

## General Information

### Mission Information

|                  |                     |
|------------------|---------------------|
| Project name     | 13931               |
| Processing date  | 2022-06-24 20:11:35 |
| Mission date     | 2022-05-07 14:31:51 |
| Mission duration | 05:28:40.000        |
| Processing mode  | IN-Fusion PP-RTX    |

### Rover Hardware Information

|               |                          |
|---------------|--------------------------|
| Product       | POS AV 610 VER6 HW2.5-12 |
| Serial number | S/N7881                  |
| IMU type      | 57                       |
| Receiver type | BD982                    |
| Antenna type  | AV39                     |

## Project File List

### Rover Data Files

| File name    | File type |
|--------------|-----------|
| 20220507.000 | POS Data  |
| 20220507.001 | POS Data  |
| 20220507.002 | POS Data  |
| 20220507.003 | POS Data  |
| 20220507.004 | POS Data  |
| 20220507.005 | POS Data  |
| 20220507.006 | POS Data  |
| 20220507.007 | POS Data  |
| 20220507.008 | POS Data  |
| 20220507.009 | POS Data  |
| 20220507.010 | POS Data  |
| 20220507.011 | POS Data  |
| 20220507.012 | POS Data  |
| 20220507.013 | POS Data  |
| 20220507.014 | POS Data  |
| 20220507.015 | POS Data  |
| 20220507.016 | POS Data  |
| 20220507.017 | POS Data  |
| 20220507.018 | POS Data  |
| 20220507.019 | POS Data  |
| 20220507.020 | POS Data  |
| 20220507.021 | POS Data  |
| 20220507.022 | POS Data  |
| 20220507.023 | POS Data  |
| 20220507.024 | POS Data  |
| 20220507.025 | POS Data  |
| 20220507.026 | POS Data  |
| 20220507.027 | POS Data  |
| 20220507.028 | POS Data  |
| 20220507.029 | POS Data  |
| 20220507.030 | POS Data  |
| 20220507.031 | POS Data  |
| 20220507.032 | POS Data  |
| 20220507.033 | POS Data  |
| 20220507.034 | POS Data  |
| 20220507.035 | POS Data  |
| 20220507.036 | POS Data  |
| 20220507.037 | POS Data  |
| 20220507.038 | POS Data  |
| 20220507.039 | POS Data  |
| 20220507.040 | POS Data  |
| 20220507.041 | POS Data  |
| 20220507.042 | POS Data  |
| 20220507.043 | POS Data  |

### Input Files

| File Name    | File Type                   |
|--------------|-----------------------------|
| Ephm1270.22g | GLONASS Broadcast Ephemeris |
| Ephm1270.22n | GPS Broadcast Ephemeris     |

### Output Files

| Filename                   | File type                         |
|----------------------------|-----------------------------------|
| sbet_13931.out             | SBET Trajectory File              |
| event1_eo_13931.txt        | ZI Imaging POSEO Output           |
| sbet_13931_NAD83(2011).out | Custom Smoothed BET Export Output |

## Rover Data Summary

|  |                                  |        |         |
|--|----------------------------------|--------|---------|
| First raw data file                                      | 20220507.000                     |        |         |
| Last raw data file                                       | 20220507.043                     |        |         |
| Start GPS week   | 2208                             |        |         |
| Start time   | 570710.750 (05/07/2022 14:31:50) |        |         |
| End time   | 590425.585 (05/07/2022 20:00:25) |        |         |
| Start of fine alignment                                  | 571095.264 (05/07/2022 14:38:15) |        |         |
| Available subsystems                                     | Primary GNSS, IMU                |        |         |
| POS Event Input  | Event 1 Input                    |        |         |
| Correction data  | None                             |        |         |
| <b>IMU Installation Lever Arms &amp; Mounting Angles</b> |                                  |        |         |
| Reference to IMU lever arm (m)                           | -0.230                           | -0.010 | -0.133  |
| Reference to IMU mounting angles (deg)                   | 0.000                            | 0.000  | 180.000 |
| Reference to Primary GNSS lever arm (m)                  | 0.126                            | -0.066 | -1.071  |
| Reference to Primary GNSS lever arm std dev (m)          | -1.000                           |        |         |
| Aircraft to Reference mounting angles (deg)              | 0.000                            | 0.000  | 0.000   |

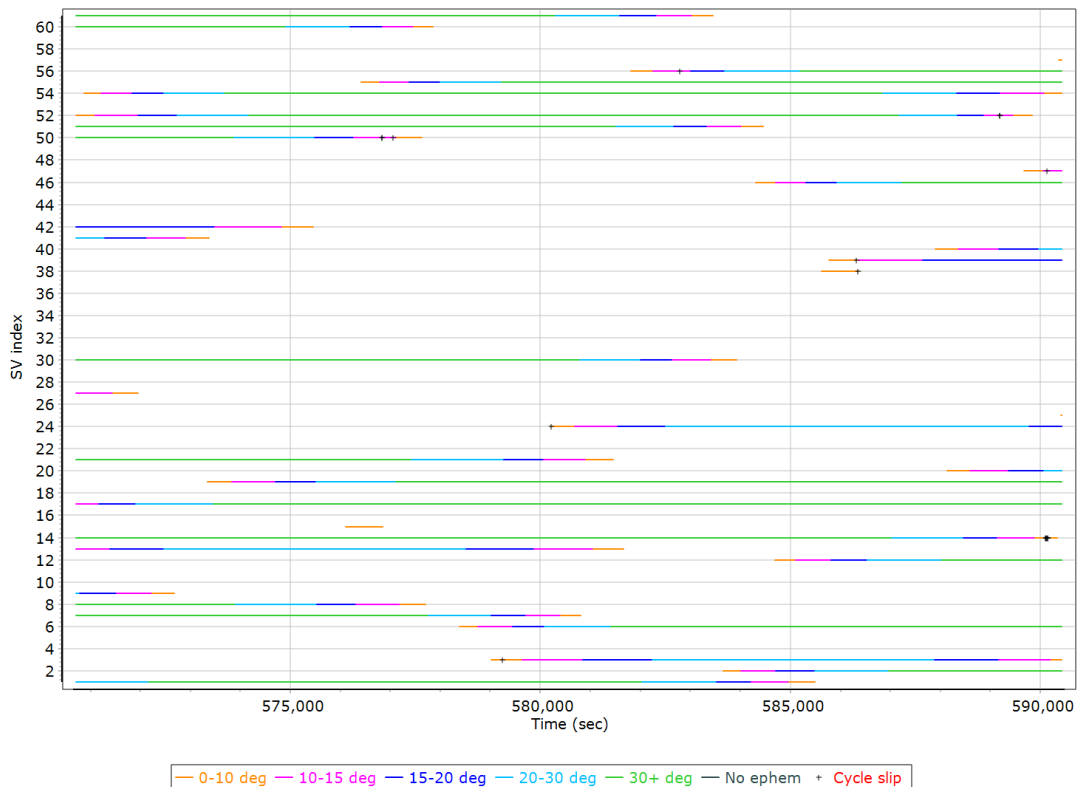
## Rover Data QC

### Raw IMU Import QC Summary

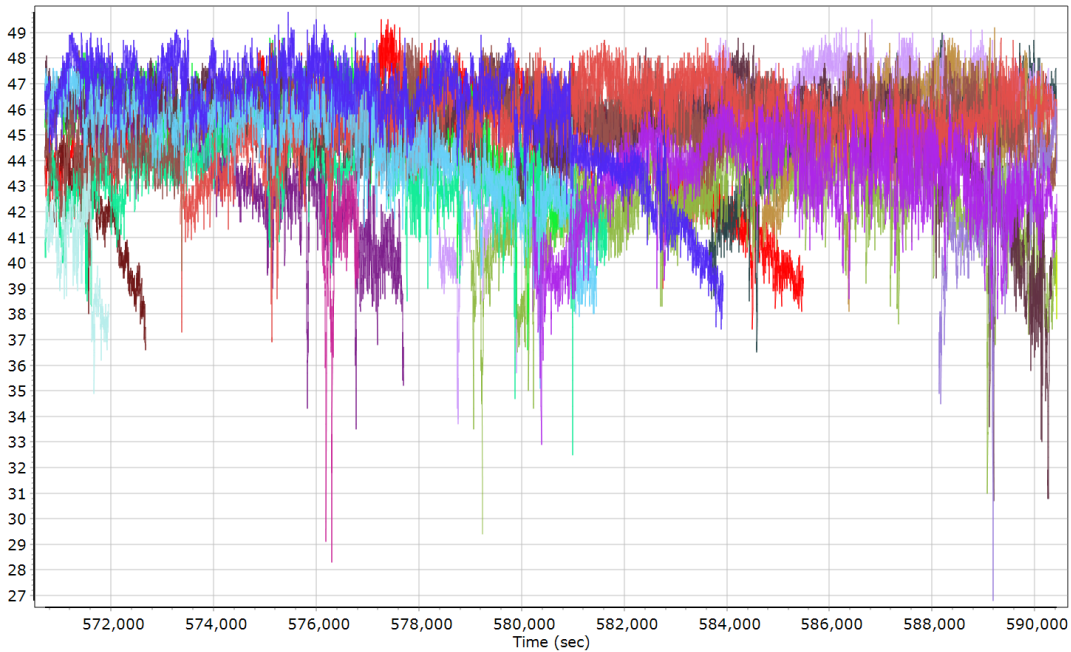
|                         |                 |
|-------------------------|-----------------|
| IMU data input file     | imu_13931.dat   |
| IMU data check log file | imudt_13931.log |
| IMU Records Processed   | 3943339         |
| Termination Status      | Normal          |
| IMU Anomalies           | 0               |

## Primary Observables & Satellite Data

### GPS/GLONASS L1 Satellite Lock/Elevation

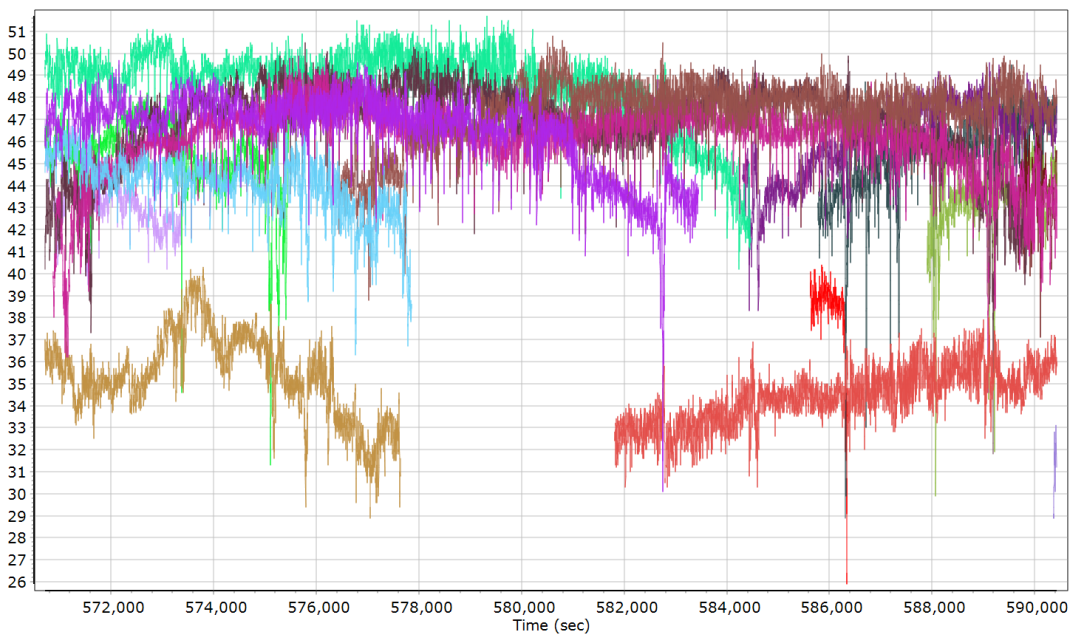


**GPS L1 SNR**



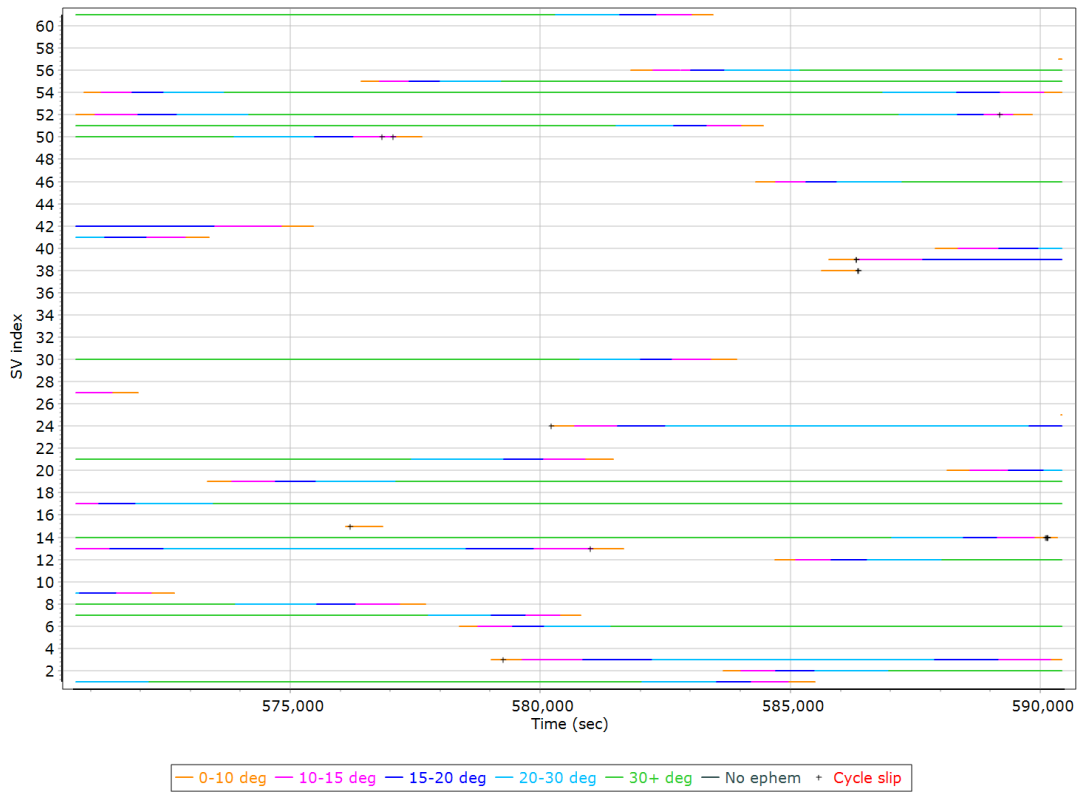
- |                           |                           |                           |                           |
|---------------------------|---------------------------|---------------------------|---------------------------|
| GPS PRN 01 L1 SNR (dB/Hz) | GPS PRN 02 L1 SNR (dB/Hz) | GPS PRN 03 L1 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 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 27 L1 SNR (dB/Hz) | GPS PRN 30 L1 SNR (dB/Hz) |                           |

**GLONASS L1 SNR**

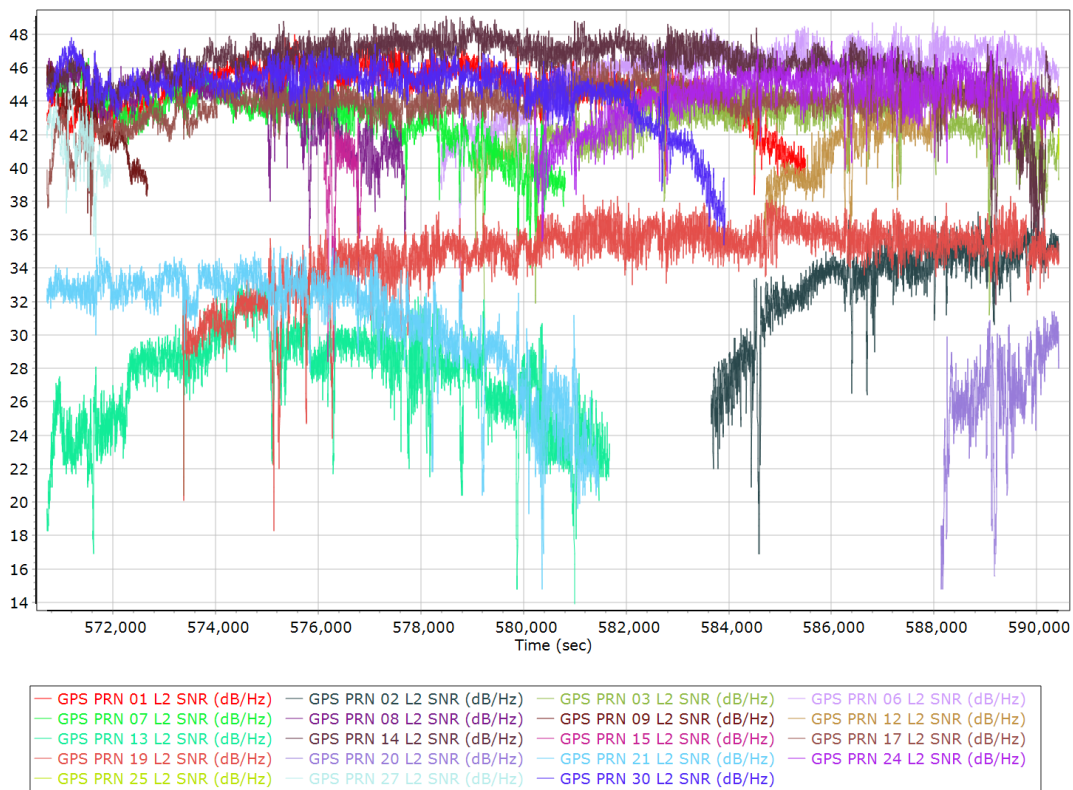


- |                           |                           |                           |
|---------------------------|---------------------------|---------------------------|
| GLONASS 01 L1 SNR (dB/Hz) | GLONASS 02 L1 SNR (dB/Hz) | GLONASS 03 L1 SNR (dB/Hz) |
| GLONASS 04 L1 SNR (dB/Hz) | GLONASS 05 L1 SNR (dB/Hz) | GLONASS 09 L1 SNR (dB/Hz) |
| GLONASS 10 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 19 L1 SNR (dB/Hz) | GLONASS 20 L1 SNR (dB/Hz) | GLONASS 23 L1 SNR (dB/Hz) |
| GLONASS 24 L1 SNR (dB/Hz) |                           |                           |

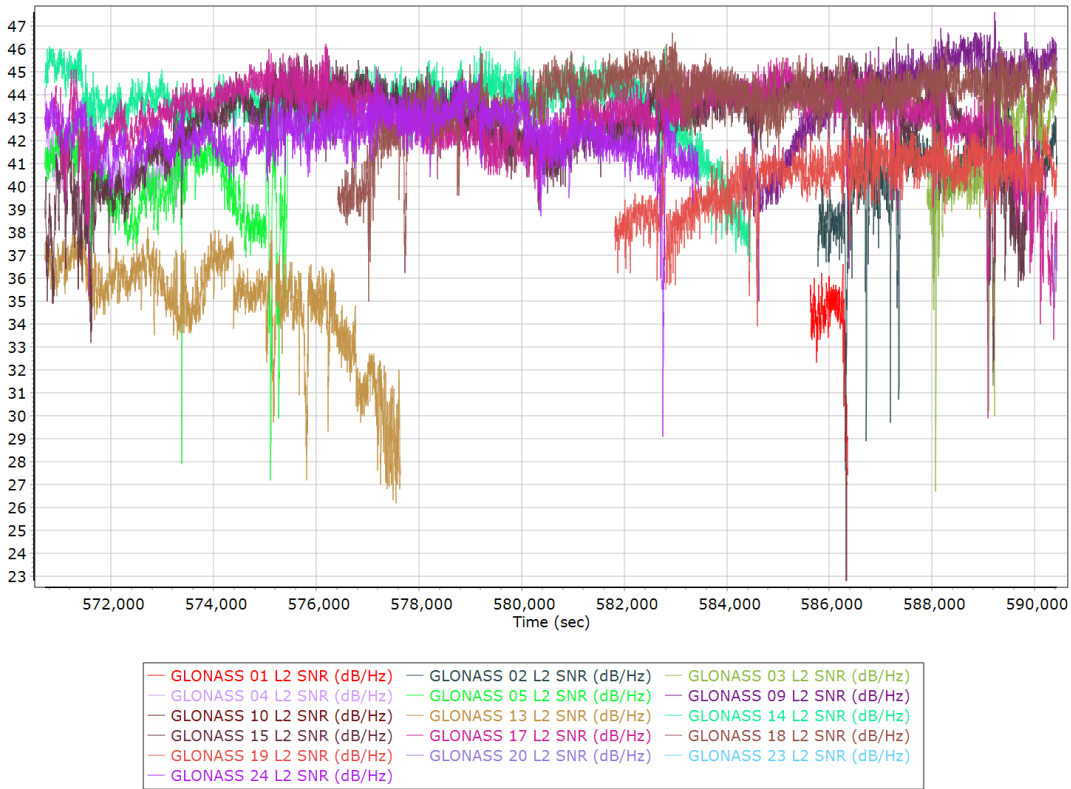
### GPS/GLONASS L2 Satellite Lock/Elevation



