# Combined GPS and NavIC (IRNSS) - GPS(L1) + NavIC(L5) Band Post Processing

*Generated using SPIRIIT on : 05/06/2024 16:40:06 IST*

Input File Name : IITK00IND_R_20223650000_01D_30S_MO.rnx

Reference Ellipsoid :WGS84

Constellation : Combined GPS and NavIC (IRNSS)

Band used : GPS(L1) + NavIC(L5)

Processed data start time : 2022-12-31 00:00:00 UTC

Processed data end time : 2022-12-31 00:09:30 UTC

Data Interval : 30.0 seconds

Processing mode : Single Point Positioning

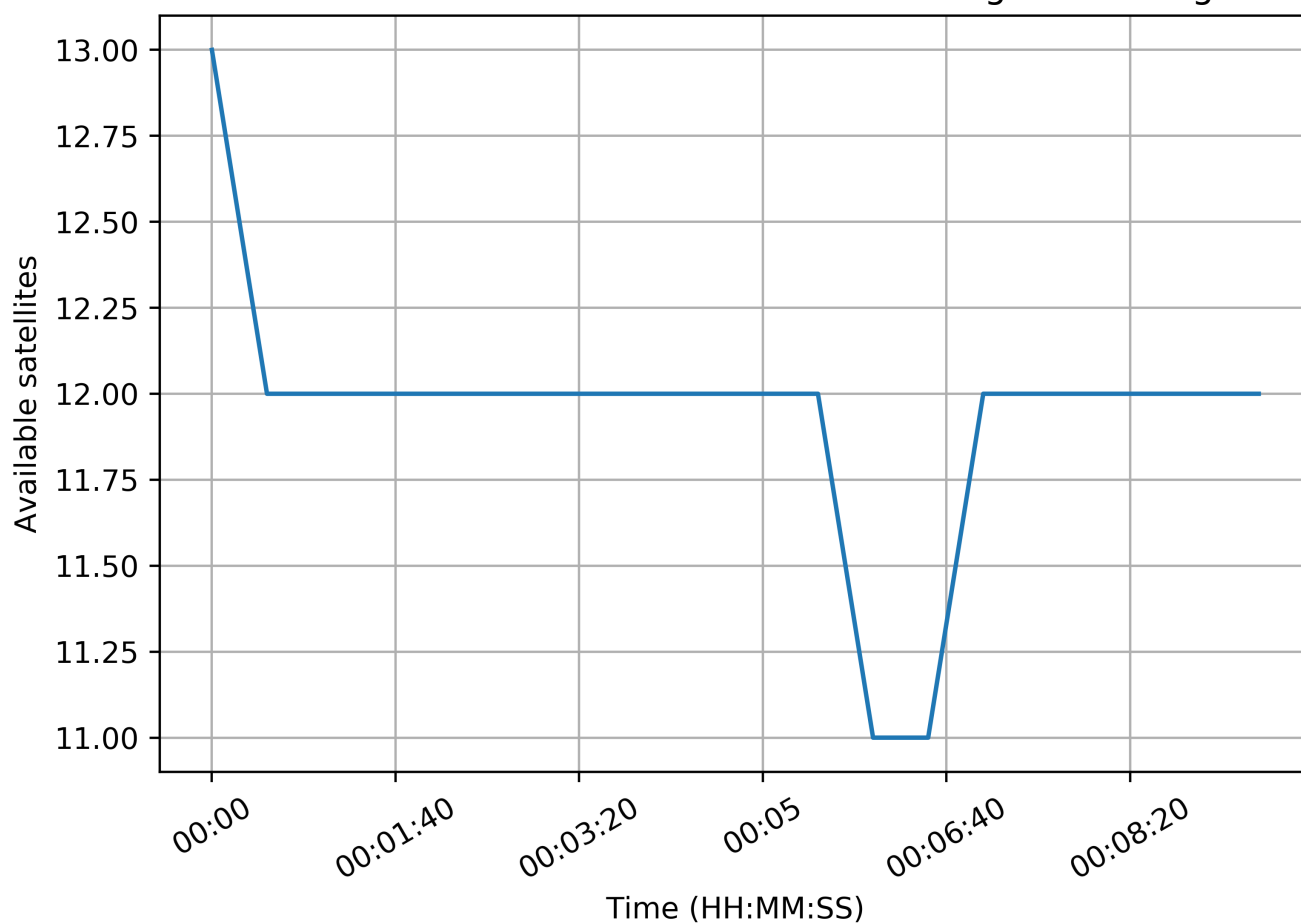Processing technique : WLS

## Estimated vs. True Coordinates

|  | X (m) | Y (m) | Z (m) |
|---|---|---|---|
| True Coords. | 968879.589 | 5628035.887 | 2830901.014 |
| Estimated (mean) Coords. | 968875.208 | 5628036.018 | 2830899.683 |

