

Global View

site Laboratory satellite systems
 abbreviation NAU
 country Ukraine
 city Kiev
 comment Konin V., Shyshkov F. InsideGNSS, Jan-Feb 2015,
 P.50 - 54
 program Pegasus
 version 4.8.4
 date 27/09/2016

SBAS Messages

start: 06:30:4.129 05.09.2016 (week: 1913 sec: 109804.129)
end: 13:13:21.129 05.09.2016 (week: 1913 sec: 134001.129)
duration: 06:43:17 ..

quality

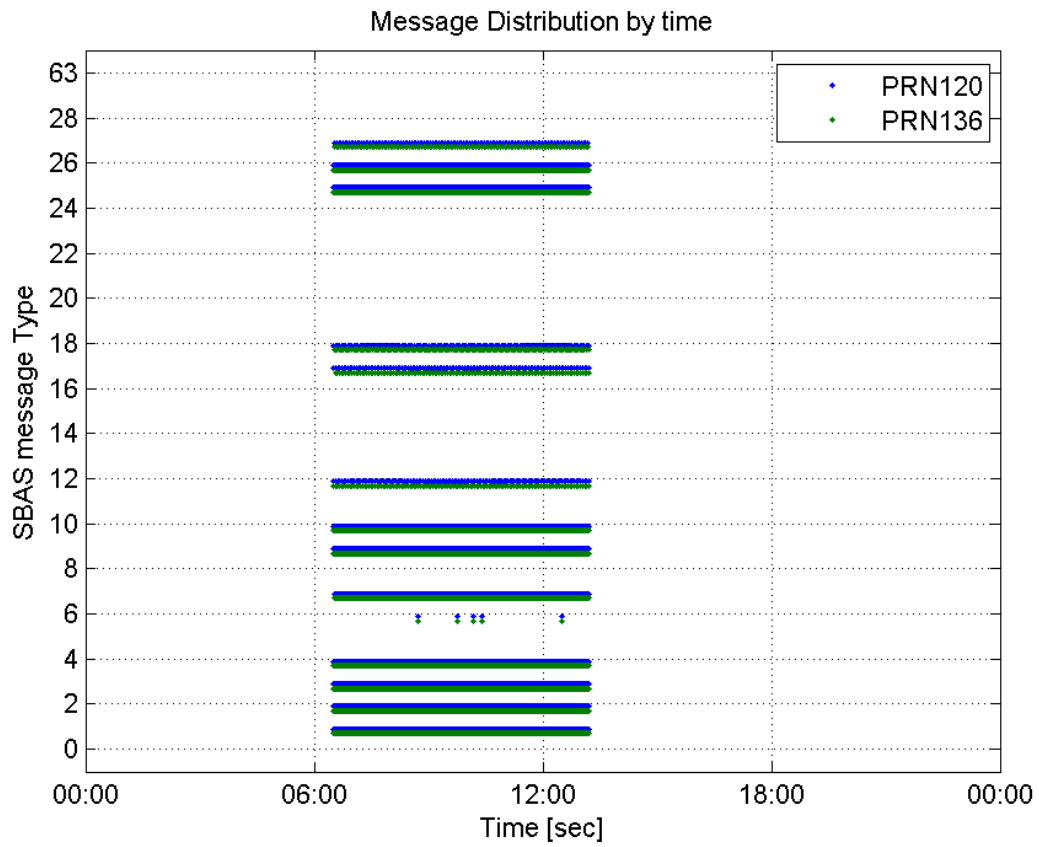
valid samples 48396
total samples 48396
number of SBAS PRNs 2

SBAS SIS Overview

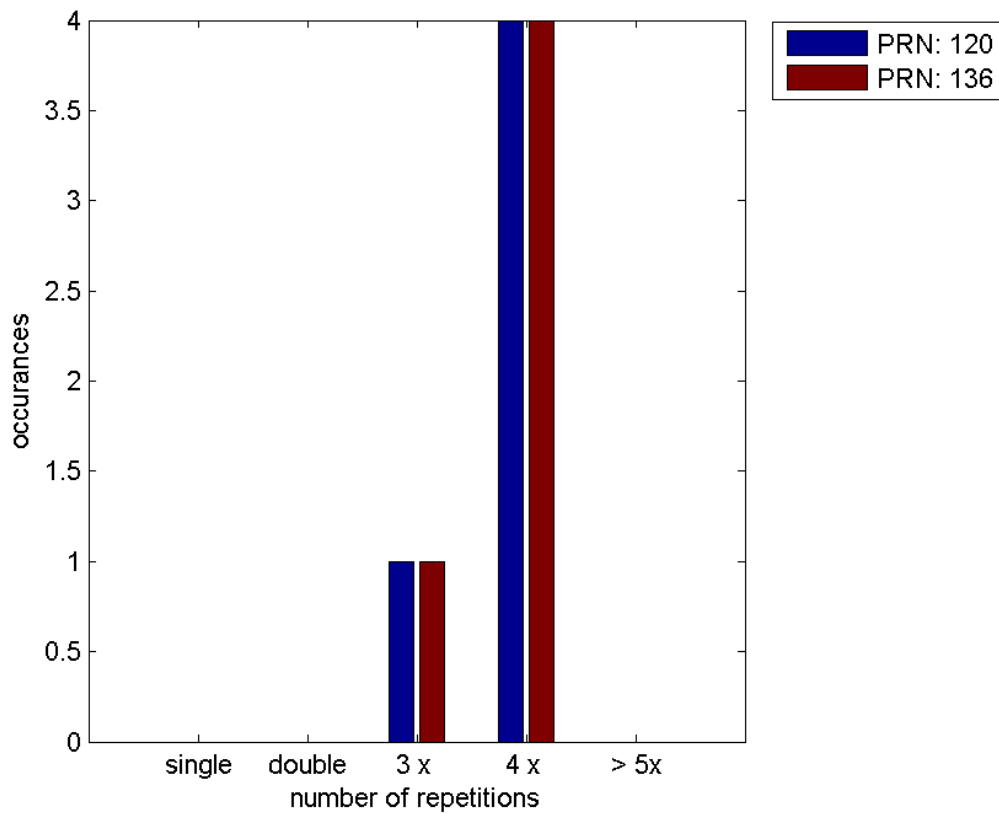
Message Type 6 repetitions :