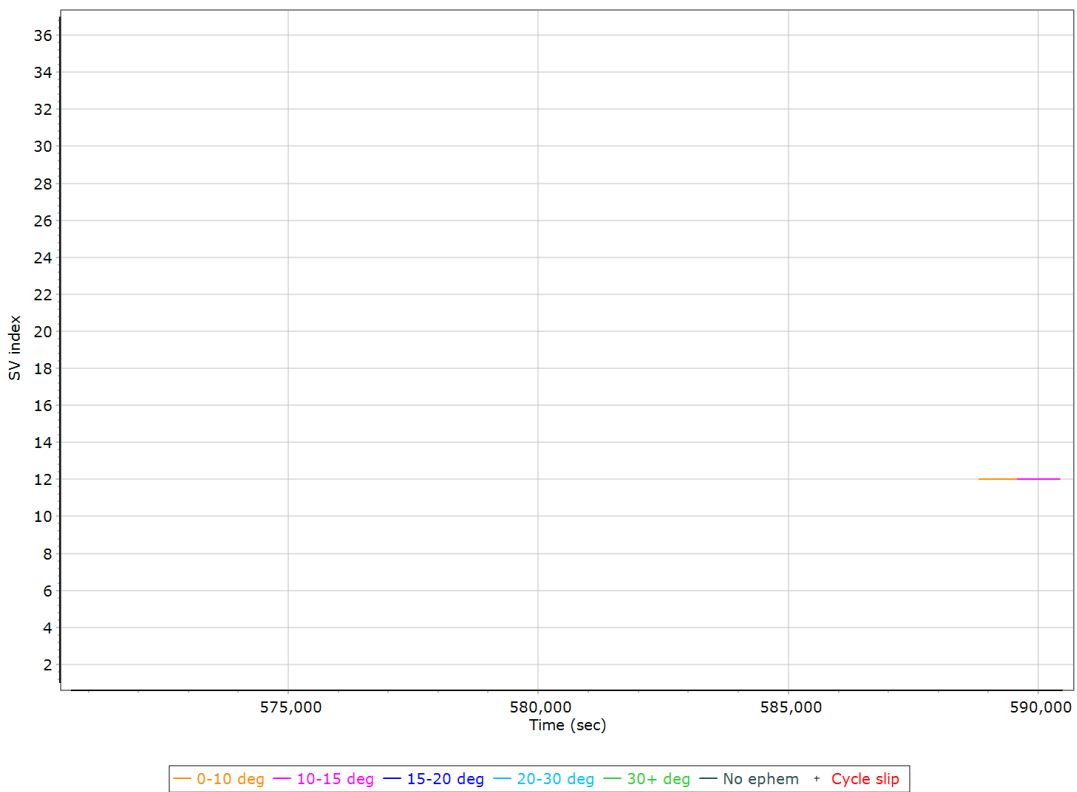
### GPS L2 SNR



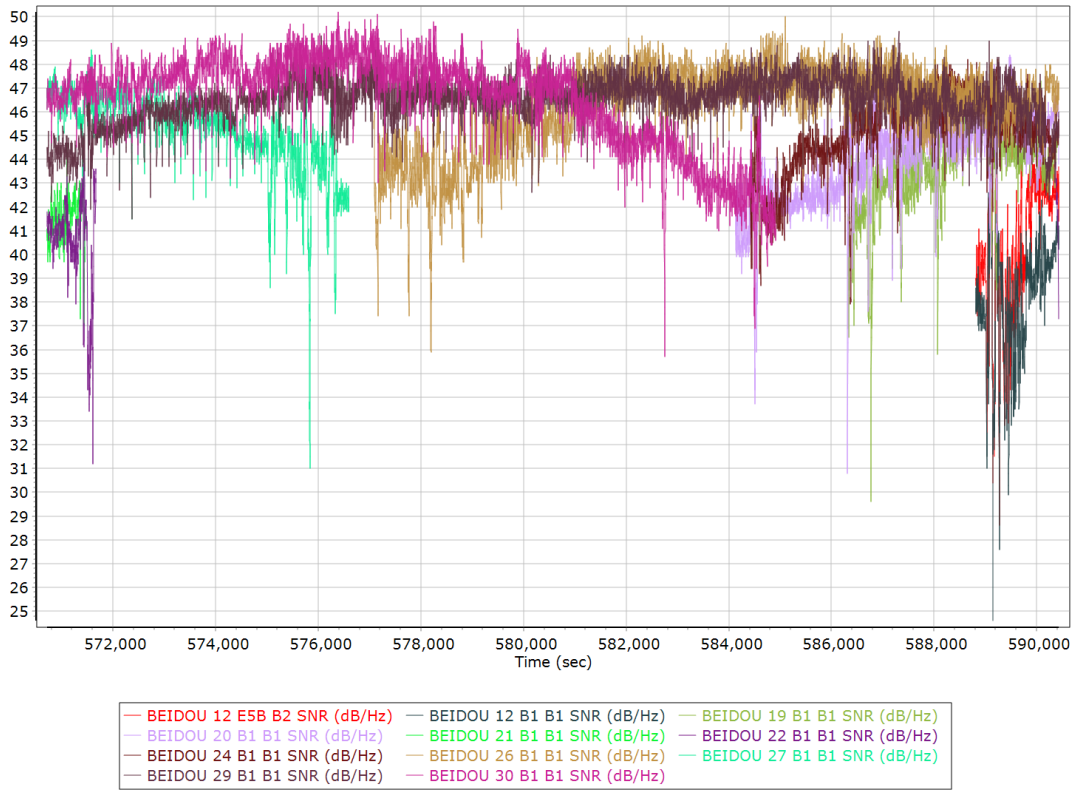
### GLONASS L2 SNR



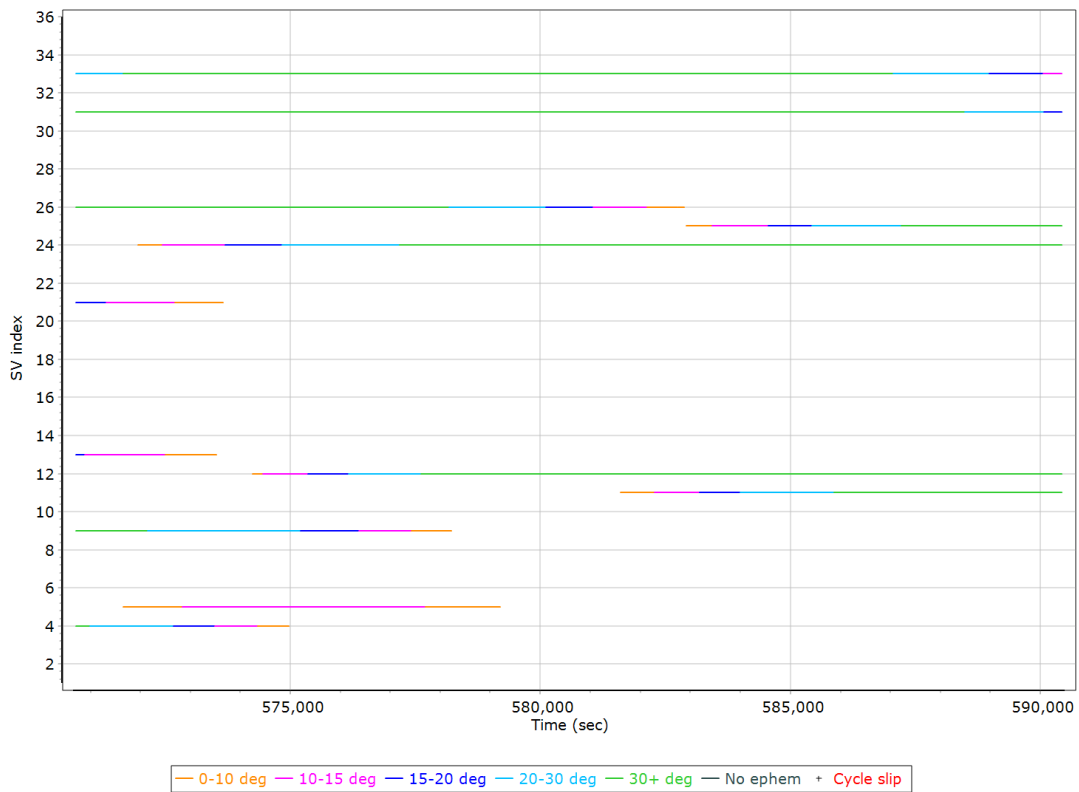
### BEIDOU Satellite Lock/Elevation



### BEIDOU SNR

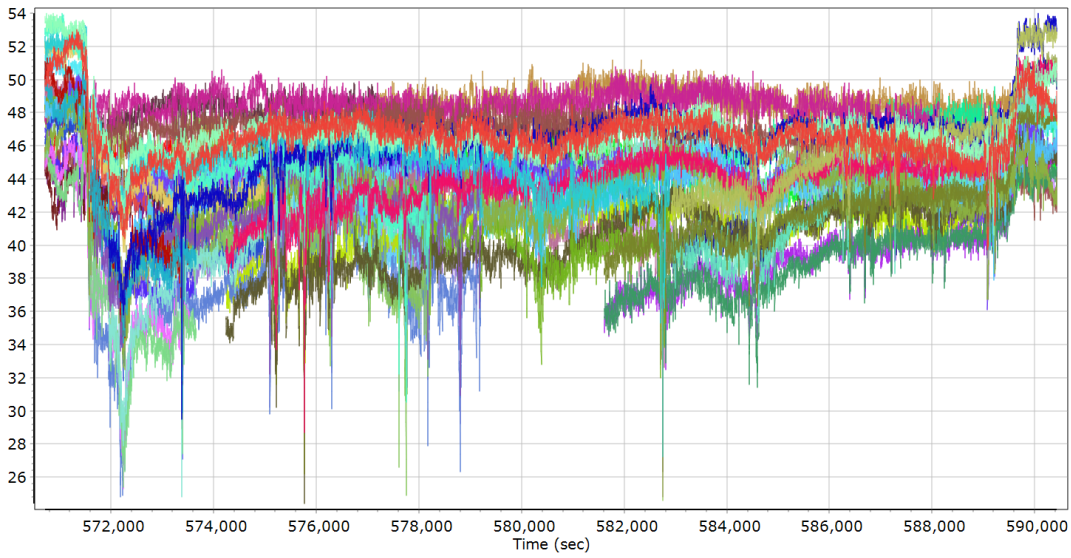


### GALILEO Satellite Lock/Elevation





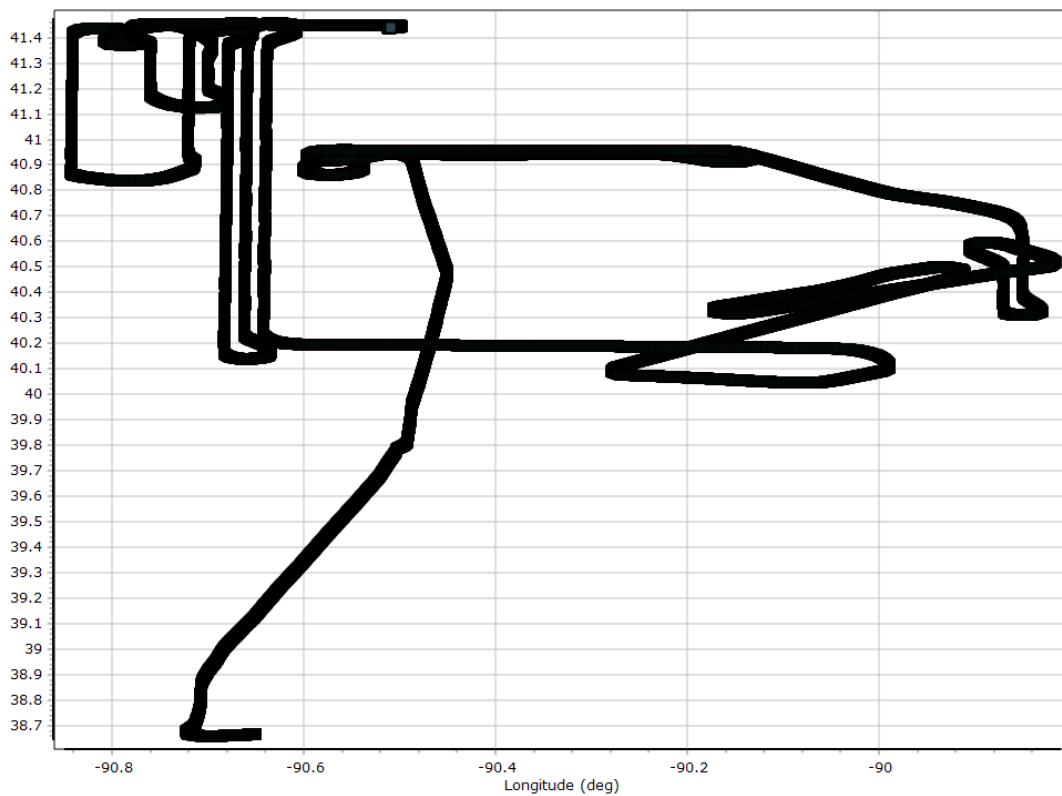
## GALILEO SNR



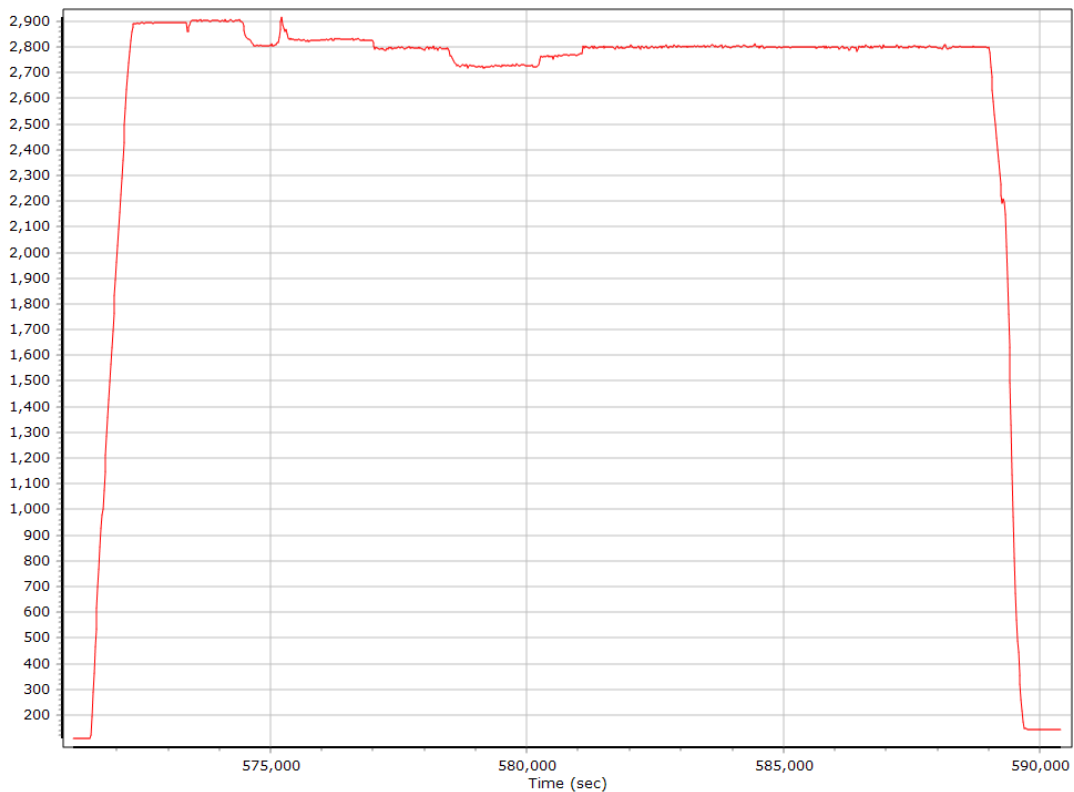
|   |   |
|---|---|
| — GALILEO 04 L1 BOC_1_1_DP_MBOC SNR (dB/Hz) | — GALILEO 05 L1 BOC_1_1_DP_MBOC SNR (dB/Hz) |
| — GALILEO 09 L1 BOC_1_1_DP_MBOC SNR (dB/Hz) | — GALILEO 11 L1 BOC_1_1_DP_MBOC SNR (dB/Hz) |
| — GALILEO 12 L1 BOC_1_1_DP_MBOC SNR (dB/Hz) | — GALILEO 13 L1 BOC_1_1_DP_MBOC SNR (dB/Hz) |
| — GALILEO 21 L1 BOC_1_1_DP_MBOC SNR (dB/Hz) | — GALILEO 24 L1 BOC_1_1_DP_MBOC SNR (dB/Hz) |
| — GALILEO 25 L1 BOC_1_1_DP_MBOC SNR (dB/Hz) | — GALILEO 26 L1 BOC_1_1_DP_MBOC SNR (dB/Hz) |
| — GALILEO 31 L1 BOC_1_1_DP_MBOC SNR (dB/Hz) | — GALILEO 33 L1 BOC_1_1_DP_MBOC SNR (dB/Hz) |
| — GALILEO 04 L5E5A BPSK10_PD SNR (dB/Hz)    | — GALILEO 05 L5E5A BPSK10_PD SNR (dB/Hz)    |
| — GALILEO 09 L5E5A BPSK10_PD SNR (dB/Hz)    | — GALILEO 11 L5E5A BPSK10_PD SNR (dB/Hz)    |
| — GALILEO 12 L5E5A BPSK10_PD SNR (dB/Hz)    | — GALILEO 13 L5E5A BPSK10_PD SNR (dB/Hz)    |
| — GALILEO 21 L5E5A BPSK10_PD SNR (dB/Hz)    | — GALILEO 24 L5E5A BPSK10_PD SNR (dB/Hz)    |

