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Coconino, AZ

Project ID: 224808

Work Unit ID: 300217

Lidar Mapping Report

April 2022

EXECUTIVE SUMMARY

[The Sanborn Map Company, Inc.](#) (Sanborn) was tasked to provide remote sensing services in the form of lidar. Utilizing a multi-return system, Light Detection and Ranging (Lidar) detects 3-dimensional positions and attributes to form a point cloud. The high accuracy airborne system is integrated with both Global Navigation Satellite System (GNSS) and an Inertial Measure Unit (IMU) for accurate position and orientation. Acquisition of the project area's ~910 mi² was completed on September 1st, 2022.

The VeriDaaS Geiger Mode Lidar (GML) was used to collect data for the aerial survey campaign. The sensor is attached to the aircraft's underside and emits rapid laser pulses that are used to calculate ranges between the aircraft and subsequent terrain below. The Airborne Lidar System (ALS) is boresighted by completing multiple passes over a known ground surface before the project acquisition. During data processing, the system calibration parameters are updated and used during post-processing of the lidar point cloud.

Differential GNSS unit in aircraft sampled positions at 2Hz or higher frequency. Lidar data was only acquired when GNSS PDOP is ≤ 4 and at least 6 satellites are in view. The atmosphere was free of clouds and fog between the aircraft and ground. The ground was free of snow and extensive flooding or any other type of inundation.

The contents of this report summarize the methods used to establish the base station coordinates, perform the lidar data acquisition and processing as well as the results of these methods.

CONTENTS

EXECUTIVE SUMMARY	1
CONTENTS	2
1.0 INTRODUCTION	3
1.1 CONTACT INFORMATION.....	3
1.2 PURPOSE OF LIDAR ACQUISITION	3
1.3 PROJECT LOCATION	3
2.0 ACQUISITION.....	4
2.1 INTRODUCTION.....	4
2.2 ACQUISITION PARAMETERS	4
2.3 FIELD WORK PROCEDURES.....	4
3.0 PROCESSING	6
3.1 INTRODUCTION.....	6
3.2 COORDINATE REFERENCE SYSTEM.....	8
3.3 LIDAR MATCHING.....	9
3.4 LIDAR CLASSIFICATION	12
3.5 ACCURACY ASSESSMENT.....	14
4.0 PRODUCT GENERATION	16
CLASSIFIED POINT CLOUD	16
BARE-EARTH DIGITAL ELEVATION MODEL (DEM).....	17
BREAKLINES	18
FIRST-RETURN INTENSITY IMAGES	19
LAST-RETURN SWATH PRECISION IMAGES	20
LAST-RETURN SWATH SEPARATION IMAGES	21
SWATH POLYGONS	22
OTHER DELIVERABLES	22
APPENDIX A – ABGNSS/IMU PLOTS.....	23

1.0 INTRODUCTION

This document contains the technical write-up of the lidar campaign, including system calibration techniques, and the collection and processing of the lidar data.

1.1 Contact Information

Questions regarding the technical aspects of this report should be addressed to:

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1.2 Purpose of Lidar Acquisition

The objective of this project is to collect accurate measurements of the bare-earth surface as well as above ground features to be provided as geometric inputs for surface and/or change modeling as is relates survey assessments.

1.3 Project Location

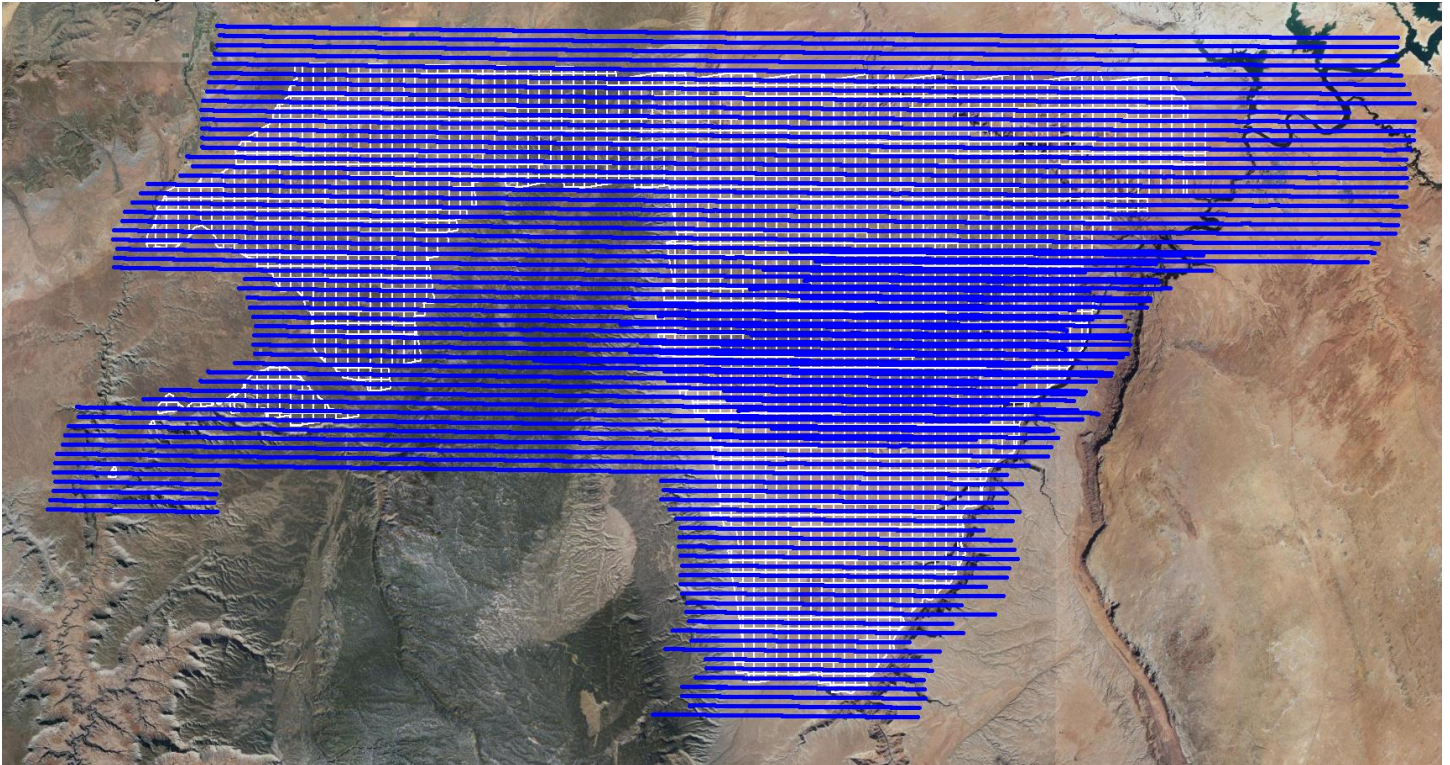


Figure 1: Tile Index and Trajectories As-Flown

2.0 ACQUISITION

2.1 Introduction

This section outlines the lidar system, flight reporting, and data acquisition methodology used during the collection of the lidar campaign. Although Sanborn conducts all lidar missions with the same rigorous and strict procedures and processes, all lidar collections are unique.

2.2 Acquisition Parameters

Sanborn specifically defined the collection parameters to accomplish the desired project specifications. **Table 1** shows the planned acquisition parameters utilized for this aerial survey with the sensor(s) installed.

Planned Acquisition Parameters		
Aircraft	N3533Q - SA2270DC	
Sensor	VeriDaaS Geiger Mode LiDAR	
Maximum Number of Returns	1	
Point Spacing (m)	0.35	*
Point Density (pts/m ²)	8	*
Flying Height (AGL) (m)	4,700	
Ground Speed (kts)	220	
Field of View (deg)	15	
Scan Rate (Hz)	15.77	
Pulse Rate (kHz)	50	
Laser Footprint (m)	0.16	
Wavelength (nm)	1,064	
Multi-Pulse	Yes	
Swath Width (m)	2,100	
Overlap (%)	55	

* for data as delivered. Data collected at higher density; +30 ppsm

Table 1: Lidar Acquisition Parameters

2.3 Field Work Procedures

Sanborn's standard procedure before every mission is to perform pre-flight checks to ensure correct operation of all systems. All cables were checked, and the sensor head glass was cleaned. A three-minute static session was conducted on the ground with the engines running prior to take-off to establish fine-alignment of the IMU and to resolve GNSS ambiguities.

The project acquisition consisted of Thirtythree (33) mission(s). During the data collection, the operator recorded information on log sheets which includes weather conditions, lidar operation parameters, flight line statistics and PDOP.

Preliminary data processing was performed in the field immediately following the missions for quality control of GNSS data and to ensure sufficient coverage of the project AOI. Any problematic data could then be re-flown immediately as required. Final data processing was completed in the Colorado Springs, CO office. **Table 2** below shows the flight acquisition metrics for the entire collection.

Sortie ID	Date	Tail #	Flight Duration (hrs)	Number of Lines	Approximate Line Miles	Approximate Area (sq mi)
a07-s03-0508	7/6/2022	N3533Q	5	17	609	306
a07-s03-0510	7/7/2022	N3533Q	3	9	142	66
a07-s03-0511	7/8/2022	N3533Q	3.5	17	252	116
a07-s03-0525	8/29/2022	N3533Q	5.6	19	536	249
a07-s03-0526	8/30/2022	N3533Q	4.2	12	645	285
a07-s03-0527	8/31/2022	N3533Q	3	6	329	143
a07-s03-0528	8/31/2022	N3533Q	2.6	6	405	183
a07-s03-0529	9/1/2022	N3533Q	3.5	8	555	254
a07-s03-0530	9/1/2022	N3533Q	4.5	12	793	376

Table 2: Collection Date by Mission

3.0 PROCESSING

3.1 Introduction

The GNSS/IMU data was post-processed using Applanix POSPac MMS software to create Smoothed Best Estimate Trajectory (SBET) file(s). The SBET was then combined with the laser range measurements in VeriDaaS Software to produce the 3-dimensional coordinates resulting in an accurate set of Raw Point Cloud (RPC) mass points. These raw swath (*.las) files are output in WGS84, UTM, Ellipsoid, Meters and transformed to the project Coordinate Reference System (CRS) upon ingest into GeoCue..

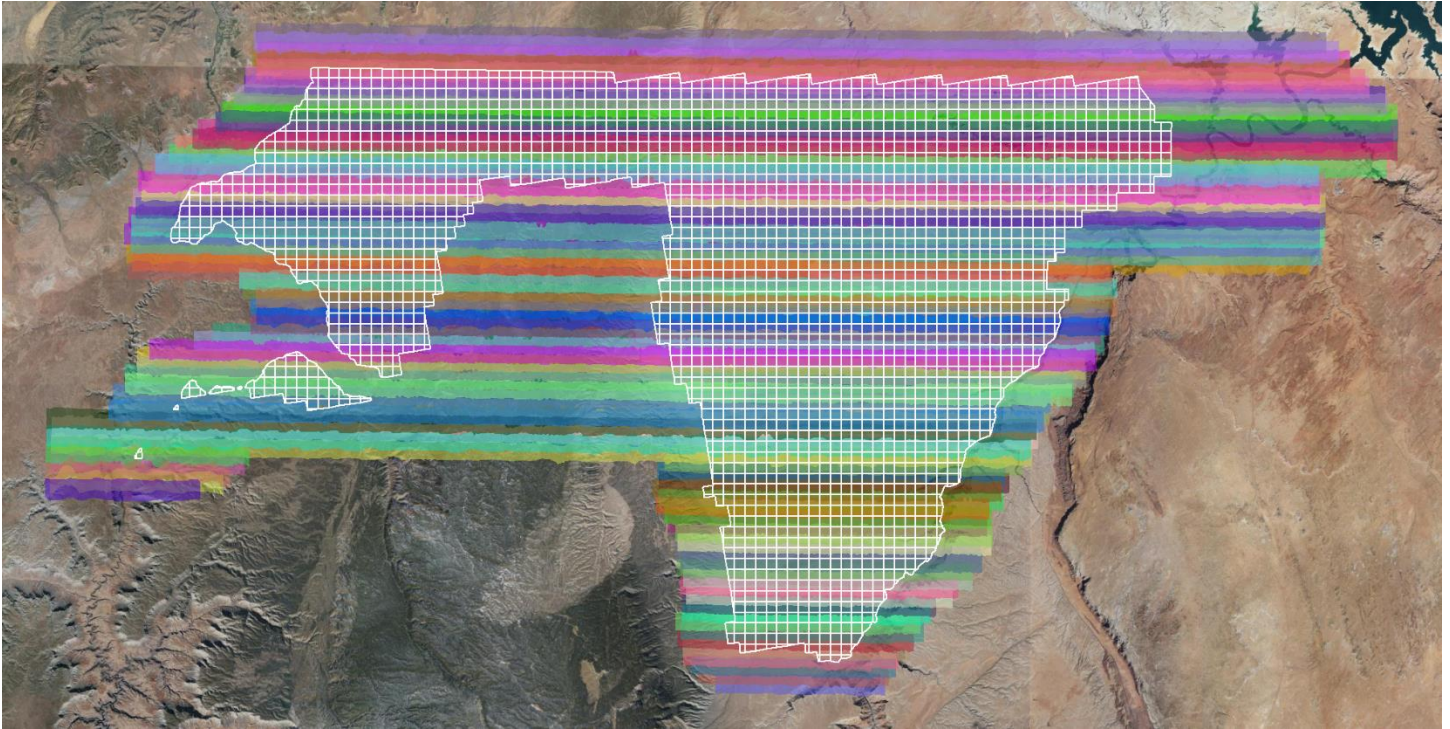


Figure 2: Raw Swath Coverage

The VeriDaaS Software pre-processing software created raw swath files with all return values. This multi-return information was processed and classified to obtain the required feature for delivery. All lidar data is processed using the ASPRS binary LAS format version 1.4. **Table 3** illustrates the achieved point cloud statistics.

Category	Value
Aggregate Total Points	35,253,860,402
Aggregate Nominal Pulse Spacing (m)	0.27
Aggregate Nominal Pulse Density (pls/m ²)	13.6
Aggregate Nominal Pulse Spacing (ft)	0.89
Aggregate Nominal Pulse Density (pls/ft ²)	1.3

Table 3: Point Cloud Statistics

VeriDaaS's Geiger-Mode Lidar sensor collects over 200 million measurements each second. The culmination of those measurements results in every spot on the ground being illuminated dozens of times from multiple angles to build an accurate model of the terrain. This vast amount of raw data is resolved in our proprietary software, which compares each discrete measurement within the collection of measurements to determine the most probable points to represent the surface.

It all begins with the GmAPD (Geiger-Mode Avalanche Photo Diode) sensor that has the potential to capture up to 4,096 detections each laser pulse with its 32 x 128 pixel array. Each actual detection records meta data such as time, scanner angle, time of flight (of the laser pulse), and navigation solution information. The laser generates 50,000 such pulses per second each with metadata enabling subsequent processes to determine X,Y,Z position for each detection. The

amalgamation of these is an un-filtered point cloud that is an interim product prepared for a final aggregation step which selects the best points that best characterize the surface.

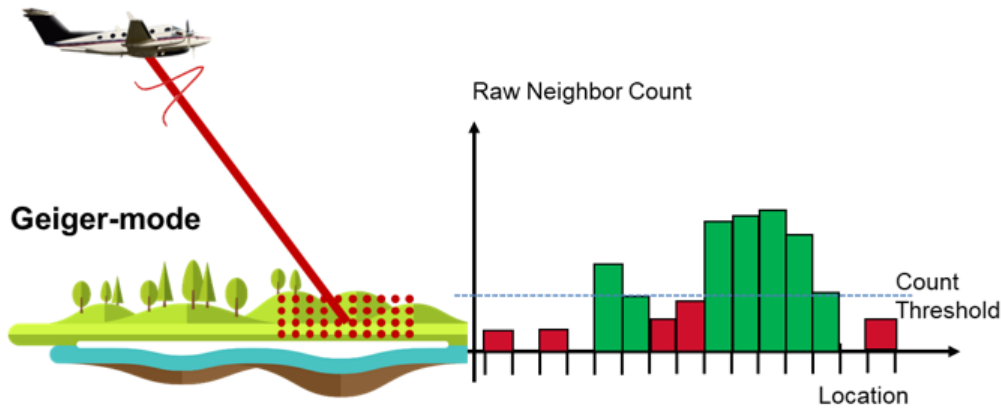


Figure 3: Individual Detections Grouped by Location

Depending on the initial collection parameters, the data can produce final point clouds of varying densities to meet the needs of specific end uses. Once an output density is chosen, 3D cells are created known as a Voxel matrix whose size is governed by the selected density. The size of the cells is set to guarantee the density on flat terrain so when vertical features like vegetation and buildings are present, the resultant density is higher. For the given Voxel matrix, the software compares the numerous unfiltered points within that cell to each other as well as the neighboring cells and statistically selects the best point to represent that location. It repeats this process for all the Voxel cells until a calibrated point cloud is determined for the selected resolution. The result of the entire process is a highly uniform, accurate representation of the surface.

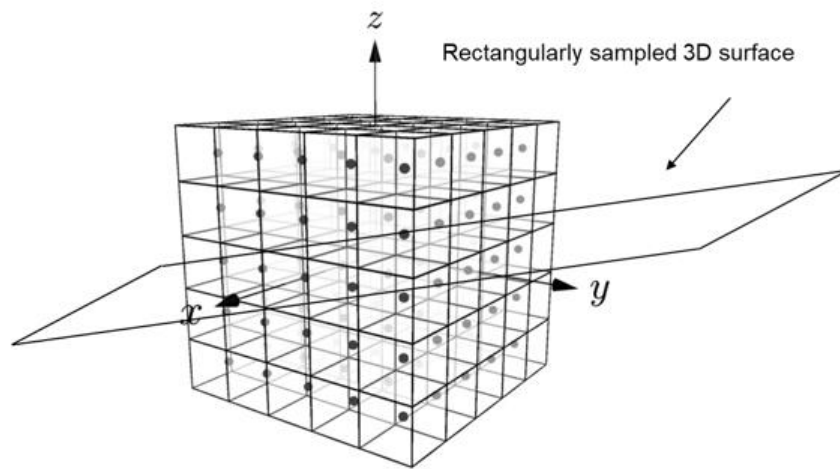


Figure 4: 3D Voxel Matrix

In the case where a higher resolution point cloud was initially created, a lower density product can be down sampled by decimating, however, this is less precise method than rebuilding the lower density product from the start utilizing all of the points within the original unfiltered point cloud to determine the best point to represent the specified Voxel cell. For all USGS deliveries, VeriDaaS is creating the product at the delivered density to provide the best representation of the surface.

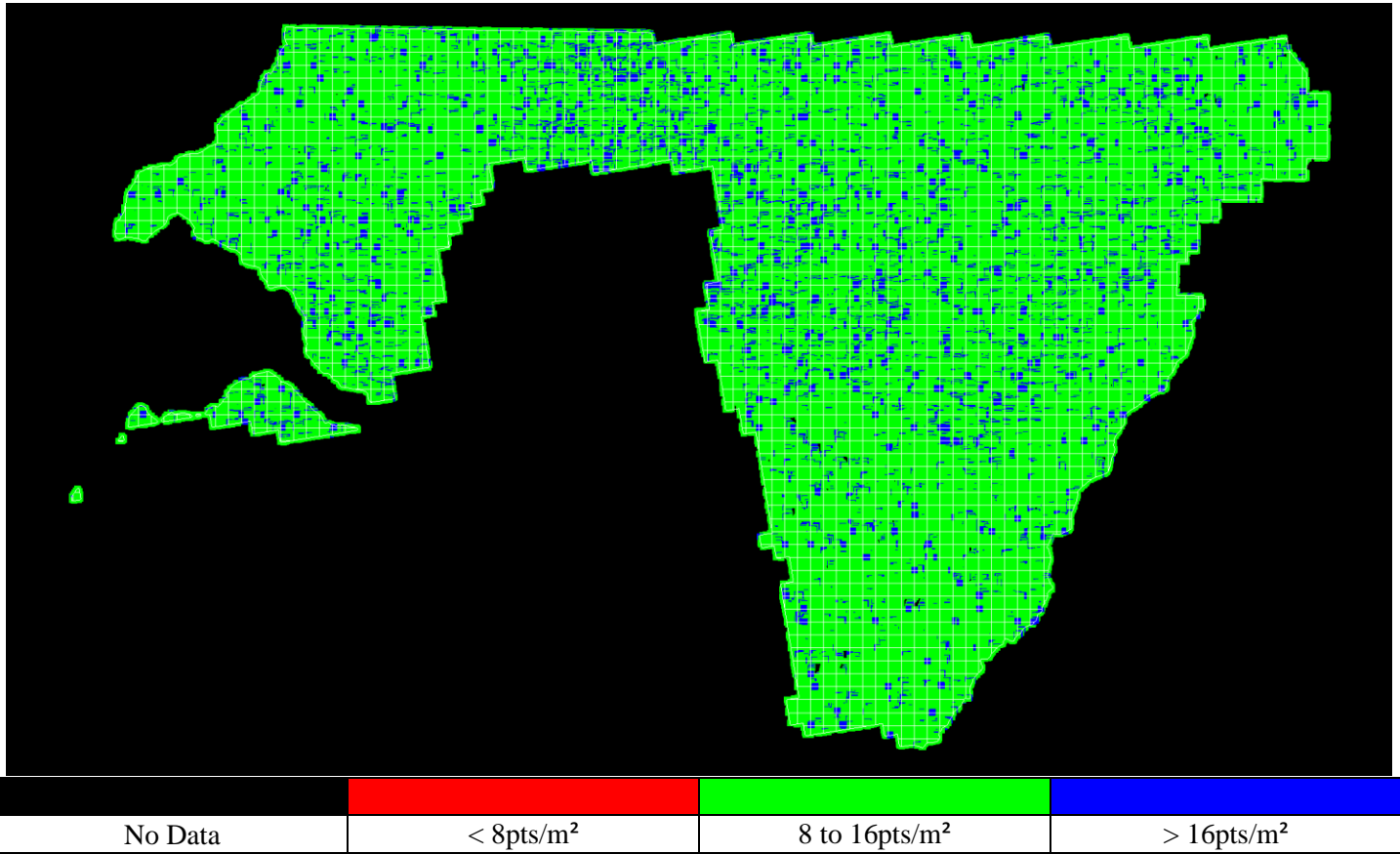


Figure 5: Point Cloud Density

3.2 Coordinate Reference System

Horizontal Datum: North American Datum of 1983 (2011)
Projection: Universal Transverse Mercator Zone 12 North
Vertical Datum: North American Vertical Datum of 1988
Geoid Model: Geoid18
Units: Meters

3.3 Lidar Matching

Sanborn uses pre-processing software and the latest boresight values to combine the processed SBET with the laser scan files to produce the lidar point cloud. The data is processed by mission and/or block and is output in ASPRS LASv1.4 Point Data Record Format (PDRF) 6 with 16bit linearly scaled intensities to the nearest 0.001 3D position. Each mission is produced in WGS84, UTM, Ellipsoid, Meters and transformed to the project CRS upon import into GeoCue.

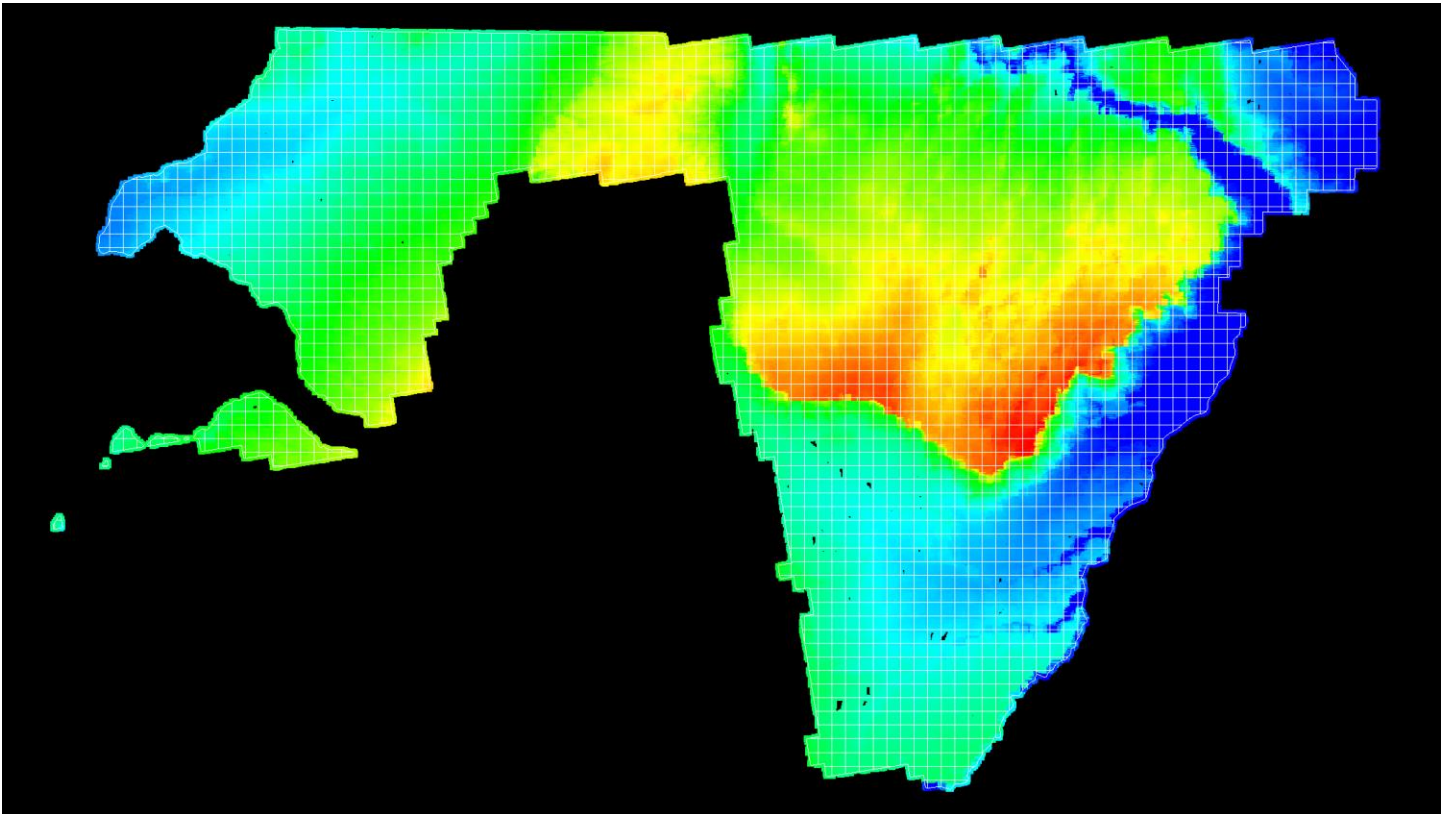


Figure 6: Point Cloud Elevation

To determine the relative accuracy for the VeriDaaS Geiger Mode Lidar system, key information is utilized during the data processing. The process employs a Bundle Adjustment approach to optimize the flight line trajectories by minimizing “pseudo tie points” within the project boundary. The finalized Adjustment files provide residuals (or errors) for each “pseudo tie point” and these can then be used to understand a Geiger Mode’s relative accuracy. The concept of using a Bundle Adjustment is very similar to the photogrammetric approach applied during photo surveys. There are two differences between photogrammetric surveys and GML surveys. First, the GML process uses “pseudo tie points” in the Bundle Adjustment. These pseudo tie points are small lidar point cloud chips from overlapping flight lines that are then compared. Because the chips come from overlapping flight lines there will be residuals in these point clouds – that is, differences in the spatial locations. Typically, road intersections, building edges, and other “hard targets” are used in the process.

In this sense these point cloud chips act like traditional photogrammetry tie points. The second difference is the number of tie points used. The GML process uses many tens of thousands of tie points in the Bundle Adjustment, whereas a photogrammetry session would typically use far less. As would be expected, once the Bundle Adjustment has been run, the resulting output are optimized flight line trajectories such that each pseudo tie point (point cloud chip) residual has been minimized. **Figure 7** shows how the Bundle Adjustment works for the GML data. On the left, the pre and post corrected point cloud chips are shown (before and after the adjusted trajectory). On the right, the adjustments in the trajectory are shown via the effects those adjustments have on the 3D point cloud.

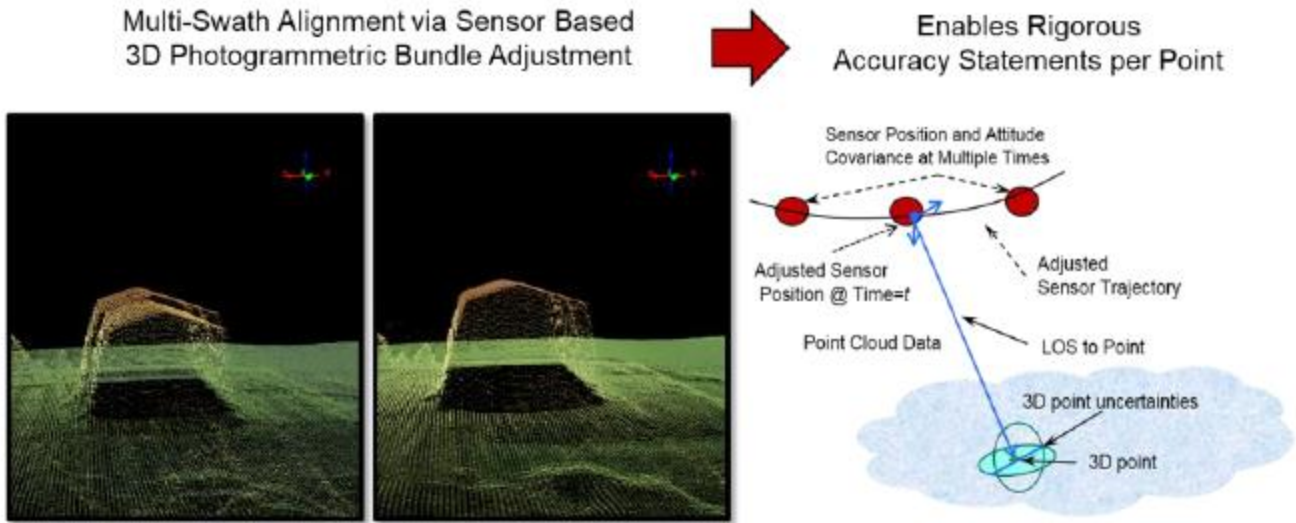


Figure 7: Photogrammetric Style Bundle Adjustment

After the Bundle Adjustment is complete, the final pseudo tie point residuals from the adjustment report are harvested. In these reports, each tie point not only details the 3D residual but also the geo location. This allows the process to plot these residuals geo-spatially across the project.

To provide a graphic like the USGS expectation for the Swath Separation Images, a geospatial plot of the vertical residuals (σ_v), color-coded with the following schema can be provided:

- All residuals with an absolute vertical error less than 8 cm are green: $\sigma_v < 8$ cm
- All residuals with an absolute vertical error between 8 and 16 cm are yellow: $8 \text{ cm} \leq \sigma_v \leq 16 \text{ cm}$
- All residuals with an absolute vertical error greater than 16 cm are red: $\sigma_v > 16$ cm

This vertical residual color-coded plot can also be super-imposed over the lidar intensity image. This intensity image is important because it is an image layer that is captured at the same time as the lidar point cloud itself. This means there is zero temporal decorrelation. Also, the intensity image gives context to the residual plot and allows the observer to see why certain vertical errors may be large, e.g. due to certain terrain features or ground cover.

Sanborn takes advantage of both visual and statistical validation methodologies to review and ensure both the individual precision and alignment of the lidar dataset. Swath Precision Images are representative of the intraswath alignment and provide a holistic qualitative look at the goodness of fit within each swath. Swath Separation Images are representative of the interswath alignment and provide a holistic qualitative look at the positional quality of the point cloud. The images are reviewed in their entirety. This visual and statistical review guarantees the relative accuracy of the lidar dataset. **Table 4** outlines the relative accuracy requirements of the project. **Figure 10** is the achieved relative accuracy distribution generated from the psuedo tie point residuals .

Category	Value (m)	Value (ft)
Smooth Surface Repeatability	≤ 0.060	≤ 0.197
Swath overlap difference, RMSDz	≤ 0.080	≤ 0.262

Table 4: Relative Accuracy Requirements

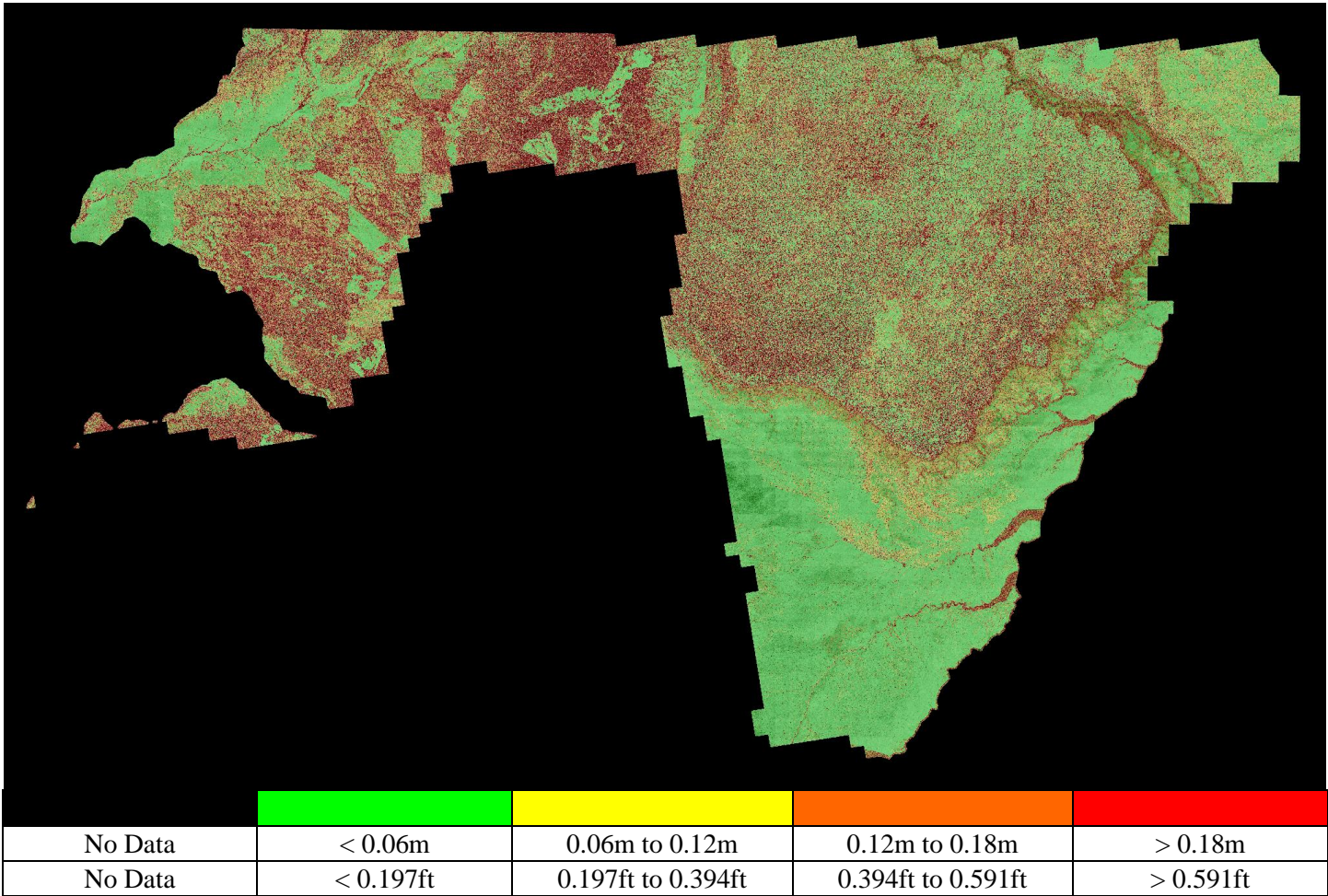


Figure 8: Swath Precision

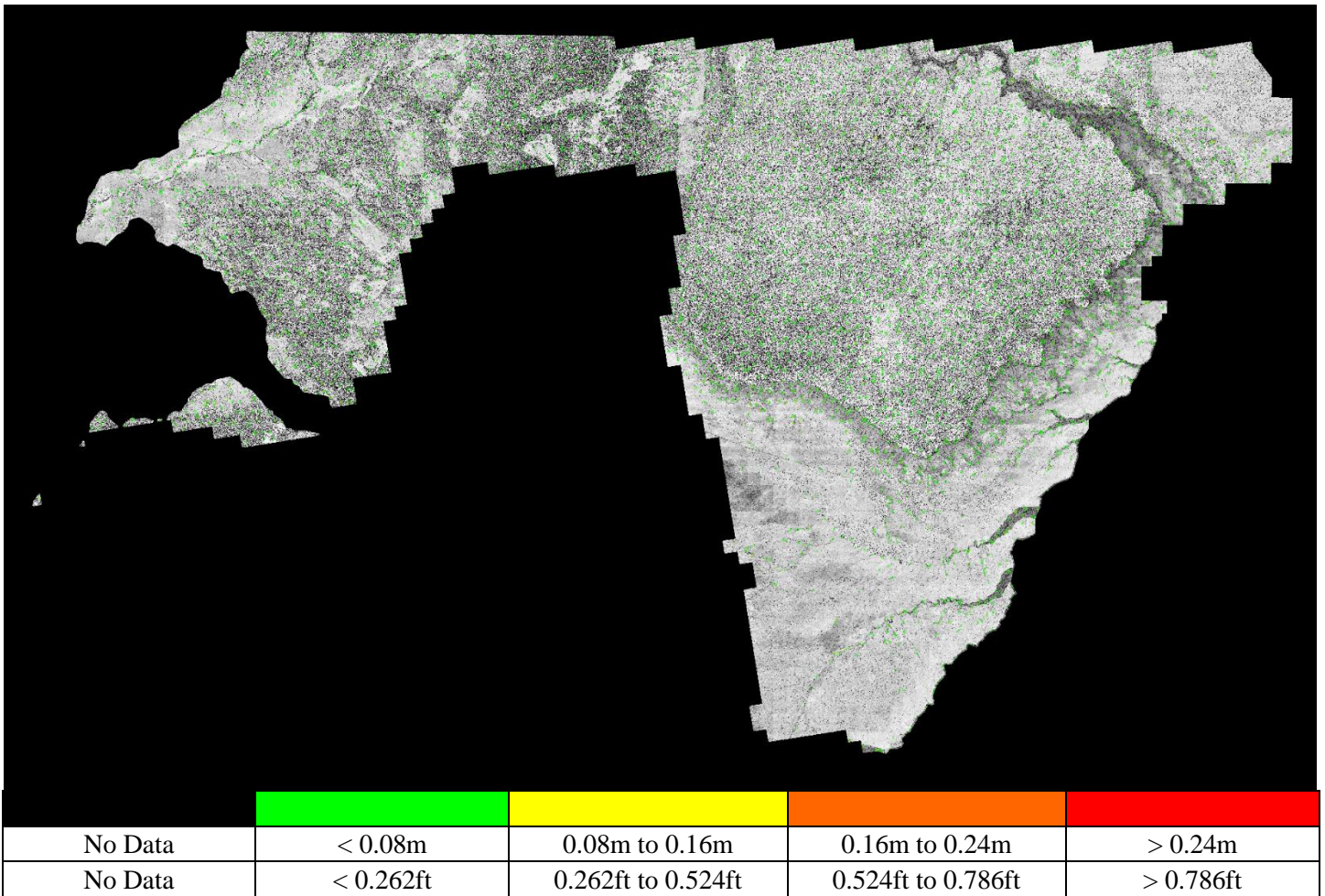


Figure 9: Swath Separation

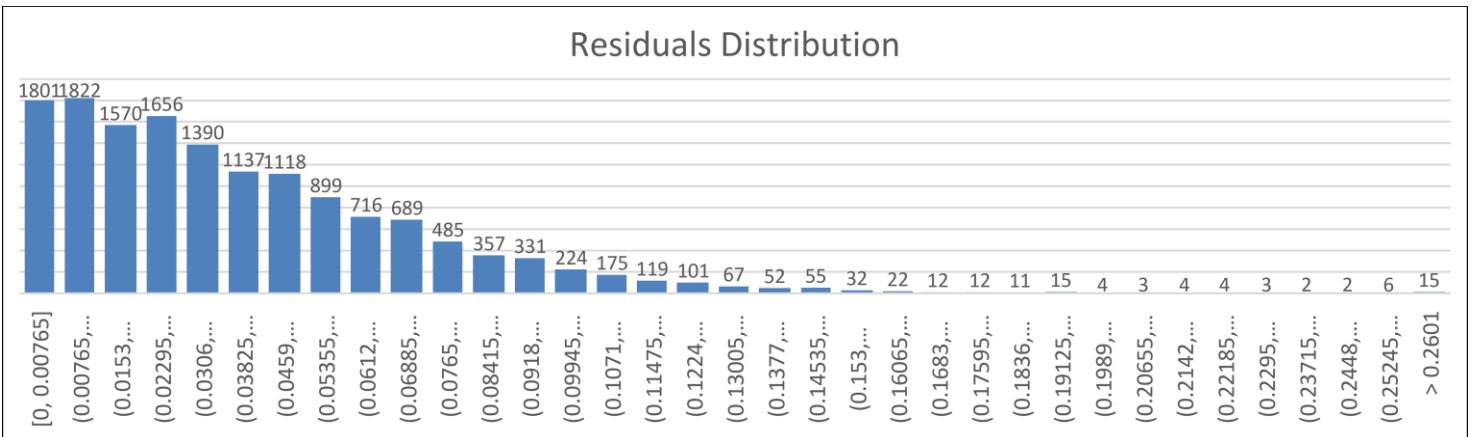


Figure 10: Pseudo Tie Point Residuals Distribution

3.4 Lidar Classification

Lidar filtering was accomplished using GeoCue with TerraSolid processing and modeling software. The filtering process reclassifies all the data into classes within the point cloud classification scheme. Once the data is classified, the entire dataset is reviewed and manually edited for anomalies that are outside the required guidelines of the product specification or contract requirements. This can include, but is not limited to, classifying bridges, structures, filling culverts, and manually analyzing the bare-earth surface by classifying features that belong in non-extraneous classification codes. **Table 5** outlines a statistical summary of the point classes leveraged in the lidar dataset.

Code	Class	Points
1	Unclassified	740,500,561
2	Ground	19,616,859,810
3	Low Vegetation	10,759,392,001
4	Medium Vegetation	3,408,270,519
5	High Vegetation	217,033,874
6	Buildings	543,911
7	Low Noise	511,060,909
9	Water	103,196
17	Bridge Decks	13,486
18	High Noise	74,636
20	Ignored Ground	7,499
Flag	Withheld	511,135,545

Table 5: Lidar Classification Statistics

In certain instances, objects with high reflectance can cause anomalies in lidar data. The objects cause the beam to deflect abnormally creating a burst in the data which has been termed Buckshot. The Buckshot occurrences correlate with urban and industrial areas where such reflective objects are more prevalent. With VeriDaaS's Geiger-Mode system, in most cases when this phenomenon occurs, good data is also collected that defines the actual ground and objects in the area.

Since the inception of the USGS Arizona project, VeriDaaS has been working to ensure Buckshot occurrences are properly classify as noise while maintaining the surrounding good measurements. In addition, VeriDaaS has been characterizing the Buckshot events and developing signature profiles to identify the instances through Machine Learning (ML) routines. Specific objectives have been:

- First, identify the instances of the Buckshot in the datasets so they can be properly classified in subsequent processes,
- Second, automatically locate then auto classify the Buckshot points as noise before entering normal classification processes,
- Third, eliminate the error points during the aggregation routines using the developed ML routines.

Progress on the initiative has been brisk. The prototype routines have correlated well with manual inspections and the tuning of the algorithms have shown continuous improvement towards identifying occurrences.

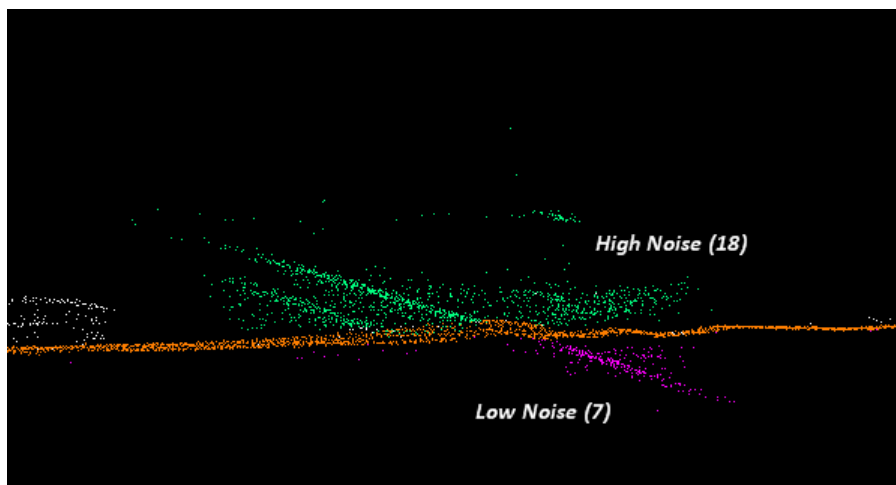


Figure 11: Buckshot Identification and Classification

3.5 Accuracy Assessment

The lidar dataset was evaluated using a total of two hundred and thirty (230) check points (129 NVA + 101 VVA). The result provided a vertical accuracy that fell within project specifications. Please see the **Attachment A** for the full Vertical Accuracy Report and the project *Metadata* for an in-depth accuracy assessment. **Table 6** outlines the absolute accuracy requirements of the project. **Table 7** shows high level statistics and mean errors for the area processed by Sanborn.

Category	Value (m)	Value (ft)
RMSEz	≤0.100	≤0.328
@ 95-Percent Confidence Level	≤0.196	≤0.643
@ 95 th Percentile	≤0.300	≤0.984

Table 6: Absolute Accuracy Requirements

Broad Land Cover Type	# of Points	RMSEz	95% Confidence Level	95th Percentile
NVA of Point Cloud	129	0.051	0.100	
NVA of Bare Earth	129	0.051	0.099	
NVA of DEM	129	0.051	0.100	
VVA of Bare Earth	101	0.053		0.107
VVA of DEM	101	0.052		0.097

Table 7: Vertical Accuracy Assessment of Check Points (Meters)

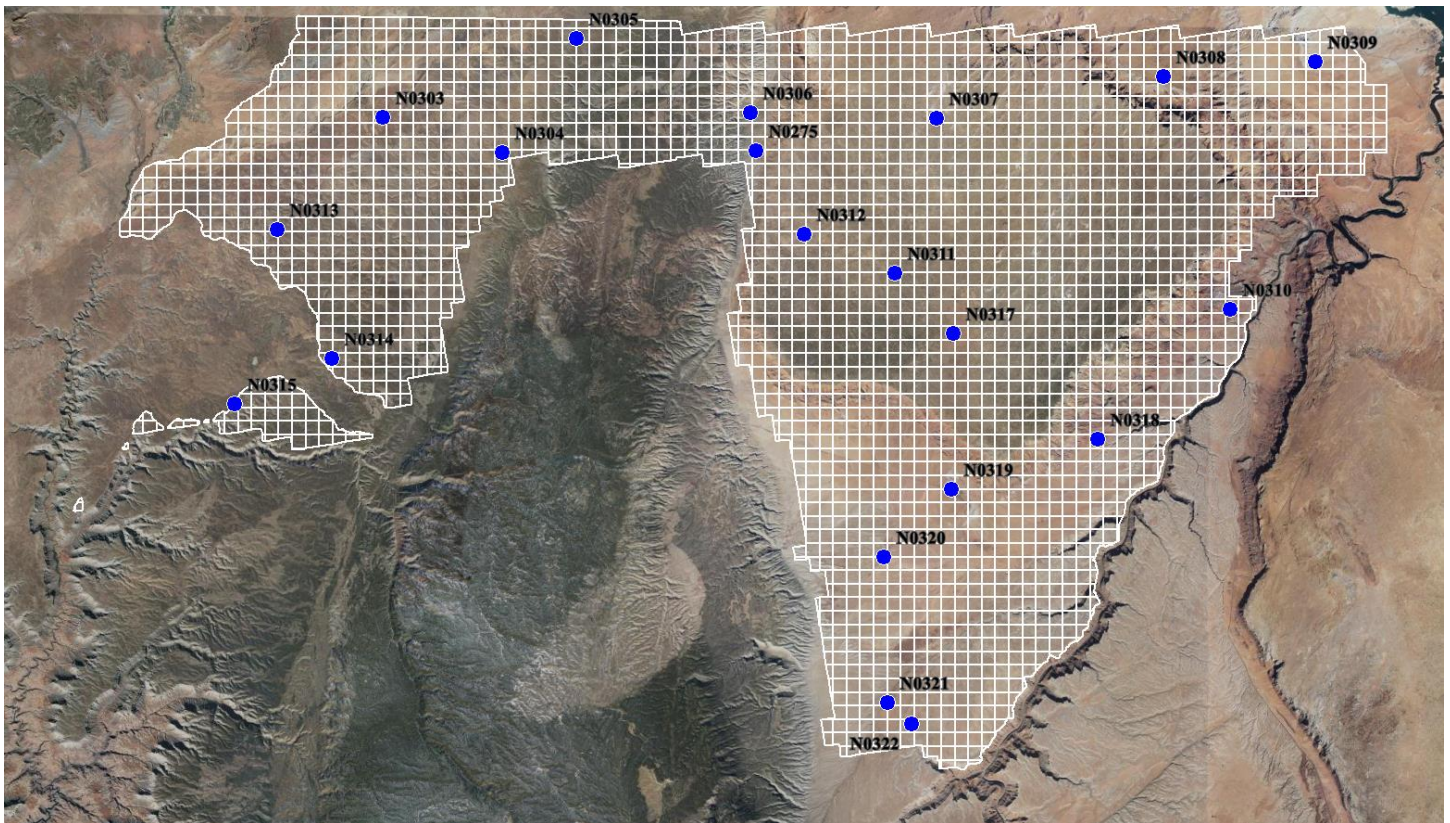


Figure 12: Non-vegetated Check Point Distribution

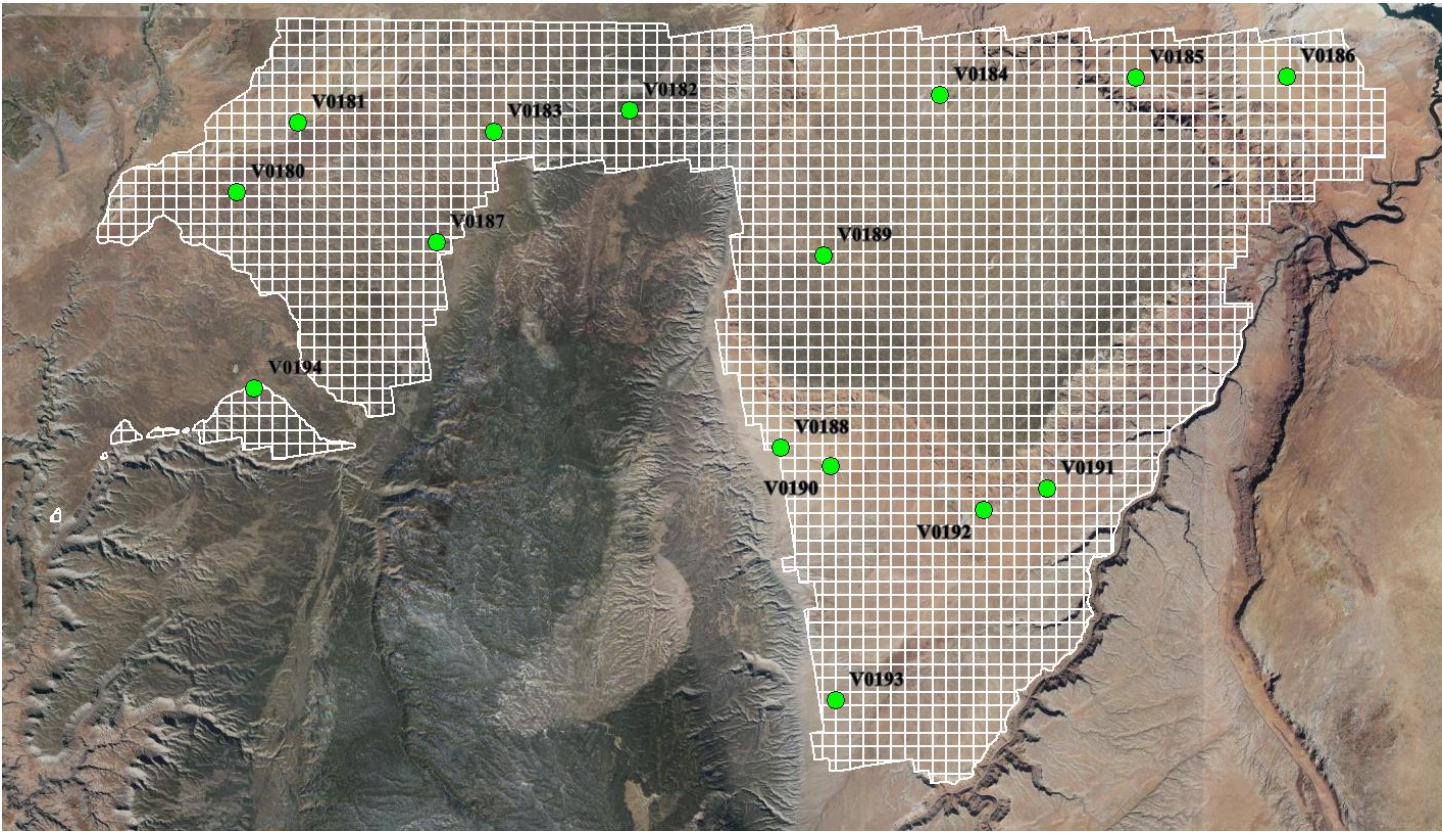


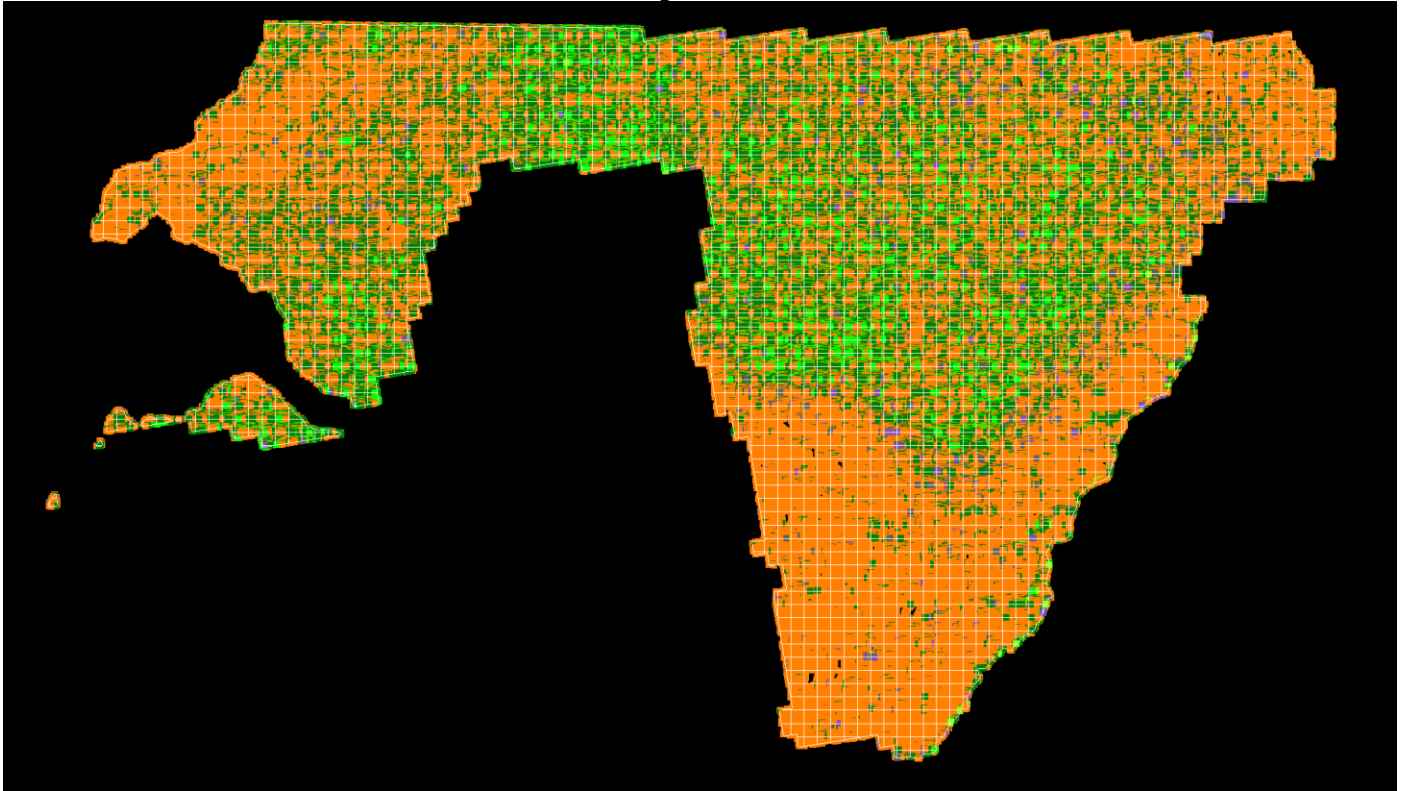
Figure 13: Vegetated Check Point Distribution

4.0 PRODUCT GENERATION

The following products were generated using the final coordinate system as defined in the contract:

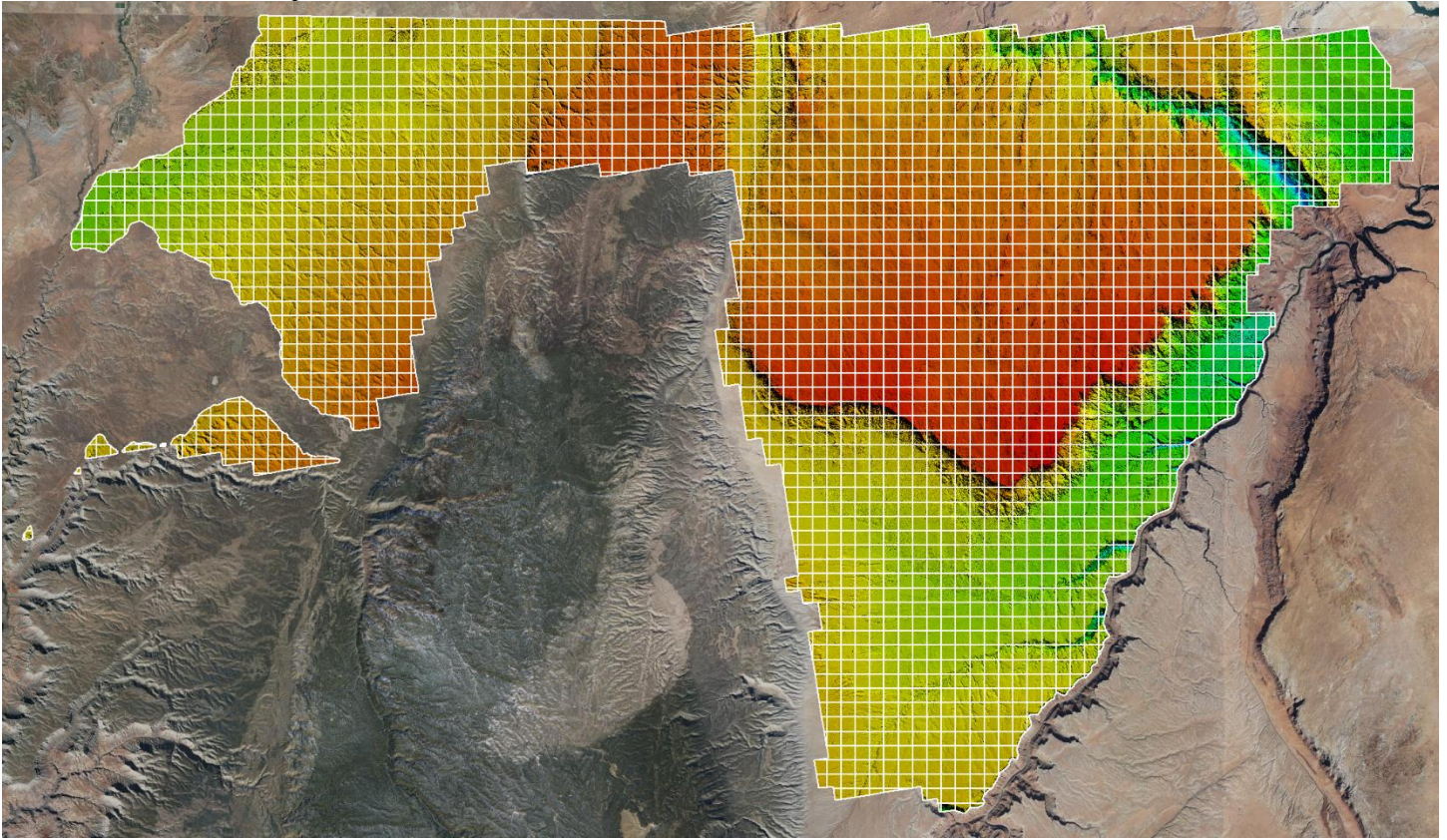
Classified Point Cloud

The Classified Point Cloud, containing all returns, is delivered in LASv1.4 (*.las) format and meets project specifications. The Classified Point Cloud contains file names referencing the tile index.



Bare-earth Digital Elevation Model (DEM)

32-bit GeoTIFF (*.tif) elevation rasters were created from the bare-earth points in the processed lidar dataset and hydro-flattened breaklines. Bare-earth rasters were produced the bilinear interpolation methodology and GDAL v2.4.0 was used to define the CRS. Each pixel contains an elevation.



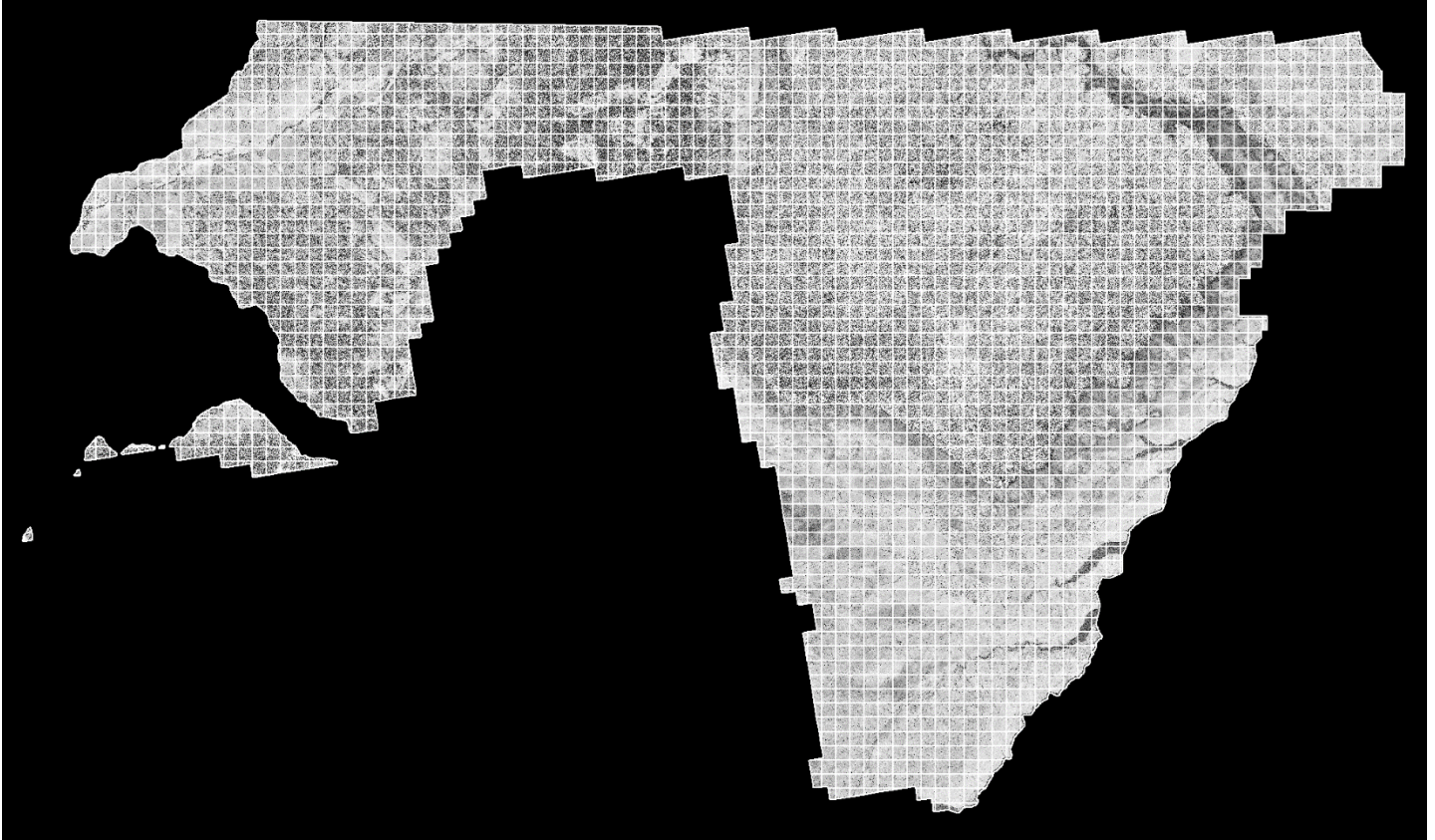
Breaklines

Hydro-flattened breaklines were generated from digitized water features conflated to the elevations derived from the bare-earth points in the processed lidar dataset. Delivered in Esri (*.gdb) format.



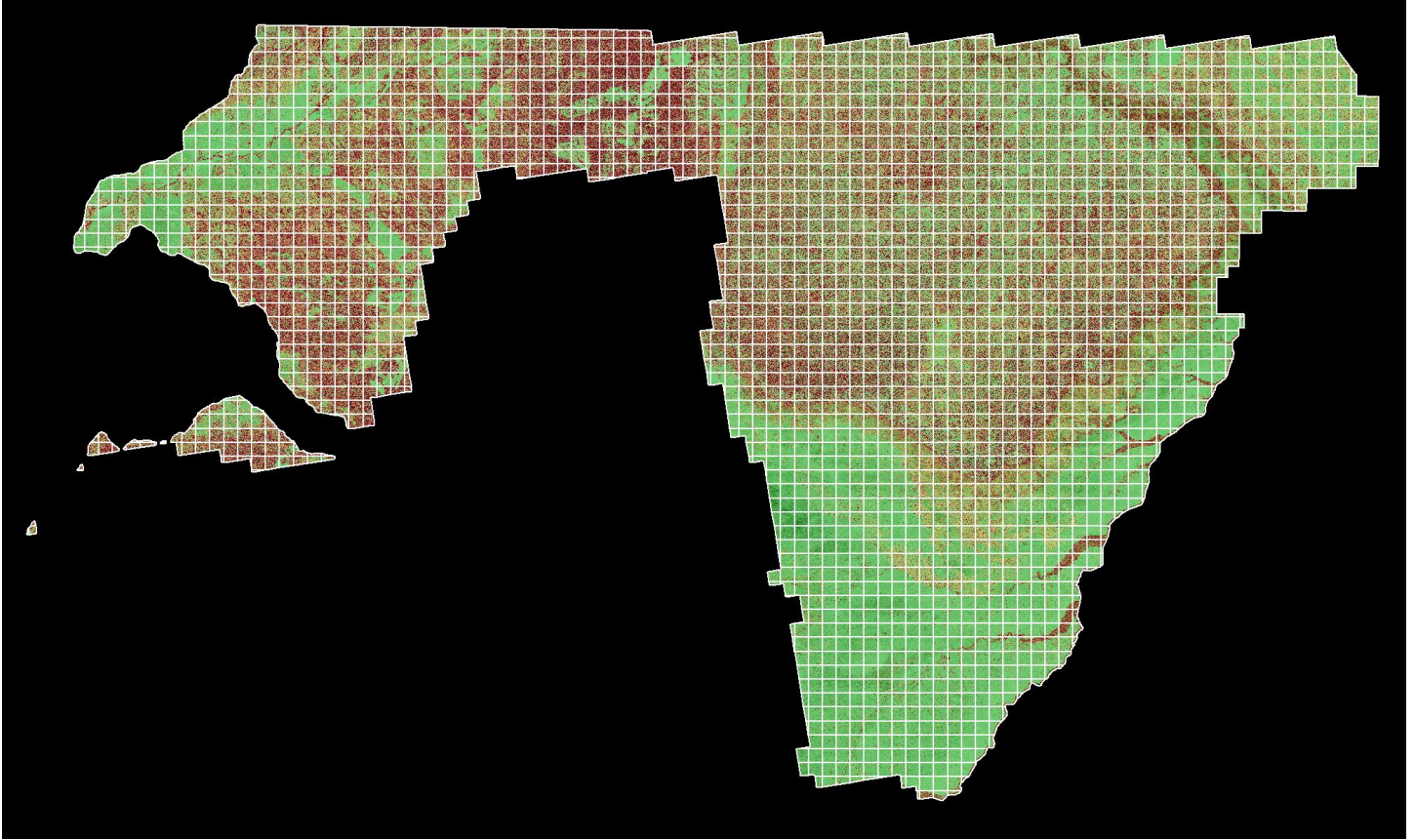
First-return Intensity Images

8-bit GeoTIFF (*.tif) intensity rasters were created from the first-return points in the processed lidar dataset. All overlap classes were ignored during this process. GDAL v2.4.0 was used to define the CRS.



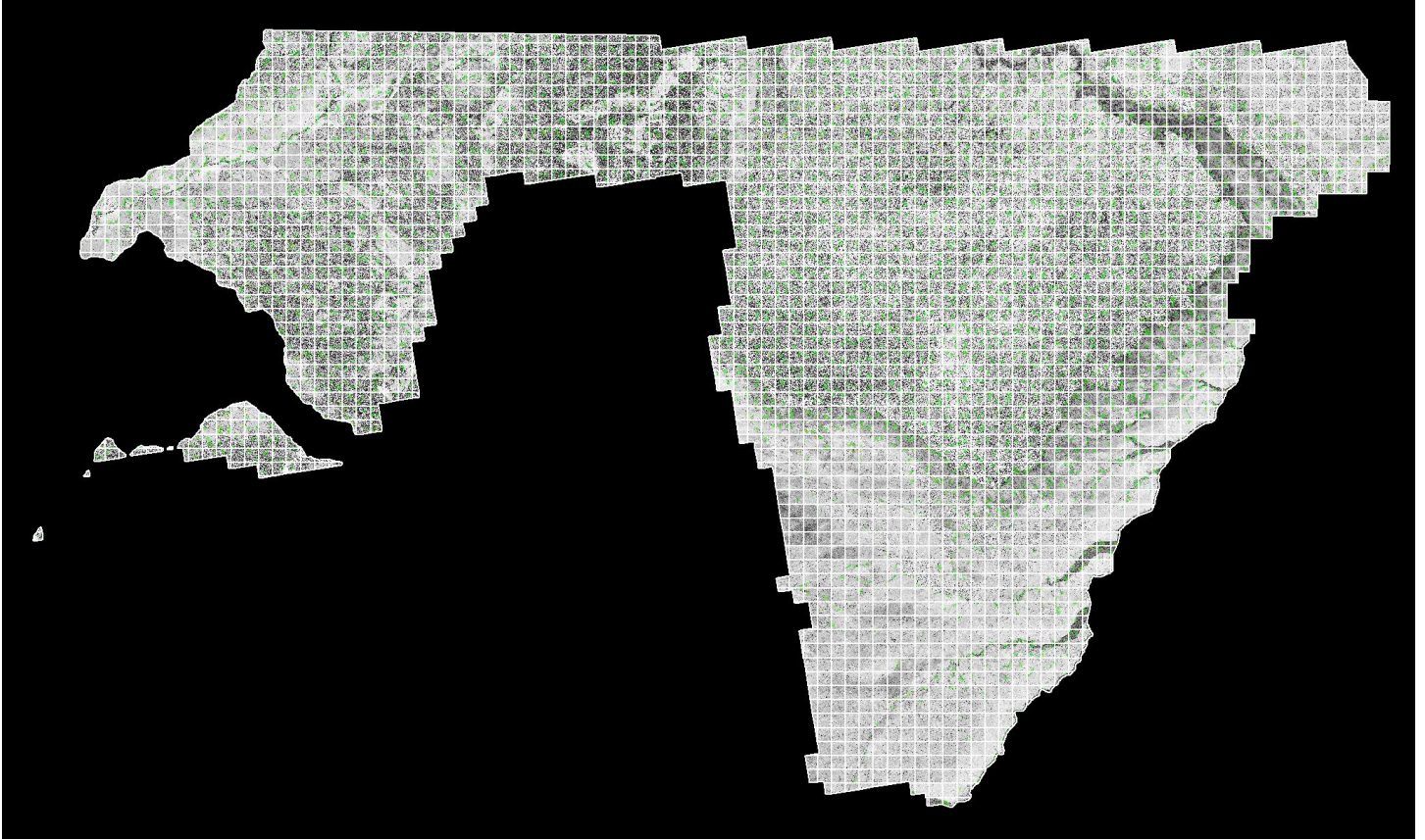
Last-return Swath Precision Images

24-bit GeoTIFF (*.tif) swath precision images modulated by intensity were created from the last-return points in the processed lidar dataset. All overlap classes were ignored during this process. GDAL v2.4.0 was used to define the CRS.



Last-return Swath Separation Images

24-bit GeoTIFF (*.tif) swath separation images modulated by intensity were created from the last-return points in the processed lidar dataset. GDAL v2.4.0 was used to define the CRS.



Swath Polygons

Polygons features representing either the convex or concave hull of swaths, where each record is an individual swath or channel within a swath. Delivered in Esri (*.shp) format.



Other Deliverables

Metadata

Survey Report

Vertical Accuracy Report

A final quality assurance process was undertaken to validate all deliverables for the project. Prior to release of data for delivery, Sanborn's Quality Control/Quality Assurance department reviews the data and then releases it for delivery.

APPENDIX A – ABGNSS/IMU PLOTS

The following pages contain the processing reports for the airborne trajectories.

General Information

Mission Information

Project name	a07-s03-0508
Processing date	2022-07-07 14:41:34
Mission date	2022-07-07 05:01:07
Mission duration	04:59:16.000
Processing mode	IN-Fusion PP-RTX

Rover Hardware Information

Product	POS AV 610 VER6 HW1.6-12
Serial number	S/N6907
IMU type	57
Receiver type	BD982
Antenna type	AV39

Project File List

Rover Data Files

File name	File type
default0707_050108.000	POS Data
default0707_050108.001	POS Data
default0707_050108.002	POS Data
default0707_050108.003	POS Data
default0707_050108.004	POS Data
default0707_050108.005	POS Data
default0707_050108.006	POS Data
default0707_050108.007	POS Data
default0707_050108.008	POS Data
default0707_050108.009	POS Data
default0707_050108.010	POS Data
default0707_050108.011	POS Data
default0707_050108.012	POS Data
default0707_050108.013	POS Data
default0707_050108.014	POS Data
default0707_050108.015	POS Data
default0707_050108.016	POS Data
default0707_050108.017	POS Data
default0707_050108.018	POS Data
default0707_050108.019	POS Data
default0707_050108.020	POS Data
default0707_050108.021	POS Data
default0707_050108.022	POS Data
default0707_050108.023	POS Data
default0707_050108.024	POS Data

Input Files

File Name	File Type
Ephm1880.22g	GLONASS Broadcast Ephemeris
Ephm1880.22n	GPS Broadcast Ephemeris

Output Files

Filename	File type
sbet_a07-s03-0508.out	SBET Trajectory File

Rover Data Summary

First raw data file	default0707_050108.000		
Last raw data file	default0707_050108.024		
Start GPS week	2217		
Start time	363650.017 (7/7/2022 5:00:50 AM)		
End time	381606.460 (7/7/2022 10:00:06 AM)		
Start of fine alignment	364054.994 (7/7/2022 5:07:34 AM)		
Available subsystems	Primary GNSS, IMU		
POS Event Input	None		
Correction data	None		
IMU Installation Lever Arms & Mounting Angles			
Reference to IMU lever arm (m)	0.000	0.000	0.000
Reference to IMU mounting angles (deg)	0.000	0.000	0.000
Reference to Primary GNSS lever arm (m)	-0.353	-0.322	-1.280
Reference to Primary GNSS lever arm std dev (m)	-1.000		
Aircraft to Reference mounting angles (deg)	0.000	0.000	0.000

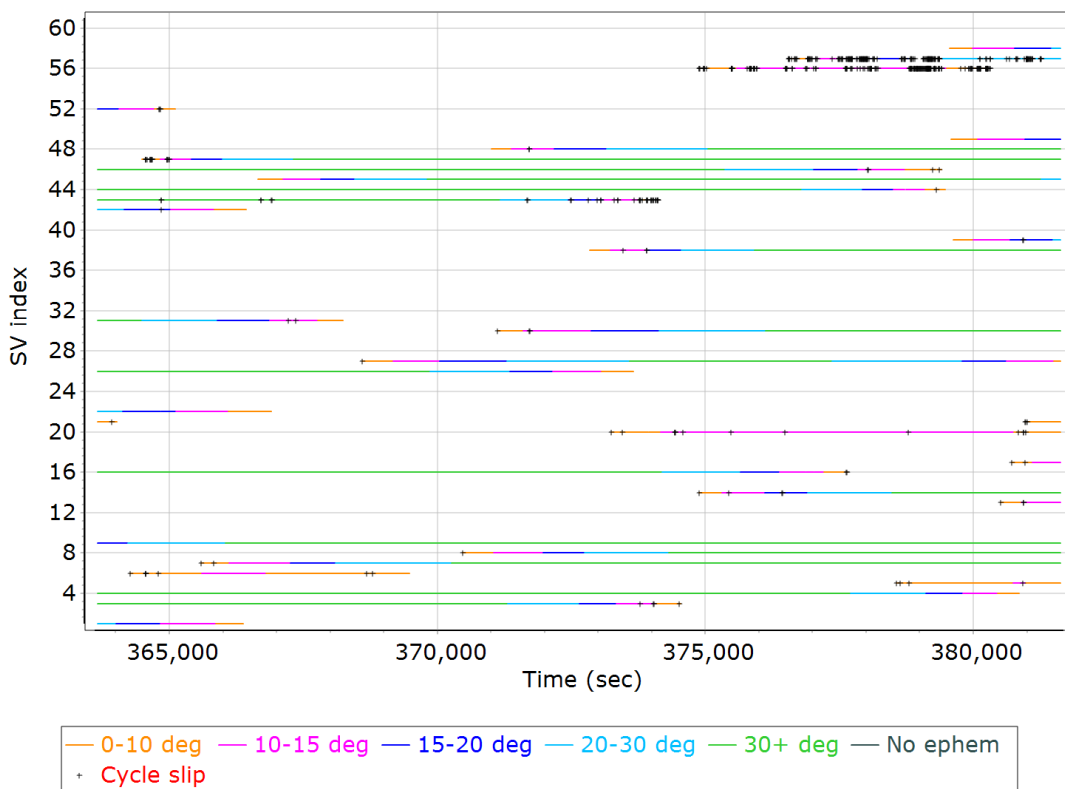
Rover Data QC

Raw IMU Import QC Summary

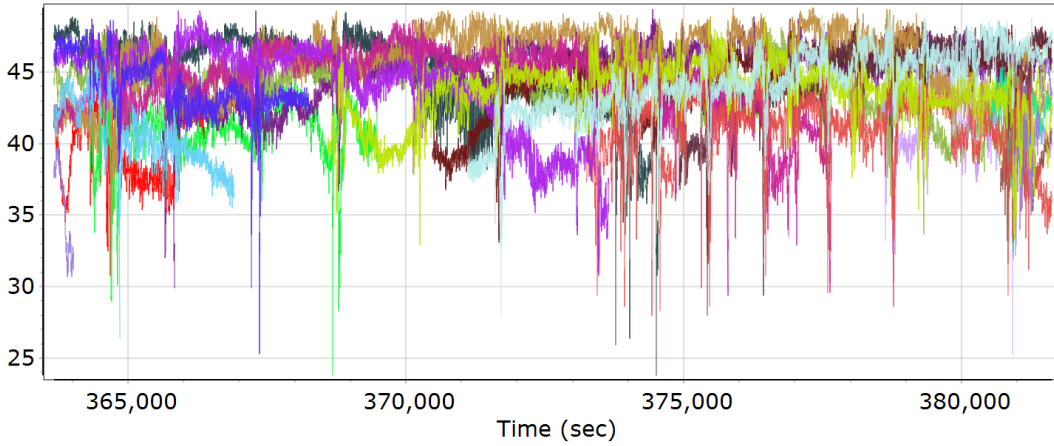
IMU data input file	imu_a07-s03-0508.dat
IMU data check log file	imudt_a07-s03-0508.log
IMU Records Processed	3590922
Termination Status	Warnings
IMU Anomalies	1
IMU Failure Messages	
363649.267 : WARNING : Gap of 363631.9151 seconds in CHECKDT input data	

Primary Observables & Satellite Data

GPS/GLONASS L1 Satellite Lock/Elevation

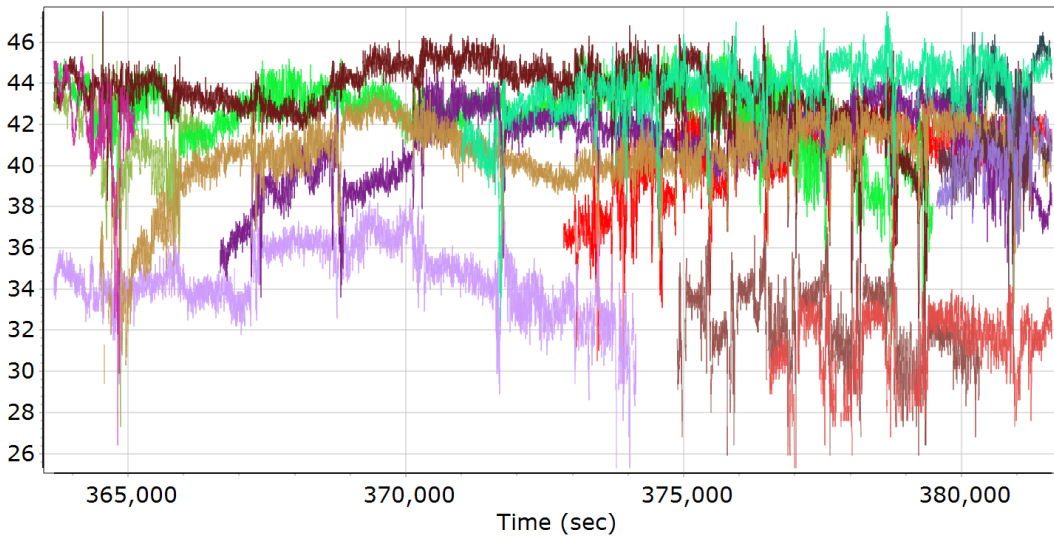


GPS L1 SNR



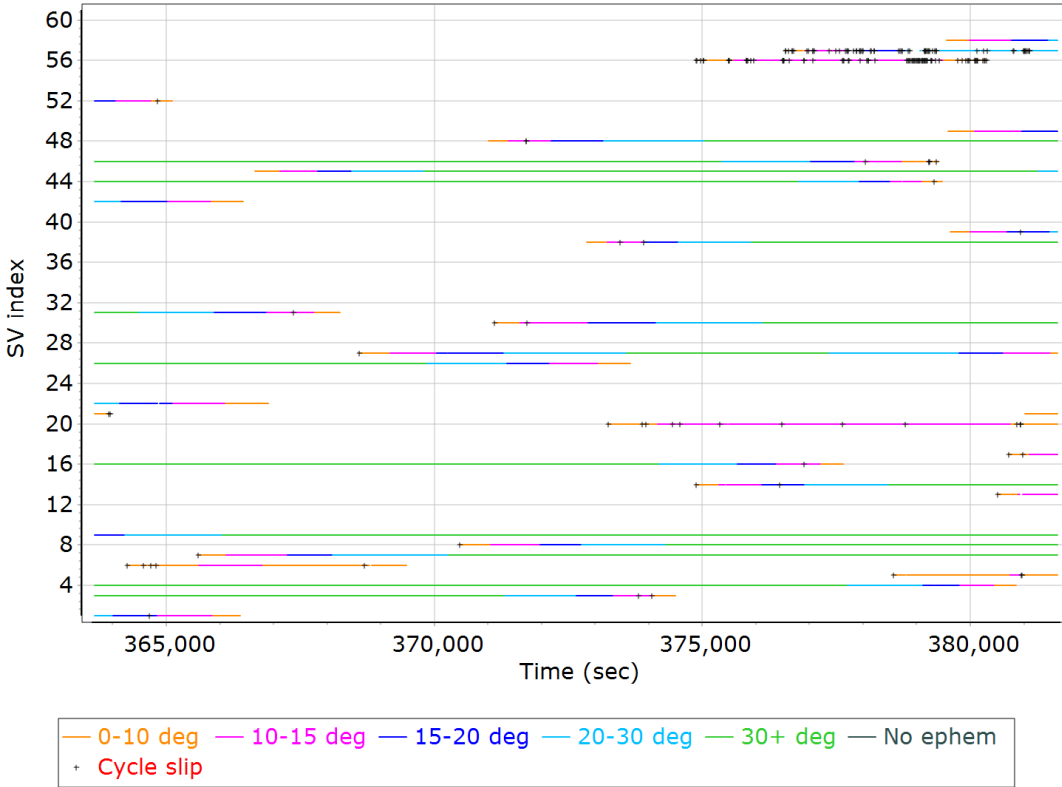
- | | |
|-----------------------------|-----------------------------|
| — GPS PRN 01 L1 SNR (dB/Hz) | — GPS PRN 03 L1 SNR (dB/Hz) |
| — GPS PRN 04 L1 SNR (dB/Hz) | — GPS PRN 05 L1 SNR (dB/Hz) |
| — GPS PRN 06 L1 SNR (dB/Hz) | — GPS PRN 07 L1 SNR (dB/Hz) |
| — GPS PRN 08 L1 SNR (dB/Hz) | — GPS PRN 09 L1 SNR (dB/Hz) |
| — GPS PRN 13 L1 SNR (dB/Hz) | — GPS PRN 14 L1 SNR (dB/Hz) |
| — GPS PRN 16 L1 SNR (dB/Hz) | — GPS PRN 17 L1 SNR (dB/Hz) |
| — GPS PRN 20 L1 SNR (dB/Hz) | — GPS PRN 21 L1 SNR (dB/Hz) |
| — GPS PRN 22 L1 SNR (dB/Hz) | — GPS PRN 26 L1 SNR (dB/Hz) |
| — GPS PRN 27 L1 SNR (dB/Hz) | — GPS PRN 30 L1 SNR (dB/Hz) |
| — GPS PRN 31 L1 SNR (dB/Hz) | |

GLONASS L1 SNR

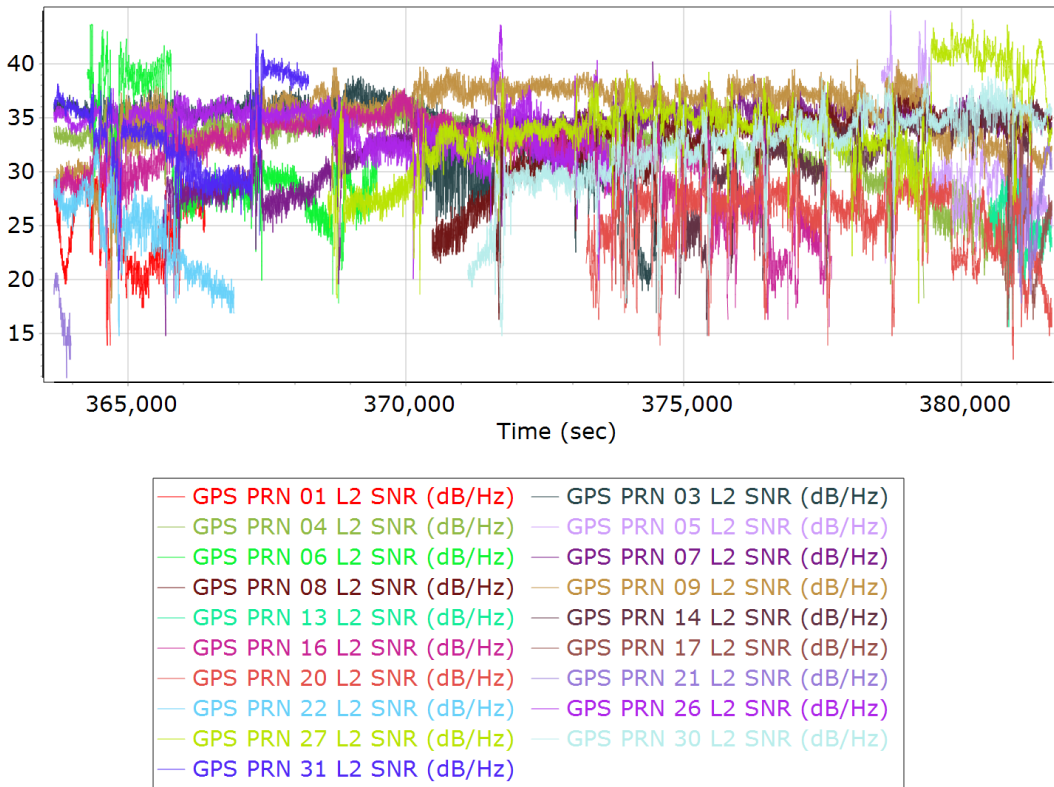


- | | |
|-----------------------------|-----------------------------|
| — GLONASS 01 L1 SNR (dB/Hz) | — GLONASS 02 L1 SNR (dB/Hz) |
| — GLONASS 05 L1 SNR (dB/Hz) | — GLONASS 06 L1 SNR (dB/Hz) |
| — GLONASS 07 L1 SNR (dB/Hz) | — GLONASS 08 L1 SNR (dB/Hz) |
| — GLONASS 09 L1 SNR (dB/Hz) | — GLONASS 10 L1 SNR (dB/Hz) |
| — GLONASS 11 L1 SNR (dB/Hz) | — GLONASS 12 L1 SNR (dB/Hz) |
| — GLONASS 15 L1 SNR (dB/Hz) | — GLONASS 19 L1 SNR (dB/Hz) |
| — GLONASS 20 L1 SNR (dB/Hz) | — GLONASS 21 L1 SNR (dB/Hz) |

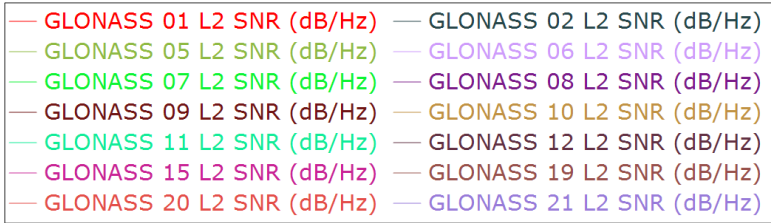
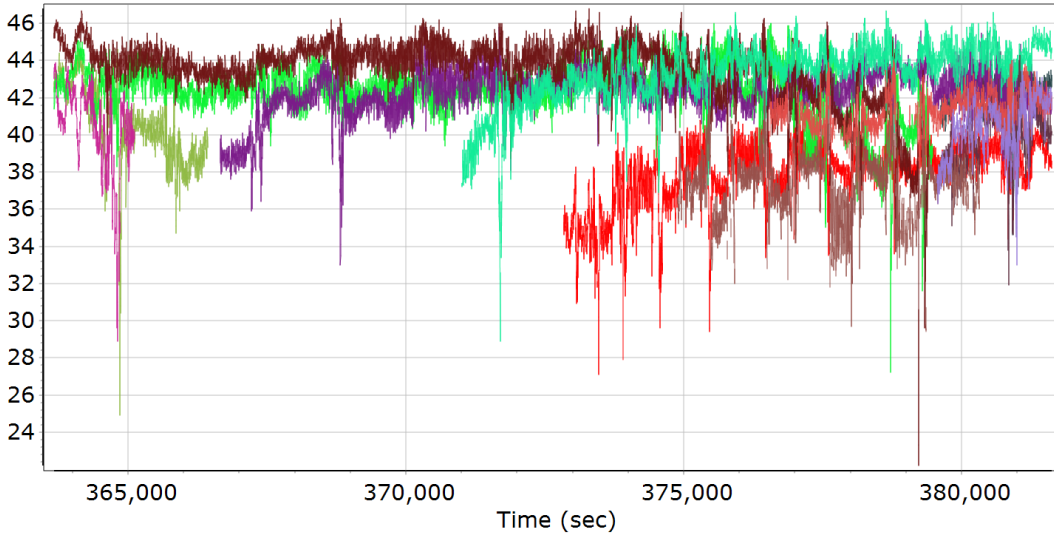
GPS/GLONASS L2 Satellite Lock/Elevation



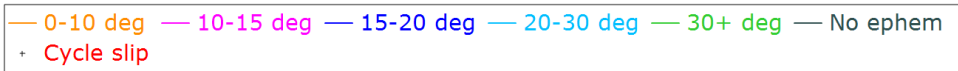
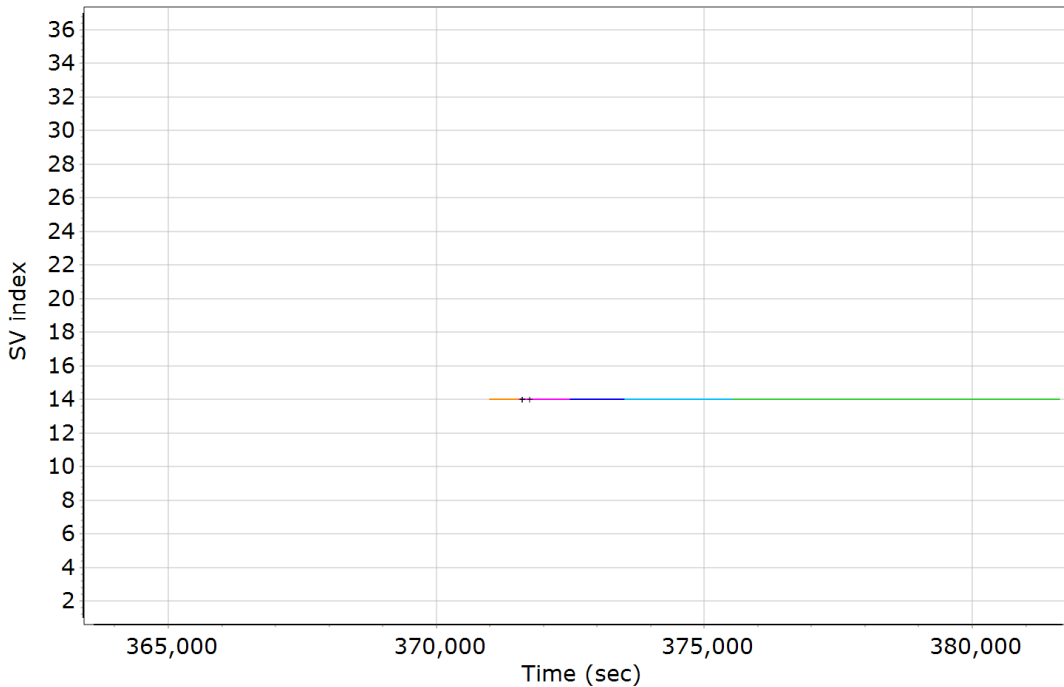
GPS L2 SNR



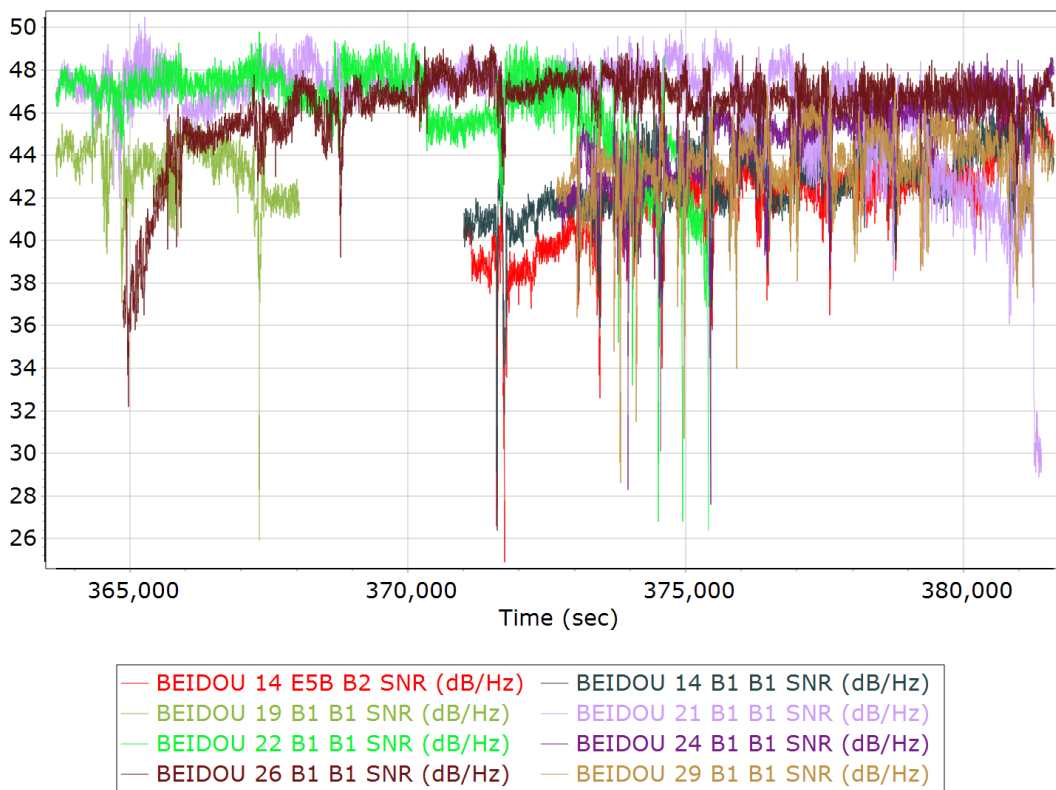
GLONASS L2 SNR



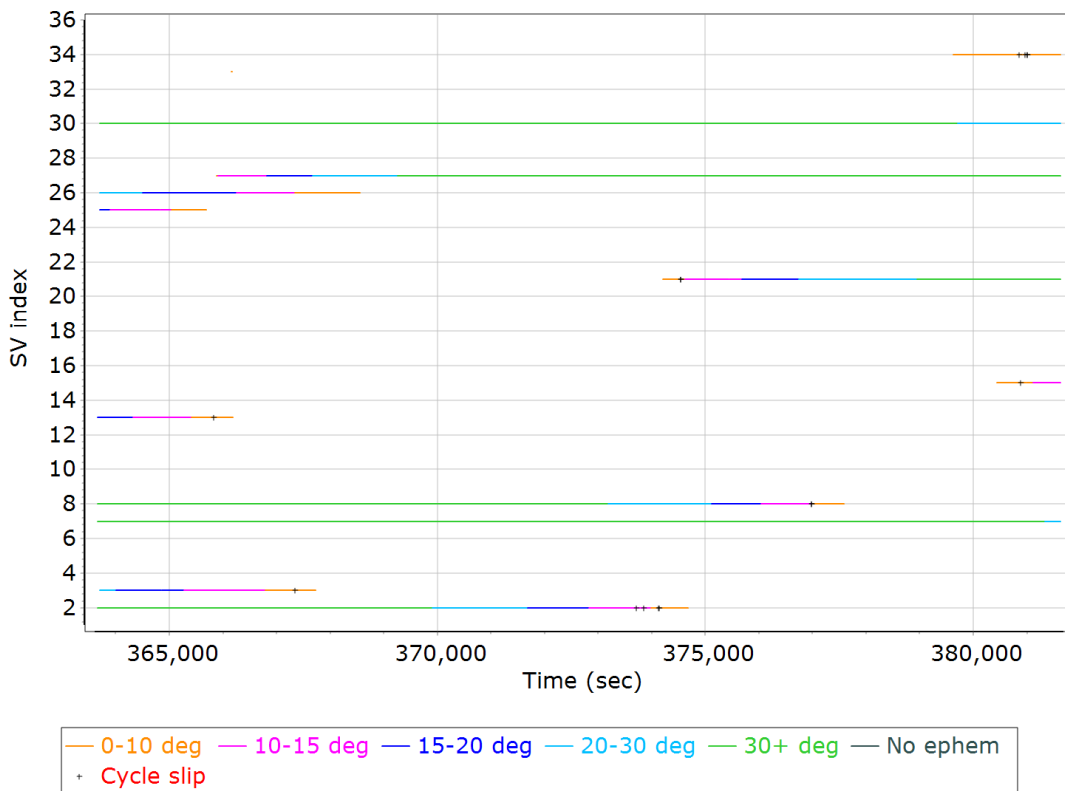
BEIDOU Satellite Lock/Elevation



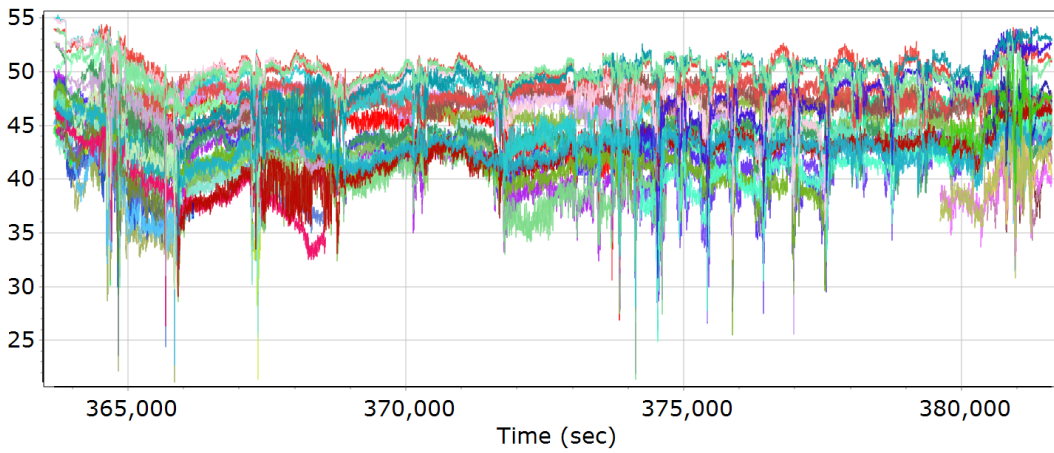
BEIDOU SNR



GALILEO Satellite Lock/Elevation



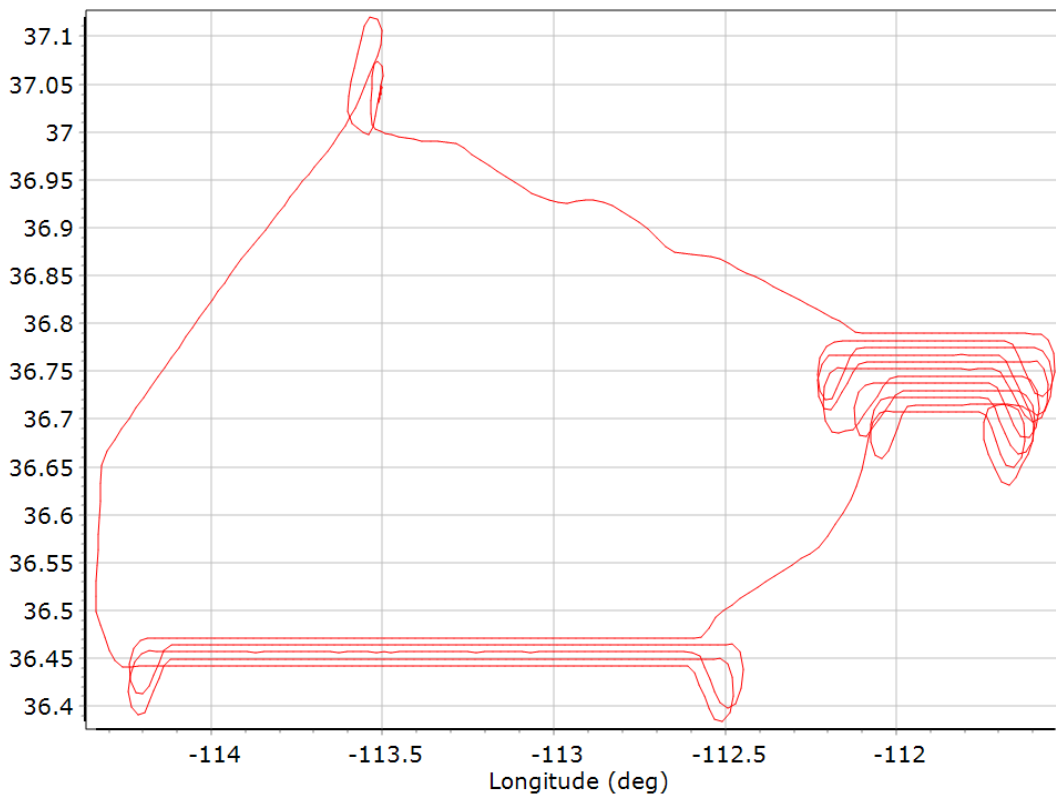
GALILEO SNR



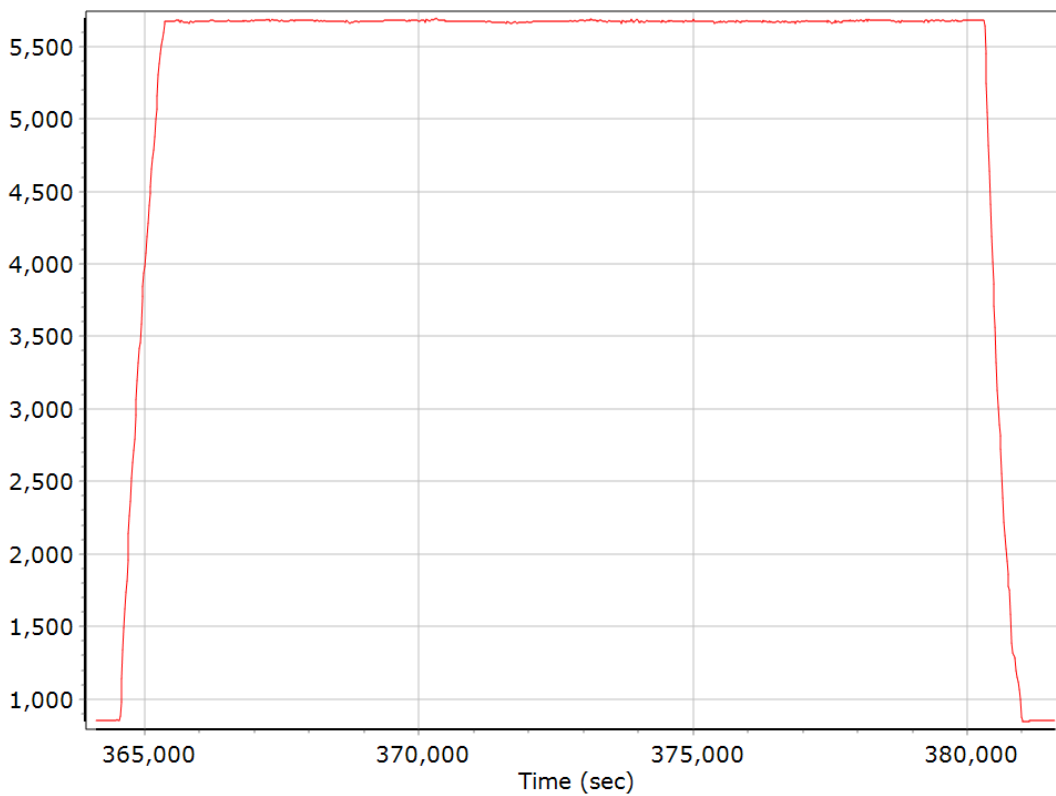
- GALILEO 02 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 03 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 07 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 08 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 13 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 14 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 15 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 19 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 21 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 25 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)

Smoothed Trajectory Information

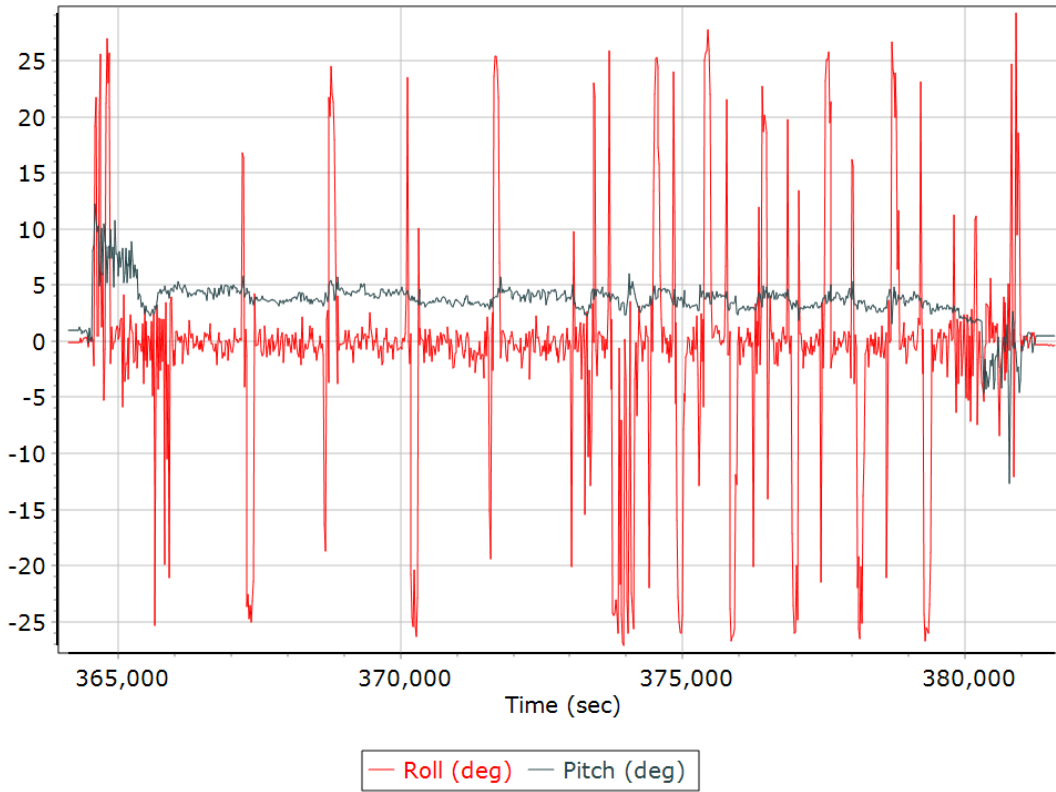
Top View



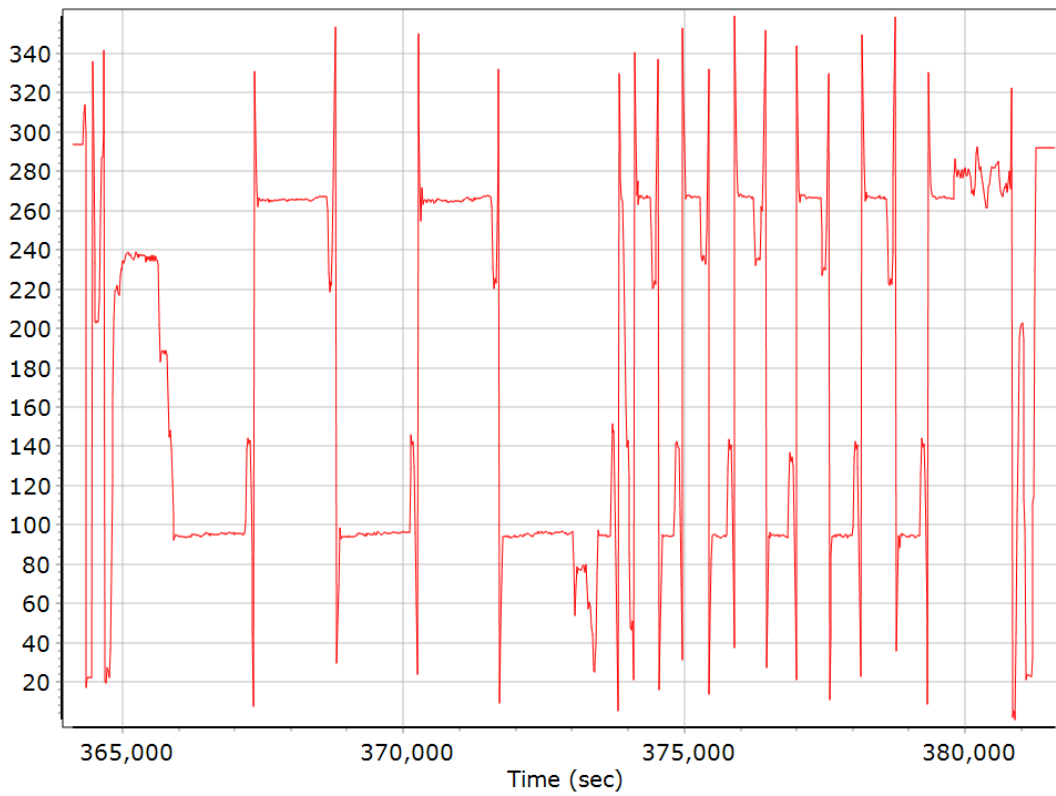
Altitude



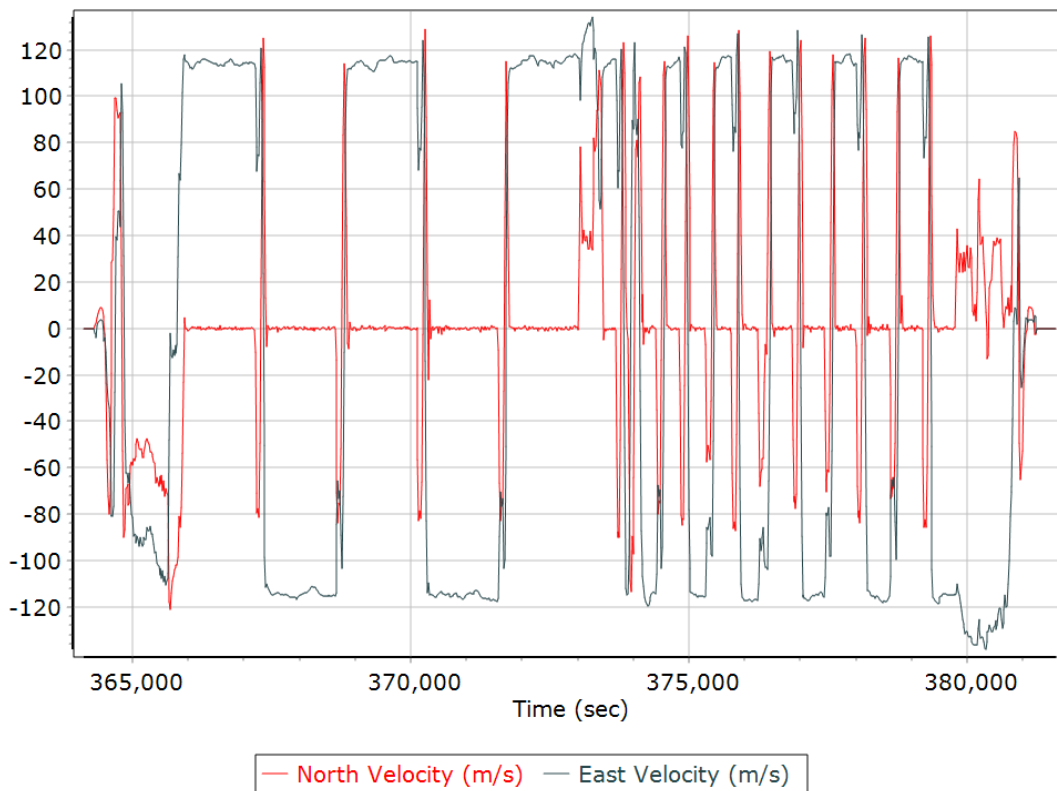
Roll/Pitch



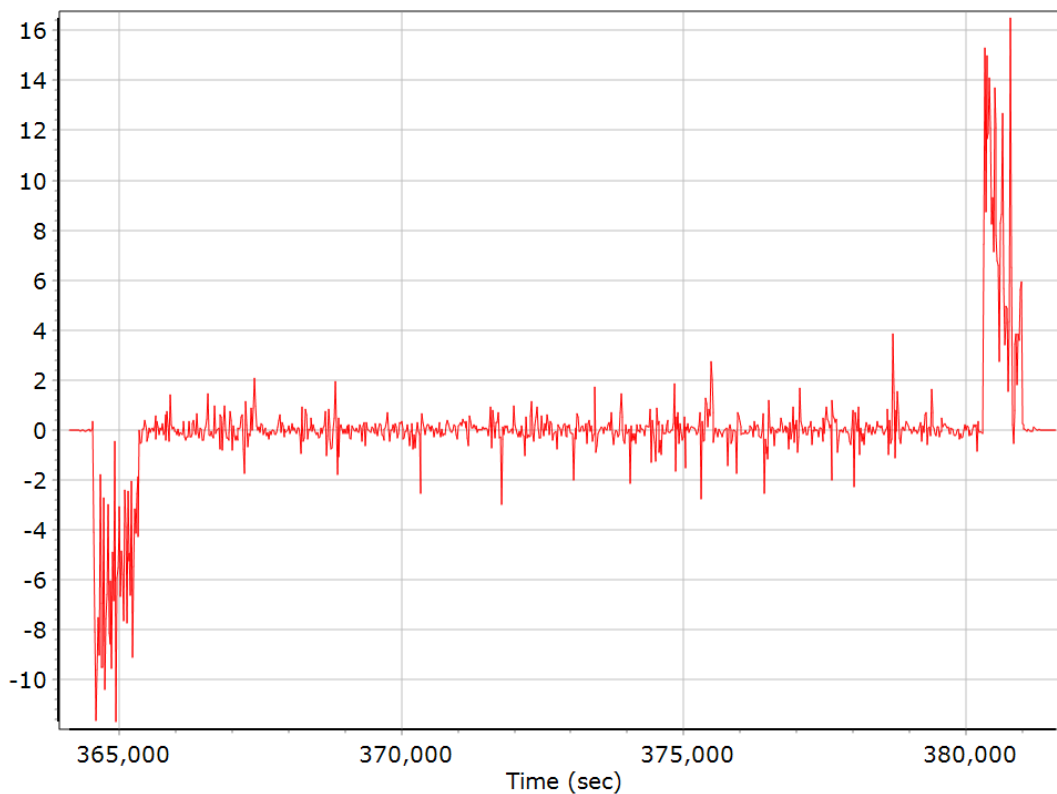
Heading



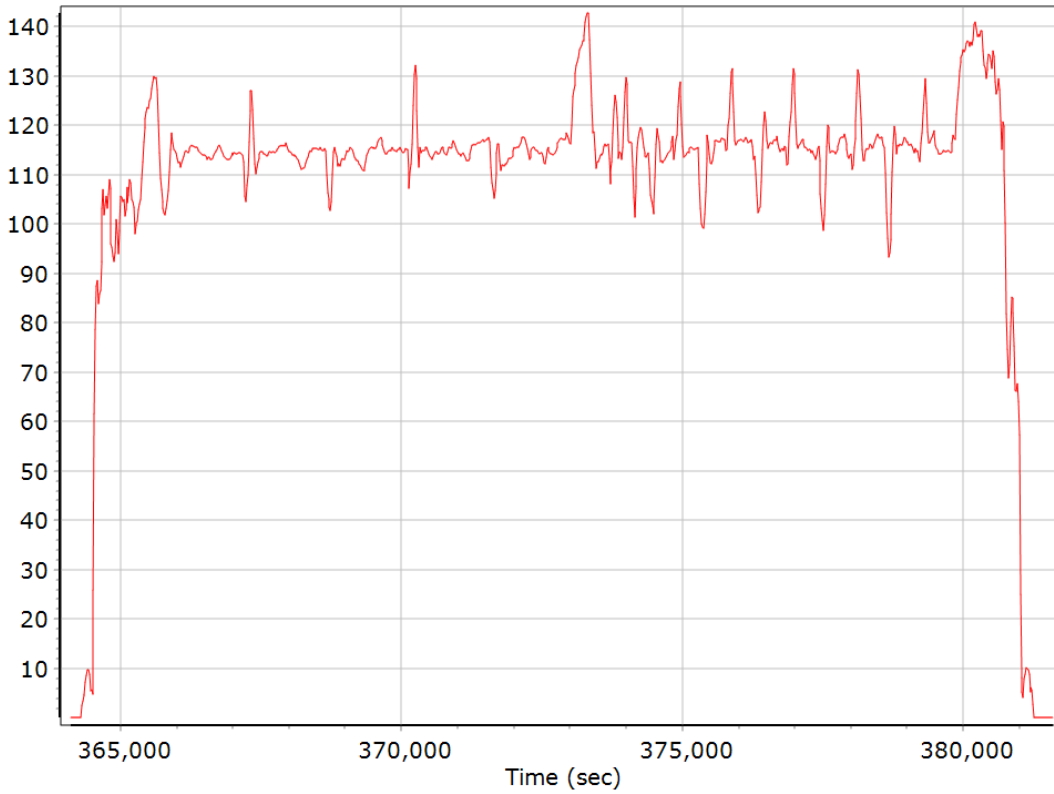
North/East Velocity



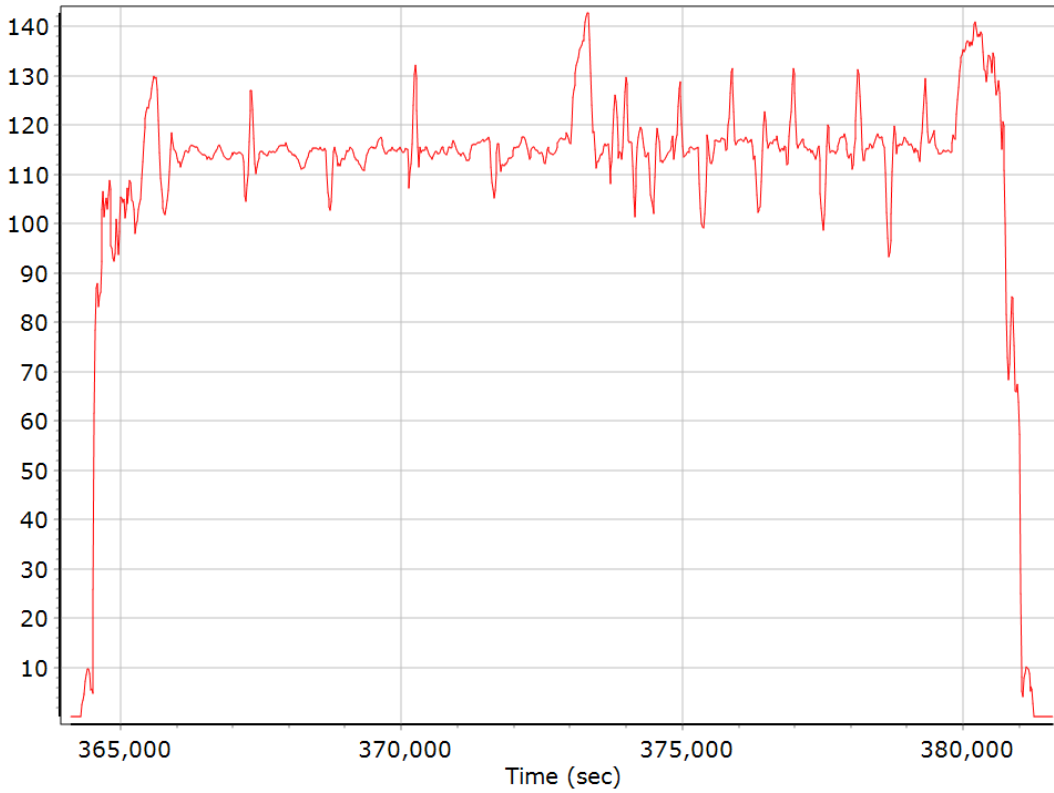
Down Velocity



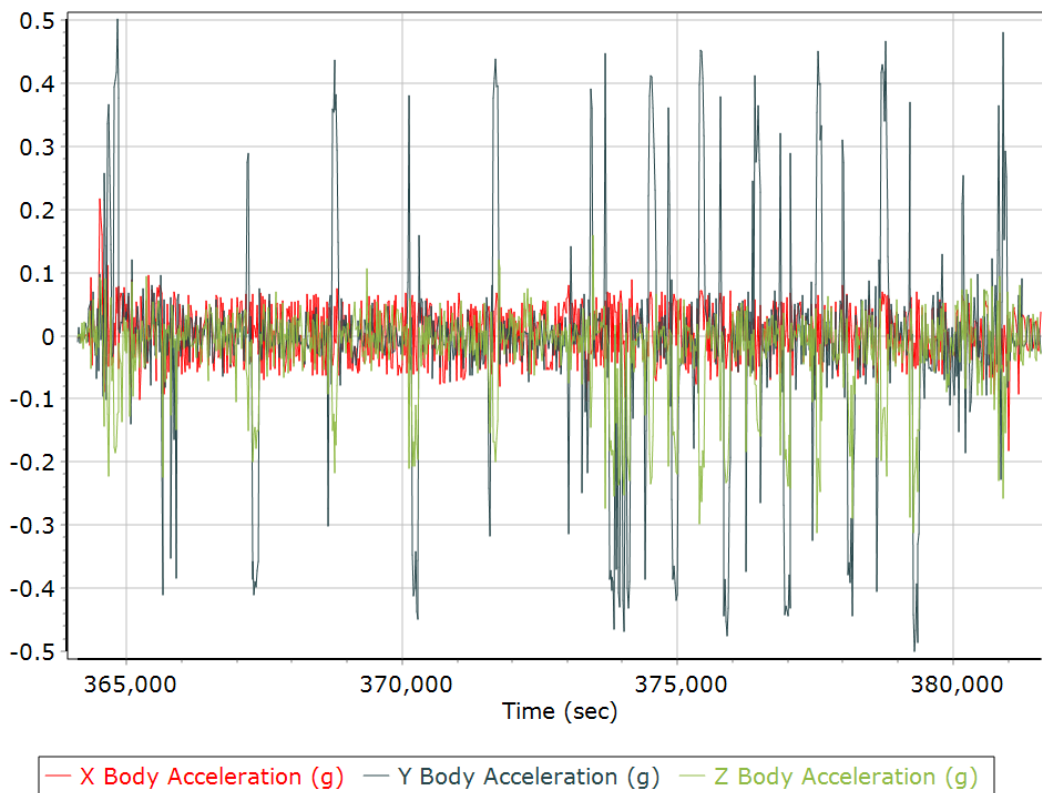
Total Speed



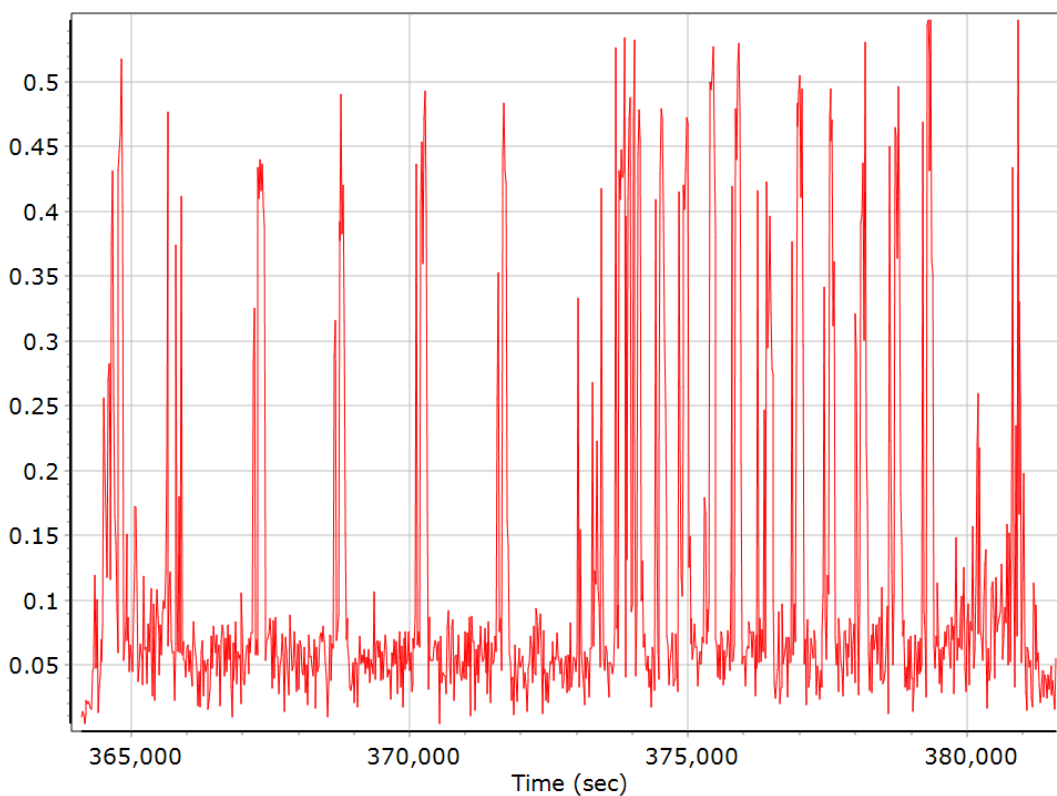
Ground Speed



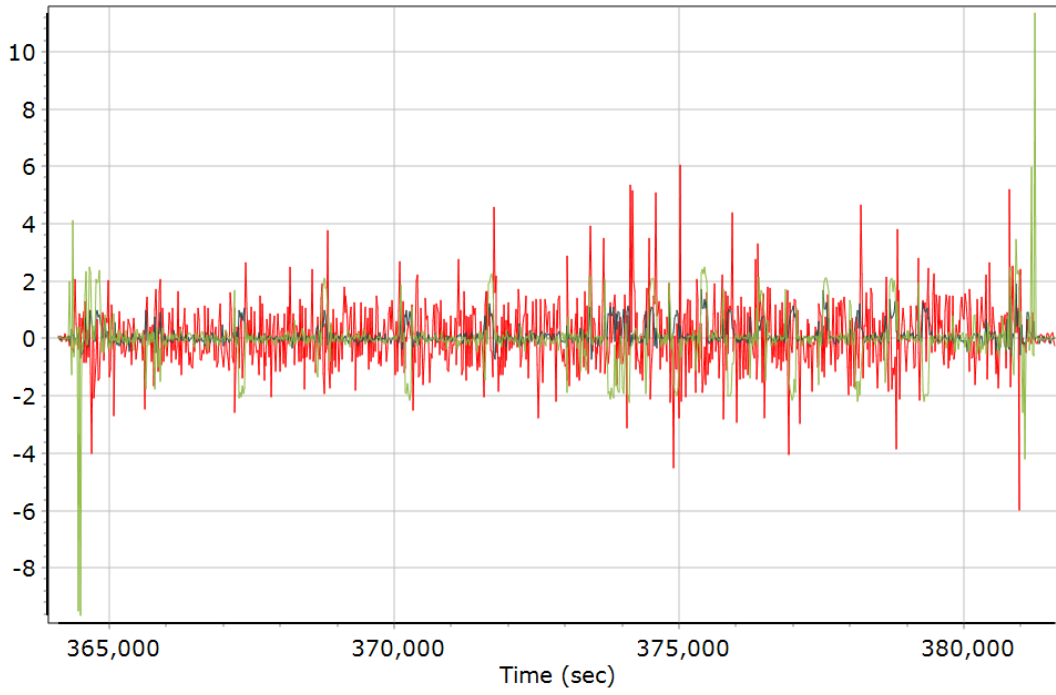
Body Acceleration



Total Body Acceleration



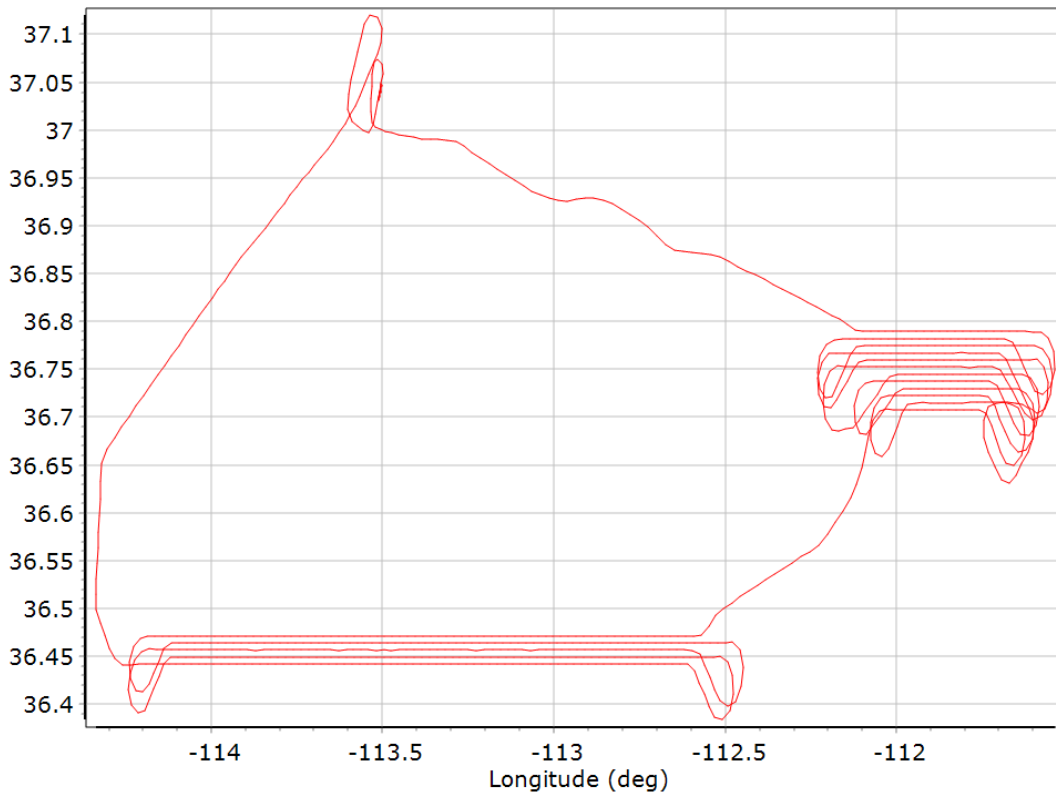
Body Angular Rate



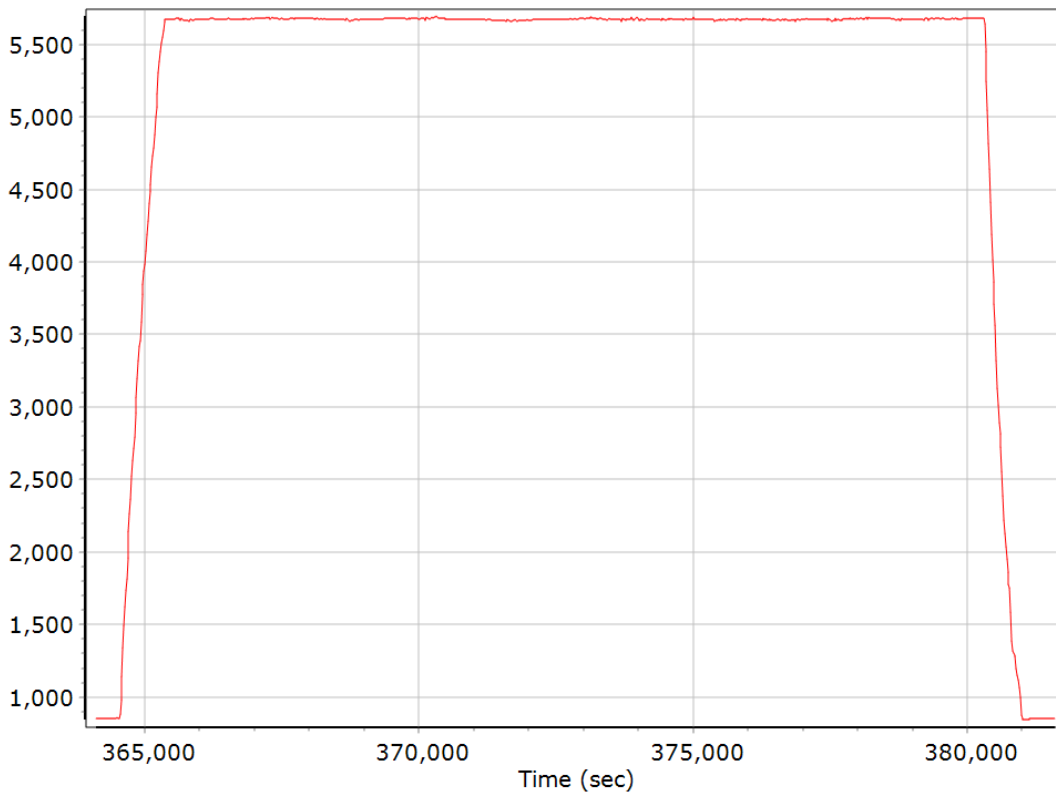
— X Body Angular Rate (deg/sec) — Y Body Angular Rate (deg/sec)
— Z Body Angular Rate (deg/sec)

Forward Processed Trajectory Information

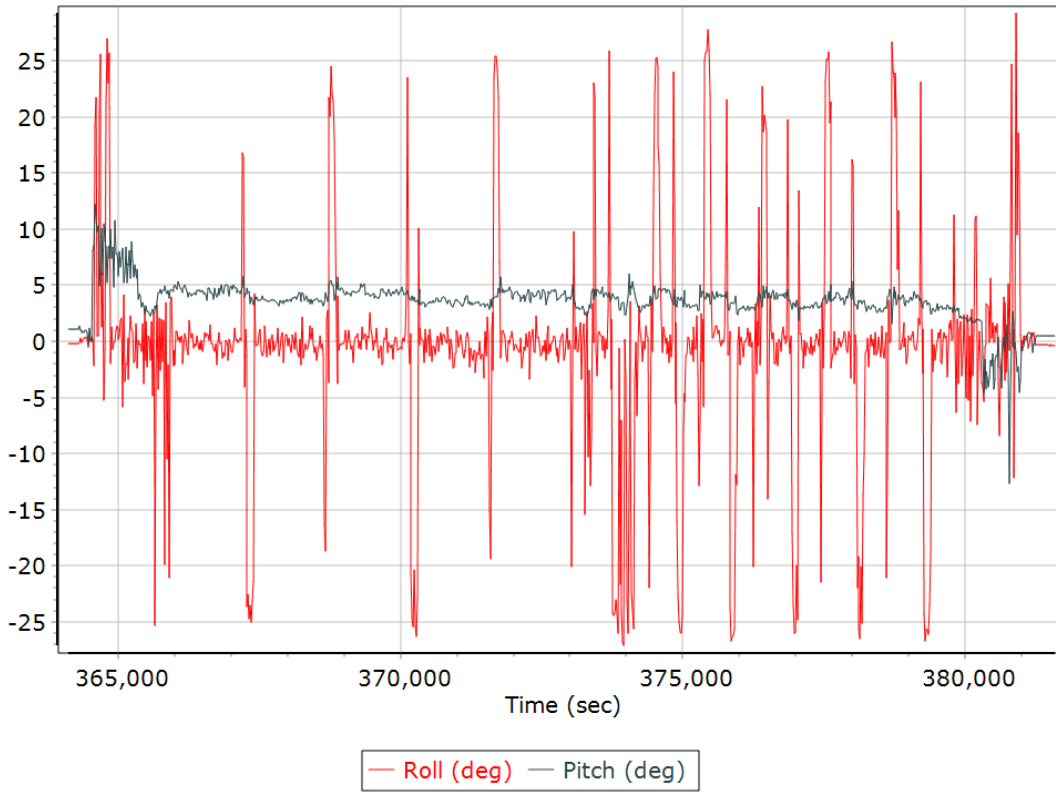
Top View



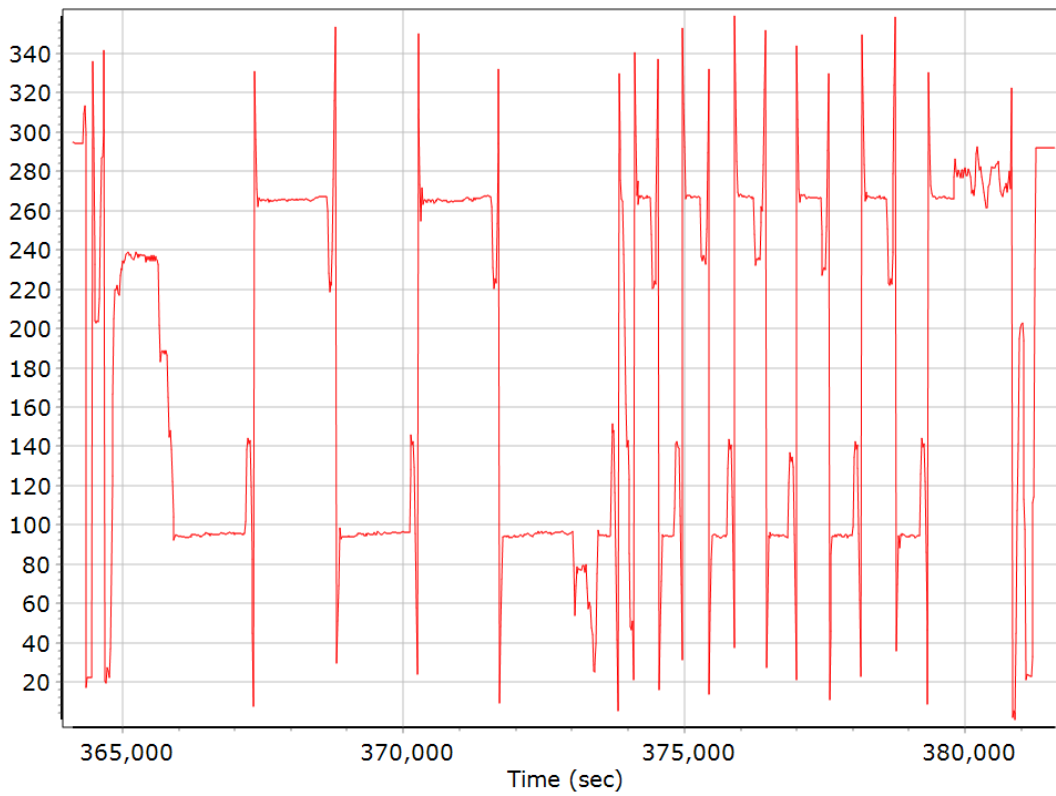
Altitude



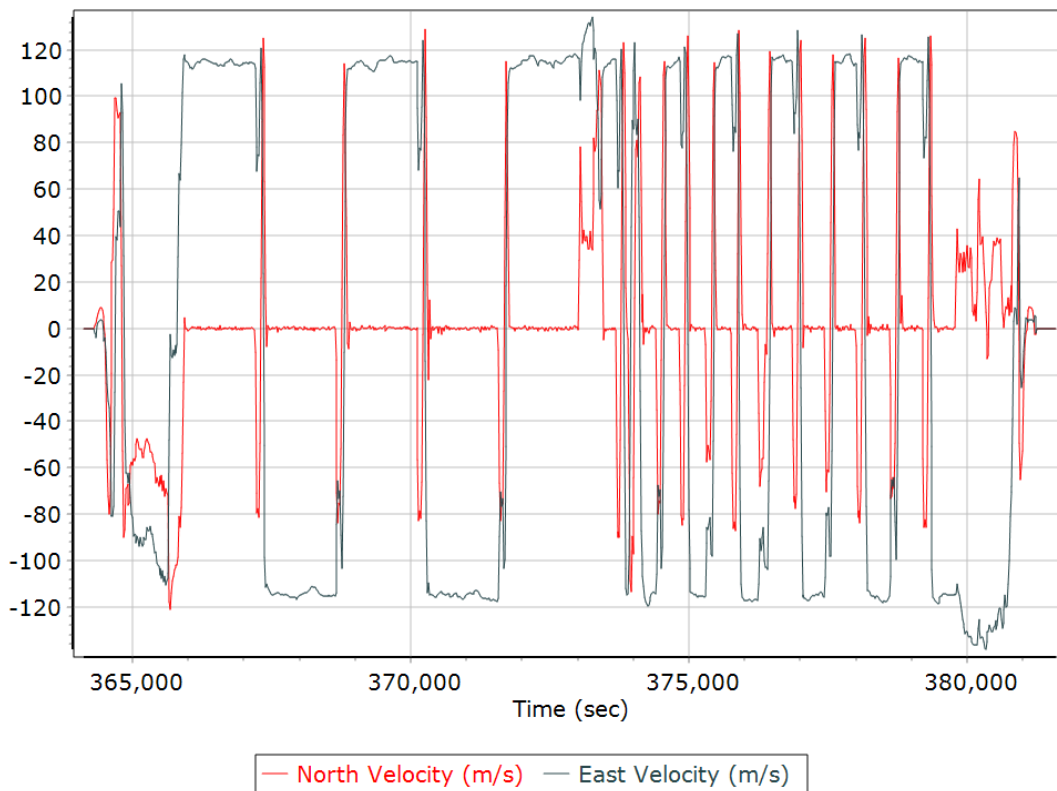
Roll/Pitch



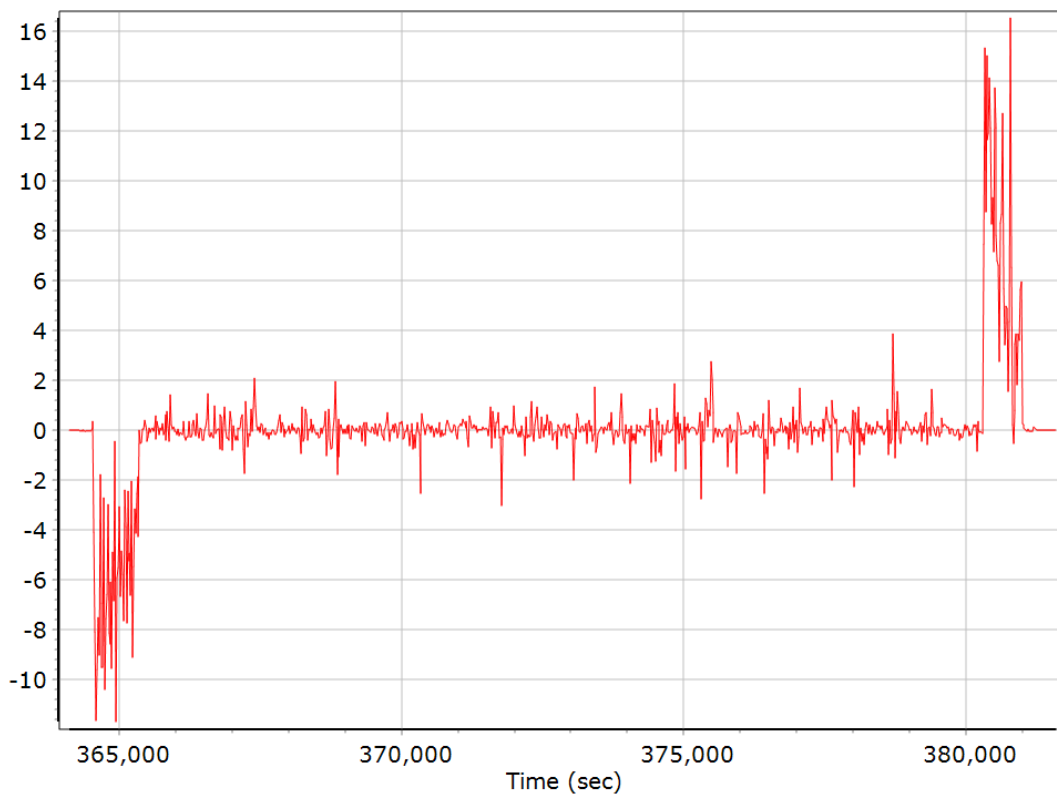
Heading



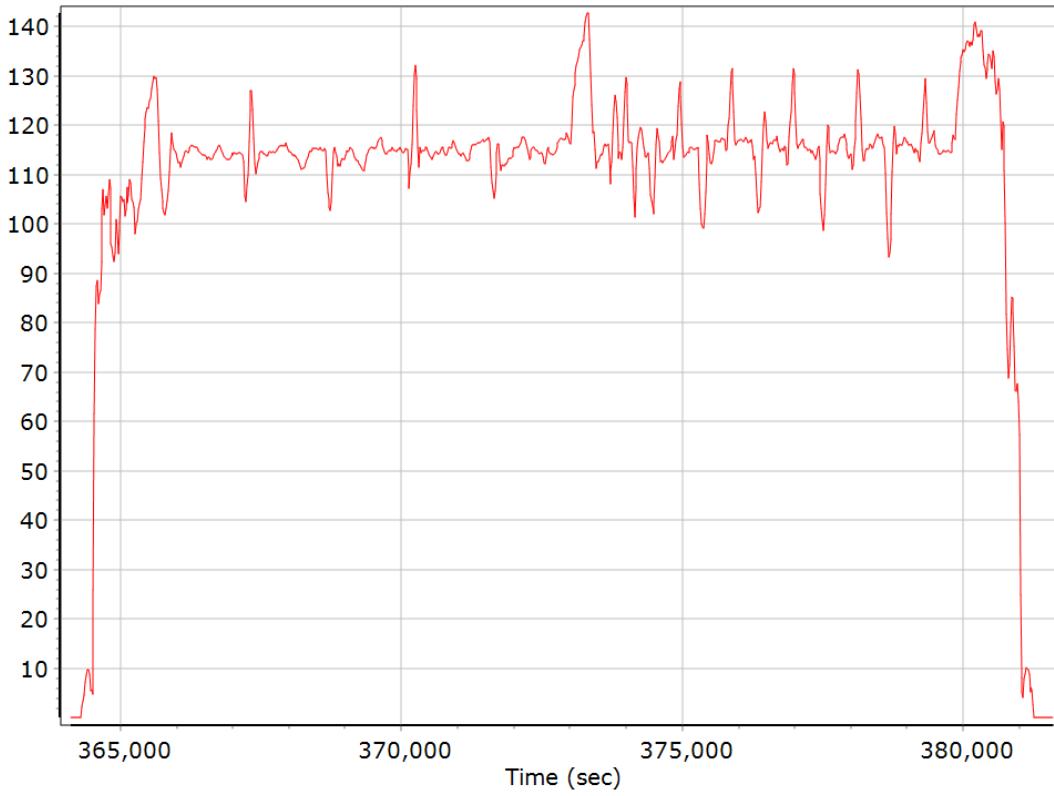
North/East Velocity



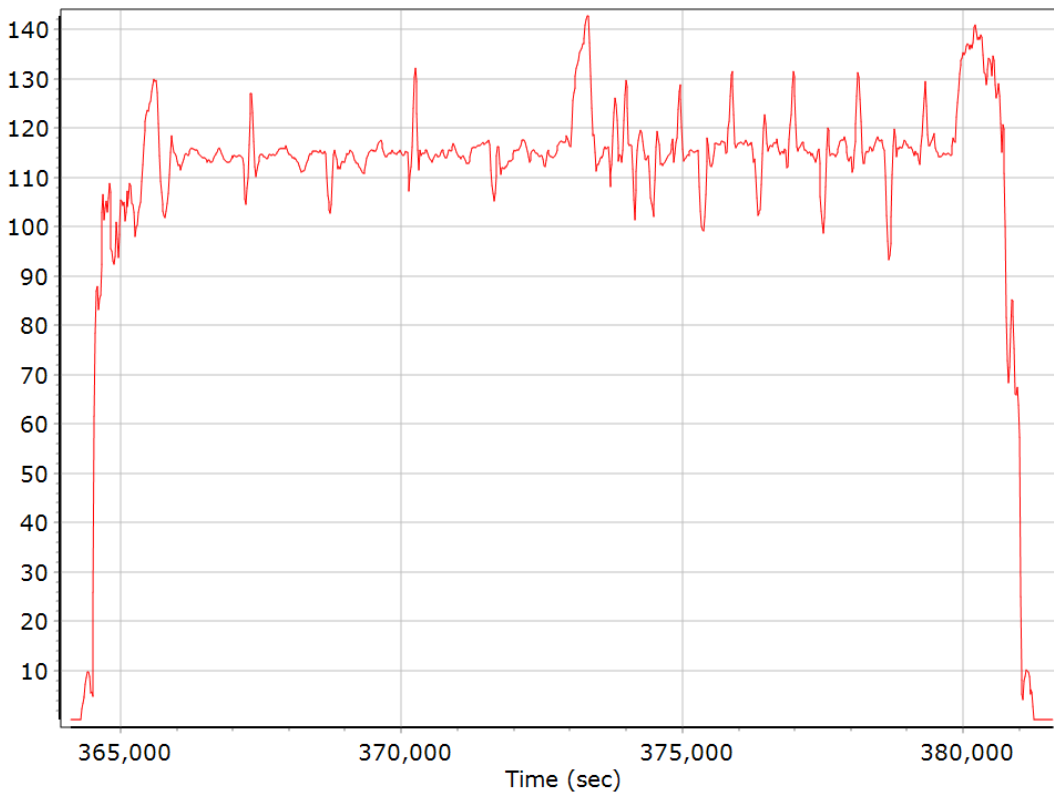
Down Velocity



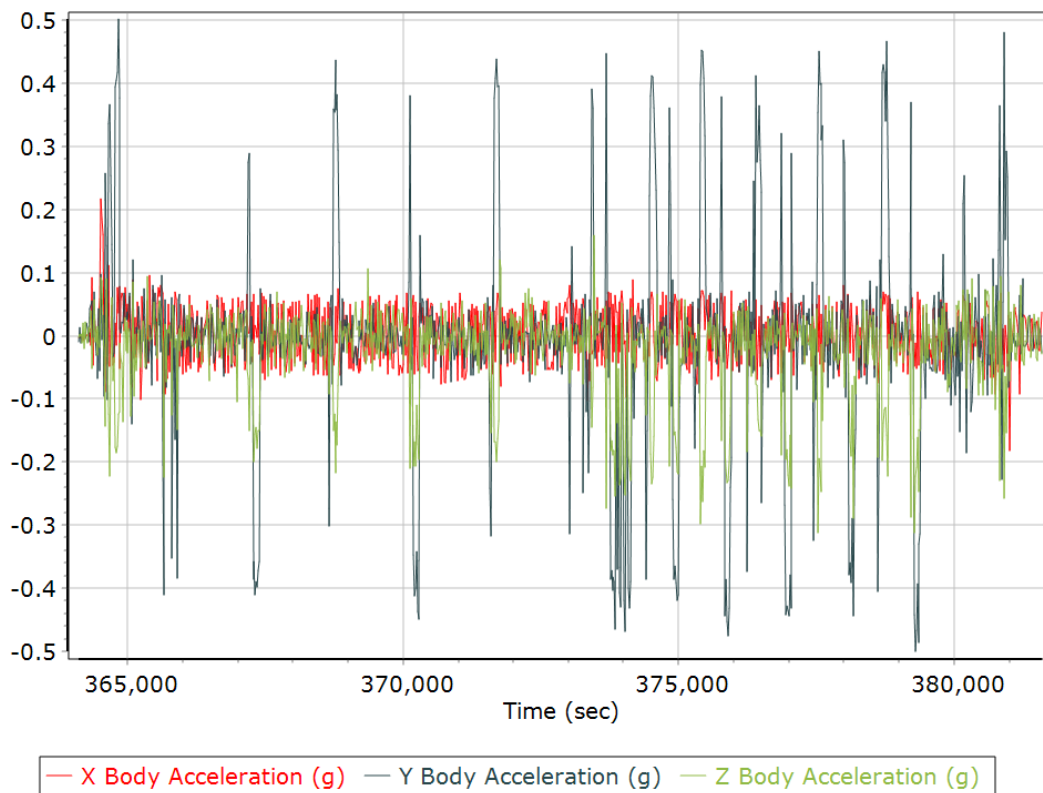
Total Speed



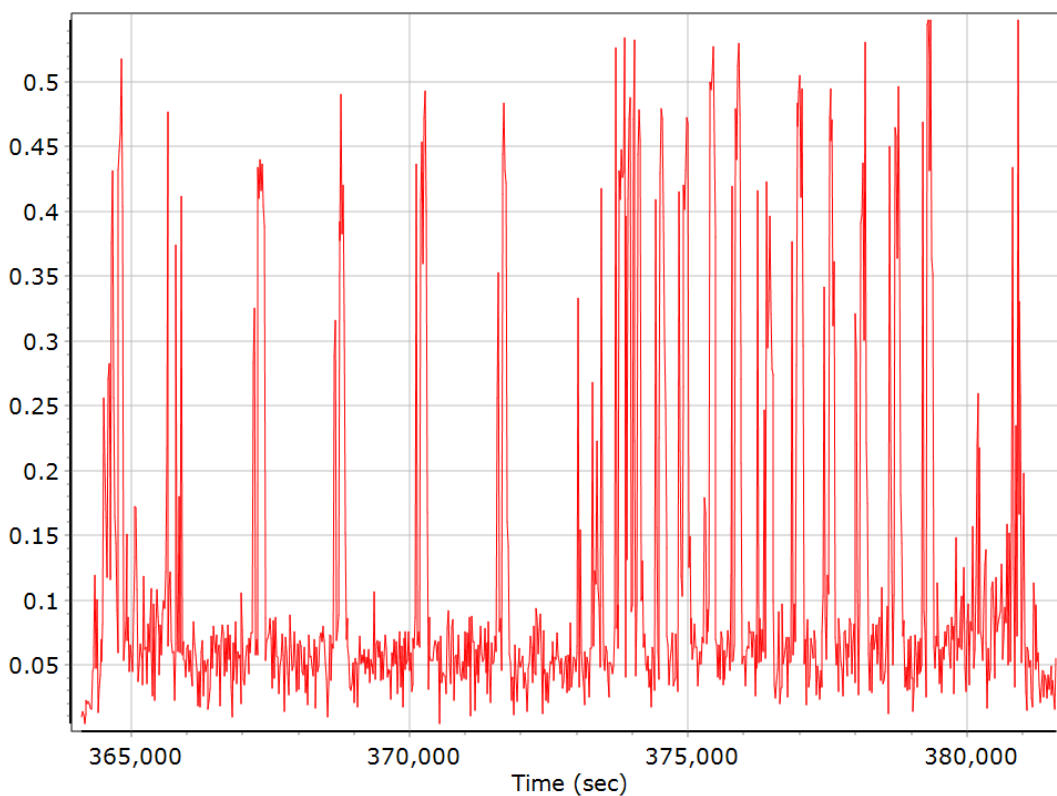
Ground Speed



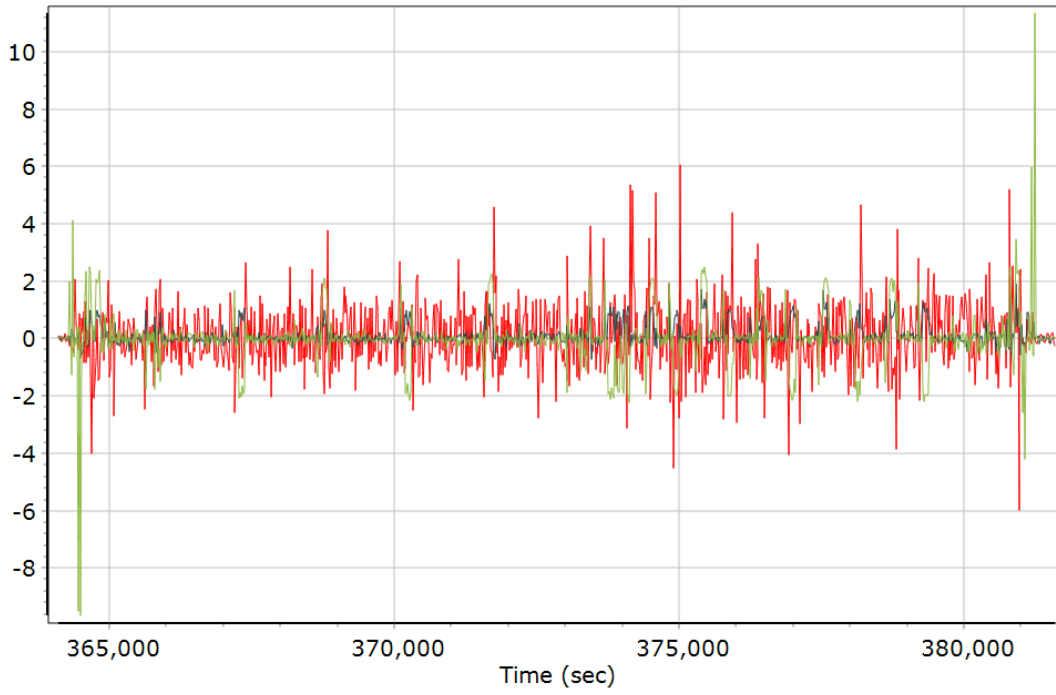
Body Acceleration



Total Body Acceleration



Body Angular Rate



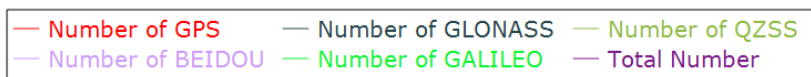
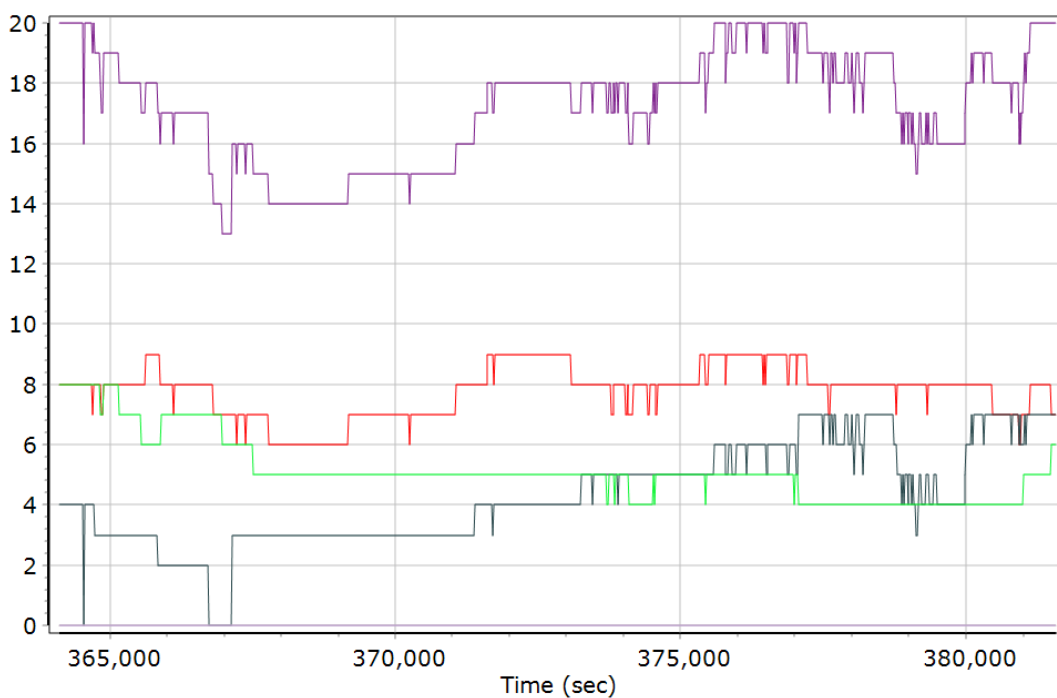
— X Body Angular Rate (deg/sec) — Y Body Angular Rate (deg/sec)
— Z Body Angular Rate (deg/sec)

GNSS QC

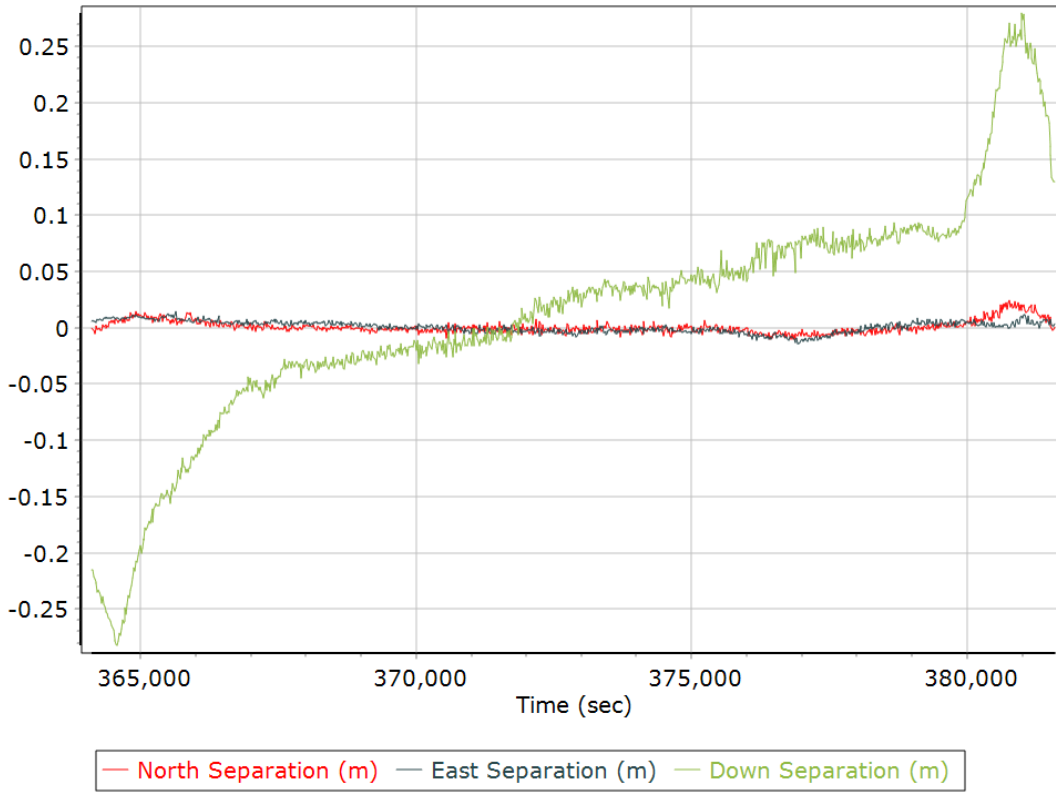
GNSS QC Statistics

Statistics	Min	Max	Mean
Baseline length (km)	0.00	0.00	
Number of GPS SV	6	9	8
Number of GLONASS SV	0	7	4
Number of QZSS SV	0	0	0
Number of BEIDOU SV	0	0	0
Number of GALILEO SV	4	8	5
Total number of SV	13	21	17
PDOP	1.05	1.74	1.27
QC Solution Gaps	0.00	0.00	
Solution Type	Fixed	Float	No solution
Epoch (sec)	17915.00	0.00	0.00
Percentage	100.00	0.00	0.00

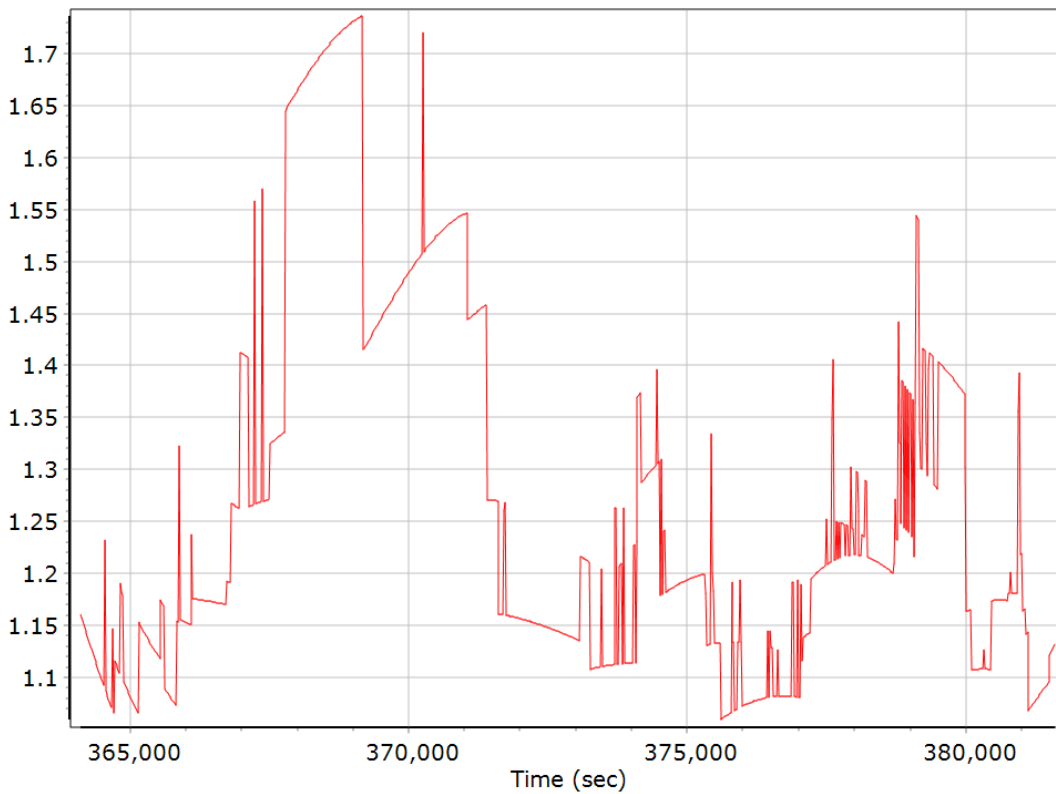
Num SVs in solution



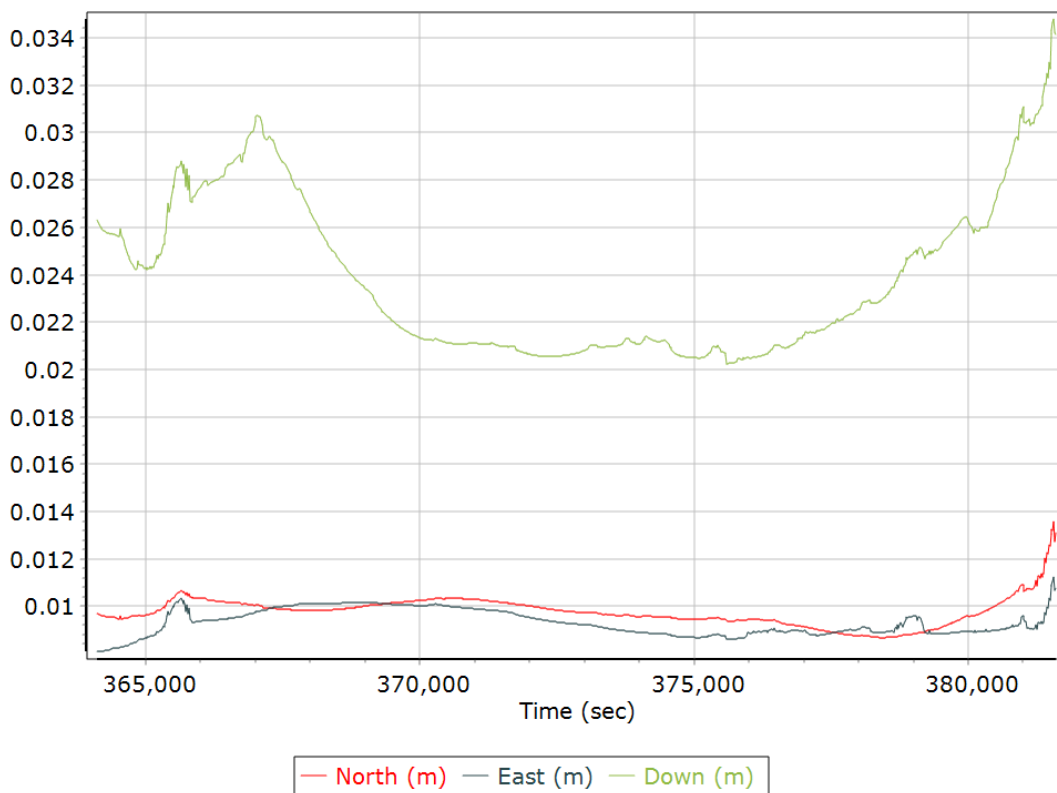
Forward/Reverse Separation



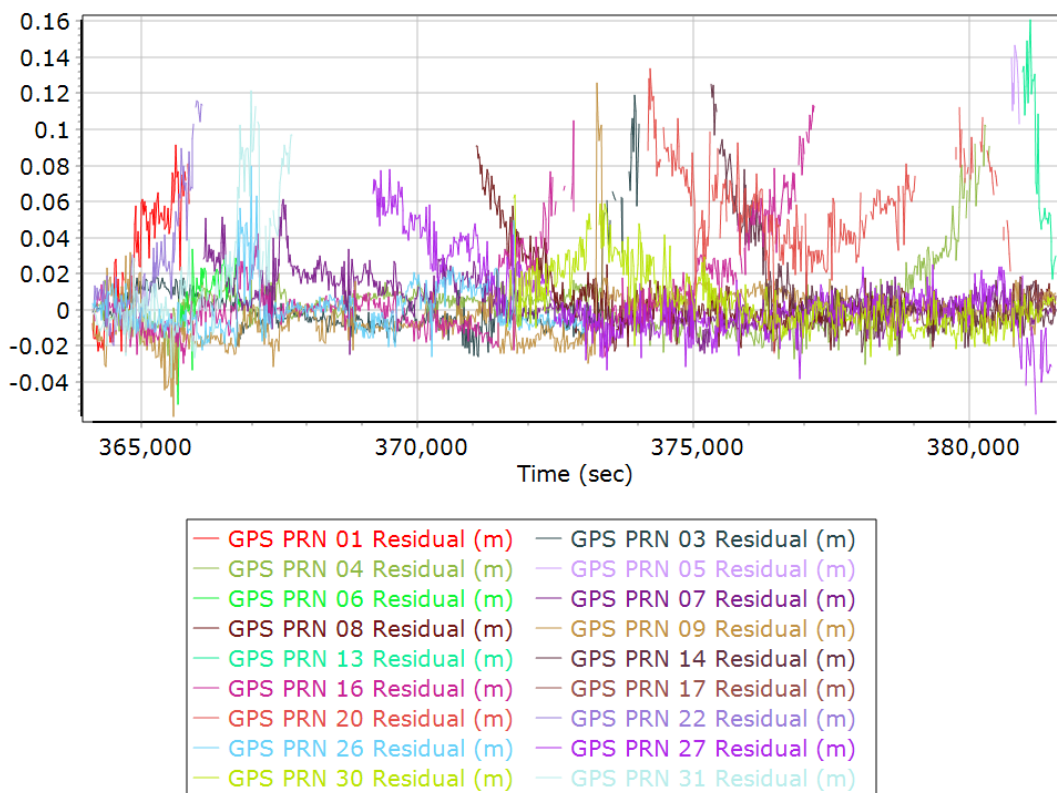
PDOP



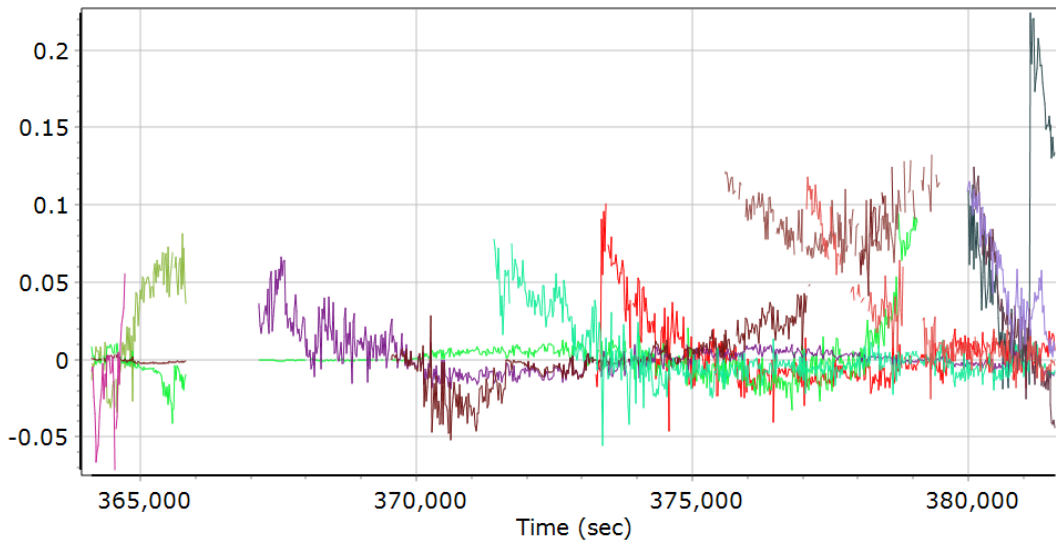
Estimated Position Accuracy



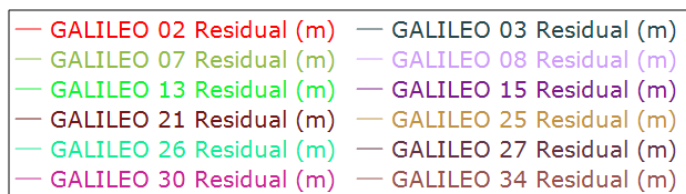
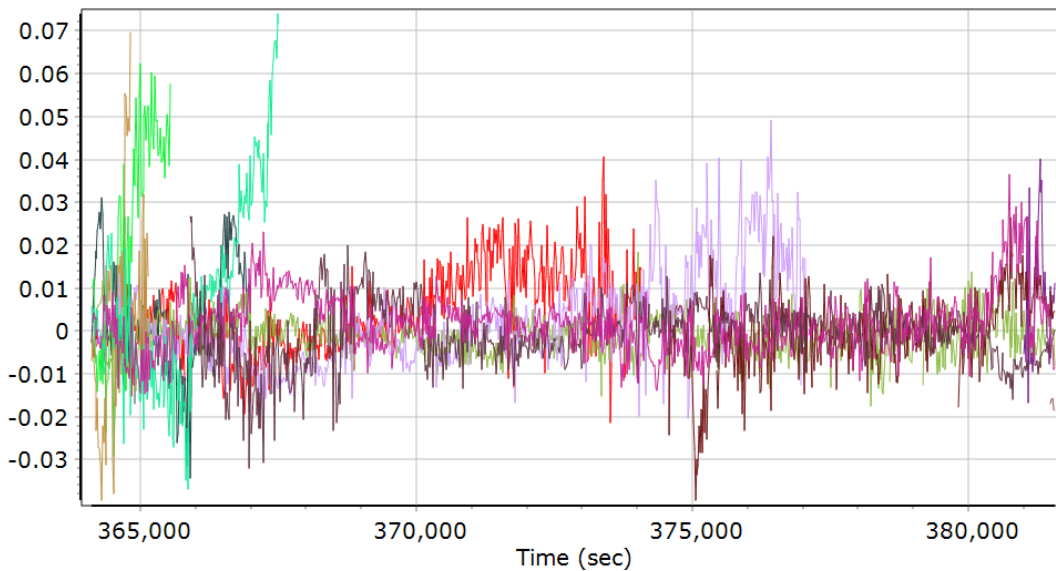
GPS Residuals



GLONASS Residuals



GALILEO Residuals



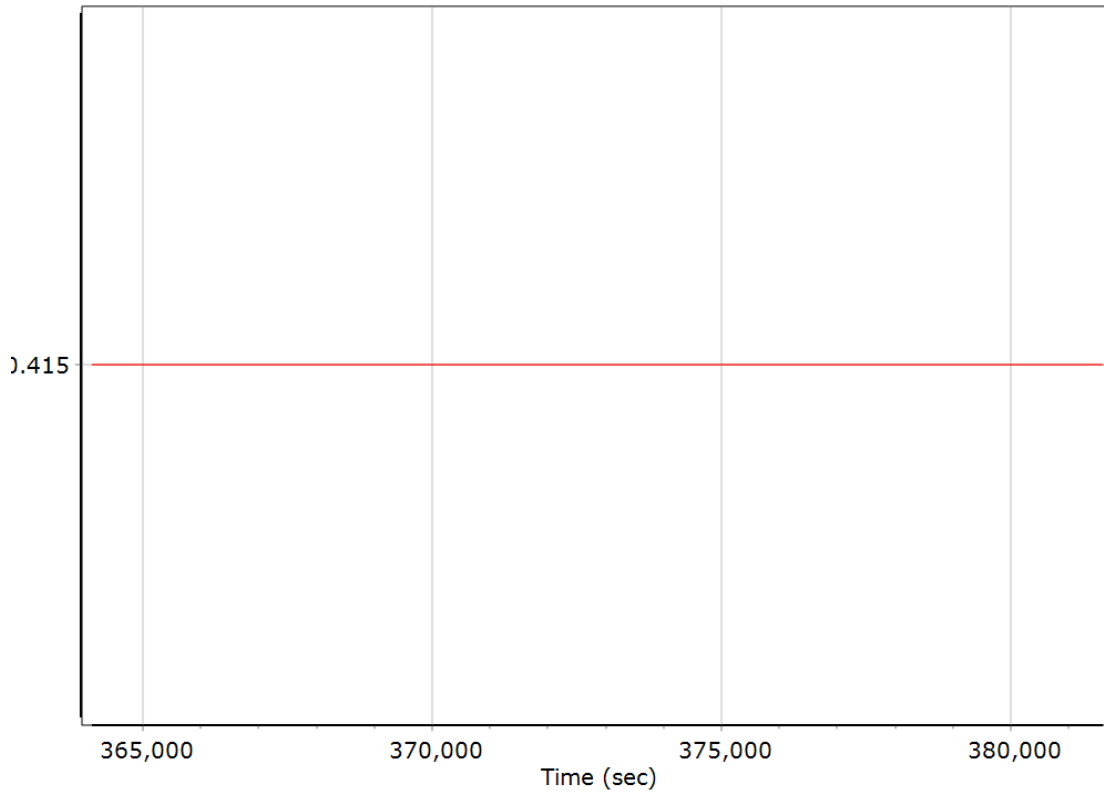
GNSS-Inertial Processor Configuration

Processing mode	IN-Fusion PP-RTX		
Stabilized mount	False		
Processing start time	363649.000 (7/7/2022 5:00:49 AM)		
Processing end time	381605.000 (7/7/2022 10:00:05 AM)		
Initial attitude source	Real-Time VNAV/RNAV Attitude		
IMU Sensor Context	Processing with Onboard IMU		
Reference to IMU lever arm (m)	0.000	0.000	0.000
Reference to IMU mounting angles (deg)	0.000	0.000	0.000
Reference to Primary GNSS lever arm (m)	-0.415	-0.285	-1.274
Reference 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

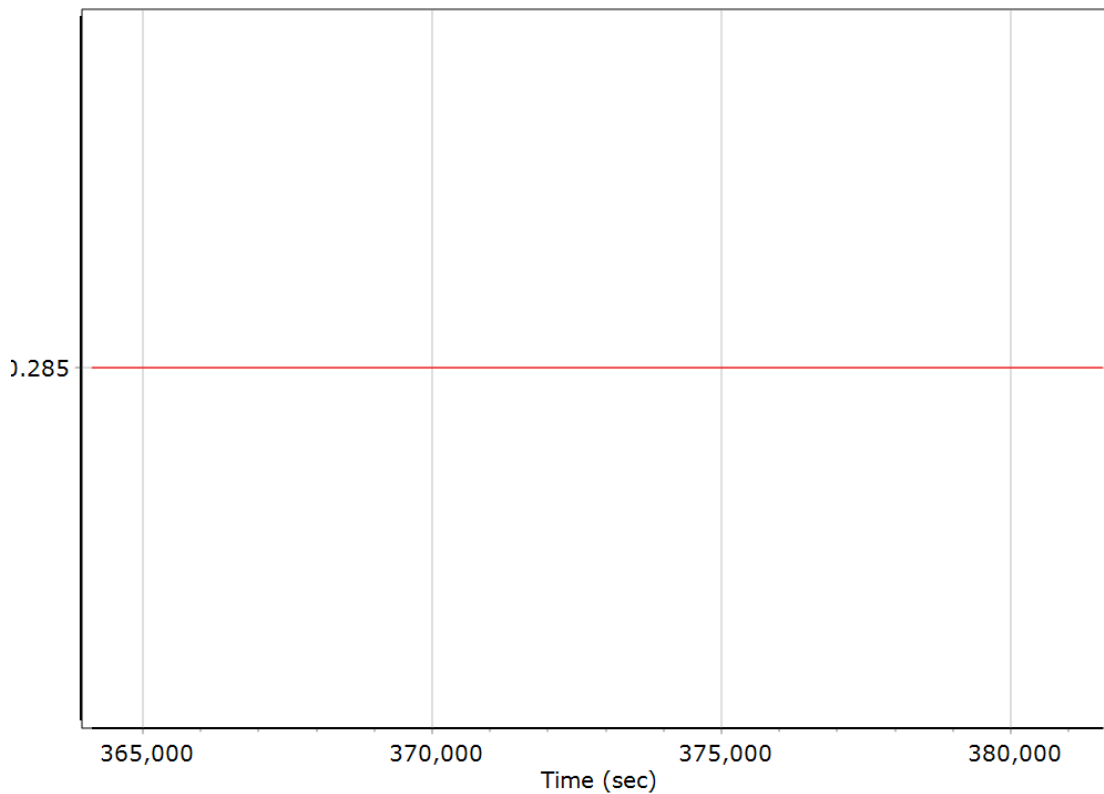
Calibrated Installation Parameters

Reference-Primary GNSS Lever Arm (m)

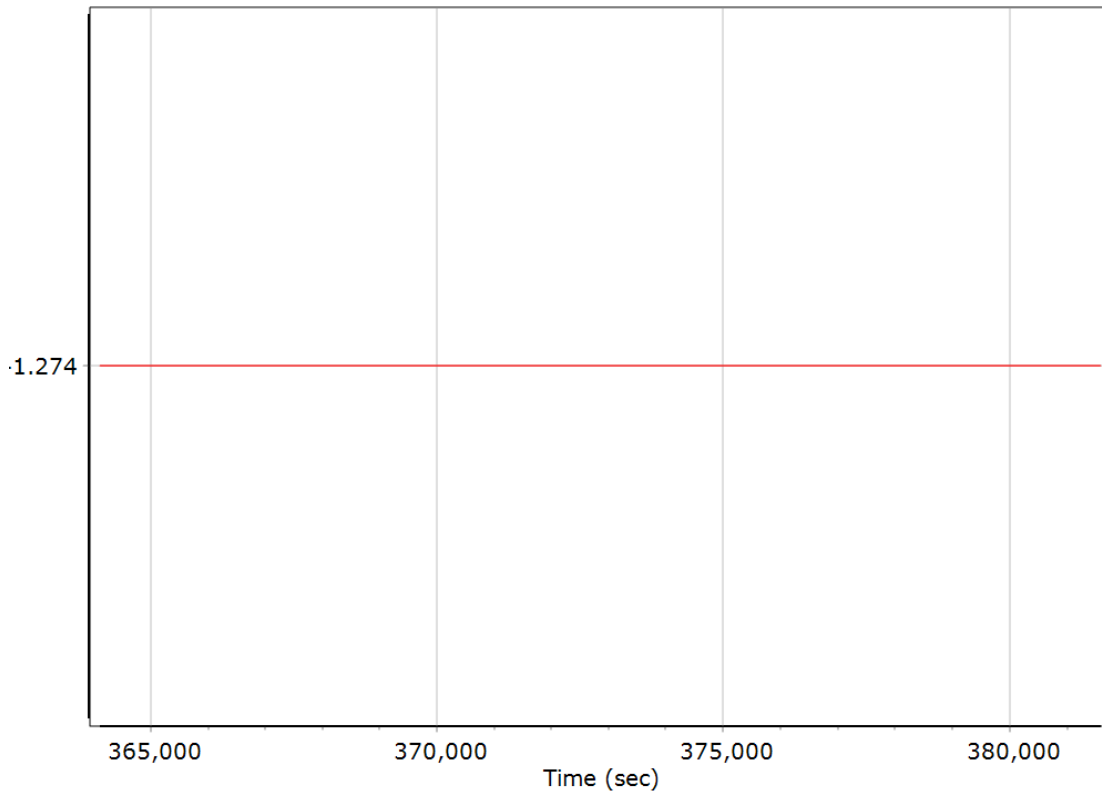
X Reference-Primary GNSS Lever Arm (m)



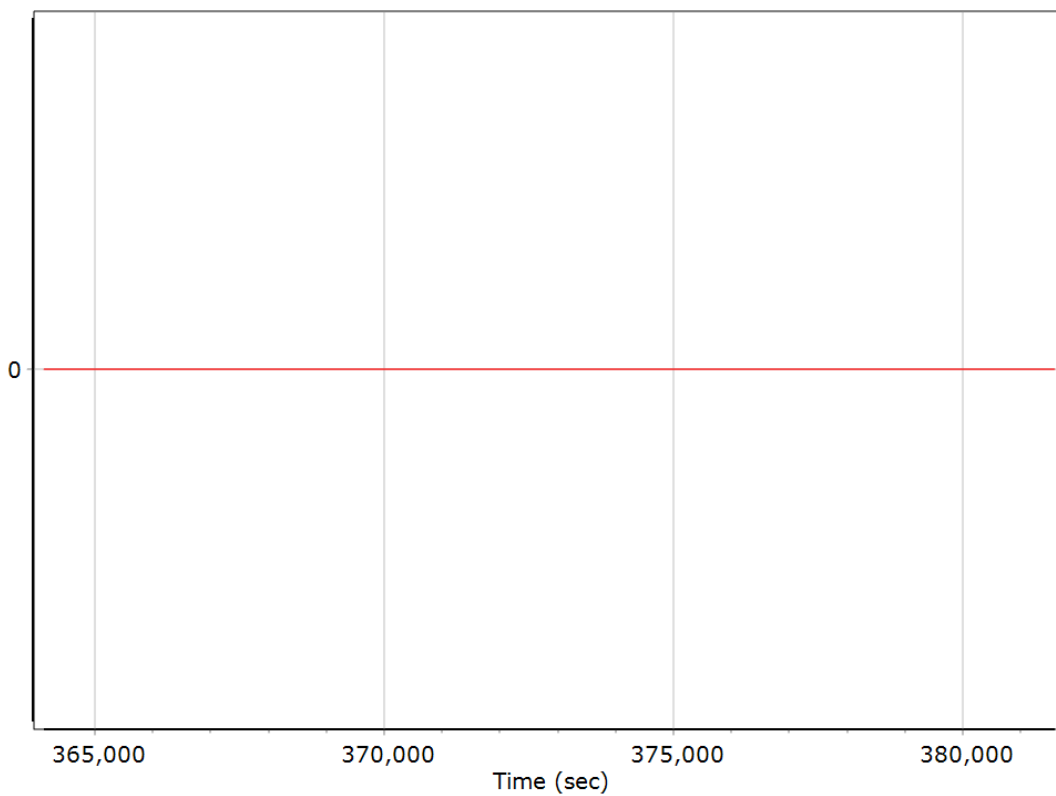
Y Reference-Primary GNSS Lever Arm (m)



Z Reference-Primary GNSS Lever Arm (m)



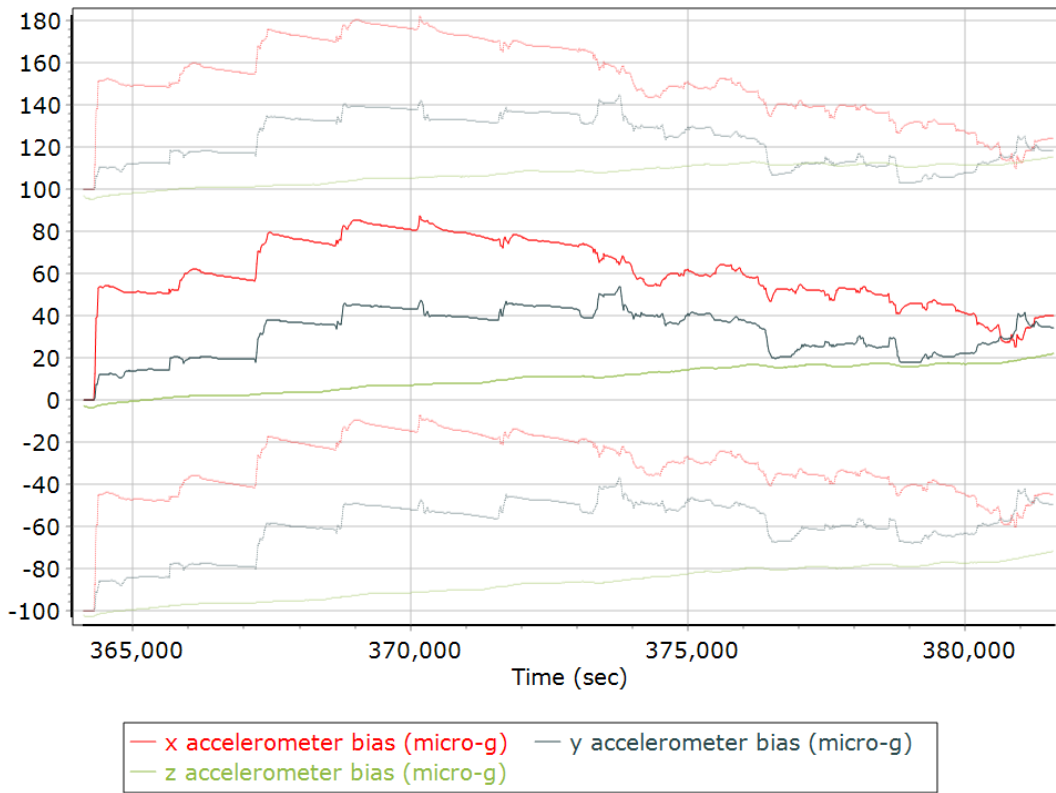
Reference-Primary GNSS Lever Arm Figure of Merit



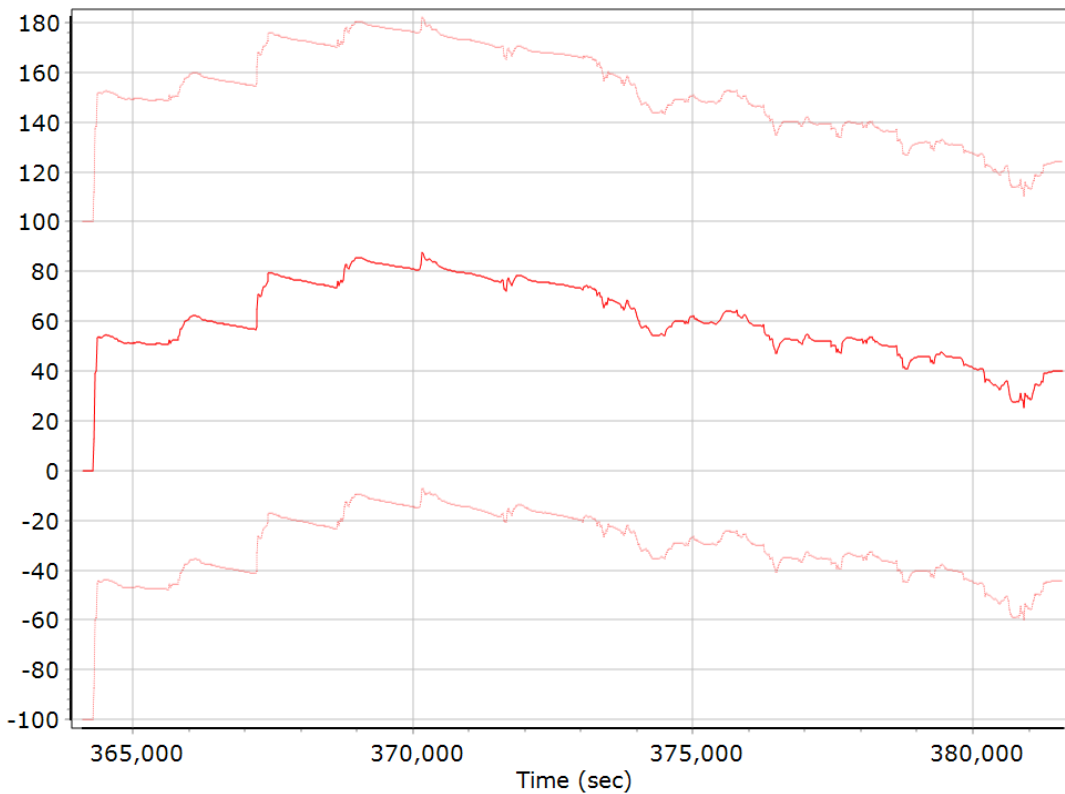
IN-Fusion QC

Forward Processed Estimated Errors, Reference Frame

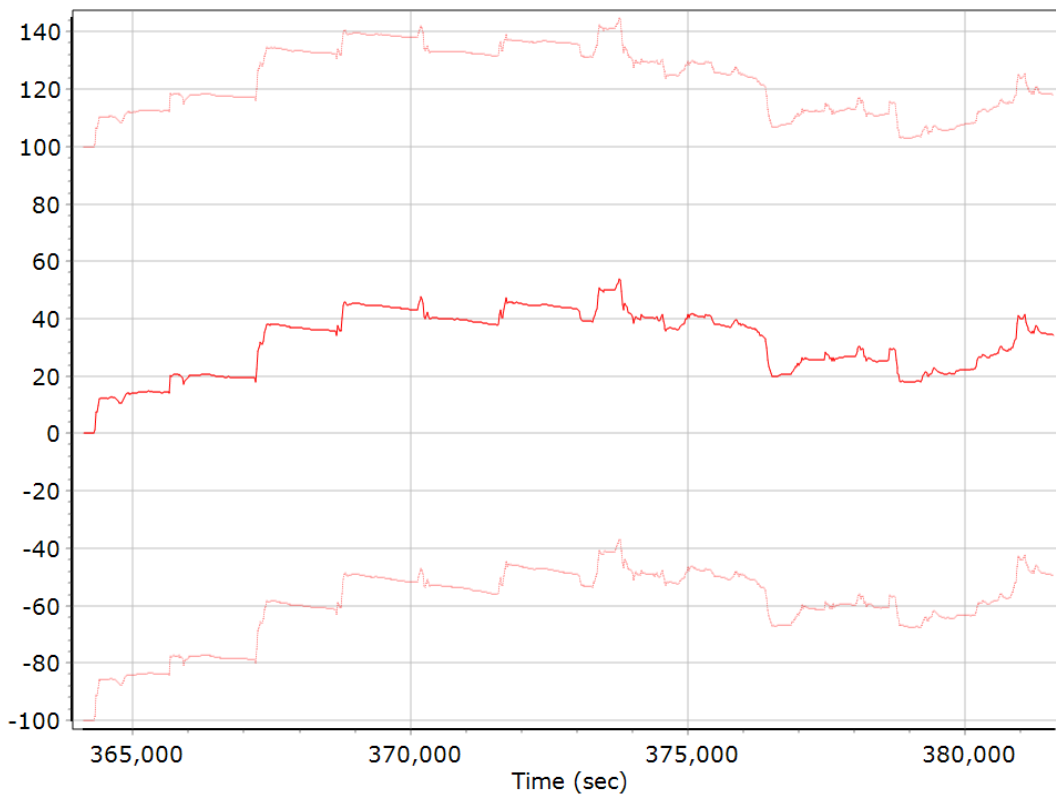
Accelerometer Bias (micro-g)



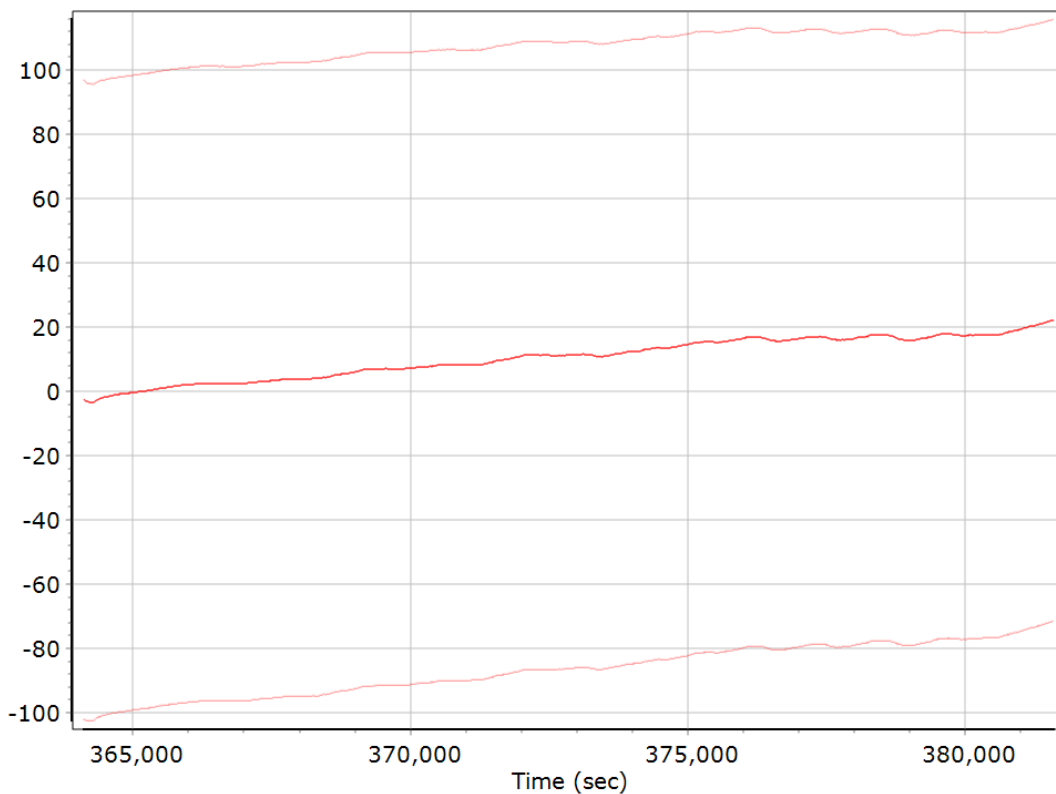
X Accelerometer Bias (micro-g)



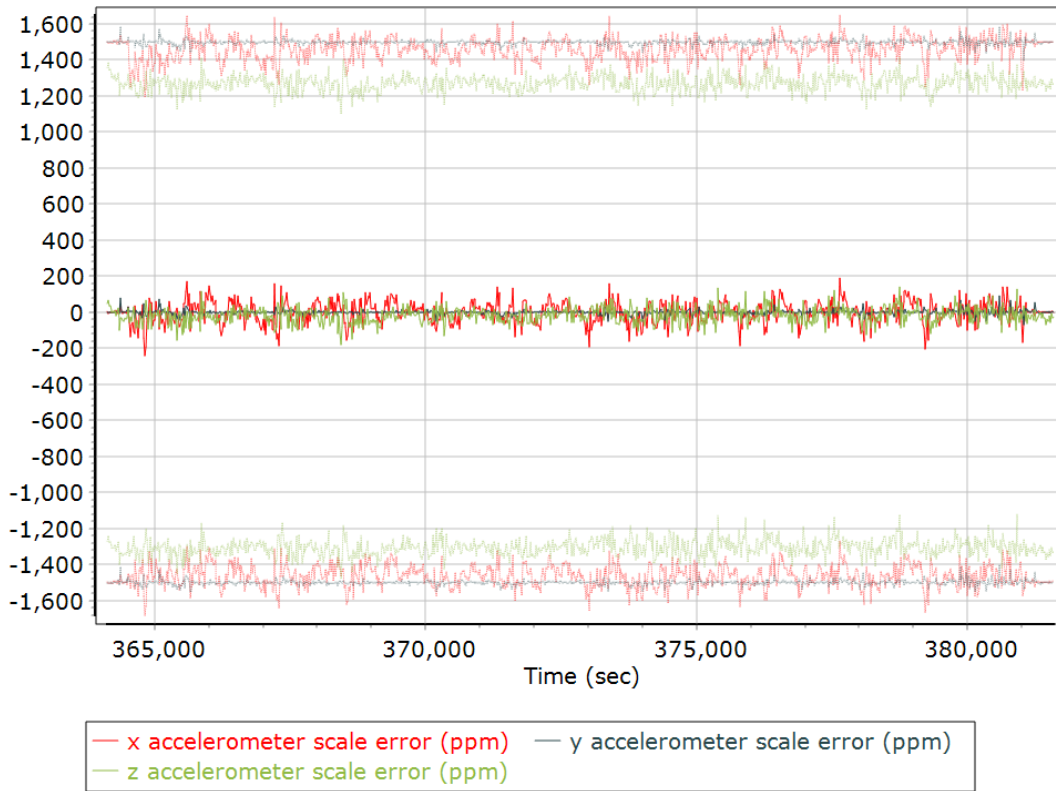
Y Accelerometer Bias (micro-g)



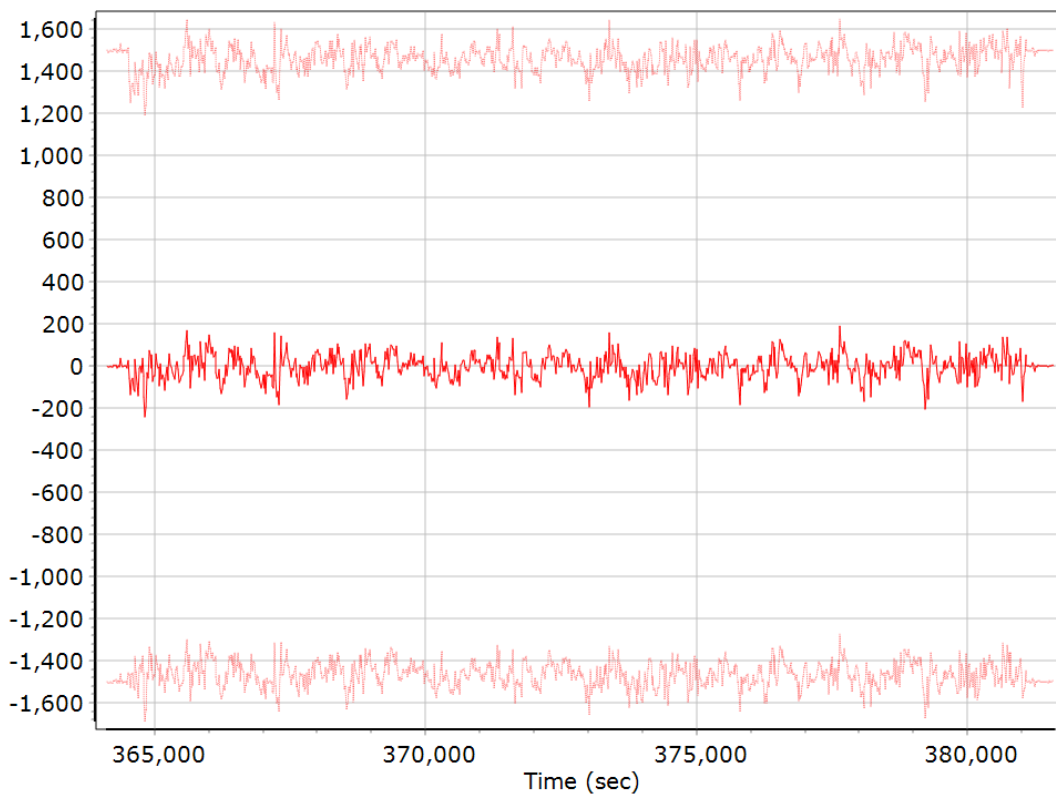
Z Accelerometer Bias (micro-g)



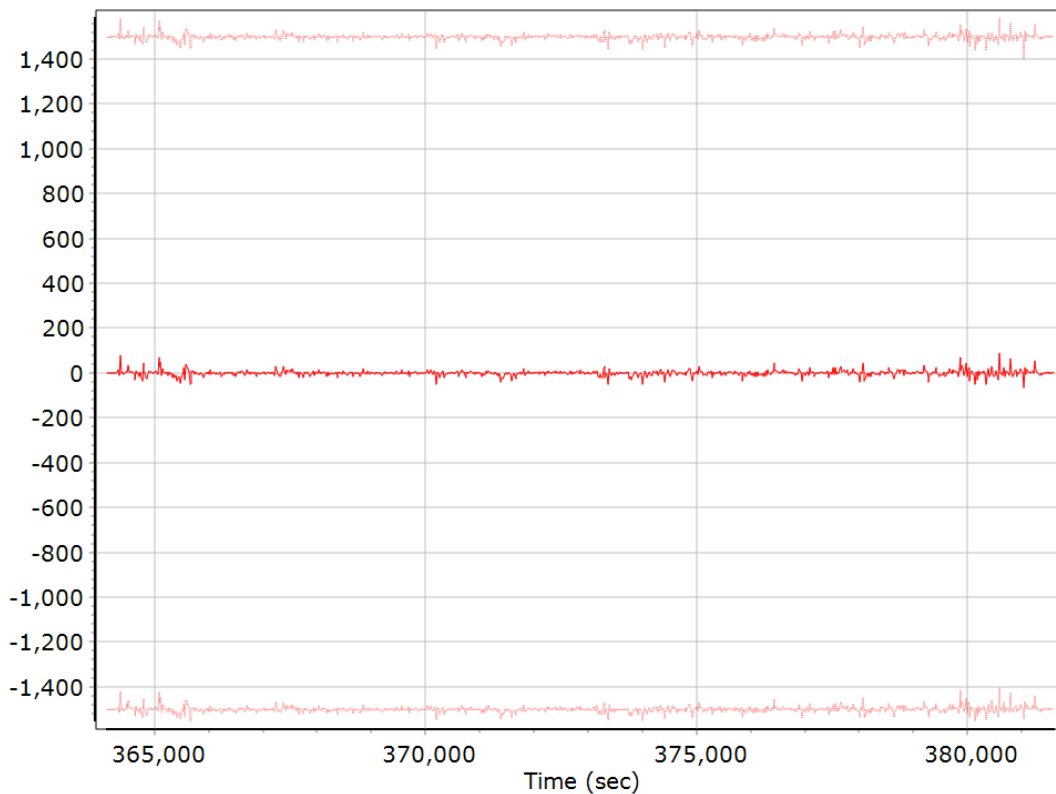
Accelerometer Scale Error (ppm)



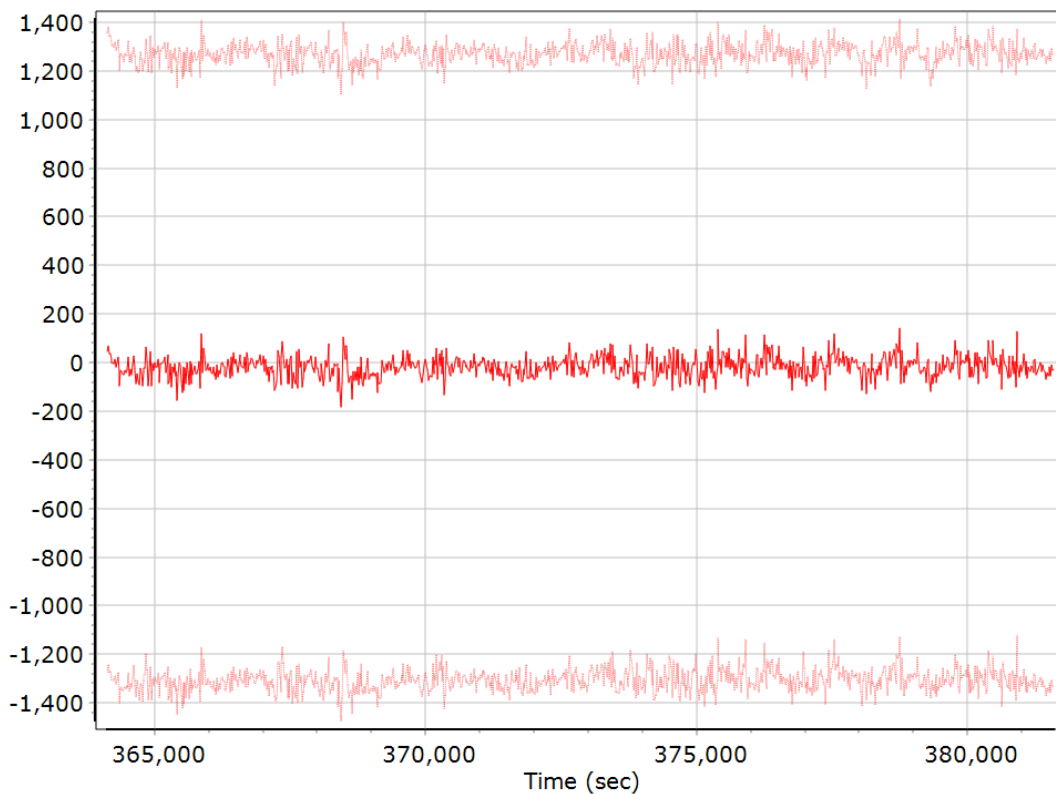
X Accelerometer Scale Error (ppm)



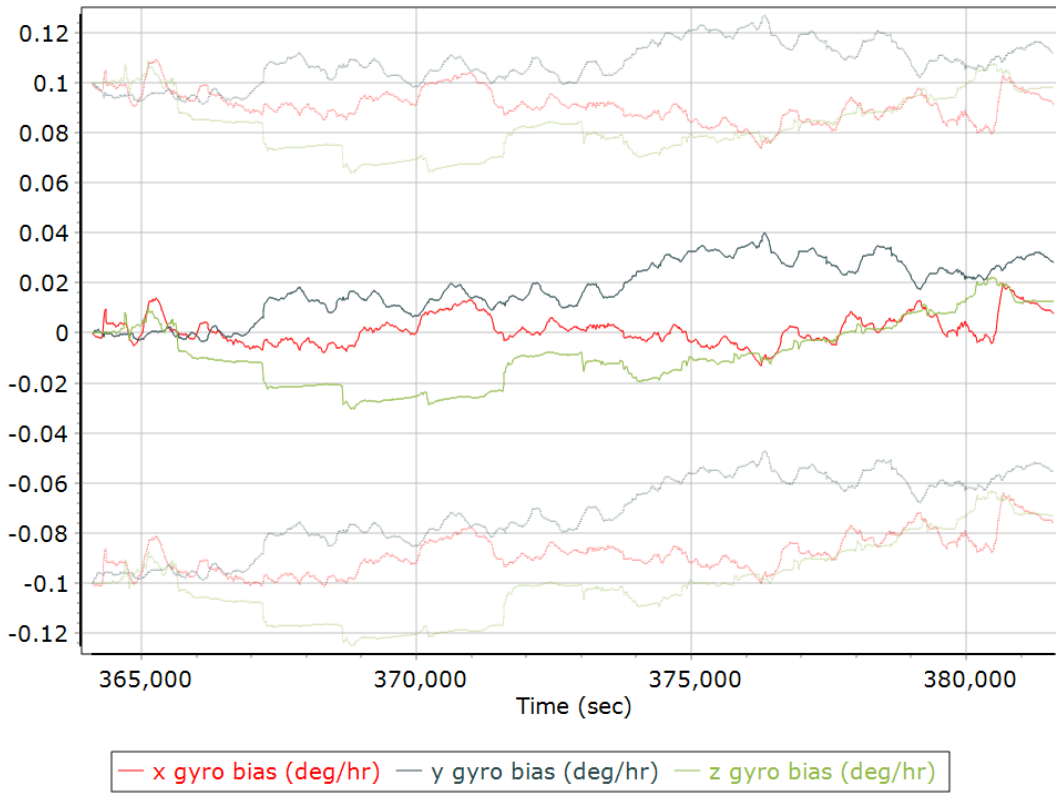
Y Accelerometer Scale Error (ppm)



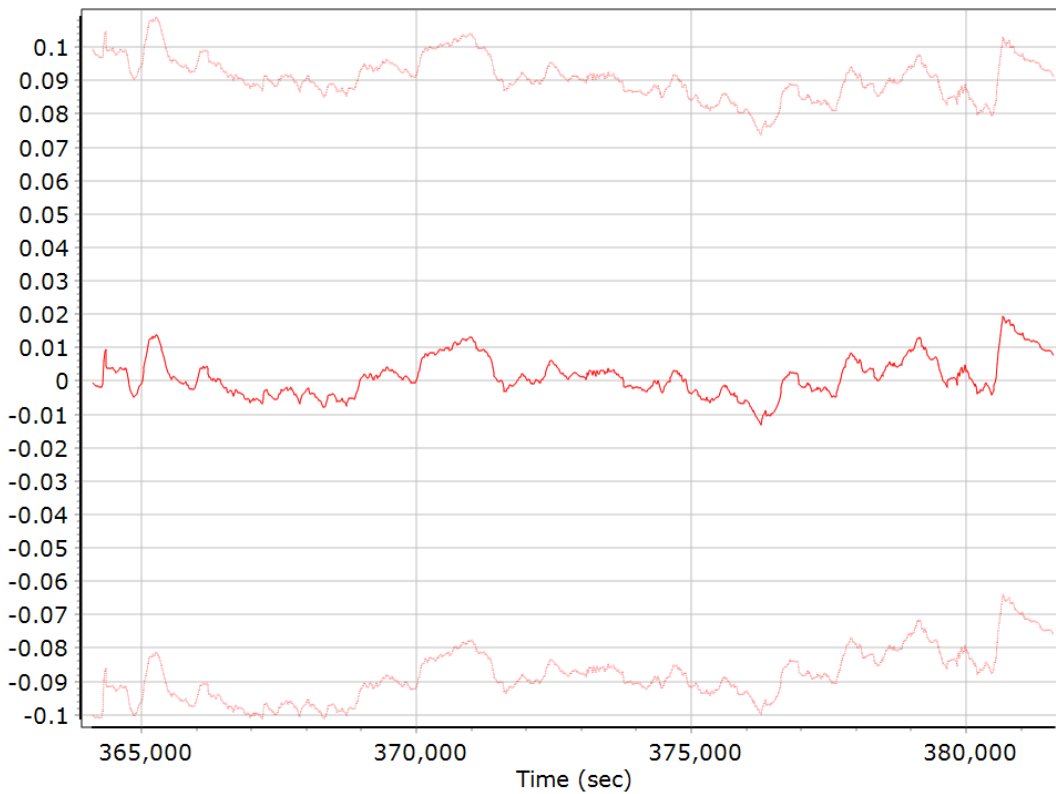
Z Accelerometer Scale Error (ppm)



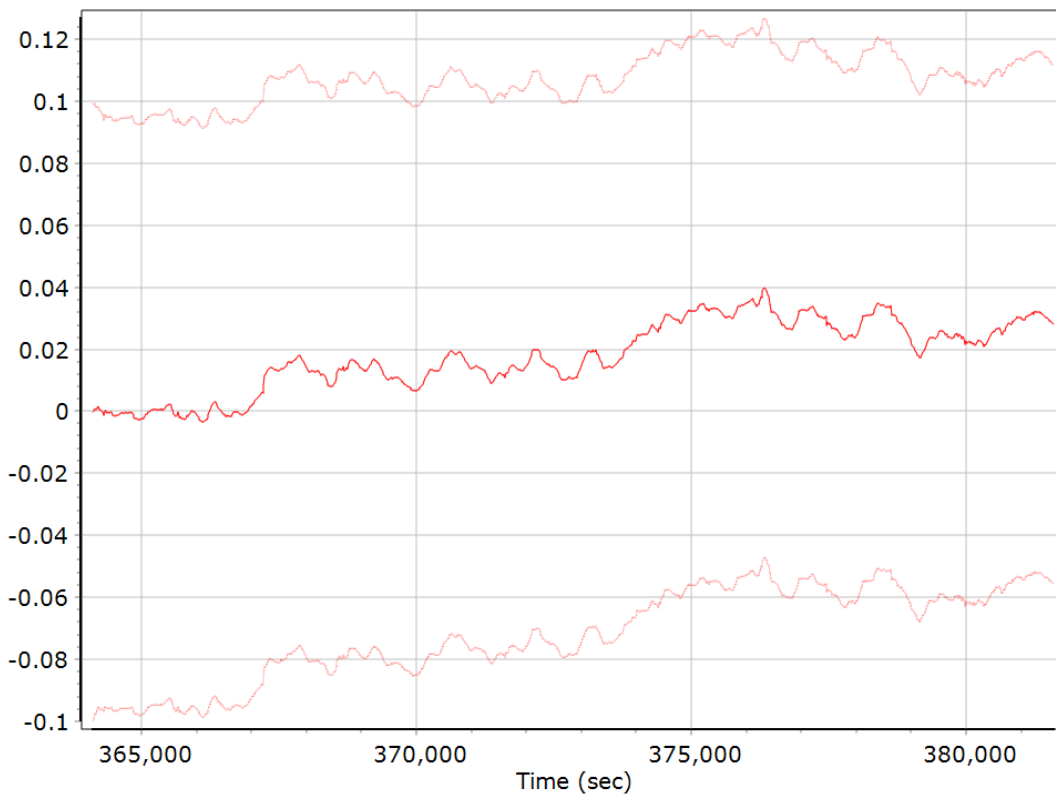
Gyro Bias (deg/h)



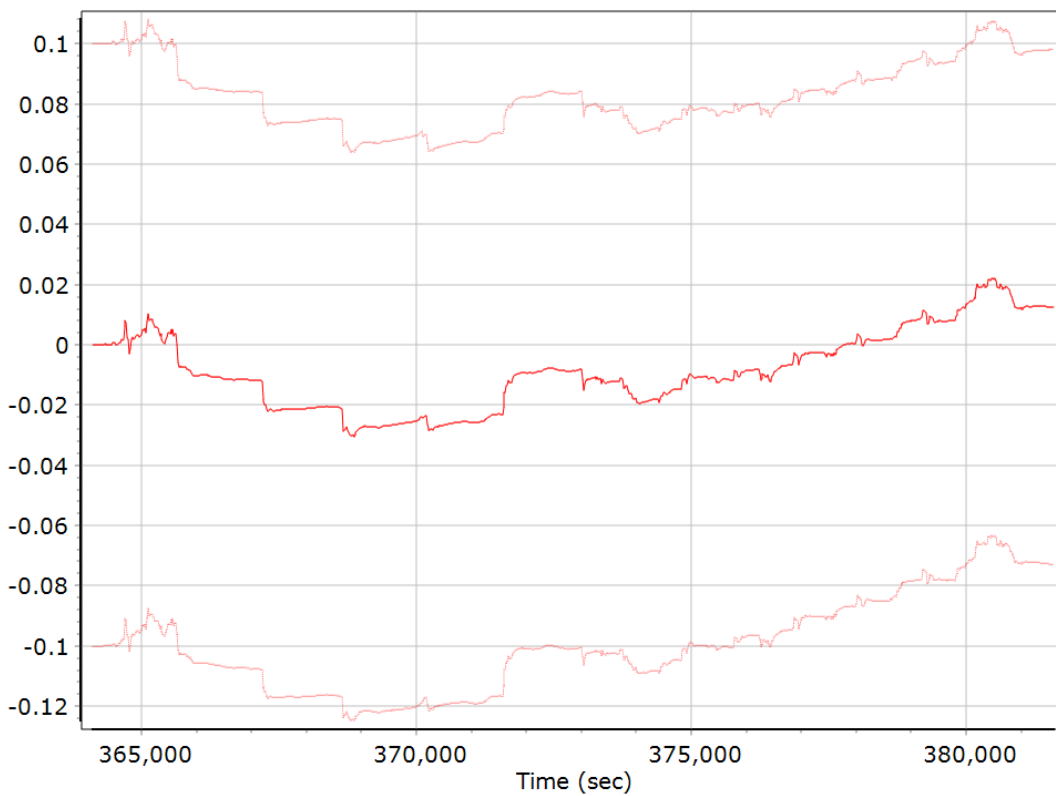
X Gyro Bias (deg/h)



