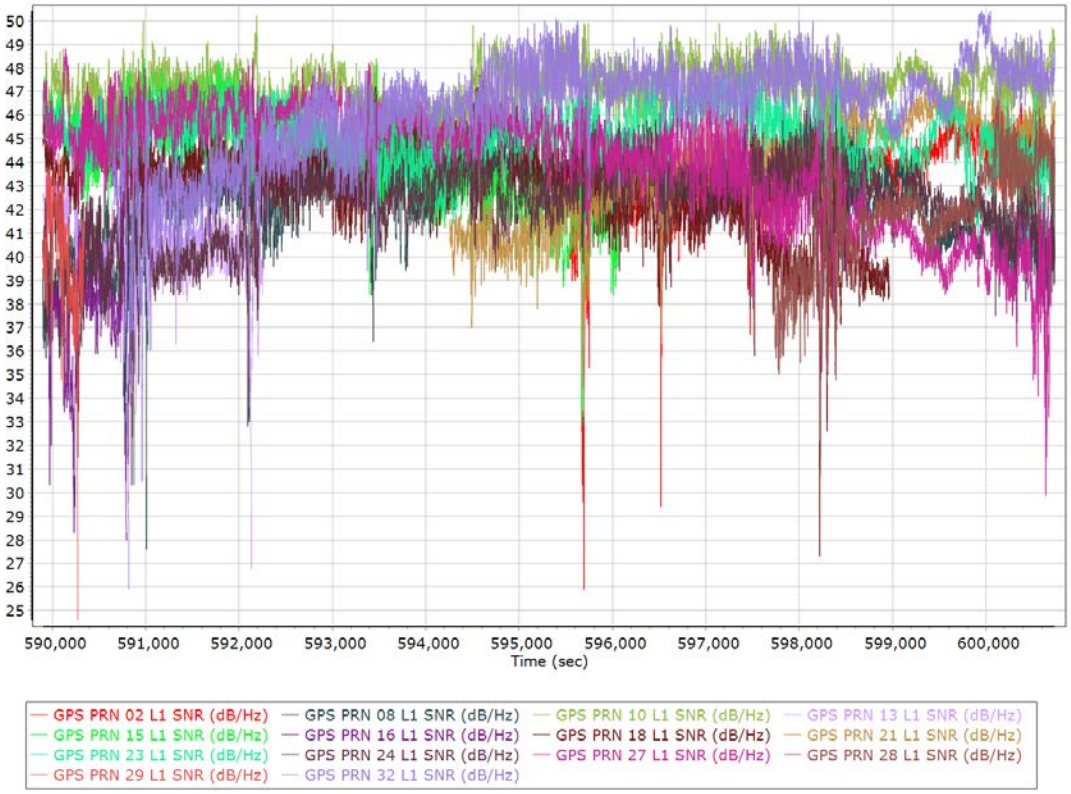
IMU data input file	imu_Mission 1.dat
IMU data check log file	imudt_07292023B_4051.log
IMU Records Processed	2167143
Termination Status	Normal
IMU Anomalies	0

Primary Observables & Satellite Data

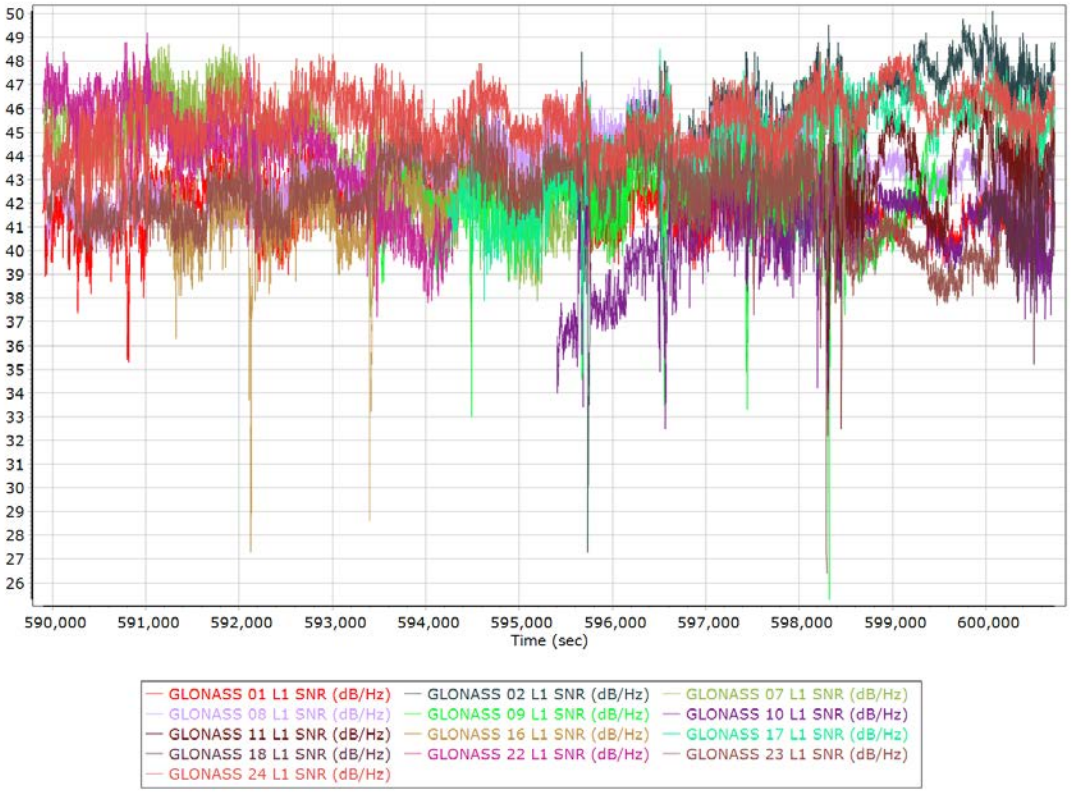
GPS/GLONASS L1 Satellite Lock/Elevation



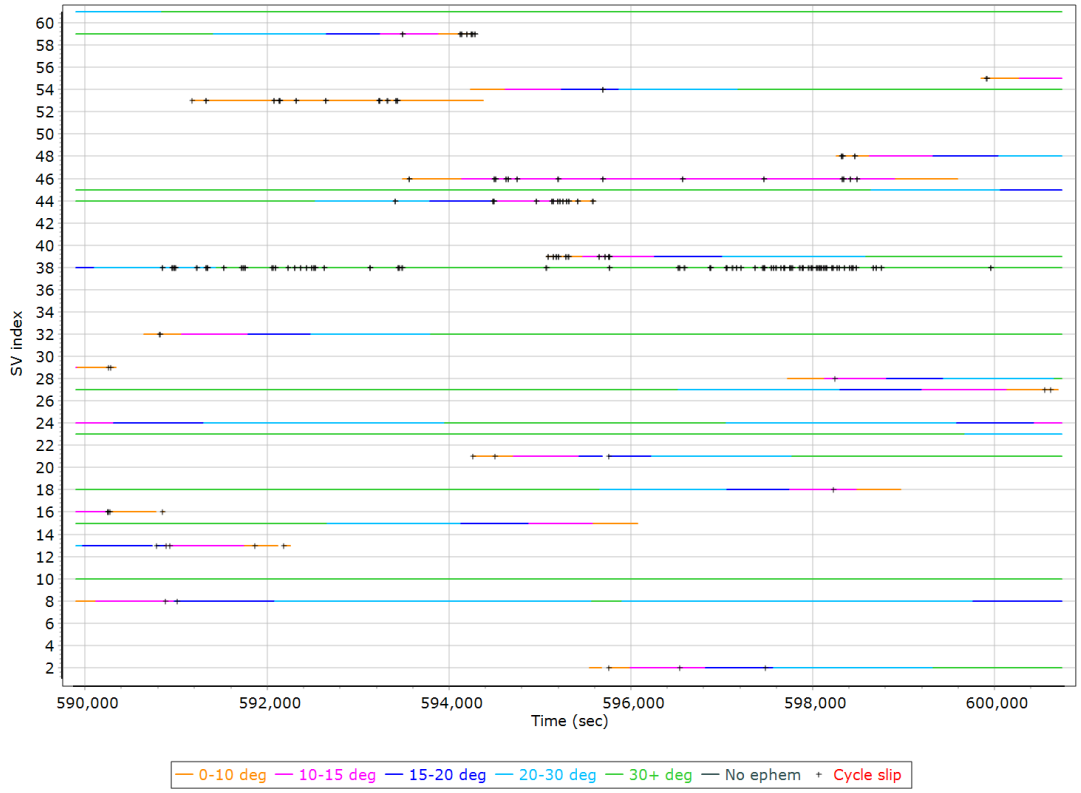
GPS L1 SNR



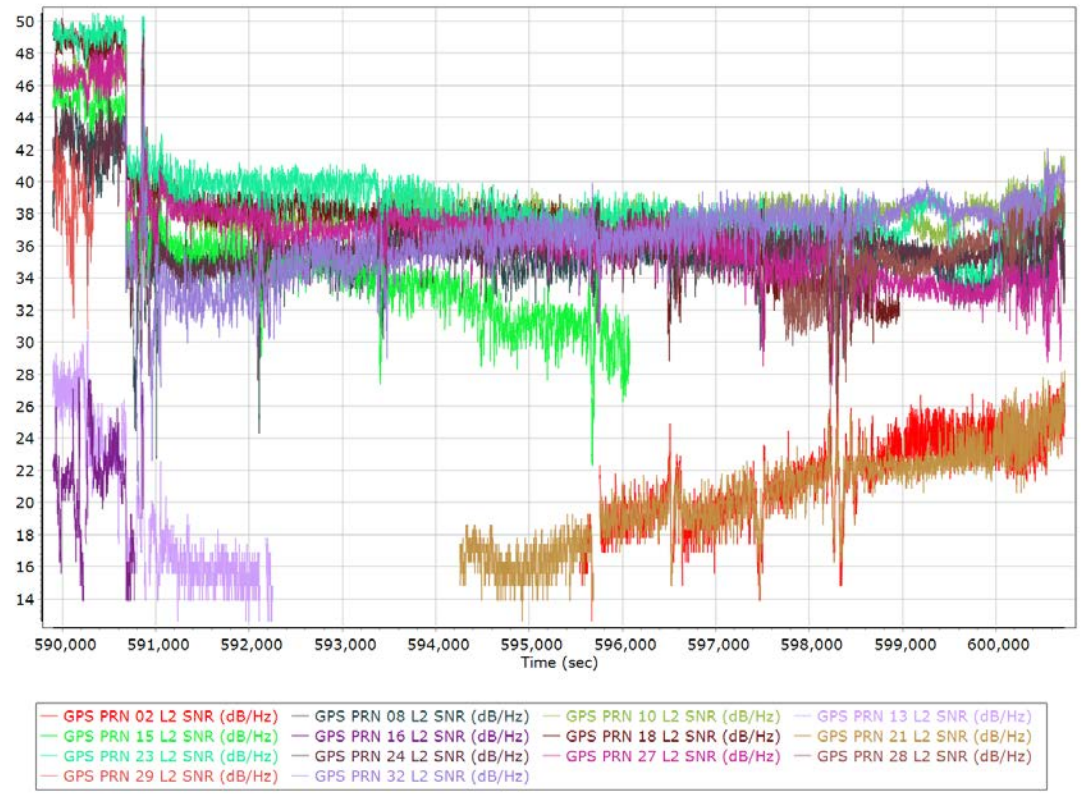
GLONASS L1 SNR



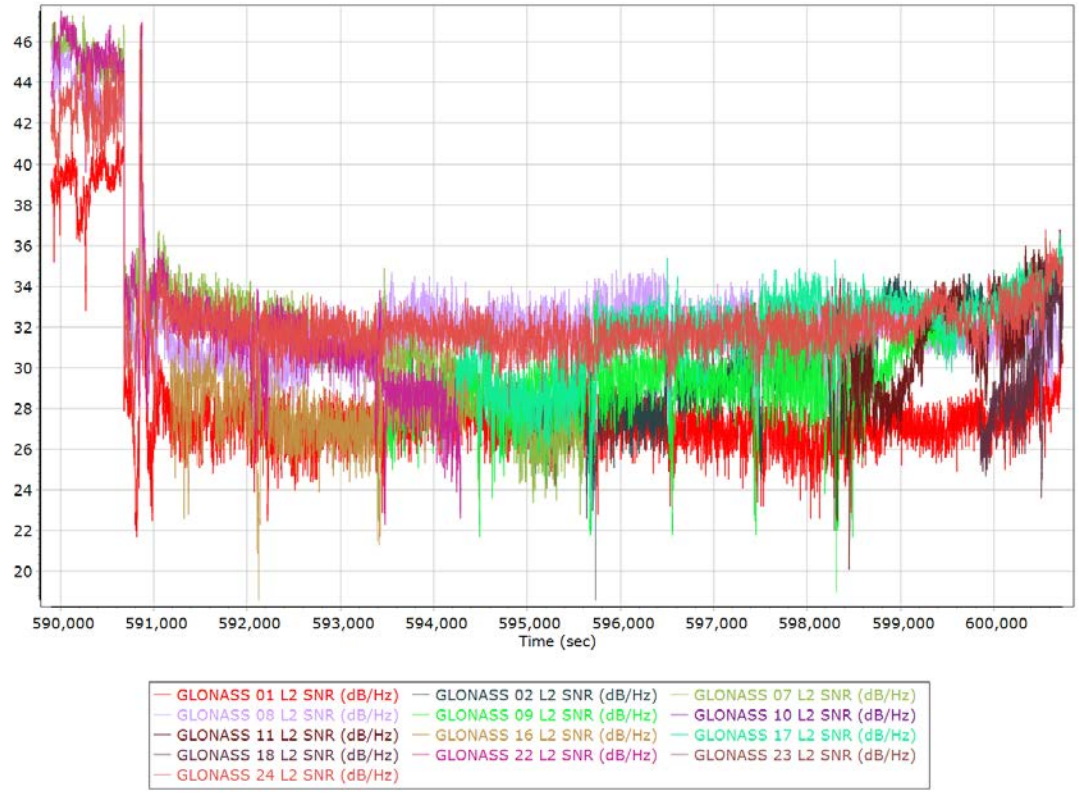
GPS/GLONASS L2 Satellite Lock/Elevation



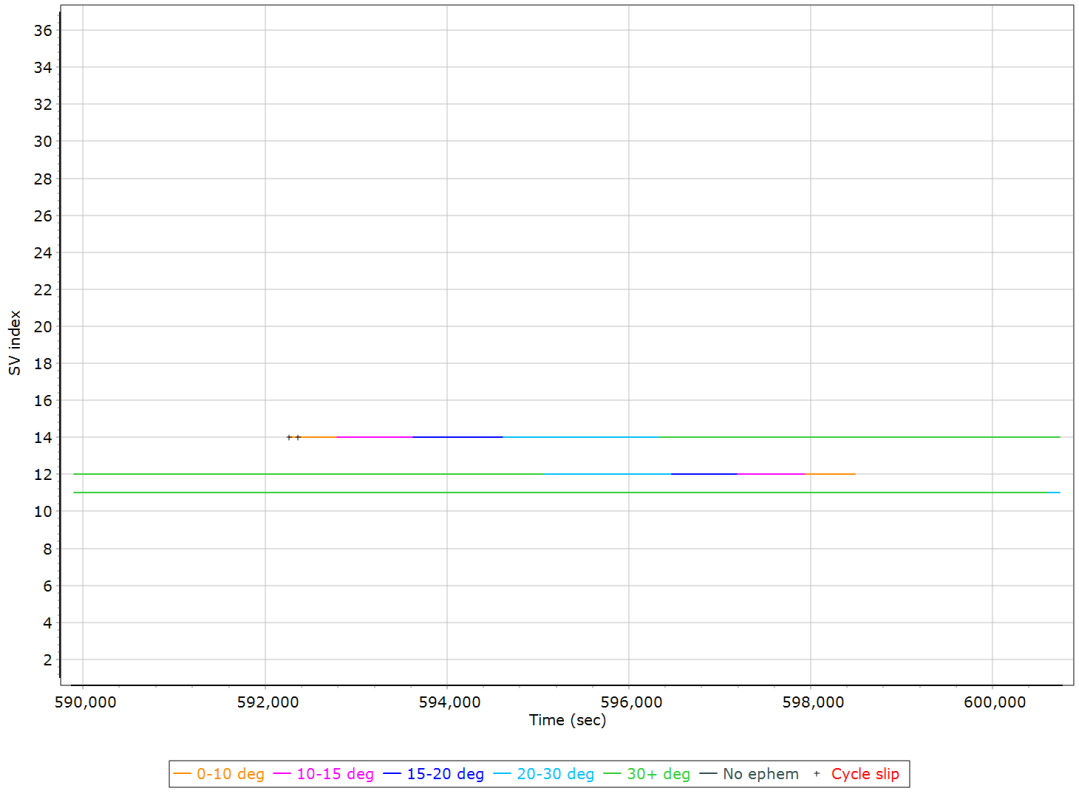
GPS L2 SNR



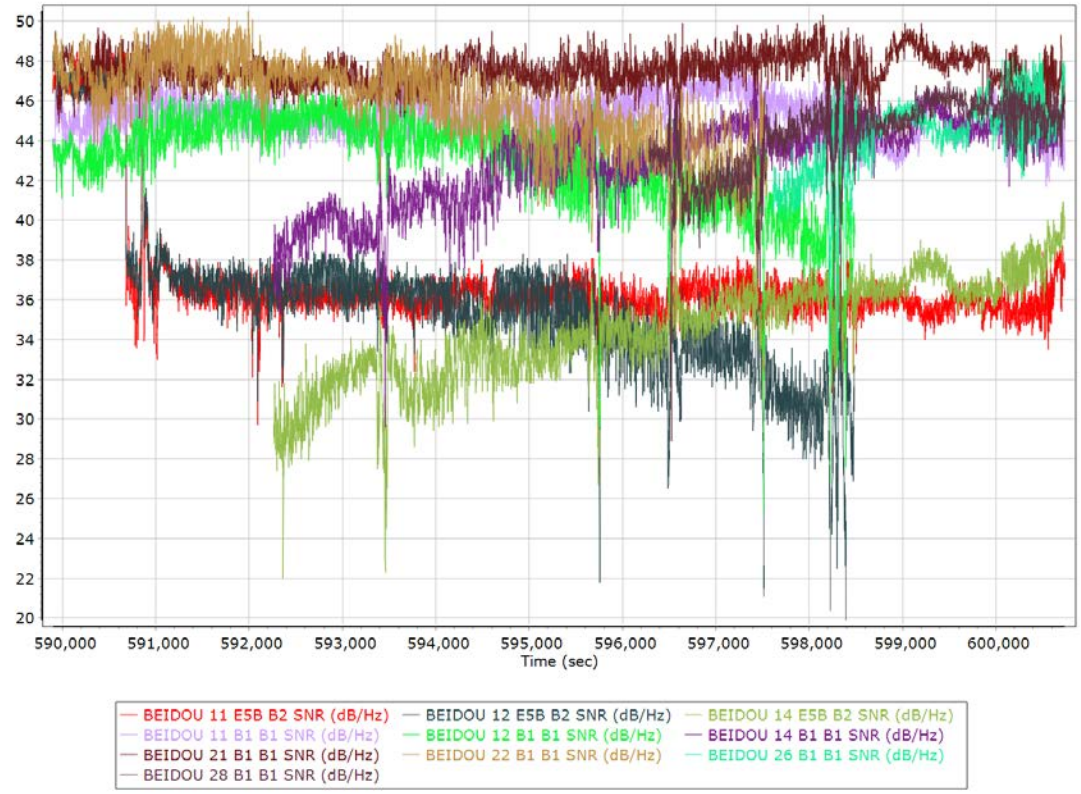
GLONASS L2 SNR



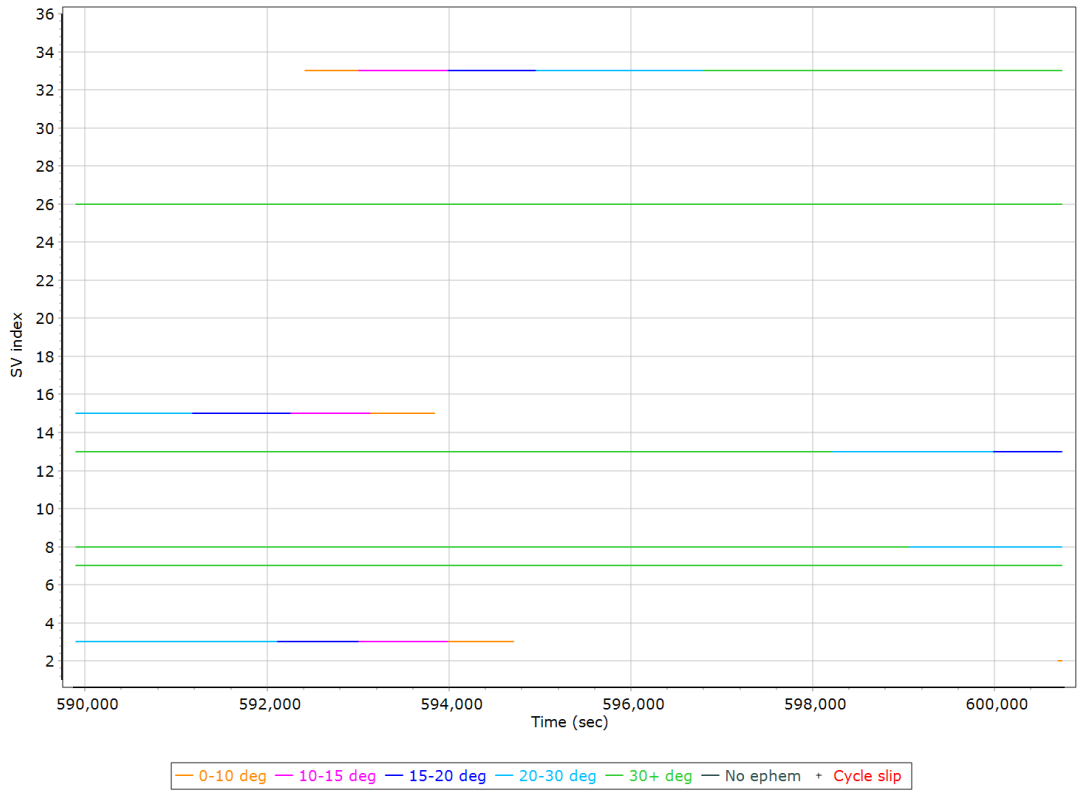
BEIDOU Satellite Lock/Elevation



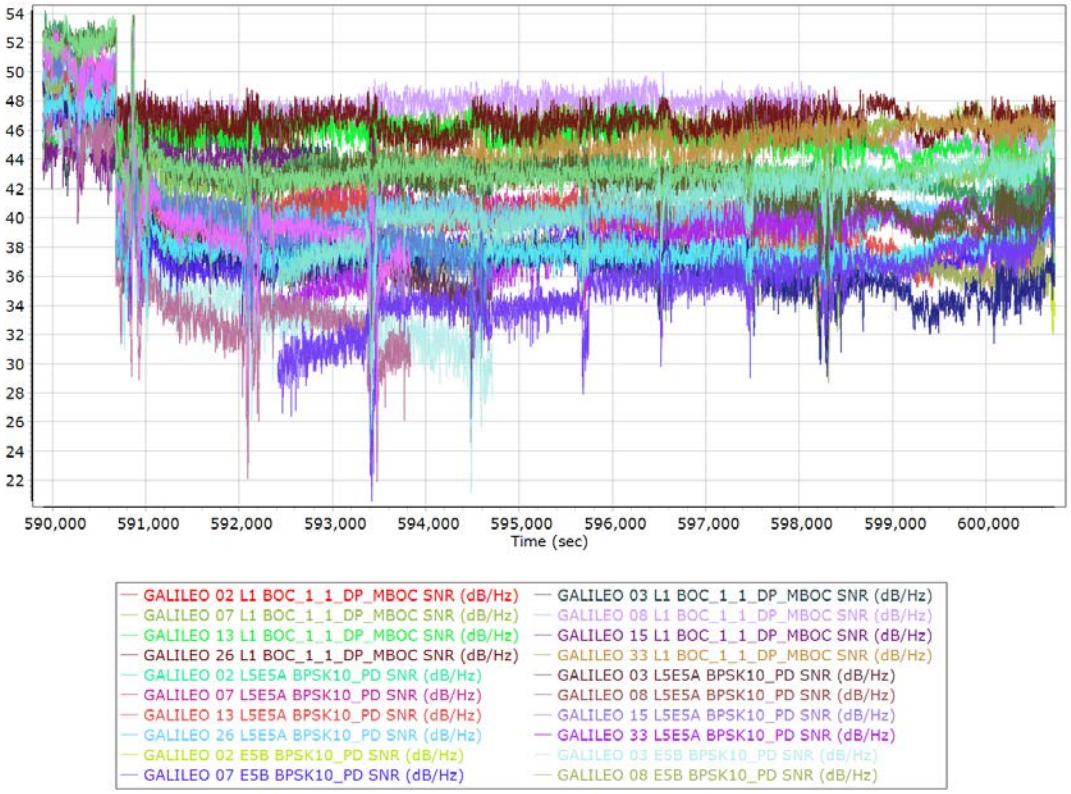
BEIDOU SNR



GALILEO Satellite Lock/Elevation

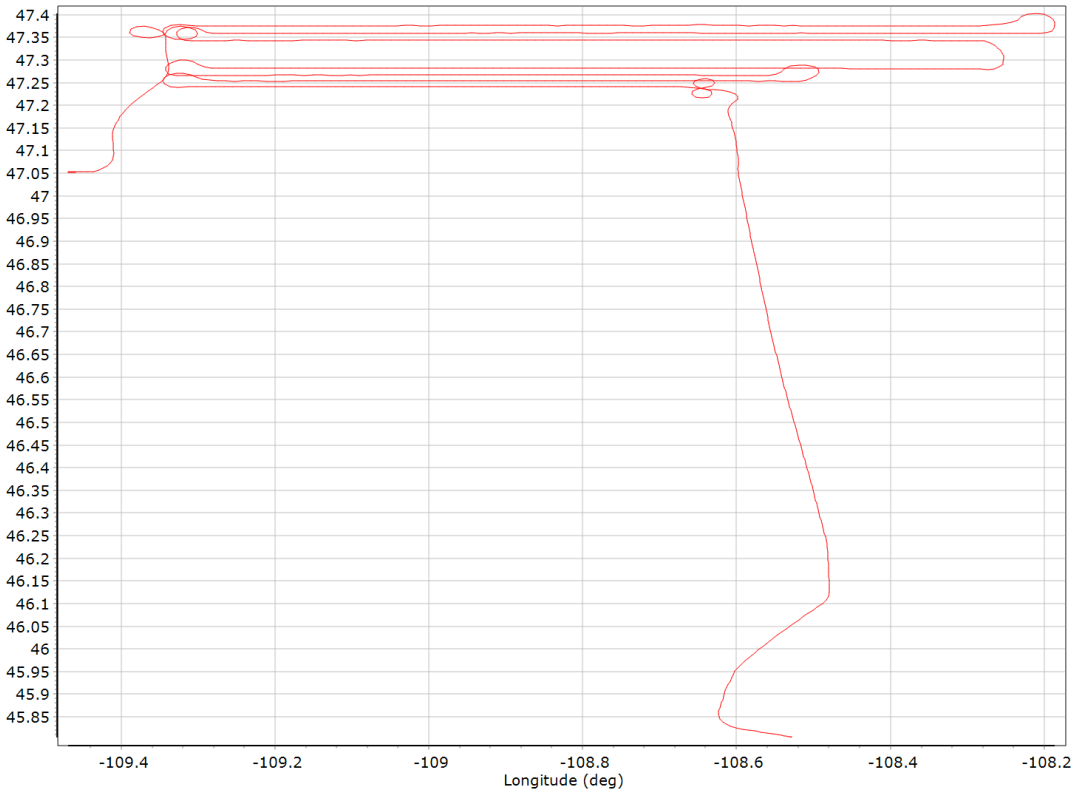


GALILEO SNR

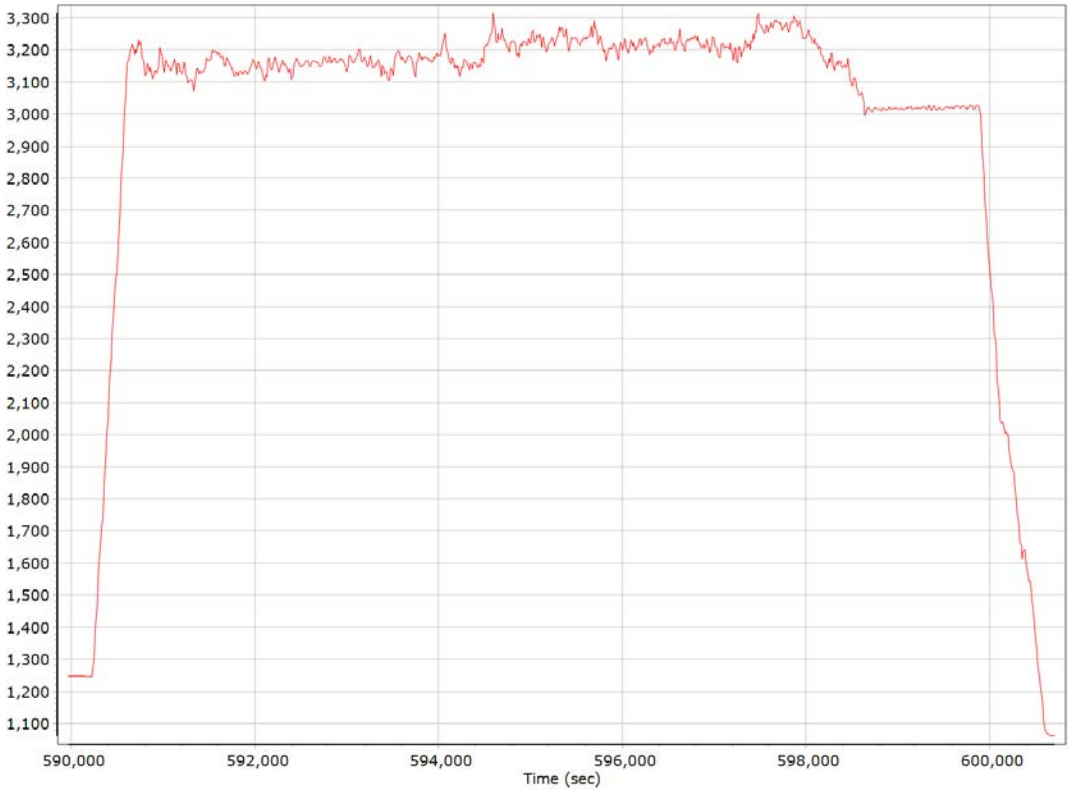

54
52
50
48
46
44
42
40
38
36
34
32
30
28
26
24
22
590,000
591,000
592,000
593,000
594,000
595,000
596,000
597,000
598,000
599,000
600,000
Time (sec)
GALILEO 02 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 03 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 07 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 08 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 13 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 15 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 26 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 33 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 02 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 03 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 07 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 08 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 13 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 15 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 26 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 33 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 02 E5B BPSK10_PD SNR (dB/Hz)
GALILEO 03 E5B BPSK10_PD SNR (dB/Hz)
GALILEO 07 E5B BPSK10_PD SNR (dB/Hz)
GALILEO 08 E5B BPSK10_PD SNR (dB/Hz)

Smoothed Trajectory Information

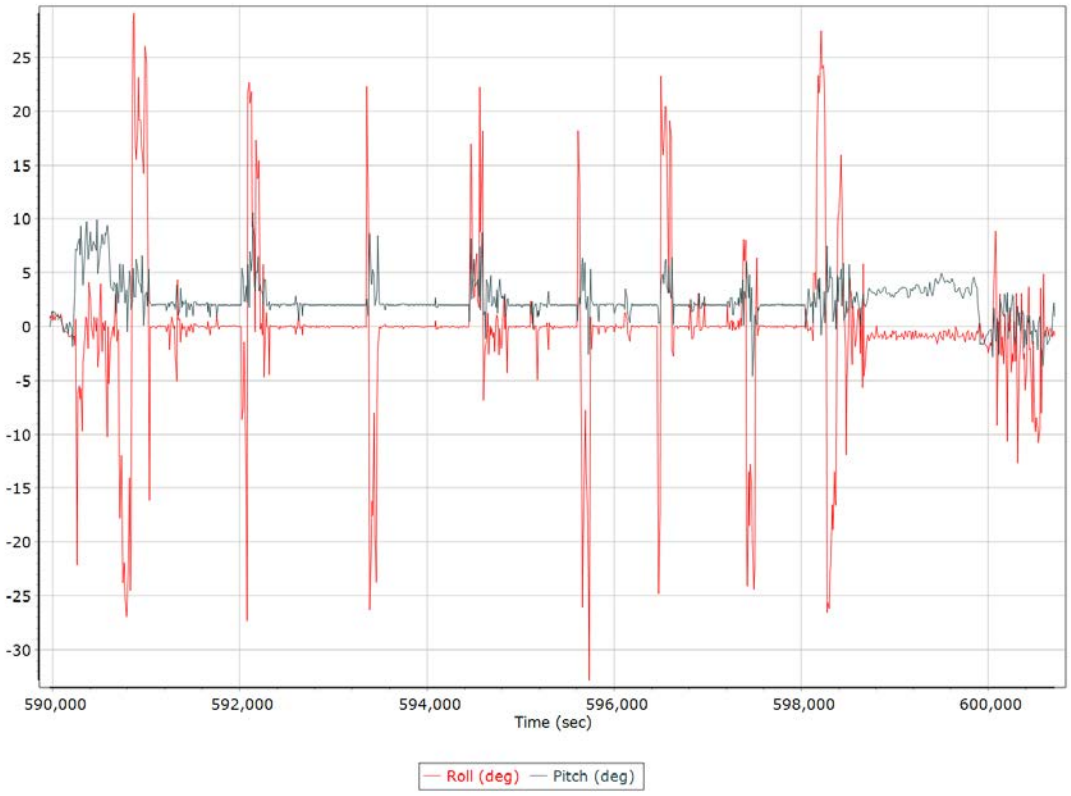
Top View



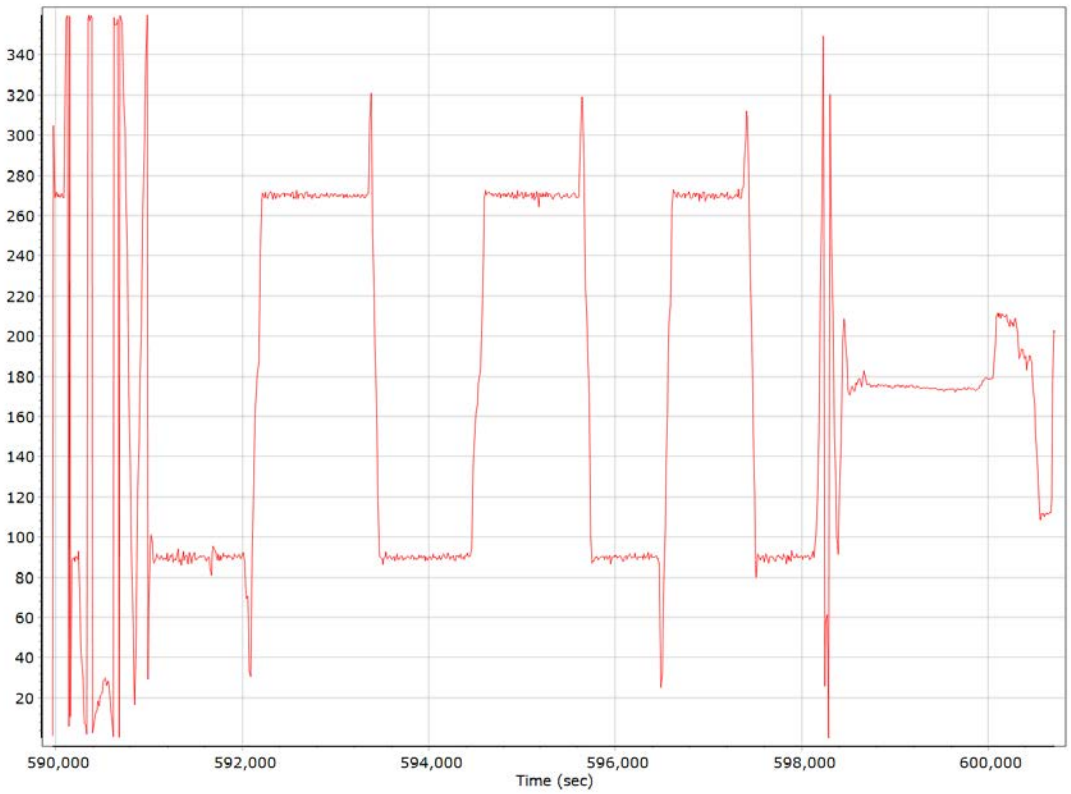
Altitude



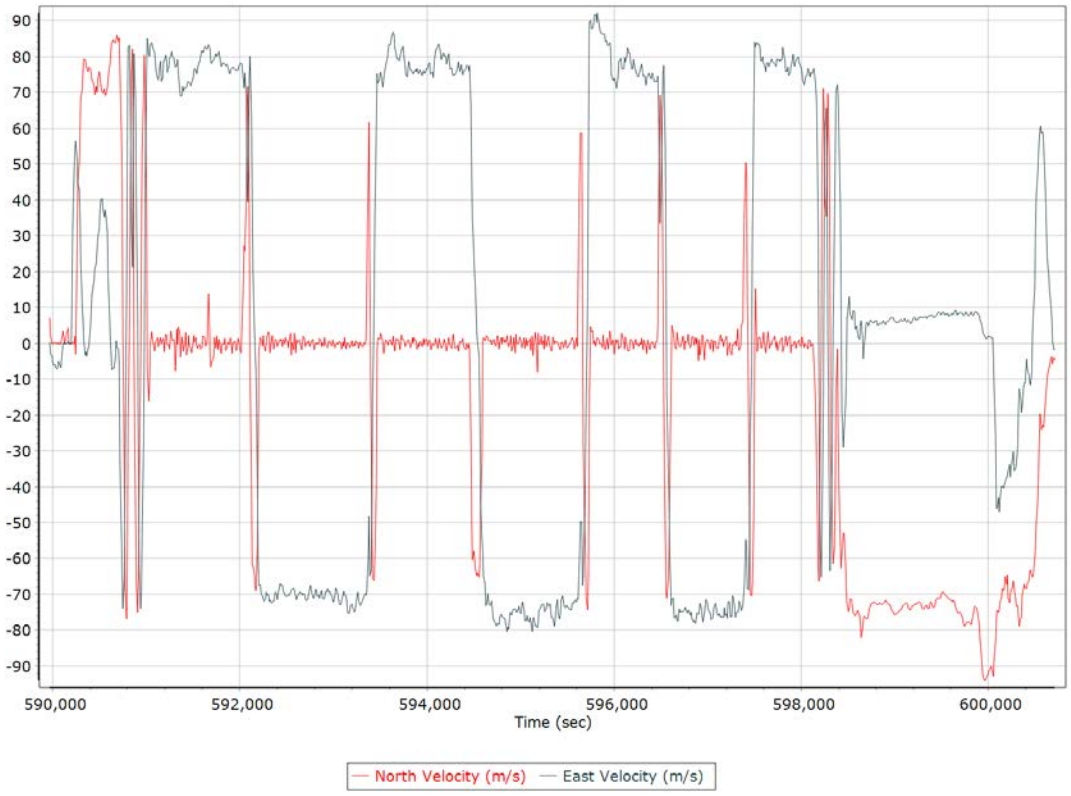
Roll/Pitch



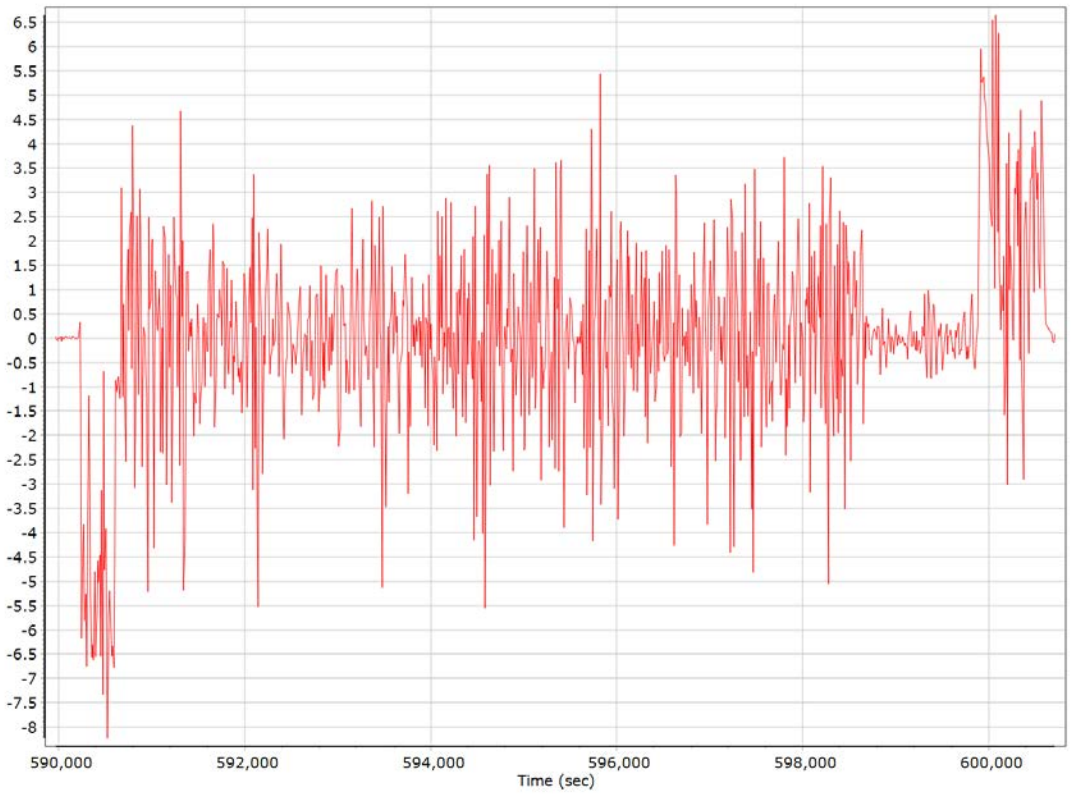
Heading



North/East Velocity



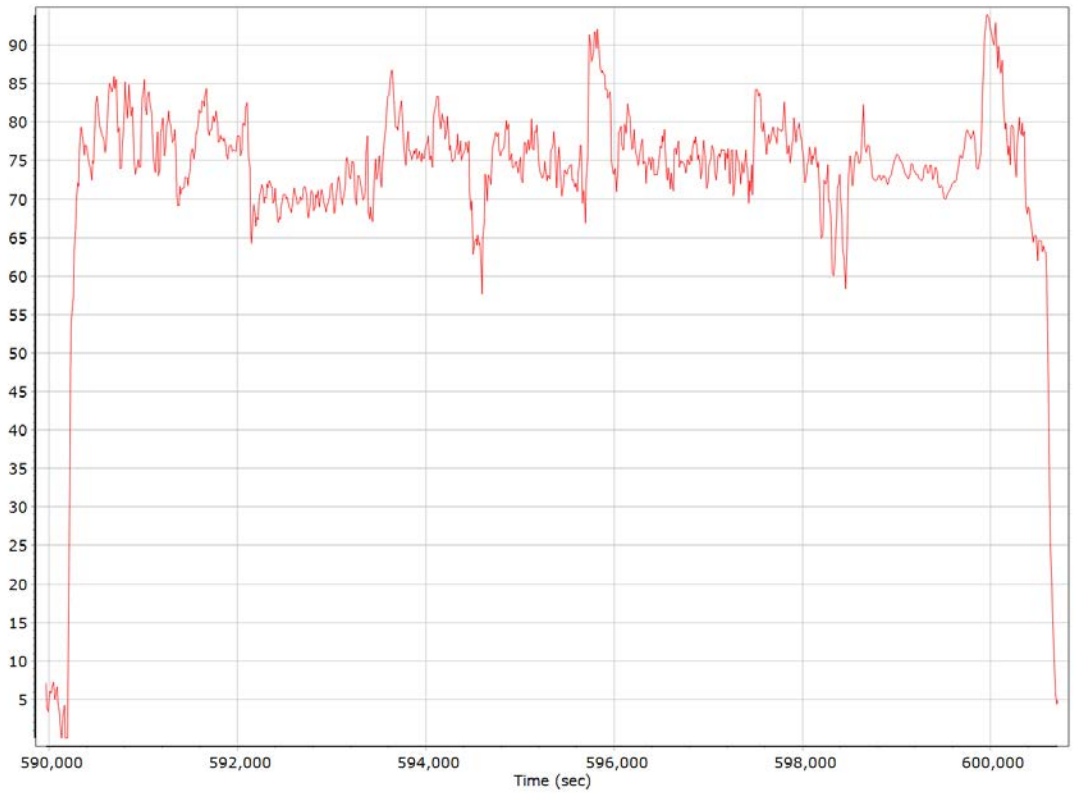
Down Velocity



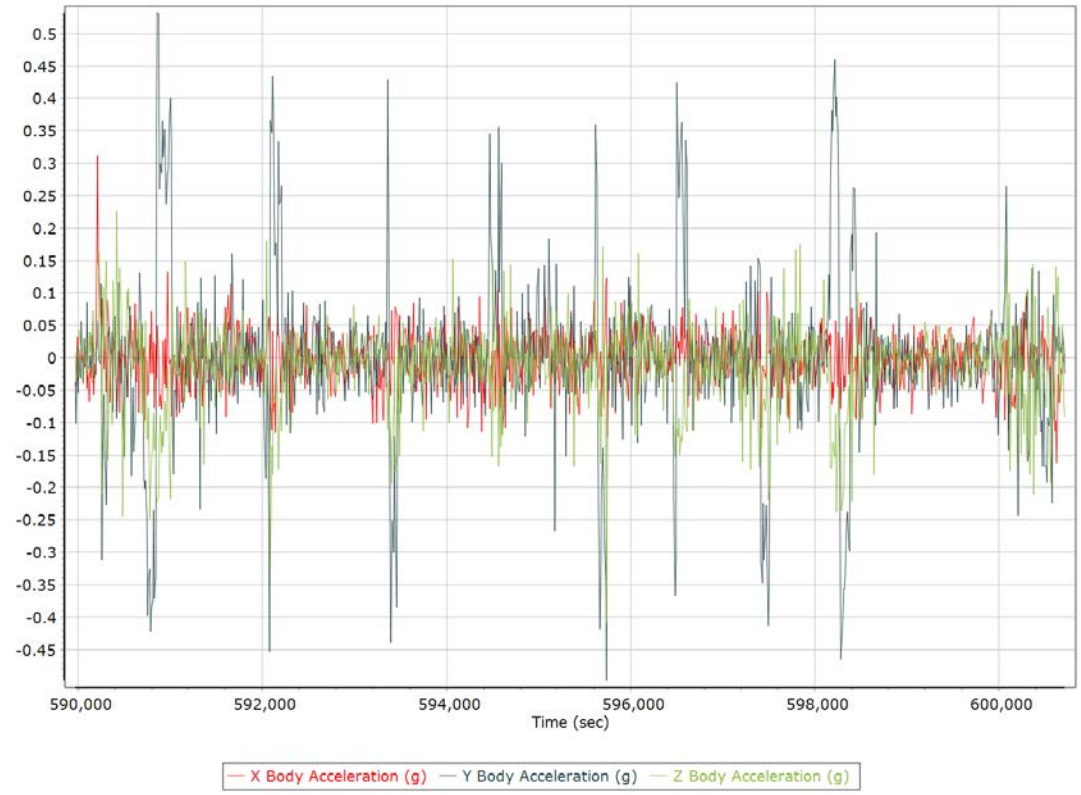
Total Speed



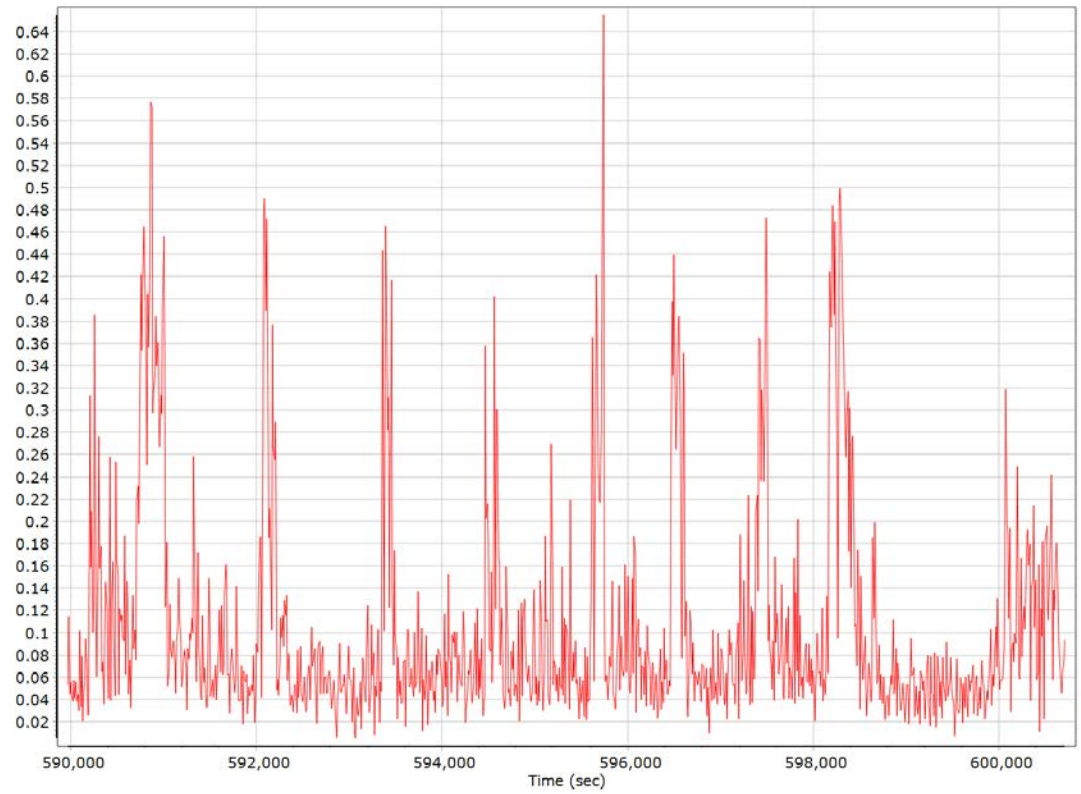
Ground Speed



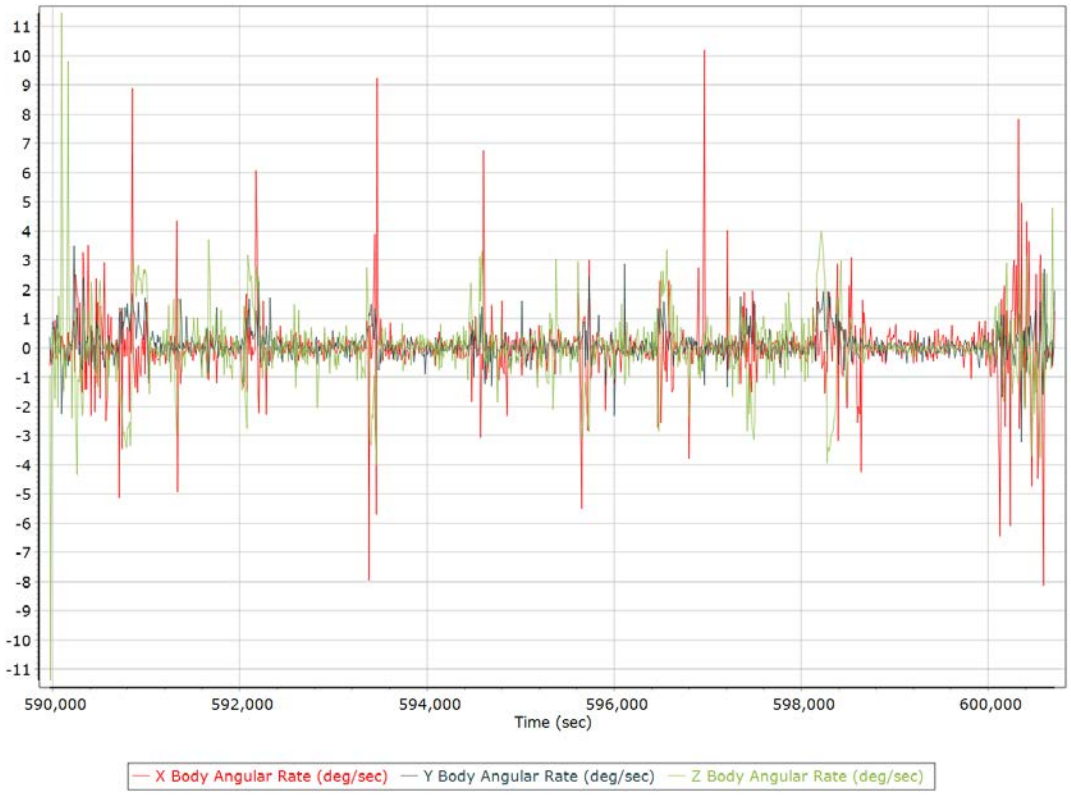
Body Acceleration



Total Body Acceleration

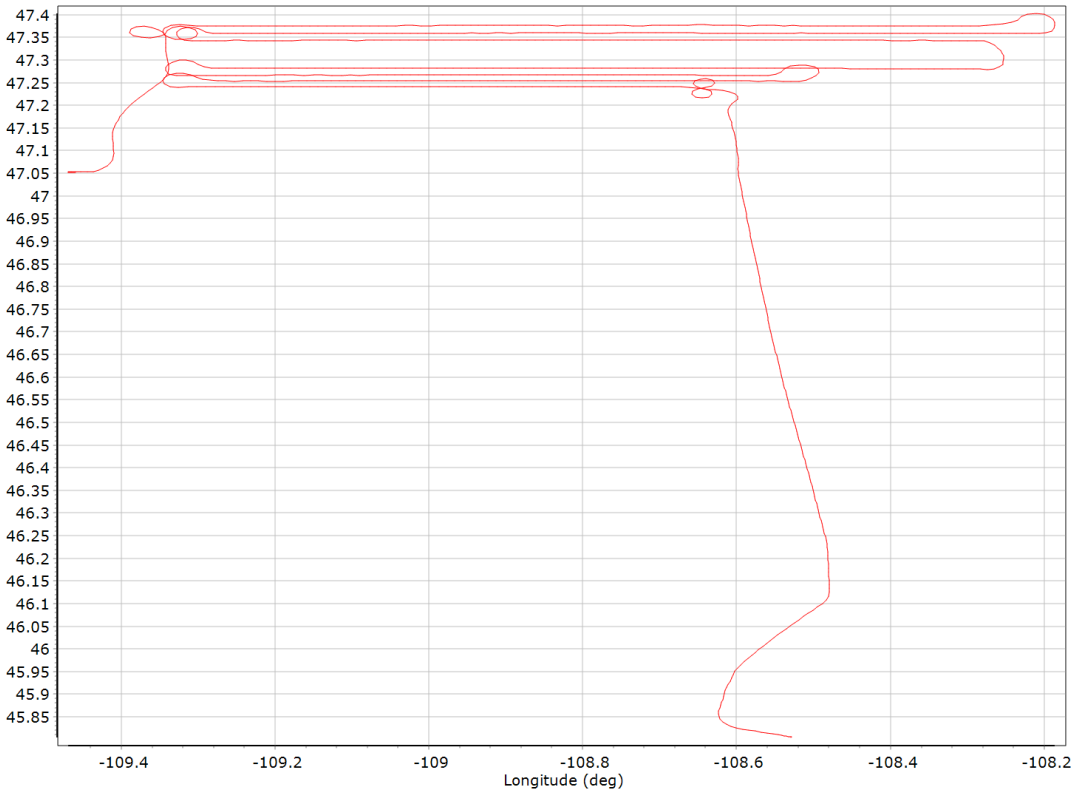


Body Angular Rate

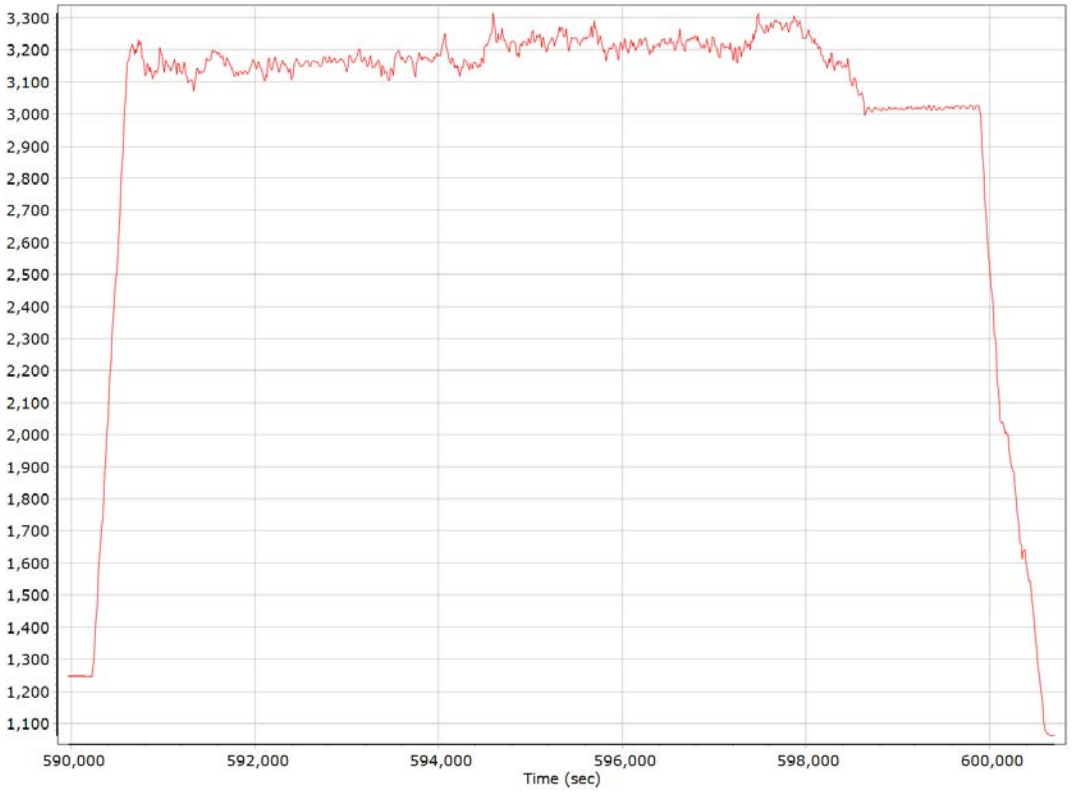


Forward Processed Trajectory Information

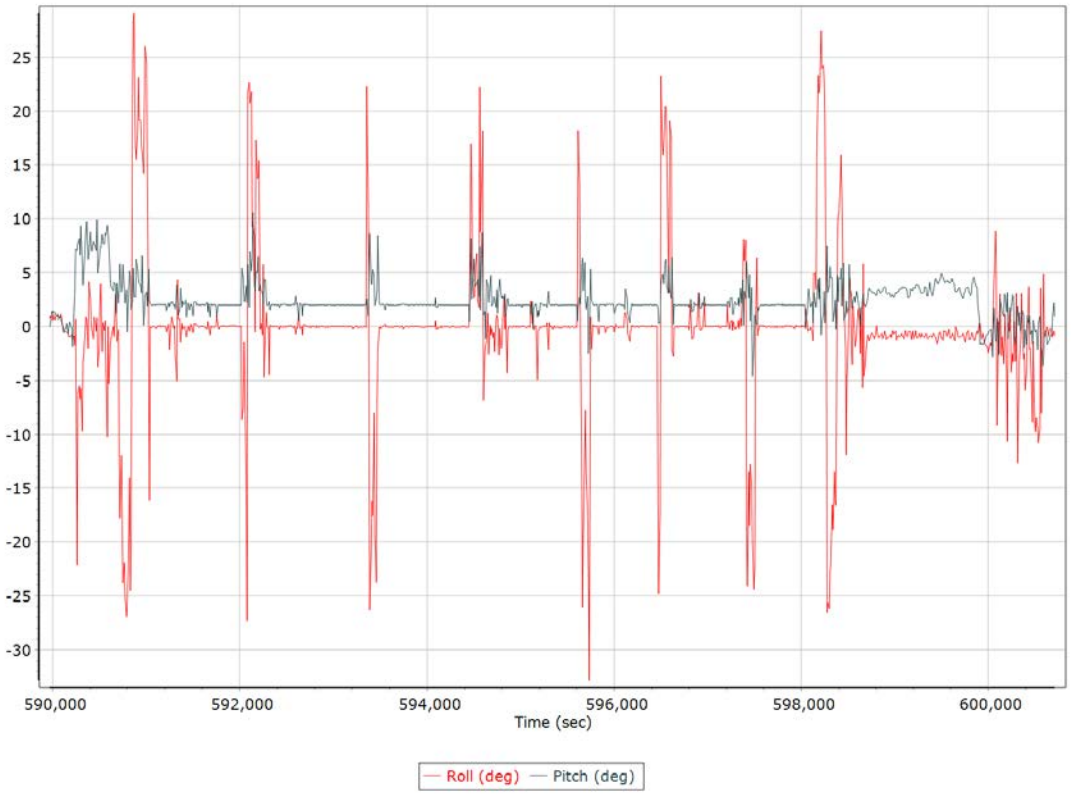
Top View



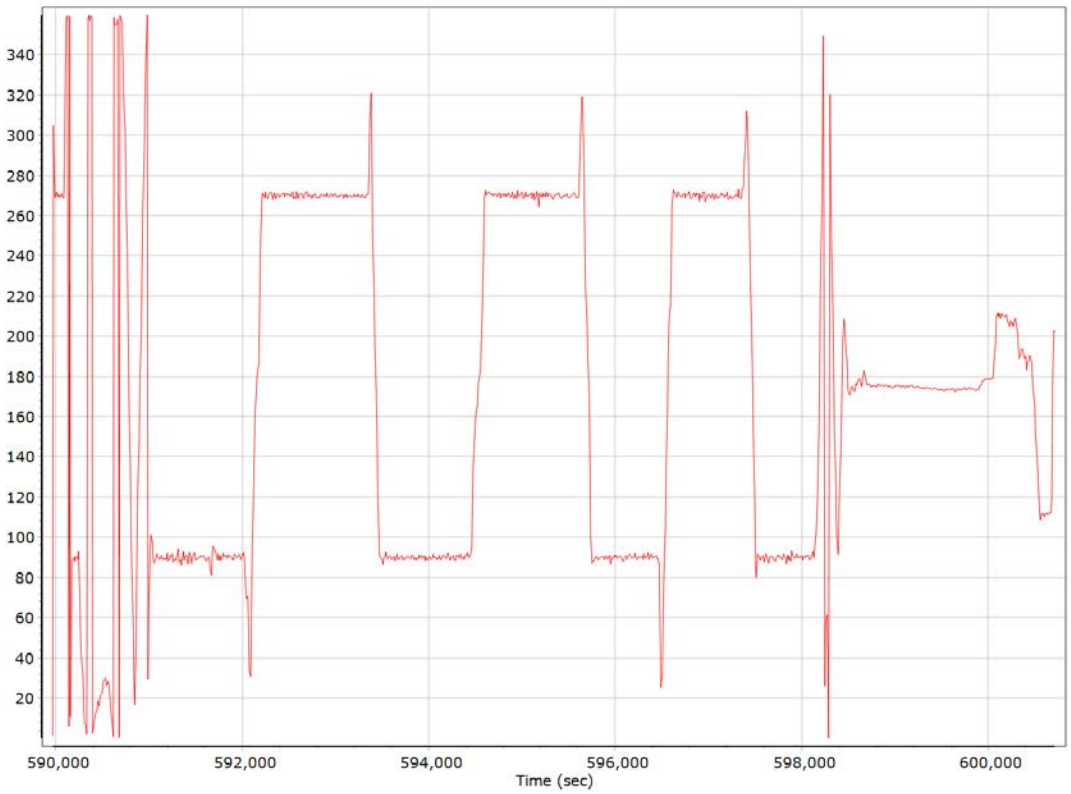
Altitude



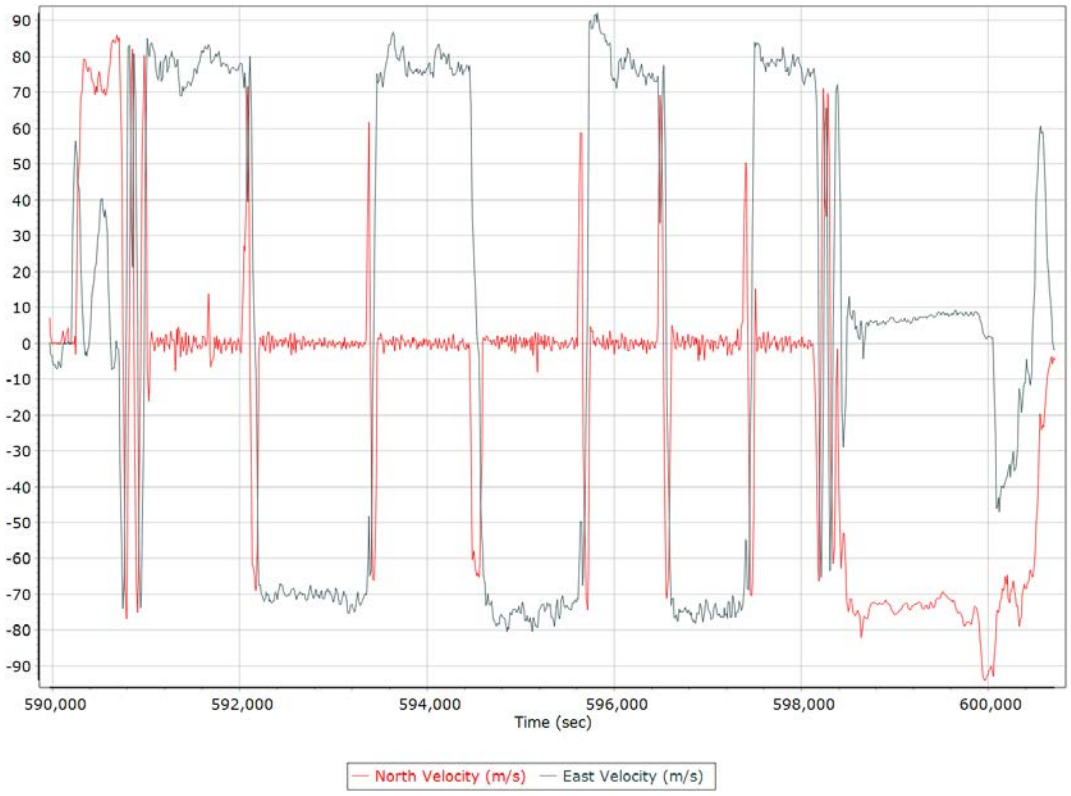
Roll/Pitch



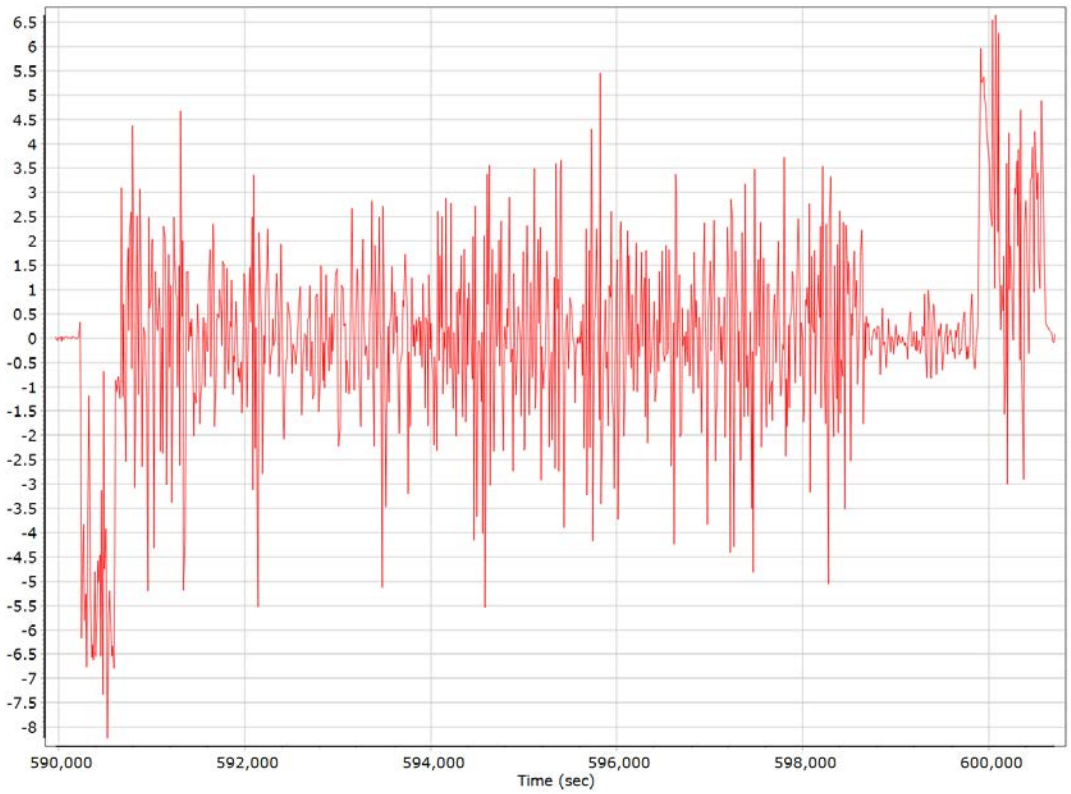
Heading



North/East Velocity



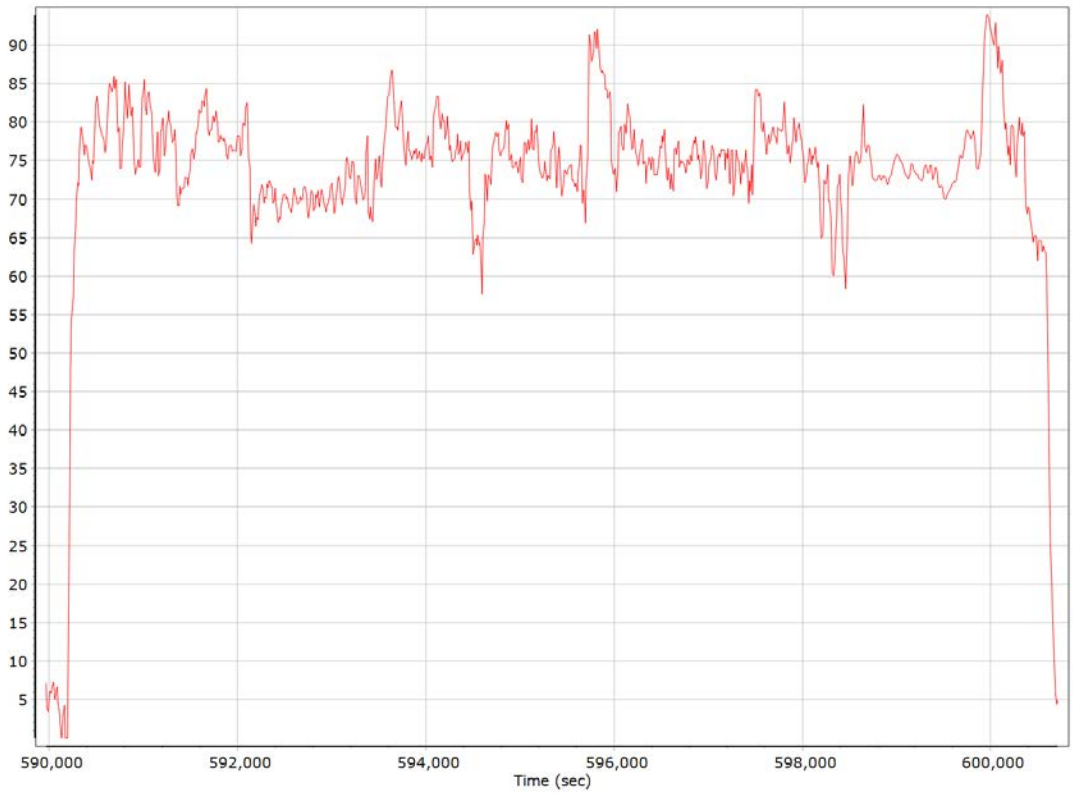
Down Velocity



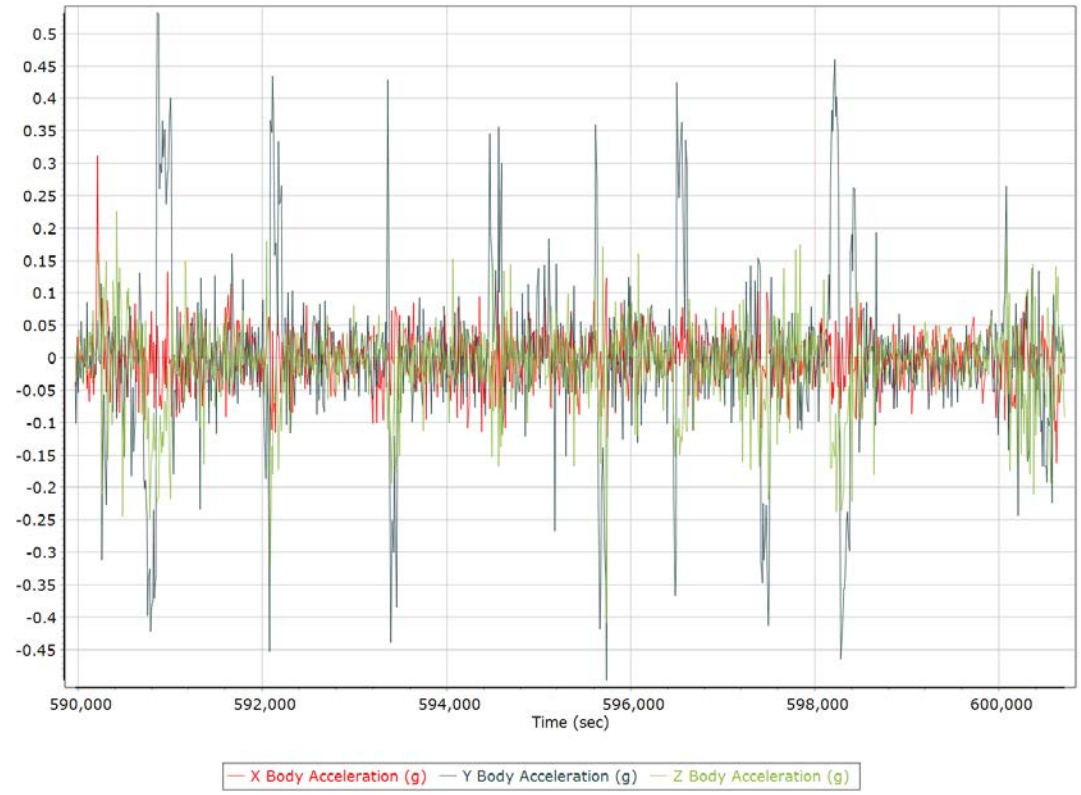
Total Speed



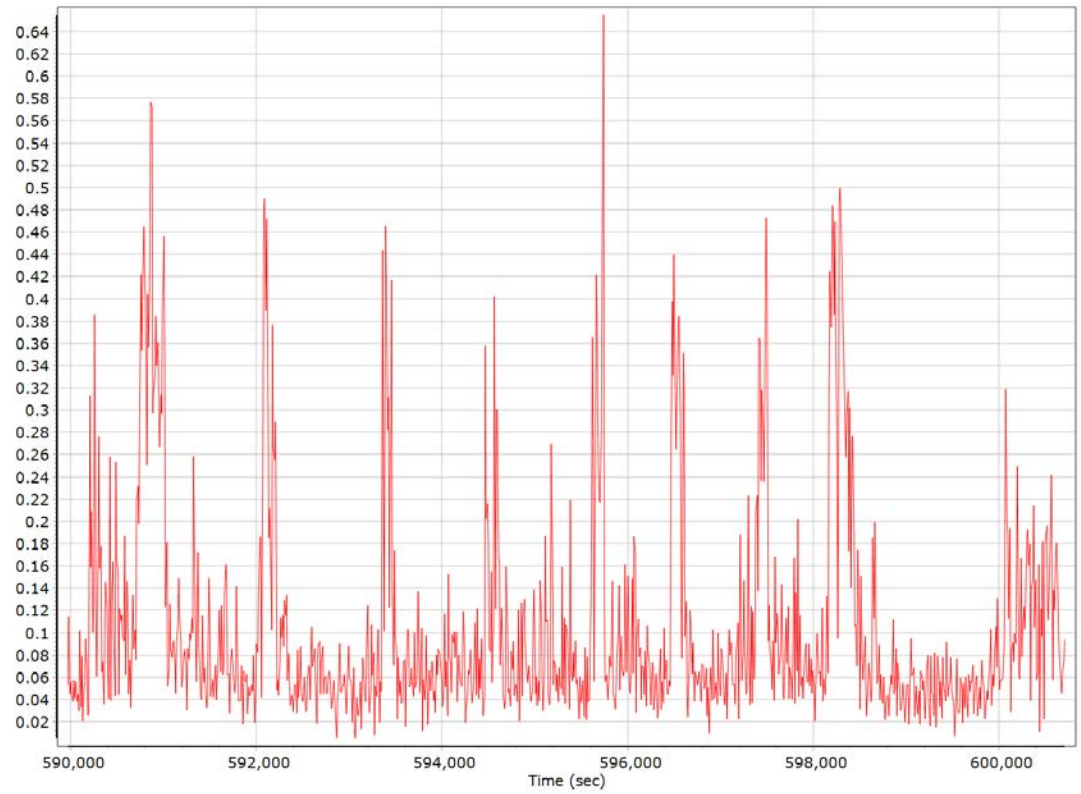
Ground Speed



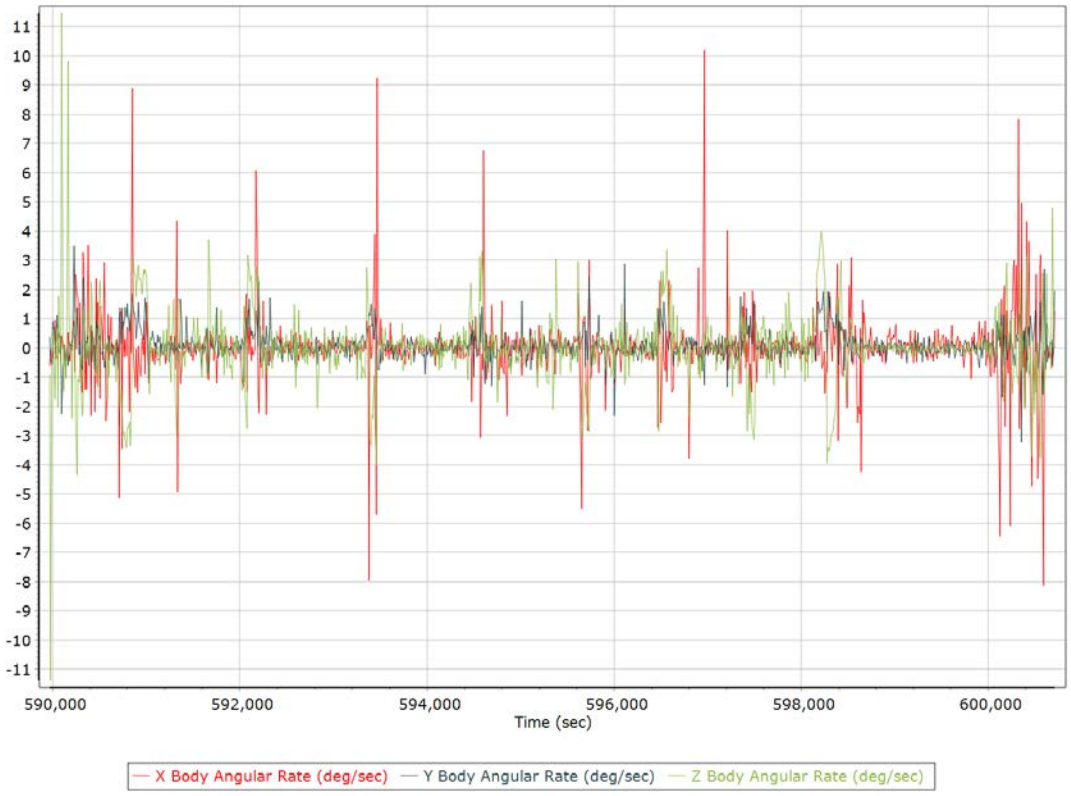
Body Acceleration



Total Body Acceleration



Body Angular Rate

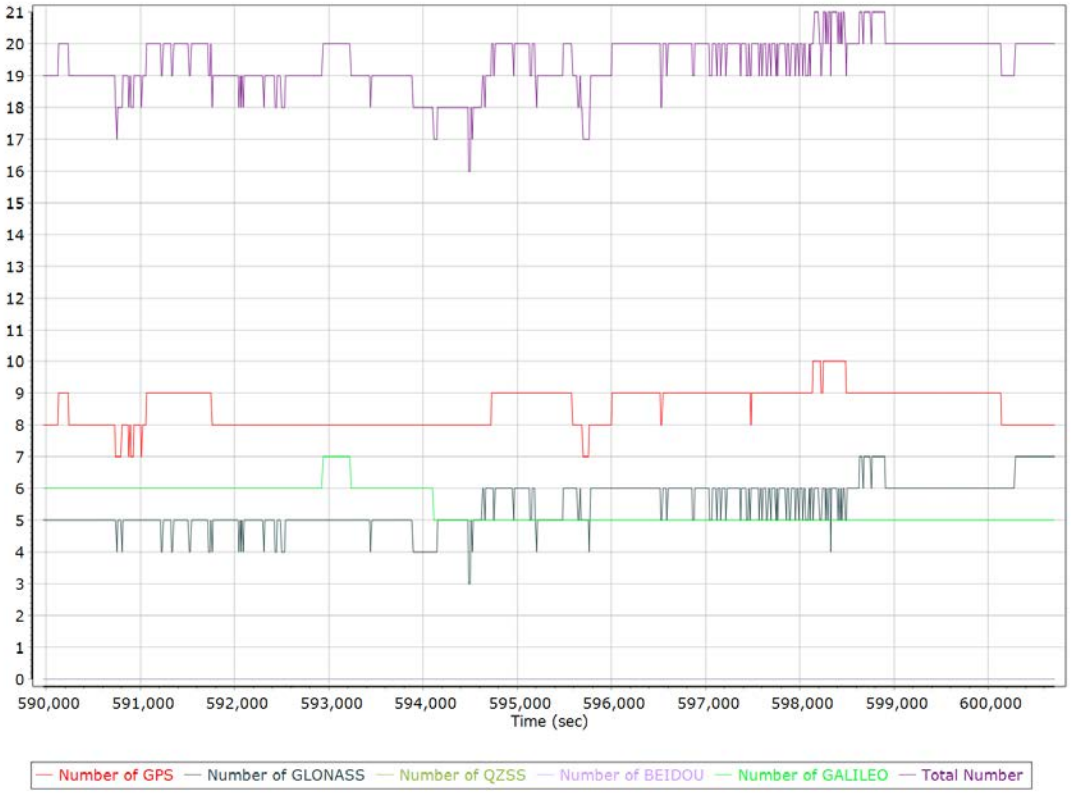


GNSS QC

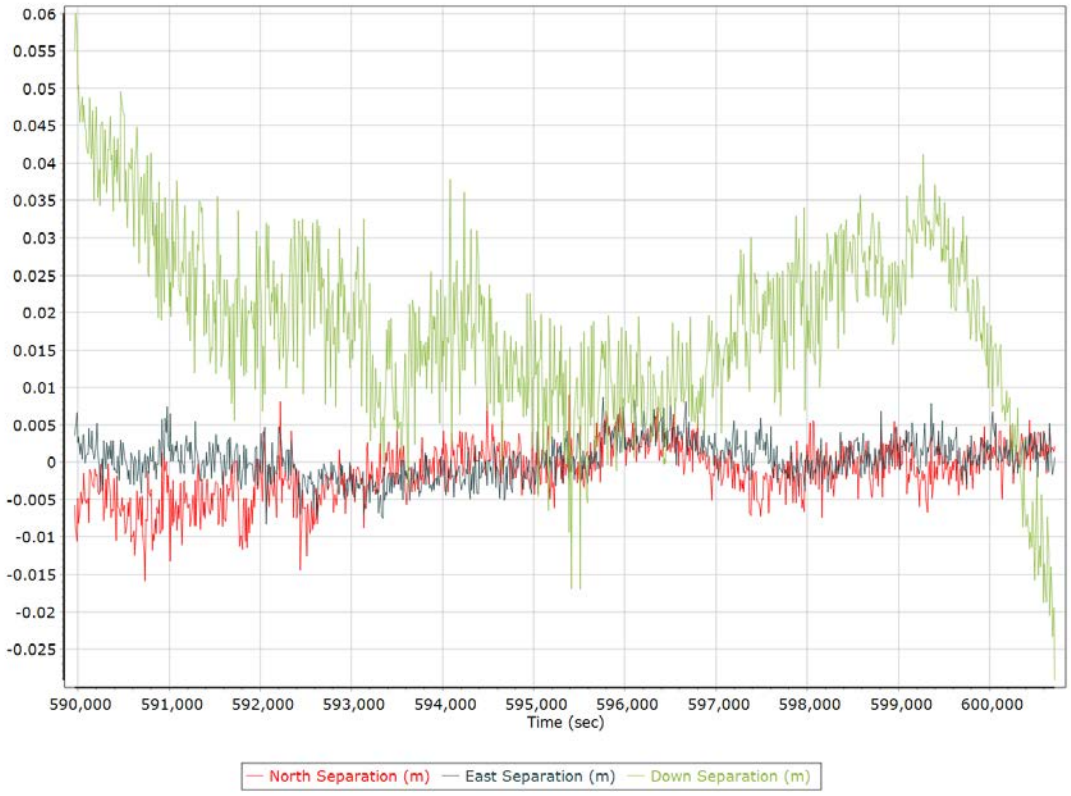
GNSS QC Statistics

Statistics	Min	Max	Mean
Baseline length (km)	0.00	0.00	
Number of GPS SV	5	10	9
Number of GLONASS SV	3	7	5
Number of QZSS SV	0	0	0
Number of BEIDOU SV	0	0	0
Number of GALILEO SV	3	7	5
Total number of SV	12	21	19
PDOP	1.07	2.24	1.19
QC Solution Gaps	0.00	0.00	
Solution Type	Fixed	Float	No solution
Epoch (sec)	10803.00	0.00	0.00
Percentage	100.00	0.00	0.00

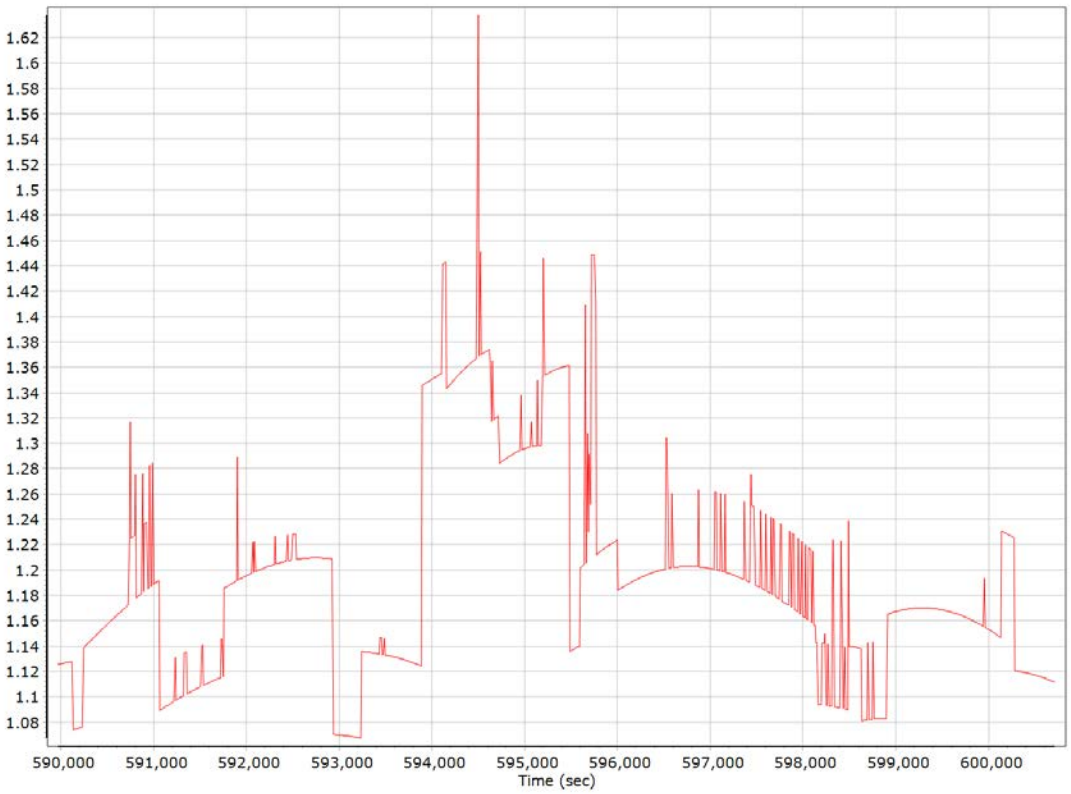
Num SVs in solution



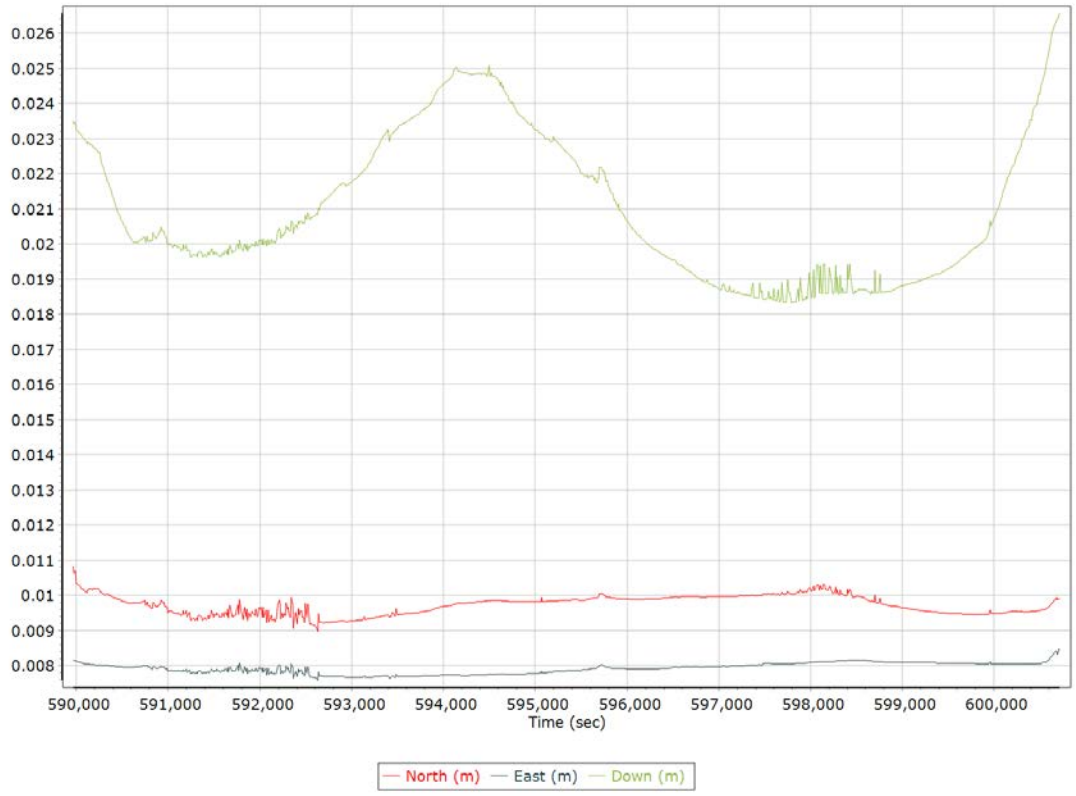
Forward/Reverse Separation



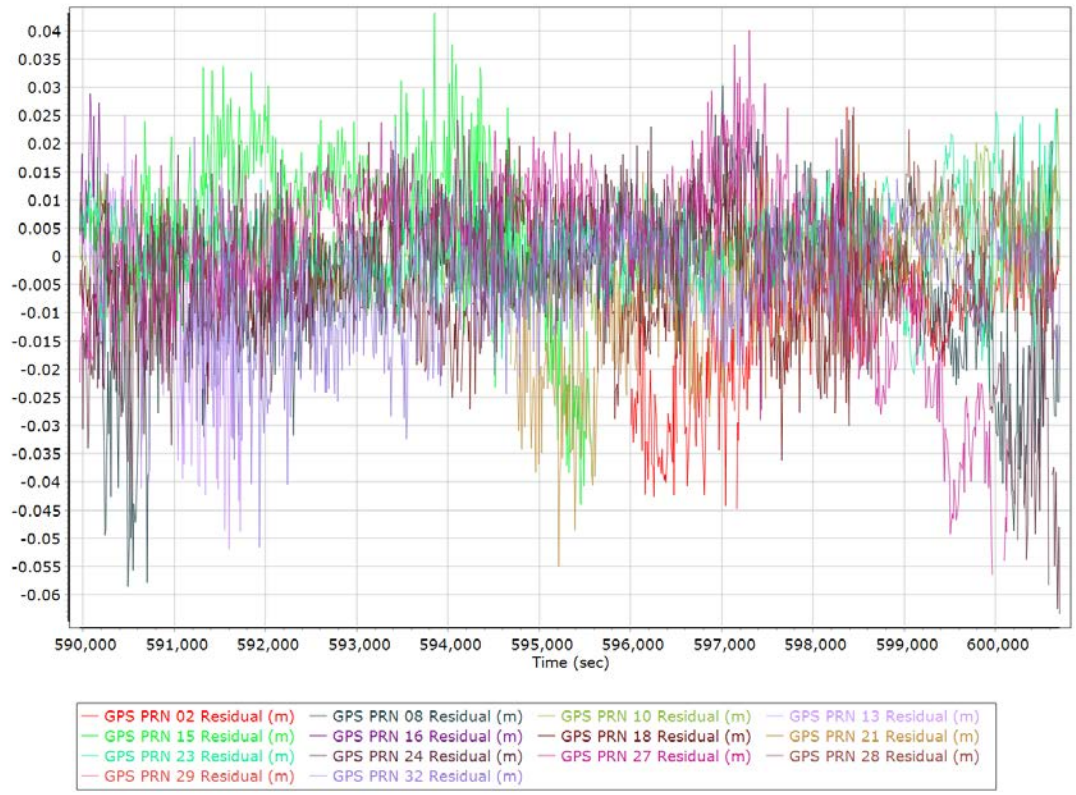
PDOP



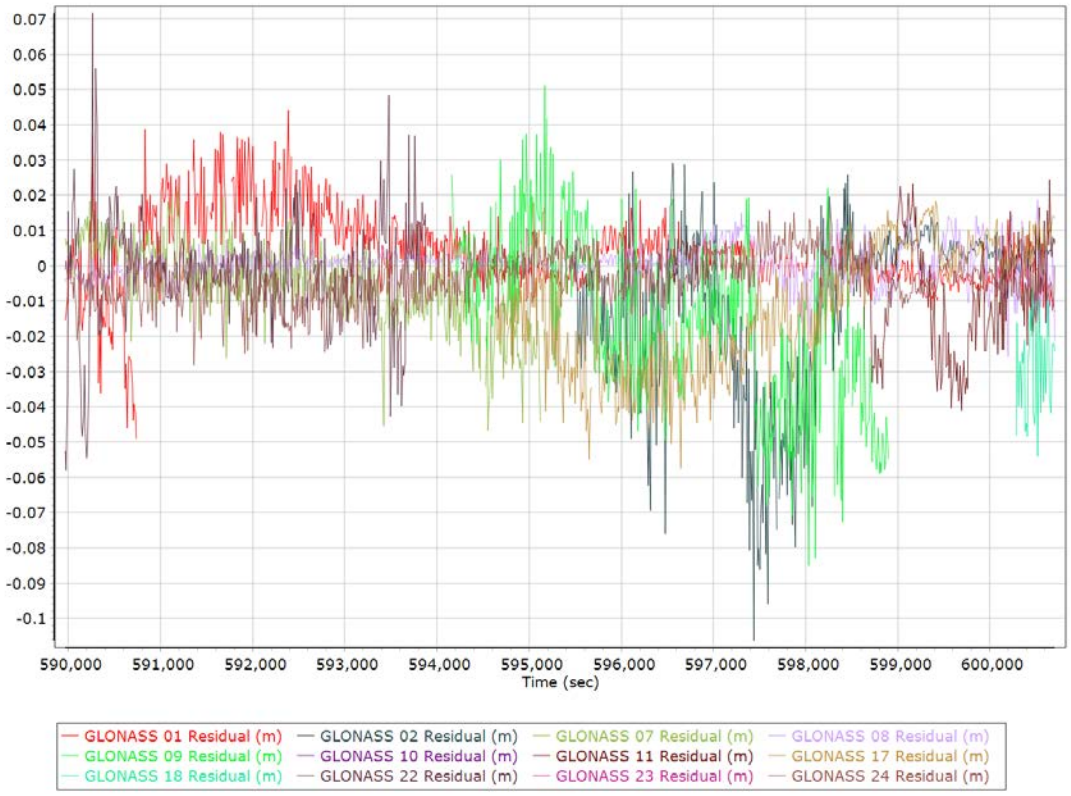
Estimated Position Accuracy



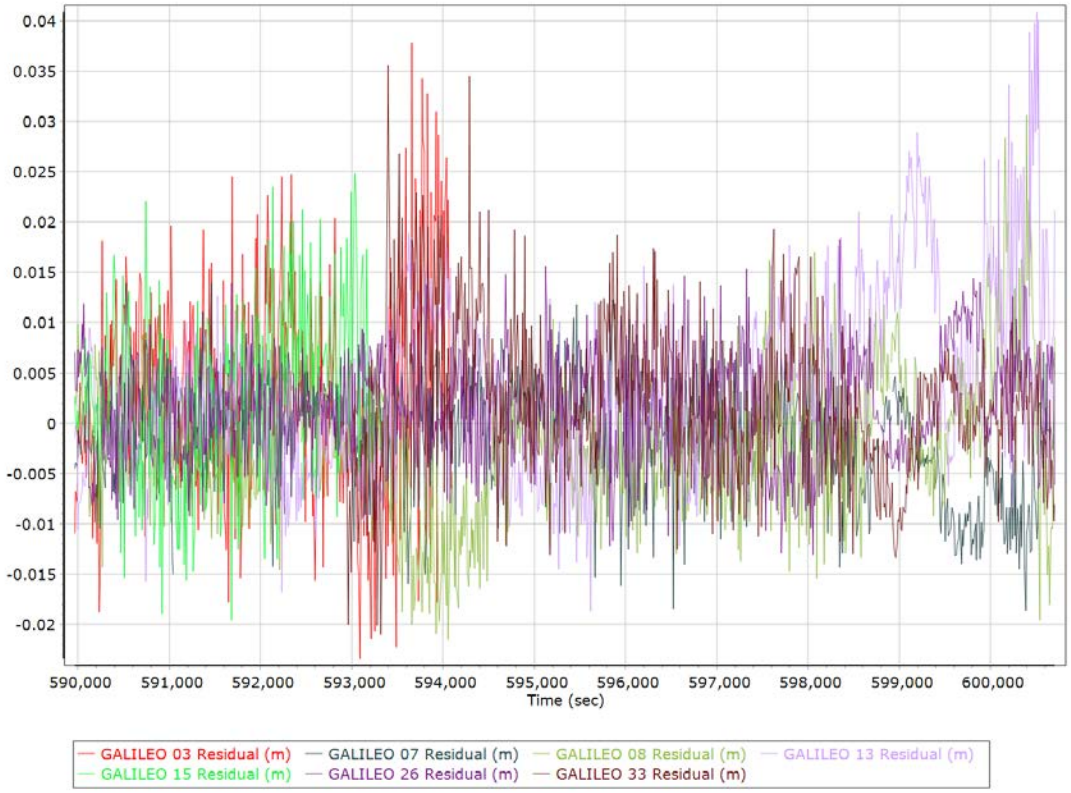
GPS Residuals



GLONASS Residuals



GALILEO Residuals



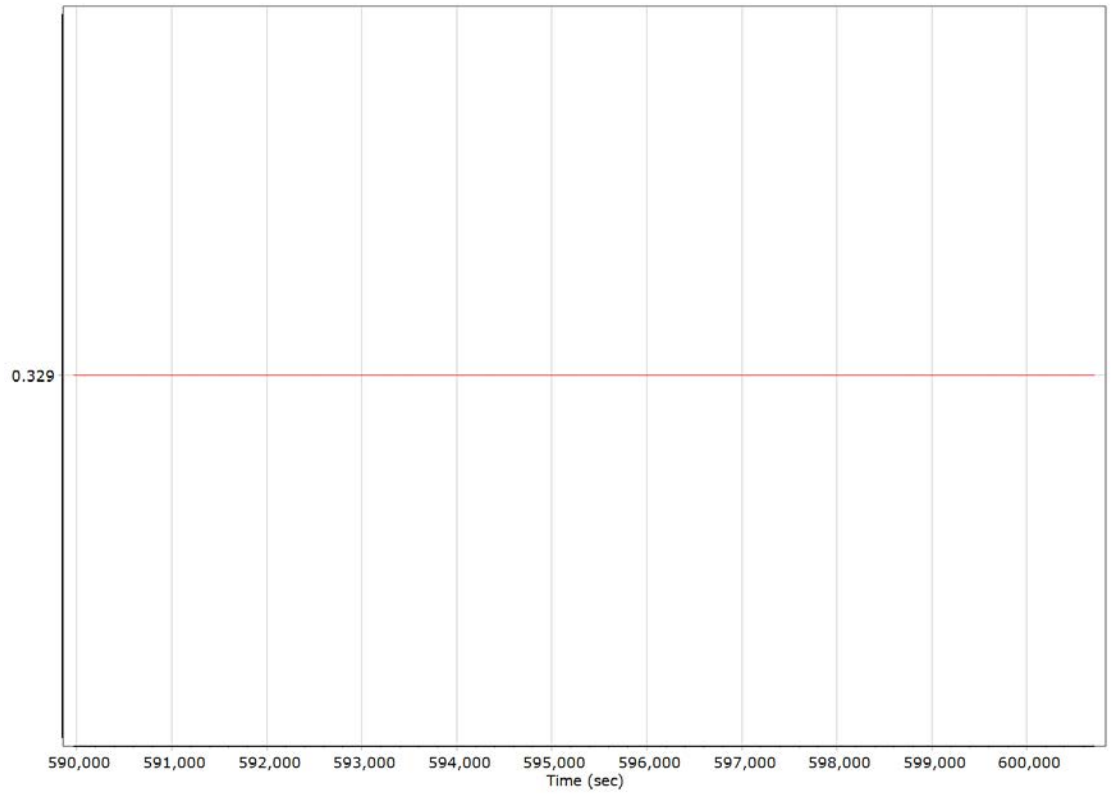
GNSS-Inertial Processor Configuration

Processing mode	IN-Fusion PP-RTX		
Stabilized mount	True		
Processing start time	589882.000 (7/29/2023 7:51:22 PM)		
Processing end time	600719.000 (7/29/2023 10:51:59 PM)		
Initial attitude source	Primary GNSS Track		
IMU Sensor Context	Processing with Onboard IMU		
Gimbal to IMU lever arm (m)	-0.034	-0.010	-0.374
Gimbal to IMU mounting angles (deg)	0.000	0.000	0.000
Gimbal to Primary GNSS lever arm (m)	0.329	-0.067	-1.393
Gimbal to Primary GNSS lever arm std dev (m)	0.030	0.030	0.030
Aircraft to Reference mounting angles (deg)	0.000	0.000	0.000

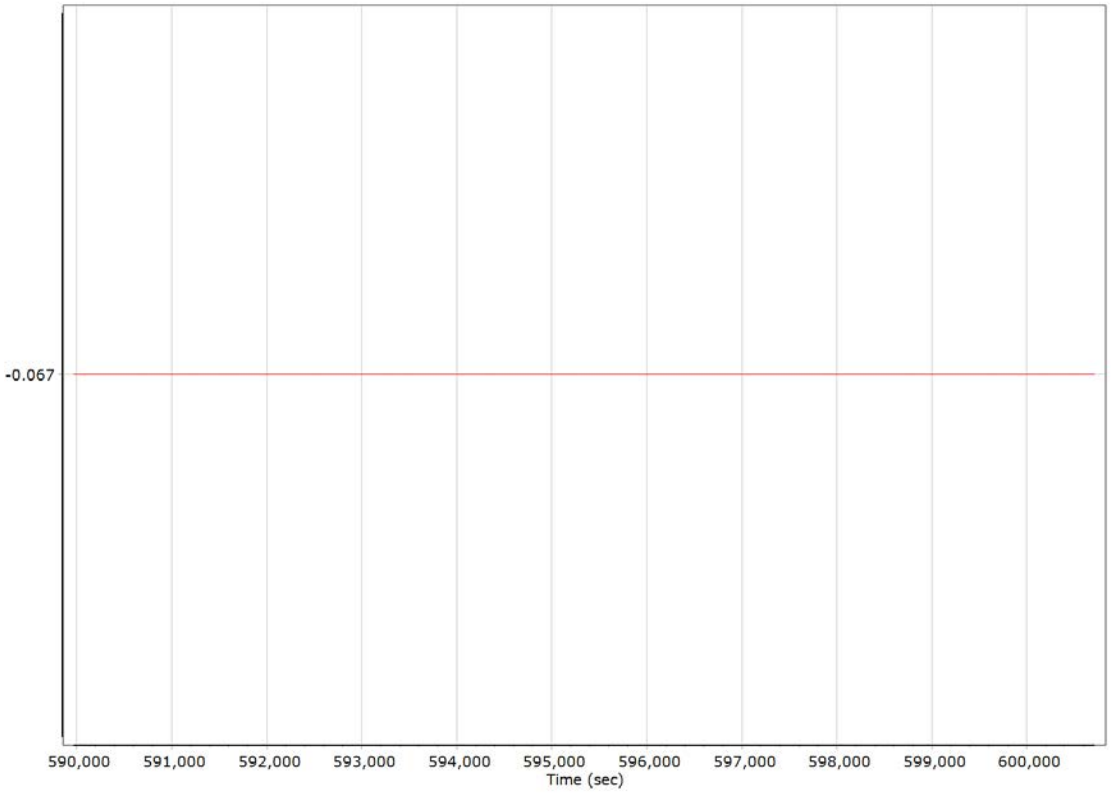
Calibrated Installation Parameters

Reference-Primary GNSS Lever Arm (m)

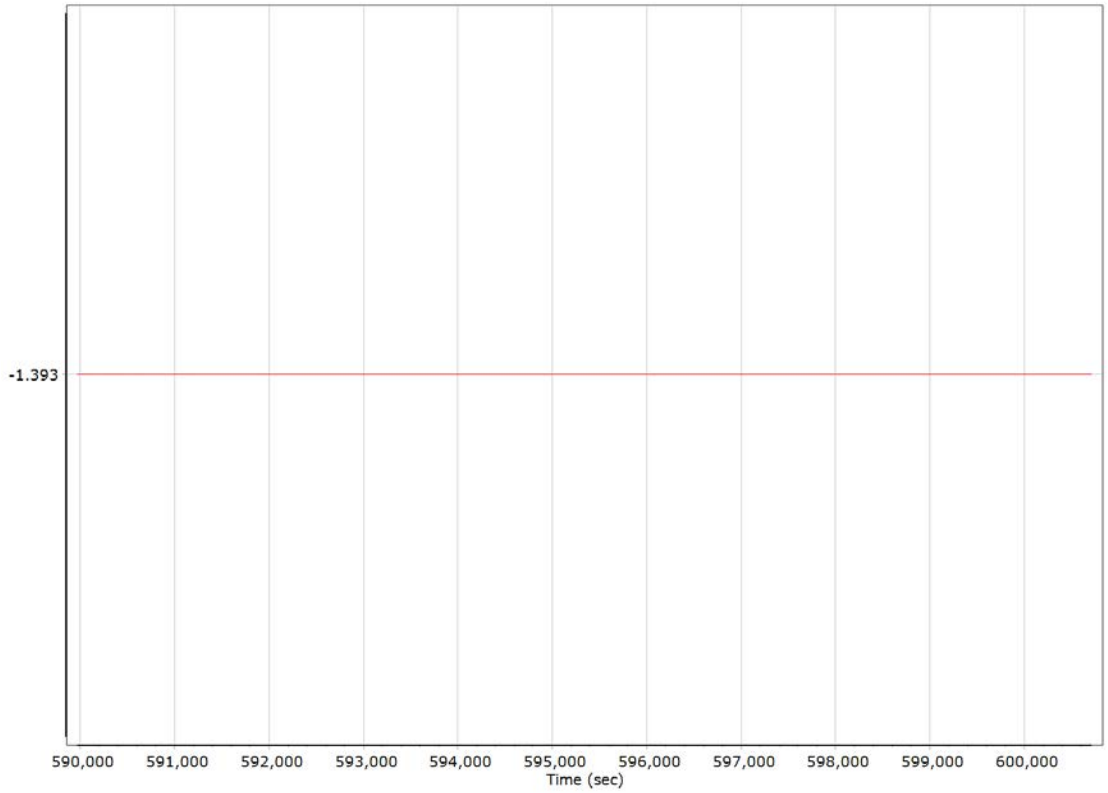
X Reference-Primary GNSS Lever Arm (m)



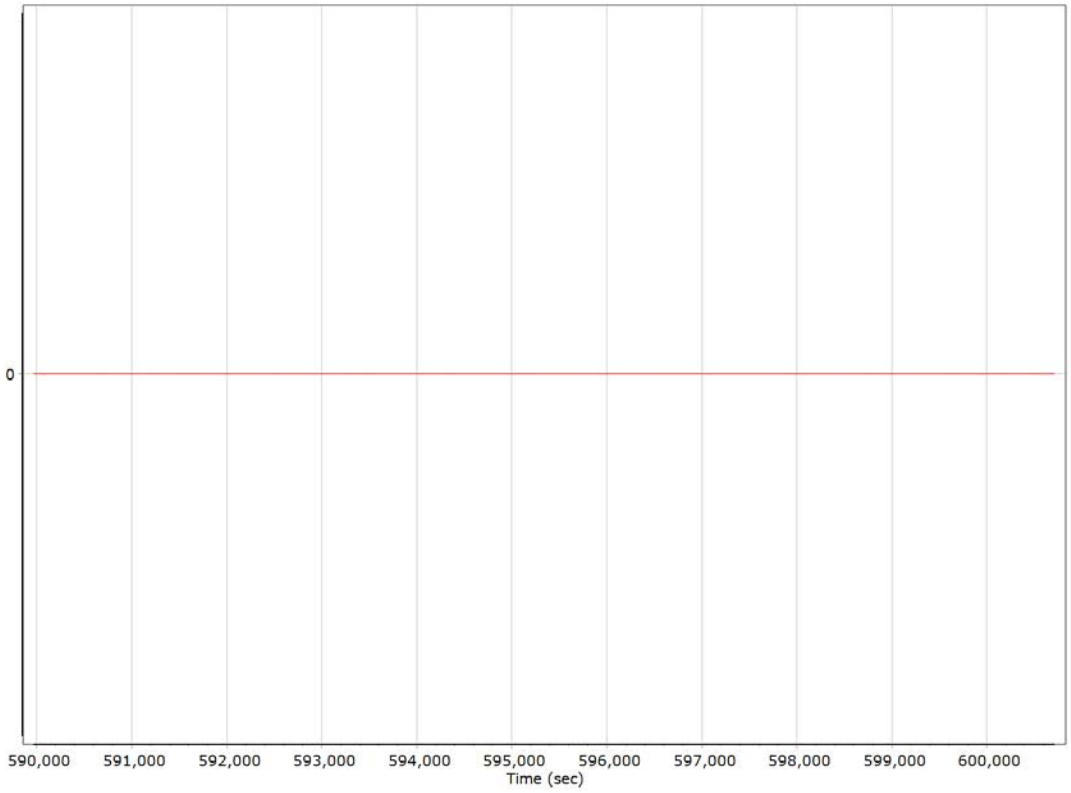
Y Reference-Primary GNSS Lever Arm (m)



Z Reference-Primary GNSS Lever Arm (m)



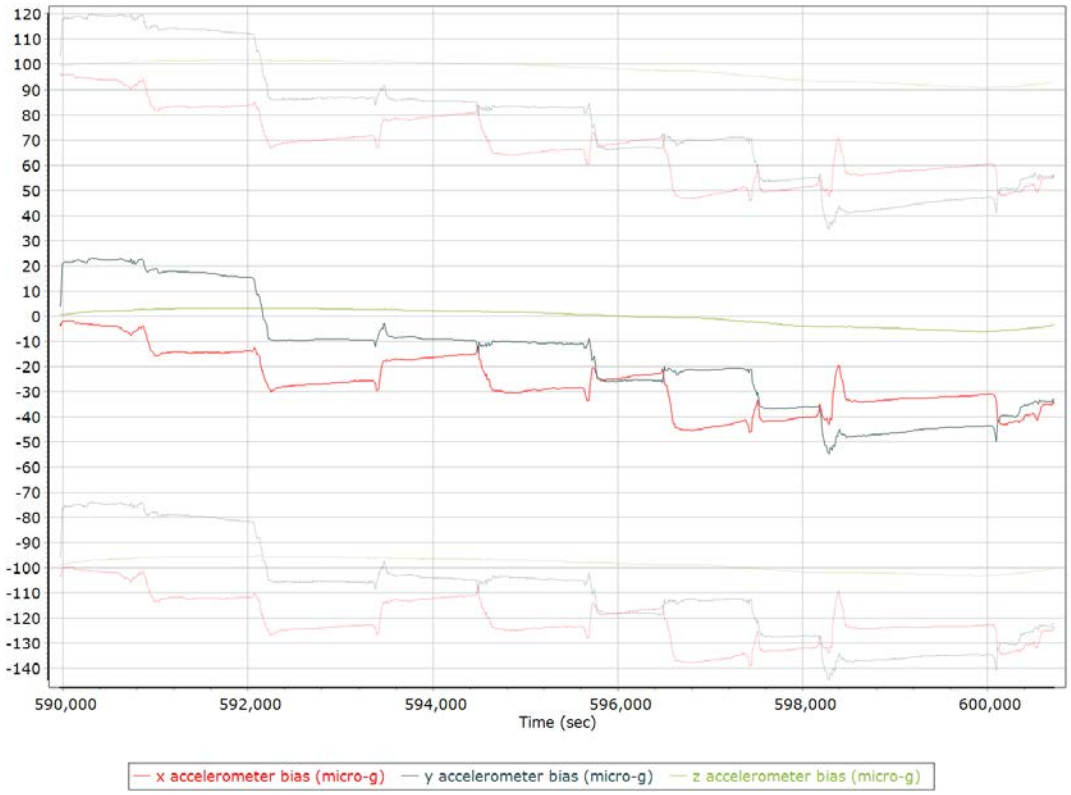
Reference-Primary GNSS Lever Arm Figure of Merit



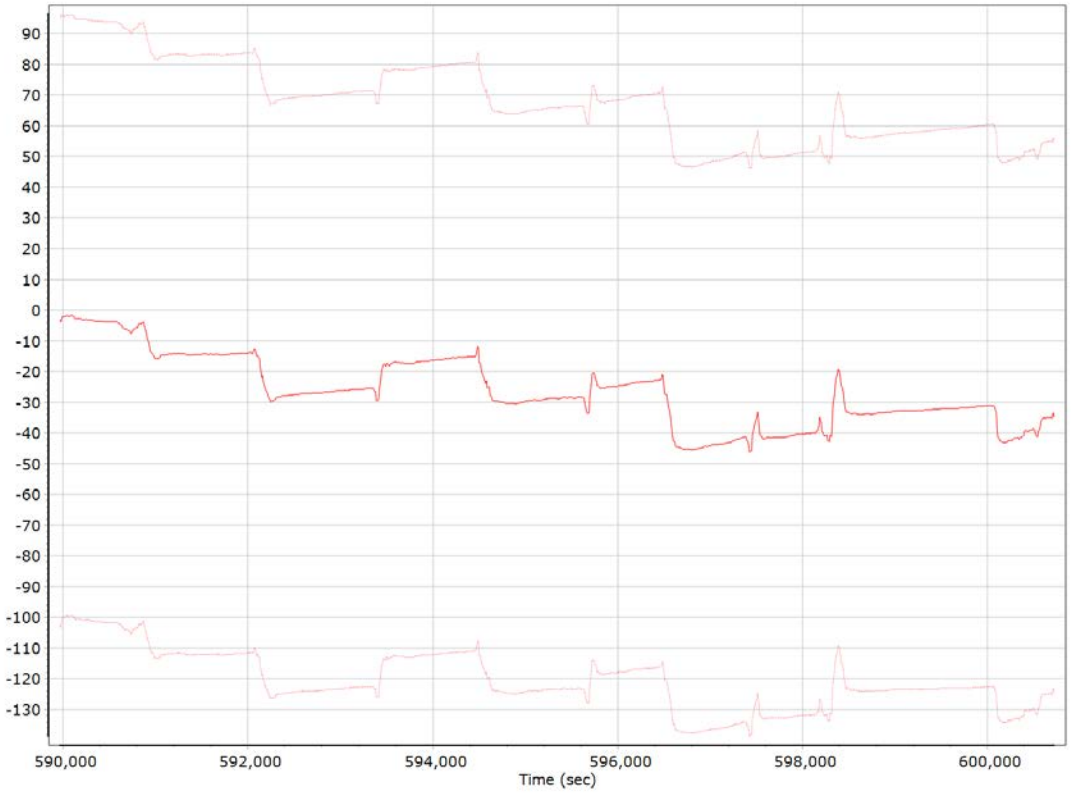
IN-Fusion QC

Forward Processed Estimated Errors, Reference Frame

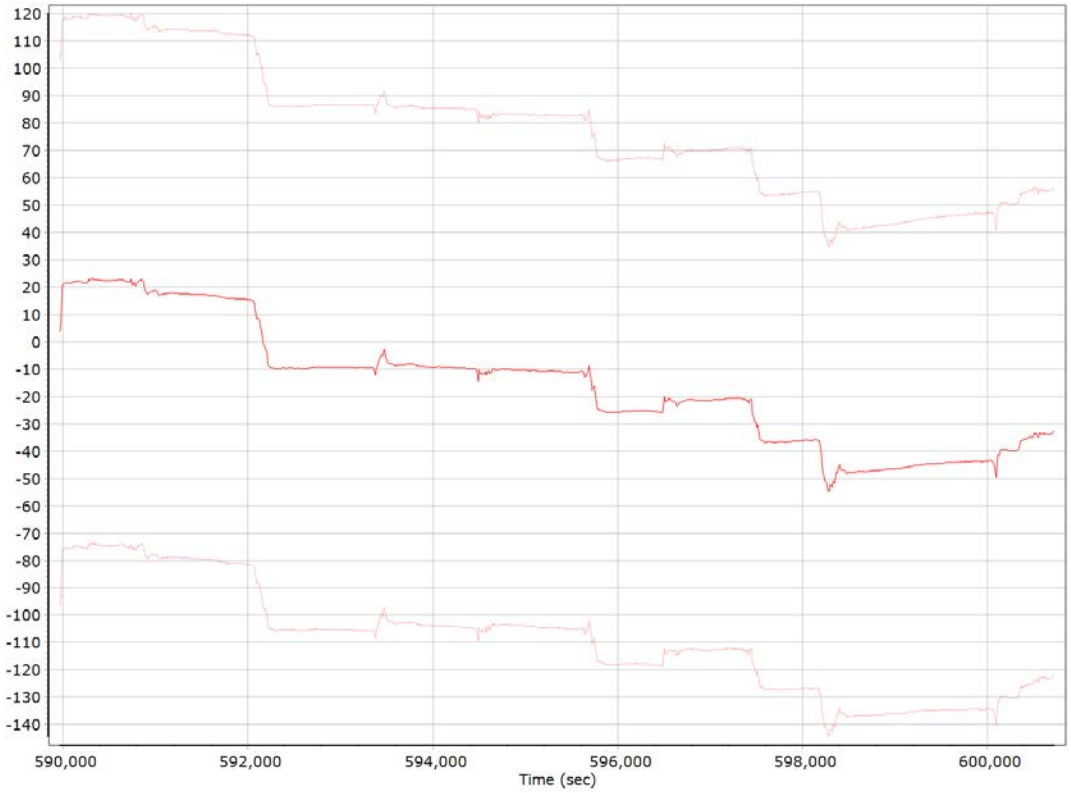
Accelerometer Bias (micro-g)



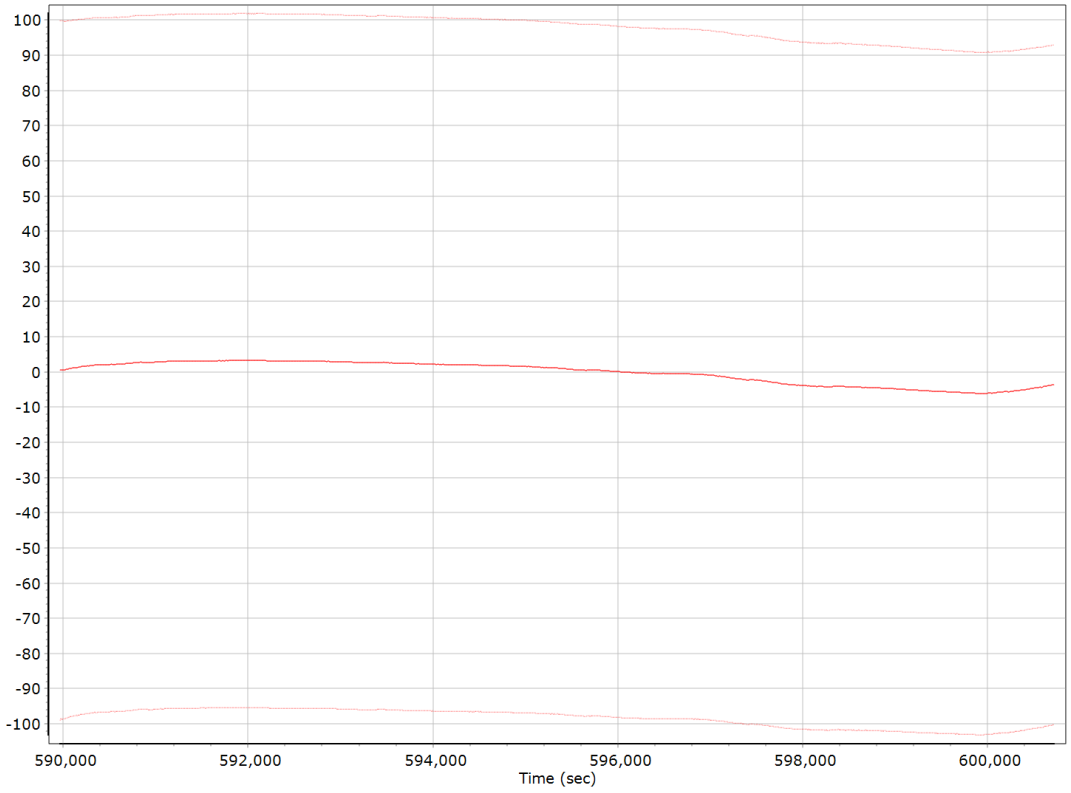
X Accelerometer Bias (micro-g)



Y Accelerometer Bias (micro-g)



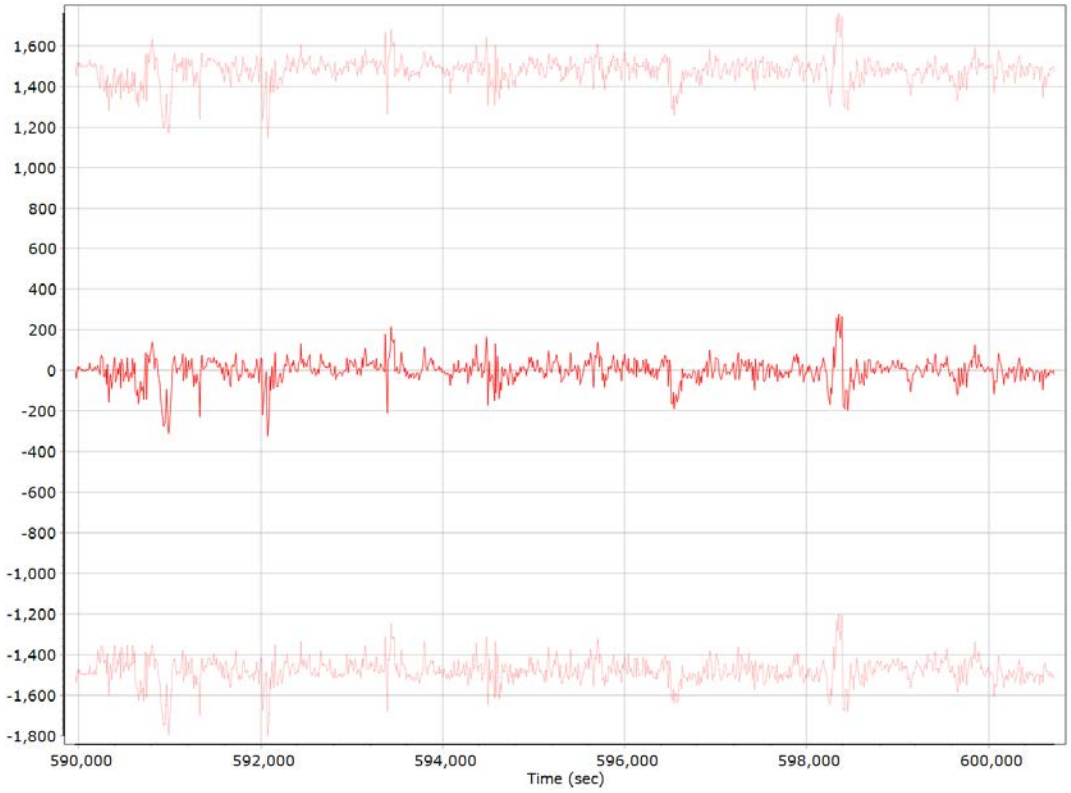
Z Accelerometer Bias (micro-g)



Accelerometer Scale Error (ppm)



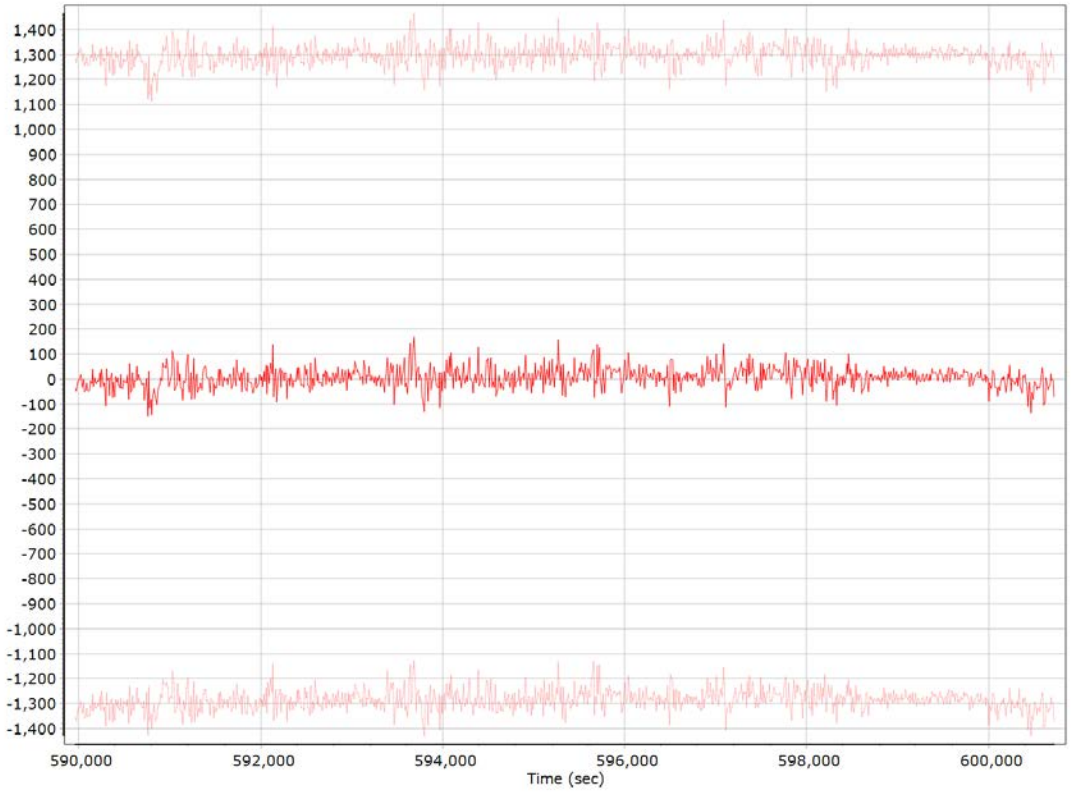
X Accelerometer Scale Error (ppm)



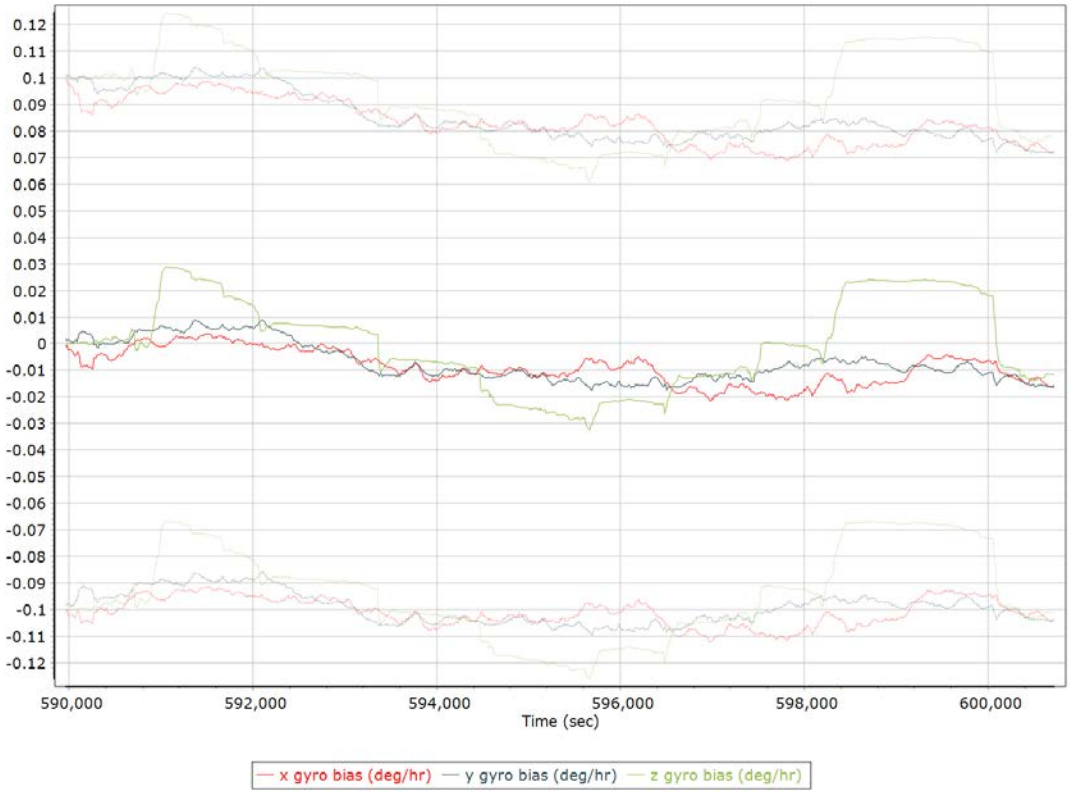
Y Accelerometer Scale Error (ppm)



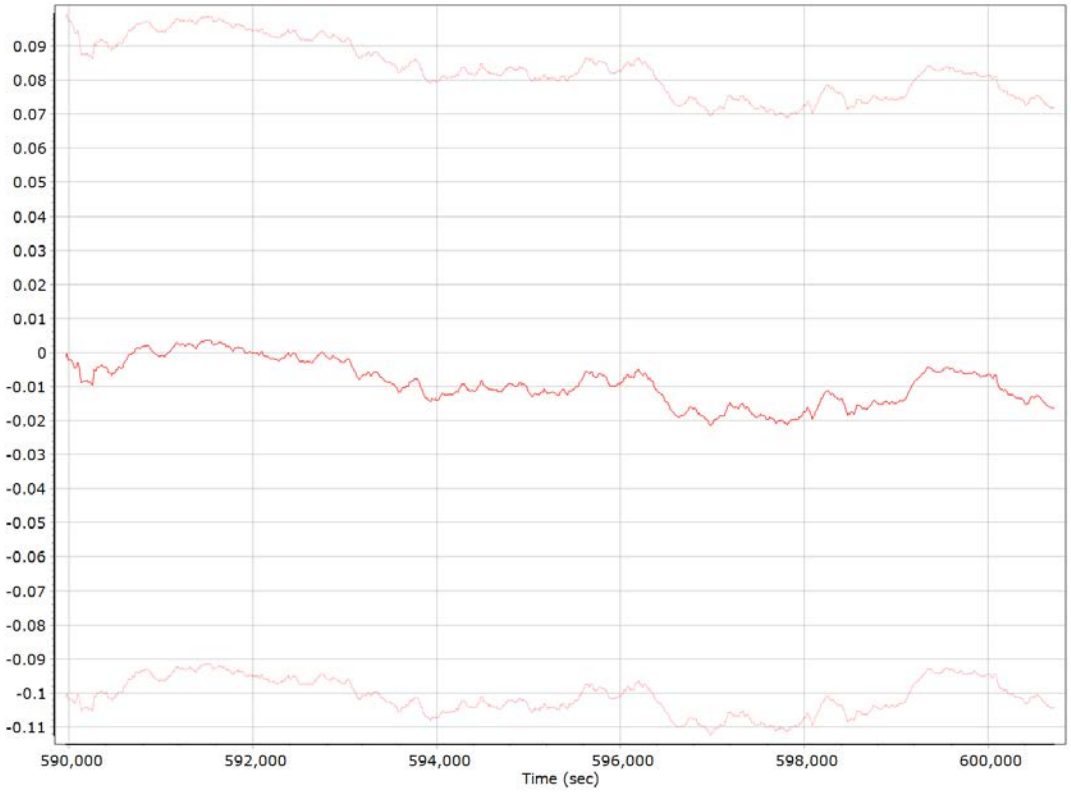
Z Accelerometer Scale Error (ppm)



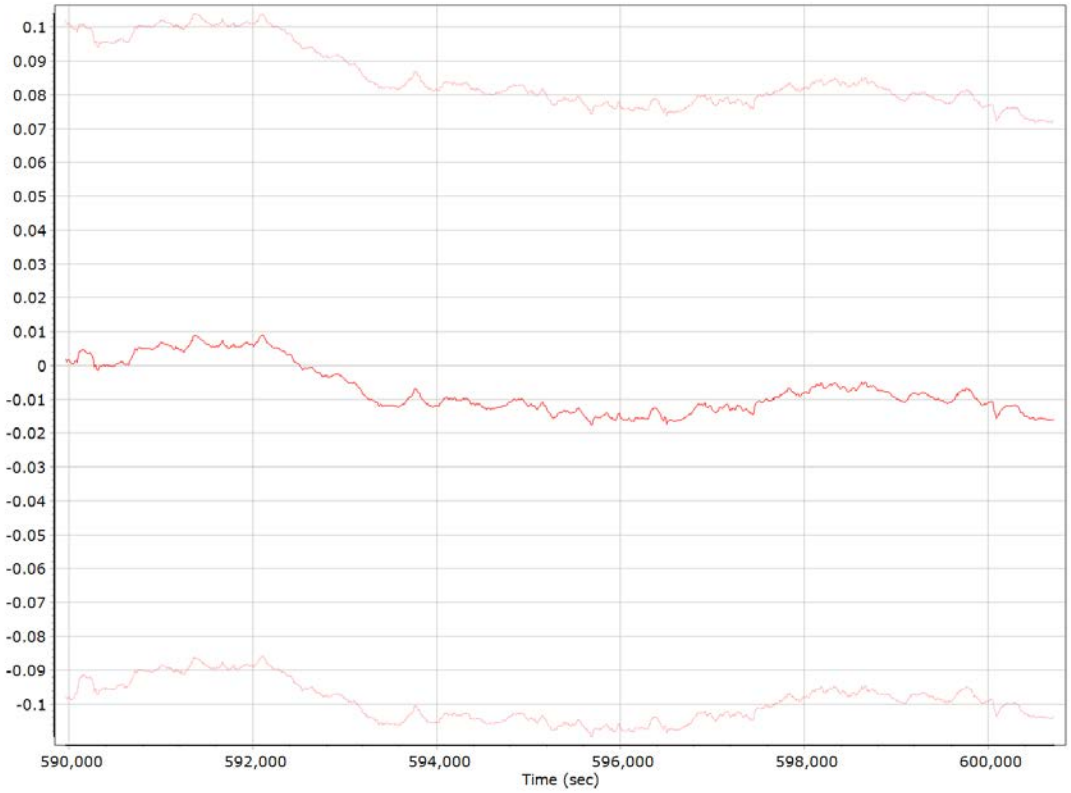
Gyro Bias (deg/h)



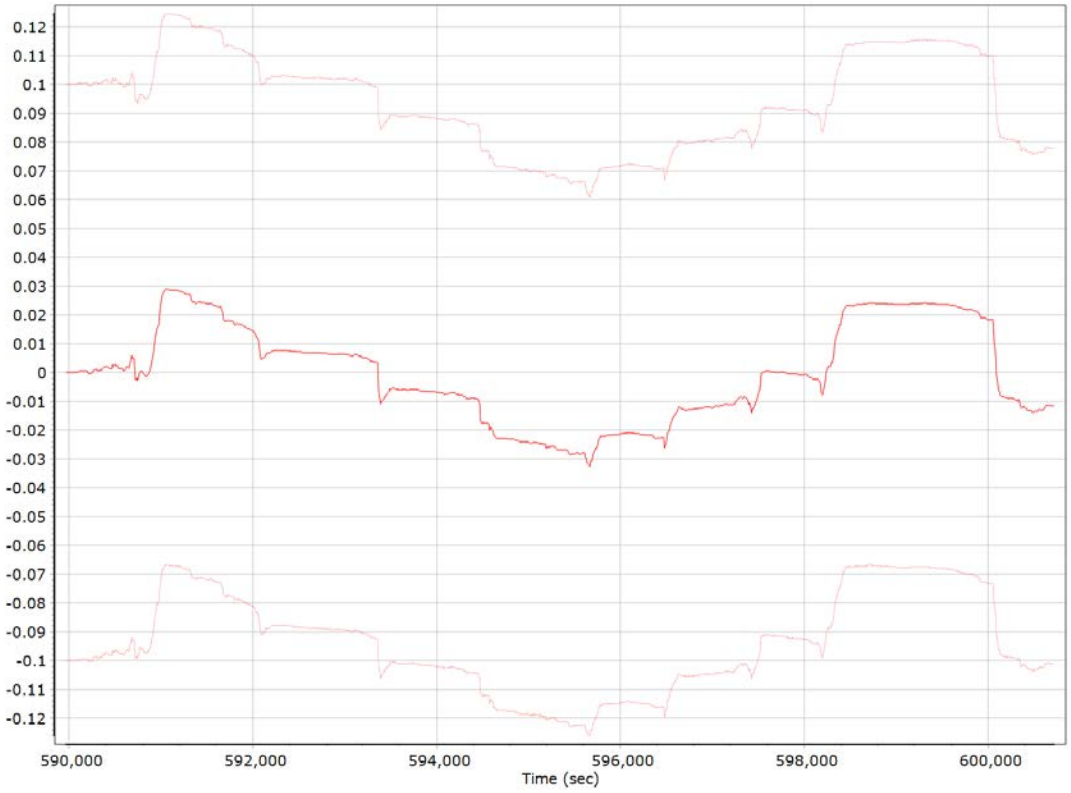
X Gyro Bias (deg/h)



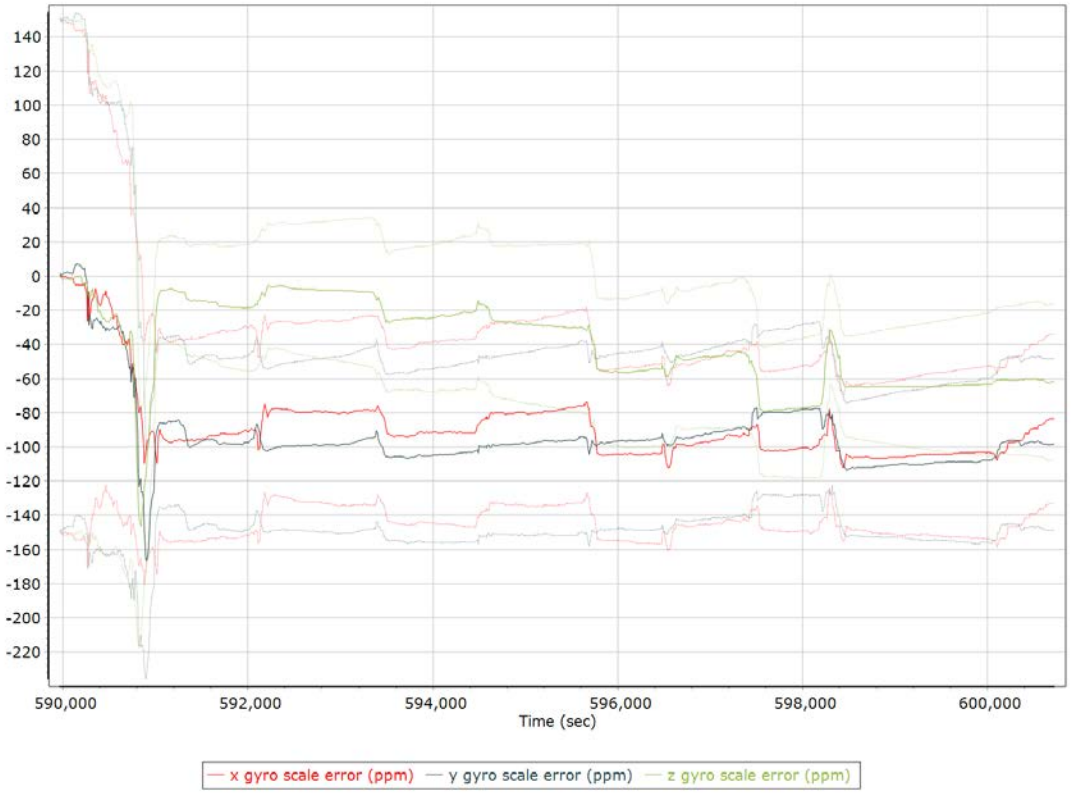
Y Gyro Bias (deg/h)



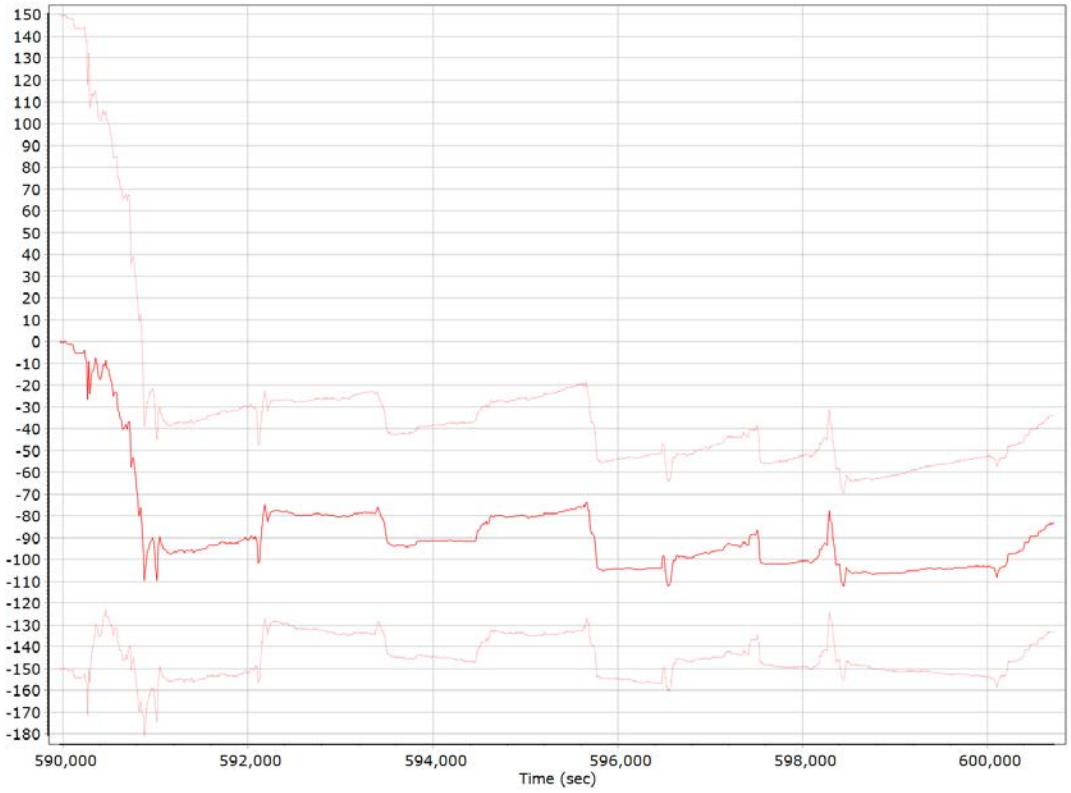
Z Gyro Bias (deg/h)



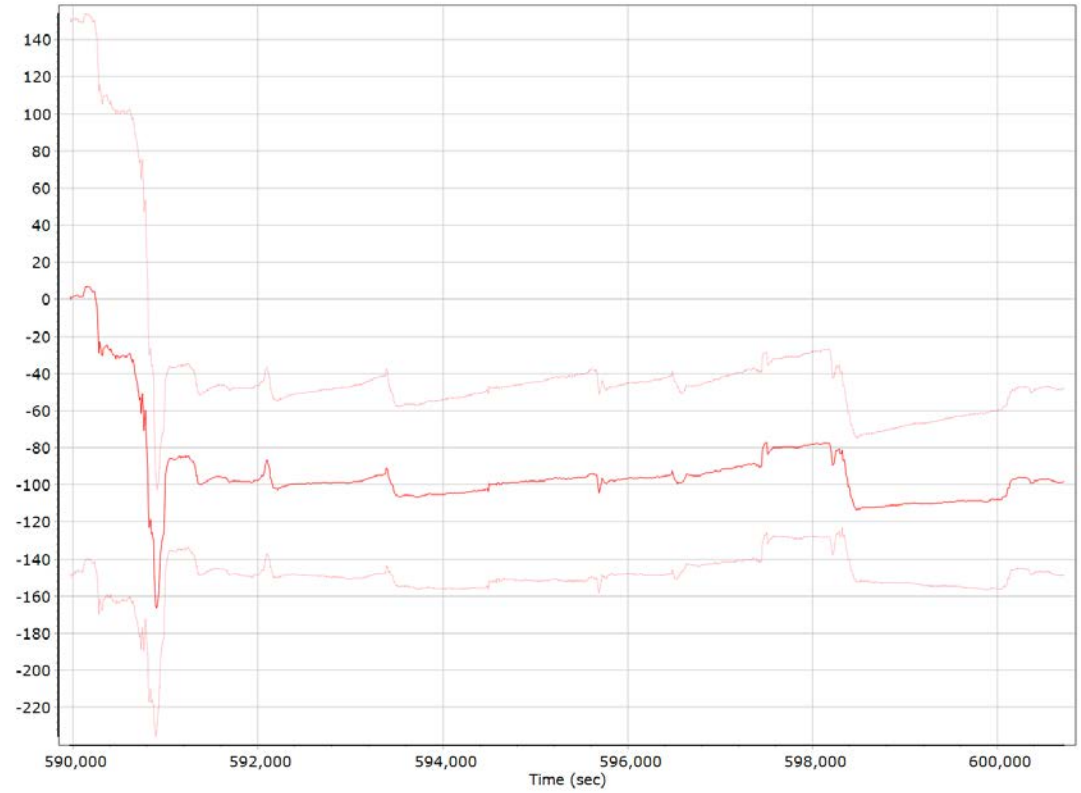
Gyro Scale Error (ppm)



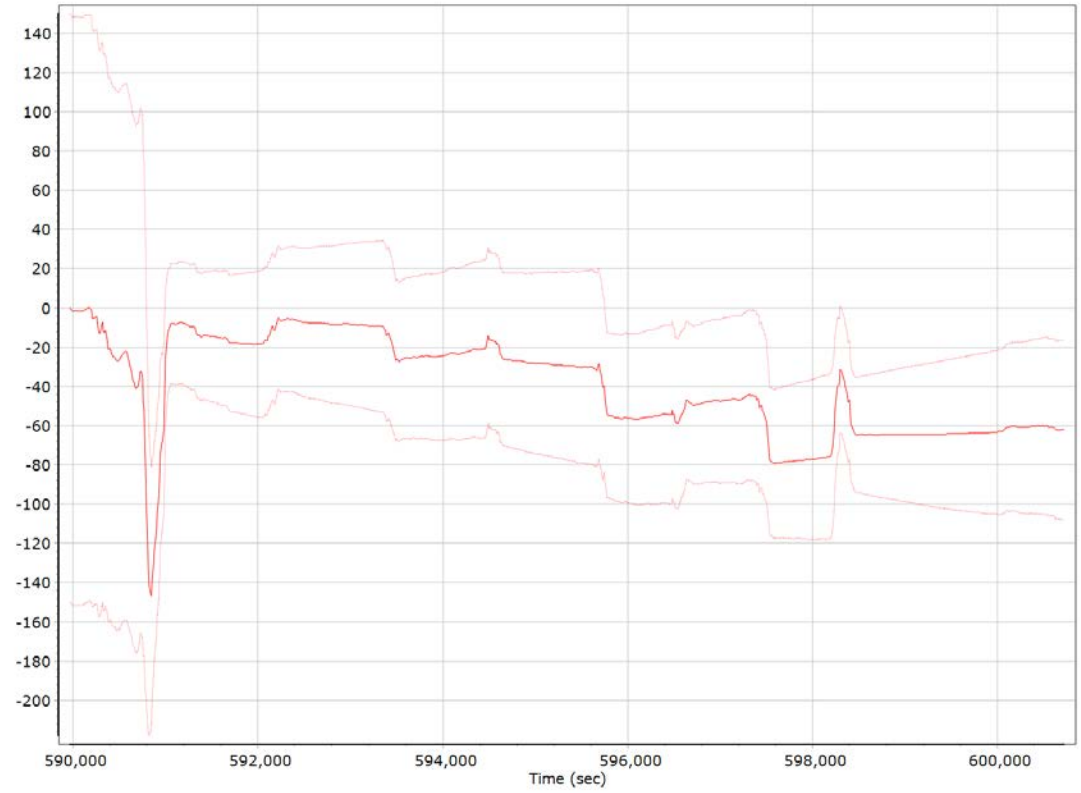
X Gyro Scale Error (ppm)



Y Gyro Scale Error (ppm)



Z Gyro Scale Error (ppm)

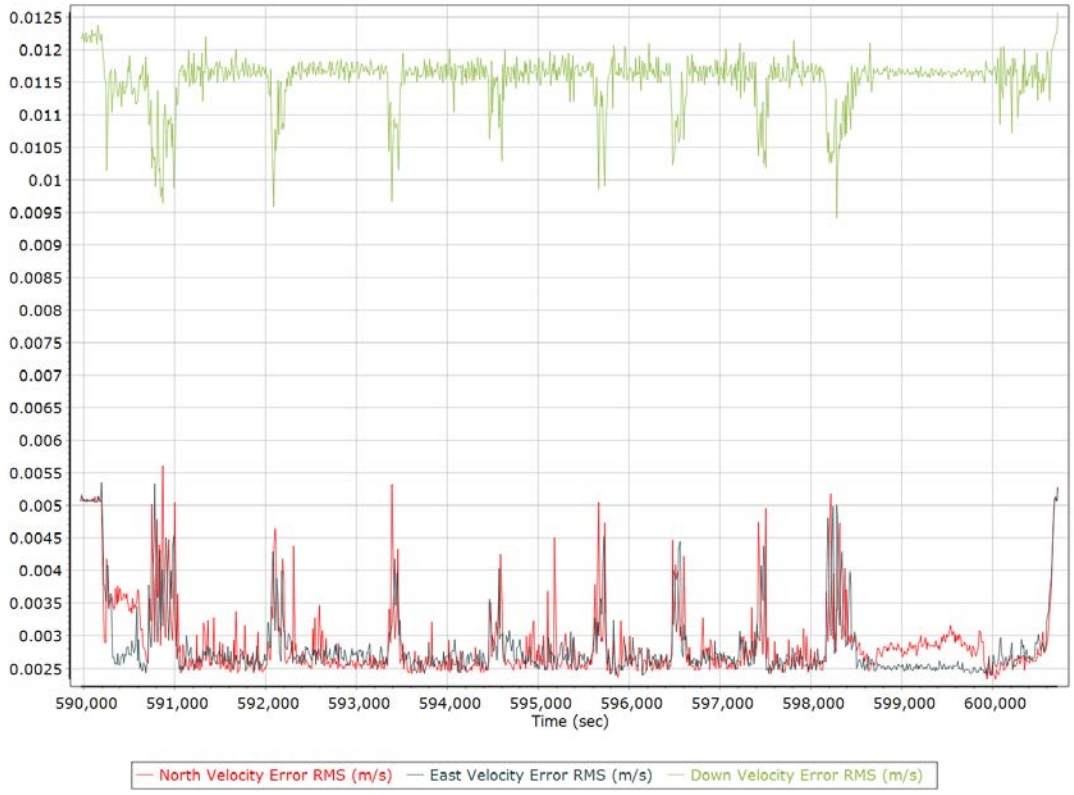


Smoothed Performance Metrics

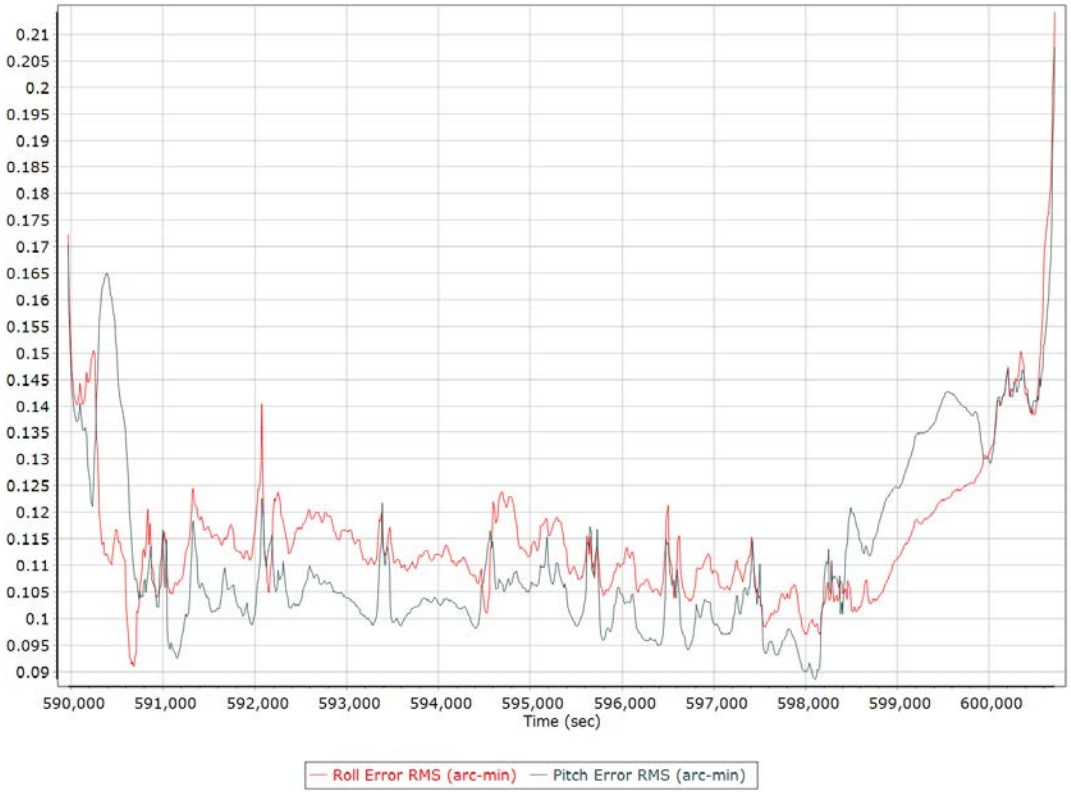
Position Error RMS (m)



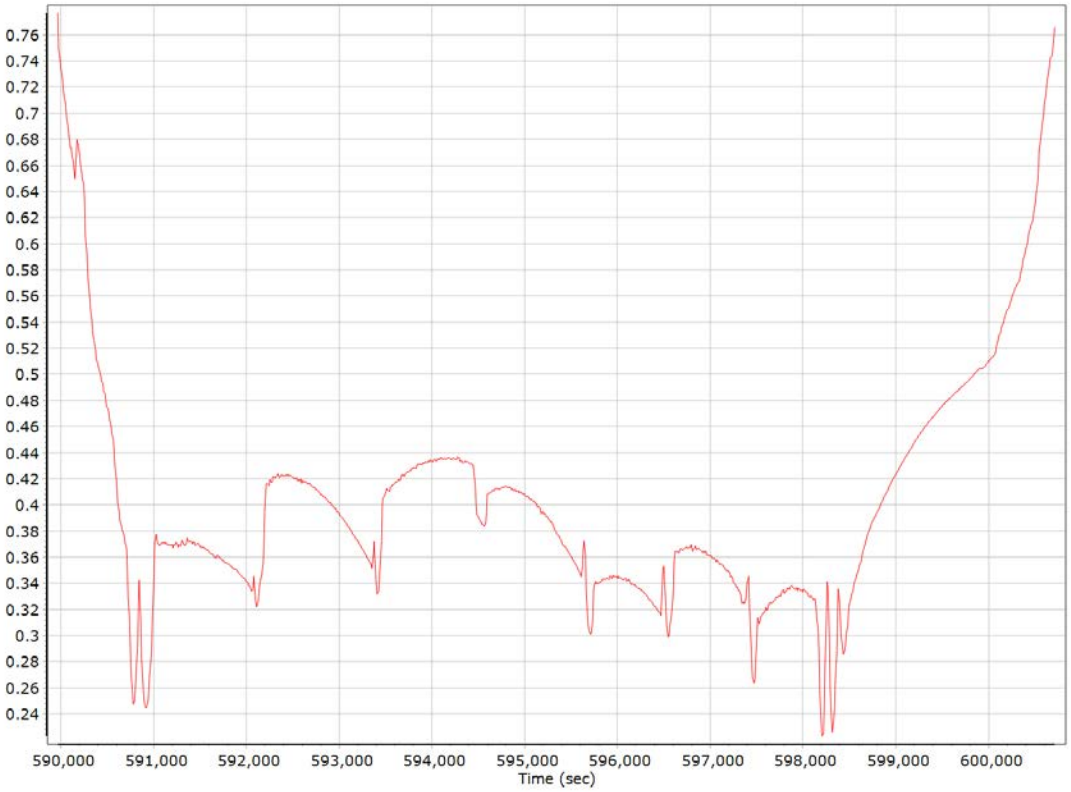
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

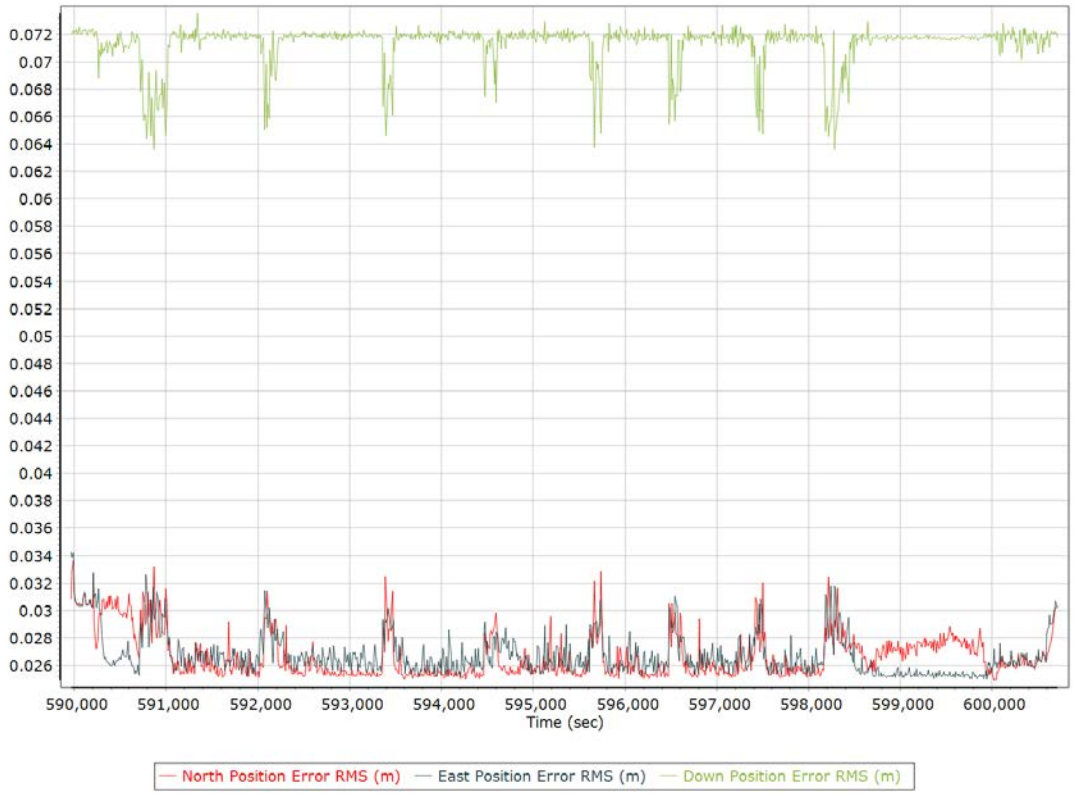


Heading Error RMS (arc-min)



Forward Processed Performance Metrics

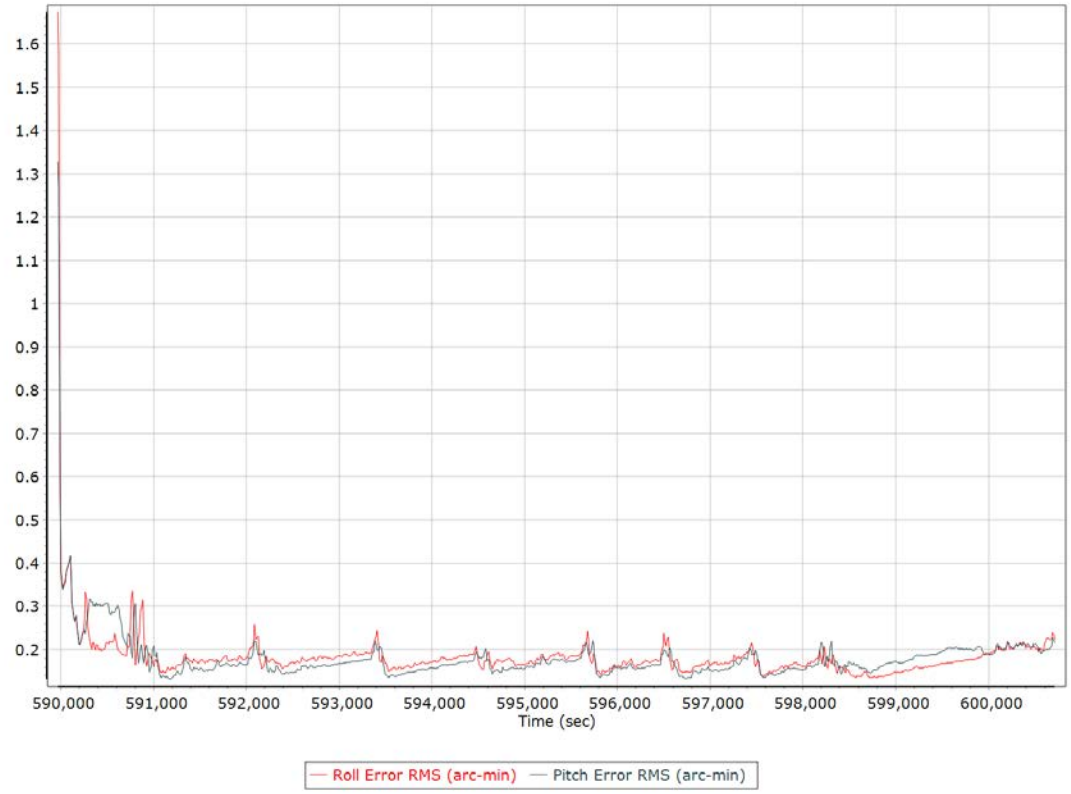
Position Error RMS (m)



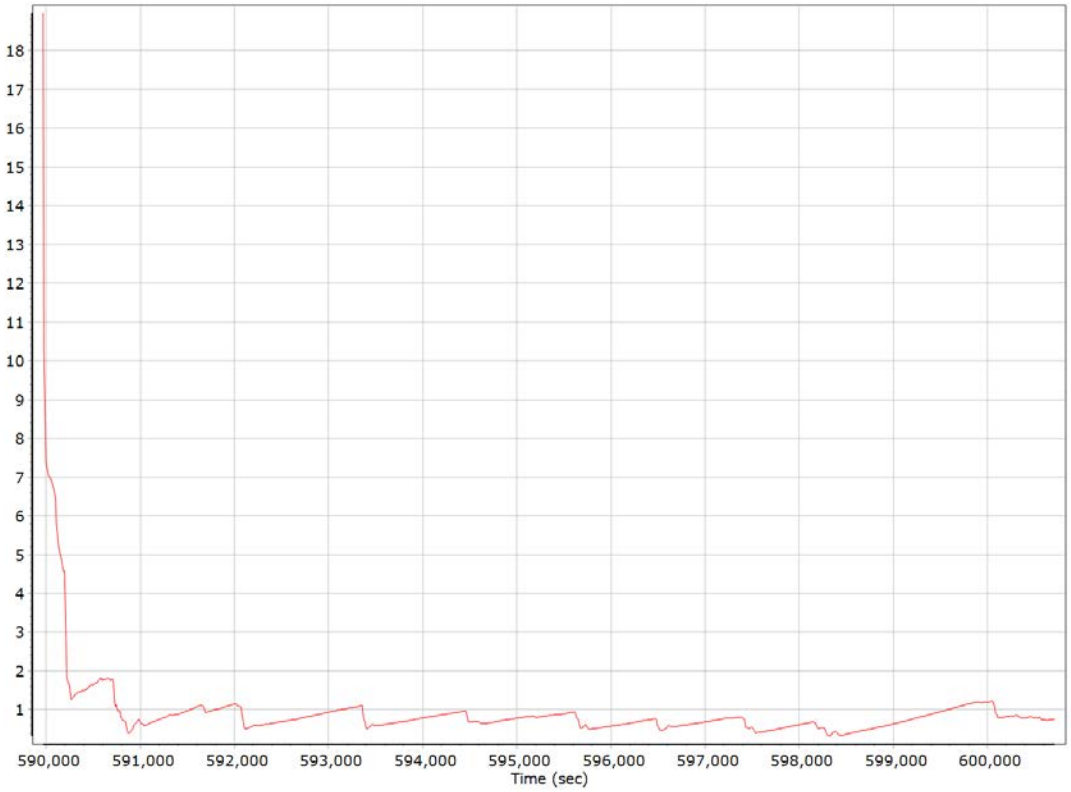
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

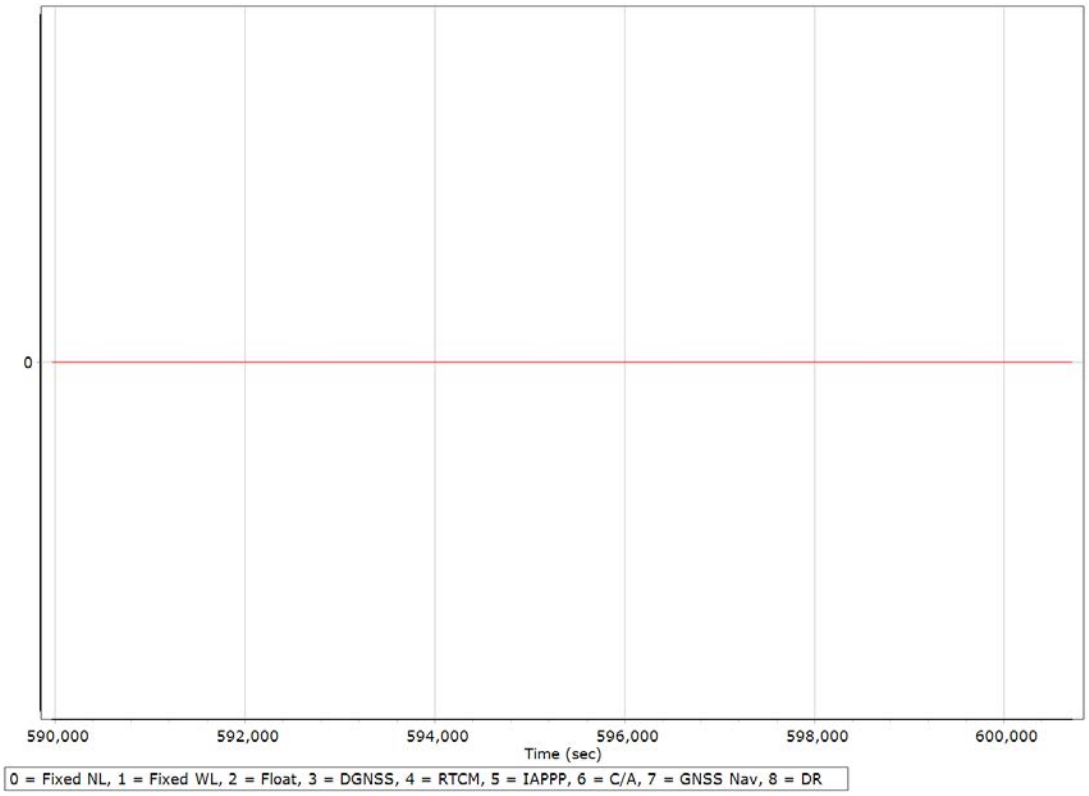


Heading Error RMS (arc-min)