## Smoothed Trajectory Information

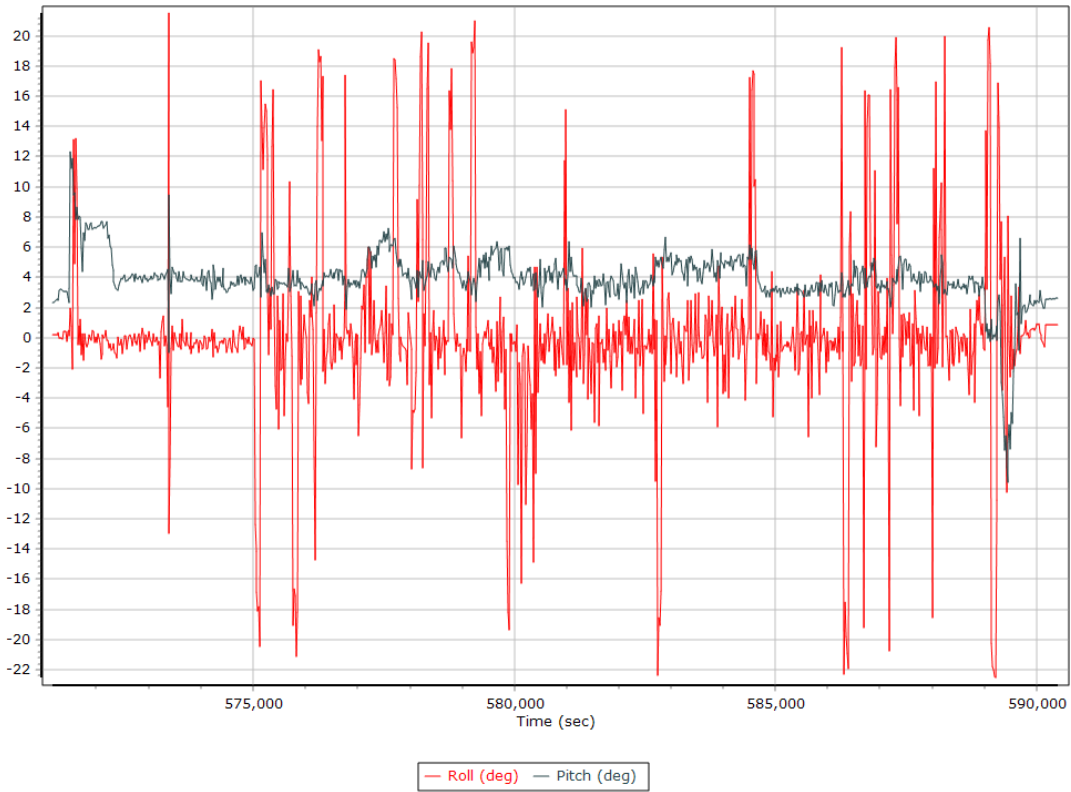
### Top View



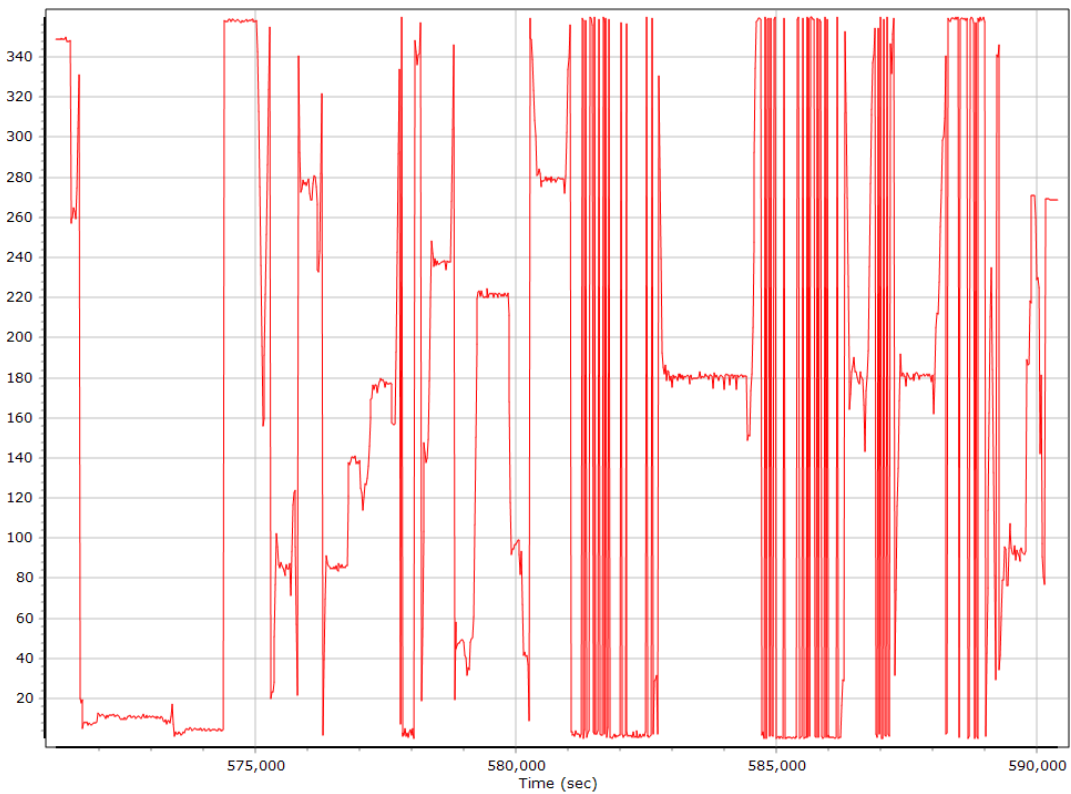
### Altitude



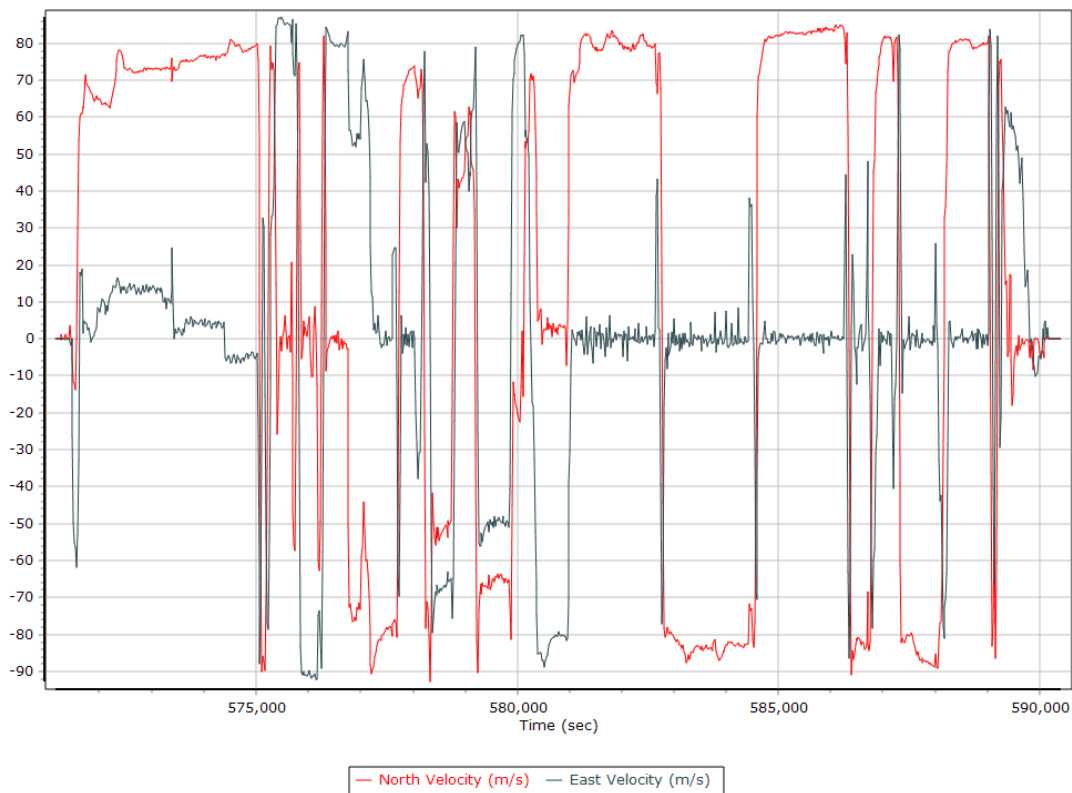
## Roll/Pitch



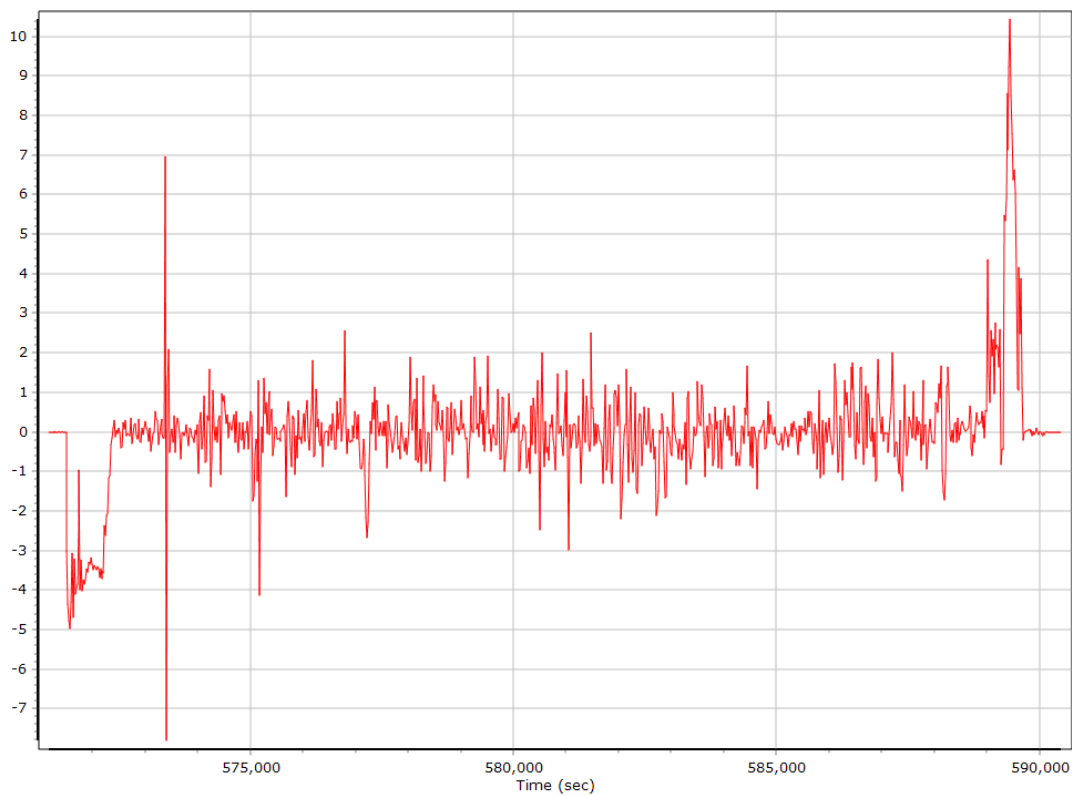
## Heading



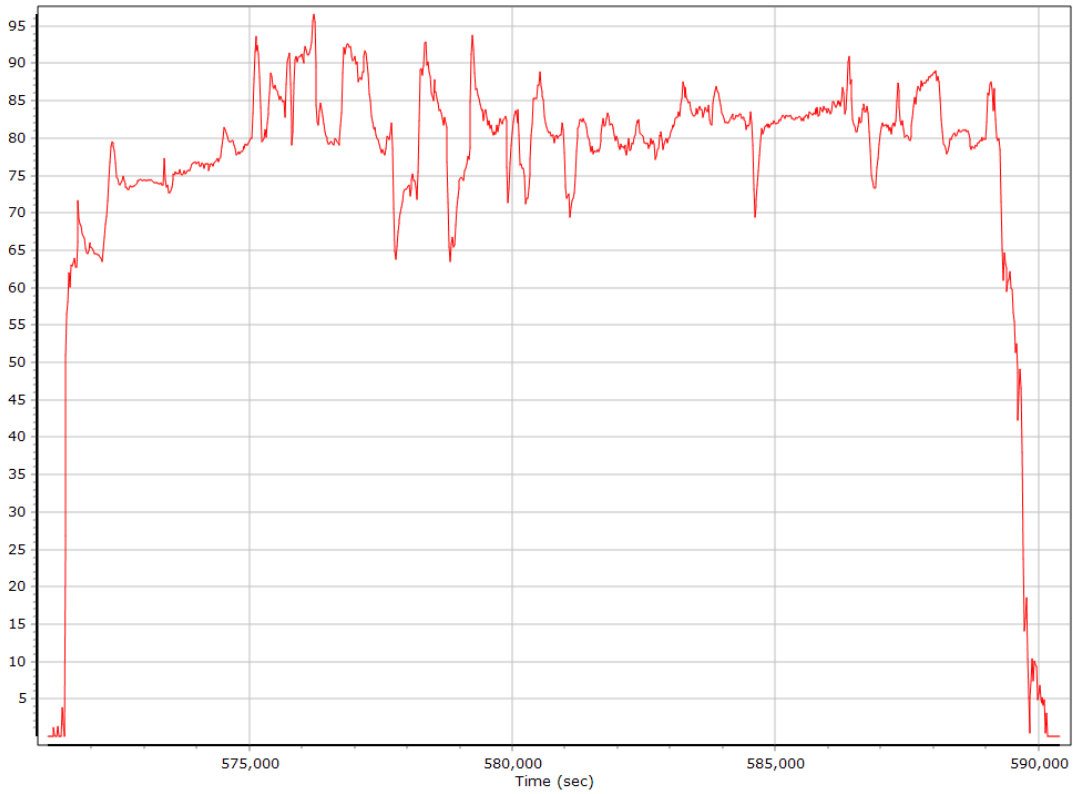
### North/East Velocity



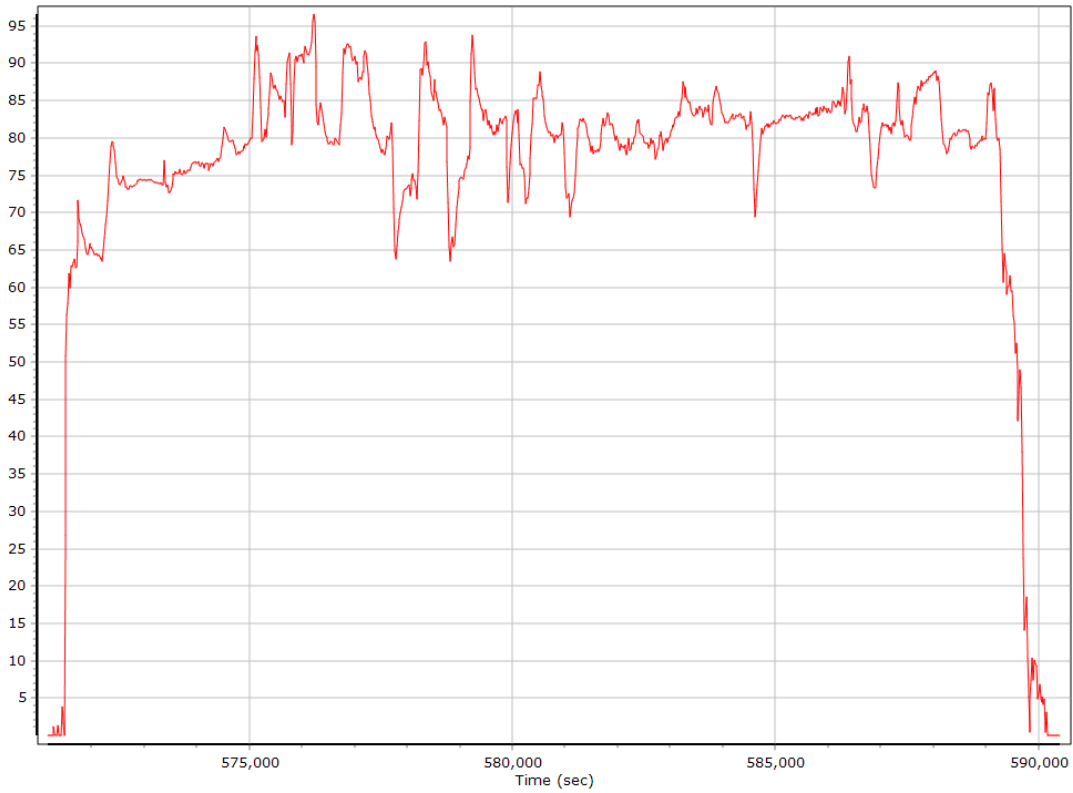
### Down Velocity



## Total Speed



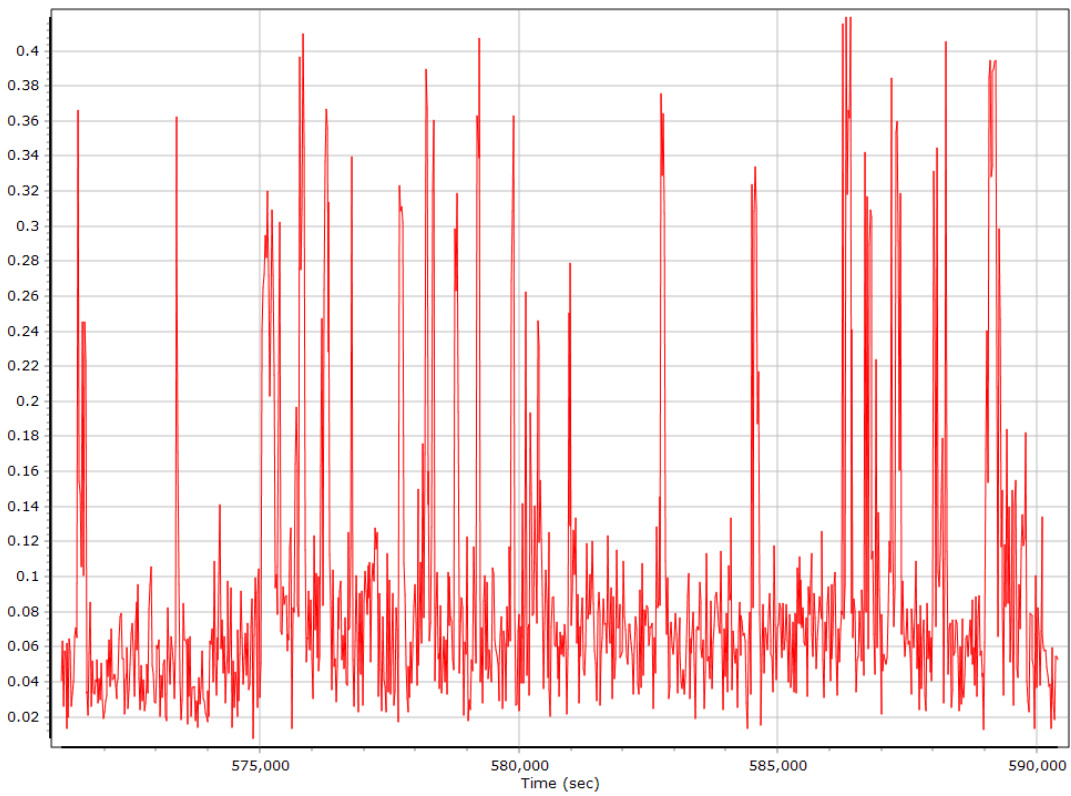
## Ground Speed



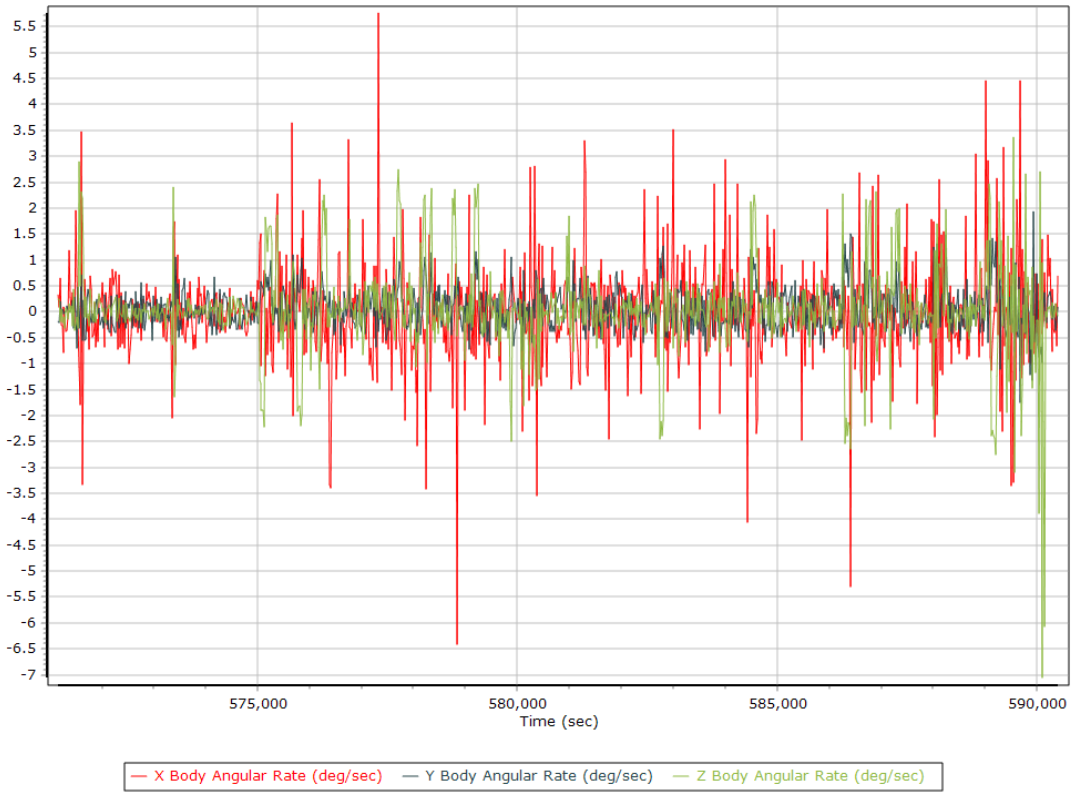
## Body Acceleration



## Total Body Acceleration

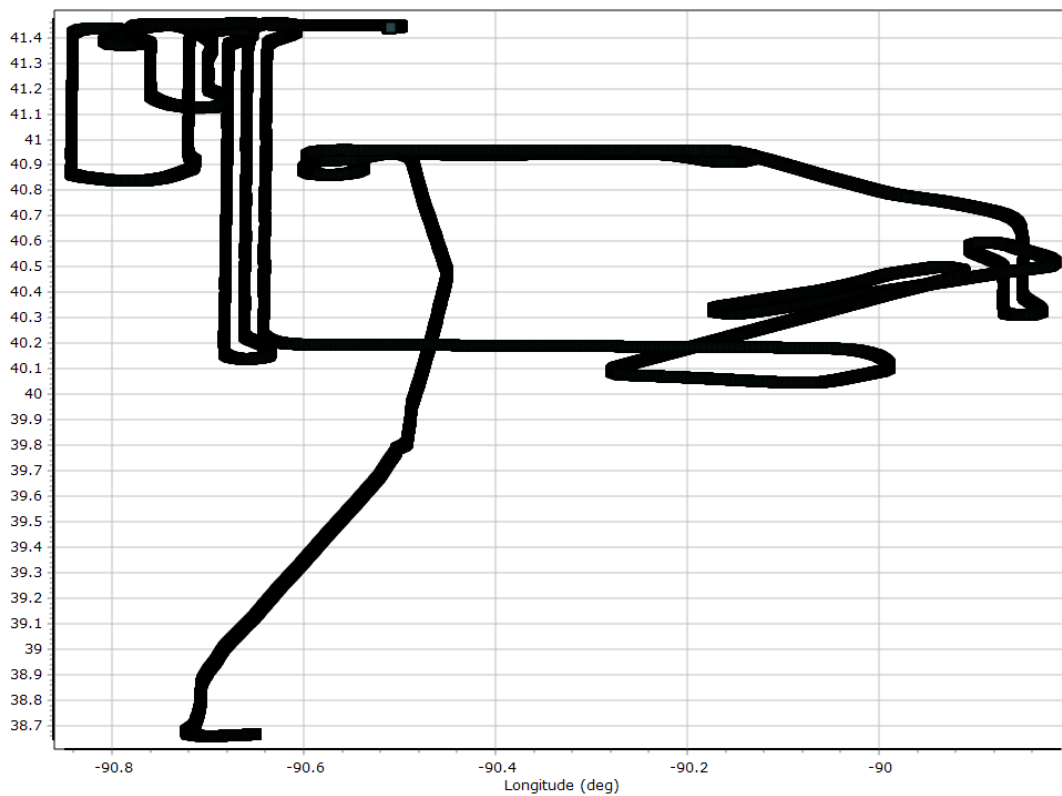


## Body Angular Rate

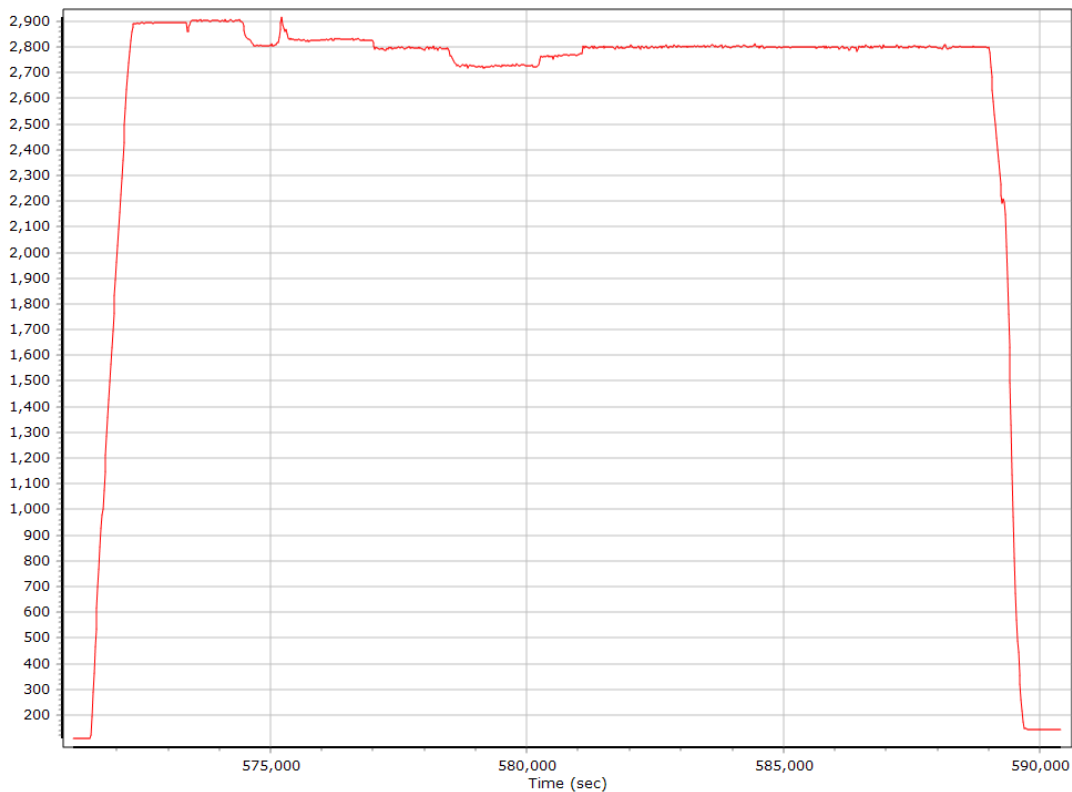


## Forward Processed Trajectory Information

### Top View

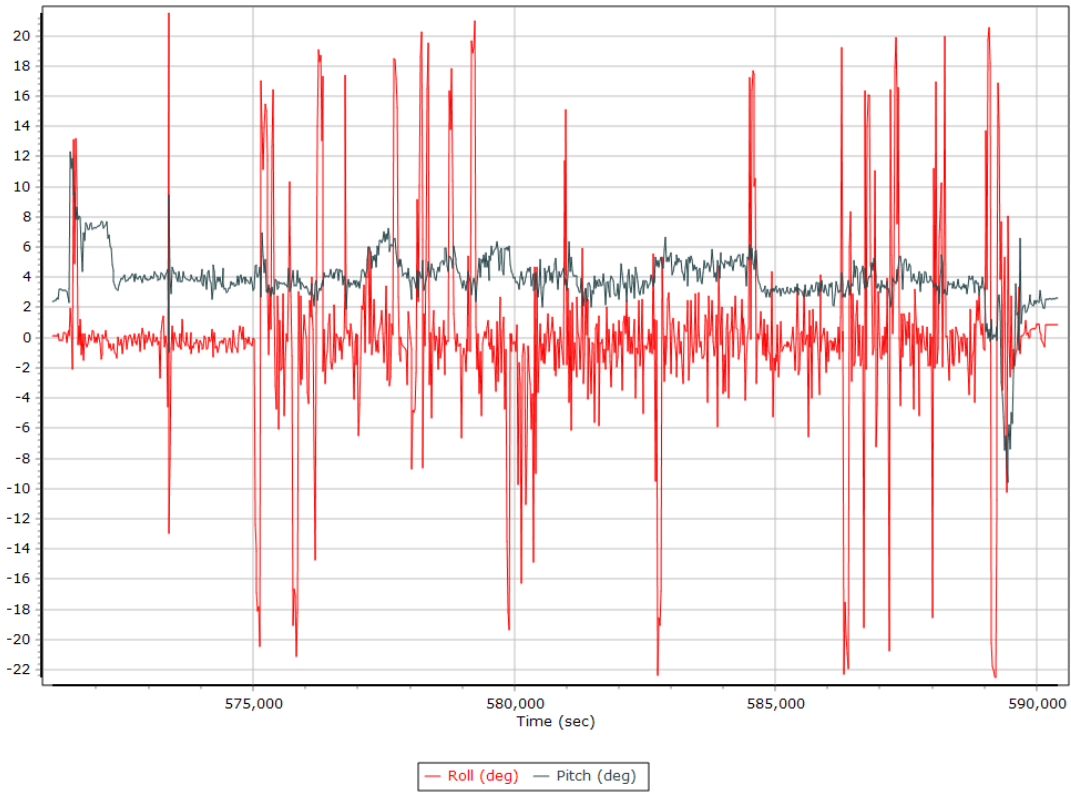


### Altitude

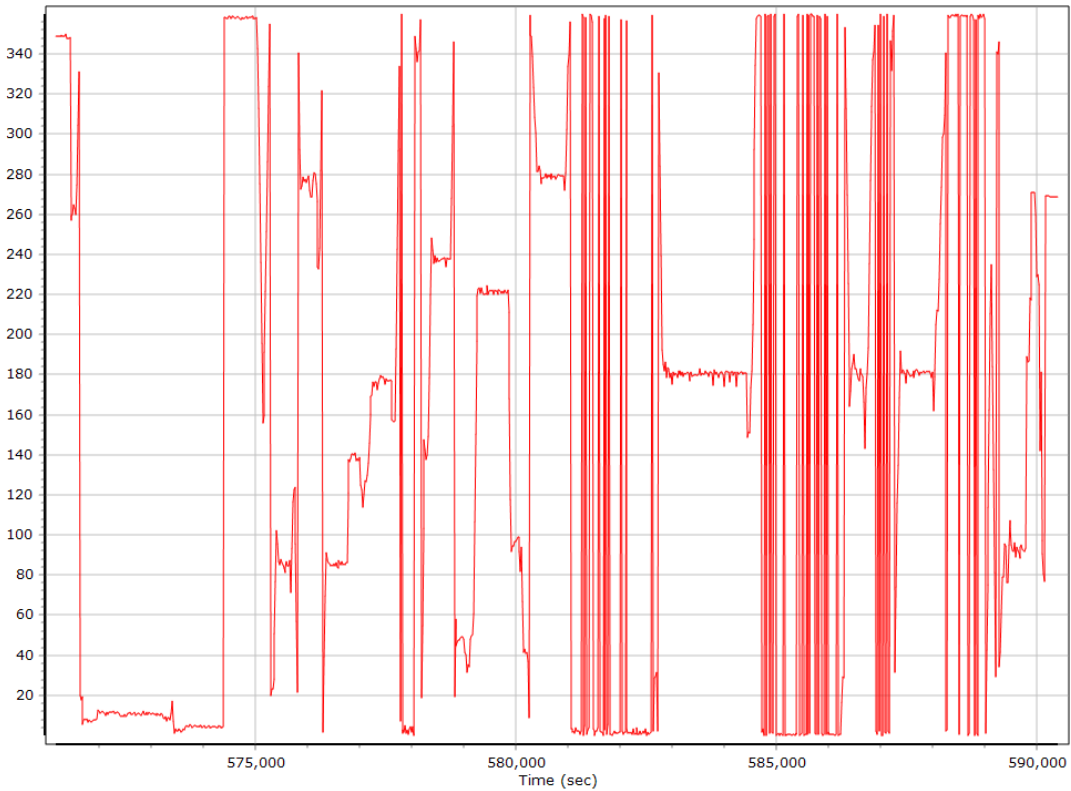




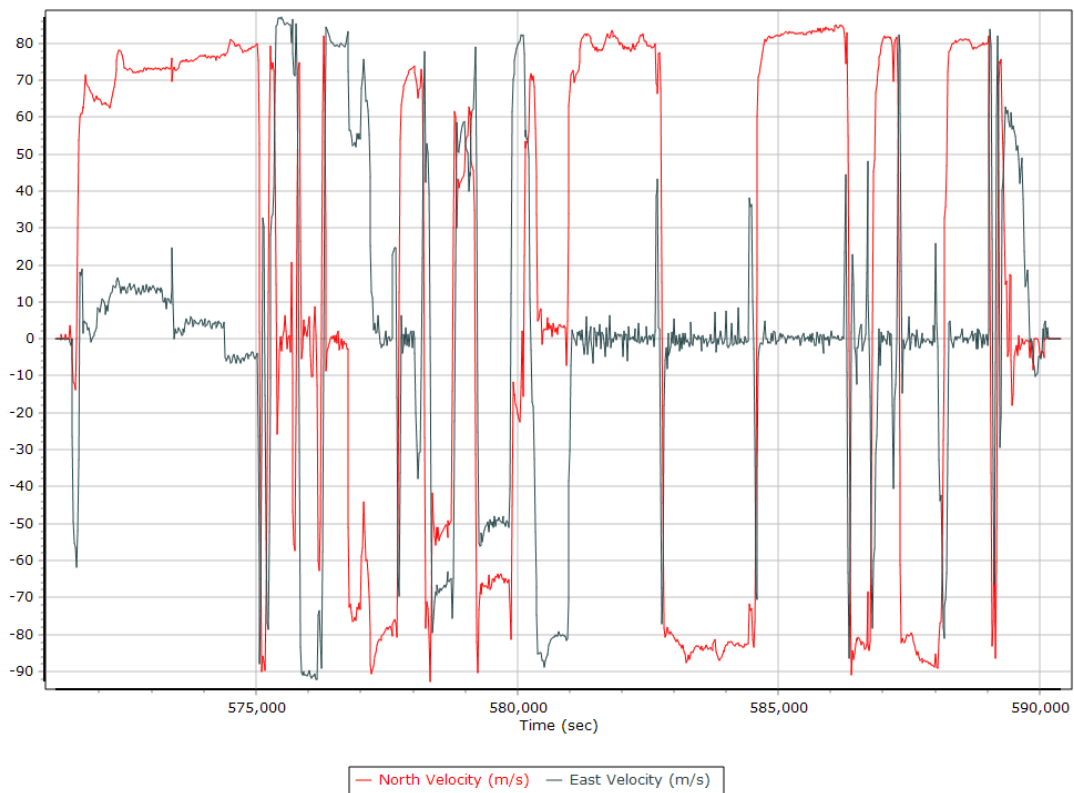
## Roll/Pitch



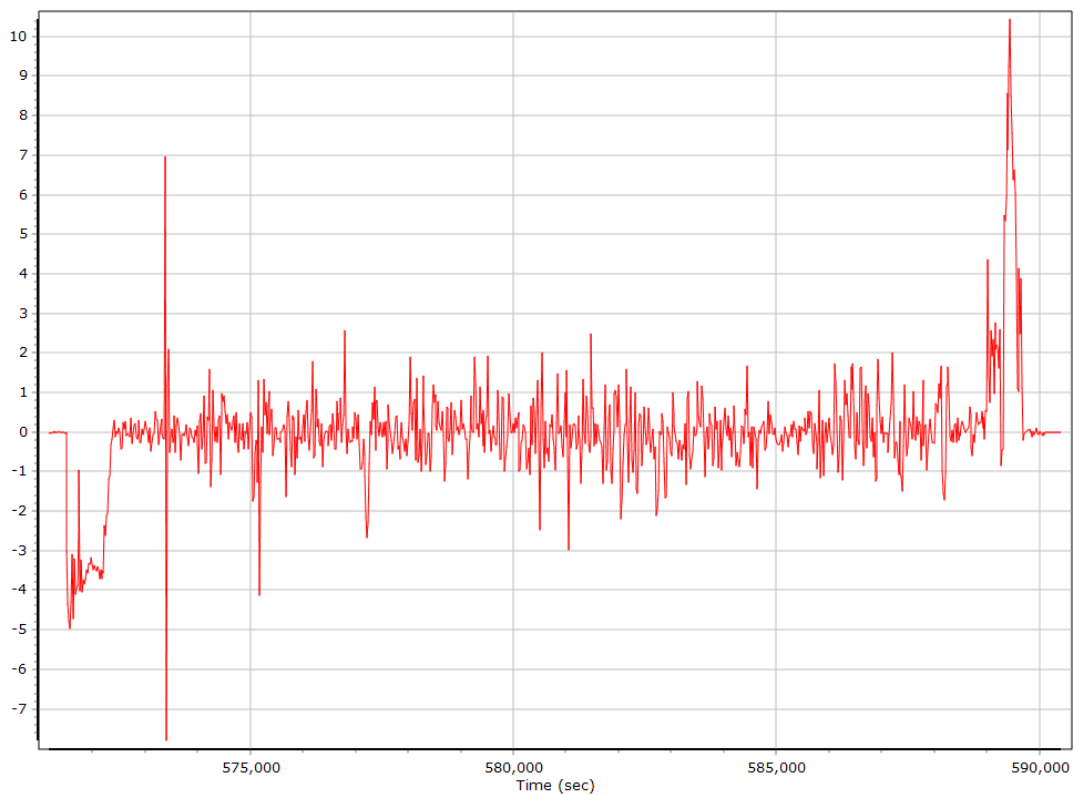
## Heading



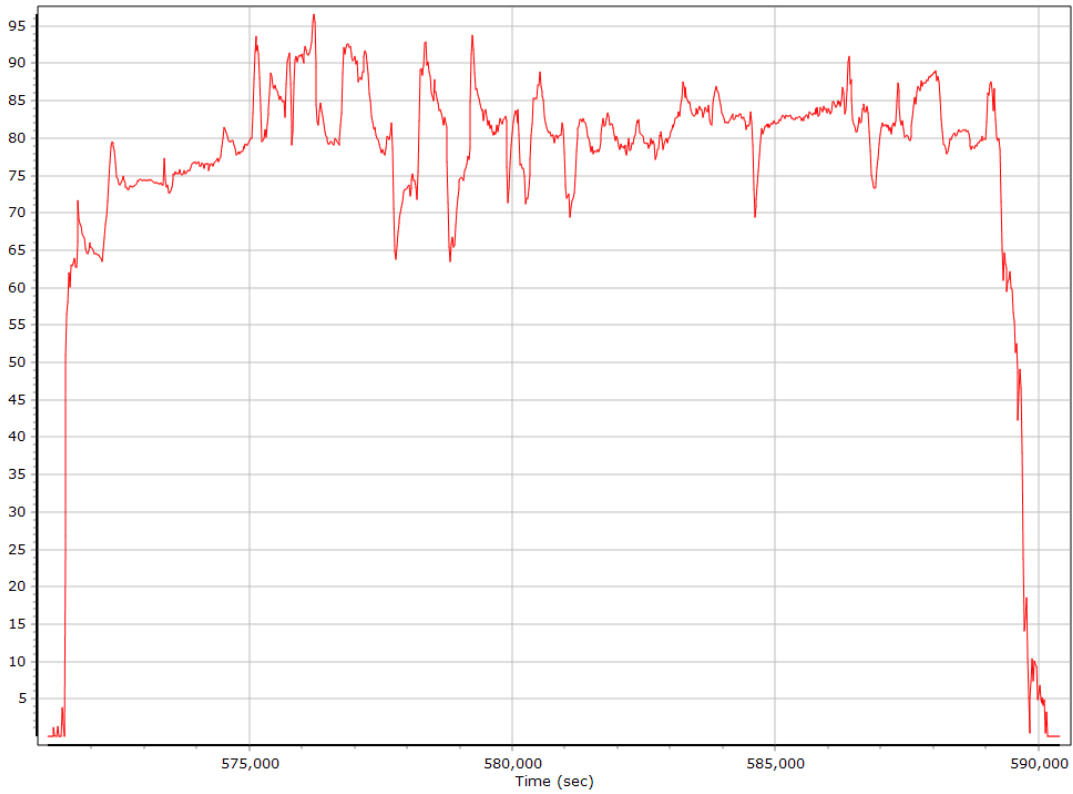
### North/East Velocity



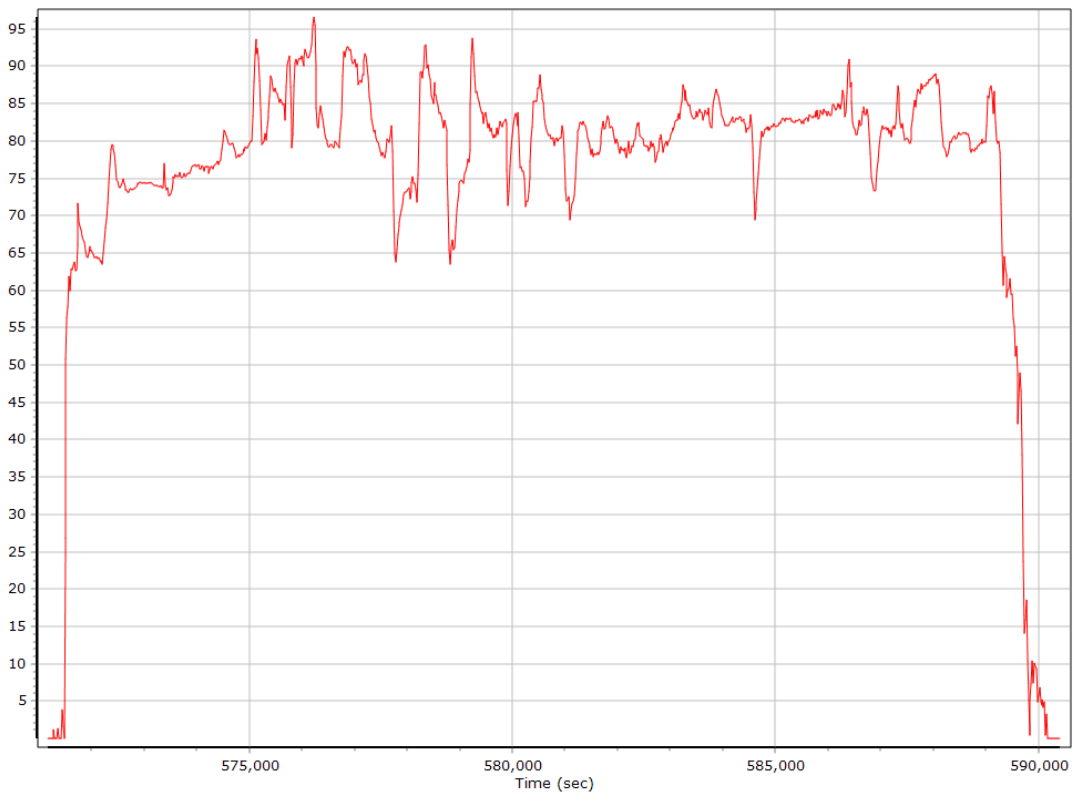
### Down Velocity



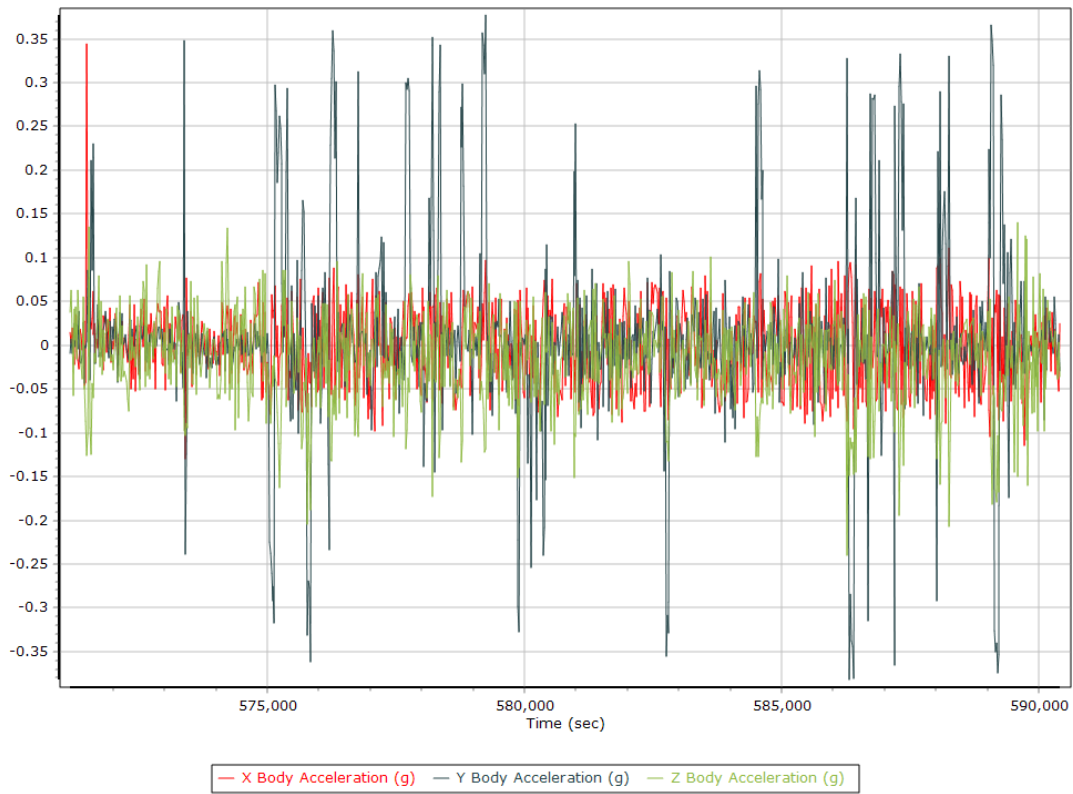