## Error statistics (in meters)

| Parameter | Maximum error (3D) | Minimum error (3D) | RMSE (3D) |
|---|---|---|---|
| Position error | 14.902 | 3.446 | 5.638 |
|  | Standard deviation (X) | Standard deviation (Y) | Standard deviation (Z) |
| Std. Dev | 0.753 | 3.004 | 1.099 |
|  | Semi Major axis | Semi Minor axis |  |
| 2 sigma error ellipse | 6.250 | 1.144 |  |
|  | Radius |  |  |
| Circular Error Probable | 2.343 |  |  |

## Number of available satellites - Mask Angle = 10 deg



## Sky Plot of Satellites



Legend:
- G02
- G08
- G10
- G18
- G22
- G23
- G24
- G27
- G31
- G32
- I02
- I03
- I06
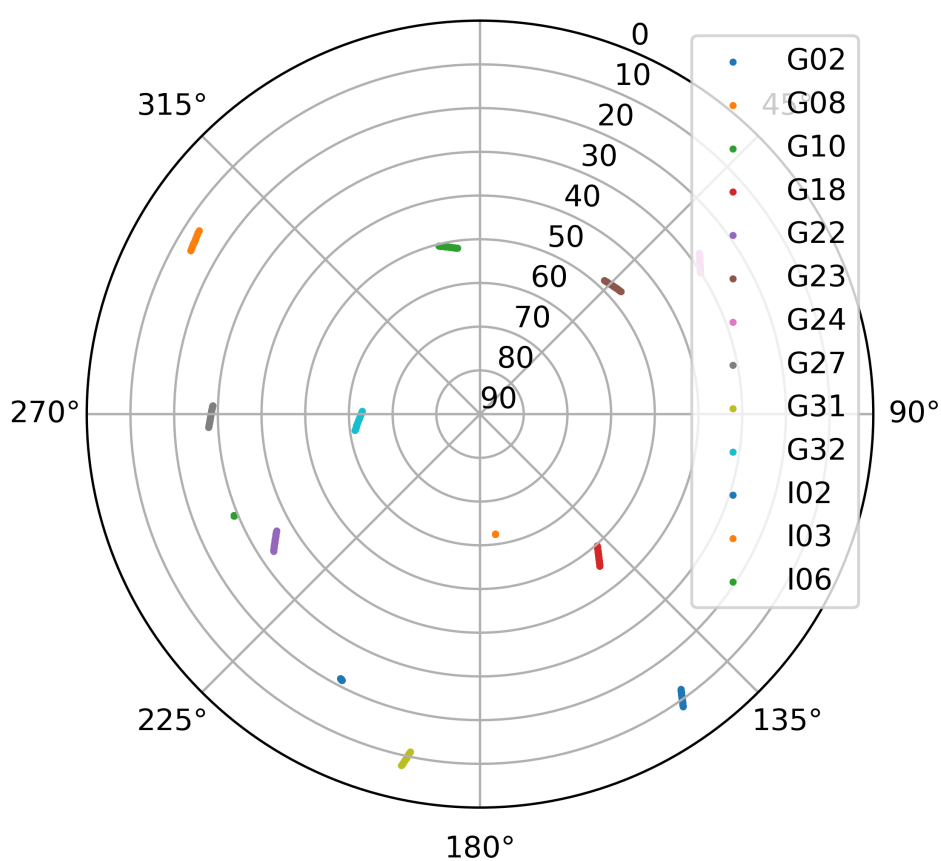
|  | Average C/No - L1 (dBHz) | Maximum C/No - L1 (dBHz) | Minimum C/No - L1 (dBHz) | Std. Dev C/No - L1 (dBHz) |
|---|---|---|---|---|
| G02 | 34.5 | 35.6 | 31.8 | 0.98 |
| G08 | 35.23 | 37.6 | 34.0 | 0.82 |
| G10 | 49.12 | 50.0 | 48.4 | 0.51 |
| G18 | 46.06 | 47.1 | 45.5 | 0.39 |
| G22 | 43.26 | 43.9 | 42.6 | 0.31 |
| G23 | 47.52 | 48.6 | 46.4 | 0.46 |
| G24 | 39.74 | 41.1 | 38.4 | 0.57 |
| G27 | 41.06 | 42.0 | 40.3 | 0.5 |
| G31 | 33.76 | 36.5 | 30.3 | 1.36 |
| G32 | 51.41 | 52.3 | 50.3 | 0.53 |
| I02 | 0.0 | 0.0 | 0.0 | 0.0 |
| I03 | 0.0 | 0.0 | 0.0 | 0.0 |
| I06 | 0.0 | 0.0 | 0.0 | 0.0 |