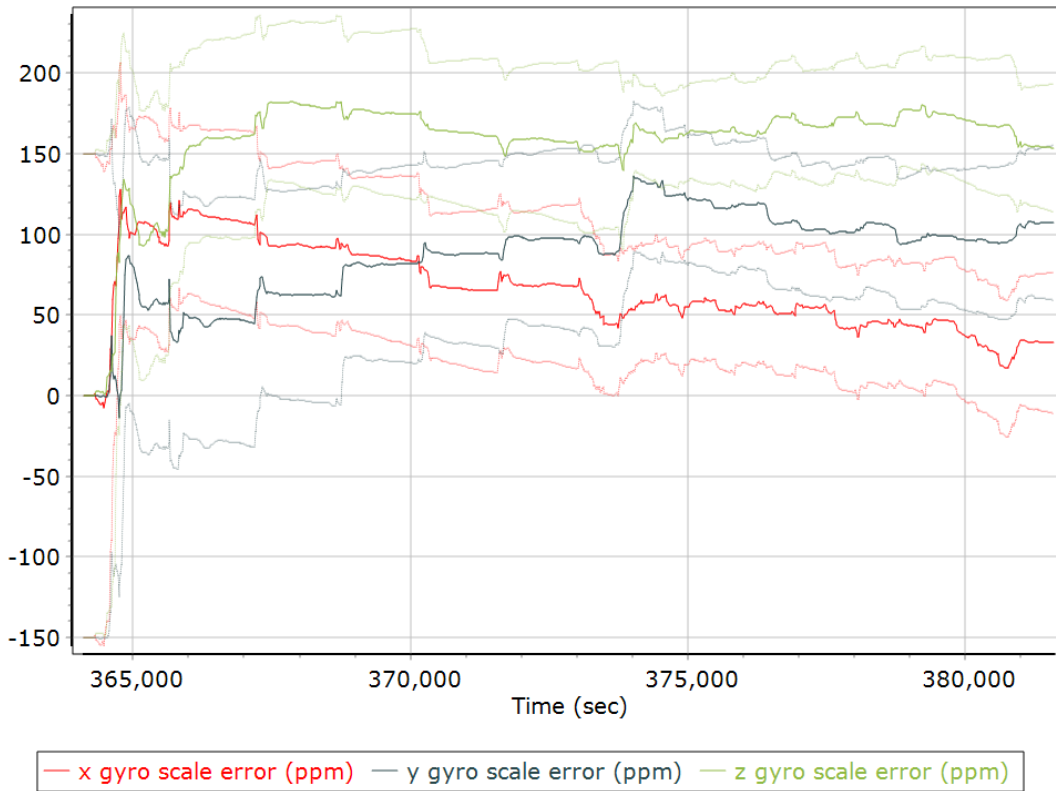
Y Gyro Bias (deg/h)



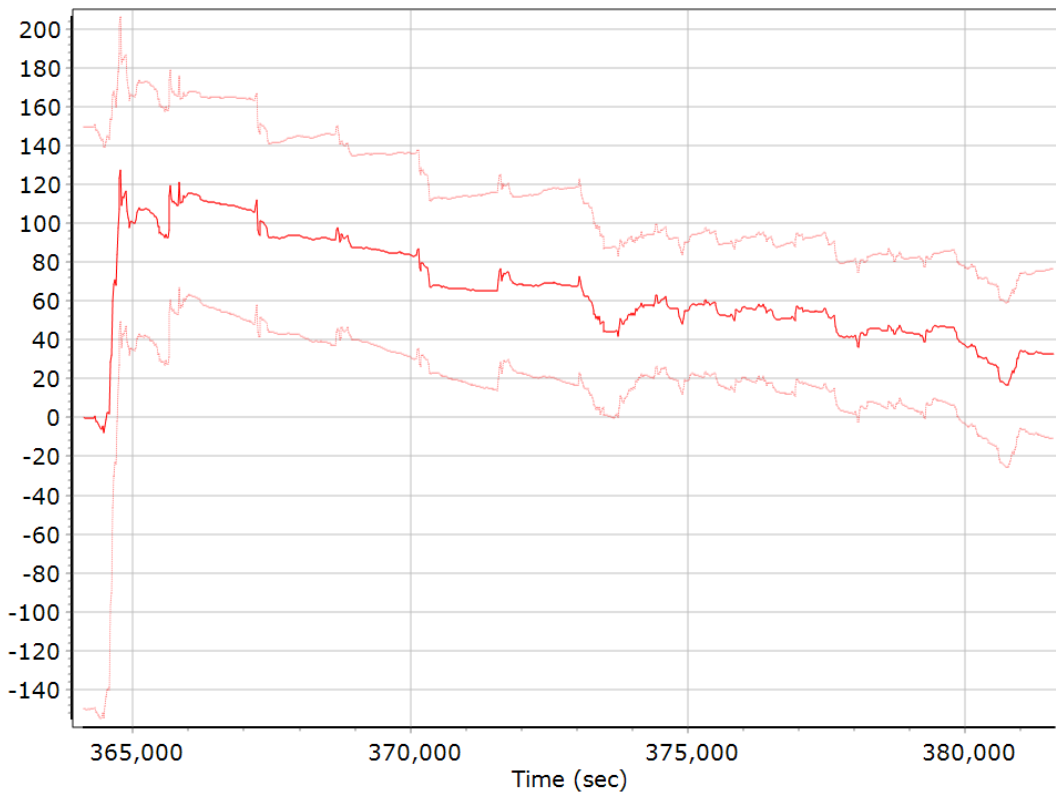
Z Gyro Bias (deg/h)



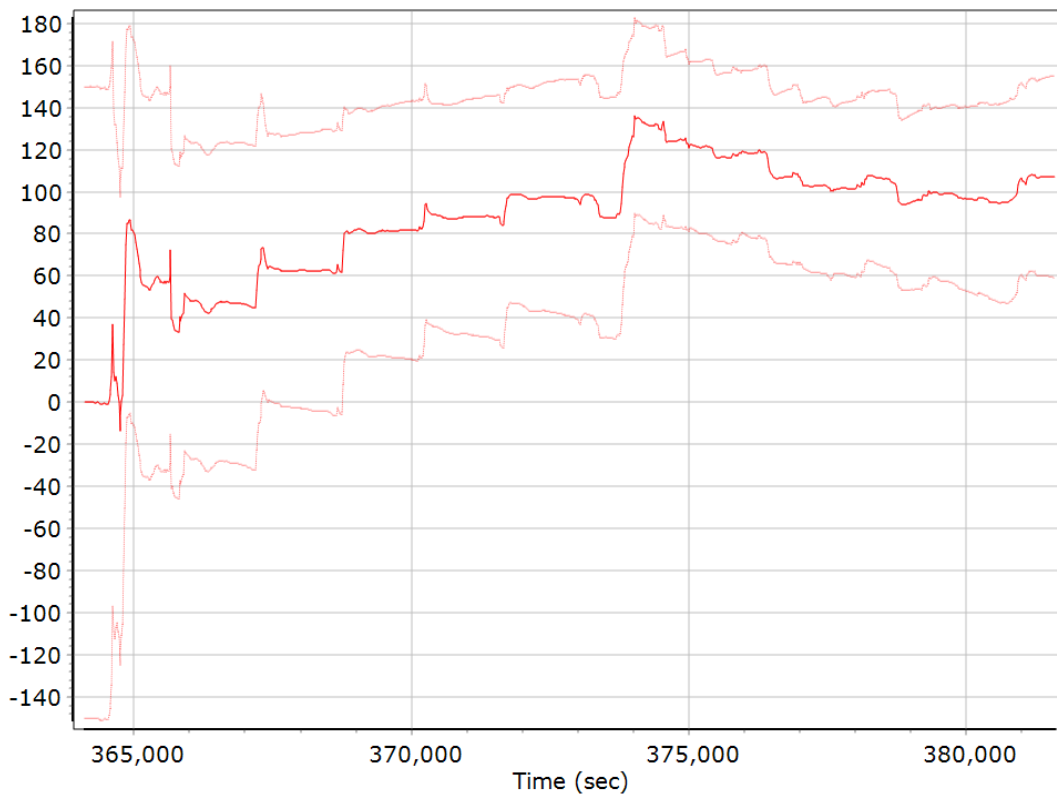
Gyro Scale Error (ppm)



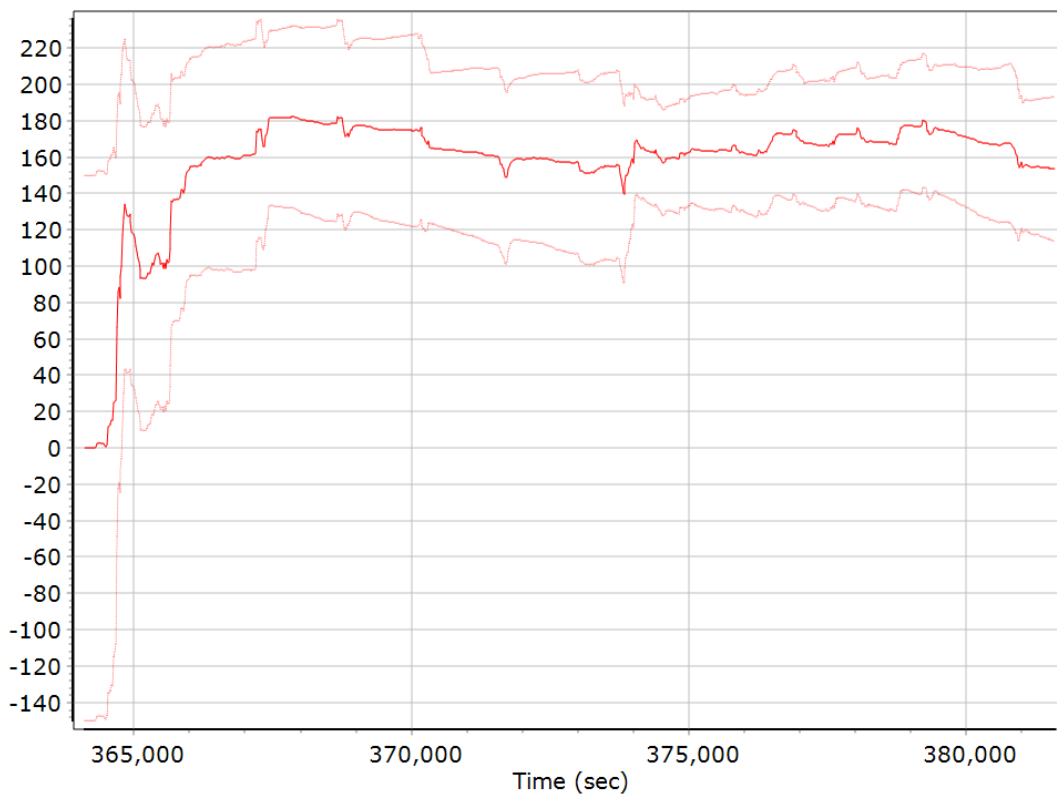
X Gyro Scale Error (ppm)



Y Gyro Scale Error (ppm)

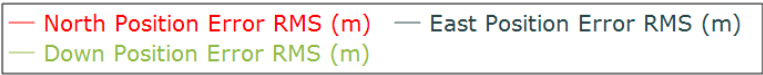


Z Gyro Scale Error (ppm)

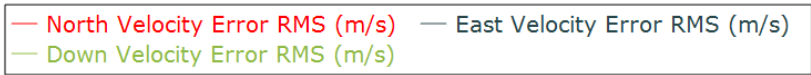


Smoothed Performance Metrics

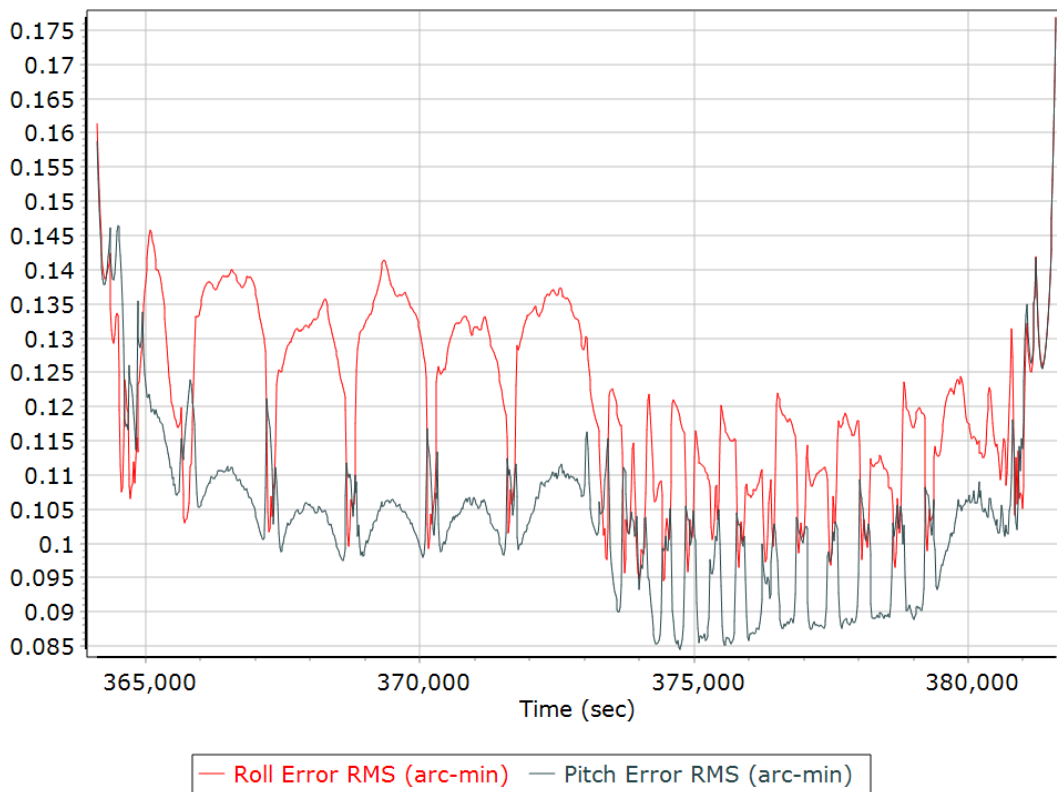
Position Error RMS (m)



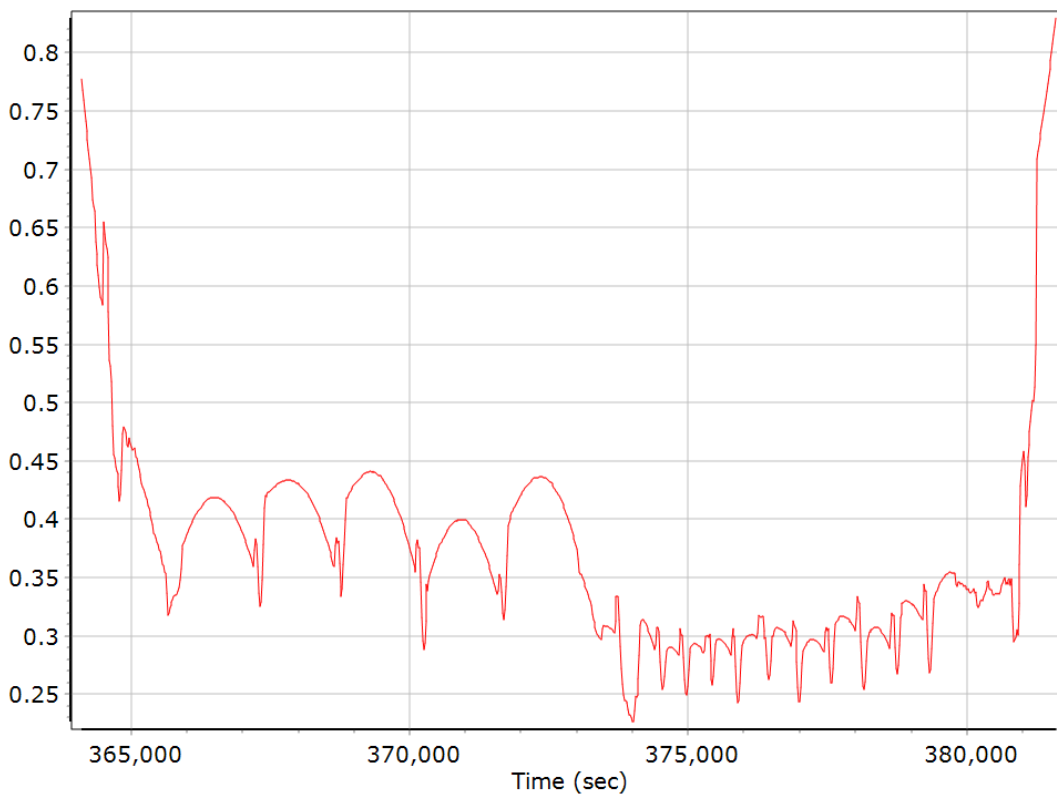
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

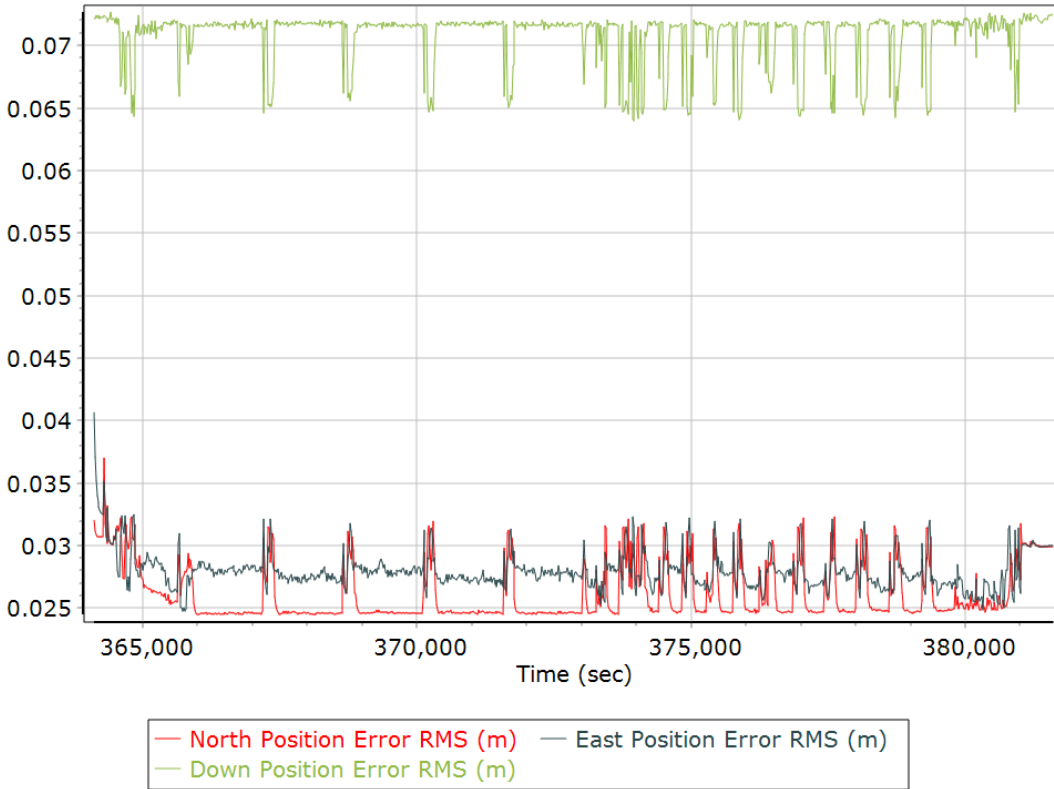


Heading Error RMS (arc-min)

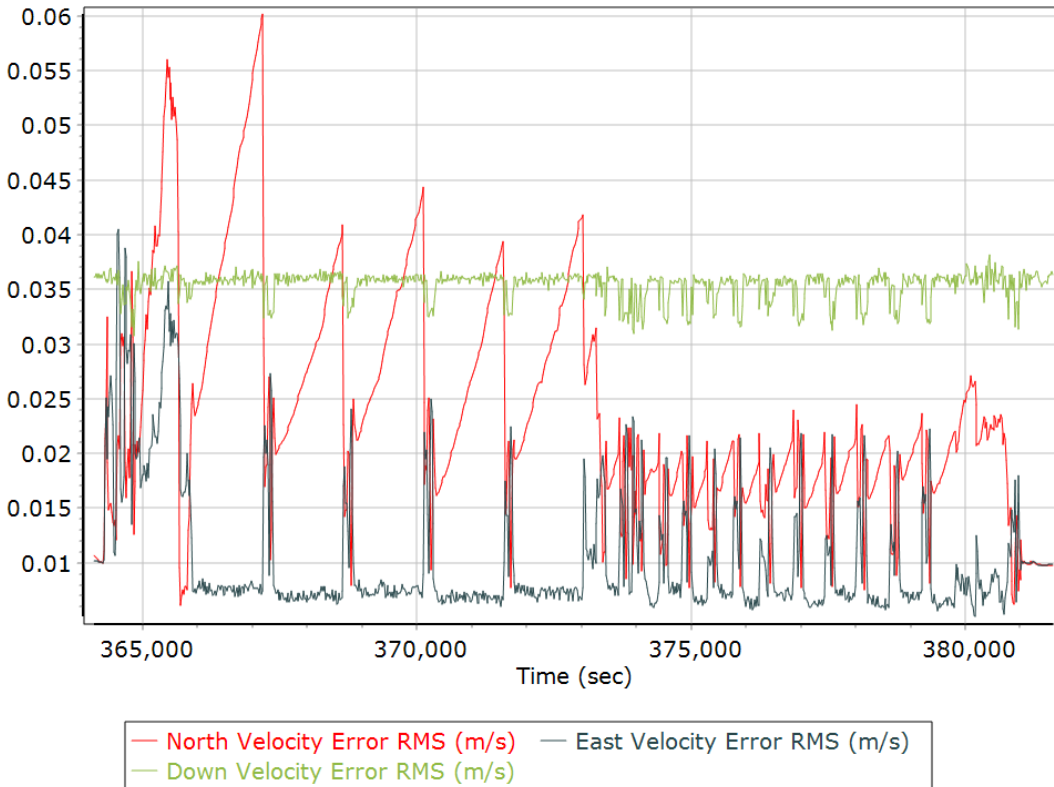


Forward Processed Performance Metrics

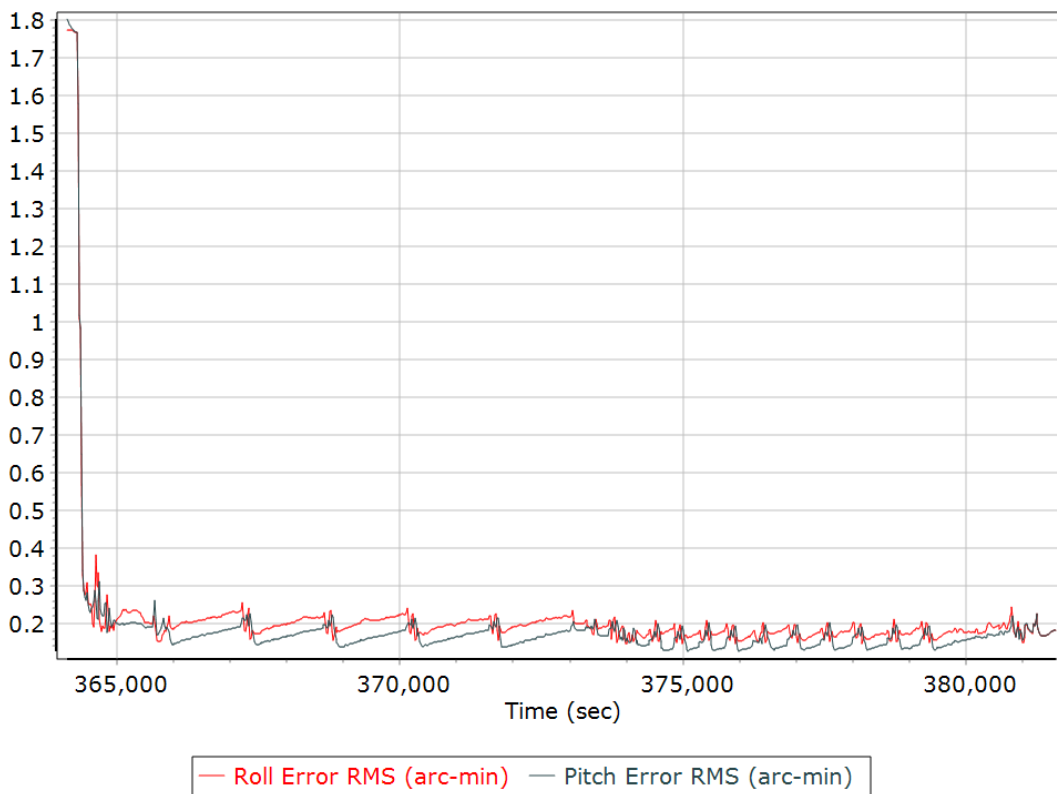
Position Error RMS (m)



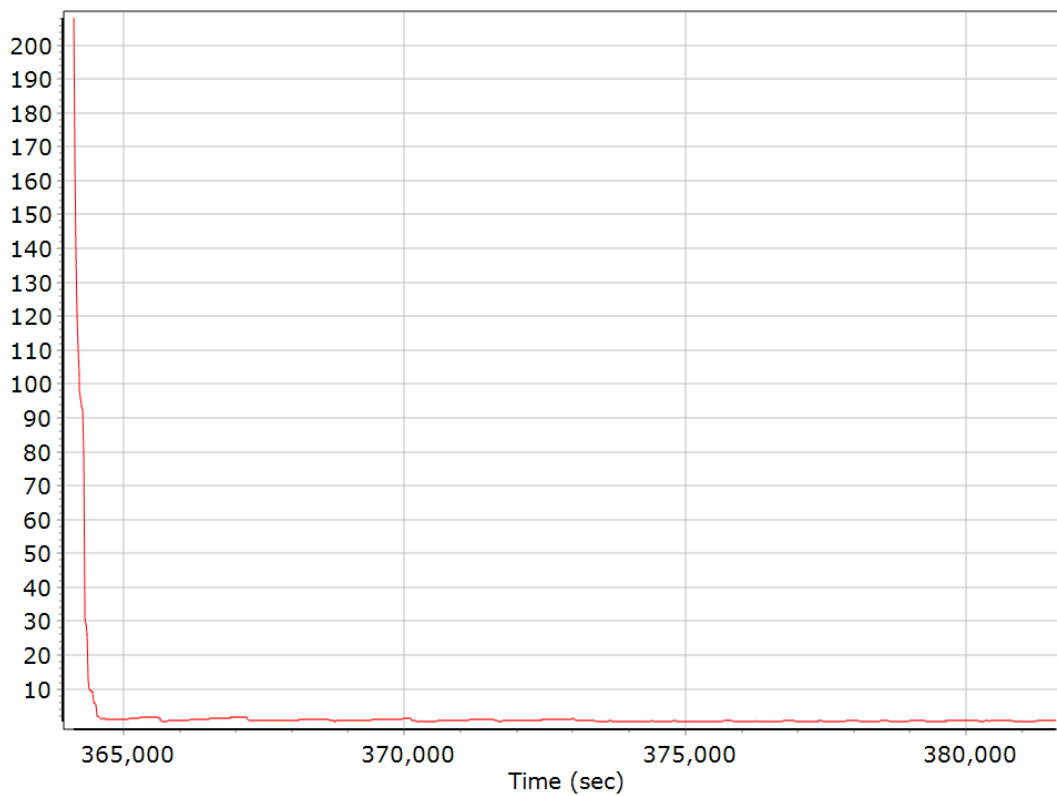
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

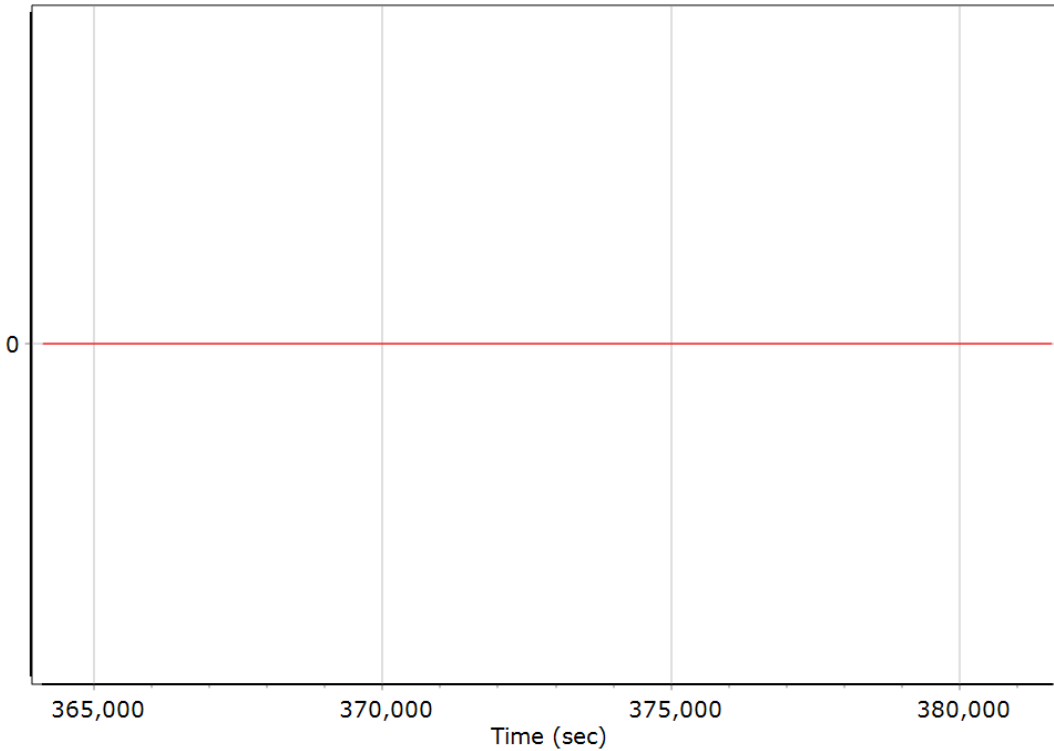


Heading Error RMS (arc-min)



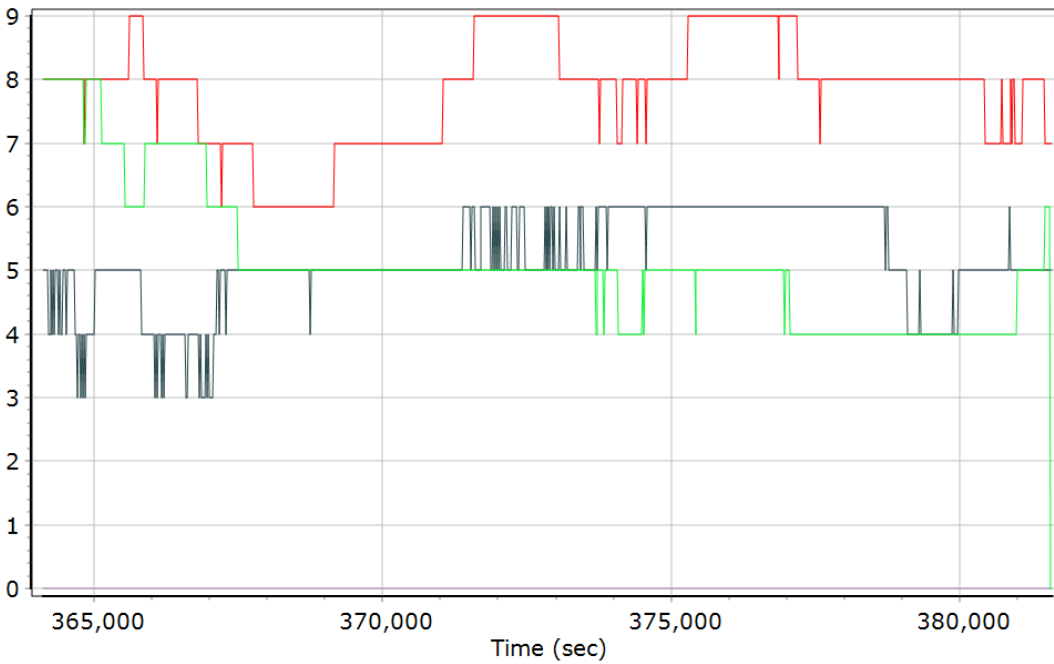
Forward Processed Solution Status

Processing Mode



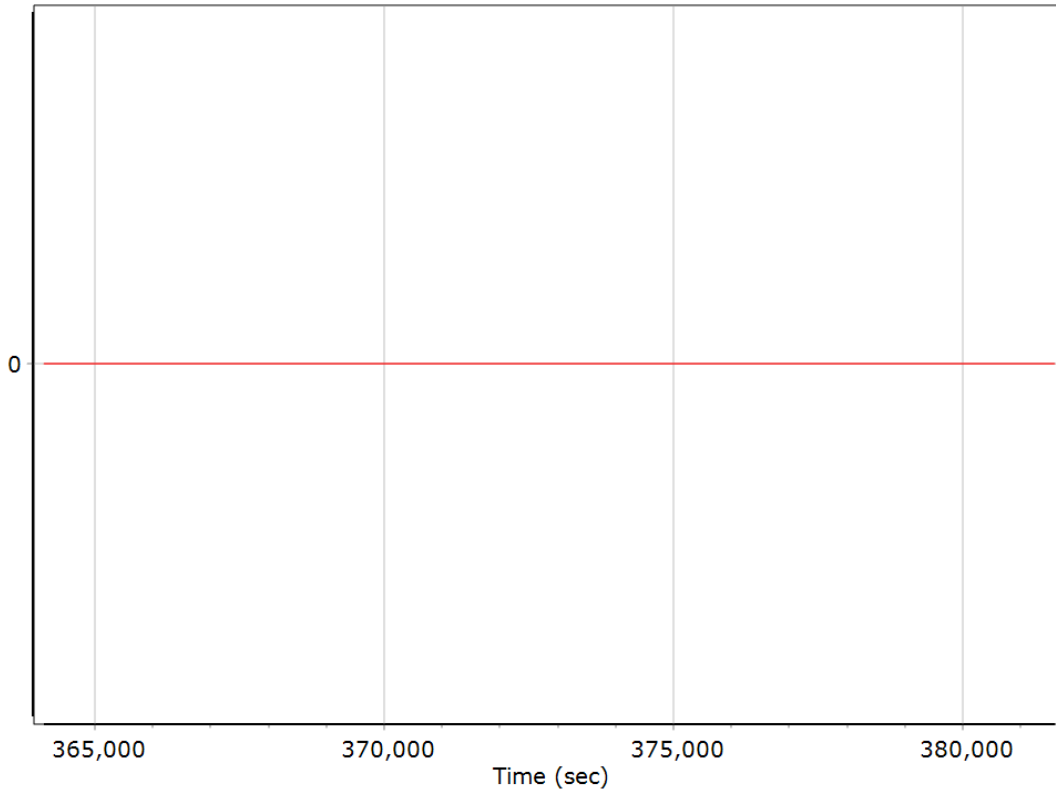
0 = Fixed NL, 1 = Fixed WL, 2 = Float, 3 = DGNSS, 4 = RTCM, 5 = IAPPP, 6 = C/A, 7 = GNSS Na

Number of Satellites



— Number of GPS Satellites	— Number of GLONASS Satellites
— Number of QZSS Satellites	— Number of BEIDOU Satellites
— Number of GALILEO Satellites	

Baseline Length



General Information

Mission Information

Project name	a07-s03-0510
Processing date	2022-07-08 16:05:03
Mission date	2022-07-08 05:13:11
Mission duration	03:34:20.000
Processing mode	IN-Fusion PP-RTX

Rover Hardware Information

Product	POS AV 610 VER6 HW1.6-12
Serial number	S/N6907
IMU type	57
Receiver type	BD982
Antenna type	AV39

Project File List

Rover Data Files

File name	File type
default0708_050057.001	POS Data
default0708_050057.002	POS Data
default0708_050057.003	POS Data
default0708_050057.004	POS Data
default0708_050057.005	POS Data
default0708_050057.006	POS Data
default0708_050057.007	POS Data
default0708_050057.008	POS Data
default0708_050057.009	POS Data
default0708_050057.010	POS Data
default0708_050057.011	POS Data
default0708_050057.012	POS Data
default0708_050057.013	POS Data
default0708_050057.014	POS Data
default0708_050057.015	POS Data
default0708_050057.016	POS Data
default0708_050057.017	POS Data
default0708_050057.018	POS Data

Input Files

File Name	File Type
Ephm1890.22g	GLONASS Broadcast Ephemeris
Ephm1890.22n	GPS Broadcast Ephemeris

Output Files

Filename	File type
sbet_a07-s03-0510.out	SBET Trajectory File

Rover Data Summary

First raw data file	default0708_050057.001		
Last raw data file	default0708_050057.018		
Start GPS week	2217		
Start time	450772.746 (7/8/2022 5:12:52 AM)		
End time	463634.229 (7/8/2022 8:47:14 AM)		
Start of fine alignment	450796.151 (7/8/2022 5:13:16 AM)		
Available subsystems	Primary GNSS, IMU		
POS Event Input	None		
Correction data	None		
IMU Installation Lever Arms & Mounting Angles			
Reference to IMU lever arm (m)	0.000	0.000	0.000
Reference to IMU mounting angles (deg)	0.000	0.000	0.000
Reference to Primary GNSS lever arm (m)	-0.353	-0.322	-1.280
Reference to Primary GNSS lever arm std dev (m)	-1.000		
Aircraft to Reference mounting angles (deg)	0.000	0.000	0.000

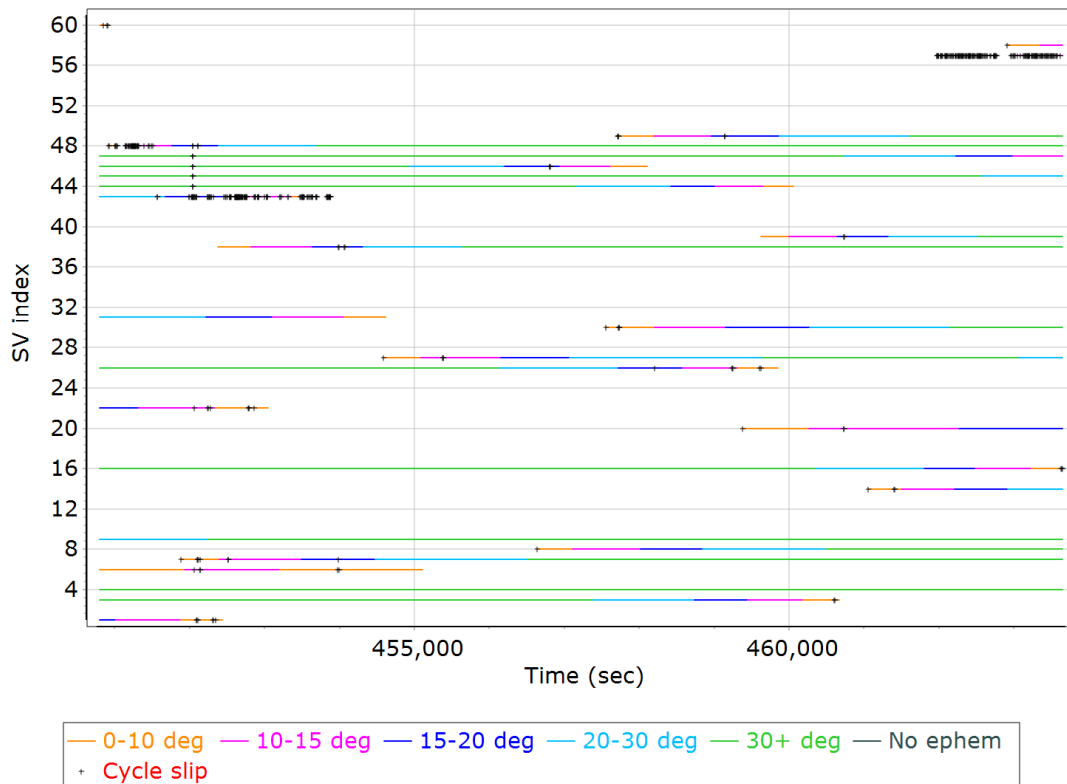
Rover Data QC

Raw IMU Import QC Summary

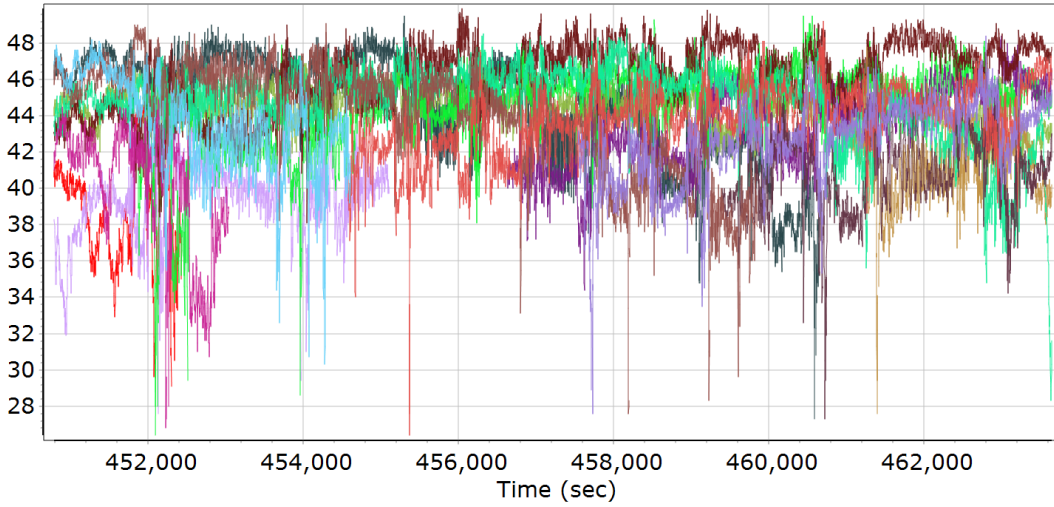
IMU data input file	imu_a07-s03-0510.dat
IMU data check log file	imudt_a07-s03-0510.log
IMU Records Processed	2571848
Termination Status	Normal
IMU Anomalies	0

Primary Observables & Satellite Data

GPS/GLONASS L1 Satellite Lock/Elevation

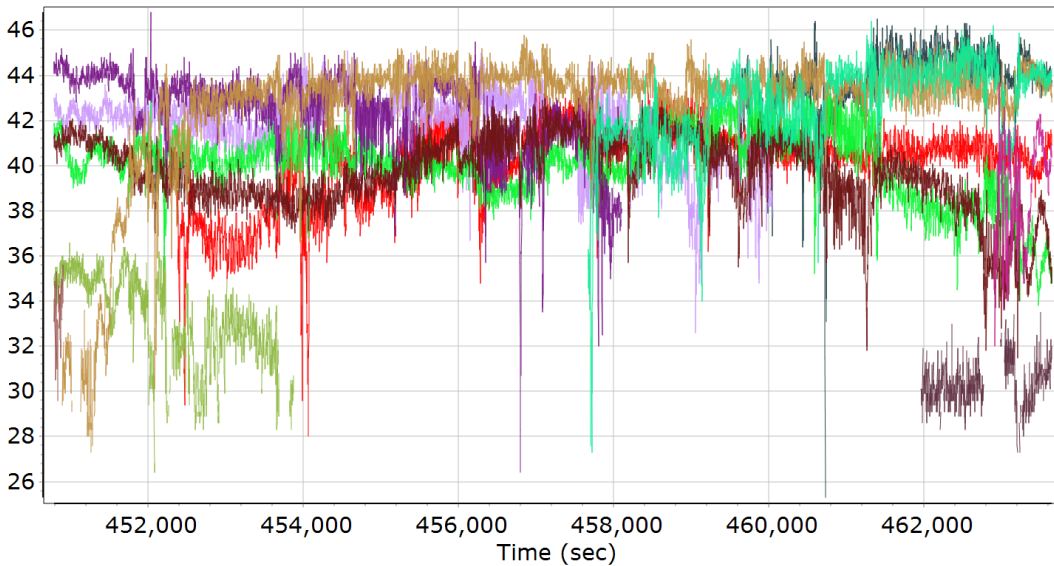


GPS L1 SNR



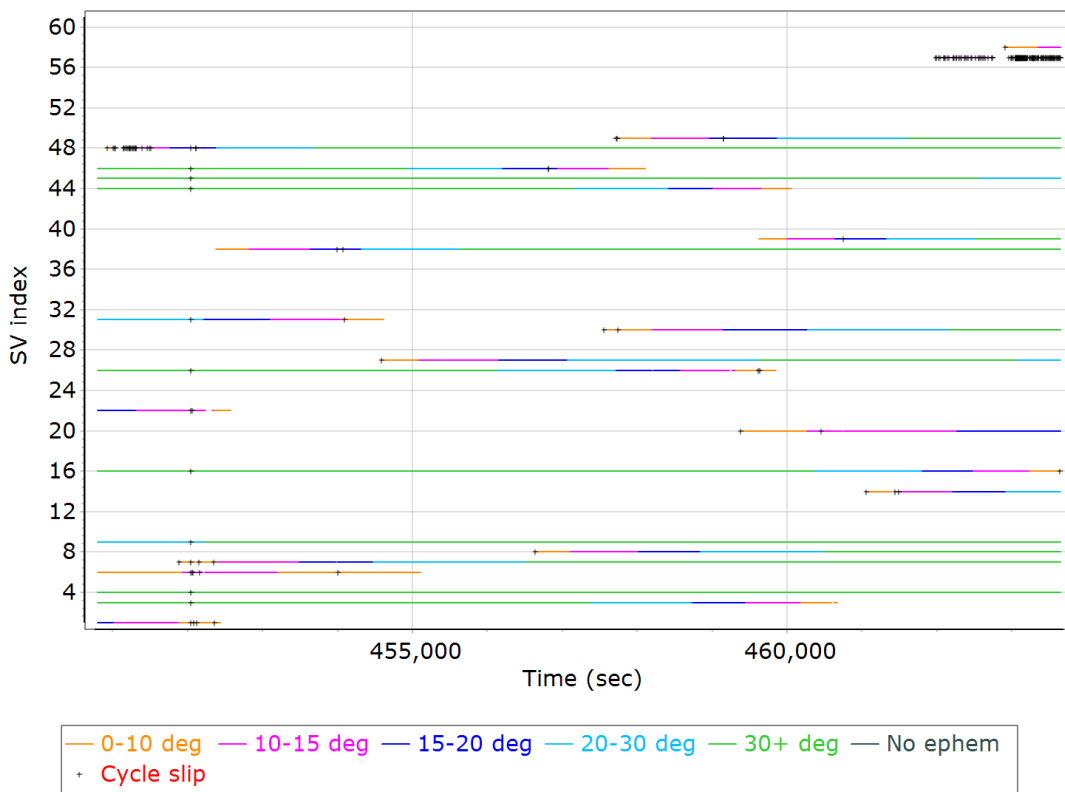
- | | |
|-----------------------------|-----------------------------|
| — GPS PRN 01 L1 SNR (dB/Hz) | — GPS PRN 03 L1 SNR (dB/Hz) |
| — GPS PRN 04 L1 SNR (dB/Hz) | — GPS PRN 06 L1 SNR (dB/Hz) |
| — GPS PRN 07 L1 SNR (dB/Hz) | — GPS PRN 08 L1 SNR (dB/Hz) |
| — GPS PRN 09 L1 SNR (dB/Hz) | — GPS PRN 14 L1 SNR (dB/Hz) |
| — GPS PRN 16 L1 SNR (dB/Hz) | — GPS PRN 20 L1 SNR (dB/Hz) |
| — GPS PRN 22 L1 SNR (dB/Hz) | — GPS PRN 26 L1 SNR (dB/Hz) |
| — GPS PRN 27 L1 SNR (dB/Hz) | — GPS PRN 30 L1 SNR (dB/Hz) |
| — GPS PRN 31 L1 SNR (dB/Hz) | |

GLONASS L1 SNR

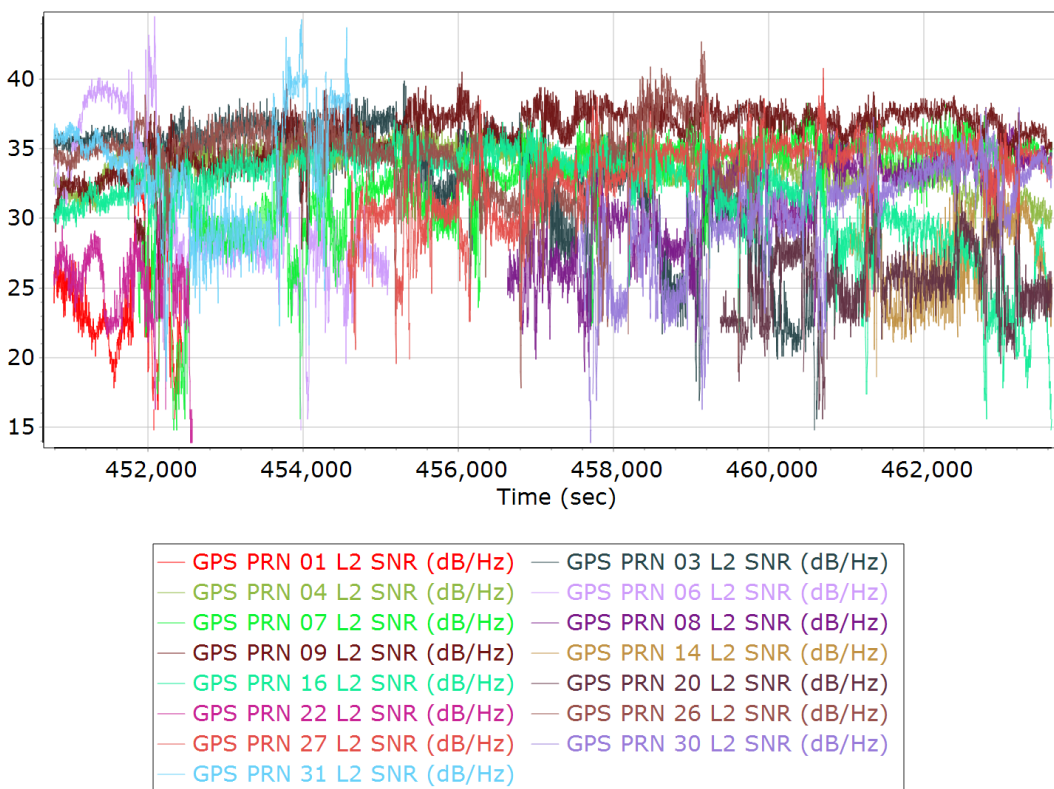


- | | |
|-----------------------------|-----------------------------|
| — GLONASS 01 L1 SNR (dB/Hz) | — GLONASS 02 L1 SNR (dB/Hz) |
| — GLONASS 06 L1 SNR (dB/Hz) | — GLONASS 07 L1 SNR (dB/Hz) |
| — GLONASS 08 L1 SNR (dB/Hz) | — GLONASS 09 L1 SNR (dB/Hz) |
| — GLONASS 10 L1 SNR (dB/Hz) | — GLONASS 11 L1 SNR (dB/Hz) |
| — GLONASS 12 L1 SNR (dB/Hz) | — GLONASS 20 L1 SNR (dB/Hz) |
| — GLONASS 21 L1 SNR (dB/Hz) | — GLONASS 23 L1 SNR (dB/Hz) |

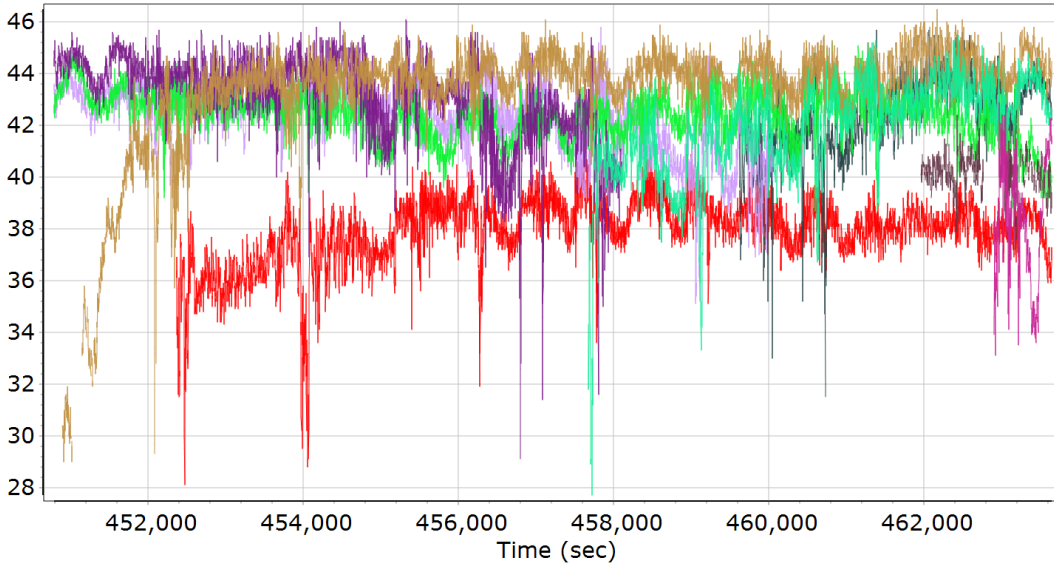
GPS/GLONASS L2 Satellite Lock/Elevation



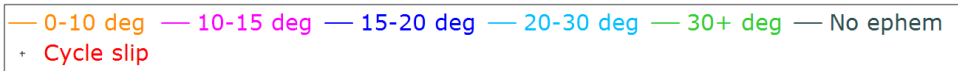
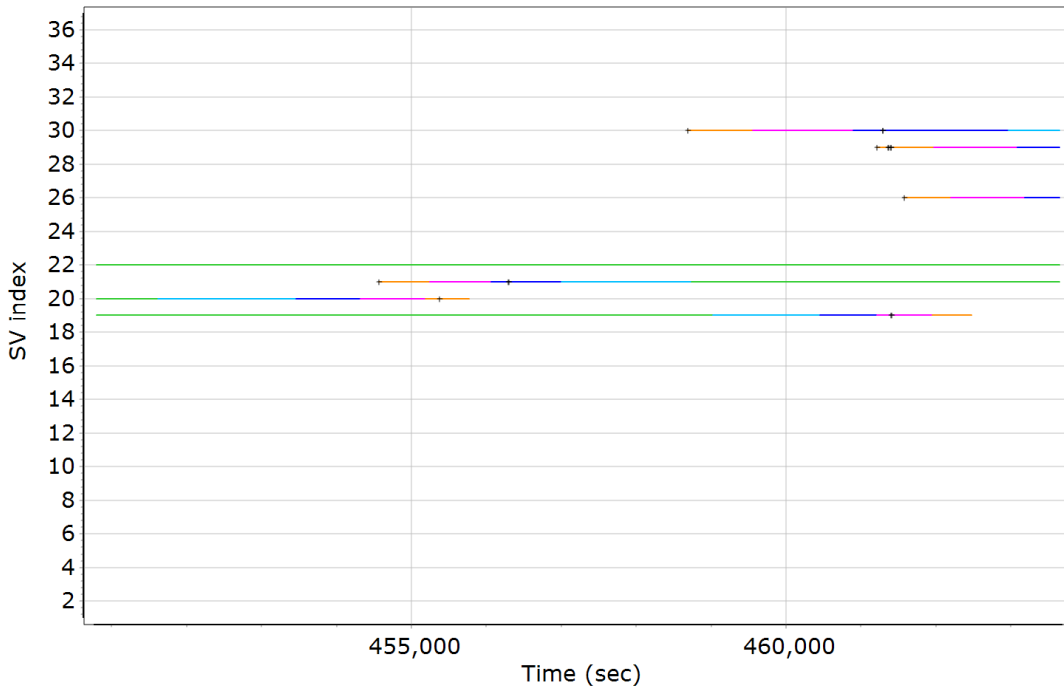
GPS L2 SNR



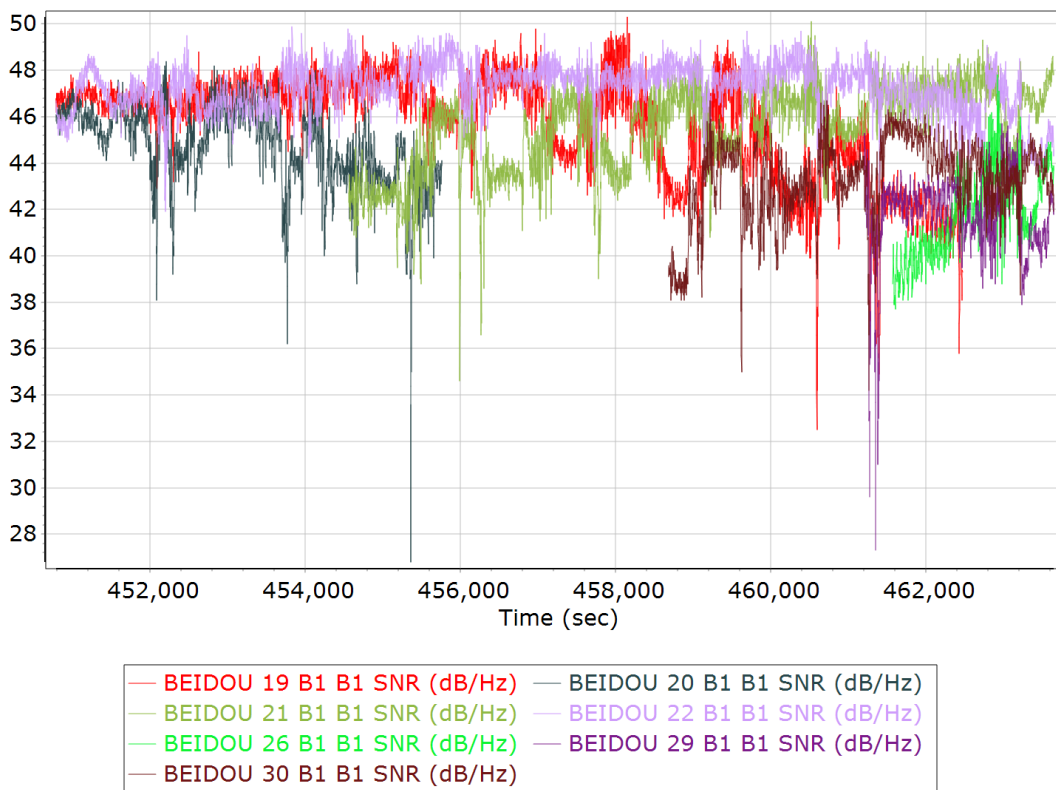
GLONASS L2 SNR



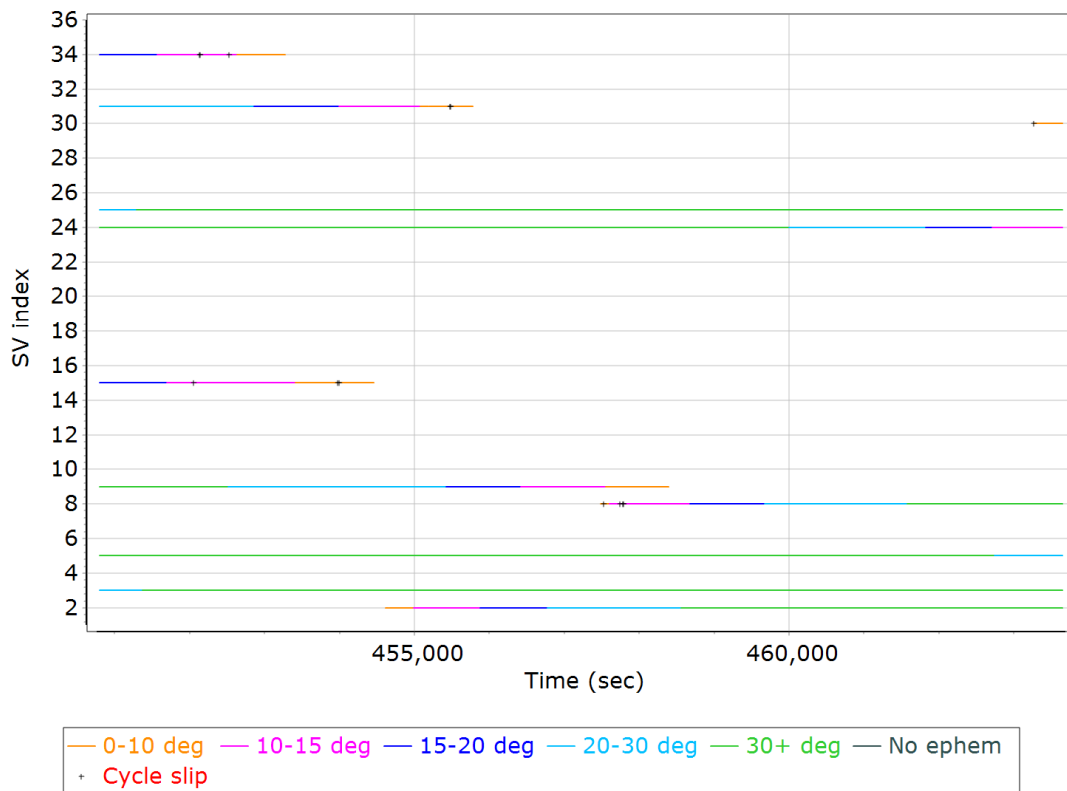
BEIDOU Satellite Lock/Elevation



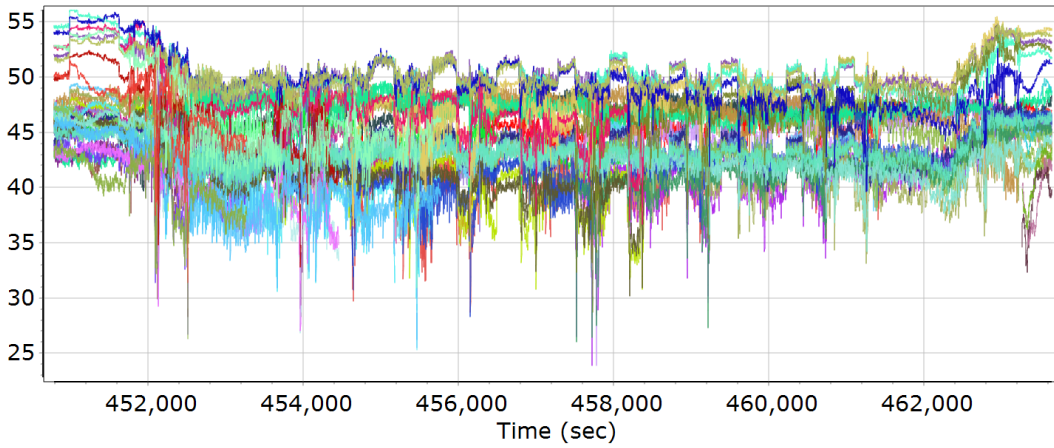
BEIDOU SNR



GALILEO Satellite Lock/Elevation



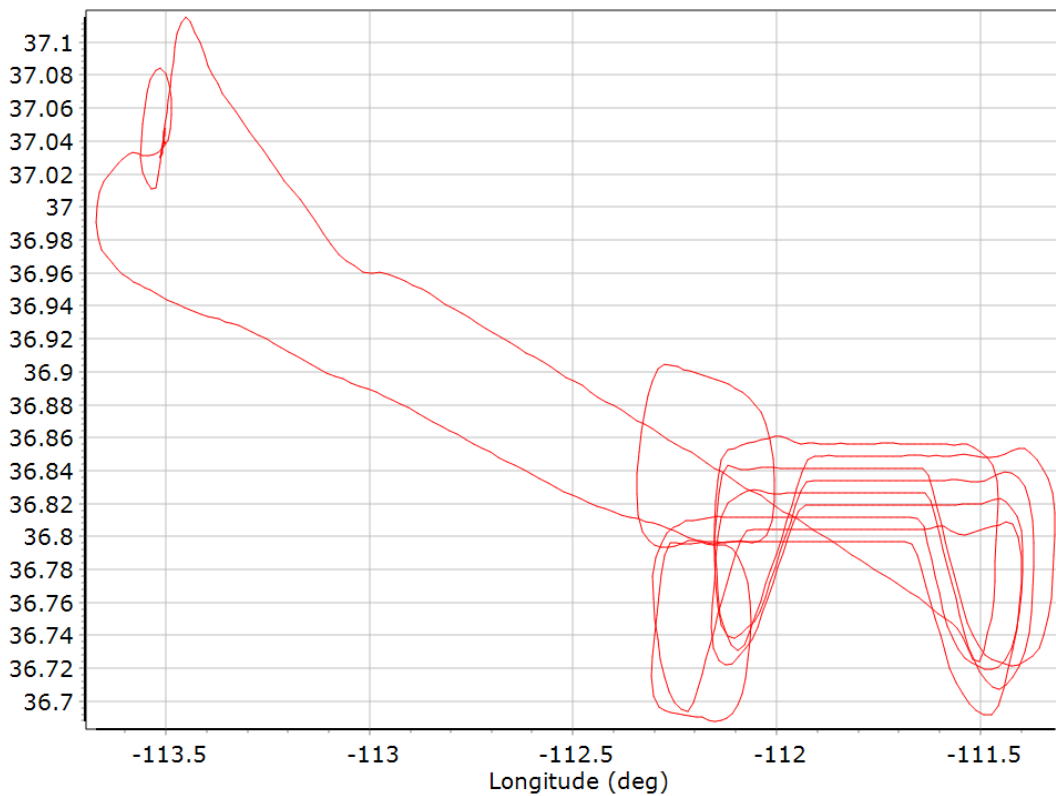
GALILEO SNR



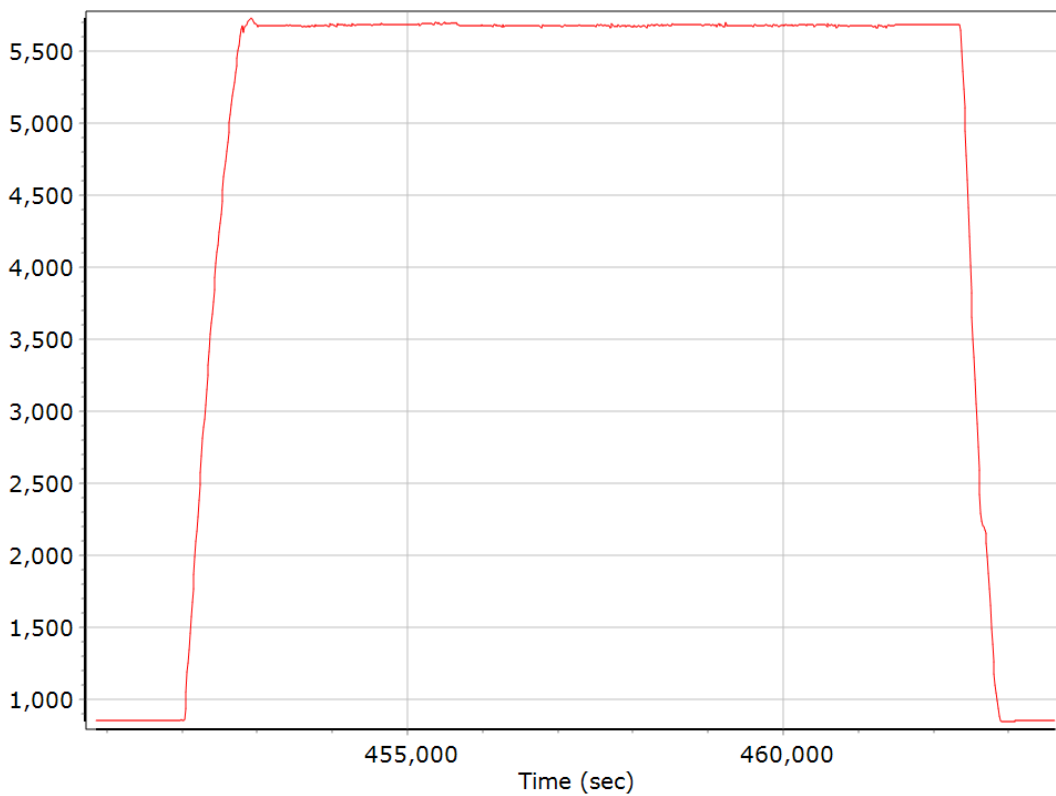
- GALILEO 02 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 03 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 05 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 08 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 09 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 15 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 18 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 24 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 25 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 30 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)

Smoothed Trajectory Information

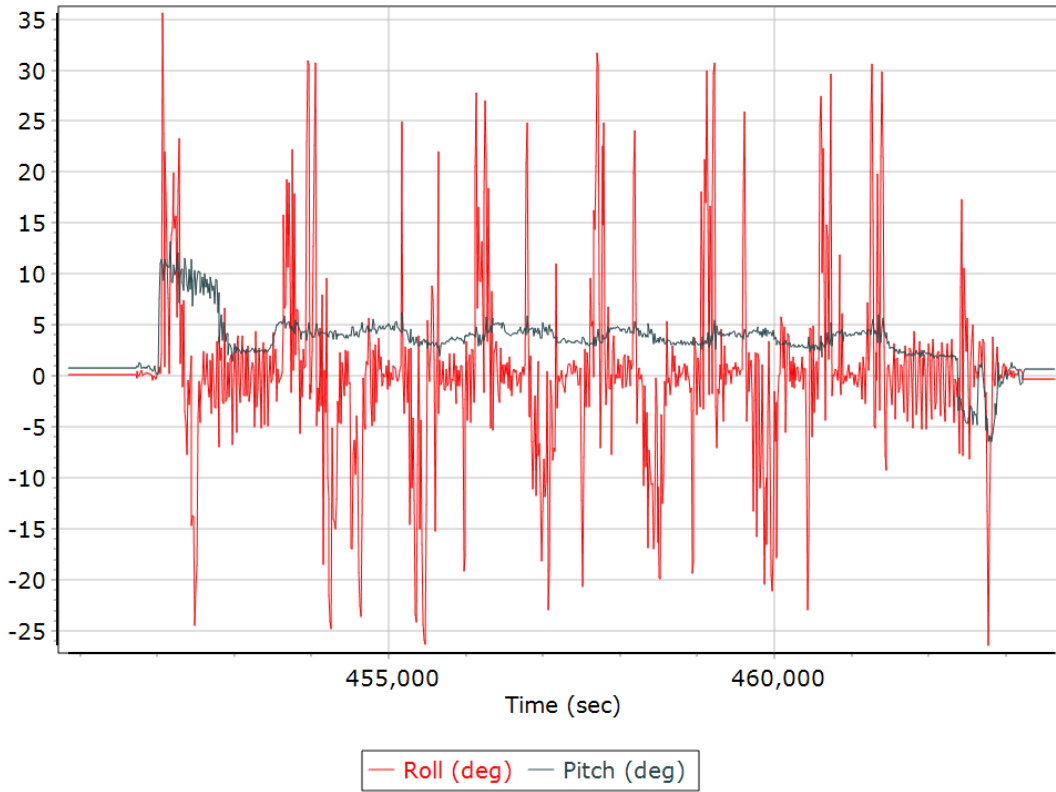
Top View



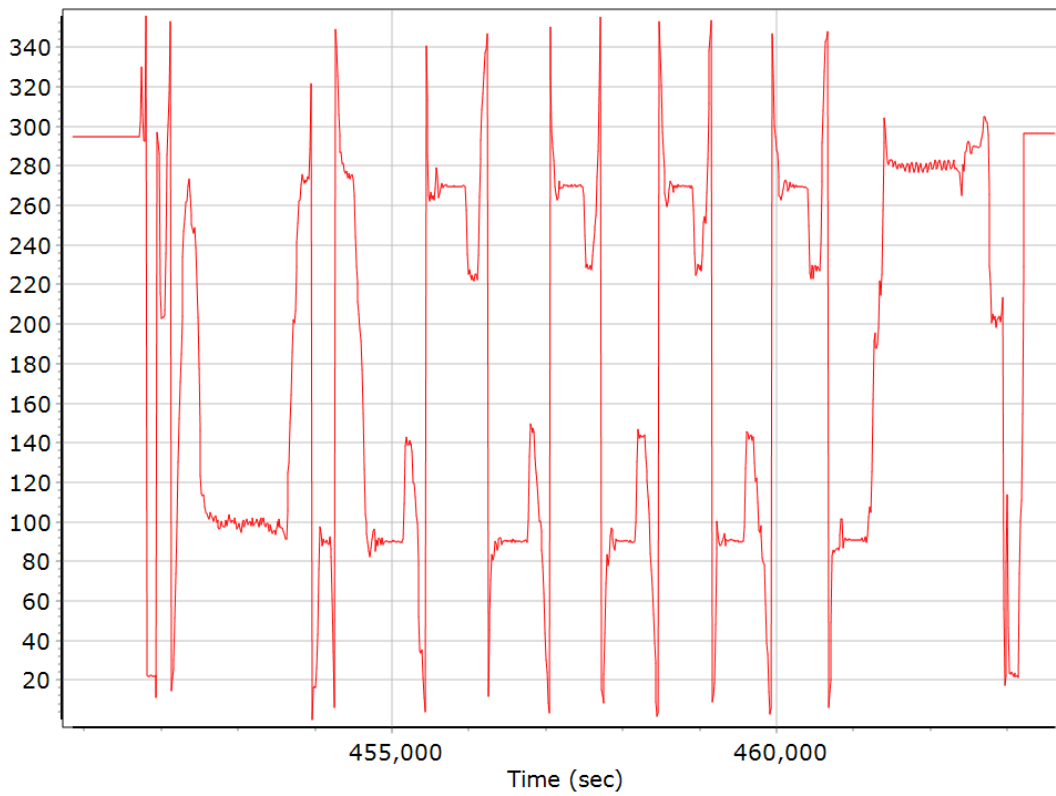
Altitude



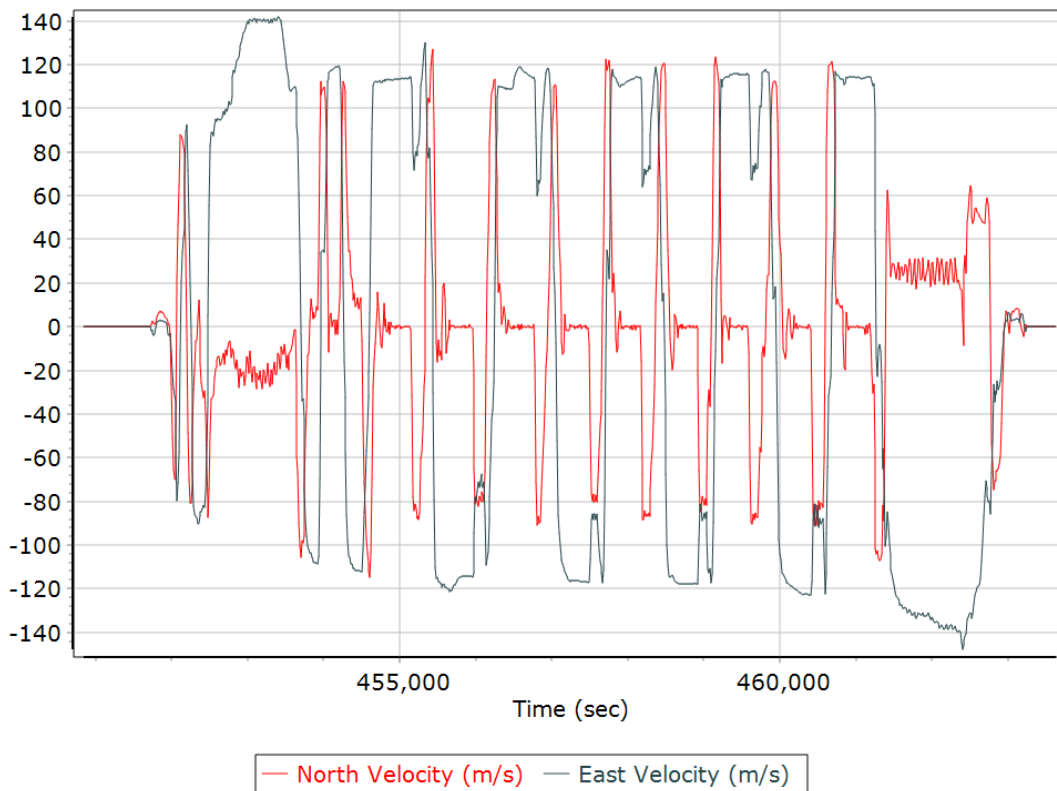
Roll/Pitch



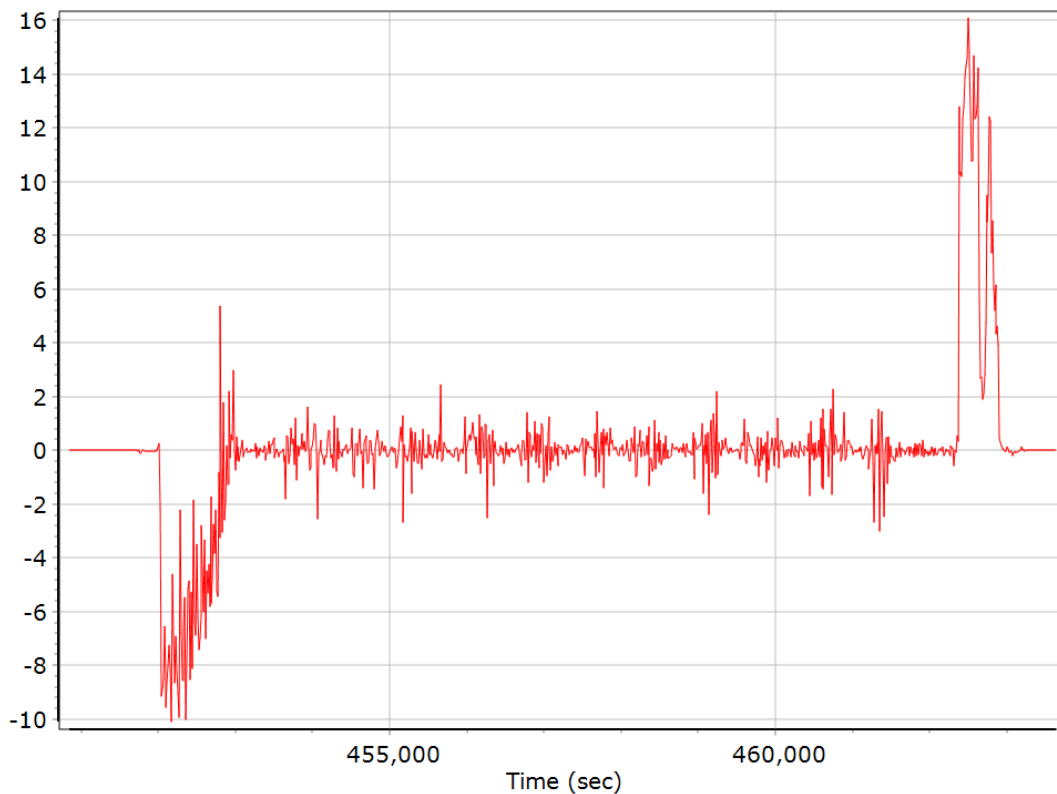
Heading



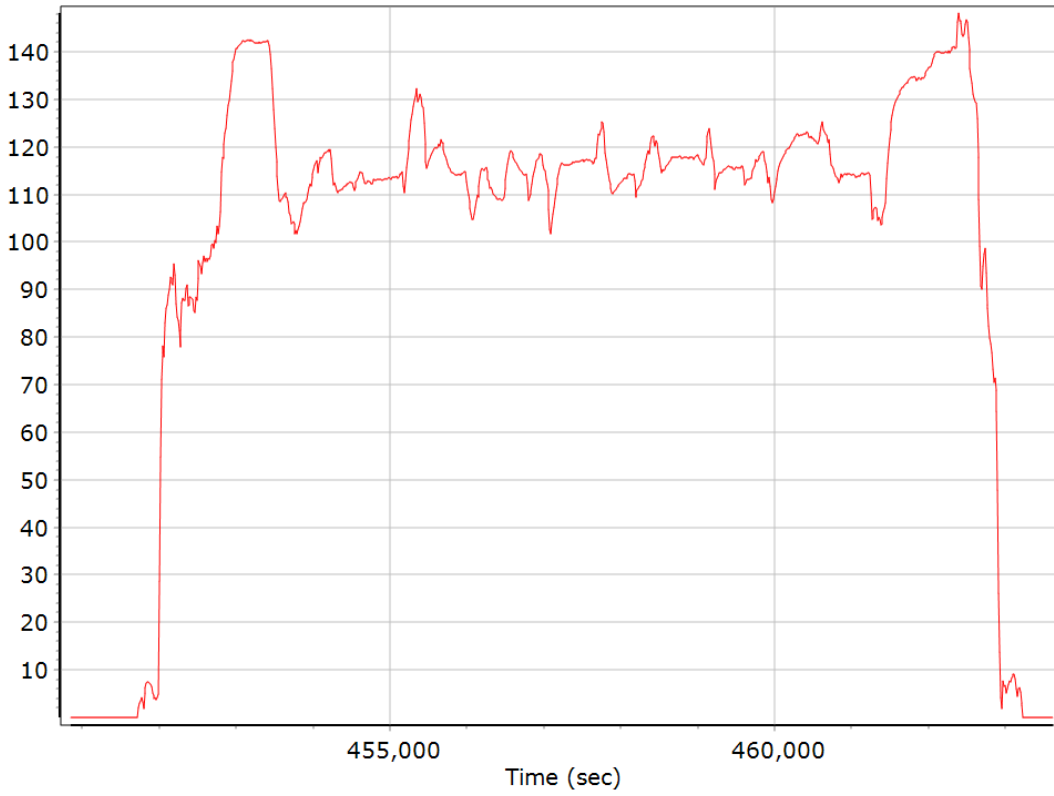
North/East Velocity



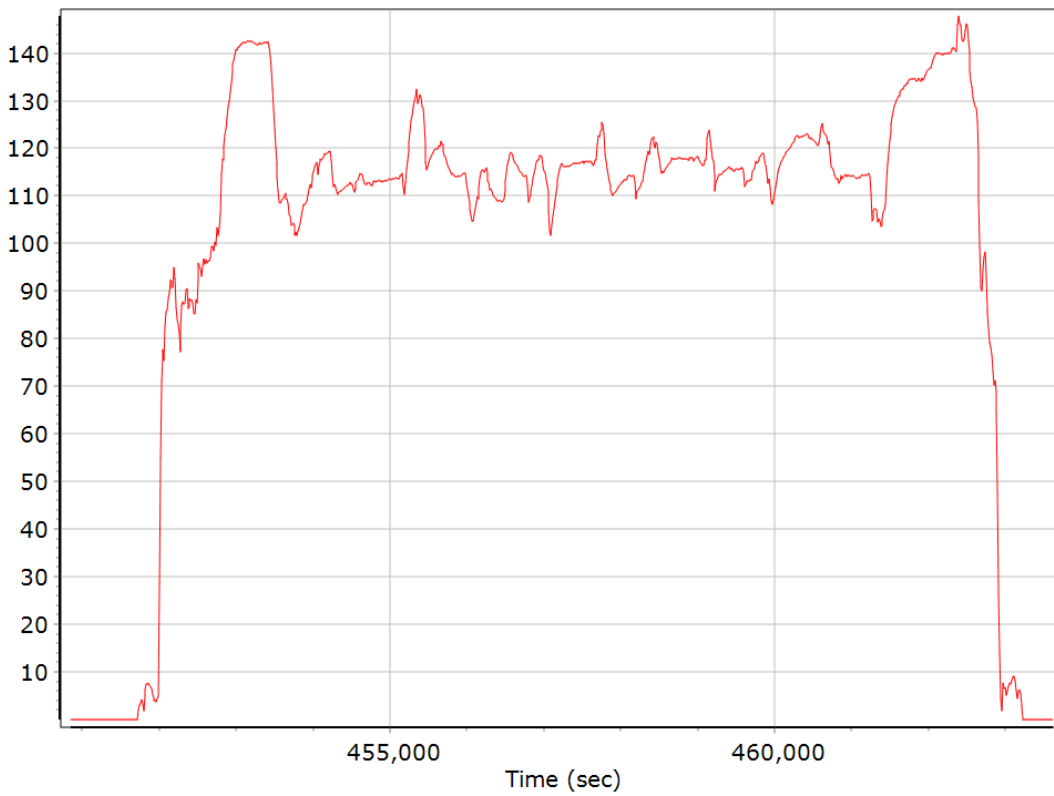
Down Velocity



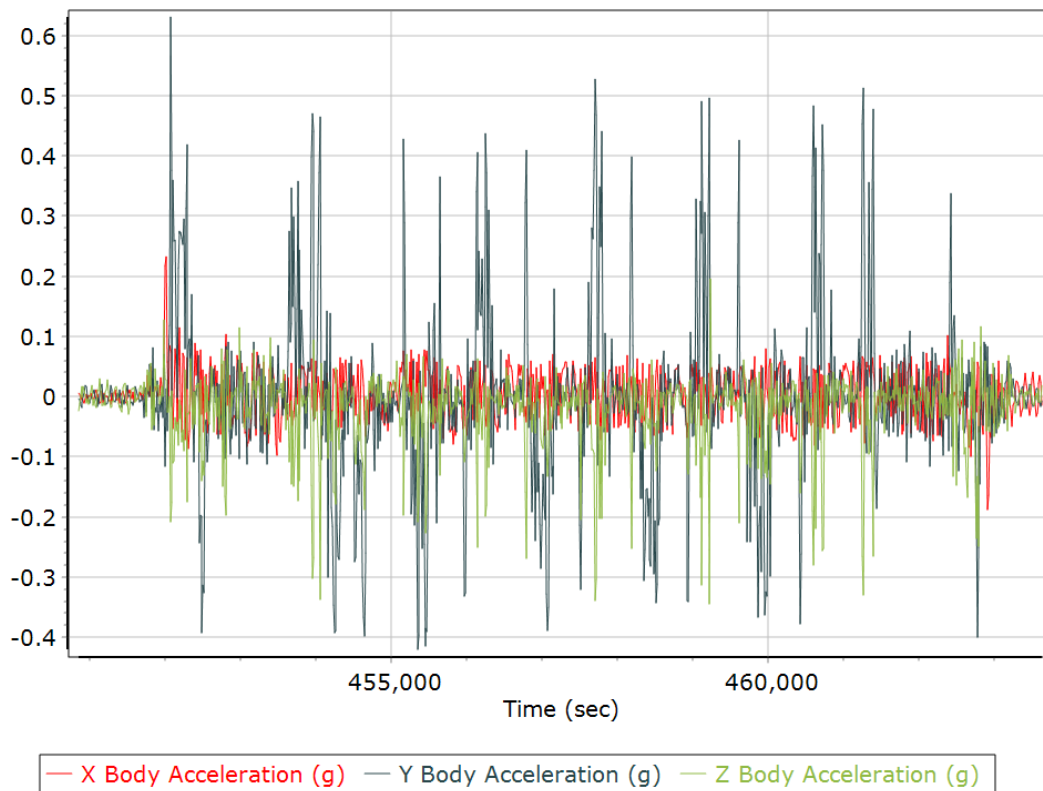
Total Speed



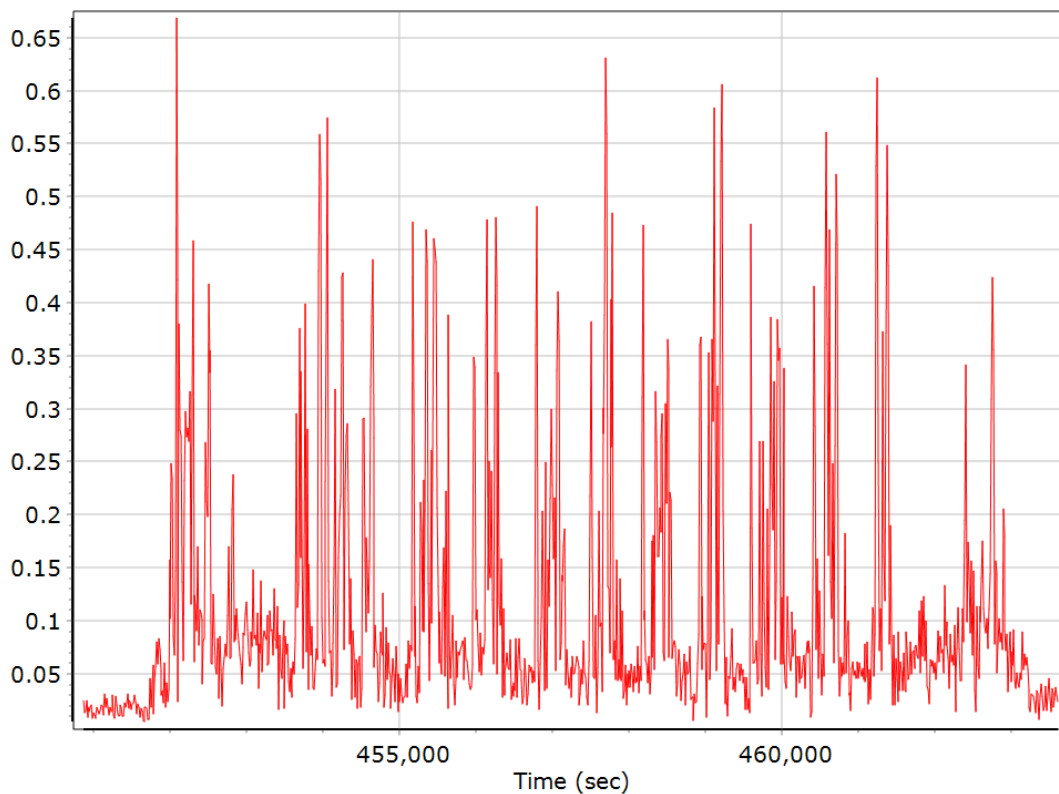
Ground Speed



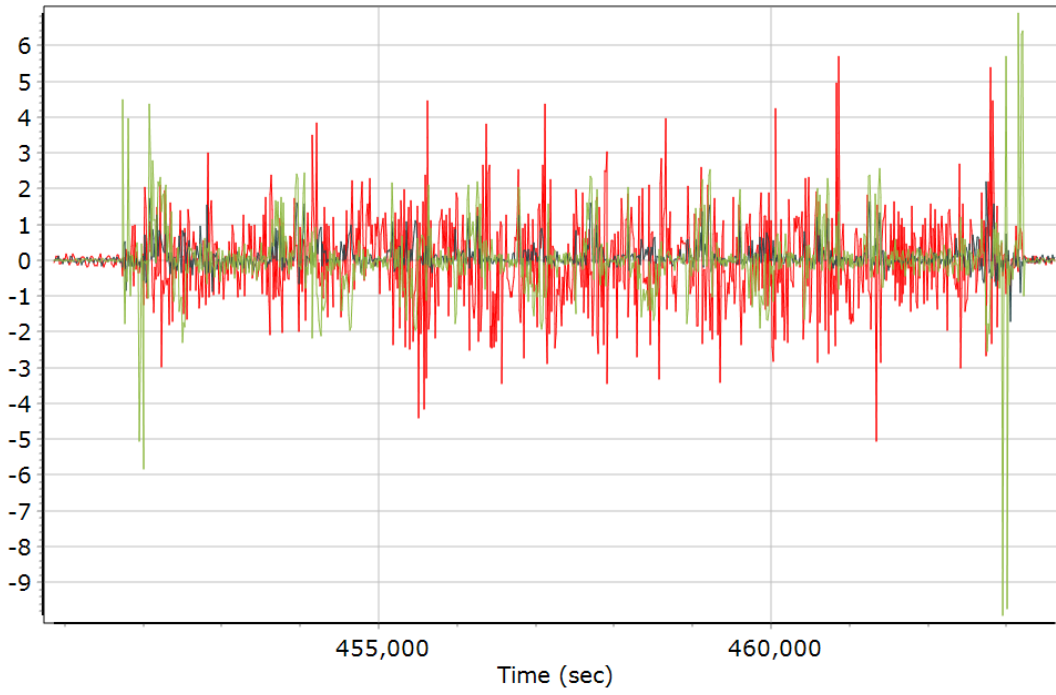
Body Acceleration



Total Body Acceleration



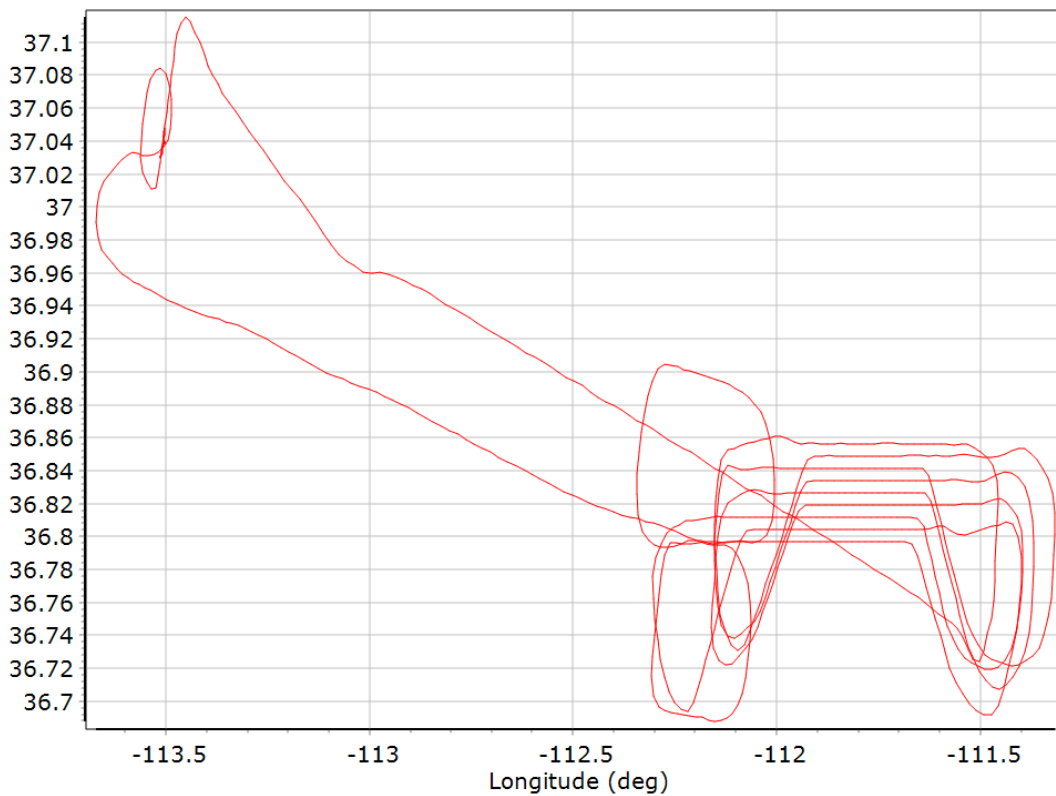
Body Angular Rate



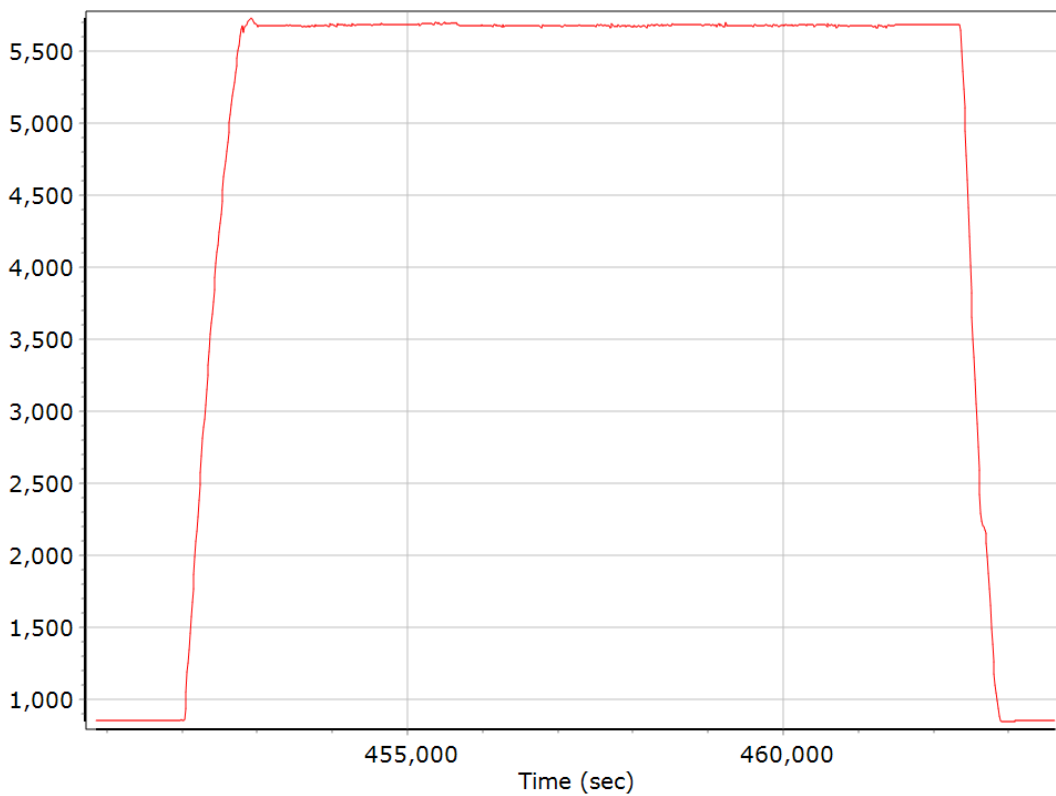
— X Body Angular Rate (deg/sec) — Y Body Angular Rate (deg/sec)
— Z Body Angular Rate (deg/sec)

Forward Processed Trajectory Information

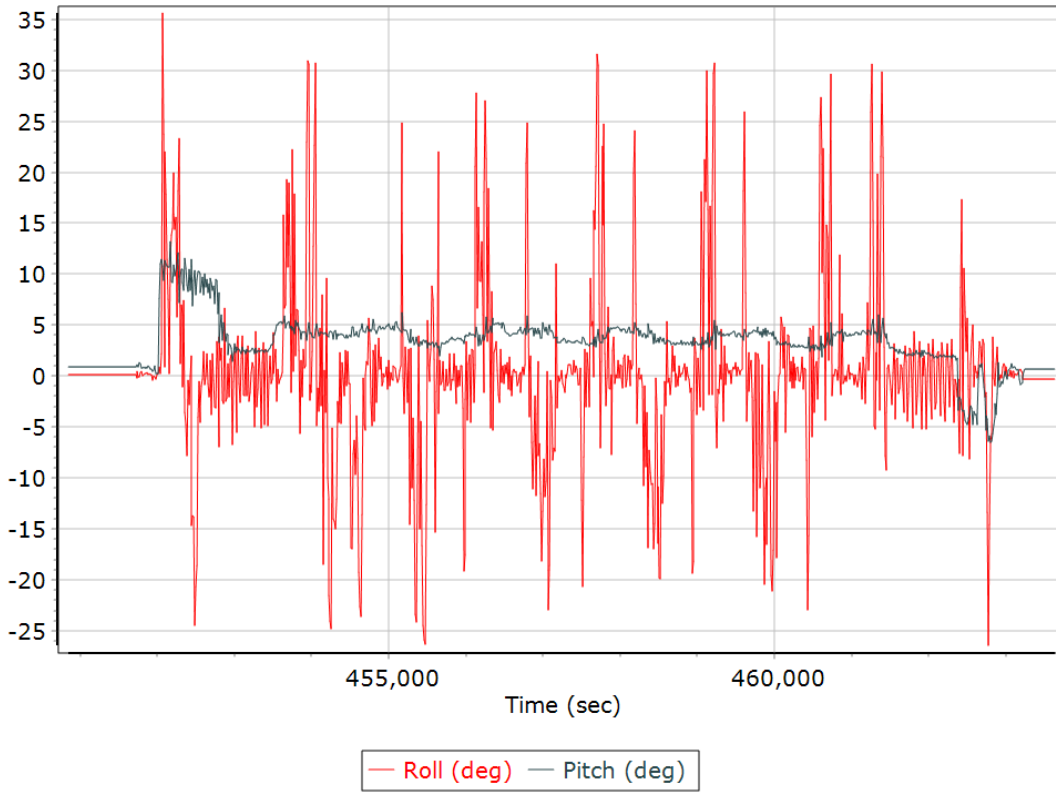
Top View



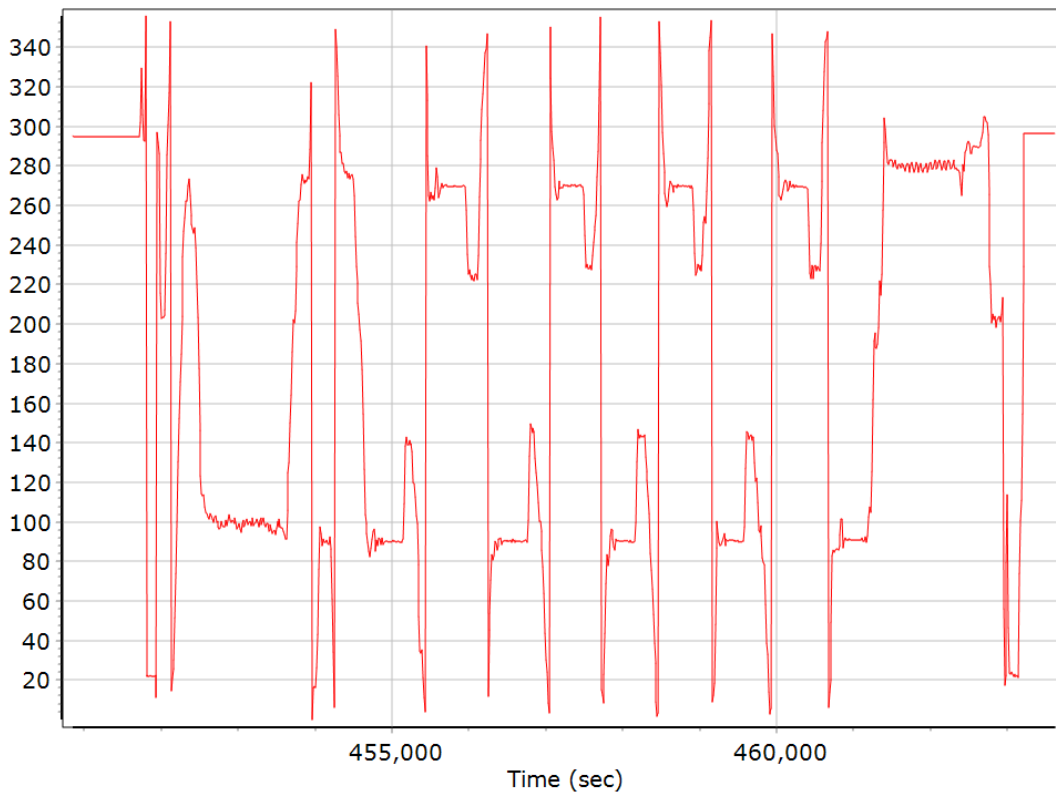
Altitude



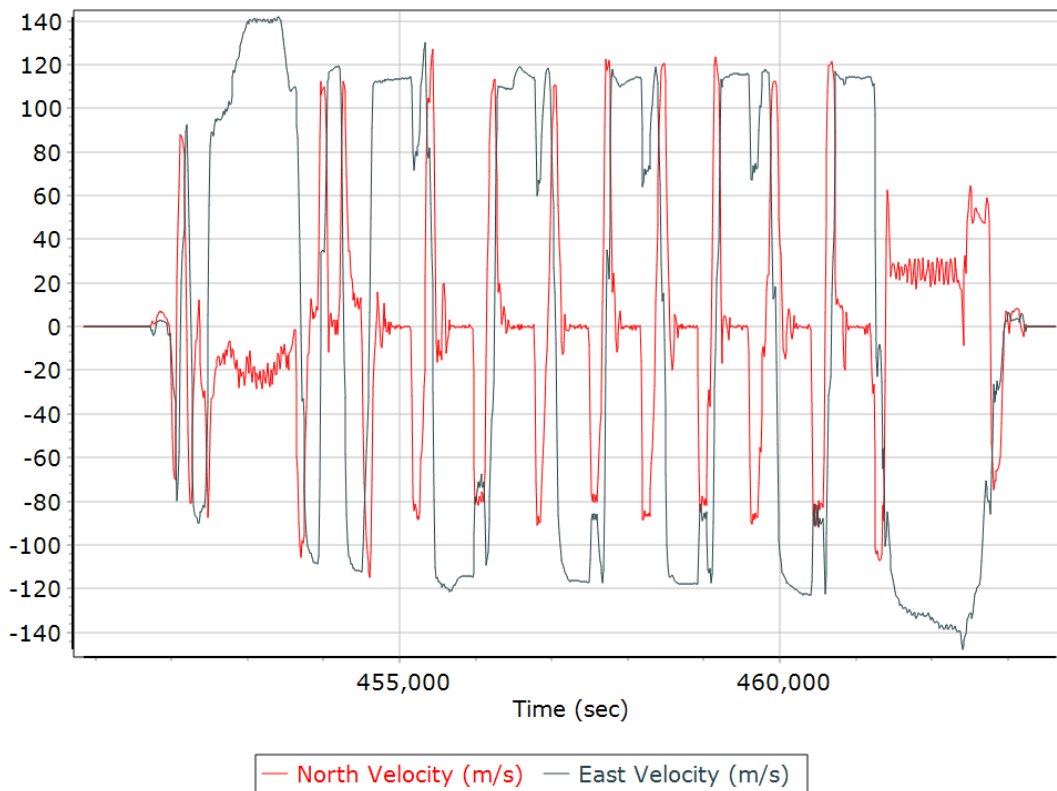
Roll/Pitch



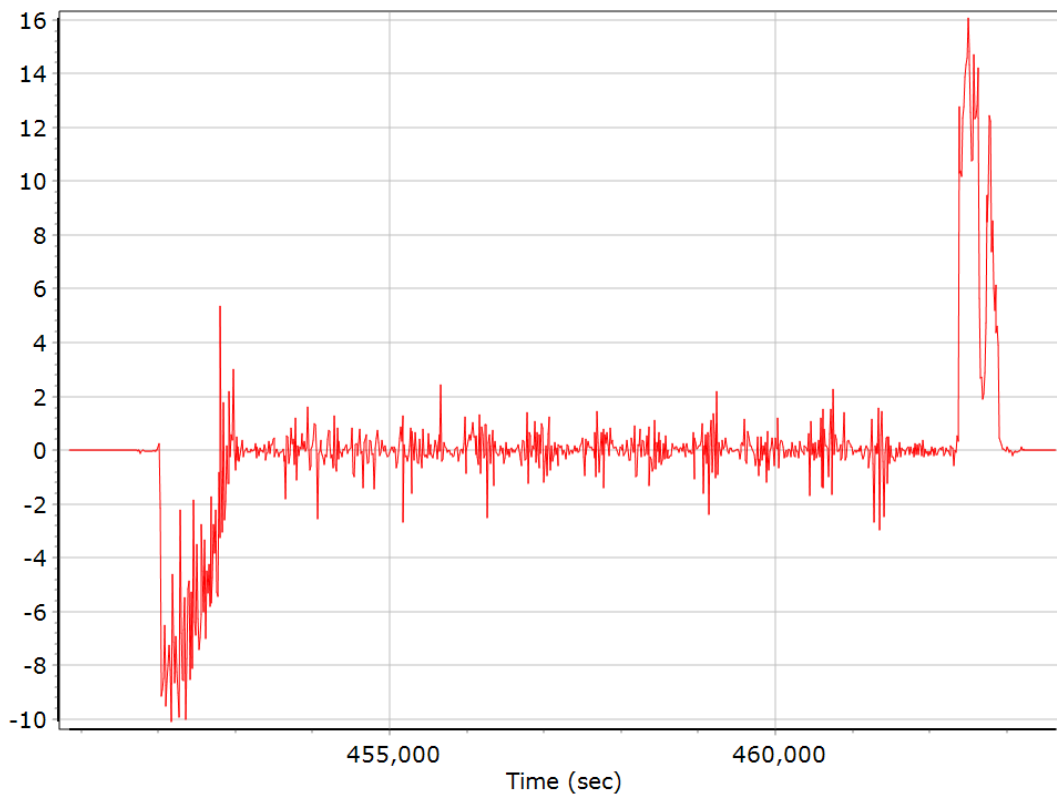
Heading



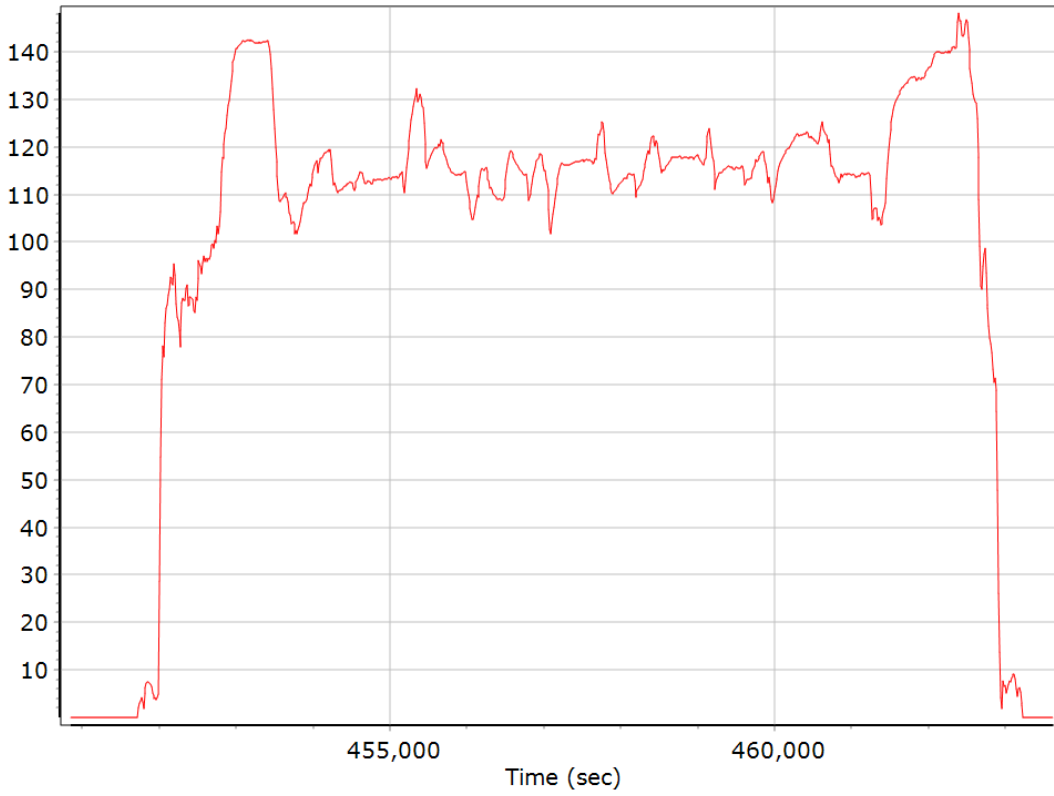
North/East Velocity



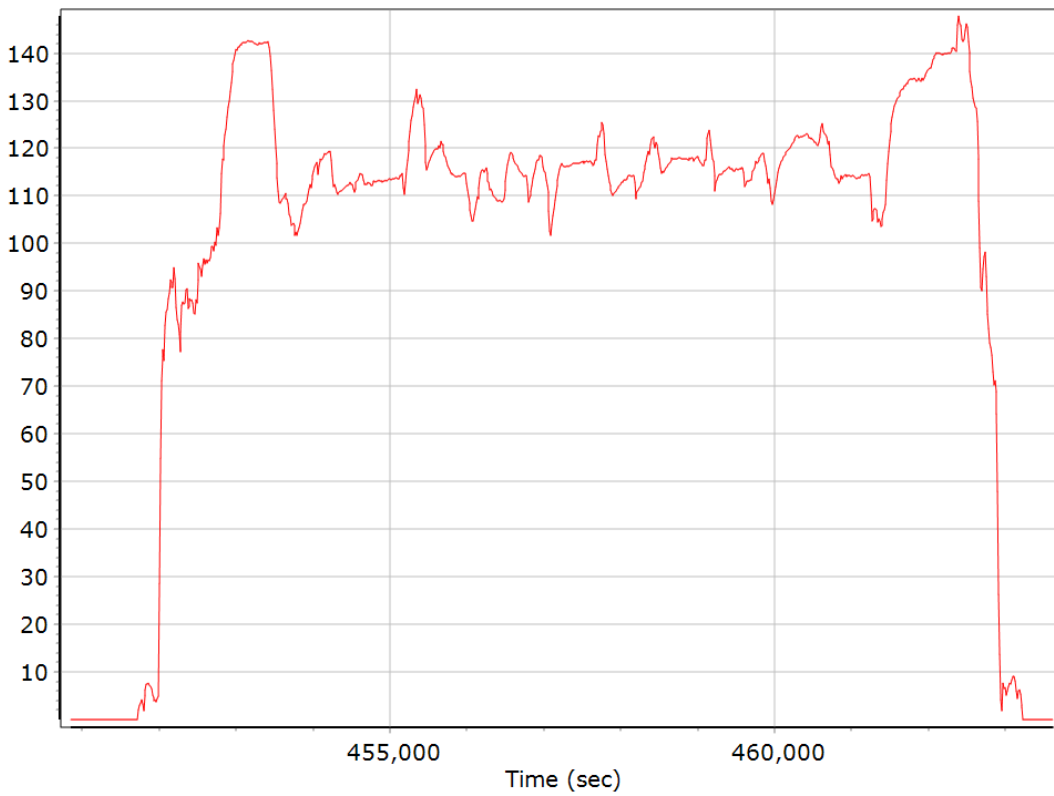
Down Velocity



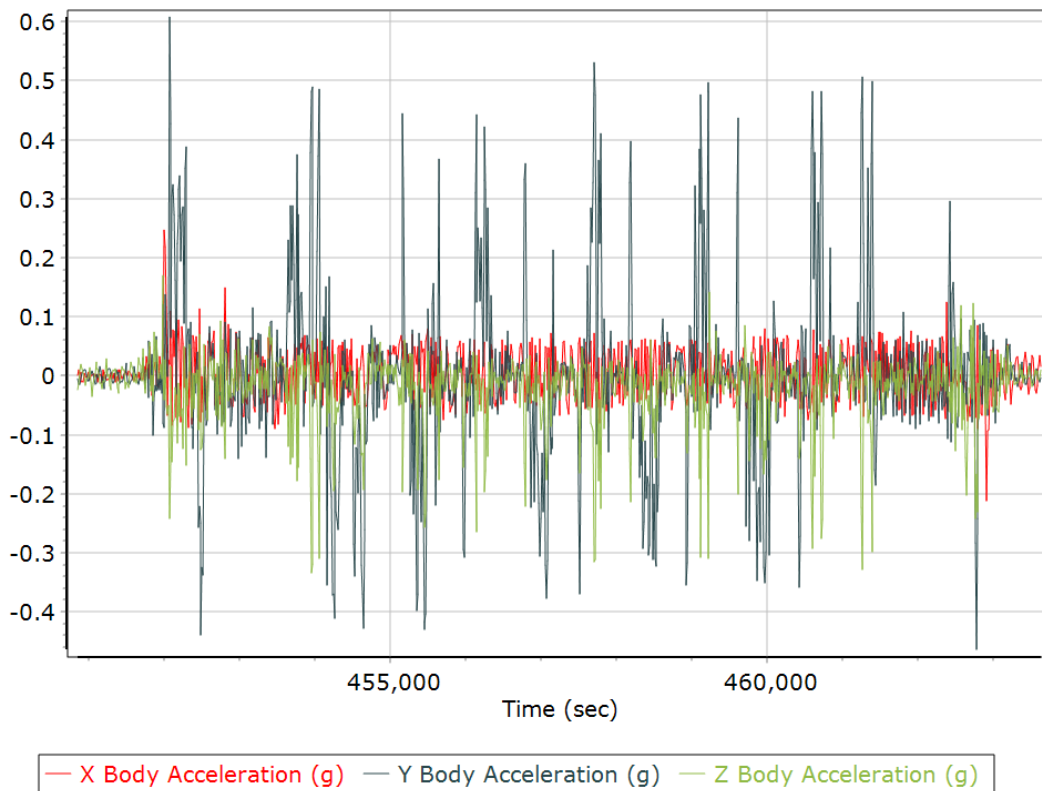
Total Speed



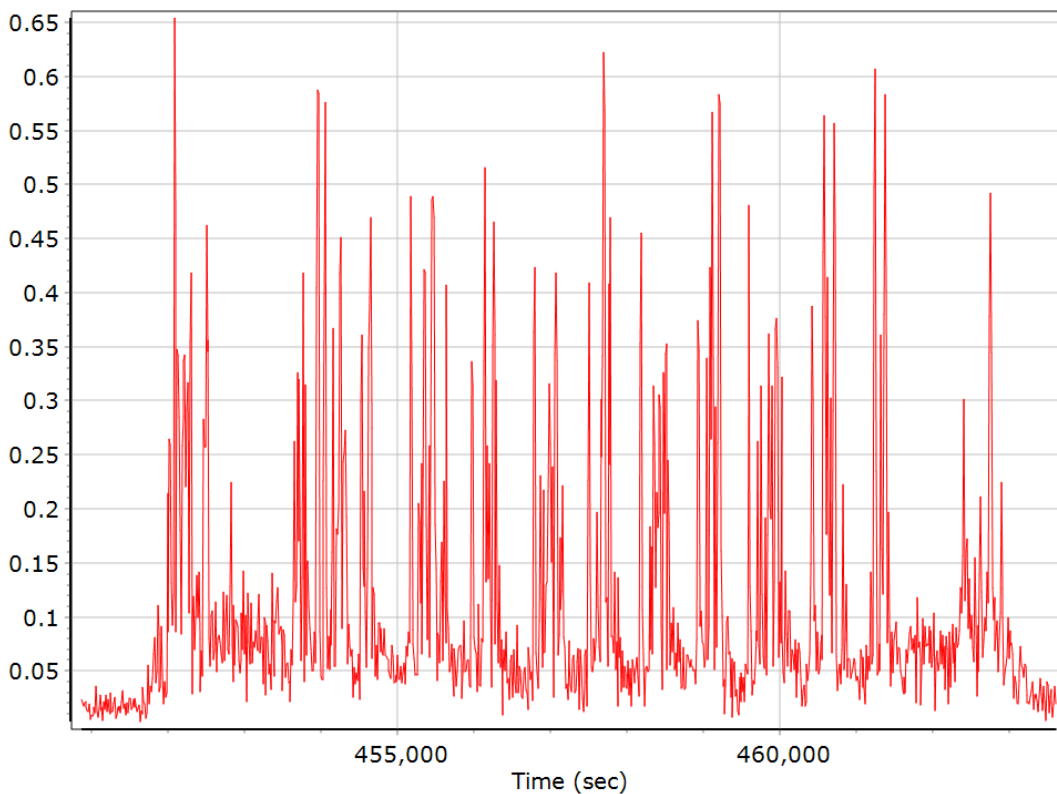
Ground Speed



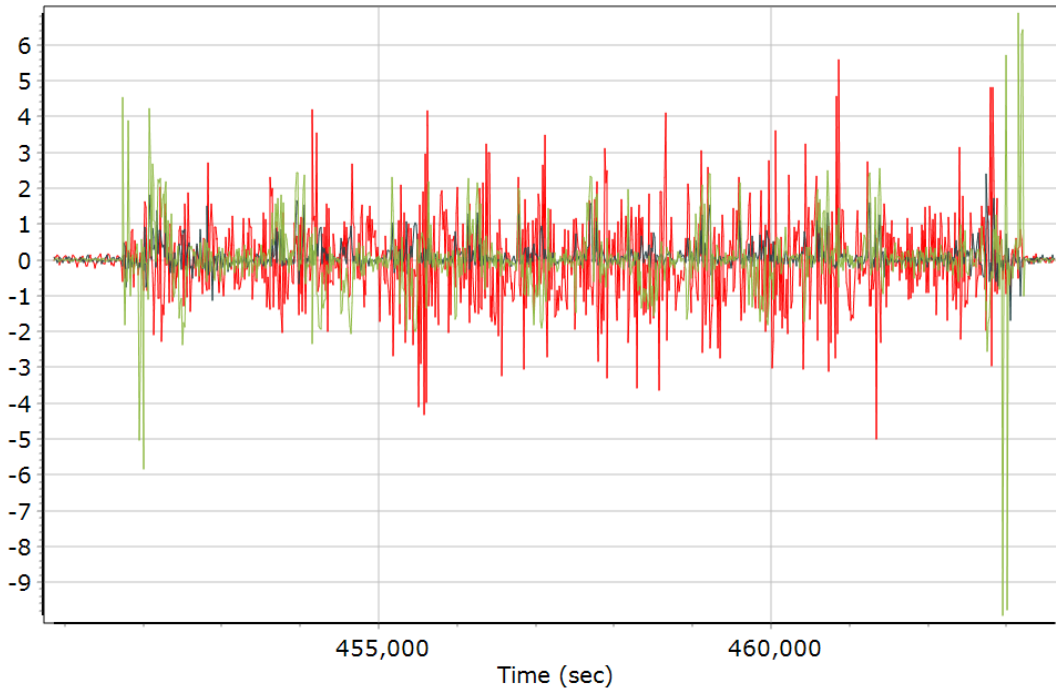
Body Acceleration



Total Body Acceleration



Body Angular Rate



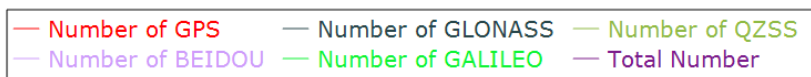
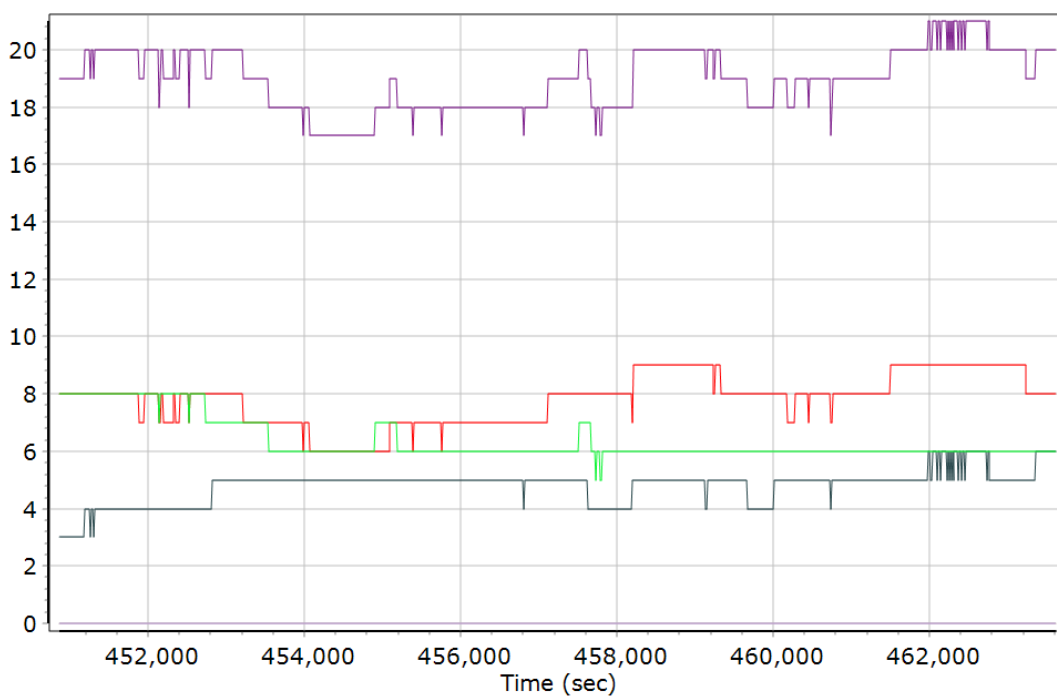
— X Body Angular Rate (deg/sec) — Y Body Angular Rate (deg/sec)
— Z Body Angular Rate (deg/sec)

GNSS QC

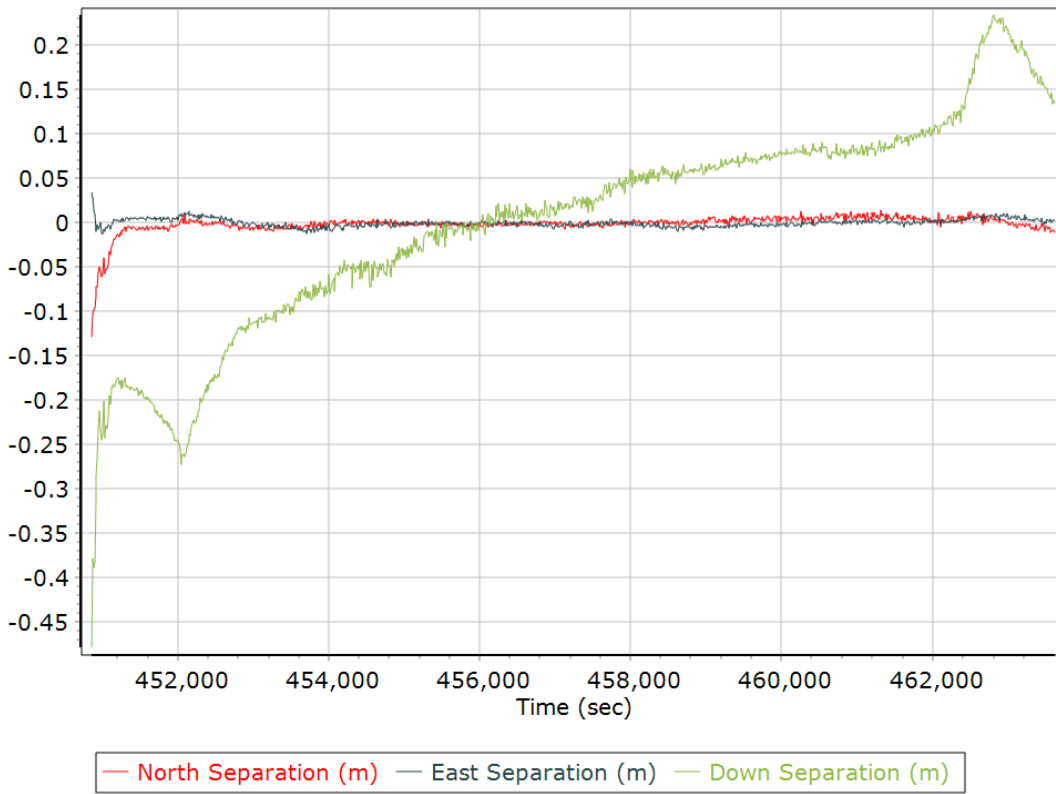
GNSS QC Statistics

Statistics	Min	Max	Mean
Baseline length (km)	0.00	0.00	
Number of GPS SV	6	9	8
Number of GLONASS SV	0	6	5
Number of QZSS SV	0	0	0
Number of BEIDOU SV	0	0	0
Number of GALILEO SV	5	8	6
Total number of SV	16	21	19
PDOP	1.03	1.47	1.20
QC Solution Gaps	0.00	0.00	
Solution Type	Fixed	Float	No solution
Epoch (sec)	12851.00	0.00	0.00
Percentage	100.00	0.00	0.00

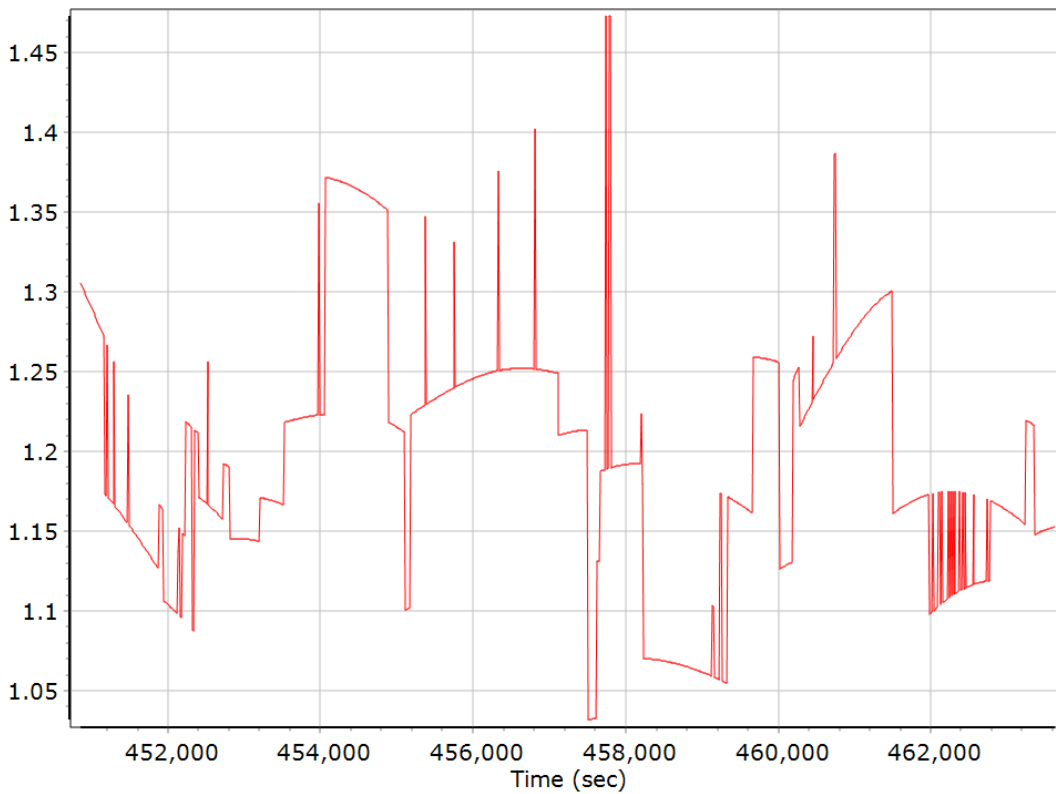
Num SVs in solution



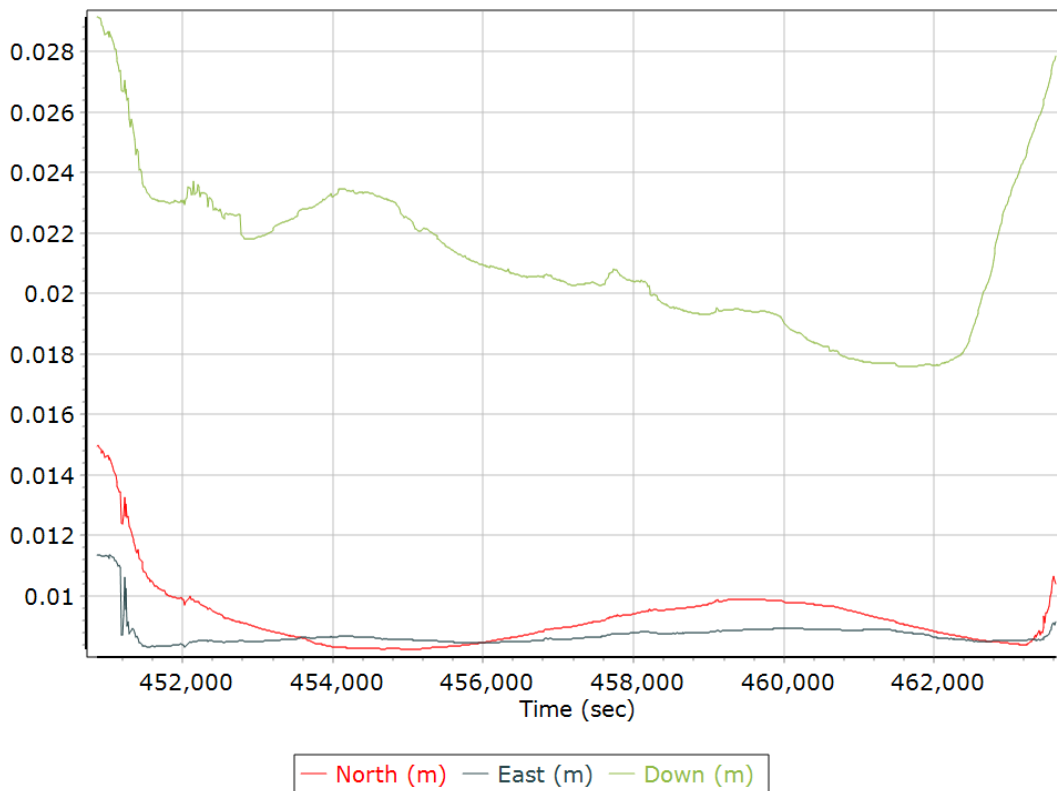
Forward/Reverse Separation



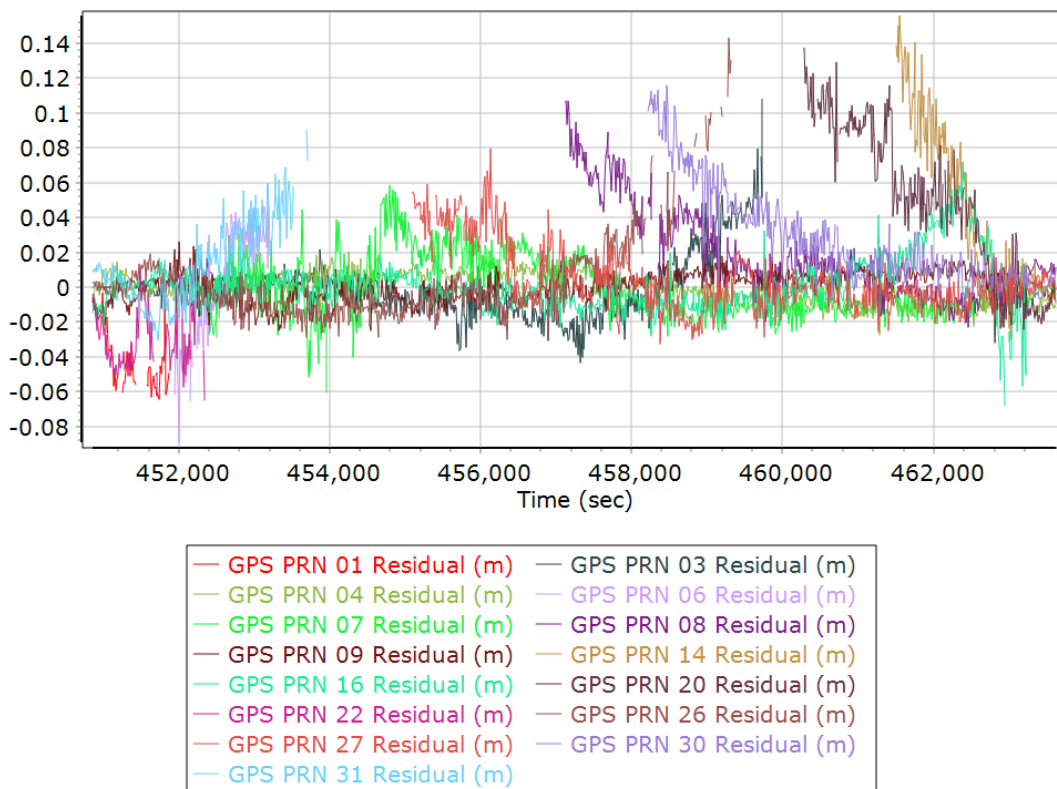
PDOP



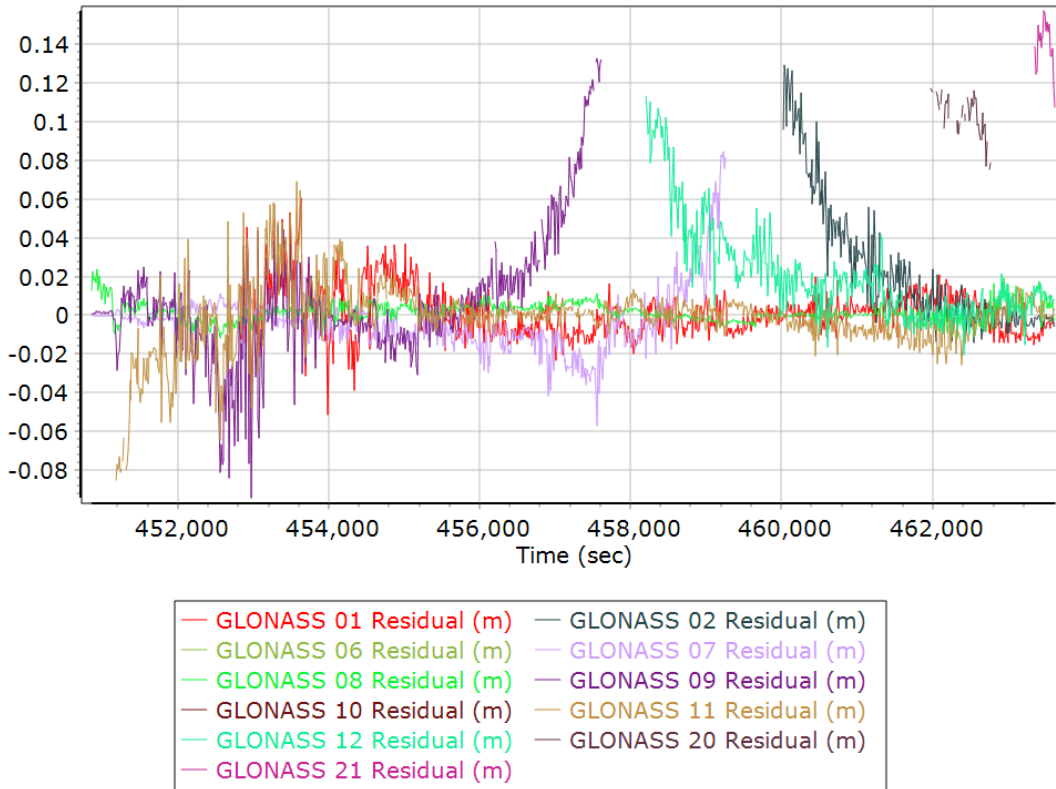
Estimated Position Accuracy



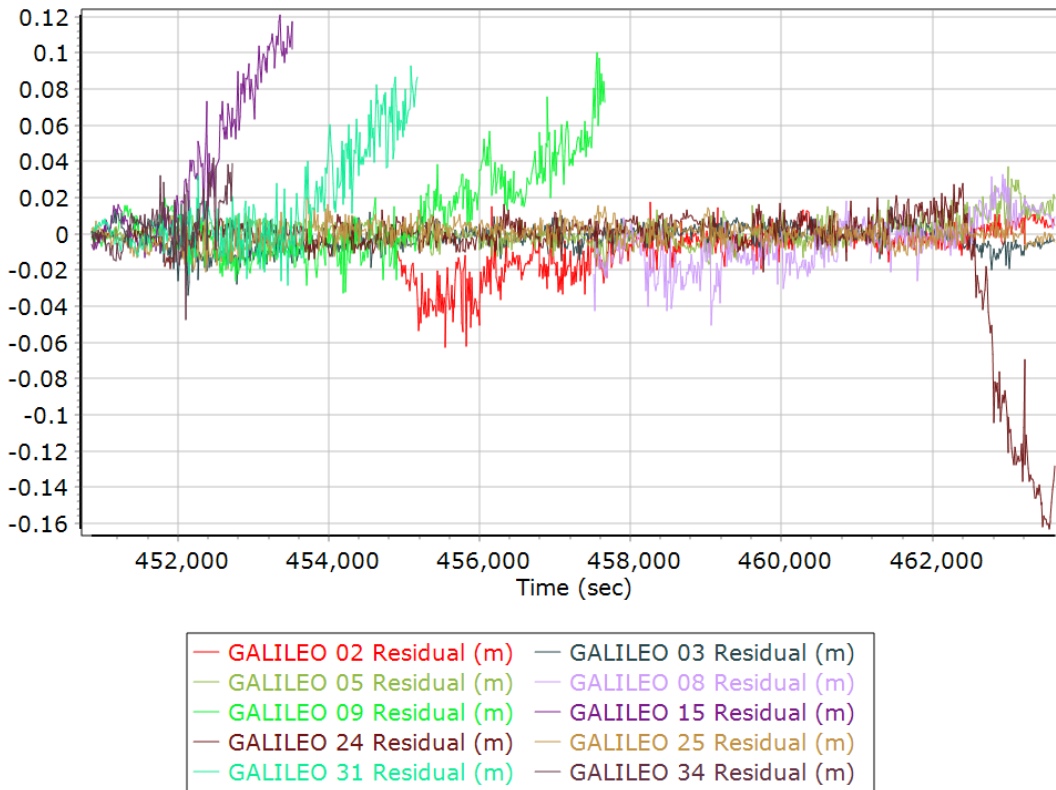
GPS Residuals



GLONASS Residuals



GALILEO Residuals



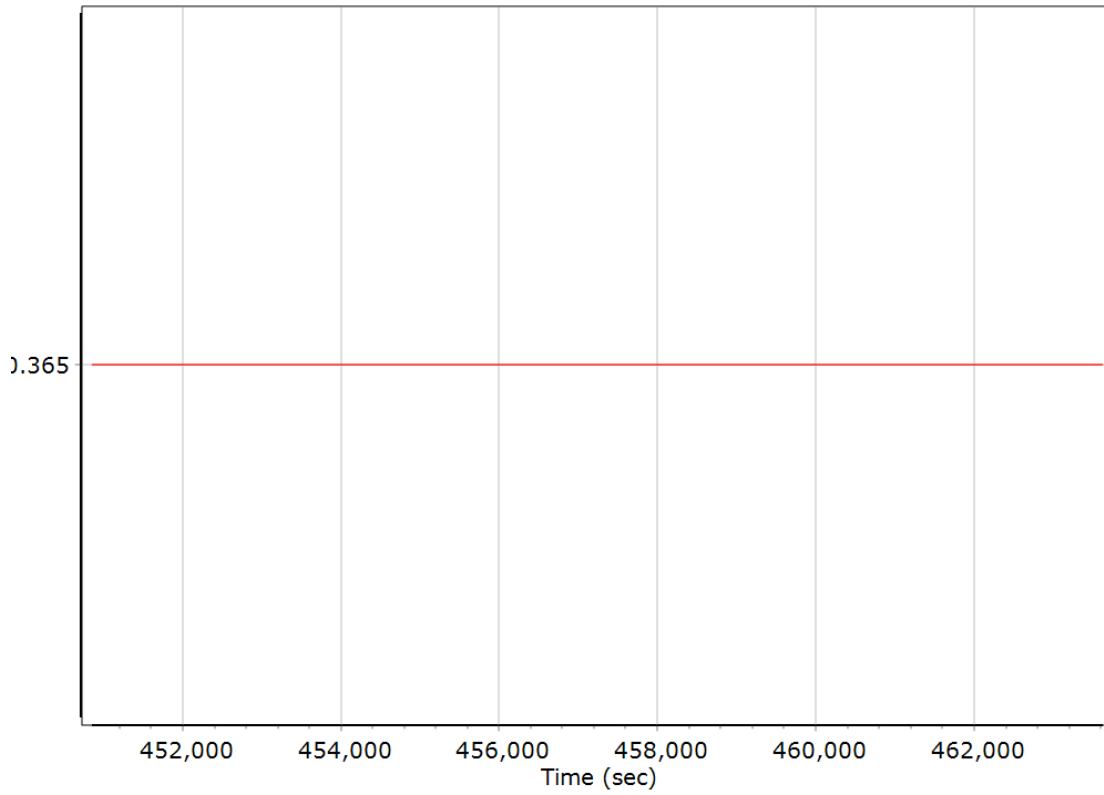
GNSS-Inertial Processor Configuration

Processing mode	IN-Fusion PP-RTX		
Stabilized mount	False		
Processing start time	450773.000 (7/8/2022 5:12:53 AM)		
Processing end time	463633.000 (7/8/2022 8:47:13 AM)		
Initial attitude source	Real-Time VNAV/RNAV Attitude		
IMU Sensor Context	Processing with Onboard IMU		
Reference to IMU lever arm (m)	0.000	0.000	0.000
Reference to IMU mounting angles (deg)	0.000	0.000	0.000
Reference to Primary GNSS lever arm (m)	-0.365	-0.305	-1.282
Reference 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

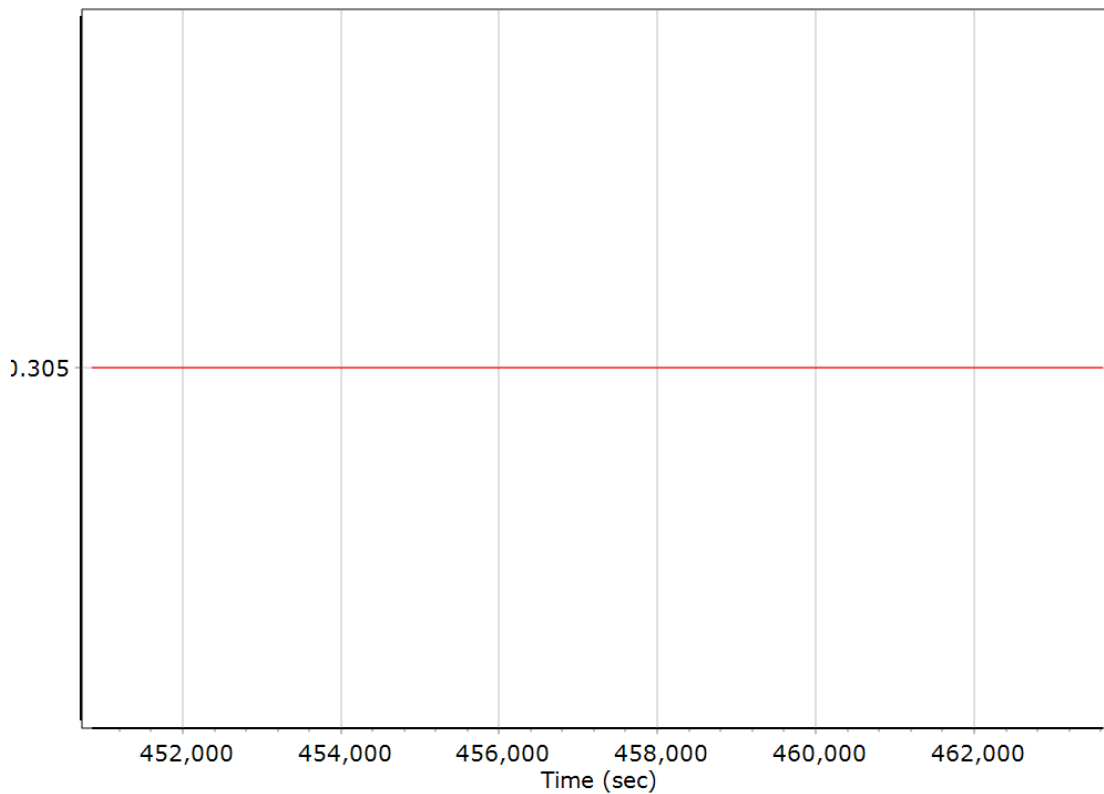
Calibrated Installation Parameters

Reference-Primary GNSS Lever Arm (m)

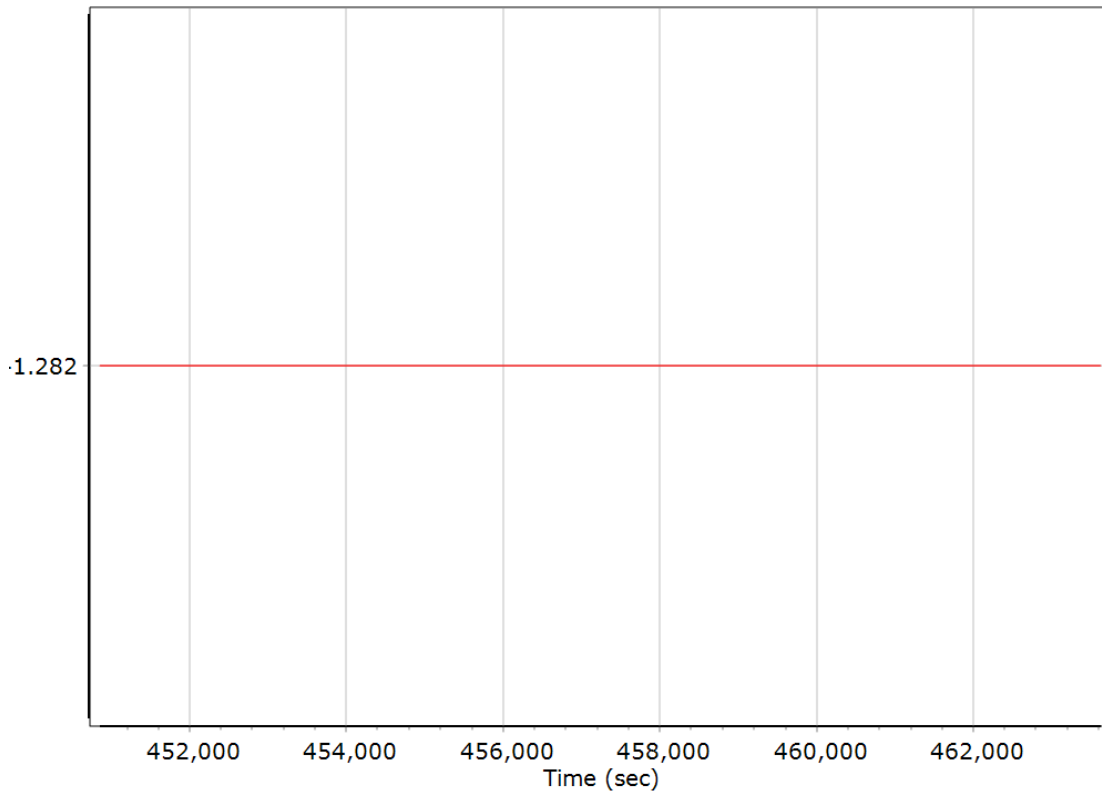
X Reference-Primary GNSS Lever Arm (m)



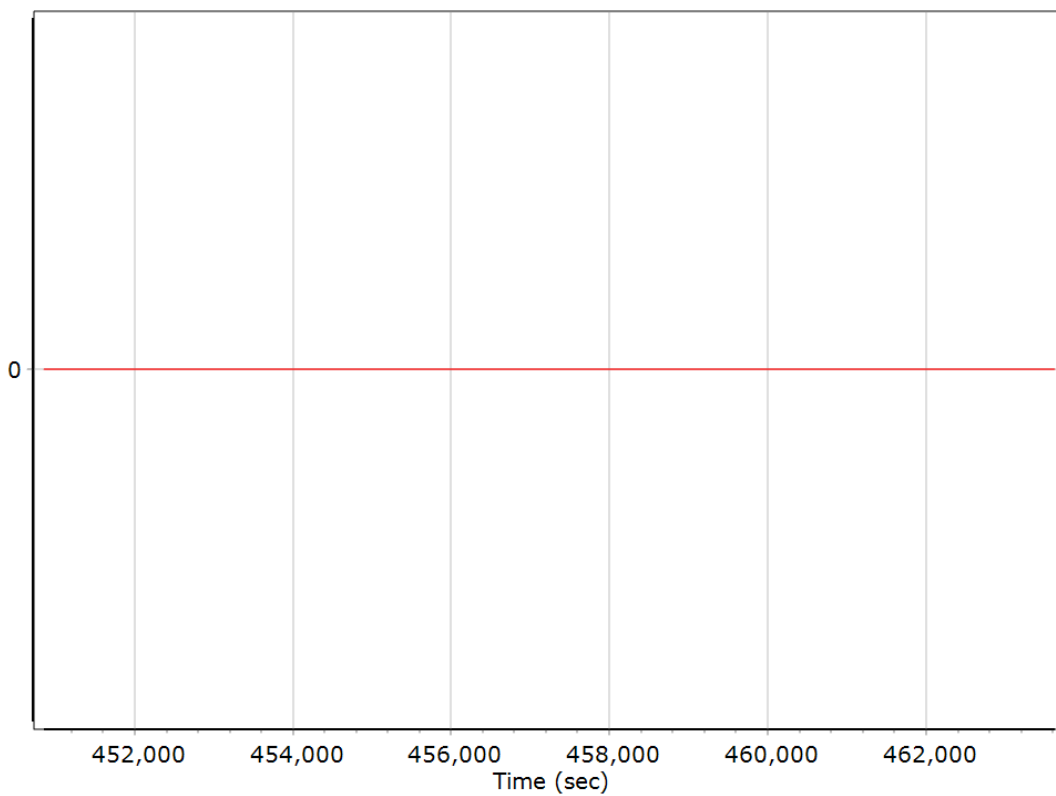
Y Reference-Primary GNSS Lever Arm (m)



Z Reference-Primary GNSS Lever Arm (m)



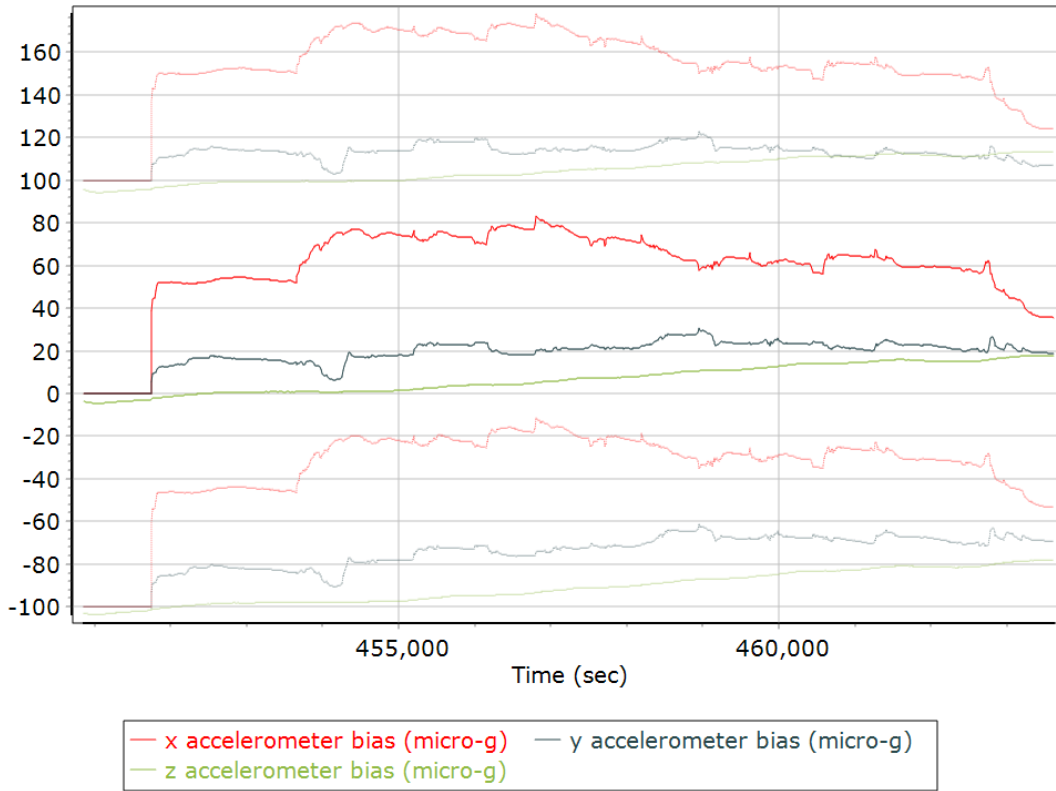
Reference-Primary GNSS Lever Arm Figure of Merit



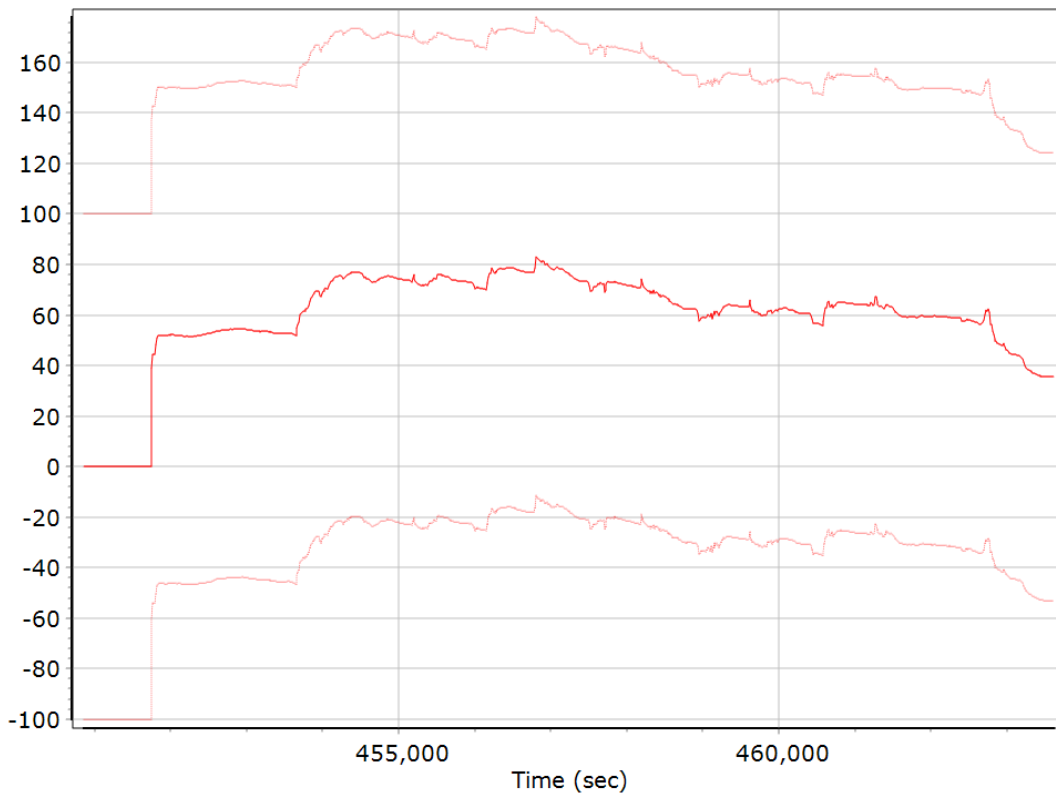
IN-Fusion QC

Forward Processed Estimated Errors, Reference Frame

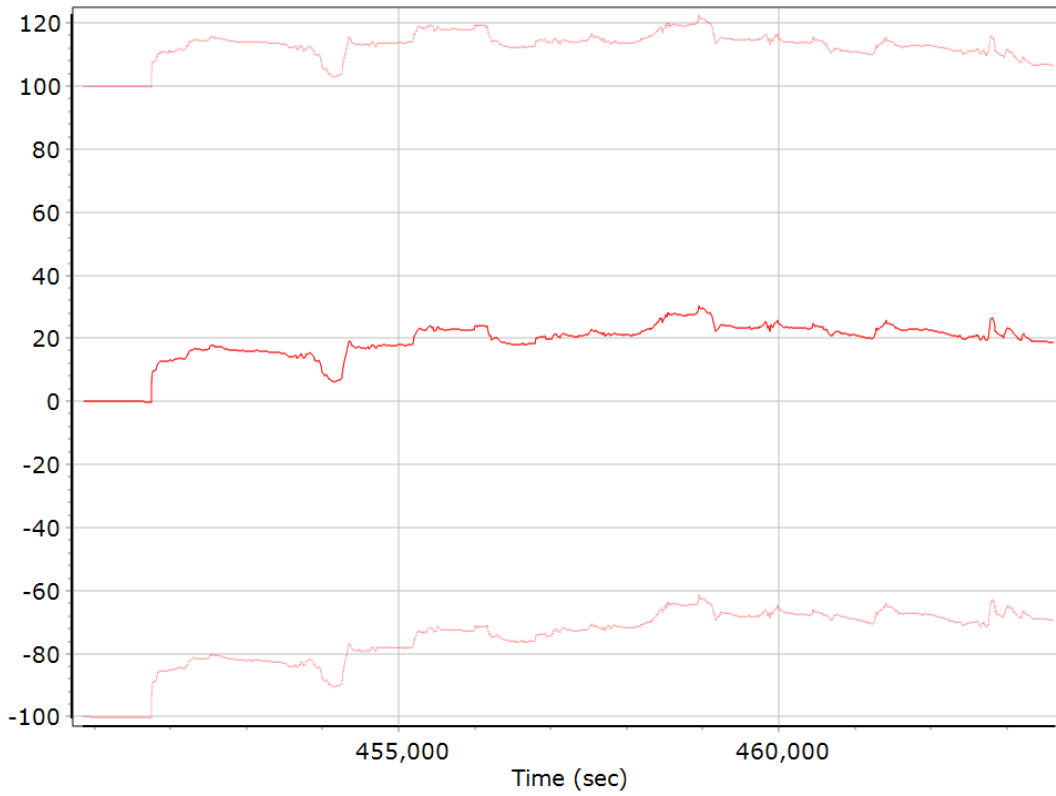
Accelerometer Bias (micro-g)



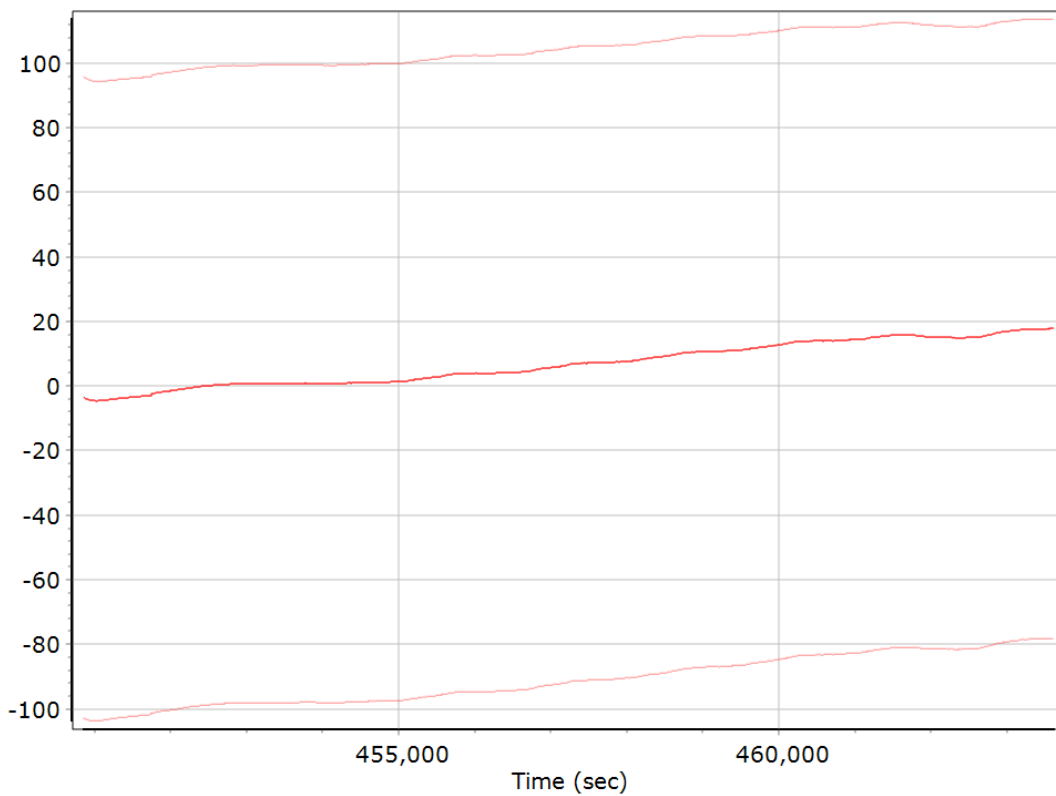
X Accelerometer Bias (micro-g)



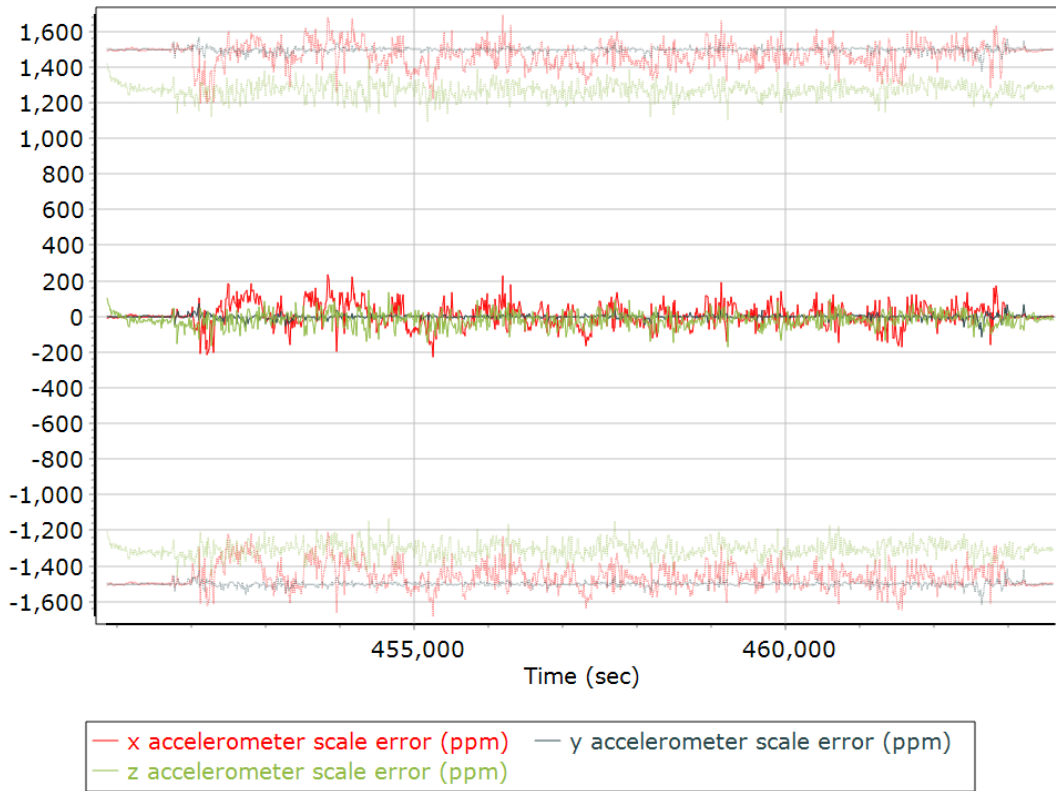
Y Accelerometer Bias (micro-g)



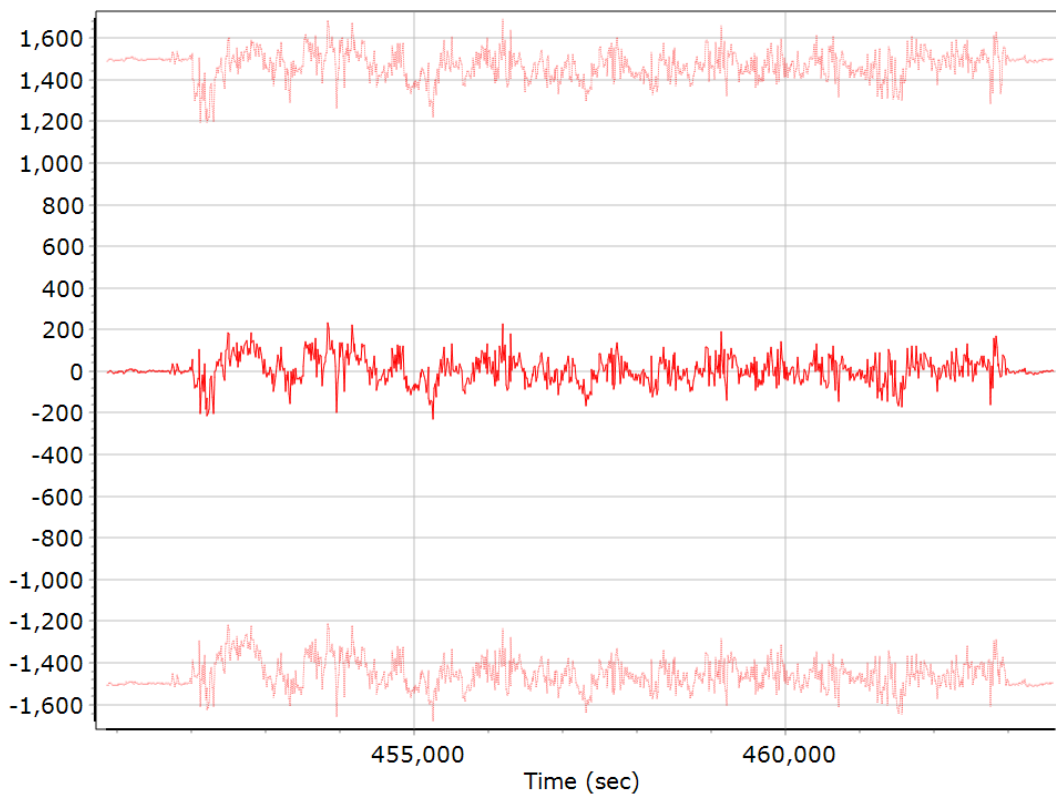
Z Accelerometer Bias (micro-g)



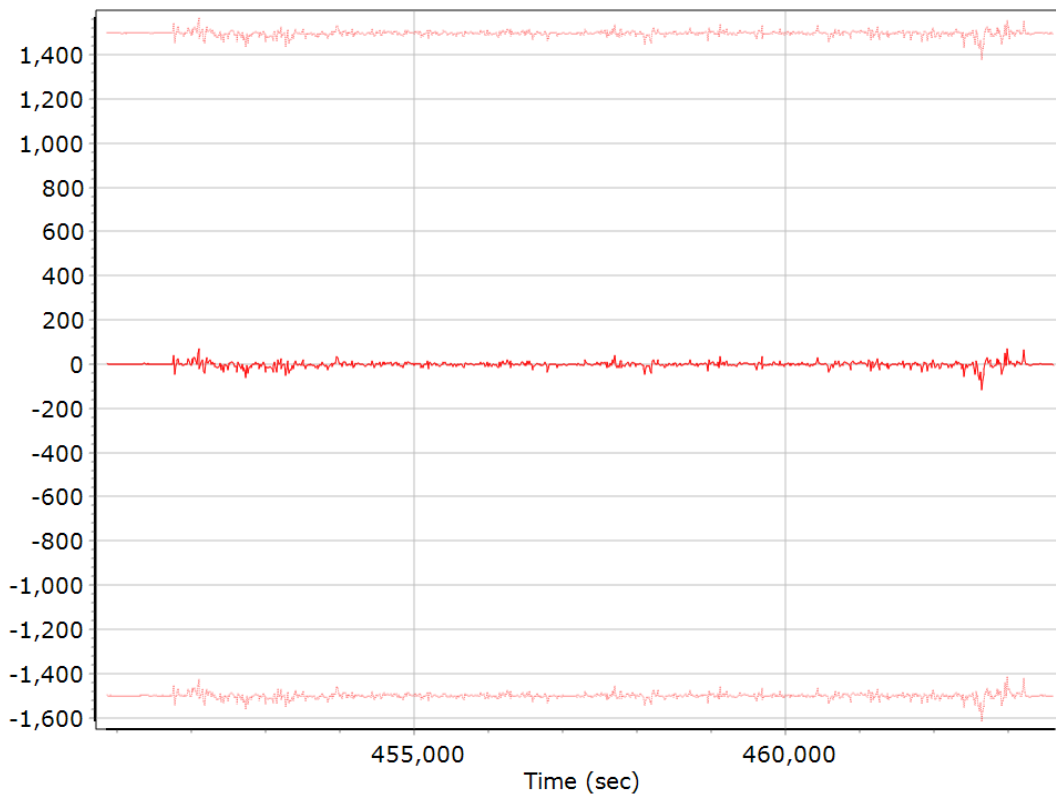
Accelerometer Scale Error (ppm)



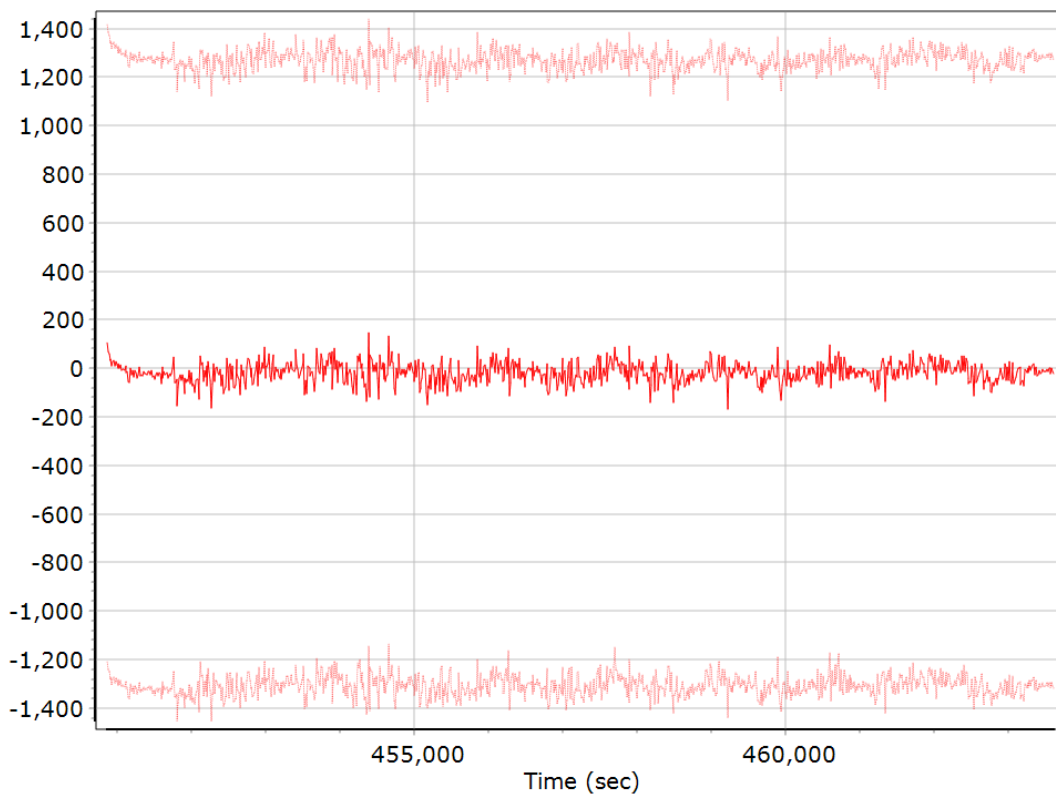
X Accelerometer Scale Error (ppm)



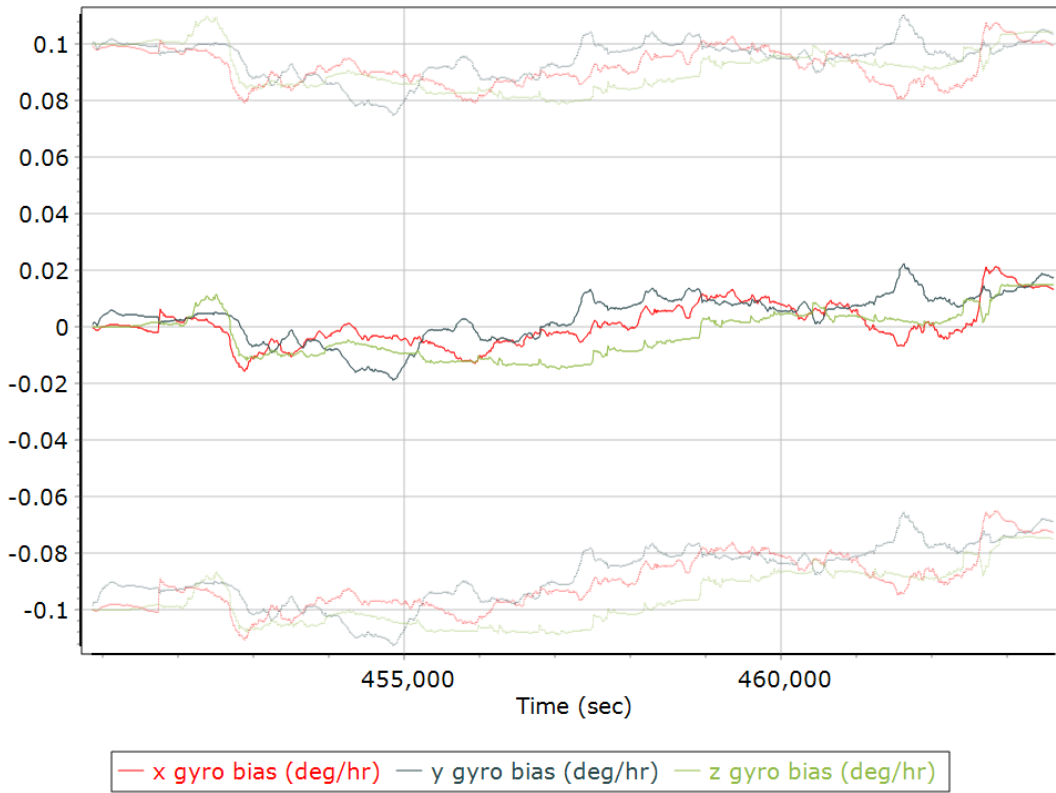
Y Accelerometer Scale Error (ppm)



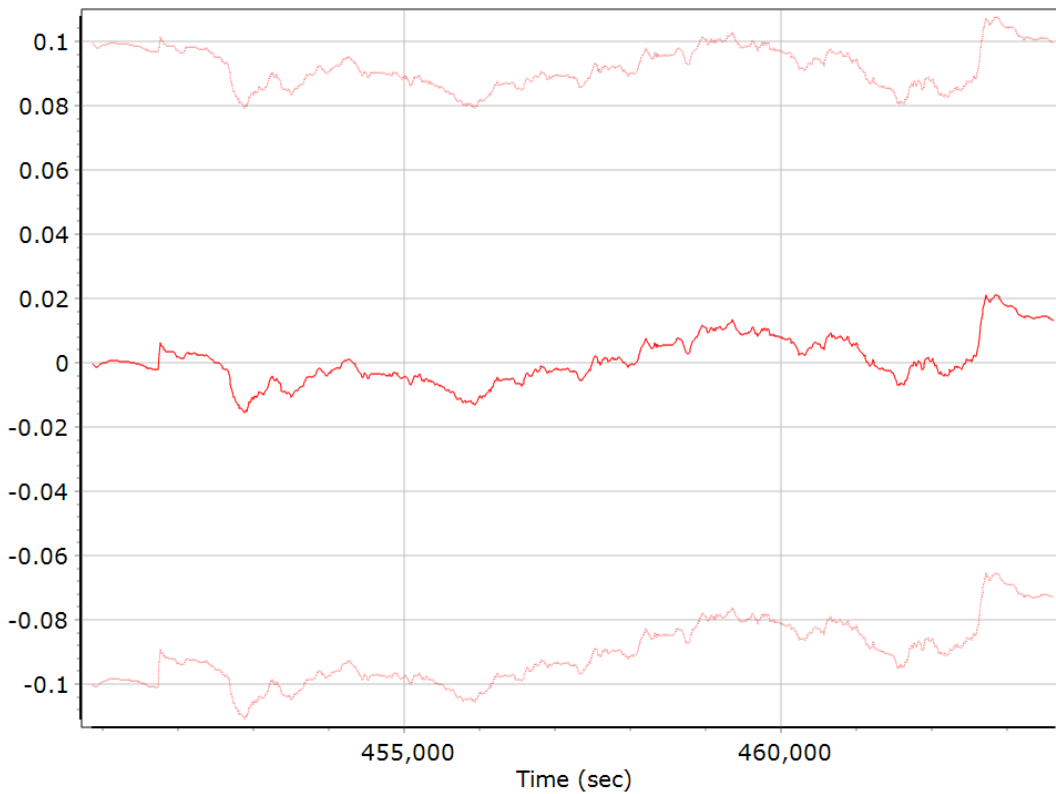
Z Accelerometer Scale Error (ppm)



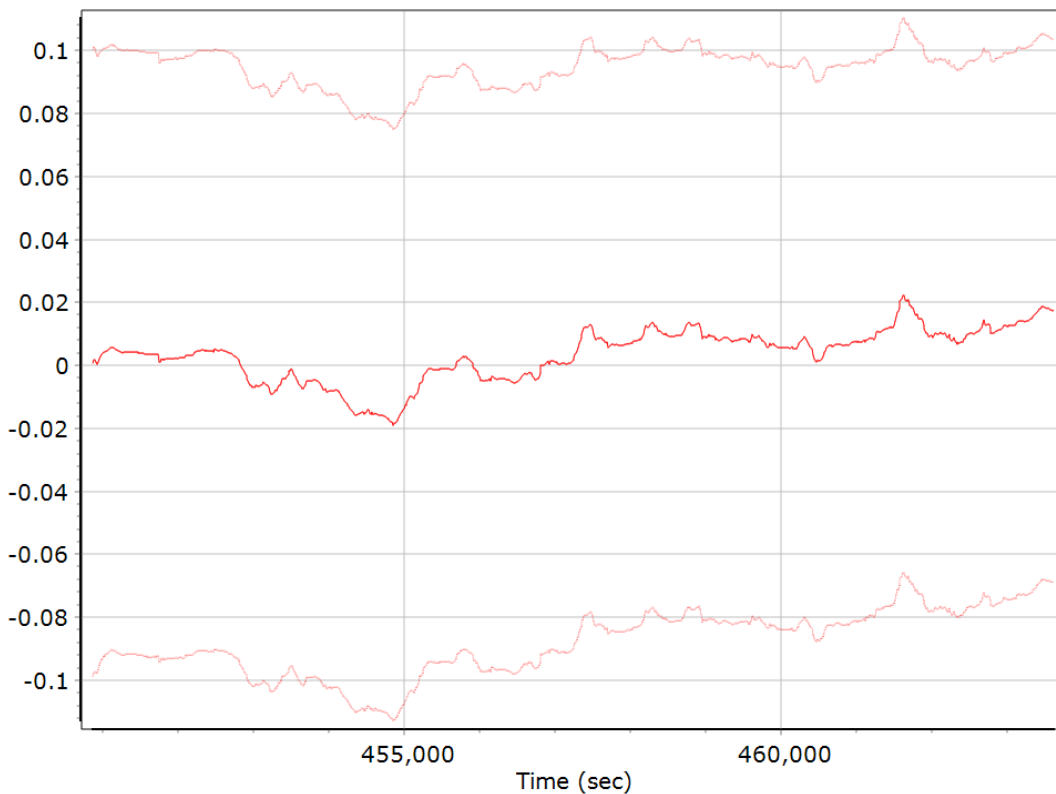
Gyro Bias (deg/h)



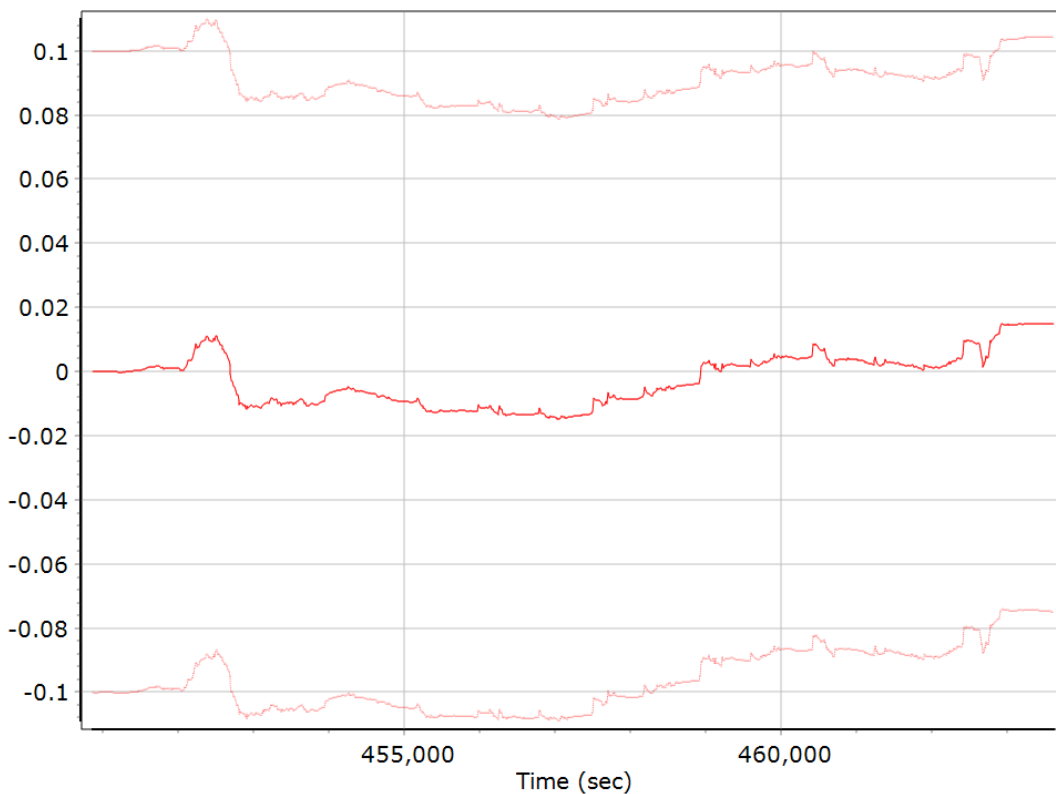
X Gyro Bias (deg/h)



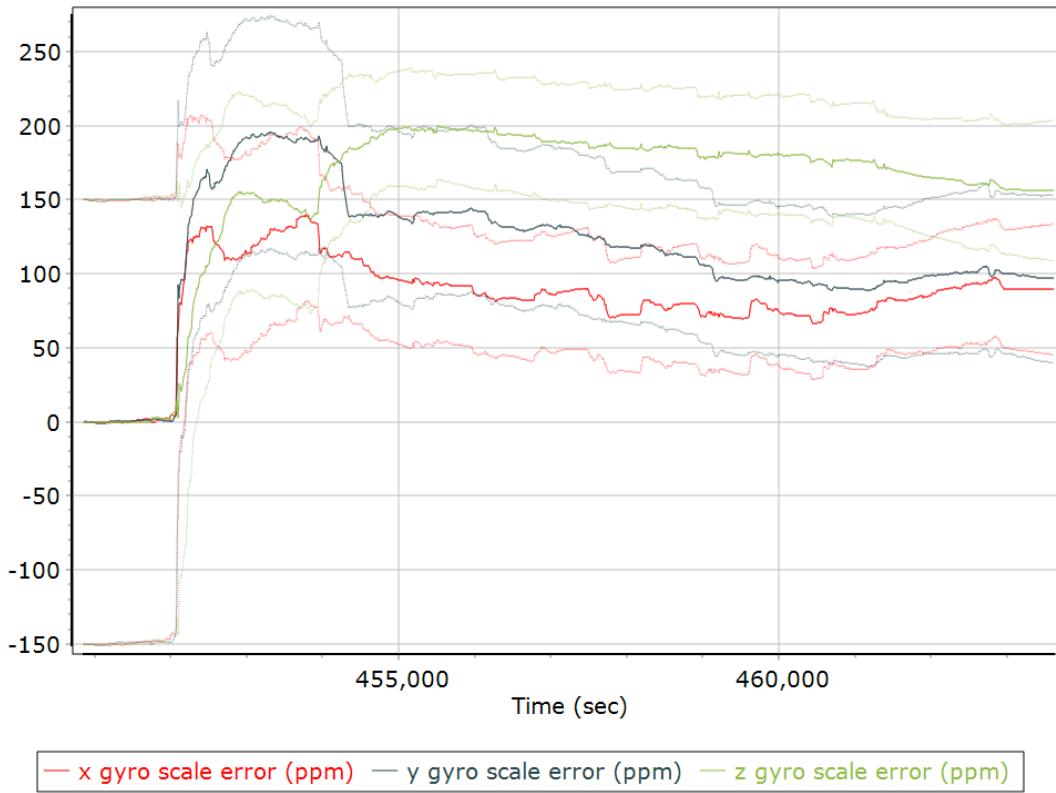
Y Gyro Bias (deg/h)



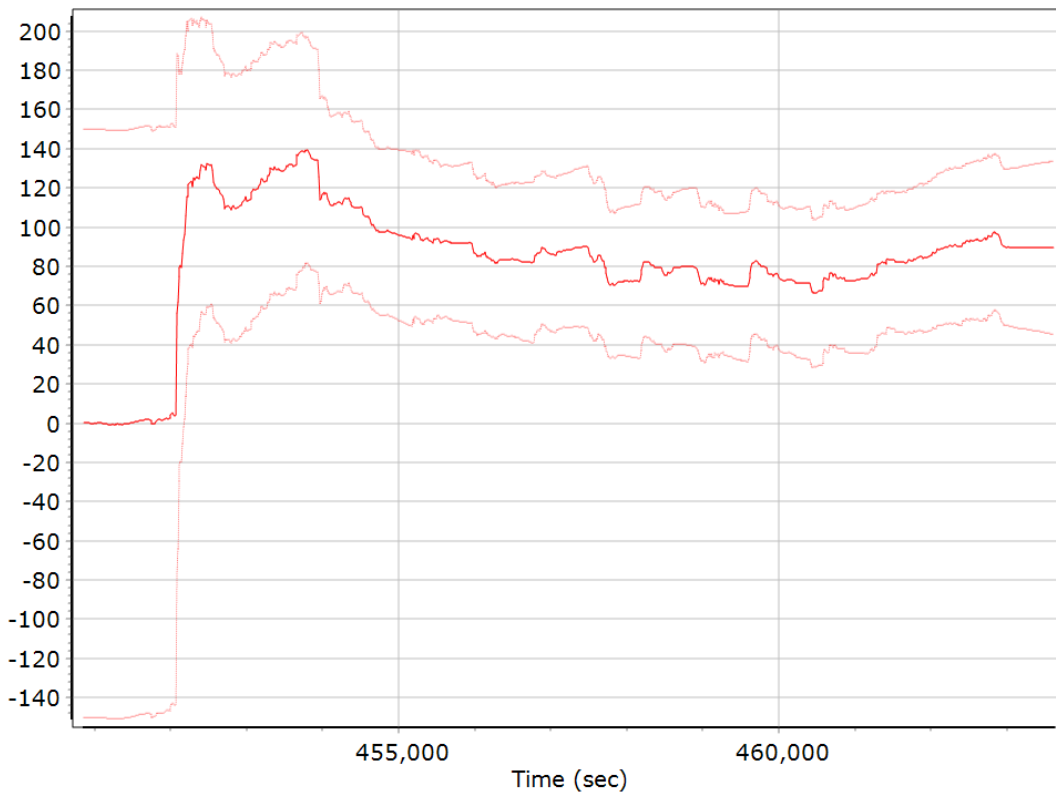
Z Gyro Bias (deg/h)



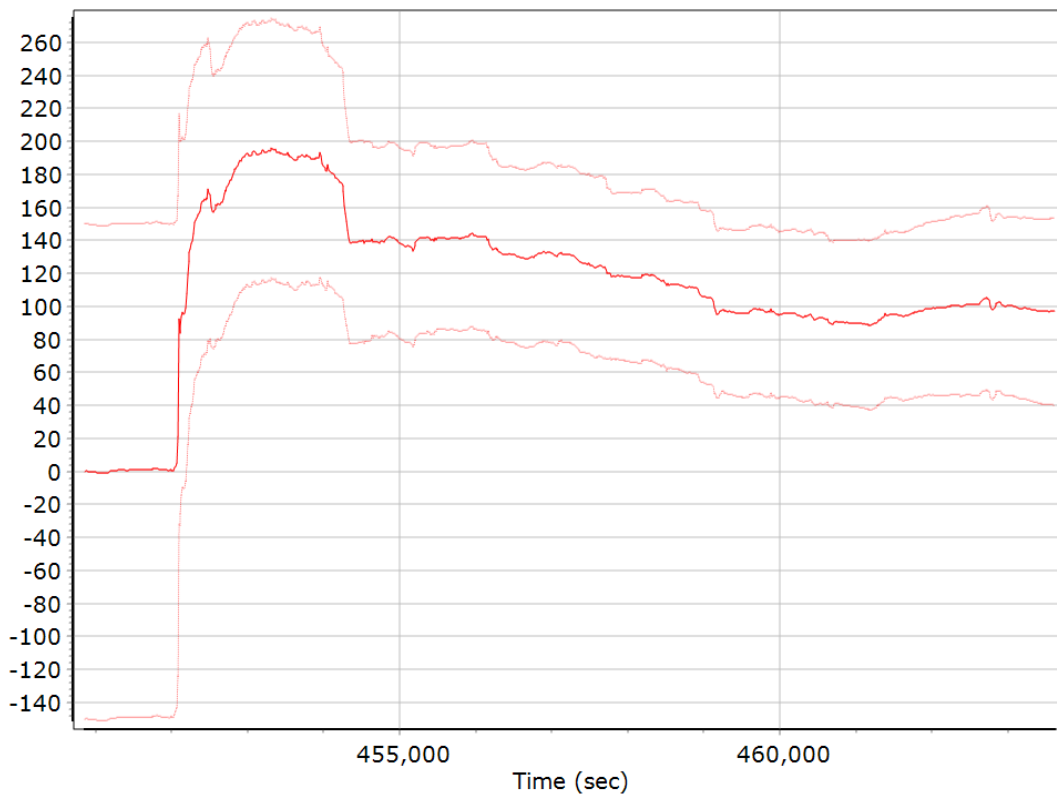
Gyro Scale Error (ppm)



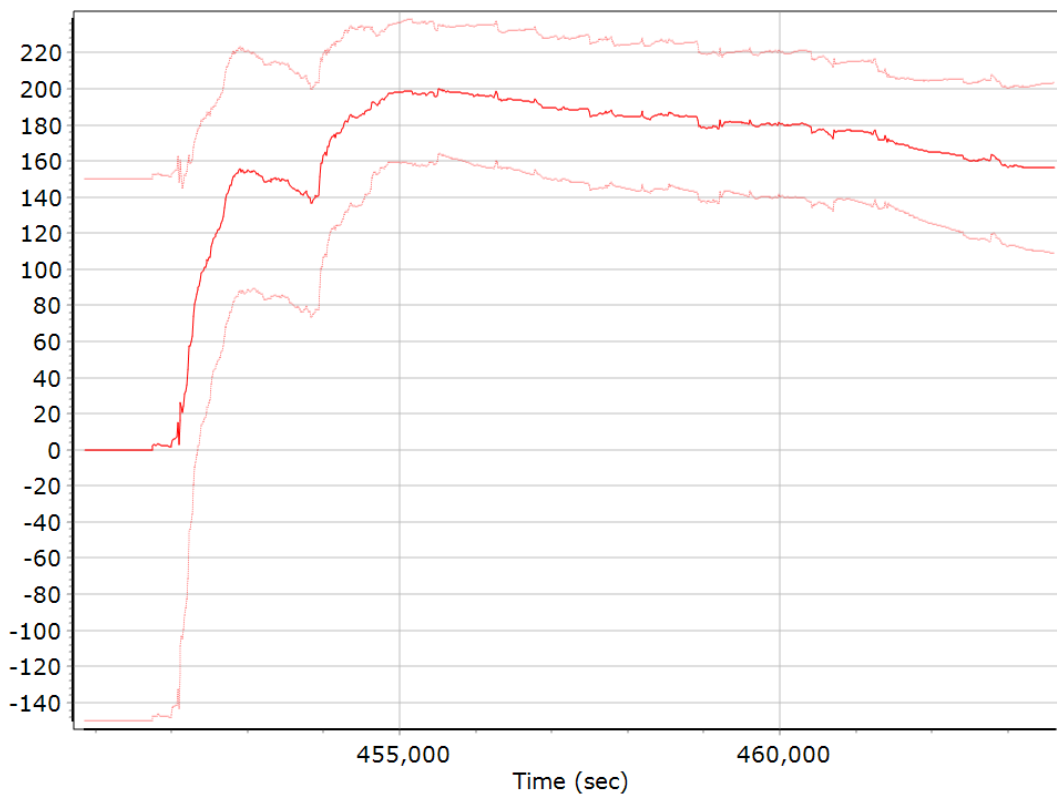
X Gyro Scale Error (ppm)



Y Gyro Scale Error (ppm)

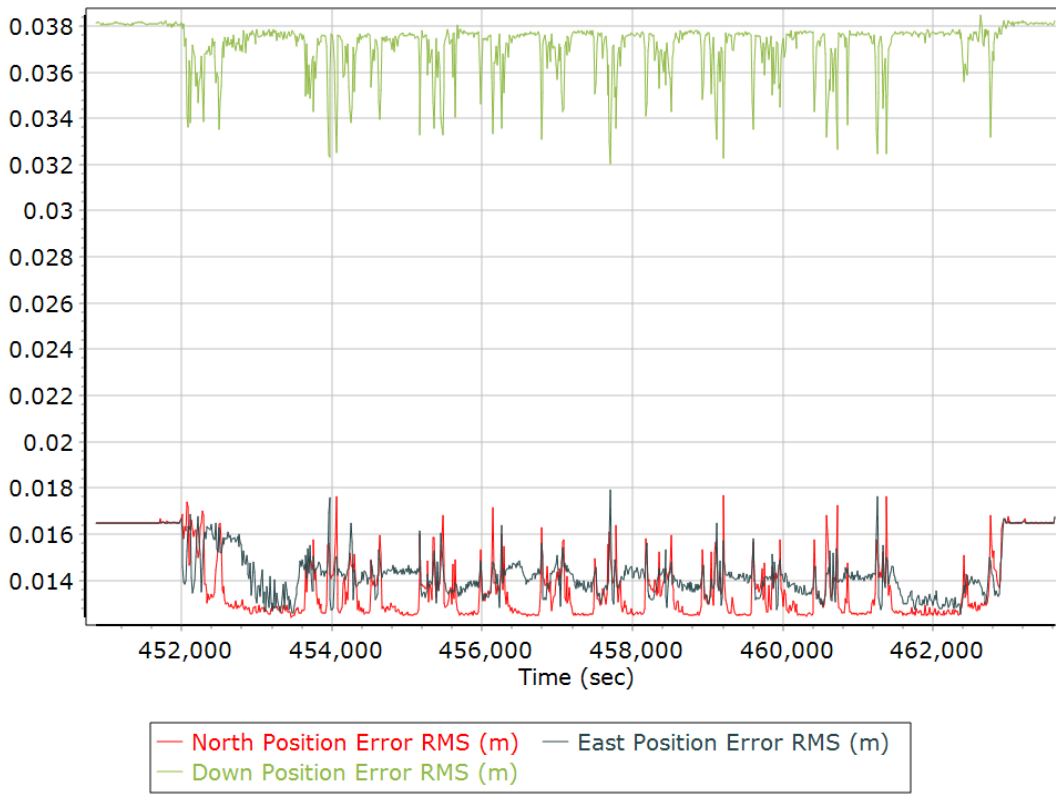


Z Gyro Scale Error (ppm)

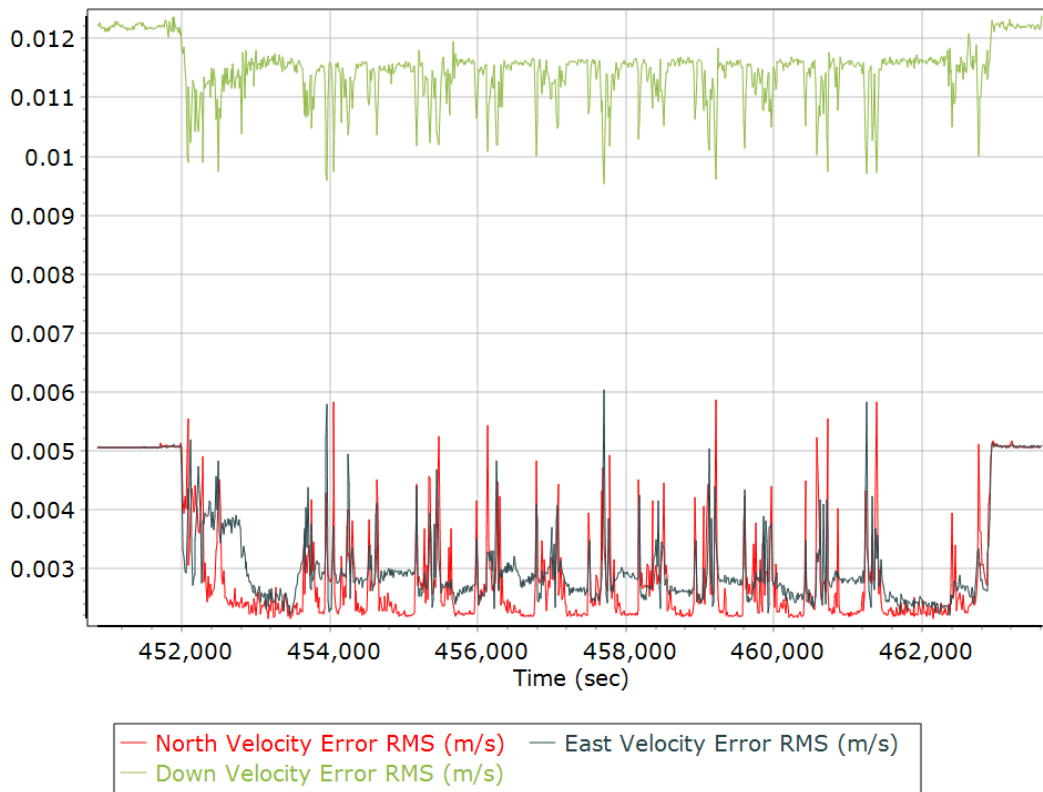


Smoothed Performance Metrics

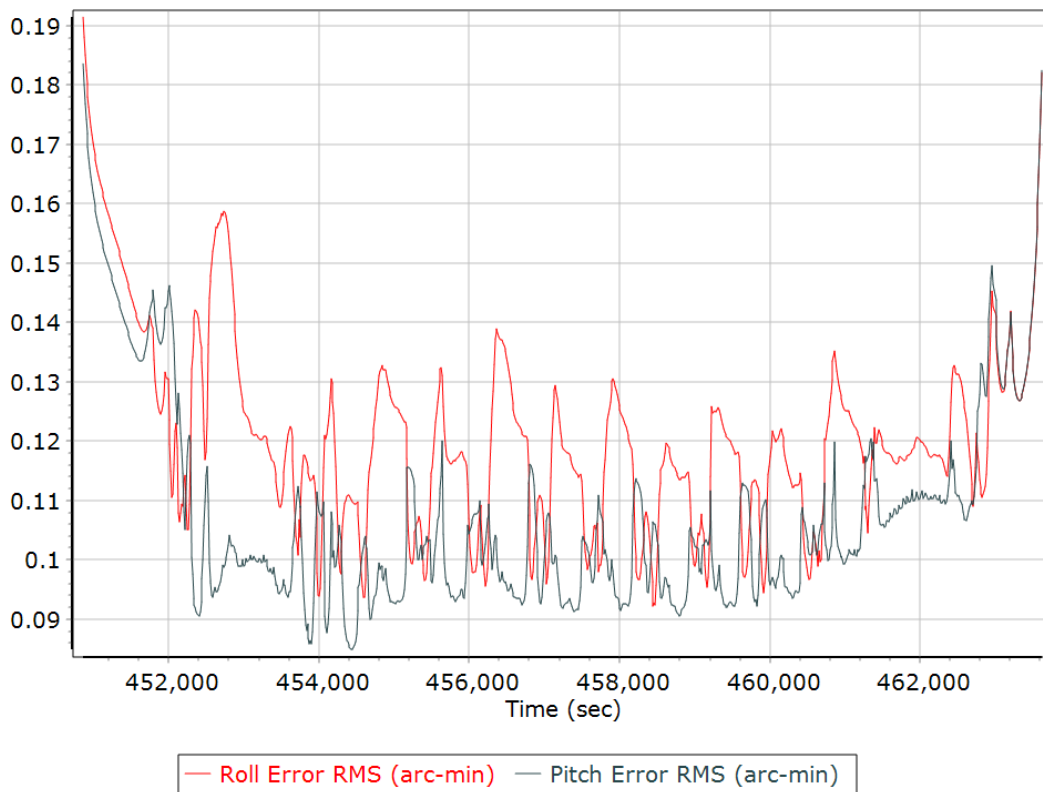
Position Error RMS (m)



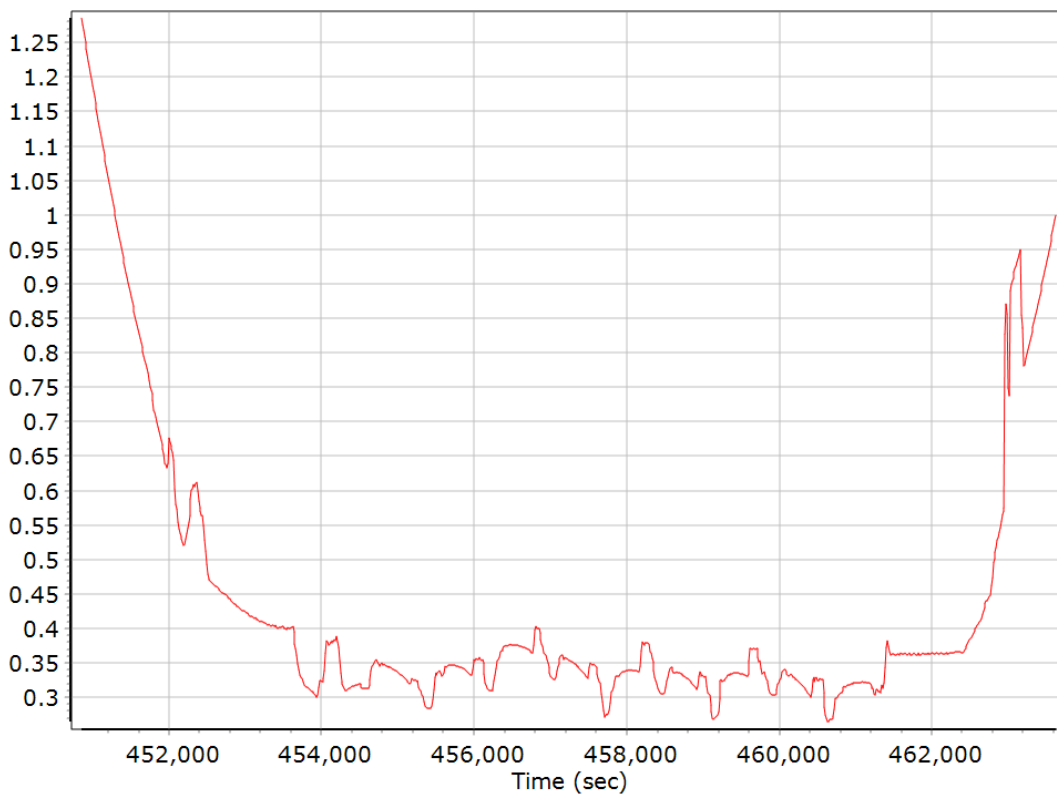
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

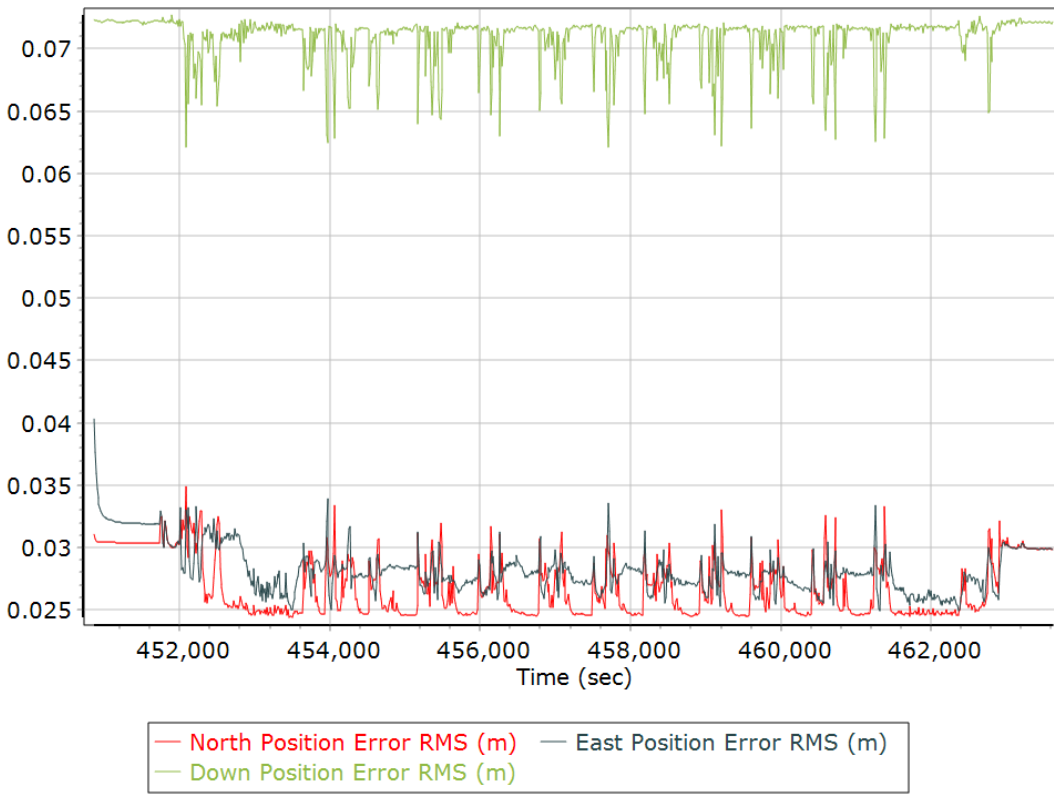


Heading Error RMS (arc-min)

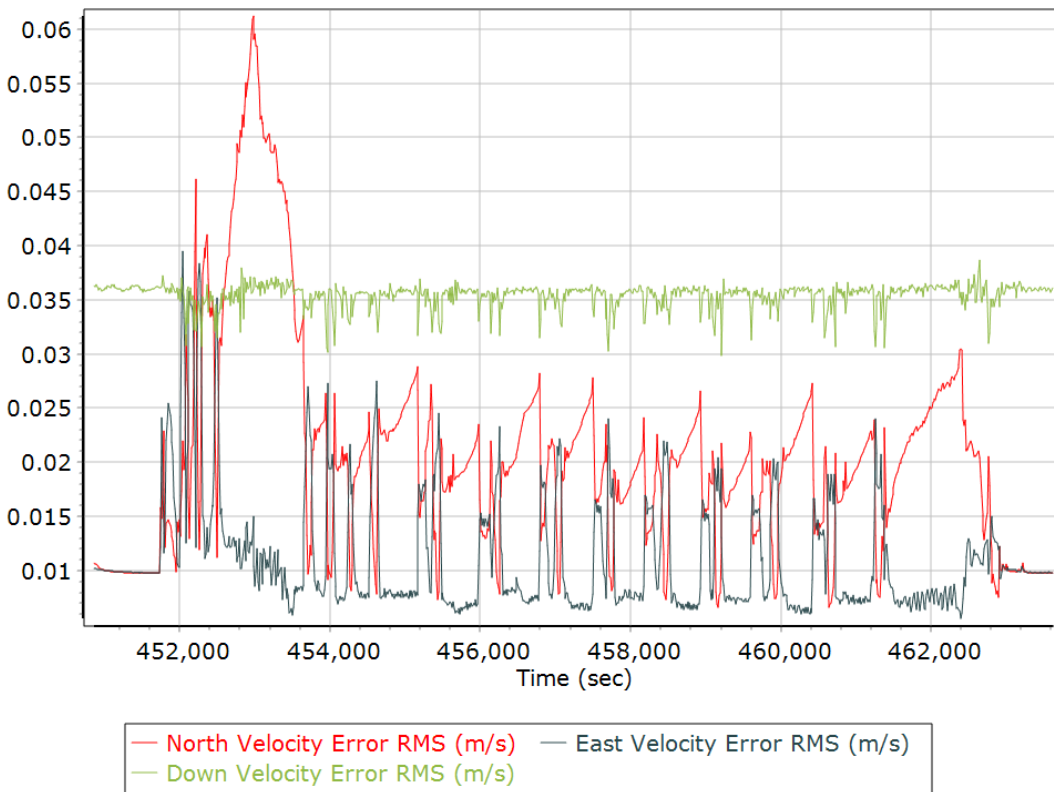


Forward Processed Performance Metrics

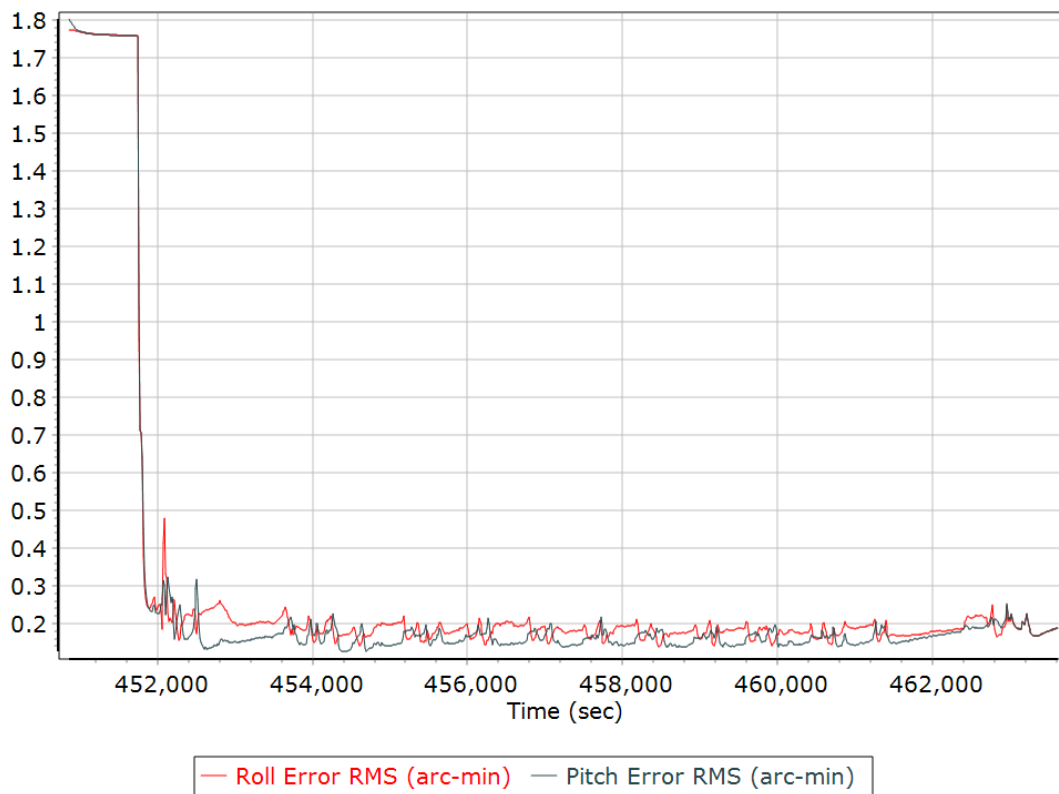
Position Error RMS (m)



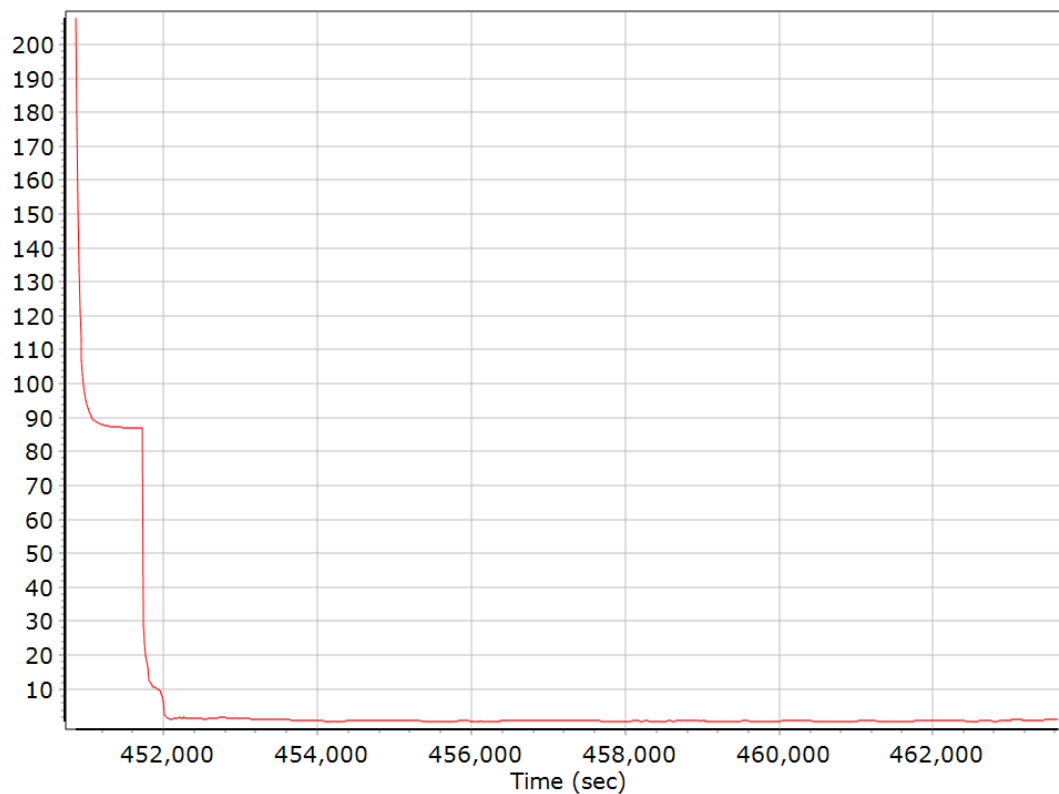
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

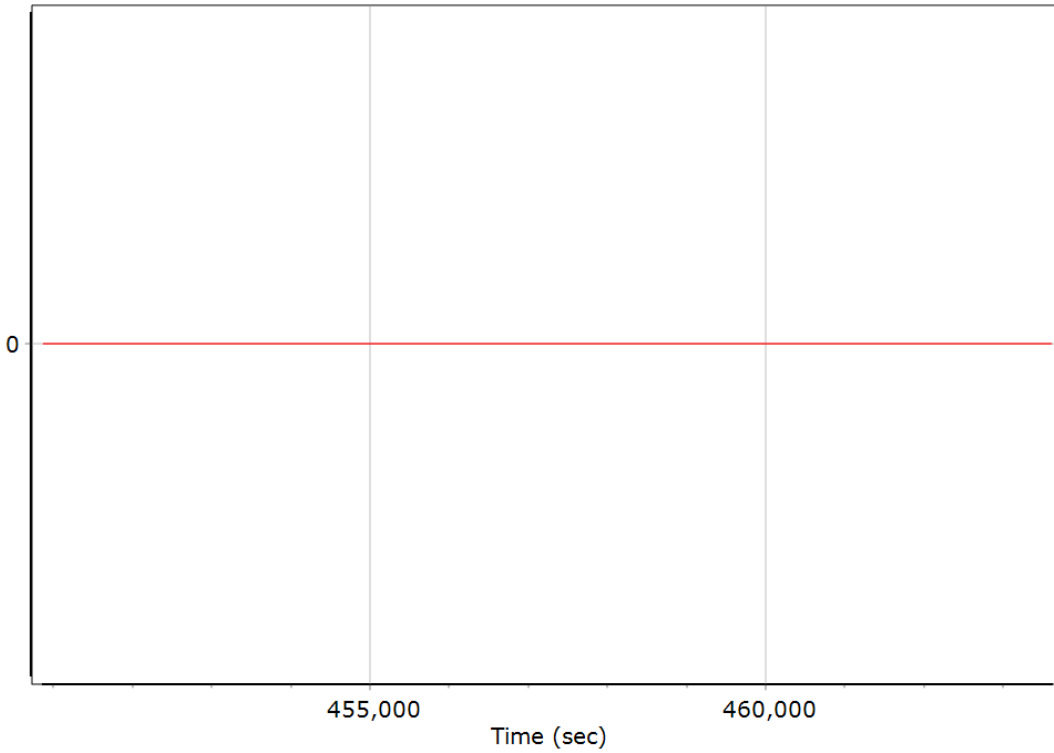


Heading Error RMS (arc-min)