## Total Speed



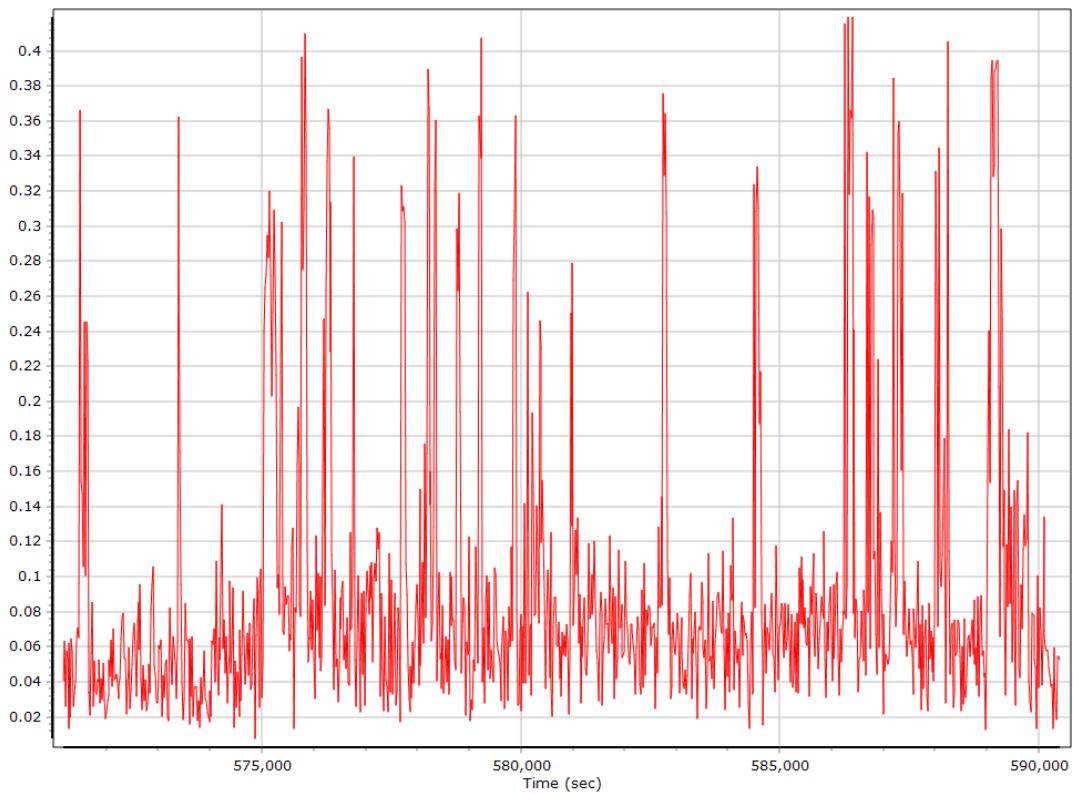
## Ground Speed



## Body Acceleration



## Total Body Acceleration



## Body Angular Rate

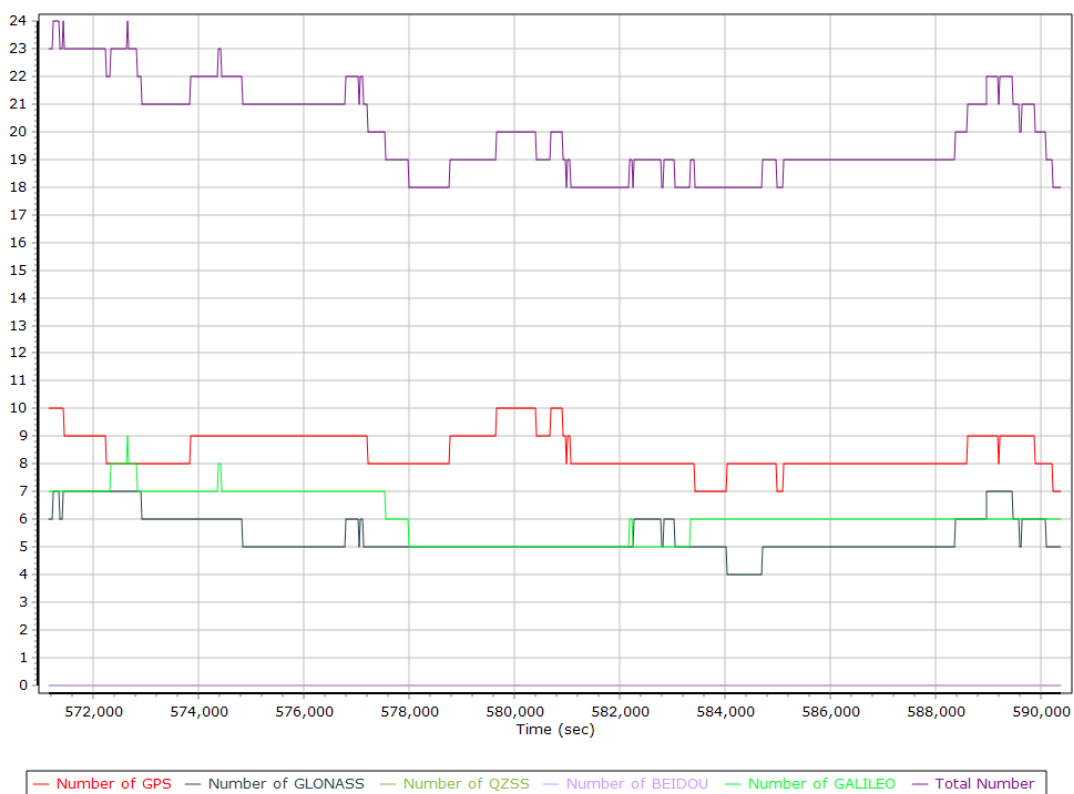


## GNSS QC

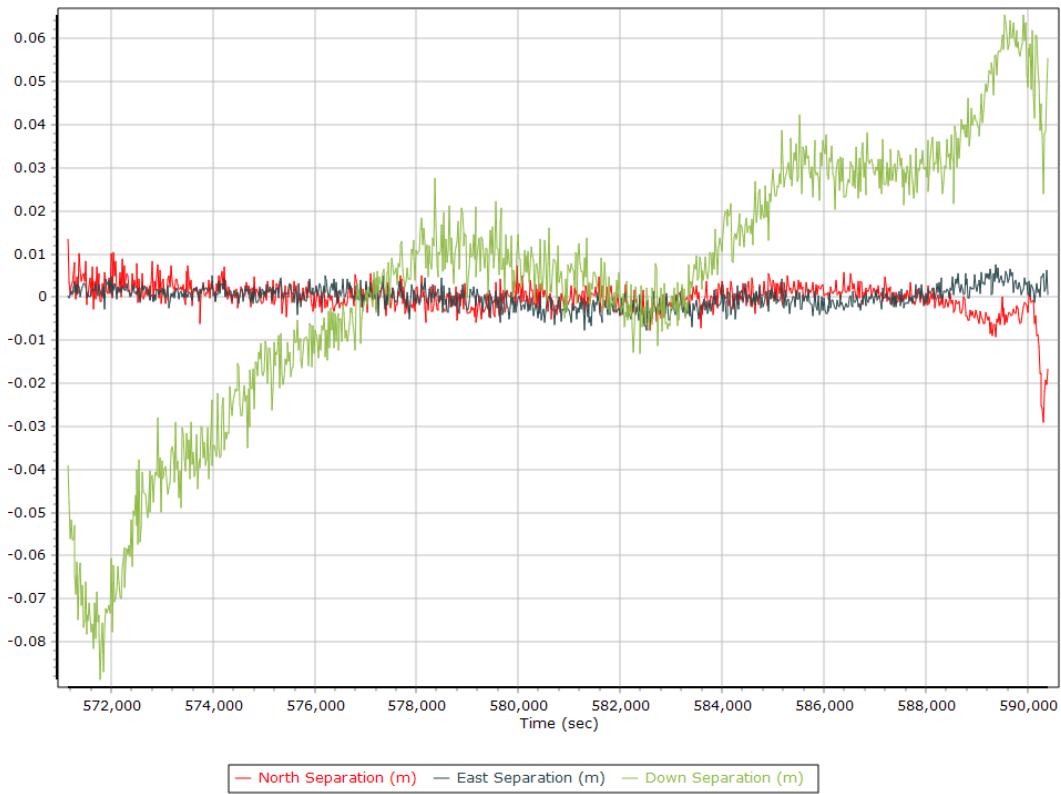
### GNSS QC Statistics

| Statistics           | Min      | Max   | Mean        |
|----------------------|----------|-------|-------------|
| Baseline length (km) | 0.00     | 0.00  |             |
| Number of GPS SV     | 7        | 10    | 8           |
| Number of GLONASS SV | 4        | 7     | 5           |
| Number of QZSS SV    | 0        | 0     | 0           |
| Number of BEIDOU SV  | 0        | 0     | 0           |
| Number of GALILEO SV | 5        | 9     | 6           |
| Total number of SV   | 17       | 24    | 20          |
| PDOP                 | 0.98     | 1.40  | 1.19        |
| QC Solution Gaps     | 0.00     | 0.00  |             |
| Solution Type        | Fixed    | Float | No solution |
| Epoch (sec)          | 19678.00 | 0.00  | 0.00        |
| Percentage           | 100.00   | 0.00  | 0.00        |