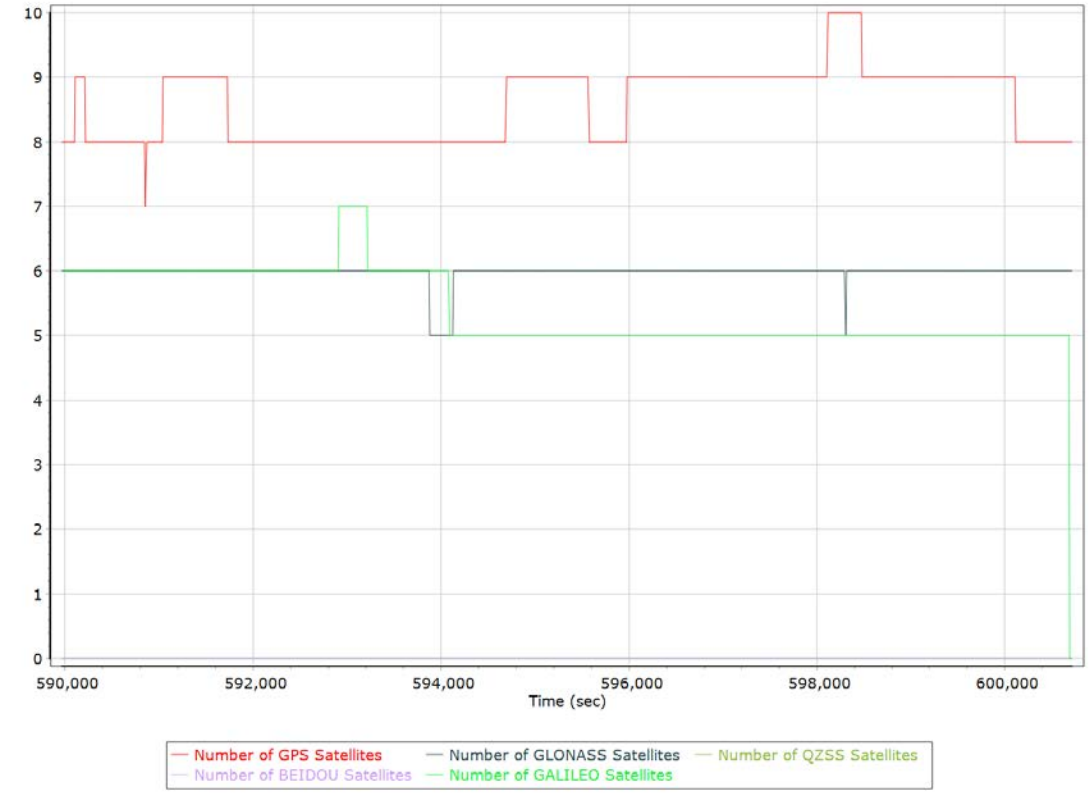


Forward Processed Solution Status

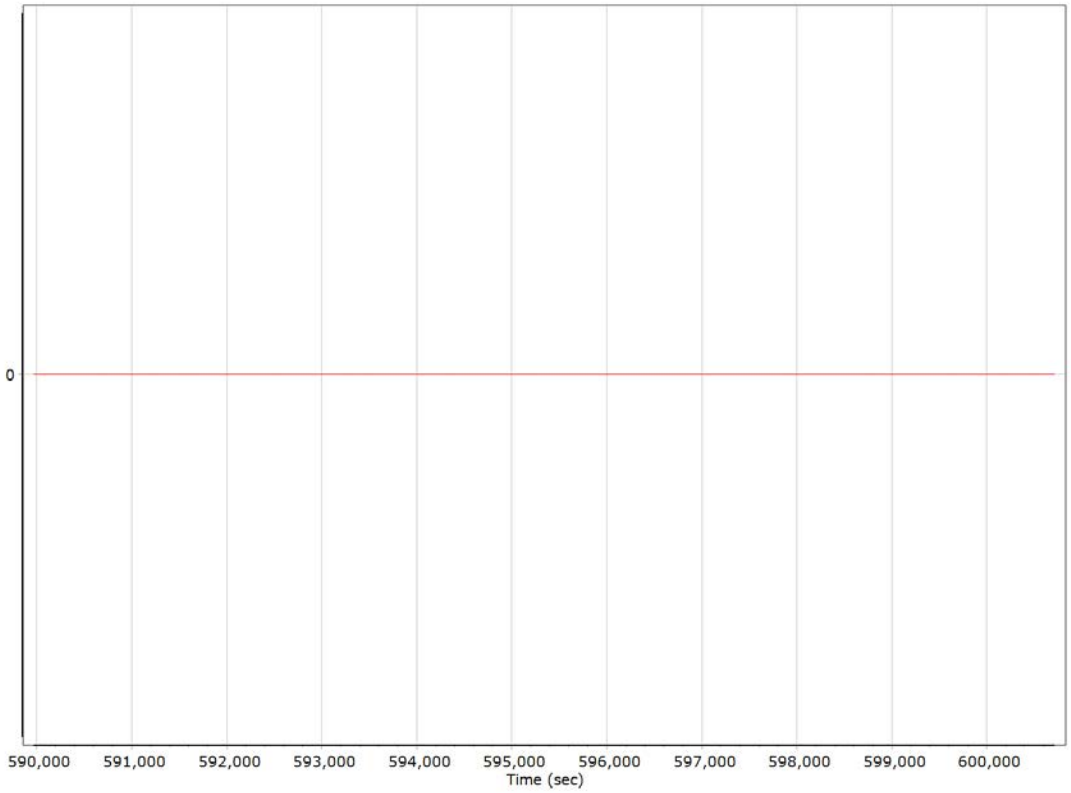
Processing Mode



Number of Satellites



Baseline Length



General Information

Mission Information

Project name	08112023A_4051
Processing date	2023-08-16 19:55:43
Mission date	2023-08-11 15:18:07
Mission duration	03:14:13.031
Processing mode	IN-Fusion PP-RTX

Rover Hardware Information

Product	POS AV 610 VER6 HW2.5-12
Serial number	S/N11221
IMU type	57
Receiver type	BD982
Antenna type	AV59

Project File List

Rover Data Files

File name	File type
CP780.062	POS Data
CP780.063	POS Data
CP780.064	POS Data
CP780.065	POS Data
CP780.066	POS Data
CP780.067	POS Data
CP780.068	POS Data
CP780.069	POS Data
CP780.070	POS Data
CP780.071	POS Data
CP780.072	POS Data
CP780.073	POS Data
CP780.074	POS Data
CP780.075	POS Data
CP780.076	POS Data
CP780.077	POS Data
CP780.078	POS Data
CP780.079	POS Data
CP780.080	POS Data
CP780.081	POS Data
CP780.082	POS Data
CP780.083	POS Data
CP780.084	POS Data
CP780.085	POS Data
CP780.086	POS Data
CP780.087	POS Data
CP780.088	POS Data

Input Files

File Name	File Type
Ephm2230.23g	GLONASS Broadcast Ephemeris
Ephm2230.23n	GPS Broadcast Ephemeris

Output Files

Filename	File type
sbet_08112023A_4051.out	SBET Trajectory File

Rover Data Summary

First raw data file	CP780.062		
Last raw data file	CP780.088		
Start GPS week	2274		
Start time	487068.698 (8/11/2023 3:17:48 PM)		
End time	498721.729 (8/11/2023 6:32:01 PM)		
Start of fine alignment	487092.312 (8/11/2023 3:18:12 PM)		
Available subsystems	Primary GNSS, Gimbal, IMU		
POS Event Input	None		
Correction data	None		
IMU Installation Lever Arms & Mounting Angles			
Gimbal to IMU lever arm (m)	-0.034	-0.010	-0.374
Gimbal to IMU mounting angles (deg)	0.000	0.000	0.000
Gimbal to Primary GNSS lever arm (m)	0.053	-0.183	-1.279
Gimbal to Primary GNSS lever arm std dev (m)	-1.000		
Aircraft to Reference mounting angles (deg)	0.000	0.000	0.000

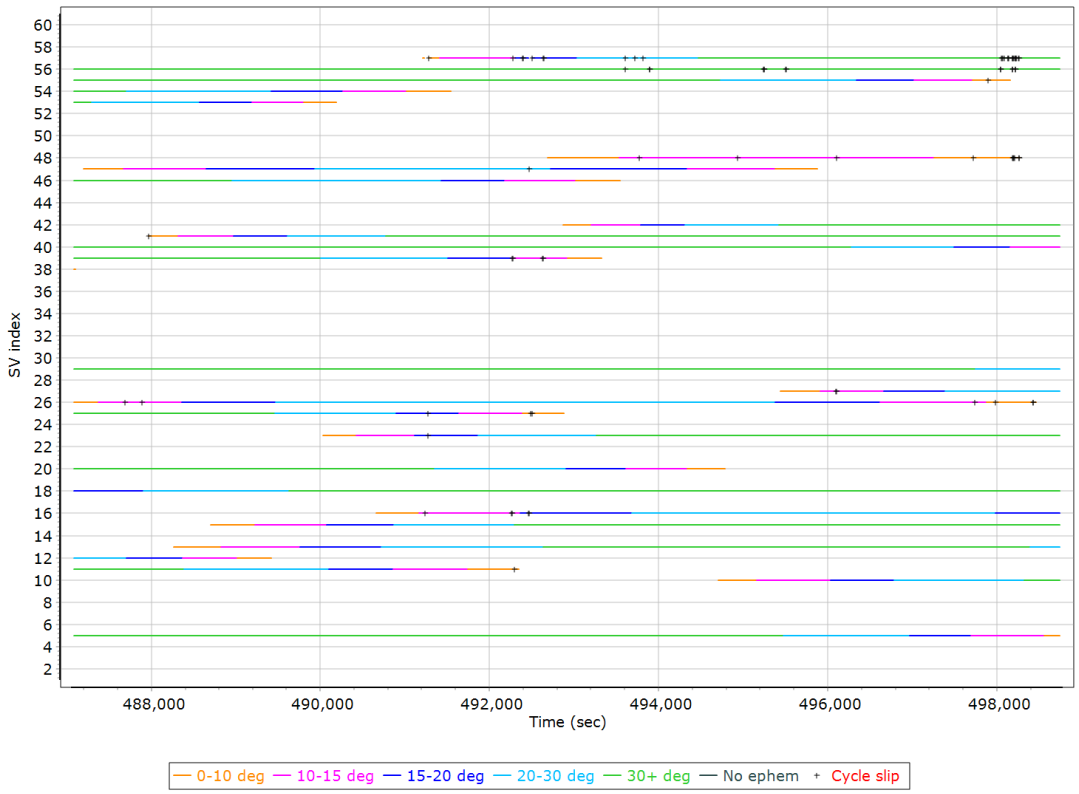
Rover Data QC

Raw IMU Import QC Summary

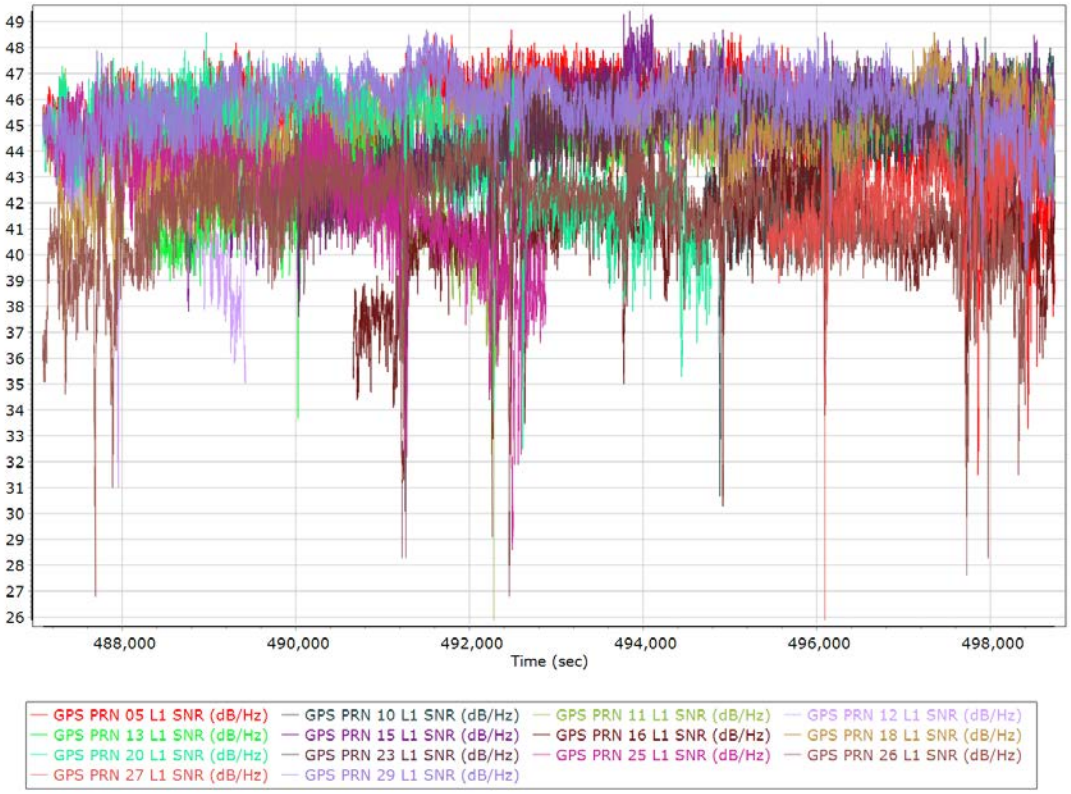
IMU data input file	imu_Mission 1.dat
IMU data check log file	imudt_08112023A_4051.log
IMU Records Processed	2330382
Termination Status	Normal
IMU Anomalies	0

Primary Observables & Satellite Data

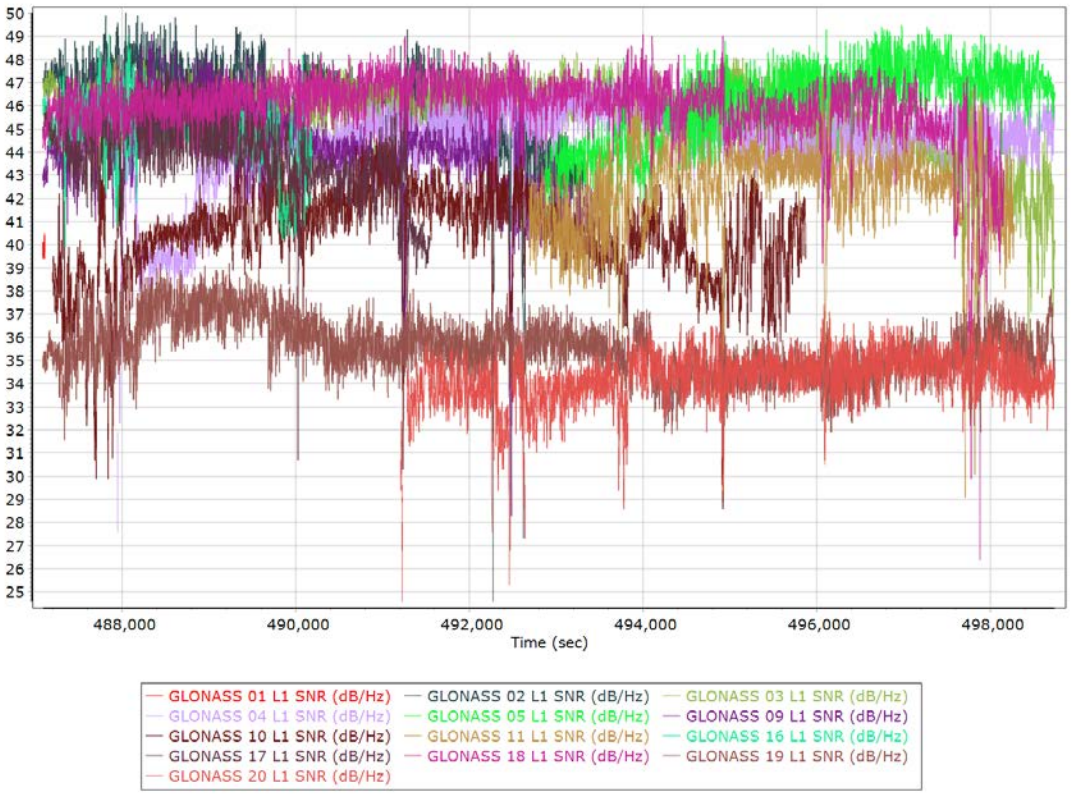
GPS/GLONASS L1 Satellite Lock/Elevation



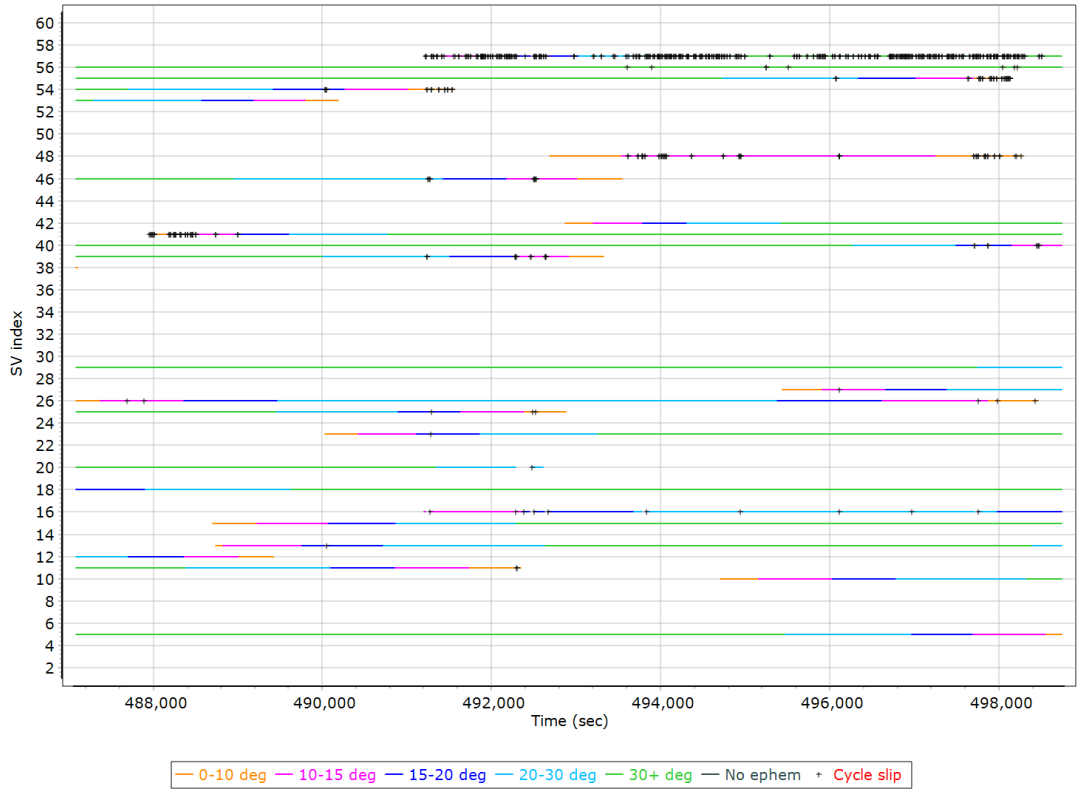
GPS L1 SNR



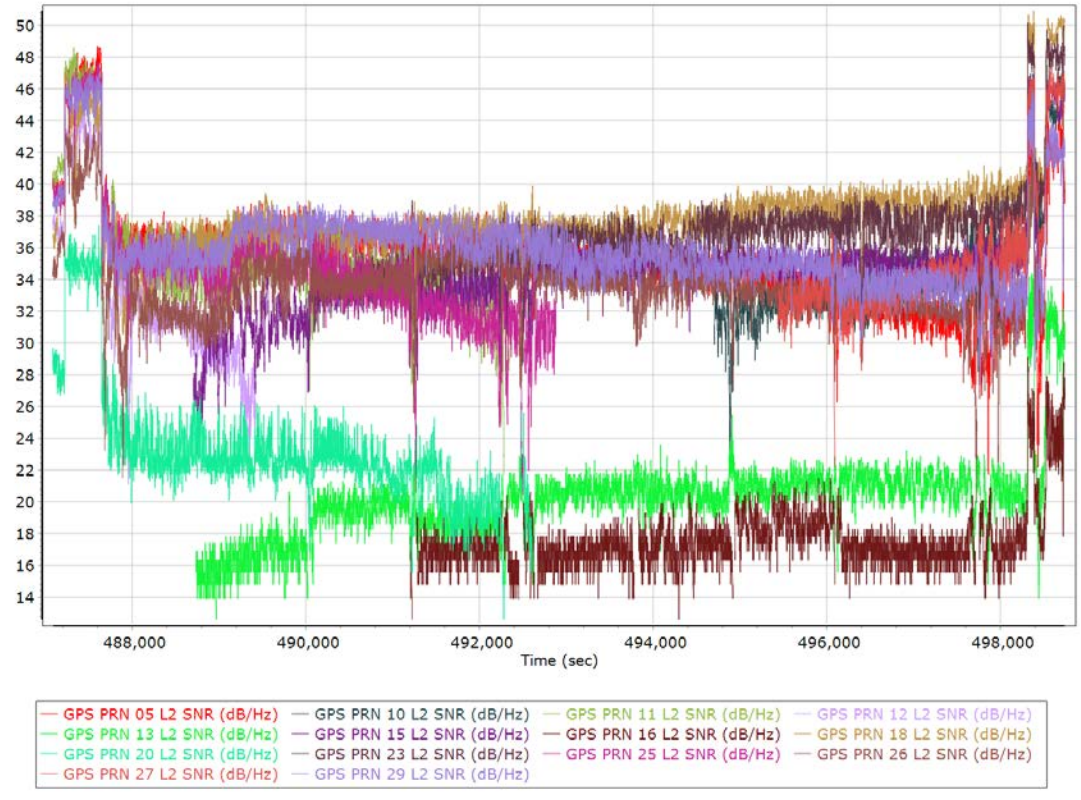
GLONASS L1 SNR



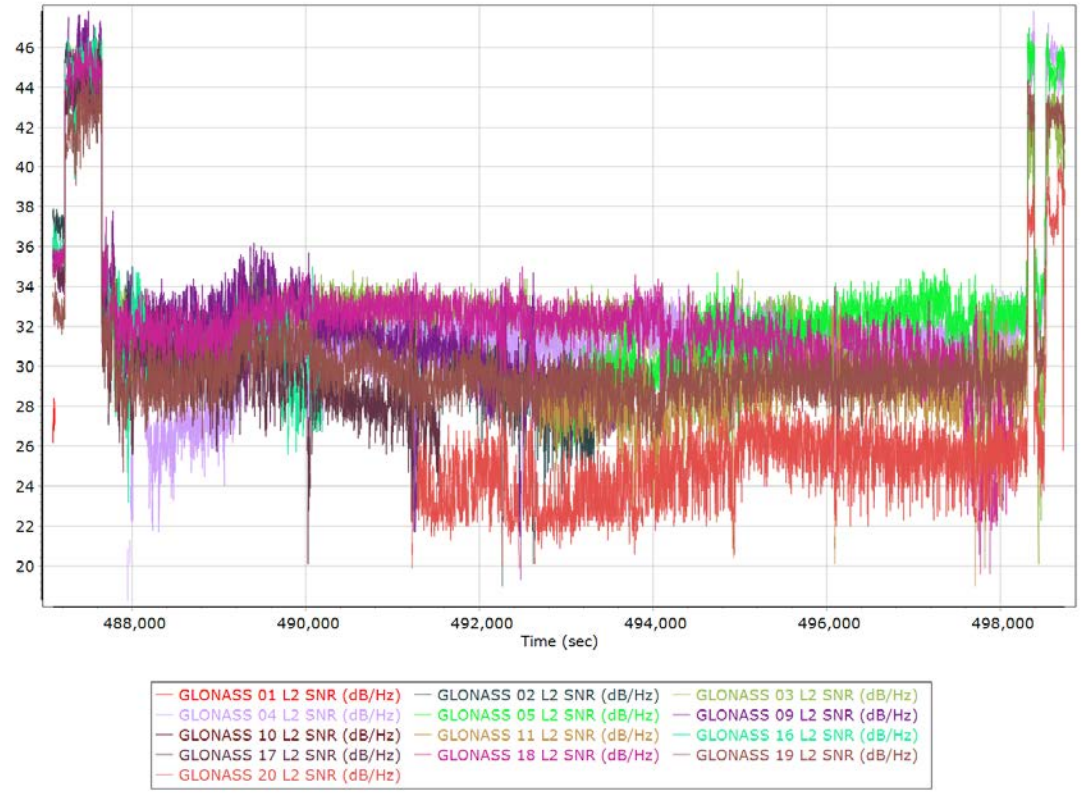
GPS/GLONASS L2 Satellite Lock/Elevation



GPS L2 SNR



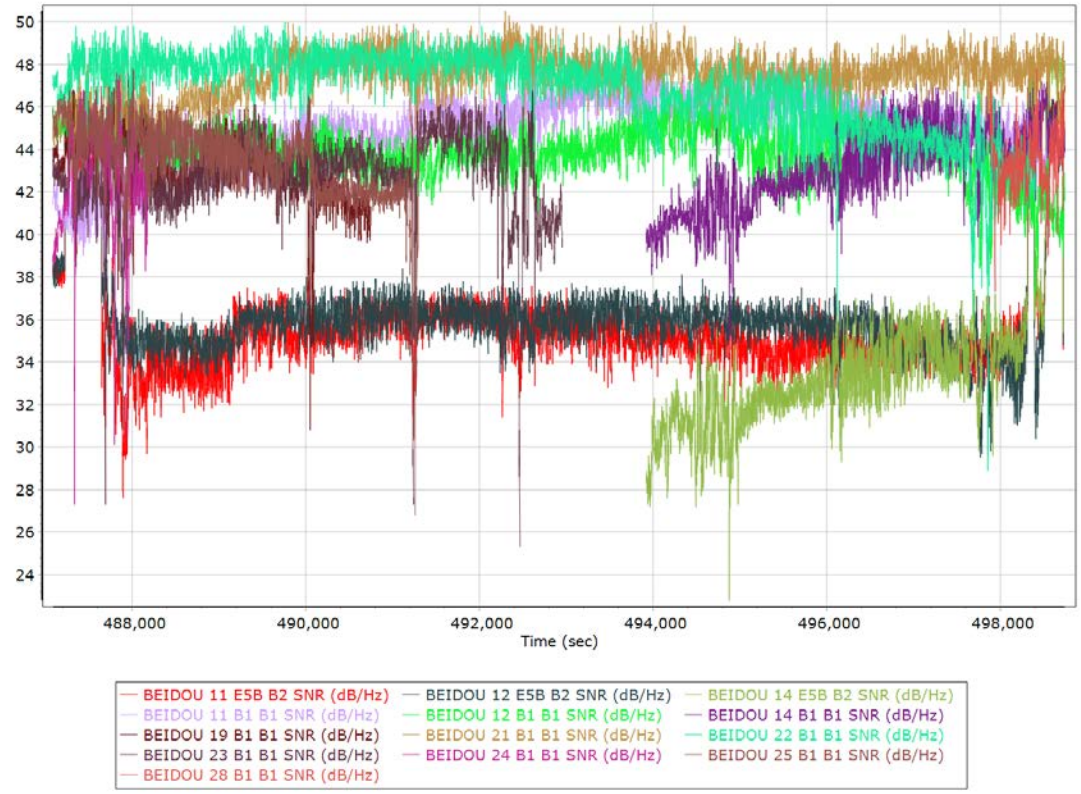
GLONASS L2 SNR



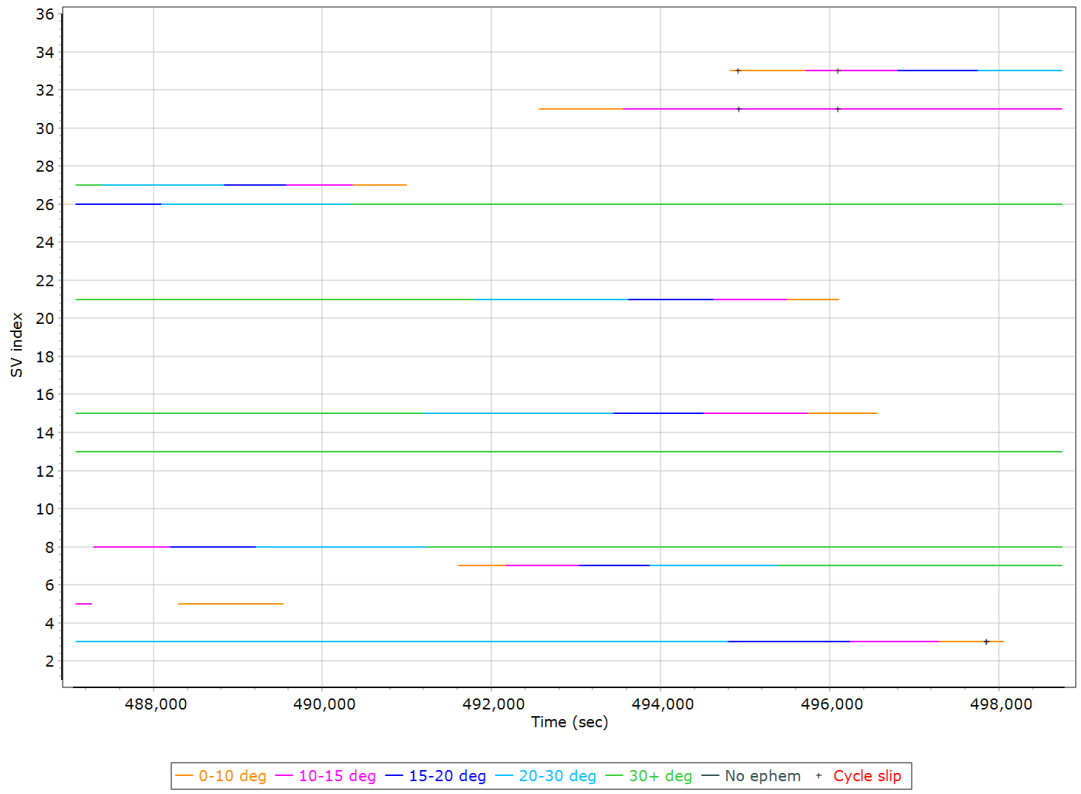
BEIDOU Satellite Lock/Elevation



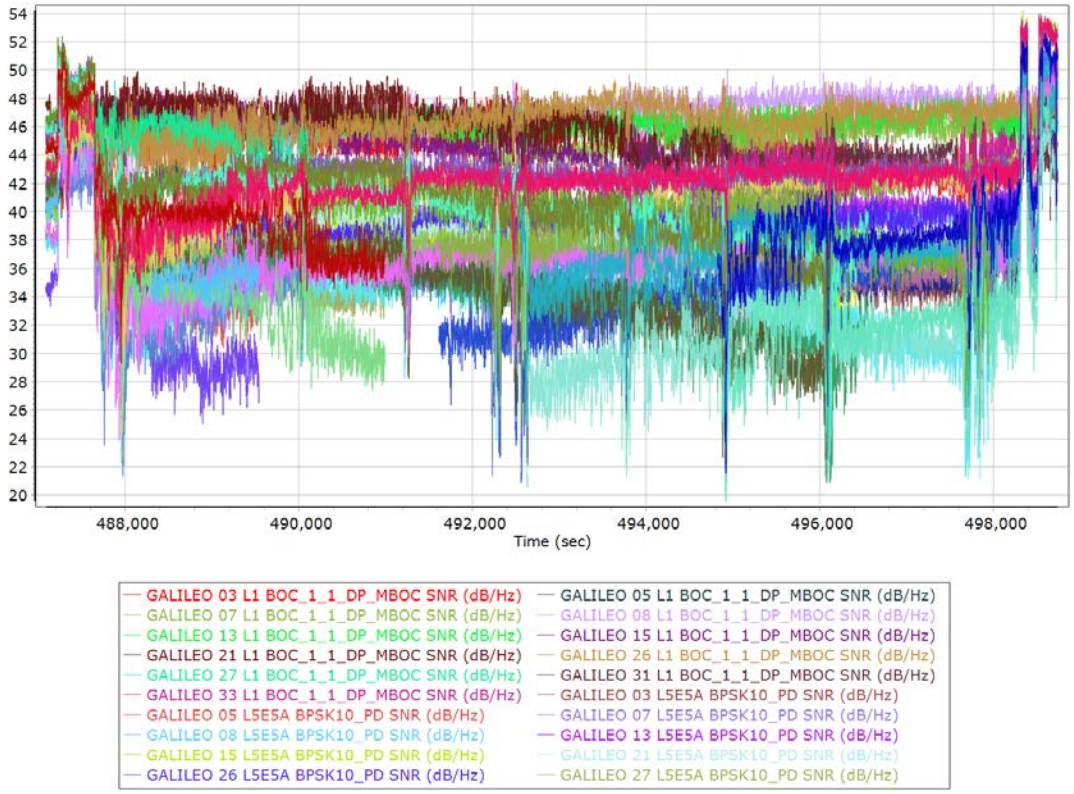
BEIDOU SNR



GALILEO Satellite Lock/Elevation

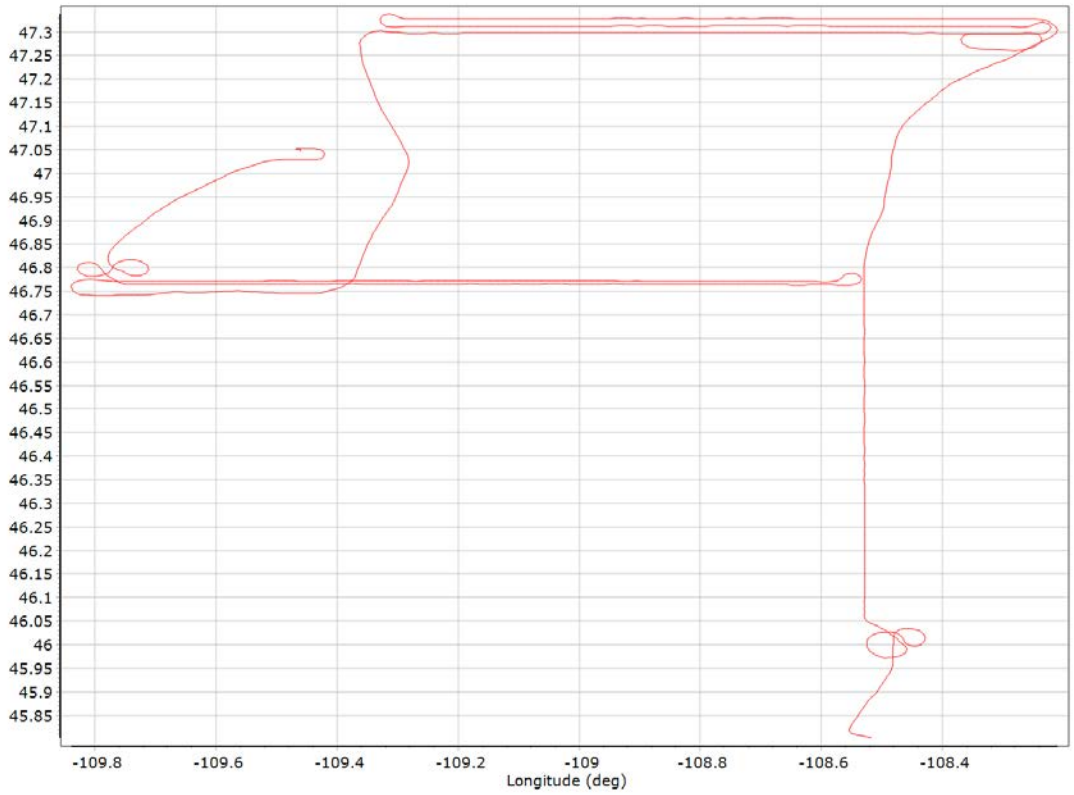


GALILEO SNR

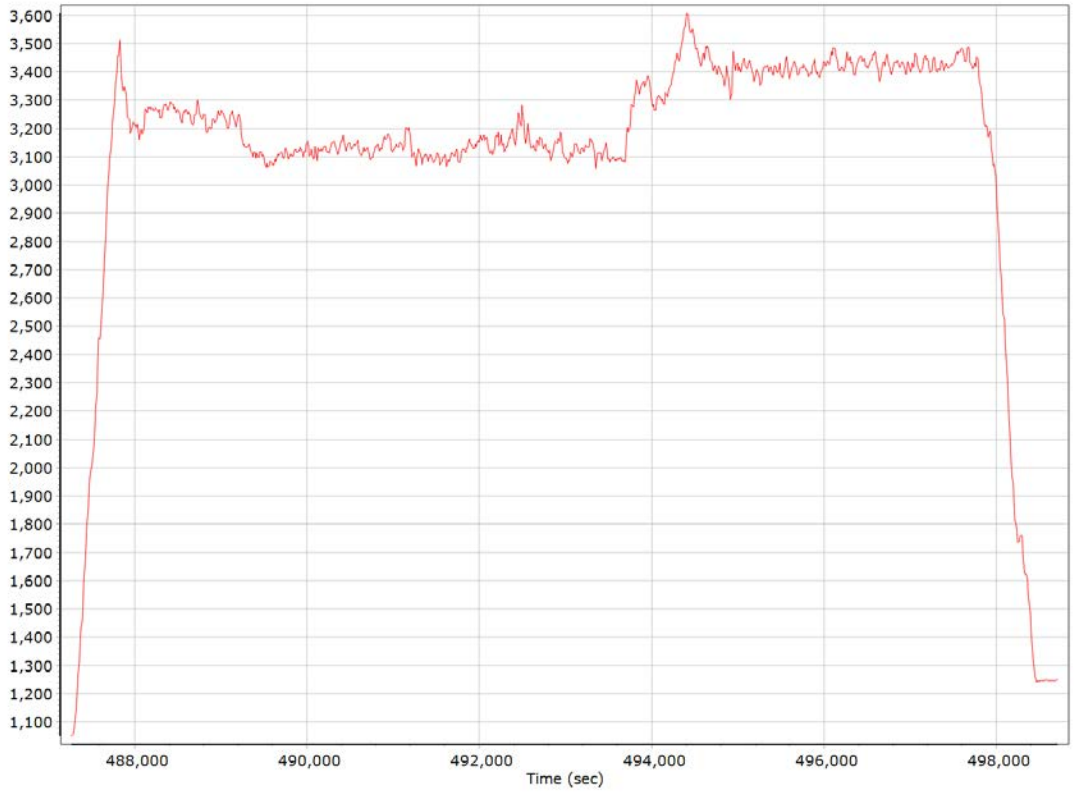

54
52
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32
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488,000
490,000
492,000
494,000
496,000
498,000
Time (sec)
GALILEO 03 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 05 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 07 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 08 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 13 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 15 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 21 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 26 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 27 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 31 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 33 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 03 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 05 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 07 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 08 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 13 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 15 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 21 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 26 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 27 L5E5A BPSK10_PD SNR (dB/Hz)

Smoothed Trajectory Information

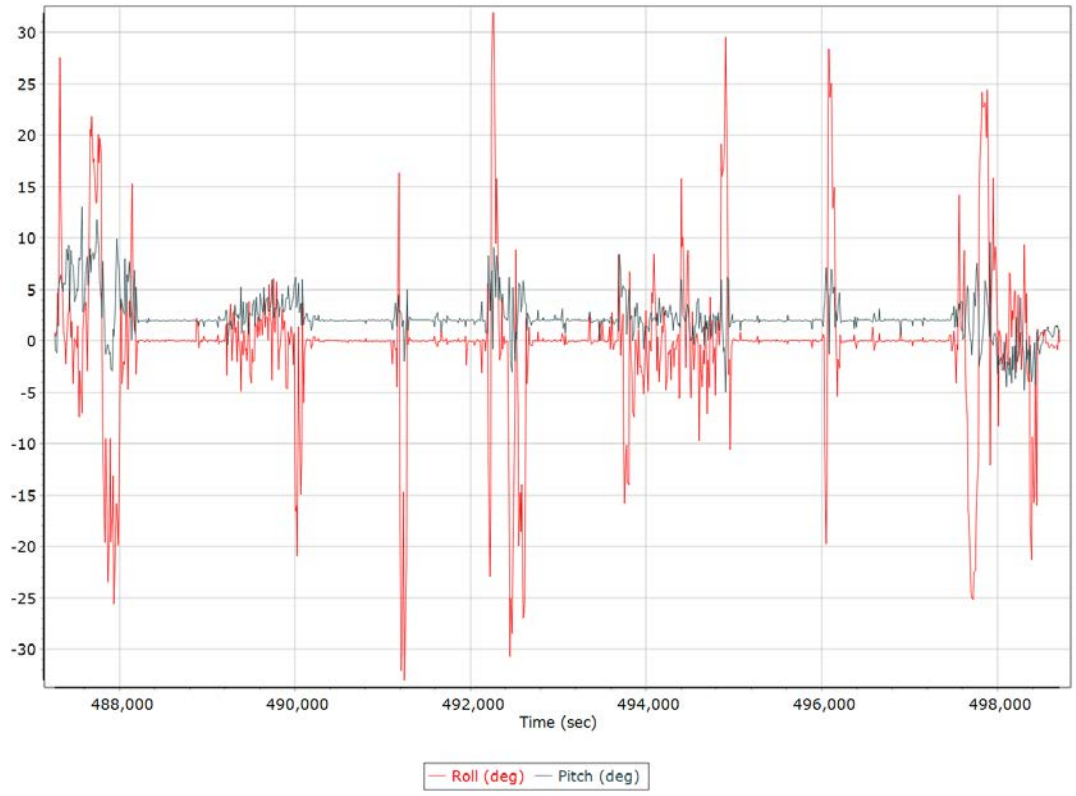
Top View



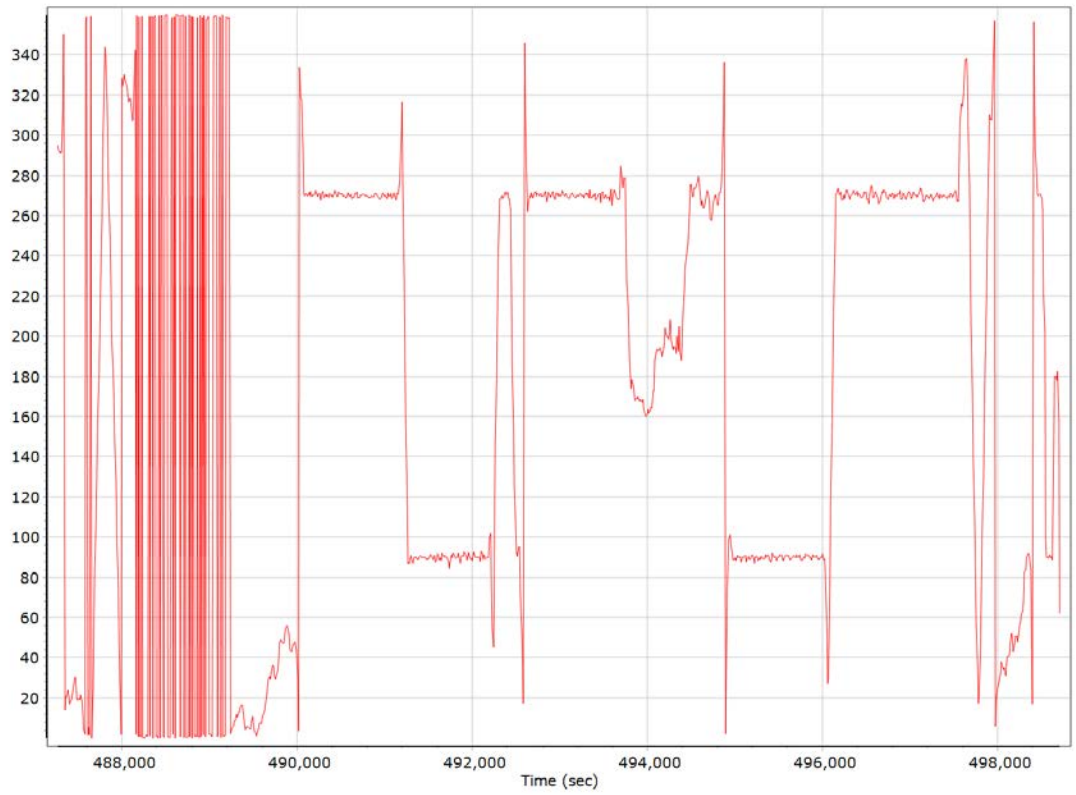
Altitude



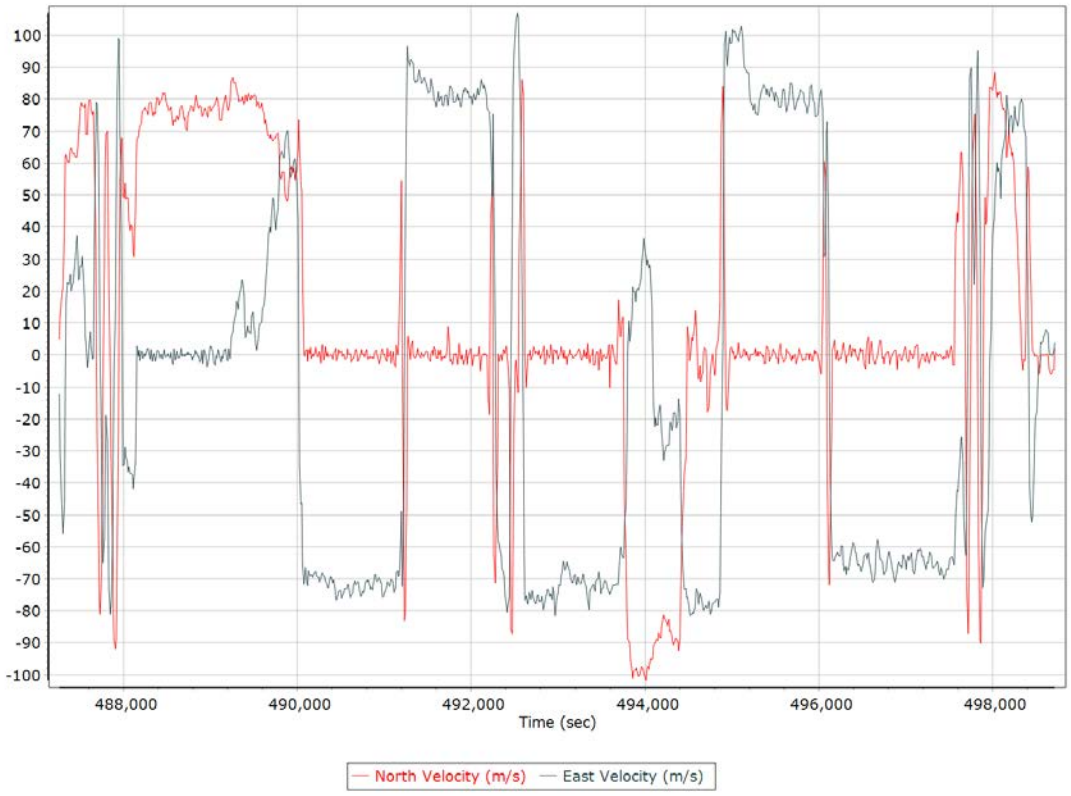
Roll/Pitch



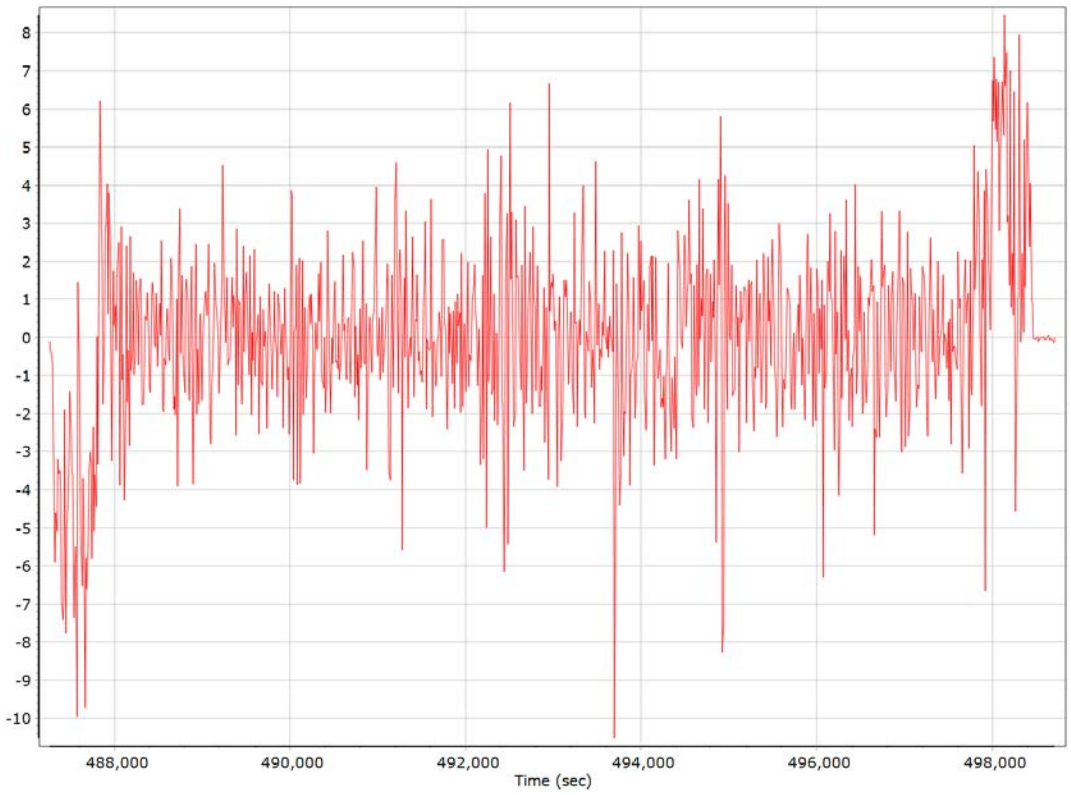
Heading



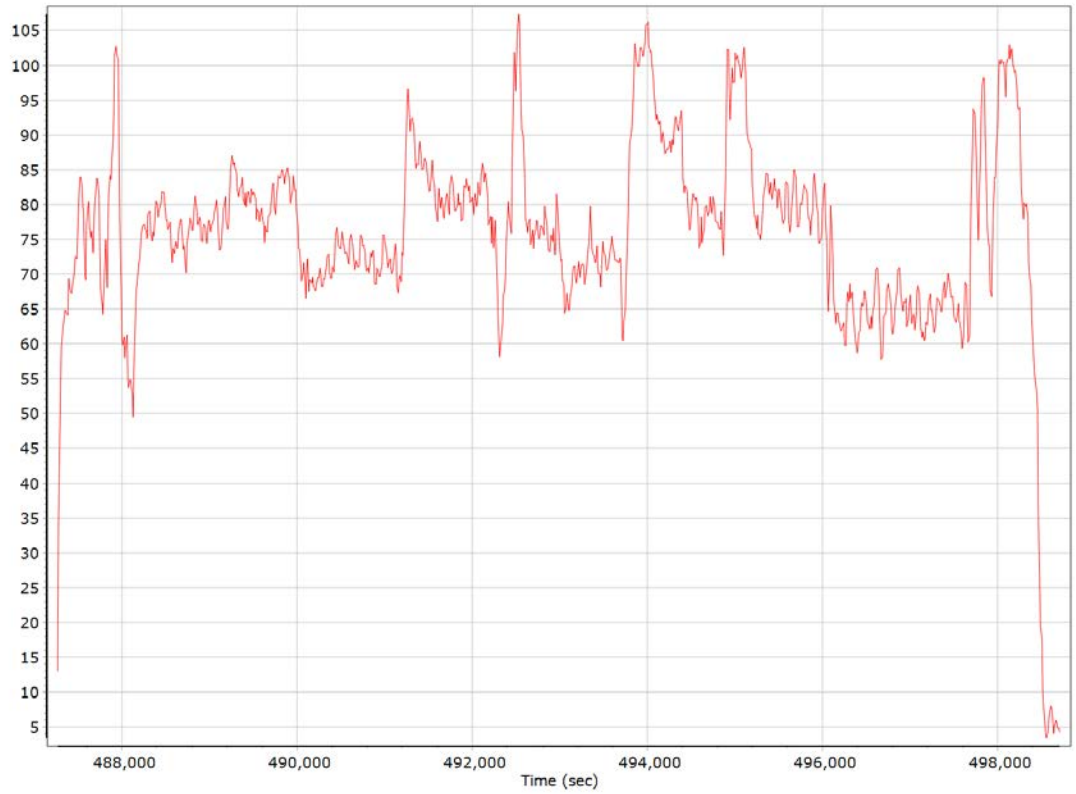
North/East Velocity



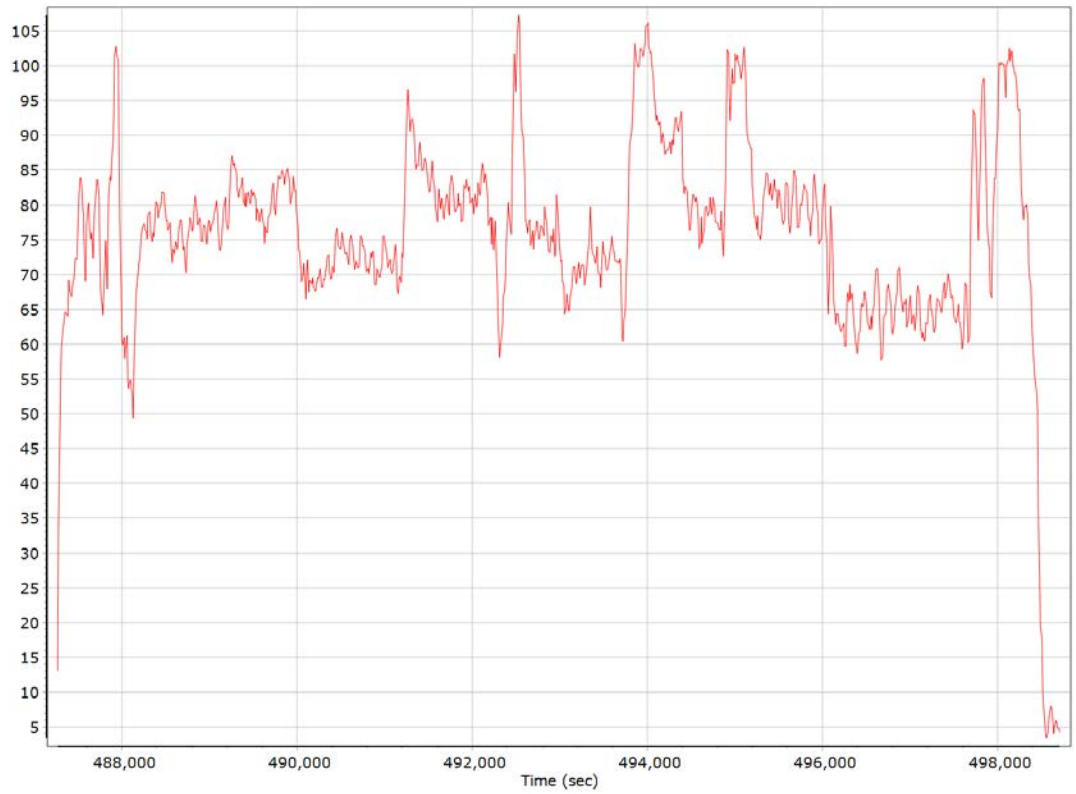
Down Velocity



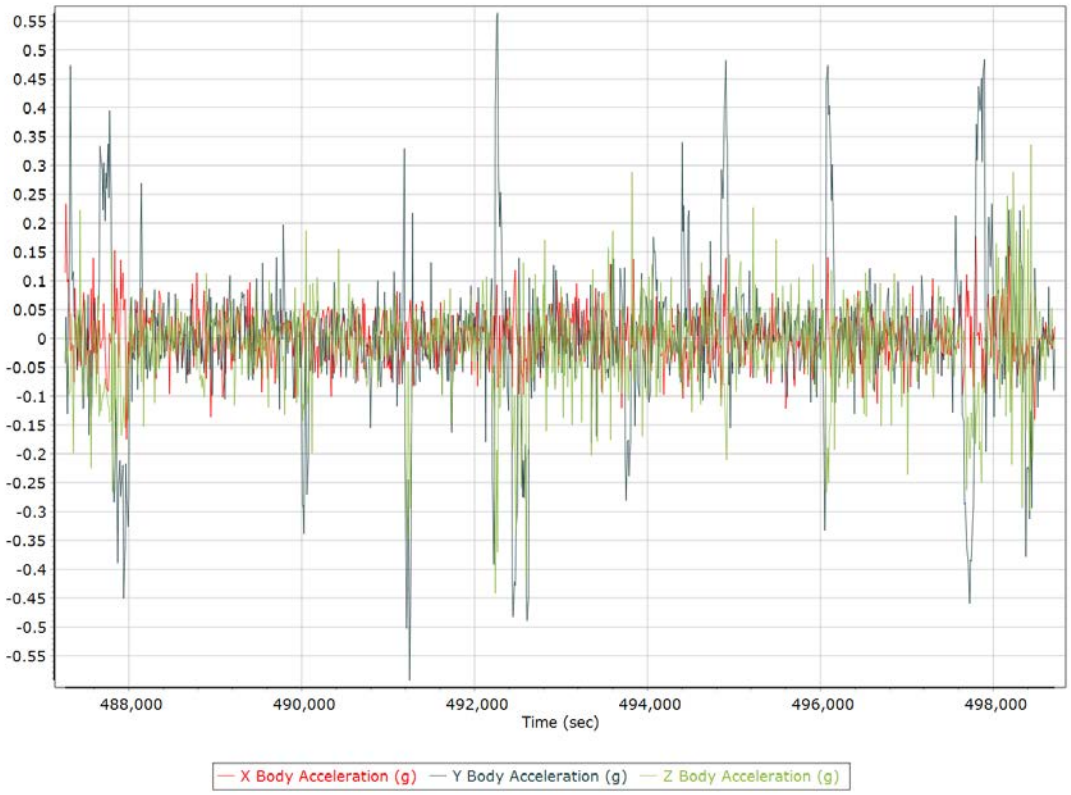
Total Speed



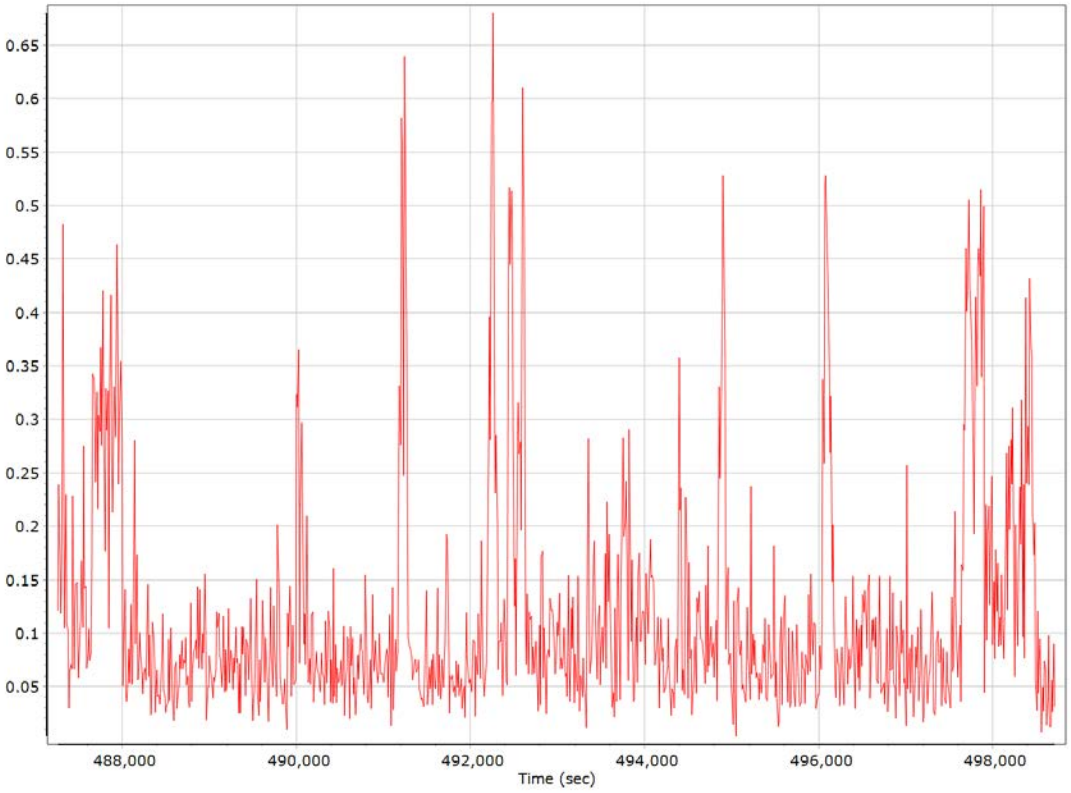
Ground Speed



Body Acceleration



Total Body Acceleration

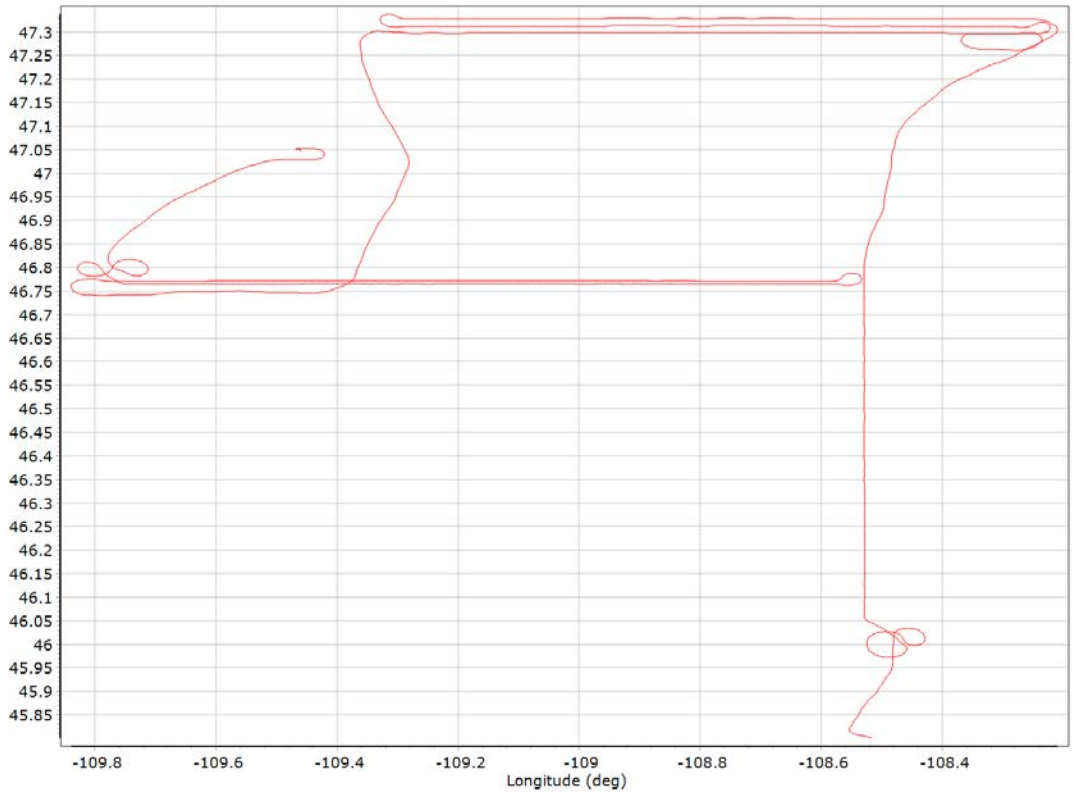


Body Angular Rate

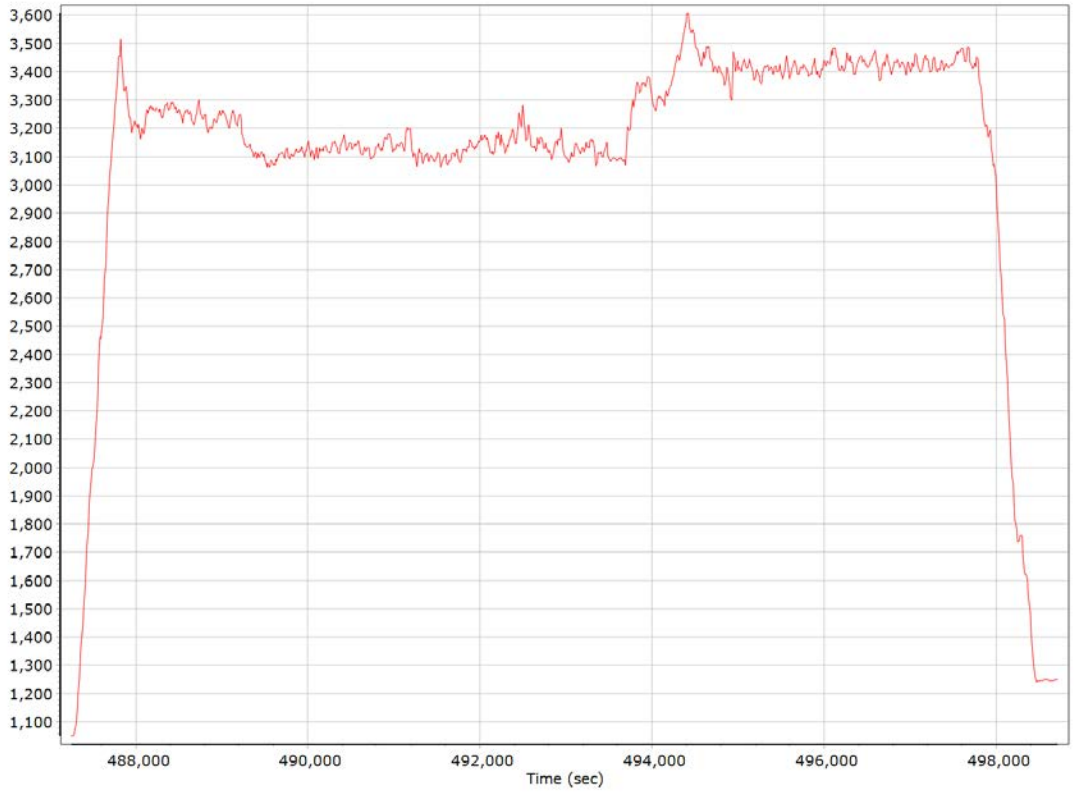


Forward Processed Trajectory Information

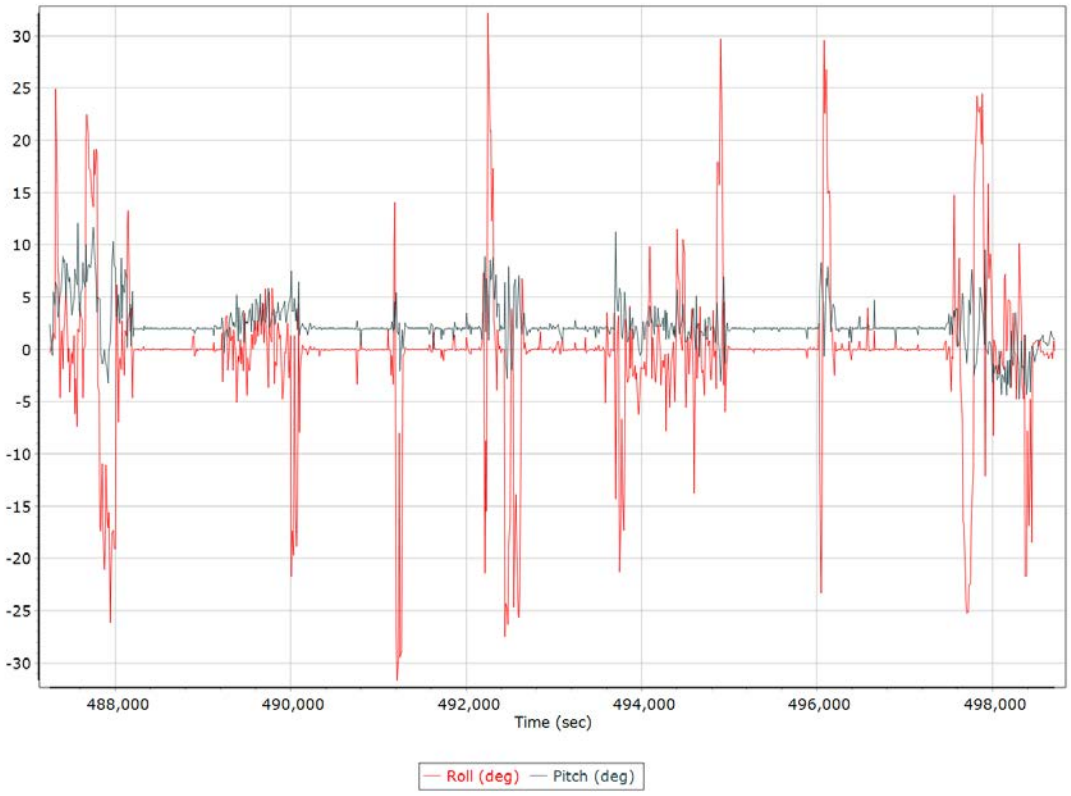
Top View



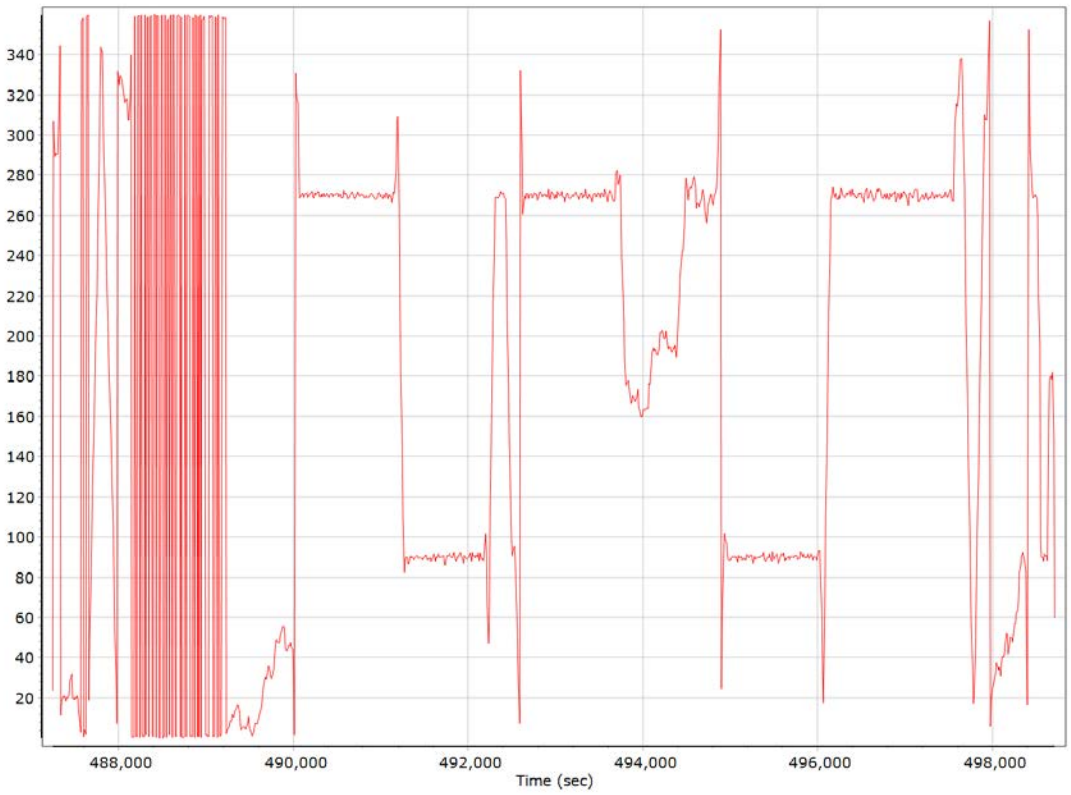
Altitude



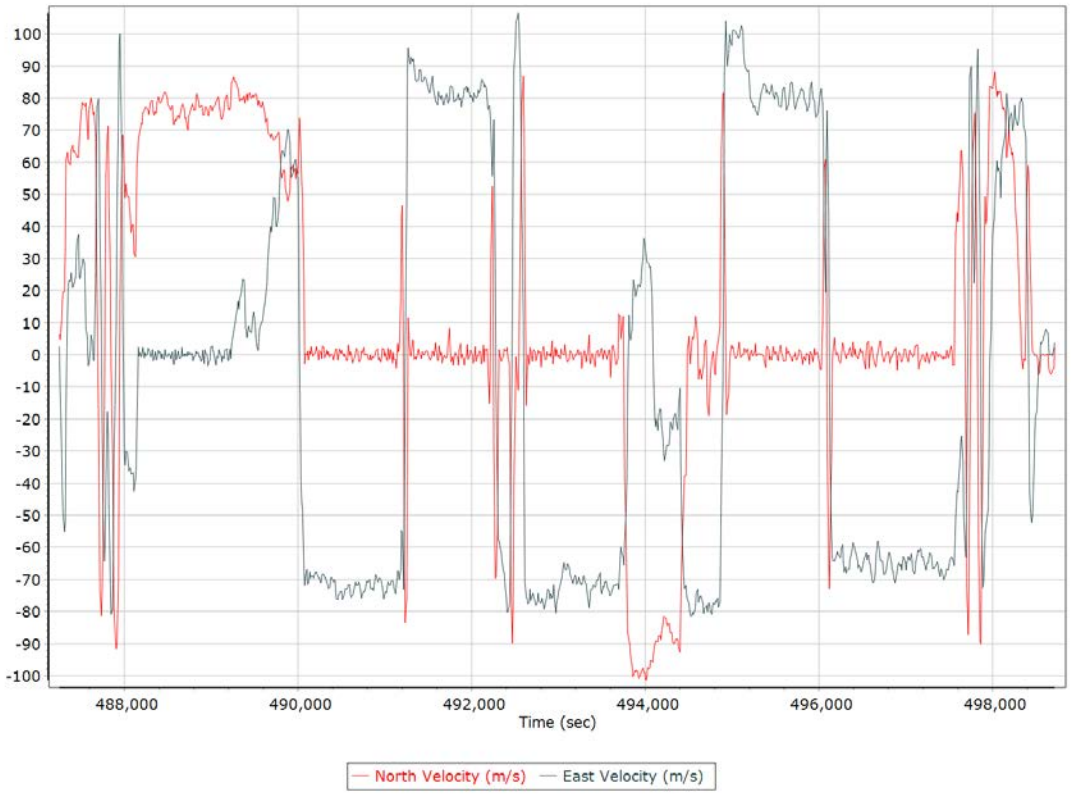
Roll/Pitch



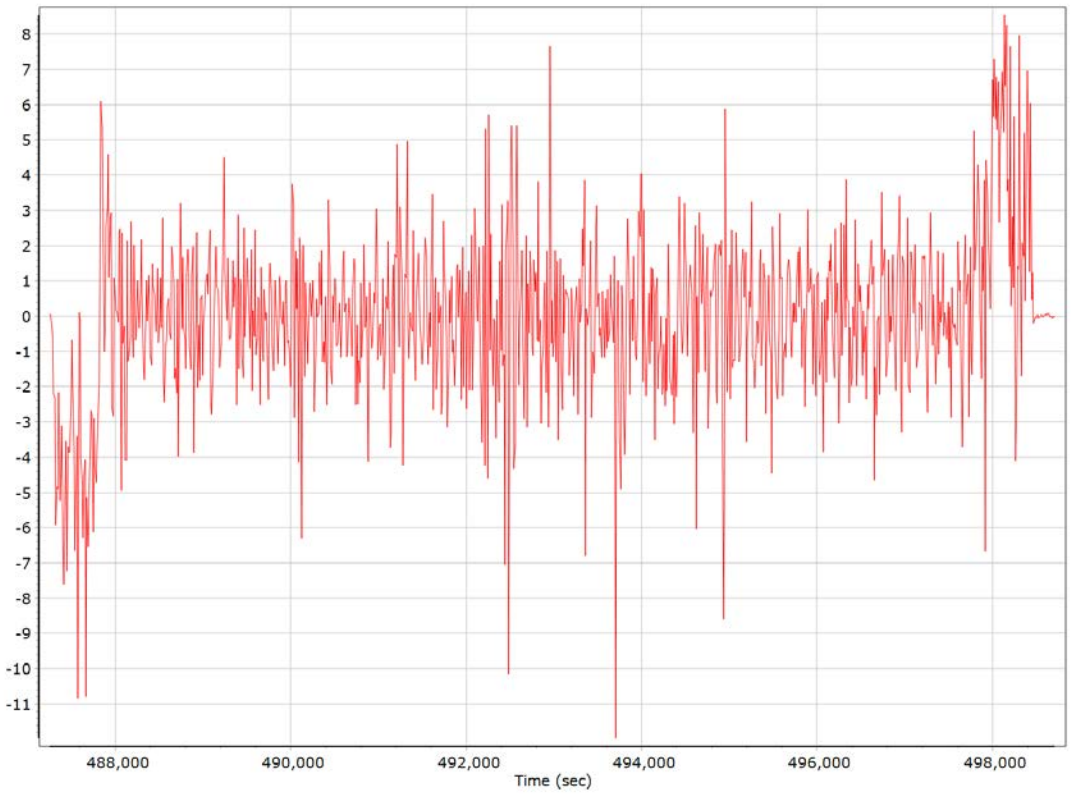
Heading



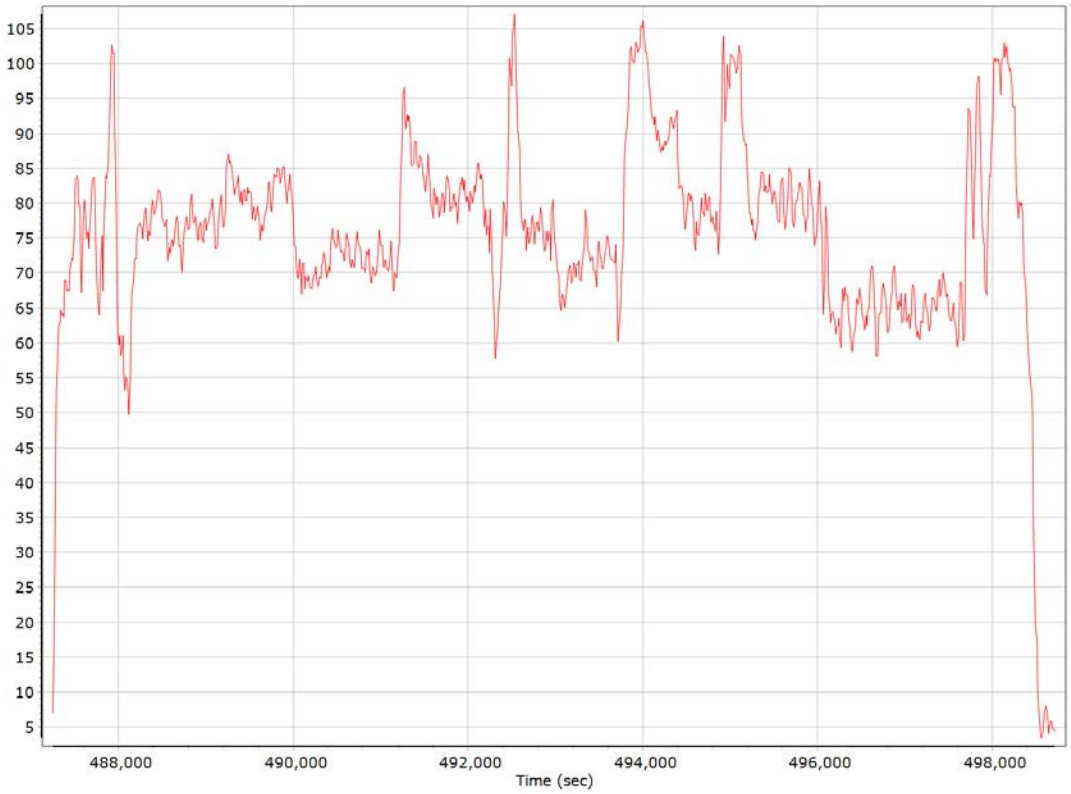
North/East Velocity



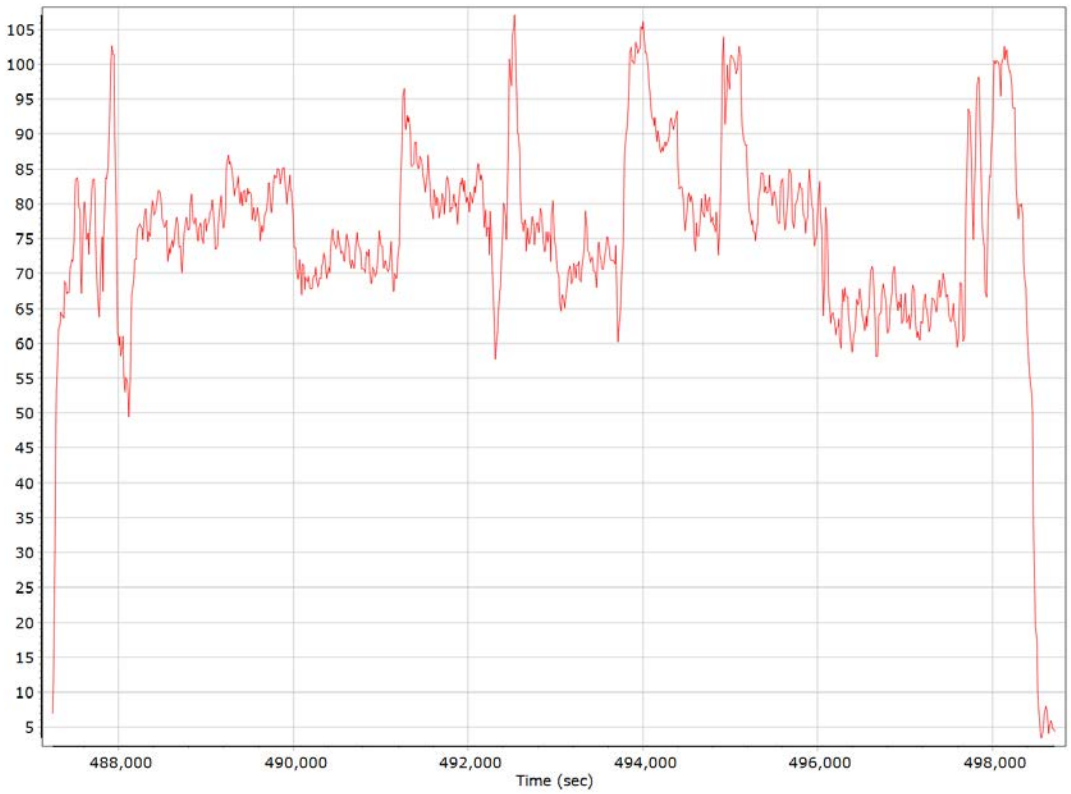
Down Velocity



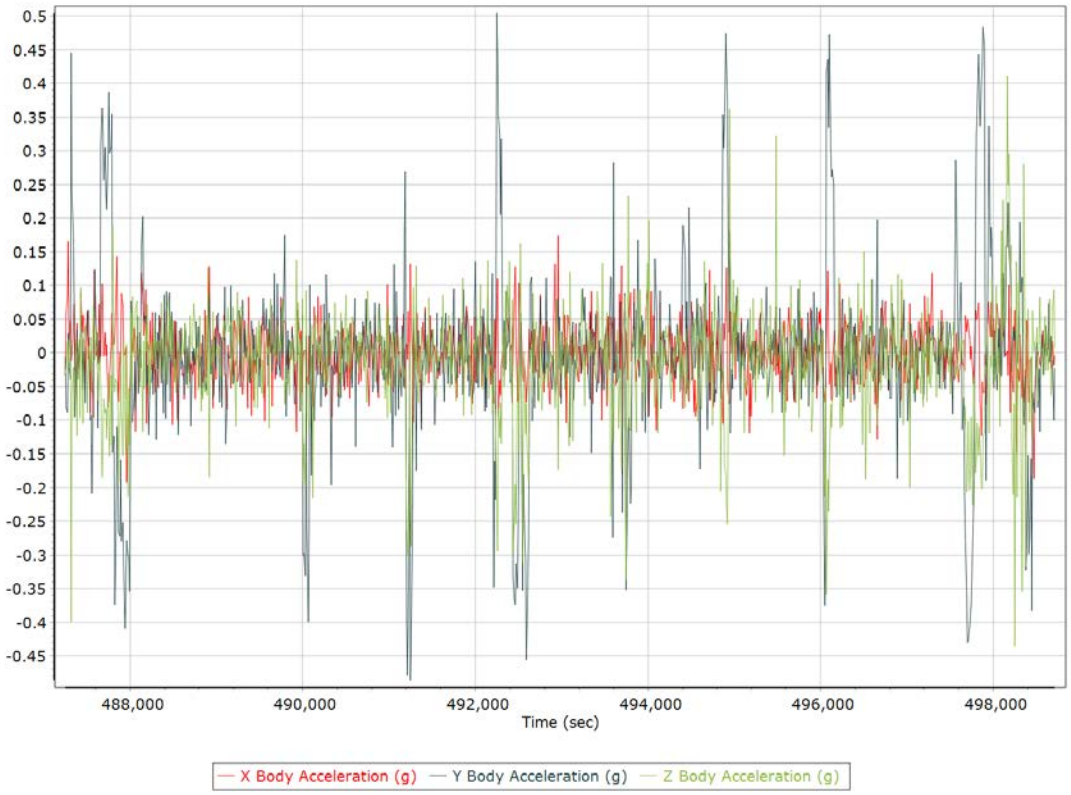
Total Speed



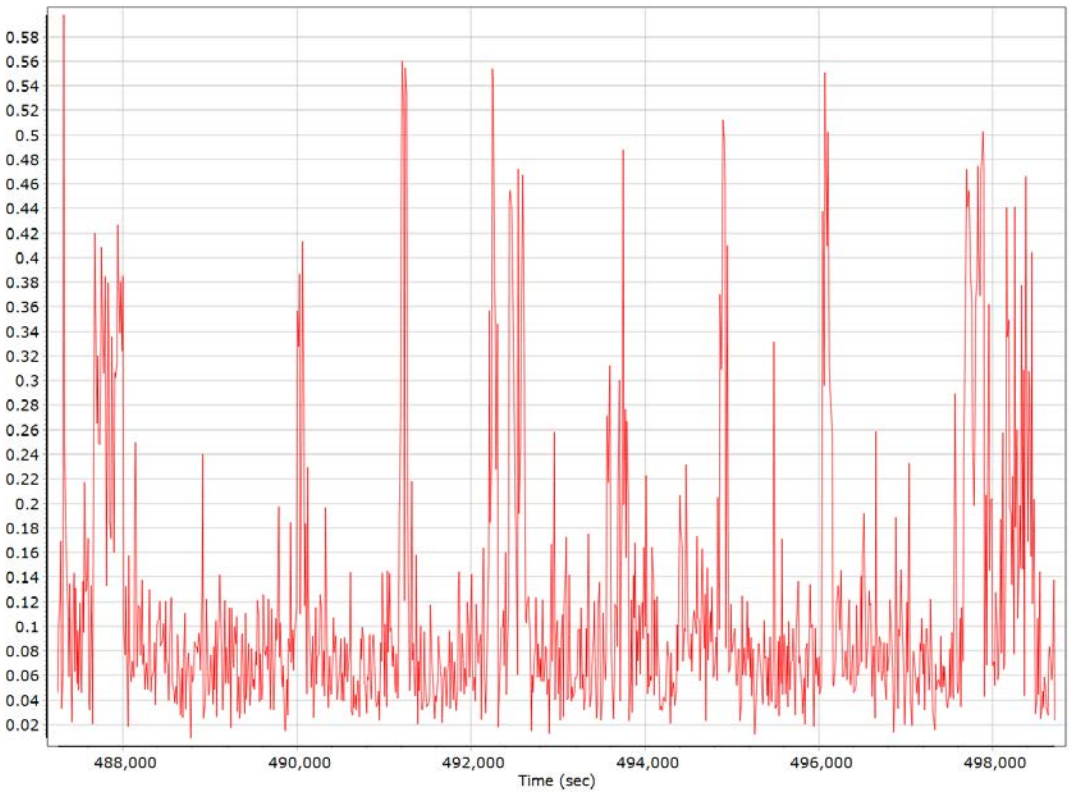
Ground Speed



Body Acceleration



Total Body Acceleration



Body Angular Rate

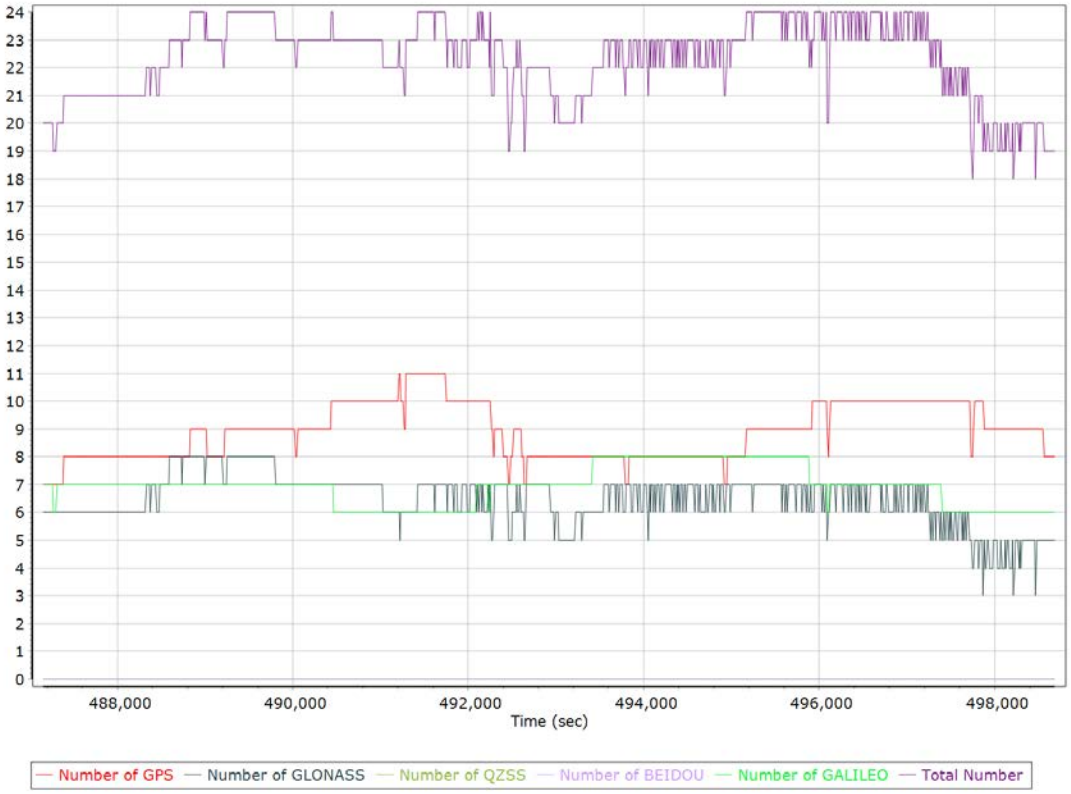


GNSS QC

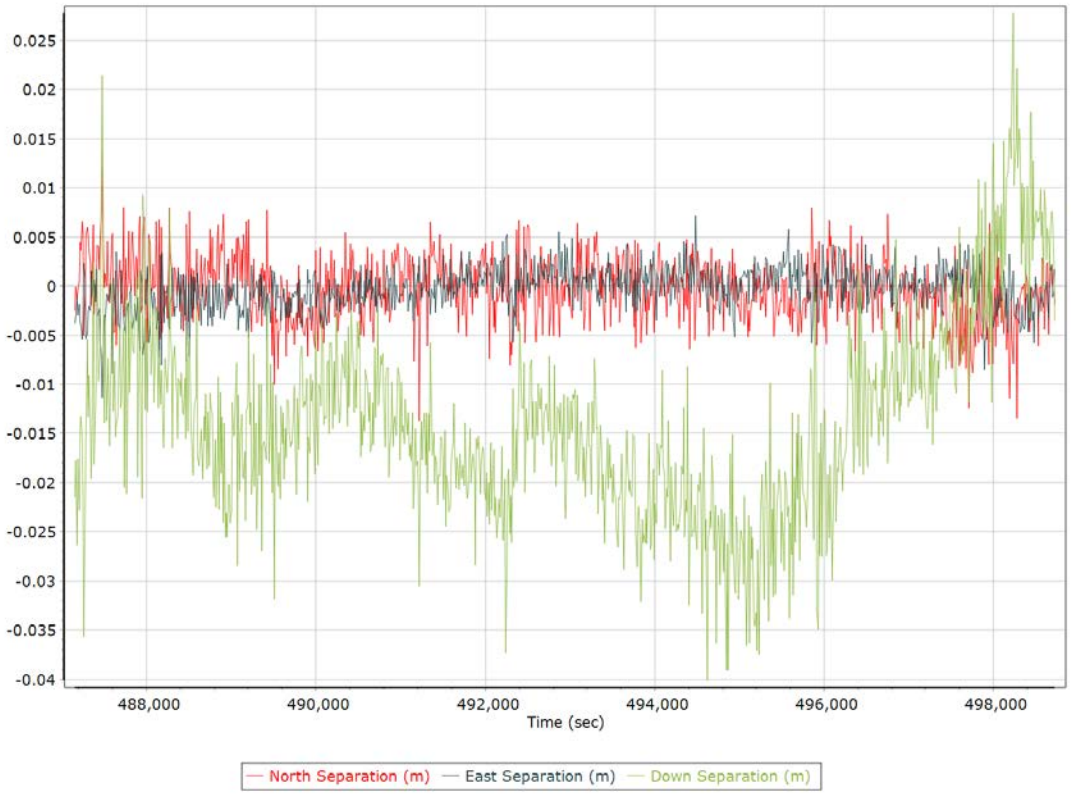
GNSS QC Statistics

Statistics	Min	Max	Mean
Baseline length (km)	0.00	0.00	
Number of GPS SV	7	11	9
Number of GLONASS SV	3	8	6
Number of QZSS SV	0	0	0
Number of BEIDOU SV	0	0	0
Number of GALILEO SV	6	8	7
Total number of SV	18	24	22
PDOP	1.00	1.60	1.13
QC Solution Gaps	0.00	0.00	
Solution Type	Fixed	Float	No solution
Epoch (sec)	11600.00	0.00	0.00
Percentage	100.00	0.00	0.00

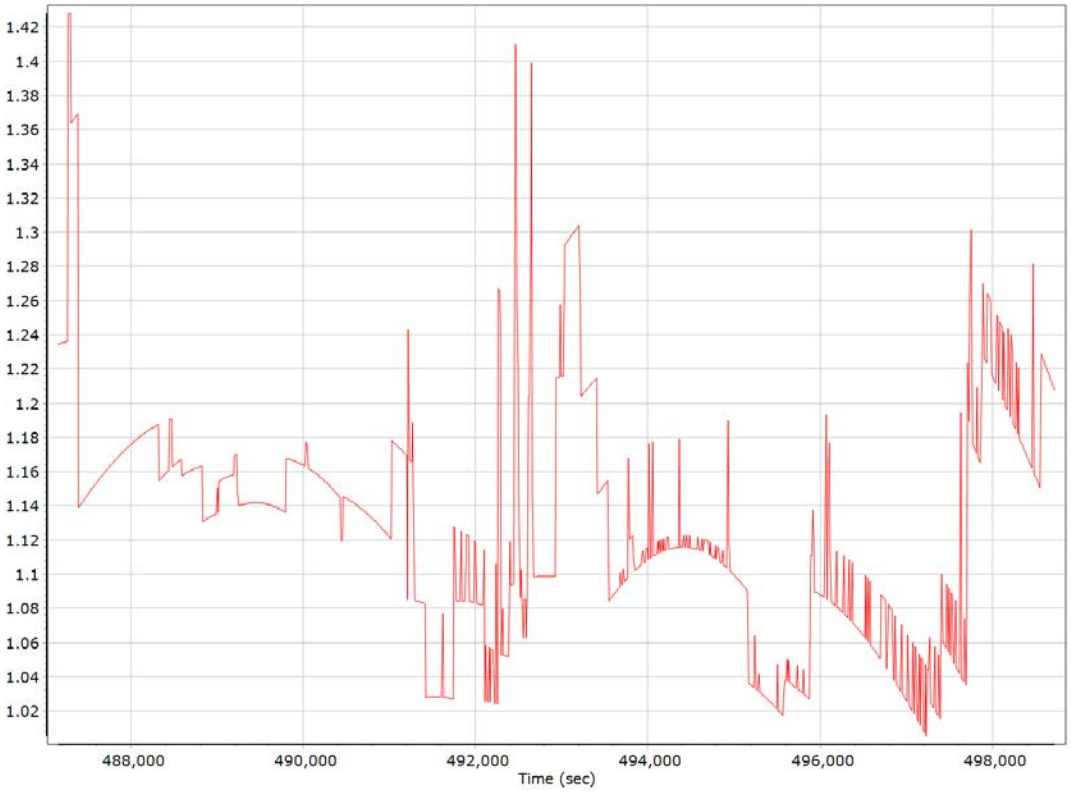
Num SVs in solution



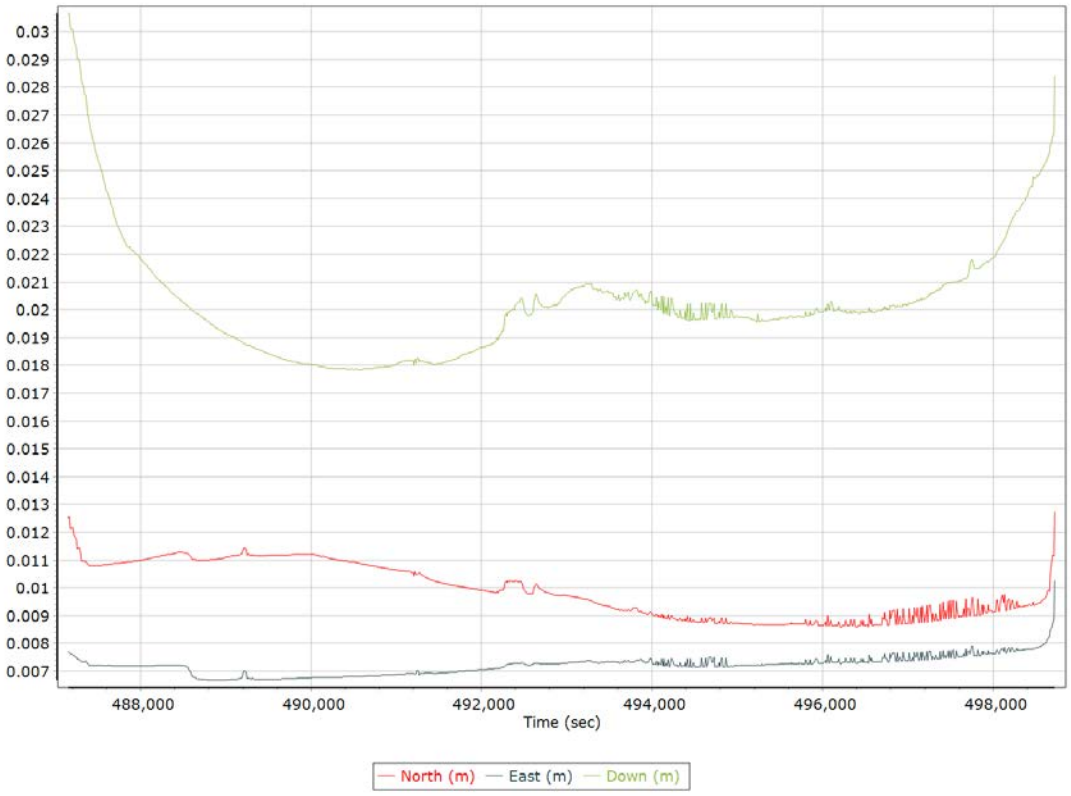
Forward/Reverse Separation



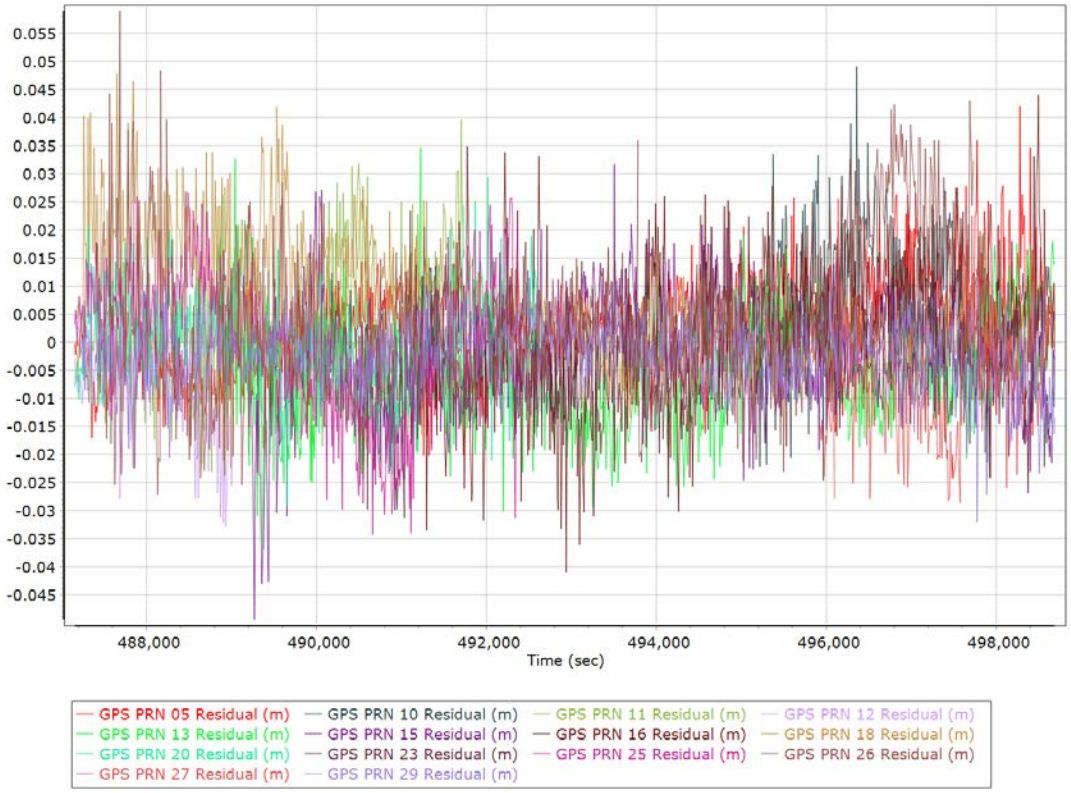
PDOP



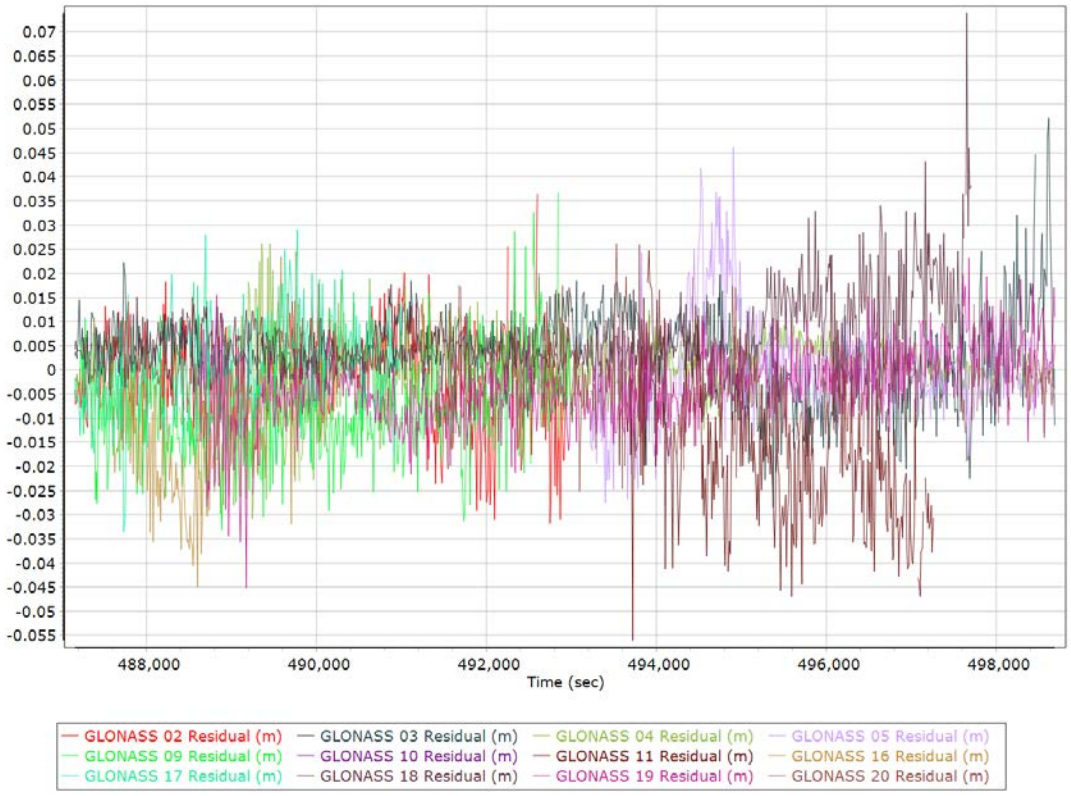
Estimated Position Accuracy



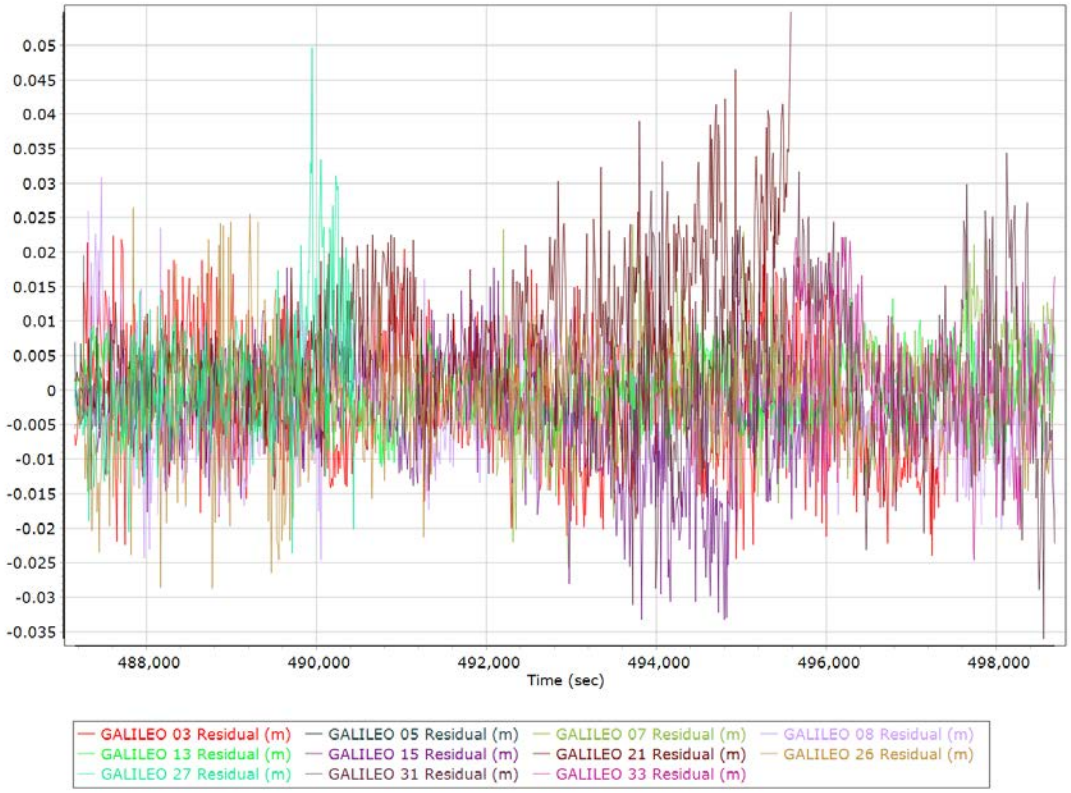
GPS Residuals



GLONASS Residuals



GALILEO Residuals



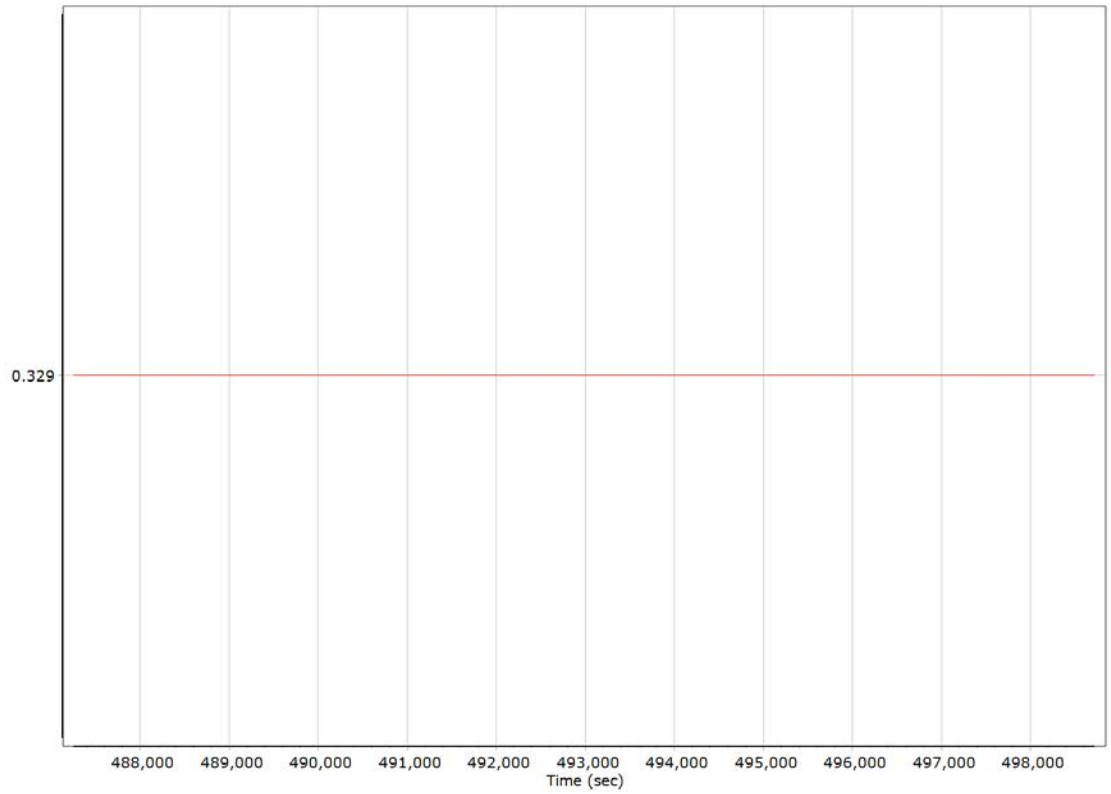
GNSS-Inertial Processor Configuration

Processing mode	IN-Fusion PP-RTX		
Stabilized mount	True		
Processing start time	487069.000 (8/11/2023 3:17:49 PM)		
Processing end time	498722.000 (8/11/2023 6:32:02 PM)		
Initial attitude source	Primary GNSS Track		
IMU Sensor Context	Processing with Onboard IMU		
Gimbal to IMU lever arm (m)	-0.034	-0.010	-0.374
Gimbal to IMU mounting angles (deg)	0.000	0.000	0.000
Gimbal to Primary GNSS lever arm (m)	0.329	-0.067	-1.393
Gimbal to Primary GNSS lever arm std dev (m)	0.030	0.030	0.030
Aircraft to Reference mounting angles (deg)	0.000	0.000	0.000

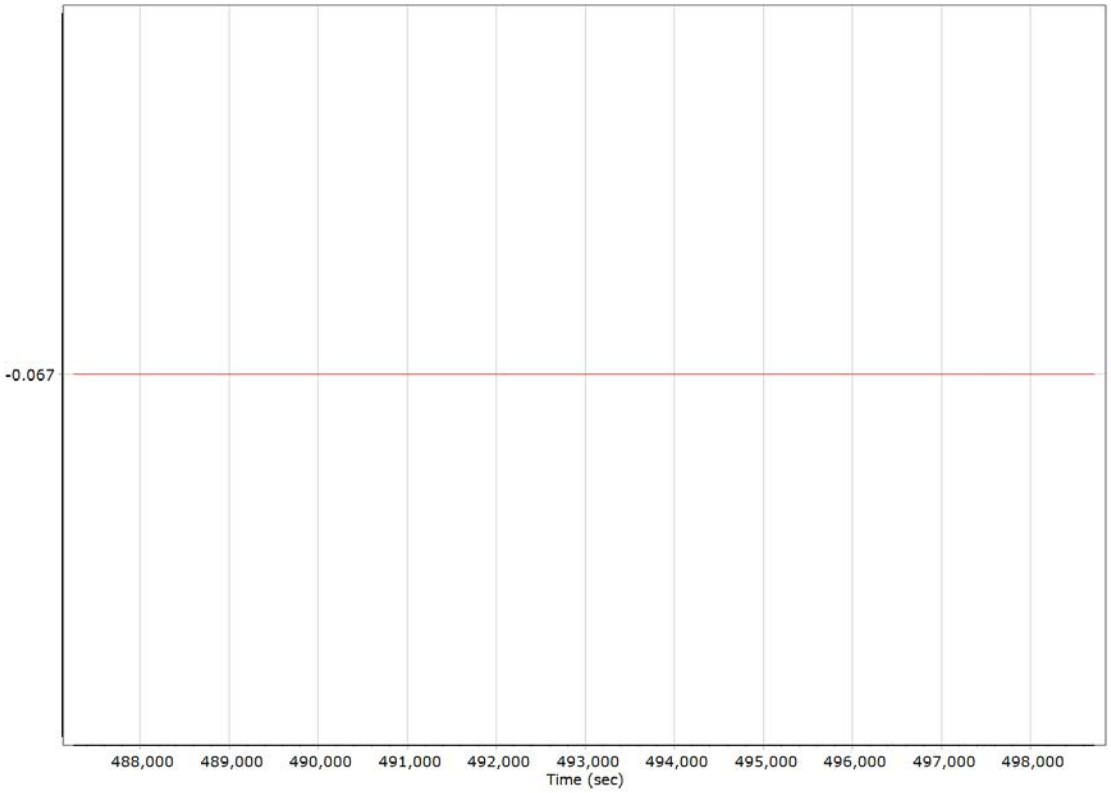
Calibrated Installation Parameters

Reference-Primary GNSS Lever Arm (m)

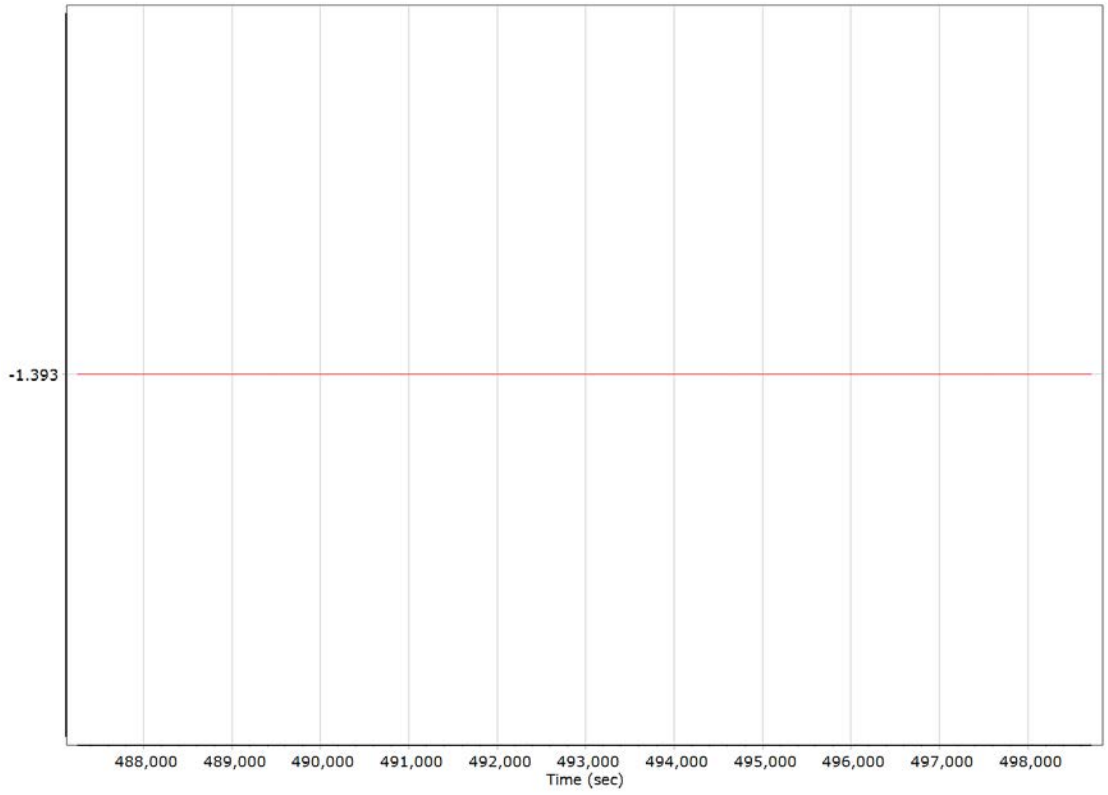
X Reference-Primary GNSS Lever Arm (m)



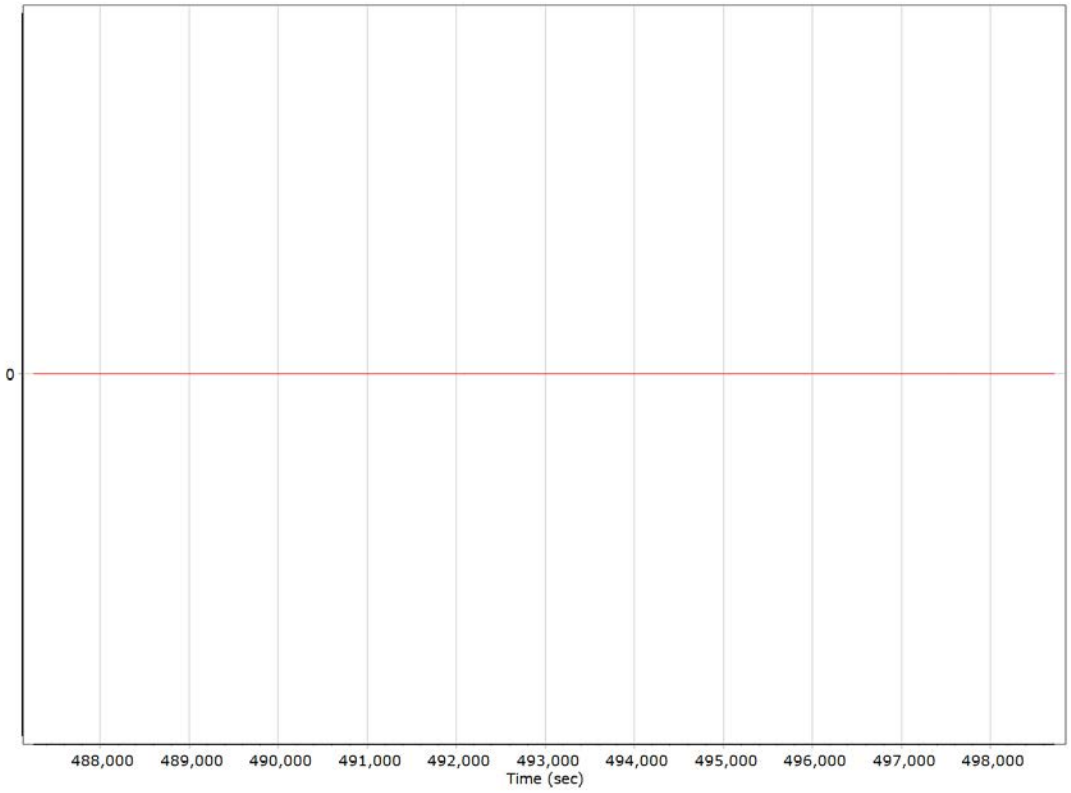
Y Reference-Primary GNSS Lever Arm (m)



Z Reference-Primary GNSS Lever Arm (m)



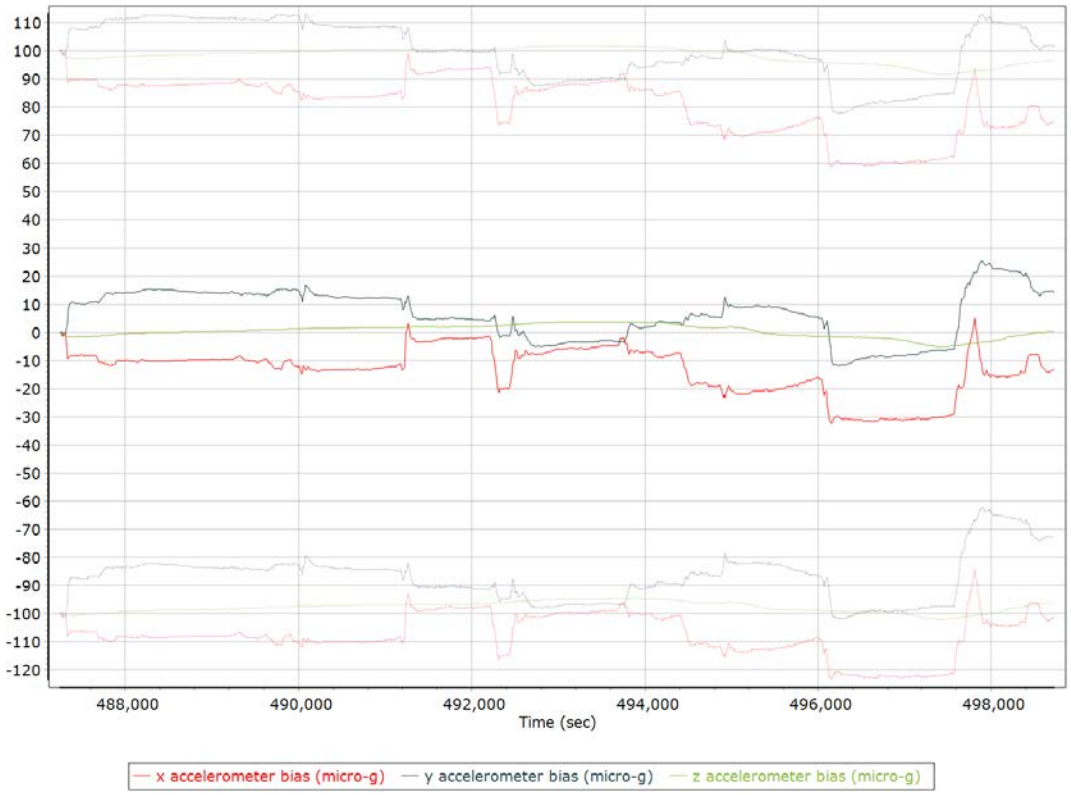
Reference-Primary GNSS Lever Arm Figure of Merit



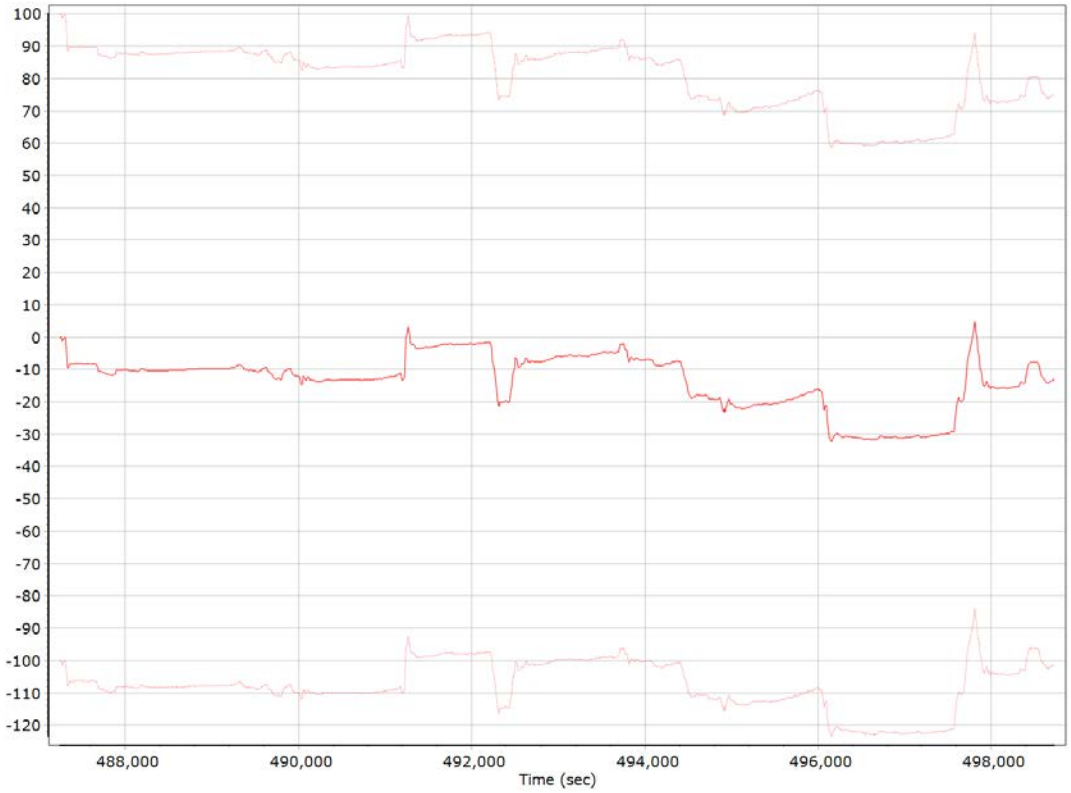
IN-Fusion QC

Forward Processed Estimated Errors, Reference Frame

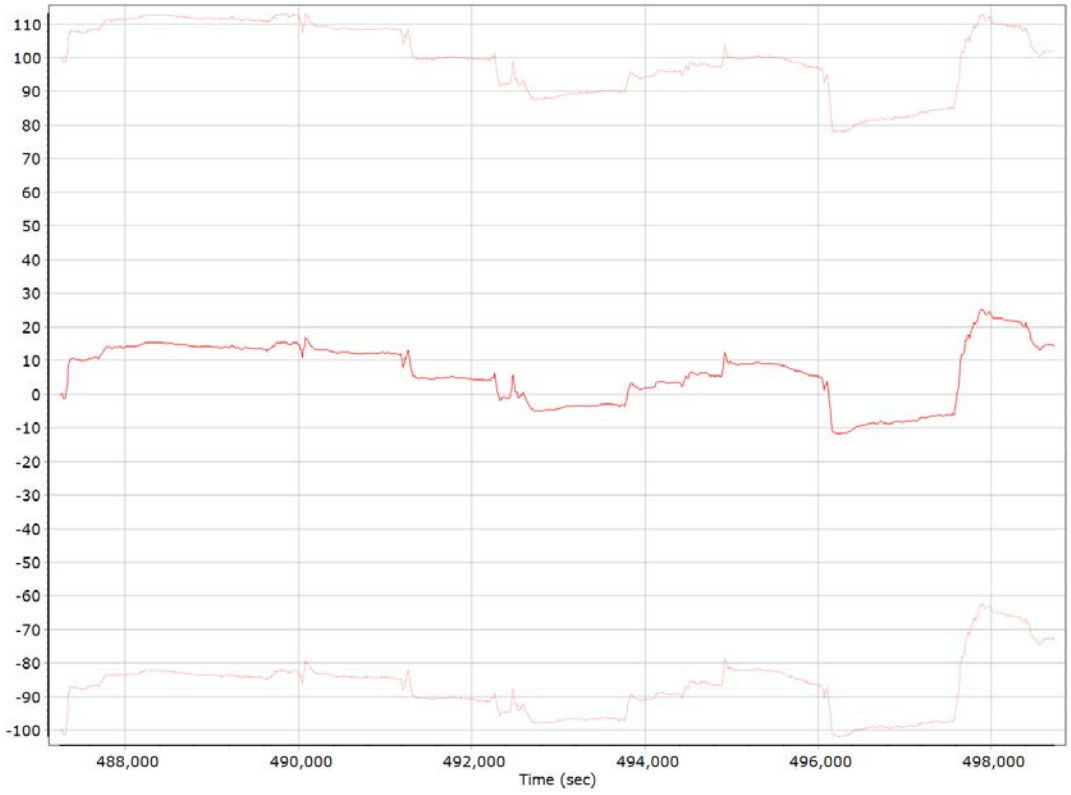
Accelerometer Bias (micro-g)



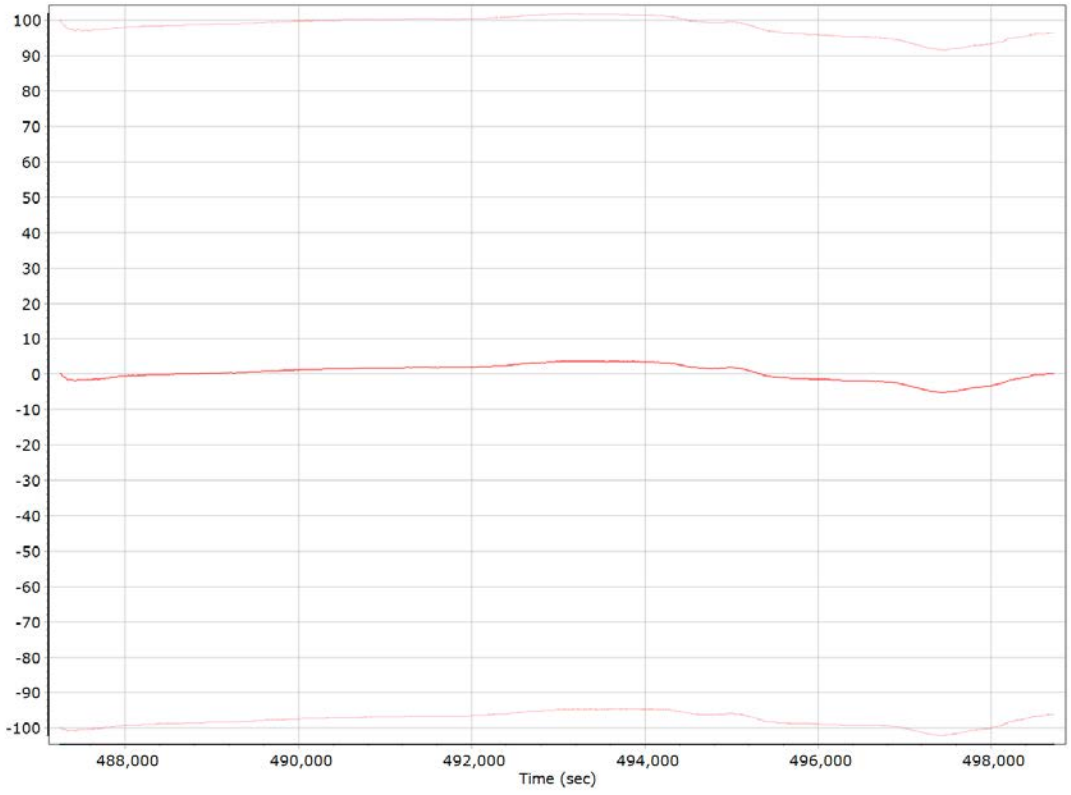
X Accelerometer Bias (micro-g)



Y Accelerometer Bias (micro-g)



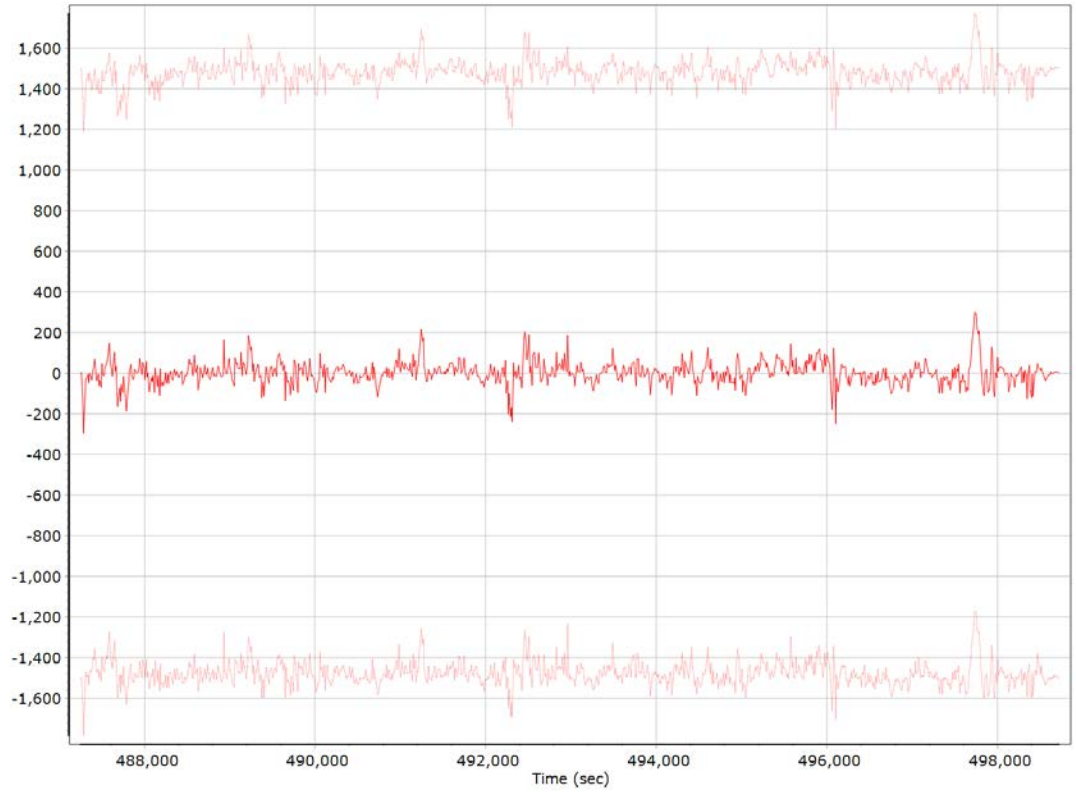
Z Accelerometer Bias (micro-g)



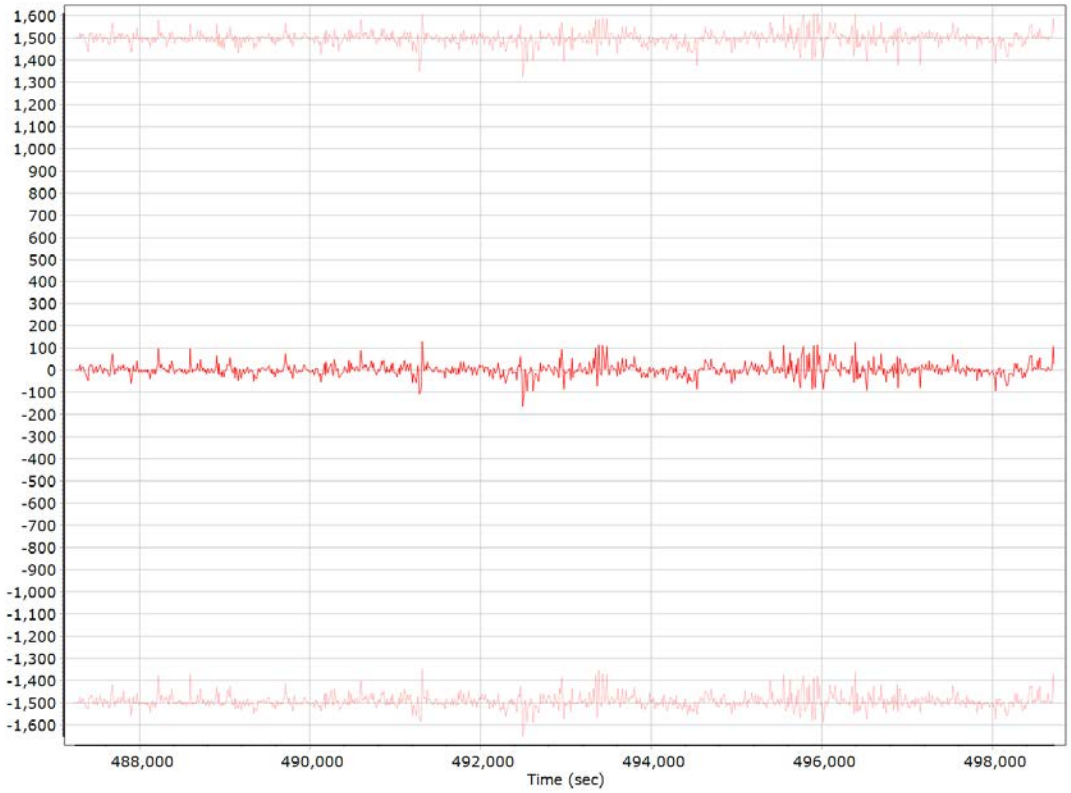
Accelerometer Scale Error (ppm)



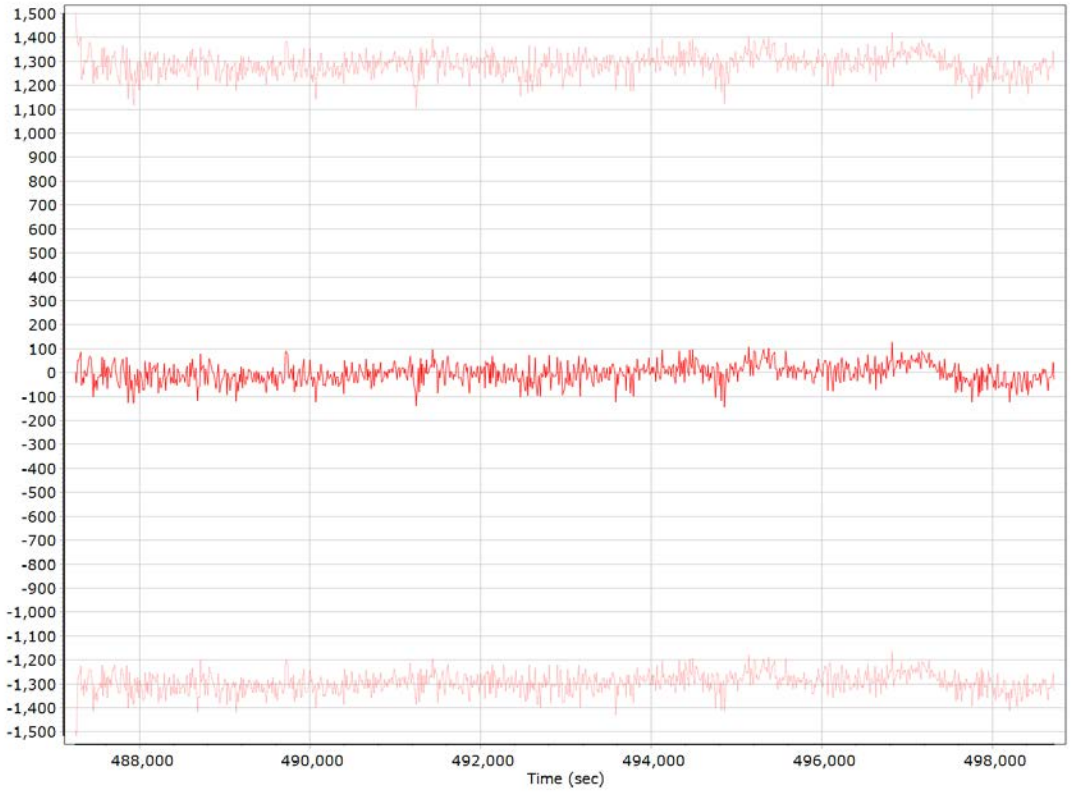
X Accelerometer Scale Error (ppm)



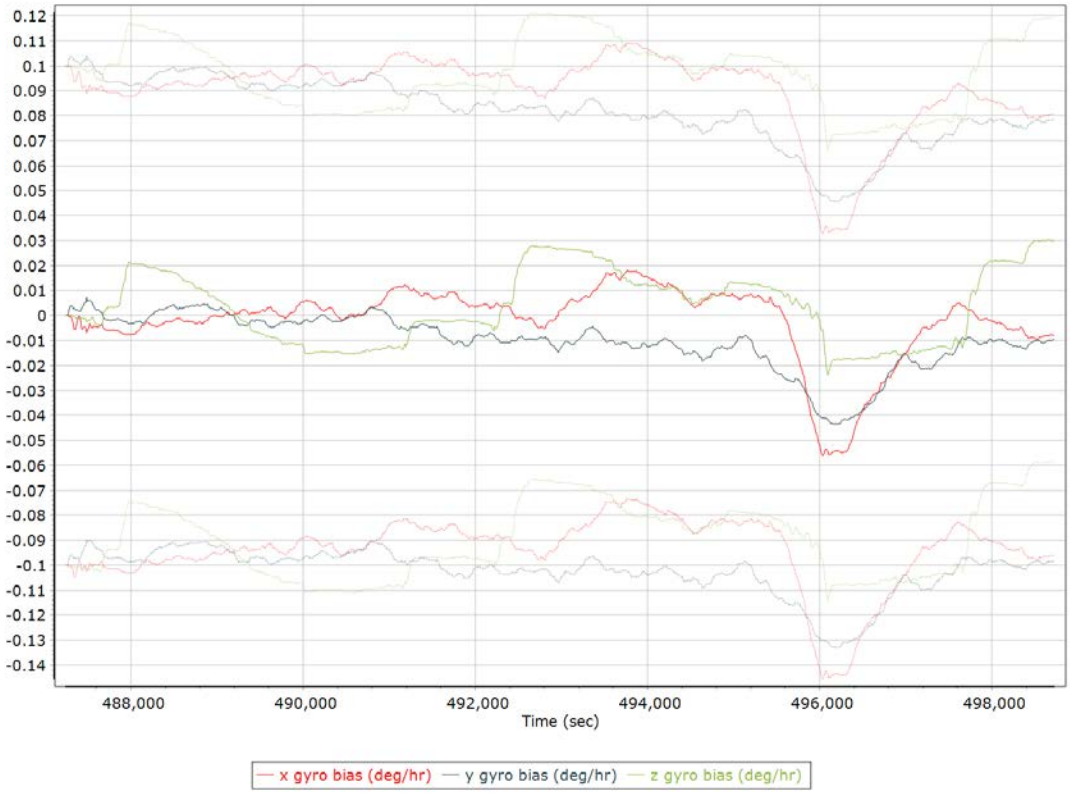
Y Accelerometer Scale Error (ppm)



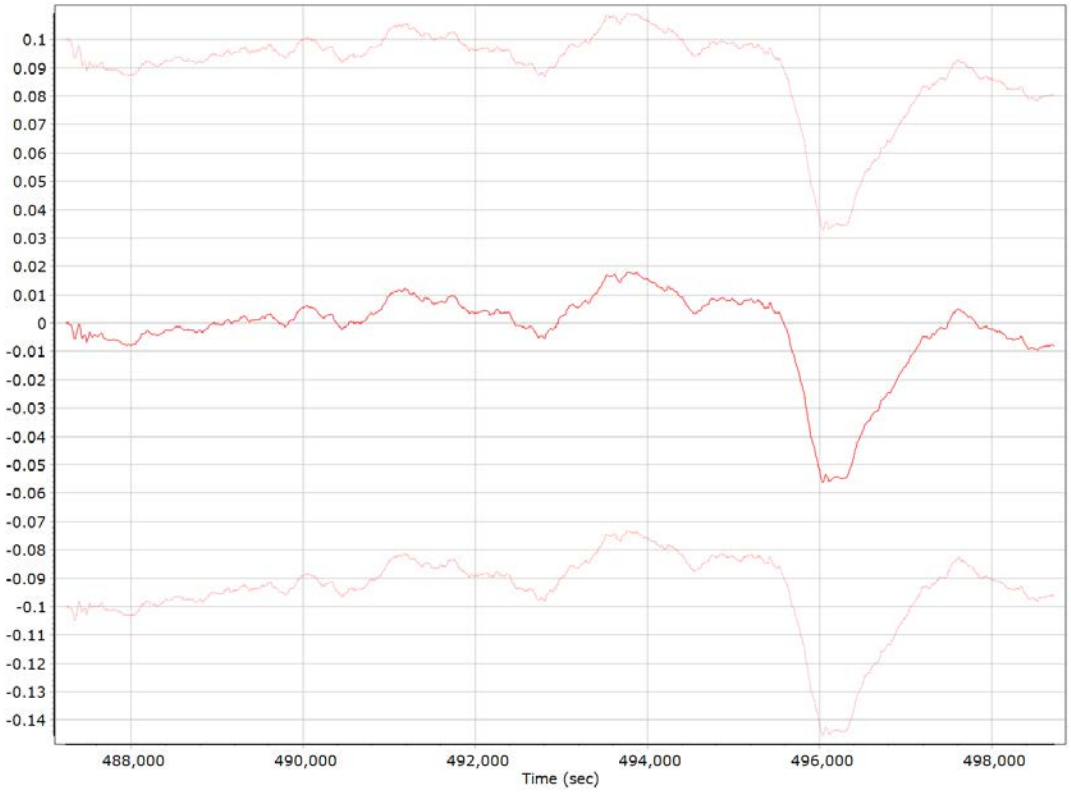
Z Accelerometer Scale Error (ppm)



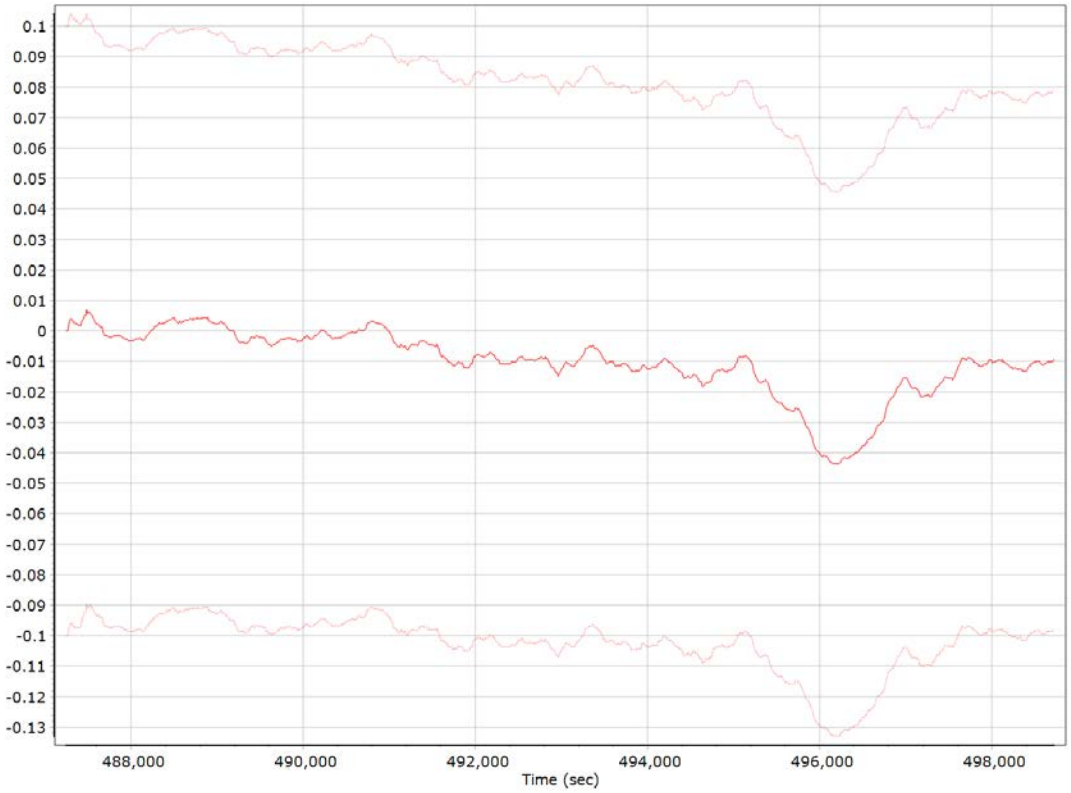
Gyro Bias (deg/h)



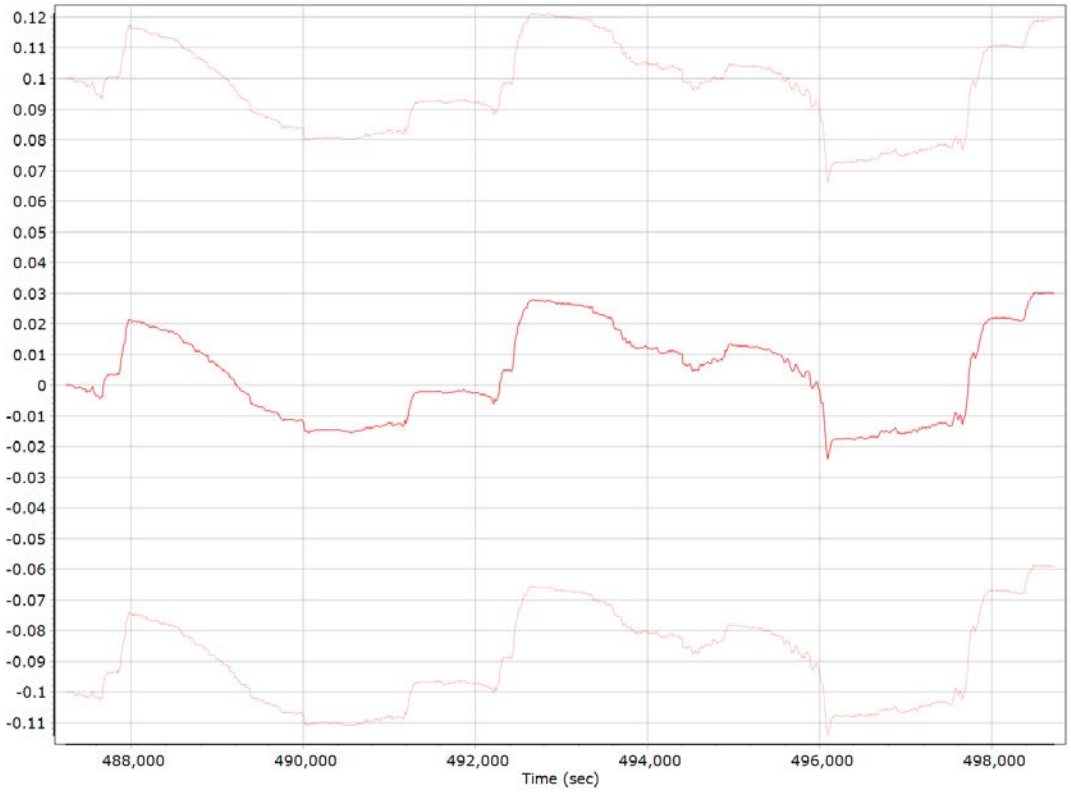
X Gyro Bias (deg/h)



Y Gyro Bias (deg/h)



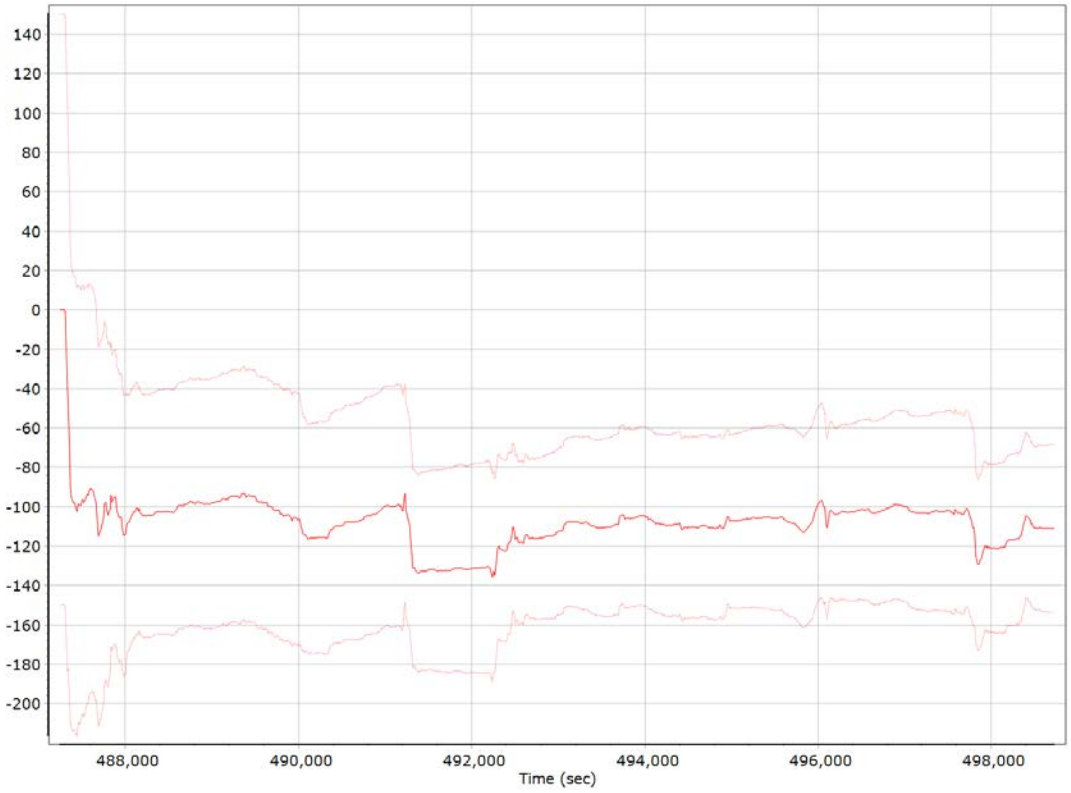
Z Gyro Bias (deg/h)



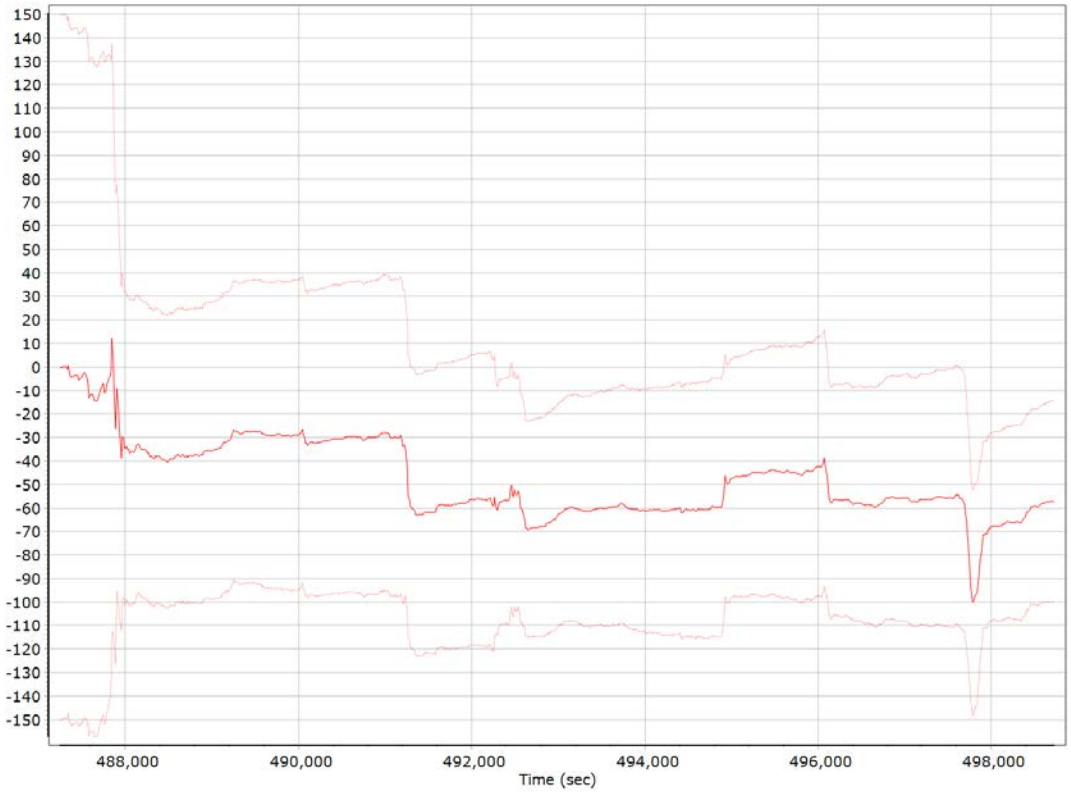
Gyro Scale Error (ppm)



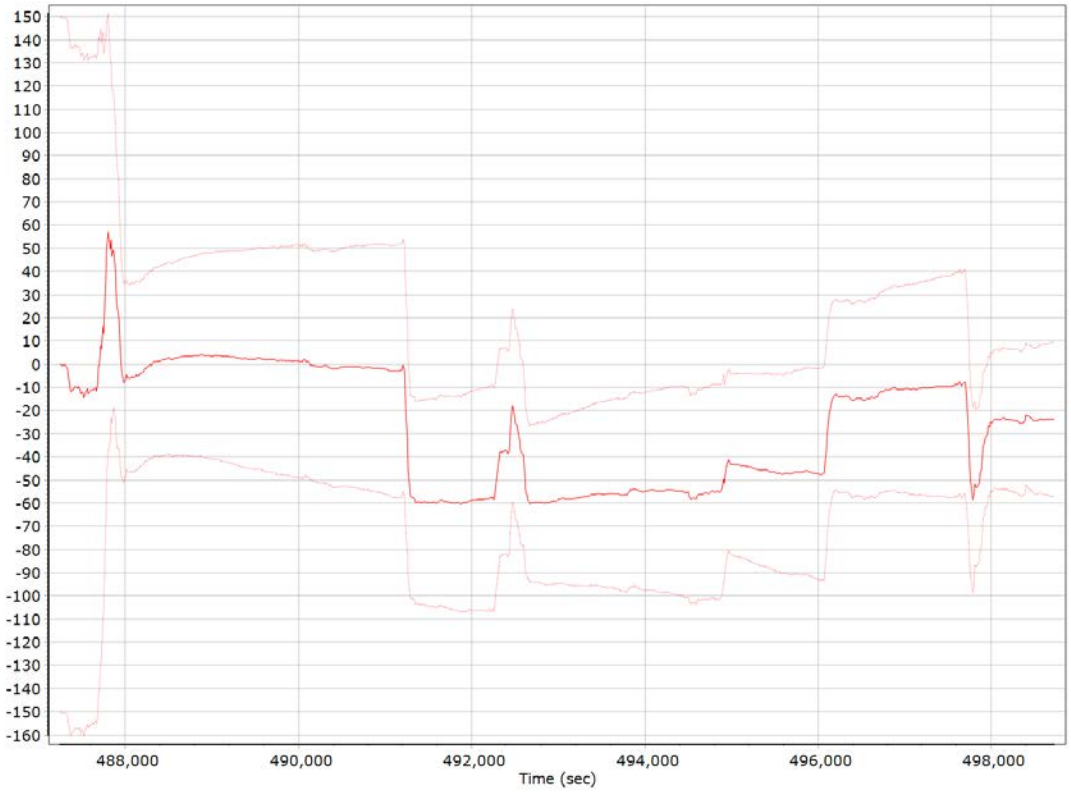
X Gyro Scale Error (ppm)



Y Gyro Scale Error (ppm)



Z Gyro Scale Error (ppm)

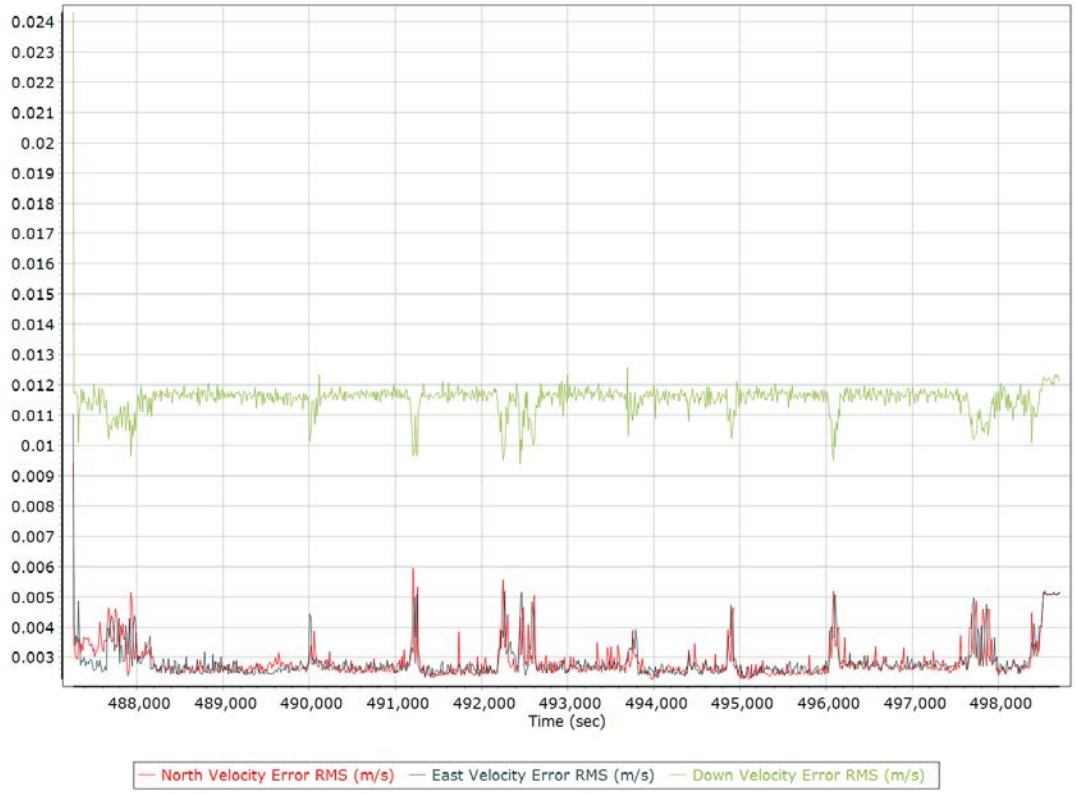


Smoothed Performance Metrics

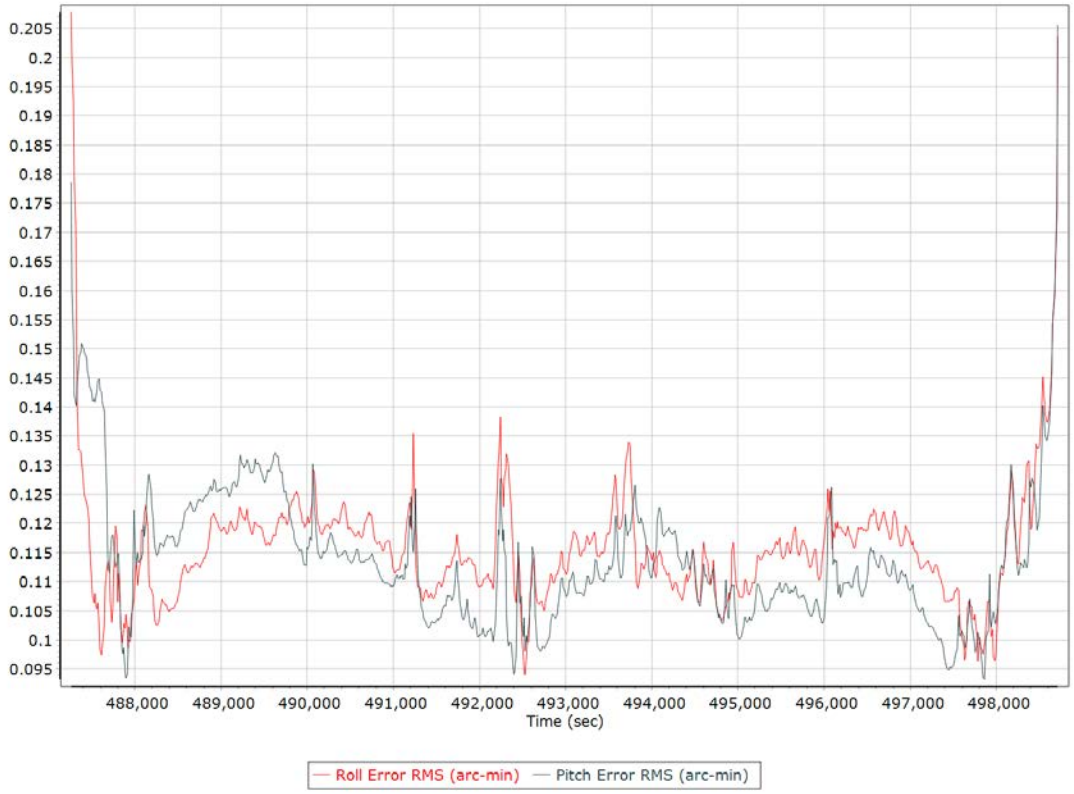
Position Error RMS (m)



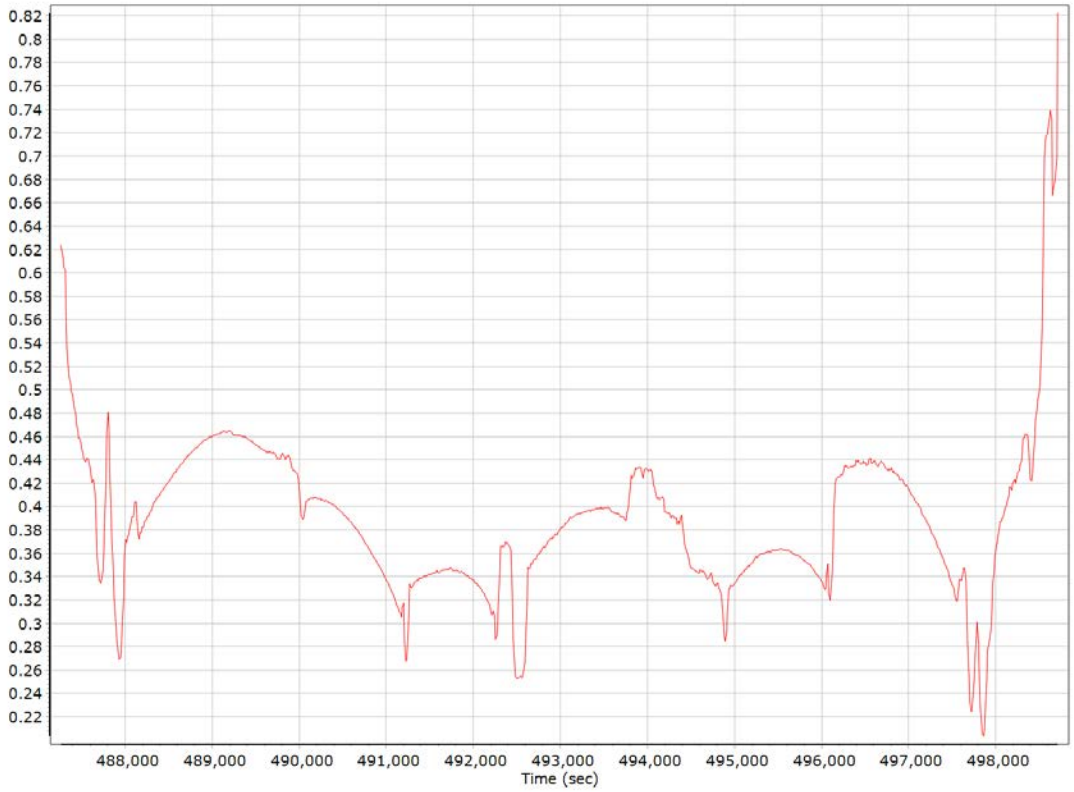
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)



Heading Error RMS (arc-min)