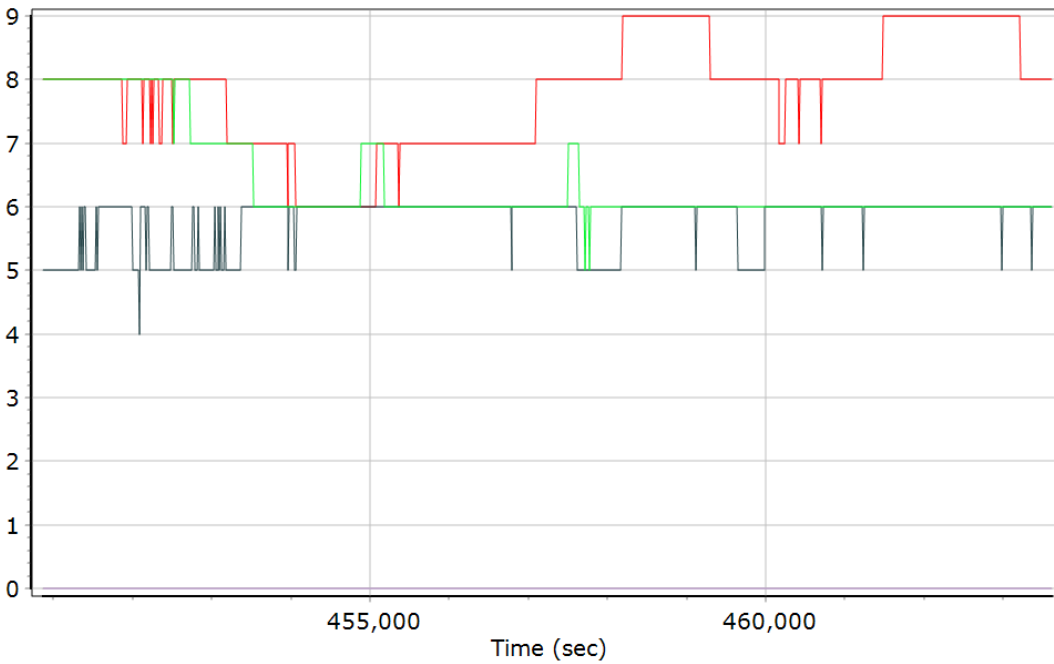
Forward Processed Solution Status

Processing Mode



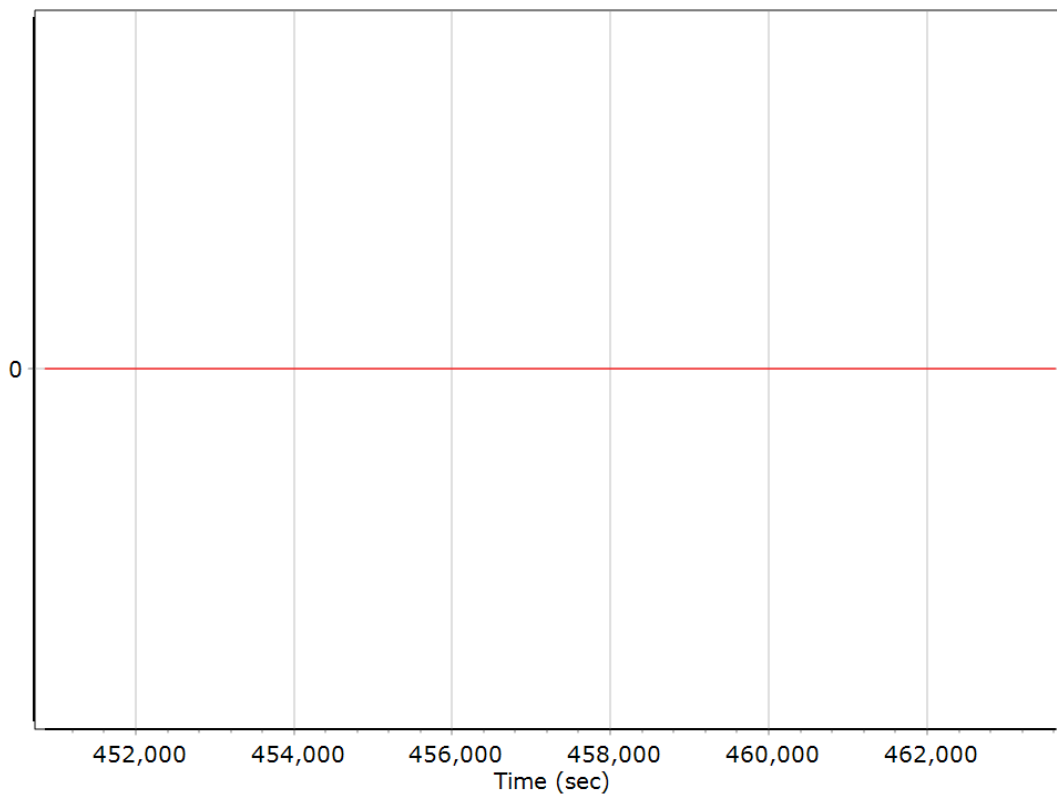
0 = Fixed NL, 1 = Fixed WL, 2 = Float, 3 = DGNSS, 4 = RTCM, 5 = IAPPP, 6 = C/A, 7 = GNSS Na

Number of Satellites



— Number of GPS Satellites	— Number of GLONASS Satellites
— Number of QZSS Satellites	— Number of BEIDOU Satellites
— Number of GALILEO Satellites	

Baseline Length



General Information

Mission Information

Project name	a07-s03-0511
Processing date	2022-07-18 19:00:47
Mission date	2022-07-09 05:43:19
Mission duration	03:55:02.000
Processing mode	IN-Fusion PP-RTX

Rover Hardware Information

Product	POS AV 610 VER6 HW1.6-12
Serial number	S/N6907
IMU type	57
Receiver type	BD982
Antenna type	AV39

Project File List

Rover Data Files

File name	File type
default0709_054320.000	POS Data
default0709_054320.001	POS Data
default0709_054320.002	POS Data
default0709_054320.003	POS Data
default0709_054320.004	POS Data
default0709_054320.005	POS Data
default0709_054320.006	POS Data
default0709_054320.007	POS Data
default0709_054320.008	POS Data
default0709_054320.009	POS Data
default0709_054320.010	POS Data
default0709_054320.011	POS Data
default0709_054320.012	POS Data
default0709_054320.013	POS Data
default0709_054320.014	POS Data
default0709_054320.015	POS Data
default0709_054320.016	POS Data
default0709_054320.017	POS Data
default0709_054320.018	POS Data
default0709_054320.019	POS Data

Input Files

File Name	File Type
Ephm1900.22g	GLONASS Broadcast Ephemeris
Ephm1900.22n	GPS Broadcast Ephemeris

Output Files

Filename	File type
sbt_a07-s03-0511.out	SBET Trajectory File

Rover Data Summary

First raw data file	default0709_054320.000		
Last raw data file	default0709_054320.019		
Start GPS week	2217		
Start time	17.107 (7/3/2022 12:00:17 AM)		
End time	553084.205 (7/9/2022 9:38:04 AM)		
Start of fine alignment	539381.261 (7/9/2022 5:49:41 AM)		
Available subsystems	Primary GNSS, IMU		
POS Event Input	None		
Correction data	None		
IMU Installation Lever Arms & Mounting Angles			
Reference to IMU lever arm (m)	0.000	0.000	0.000
Reference to IMU mounting angles (deg)	0.000	0.000	0.000
Reference to Primary GNSS lever arm (m)	-0.353	-0.322	-1.280
Reference to Primary GNSS lever arm std dev (m)	-1.000		
Aircraft to Reference mounting angles (deg)	0.000	0.000	0.000

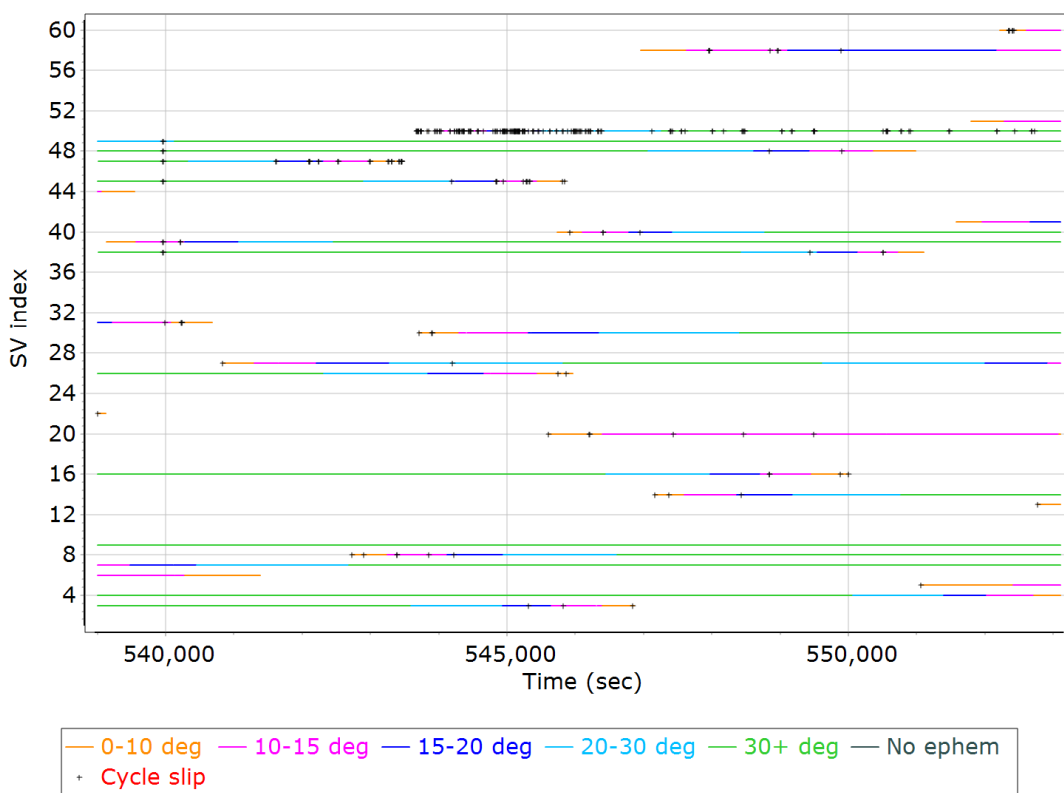
Rover Data QC

Raw IMU Import QC Summary

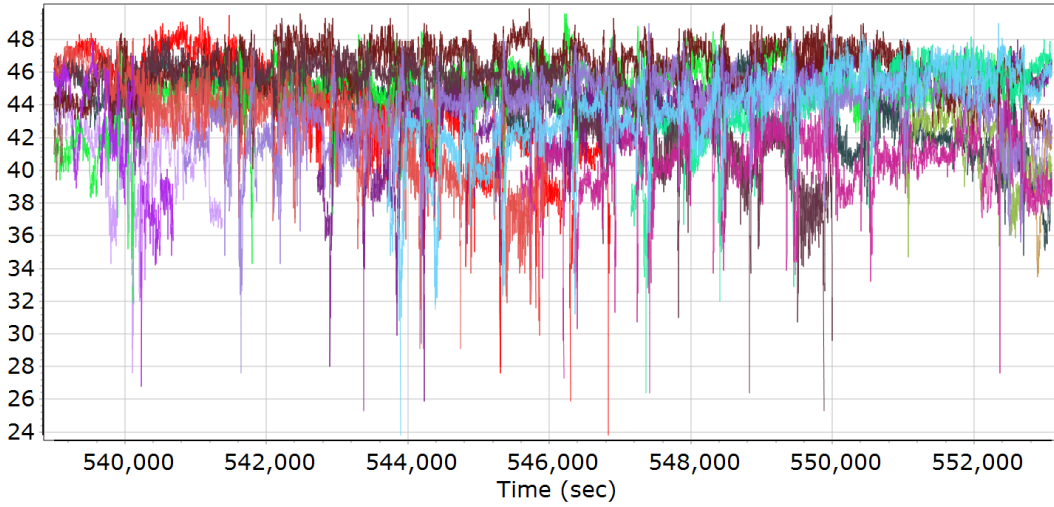
IMU data input file	imu_a07-s03-0511.dat
IMU data check log file	imudt_a07-s03-0511.log
IMU Records Processed	2820294
Termination Status	Warnings
IMU Anomalies	3
IMU Failure Messages	
538980.719 : WARNING : Gap of 0.0100 seconds in CHECKDT input data	
538980.614 : WARNING : Gap of 0.0100 seconds in CHECKDT input data	
538980.549 : WARNING : Gap of 538963.1824 seconds in CHECKDT input data	

Primary Observables & Satellite Data

GPS/GLONASS L1 Satellite Lock/Elevation

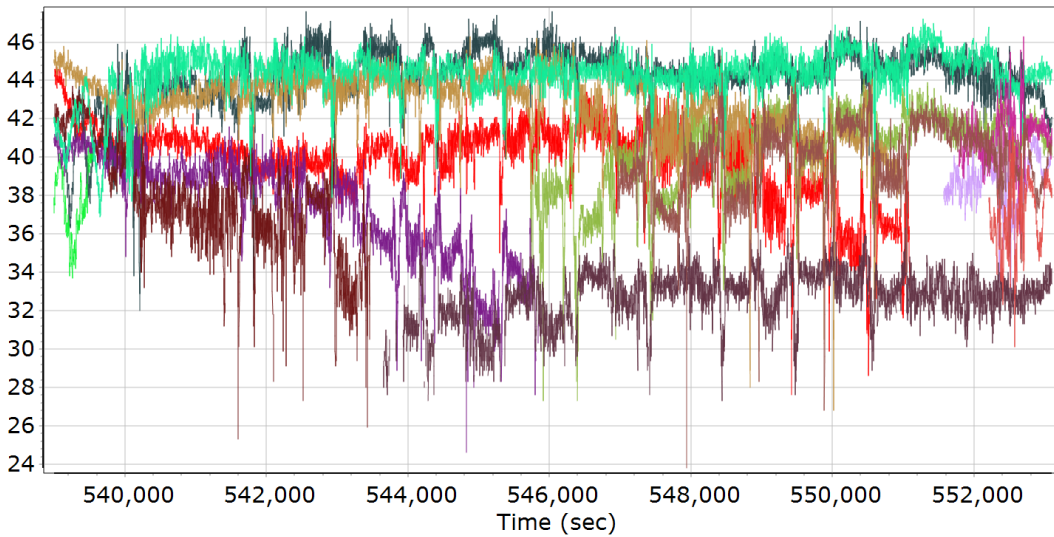


GPS L1 SNR



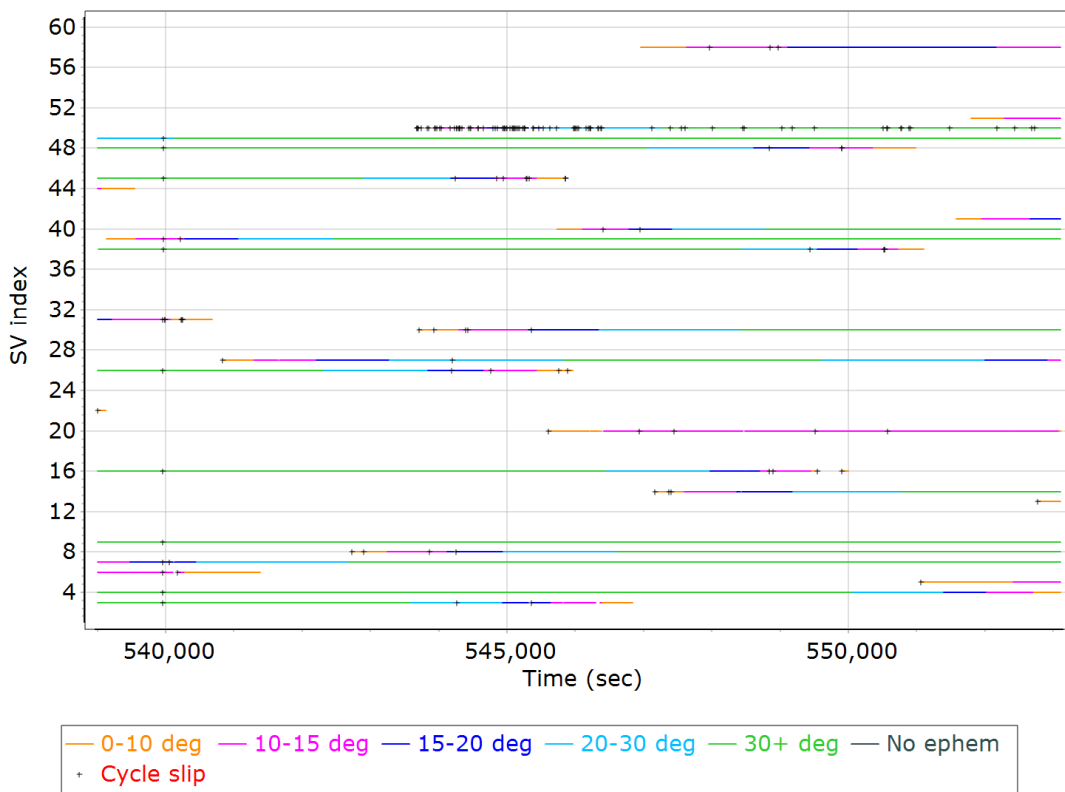
- | | |
|-----------------------------|-----------------------------|
| — GPS PRN 03 L1 SNR (dB/Hz) | — GPS PRN 04 L1 SNR (dB/Hz) |
| — GPS PRN 05 L1 SNR (dB/Hz) | — GPS PRN 06 L1 SNR (dB/Hz) |
| — GPS PRN 07 L1 SNR (dB/Hz) | — GPS PRN 08 L1 SNR (dB/Hz) |
| — GPS PRN 09 L1 SNR (dB/Hz) | — GPS PRN 13 L1 SNR (dB/Hz) |
| — GPS PRN 14 L1 SNR (dB/Hz) | — GPS PRN 16 L1 SNR (dB/Hz) |
| — GPS PRN 20 L1 SNR (dB/Hz) | — GPS PRN 22 L1 SNR (dB/Hz) |
| — GPS PRN 26 L1 SNR (dB/Hz) | — GPS PRN 27 L1 SNR (dB/Hz) |
| — GPS PRN 30 L1 SNR (dB/Hz) | — GPS PRN 31 L1 SNR (dB/Hz) |

GLONASS L1 SNR

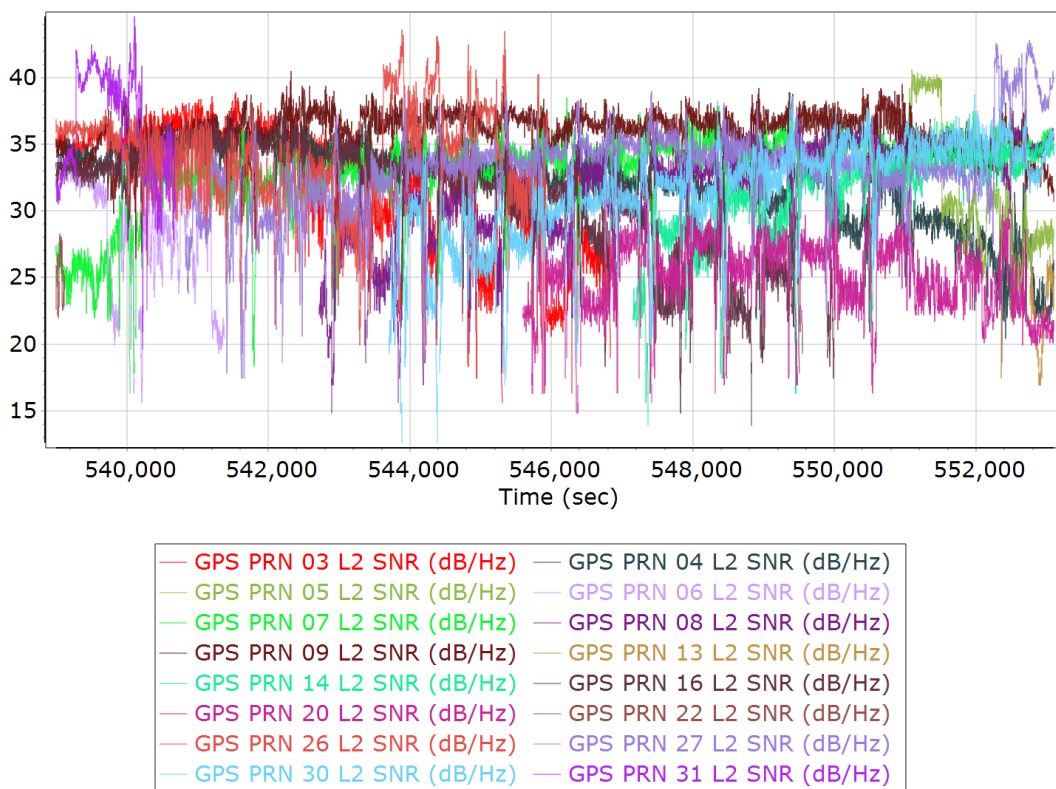


- | | |
|-----------------------------|-----------------------------|
| — GLONASS 01 L1 SNR (dB/Hz) | — GLONASS 02 L1 SNR (dB/Hz) |
| — GLONASS 03 L1 SNR (dB/Hz) | — GLONASS 04 L1 SNR (dB/Hz) |
| — GLONASS 07 L1 SNR (dB/Hz) | — GLONASS 08 L1 SNR (dB/Hz) |
| — GLONASS 10 L1 SNR (dB/Hz) | — GLONASS 11 L1 SNR (dB/Hz) |
| — GLONASS 12 L1 SNR (dB/Hz) | — GLONASS 13 L1 SNR (dB/Hz) |
| — GLONASS 14 L1 SNR (dB/Hz) | — GLONASS 21 L1 SNR (dB/Hz) |
| — GLONASS 23 L1 SNR (dB/Hz) | |

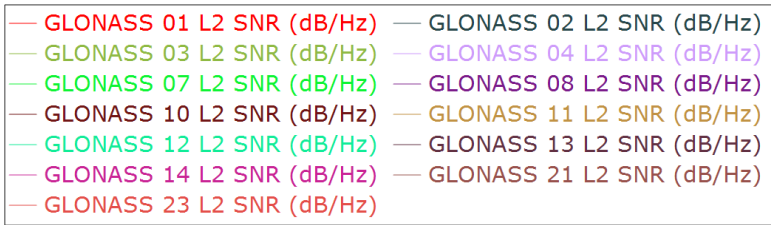
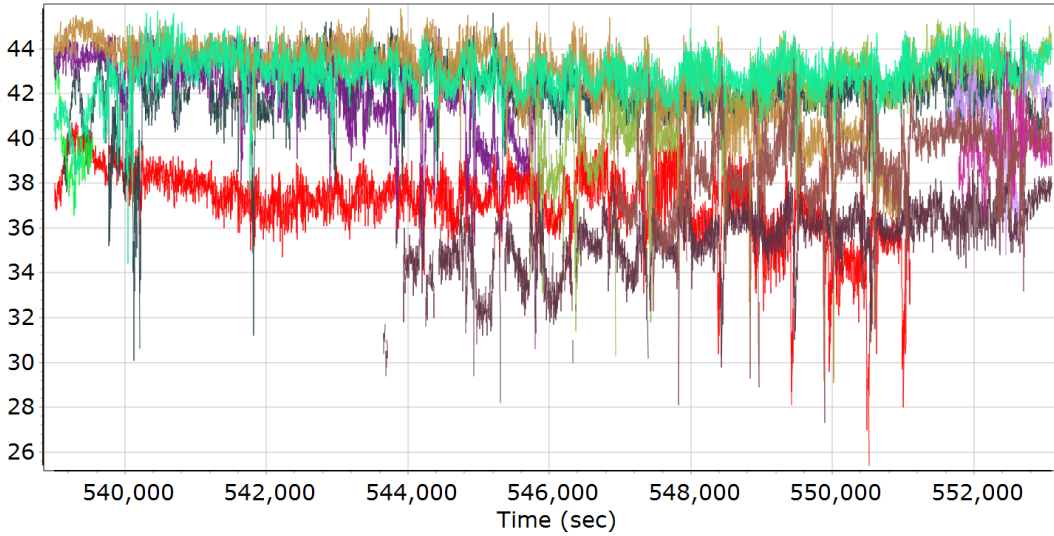
GPS/GLONASS L2 Satellite Lock/Elevation



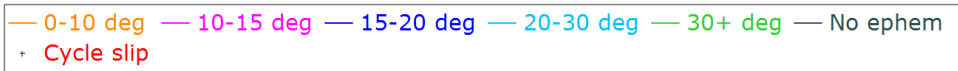
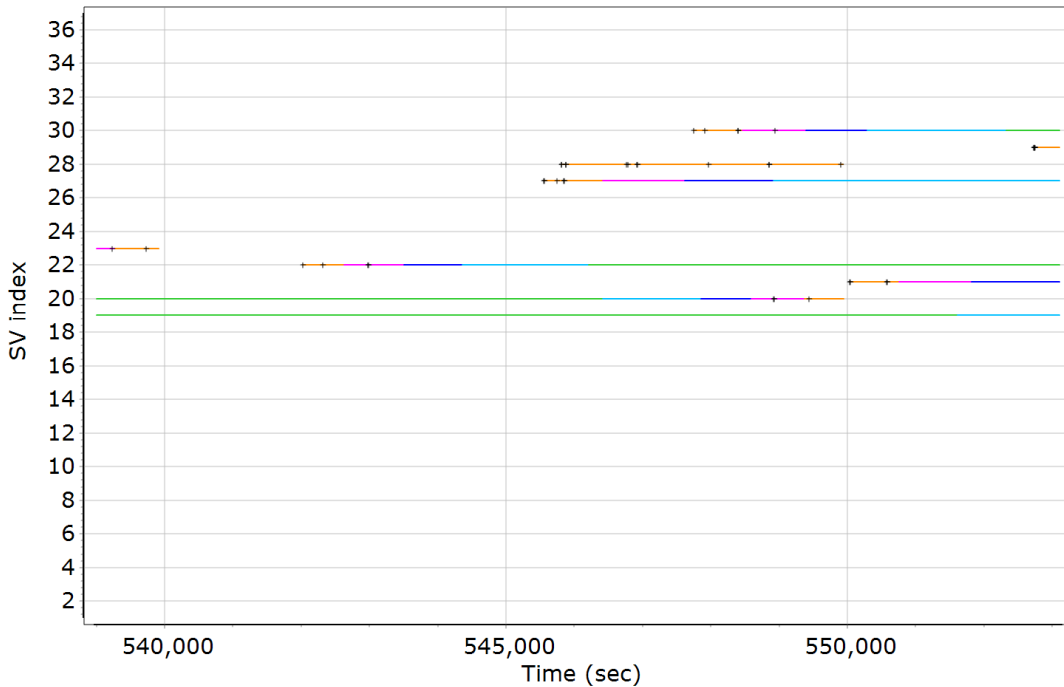
GPS L2 SNR



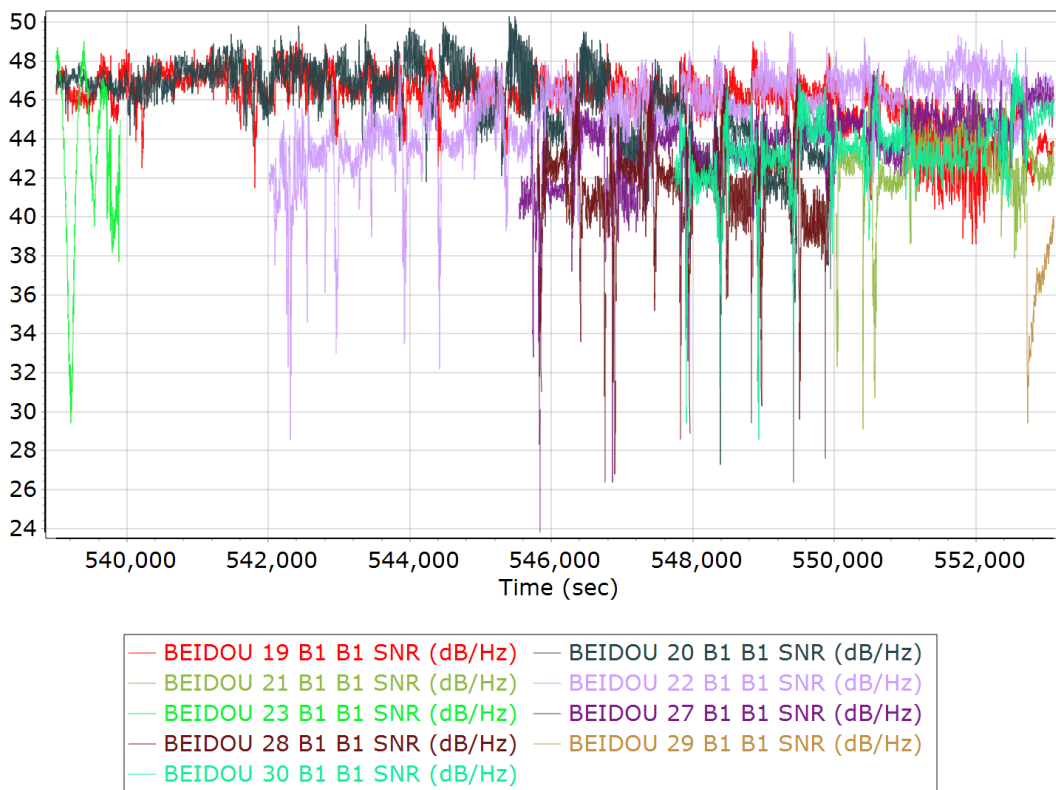
GLONASS L2 SNR



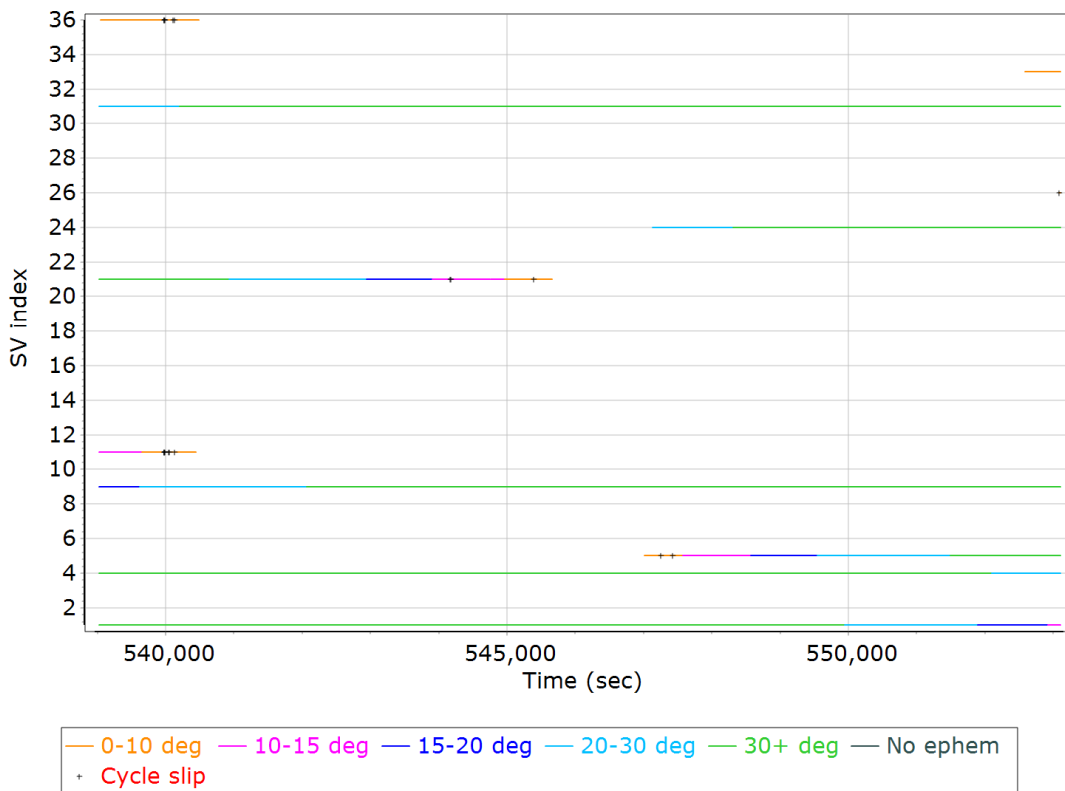
BEIDOU Satellite Lock/Elevation



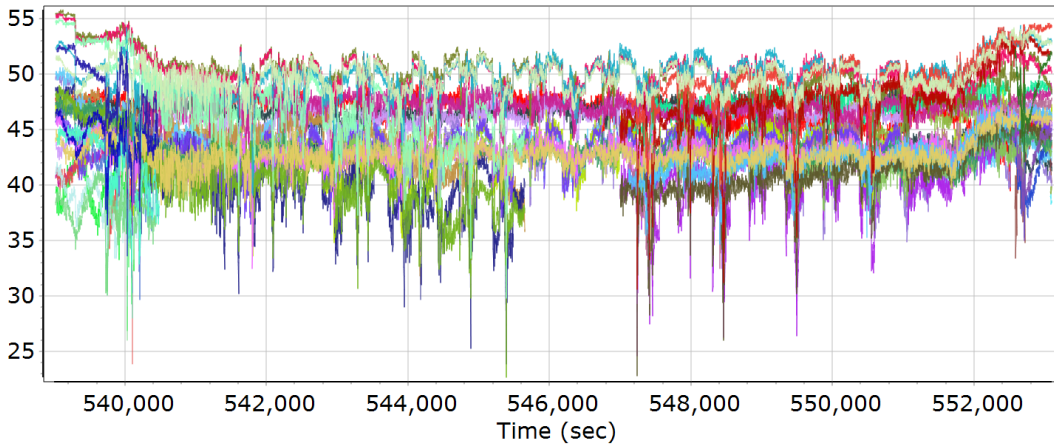
BEIDOU SNR



GALILEO Satellite Lock/Elevation



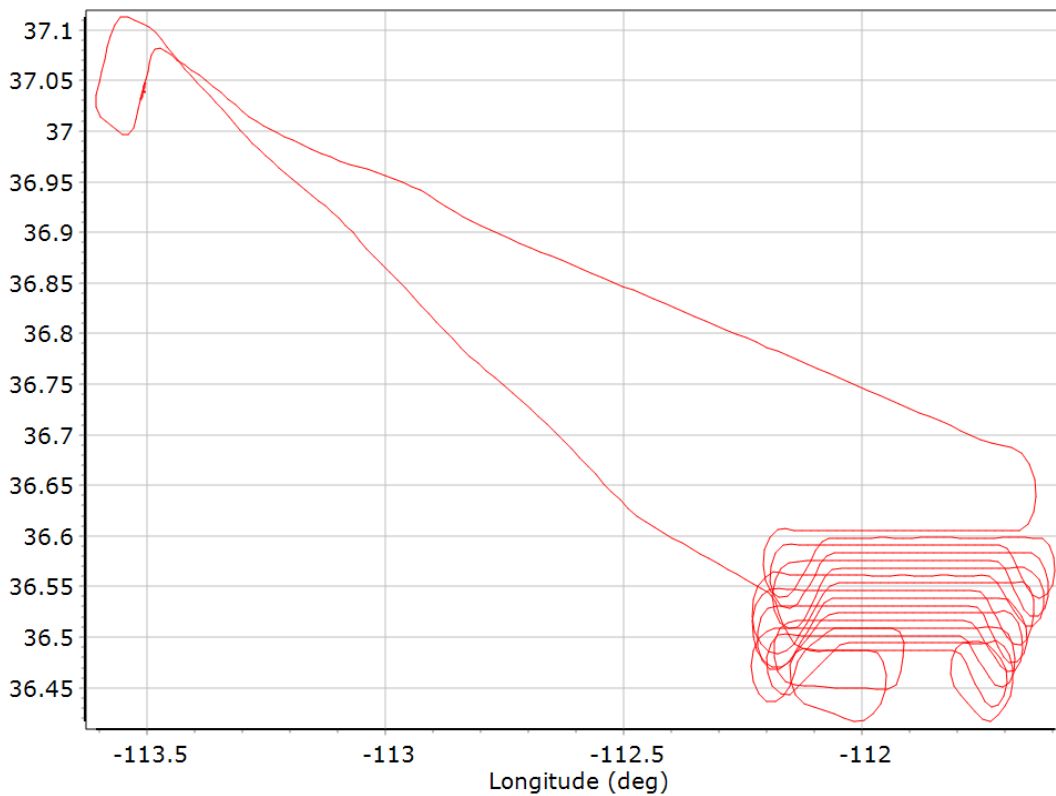
GALILEO SNR



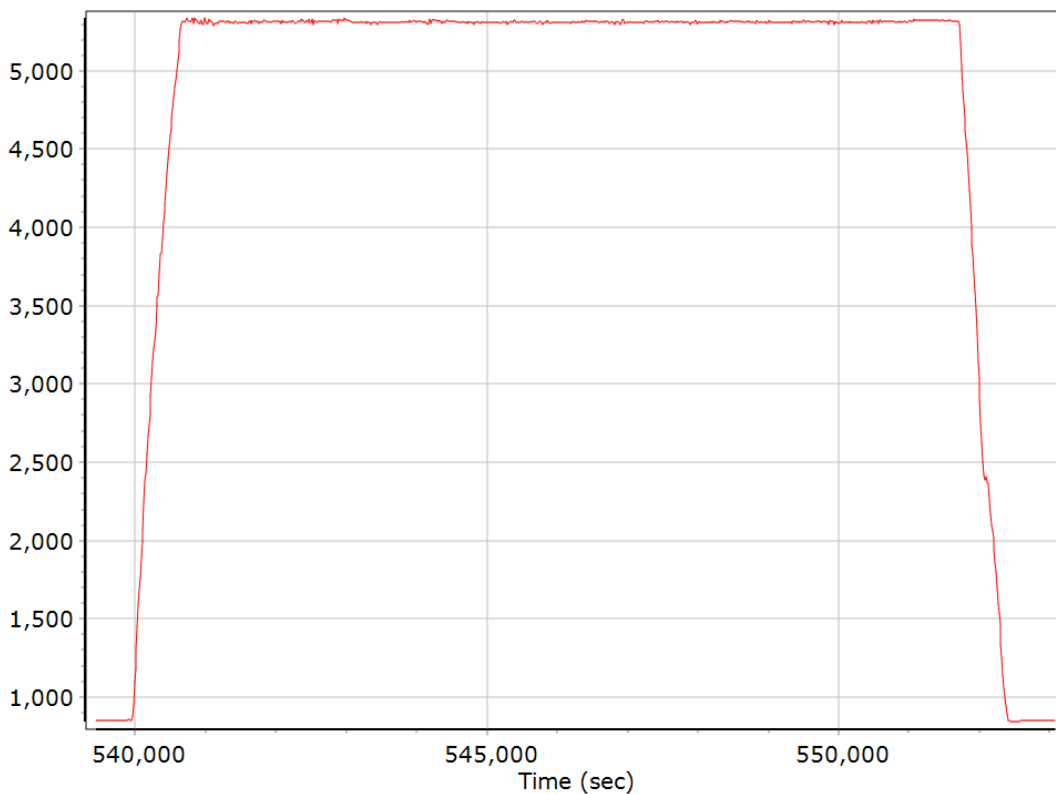
- GALILEO 01 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 04 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 05 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 09 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 11 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 18 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 19 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 21 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 24 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 26 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)

Smoothed Trajectory Information

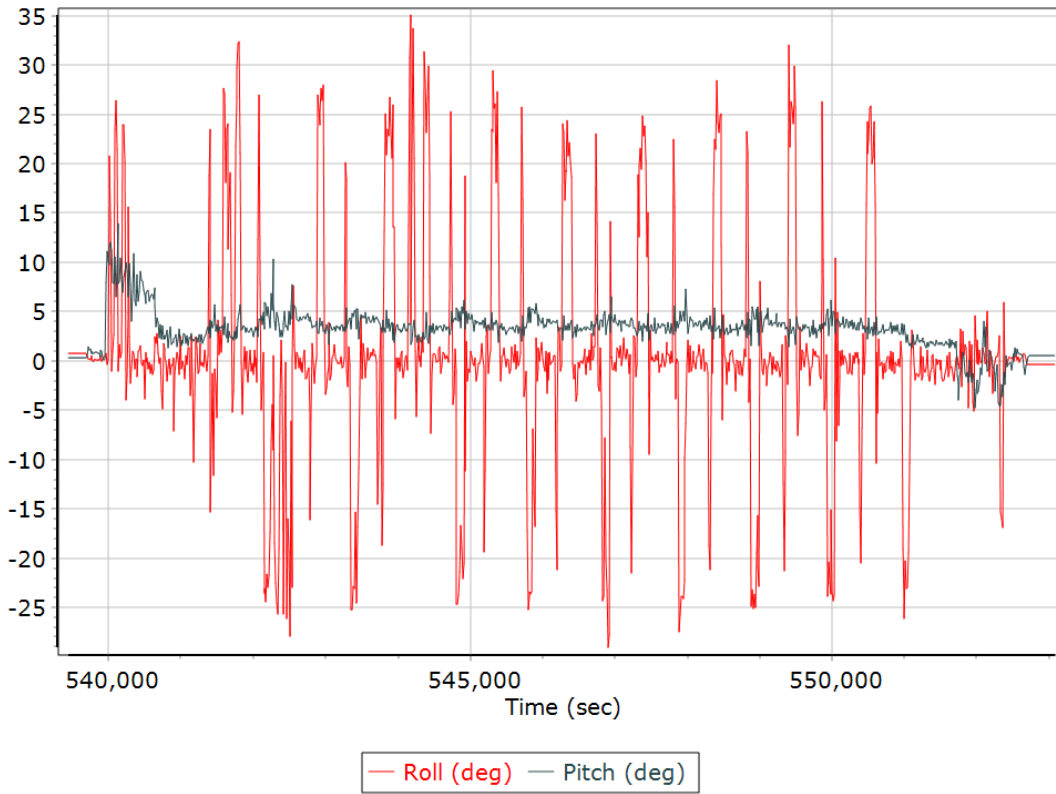
Top View



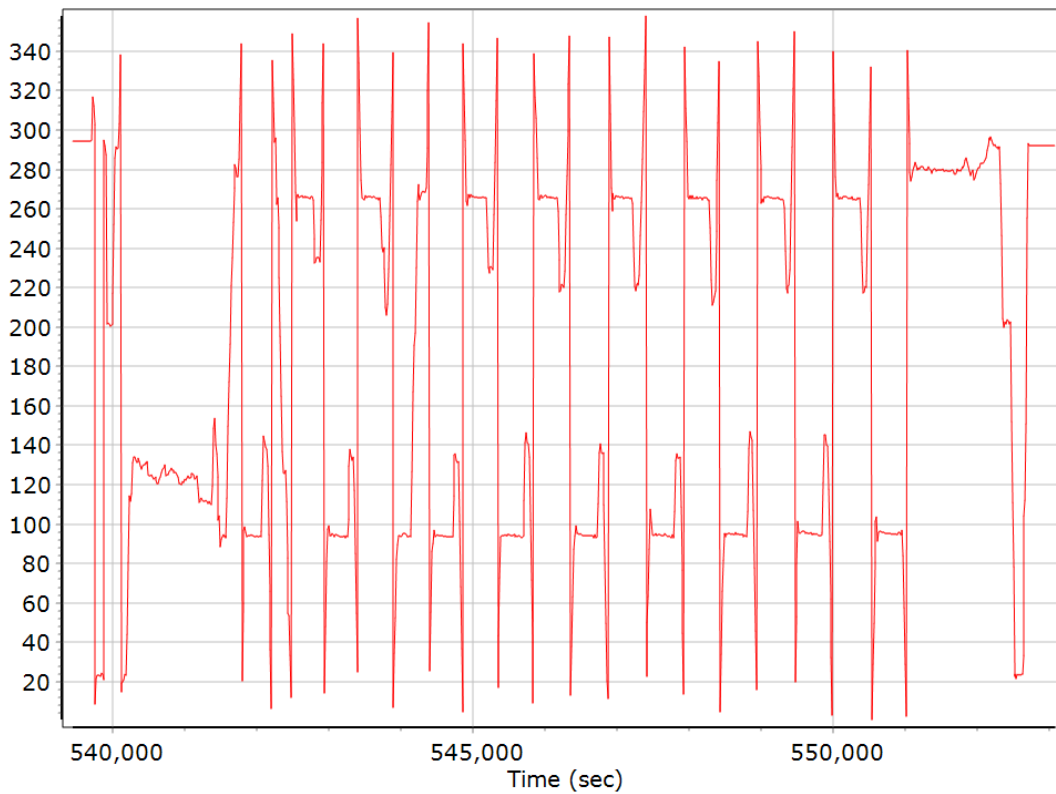
Altitude



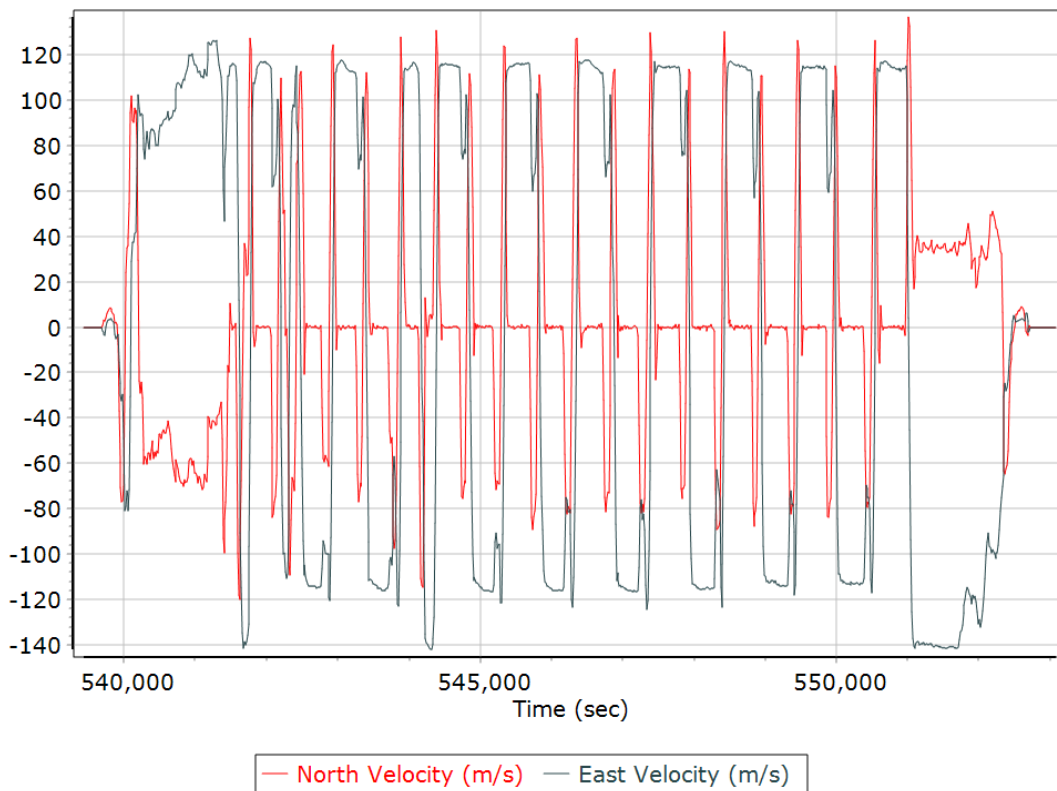
Roll/Pitch



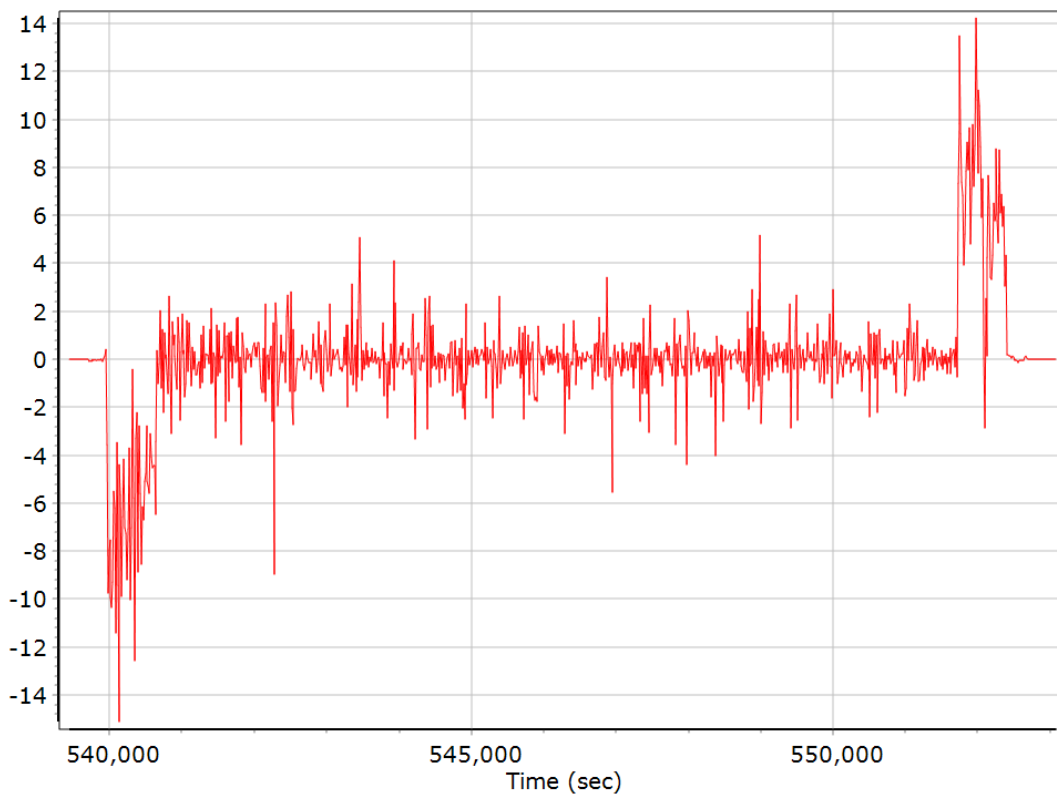
Heading



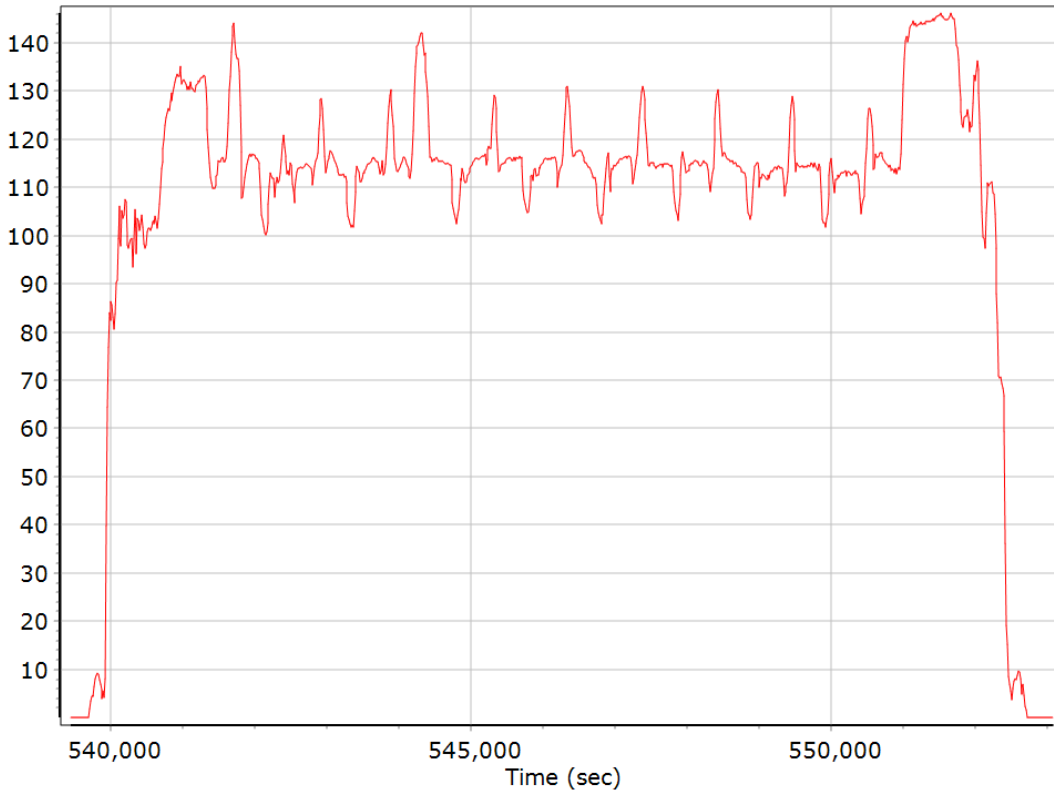
North/East Velocity



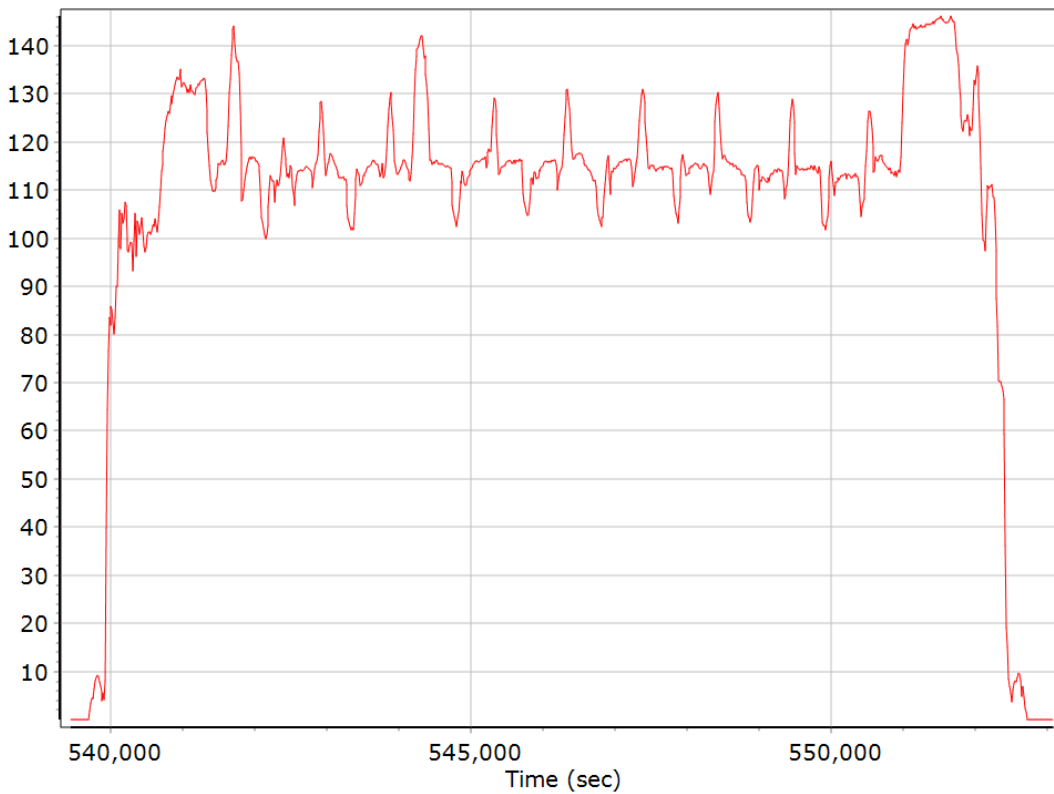
Down Velocity



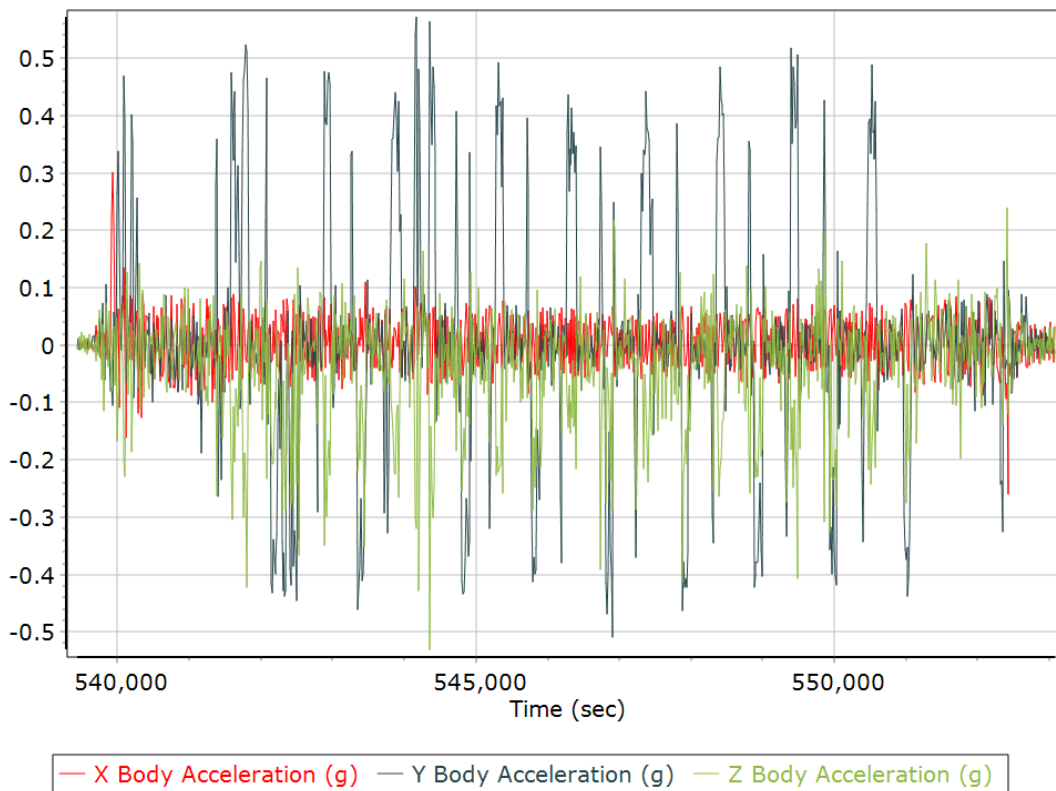
Total Speed



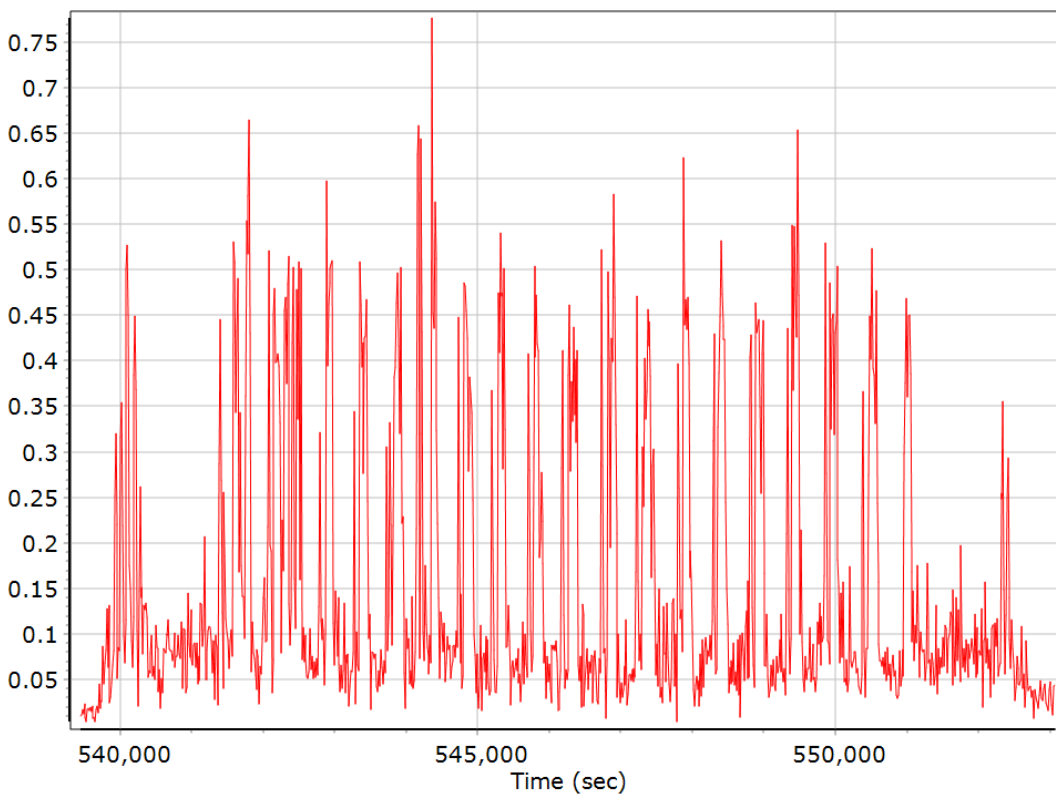
Ground Speed



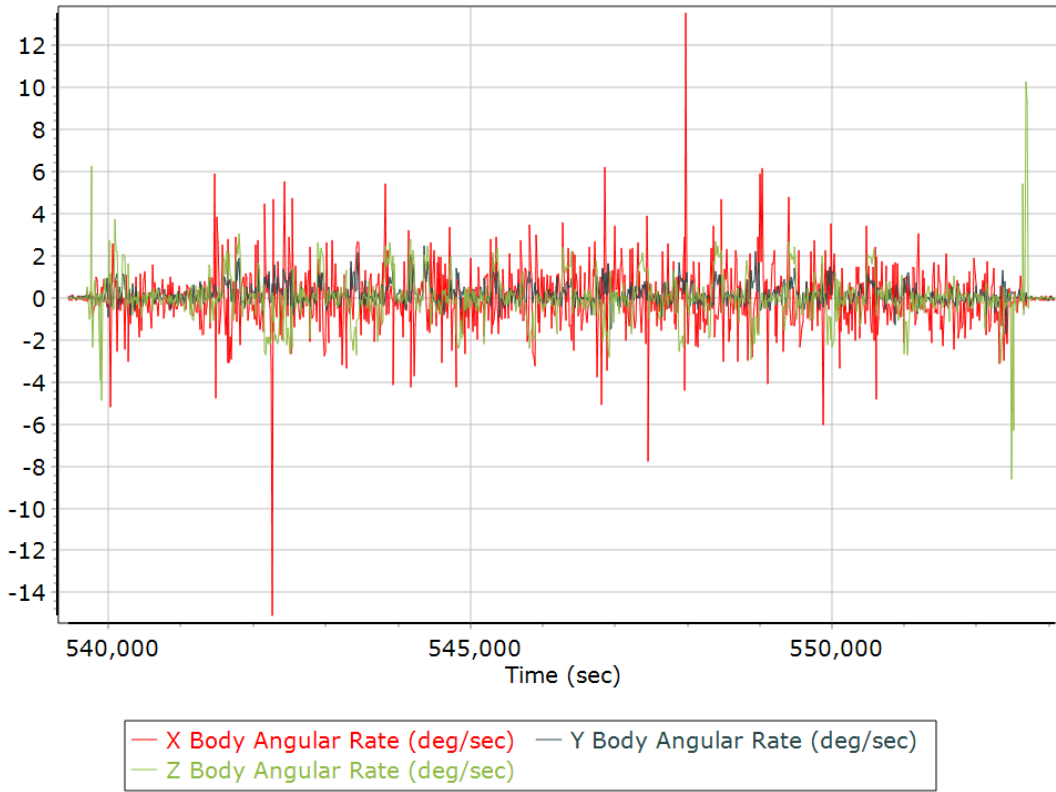
Body Acceleration



Total Body Acceleration

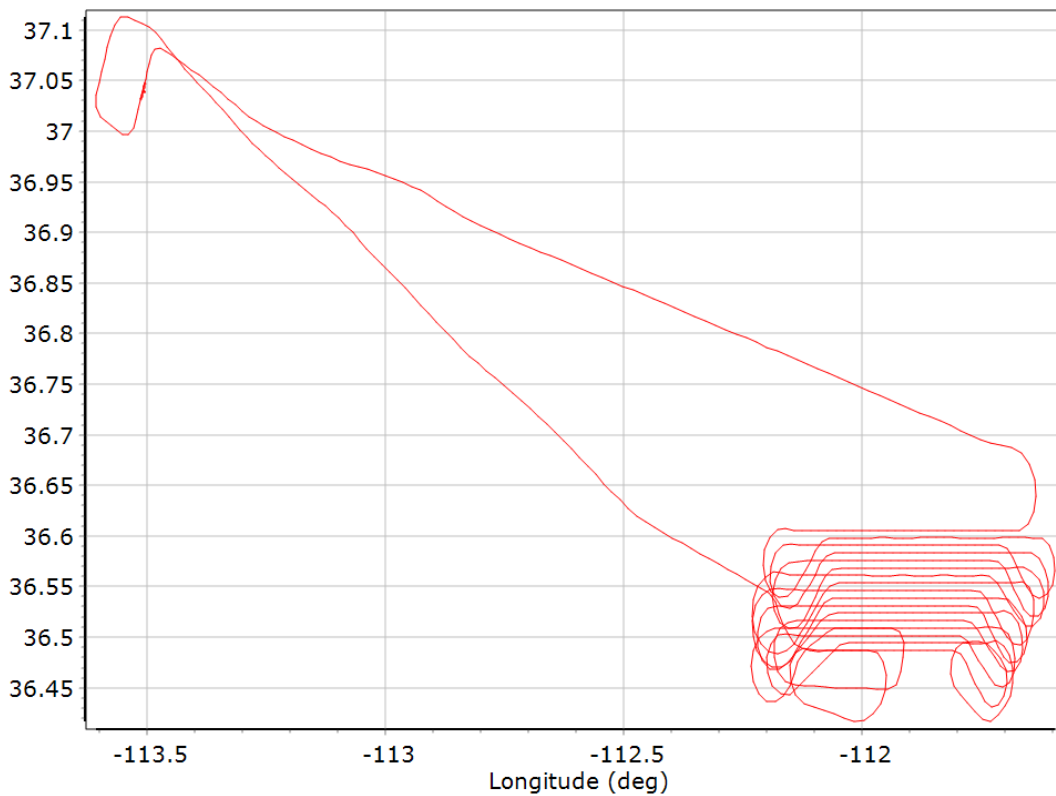


Body Angular Rate

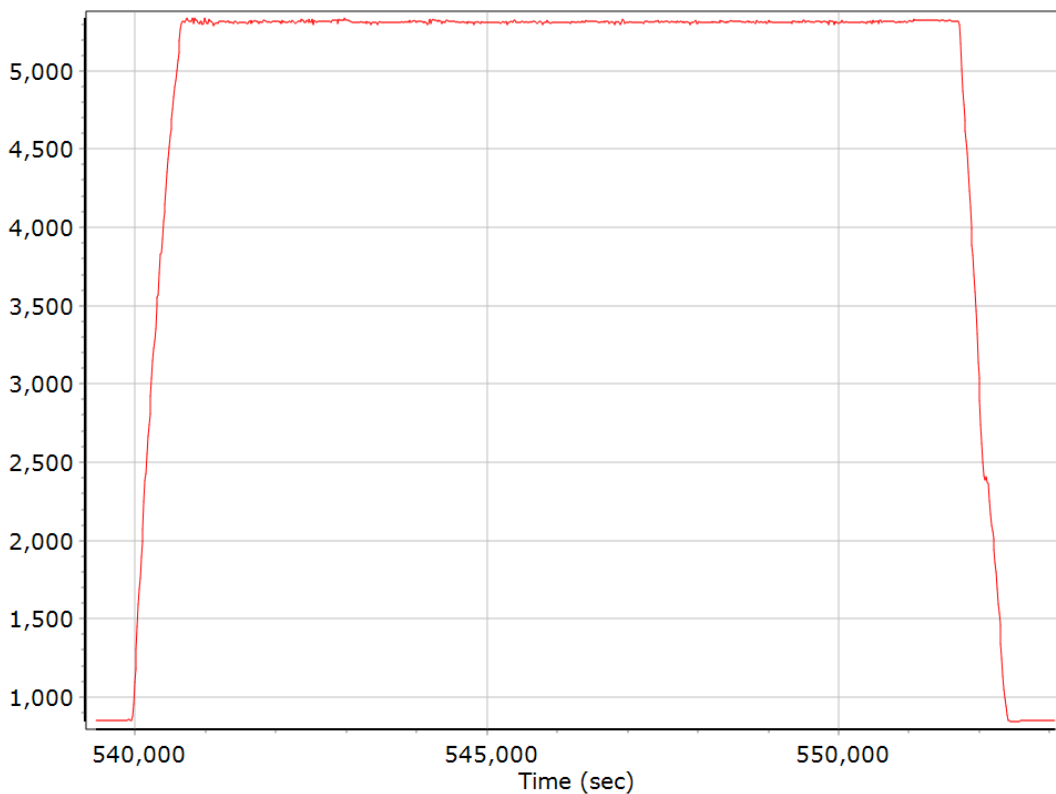


Forward Processed Trajectory Information

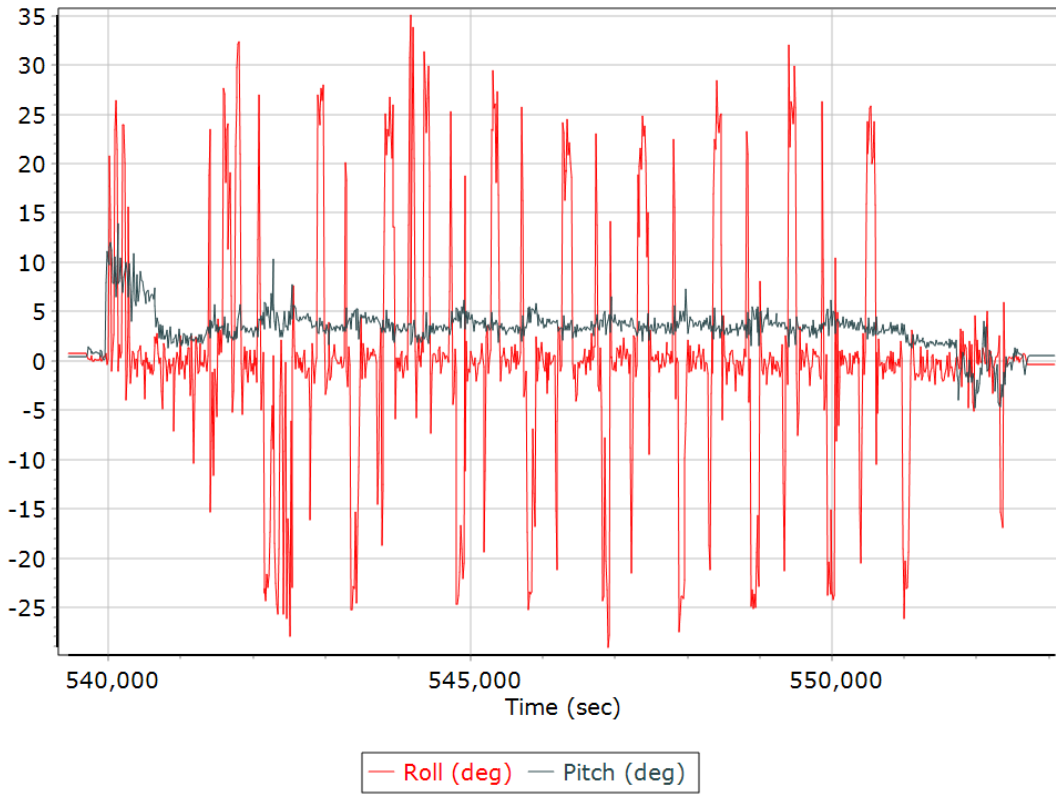
Top View



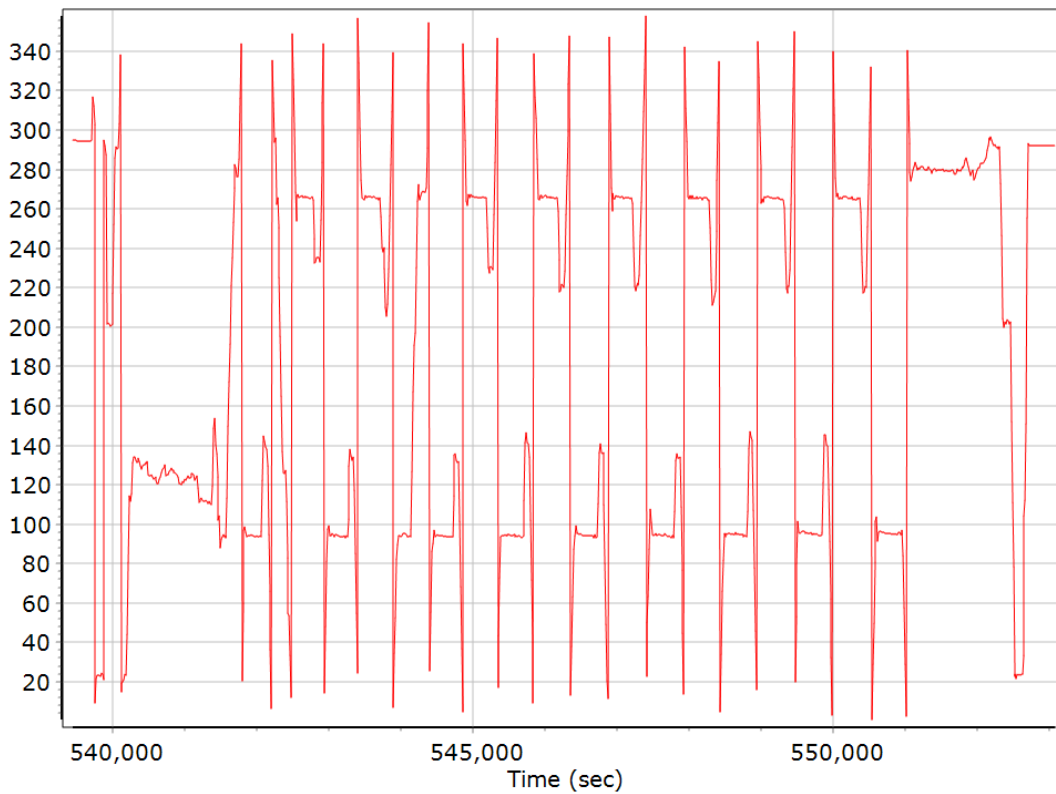
Altitude



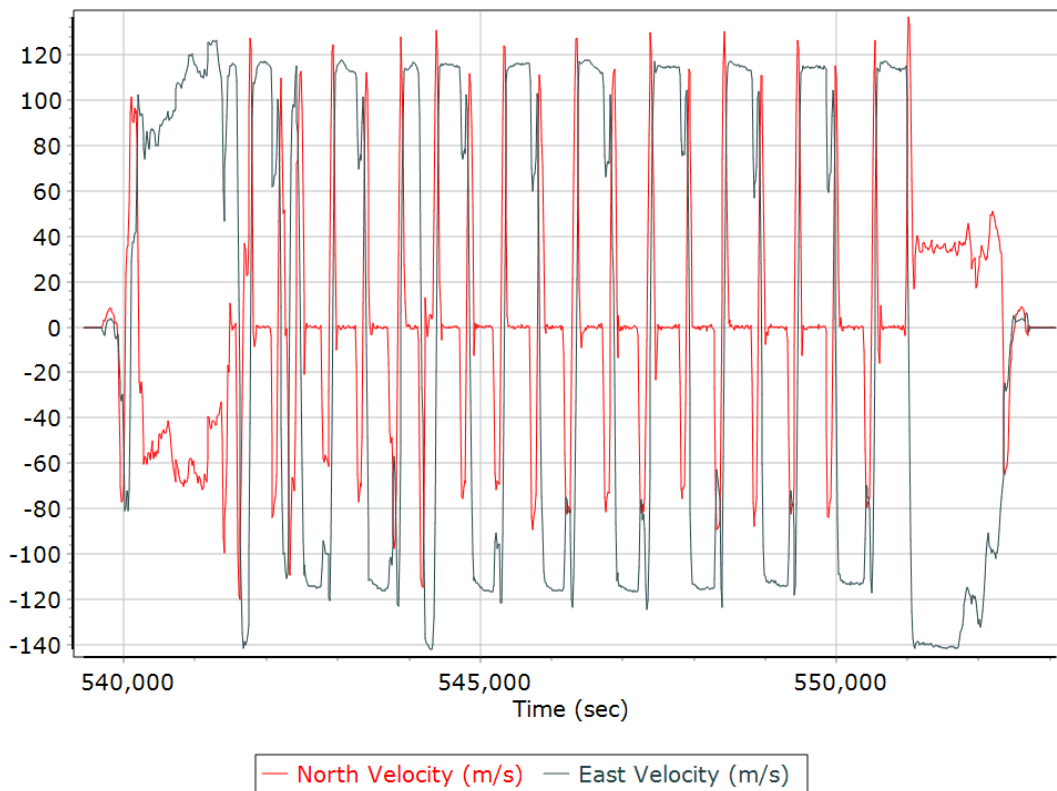
Roll/Pitch



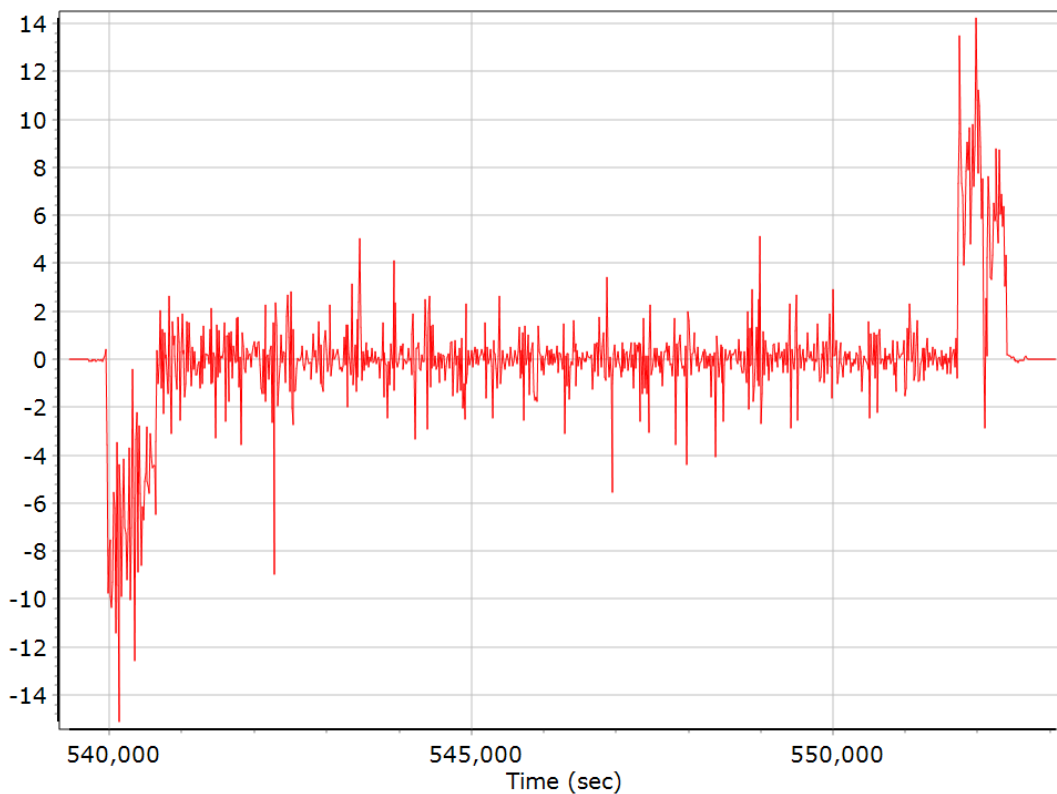
Heading



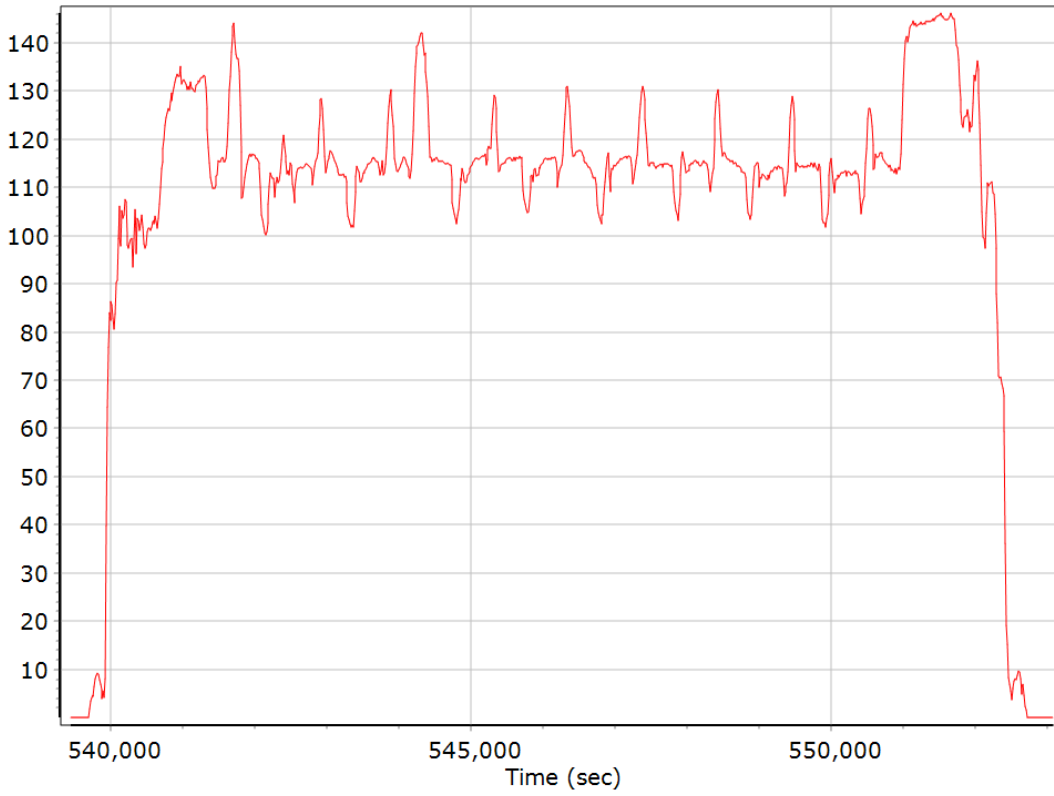
North/East Velocity



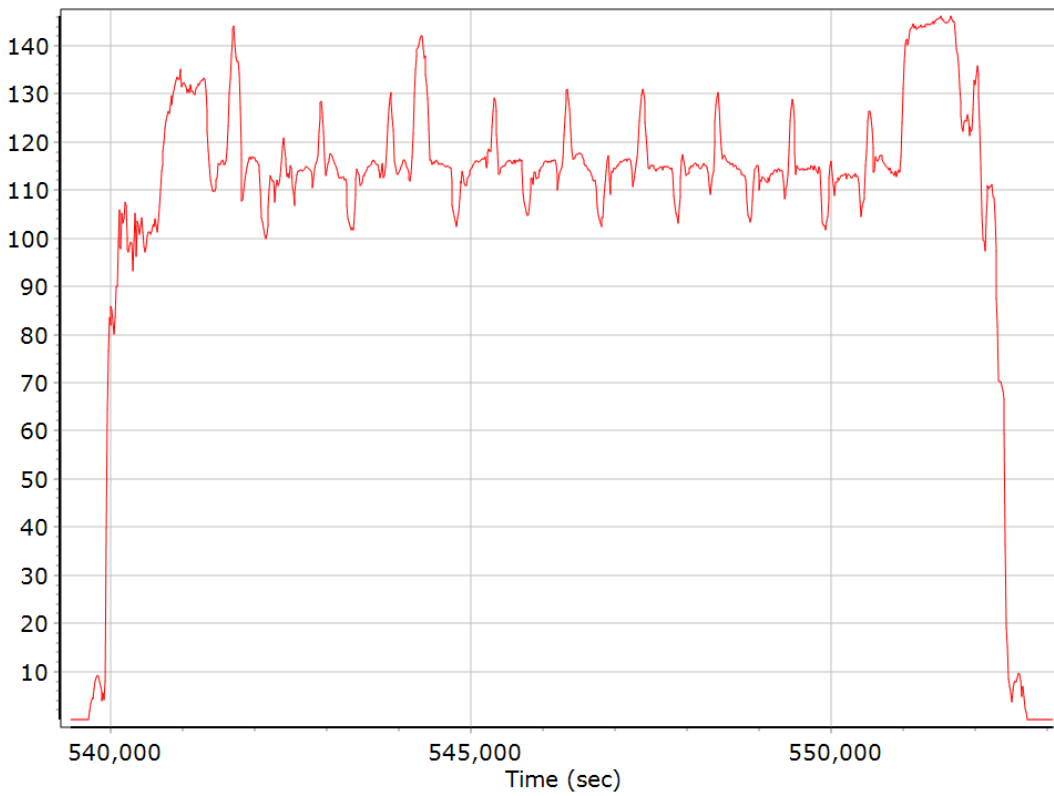
Down Velocity



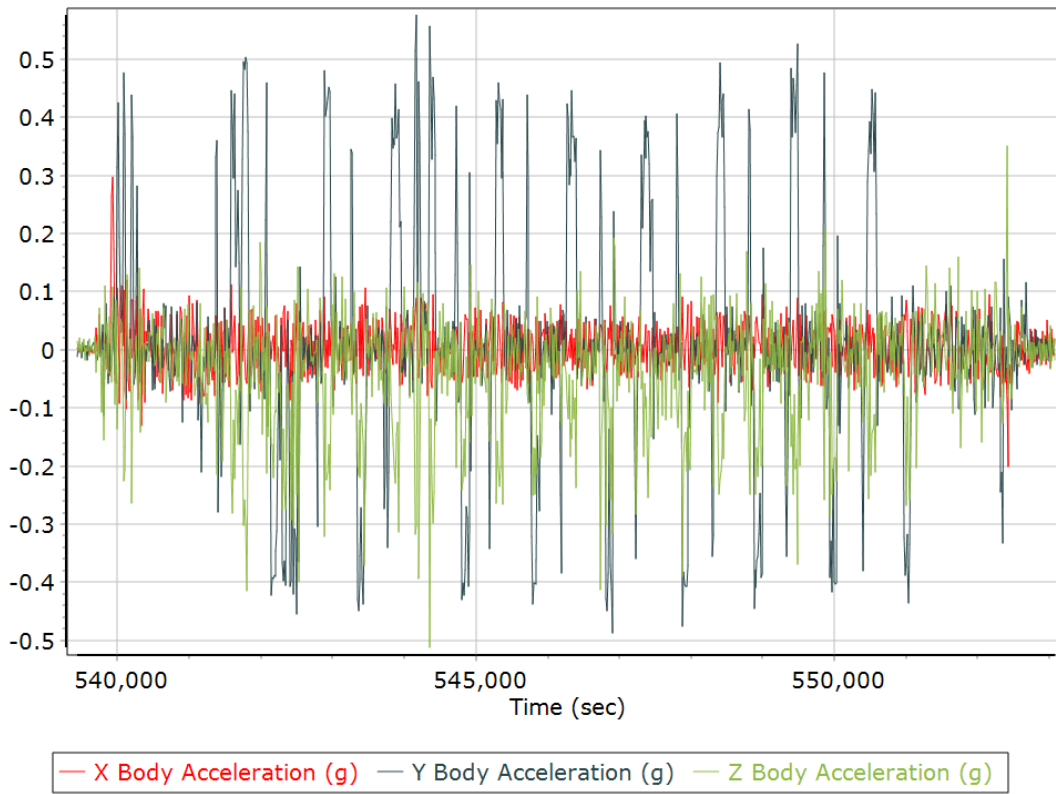
Total Speed



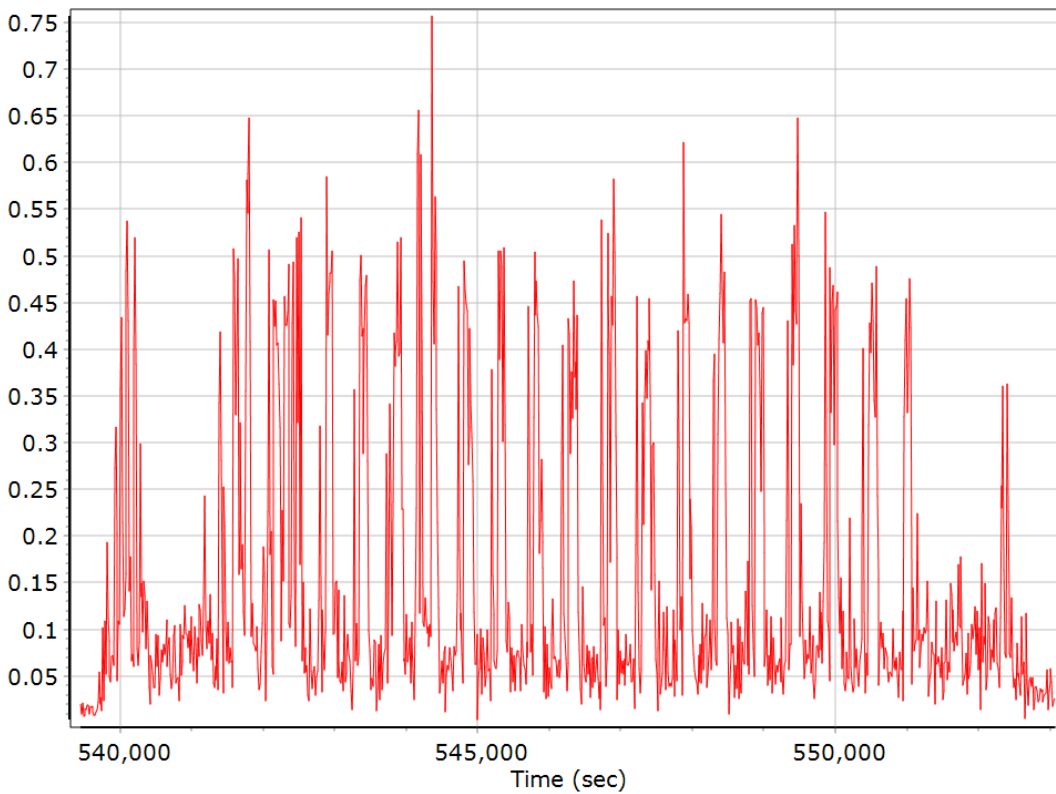
Ground Speed



Body Acceleration



Total Body Acceleration



Body Angular Rate



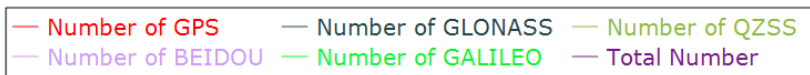
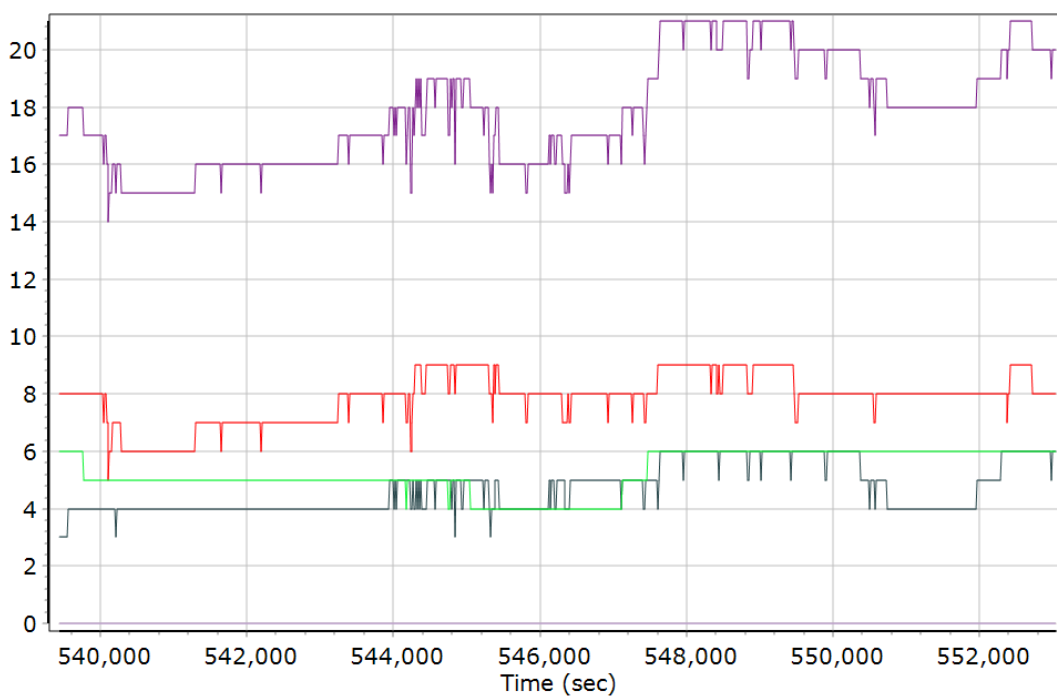
— X Body Angular Rate (deg/sec) — Y Body Angular Rate (deg/sec)
— Z Body Angular Rate (deg/sec)

GNSS QC

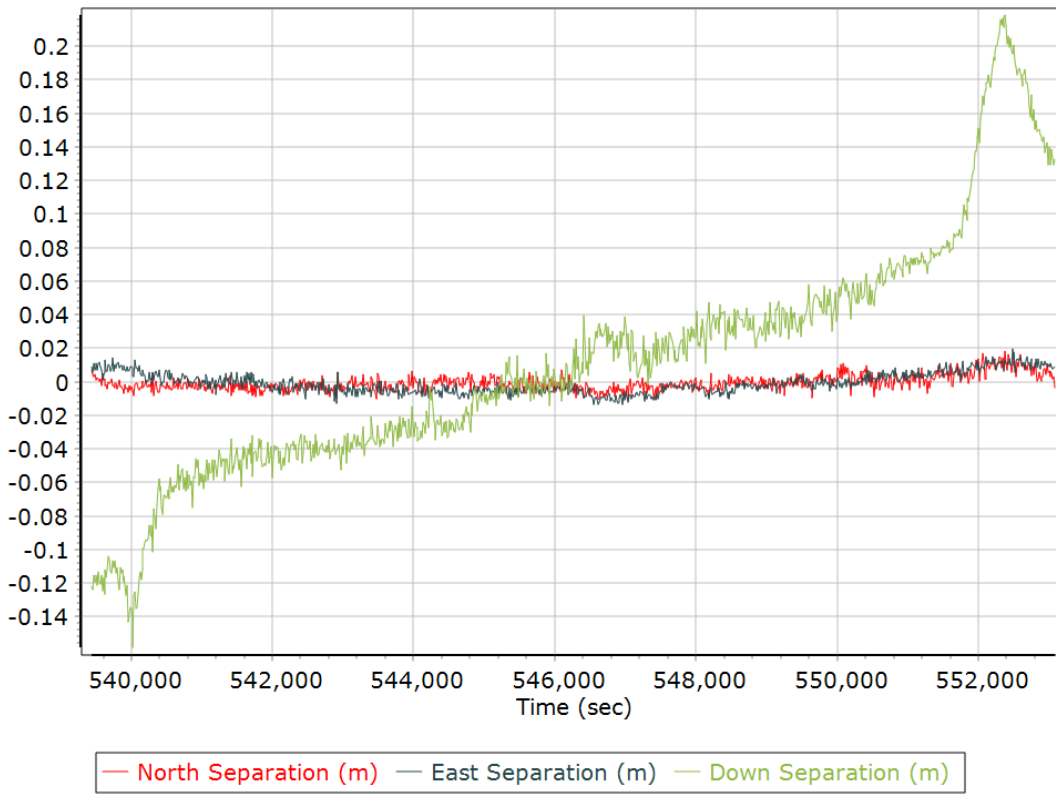
GNSS QC Statistics

Statistics	Min	Max	Mean
Baseline length (km)	0.00	0.00	
Number of GPS SV	2	9	8
Number of GLONASS SV	0	6	5
Number of QZSS SV	0	0	0
Number of BEIDOU SV	0	0	0
Number of GALILEO SV	0	6	5
Total number of SV	9	21	18
PDOP	1.01	3.46	1.29
QC Solution Gaps	0.00	0.00	
Solution Type	Fixed	Float	No solution
Epoch (sec)	14046.00	0.00	0.00
Percentage	100.00	0.00	0.00

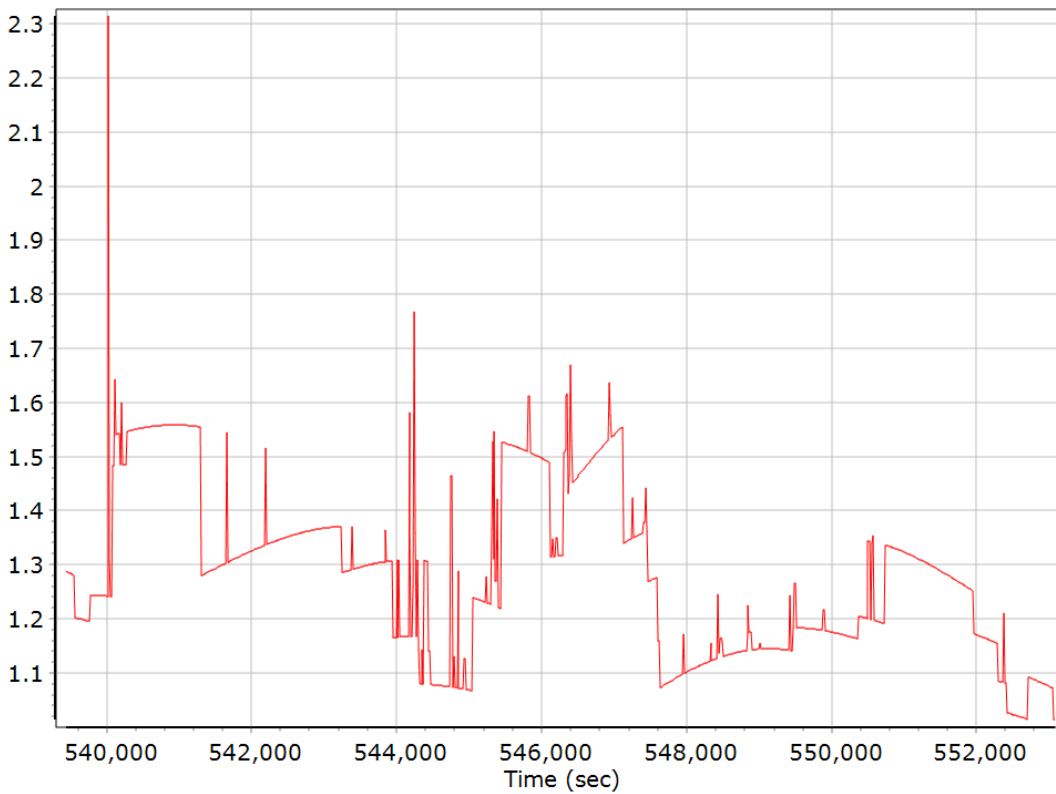
Num SVs in solution



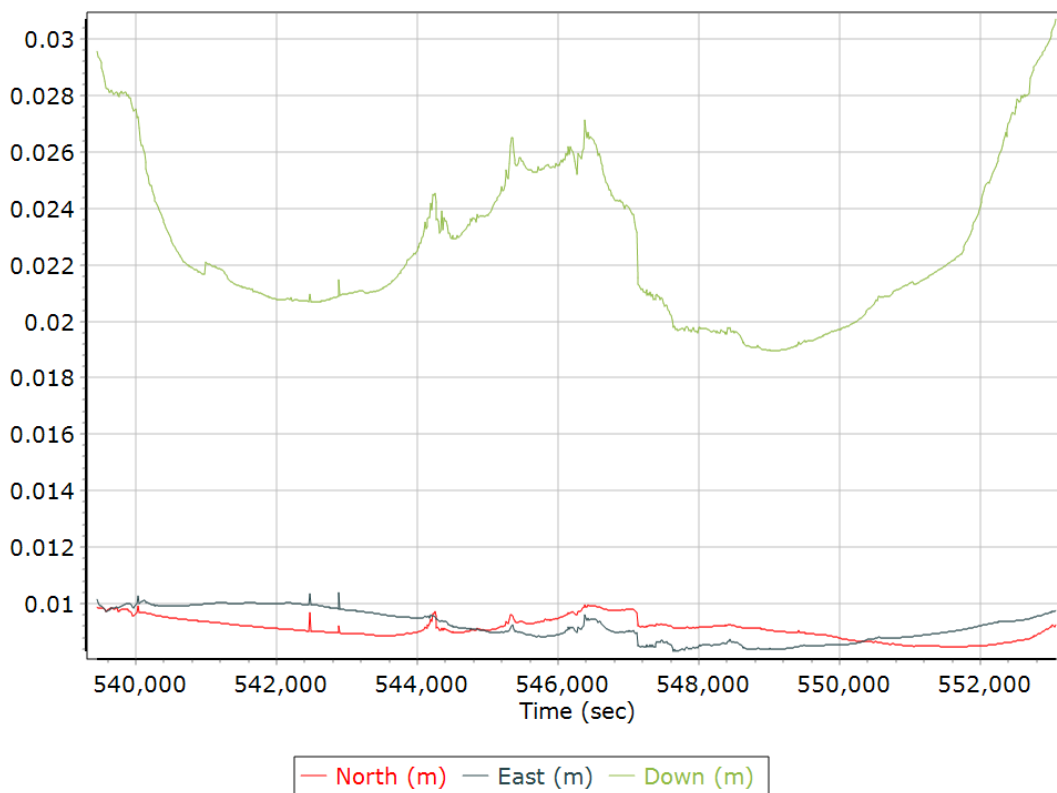
Forward/Reverse Separation



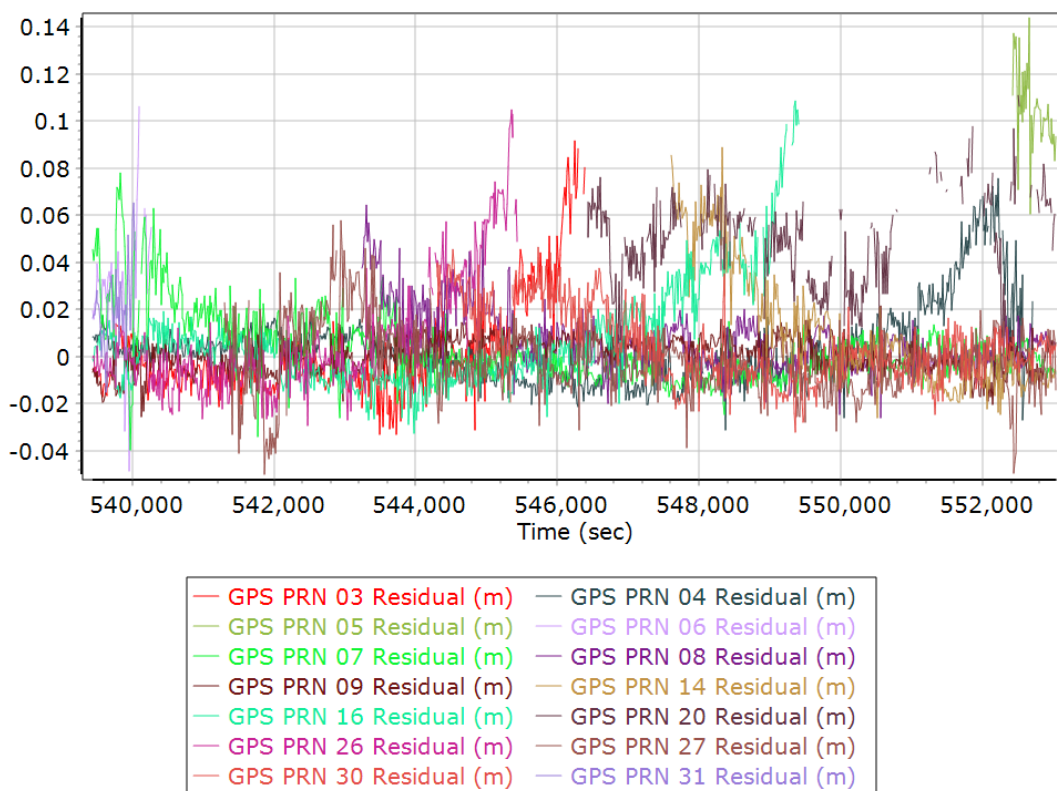
PDOP



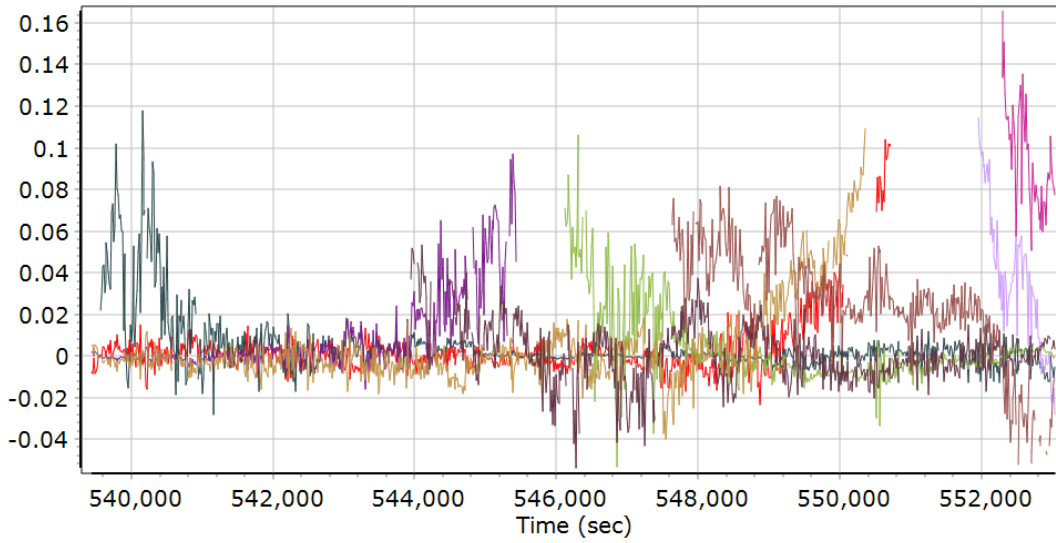
Estimated Position Accuracy



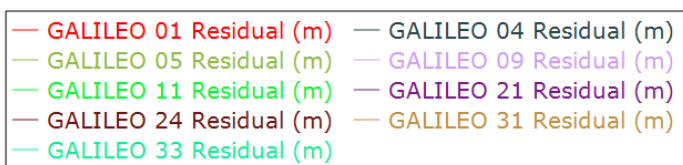
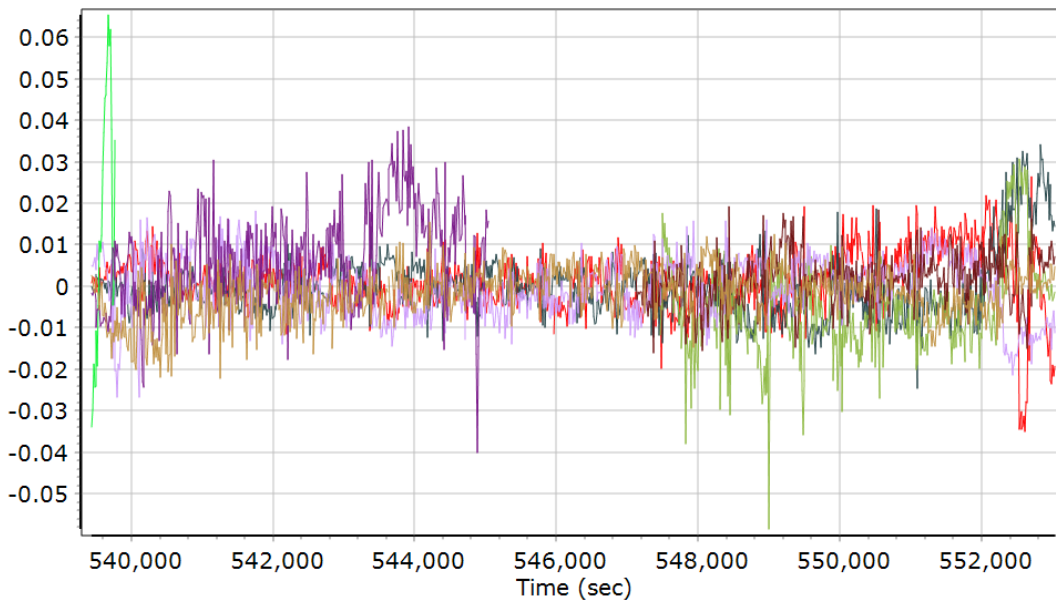
GPS Residuals



GLONASS Residuals



GALILEO Residuals



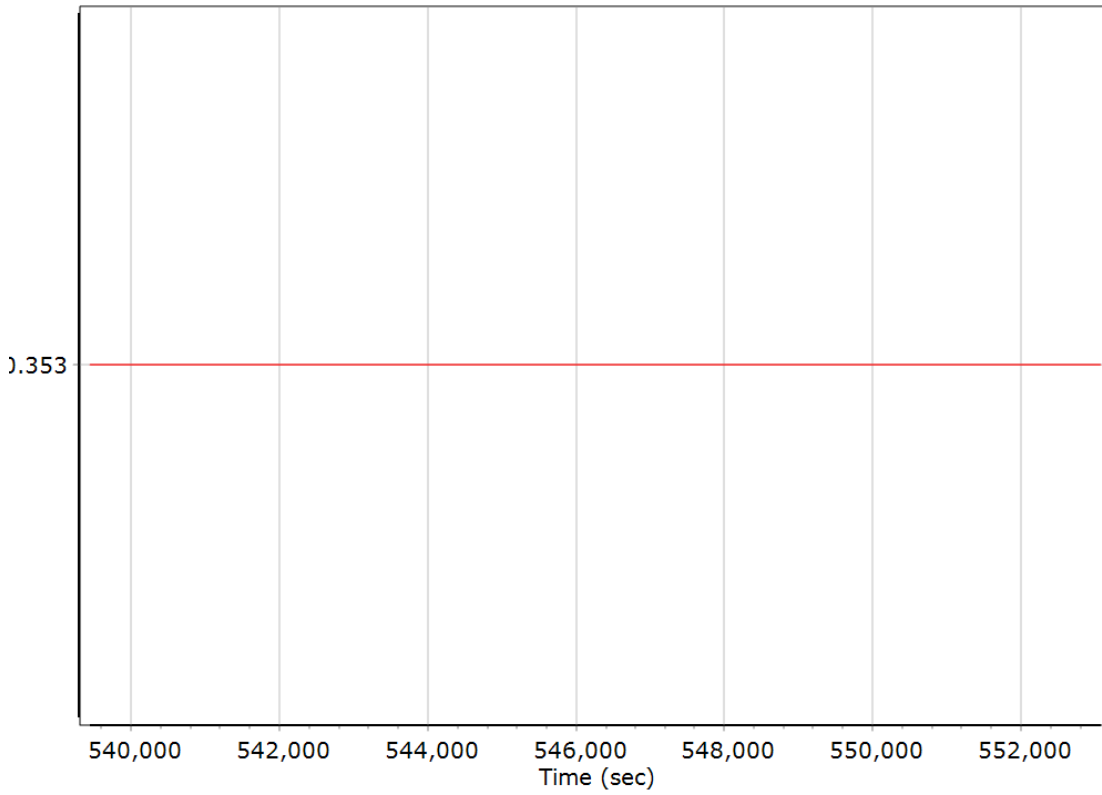
GNSS-Inertial Processor Configuration

Processing mode	IN-Fusion PP-RTX		
Stabilized mount	False		
Processing start time	538981.000 (7/9/2022 5:43:01 AM)		
Processing end time	553083.000 (7/9/2022 9:38:03 AM)		
Initial attitude source	Real-Time VNAV/RNAV Attitude		
IMU Sensor Context	Processing with Onboard IMU		
Reference to IMU lever arm (m)	0.000	0.000	0.000
Reference to IMU mounting angles (deg)	0.000	0.000	0.000
Reference to Primary GNSS lever arm (m)	-0.353	-0.322	-1.280
Reference 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

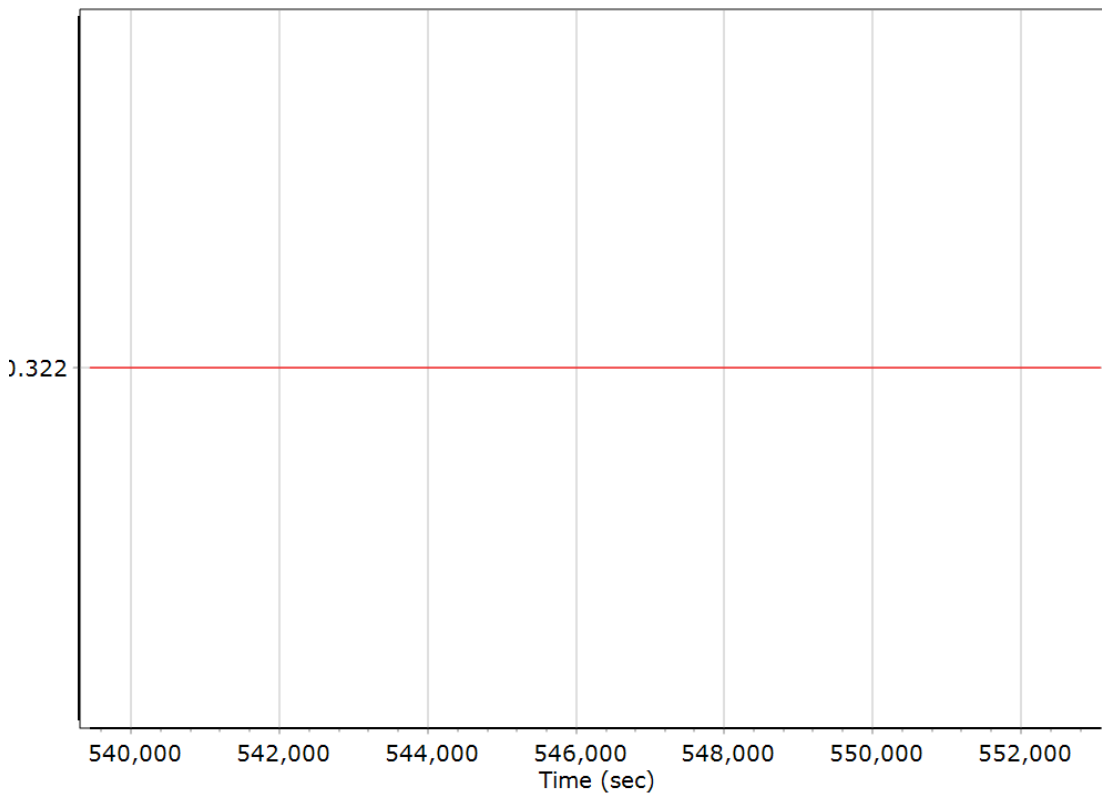
Calibrated Installation Parameters

Reference-Primary GNSS Lever Arm (m)

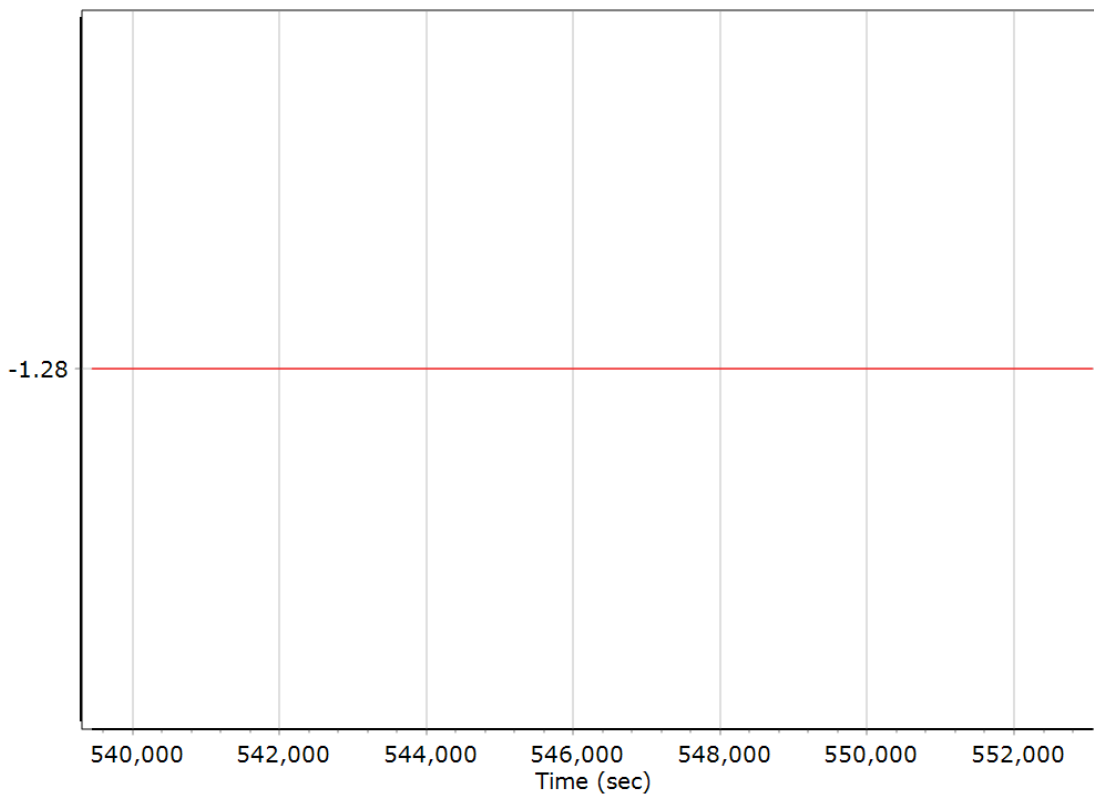
X Reference-Primary GNSS Lever Arm (m)



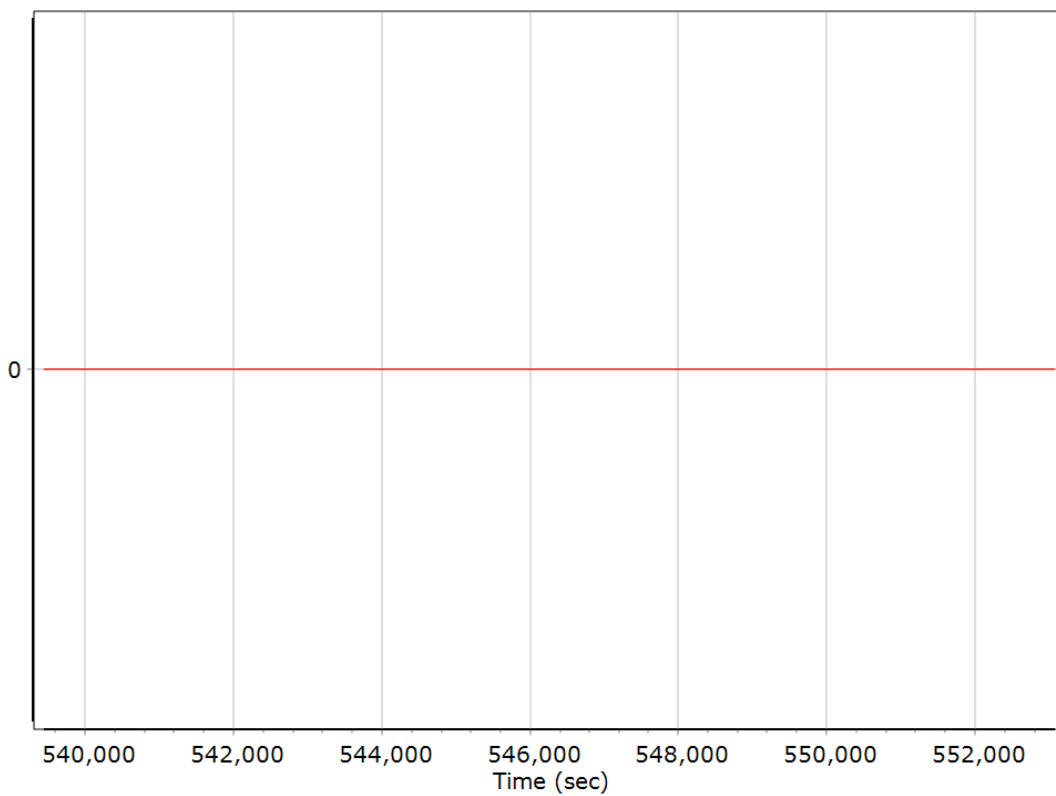
Y Reference-Primary GNSS Lever Arm (m)



Z Reference-Primary GNSS Lever Arm (m)



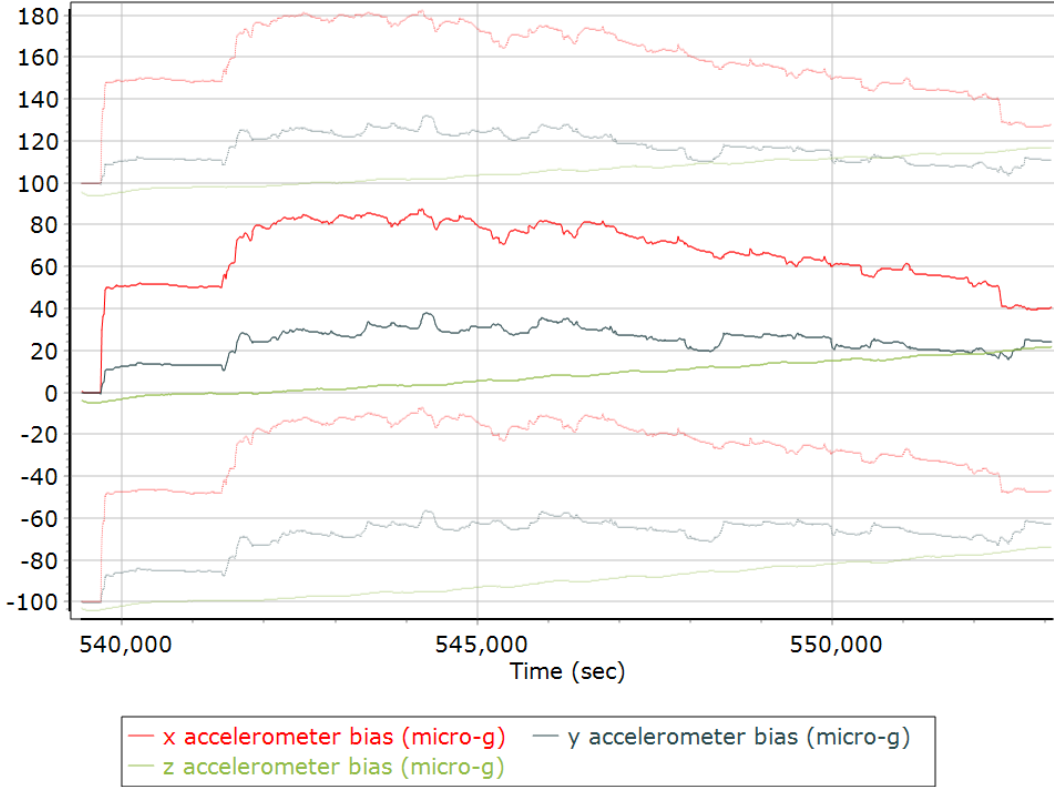
Reference-Primary GNSS Lever Arm Figure of Merit



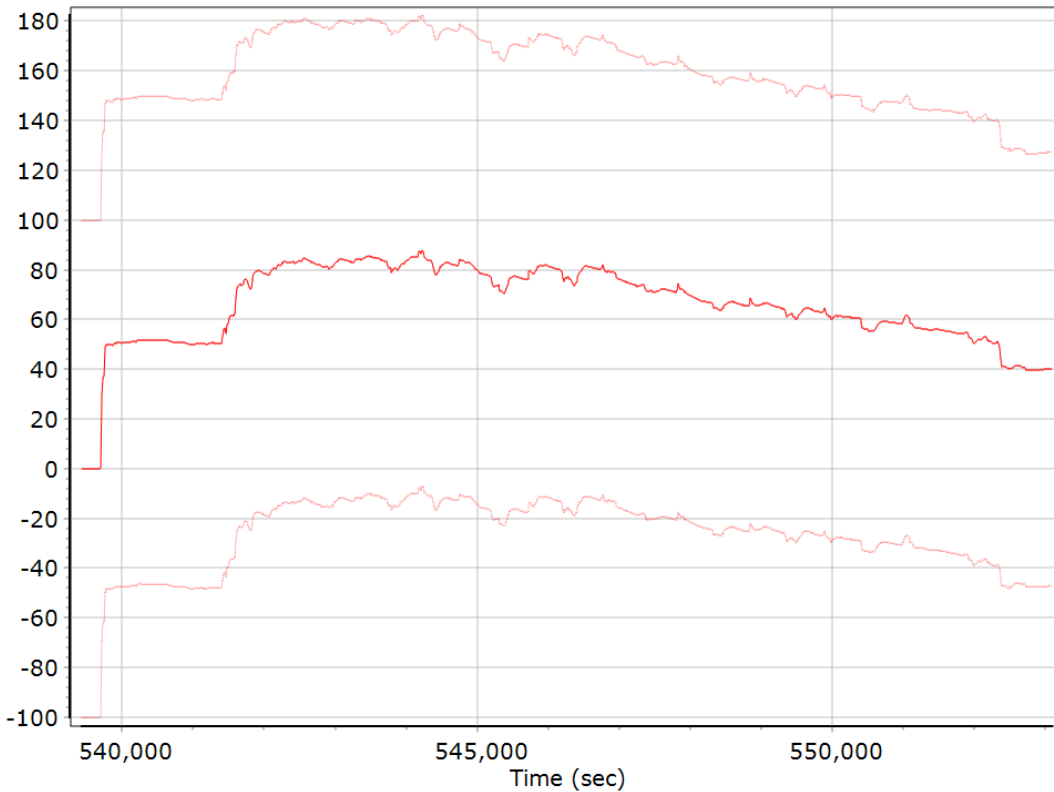
IN-Fusion QC

Forward Processed Estimated Errors, Reference Frame

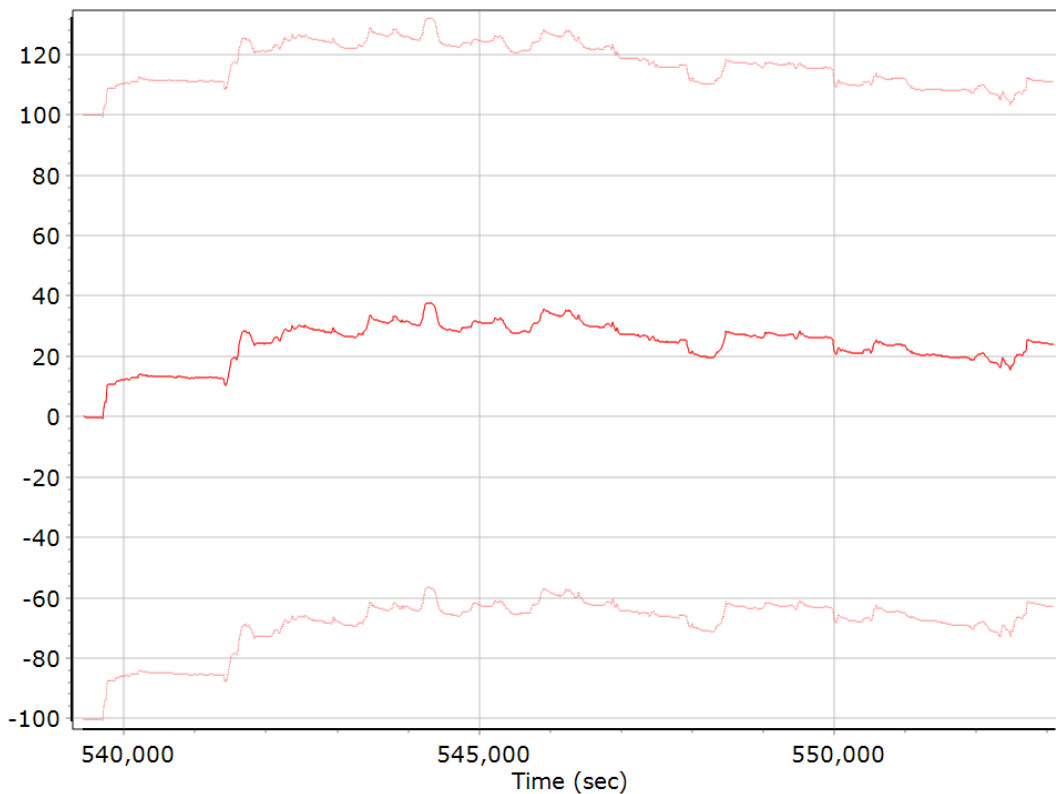
Accelerometer Bias (micro-g)



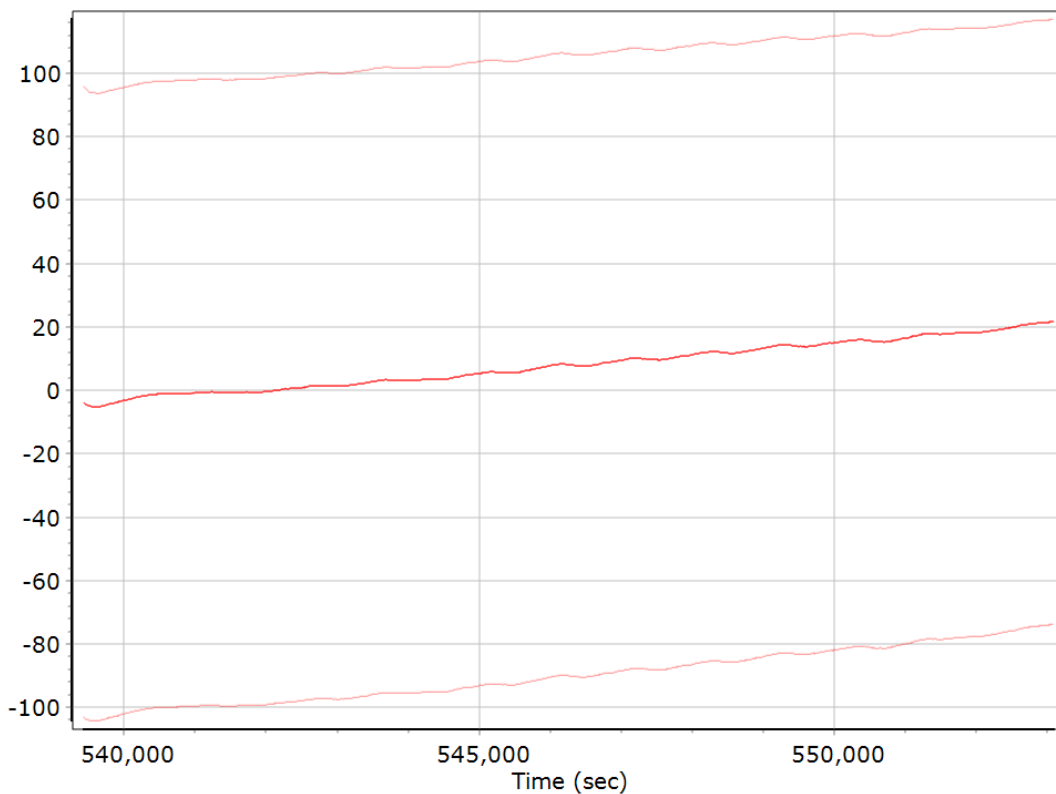
X Accelerometer Bias (micro-g)



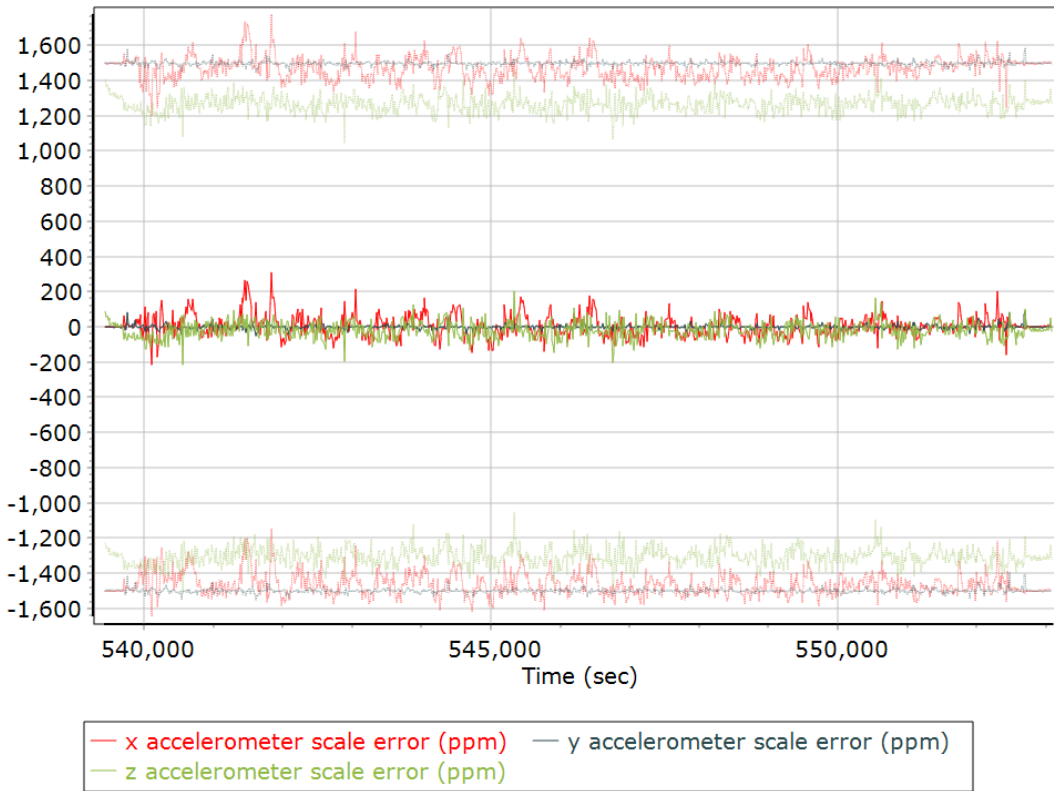
Y Accelerometer Bias (micro-g)



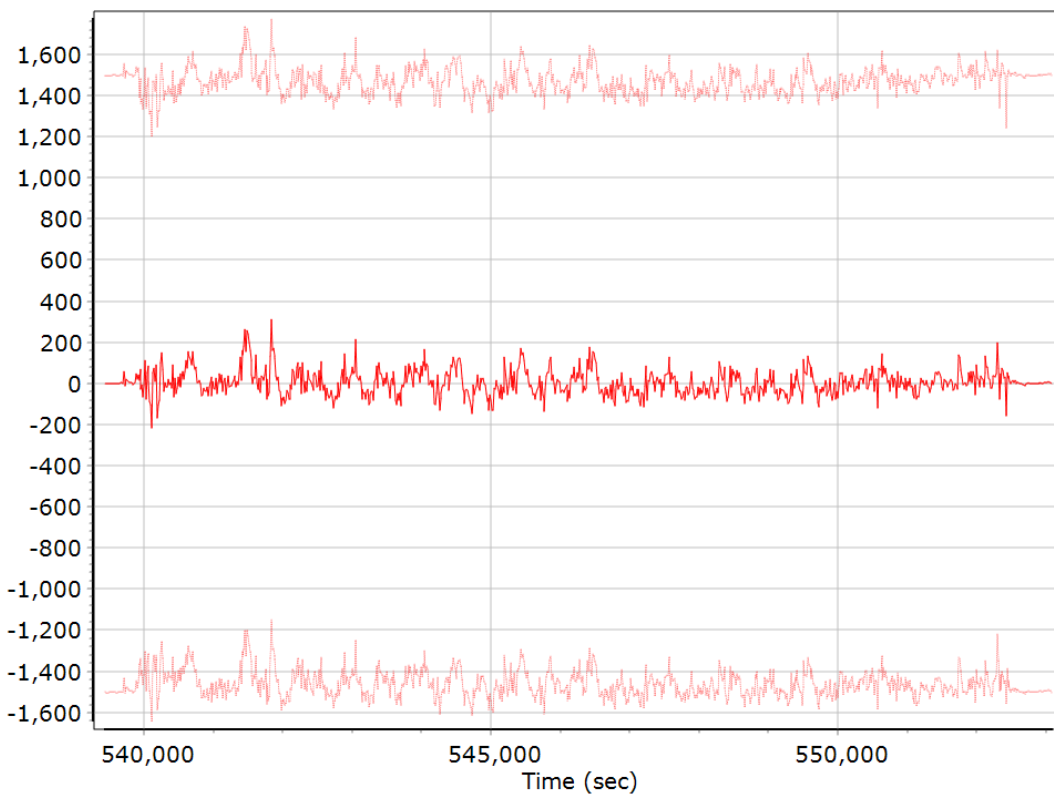
Z Accelerometer Bias (micro-g)



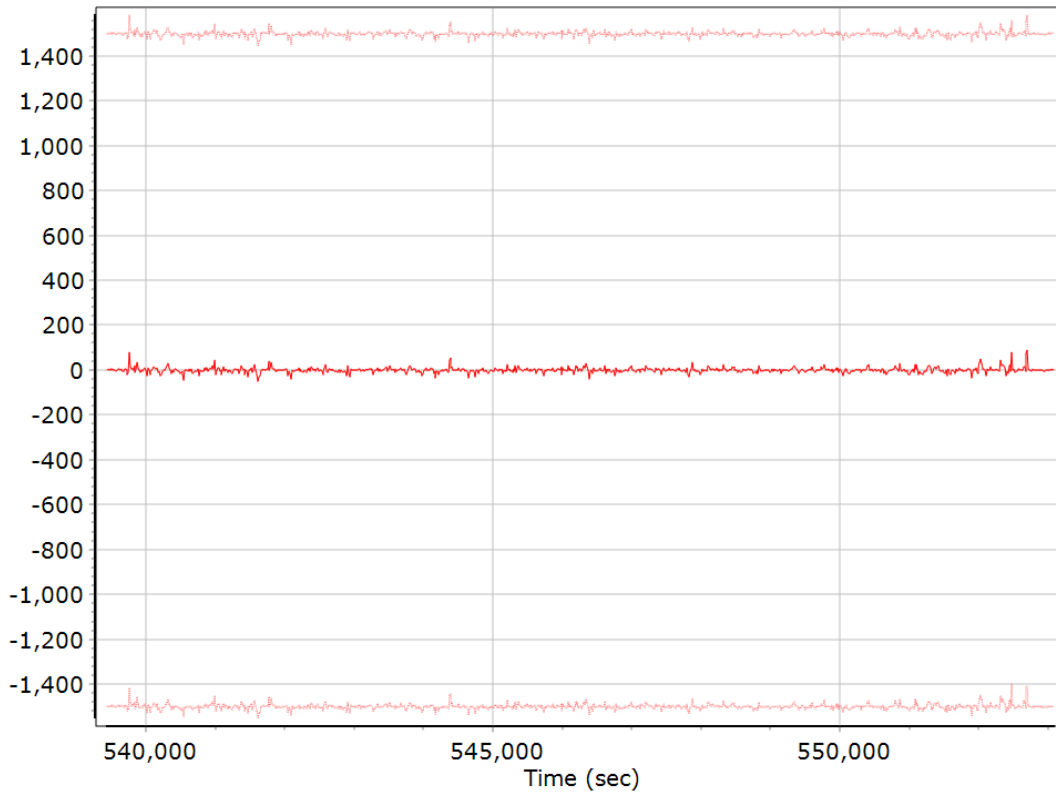
Accelerometer Scale Error (ppm)



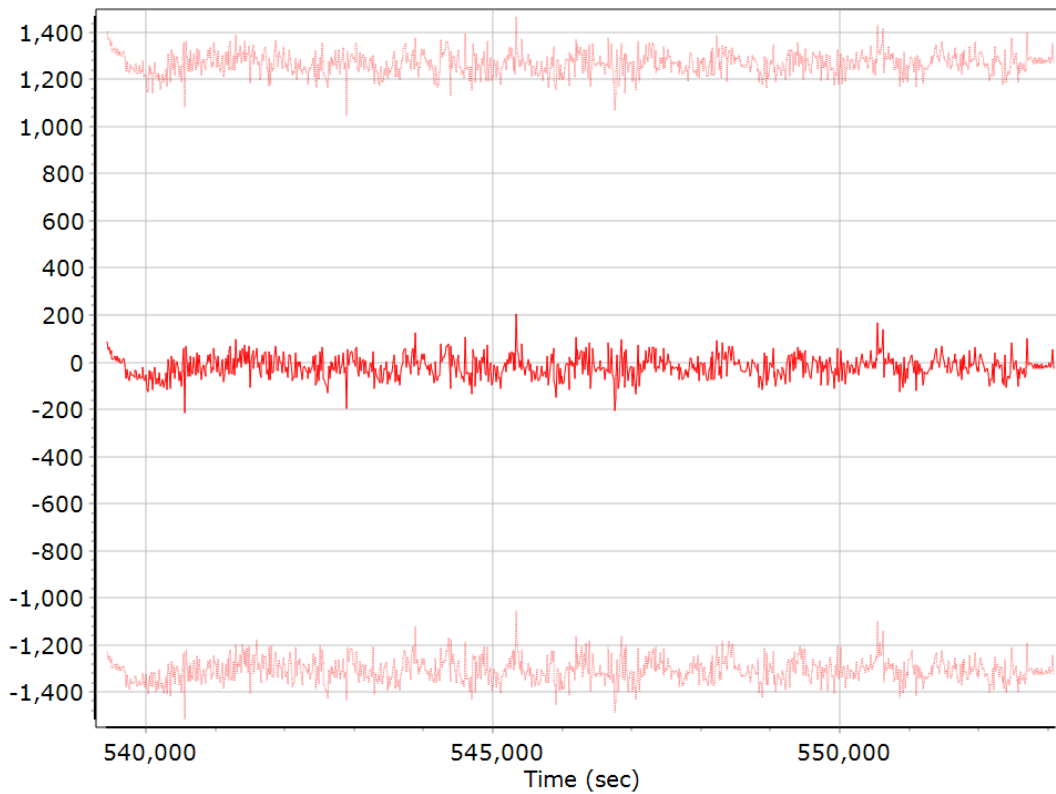
X Accelerometer Scale Error (ppm)



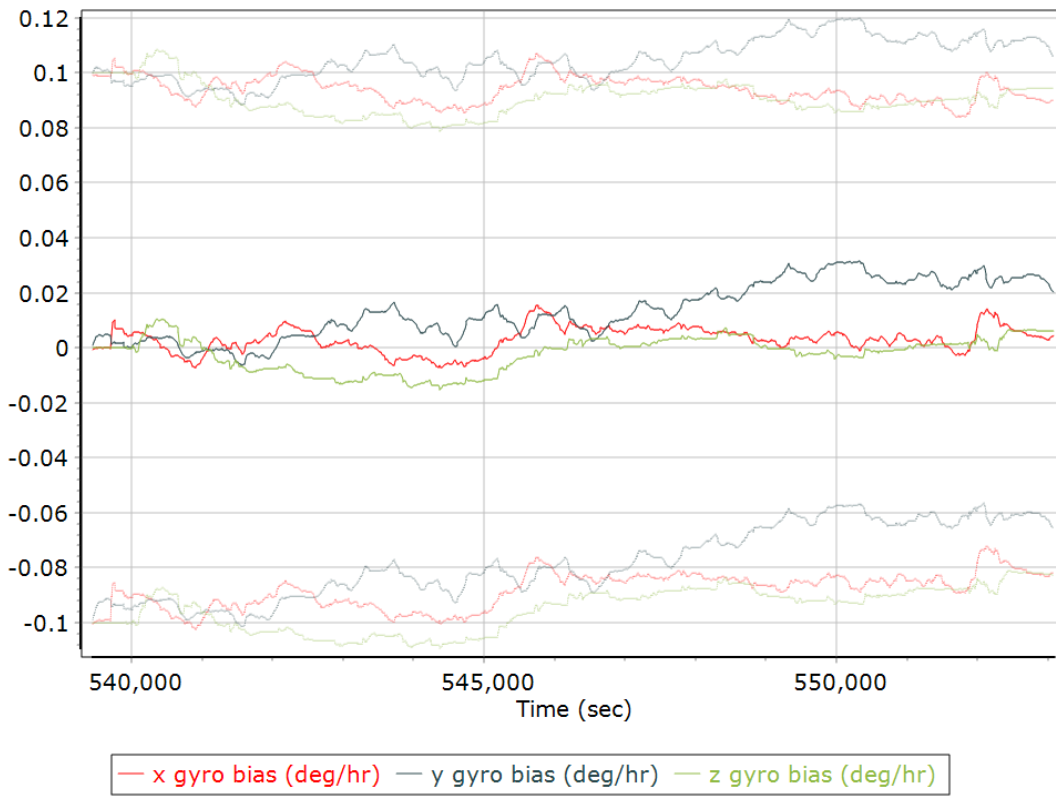
Y Accelerometer Scale Error (ppm)



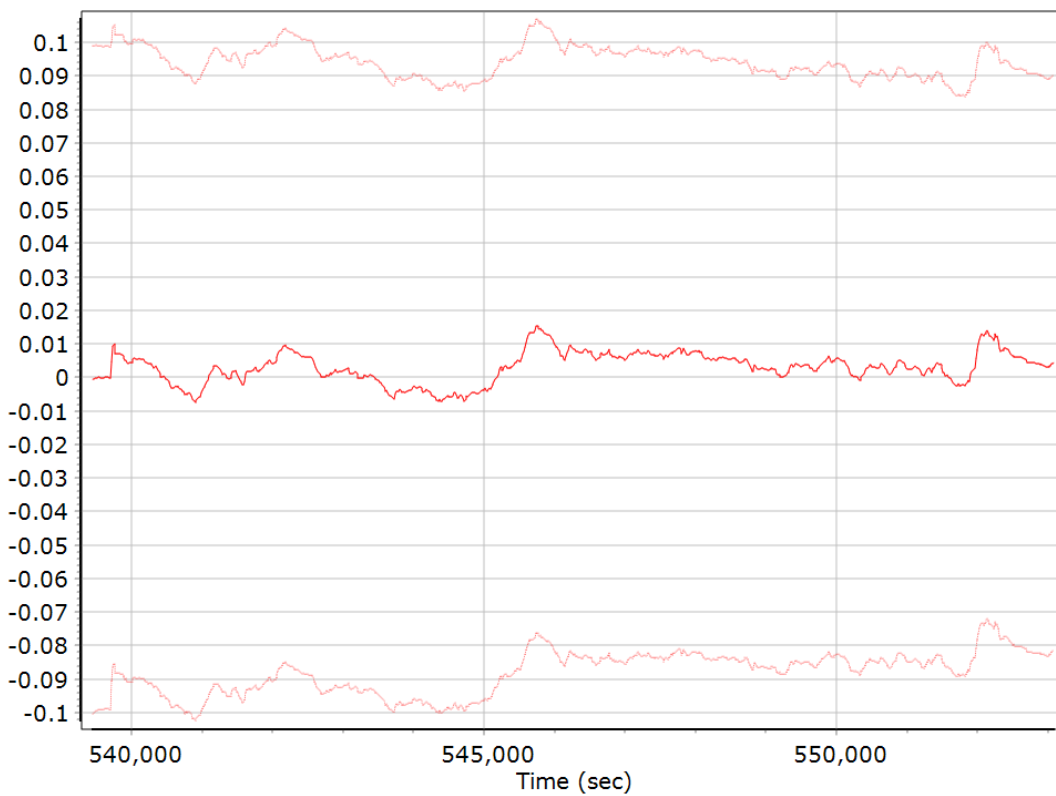
Z Accelerometer Scale Error (ppm)



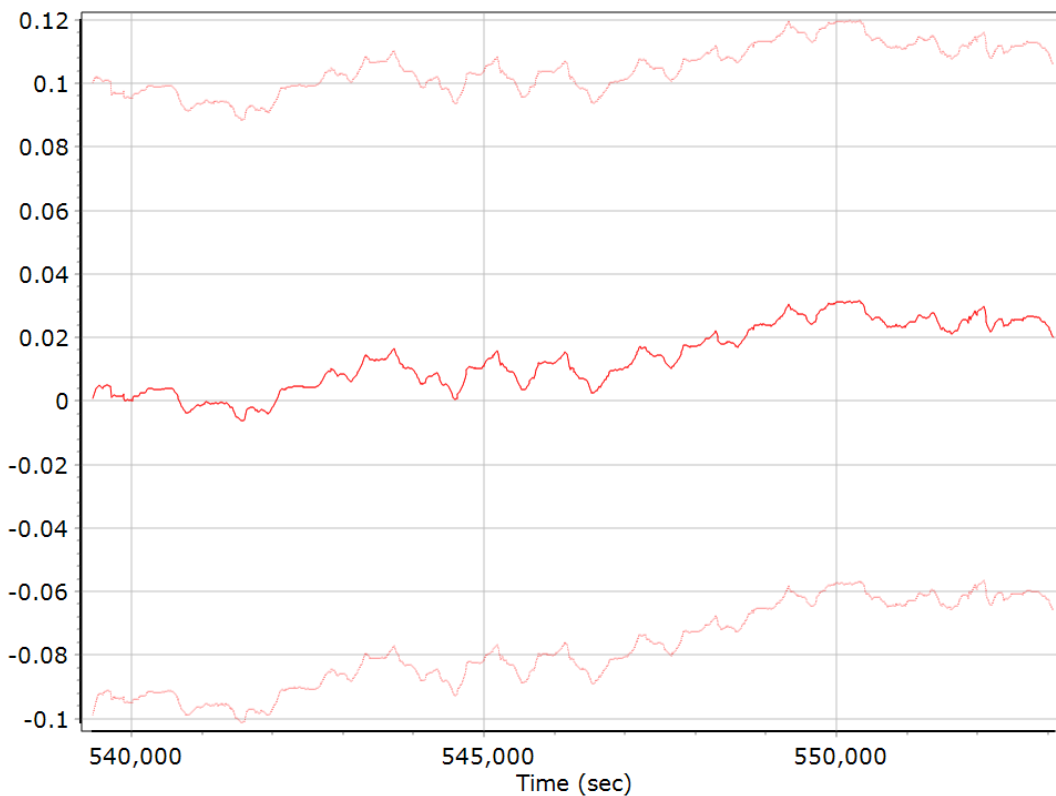
Gyro Bias (deg/h)



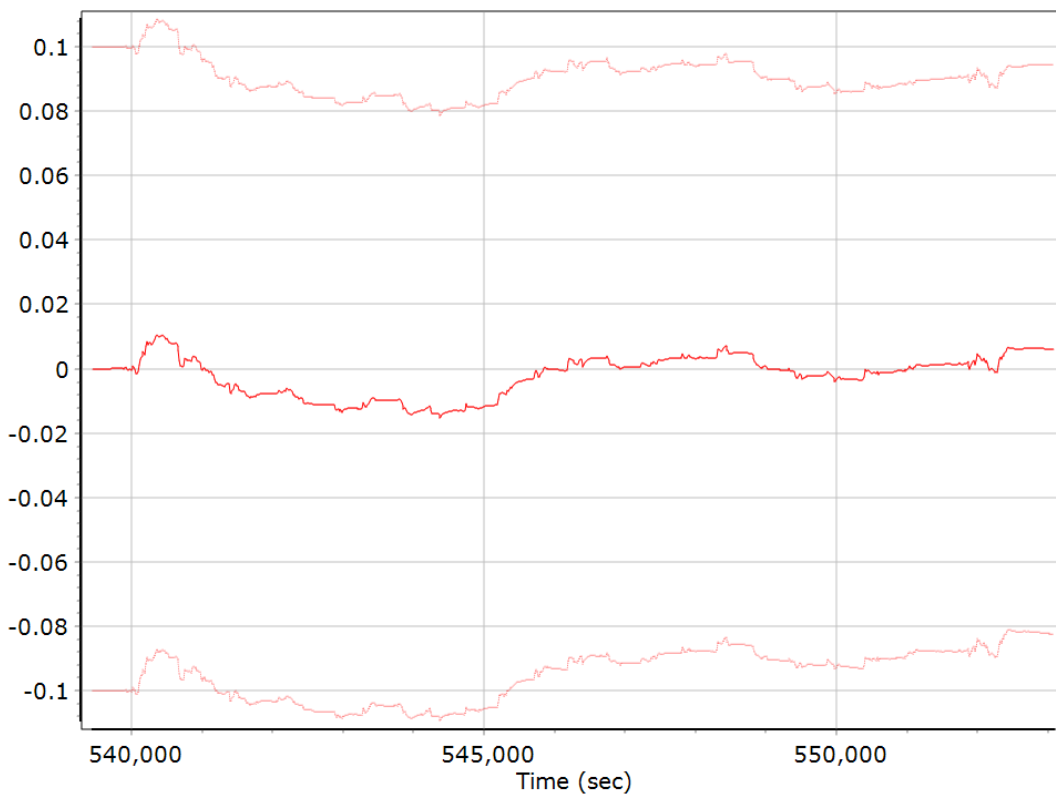
X Gyro Bias (deg/h)



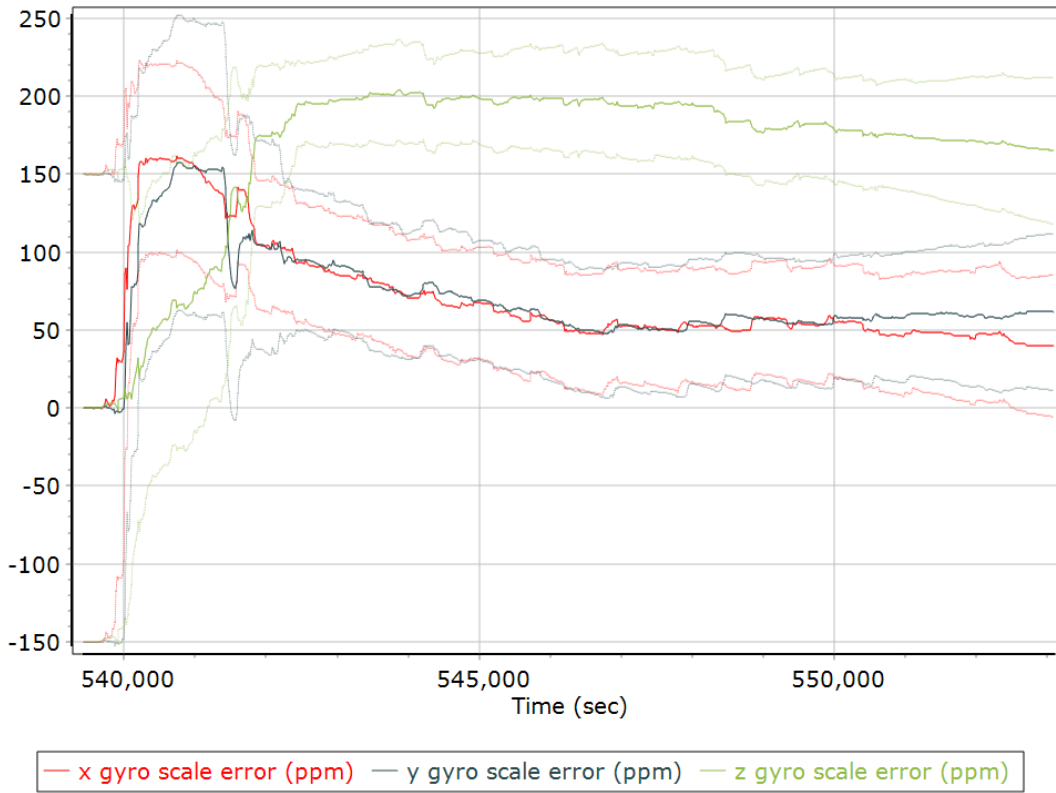
Y Gyro Bias (deg/h)



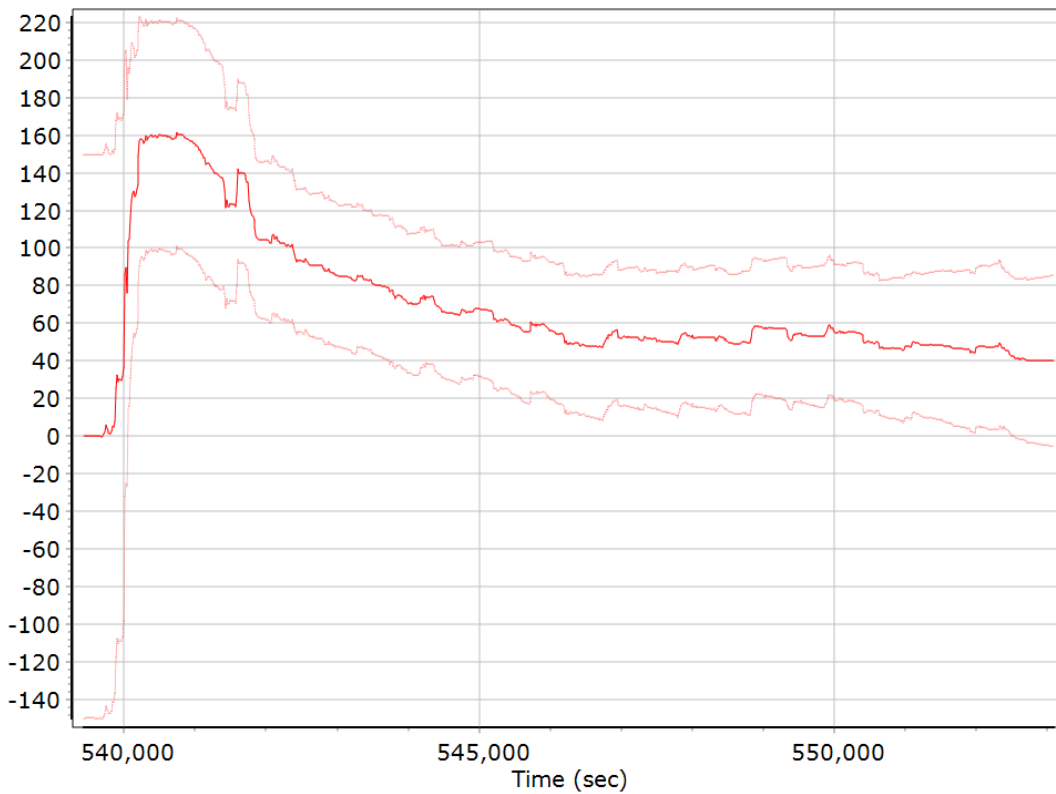
Z Gyro Bias (deg/h)



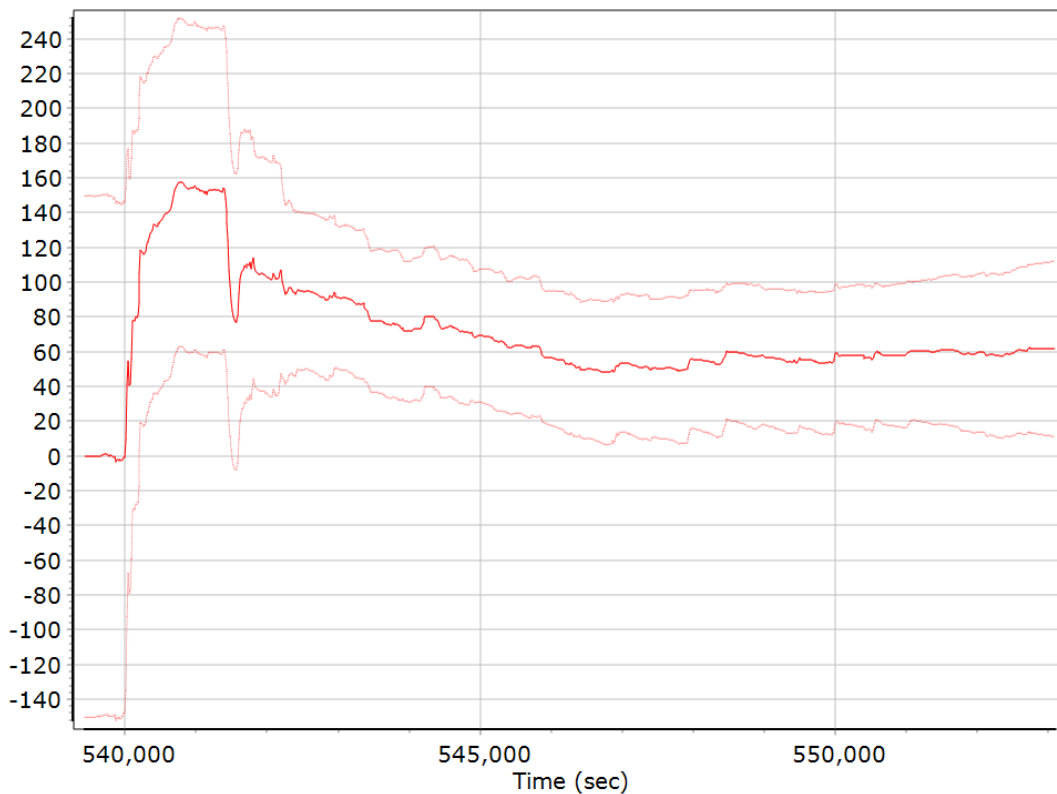
Gyro Scale Error (ppm)



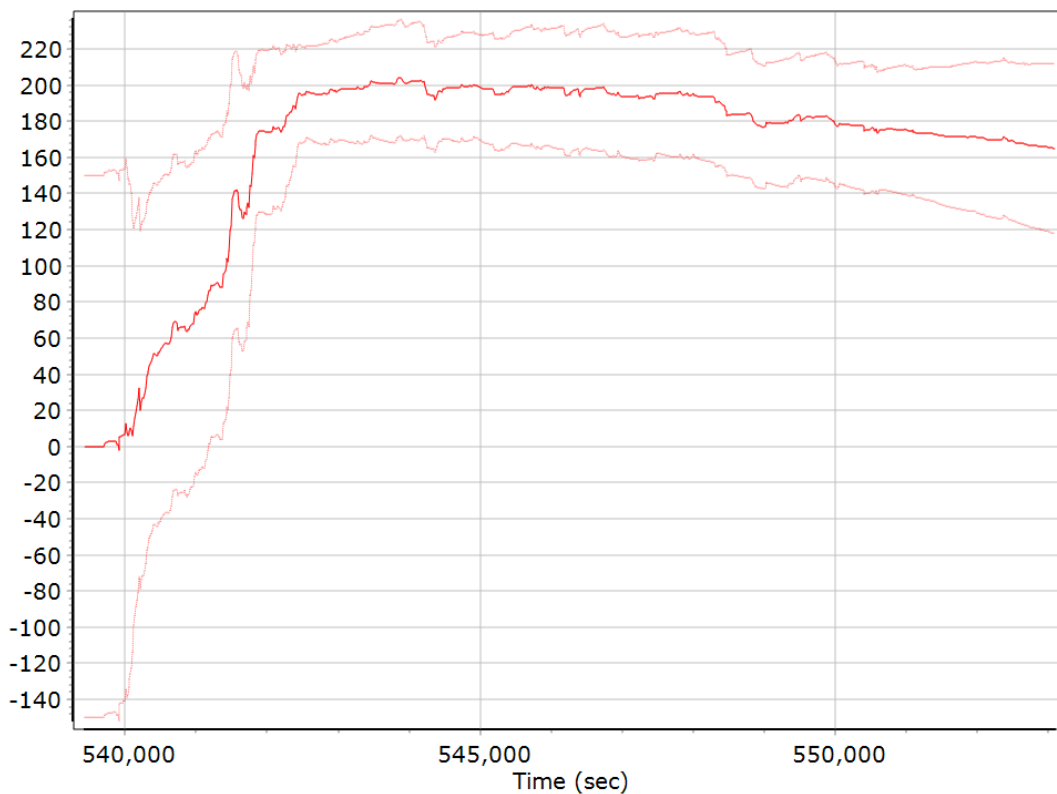
X Gyro Scale Error (ppm)



Y Gyro Scale Error (ppm)

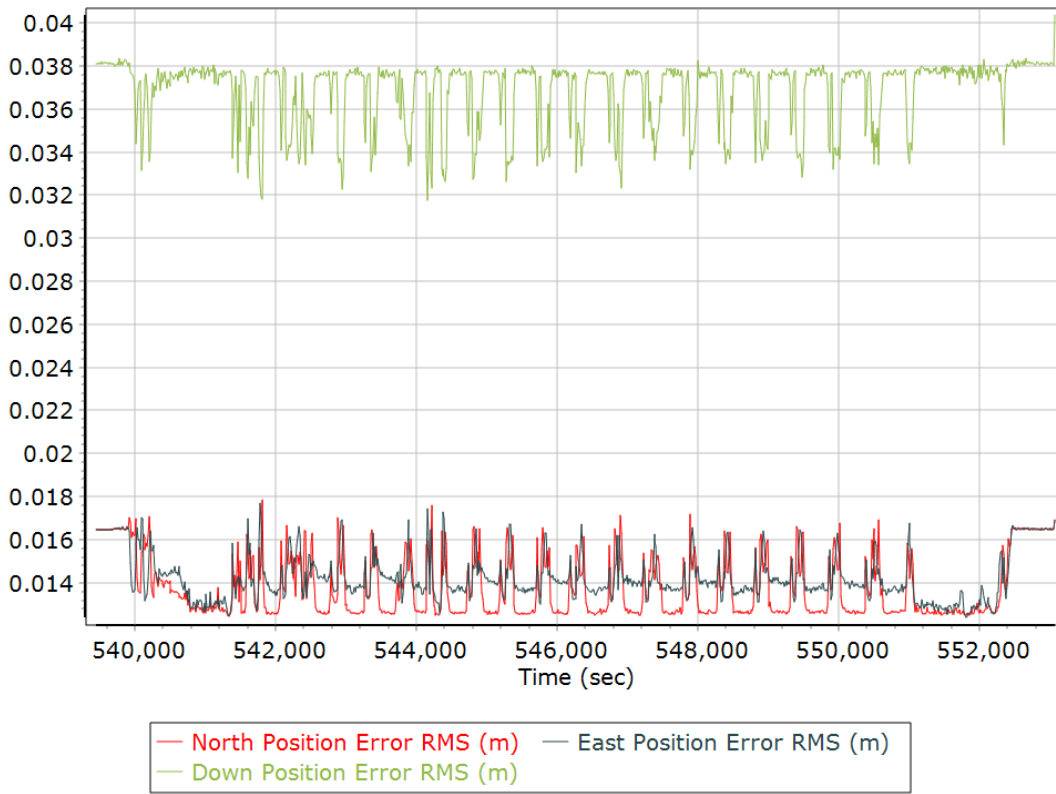


Z Gyro Scale Error (ppm)

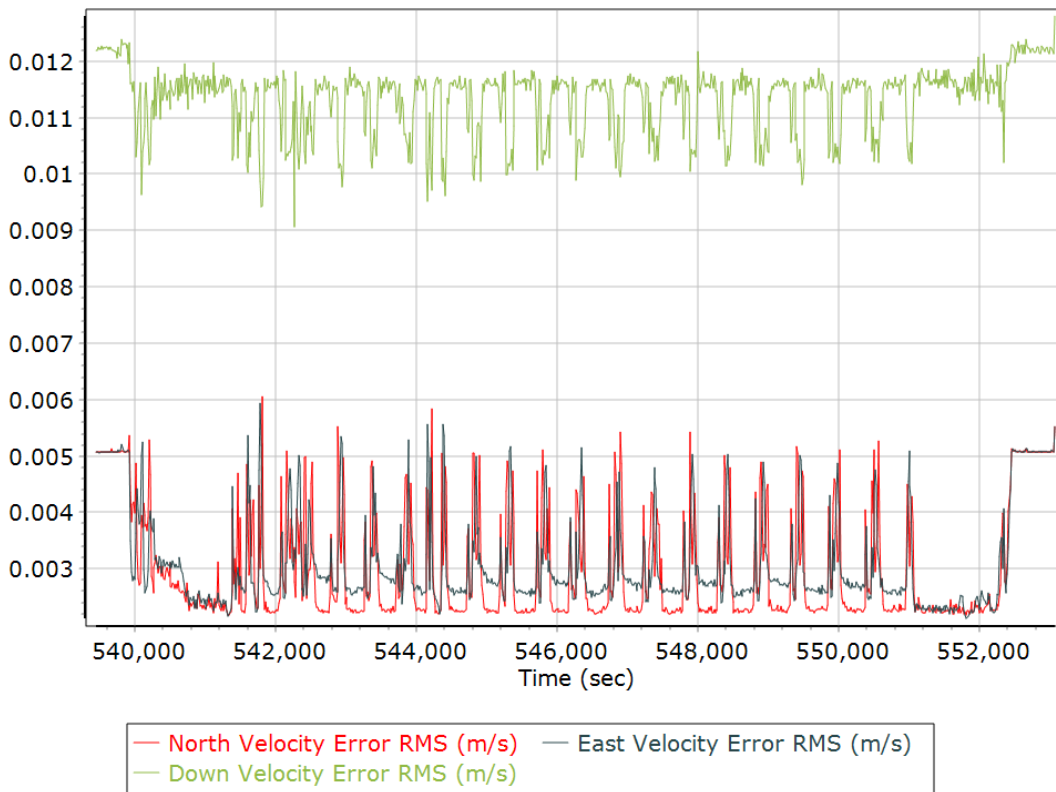


Smoothed Performance Metrics

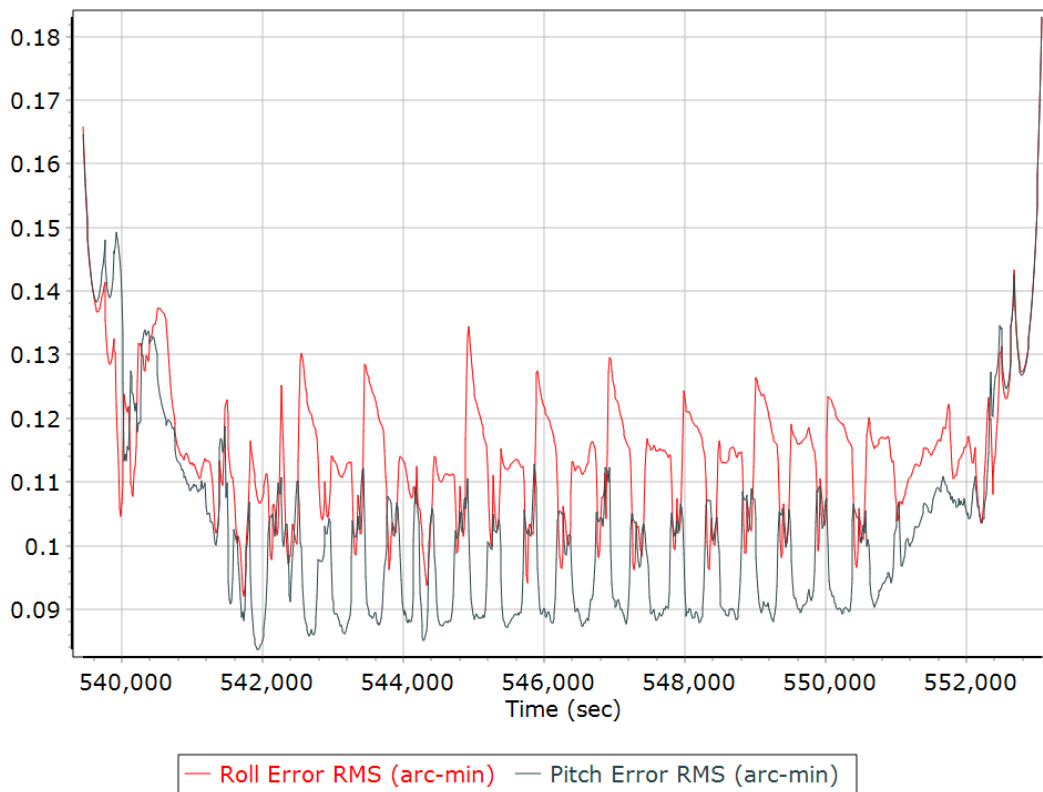
Position Error RMS (m)



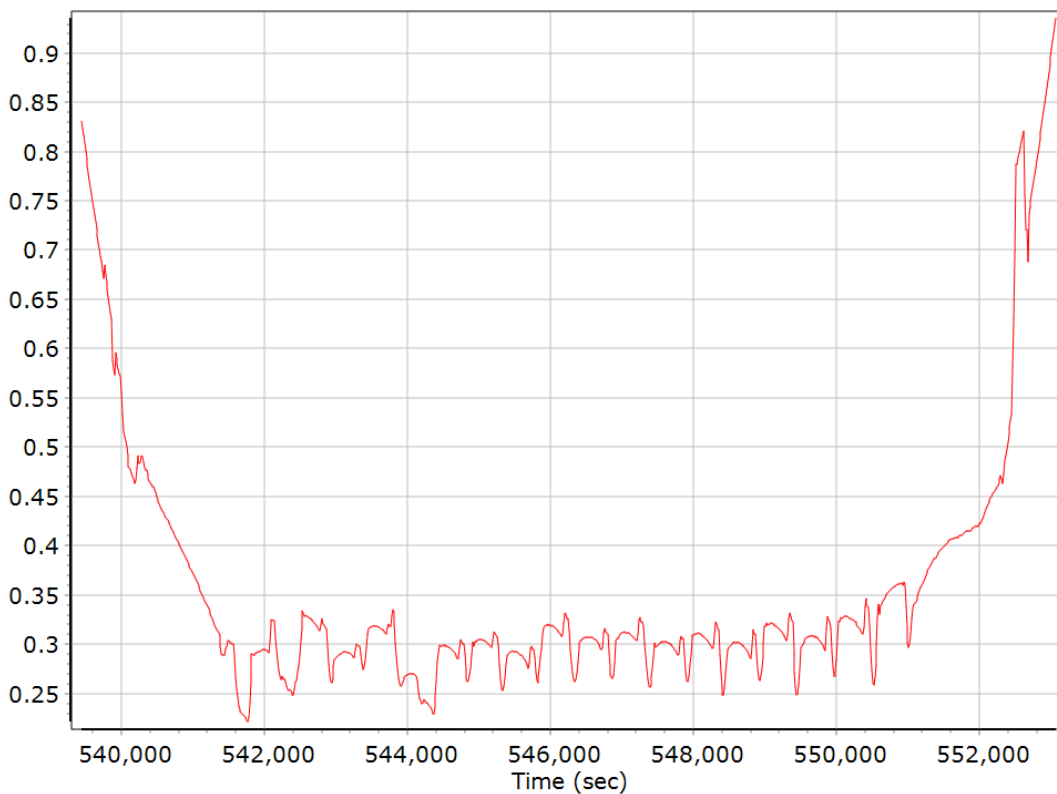
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

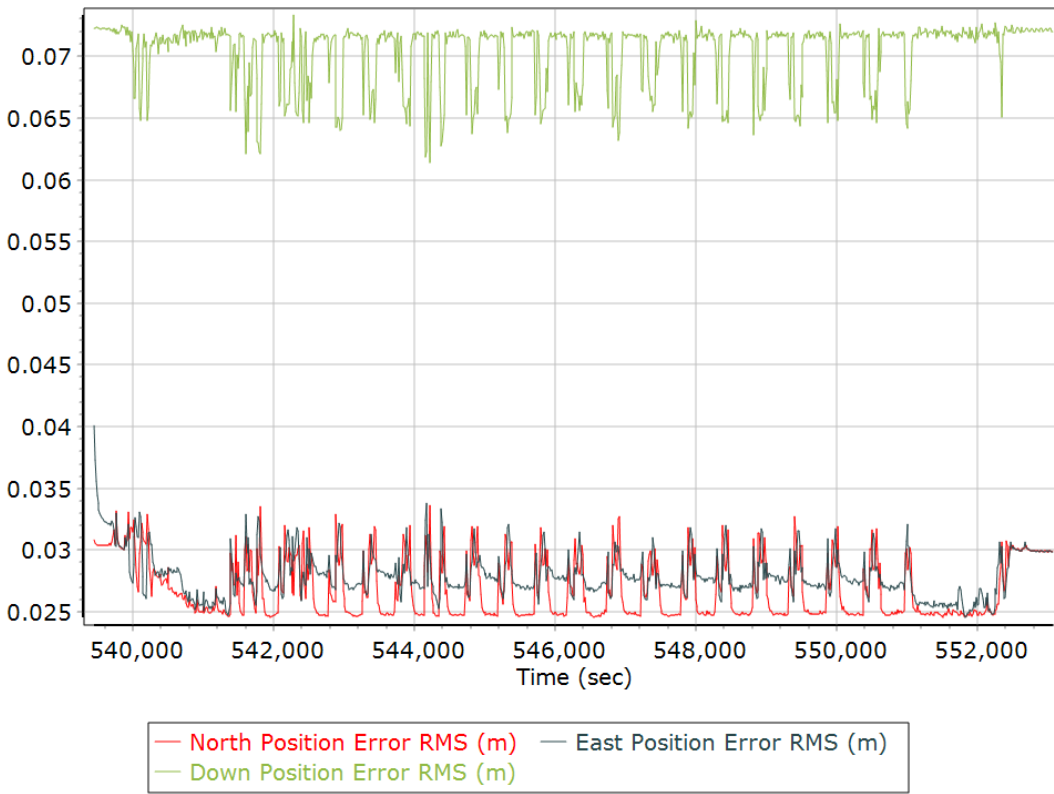


Heading Error RMS (arc-min)

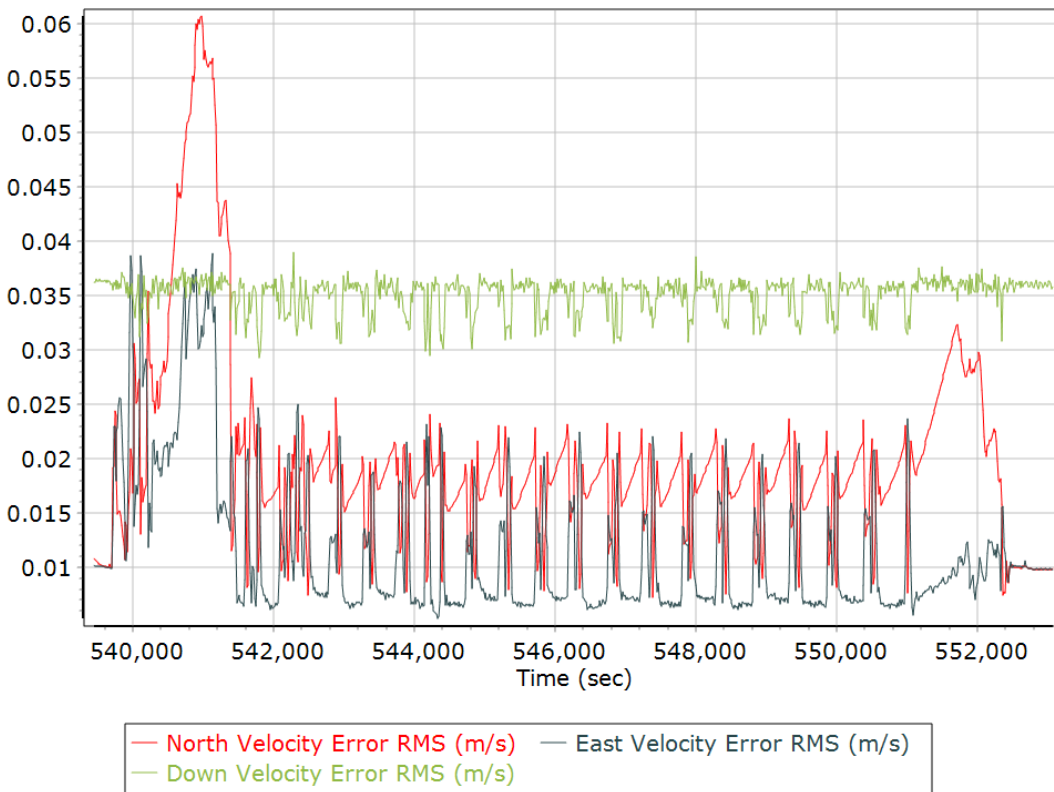


Forward Processed Performance Metrics

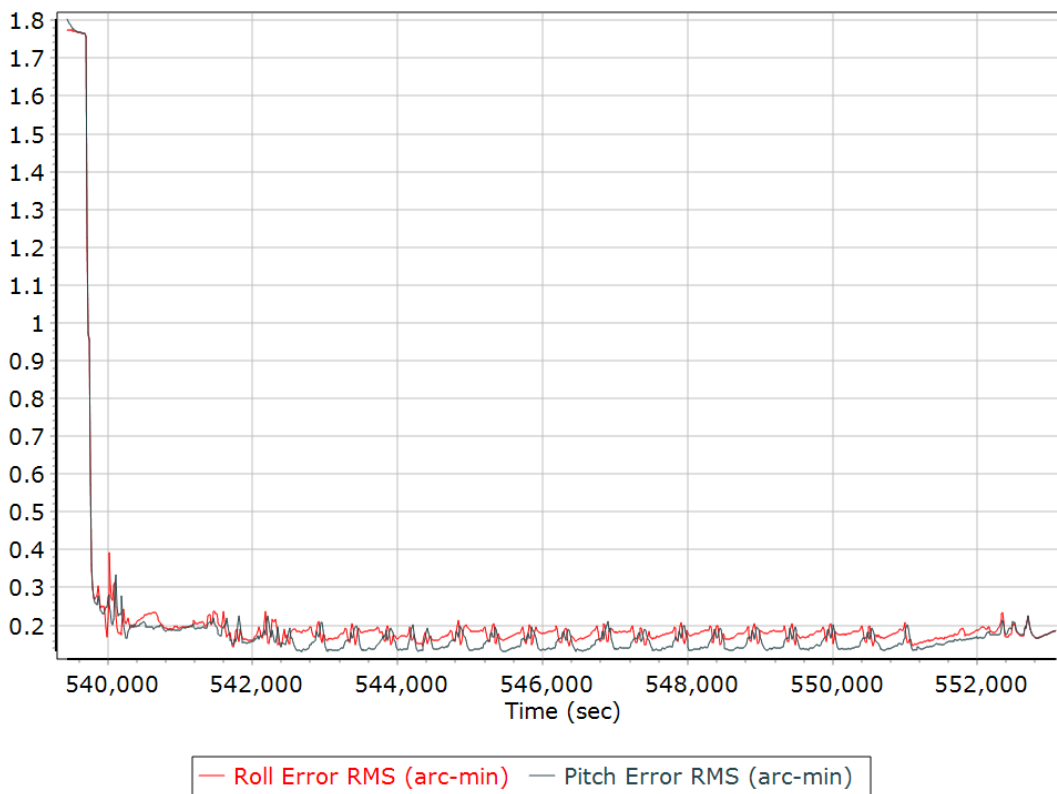
Position Error RMS (m)



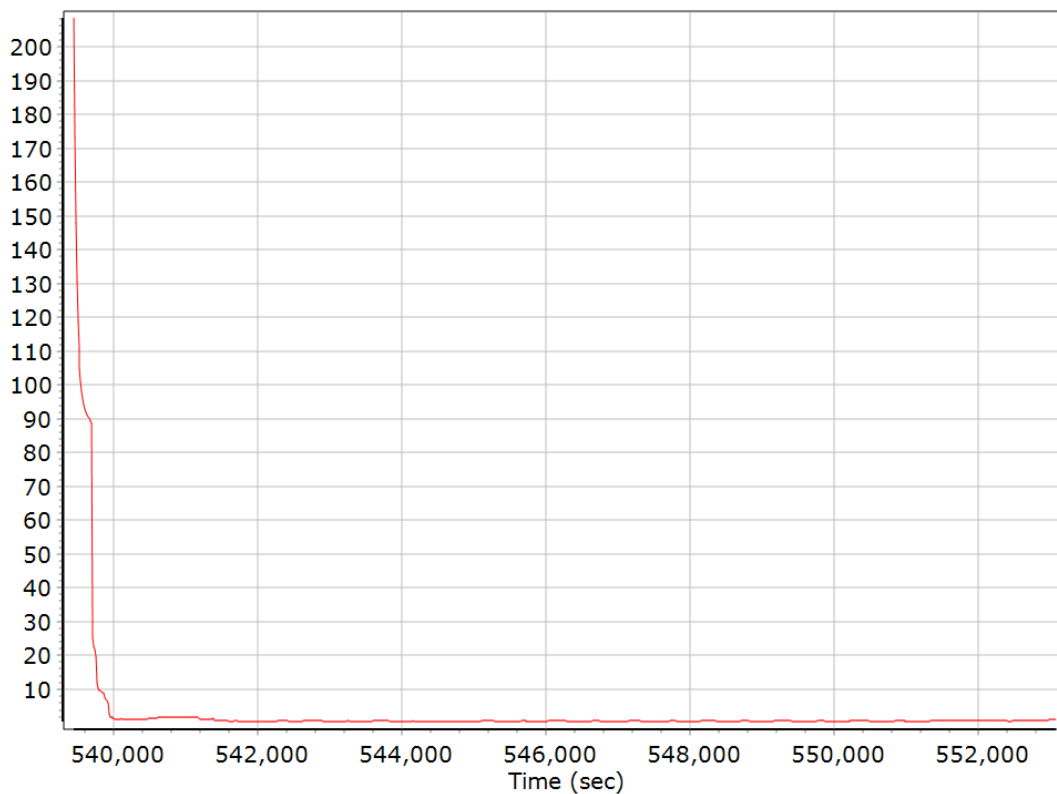
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

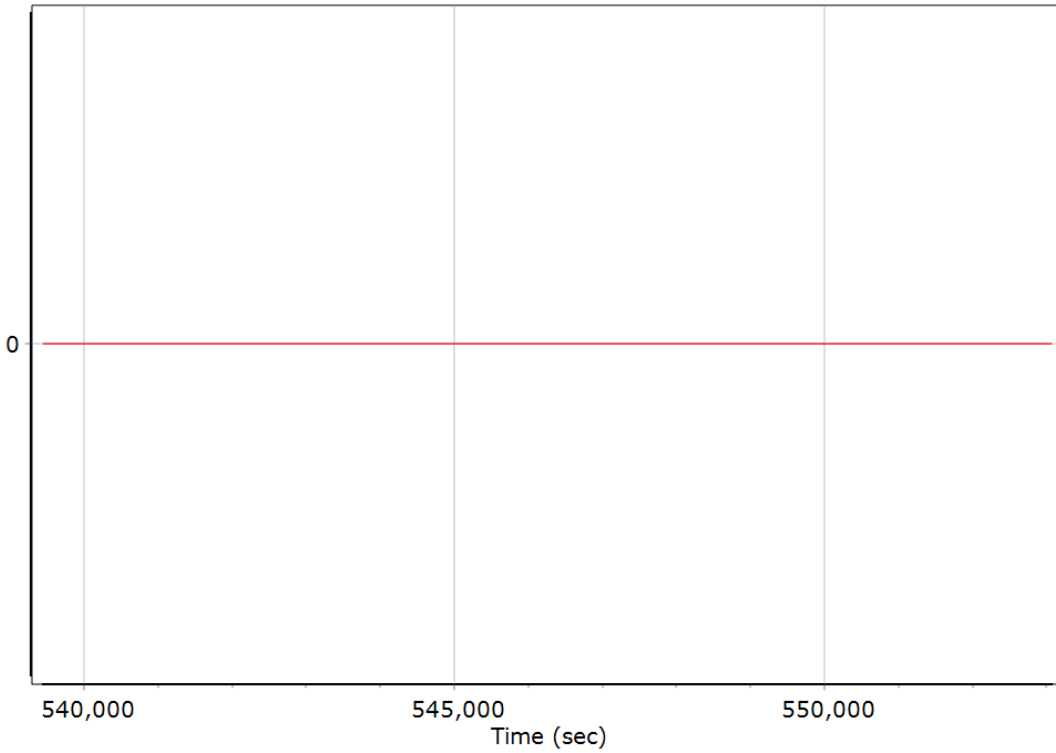


Heading Error RMS (arc-min)



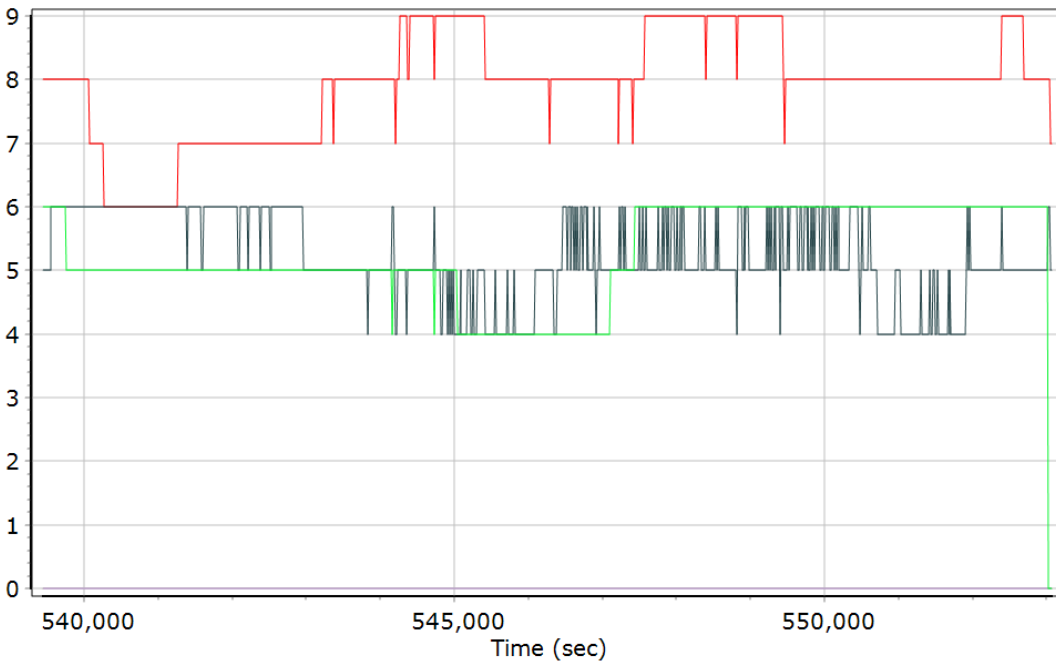
Forward Processed Solution Status

Processing Mode



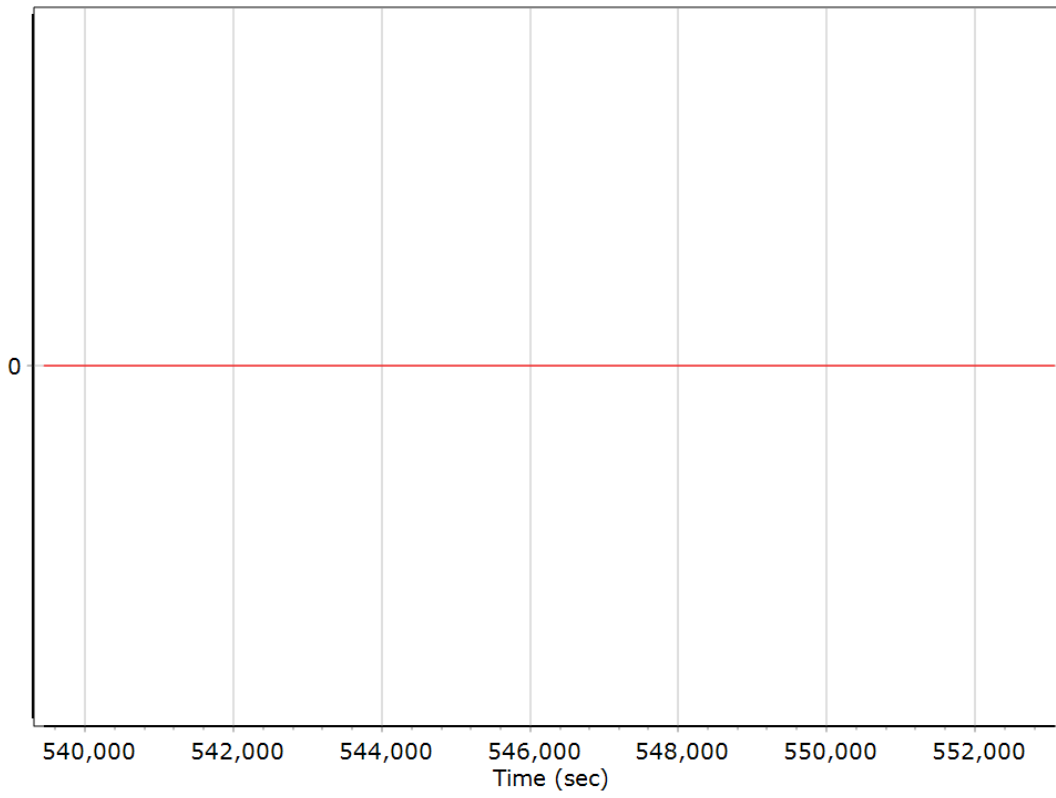
0 = Fixed NL, 1 = Fixed WL, 2 = Float, 3 = DGNSS, 4 = RTCM, 5 = IAPPP, 6 = C/A, 7 = GNSS Na

Number of Satellites



— Number of GPS Satellites — Number of GLONASS Satellites
— Number of QZSS Satellites — Number of BEIDOU Satellites
— Number of GALILEO Satellites

Baseline Length



General Information

Mission Information

Project name	a07-s03-0525
Processing date	2022-08-30 16:40:03
Mission date	2022-08-30 07:23:39
Mission duration	04:58:15.000
Processing mode	IN-Fusion PP-RTX

Rover Hardware Information

Product	POS AV 610 VER6 HW1.6-12
Serial number	S/N6907
IMU type	57
Receiver type	BD982
Antenna type	AV39

Project File List

Rover Data Files

File name	File type
default0830_072341.000	POS Data
default0830_072341.001	POS Data
default0830_072341.002	POS Data
default0830_072341.003	POS Data
default0830_072341.004	POS Data
default0830_072341.005	POS Data
default0830_072341.006	POS Data
default0830_072341.007	POS Data
default0830_072341.008	POS Data
default0830_072341.009	POS Data
default0830_072341.010	POS Data
default0830_072341.011	POS Data
default0830_072341.012	POS Data
default0830_072341.013	POS Data
default0830_072341.014	POS Data
default0830_072341.015	POS Data
default0830_072341.016	POS Data
default0830_072341.017	POS Data
default0830_072341.018	POS Data
default0830_072341.019	POS Data
default0830_072341.020	POS Data
default0830_072341.021	POS Data
default0830_072341.022	POS Data
default0830_072341.023	POS Data
default0830_072341.024	POS Data

Input Files

File Name	File Type
Ephm2420.22g	GLONASS Broadcast Ephemeris
Ephm2420.22n	GPS Broadcast Ephemeris

Output Files

Filename	File type
sbet_a07-s03-0525.out	SBET Trajectory File

Rover Data Summary

First raw data file	default0830_072341.000		
Last raw data file	default0830_072341.024		
Start GPS week	2225		
Start time	18.107 (8/28/2022 12:00:18 AM)		
End time	217297.143 (8/30/2022 12:21:37 PM)		
Start of fine alignment	199806.683 (8/30/2022 7:30:06 AM)		
Available subsystems	Primary GNSS, IMU		
POS Event Input	None		
Correction data	None		
IMU Installation Lever Arms & Mounting Angles			
Reference to IMU lever arm (m)	0.000	0.000	0.000
Reference to IMU mounting angles (deg)	0.000	0.000	0.000
Reference to Primary GNSS lever arm (m)	-0.353	-0.322	-1.280
Reference to Primary GNSS lever arm std dev (m)	-1.000		
Aircraft to Reference mounting angles (deg)	0.000	0.000	0.000

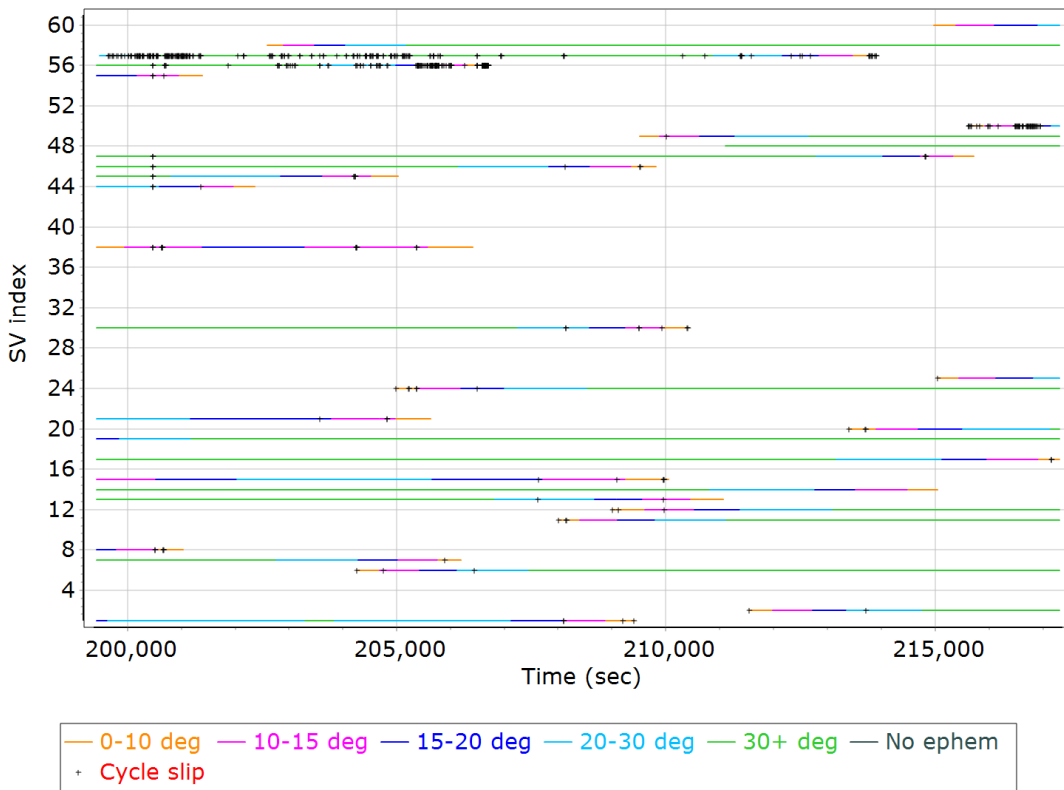
Rover Data QC

Raw IMU Import QC Summary

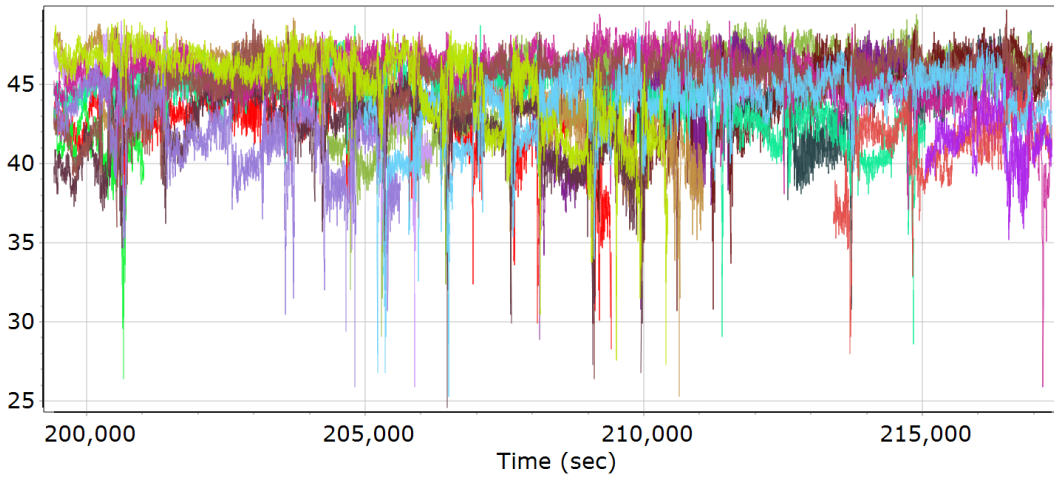
IMU data input file	imu_a07-s03-0525.dat
IMU data check log file	imudt_a07-s03-0525.log
IMU Records Processed	3578723
Termination Status	Warnings
IMU Anomalies	3
IMU Failure Messages	
199402.966 : WARNING : Gap of 199383.6041 seconds in CHECKDT input data	
18.537 : WARNING : Gap of 0.0100 seconds in CHECKDT input data	
18.427 : WARNING : Gap of 0.0100 seconds in CHECKDT input data	

Primary Observables & Satellite Data

GPS/GLONASS L1 Satellite Lock/Elevation

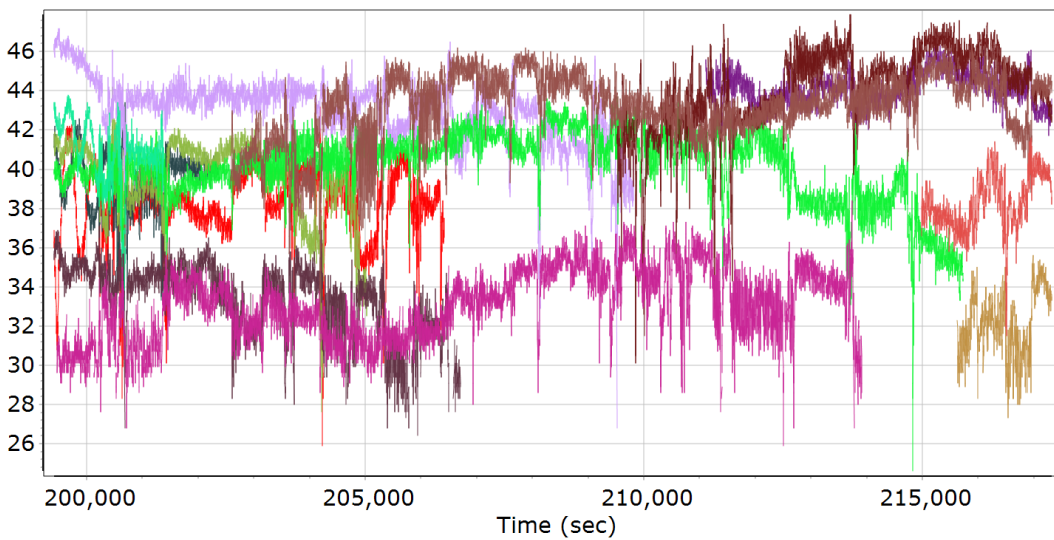


GPS L1 SNR



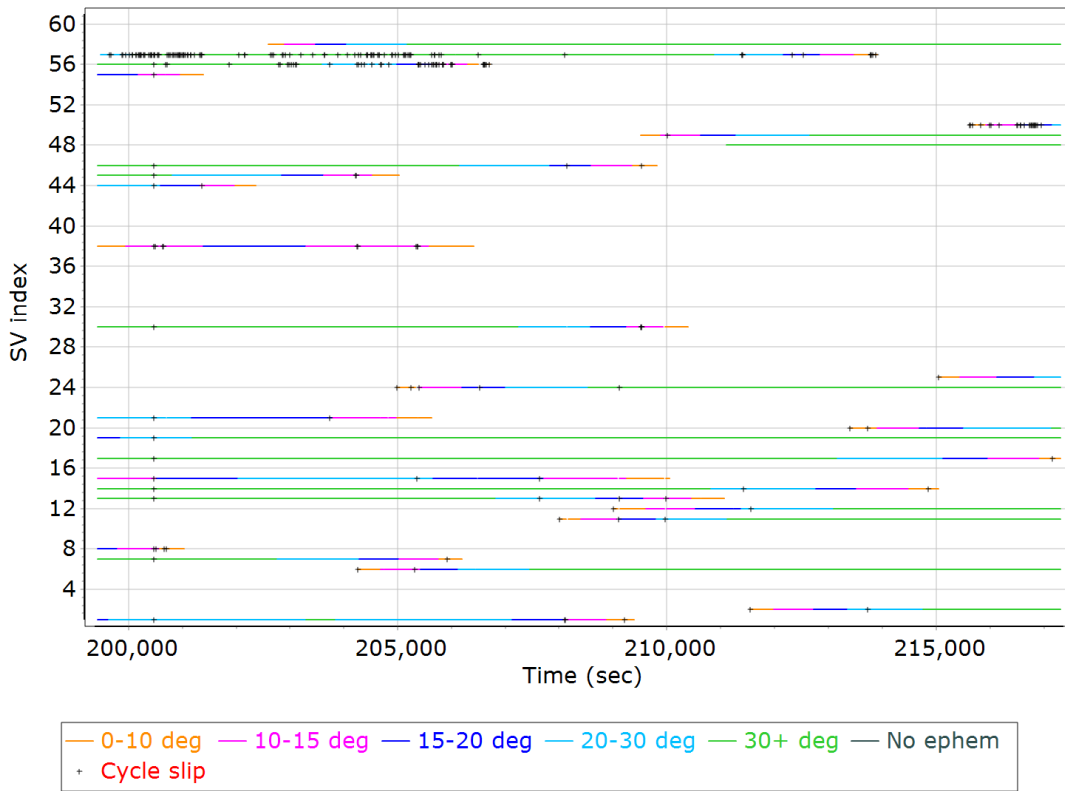
- | | |
|-----------------------------|-----------------------------|
| — GPS PRN 01 L1 SNR (dB/Hz) | — GPS PRN 02 L1 SNR (dB/Hz) |
| — GPS PRN 06 L1 SNR (dB/Hz) | — GPS PRN 07 L1 SNR (dB/Hz) |
| — GPS PRN 08 L1 SNR (dB/Hz) | — GPS PRN 11 L1 SNR (dB/Hz) |
| — GPS PRN 12 L1 SNR (dB/Hz) | — GPS PRN 13 L1 SNR (dB/Hz) |
| — GPS PRN 14 L1 SNR (dB/Hz) | — GPS PRN 15 L1 SNR (dB/Hz) |
| — GPS PRN 17 L1 SNR (dB/Hz) | — GPS PRN 19 L1 SNR (dB/Hz) |
| — GPS PRN 20 L1 SNR (dB/Hz) | — GPS PRN 21 L1 SNR (dB/Hz) |
| — GPS PRN 24 L1 SNR (dB/Hz) | — GPS PRN 25 L1 SNR (dB/Hz) |
| — GPS PRN 30 L1 SNR (dB/Hz) | |

GLONASS L1 SNR

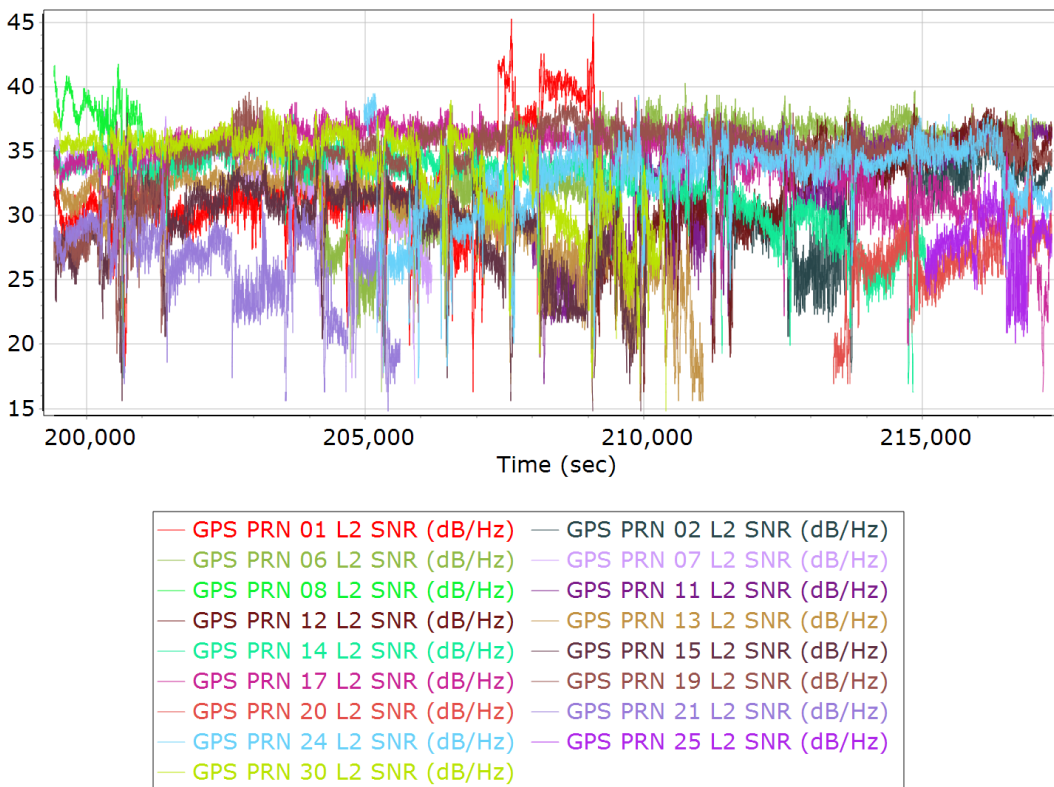


- | | |
|-----------------------------|-----------------------------|
| — GLONASS 01 L1 SNR (dB/Hz) | — GLONASS 07 L1 SNR (dB/Hz) |
| — GLONASS 08 L1 SNR (dB/Hz) | — GLONASS 09 L1 SNR (dB/Hz) |
| — GLONASS 10 L1 SNR (dB/Hz) | — GLONASS 11 L1 SNR (dB/Hz) |
| — GLONASS 12 L1 SNR (dB/Hz) | — GLONASS 13 L1 SNR (dB/Hz) |
| — GLONASS 18 L1 SNR (dB/Hz) | — GLONASS 19 L1 SNR (dB/Hz) |
| — GLONASS 20 L1 SNR (dB/Hz) | — GLONASS 21 L1 SNR (dB/Hz) |
| — GLONASS 23 L1 SNR (dB/Hz) | |

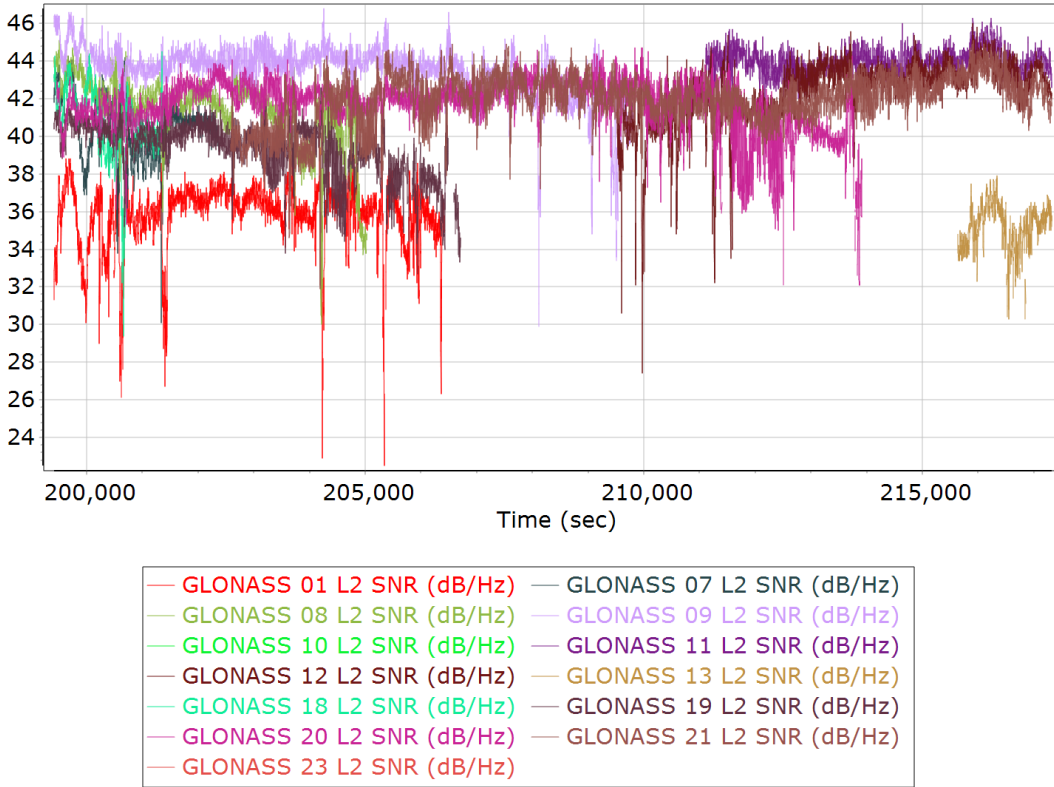
GPS/GLONASS L2 Satellite Lock/Elevation



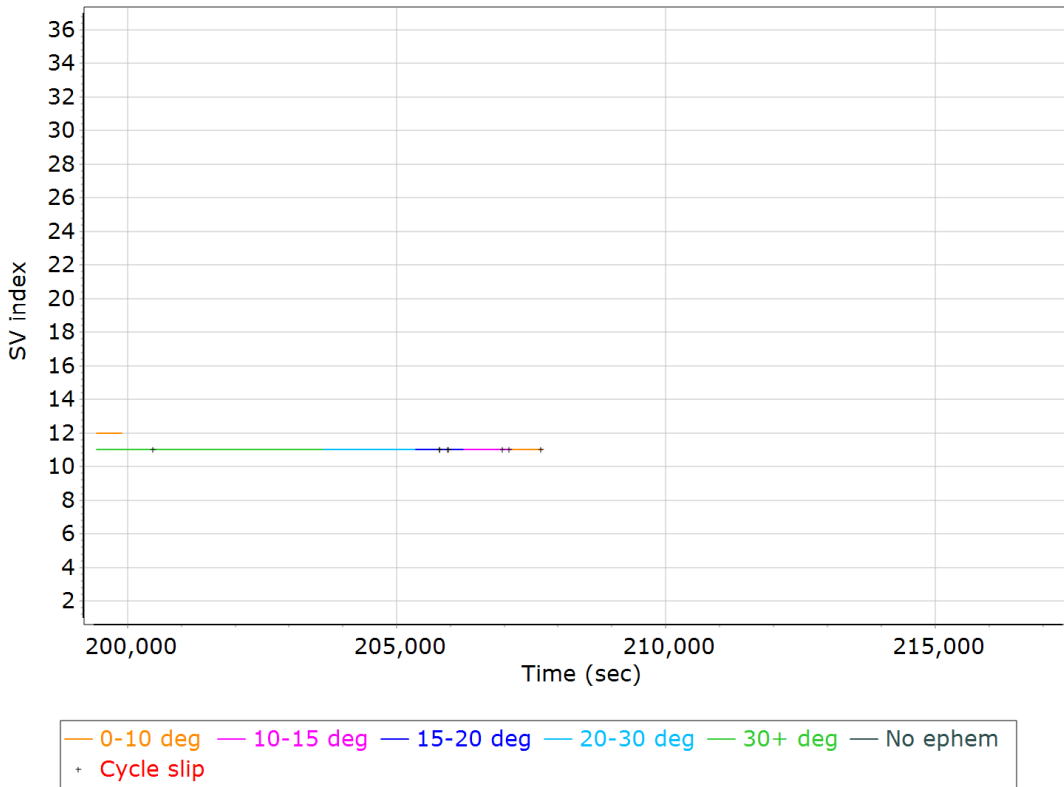
GPS L2 SNR



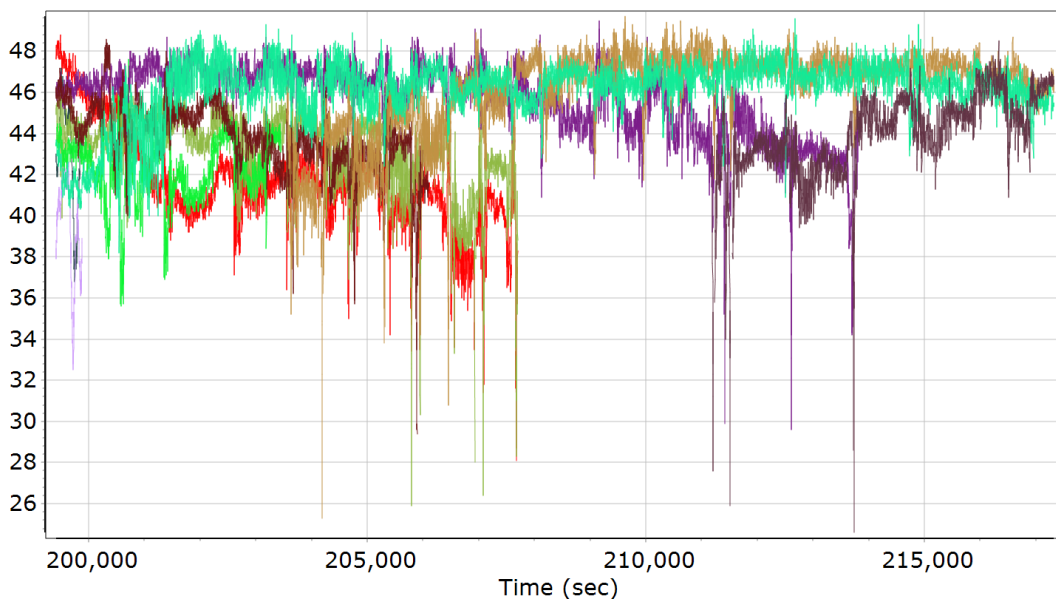
GLONASS L2 SNR



BEIDOU Satellite Lock/Elevation

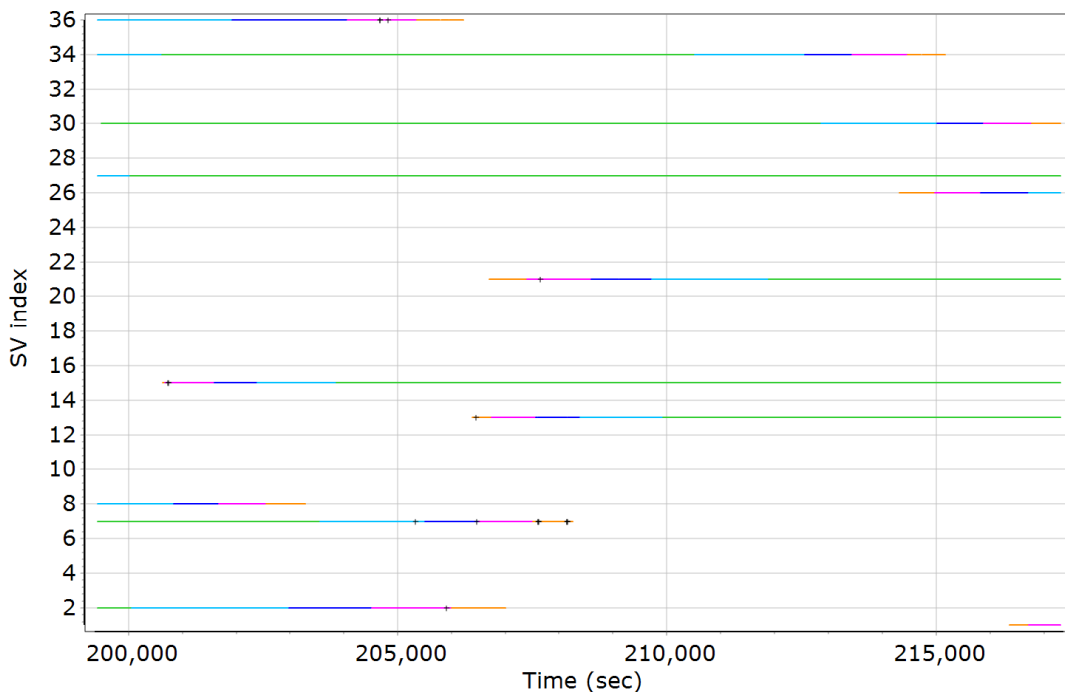


BEIDOU SNR



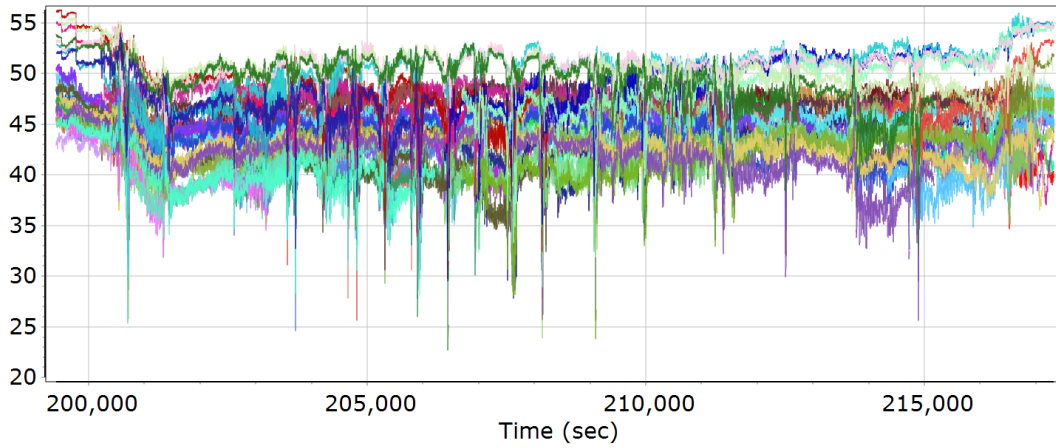
- BEIDOU 11 E5B B2 SNR (dB/Hz)
- BEIDOU 12 E5B B2 SNR (dB/Hz)
- BEIDOU 11 B1 B1 SNR (dB/Hz)
- BEIDOU 12 B1 B1 SNR (dB/Hz)
- BEIDOU 20 B1 B1 SNR (dB/Hz)
- BEIDOU 23 B1 B1 SNR (dB/Hz)
- BEIDOU 25 B1 B1 SNR (dB/Hz)
- BEIDOU 27 B1 B1 SNR (dB/Hz)
- BEIDOU 28 B1 B1 SNR (dB/Hz)
- BEIDOU 30 B1 B1 SNR (dB/Hz)

GALILEO Satellite Lock/Elevation



- 0-10 deg
- 10-15 deg
- 15-20 deg
- 20-30 deg
- 30+ deg
- No ephem
- + Cycle slip