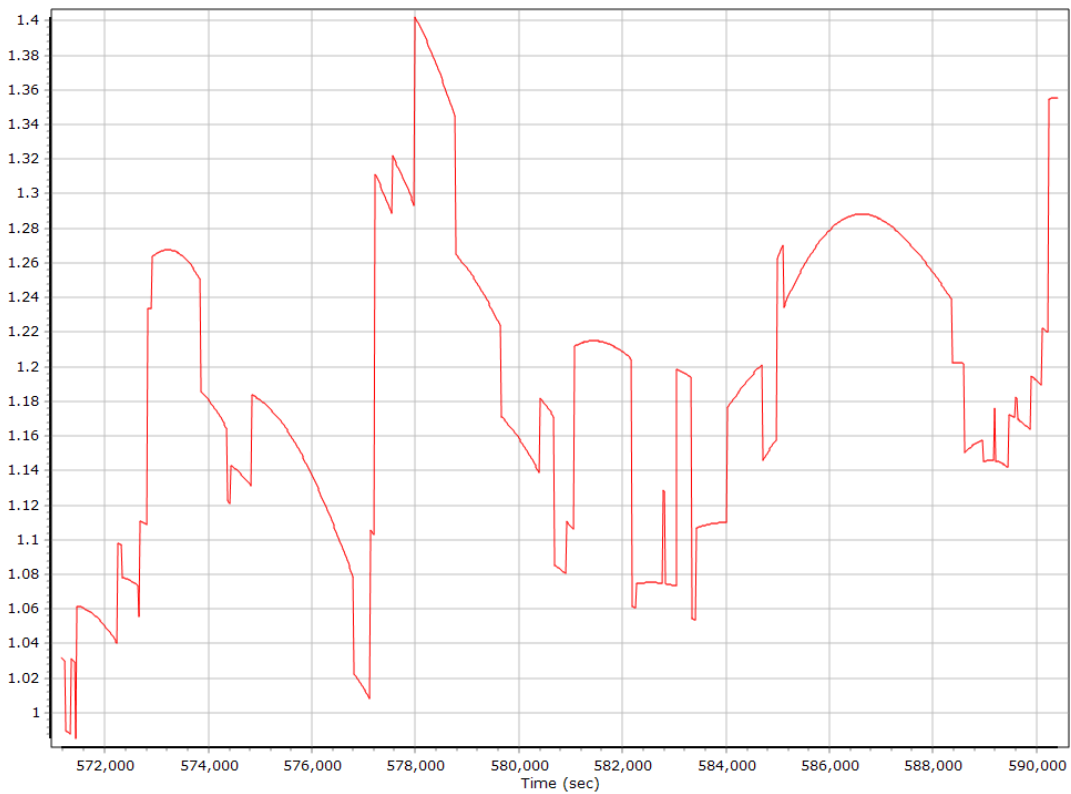
### Num SVs in solution



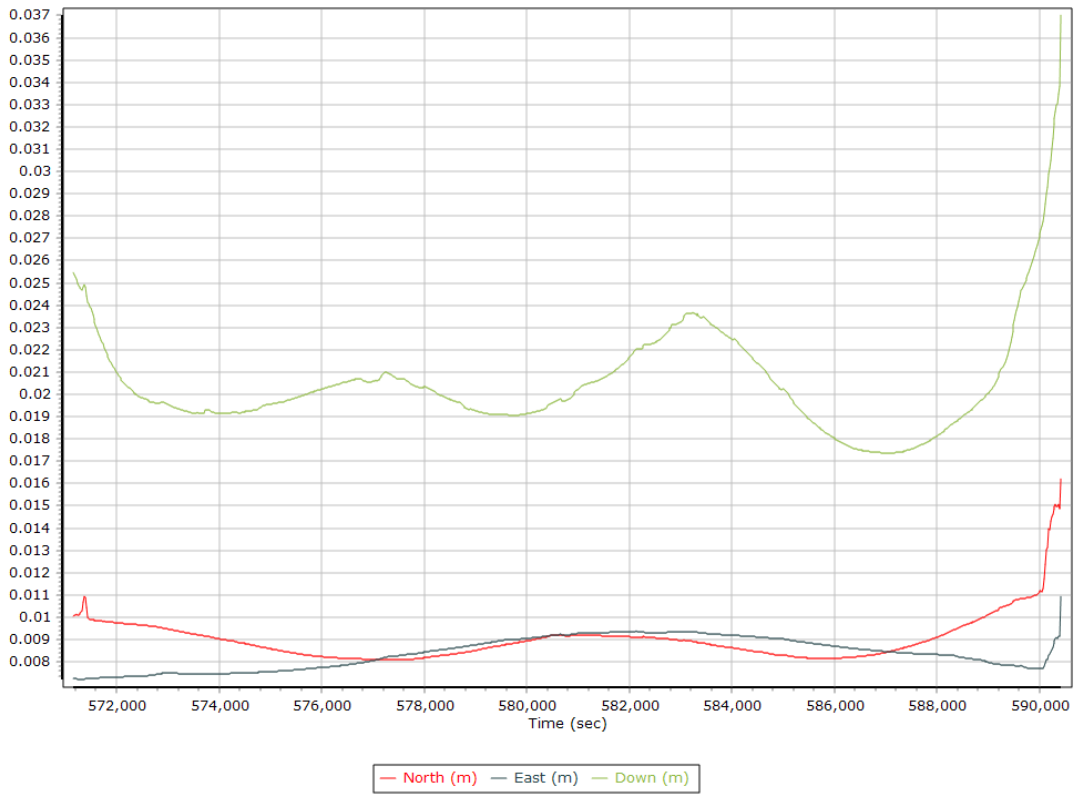
## Forward/Reverse Separation



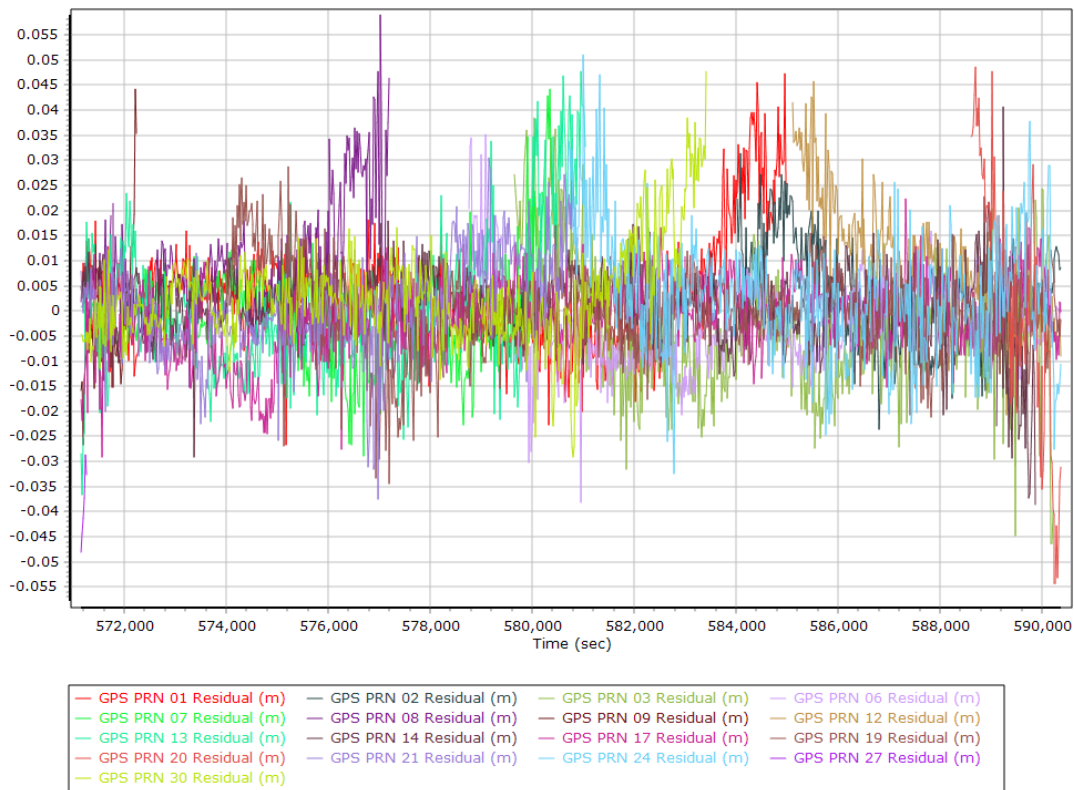
## PDOP



## Estimated Position Accuracy

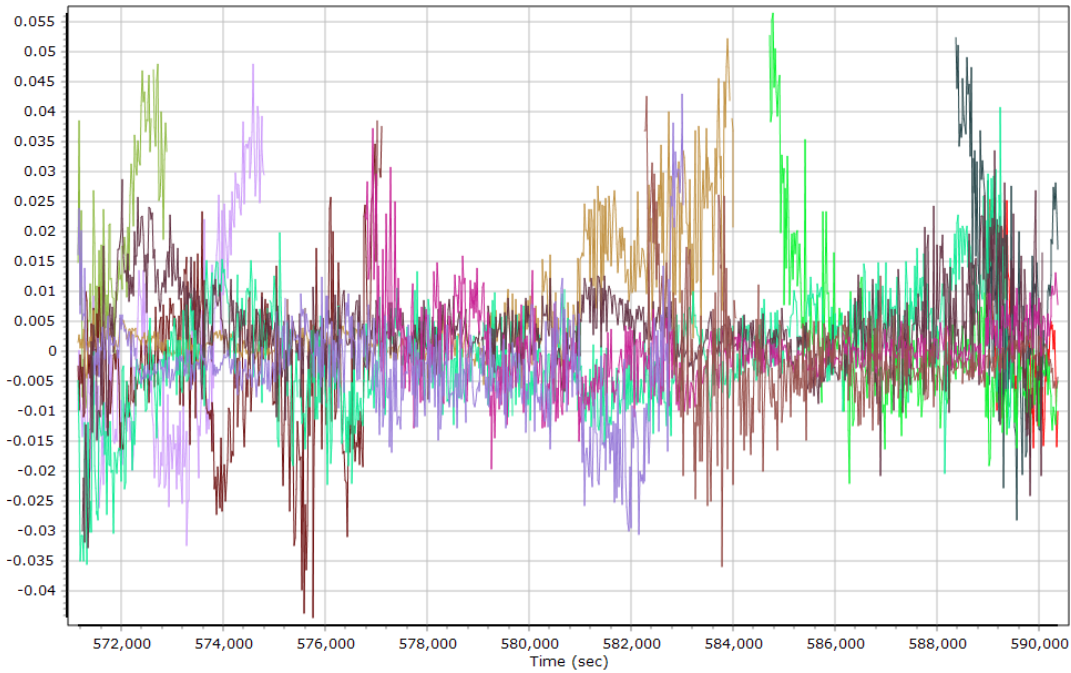


## GPS Residuals



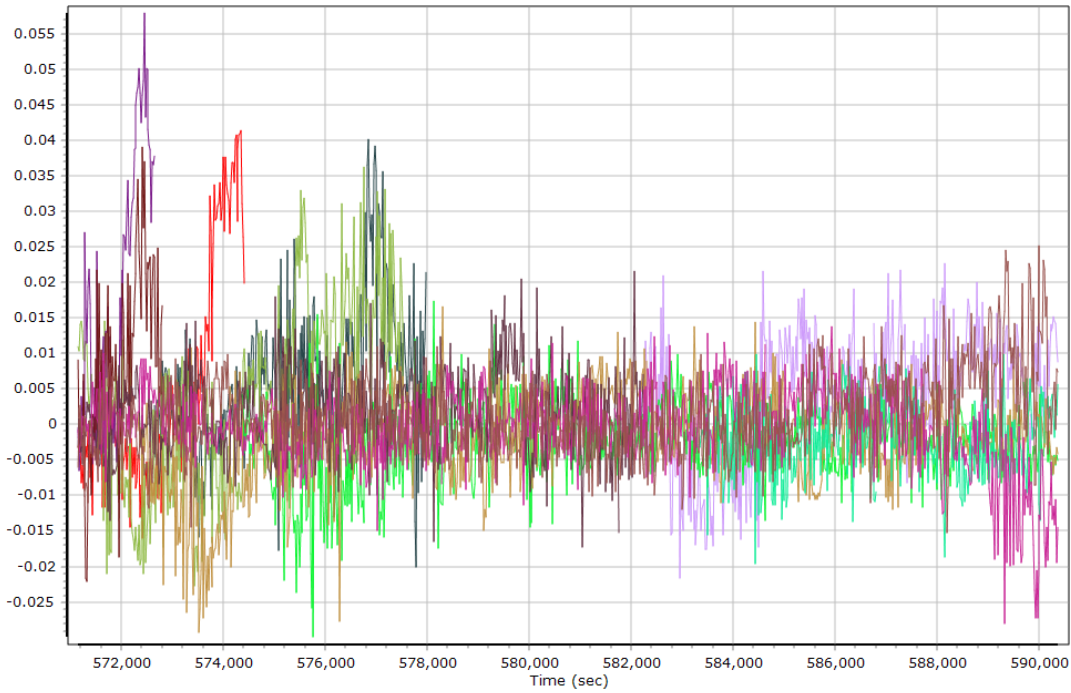


## GLONASS Residuals



- |                         |                         |                         |                         |
|-------------------------|-------------------------|-------------------------|-------------------------|
| GLONASS 02 Residual (m) | GLONASS 03 Residual (m) | GLONASS 04 Residual (m) | GLONASS 05 Residual (m) |
| GLONASS 09 Residual (m) | GLONASS 10 Residual (m) | GLONASS 13 Residual (m) | GLONASS 14 Residual (m) |
| GLONASS 15 Residual (m) | GLONASS 17 Residual (m) | GLONASS 18 Residual (m) | GLONASS 19 Residual (m) |
| GLONASS 23 Residual (m) | GLONASS 24 Residual (m) |                         |                         |

## GALILEO Residuals



- |                         |                         |                         |                         |
|-------------------------|-------------------------|-------------------------|-------------------------|
| GALILEO 04 Residual (m) | GALILEO 05 Residual (m) | GALILEO 09 Residual (m) | GALILEO 11 Residual (m) |
| GALILEO 12 Residual (m) | GALILEO 13 Residual (m) | GALILEO 21 Residual (m) | GALILEO 24 Residual (m) |
| GALILEO 25 Residual (m) | GALILEO 26 Residual (m) | GALILEO 31 Residual (m) | GALILEO 33 Residual (m) |

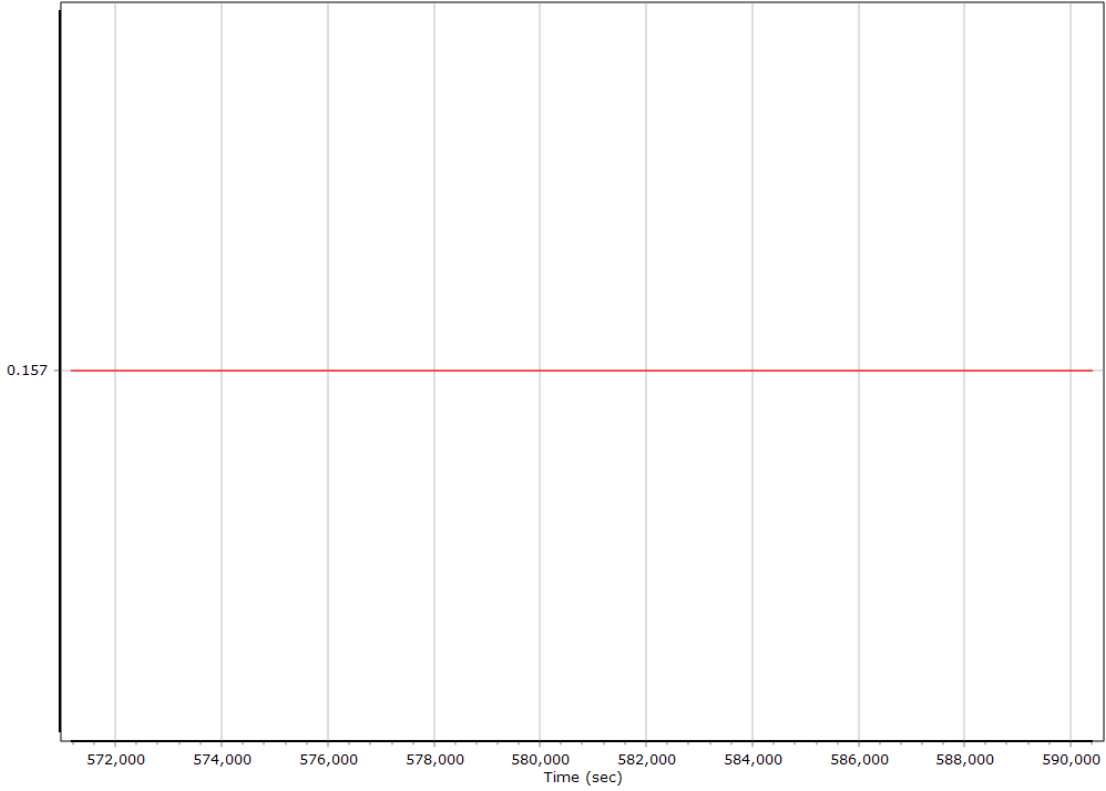
## GNSS-Inertial Processor Configuration

|   |                                  |        |         |
|---|----------------------------------|--------|---------|
| Processing mode                                 | IN-Fusion PP-RTX                 |        |         |
| Stabilized mount                                | False                            |        |         |
| Processing start time                           | 570711.000 (05/07/2022 14:31:51) |        |         |
| Processing end time                             | 590431.000 (05/07/2022 20:00:31) |        |         |
| 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  | 180.000 |
| Reference to Primary GNSS lever arm (m)         | 0.157                            | -0.150 | -1.090  |
| 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   |

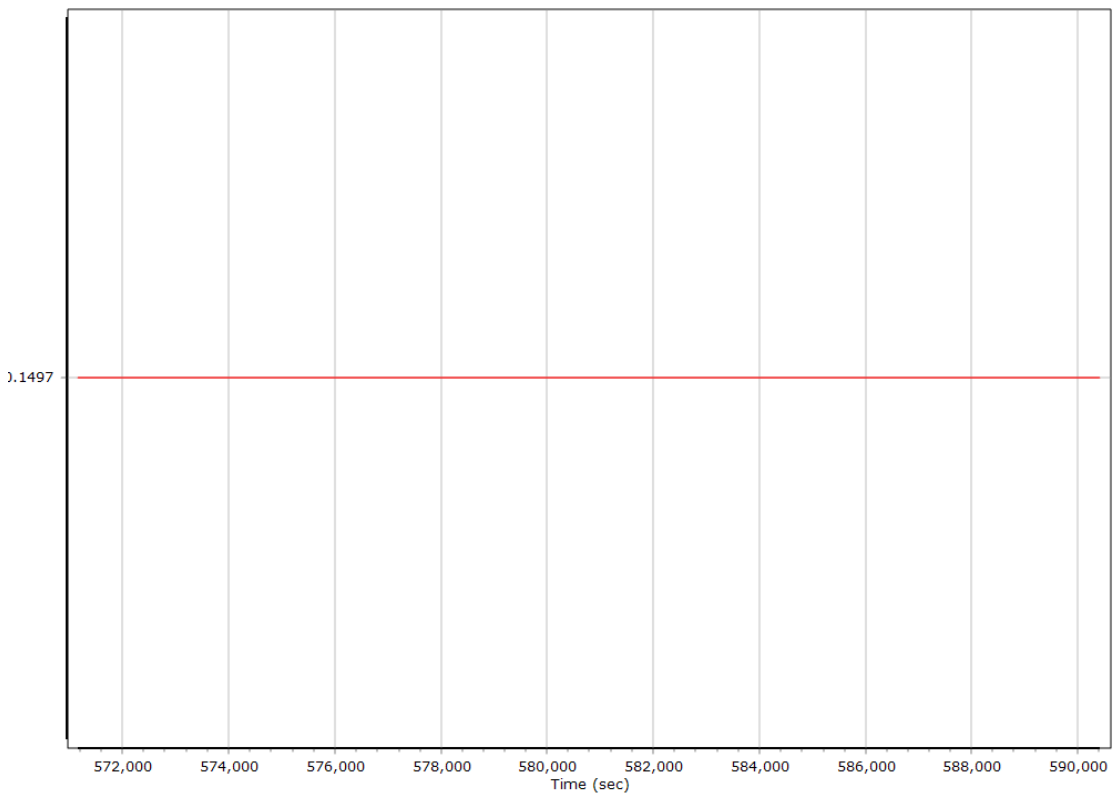
## Calibrated Installation Parameters

### Reference-Primary GNSS Lever Arm (m)

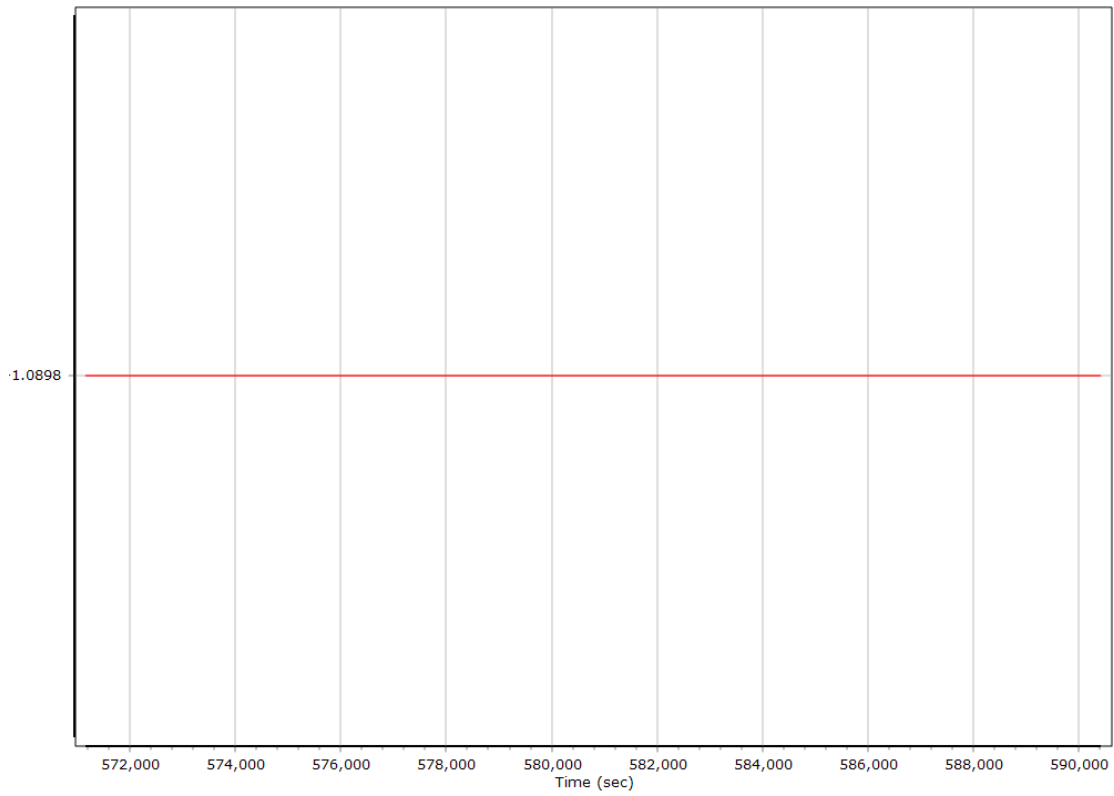
#### X Reference-Primary GNSS Lever Arm (m)



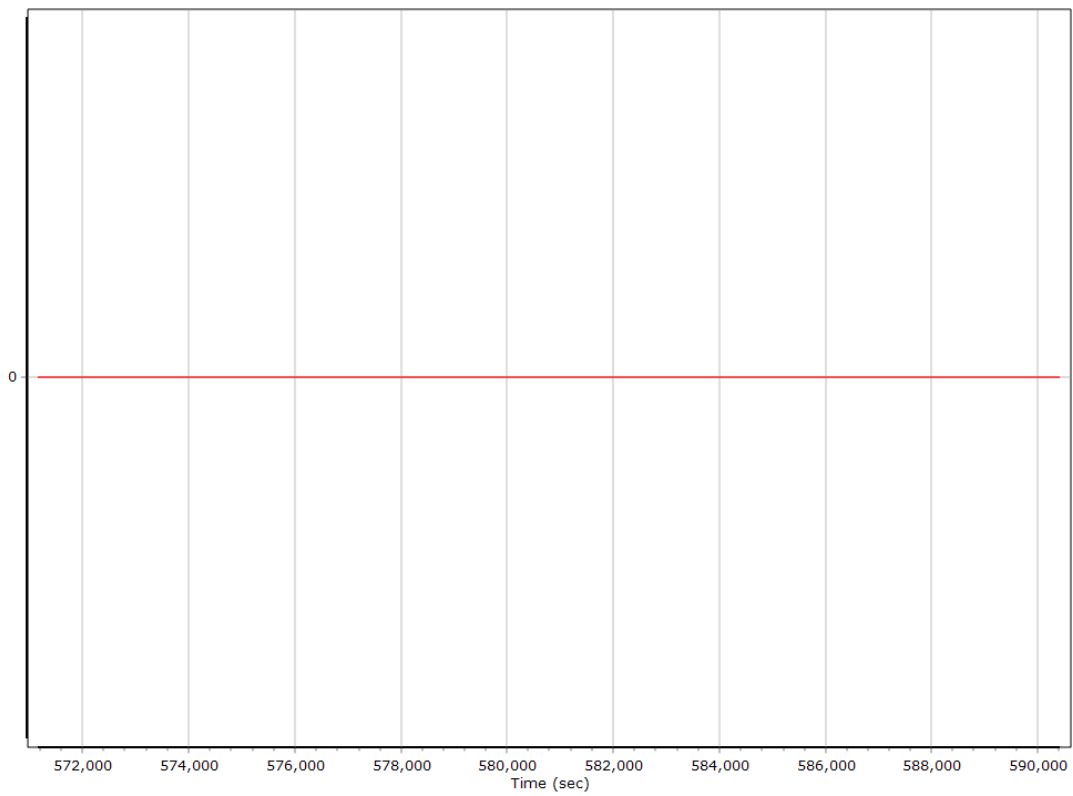
#### Y Reference-Primary GNSS Lever Arm (m)



### Z Reference-Primary GNSS Lever Arm (m)



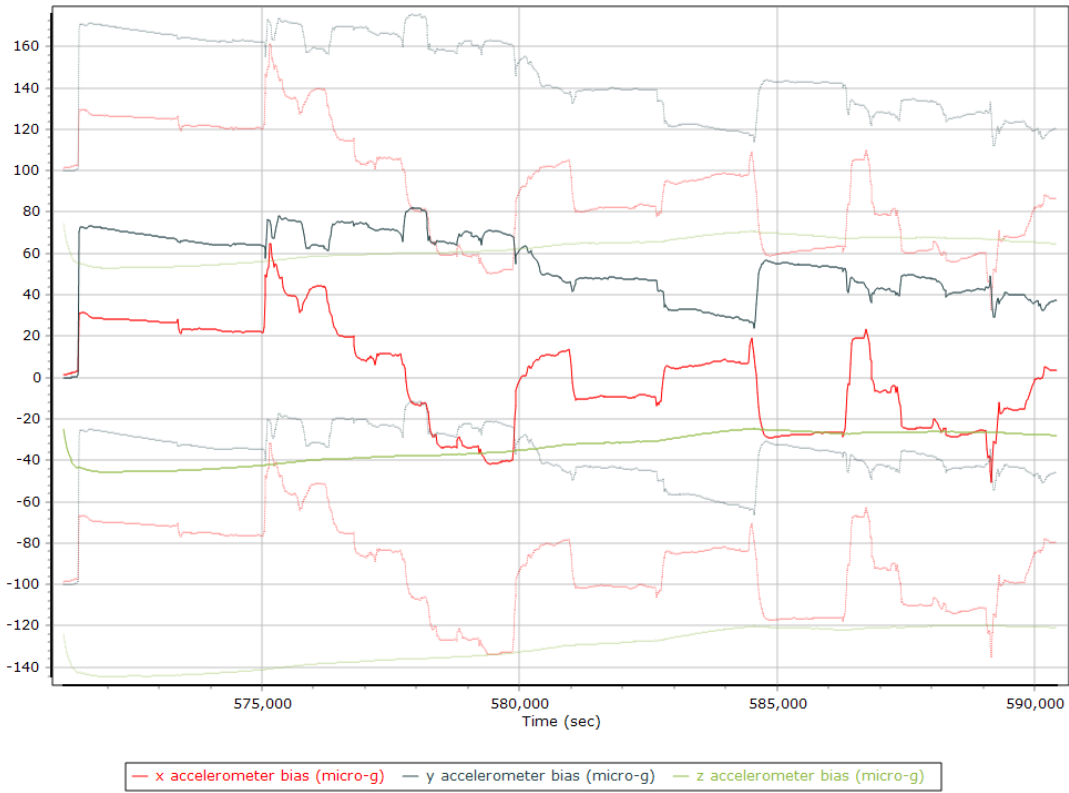
### Reference-Primary GNSS Lever Arm Figure of Merit