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## C/No - Band L1



Legend:
- G02
- G08
- G10
- G18
- G22
- G23
- G24
- G27
- G31
- G32
- I02
- I03
- I06
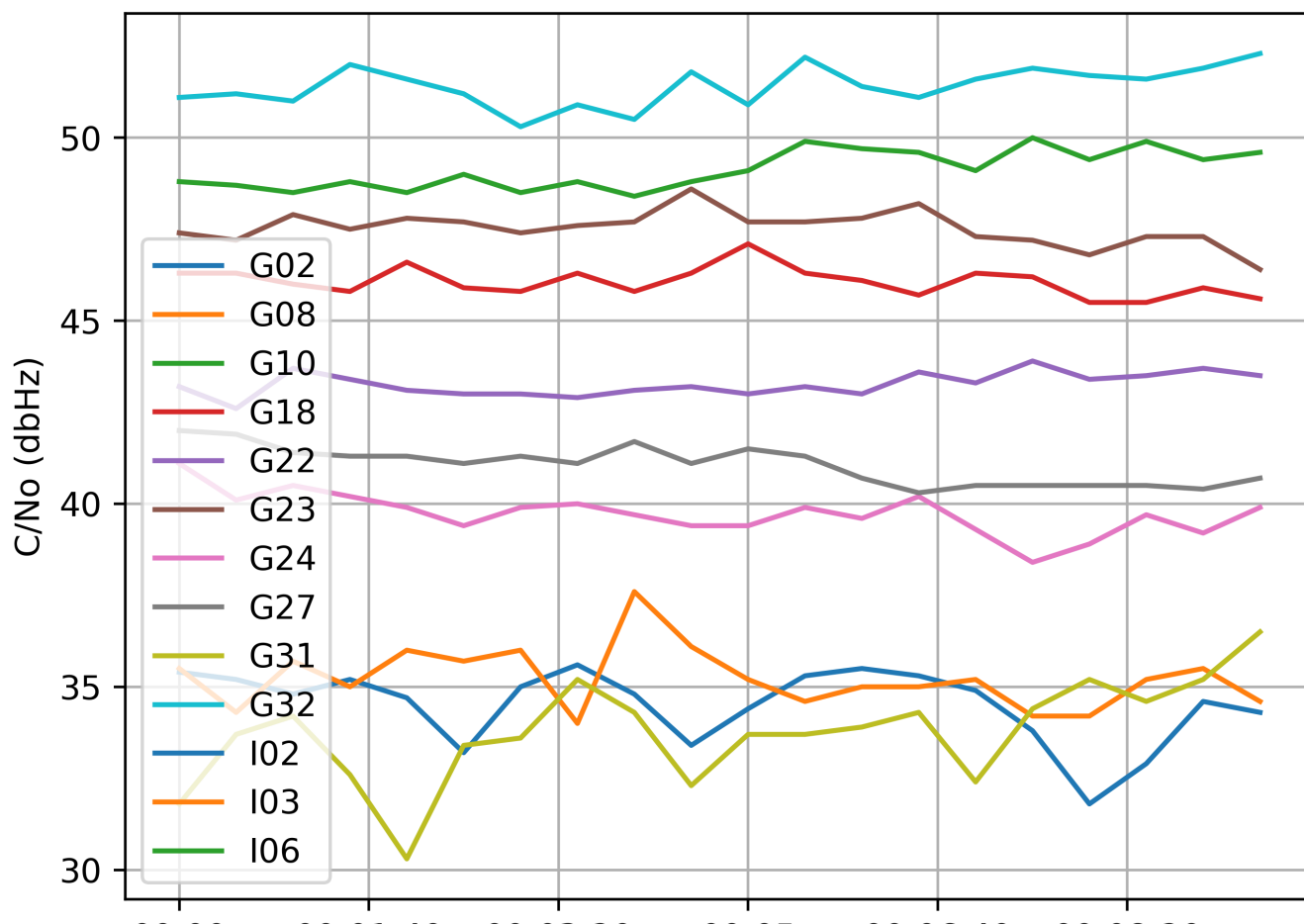
## Scatter plot and CEP error plot