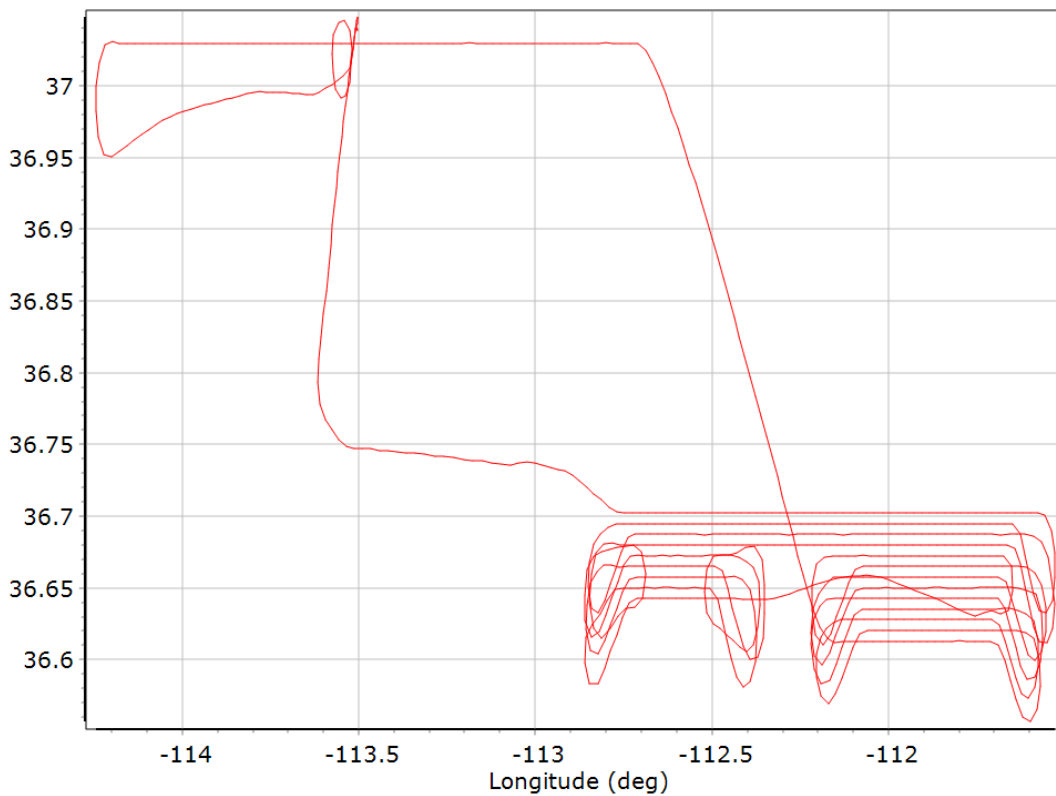
GALILEO SNR



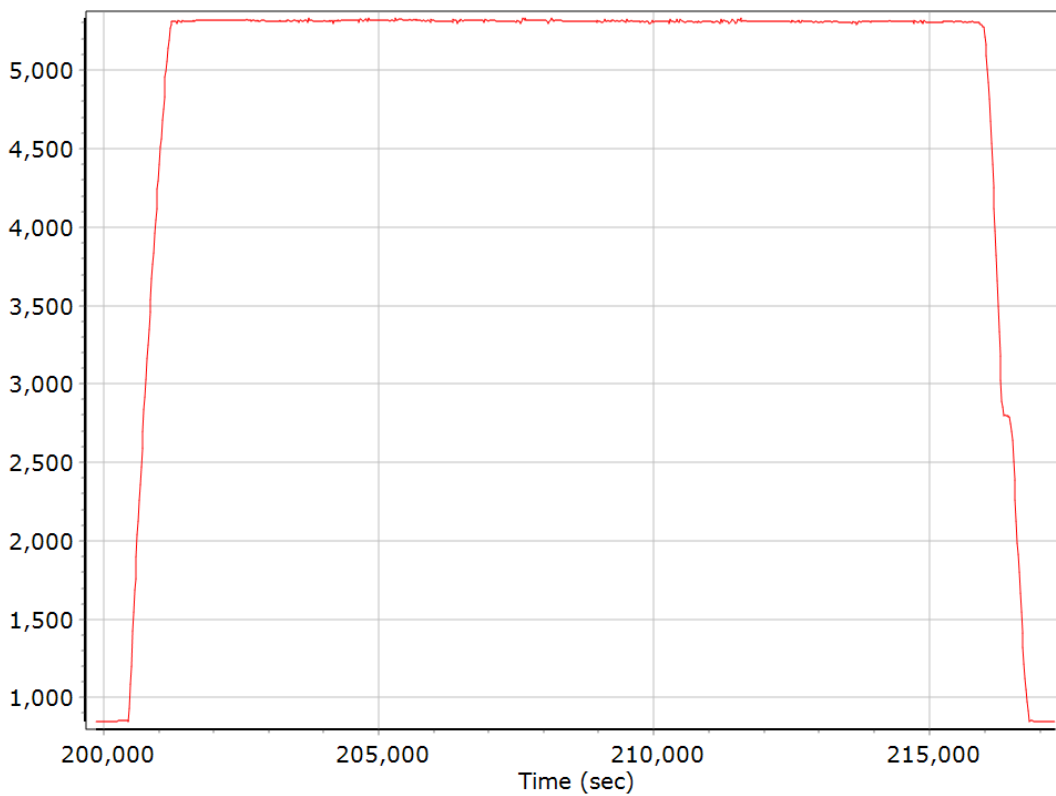
- GALILEO 01 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 02 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 07 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 08 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 13 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 14 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 15 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- 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)

Smoothed Trajectory Information

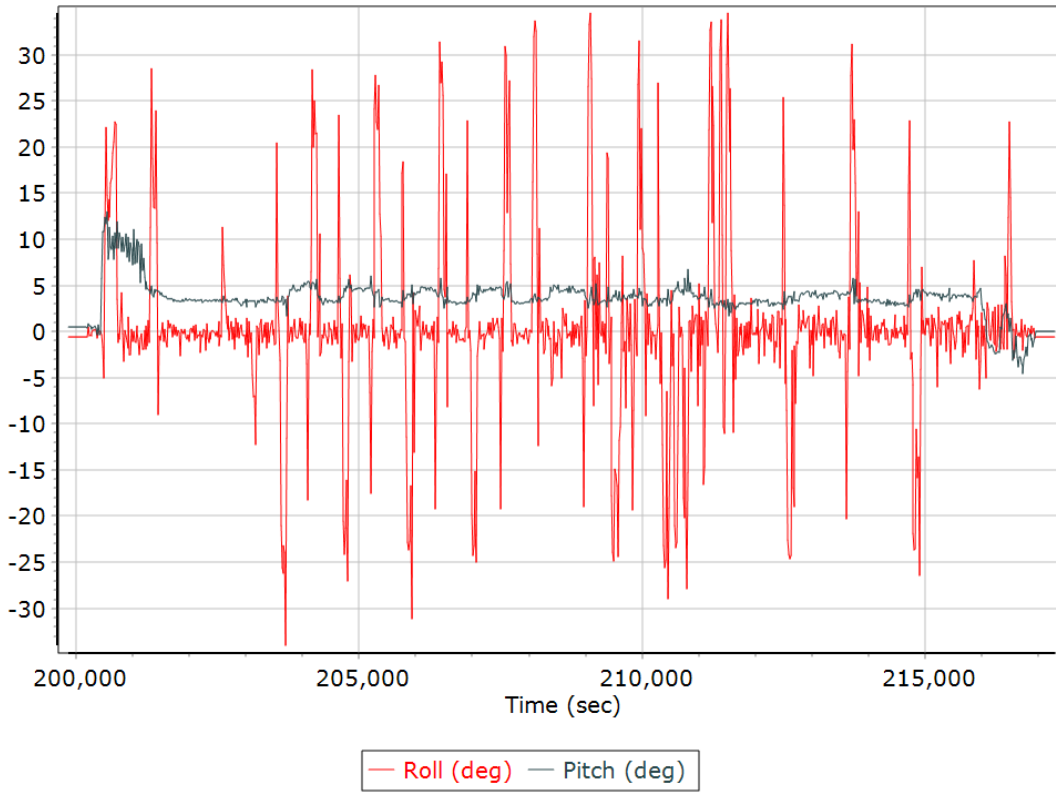
Top View



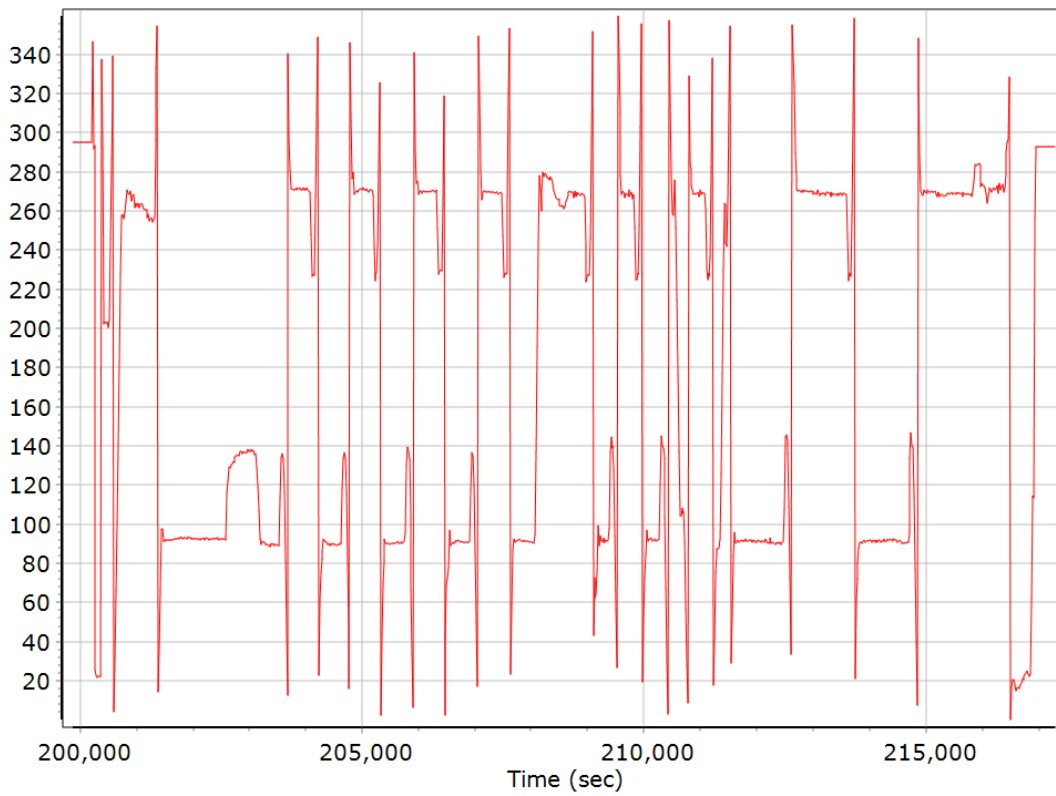
Altitude



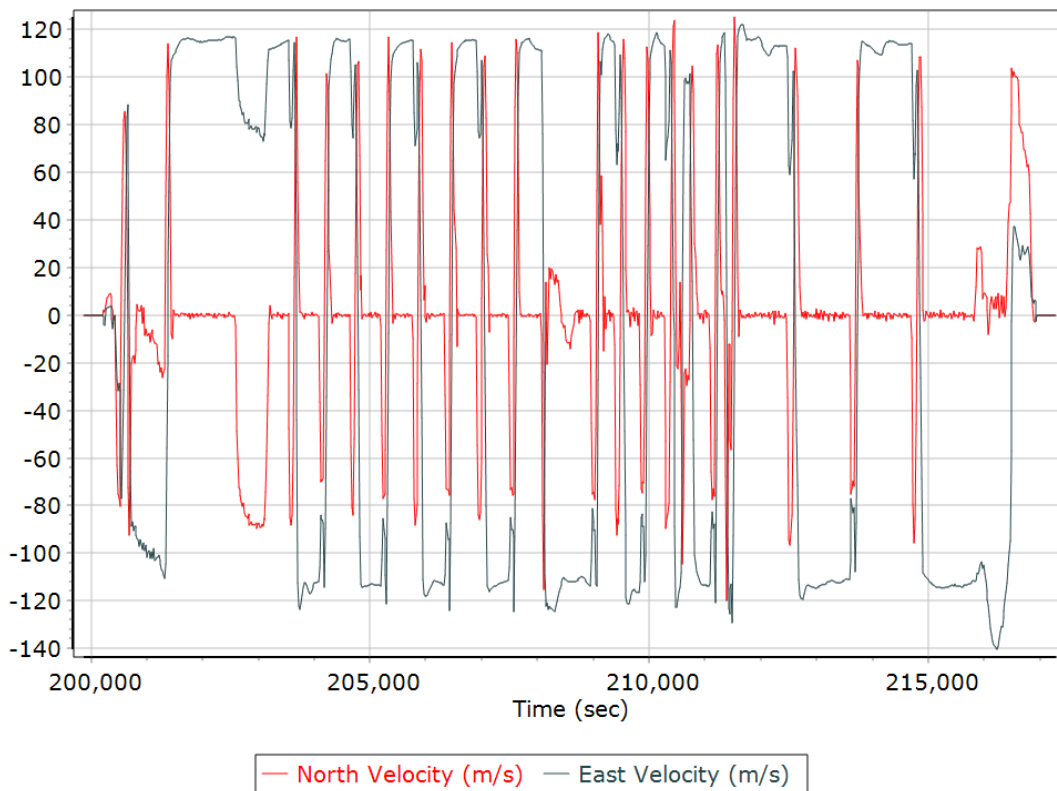
Roll/Pitch



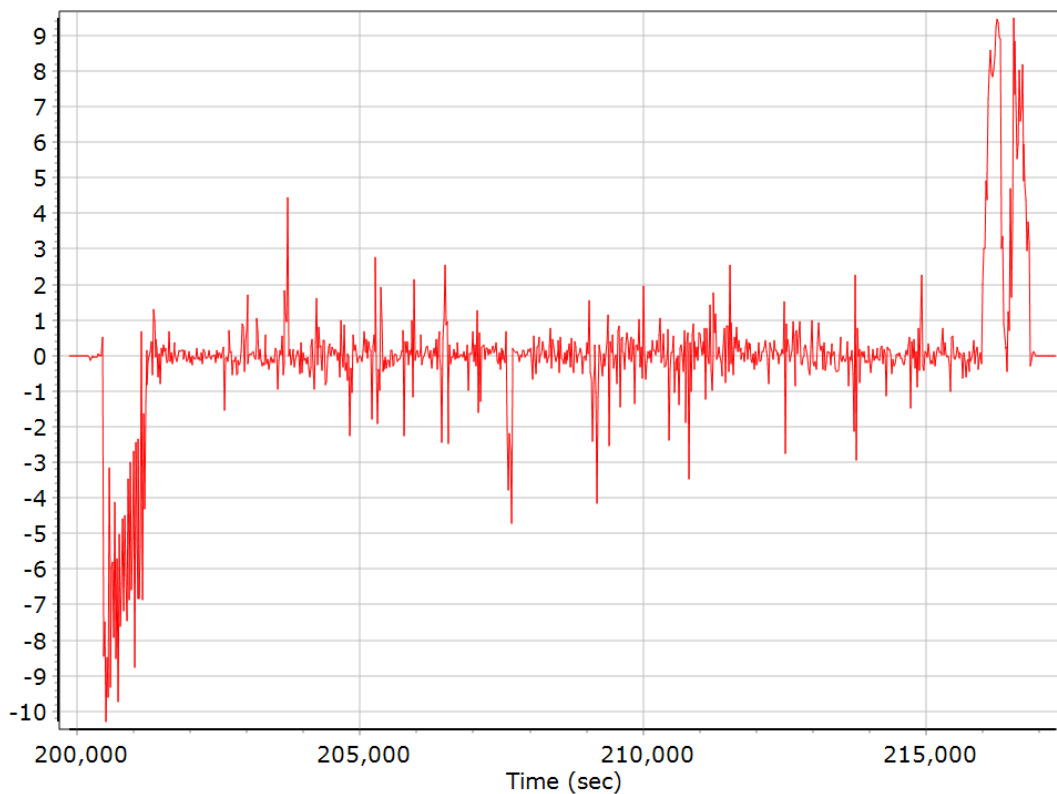
Heading



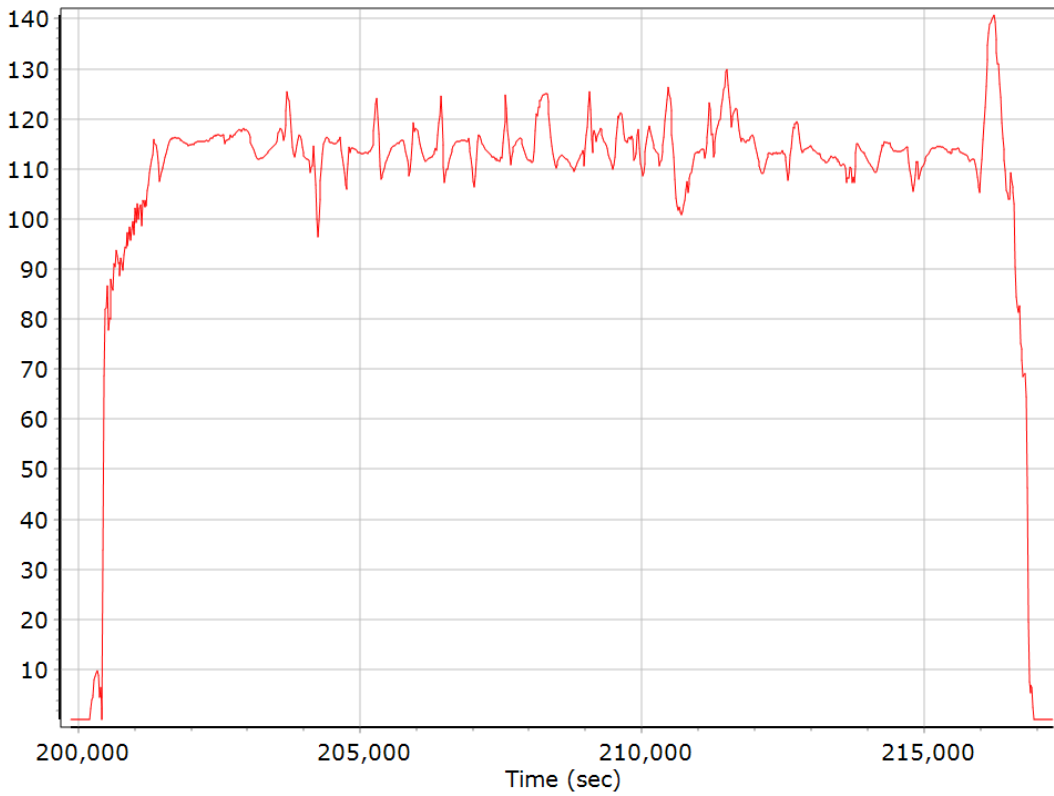
North/East Velocity



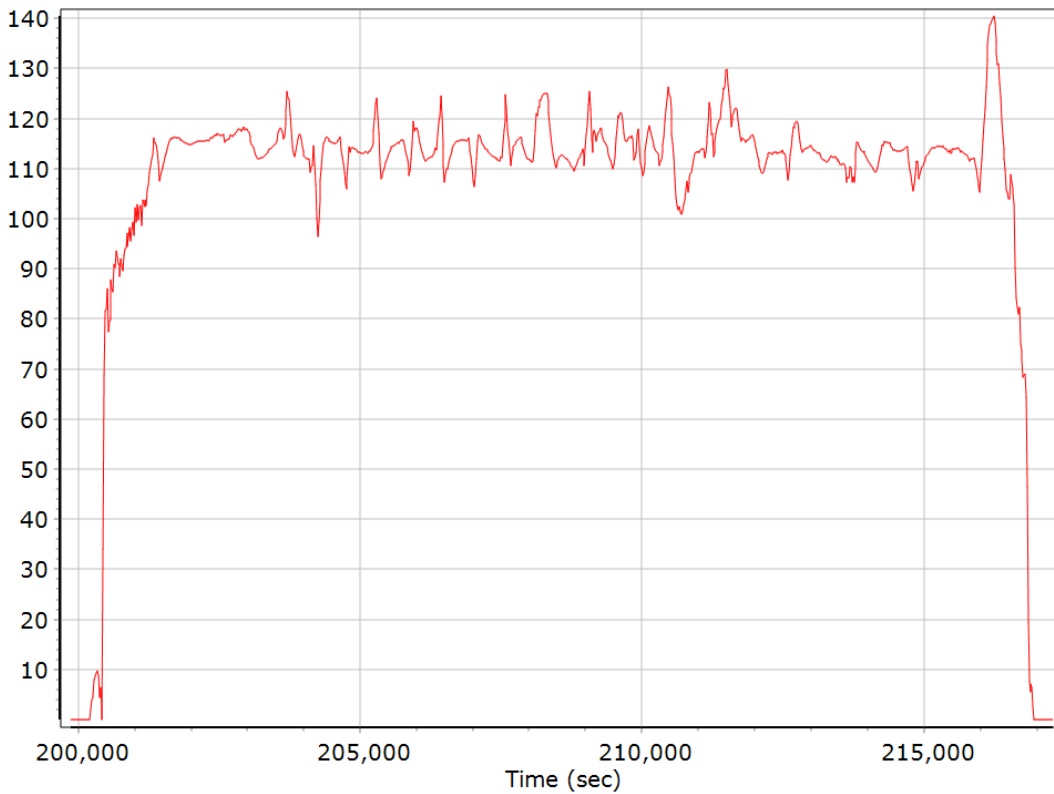
Down Velocity



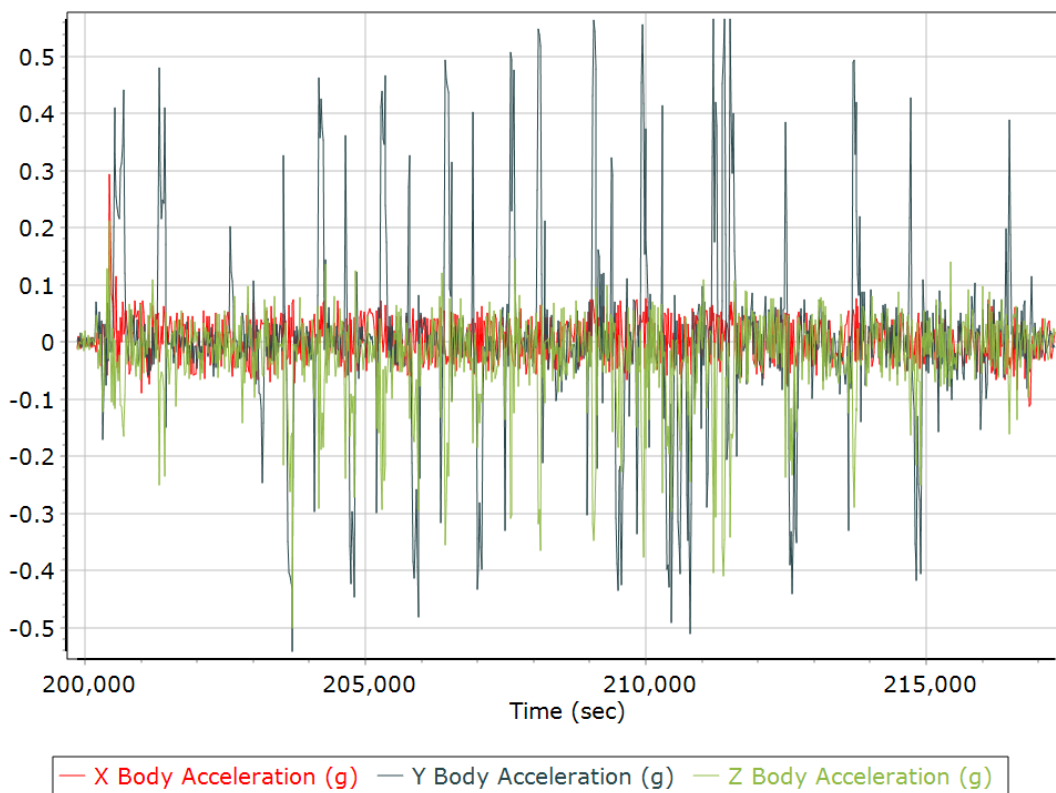
Total Speed



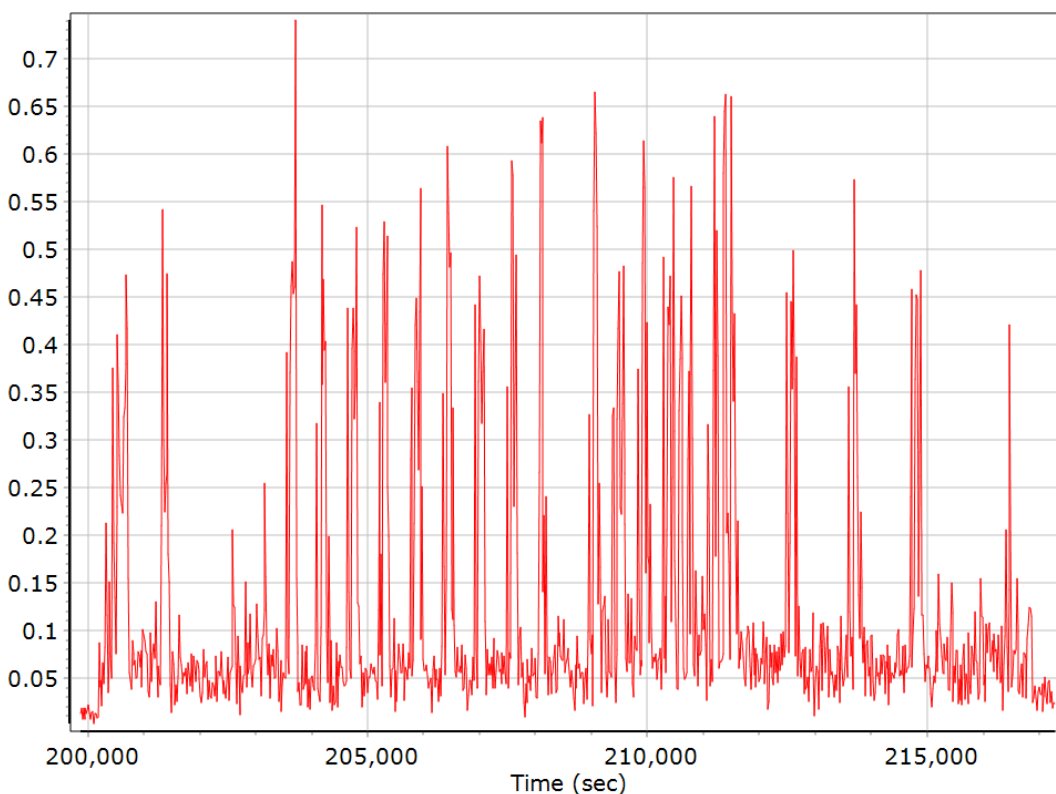
Ground Speed



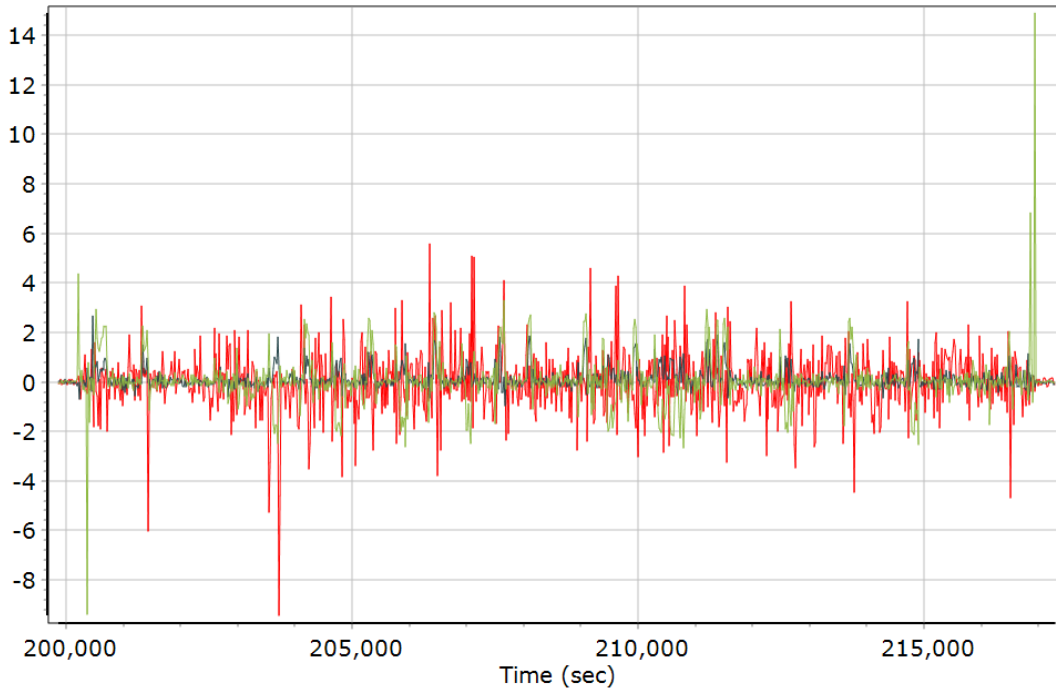
Body Acceleration



Total Body Acceleration



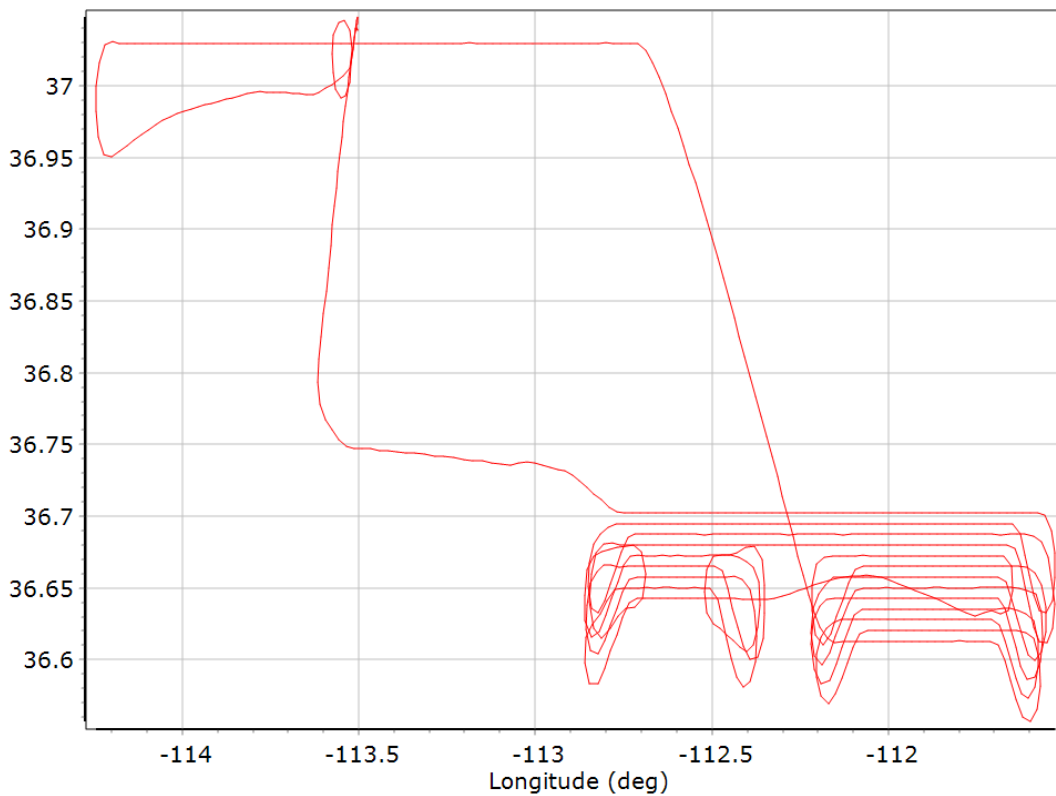
Body Angular Rate



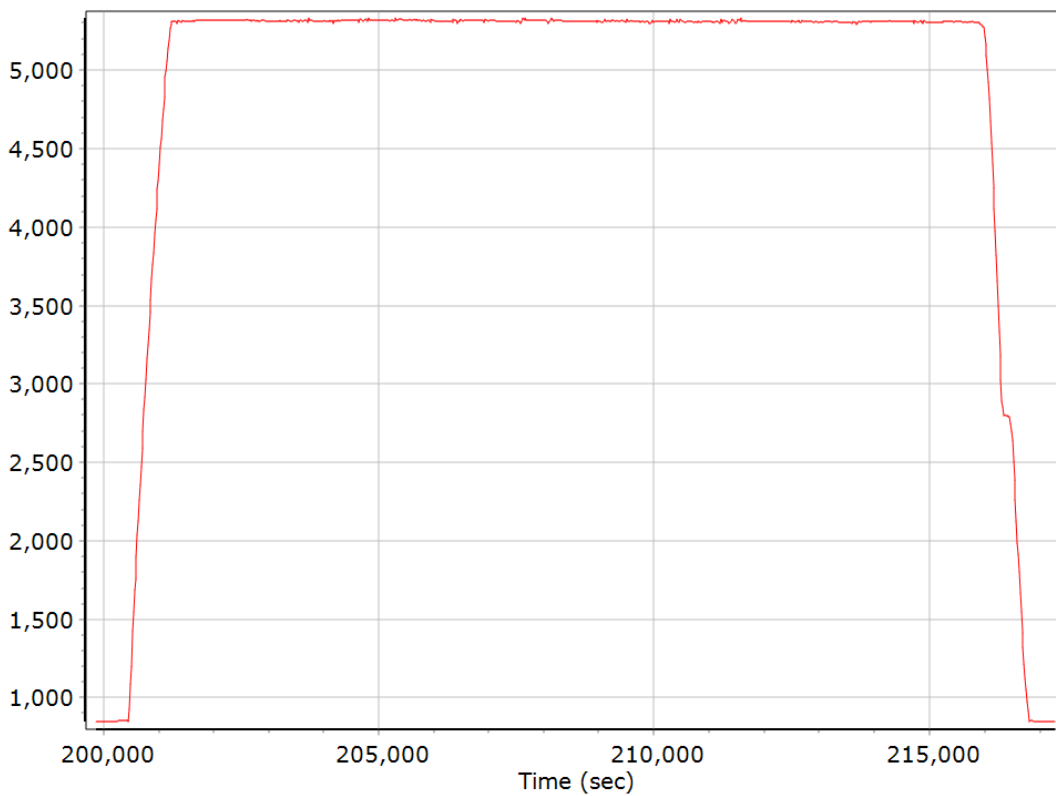
— X Body Angular Rate (deg/sec) — Y Body Angular Rate (deg/sec)
— Z Body Angular Rate (deg/sec)

Forward Processed Trajectory Information

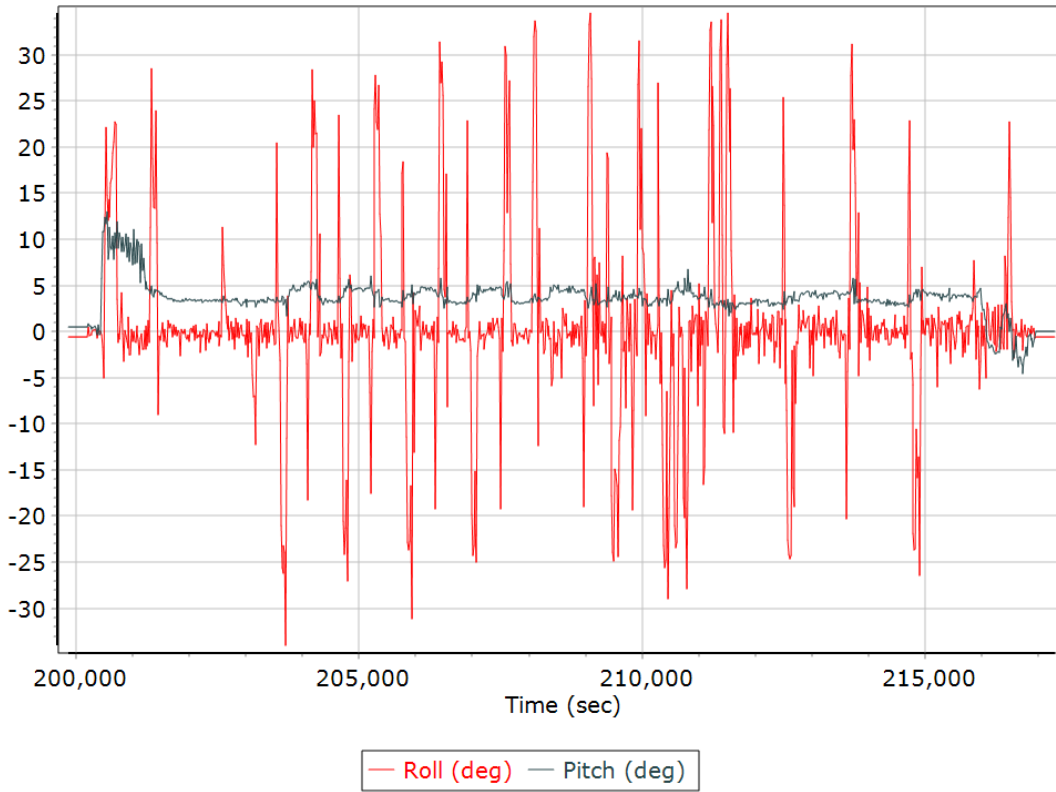
Top View



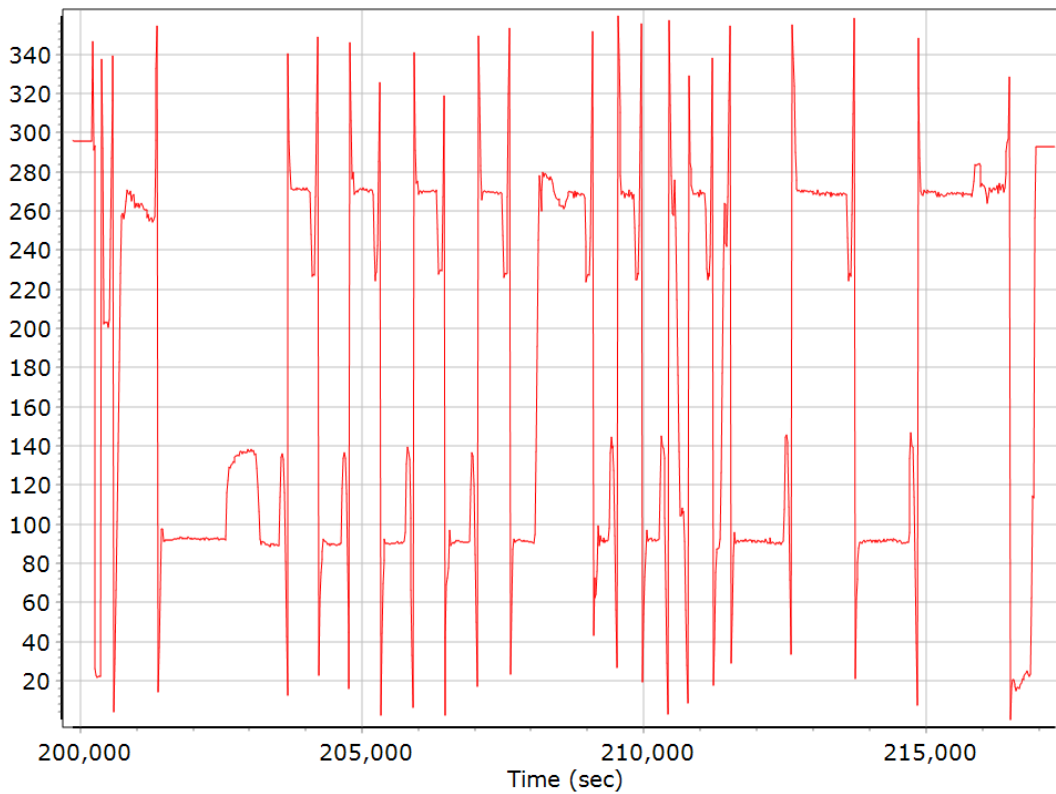
Altitude



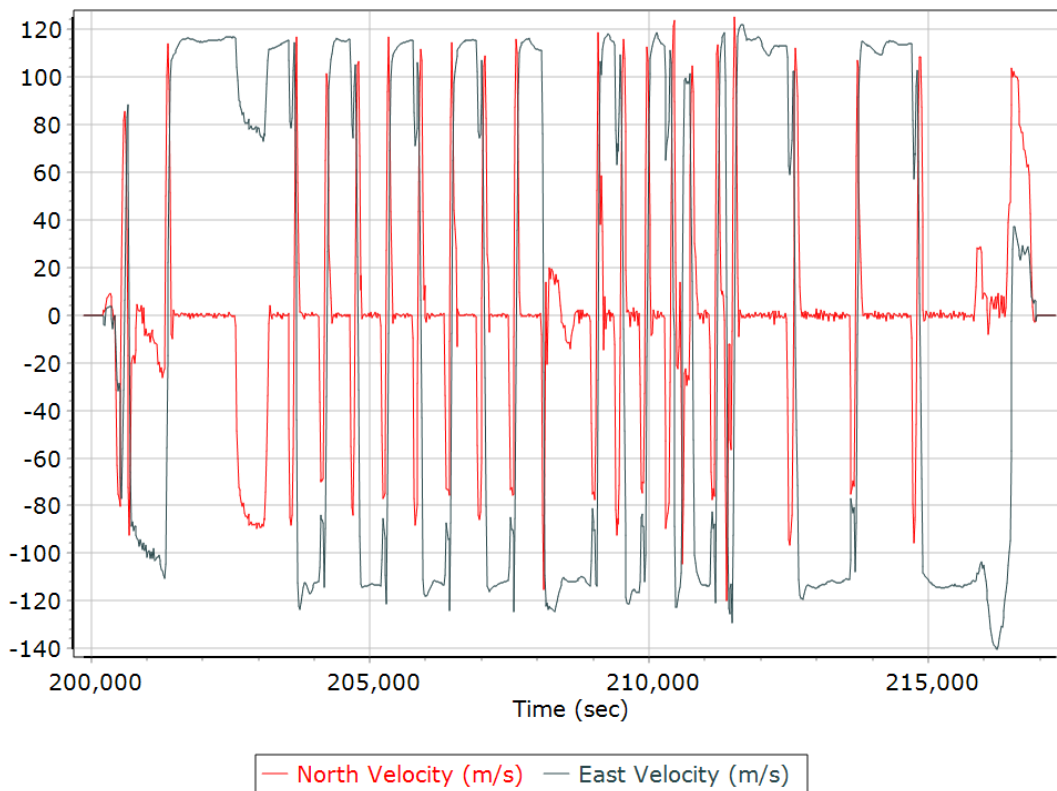
Roll/Pitch



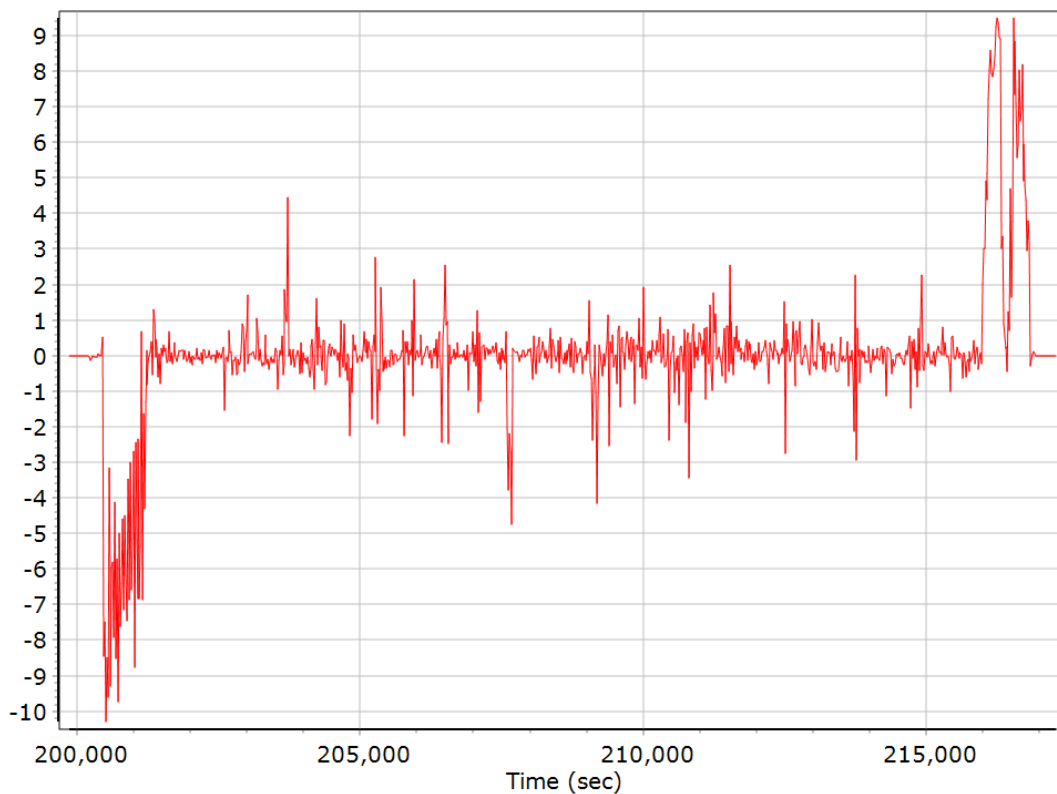
Heading



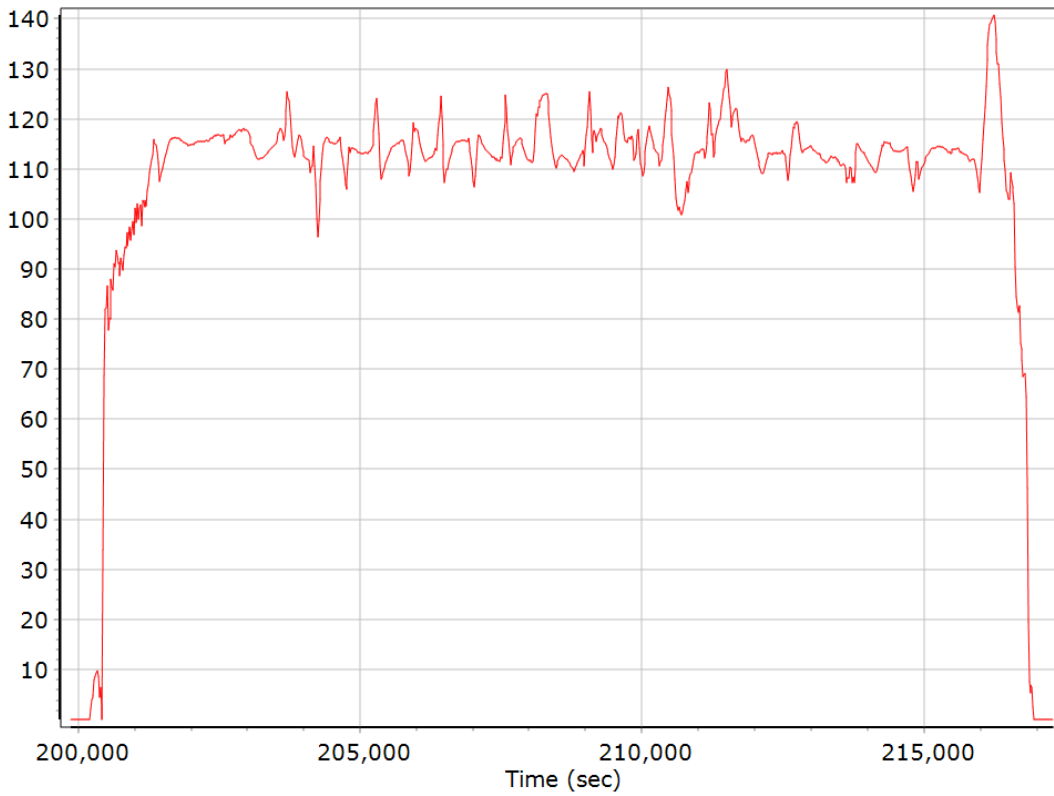
North/East Velocity



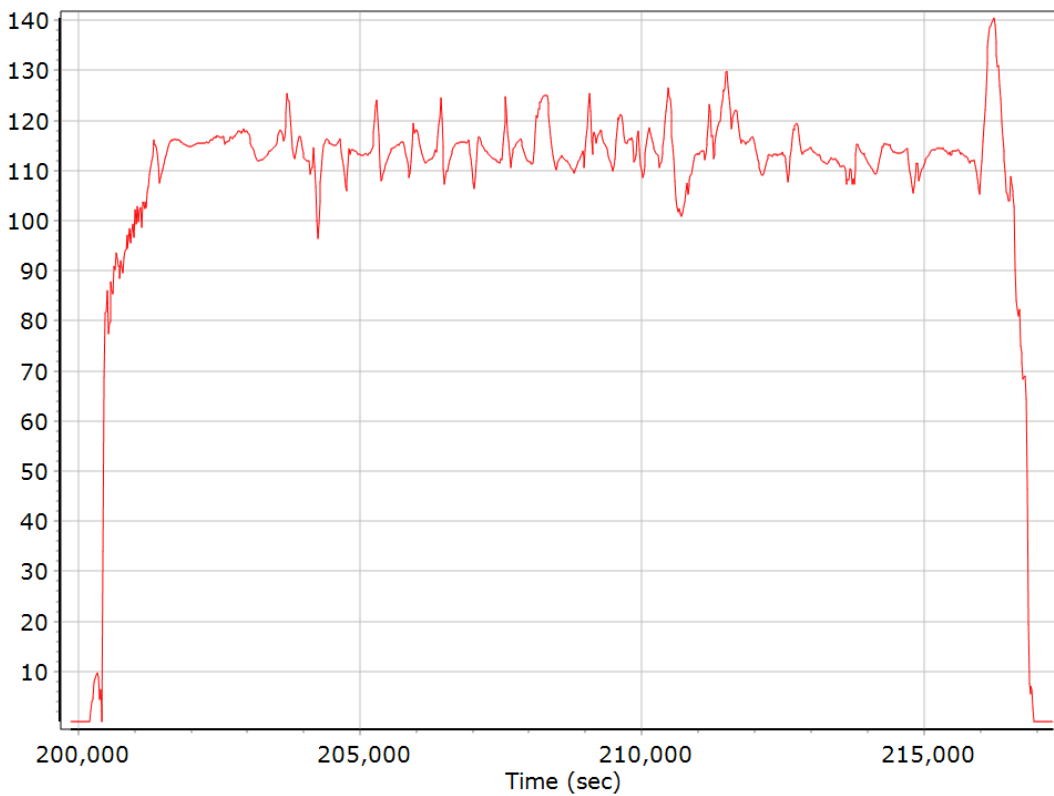
Down Velocity



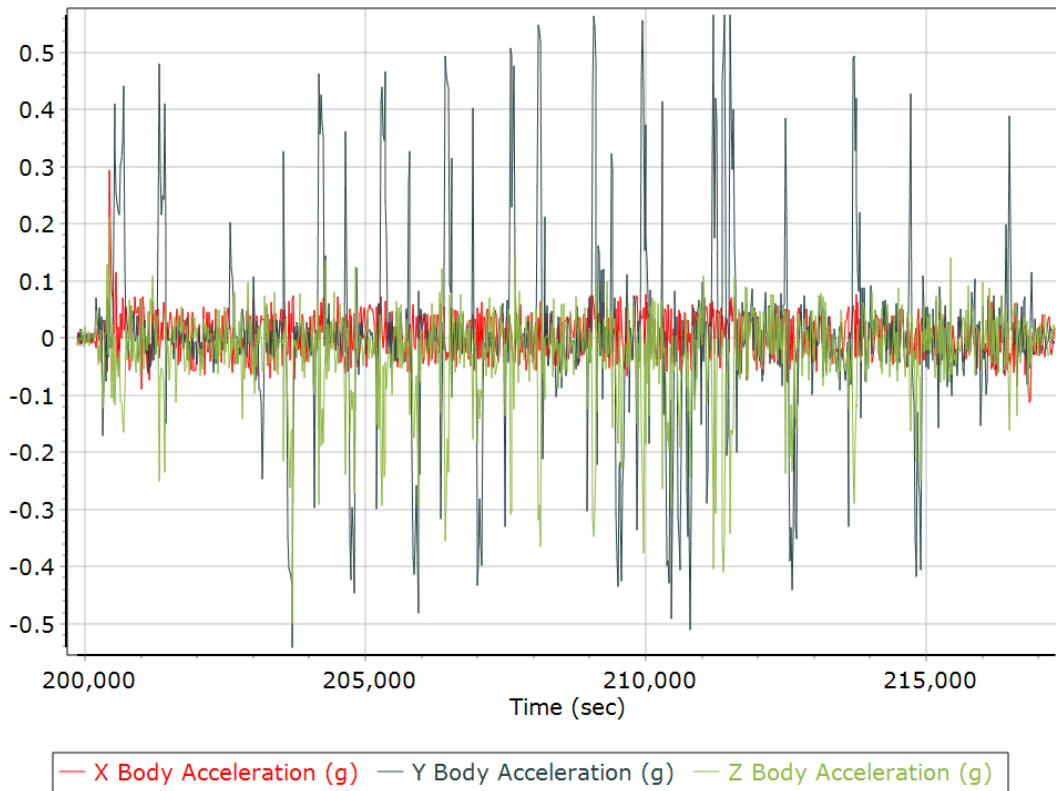
Total Speed



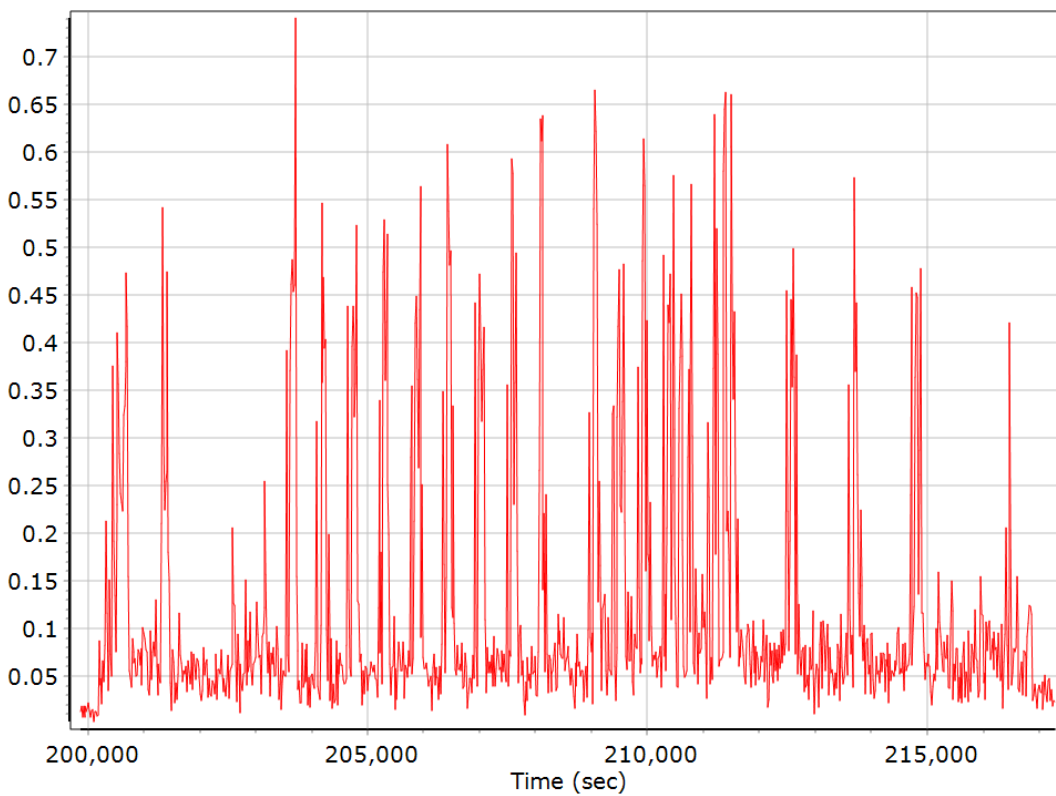
Ground Speed



Body Acceleration



Total Body Acceleration



Body Angular Rate



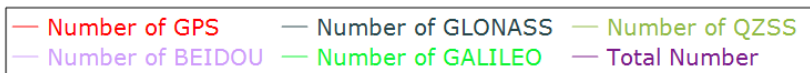
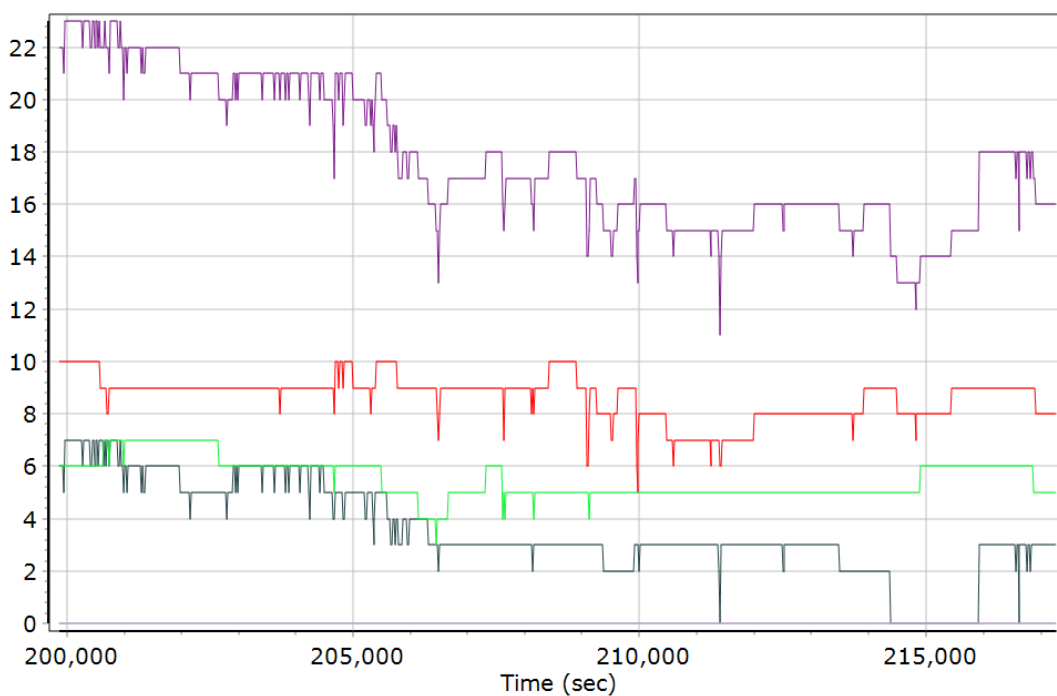
— X Body Angular Rate (deg/sec) — Y Body Angular Rate (deg/sec)
— Z Body Angular Rate (deg/sec)

GNSS QC

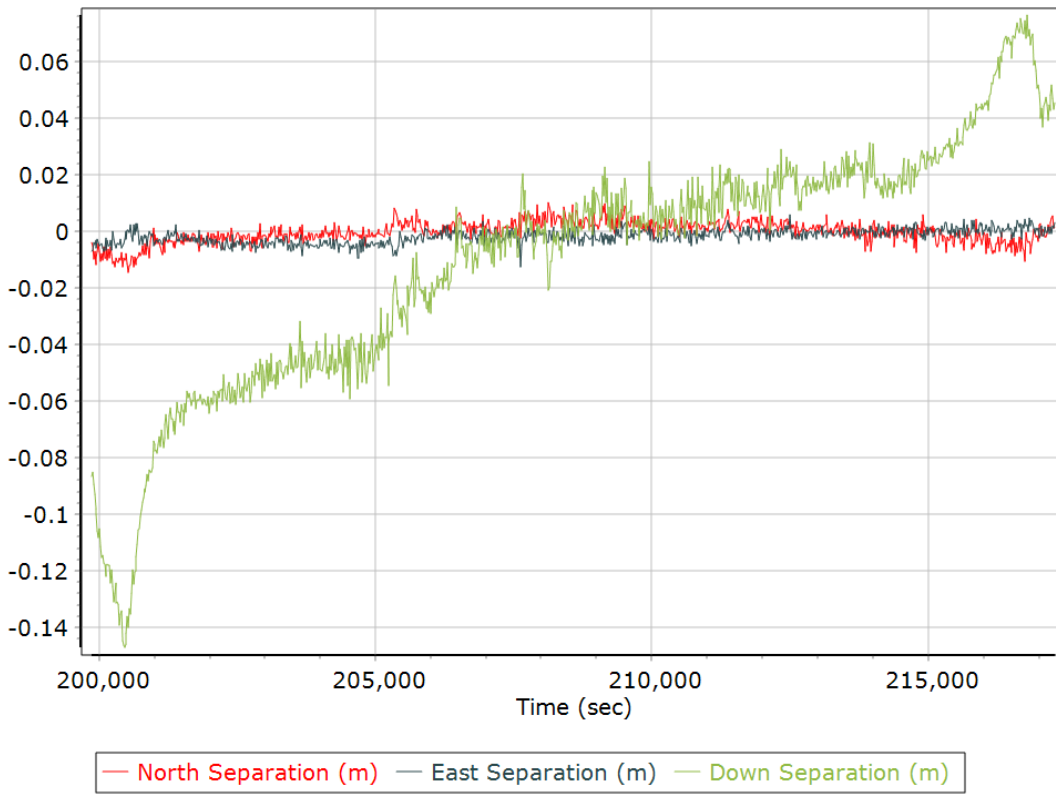
GNSS QC Statistics

Statistics	Min	Max	Mean
Baseline length (km)	0.00	0.00	
Number of GPS SV	5	10	9
Number of GLONASS SV	0	7	4
Number of QZSS SV	0	0	0
Number of BEIDOU SV	0	0	0
Number of GALILEO SV	0	7	6
Total number of SV	11	23	18
PDOP	0.98	2.17	1.26
QC Solution Gaps	0.00	0.00	
Solution Type	Fixed	Float	No solution
Epoch (sec)	17858.00	0.00	0.00
Percentage	100.00	0.00	0.00

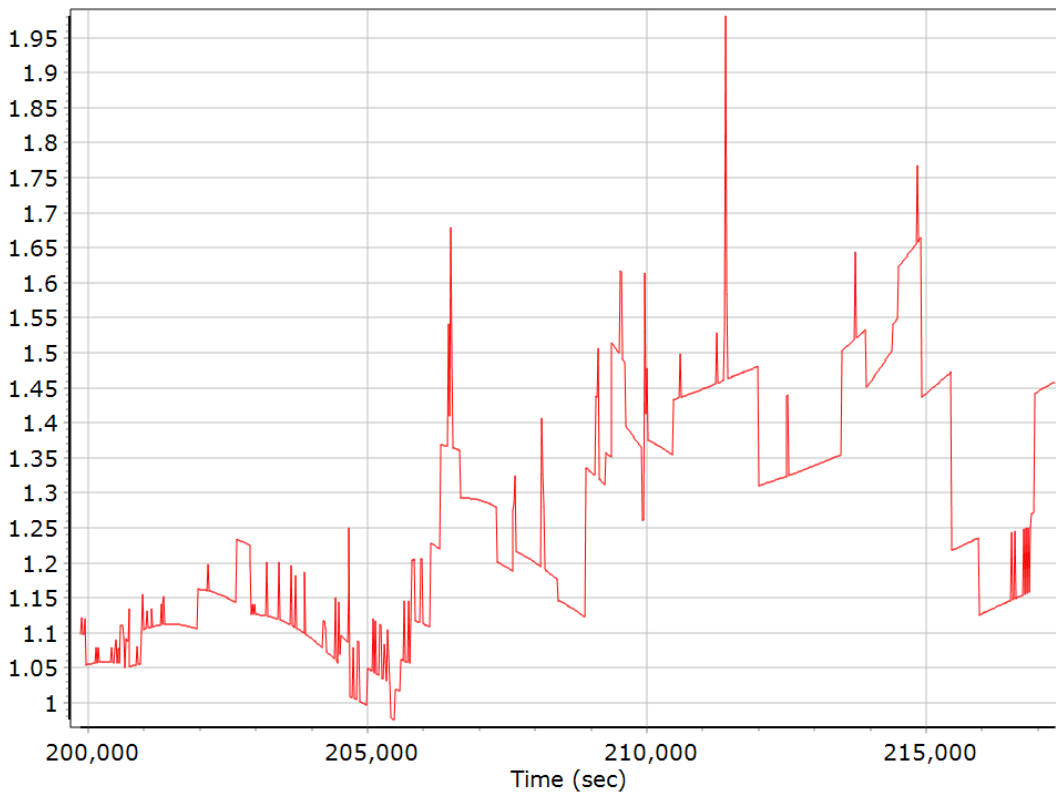
Num SVs in solution



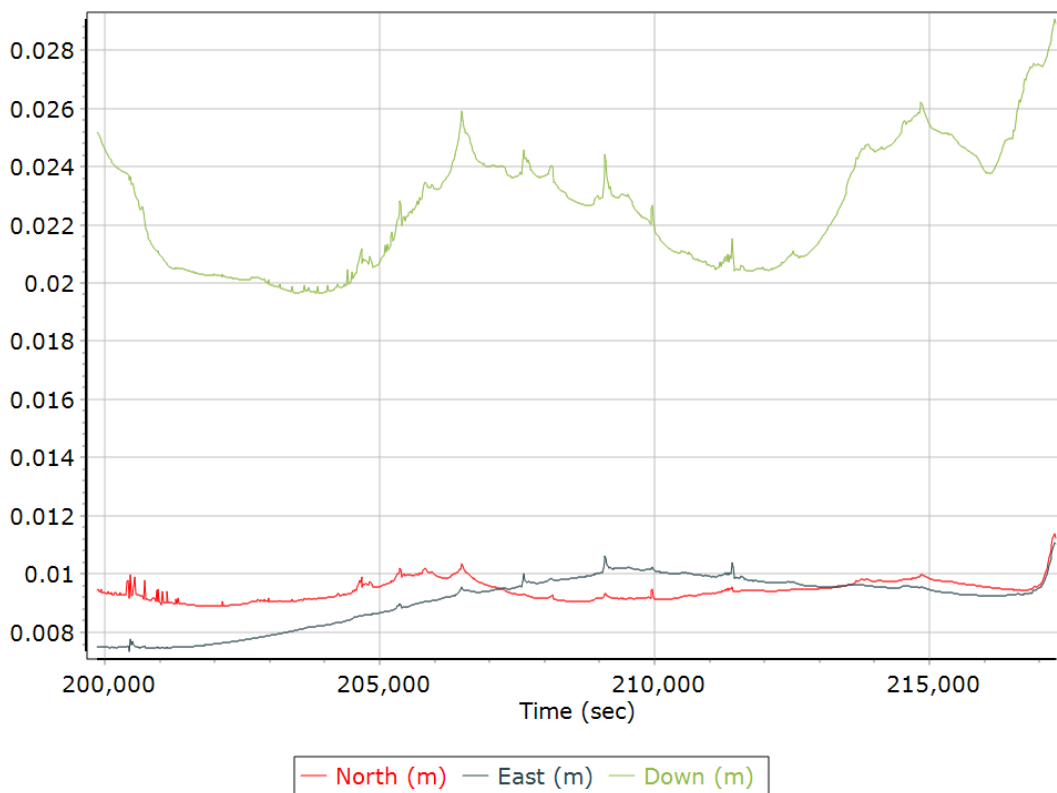
Forward/Reverse Separation



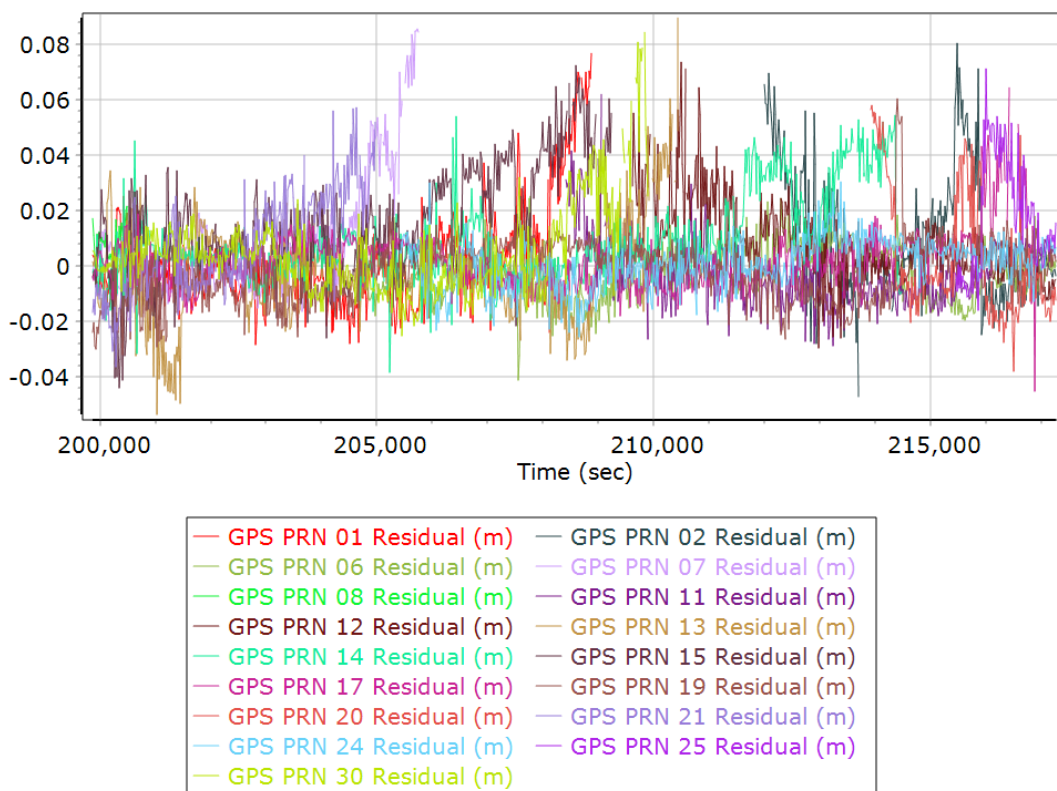
PDOP



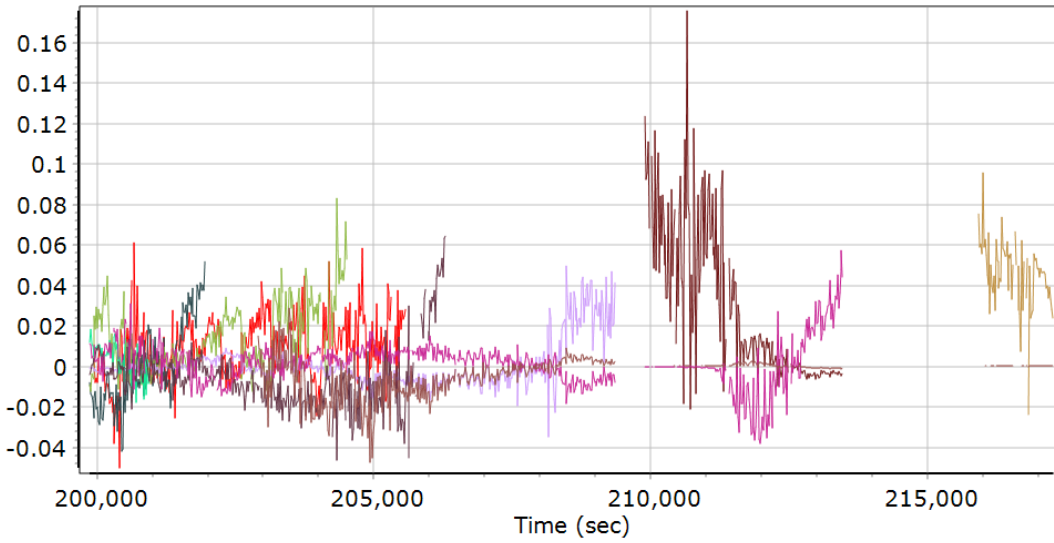
Estimated Position Accuracy



GPS Residuals

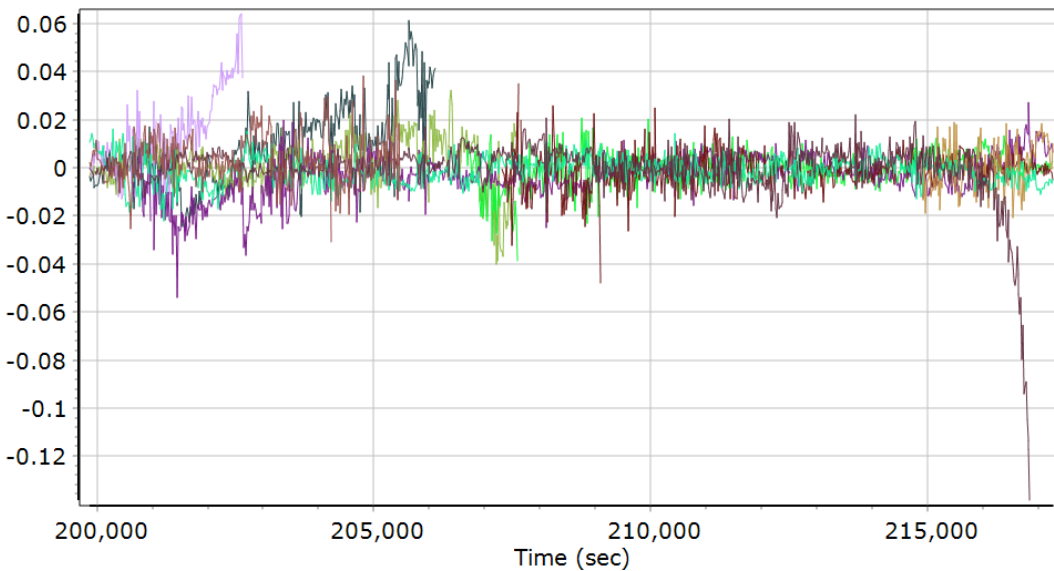


GLONASS Residuals



- | | |
|---------------------------|---------------------------|
| — GLONASS 01 Residual (m) | — GLONASS 07 Residual (m) |
| — GLONASS 08 Residual (m) | — GLONASS 09 Residual (m) |
| — GLONASS 10 Residual (m) | — GLONASS 11 Residual (m) |
| — GLONASS 12 Residual (m) | — GLONASS 13 Residual (m) |
| — GLONASS 18 Residual (m) | — GLONASS 19 Residual (m) |
| — GLONASS 20 Residual (m) | — GLONASS 21 Residual (m) |
| — GLONASS 23 Residual (m) | |

GALILEO Residuals



- | | |
|---------------------------|---------------------------|
| — GALILEO 01 Residual (m) | — GALILEO 02 Residual (m) |
| — GALILEO 07 Residual (m) | — GALILEO 08 Residual (m) |
| — GALILEO 13 Residual (m) | — GALILEO 15 Residual (m) |
| — GALILEO 21 Residual (m) | — GALILEO 26 Residual (m) |
| — GALILEO 27 Residual (m) | — GALILEO 30 Residual (m) |
| — GALILEO 34 Residual (m) | — GALILEO 36 Residual (m) |

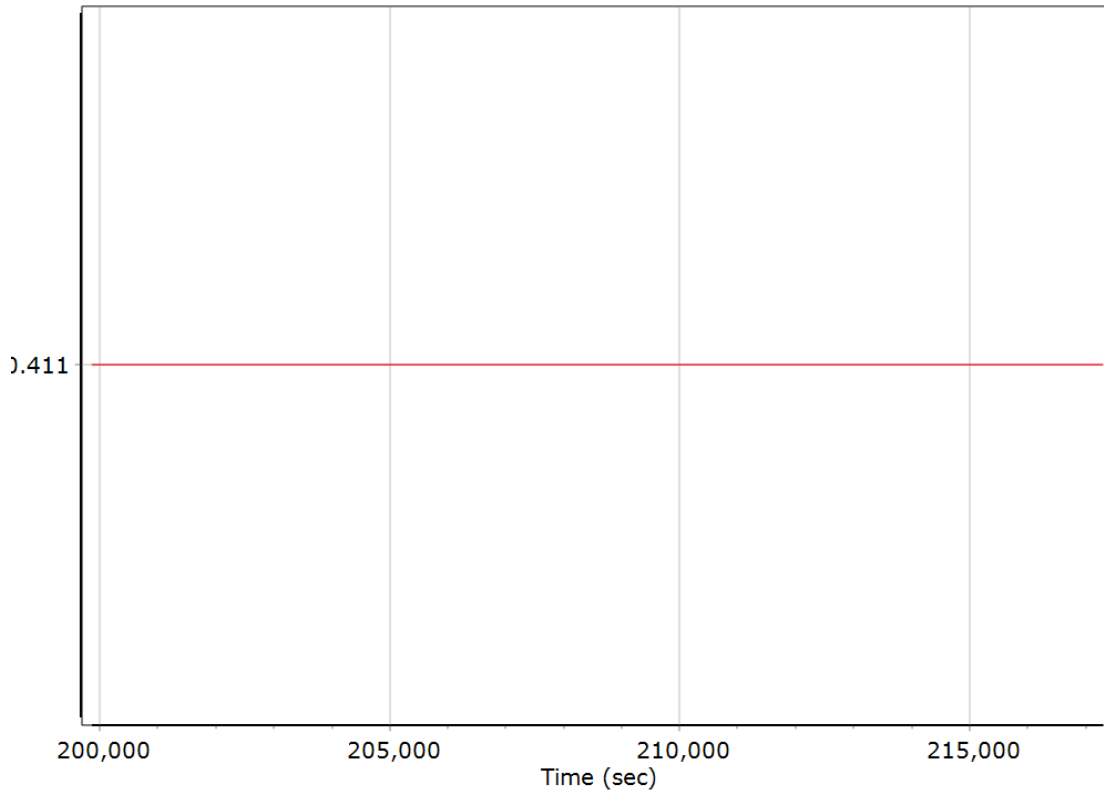
GNSS-Inertial Processor Configuration

Processing mode	IN-Fusion PP-RTX		
Stabilized mount	False		
Processing start time	199401.000 (8/30/2022 7:23:21 AM)		
Processing end time	217296.000 (8/30/2022 12:21:36 PM)		
Initial attitude source	Real-Time VNAV/RNAV Attitude		
IMU Sensor Context	Processing with Onboard IMU		
Reference to IMU lever arm (m)	0.000	0.000	0.000
Reference to IMU mounting angles (deg)	0.000	0.000	0.000
Reference to Primary GNSS lever arm (m)	-0.411	-0.283	-1.282
Reference 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

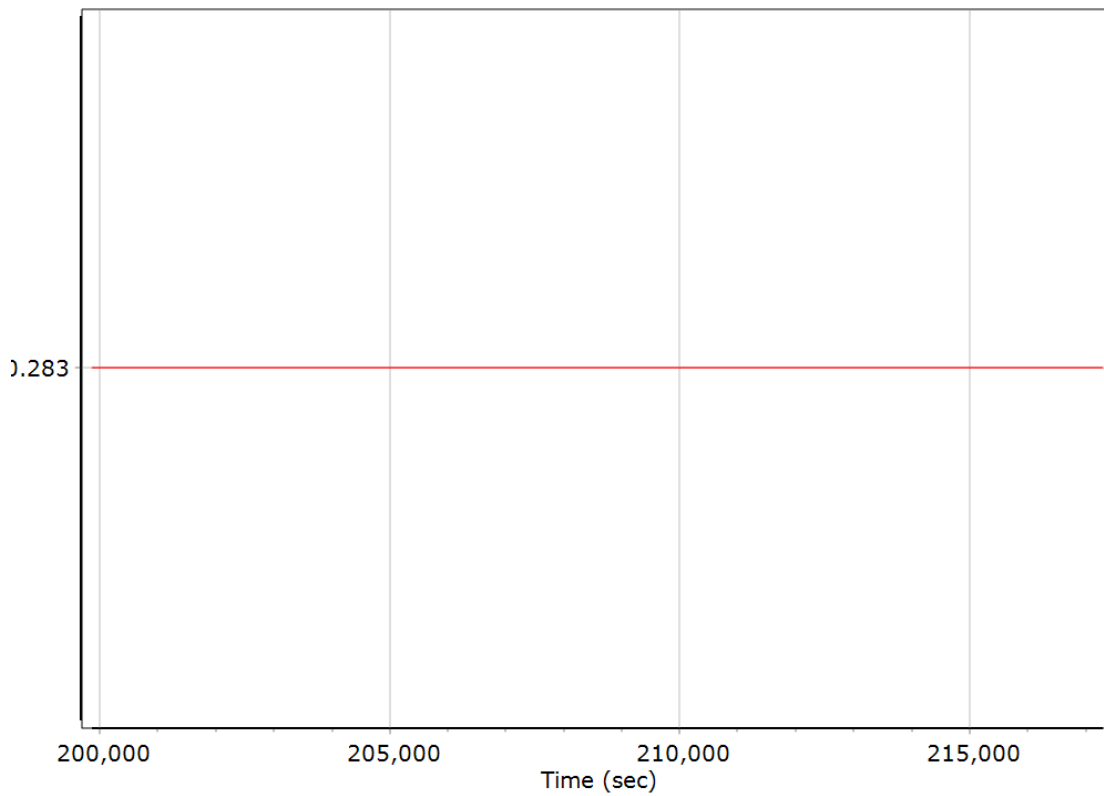
Calibrated Installation Parameters

Reference-Primary GNSS Lever Arm (m)

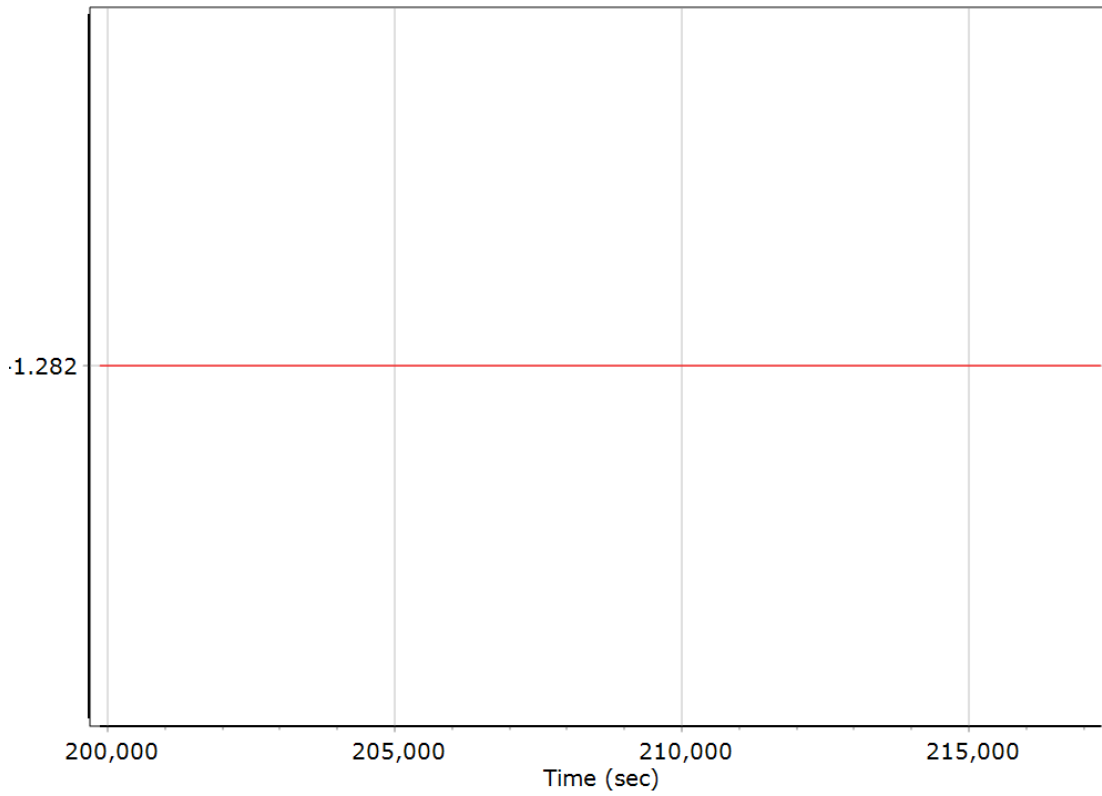
X Reference-Primary GNSS Lever Arm (m)



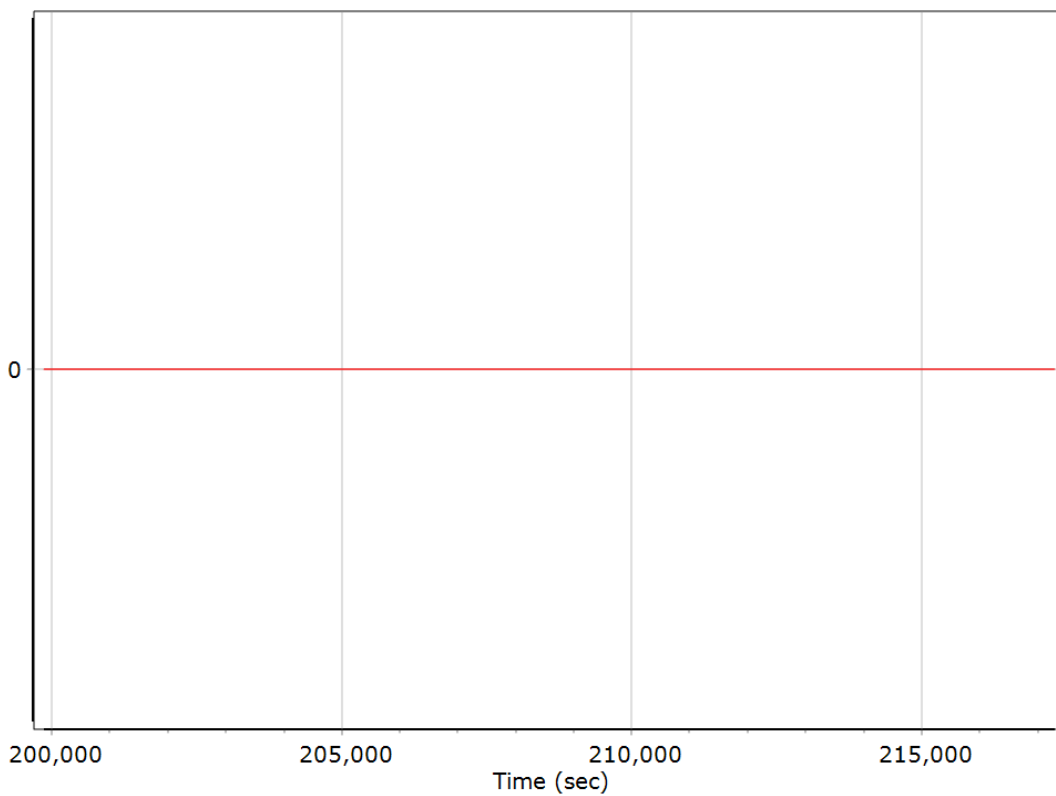
Y Reference-Primary GNSS Lever Arm (m)



Z Reference-Primary GNSS Lever Arm (m)



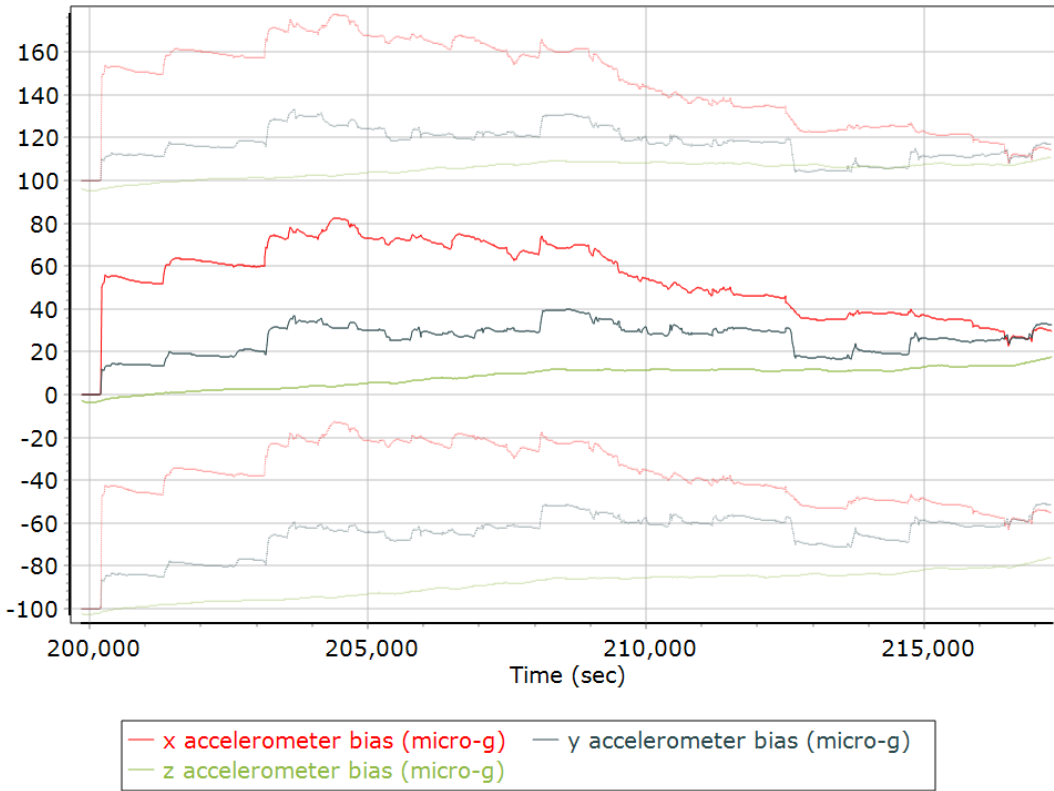
Reference-Primary GNSS Lever Arm Figure of Merit



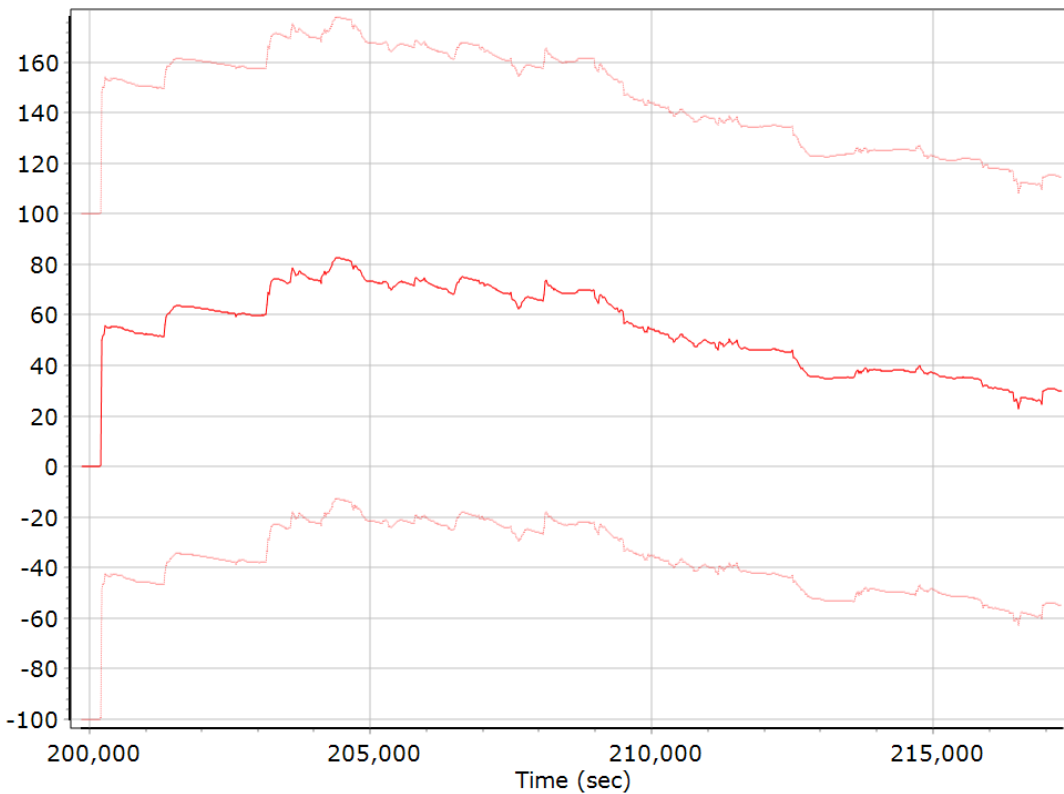
IN-Fusion QC

Forward Processed Estimated Errors, Reference Frame

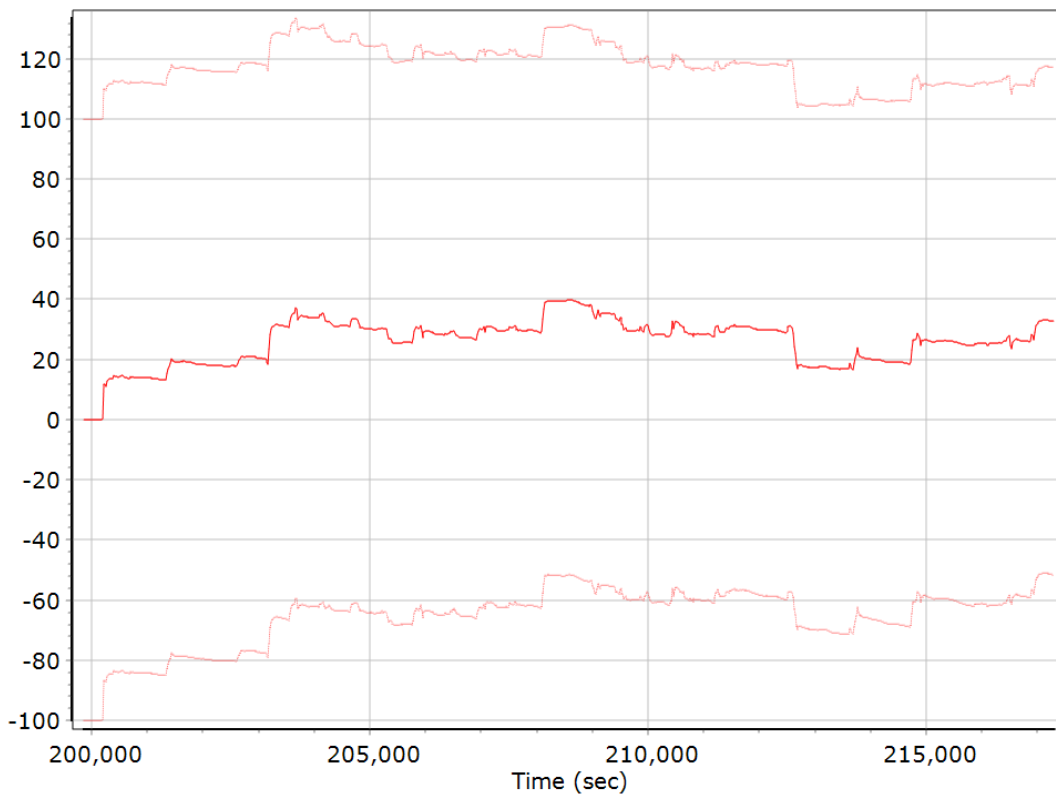
Accelerometer Bias (micro-g)



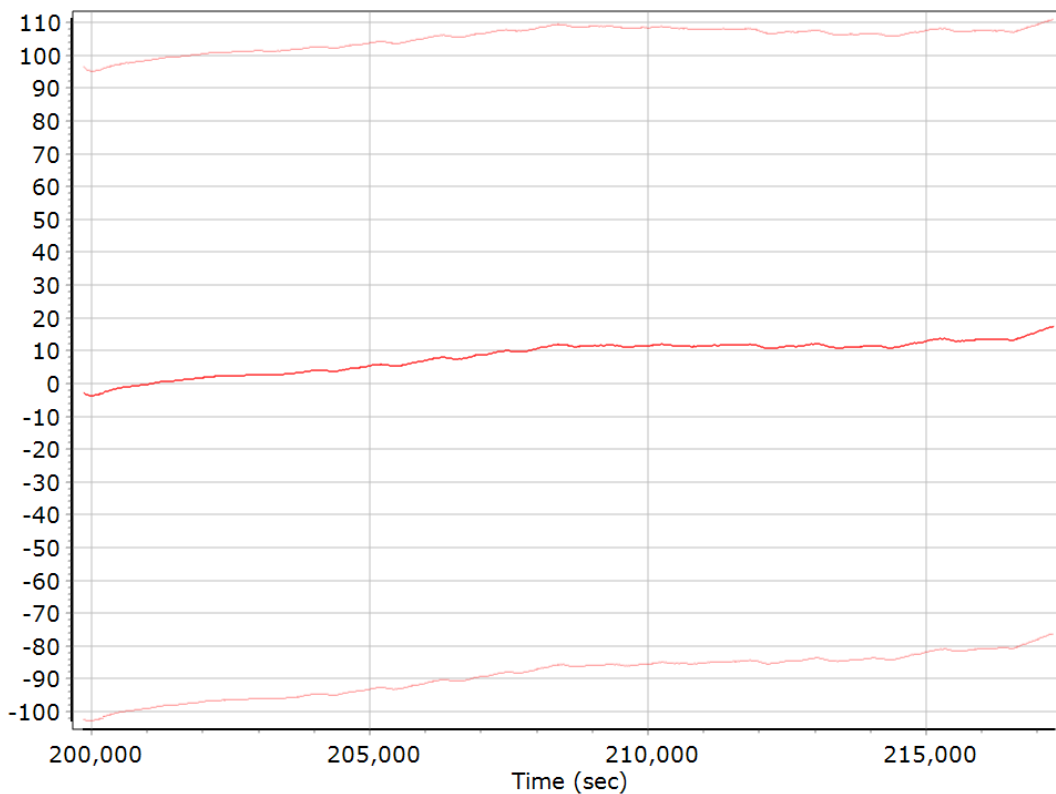
X Accelerometer Bias (micro-g)



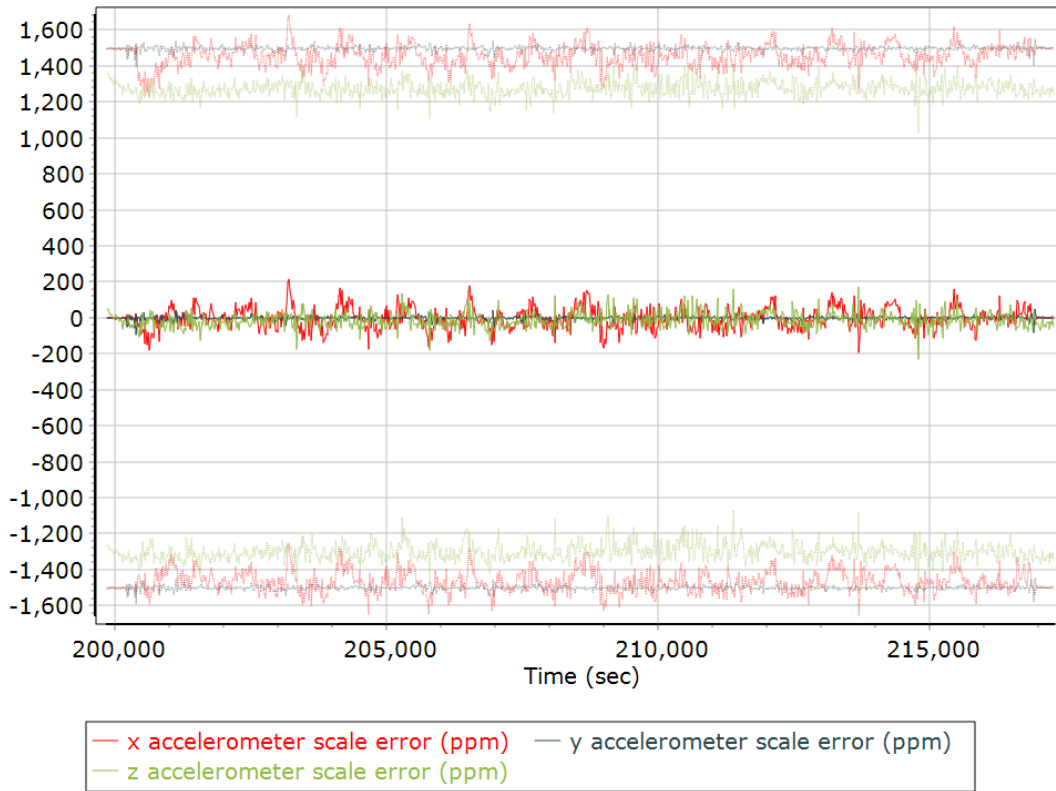
Y Accelerometer Bias (micro-g)



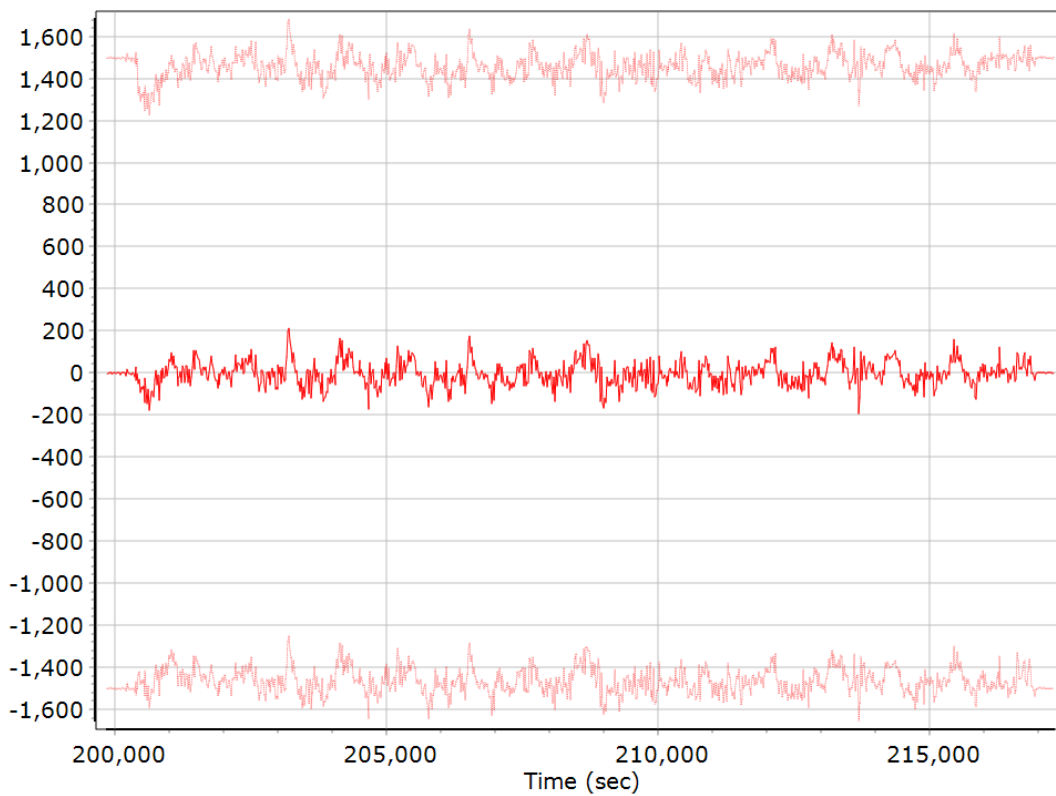
Z Accelerometer Bias (micro-g)



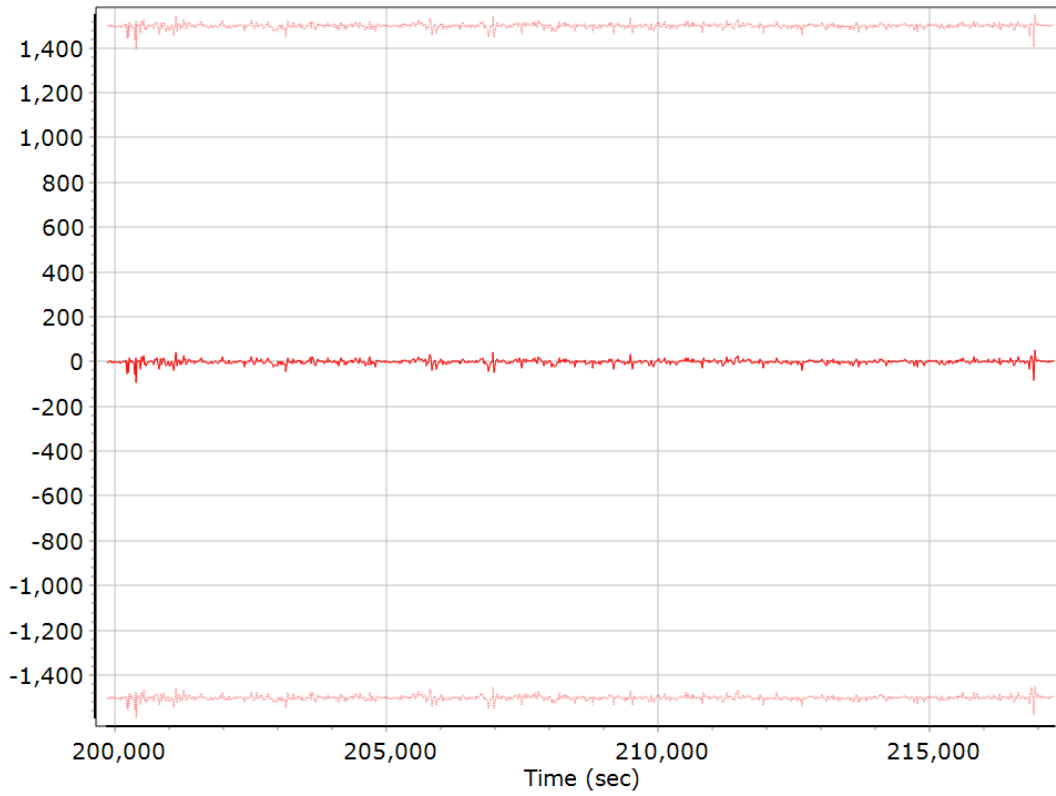
Accelerometer Scale Error (ppm)



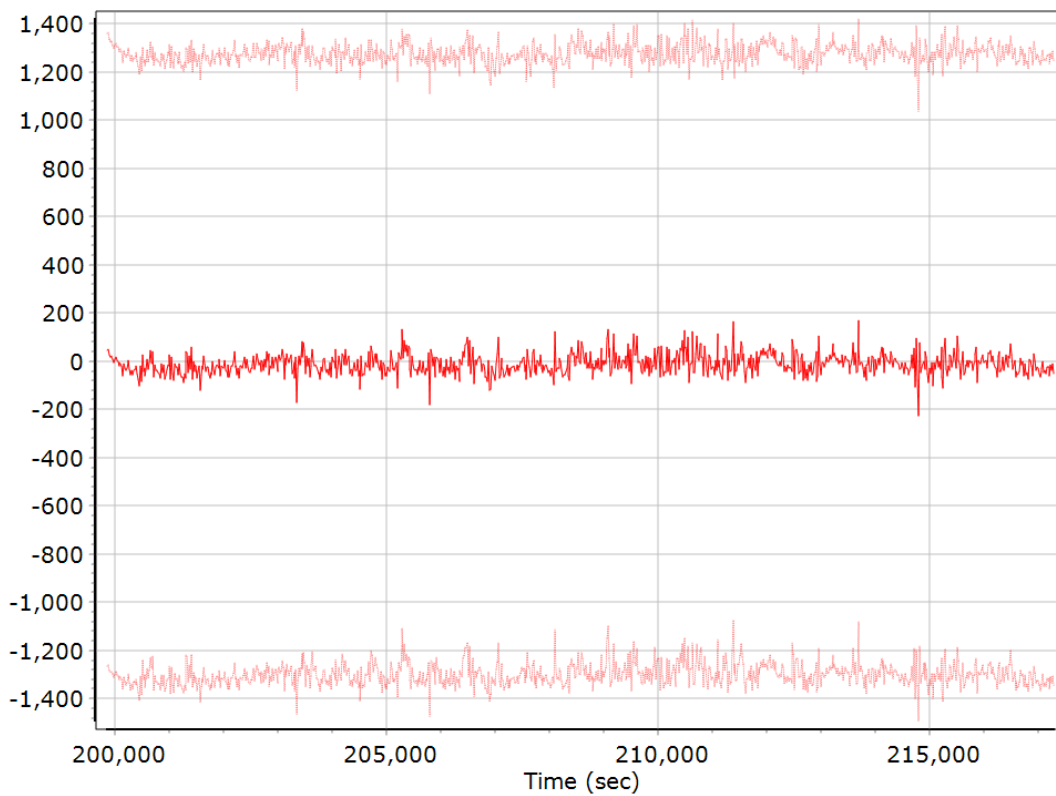
X Accelerometer Scale Error (ppm)



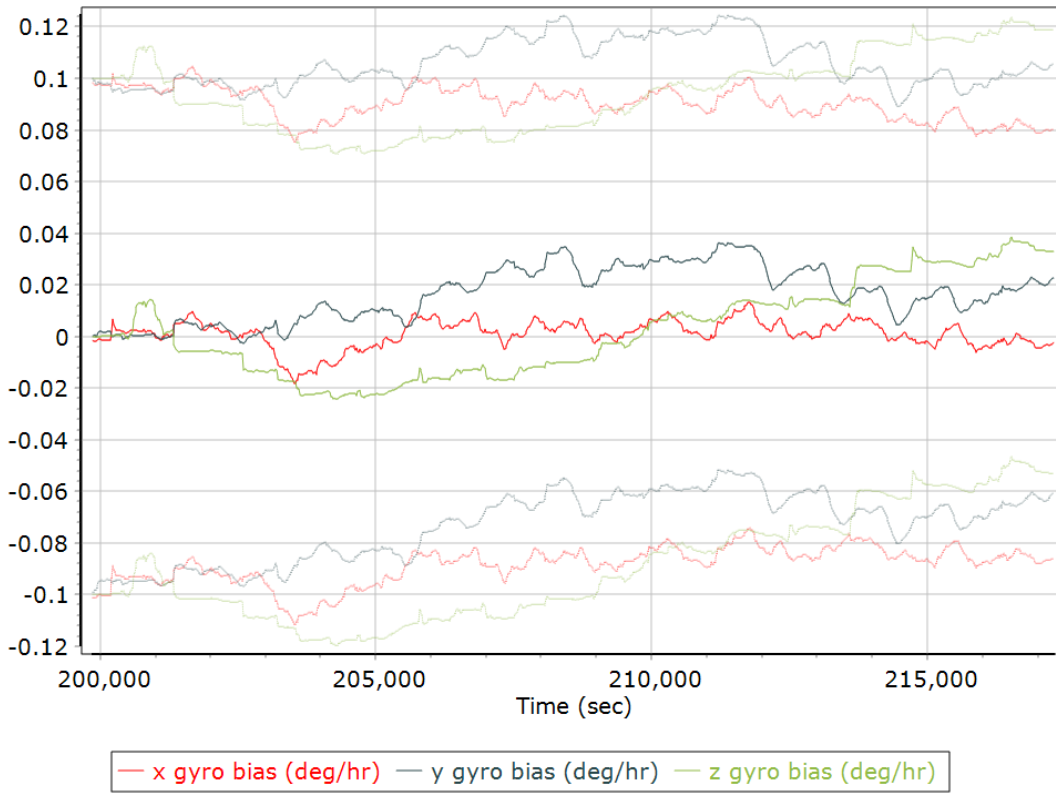
Y Accelerometer Scale Error (ppm)



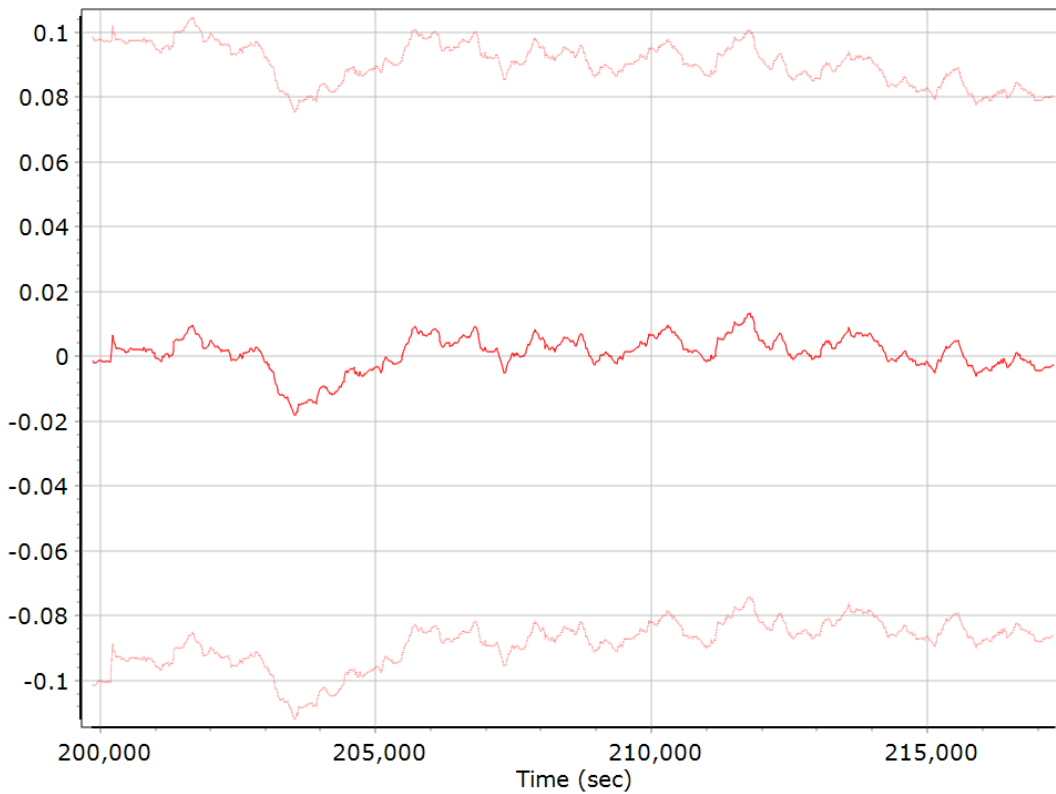
Z Accelerometer Scale Error (ppm)



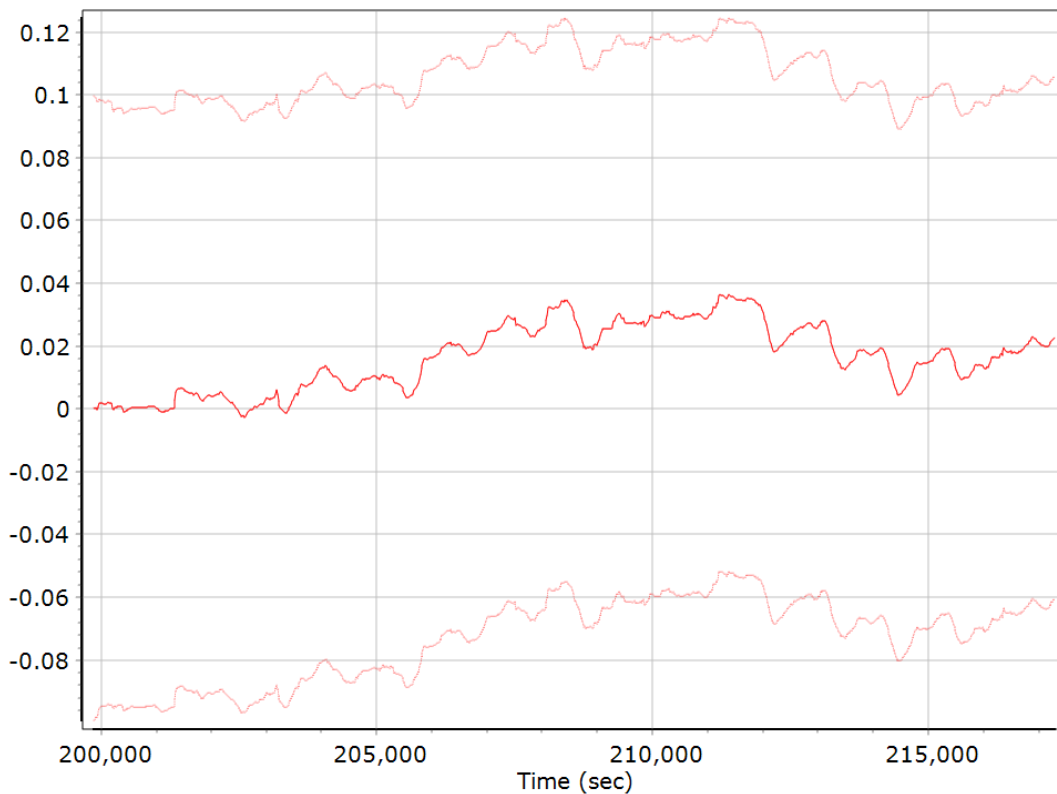
Gyro Bias (deg/h)



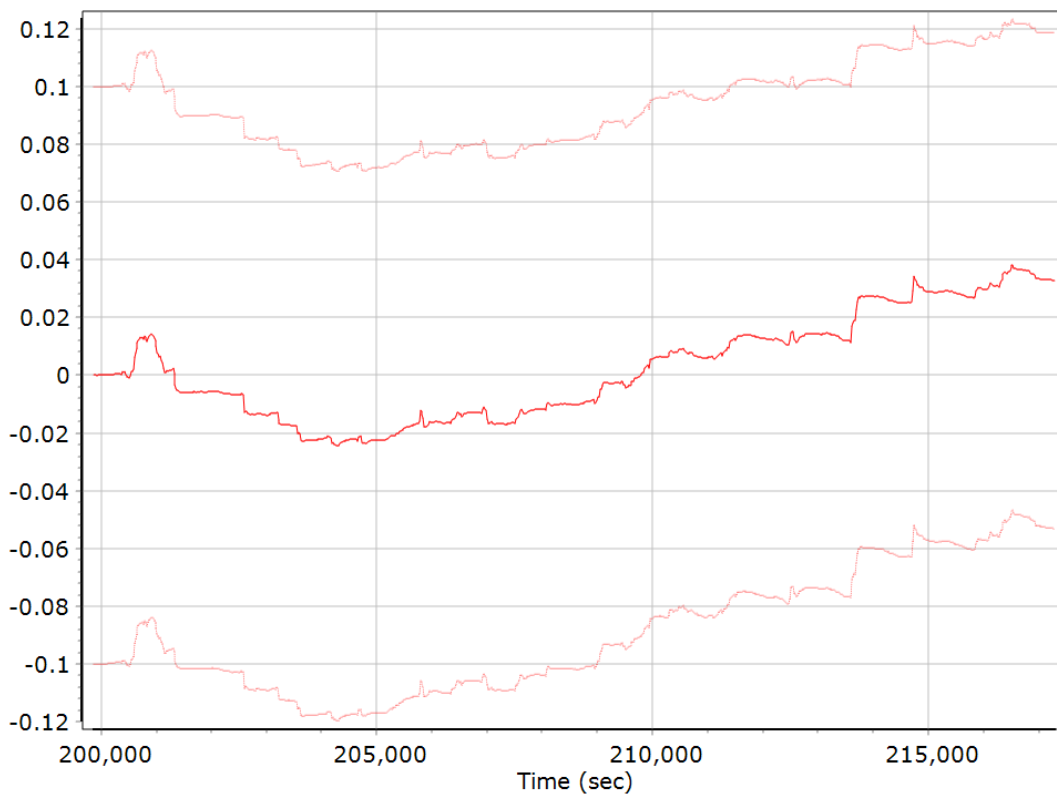
X Gyro Bias (deg/h)



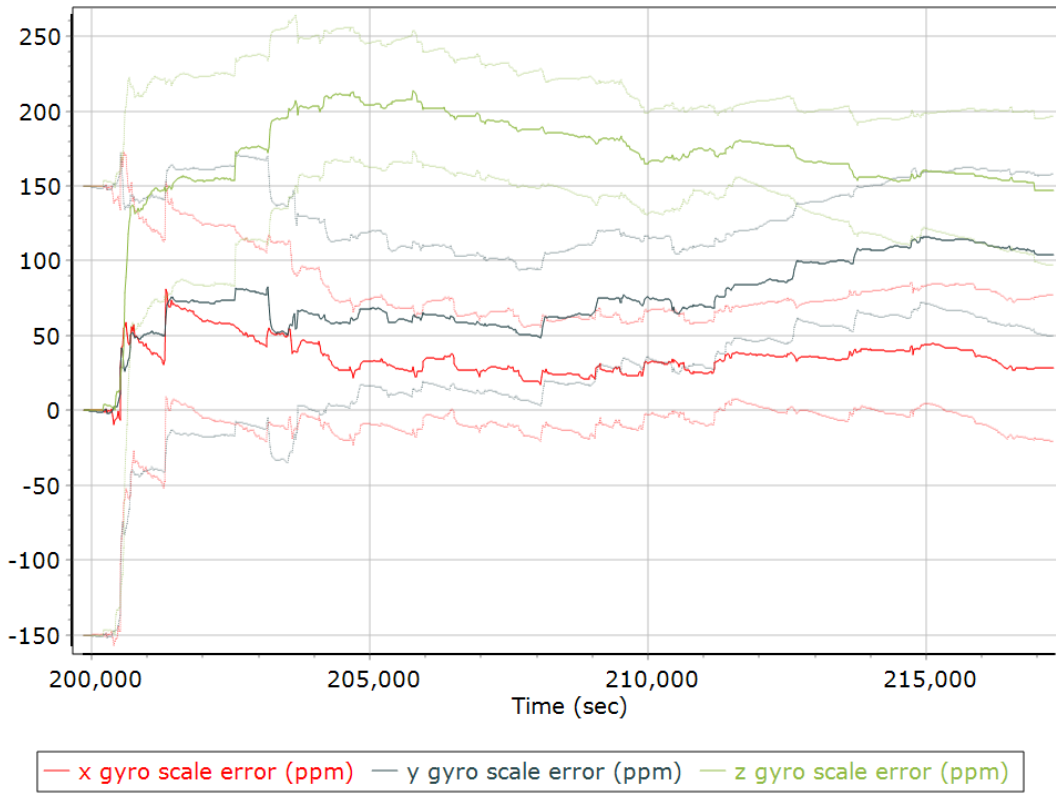
Y Gyro Bias (deg/h)



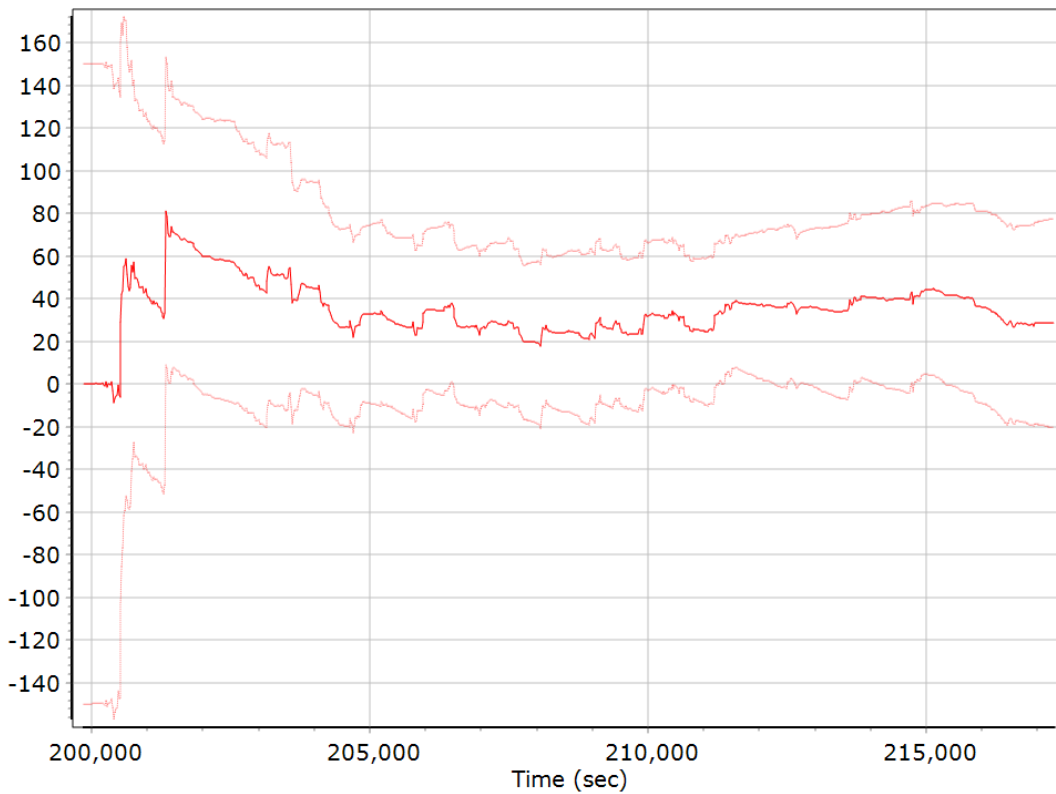
Z Gyro Bias (deg/h)



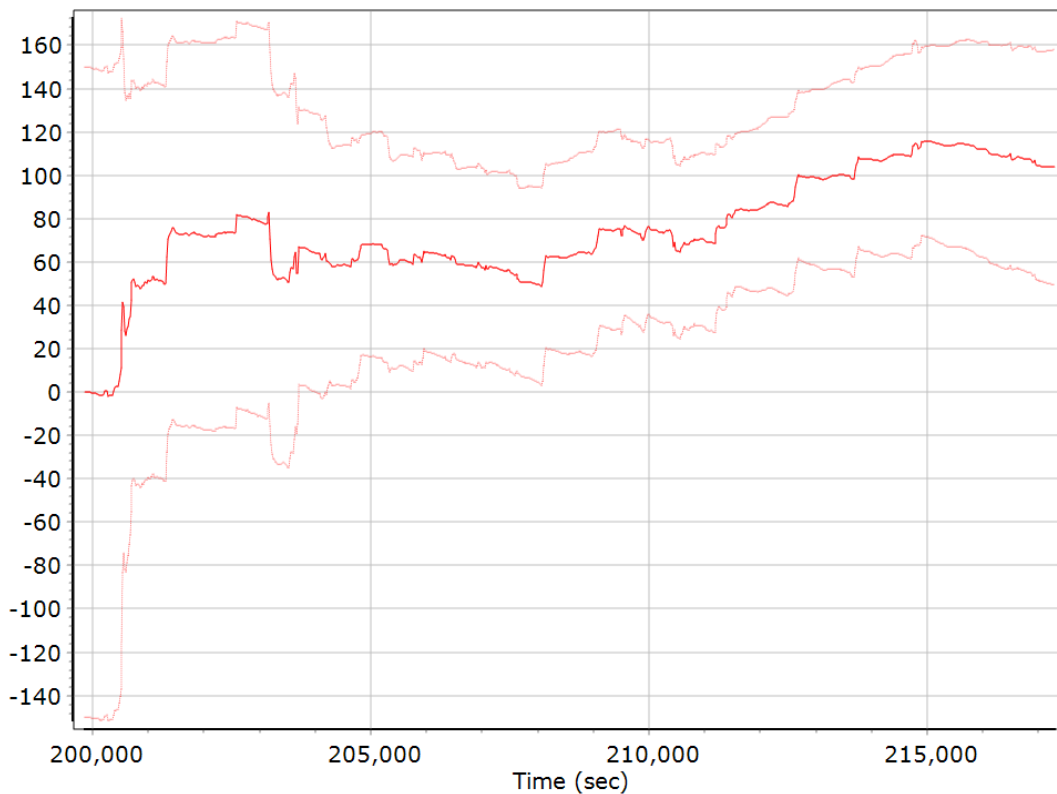
Gyro Scale Error (ppm)



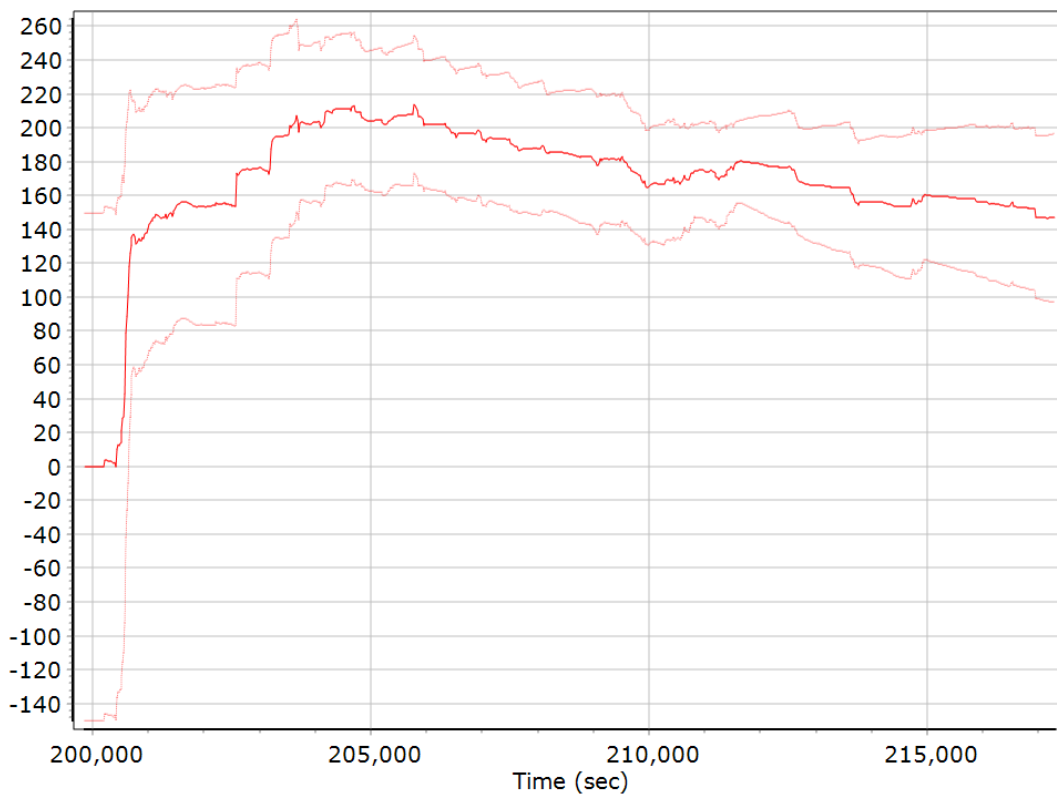
X Gyro Scale Error (ppm)



Y Gyro Scale Error (ppm)

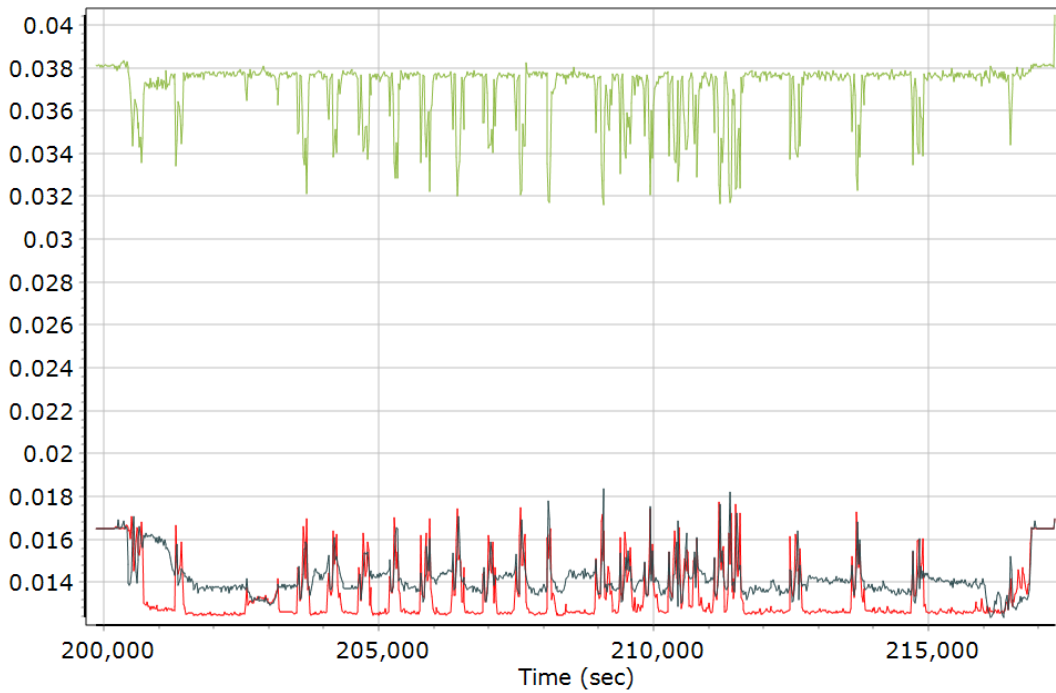


Z Gyro Scale Error (ppm)



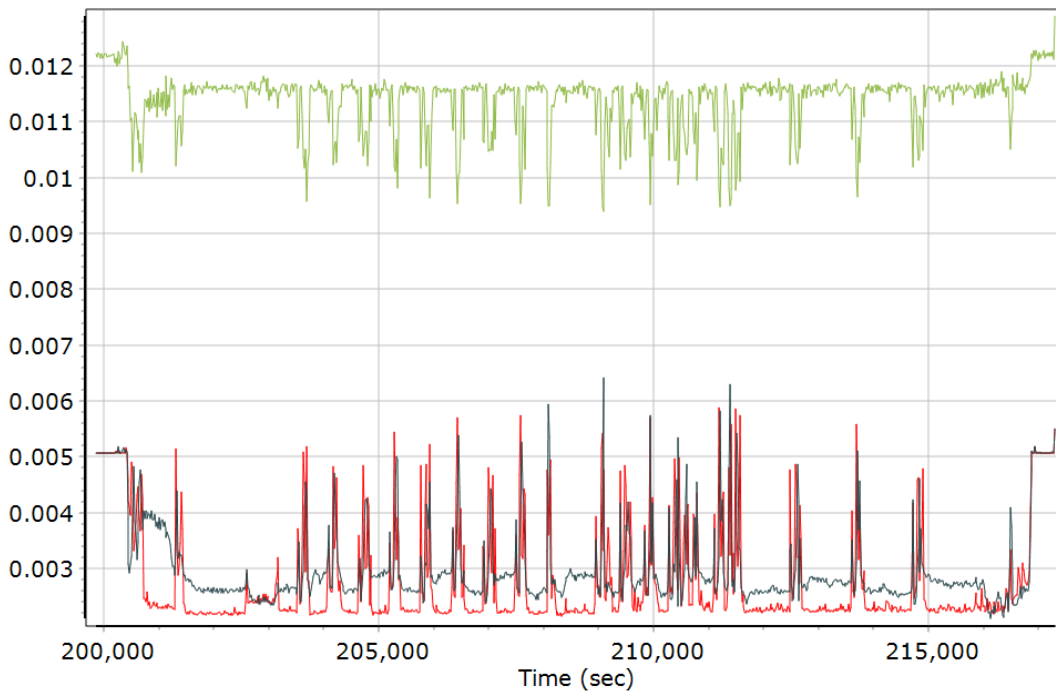
Smoothed Performance Metrics

Position Error RMS (m)



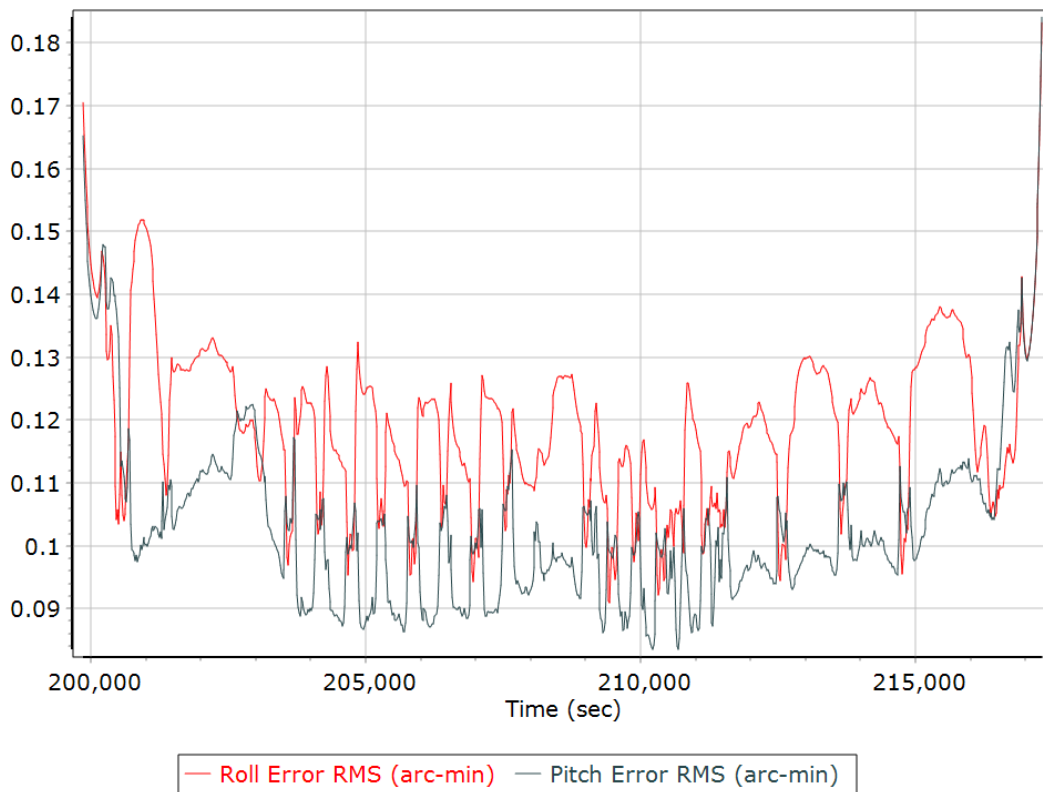
— North Position Error RMS (m) — East Position Error RMS (m)
— Down Position Error RMS (m)

Velocity Error RMS (m/s)

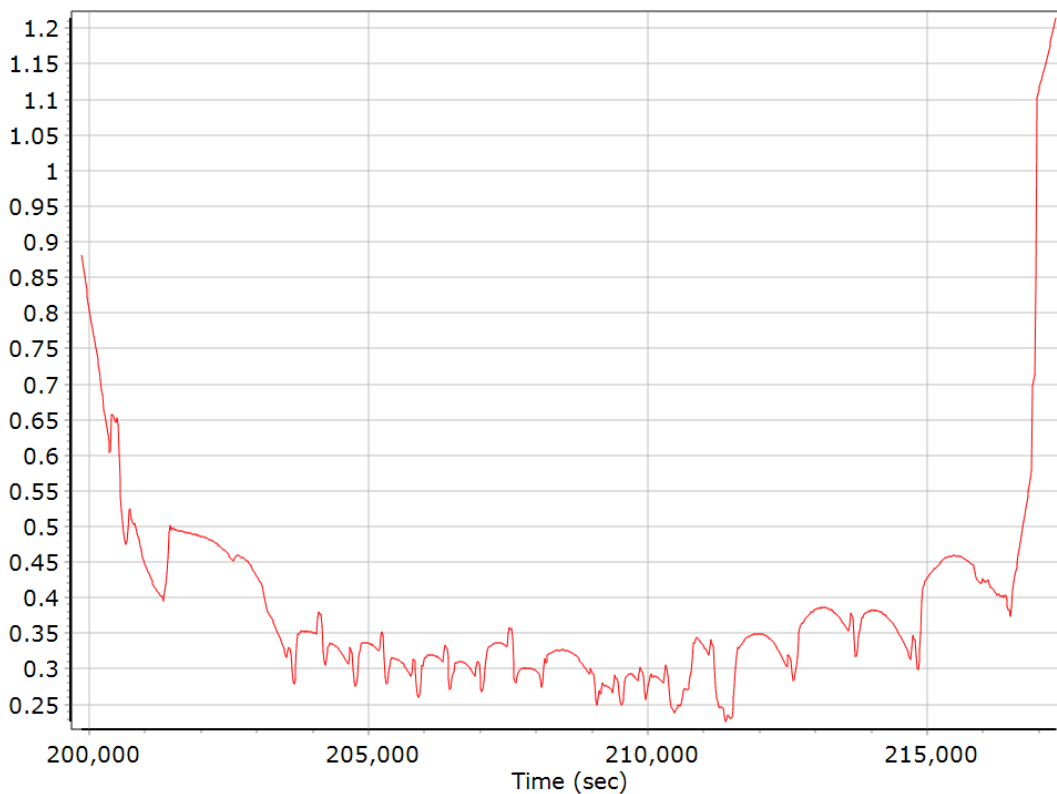


— North Velocity Error RMS (m/s) — East Velocity Error RMS (m/s)
— Down Velocity Error RMS (m/s)

Roll/Pitch Error RMS (arc-min)

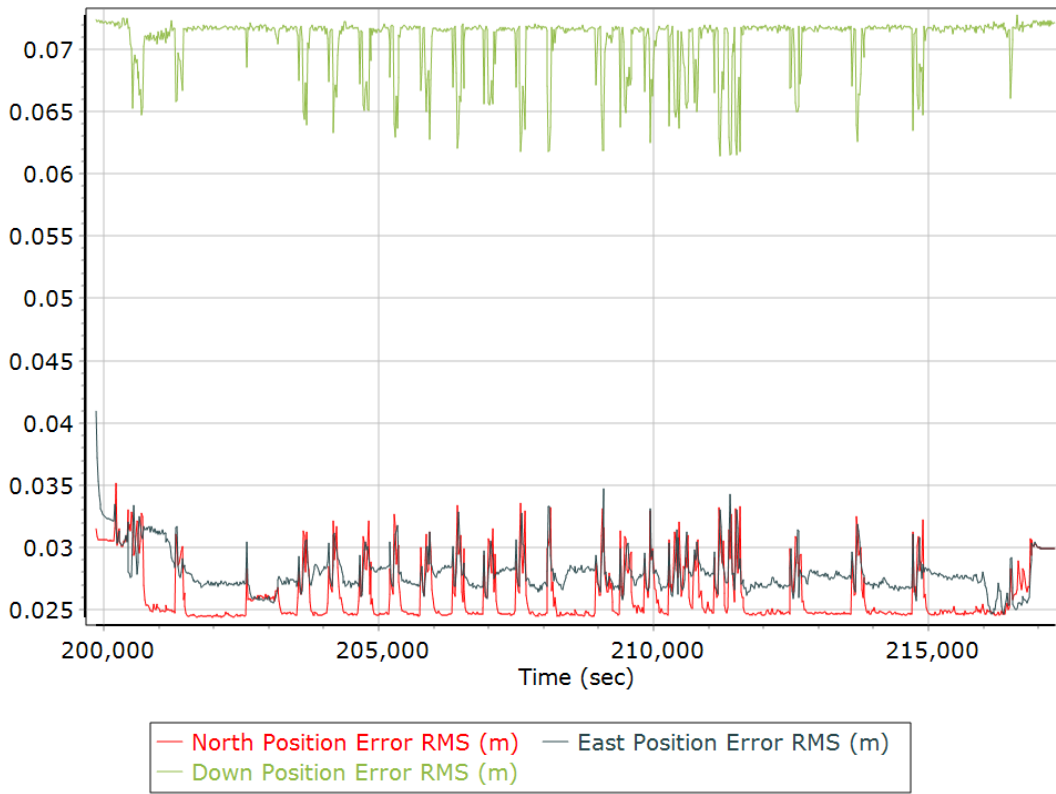


Heading Error RMS (arc-min)

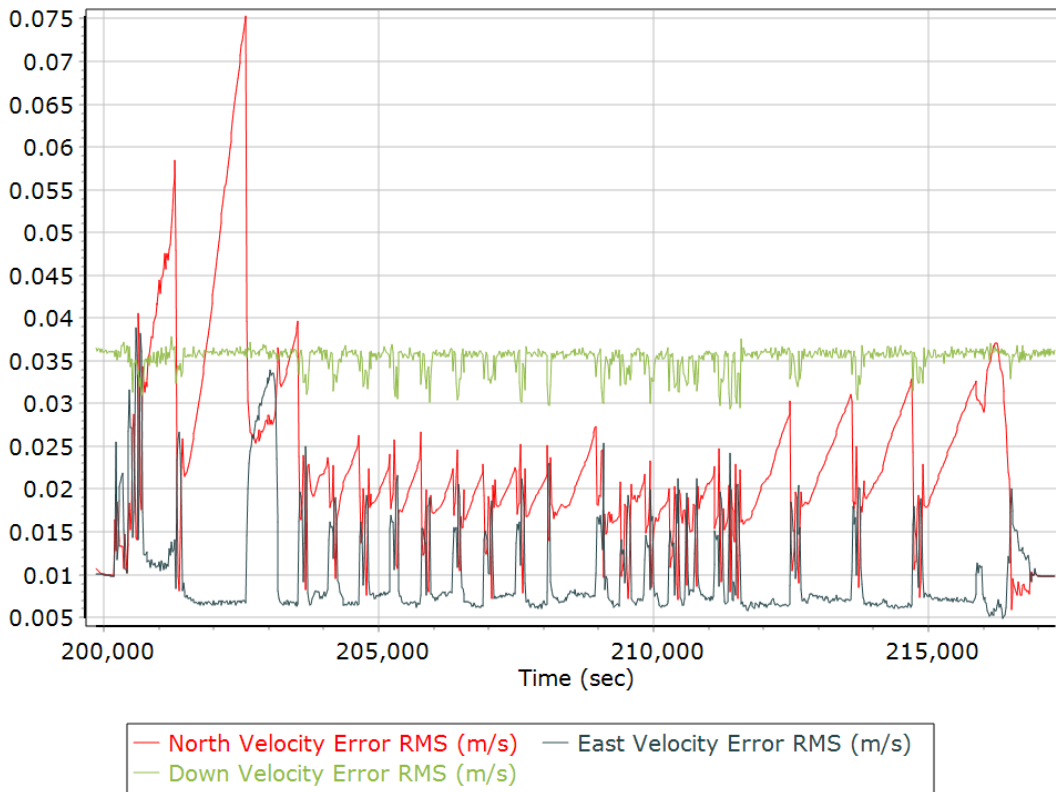


Forward Processed Performance Metrics

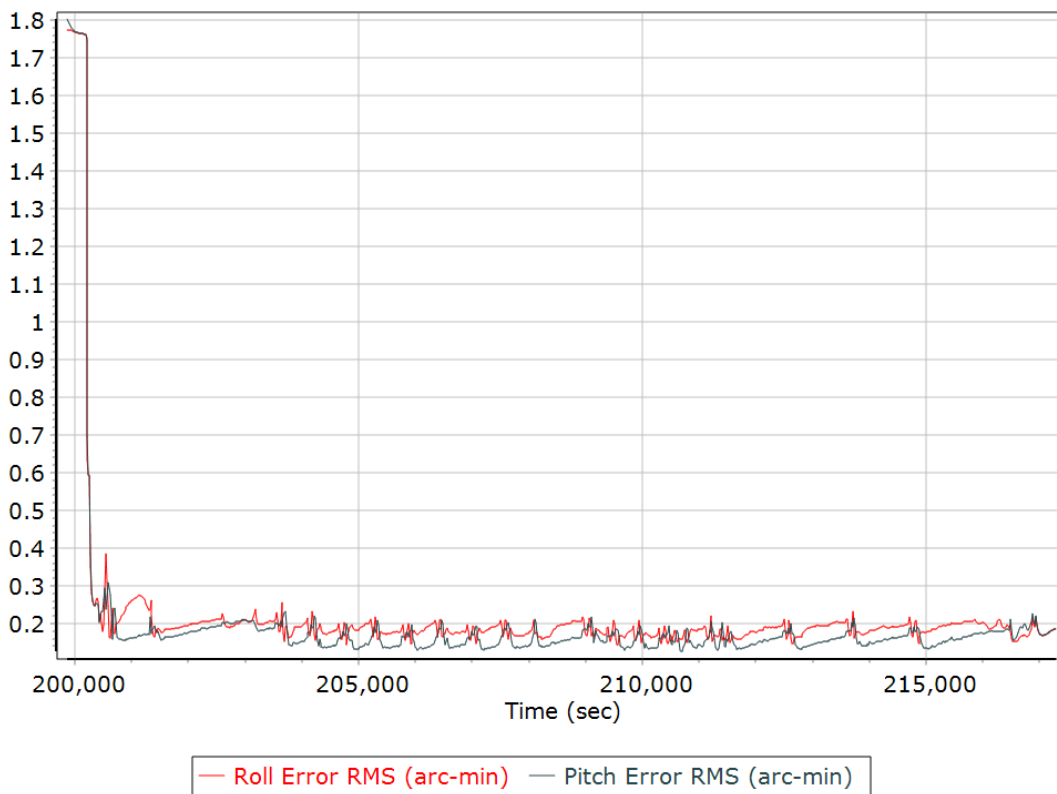
Position Error RMS (m)



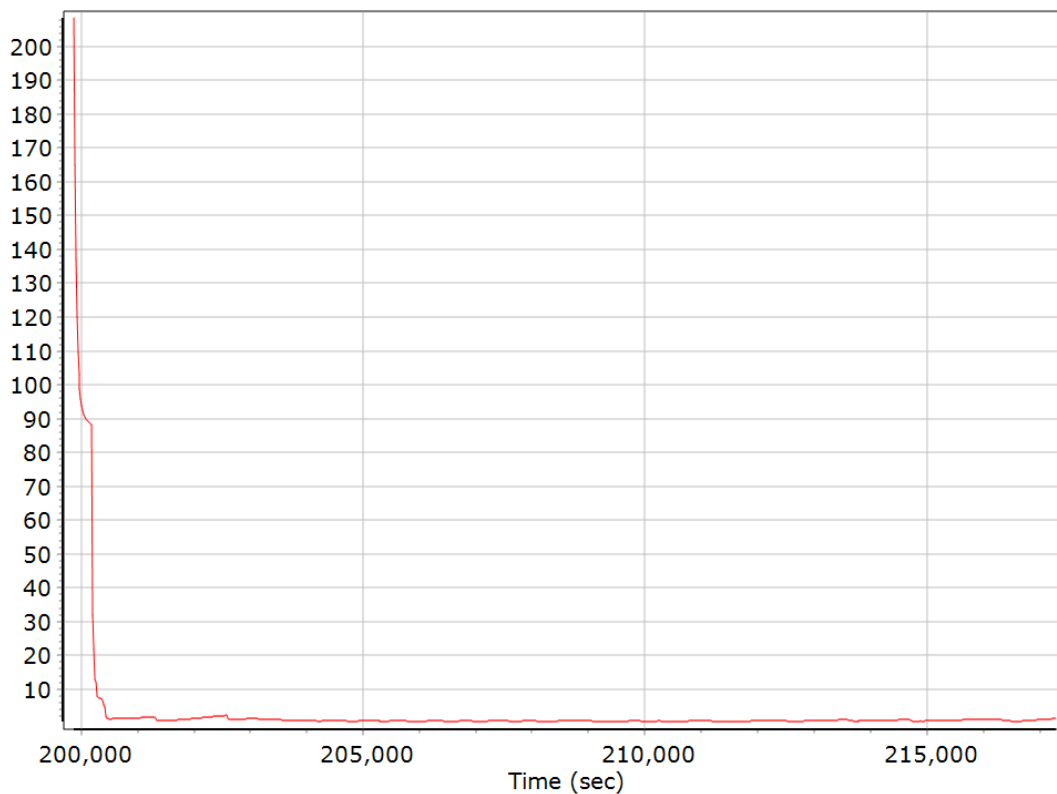
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

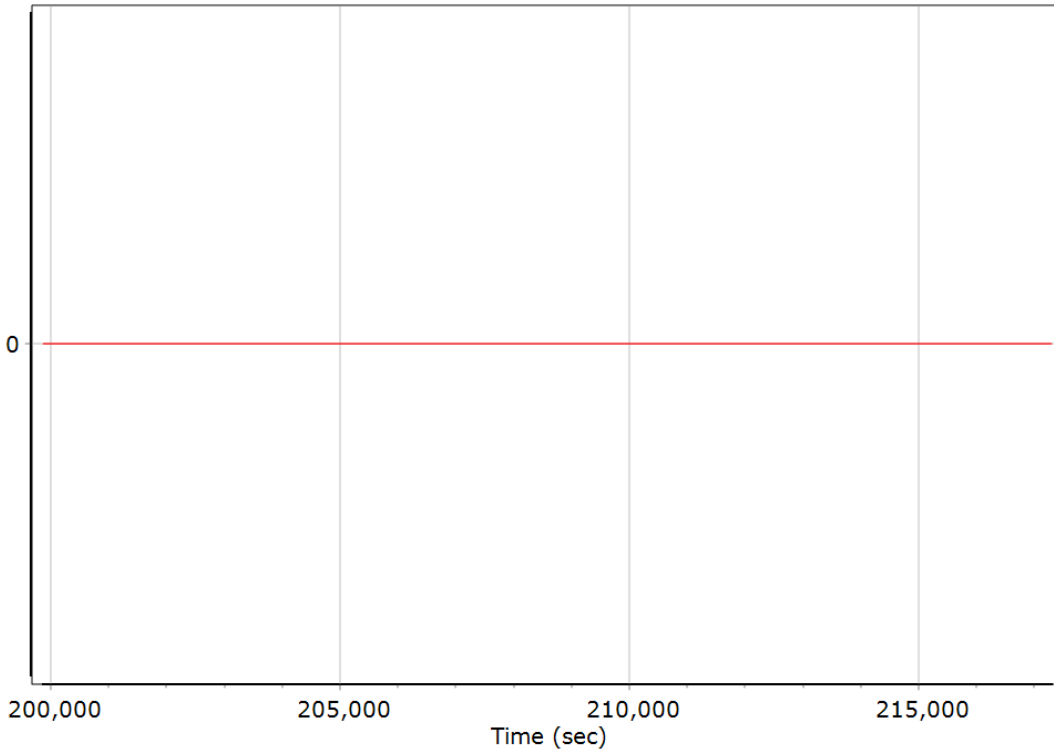


Heading Error RMS (arc-min)



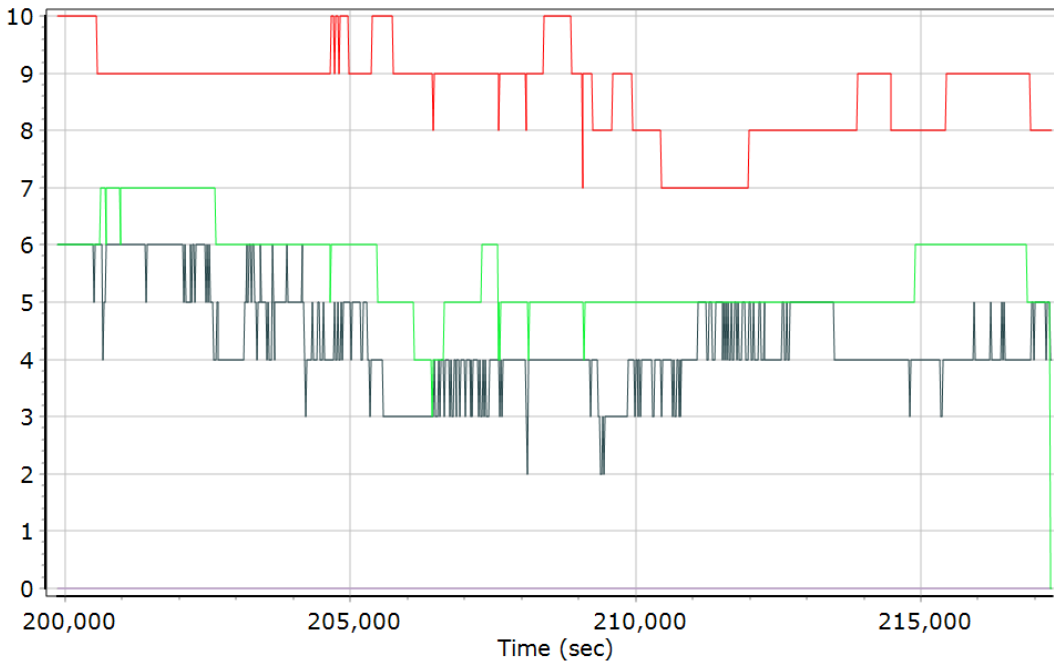
Forward Processed Solution Status

Processing Mode



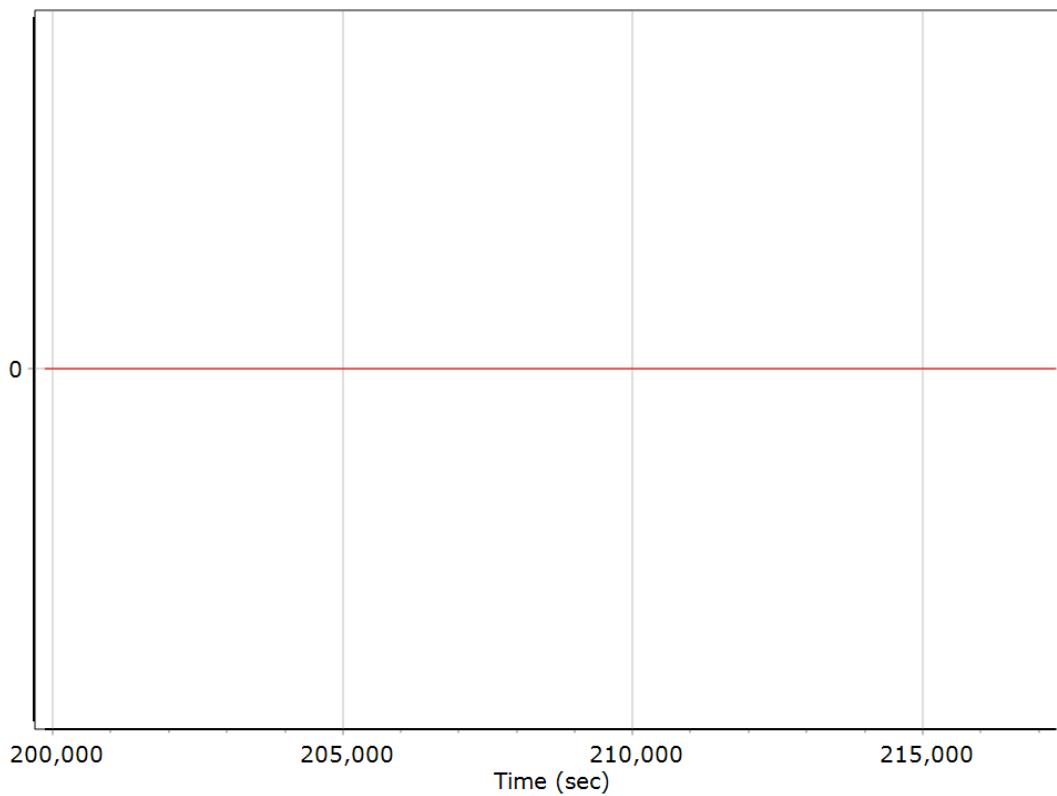
0 = Fixed NL, 1 = Fixed WL, 2 = Float, 3 = DGNSS, 4 = RTCM, 5 = IAPPP, 6 = C/A, 7 = GNSS Na

Number of Satellites



— Number of GPS Satellites	— Number of GLONASS Satellites
— Number of QZSS Satellites	— Number of BEIDOU Satellites
— Number of GALILEO Satellites	

Baseline Length



General Information

Mission Information

Project name	a07-s03-0526
Processing date	2022-08-31 19:36:31
Mission date	2022-08-31 06:44:42
Mission duration	04:41:12.000
Processing mode	IN-Fusion PP-RTX

Rover Hardware Information

Product	POS AV 610 VER6 HW1.6-12
Serial number	S/N6907
IMU type	57
Receiver type	BD982
Antenna type	AV39

Project File List

Rover Data Files

File name	File type
default0831_064443.000	POS Data
default0831_064443.001	POS Data
default0831_064443.002	POS Data
default0831_064443.003	POS Data
default0831_064443.004	POS Data
default0831_064443.005	POS Data
default0831_064443.006	POS Data
default0831_064443.007	POS Data
default0831_064443.008	POS Data
default0831_064443.009	POS Data
default0831_064443.010	POS Data
default0831_064443.011	POS Data
default0831_064443.012	POS Data
default0831_064443.013	POS Data
default0831_064443.014	POS Data
default0831_064443.015	POS Data
default0831_064443.016	POS Data
default0831_064443.017	POS Data
default0831_064443.018	POS Data
default0831_064443.019	POS Data
default0831_064443.020	POS Data
default0831_064443.021	POS Data
default0831_064443.022	POS Data
default0831_064443.023	POS Data

Input Files

File Name	File Type
Ephm2430.22g	GLONASS Broadcast Ephemeris
Ephm2430.22n	GPS Broadcast Ephemeris

Output Files

Filename	File type
sbet_a07-s03-0526.out	SBET Trajectory File

Rover Data Summary

First raw data file	default0831_064443.000		
Last raw data file	default0831_064443.023		
Start GPS week	2225		
Start time	283464.934 (8/31/2022 6:44:24 AM)		
End time	300337.177 (8/31/2022 11:25:37 AM)		
Start of fine alignment	283863.910 (8/31/2022 6:51:03 AM)		
Available subsystems	Primary GNSS, IMU		
POS Event Input	None		
Correction data	None		
IMU Installation Lever Arms & Mounting Angles			
Reference to IMU lever arm (m)	0.000	0.000	0.000
Reference to IMU mounting angles (deg)	0.000	0.000	0.000
Reference to Primary GNSS lever arm (m)	-0.353	-0.322	-1.280
Reference to Primary GNSS lever arm std dev (m)	-1.000		
Aircraft to Reference mounting angles (deg)	0.000	0.000	0.000

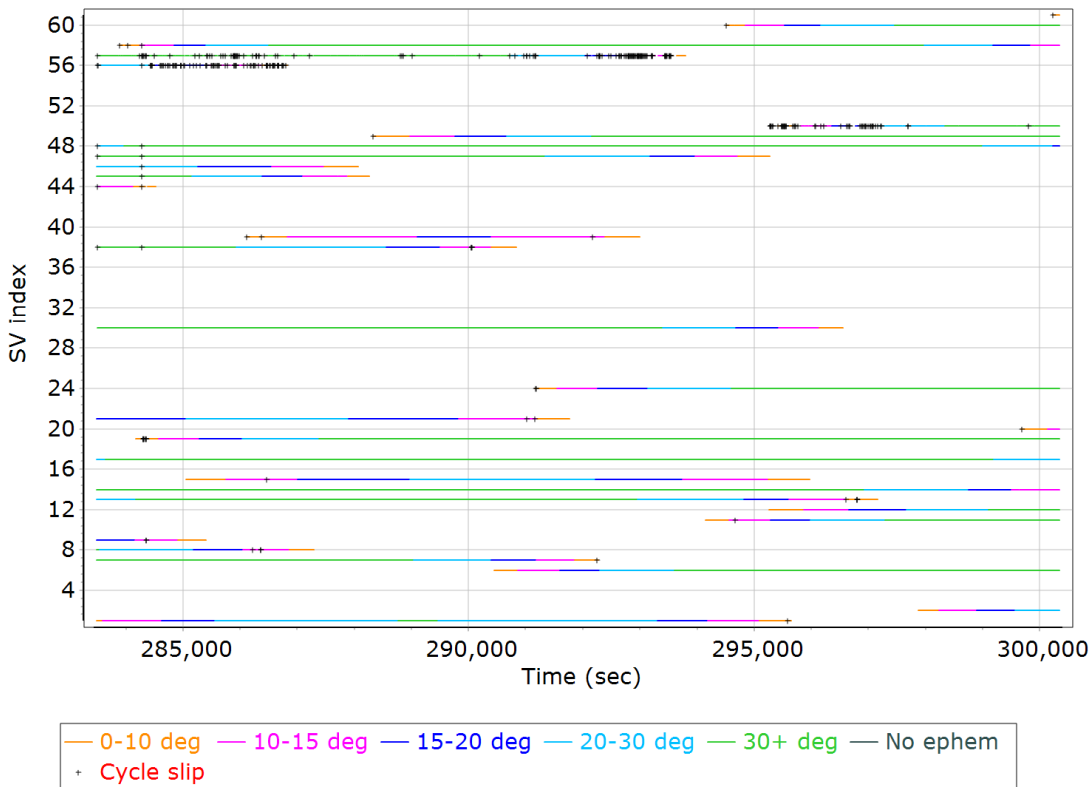
Rover Data QC

Raw IMU Import QC Summary

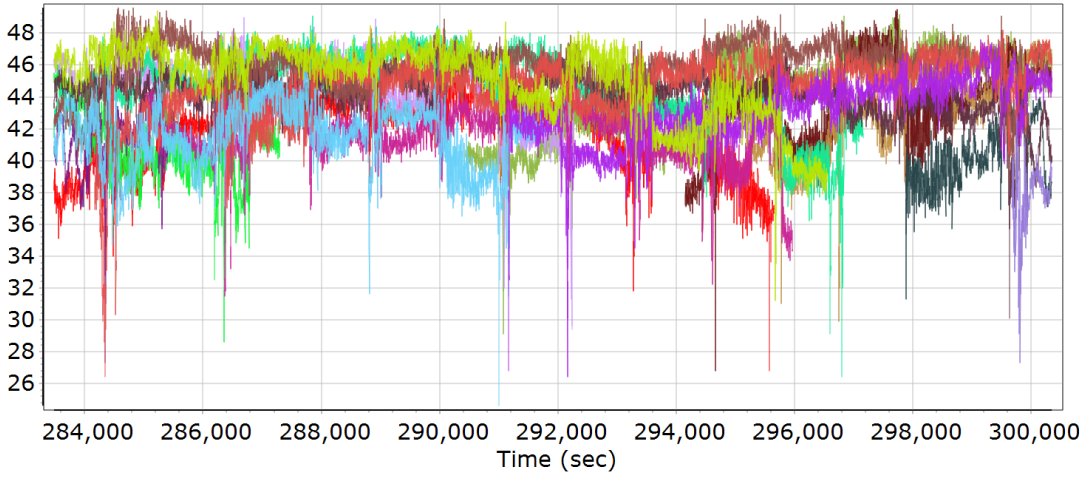
IMU data input file	imu_a07-s03-0526.dat
IMU data check log file	imudt_a07-s03-0526.log
IMU Records Processed	3374110
Termination Status	Warnings
IMU Anomalies	2
IMU Failure Messages	
283464.233 : WARNING : Gap of 0.0100 seconds in CHECKDT input data	
283464.183 : WARNING : Gap of 283446.8313 seconds in CHECKDT input data	

Primary Observables & Satellite Data

GPS/GLONASS L1 Satellite Lock/Elevation

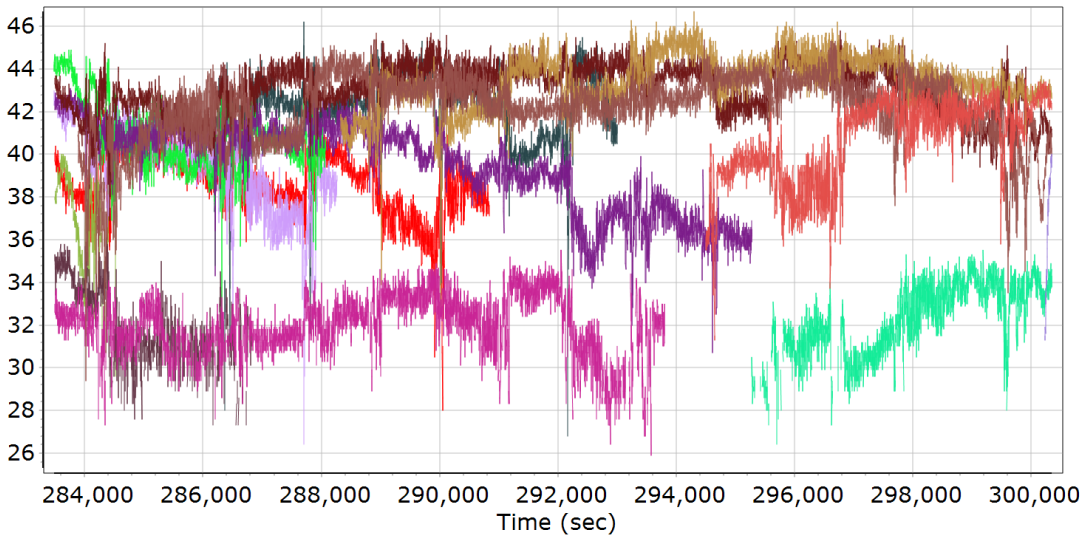


GPS L1 SNR



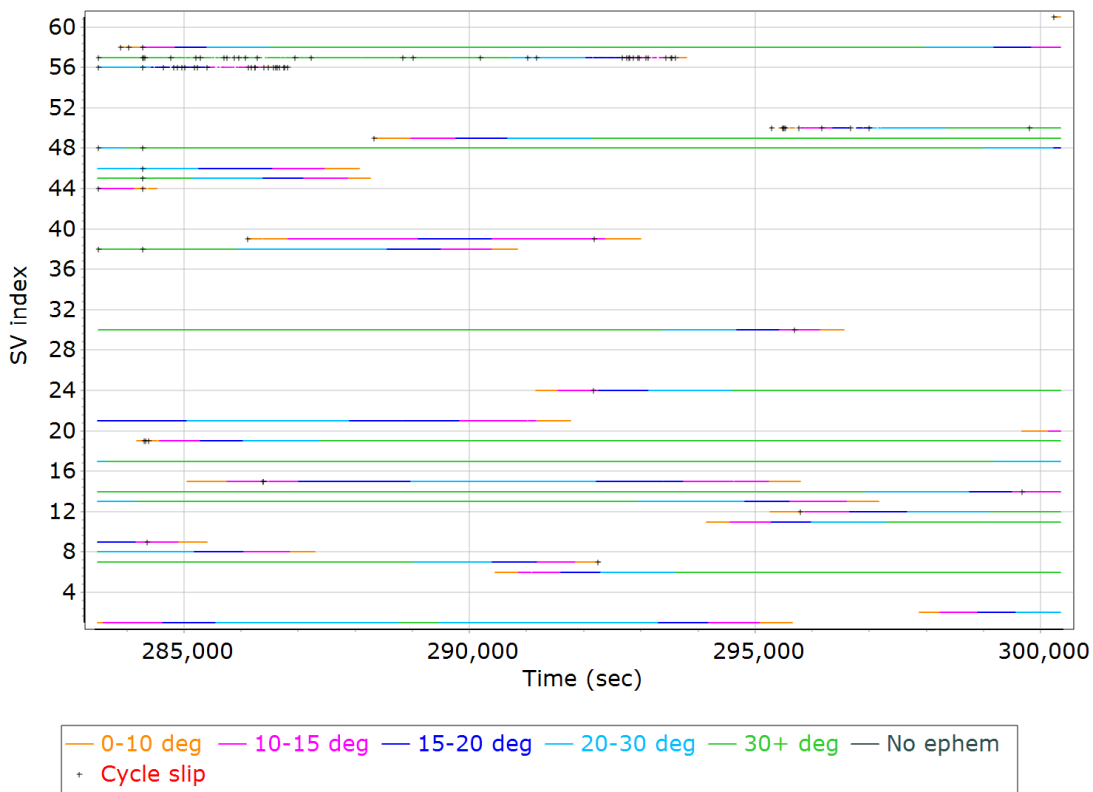
- | | |
|-----------------------------|-----------------------------|
| — GPS PRN 01 L1 SNR (dB/Hz) | — GPS PRN 02 L1 SNR (dB/Hz) |
| — GPS PRN 06 L1 SNR (dB/Hz) | — GPS PRN 07 L1 SNR (dB/Hz) |
| — GPS PRN 08 L1 SNR (dB/Hz) | — GPS PRN 09 L1 SNR (dB/Hz) |
| — GPS PRN 11 L1 SNR (dB/Hz) | — GPS PRN 12 L1 SNR (dB/Hz) |
| — GPS PRN 13 L1 SNR (dB/Hz) | — GPS PRN 14 L1 SNR (dB/Hz) |
| — GPS PRN 15 L1 SNR (dB/Hz) | — GPS PRN 17 L1 SNR (dB/Hz) |
| — GPS PRN 19 L1 SNR (dB/Hz) | — GPS PRN 20 L1 SNR (dB/Hz) |
| — GPS PRN 21 L1 SNR (dB/Hz) | — GPS PRN 24 L1 SNR (dB/Hz) |
| — GPS PRN 30 L1 SNR (dB/Hz) | |

GLONASS L1 SNR

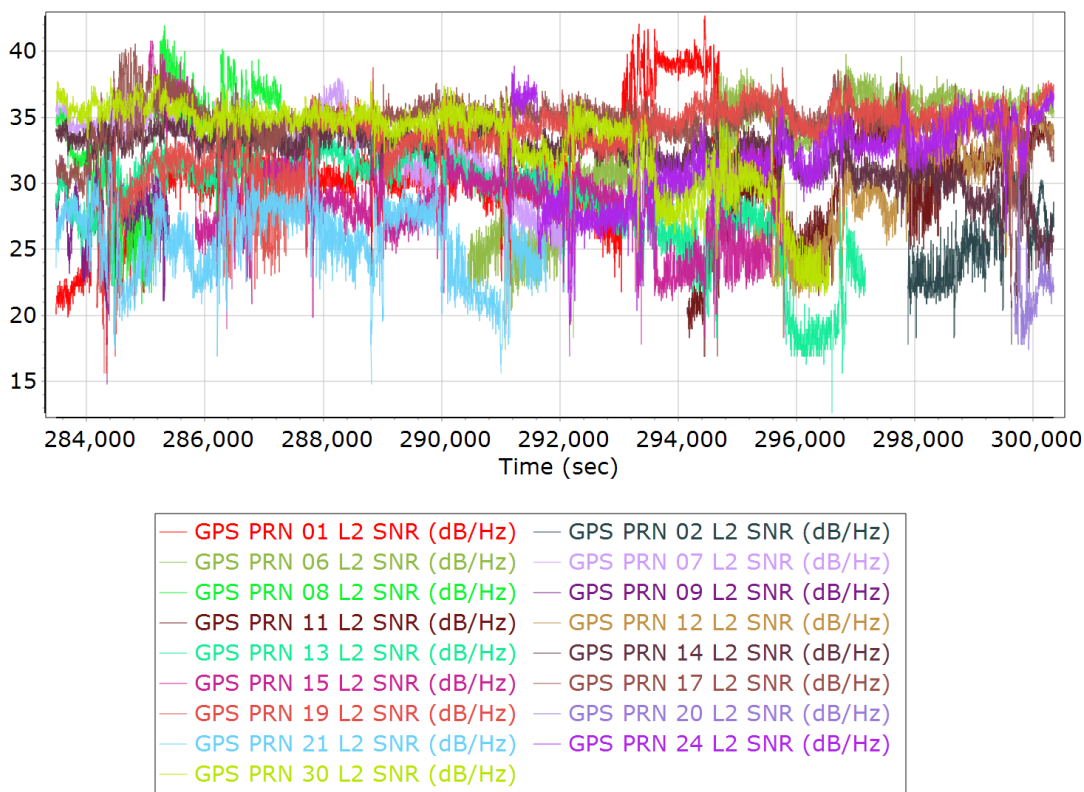


- | | |
|-----------------------------|-----------------------------|
| — GLONASS 01 L1 SNR (dB/Hz) | — GLONASS 02 L1 SNR (dB/Hz) |
| — GLONASS 07 L1 SNR (dB/Hz) | — GLONASS 08 L1 SNR (dB/Hz) |
| — GLONASS 09 L1 SNR (dB/Hz) | — GLONASS 10 L1 SNR (dB/Hz) |
| — GLONASS 11 L1 SNR (dB/Hz) | — GLONASS 12 L1 SNR (dB/Hz) |
| — GLONASS 13 L1 SNR (dB/Hz) | — GLONASS 19 L1 SNR (dB/Hz) |
| — GLONASS 20 L1 SNR (dB/Hz) | — GLONASS 21 L1 SNR (dB/Hz) |
| — GLONASS 23 L1 SNR (dB/Hz) | — GLONASS 24 L1 SNR (dB/Hz) |

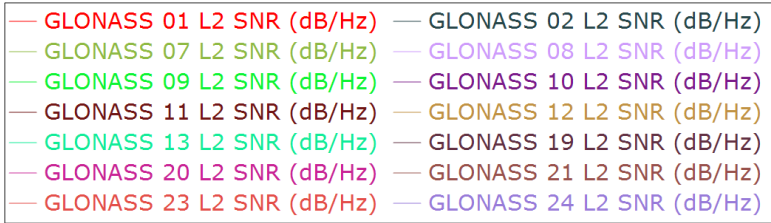
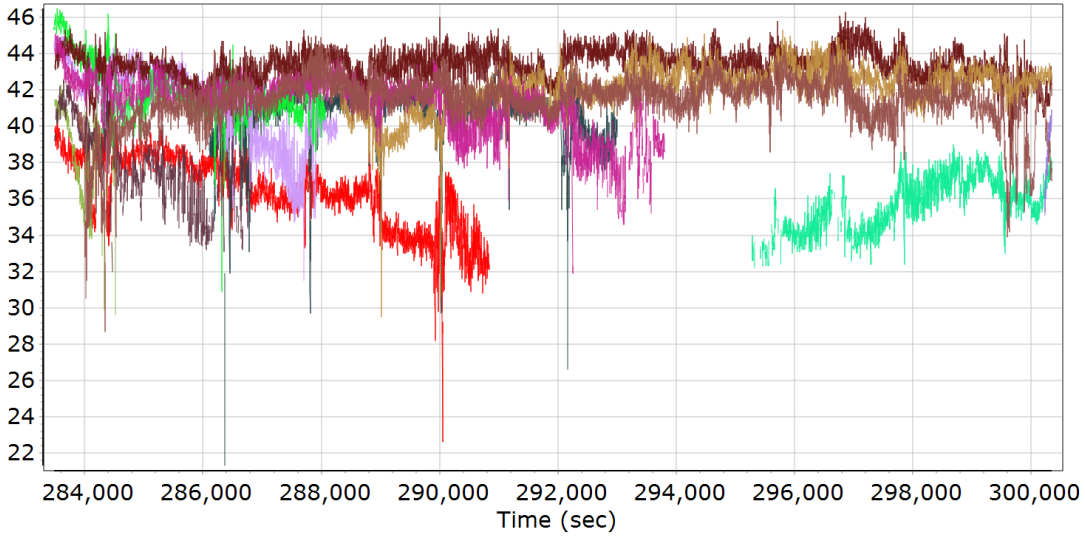
GPS/GLONASS L2 Satellite Lock/Elevation



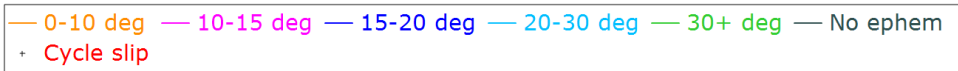
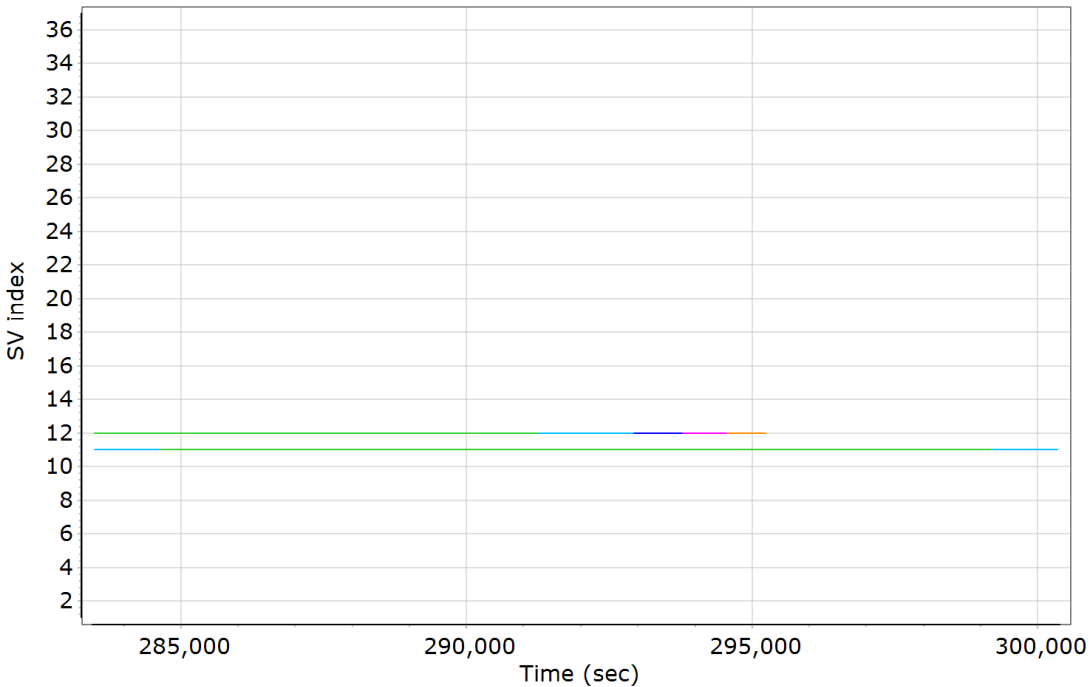
GPS L2 SNR



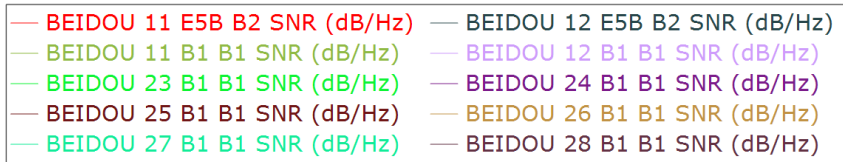
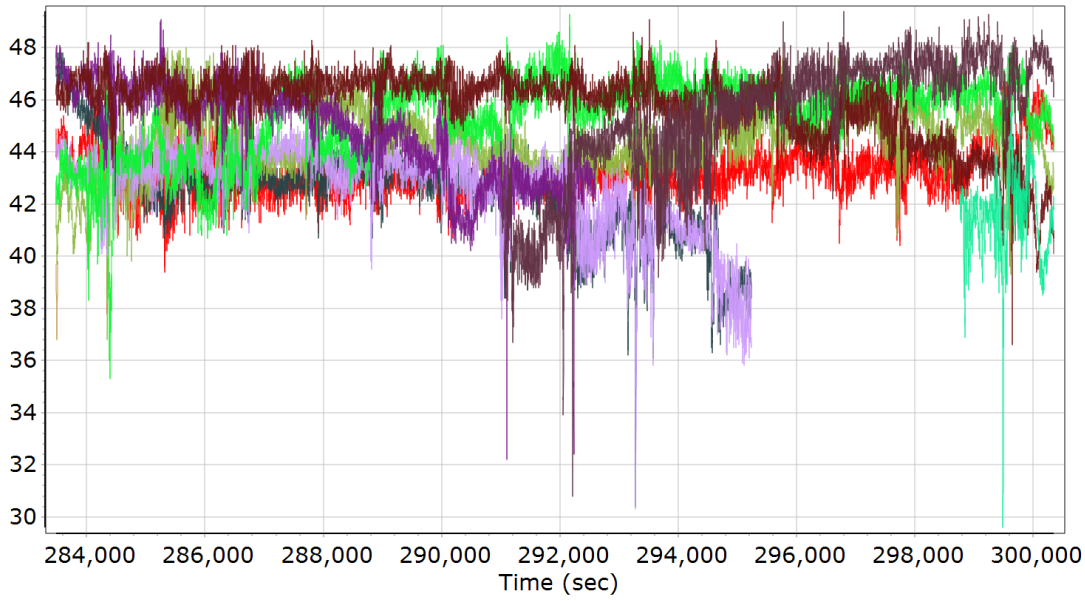
GLONASS L2 SNR



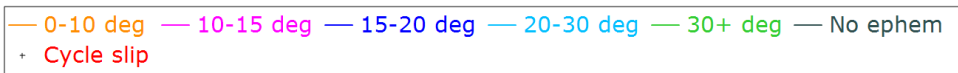
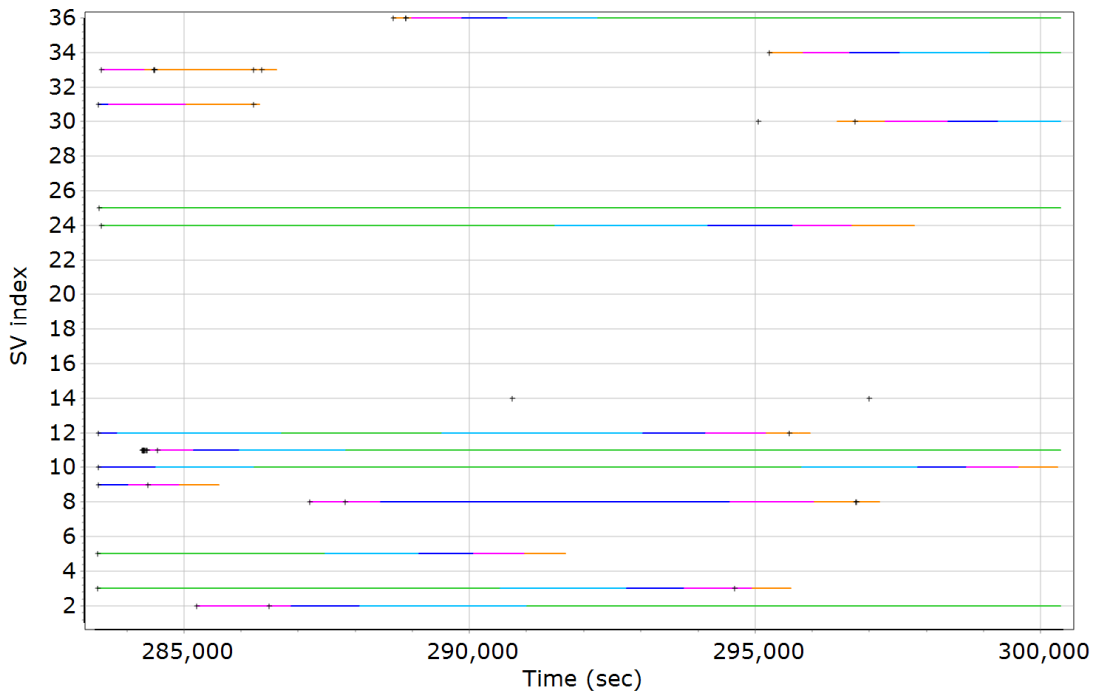
BEIDOU Satellite Lock/Elevation



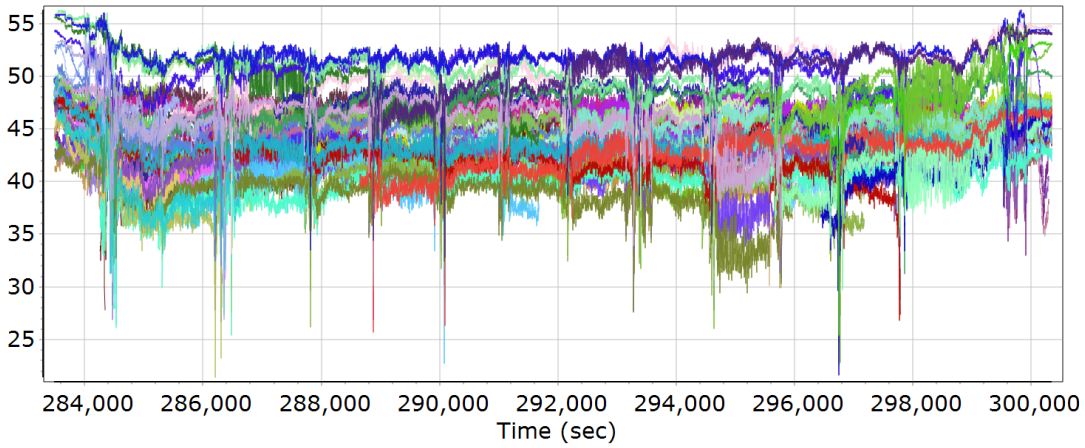
BEIDOU SNR



GALILEO Satellite Lock/Elevation



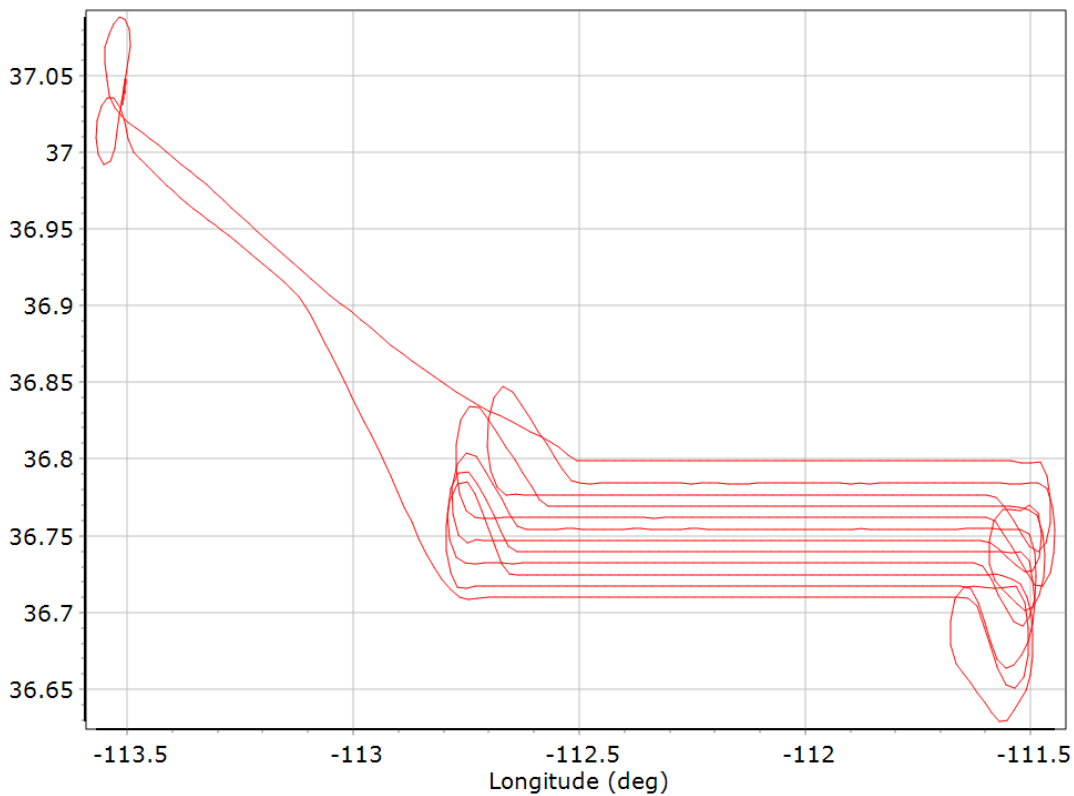
GALILEO SNR



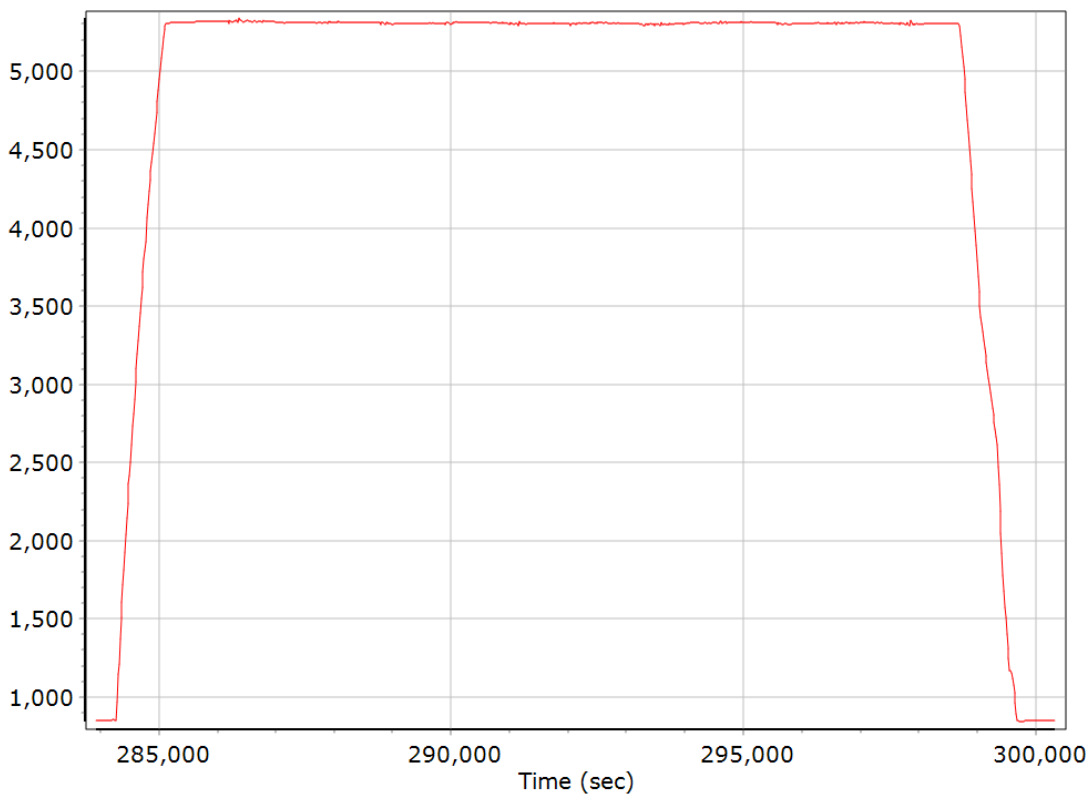
- GALILEO 02 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 03 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 05 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 08 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 09 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 10 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 11 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 12 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 14 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 24 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)

Smoothed Trajectory Information

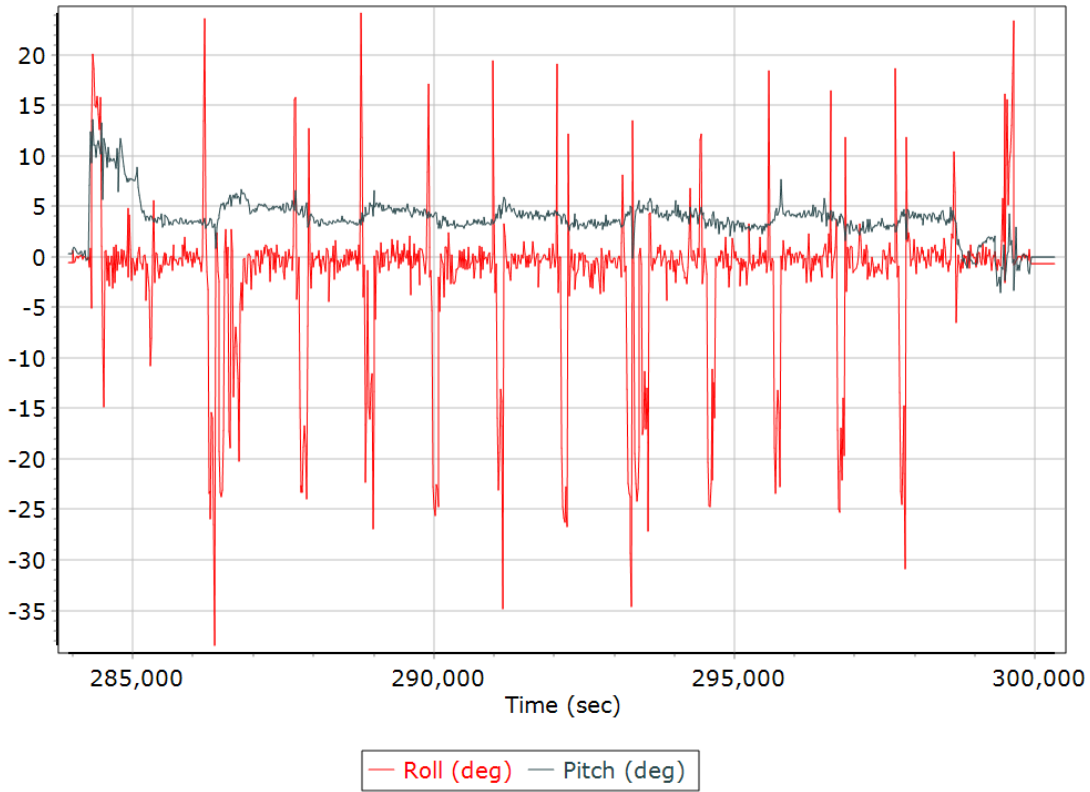
Top View



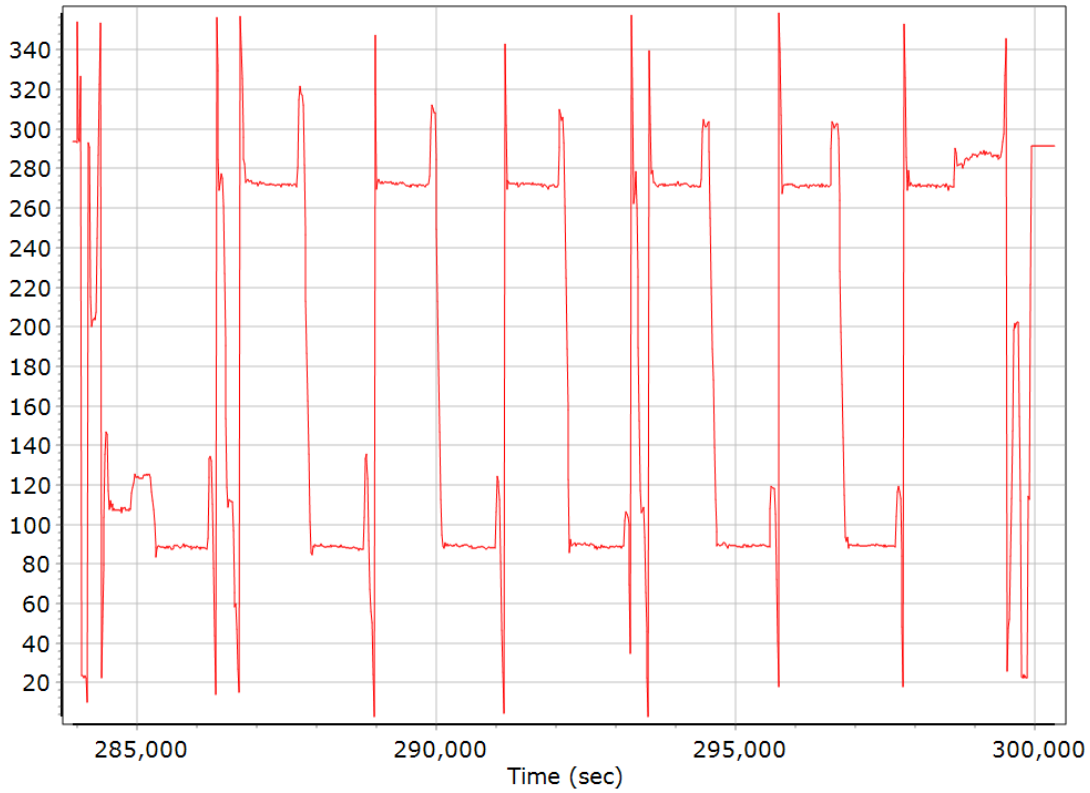
Altitude



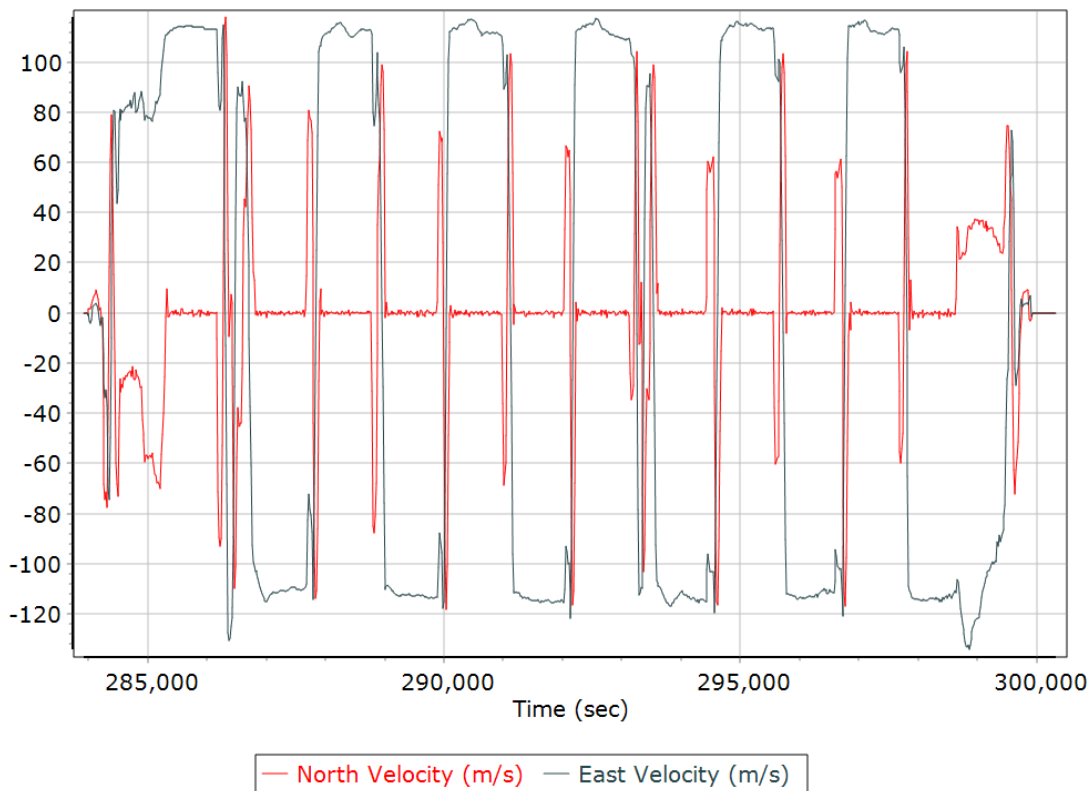
Roll/Pitch



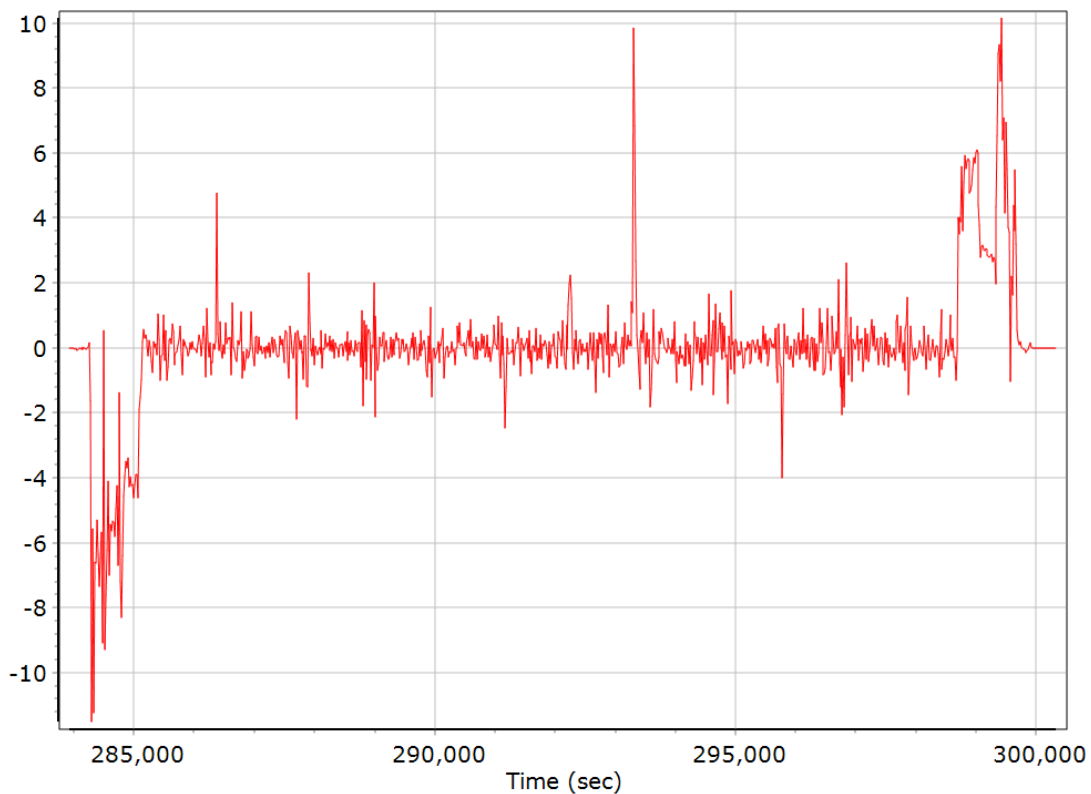
Heading



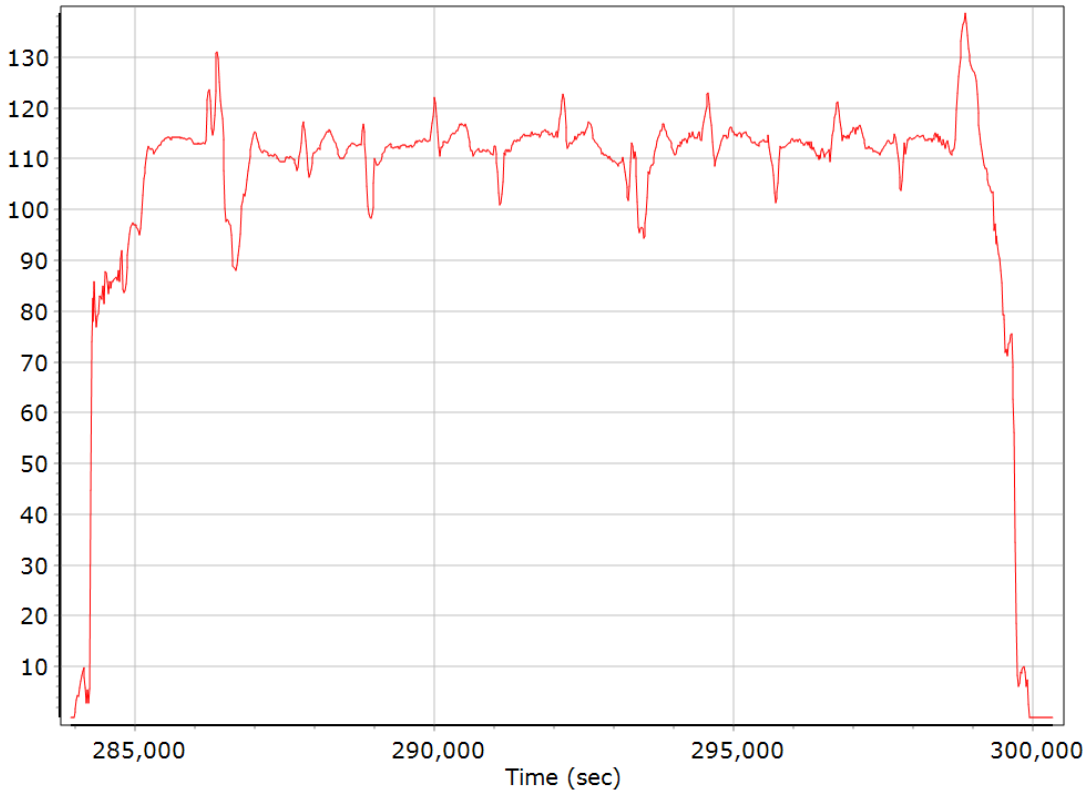
North/East Velocity



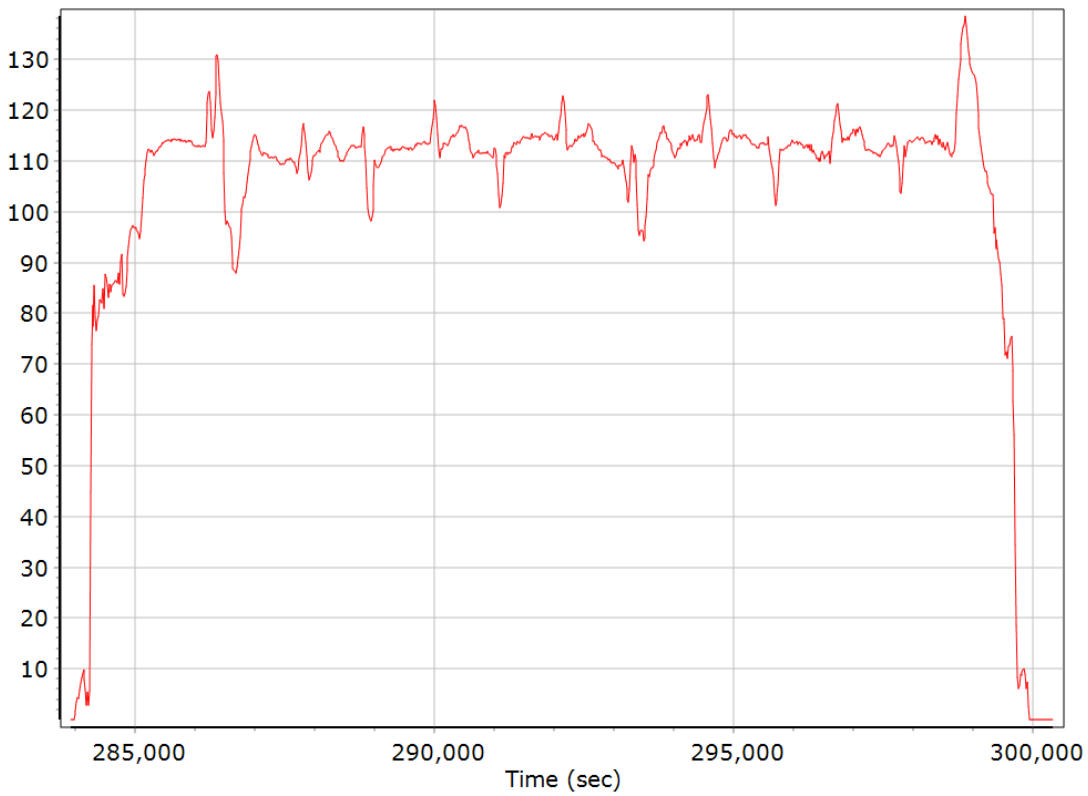
Down Velocity



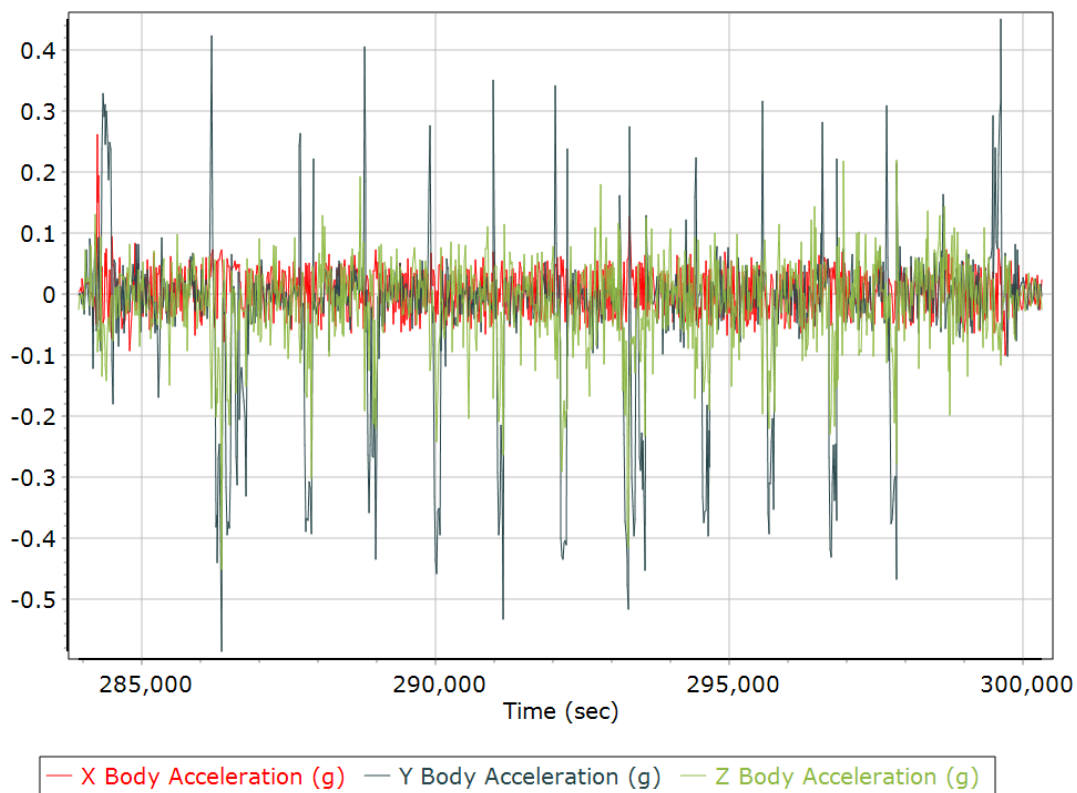
Total Speed



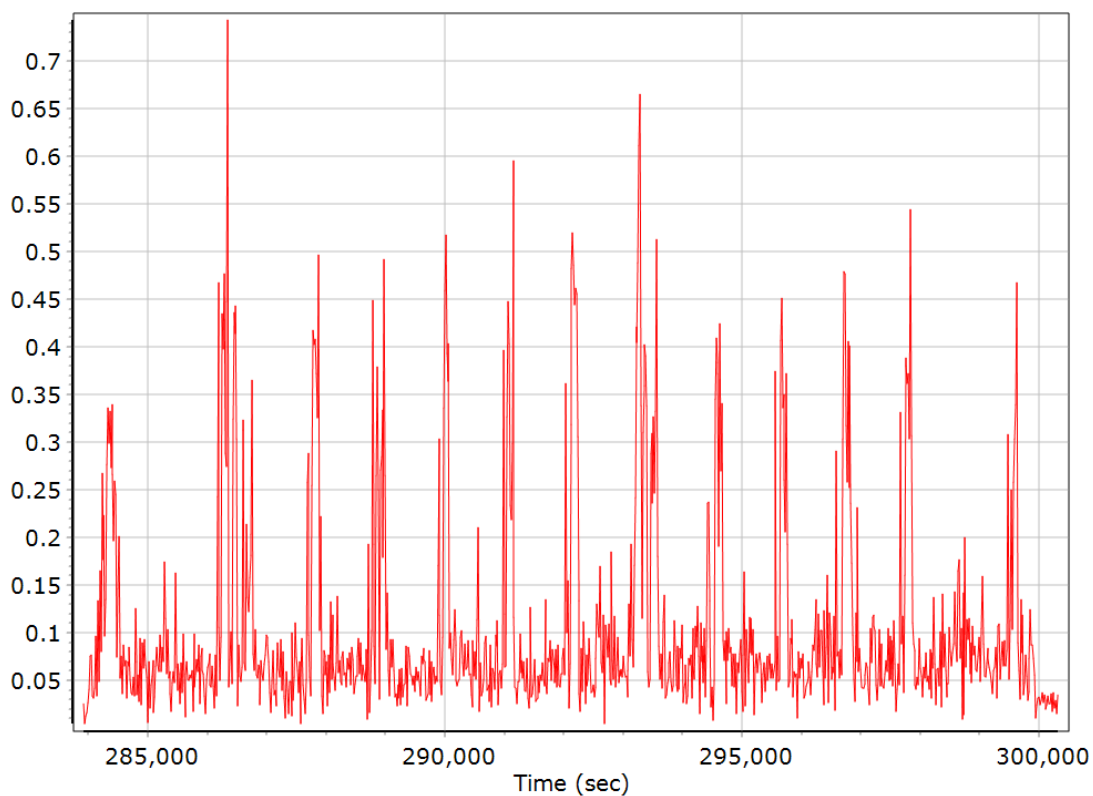
Ground Speed



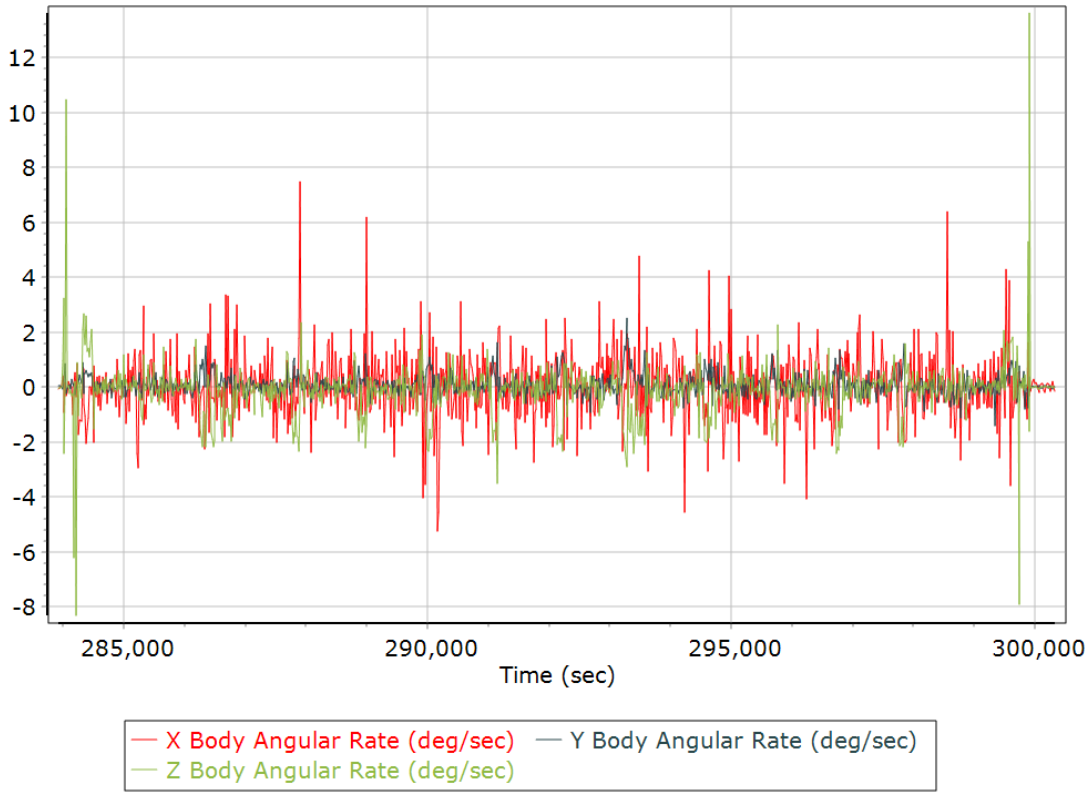
Body Acceleration



Total Body Acceleration

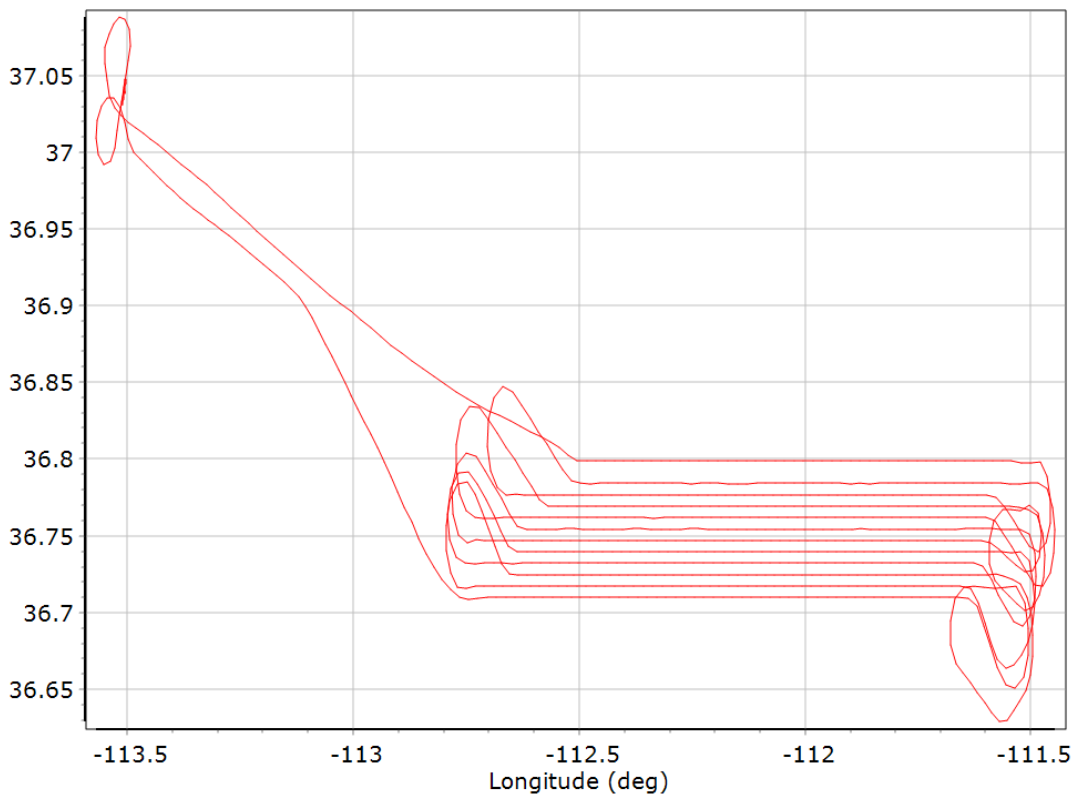


Body Angular Rate

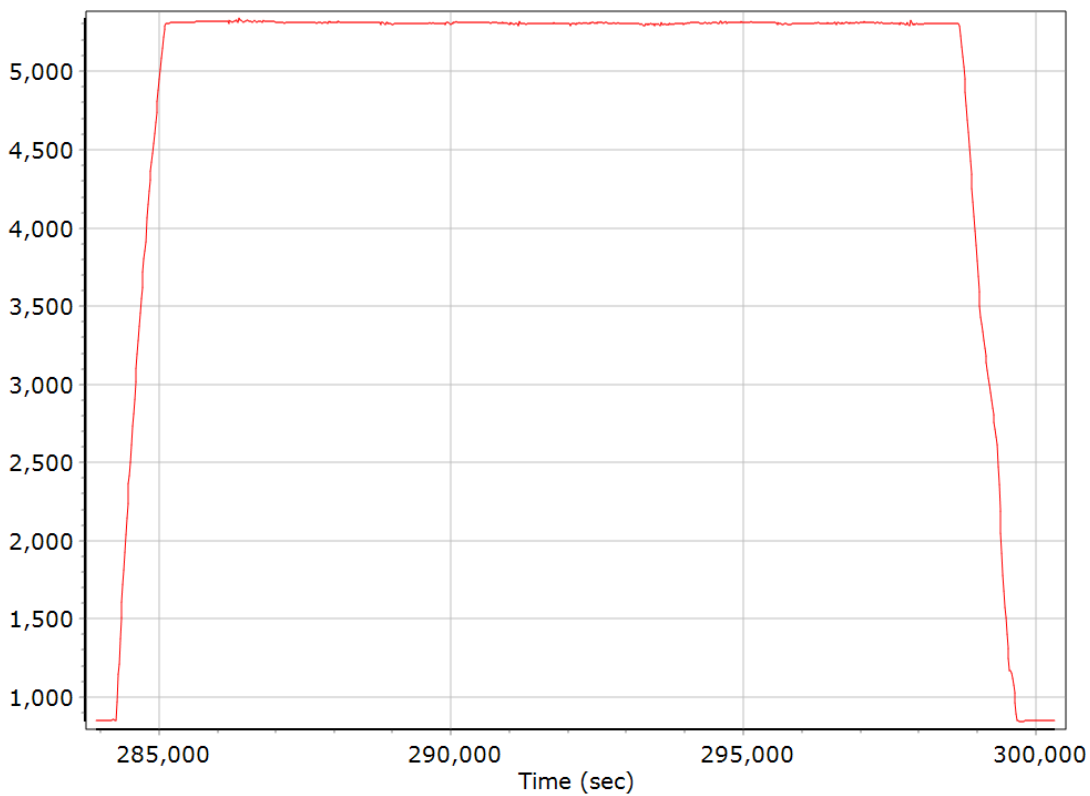


Forward Processed Trajectory Information

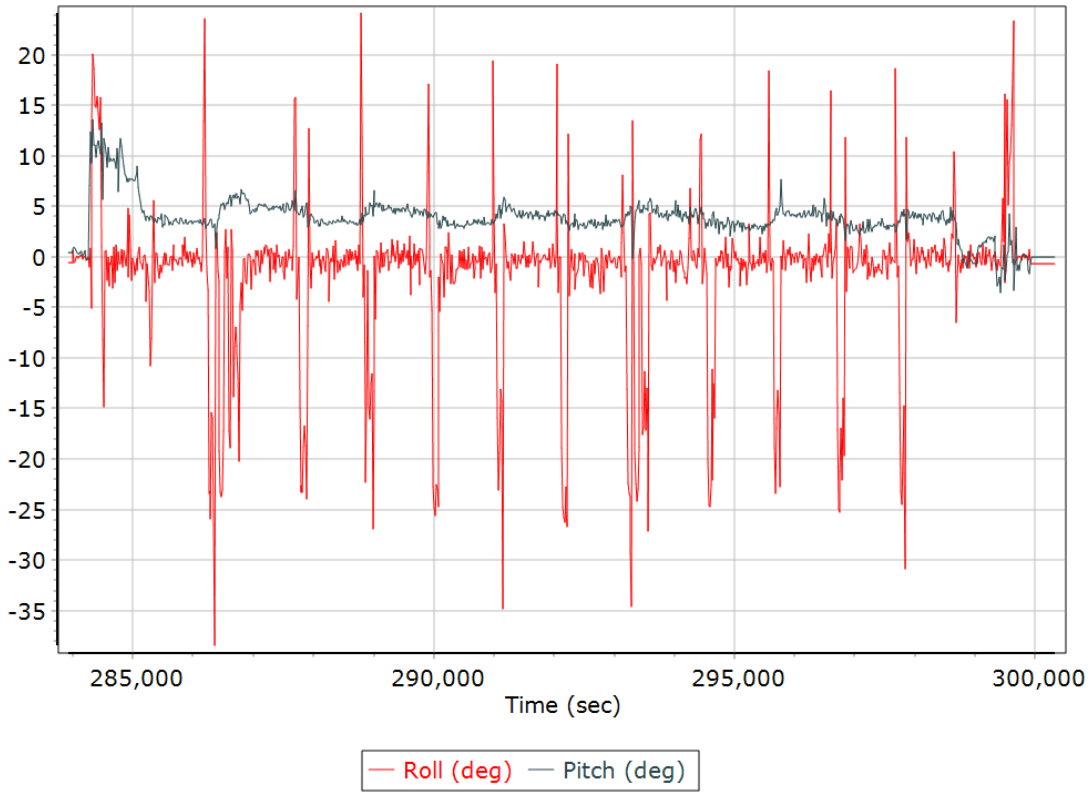
Top View



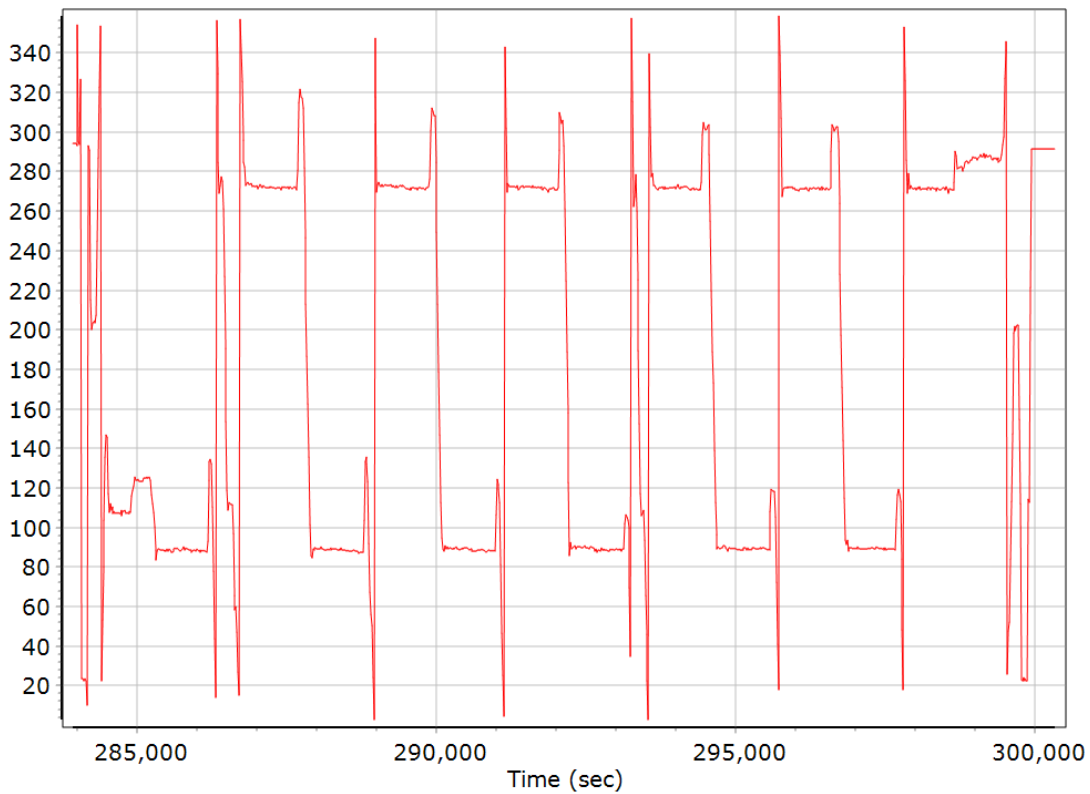
Altitude



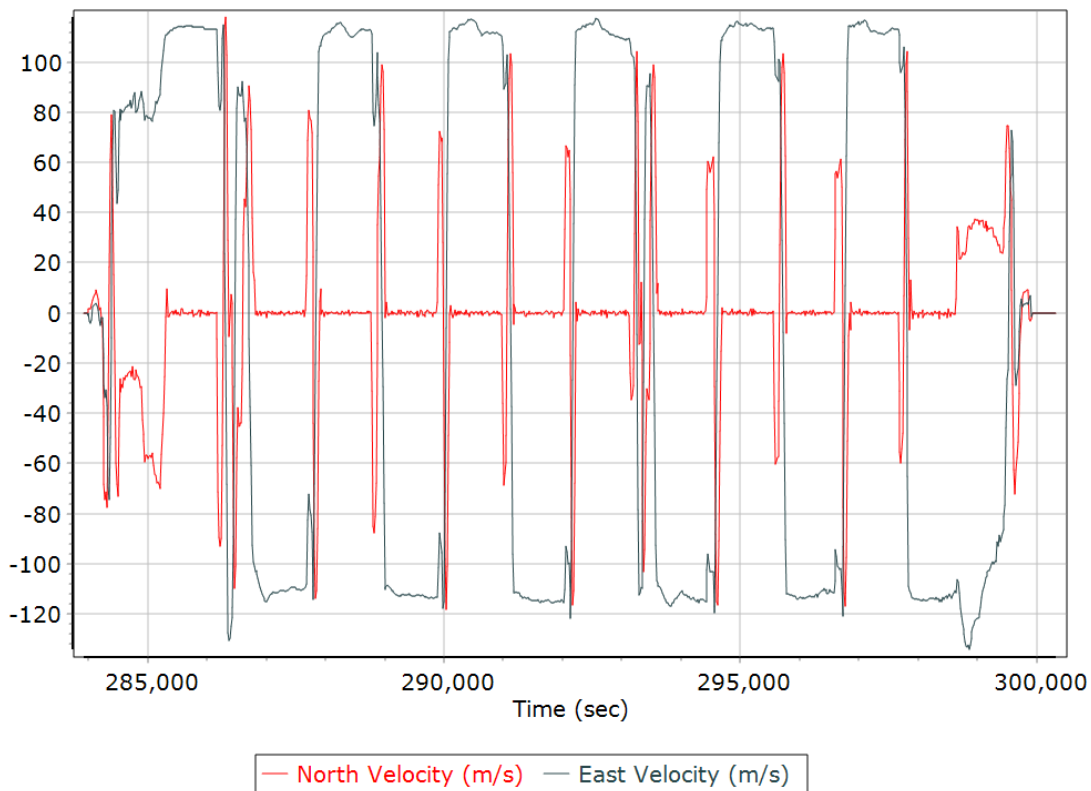
Roll/Pitch



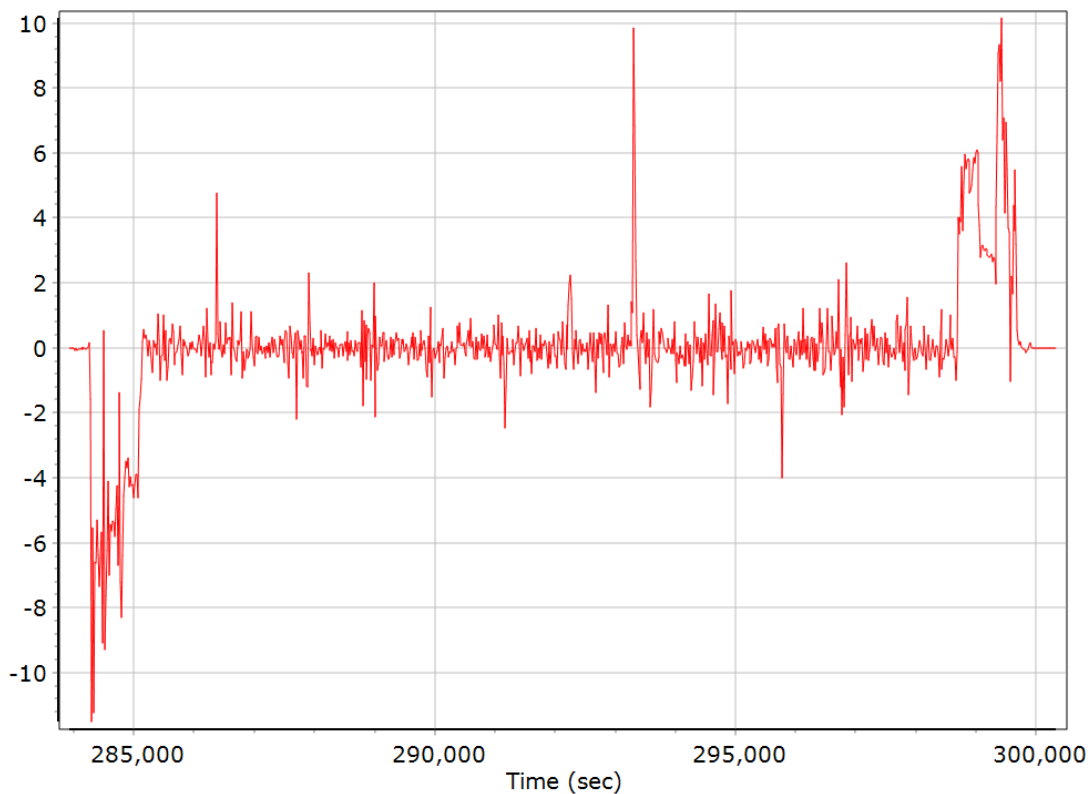
Heading



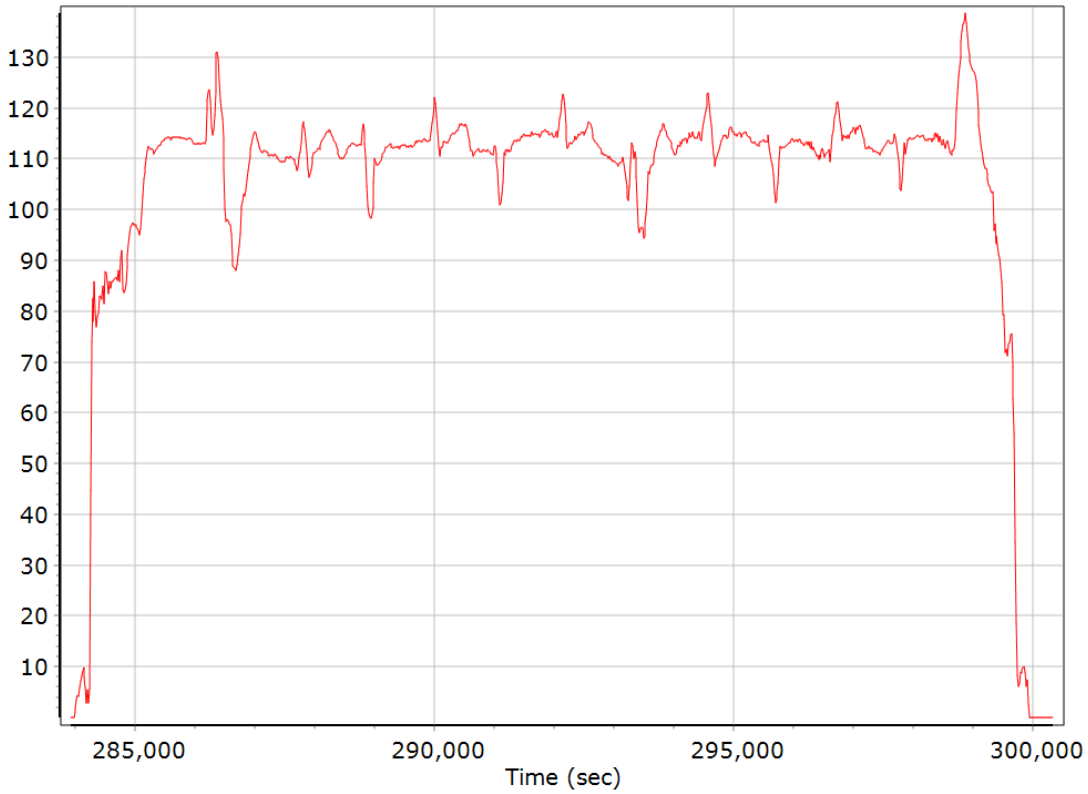
North/East Velocity



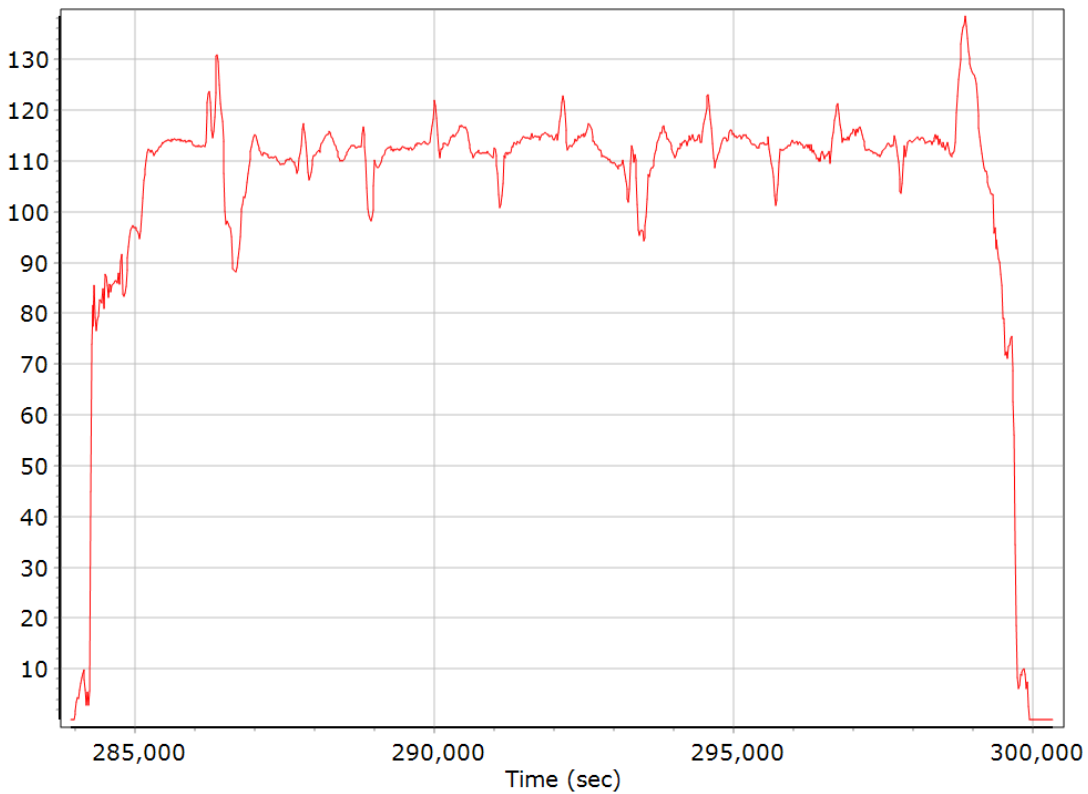
Down Velocity



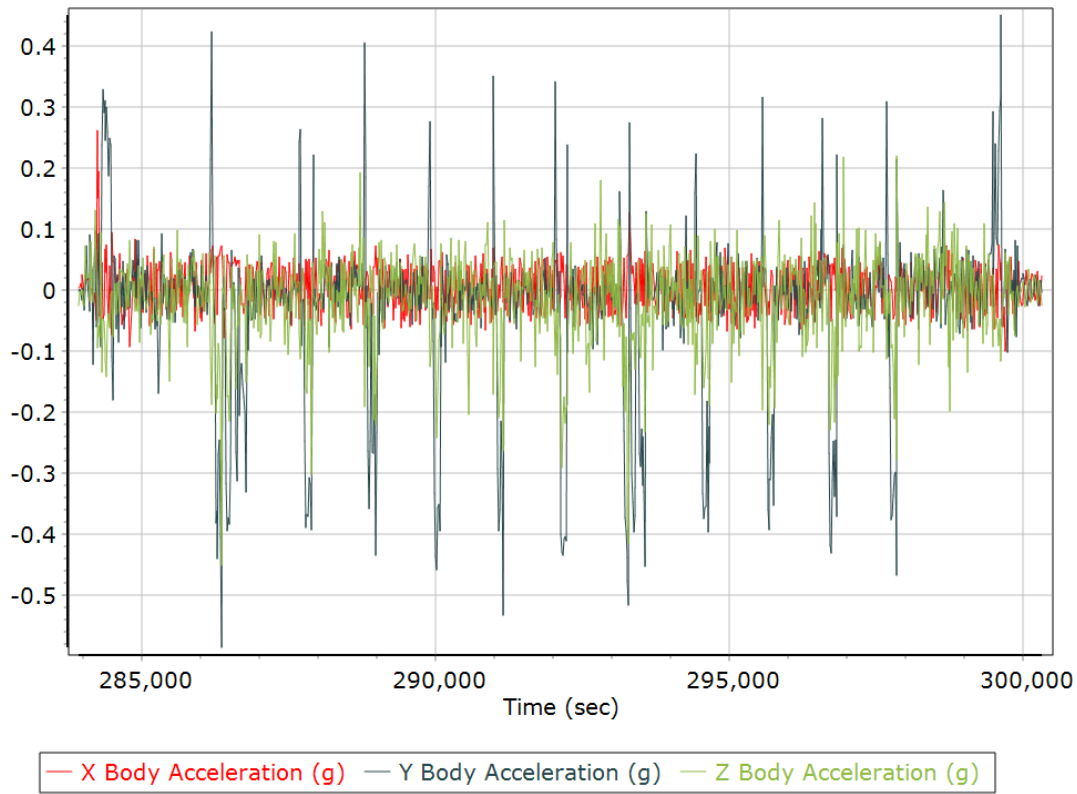
Total Speed



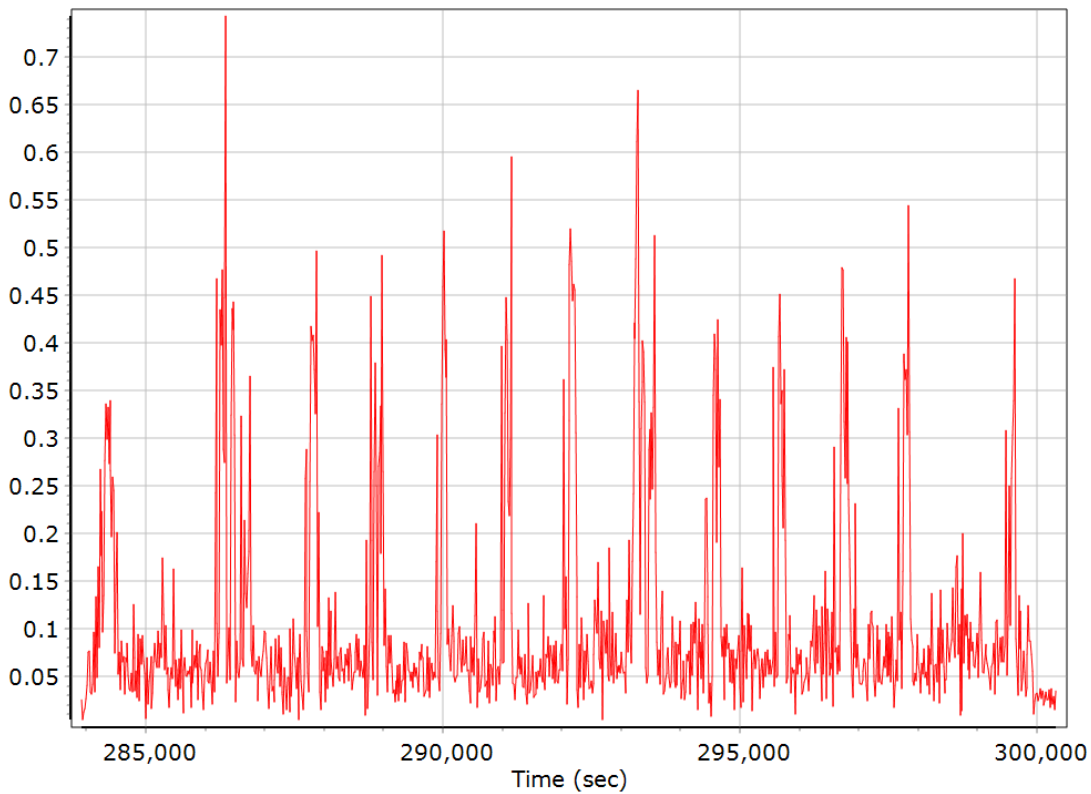
Ground Speed



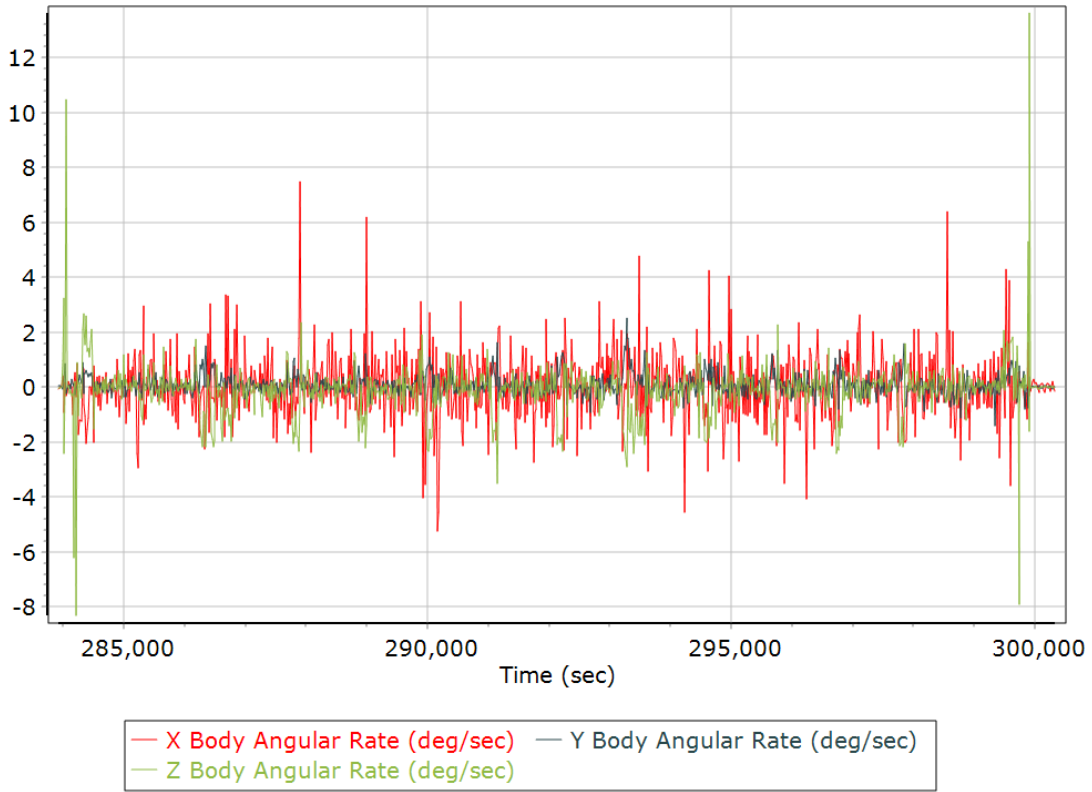
Body Acceleration



Total Body Acceleration



Body Angular Rate

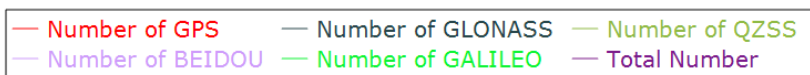
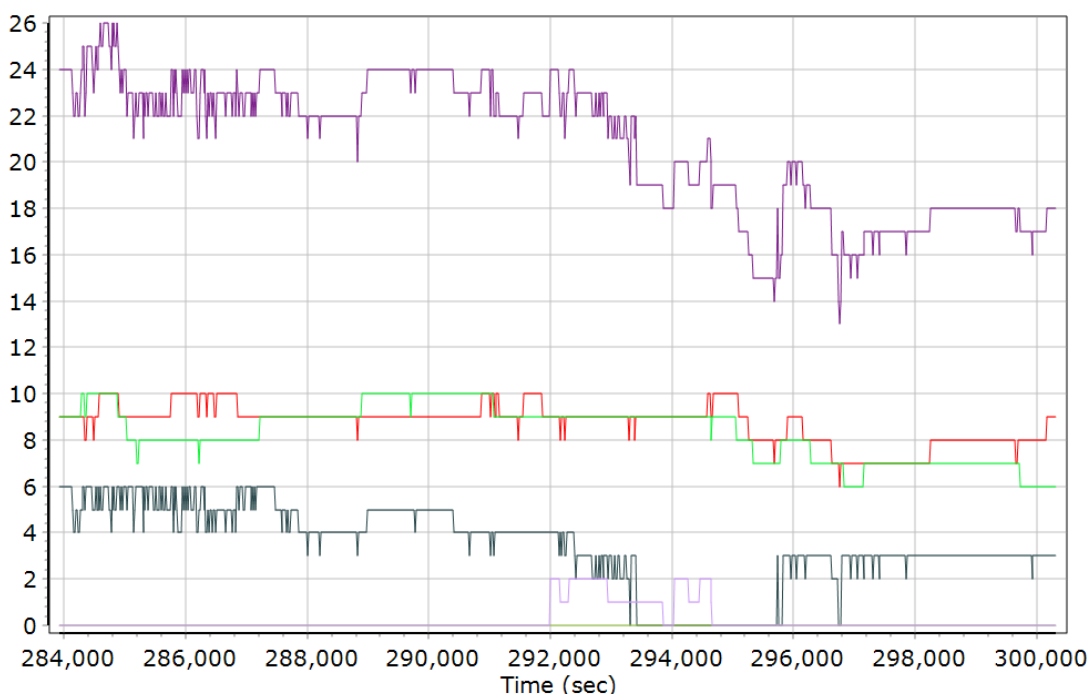