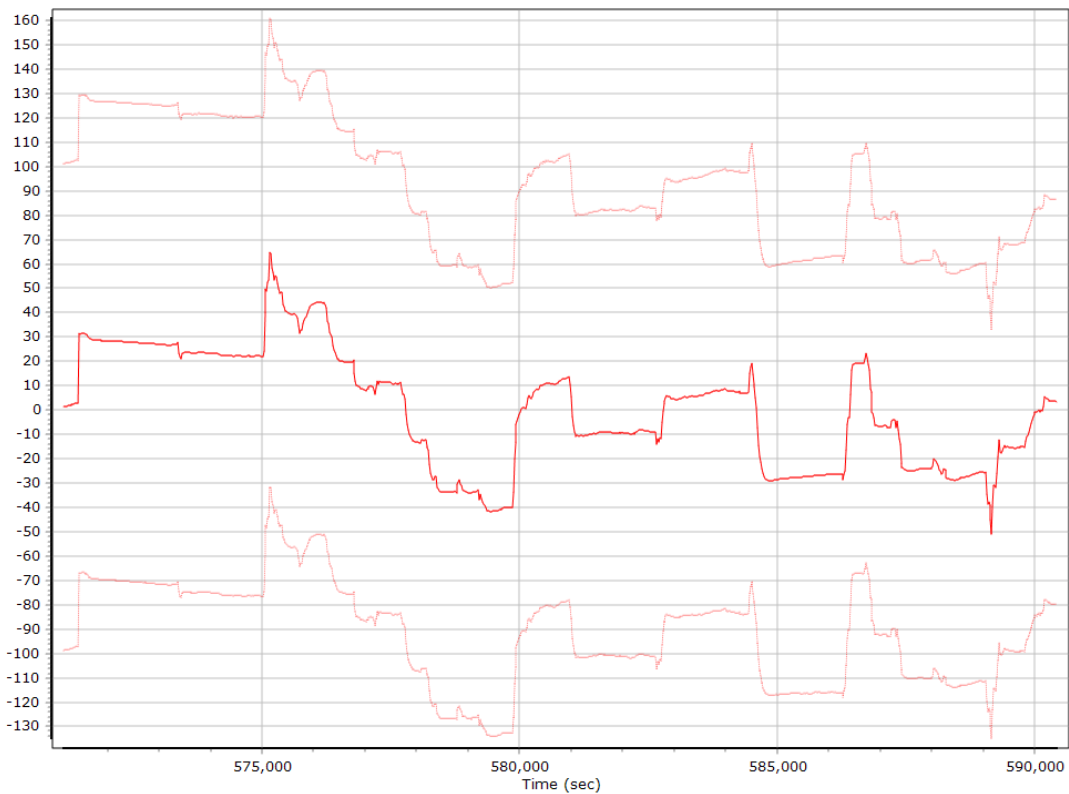
## IN-Fusion QC

### Forward Processed Estimated Errors, Reference Frame

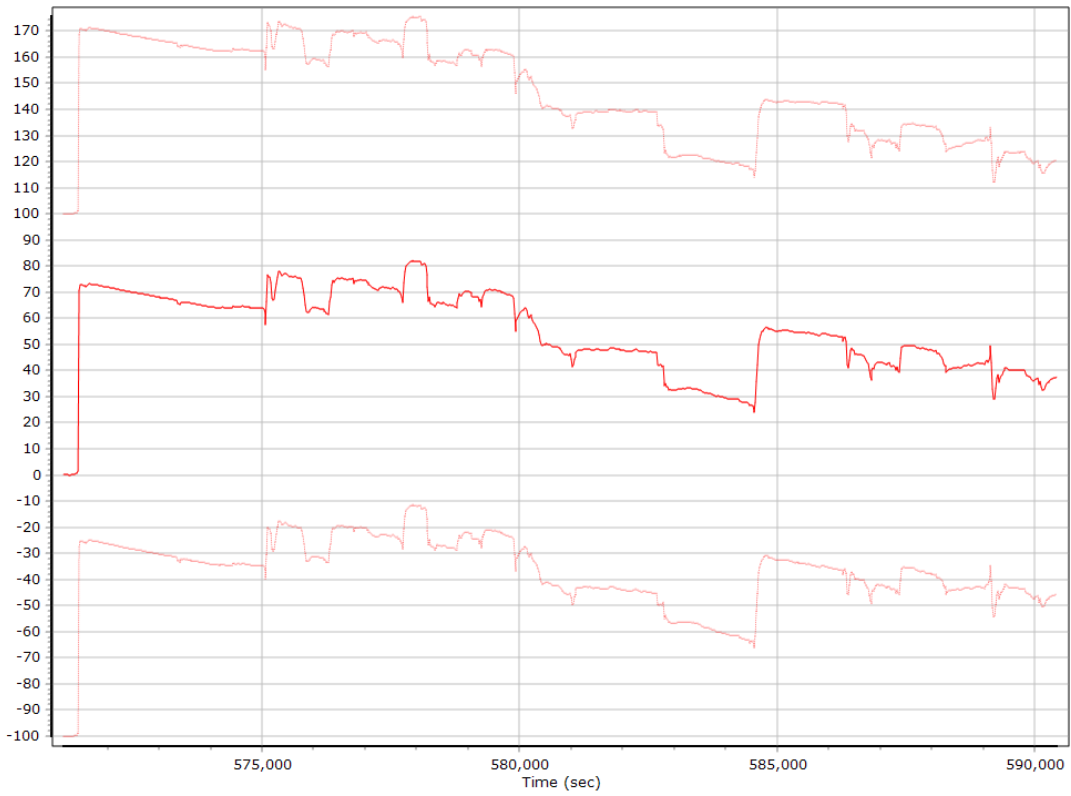
#### Accelerometer Bias (micro-g)



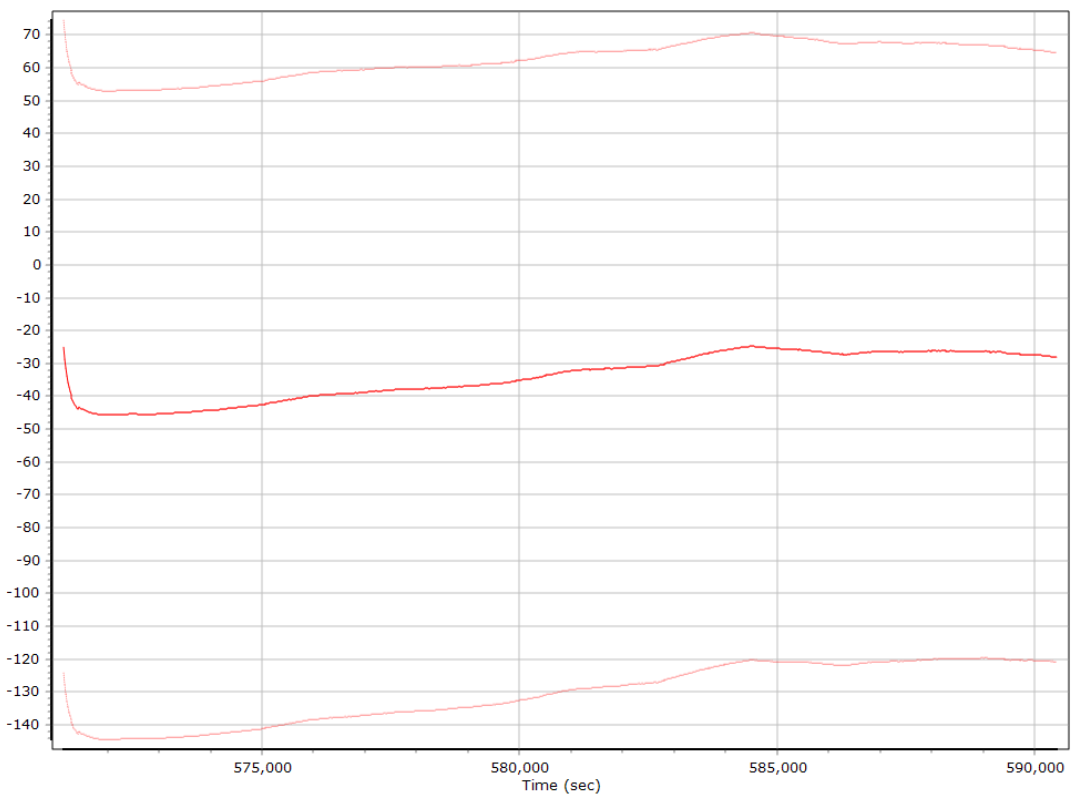
#### X Accelerometer Bias (micro-g)



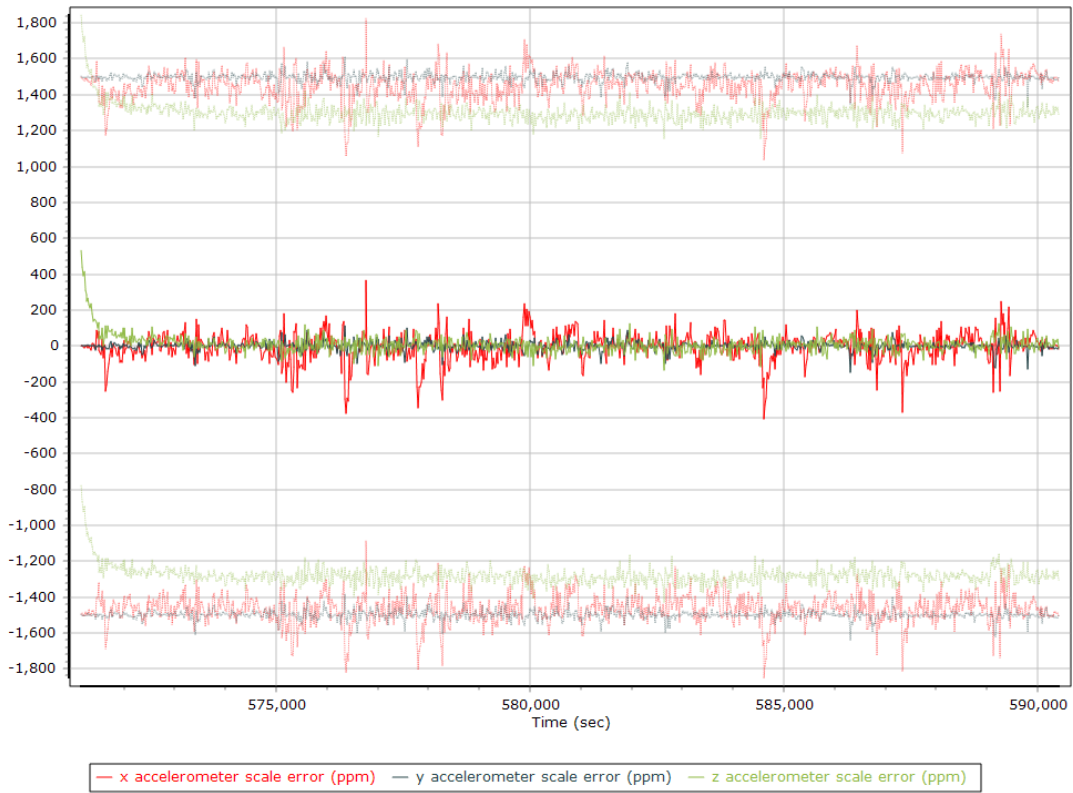
### Y Accelerometer Bias (micro-g)



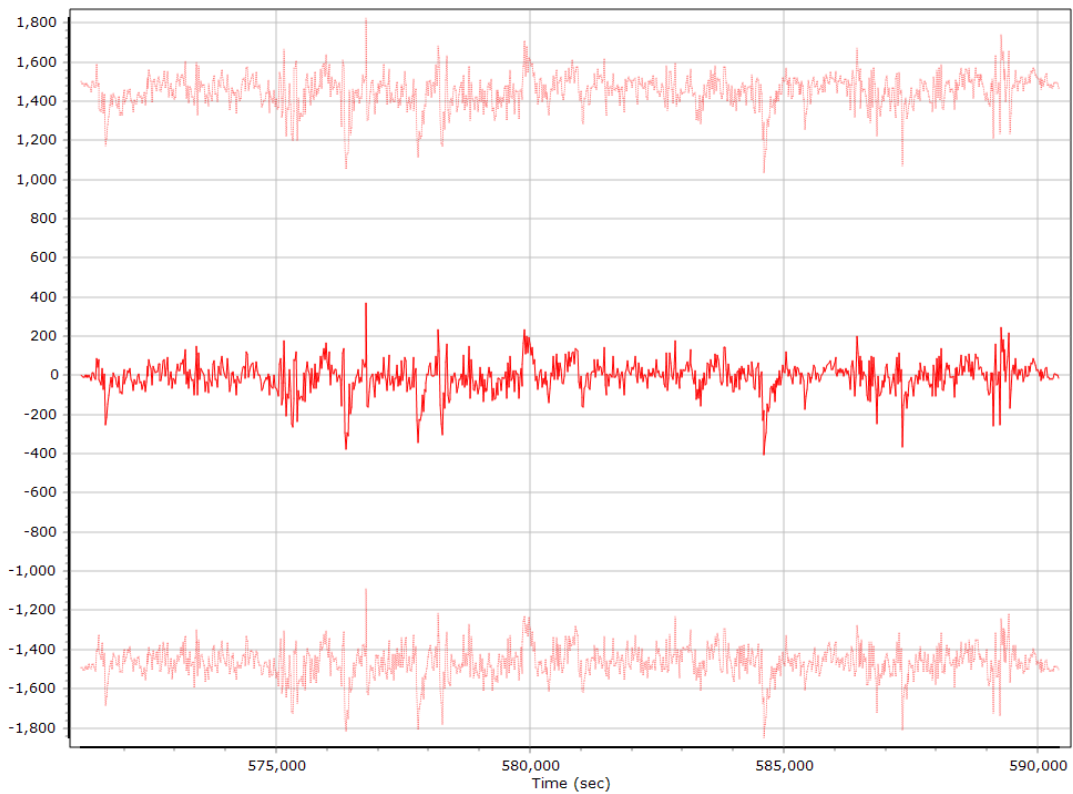
### Z Accelerometer Bias (micro-g)



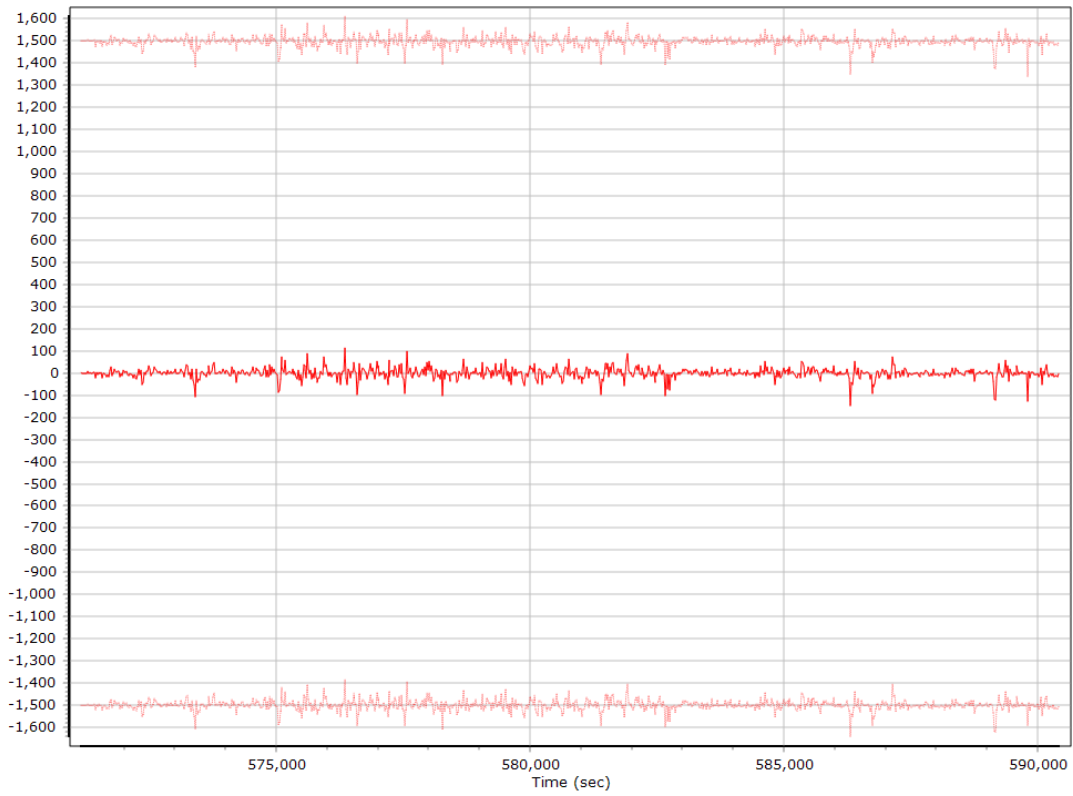
### Accelerometer Scale Error (ppm)



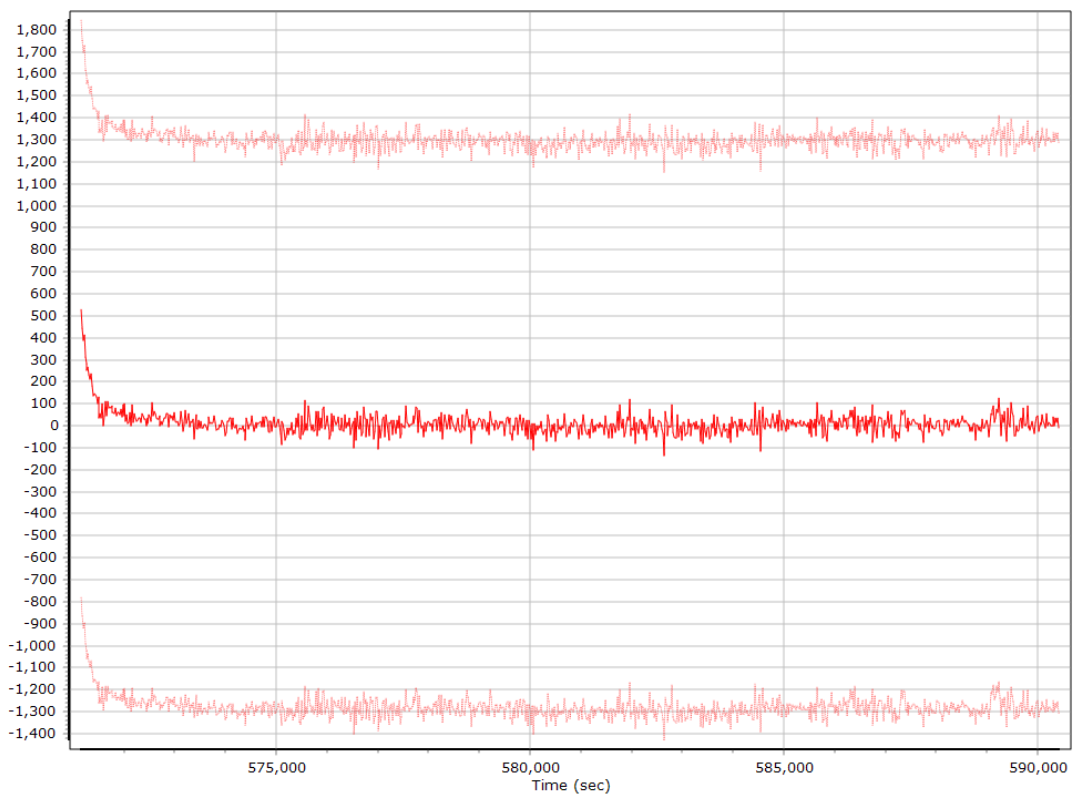
### X Accelerometer Scale Error (ppm)



### Y Accelerometer Scale Error (ppm)

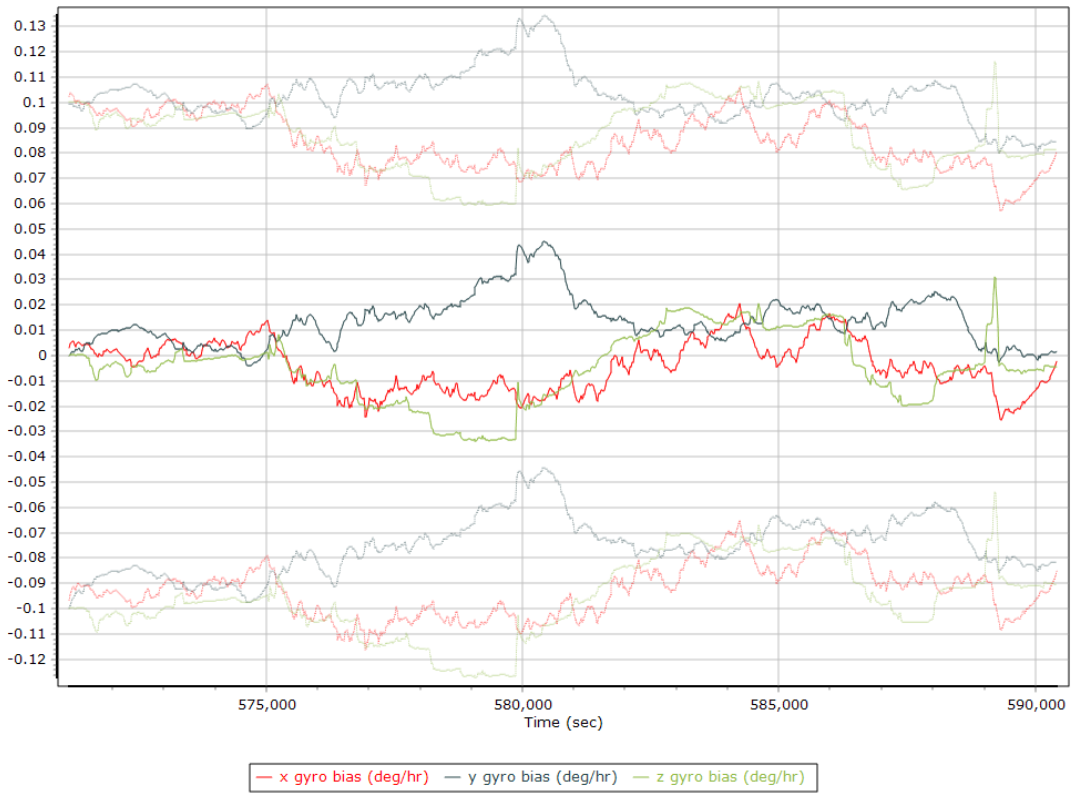


### Z Accelerometer Scale Error (ppm)

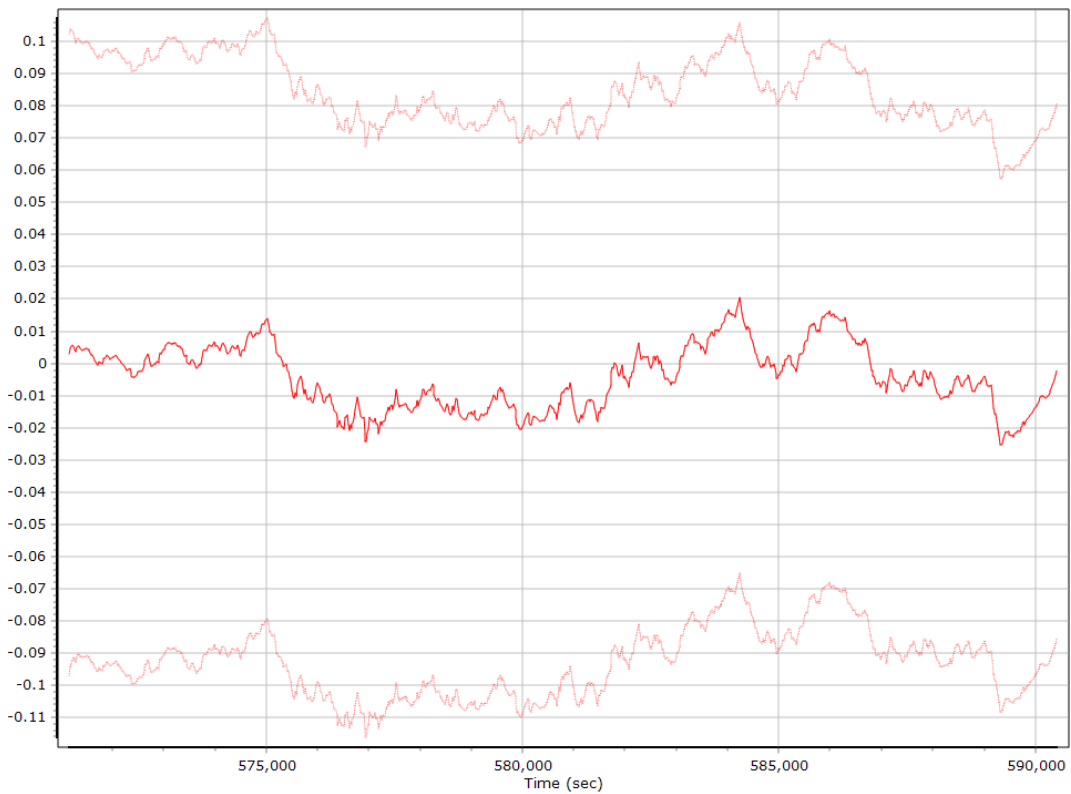




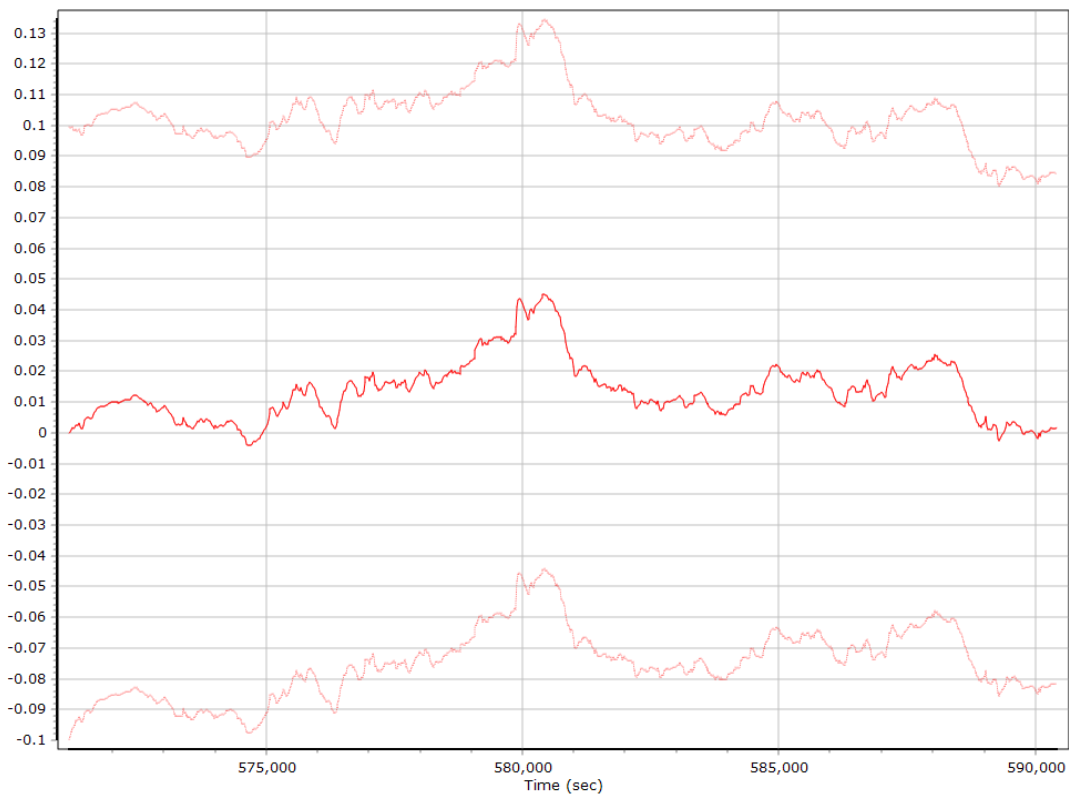
### Gyro Bias (deg/h)