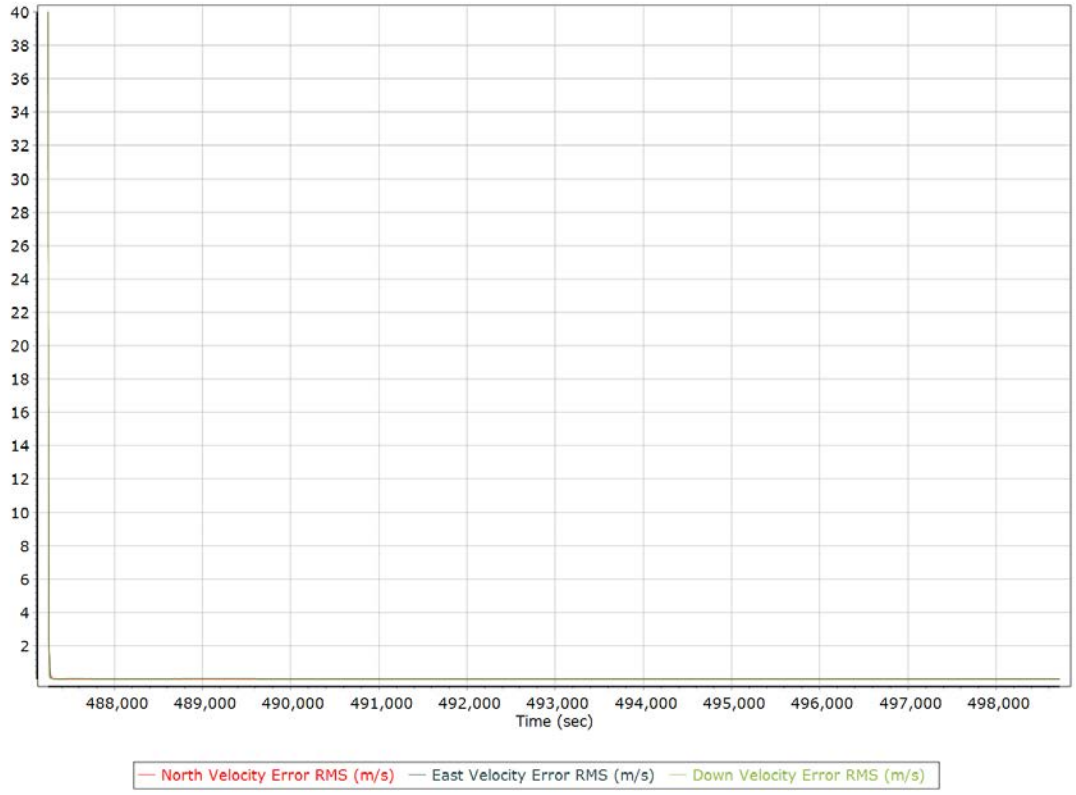


Forward Processed Performance Metrics

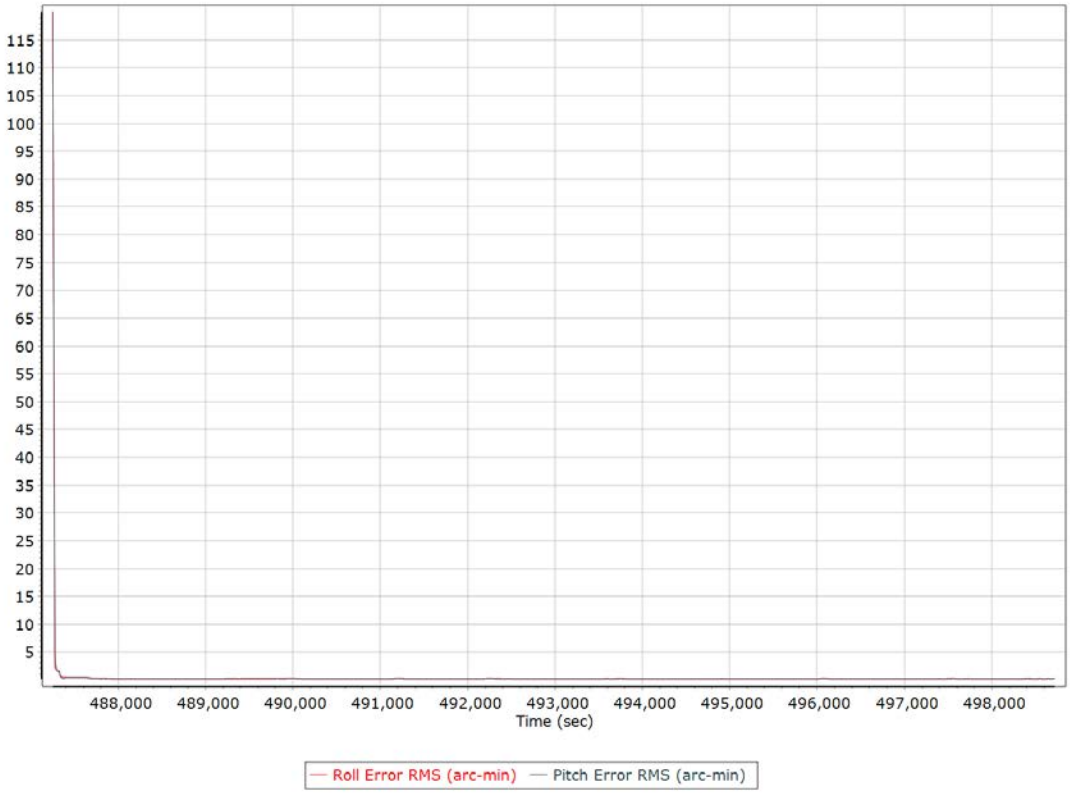
Position Error RMS (m)



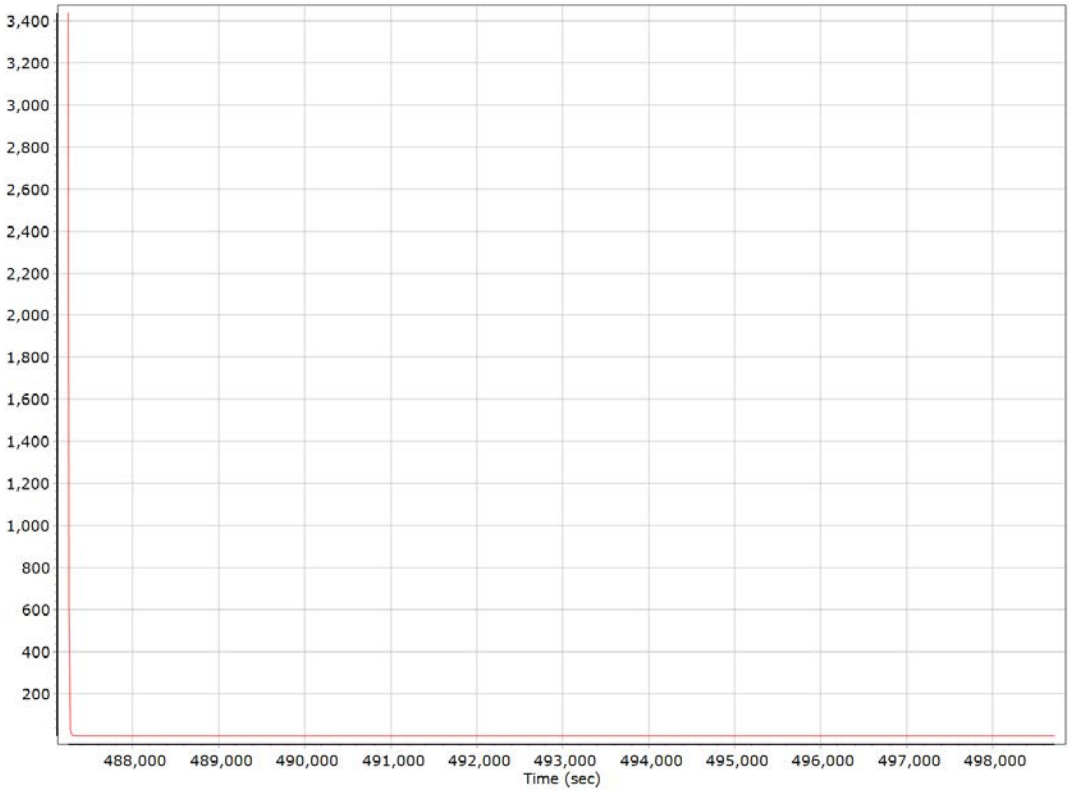
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

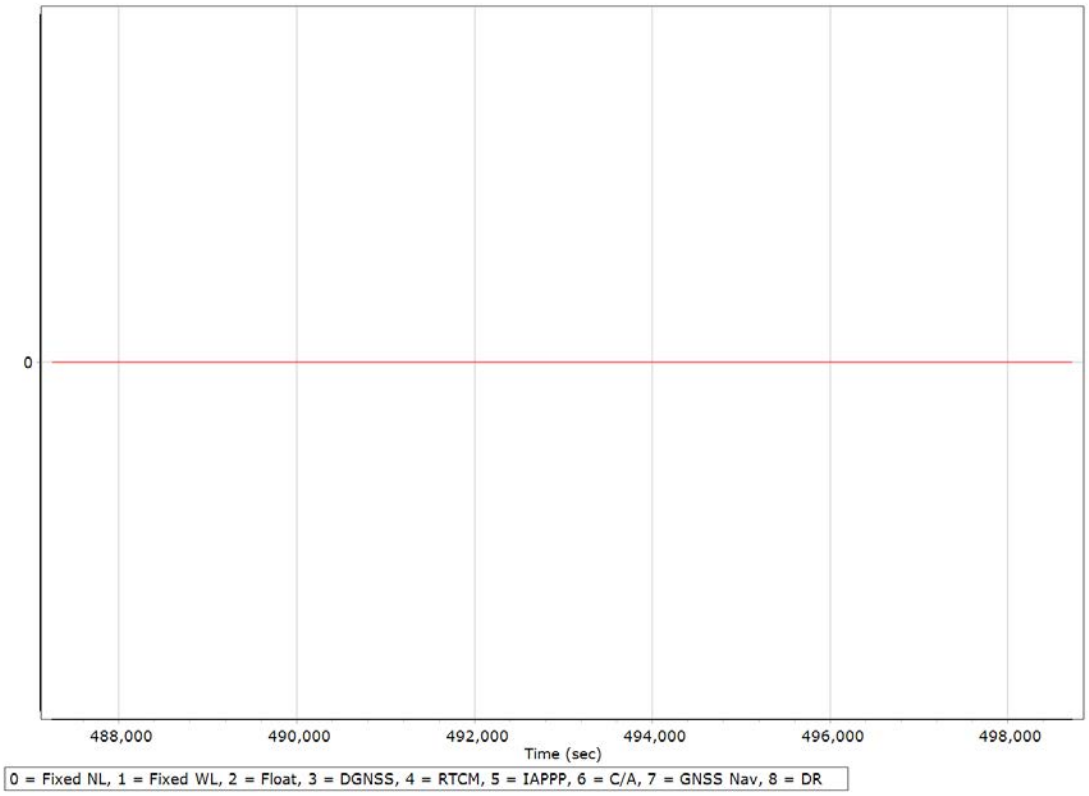


Heading Error RMS (arc-min)

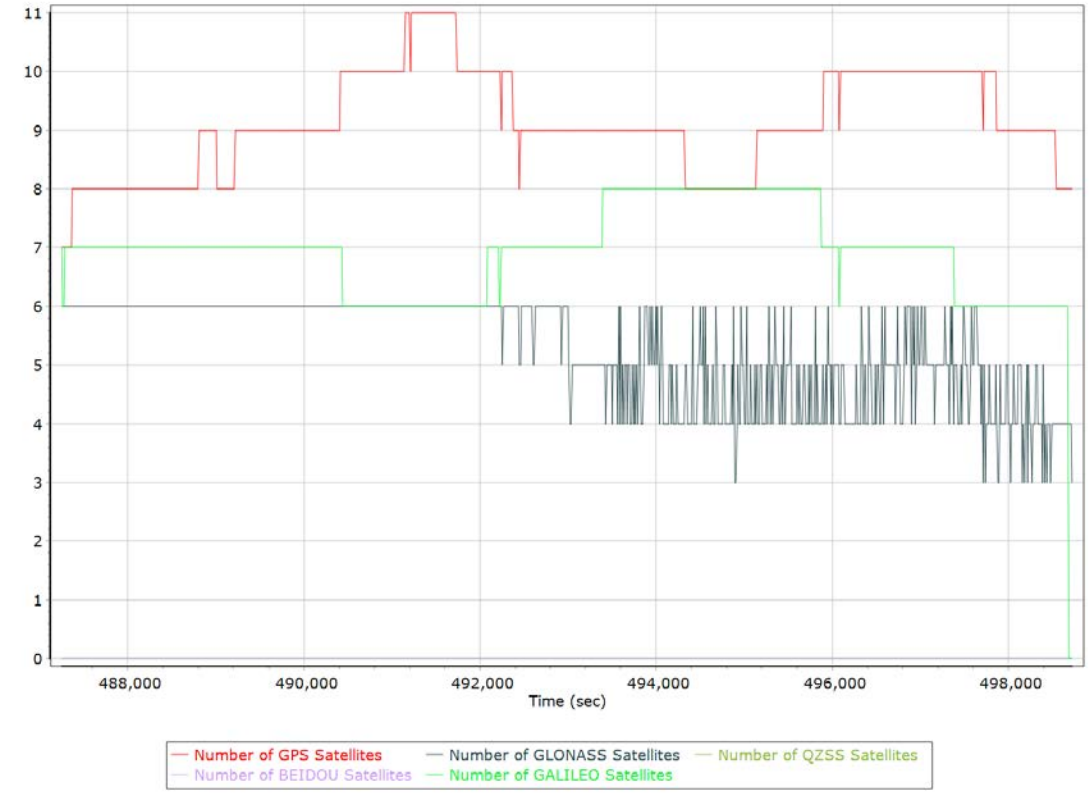


Forward Processed Solution Status

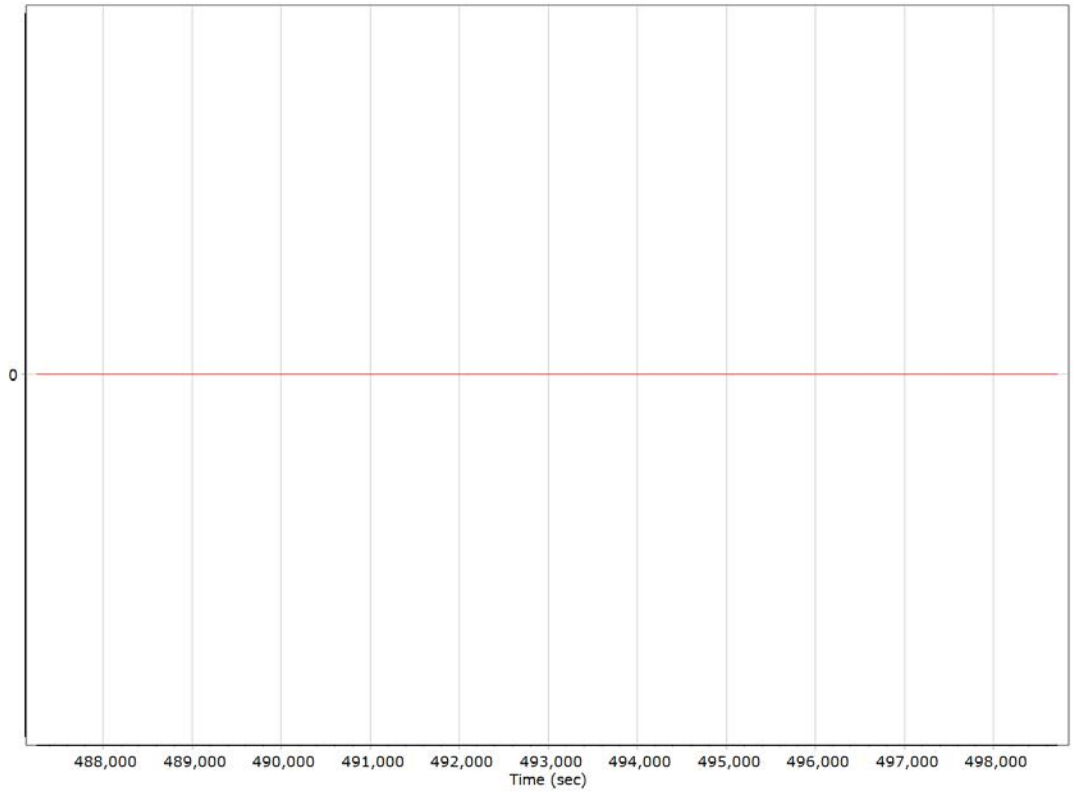
Processing Mode



Number of Satellites



Baseline Length



General Information

Mission Information

Project name	08122023B_4051
Processing date	2023-08-17 12:45:20
Mission date	2023-08-12 19:45:58
Mission duration	02:34:19.970
Processing mode	IN-Fusion PP-RTX

Rover Hardware Information

Product	POS AV 610 VER6 HW2.5-12
Serial number	S/N11221
IMU type	57
Receiver type	BD982
Antenna type	AV59

Project File List

Rover Data Files

File name	File type
CP780.153	POS Data
CP780.154	POS Data
CP780.155	POS Data
CP780.156	POS Data
CP780.157	POS Data
CP780.158	POS Data
CP780.159	POS Data
CP780.160	POS Data
CP780.161	POS Data
CP780.162	POS Data
CP780.163	POS Data
CP780.164	POS Data
CP780.165	POS Data
CP780.166	POS Data
CP780.167	POS Data
CP780.168	POS Data
CP780.169	POS Data
CP780.170	POS Data
CP780.171	POS Data
CP780.172	POS Data
CP780.173	POS Data

Input Files

File Name	File Type
Ephm2240.23g	GLONASS Broadcast Ephemeris
Ephm2240.23n	GPS Broadcast Ephemeris

Output Files

Filename	File type
sbet_Mission 1.out	SBET Trajectory File

Rover Data Summary

First raw data file	CP780.153		
Last raw data file	CP780.173		
Start GPS week	2274		
Start time	589540.100 (8/12/2023 7:45:40 PM)		
End time	598926.758 (8/12/2023 10:22:06 PM)		
Start of fine alignment	589563.414 (8/12/2023 7:46:03 PM)		
Available subsystems	Primary GNSS, Gimbal, IMU		
POS Event Input	None		
Correction data	None		
IMU Installation Lever Arms & Mounting Angles			
Gimbal to IMU lever arm (m)	-0.034	-0.010	-0.374
Gimbal to IMU mounting angles (deg)	0.000	0.000	0.000
Gimbal to Primary GNSS lever arm (m)	0.053	-0.183	-1.279
Gimbal to Primary GNSS lever arm std dev (m)	-1.000		
Aircraft to Reference mounting angles (deg)	0.000	0.000	0.000

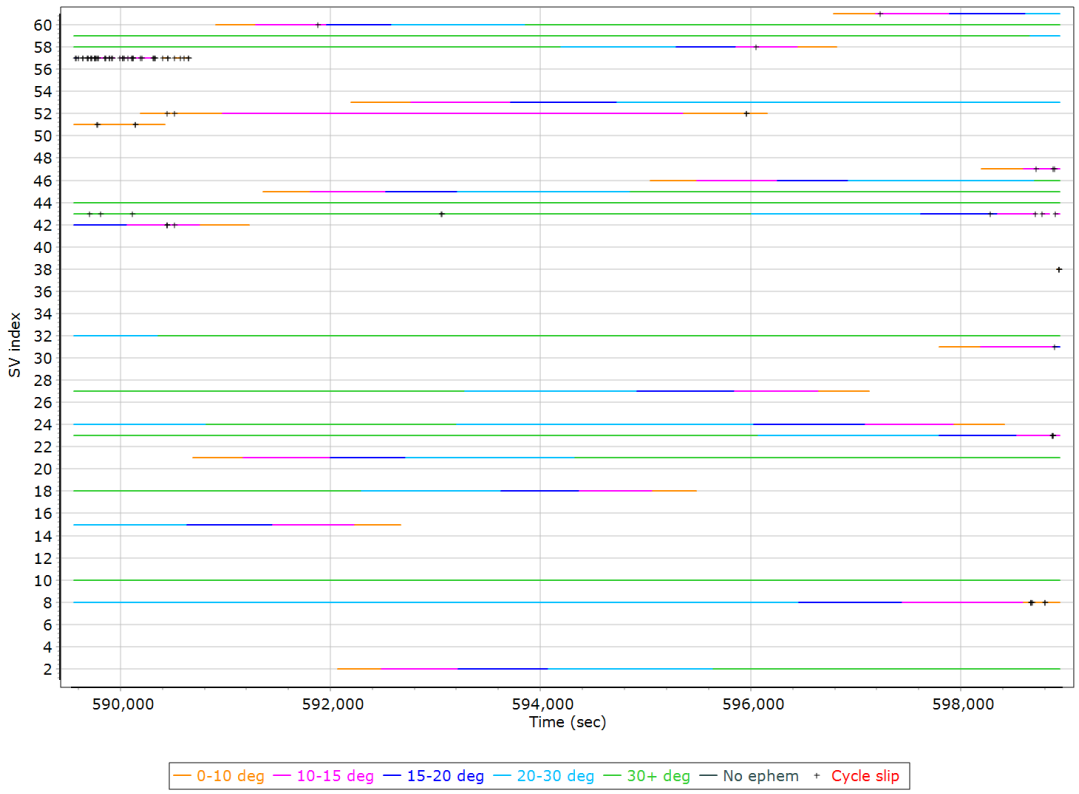
Rover Data QC

Raw IMU Import QC Summary

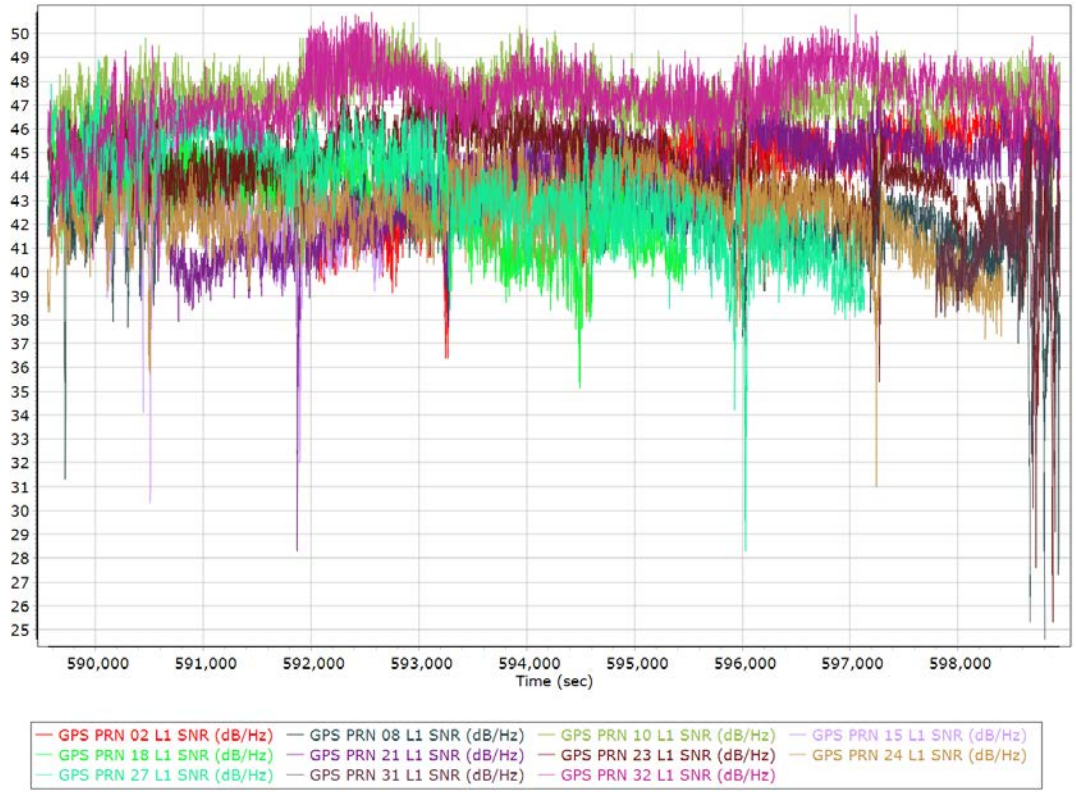
IMU data input file	imu_Mission 1.dat
IMU data check log file	imudt_Mission 1.log
IMU Records Processed	1877030
Termination Status	Normal
IMU Anomalies	0

Primary Observables & Satellite Data

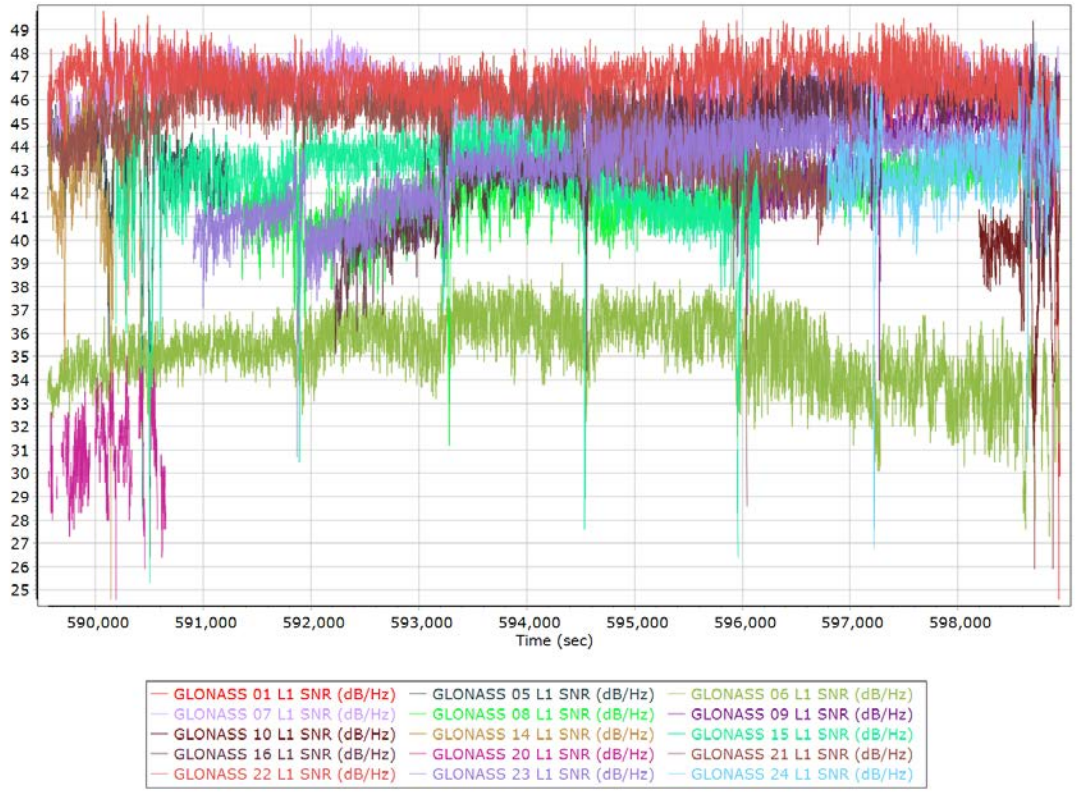
GPS/GLONASS L1 Satellite Lock/Elevation



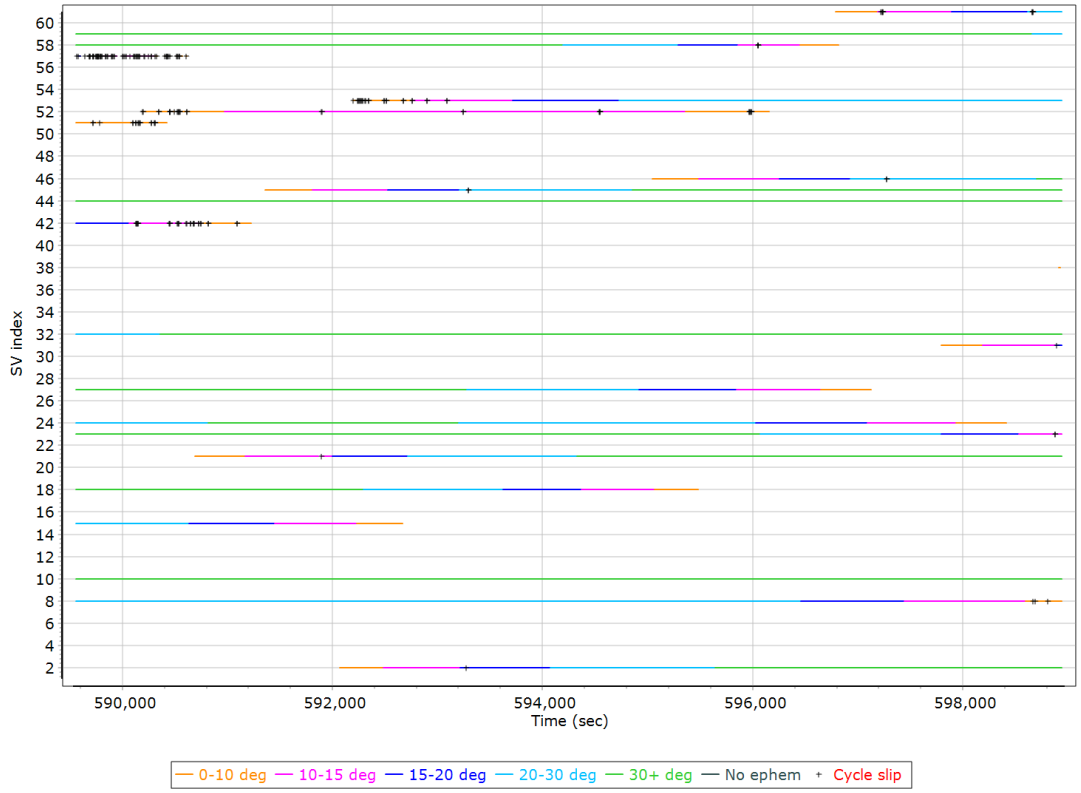
GPS L1 SNR



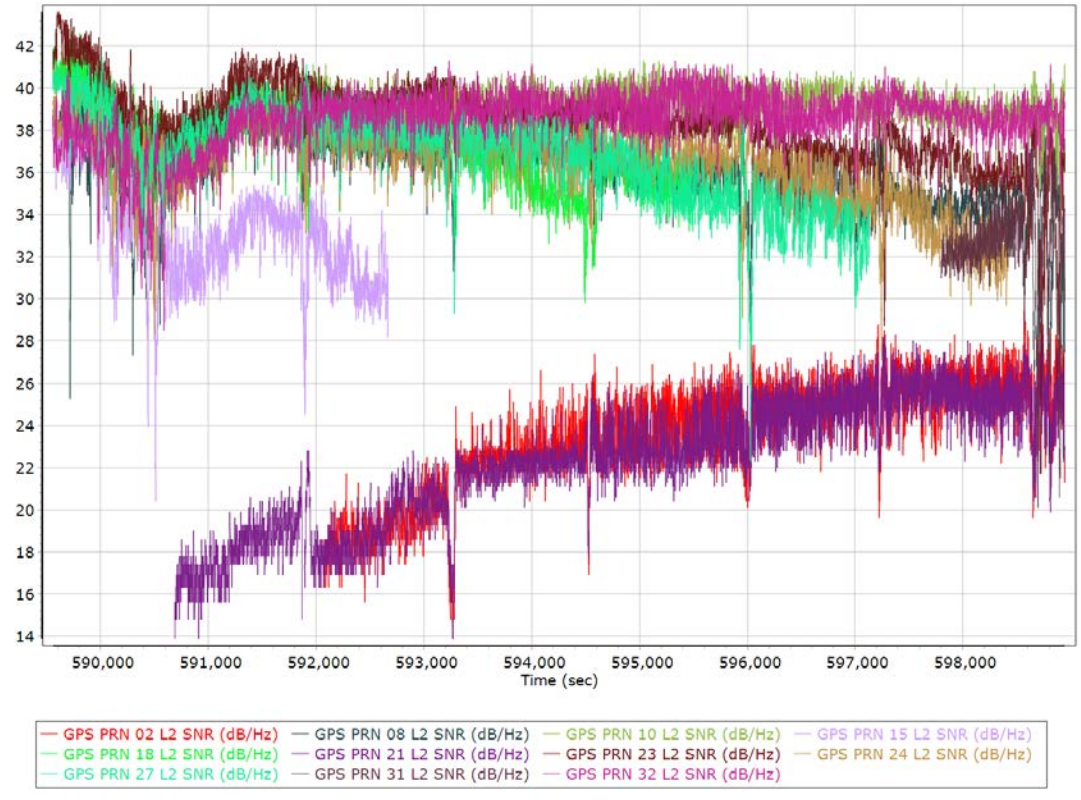
GLONASS L1 SNR



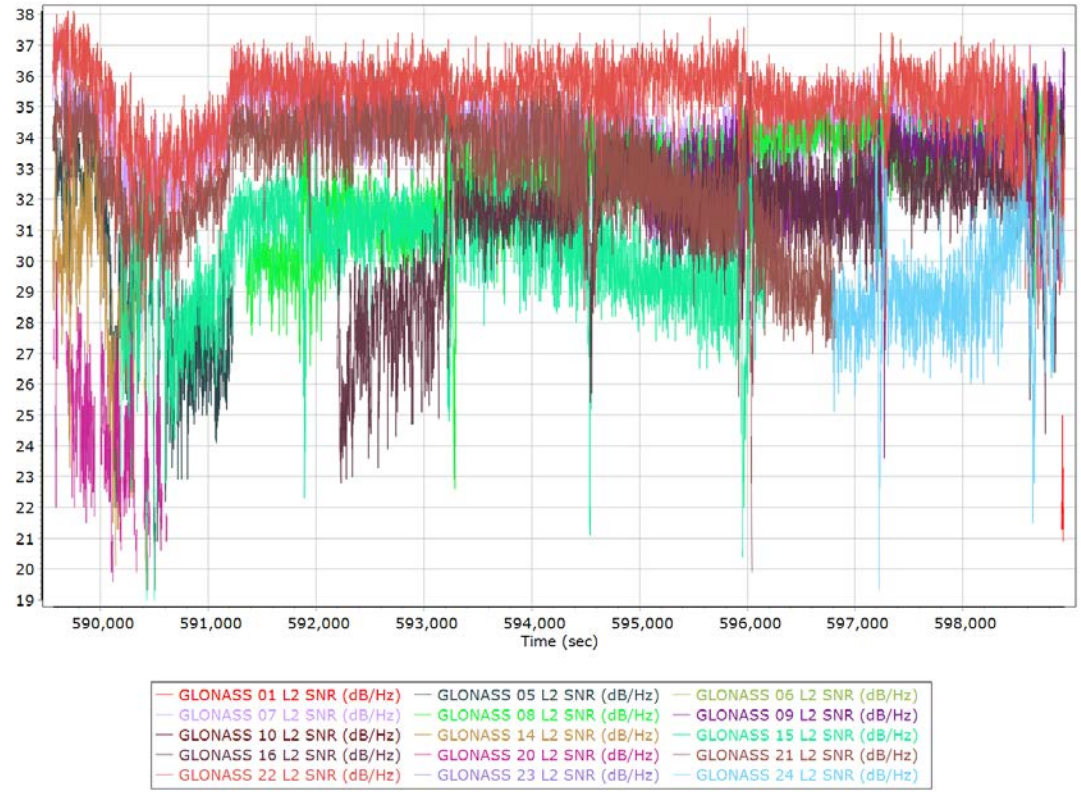
GPS/GLONASS L2 Satellite Lock/Elevation



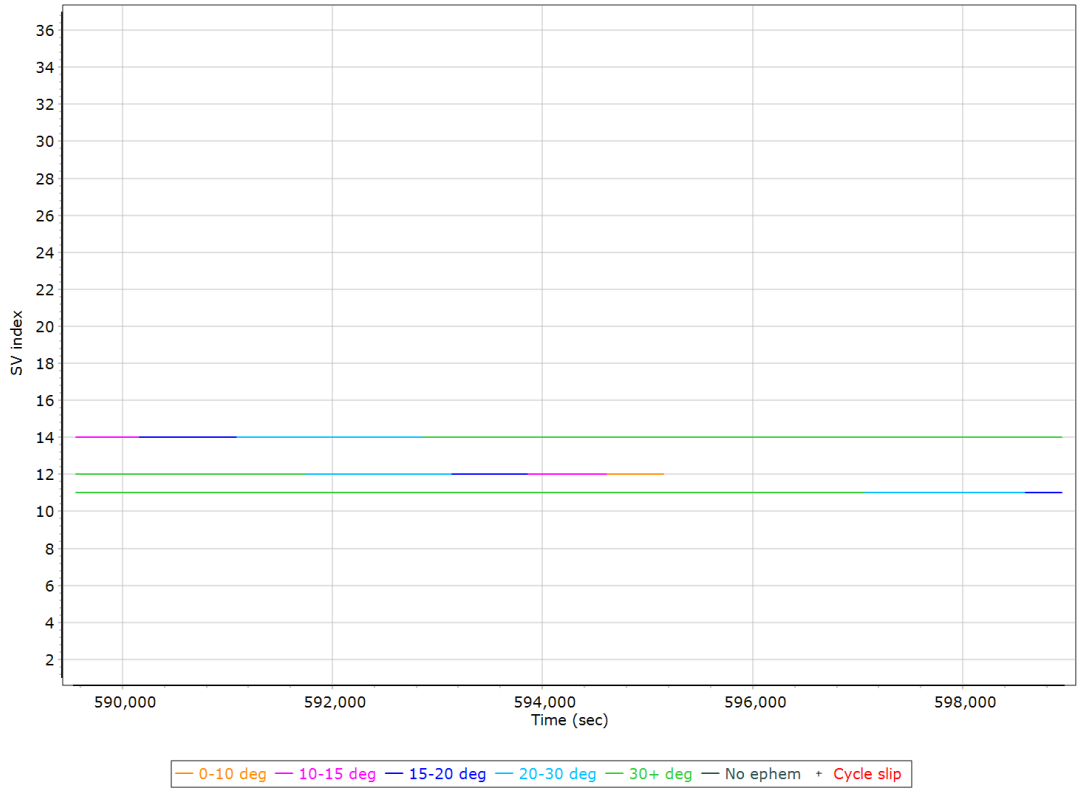
GPS L2 SNR



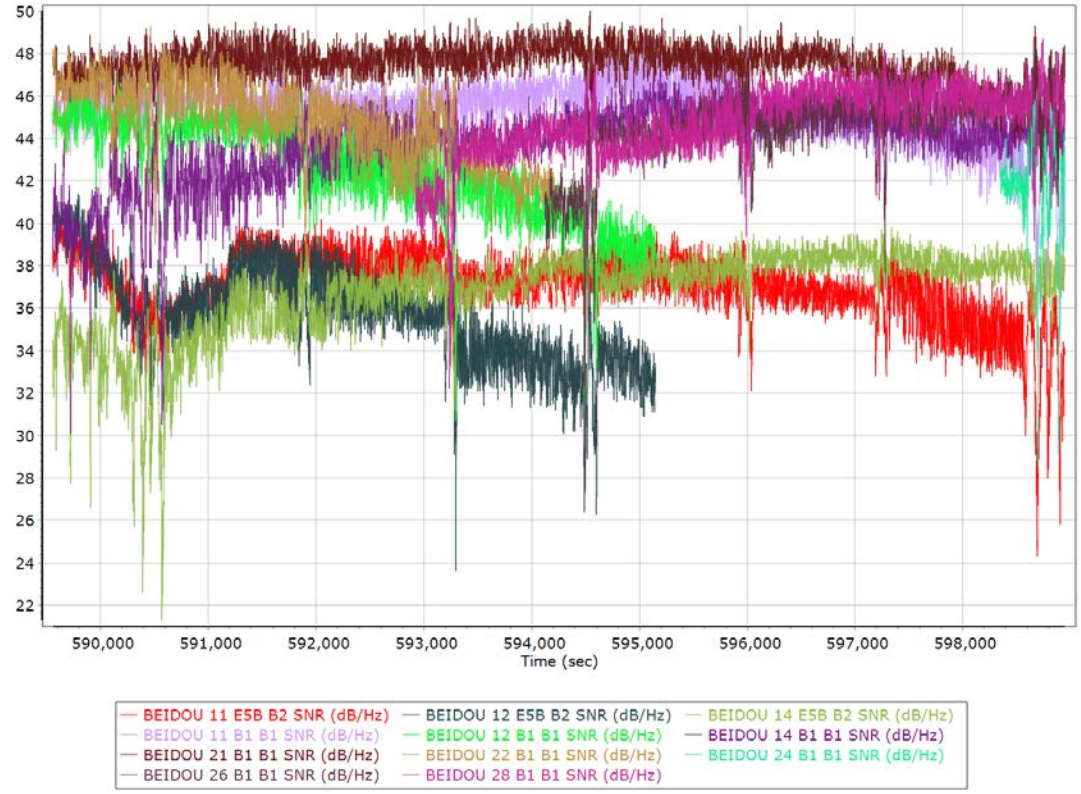
GLONASS L2 SNR



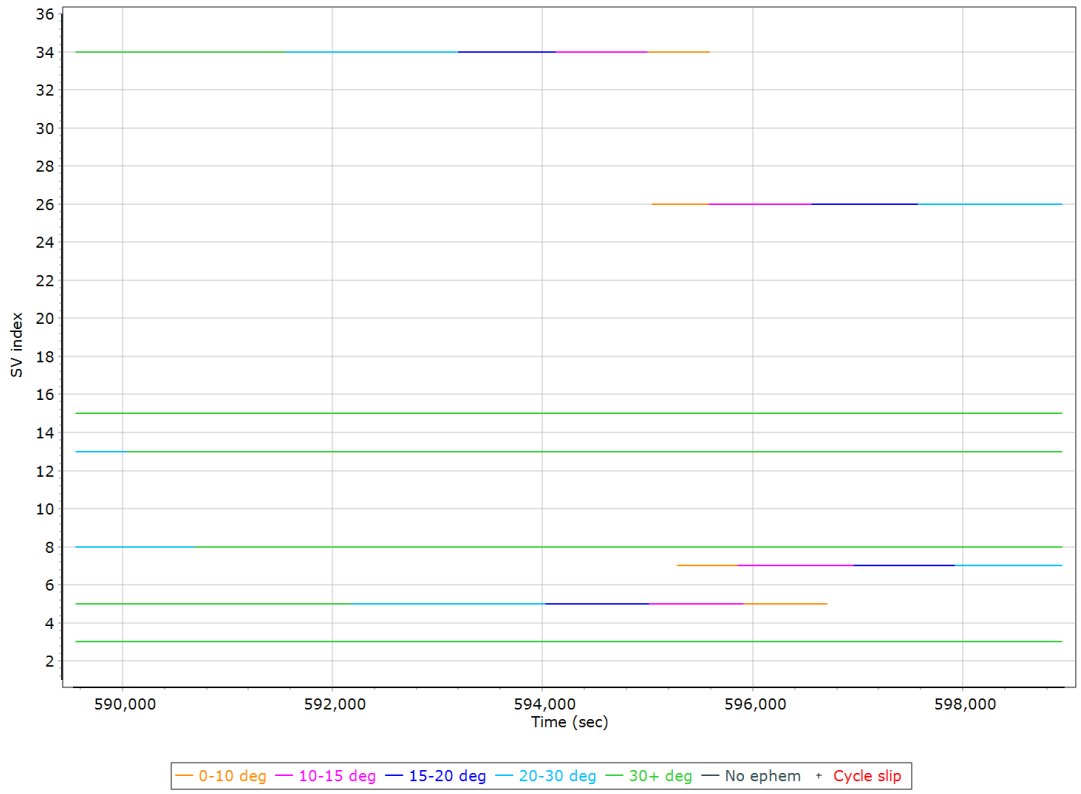
BEIDOU Satellite Lock/Elevation



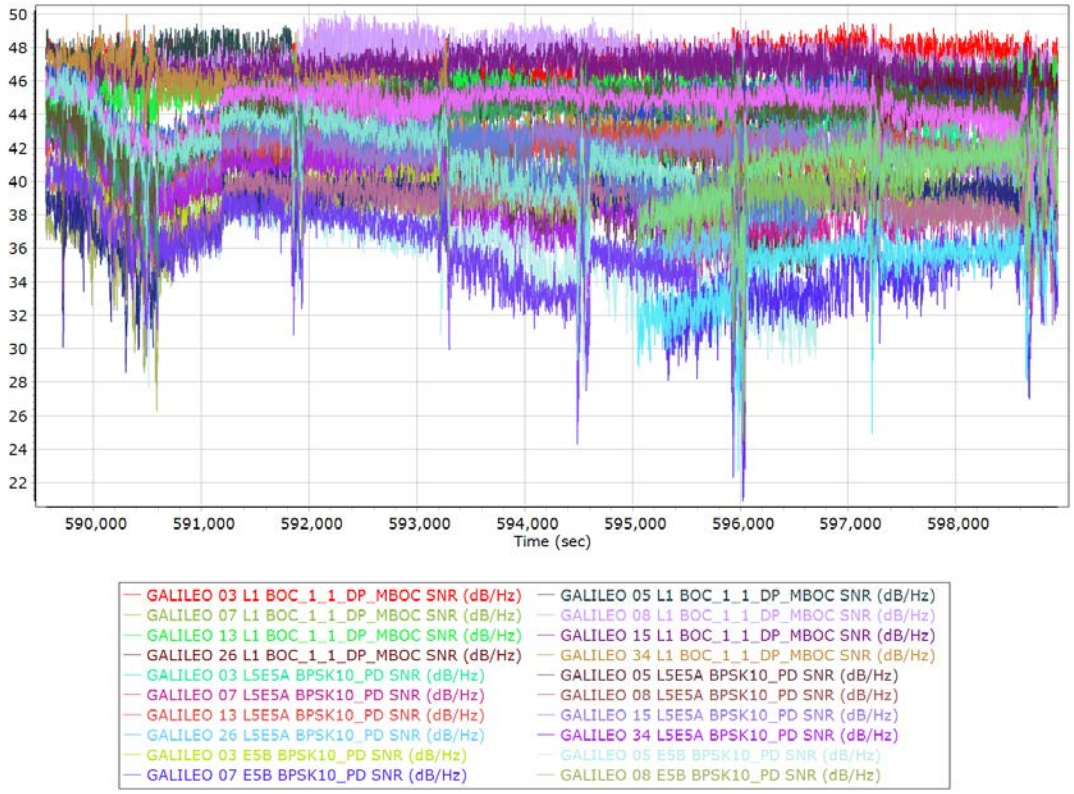
BEIDOU SNR



GALILEO Satellite Lock/Elevation

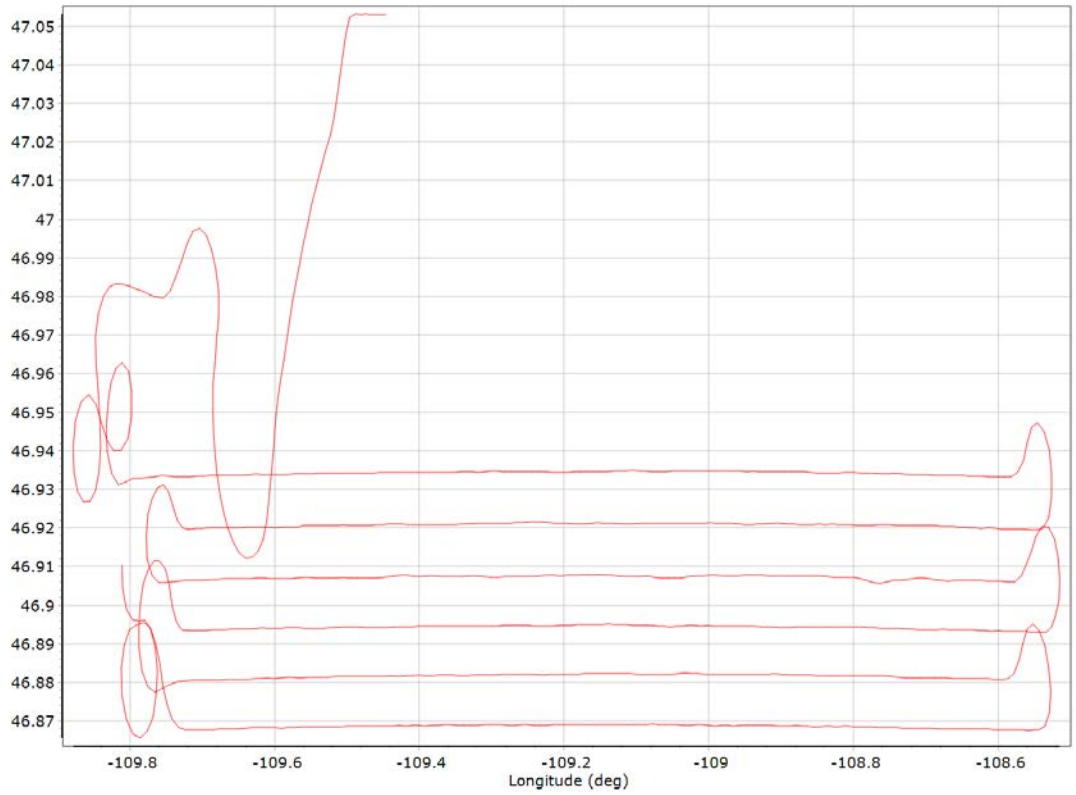


GALILEO SNR

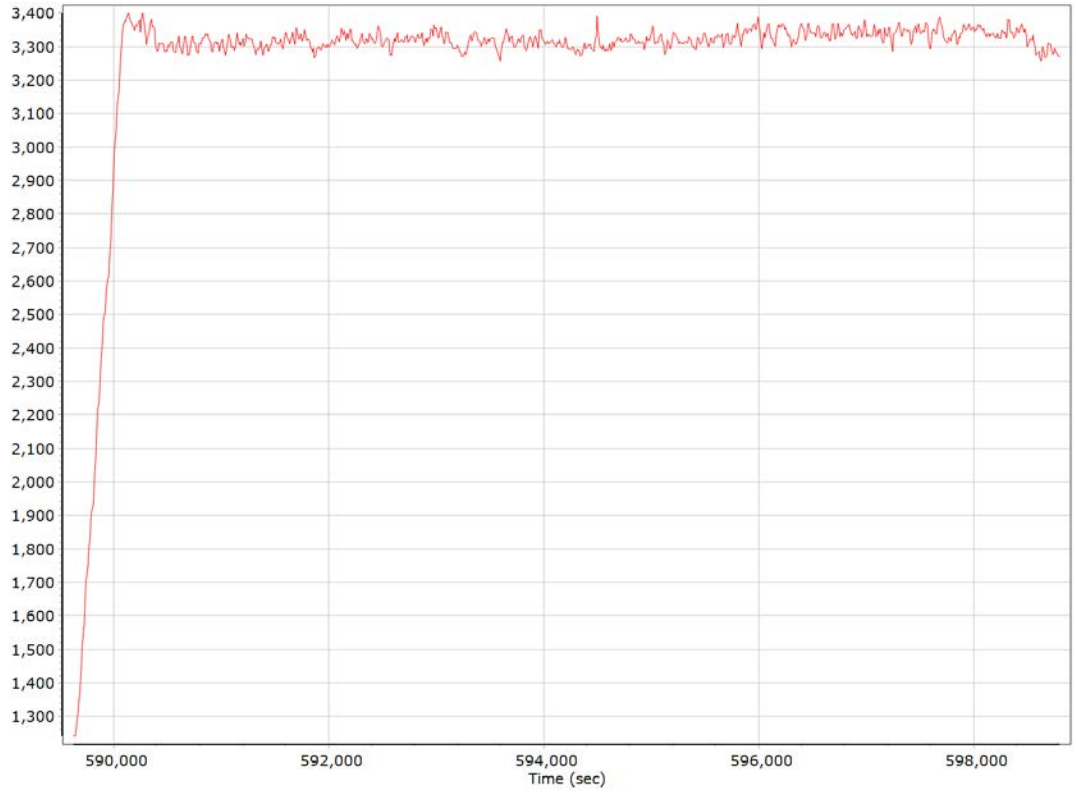

50
48
46
44
42
40
38
36
34
32
30
28
26
24
22
590,000
591,000
592,000
593,000
594,000
595,000
596,000
597,000
598,000
Time (sec)
GALILEO 03 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 05 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 07 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 08 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 13 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 15 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 26 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 34 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 03 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 05 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 07 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 08 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 13 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 15 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 26 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 34 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 03 E5B BPSK10_PD SNR (dB/Hz)
GALILEO 05 E5B BPSK10_PD SNR (dB/Hz)
GALILEO 07 E5B BPSK10_PD SNR (dB/Hz)
GALILEO 08 E5B BPSK10_PD SNR (dB/Hz)

Smoothed Trajectory Information

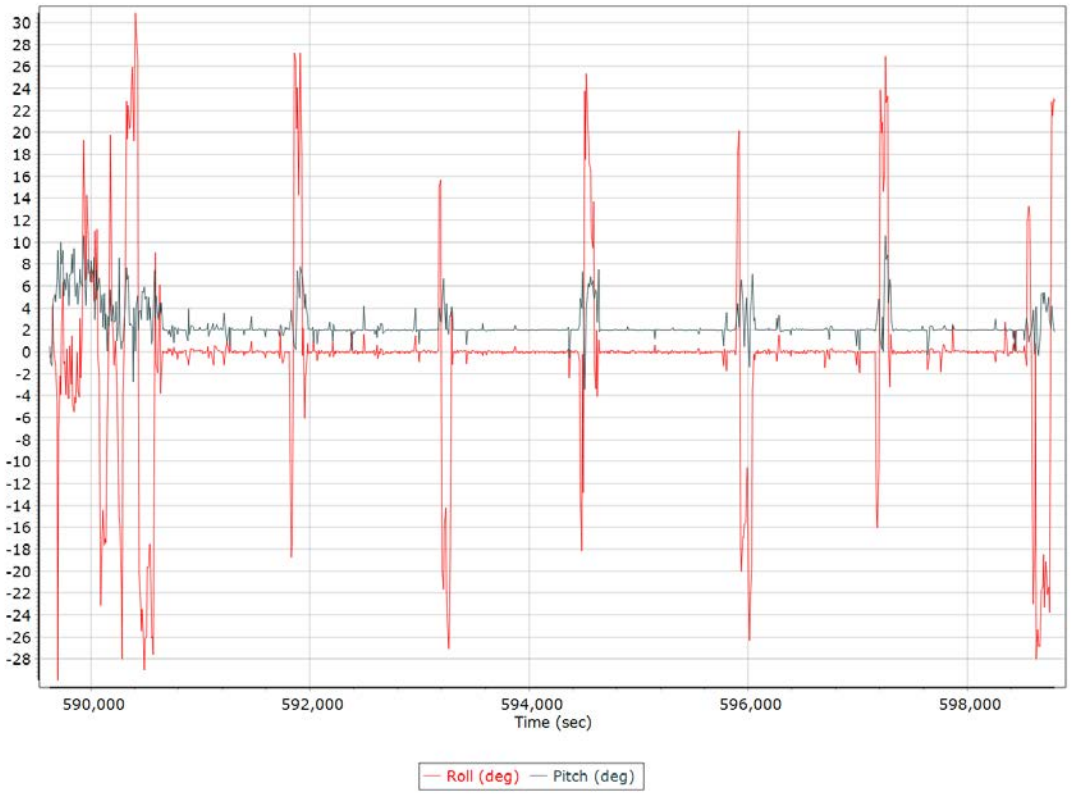
Top View



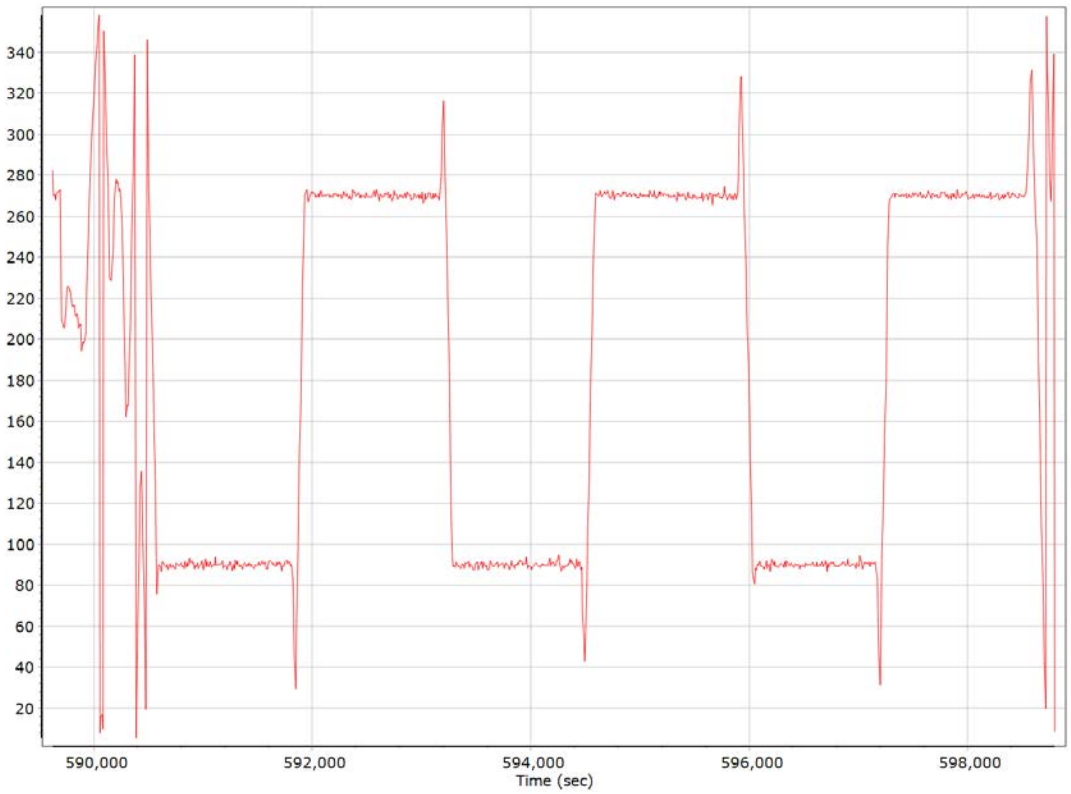
Altitude



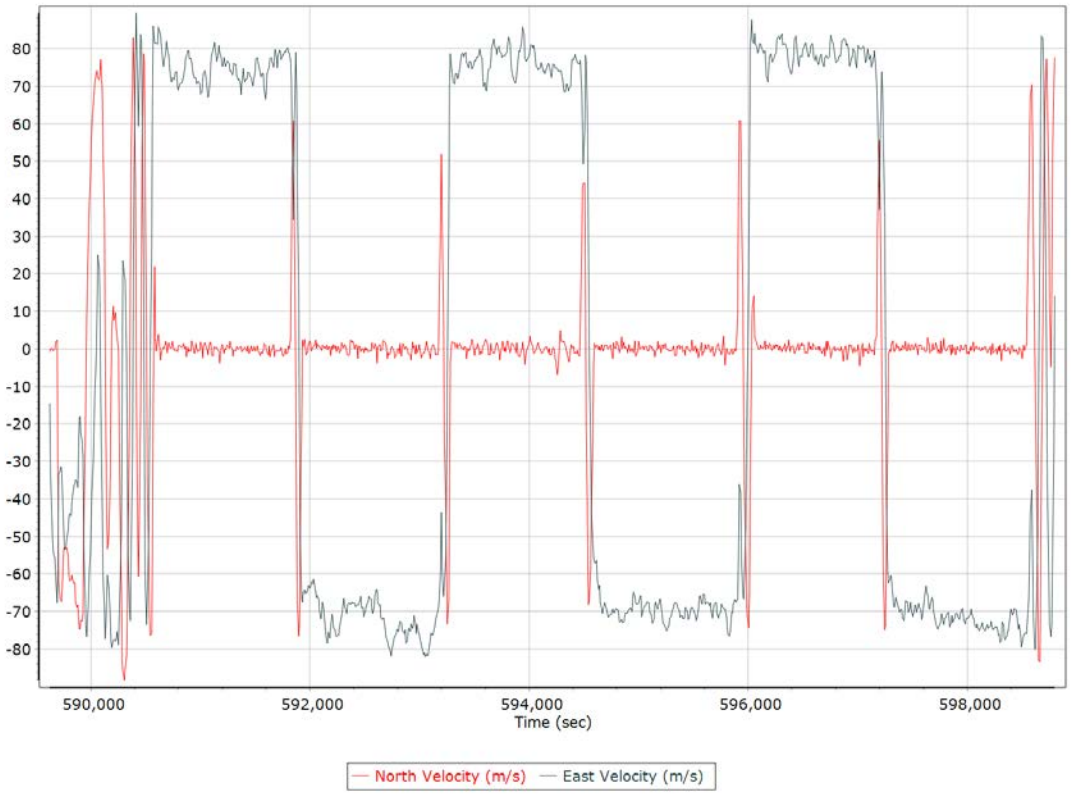
Roll/Pitch



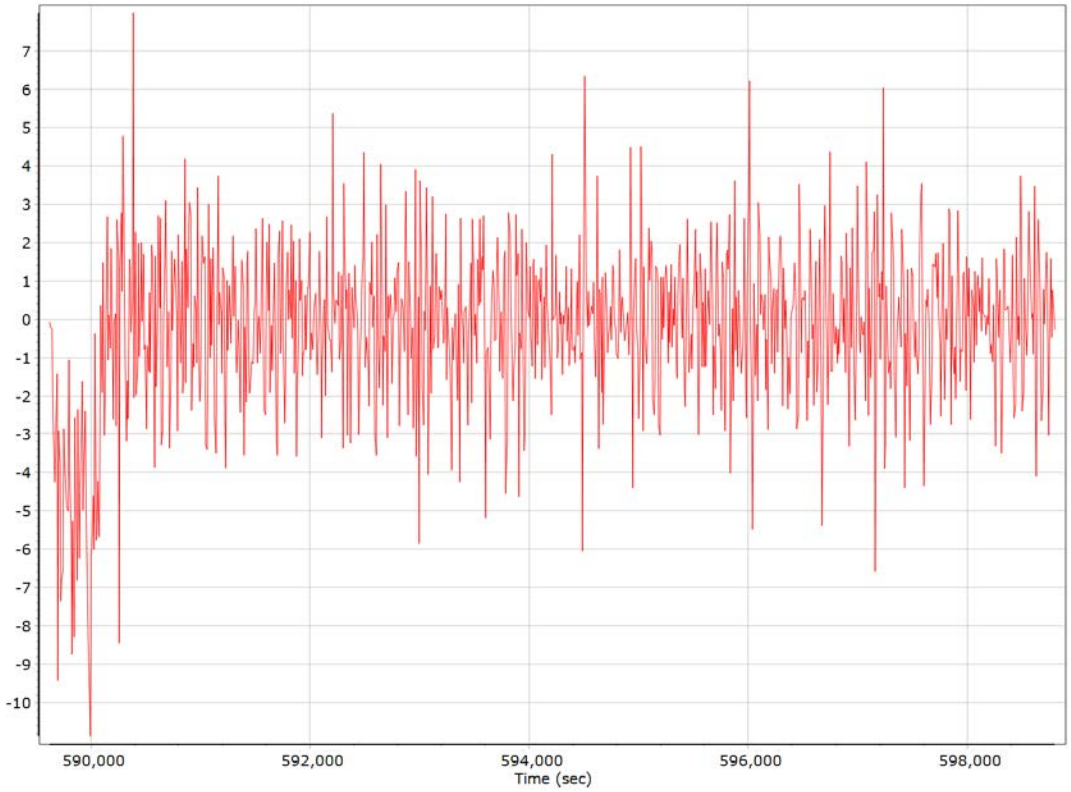
Heading



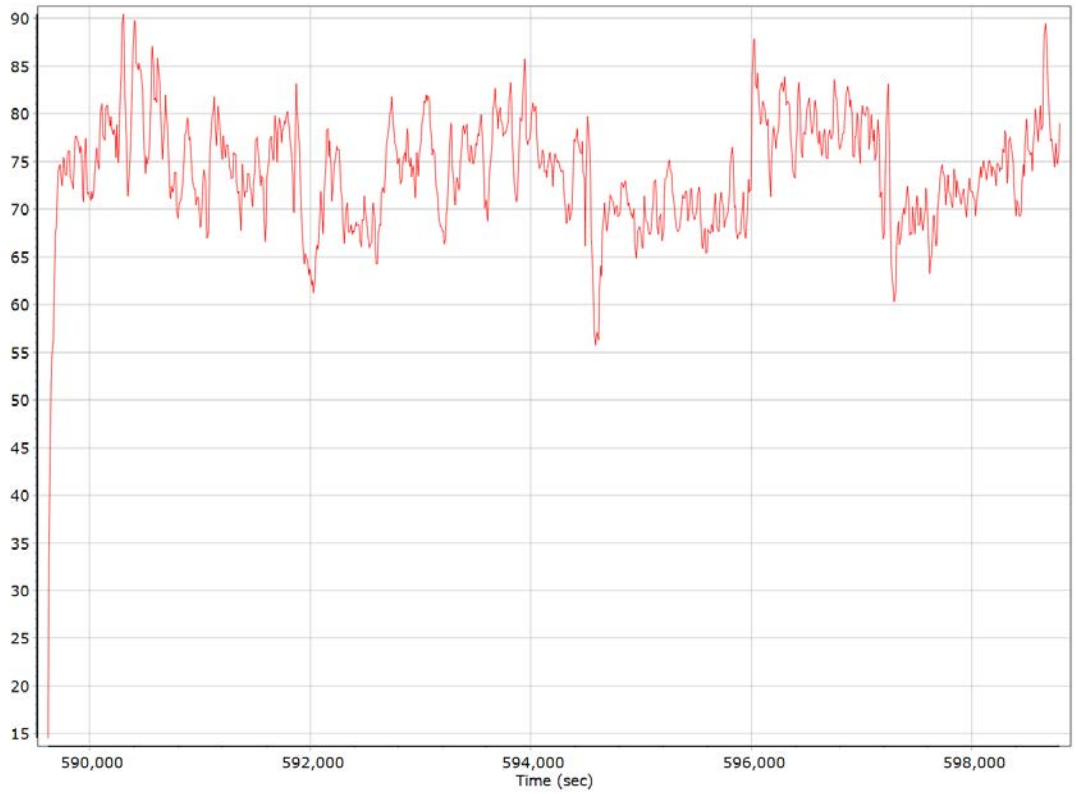
North/East Velocity



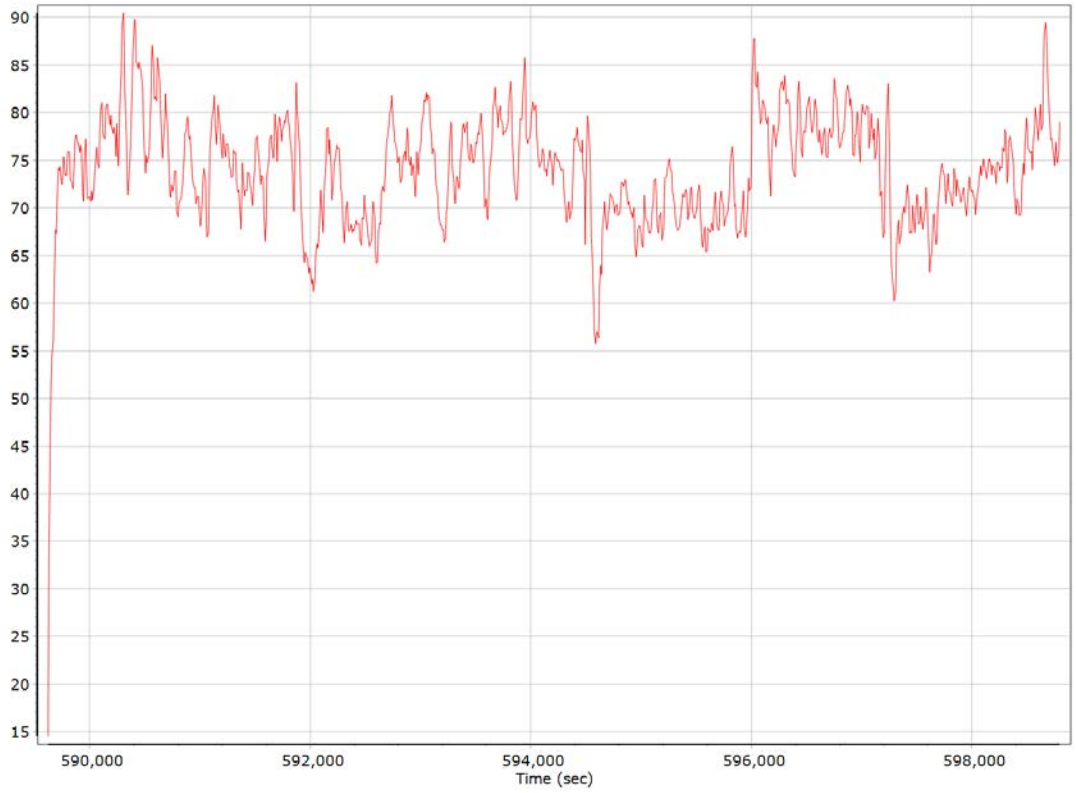
Down Velocity



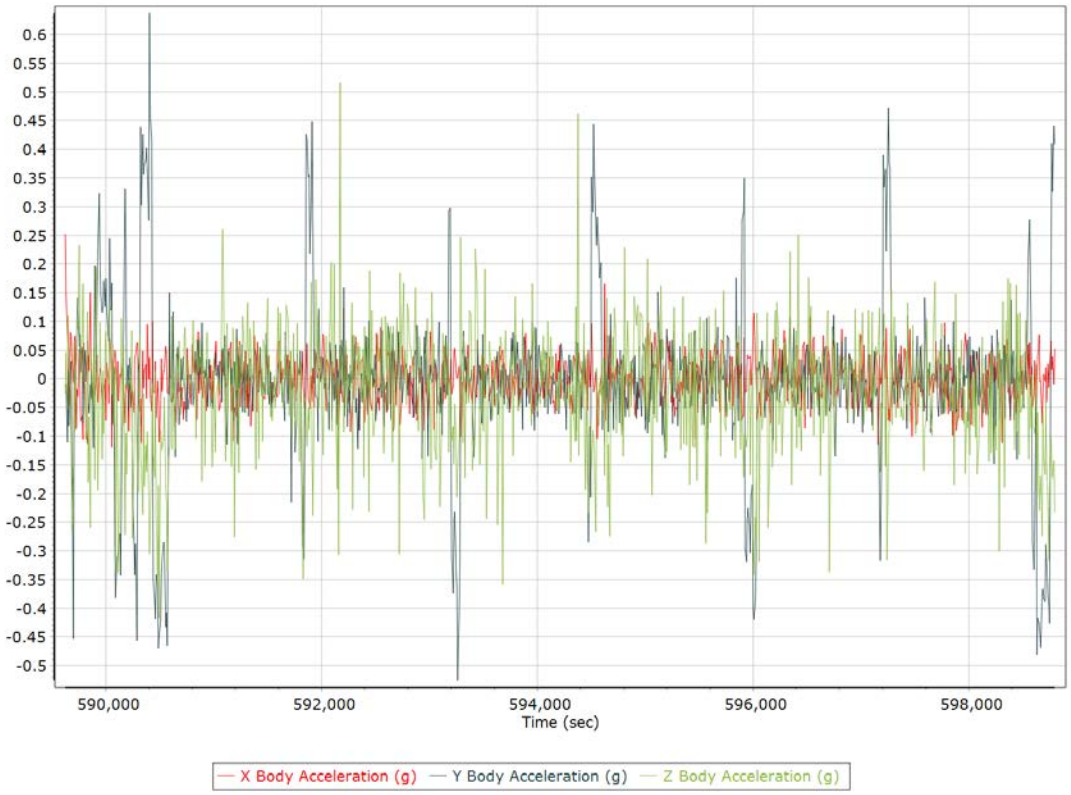
Total Speed



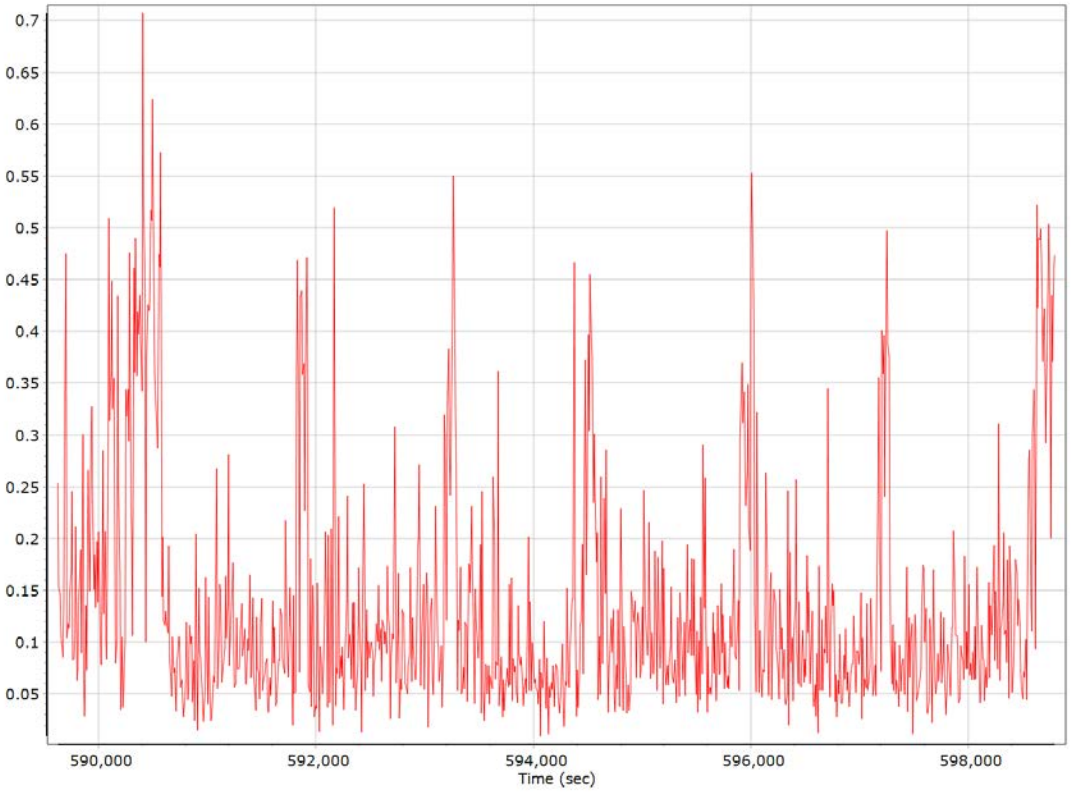
Ground Speed



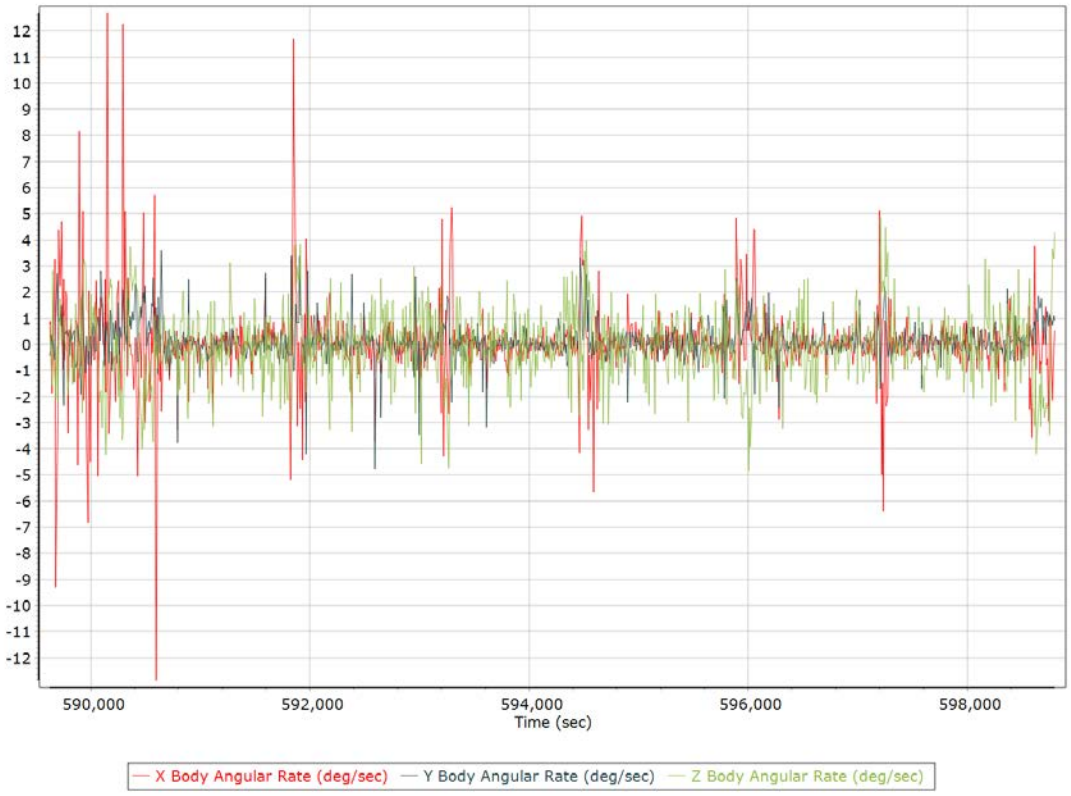
Body Acceleration



Total Body Acceleration

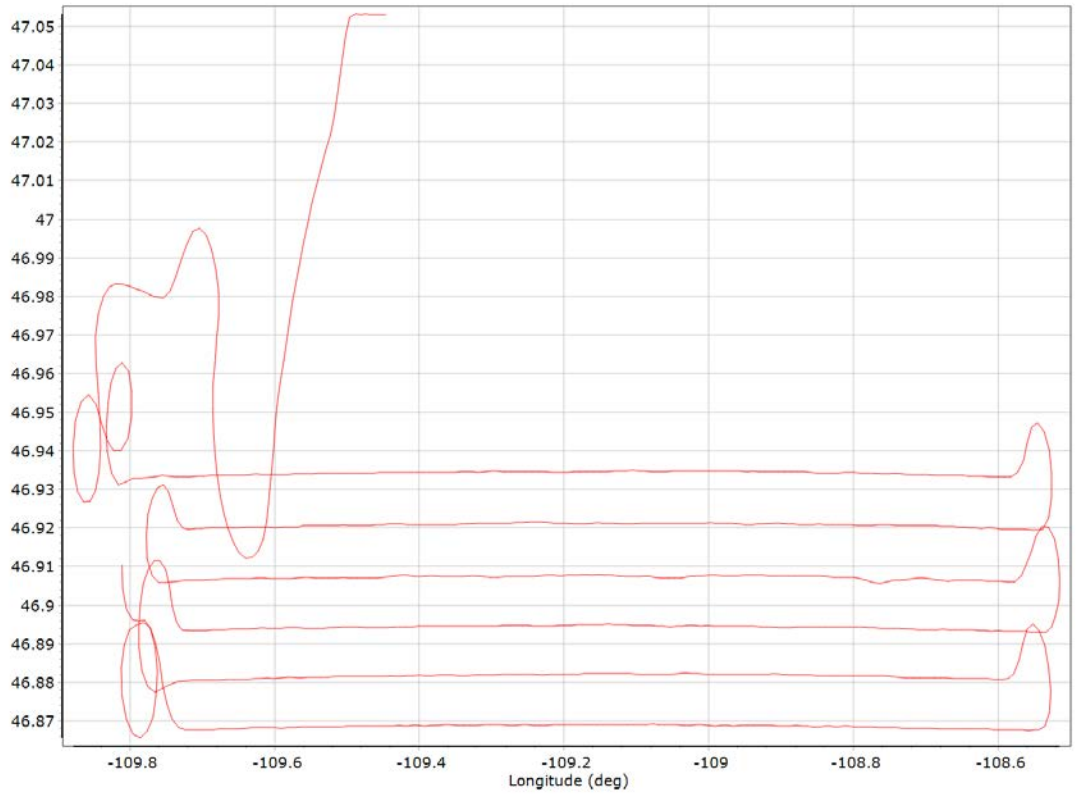


Body Angular Rate



Forward Processed Trajectory Information

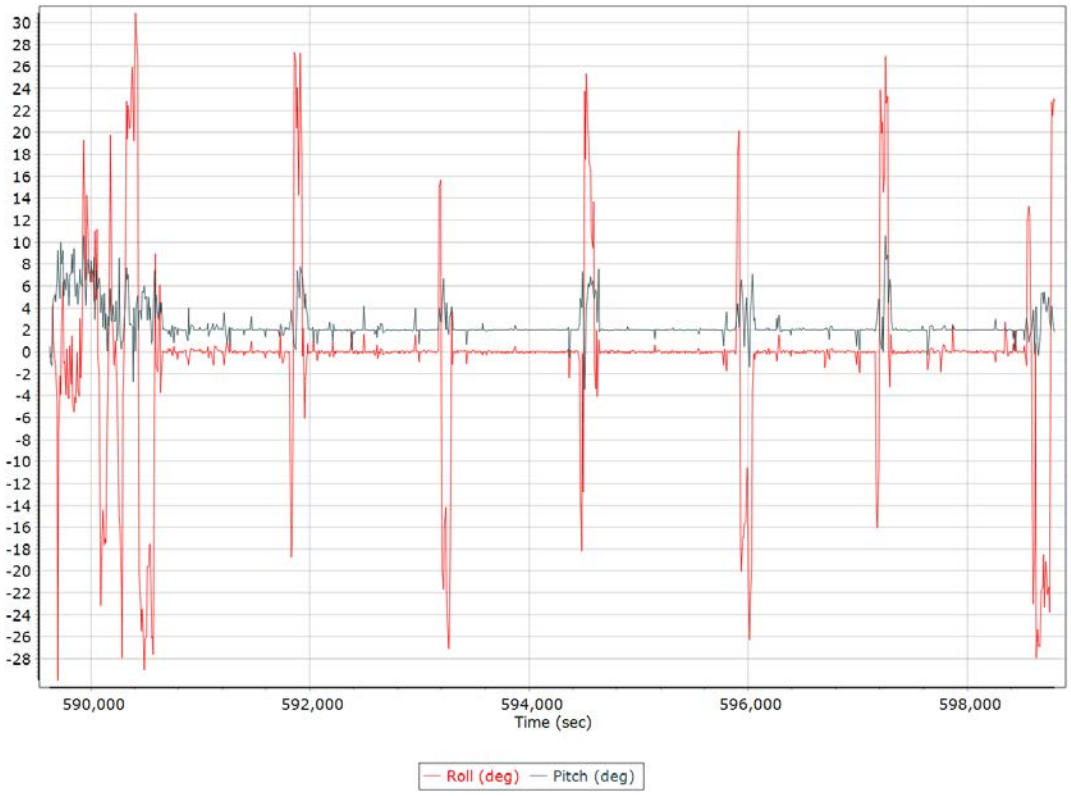
Top View



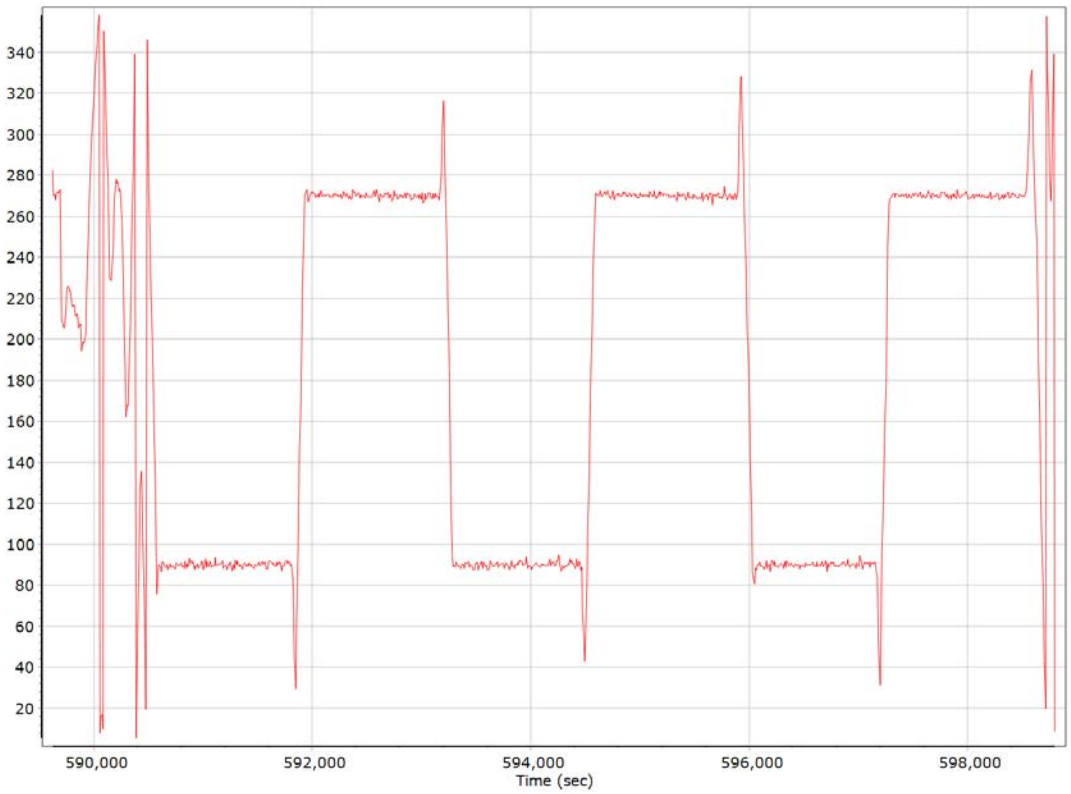
Altitude



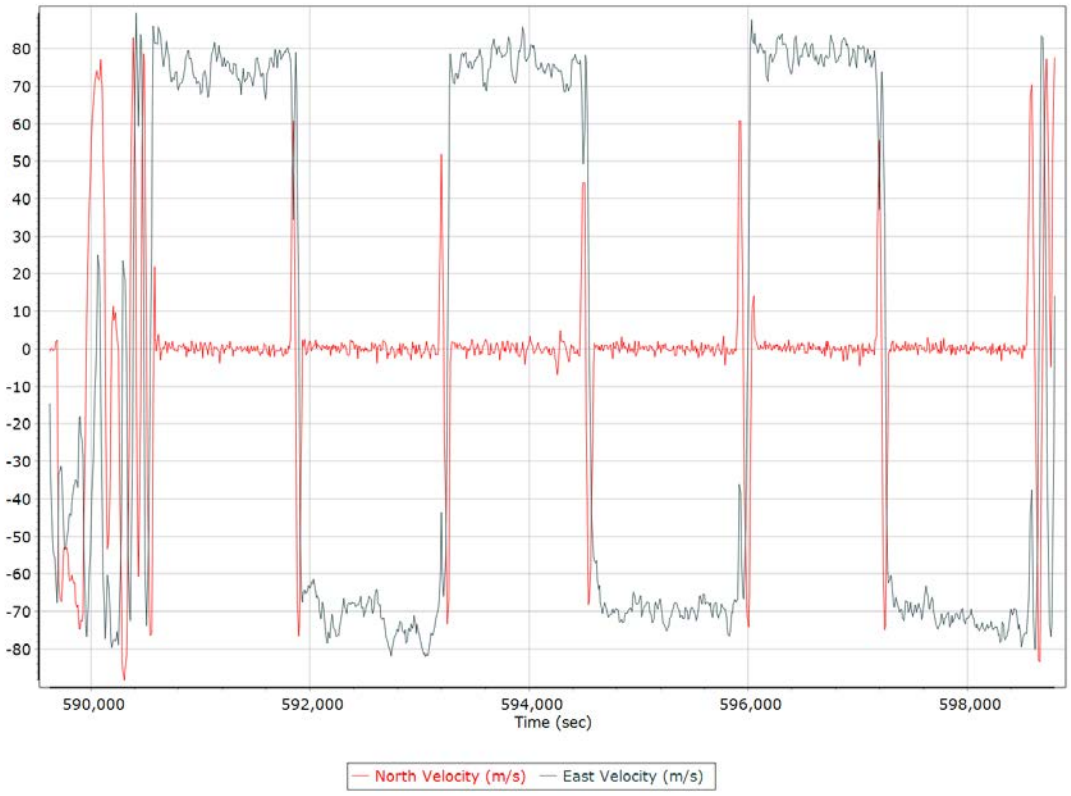
Roll/Pitch



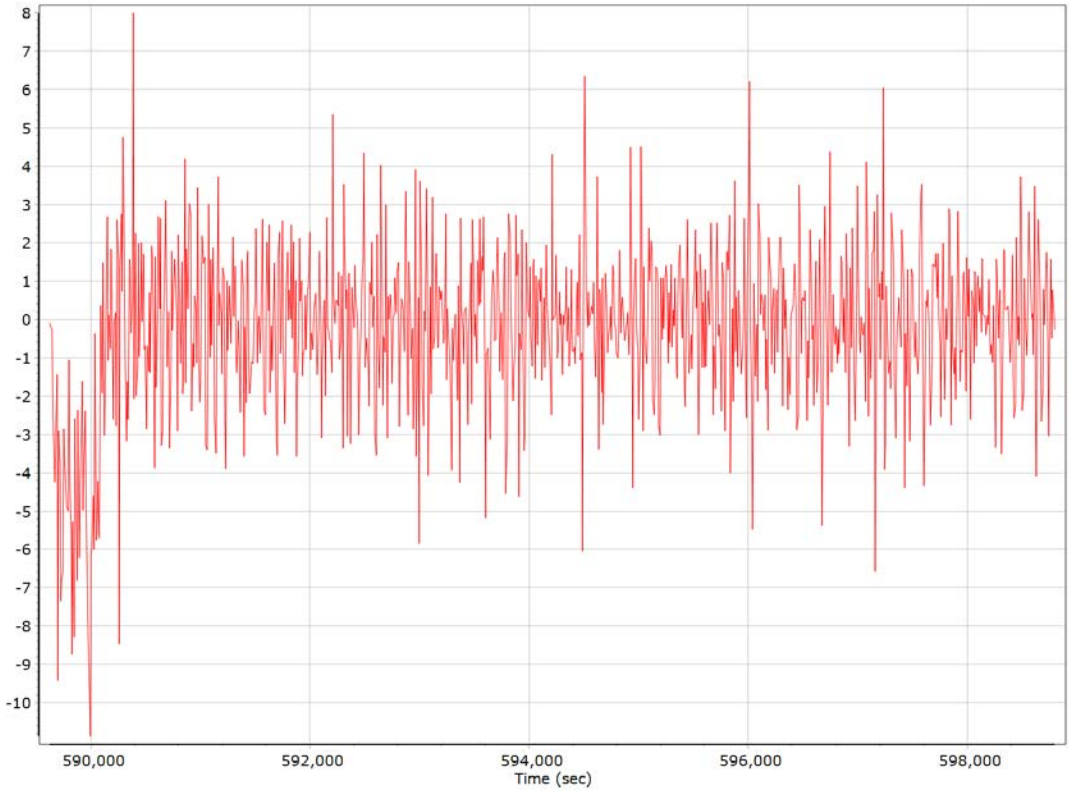
Heading



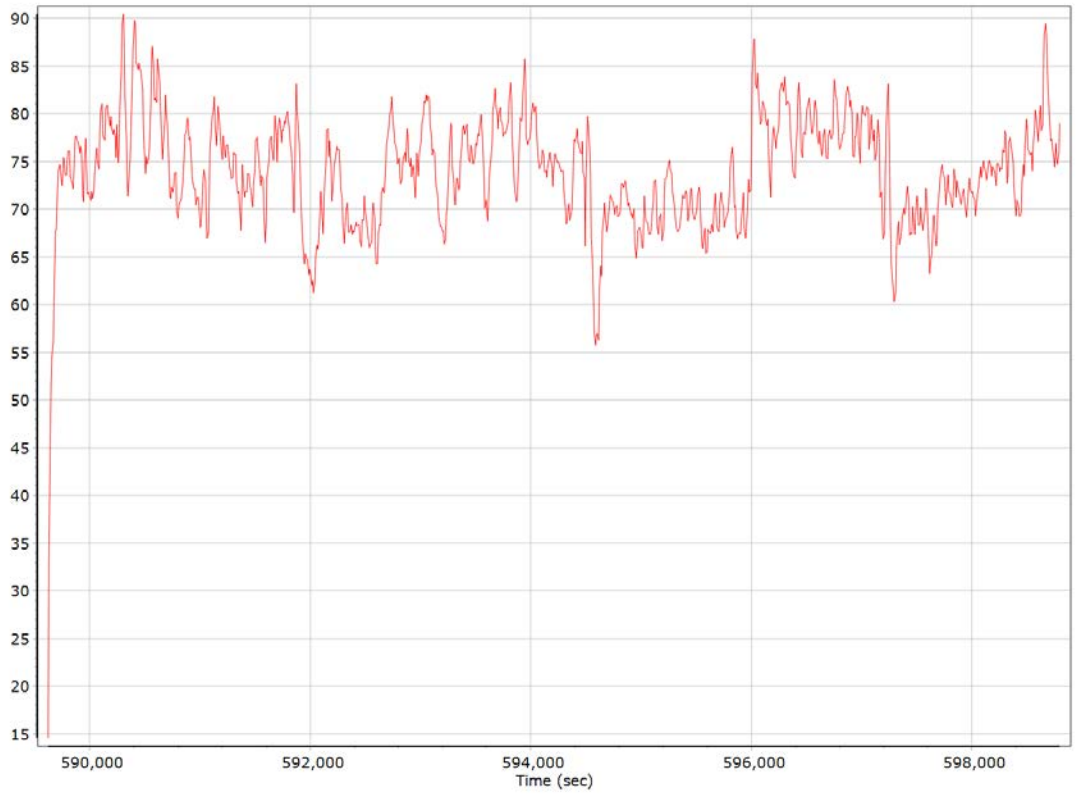
North/East Velocity



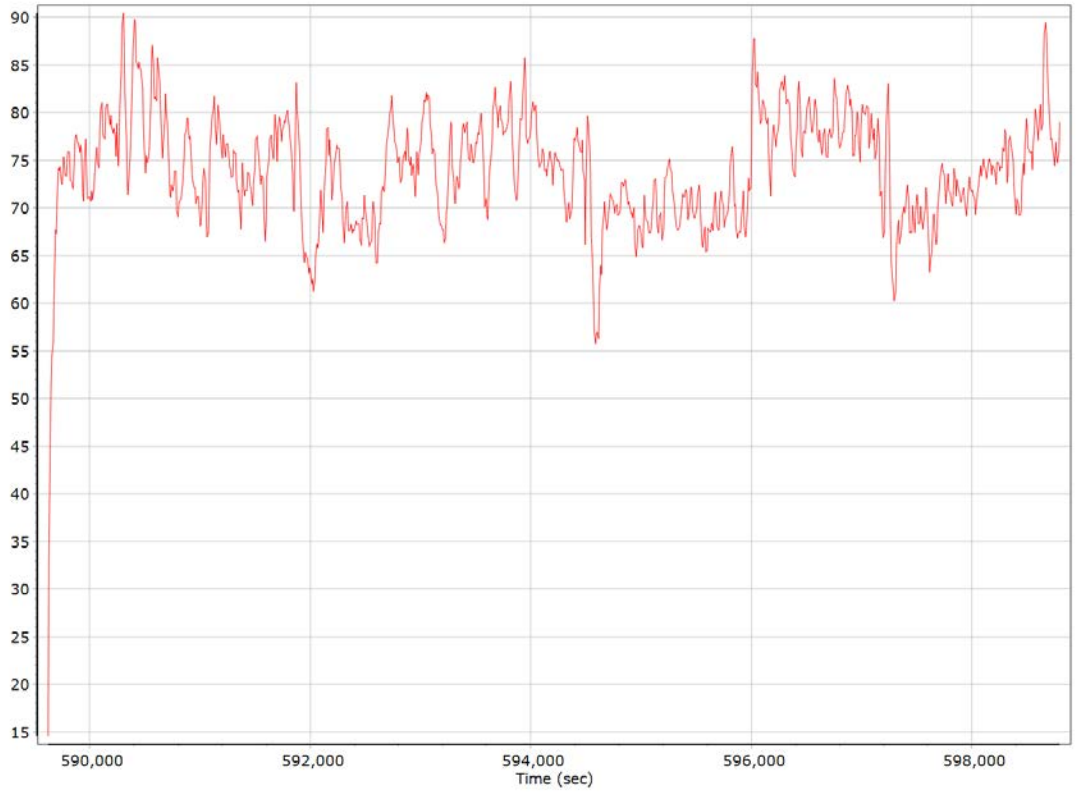
Down Velocity



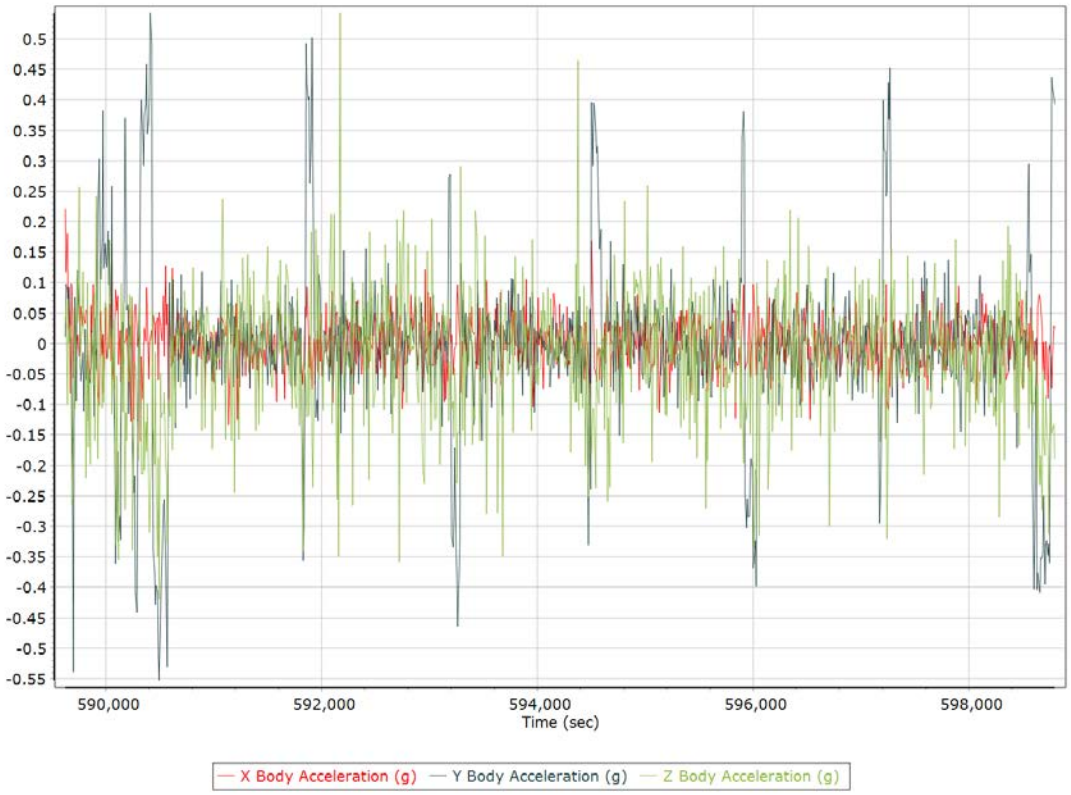
Total Speed



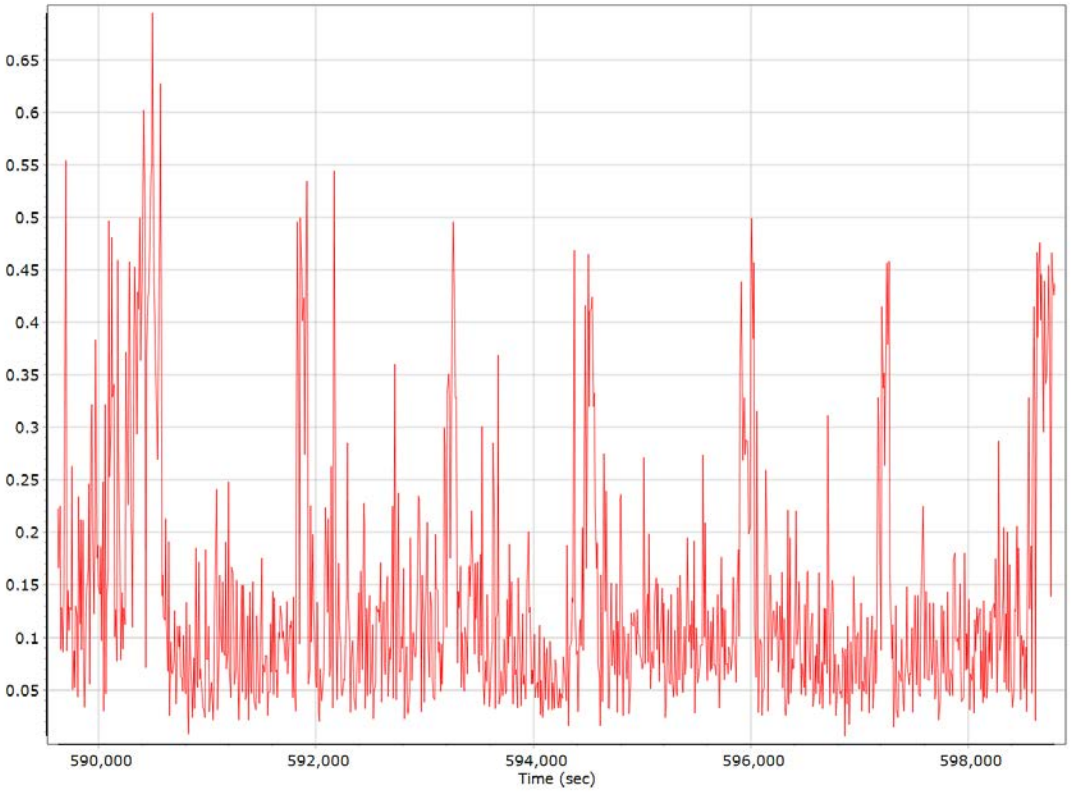
Ground Speed



Body Acceleration



Total Body Acceleration



Body Angular Rate

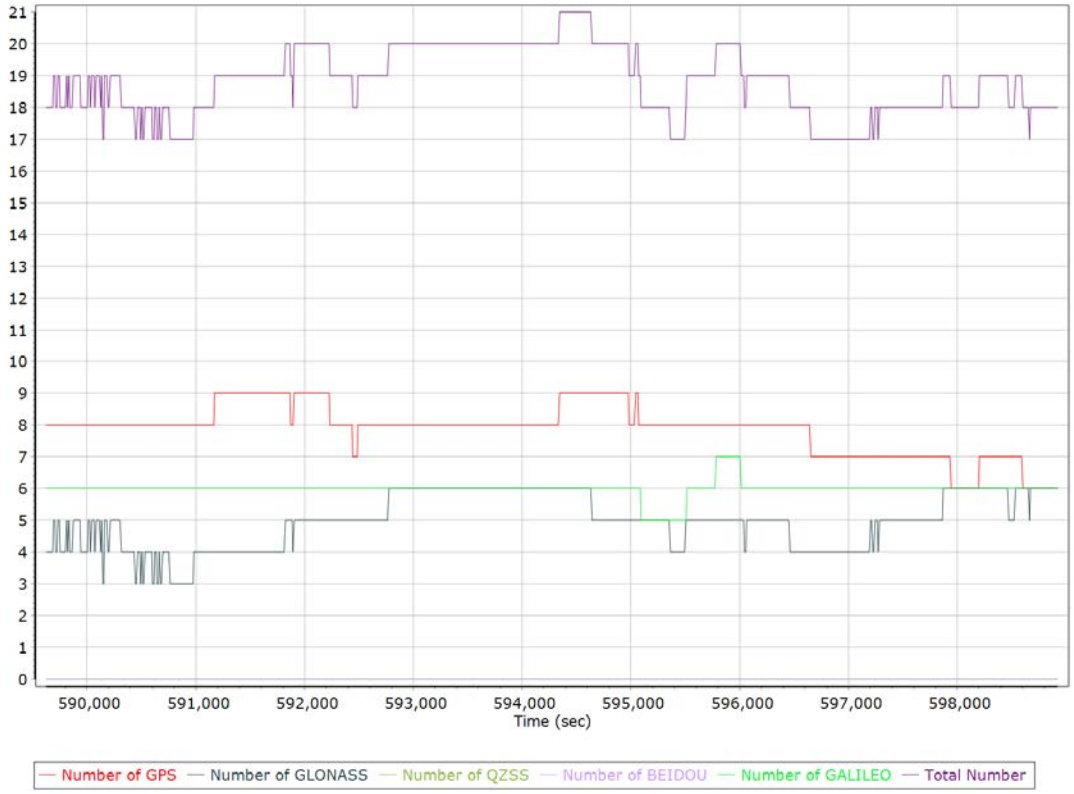


GNSS QC

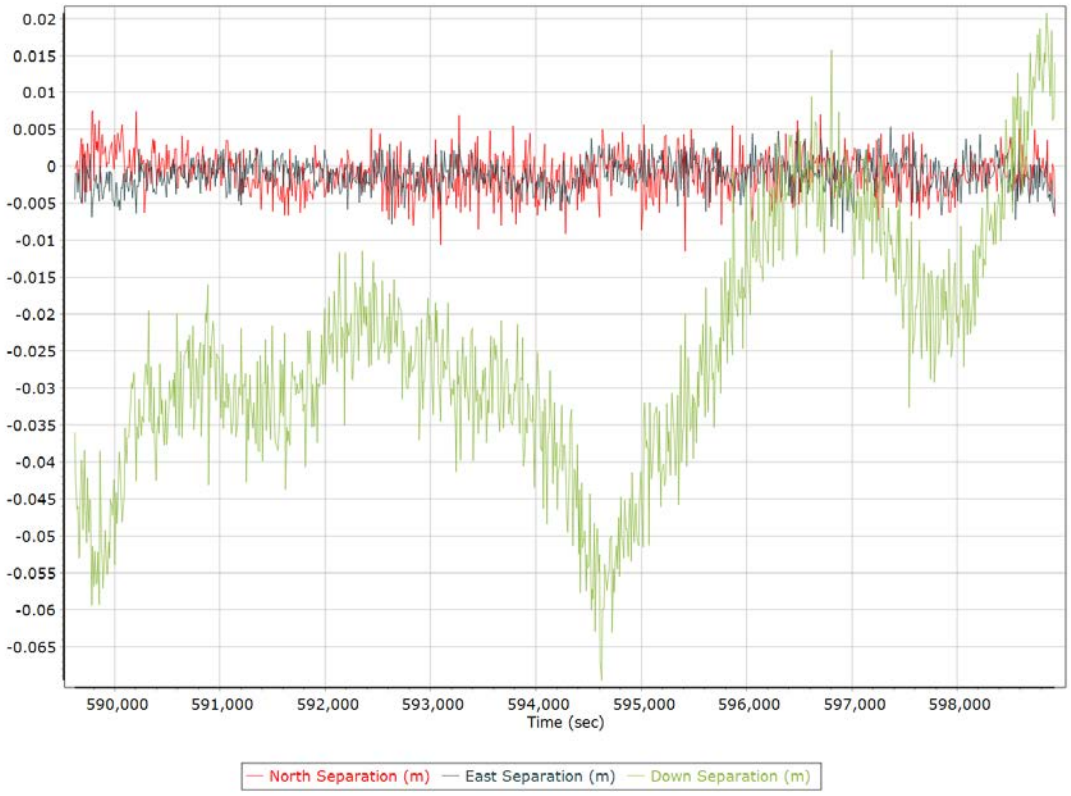
GNSS QC Statistics

Statistics	Min	Max	Mean
Baseline length (km)	0.00	0.00	
Number of GPS SV	5	9	8
Number of GLONASS SV	3	6	5
Number of QZSS SV	0	0	0
Number of BEIDOU SV	0	0	0
Number of GALILEO SV	5	7	6
Total number of SV	17	21	19
PDOP	1.00	1.54	1.17
QC Solution Gaps	0.00	0.00	
Solution Type	Fixed	Float	No solution
Epoch (sec)	9381.00	0.00	0.00
Percentage	100.00	0.00	0.00

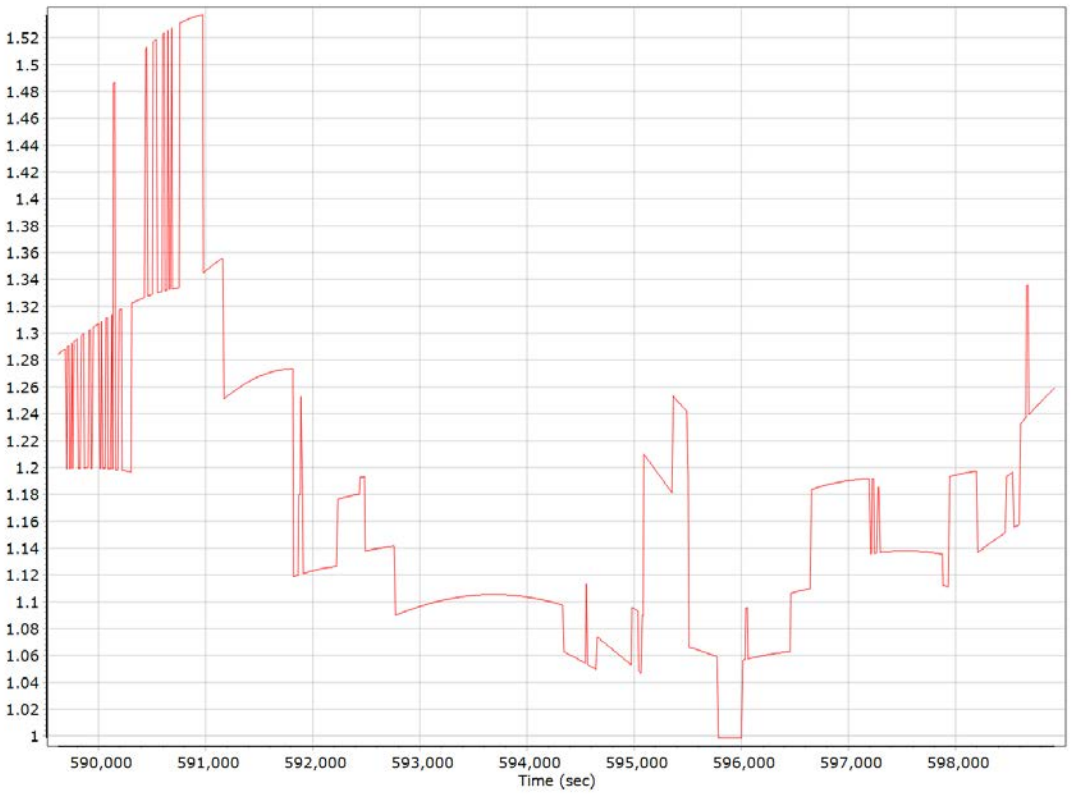
Num SVs in solution



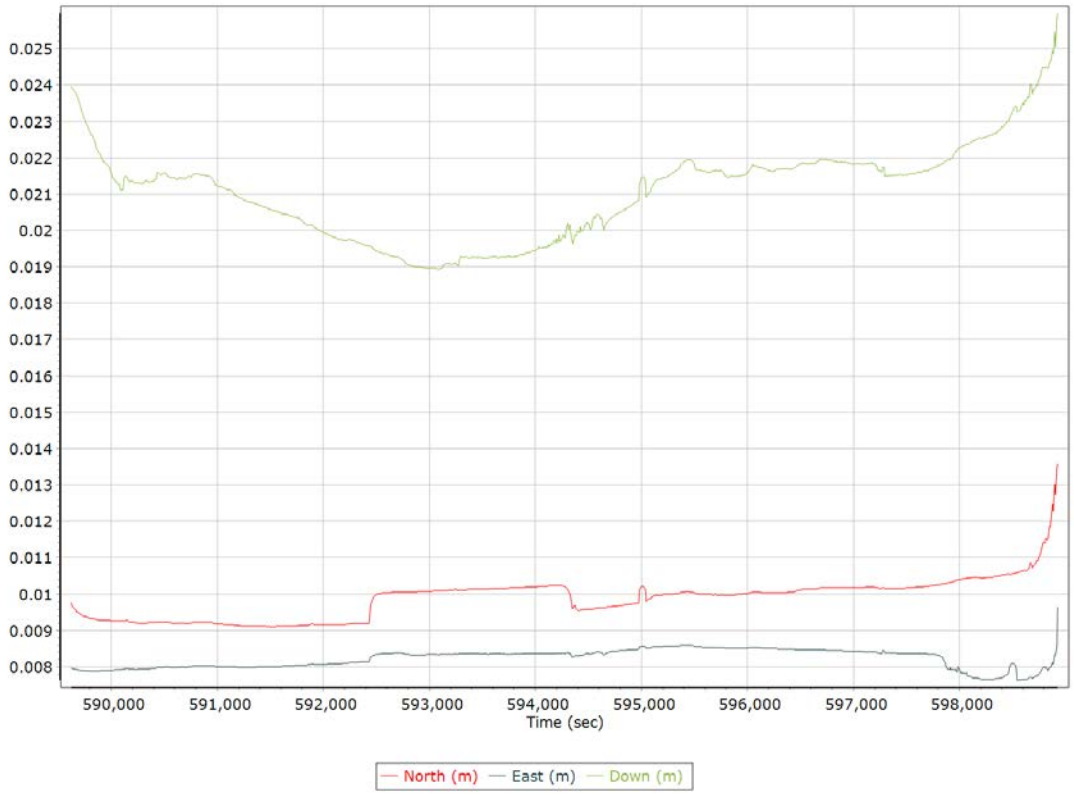
Forward/Reverse Separation



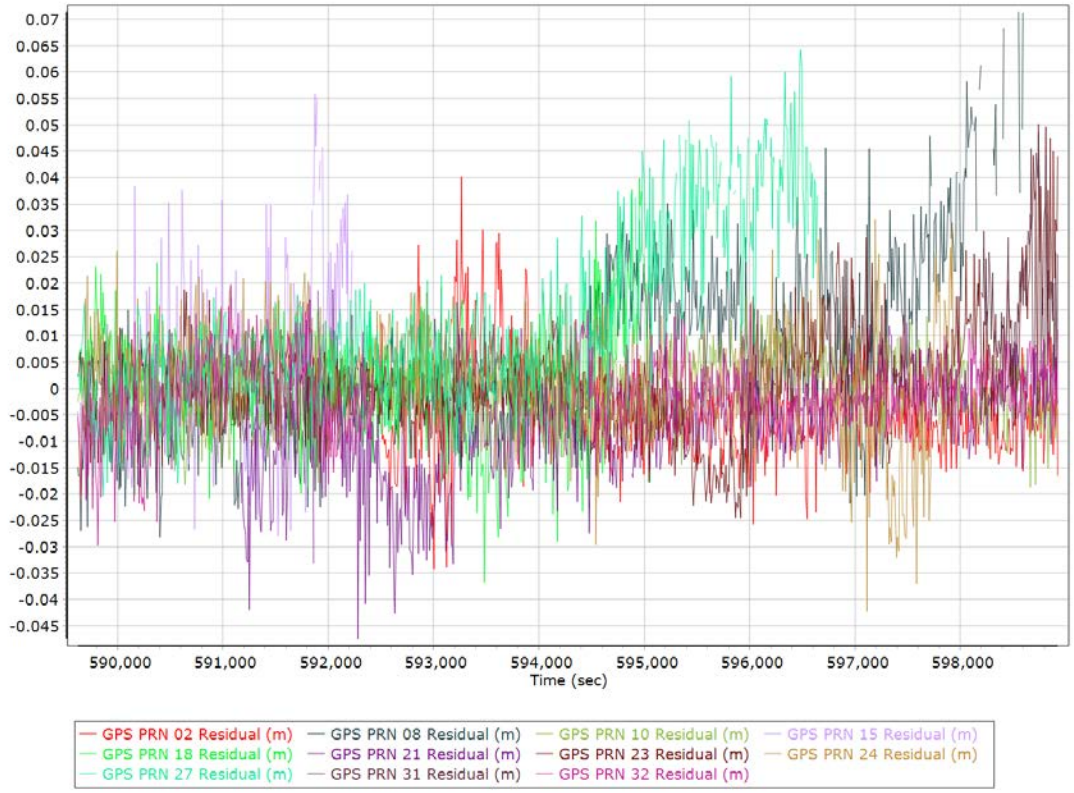
PDOP



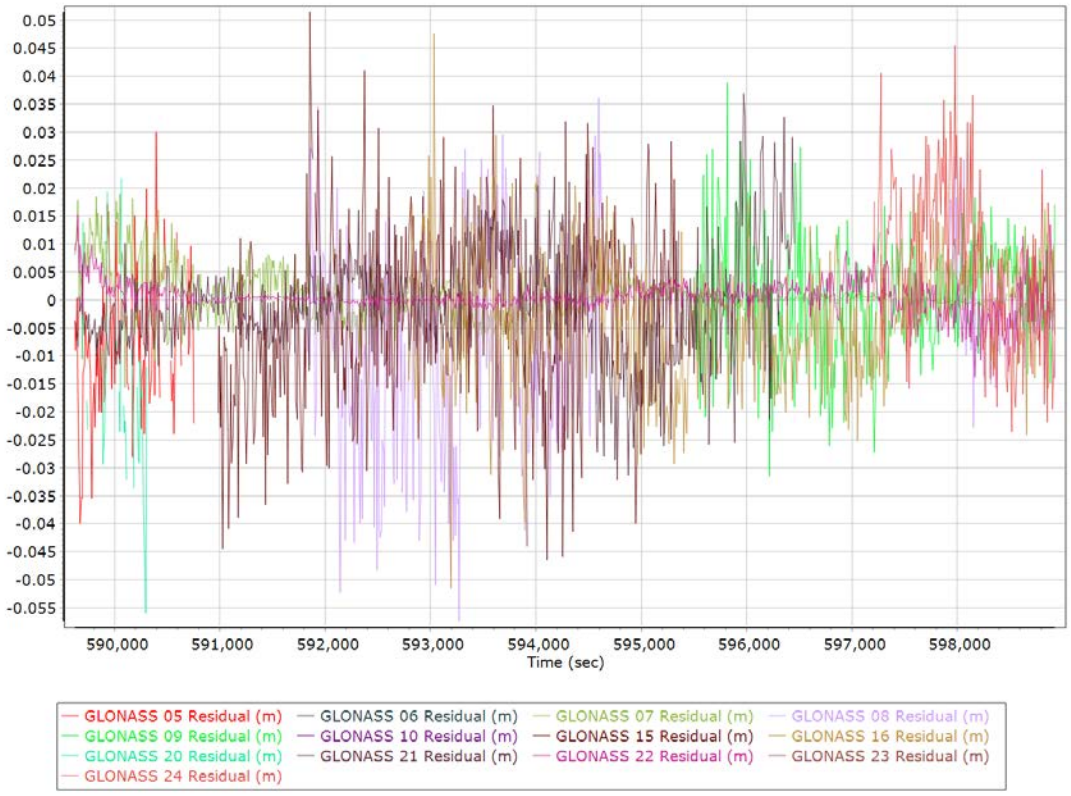
Estimated Position Accuracy



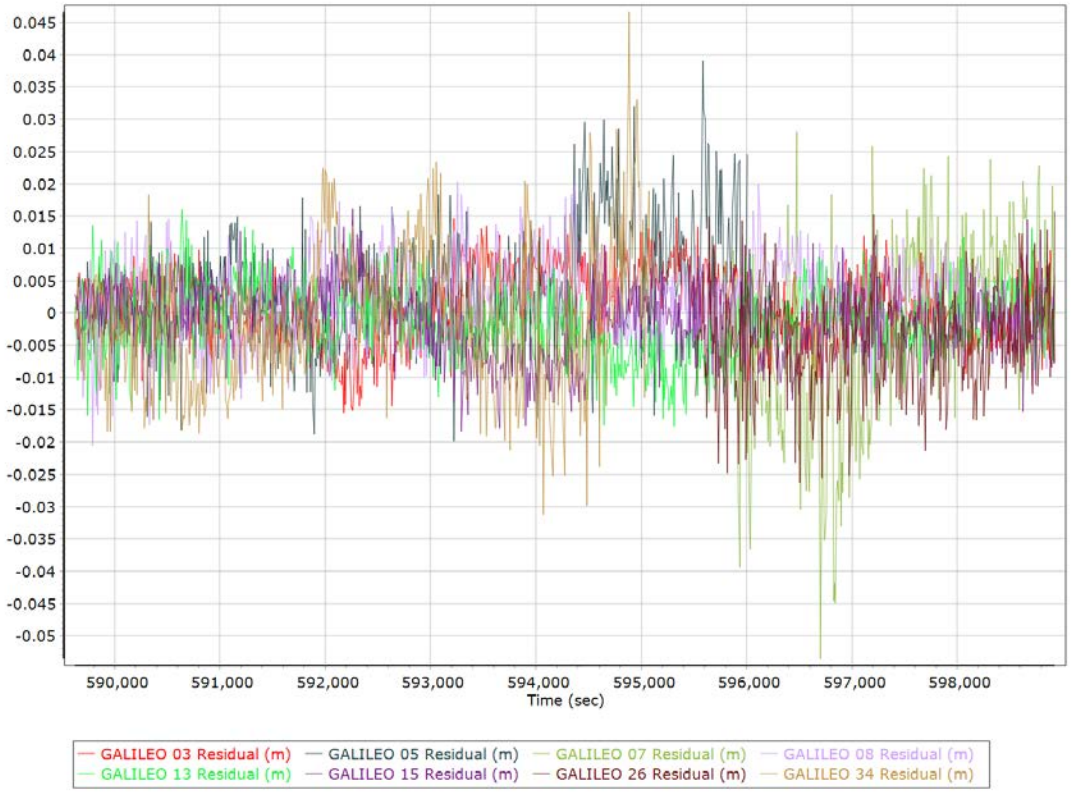
GPS Residuals



GLONASS Residuals



GALILEO Residuals



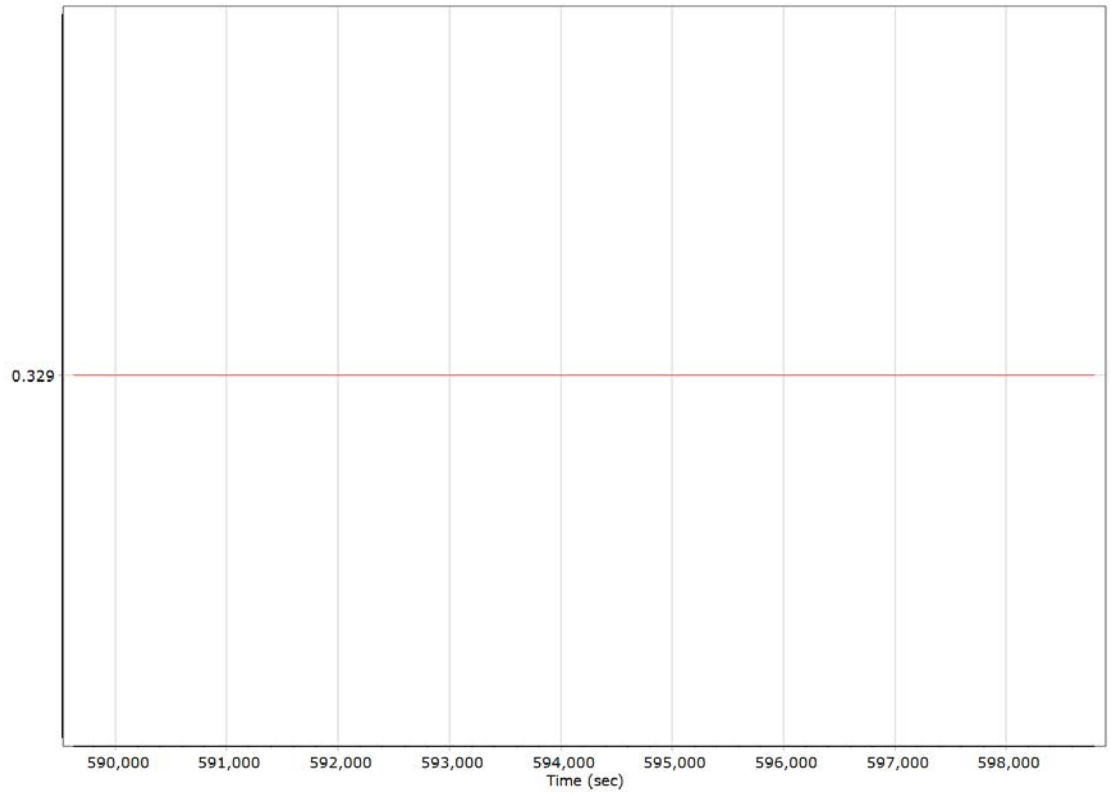
GNSS-Inertial Processor Configuration

Processing mode	IN-Fusion PP-RTX		
Stabilized mount	True		
Processing start time	589540.030 (8/12/2023 7:45:40 PM)		
Processing end time	598800.000 (8/12/2023 10:20:00 PM)		
Initial attitude source	Primary GNSS Track		
IMU Sensor Context	Processing with Onboard IMU		
Gimbal to IMU lever arm (m)	-0.034	-0.010	-0.374
Gimbal to IMU mounting angles (deg)	0.000	0.000	0.000
Gimbal to Primary GNSS lever arm (m)	0.329	-0.067	-1.393
Gimbal to Primary GNSS lever arm std dev (m)	0.030	0.030	0.030
Aircraft to Reference mounting angles (deg)	0.000	0.000	0.000

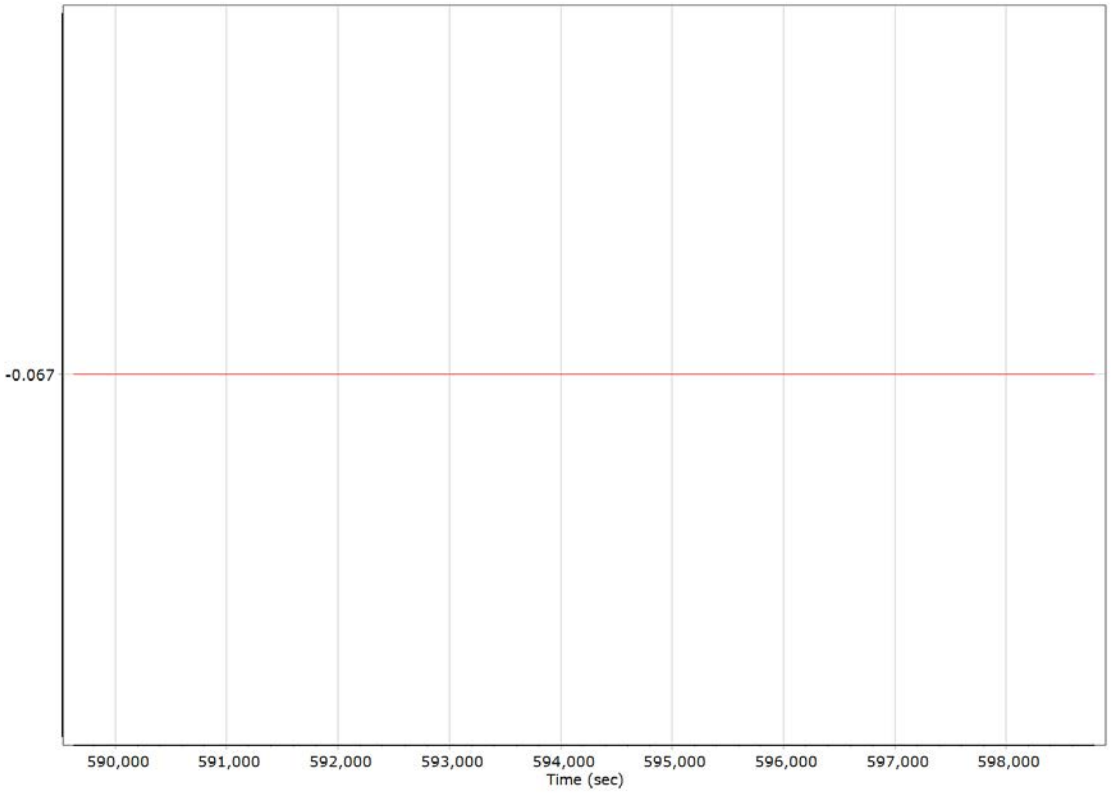
Calibrated Installation Parameters

Reference-Primary GNSS Lever Arm (m)

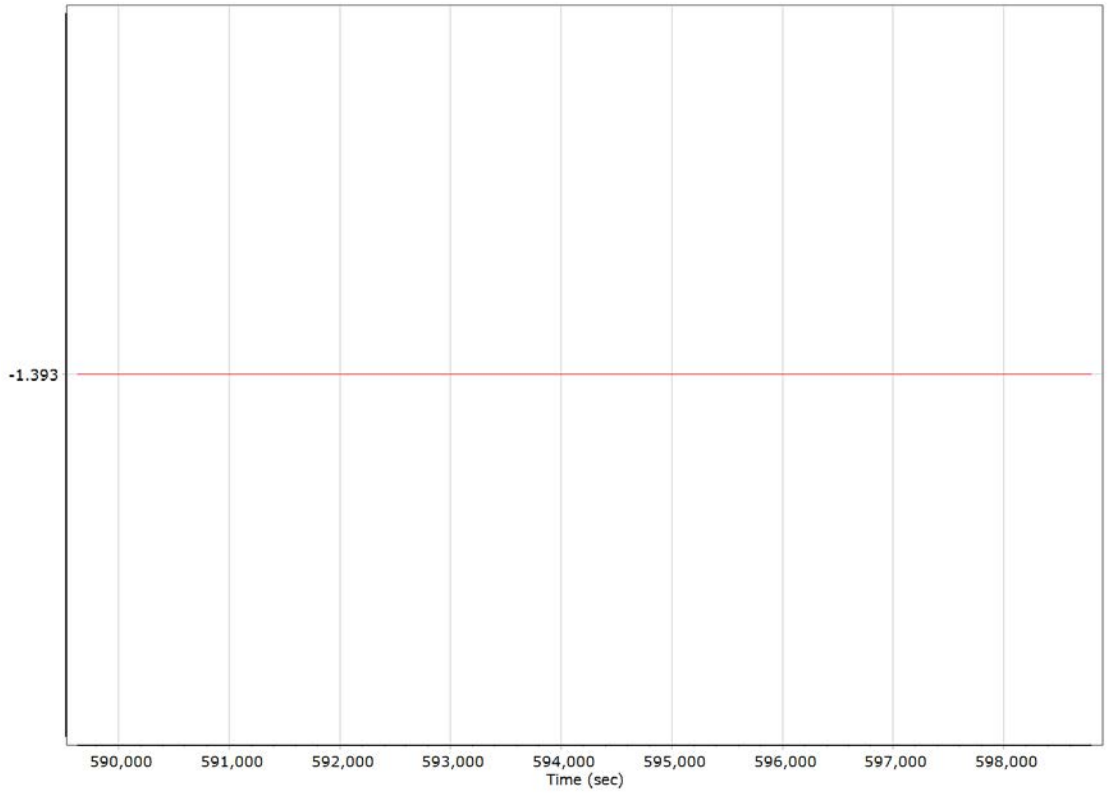
X Reference-Primary GNSS Lever Arm (m)



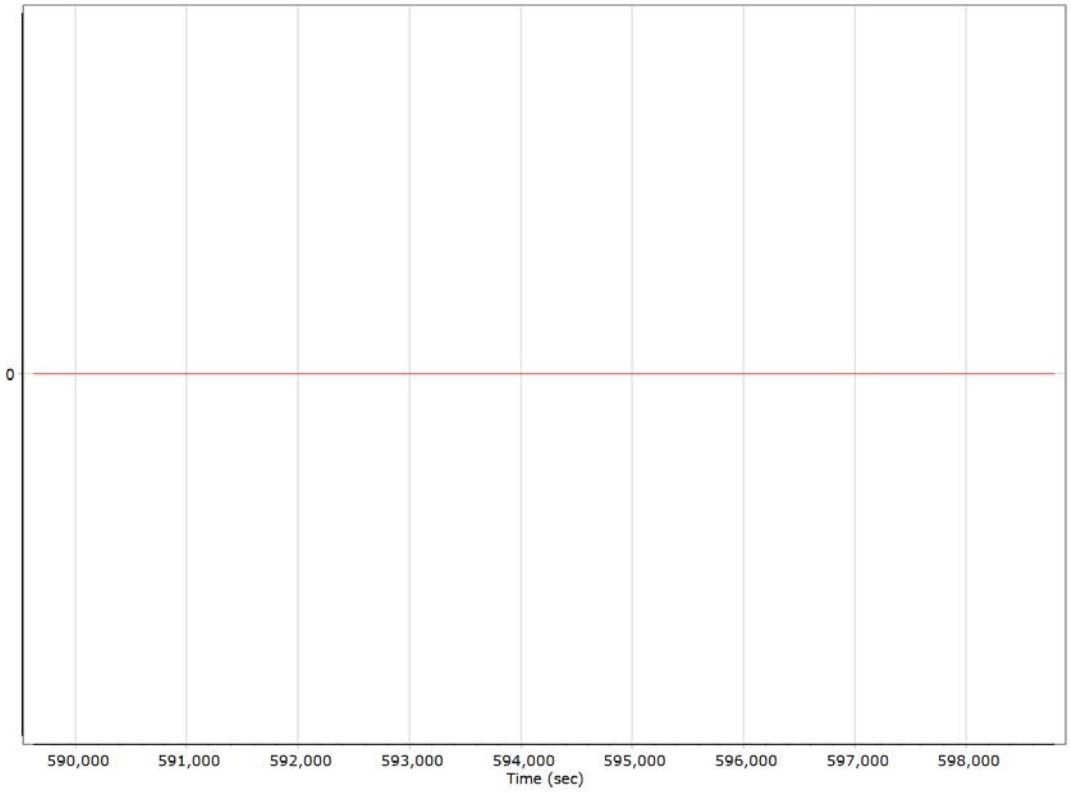
Y Reference-Primary GNSS Lever Arm (m)



Z Reference-Primary GNSS Lever Arm (m)



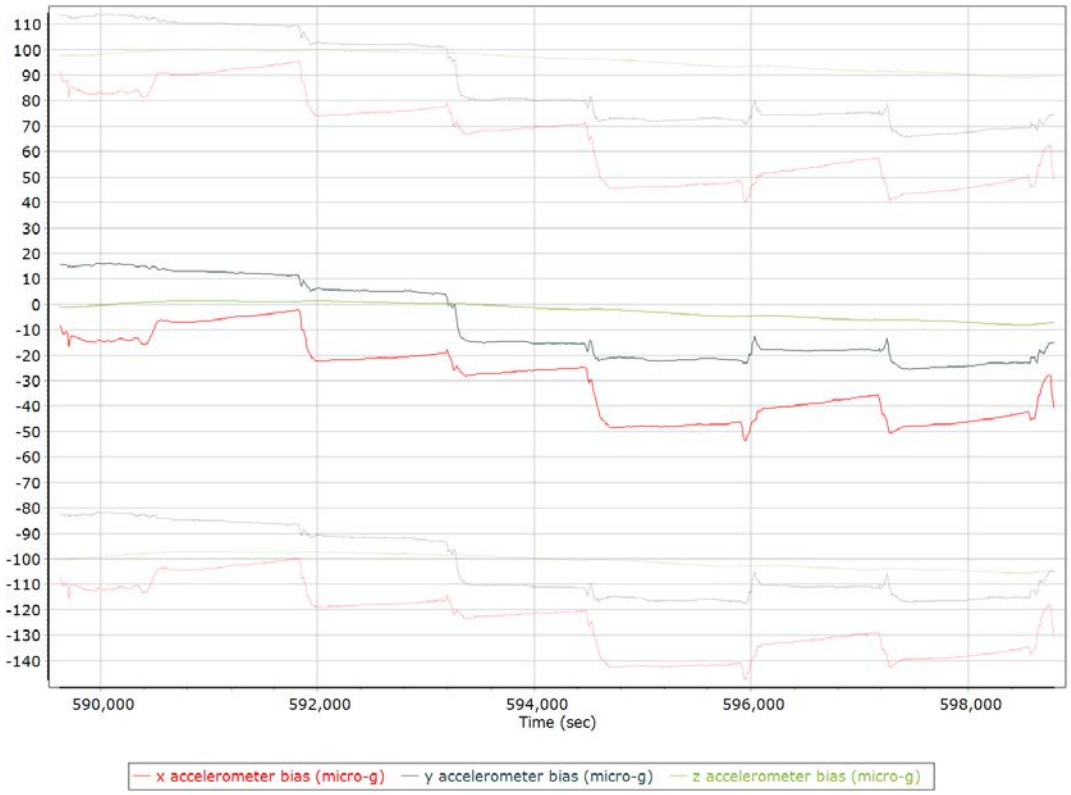
Reference-Primary GNSS Lever Arm Figure of Merit



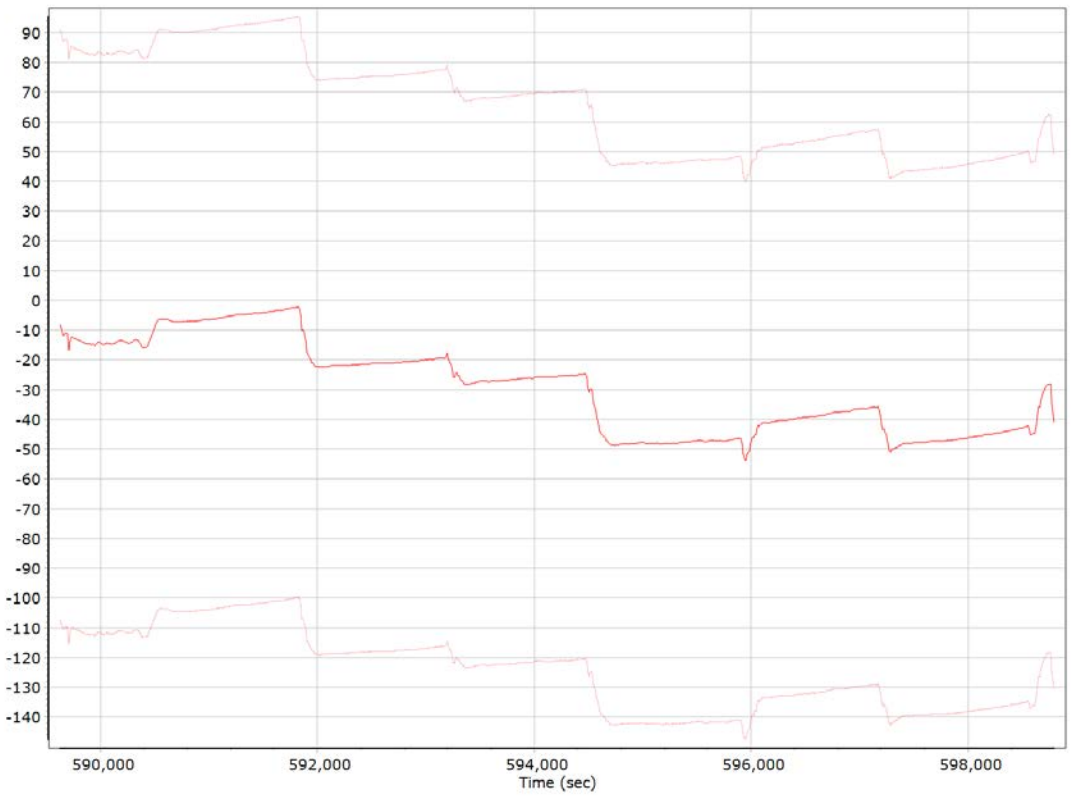
IN-Fusion QC

Forward Processed Estimated Errors, Reference Frame

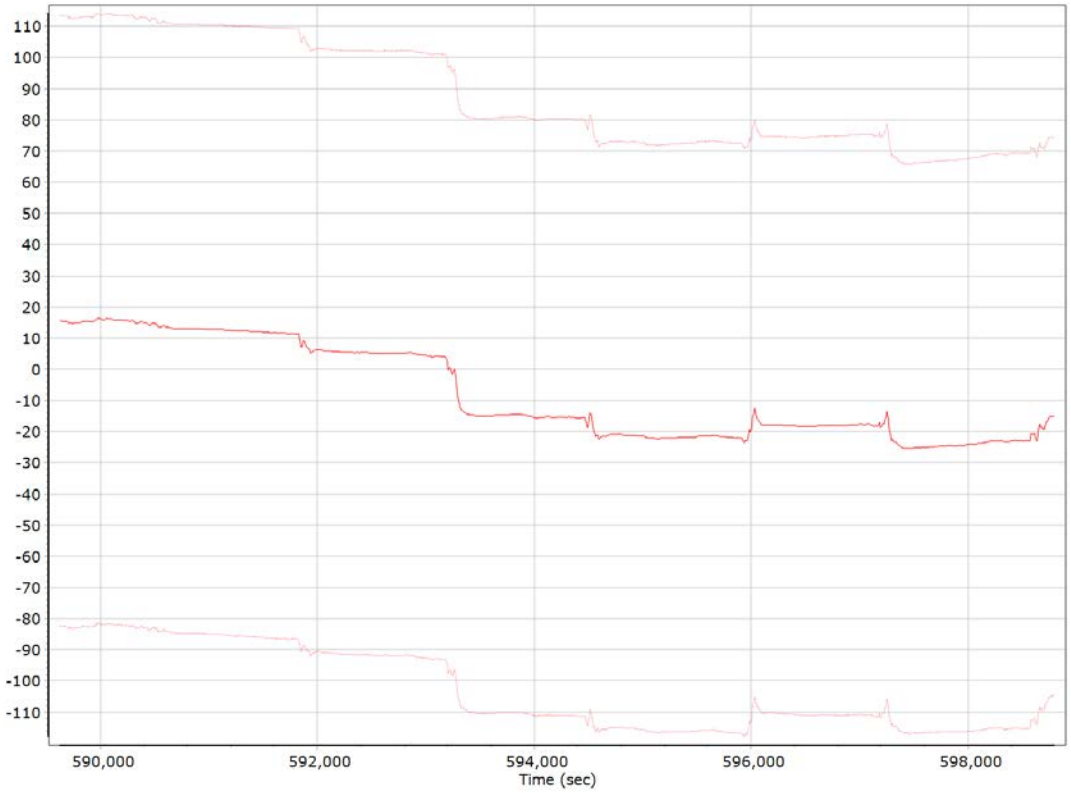
Accelerometer Bias (micro-g)



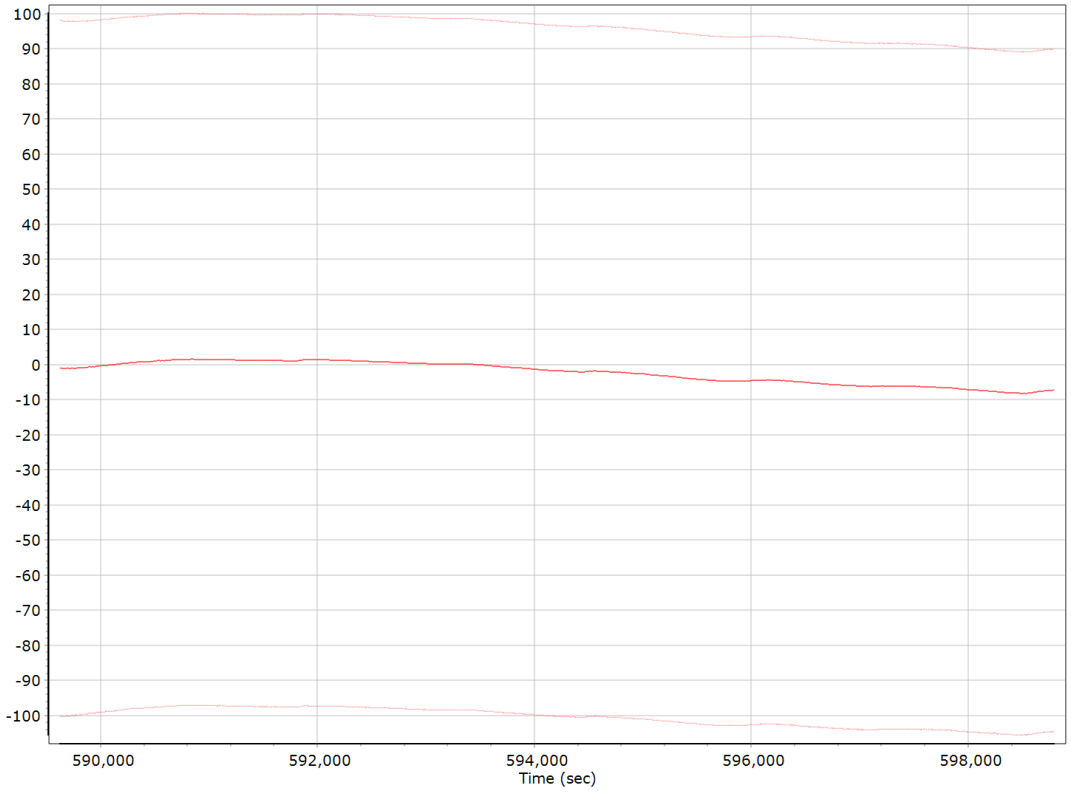
X Accelerometer Bias (micro-g)



Y Accelerometer Bias (micro-g)



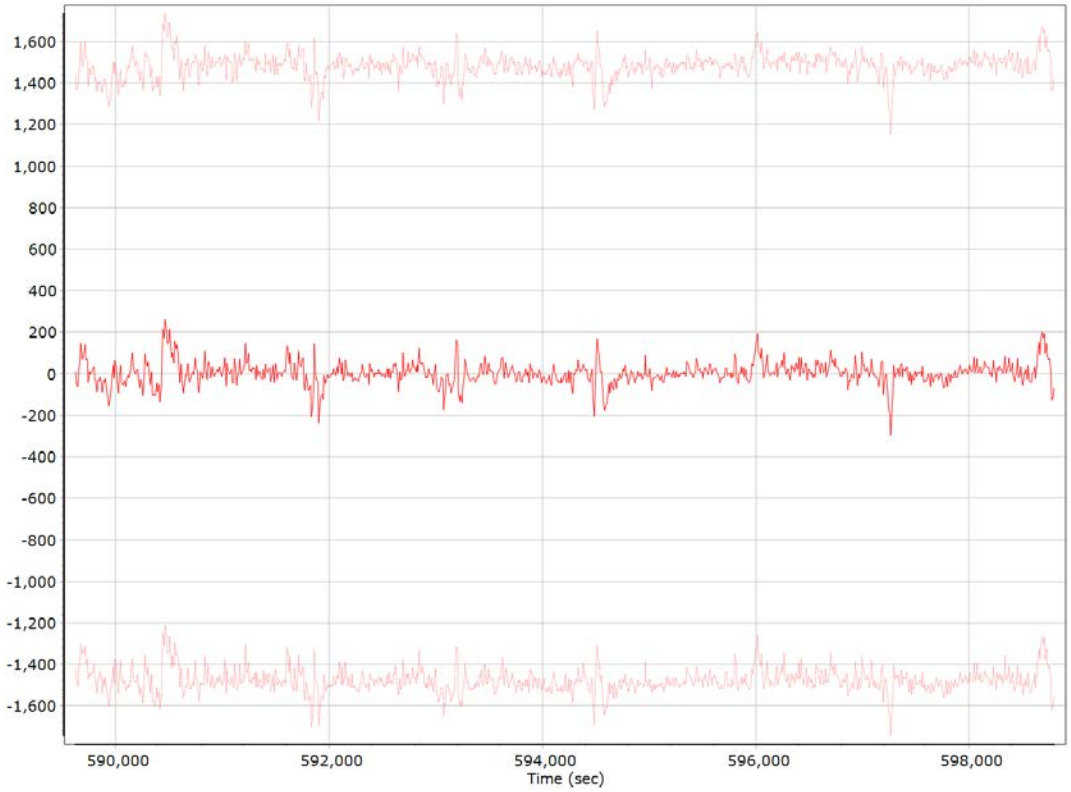
Z Accelerometer Bias (micro-g)



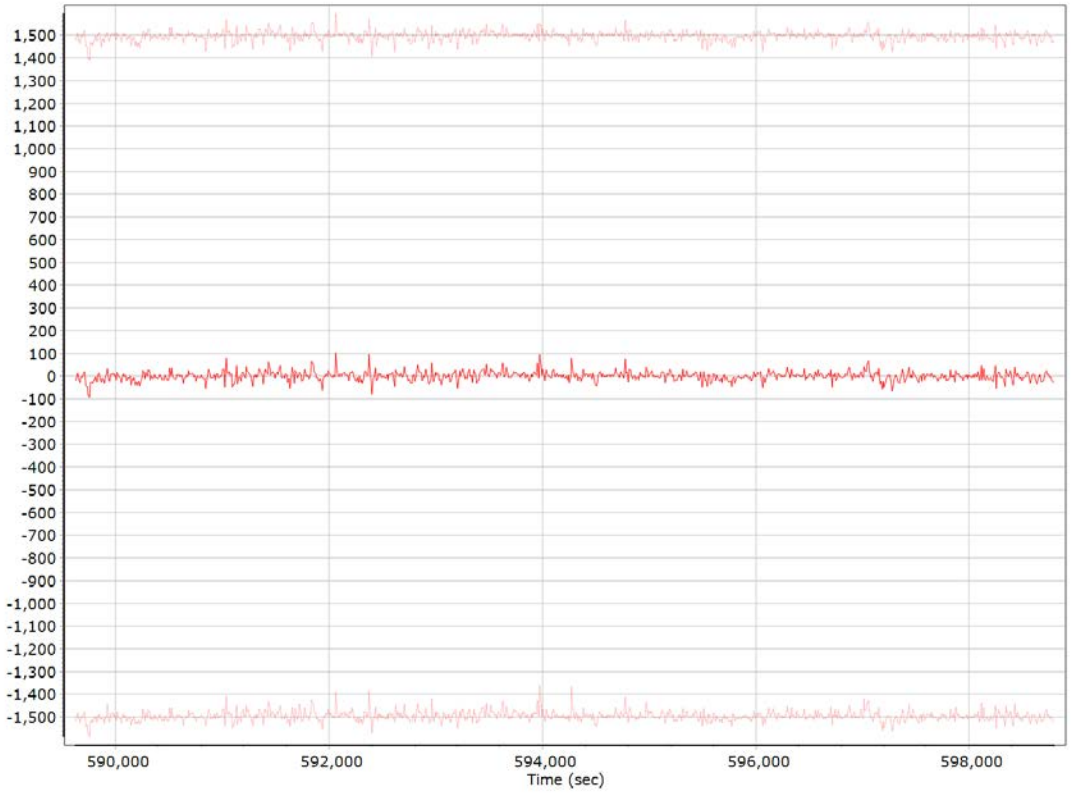
Accelerometer Scale Error (ppm)



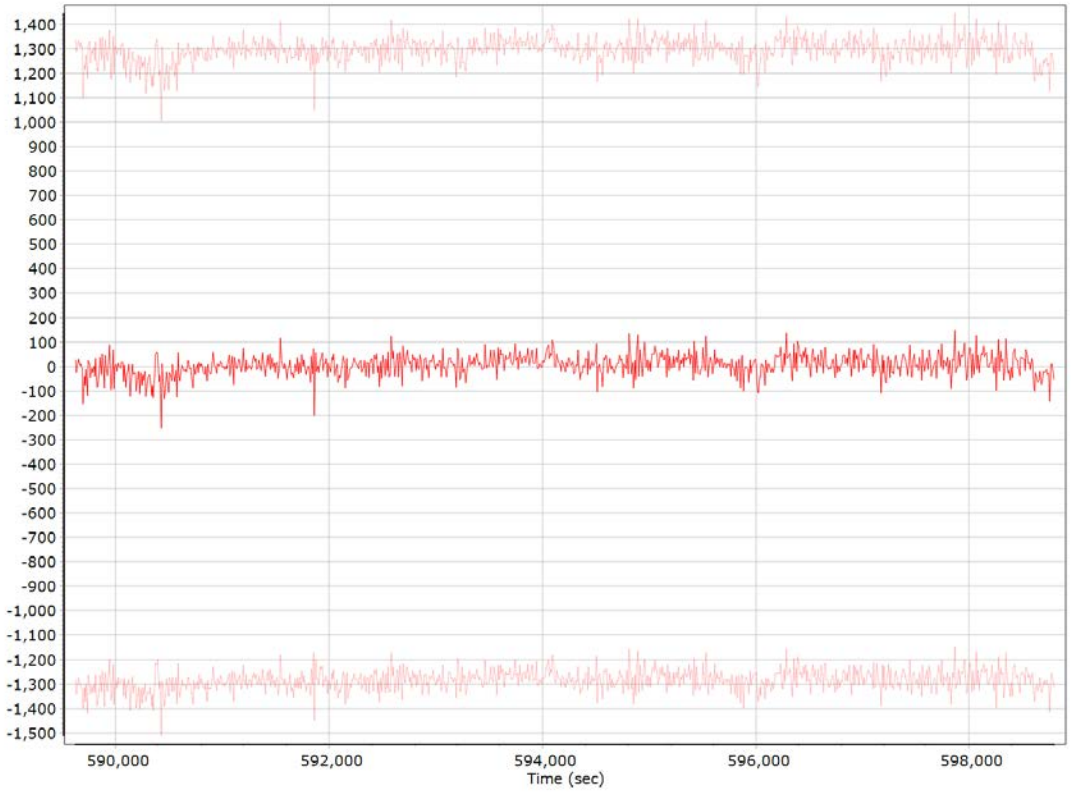
X Accelerometer Scale Error (ppm)



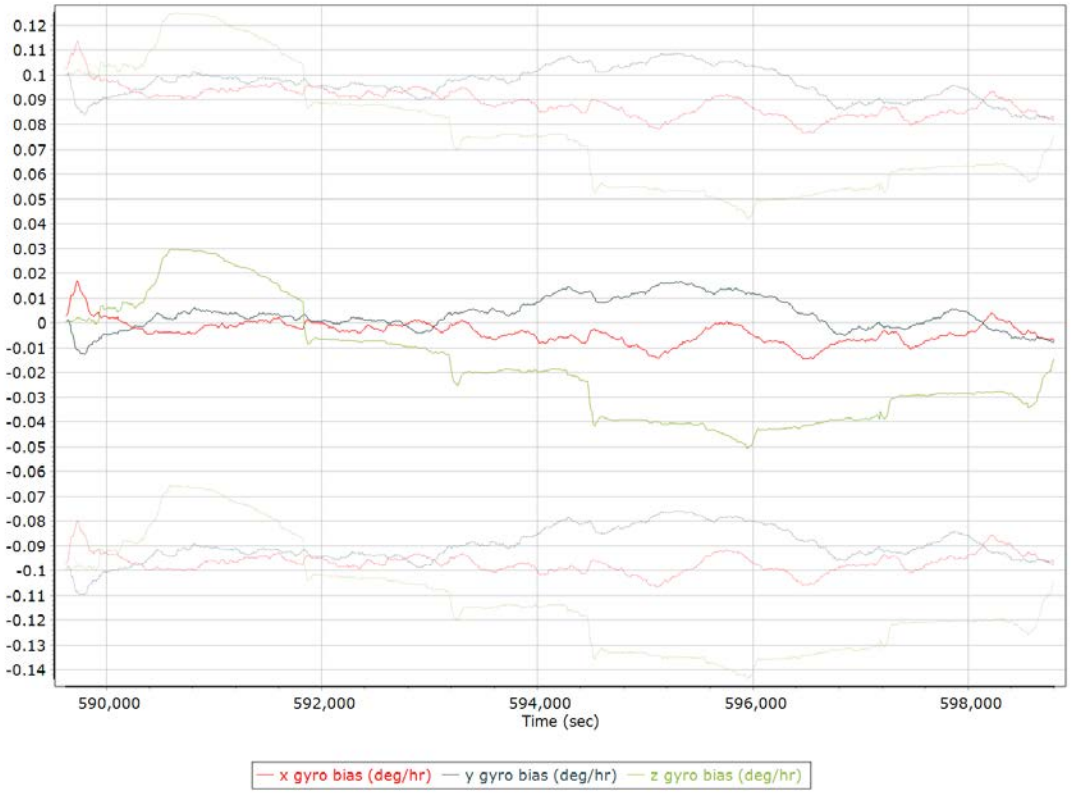
Y Accelerometer Scale Error (ppm)



Z Accelerometer Scale Error (ppm)



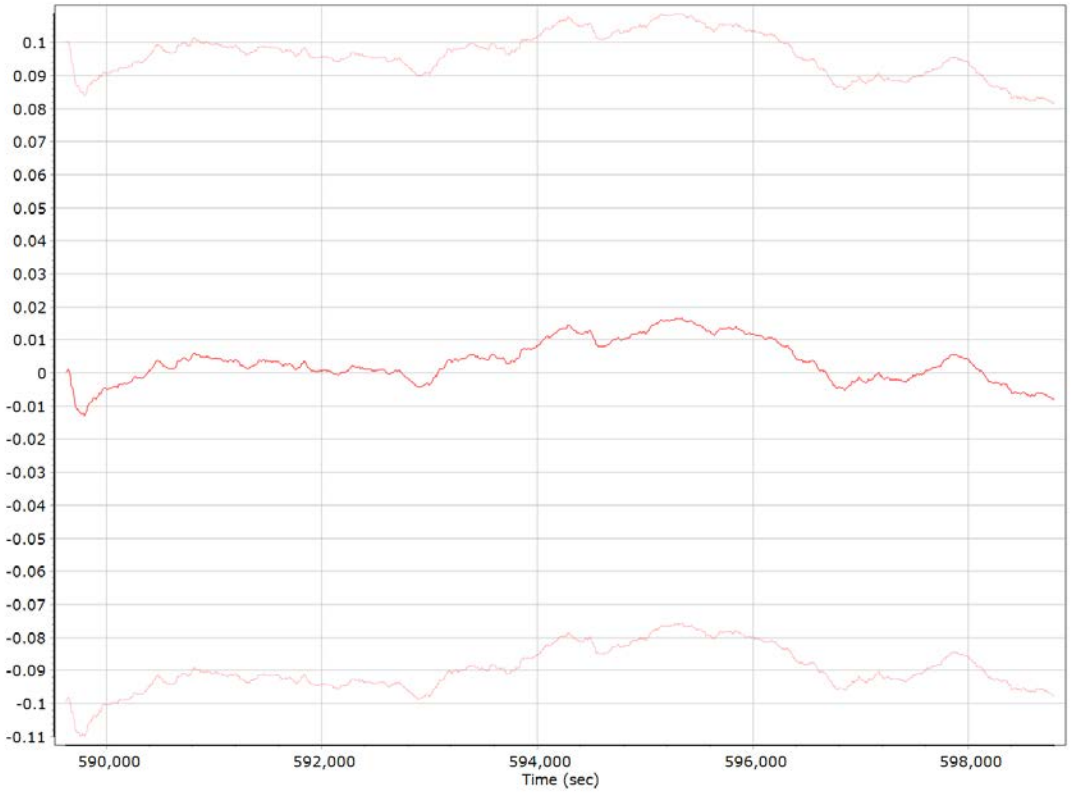
Gyro Bias (deg/h)



X Gyro Bias (deg/h)



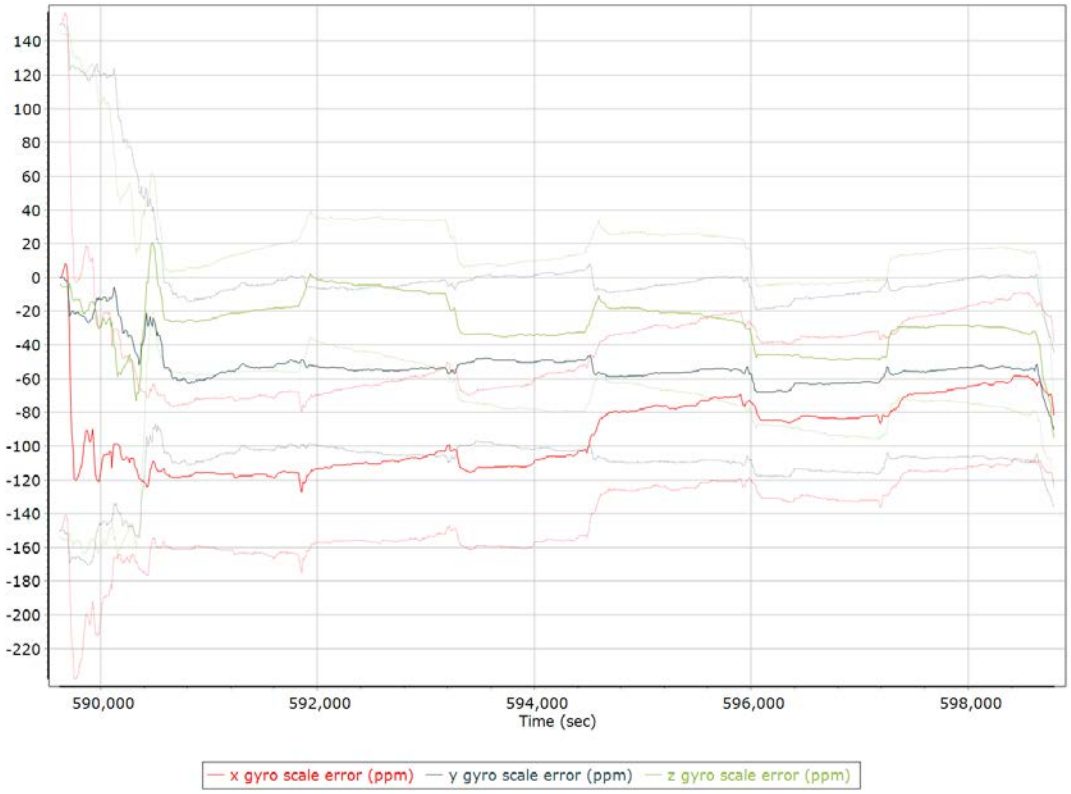
Y Gyro Bias (deg/h)



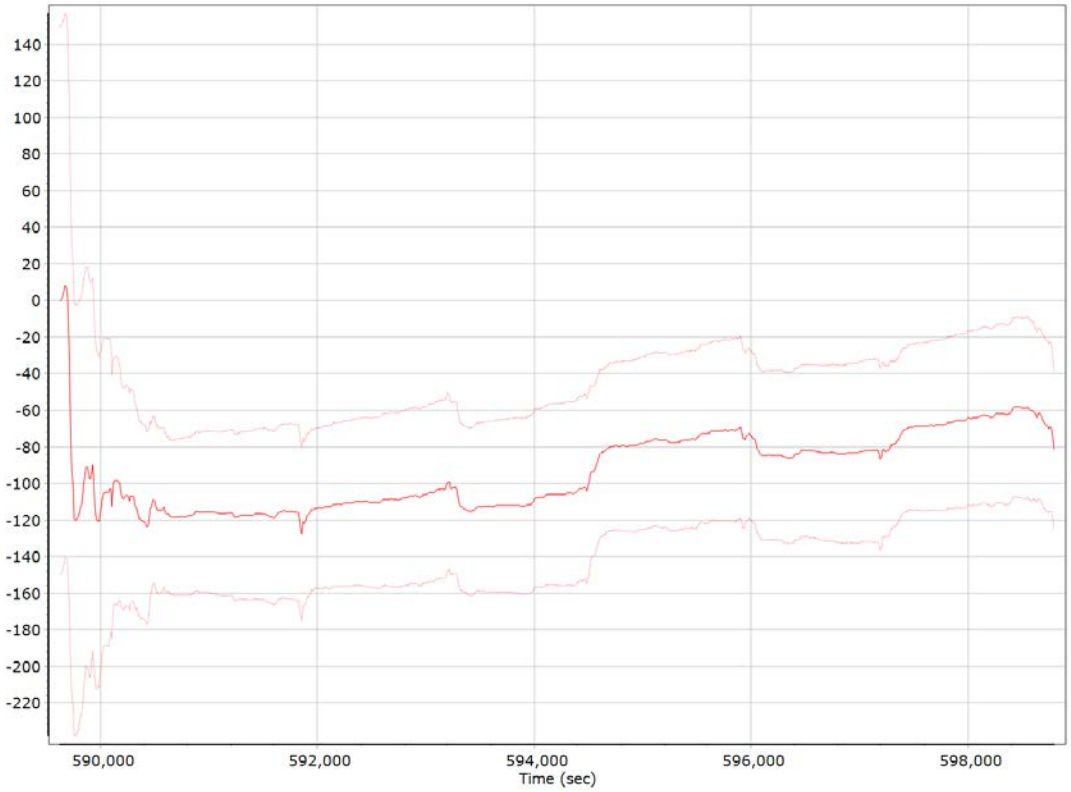
Z Gyro Bias (deg/h)



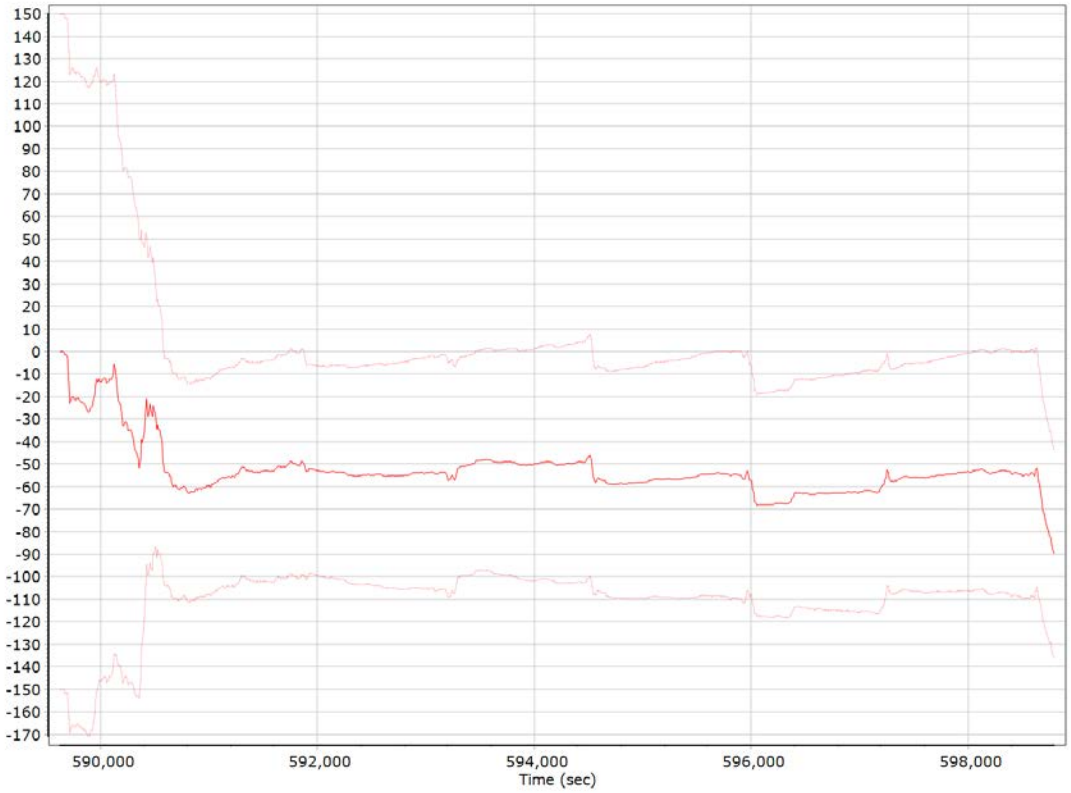
Gyro Scale Error (ppm)



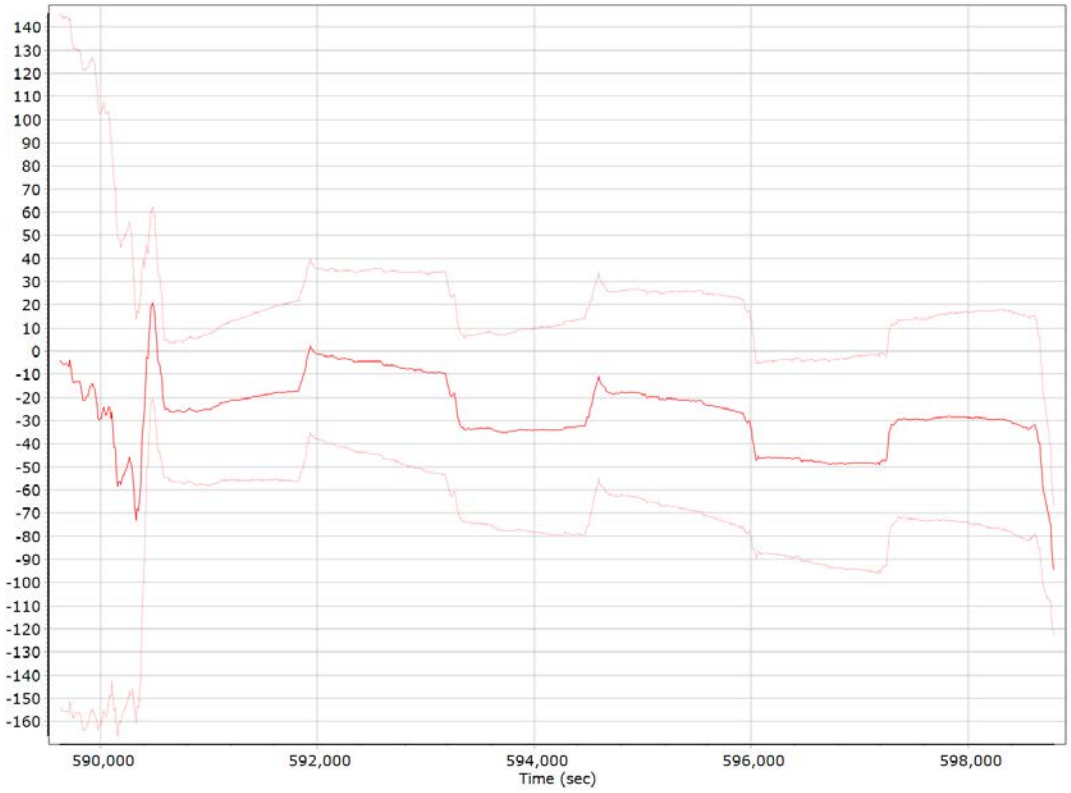
X Gyro Scale Error (ppm)



Y Gyro Scale Error (ppm)



Z Gyro Scale Error (ppm)