GNSS QC

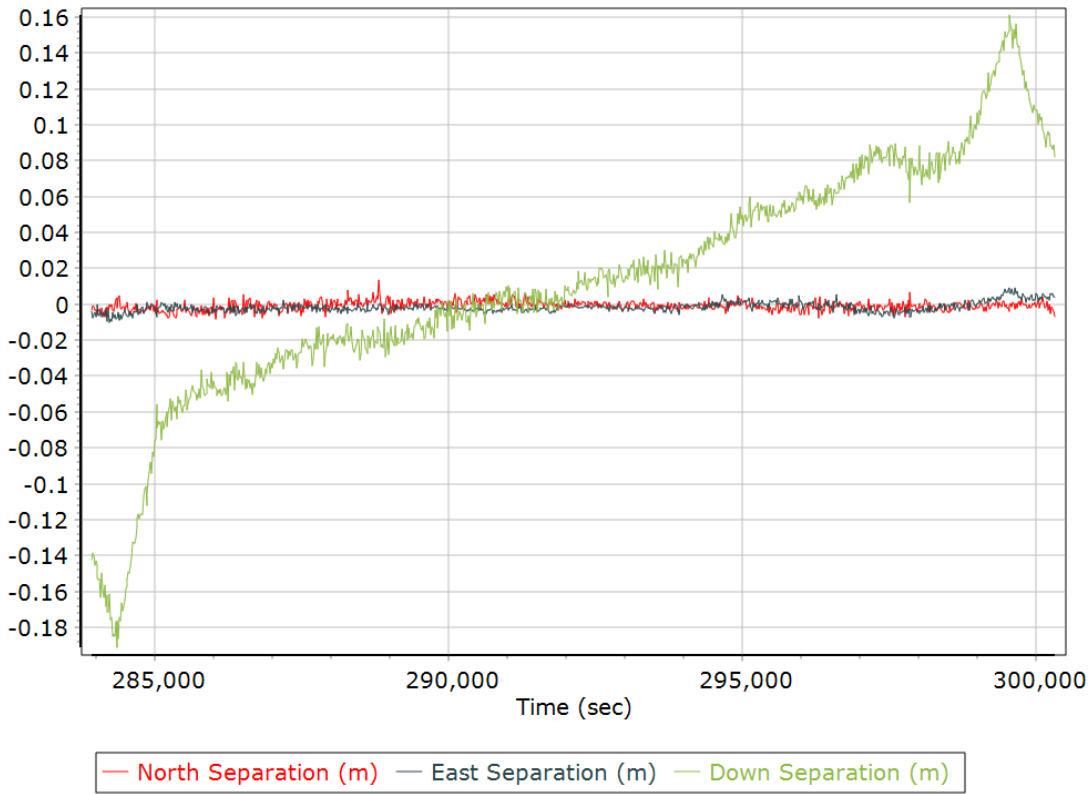
GNSS QC Statistics

Statistics	Min	Max	Mean
Baseline length (km)	0.00	0.00	
Number of GPS SV	6	10	9
Number of GLONASS SV	0	6	3
Number of QZSS SV	0	0	0
Number of BEIDOU SV	0	2	0
Number of GALILEO SV	2	10	8
Total number of SV	9	26	21
PDOP	0.99	1.89	1.17
QC Solution Gaps	0.00	0.00	
Solution Type	Fixed	Float	No solution
Epoch (sec)	16834.00	0.00	0.00
Percentage	100.00	0.00	0.00

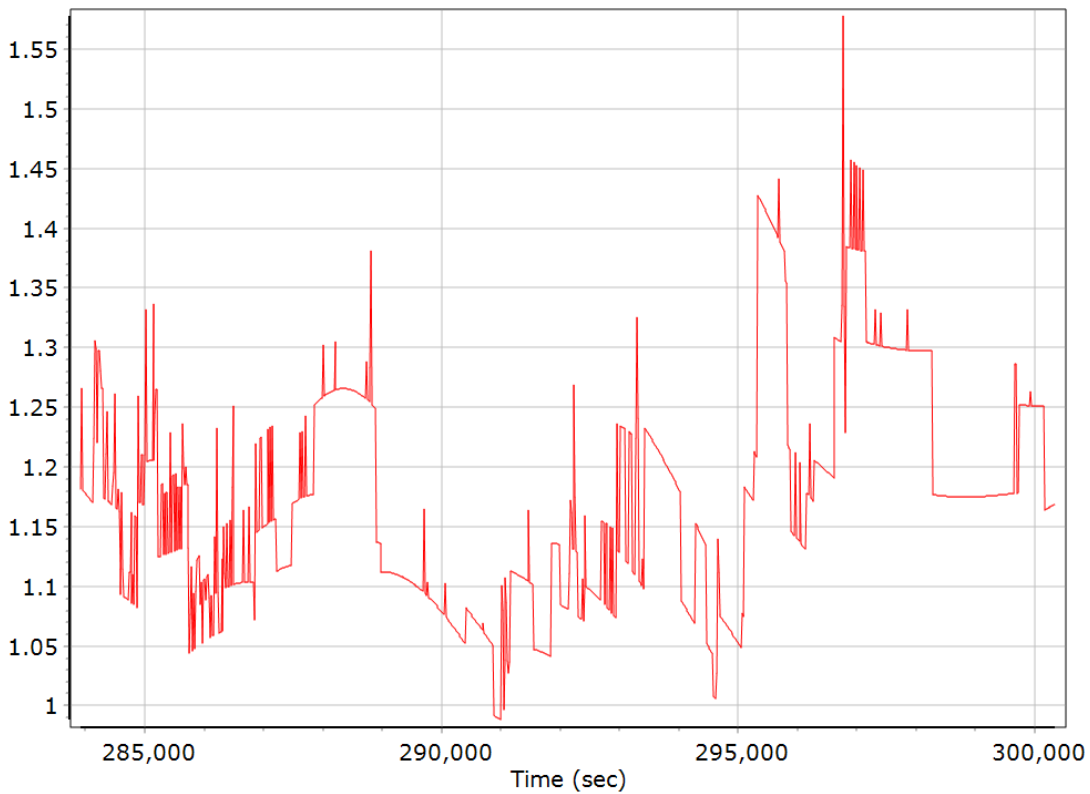
Num SVs in solution



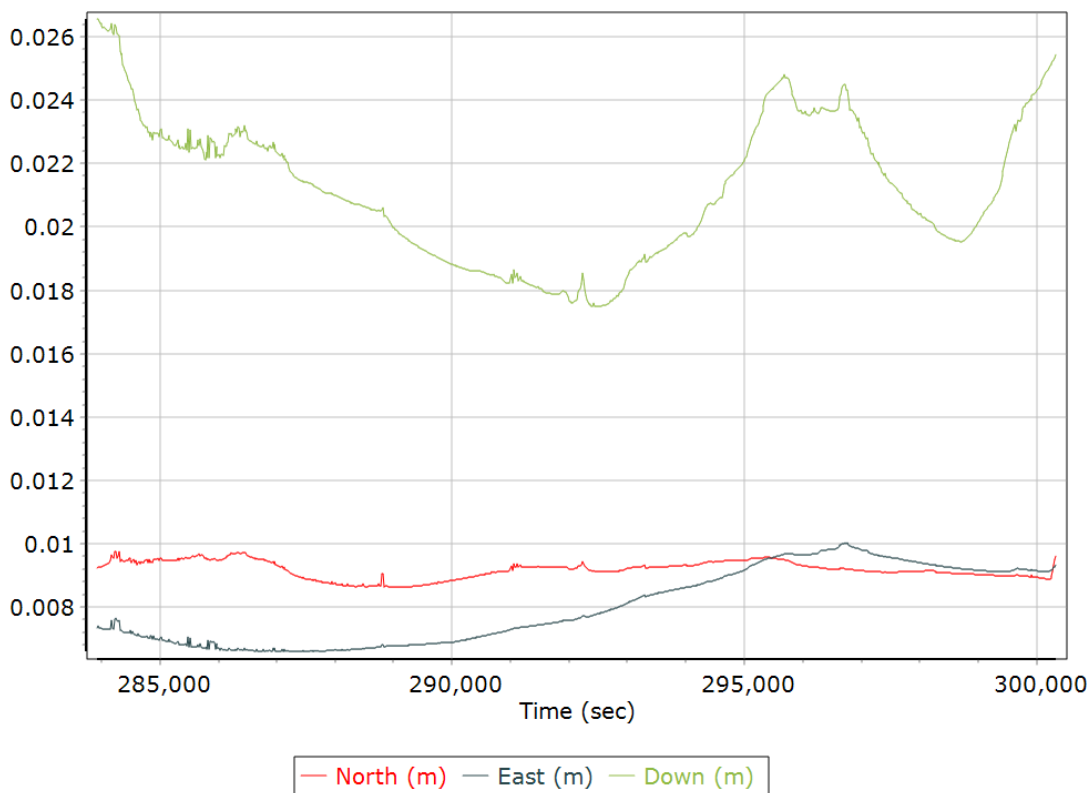
Forward/Reverse Separation



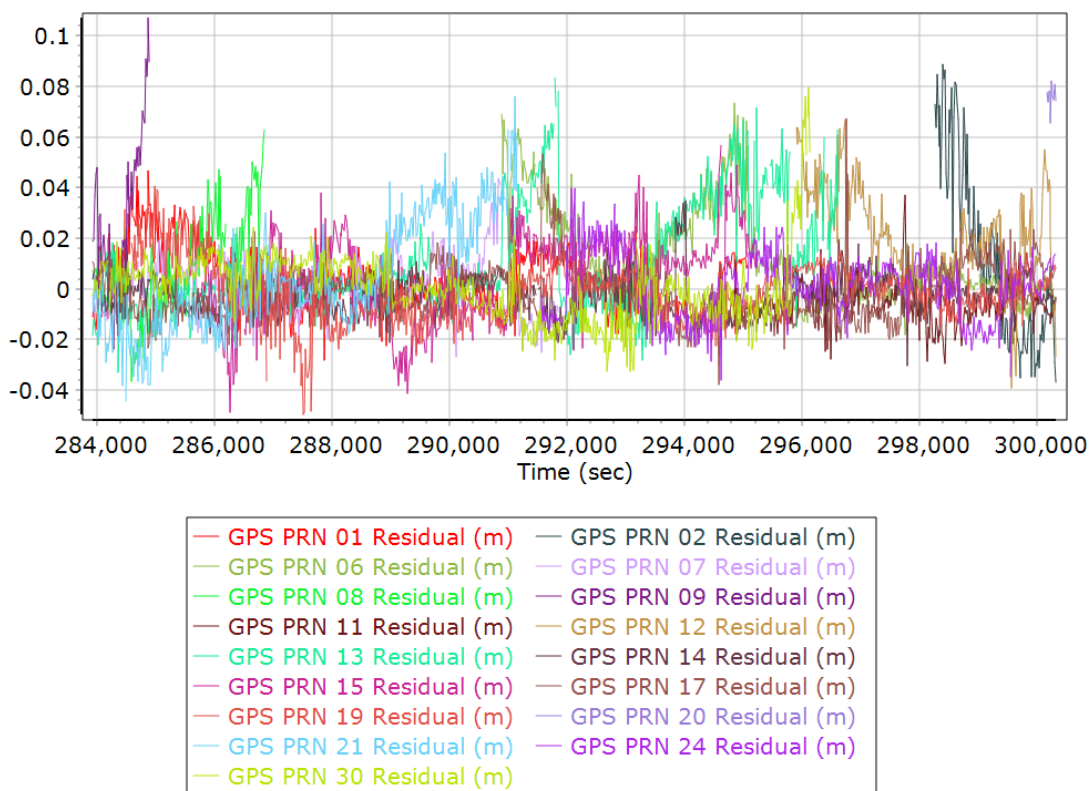
PDOP



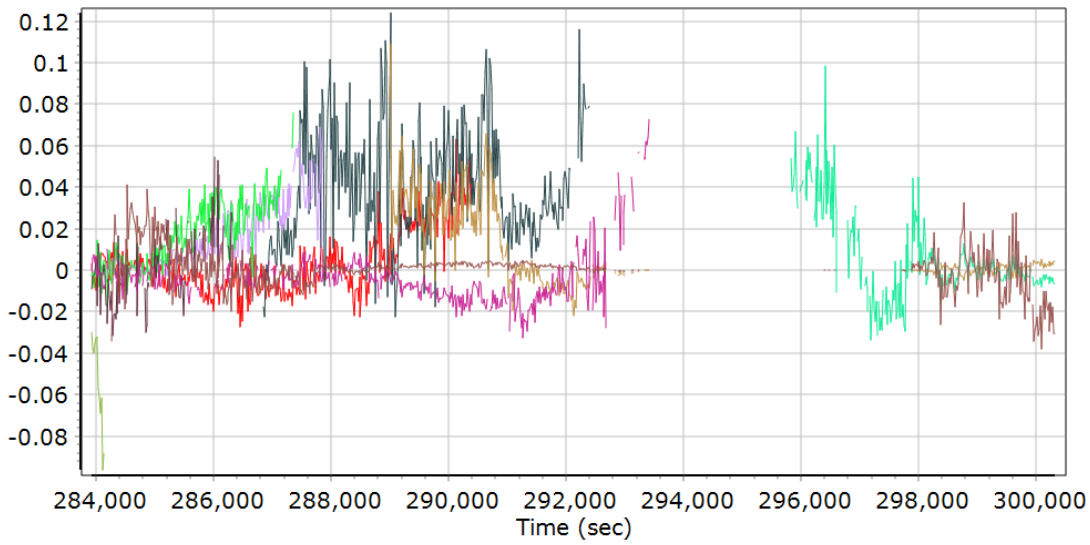
Estimated Position Accuracy



GPS Residuals

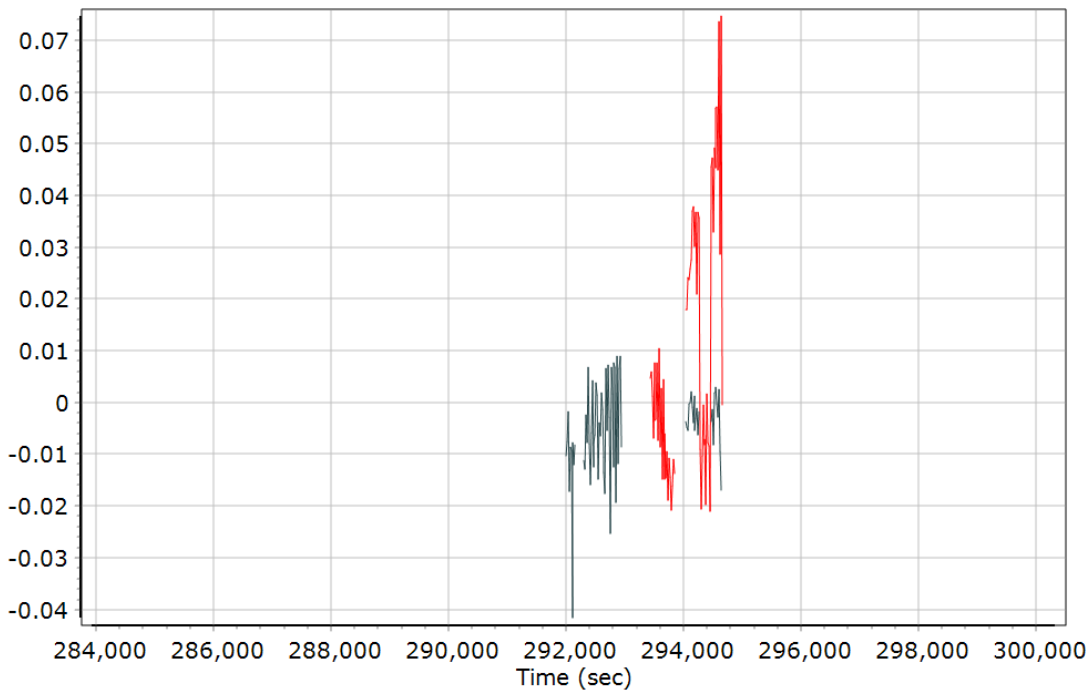


GLONASS Residuals



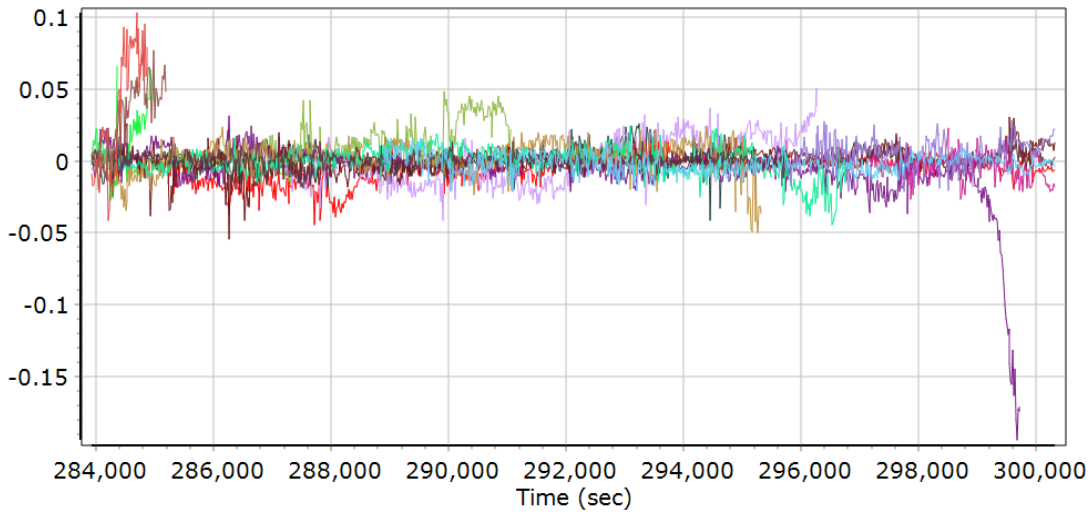
- | | |
|-------------------------|-------------------------|
| GLONASS 01 Residual (m) | GLONASS 02 Residual (m) |
| GLONASS 07 Residual (m) | GLONASS 08 Residual (m) |
| GLONASS 09 Residual (m) | GLONASS 10 Residual (m) |
| GLONASS 11 Residual (m) | GLONASS 12 Residual (m) |
| GLONASS 13 Residual (m) | GLONASS 19 Residual (m) |
| GLONASS 20 Residual (m) | GLONASS 21 Residual (m) |
| GLONASS 23 Residual (m) | |

BEIDOU Residuals



- | | | |
|------------------------|------------------------|------------------------|
| BEIDOU 11 Residual (m) | BEIDOU 12 Residual (m) | BEIDOU 23 Residual (m) |
| BEIDOU 25 Residual (m) | BEIDOU 28 Residual (m) | |

GALILEO Residuals



— GALILEO 02 Residual (m)	— GALILEO 03 Residual (m)
— GALILEO 05 Residual (m)	— GALILEO 08 Residual (m)
— GALILEO 09 Residual (m)	— GALILEO 10 Residual (m)
— GALILEO 11 Residual (m)	— GALILEO 12 Residual (m)
— GALILEO 24 Residual (m)	— GALILEO 25 Residual (m)
— GALILEO 30 Residual (m)	— GALILEO 31 Residual (m)
— GALILEO 33 Residual (m)	— GALILEO 34 Residual (m)
— GALILEO 36 Residual (m)	

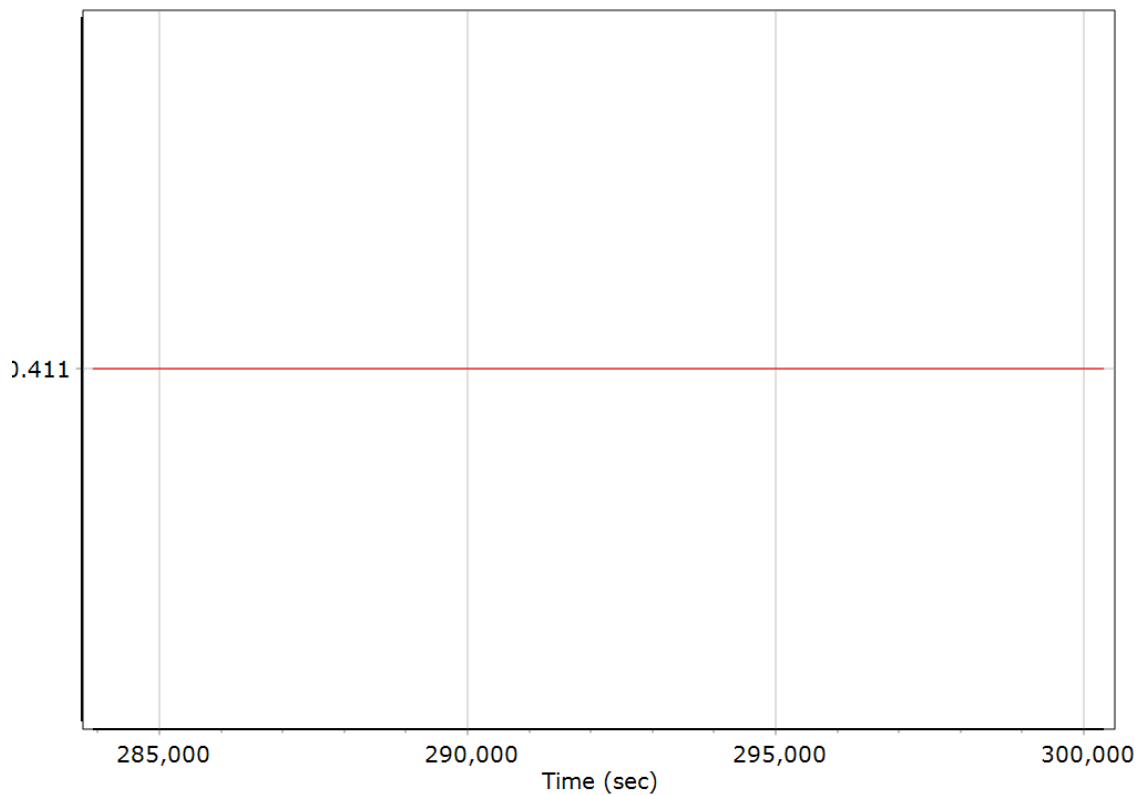
GNSS-Inertial Processor Configuration

Processing mode	IN-Fusion PP-RTX		
Stabilized mount	False		
Processing start time	283464.000 (8/31/2022 6:44:24 AM)		
Processing end time	300336.000 (8/31/2022 11:25:36 AM)		
Initial attitude source	Real-Time VNAV/RNAV Attitude		
IMU Sensor Context	Processing with Onboard IMU		
Reference to IMU lever arm (m)	0.000	0.000	0.000
Reference to IMU mounting angles (deg)	0.000	0.000	0.000
Reference to Primary GNSS lever arm (m)	-0.411	-0.283	-1.282
Reference 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

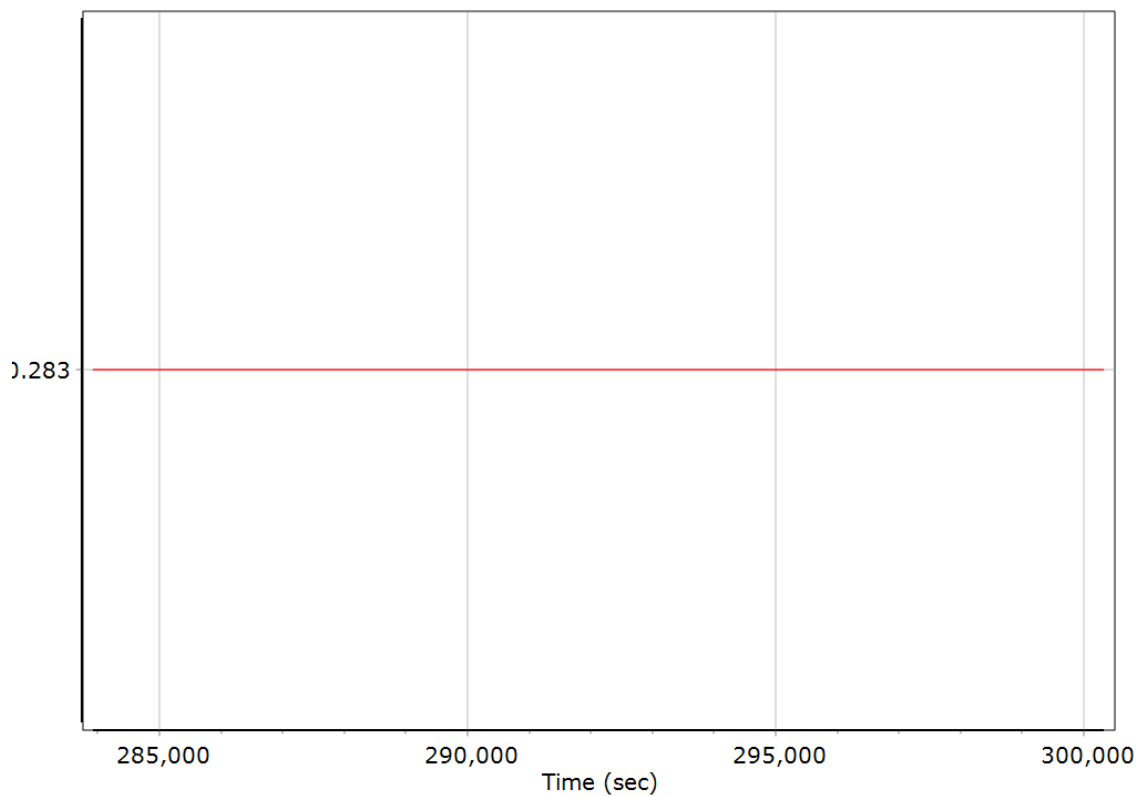
Calibrated Installation Parameters

Reference-Primary GNSS Lever Arm (m)

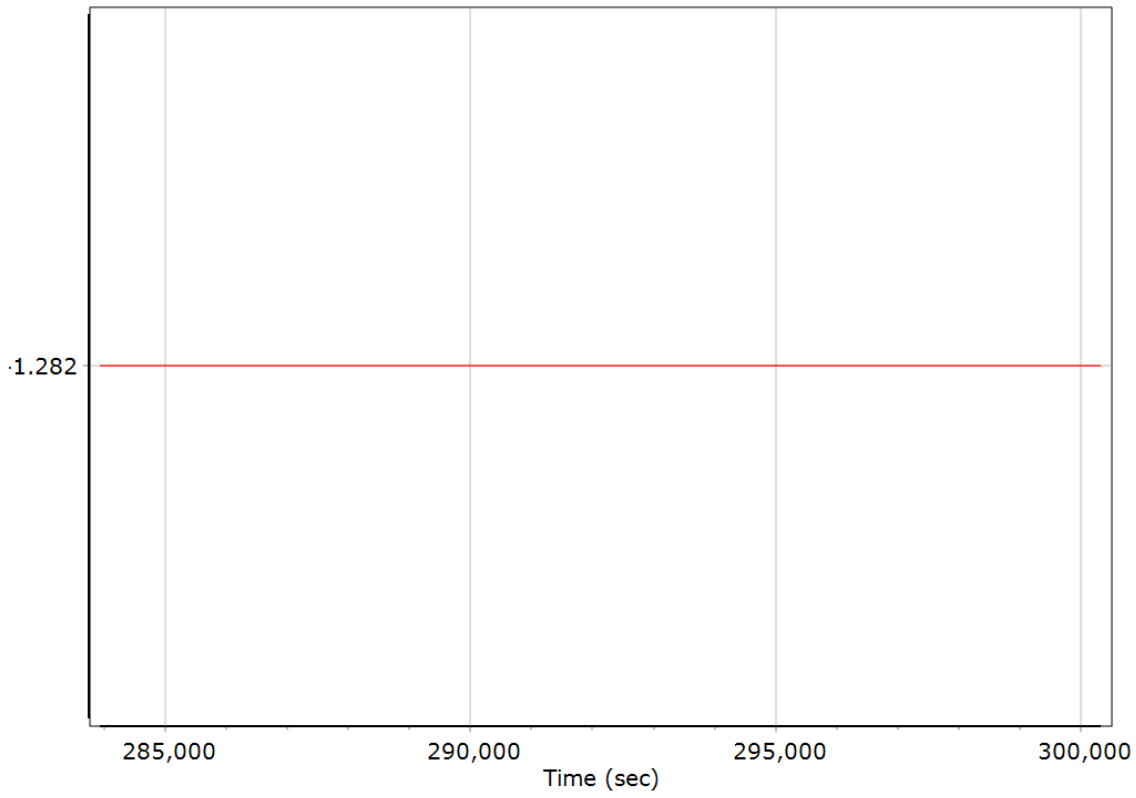
X Reference-Primary GNSS Lever Arm (m)



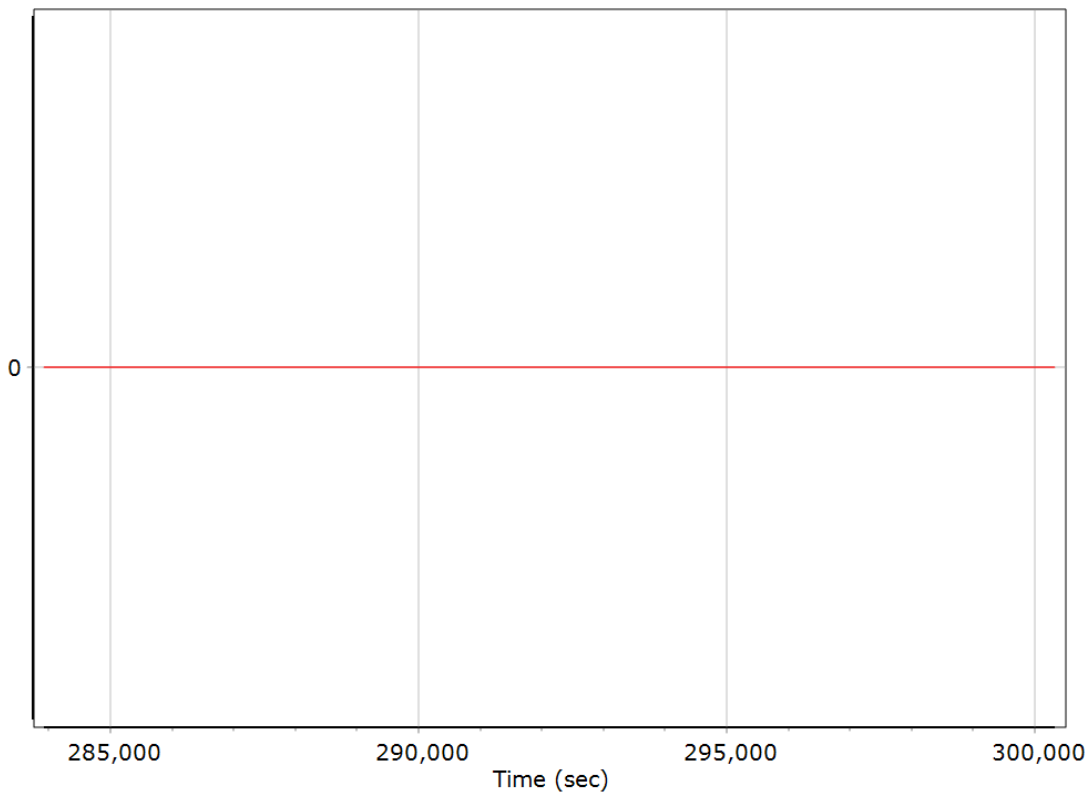
Y Reference-Primary GNSS Lever Arm (m)



Z Reference-Primary GNSS Lever Arm (m)



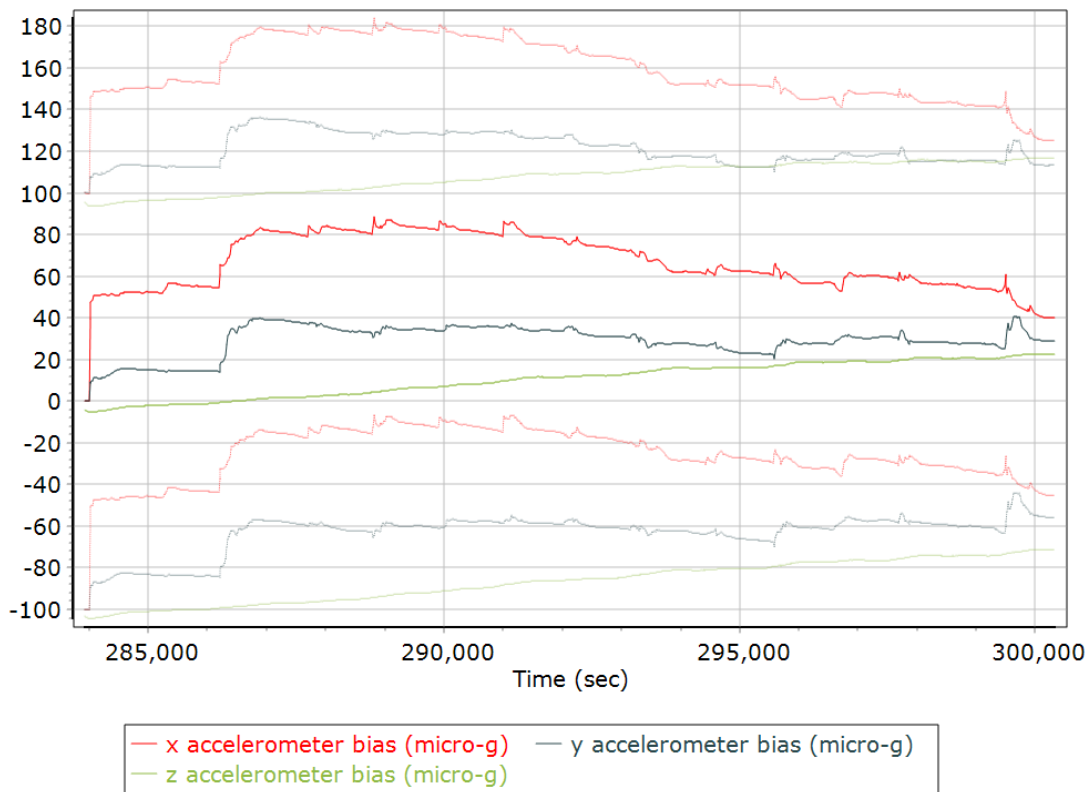
Reference-Primary GNSS Lever Arm Figure of Merit



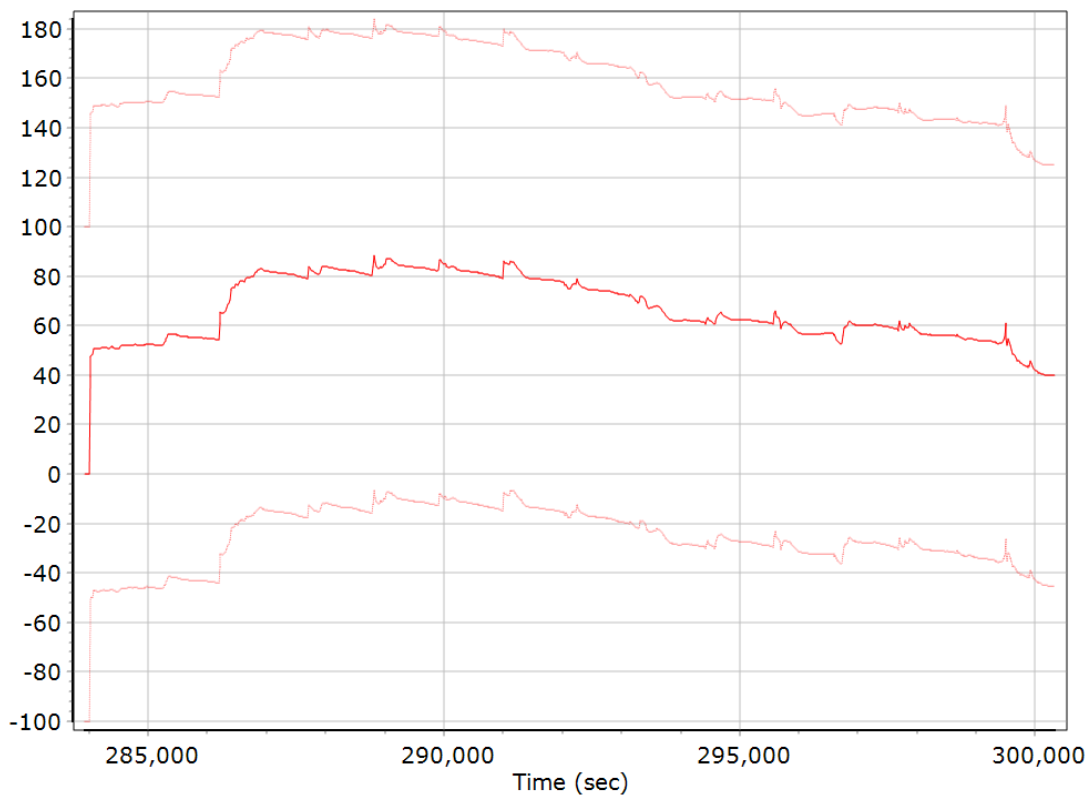
IN-Fusion QC

Forward Processed Estimated Errors, Reference Frame

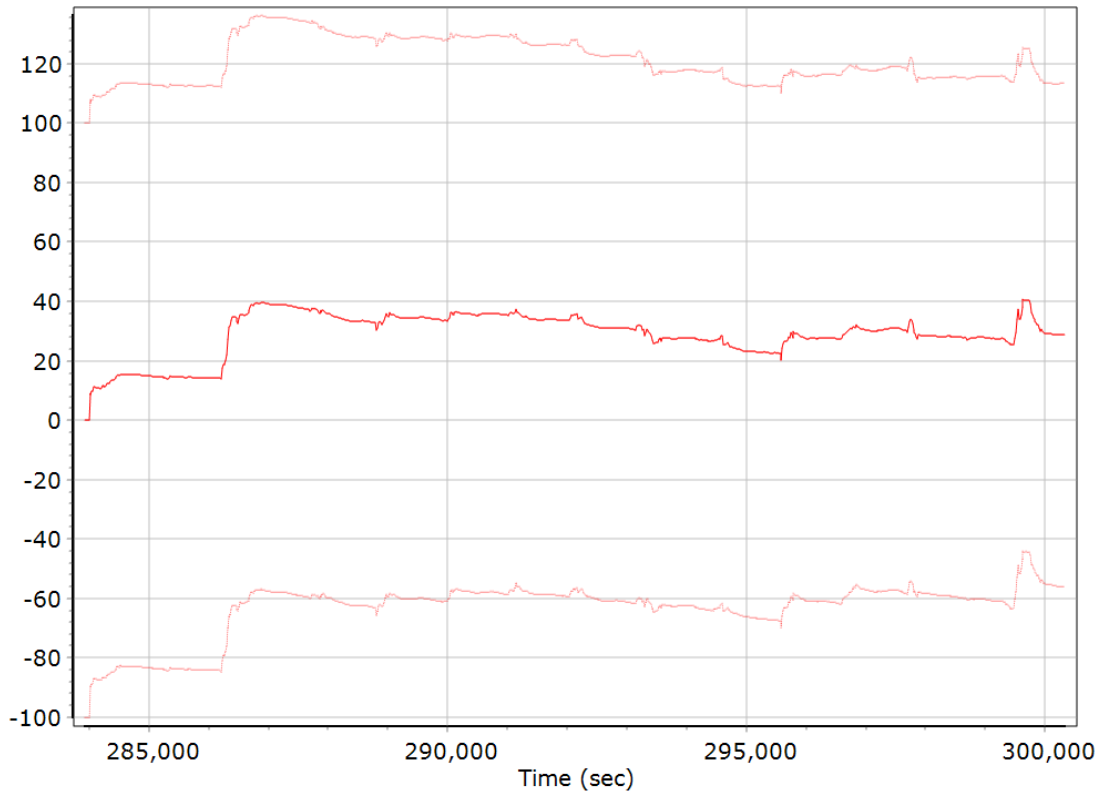
Accelerometer Bias (micro-g)



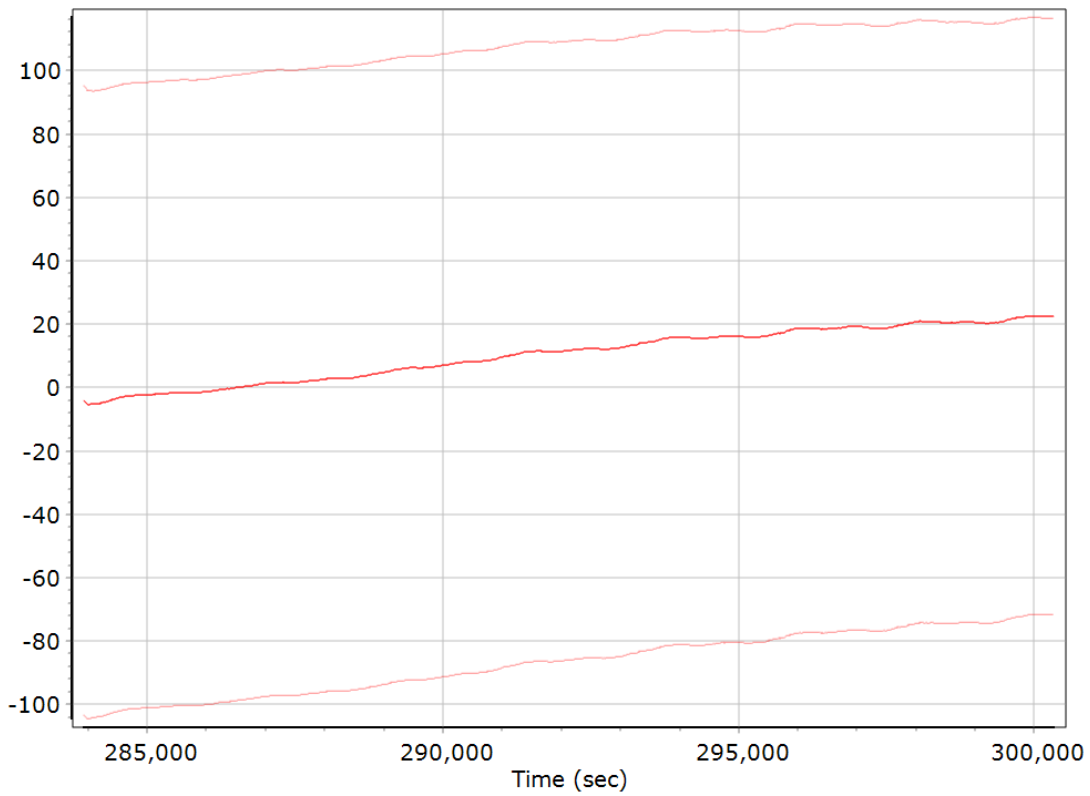
X Accelerometer Bias (micro-g)



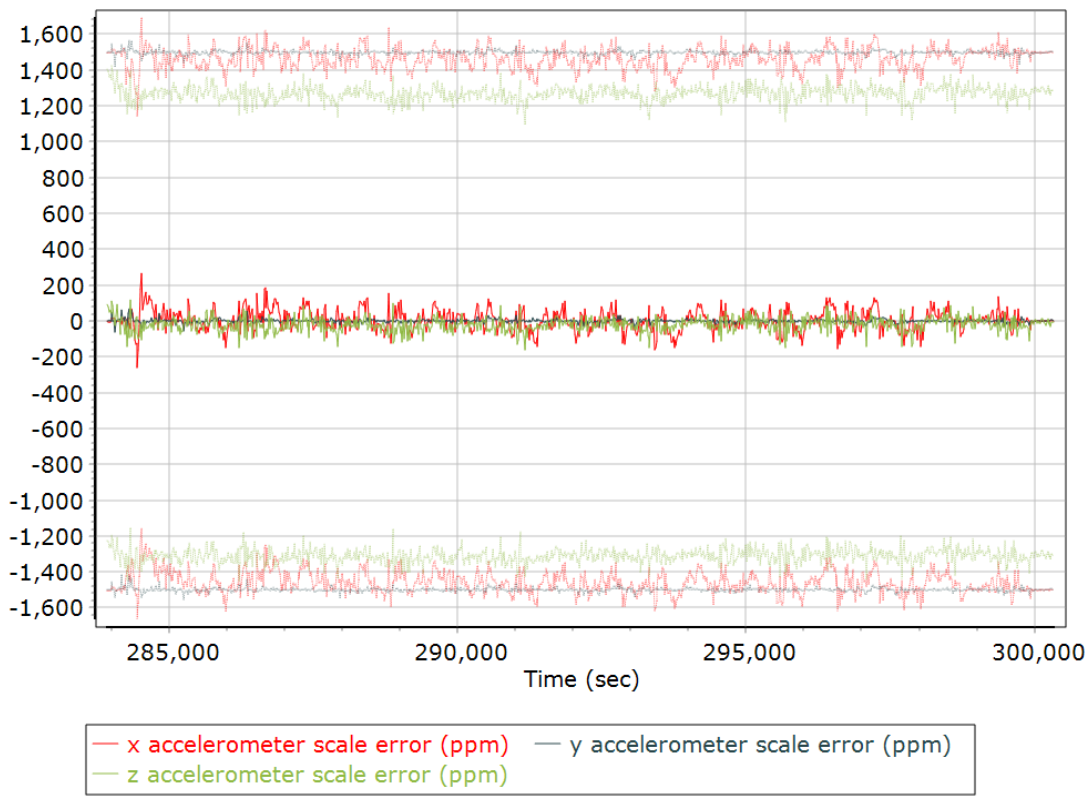
Y Accelerometer Bias (micro-g)



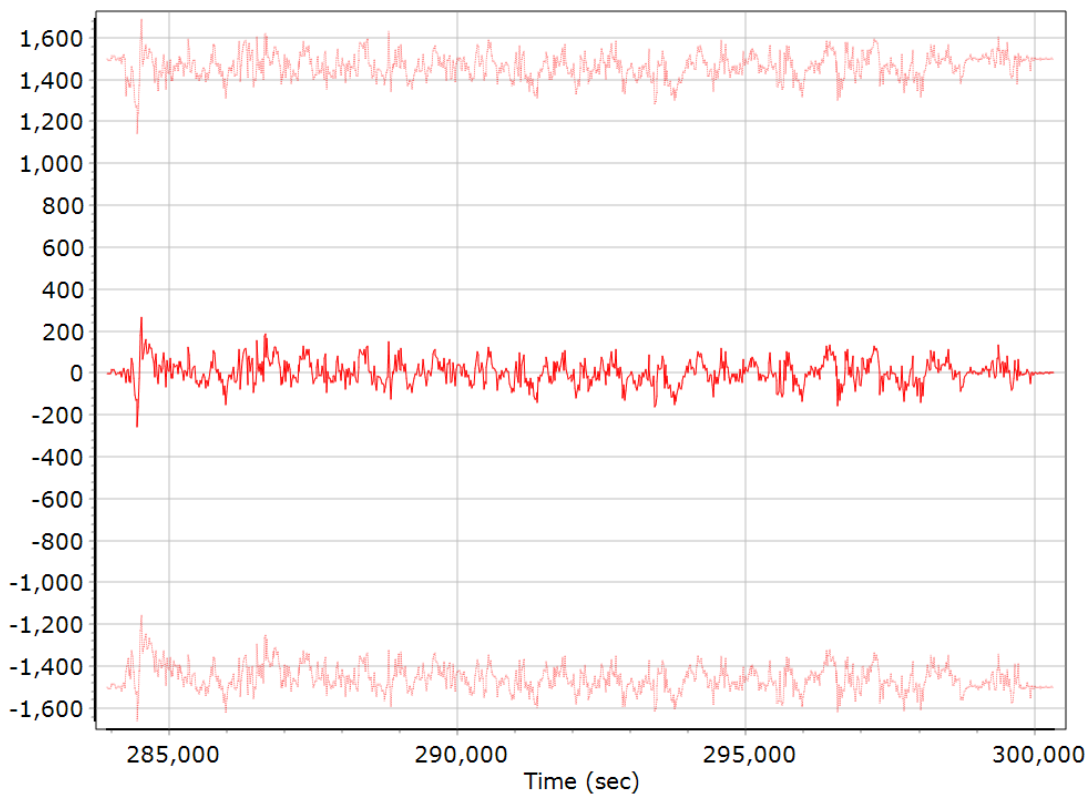
Z Accelerometer Bias (micro-g)



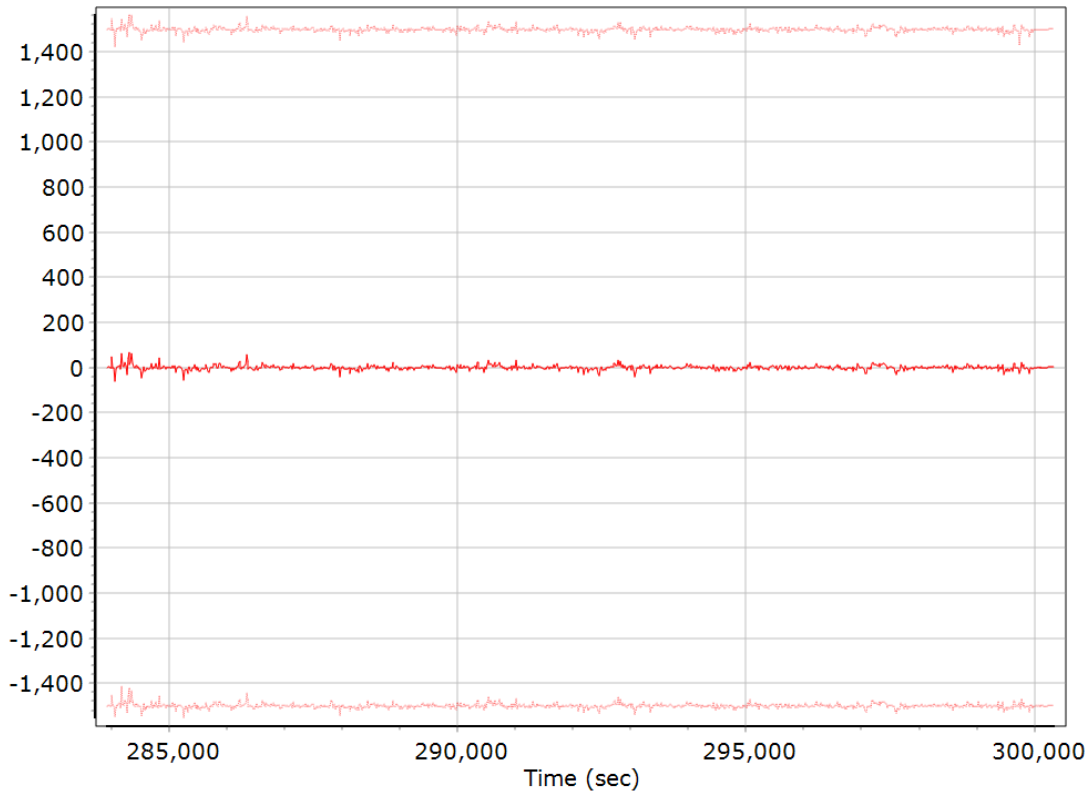
Accelerometer Scale Error (ppm)



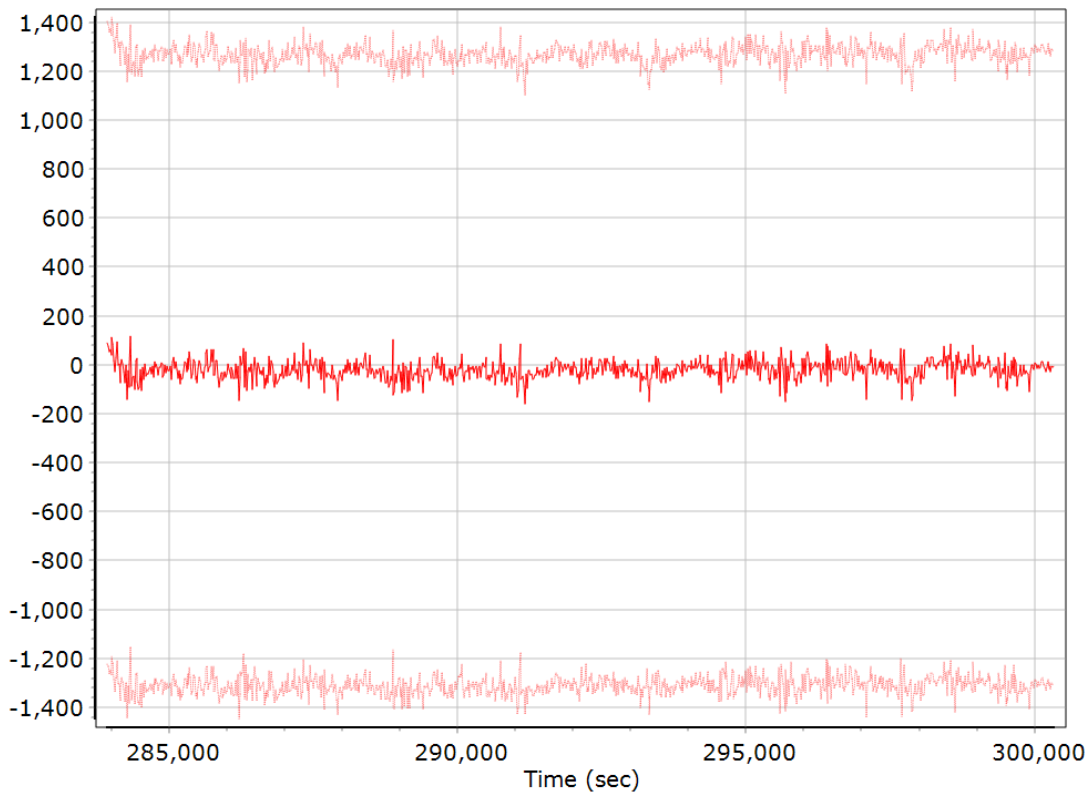
X Accelerometer Scale Error (ppm)



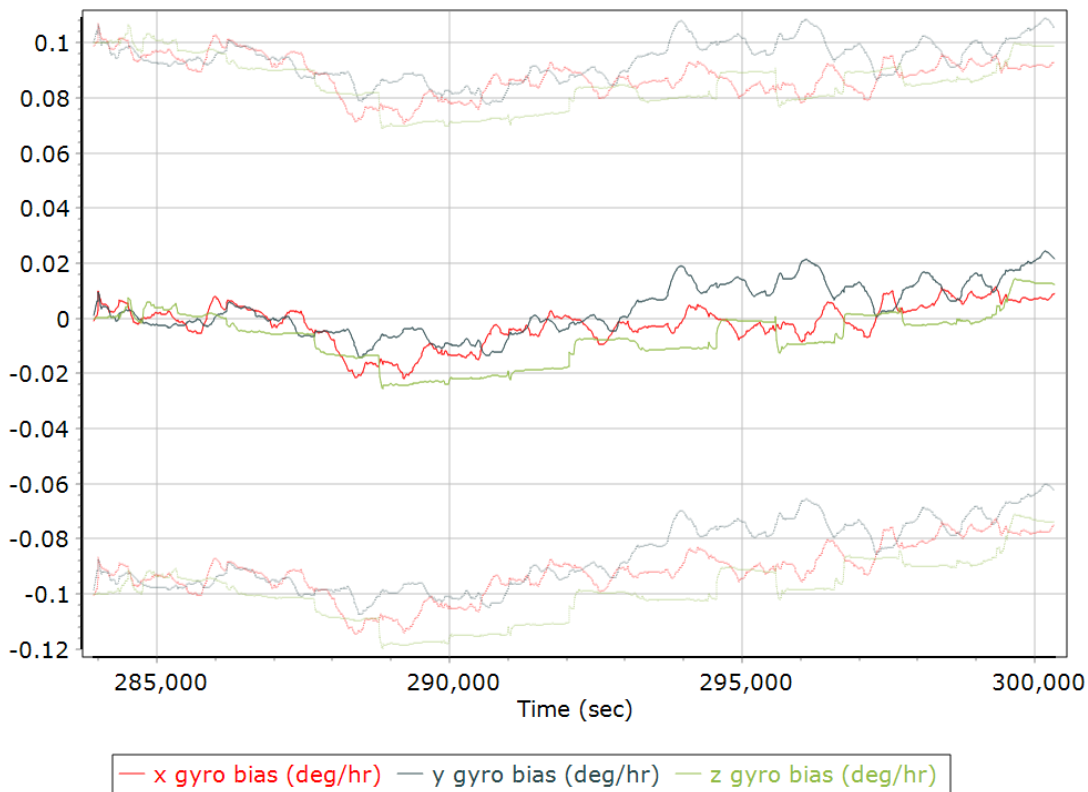
Y Accelerometer Scale Error (ppm)



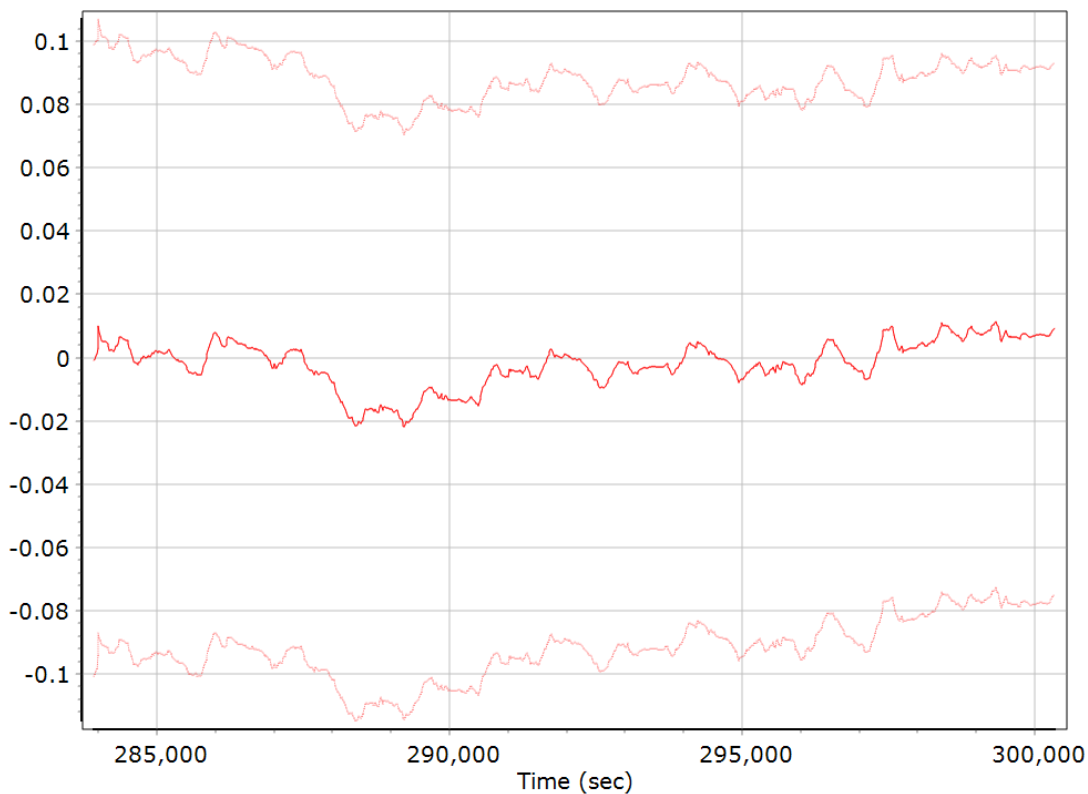
Z Accelerometer Scale Error (ppm)



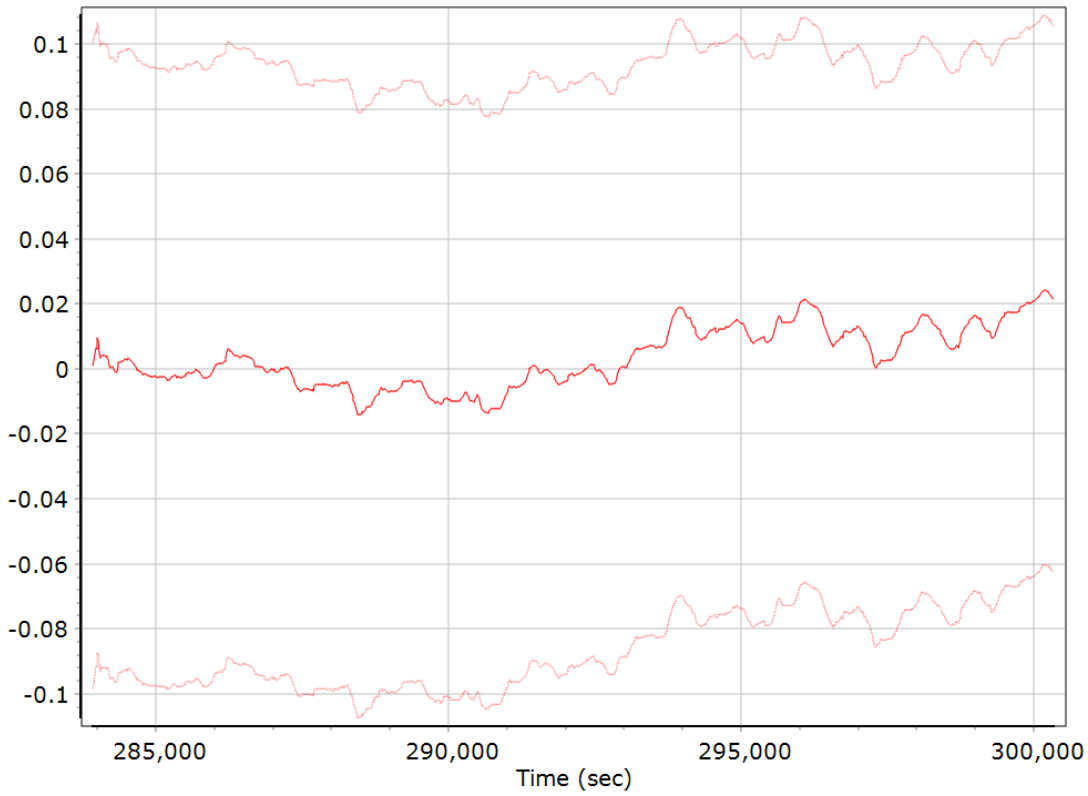
Gyro Bias (deg/h)



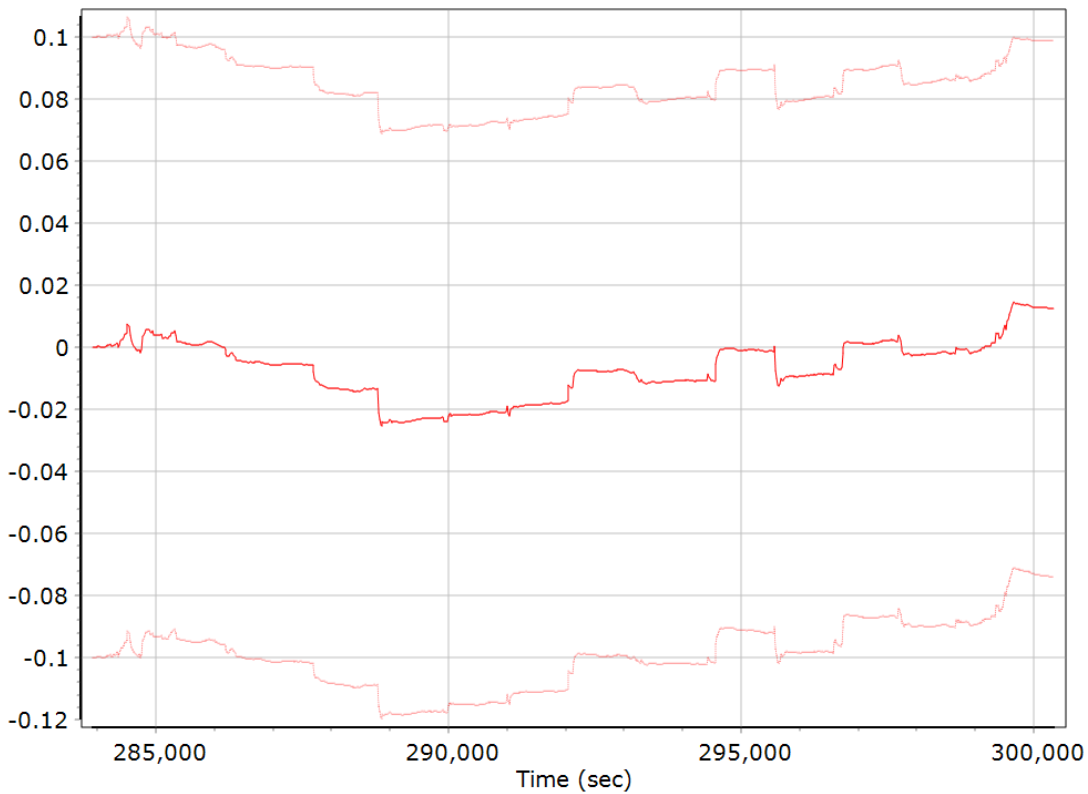
X Gyro Bias (deg/h)



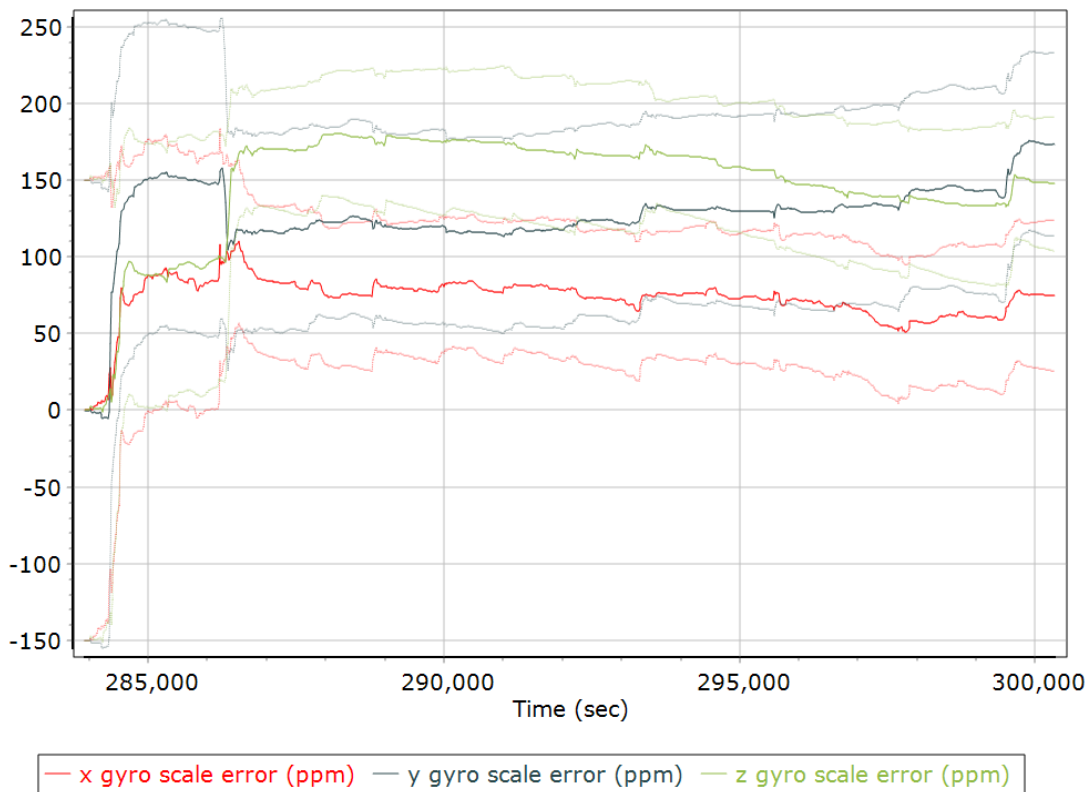
Y Gyro Bias (deg/h)



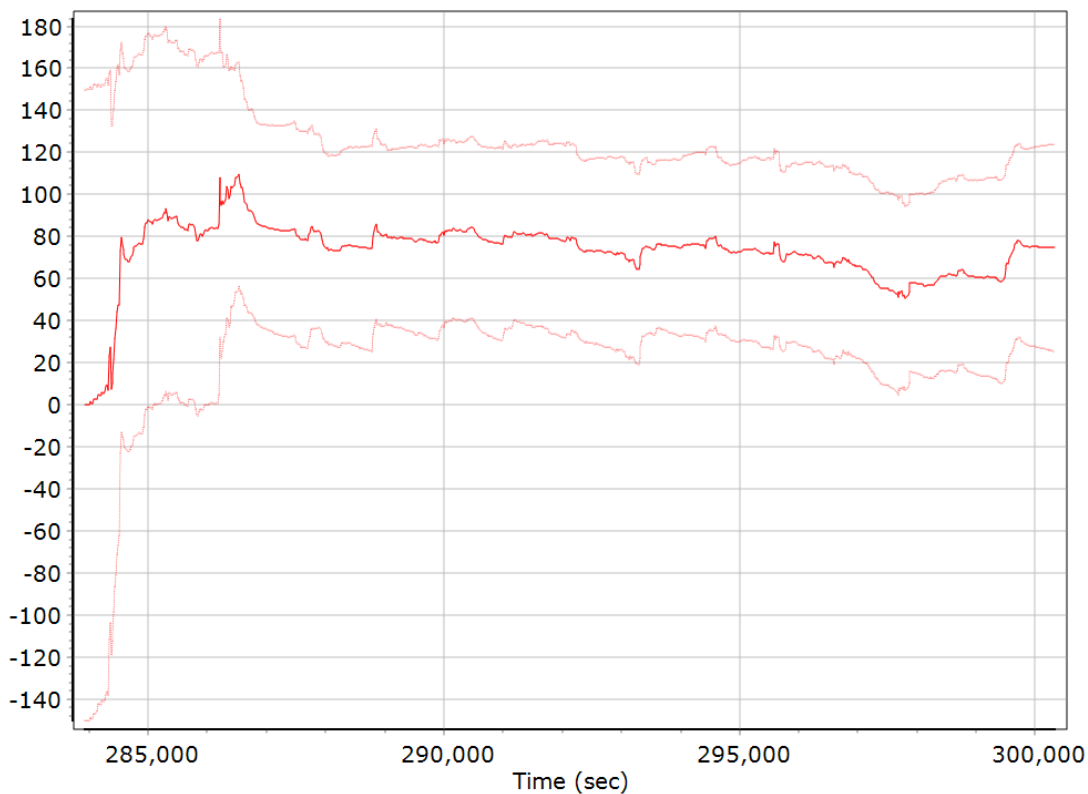
Z Gyro Bias (deg/h)



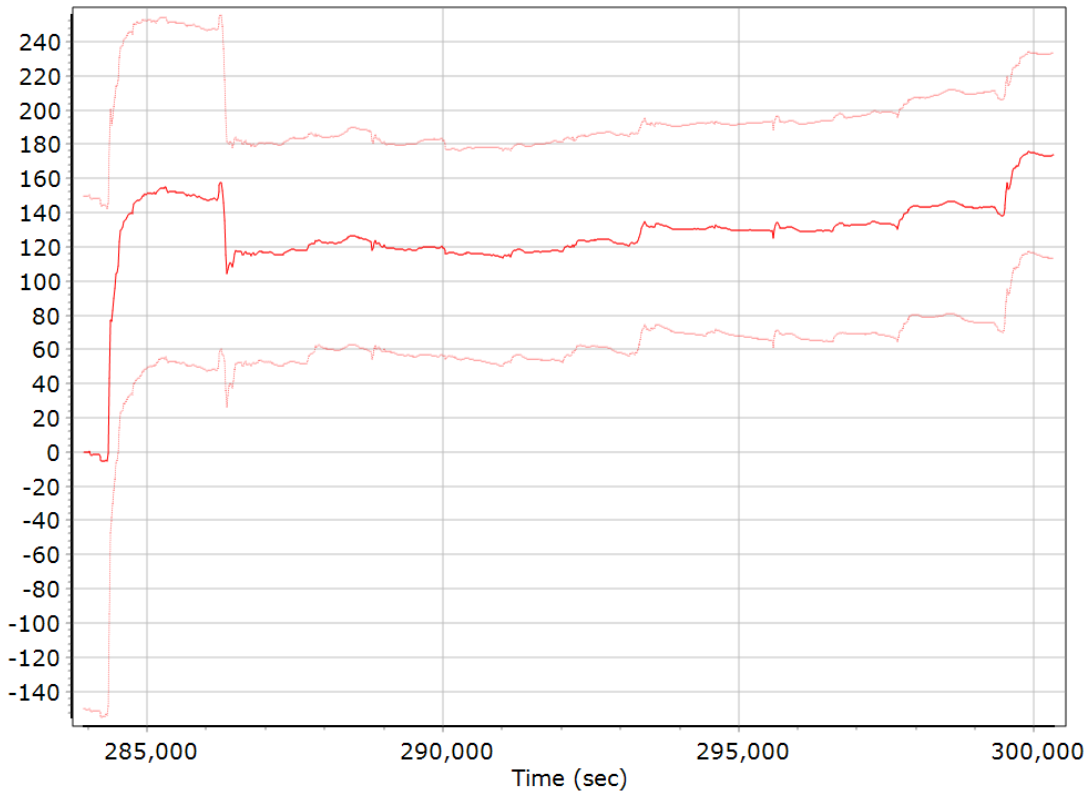
Gyro Scale Error (ppm)



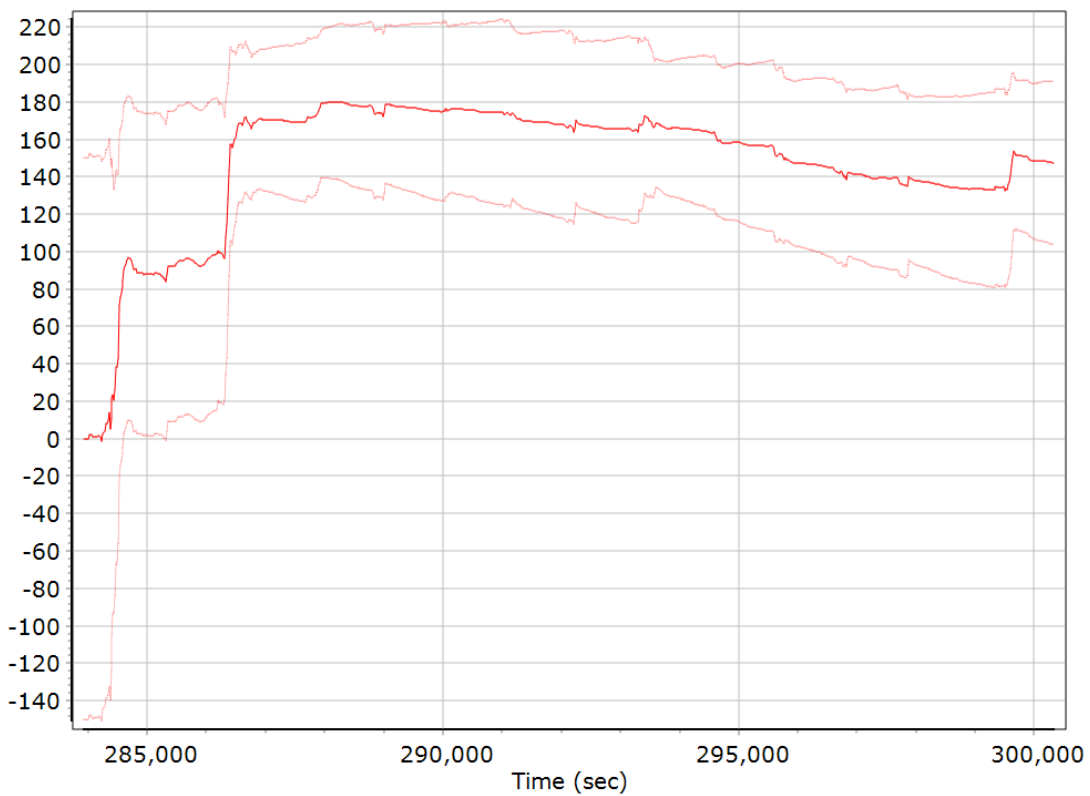
X Gyro Scale Error (ppm)



Y Gyro Scale Error (ppm)

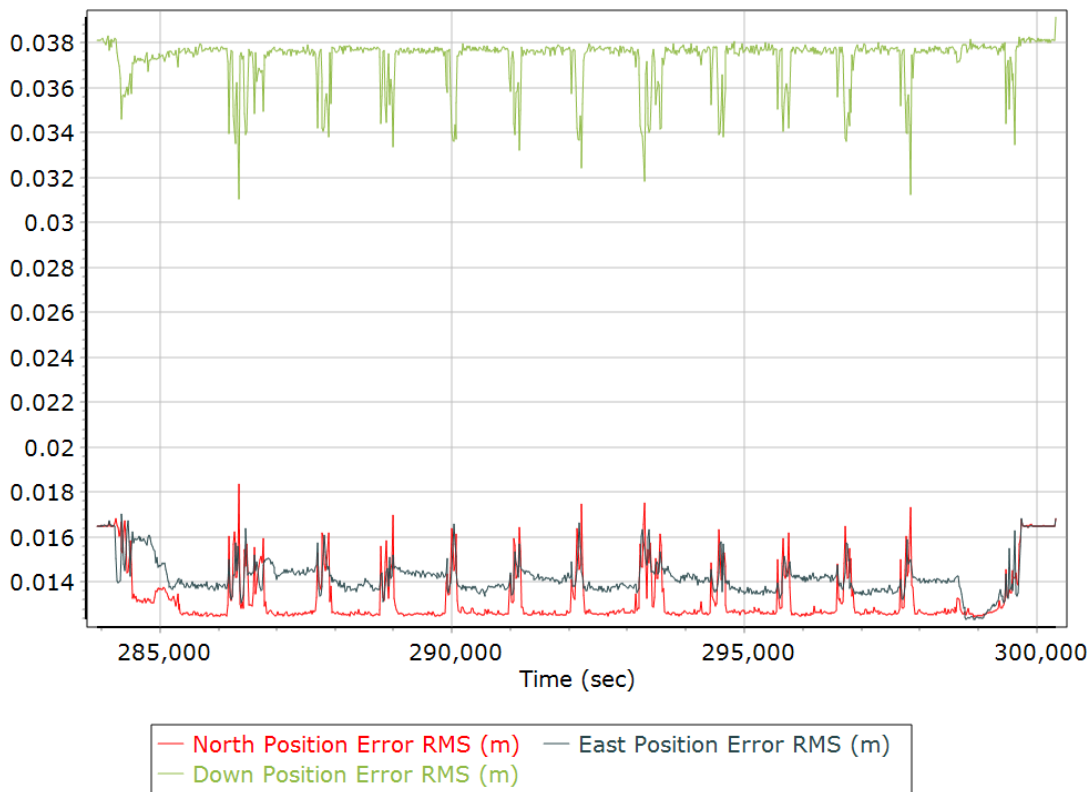


Z Gyro Scale Error (ppm)

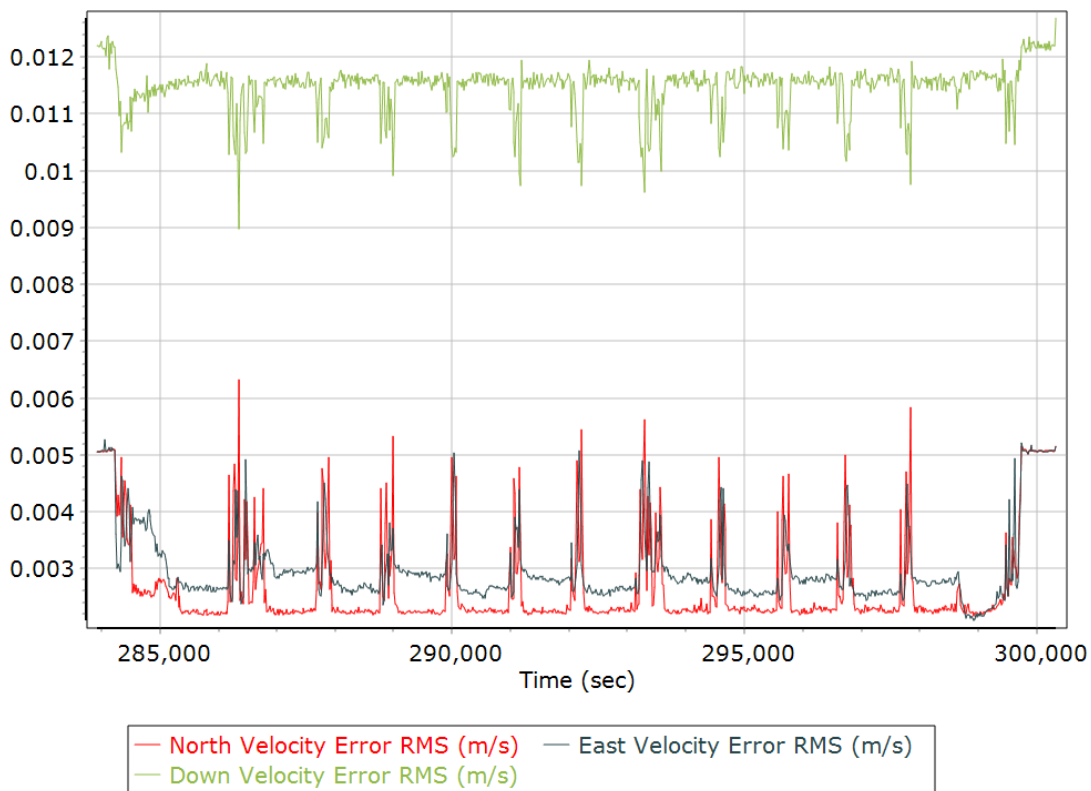


Smoothed Performance Metrics

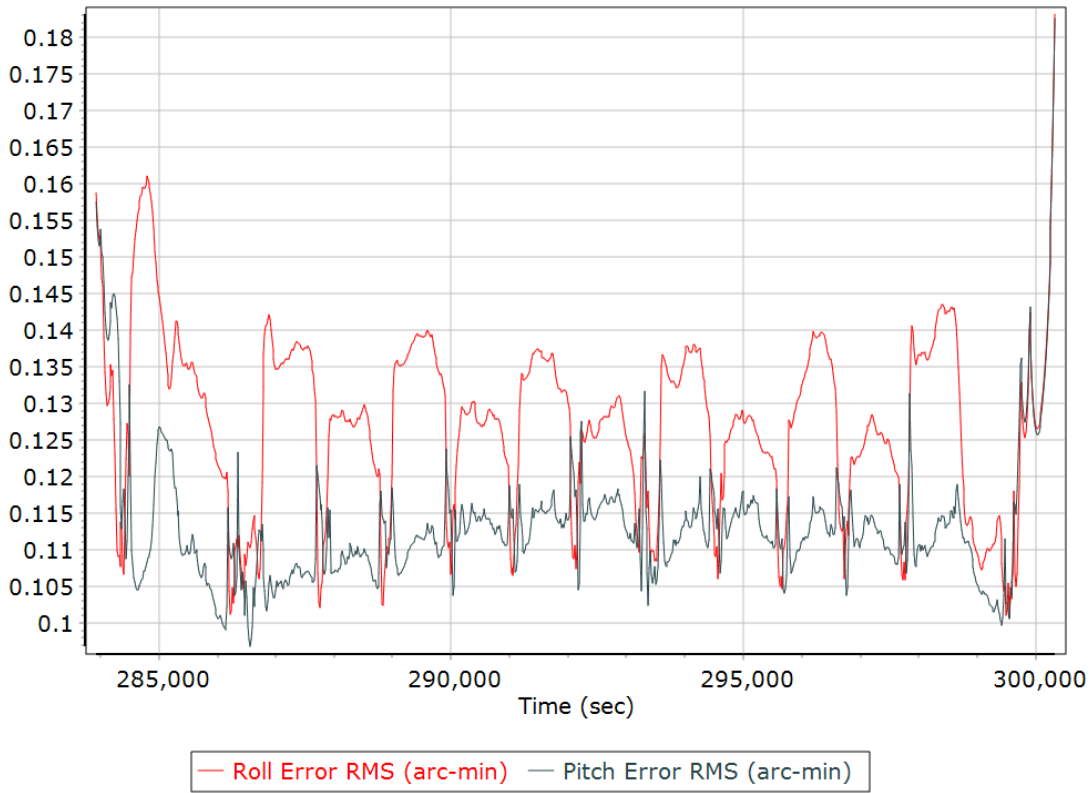
Position Error RMS (m)



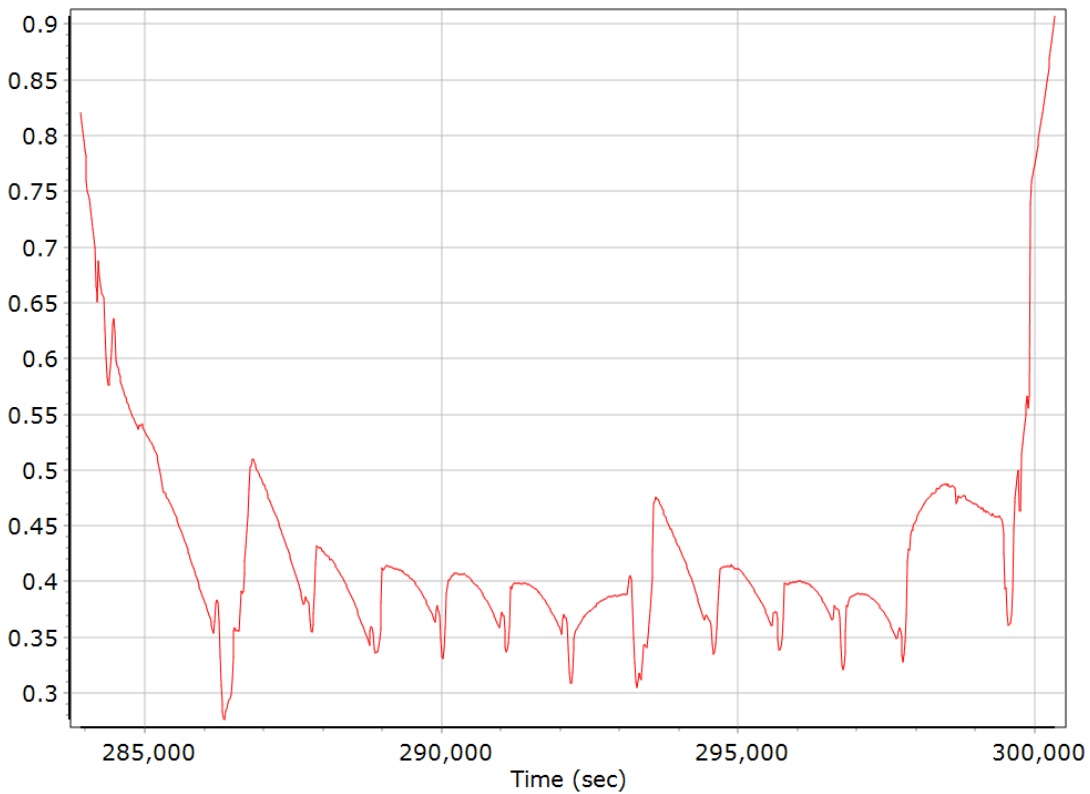
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

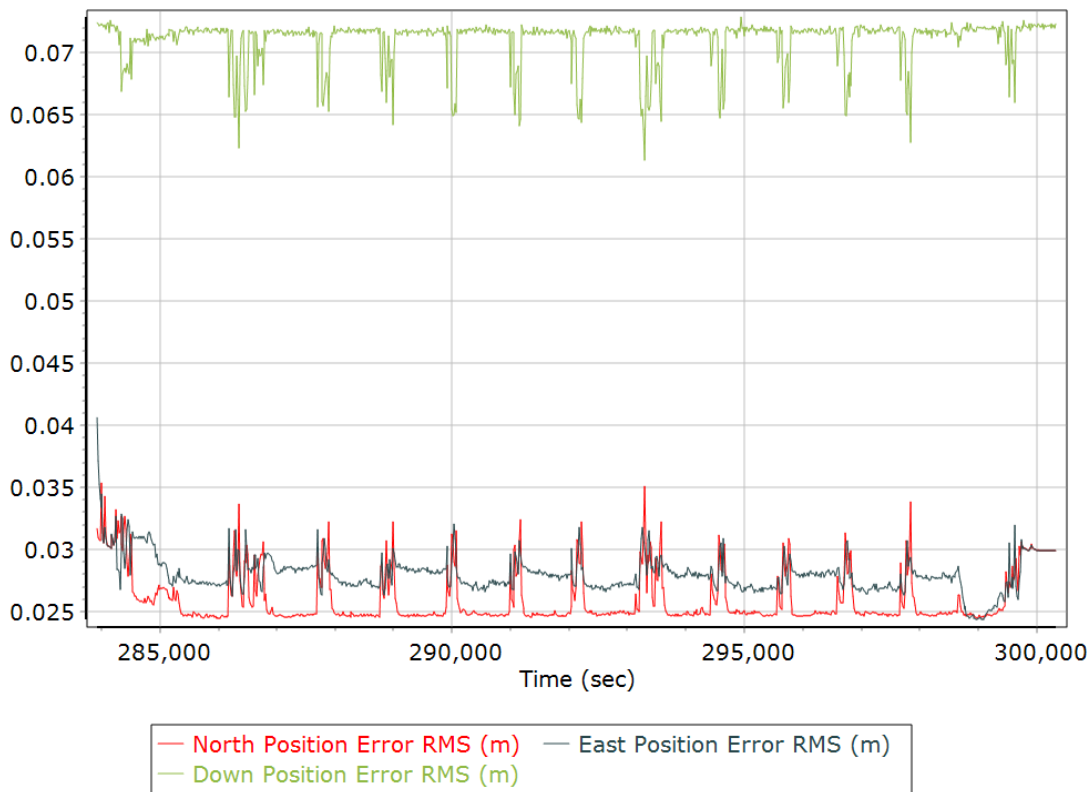


Heading Error RMS (arc-min)

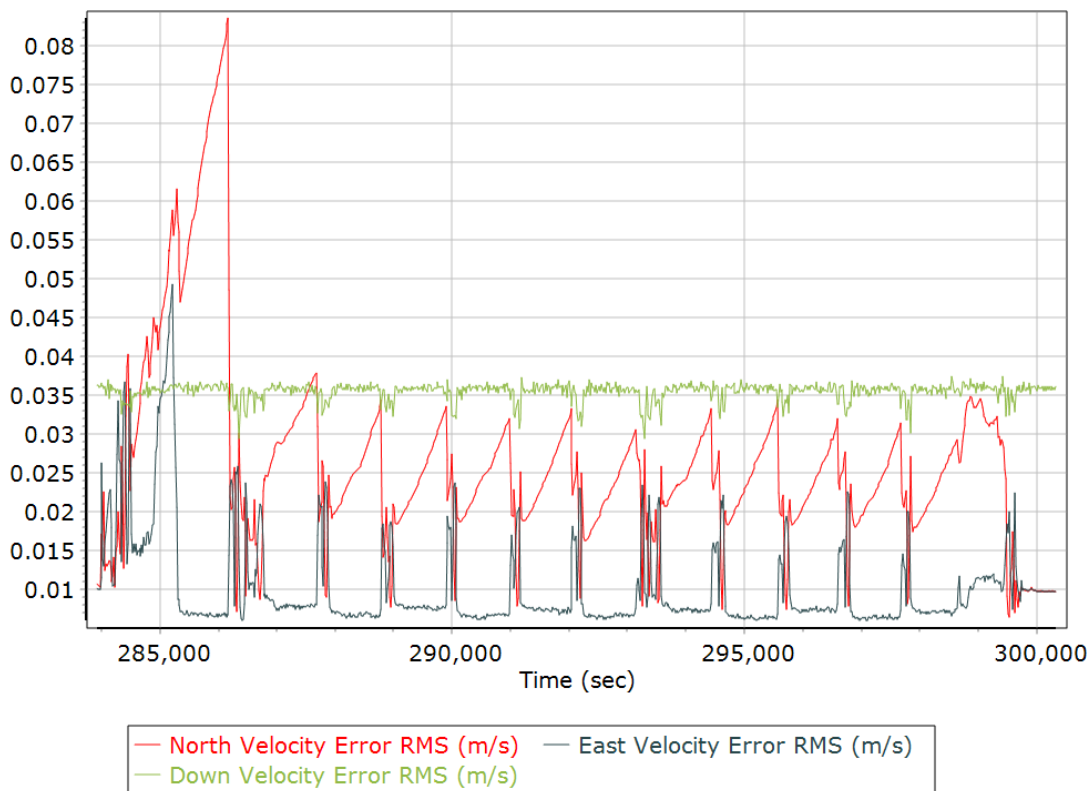


Forward Processed Performance Metrics

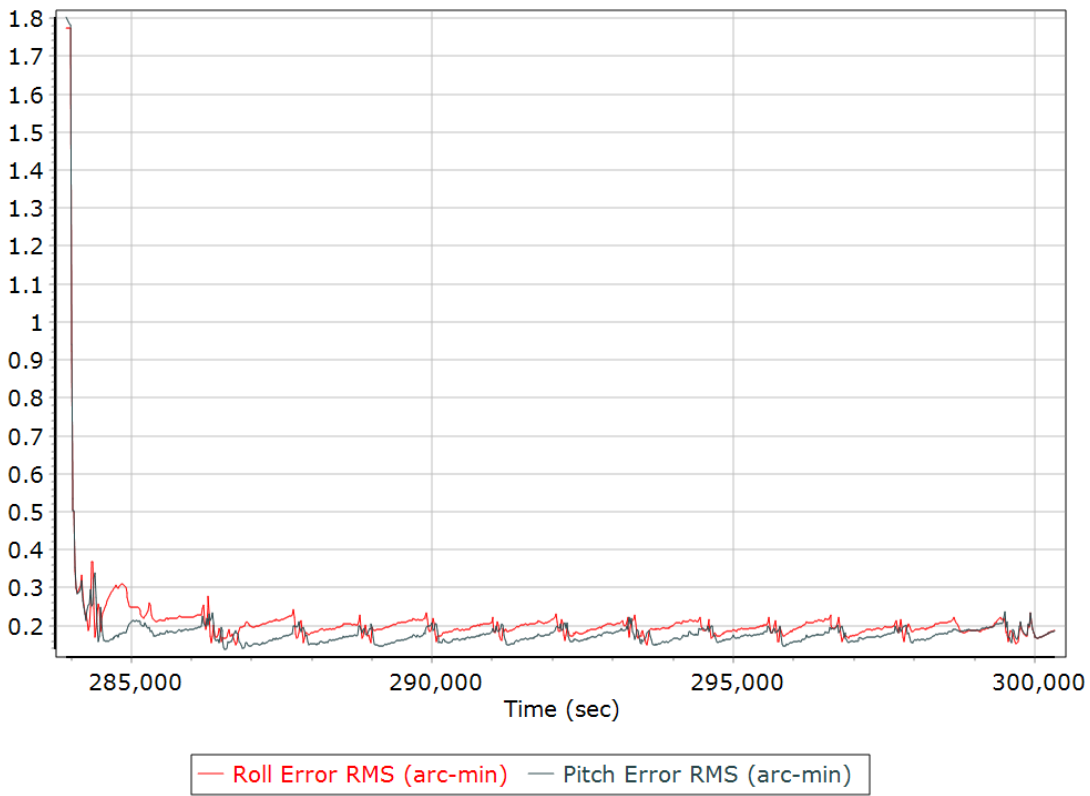
Position Error RMS (m)



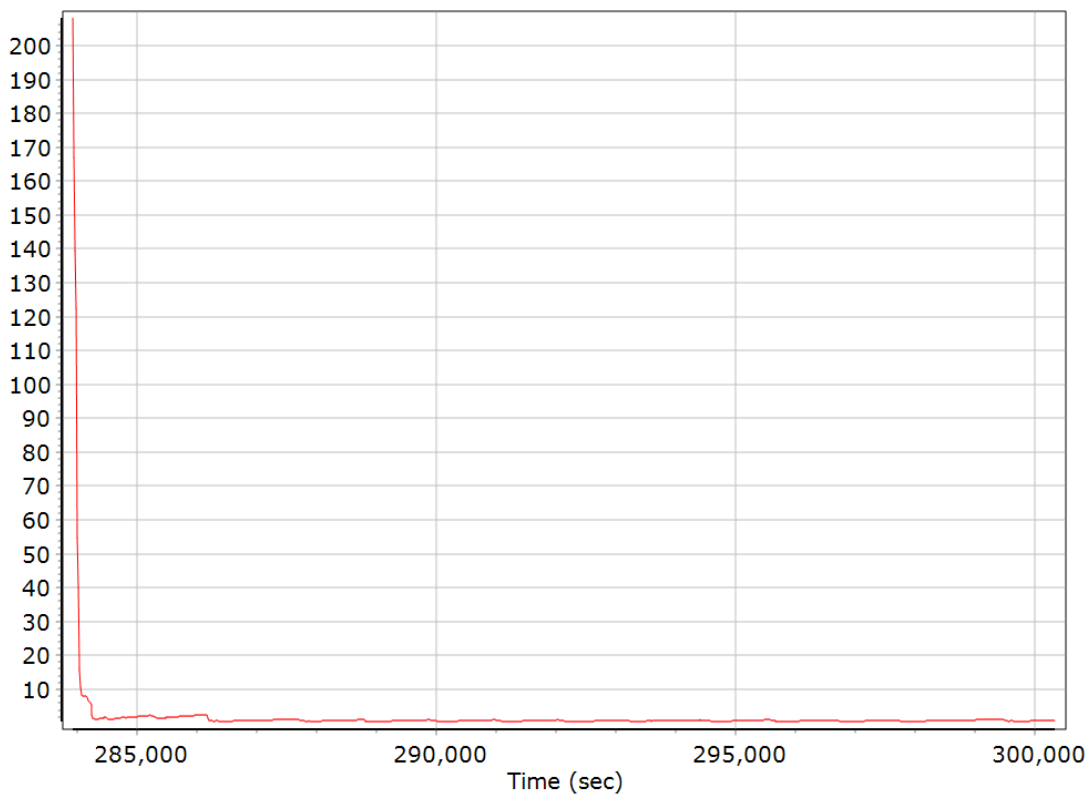
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

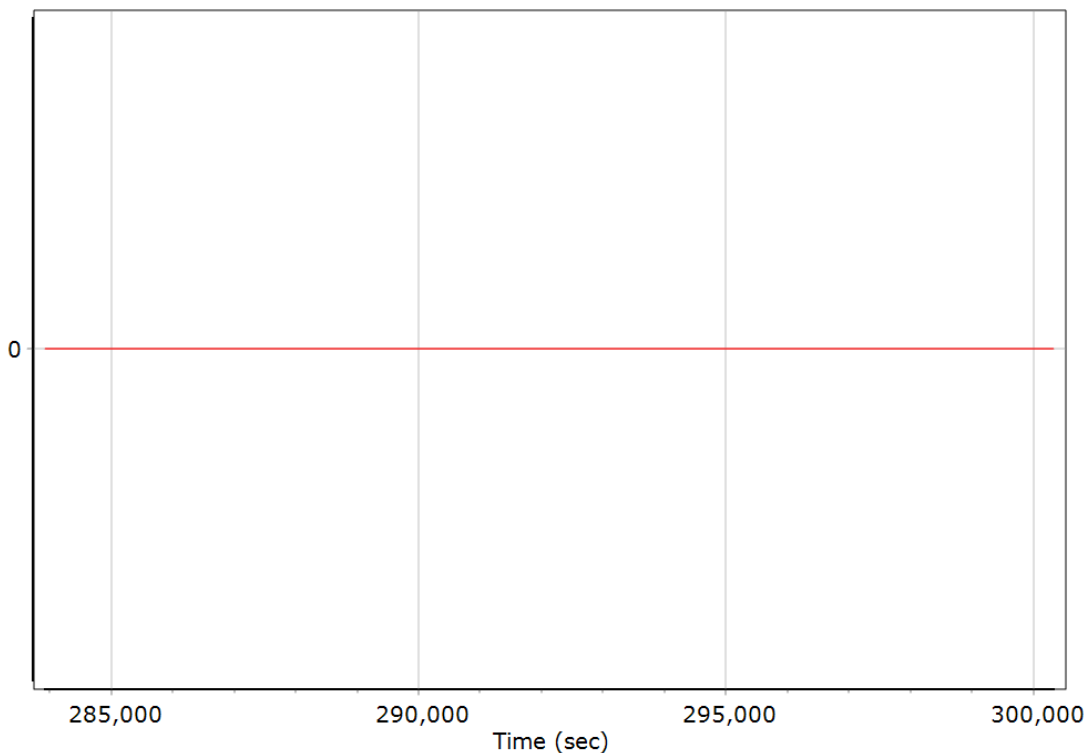


Heading Error RMS (arc-min)



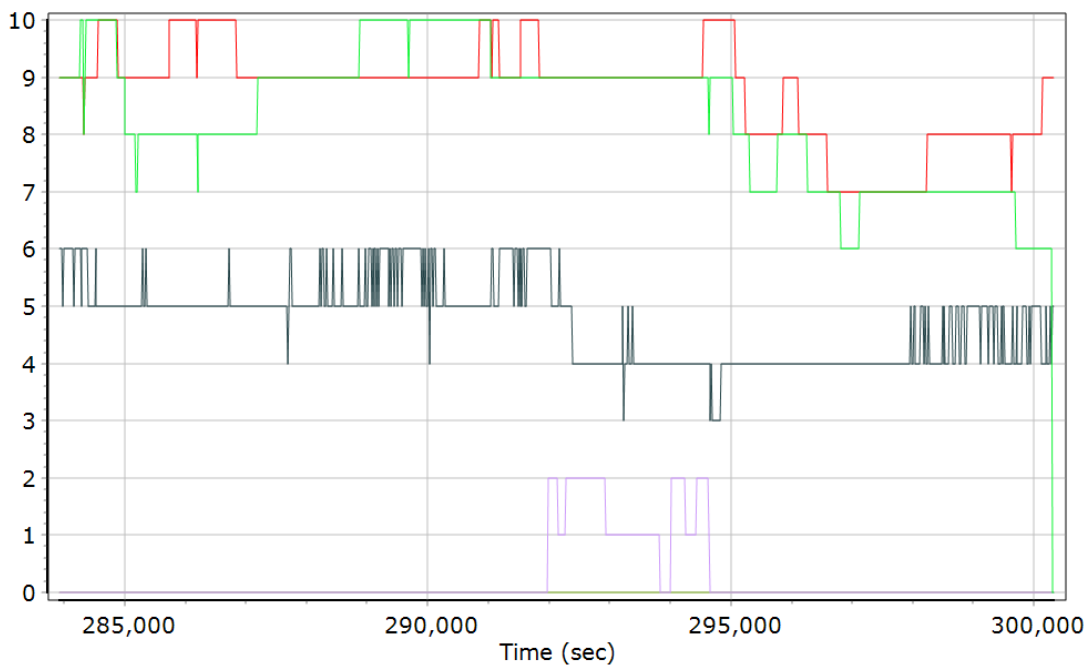
Forward Processed Solution Status

Processing Mode



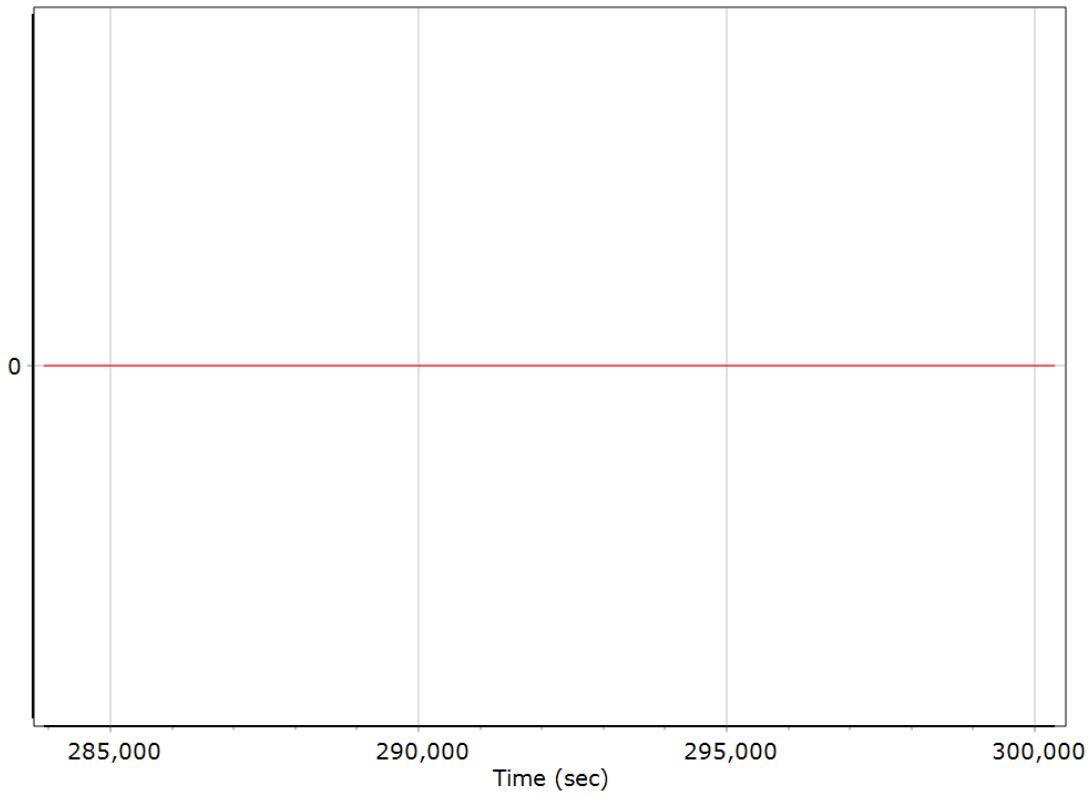
0 = Fixed NL, 1 = Fixed WL, 2 = Float, 3 = DGNSS, 4 = RTCM, 5 = IAPPP, 6 = C/A, 7 = GNSS Na

Number of Satellites



— Number of GPS Satellites	— Number of GLONASS Satellites
— Number of QZSS Satellites	— Number of BEIDOU Satellites
— Number of GALILEO Satellites	

Baseline Length



General Information

Mission Information

Project name	a07-s03-0527
Processing date	2022-09-01 15:26:21
Mission date	2022-09-01 02:19:49
Mission duration	03:19:24.000
Processing mode	IN-Fusion PP-RTX

Rover Hardware Information

Product	POS AV 610 VER6 HW1.6-12
Serial number	S/N6907
IMU type	57
Receiver type	BD982
Antenna type	AV39

Project File List

Rover Data Files

File name	File type
default0901_021951.000	POS Data
default0901_021951.001	POS Data
default0901_021951.002	POS Data
default0901_021951.003	POS Data
default0901_021951.004	POS Data
default0901_021951.005	POS Data
default0901_021951.006	POS Data
default0901_021951.007	POS Data
default0901_021951.008	POS Data
default0901_021951.009	POS Data
default0901_021951.010	POS Data
default0901_021951.011	POS Data
default0901_021951.012	POS Data
default0901_021951.013	POS Data
default0901_021951.014	POS Data
default0901_021951.015	POS Data
default0901_021951.016	POS Data

Input Files

File Name	File Type
Ephm2440.22g	GLONASS Broadcast Ephemeris
Ephm2440.22n	GPS Broadcast Ephemeris

Output Files

Filename	File type
sbet_a07-s03-0527.out	SBET Trajectory File

Rover Data Summary

First raw data file	default0901_021951.000		
Last raw data file	default0901_021951.016		
Start GPS week	2225		
Start time	18.107 (8/28/2022 12:00:18 AM)		
End time	365936.855 (9/1/2022 5:38:56 AM)		
Start of fine alignment	354377.708 (9/1/2022 2:26:17 AM)		
Available subsystems	Primary GNSS, IMU		
POS Event Input	None		
Correction data	None		
IMU Installation Lever Arms & Mounting Angles			
Reference to IMU lever arm (m)	0.000	0.000	0.000
Reference to IMU mounting angles (deg)	0.000	0.000	0.000
Reference to Primary GNSS lever arm (m)	-0.353	-0.322	-1.280
Reference to Primary GNSS lever arm std dev (m)	-1.000		
Aircraft to Reference mounting angles (deg)	0.000	0.000	0.000

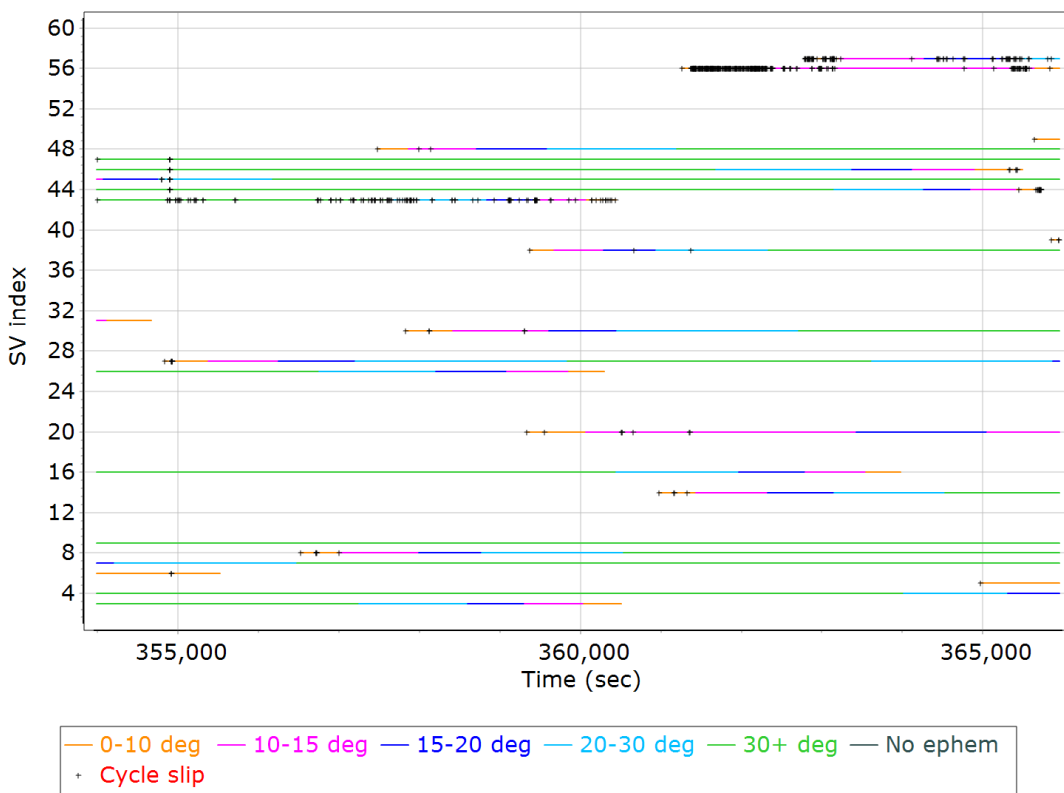
Rover Data QC

Raw IMU Import QC Summary

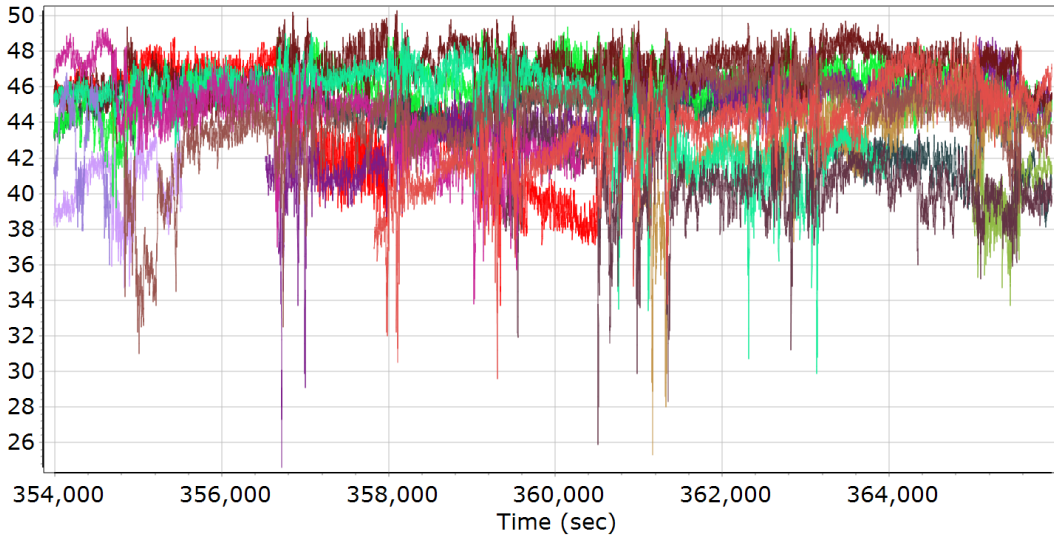
IMU data input file	imu_a07-s03-0527.dat
IMU data check log file	imudt_a07-s03-0527.log
IMU Records Processed	2392843
Termination Status	Warnings
IMU Anomalies	3
IMU Failure Messages	
353972.986 : WARNING : Gap of 353953.6285 seconds in CHECKDT input data	
18.527 : WARNING : Gap of 0.0100 seconds in CHECKDT input data	
18.422 : WARNING : Gap of 0.0100 seconds in CHECKDT input data	

Primary Observables & Satellite Data

GPS/GLONASS L1 Satellite Lock/Elevation

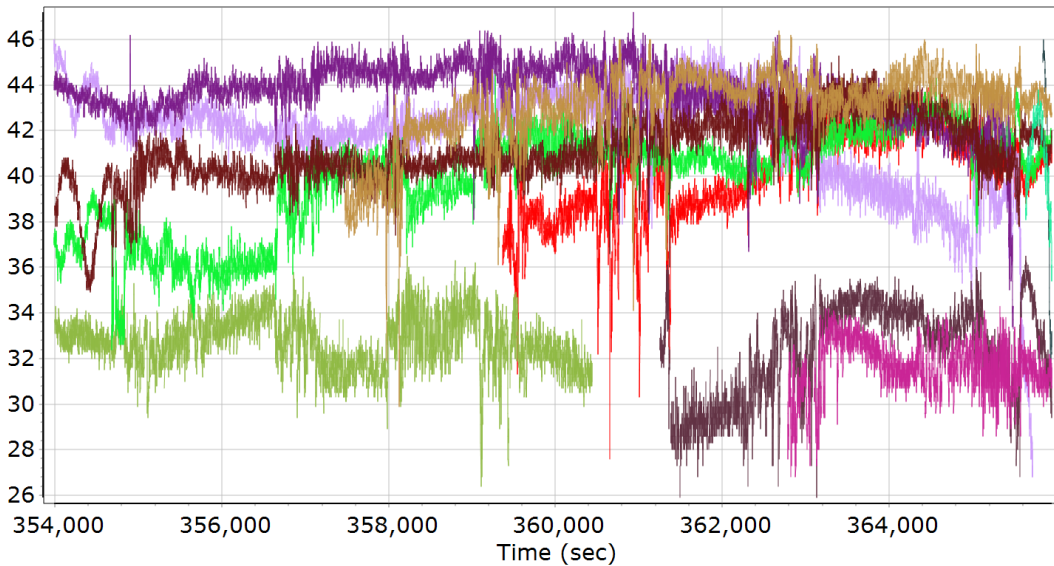


GPS L1 SNR



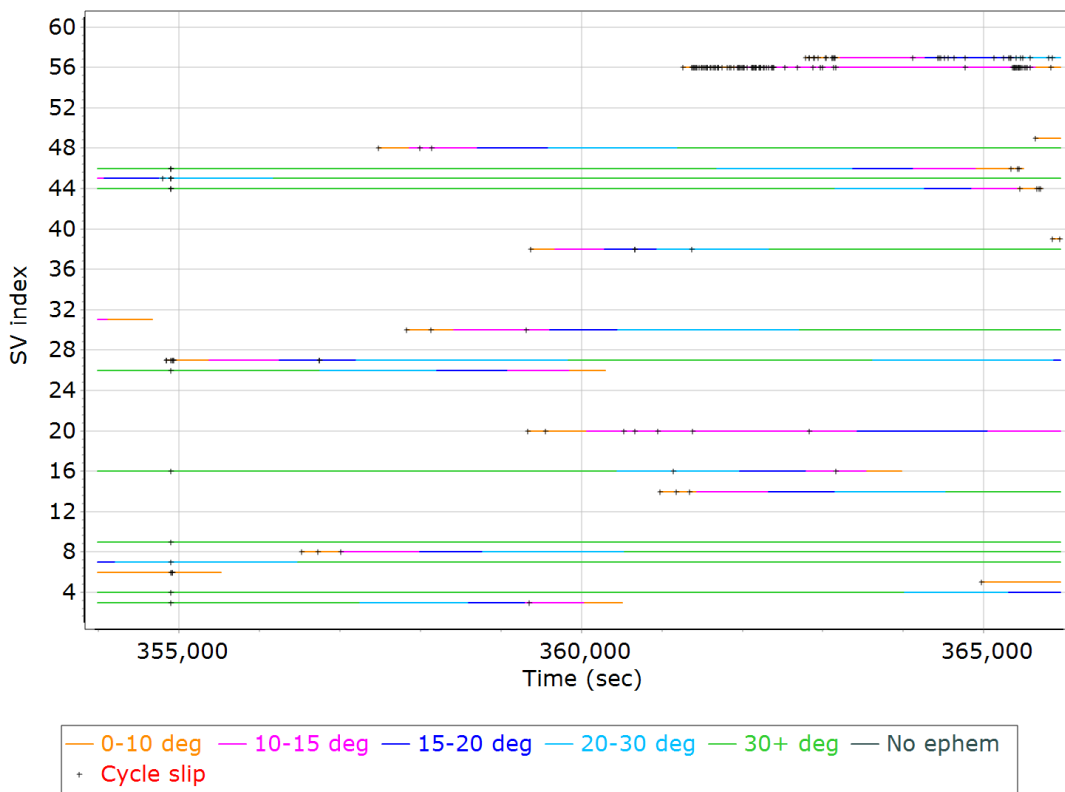
- | | |
|-----------------------------|-----------------------------|
| — GPS PRN 03 L1 SNR (dB/Hz) | — GPS PRN 04 L1 SNR (dB/Hz) |
| — GPS PRN 05 L1 SNR (dB/Hz) | — GPS PRN 06 L1 SNR (dB/Hz) |
| — GPS PRN 07 L1 SNR (dB/Hz) | — GPS PRN 08 L1 SNR (dB/Hz) |
| — GPS PRN 09 L1 SNR (dB/Hz) | — GPS PRN 14 L1 SNR (dB/Hz) |
| — GPS PRN 16 L1 SNR (dB/Hz) | — GPS PRN 20 L1 SNR (dB/Hz) |
| — GPS PRN 26 L1 SNR (dB/Hz) | — GPS PRN 27 L1 SNR (dB/Hz) |
| — GPS PRN 30 L1 SNR (dB/Hz) | — GPS PRN 31 L1 SNR (dB/Hz) |

GLONASS L1 SNR

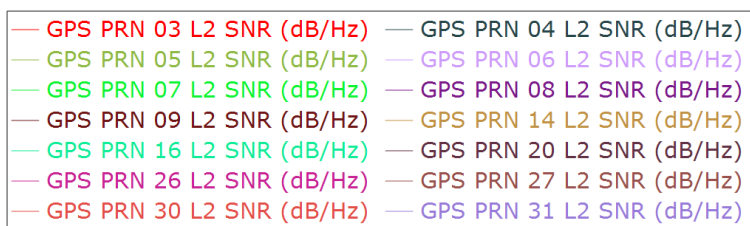
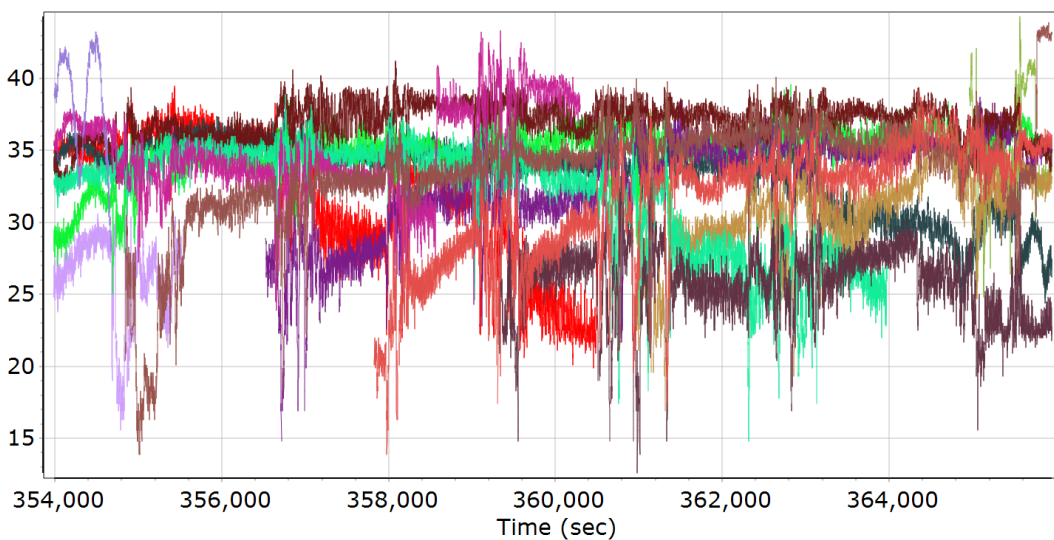


- | | |
|-----------------------------|-----------------------------|
| — GLONASS 01 L1 SNR (dB/Hz) | — GLONASS 02 L1 SNR (dB/Hz) |
| — GLONASS 06 L1 SNR (dB/Hz) | — GLONASS 07 L1 SNR (dB/Hz) |
| — GLONASS 08 L1 SNR (dB/Hz) | — GLONASS 09 L1 SNR (dB/Hz) |
| — GLONASS 10 L1 SNR (dB/Hz) | — GLONASS 11 L1 SNR (dB/Hz) |
| — GLONASS 12 L1 SNR (dB/Hz) | — GLONASS 19 L1 SNR (dB/Hz) |
| — GLONASS 20 L1 SNR (dB/Hz) | |

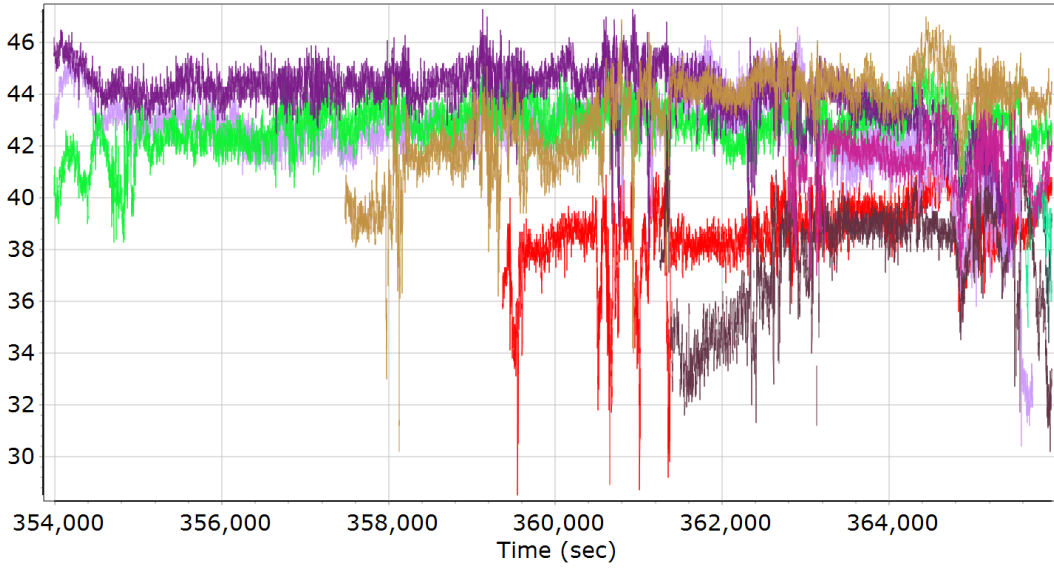
GPS/GLONASS L2 Satellite Lock/Elevation



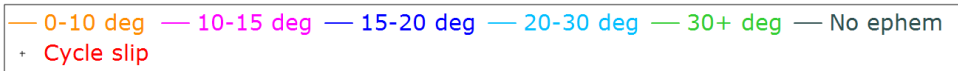
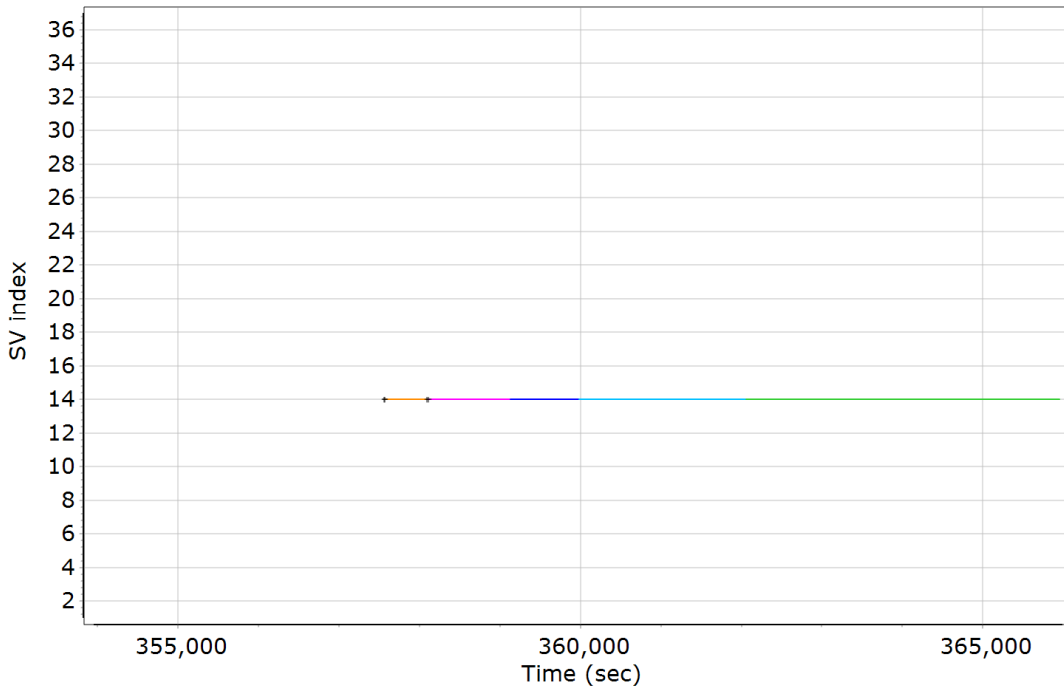
GPS L2 SNR



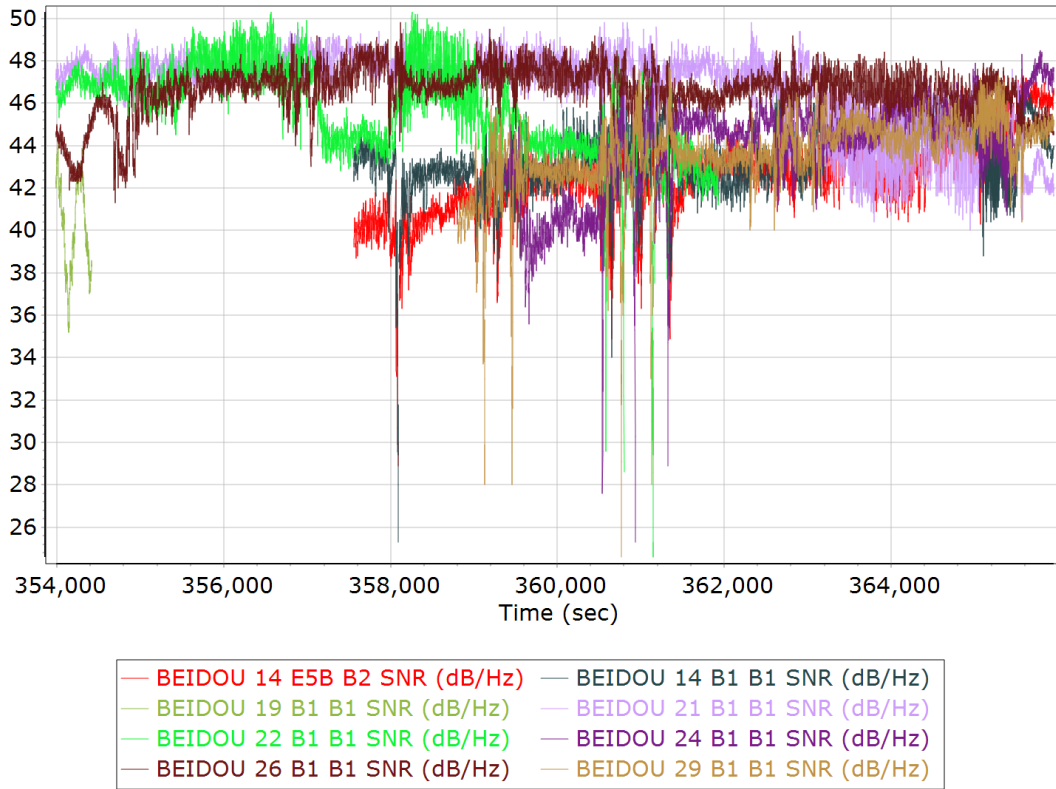
GLONASS L2 SNR



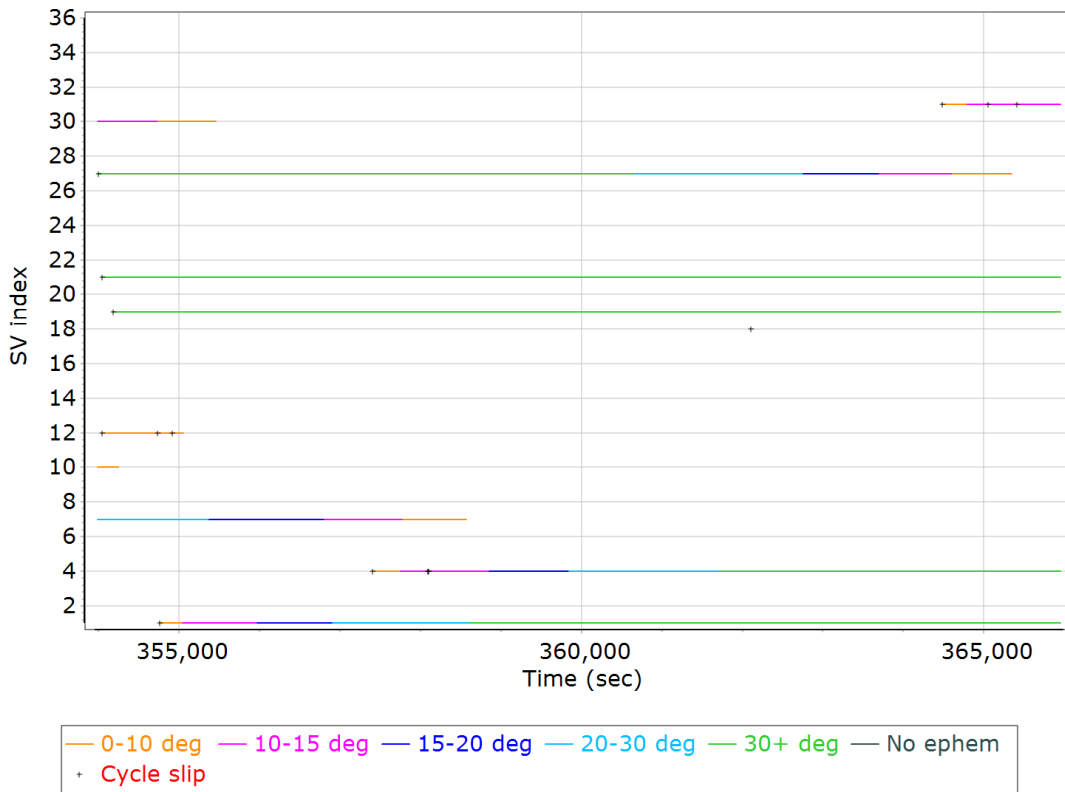
BEIDOU Satellite Lock/Elevation



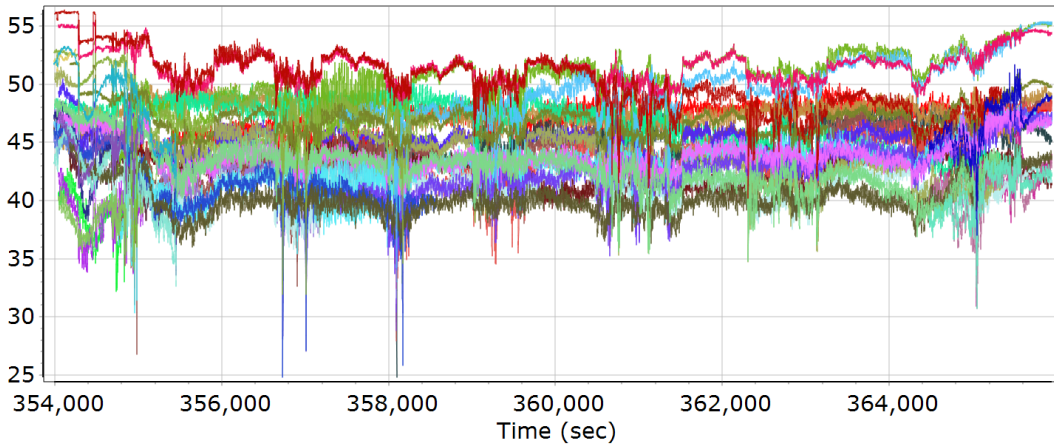
BEIDOU SNR



GALILEO Satellite Lock/Elevation



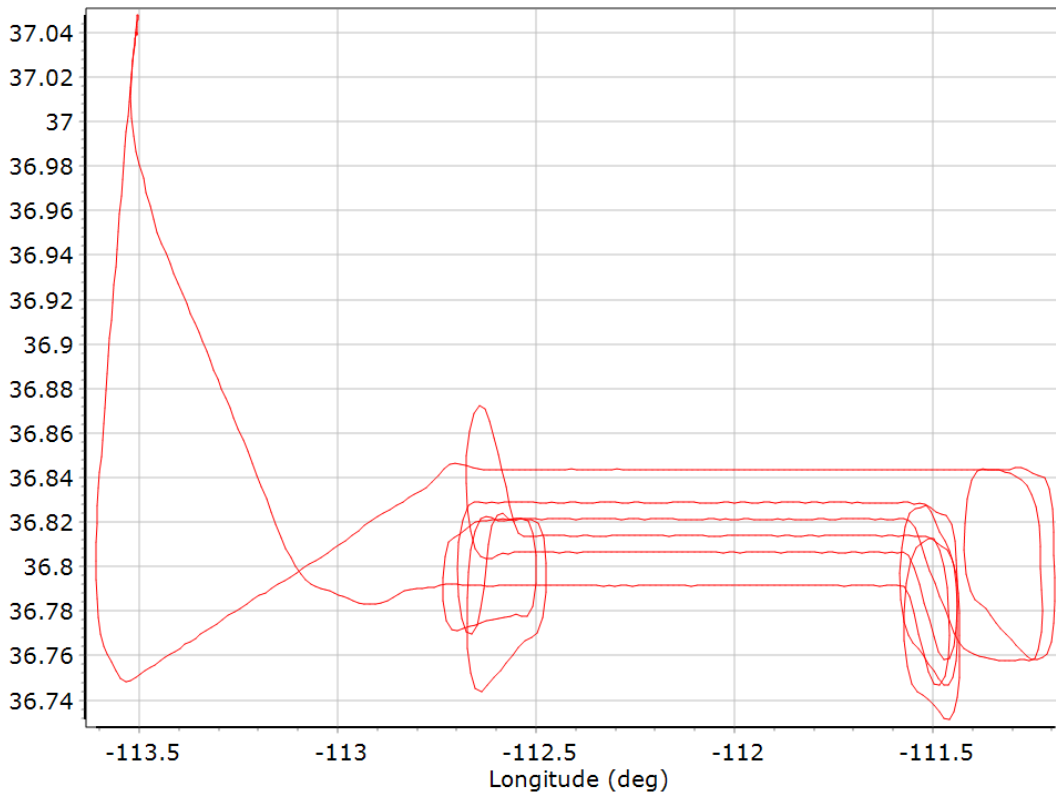
GALILEO SNR



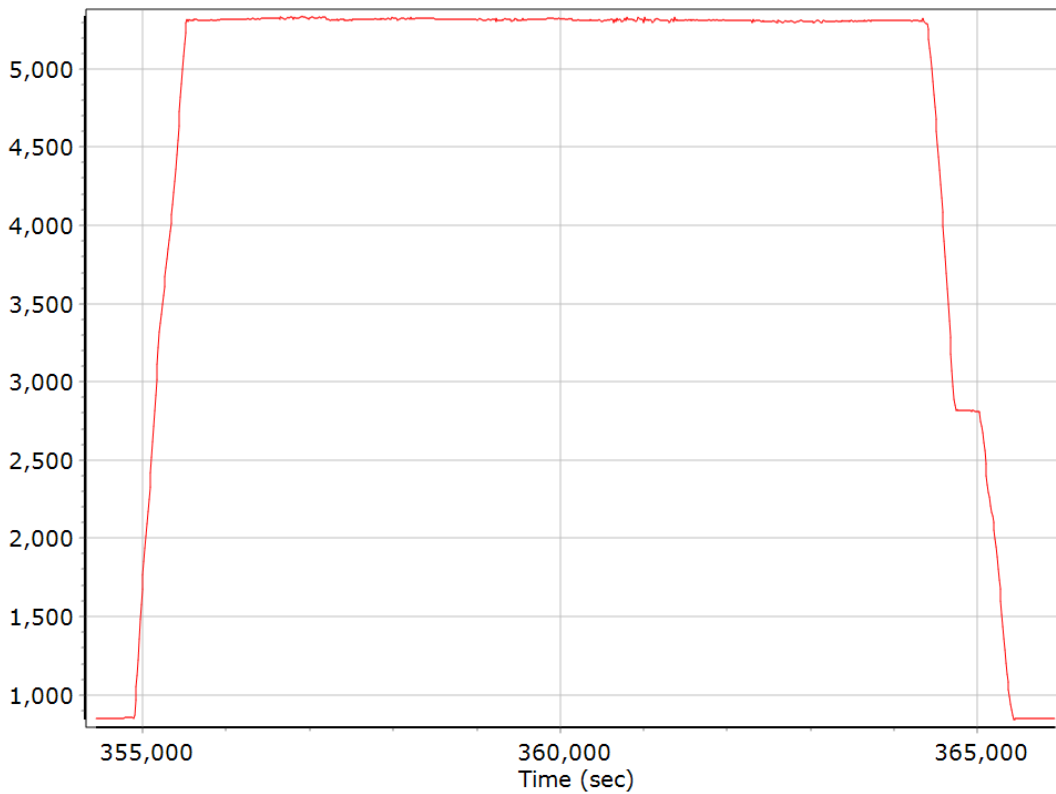
- GALILEO 01 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 04 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 07 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 10 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 12 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 18 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 19 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 21 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 27 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 30 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)

Smoothed Trajectory Information

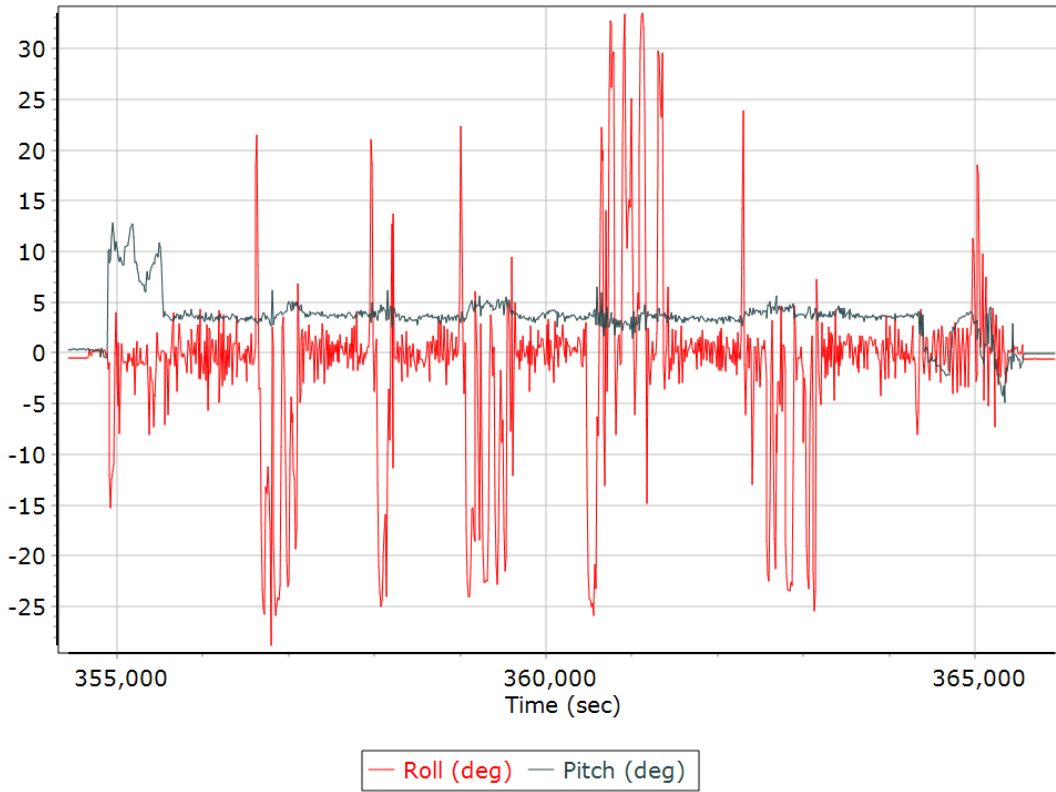
Top View



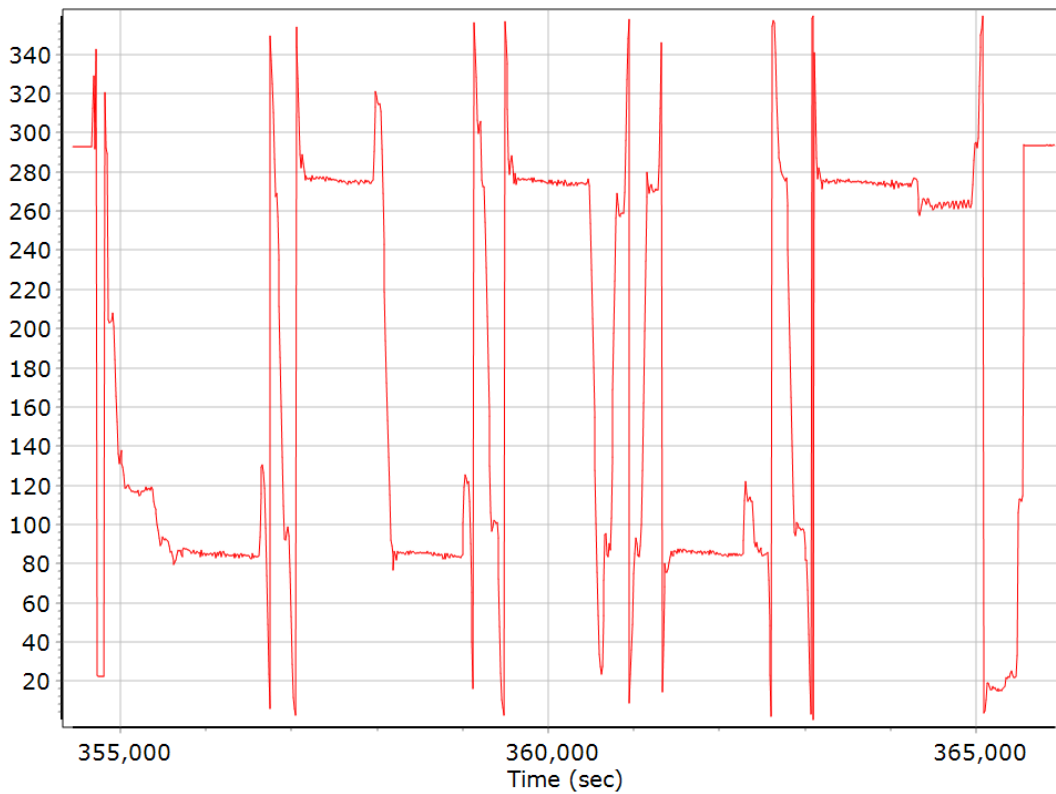
Altitude



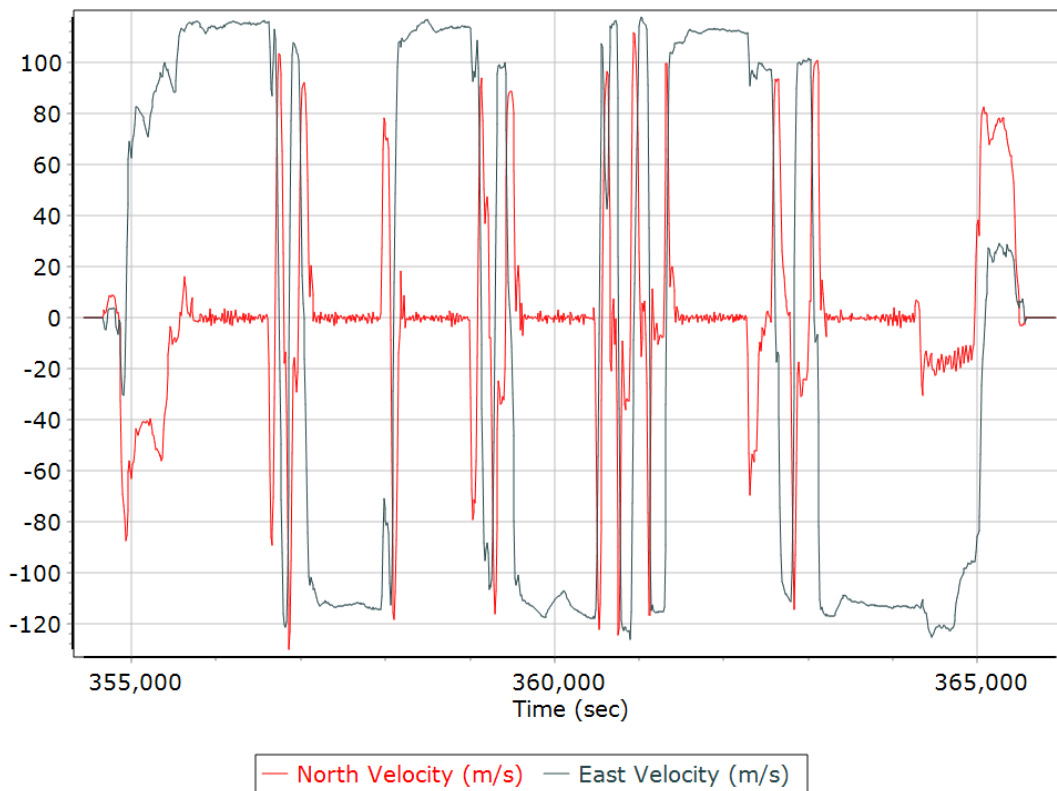
Roll/Pitch



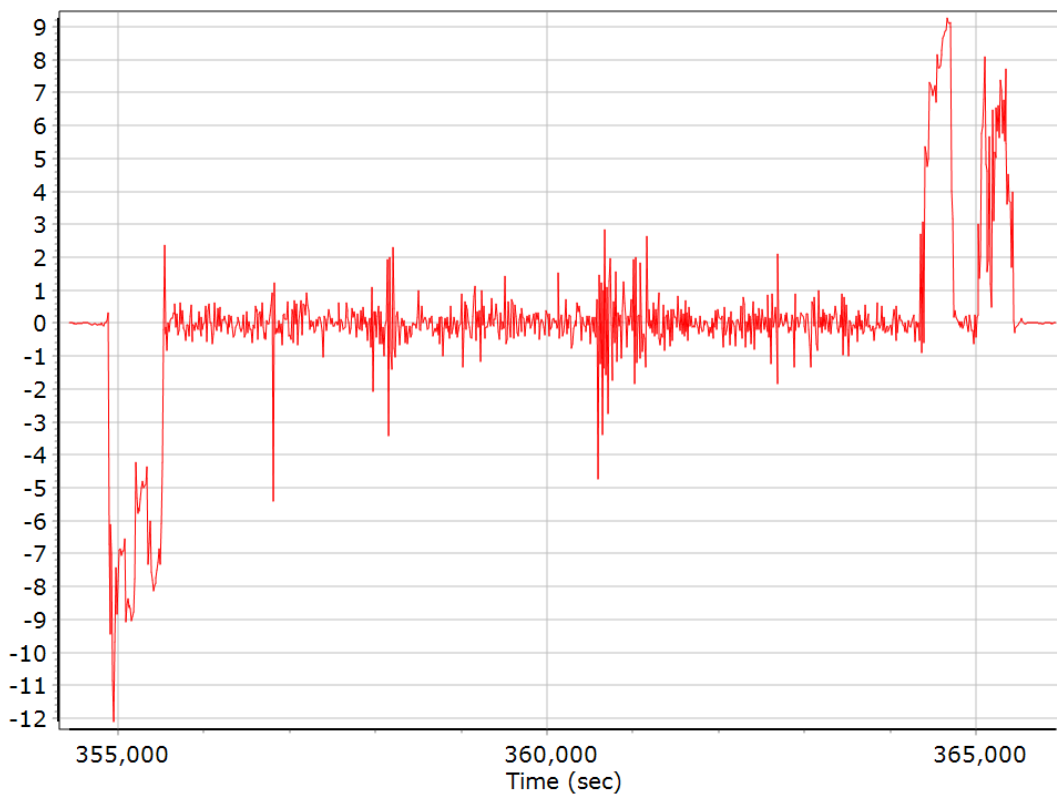
Heading



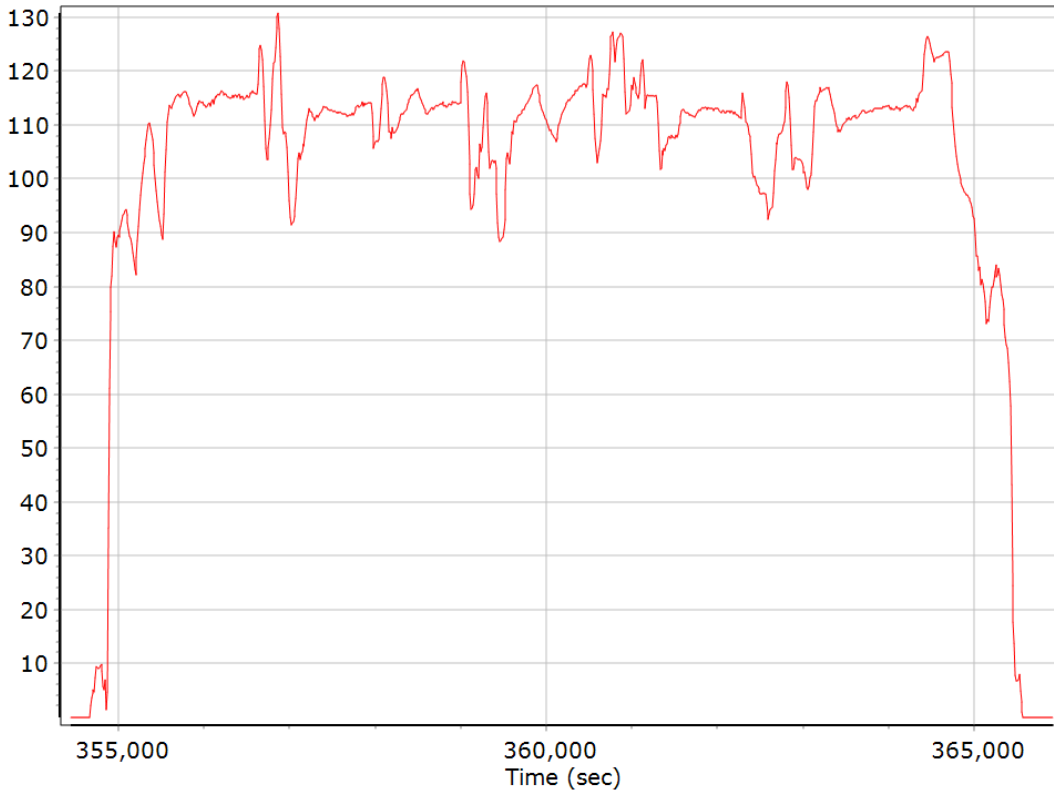
North/East Velocity



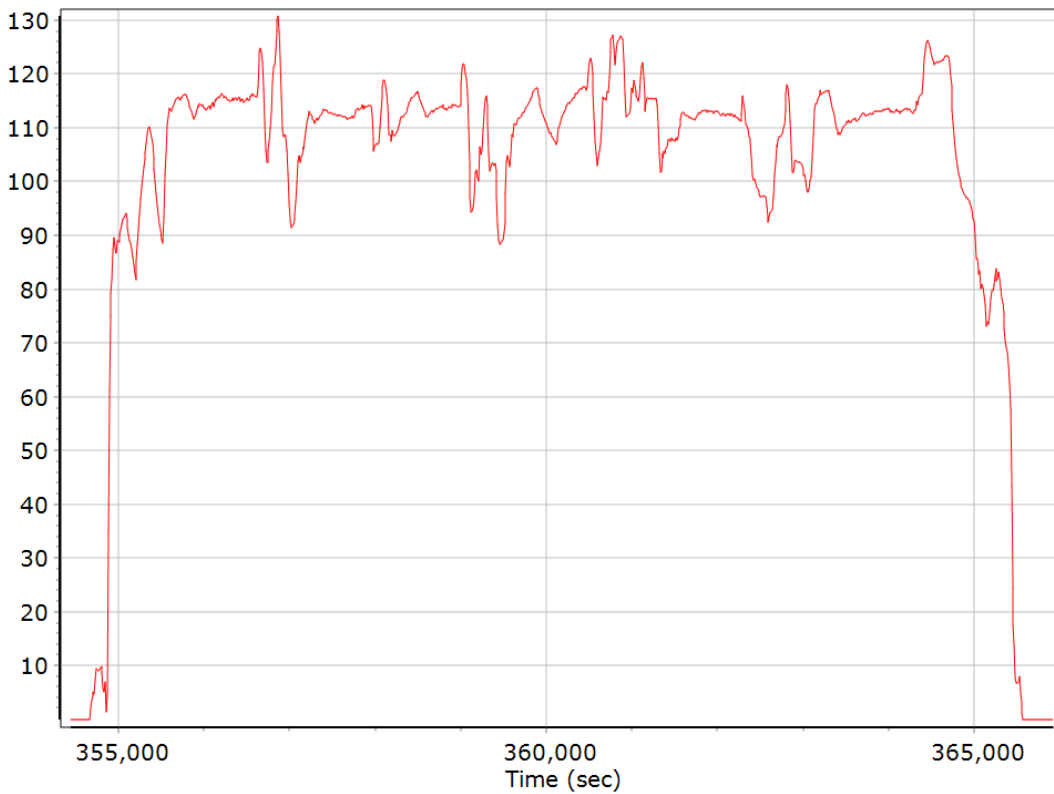
Down Velocity



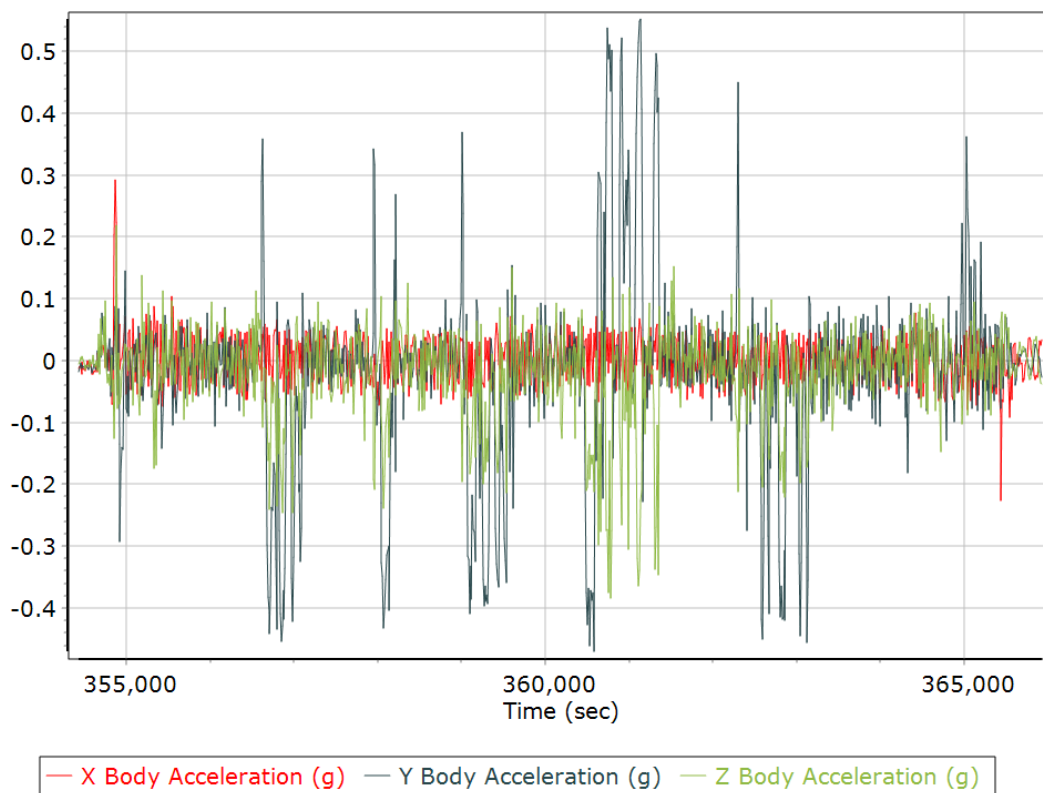
Total Speed



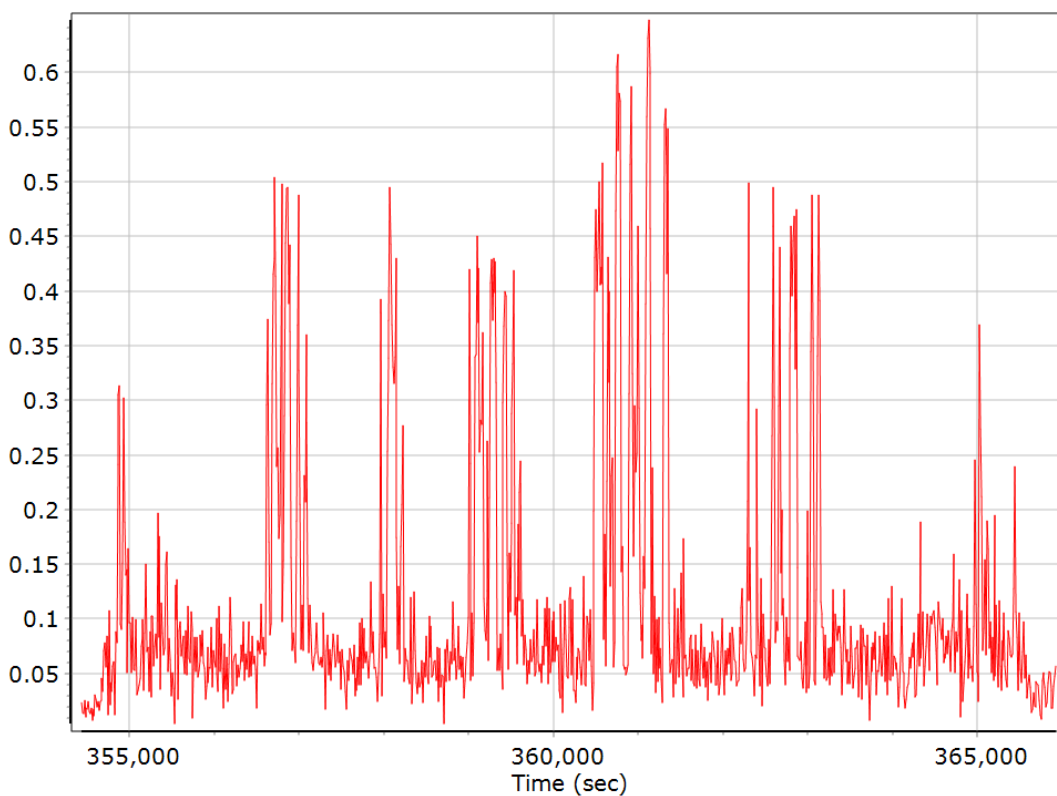
Ground Speed



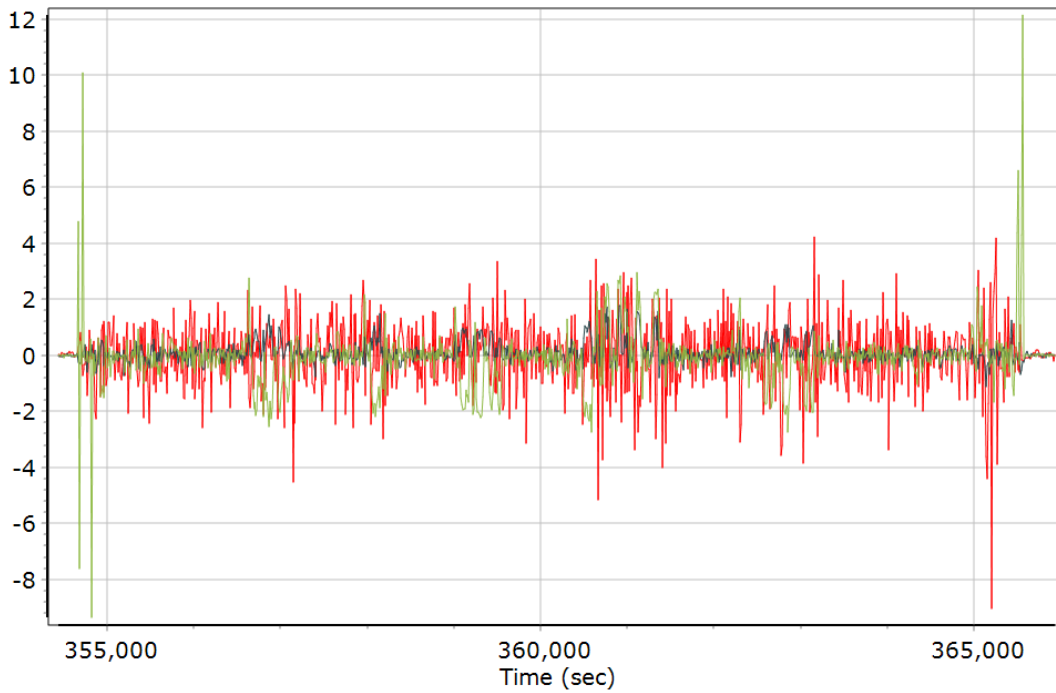
Body Acceleration



Total Body Acceleration



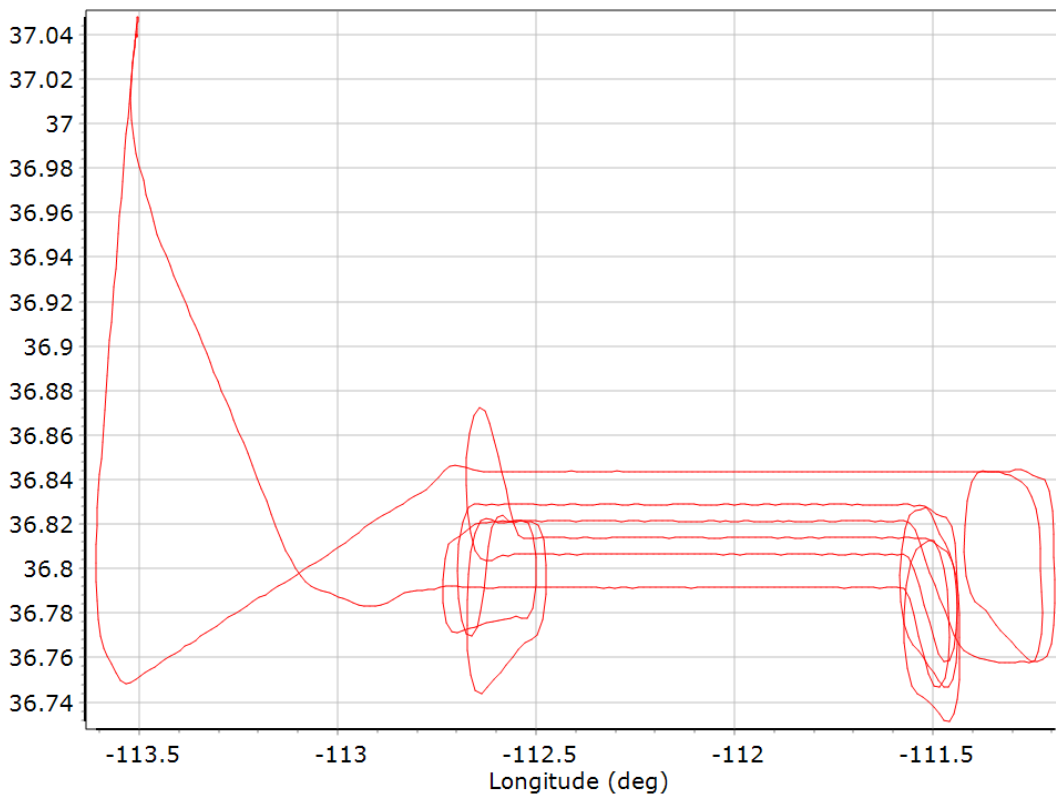
Body Angular Rate



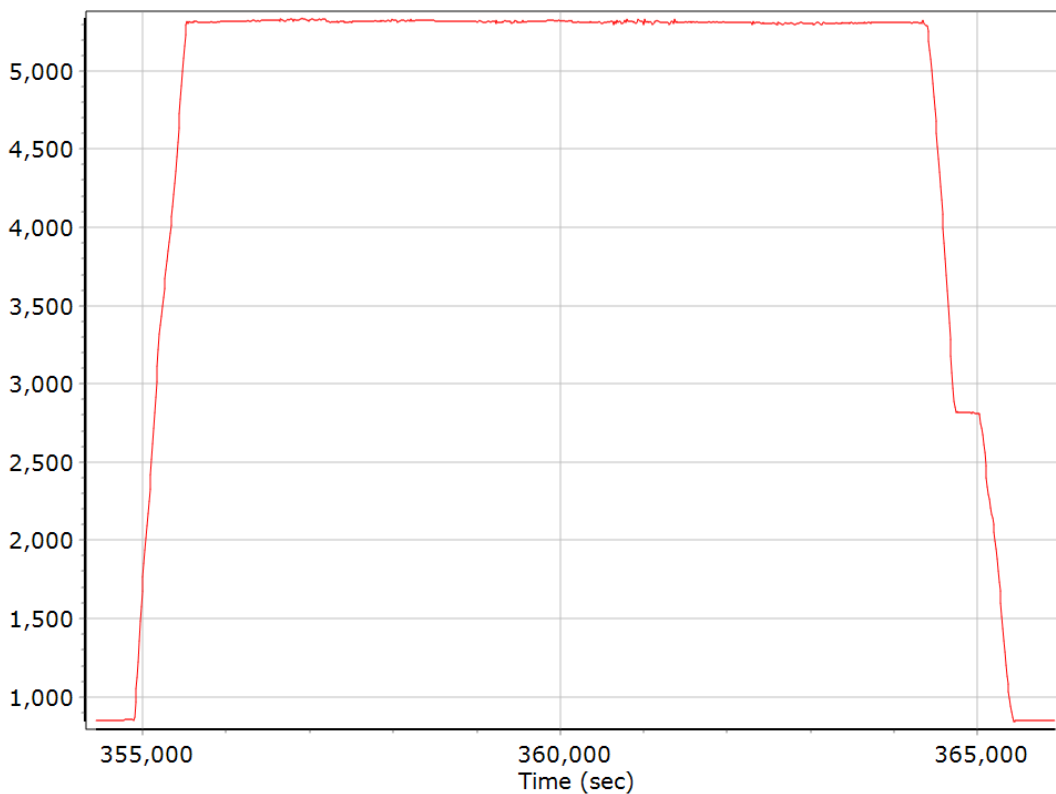
— X Body Angular Rate (deg/sec) — Y Body Angular Rate (deg/sec)
— Z Body Angular Rate (deg/sec)

Forward Processed Trajectory Information

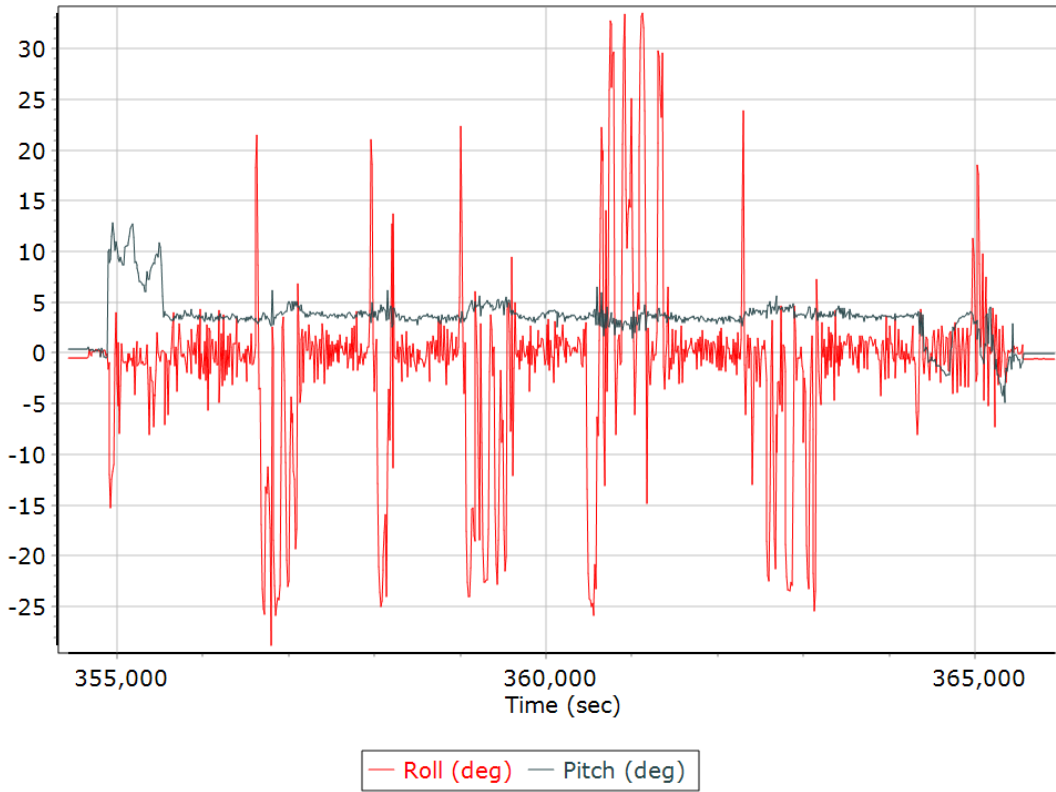
Top View



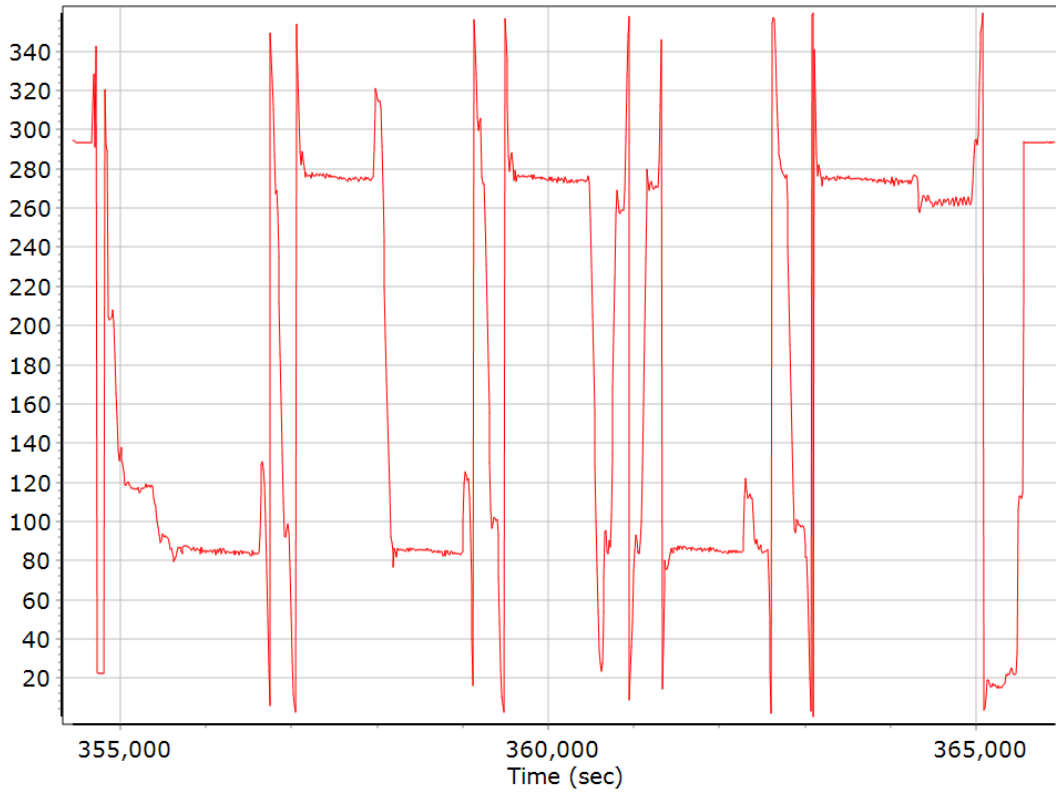
Altitude



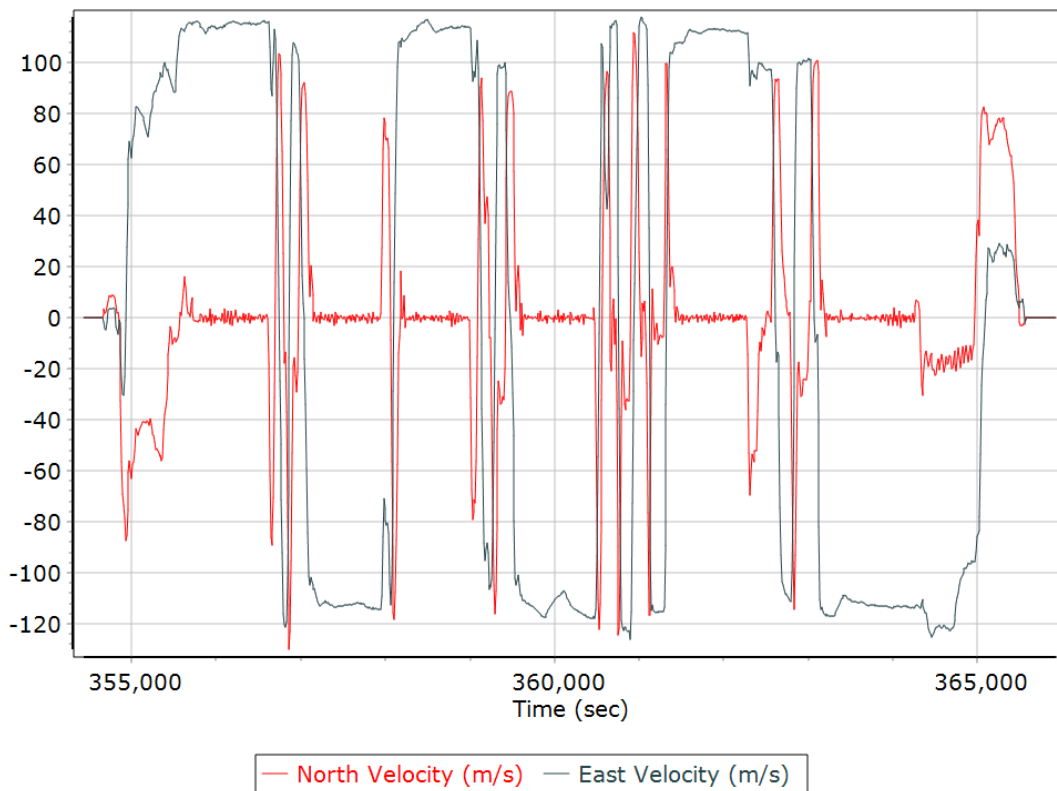
Roll/Pitch



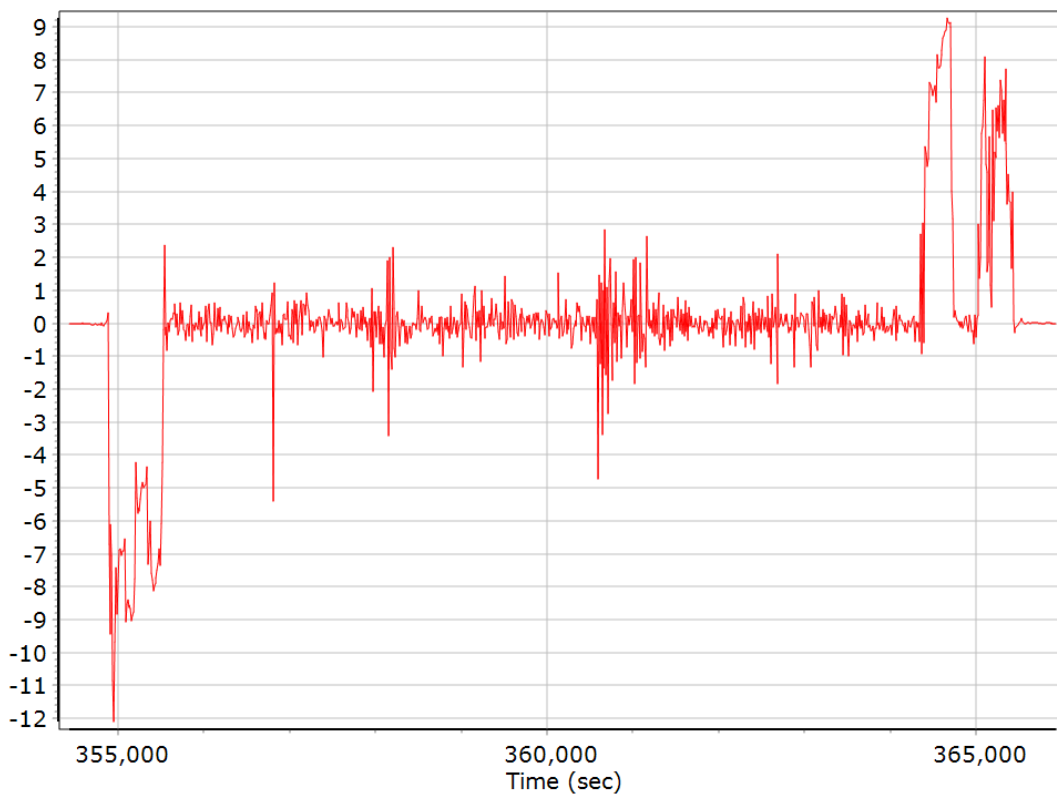
Heading



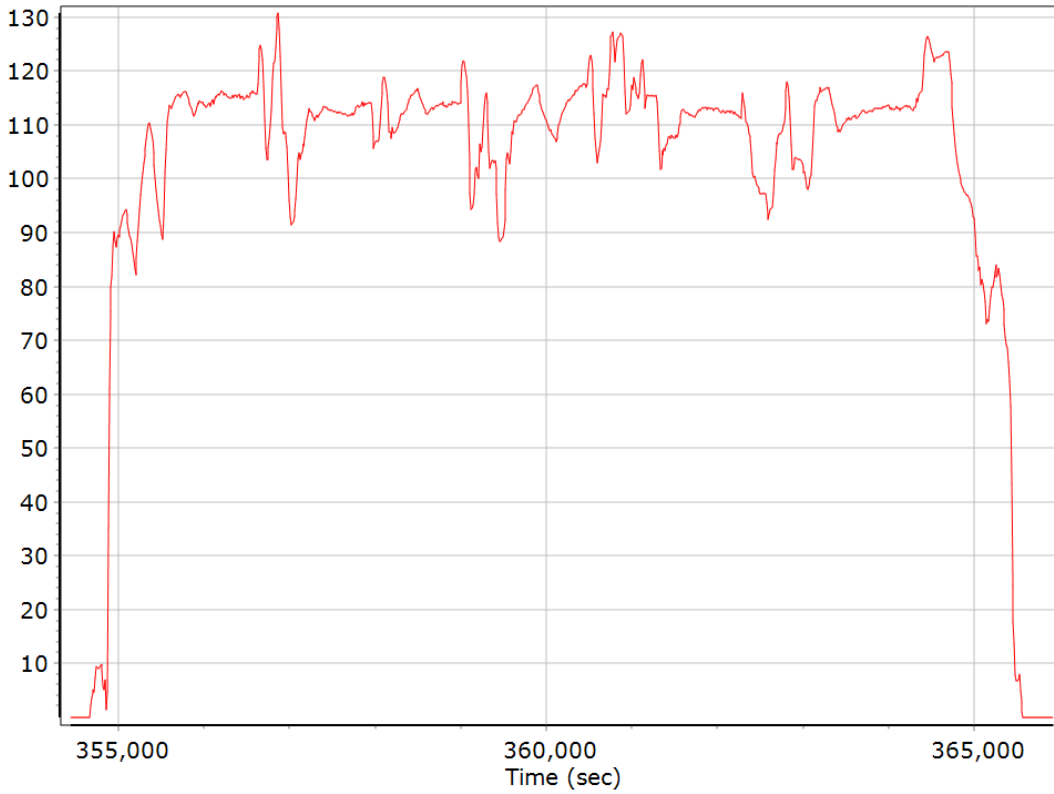
North/East Velocity



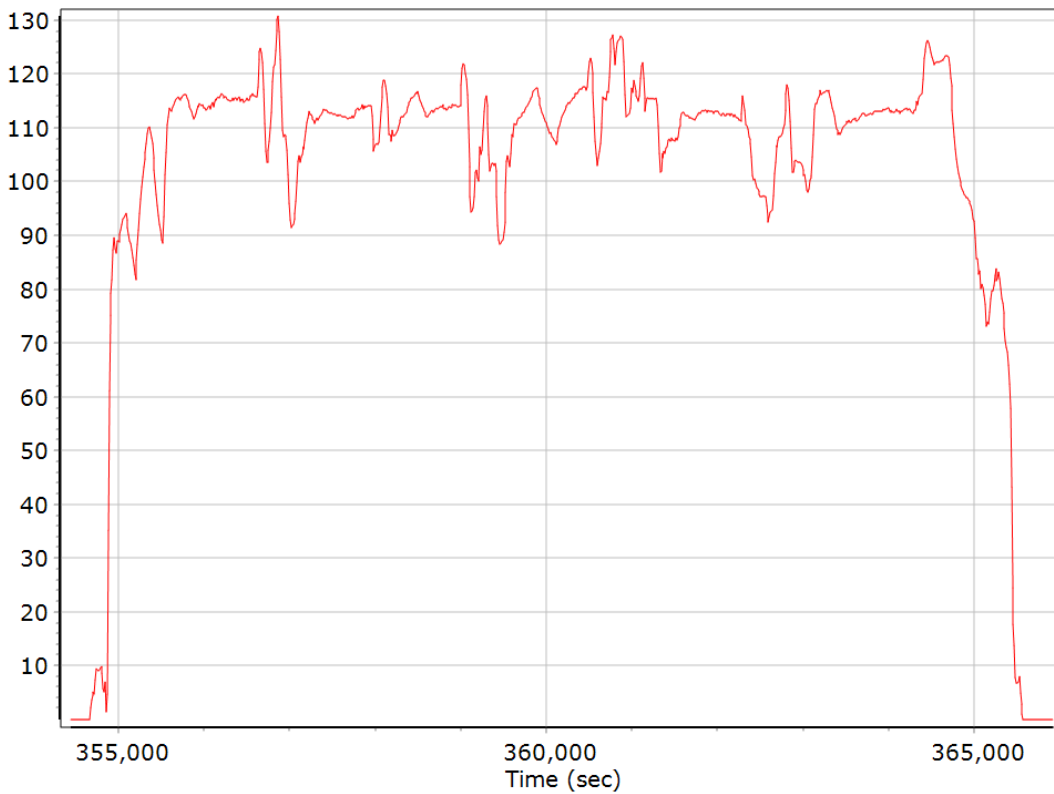
Down Velocity



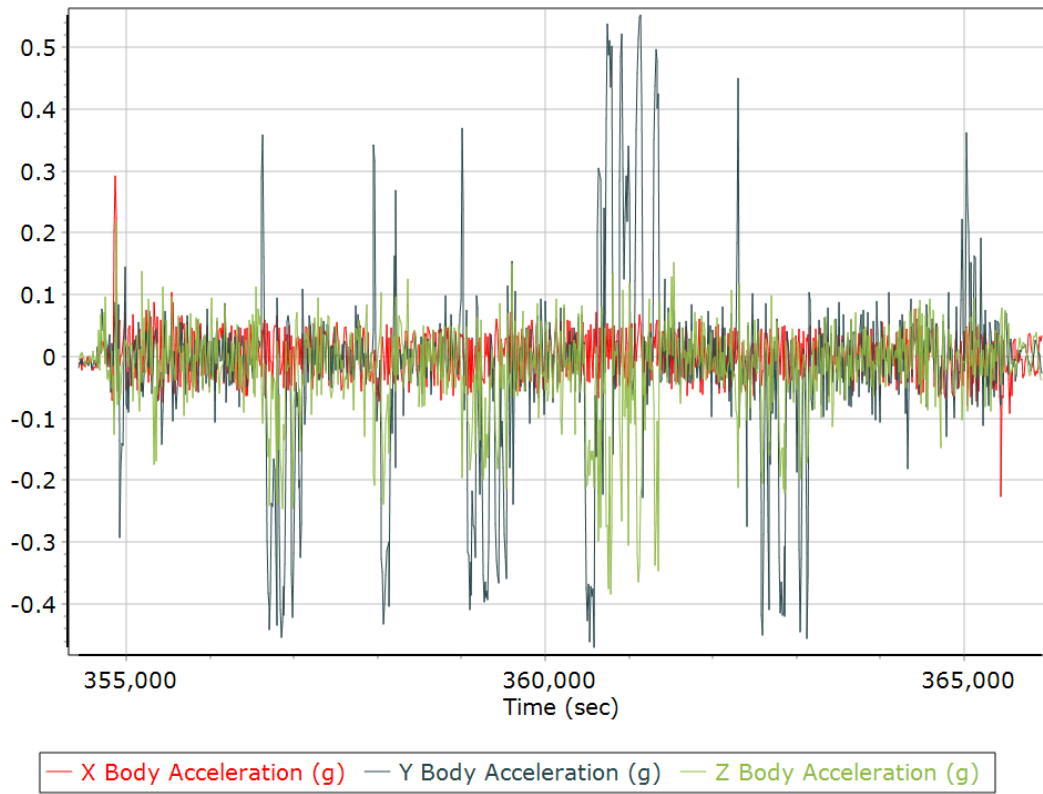
Total Speed



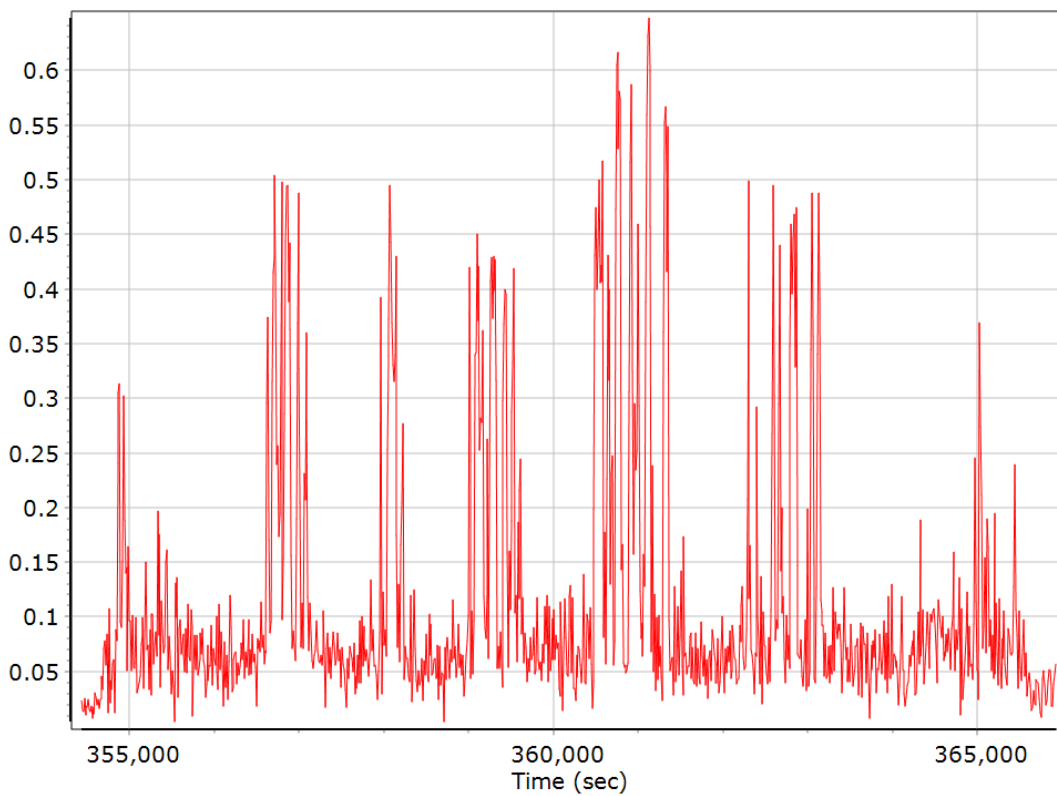
Ground Speed



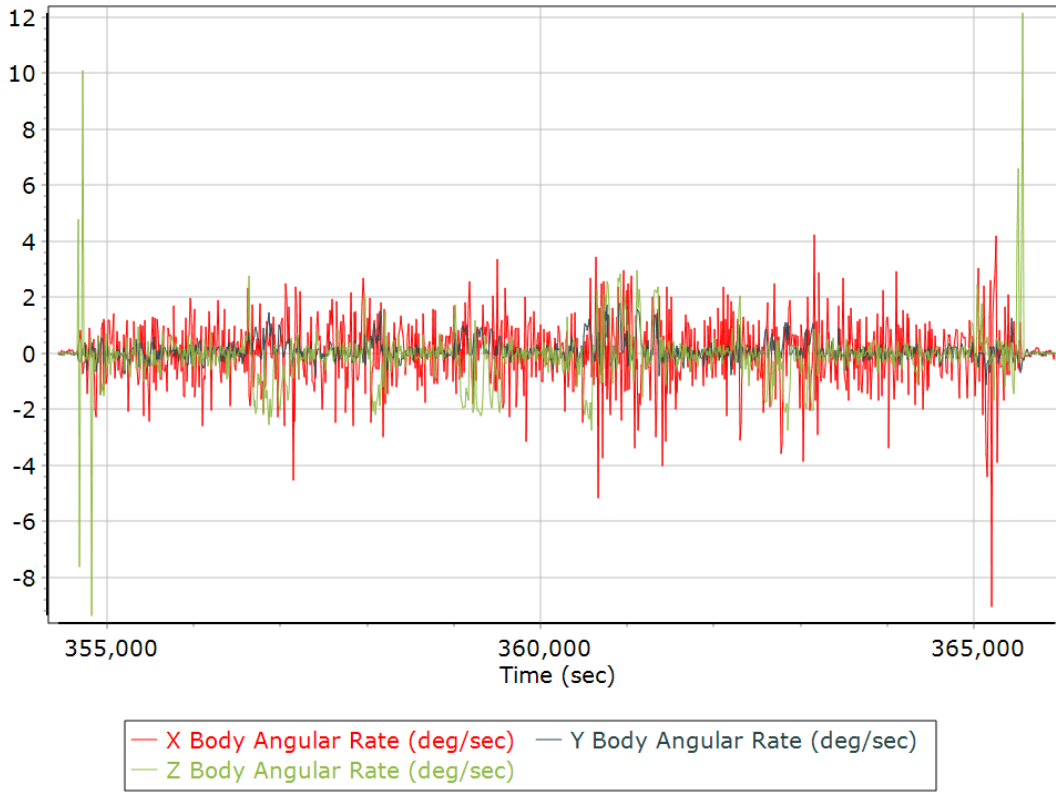
Body Acceleration



Total Body Acceleration



Body Angular Rate

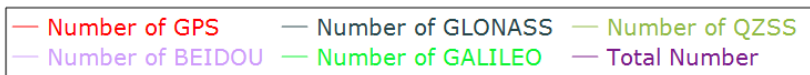
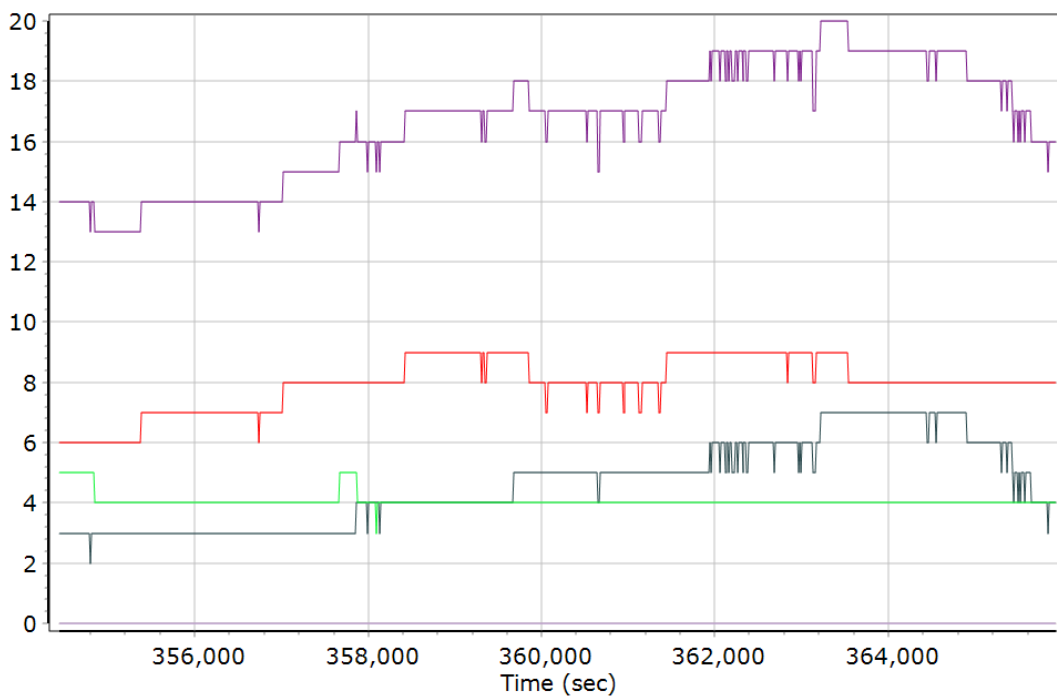


GNSS QC

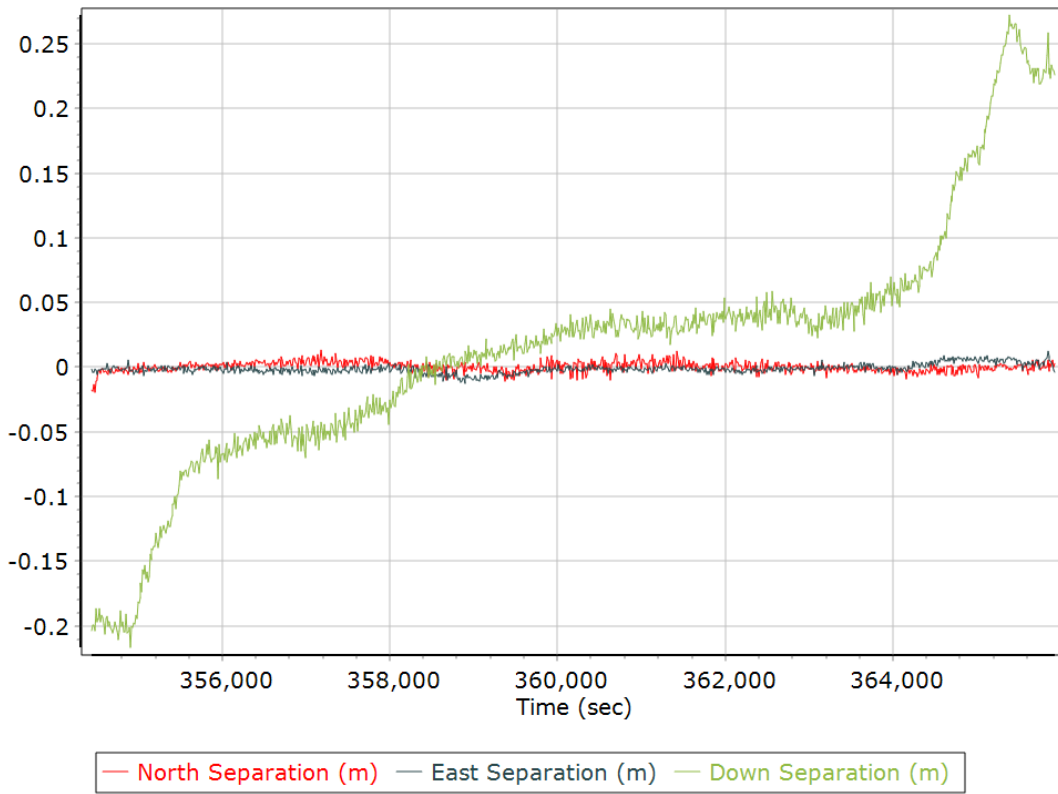
GNSS QC Statistics

Statistics	Min	Max	Mean
Baseline length (km)	0.00	0.00	
Number of GPS SV	6	9	8
Number of GLONASS SV	0	7	5
Number of QZSS SV	0	0	0
Number of BEIDOU SV	0	0	0
Number of GALILEO SV	2	5	4
Total number of SV	10	20	17
PDOP	1.10	2.09	1.34
QC Solution Gaps	0.00	0.00	
Solution Type	Fixed	Float	No solution
Epoch (sec)	11941.00	0.00	0.00
Percentage	100.00	0.00	0.00