Estimated coordinates
True coordinates

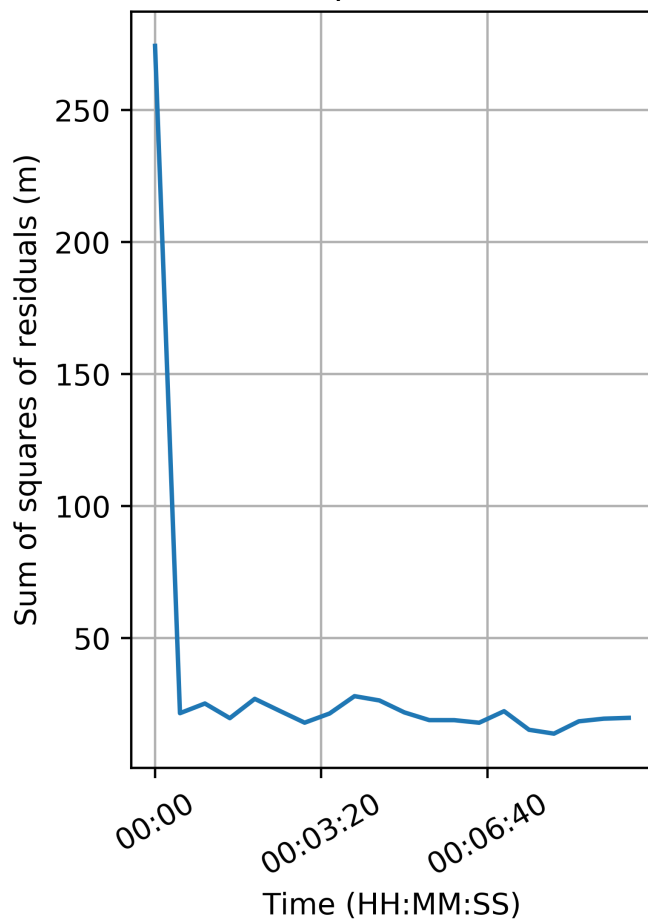# Combined GPS and NavIC (IRNSS) - GPS(L1) + NavIC(L5) Band Post Processing