| | single | double | 3 x | 4 x | > 5x |
|----------------|--------|--------|-----|-----|------|
| PRN 120 | 0 | 0 | 1 | 4 | 0 |
| PRN 136 | 0 | 0 | 1 | 4 | 0 |

Message Distribution by time:



Message Type 6 repetitions:



Broadcast SBAS Messages :

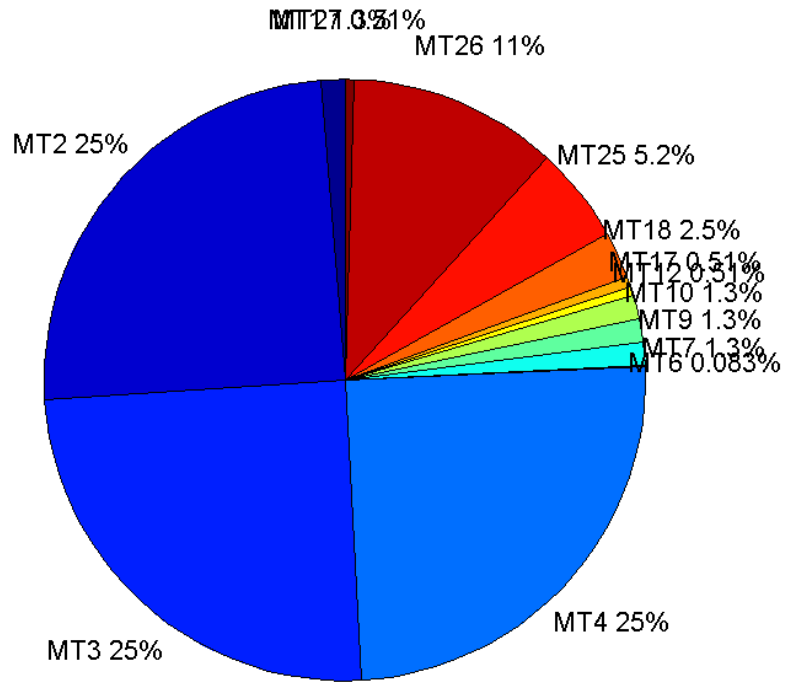
| | number of messages | % |
|--------------|--------------------|-----------|
| MT 0 | 0 | 0 |
| MT 1 | 304 | 1.2563 |
| MT 2 | 6004 | 24.812 |
| MT 3 | 6004 | 24.812 |
| MT 4 | 6005 | 24.8161 |
| MT 5 | 0 | 0 |
| MT 6 | 20 | 0.0826515 |
| MT 7 | 303 | 1.25217 |
| MT 9 | 303 | 1.25217 |
| MT 10 | 304 | 1.2563 |
| MT 12 | 124 | 0.512439 |
| MT 17 | 124 | 0.512439 |
| MT 18 | 617 | 2.5498 |
| MT 24 | 0 | 0 |
| MT 25 | 1247 | 5.15332 |
| MT 26 | 2716 | 11.2241 |
| MT 27 | 123 | 0.508306 |
| MT 28 | 0 | 0 |
| MT 62 | 0 | 0 |
| MT 63 | 0 | 0 |
| Total | 24198 | 100 |

Update intervals :

| | Minimum [s] | Maximum [s] | Mean value | Exceed Max update | Exceed NPA timeout | Exceed PA timeout |
|-------|-------------|-------------|------------|-------------------|--------------------|-------------------|
| MT 0 | -- | -- | -- | -- | -- | -- |
| MT 1 | 76 | 81 | 79.769 | 0 | 0 | 0 |
| MT 2 | 4 | 8 | 4.03015 | 5 | 0 | 0 |
| MT 3 | 4 | 8 | 4.03015 | 5 | 0 | 0 |
| MT 4 | 4 | 8 | 4.02998 | 5 | 0 | 0 |
| MT 5 | -- | -- | -- | -- | -- | -- |
| MT 6 | 1 | 7478 | 716.895 | 4 | 4 | 4 |
| MT 7 | 76 | 81 | 79.7781 | 0 | 0 | 0 |
| MT 9 | 76 | 81 | 79.7252 | 0 | 0 | 0 |
| MT 10 | 76 | 82 | 79.8053 | 0 | 0 | 0 |
| MT 12 | 190 | 202 | 195.976 | 123 | 0 | 0 |
| MT 17 | 192 | 202 | 196.041 | 0 | 0 | 0 |
| MT 18 | 4 | 161 | 39.1575 | 0 | 0 | 0 |
| MT 24 | -- | -- | -- | -- | -- | -- |
| MT 25 | 1 | 49 | 19.378 | 0 | 0 | 0 |
| MT | 1 | 32 | 8.91123 | 0 | 0 | 0 |

| | | | | | | |
|-------|-----|-----|---------|----|----|----|
| 26 | | | | | | |
| MT 27 | 189 | 201 | 195.992 | 0 | 0 | 0 |
| MT 28 | -- | -- | -- | -- | -- | -- |
| MT 62 | -- | -- | -- | -- | -- | -- |
| MT 63 | -- | -- | -- | -- | -- | -- |