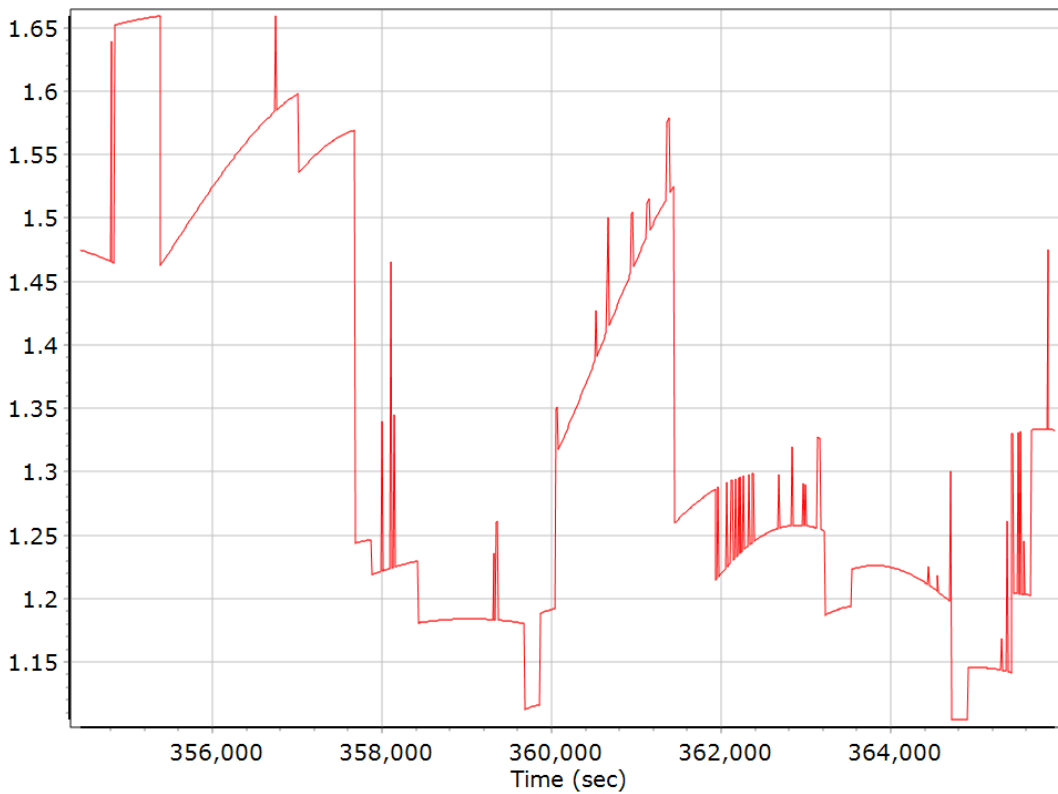
Num SVs in solution



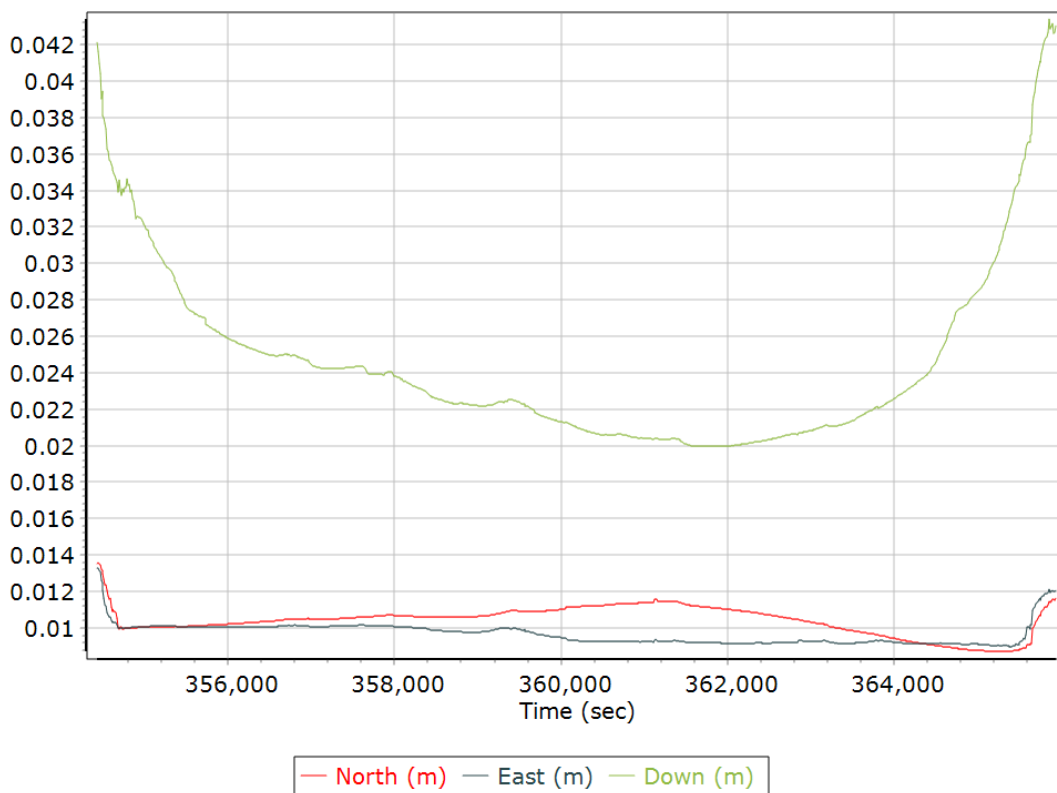
Forward/Reverse Separation



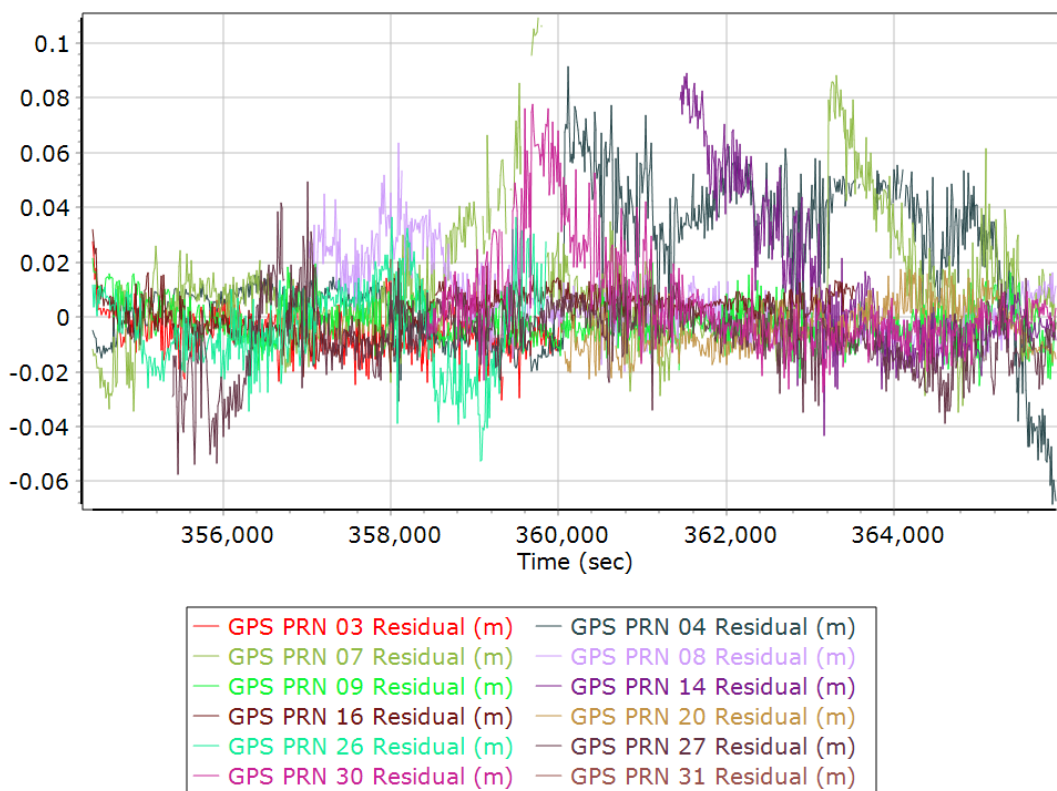
PDOP



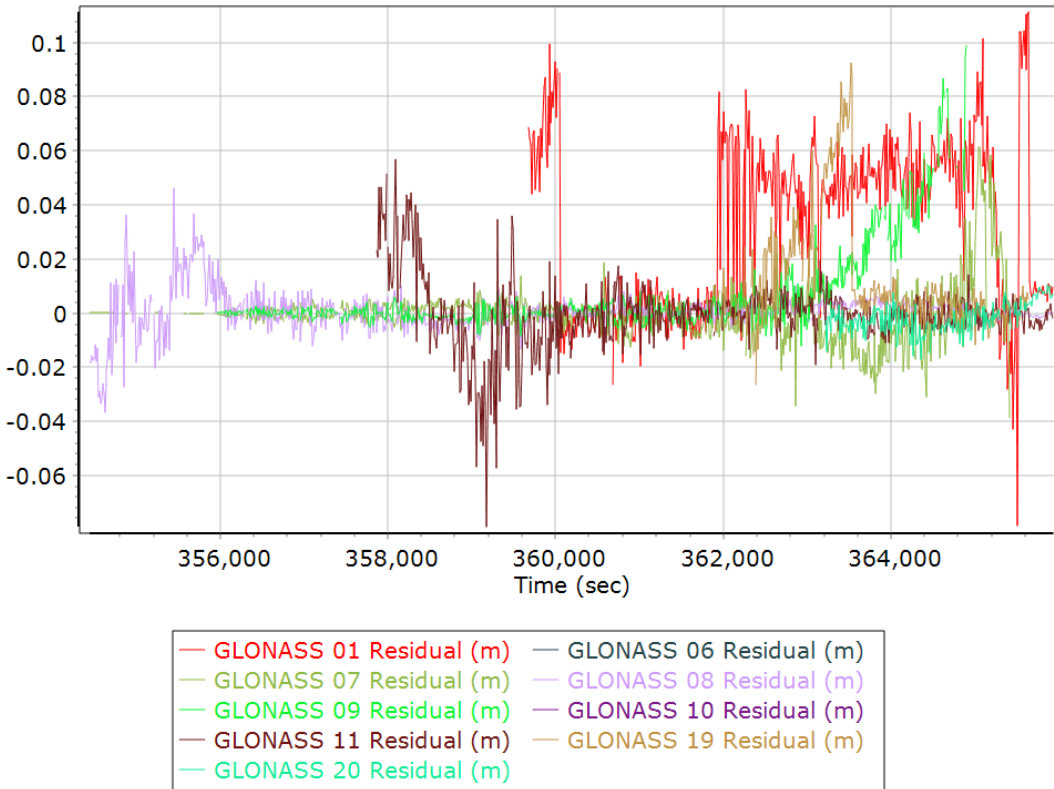
Estimated Position Accuracy



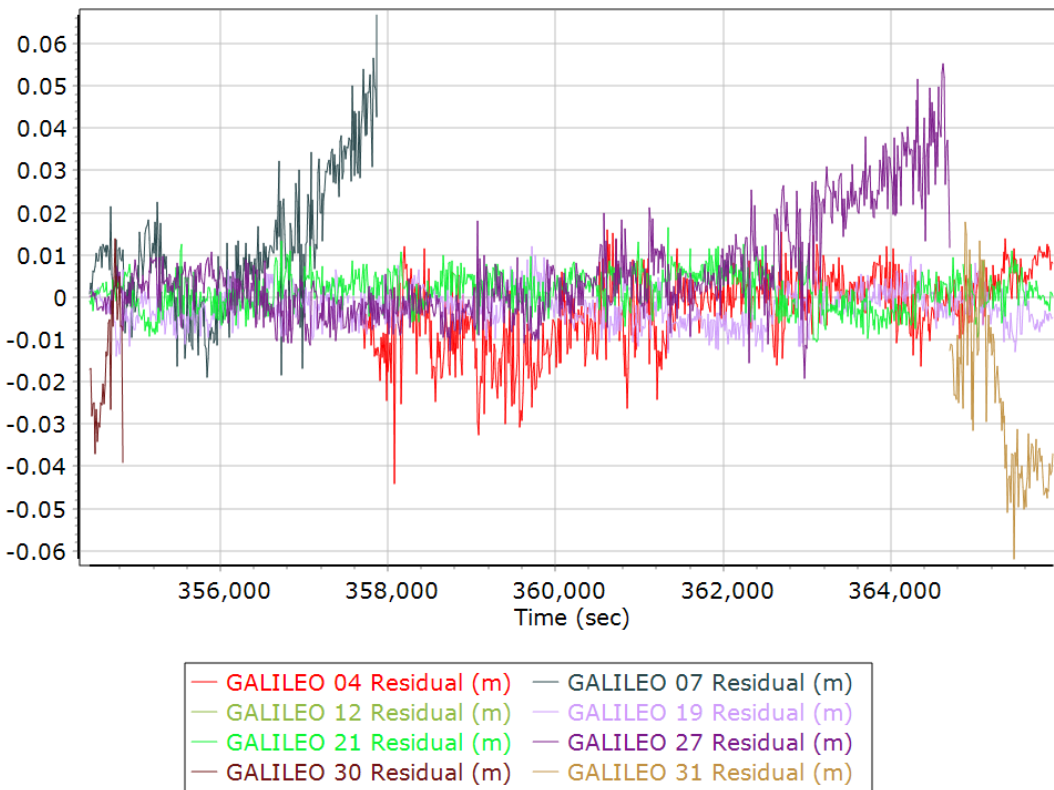
GPS Residuals



GLONASS Residuals



GALILEO Residuals



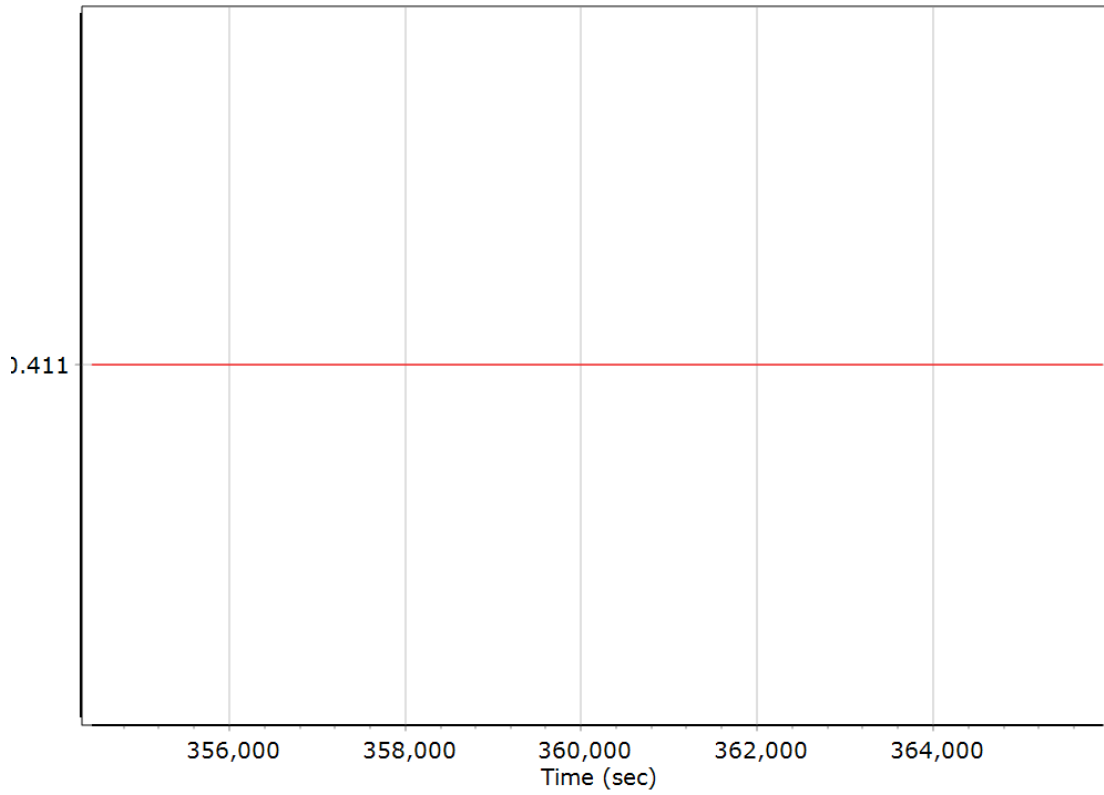
GNSS-Inertial Processor Configuration

Processing mode	IN-Fusion PP-RTX		
Stabilized mount	False		
Processing start time	353971.000 (9/1/2022 2:19:31 AM)		
Processing end time	365935.000 (9/1/2022 5:38:55 AM)		
Initial attitude source	Real-Time VNAV/RNAV Attitude		
IMU Sensor Context	Processing with Onboard IMU		
Reference to IMU lever arm (m)	0.000	0.000	0.000
Reference to IMU mounting angles (deg)	0.000	0.000	0.000
Reference to Primary GNSS lever arm (m)	-0.411	-0.283	-1.282
Reference 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

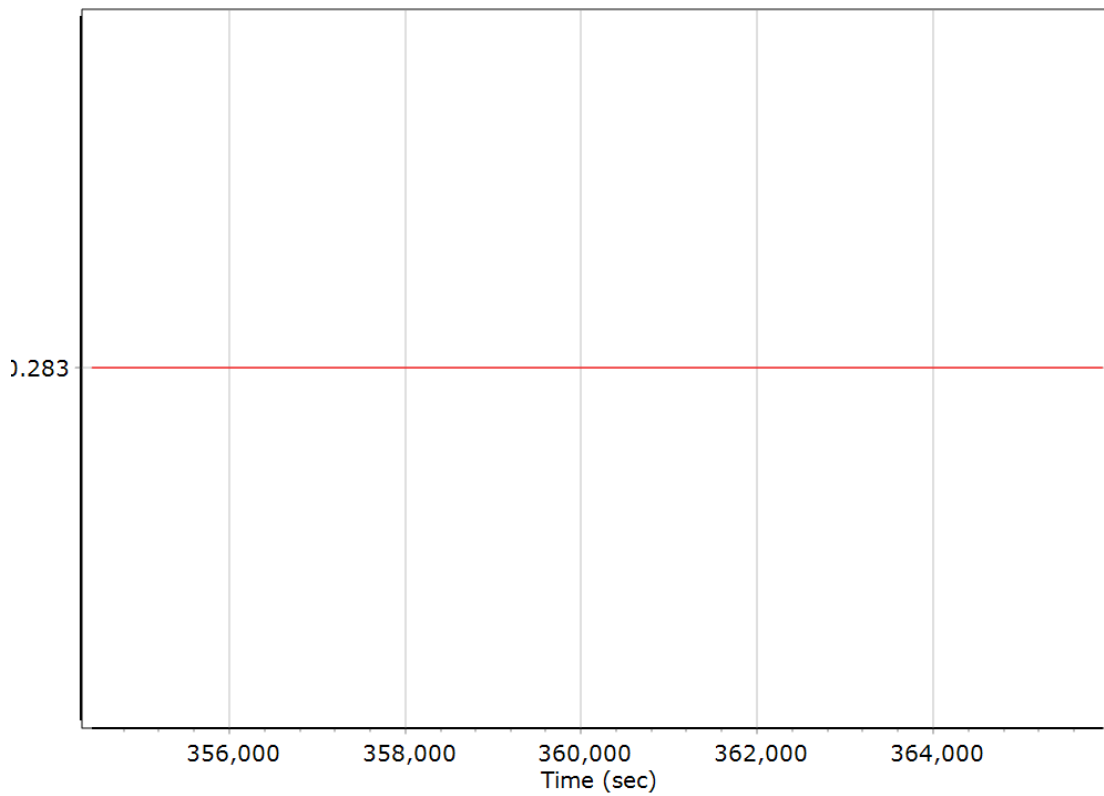
Calibrated Installation Parameters

Reference-Primary GNSS Lever Arm (m)

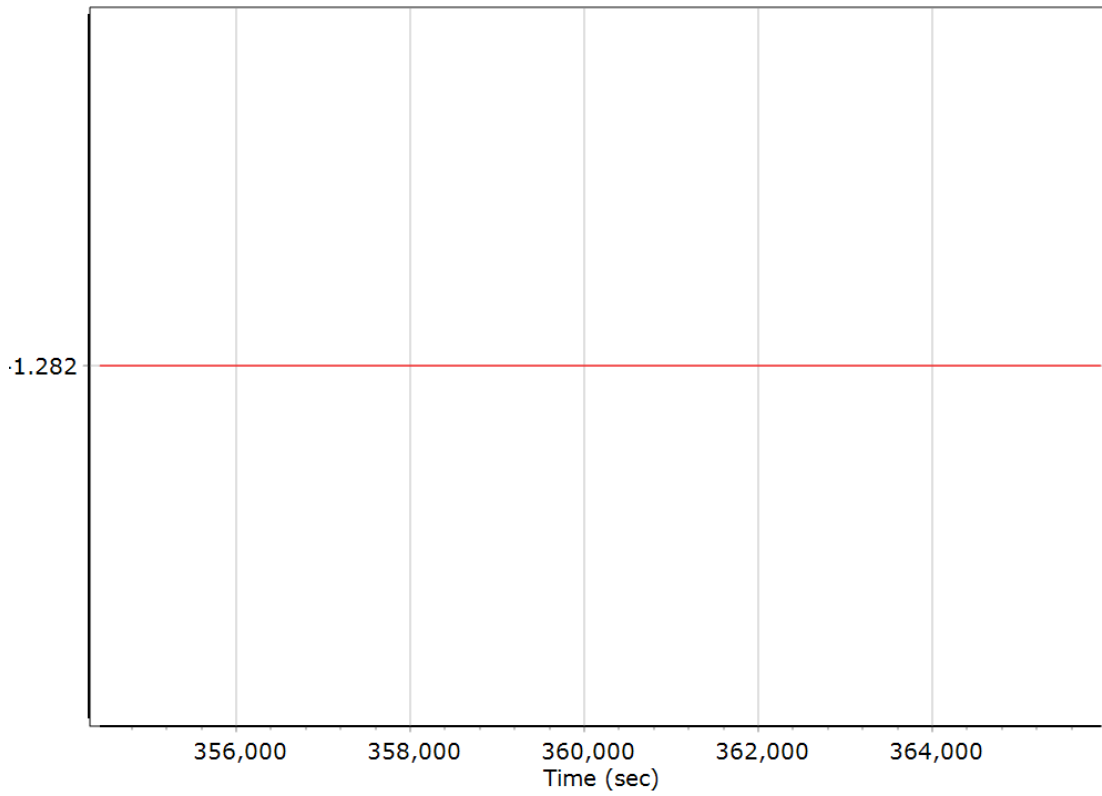
X Reference-Primary GNSS Lever Arm (m)



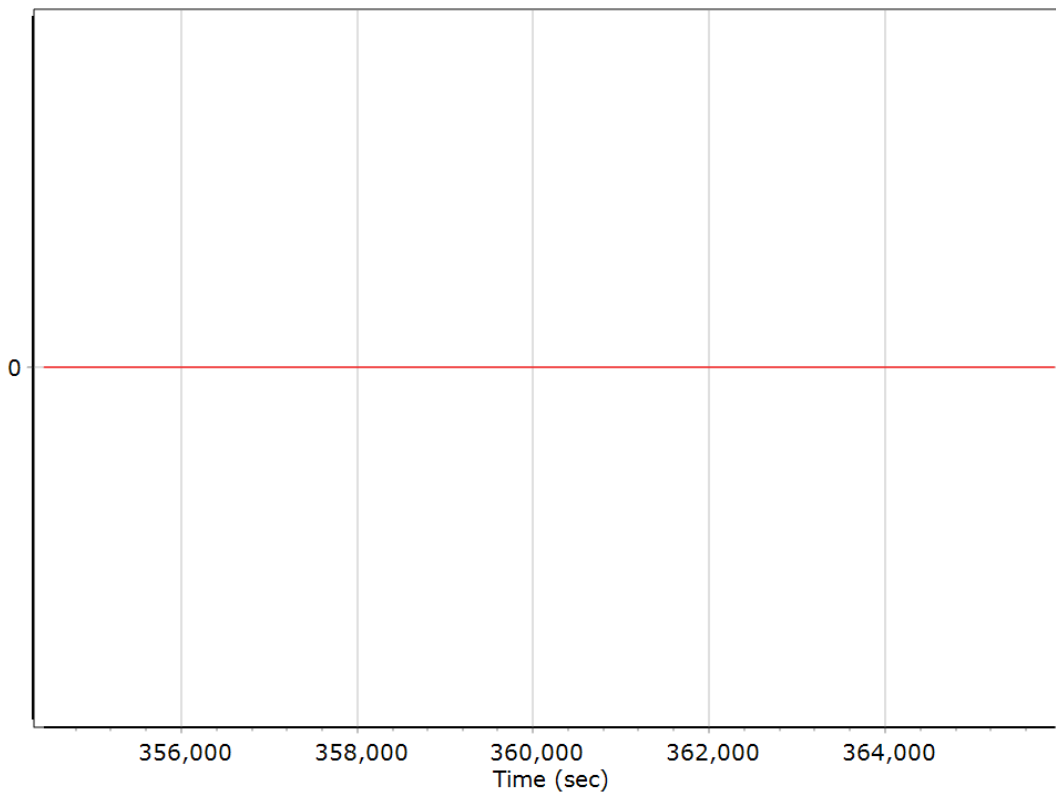
Y Reference-Primary GNSS Lever Arm (m)



Z Reference-Primary GNSS Lever Arm (m)



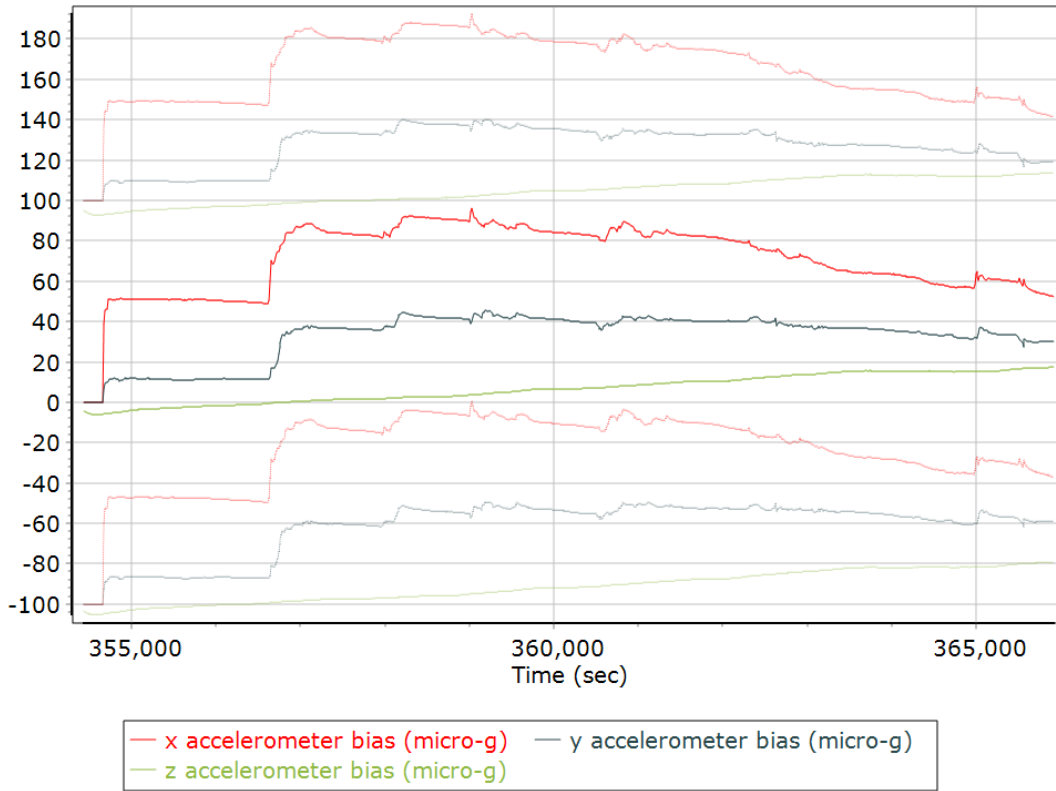
Reference-Primary GNSS Lever Arm Figure of Merit



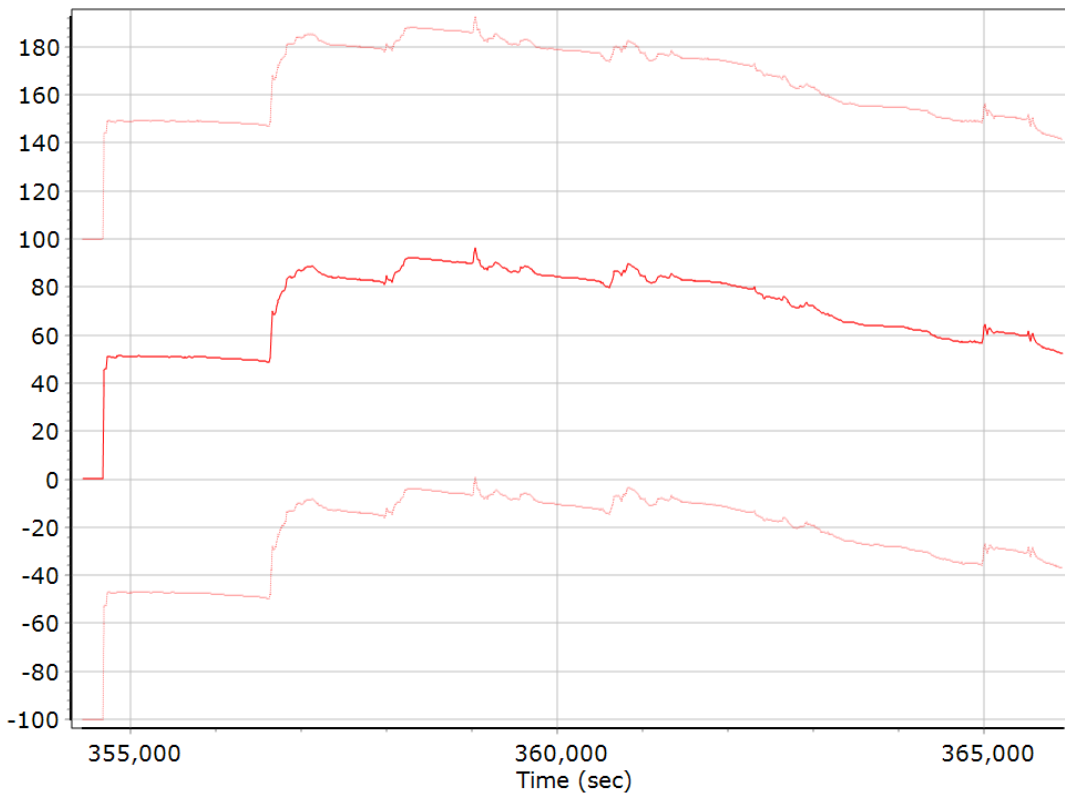
IN-Fusion QC

Forward Processed Estimated Errors, Reference Frame

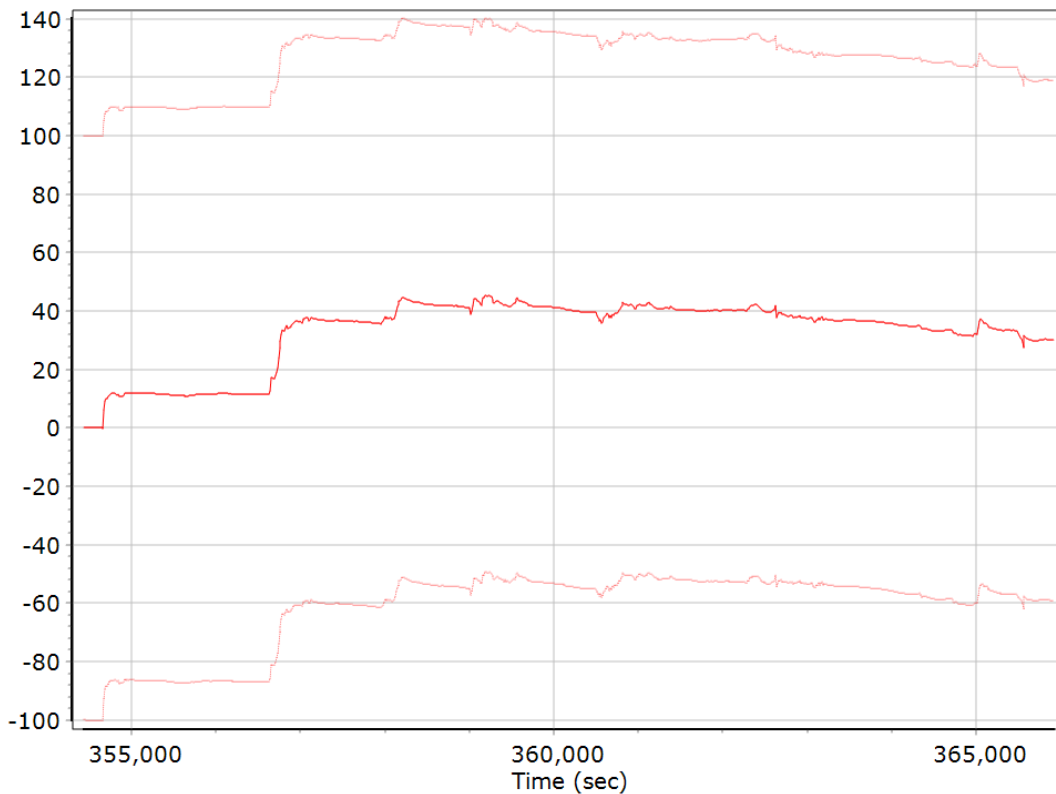
Accelerometer Bias (micro-g)



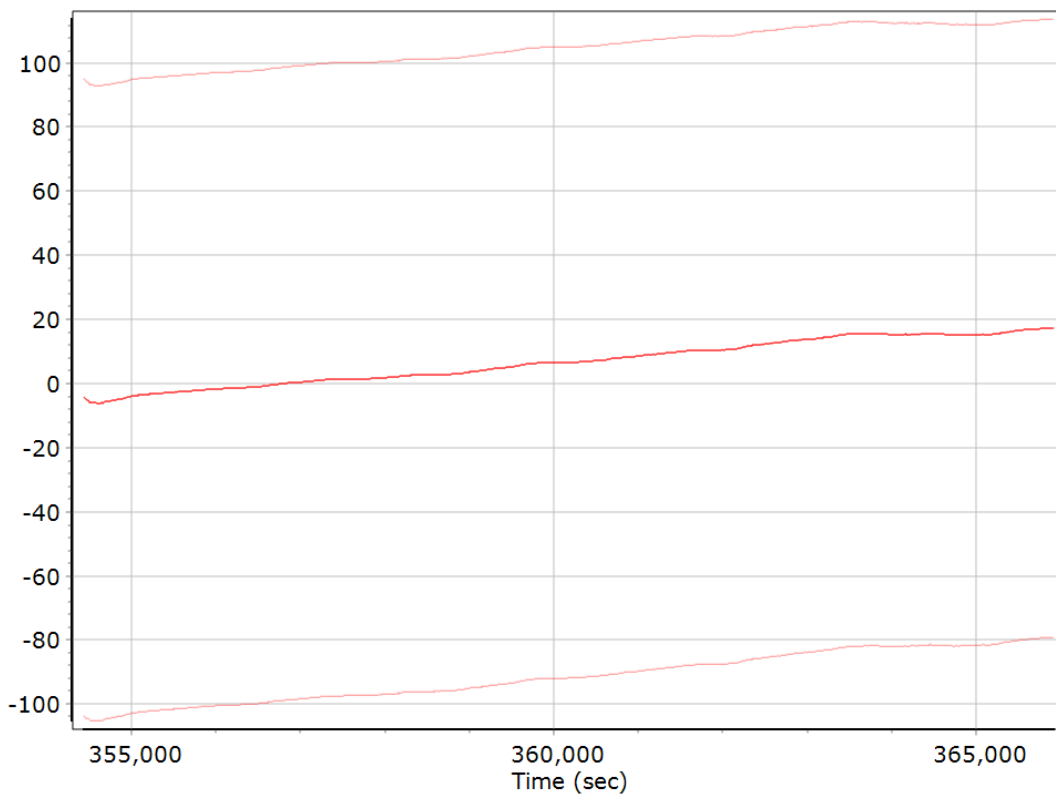
X Accelerometer Bias (micro-g)



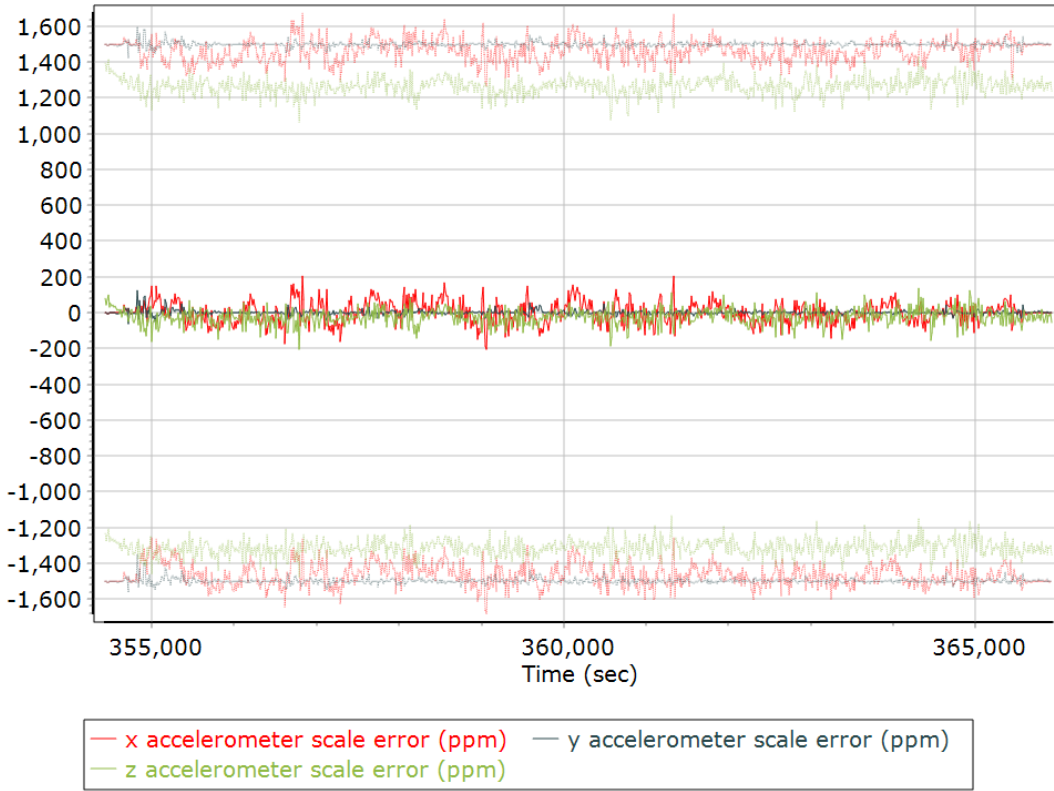
Y Accelerometer Bias (micro-g)



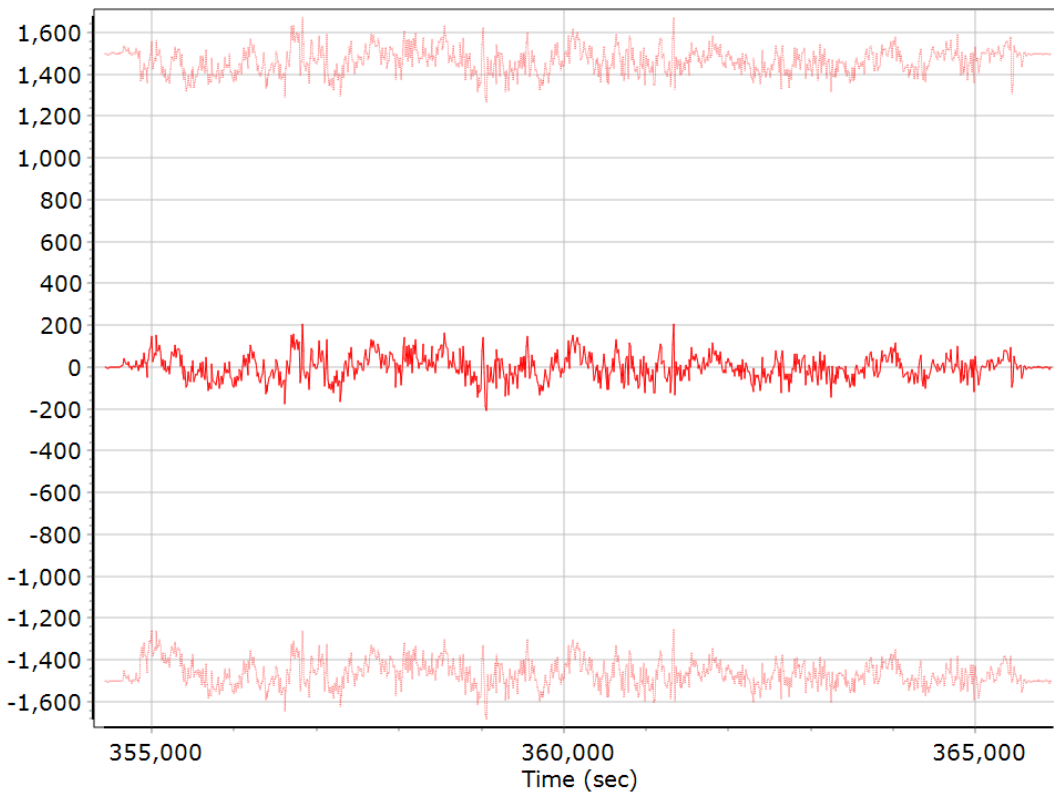
Z Accelerometer Bias (micro-g)



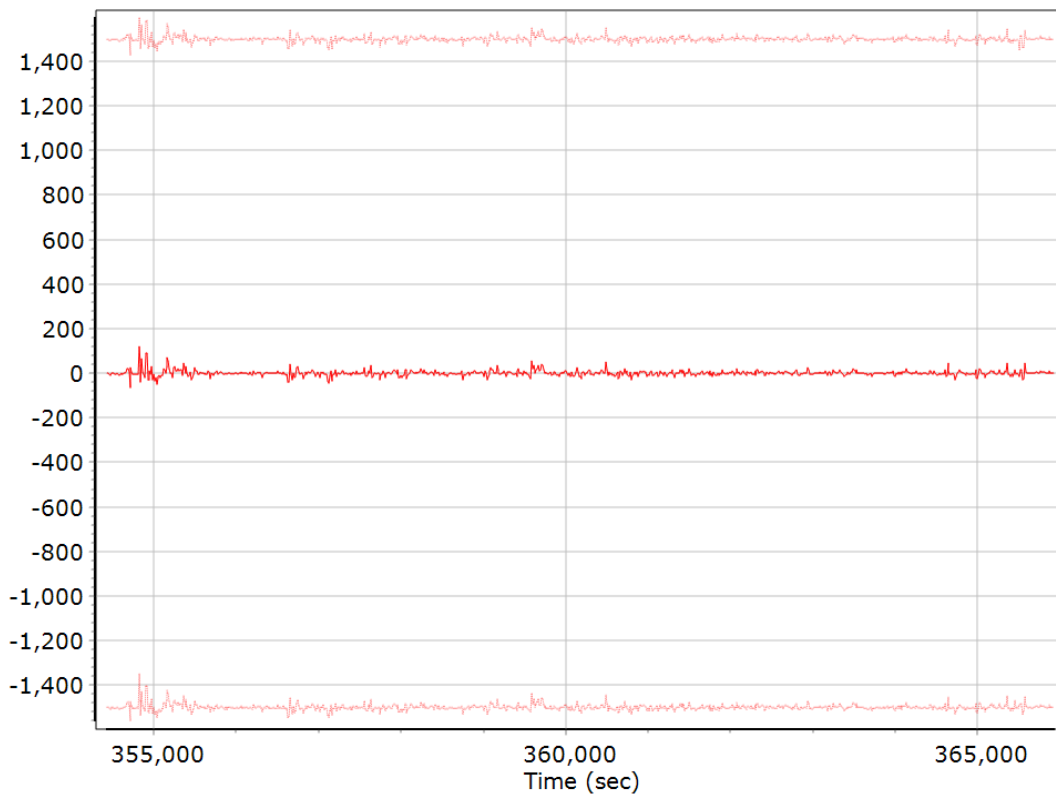
Accelerometer Scale Error (ppm)



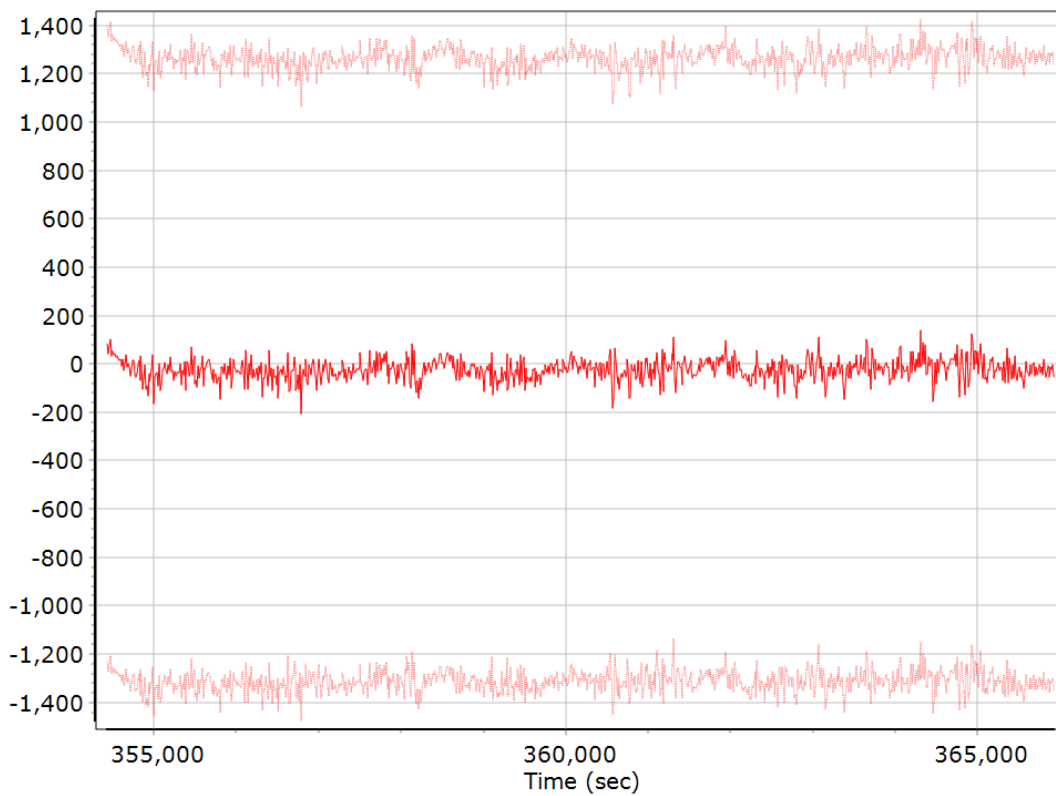
X Accelerometer Scale Error (ppm)



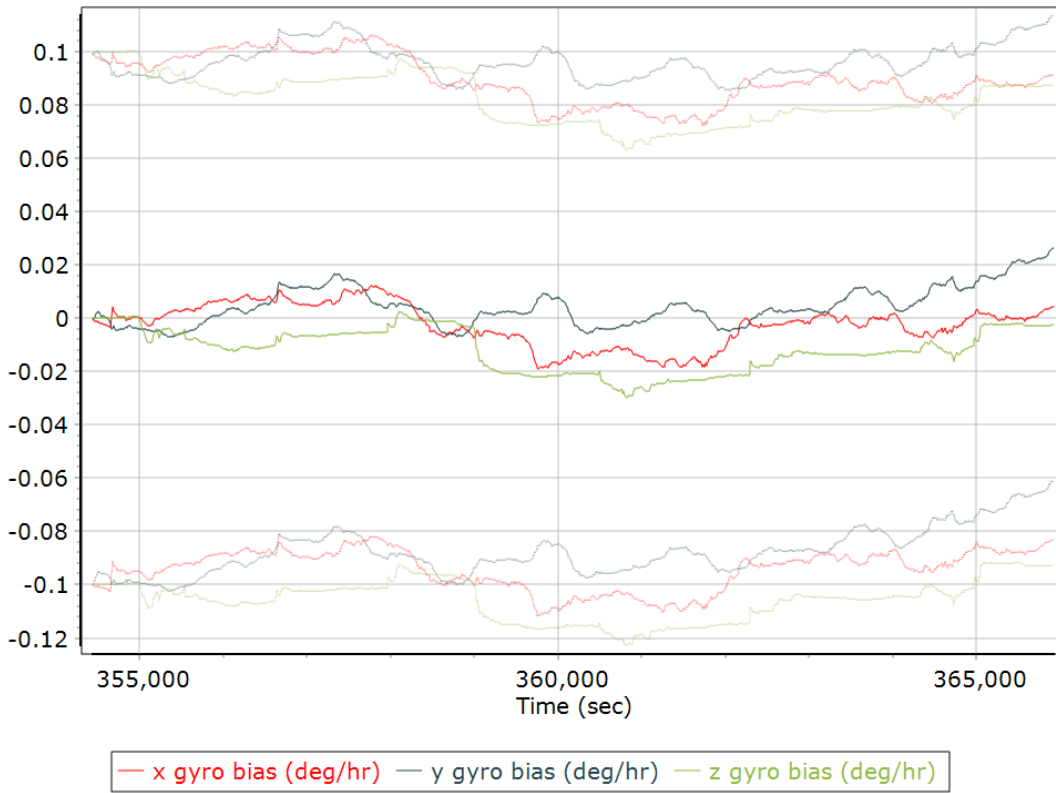
Y Accelerometer Scale Error (ppm)



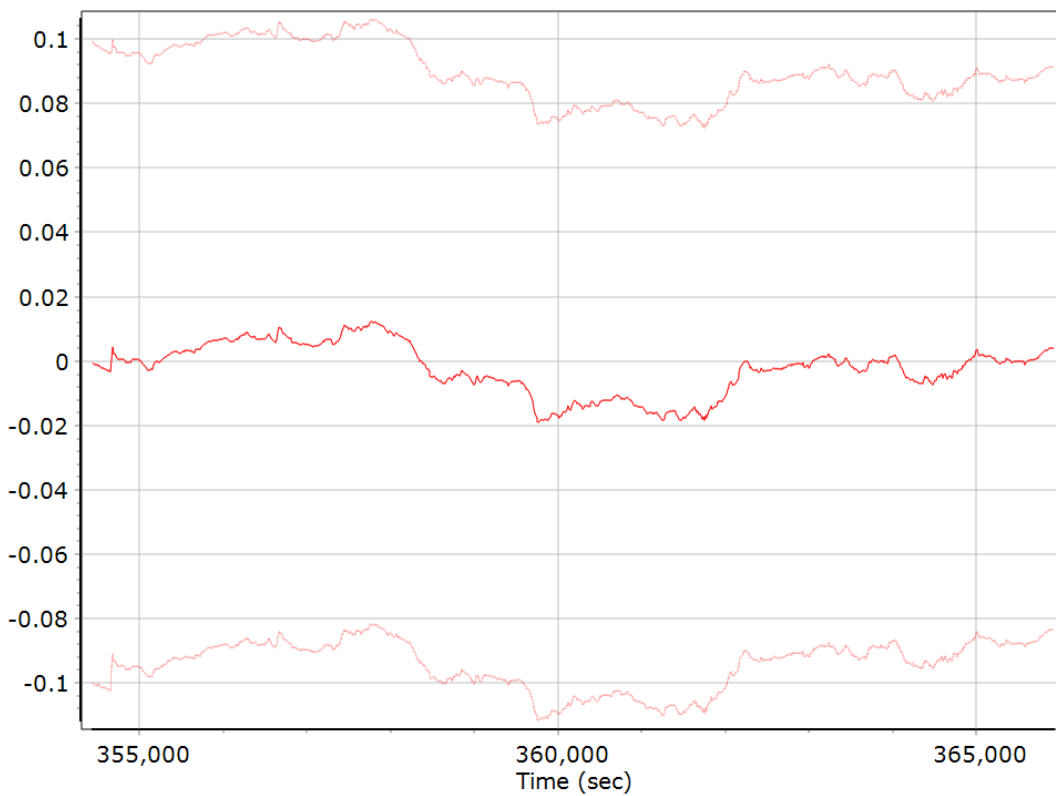
Z Accelerometer Scale Error (ppm)



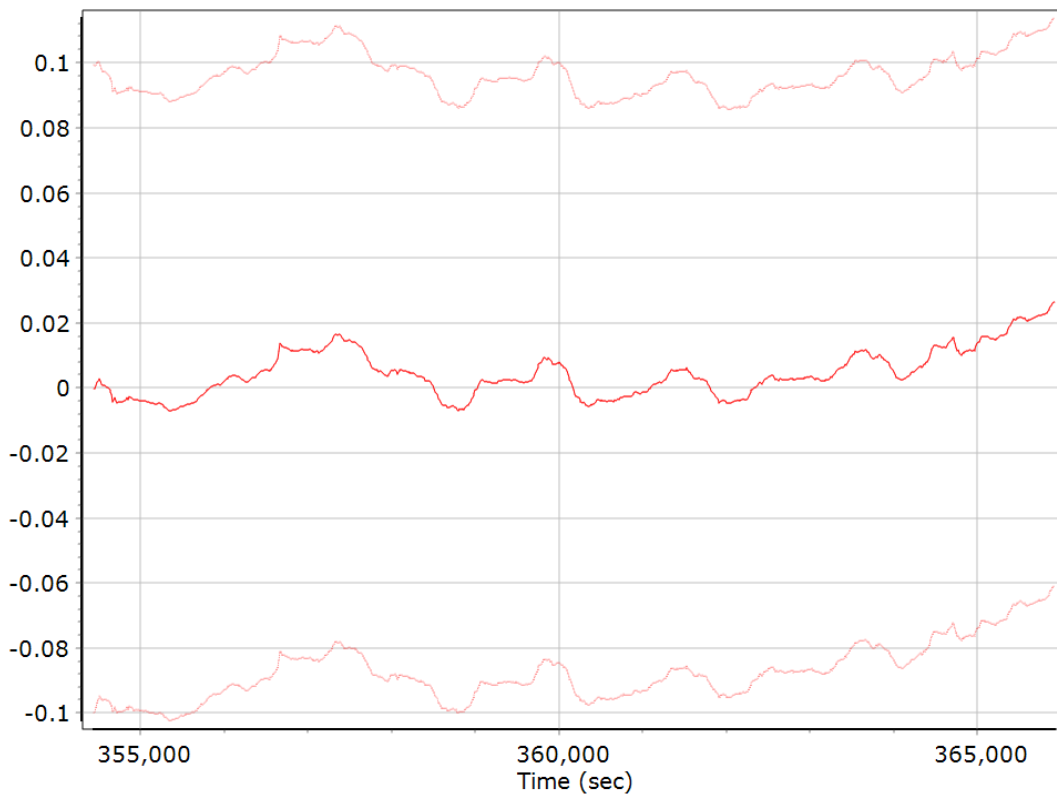
Gyro Bias (deg/h)



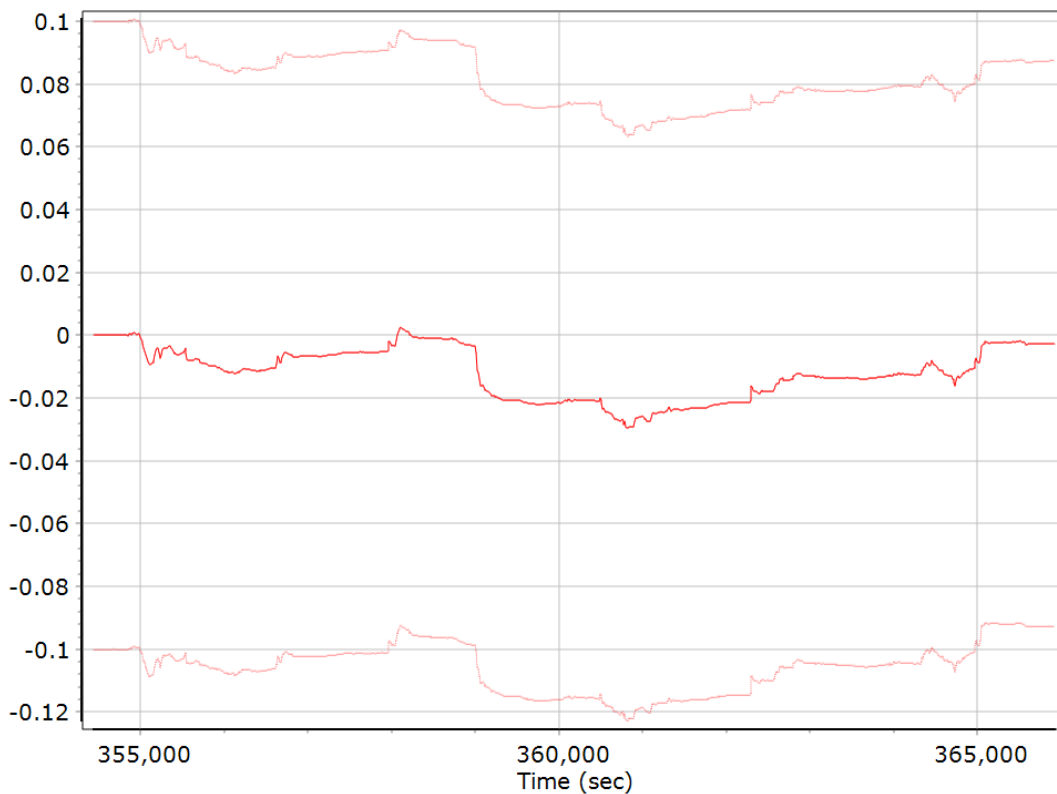
X Gyro Bias (deg/h)



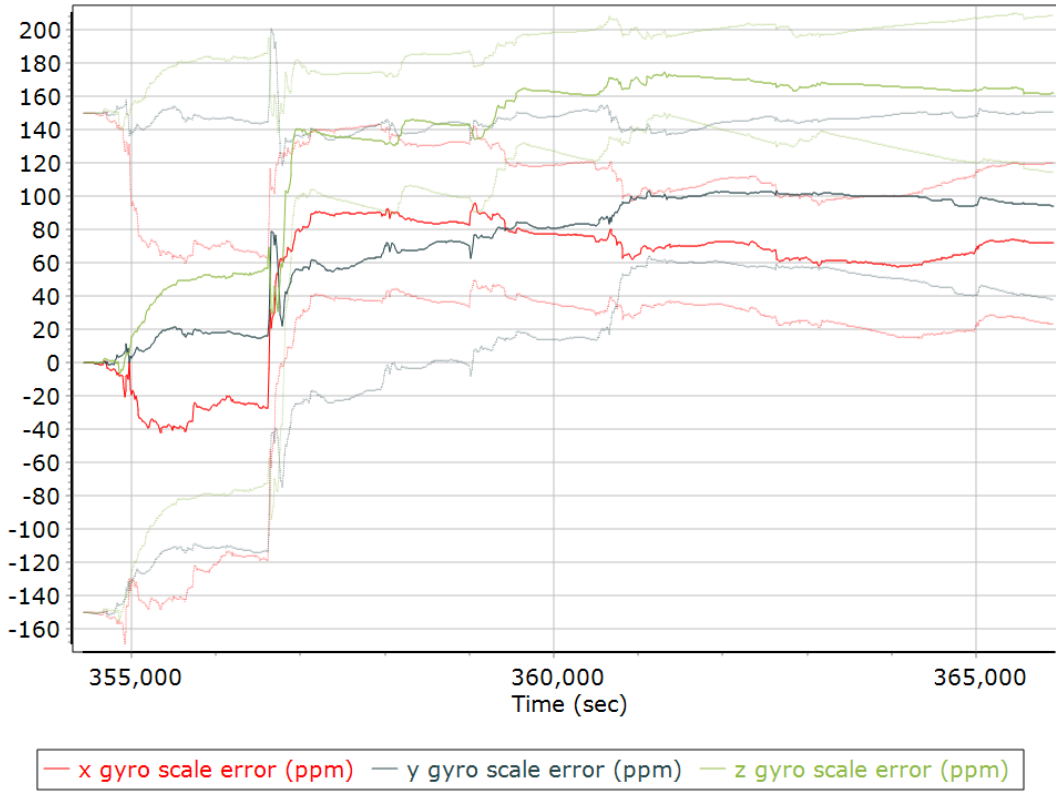
Y Gyro Bias (deg/h)



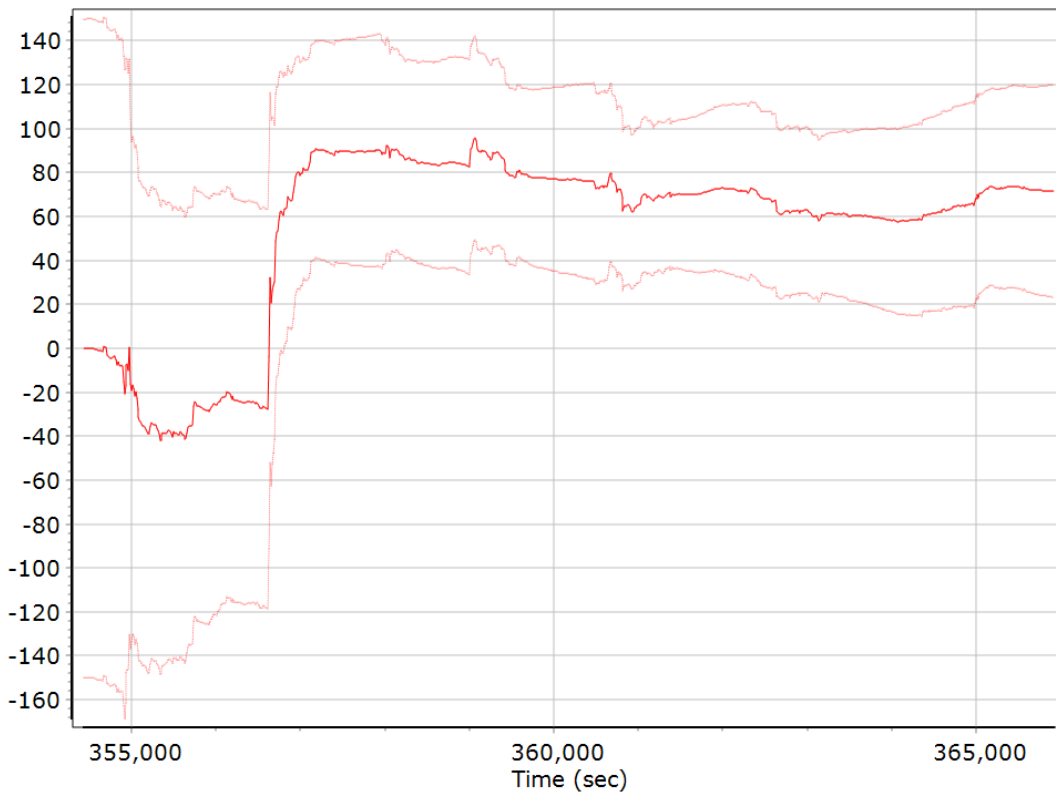
Z Gyro Bias (deg/h)



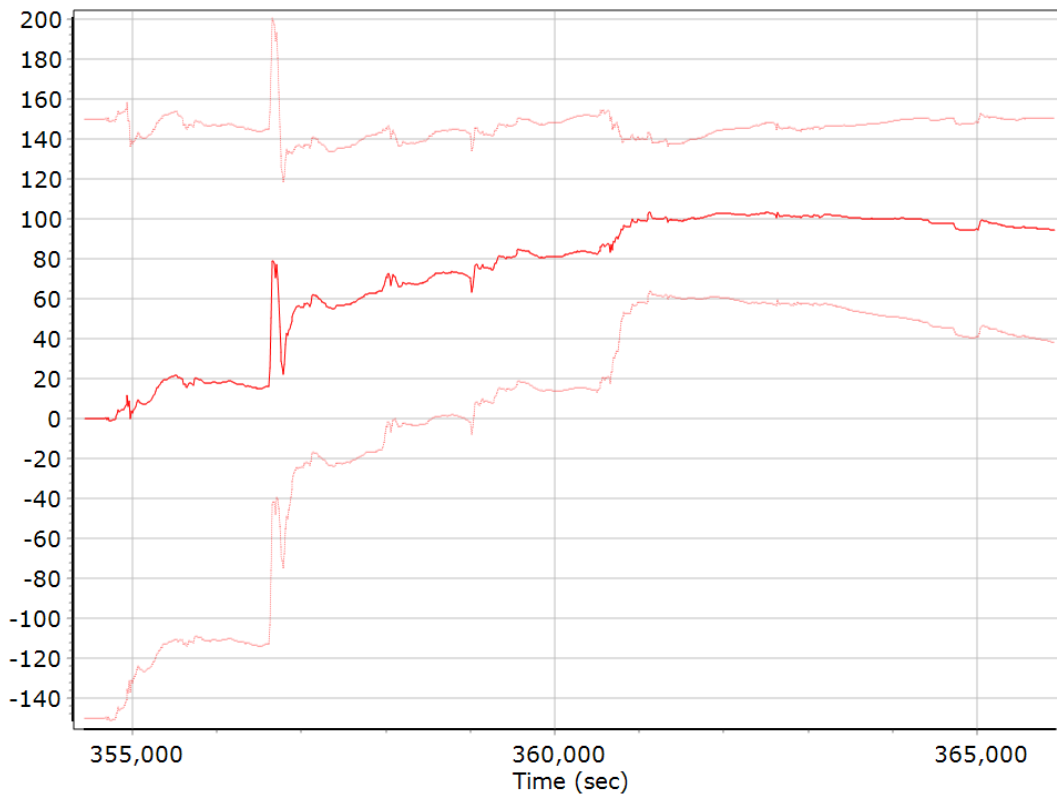
Gyro Scale Error (ppm)



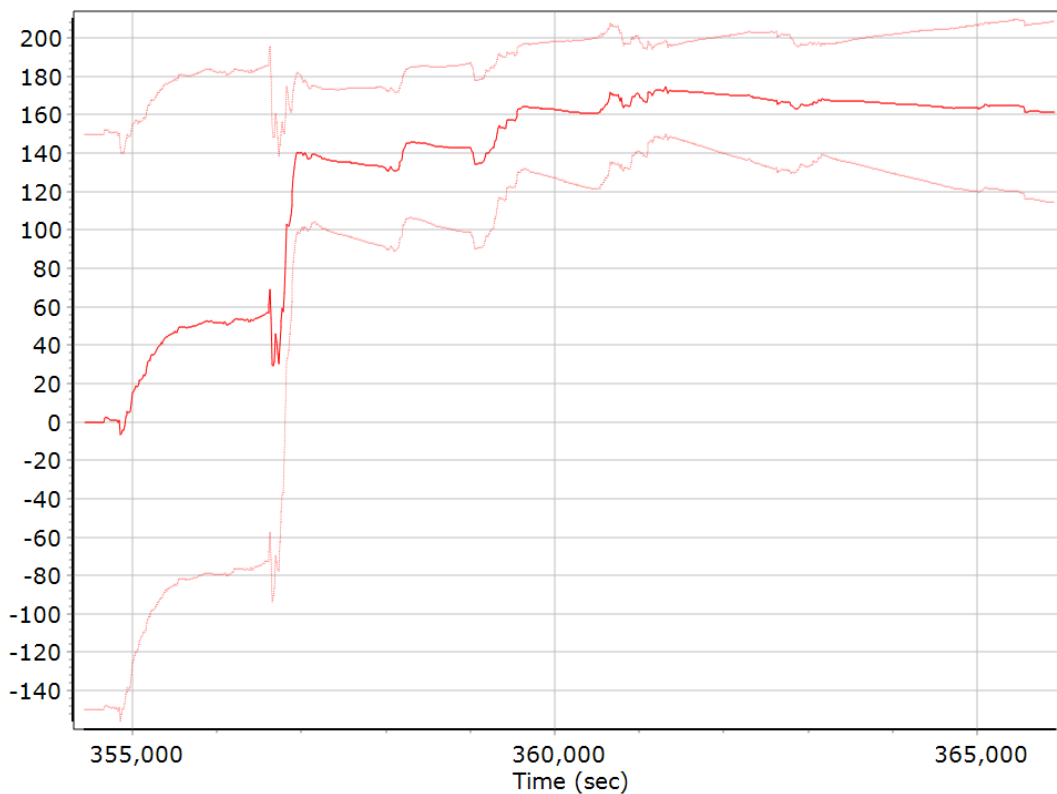
X Gyro Scale Error (ppm)



Y Gyro Scale Error (ppm)

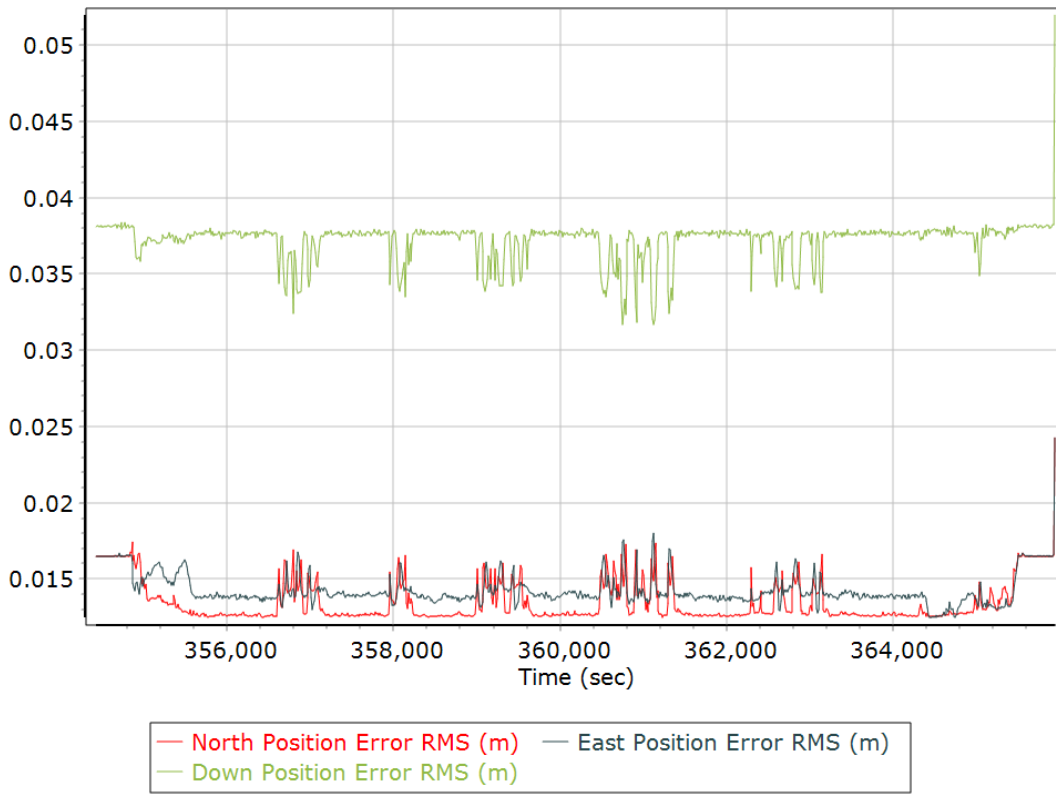


Z Gyro Scale Error (ppm)

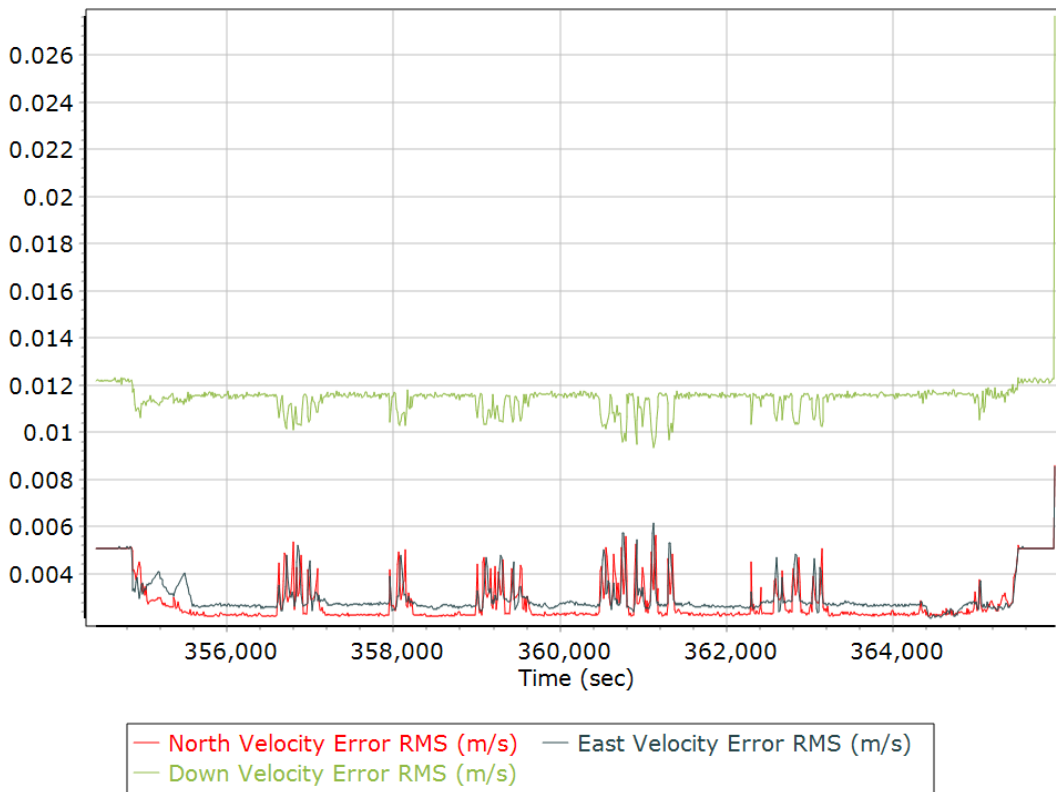


Smoothed Performance Metrics

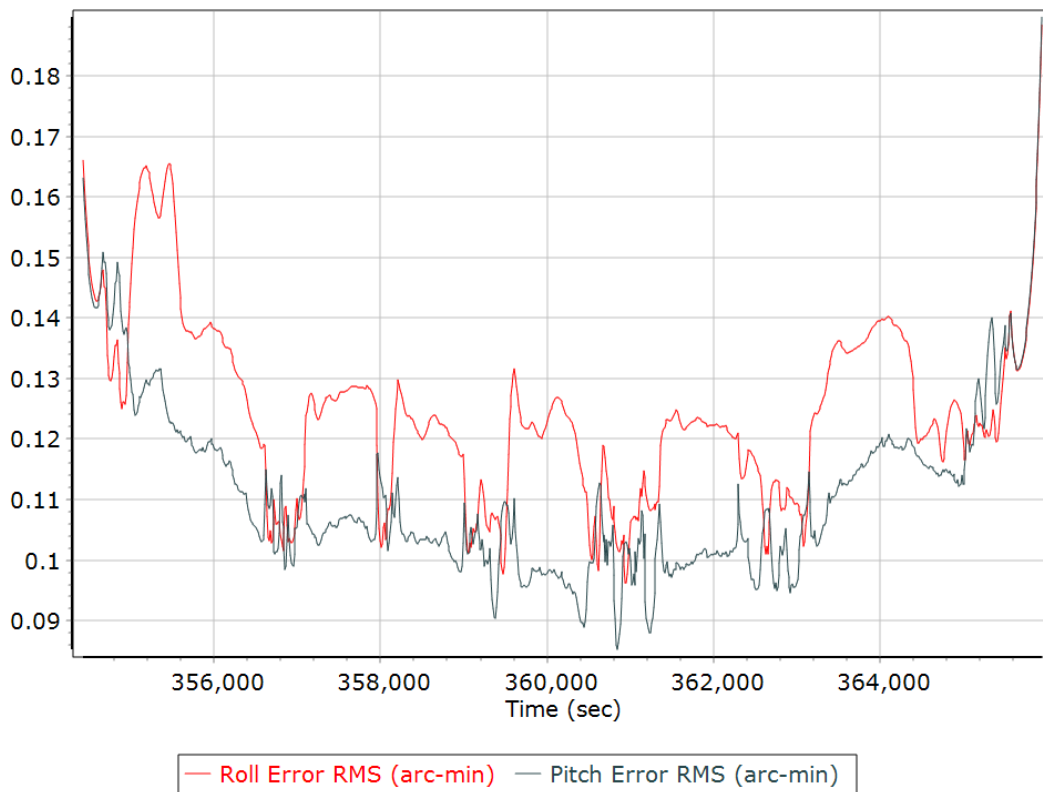
Position Error RMS (m)



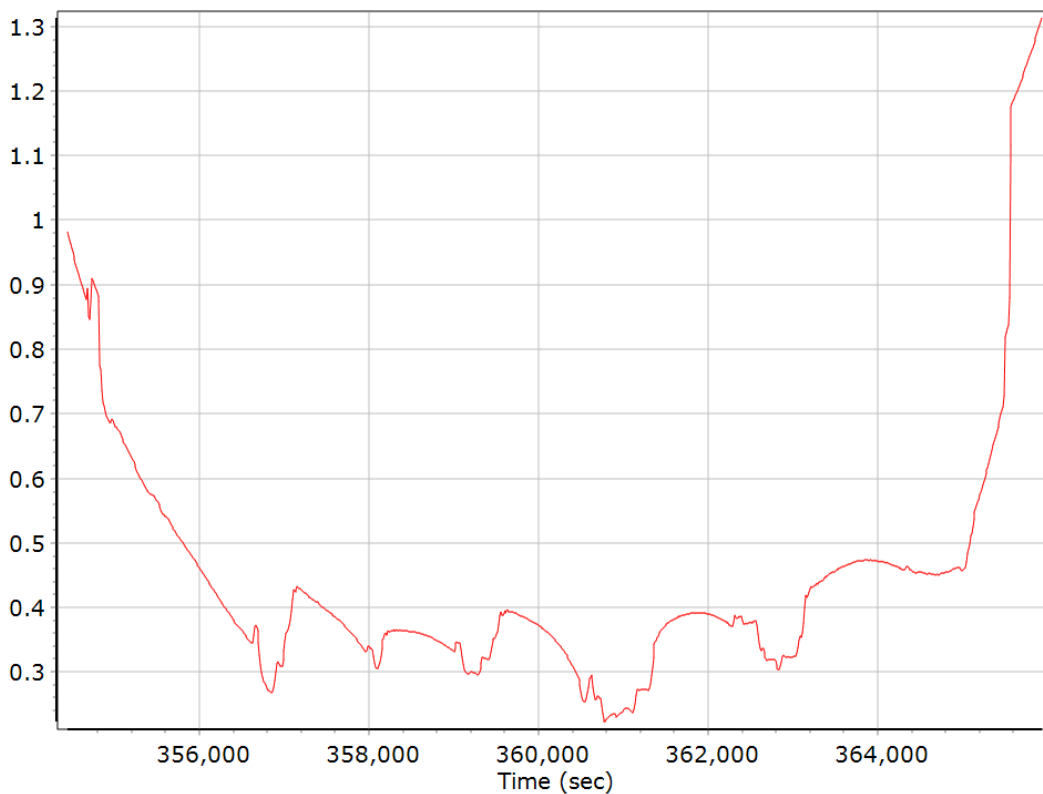
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

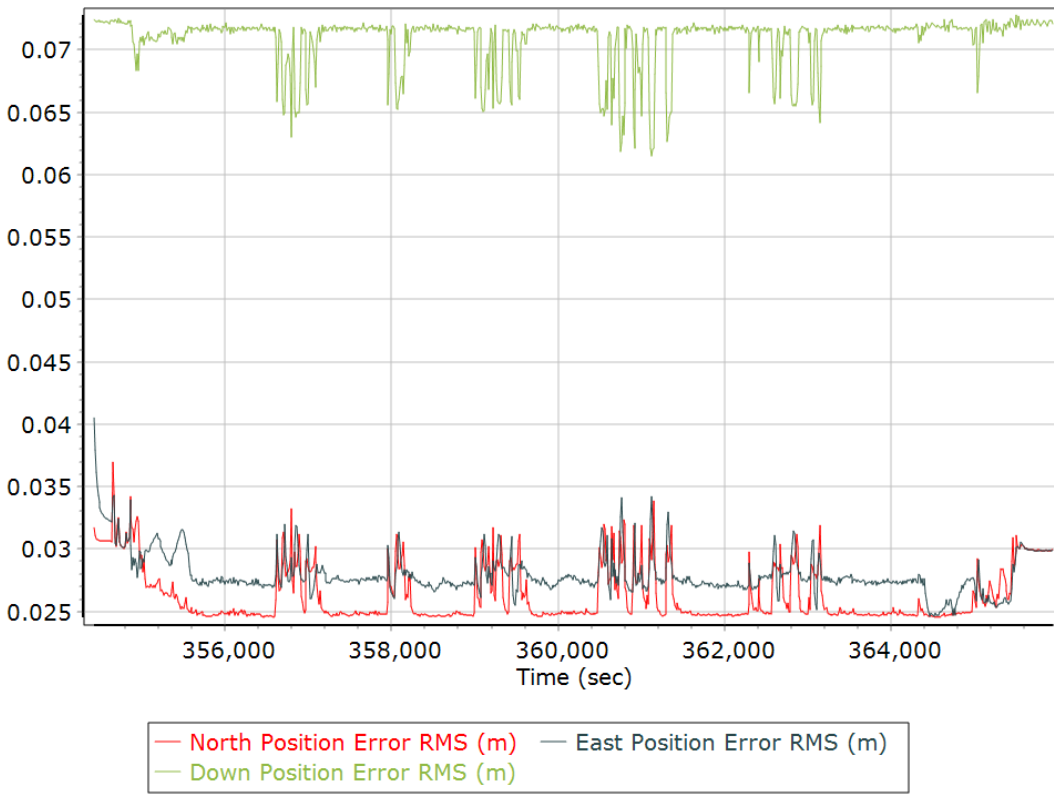


Heading Error RMS (arc-min)

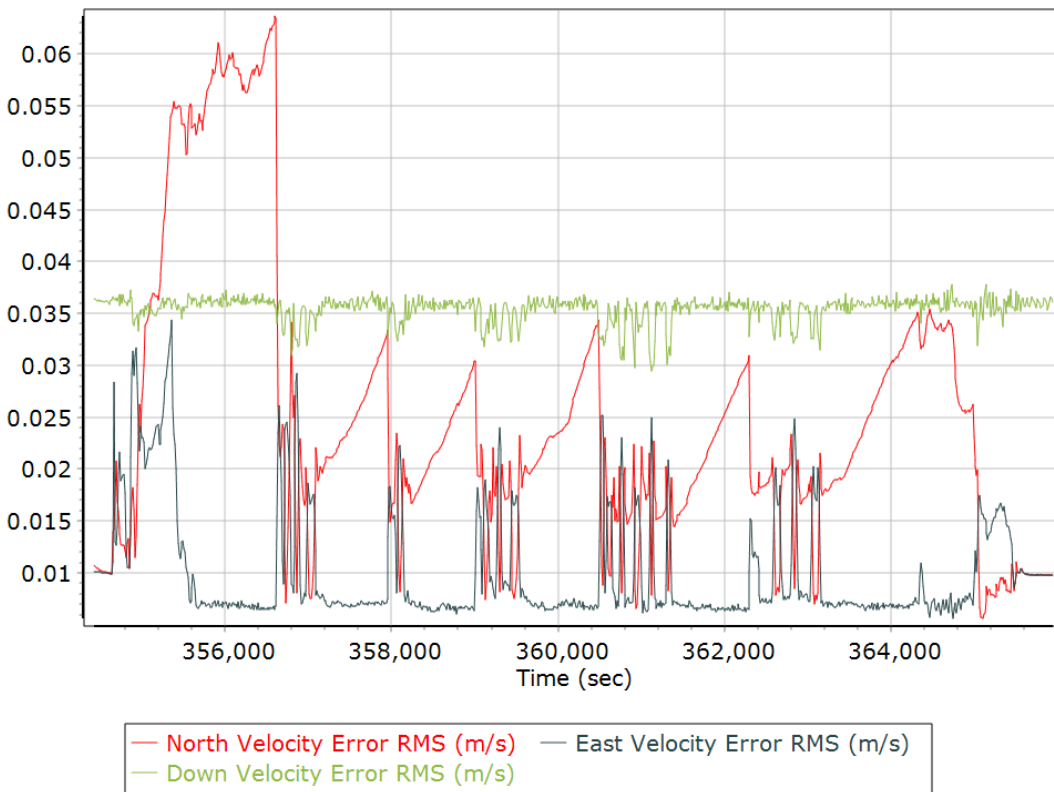


Forward Processed Performance Metrics

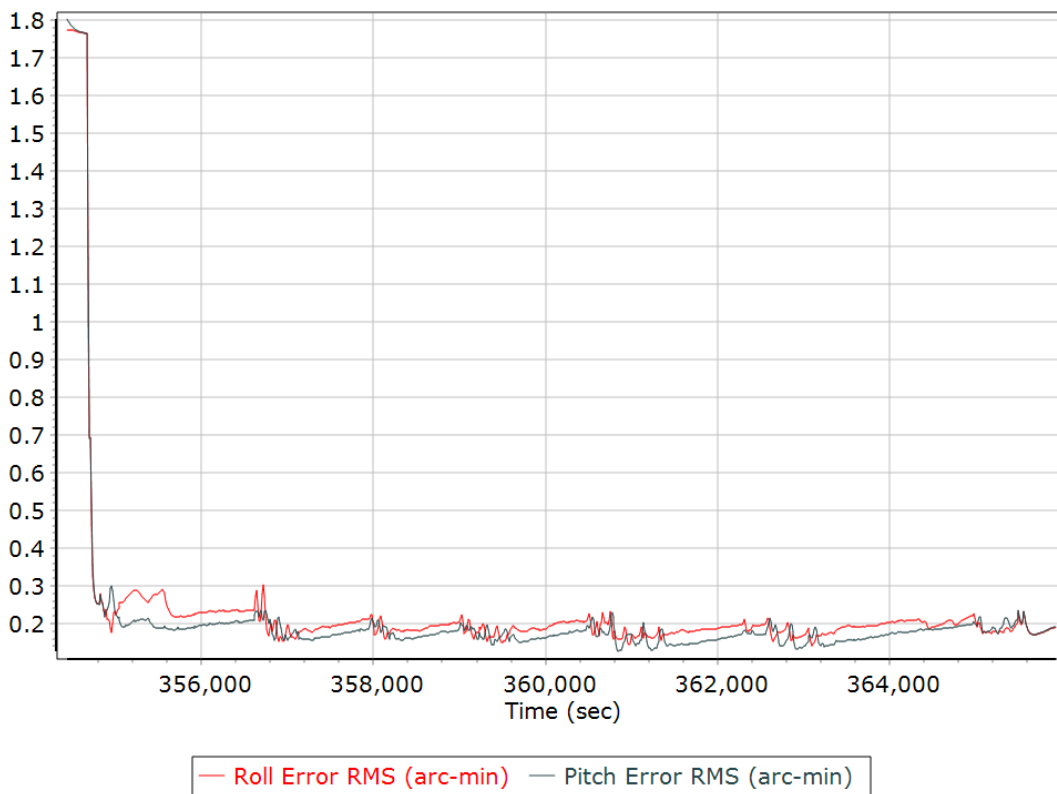
Position Error RMS (m)



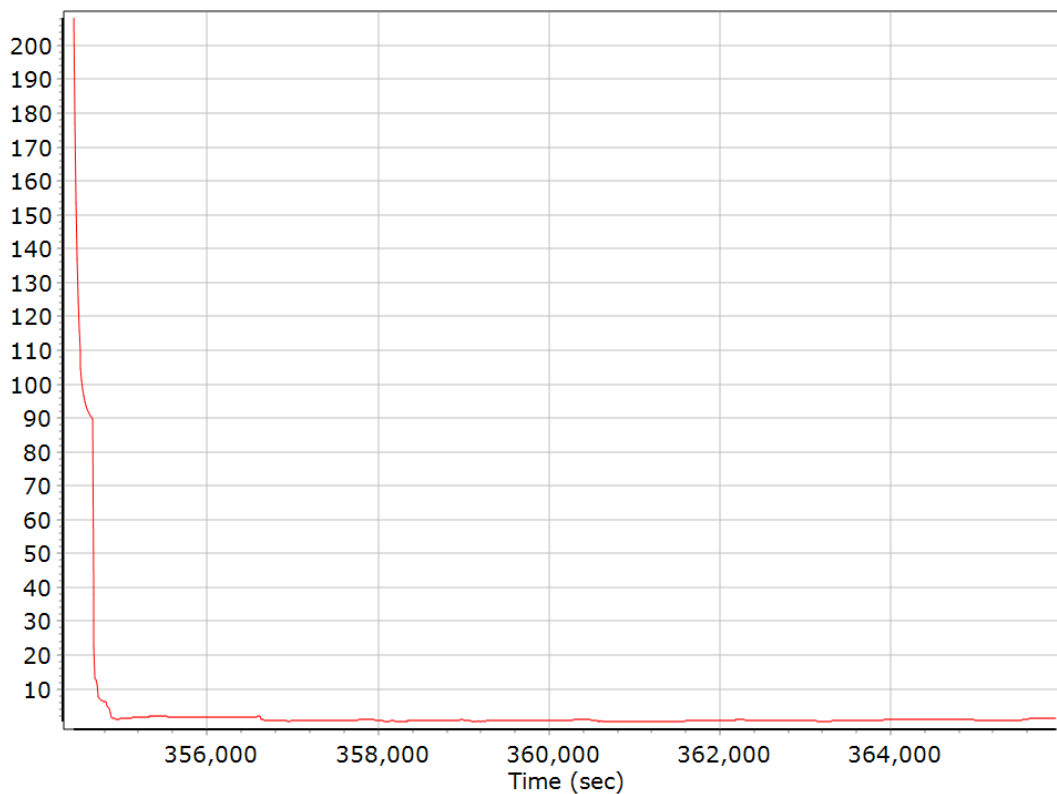
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

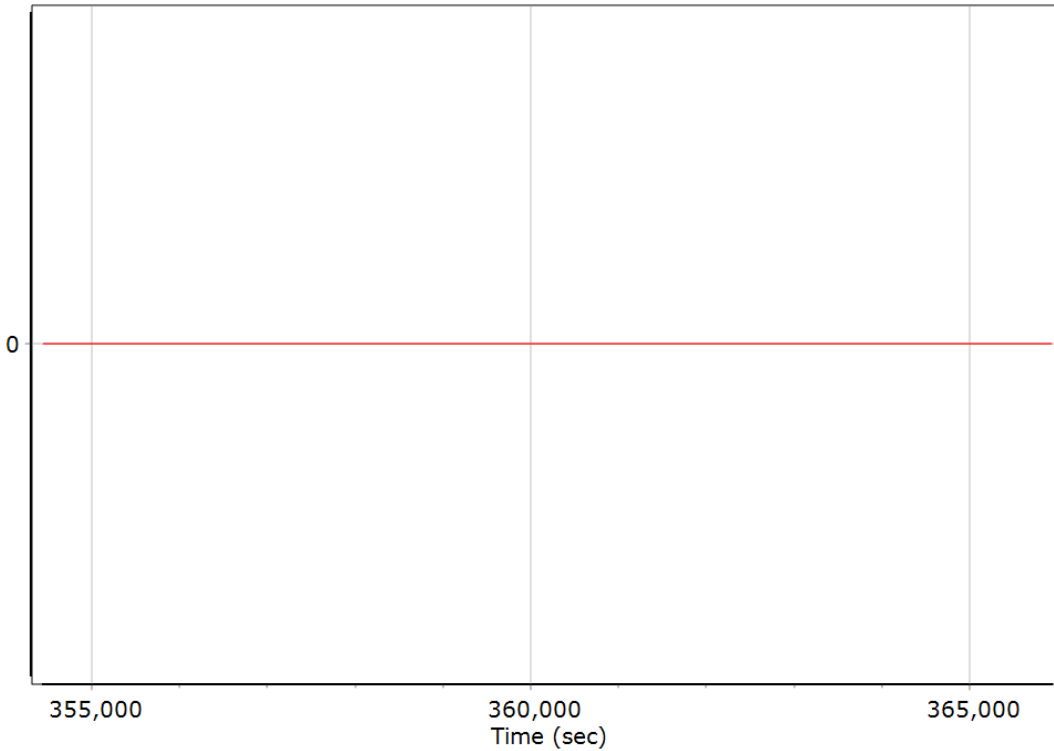


Heading Error RMS (arc-min)



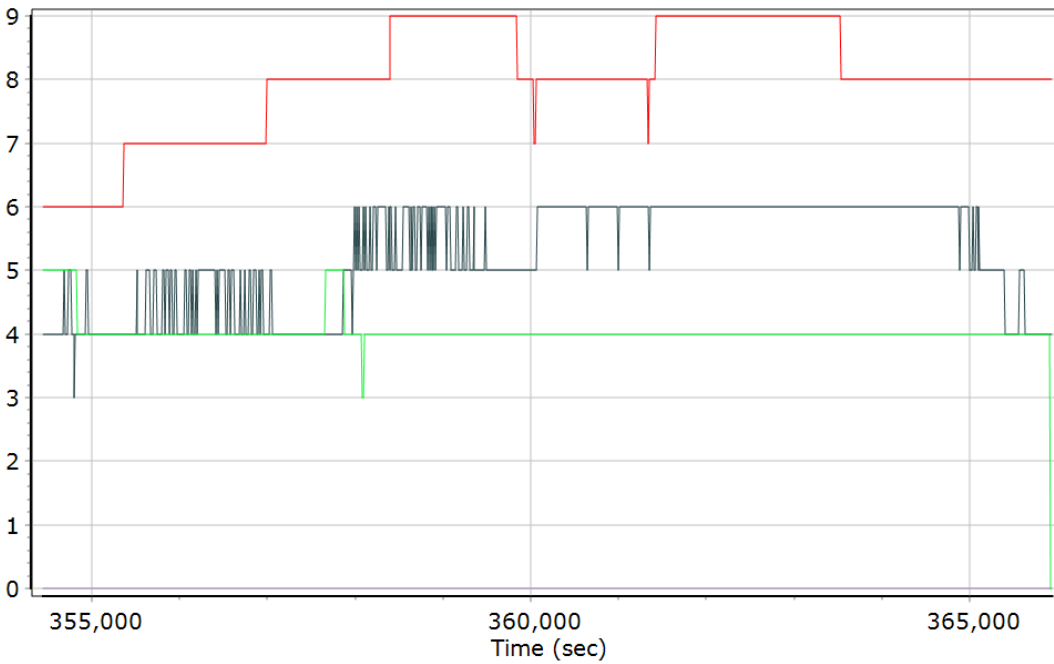
Forward Processed Solution Status

Processing Mode



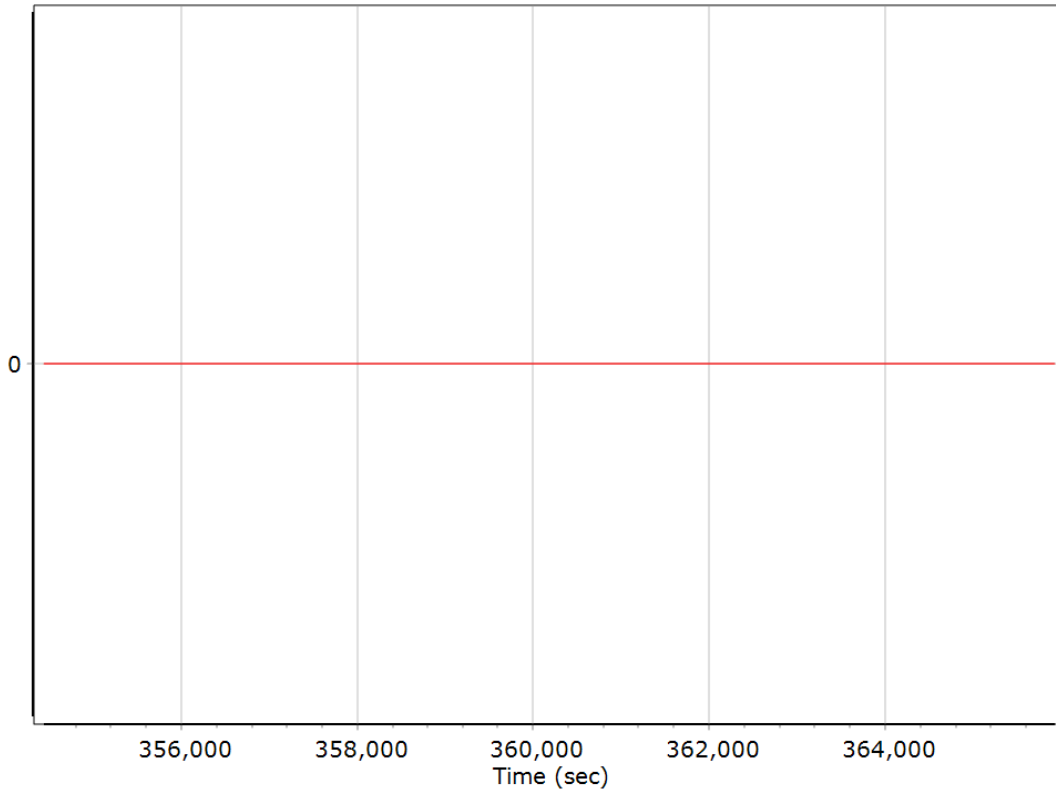
0 = Fixed NL, 1 = Fixed WL, 2 = Float, 3 = DGNSS, 4 = RTCM, 5 = IAPPP, 6 = C/A, 7 = GNSS Na

Number of Satellites



— Number of GPS Satellites	— Number of GLONASS Satellites
— Number of QZSS Satellites	— Number of BEIDOU Satellites
— Number of GALILEO Satellites	

Baseline Length



General Information

Mission Information

Project name	a07-s03-0528
Processing date	2022-09-01 15:37:09
Mission date	2022-09-01 07:30:51
Mission duration	02:58:20.000
Processing mode	IN-Fusion PP-RTX

Rover Hardware Information

Product	POS AV 610 VER6 HW1.6-12
Serial number	S/N6907
IMU type	57
Receiver type	BD982
Antenna type	AV39

Project File List

Rover Data Files

File name	File type
default0901_073053.000	POS Data
default0901_073053.001	POS Data
default0901_073053.002	POS Data
default0901_073053.003	POS Data
default0901_073053.004	POS Data
default0901_073053.005	POS Data
default0901_073053.006	POS Data
default0901_073053.007	POS Data
default0901_073053.008	POS Data
default0901_073053.009	POS Data
default0901_073053.010	POS Data
default0901_073053.011	POS Data
default0901_073053.012	POS Data
default0901_073053.013	POS Data
default0901_073053.014	POS Data

Input Files

File Name	File Type
Ephm2440.22g	GLONASS Broadcast Ephemeris
Ephm2440.22n	GPS Broadcast Ephemeris

Output Files

Filename	File type
sbet_a07-s03-0528.out	SBET Trajectory File

Rover Data Summary

First raw data file	default0901_073053.000		
Last raw data file	default0901_073053.014		
Start GPS week	2225		
Start time	372634.166 (9/1/2022 7:30:34 AM)		
End time	383334.213 (9/1/2022 10:28:54 AM)		
Start of fine alignment	373033.141 (9/1/2022 7:37:13 AM)		
Available subsystems	Primary GNSS, IMU		
POS Event Input	None		
Correction data	None		
IMU Installation Lever Arms & Mounting Angles			
Reference to IMU lever arm (m)	0.000	0.000	0.000
Reference to IMU mounting angles (deg)	0.000	0.000	0.000
Reference to Primary GNSS lever arm (m)	-0.353	-0.322	-1.280
Reference to Primary GNSS lever arm std dev (m)	-1.000		
Aircraft to Reference mounting angles (deg)	0.000	0.000	0.000

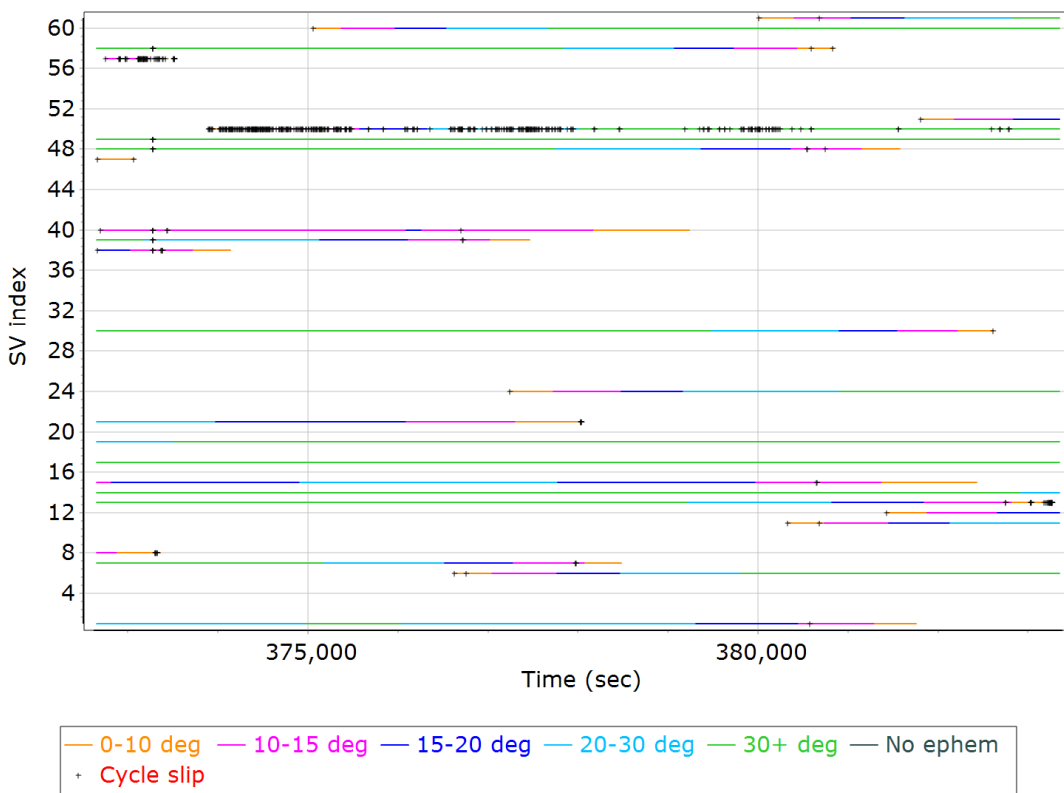
Rover Data QC

Raw IMU Import QC Summary

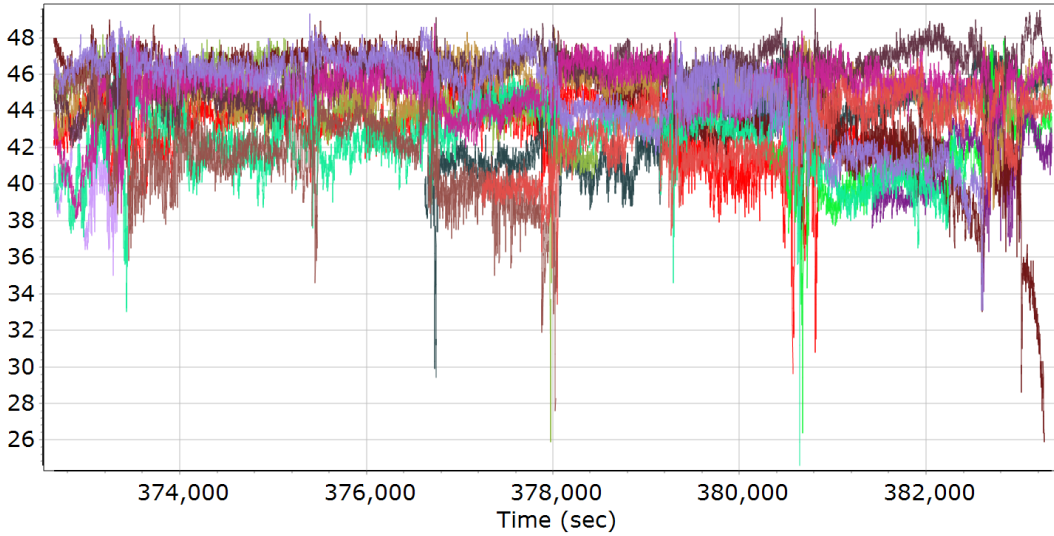
IMU data input file	imu_a07-s03-0528.dat
IMU data check log file	imudt_a07-s03-0528.log
IMU Records Processed	2139959
Termination Status	Warnings
IMU Anomalies	3
IMU Failure Messages	
372633.601 : WARNING : Gap of 0.0100 seconds in CHECKDT input data	
372633.526 : WARNING : Gap of 0.0100 seconds in CHECKDT input data	
372633.476 : WARNING : Gap of 372616.0641 seconds in CHECKDT input data	

Primary Observables & Satellite Data

GPS/GLONASS L1 Satellite Lock/Elevation

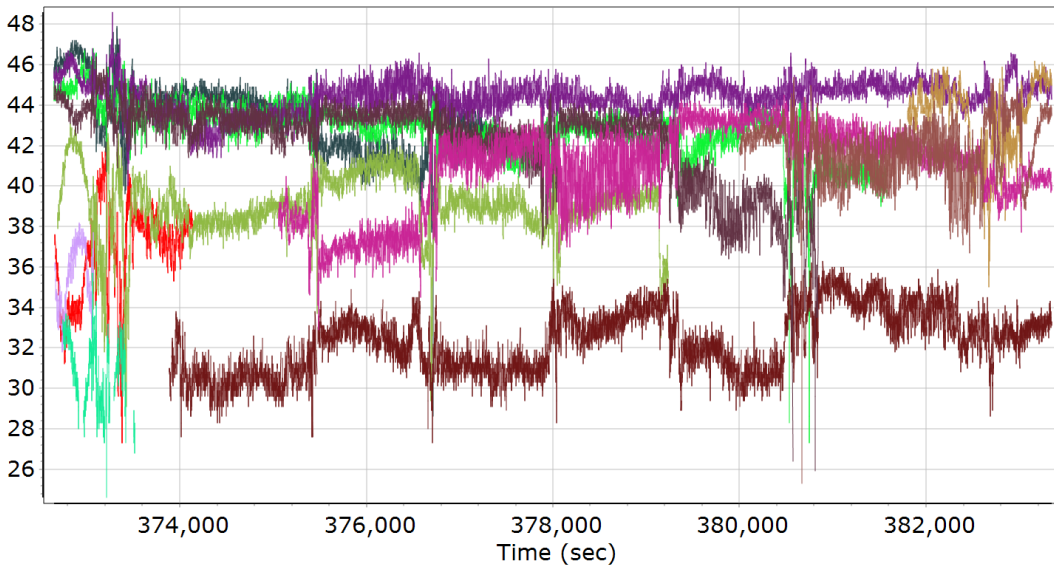


GPS L1 SNR



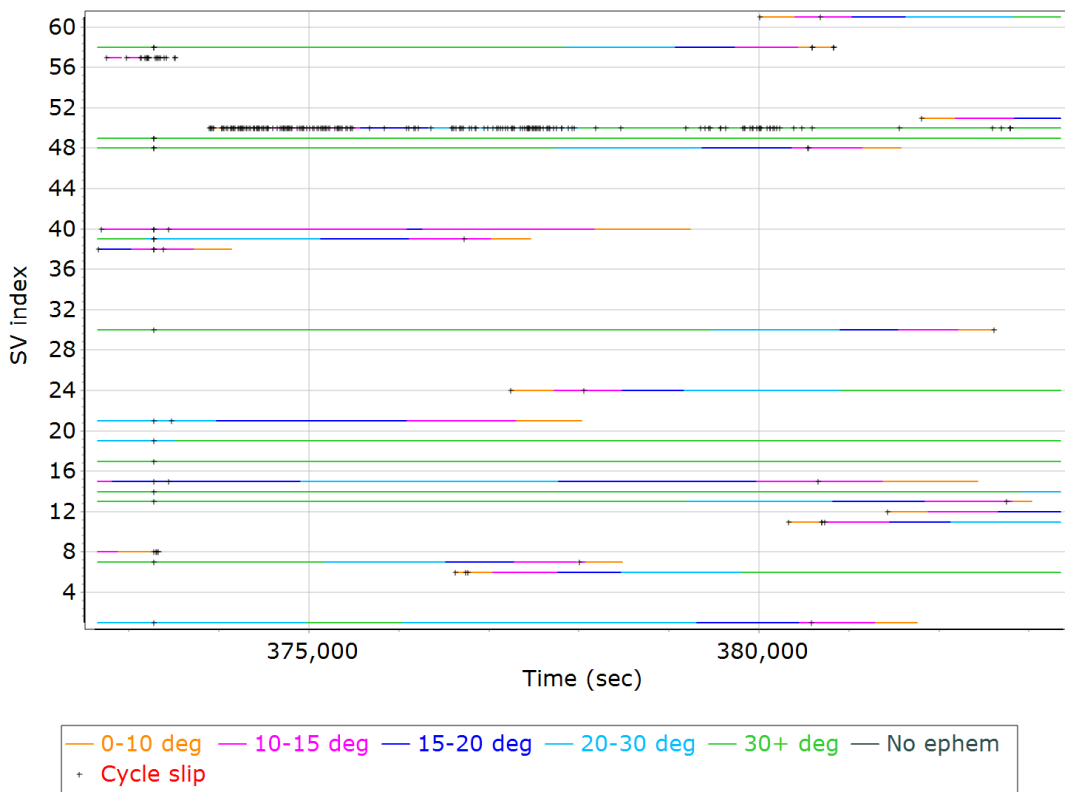
- | | |
|-----------------------------|-----------------------------|
| — GPS PRN 01 L1 SNR (dB/Hz) | — GPS PRN 06 L1 SNR (dB/Hz) |
| — GPS PRN 07 L1 SNR (dB/Hz) | — GPS PRN 08 L1 SNR (dB/Hz) |
| — GPS PRN 11 L1 SNR (dB/Hz) | — GPS PRN 12 L1 SNR (dB/Hz) |
| — GPS PRN 13 L1 SNR (dB/Hz) | — GPS PRN 14 L1 SNR (dB/Hz) |
| — GPS PRN 15 L1 SNR (dB/Hz) | — GPS PRN 17 L1 SNR (dB/Hz) |
| — GPS PRN 19 L1 SNR (dB/Hz) | — GPS PRN 21 L1 SNR (dB/Hz) |
| — GPS PRN 24 L1 SNR (dB/Hz) | — GPS PRN 30 L1 SNR (dB/Hz) |

GLONASS L1 SNR

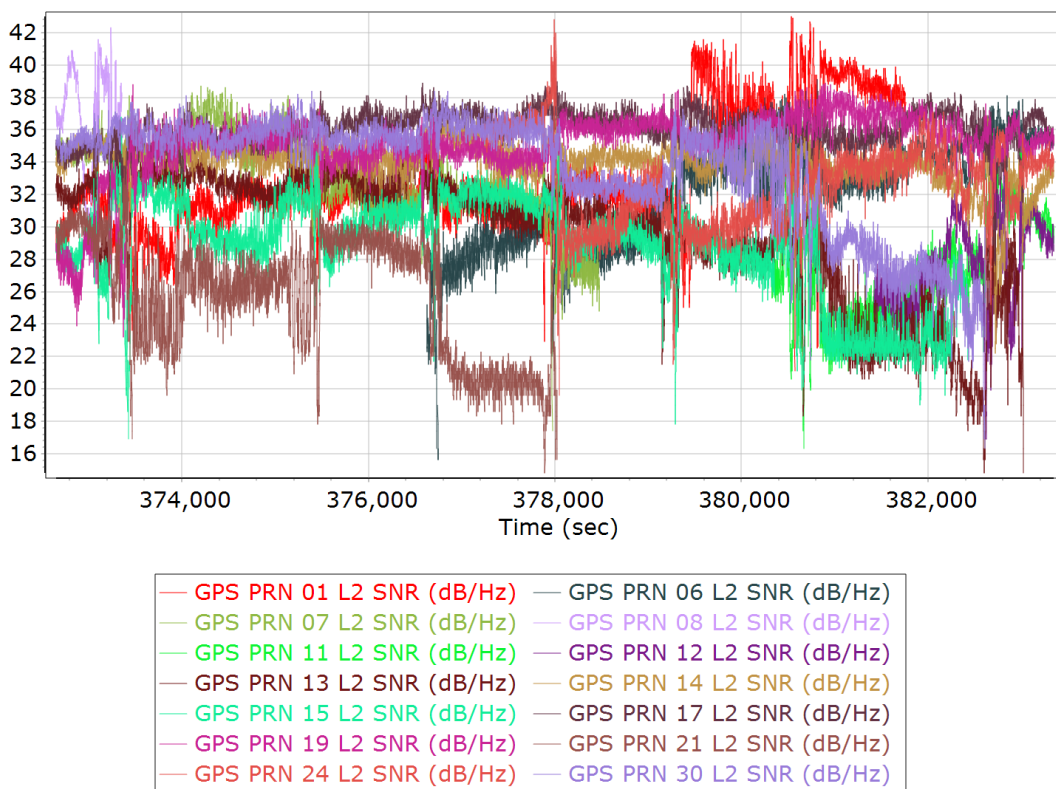


- | | |
|-----------------------------|-----------------------------|
| — GLONASS 01 L1 SNR (dB/Hz) | — GLONASS 02 L1 SNR (dB/Hz) |
| — GLONASS 03 L1 SNR (dB/Hz) | — GLONASS 10 L1 SNR (dB/Hz) |
| — GLONASS 11 L1 SNR (dB/Hz) | — GLONASS 12 L1 SNR (dB/Hz) |
| — GLONASS 13 L1 SNR (dB/Hz) | — GLONASS 14 L1 SNR (dB/Hz) |
| — GLONASS 20 L1 SNR (dB/Hz) | — GLONASS 21 L1 SNR (dB/Hz) |
| — GLONASS 23 L1 SNR (dB/Hz) | — GLONASS 24 L1 SNR (dB/Hz) |

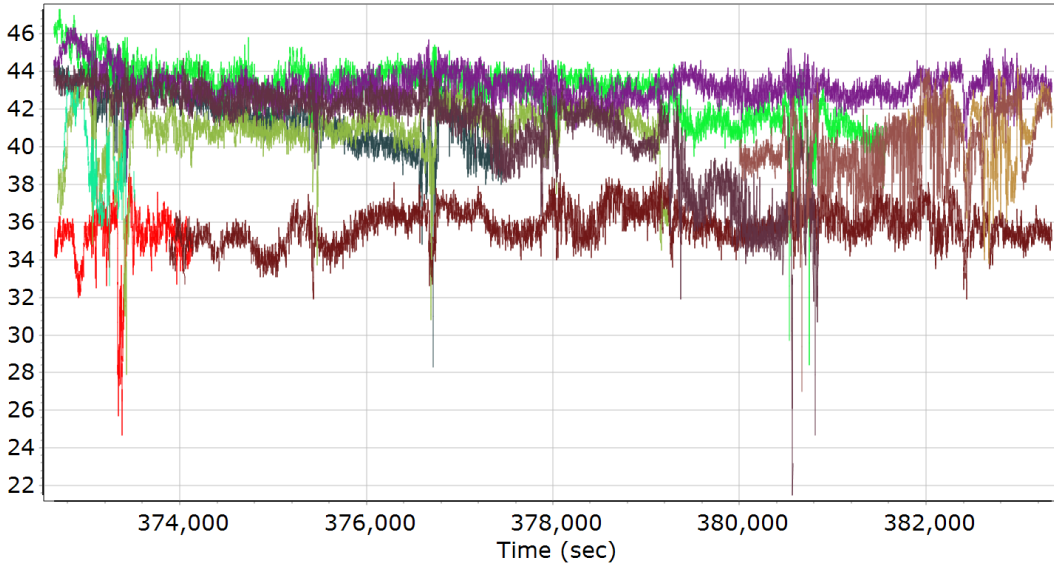
GPS/GLONASS L2 Satellite Lock/Elevation



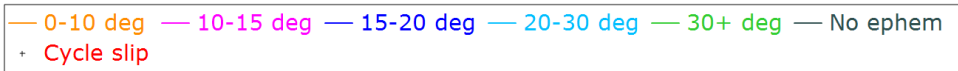
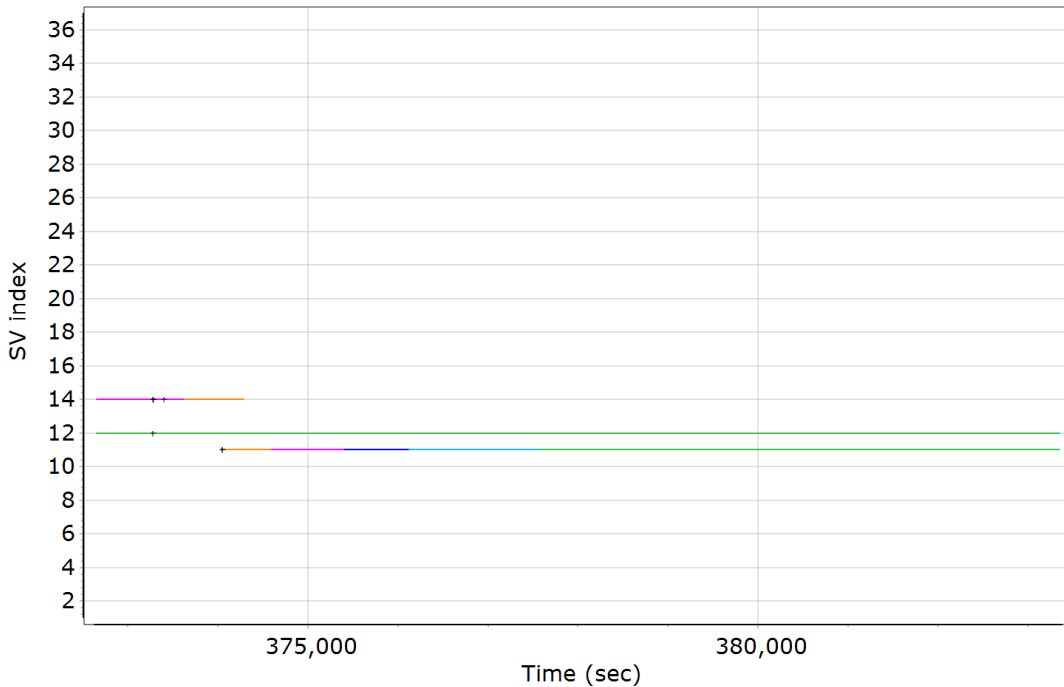
GPS L2 SNR



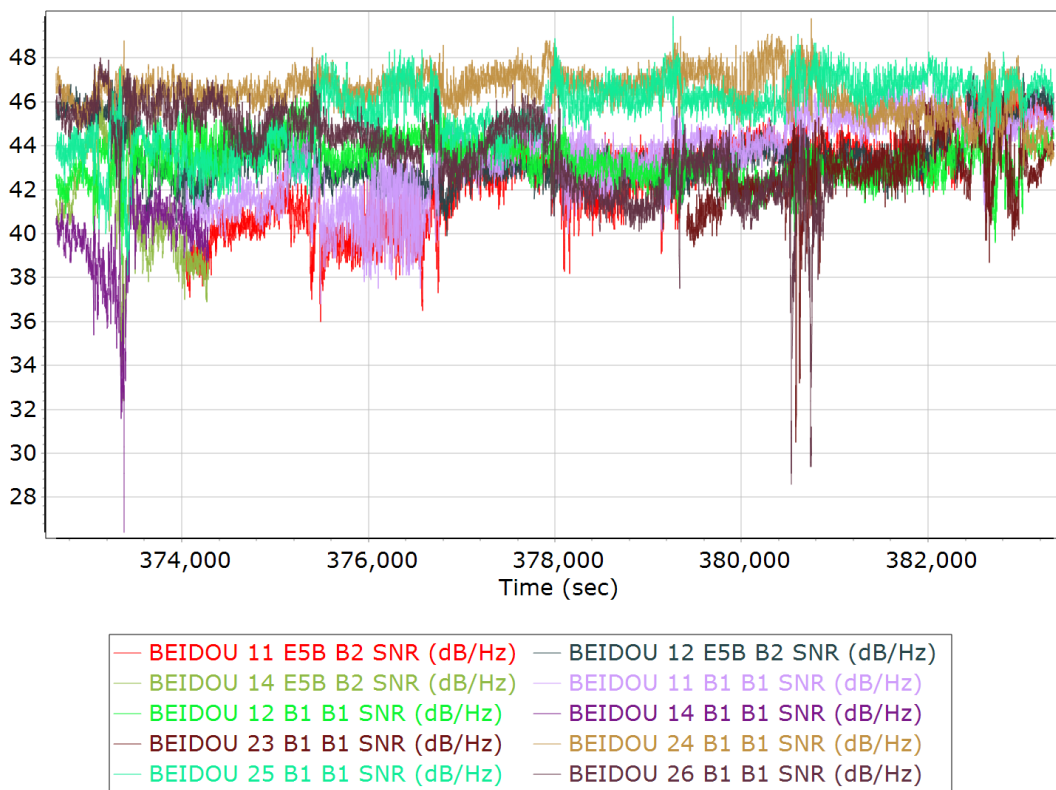
GLONASS L2 SNR



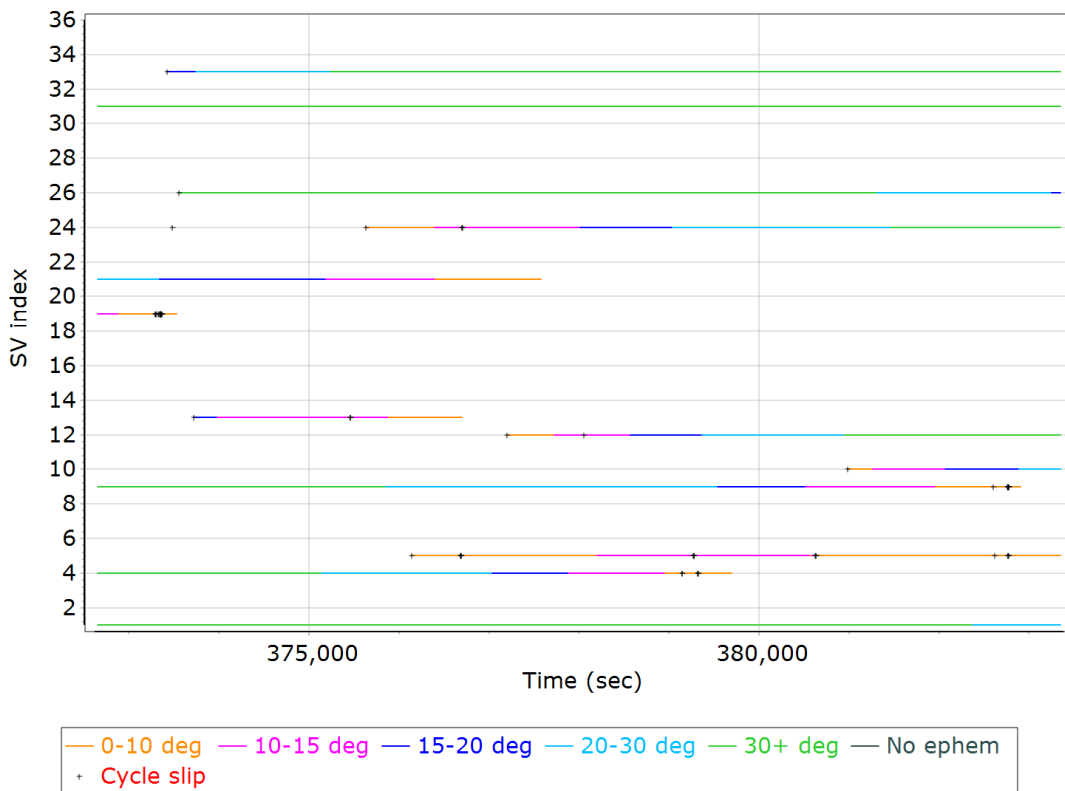
BEIDOU Satellite Lock/Elevation



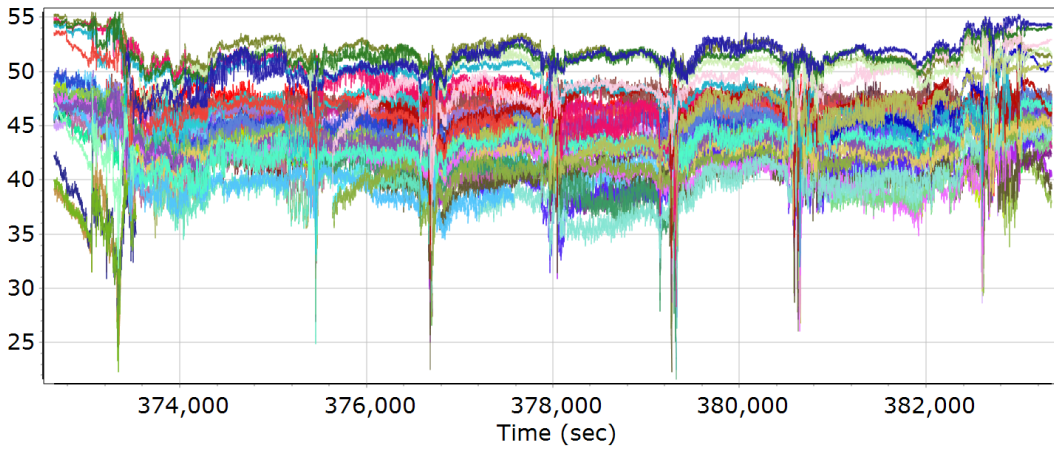
BEIDOU SNR



GALILEO Satellite Lock/Elevation



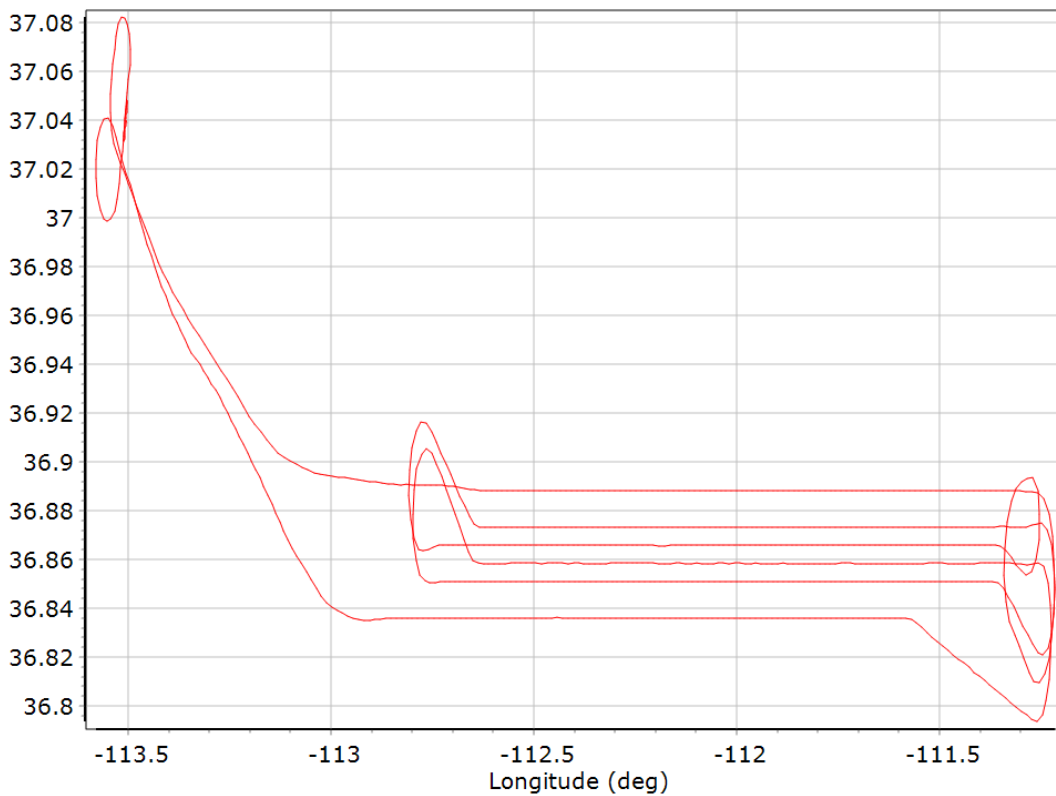
GALILEO SNR



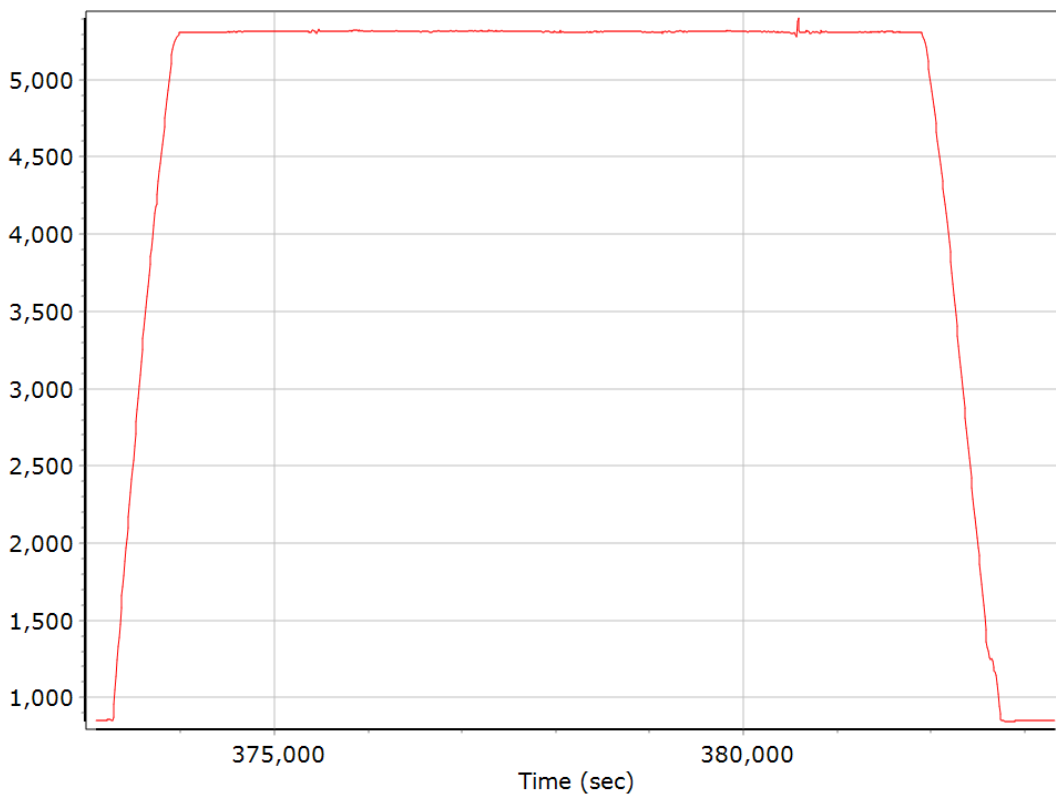
- GALILEO 01 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 04 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 05 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 09 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 10 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 12 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 13 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- 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)

Smoothed Trajectory Information

Top View



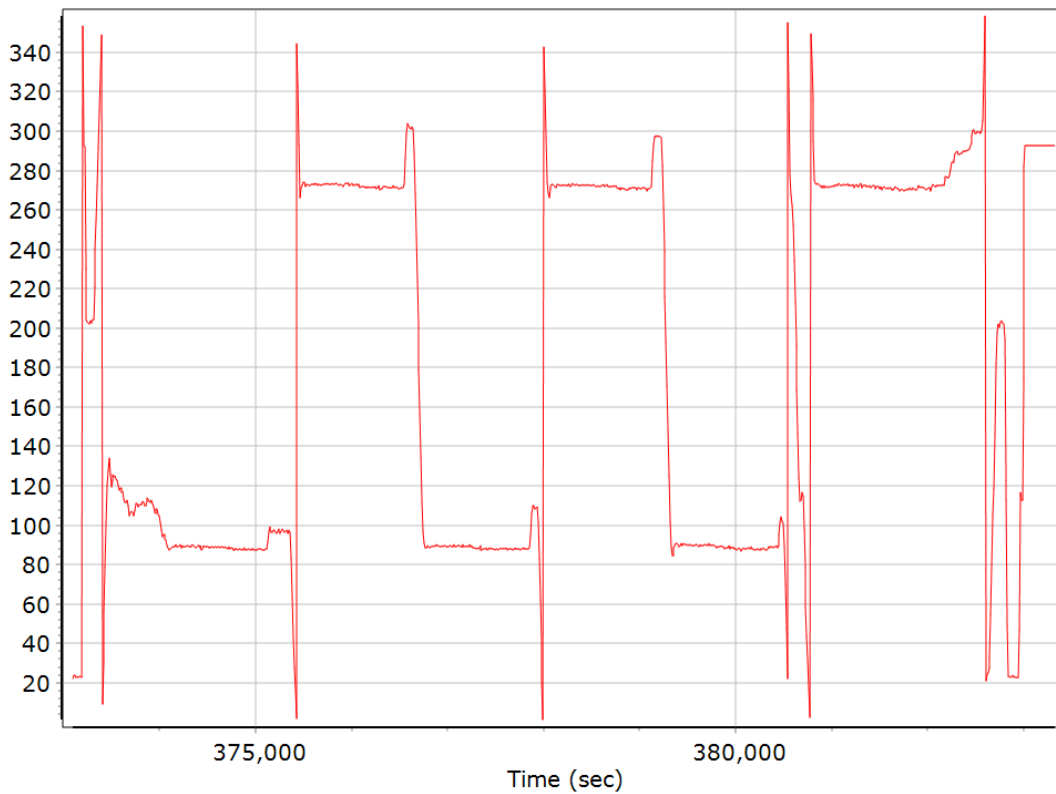
Altitude



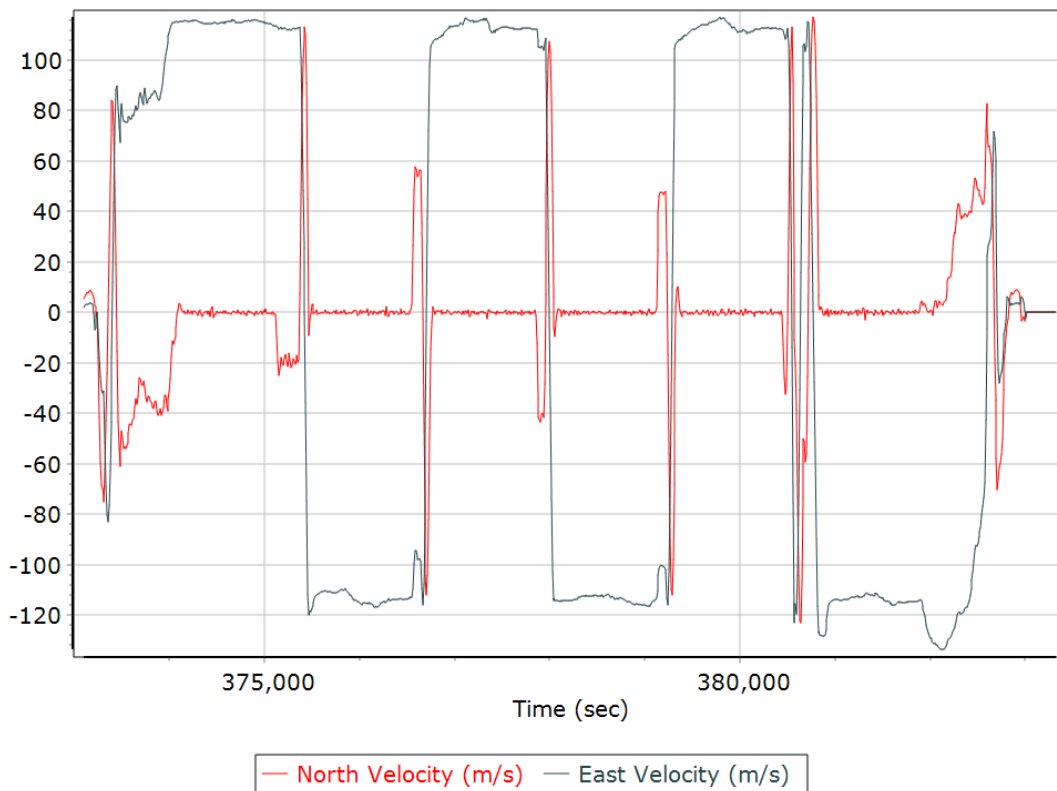
Roll/Pitch



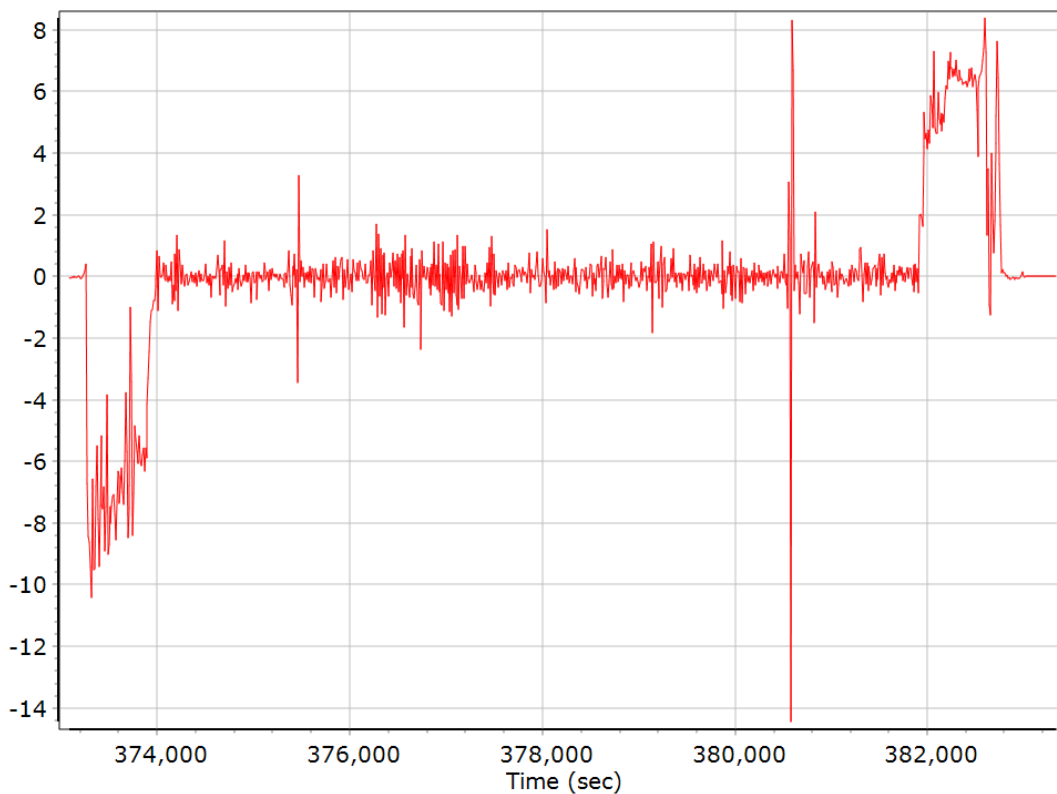
Heading



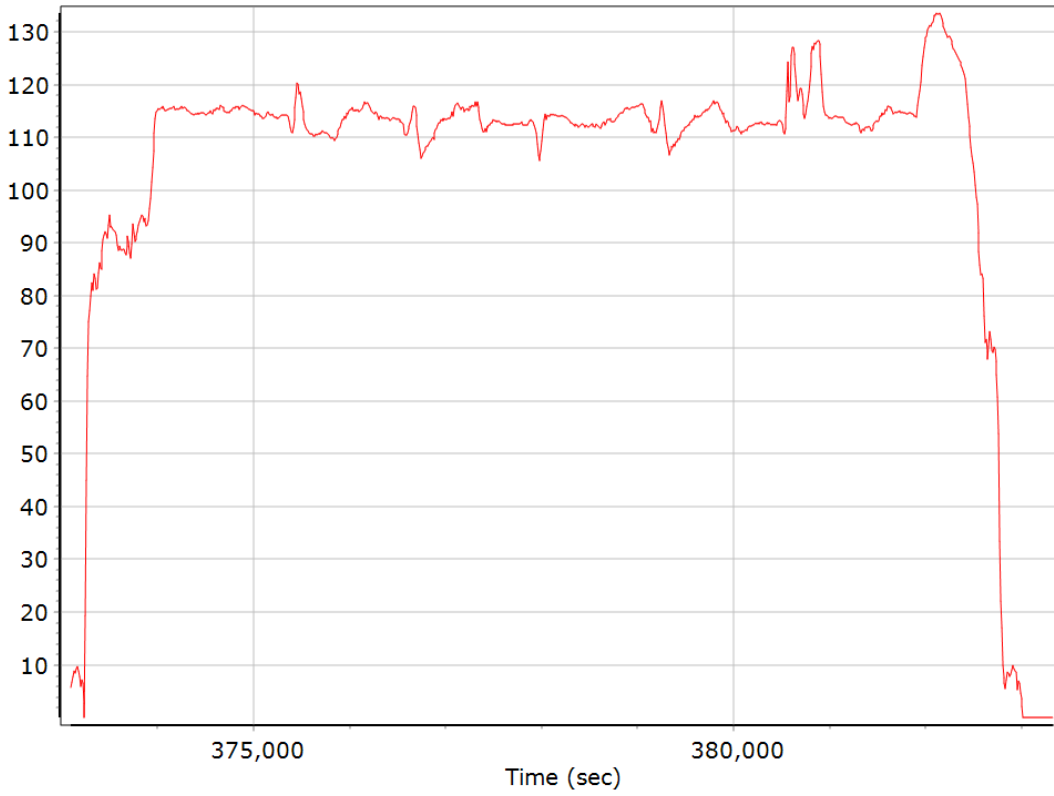
North/East Velocity



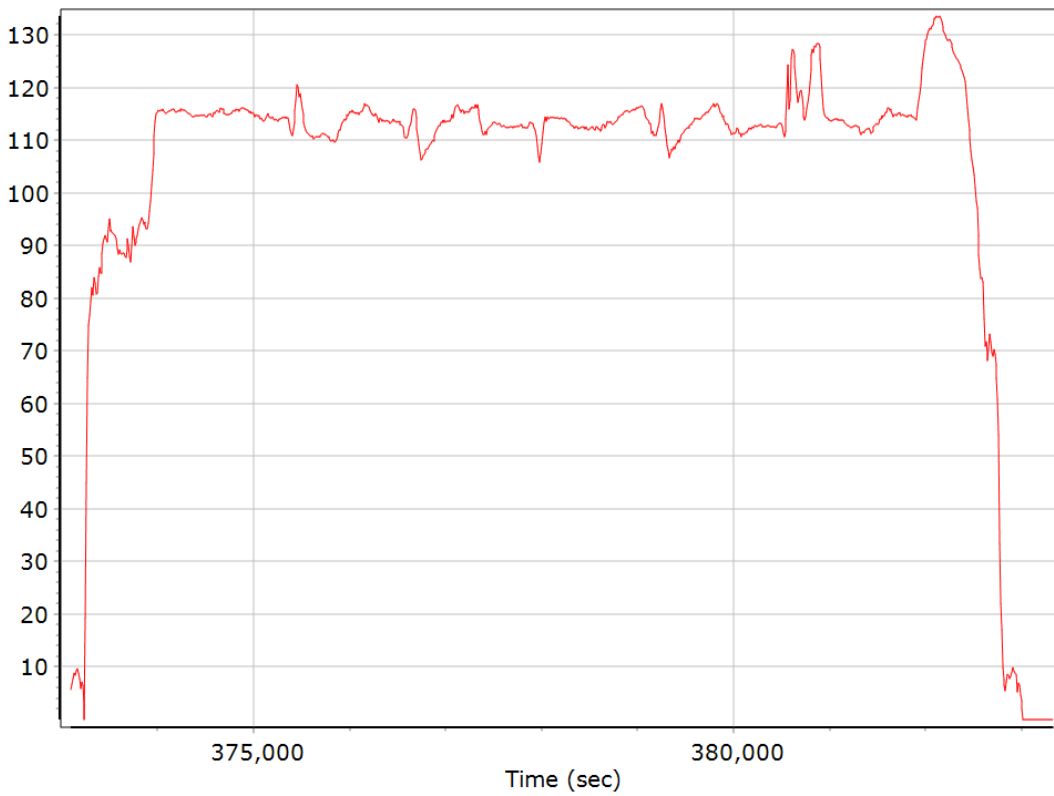
Down Velocity



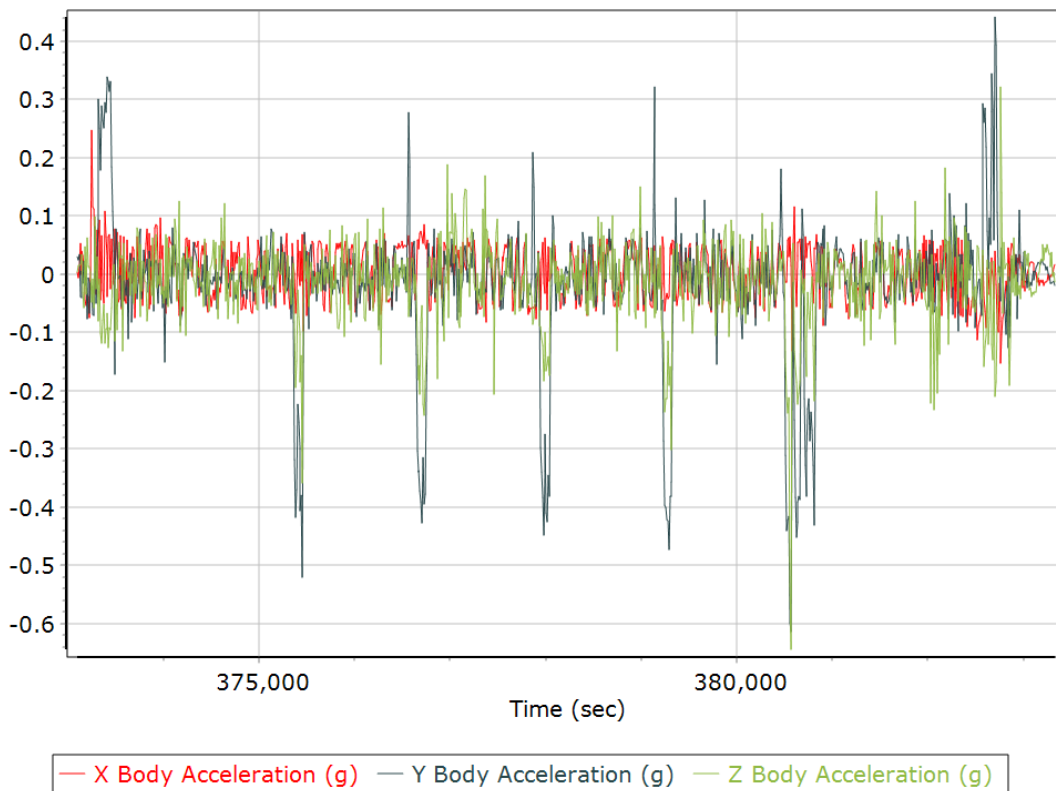
Total Speed



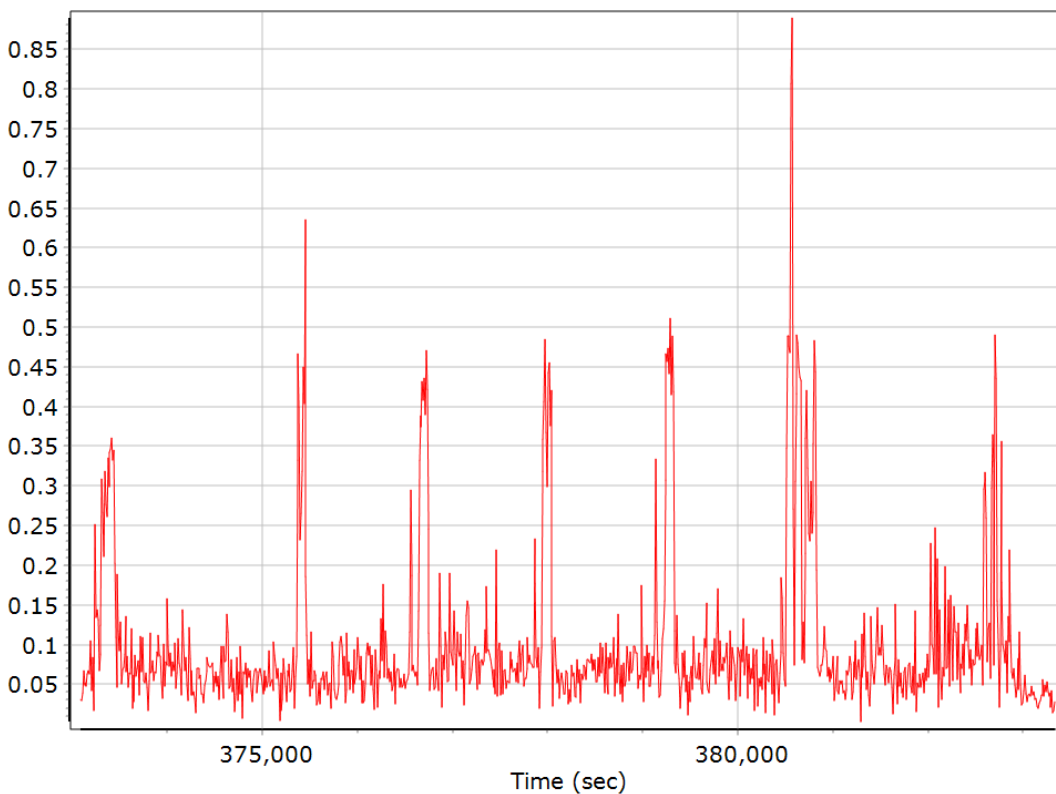
Ground Speed



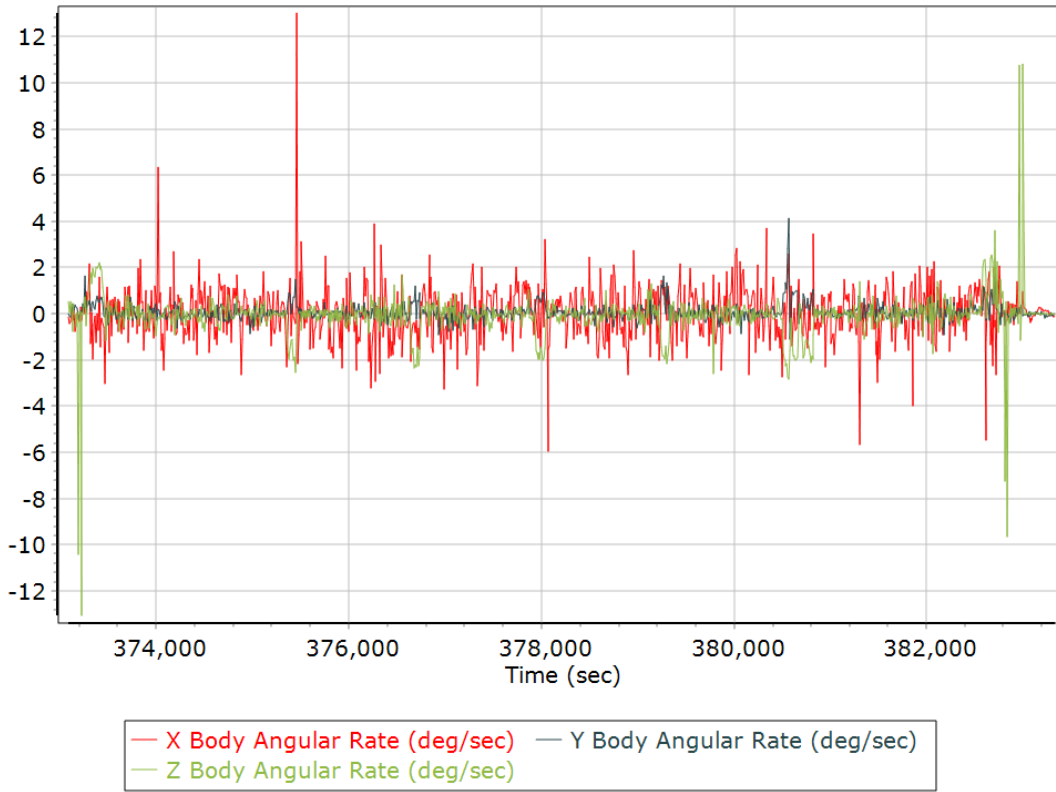
Body Acceleration



Total Body Acceleration

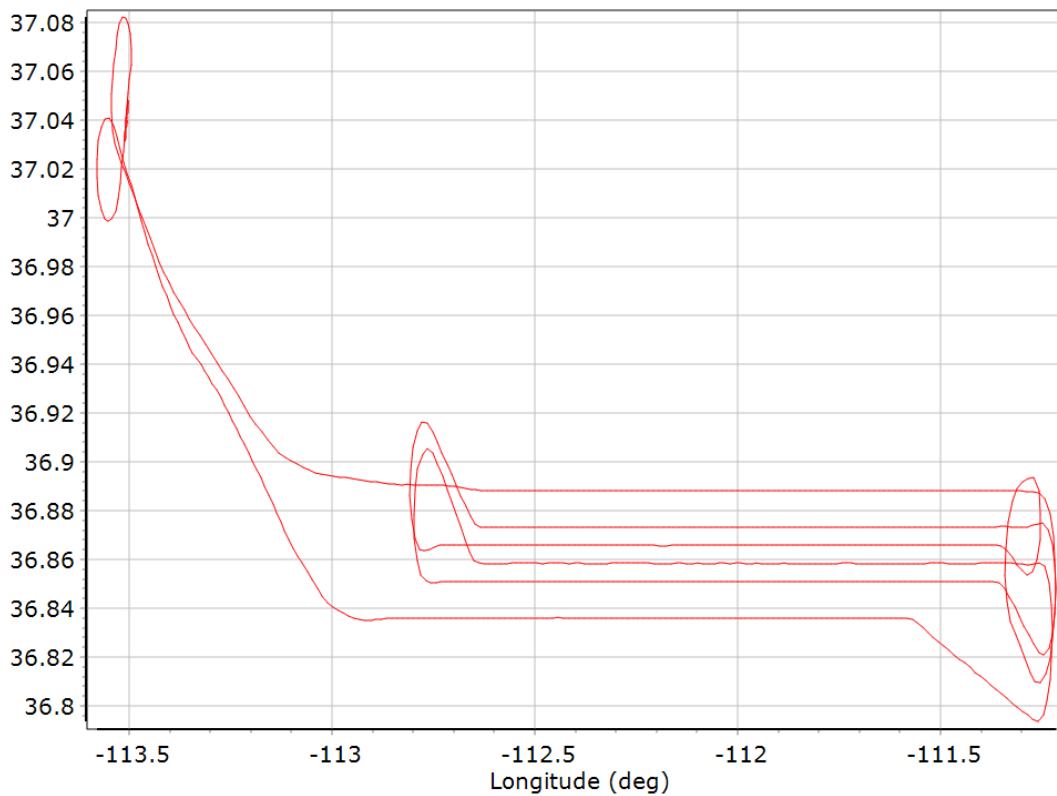


Body Angular Rate

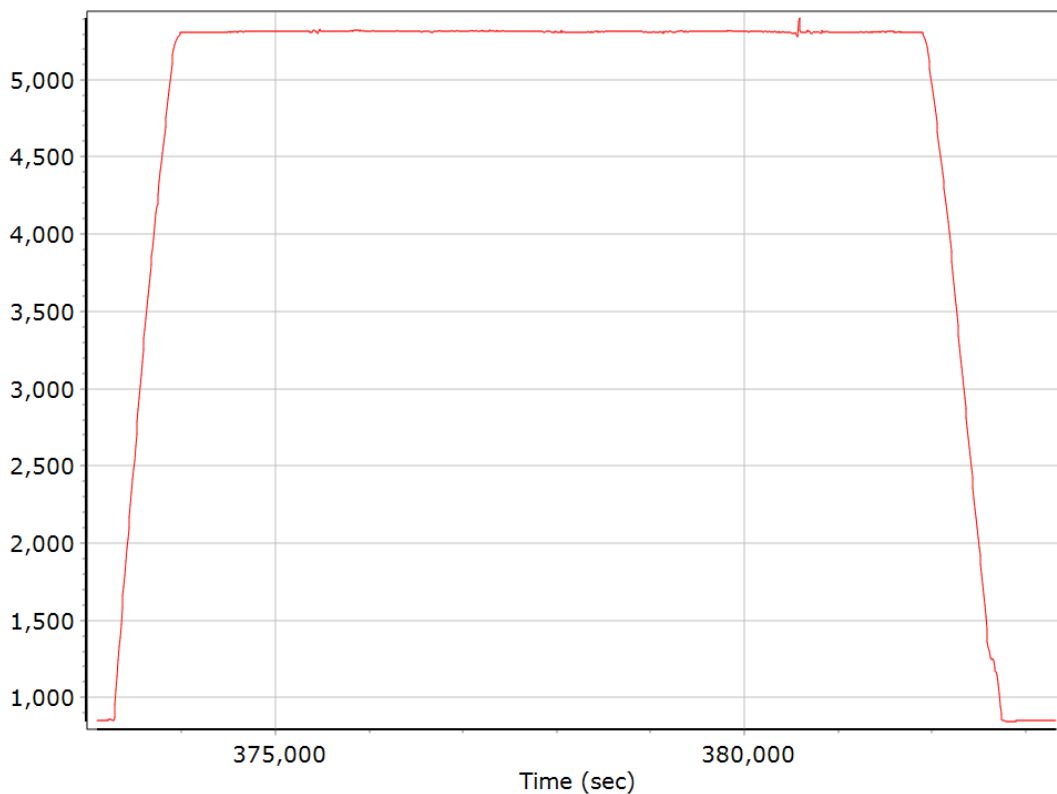


Forward Processed Trajectory Information

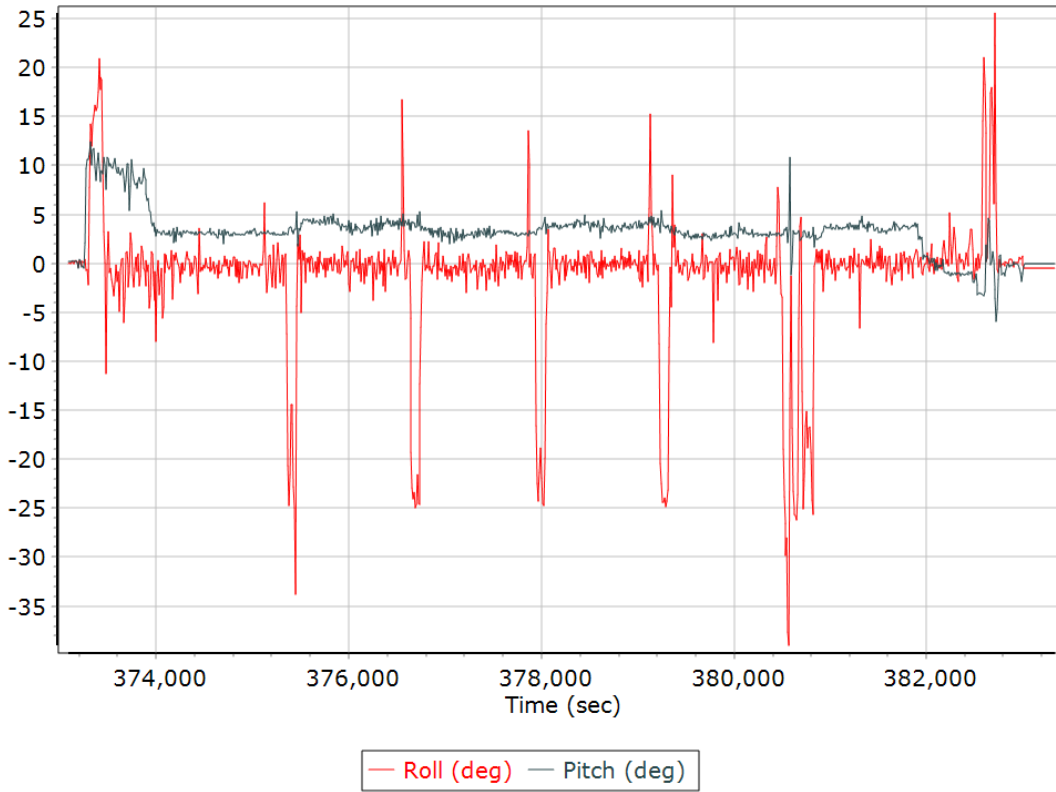
Top View



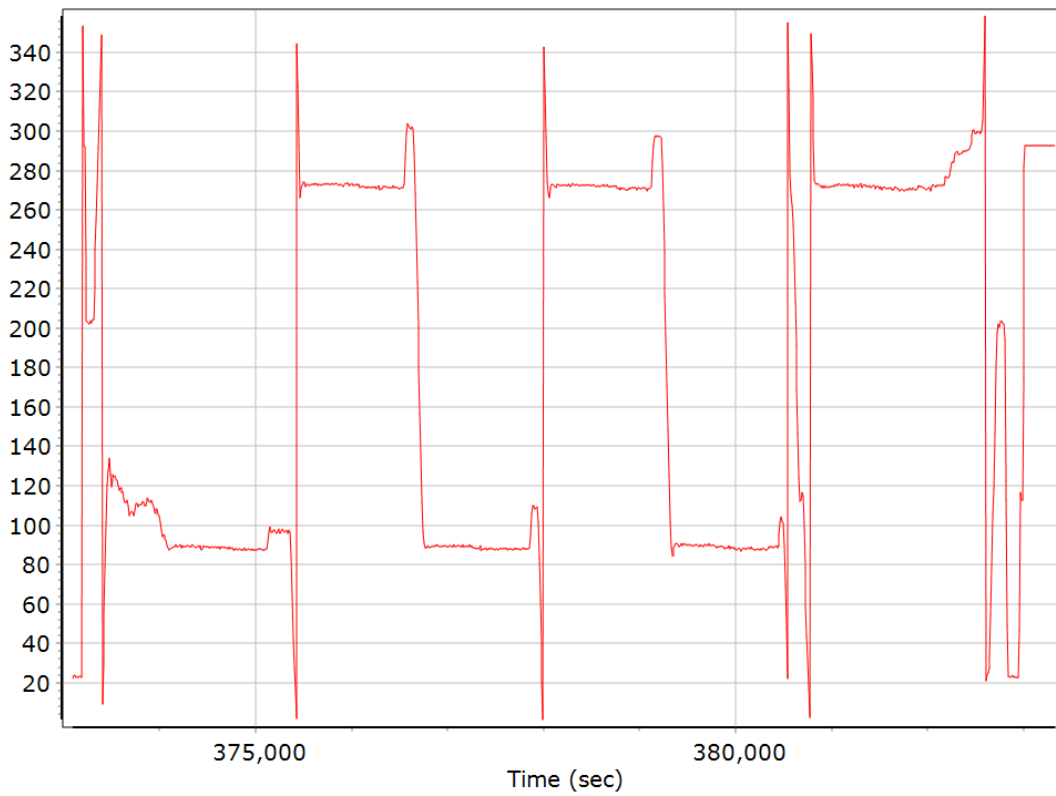
Altitude



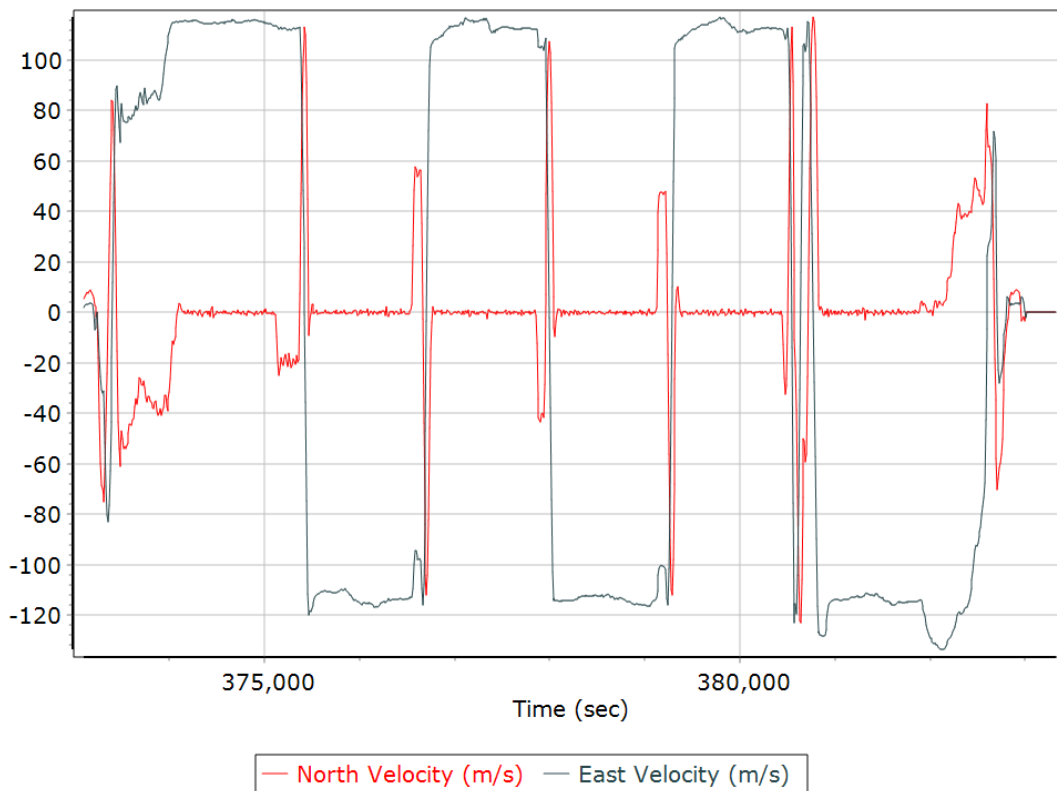
Roll/Pitch



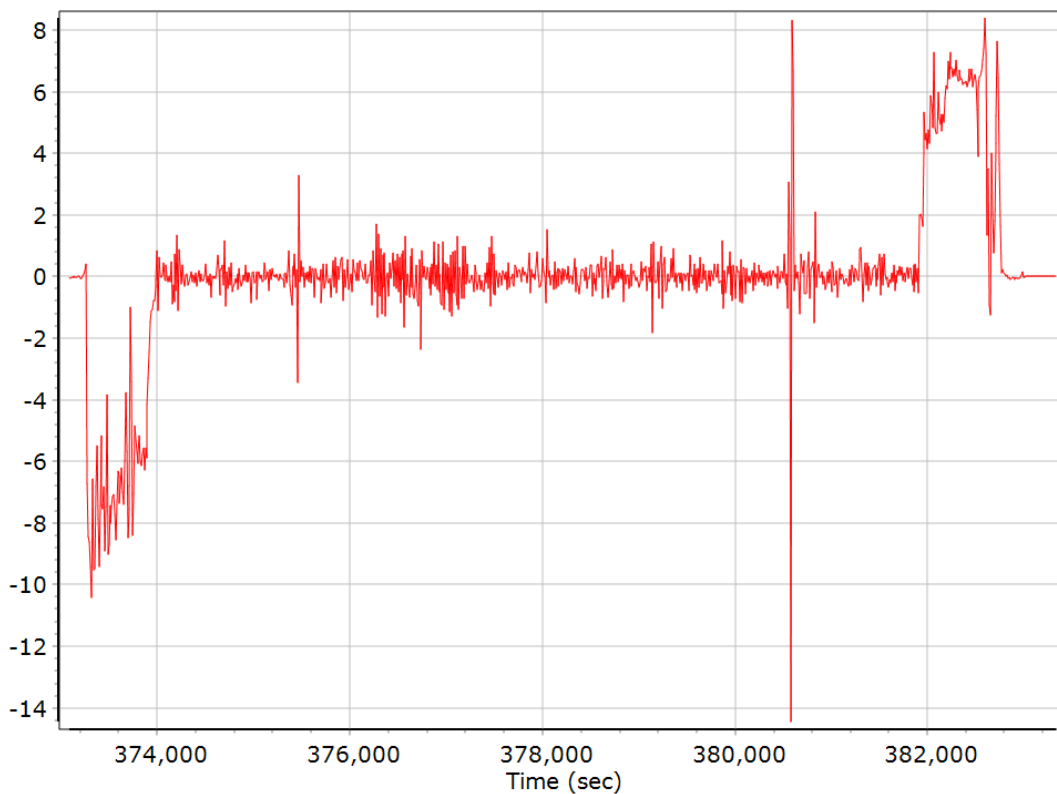
Heading



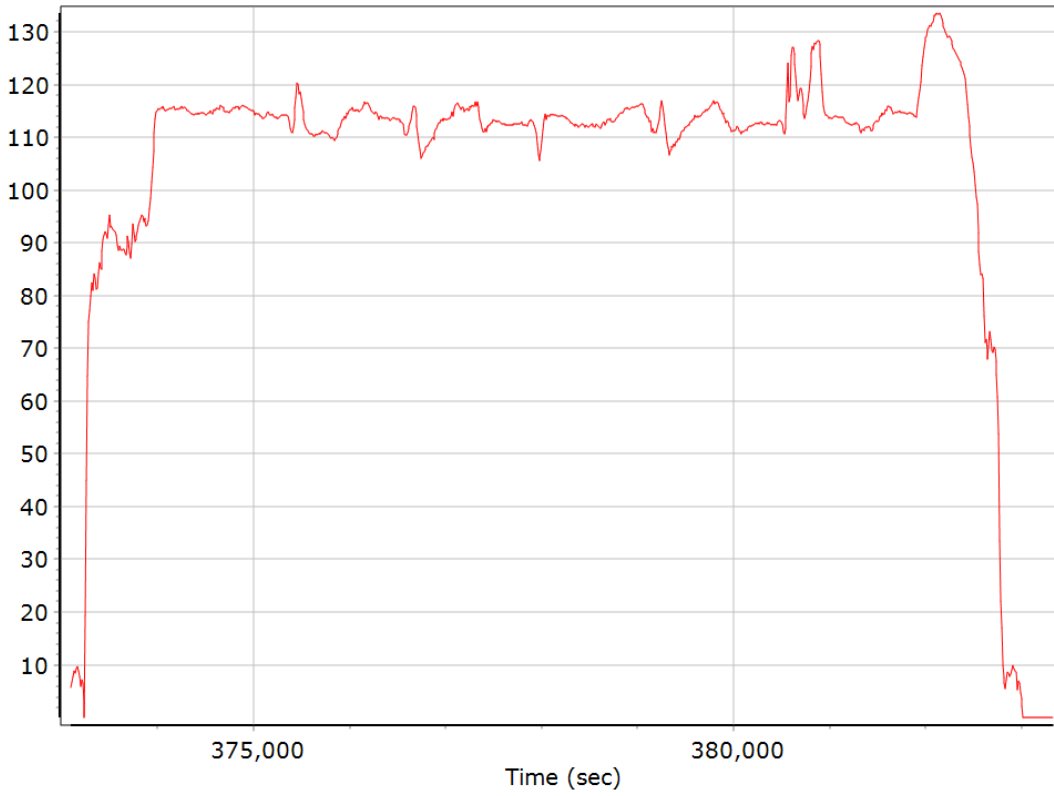
North/East Velocity



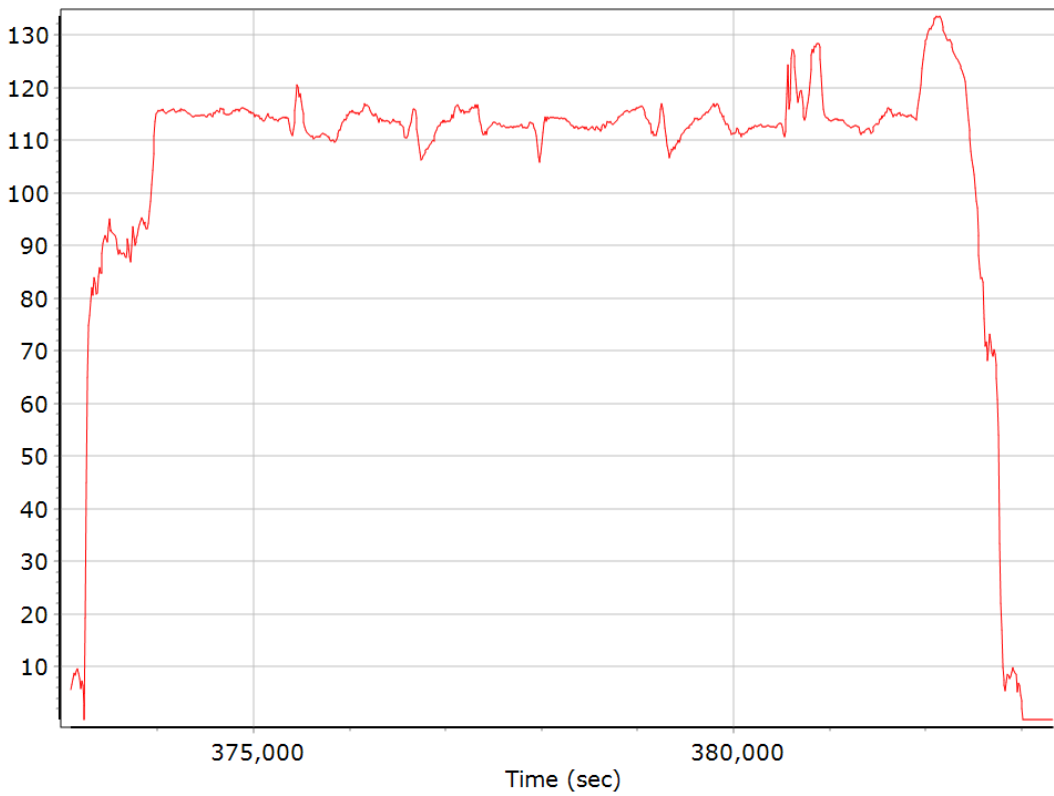
Down Velocity



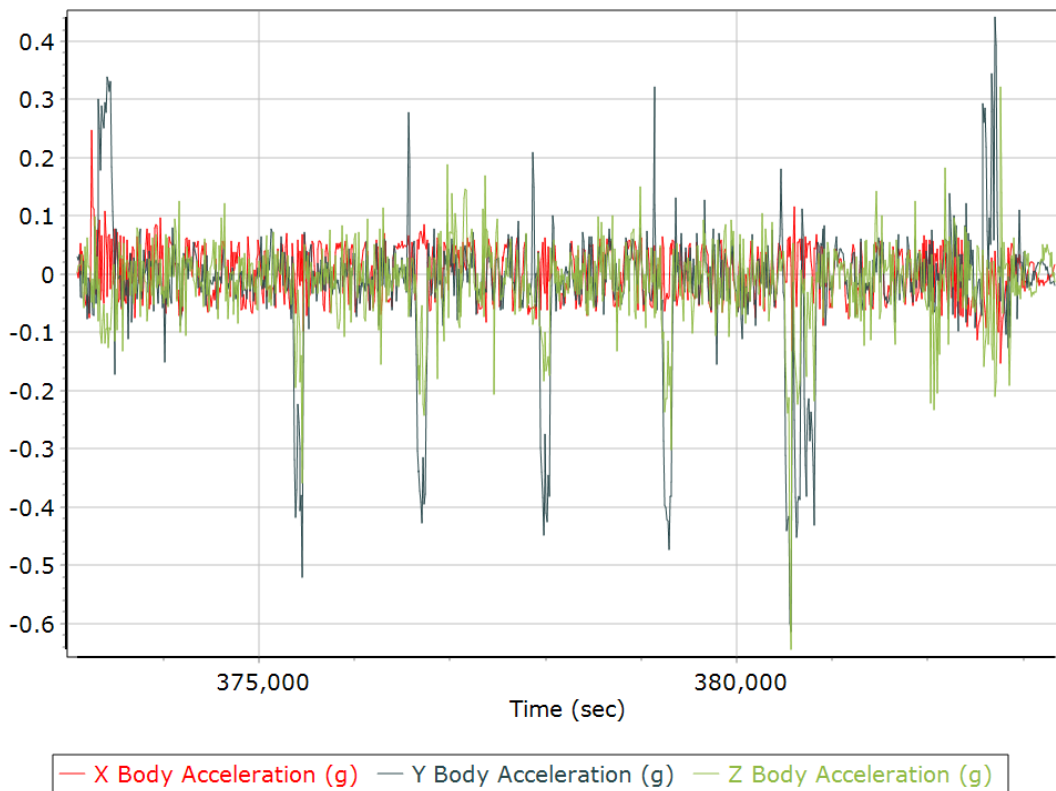
Total Speed



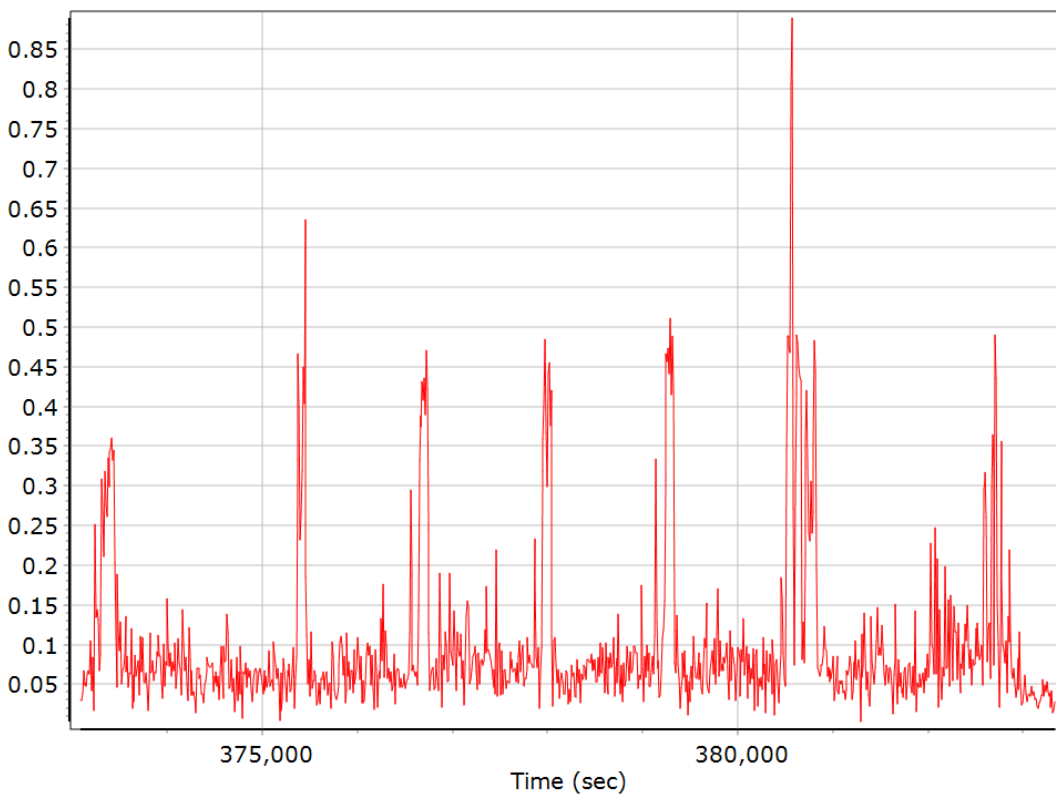
Ground Speed



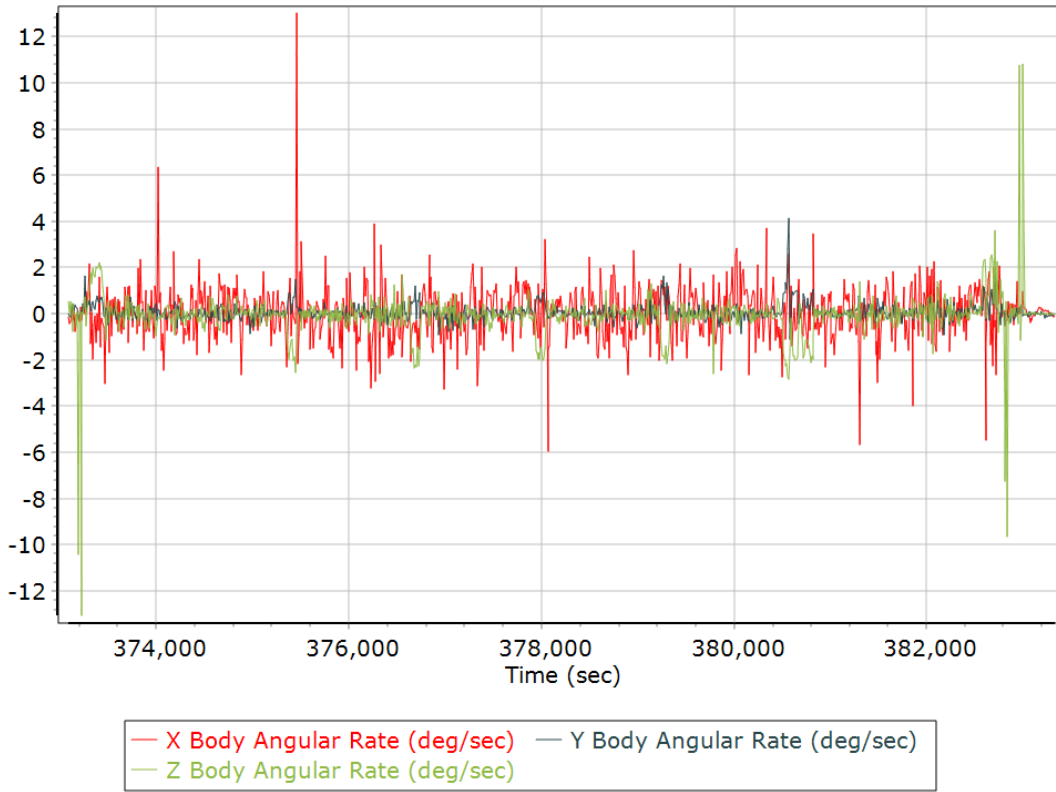
Body Acceleration



Total Body Acceleration



Body Angular Rate

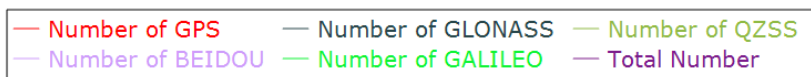
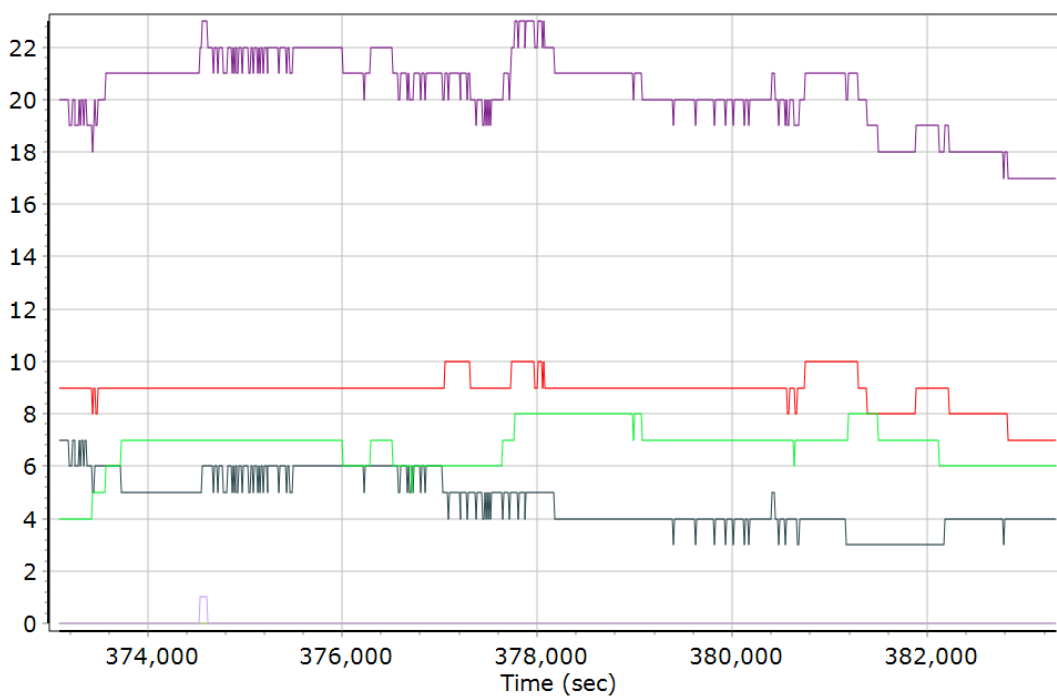


GNSS QC

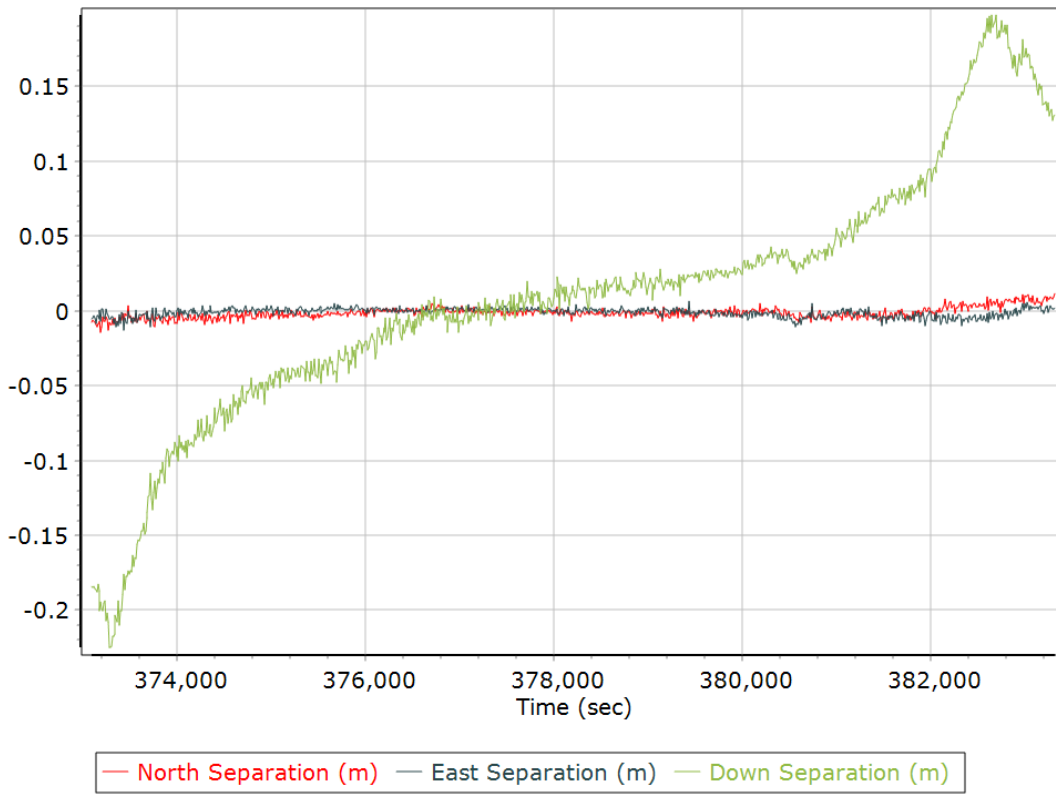
GNSS QC Statistics

Statistics	Min	Max	Mean
Baseline length (km)	0.00	0.00	
Number of GPS SV	7	10	9
Number of GLONASS SV	0	7	5
Number of QZSS SV	0	0	0
Number of BEIDOU SV	0	1	0
Number of GALILEO SV	4	8	7
Total number of SV	13	23	20
PDOP	1.04	1.62	1.20
QC Solution Gaps	0.00	0.00	
Solution Type	Fixed	Float	No solution
Epoch (sec)	10690.00	0.00	0.00
Percentage	100.00	0.00	0.00

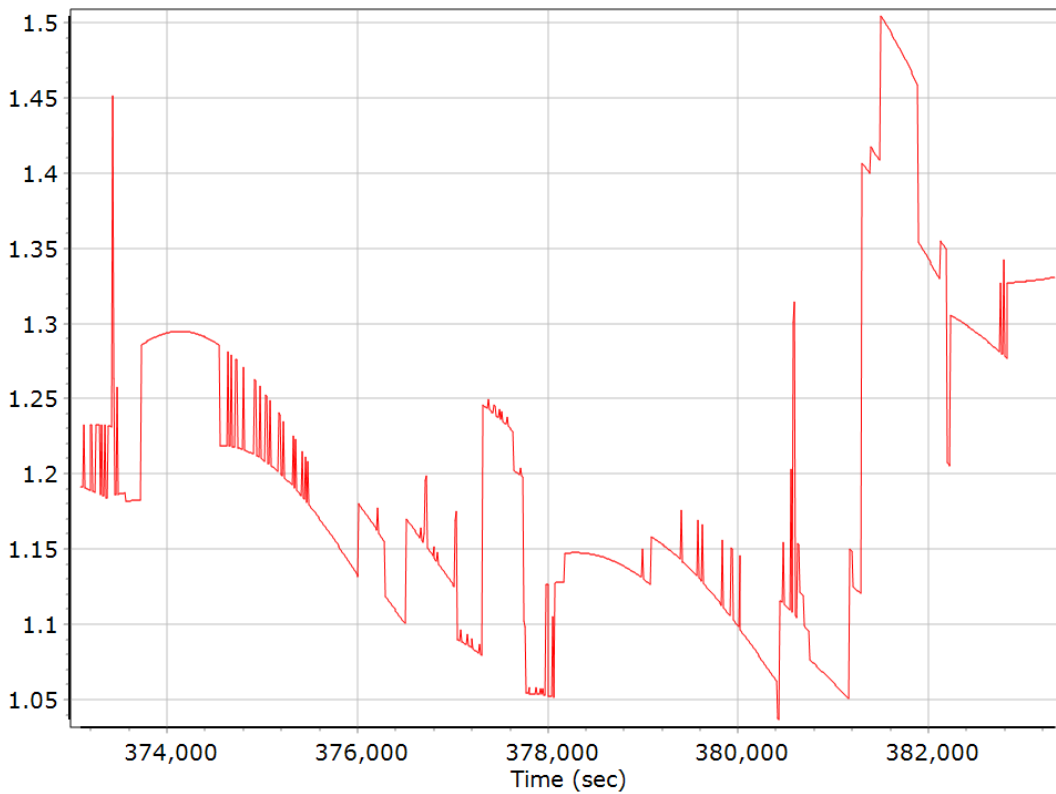
Num SVs in solution



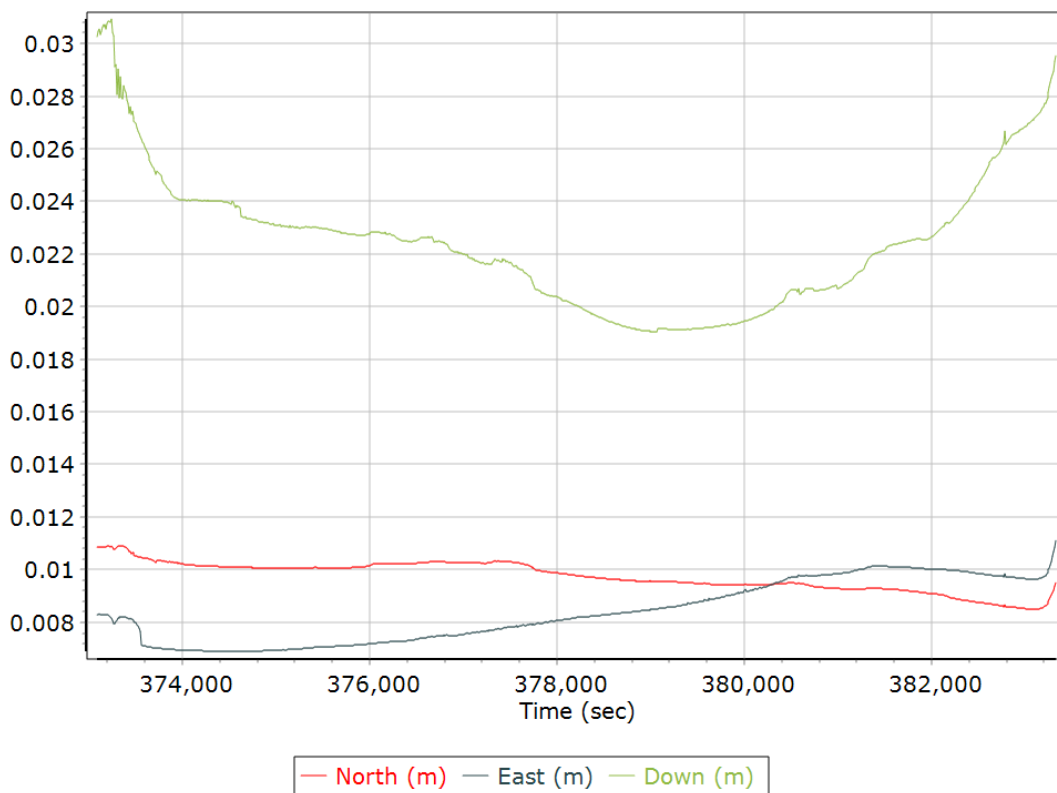
Forward/Reverse Separation



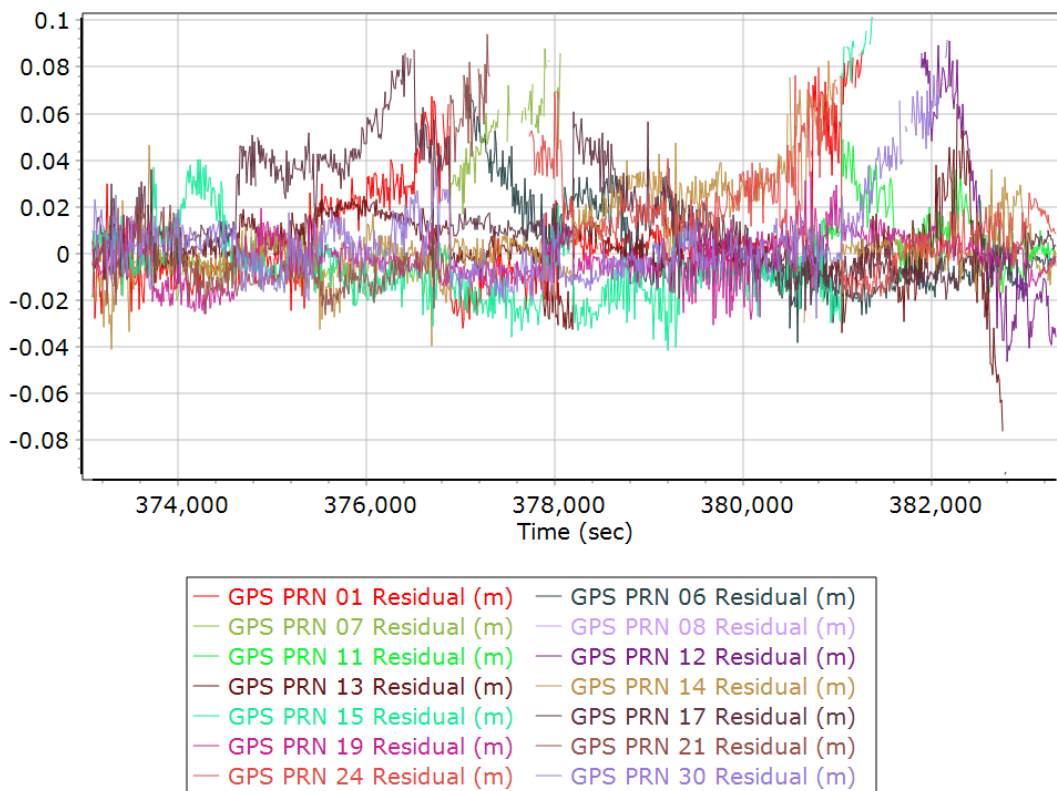
PDOP



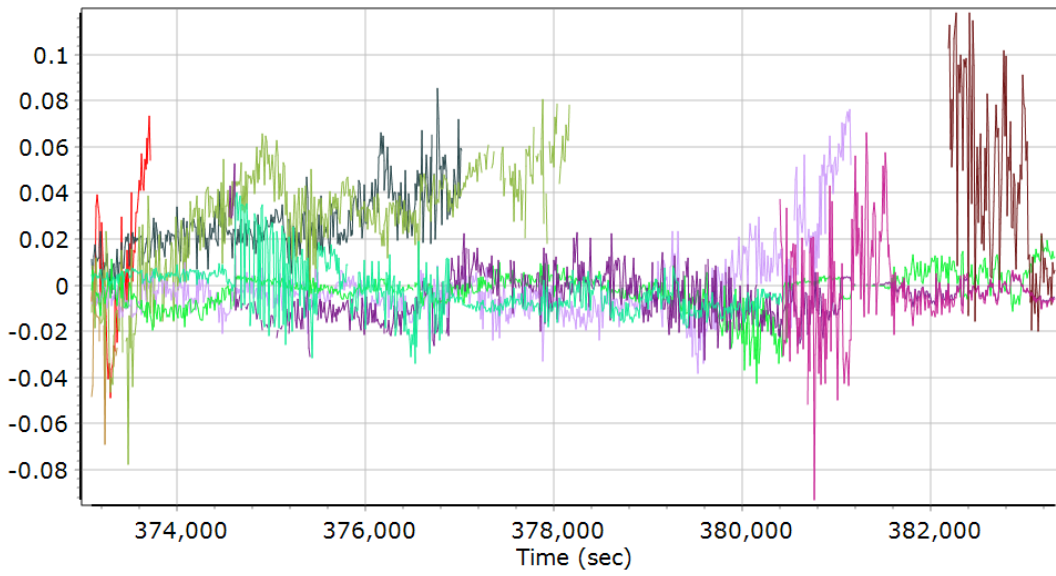
Estimated Position Accuracy



GPS Residuals

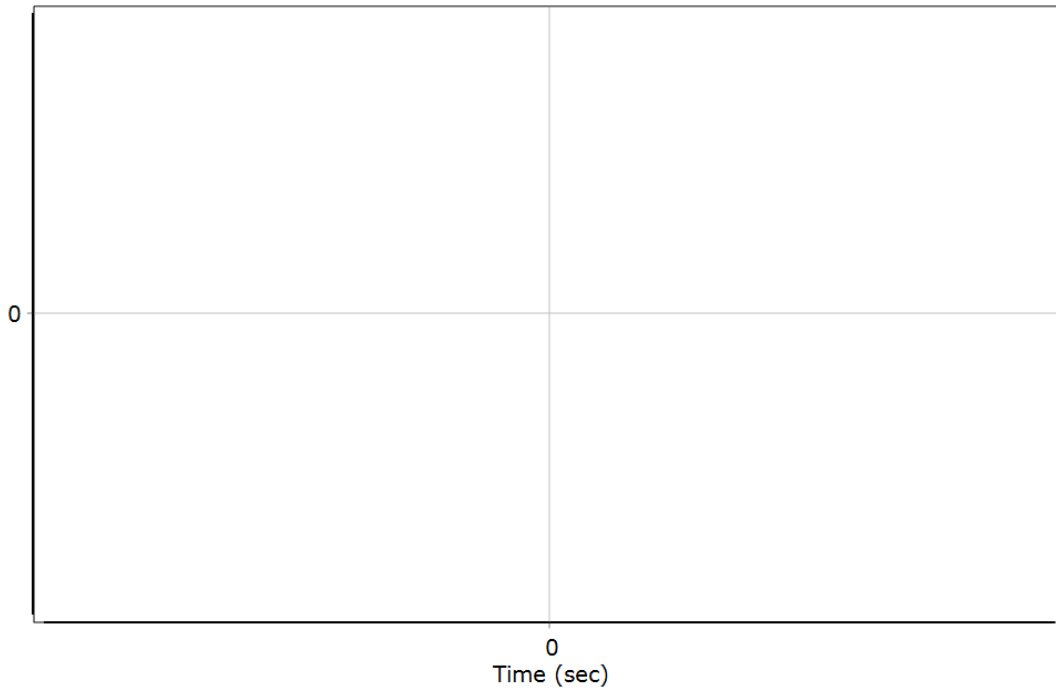


GLONASS Residuals



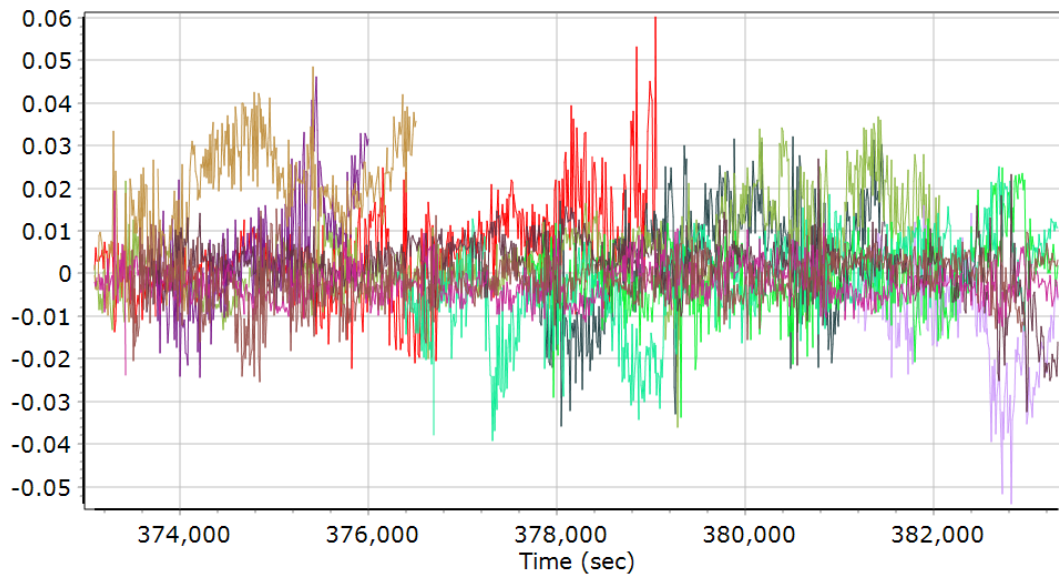
- GLONASS 01 Residual (m)
- GLONASS 02 Residual (m)
- GLONASS 03 Residual (m)
- GLONASS 11 Residual (m)
- GLONASS 12 Residual (m)
- GLONASS 13 Residual (m)
- GLONASS 14 Residual (m)
- GLONASS 20 Residual (m)
- GLONASS 21 Residual (m)
- GLONASS 23 Residual (m)
- GLONASS 24 Residual (m)

BEIDOU Residuals



- BEIDOU 11 Residual (m)
- BEIDOU 12 Residual (m)
- BEIDOU 24 Residual (m)
- BEIDOU 25 Residual (m)
- BEIDOU 26 Residual (m)

GALILEO Residuals



- | | |
|---------------------------|---------------------------|
| — GALILEO 04 Residual (m) | — GALILEO 05 Residual (m) |
| — GALILEO 09 Residual (m) | — GALILEO 10 Residual (m) |
| — GALILEO 12 Residual (m) | — GALILEO 13 Residual (m) |
| — GALILEO 19 Residual (m) | — GALILEO 21 Residual (m) |
| — GALILEO 24 Residual (m) | — GALILEO 26 Residual (m) |
| — GALILEO 31 Residual (m) | — GALILEO 33 Residual (m) |

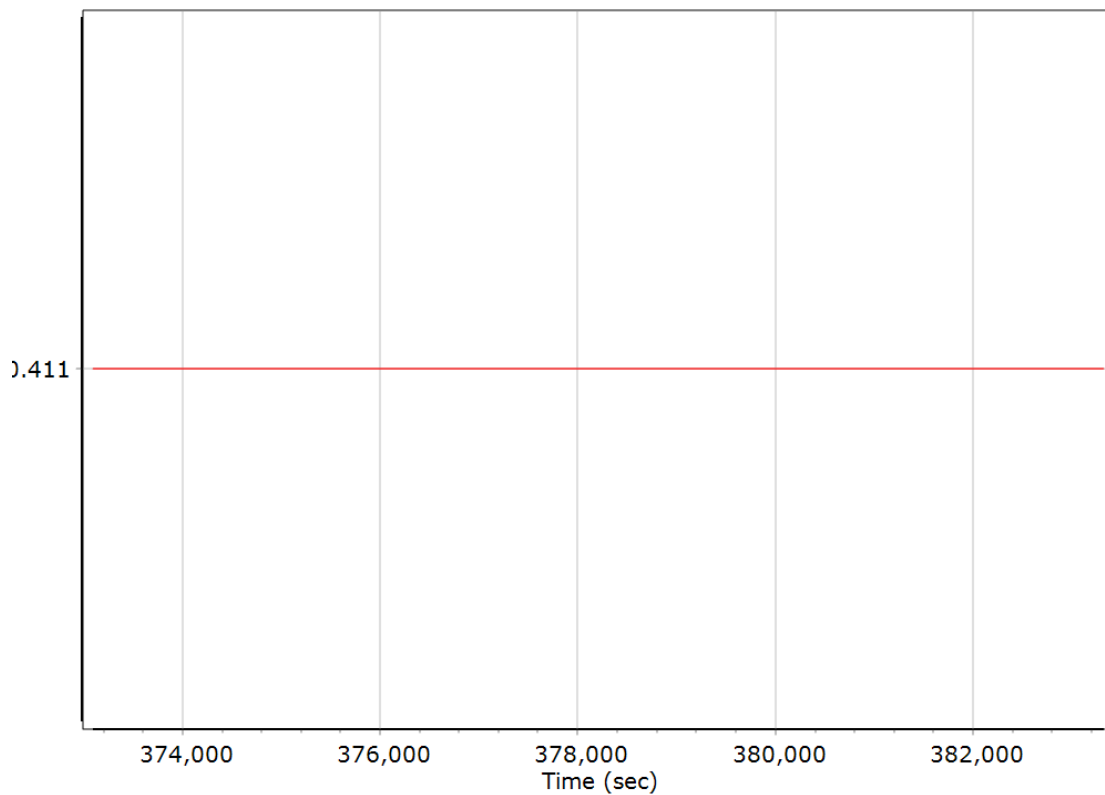
GNSS-Inertial Processor Configuration

Processing mode	IN-Fusion PP-RTX		
Stabilized mount	False		
Processing start time	372633.000 (9/1/2022 7:30:33 AM)		
Processing end time	383333.000 (9/1/2022 10:28:53 AM)		
Initial attitude source	Real-Time VNAV/RNAV Attitude		
IMU Sensor Context	Processing with Onboard IMU		
Reference to IMU lever arm (m)	0.000	0.000	0.000
Reference to IMU mounting angles (deg)	0.000	0.000	0.000
Reference to Primary GNSS lever arm (m)	-0.411	-0.283	-1.282
Reference 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

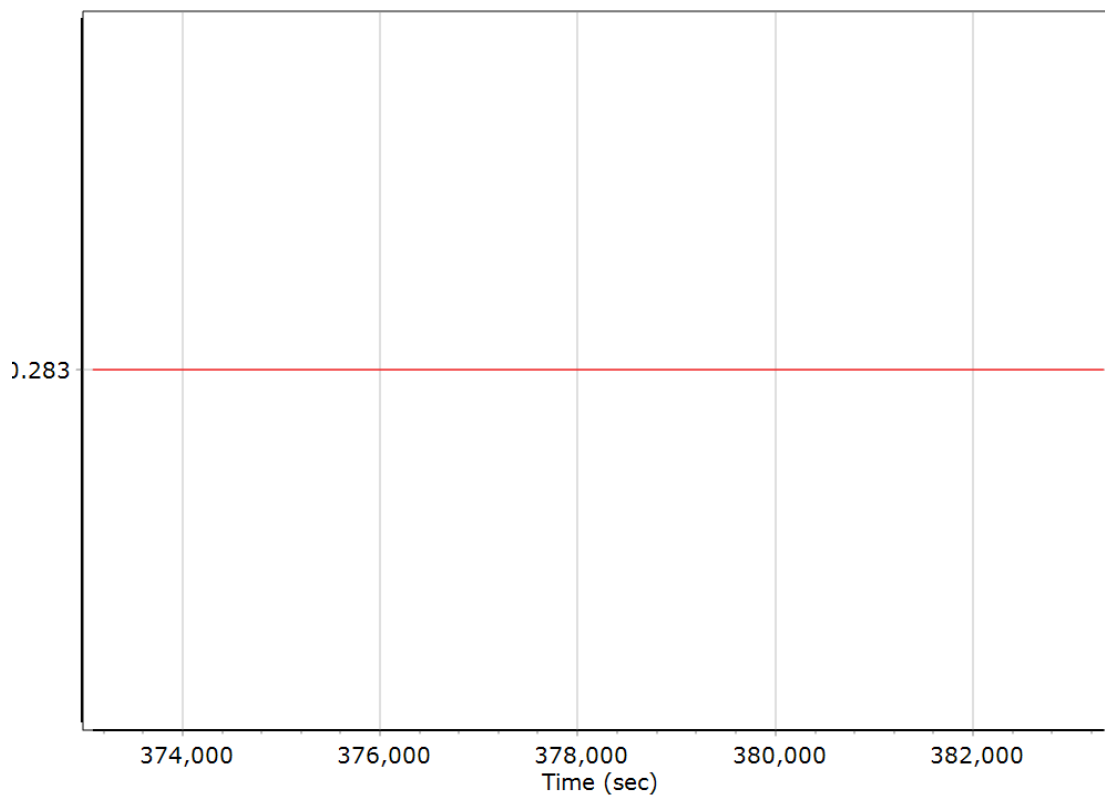
Calibrated Installation Parameters

Reference-Primary GNSS Lever Arm (m)

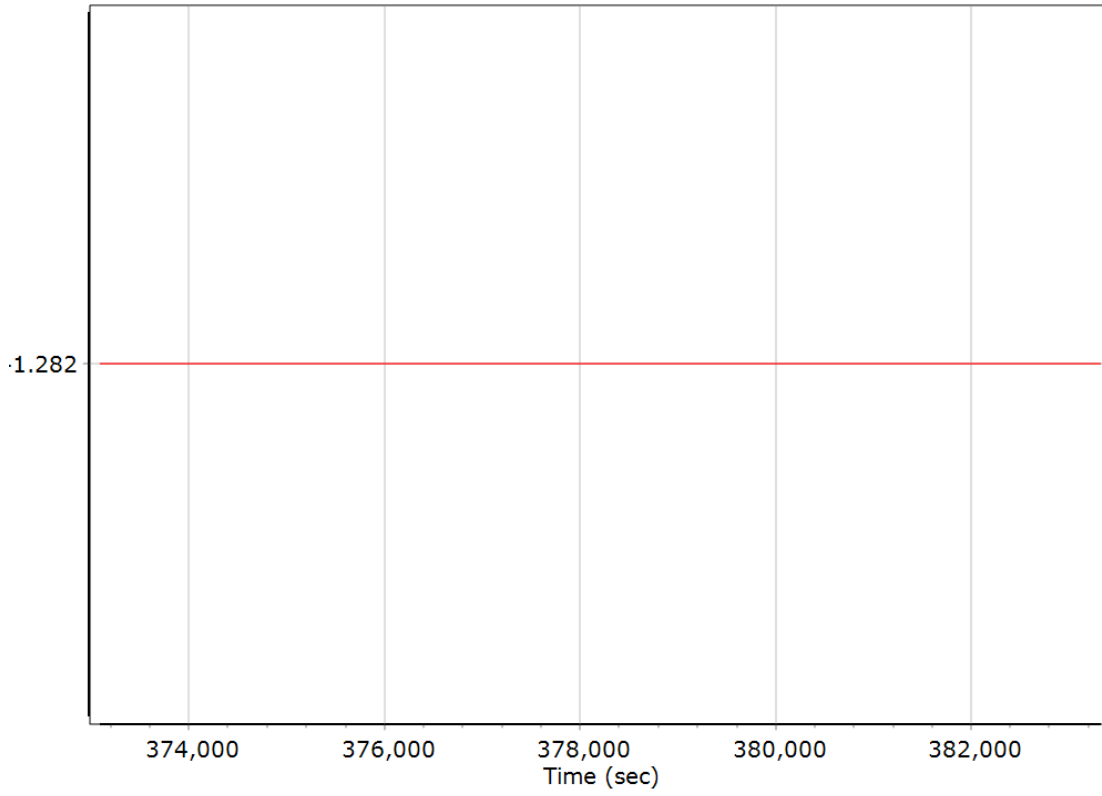
X Reference-Primary GNSS Lever Arm (m)



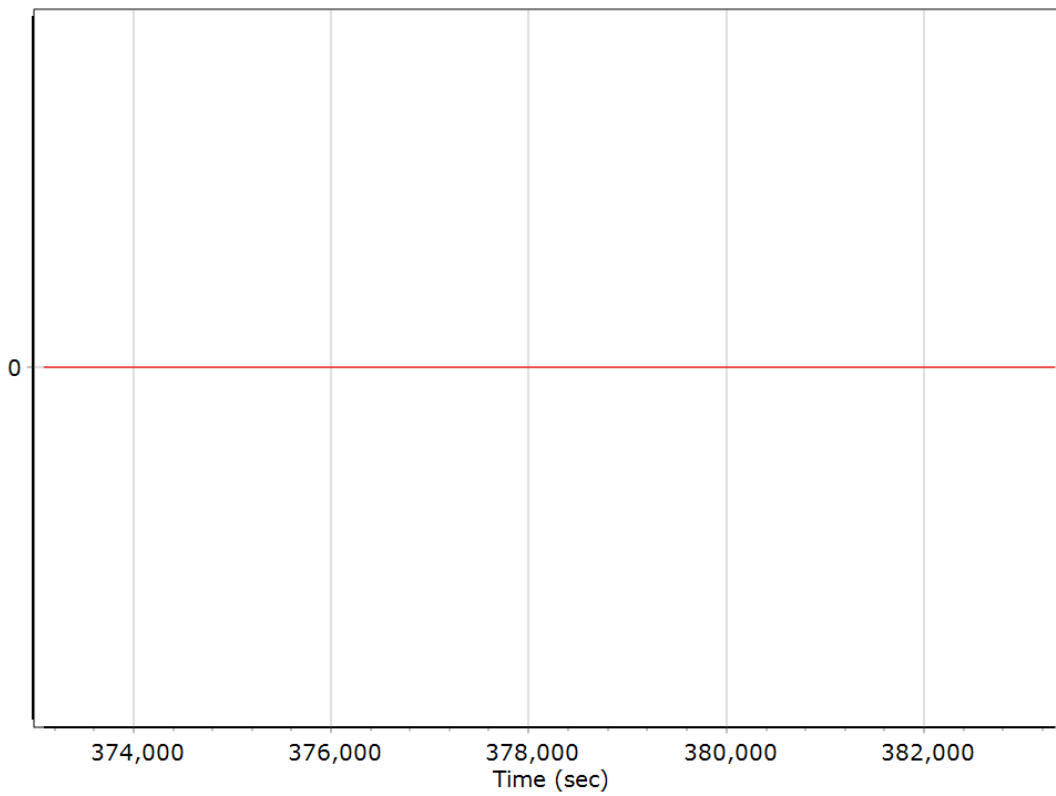
Y Reference-Primary GNSS Lever Arm (m)



Z Reference-Primary GNSS Lever Arm (m)



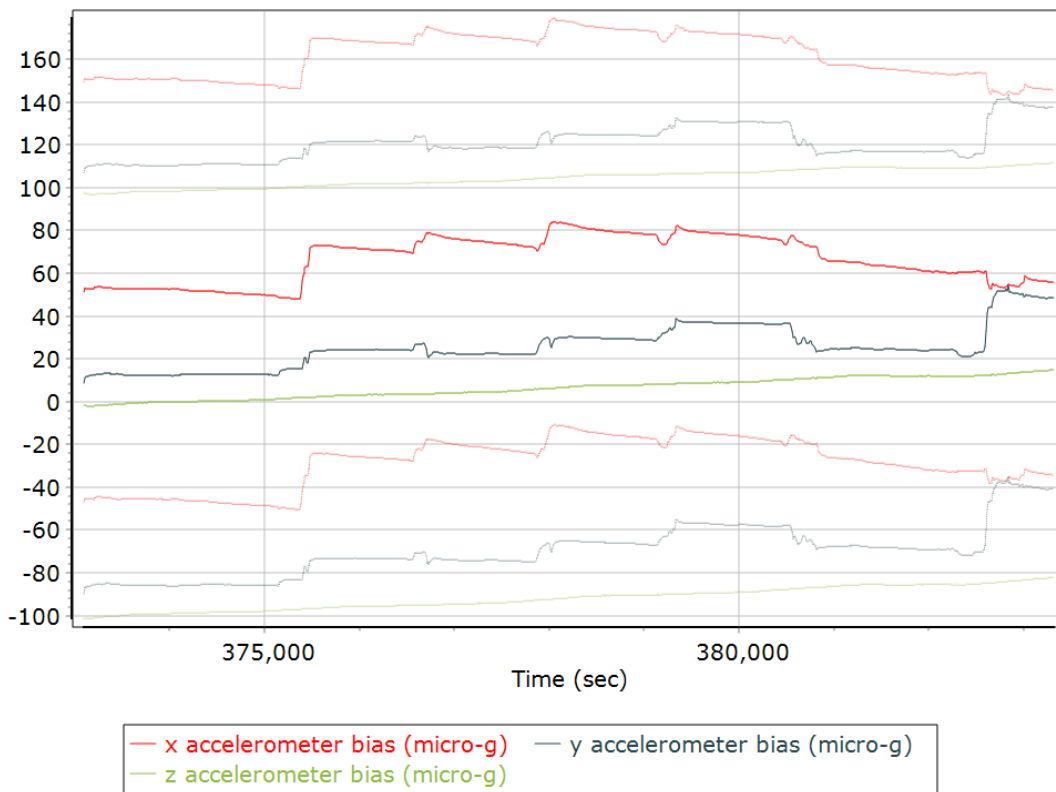
Reference-Primary GNSS Lever Arm Figure of Merit



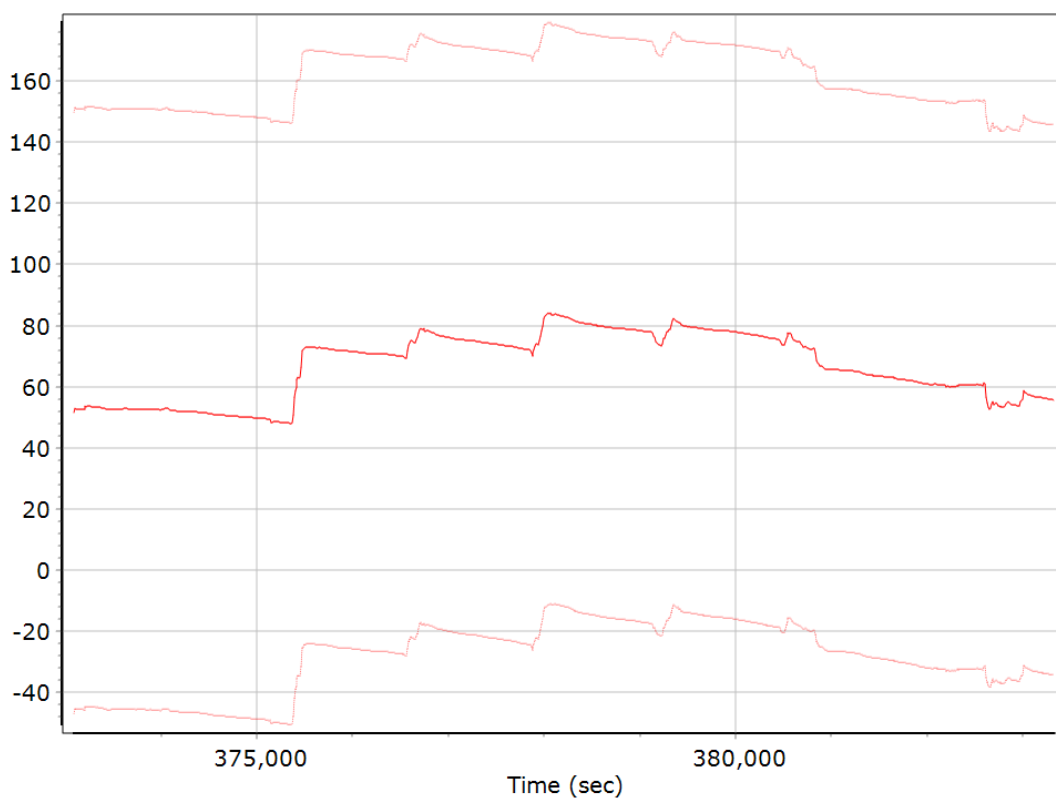
IN-Fusion QC

Forward Processed Estimated Errors, Reference Frame

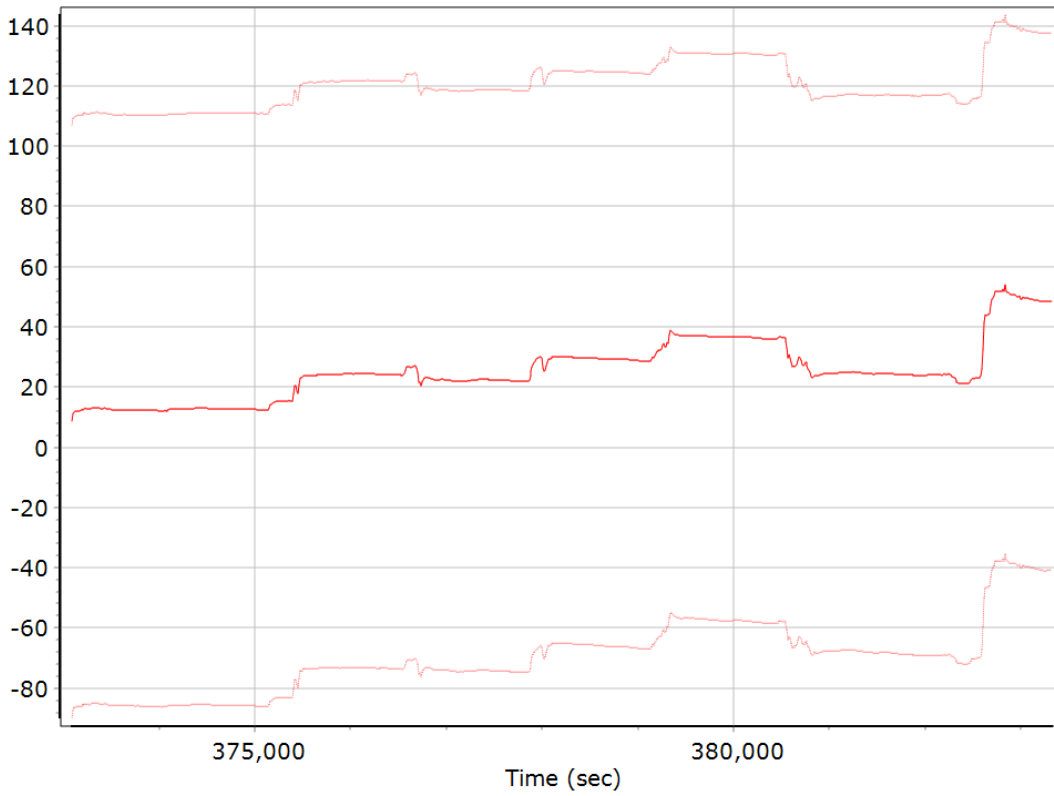
Accelerometer Bias (micro-g)