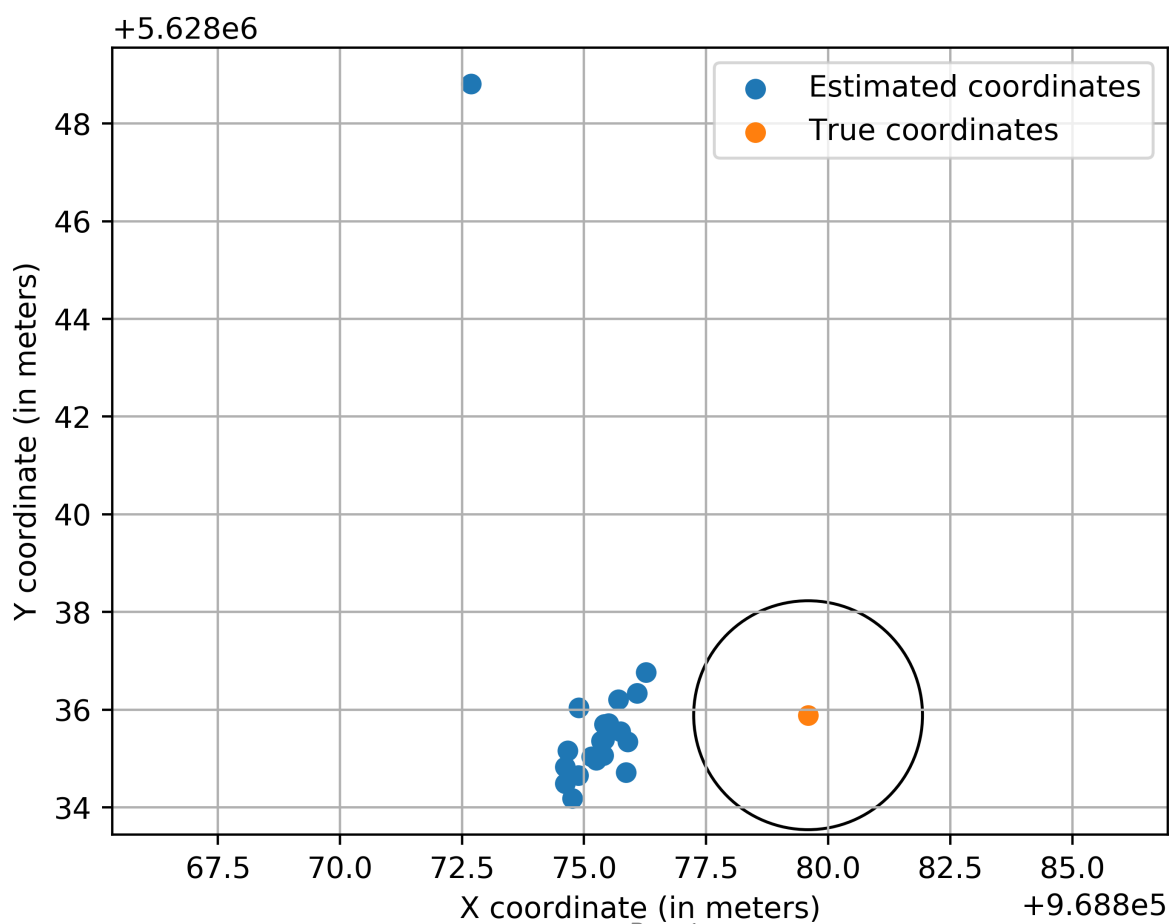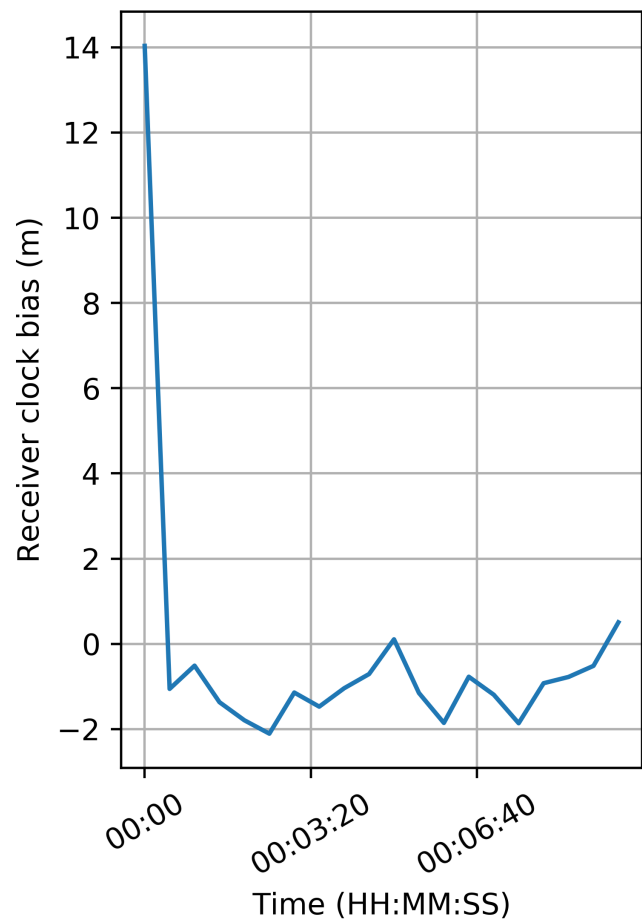
## Scatter plot and error ellipse for estimated coordinates
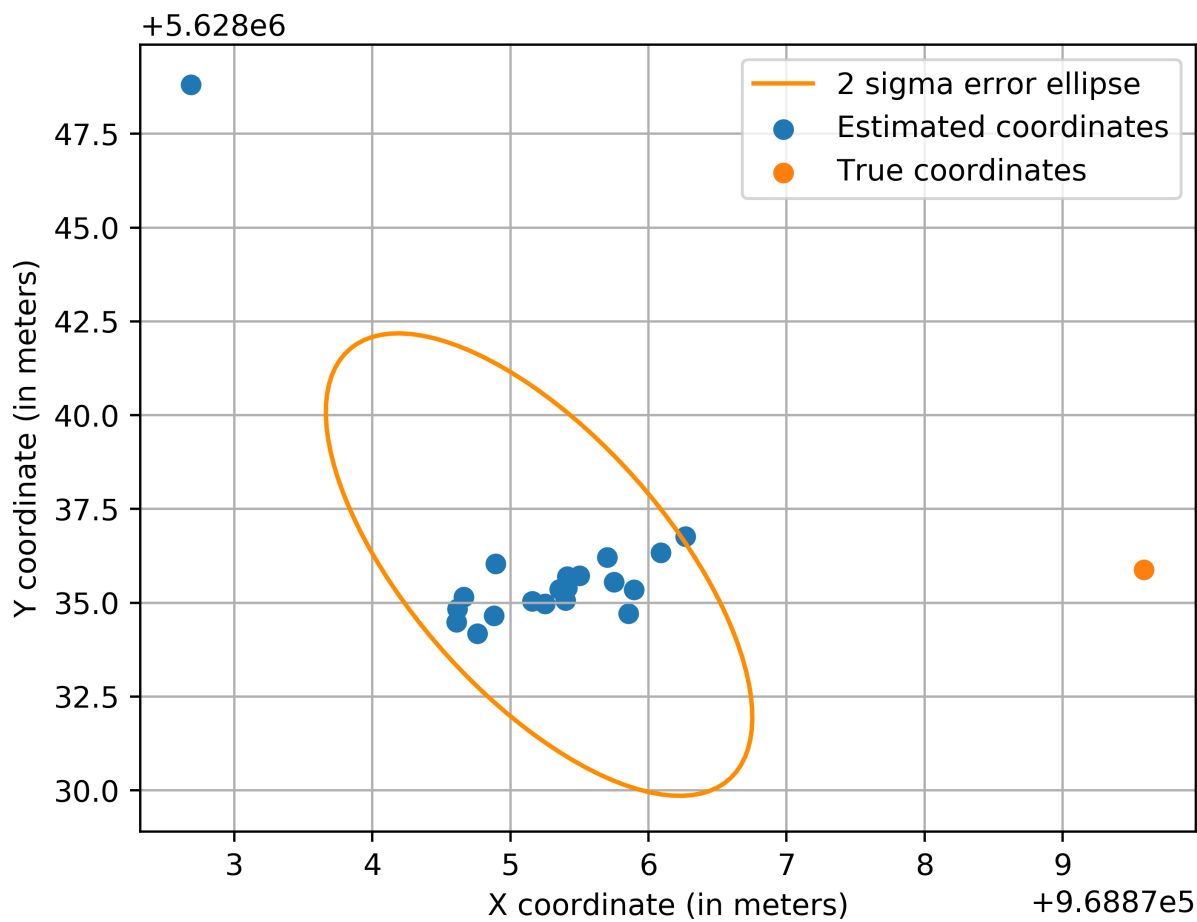