Message Distribution PRN 120:



SBAS SIS Analysis

PRN 136

Broadcast SBAS Messages :

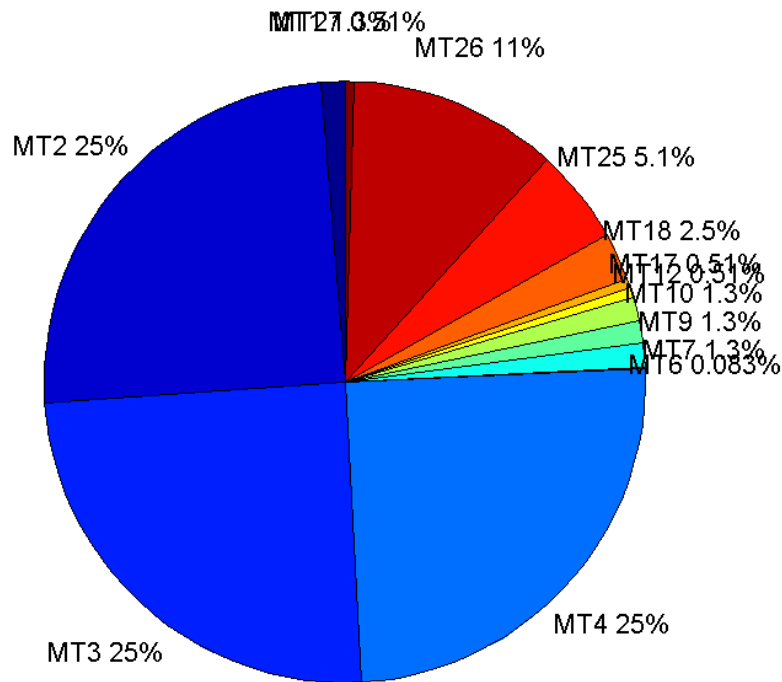
| | number of messages | % |
|-------|--------------------|-----------|
| MT 0 | 0 | 0 |
| MT 1 | 304 | 1.2563 |
| MT 2 | 6006 | 24.8202 |
| MT 3 | 6007 | 24.8244 |
| MT 4 | 6006 | 24.8202 |
| MT 5 | 0 | 0 |
| MT 6 | 20 | 0.0826515 |
| MT 7 | 303 | 1.25217 |
| MT 9 | 303 | 1.25217 |
| MT 10 | 304 | 1.2563 |

| | | |
|--------------|-------|----------|
| MT 12 | 124 | 0.512439 |
| MT 17 | 123 | 0.508306 |
| MT 18 | 615 | 2.54153 |
| MT 24 | 0 | 0 |
| MT 25 | 1246 | 5.14919 |
| MT 26 | 2714 | 11.2158 |
| MT 27 | 123 | 0.508306 |
| MT 28 | 0 | 0 |
| MT 62 | 0 | 0 |
| MT 63 | 0 | 0 |
| Total | 24198 | 100 |

Update intervals :

| | Minimum [s] | Maximum [s] | Mean value | Exceed Max update | Exceed NPA timeout | Exceed PA timeout |
|-------|-------------|-------------|------------|-------------------|--------------------|-------------------|
| MT 0 | -- | -- | -- | -- | -- | -- |
| MT 1 | 76 | 83 | 79.7657 | 0 | 0 | 0 |
| MT 2 | 4 | 8 | 4.02864 | 5 | 0 | 0 |
| MT 3 | 4 | 8 | 4.02847 | 5 | 0 | 0 |
| MT 4 | 4 | 8 | 4.02864 | 5 | 0 | 0 |
| MT 5 | -- | -- | -- | -- | -- | -- |
| MT 6 | 1 | 7478 | 716.895 | 4 | 4 | 4 |
| MT 7 | 75 | 87 | 79.8709 | 0 | 0 | 0 |
| MT 9 | 75 | 81 | 79.7649 | 0 | 0 | 0 |
| MT 10 | 75 | 82 | 79.7888 | 0 | 0 | 0 |
| MT 12 | 191 | 201 | 196.35 | 123 | 0 | 0 |
| MT 17 | 189 | 201 | 196.32 | 0 | 0 | 0 |
| MT 18 | 4 | 166 | 39.0798 | 0 | 0 | 0 |
| MT 24 | -- | -- | -- | -- | -- | -- |
| MT 25 | 1 | 46 | 19.3823 | 0 | 0 | 0 |
| MT 26 | 4 | 36 | 8.91743 | 0 | 0 | 0 |
| MT 27 | 188 | 201 | 196.352 | 0 | 0 | 0 |
| MT 28 | -- | -- | -- | -- | -- | -- |
| MT 62 | -- | -- | -- | -- | -- | -- |
| MT 63 | -- | -- | -- | -- | -- | -- |

Message Distribution PRN 136:



Parameters

System

| Name | Section | Value |
|------------|---------|--|
| Name | System | Convertor |
| Version | System | 4.3 |
| Inputfile | System | D:/PegasusDateJob/job/2016_09_05_EGNOS/01_User/01_User |
| Outputfile | System | D:/PegasusDateJob/job/2016_09_05_EGNOS/02_Convertor/02_Convertor |

Configuration

| Name | Section | Value |
|-----------------|---------------|---------------|
| Receiver | Configuration | Novatel OEM4 |
| Leap_Seconds | Configuration | 17 |
| Correction_mode | Configuration | SBAS MODE 0/2 |
| Dual_Frequency | Configuration | no |

Position Domain

start: 06:30:05 05.09.2016 (week: 1913 sec: 109805)
end: 13:13:21 05.09.2016 (week: 1913 sec: 134001)
duration: 06:43:17 ..

quality

valid samples 23836
total samples 24197

Event tables

Position discontinuity events type no (0)
APV-I discontinuity events type all
APV-35m discontinuity events type long
LPV-200 discontinuity events type long
CAT-I discontinuity events type all

extremes :

| | Epoch | HPE | HPL | HPE/HPL | VPE | VPL | VPE/VPL |
|--------------------|--------|----------|---------|-----------|----------|---------|-----------|
| max normHor | 113453 | 1.49165 | 9.73808 | 0.153177 | 0.406709 | 13.0593 | 0.0311432 |
| max normVer | 114694 | 1.58832 | 16.8716 | 0.0941418 | 2.09605 | 16.7419 | 0.125198 |
| max HPE | 116832 | 4.05898 | 46.4534 | 0.0873774 | -9.03649 | 123.189 | 0.0733547 |
| max VPE | 116832 | 4.05898 | 46.4534 | 0.0873774 | -9.03649 | 123.189 | 0.0733547 |
| min HPL | 125451 | 1.01098 | 7.86326 | 0.12857 | 0.776233 | 16.6711 | 0.0465616 |
| min VPL | 133683 | 0.991328 | 8.63595 | 0.114791 | 0.283158 | 11.8132 | 0.0239697 |

APV-I discontinuity events :

| # | Epoch | duration | stable period |
|---|--------|----------|---------------|
| 1 | 112503 | 195 | 2337 |
| 2 | 116818 | 556 | 4120 |

APV-35m discontinuity events :

| # | Epoch | duration | stable period |
|---|--------|----------|---------------|
| 1 | 110923 | 585 | 199 |
| 2 | 111557 | 19 | 1 |
| 3 | 111617 | 74 | 1 |
| 4 | 112503 | 195 | 812 |
| 5 | 116818 | 600 | 4120 |

LPV-200 discontinuity events :

| # | Epoch | duration | stable period |
|---|--------|----------|---------------|
| 1 | 110923 | 585 | 199 |
| 2 | 111557 | 19 | 1 |
| 3 | 111617 | 74 | 1 |
| 4 | 112503 | 195 | 812 |
| 5 | 116818 | 600 | 4120 |

CAT-I discontinuity events :

| # | Epoch | duration | stable period |
|---|--------|----------|---------------|
| 1 | 133671 | 3 | 0 |
| 2 | 133675 | 2 | 1 |
| 3 | 133680 | 1 | 3 |

First Glance analysis

Duration

24197

| | |
|--|--------|
| Number of Samples | 24197 |
| Number of invalid sample | 361 |
| Number of no position solution samples | 0 |
| Number of missing sample | 0 |
| Logging Loss | 0 |
| Processing Loss | 1.4919 |
| Number of Misleading Information | 0 |
| Data gaps | 0 |
| Discontinuities | 0 |

Number of Samples :

| Valid | APV-1 | LPV-200 | CAT-1 | APV-35m |
|-------|-------|---------|-------|---------|
| 23836 | 23085 | 22296 | 8 | 22296 |

Accuracy statistics :

| | Valid | APV-1 | LPV-200 | CAT-1 | APV-35m |
|--------------|---------|---------|---------|----------|---------|
| HPE 95% | 1.42396 | 1.39912 | 1.39501 | 1.055 | 1.39501 |
| HPEscale 95% | NaN | 4.79814 | 4.81591 | 4.86912 | 4.81591 |
| VPE 95% | 1.34974 | 1.25088 | 1.25262 | 0.417773 | 1.25262 |
| VPEscale 95% | NaN | 3.36644 | 2.36532 | 0.420633 | 2.36532 |

Availability :

| | Valid | APV-1 | LPV-200 | CAT-1 | APV-35m |
|-----------------|----------|----------|----------|-------------|----------|
| Signal in Space | 1 | 0.968493 | 0.935392 | 0.000335627 | 0.935392 |
| measurements | 0.985081 | 0.954044 | 0.921437 | 0.000330619 | 0.921437 |
| Operational | 0.985081 | 0.954044 | 0.921437 | 0.000330619 | 0.921437 |

Discontinuity events :

| | Valid | APV-1 | LPV-200 | CAT-1 | APV-35m |
|-------------|-------|------------|------------|-------|------------|
| All | -- | 2 | 31 | 3 | 31 |
| Long | -- | 2 | 5 | 0 | 5 |
| Independent | -- | 2 | 3 | 0 | 3 |
| P(disc.) | NaN | 0.00129955 | 0.0020183 | 0 | 0.0020183 |
| P(slide) | NaN | 0.00129955 | 0.00430571 | 0.5 | 0.00430571 |