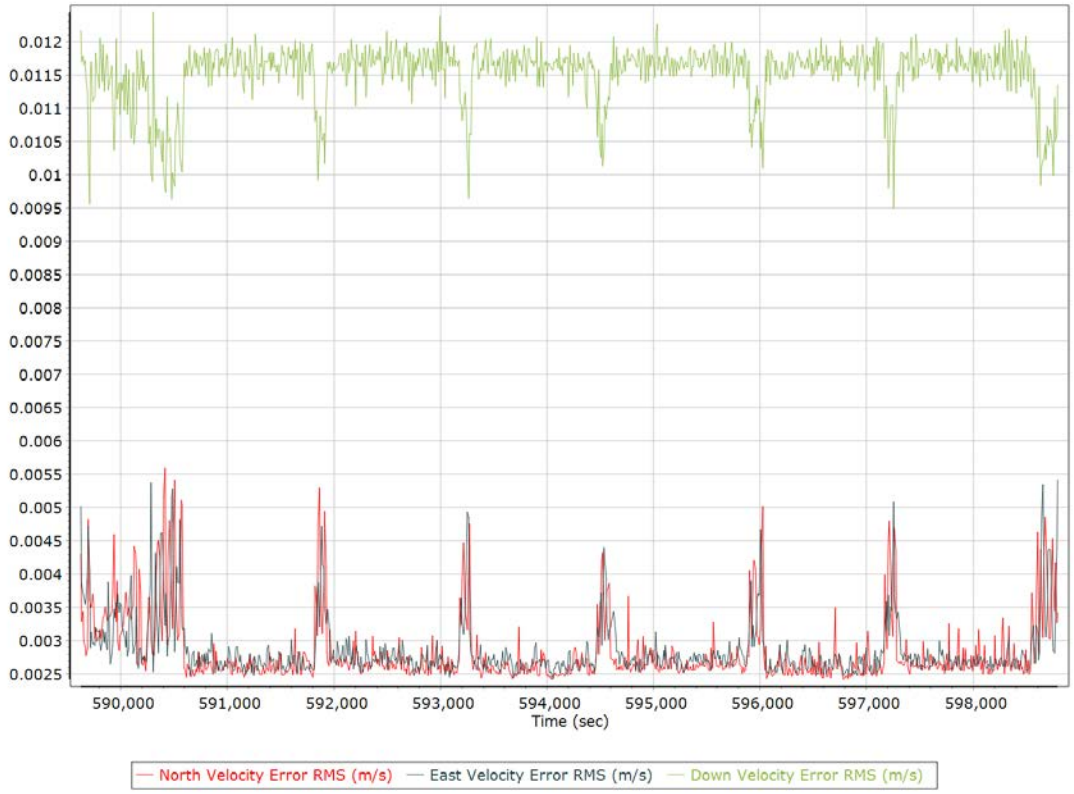


Smoothed Performance Metrics

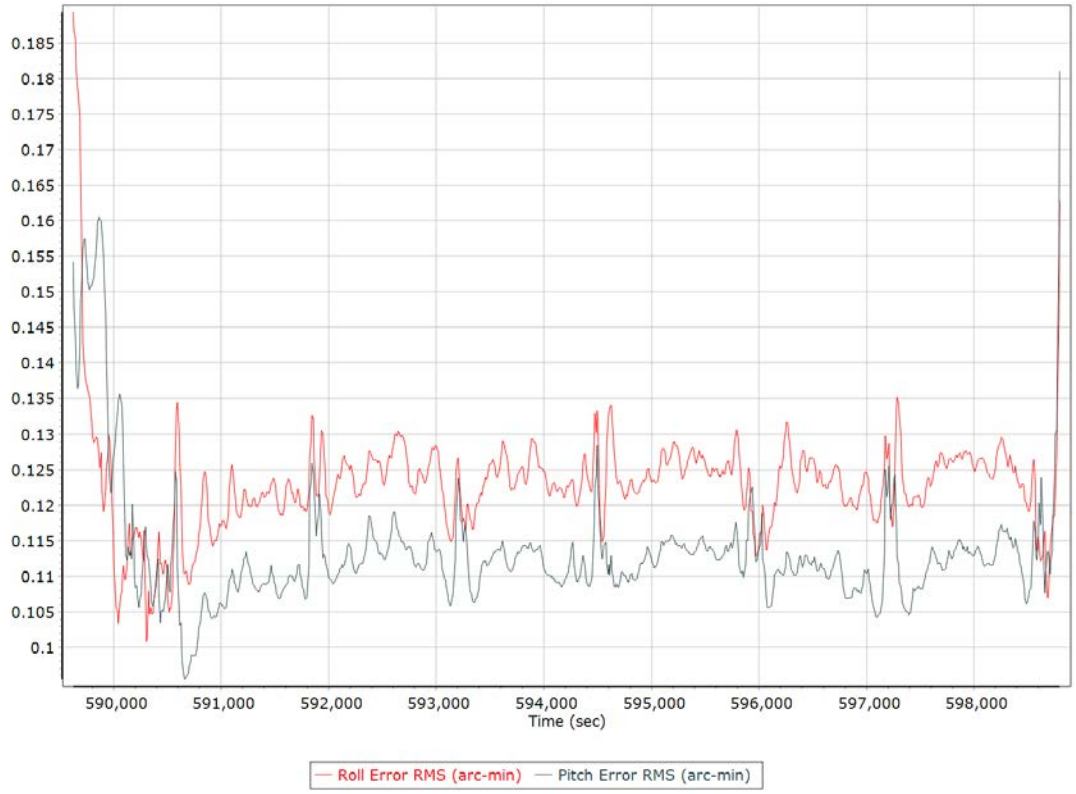
Position Error RMS (m)



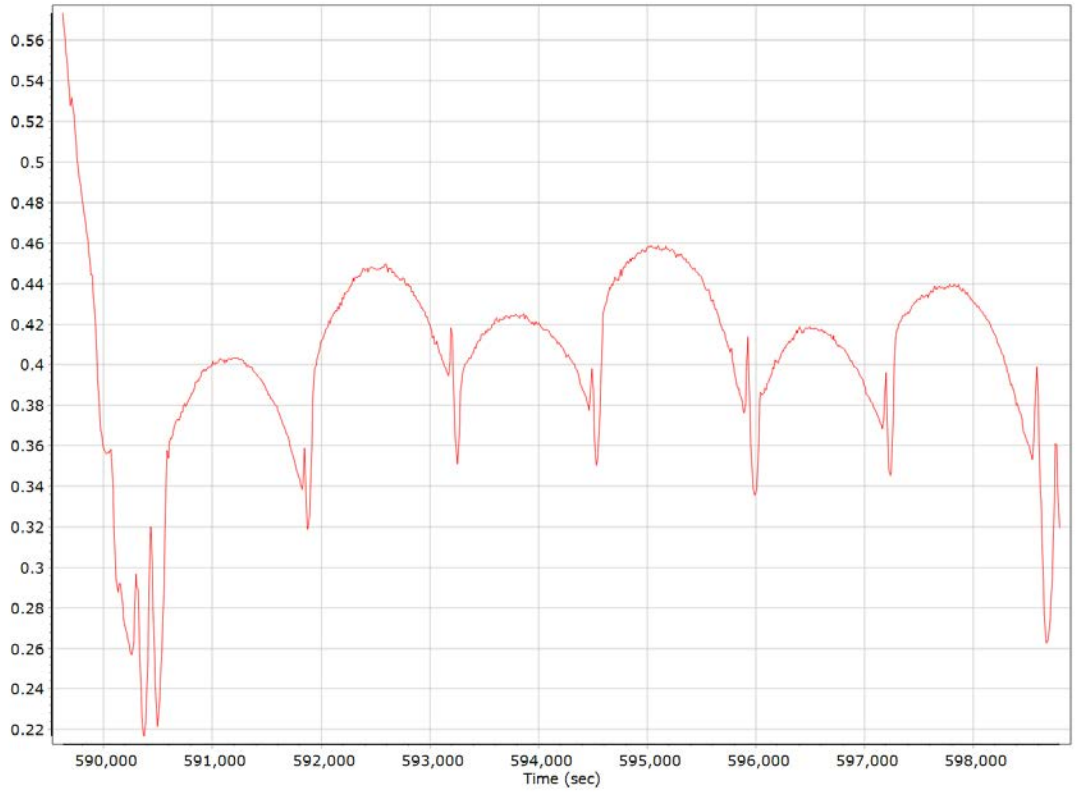
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

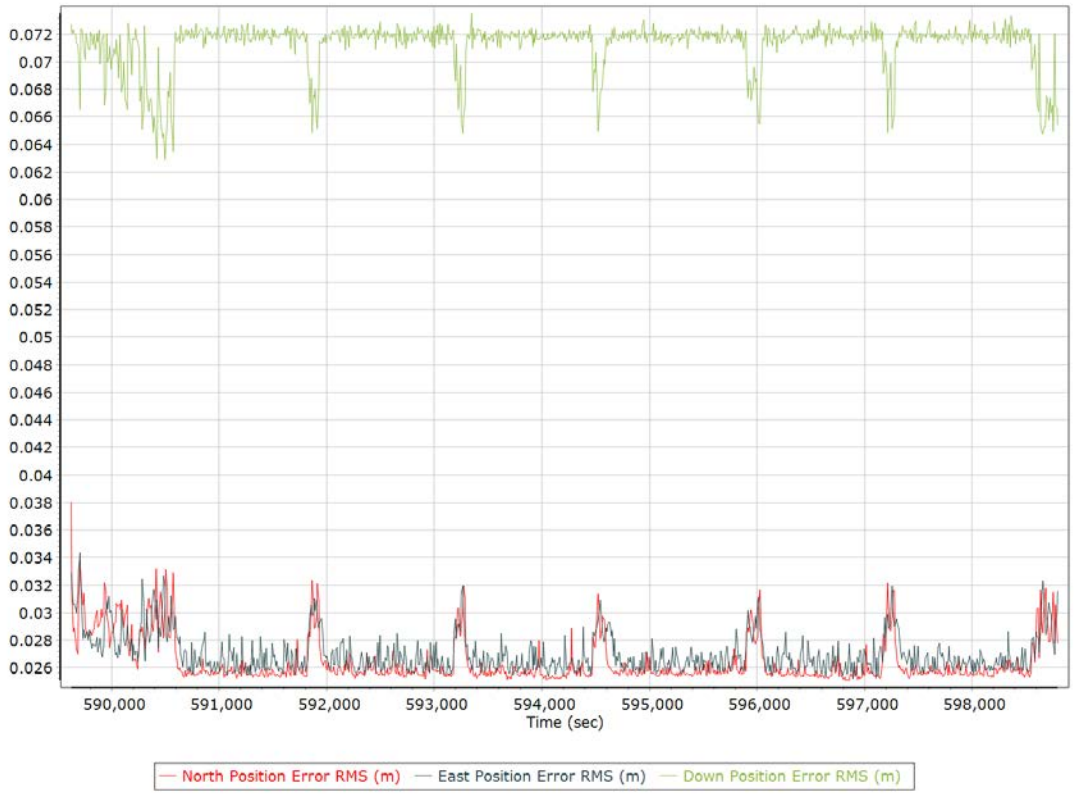


Heading Error RMS (arc-min)

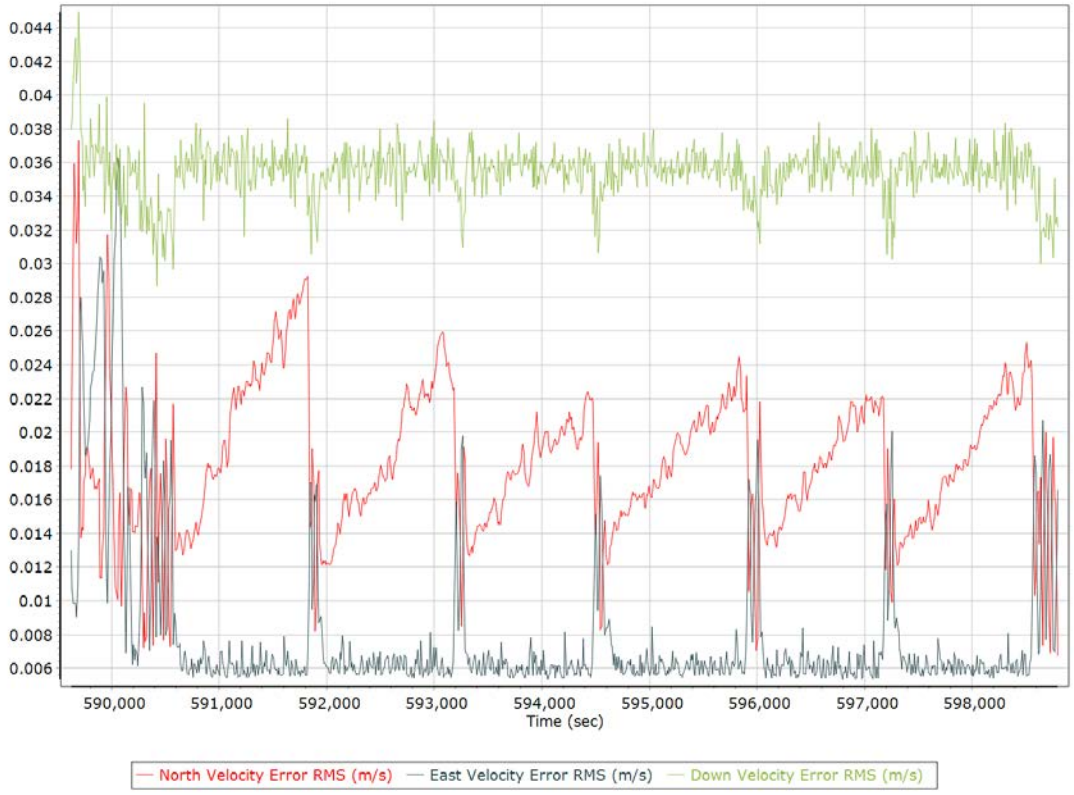


Forward Processed Performance Metrics

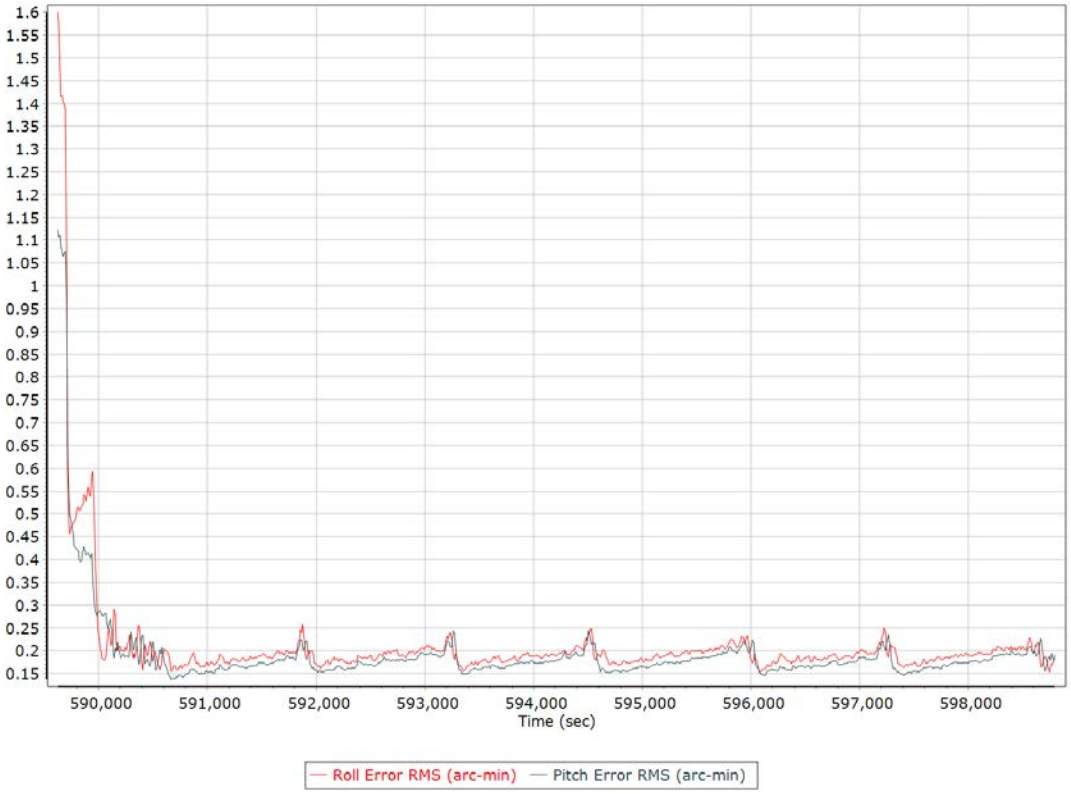
Position Error RMS (m)



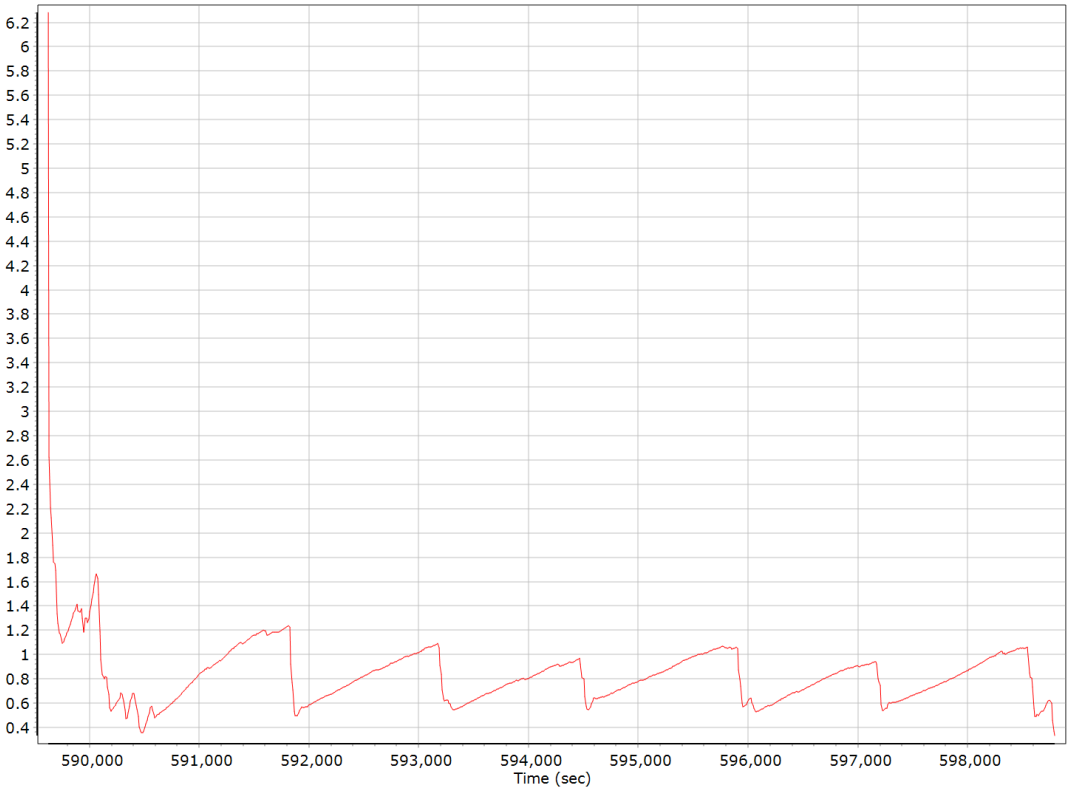
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

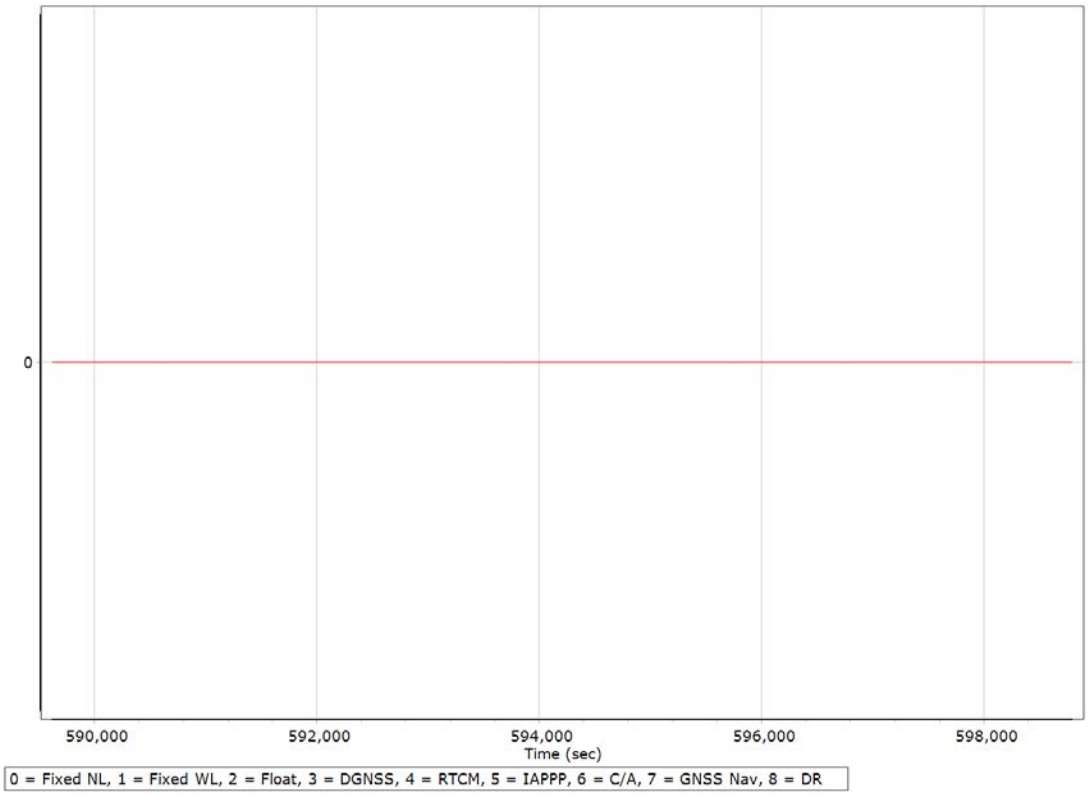


Heading Error RMS (arc-min)

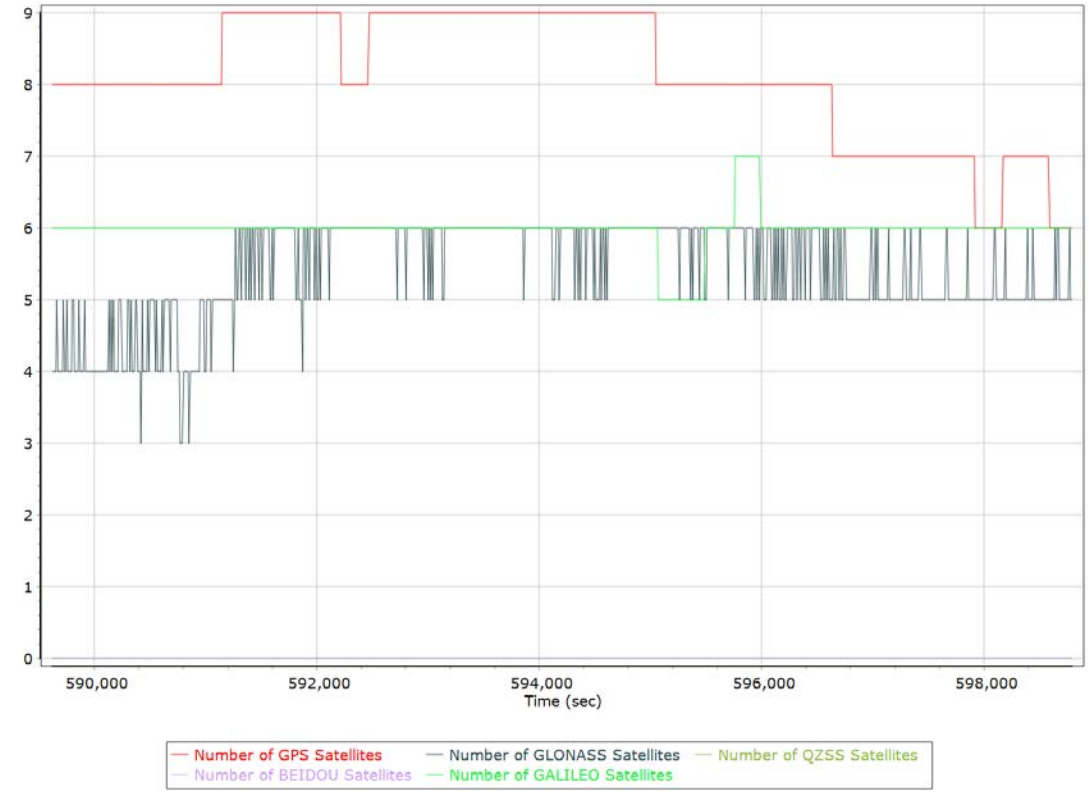


Forward Processed Solution Status

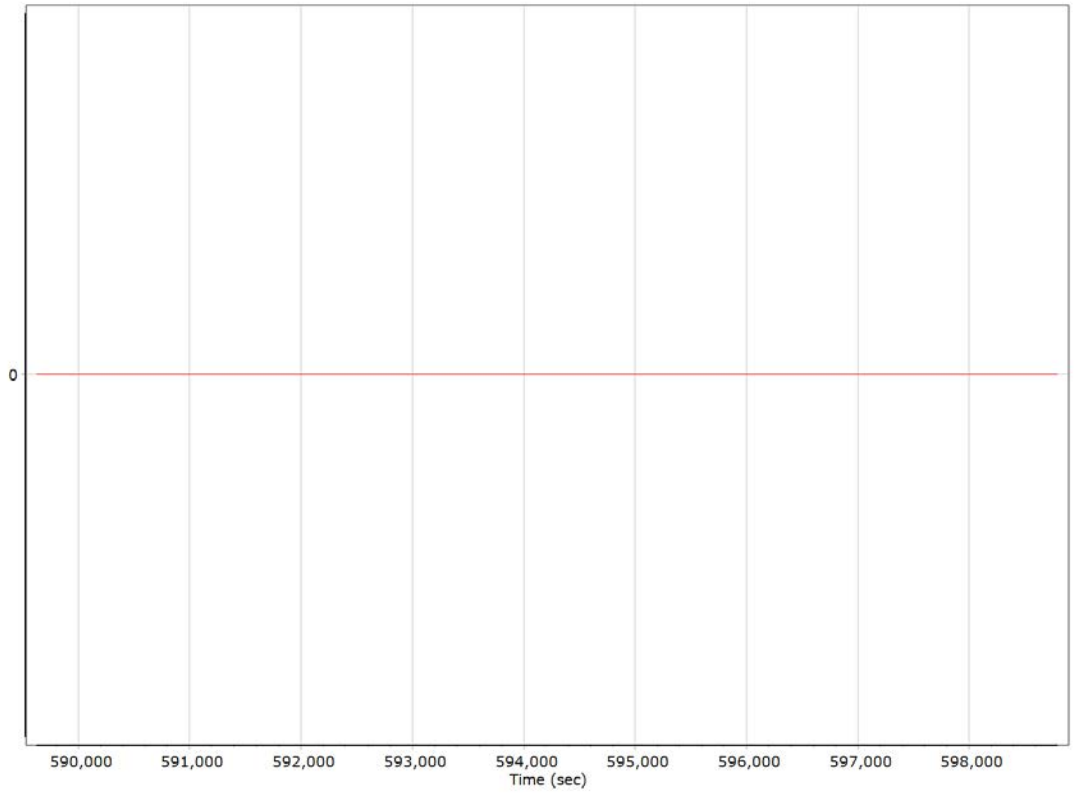
Processing Mode



Number of Satellites



Baseline Length



General Information

Mission Information

Project name	08142023A_4051
Processing date	2023-08-17 13:11:30
Mission date	2023-08-14 14:52:53
Mission duration	02:43:02.715
Processing mode	IN-Fusion PP-RTX

Rover Hardware Information

Product	POS AV 610 VER6 HW2.5-12
Serial number	S/N11221
IMU type	57
Receiver type	BD982
Antenna type	AV59

Project File List

Rover Data Files

File name	File type
CP780.187	POS Data
CP780.188	POS Data
CP780.189	POS Data
CP780.190	POS Data
CP780.191	POS Data
CP780.192	POS Data
CP780.193	POS Data
CP780.194	POS Data
CP780.195	POS Data
CP780.196	POS Data
CP780.197	POS Data
CP780.198	POS Data
CP780.199	POS Data
CP780.200	POS Data
CP780.201	POS Data
CP780.202	POS Data
CP780.203	POS Data
CP780.204	POS Data
CP780.205	POS Data
CP780.206	POS Data
CP780.207	POS Data
CP780.208	POS Data

Input Files

File Name	File Type
Ephm2260.23g	GLONASS Broadcast Ephemeris
Ephm2260.23n	GPS Broadcast Ephemeris

Output Files

Filename	File type
sbet_08142023A_4051.out	SBET Trajectory File

Rover Data Summary

First raw data file	CP780.187		
Last raw data file	CP780.208		
Start GPS week	2275		
Start time	139954.665 (8/14/2023 2:52:34 PM)		
End time	149737.380 (8/14/2023 5:35:37 PM)		
Start of fine alignment	139978.879 (8/14/2023 2:52:58 PM)		
Available subsystems	Primary GNSS, Gimbal, IMU		
POS Event Input	None		
Correction data	None		
IMU Installation Lever Arms & Mounting Angles			
Gimbal to IMU lever arm (m)	-0.034	-0.010	-0.374
Gimbal to IMU mounting angles (deg)	0.000	0.000	0.000
Gimbal to Primary GNSS lever arm (m)	0.053	-0.183	-1.279
Gimbal to Primary GNSS lever arm std dev (m)	-1.000		
Aircraft to Reference mounting angles (deg)	0.000	0.000	0.000

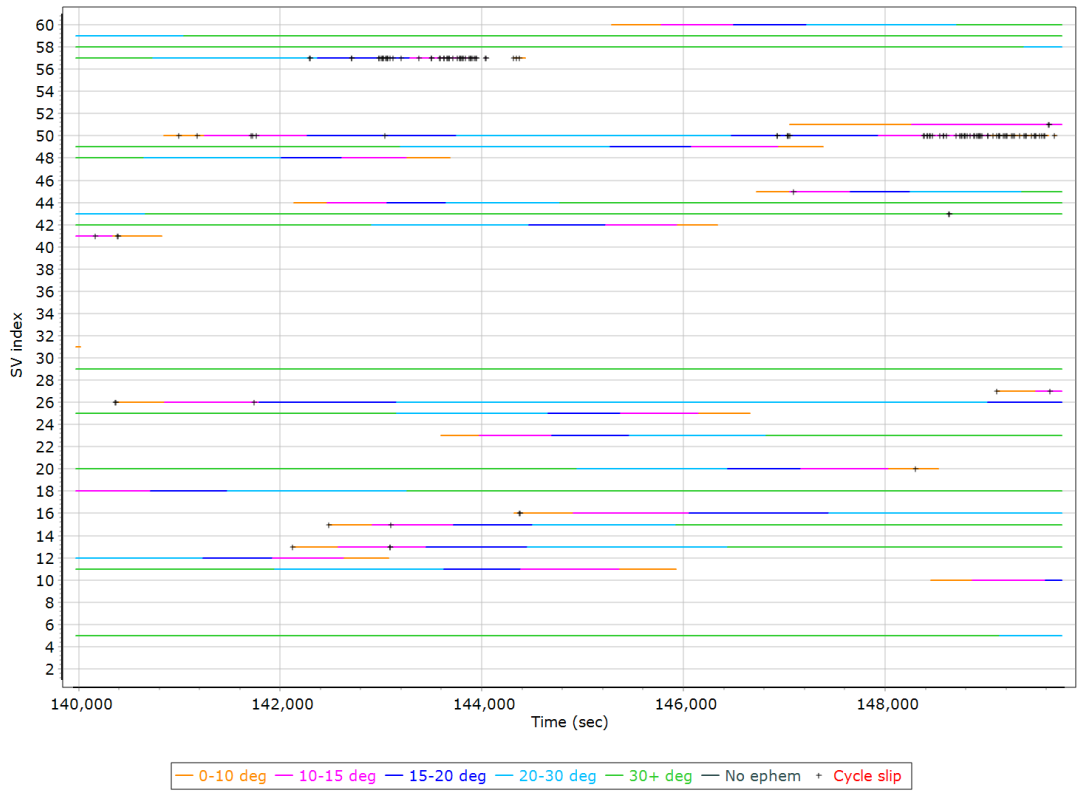
Rover Data QC

Raw IMU Import QC Summary

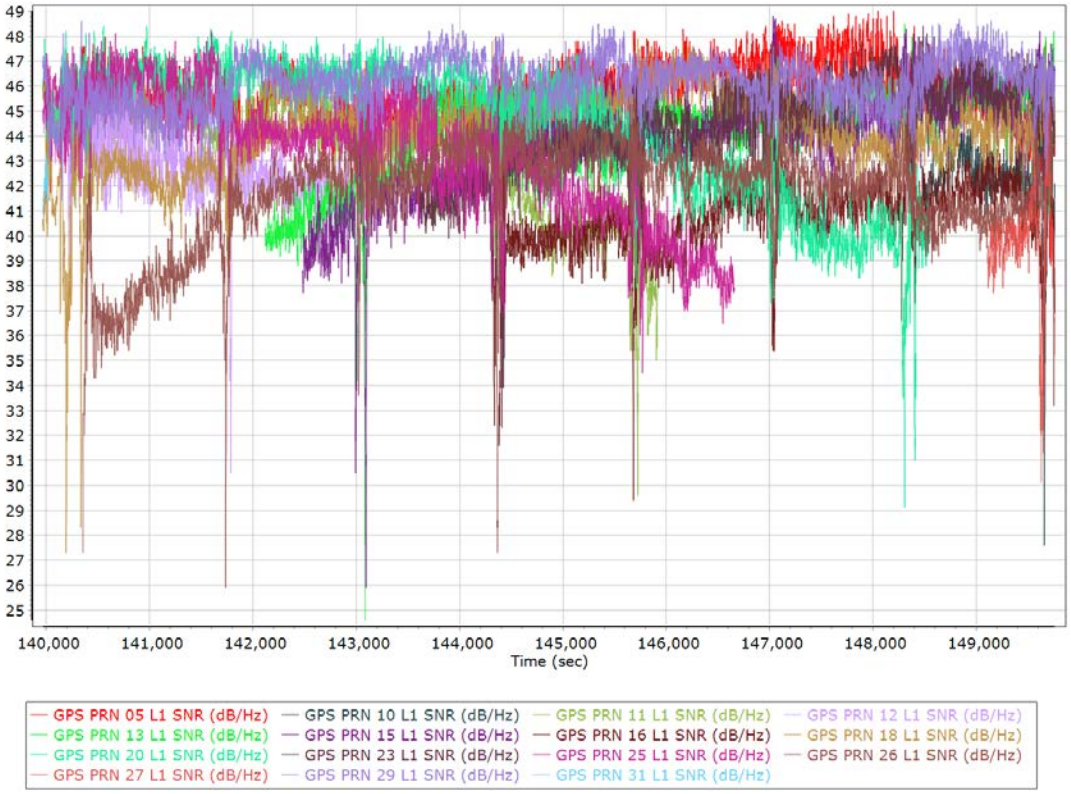
IMU data input file	imu_Mission 1.dat
IMU data check log file	imudt_08142023A_4051.log
IMU Records Processed	1956222
Termination Status	Normal
IMU Anomalies	0

Primary Observables & Satellite Data

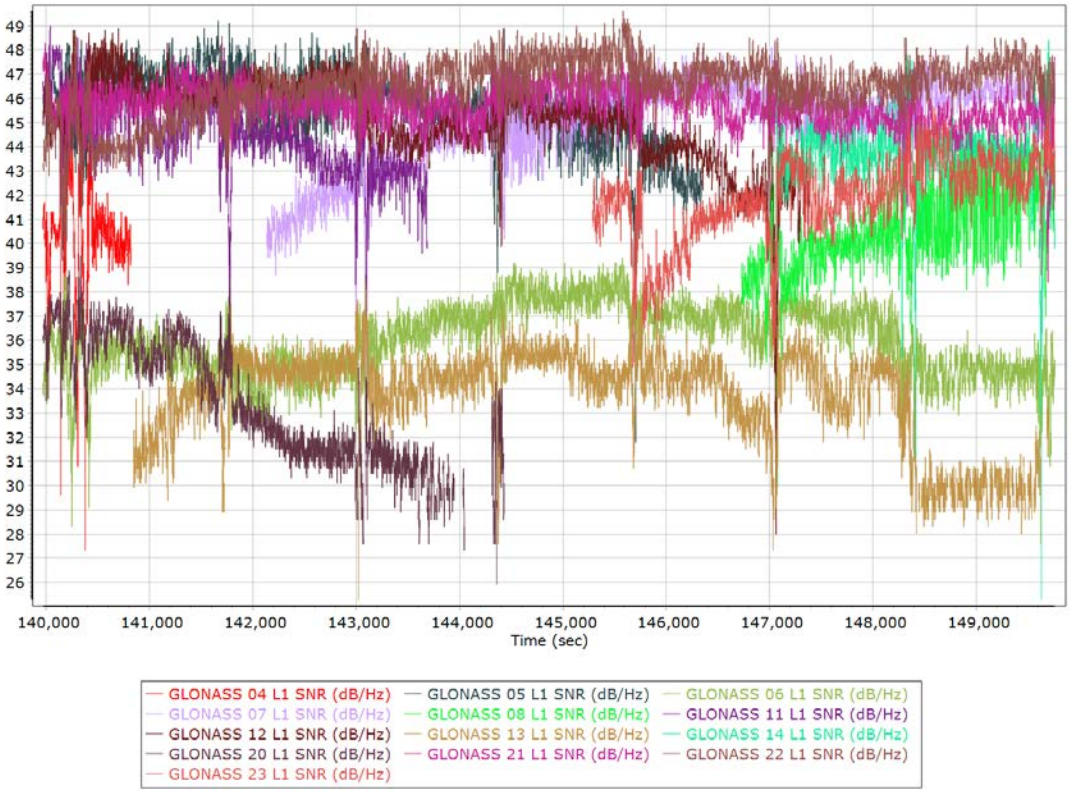
GPS/GLONASS L1 Satellite Lock/Elevation



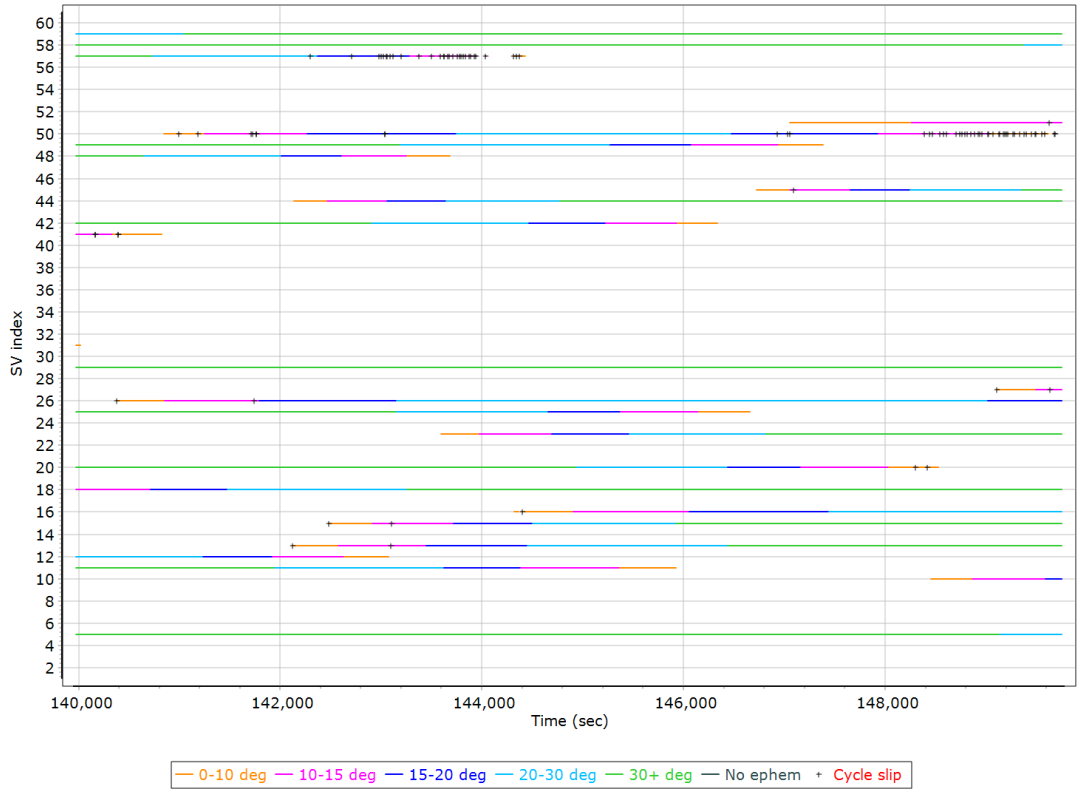
GPS L1 SNR



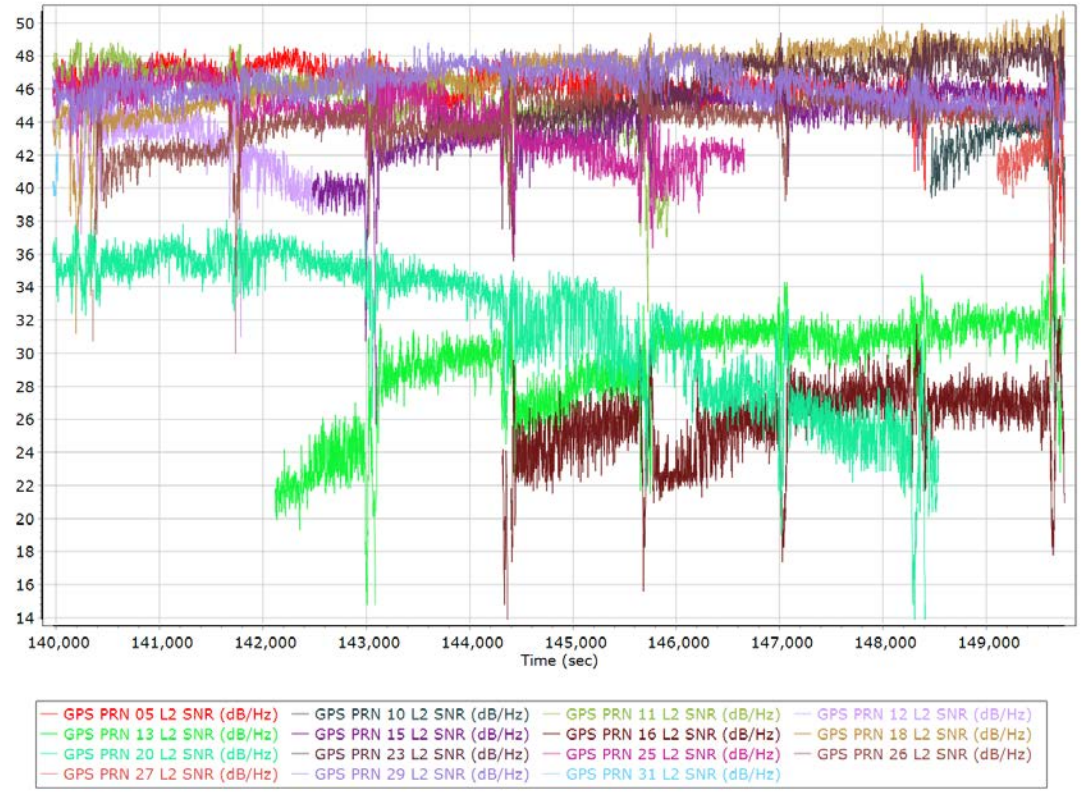
GLONASS L1 SNR



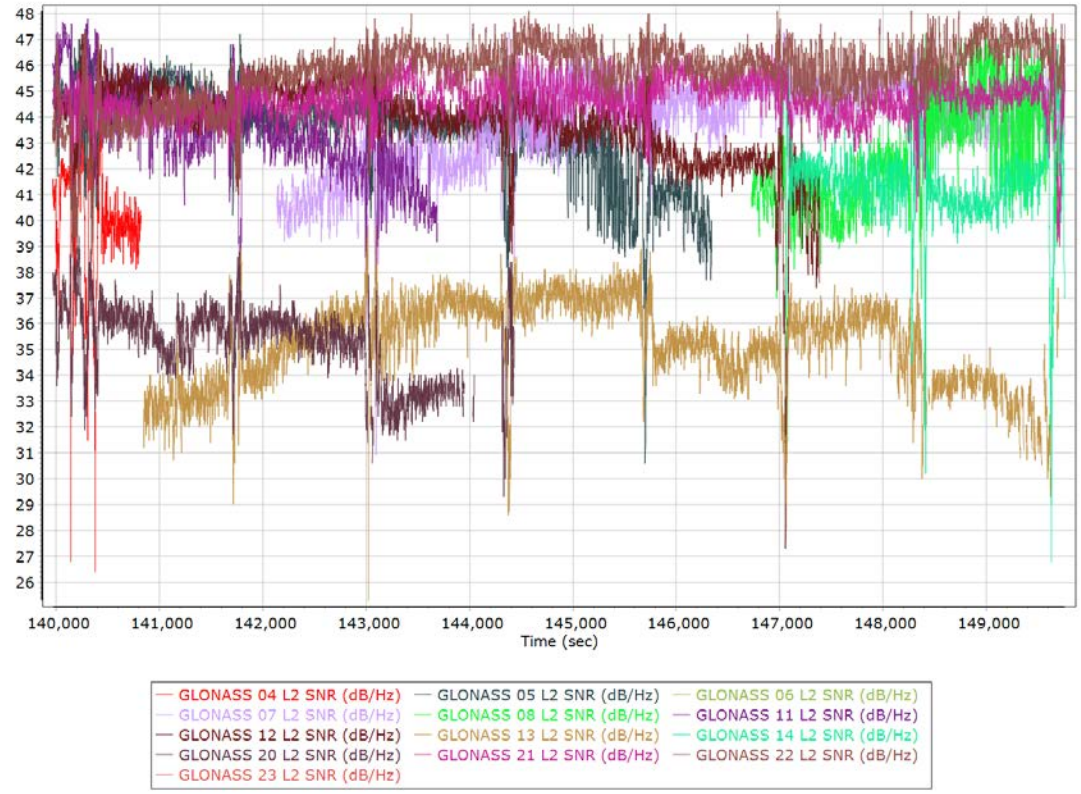
GPS/GLONASS L2 Satellite Lock/Elevation



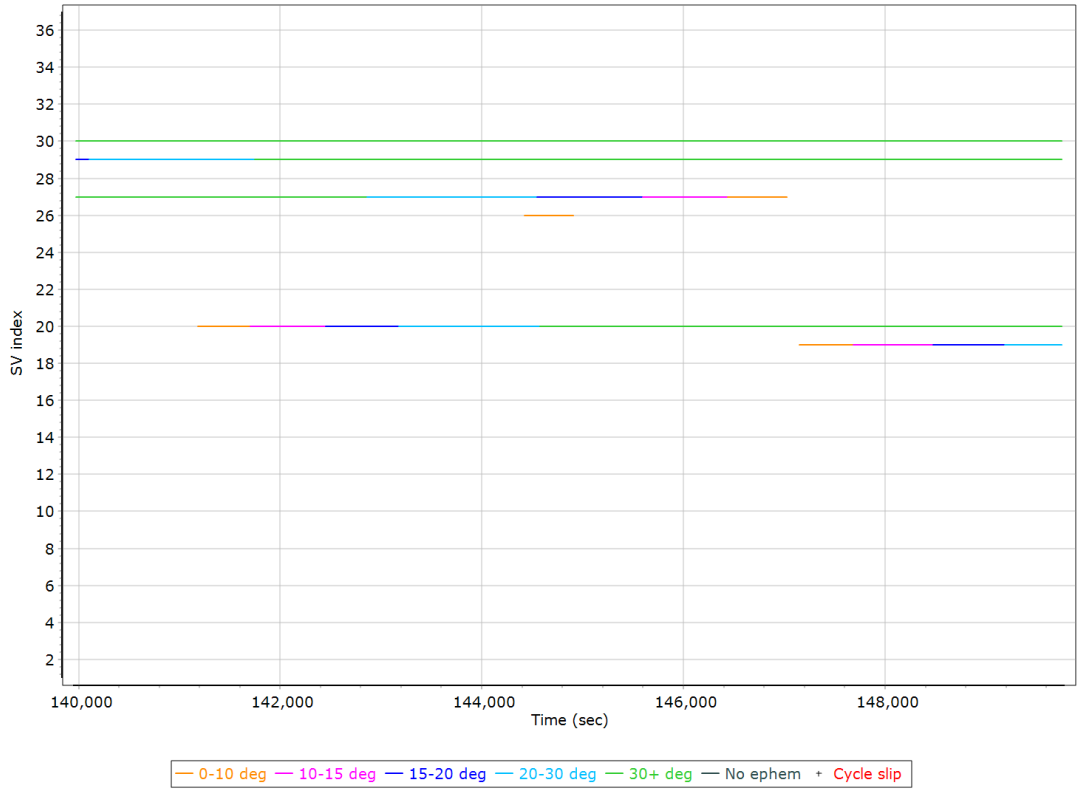
GPS L2 SNR



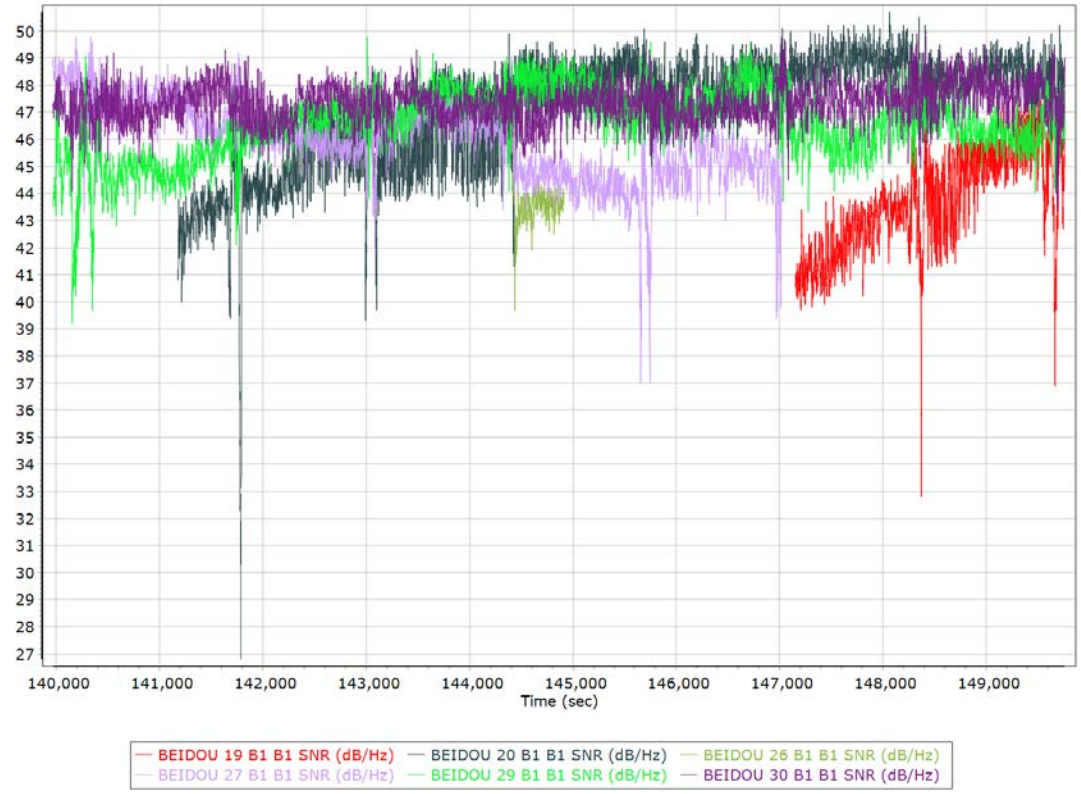
GLONASS L2 SNR



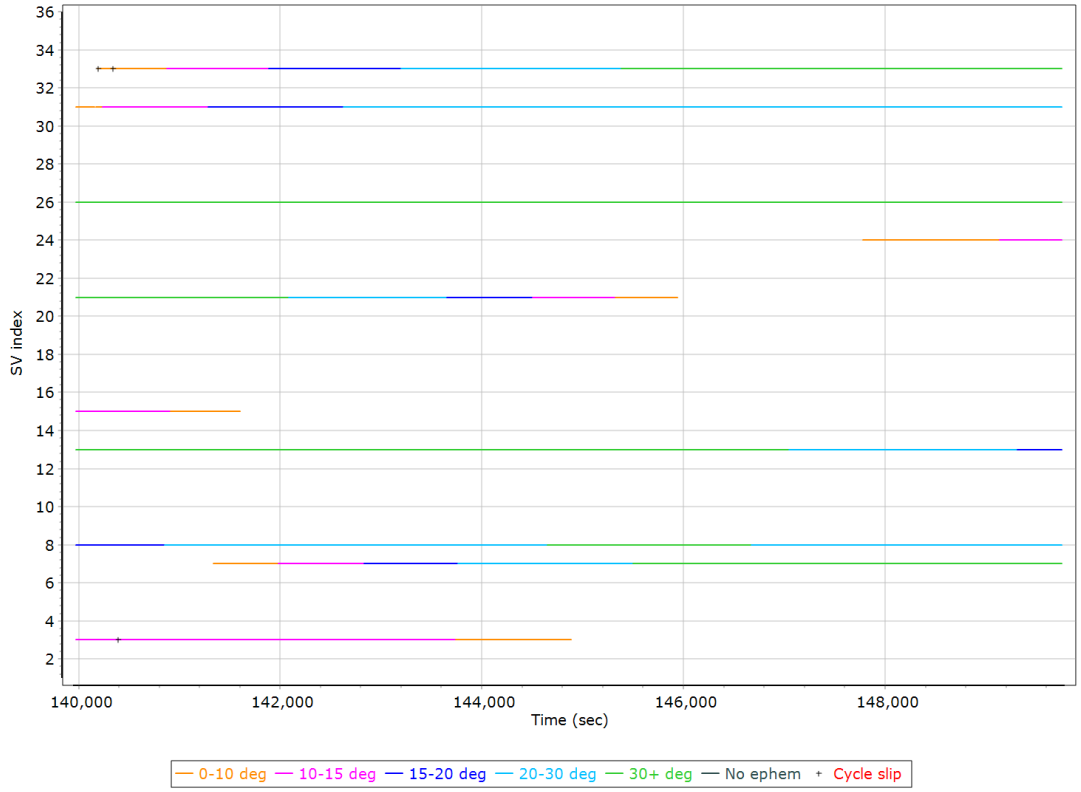
BEIDOU Satellite Lock/Elevation



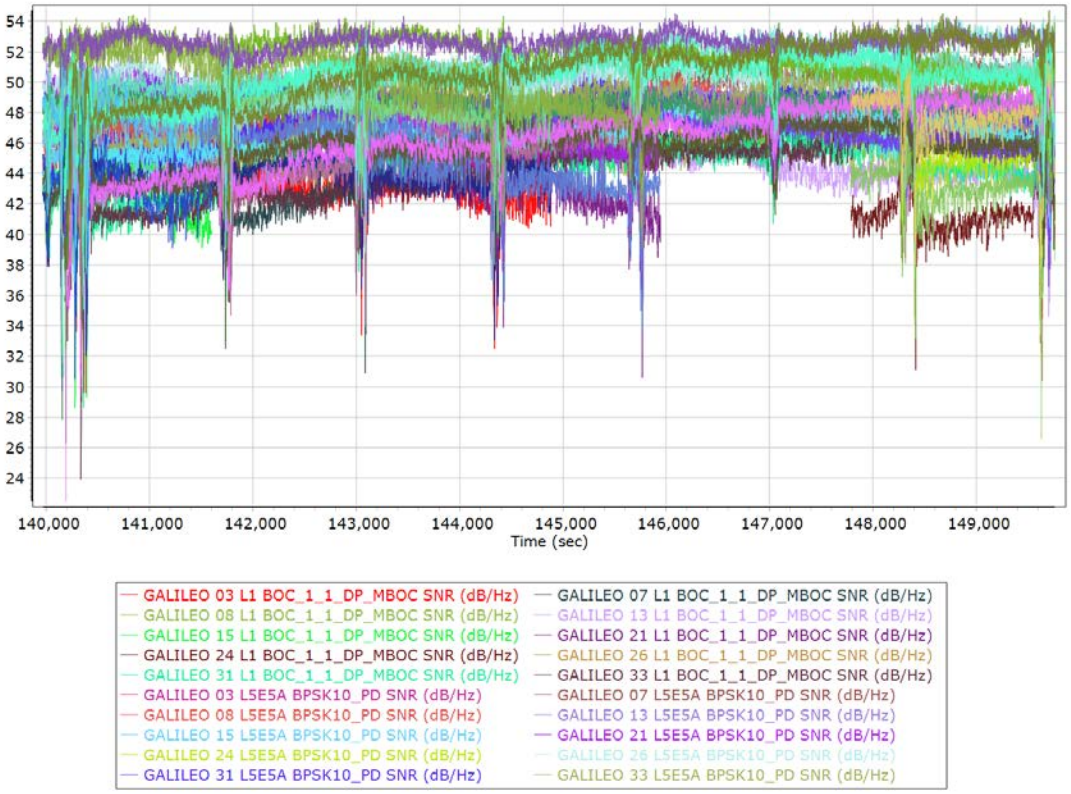
BEIDOU SNR



GALILEO Satellite Lock/Elevation

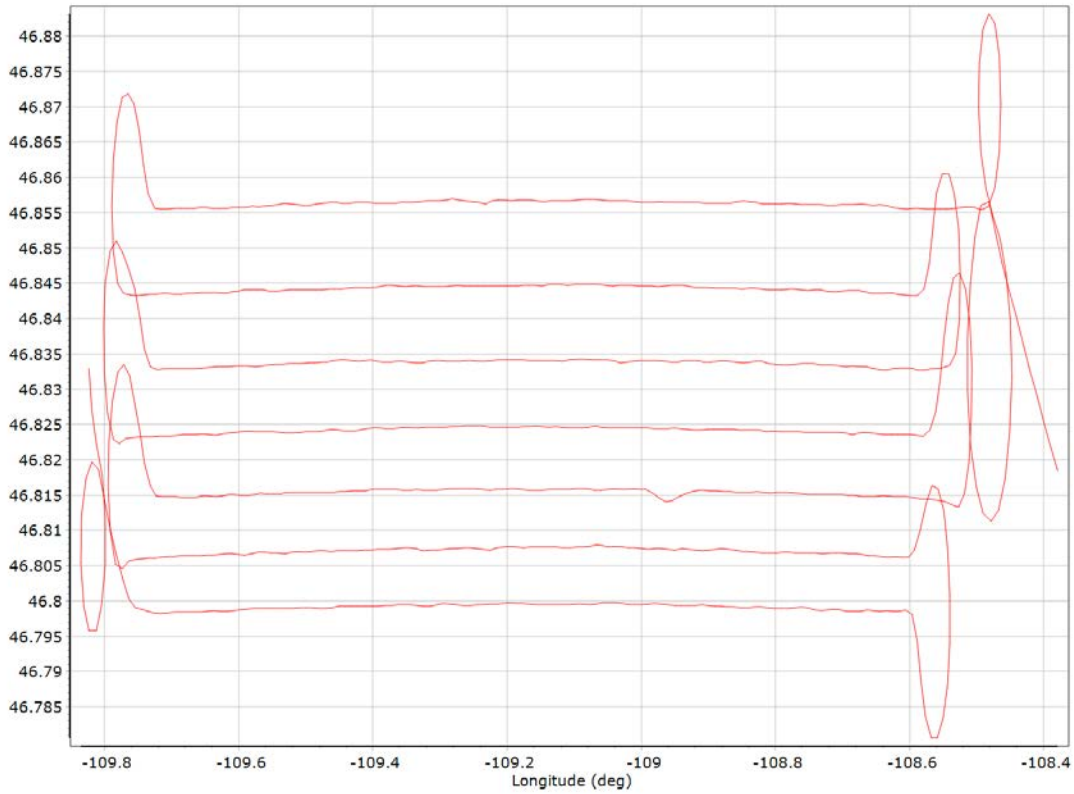


GALILEO SNR

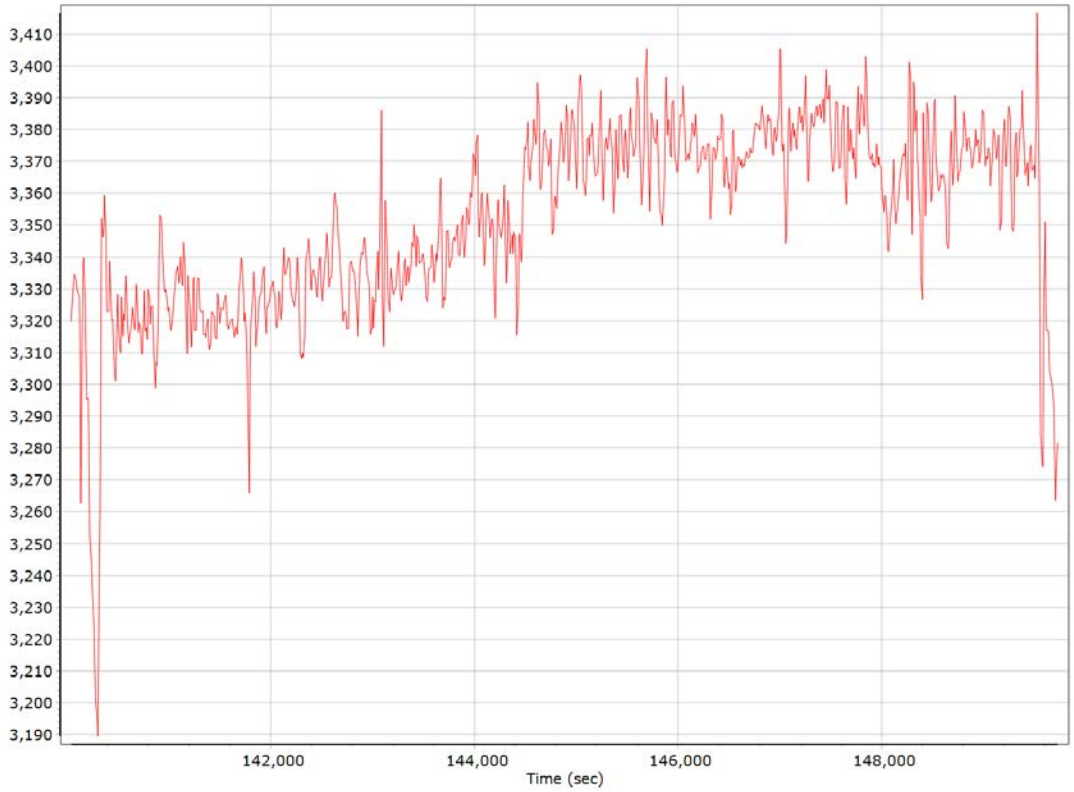

54
52
50
48
46
44
42
40
38
36
34
32
30
28
26
24
140,000
141,000
142,000
143,000
144,000
145,000
146,000
147,000
148,000
149,000
Time (sec)
GALILEO 03 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 07 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 08 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 13 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 15 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 21 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 24 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 26 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 31 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 33 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 03 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 07 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 08 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 13 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 15 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 21 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 24 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 26 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 31 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 33 L5E5A BPSK10_PD SNR (dB/Hz)

Smoothed Trajectory Information

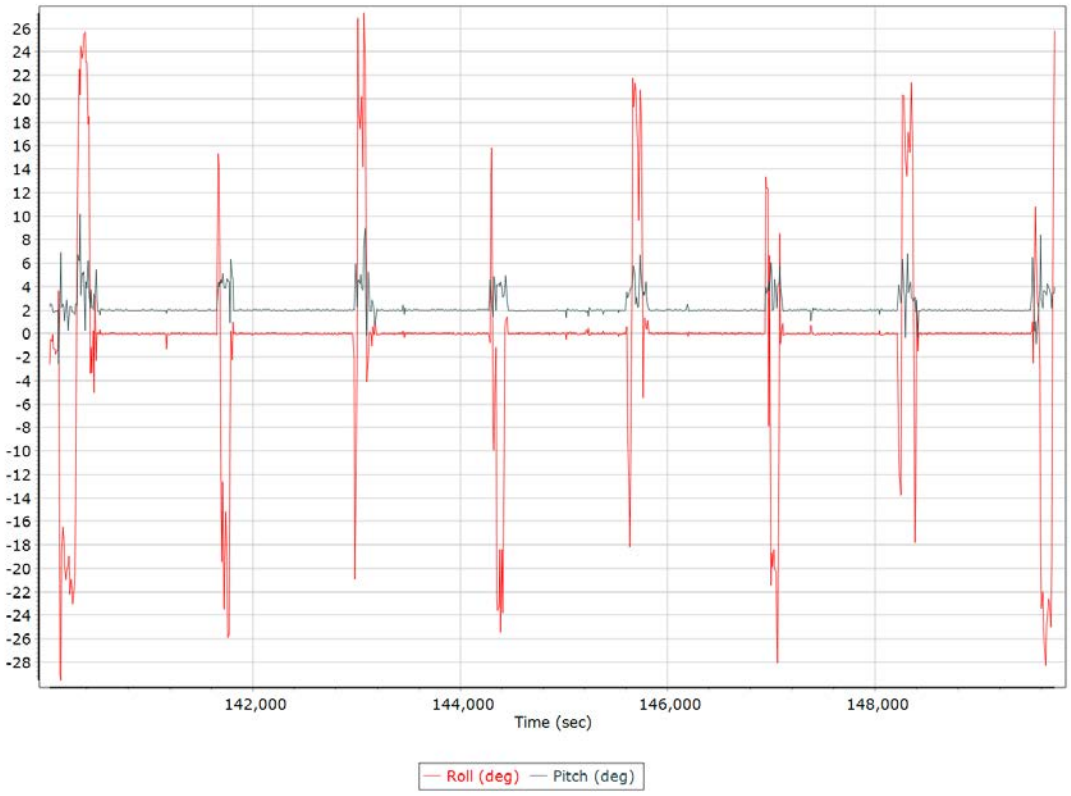
Top View



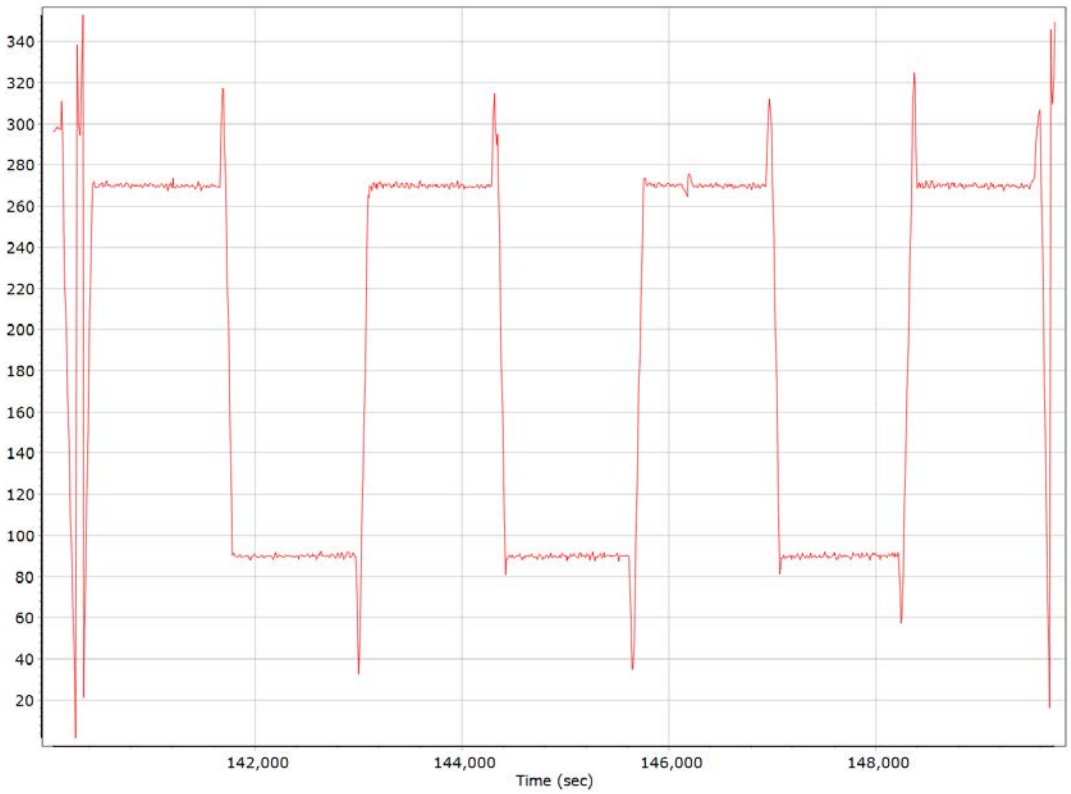
Altitude



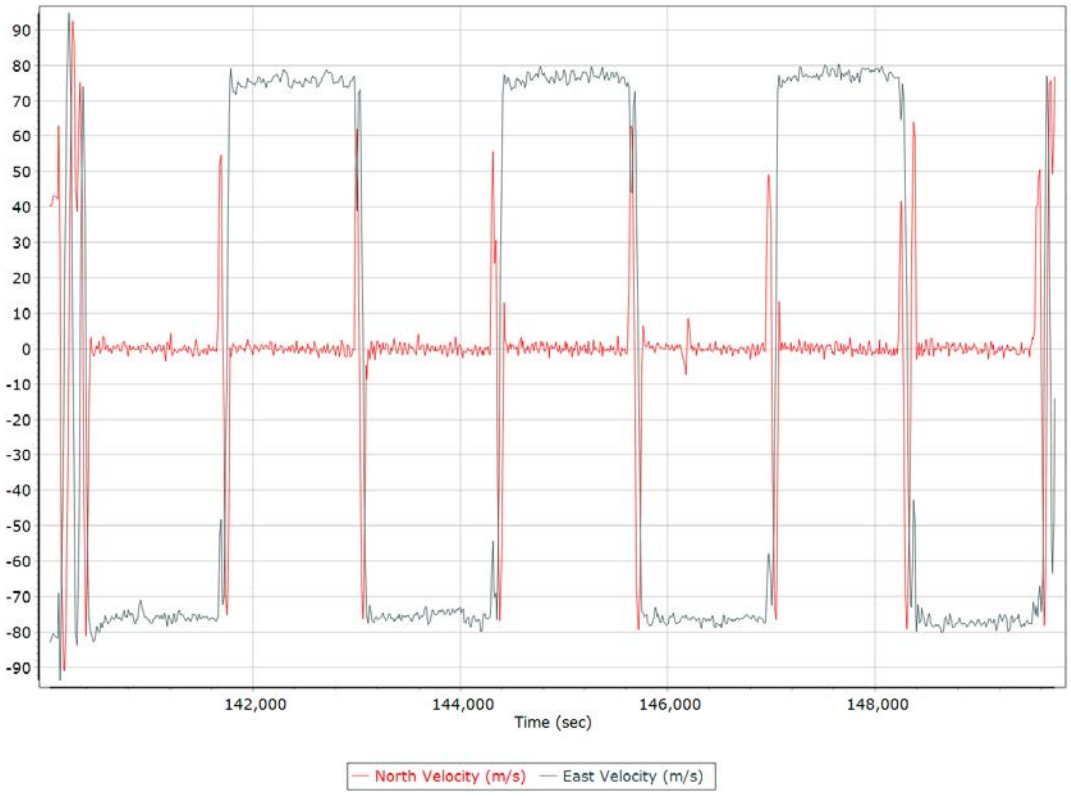
Roll/Pitch



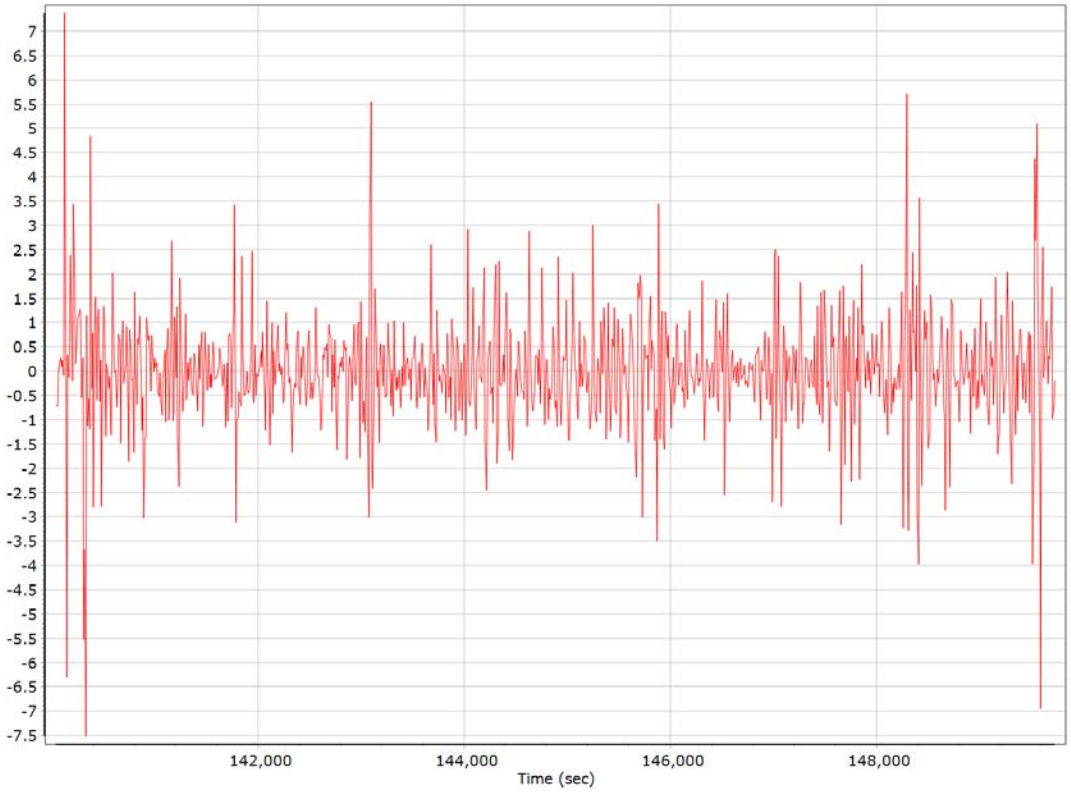
Heading



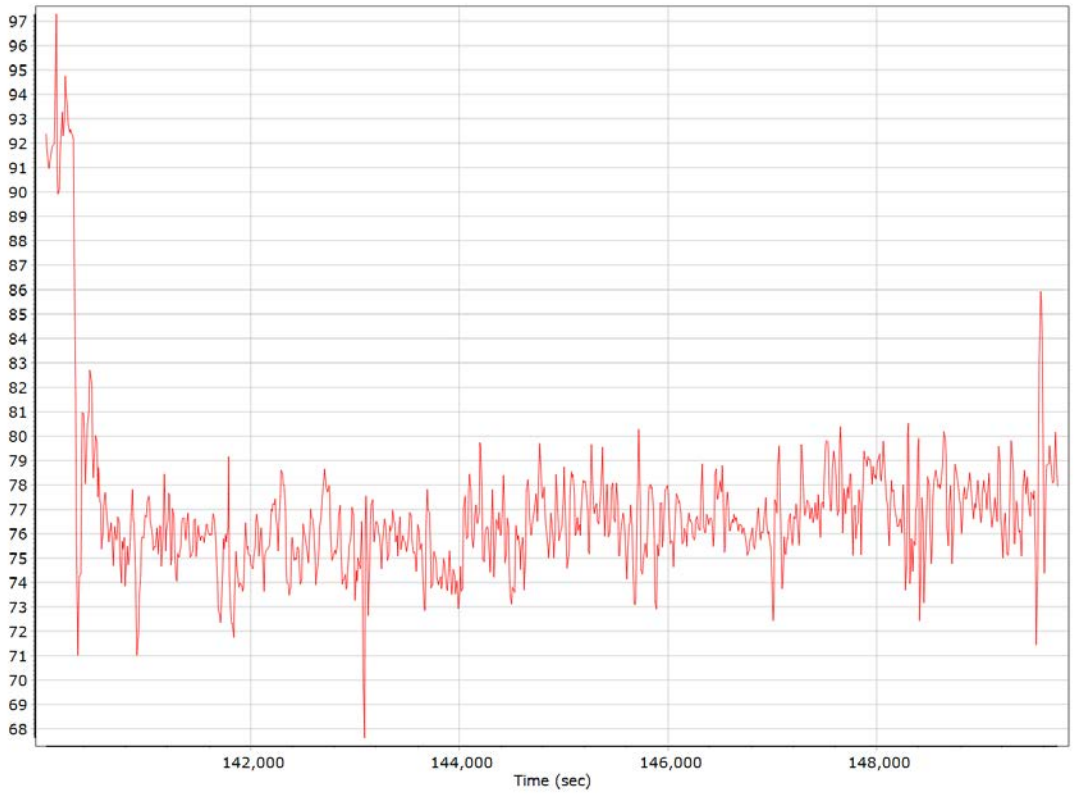
North/East Velocity



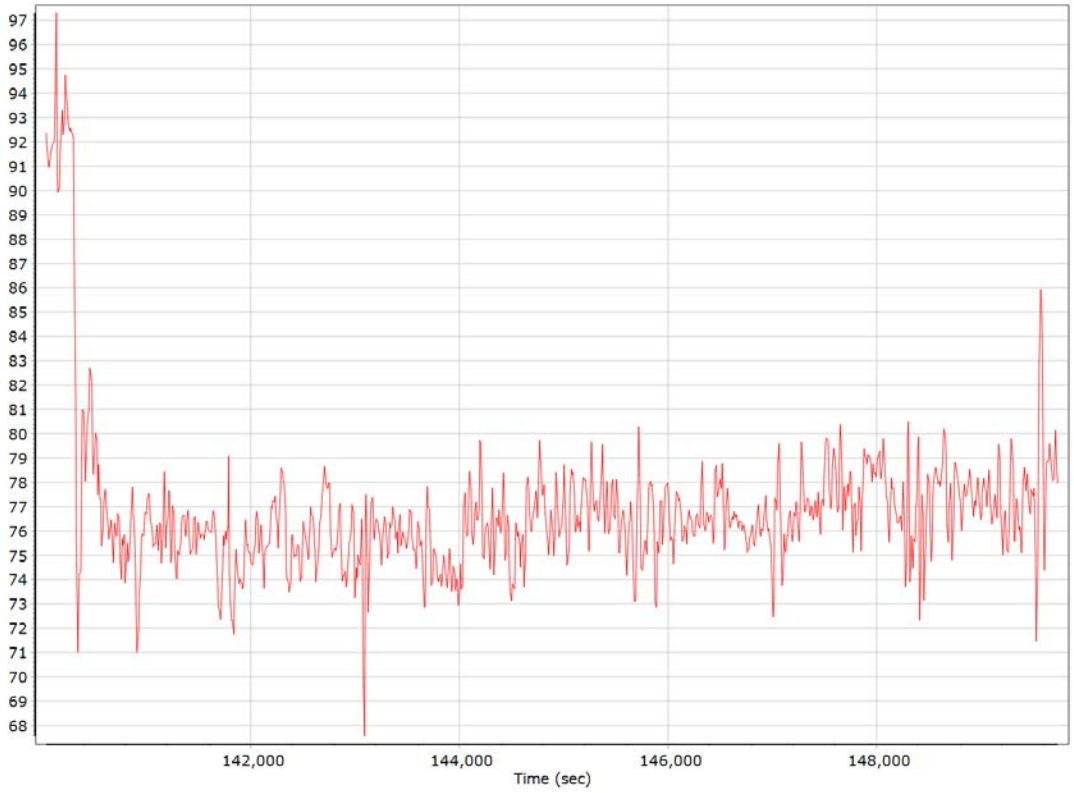
Down Velocity



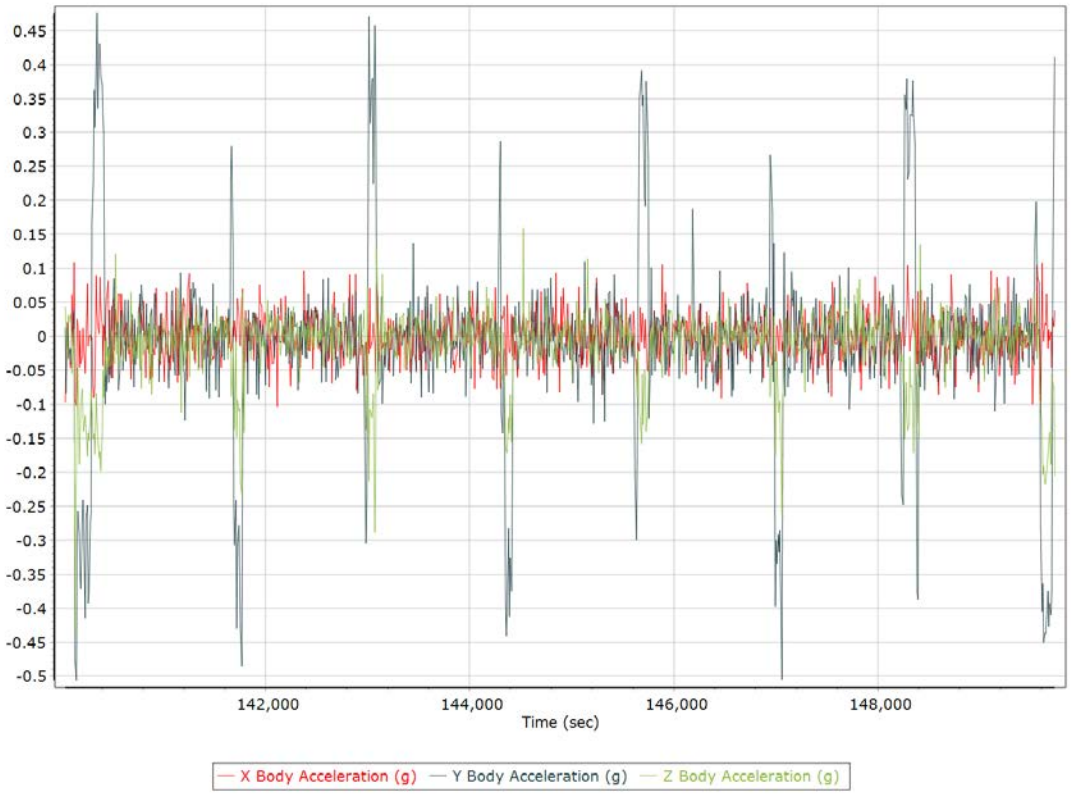
Total Speed



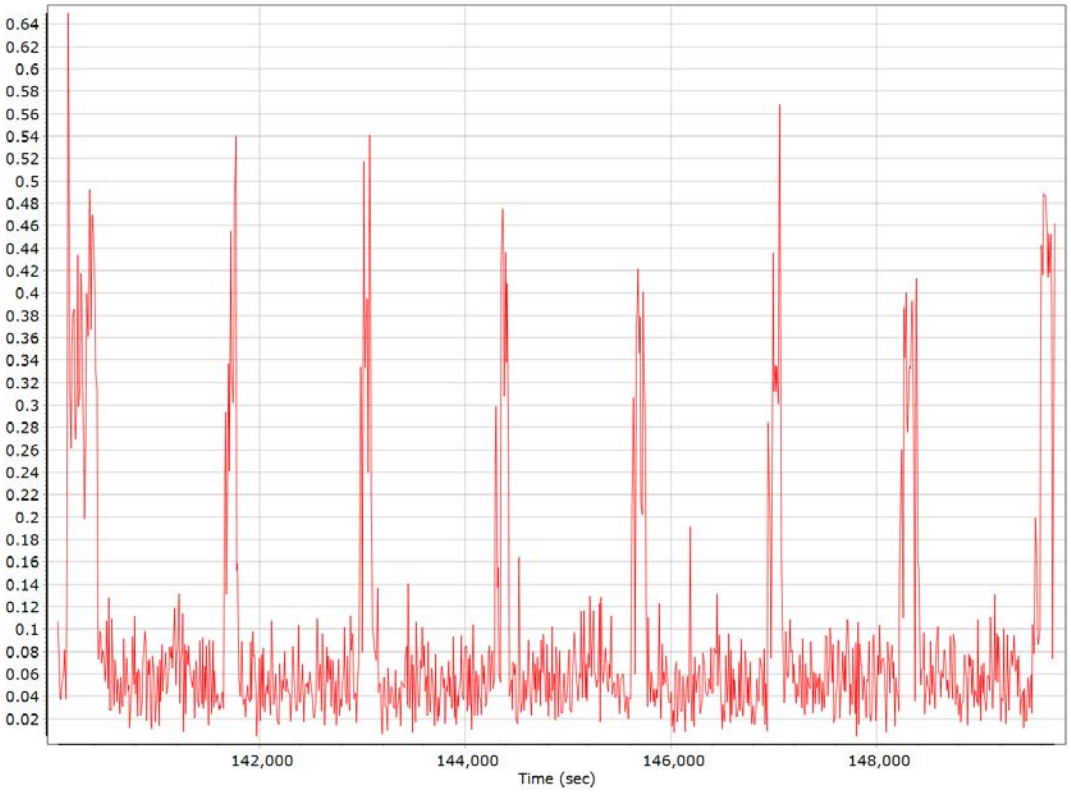
Ground Speed



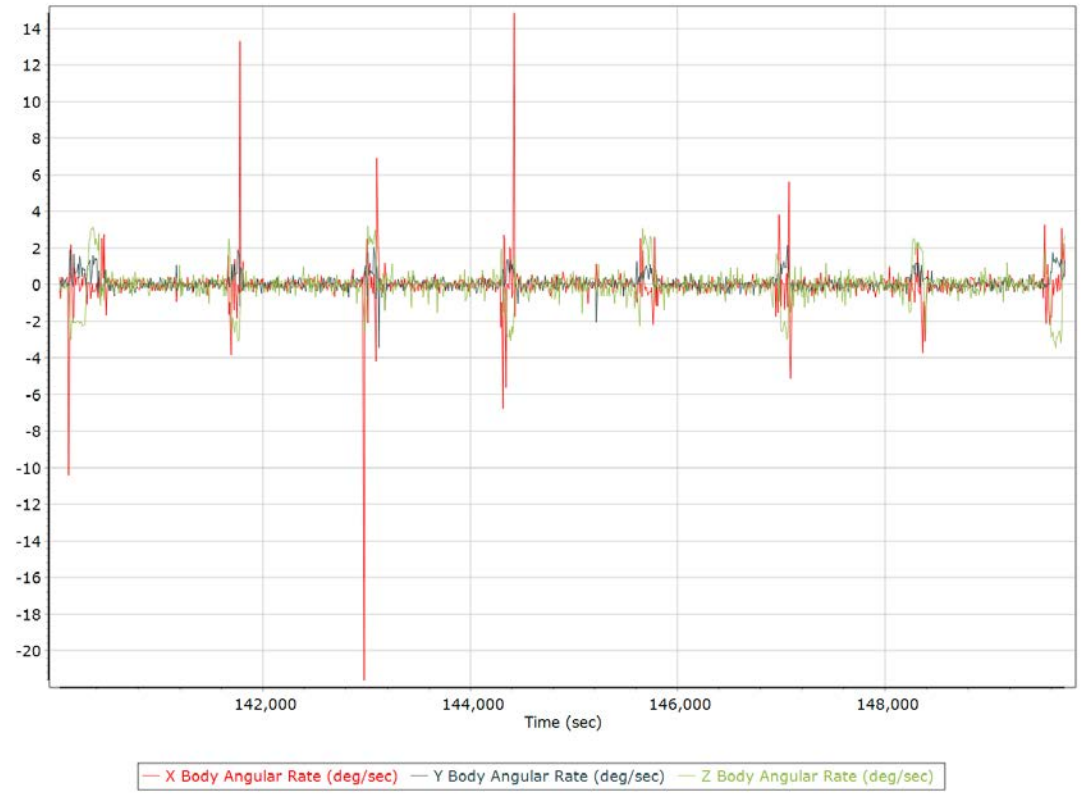
Body Acceleration



Total Body Acceleration

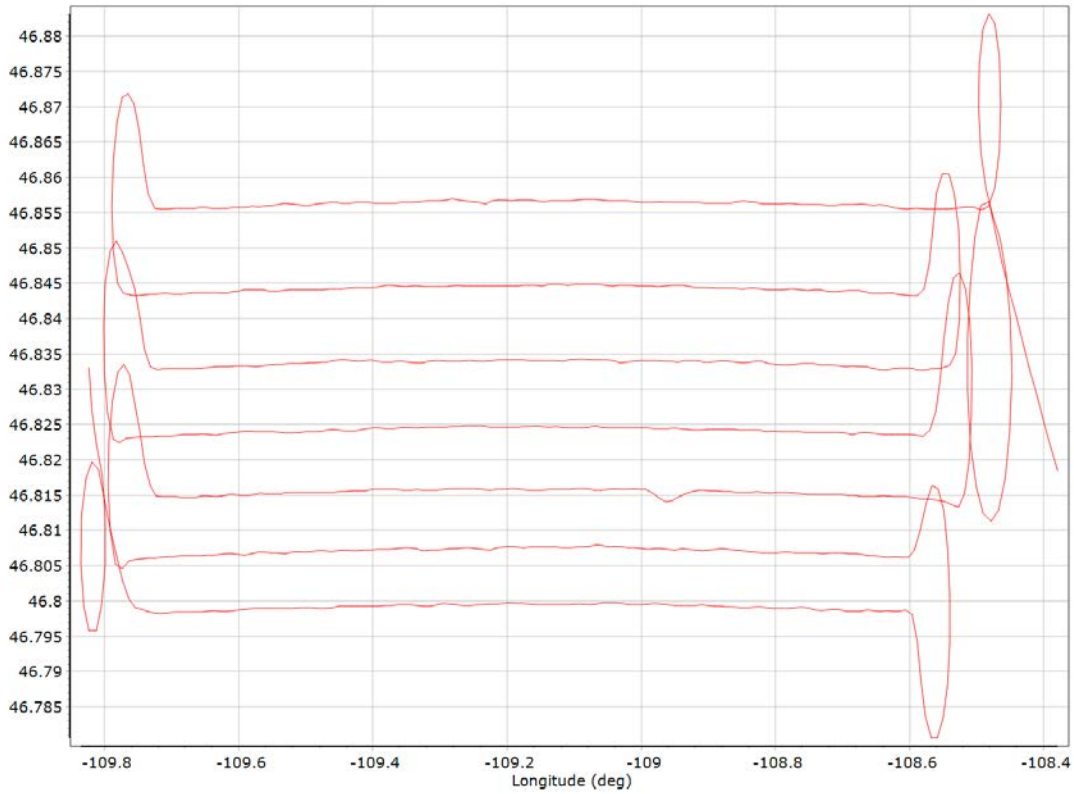


Body Angular Rate

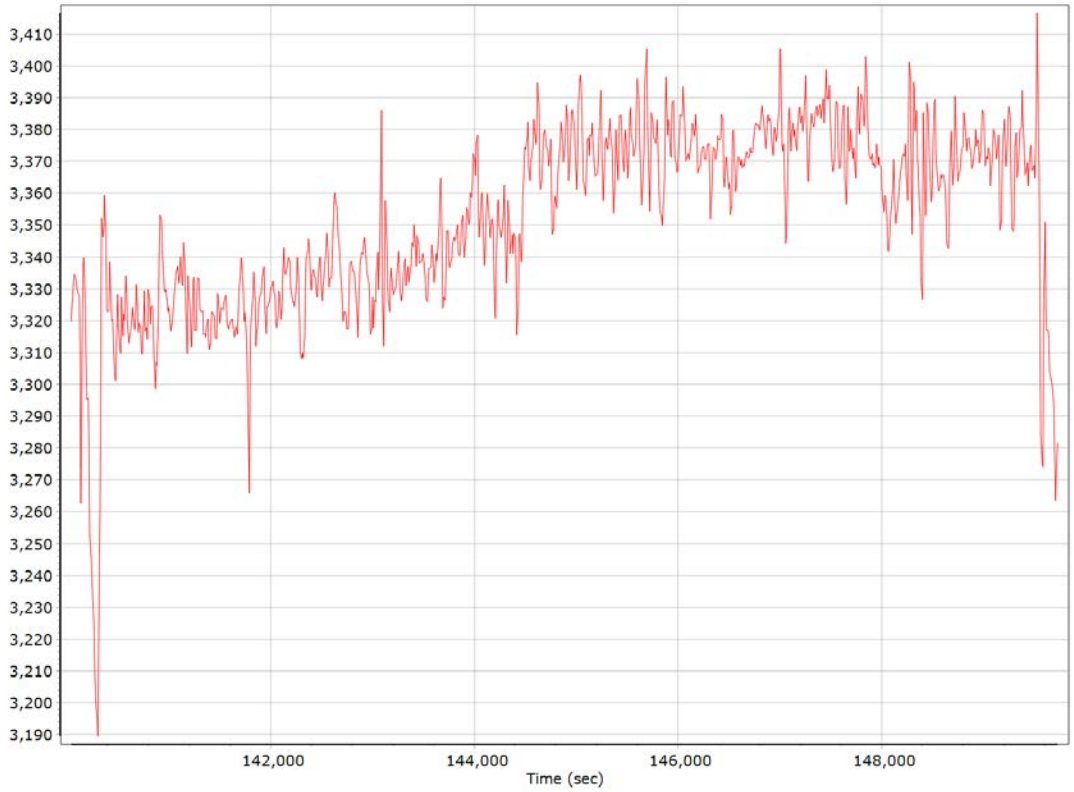


Forward Processed Trajectory Information

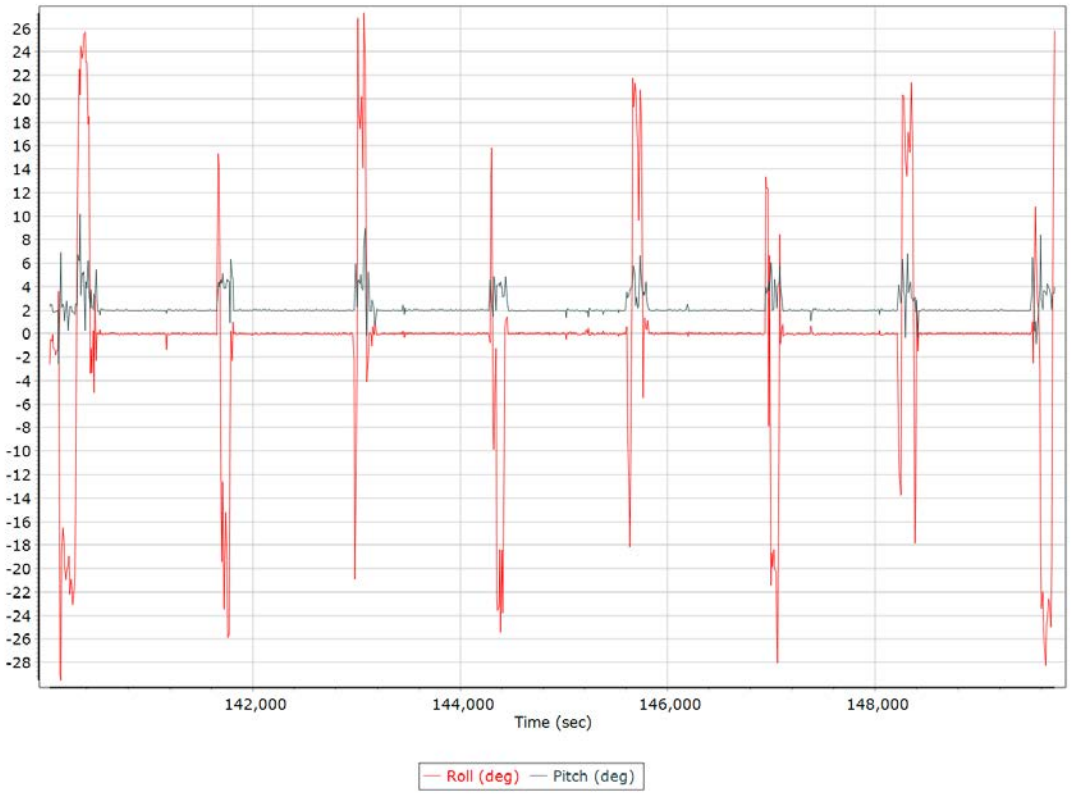
Top View



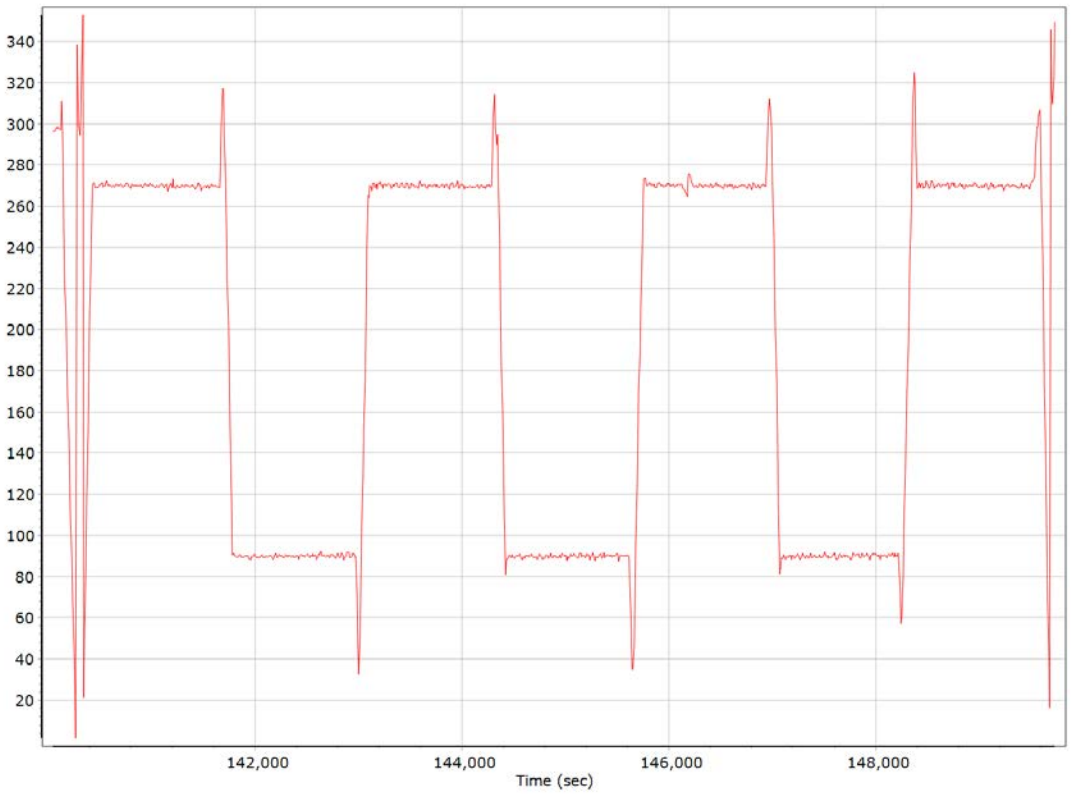
Altitude



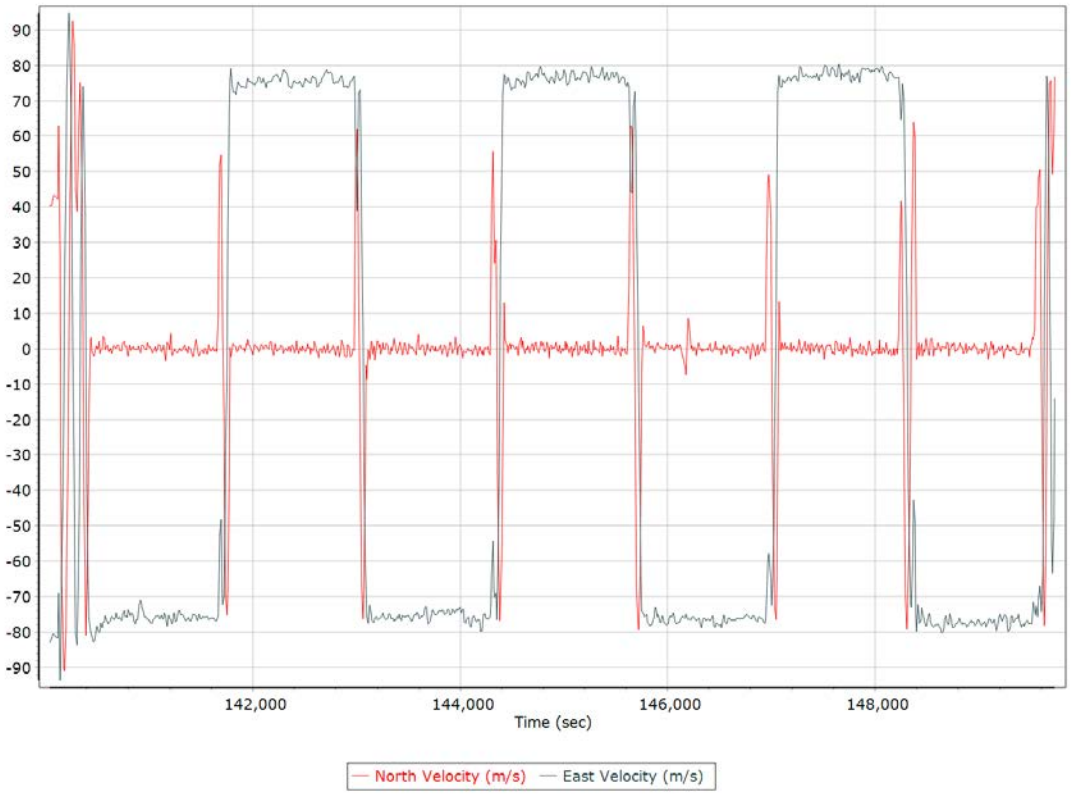
Roll/Pitch



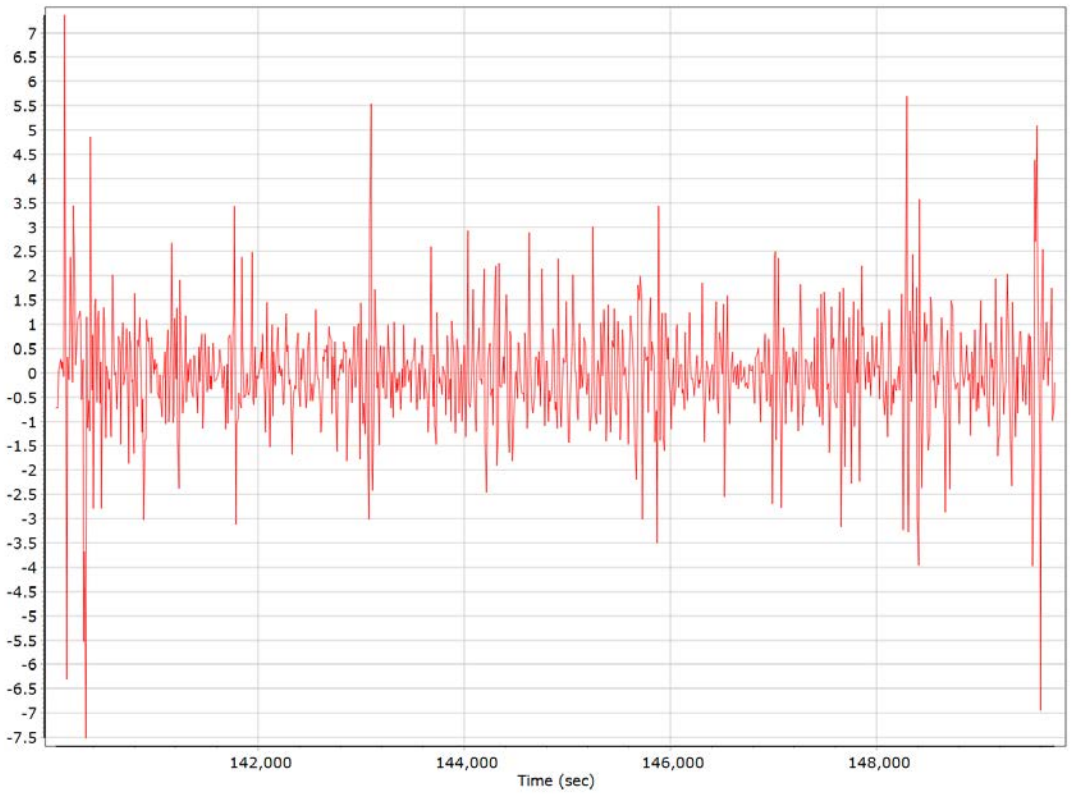
Heading



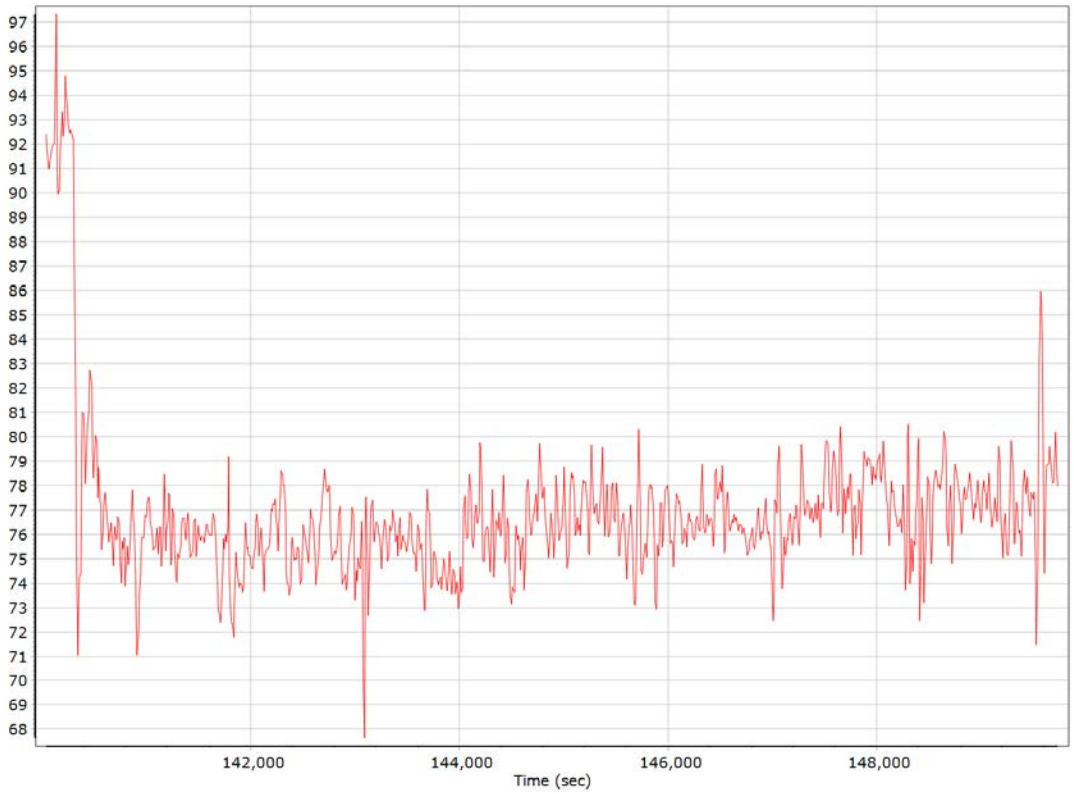
North/East Velocity



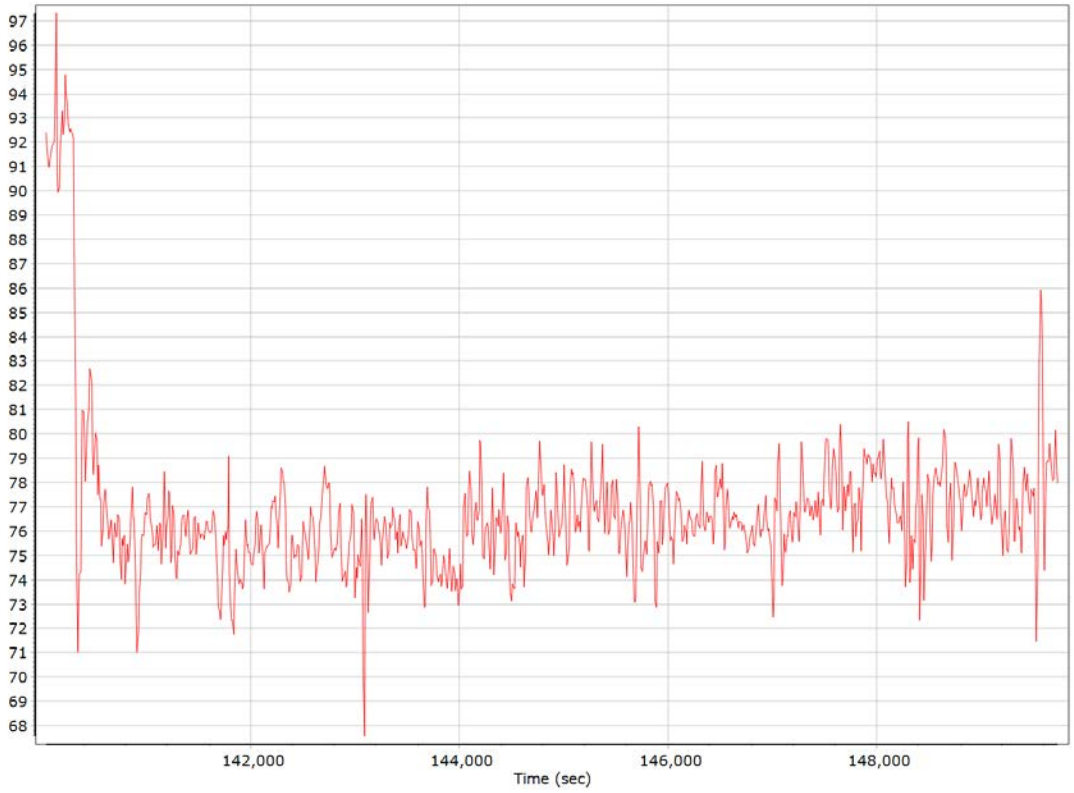
Down Velocity



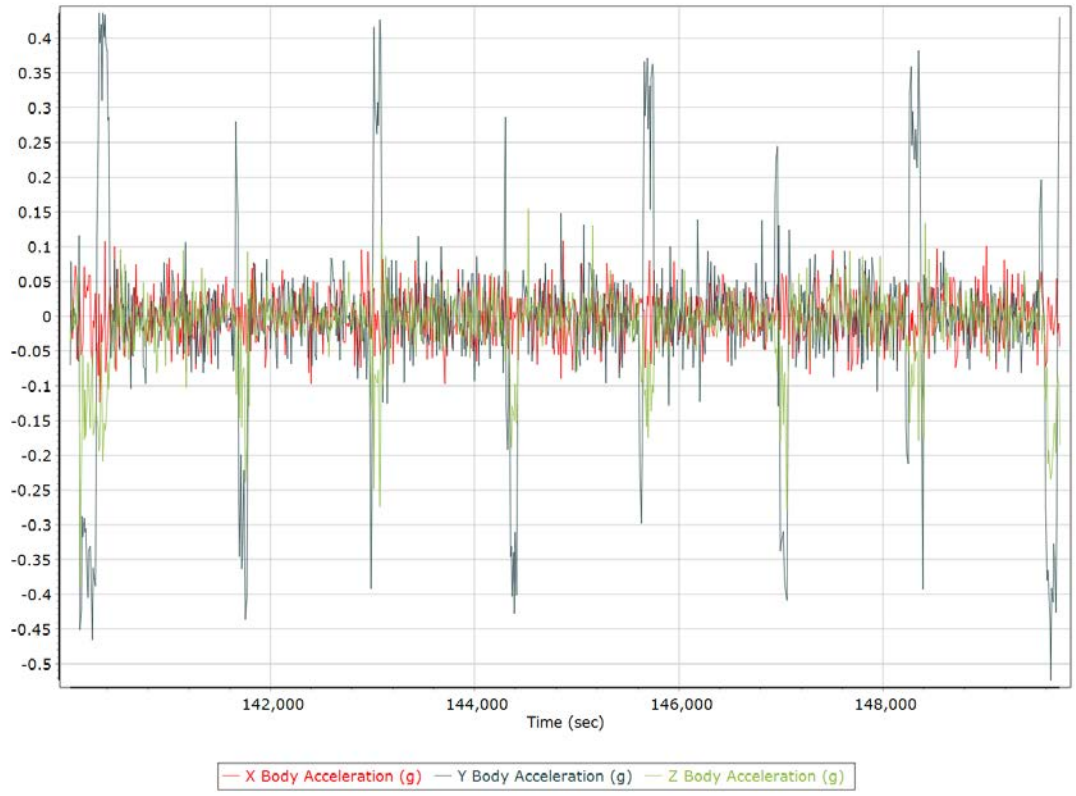
Total Speed



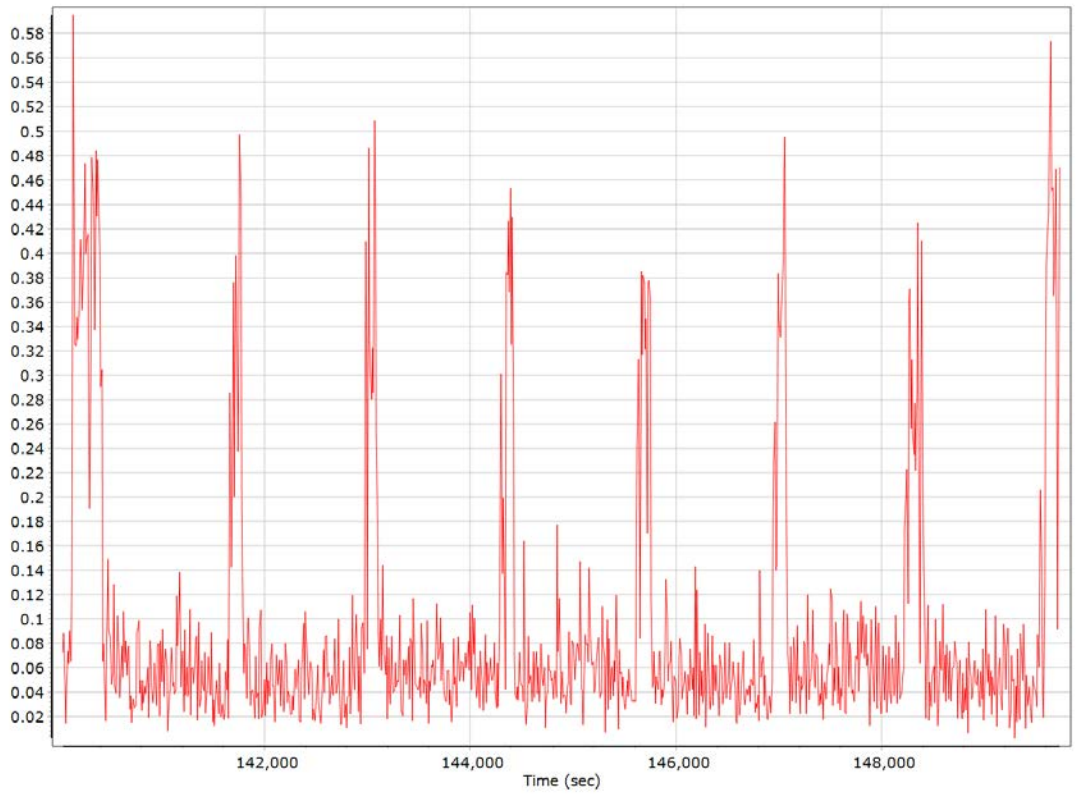
Ground Speed



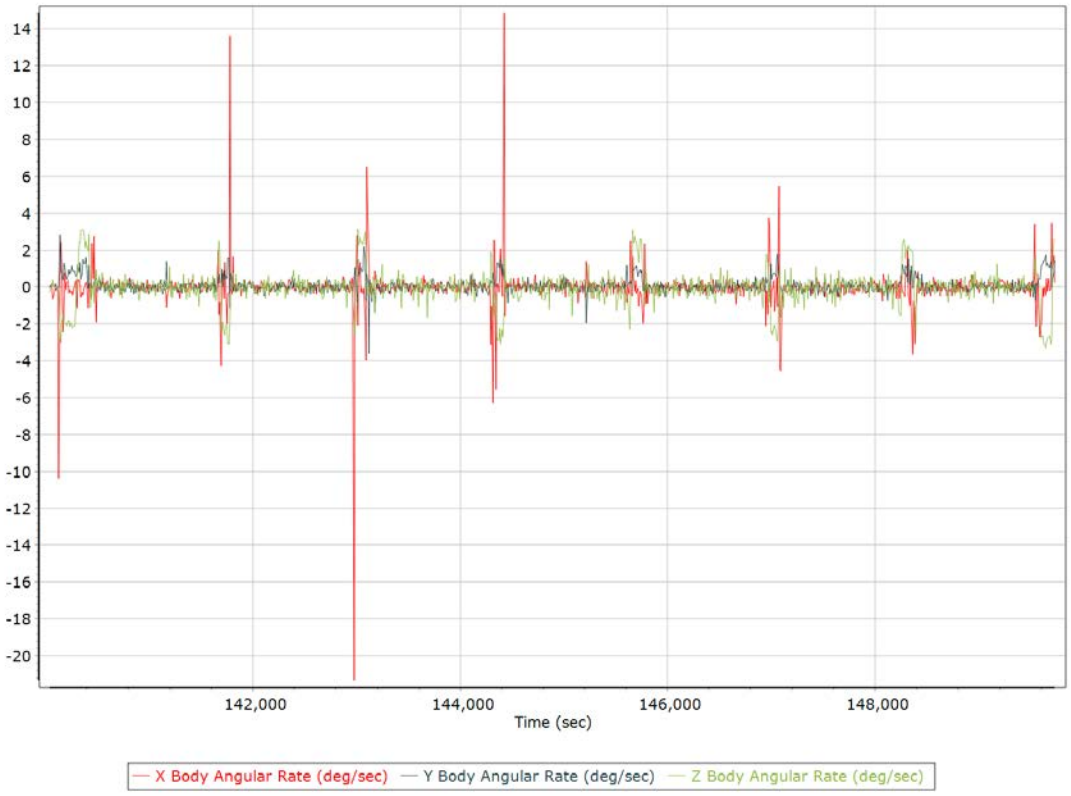
Body Acceleration



Total Body Acceleration



Body Angular Rate

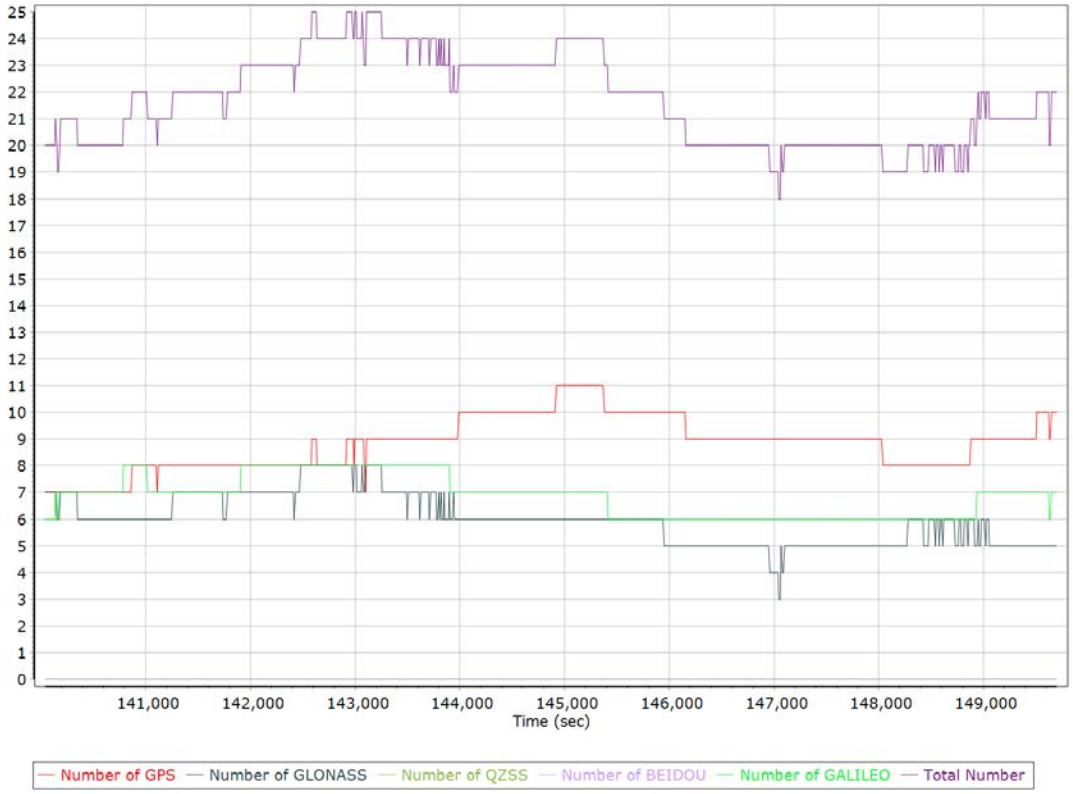


GNSS QC

GNSS QC Statistics

Statistics	Min	Max	Mean
Baseline length (km)	0.00	0.00	
Number of GPS SV	7	11	9
Number of GLONASS SV	3	8	6
Number of QZSS SV	0	0	0
Number of BEIDOU SV	0	0	0
Number of GALILEO SV	6	8	7
Total number of SV	18	25	22
PDOP	0.98	1.56	1.14
QC Solution Gaps	0.00	0.00	
Solution Type	Fixed	Float	No solution
Epoch (sec)	9723.00	0.00	0.00
Percentage	100.00	0.00	0.00

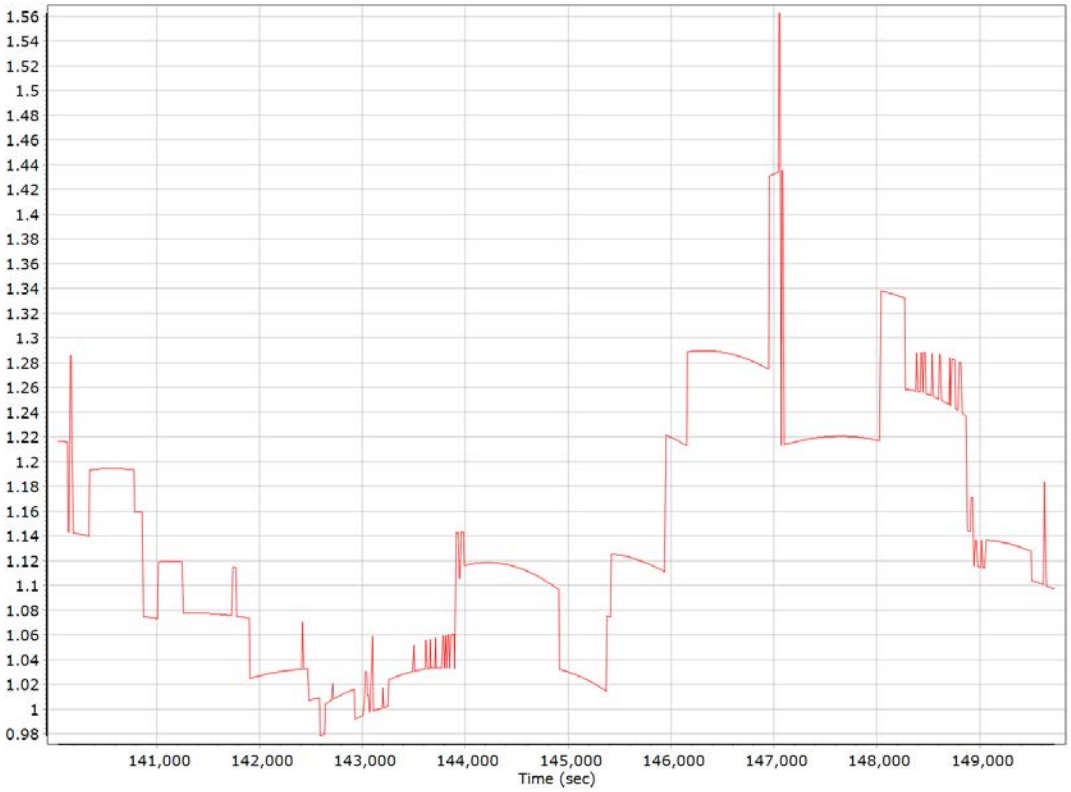
Num SVs in solution



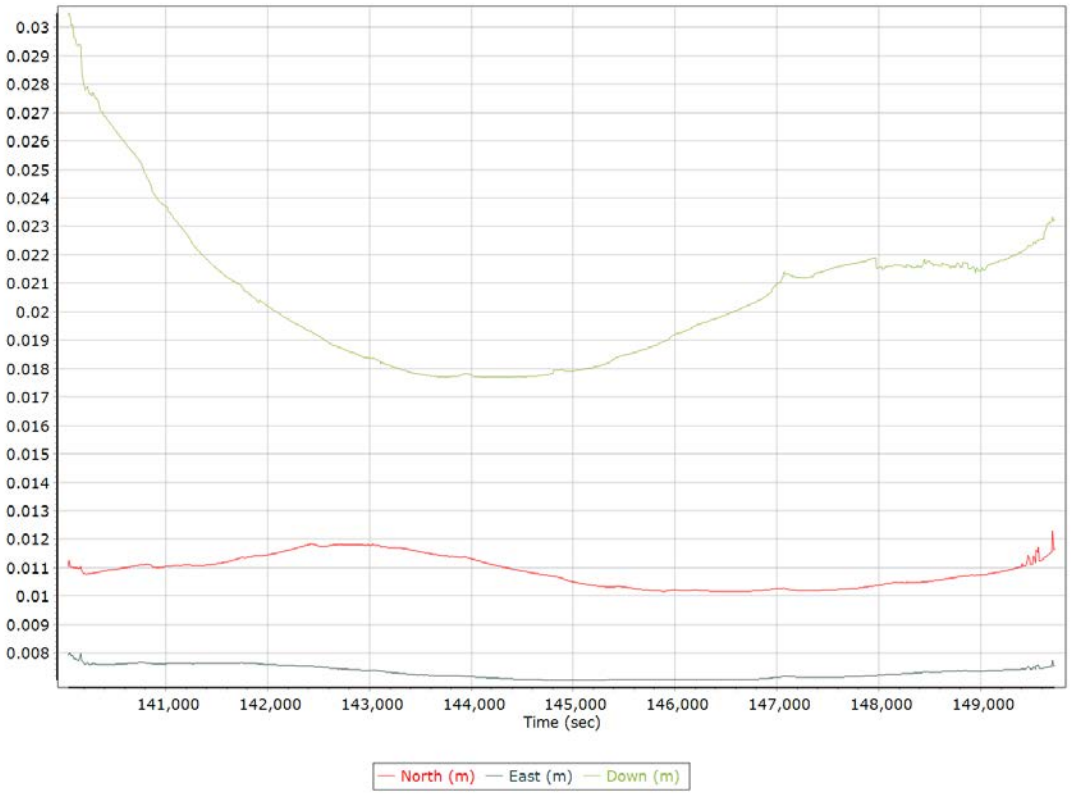
Forward/Reverse Separation



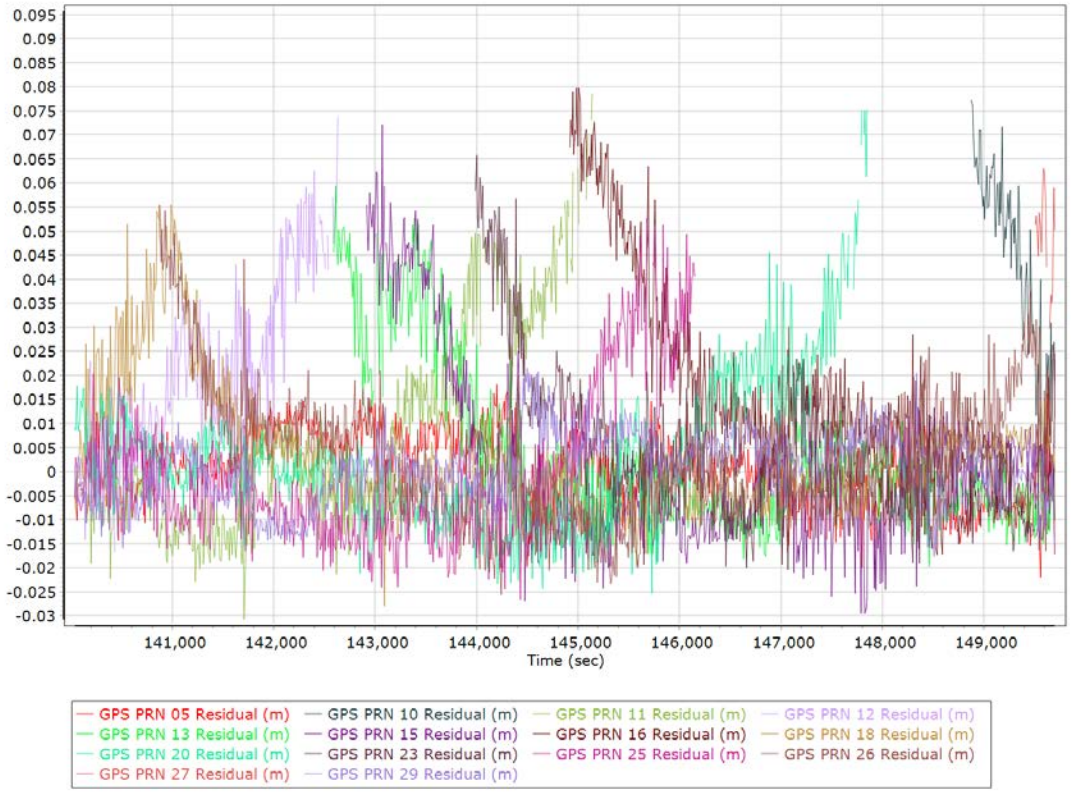
PDOP



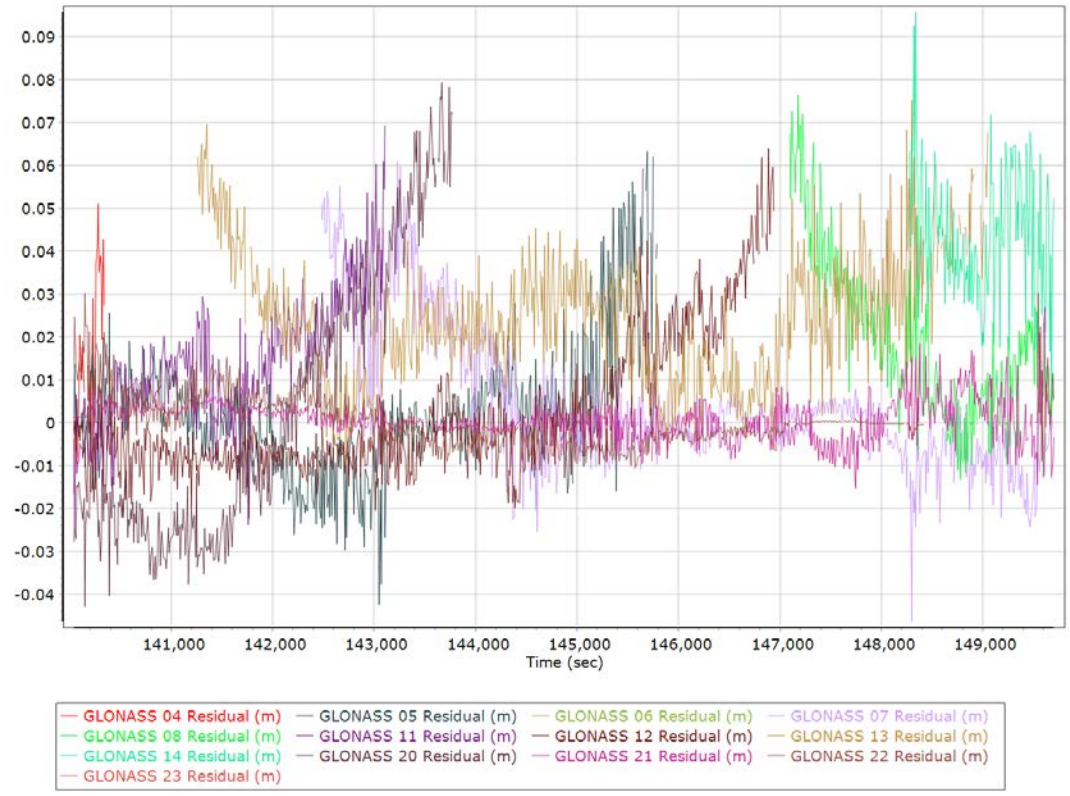
Estimated Position Accuracy



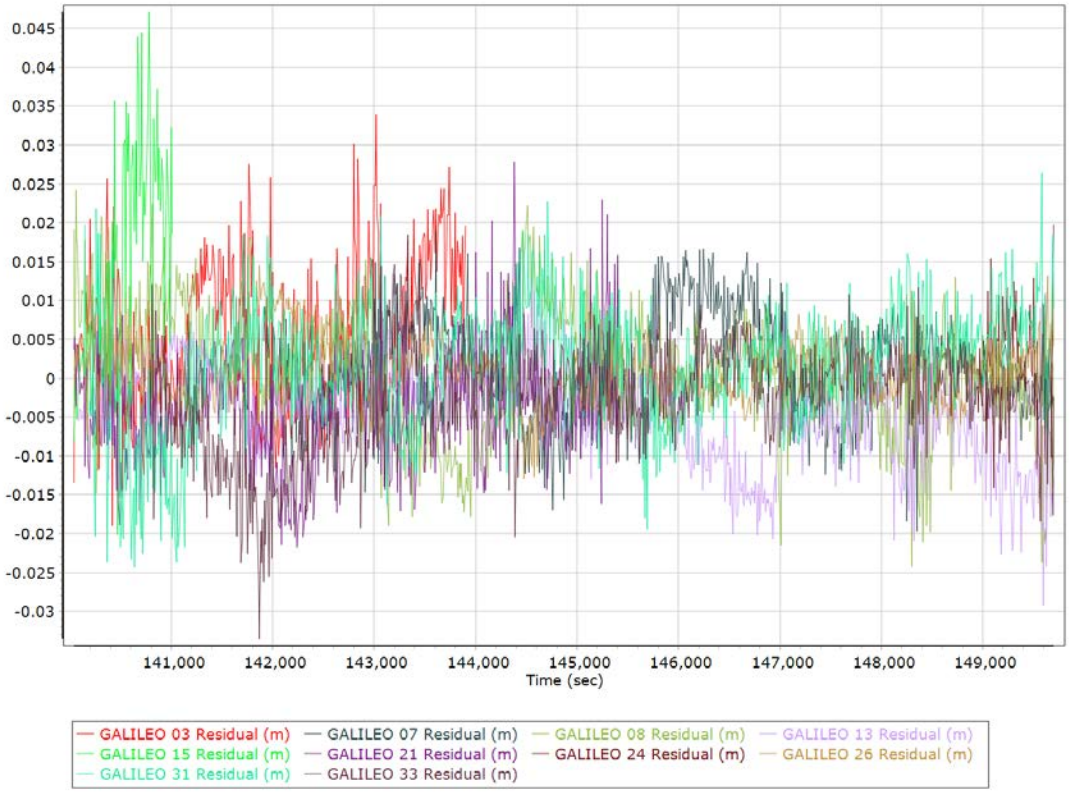
GPS Residuals



GLONASS Residuals



GALILEO Residuals



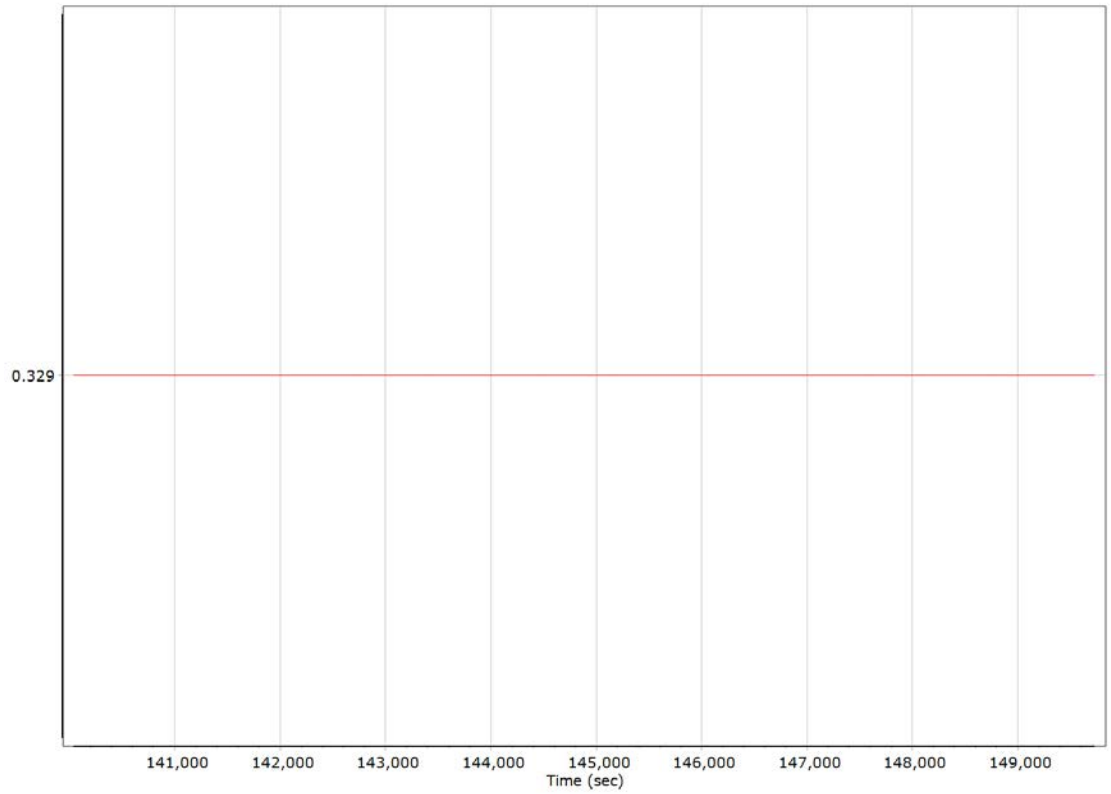
GNSS-Inertial Processor Configuration

Processing mode	IN-Fusion PP-RTX		
Stabilized mount	True		
Processing start time	139955.000 (8/14/2023 2:52:35 PM)		
Processing end time	149737.000 (8/14/2023 5:35:37 PM)		
Initial attitude source	Primary GNSS Track		
IMU Sensor Context	Processing with Onboard IMU		
Gimbal to IMU lever arm (m)	-0.034	-0.010	-0.374
Gimbal to IMU mounting angles (deg)	0.000	0.000	0.000
Gimbal to Primary GNSS lever arm (m)	0.329	-0.067	-1.393
Gimbal to Primary GNSS lever arm std dev (m)	0.030	0.030	0.030
Aircraft to Reference mounting angles (deg)	0.000	0.000	0.000

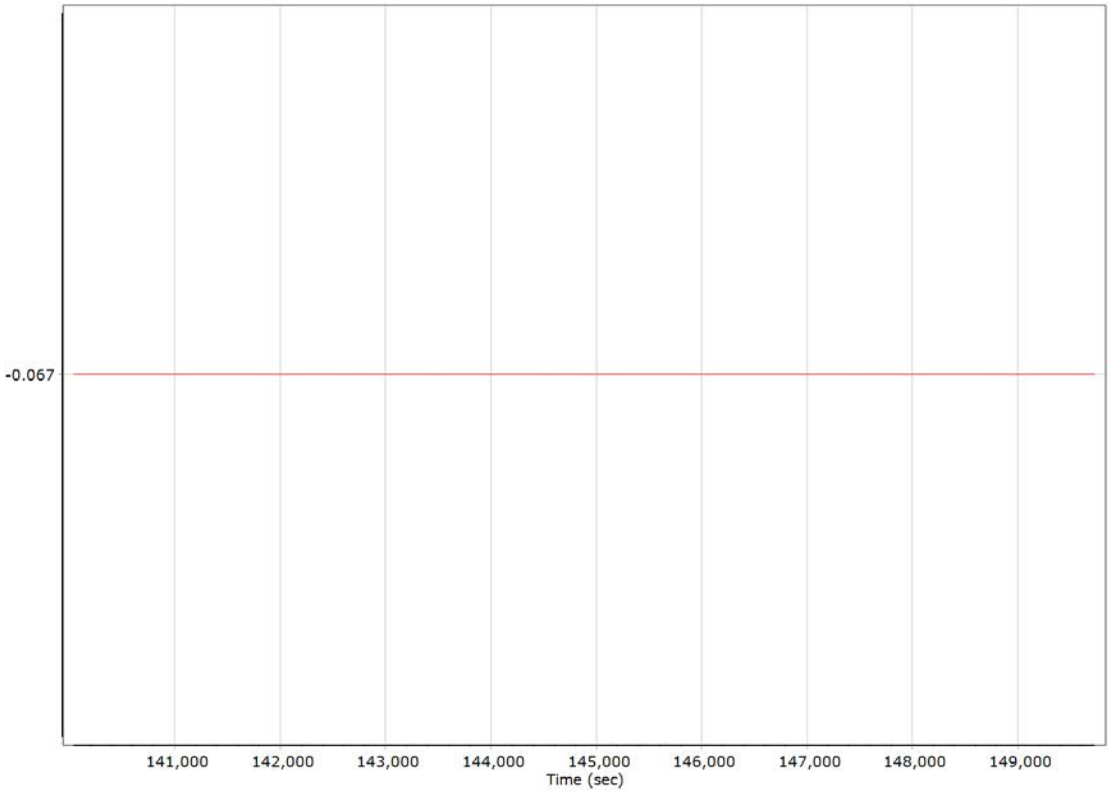
Calibrated Installation Parameters

Reference-Primary GNSS Lever Arm (m)

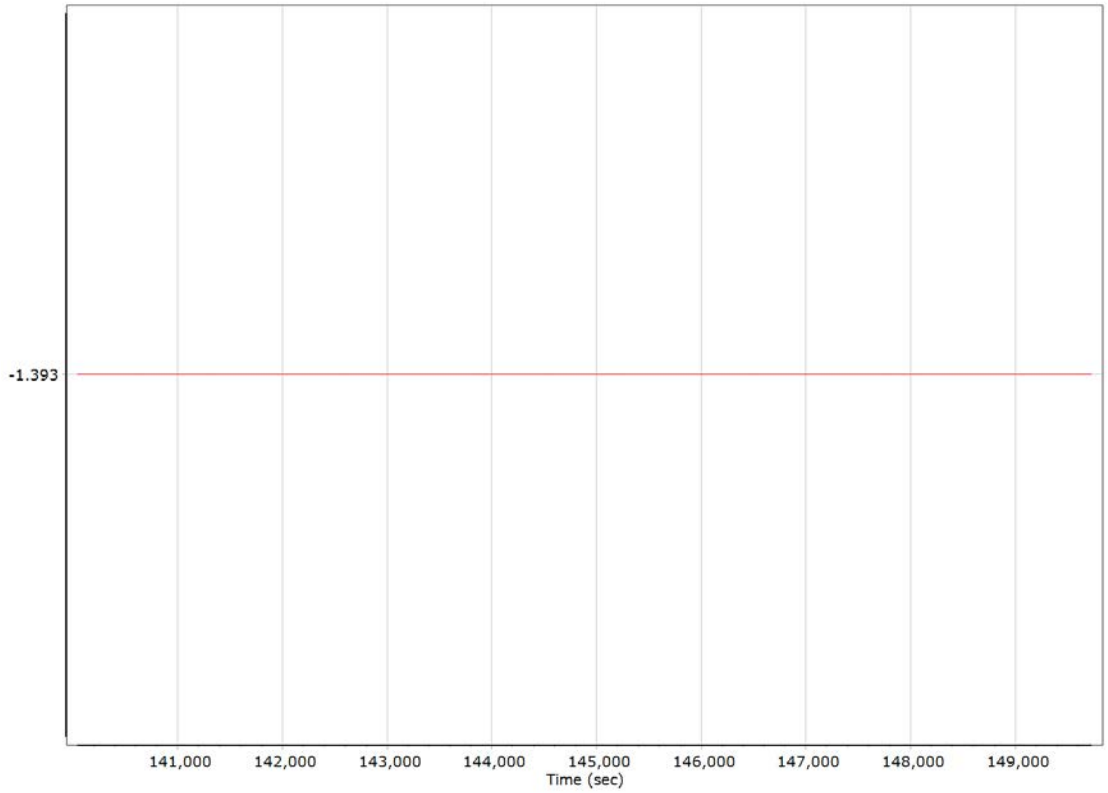
X Reference-Primary GNSS Lever Arm (m)



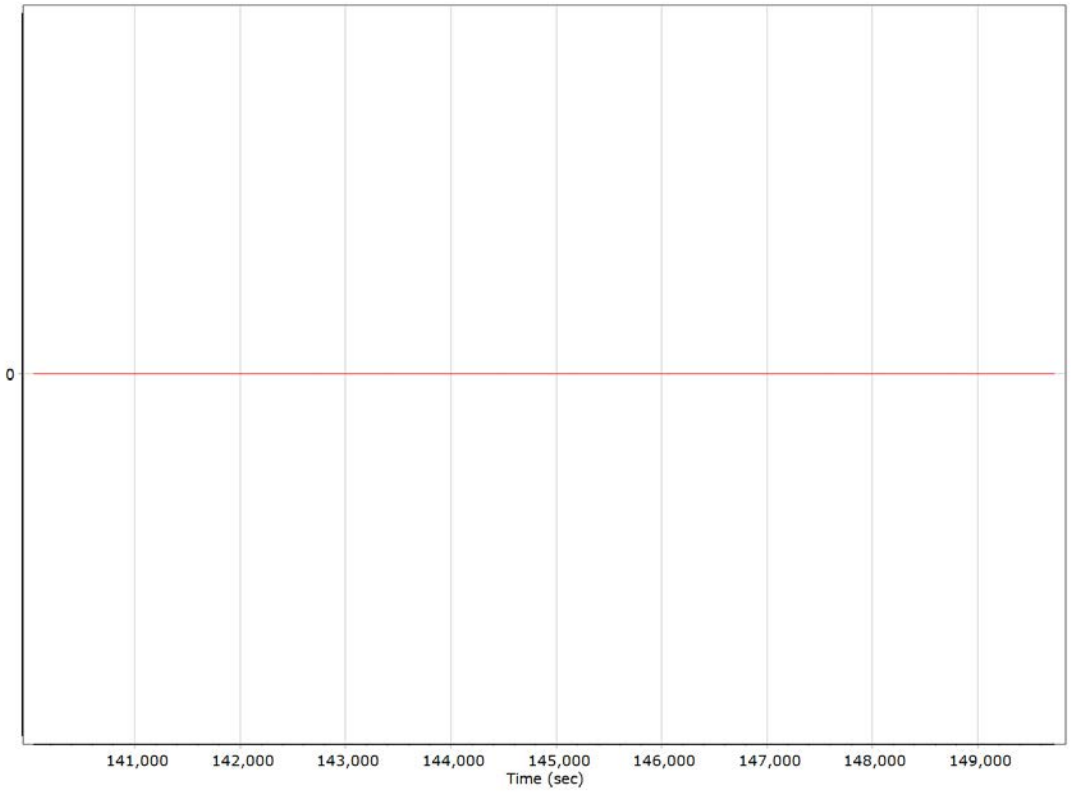
Y Reference-Primary GNSS Lever Arm (m)



Z Reference-Primary GNSS Lever Arm (m)



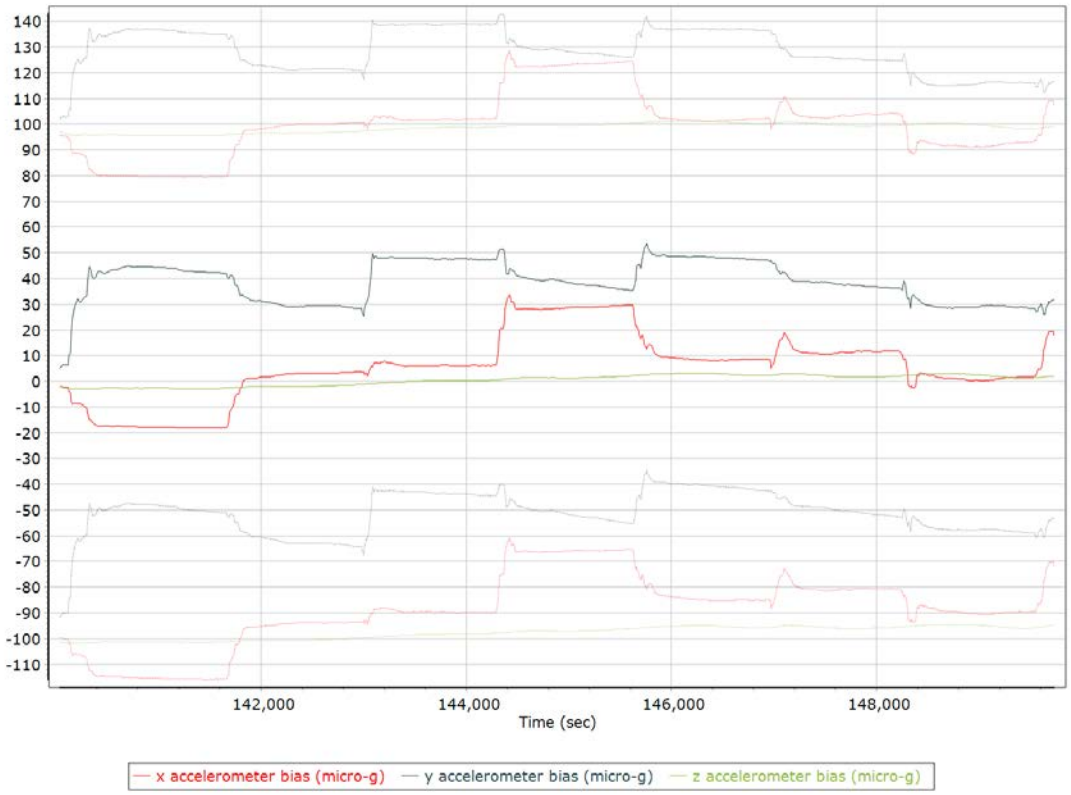
Reference-Primary GNSS Lever Arm Figure of Merit



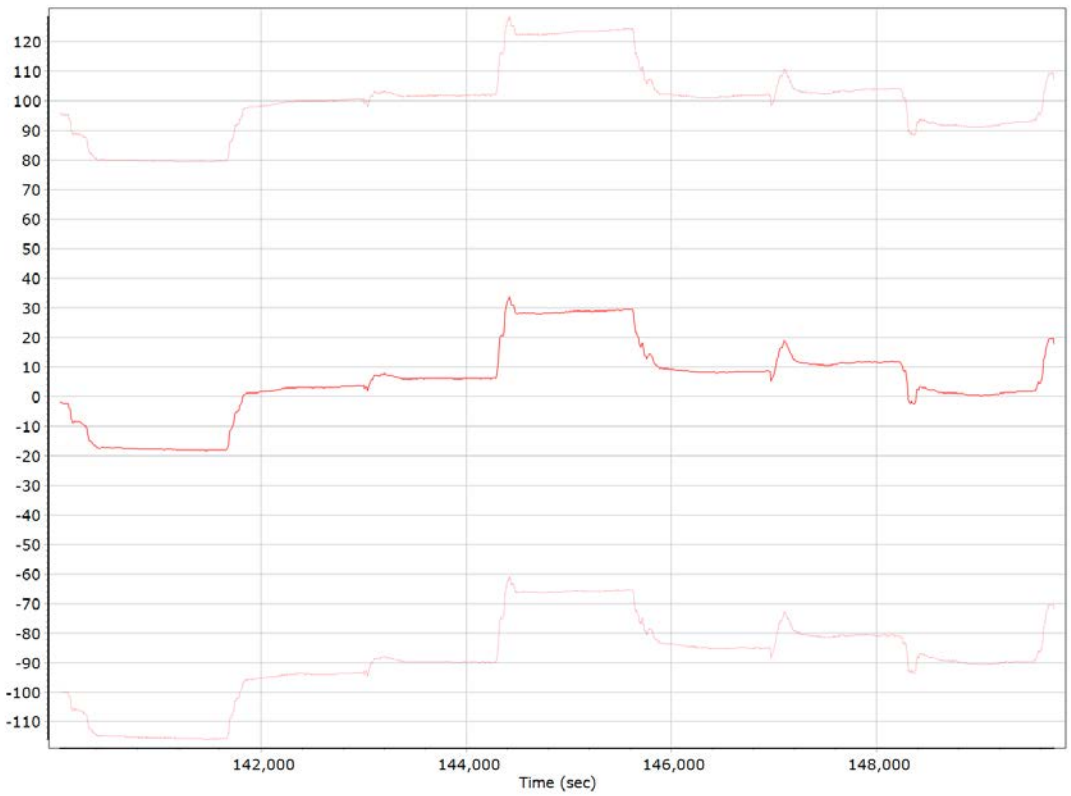
IN-Fusion QC

Forward Processed Estimated Errors, Reference Frame

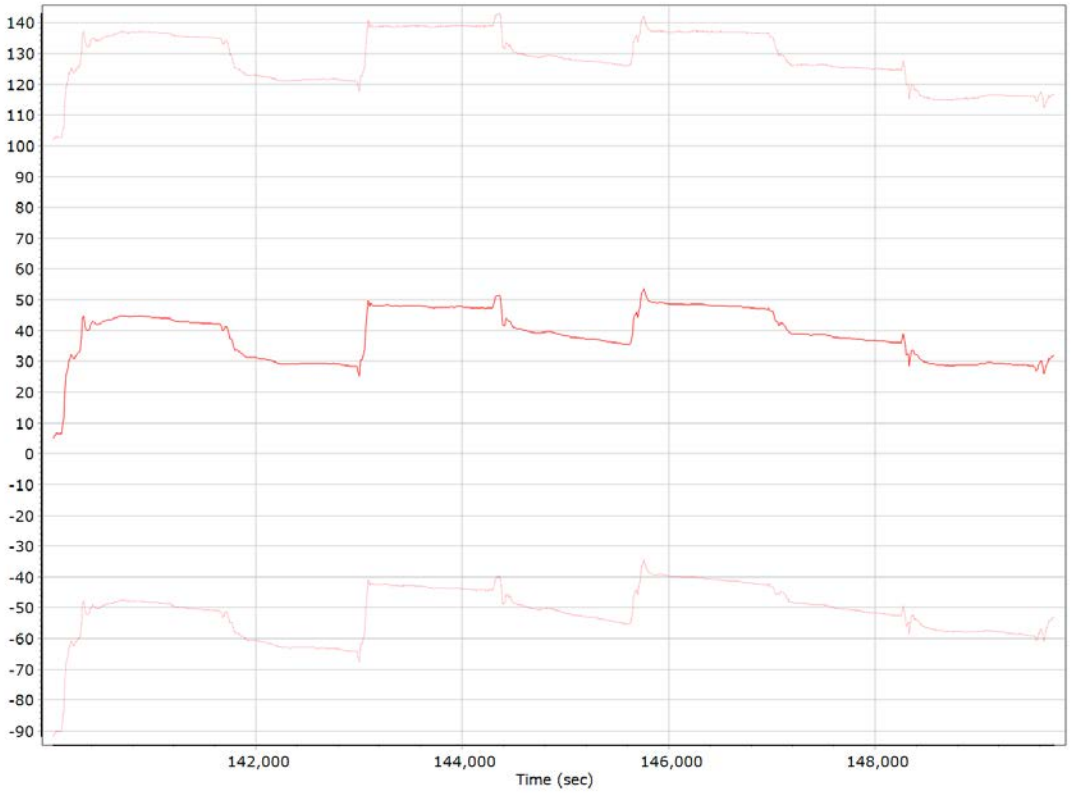
Accelerometer Bias (micro-g)



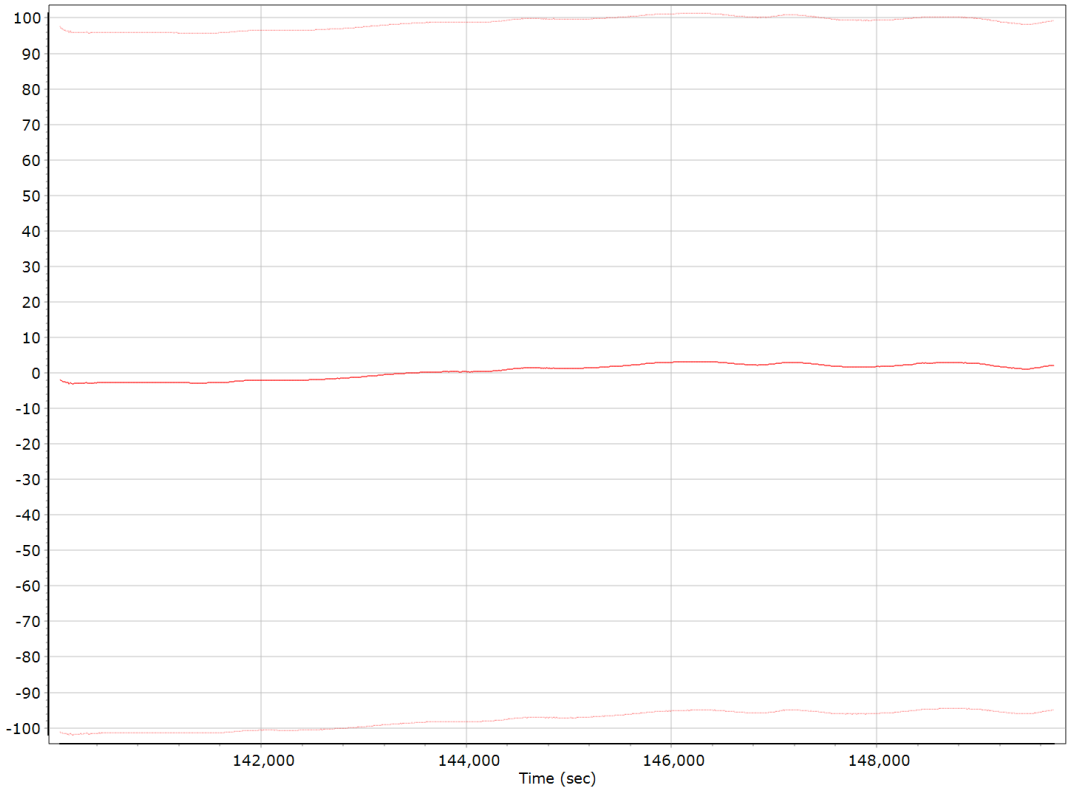
X Accelerometer Bias (micro-g)



Y Accelerometer Bias (micro-g)



Z Accelerometer Bias (micro-g)



Accelerometer Scale Error (ppm)



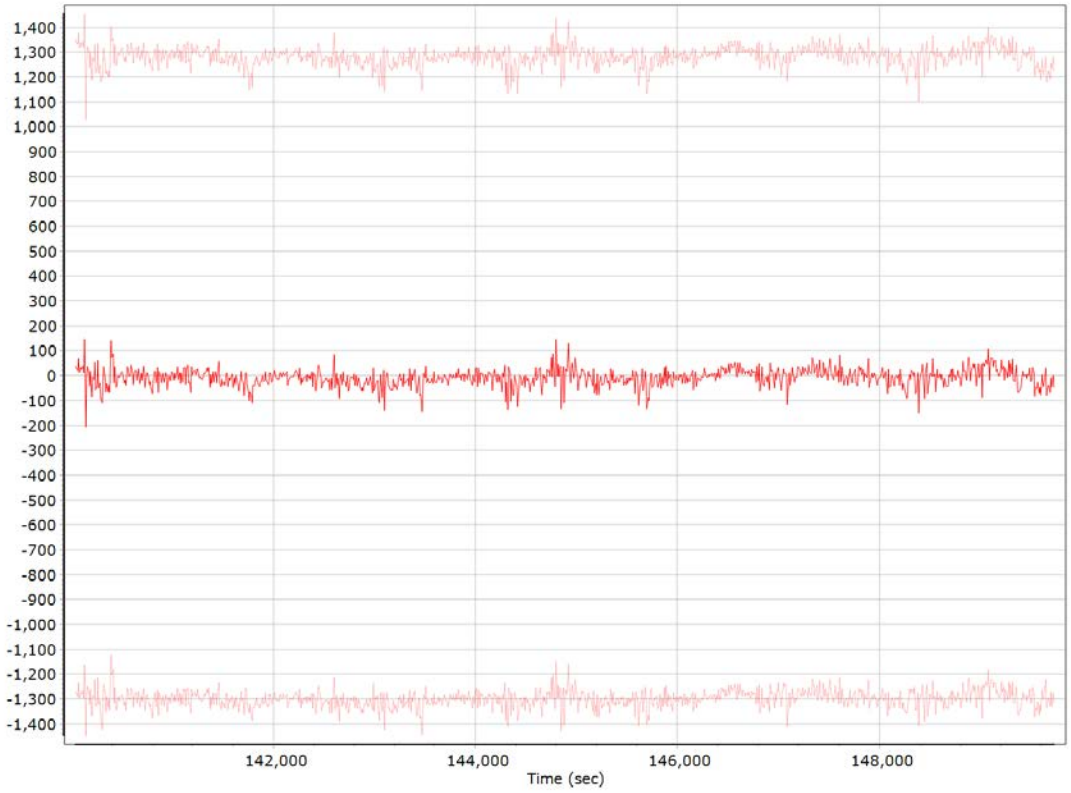
X Accelerometer Scale Error (ppm)



Y Accelerometer Scale Error (ppm)



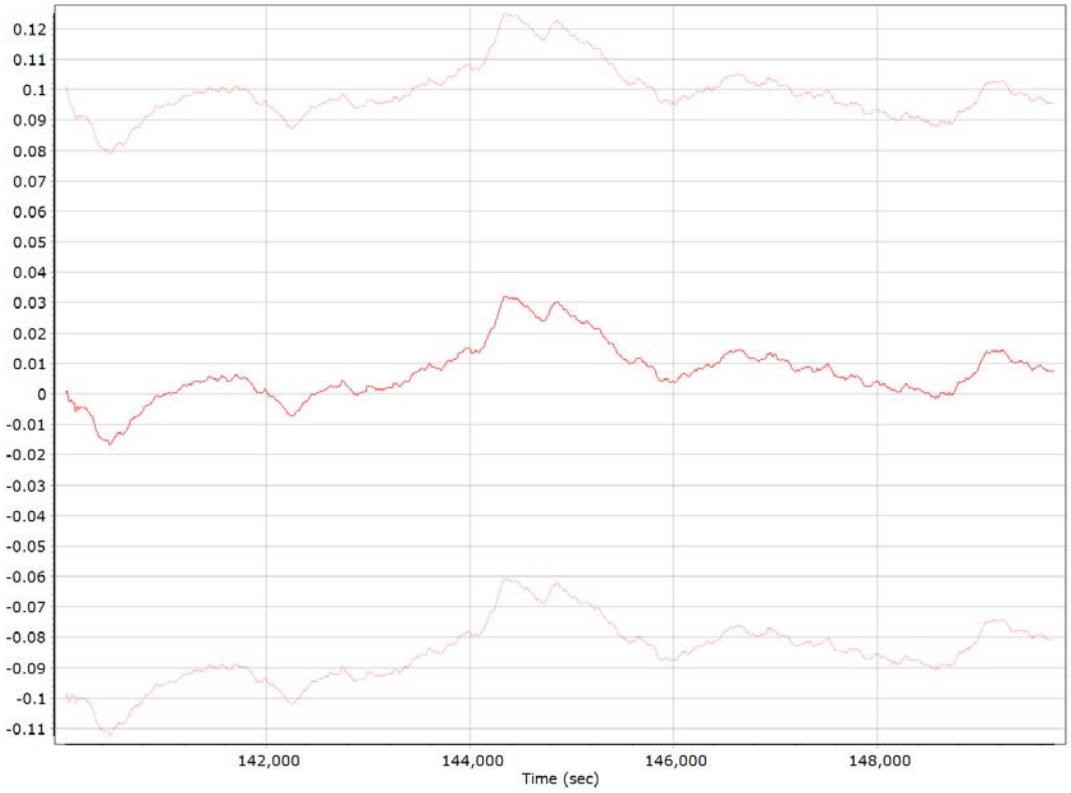
Z Accelerometer Scale Error (ppm)



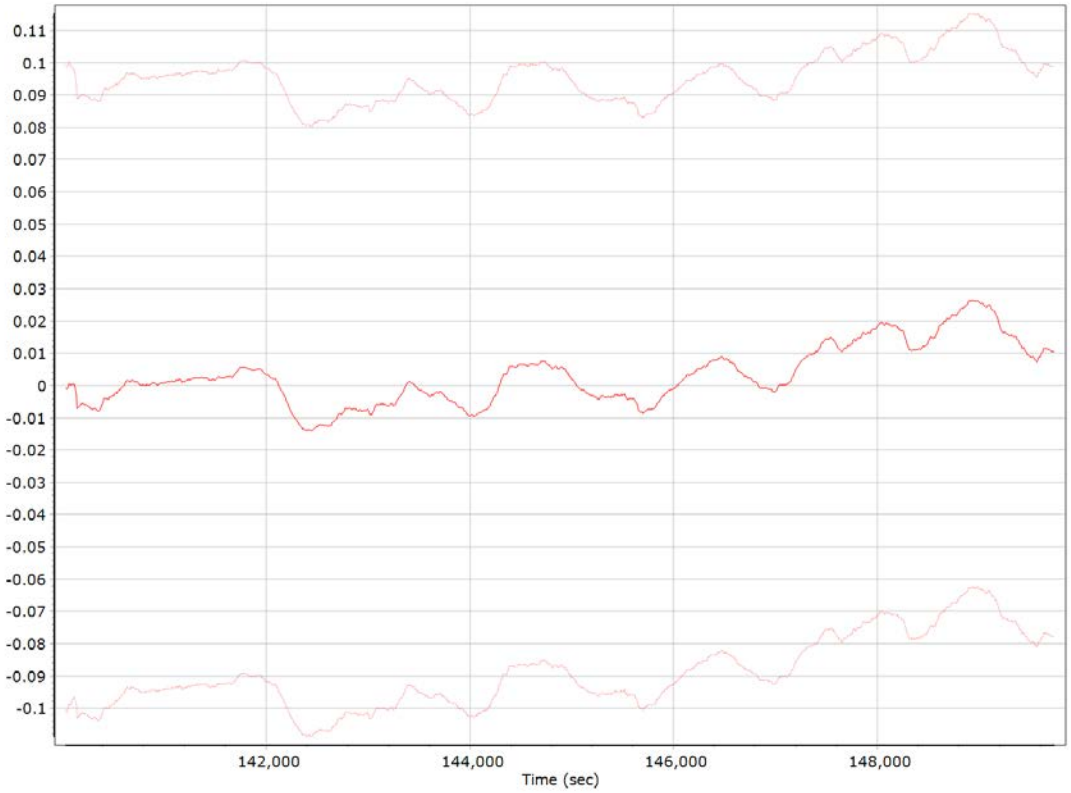
Gyro Bias (deg/h)



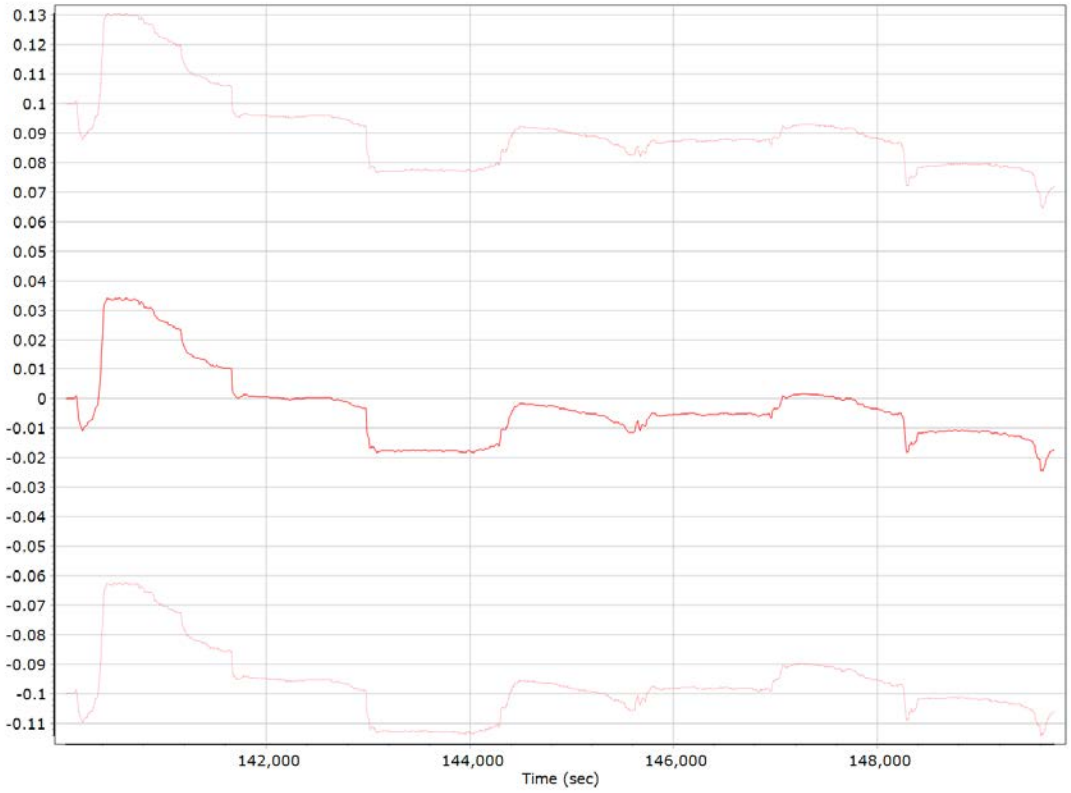
X Gyro Bias (deg/h)



Y Gyro Bias (deg/h)



Z Gyro Bias (deg/h)



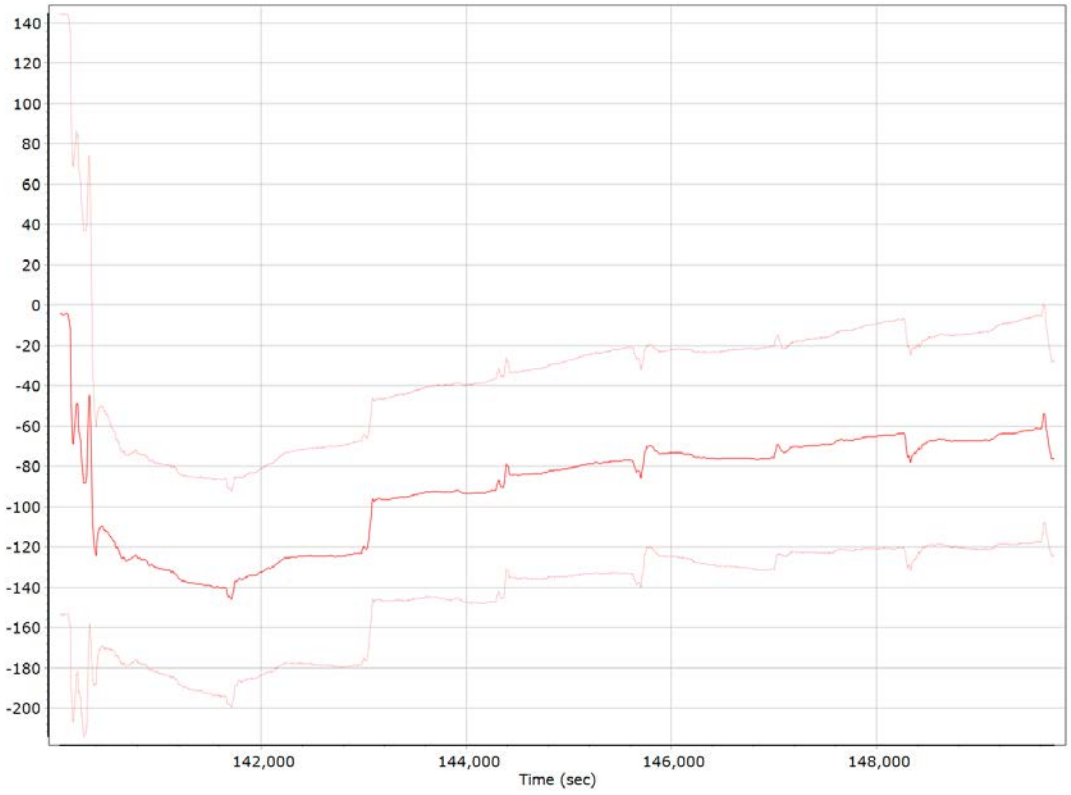
Gyro Scale Error (ppm)