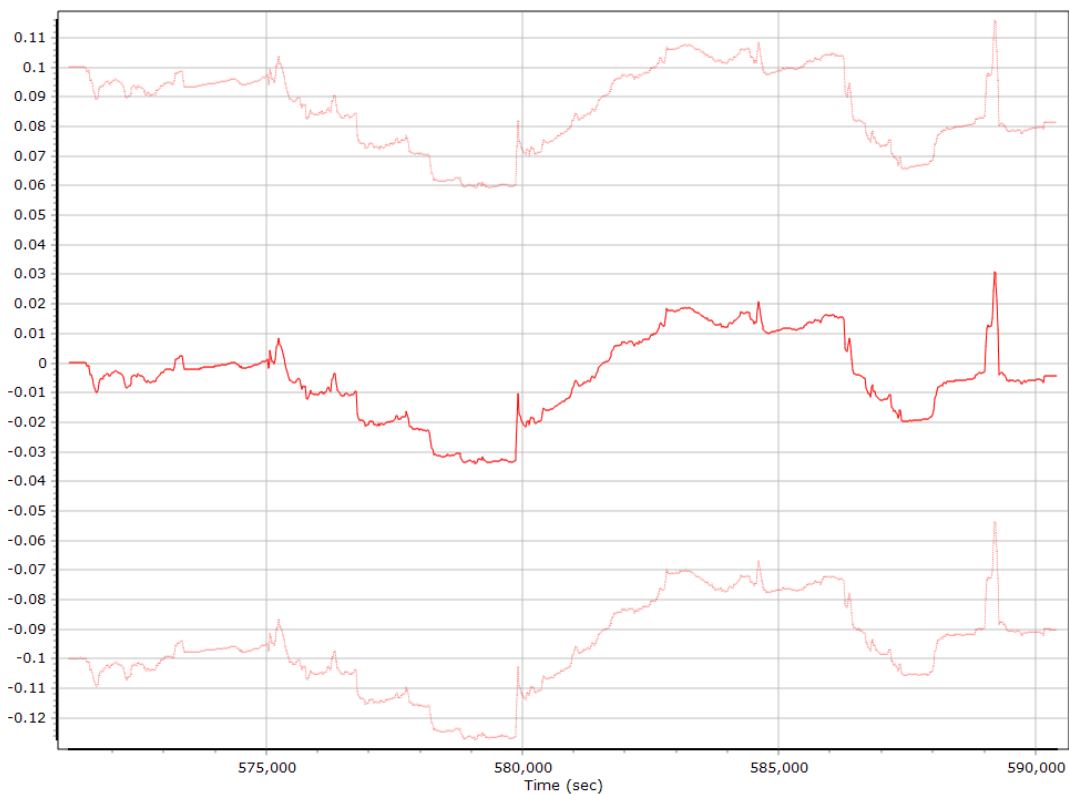
### X Gyro Bias (deg/h)



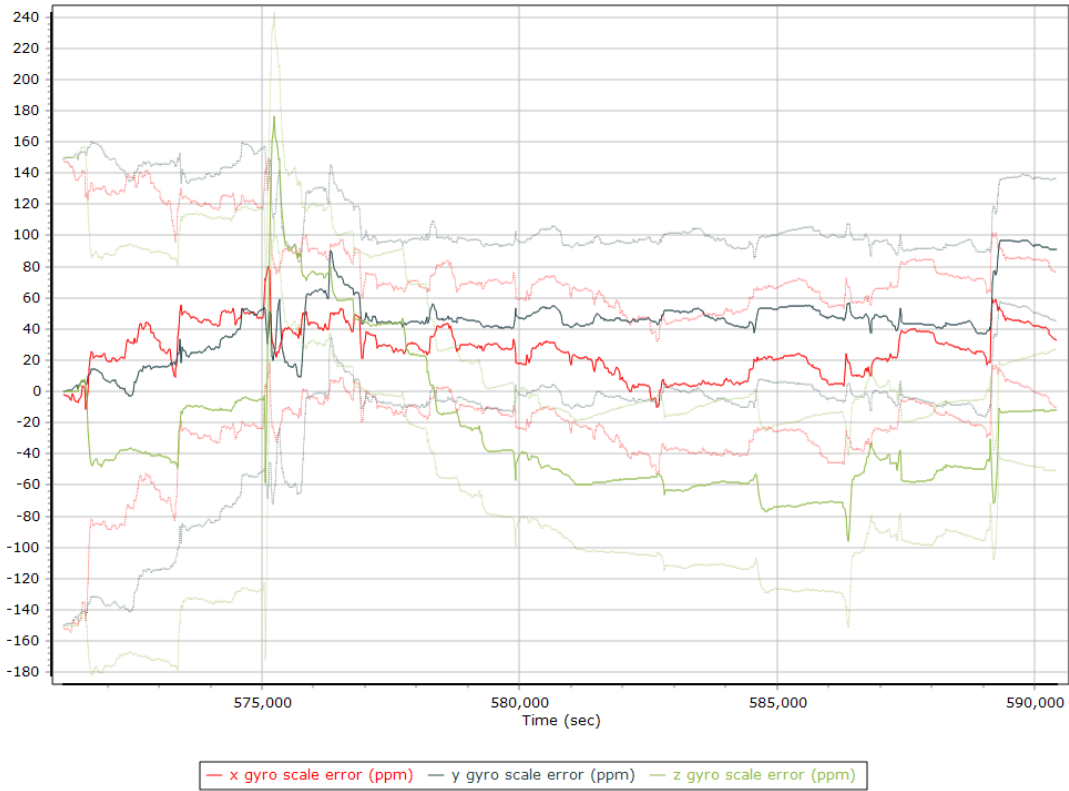
### Y Gyro Bias (deg/h)



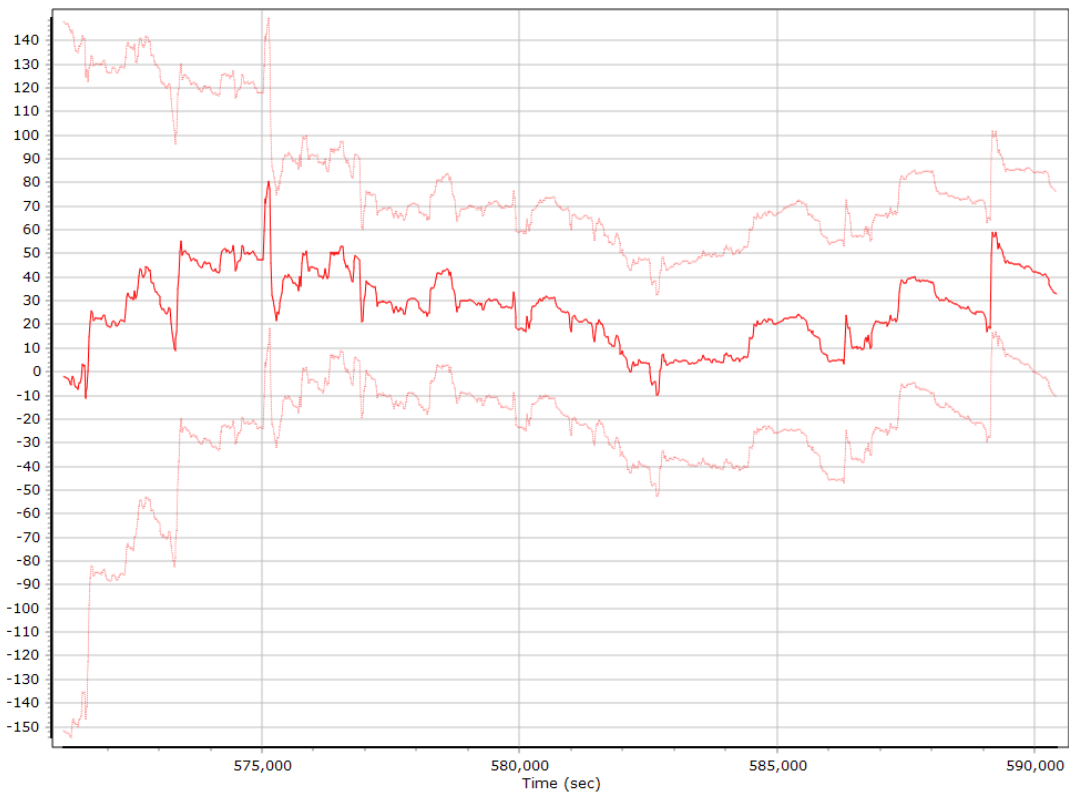
### Z Gyro Bias (deg/h)



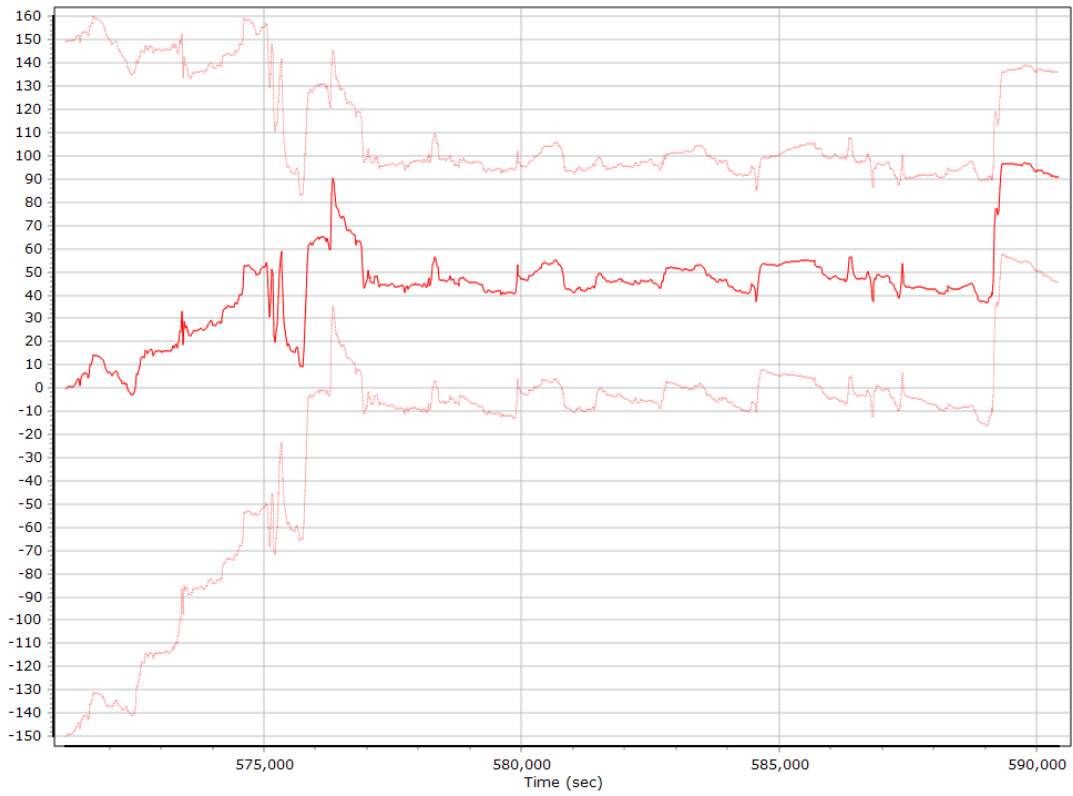
### Gyro Scale Error (ppm)



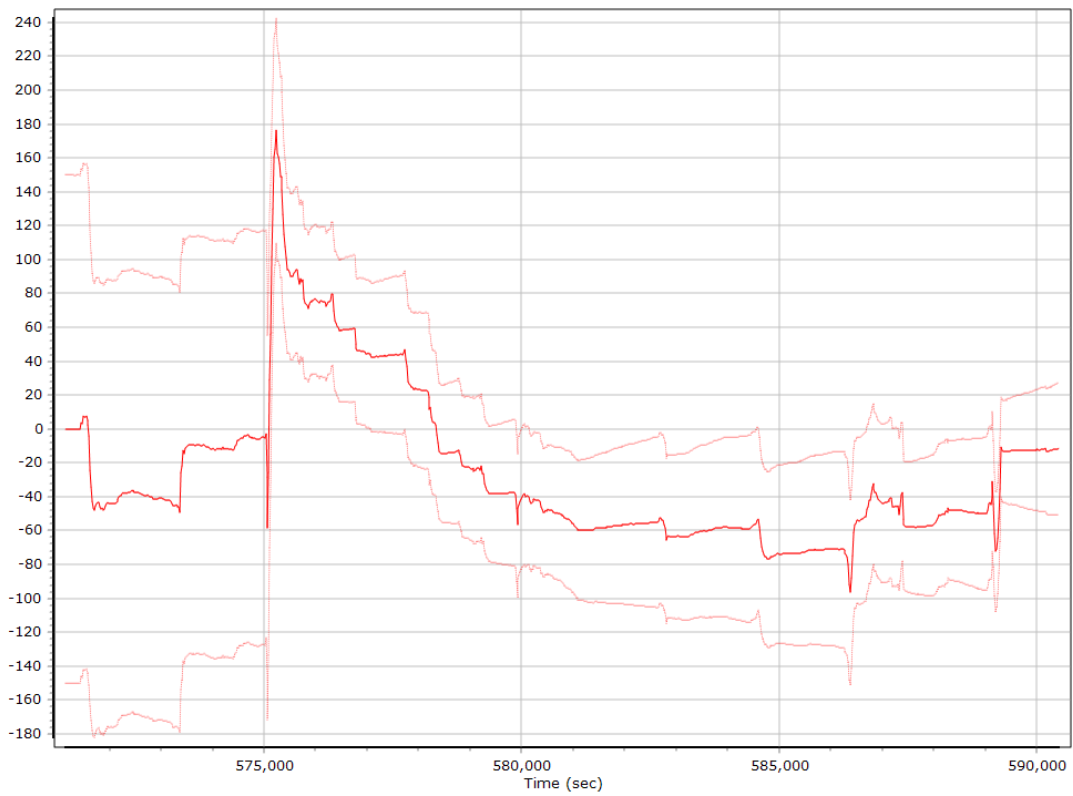
### X Gyro Scale Error (ppm)



### Y Gyro Scale Error (ppm)

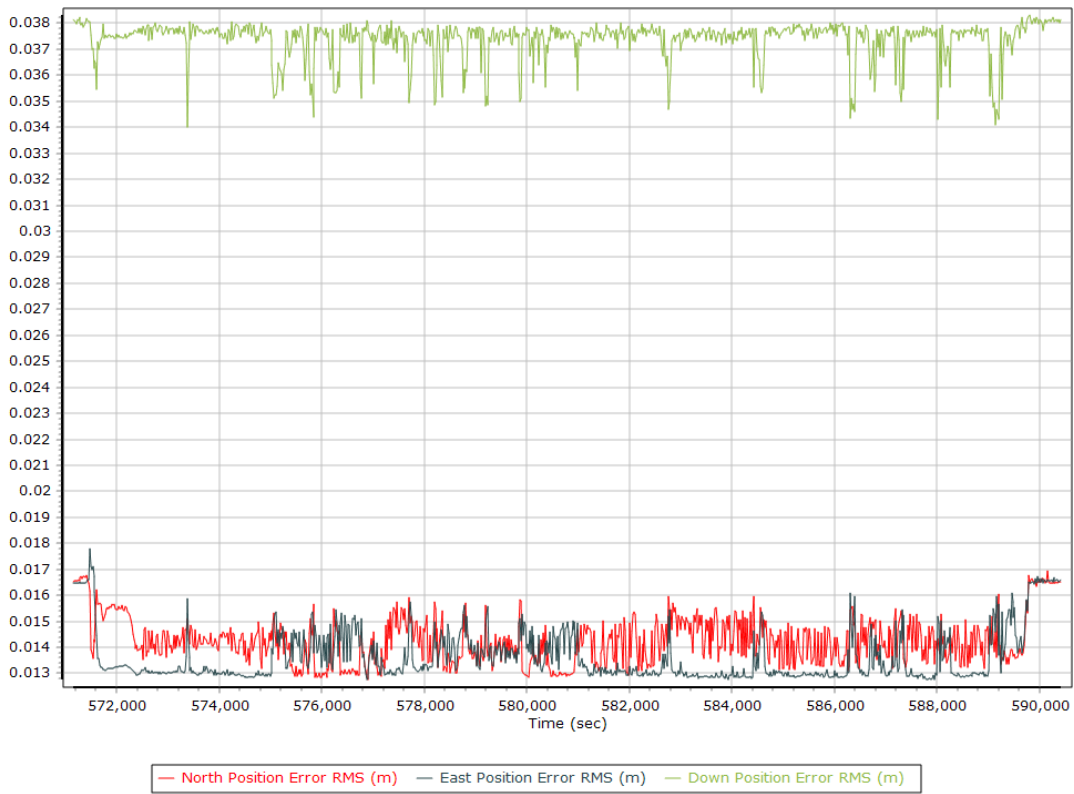


### Z Gyro Scale Error (ppm)

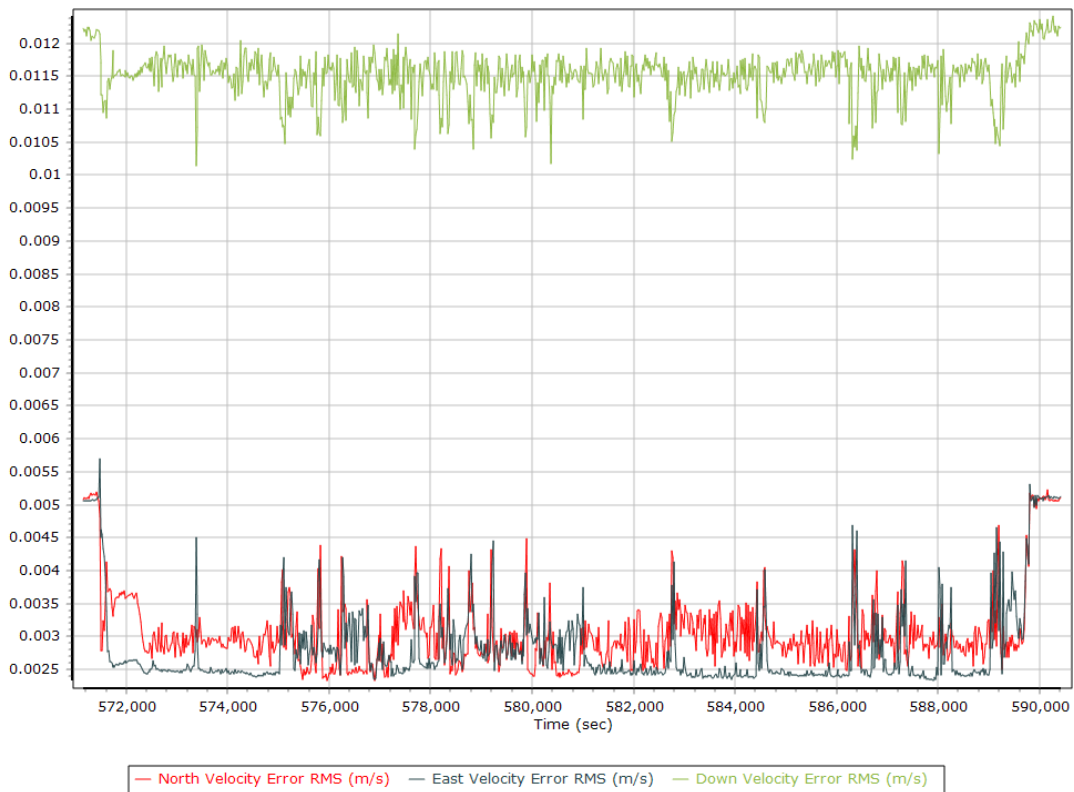


## Smoothed Performance Metrics

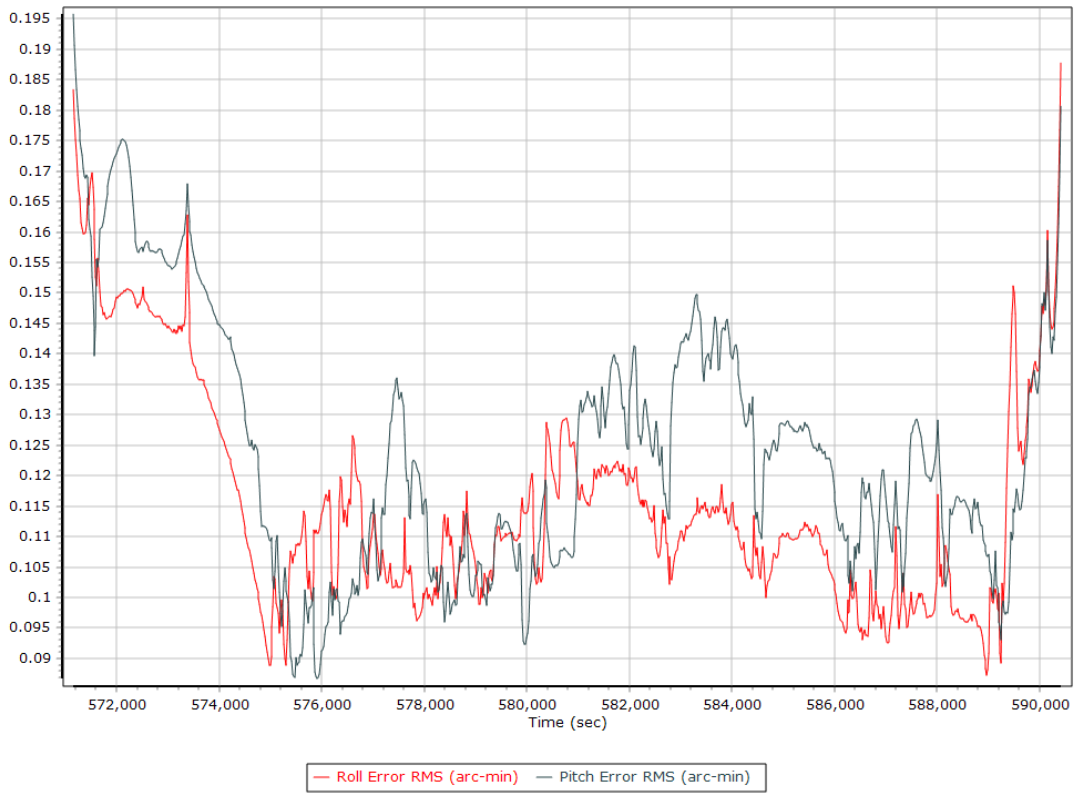
### Position Error RMS (m)