## Sum of squared residuals



## Estimated receiver clock bias

## 3D position error with time
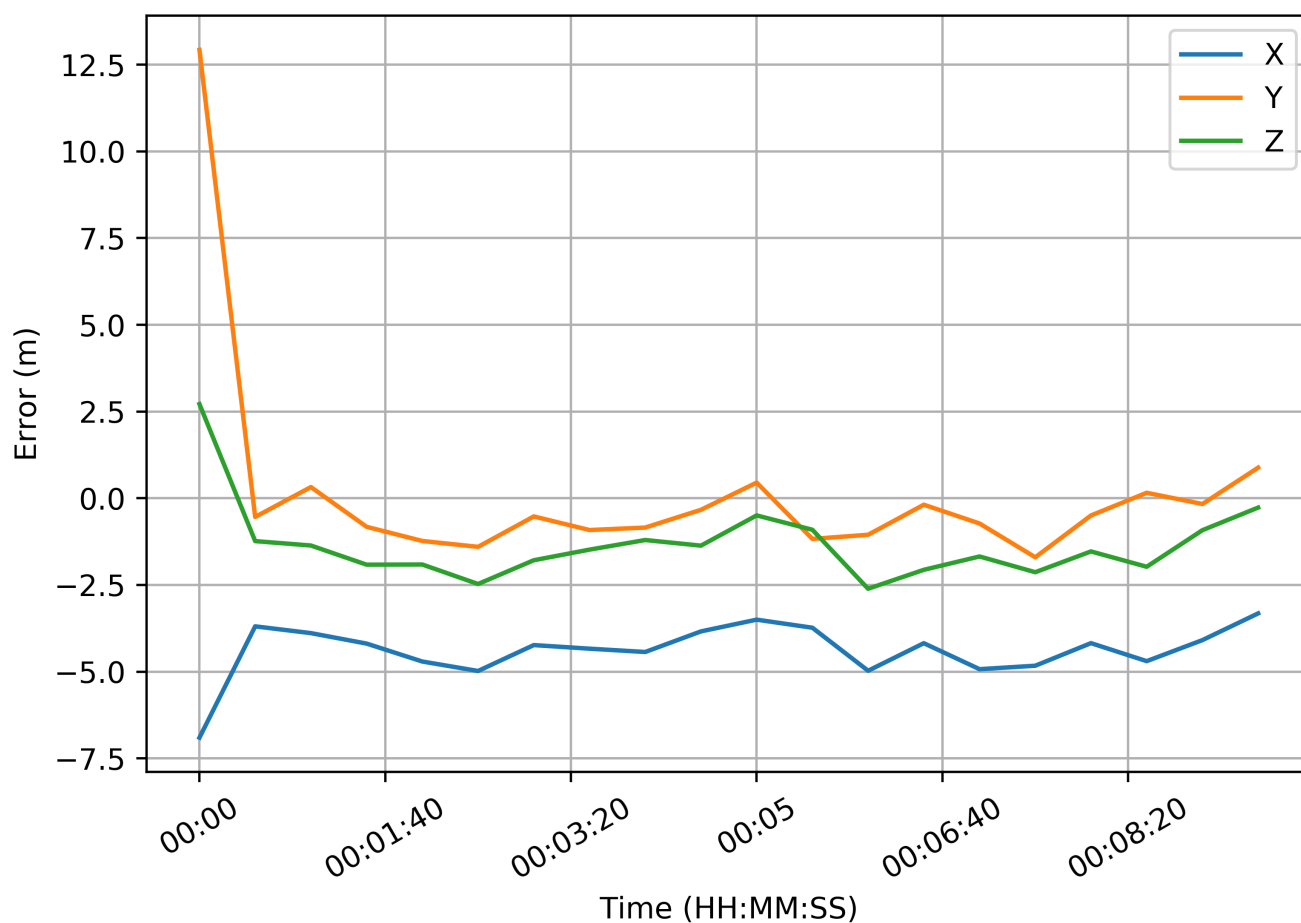