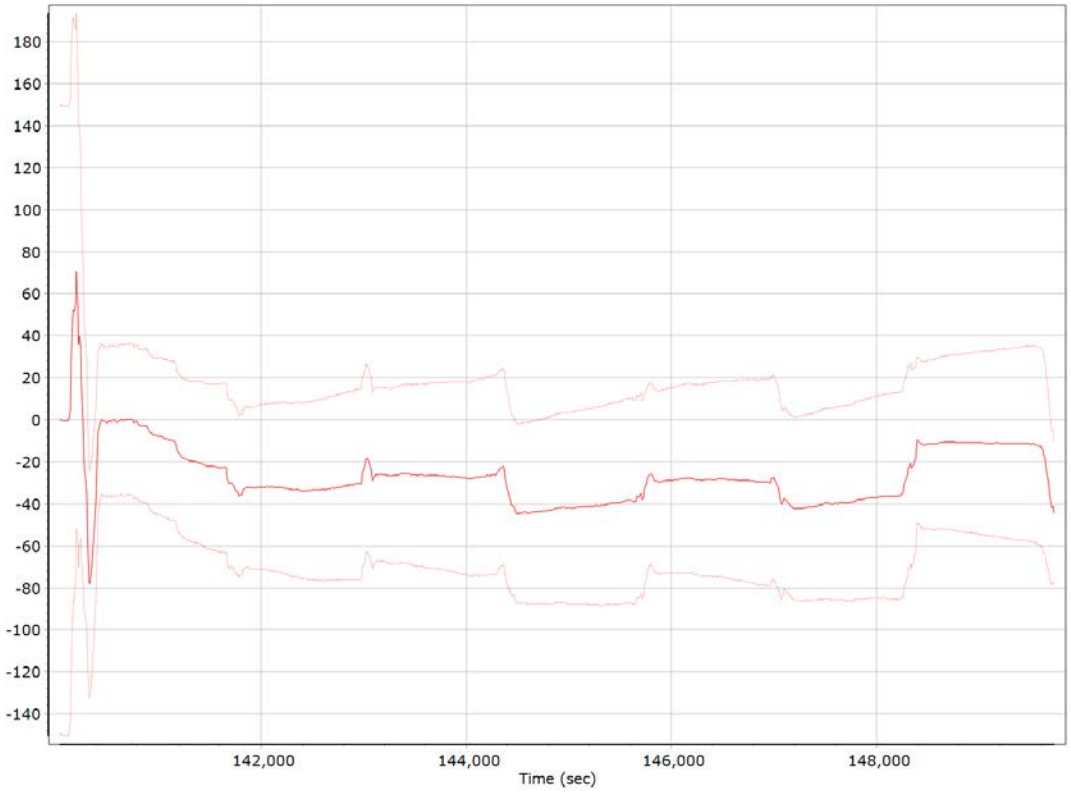
X Gyro Scale Error (ppm)



Y Gyro Scale Error (ppm)



Z Gyro Scale Error (ppm)

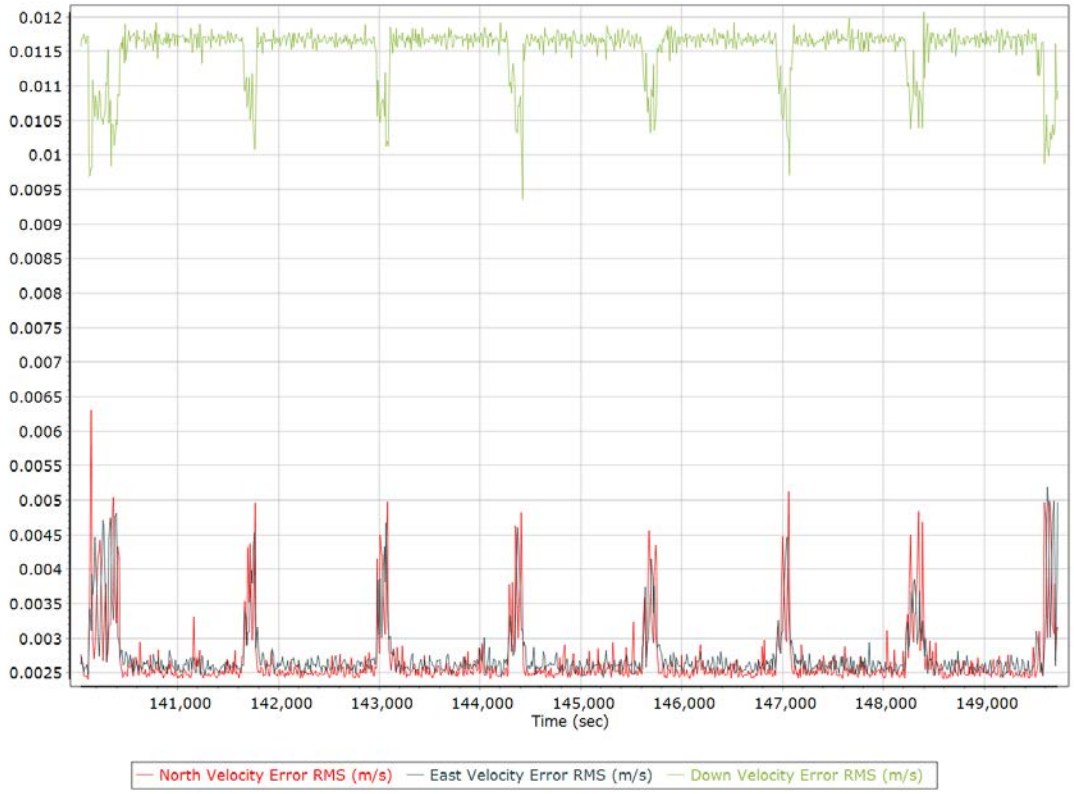


Smoothed Performance Metrics

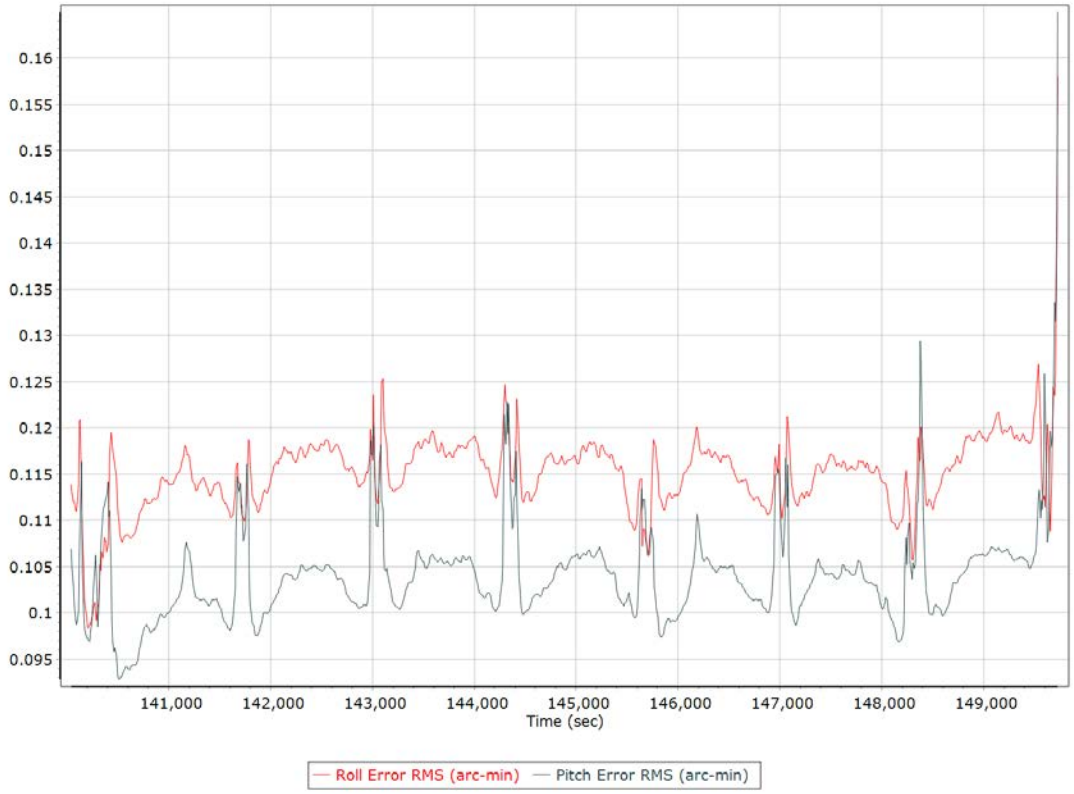
Position Error RMS (m)



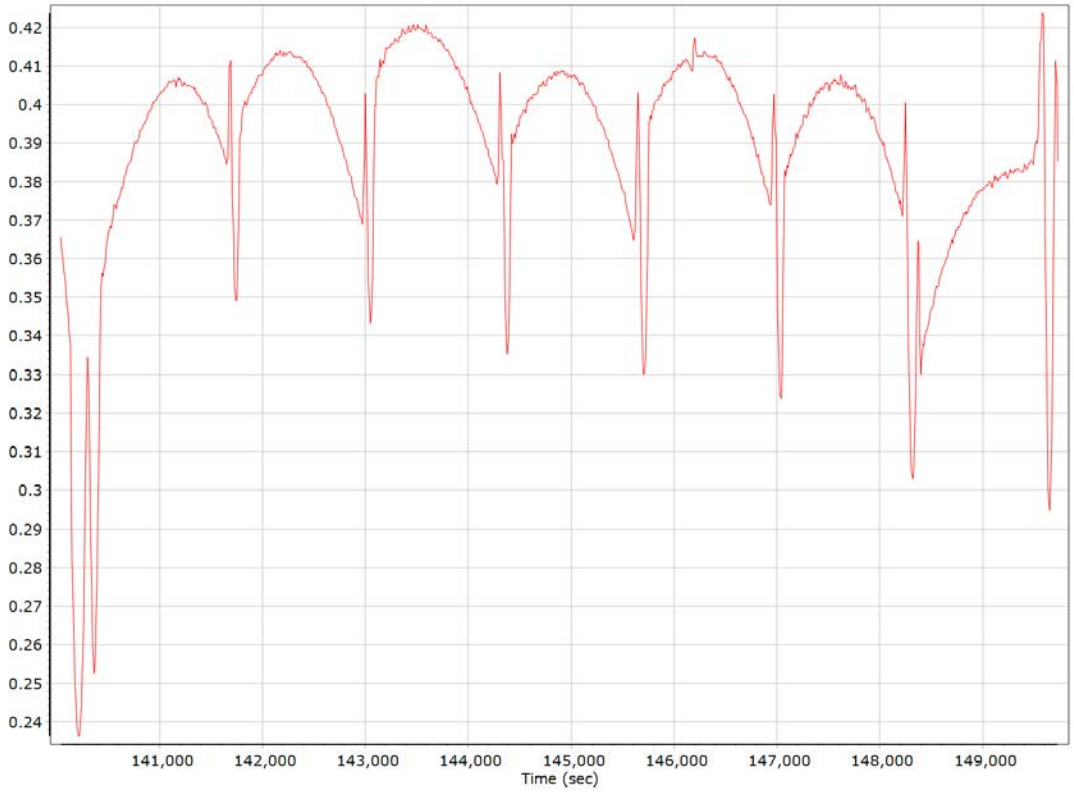
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

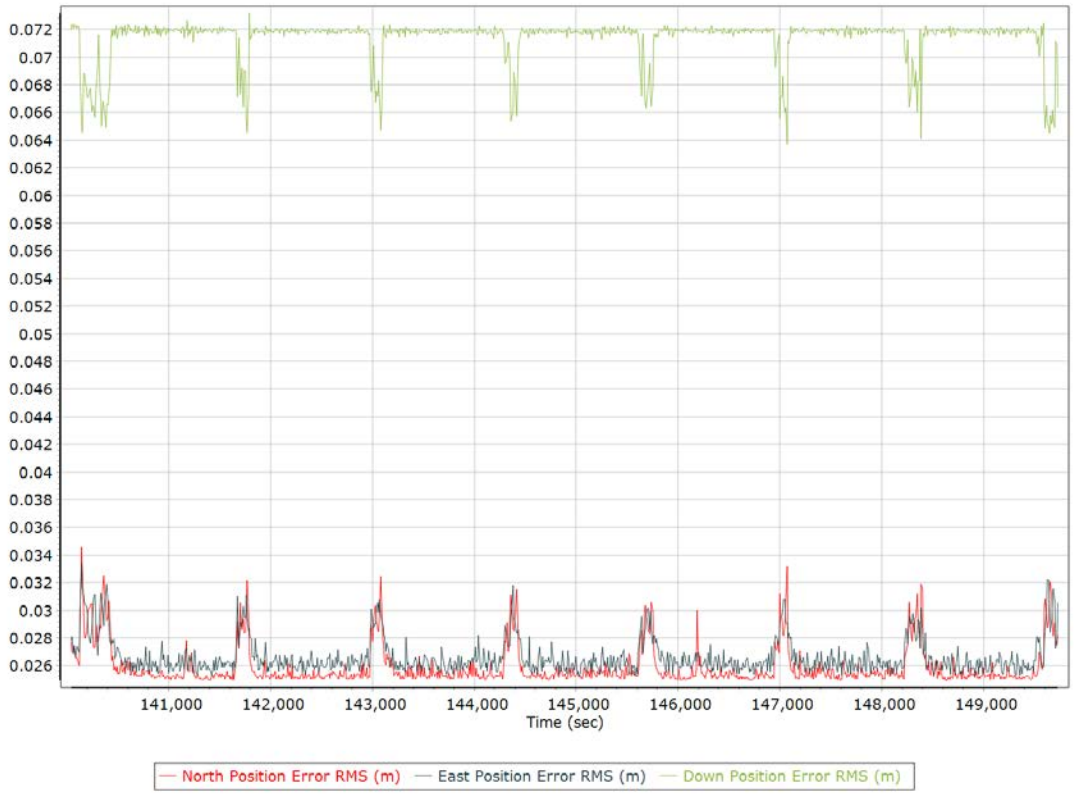


Heading Error RMS (arc-min)

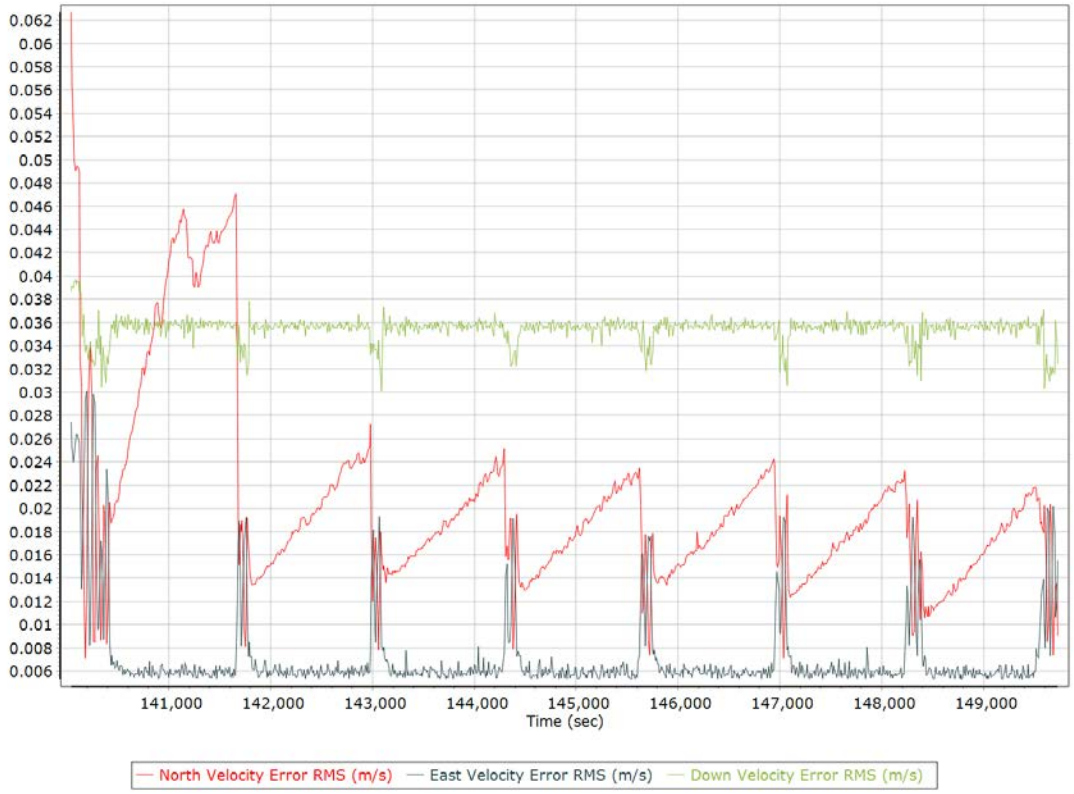


Forward Processed Performance Metrics

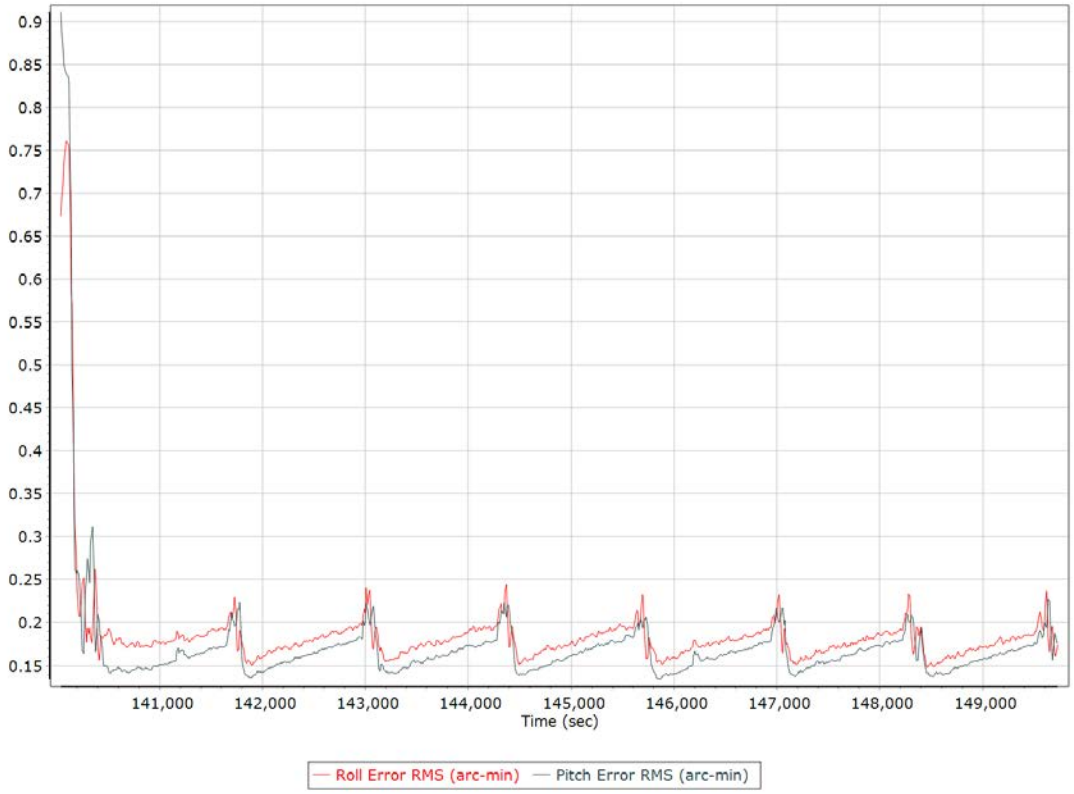
Position Error RMS (m)



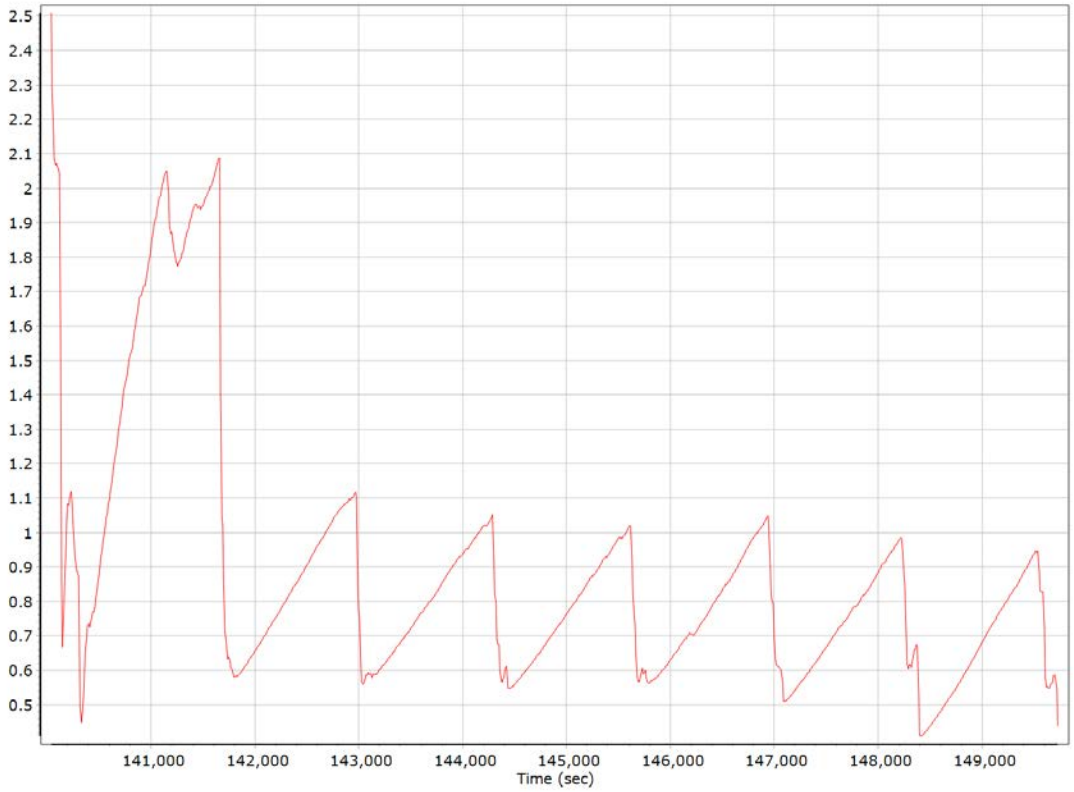
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

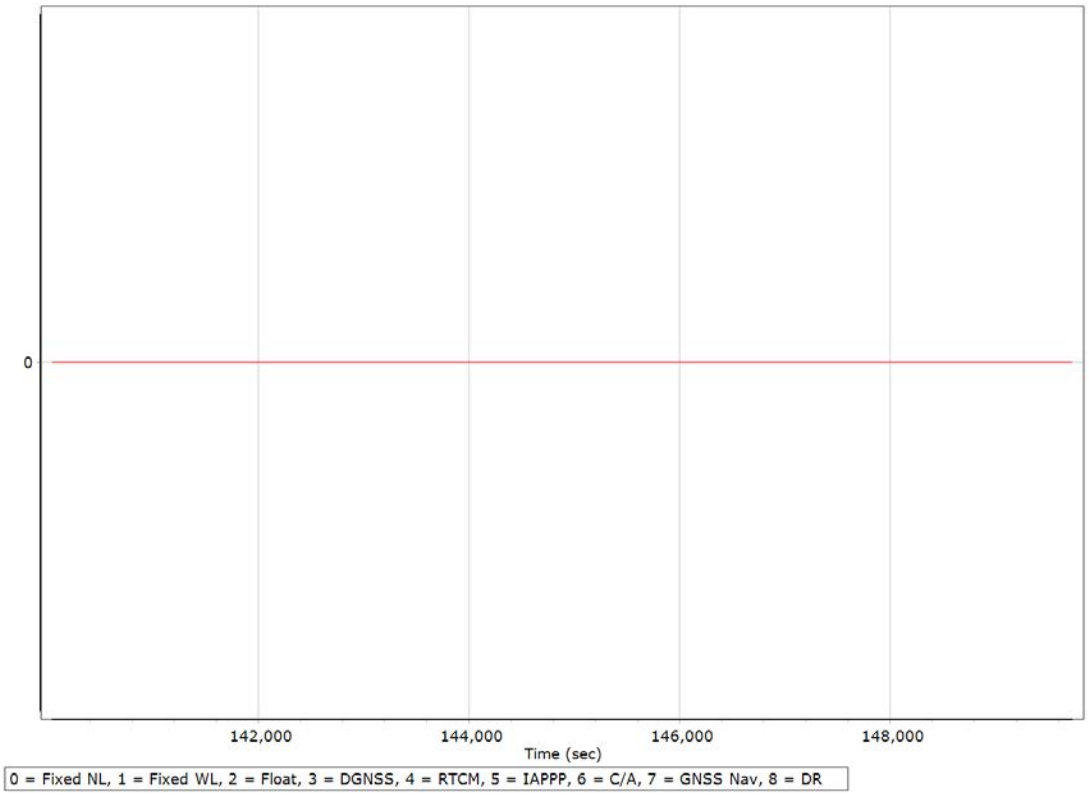


Heading Error RMS (arc-min)



Forward Processed Solution Status

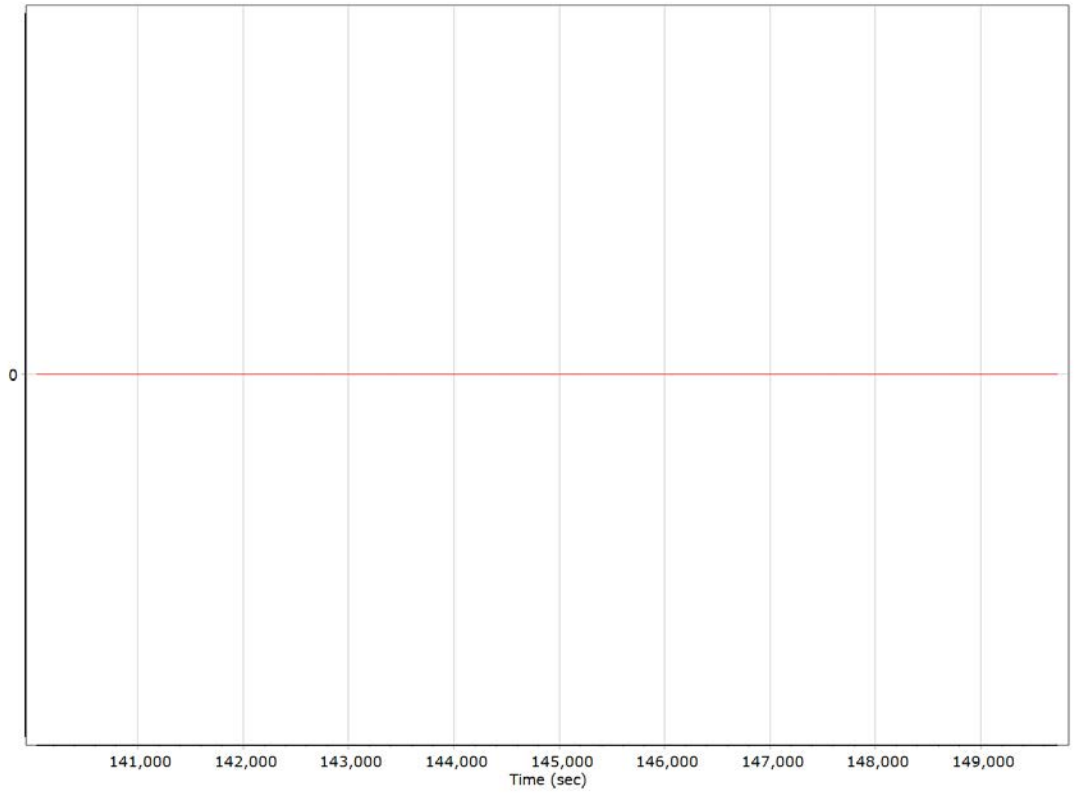
Processing Mode



Number of Satellites



Baseline Length



General Information

Mission Information

Project name	08142023B_4051
Processing date	2023-08-16 18:16:52
Mission date	2023-08-14 18:54:02
Mission duration	03:11:30.064
Processing mode	IN-Fusion PP-RTX

Rover Hardware Information

Product	POS AV 610 VER6 HW2.5-12
Serial number	S/N11221
IMU type	57
Receiver type	BD982
Antenna type	AV59

Project File List

Rover Data Files

File name	File type
CP780.002	POS Data
CP780.003	POS Data
CP780.004	POS Data
CP780.005	POS Data
CP780.006	POS Data
CP780.007	POS Data
CP780.008	POS Data
CP780.009	POS Data
CP780.010	POS Data
CP780.011	POS Data
CP780.012	POS Data
CP780.013	POS Data
CP780.014	POS Data
CP780.015	POS Data
CP780.016	POS Data
CP780.017	POS Data
CP780.018	POS Data
CP780.019	POS Data
CP780.020	POS Data
CP780.021	POS Data
CP780.022	POS Data
CP780.023	POS Data
CP780.024	POS Data
CP780.025	POS Data
CP780.026	POS Data
CP780.027	POS Data

Input Files

File Name	File Type
Ephm2260.23g	GLONASS Broadcast Ephemeris
Ephm2260.23n	GPS Broadcast Ephemeris

Output Files

Filename	File type
sbet_08142023B_4051.out	SBET Trajectory File

Rover Data Summary

First raw data file	CP780.002		
Last raw data file	CP780.027		
Start GPS week	2275		
Start time	154423.953 (8/14/2023 6:53:43 PM)		
End time	165914.017 (8/14/2023 10:05:14 PM)		
Start of fine alignment	154447.578 (8/14/2023 6:54:07 PM)		
Available subsystems	Primary GNSS, Gimbal, IMU		
POS Event Input	None		
Correction data	None		
IMU Installation Lever Arms & Mounting Angles			
Gimbal to IMU lever arm (m)	-0.034	-0.010	-0.374
Gimbal to IMU mounting angles (deg)	0.000	0.000	0.000
Gimbal to Primary GNSS lever arm (m)	0.053	-0.183	-1.279
Gimbal to Primary GNSS lever arm std dev (m)	-1.000		
Aircraft to Reference mounting angles (deg)	0.000	0.000	0.000

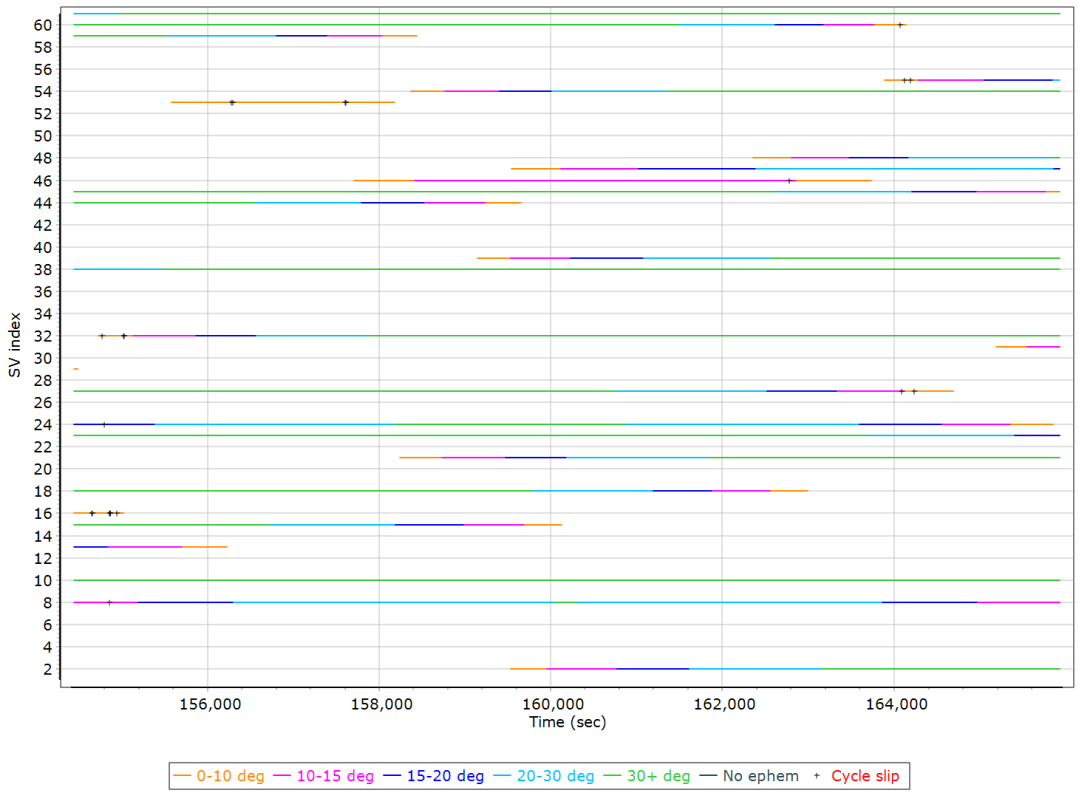
Rover Data QC

Raw IMU Import QC Summary

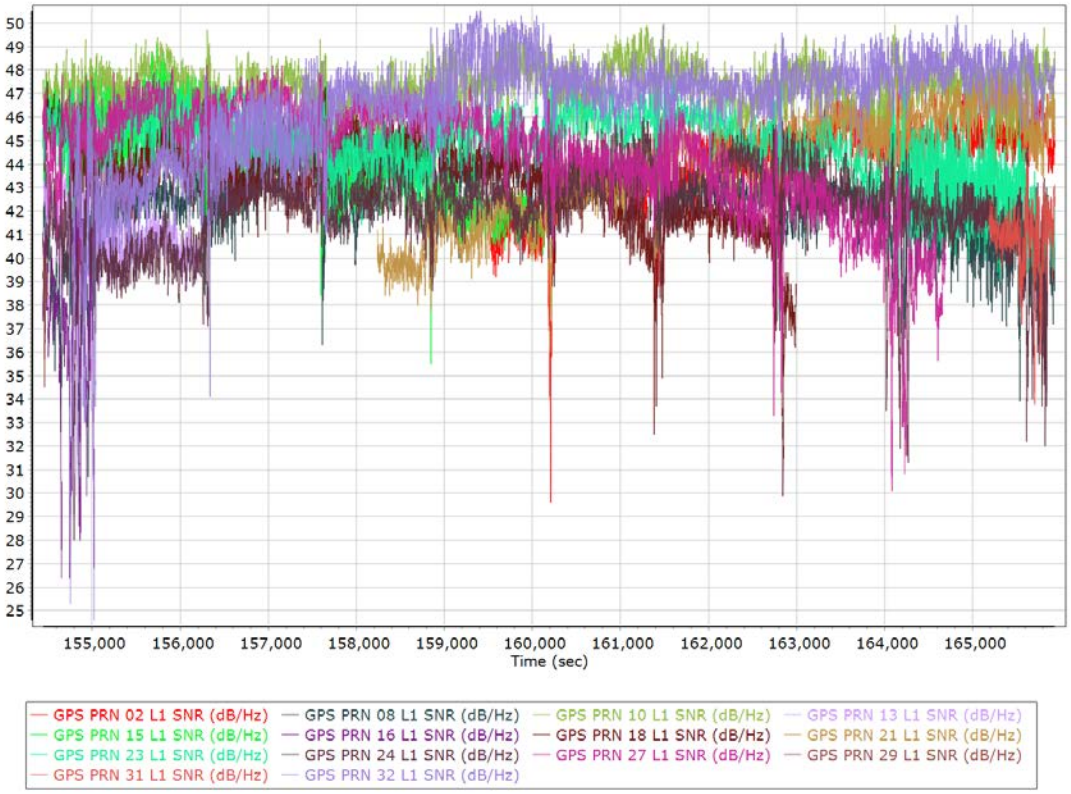
IMU data input file	imu_Mission 1.dat
IMU data check log file	imudt_08142023B_4051.log
IMU Records Processed	2297727
Termination Status	Normal
IMU Anomalies	0

Primary Observables & Satellite Data

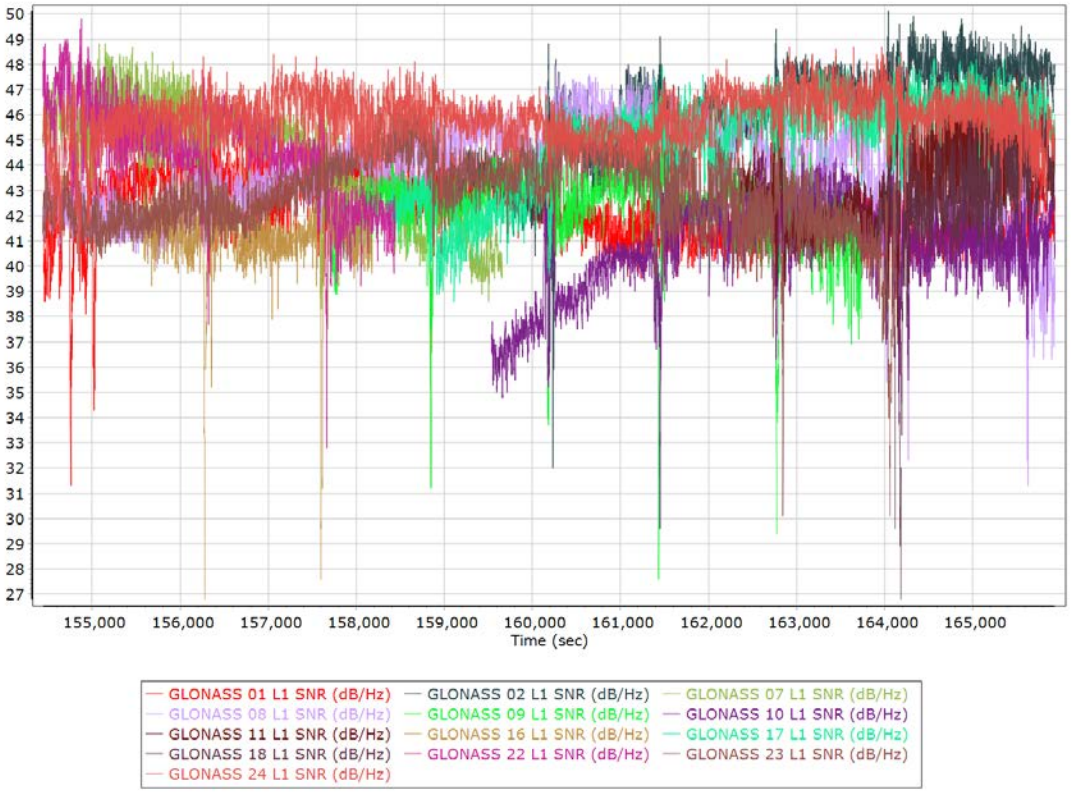
GPS/GLONASS L1 Satellite Lock/Elevation



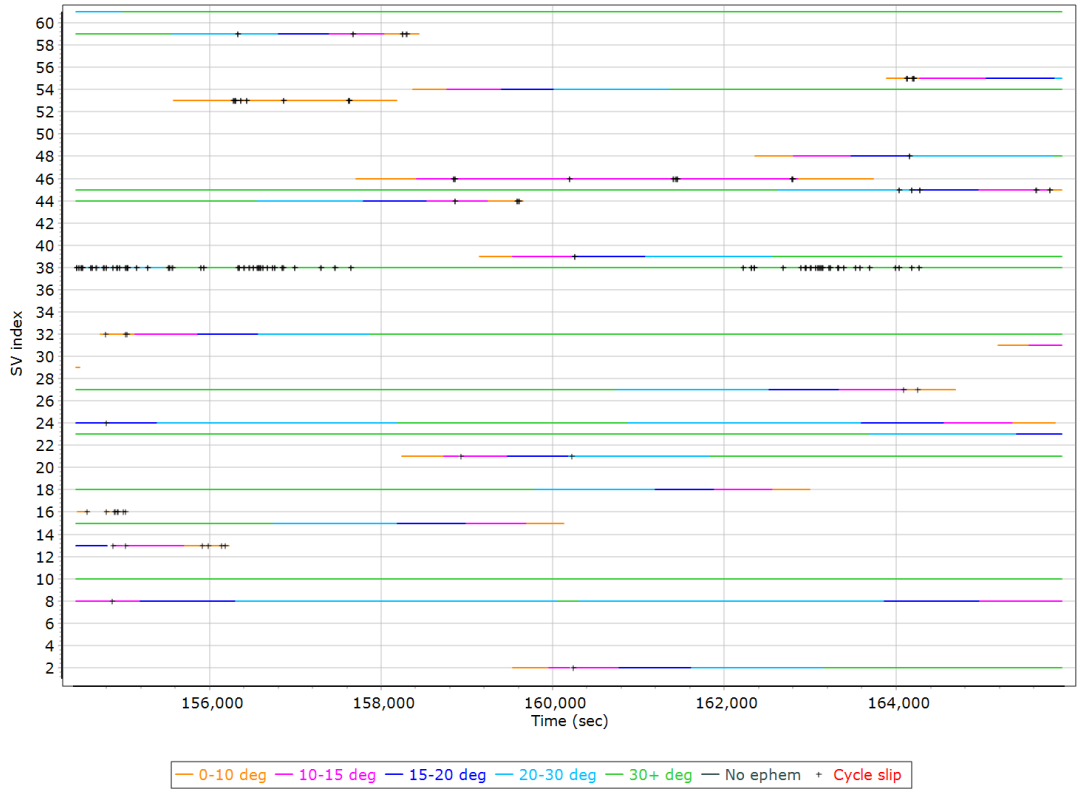
GPS L1 SNR



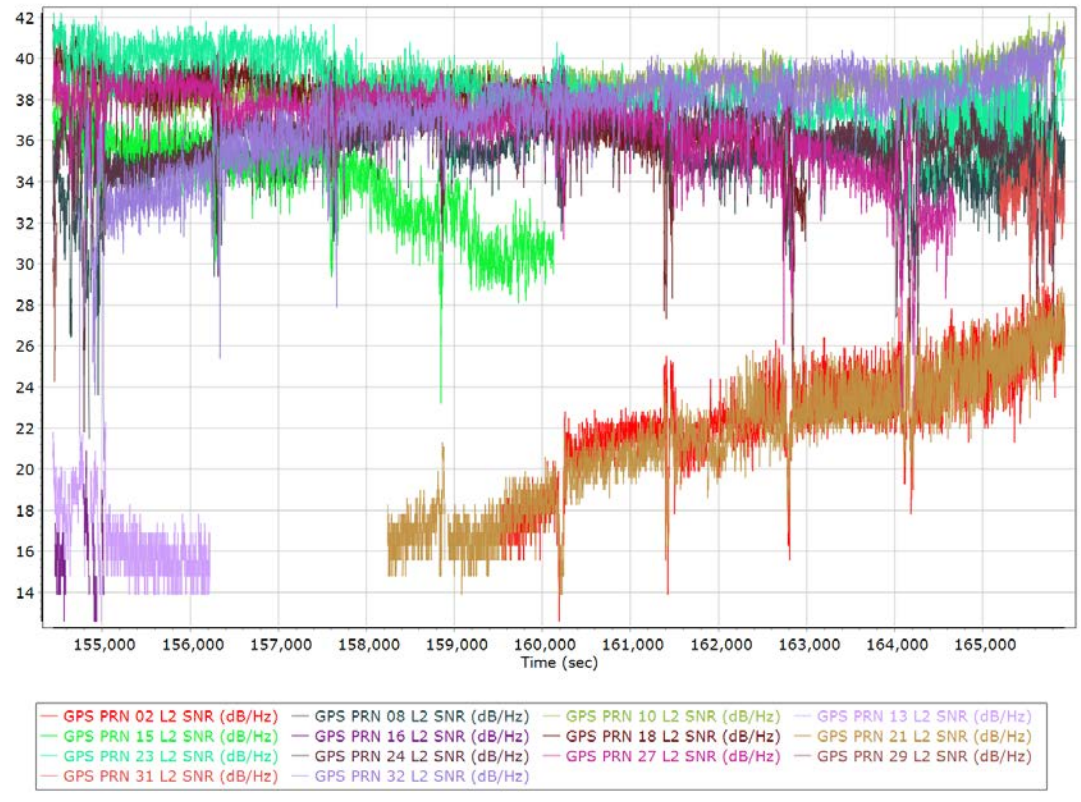
GLONASS L1 SNR



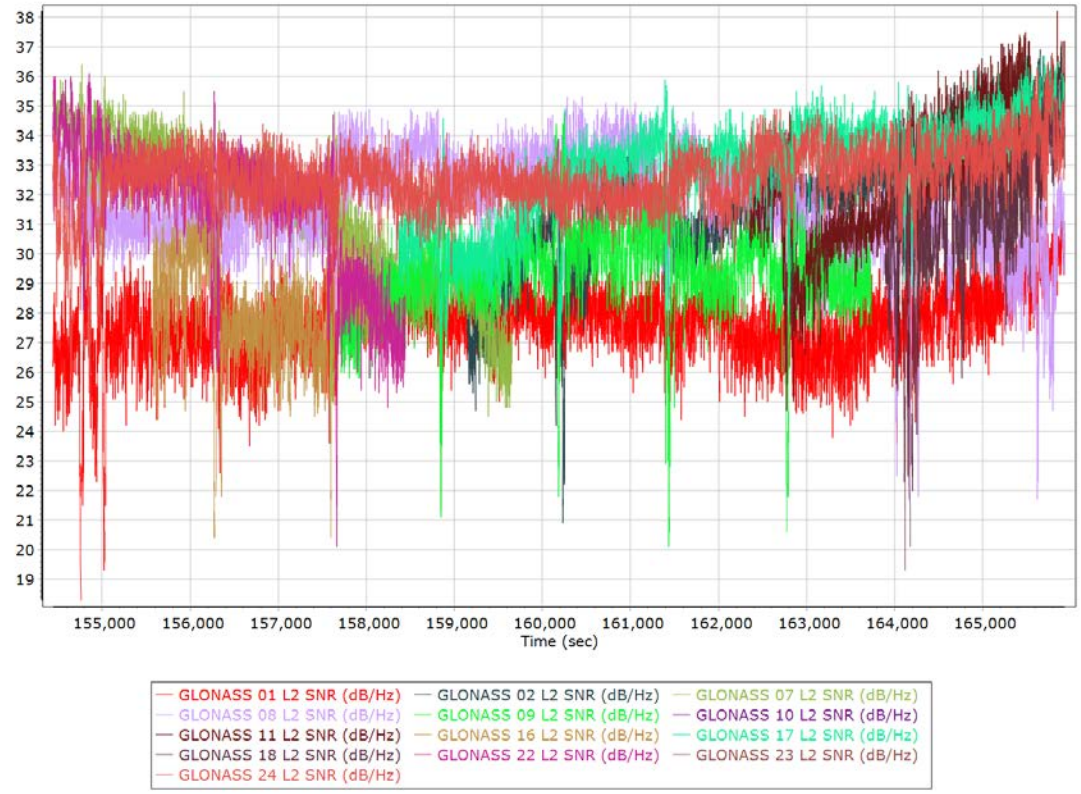
GPS/GLONASS L2 Satellite Lock/Elevation



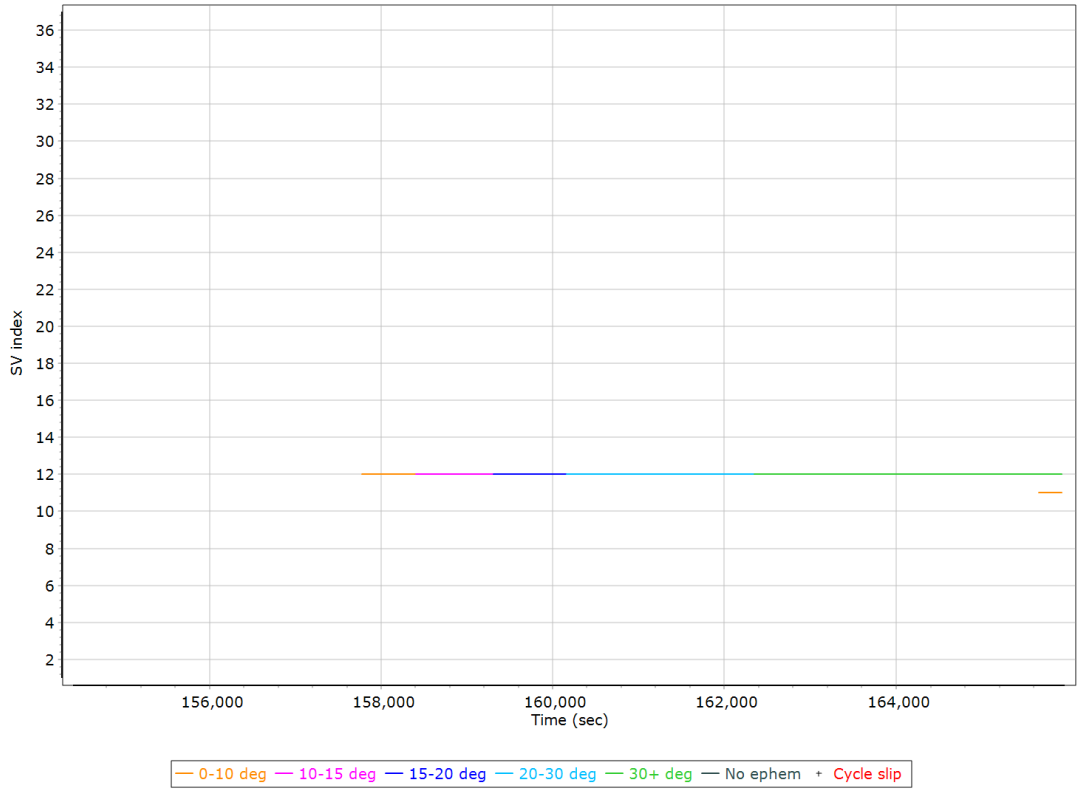
GPS L2 SNR



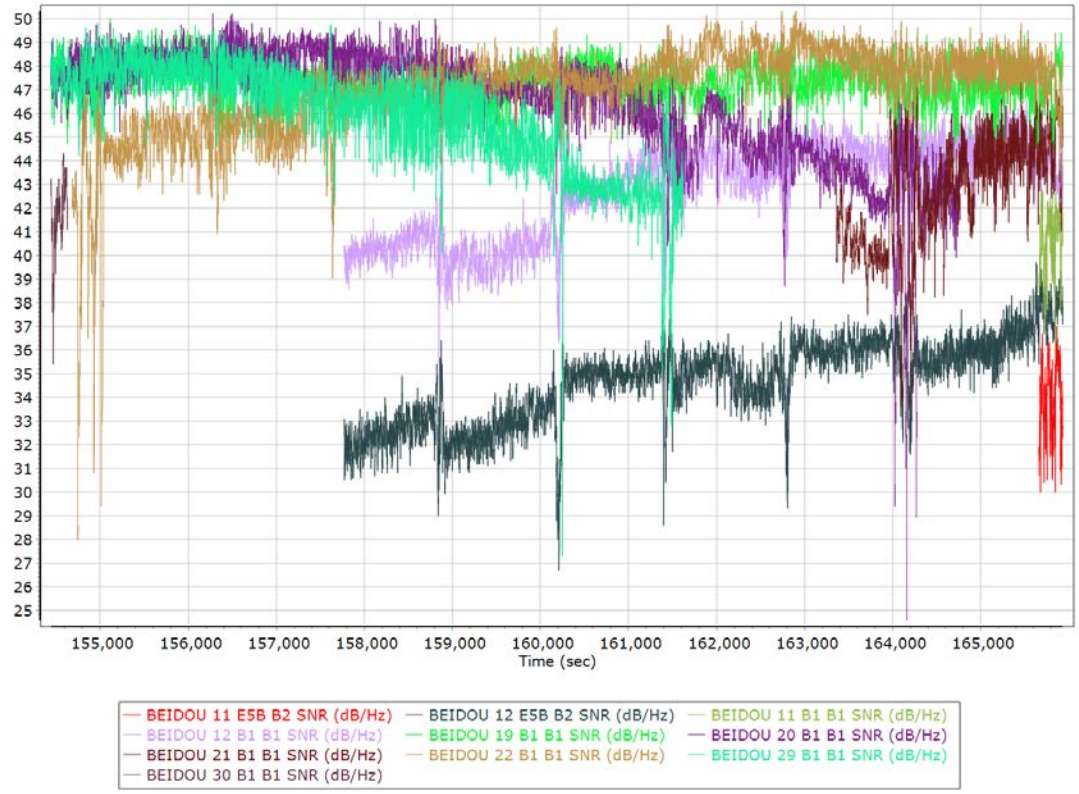
GLONASS L2 SNR



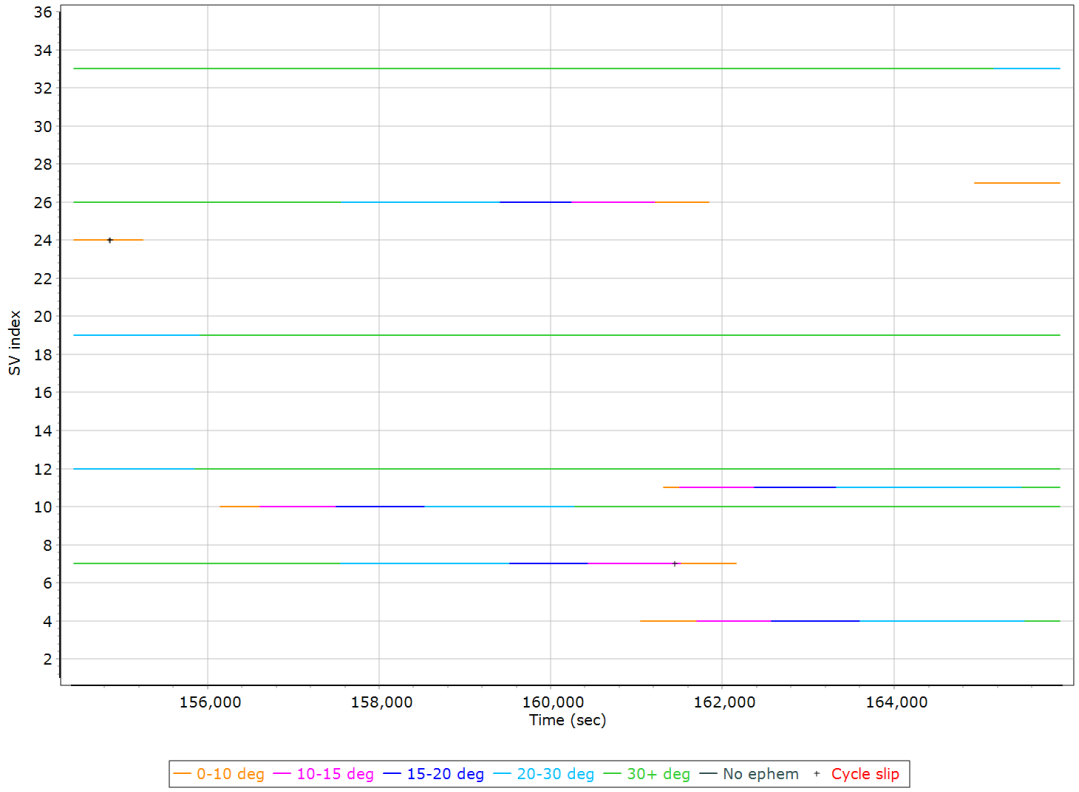
BEIDOU Satellite Lock/Elevation



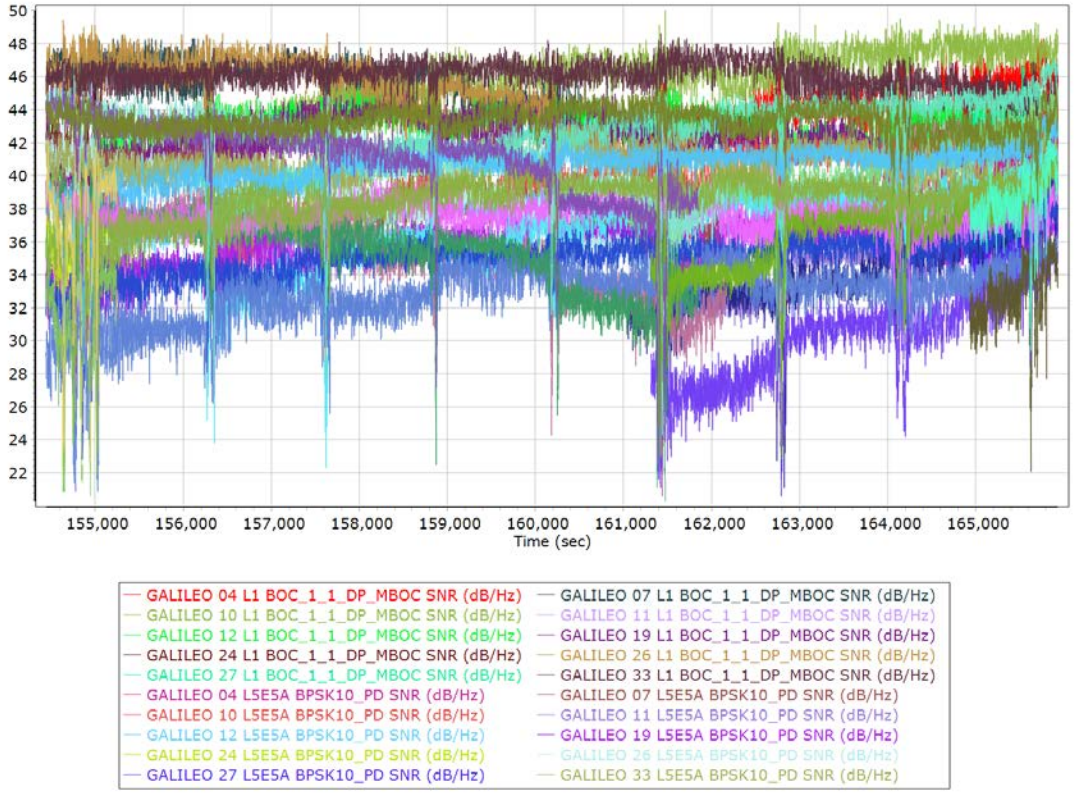
BEIDOU SNR



GALILEO Satellite Lock/Elevation

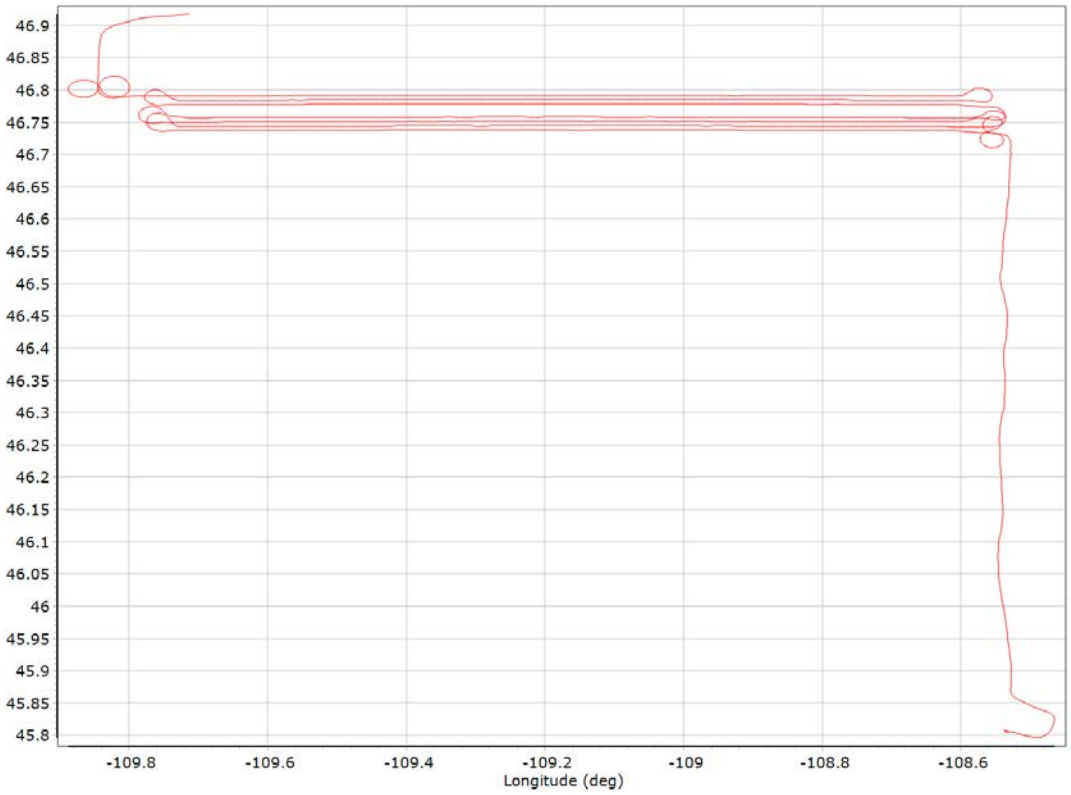


GALILEO SNR

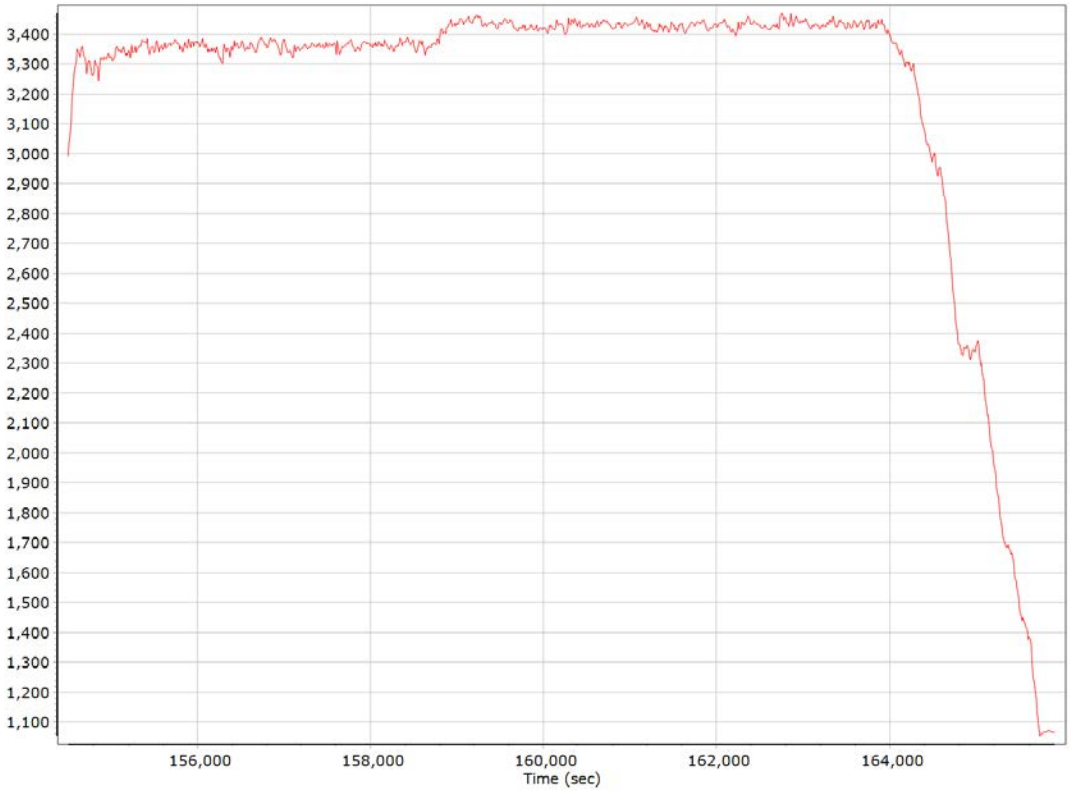

50
48
46
44
42
40
38
36
34
32
30
28
26
24
22
155,000
156,000
157,000
158,000
159,000
160,000
161,000
162,000
163,000
164,000
165,000
Time (sec)
GALILEO 04 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 07 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 10 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 11 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 12 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 19 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 24 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 26 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 27 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 33 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 04 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 07 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 10 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 11 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 12 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 19 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 24 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 26 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 27 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 33 L5E5A BPSK10_PD SNR (dB/Hz)

Smoothed Trajectory Information

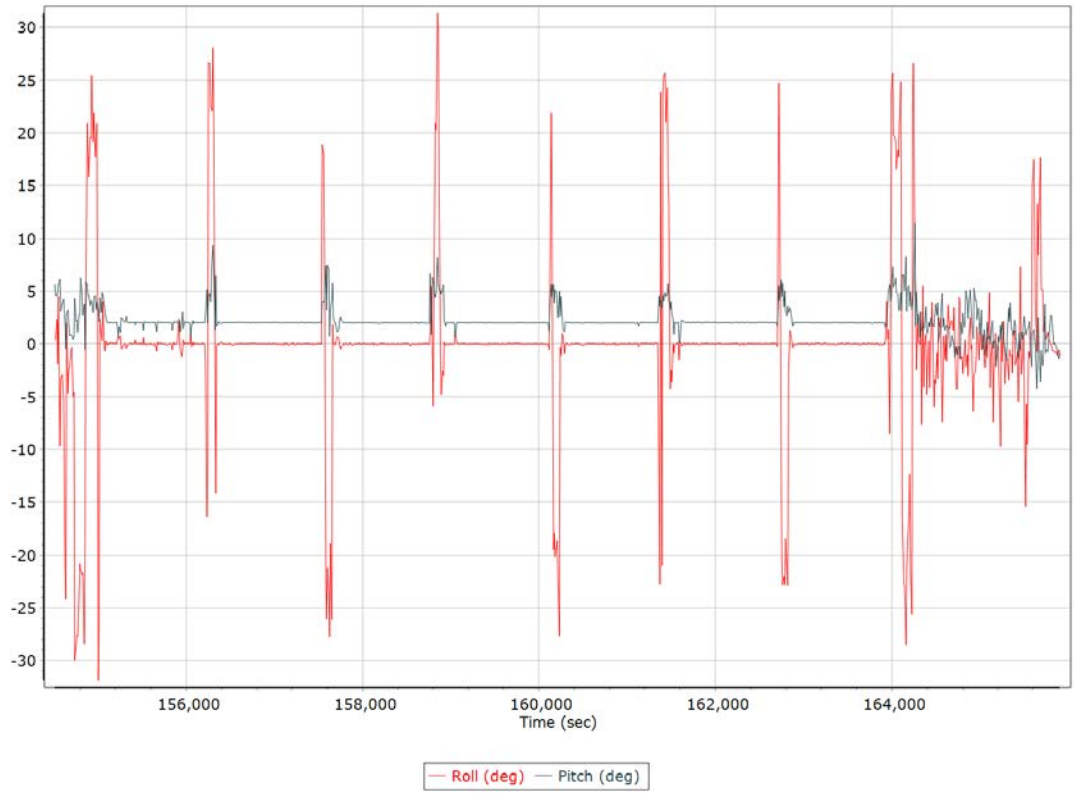
Top View



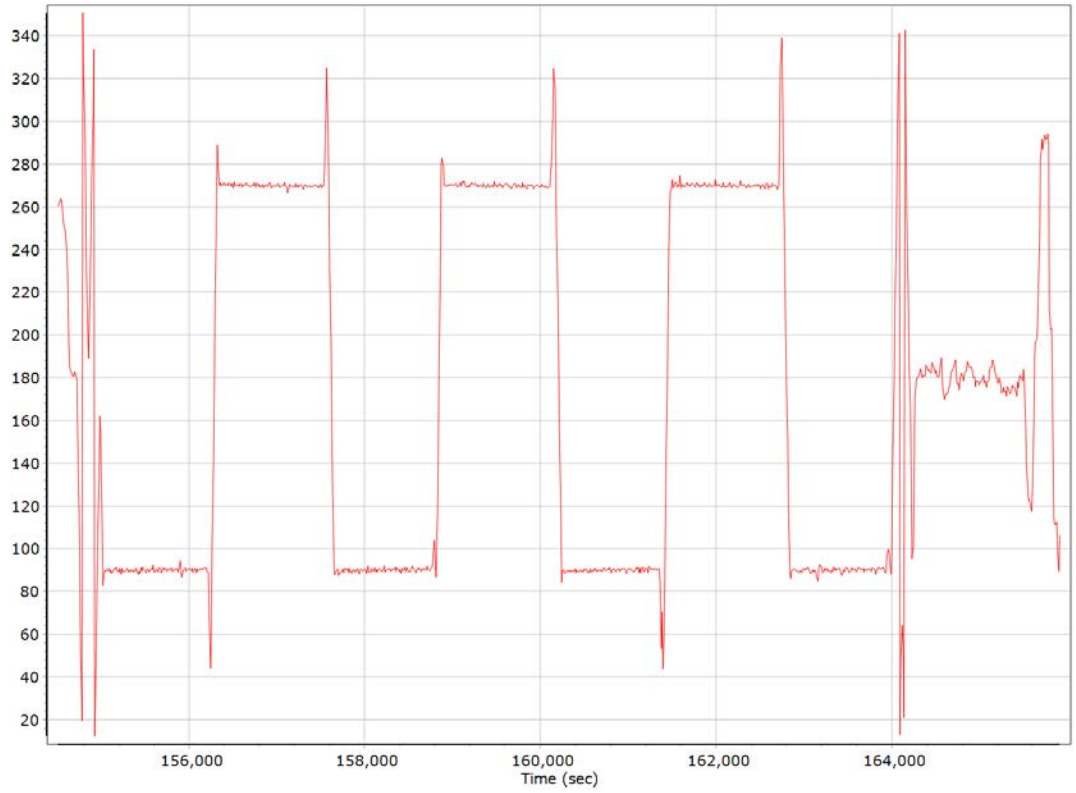
Altitude



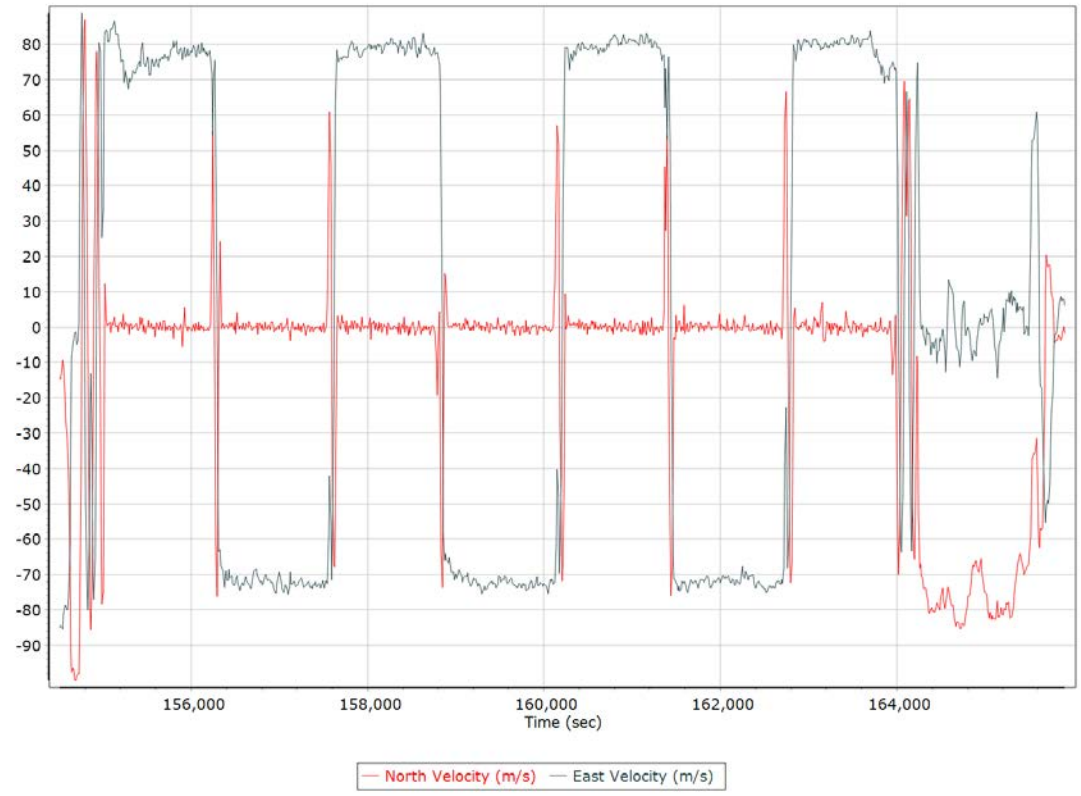
Roll/Pitch



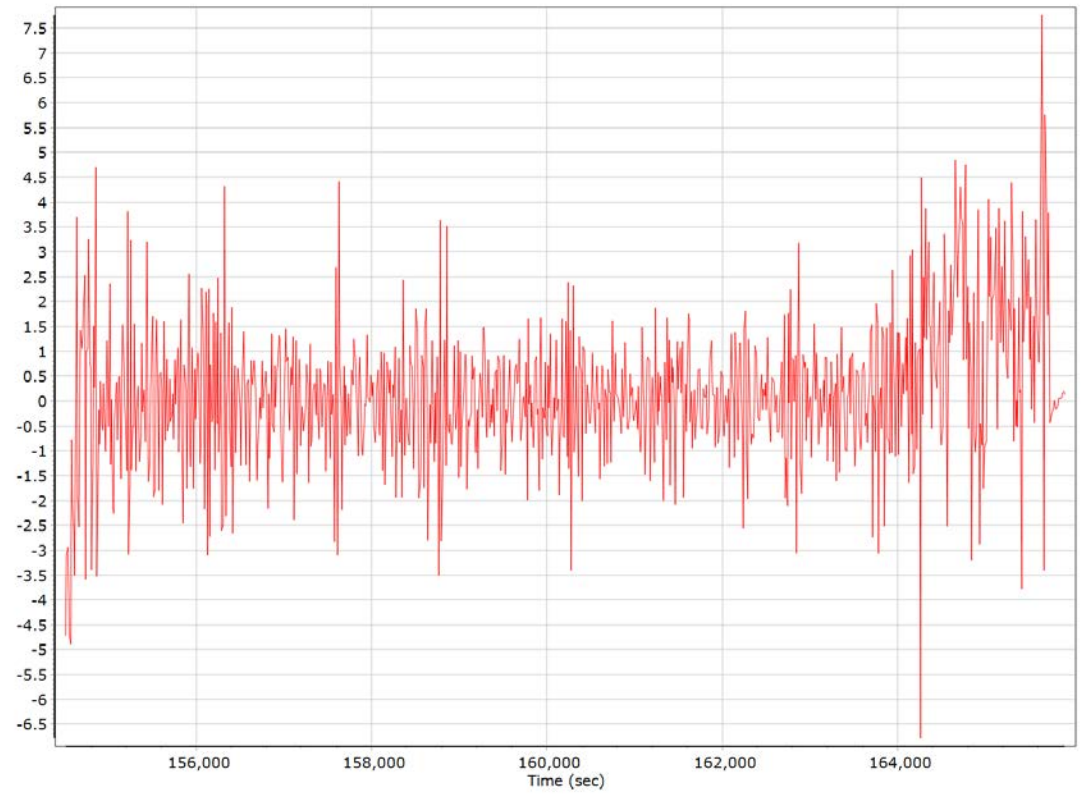
Heading



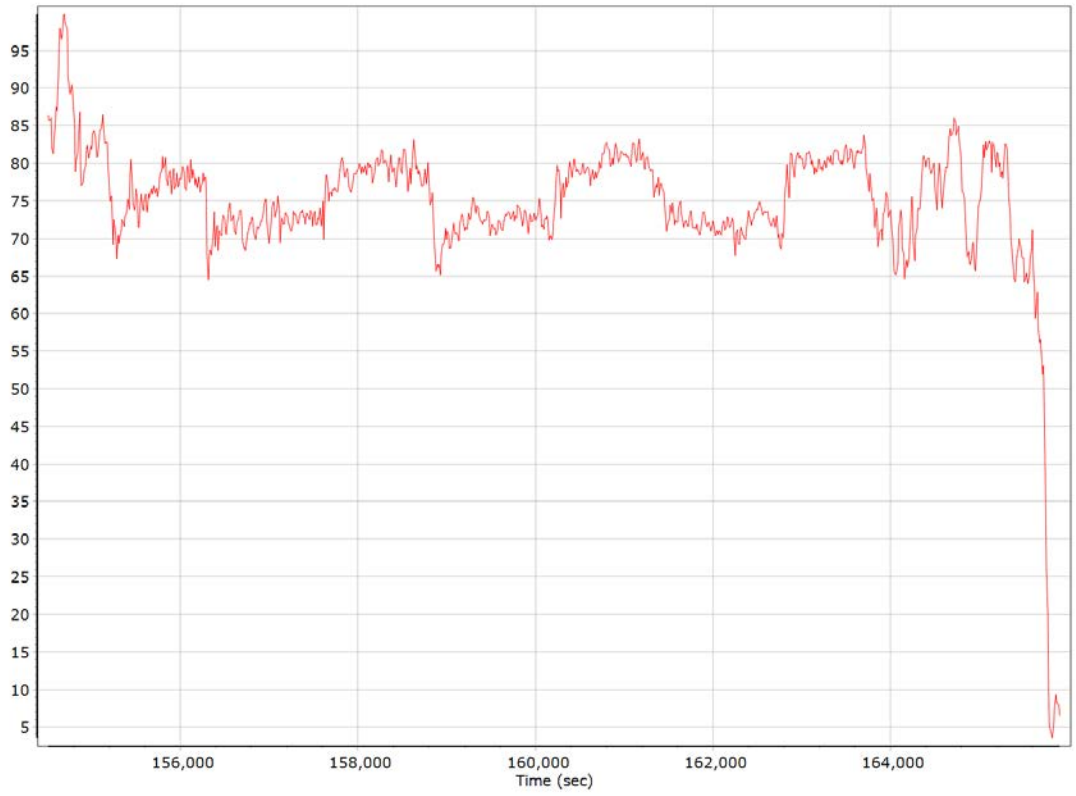
North/East Velocity



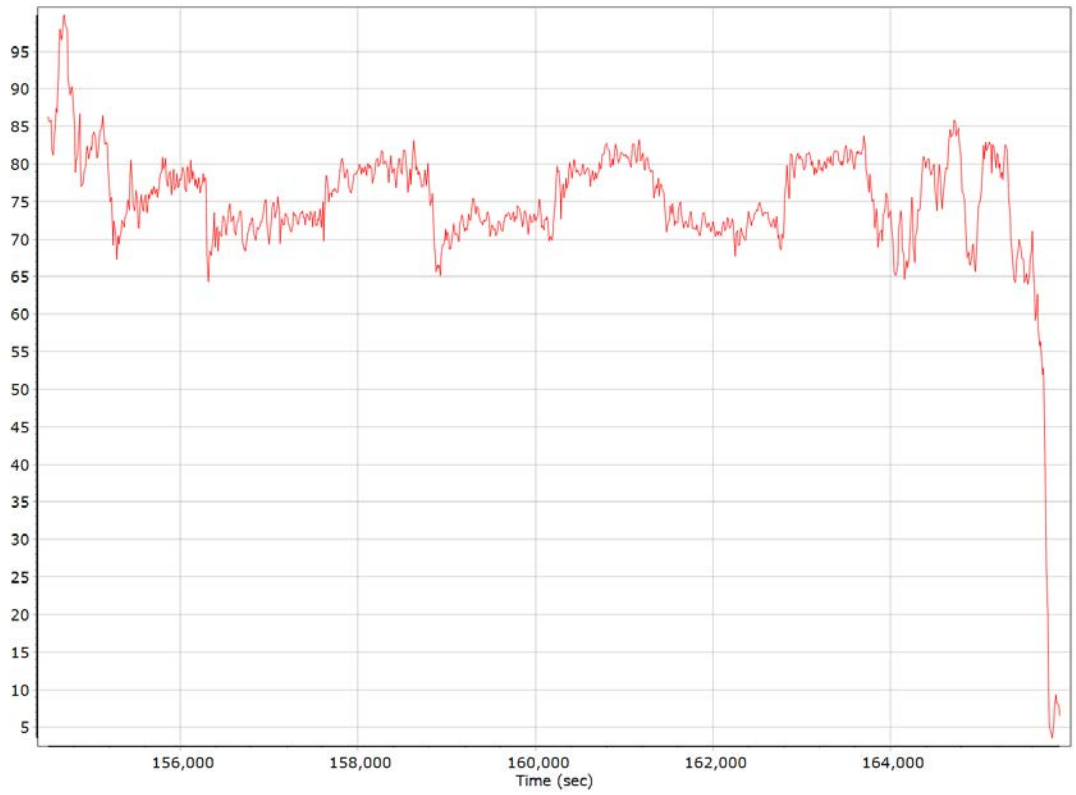
Down Velocity



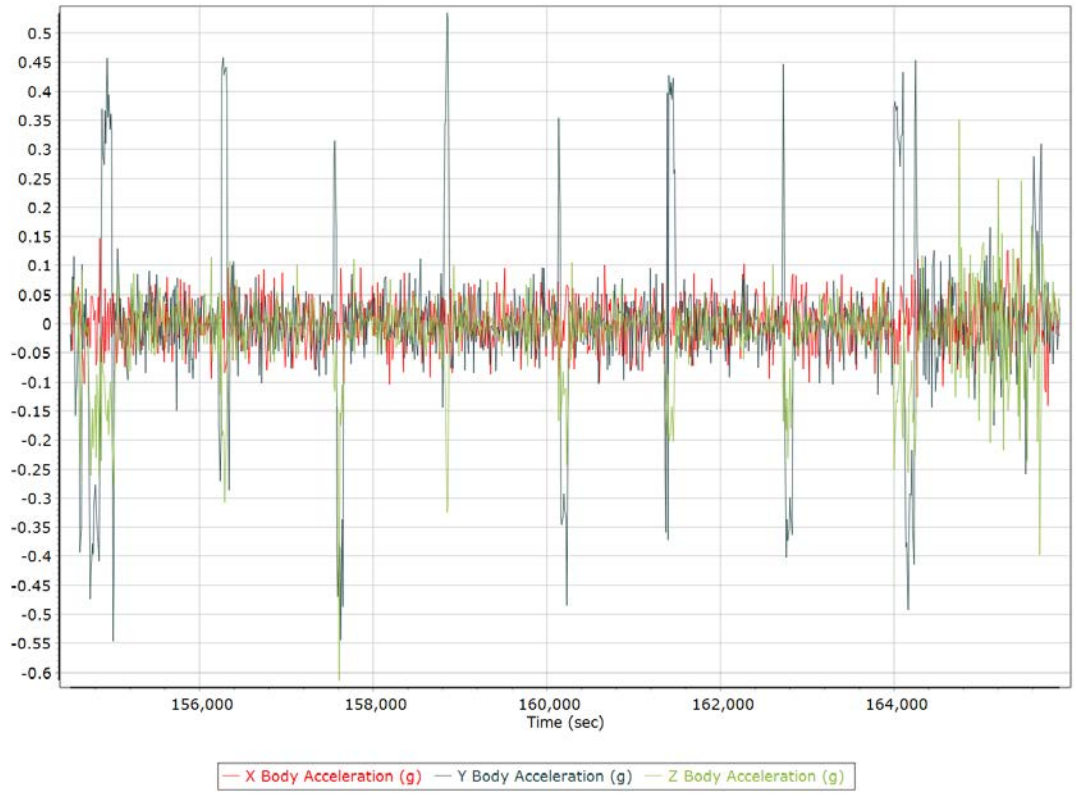
Total Speed



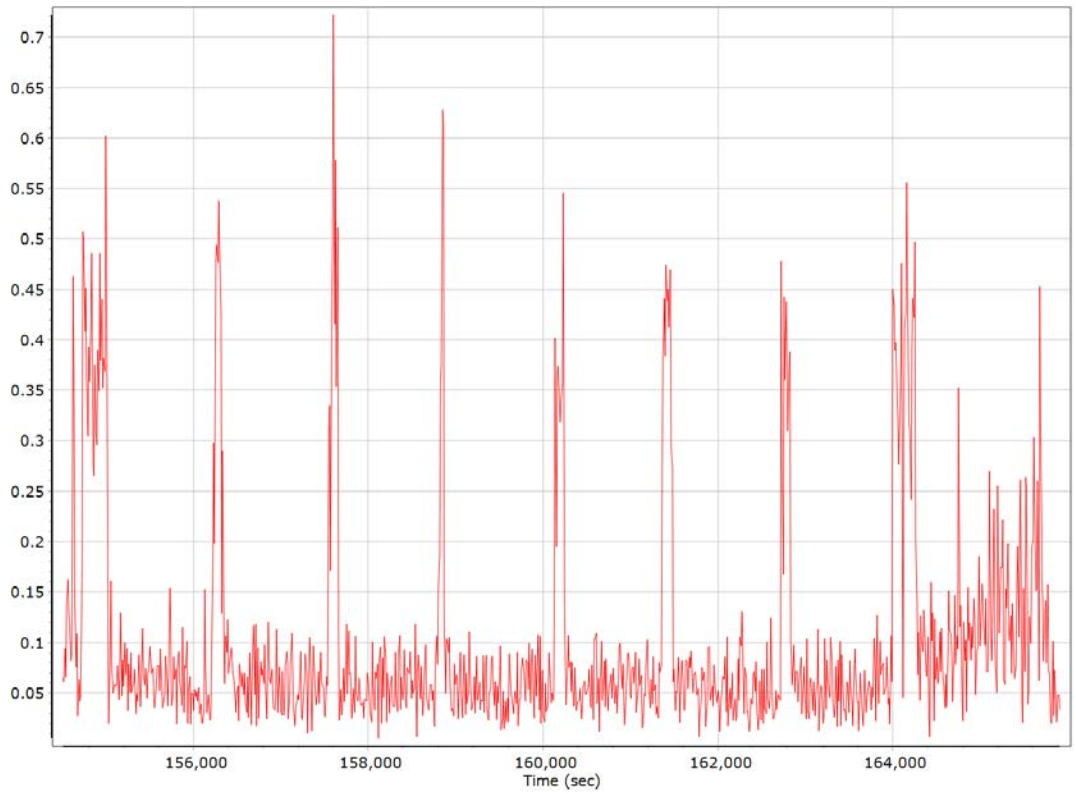
Ground Speed



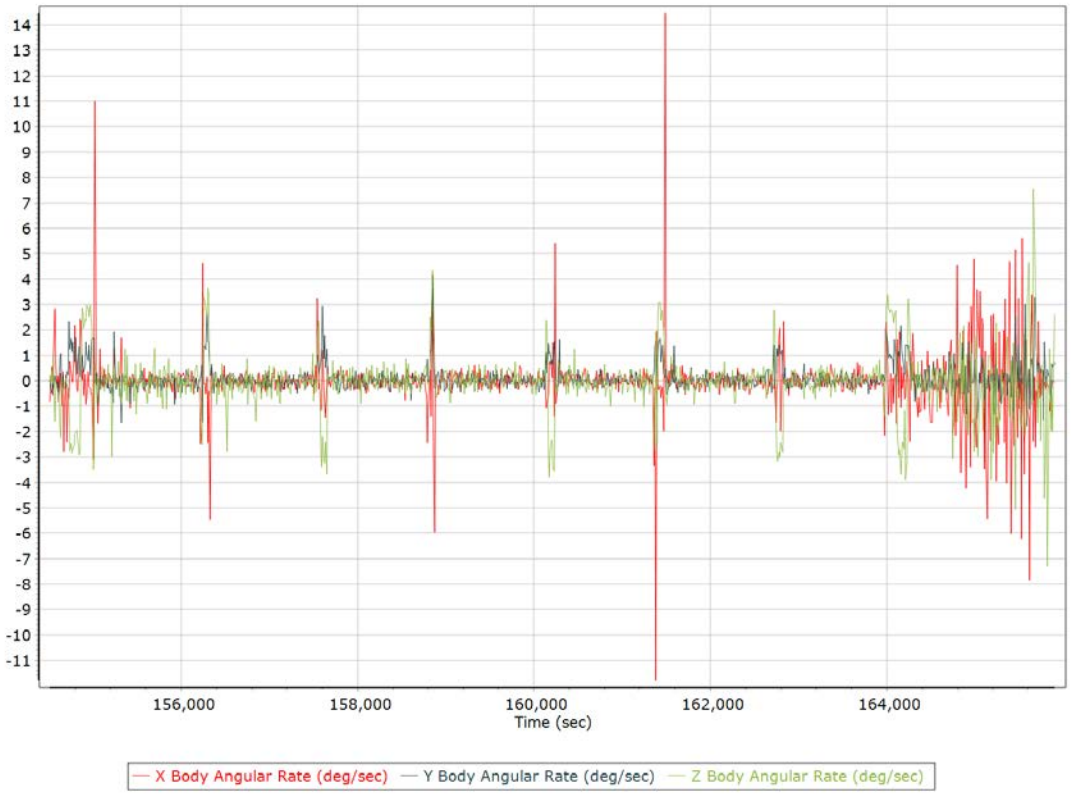
Body Acceleration



Total Body Acceleration

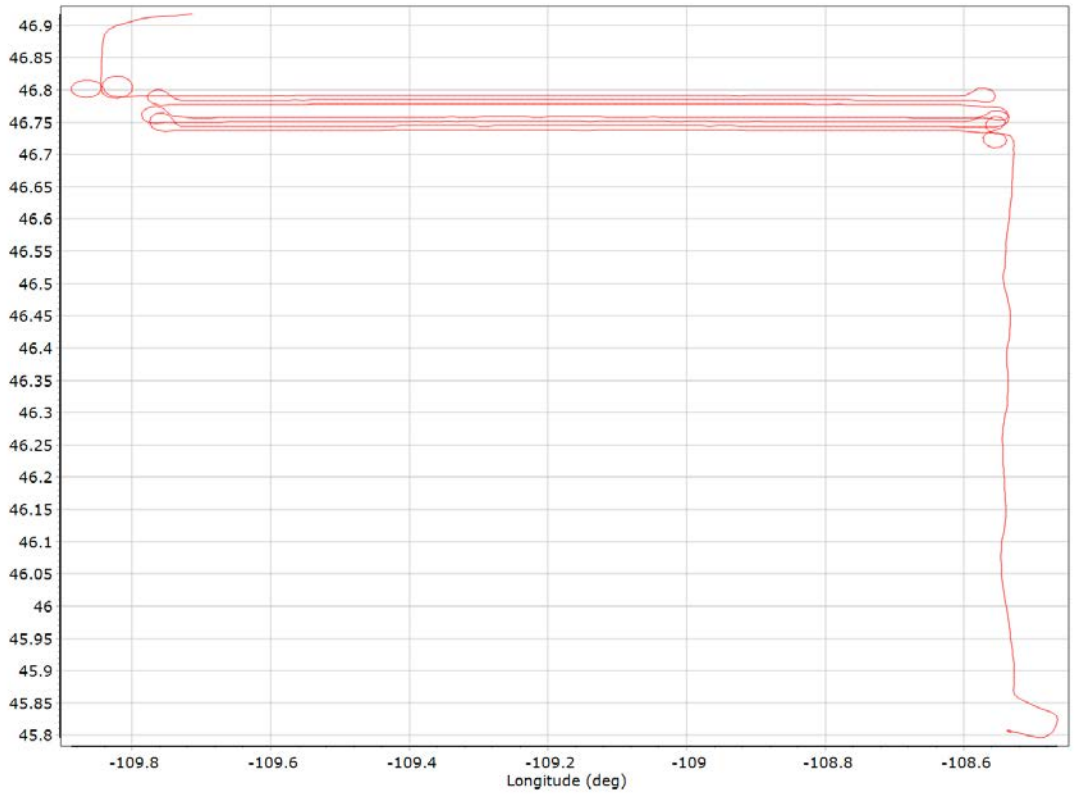


Body Angular Rate

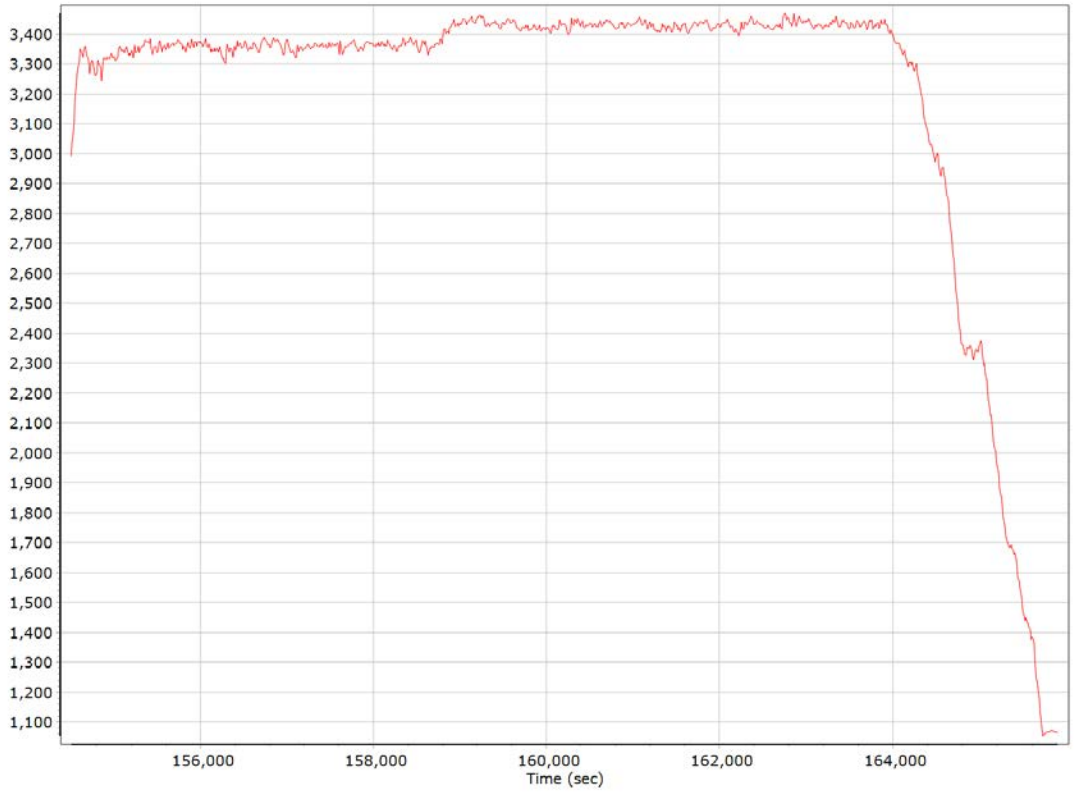


Forward Processed Trajectory Information

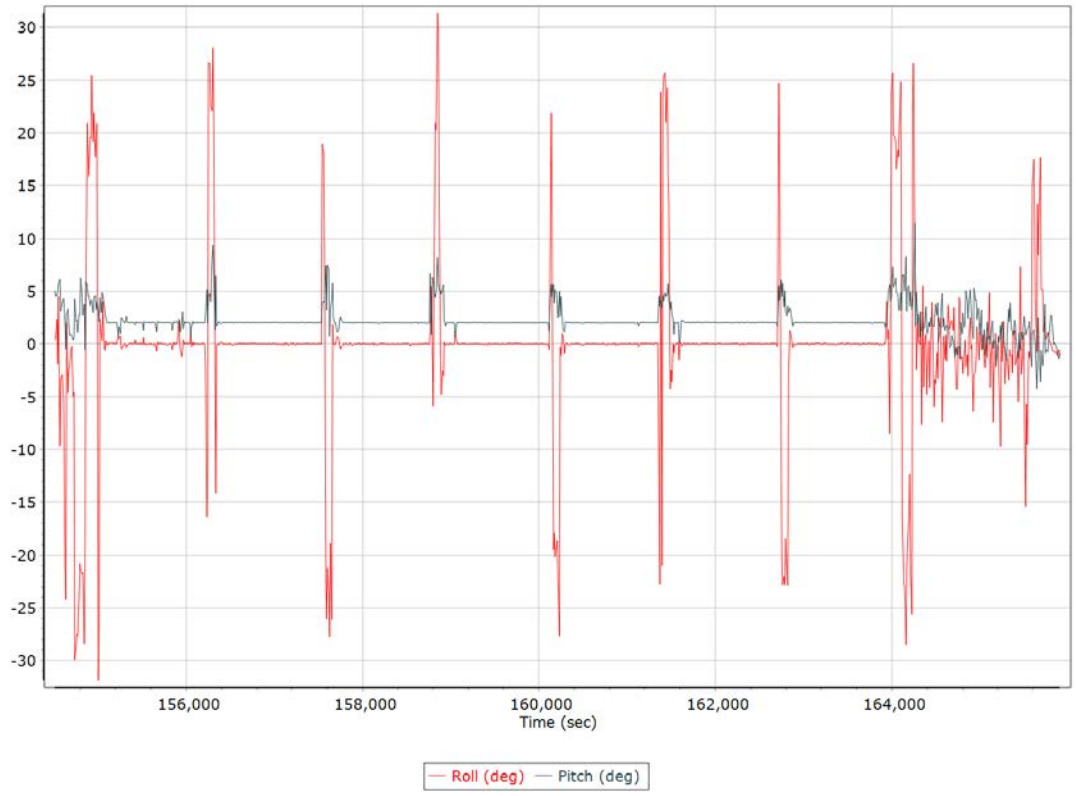
Top View



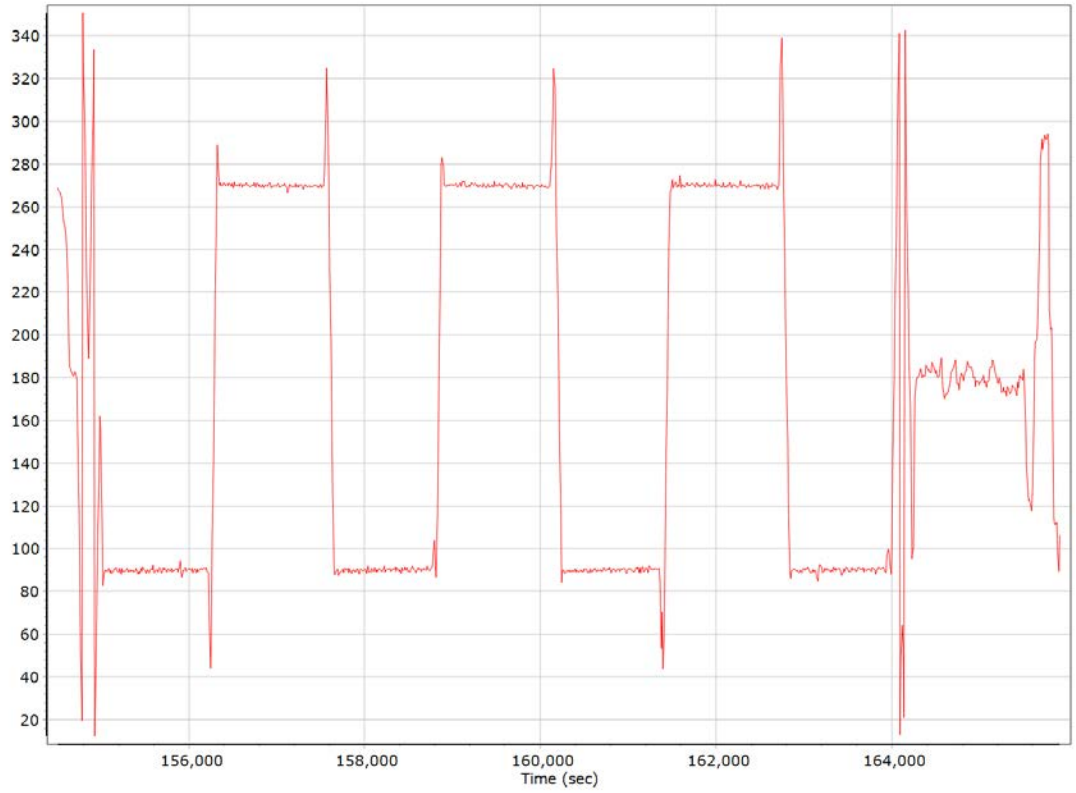
Altitude



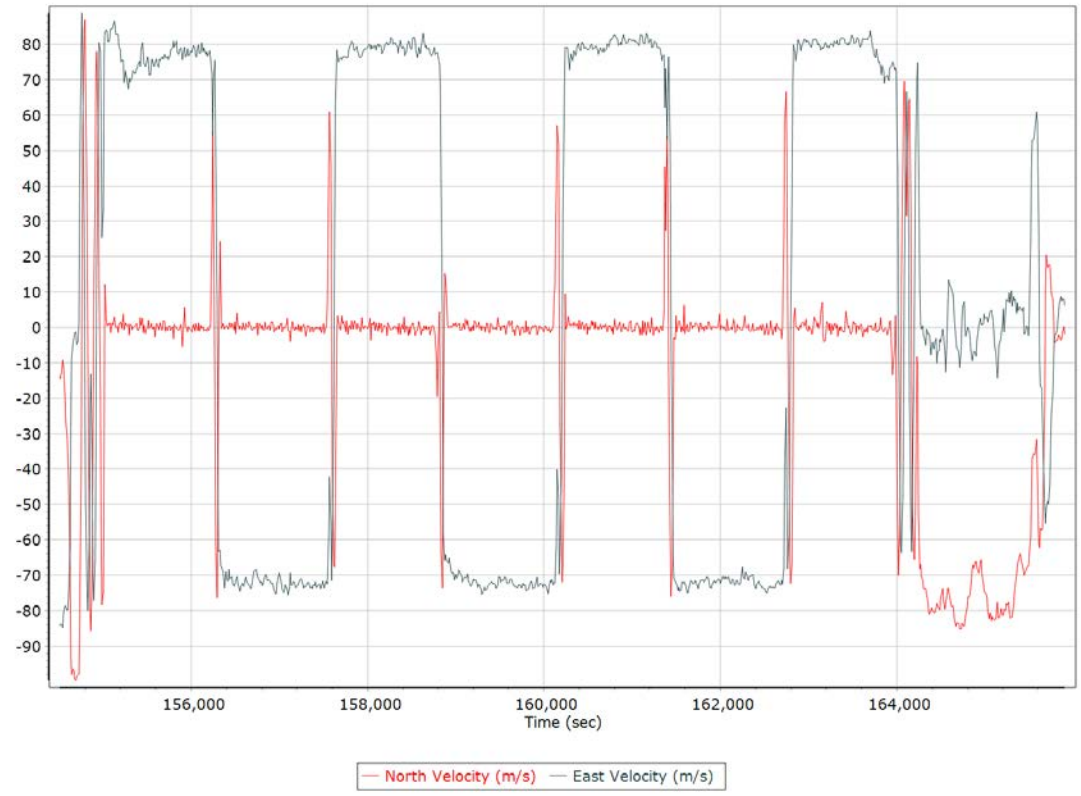
Roll/Pitch



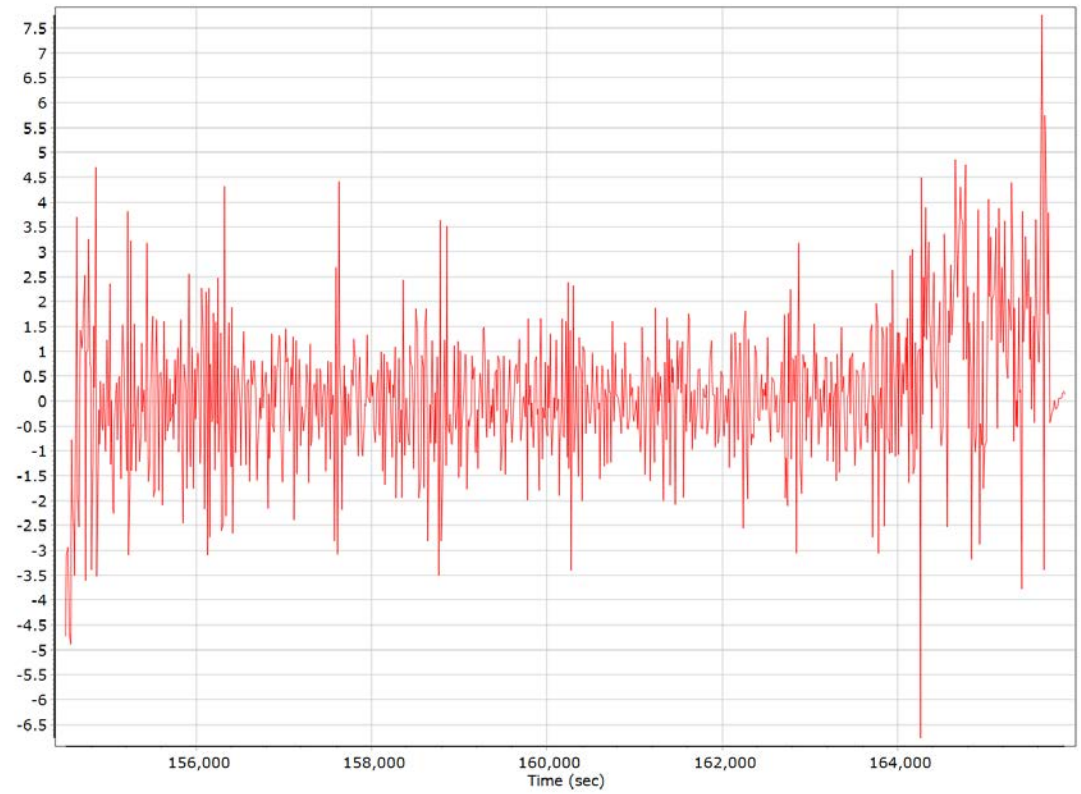
Heading



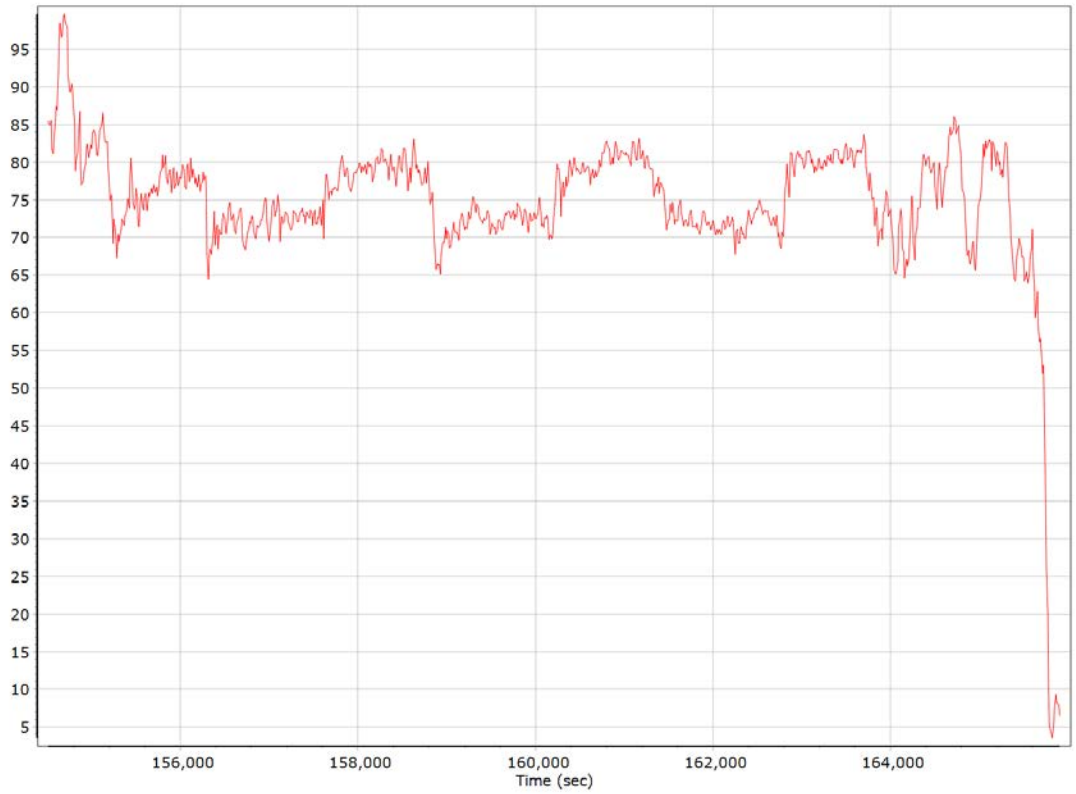
North/East Velocity



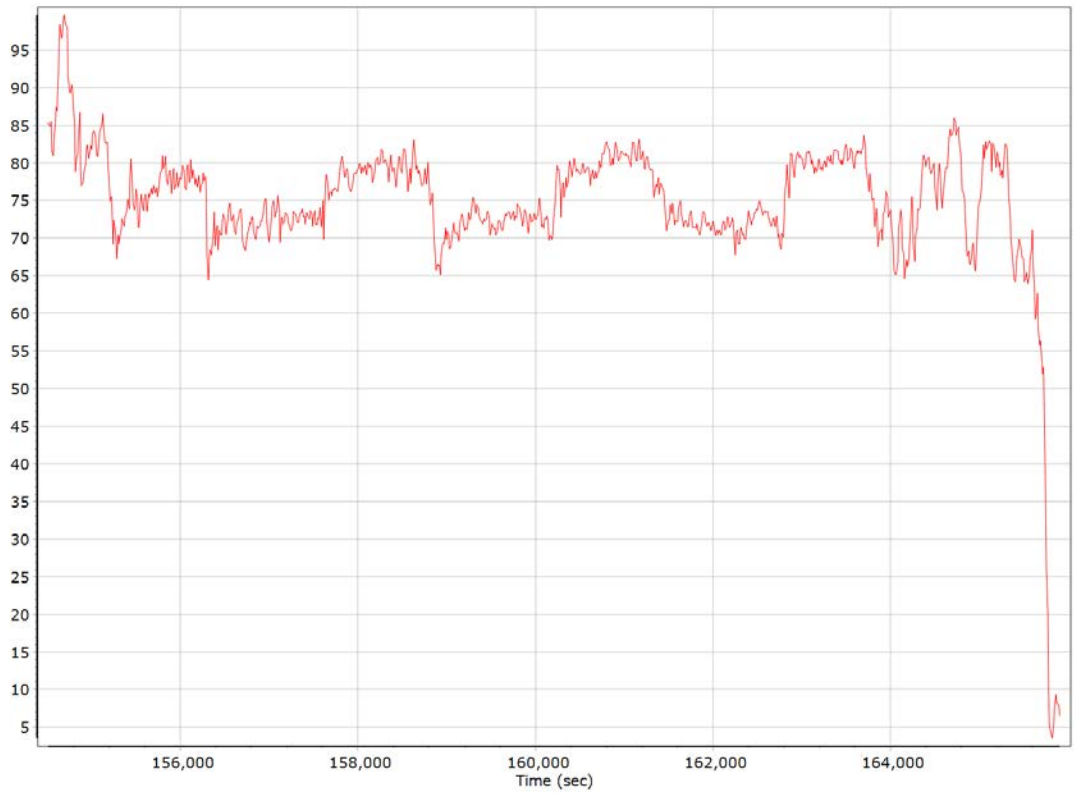
Down Velocity



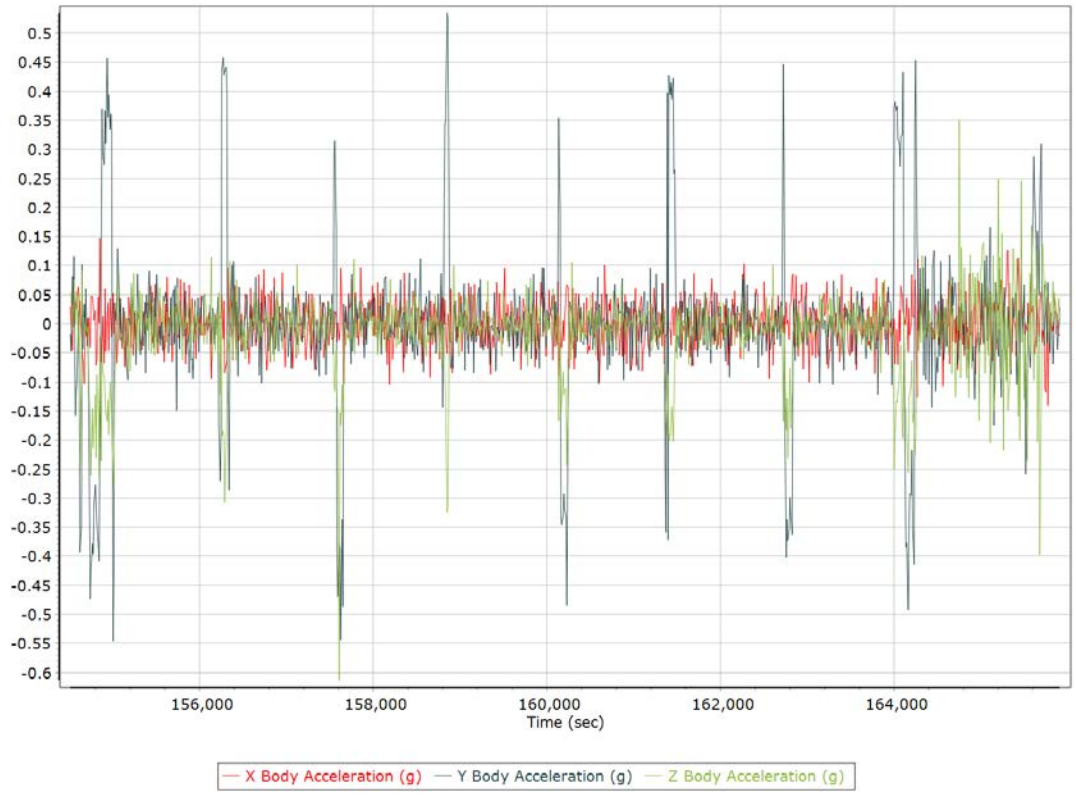
Total Speed



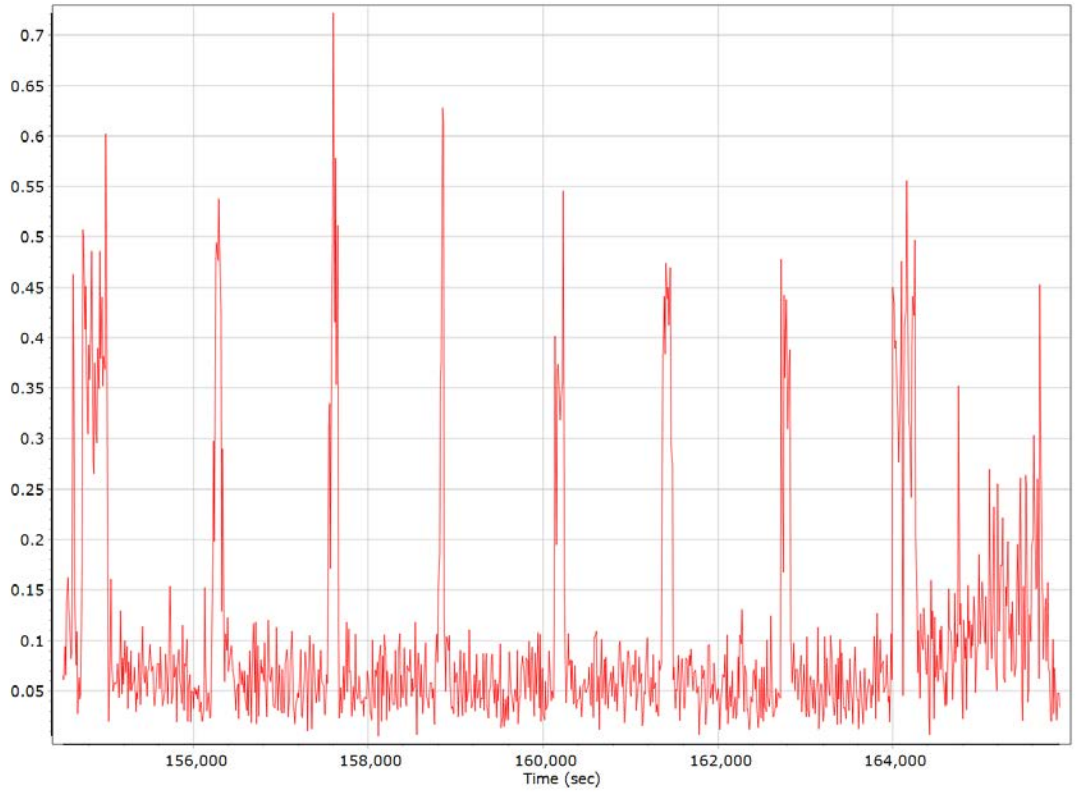
Ground Speed



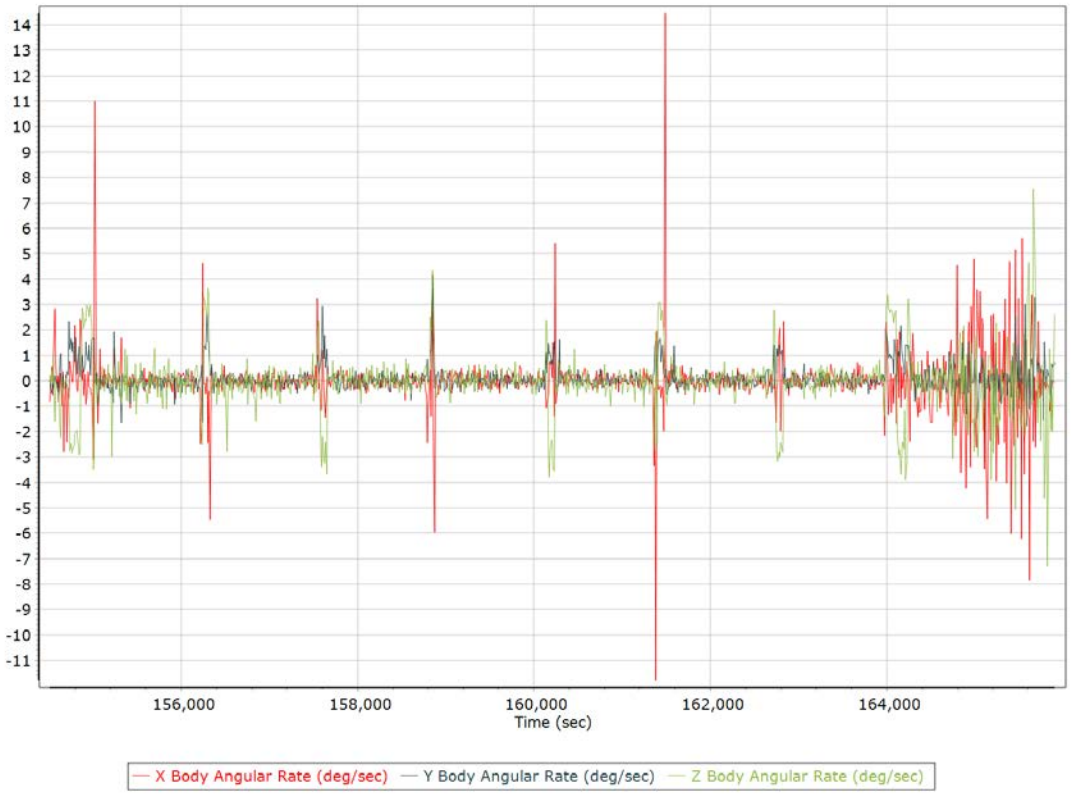
Body Acceleration



Total Body Acceleration



Body Angular Rate

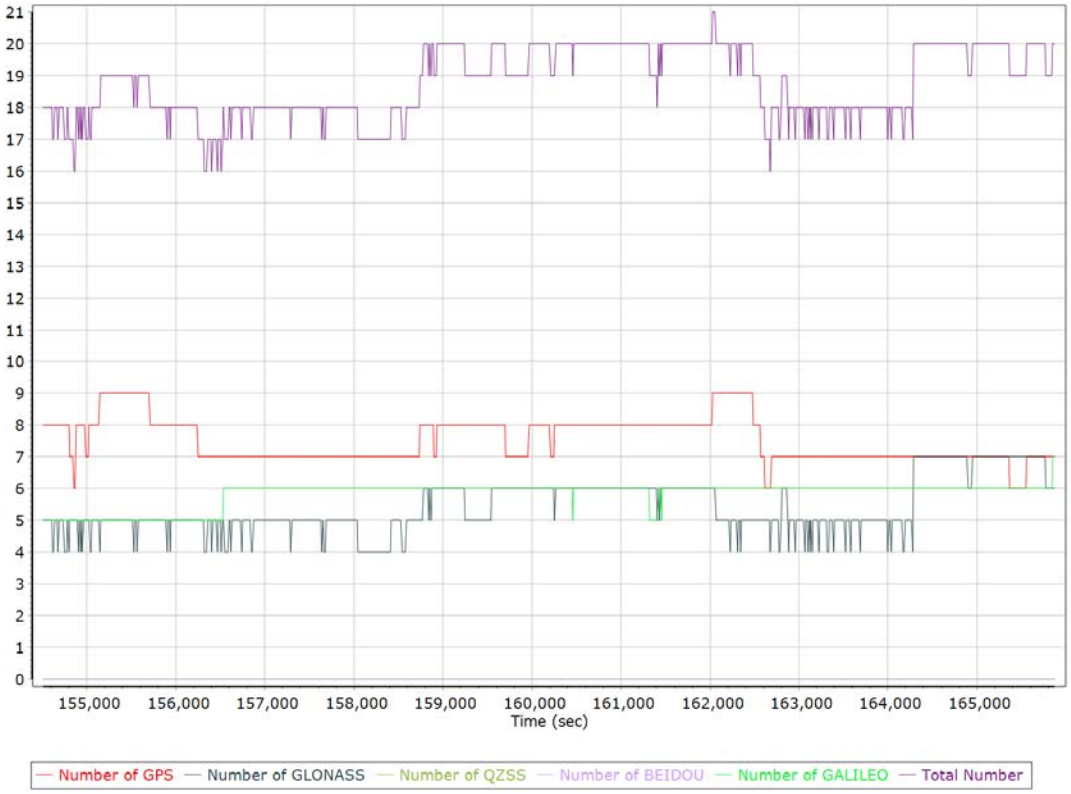


GNSS QC

GNSS QC Statistics

Statistics	Min	Max	Mean
Baseline length (km)	0.00	0.00	
Number of GPS SV	6	9	8
Number of GLONASS SV	3	7	5
Number of QZSS SV	0	0	0
Number of BEIDOU SV	0	0	0
Number of GALILEO SV	5	7	6
Total number of SV	15	21	19
PDOP	1.06	1.61	1.21
QC Solution Gaps	0.00	0.00	
Solution Type	Fixed	Float	No solution
Epoch (sec)	11429.00	0.00	0.00
Percentage	100.00	0.00	0.00

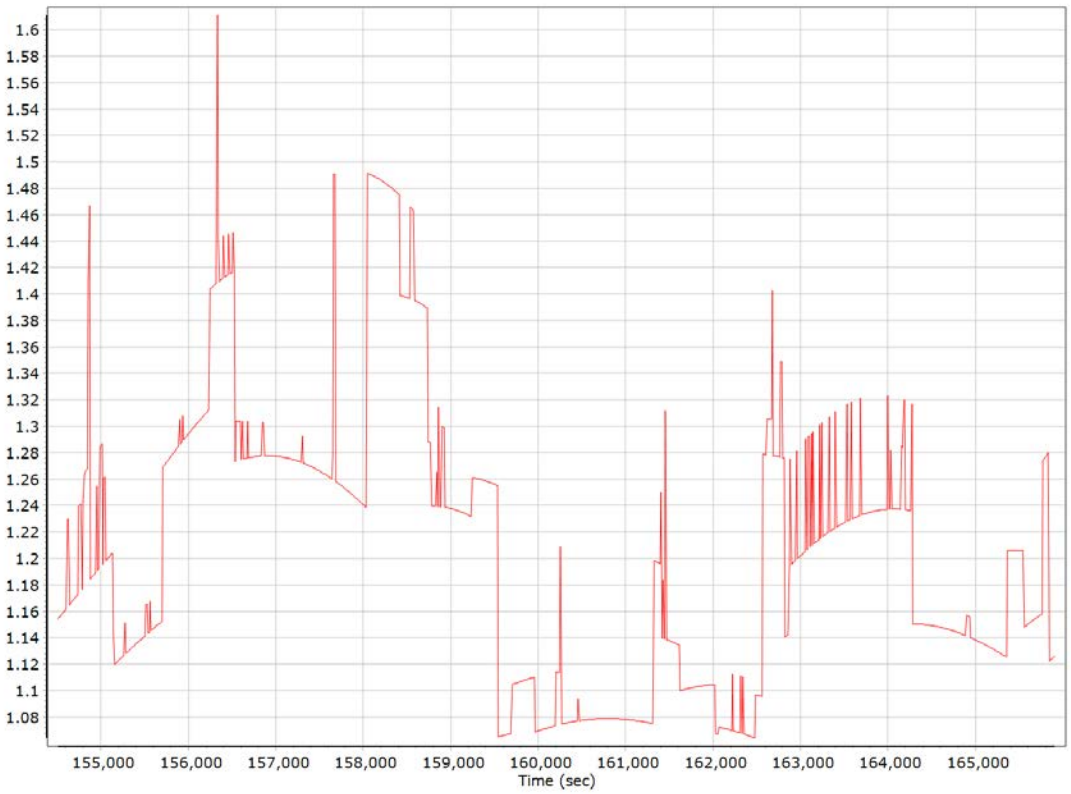
Num SVs in solution



Forward/Reverse Separation



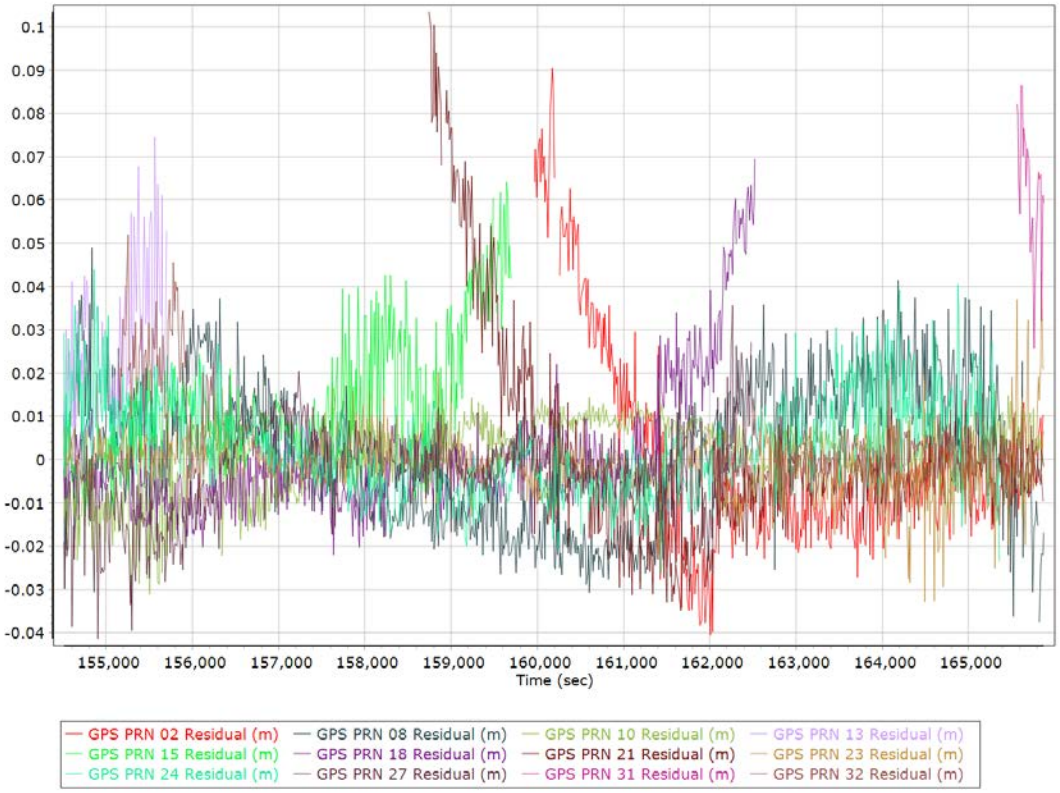
PDOP



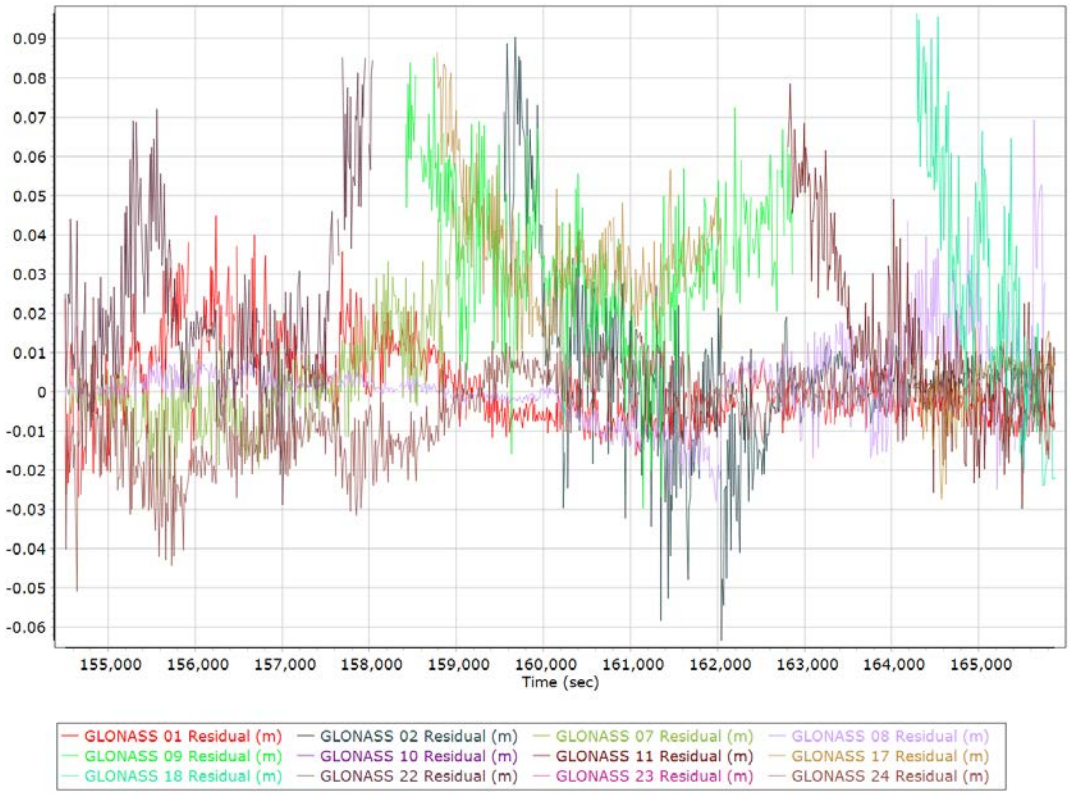
Estimated Position Accuracy



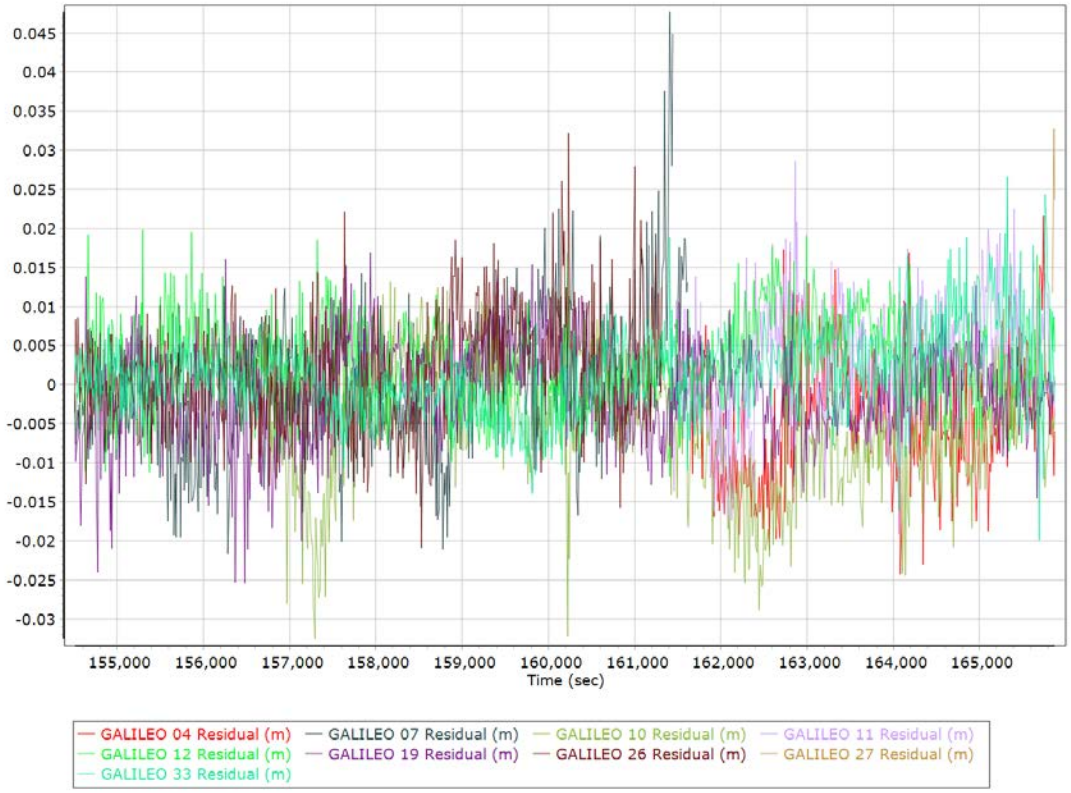
GPS Residuals



GLONASS Residuals



GALILEO Residuals



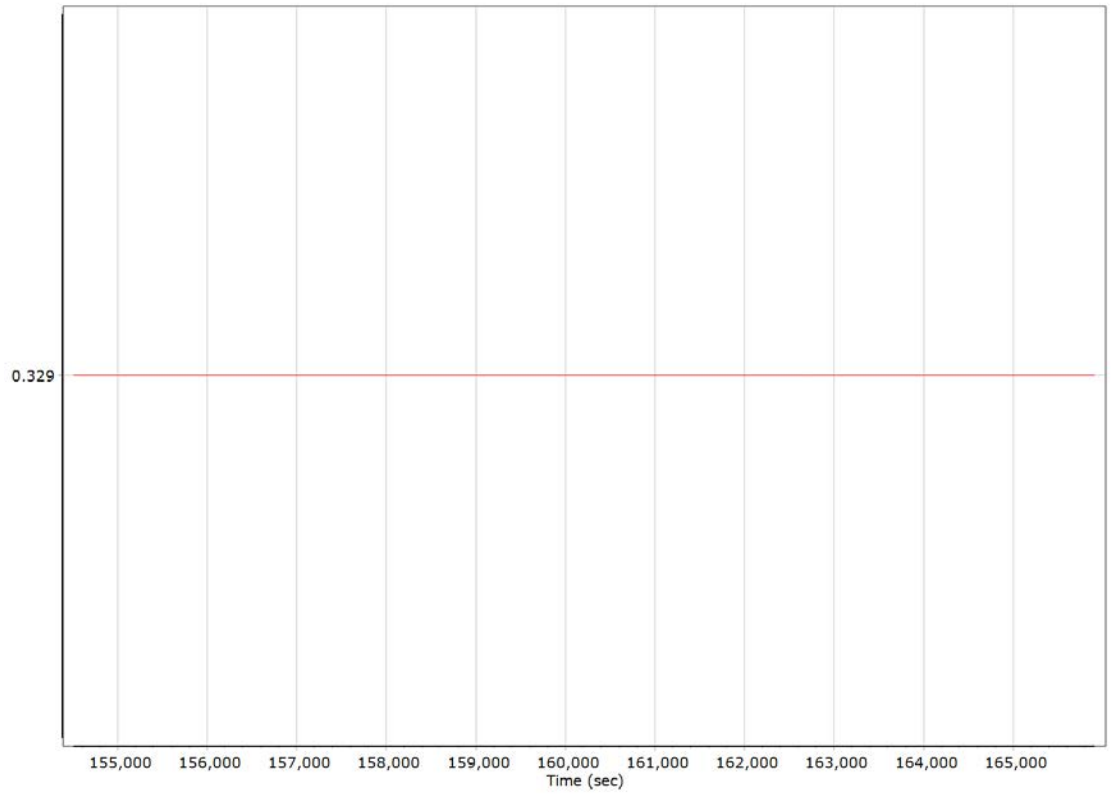
GNSS-Inertial Processor Configuration

Processing mode	IN-Fusion PP-RTX		
Stabilized mount	True		
Processing start time	154424.000 (8/14/2023 6:53:44 PM)		
Processing end time	165914.000 (8/14/2023 10:05:14 PM)		
Initial attitude source	Primary GNSS Track		
IMU Sensor Context	Processing with Onboard IMU		
Gimbal to IMU lever arm (m)	-0.034	-0.010	-0.374
Gimbal to IMU mounting angles (deg)	0.000	0.000	0.000
Gimbal to Primary GNSS lever arm (m)	0.329	-0.067	-1.393
Gimbal to Primary GNSS lever arm std dev (m)	0.030	0.030	0.030
Aircraft to Reference mounting angles (deg)	0.000	0.000	0.000

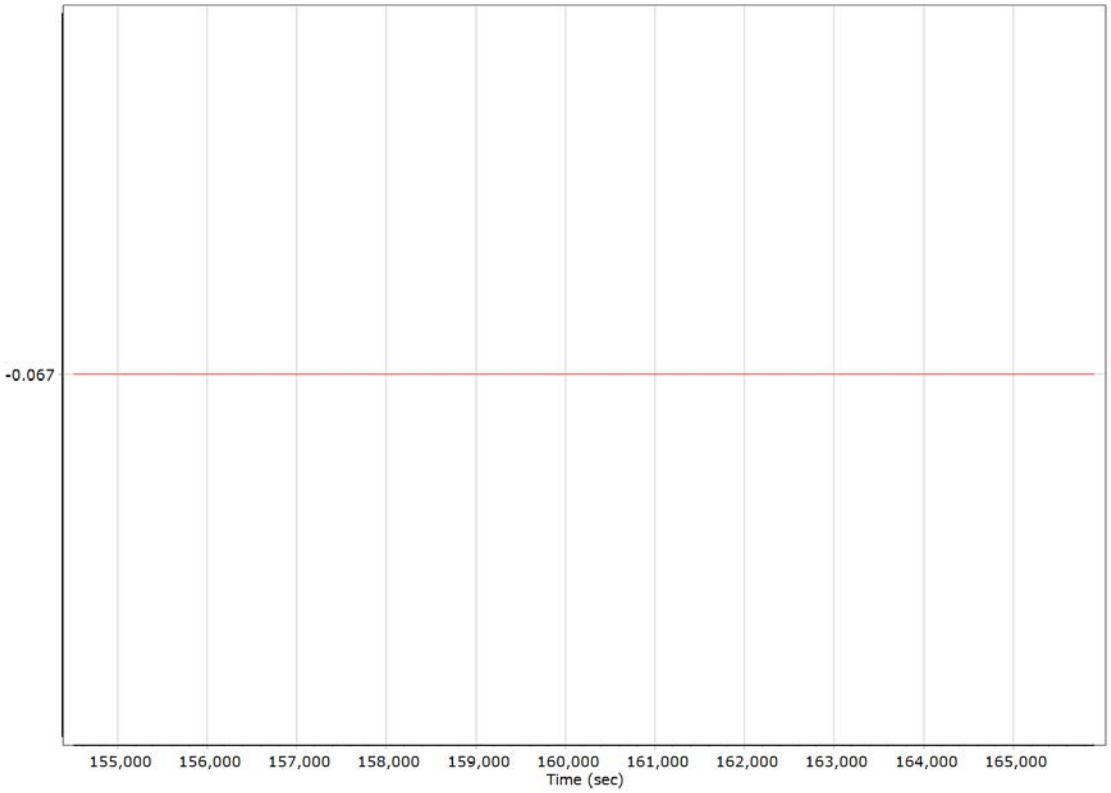
Calibrated Installation Parameters

Reference-Primary GNSS Lever Arm (m)

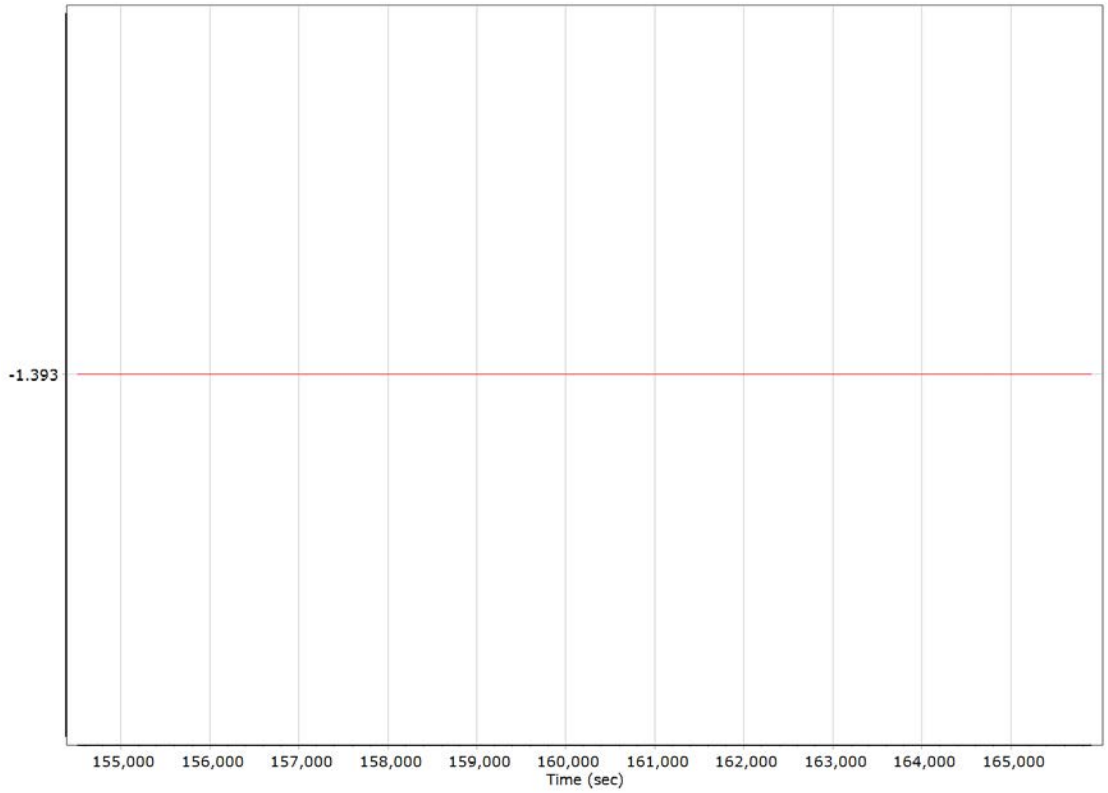
X Reference-Primary GNSS Lever Arm (m)



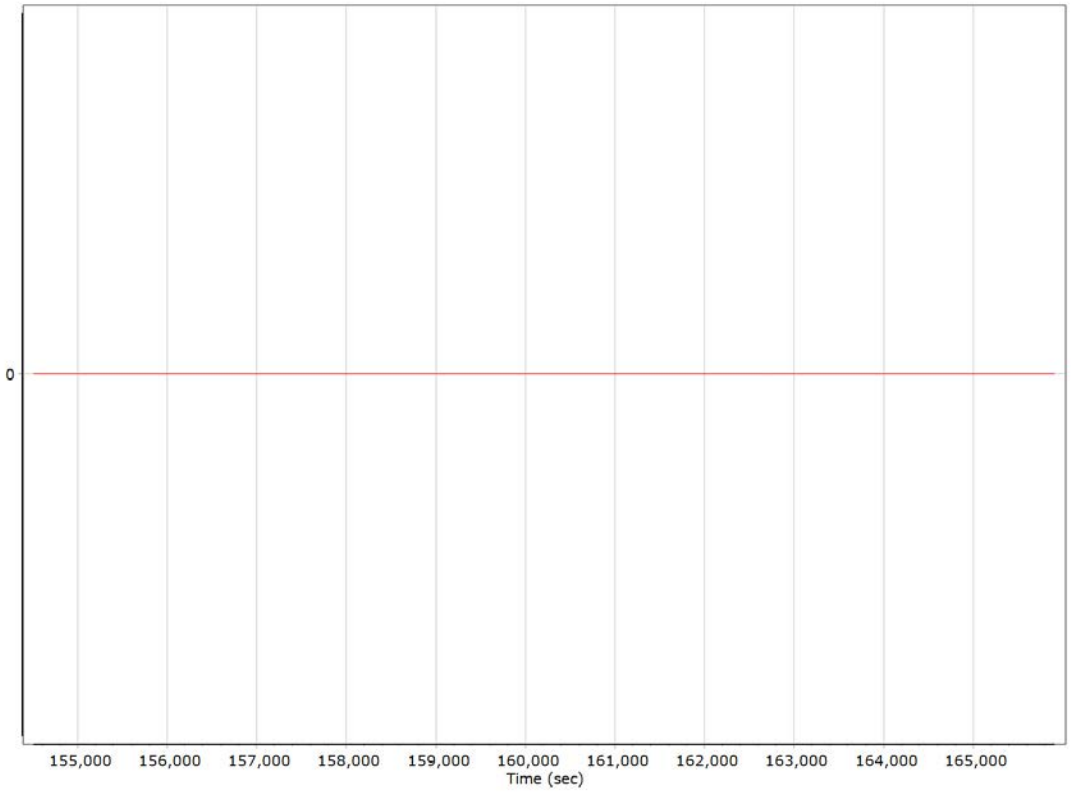
Y Reference-Primary GNSS Lever Arm (m)



Z Reference-Primary GNSS Lever Arm (m)



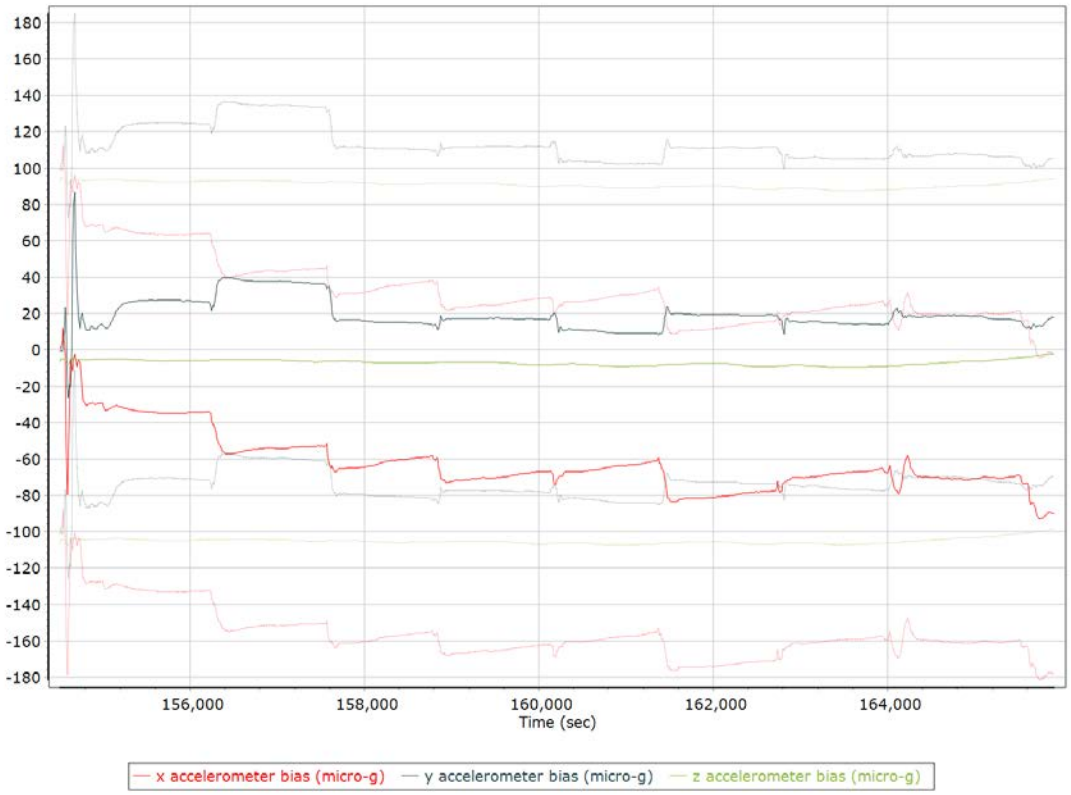
Reference-Primary GNSS Lever Arm Figure of Merit



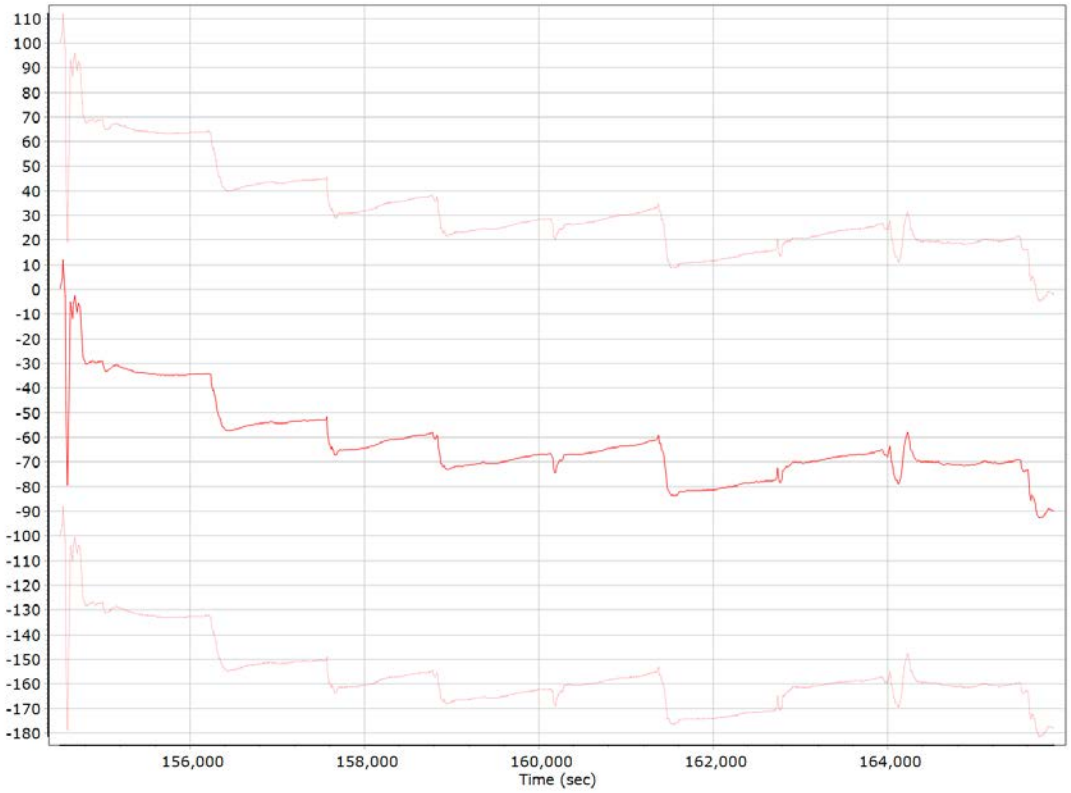
IN-Fusion QC

Forward Processed Estimated Errors, Reference Frame

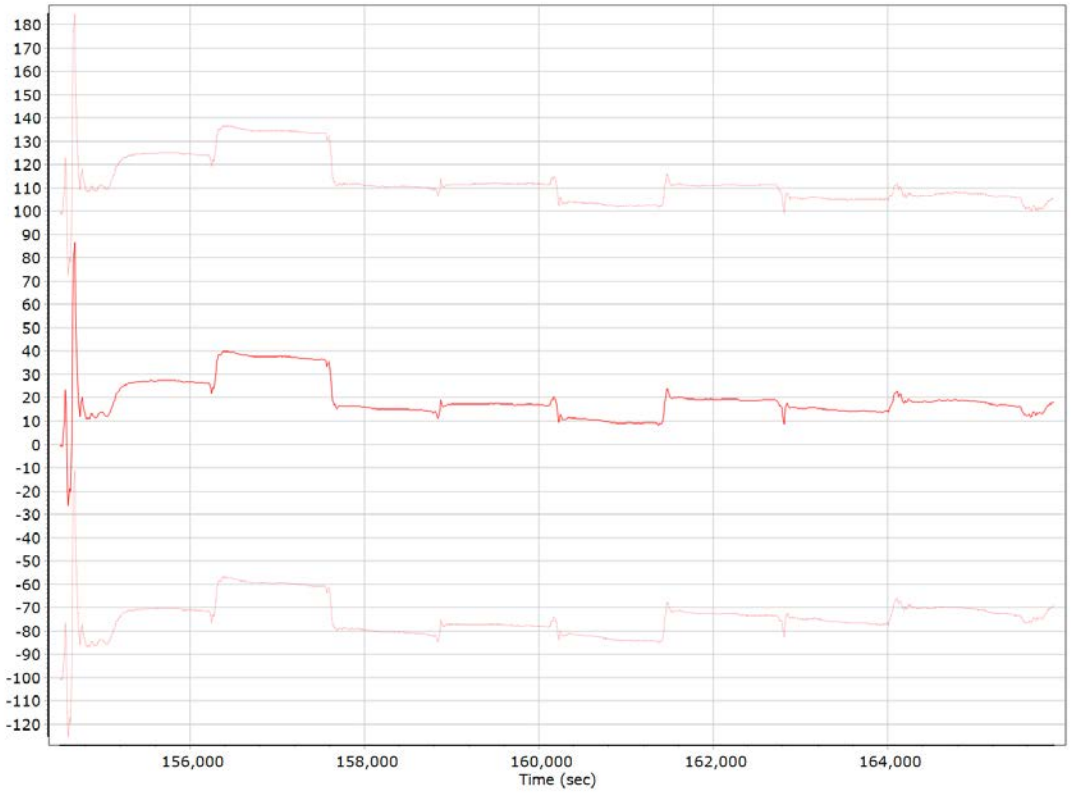
Accelerometer Bias (micro-g)



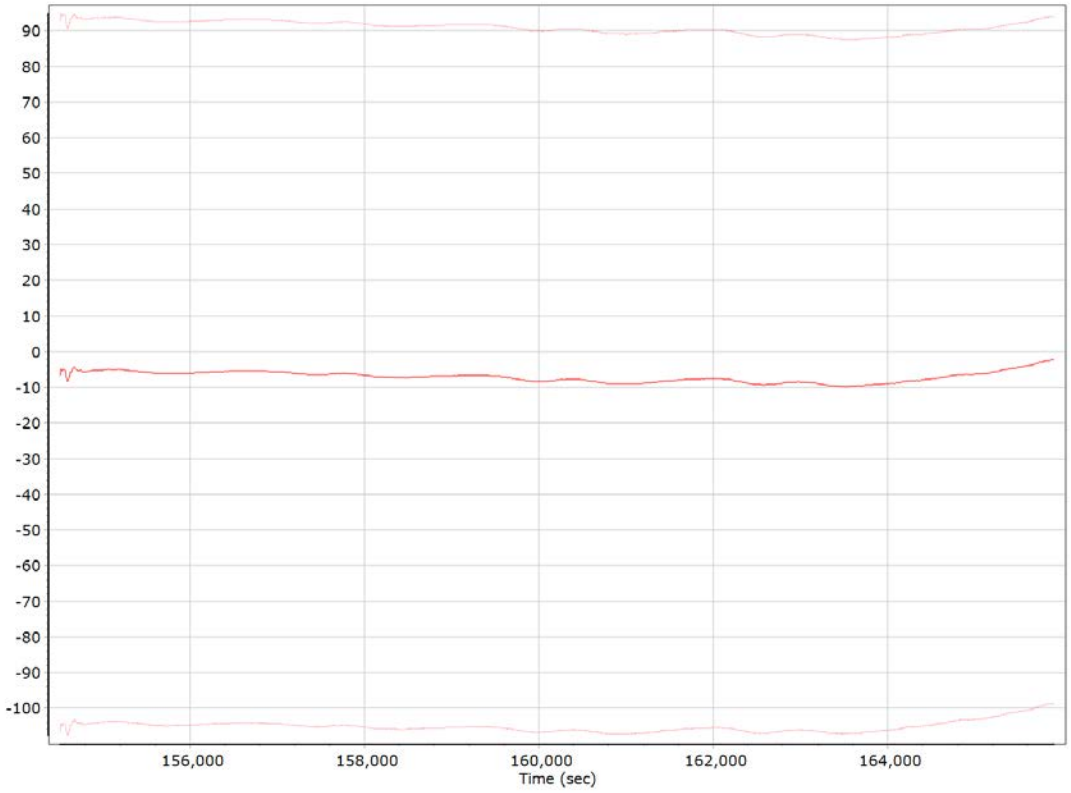
X Accelerometer Bias (micro-g)



Y Accelerometer Bias (micro-g)



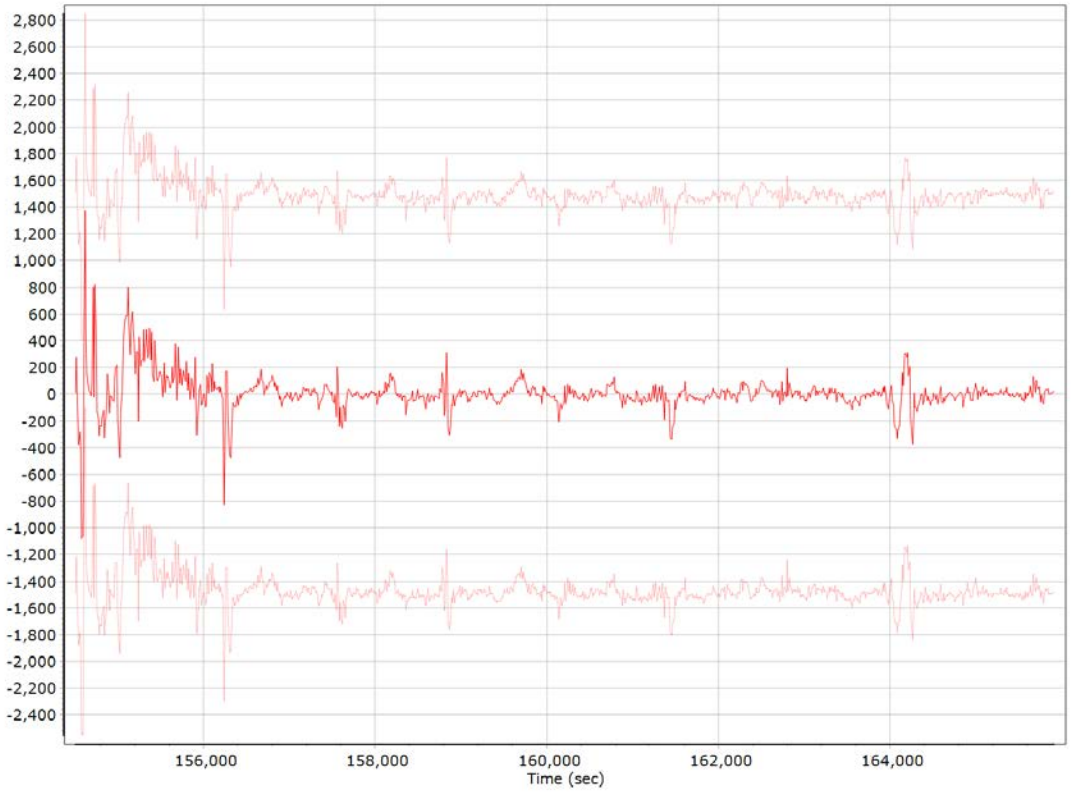
Z Accelerometer Bias (micro-g)



Accelerometer Scale Error (ppm)



X Accelerometer Scale Error (ppm)



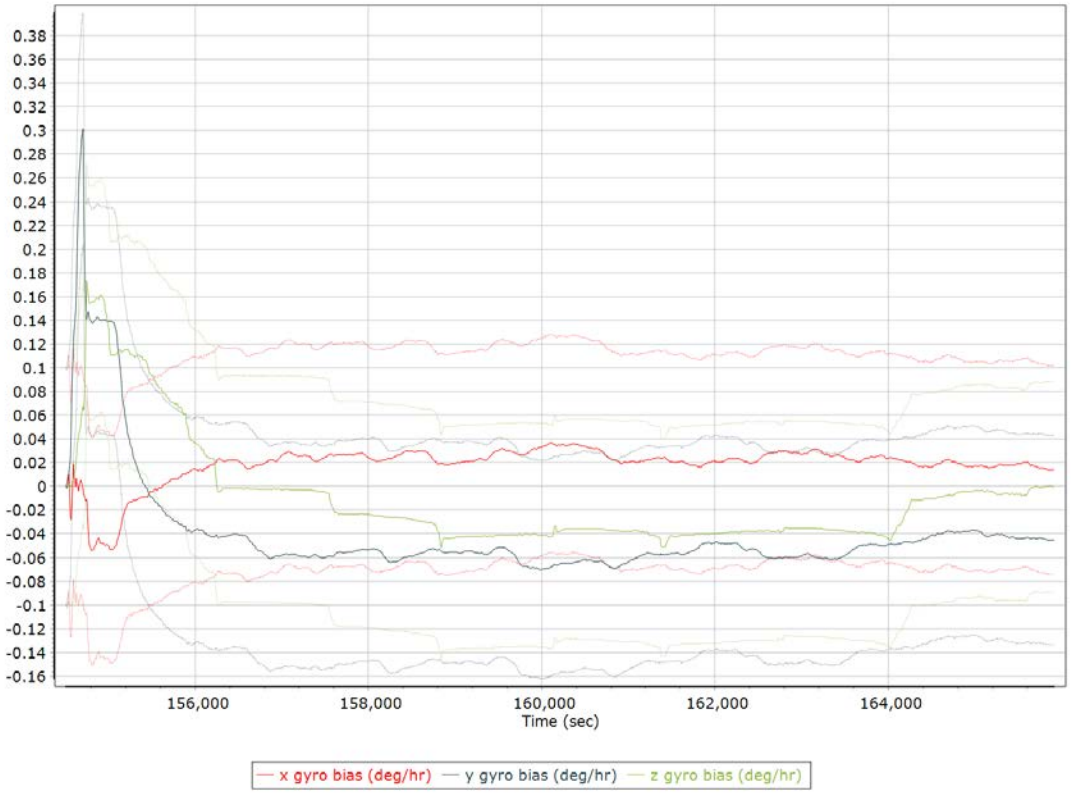
Y Accelerometer Scale Error (ppm)



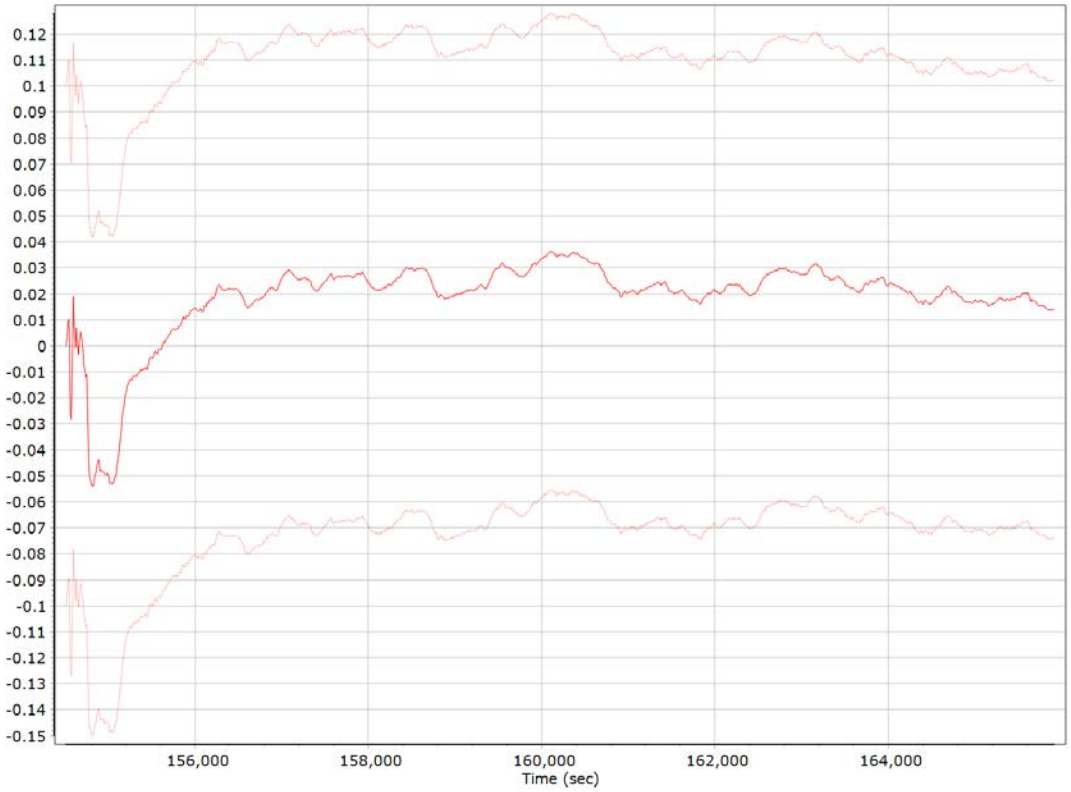
Z Accelerometer Scale Error (ppm)



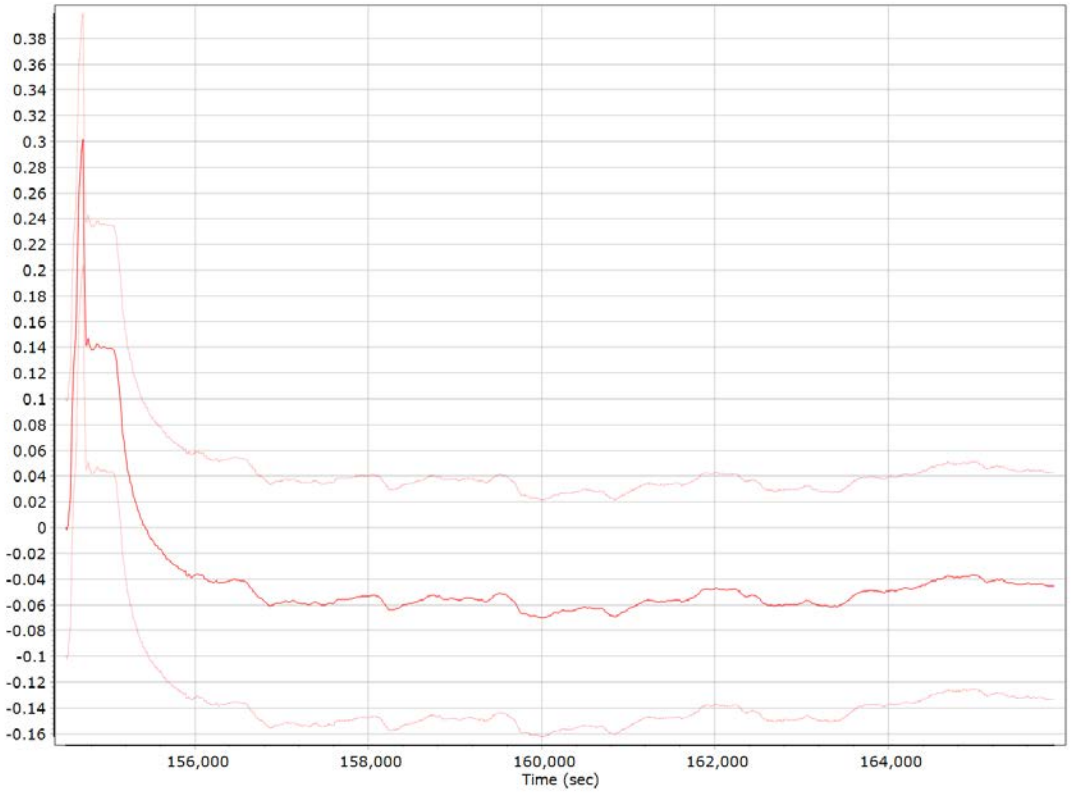
Gyro Bias (deg/h)



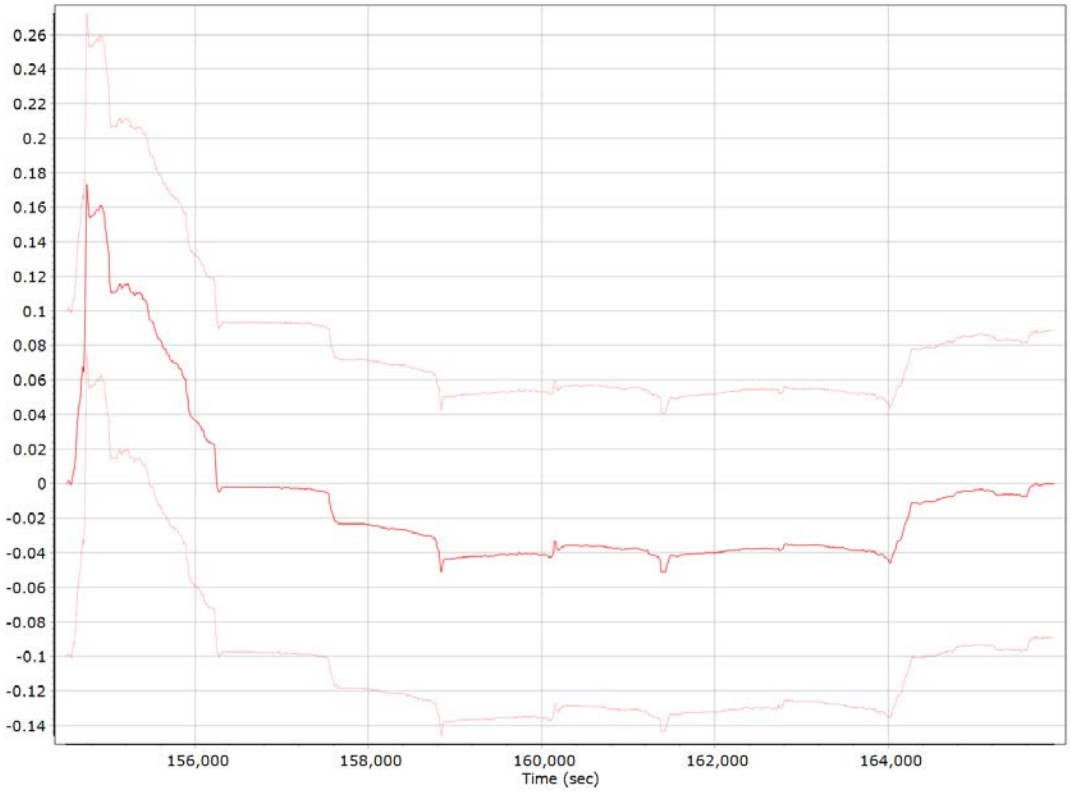
X Gyro Bias (deg/h)