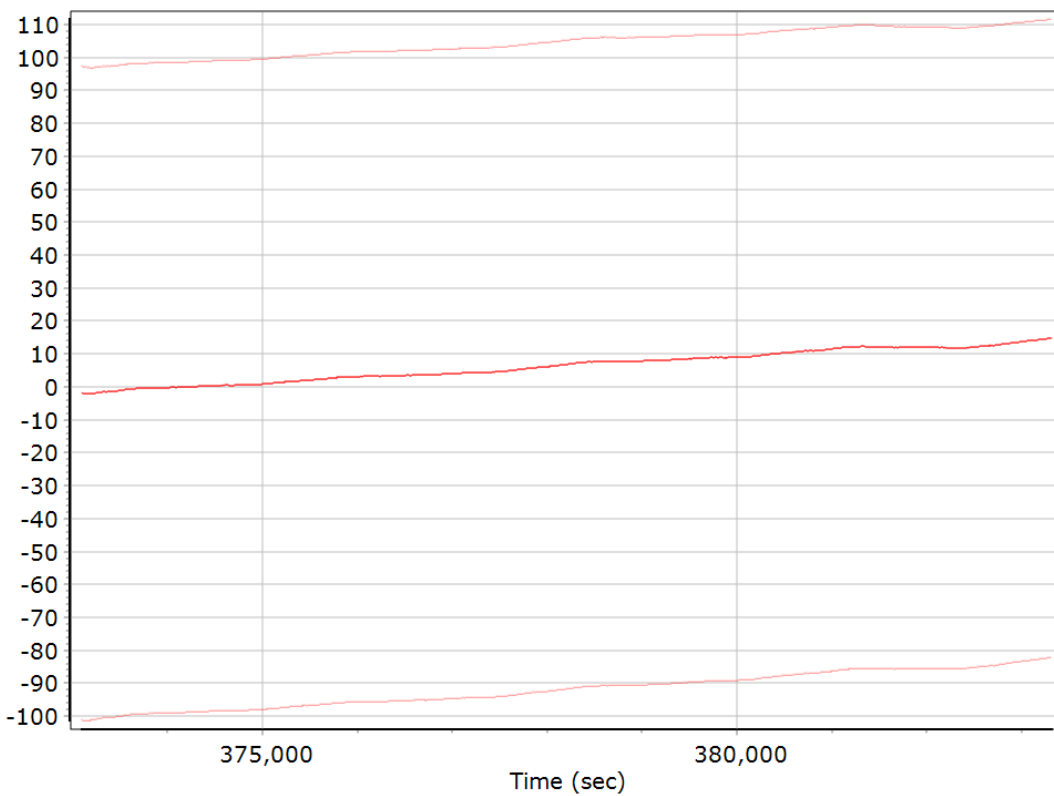
X Accelerometer Bias (micro-g)



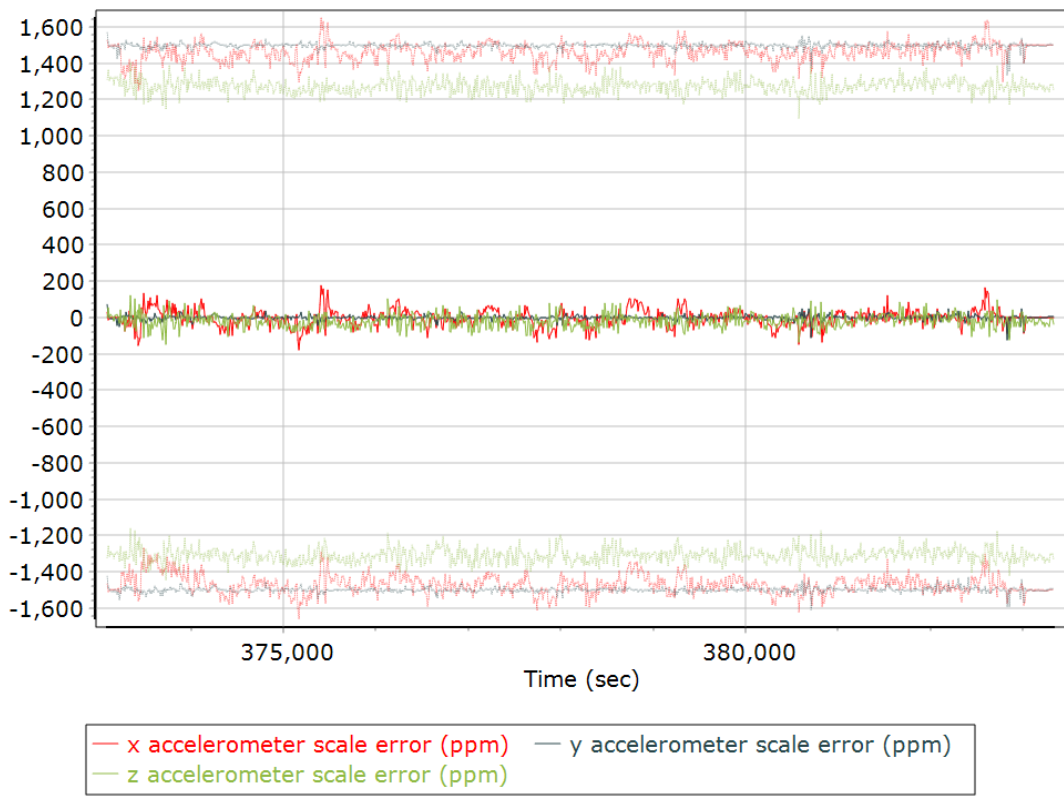
Y Accelerometer Bias (micro-g)



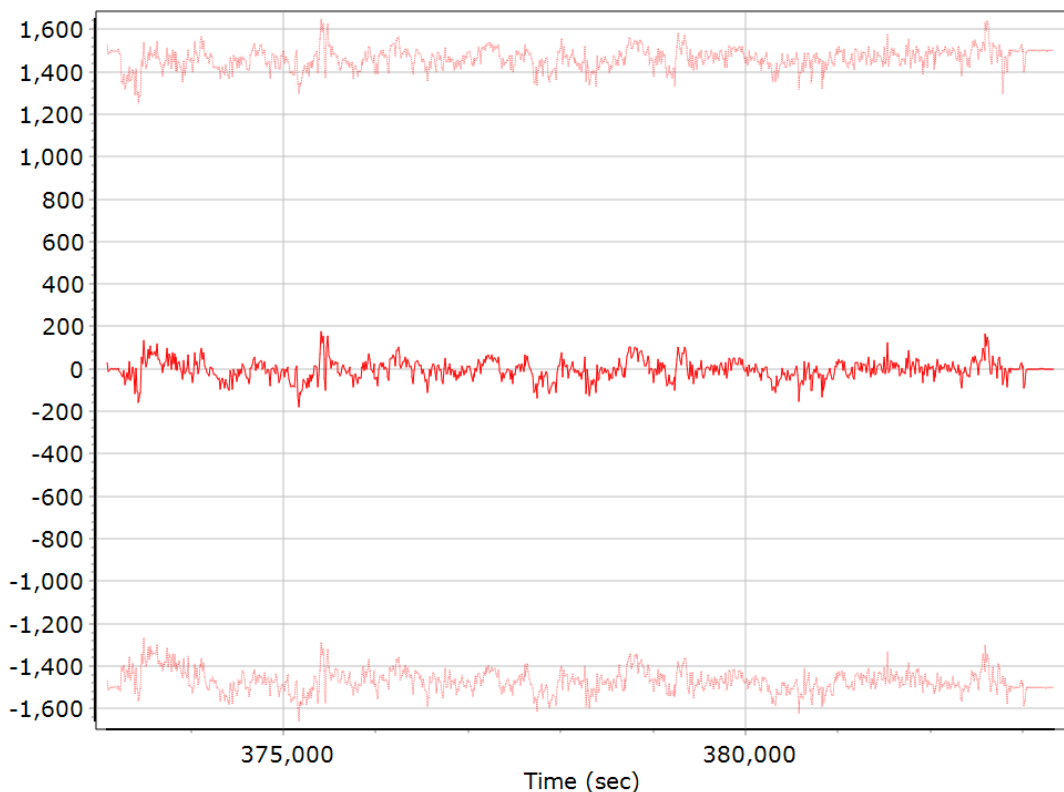
Z Accelerometer Bias (micro-g)



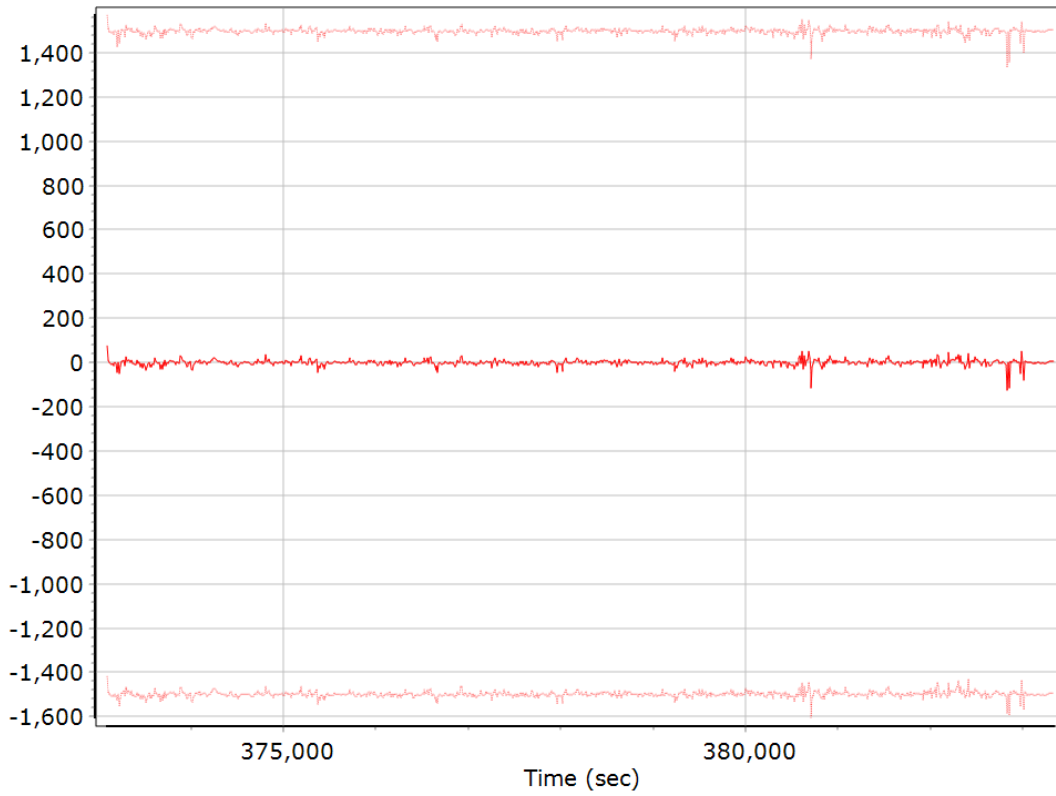
Accelerometer Scale Error (ppm)



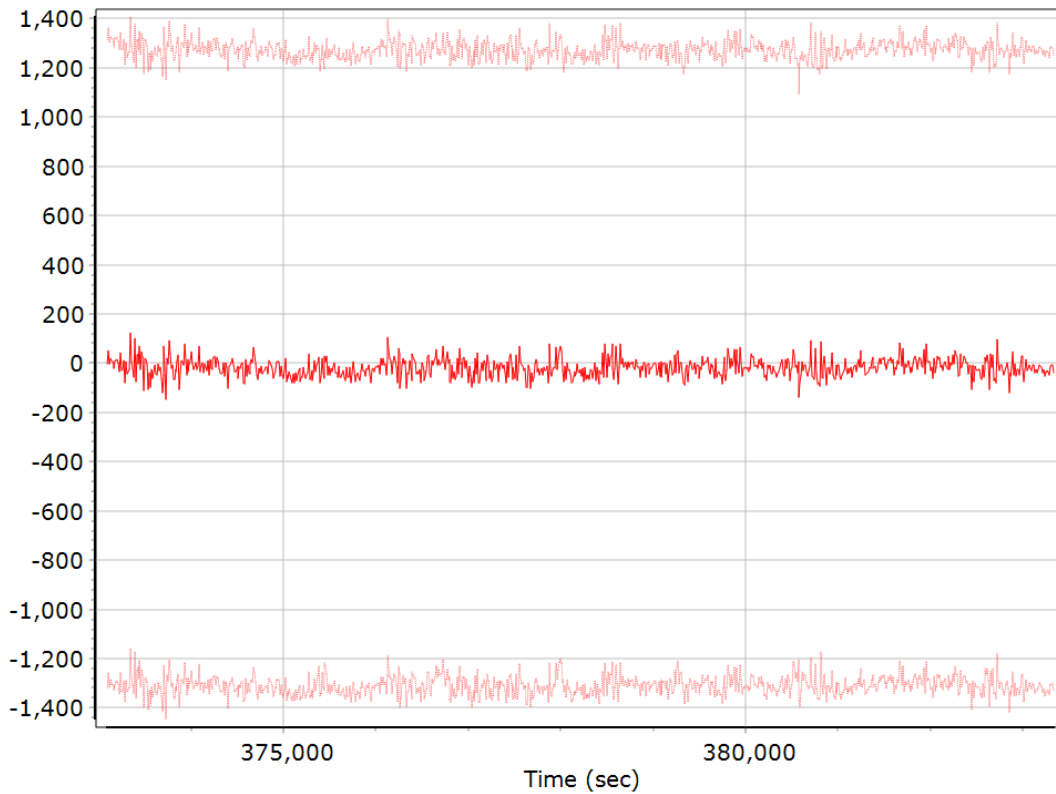
X Accelerometer Scale Error (ppm)



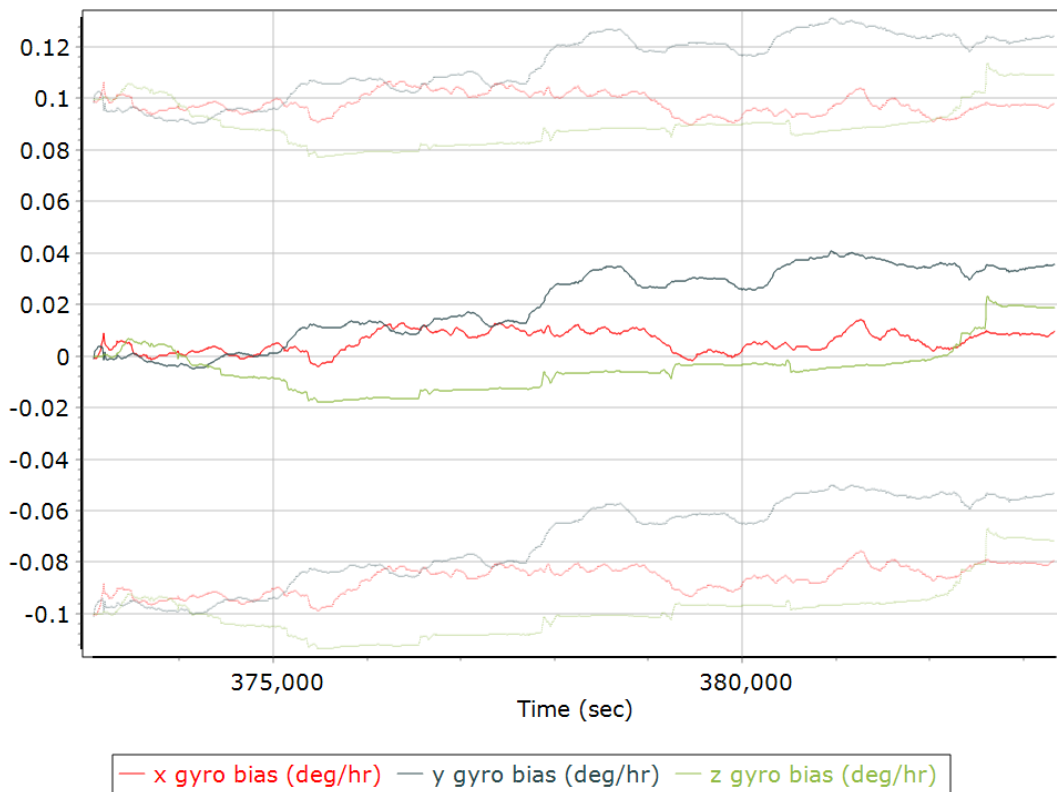
Y Accelerometer Scale Error (ppm)



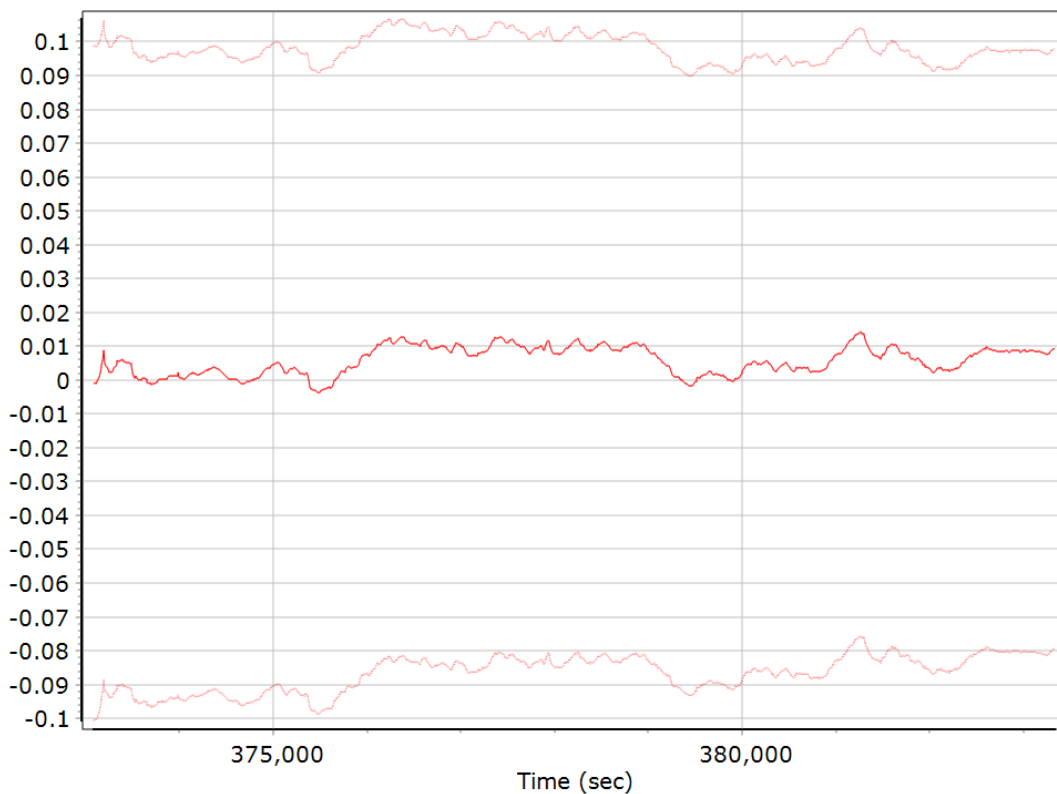
Z Accelerometer Scale Error (ppm)



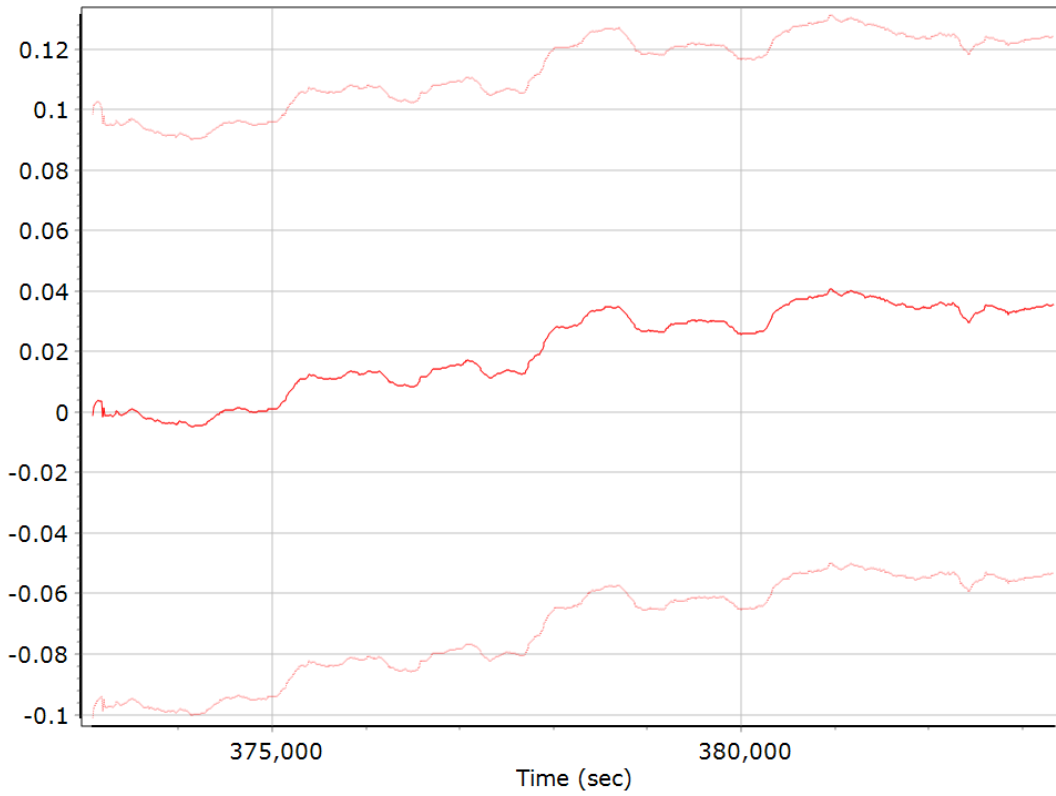
Gyro Bias (deg/h)



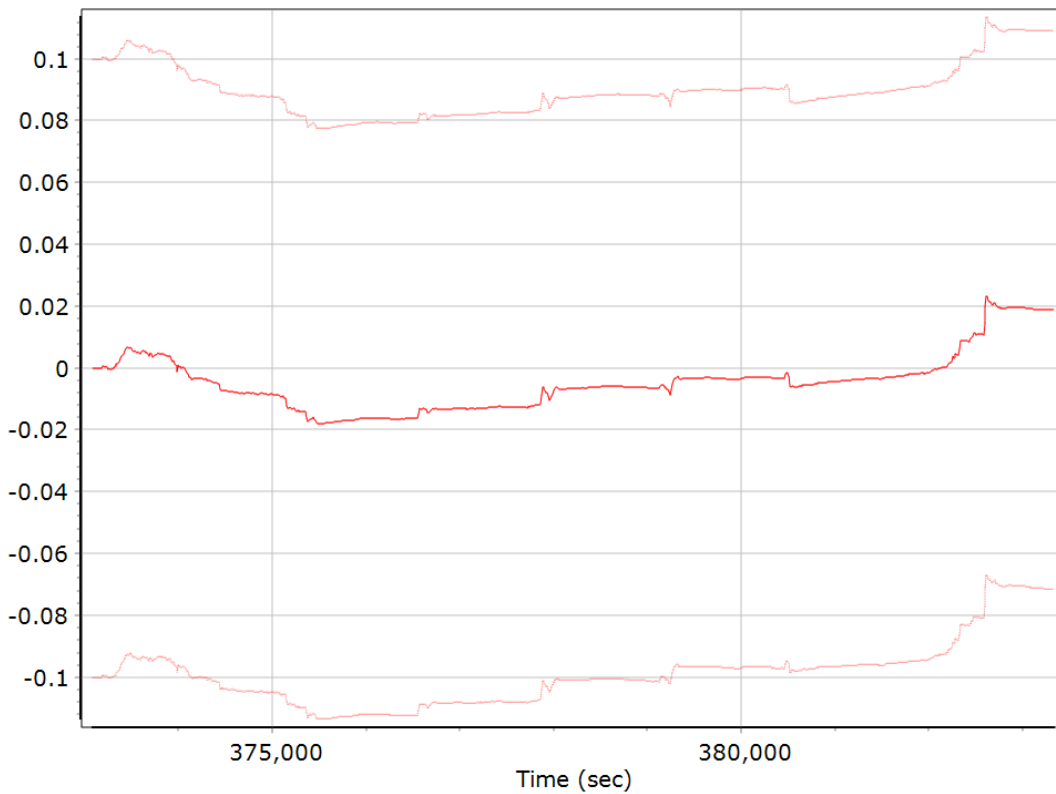
X Gyro Bias (deg/h)



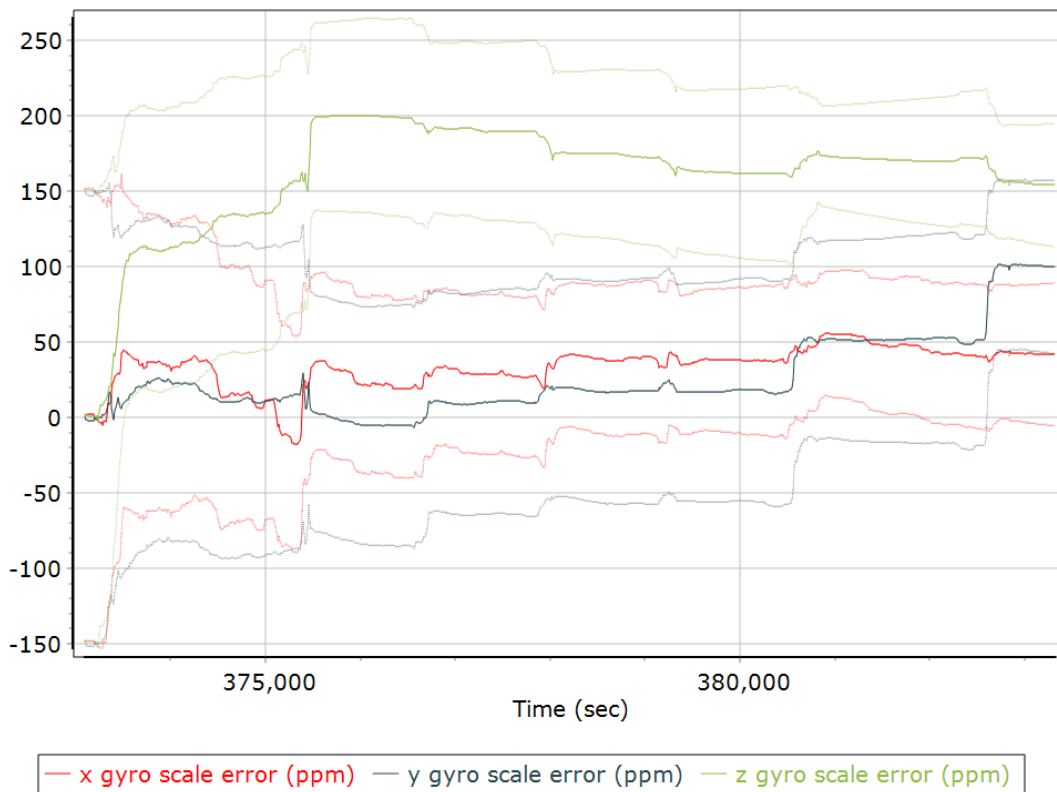
Y Gyro Bias (deg/h)



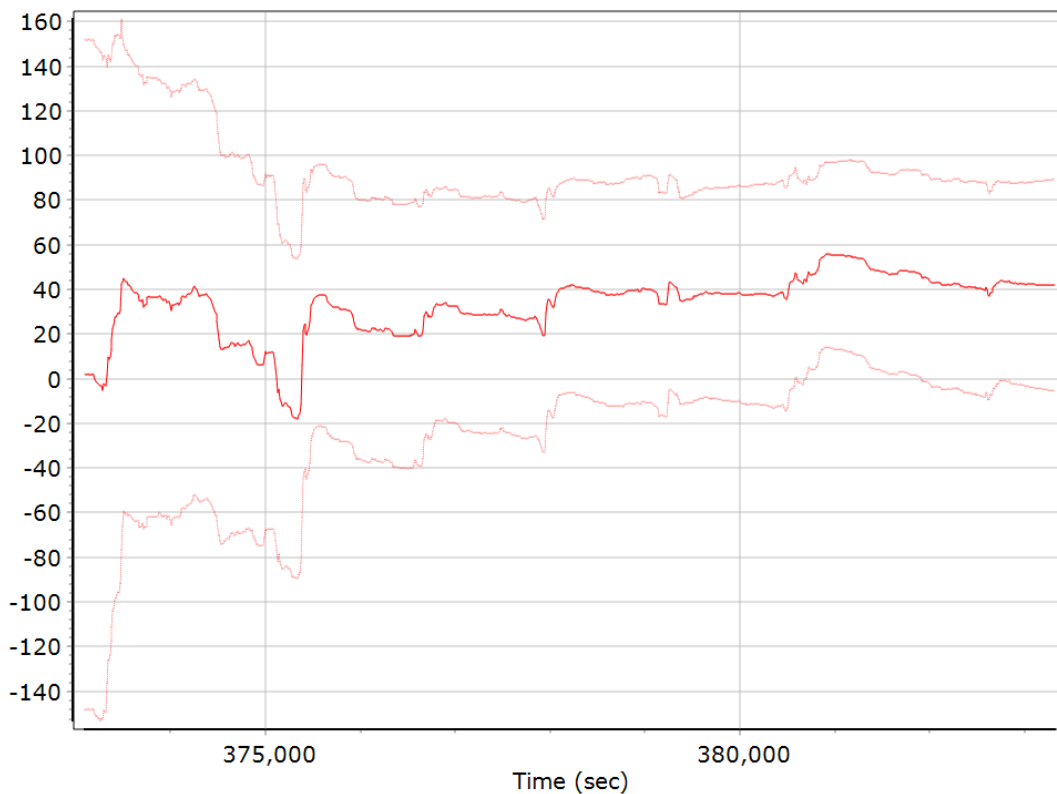
Z Gyro Bias (deg/h)



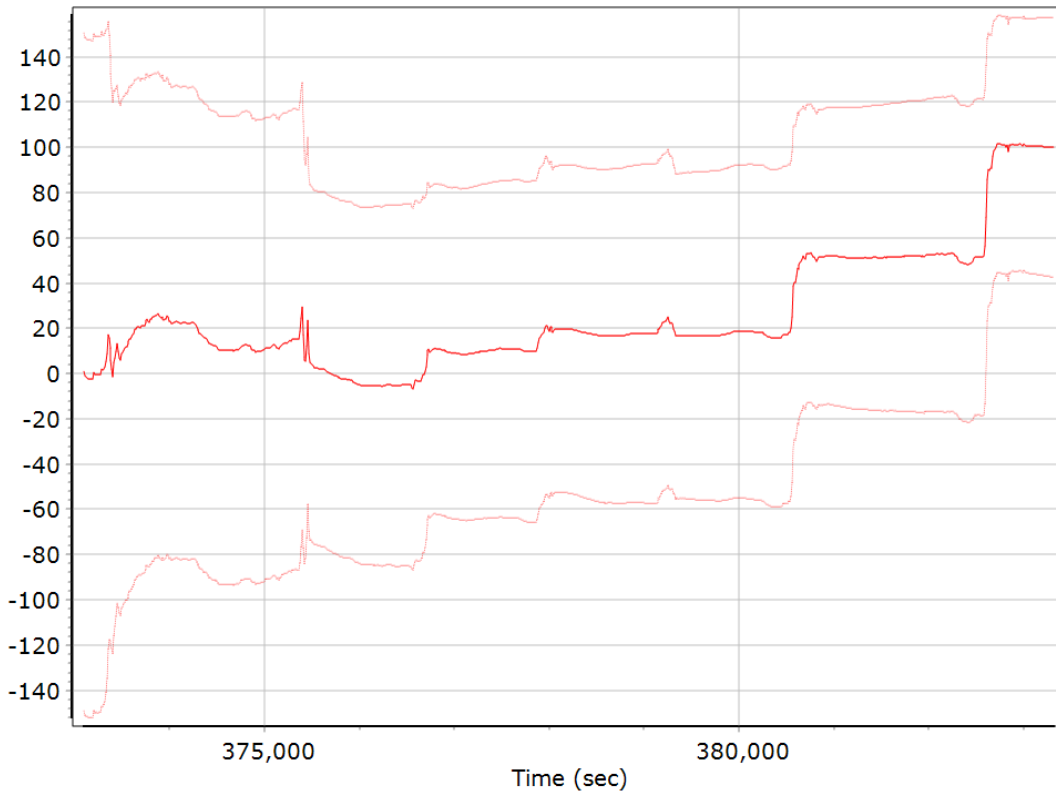
Gyro Scale Error (ppm)



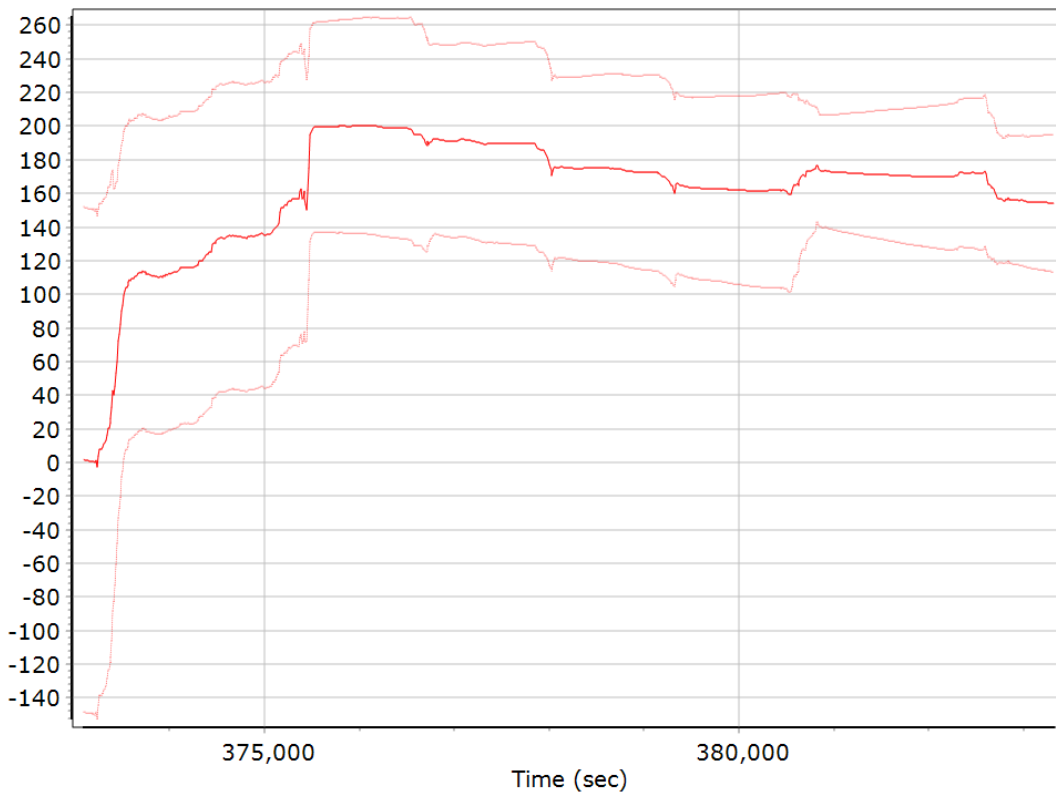
X Gyro Scale Error (ppm)



Y Gyro Scale Error (ppm)

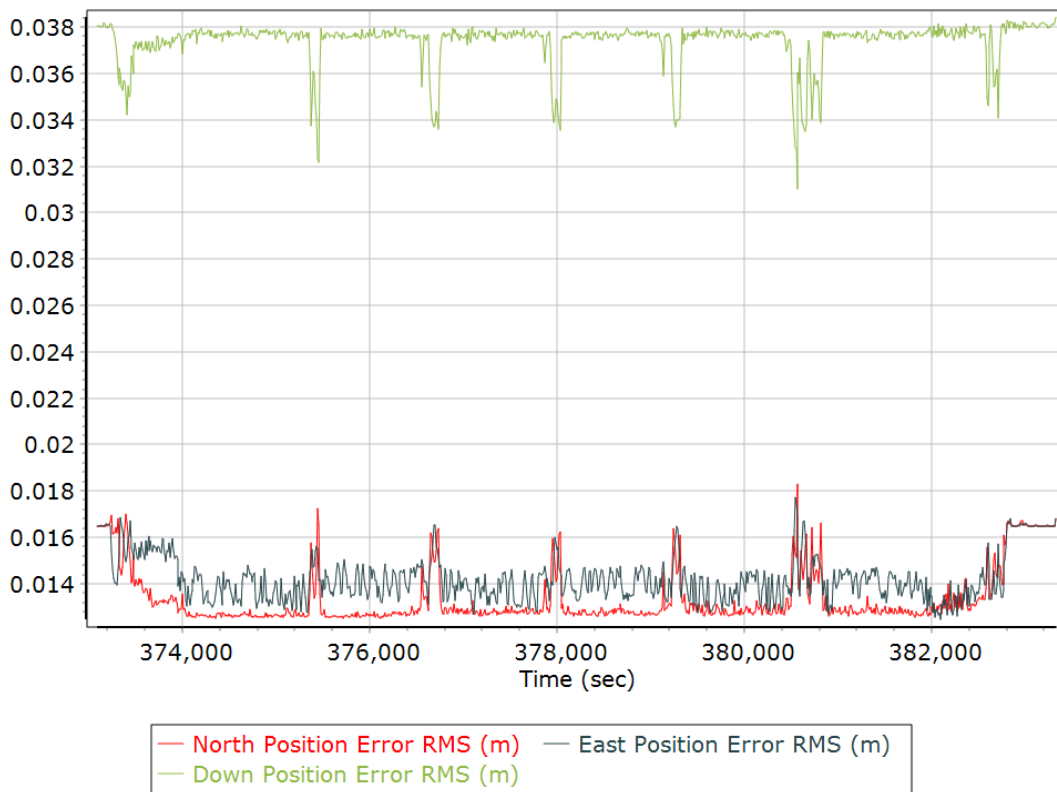


Z Gyro Scale Error (ppm)

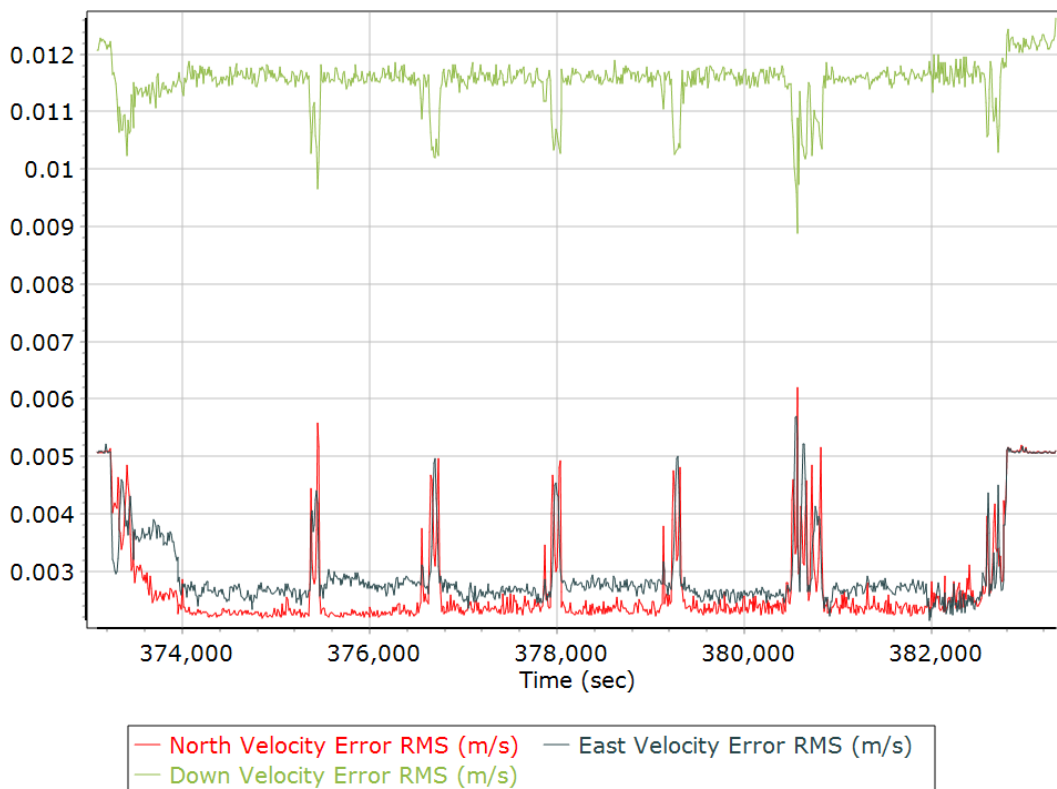


Smoothed Performance Metrics

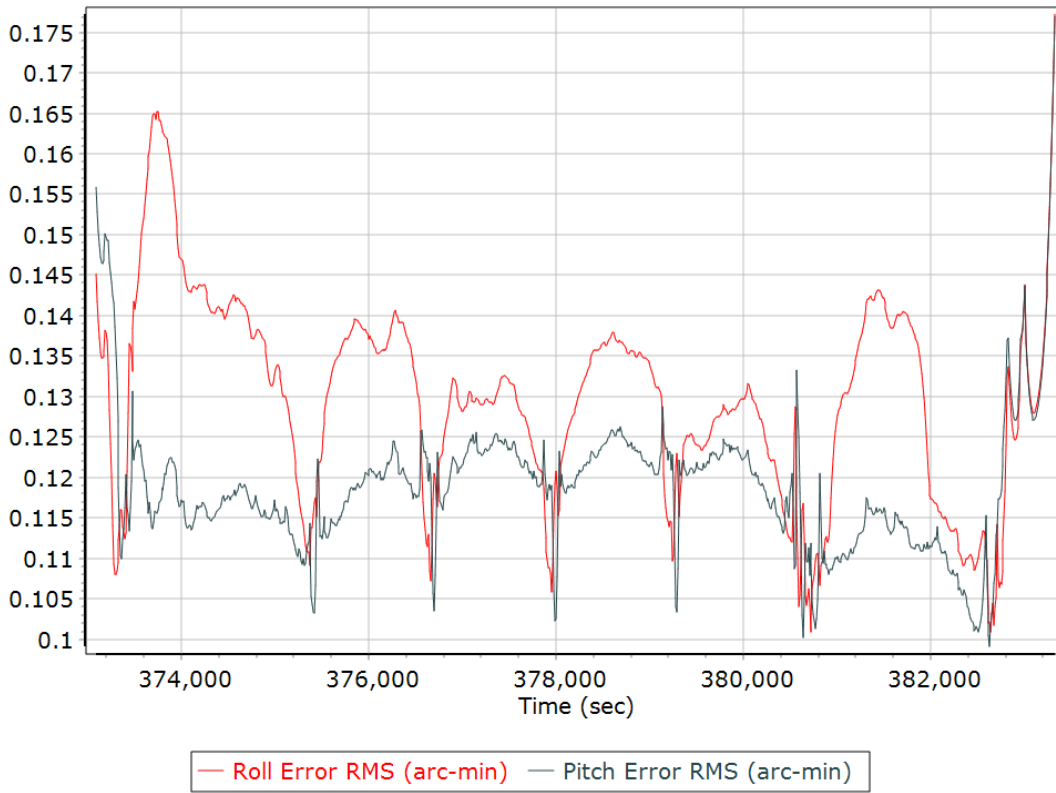
Position Error RMS (m)



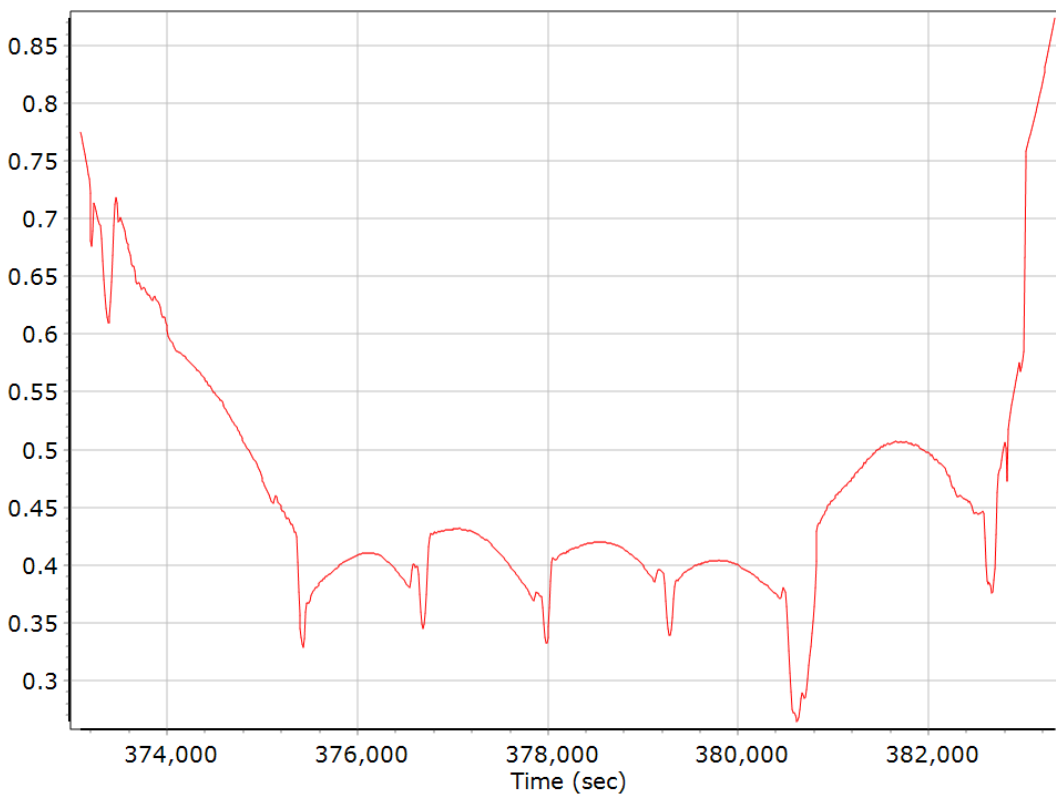
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

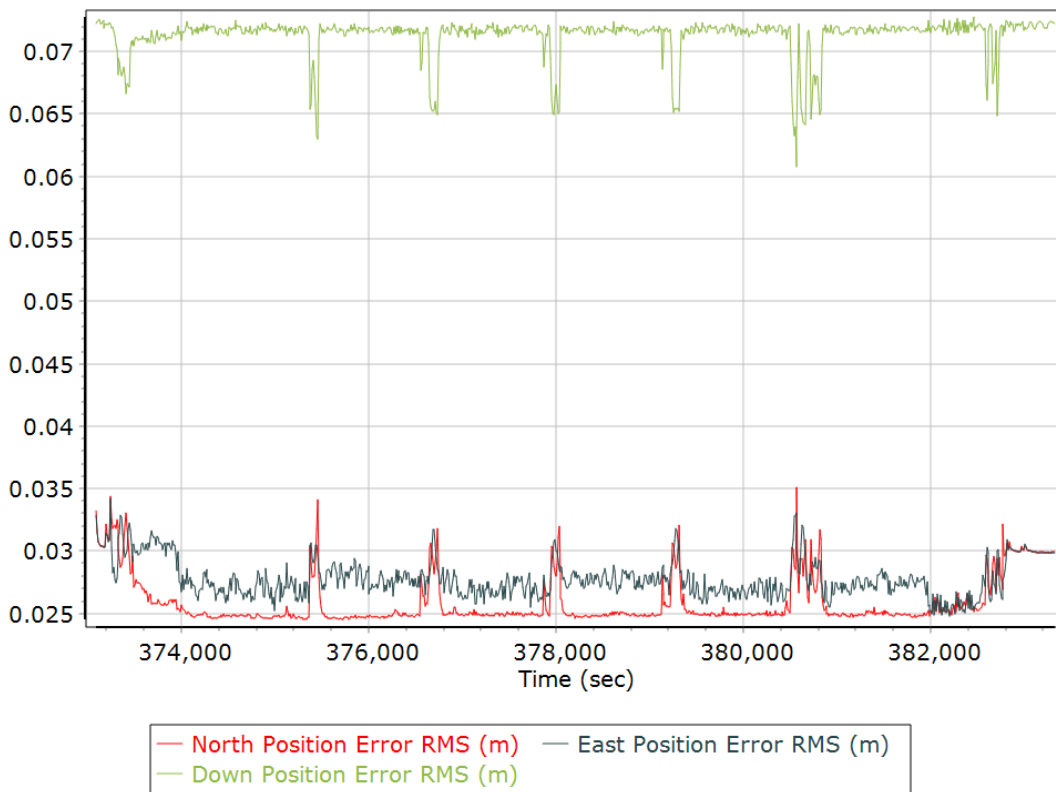


Heading Error RMS (arc-min)

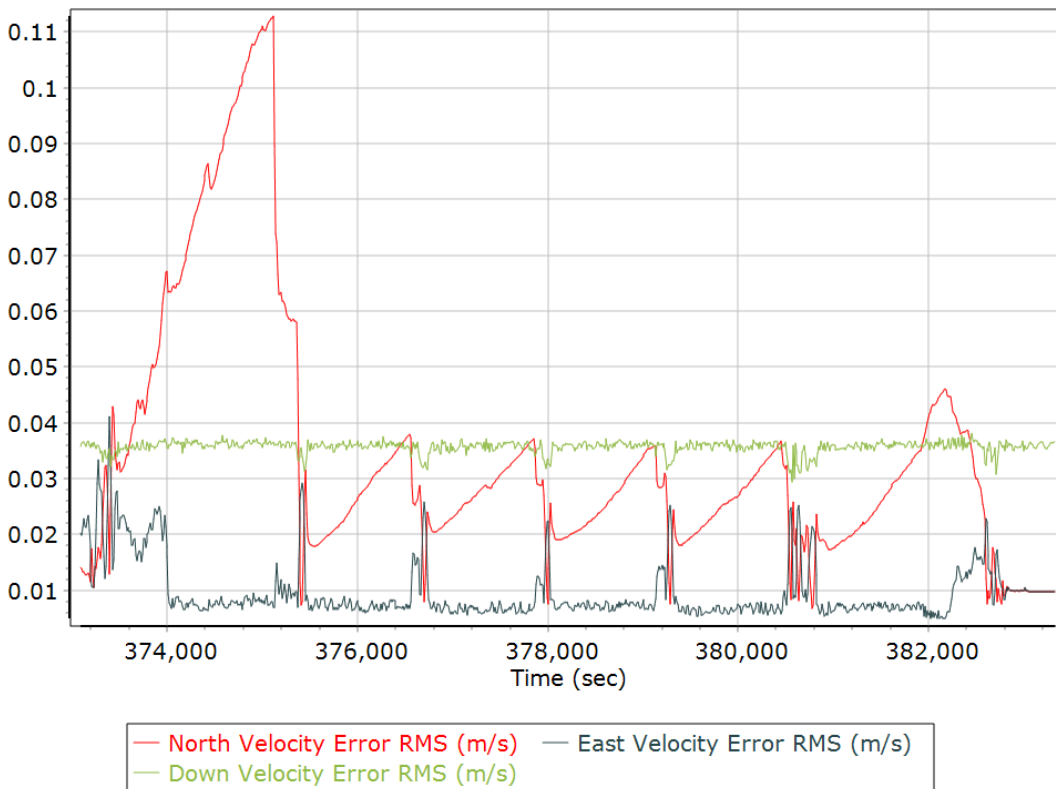


Forward Processed Performance Metrics

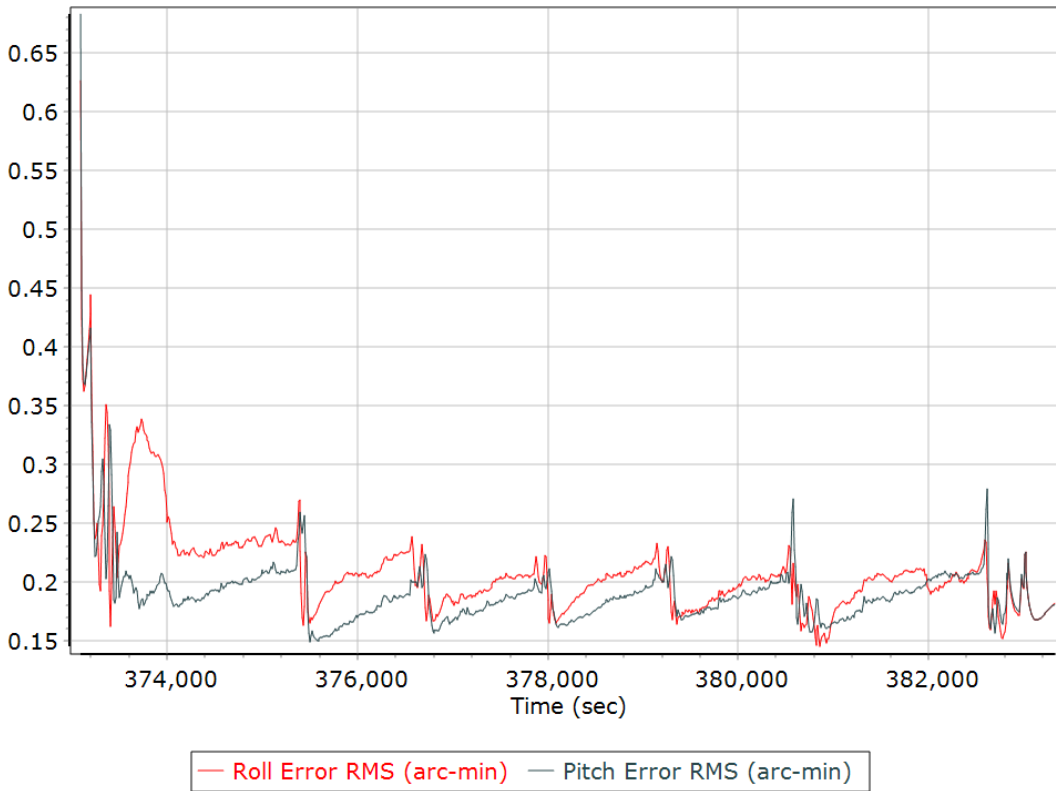
Position Error RMS (m)



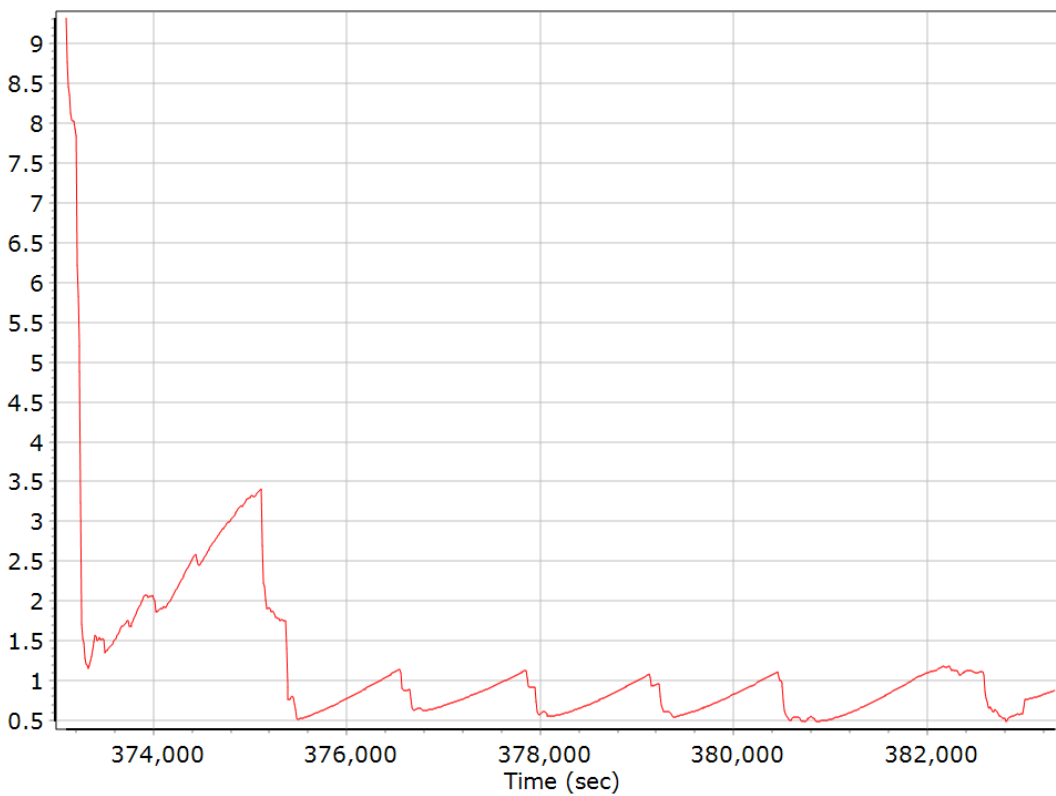
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

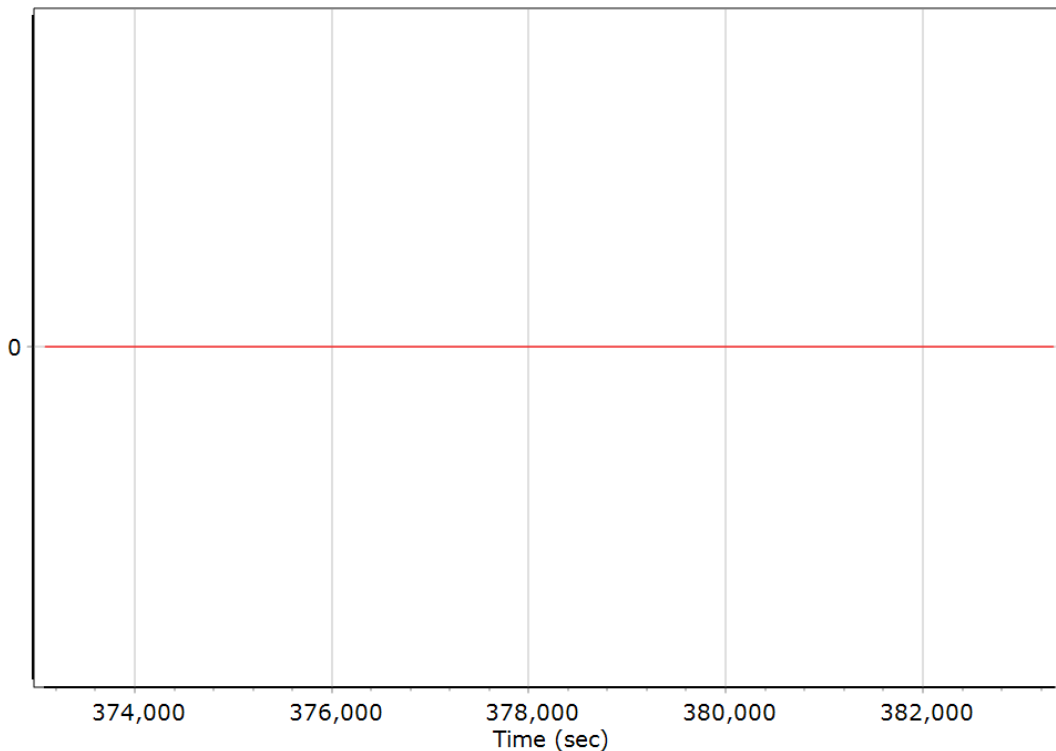


Heading Error RMS (arc-min)



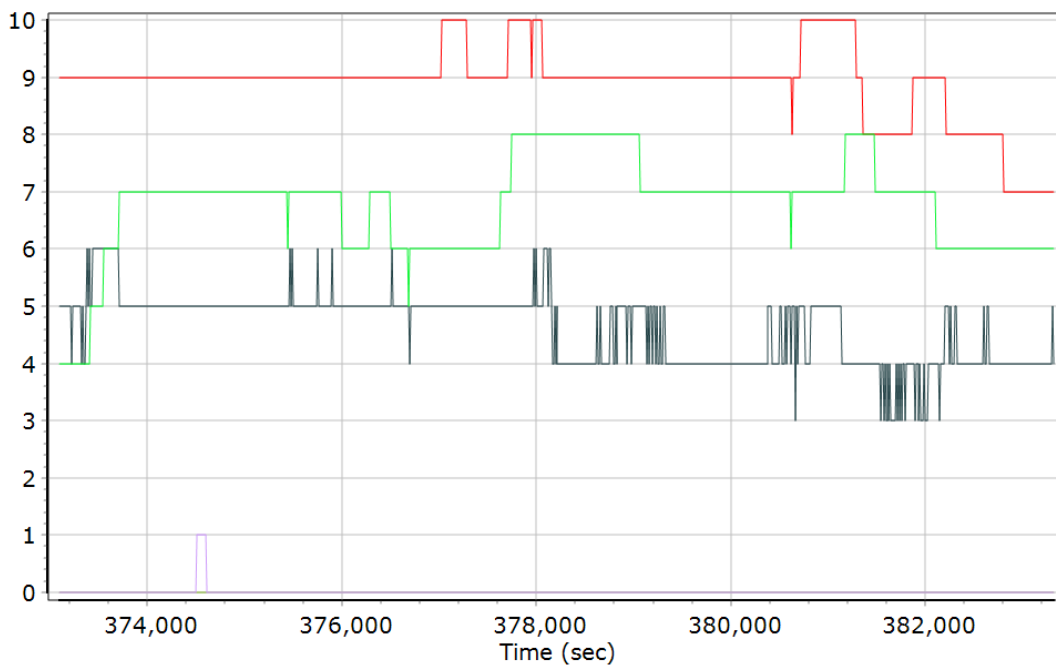
Forward Processed Solution Status

Processing Mode



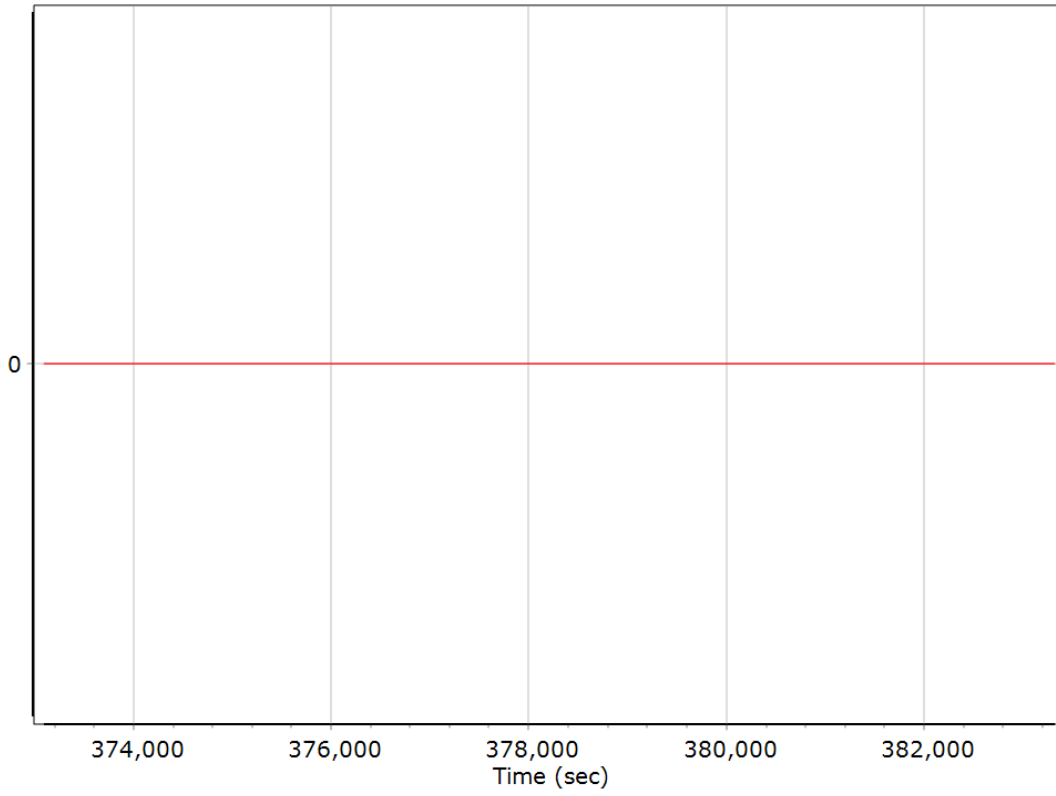
0 = Fixed NL, 1 = Fixed WL, 2 = Float, 3 = DGNSS, 4 = RTCM, 5 = IAPPP, 6 = C/A, 7 = GNSS Na

Number of Satellites



— Number of GPS Satellites	— Number of GLONASS Satellites
— Number of QZSS Satellites	— Number of BEIDOU Satellites
— Number of GALILEO Satellites	

Baseline Length



General Information

Mission Information

Project name	a07-s03-0529
Processing date	2022-09-02 16:14:40
Mission date	2022-09-02 02:16:49
Mission duration	03:50:00.000
Processing mode	IN-Fusion PP-RTX

Rover Hardware Information

Product	POS AV 610 VER6 HW1.6-12
Serial number	S/N6907
IMU type	57
Receiver type	BD982
Antenna type	AV39

Project File List

Rover Data Files

File name	File type
default0902_021651.000	POS Data
default0902_021651.001	POS Data
default0902_021651.002	POS Data
default0902_021651.003	POS Data
default0902_021651.004	POS Data
default0902_021651.005	POS Data
default0902_021651.006	POS Data
default0902_021651.007	POS Data
default0902_021651.008	POS Data
default0902_021651.009	POS Data
default0902_021651.010	POS Data
default0902_021651.011	POS Data
default0902_021651.012	POS Data
default0902_021651.013	POS Data
default0902_021651.014	POS Data
default0902_021651.015	POS Data
default0902_021651.016	POS Data
default0902_021651.017	POS Data
default0902_021651.018	POS Data

Input Files

File Name	File Type
Ephm2450.22g	GLONASS Broadcast Ephemeris
Ephm2450.22n	GPS Broadcast Ephemeris

Output Files

Filename	File type
sbet_a07-s03-0529.out	SBET Trajectory File

Rover Data Summary

First raw data file	default0902_021651.000		
Last raw data file	default0902_021651.018		
Start GPS week	2225		
Start time	18.107 (8/28/2022 12:00:18 AM)		
End time	453992.775 (9/2/2022 6:06:32 AM)		
Start of fine alignment	440627.686 (9/2/2022 2:23:47 AM)		
Available subsystems	Primary GNSS, IMU		
POS Event Input	None		
Correction data	None		
IMU Installation Lever Arms & Mounting Angles			
Reference to IMU lever arm (m)	0.000	0.000	0.000
Reference to IMU mounting angles (deg)	0.000	0.000	0.000
Reference to Primary GNSS lever arm (m)	-0.353	-0.322	-1.280
Reference to Primary GNSS lever arm std dev (m)	-1.000		
Aircraft to Reference mounting angles (deg)	0.000	0.000	0.000

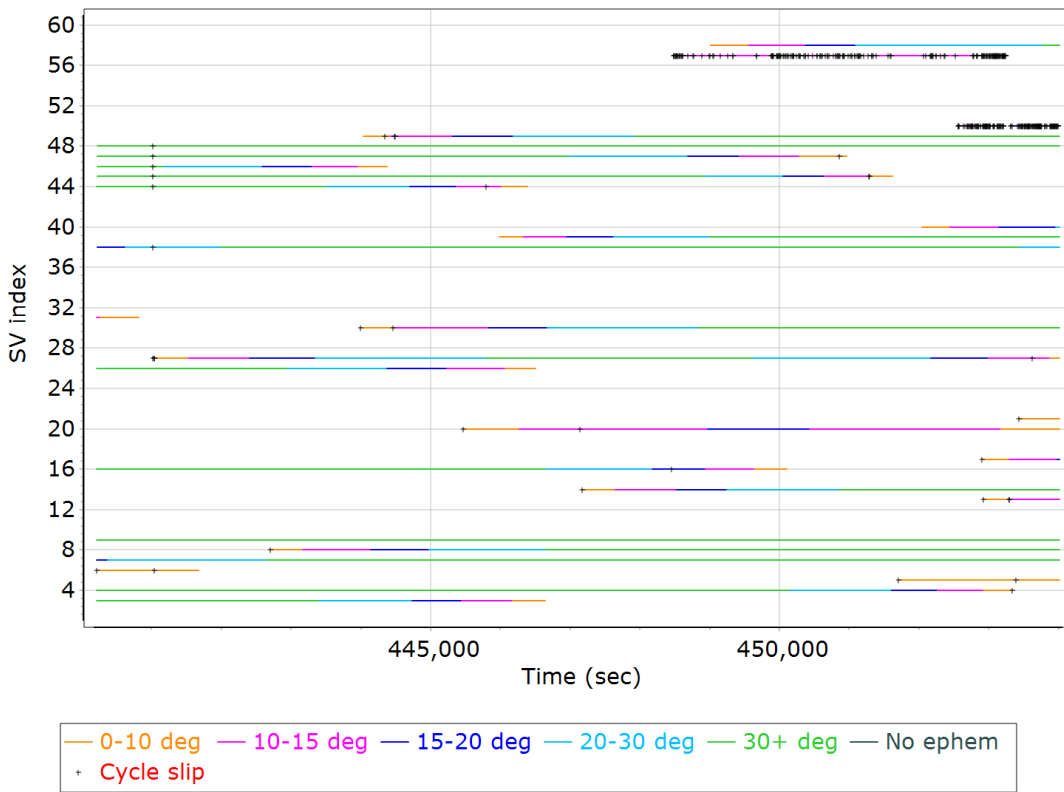
Rover Data QC

Raw IMU Import QC Summary

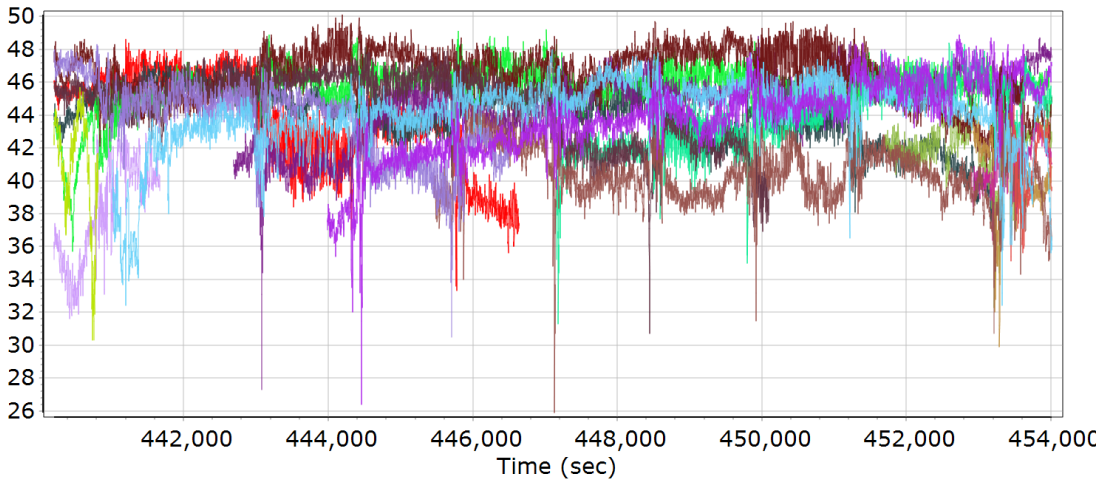
IMU data input file	imu_a07-s03-0529.dat
IMU data check log file	imudt_a07-s03-0529.log
IMU Records Processed	2759937
Termination Status	Warnings
IMU Anomalies	3
IMU Failure Messages	
440192.958 : WARNING : Gap of 440173.6007 seconds in CHECKDT input data	
18.532 : WARNING : Gap of 0.0100 seconds in CHECKDT input data	
18.427 : WARNING : Gap of 0.0100 seconds in CHECKDT input data	

Primary Observables & Satellite Data

GPS/GLONASS L1 Satellite Lock/Elevation

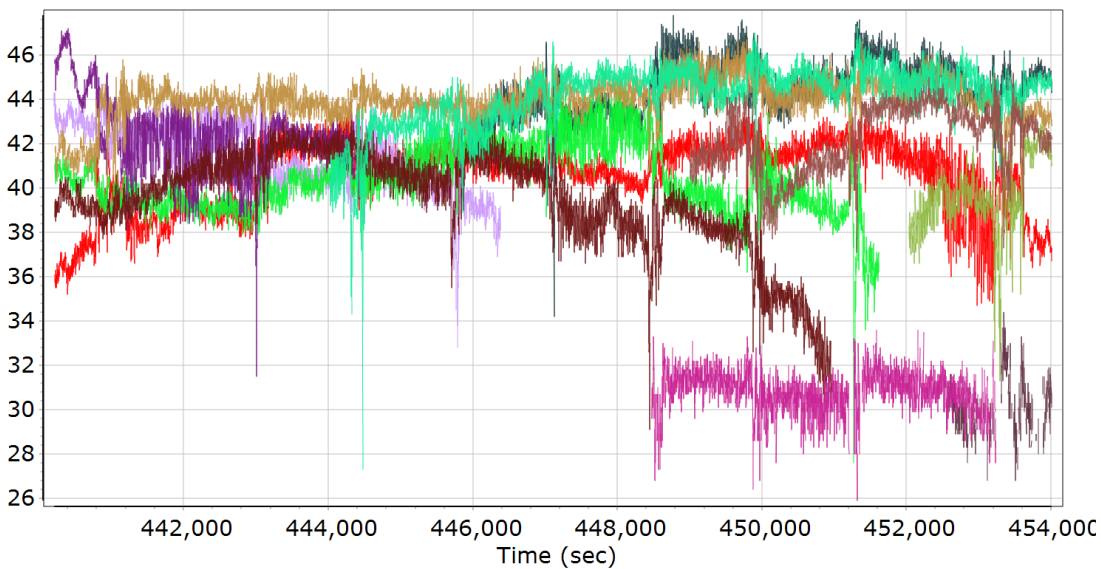


GPS L1 SNR



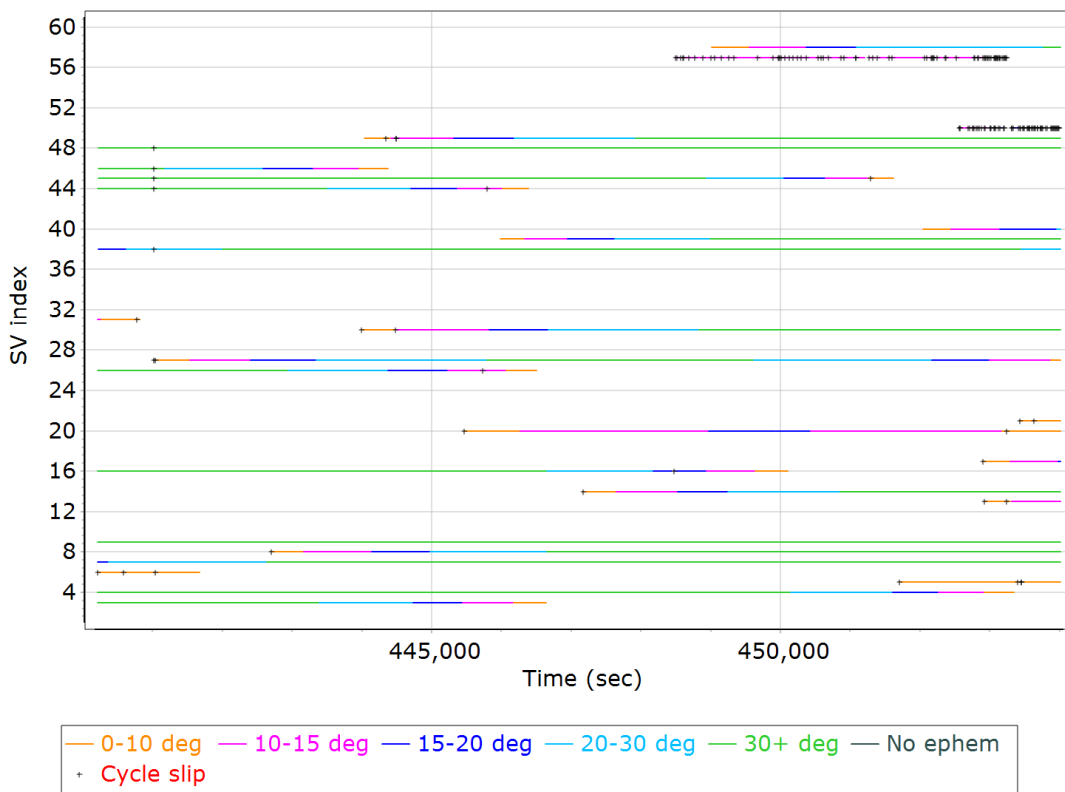
- | | |
|-----------------------------|-----------------------------|
| — GPS PRN 03 L1 SNR (dB/Hz) | — GPS PRN 04 L1 SNR (dB/Hz) |
| — GPS PRN 05 L1 SNR (dB/Hz) | — GPS PRN 06 L1 SNR (dB/Hz) |
| — GPS PRN 07 L1 SNR (dB/Hz) | — GPS PRN 08 L1 SNR (dB/Hz) |
| — GPS PRN 09 L1 SNR (dB/Hz) | — GPS PRN 13 L1 SNR (dB/Hz) |
| — GPS PRN 14 L1 SNR (dB/Hz) | — GPS PRN 16 L1 SNR (dB/Hz) |
| — GPS PRN 17 L1 SNR (dB/Hz) | — GPS PRN 20 L1 SNR (dB/Hz) |
| — GPS PRN 21 L1 SNR (dB/Hz) | — GPS PRN 26 L1 SNR (dB/Hz) |
| — GPS PRN 27 L1 SNR (dB/Hz) | — GPS PRN 30 L1 SNR (dB/Hz) |
| — GPS PRN 31 L1 SNR (dB/Hz) | |

GLONASS L1 SNR

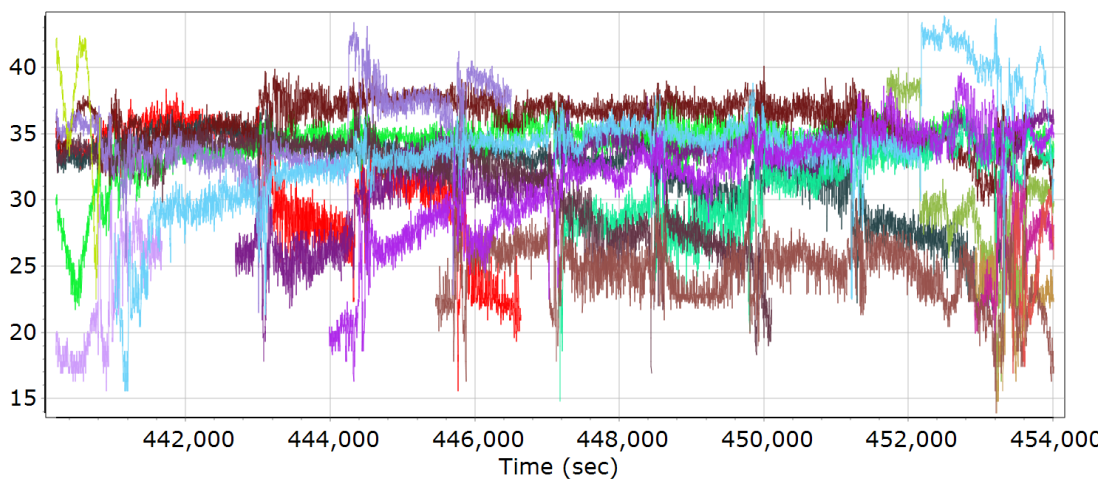


- | | |
|-----------------------------|-----------------------------|
| — GLONASS 01 L1 SNR (dB/Hz) | — GLONASS 02 L1 SNR (dB/Hz) |
| — GLONASS 03 L1 SNR (dB/Hz) | — GLONASS 07 L1 SNR (dB/Hz) |
| — GLONASS 08 L1 SNR (dB/Hz) | — GLONASS 09 L1 SNR (dB/Hz) |
| — GLONASS 10 L1 SNR (dB/Hz) | — GLONASS 11 L1 SNR (dB/Hz) |
| — GLONASS 12 L1 SNR (dB/Hz) | — GLONASS 13 L1 SNR (dB/Hz) |
| — GLONASS 20 L1 SNR (dB/Hz) | — GLONASS 21 L1 SNR (dB/Hz) |

GPS/GLONASS L2 Satellite Lock/Elevation

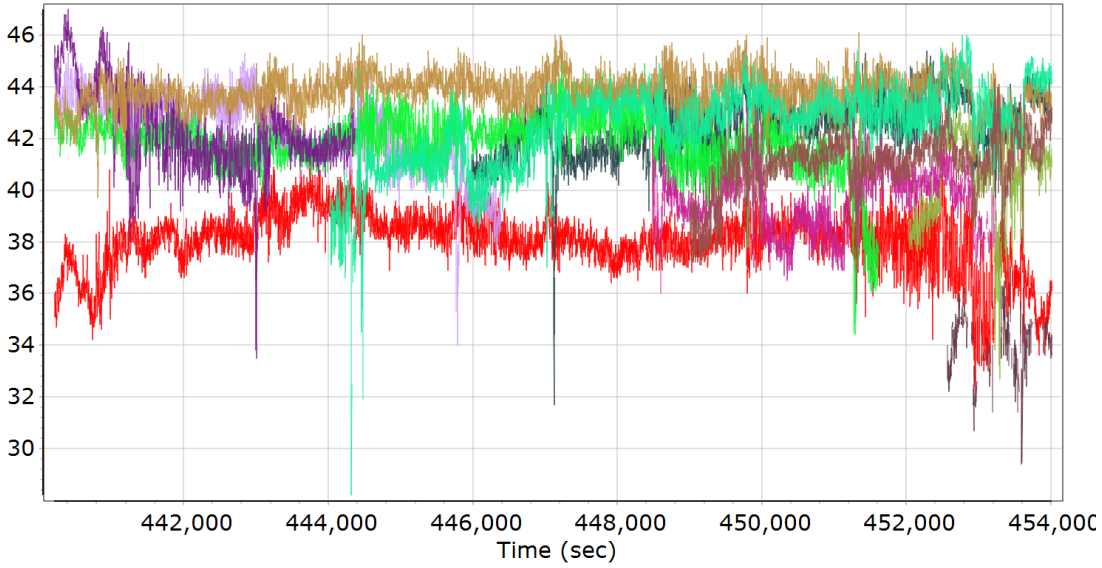


GPS L2 SNR

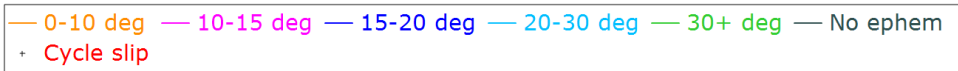
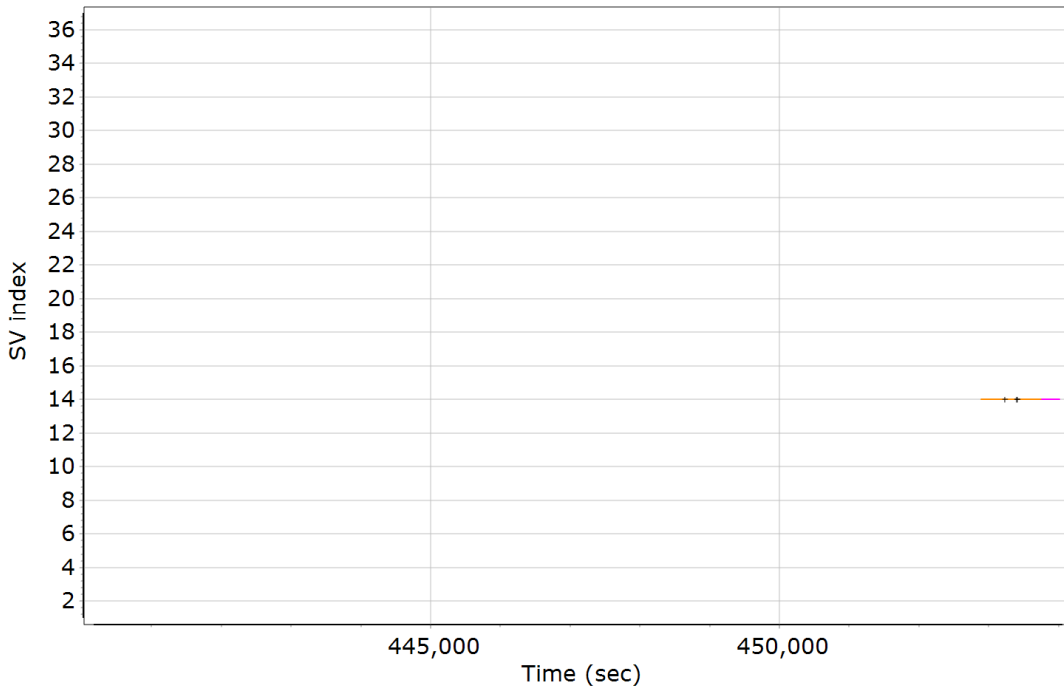


- GPS PRN 03 L2 SNR (dB/Hz)
- GPS PRN 04 L2 SNR (dB/Hz)
- GPS PRN 05 L2 SNR (dB/Hz)
- GPS PRN 06 L2 SNR (dB/Hz)
- GPS PRN 07 L2 SNR (dB/Hz)
- GPS PRN 08 L2 SNR (dB/Hz)
- GPS PRN 09 L2 SNR (dB/Hz)
- GPS PRN 10 L2 SNR (dB/Hz)
- GPS PRN 11 L2 SNR (dB/Hz)
- GPS PRN 12 L2 SNR (dB/Hz)
- GPS PRN 13 L2 SNR (dB/Hz)
- GPS PRN 14 L2 SNR (dB/Hz)
- GPS PRN 15 L2 SNR (dB/Hz)
- GPS PRN 16 L2 SNR (dB/Hz)
- GPS PRN 17 L2 SNR (dB/Hz)
- GPS PRN 18 L2 SNR (dB/Hz)
- GPS PRN 19 L2 SNR (dB/Hz)
- GPS PRN 20 L2 SNR (dB/Hz)
- GPS PRN 21 L2 SNR (dB/Hz)
- GPS PRN 22 L2 SNR (dB/Hz)
- GPS PRN 23 L2 SNR (dB/Hz)
- GPS PRN 24 L2 SNR (dB/Hz)
- GPS PRN 25 L2 SNR (dB/Hz)
- GPS PRN 26 L2 SNR (dB/Hz)
- GPS PRN 27 L2 SNR (dB/Hz)
- GPS PRN 28 L2 SNR (dB/Hz)
- GPS PRN 29 L2 SNR (dB/Hz)
- GPS PRN 30 L2 SNR (dB/Hz)
- GPS PRN 31 L2 SNR (dB/Hz)

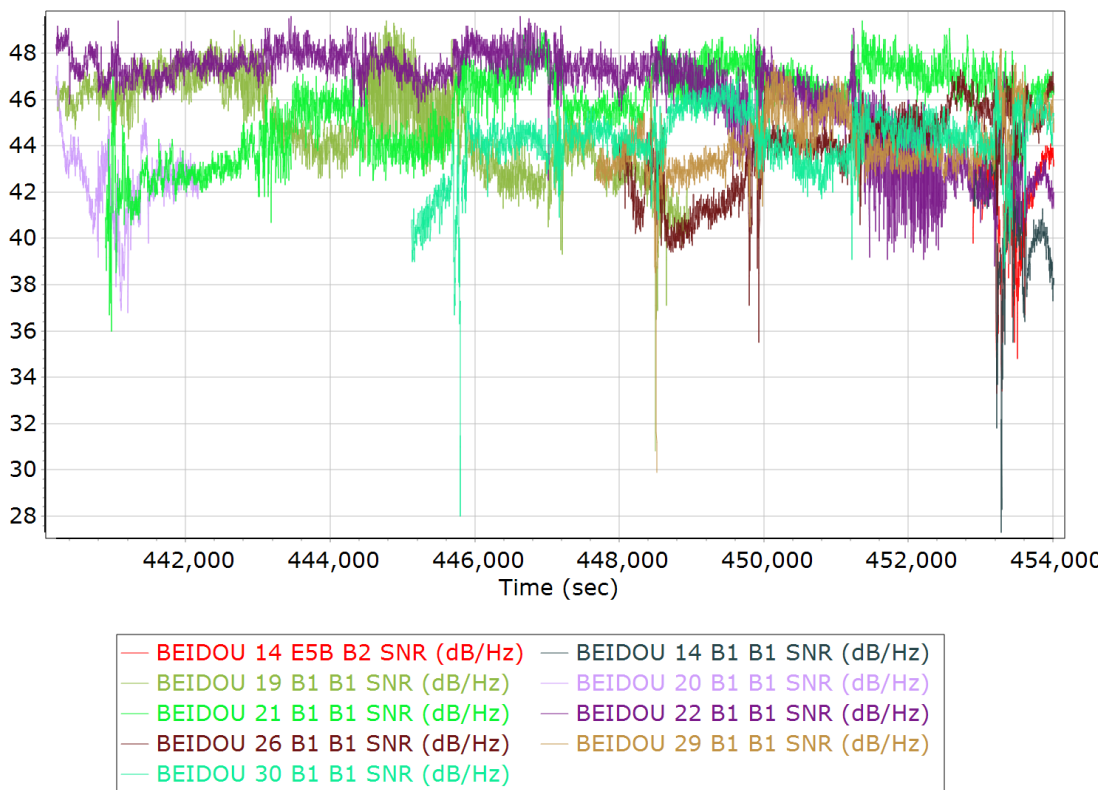
GLONASS L2 SNR



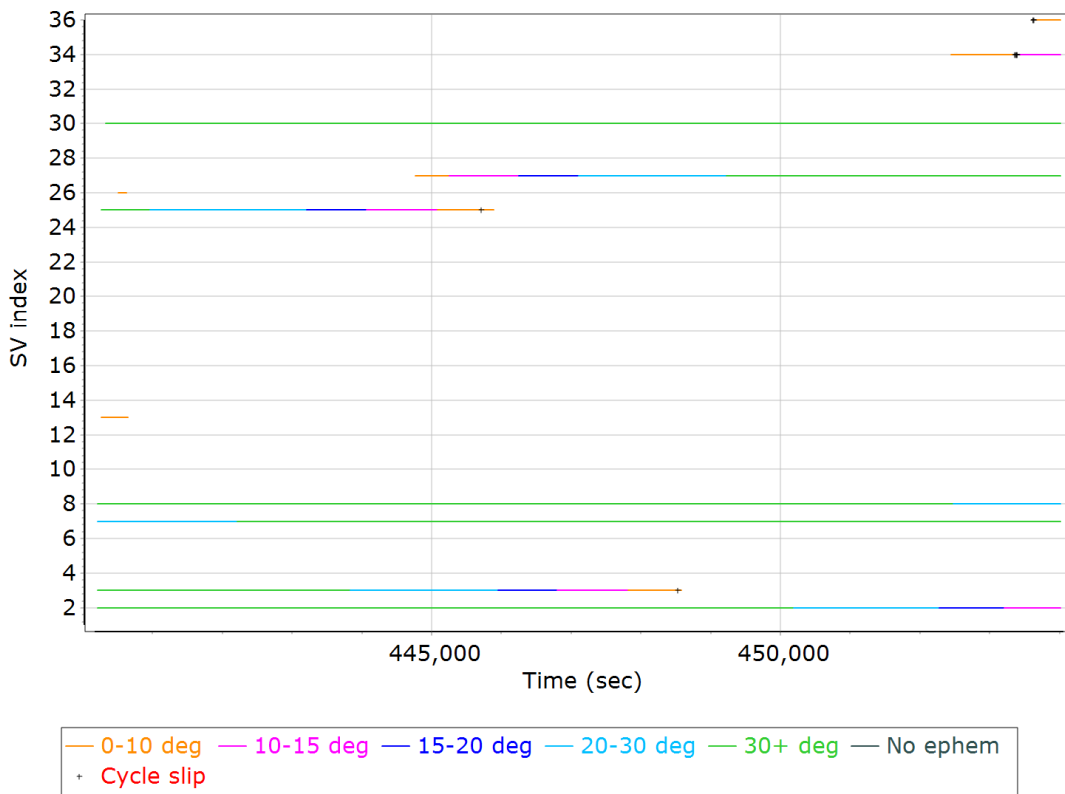
BEIDOU Satellite Lock/Elevation



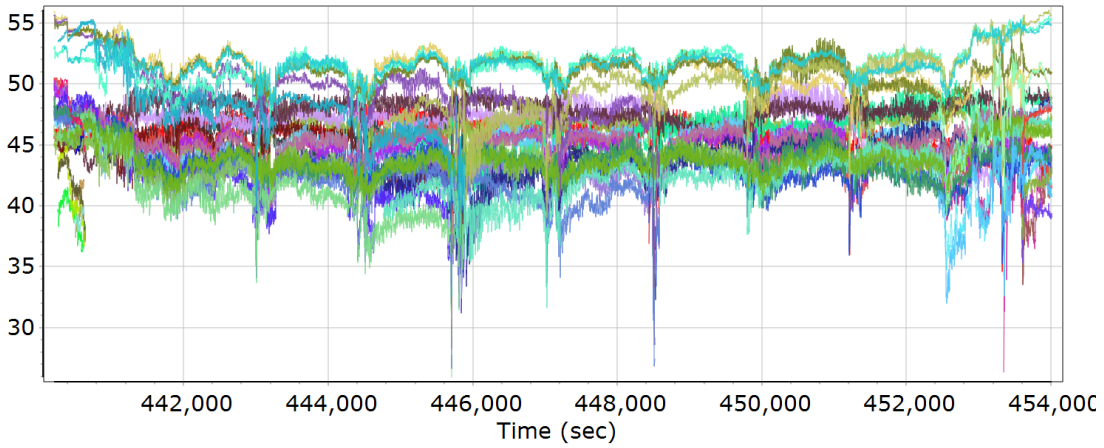
BEIDOU SNR



GALILEO Satellite Lock/Elevation



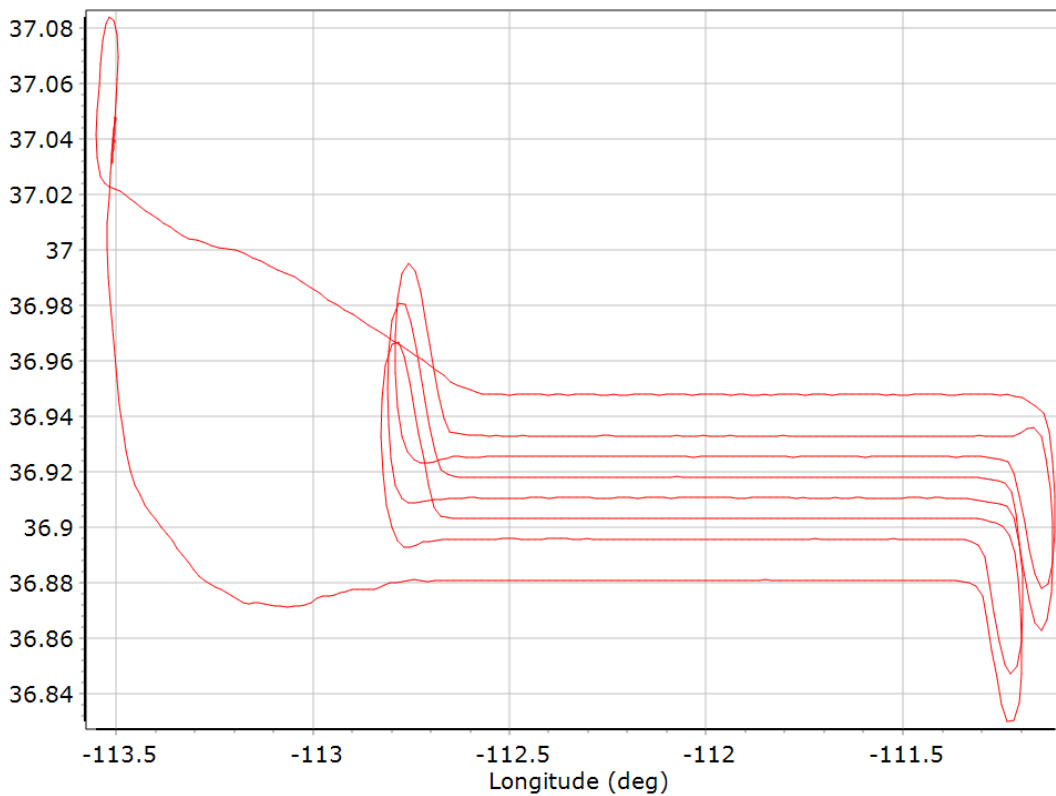
GALILEO SNR



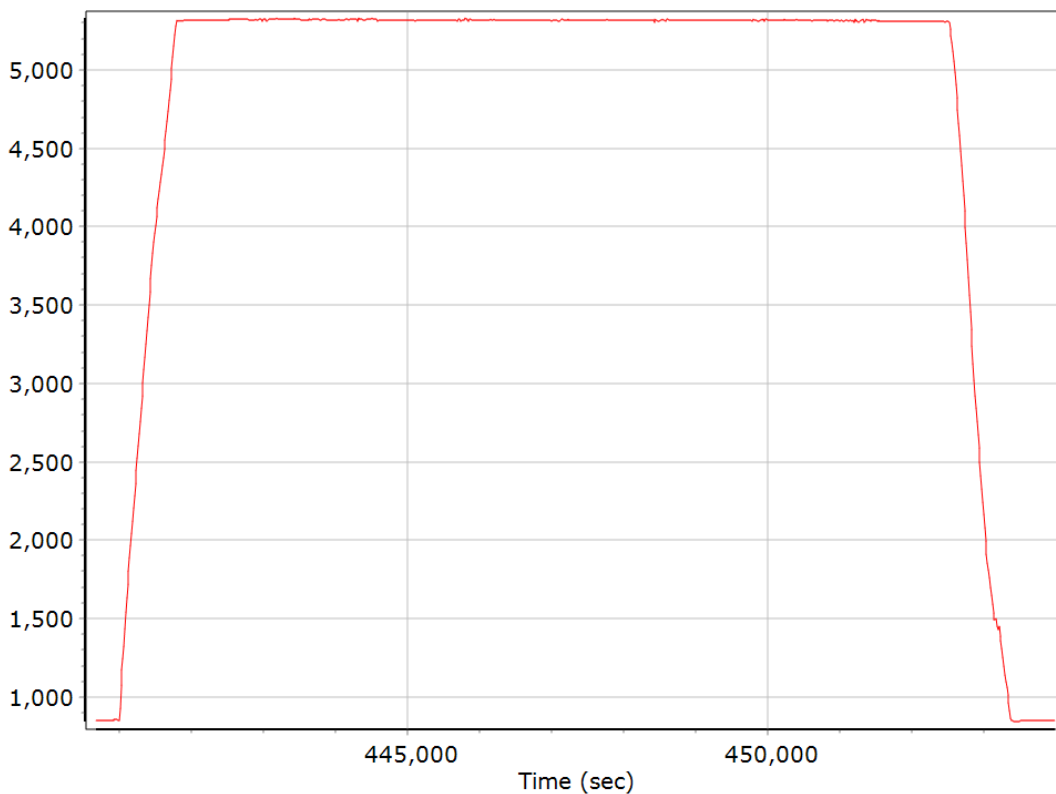
- GALILEO 02 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 03 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 07 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 08 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 13 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 18 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 25 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- 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)

Smoothed Trajectory Information

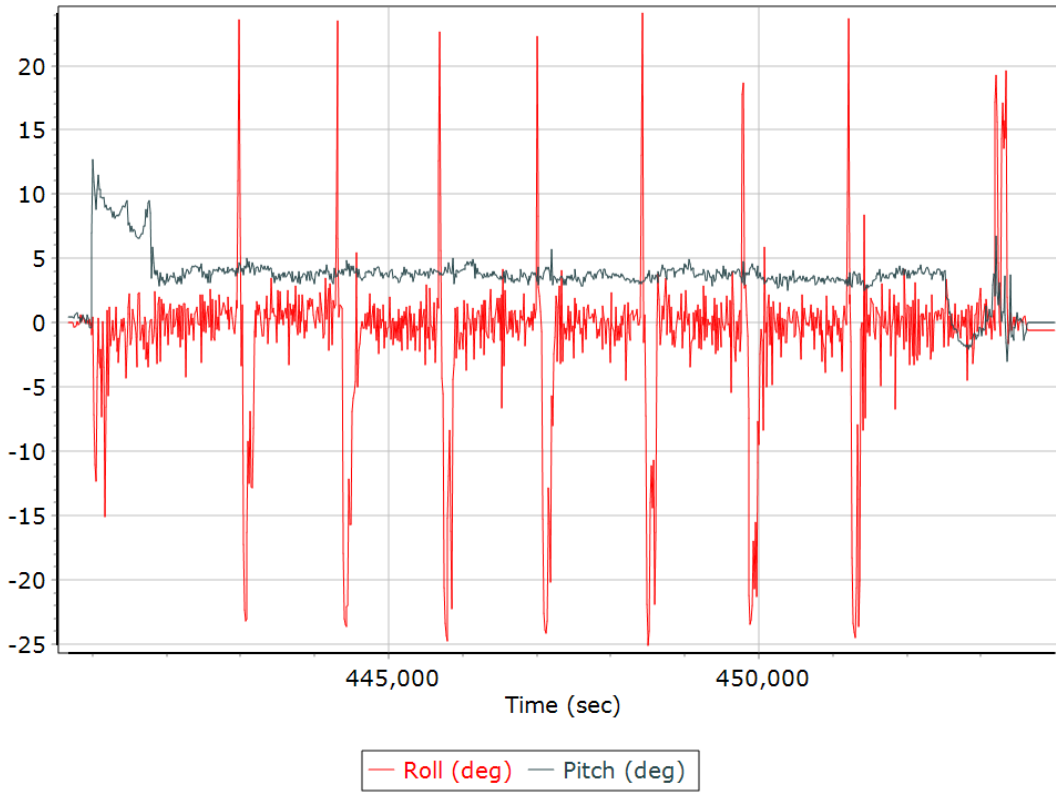
Top View



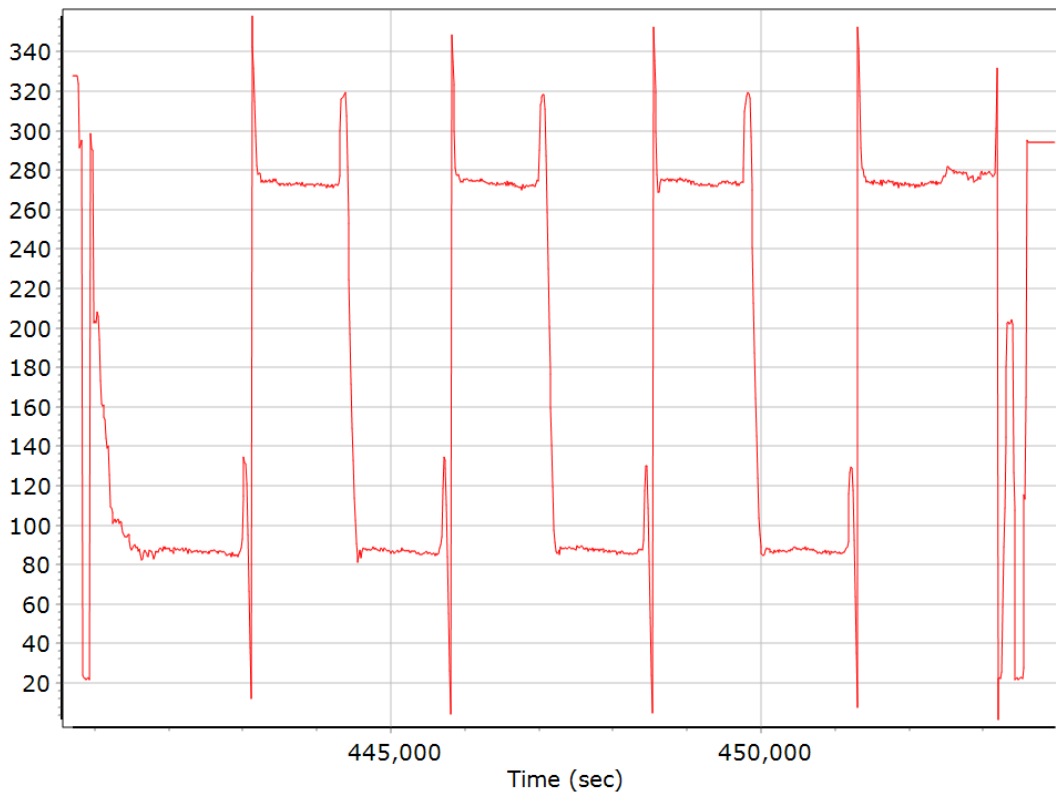
Altitude



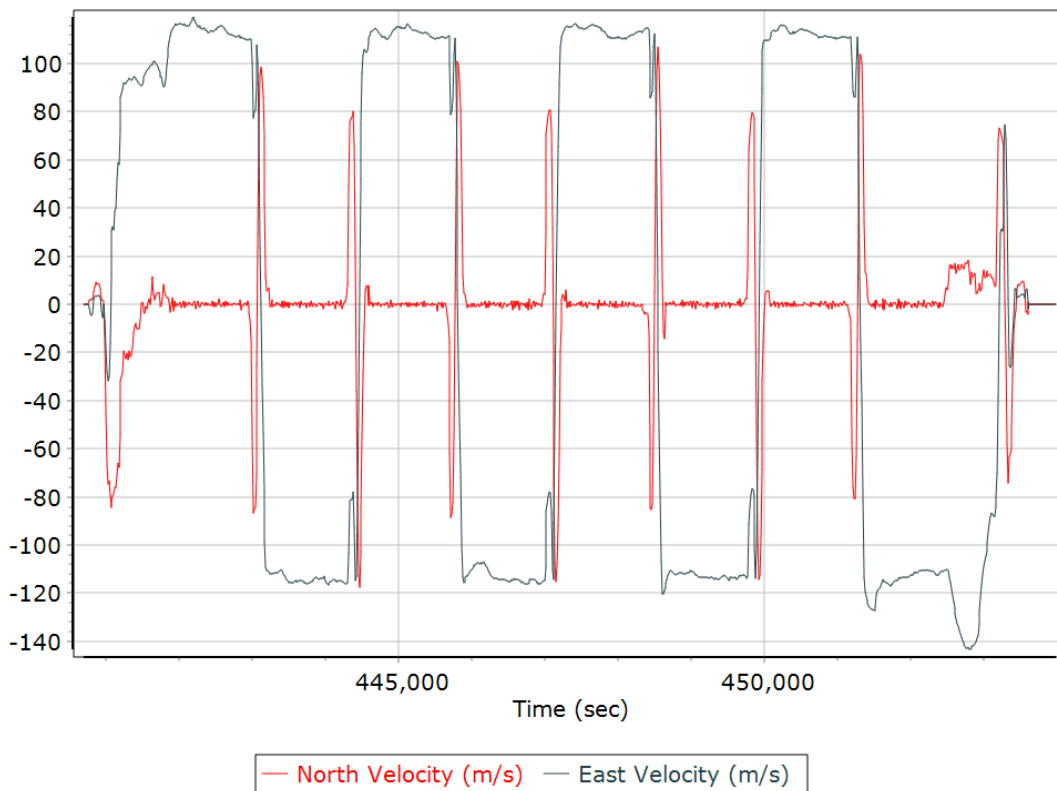
Roll/Pitch



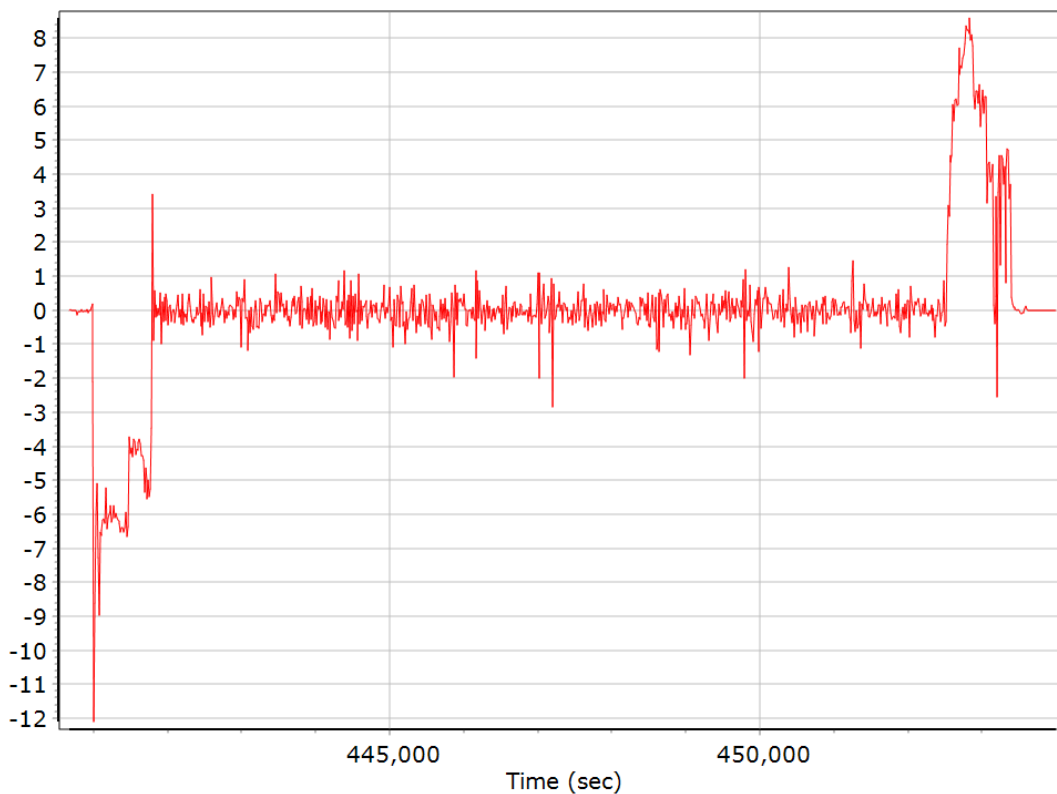
Heading



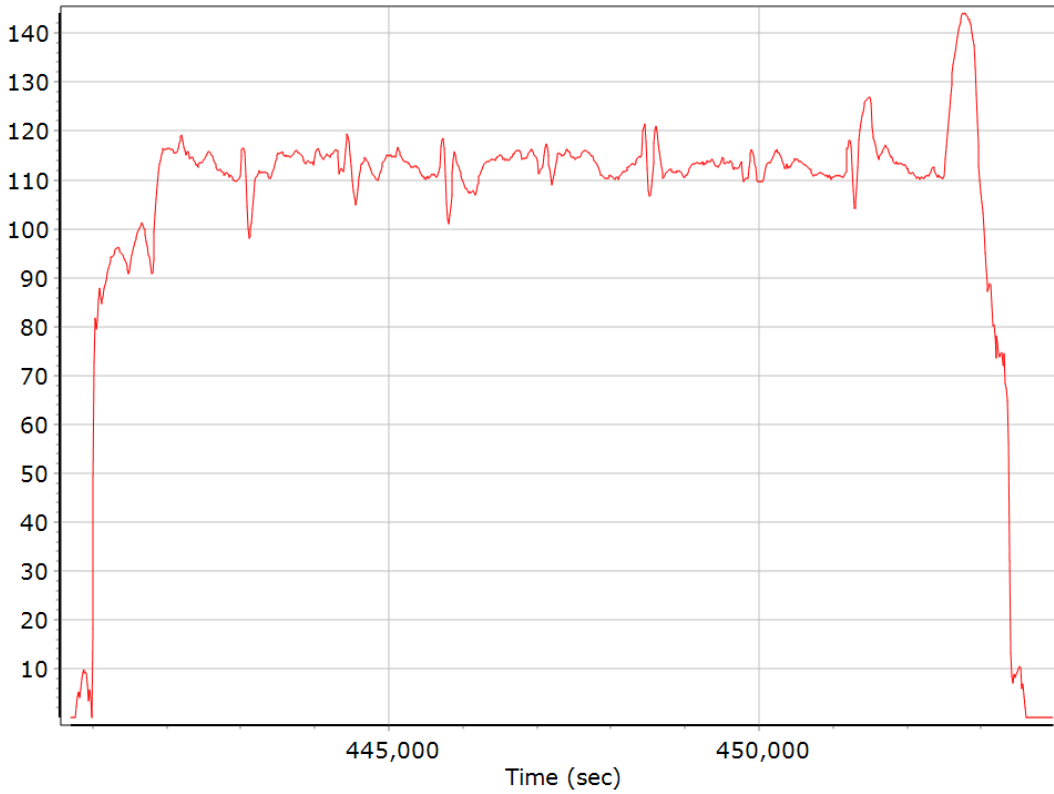
North/East Velocity



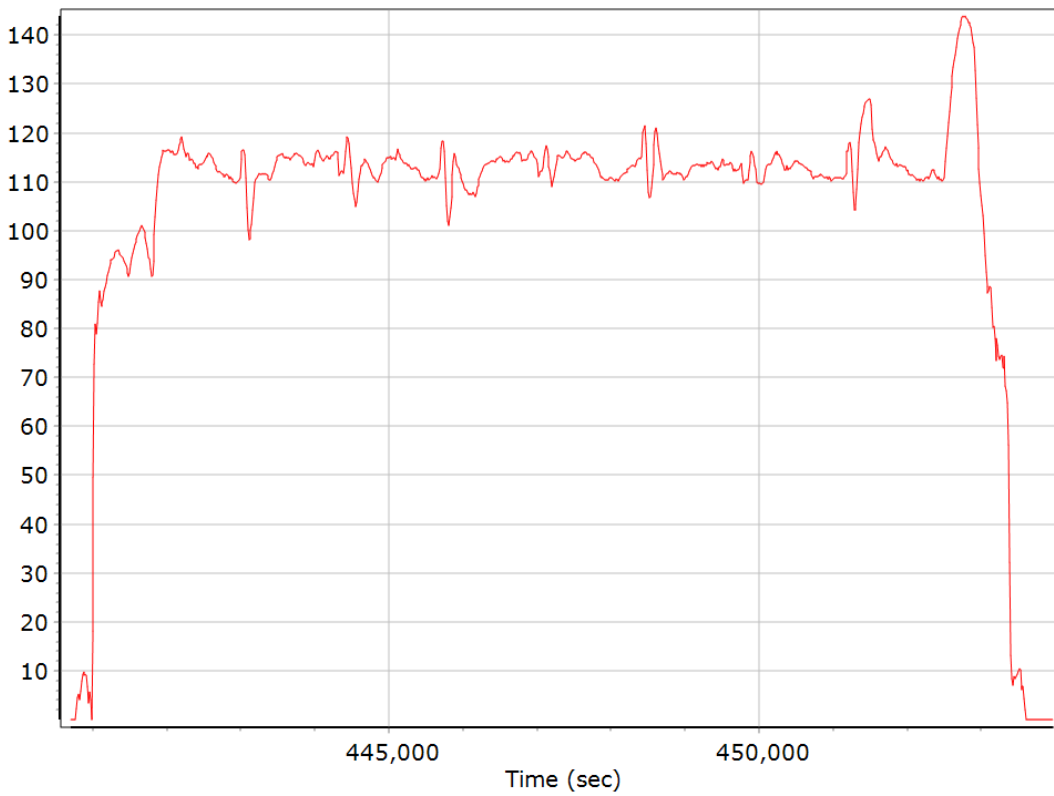
Down Velocity



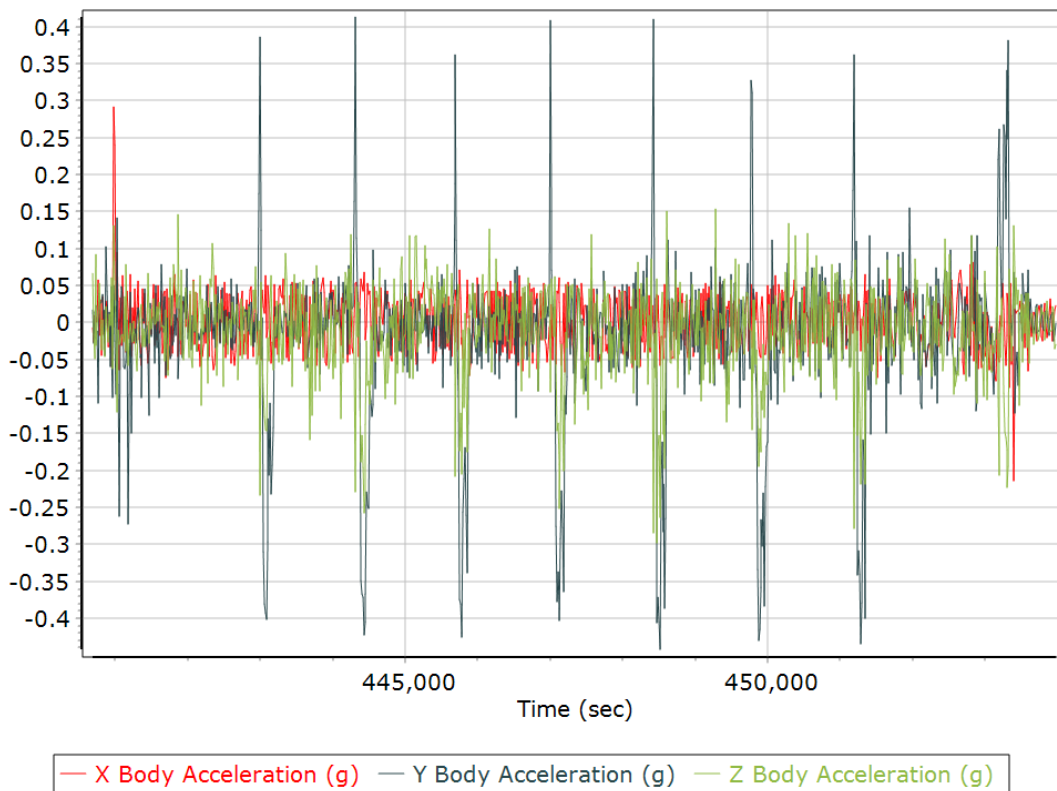
Total Speed



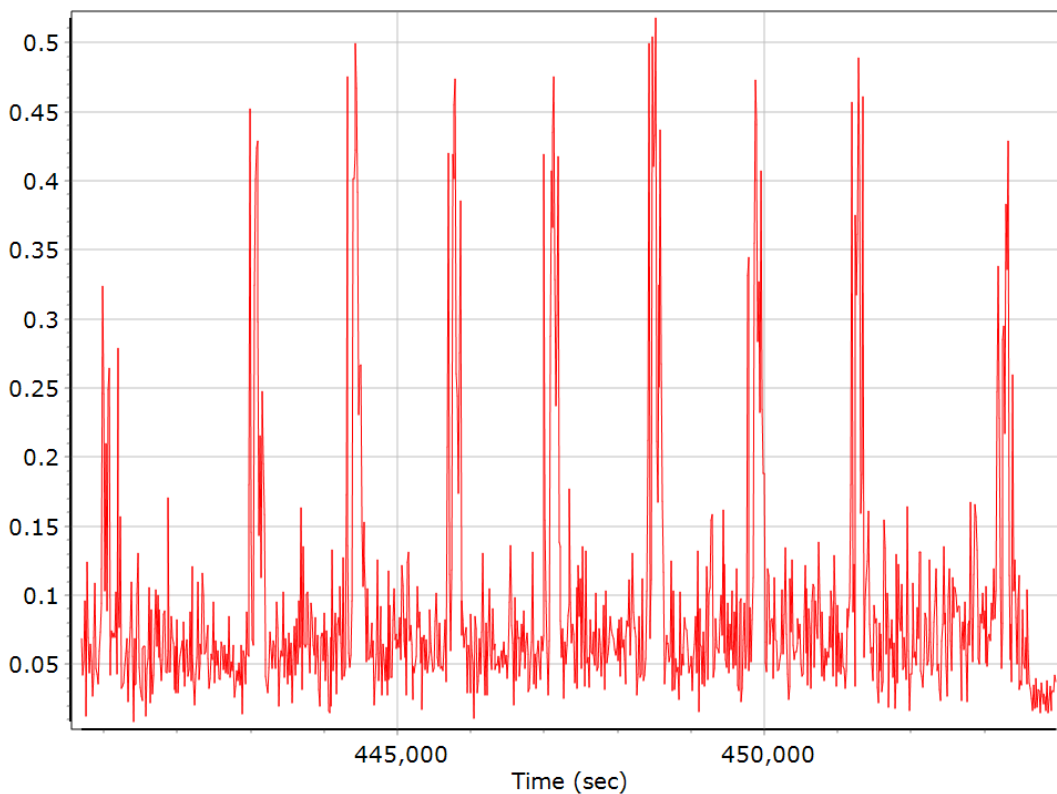
Ground Speed



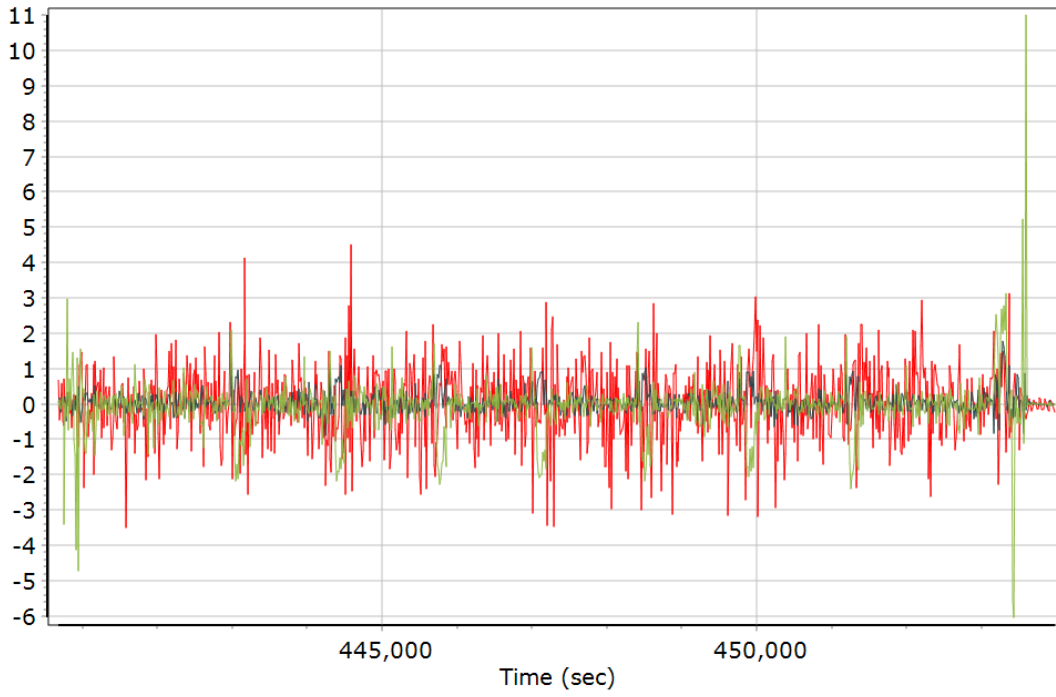
Body Acceleration



Total Body Acceleration



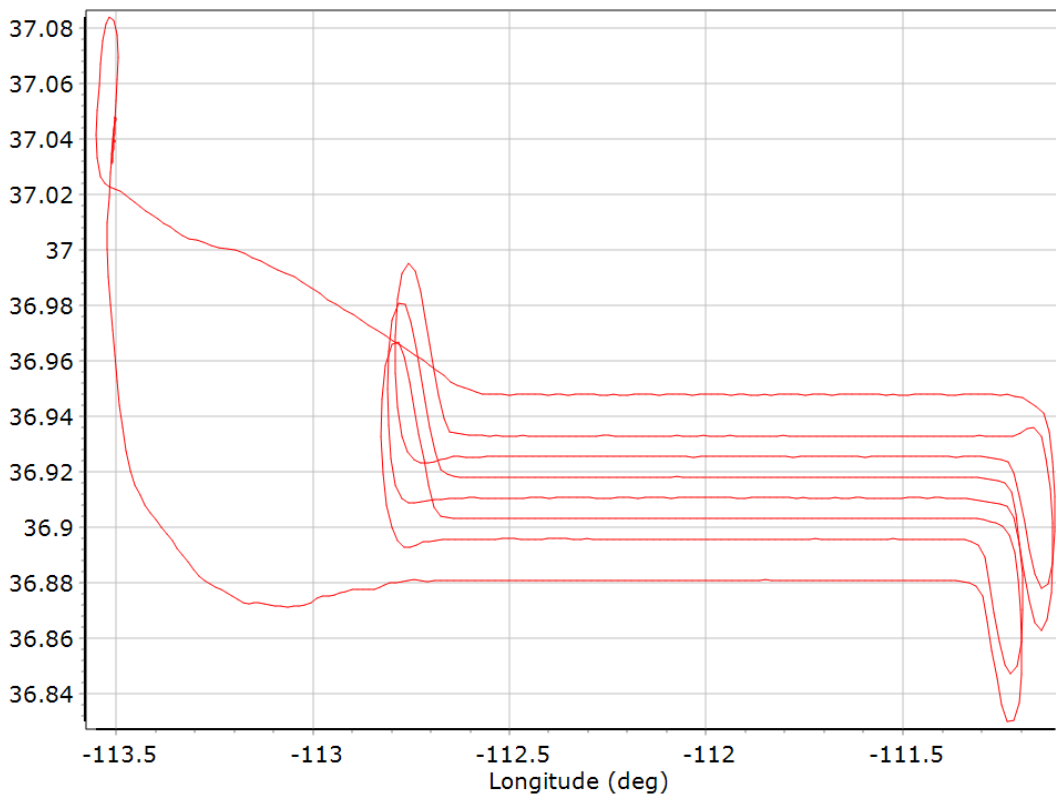
Body Angular Rate



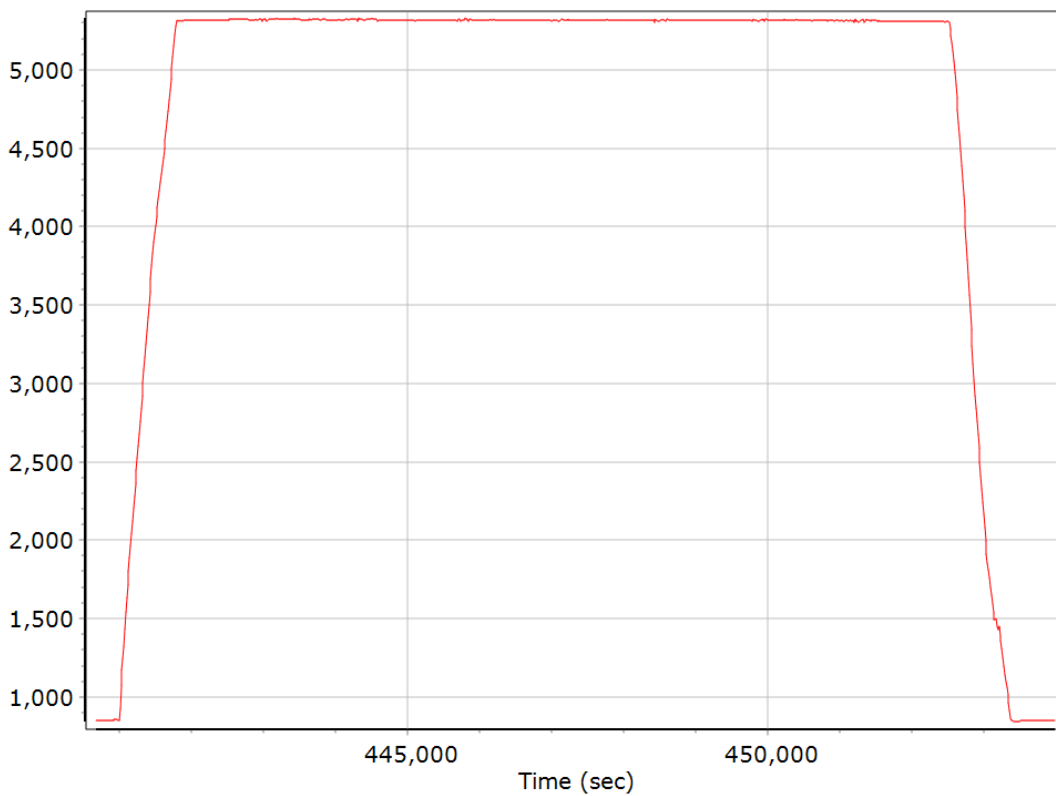
— X Body Angular Rate (deg/sec) — Y Body Angular Rate (deg/sec)
— Z Body Angular Rate (deg/sec)

Forward Processed Trajectory Information

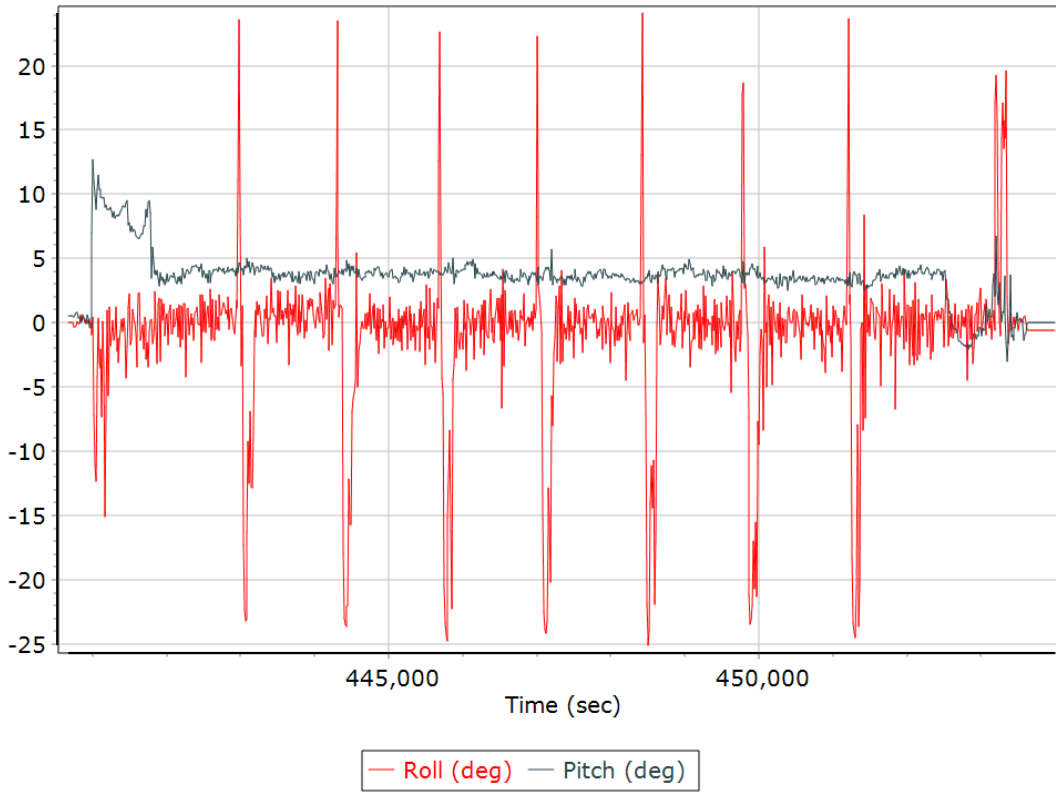
Top View



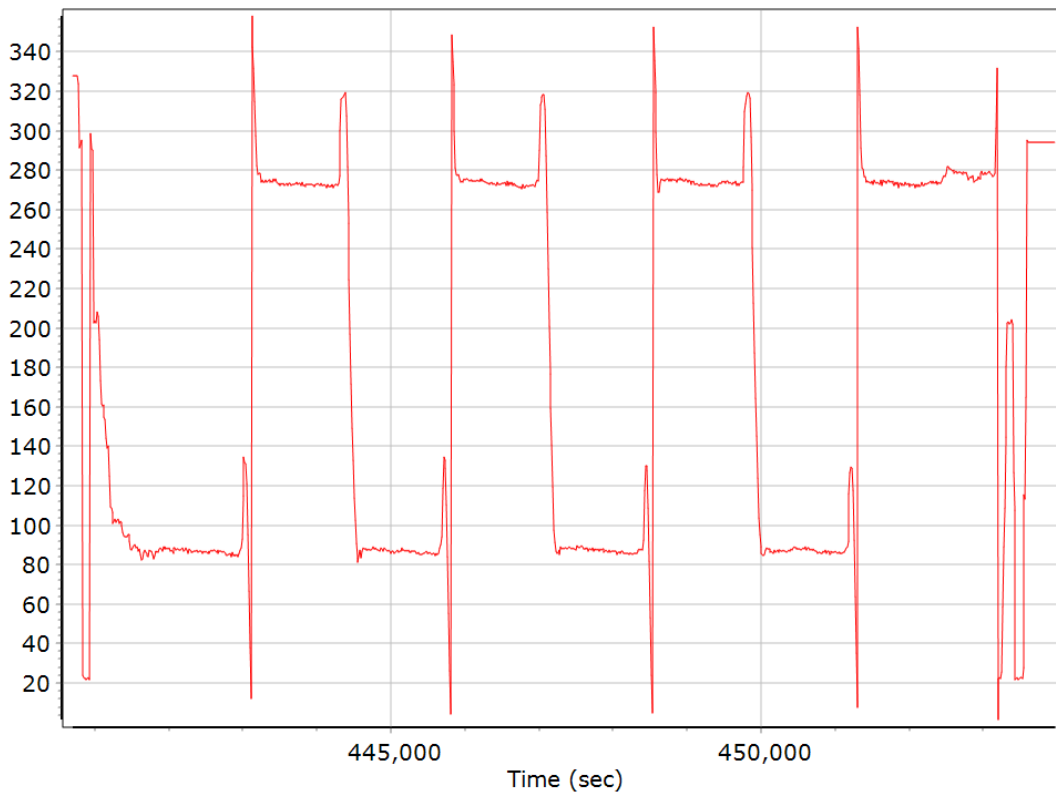
Altitude



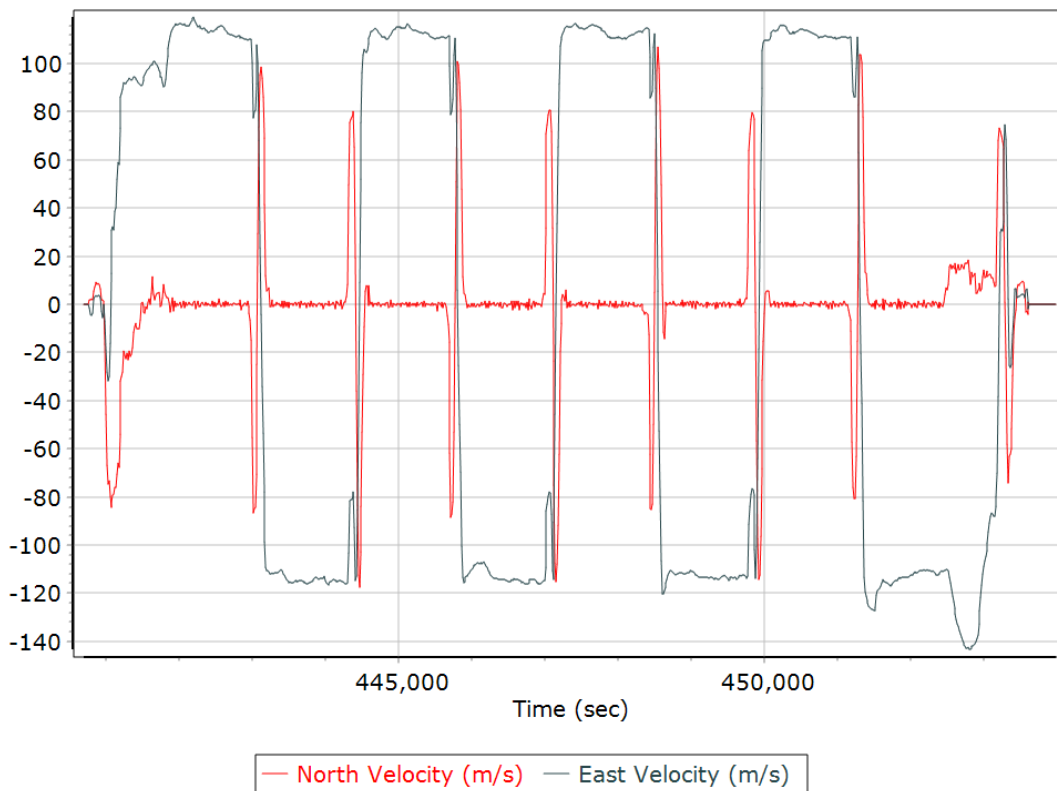
Roll/Pitch



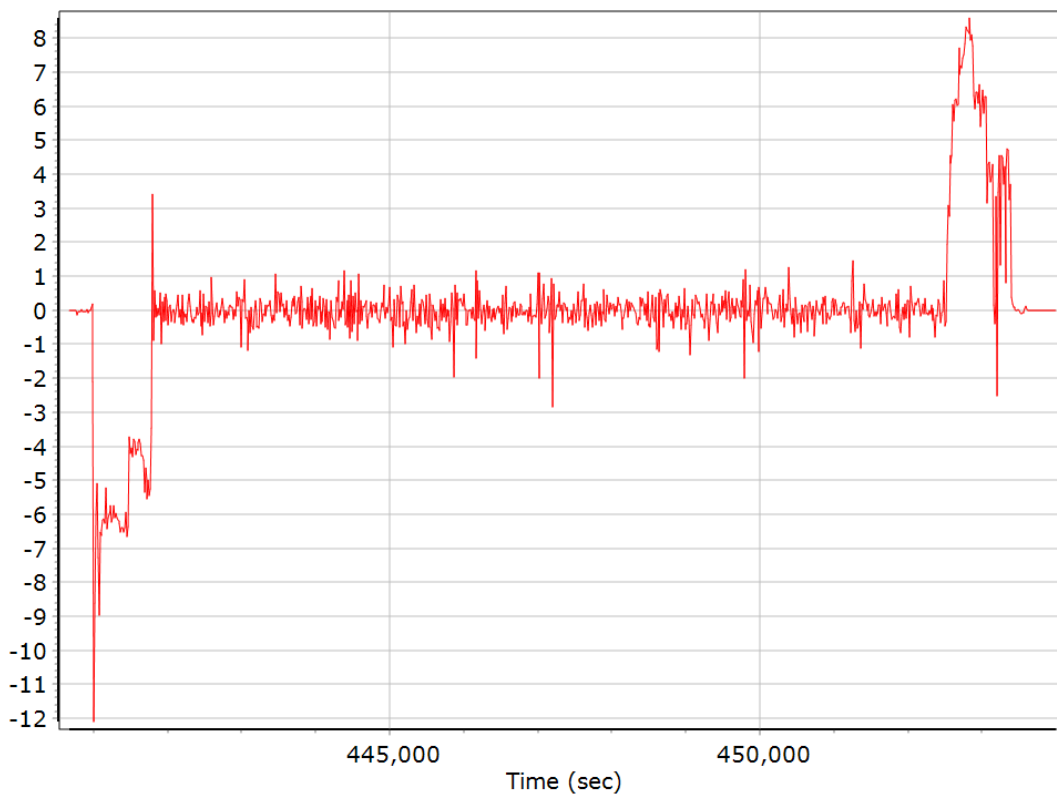
Heading



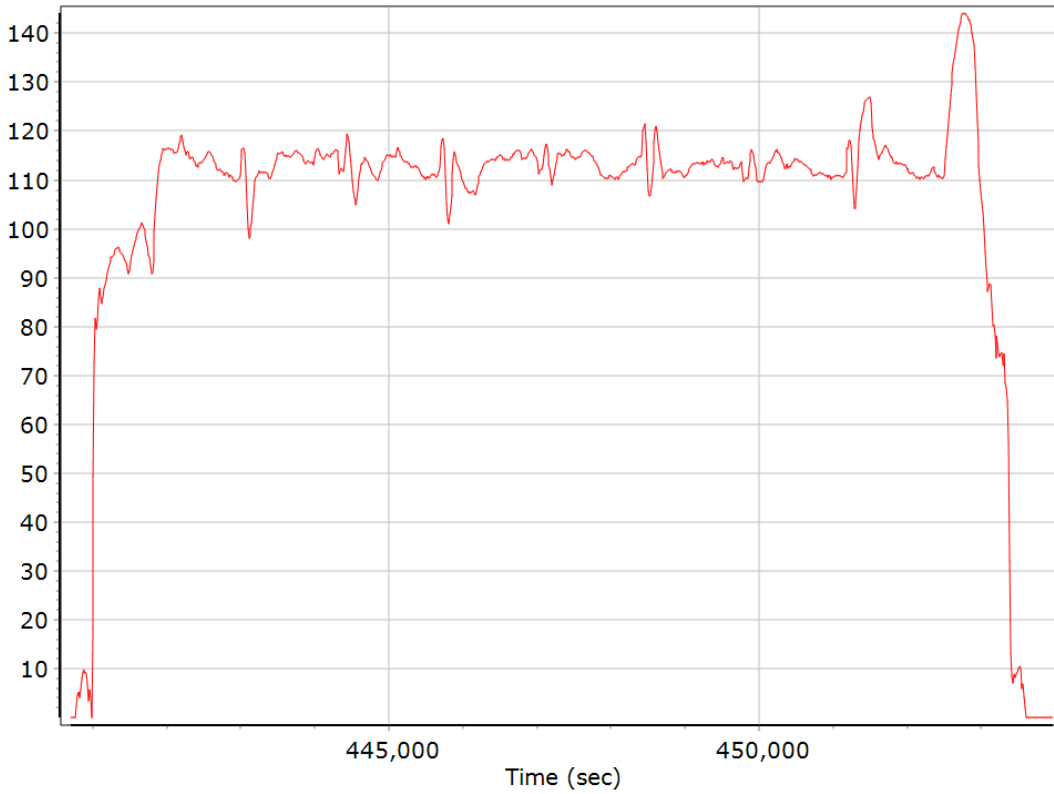
North/East Velocity



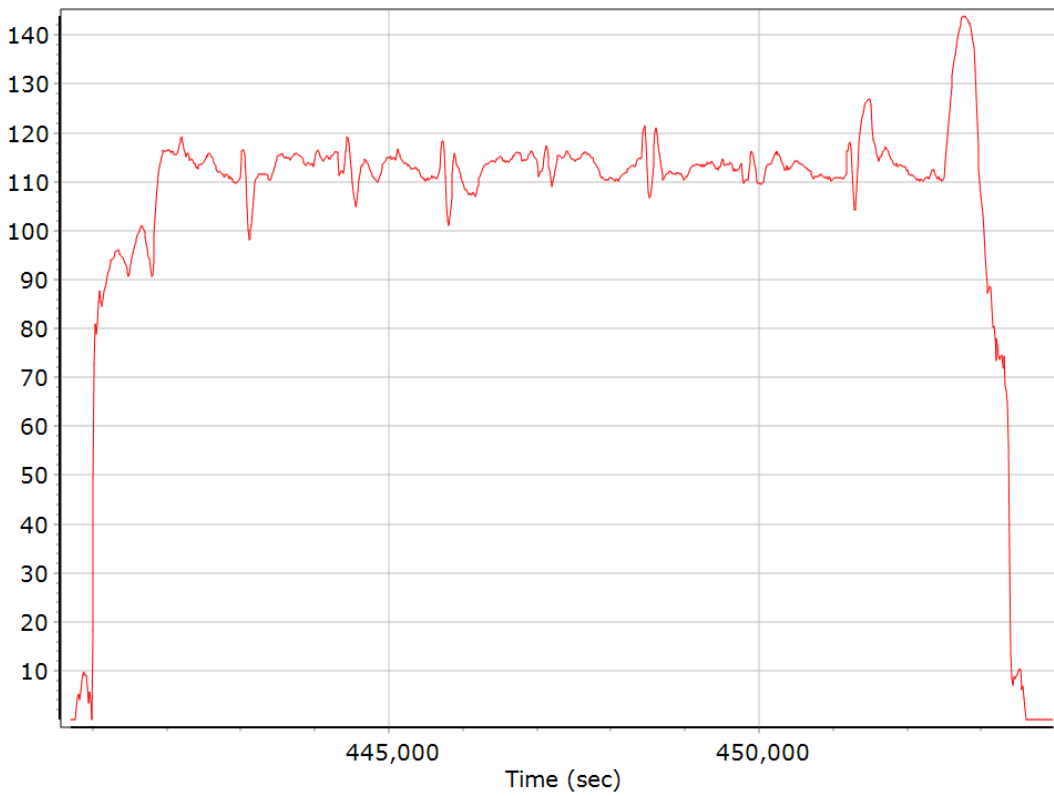
Down Velocity



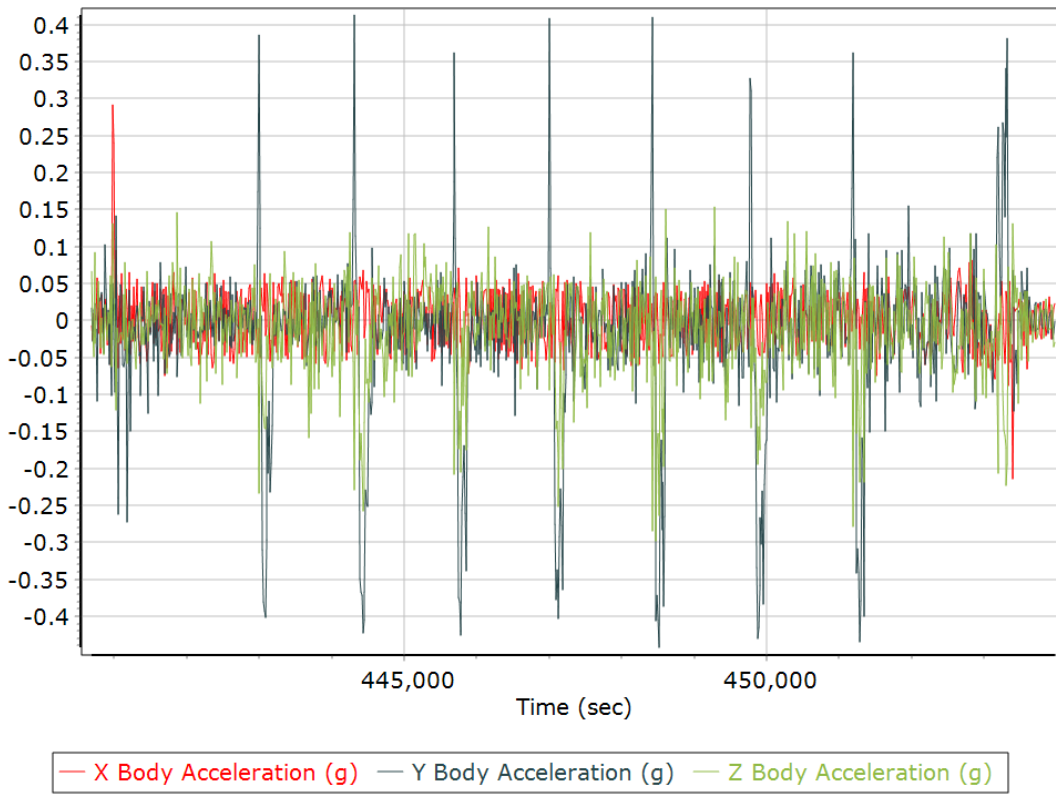
Total Speed



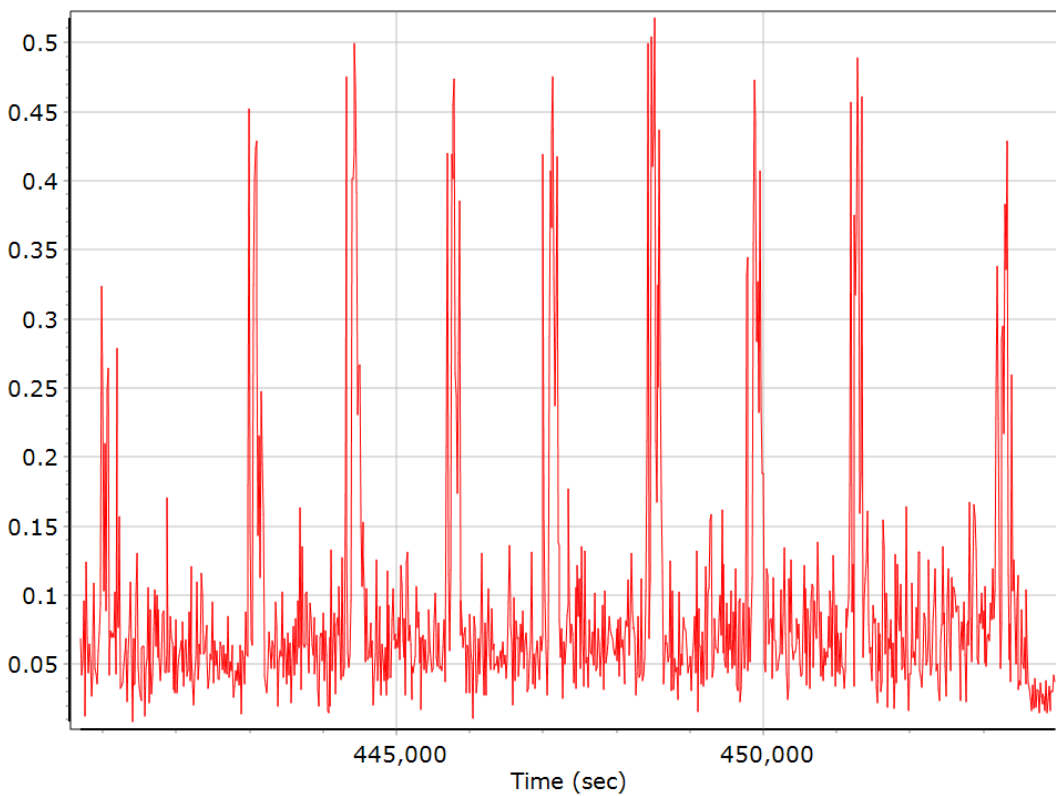
Ground Speed



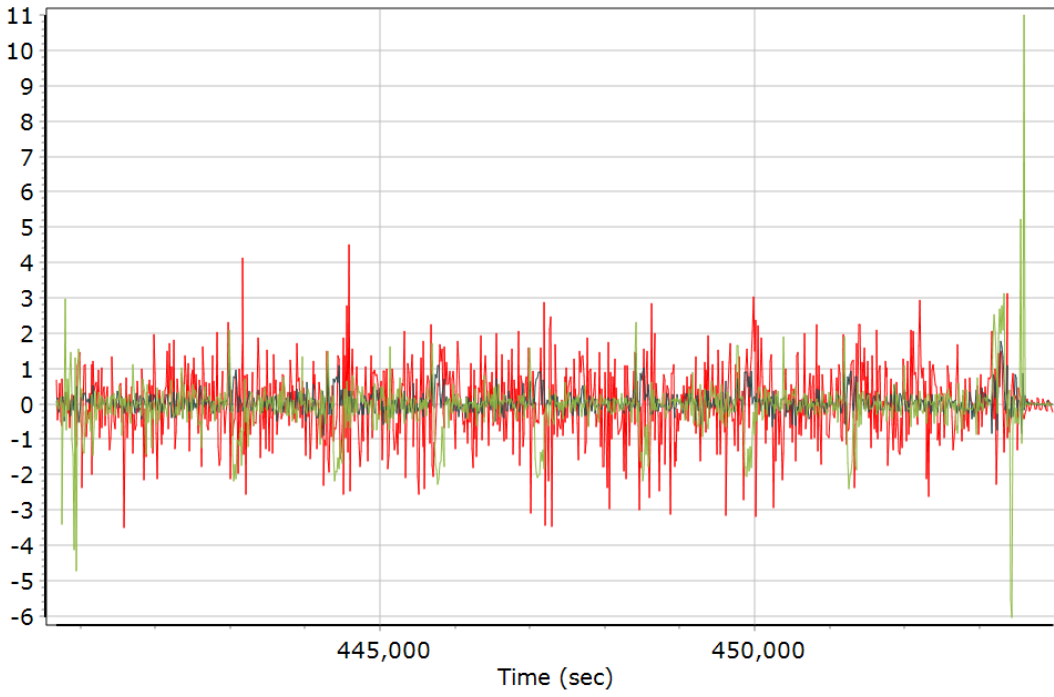
Body Acceleration



Total Body Acceleration



Body Angular Rate



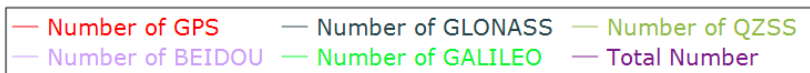
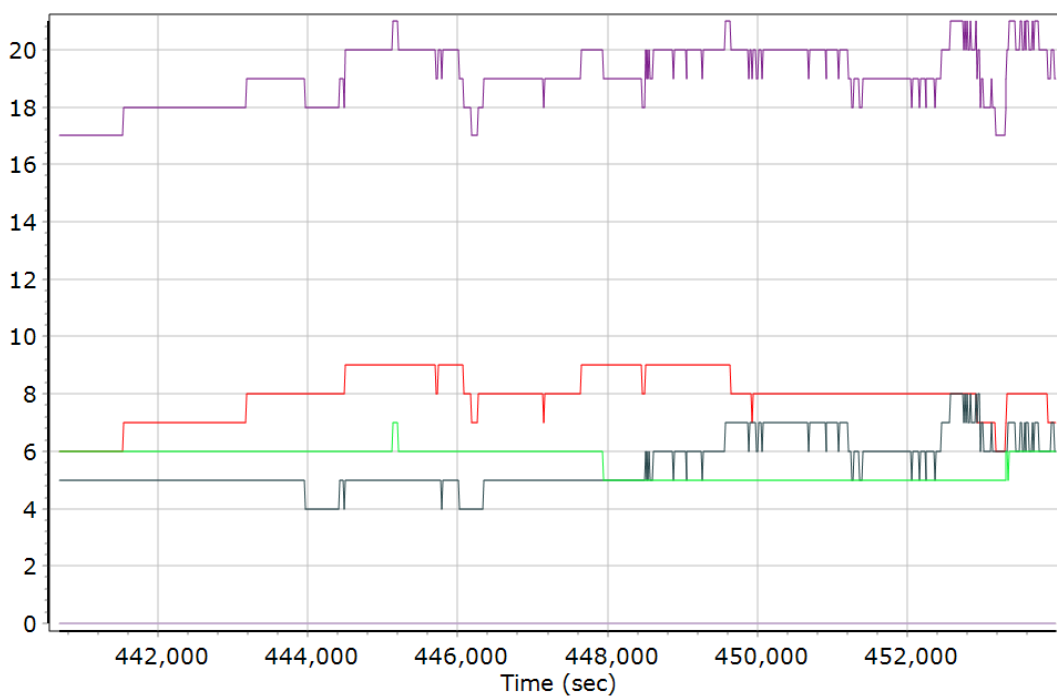
— X Body Angular Rate (deg/sec) — Y Body Angular Rate (deg/sec)
— Z Body Angular Rate (deg/sec)

GNSS QC

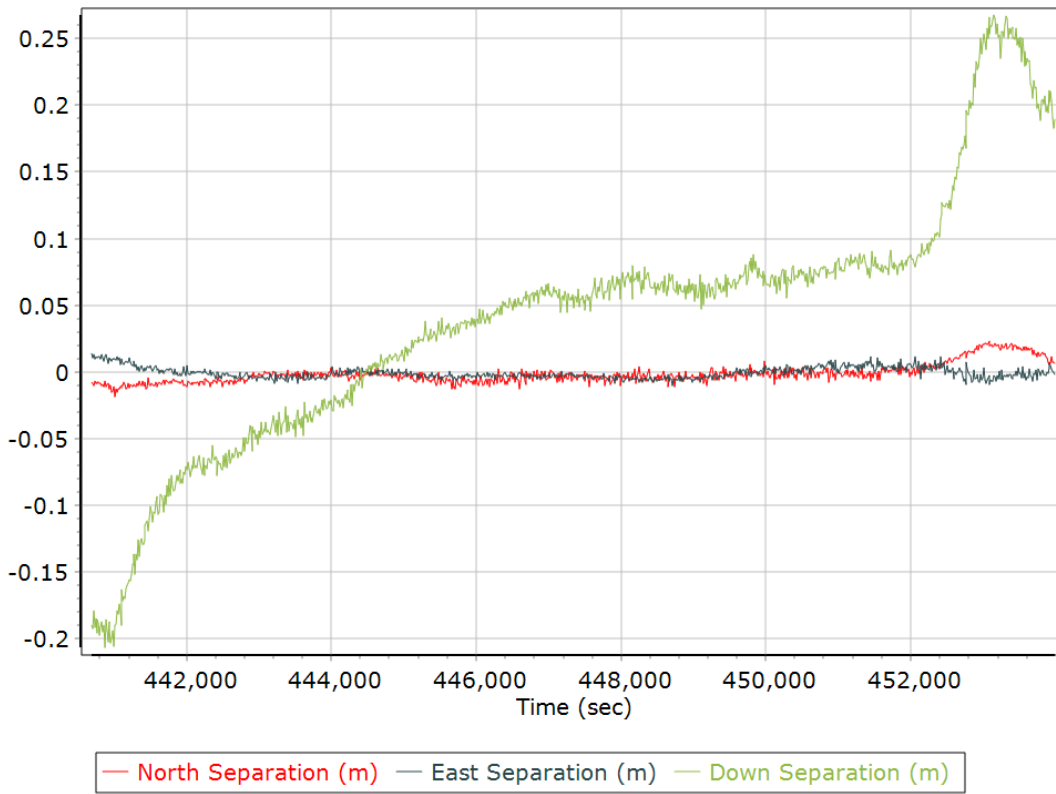
GNSS QC Statistics

Statistics	Min	Max	Mean
Baseline length (km)	0.00	0.00	
Number of GPS SV	6	9	8
Number of GLONASS SV	0	8	6
Number of QZSS SV	0	0	0
Number of BEIDOU SV	0	0	0
Number of GALILEO SV	4	7	6
Total number of SV	11	21	19
PDOP	1.00	1.92	1.24
QC Solution Gaps	0.00	0.00	
Solution Type	Fixed	Float	No solution
Epoch (sec)	13762.00	0.00	0.00
Percentage	100.00	0.00	0.00

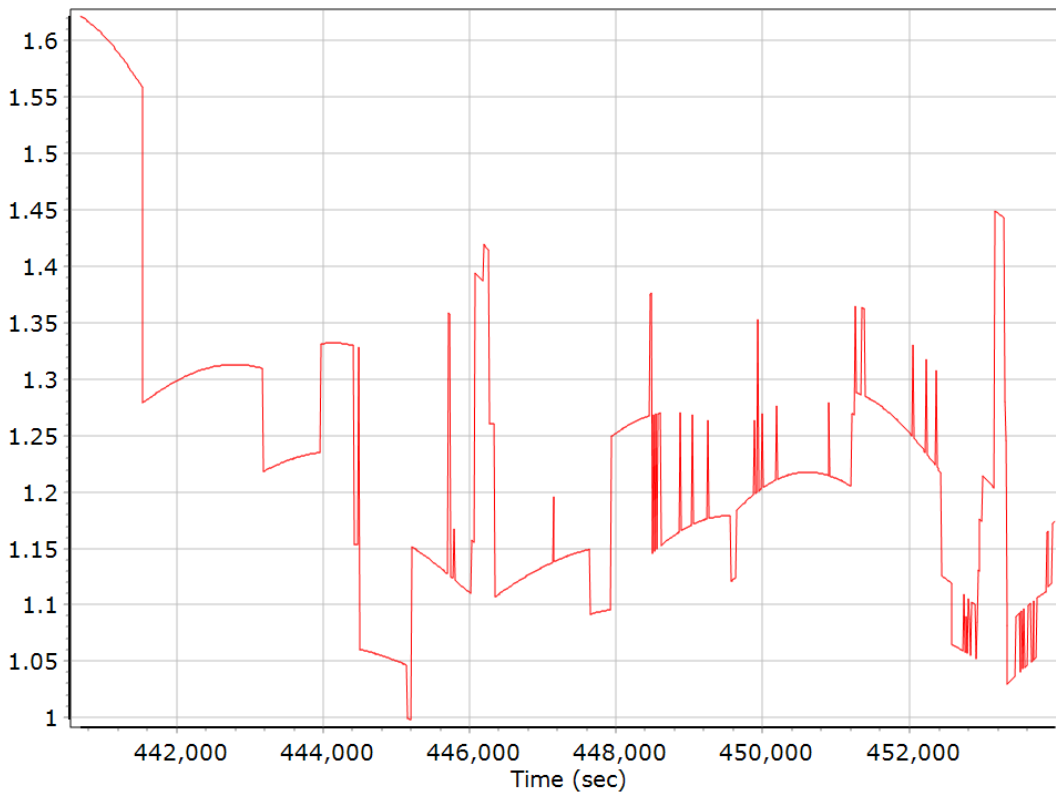
Num SVs in solution



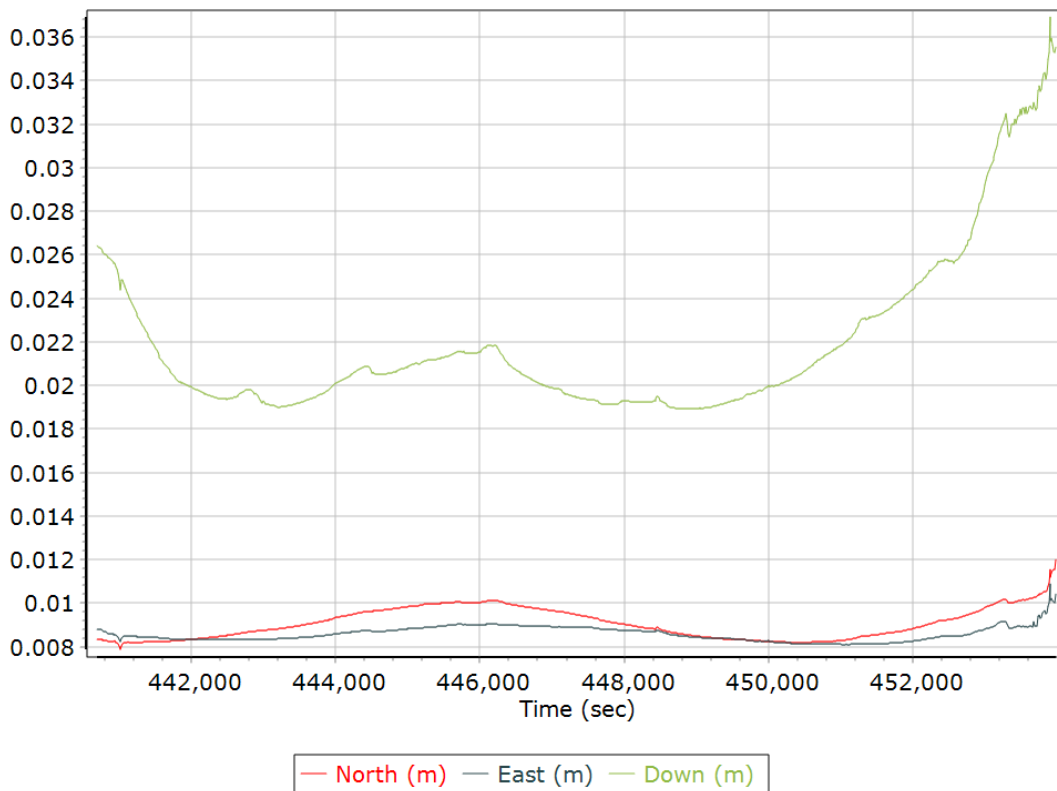
Forward/Reverse Separation



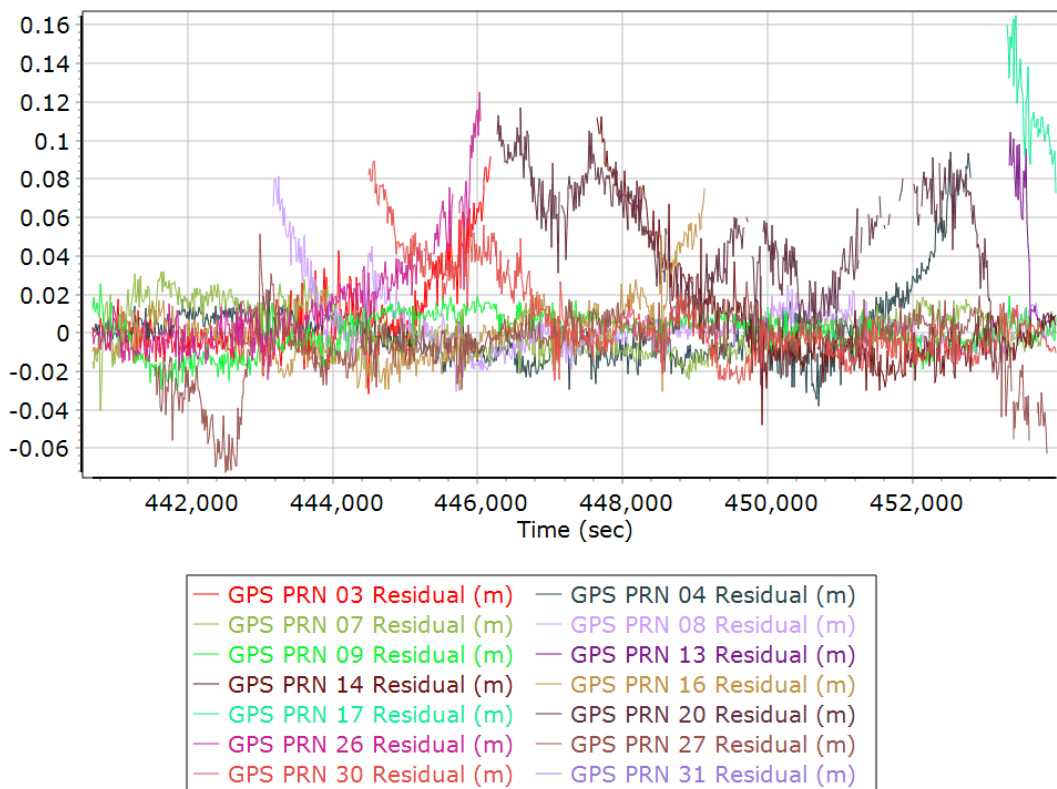
PDOP



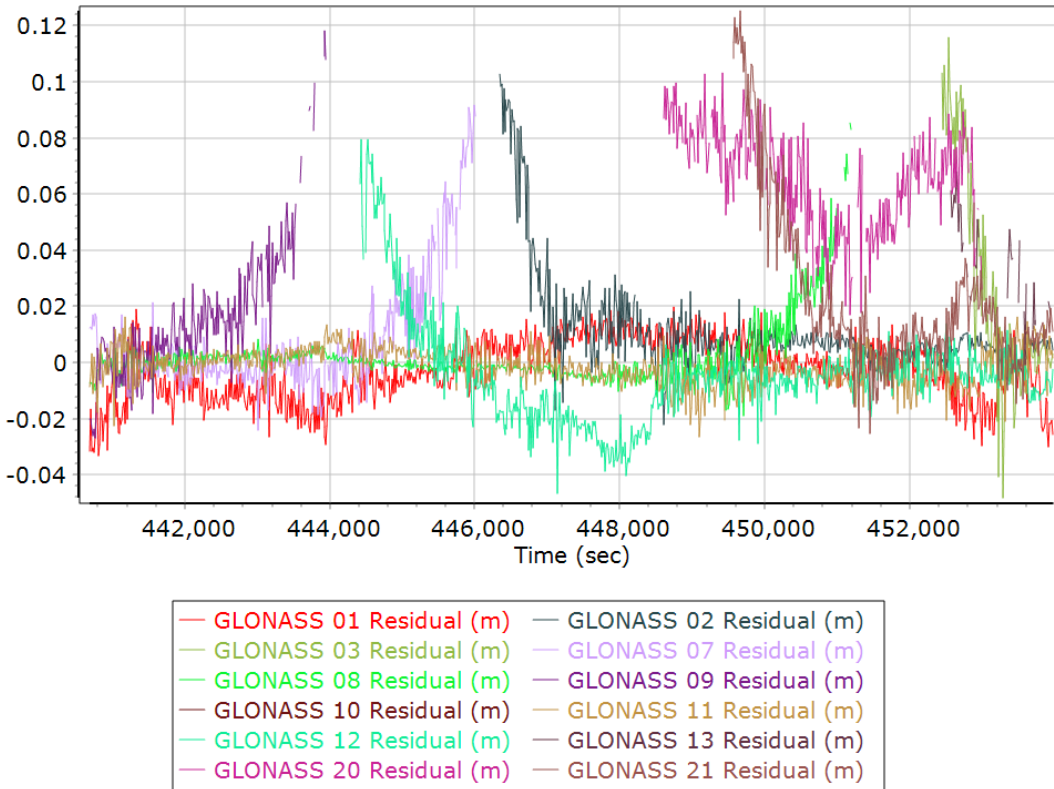
Estimated Position Accuracy



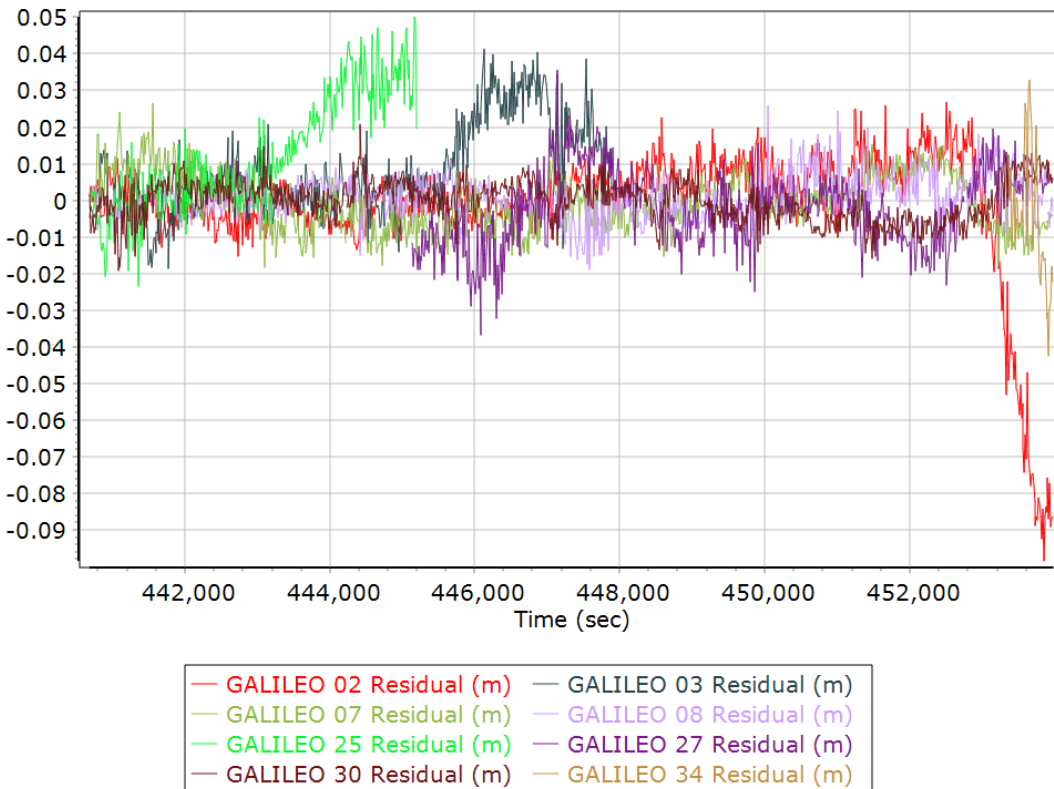
GPS Residuals



GLONASS Residuals



GALILEO Residuals



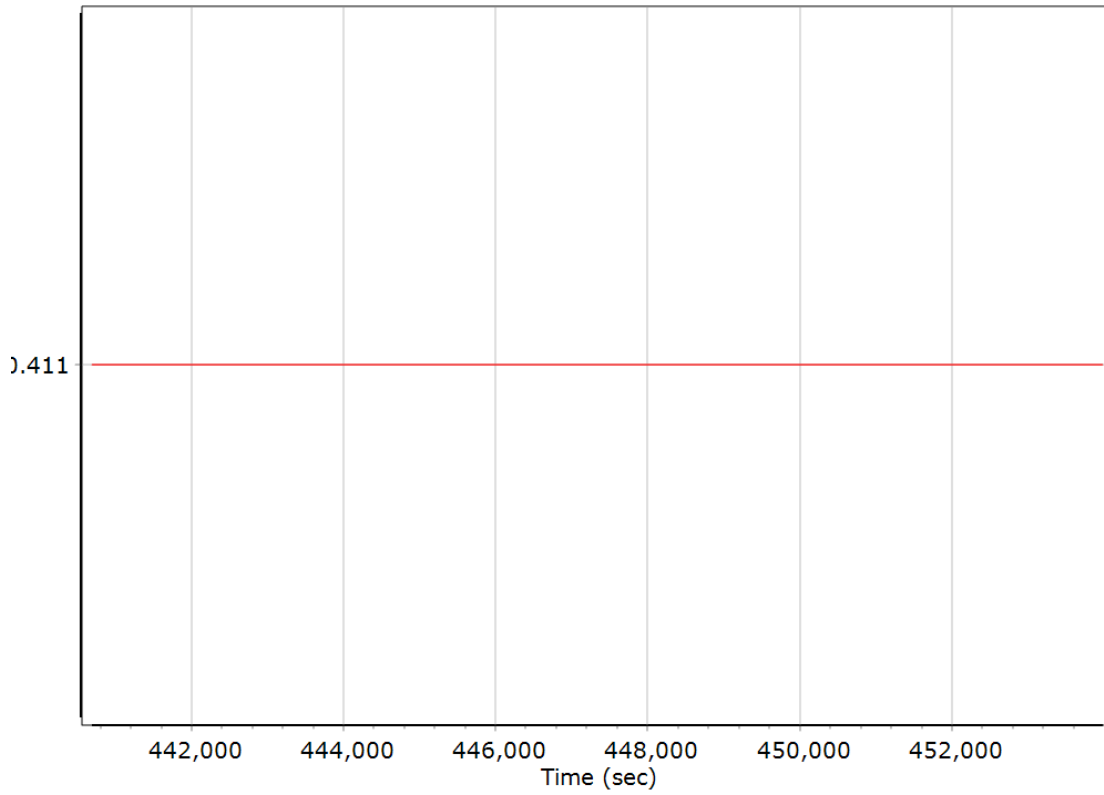
GNSS-Inertial Processor Configuration

Processing mode	IN-Fusion PP-RTX		
Stabilized mount	False		
Processing start time	440191.000 (9/2/2022 2:16:31 AM)		
Processing end time	453991.000 (9/2/2022 6:06:31 AM)		
Initial attitude source	Real-Time VNAV/RNAV Attitude		
IMU Sensor Context	Processing with Onboard IMU		
Reference to IMU lever arm (m)	0.000	0.000	0.000
Reference to IMU mounting angles (deg)	0.000	0.000	0.000
Reference to Primary GNSS lever arm (m)	-0.411	-0.283	-1.282
Reference 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

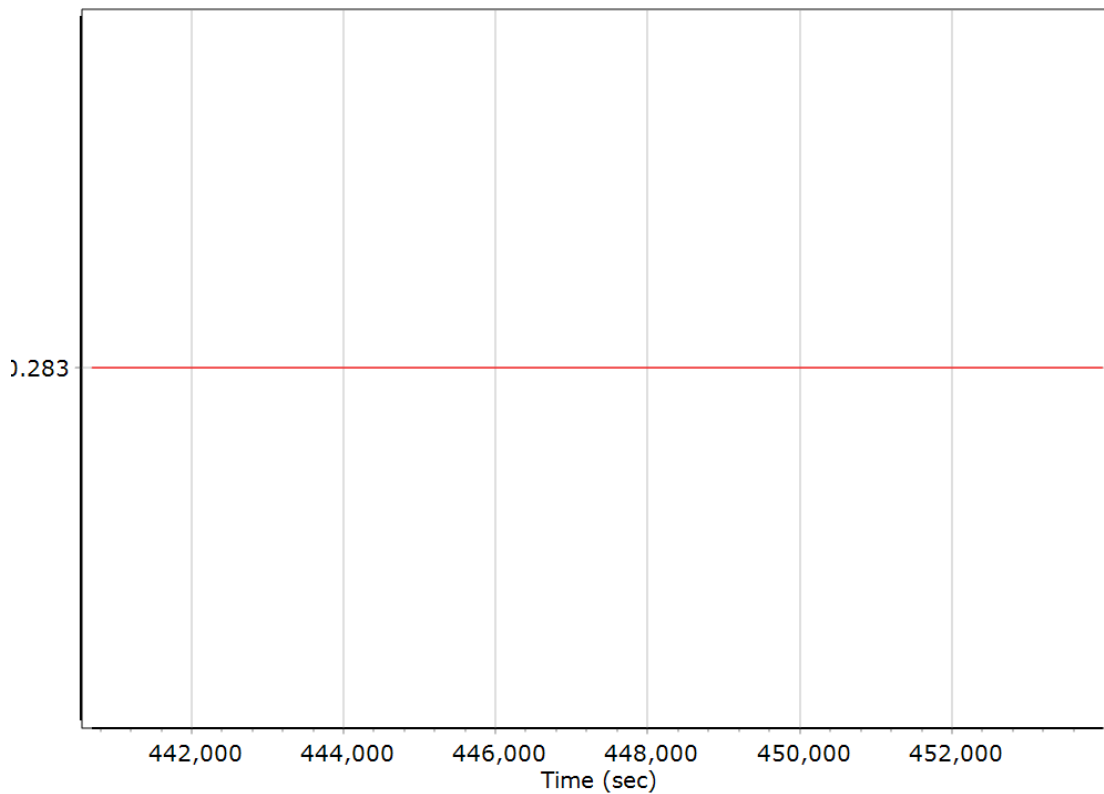
Calibrated Installation Parameters

Reference-Primary GNSS Lever Arm (m)

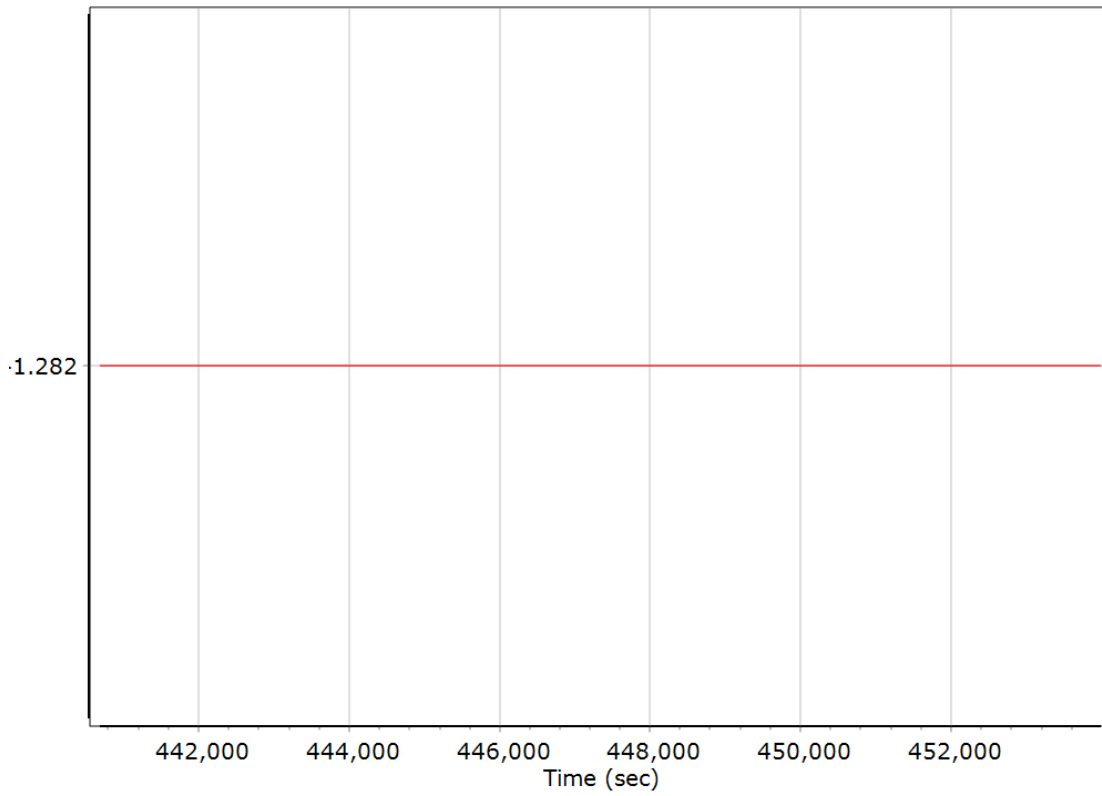
X Reference-Primary GNSS Lever Arm (m)



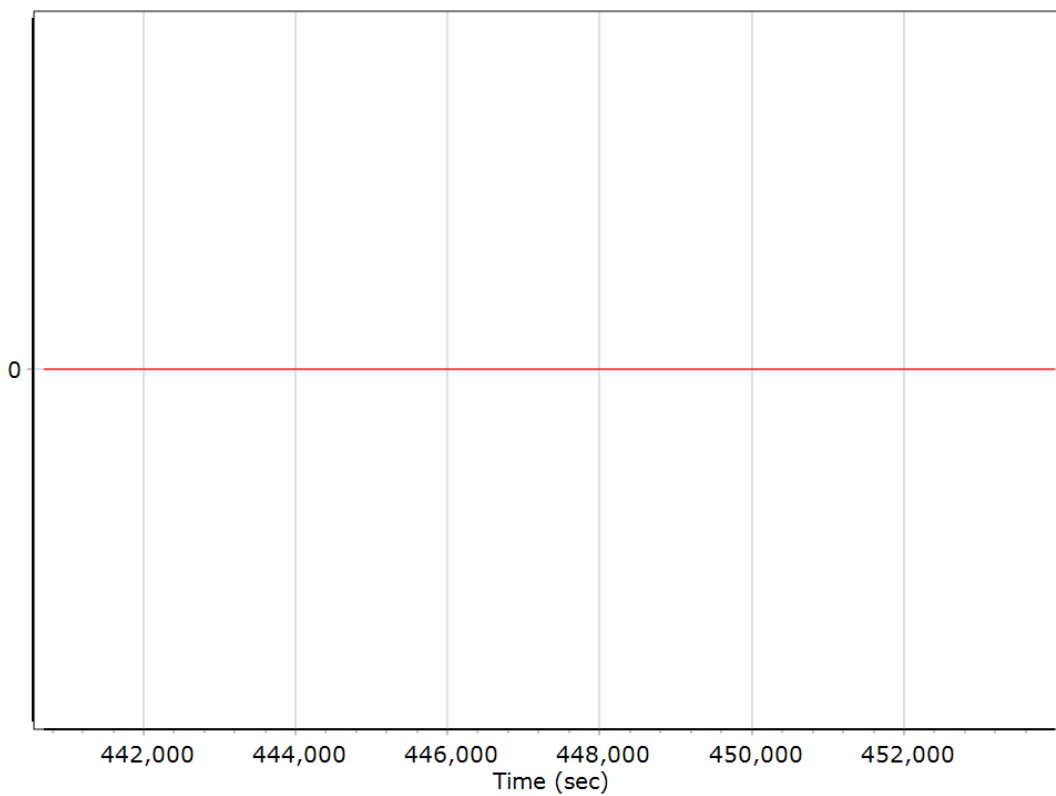
Y Reference-Primary GNSS Lever Arm (m)



Z Reference-Primary GNSS Lever Arm (m)



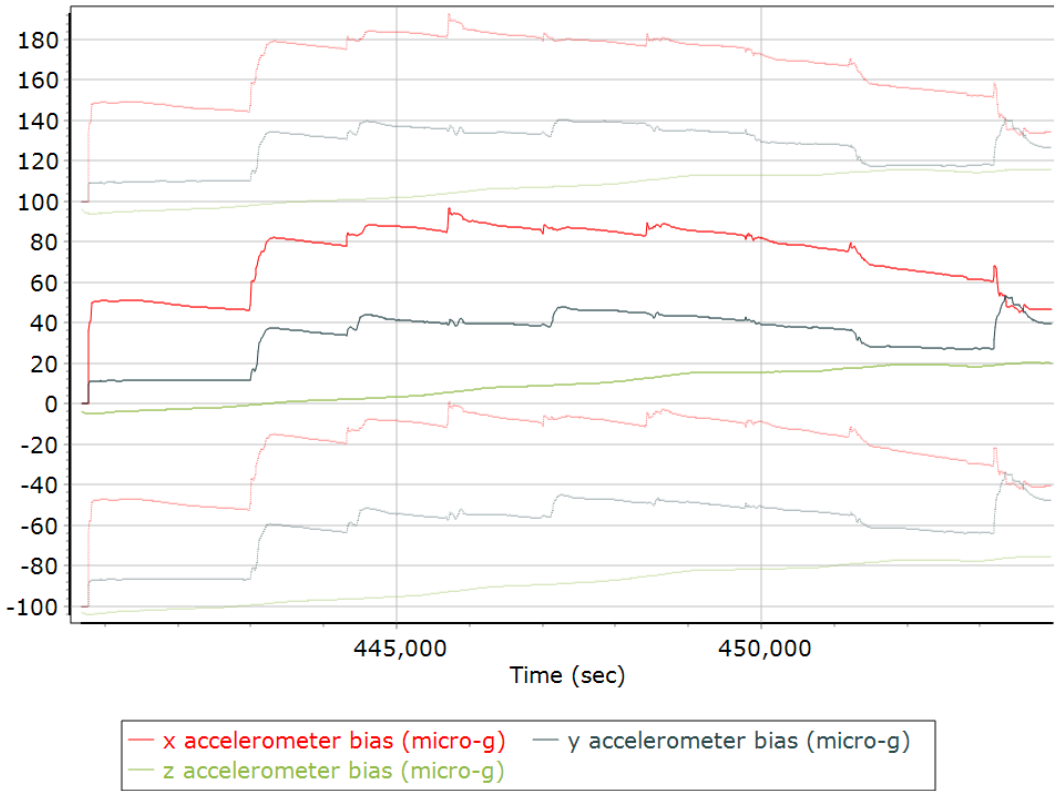
Reference-Primary GNSS Lever Arm Figure of Merit



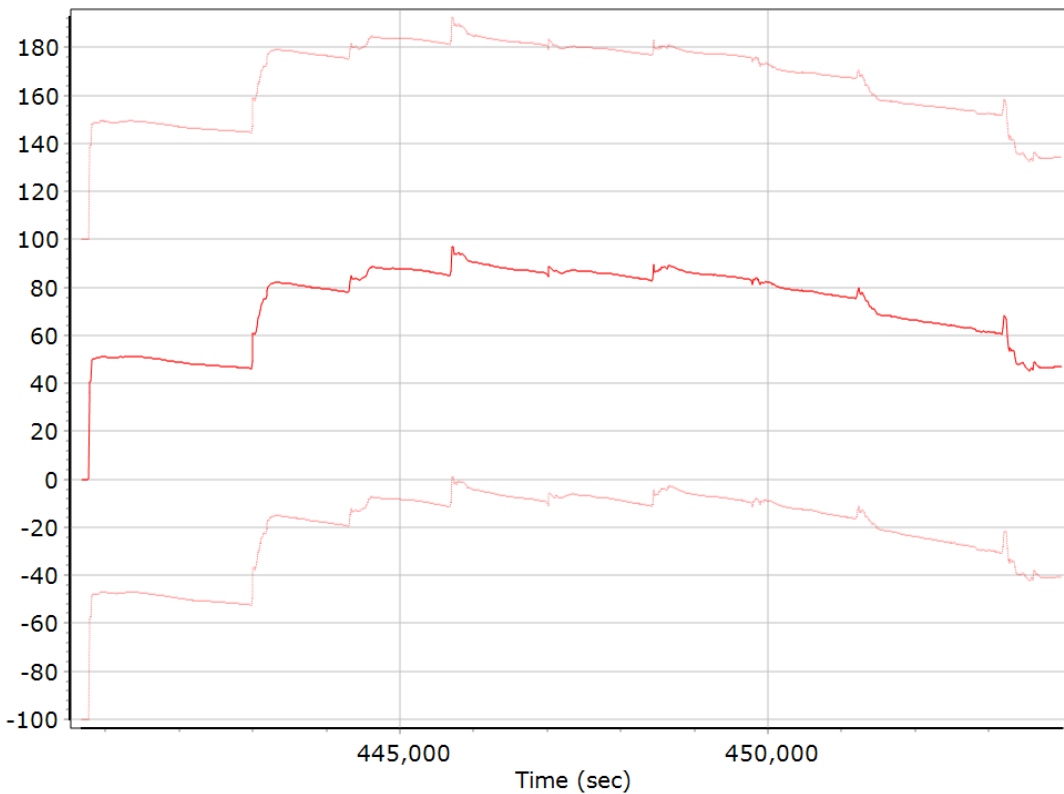
IN-Fusion QC

Forward Processed Estimated Errors, Reference Frame

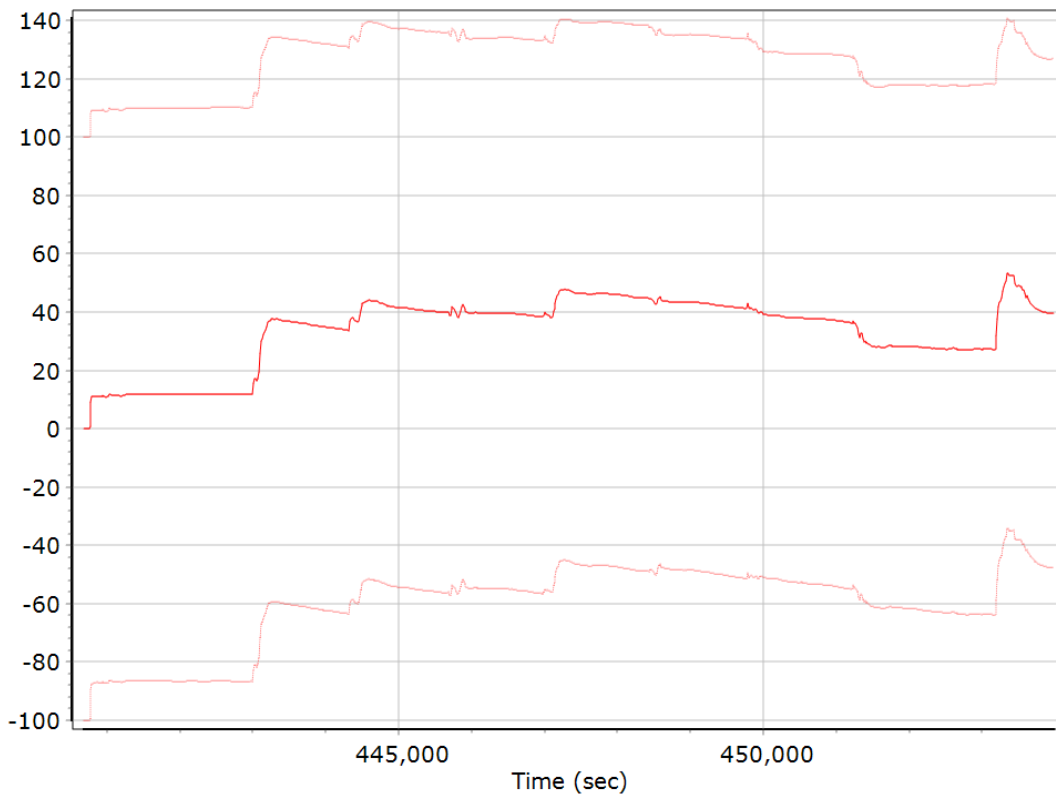
Accelerometer Bias (micro-g)



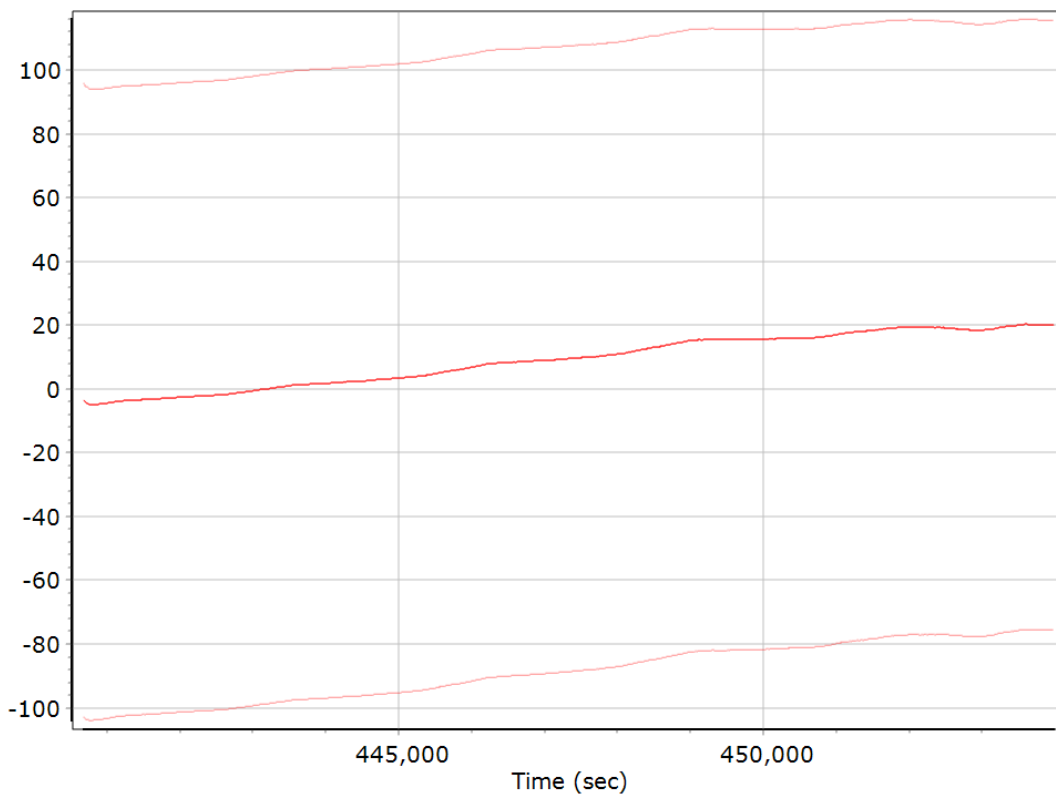
X Accelerometer Bias (micro-g)



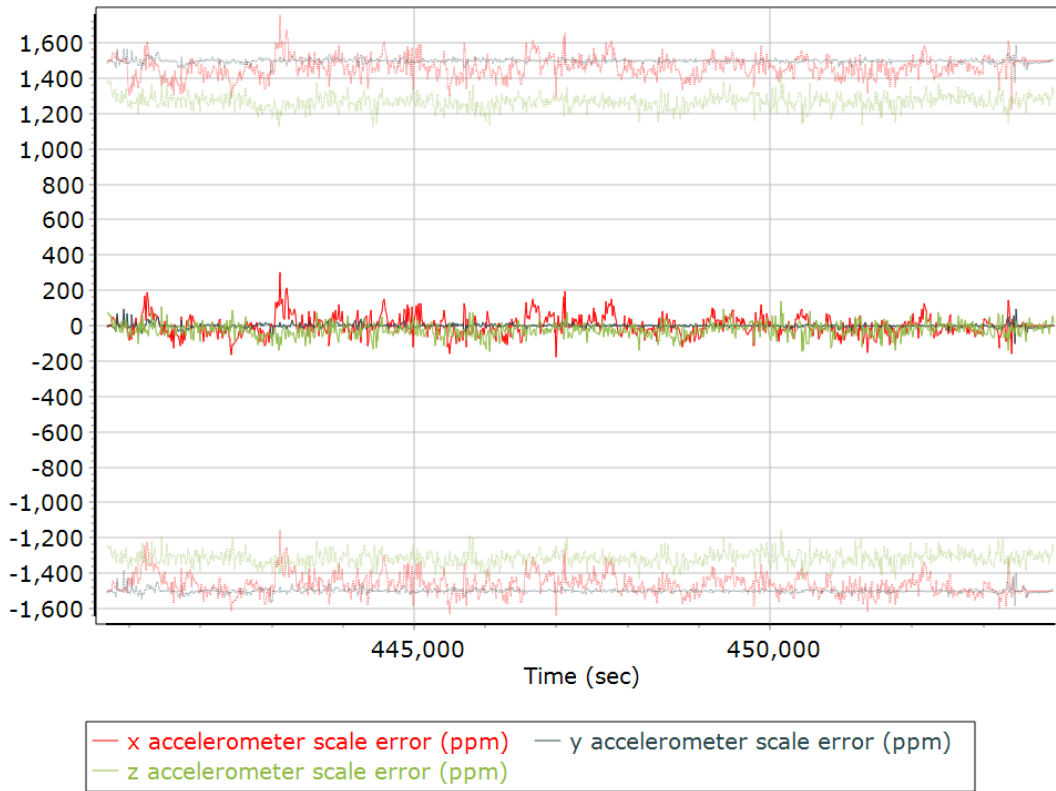
Y Accelerometer Bias (micro-g)



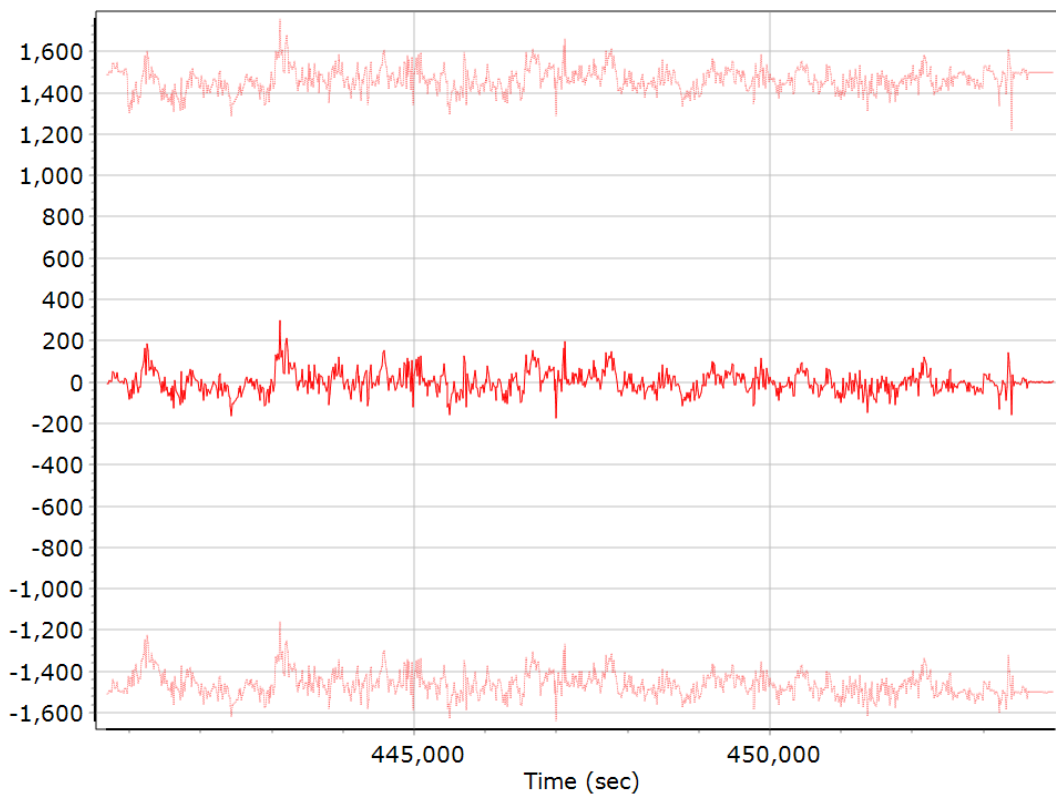
Z Accelerometer Bias (micro-g)



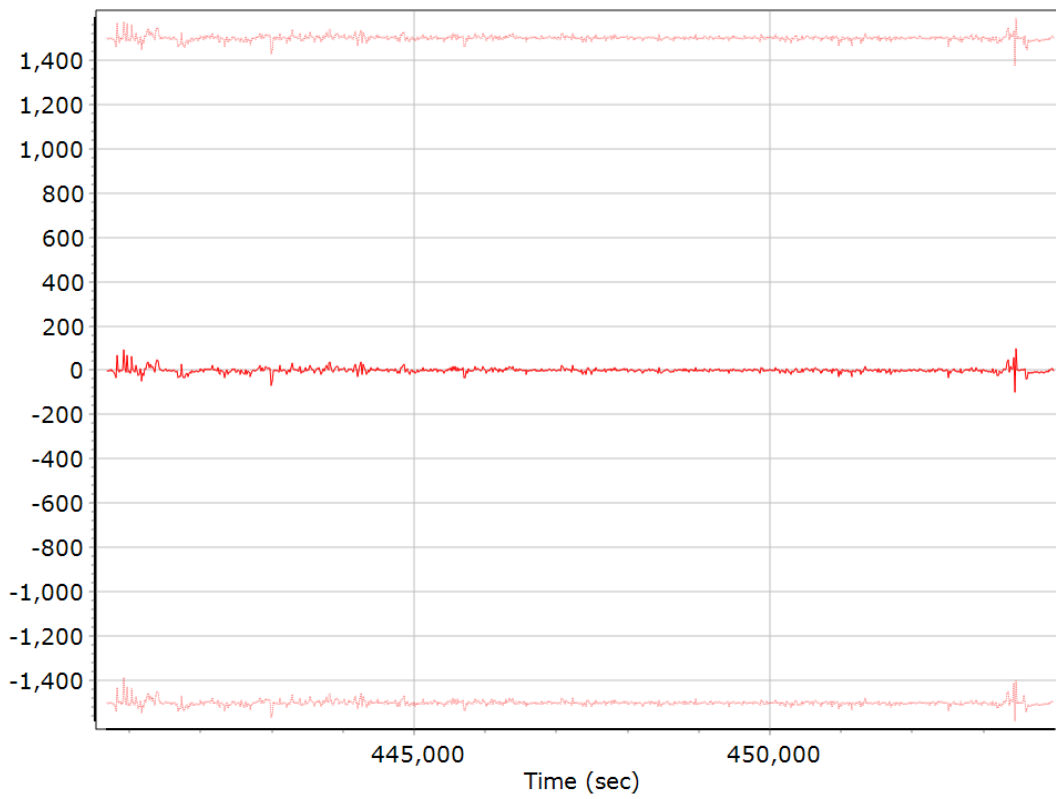
Accelerometer Scale Error (ppm)



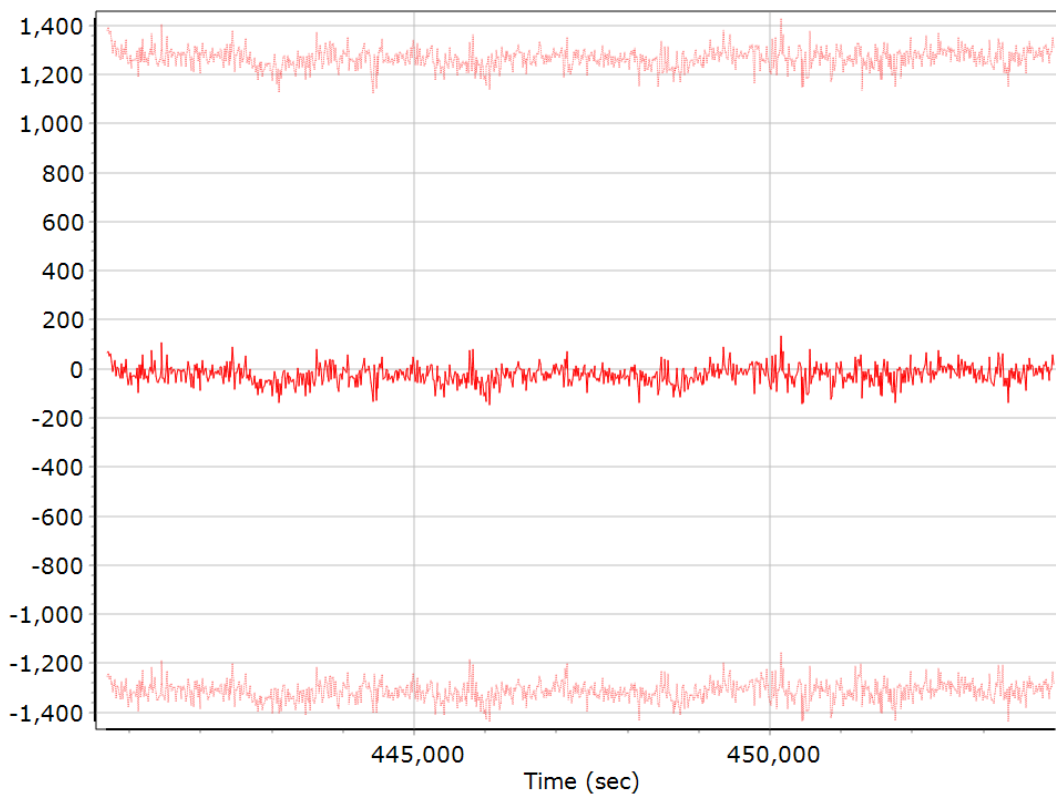
X Accelerometer Scale Error (ppm)



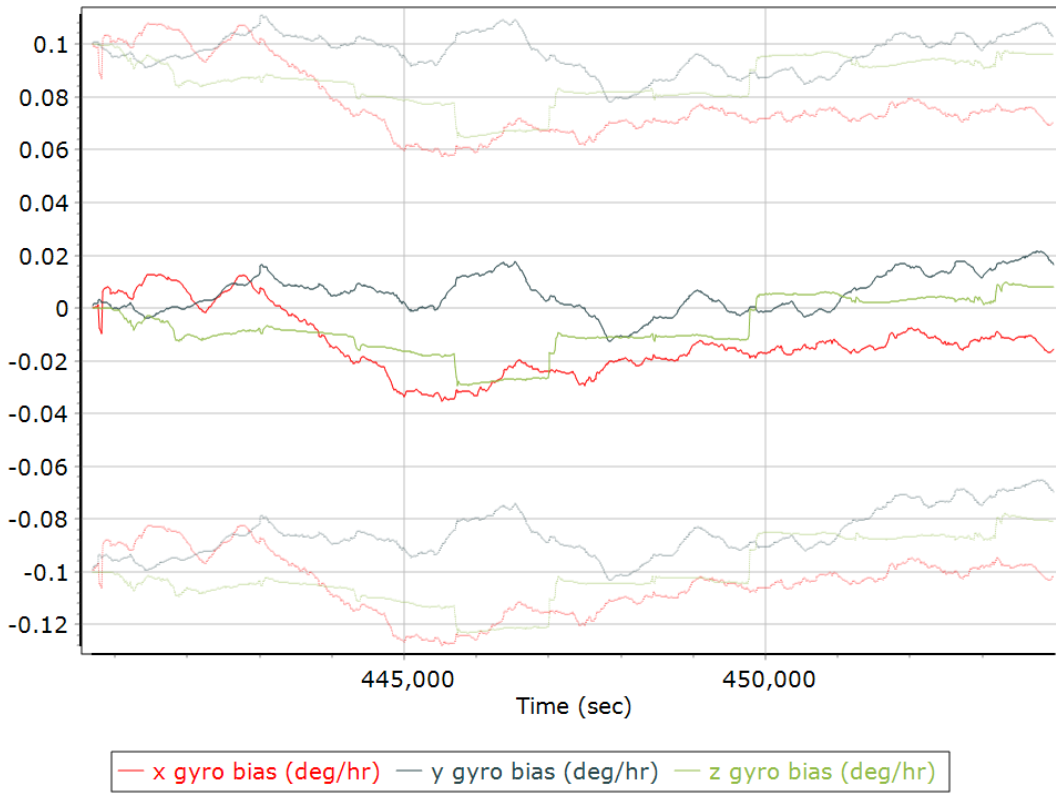
Y Accelerometer Scale Error (ppm)



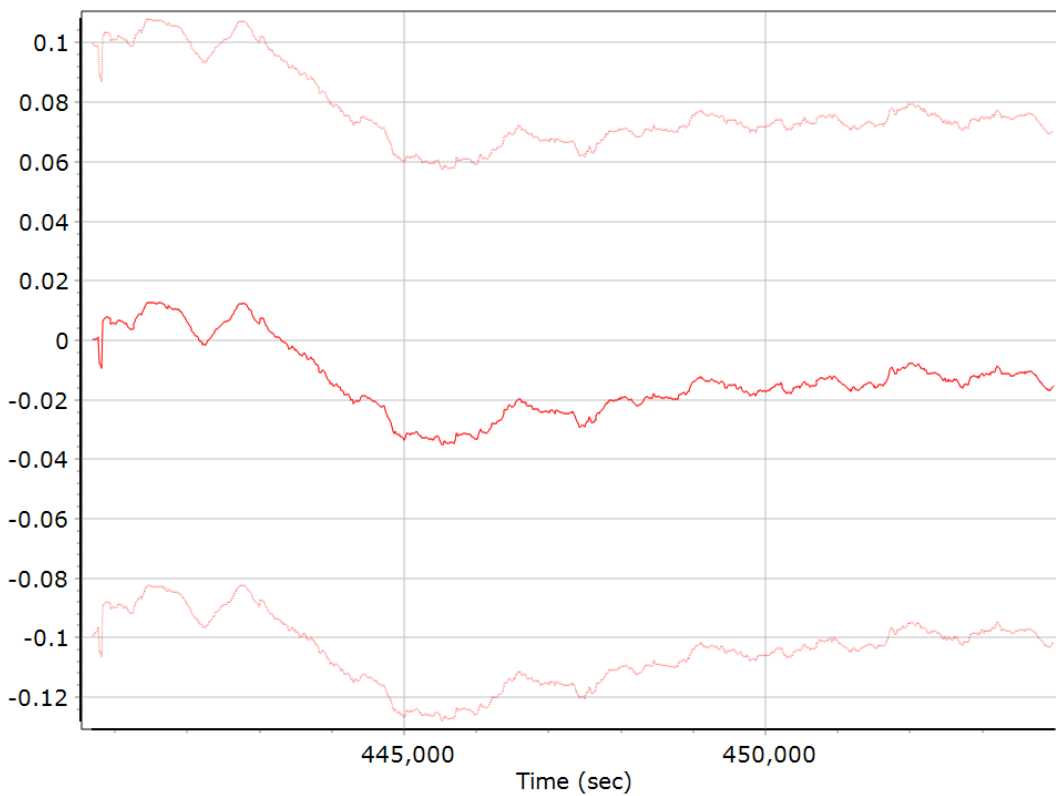
Z Accelerometer Scale Error (ppm)



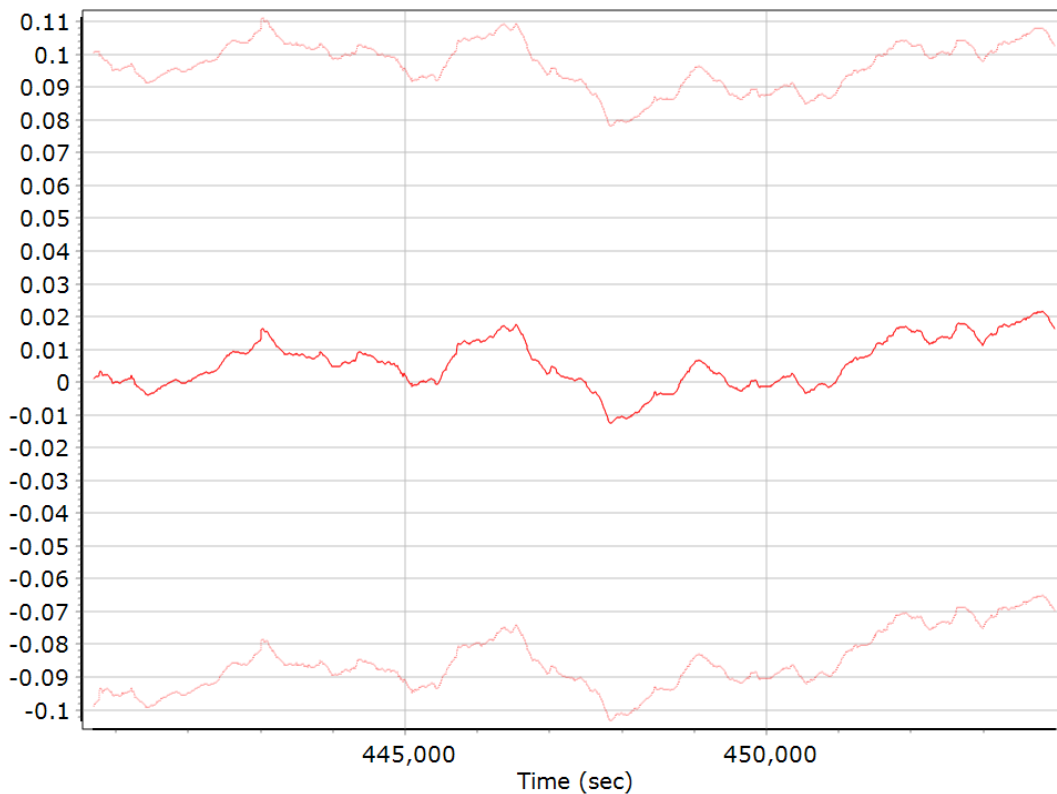
Gyro Bias (deg/h)



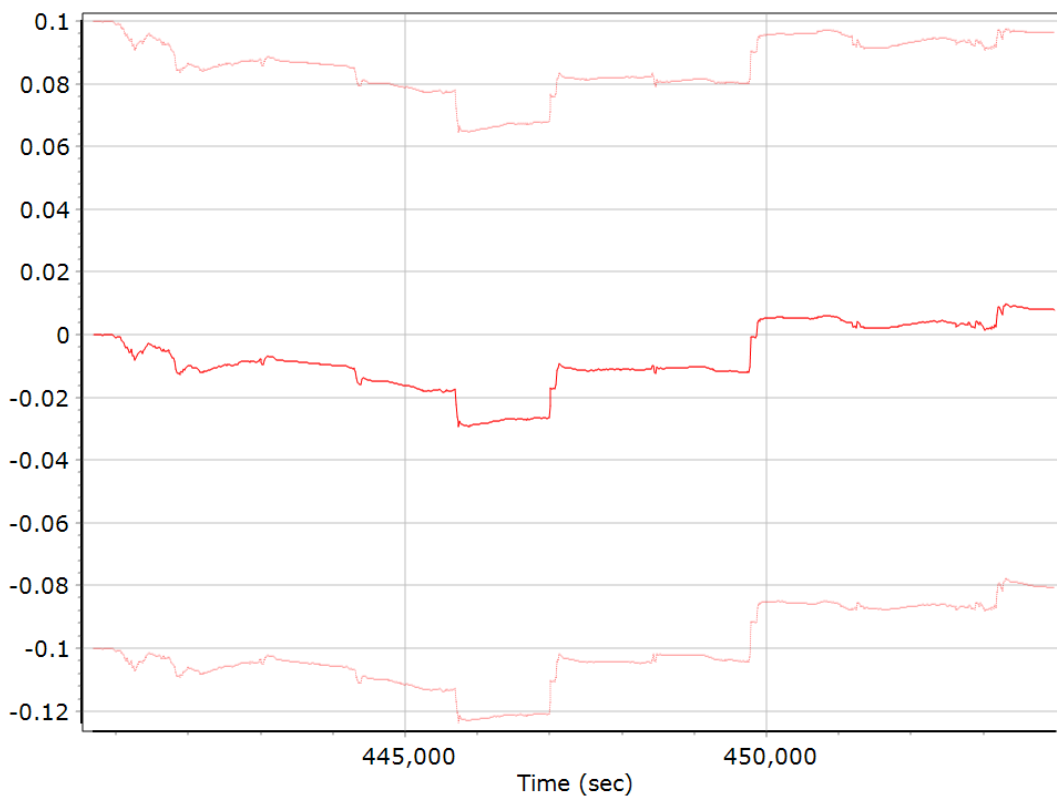
X Gyro Bias (deg/h)



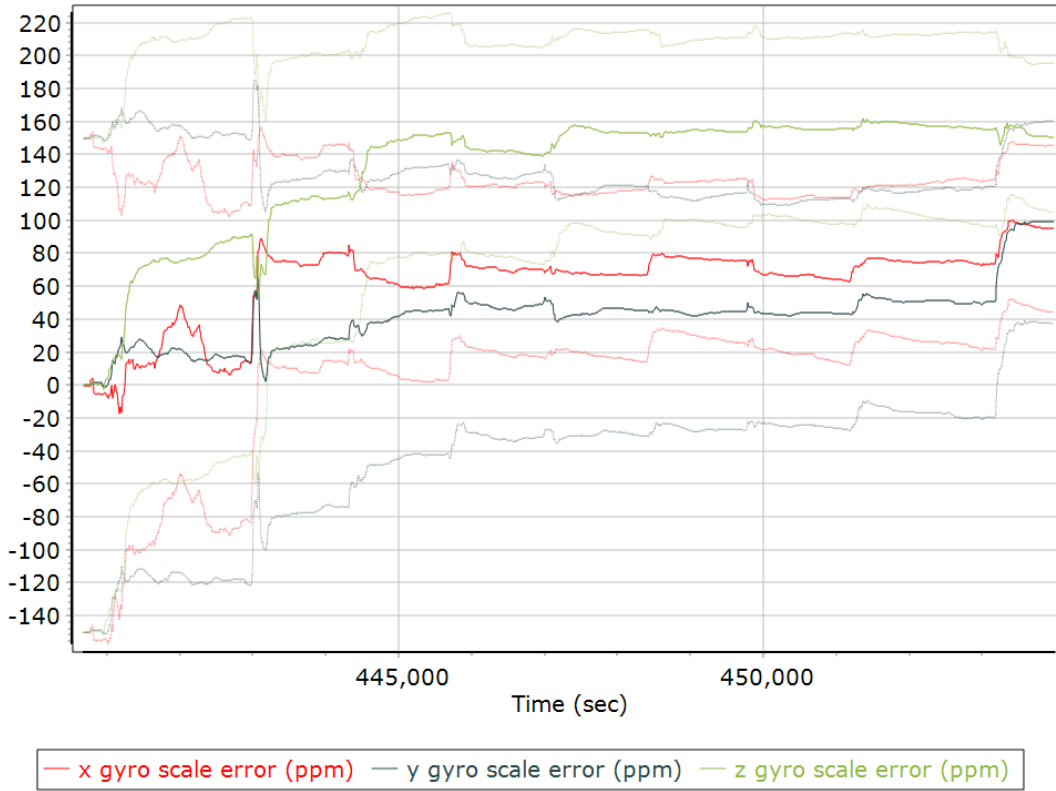
Y Gyro Bias (deg/h)



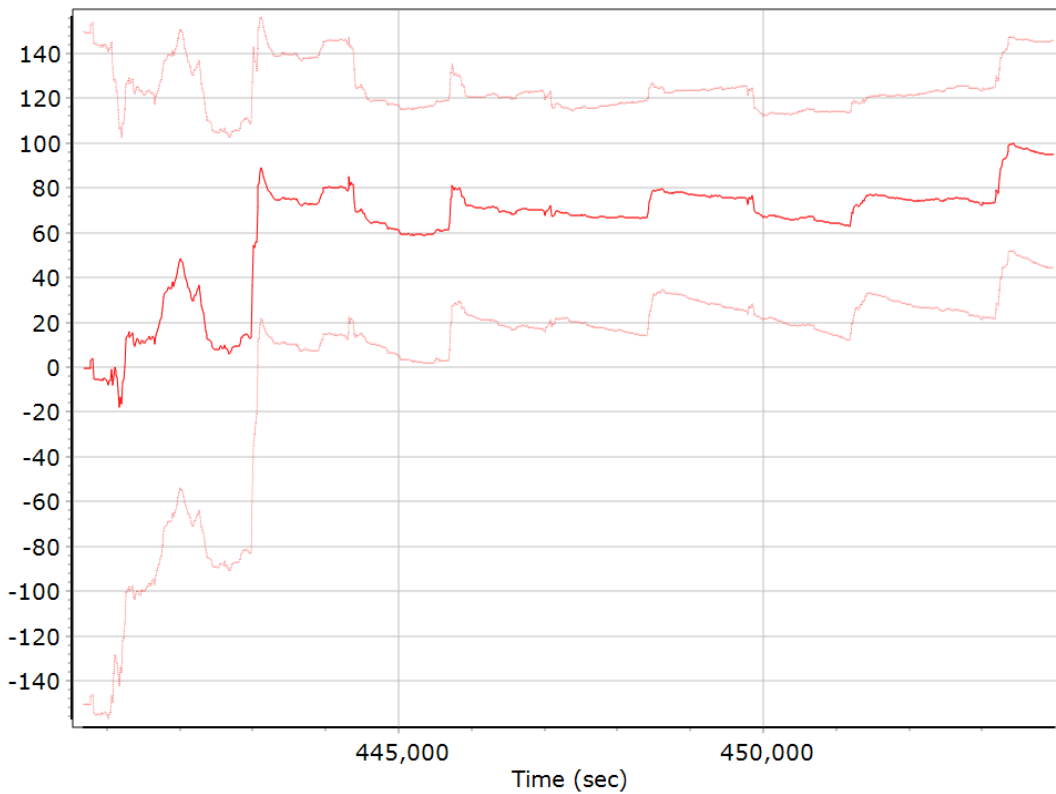
Z Gyro Bias (deg/h)