Integrity events :

| | MI | HMI APV-1 | HMI LPV-200 | HMI CAT-1 | HMI APV-35m |
|------------|----|-----------|-------------|-----------|-------------|
| Total | 0 | 0 | 0 | 0 | 0 |
| Horizontal | 0 | 0 | 0 | 0 | 0 |
| Vertical | 0 | 0 | 0 | 0 | 0 |

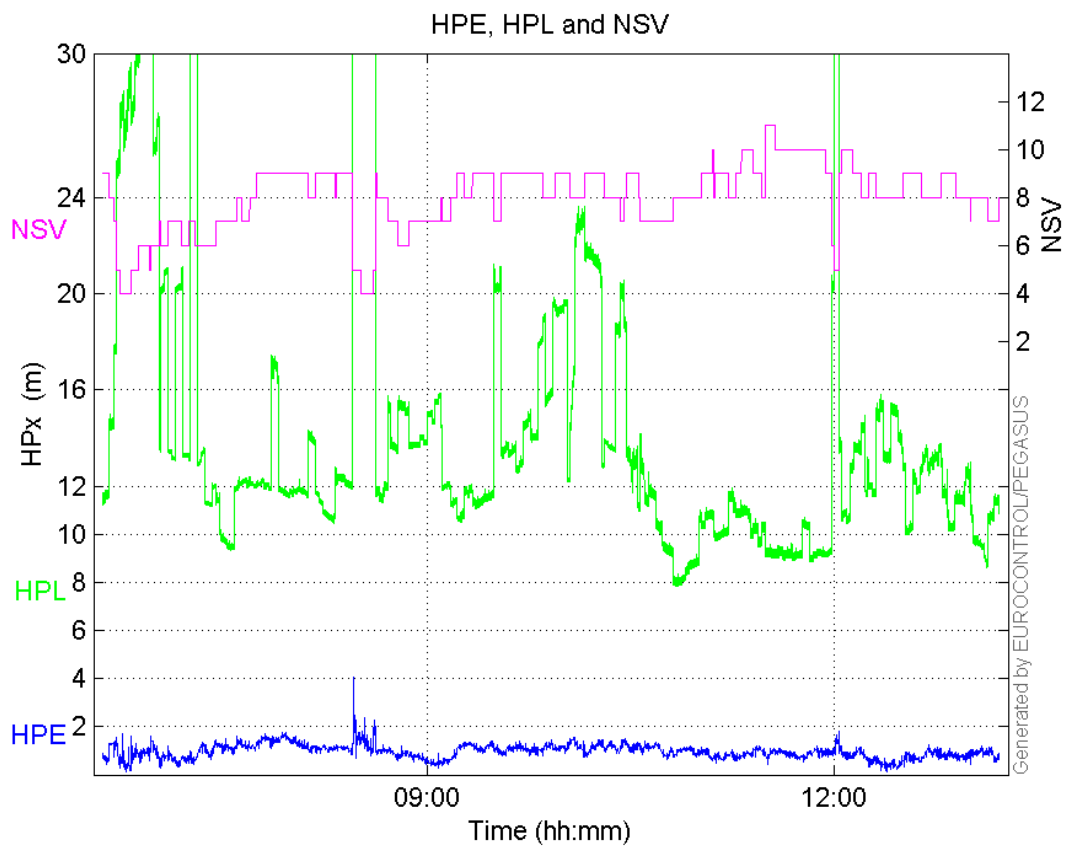
Performance Summary :

| | Valid | APV-1 | LPV-200 | CAT-1 | APV-35m |
|--------------------|----------|----------|----------|-------------|----------|
| Samples | 23836 | 23085 | 22296 | 8 | 22296 |
| SIS Availability | 1 | 0.968493 | 0.935392 | 0.000335627 | 0.935392 |
| Local Availability | 0.985081 | 0.954044 | 0.921437 | 0.000330619 | 0.921437 |
| | | | | | |