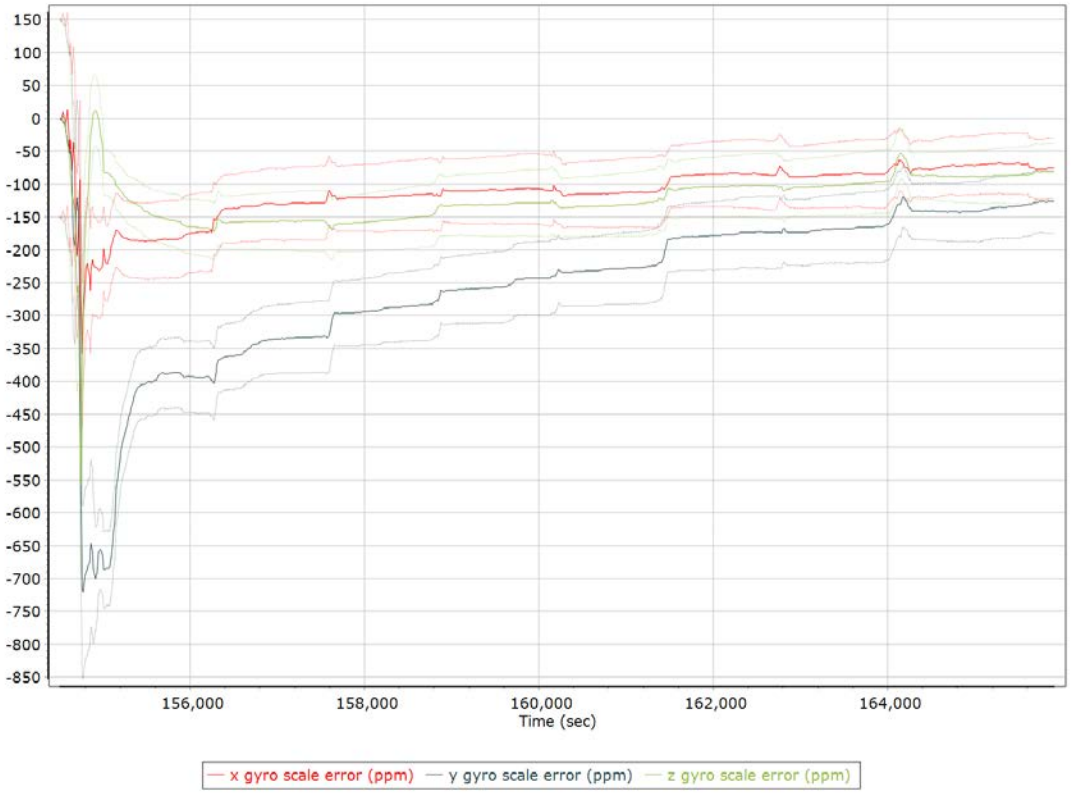
Y Gyro Bias (deg/h)



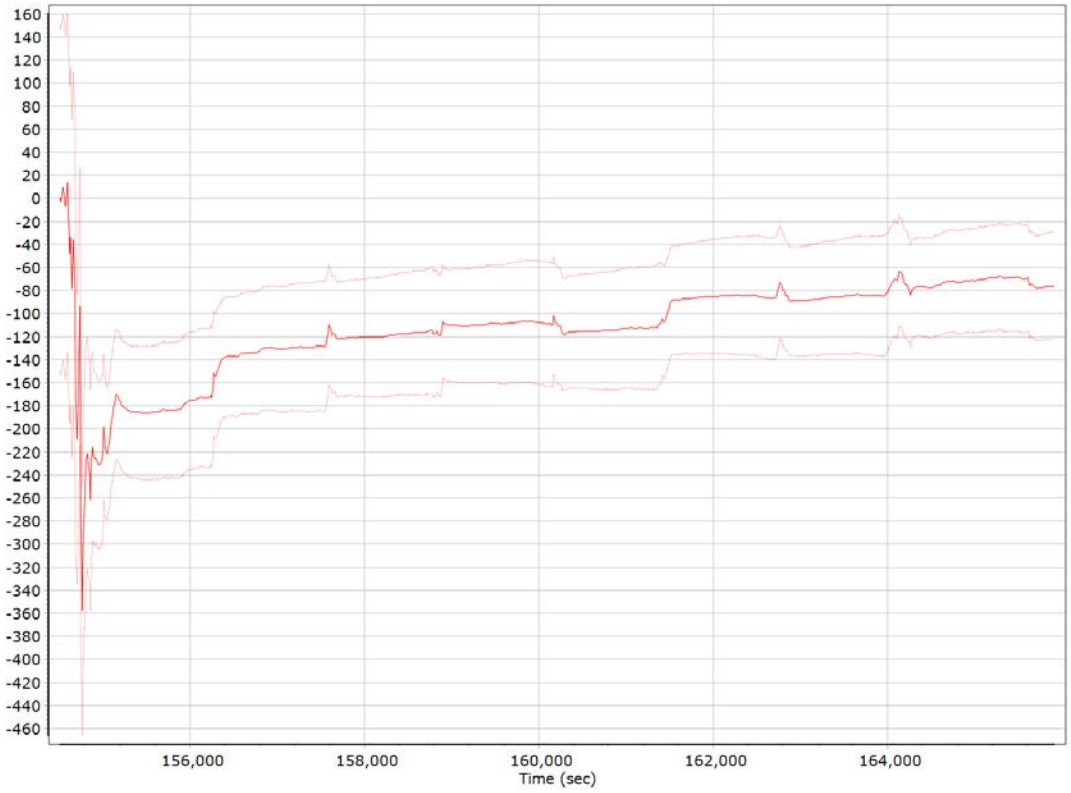
Z Gyro Bias (deg/h)



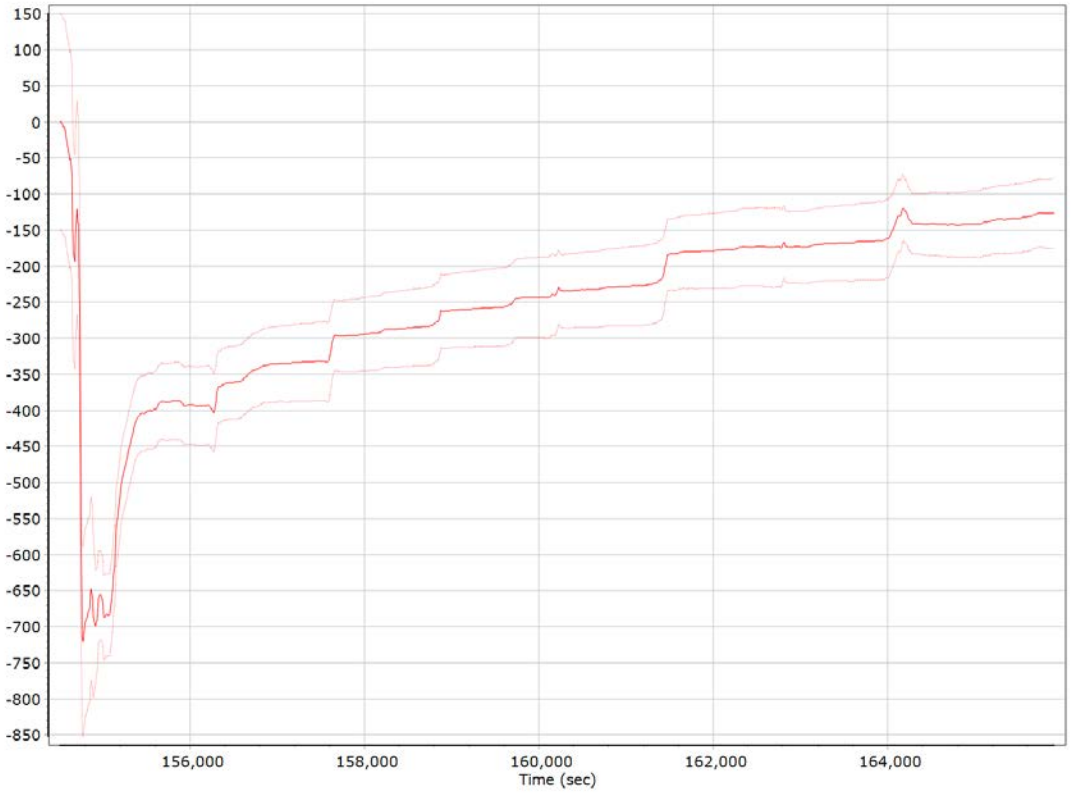
Gyro Scale Error (ppm)



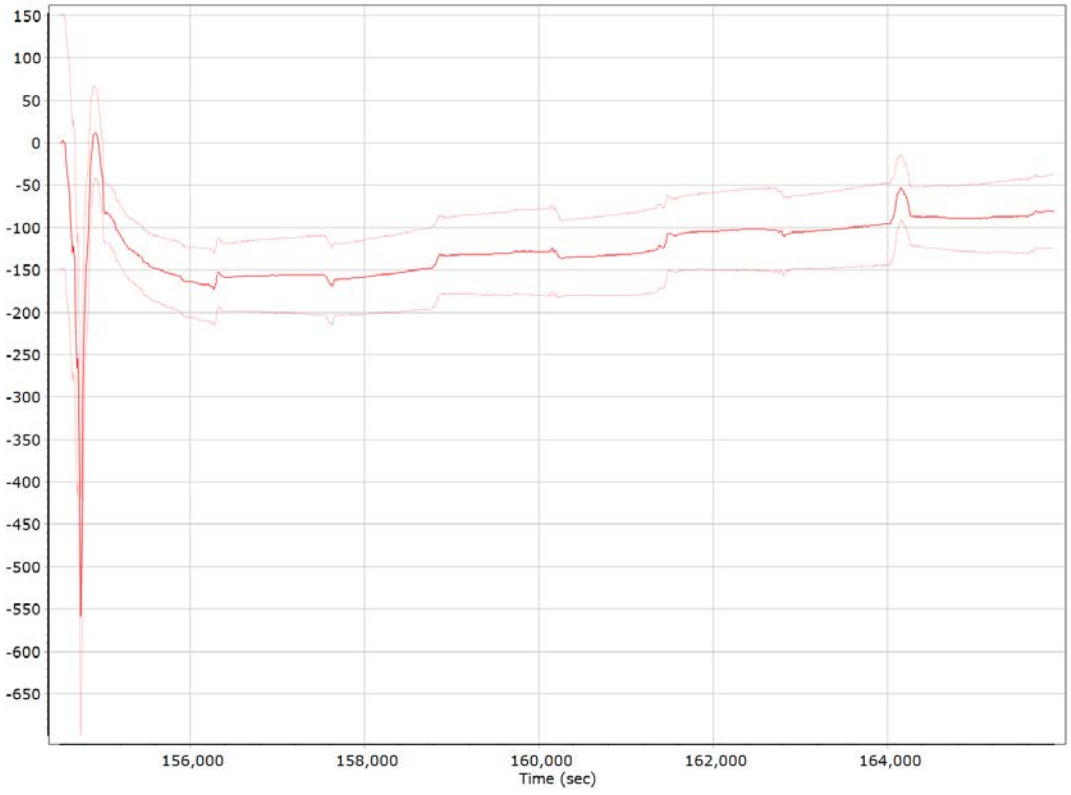
X Gyro Scale Error (ppm)



Y Gyro Scale Error (ppm)



Z Gyro Scale Error (ppm)



Smoothed Performance Metrics

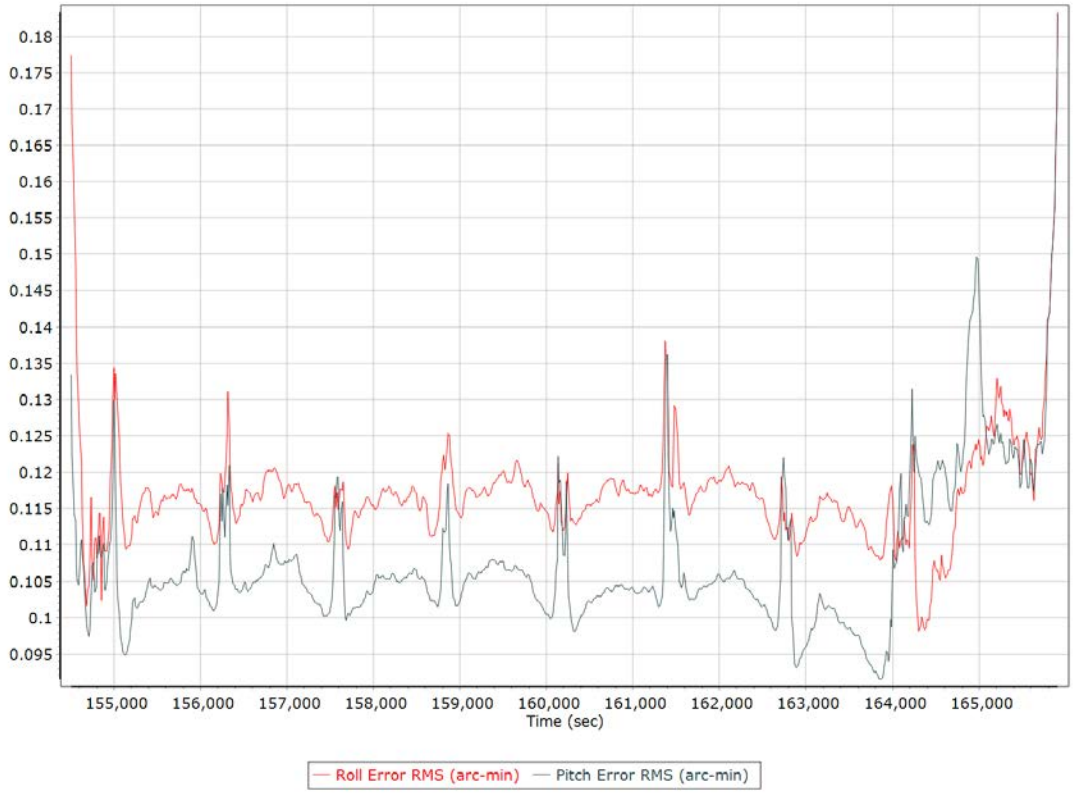
Position Error RMS (m)



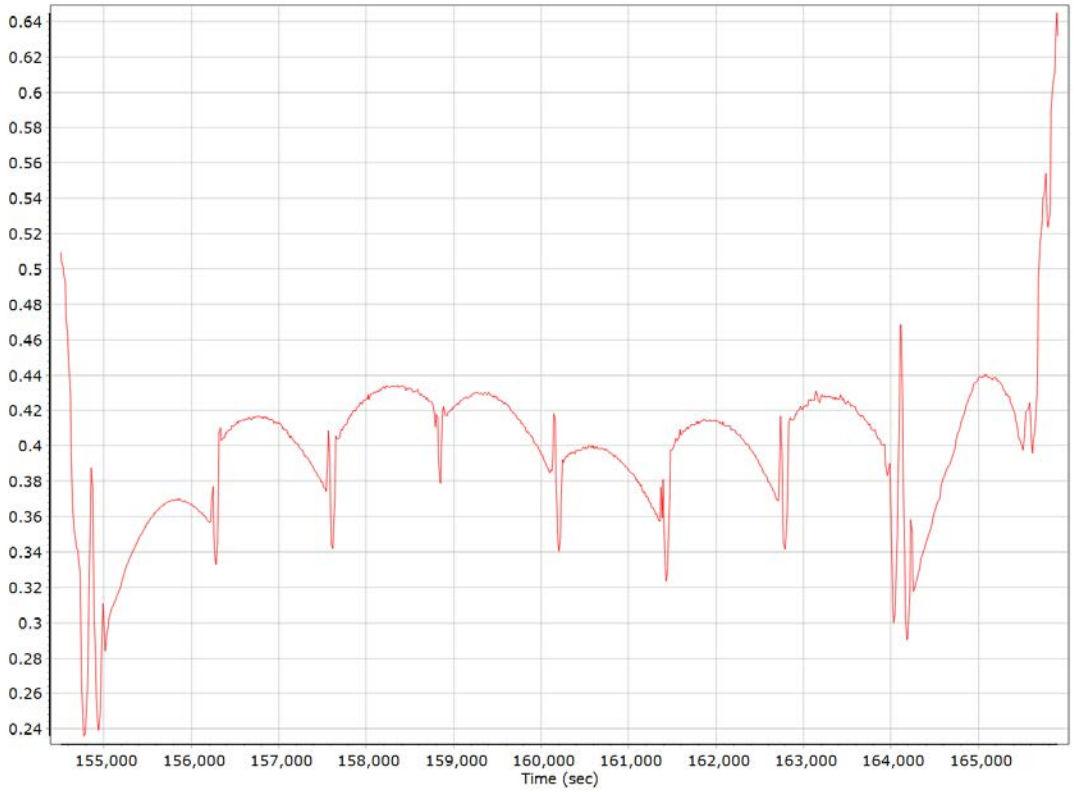
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)



Heading Error RMS (arc-min)

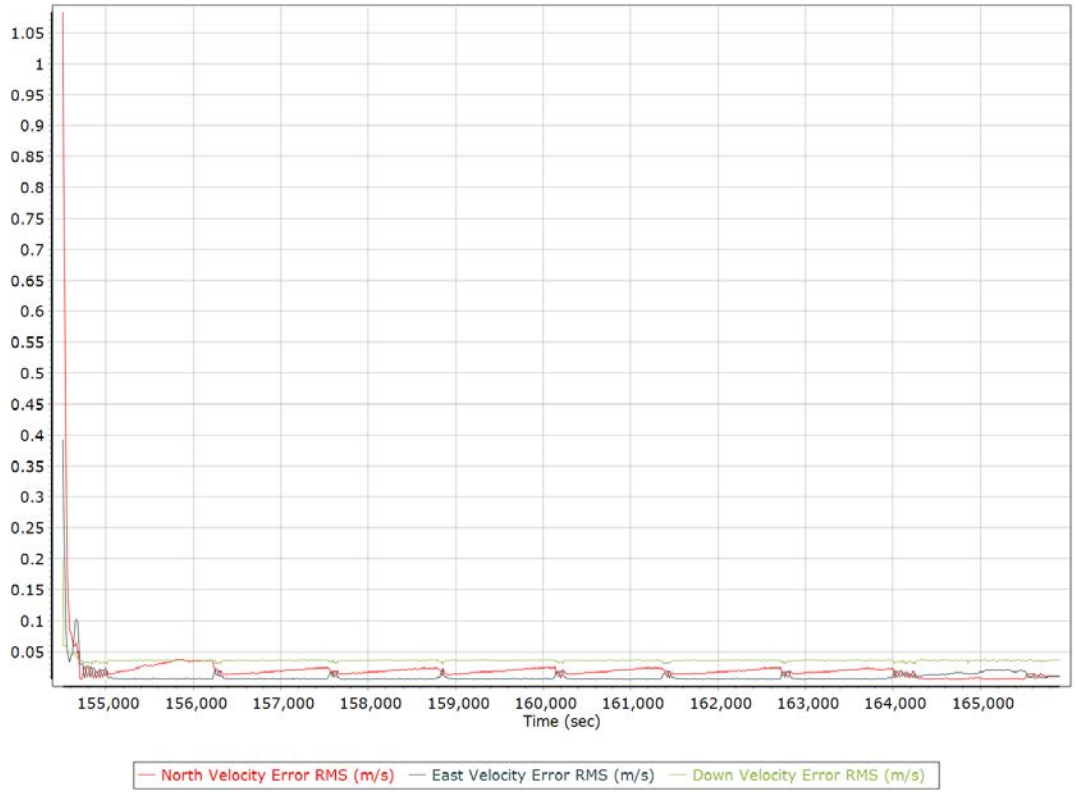


Forward Processed Performance Metrics

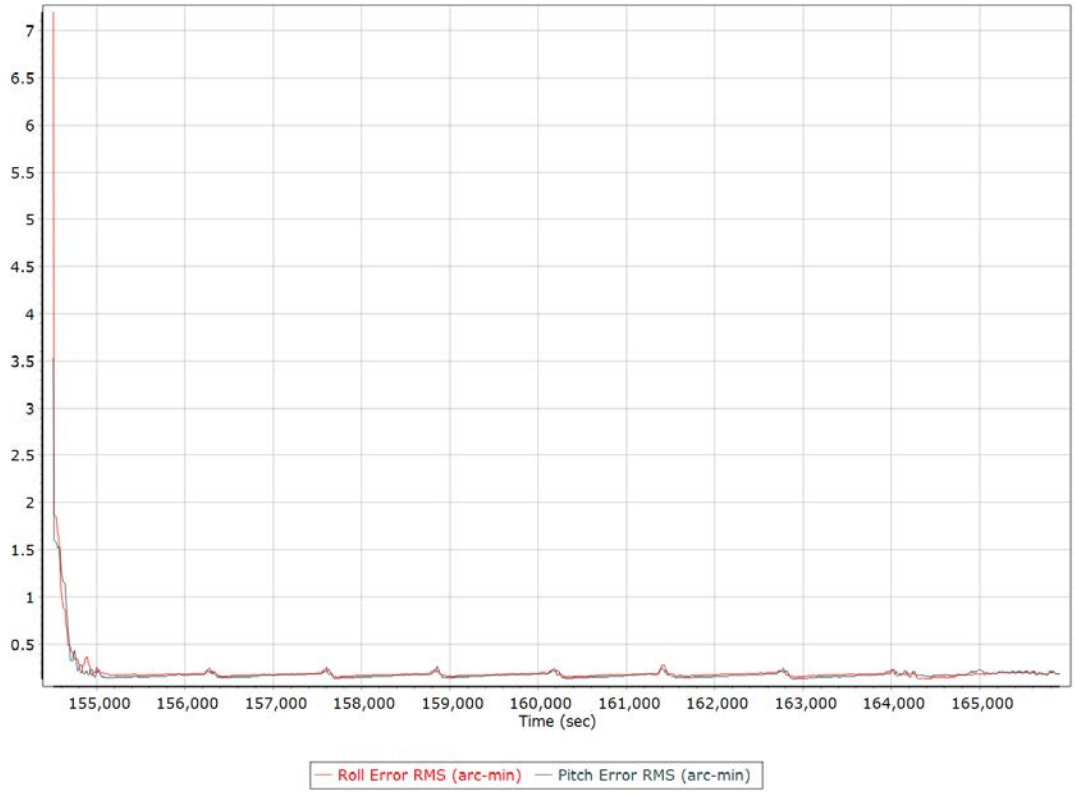
Position Error RMS (m)



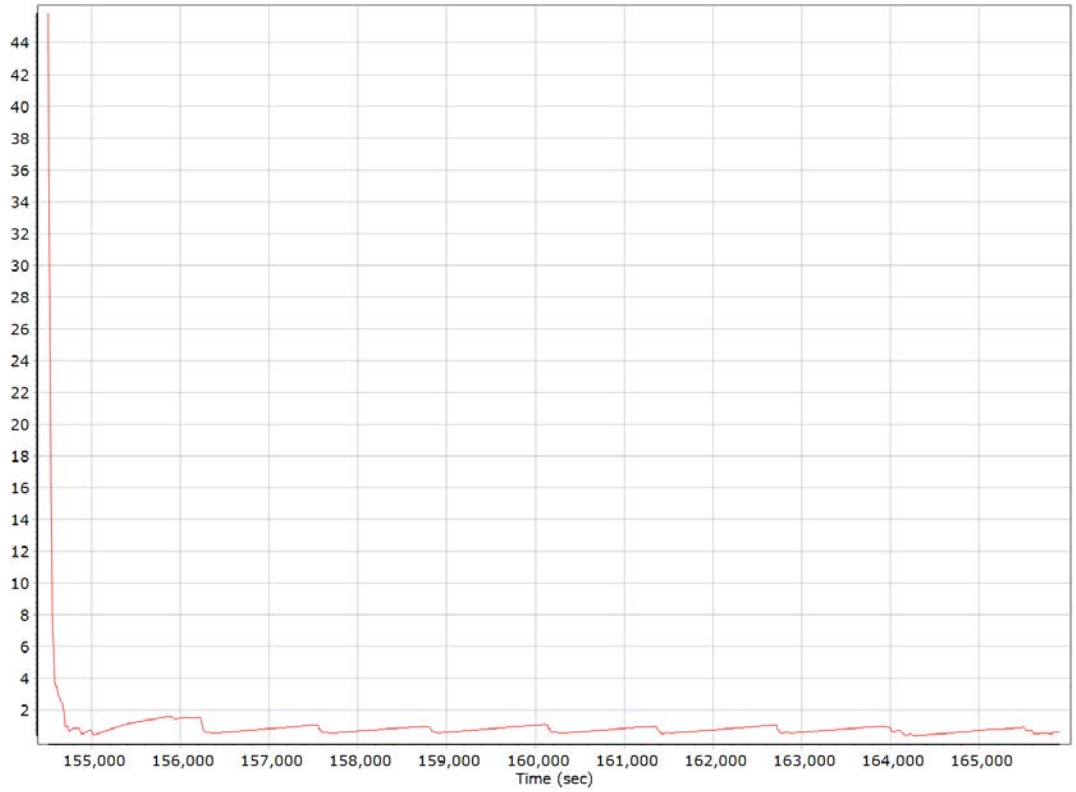
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

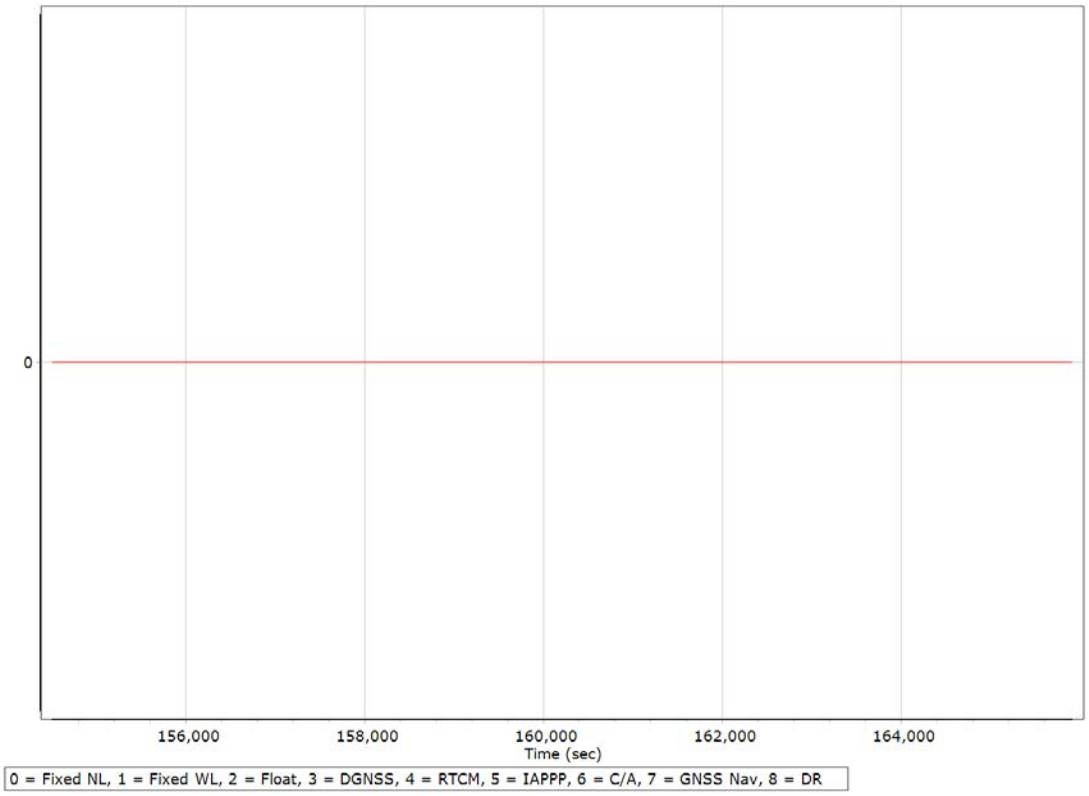


Heading Error RMS (arc-min)

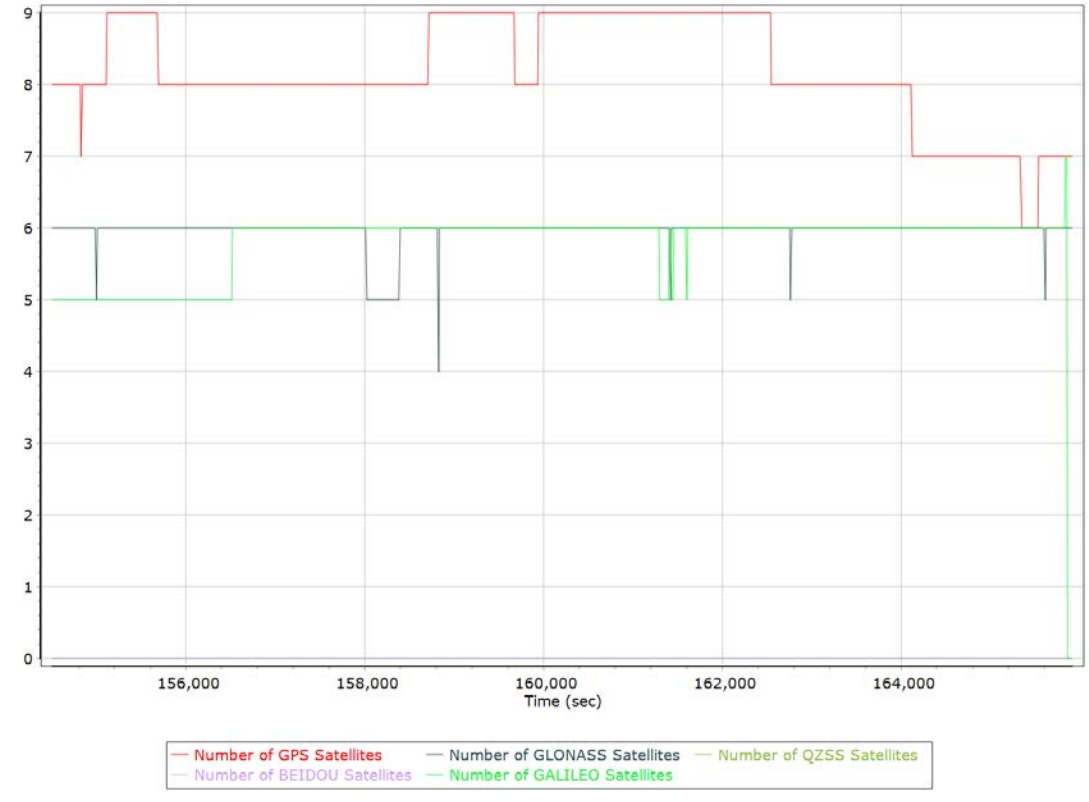


Forward Processed Solution Status

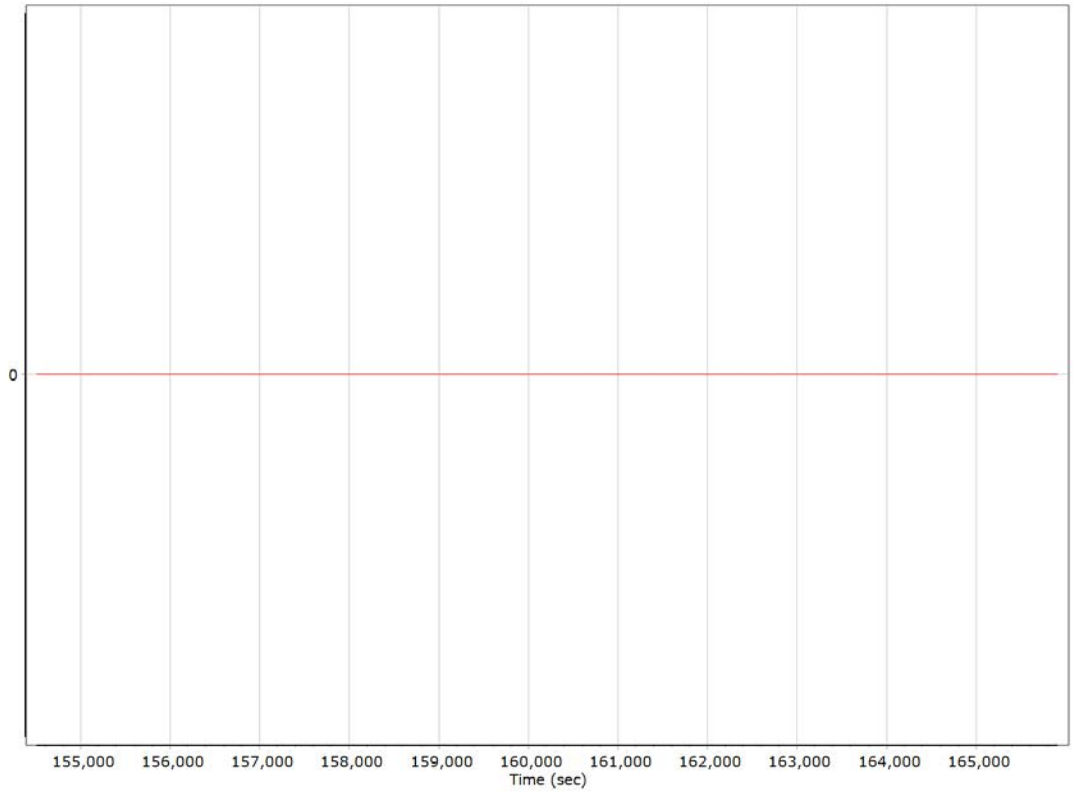
Processing Mode



Number of Satellites



Baseline Length



General Information

Mission Information

Project name	08212023A_3543
Processing date	2023-08-24 16:25:31
Mission date	2023-08-21 21:03:23
Mission duration	03:15:18.867
Processing mode	IN-Fusion PP-RTX

Rover Hardware Information

Product	POS AV 610 VER6 HW2.5-12
Serial number	S/N9683
IMU type	57
Receiver type	BD982
Antenna type	AV59

Project File List

Rover Data Files

File name	File type
N62756178.086	POS Data
N62756178.087	POS Data
N62756178.088	POS Data
N62756178.089	POS Data
N62756178.090	POS Data
N62756178.091	POS Data
N62756178.092	POS Data
N62756178.093	POS Data
N62756178.094	POS Data
N62756178.095	POS Data
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N62756178.103	POS Data
N62756178.104	POS Data
N62756178.105	POS Data
N62756178.106	POS Data
N62756178.107	POS Data
N62756178.108	POS Data
N62756178.109	POS Data
N62756178.110	POS Data
N62756178.111	POS Data
N62756178.112	POS Data
N62756178.113	POS Data
N62756178.114	POS Data
N62756178.115	POS Data
N62756178.116	POS Data
N62756178.117	POS Data
N62756178.118	POS Data
N62756178.119	POS Data
N62756178.120	POS Data
N62756178.121	POS Data
N62756178.122	POS Data

Input Files

File Name	File Type
Ephm2330.23g	GLONASS Broadcast Ephemeris
Ephm2330.23n	GPS Broadcast Ephemeris
Ephm2340.23g	GLONASS Broadcast Ephemeris
Ephm2340.23n	GPS Broadcast Ephemeris

Output Files

Filename	File type
sbet_08212023A_3543.out	SBET Trajectory File

Rover Data Summary

First raw data file	N62756178.086		
Last raw data file	N62756178.122		
Start GPS week	2276		
Start time	162184.841 (8/21/2023 9:03:04 PM)		
End time	173903.708 (8/22/2023 12:18:23 AM)		
Start of fine alignment	162208.472 (8/21/2023 9:03:28 PM)		
Available subsystems	Primary GNSS, Gimbal, IMU		
POS Event Input	Event 1 Input, Event 2 Input, Event 3 Input		
Correction data	None		
IMU Installation Lever Arms & Mounting Angles			
Gimbal to IMU lever arm (m)	-0.034	-0.010	-0.374
Gimbal to IMU mounting angles (deg)	0.000	0.000	0.000
Gimbal to Primary GNSS lever arm (m)	0.139	-0.209	-1.290
Gimbal to Primary GNSS lever arm std dev (m)	-1.000		
Aircraft to Reference mounting angles (deg)	0.000	0.000	0.000

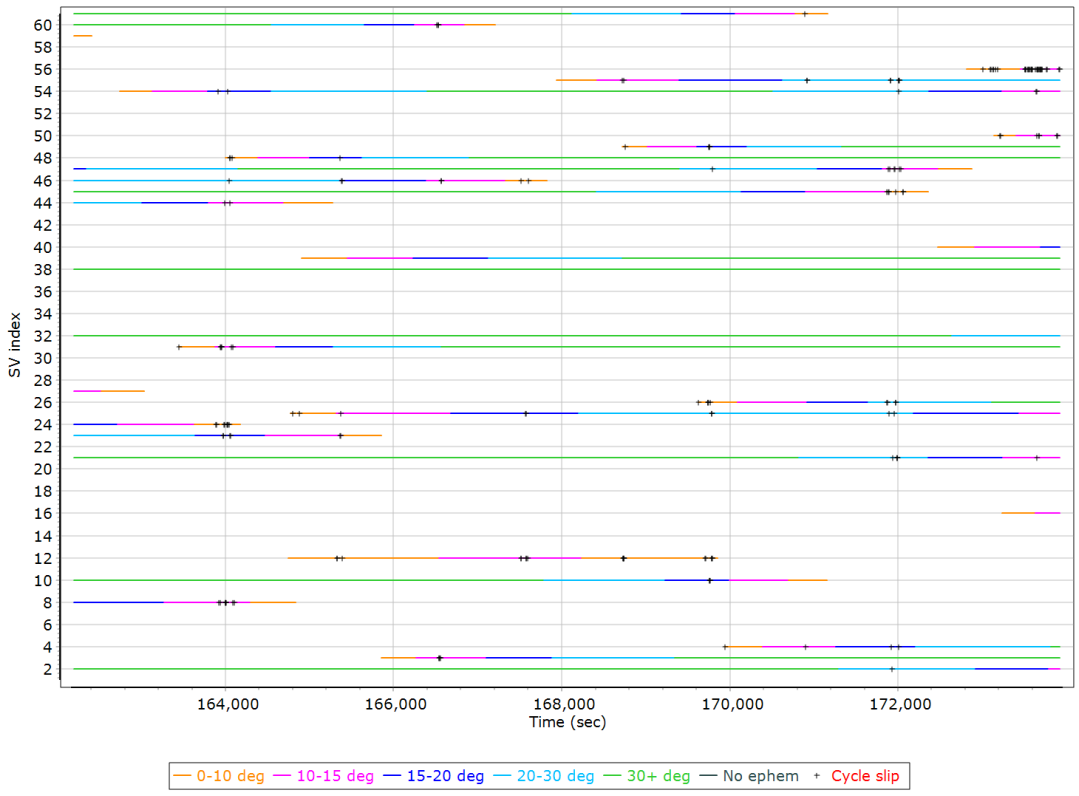
Rover Data QC

Raw IMU Import QC Summary

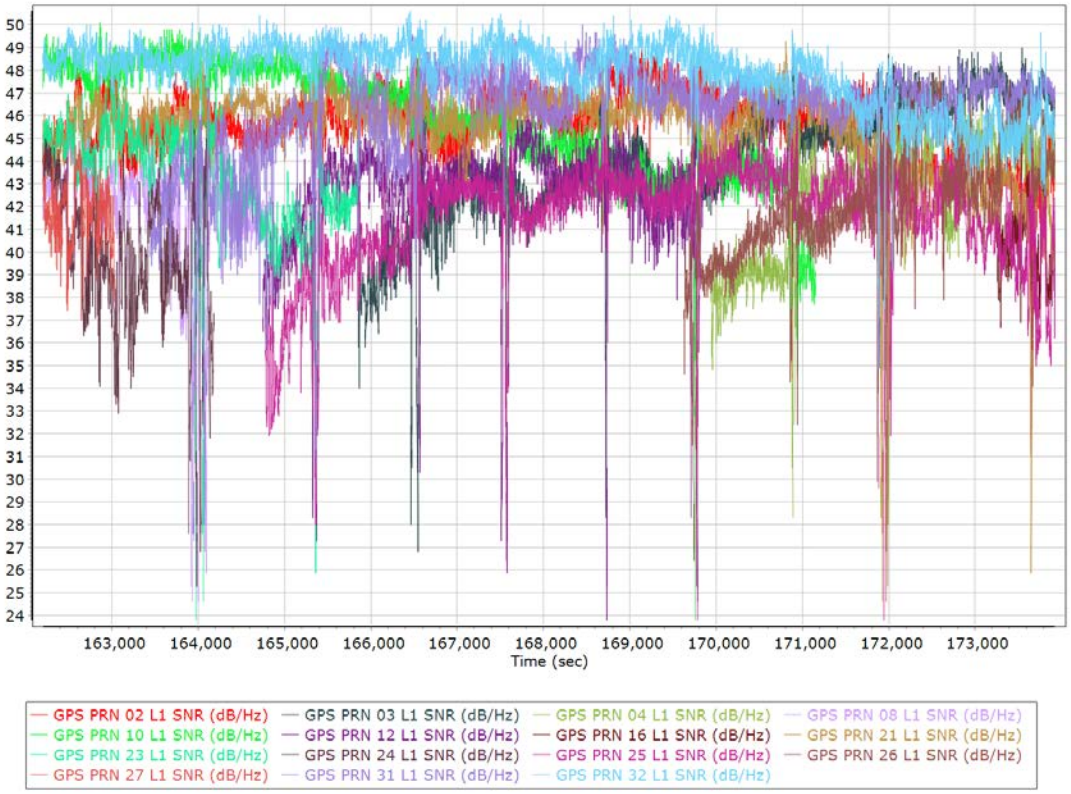
IMU data input file	imu_Mission 1.dat
IMU data check log file	imudt_08212023A_3543.log
IMU Records Processed	2343242
Termination Status	Normal
IMU Anomalies	0

Primary Observables & Satellite Data

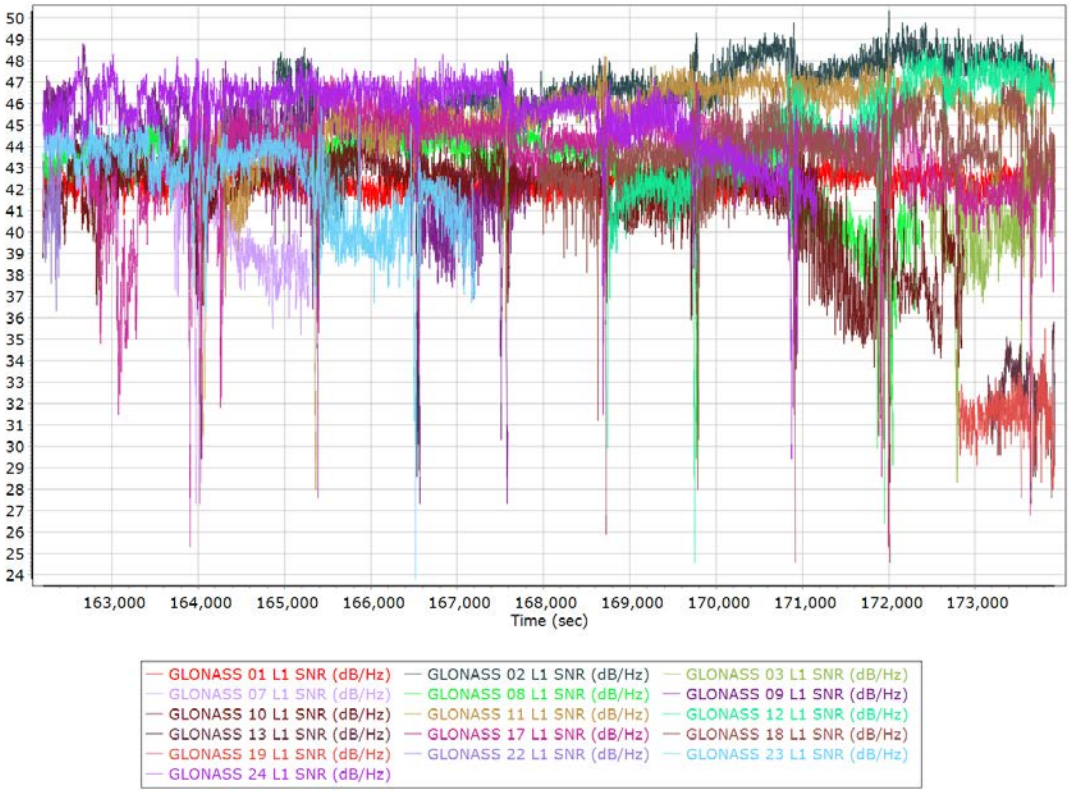
GPS/GLONASS L1 Satellite Lock/Elevation



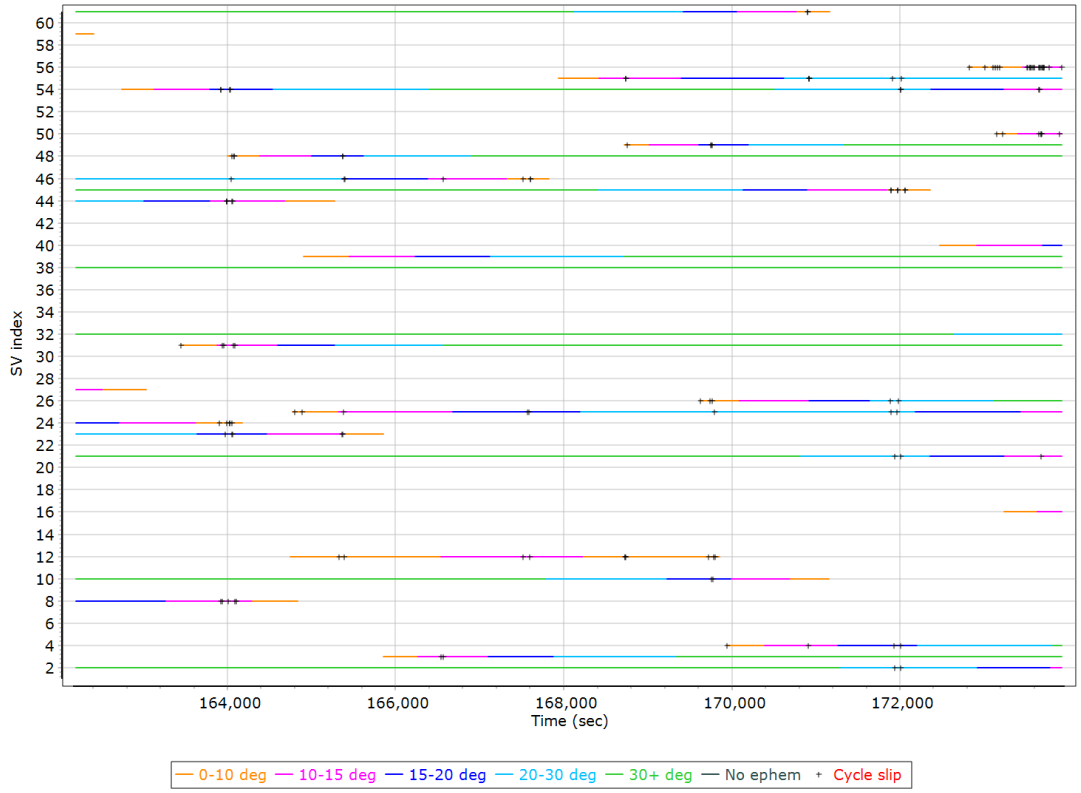
GPS L1 SNR



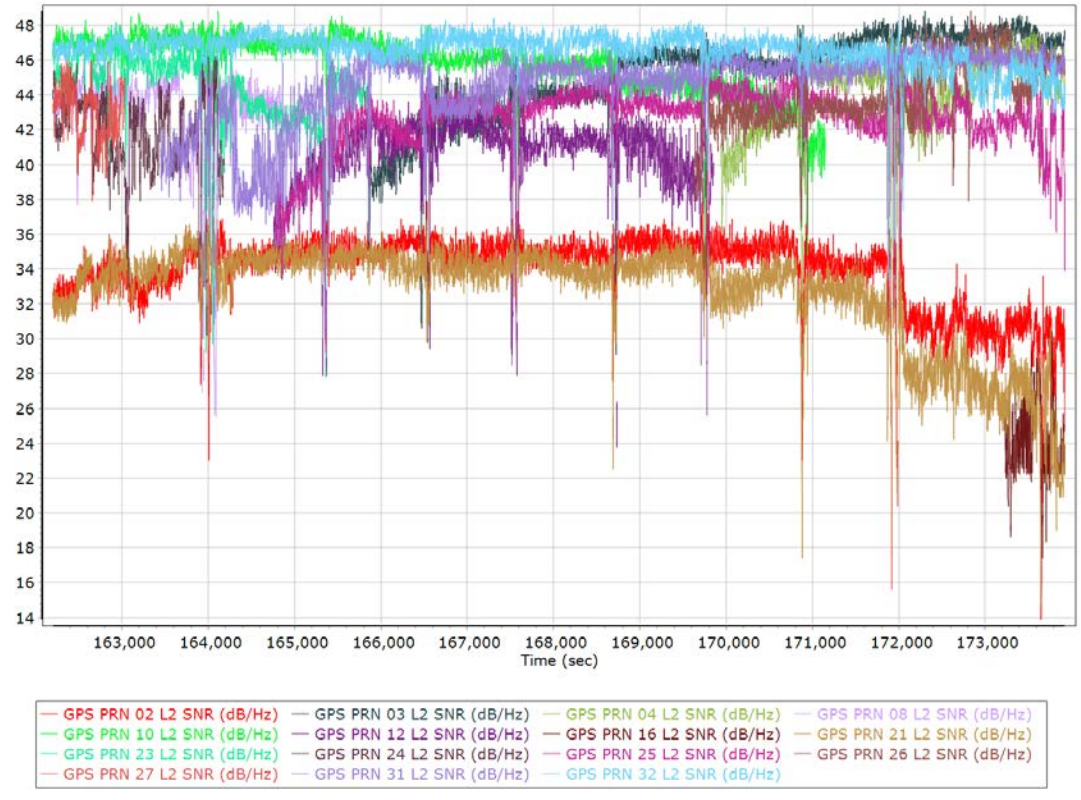
GLONASS L1 SNR



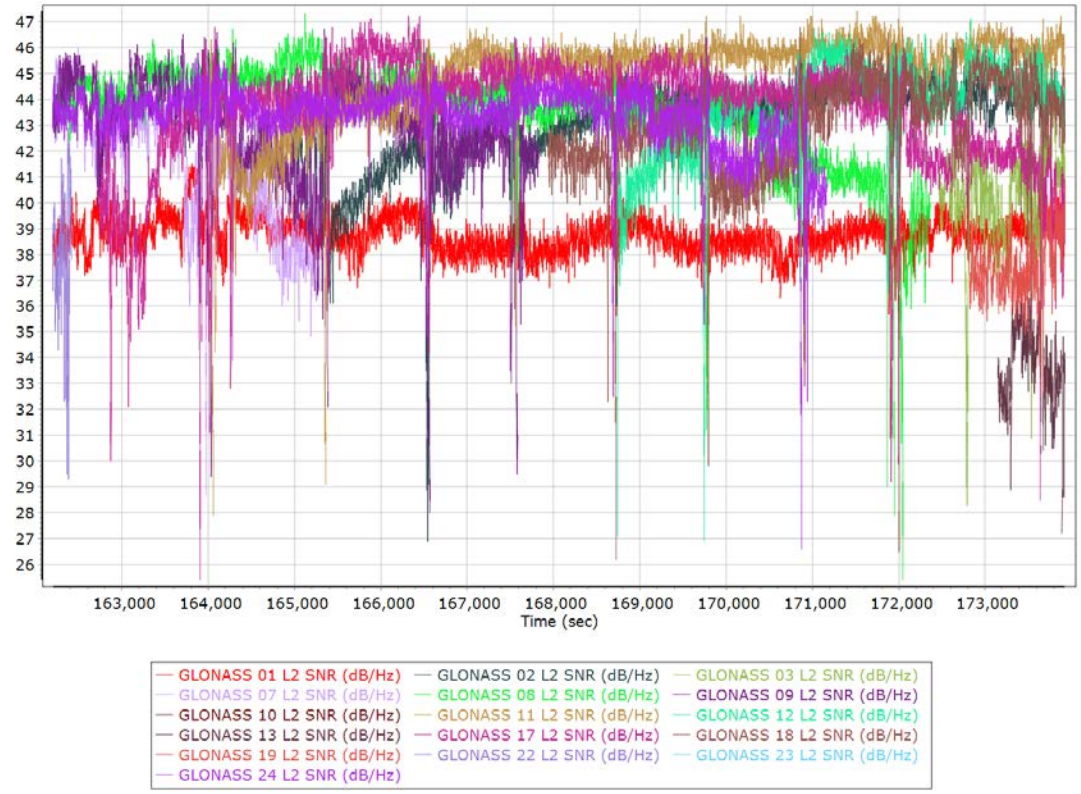
GPS/GLONASS L2 Satellite Lock/Elevation



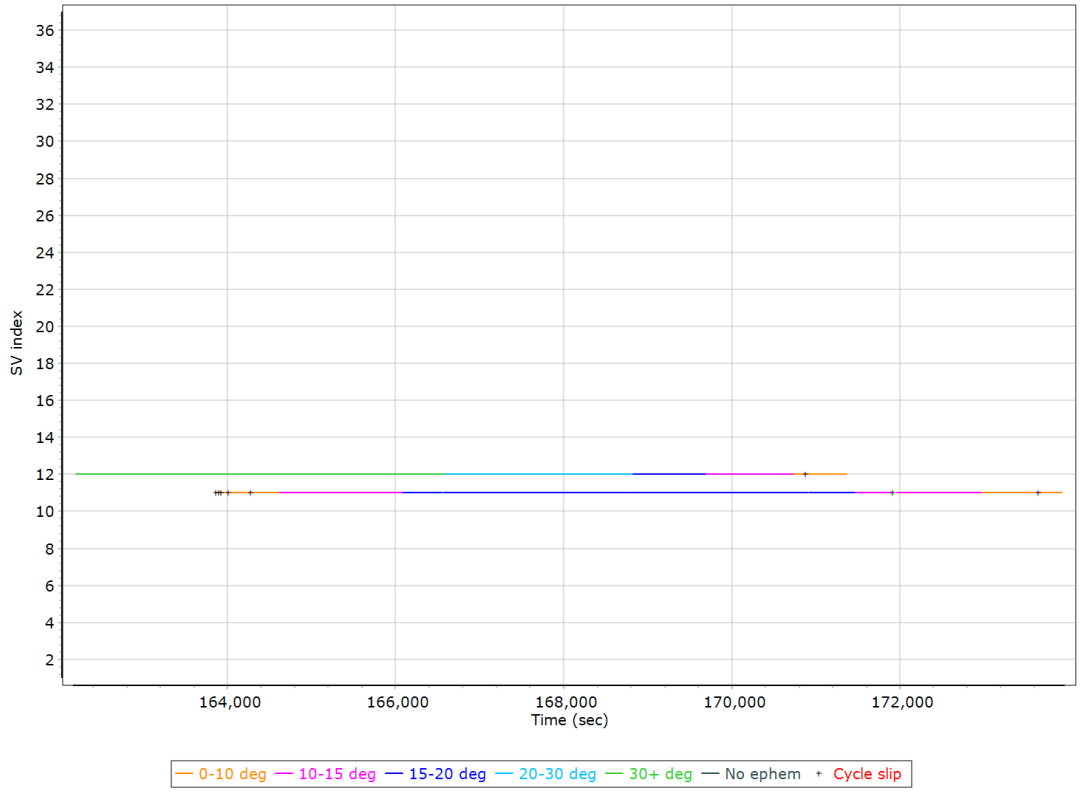
GPS L2 SNR



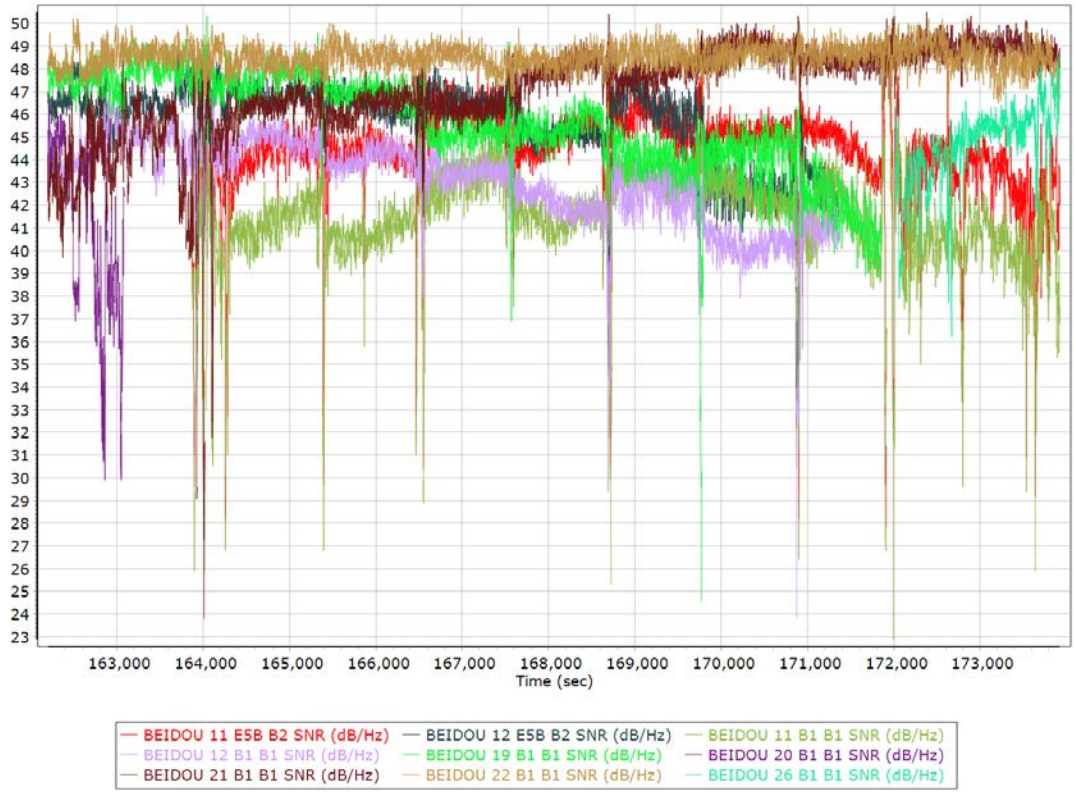
GLONASS L2 SNR



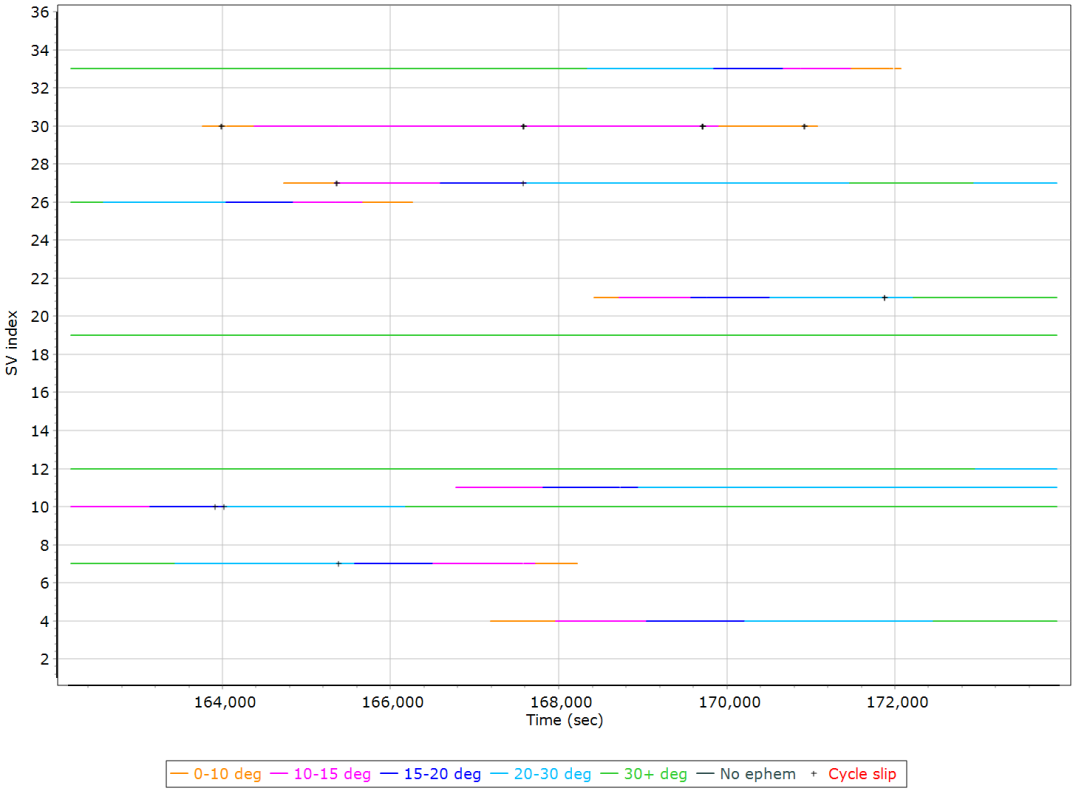
BEIDOU Satellite Lock/Elevation



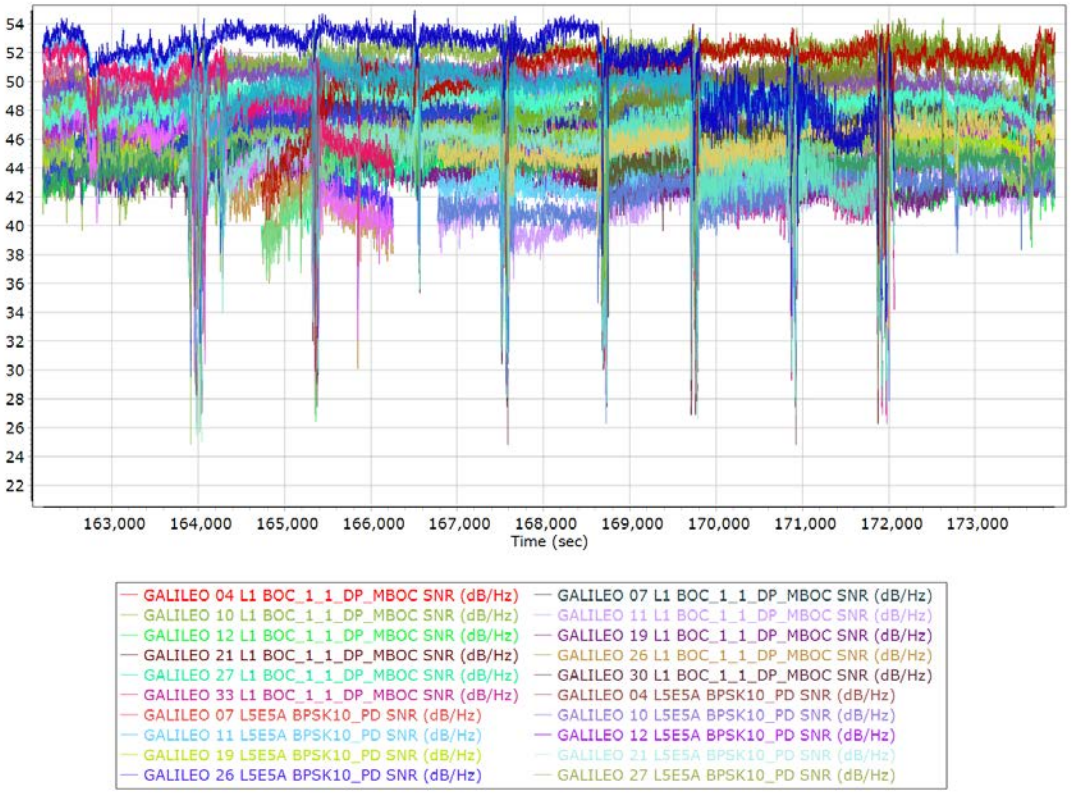
BEIDOU SNR



GALILEO Satellite Lock/Elevation

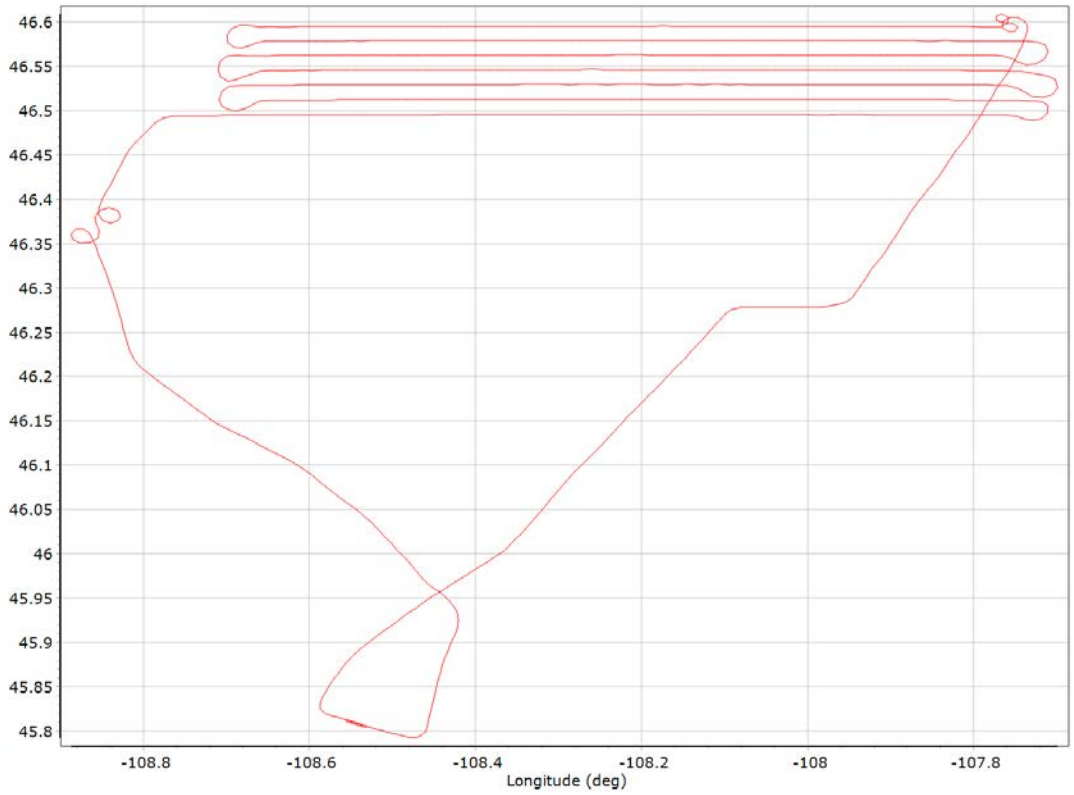


GALILEO SNR


54
52
50
48
46
44
42
40
38
36
34
32
30
28
26
24
22
163,000
164,000
165,000
166,000
167,000
168,000
169,000
170,000
171,000
172,000
173,000
Time (sec)
GALILEO 04 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 07 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 10 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 11 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 12 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 19 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 21 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 26 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 27 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 30 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 33 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 04 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 07 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 10 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 11 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 12 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 19 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 21 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 26 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 27 L5E5A BPSK10_PD SNR (dB/Hz)

Smoothed Trajectory Information

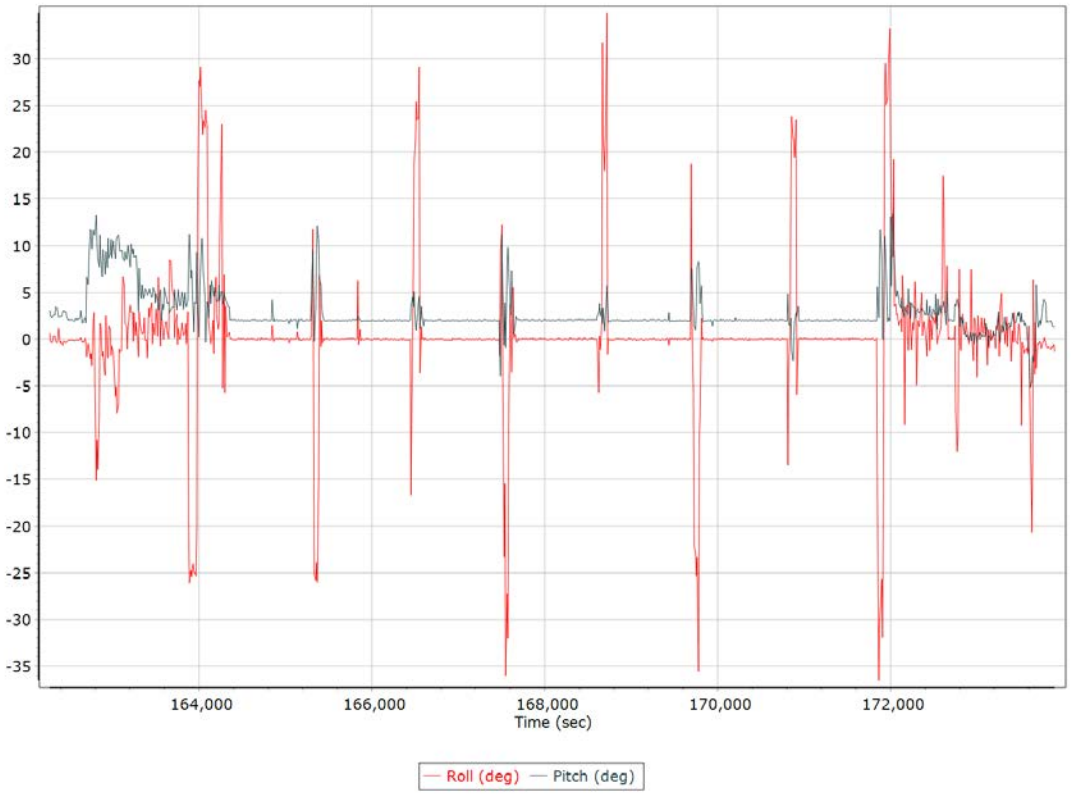
Top View



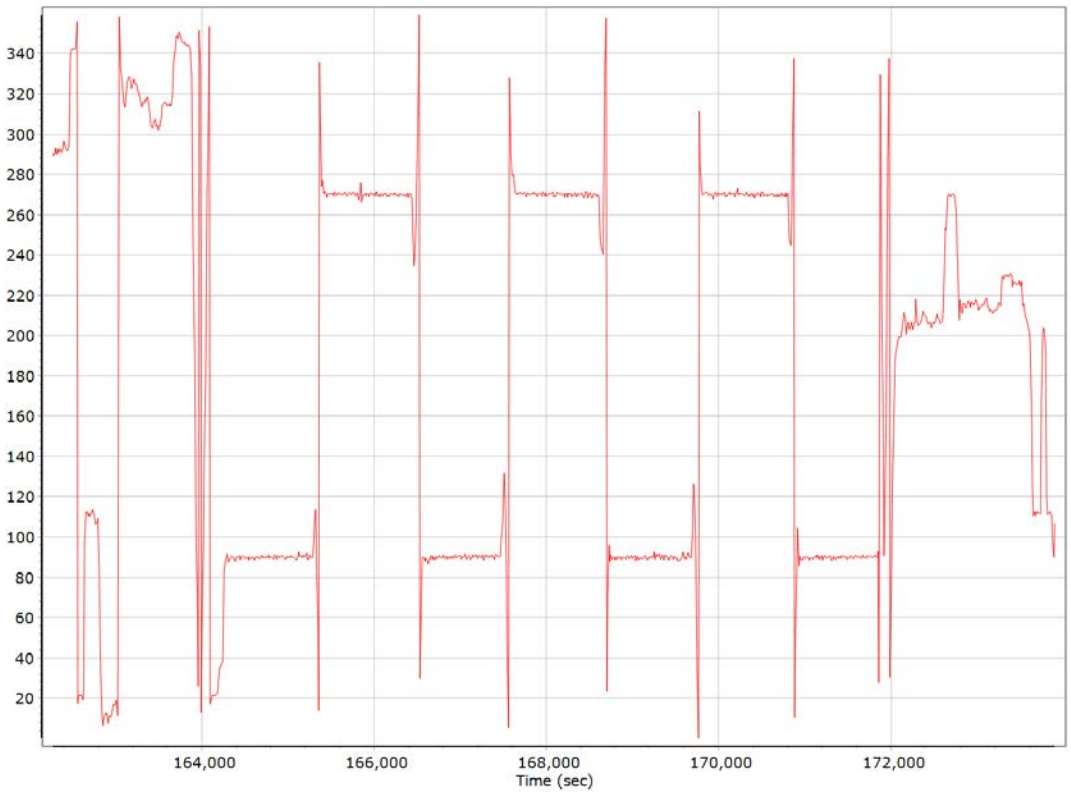
Altitude



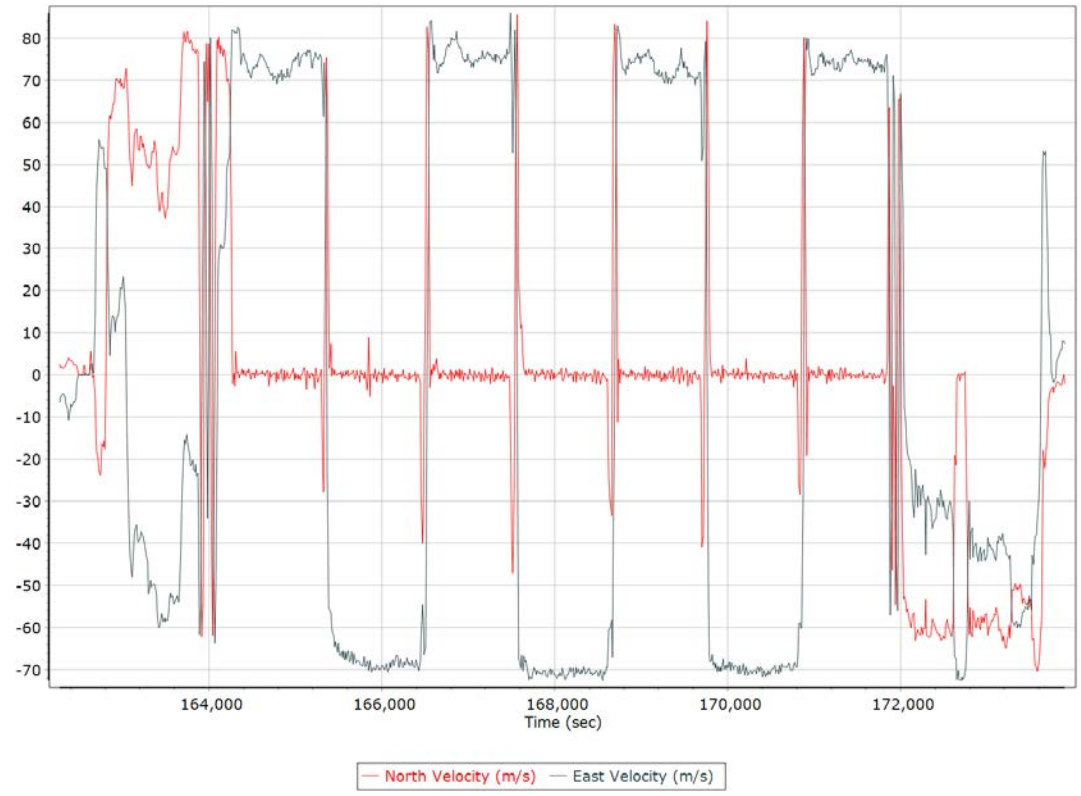
Roll/Pitch



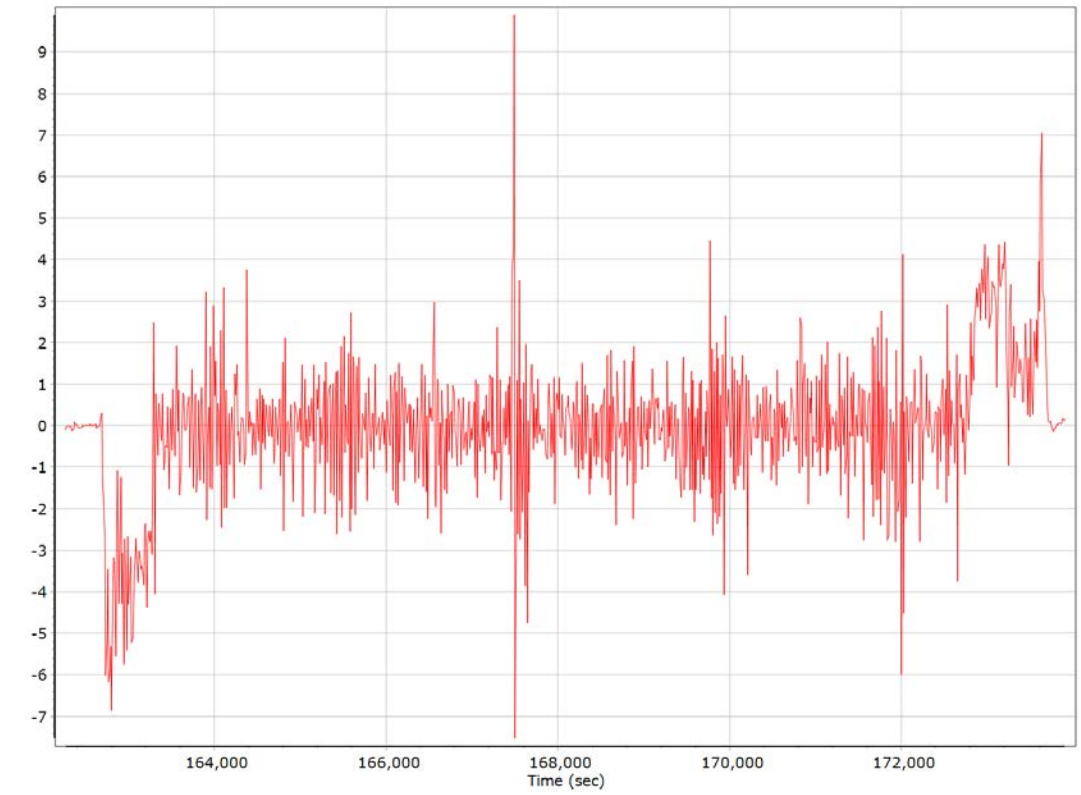
Heading



North/East Velocity



Down Velocity



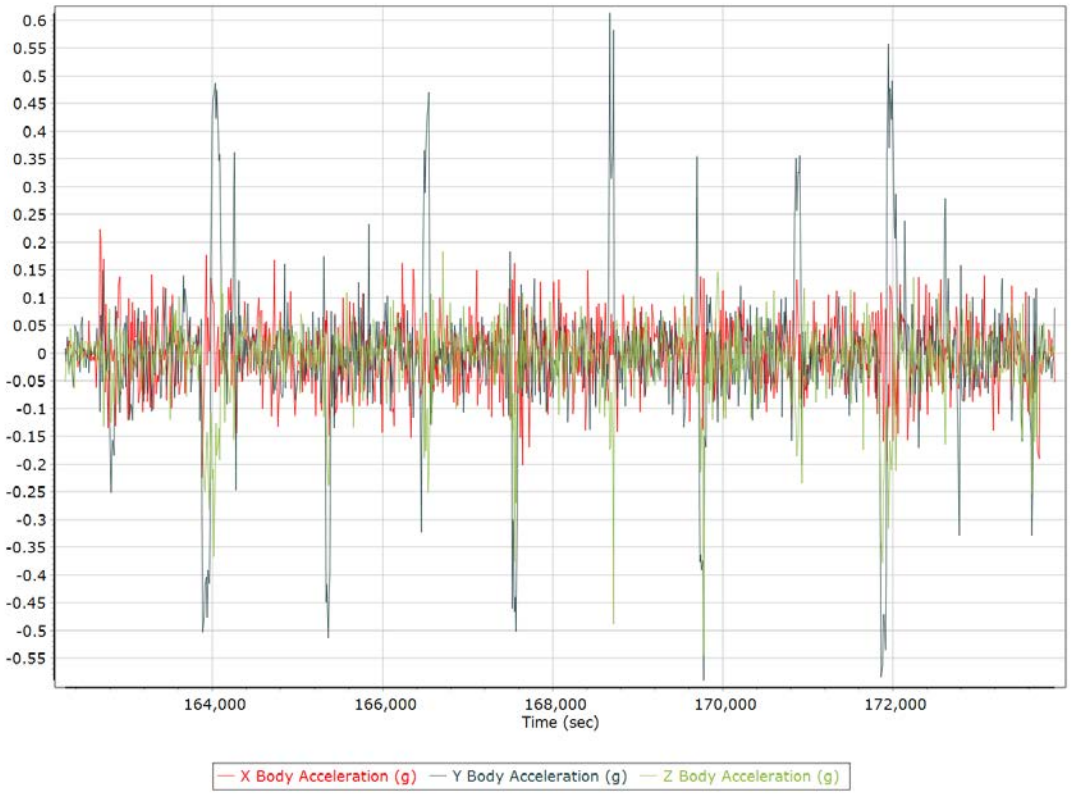
Total Speed



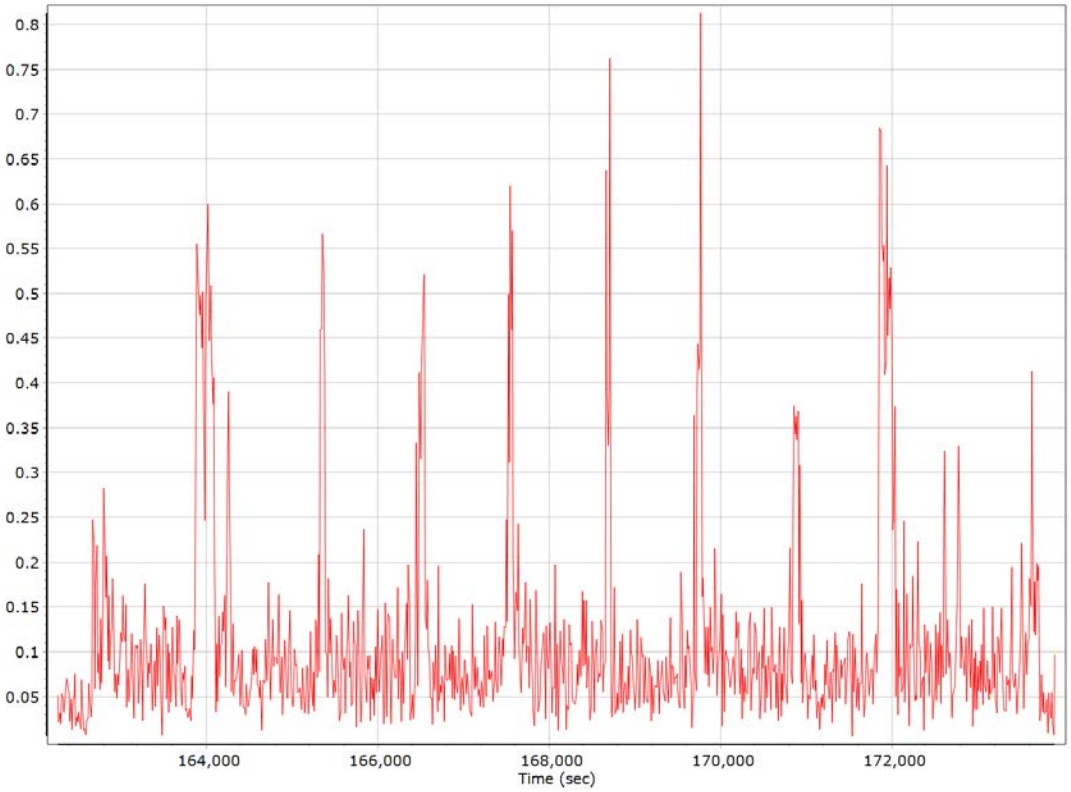
Ground Speed



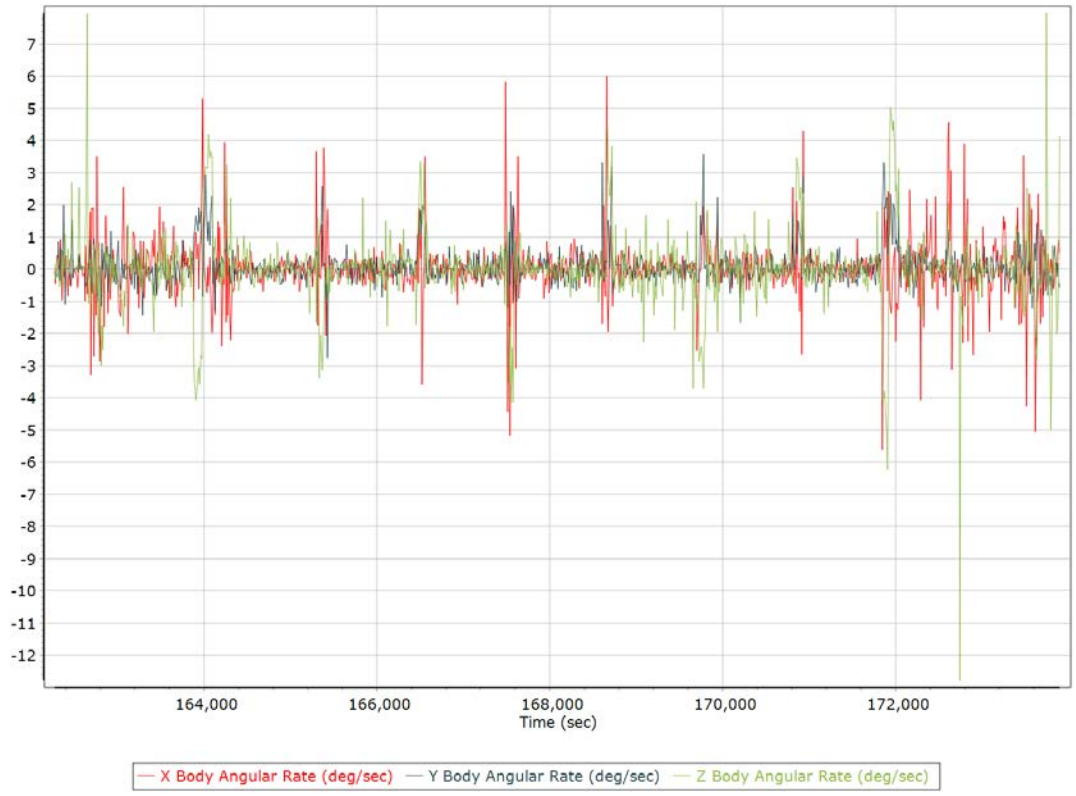
Body Acceleration



Total Body Acceleration

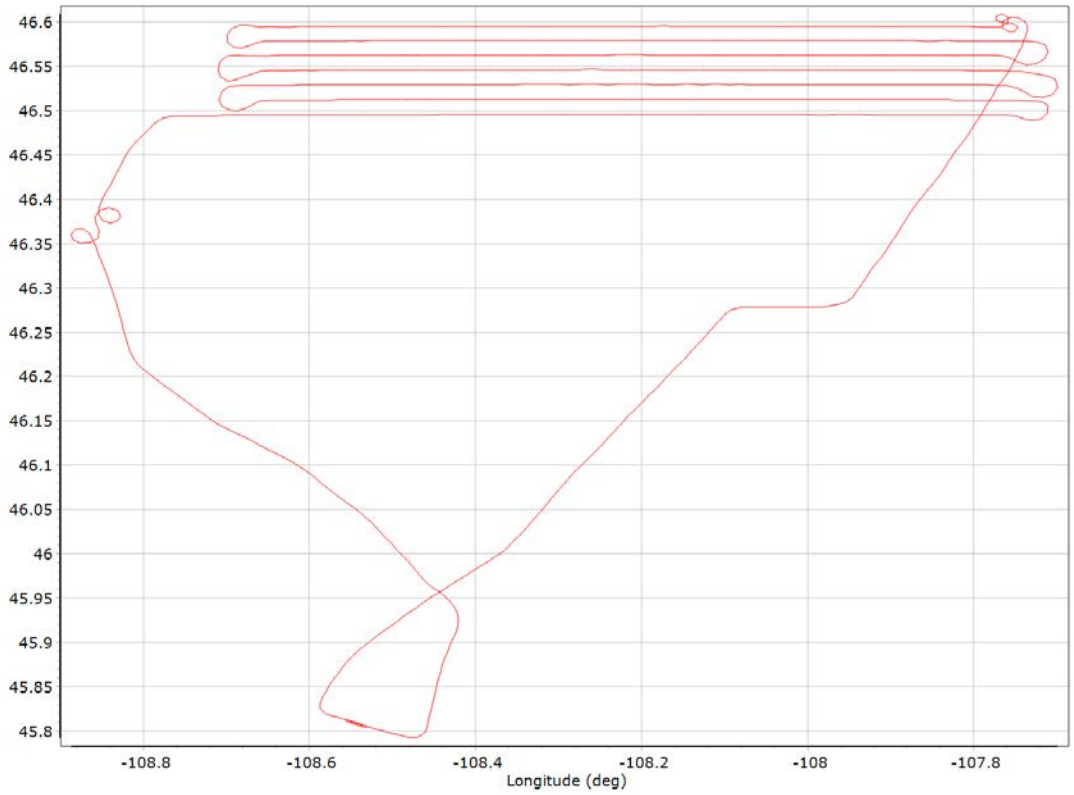


Body Angular Rate



Forward Processed Trajectory Information

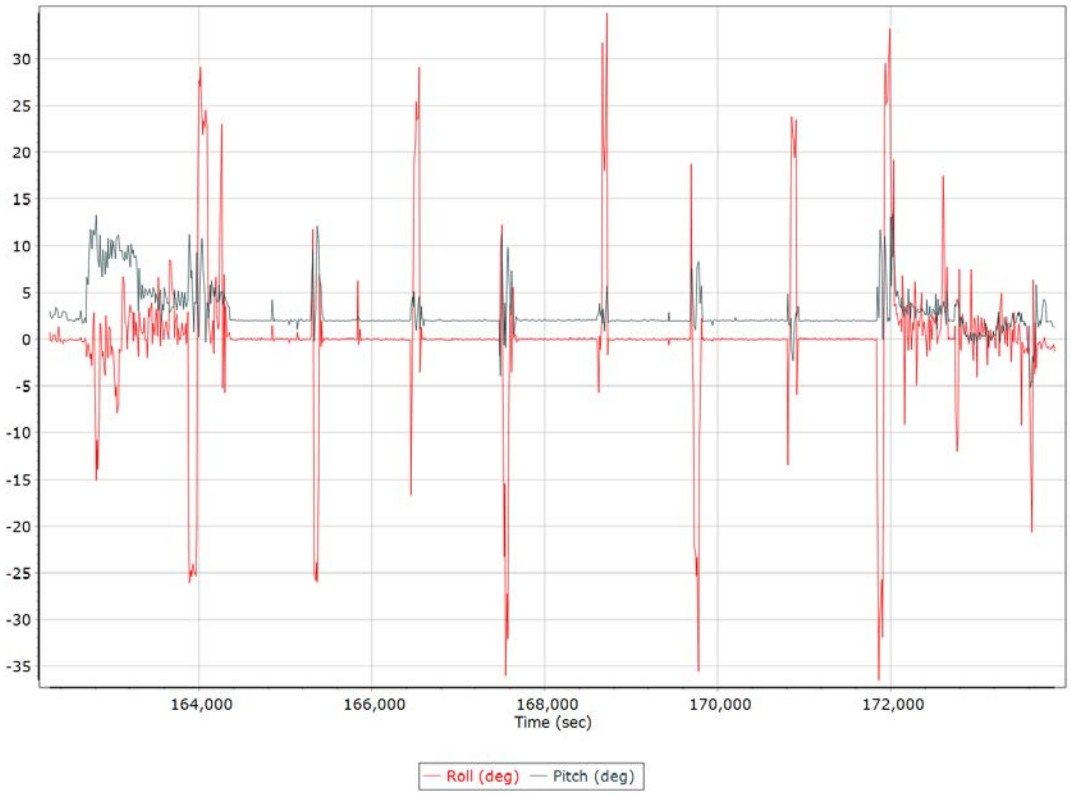
Top View



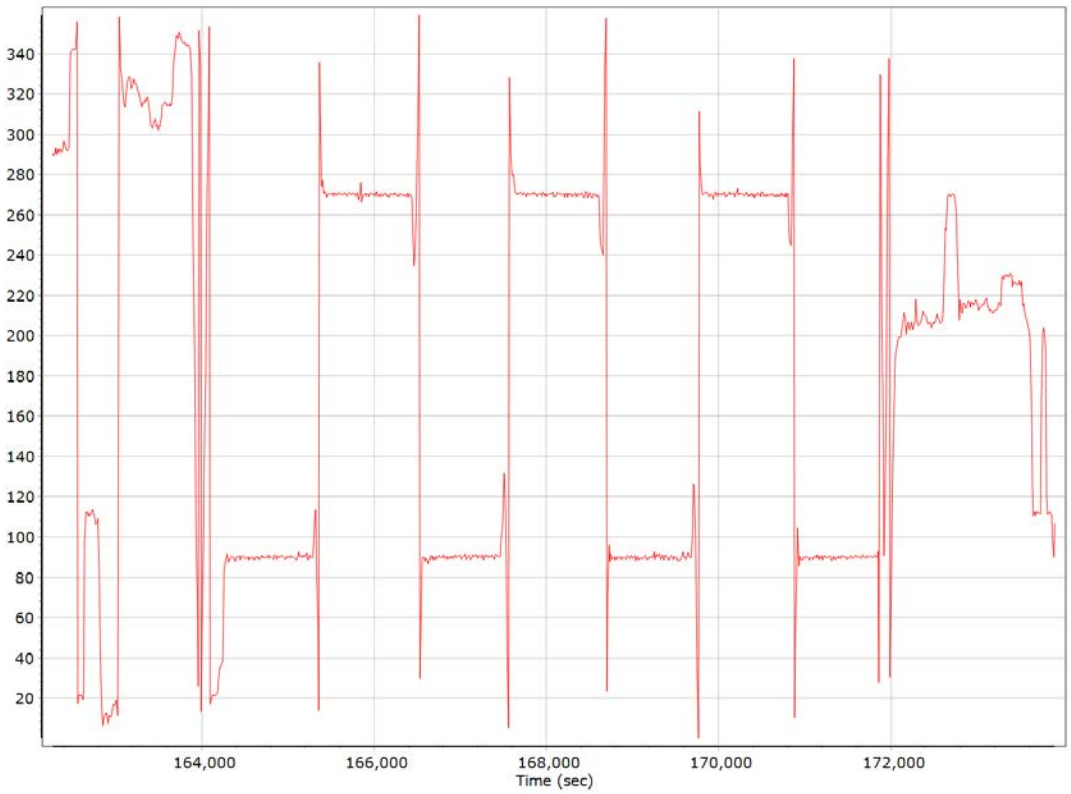
Altitude



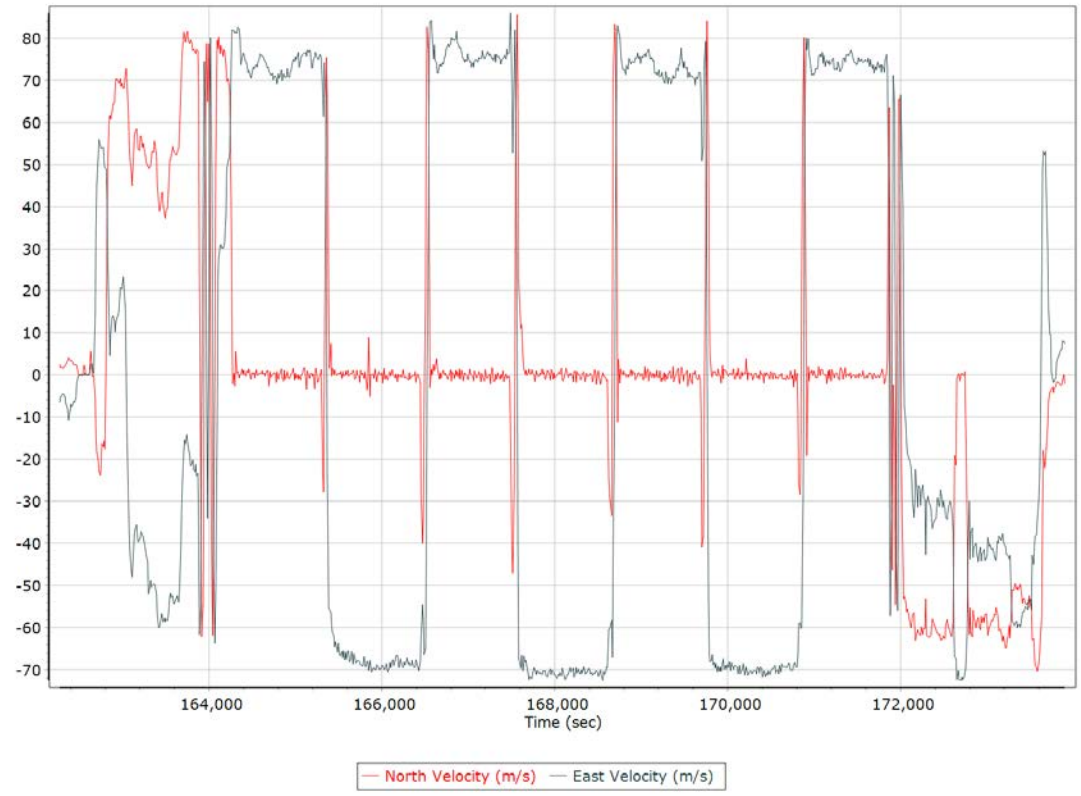
Roll/Pitch



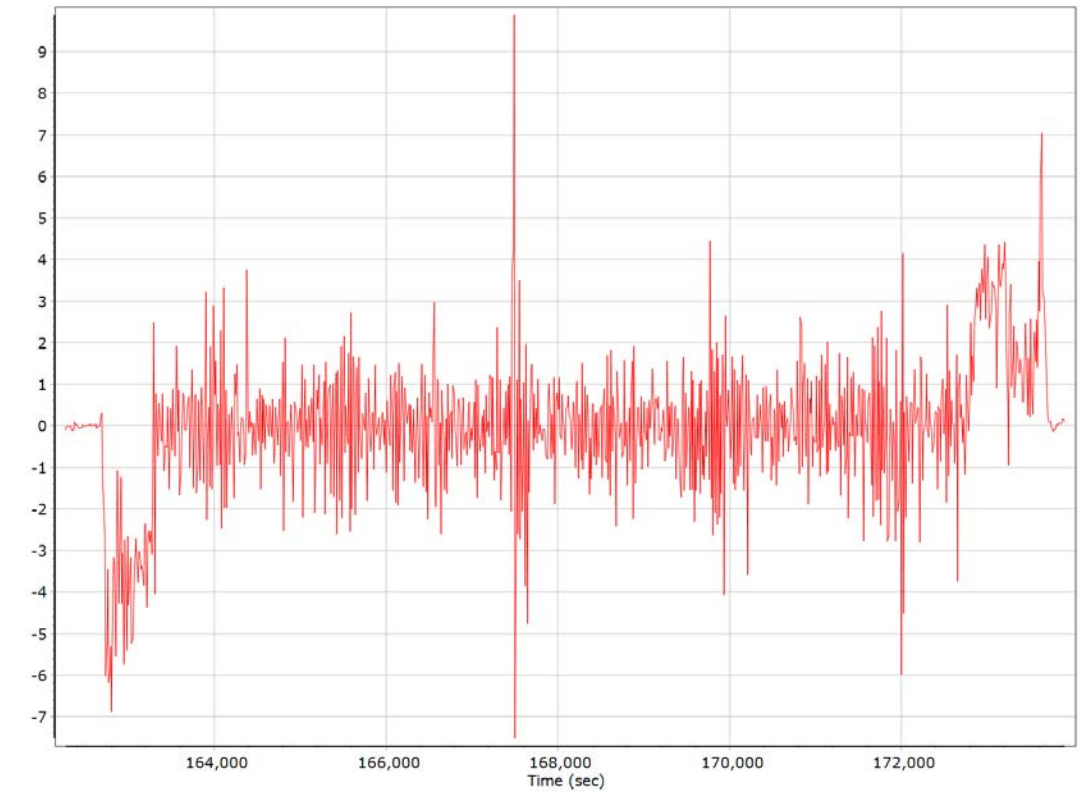
Heading



North/East Velocity



Down Velocity



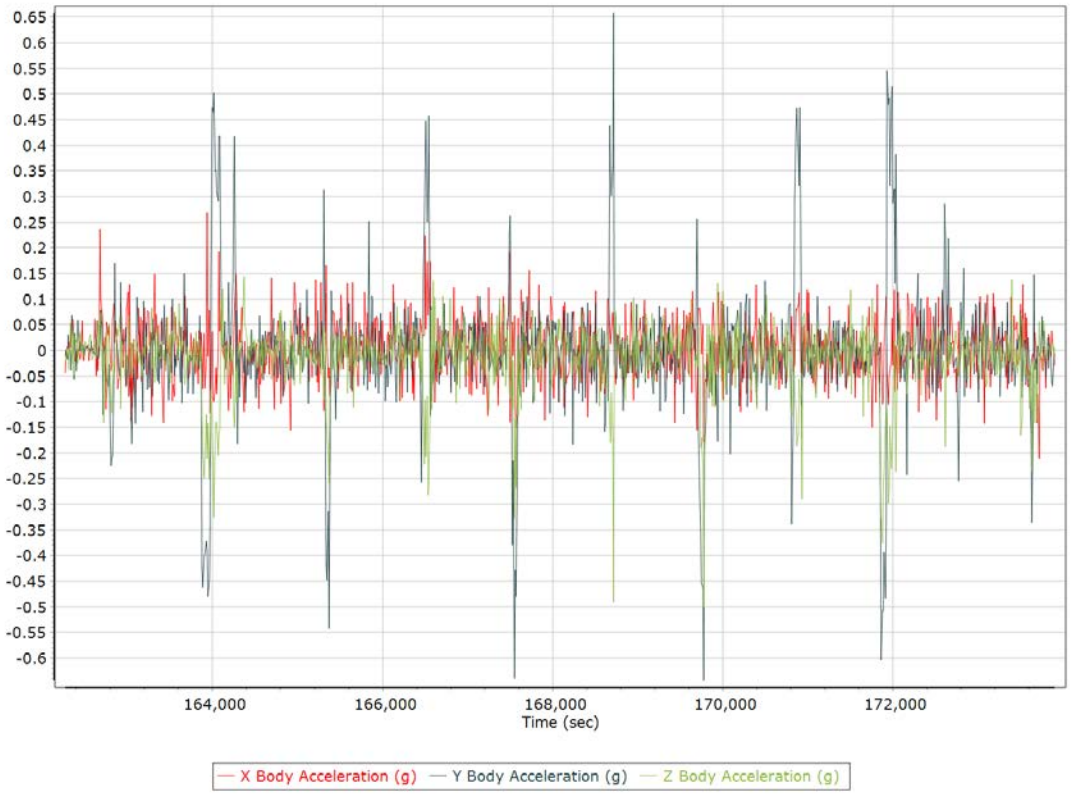
Total Speed



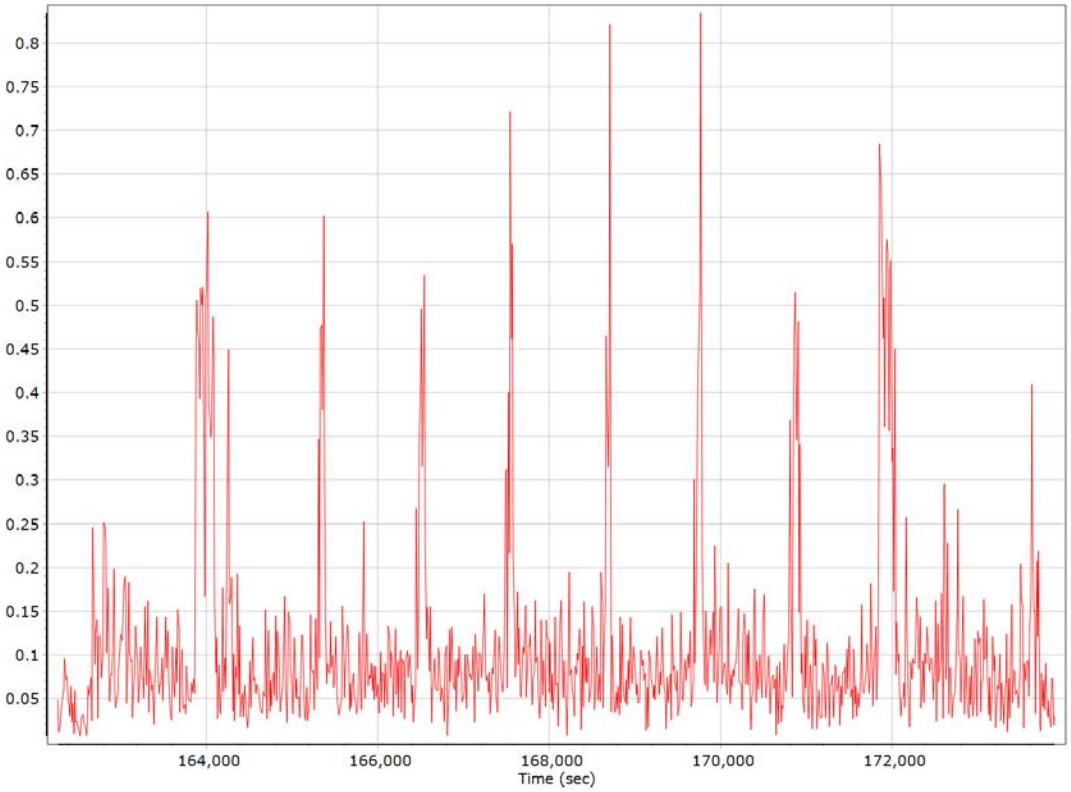
Ground Speed



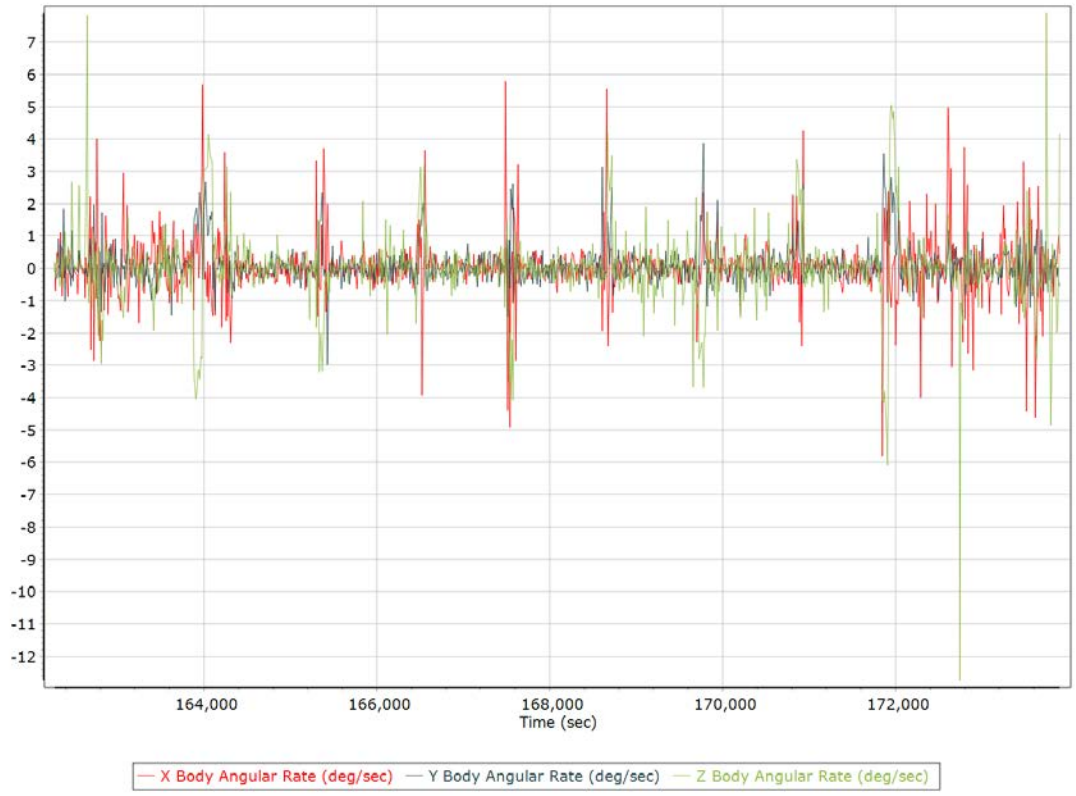
Body Acceleration



Total Body Acceleration



Body Angular Rate

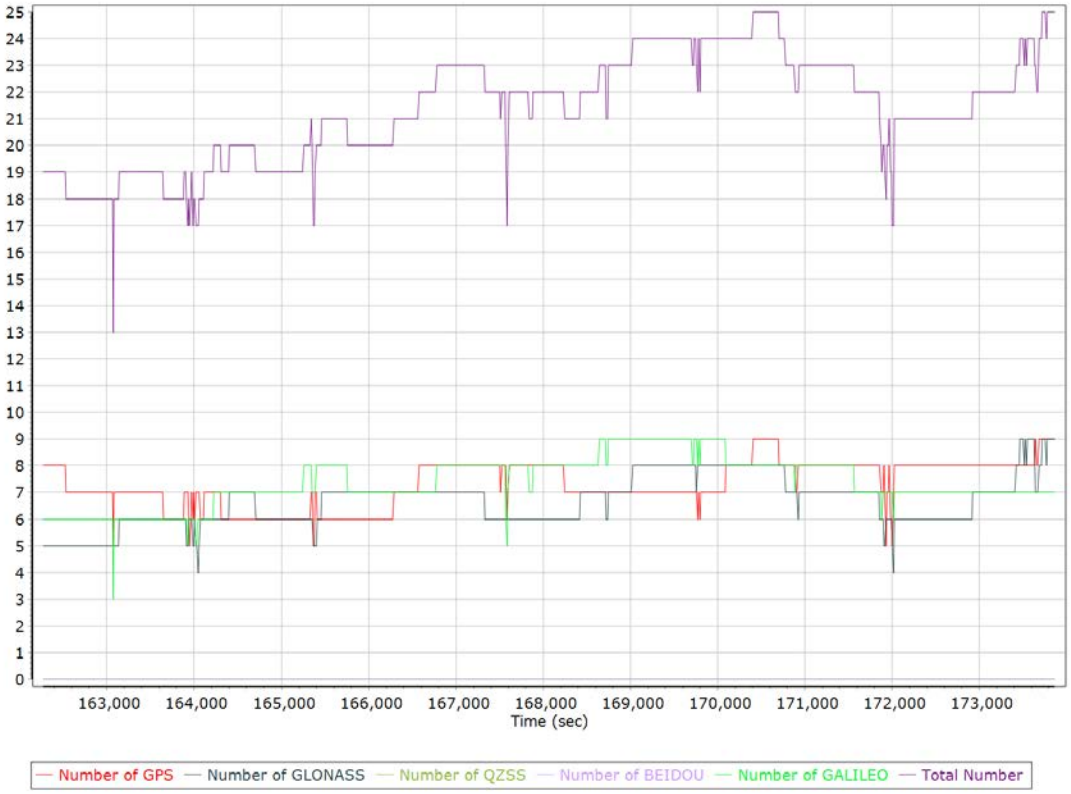


GNSS QC

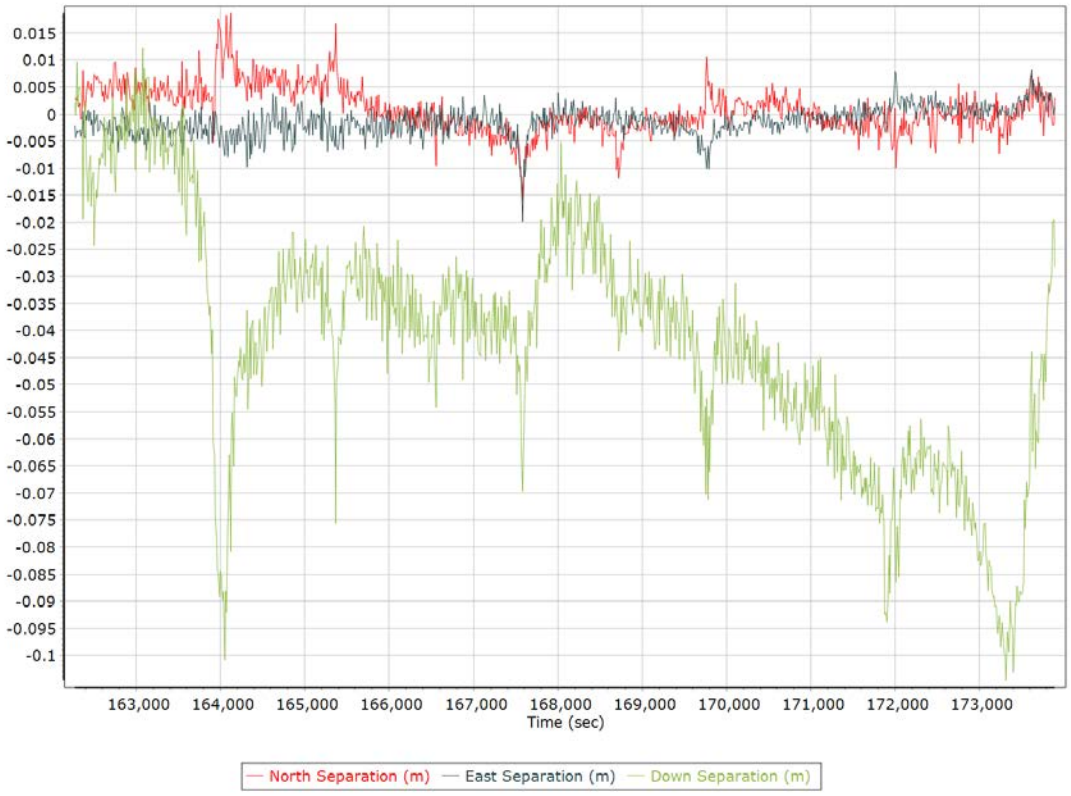
GNSS QC Statistics

Statistics	Min	Max	Mean
Baseline length (km)	0.00	0.00	
Number of GPS SV	5	9	7
Number of GLONASS SV	4	9	7
Number of QZSS SV	0	0	0
Number of BEIDOU SV	0	0	0
Number of GALILEO SV	3	9	7
Total number of SV	13	25	21
PDOP	1.00	1.90	1.21
QC Solution Gaps	0.00	0.00	
Solution Type	Fixed	Float	No solution
Epoch (sec)	11657.00	0.00	0.00
Percentage	100.00	0.00	0.00

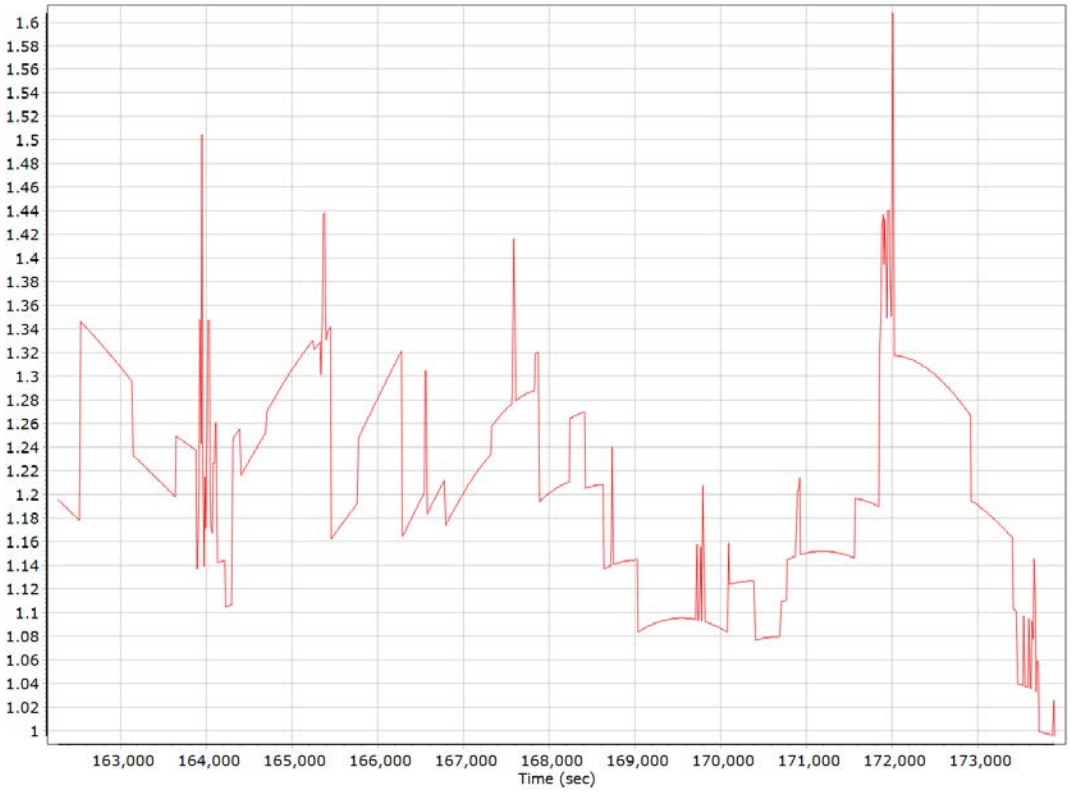
Num SVs in solution



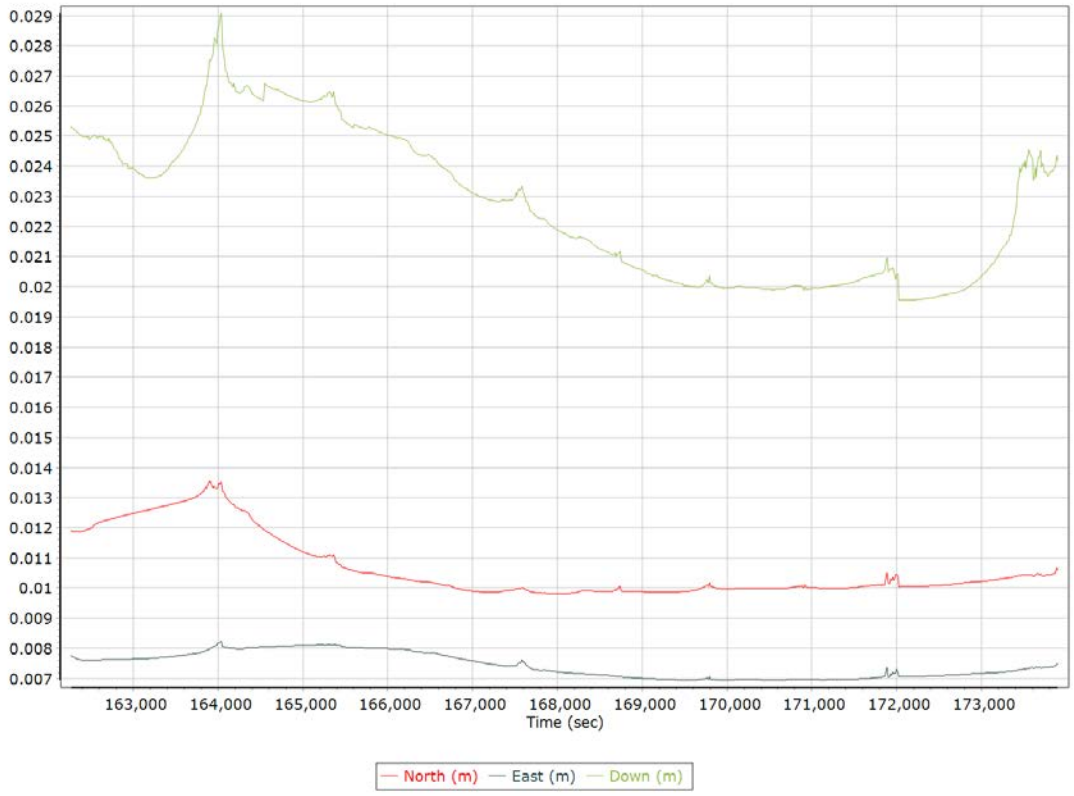
Forward/Reverse Separation



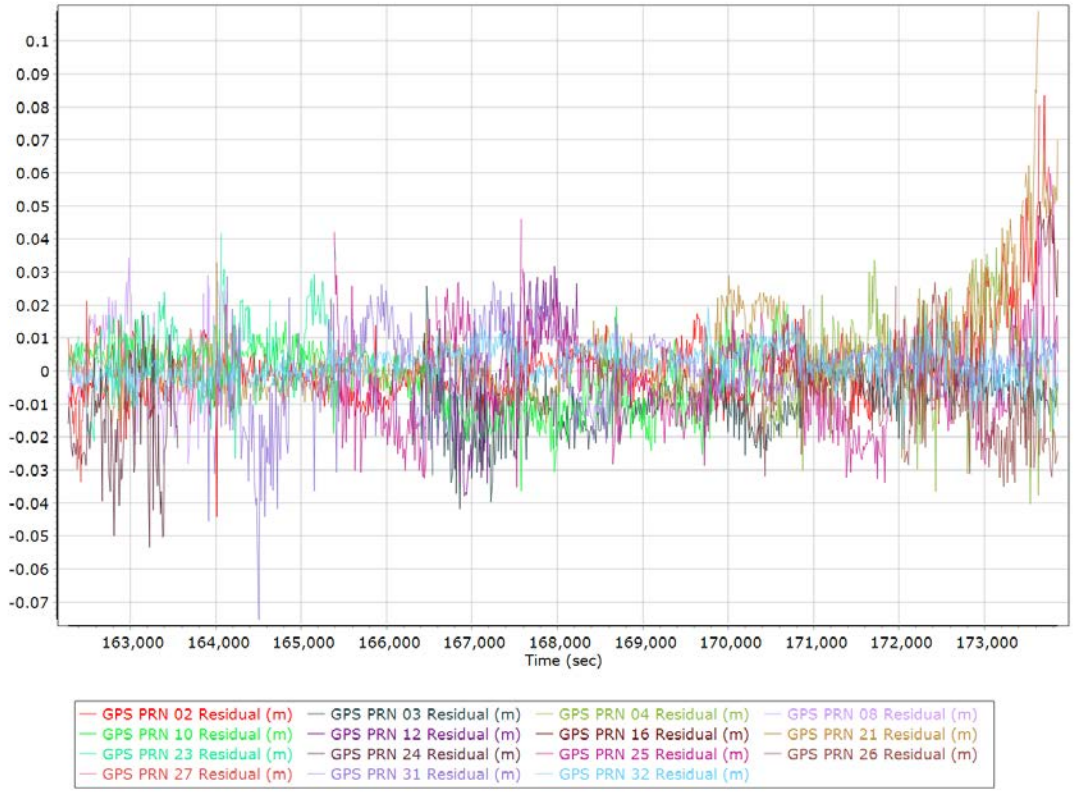
PDOP



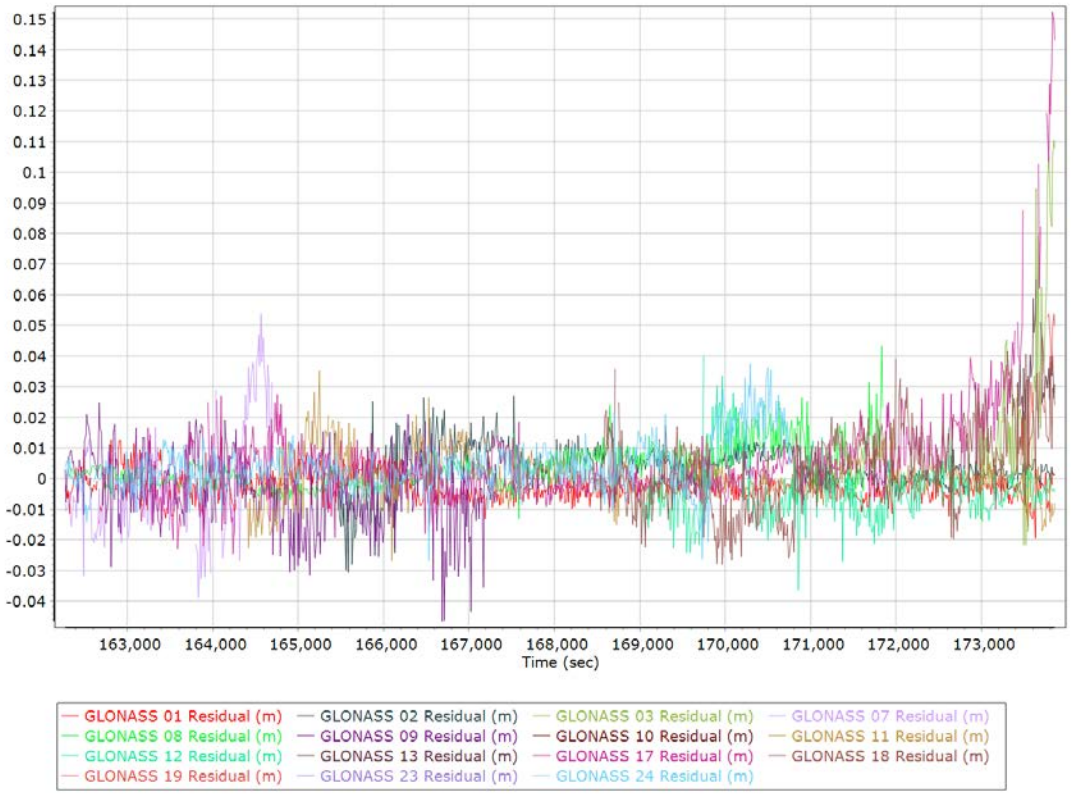
Estimated Position Accuracy



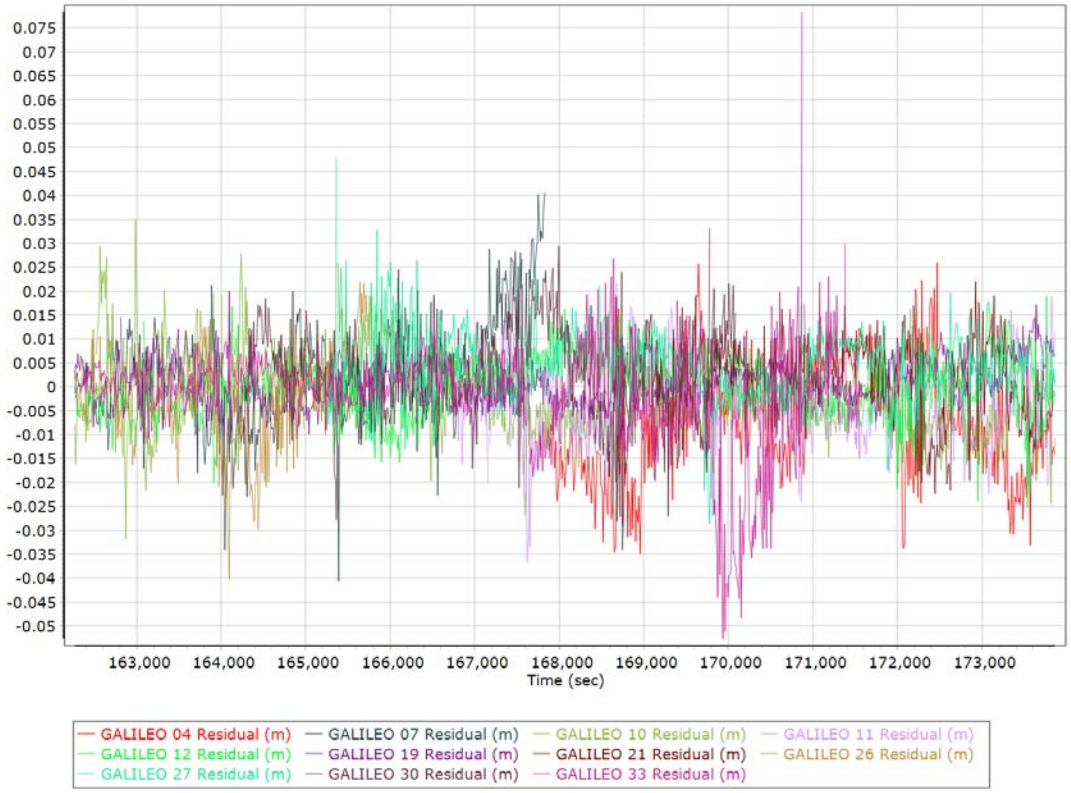
GPS Residuals



GLONASS Residuals



GALILEO Residuals



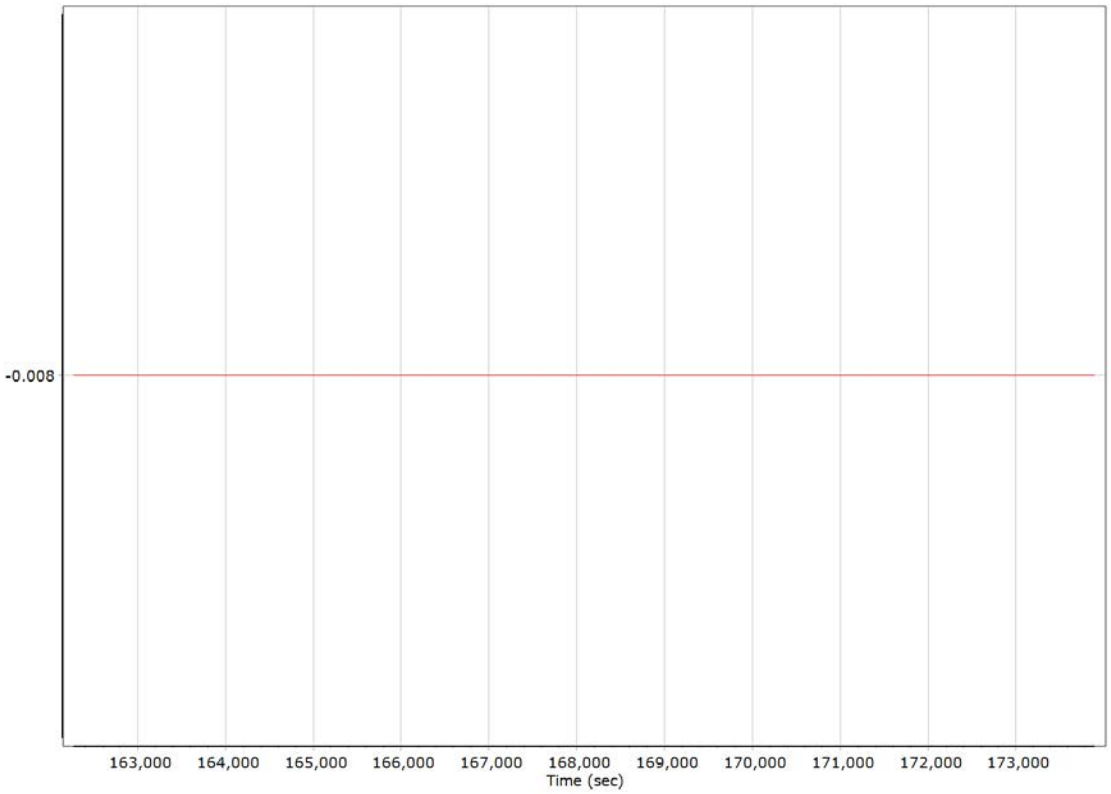
GNSS-Inertial Processor Configuration

Processing mode	IN-Fusion PP-RTX		
Stabilized mount	True		
Processing start time	162185.000 (8/21/2023 9:03:05 PM)		
Processing end time	173903.000 (8/22/2023 12:18:23 AM)		
Initial attitude source	Primary GNSS Track		
IMU Sensor Context	Processing with Onboard IMU		
Gimbal to IMU lever arm (m)	-0.034	-0.010	-0.374
Gimbal to IMU mounting angles (deg)	0.000	0.000	0.000
Gimbal to Primary GNSS lever arm (m)	-0.008	0.031	-1.294
Gimbal to Primary GNSS lever arm std dev (m)	0.030	0.030	0.030
Aircraft to Reference mounting angles (deg)	0.000	0.000	0.000

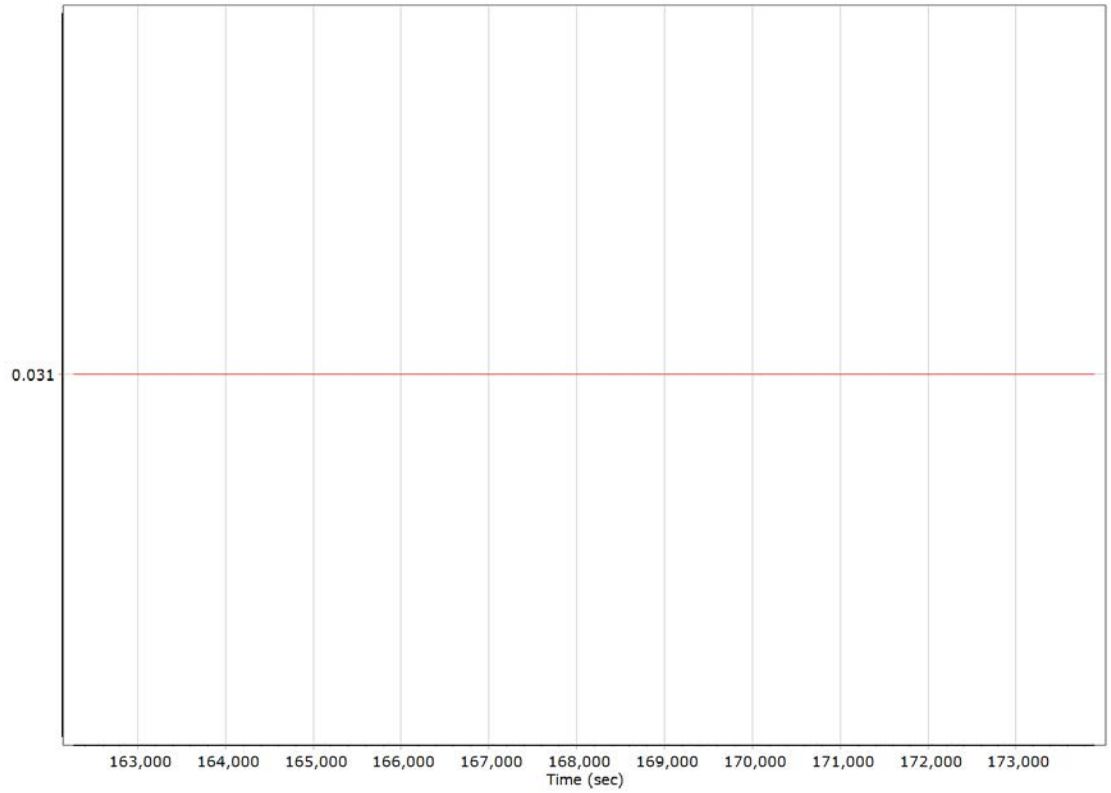
Calibrated Installation Parameters

Reference-Primary GNSS Lever Arm (m)

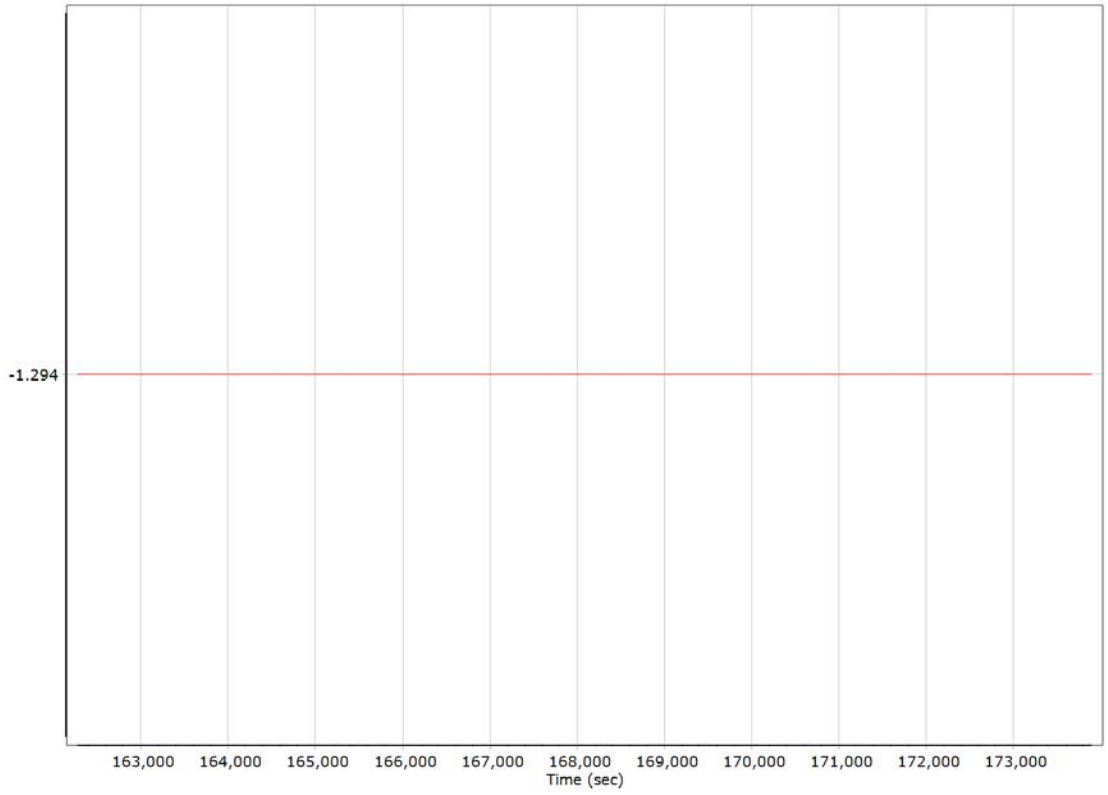
X Reference-Primary GNSS Lever Arm (m)



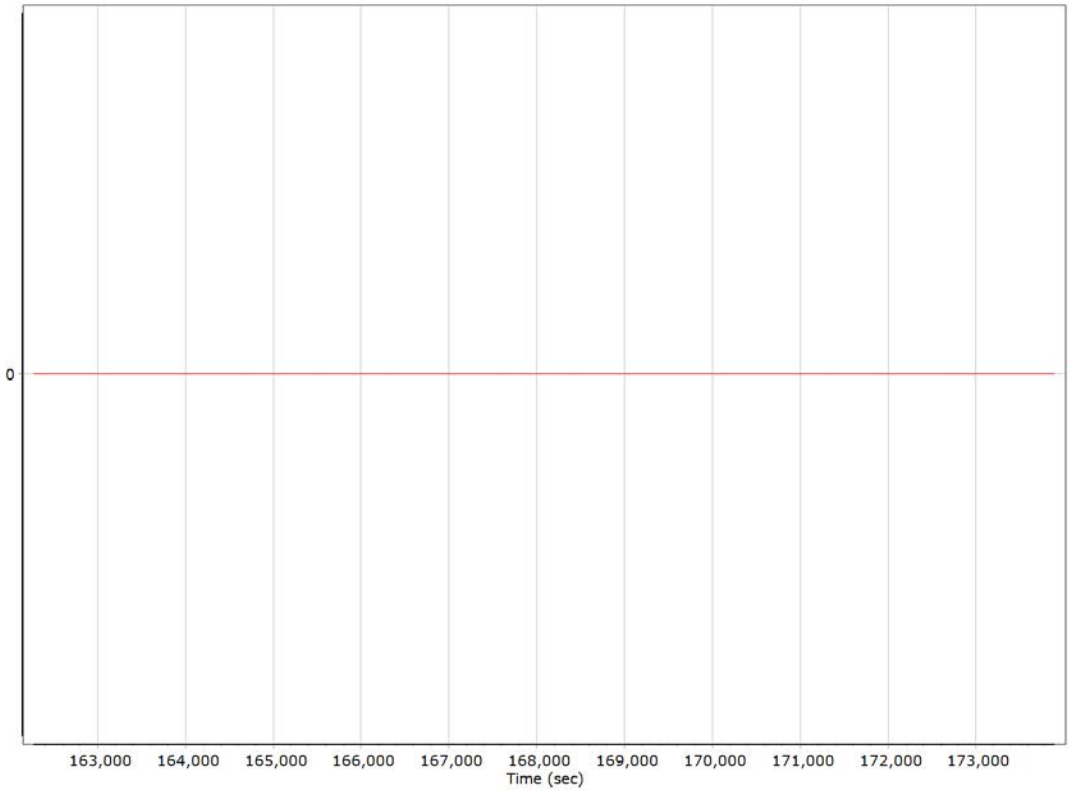
Y Reference-Primary GNSS Lever Arm (m)



Z Reference-Primary GNSS Lever Arm (m)



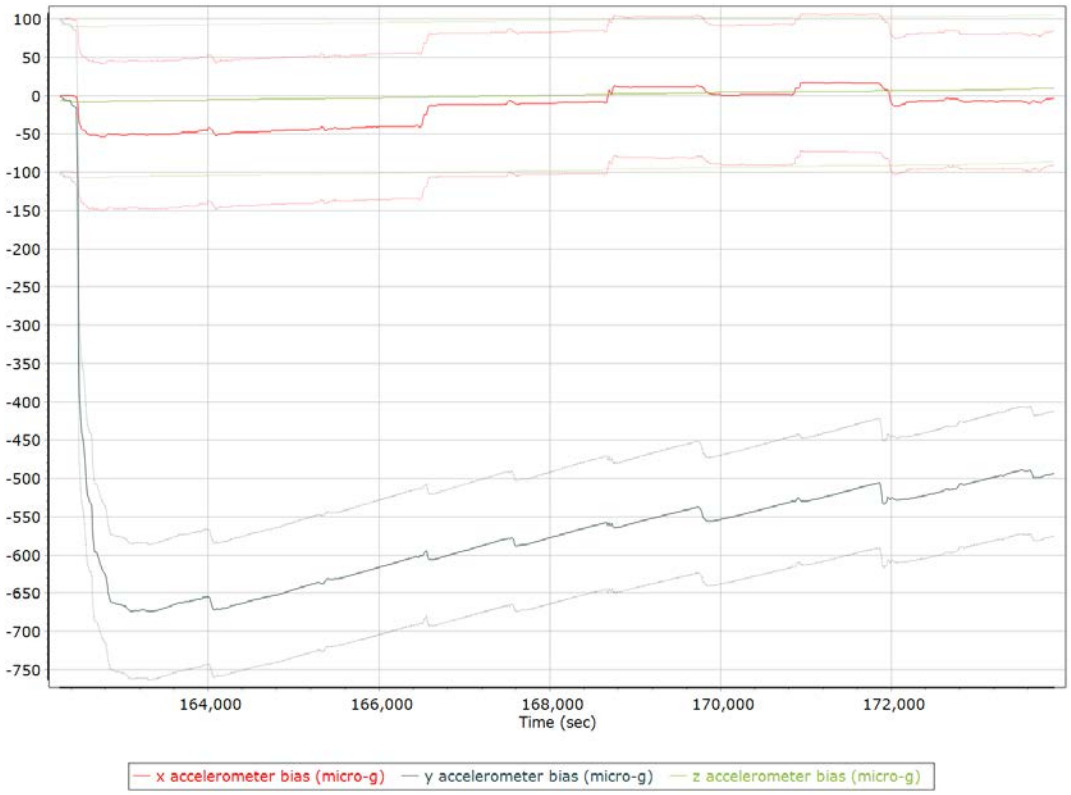
Reference-Primary GNSS Lever Arm Figure of Merit



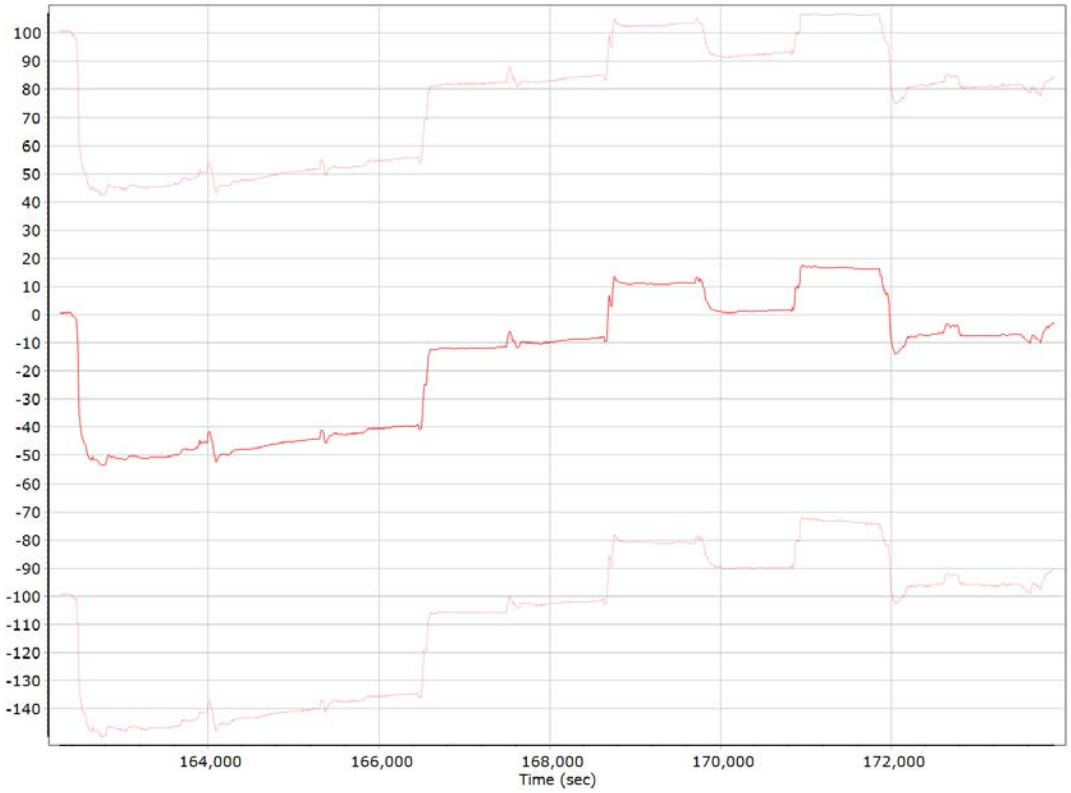
IN-Fusion QC

Forward Processed Estimated Errors, Reference Frame

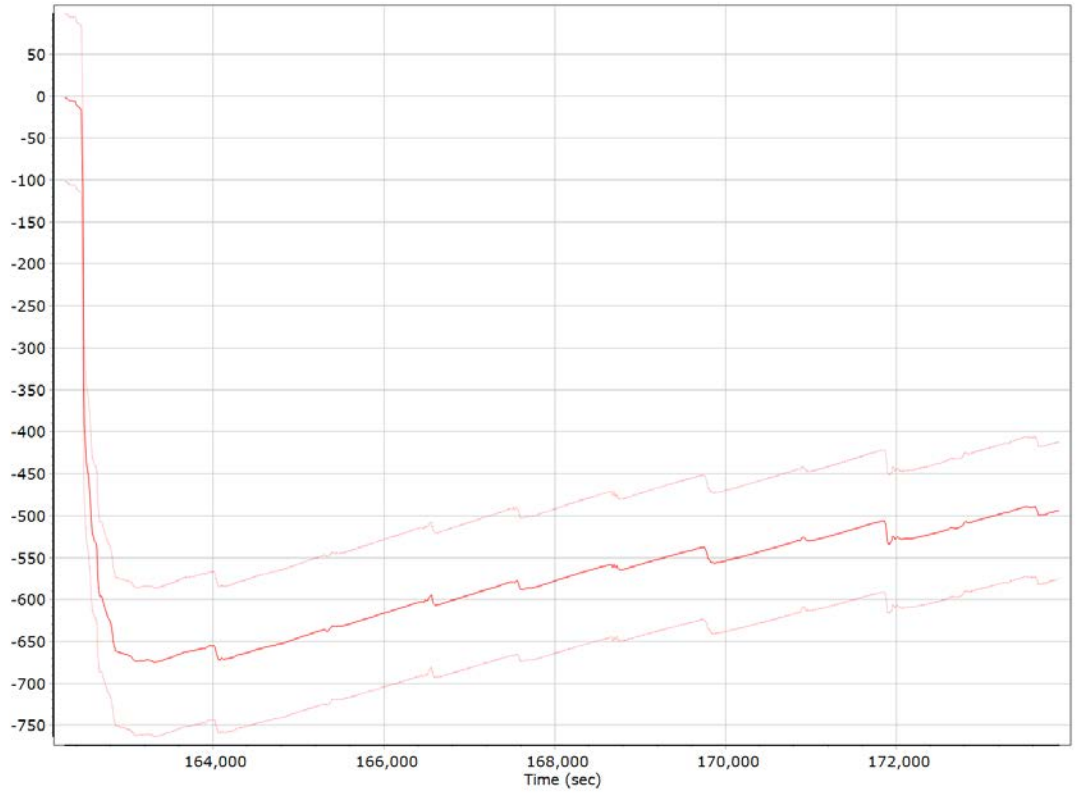
Accelerometer Bias (micro-g)



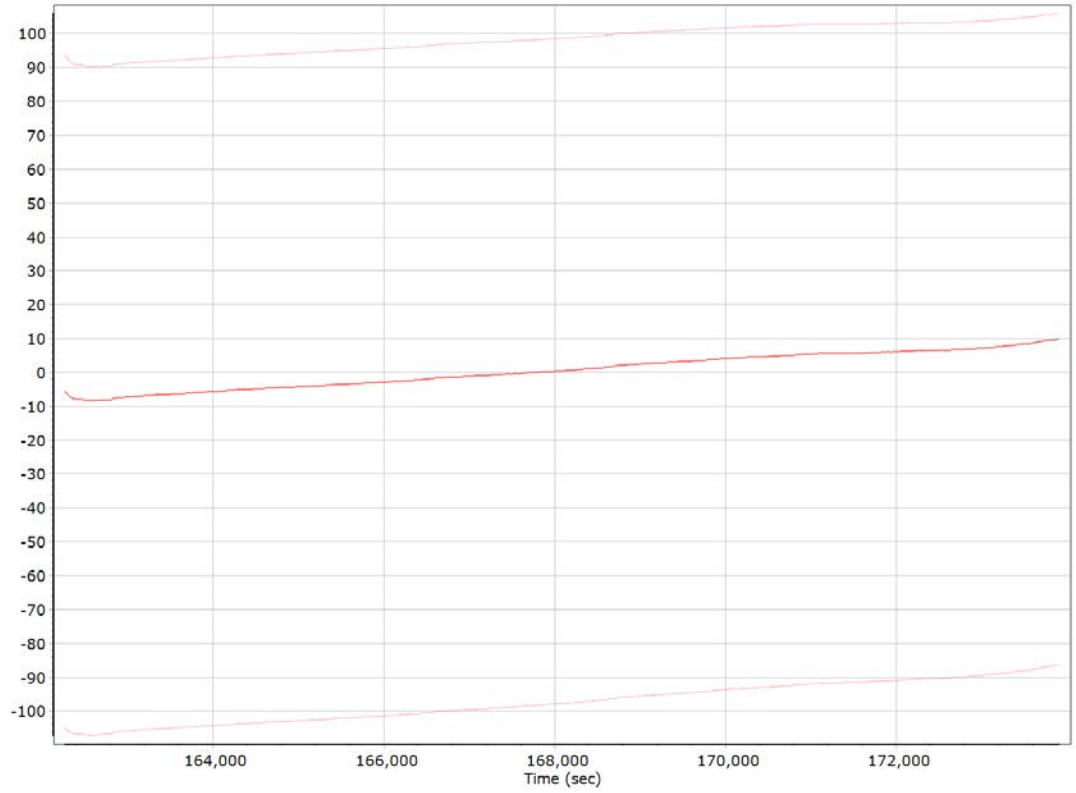
X Accelerometer Bias (micro-g)



Y Accelerometer Bias (micro-g)



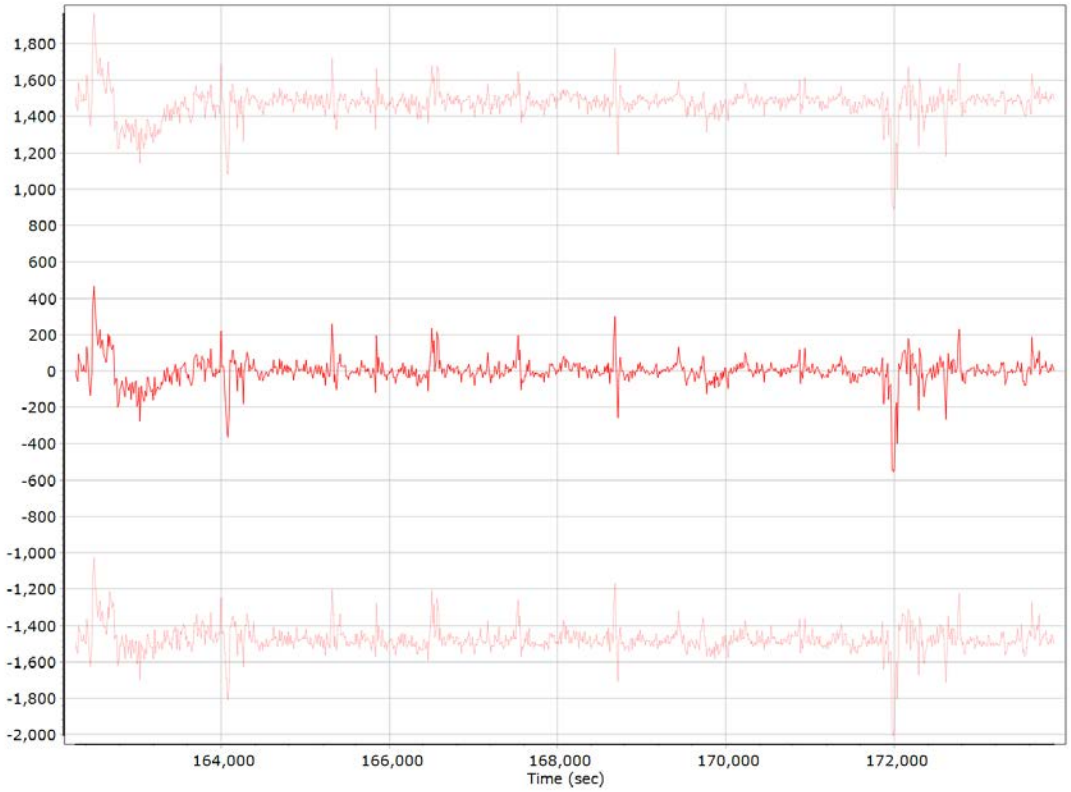
Z Accelerometer Bias (micro-g)



Accelerometer Scale Error (ppm)



X Accelerometer Scale Error (ppm)



Y Accelerometer Scale Error (ppm)



Z Accelerometer Scale Error (ppm)



Gyro Bias (deg/h)



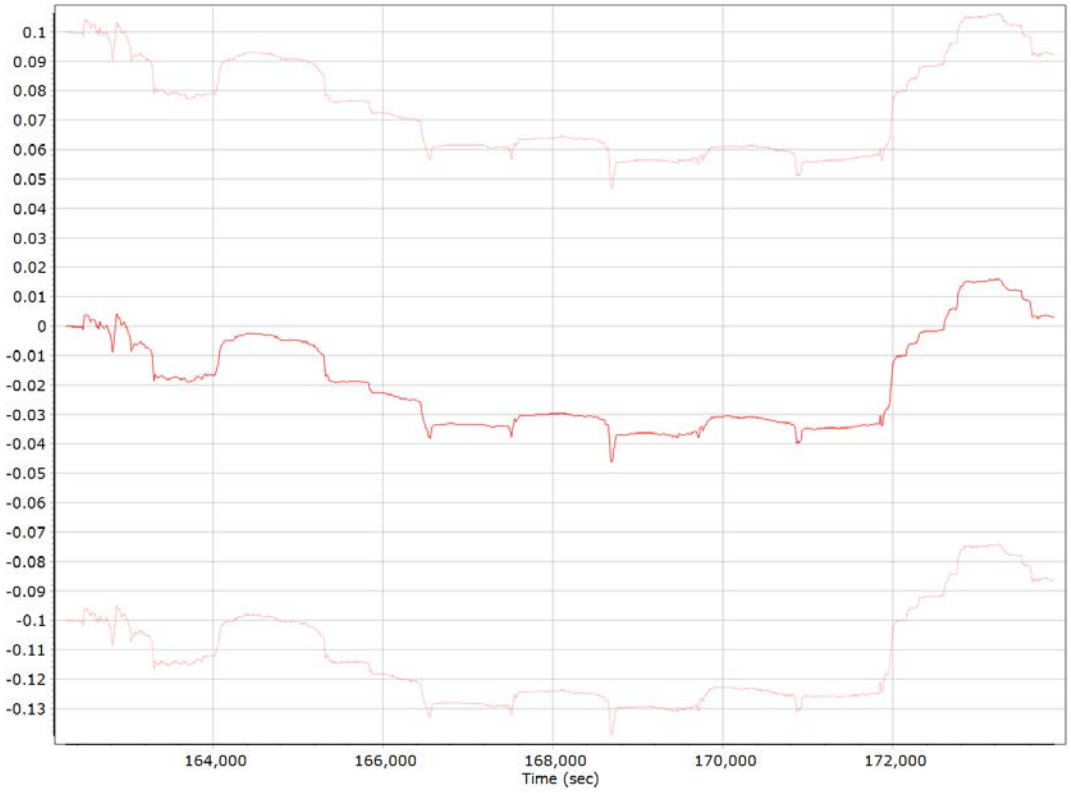
X Gyro Bias (deg/h)



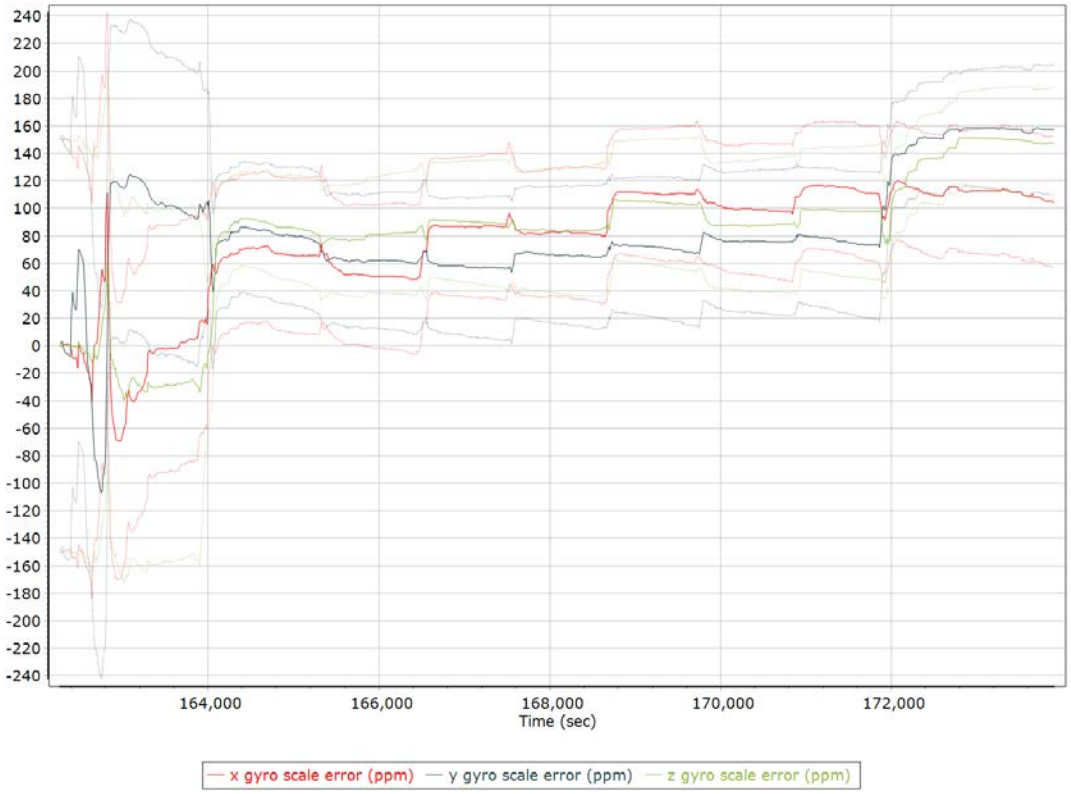
Y Gyro Bias (deg/h)



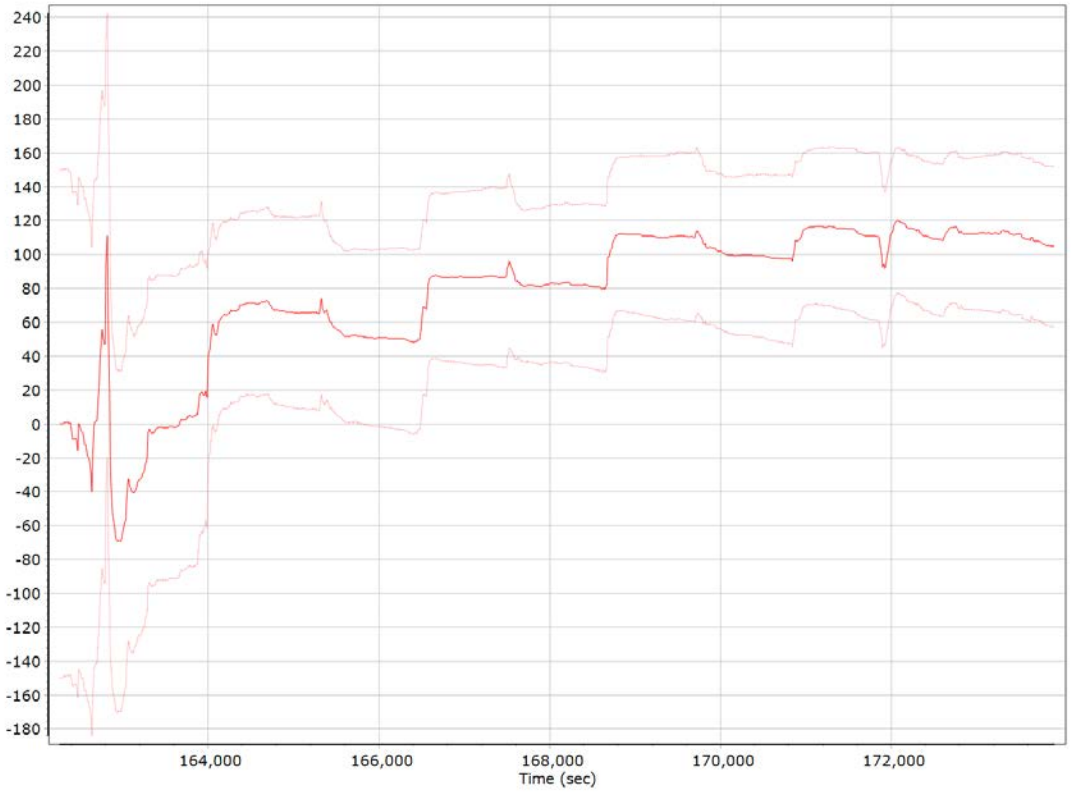
Z Gyro Bias (deg/h)



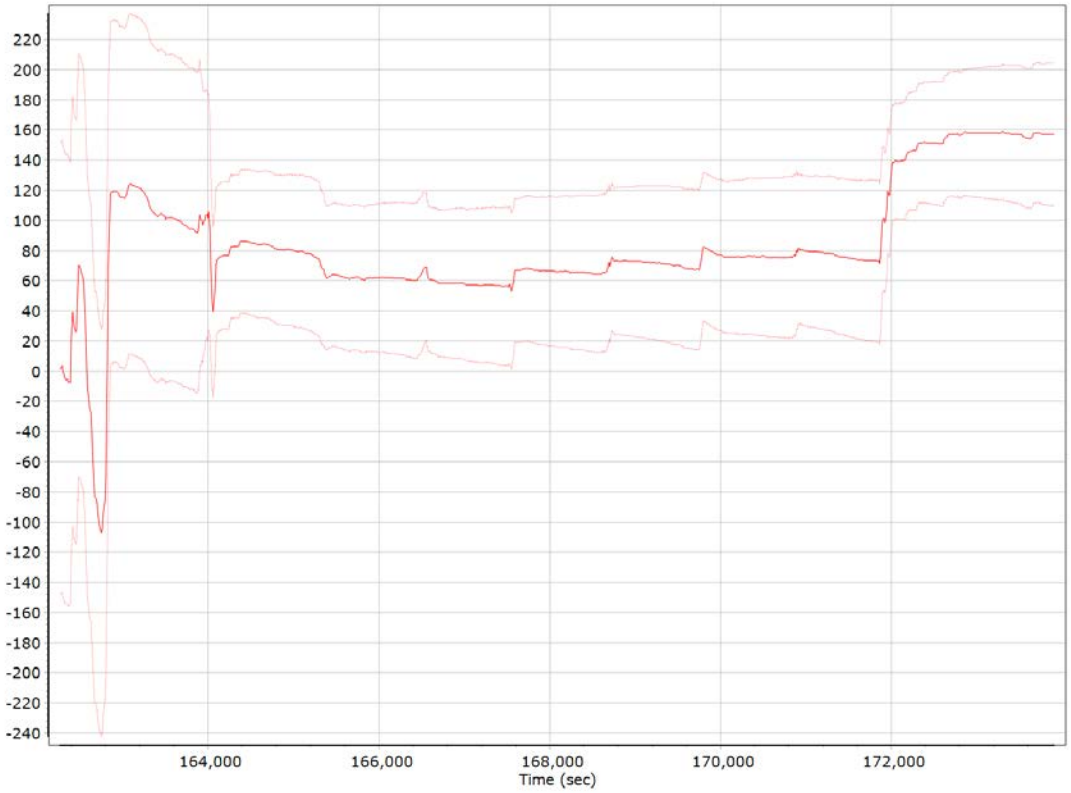
Gyro Scale Error (ppm)



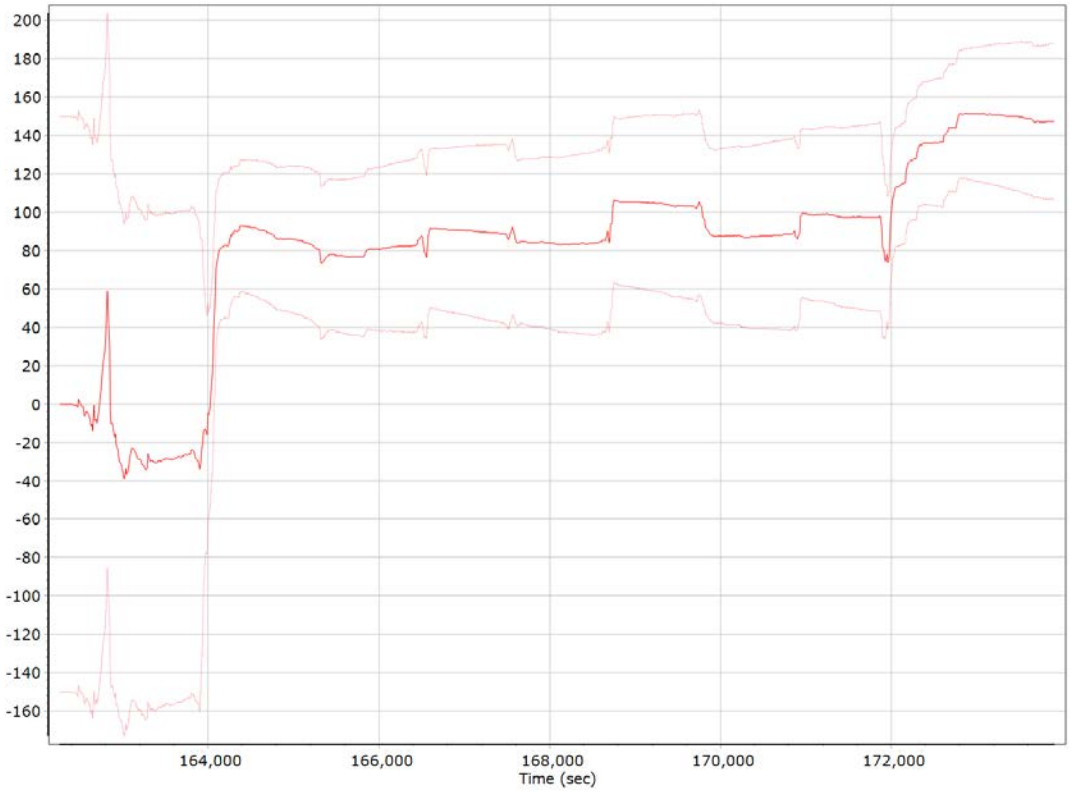
X Gyro Scale Error (ppm)



Y Gyro Scale Error (ppm)



Z Gyro Scale Error (ppm)