## Histogram plot of error

# Combined GPS and NavIC (IRNSS) - GPS(L1) + NavIC(L5) Band Post Processing
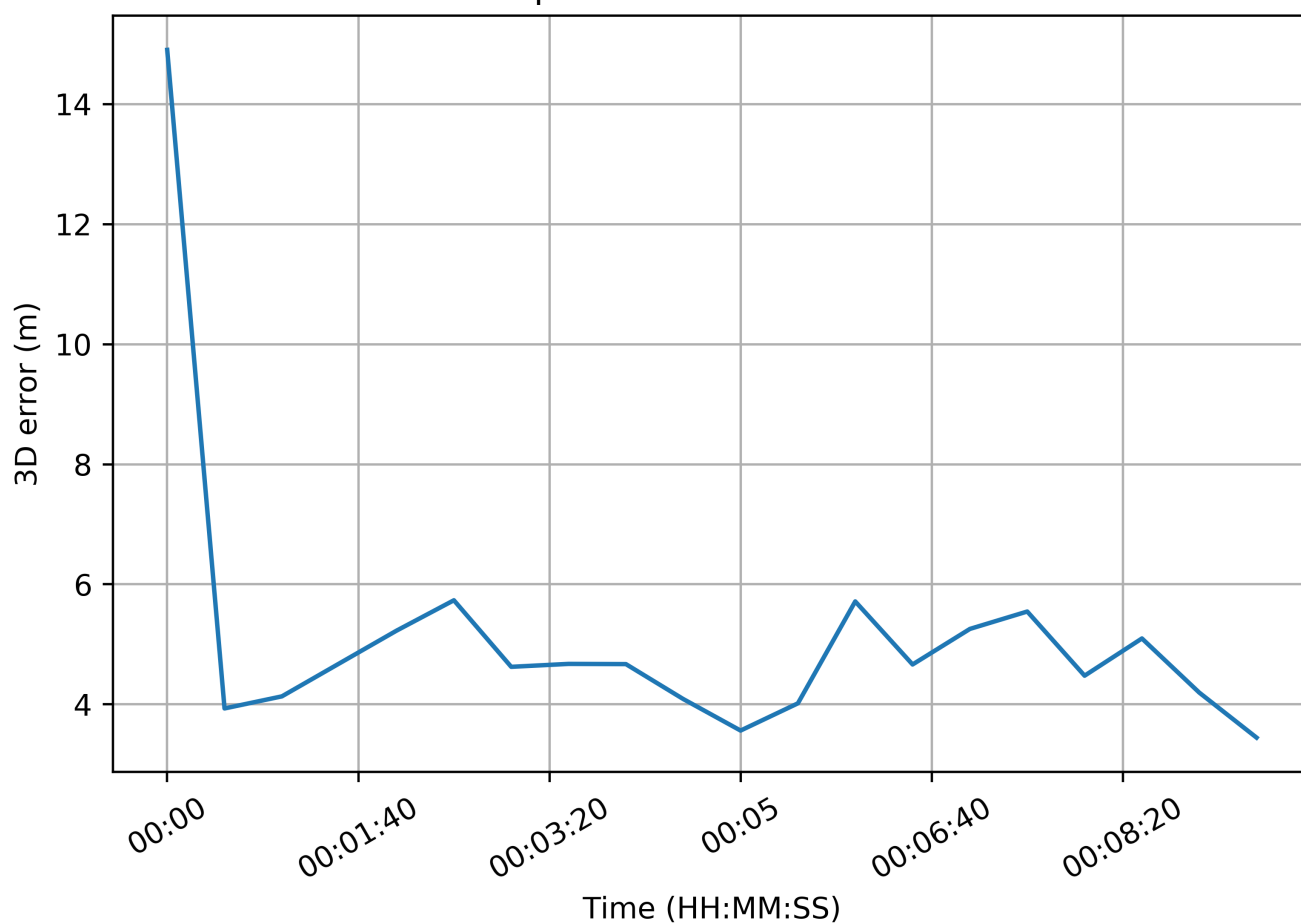