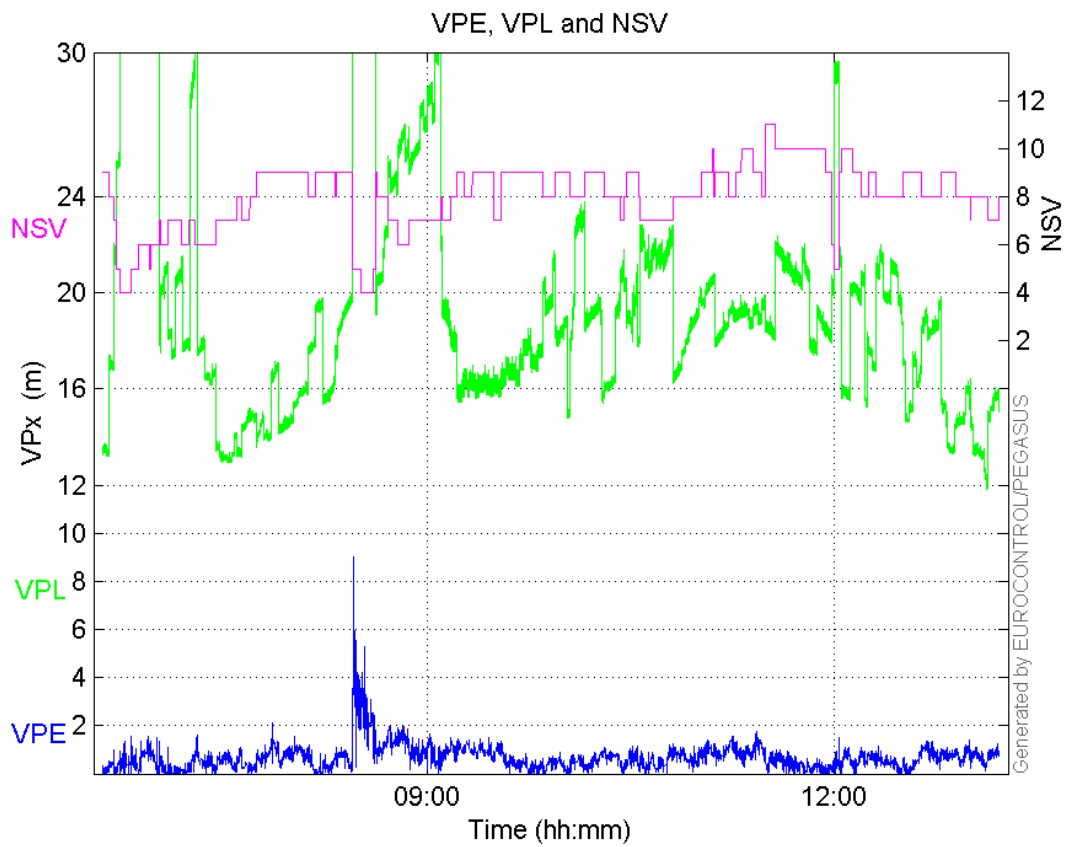
| | | | | | |
|---|----------|------------|------------|-------------|------------|
| Operational Availability | 0.985081 | 0.954044 | 0.921437 | 0.000330619 | 0.921437 |
| HPE 95% | 1.42396 | 1.39912 | 1.39501 | 1.055 | 1.39501 |
| HPscale 95% | NaN | 4.79814 | 4.81591 | 4.86912 | 4.81591 |
| VPE 95% | 1.34974 | 1.25088 | 1.25262 | 0.417773 | 1.25262 |
| VPscale 95% | NaN | 3.36644 | 2.36532 | 0.420633 | 2.36532 |
| All Discontinuity Events | -- | 2 | 31 | 3 | 31 |
| Long Discontinuity Events | -- | 2 | 5 | 0 | 5 |
| Independent Discontinuity Events | -- | 2 | 3 | 0 | 3 |
| P(discontinuity) | NaN | 0.00129955 | 0.0020183 | 0 | 0.0020183 |
| P(sliding window) | NaN | 0.00129955 | 0.00430571 | 0.5 | 0.00430571 |
| All Integrity Events | 0 | 0 | 0 | 0 | 0 |
| Horizontal Integrity Events | 0 | 0 | 0 | 0 | 0 |
| Vertical Integrity Events | 0 | 0 | 0 | 0 | 0 |

Time Series

HPE, HPL and NSV:

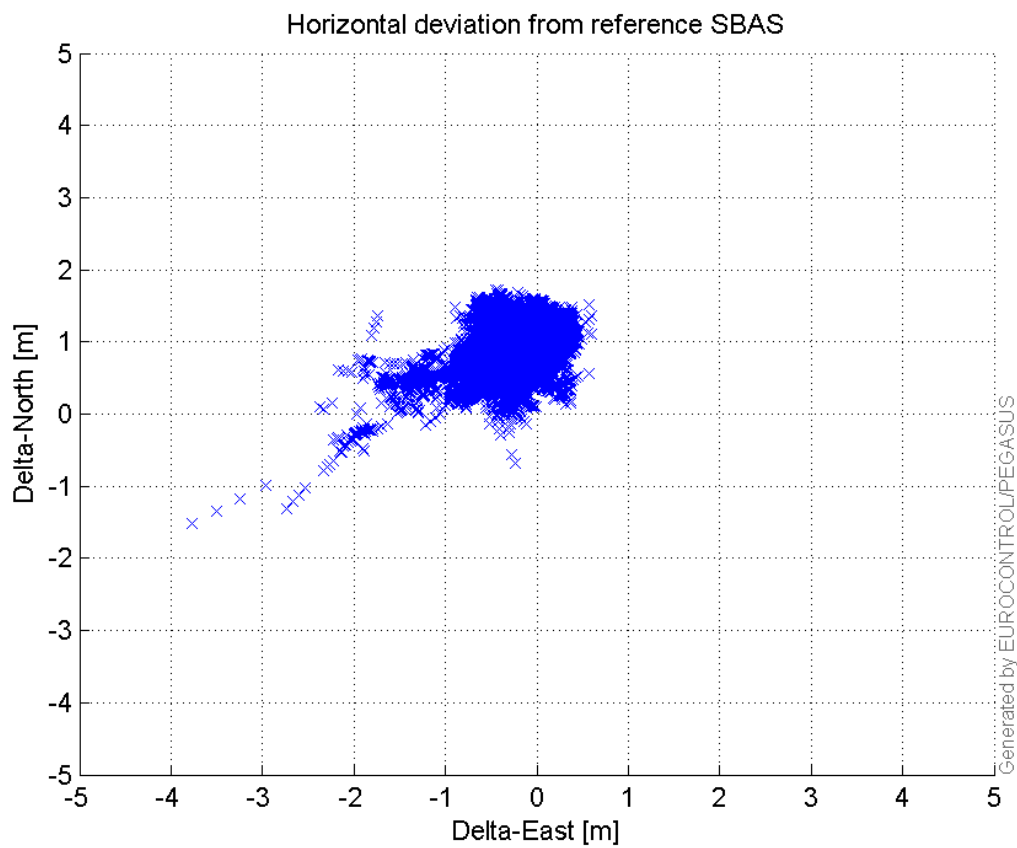


VPE, VPL and NSV:



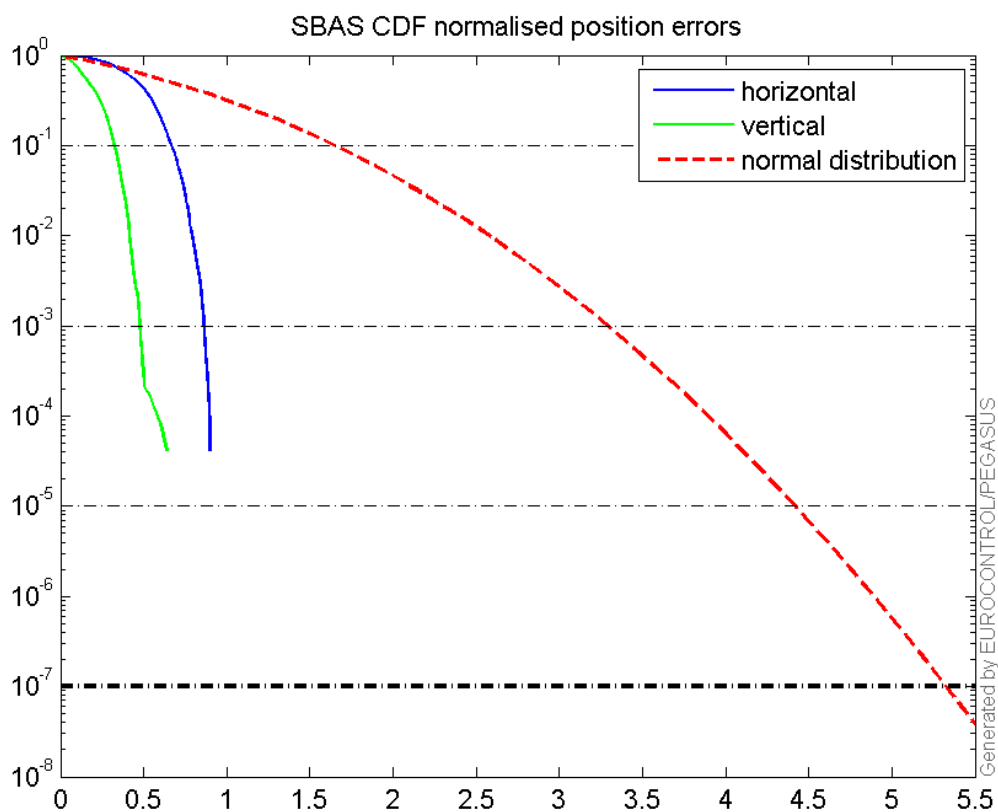
Horizontal deviation

Horizontal deviation from reference SBAS:



CDF position

SBAS CDF position domain:



Statistics

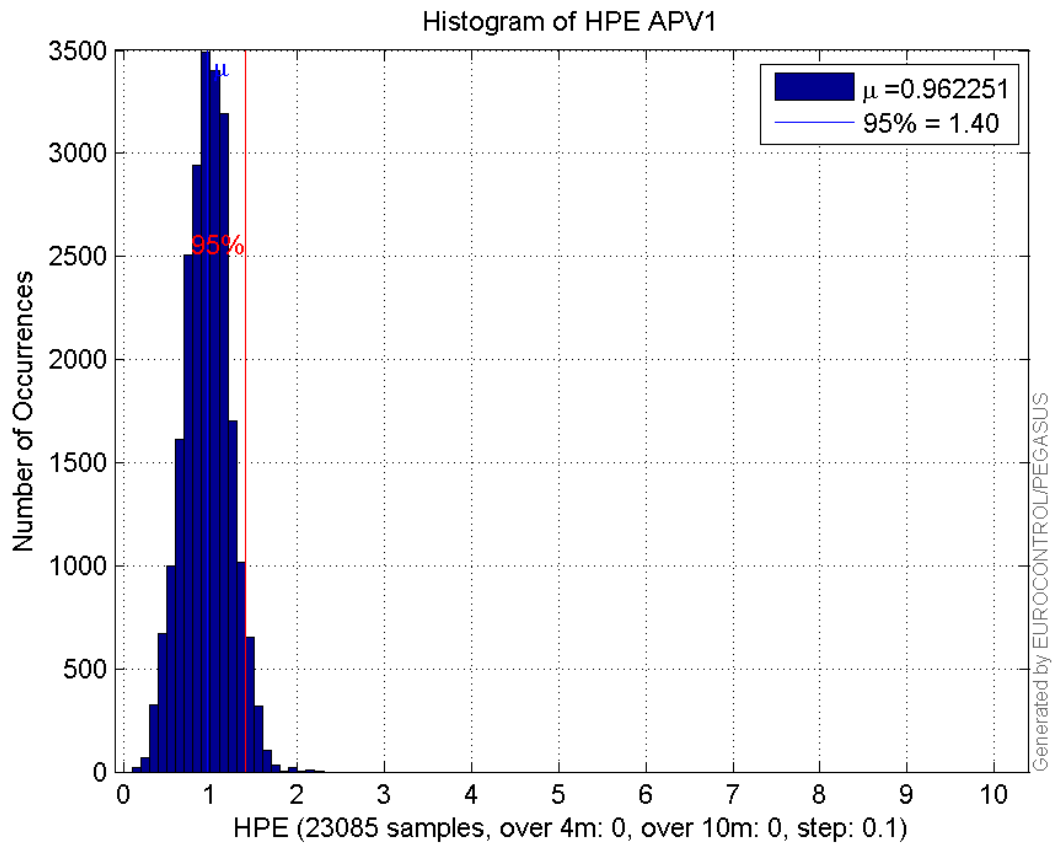
| | |
|------------------|-----------|
| number | 23085 |
| sum | 22213.555 |
| sum2 | 22988.508 |
| prctile95 | 1.399124 |
| prctile99 | 1.5642401 |
| number | 23085 |
| sum | 14526.561 |
| sum2 | 12063.583 |
| prctile95 | 1.2508831 |
| prctile99 | 1.5489748 |
| number | 23085 |
| sum | 317166.07 |
| sum2 | 4959768.8 |
| prctile95 | 26.1792 |
| prctile99 | 34.020245 |
| number | 23085 |
| sum | 449911.66 |
| sum2 | 9493147.6 |
| prctile95 | 30.82705 |
| prctile99 | 42.801095 |
| number | 23085 |
| sum | 1771.4537 |
| sum2 | 153.46886 |