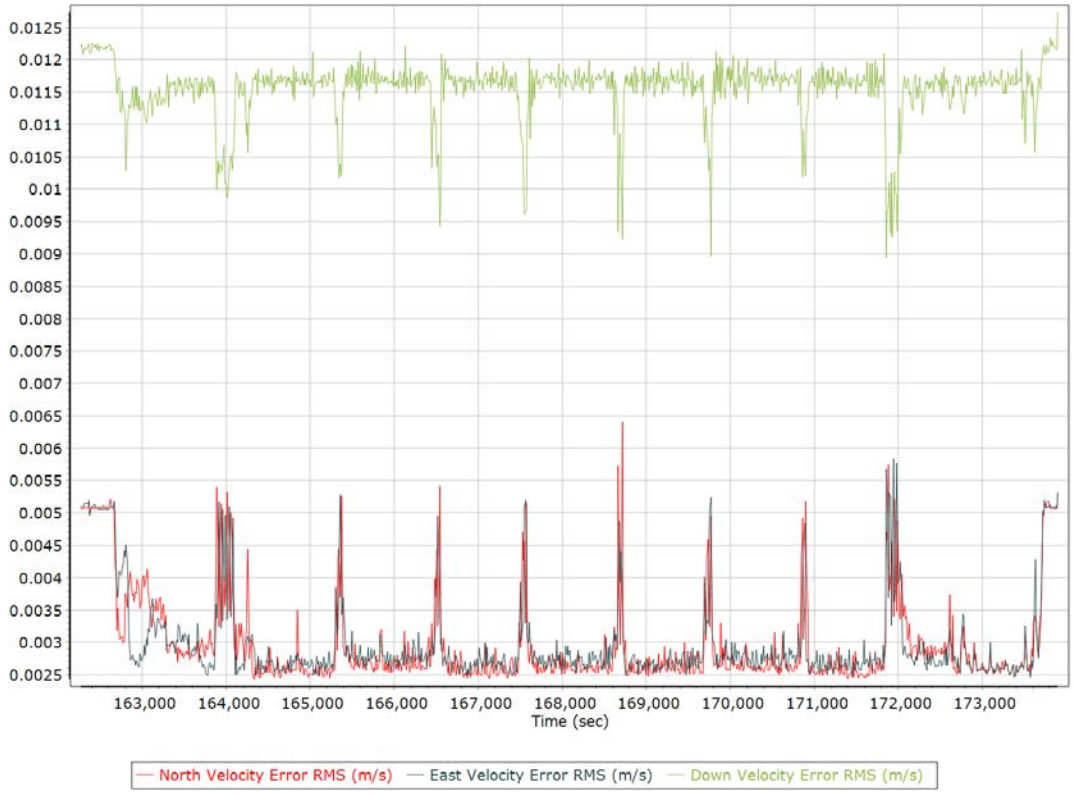


Smoothed Performance Metrics

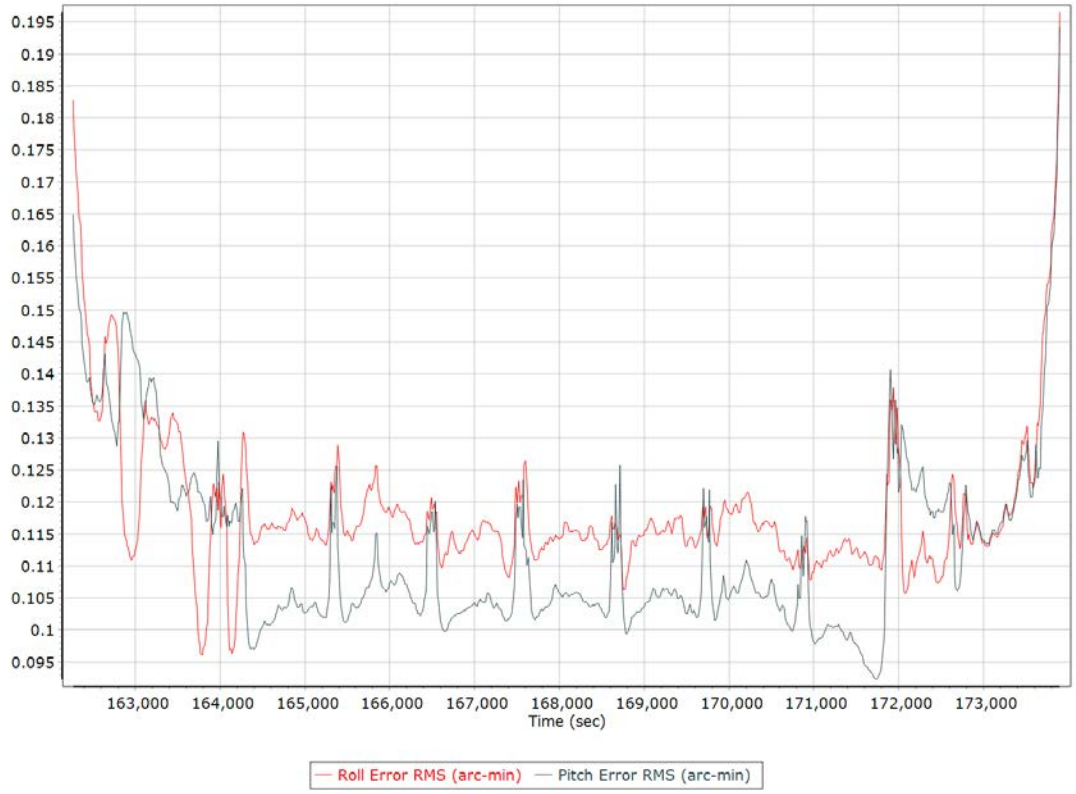
Position Error RMS (m)



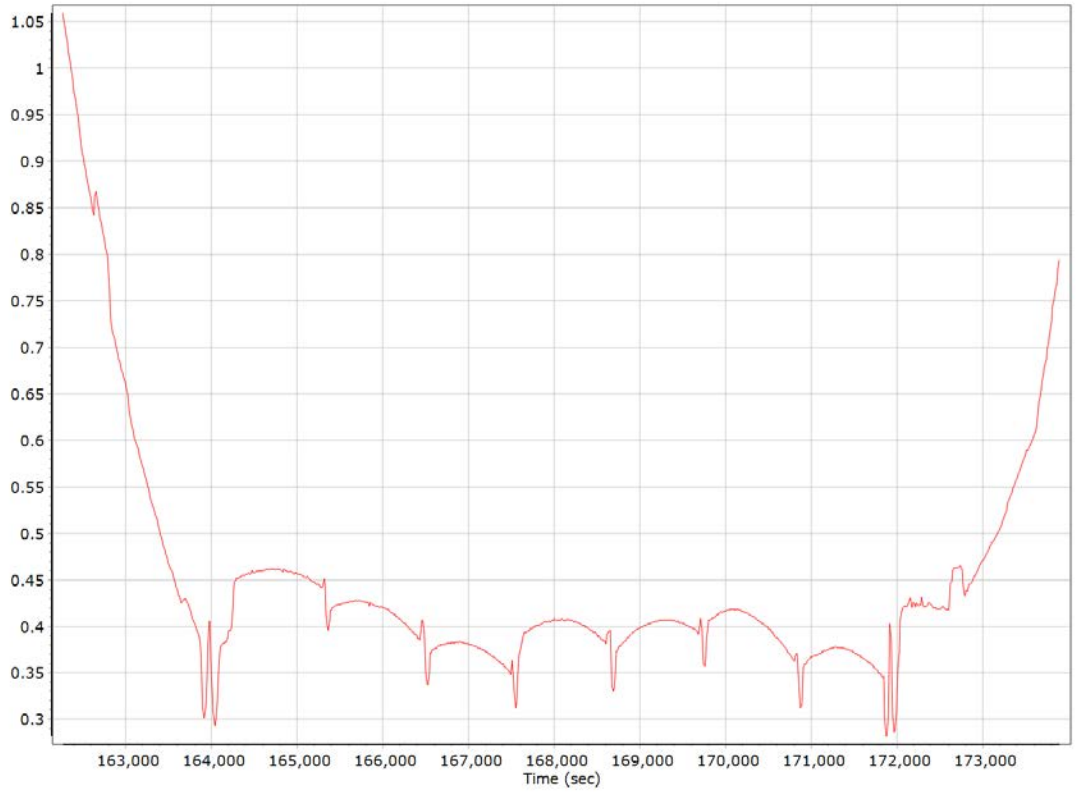
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)



Heading Error RMS (arc-min)



Forward Processed Performance Metrics

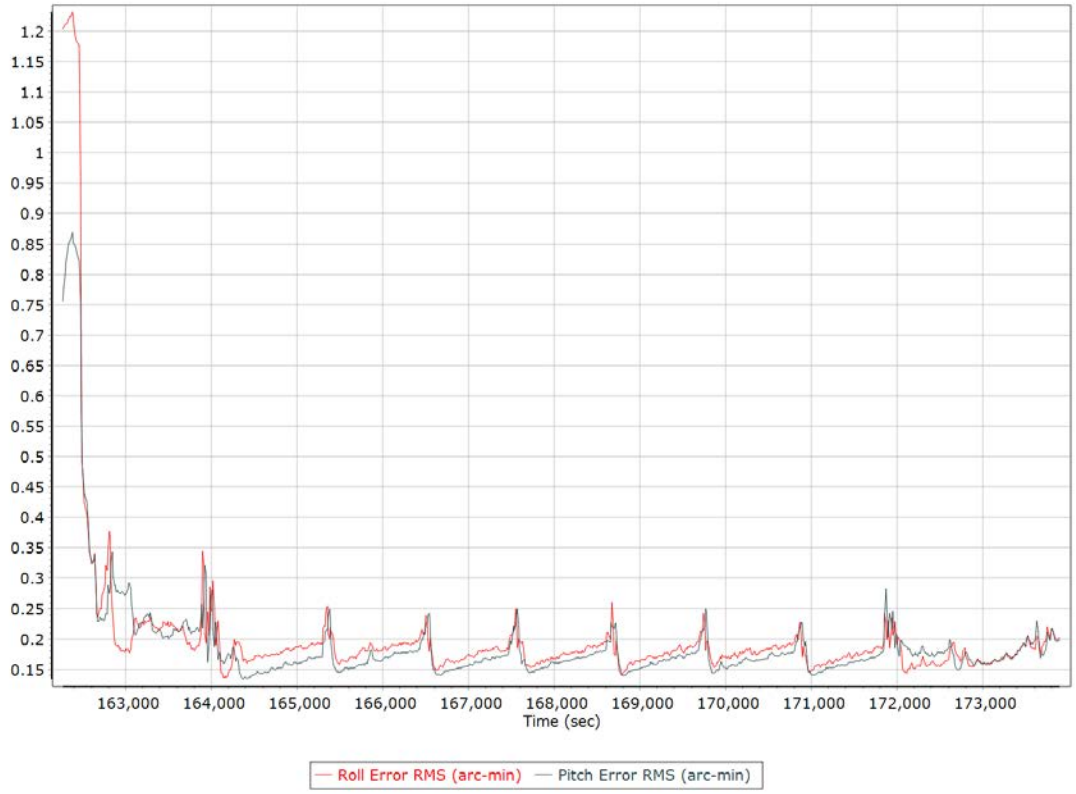
Position Error RMS (m)



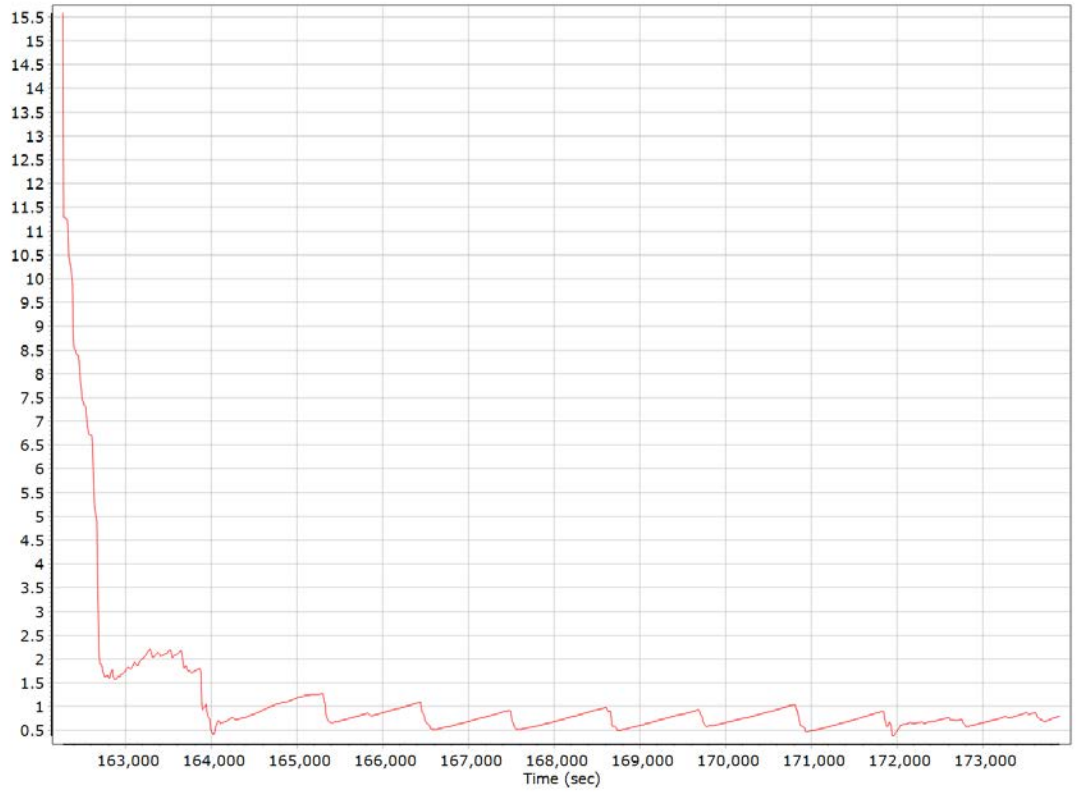
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

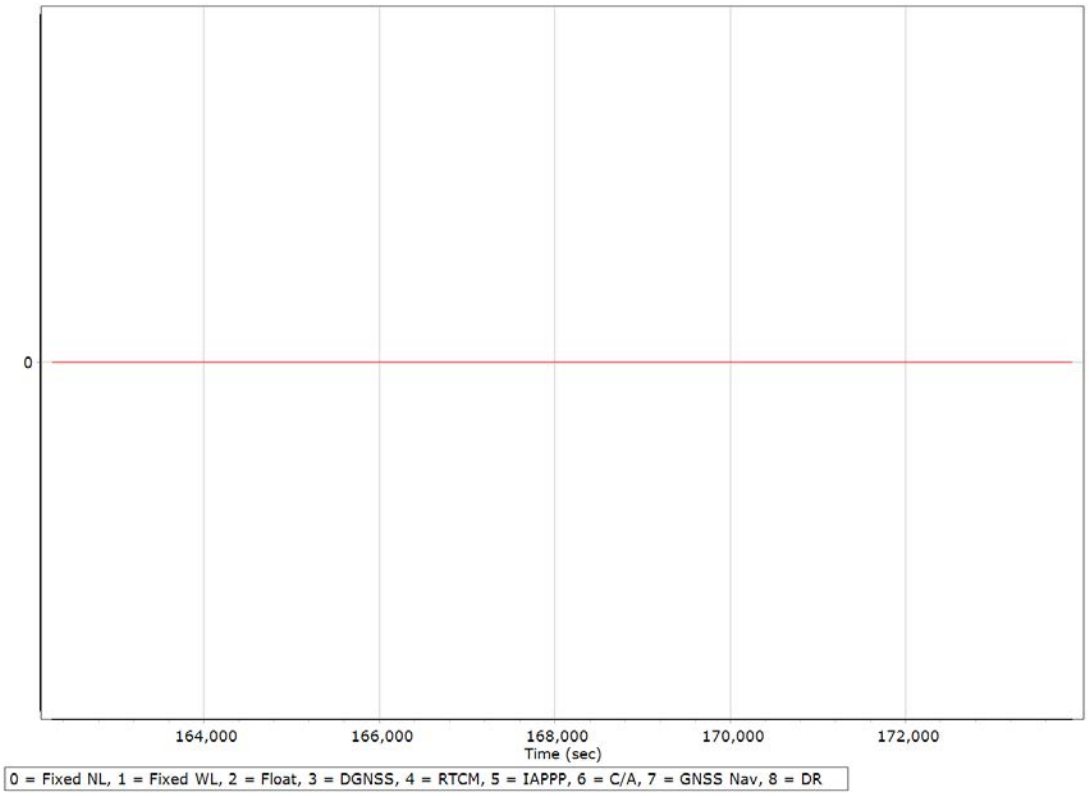


Heading Error RMS (arc-min)



Forward Processed Solution Status

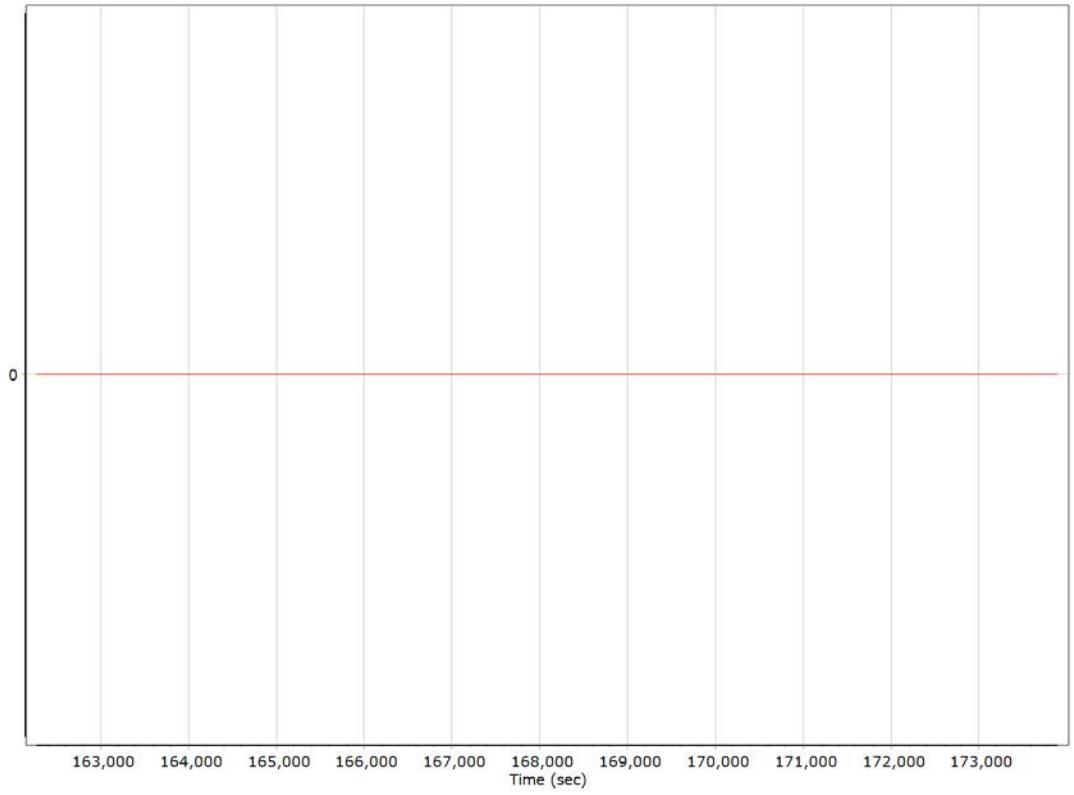
Processing Mode



Number of Satellites



Baseline Length



General Information

Mission Information

Project name	08222023A_3541
Processing date	2023-08-25 18:37:19
Mission date	2023-08-22 13:28:52
Mission duration	05:31:53.861
Processing mode	IN-Fusion PP-RTX

Rover Hardware Information

Product	POS AV 610 VER6 HW2.5-12
Serial number	S/N9642
IMU type	57
Receiver type	BD982
Antenna type	AV59

Project File List

Rover Data Files

File name	File type
ALS.003	POS Data
ALS.004	POS Data
ALS.005	POS Data
ALS.006	POS Data
ALS.007	POS Data
ALS.008	POS Data
ALS.009	POS Data
ALS.010	POS Data
ALS.011	POS Data
ALS.012	POS Data
ALS.013	POS Data
ALS.014	POS Data
ALS.015	POS Data
ALS.016	POS Data
ALS.017	POS Data
ALS.018	POS Data
ALS.019	POS Data
ALS.020	POS Data
ALS.021	POS Data
ALS.022	POS Data
ALS.023	POS Data
ALS.024	POS Data
ALS.025	POS Data
ALS.026	POS Data
ALS.027	POS Data
ALS.028	POS Data
ALS.029	POS Data
ALS.030	POS Data
ALS.031	POS Data
ALS.032	POS Data
ALS.033	POS Data
ALS.034	POS Data
ALS.035	POS Data
ALS.036	POS Data

Input Files

File Name	File Type
Ephm2340.23g	GLONASS Broadcast Ephemeris
Ephm2340.23n	GPS Broadcast Ephemeris

Output Files

Filename	File type
sbet_08222023A_3541.out	SBET Trajectory File

Rover Data Summary

First raw data file	ALS.003		
Last raw data file	ALS.036		
Start GPS week	2276		
Start time	221313.975 (8/22/2023 1:28:33 PM)		
End time	241227.836 (8/22/2023 7:00:27 PM)		
Start of fine alignment	221337.299 (8/22/2023 1:28:57 PM)		
Available subsystems	Primary GNSS, Gimbal, IMU		
POS Event Input	None		
Correction data	None		
IMU Installation Lever Arms & Mounting Angles			
Gimbal to IMU lever arm (m)	-0.034	-0.010	-0.374
Gimbal to IMU mounting angles (deg)	0.000	0.000	0.000
Gimbal to Primary GNSS lever arm (m)	-0.137	0.043	-1.289
Gimbal to Primary GNSS lever arm std dev (m)	-1.000		
Aircraft to Reference mounting angles (deg)	0.000	0.000	0.000

Rover Data QC

Raw IMU Import QC Summary

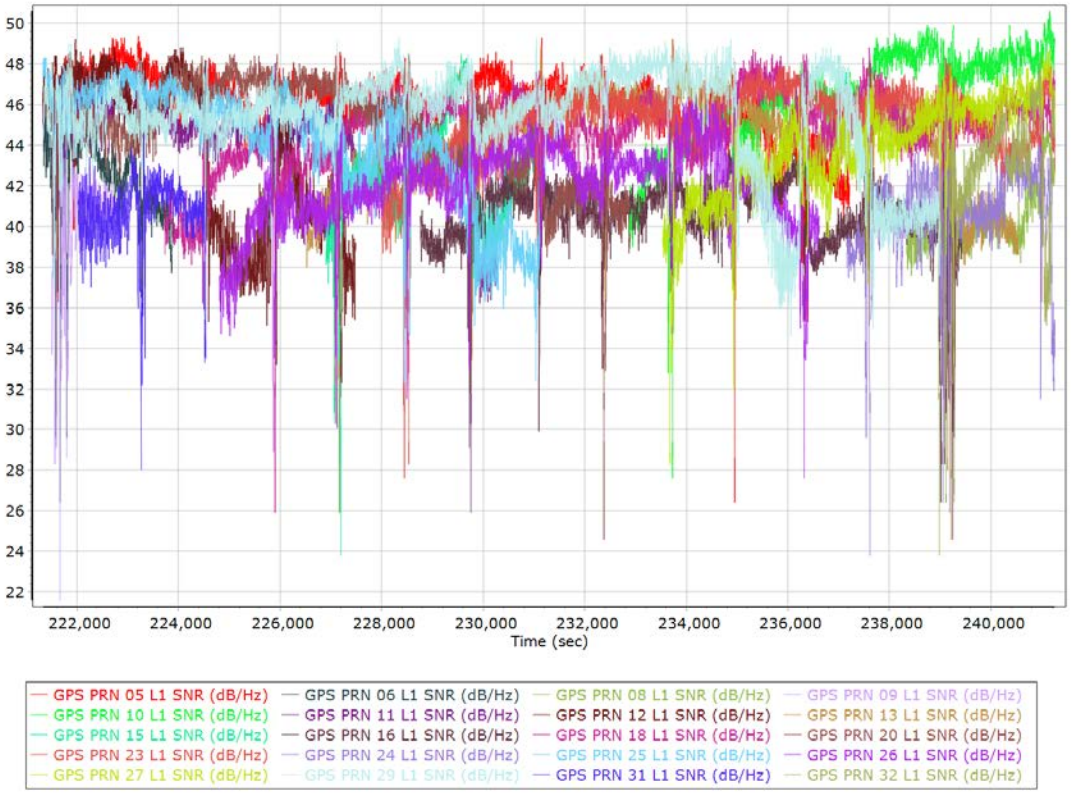
IMU data input file	imu_Mission 1.dat
IMU data check log file	imudt_08222023A_3541.log
IMU Records Processed	3983972
Termination Status	Normal
IMU Anomalies	0

Primary Observables & Satellite Data

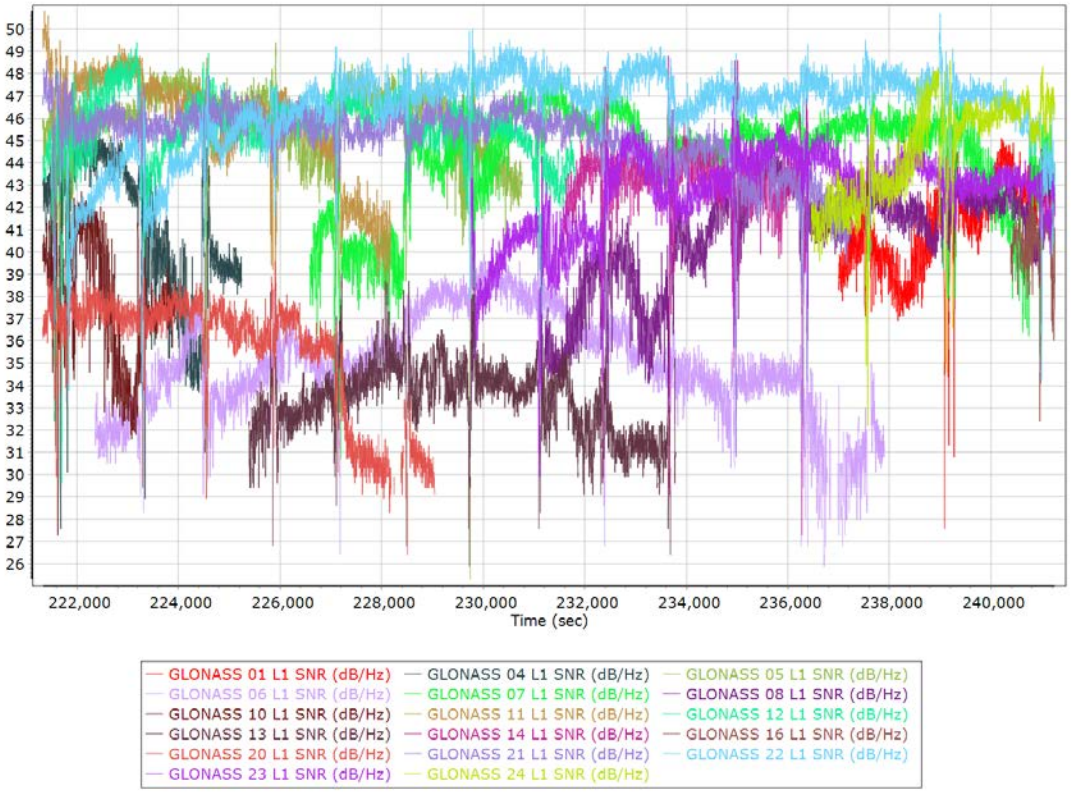
GPS/GLONASS L1 Satellite Lock/Elevation



GPS L1 SNR



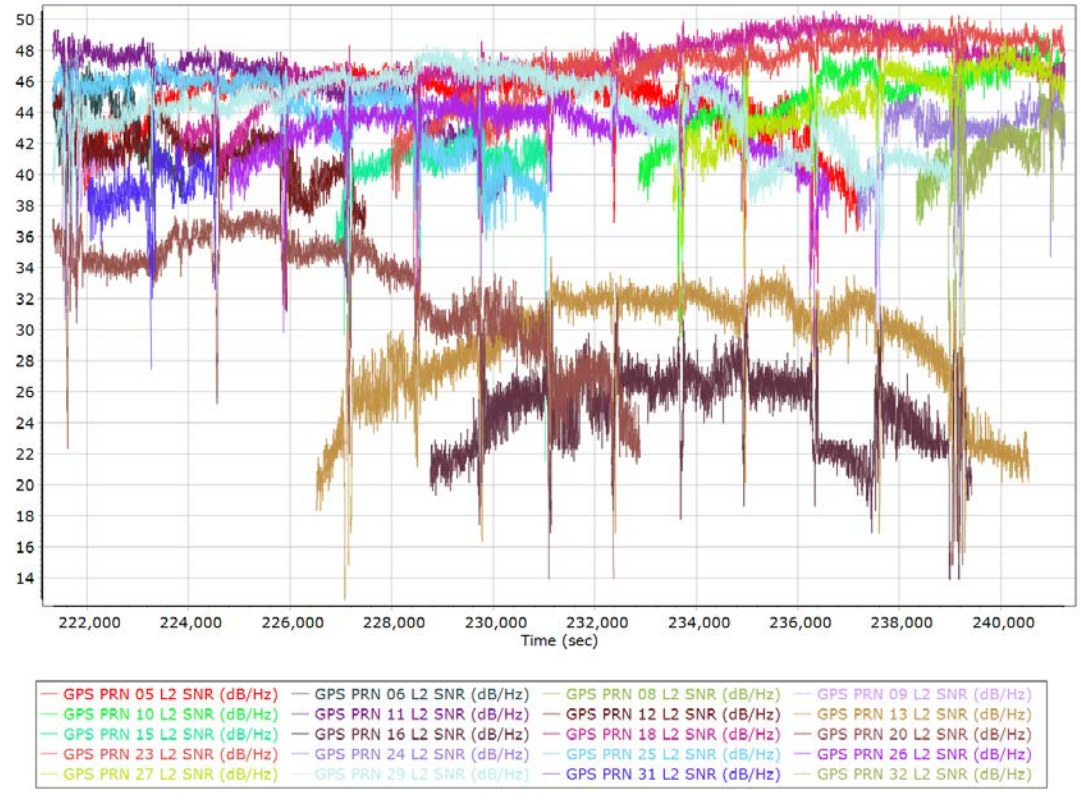
GLONASS L1 SNR



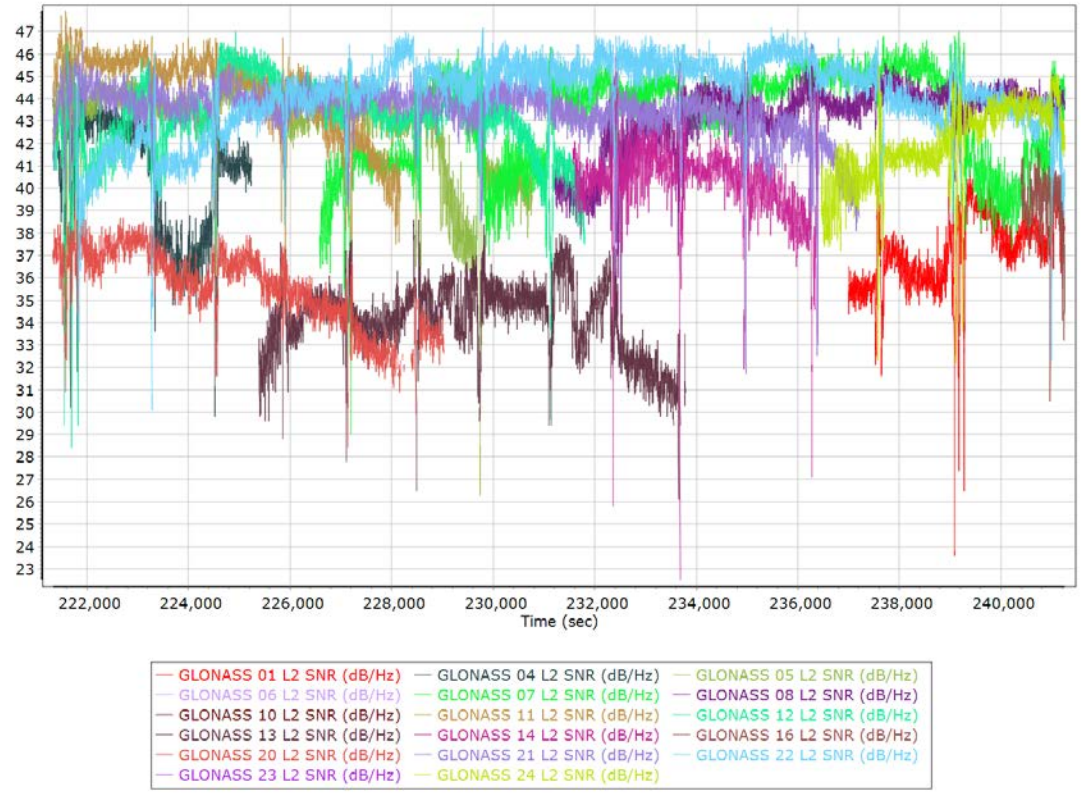
GPS/GLONASS L2 Satellite Lock/Elevation



GPS L2 SNR



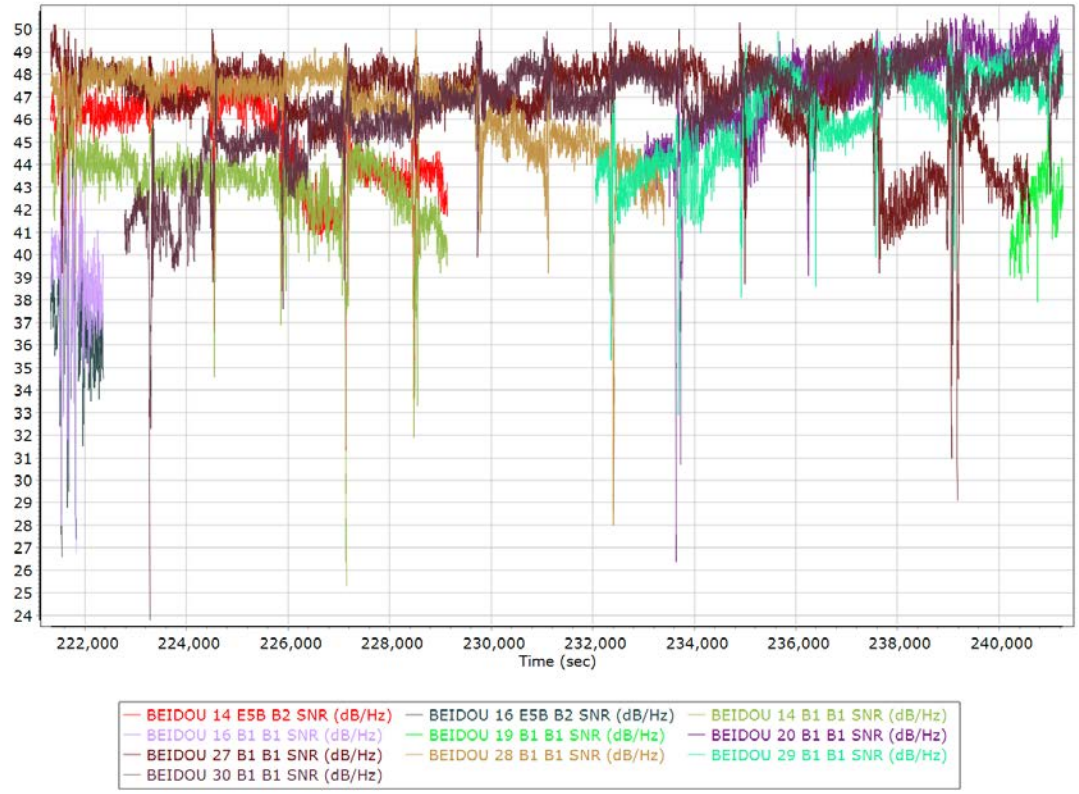
GLONASS L2 SNR



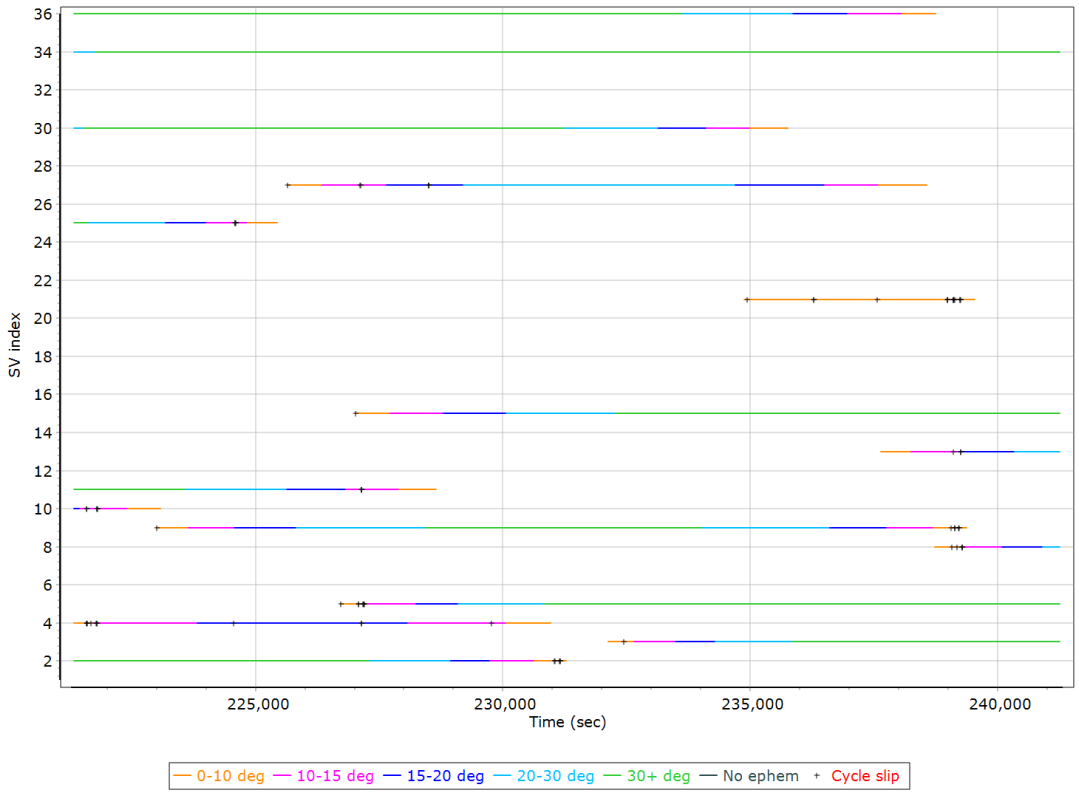
BEIDOU Satellite Lock/Elevation



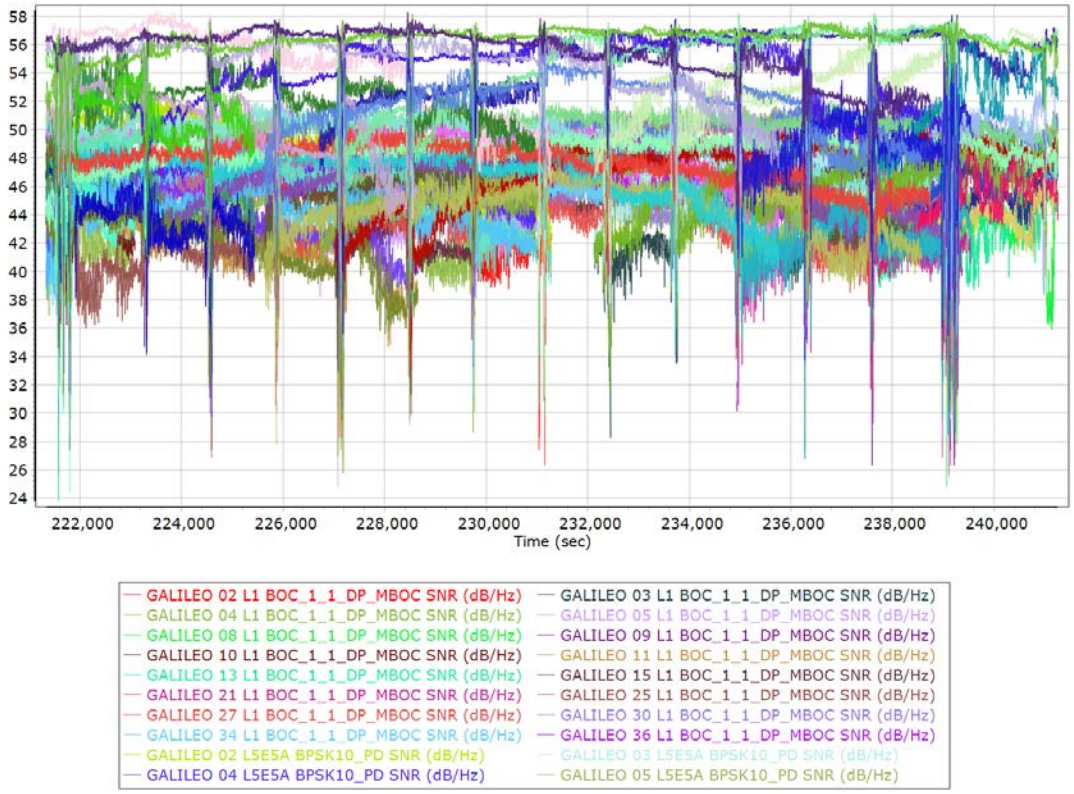
BEIDOU SNR



GALILEO Satellite Lock/Elevation

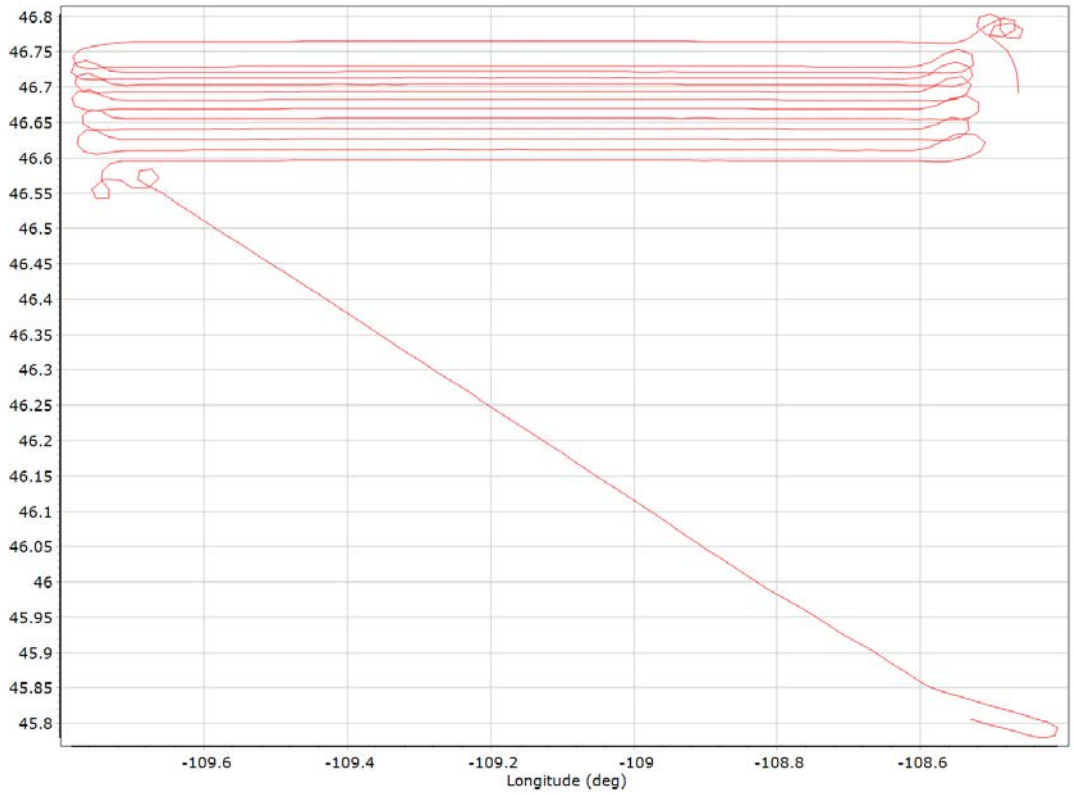


GALILEO SNR

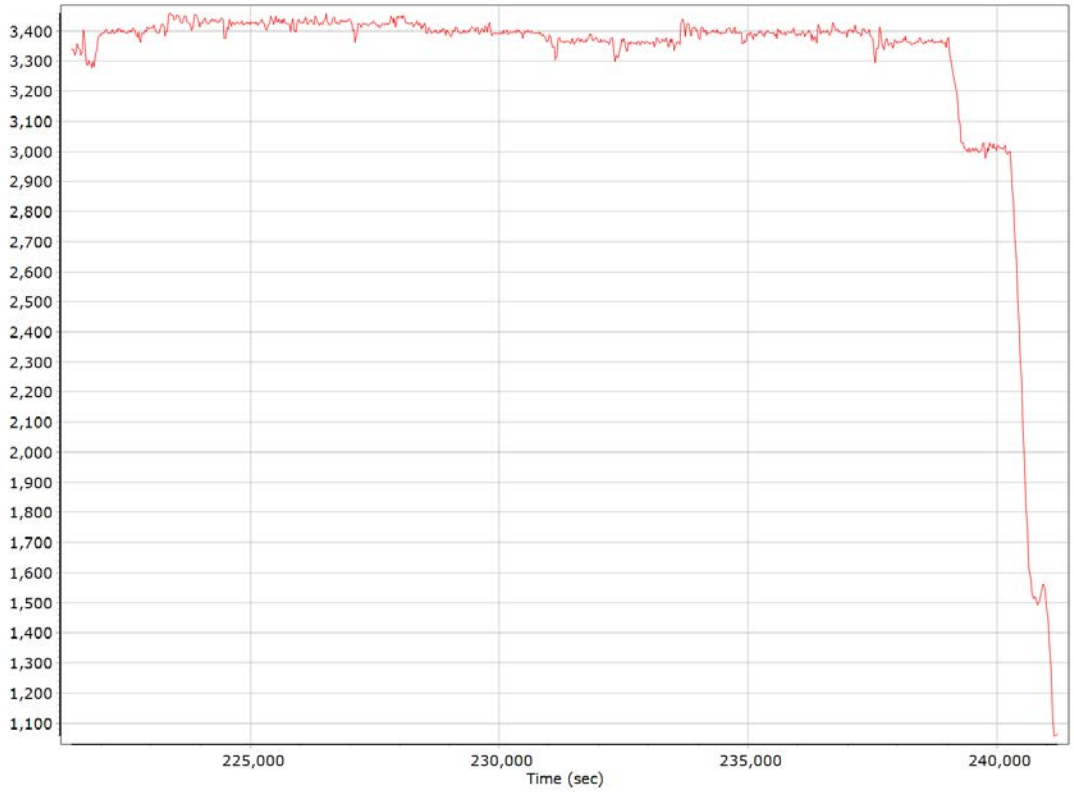

58
56
54
52
50
48
46
44
42
40
38
36
34
32
30
28
26
24
222,000
224,000
226,000
228,000
230,000
232,000
234,000
236,000
238,000
240,000
Time (sec)
GALILEO 02 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 03 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 04 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 05 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 08 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 09 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 10 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 11 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 13 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 15 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 21 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 25 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 27 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 30 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 34 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 36 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 02 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 03 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 04 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 05 L5E5A BPSK10_PD SNR (dB/Hz)

Smoothed Trajectory Information

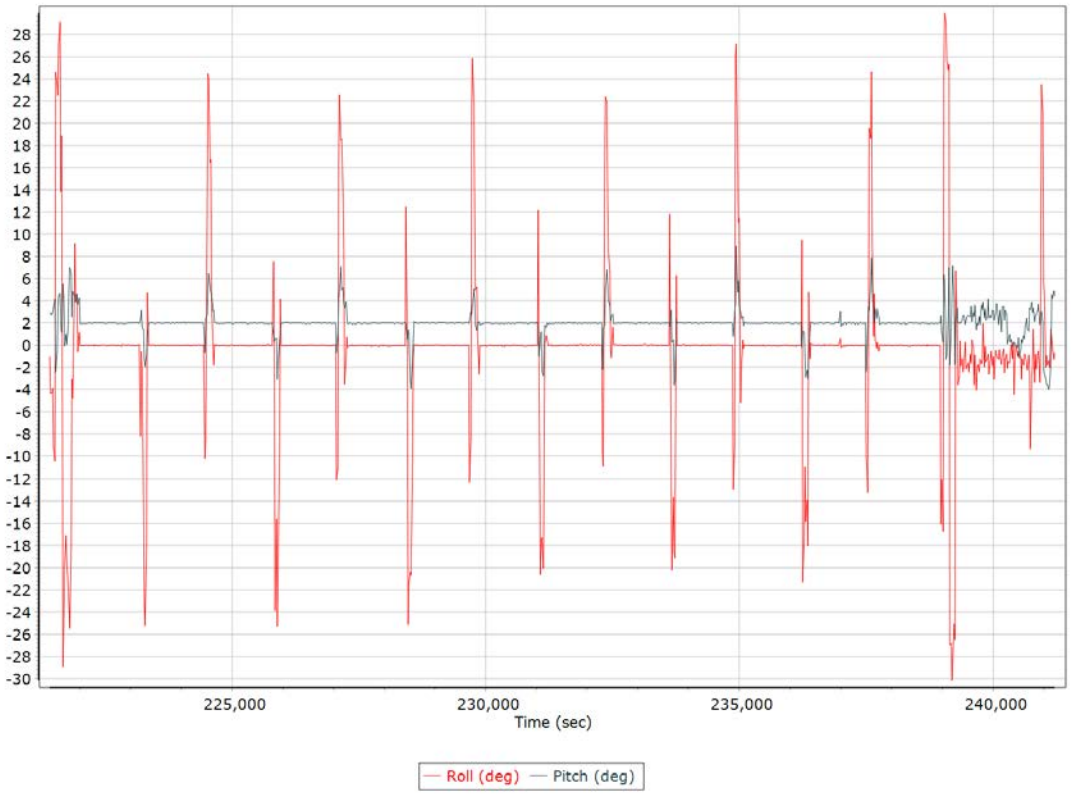
Top View



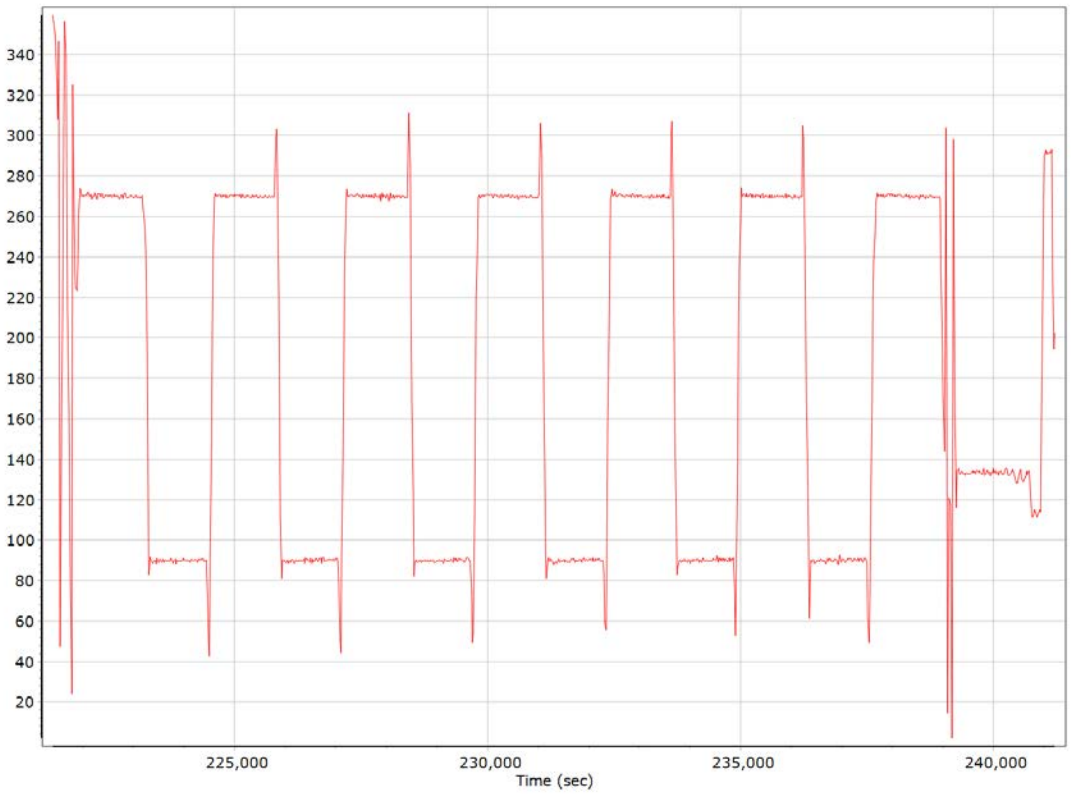
Altitude



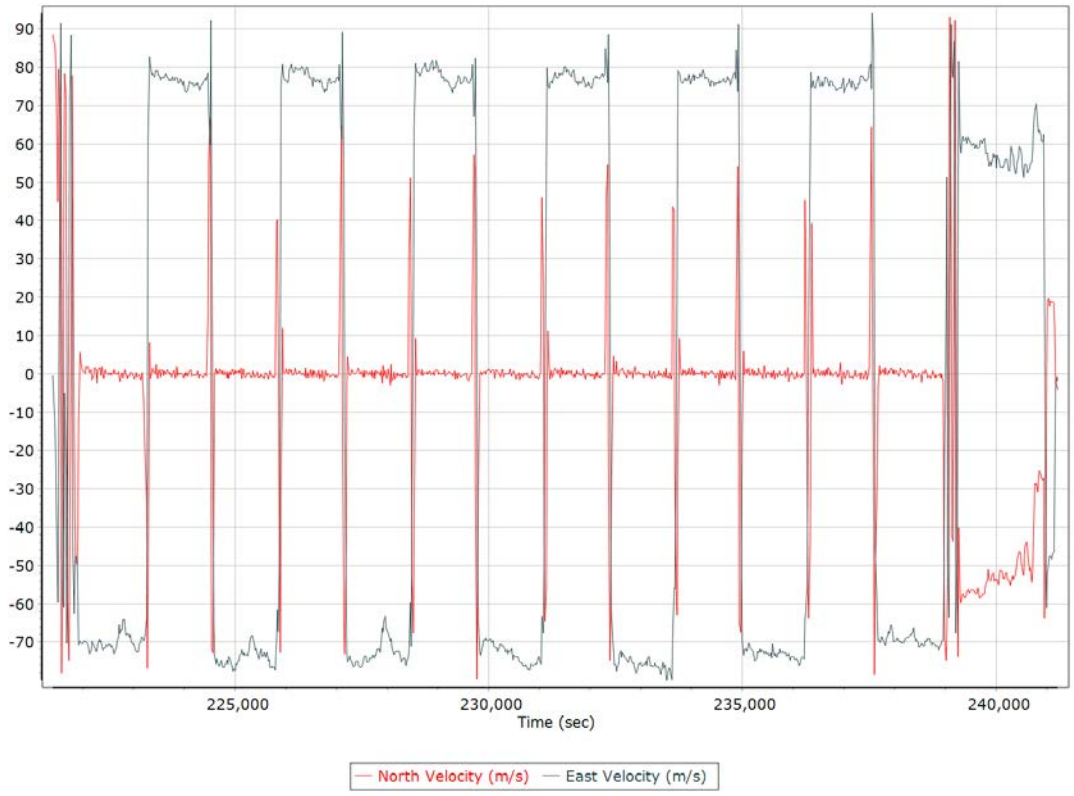
Roll/Pitch



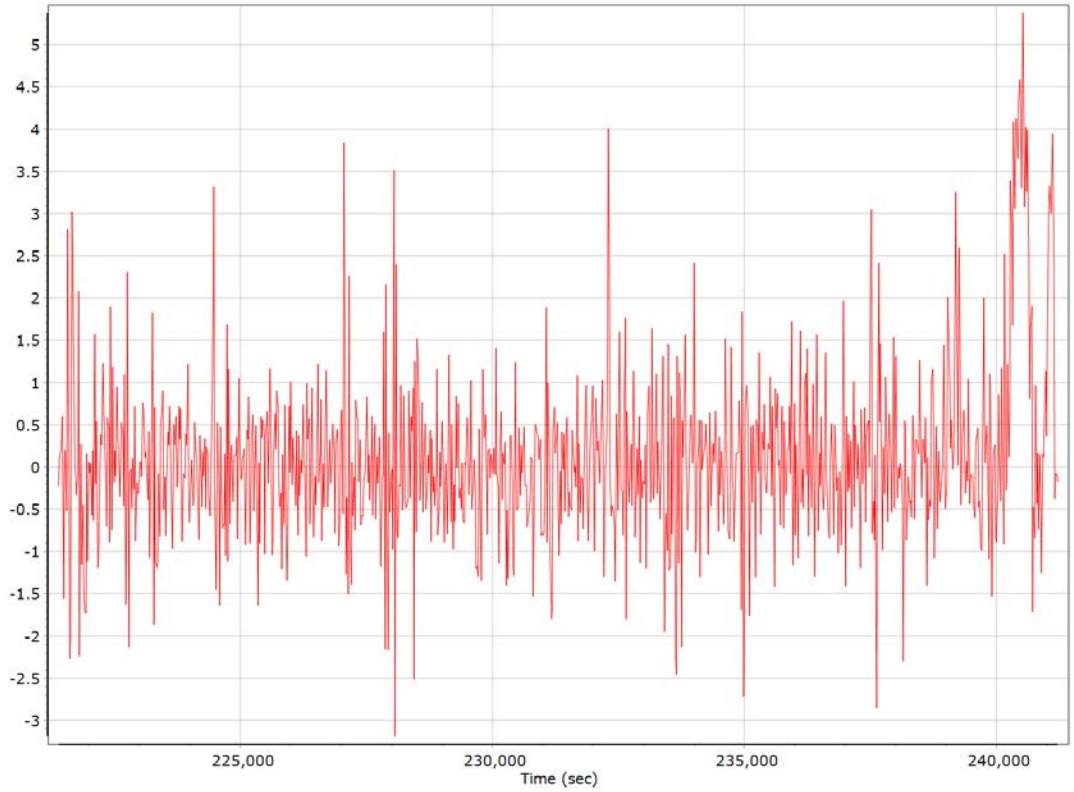
Heading



North/East Velocity



Down Velocity



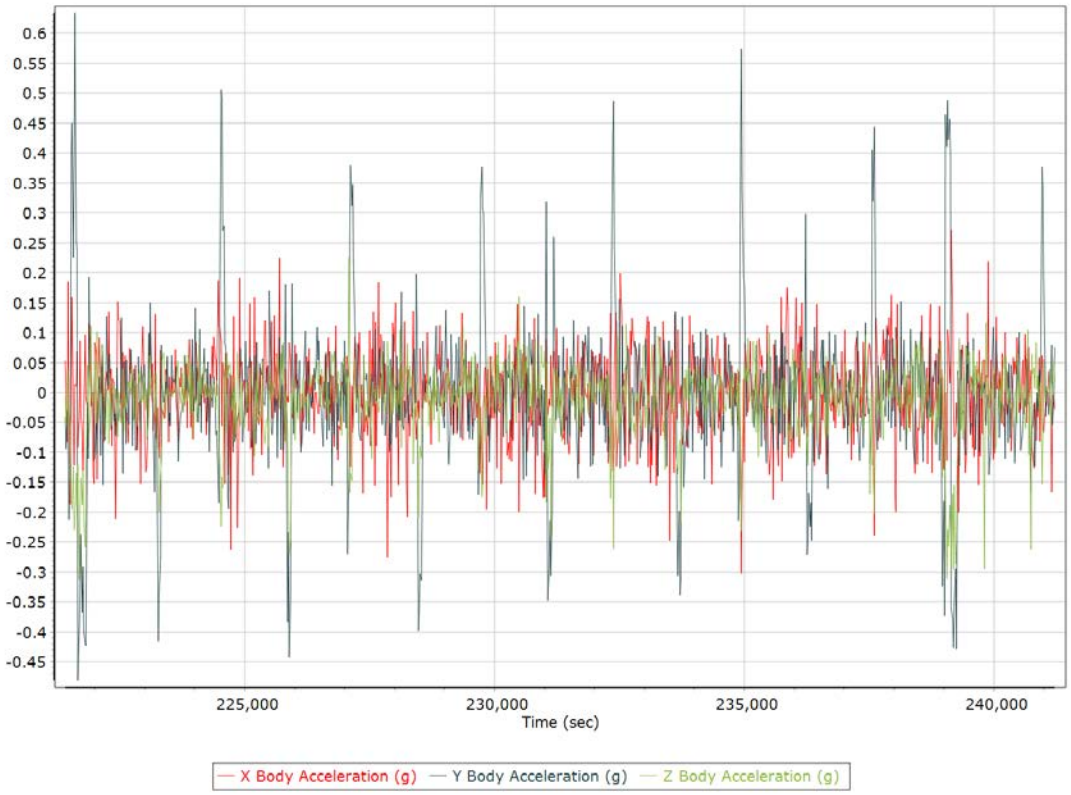
Total Speed



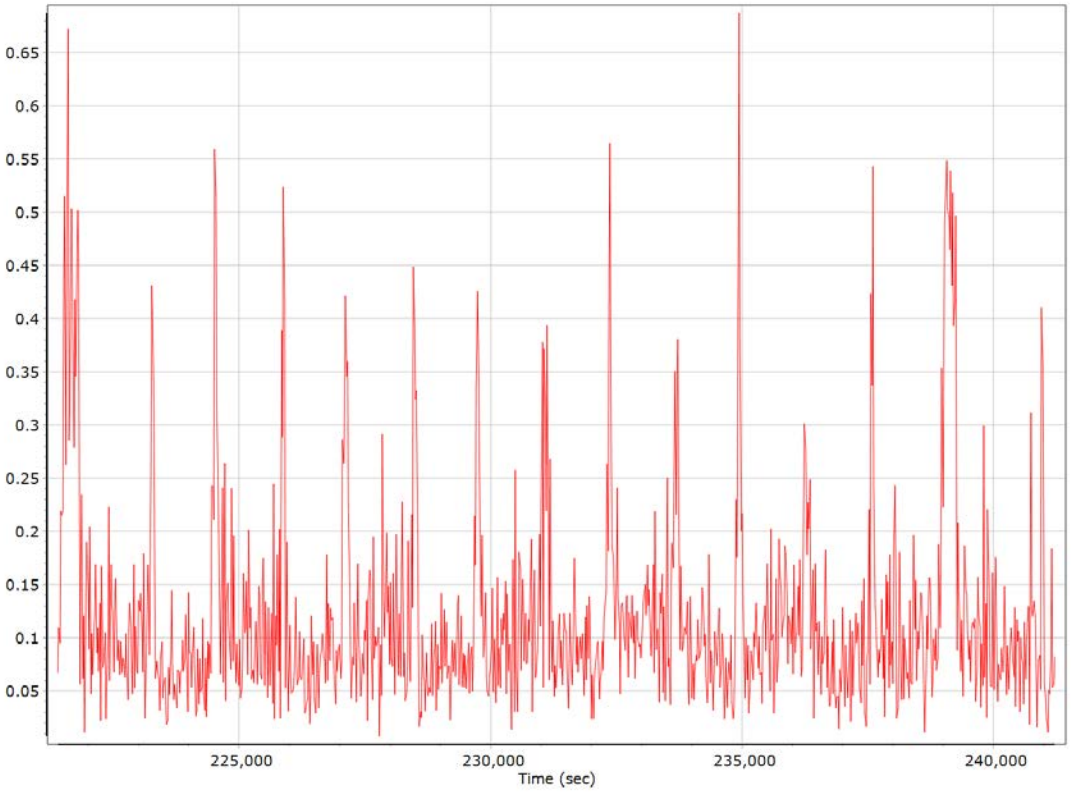
Ground Speed



Body Acceleration



Total Body Acceleration

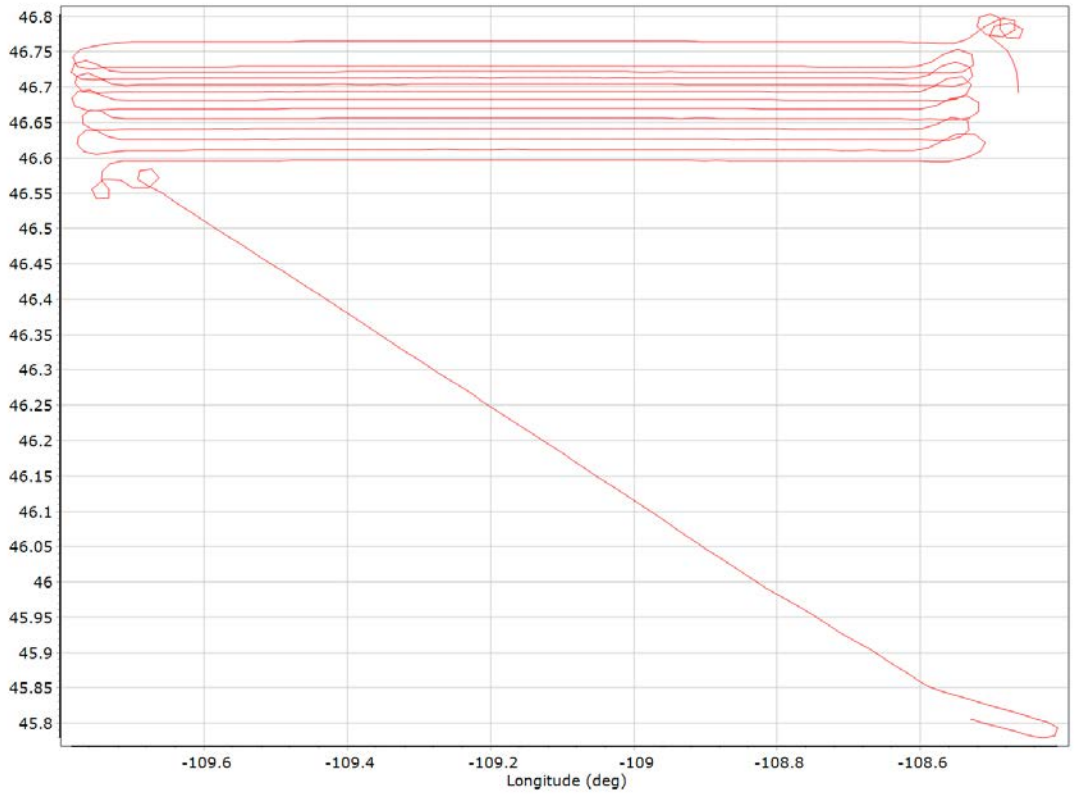


Body Angular Rate

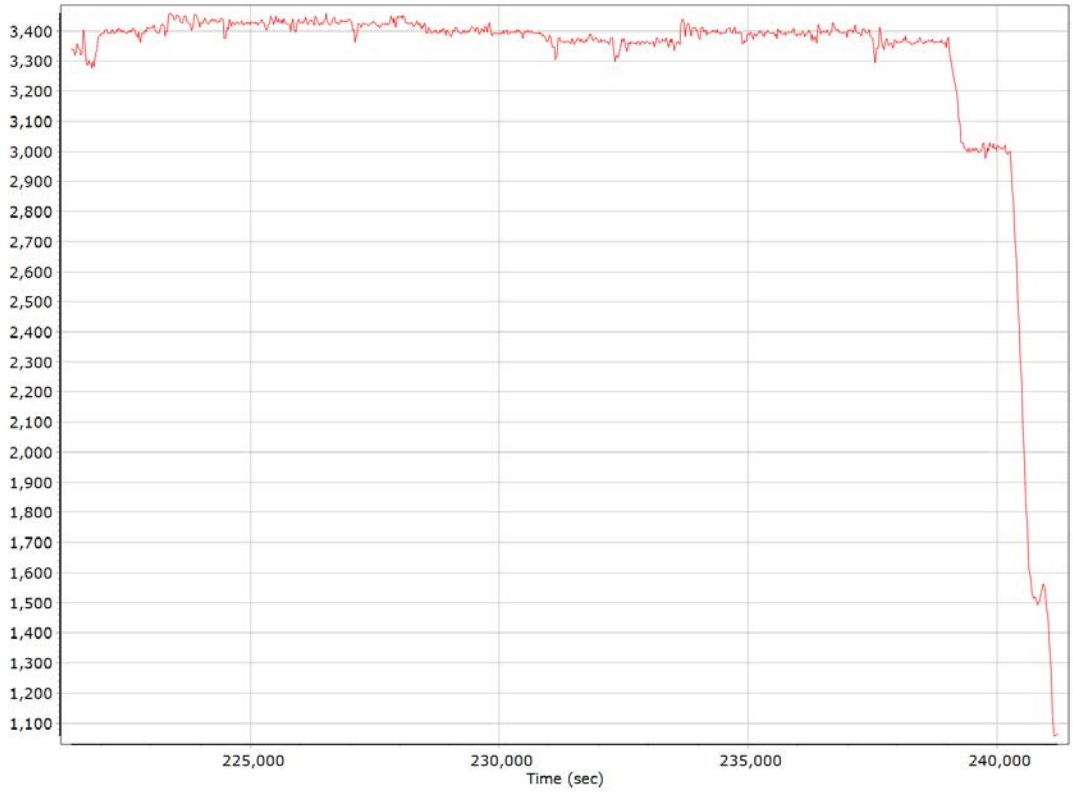


Forward Processed Trajectory Information

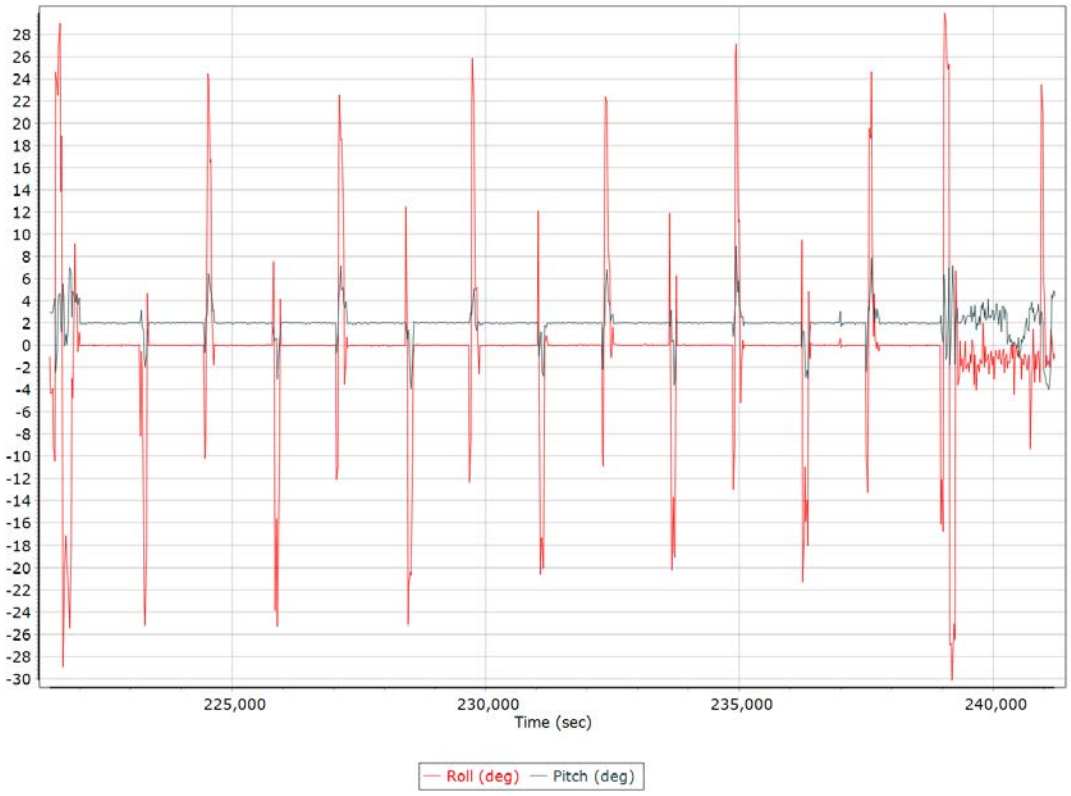
Top View



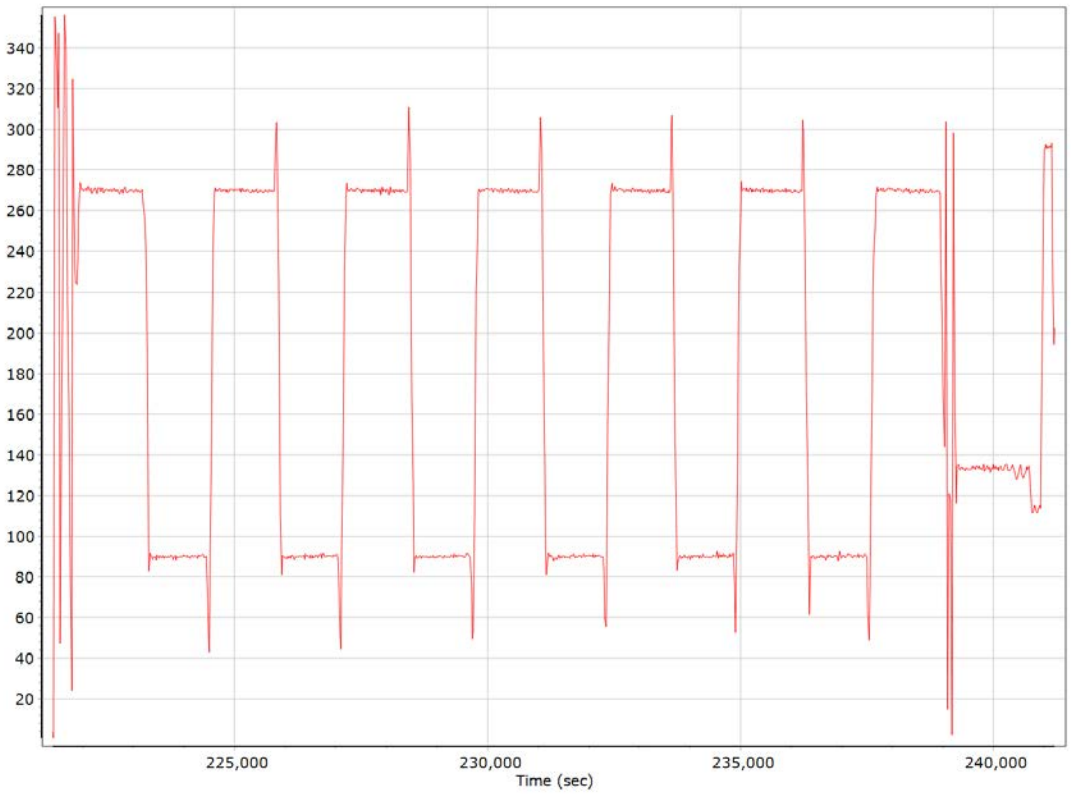
Altitude



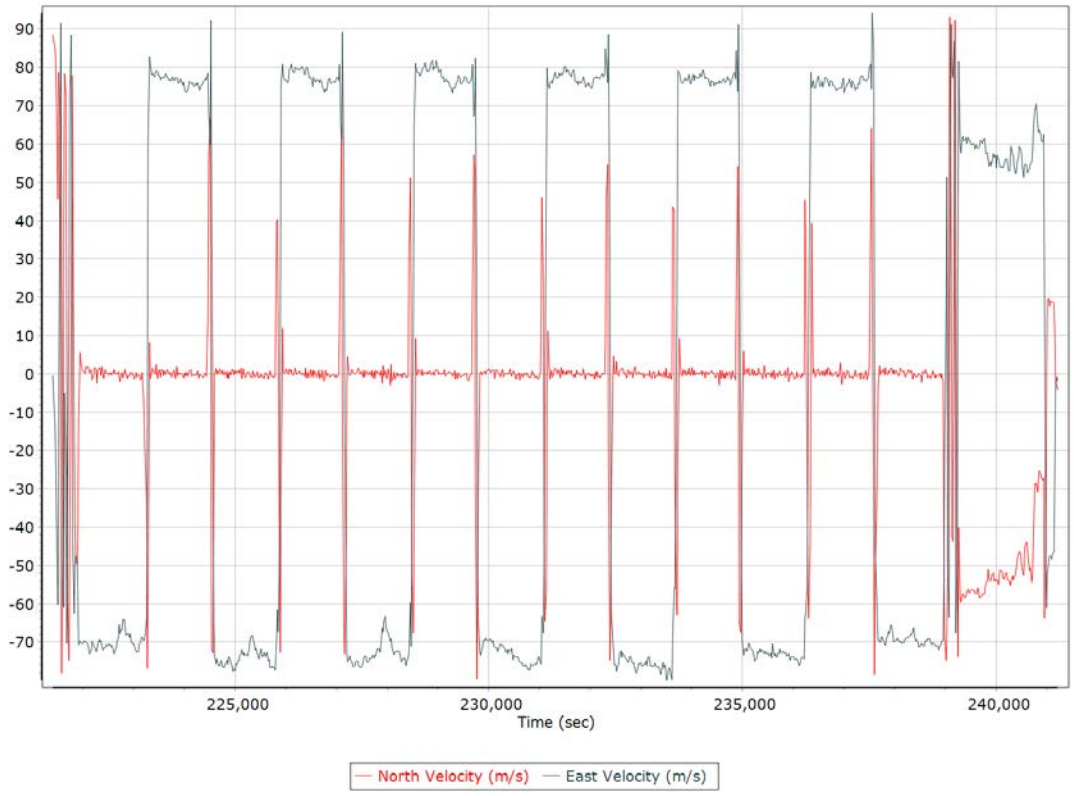
Roll/Pitch



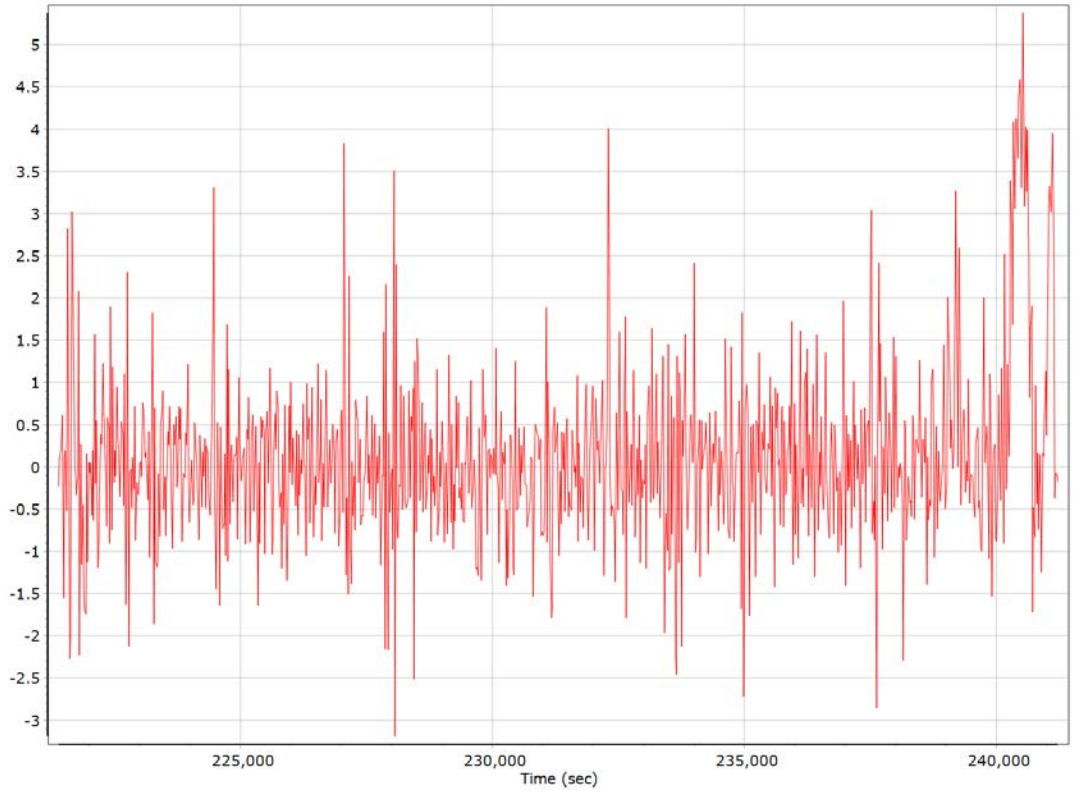
Heading



North/East Velocity



Down Velocity



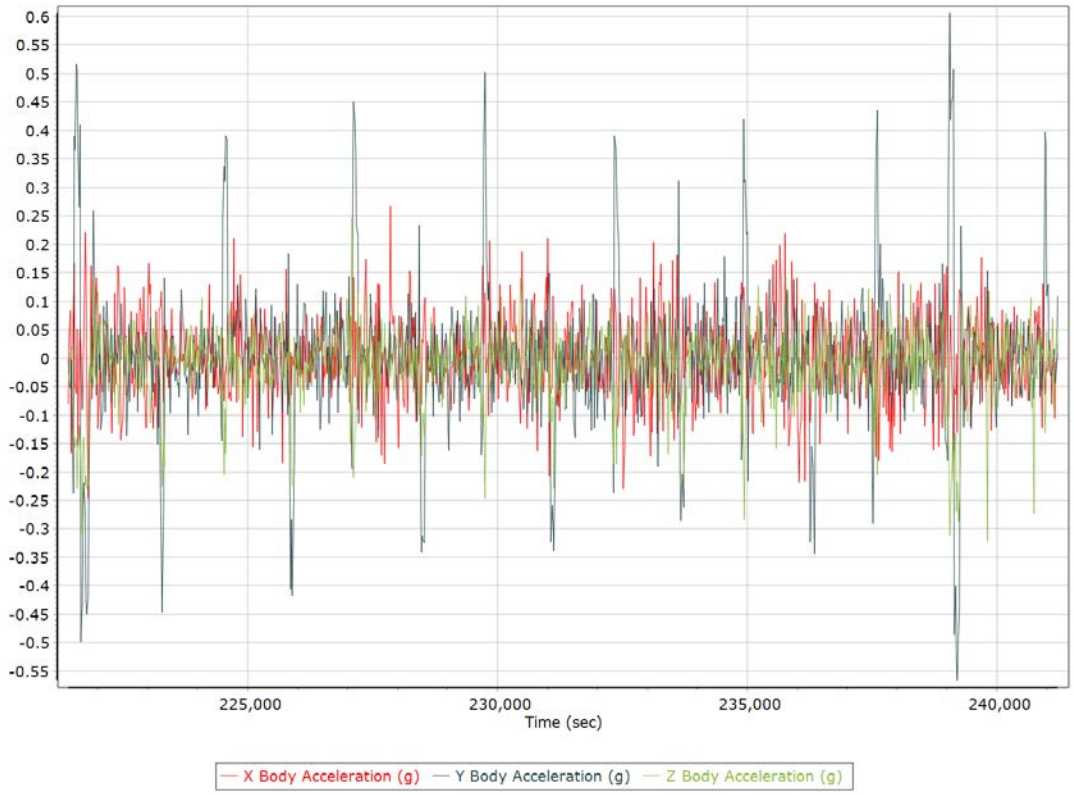
Total Speed



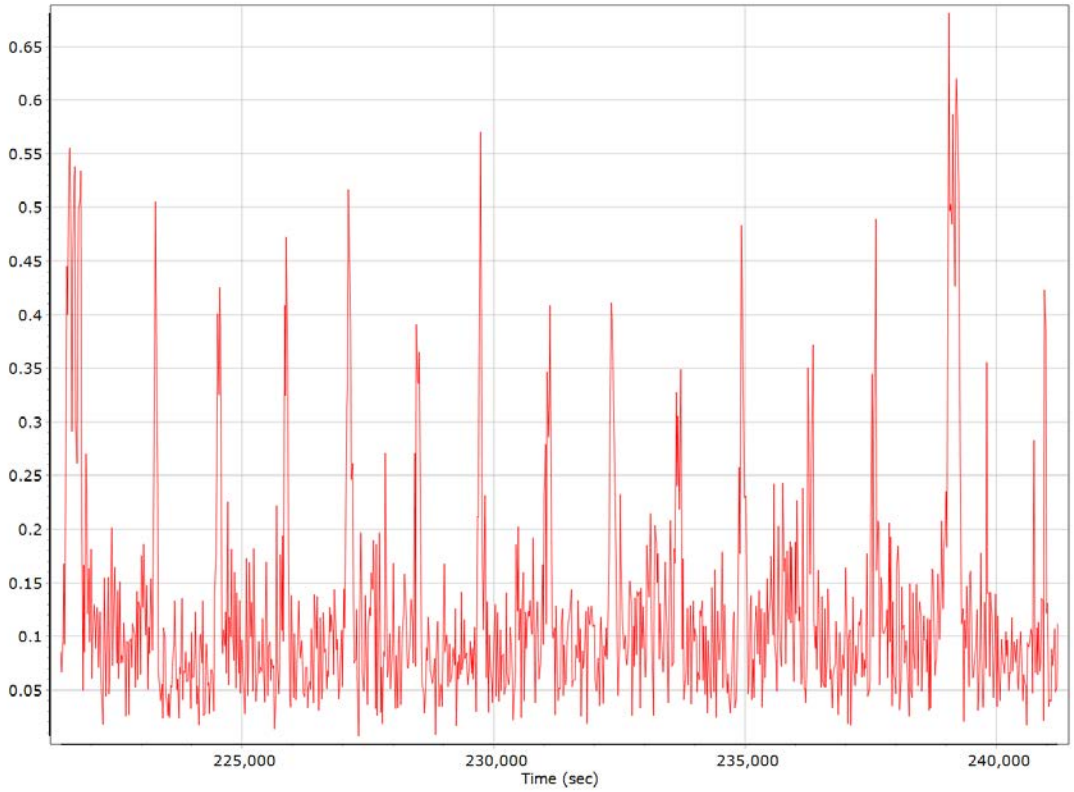
Ground Speed



Body Acceleration



Total Body Acceleration



Body Angular Rate



GNSS QC

GNSS QC Statistics

Statistics	Min	Max	Mean
Baseline length (km)	0.00	0.00	
Number of GPS SV	5	11	8
Number of GLONASS SV	3	8	6
Number of QZSS SV	0	0	0
Number of BEIDOU SV	0	0	0
Number of GALILEO SV	4	10	7
Total number of SV	14	27	21
PDOP	0.94	1.65	1.15
QC Solution Gaps	1.00	1.00	
Solution Type	Fixed	Float	No solution
Epoch (sec)	19906.00	0.00	1.00
Percentage	99.99	0.00	0.01

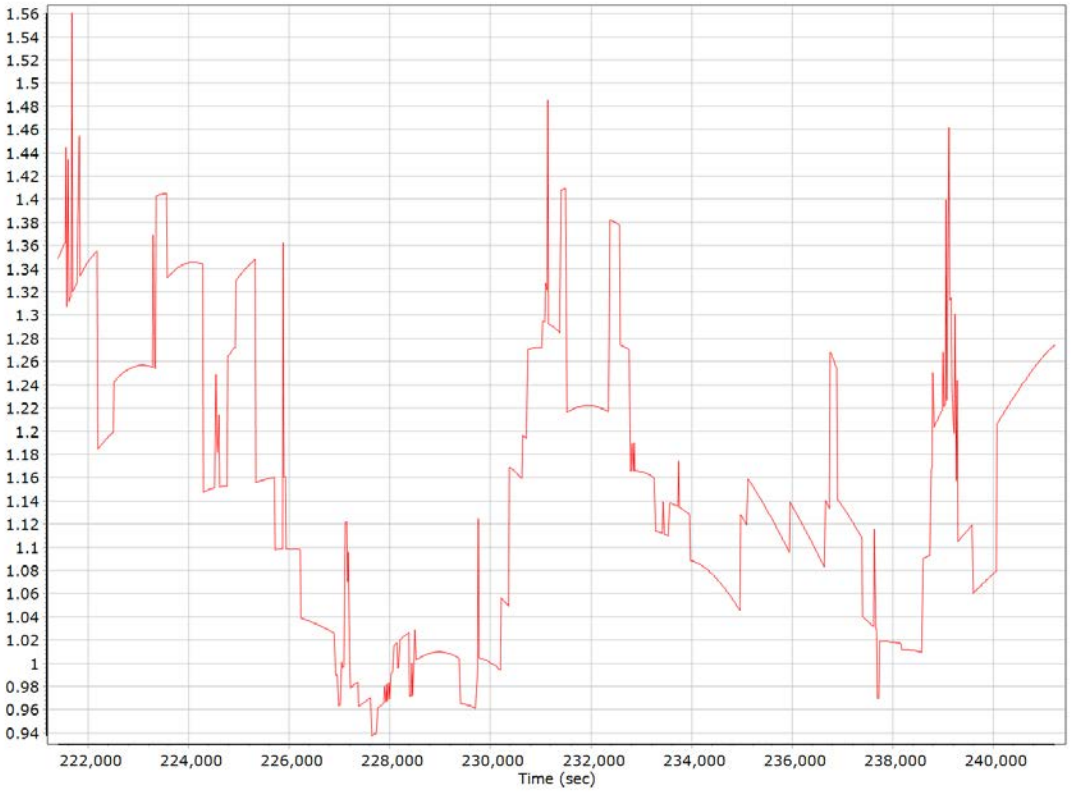
Num SVs in solution



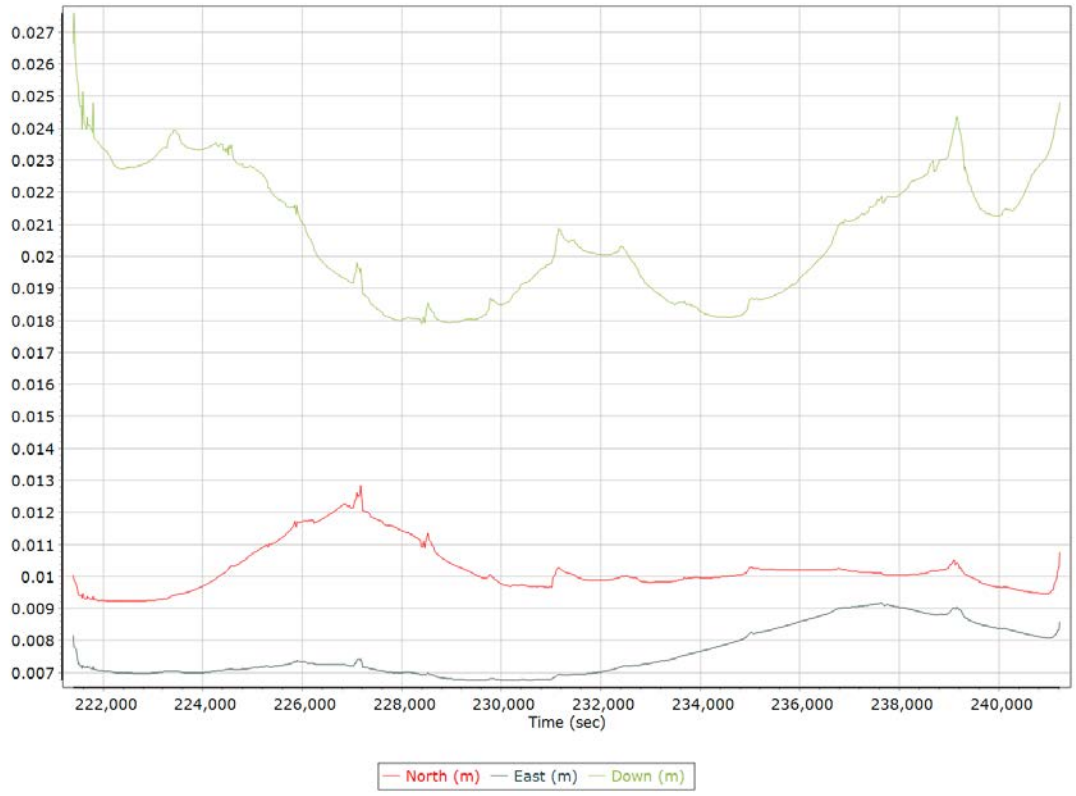
Forward/Reverse Separation



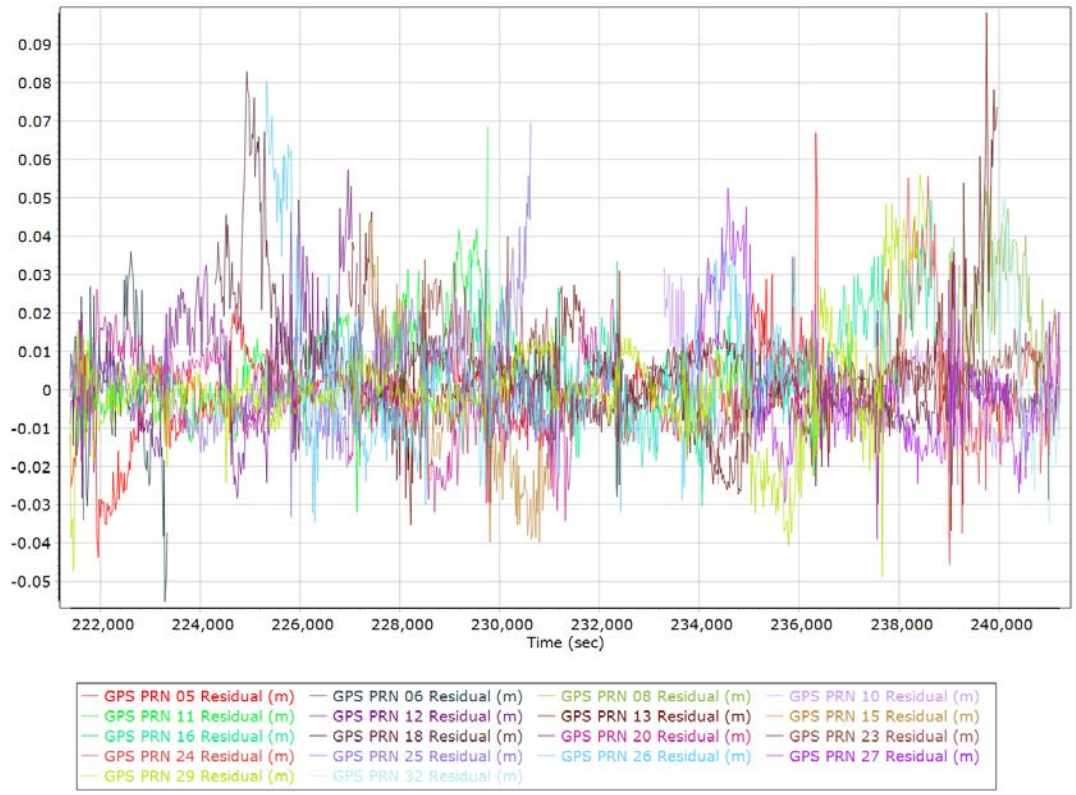
PDOP



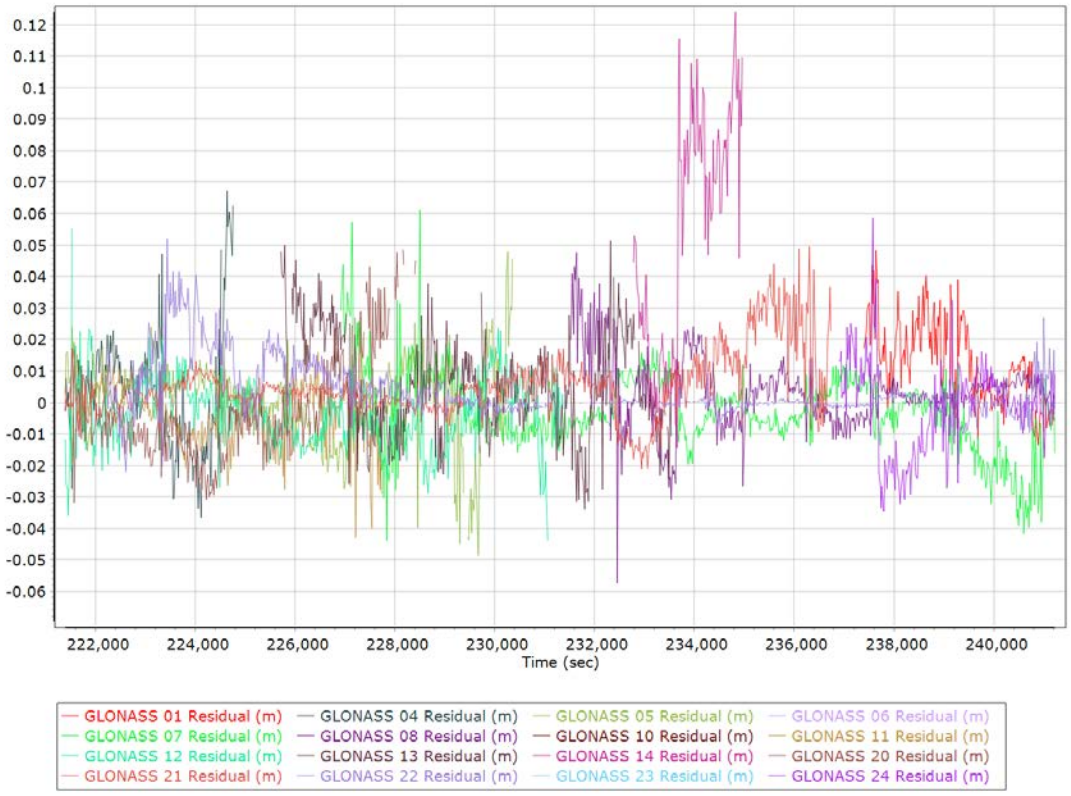
Estimated Position Accuracy



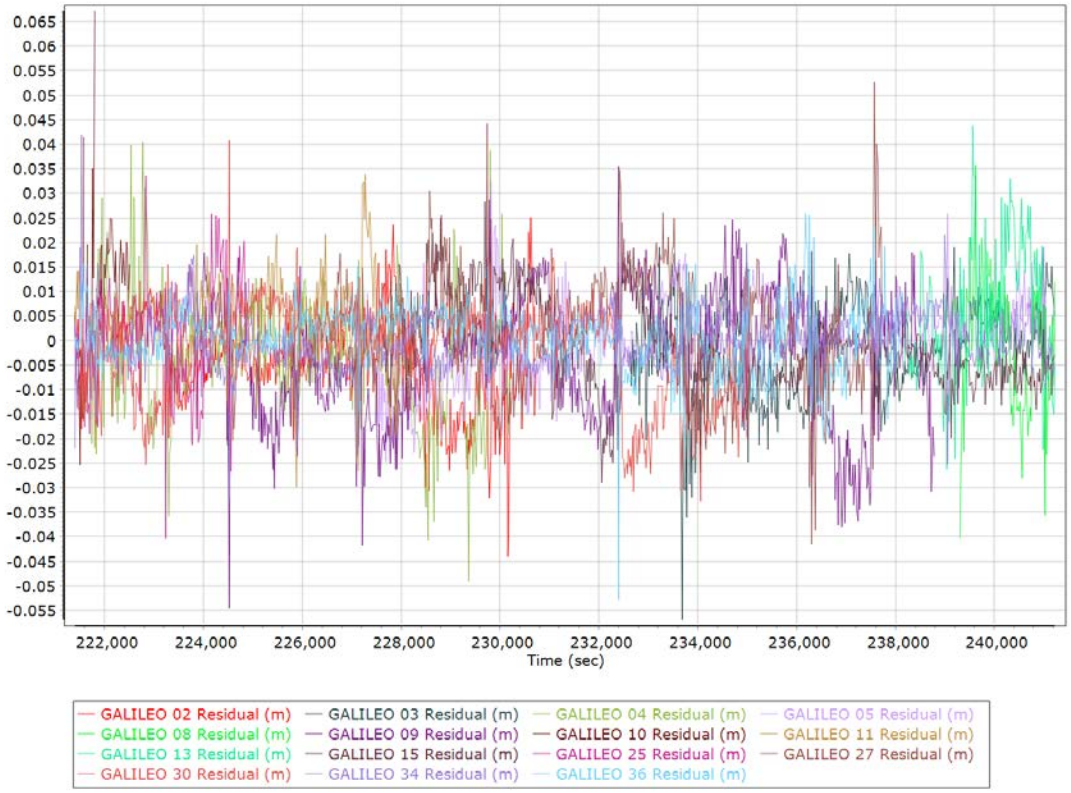
GPS Residuals



GLONASS Residuals



GALILEO Residuals



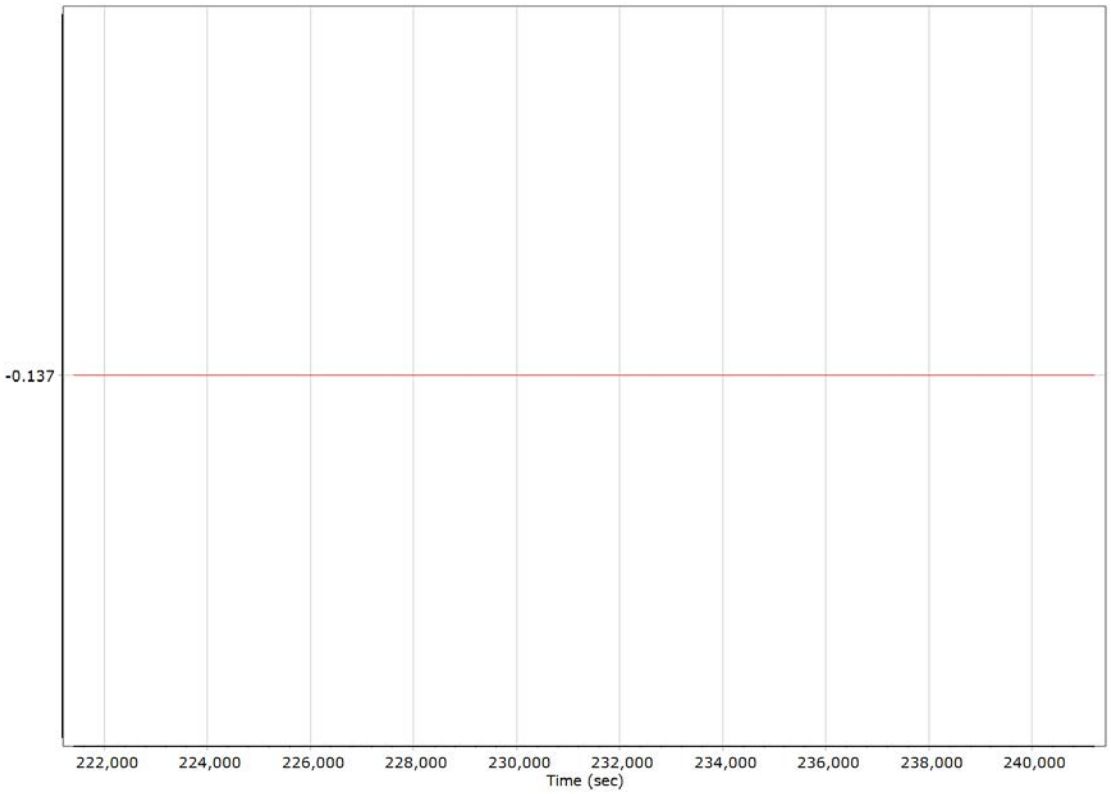
GNSS-Inertial Processor Configuration

Processing mode	IN-Fusion PP-RTX		
Stabilized mount	True		
Processing start time	221314.000 (8/22/2023 1:28:34 PM)		
Processing end time	241236.000 (8/22/2023 7:00:36 PM)		
Initial attitude source	Primary GNSS Track		
IMU Sensor Context	Processing with Onboard IMU		
Gimbal to IMU lever arm (m)	-0.034	-0.010	-0.374
Gimbal to IMU mounting angles (deg)	0.000	0.000	0.000
Gimbal to Primary GNSS lever arm (m)	-0.137	0.043	-1.289
Gimbal to Primary GNSS lever arm std dev (m)	0.030	0.030	0.030
Aircraft to Reference mounting angles (deg)	0.000	0.000	0.000

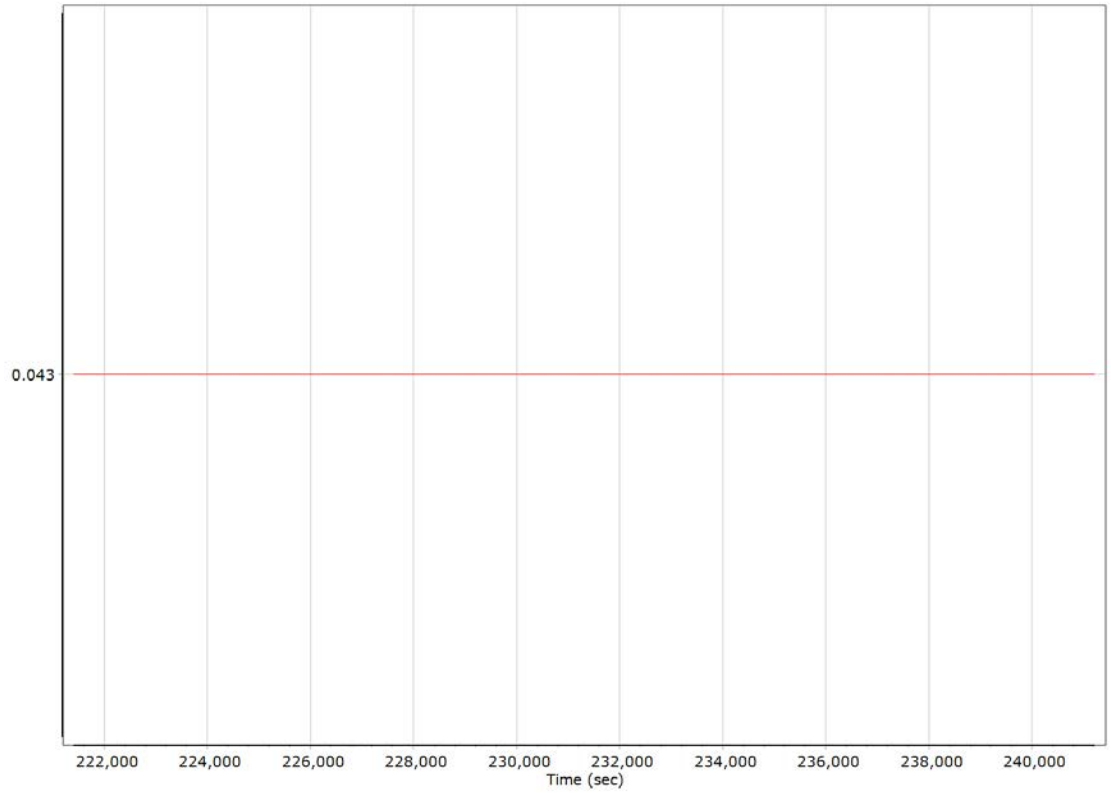
Calibrated Installation Parameters

Reference-Primary GNSS Lever Arm (m)

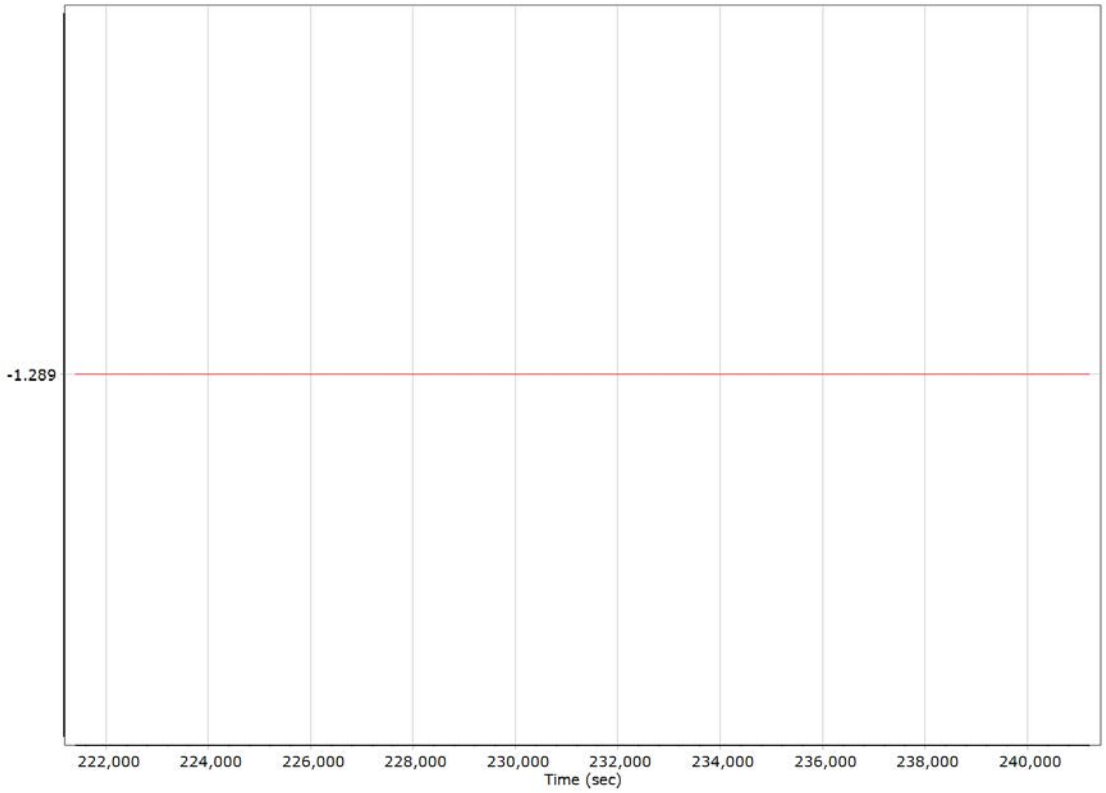
X Reference-Primary GNSS Lever Arm (m)



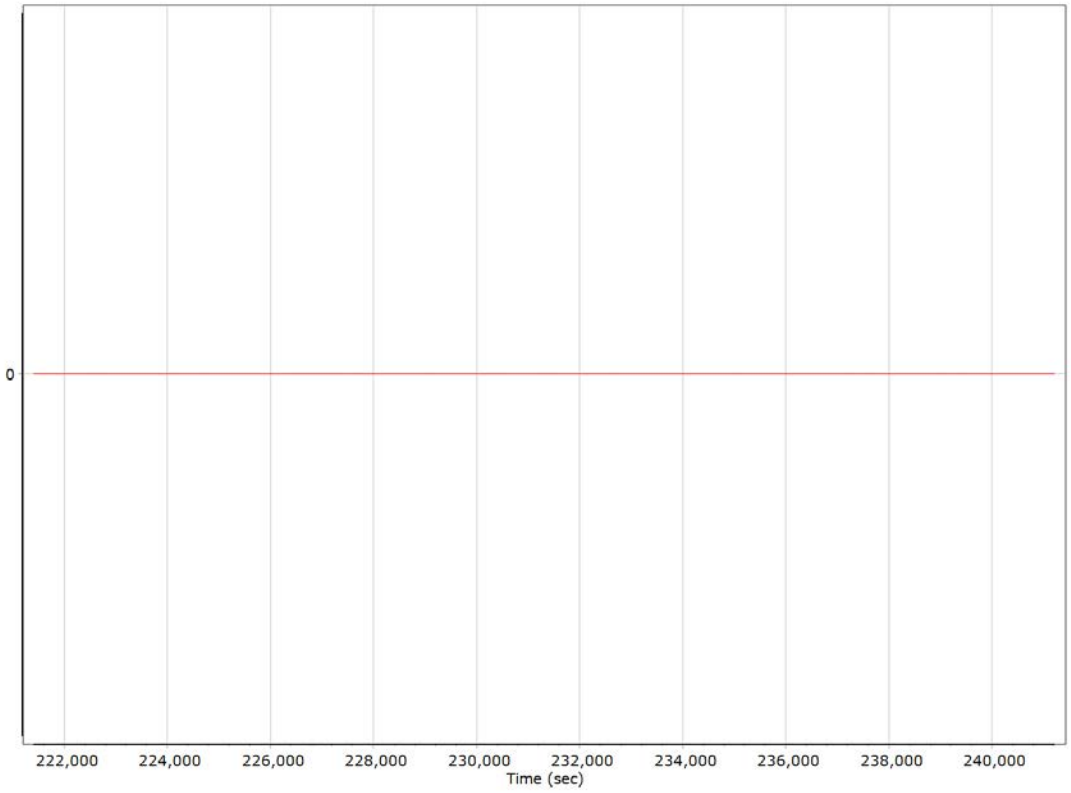
Y Reference-Primary GNSS Lever Arm (m)



Z Reference-Primary GNSS Lever Arm (m)



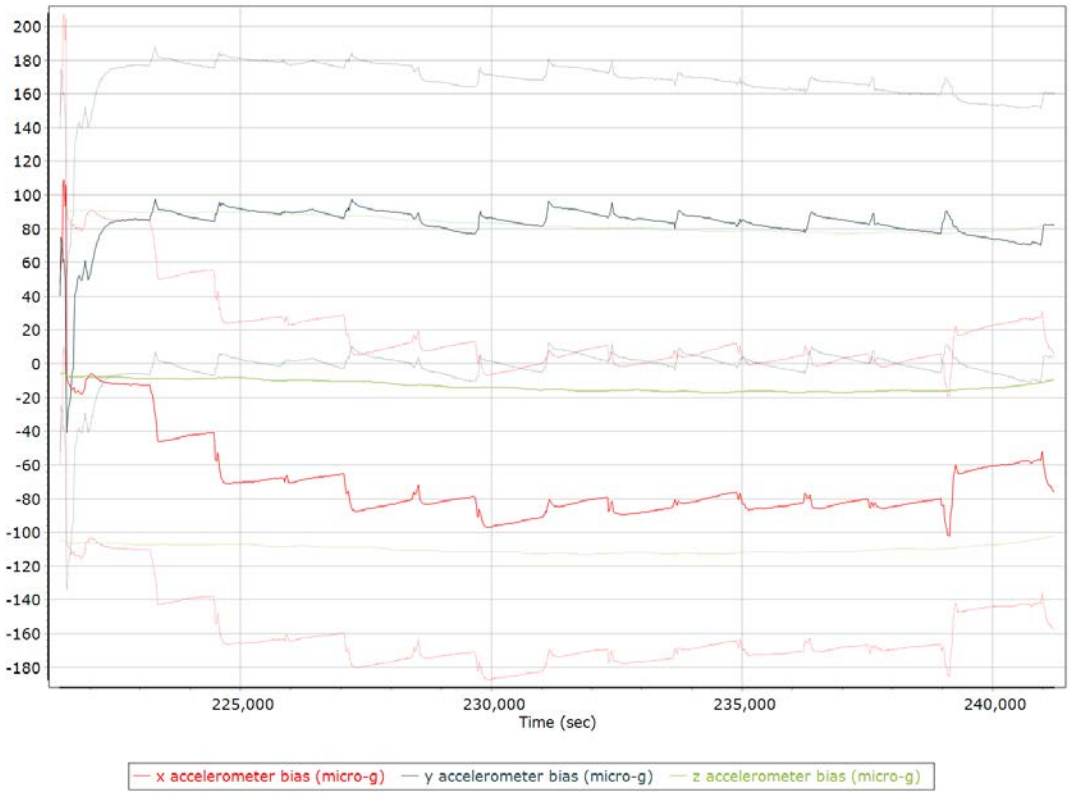
Reference-Primary GNSS Lever Arm Figure of Merit



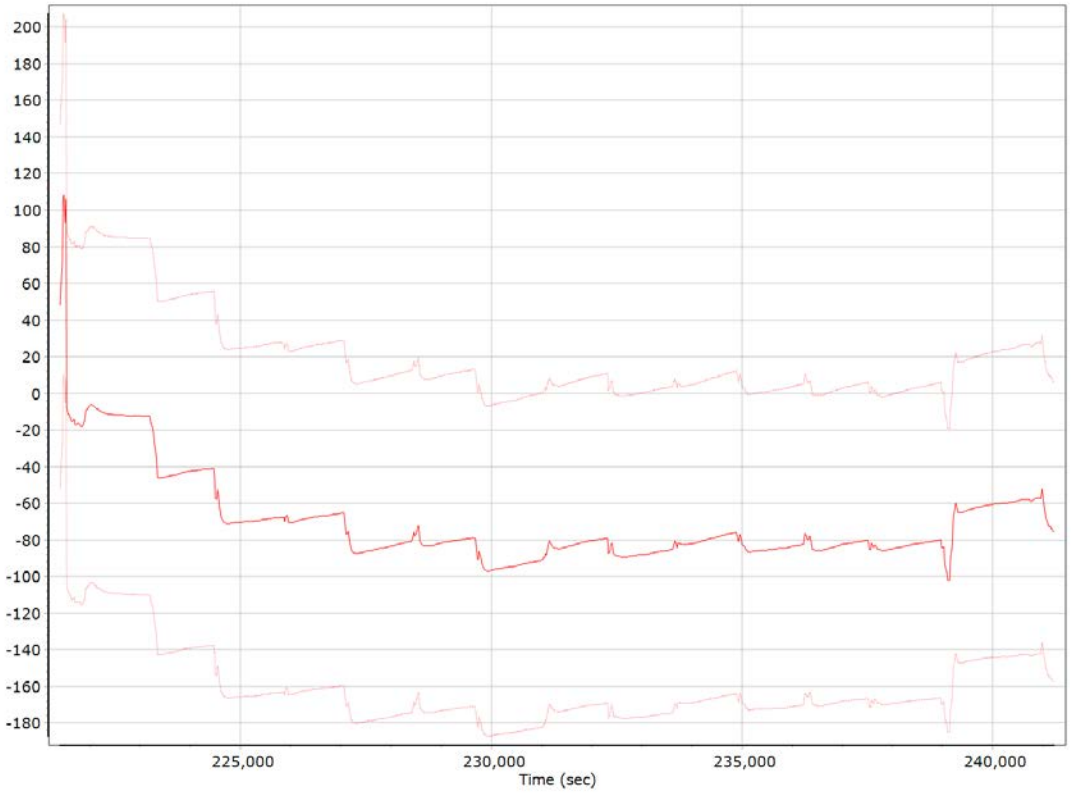
IN-Fusion QC

Forward Processed Estimated Errors, Reference Frame

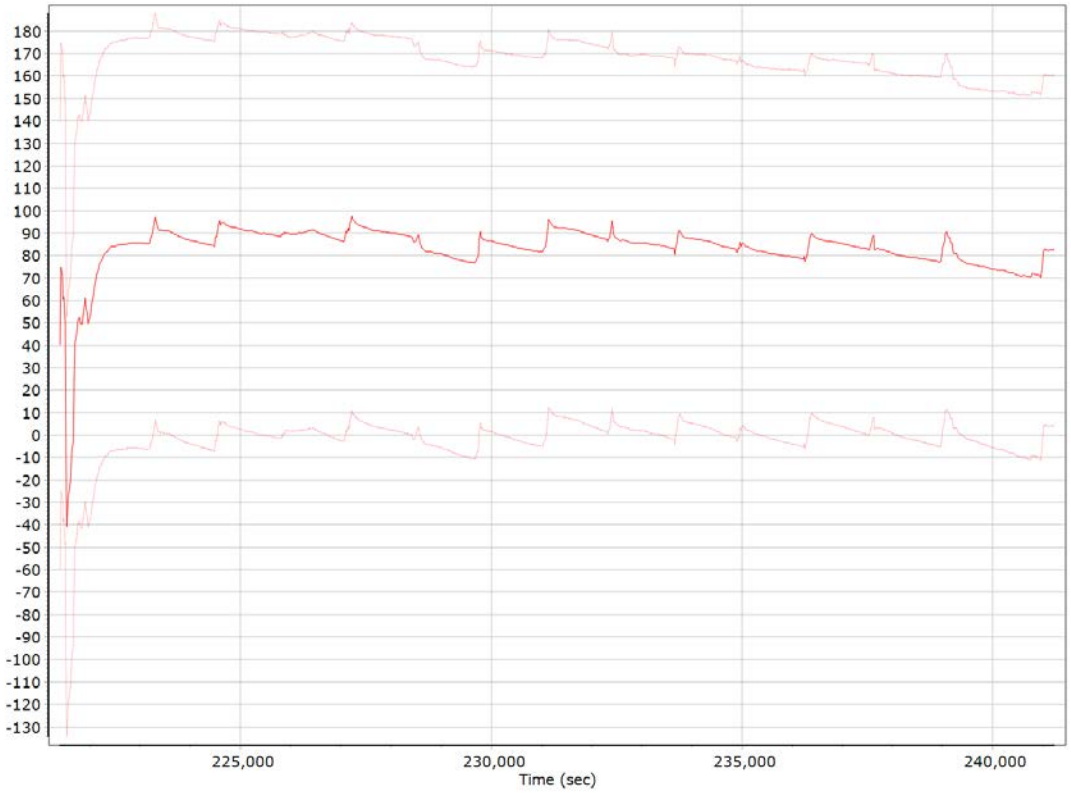
Accelerometer Bias (micro-g)



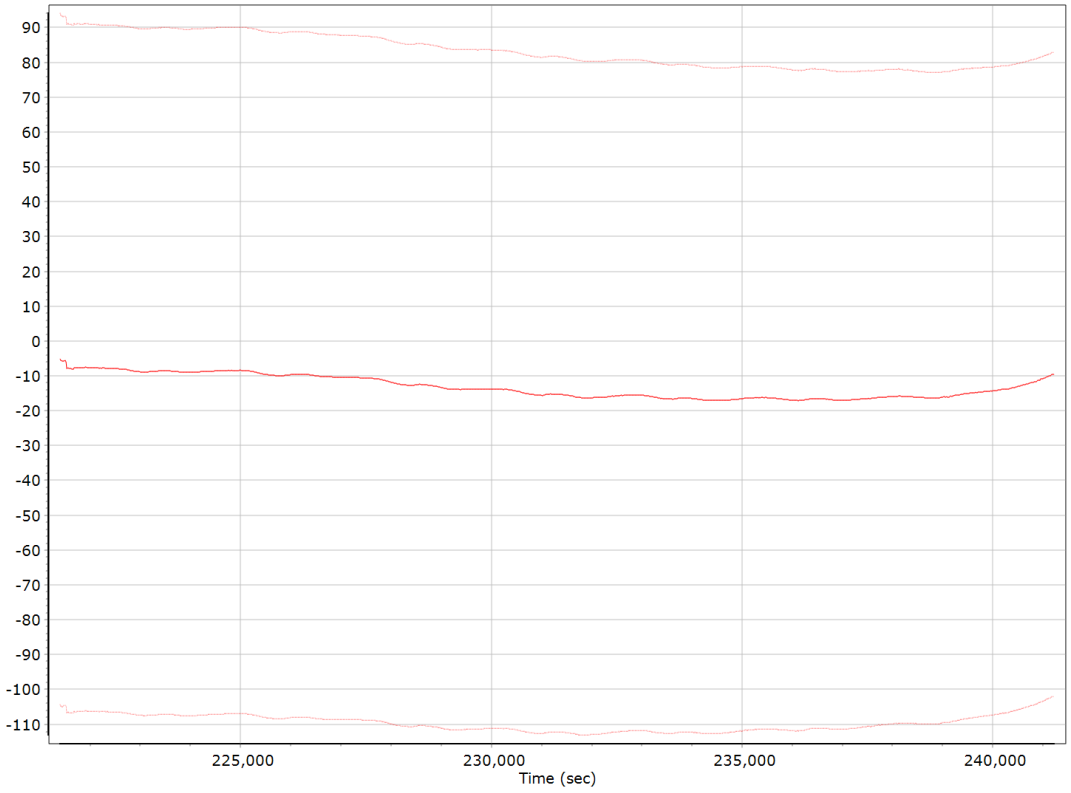
X Accelerometer Bias (micro-g)



Y Accelerometer Bias (micro-g)



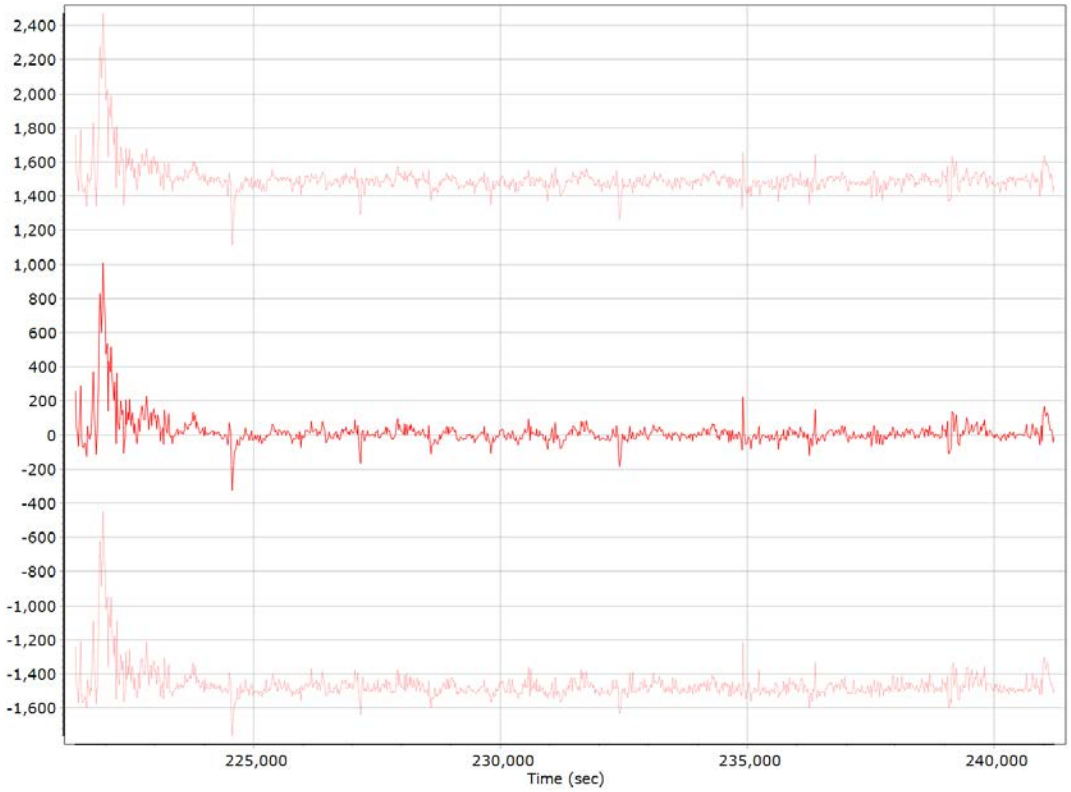
Z Accelerometer Bias (micro-g)



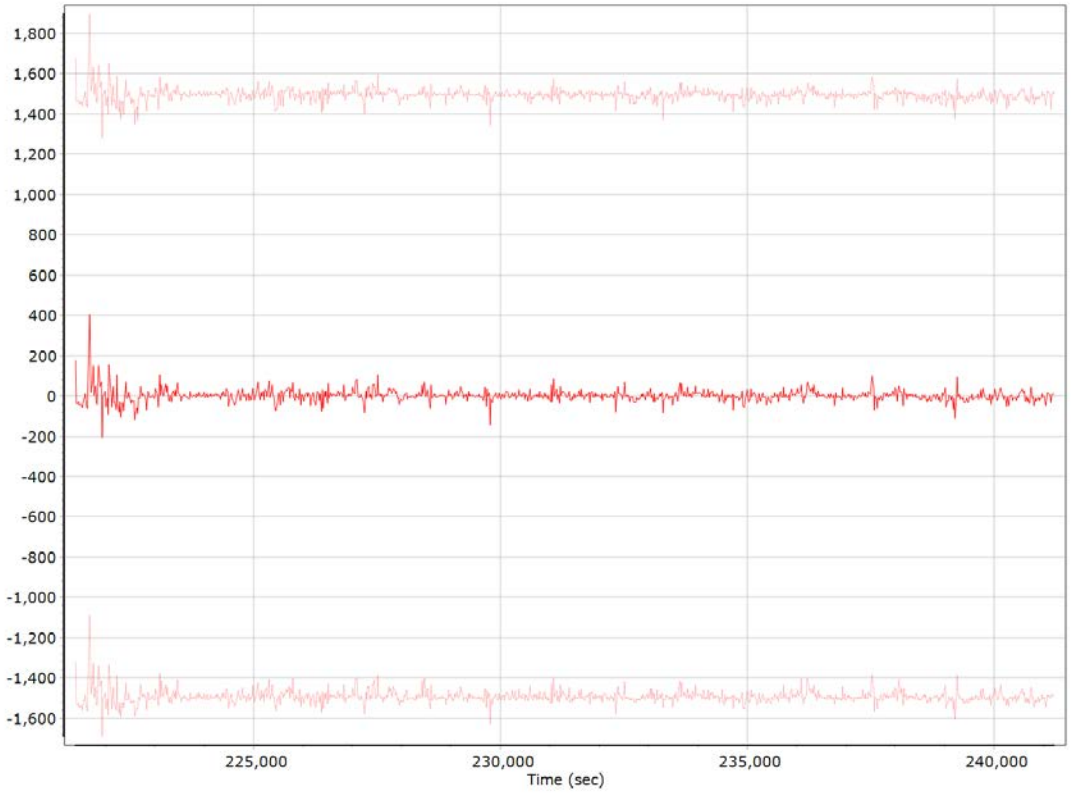
Accelerometer Scale Error (ppm)



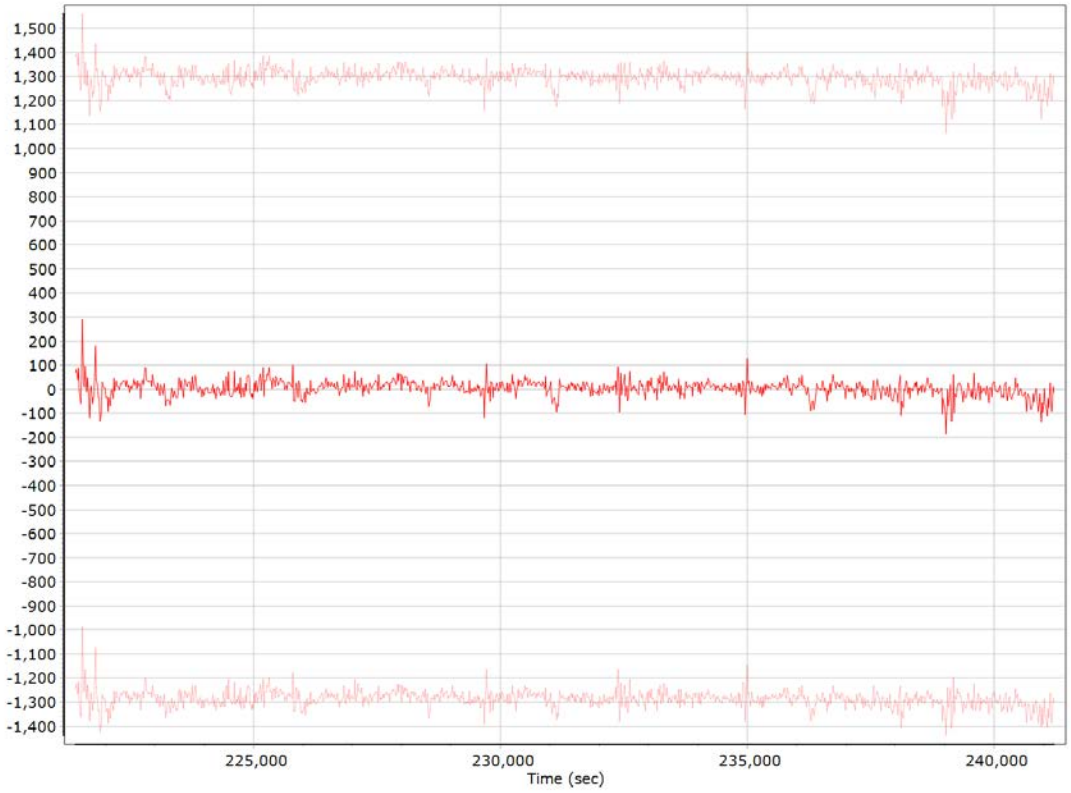
X Accelerometer Scale Error (ppm)



Y Accelerometer Scale Error (ppm)



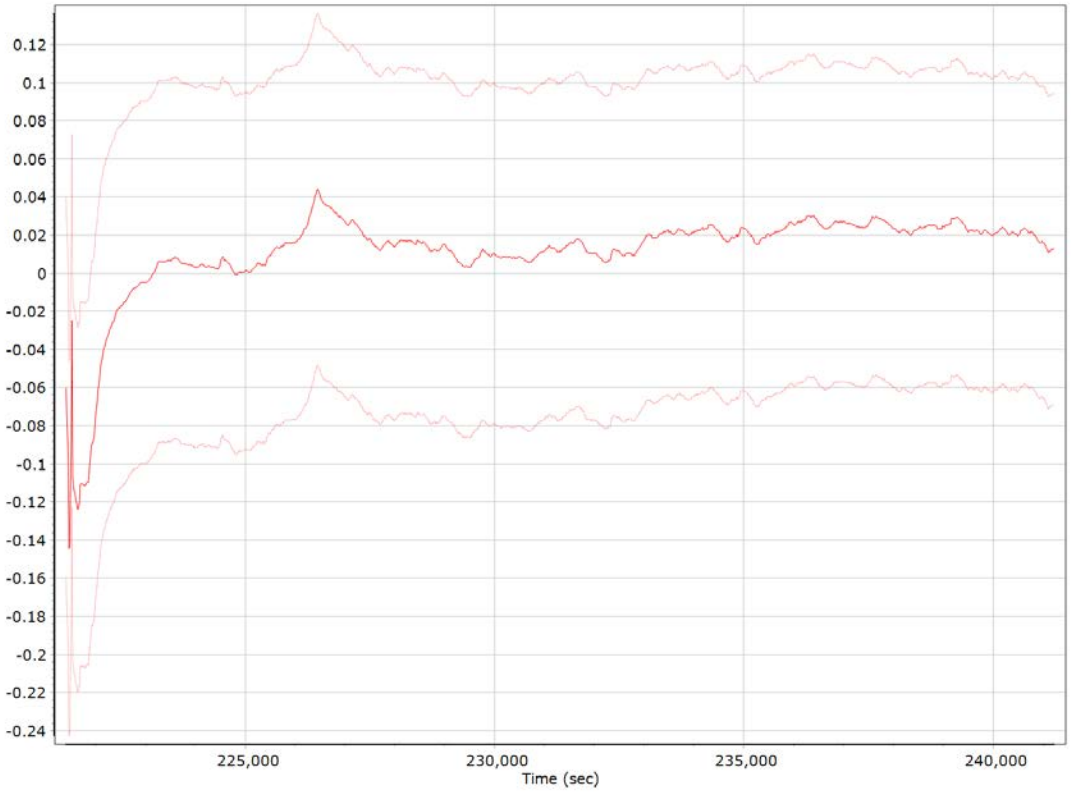
Z Accelerometer Scale Error (ppm)



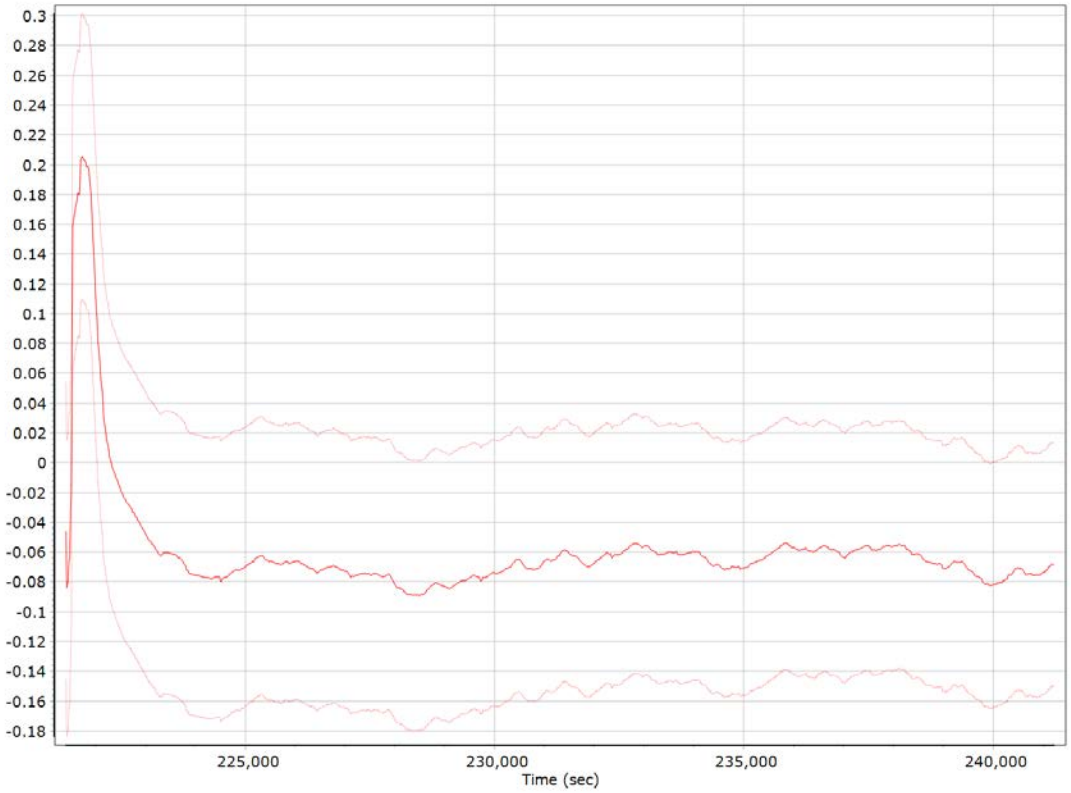
Gyro Bias (deg/h)



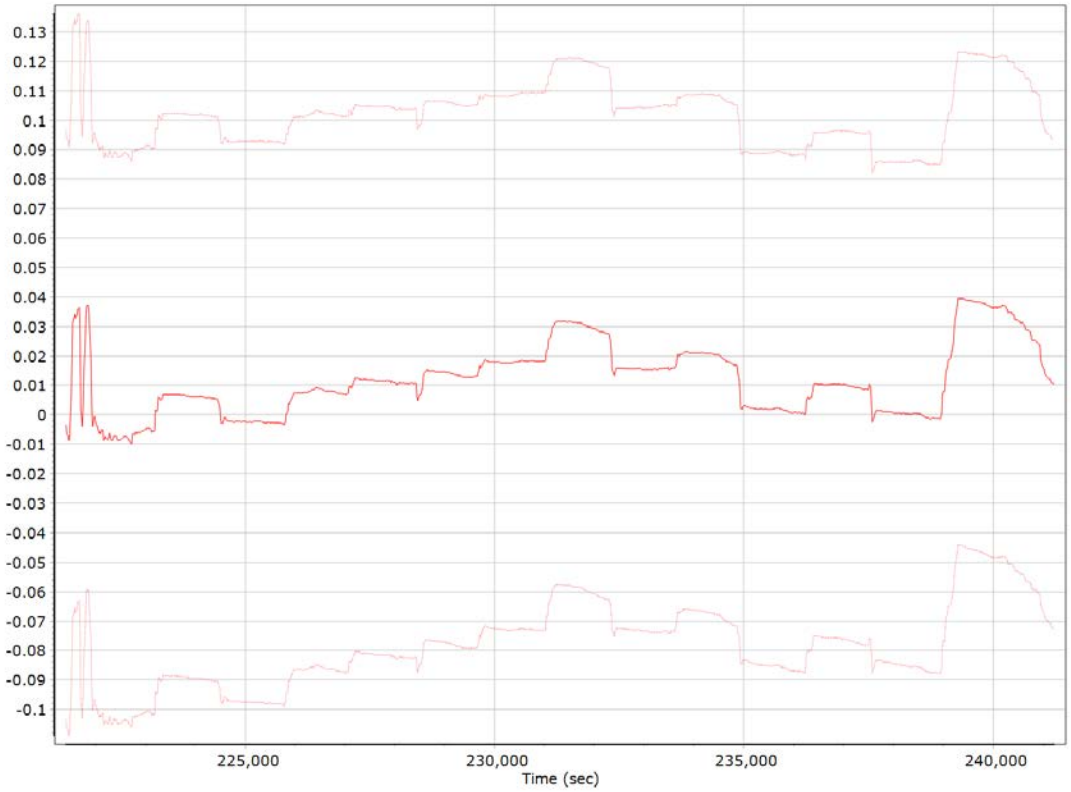
X Gyro Bias (deg/h)



Y Gyro Bias (deg/h)



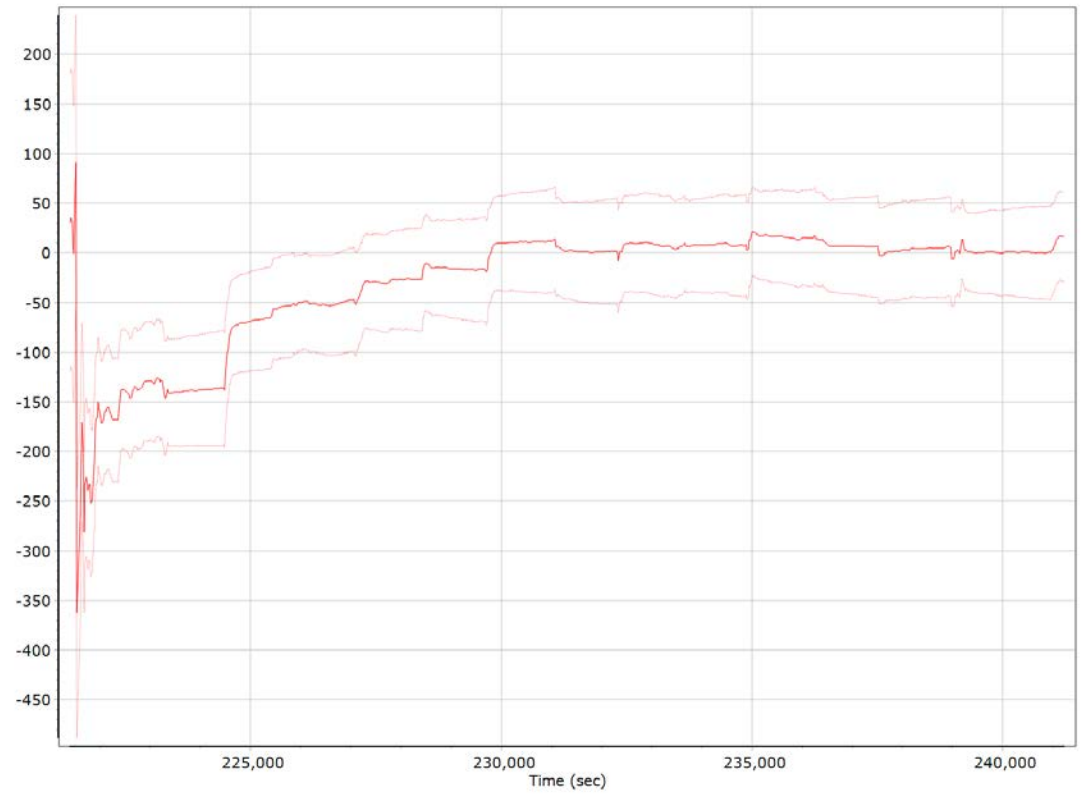
Z Gyro Bias (deg/h)



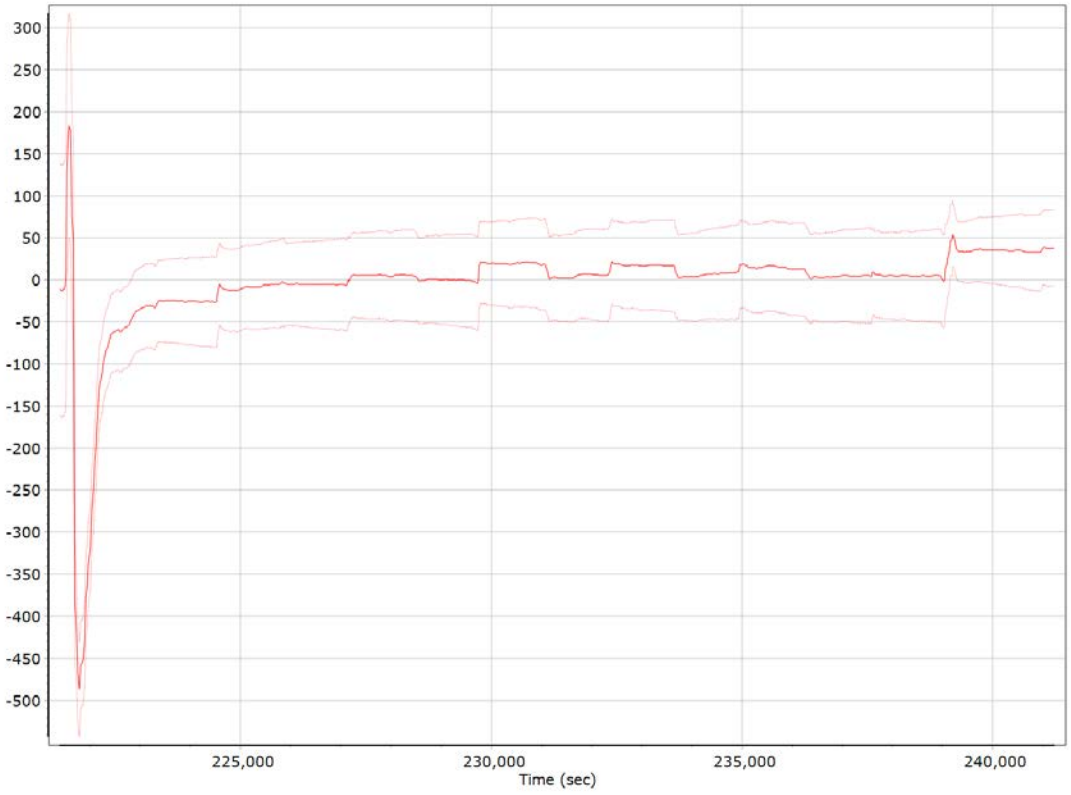
Gyro Scale Error (ppm)



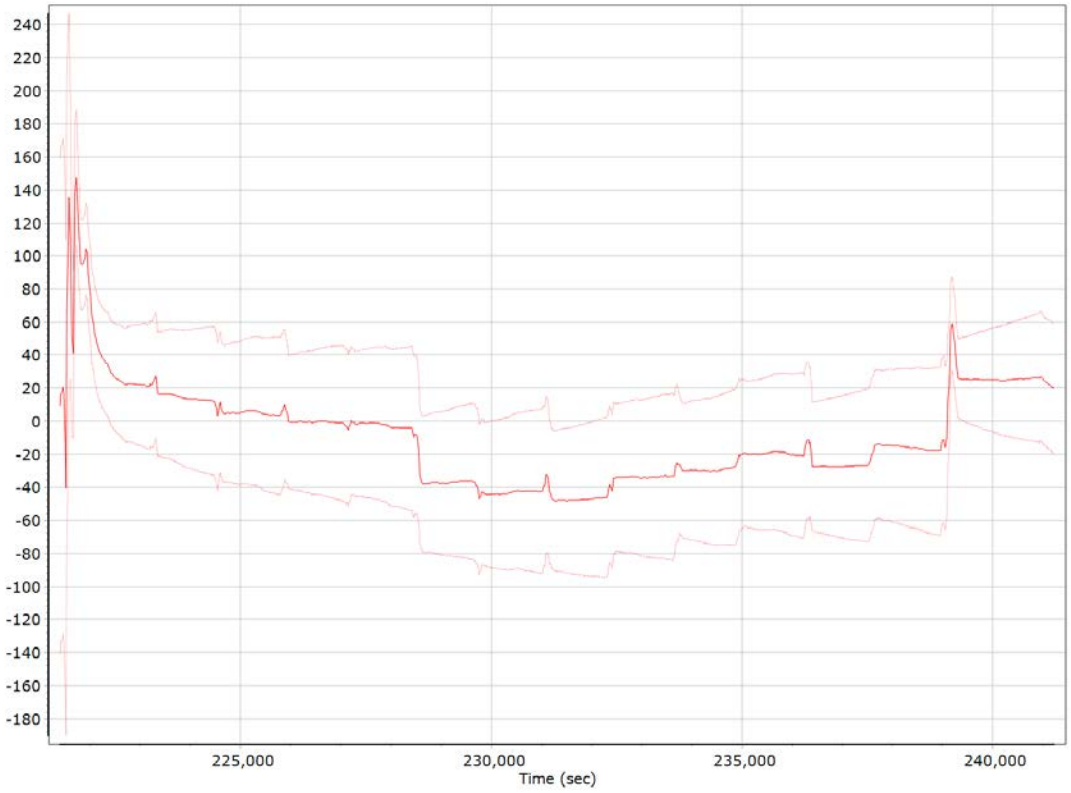
X Gyro Scale Error (ppm)



Y Gyro Scale Error (ppm)



Z Gyro Scale Error (ppm)

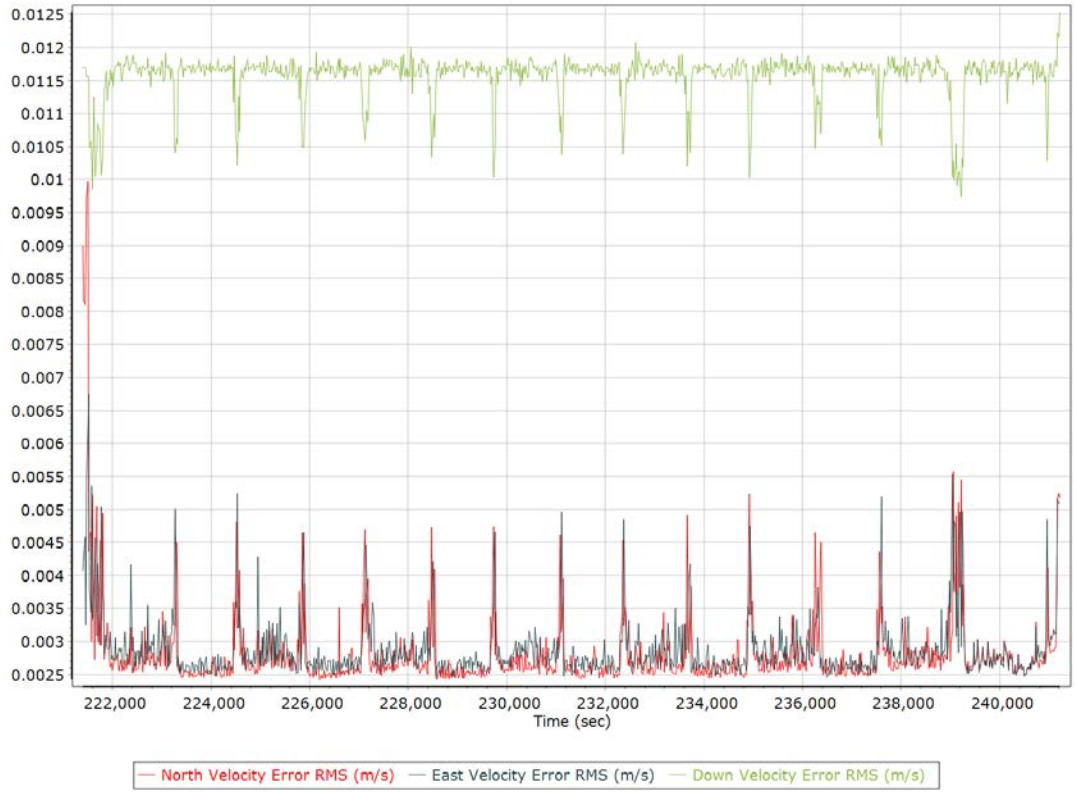


Smoothed Performance Metrics

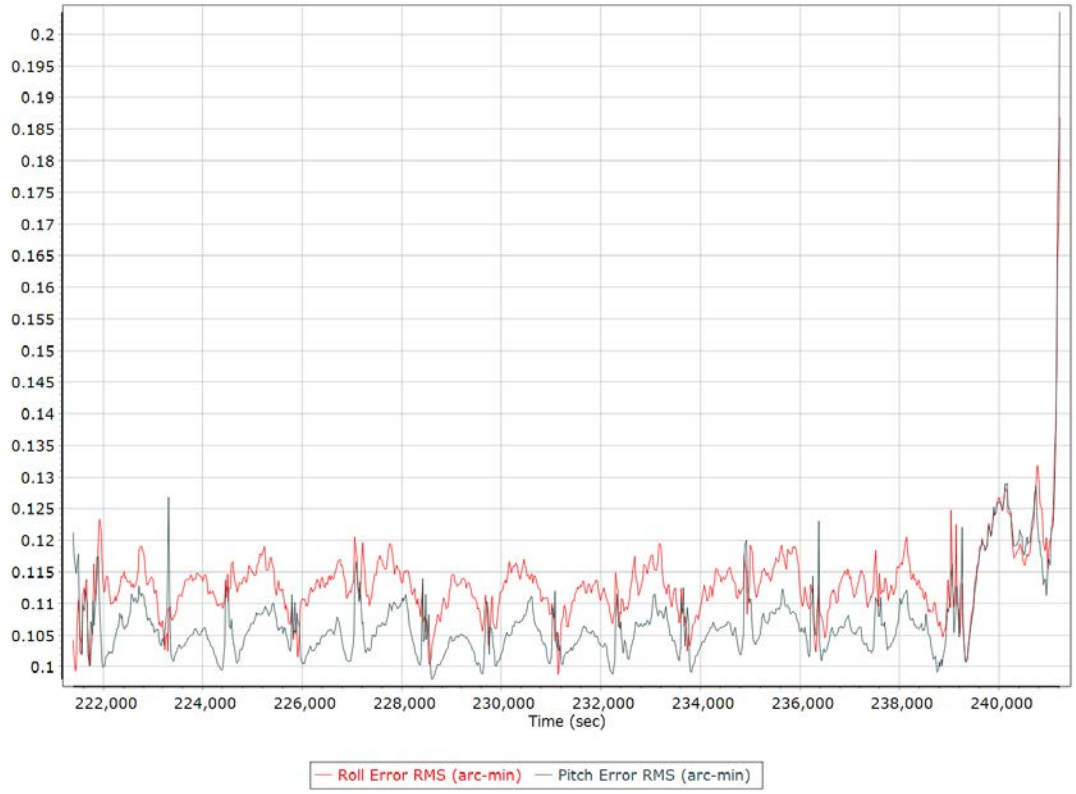
Position Error RMS (m)



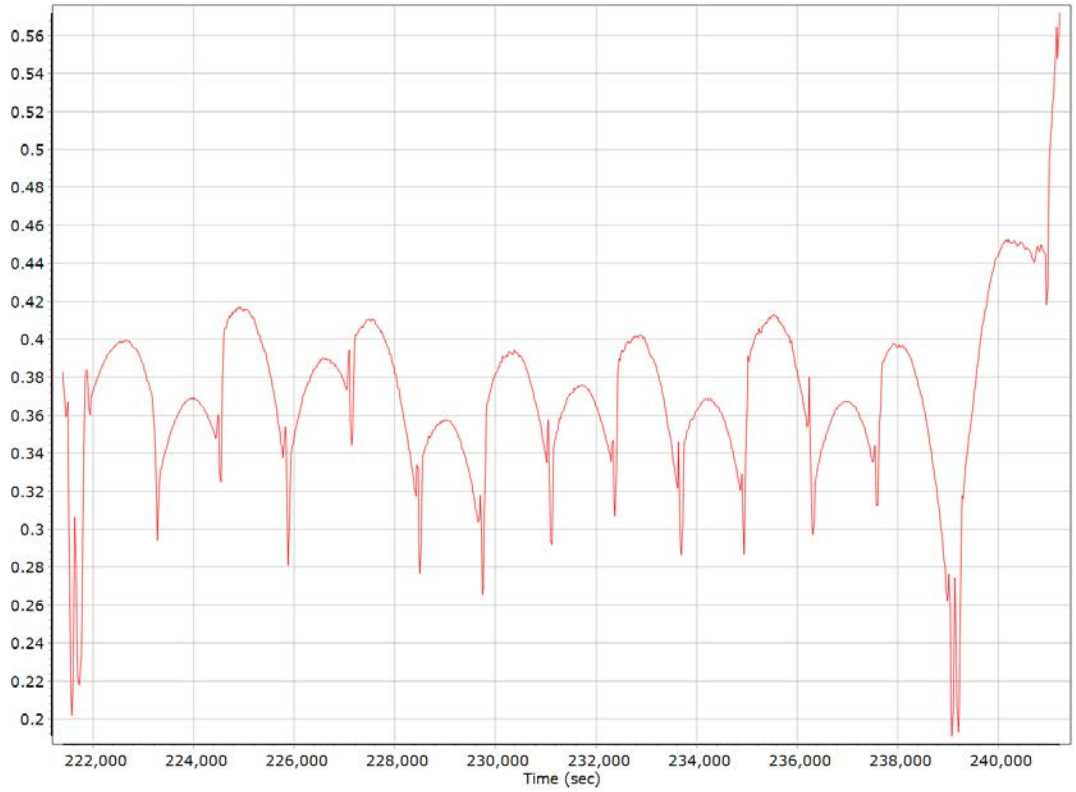
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)



Heading Error RMS (arc-min)



Forward Processed Performance Metrics

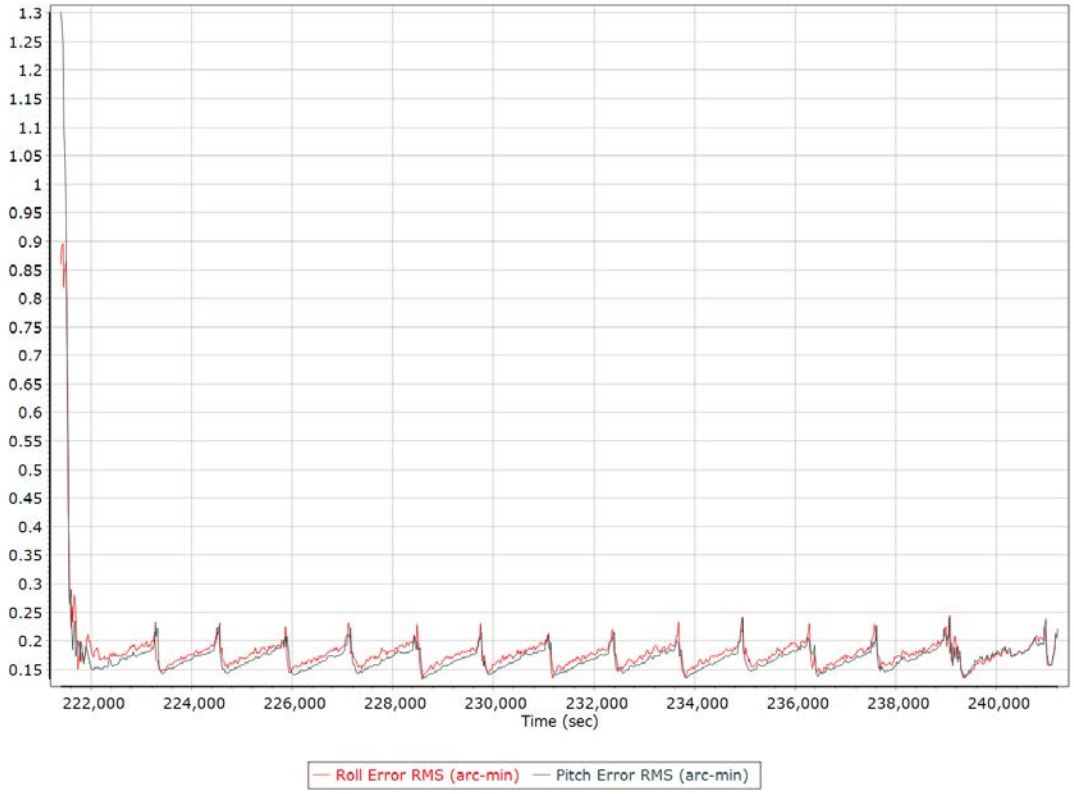
Position Error RMS (m)



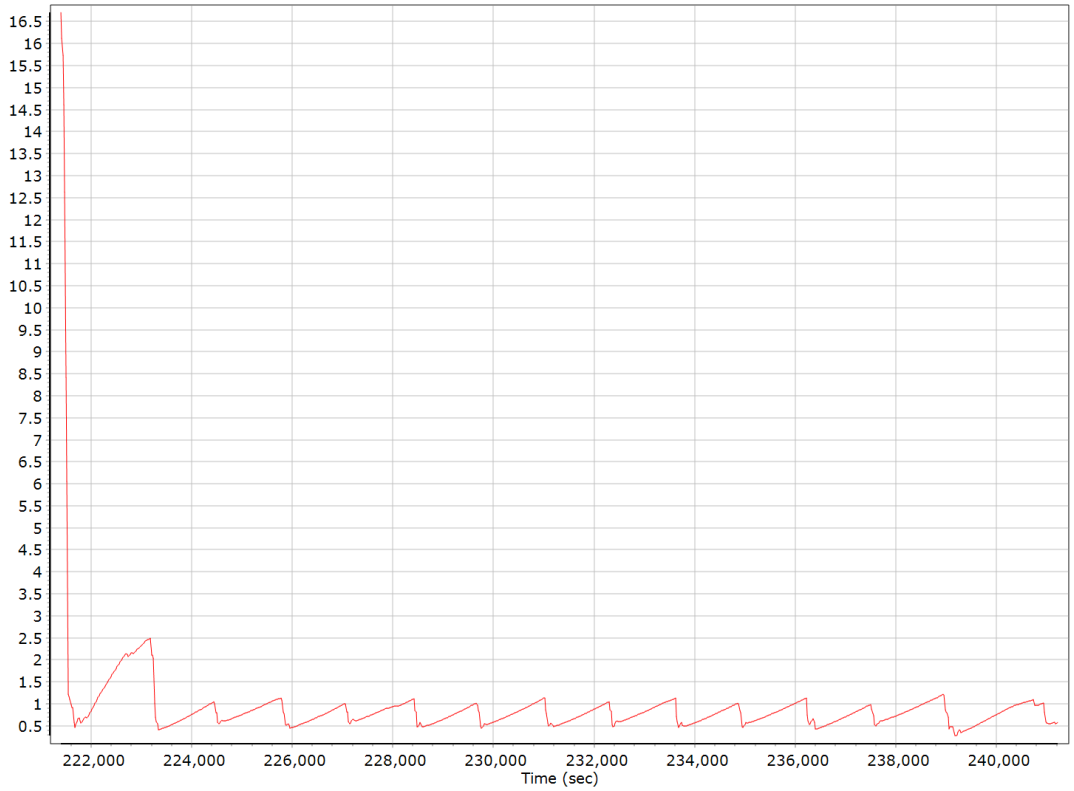
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

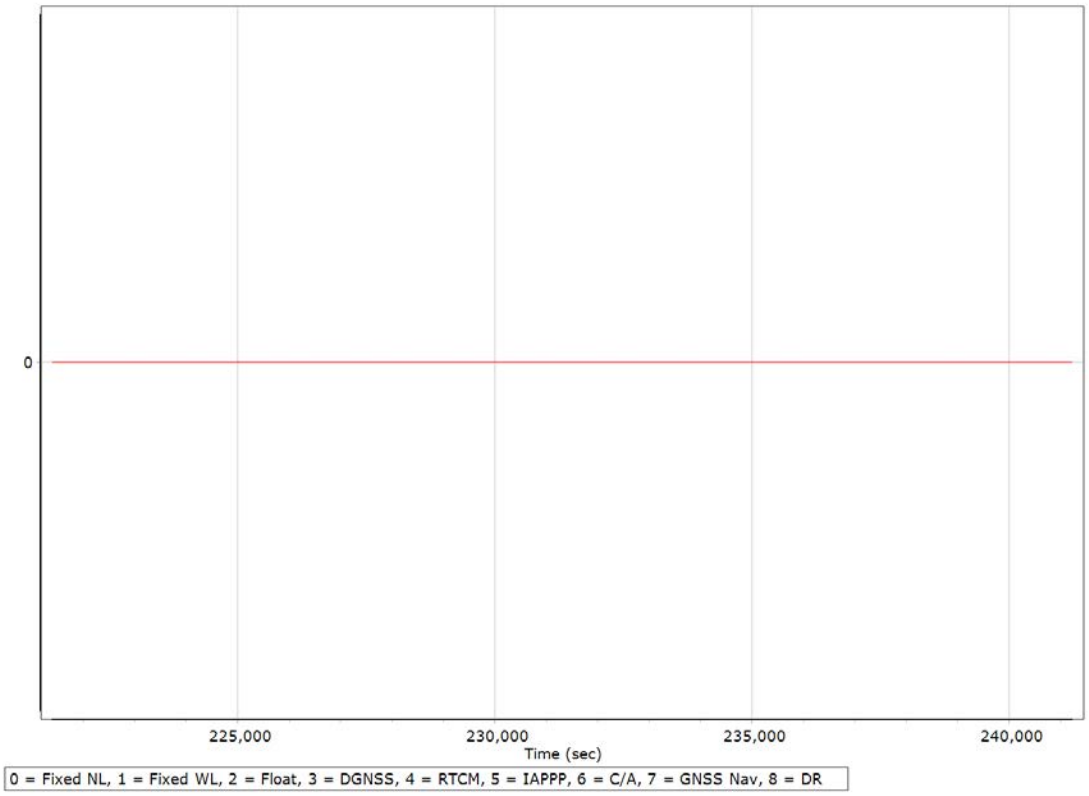


Heading Error RMS (arc-min)

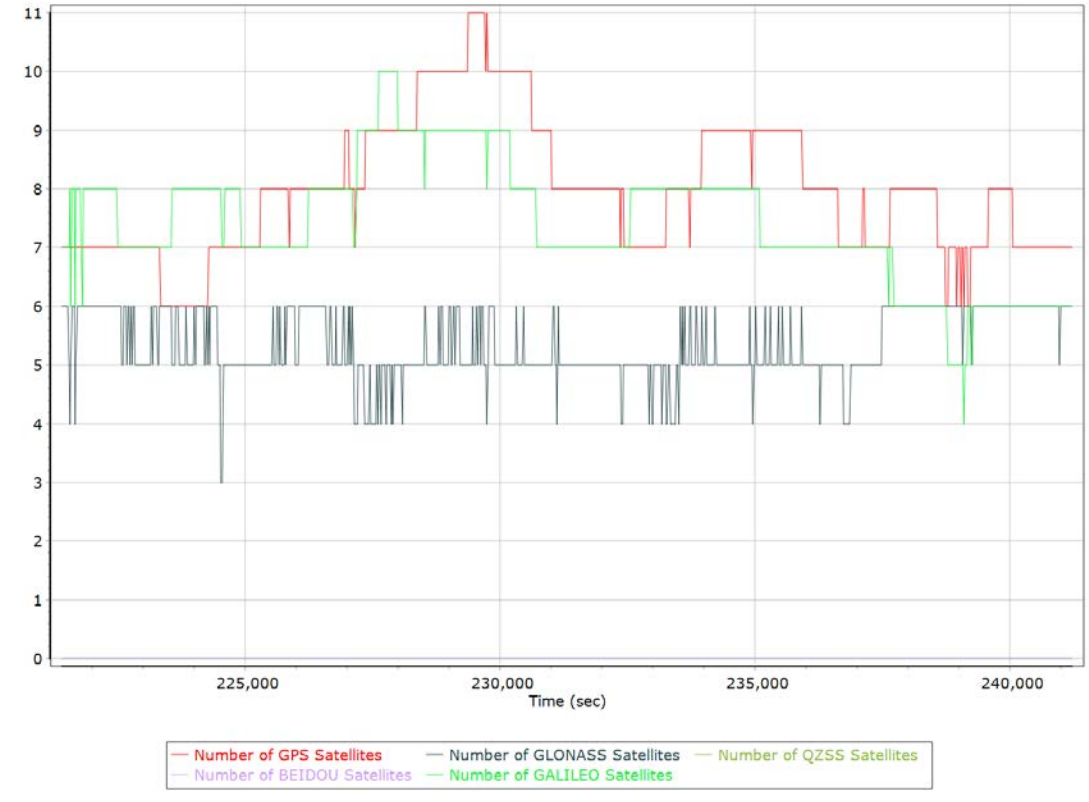


Forward Processed Solution Status

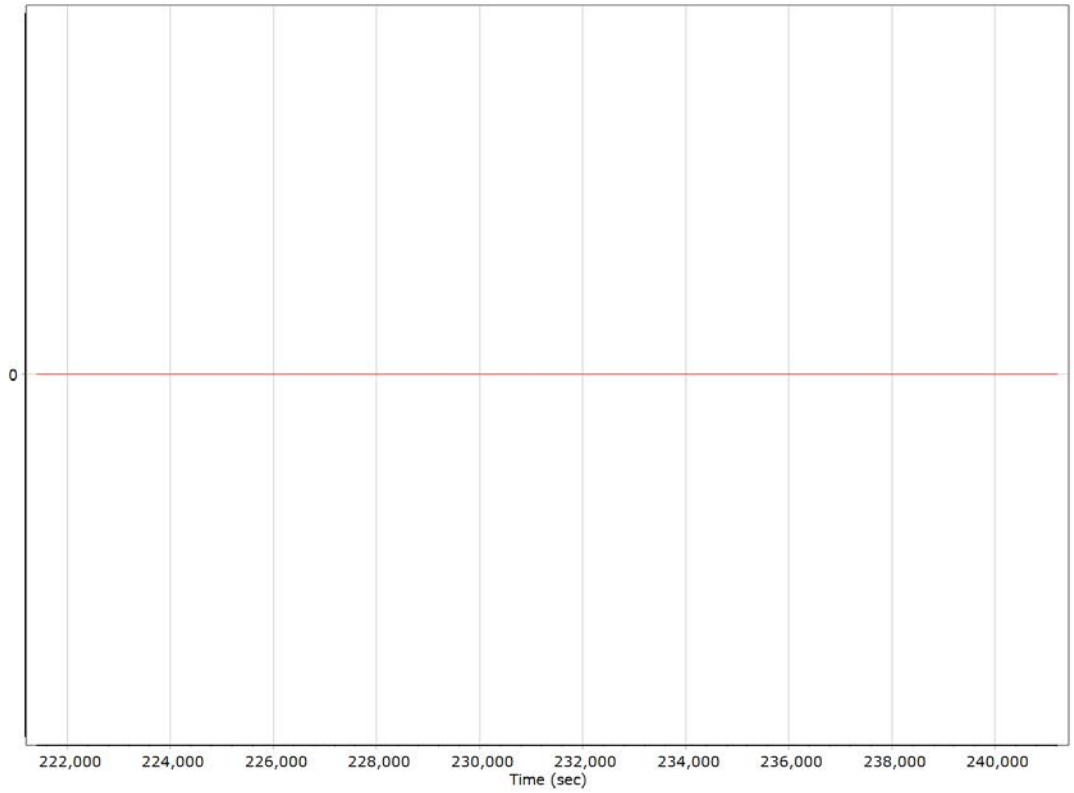
Processing Mode



Number of Satellites



Baseline Length



General Information

Mission Information

Project name	08252023A_3541
Processing date	2023-08-29 15:55:18
Mission date	2023-08-25 13:37:07
Mission duration	05:08:03.570
Processing mode	IN-Fusion PP-RTX

Rover Hardware Information

Product	POS AV 610 VER6 HW2.5-12
Serial number	S/N9642
IMU type	57
Receiver type	BD982
Antenna type	AV59