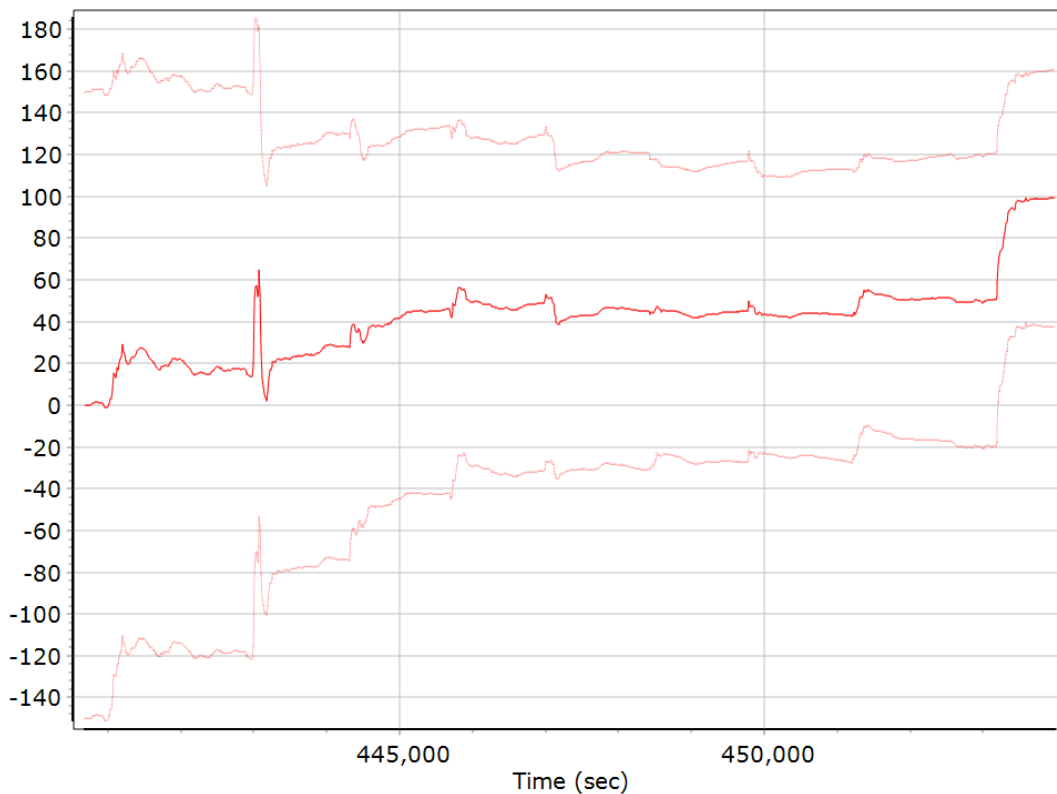
Gyro Scale Error (ppm)



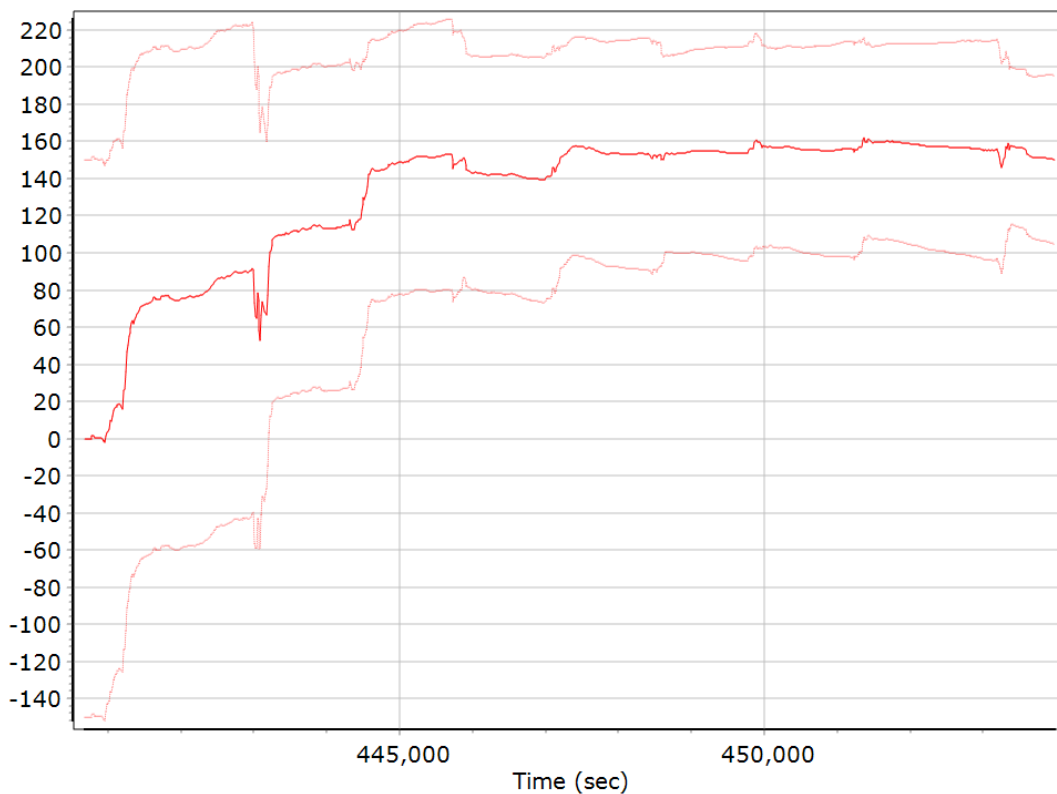
X Gyro Scale Error (ppm)



Y Gyro Scale Error (ppm)

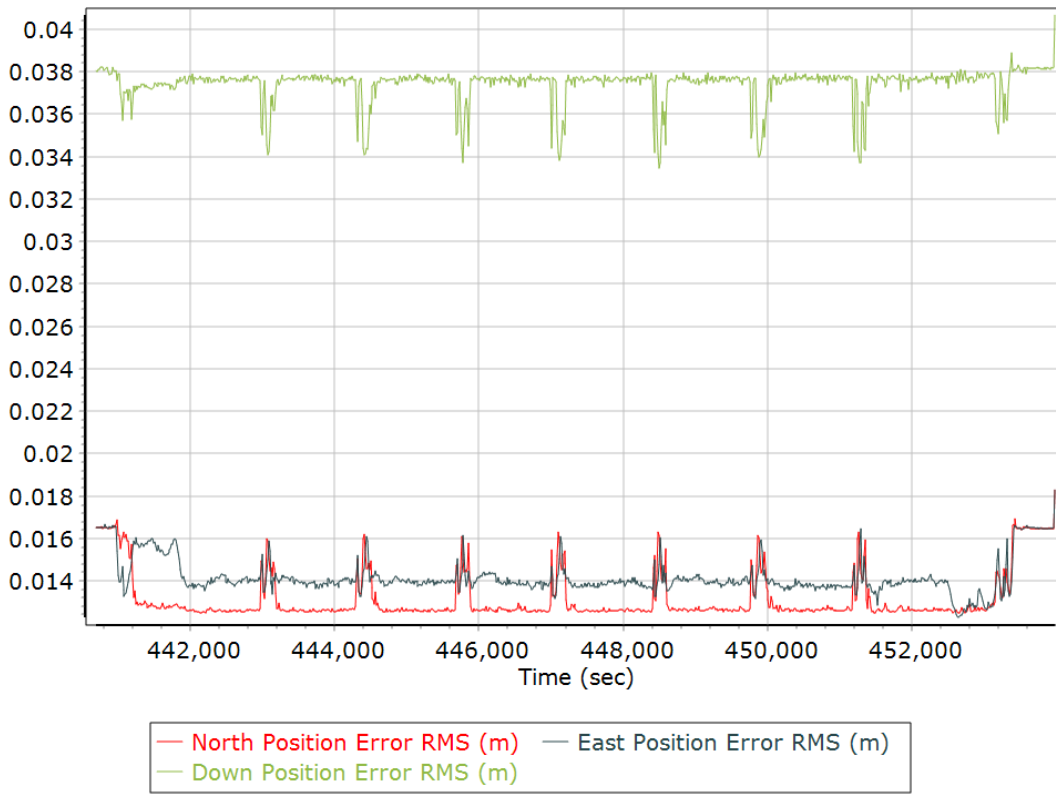


Z Gyro Scale Error (ppm)

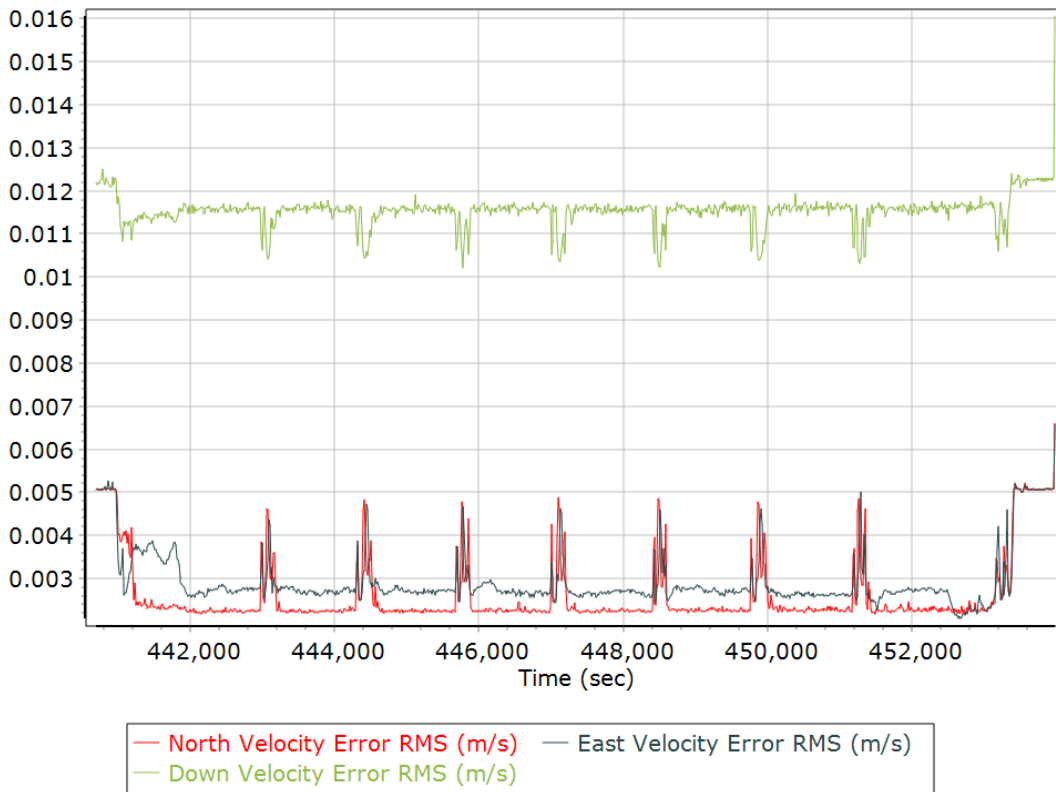


Smoothed Performance Metrics

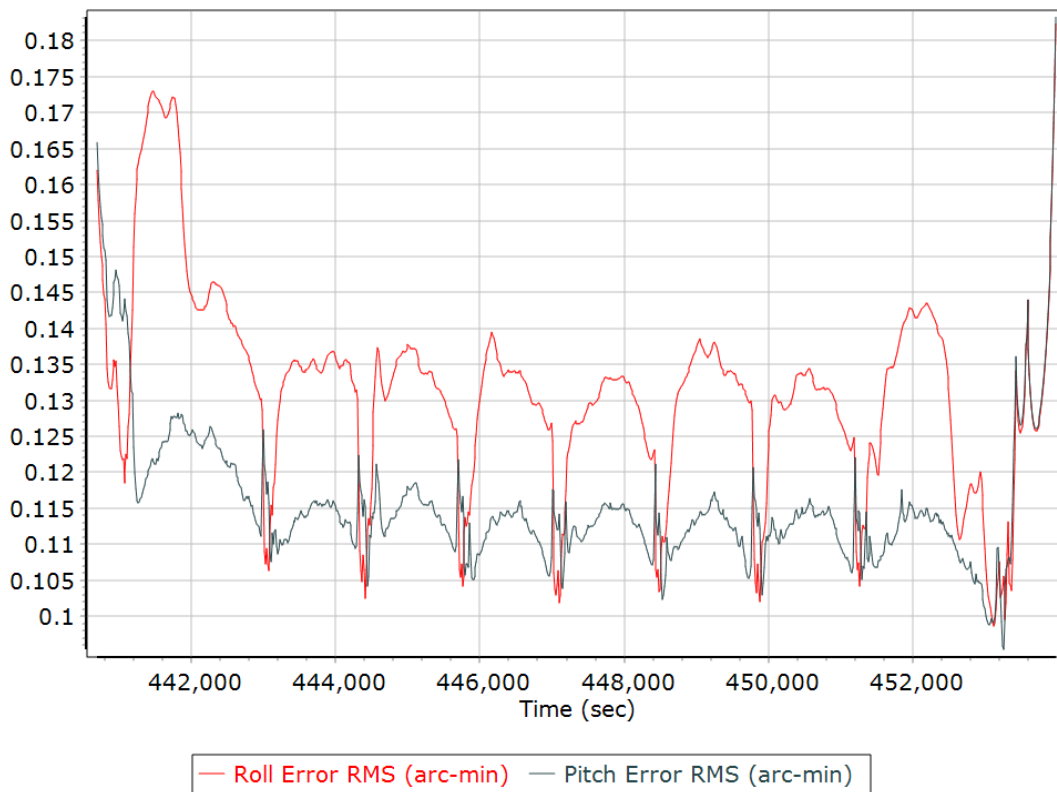
Position Error RMS (m)



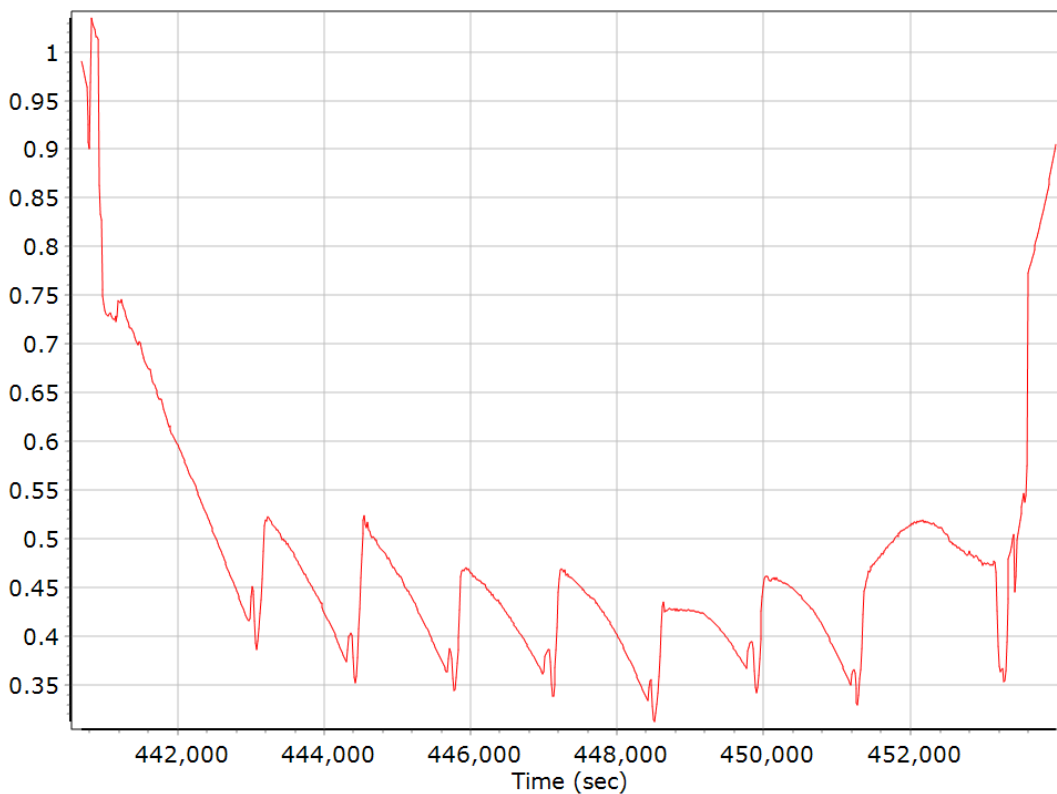
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

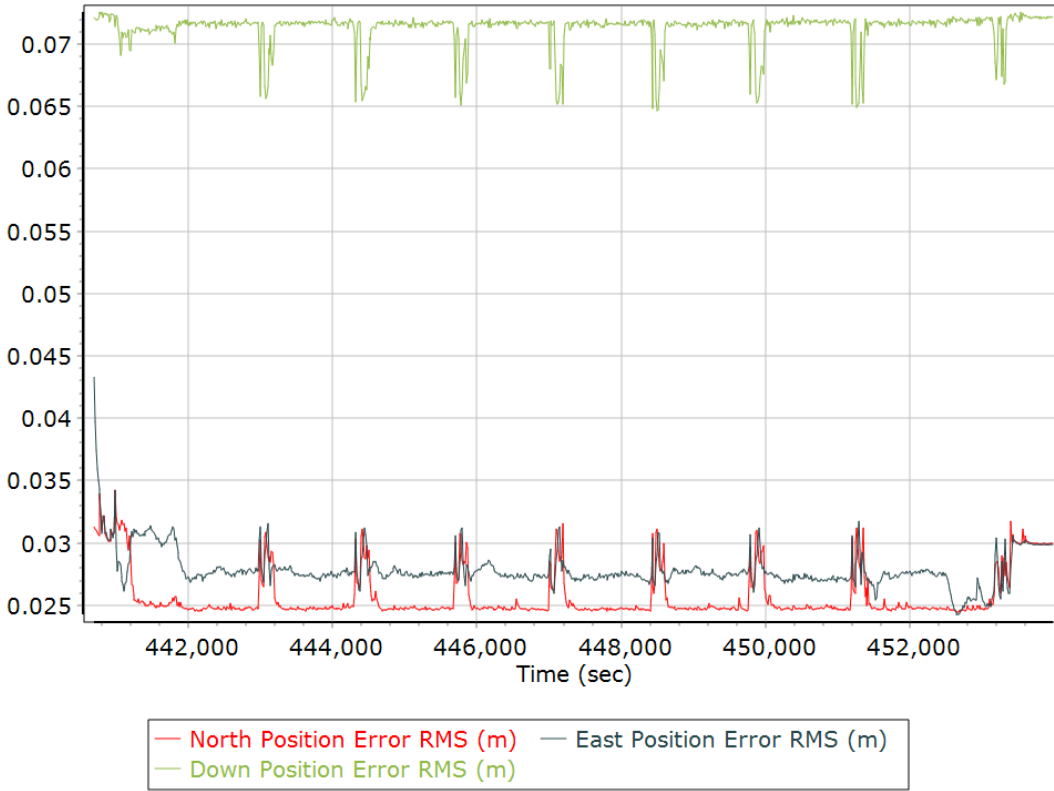


Heading Error RMS (arc-min)

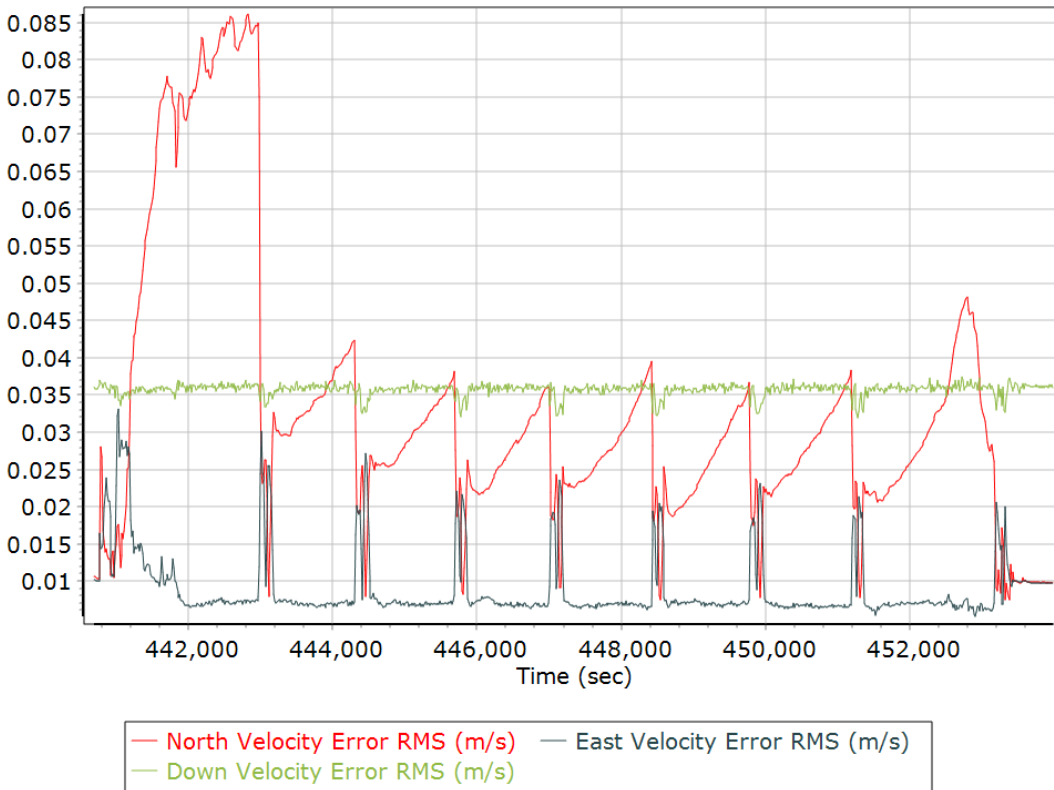


Forward Processed Performance Metrics

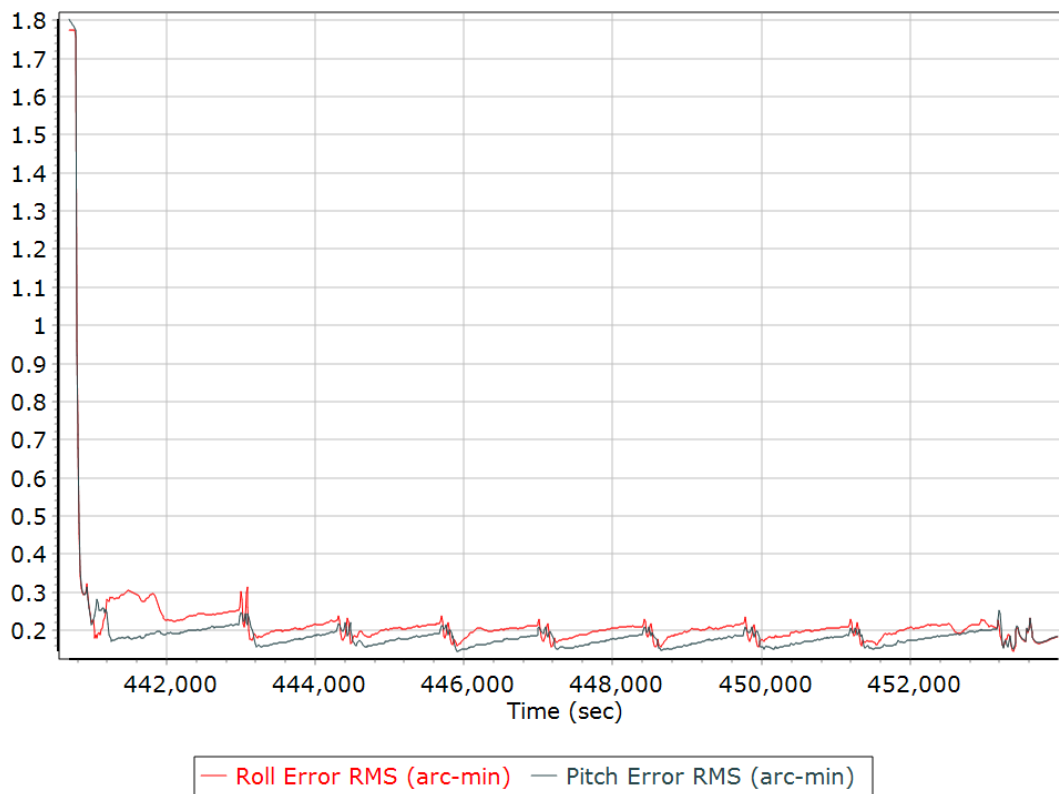
Position Error RMS (m)



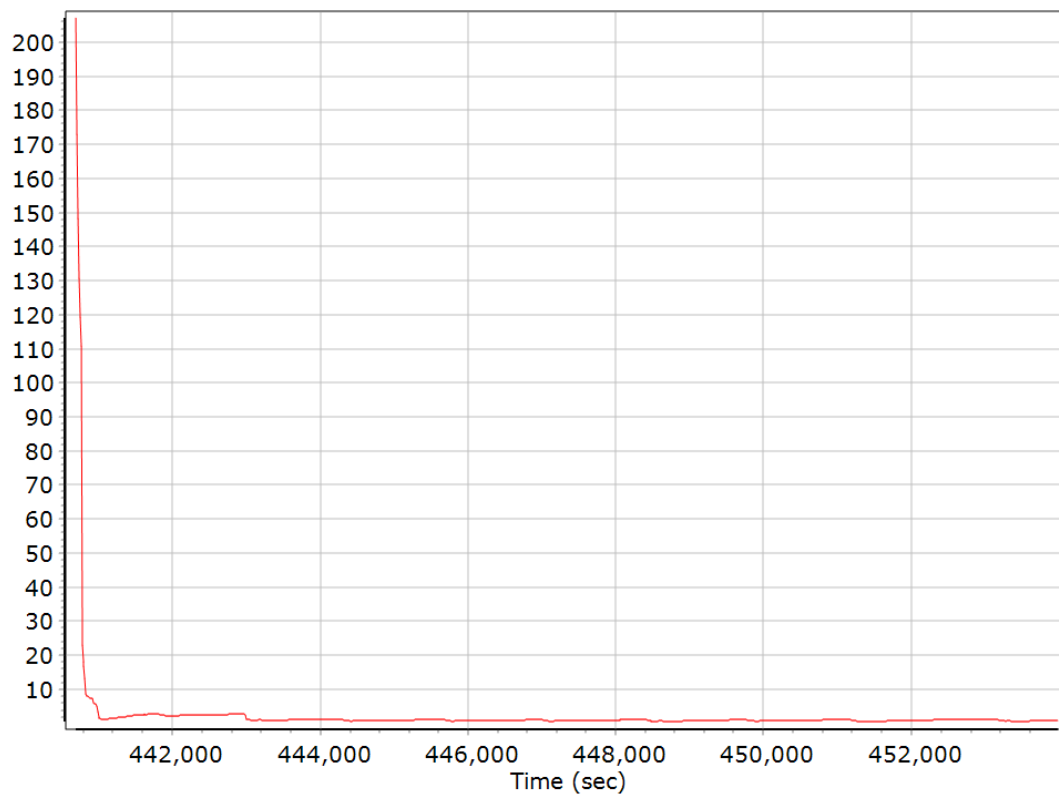
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

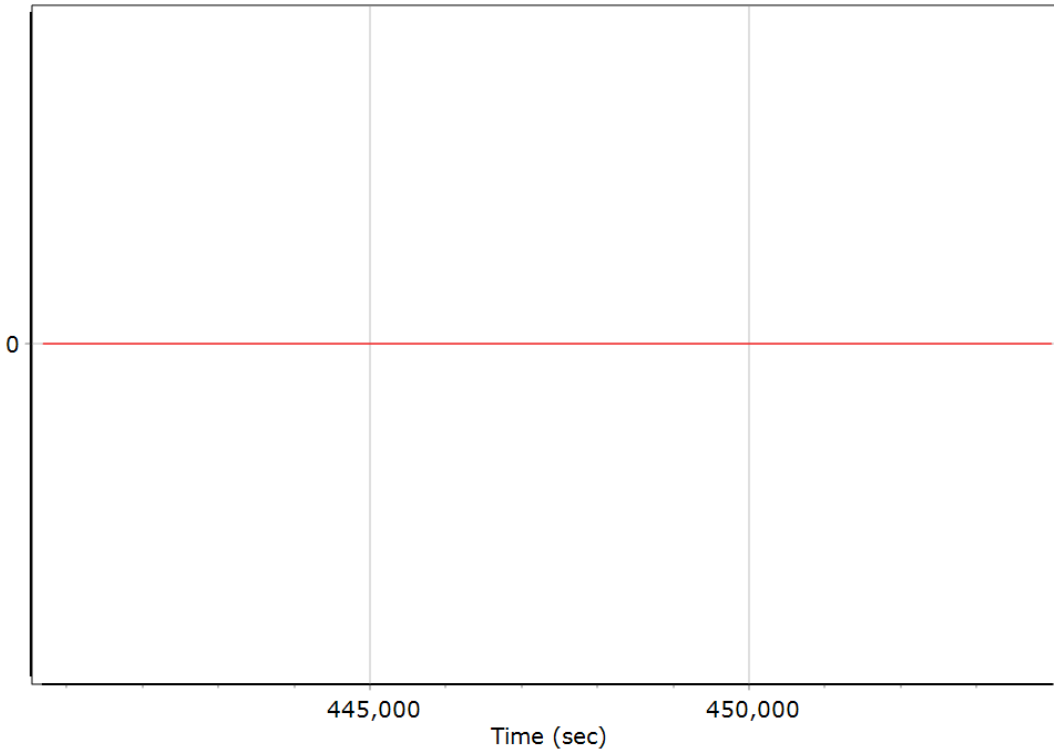


Heading Error RMS (arc-min)



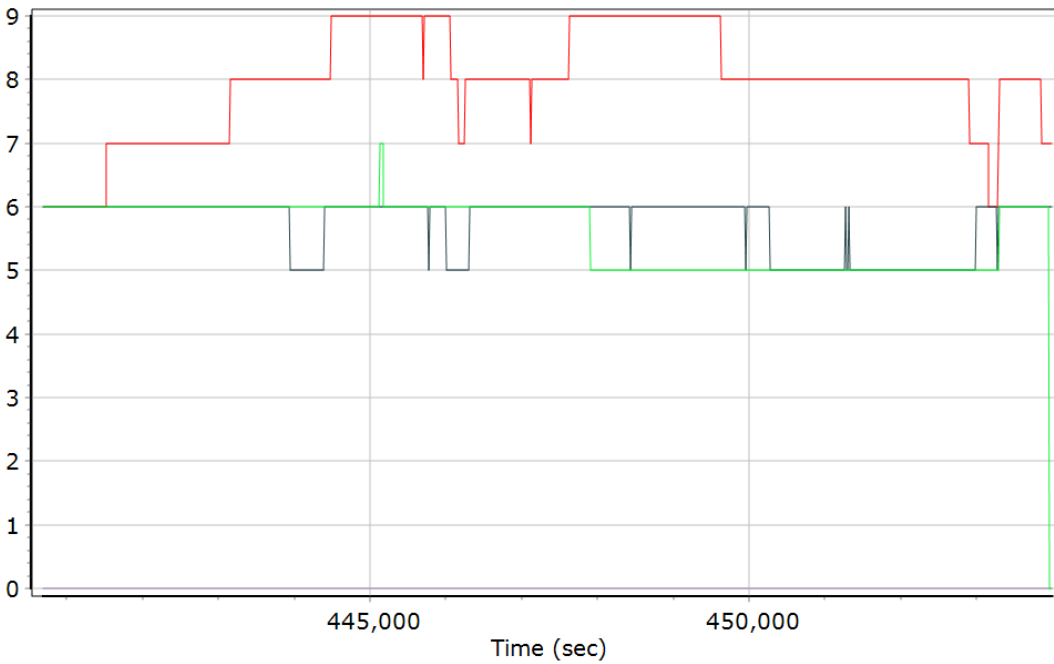
Forward Processed Solution Status

Processing Mode



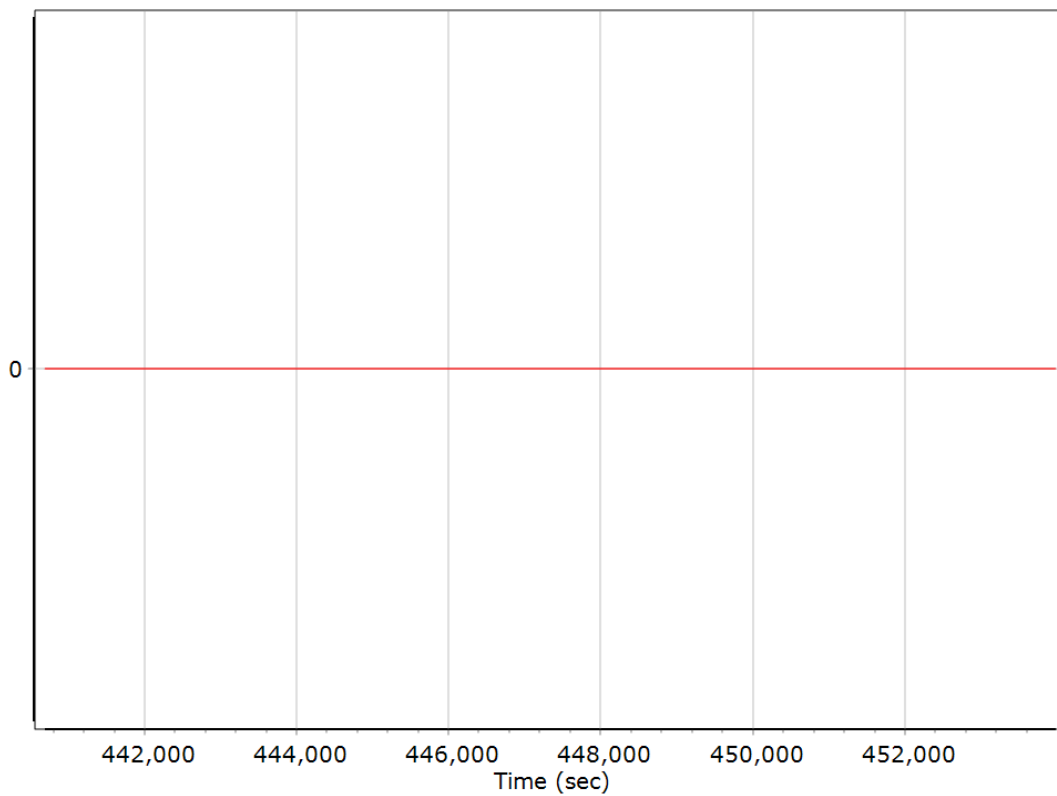
0 = Fixed NL, 1 = Fixed WL, 2 = Float, 3 = DGNSS, 4 = RTCM, 5 = IAPPP, 6 = C/A, 7 = GNSS Na

Number of Satellites



— Number of GPS Satellites	— Number of GLONASS Satellites
— Number of QZSS Satellites	— Number of BEIDOU Satellites
— Number of GALILEO Satellites	

Baseline Length



General Information

Mission Information

Project name	a07-s03-0530
Processing date	2022-09-02 16:30:43
Mission date	2022-09-02 07:14:18
Mission duration	04:52:11.000
Processing mode	IN-Fusion PP-RTX

Rover Hardware Information

Product	POS AV 610 VER6 HW1.6-12
Serial number	S/N6907
IMU type	57
Receiver type	BD982
Antenna type	AV39

Project File List

Rover Data Files

File name	File type
default0902_071420.000	POS Data
default0902_071420.001	POS Data
default0902_071420.002	POS Data
default0902_071420.003	POS Data
default0902_071420.004	POS Data
default0902_071420.005	POS Data
default0902_071420.006	POS Data
default0902_071420.007	POS Data
default0902_071420.008	POS Data
default0902_071420.009	POS Data
default0902_071420.010	POS Data
default0902_071420.011	POS Data
default0902_071420.012	POS Data
default0902_071420.013	POS Data
default0902_071420.014	POS Data
default0902_071420.015	POS Data
default0902_071420.016	POS Data
default0902_071420.017	POS Data
default0902_071420.018	POS Data
default0902_071420.019	POS Data
default0902_071420.020	POS Data
default0902_071420.021	POS Data
default0902_071420.022	POS Data
default0902_071420.023	POS Data

Input Files

File Name	File Type
Ephm2450.22g	GLONASS Broadcast Ephemeris
Ephm2450.22n	GPS Broadcast Ephemeris

Output Files

Filename	File type
sbet_a07-s03-0530.out	SBET Trajectory File

Rover Data Summary

First raw data file	default0902_071420.000		
Last raw data file	default0902_071420.023		
Start GPS week	2225		
Start time	17.107 (8/28/2022 12:00:17 AM)		
End time	475572.908 (9/2/2022 12:06:12 PM)		
Start of fine alignment	458391.326 (9/2/2022 7:19:51 AM)		
Available subsystems	Primary GNSS, IMU		
POS Event Input	None		
Correction data	None		
IMU Installation Lever Arms & Mounting Angles			
Reference to IMU lever arm (m)	0.000	0.000	0.000
Reference to IMU mounting angles (deg)	0.000	0.000	0.000
Reference to Primary GNSS lever arm (m)	-0.353	-0.322	-1.280
Reference to Primary GNSS lever arm std dev (m)	-1.000		
Aircraft to Reference mounting angles (deg)	0.000	0.000	0.000

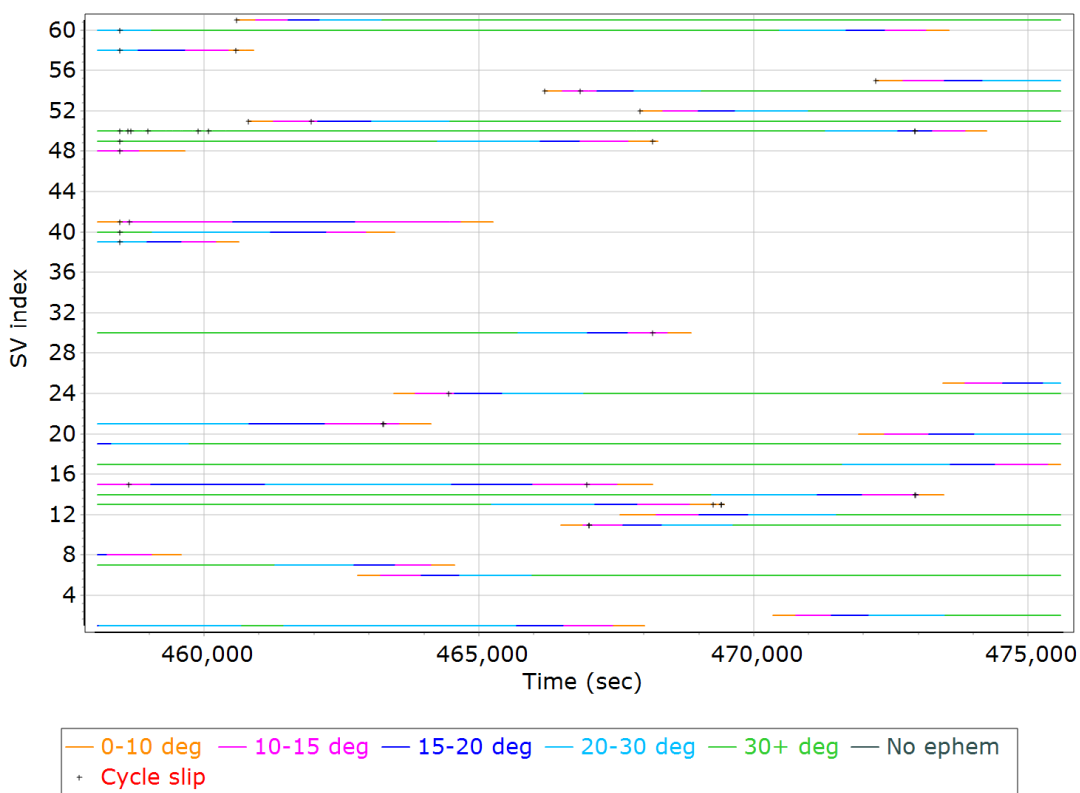
Rover Data QC

Raw IMU Import QC Summary

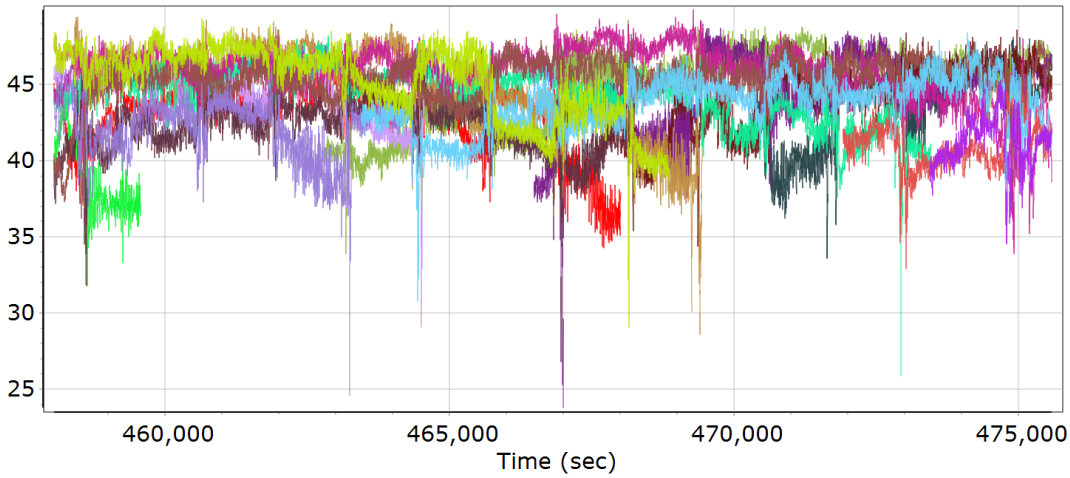
IMU data input file	imu_a07-s03-0530.dat
IMU data check log file	imudt_a07-s03-0530.log
IMU Records Processed	3506076
Termination Status	Warnings
IMU Anomalies	3
IMU Failure Messages	
458040.779 : WARNING : Gap of 0.0100 seconds in CHECKDT input data	
458040.679 : WARNING : Gap of 0.0100 seconds in CHECKDT input data	
458040.619 : WARNING : Gap of 458023.2570 seconds in CHECKDT input data	

Primary Observables & Satellite Data

GPS/GLONASS L1 Satellite Lock/Elevation

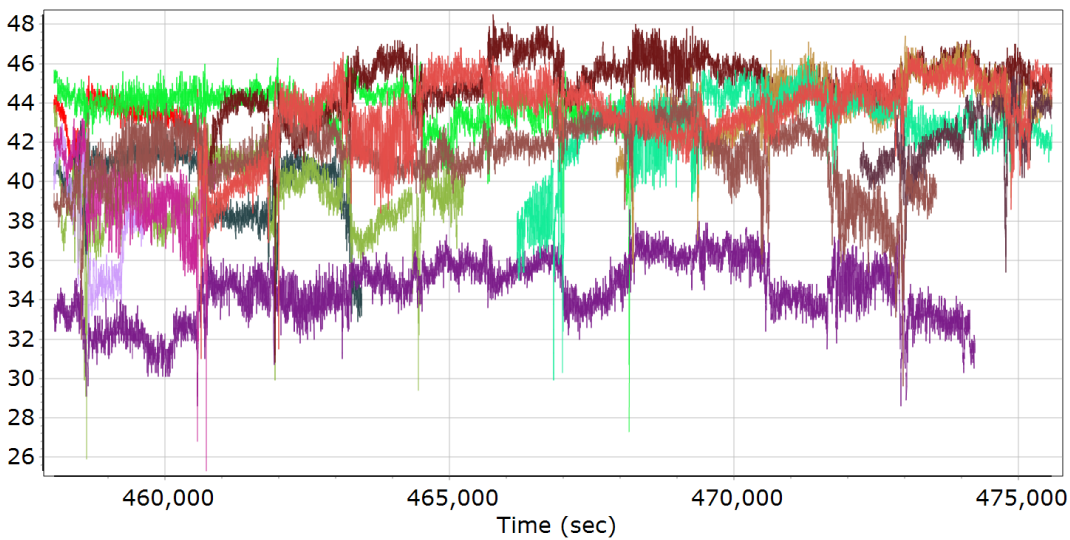


GPS L1 SNR



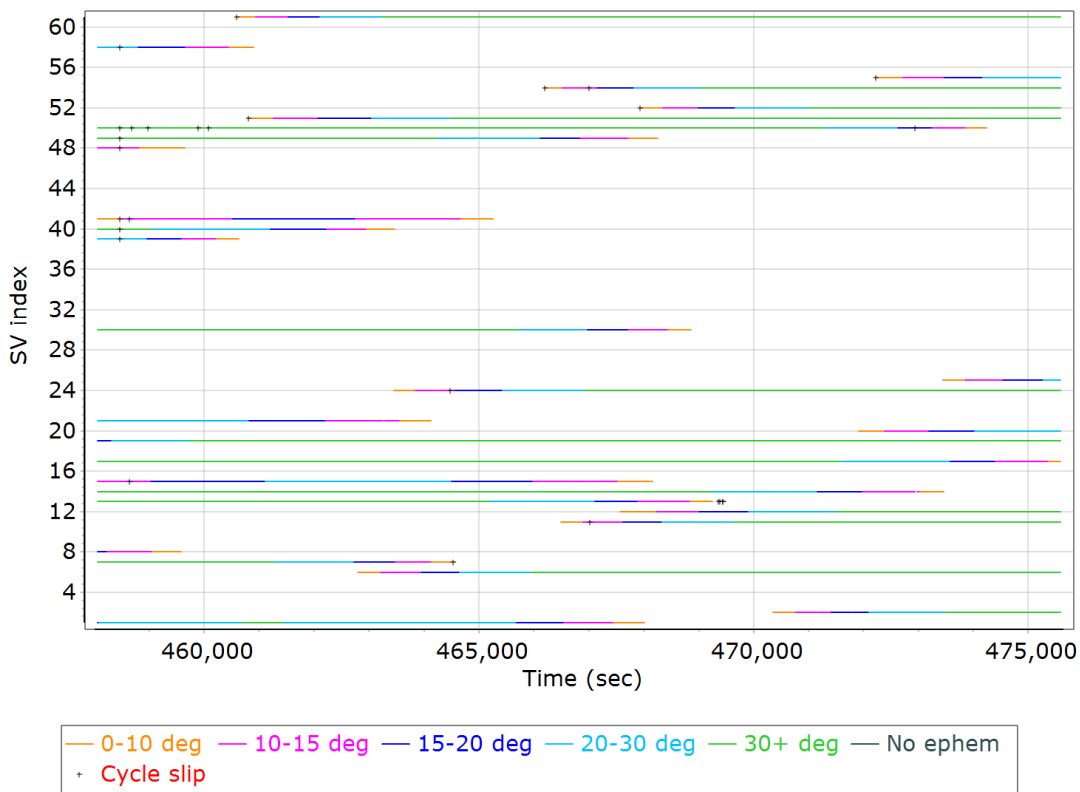
- | | |
|-----------------------------|-----------------------------|
| — GPS PRN 01 L1 SNR (dB/Hz) | — GPS PRN 02 L1 SNR (dB/Hz) |
| — GPS PRN 06 L1 SNR (dB/Hz) | — GPS PRN 07 L1 SNR (dB/Hz) |
| — GPS PRN 08 L1 SNR (dB/Hz) | — GPS PRN 11 L1 SNR (dB/Hz) |
| — GPS PRN 12 L1 SNR (dB/Hz) | — GPS PRN 13 L1 SNR (dB/Hz) |
| — GPS PRN 14 L1 SNR (dB/Hz) | — GPS PRN 15 L1 SNR (dB/Hz) |
| — GPS PRN 17 L1 SNR (dB/Hz) | — GPS PRN 19 L1 SNR (dB/Hz) |
| — GPS PRN 20 L1 SNR (dB/Hz) | — GPS PRN 21 L1 SNR (dB/Hz) |
| — GPS PRN 24 L1 SNR (dB/Hz) | — GPS PRN 25 L1 SNR (dB/Hz) |
| — GPS PRN 30 L1 SNR (dB/Hz) | |

GLONASS L1 SNR

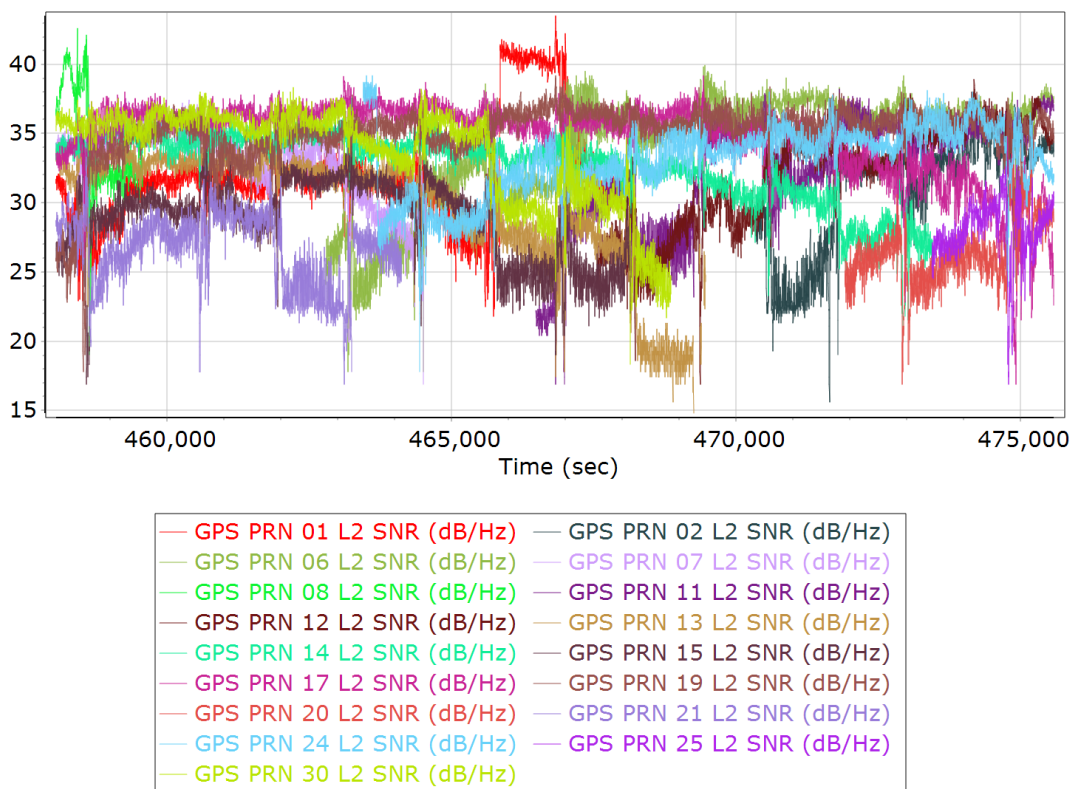


- | | |
|-----------------------------|-----------------------------|
| — GLONASS 02 L1 SNR (dB/Hz) | — GLONASS 03 L1 SNR (dB/Hz) |
| — GLONASS 04 L1 SNR (dB/Hz) | — GLONASS 11 L1 SNR (dB/Hz) |
| — GLONASS 12 L1 SNR (dB/Hz) | — GLONASS 13 L1 SNR (dB/Hz) |
| — GLONASS 14 L1 SNR (dB/Hz) | — GLONASS 15 L1 SNR (dB/Hz) |
| — GLONASS 17 L1 SNR (dB/Hz) | — GLONASS 18 L1 SNR (dB/Hz) |
| — GLONASS 21 L1 SNR (dB/Hz) | — GLONASS 23 L1 SNR (dB/Hz) |
| — GLONASS 24 L1 SNR (dB/Hz) | |

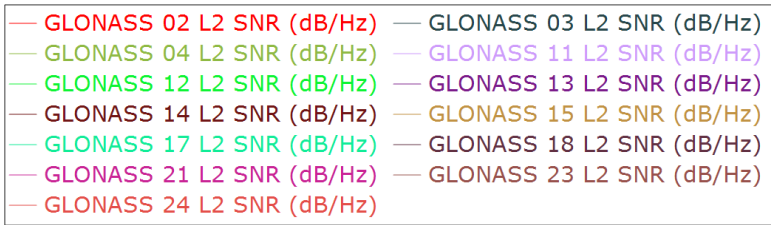
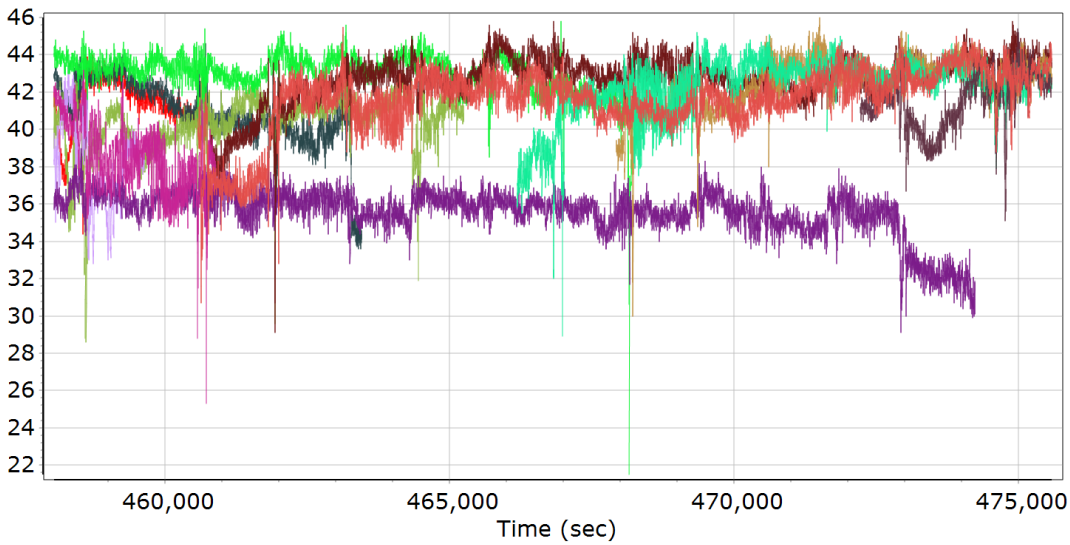
GPS/GLONASS L2 Satellite Lock/Elevation



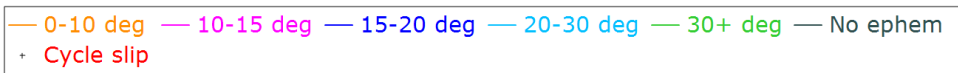
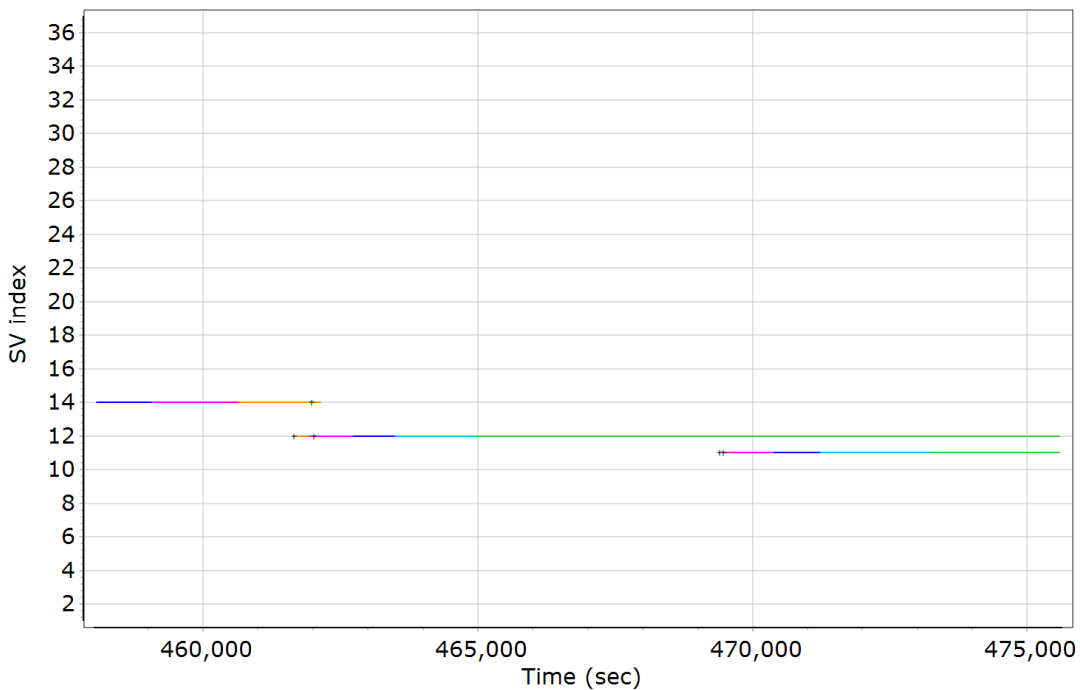
GPS L2 SNR



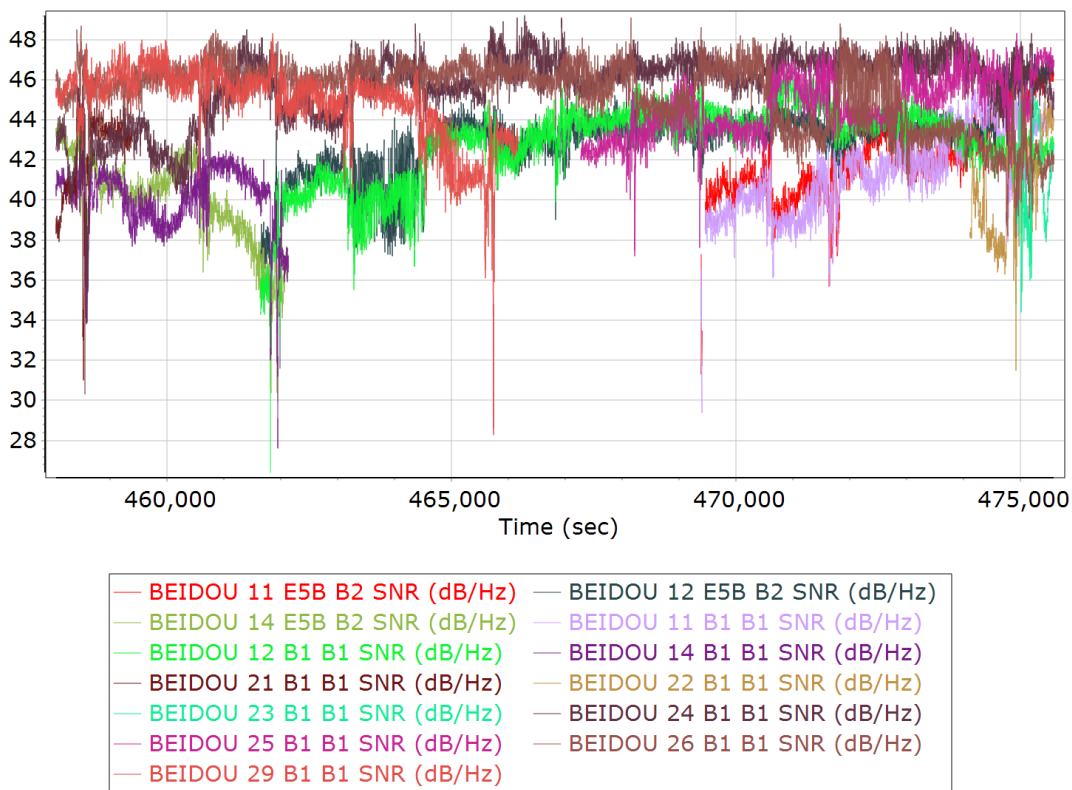
GLONASS L2 SNR



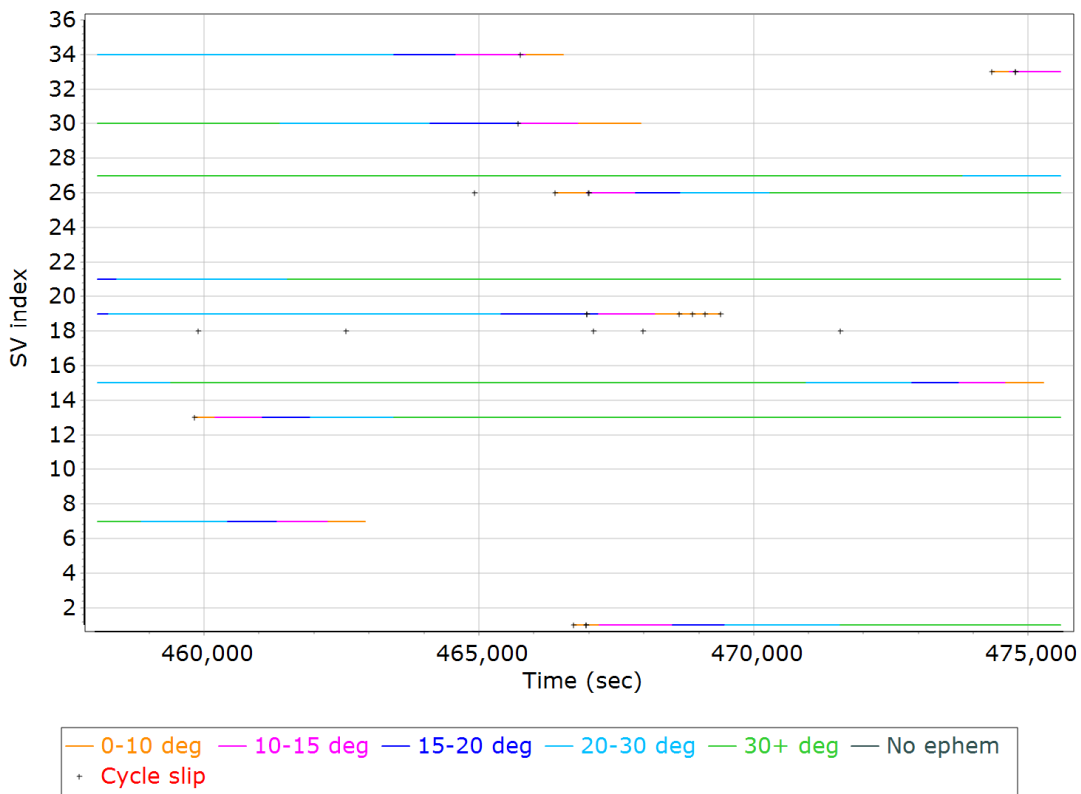
BEIDOU Satellite Lock/Elevation



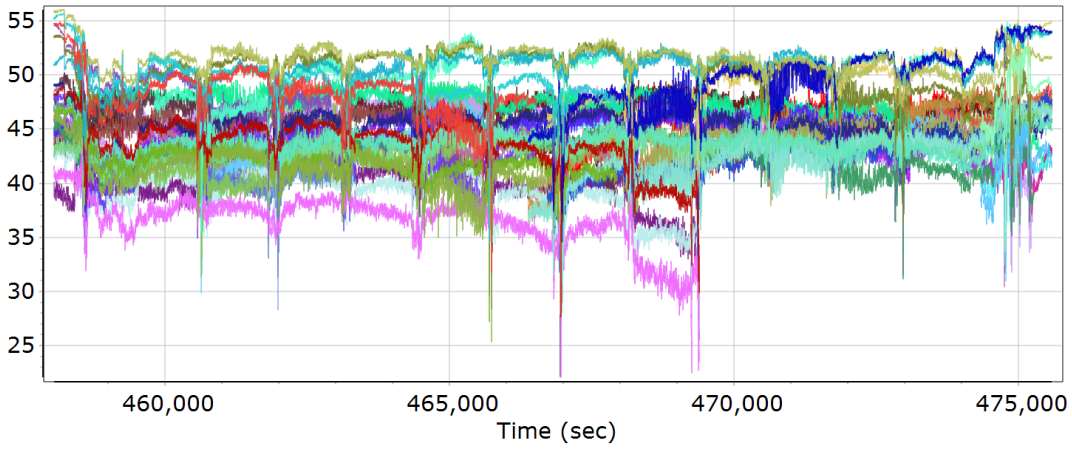
BEIDOU SNR



GALILEO Satellite Lock/Elevation



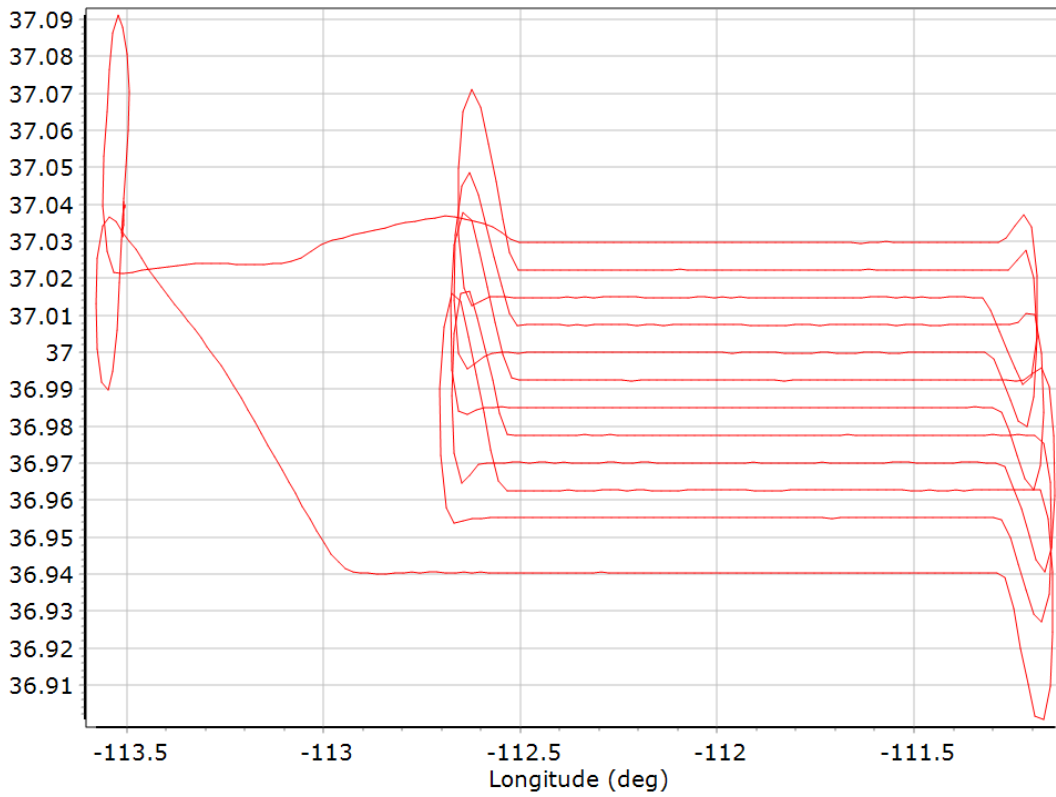
GALILEO SNR



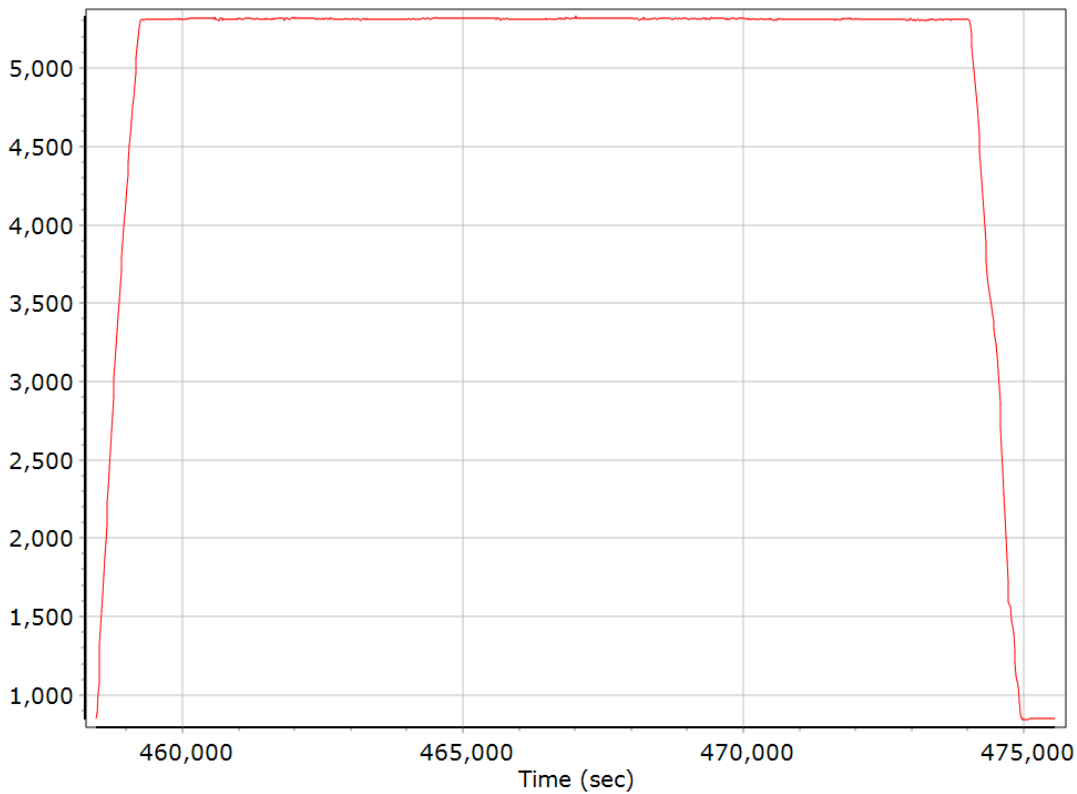
- GALILEO 01 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 07 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 13 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 15 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 18 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 19 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- GALILEO 21 L1 BOC_1_1_DP_MBOC SNR (dB/Hz)
- 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)

Smoothed Trajectory Information

Top View



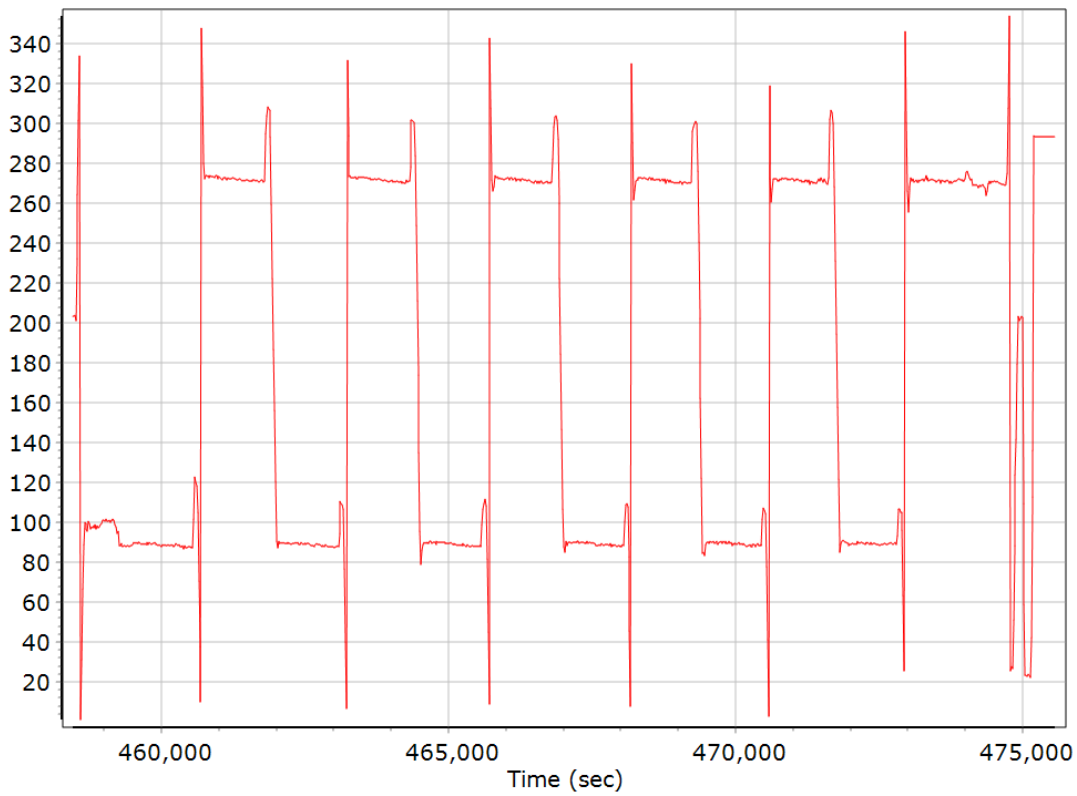
Altitude



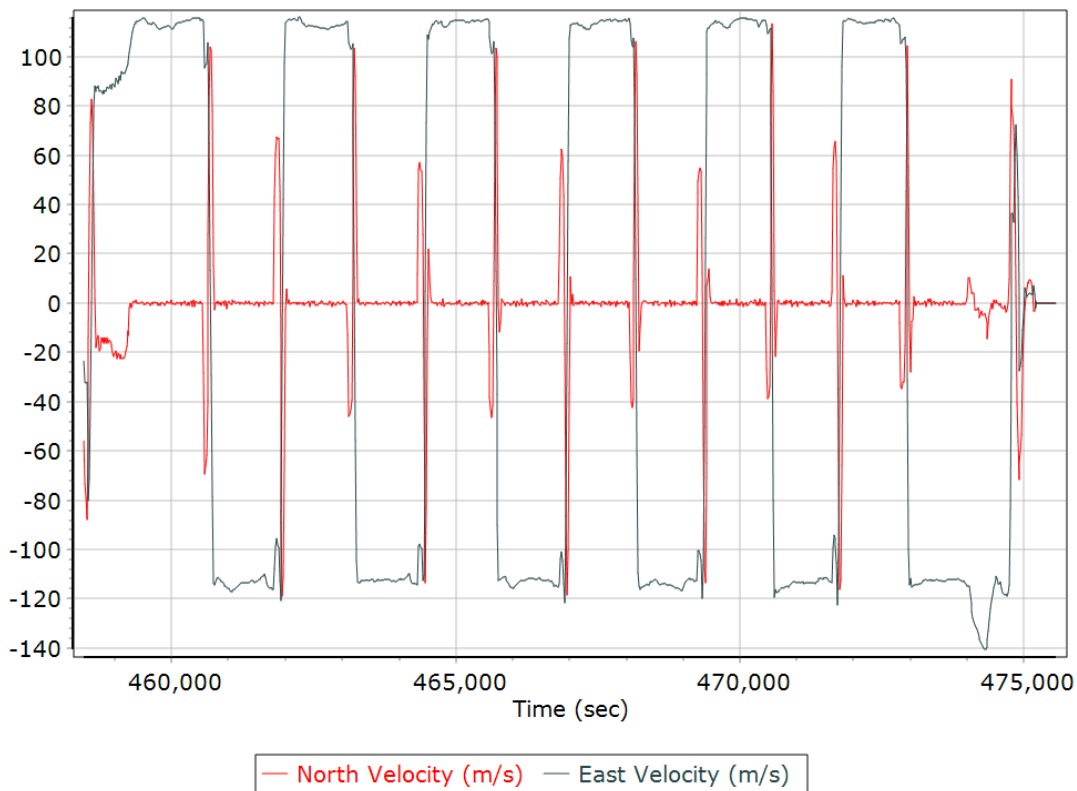
Roll/Pitch



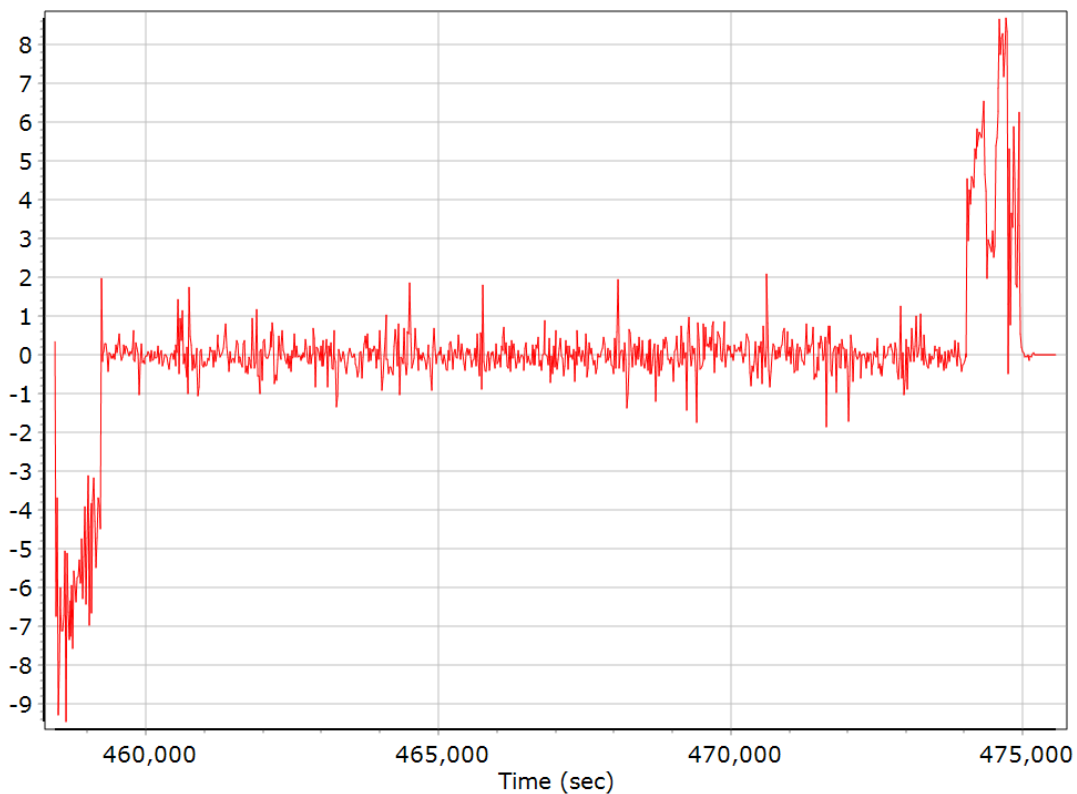
Heading



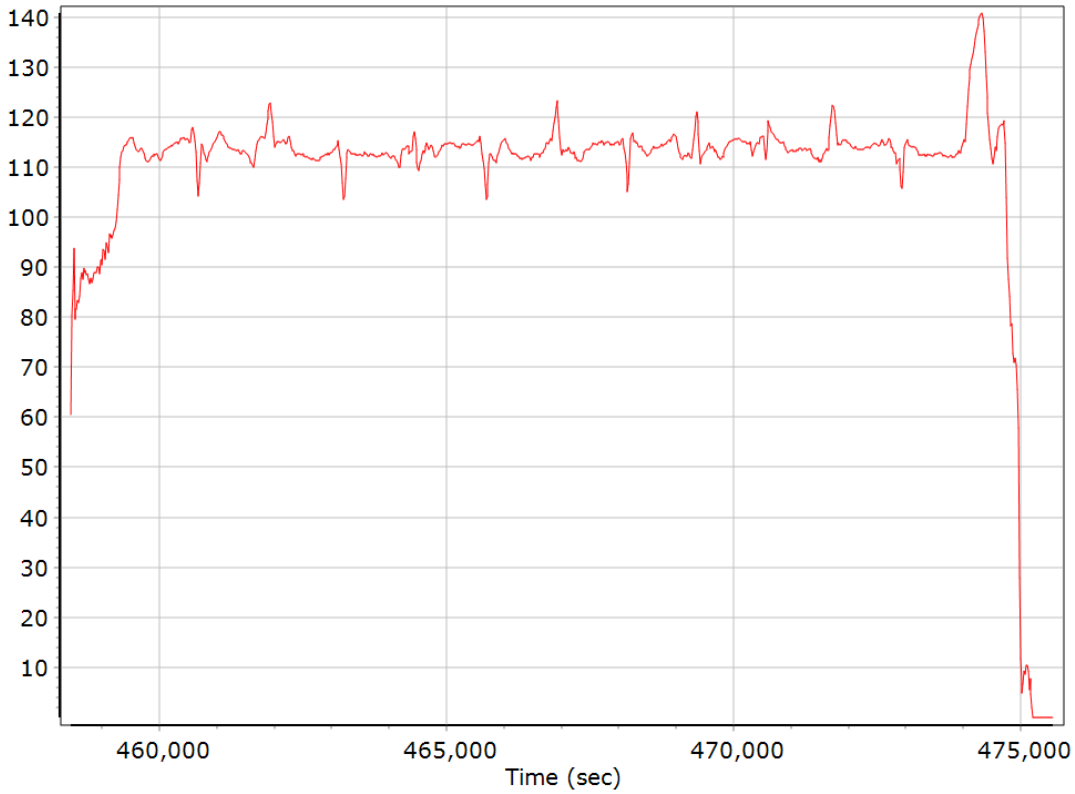
North/East Velocity



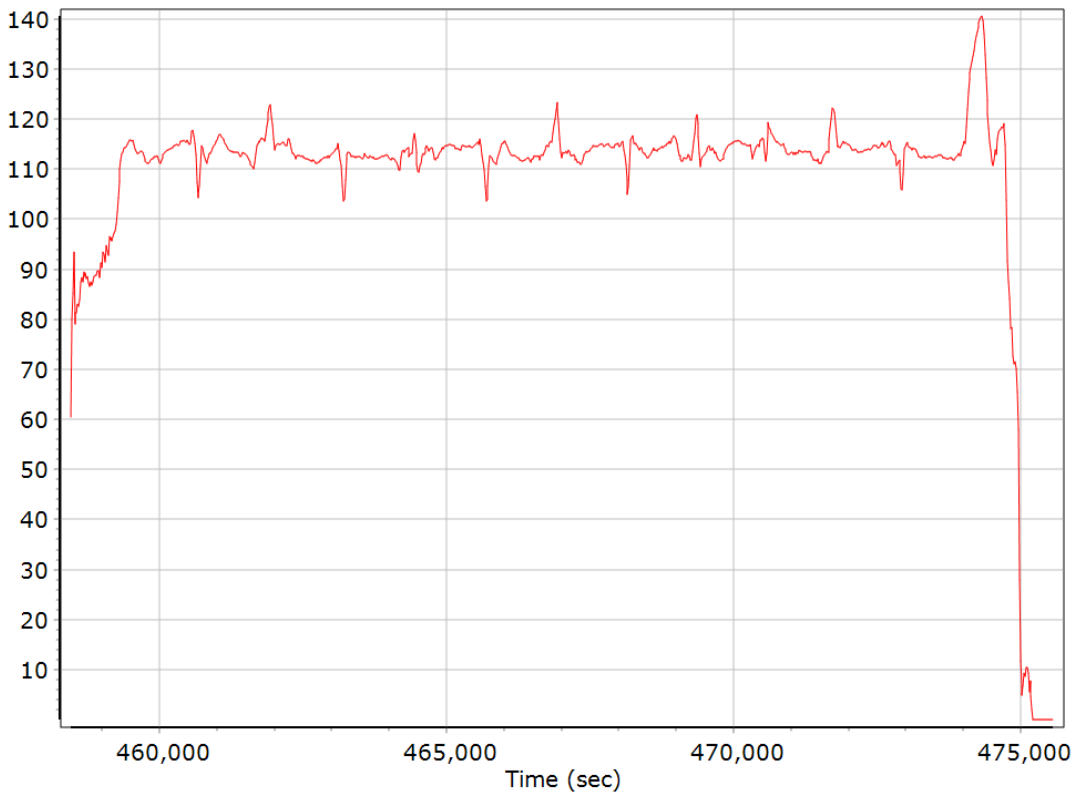
Down Velocity



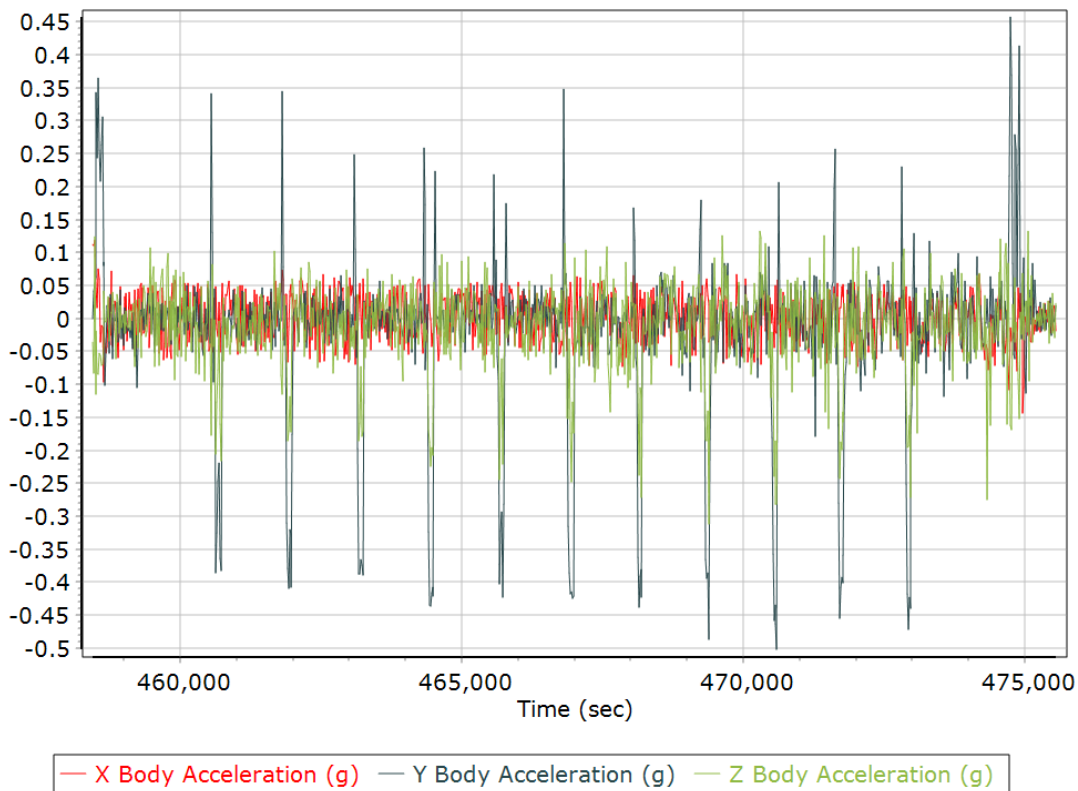
Total Speed



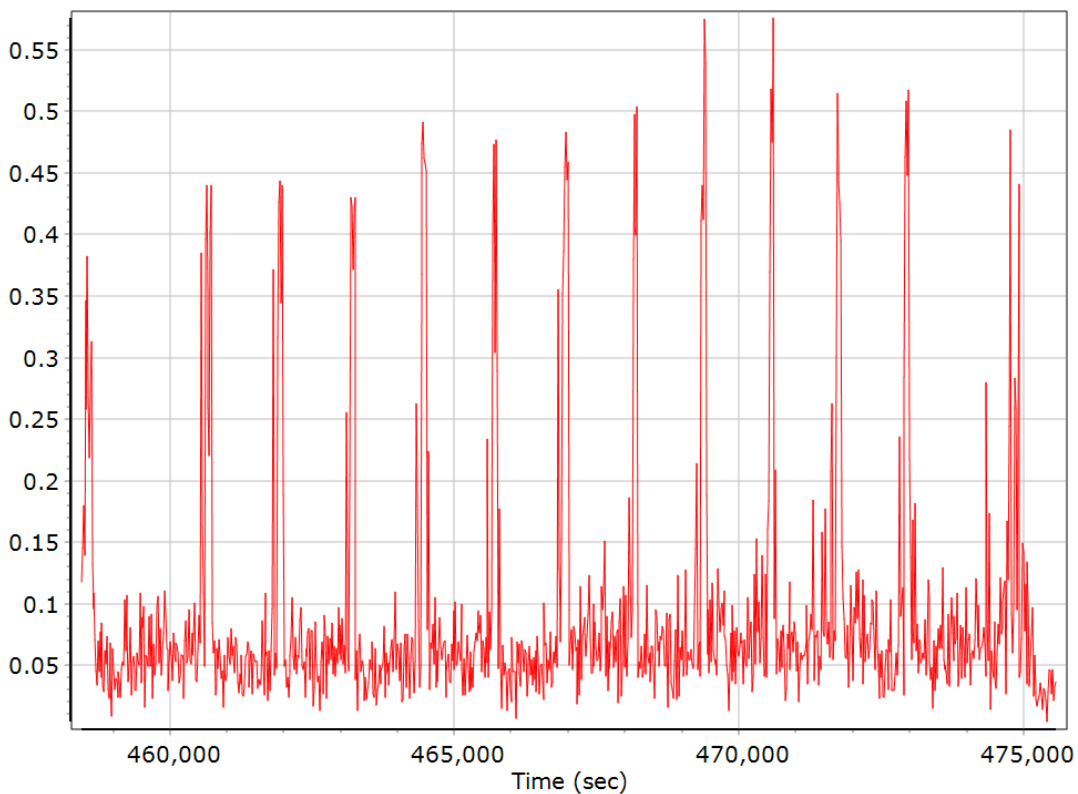
Ground Speed



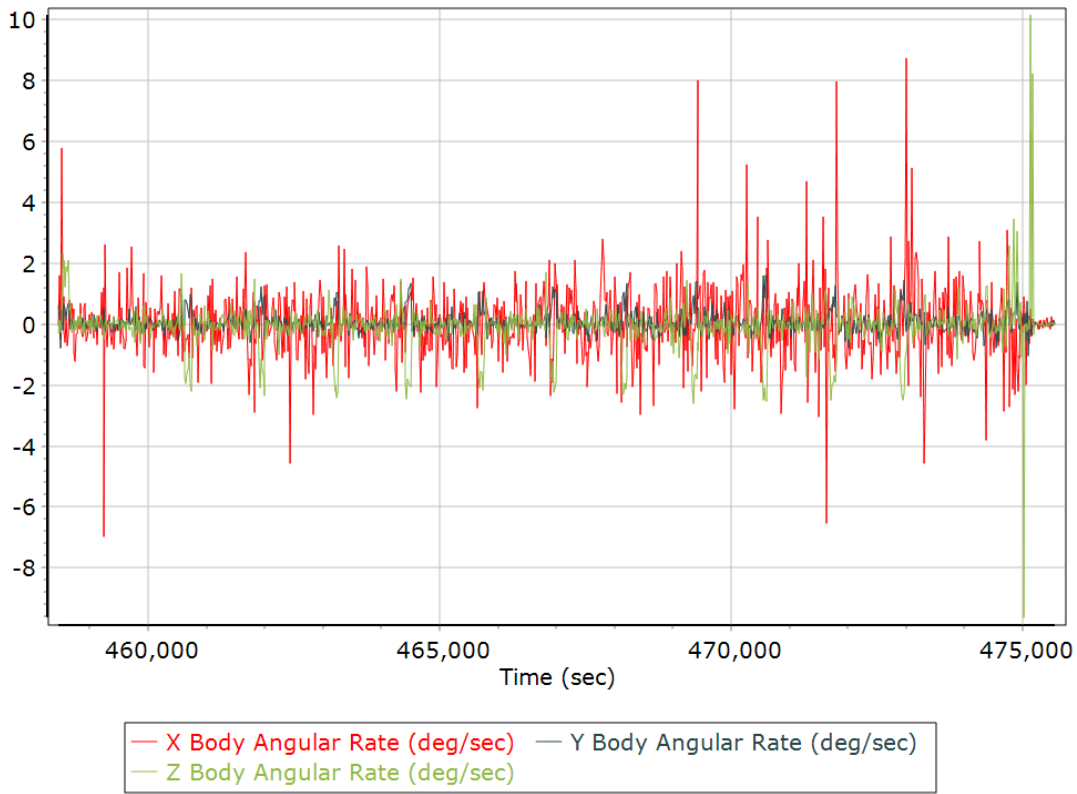
Body Acceleration



Total Body Acceleration

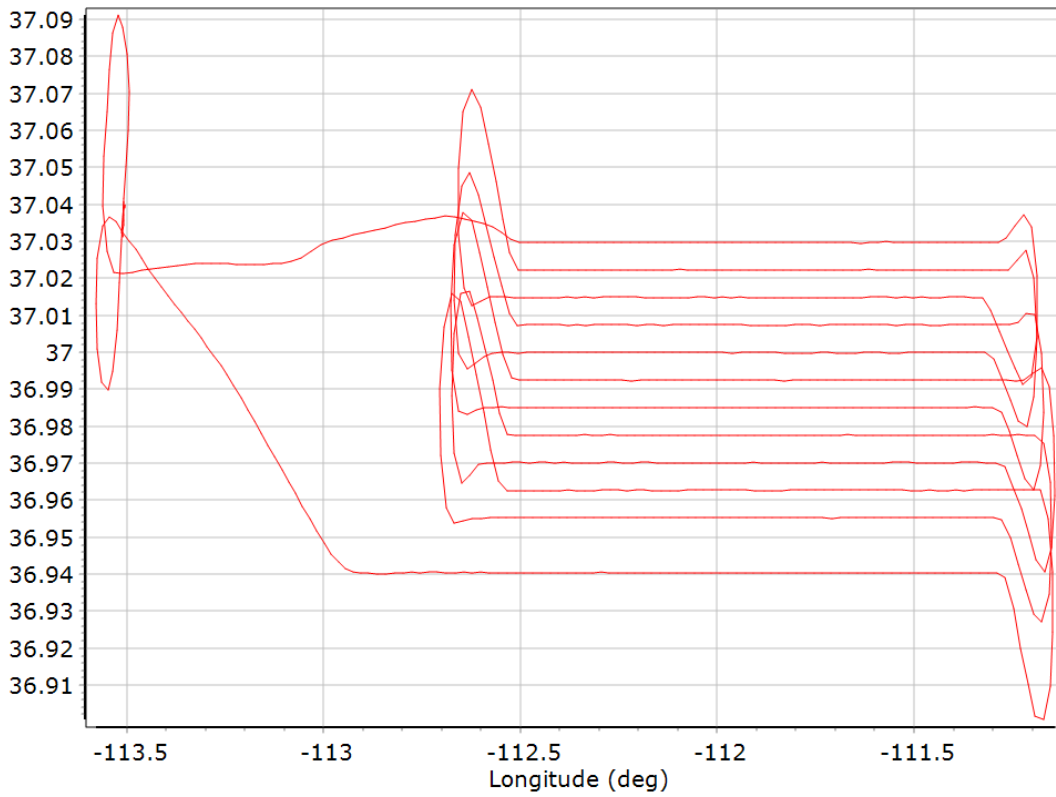


Body Angular Rate

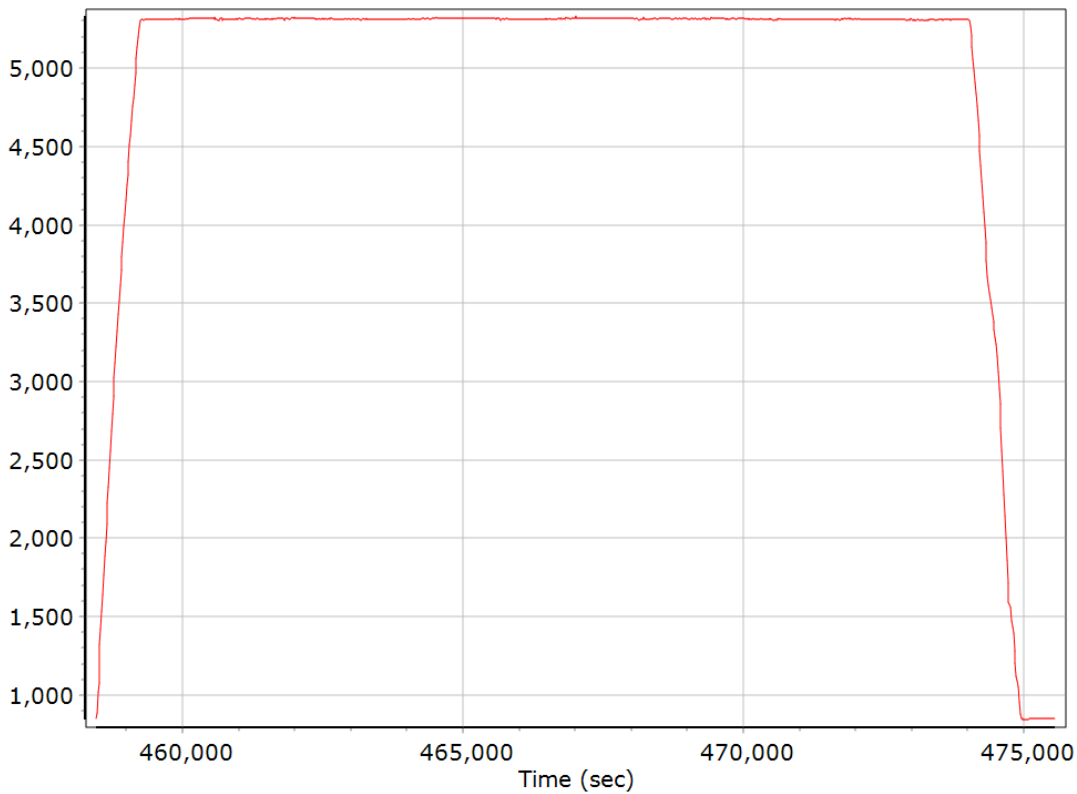


Forward Processed Trajectory Information

Top View



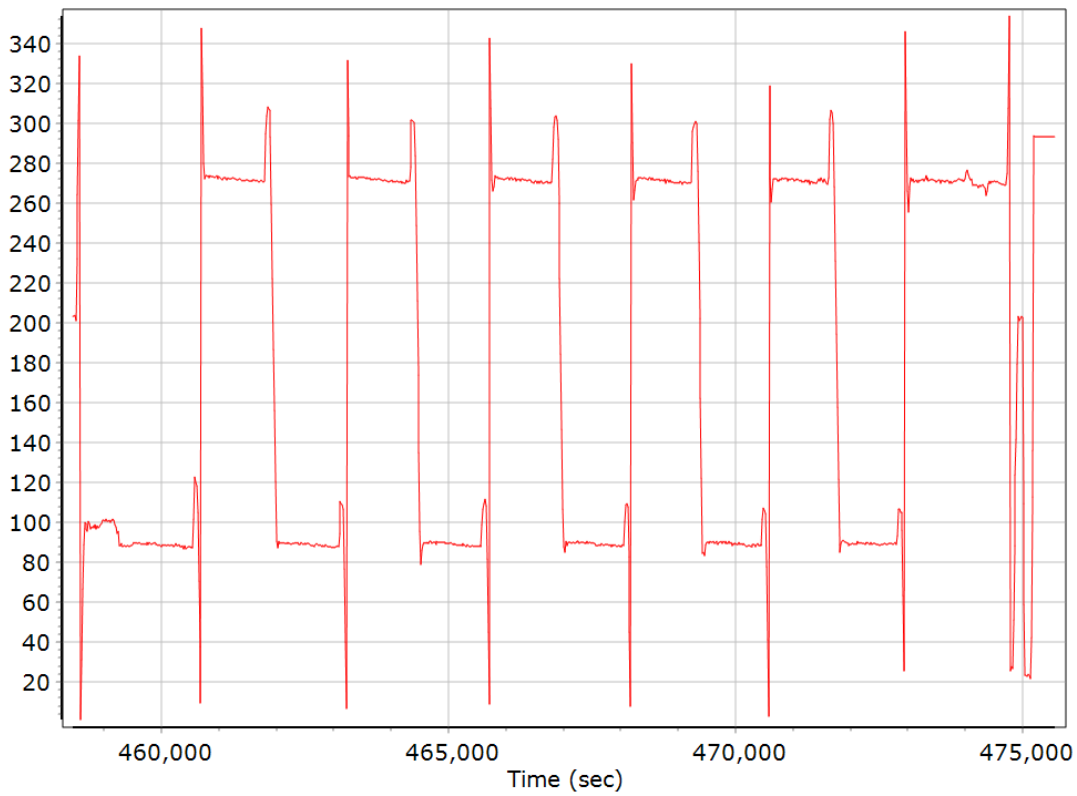
Altitude



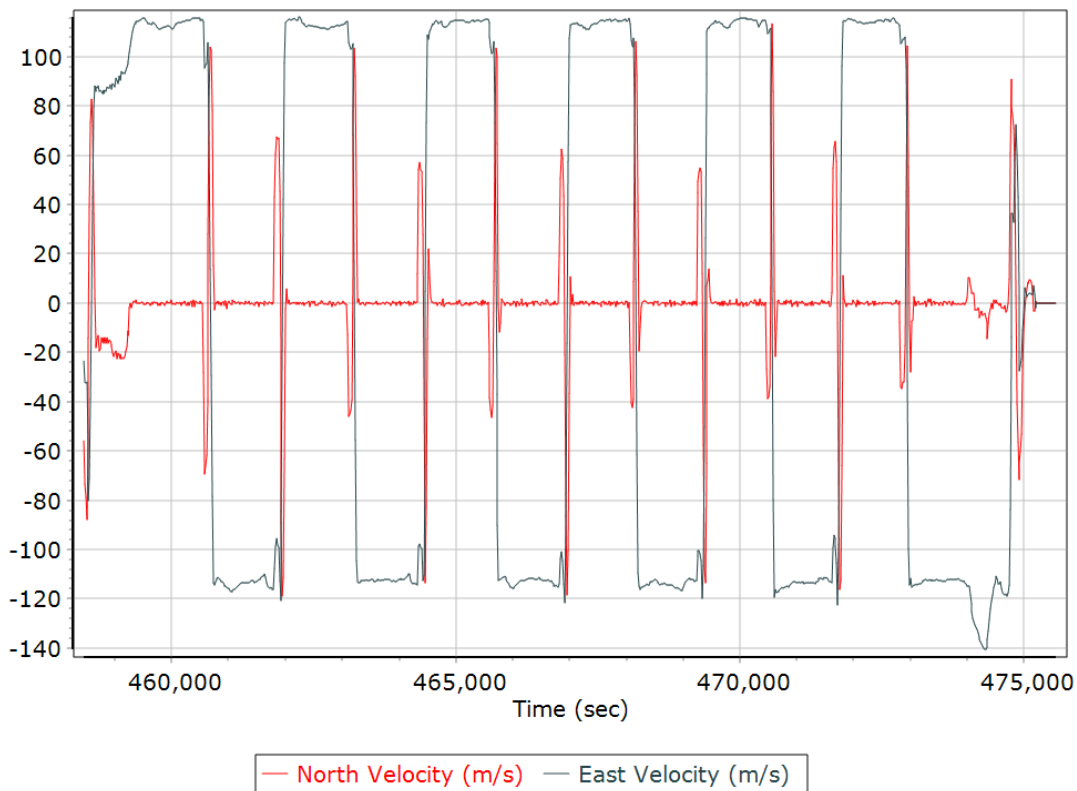
Roll/Pitch



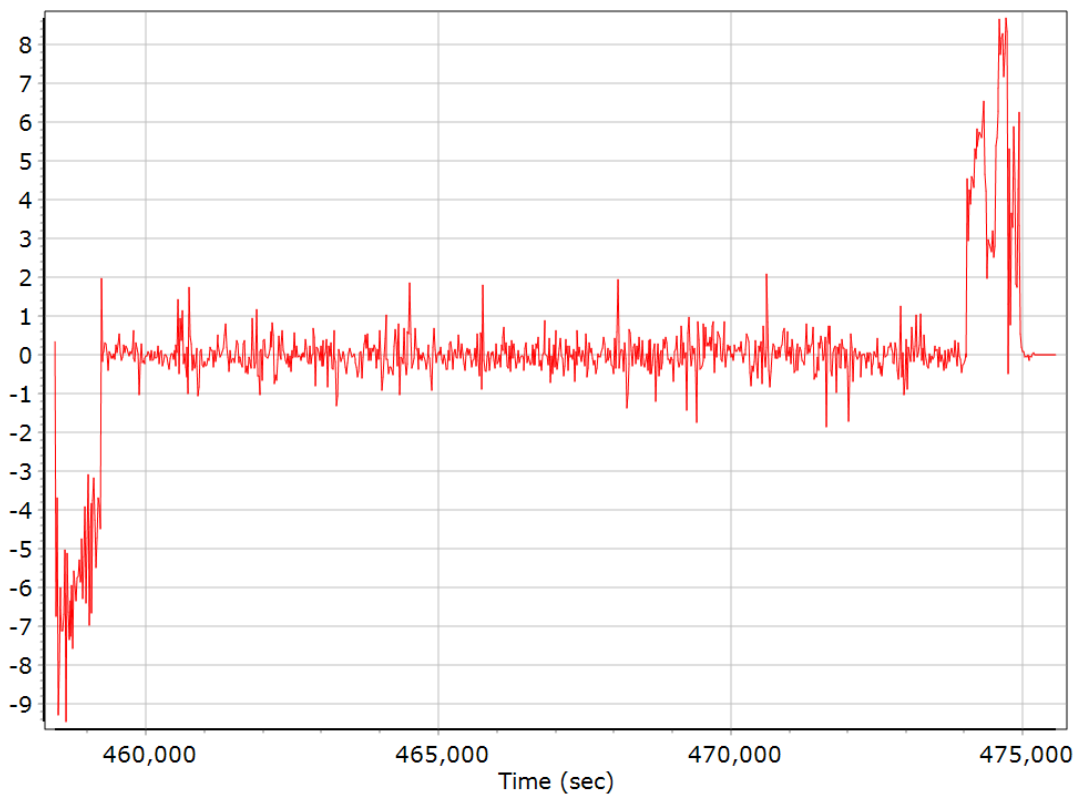
Heading



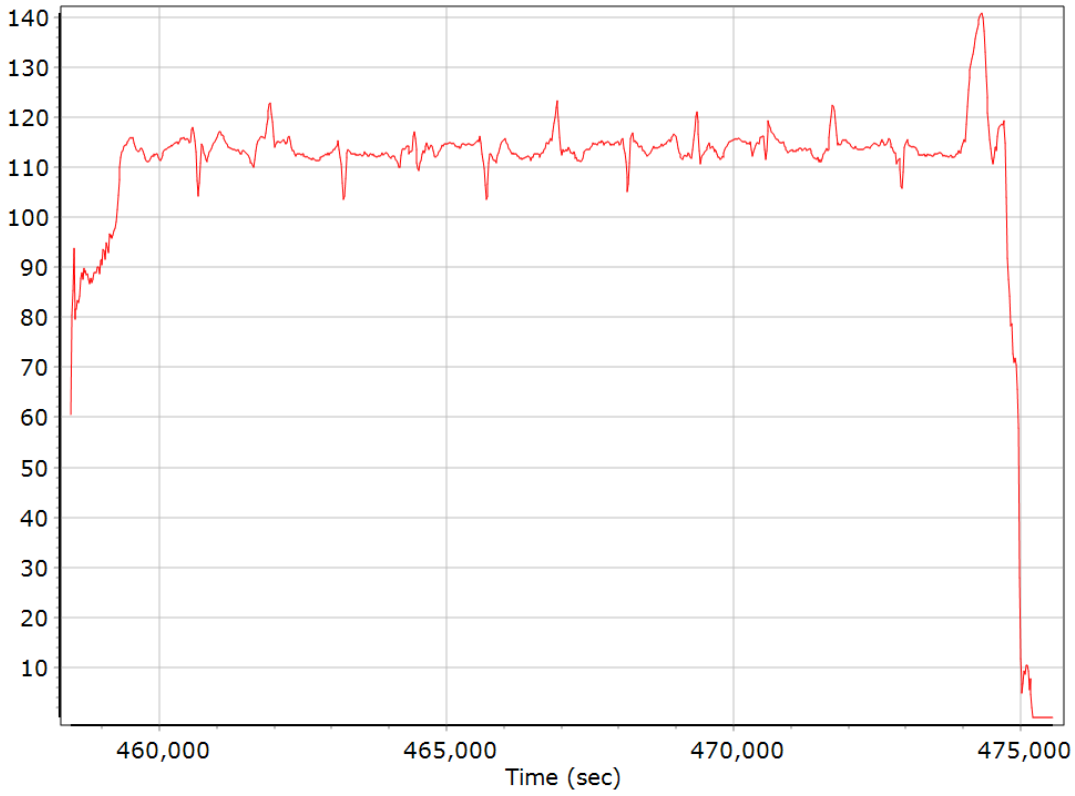
North/East Velocity



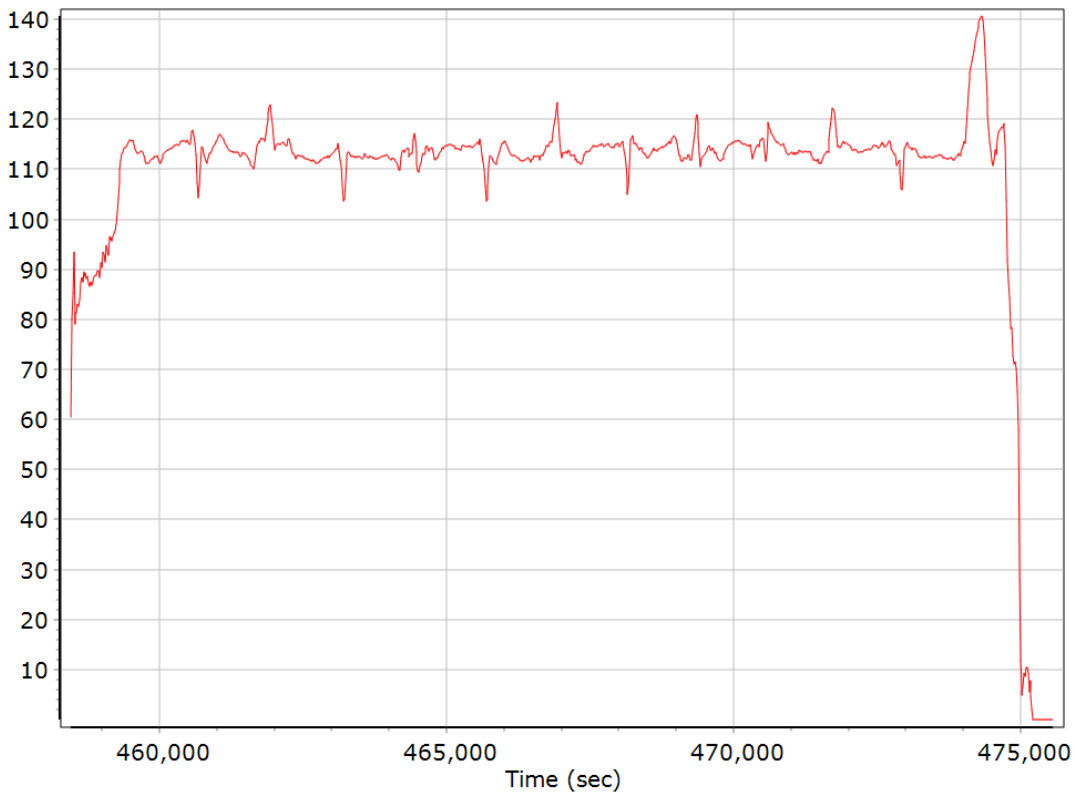
Down Velocity



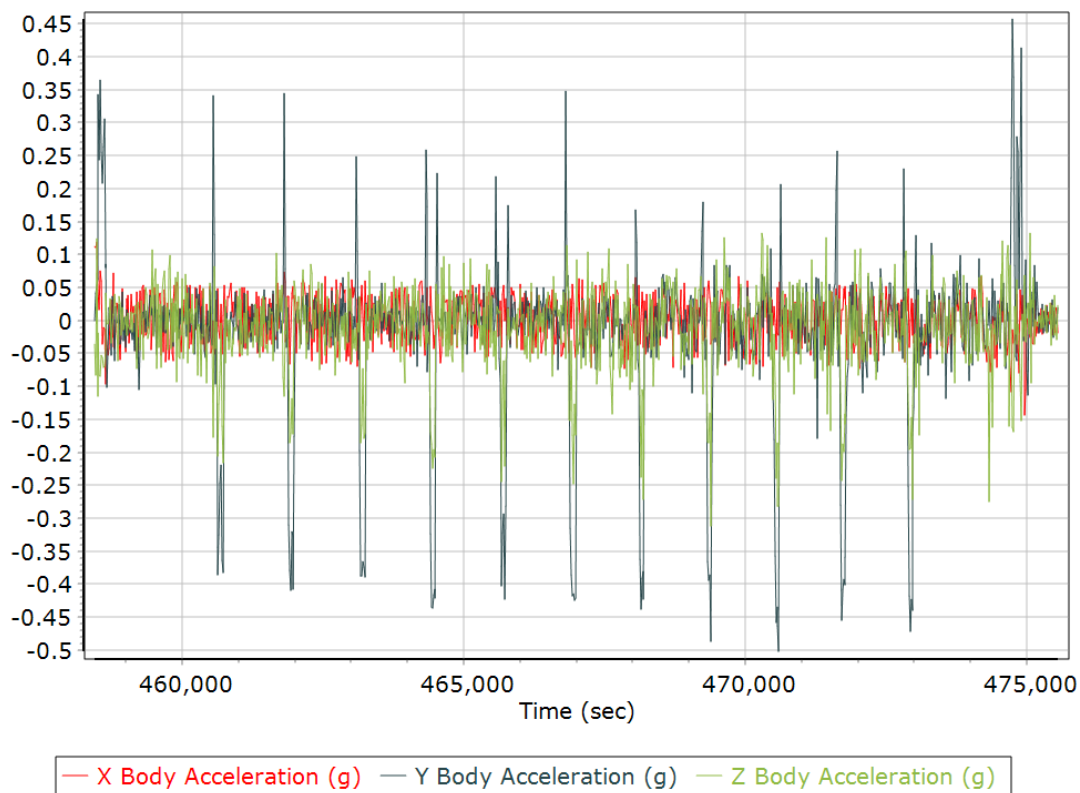
Total Speed



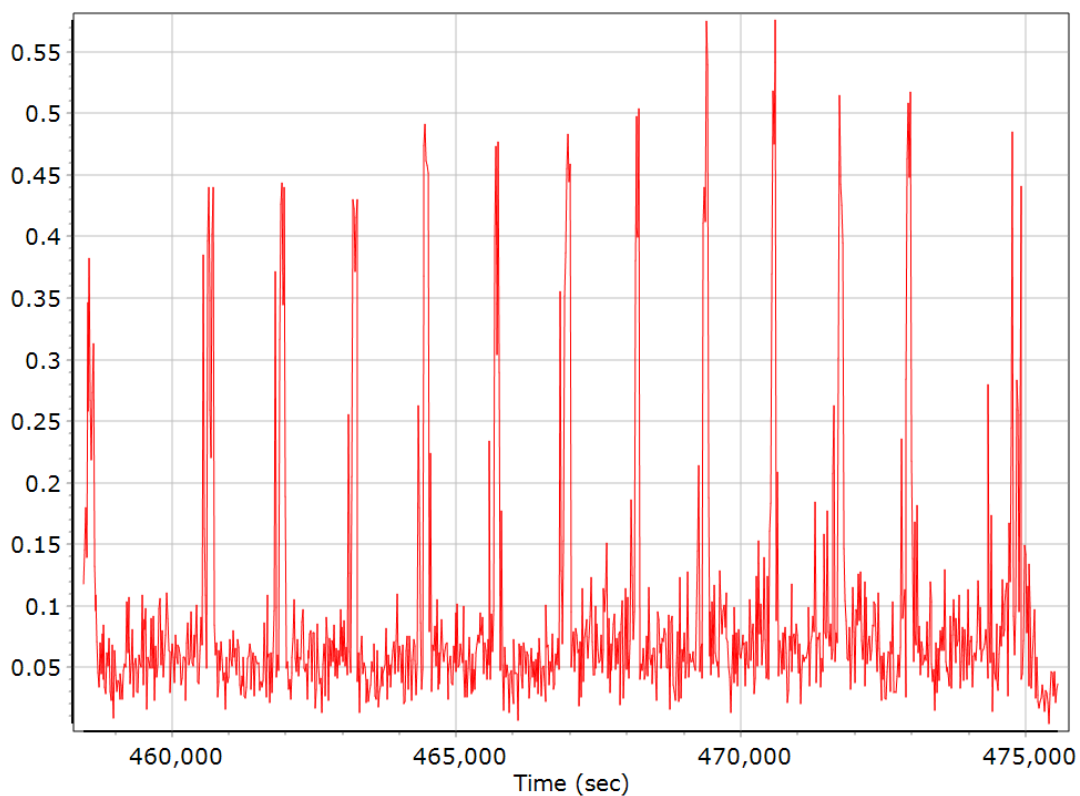
Ground Speed



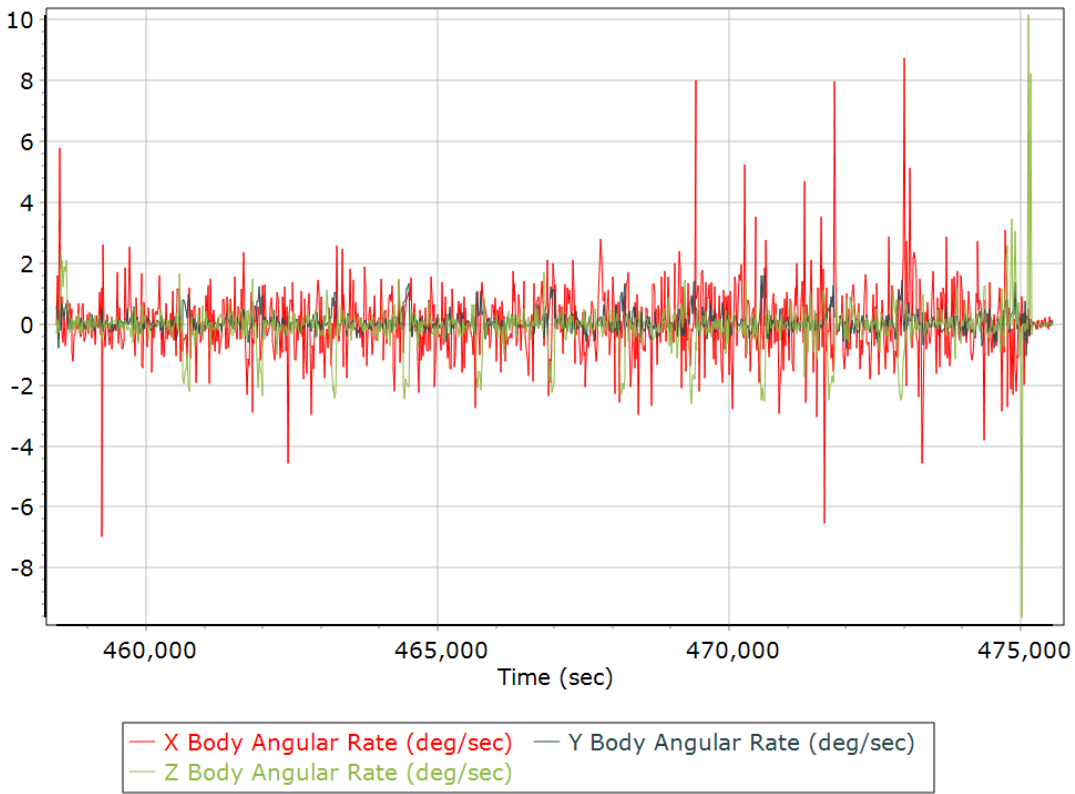
Body Acceleration



Total Body Acceleration



Body Angular Rate

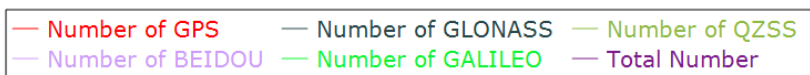
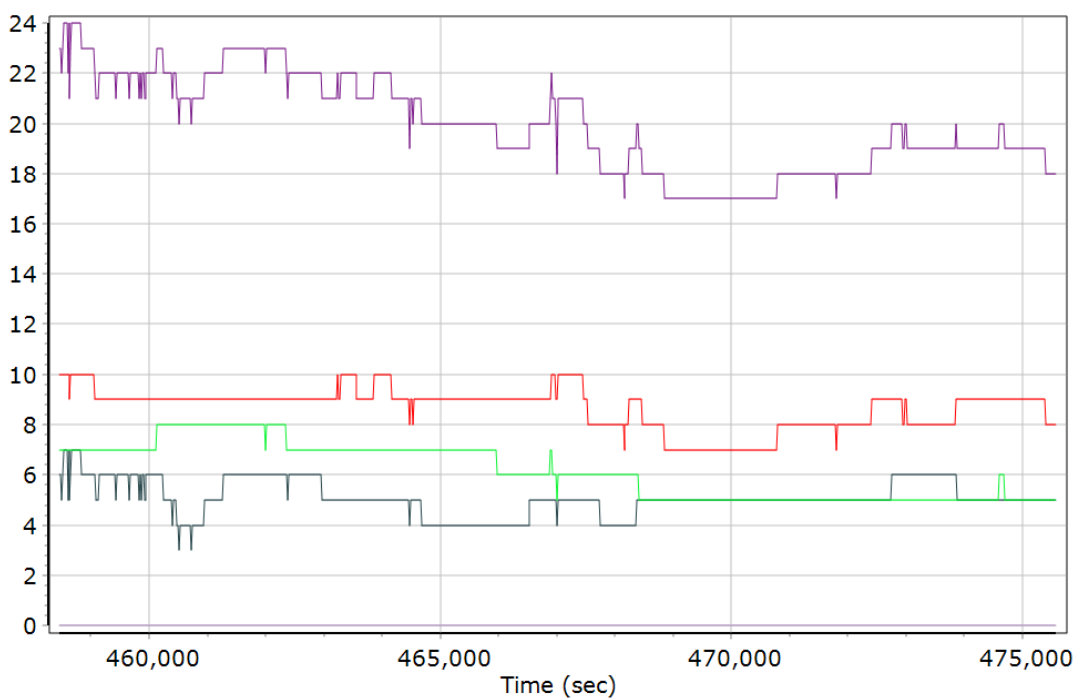


GNSS QC

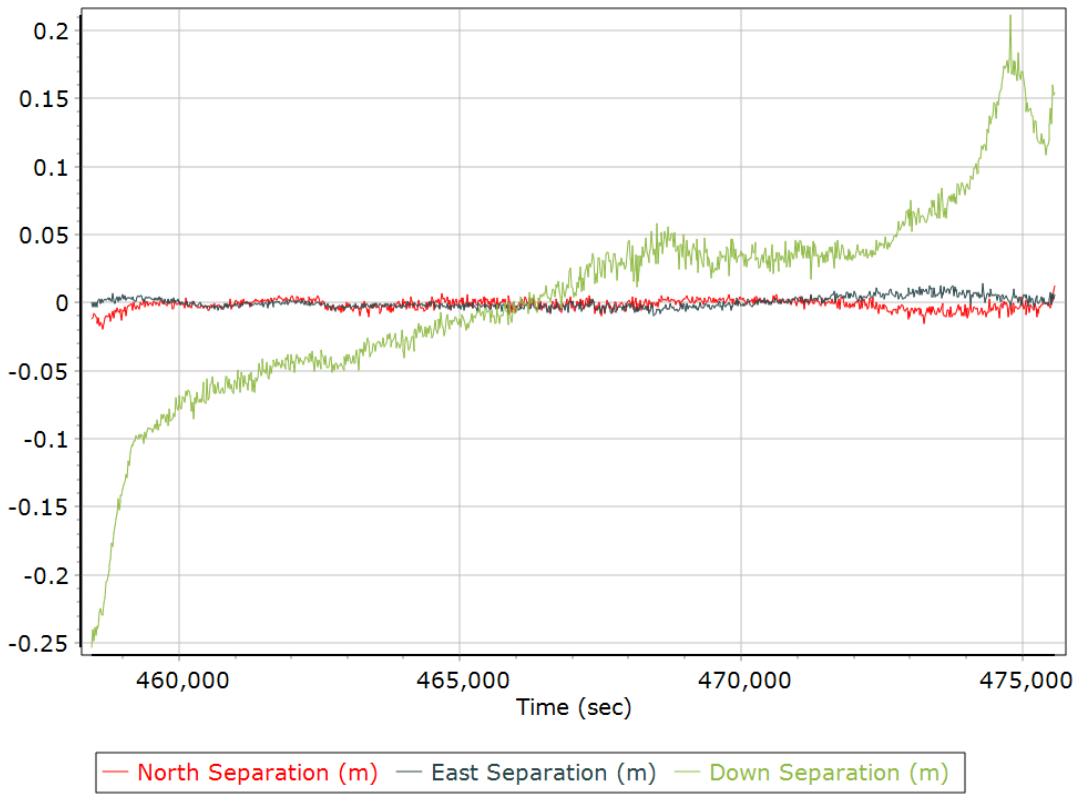
GNSS QC Statistics

Statistics	Min	Max	Mean
Baseline length (km)	0.00	0.00	
Number of GPS SV	7	10	9
Number of GLONASS SV	0	7	5
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	20
PDOP	1.03	1.71	1.21
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

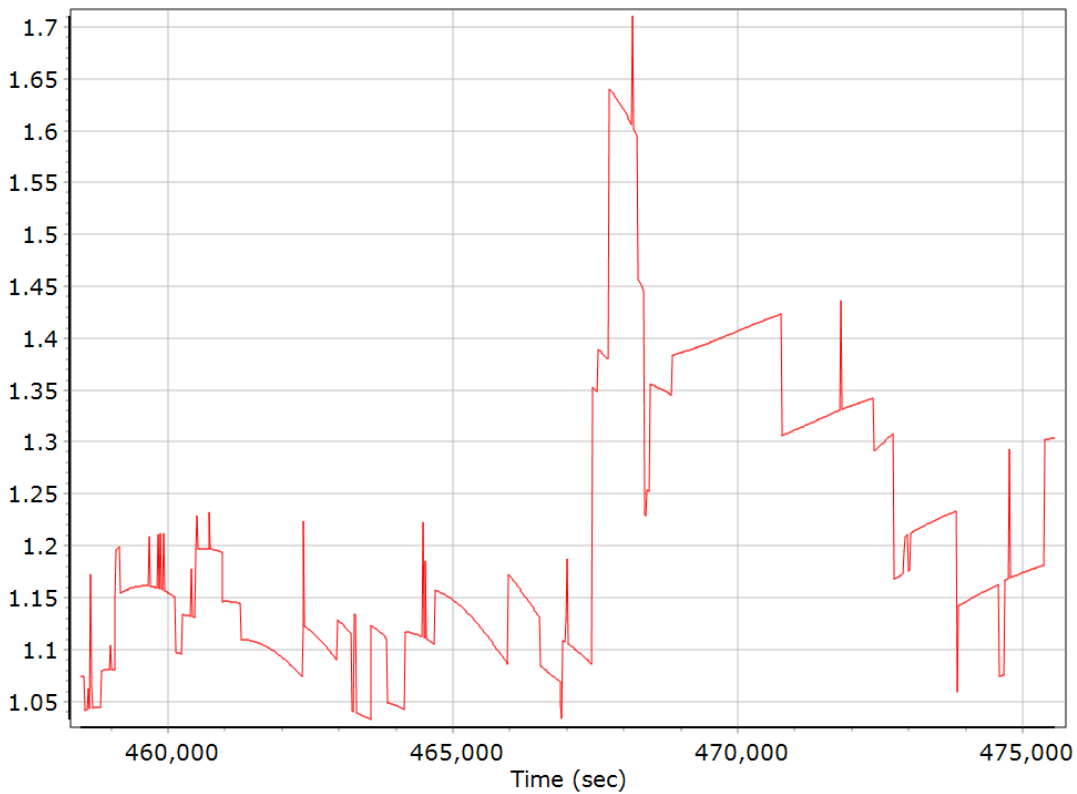
Num SVs in solution



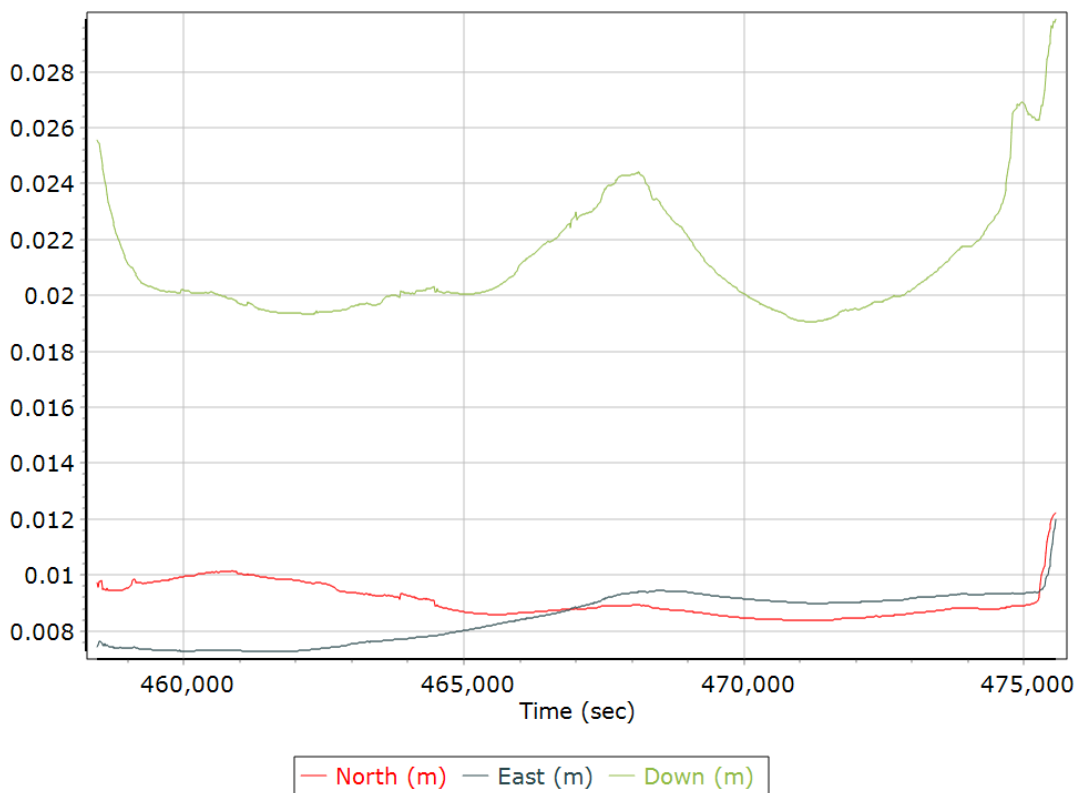
Forward/Reverse Separation



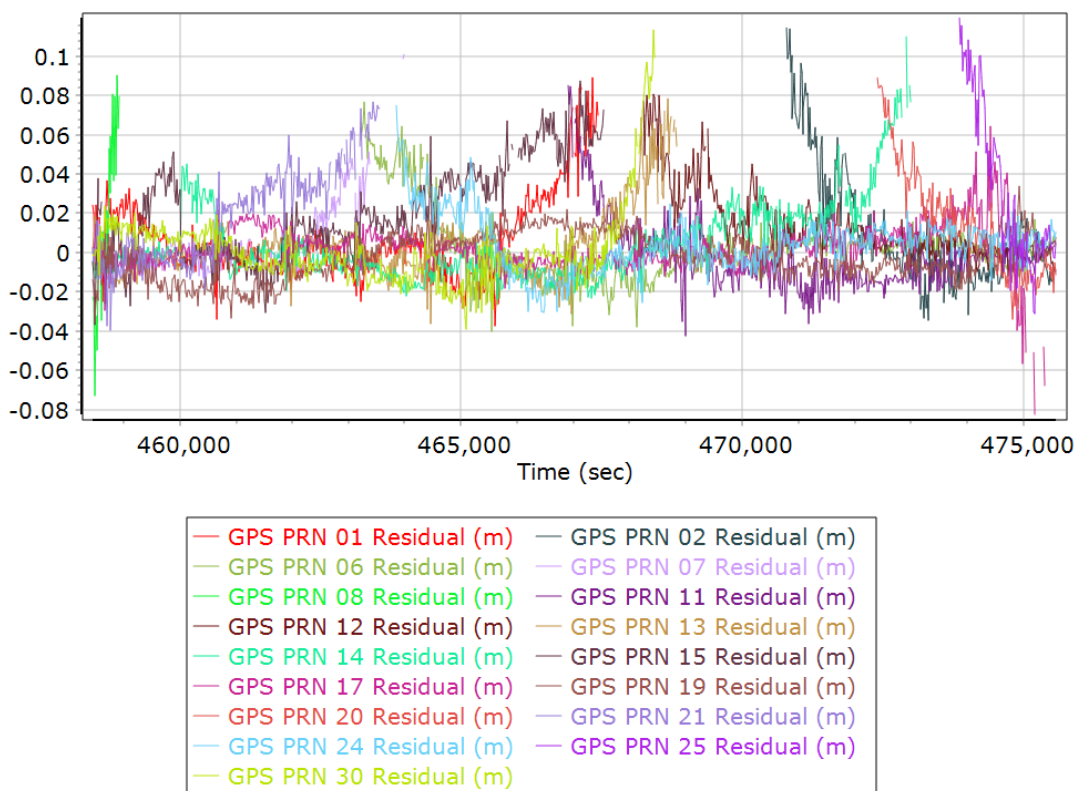
PDOP



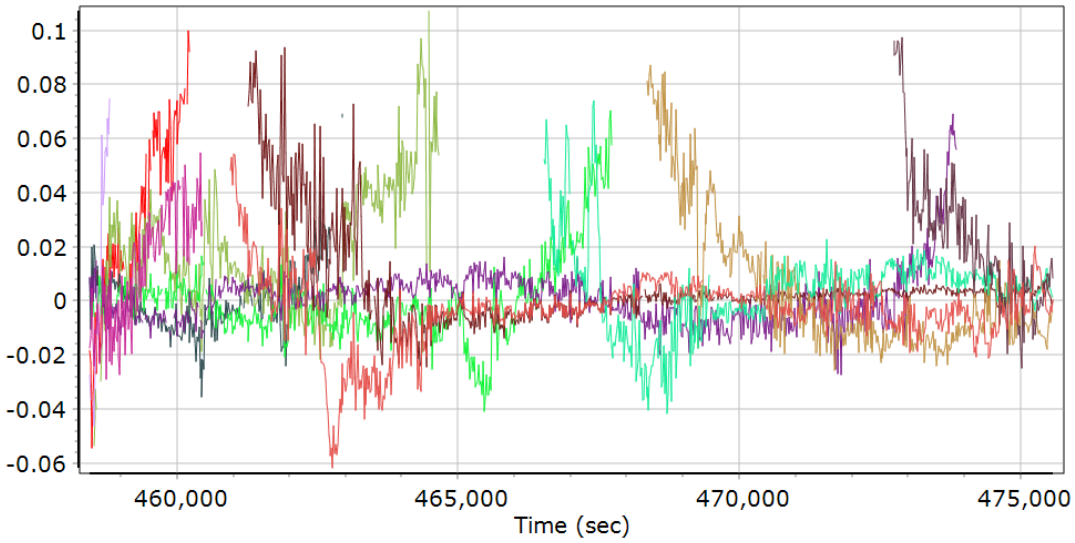
Estimated Position Accuracy



GPS Residuals

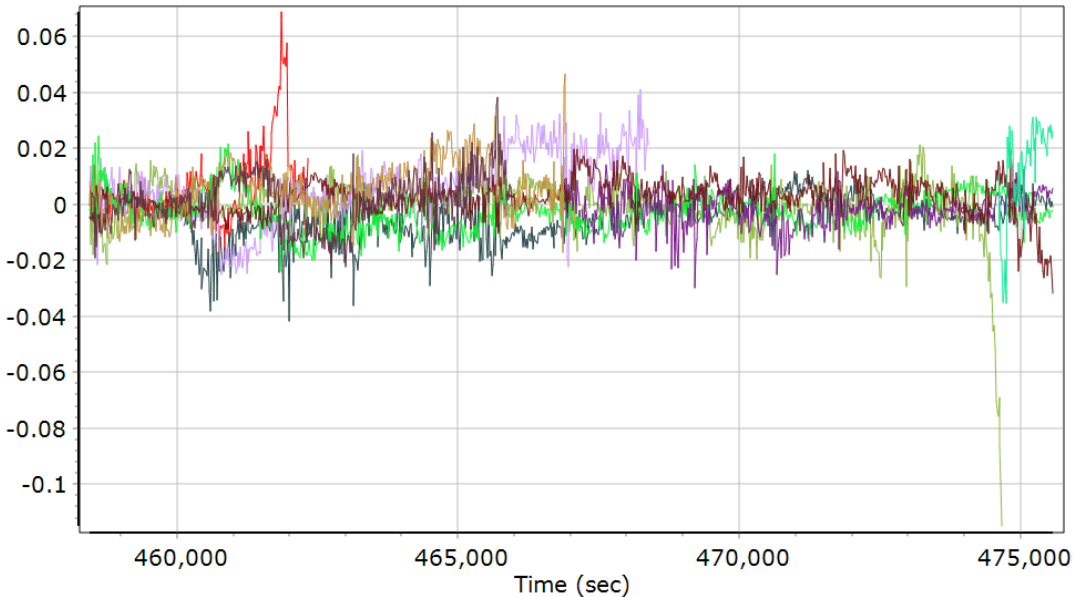


GLONASS Residuals



- | | |
|---------------------------|---------------------------|
| — GLONASS 02 Residual (m) | — GLONASS 03 Residual (m) |
| — GLONASS 04 Residual (m) | — GLONASS 11 Residual (m) |
| — GLONASS 12 Residual (m) | — GLONASS 13 Residual (m) |
| — GLONASS 14 Residual (m) | — GLONASS 15 Residual (m) |
| — GLONASS 17 Residual (m) | — GLONASS 18 Residual (m) |
| — GLONASS 21 Residual (m) | — GLONASS 23 Residual (m) |
| — GLONASS 24 Residual (m) | |

GALILEO Residuals



- | | |
|---------------------------|---------------------------|
| — GALILEO 07 Residual (m) | — GALILEO 13 Residual (m) |
| — GALILEO 15 Residual (m) | — GALILEO 19 Residual (m) |
| — GALILEO 21 Residual (m) | — GALILEO 26 Residual (m) |
| — GALILEO 27 Residual (m) | — GALILEO 30 Residual (m) |
| — GALILEO 33 Residual (m) | — GALILEO 34 Residual (m) |

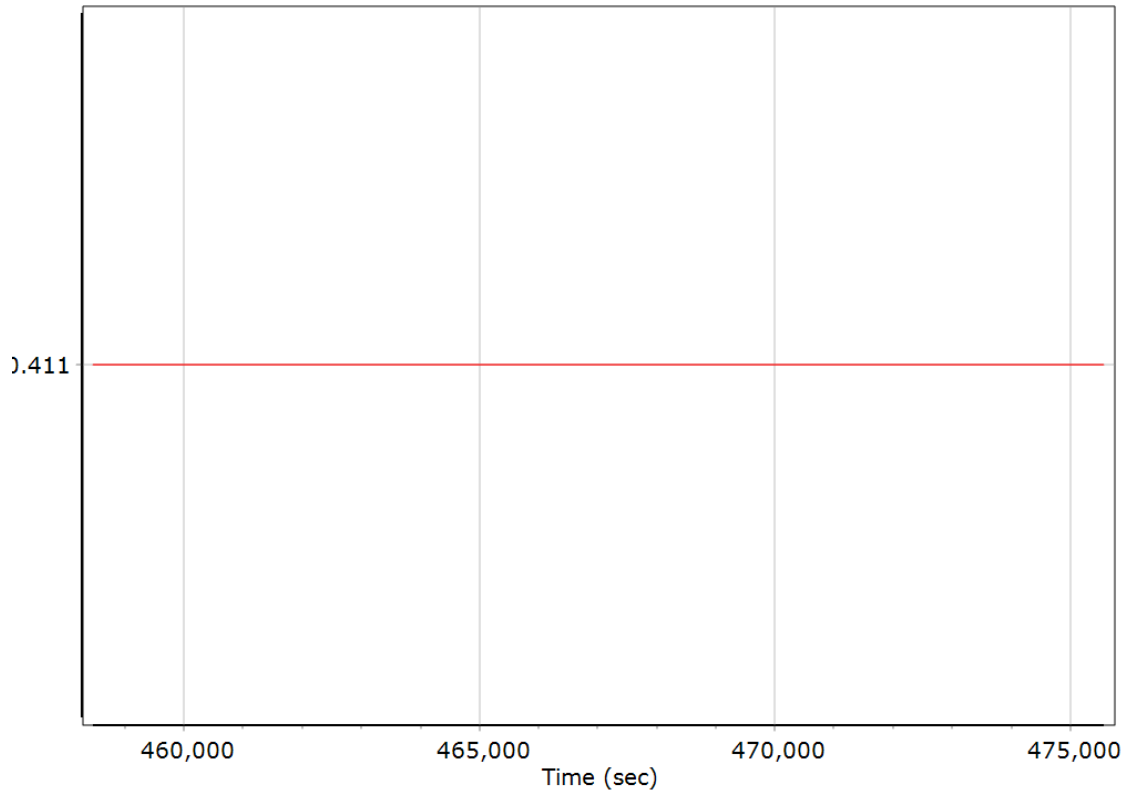
GNSS-Inertial Processor Configuration

Processing mode	IN-Fusion PP-RTX		
Stabilized mount	False		
Processing start time	458040.000 (9/2/2022 7:14:00 AM)		
Processing end time	475571.000 (9/2/2022 12:06:11 PM)		
Initial attitude source	Real-Time VNAV/RNAV Attitude		
IMU Sensor Context	Processing with Onboard IMU		
Reference to IMU lever arm (m)	0.000	0.000	0.000
Reference to IMU mounting angles (deg)	0.000	0.000	0.000
Reference to Primary GNSS lever arm (m)	-0.411	-0.283	-1.282
Reference 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

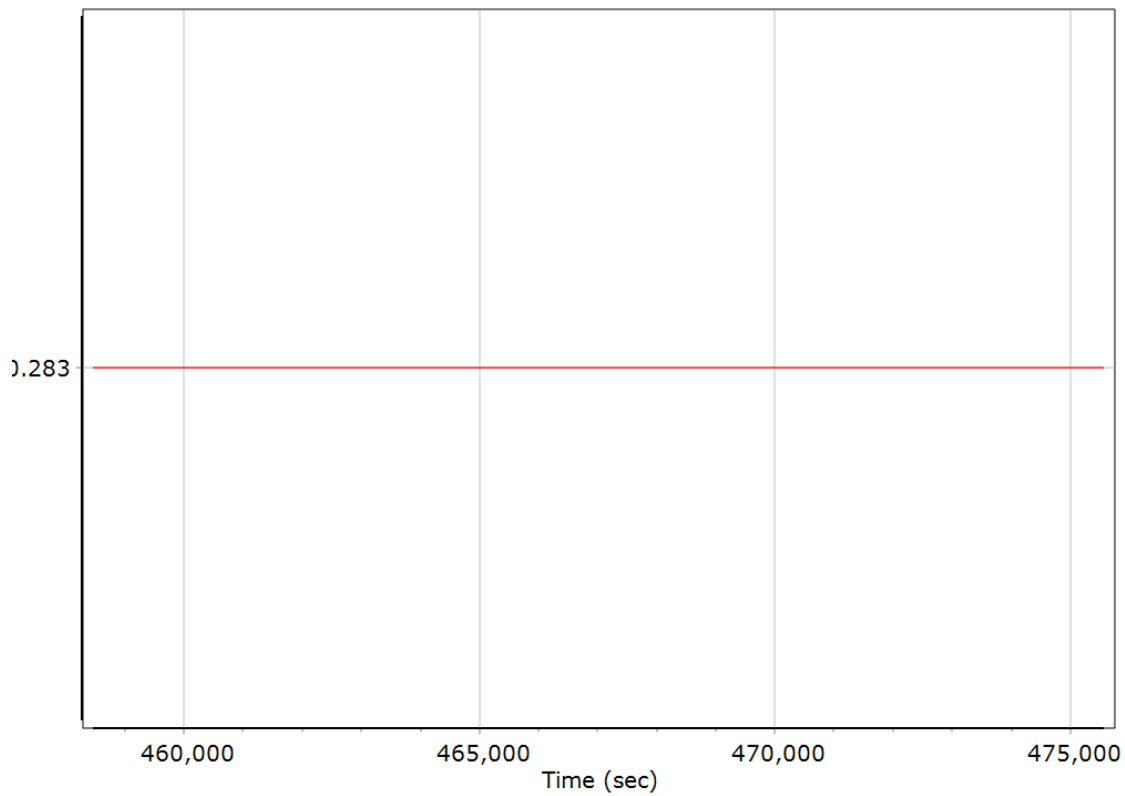
Calibrated Installation Parameters

Reference-Primary GNSS Lever Arm (m)

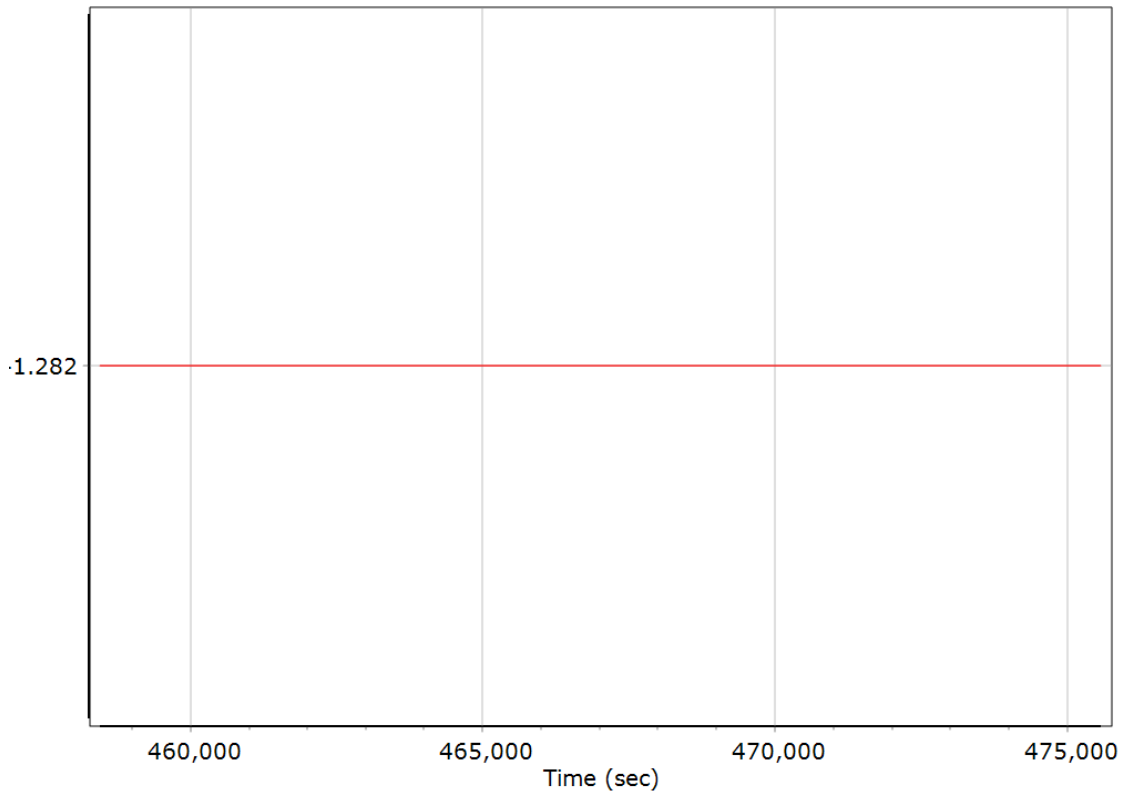
X Reference-Primary GNSS Lever Arm (m)



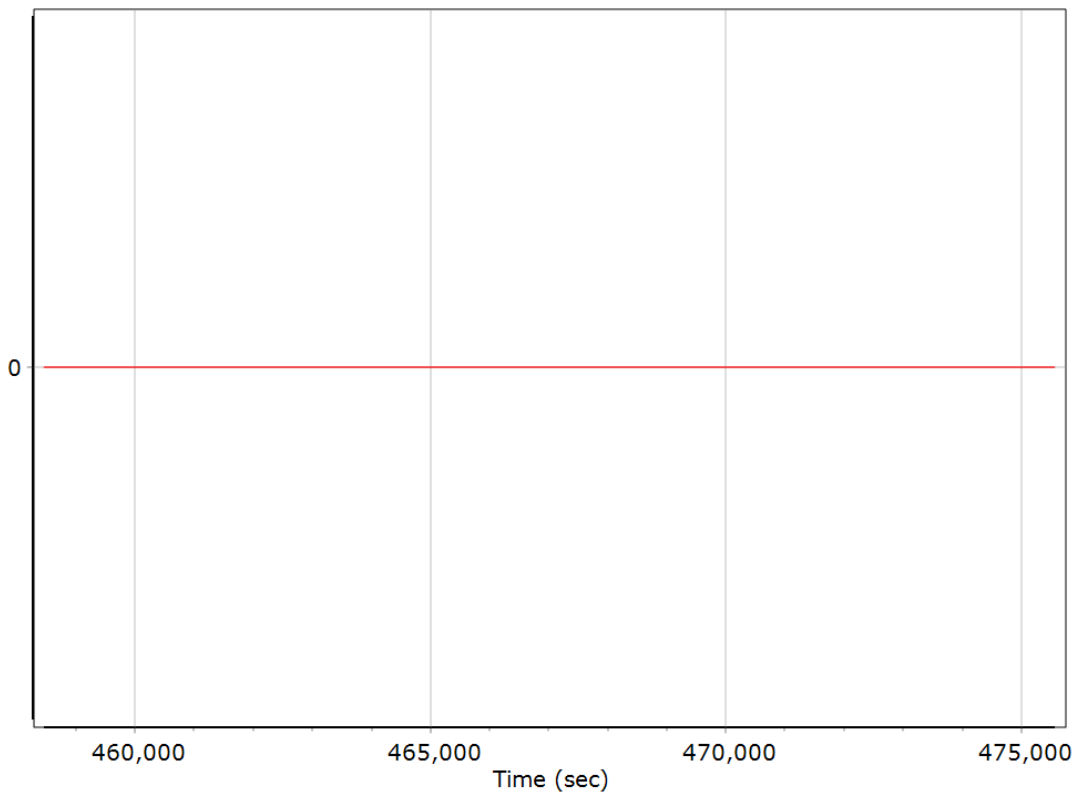
Y Reference-Primary GNSS Lever Arm (m)



Z Reference-Primary GNSS Lever Arm (m)



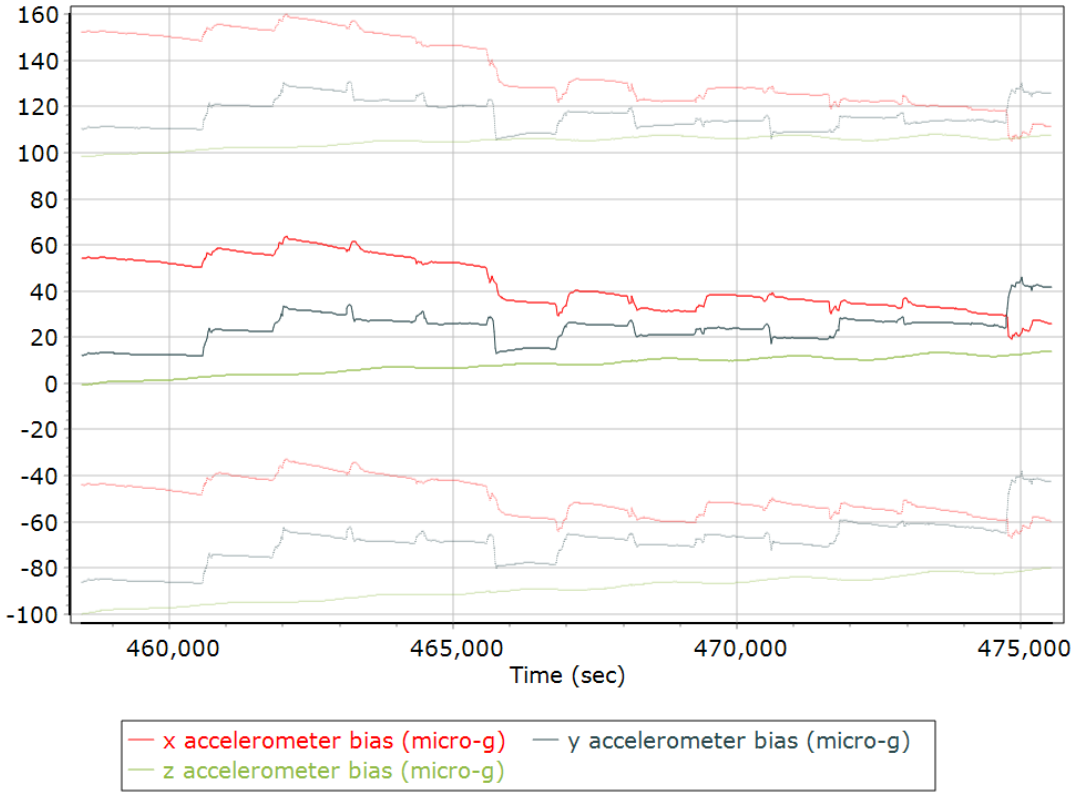
Reference-Primary GNSS Lever Arm Figure of Merit



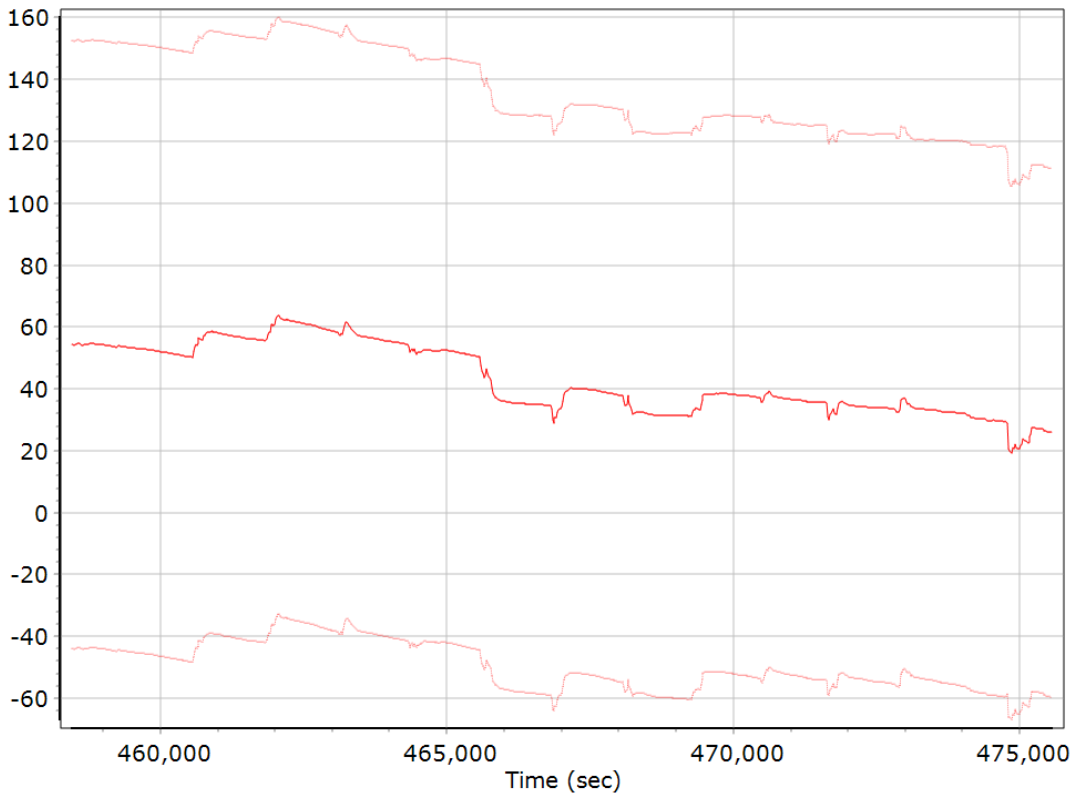
IN-Fusion QC

Forward Processed Estimated Errors, Reference Frame

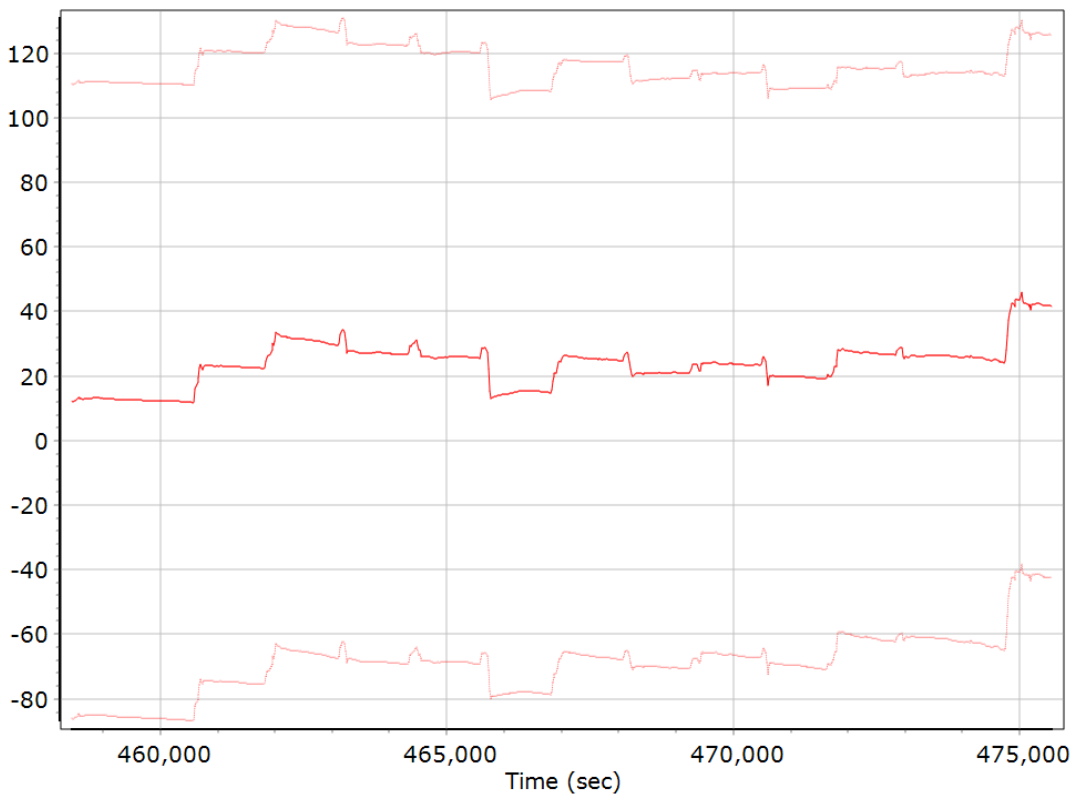
Accelerometer Bias (micro-g)



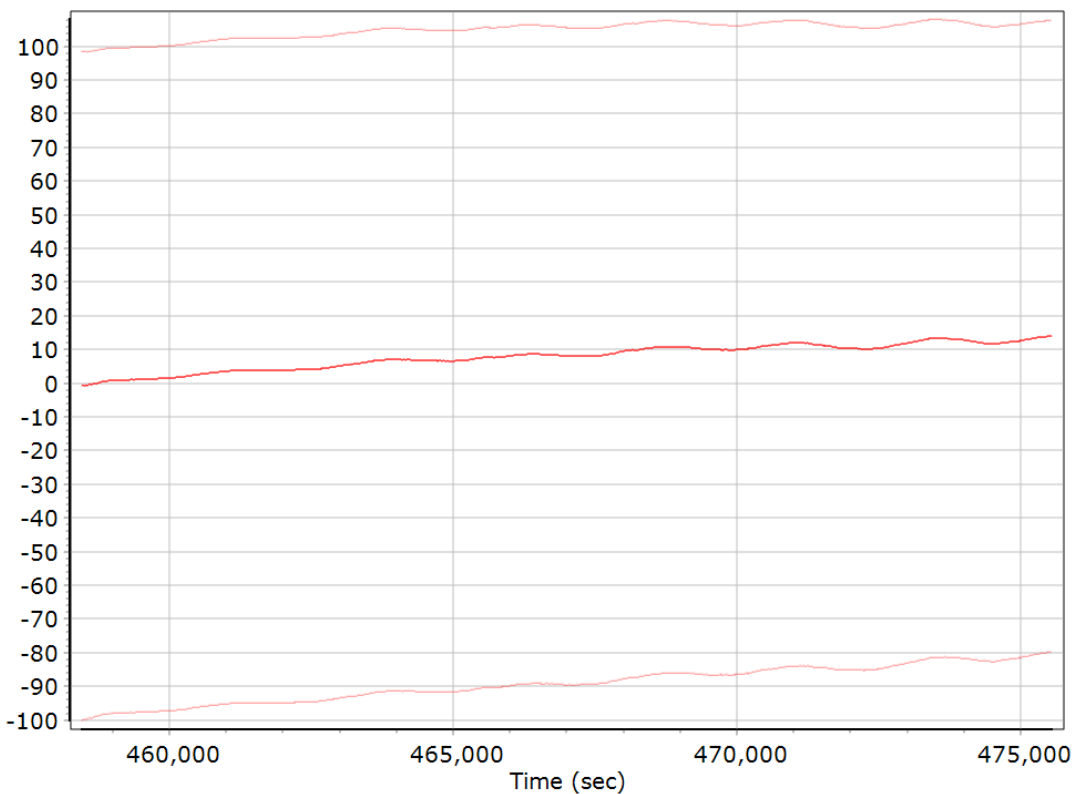
X Accelerometer Bias (micro-g)



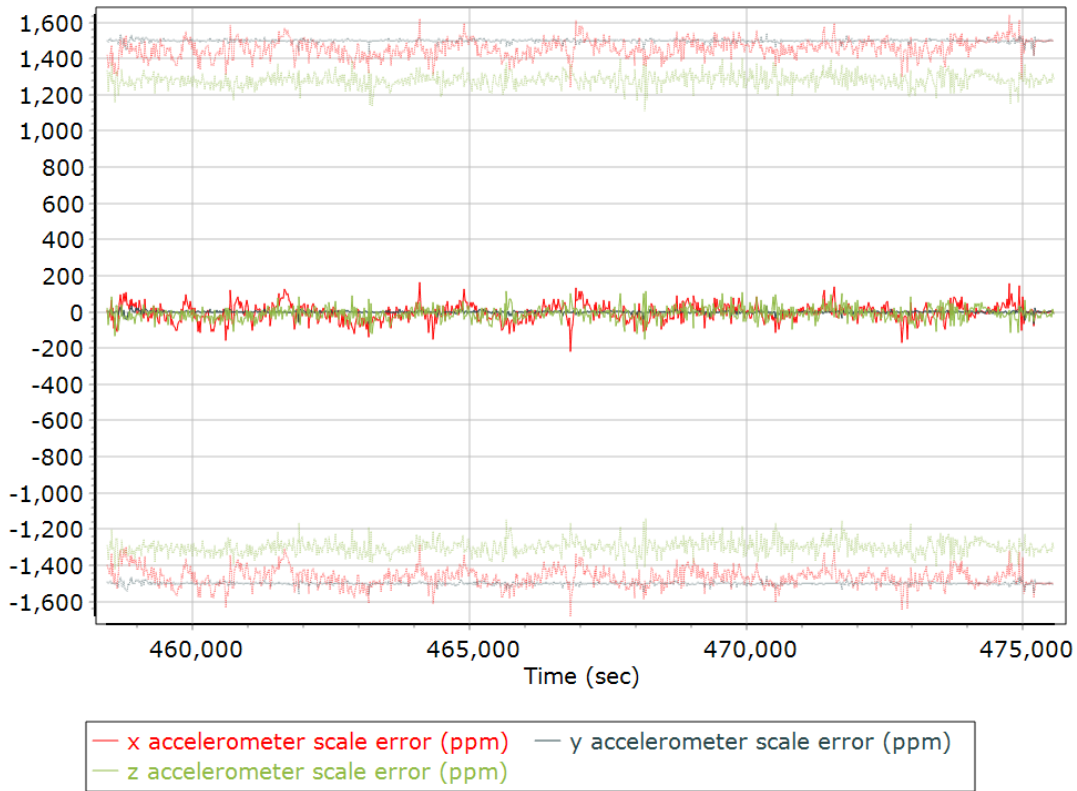
Y Accelerometer Bias (micro-g)



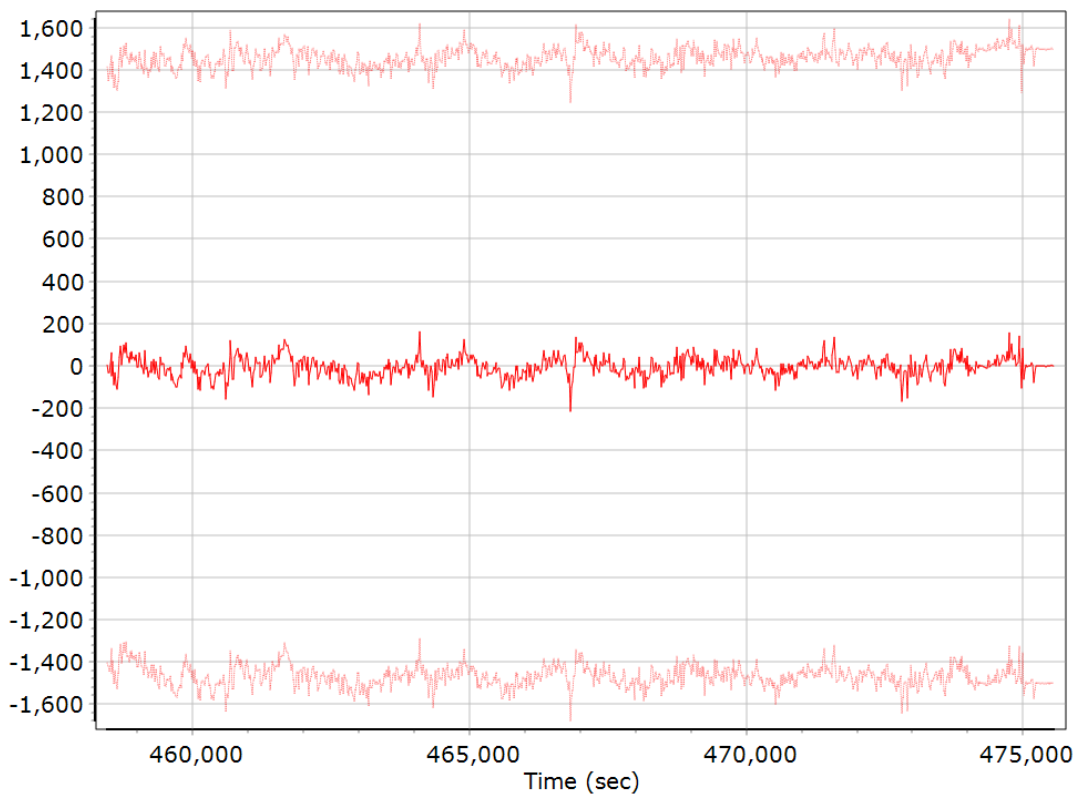
Z Accelerometer Bias (micro-g)



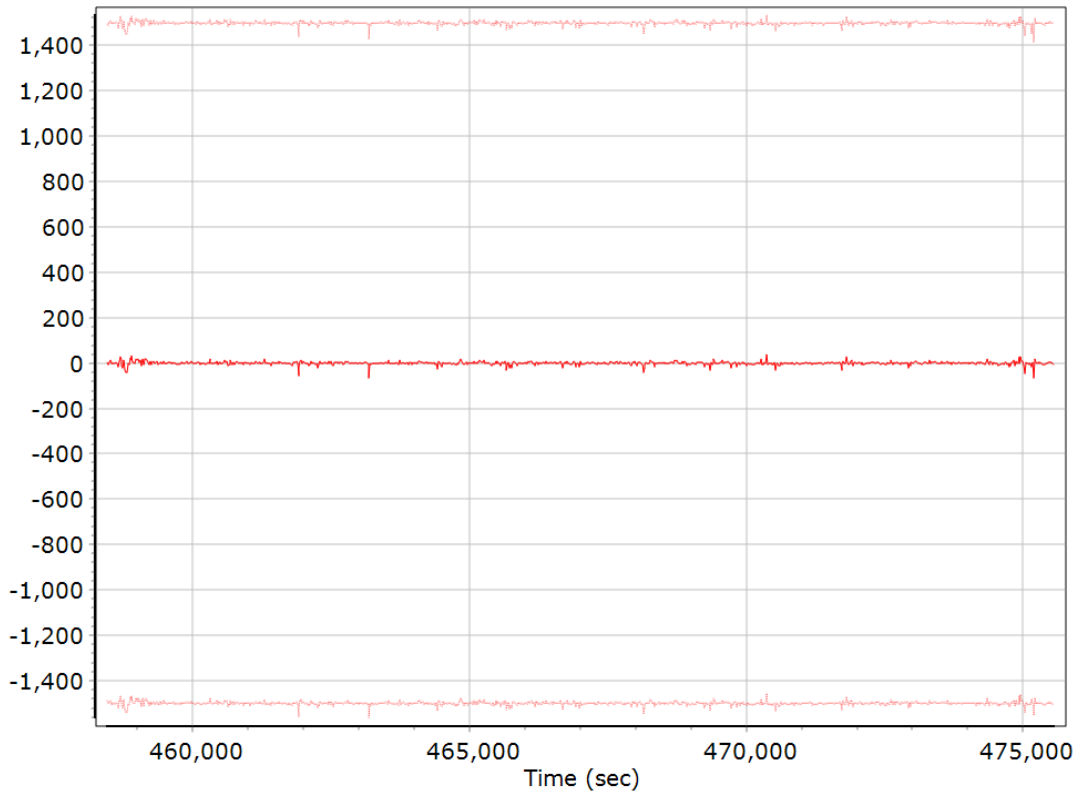
Accelerometer Scale Error (ppm)



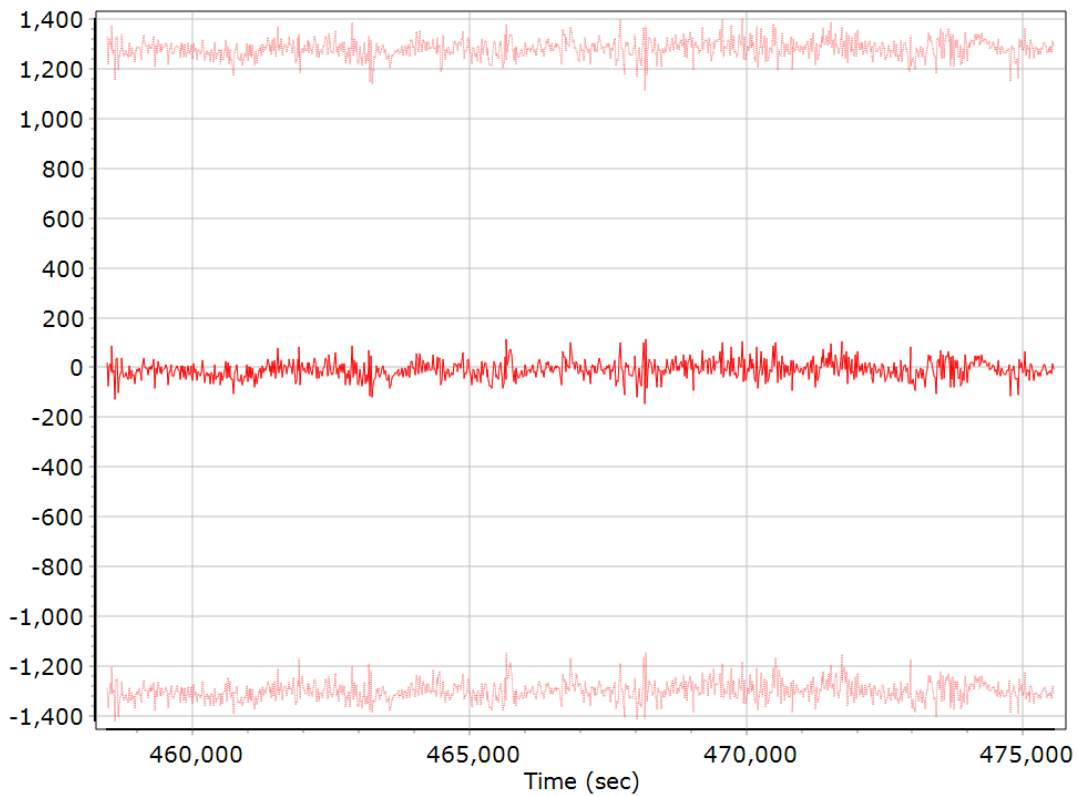
X Accelerometer Scale Error (ppm)



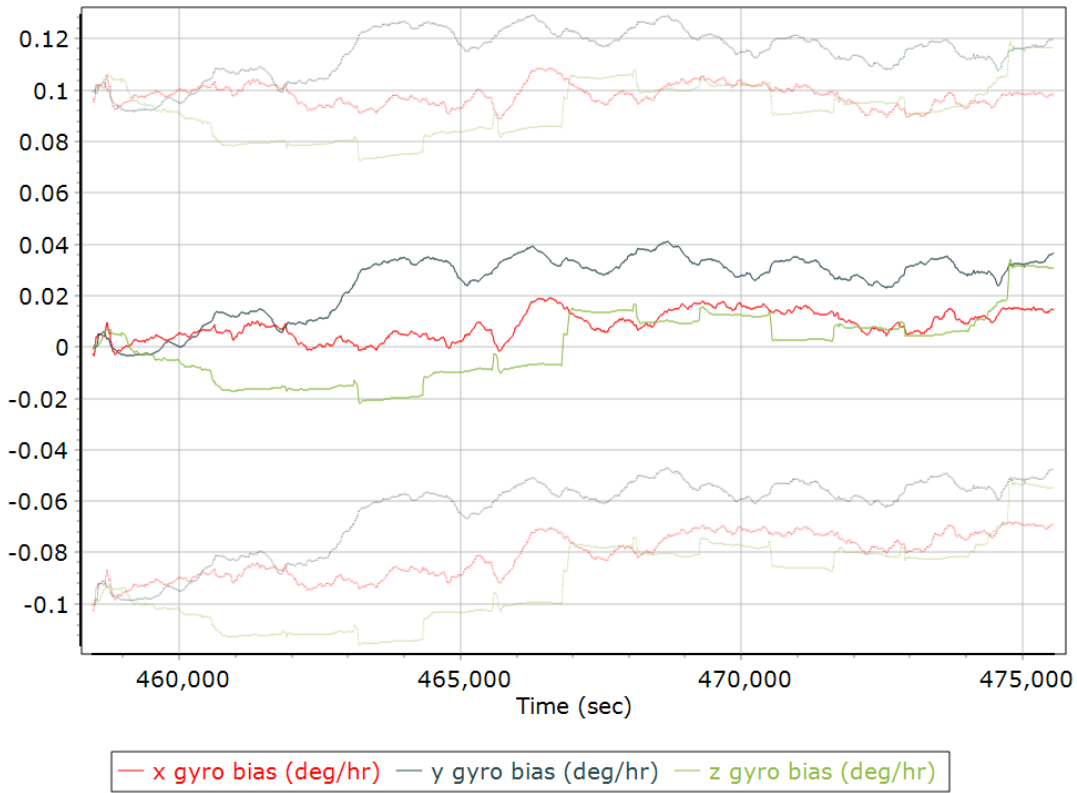
Y Accelerometer Scale Error (ppm)



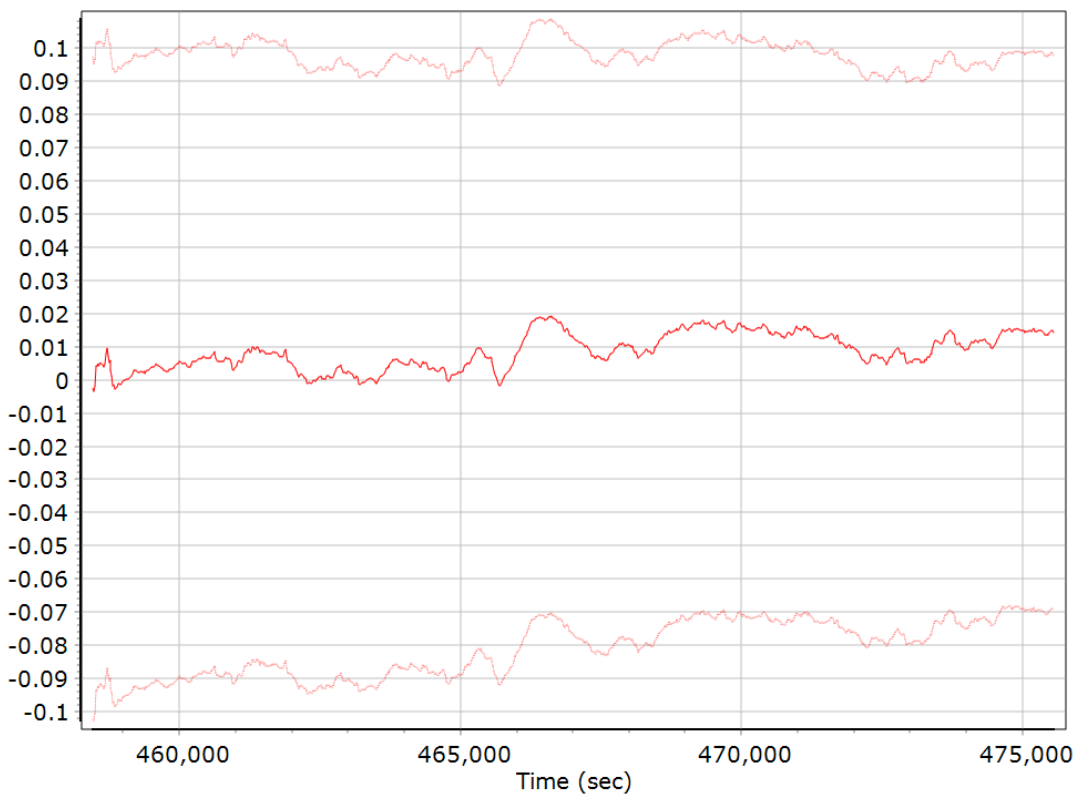
Z Accelerometer Scale Error (ppm)



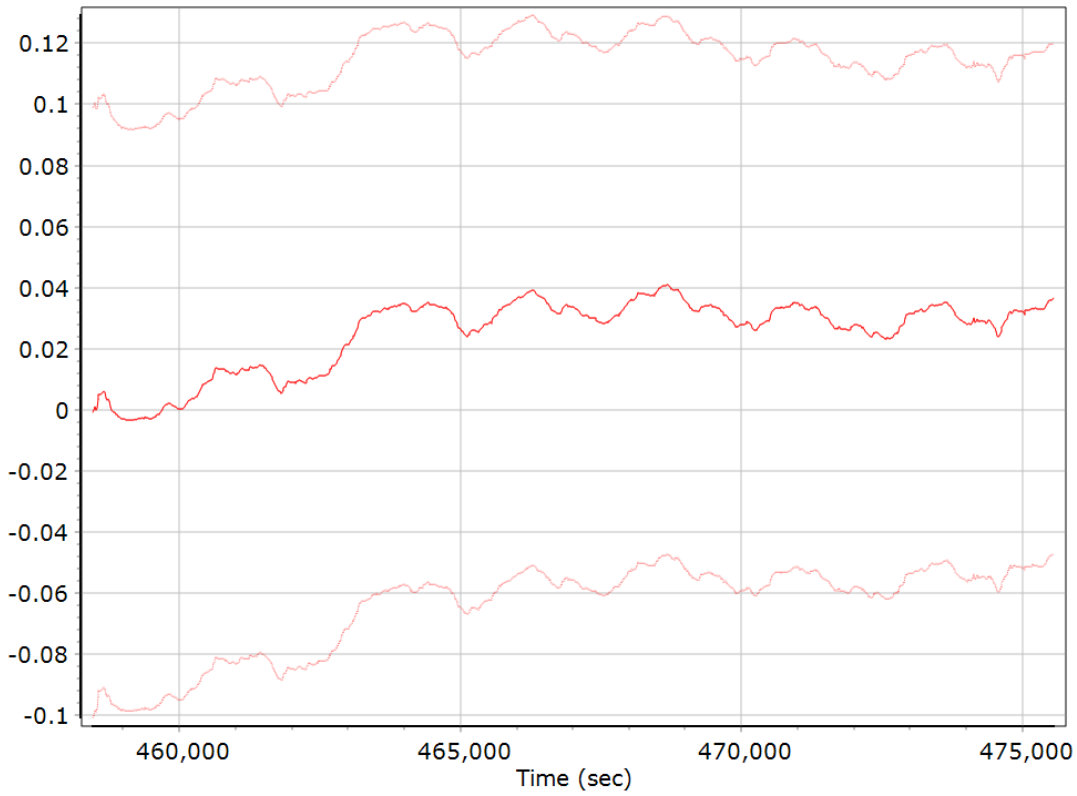
Gyro Bias (deg/h)



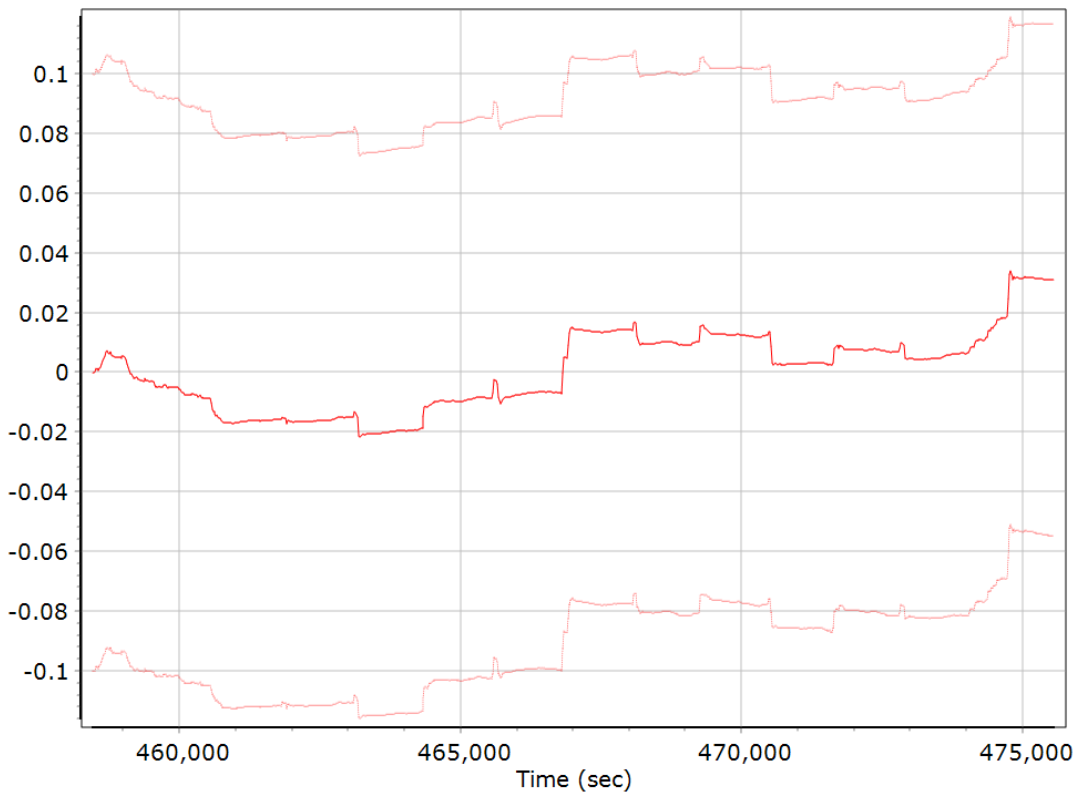
X Gyro Bias (deg/h)



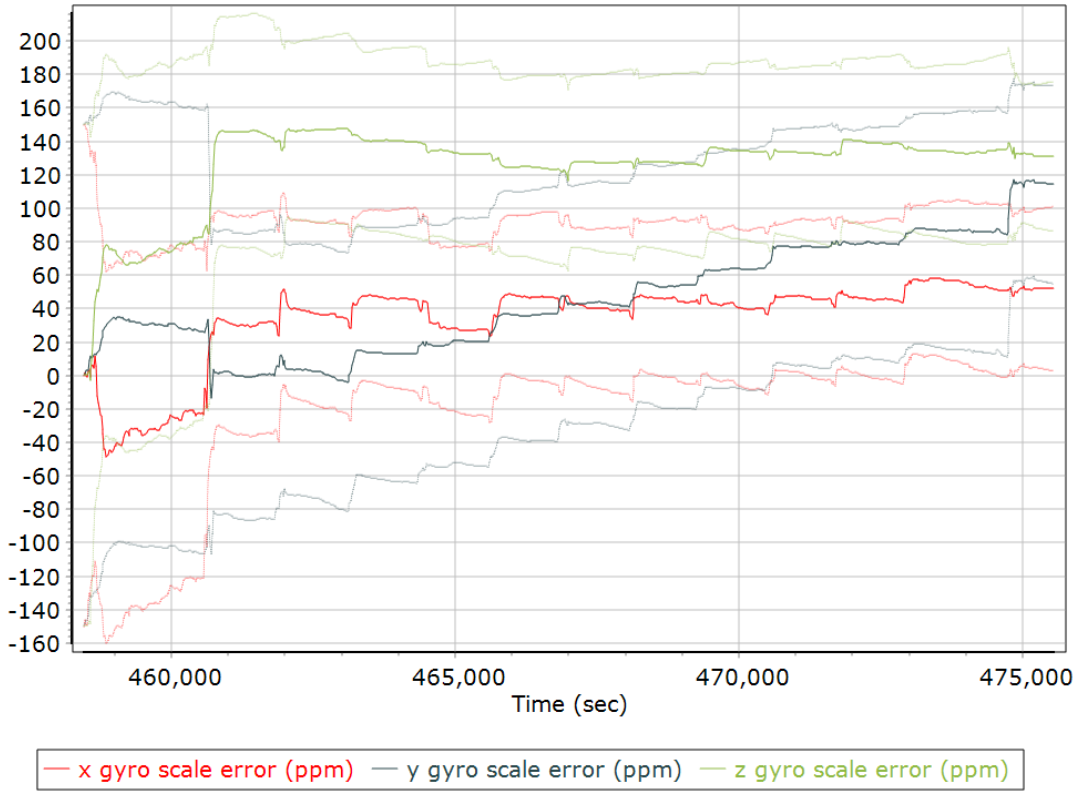
Y Gyro Bias (deg/h)



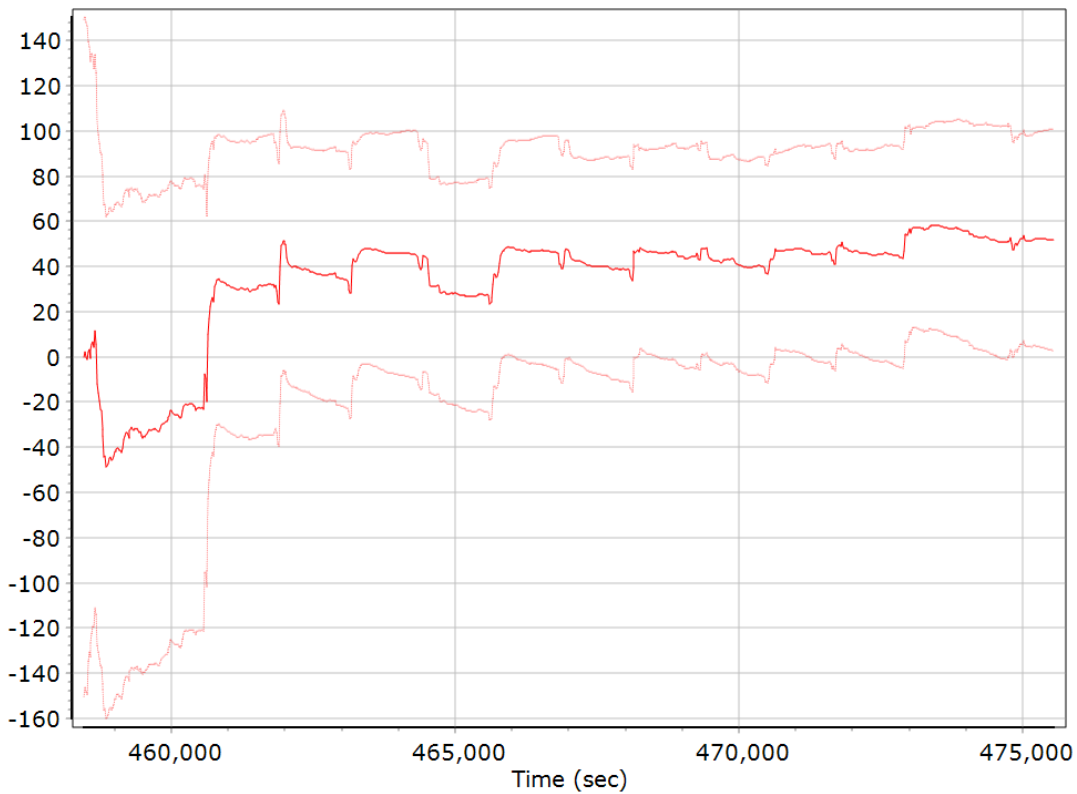
Z Gyro Bias (deg/h)



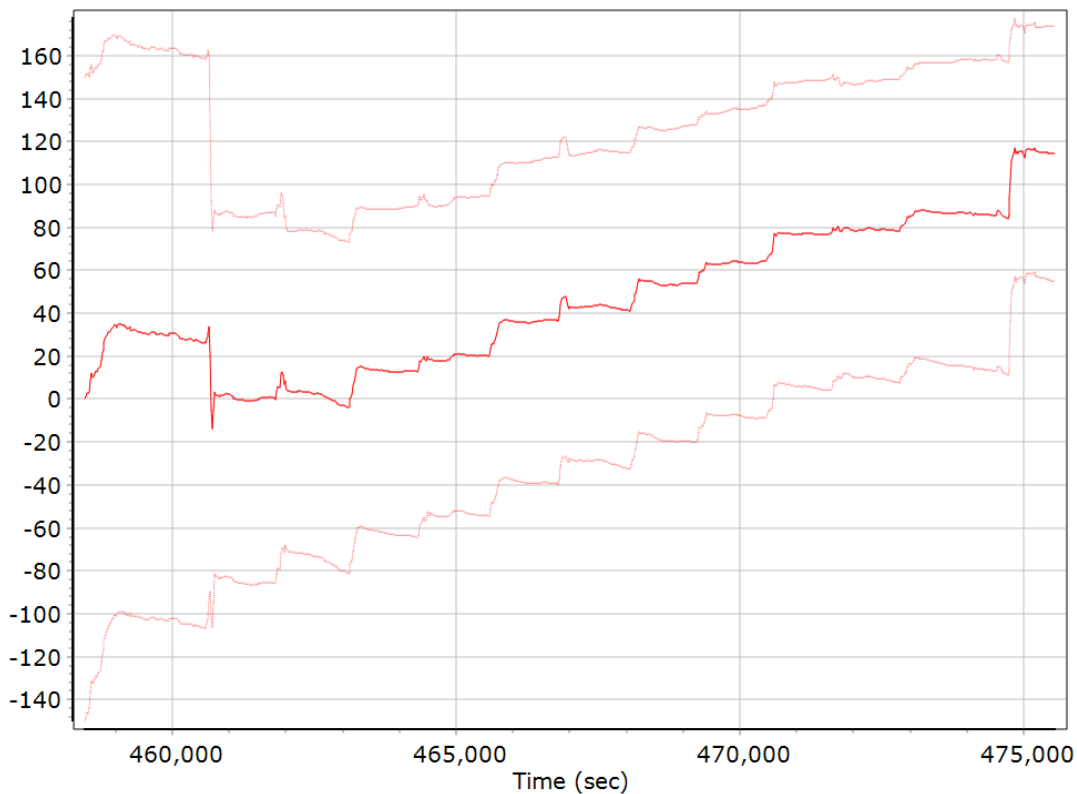
Gyro Scale Error (ppm)



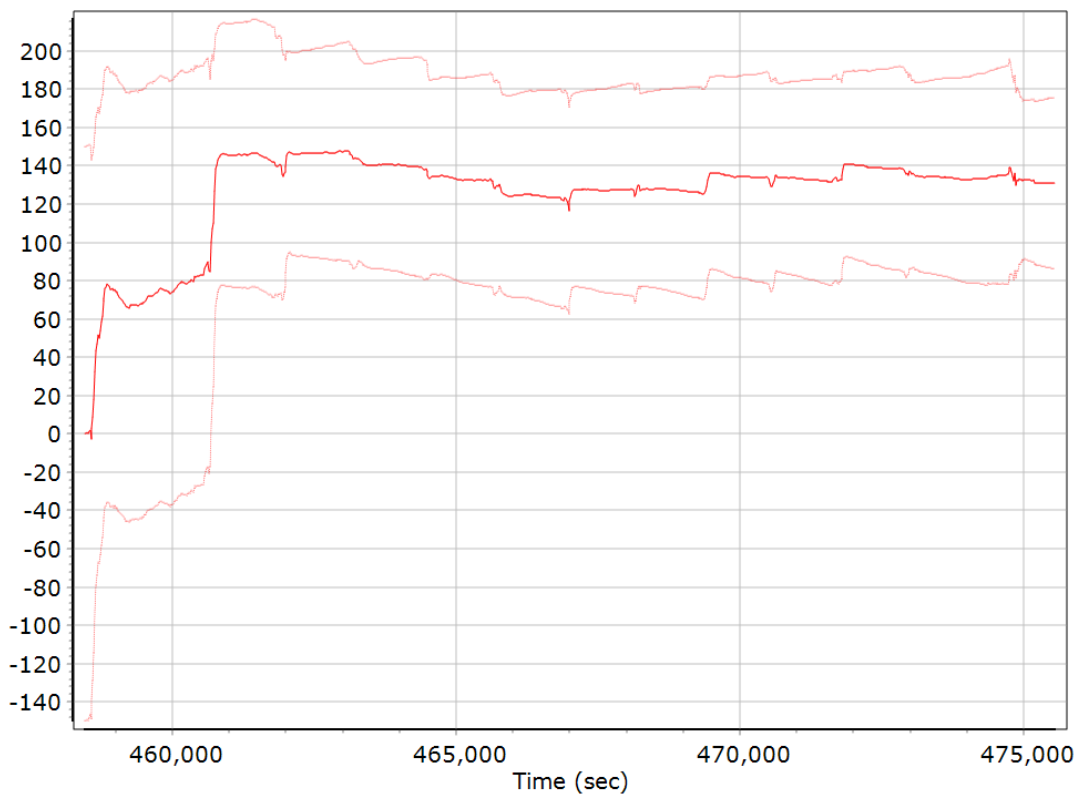
X Gyro Scale Error (ppm)



Y Gyro Scale Error (ppm)

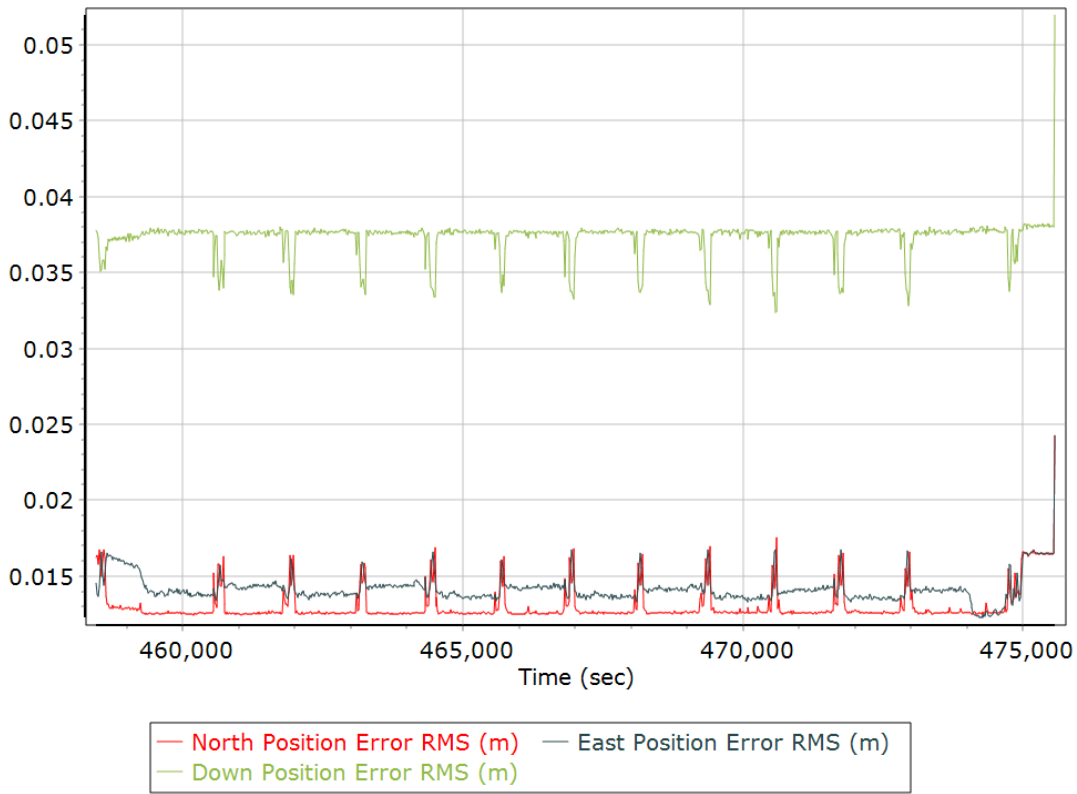


Z Gyro Scale Error (ppm)

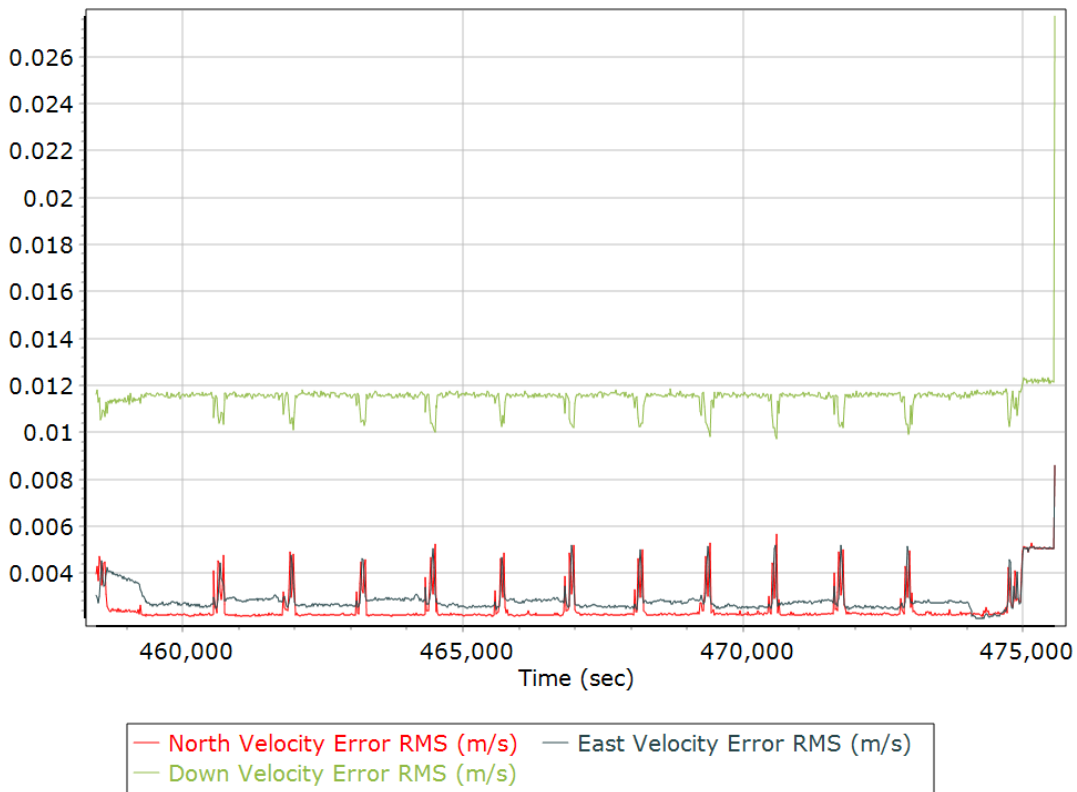


Smoothed Performance Metrics

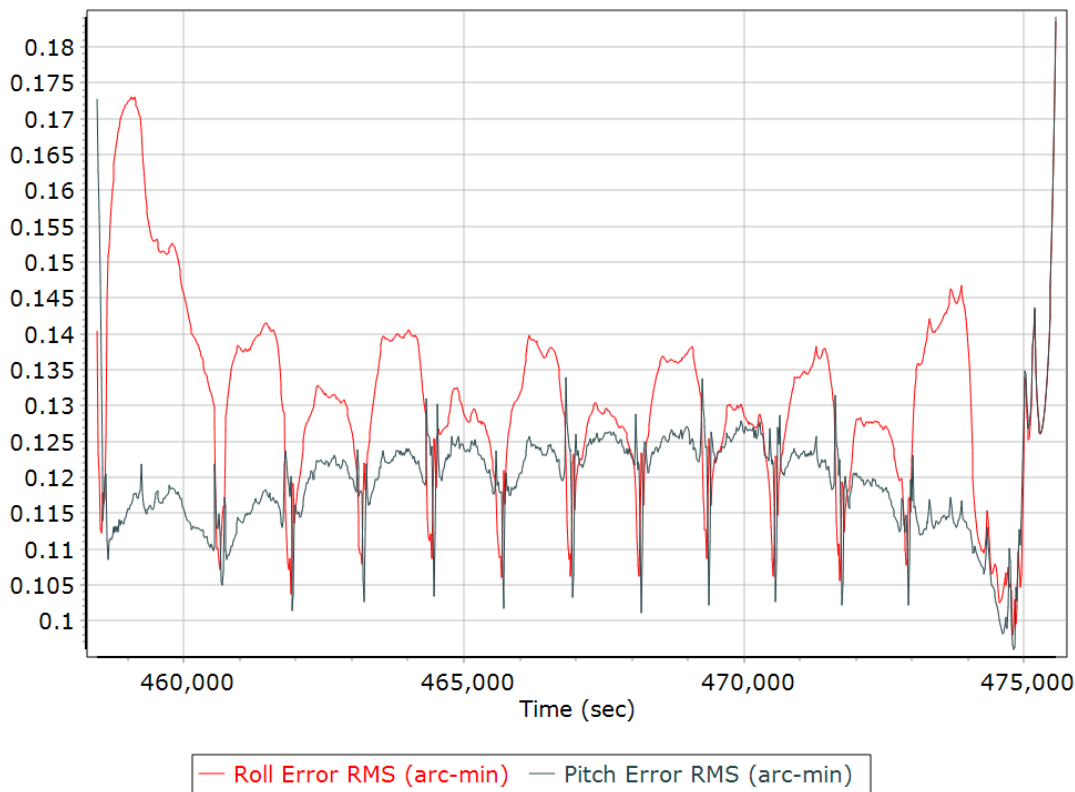
Position Error RMS (m)



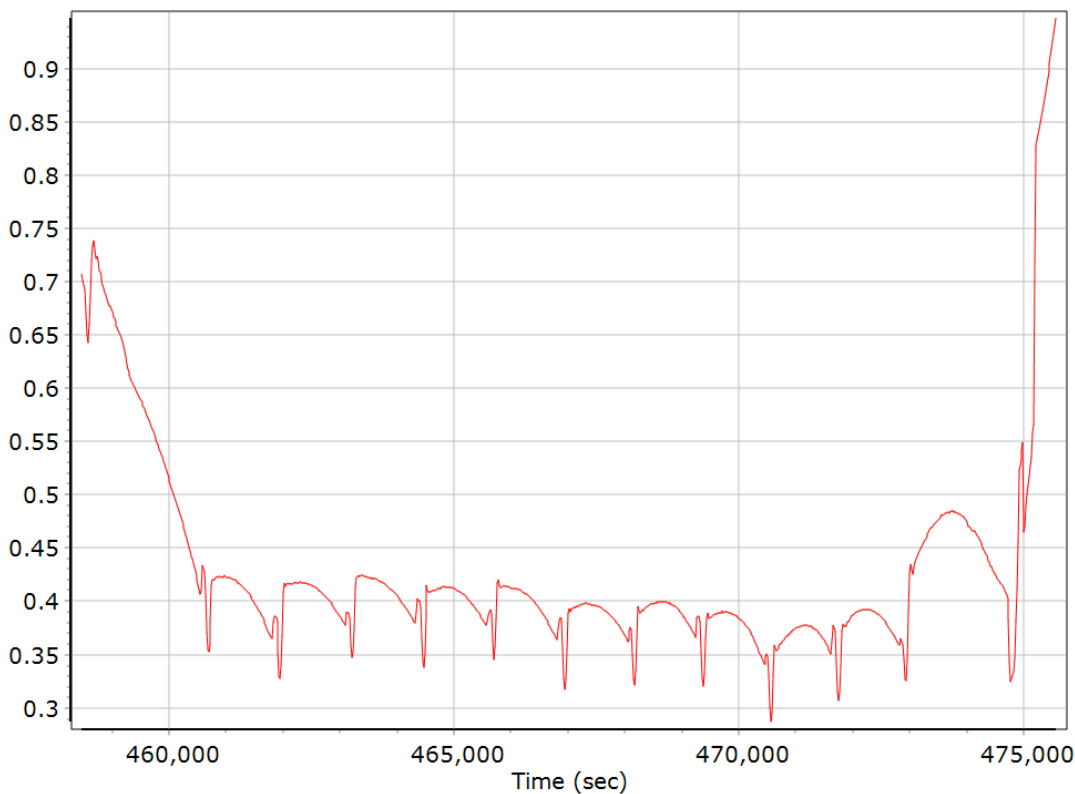
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

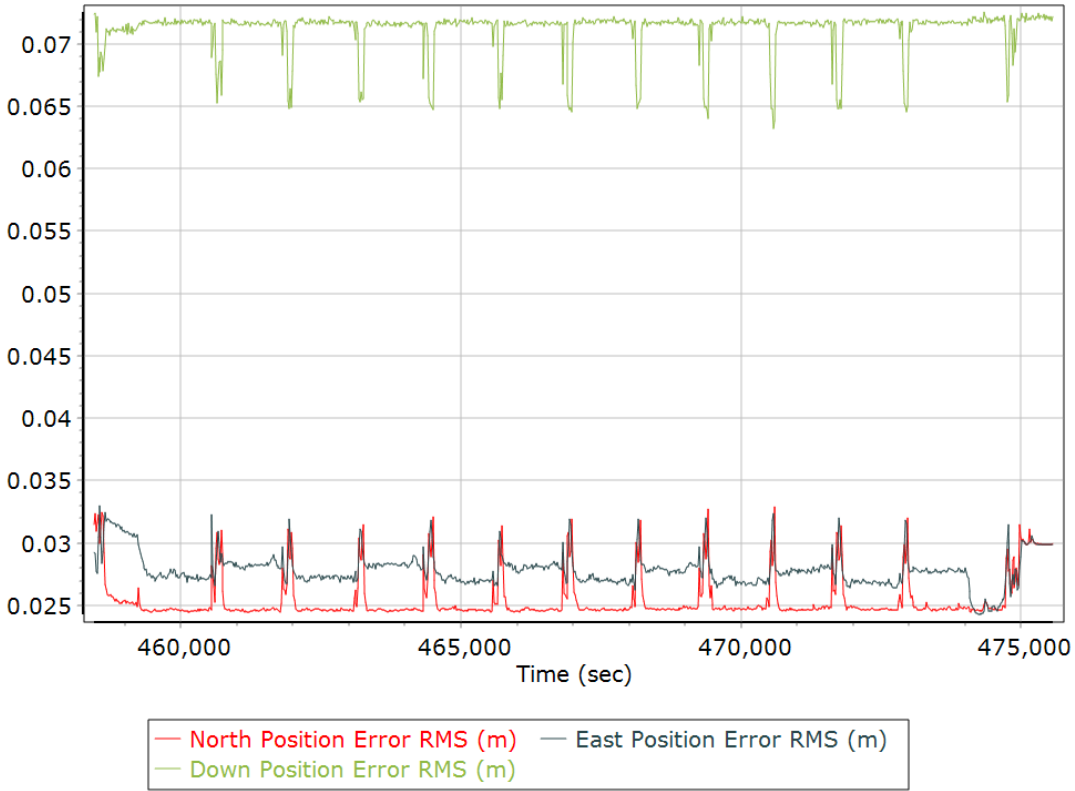


Heading Error RMS (arc-min)

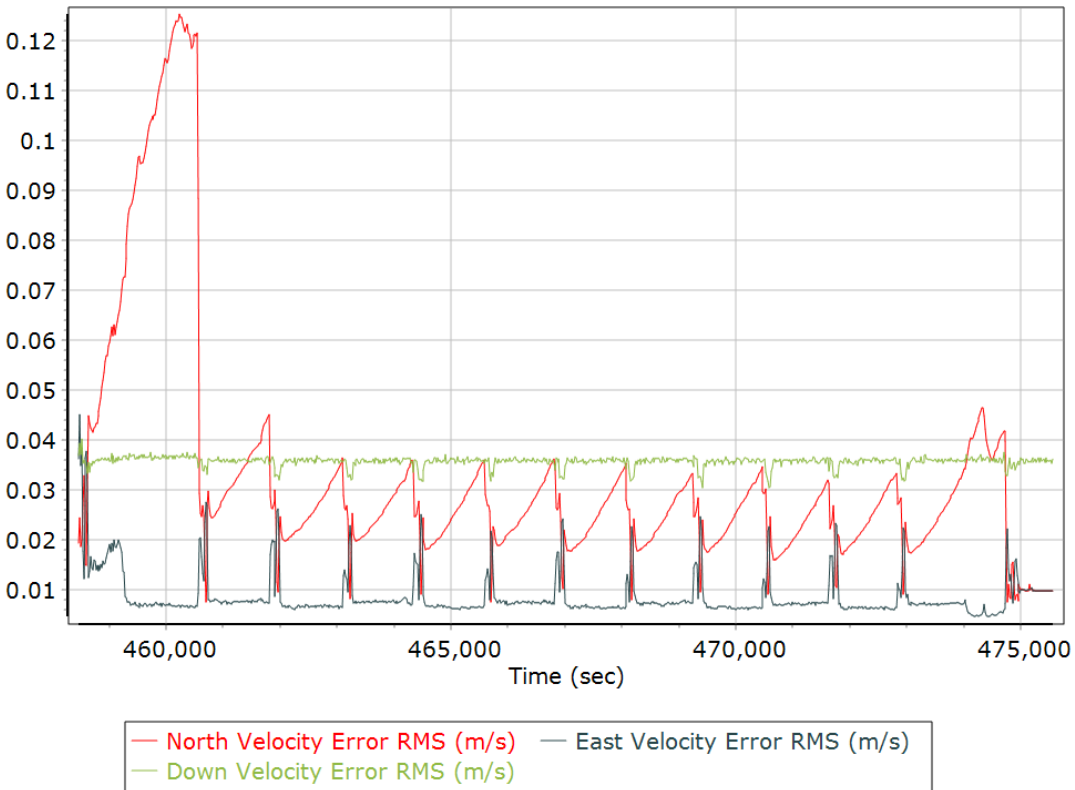


Forward Processed Performance Metrics

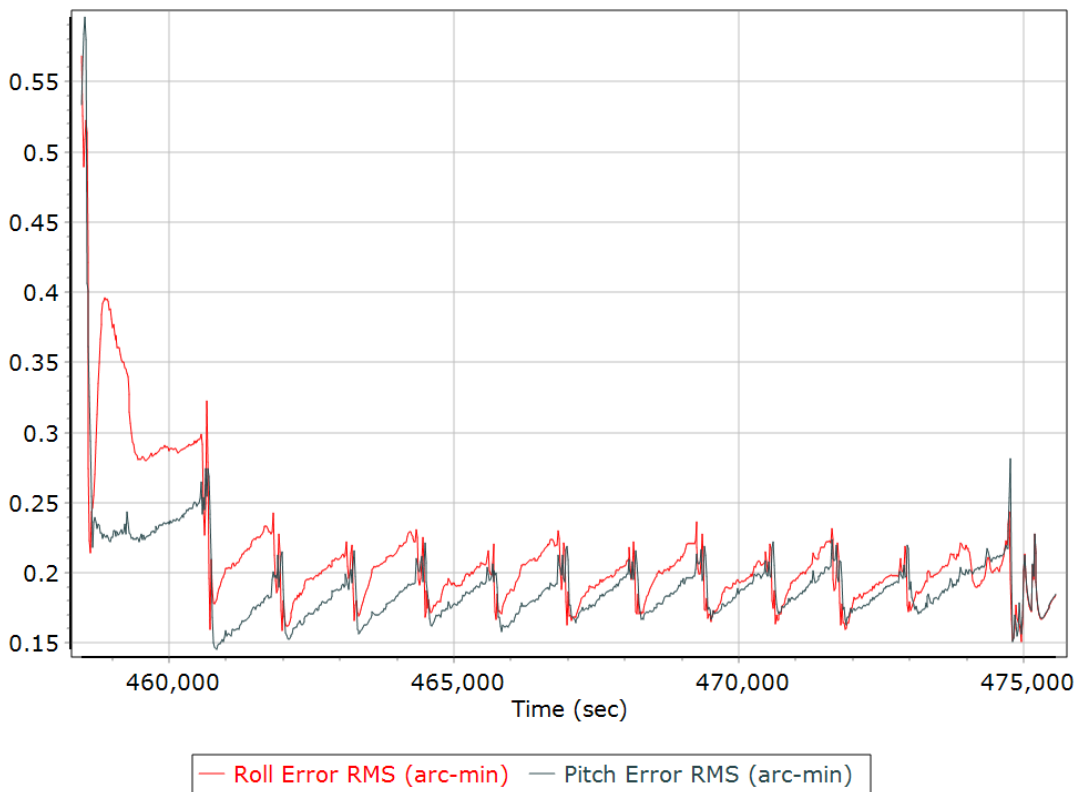
Position Error RMS (m)



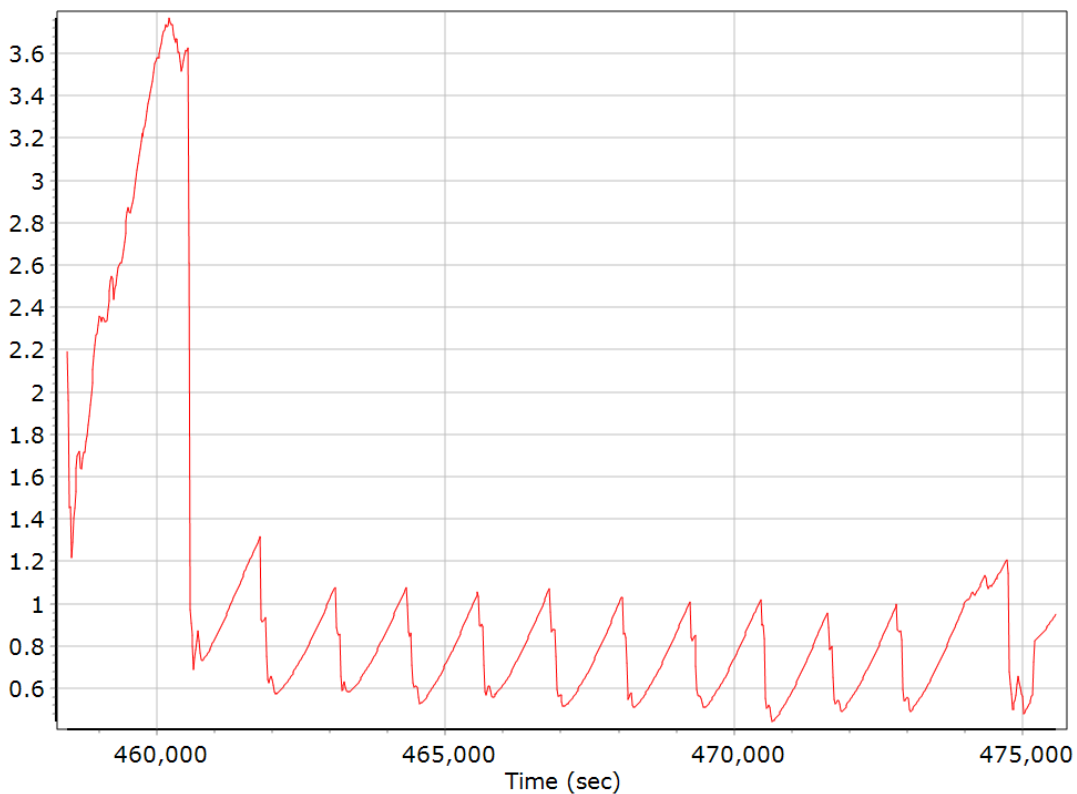
Velocity Error RMS (m/s)



Roll/Pitch Error RMS (arc-min)

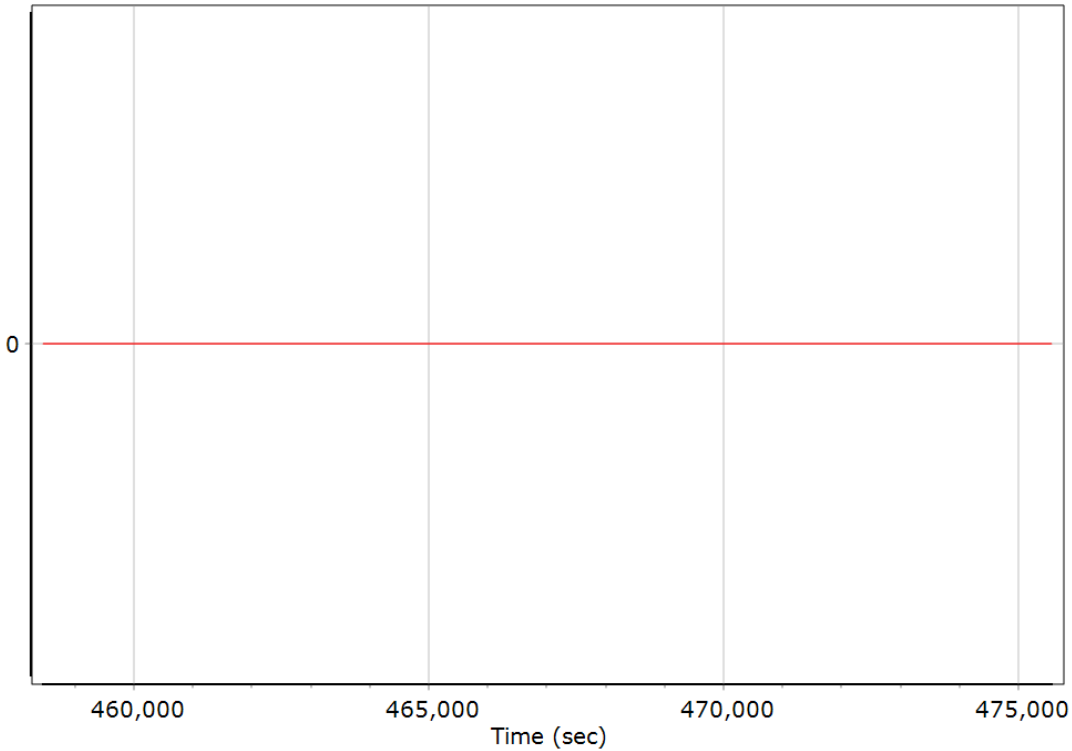


Heading Error RMS (arc-min)



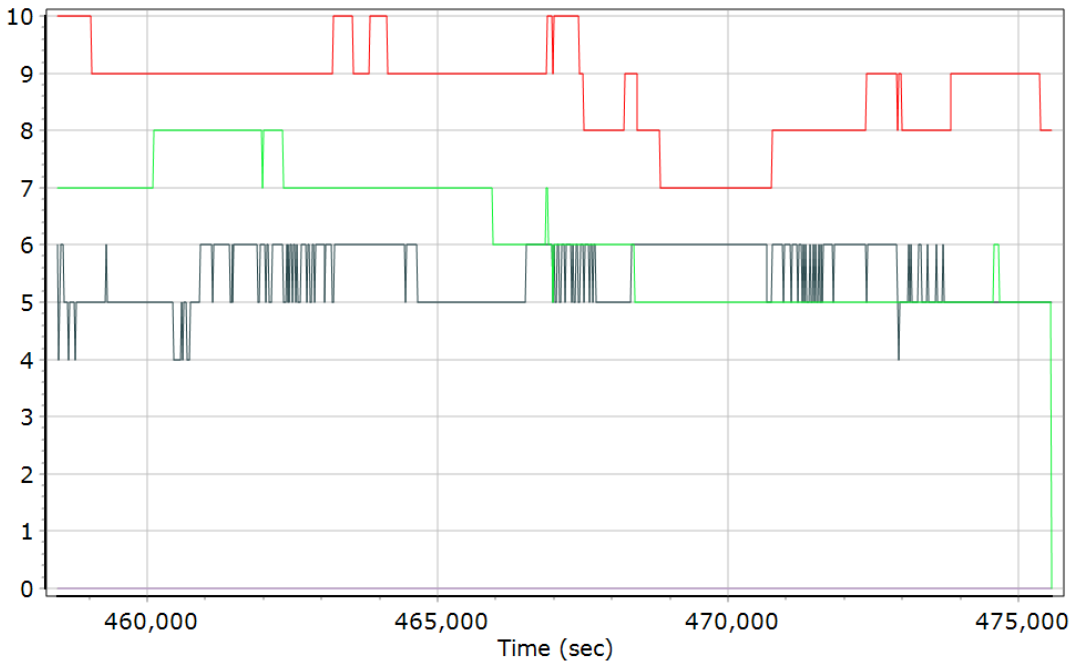
Forward Processed Solution Status

Processing Mode



0 = Fixed NL, 1 = Fixed WL, 2 = Float, 3 = DGNSS, 4 = RTCM, 5 = IAPPP, 6 = C/A, 7 = GNSS Na

Number of Satellites



— Number of GPS Satellites — Number of GLONASS Satellites
— Number of QZSS Satellites — Number of BEIDOU Satellites
— Number of GALILEO Satellites

Baseline Length