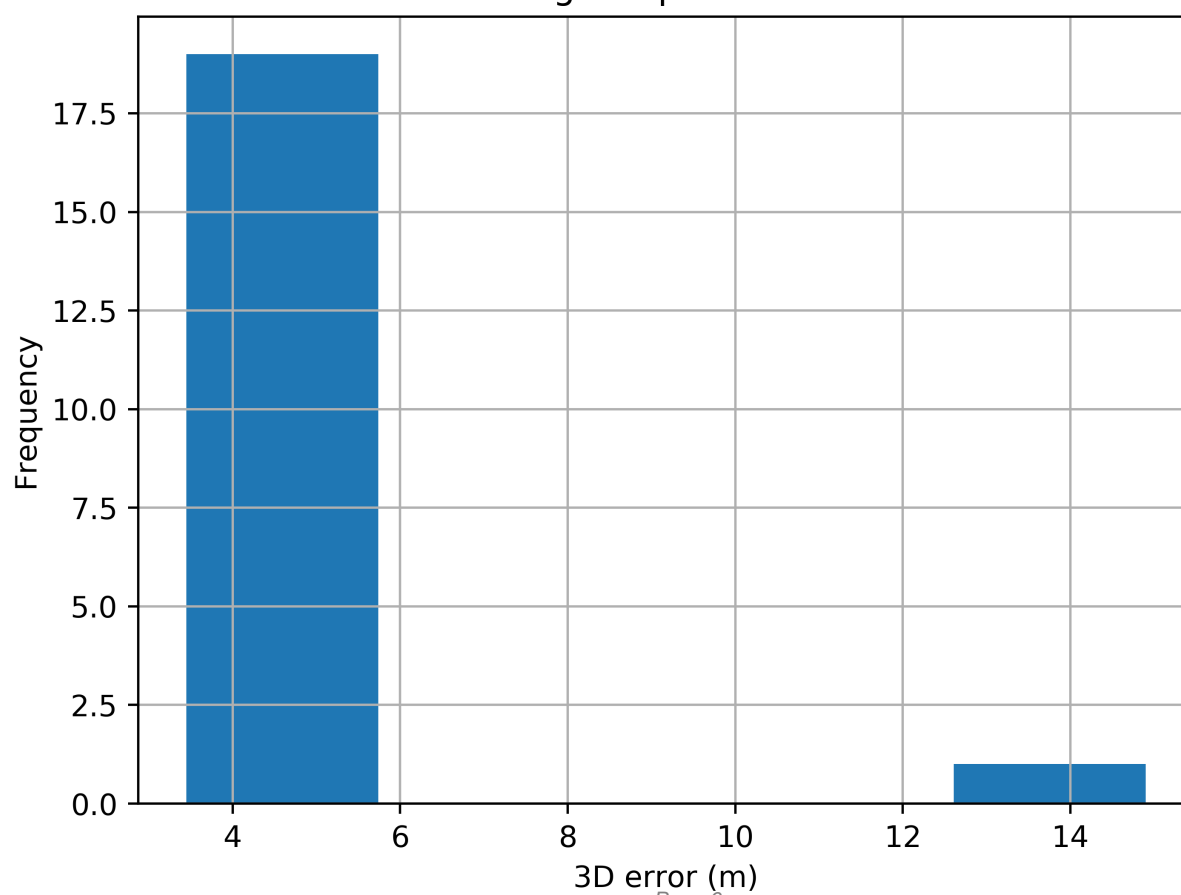
## Position error with time



## Ionospheric delay

## Dilution of Precision