Project File List

Rover Data Files

File name	File type
ALS.103	POS Data
ALS.104	POS Data
ALS.105	POS Data
ALS.106	POS Data
ALS.107	POS Data
ALS.108	POS Data
ALS.109	POS Data
ALS.110	POS Data
ALS.111	POS Data
ALS.112	POS Data
ALS.113	POS Data
ALS.114	POS Data
ALS.115	POS Data
ALS.116	POS Data
ALS.117	POS Data
ALS.118	POS Data
ALS.119	POS Data
ALS.120	POS Data
ALS.121	POS Data
ALS.122	POS Data
ALS.123	POS Data
ALS.124	POS Data
ALS.125	POS Data
ALS.126	POS Data
ALS.127	POS Data
ALS.128	POS Data
ALS.129	POS Data
ALS.130	POS Data
ALS.131	POS Data
ALS.132	POS Data
ALS.133	POS Data
ALS.134	POS Data

Input Files

File Name	File Type
Ephm2370.23g	GLONASS Broadcast Ephemeris
Ephm2370.23n	GPS Broadcast Ephemeris

Output Files

Filename	File type
sbet_08252023A_3541.out	SBET Trajectory File

Rover Data Summary

First raw data file	ALS.103		
Last raw data file	ALS.134		
Start GPS week	2276		
Start time	481009.002 (8/25/2023 1:36:49 PM)		
End time	499492.572 (8/25/2023 6:44:52 PM)		
Start of fine alignment	481032.316 (8/25/2023 1:37:12 PM)		
Available subsystems	Primary GNSS, Gimbal, IMU		
POS Event Input	None		
Correction data	None		
IMU Installation Lever Arms & Mounting Angles			
Gimbal to IMU lever arm (m)	-0.034	-0.010	-0.374
Gimbal to IMU mounting angles (deg)	0.000	0.000	0.000
Gimbal to Primary GNSS lever arm (m)	-0.137	0.043	-1.289
Gimbal to Primary GNSS lever arm std dev (m)	-1.000		
Aircraft to Reference mounting angles (deg)	0.000	0.000	0.000

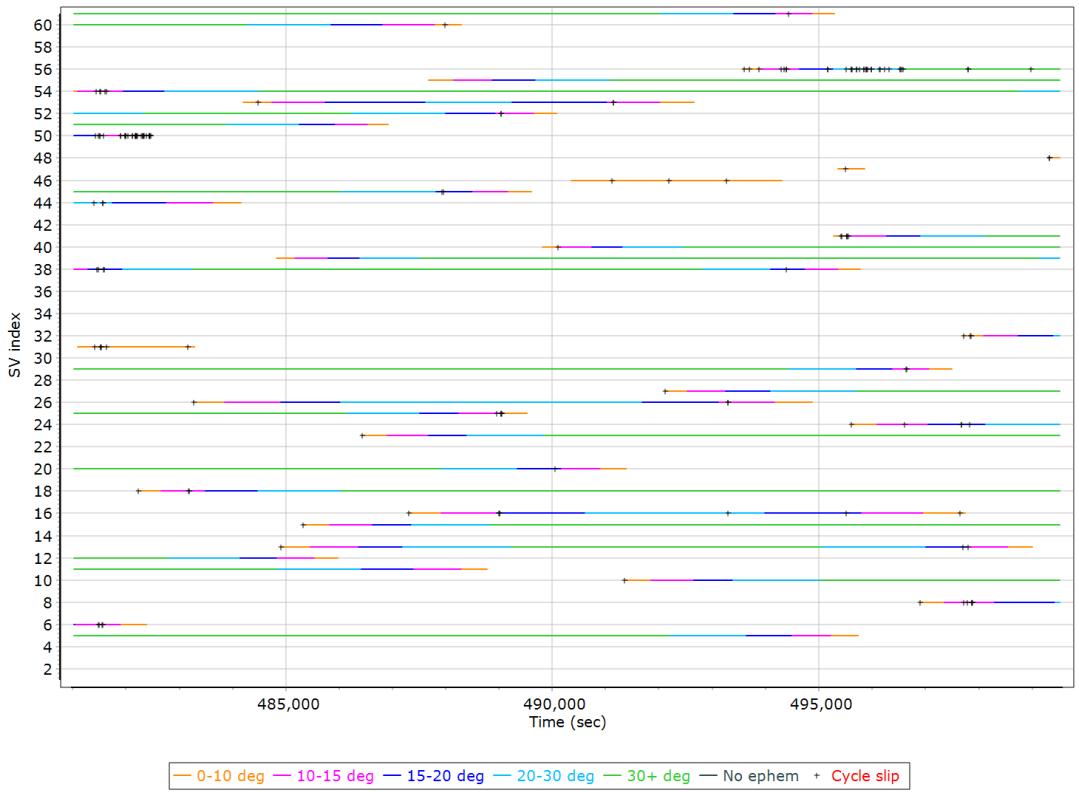
Rover Data QC

Raw IMU Import QC Summary

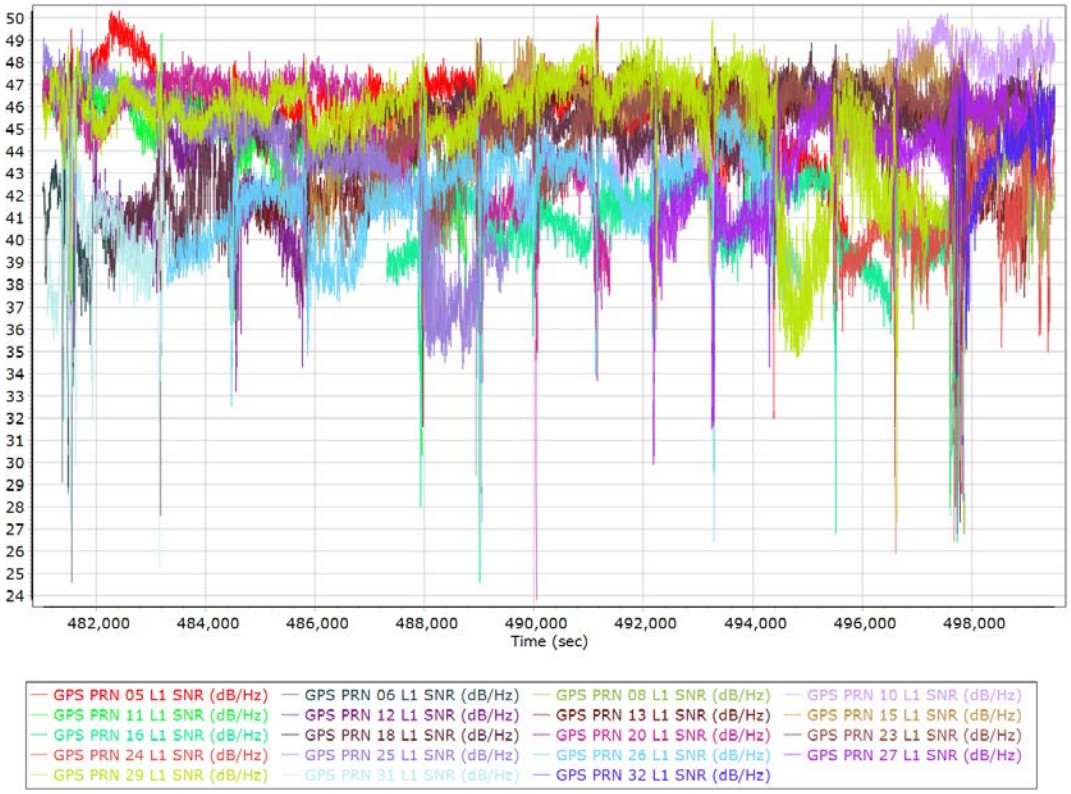
IMU data input file	imu_Mission 1.dat
IMU data check log file	imudt_08252023A_3541.log
IMU Records Processed	3697892
Termination Status	Normal
IMU Anomalies	0

Primary Observables & Satellite Data

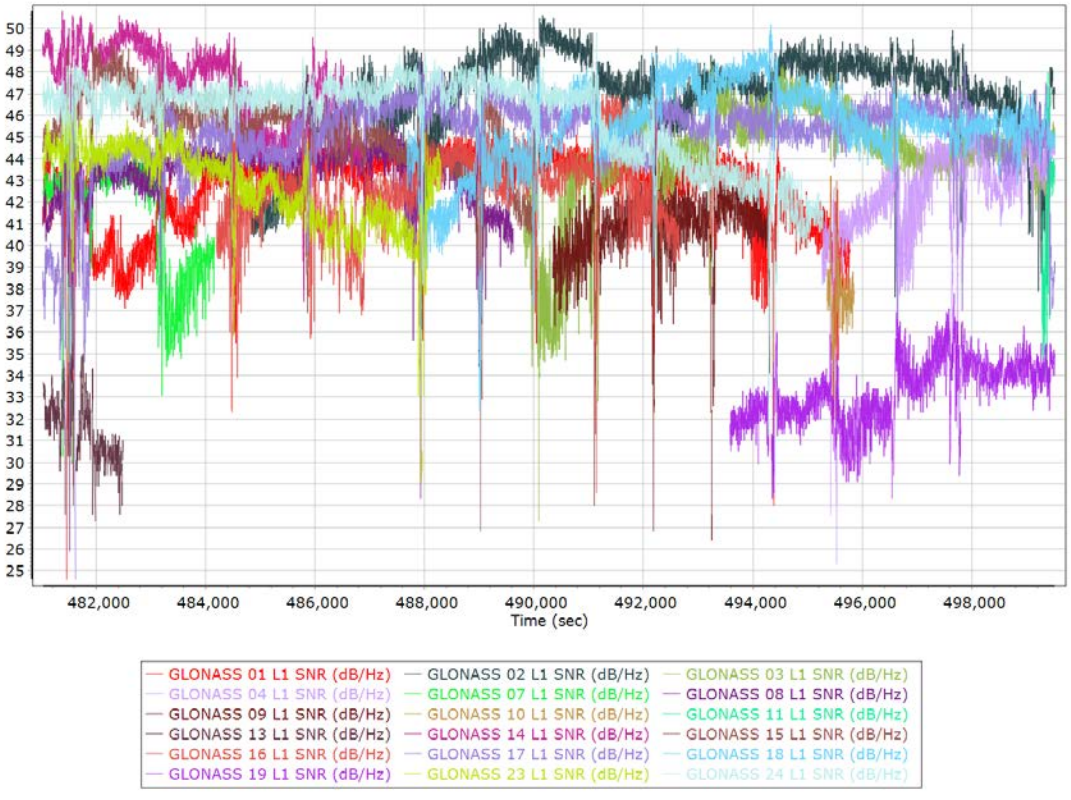
GPS/GLONASS L1 Satellite Lock/Elevation



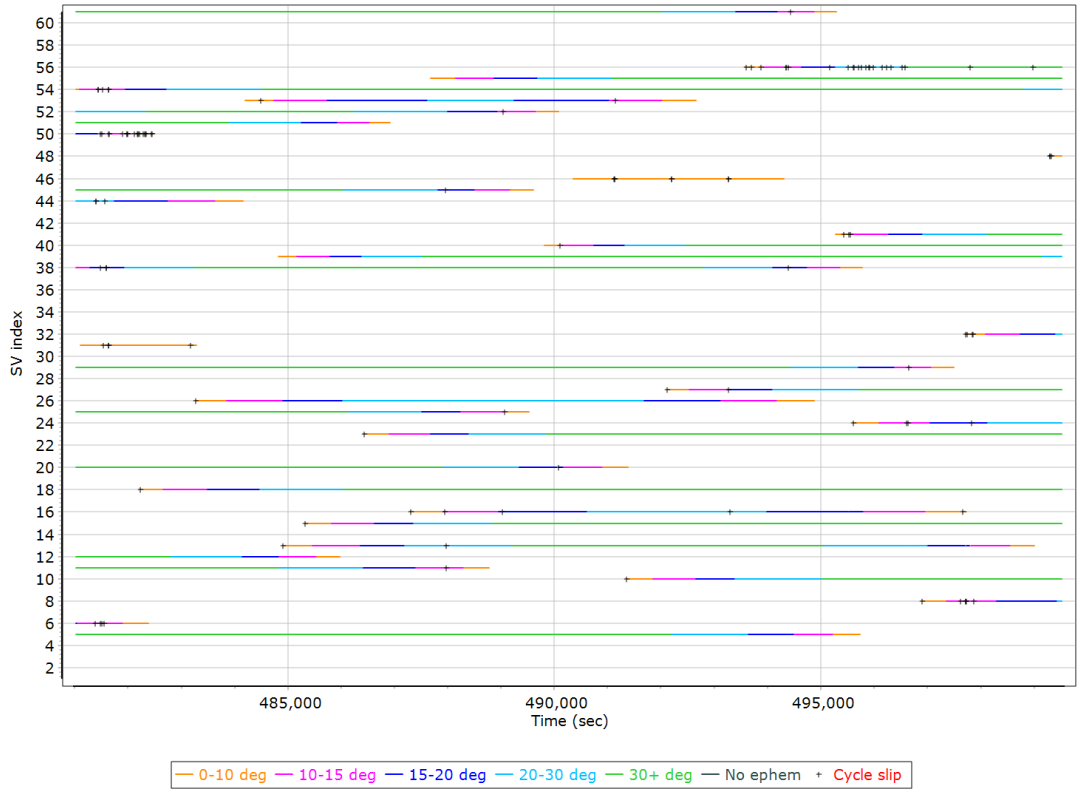
GPS L1 SNR



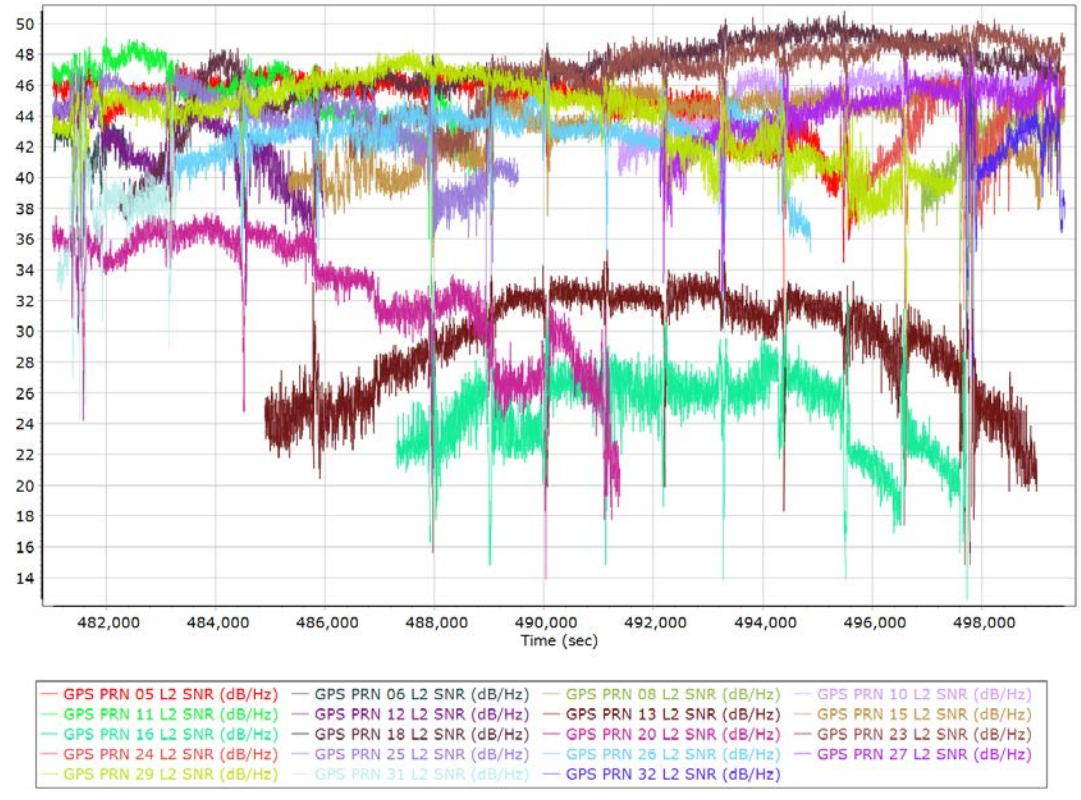
GLONASS L1 SNR



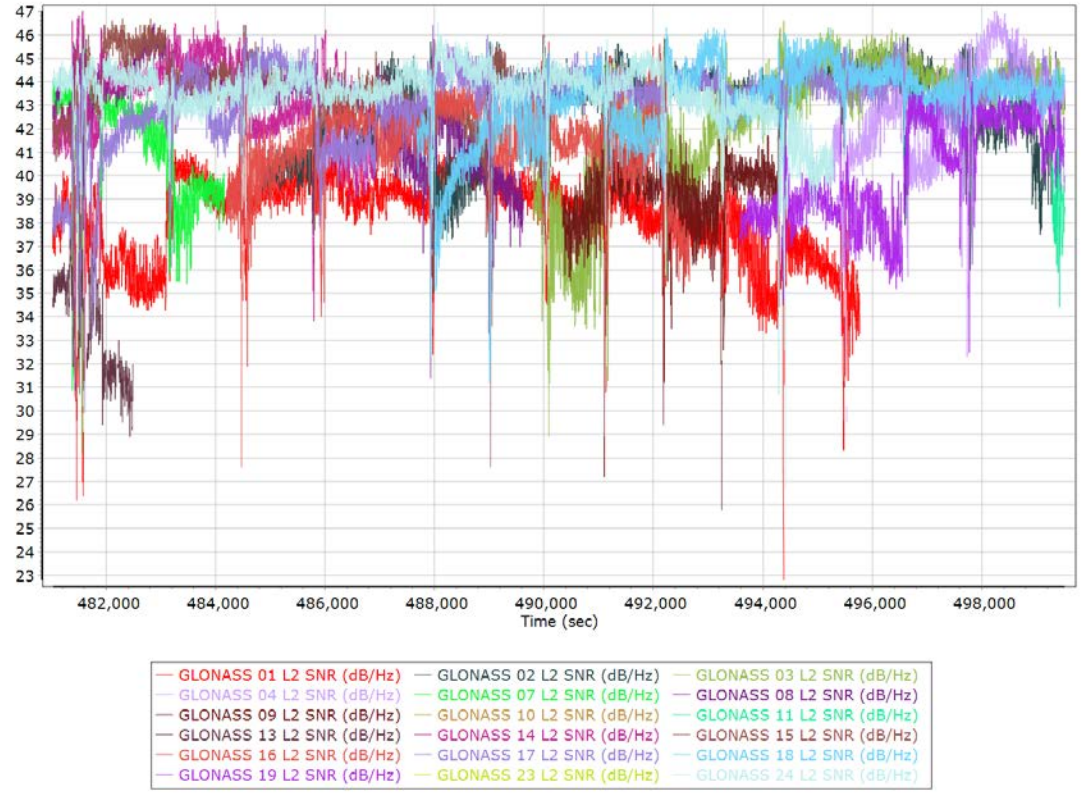
GPS/GLONASS L2 Satellite Lock/Elevation



GPS L2 SNR



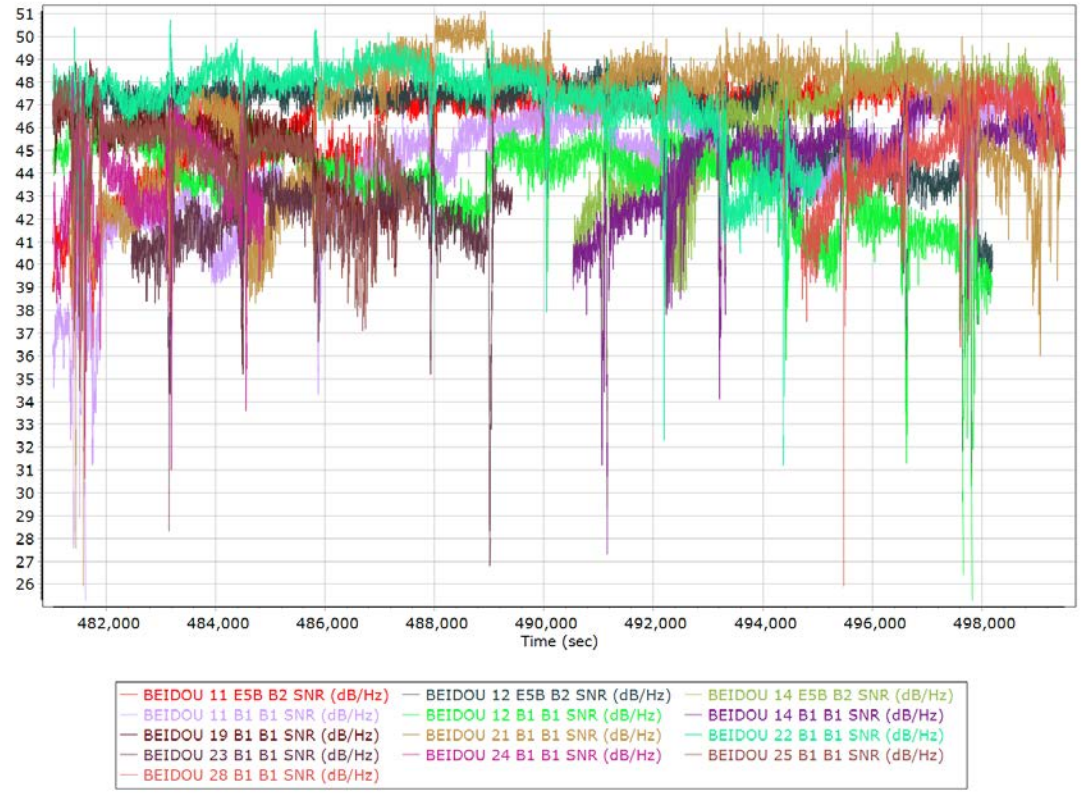
GLONASS L2 SNR



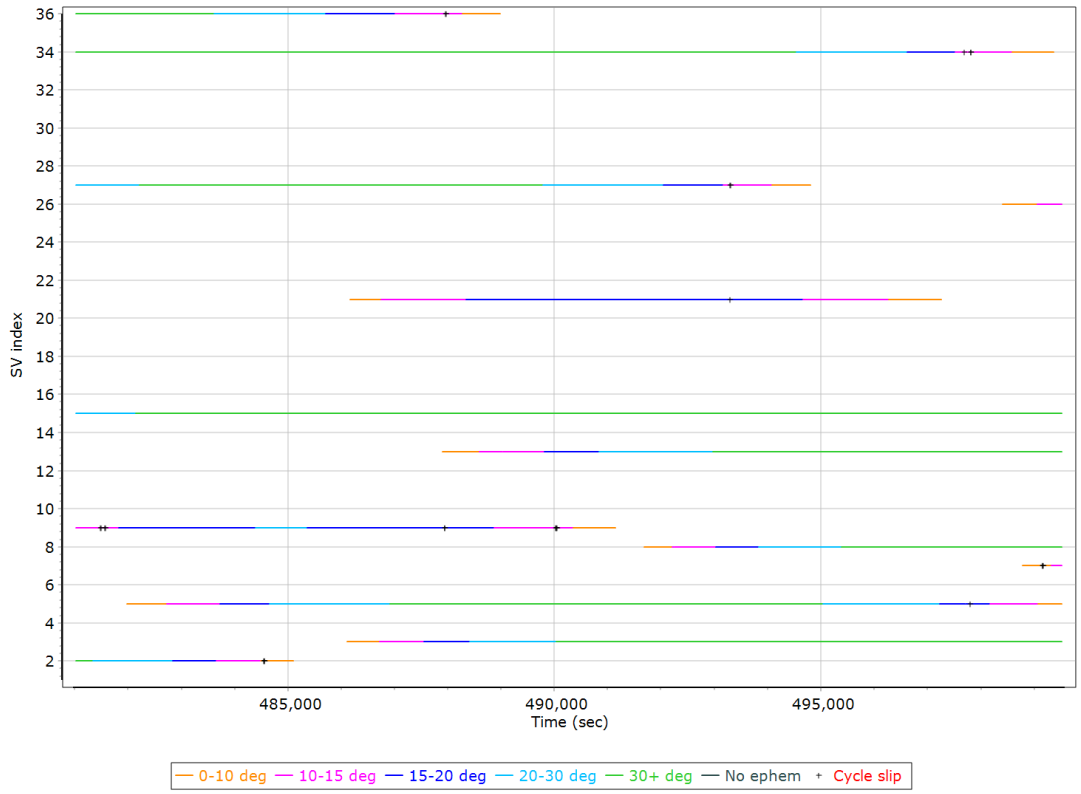
BEIDOU Satellite Lock/Elevation



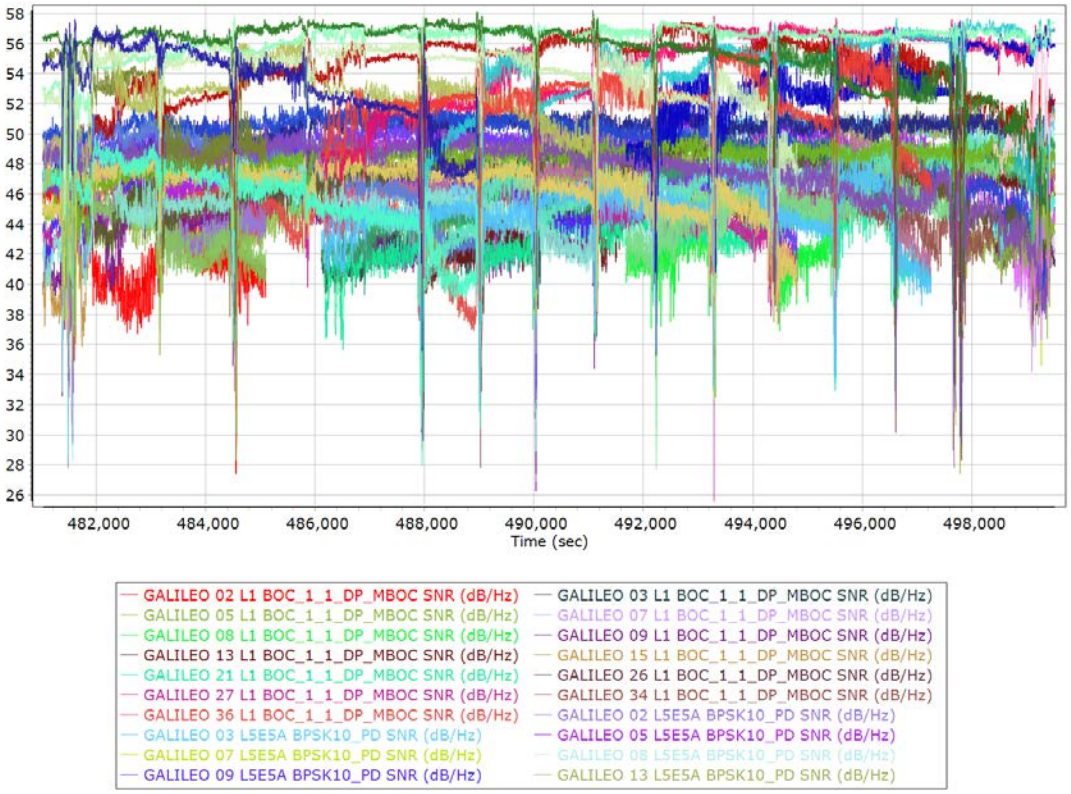
BEIDOU SNR



GALILEO Satellite Lock/Elevation

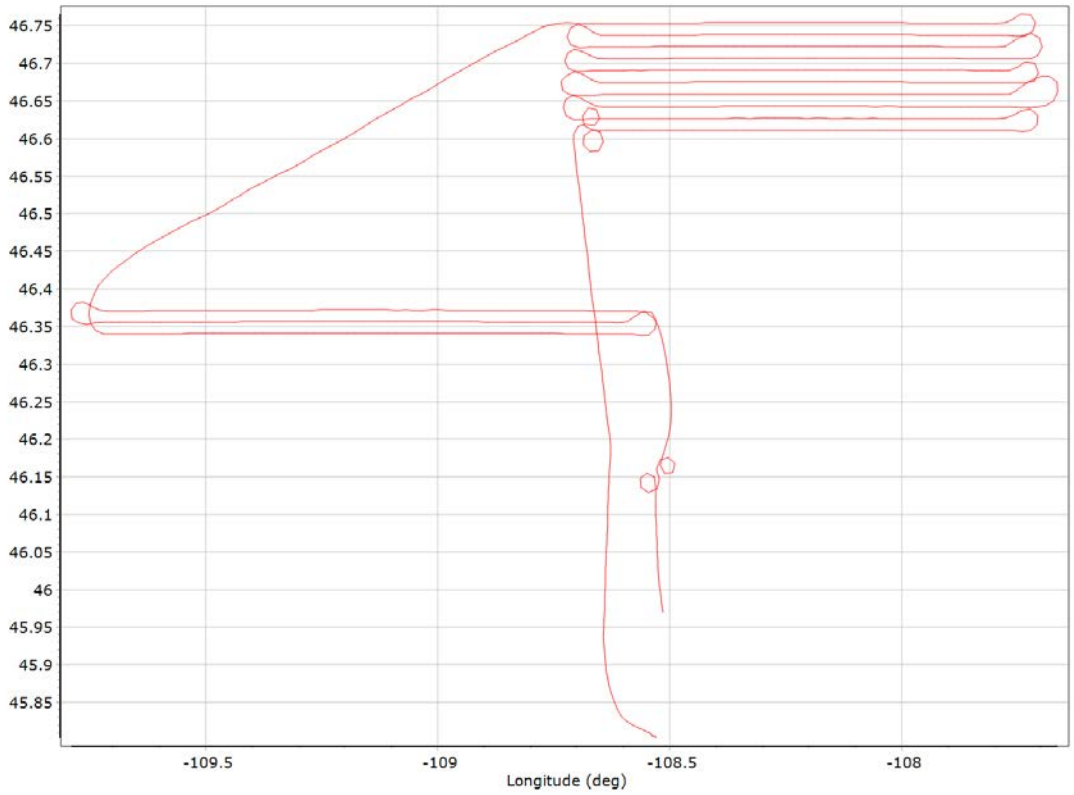


GALILEO SNR

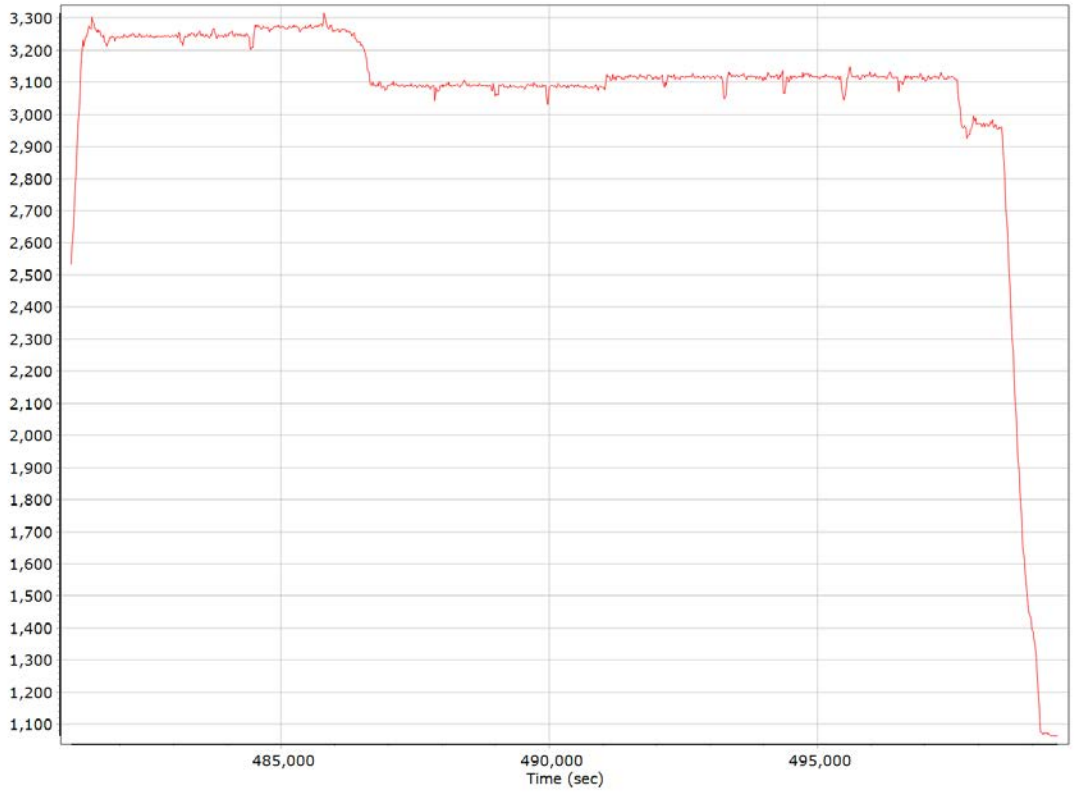

58
56
54
52
50
48
46
44
42
40
38
36
34
32
30
28
26
482,000
484,000
486,000
488,000
490,000
492,000
494,000
496,000
498,000
Time (sec)
GALILEO 02 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 03 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 05 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 07 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 08 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 09 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 13 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 15 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 21 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 26 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 27 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 34 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 36 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
GALILEO 02 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 03 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 05 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 07 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 08 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 09 L5E5A BPSK10_PD SNR (dB/Hz)
GALILEO 13 L5E5A BPSK10_PD SNR (dB/Hz)

Smoothed Trajectory Information

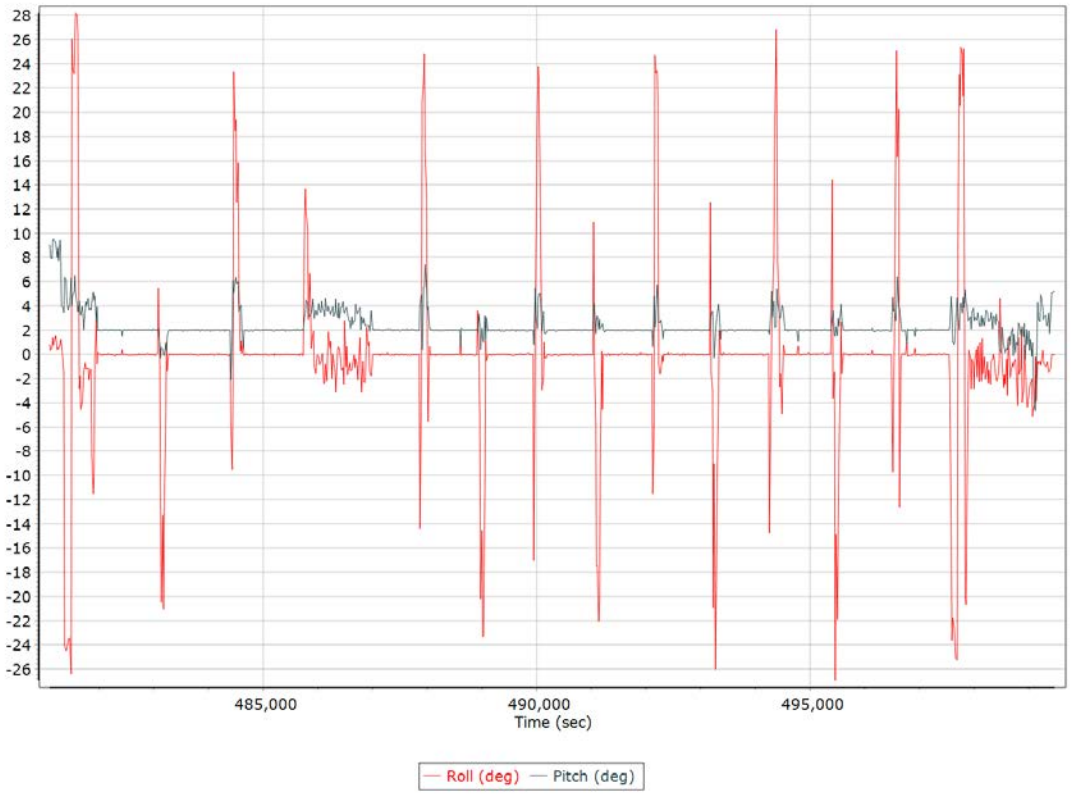
Top View



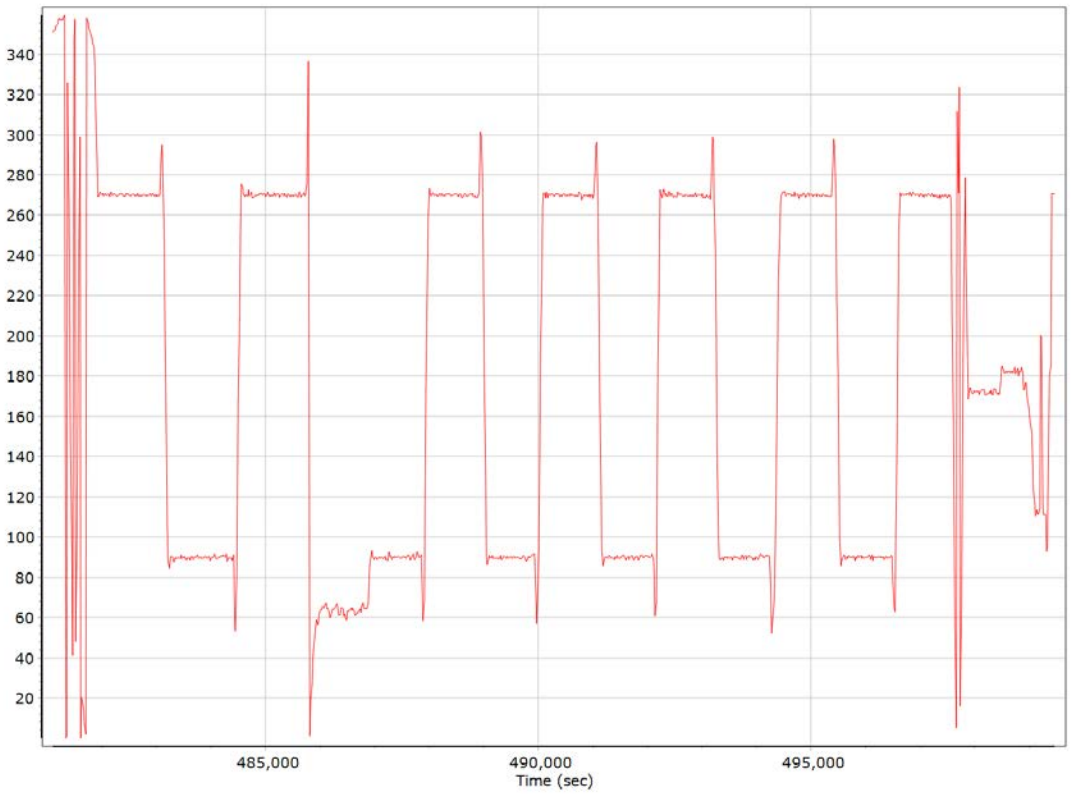
Altitude



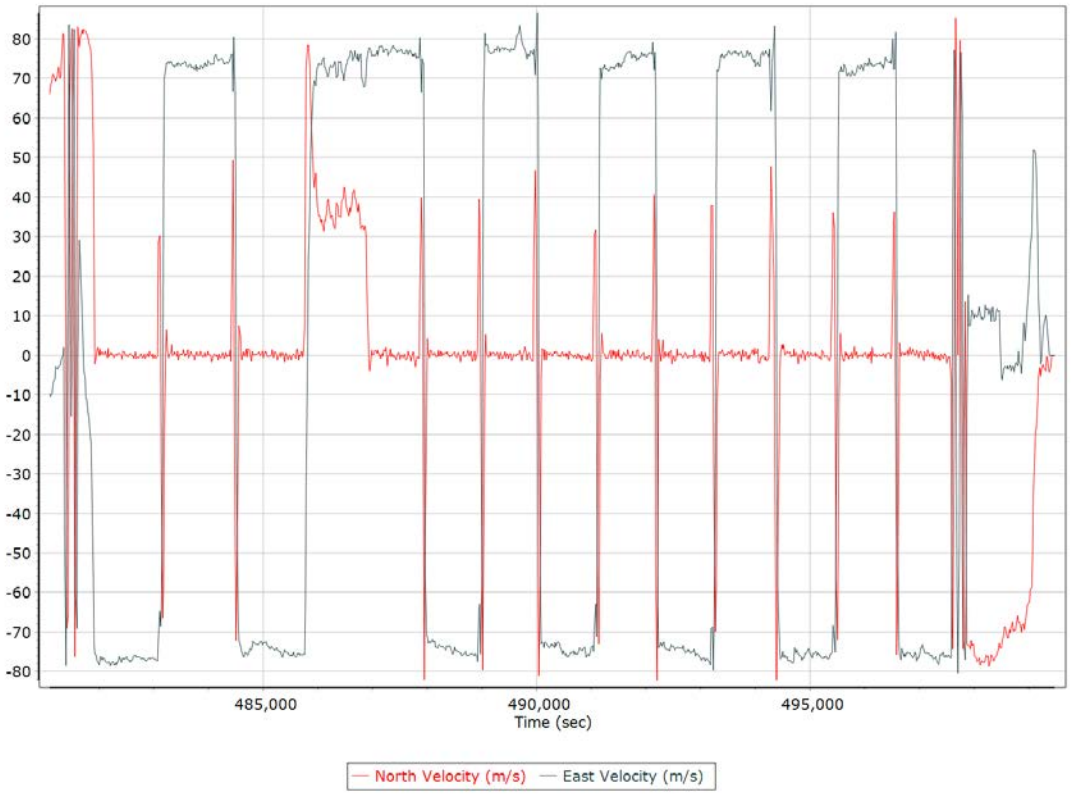
Roll/Pitch



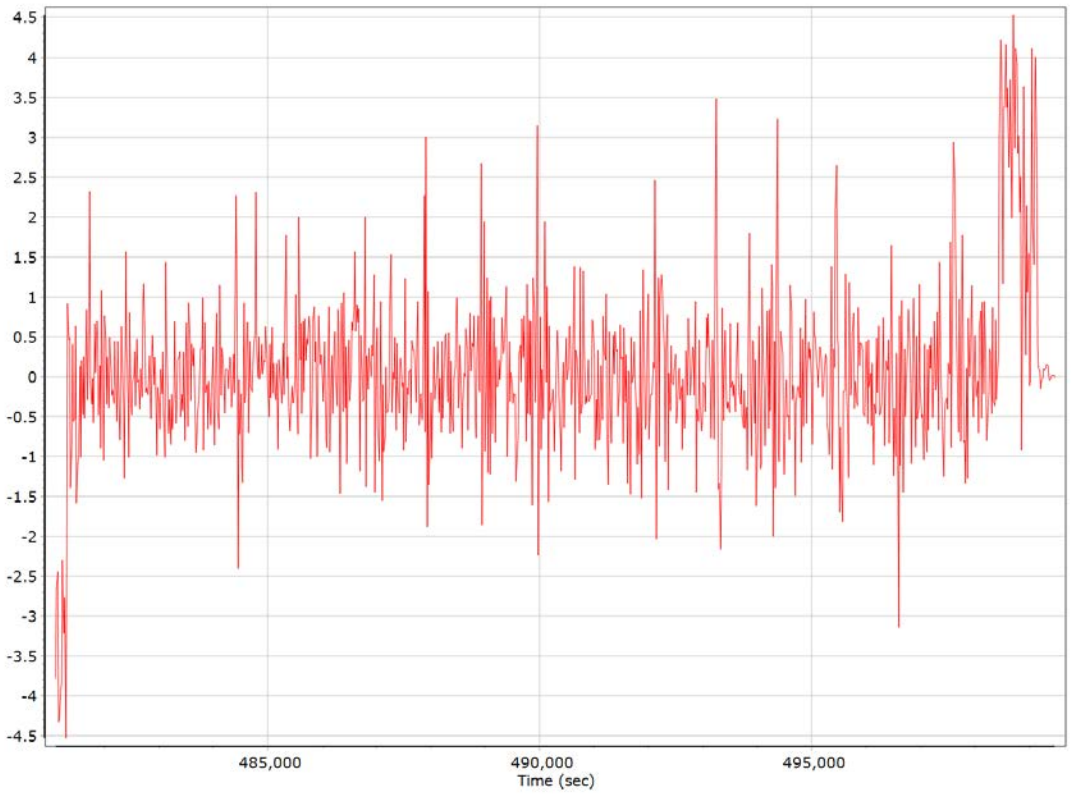
Heading



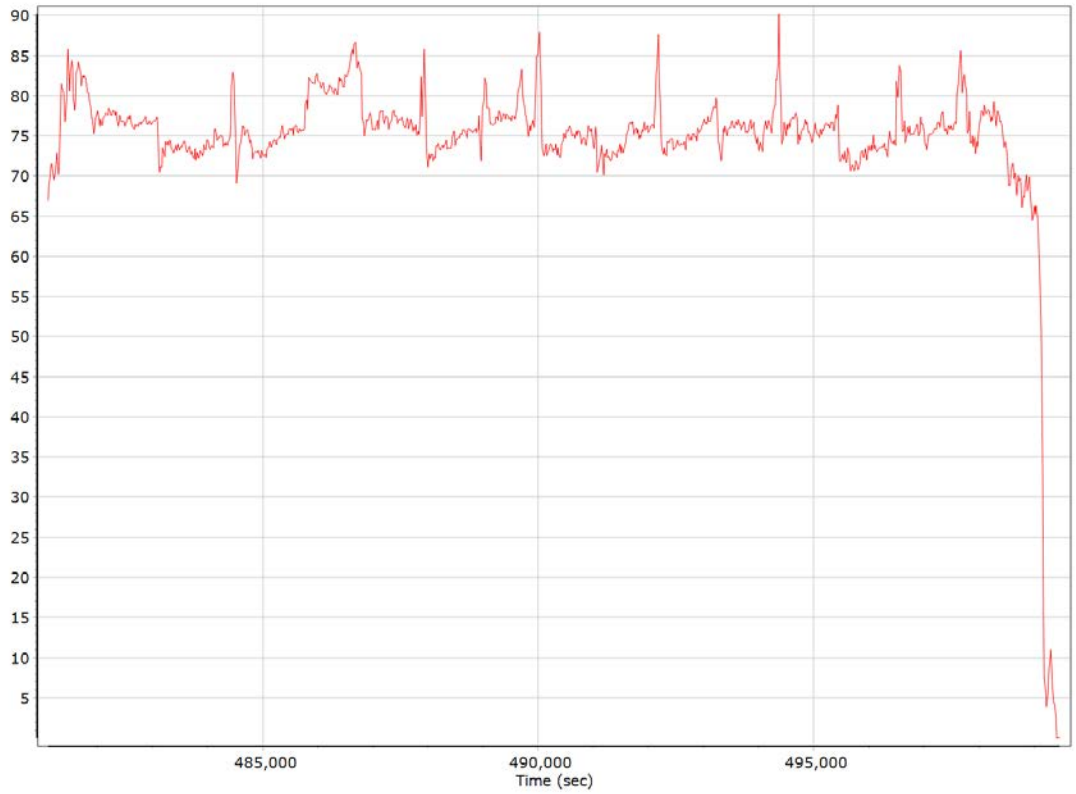
North/East Velocity



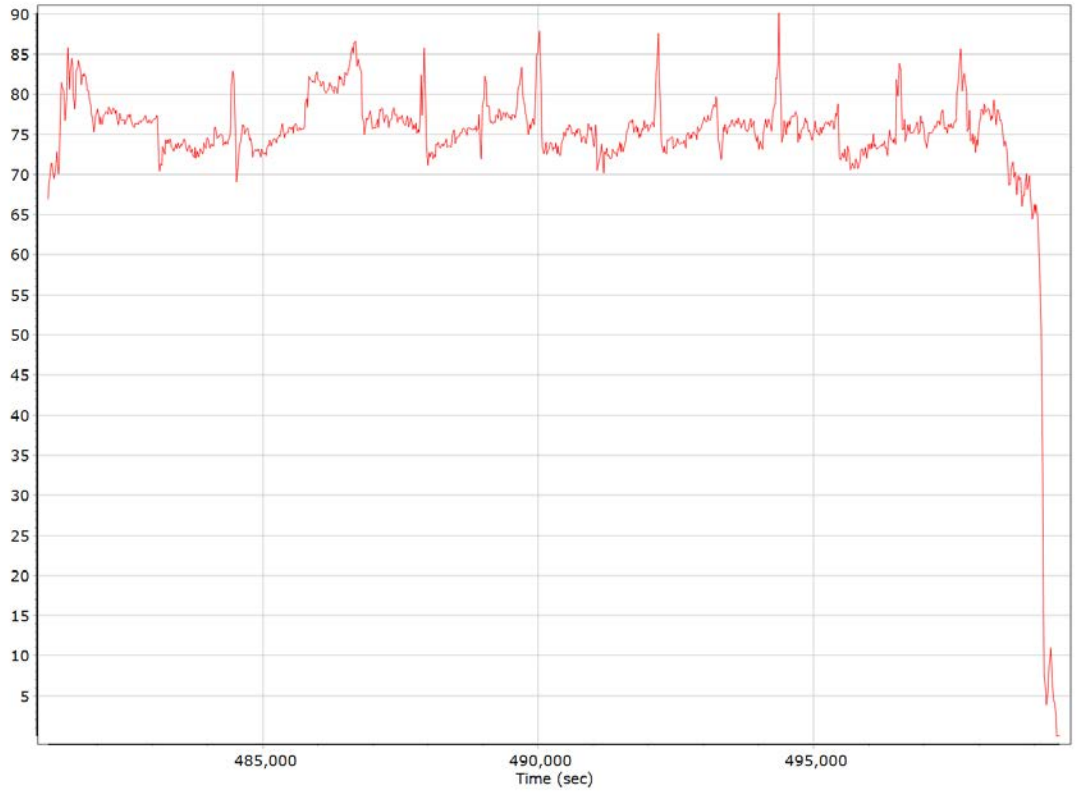
Down Velocity



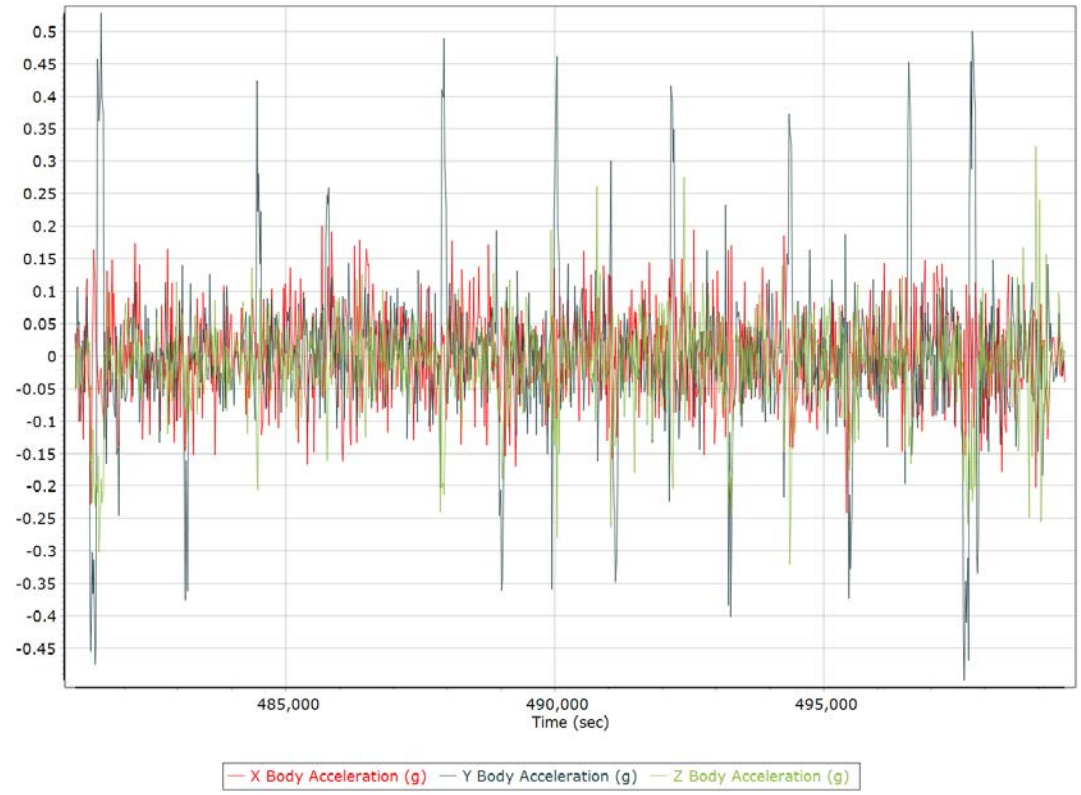
Total Speed



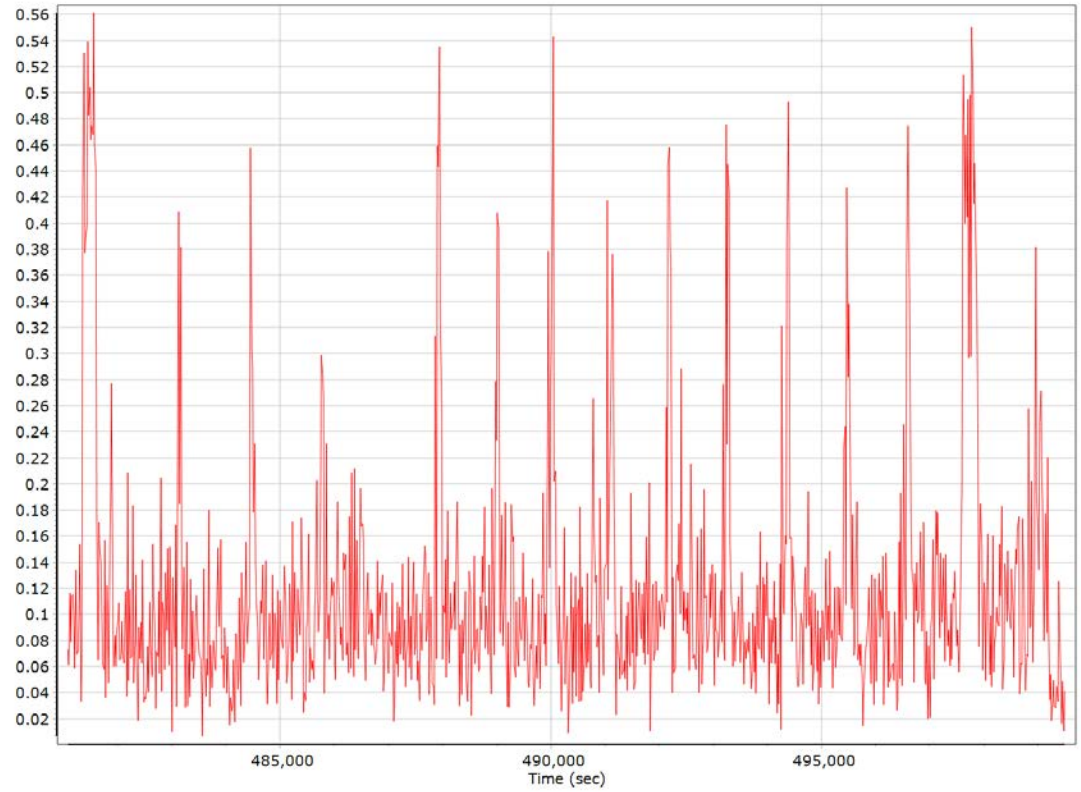
Ground Speed



Body Acceleration



Total Body Acceleration

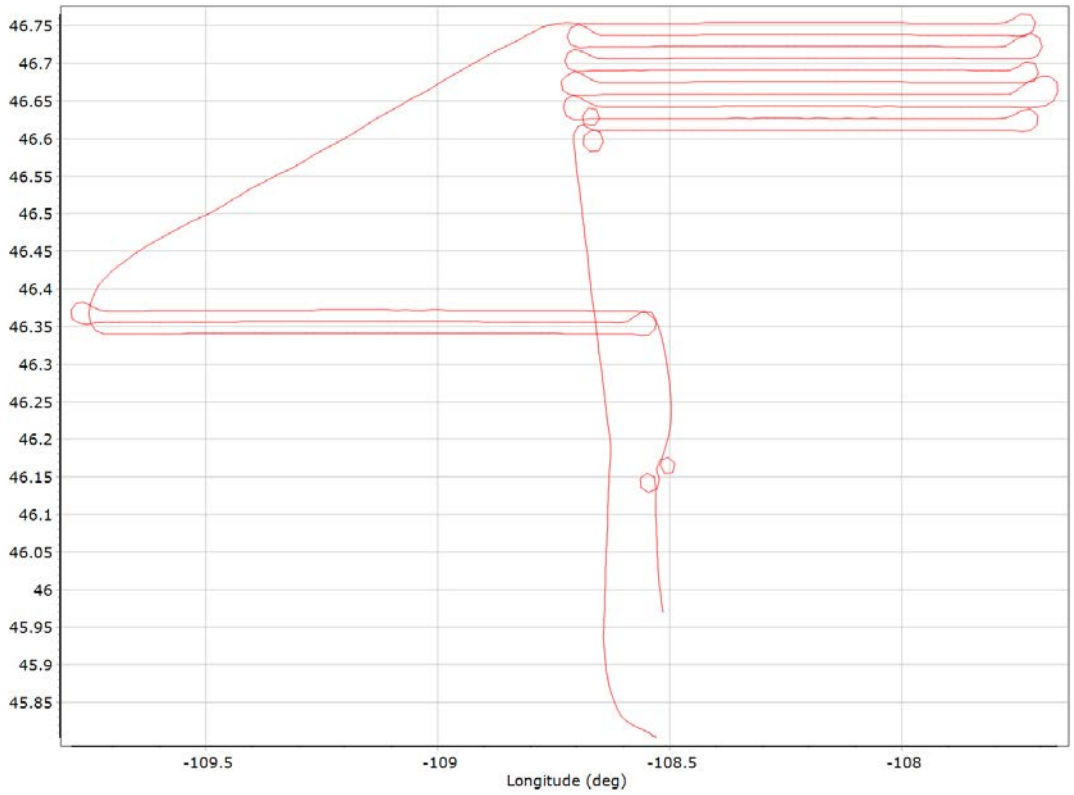


Body Angular Rate

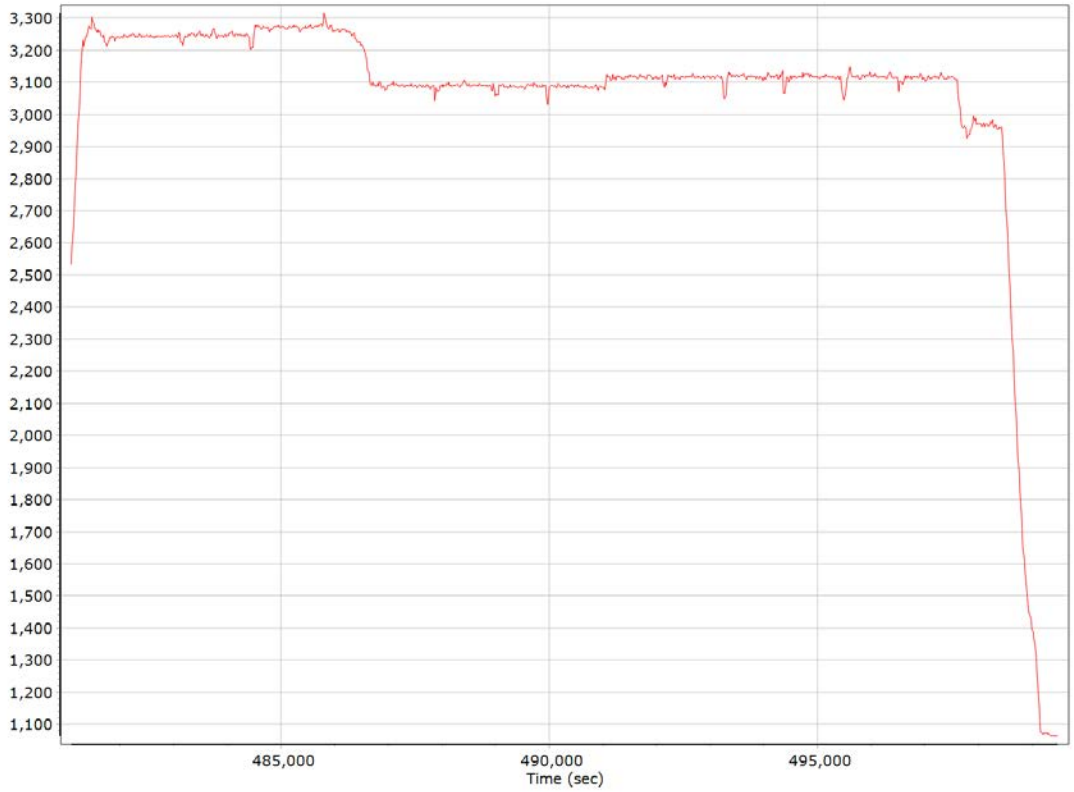


Forward Processed Trajectory Information

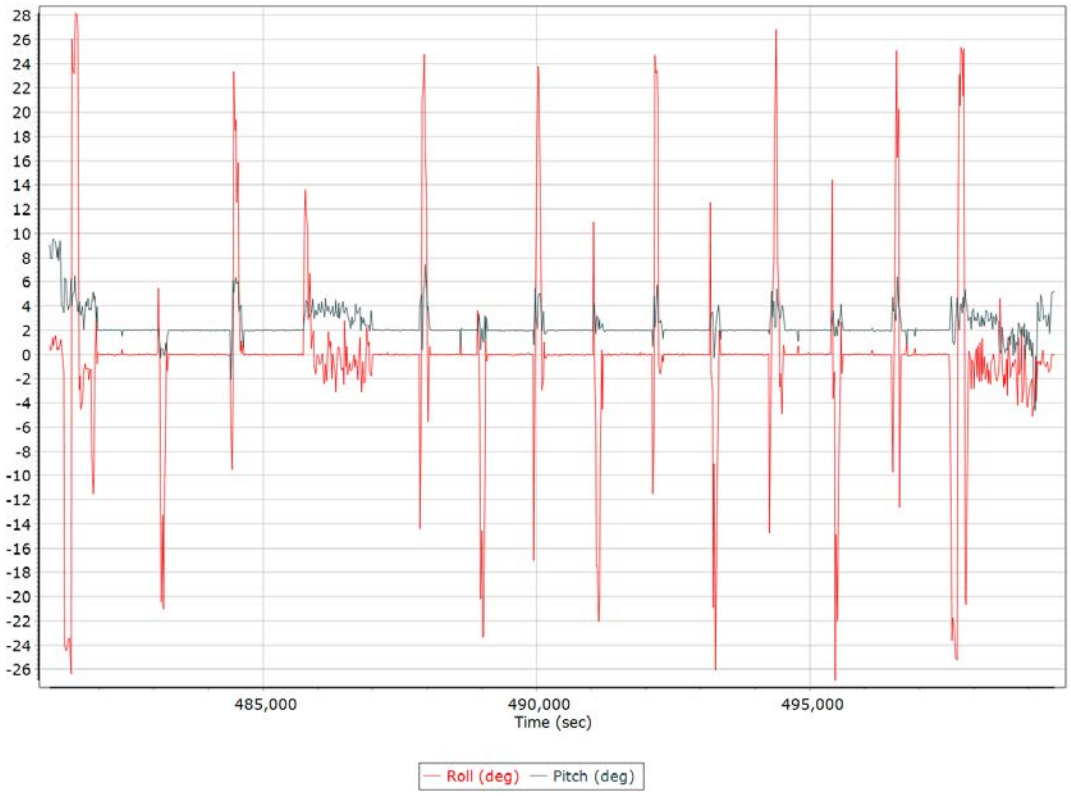
Top View



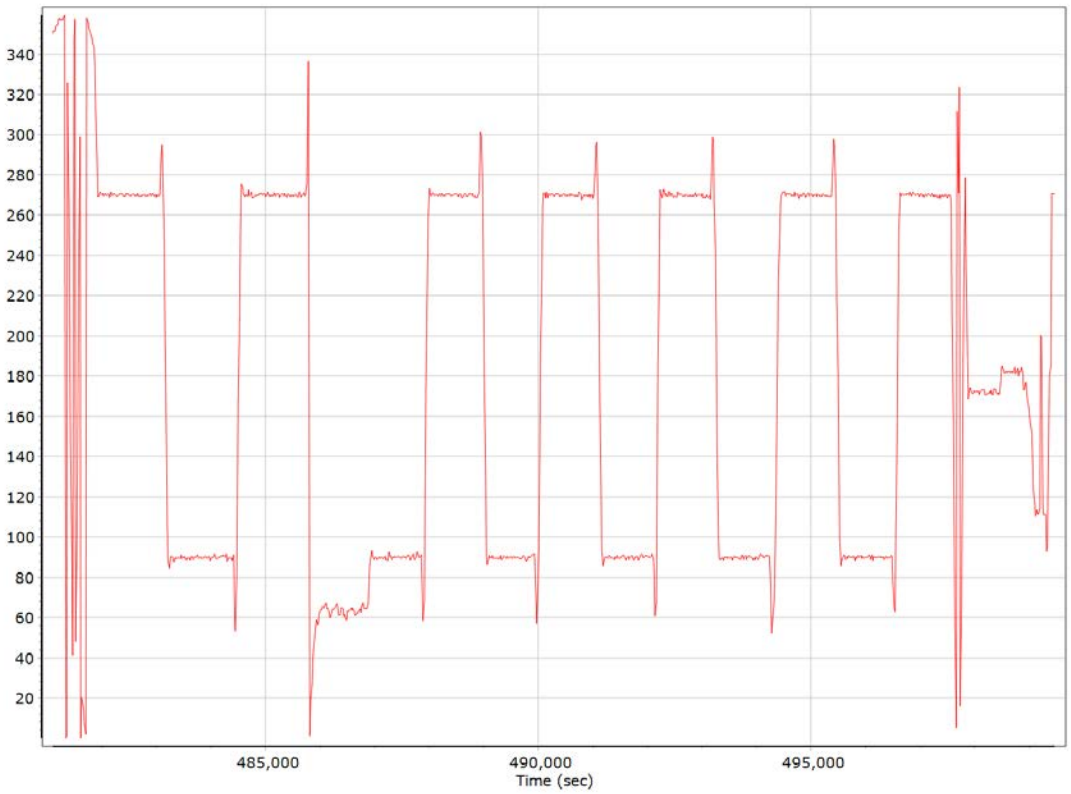
Altitude



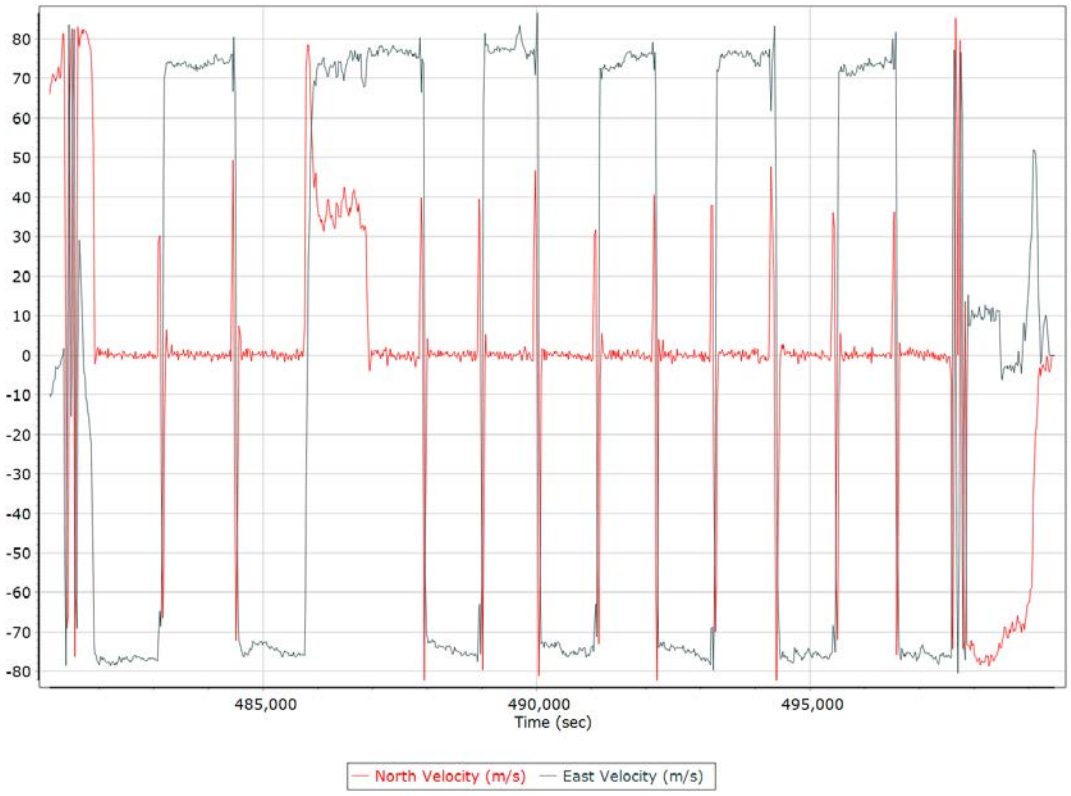
Roll/Pitch



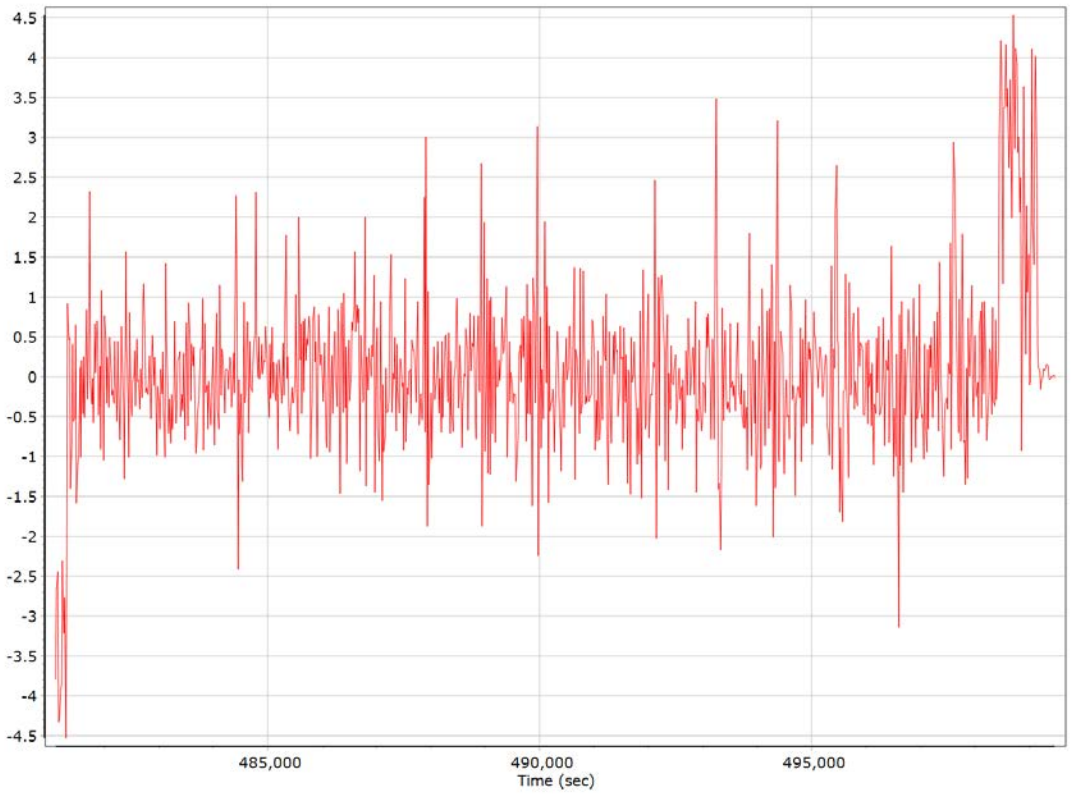
Heading



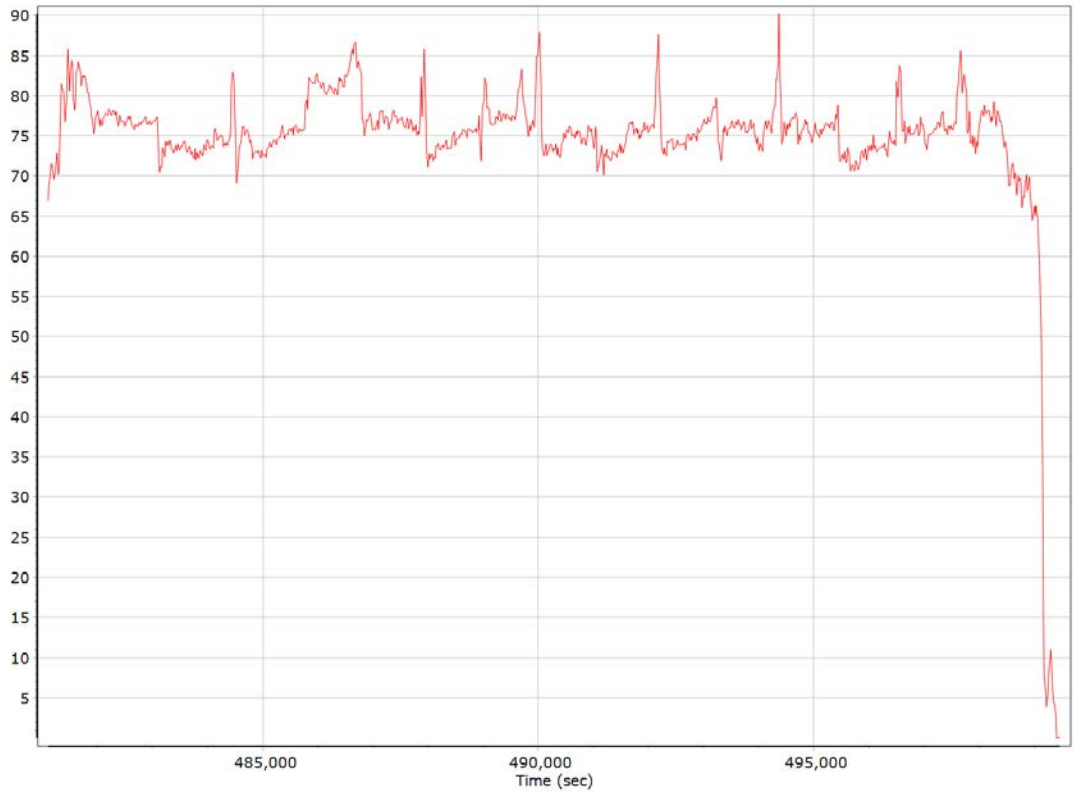
North/East Velocity



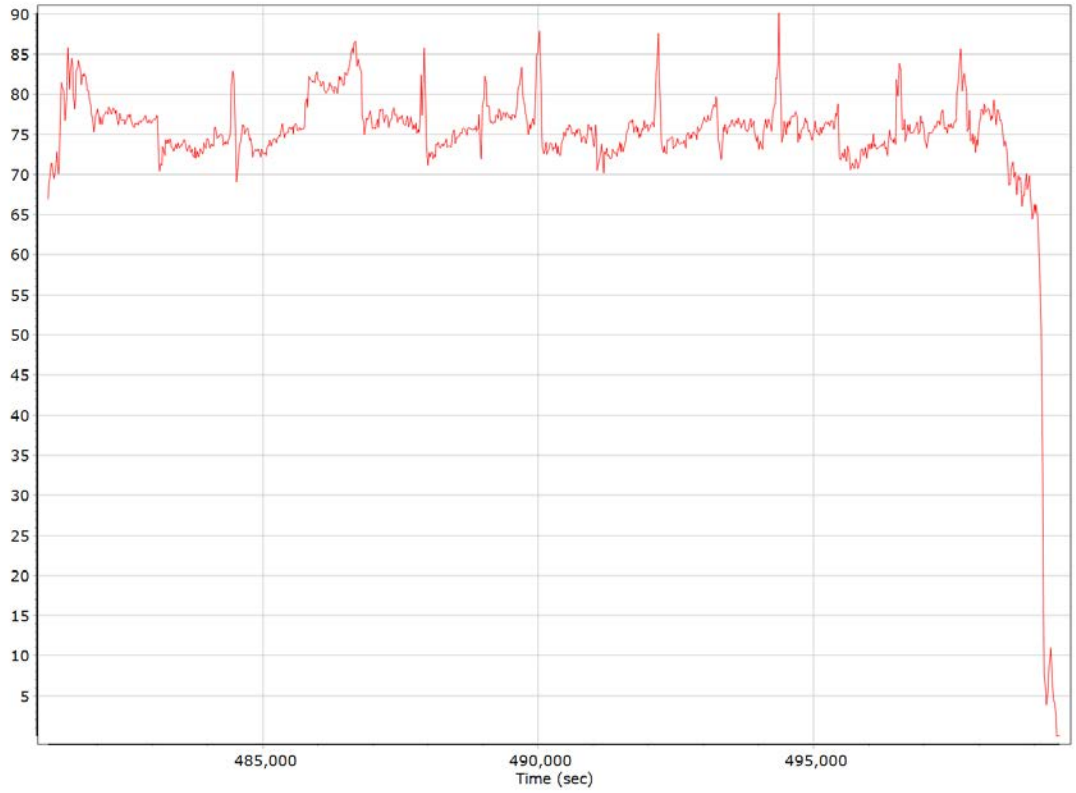
Down Velocity



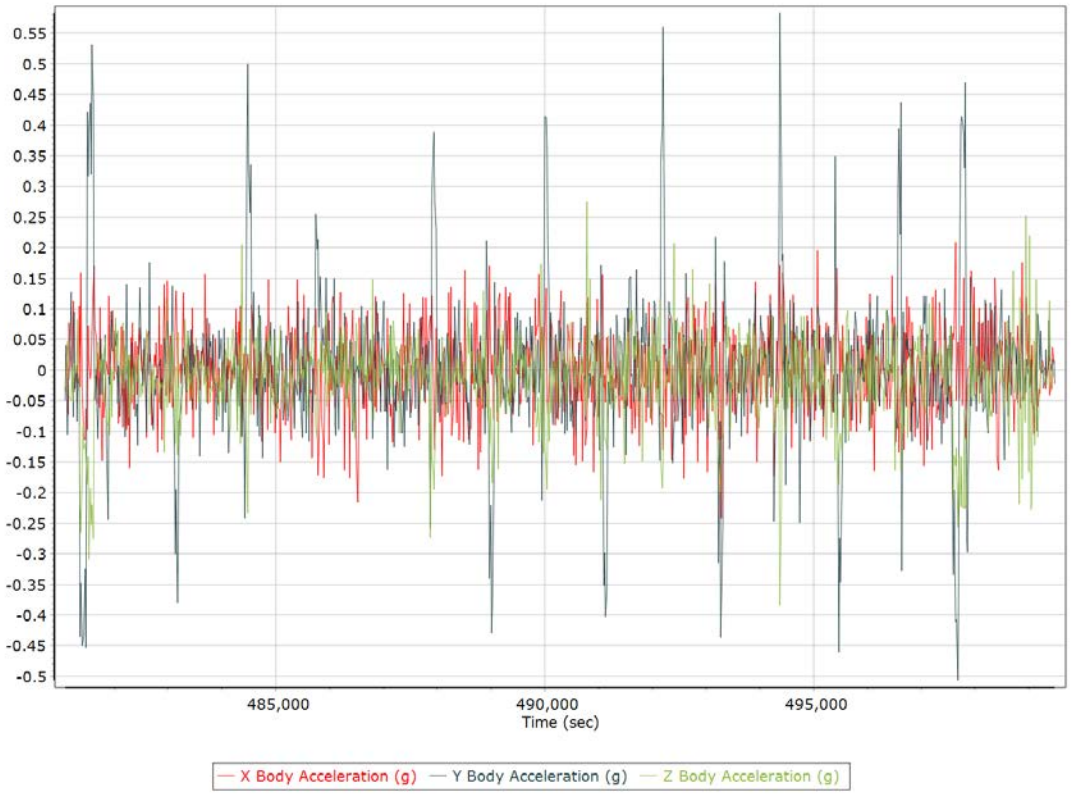
Total Speed



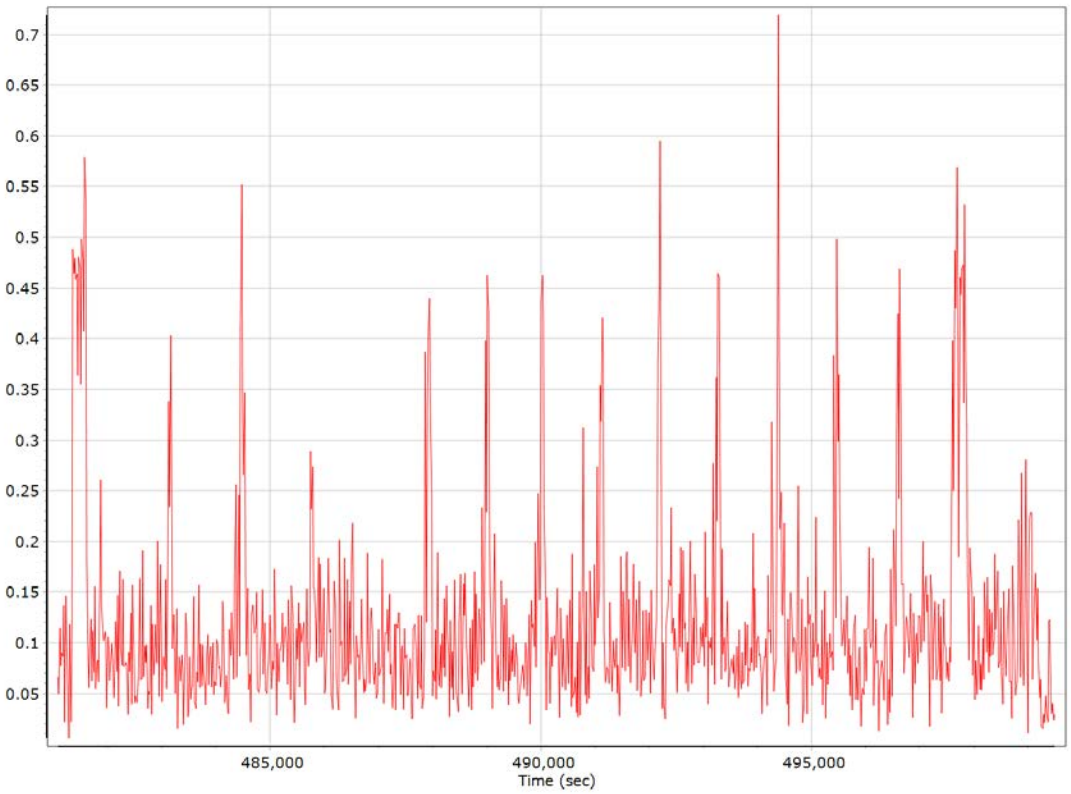
Ground Speed



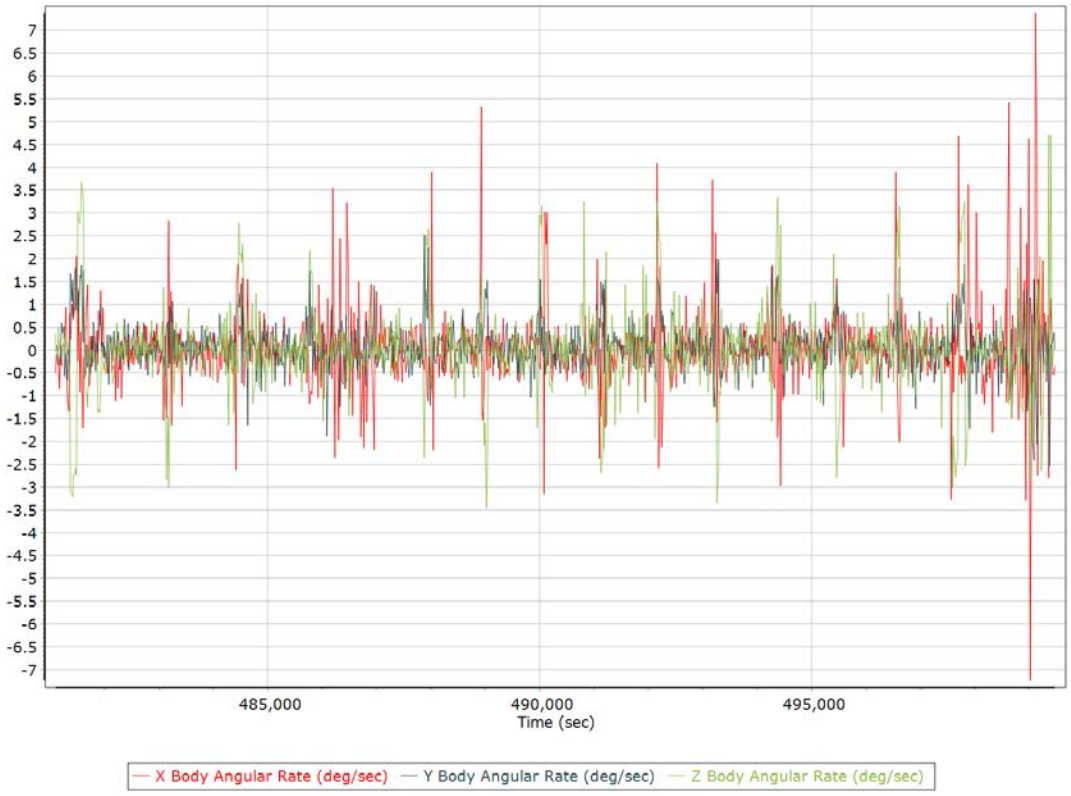
Body Acceleration



Total Body Acceleration



Body Angular Rate

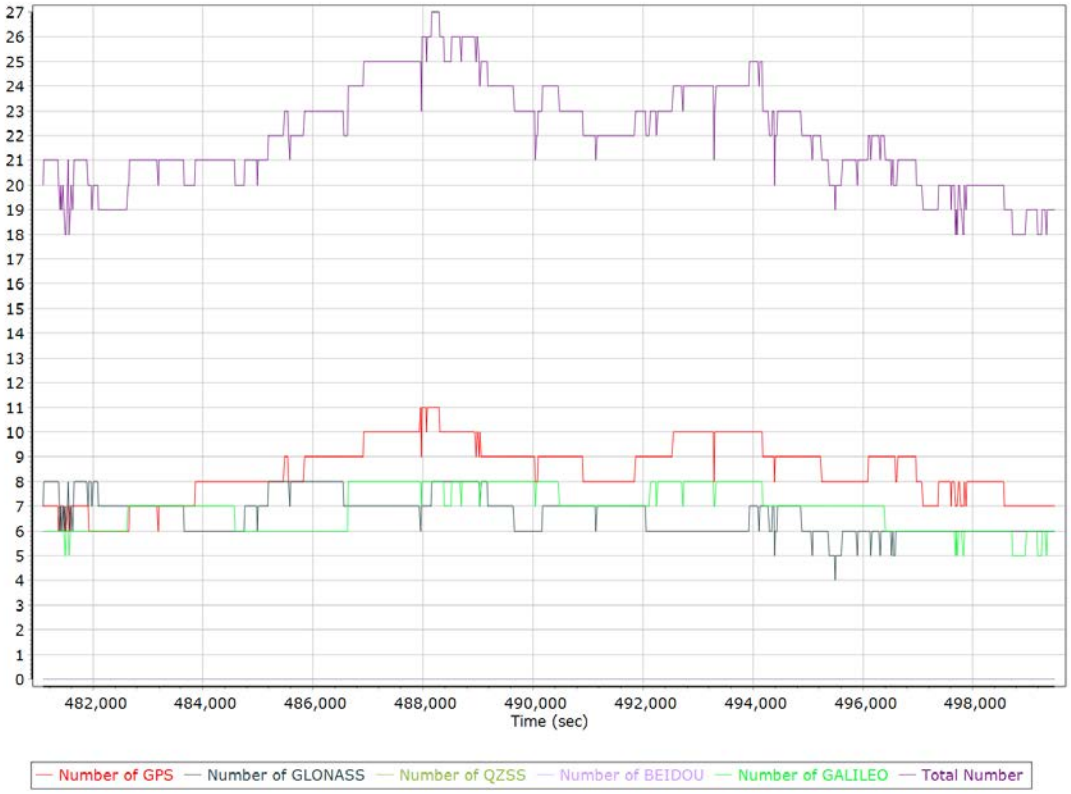


GNSS QC

GNSS QC Statistics

Statistics	Min	Max	Mean
Baseline length (km)	0.00	0.00	
Number of GPS SV	6	11	8
Number of GLONASS SV	4	8	7
Number of QZSS SV	0	0	0
Number of BEIDOU SV	0	0	0
Number of GALILEO SV	5	8	7
Total number of SV	17	27	22
PDOP	0.92	1.59	1.13
QC Solution Gaps	0.00	0.00	
Solution Type	Fixed	Float	No solution
Epoch (sec)	18483.00	0.00	0.00
Percentage	100.00	0.00	0.00

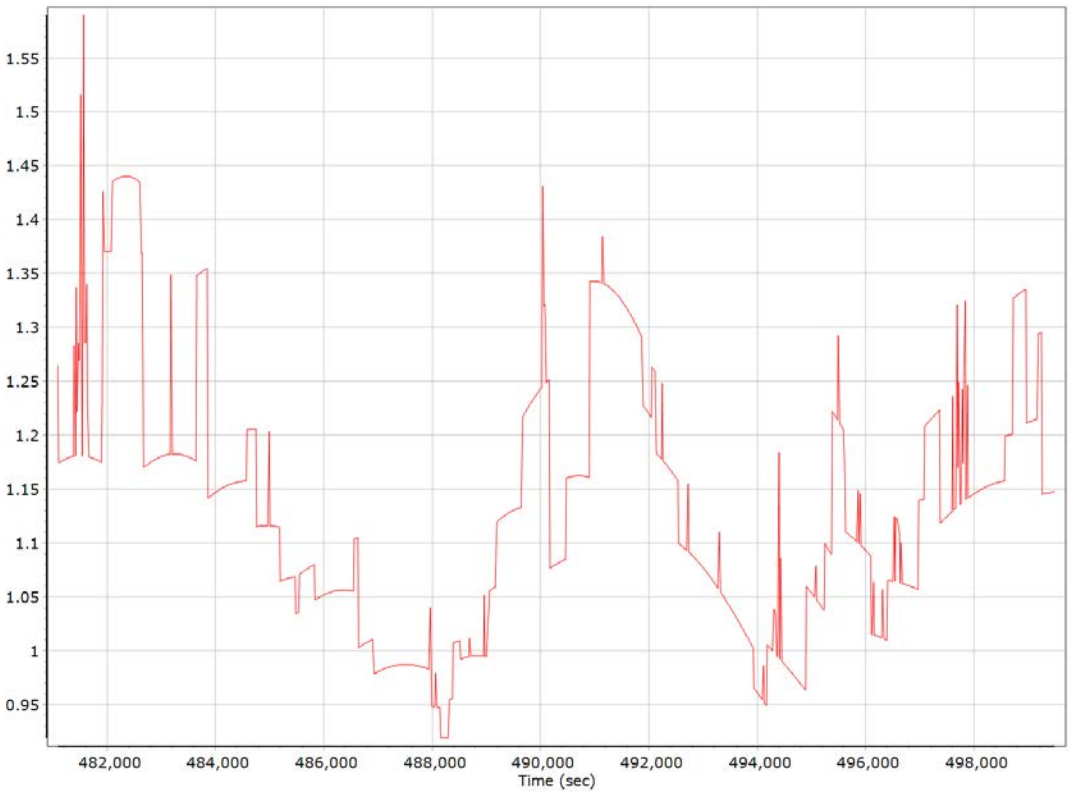
Num SVs in solution



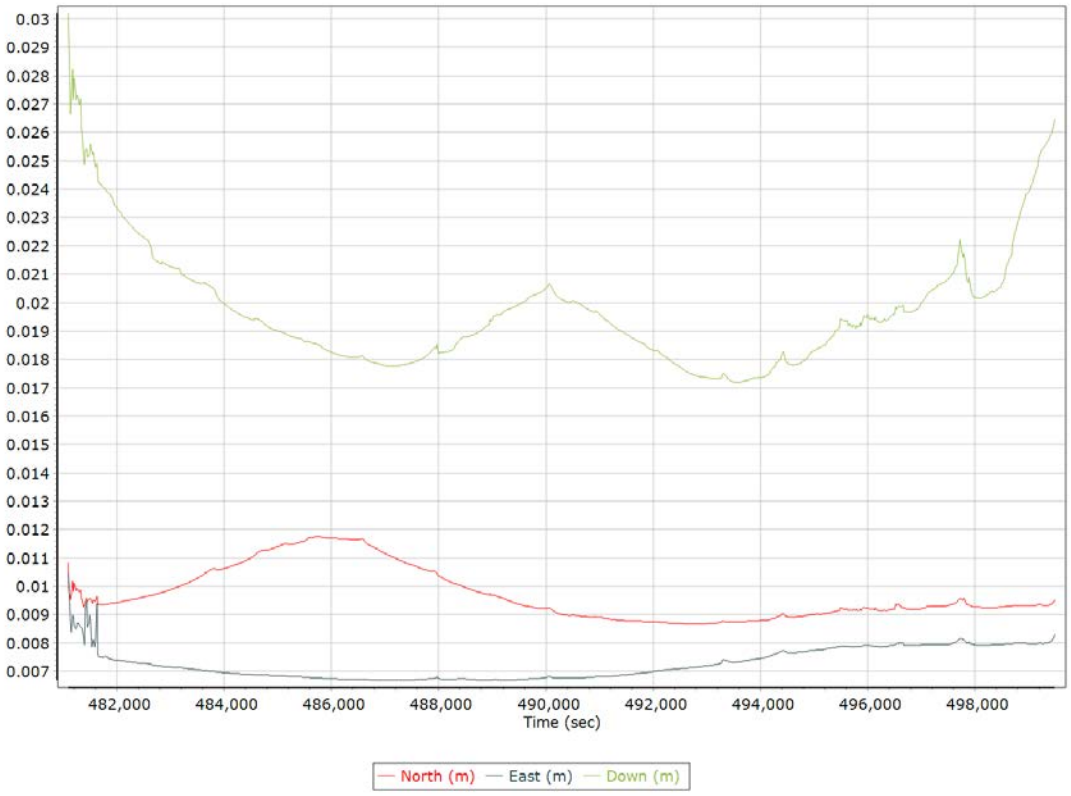
Forward/Reverse Separation



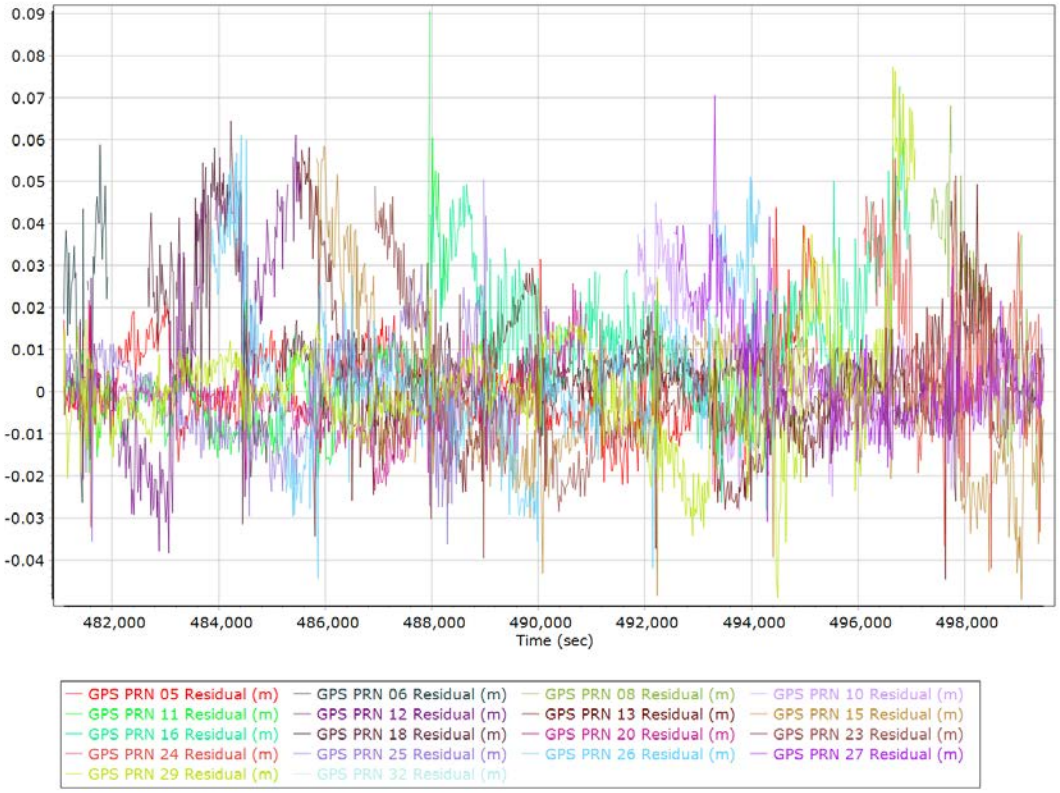
PDOP



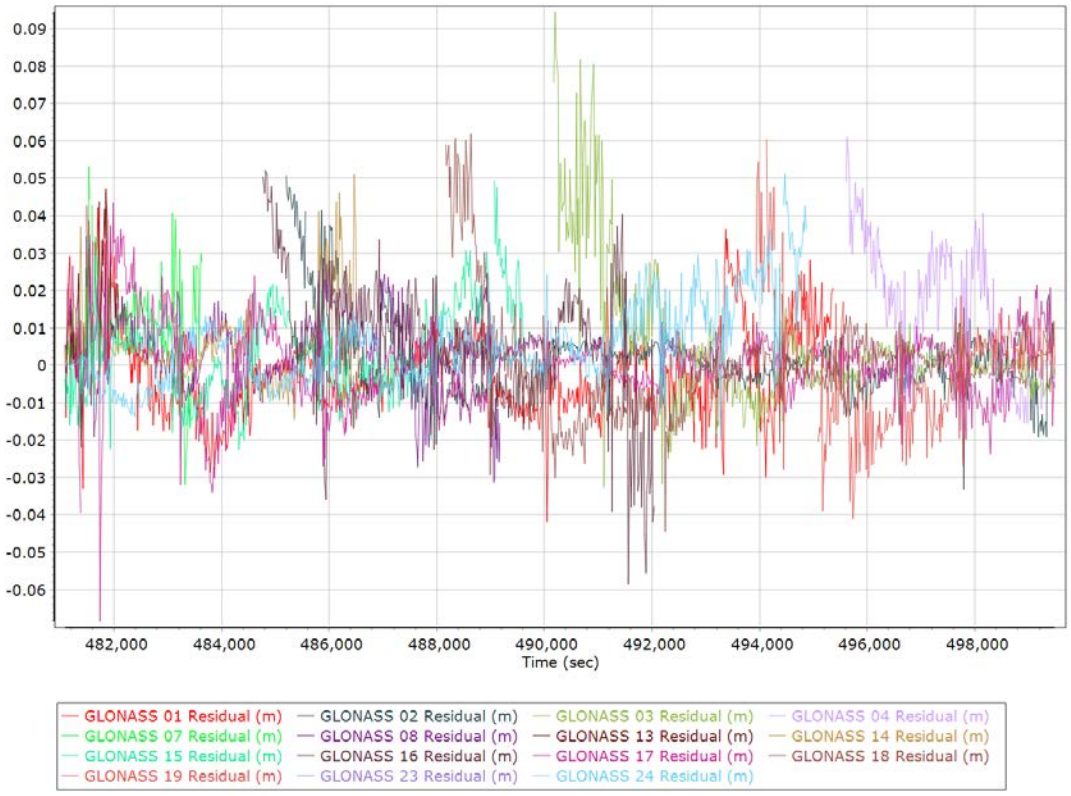
Estimated Position Accuracy



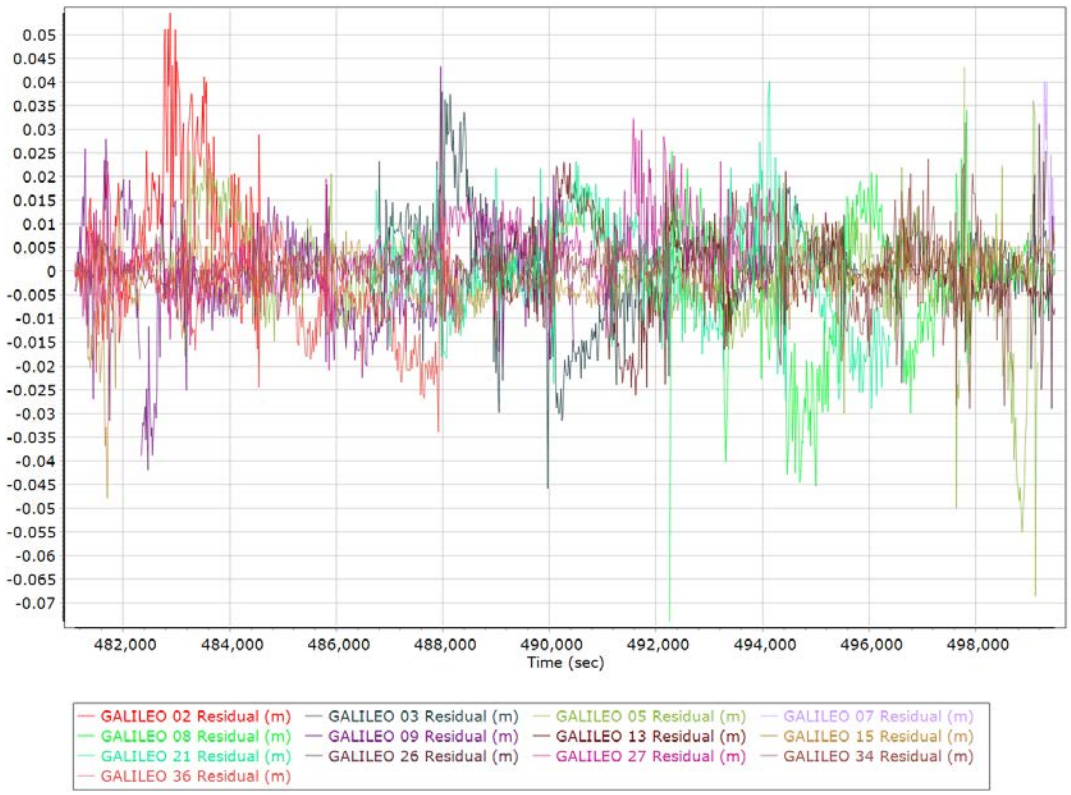
GPS Residuals



GLONASS Residuals



GALILEO Residuals



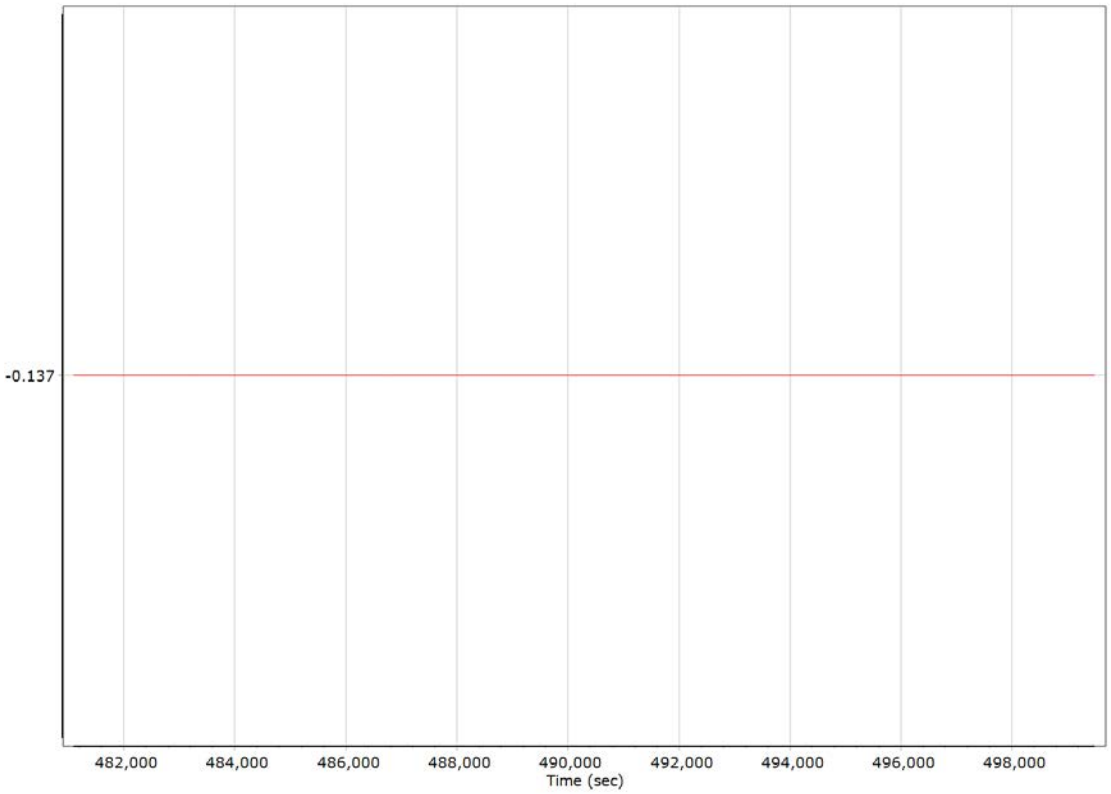
GNSS-Inertial Processor Configuration

Processing mode	IN-Fusion PP-RTX		
Stabilized mount	True		
Processing start time	481009.000 (8/25/2023 1:36:49 PM)		
Processing end time	499500.000 (8/25/2023 6:45:00 PM)		
Initial attitude source	Primary GNSS Track		
IMU Sensor Context	Processing with Onboard IMU		
Gimbal to IMU lever arm (m)	-0.034	-0.010	-0.374
Gimbal to IMU mounting angles (deg)	0.000	0.000	0.000
Gimbal to Primary GNSS lever arm (m)	-0.137	0.043	-1.289
Gimbal to Primary GNSS lever arm std dev (m)	0.030	0.030	0.030
Aircraft to Reference mounting angles (deg)	0.000	0.000	0.000

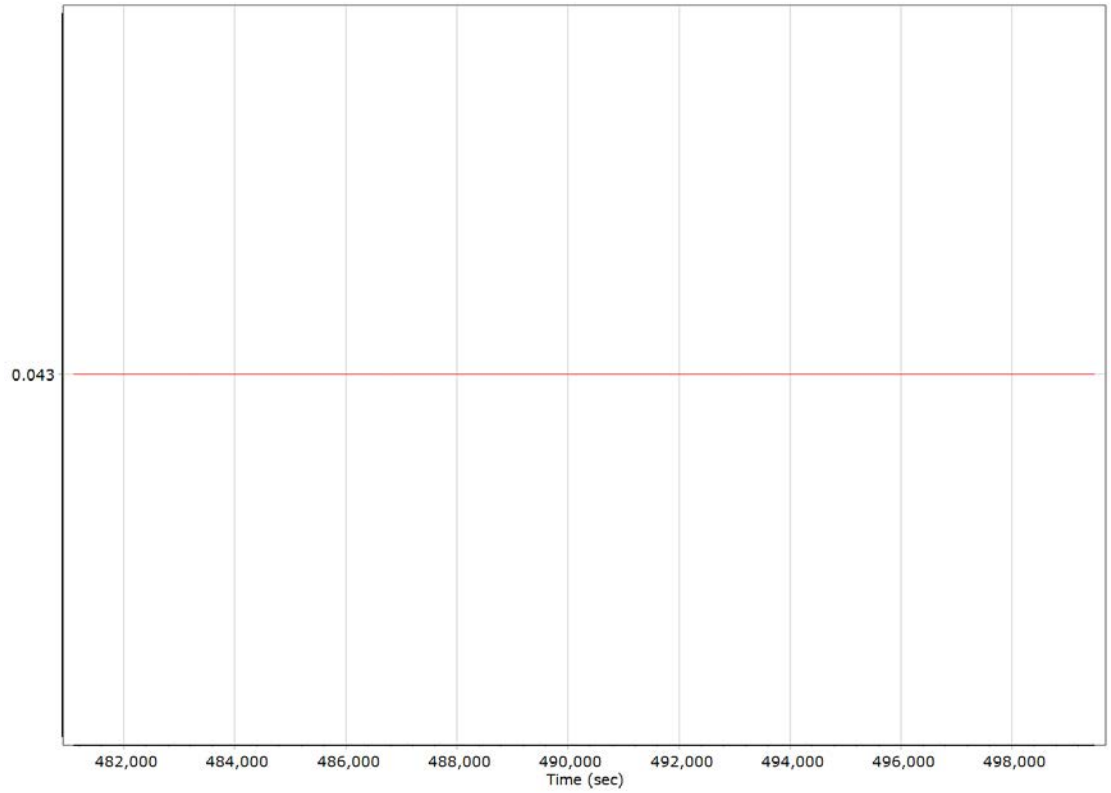
Calibrated Installation Parameters

Reference-Primary GNSS Lever Arm (m)

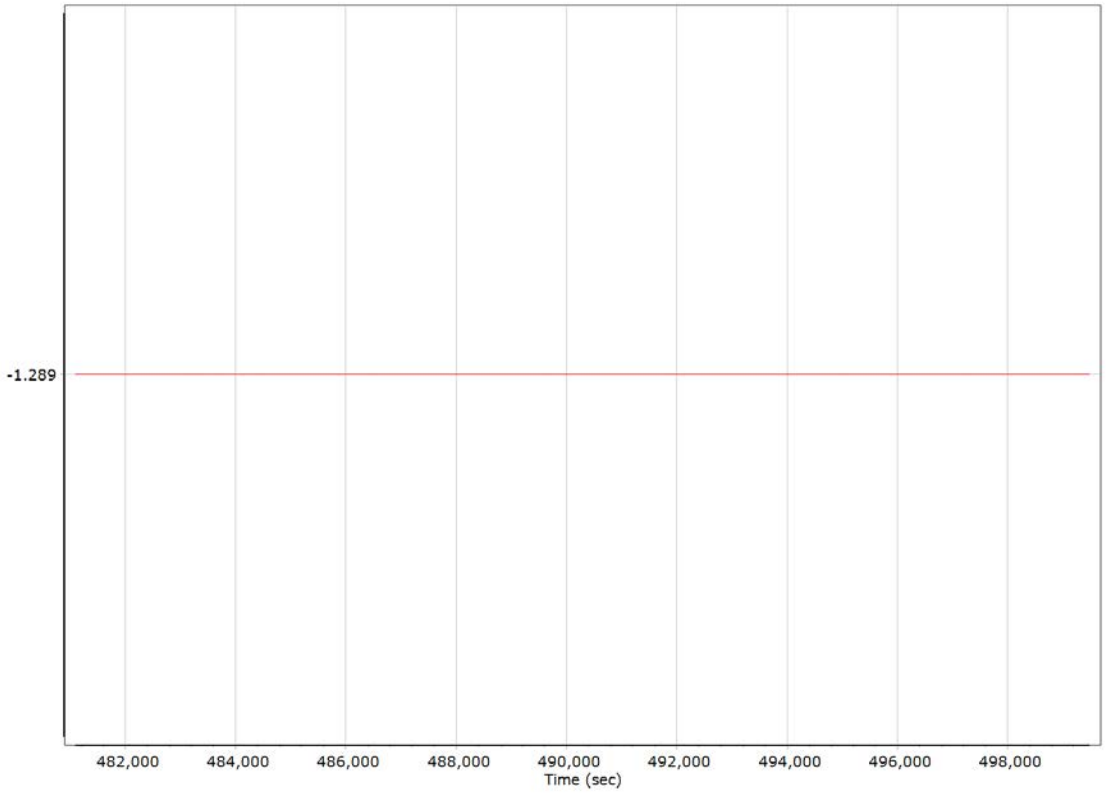
X Reference-Primary GNSS Lever Arm (m)



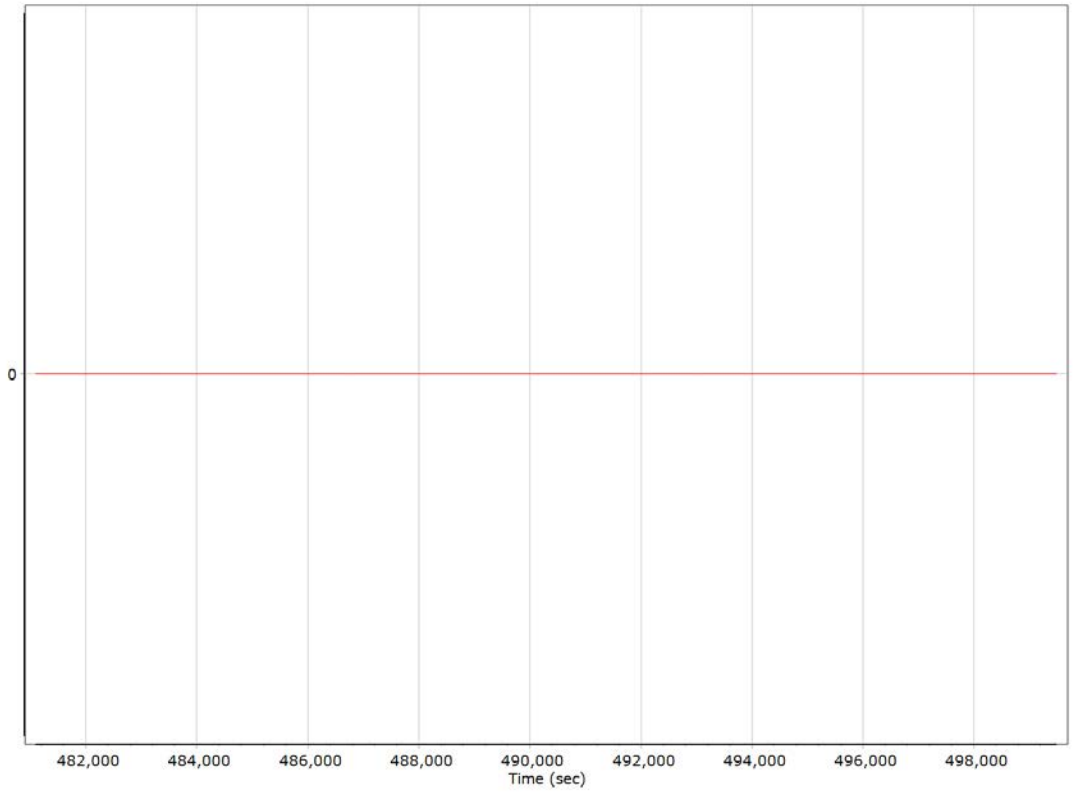
Y Reference-Primary GNSS Lever Arm (m)



Z Reference-Primary GNSS Lever Arm (m)



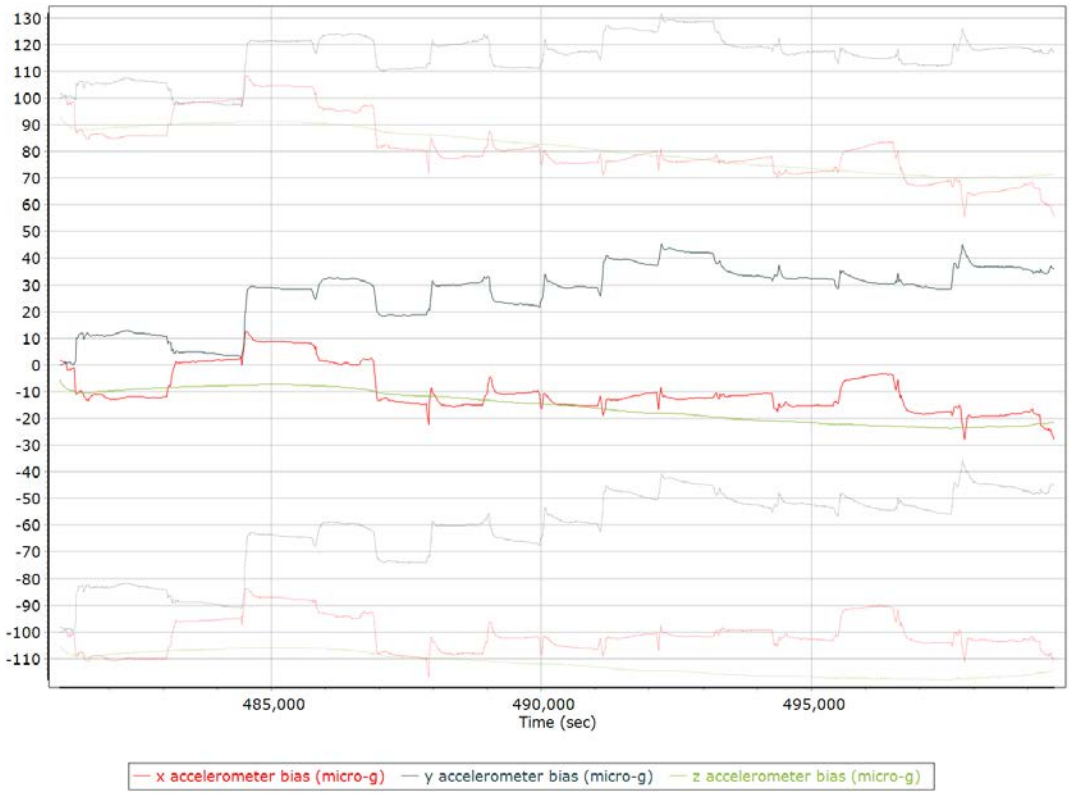
Reference-Primary GNSS Lever Arm Figure of Merit



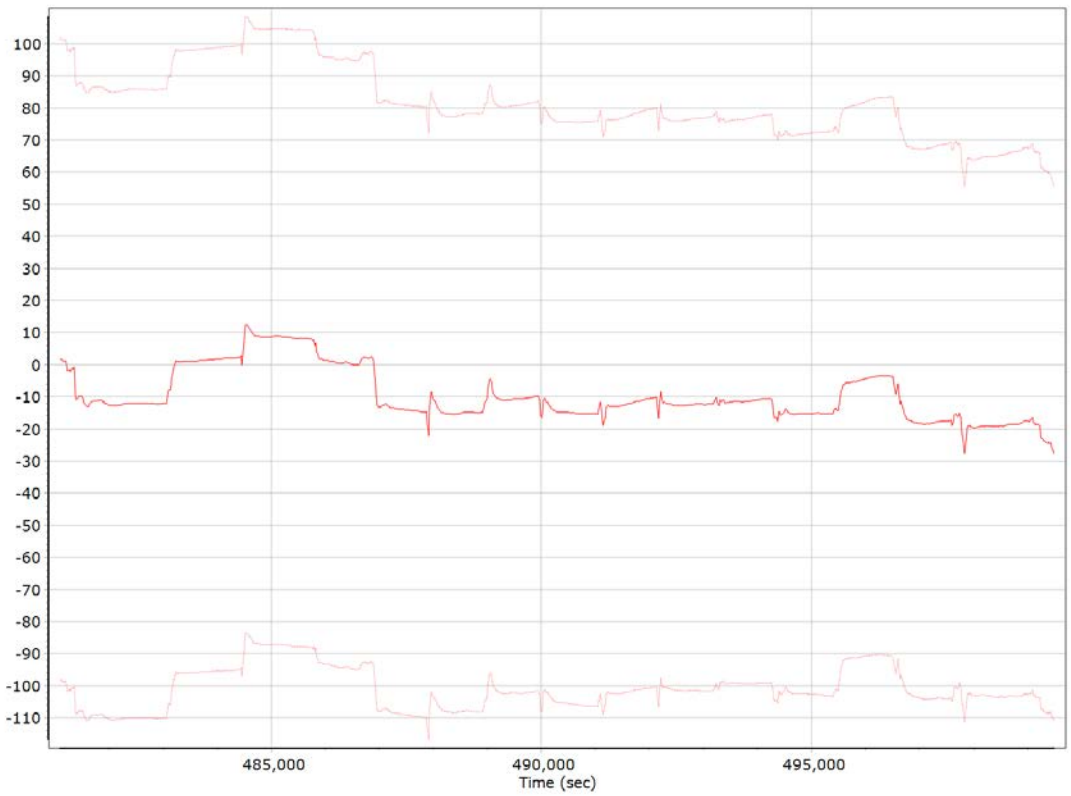
IN-Fusion QC

Forward Processed Estimated Errors, Reference Frame

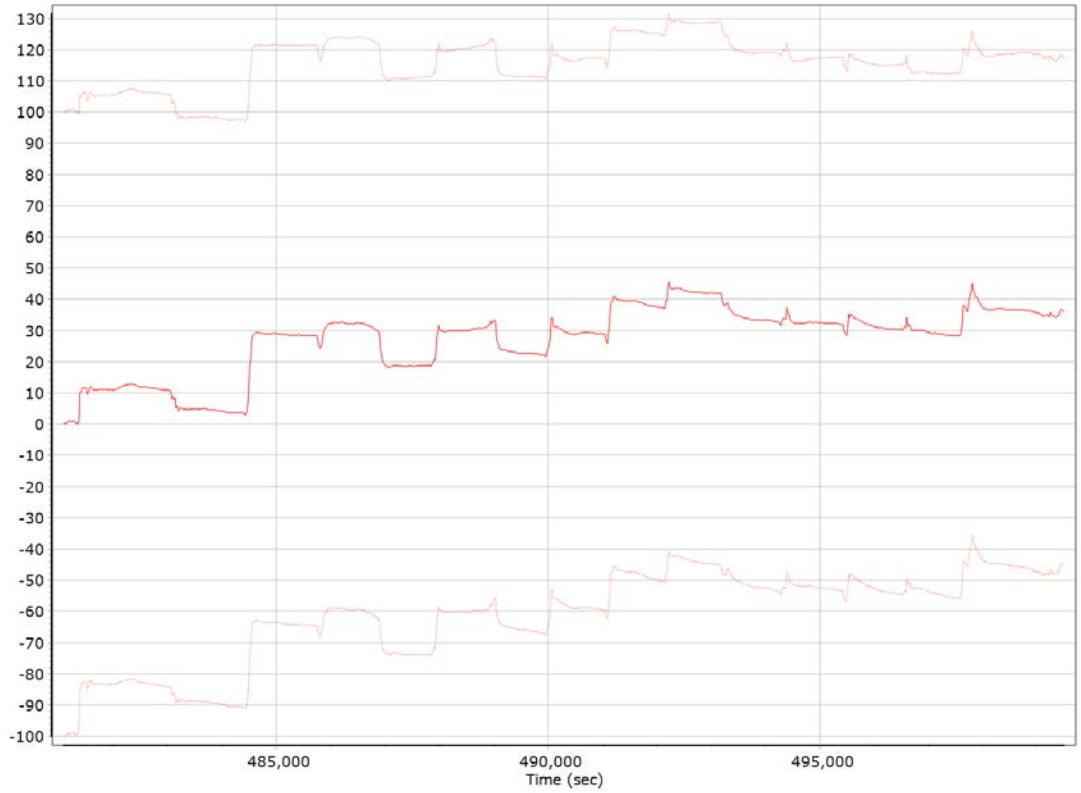
Accelerometer Bias (micro-g)



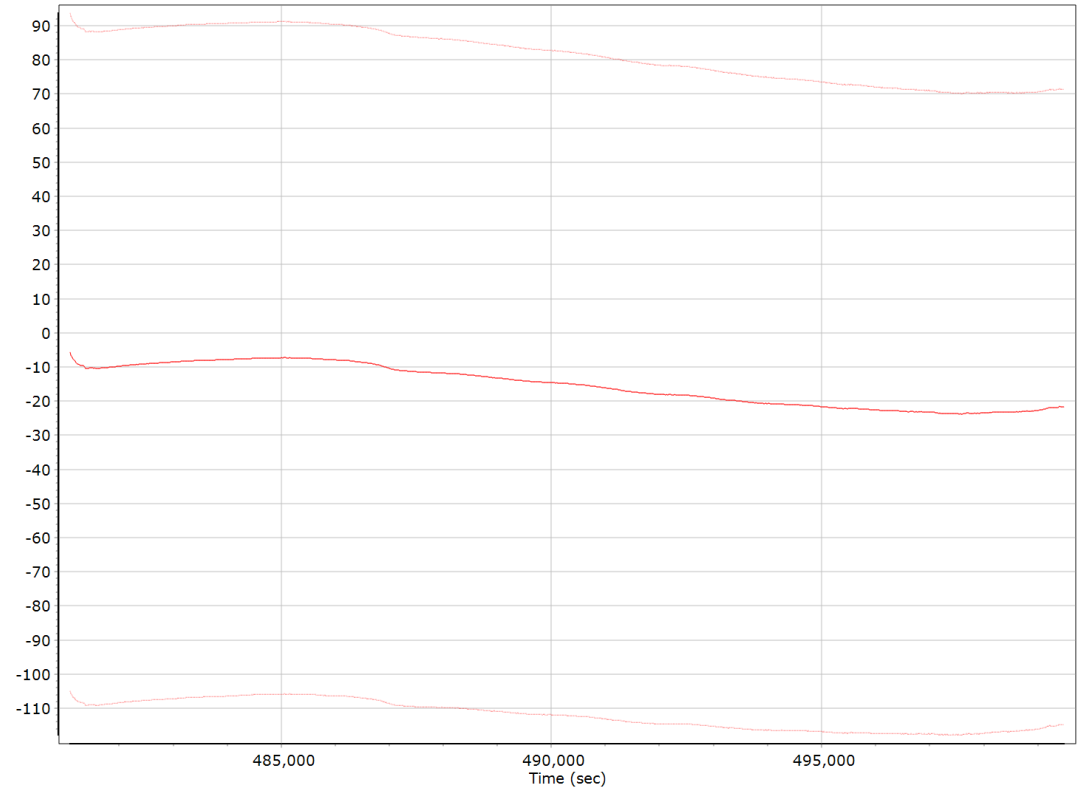
X Accelerometer Bias (micro-g)



Y Accelerometer Bias (micro-g)



Z Accelerometer Bias (micro-g)



Accelerometer Scale Error (ppm)



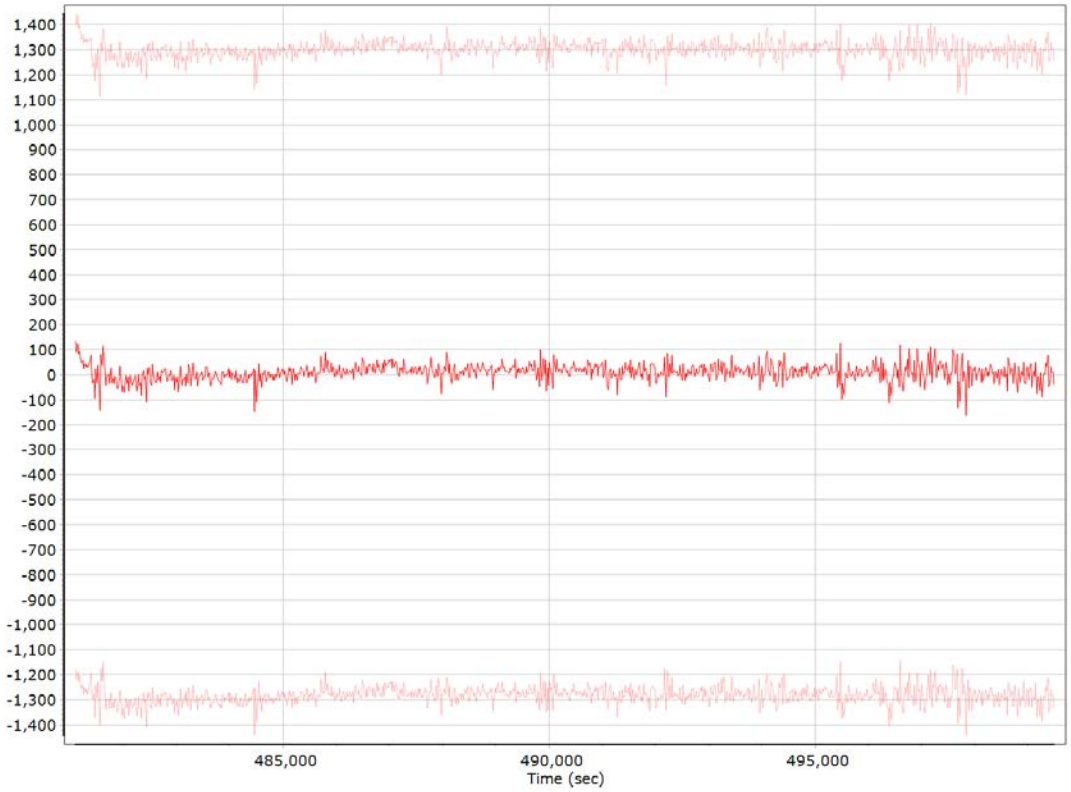
X Accelerometer Scale Error (ppm)



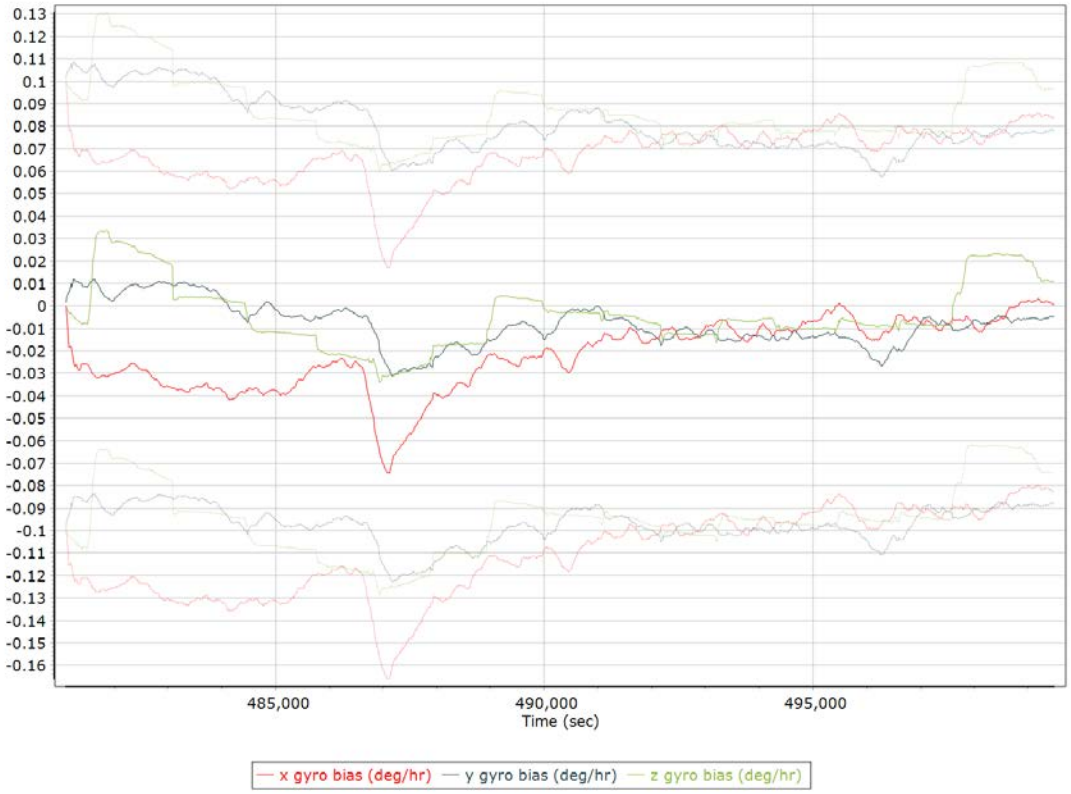
Y Accelerometer Scale Error (ppm)



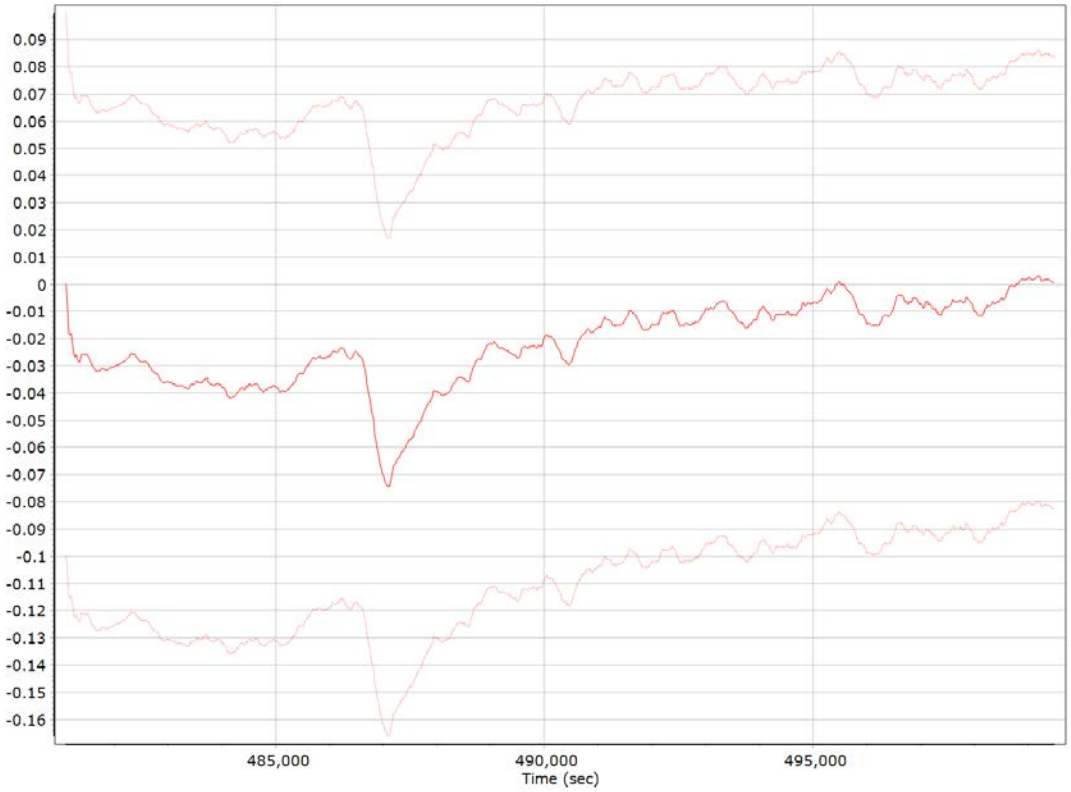
Z Accelerometer Scale Error (ppm)



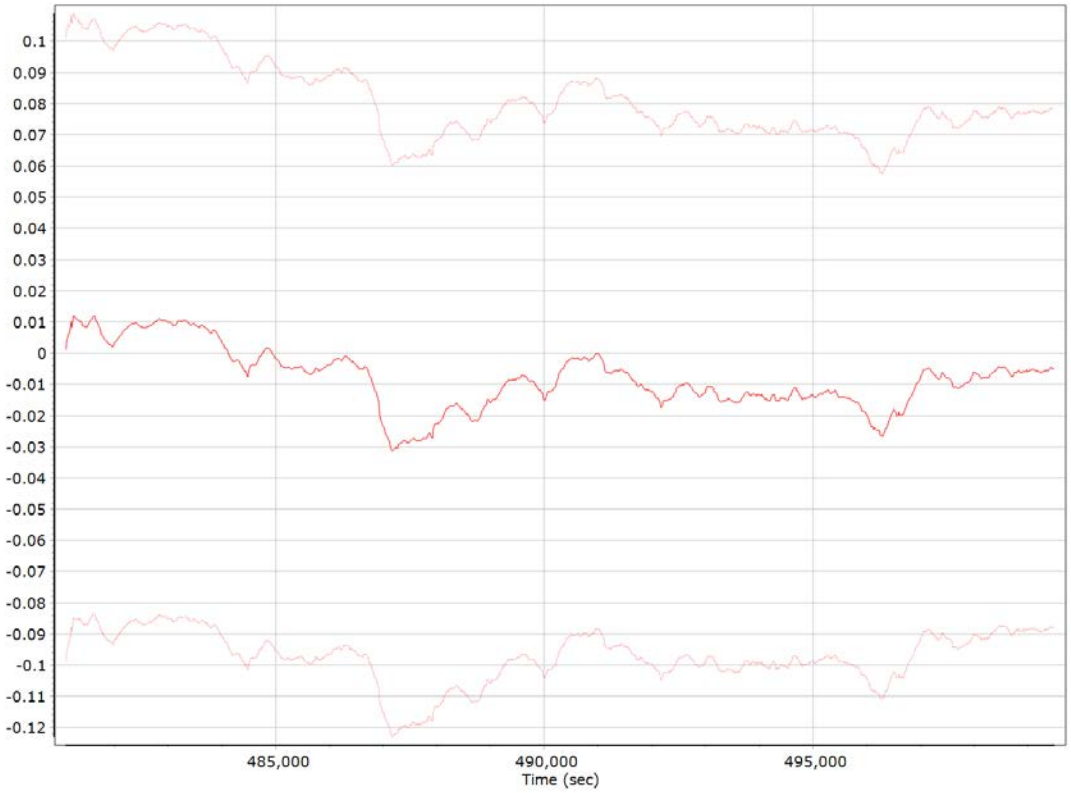
Gyro Bias (deg/h)



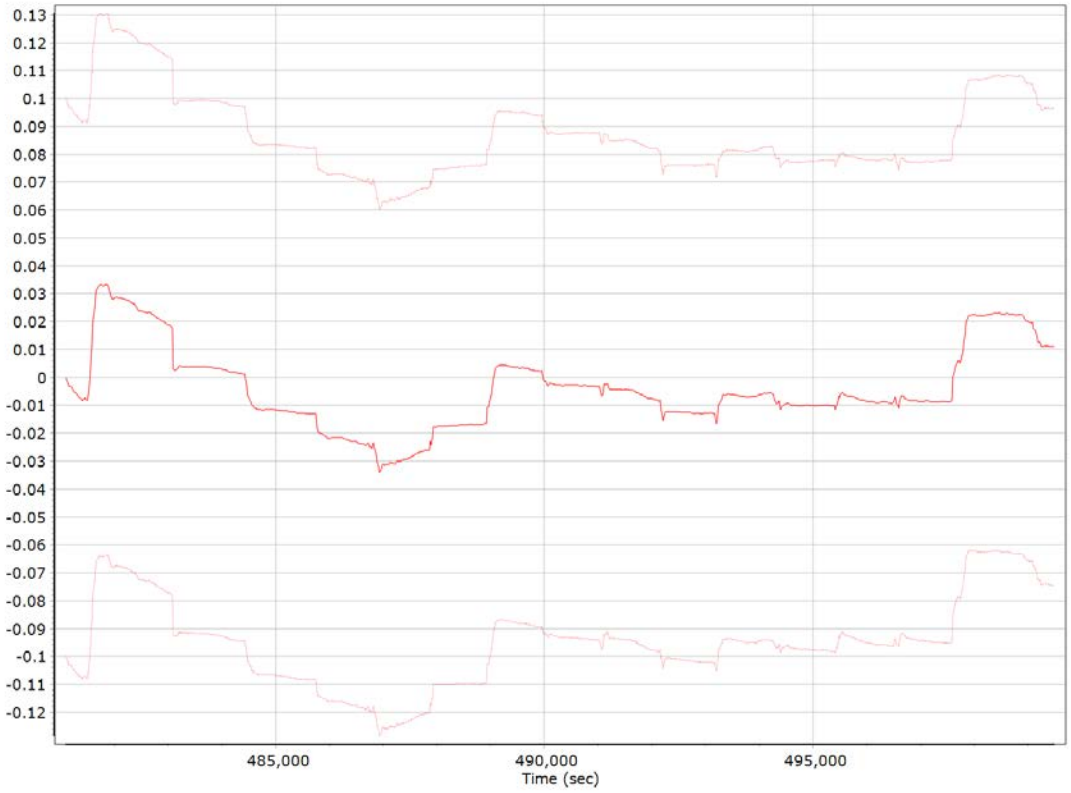
X Gyro Bias (deg/h)



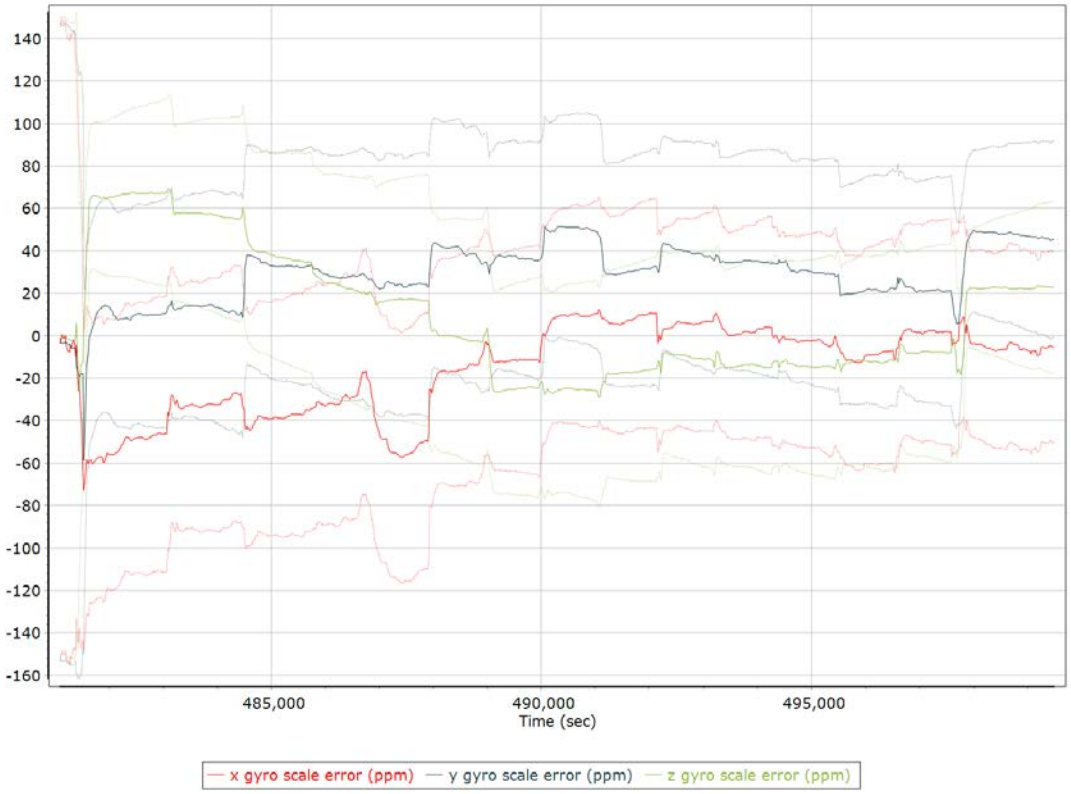
Y Gyro Bias (deg/h)



Z Gyro Bias (deg/h)



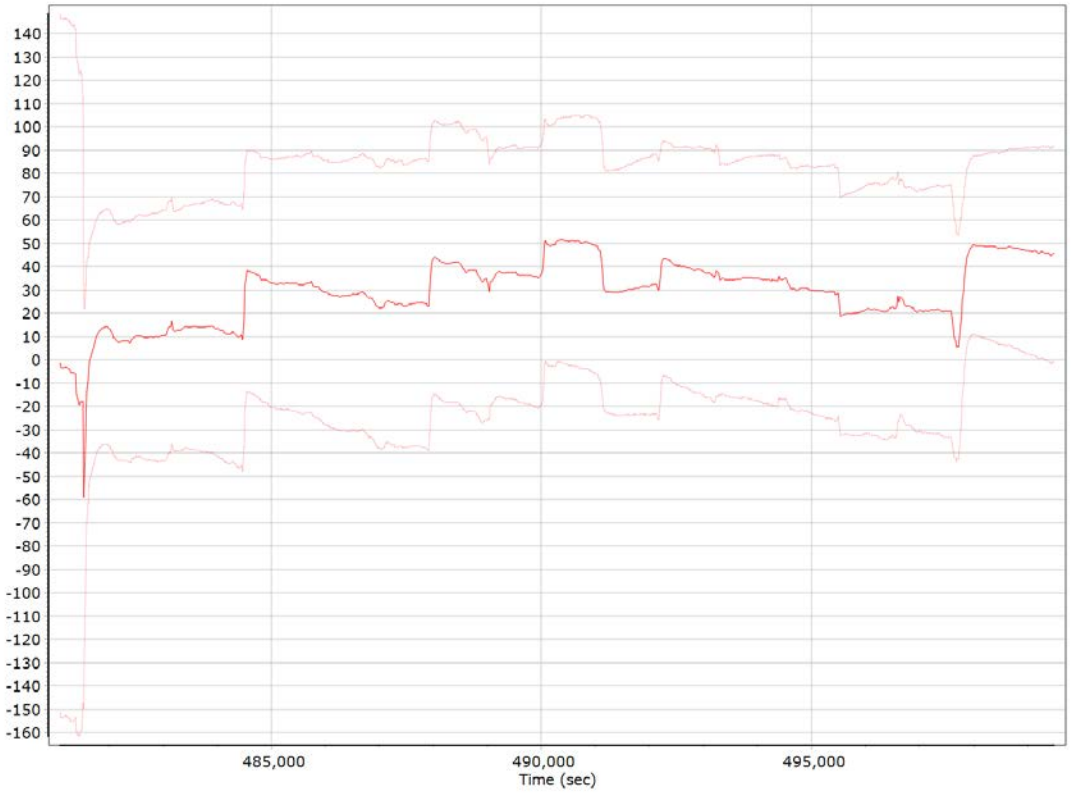
Gyro Scale Error (ppm)



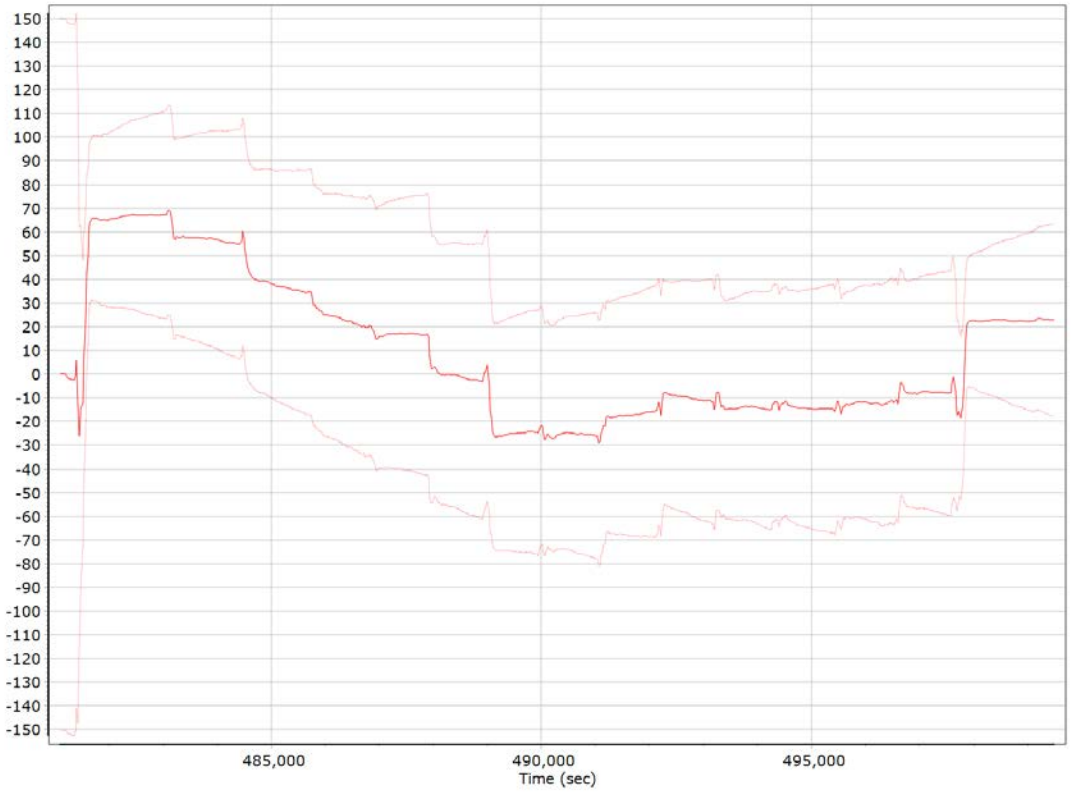
X Gyro Scale Error (ppm)



Y Gyro Scale Error (ppm)



Z Gyro Scale Error (ppm)



Smoothed Performance Metrics

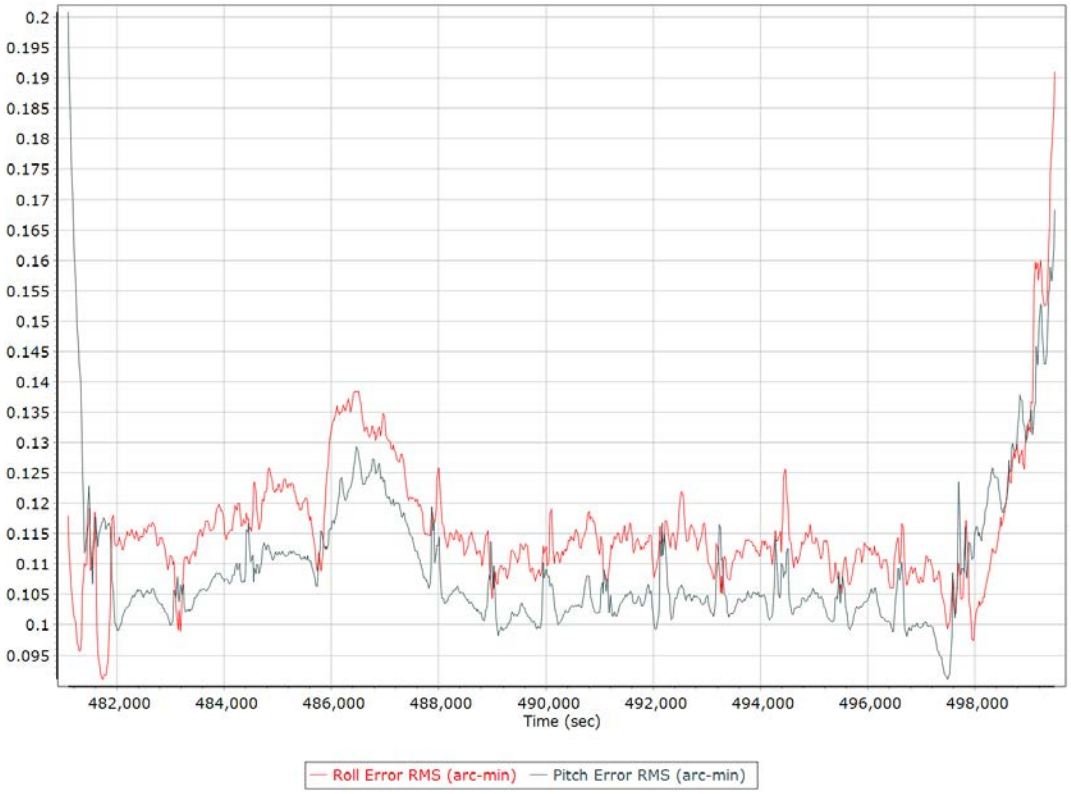
Position Error RMS (m)



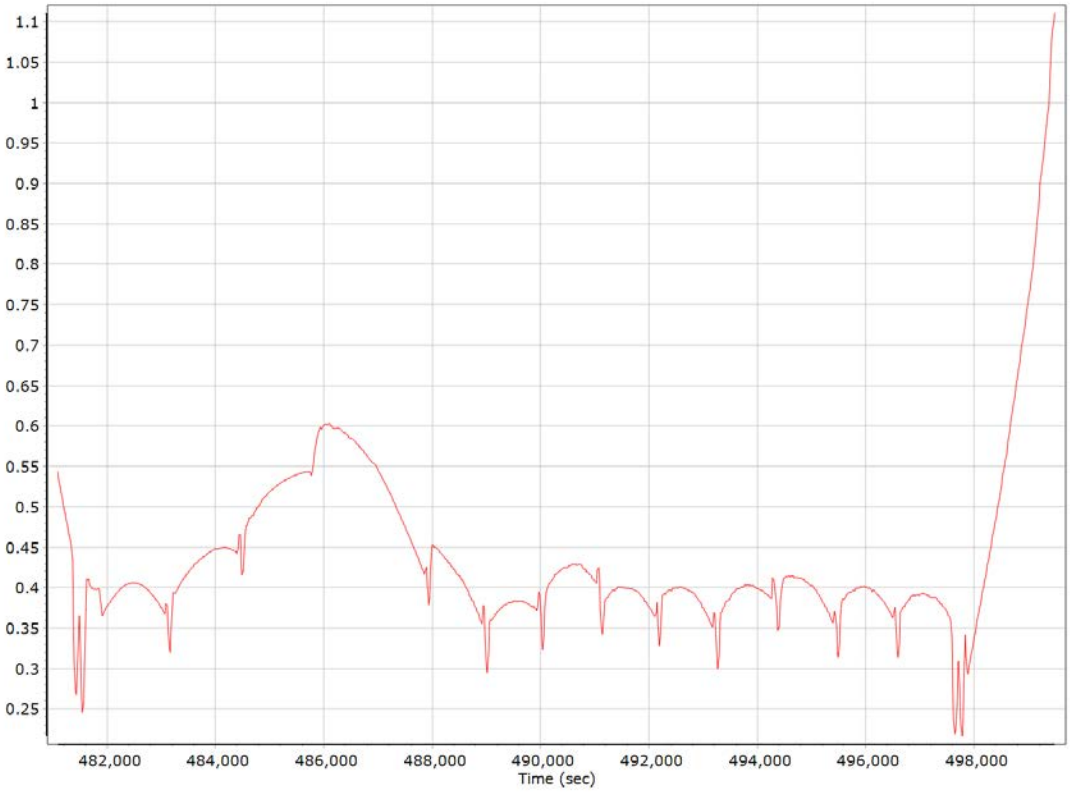
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

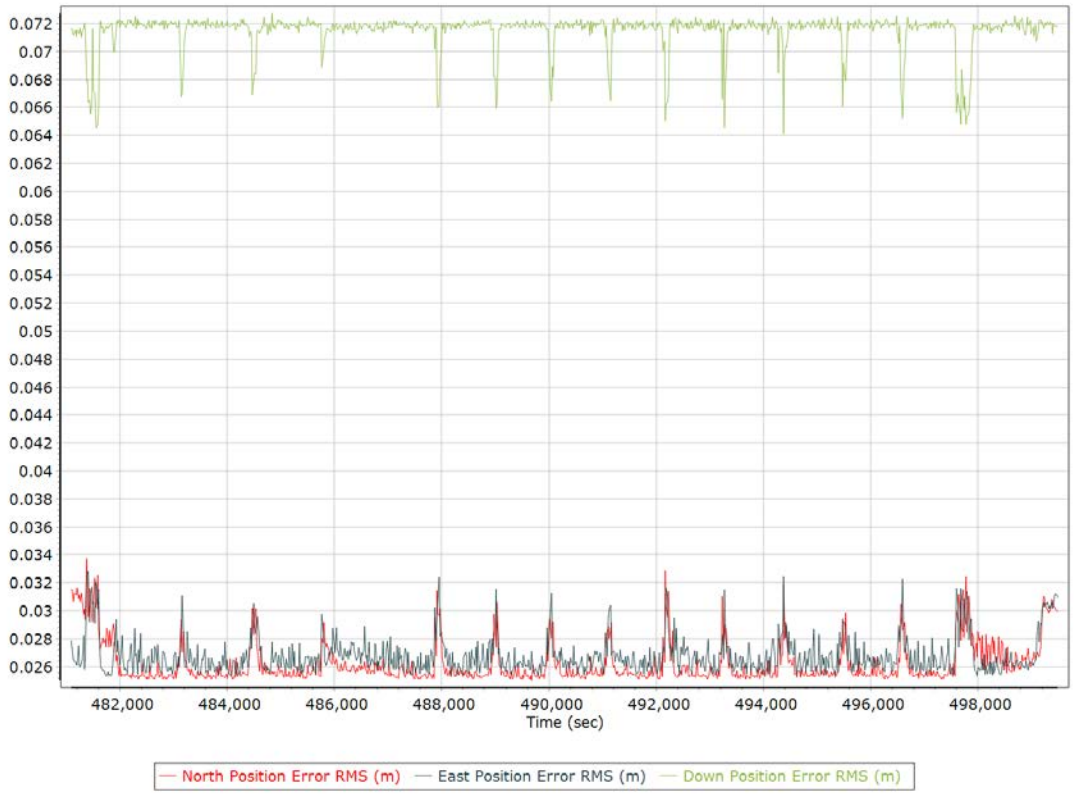


Heading Error RMS (arc-min)

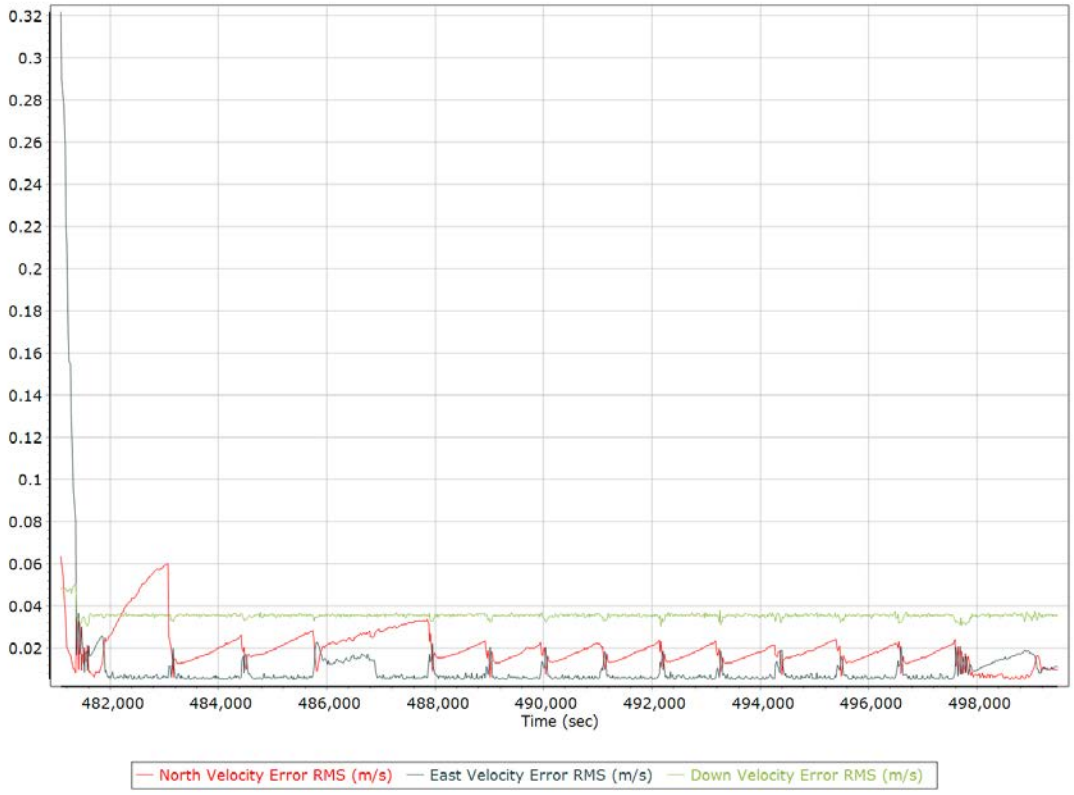


Forward Processed Performance Metrics

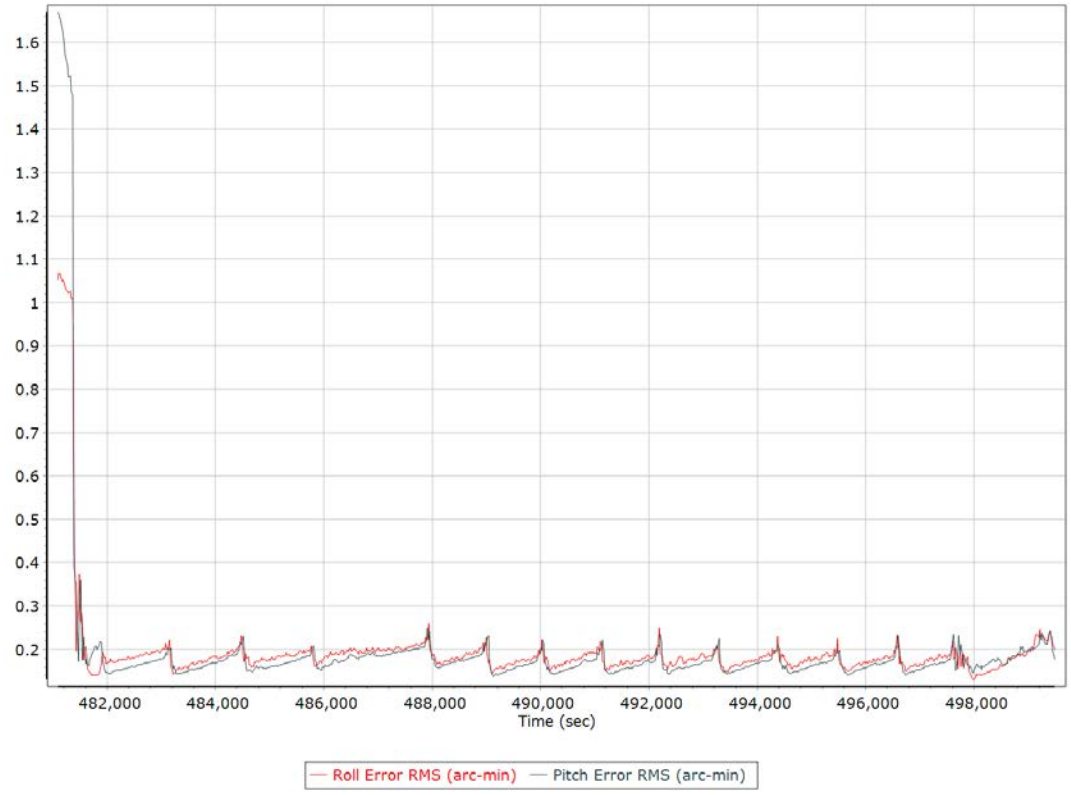
Position Error RMS (m)



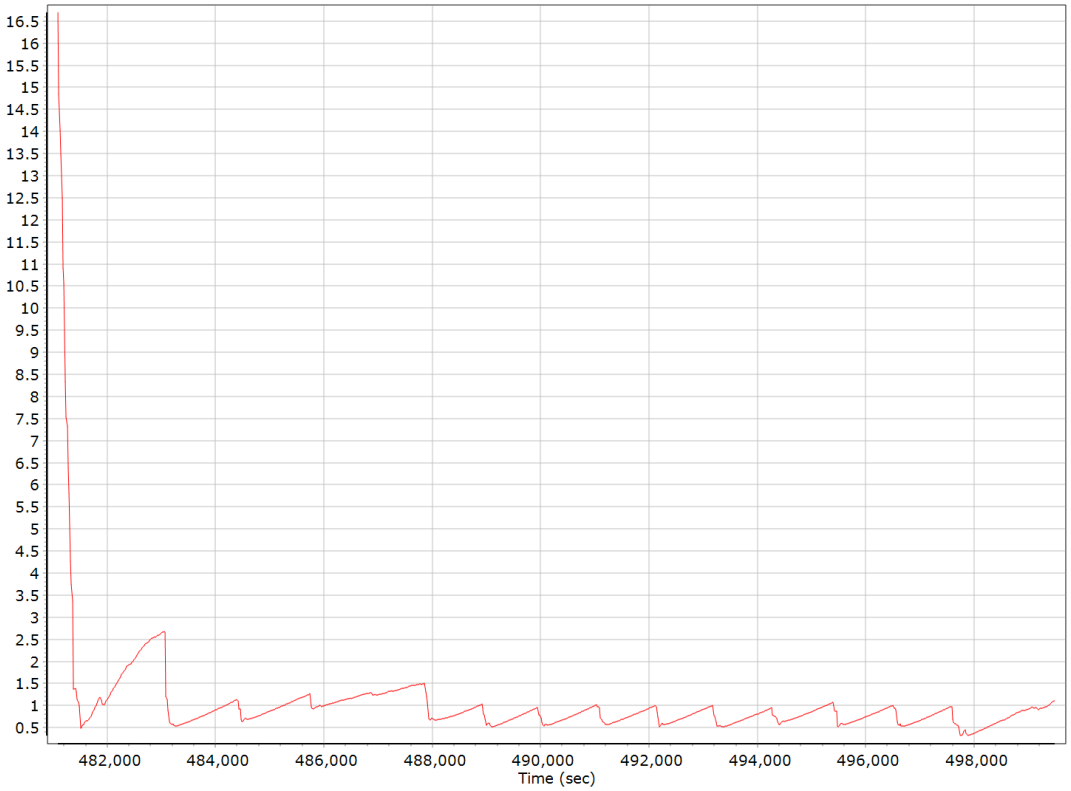
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

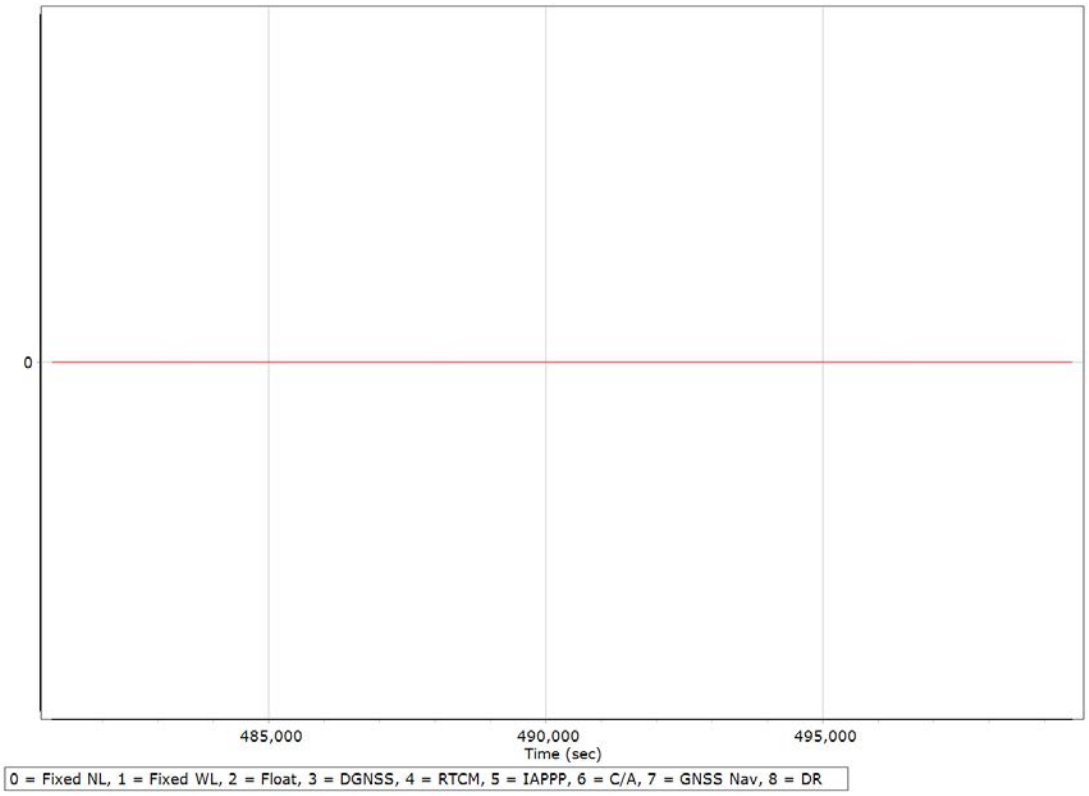


Heading Error RMS (arc-min)

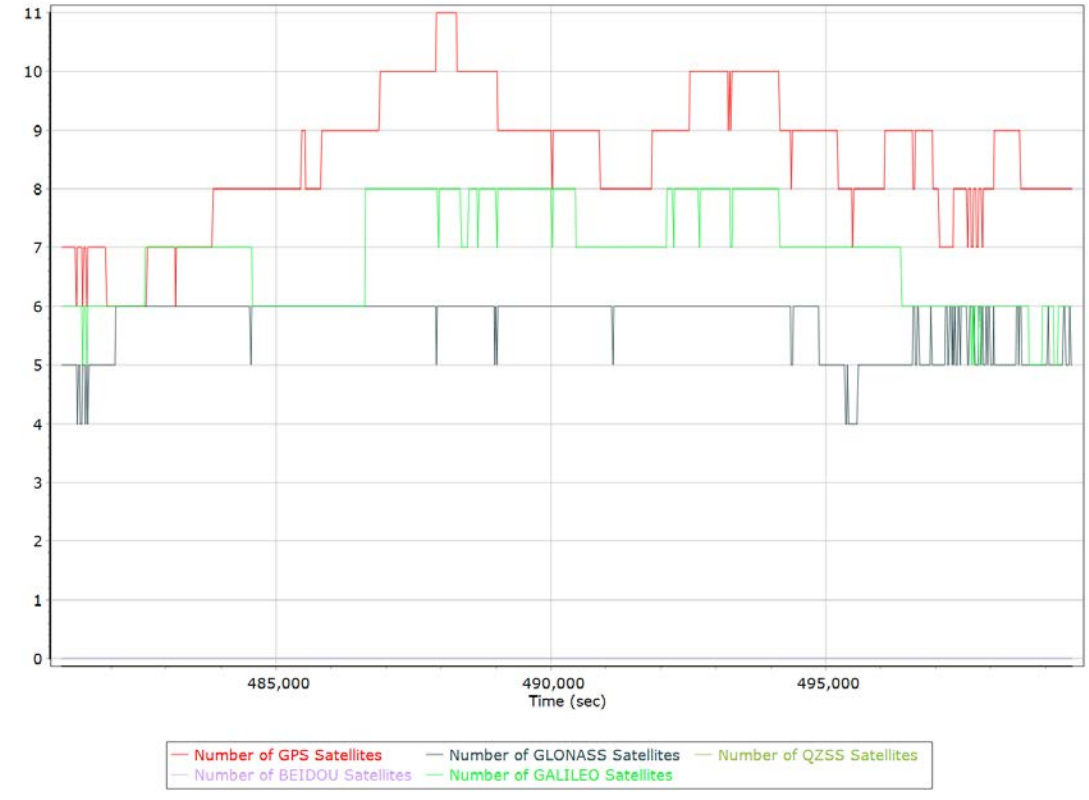


Forward Processed Solution Status

Processing Mode



Number of Satellites



Baseline Length