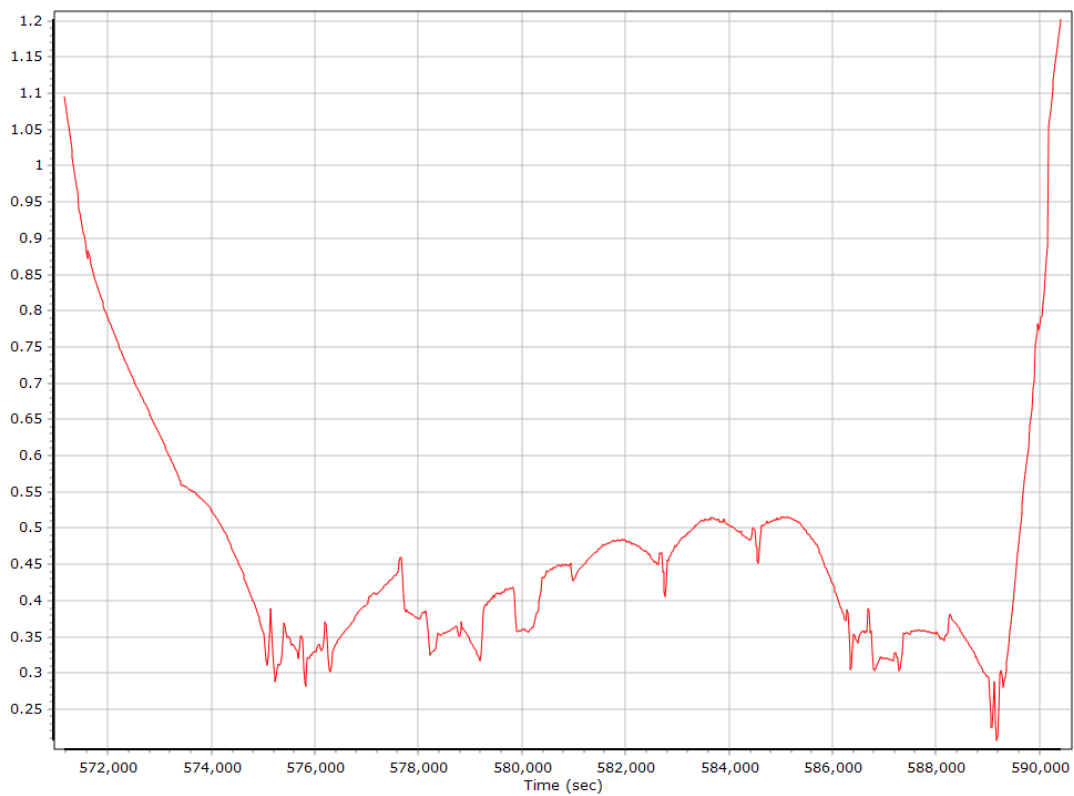
### Velocity Error RMS (m/s)



### Roll/Pitch Error RMS (arc-min)

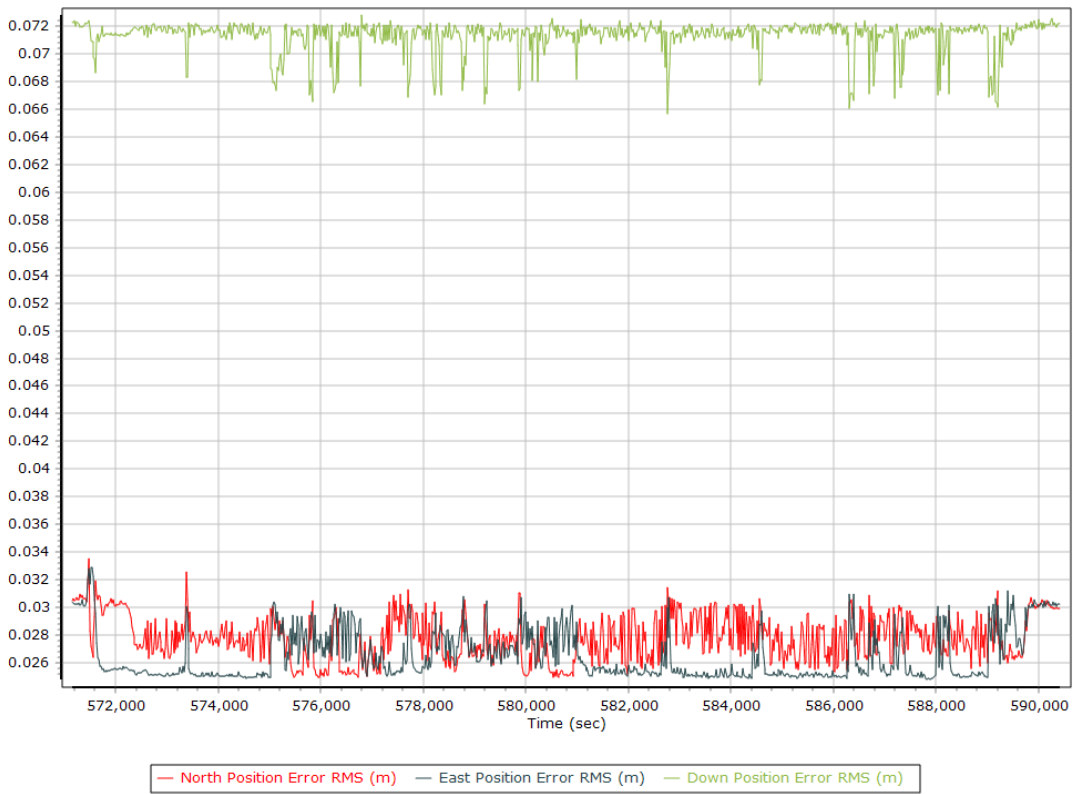


### Heading Error RMS (arc-min)

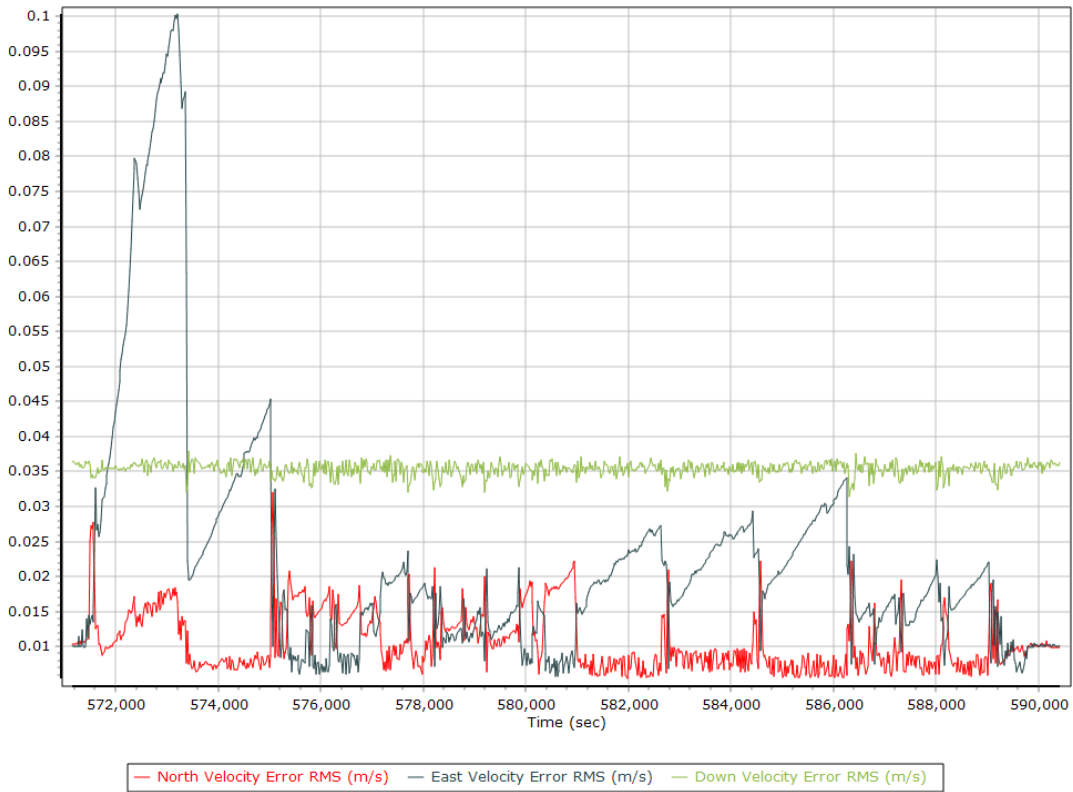


## Forward Processed Performance Metrics

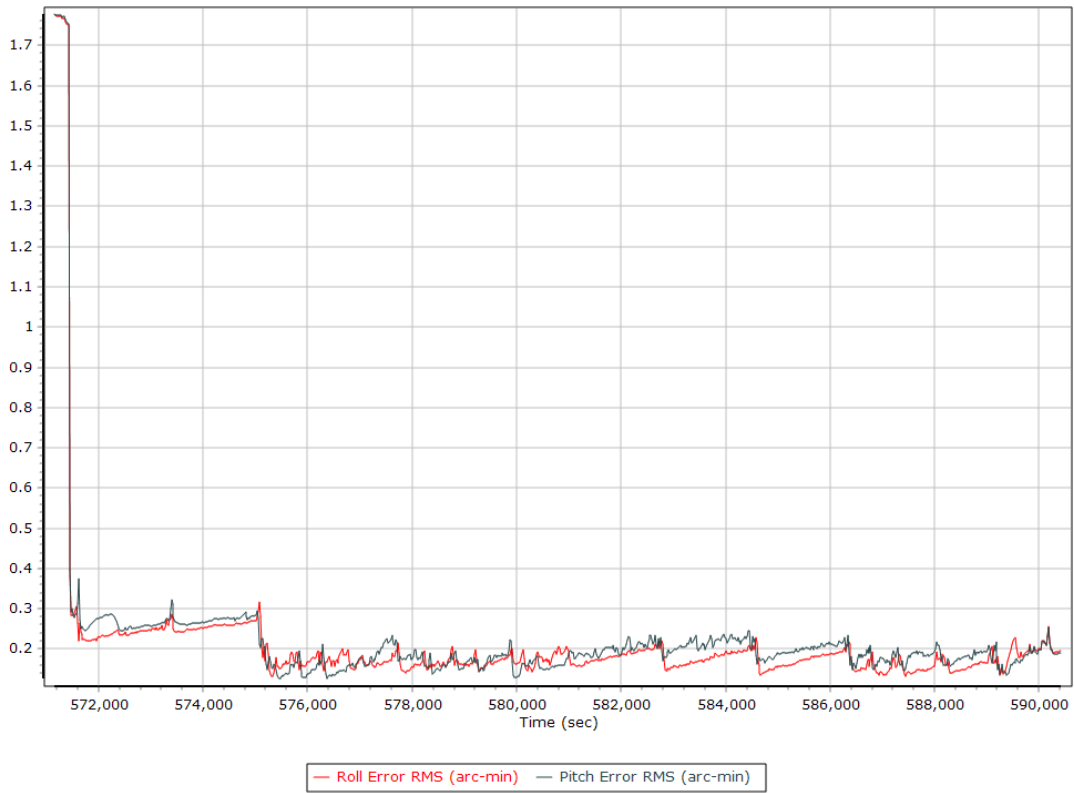
### Position Error RMS (m)



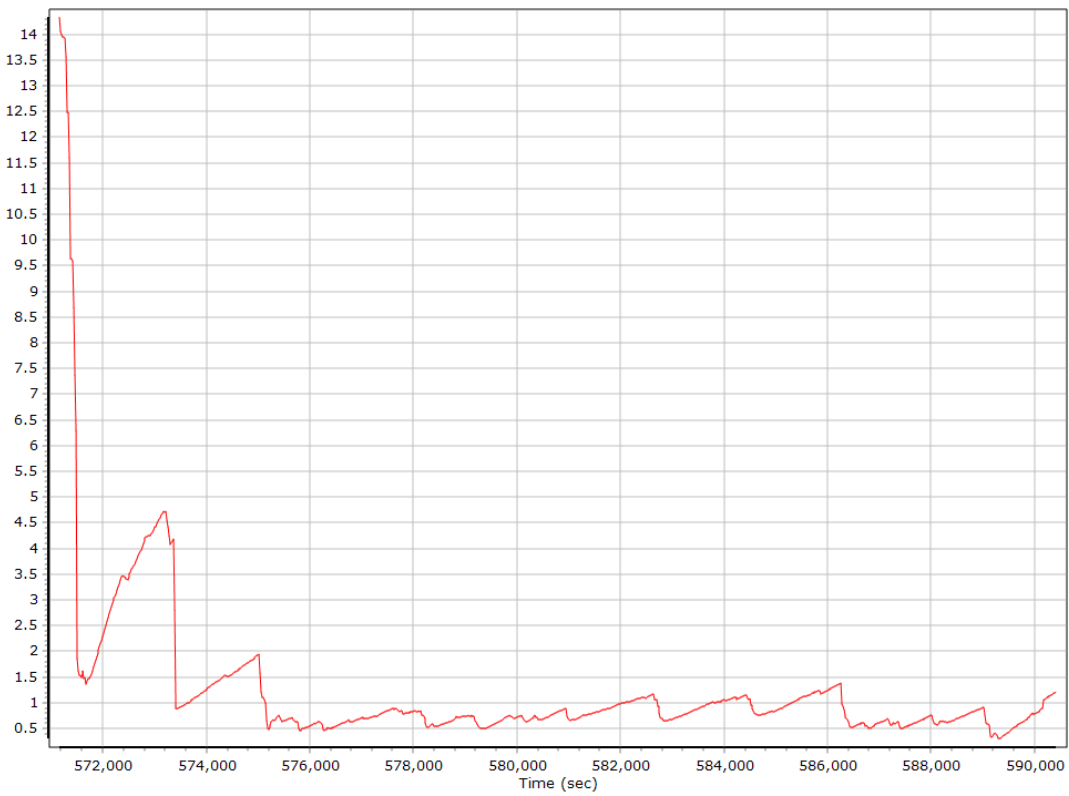
### Velocity Error RMS (m/s)



### Roll/Pitch Error RMS (arc-min)



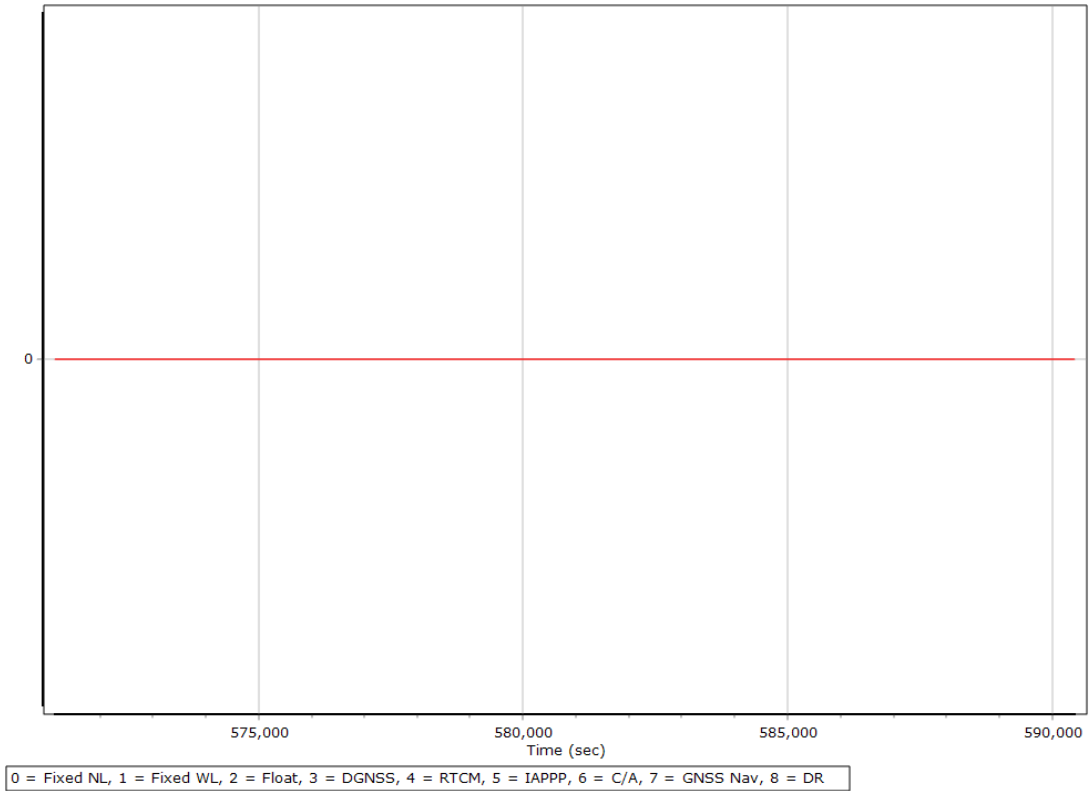
### Heading Error RMS (arc-min)



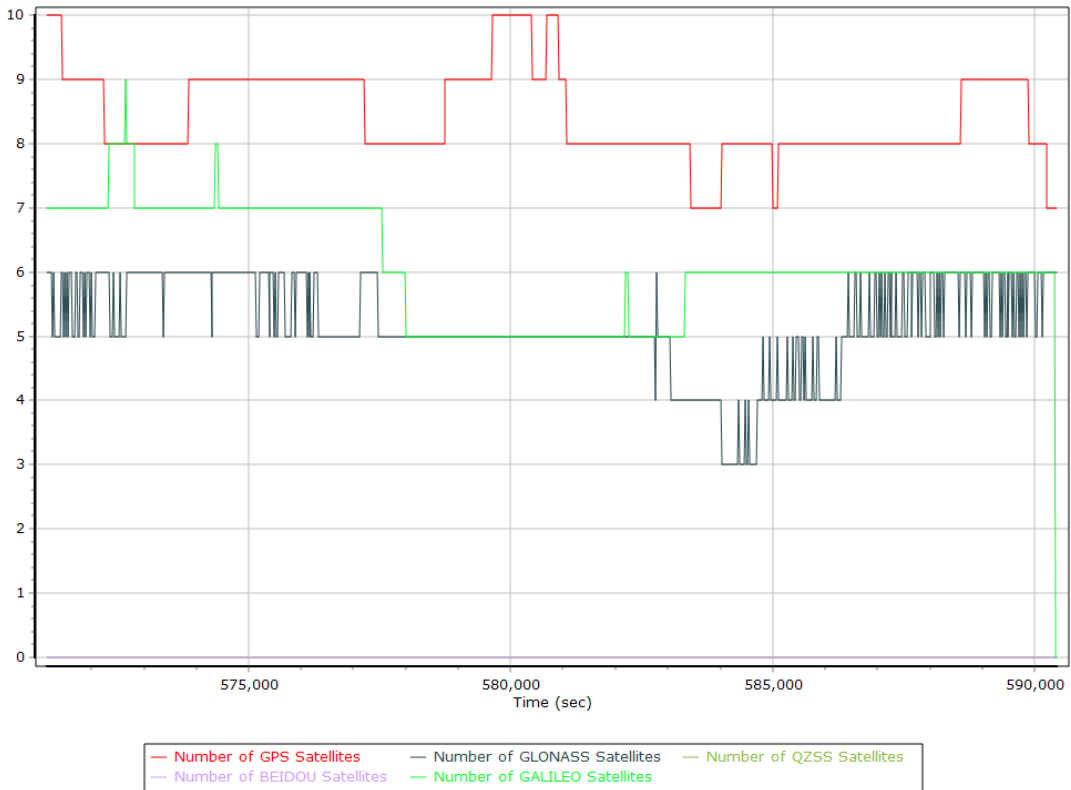


## Forward Processed Solution Status

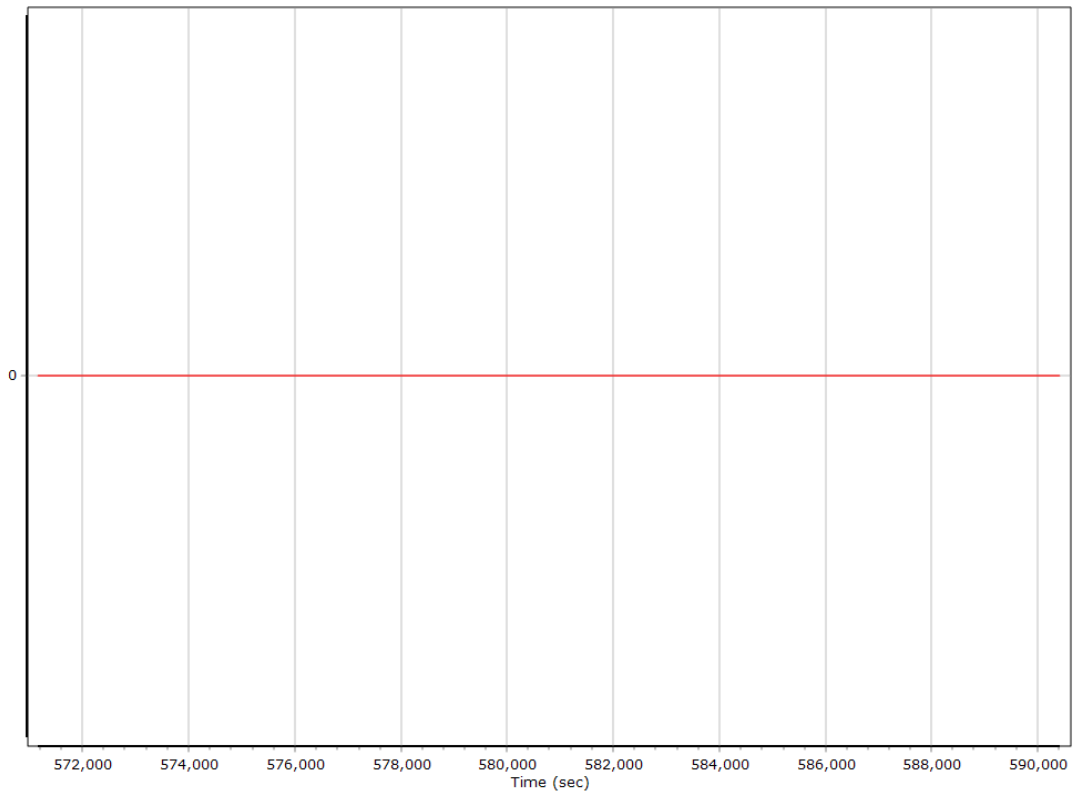
### Processing Mode



### Number of Satellites



## Baseline Length



## Export Summary

|                                       |                                  |             |       |
|---------------------------------------|----------------------------------|-------------|-------|
| Export file                           | sbet_13931_NAD83(2011).out       |             |       |
| Export format                         | Custom Smoothed BET              |             |       |
| Solution in use                       | Post-processed                   |             |       |
| Output rate                           | All Records                      |             |       |
| Reference to Output lever arm (m)     | 0.000                            | 0.000       | 0.000 |
| Reference mounting angles (deg)       | 0.000                            | 0.000       | 0.000 |
| Output units (Coordinate / Lat & Lon) | Meter                            | Deg Decimal |       |
| Export start time                     | 571097.005 (05/07/2022 14:38:17) |             |       |
| Export end time                       | 590431.001 (05/07/2022 20:00:31) |             |       |
| Height option                         | Ellipsoid Height                 |             |       |
| WGS84 height flag                     | False                            |             |       |
| Grid                                  | Universal Transverse Mercator    |             |       |
| Zone                                  | UTM North 15 (96W to 90W)        |             |       |
| Datum                                 | NAD83 (2011)                     |             |       |
| Ellipsoid                             | GRS 1980                         |             |       |
| Local Transformation                  | NONE                             |             |       |
| Target Epoch                          | 2010                             |             |       |

## EO Summary

|   |                                  |        |             |
|---|----------------------------------|--------|-------------|
| EO file                                       | event1_eo_13931.txt              |        |             |
| EO format                                     | ZI Imaging                       |        |             |
| Lever arm (m)                                 | 0.000                            | 0.000  | 0.000       |
| Boresight angles (arcmin)                     | 0.0000                           | 0.0000 | 0.0000      |
| Output rate                                   | Event 1 Time                     |        |             |
| Rotation sequence                             | x omega                          | y phi  | z kappa     |
| Local shift (m)                               | 0.000                            | 0.000  | 0.000       |
| Output units (coordinate / angle / lat & lon) | Meter                            | Degree | Deg Decimal |
| Height option                                 | Ellipsoid Height                 |        |             |
| WGS84 height flag                             | False                            |        |             |
| Scale height option                           | False                            |        |             |
| Kappa cardinal rotation (deg)                 | 0                                |        |             |
| Solution in use                               | Post-processed                   |        |             |
| EO start time                                 | 571097.005 (05/07/2022 14:38:17) |        |             |
| EO end time                                   | 590431.001 (05/07/2022 20:00:31) |        |             |
| Grid  | Universal Transverse Mercator    |        |             |
| Zone  | UTM North 15 (96W to 90W)        |        |             |
| Datum   | NAD83 (2011)                     |        |             |
| Ellipsoid                                     | GRS 1980                         |        |             |
| Local Transformation                          | NONE                             |        |             |
| Target Epoch                                  | 2010                             |        |             |