prctile95 0.11995348
prctile99 0.13212563
number 23085
sum 784.15561
sum2 35.699912
prctile95 0.067328801
prctile99 0.077752621
number 22296
sum 21443.773
sum2 22160.813
prctile95 1.3950105
prctile99 1.5473091
number 22296
sum 14009.541
sum2 11626.662
prctile95 1.2526167
prctile99 1.5488228
number 22296
sum 293084.82
sum2 4217373.7
prctile95 21.34294
prctile99 27.924588
number 22296
sum 417246.26
sum2 8129868.6
prctile95 26.40474
prctile99 32.5977
number 22296
sum 1746.4063
sum2 152.62068
prctile95 0.12039766
prctile99 0.13235887
number 22296
sum 771.80511
sum2 35.453273
prctile95 0.067580594
prctile99 0.077887846

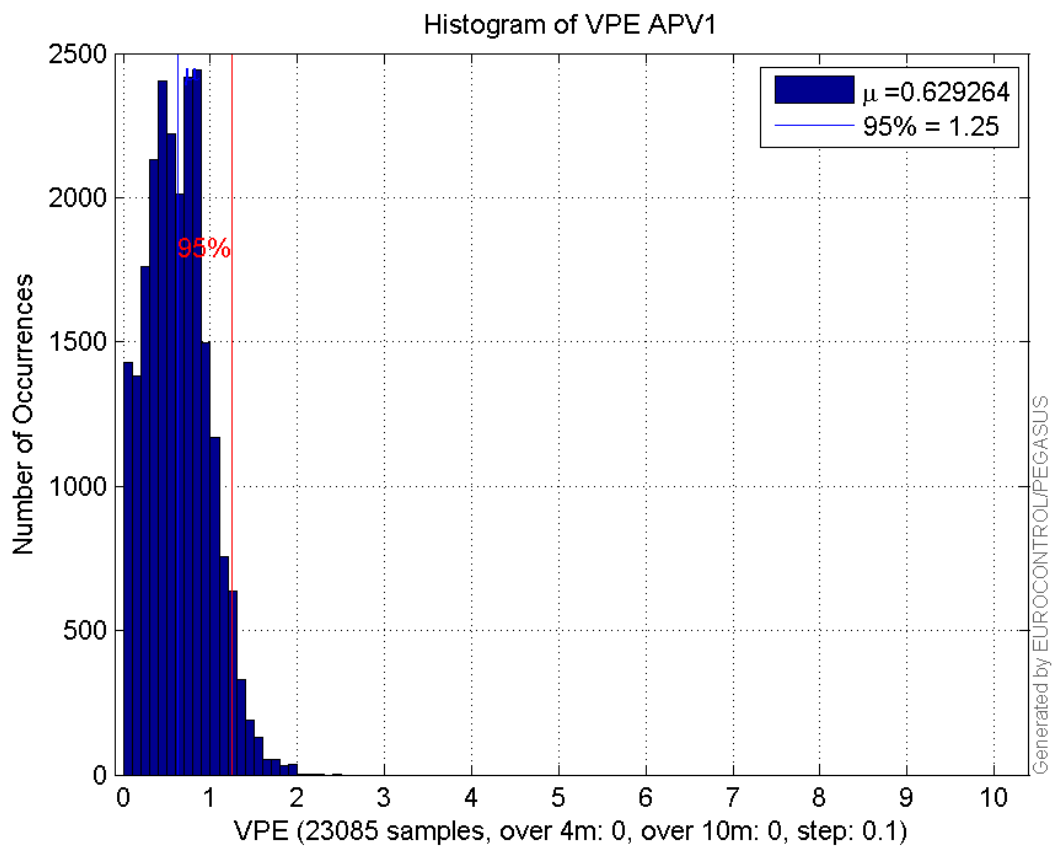
Error and XPL Statistics :

| | Mean Value | Standard Deviation | 50% Value | 95% Value | 99% Value | RMS Value |
|------------|------------|--------------------|-----------|-----------|-----------|-----------|
| HPE | 0.962251 | 0.26438 | 0.970711 | 1.39912 | 1.56424 | 0.997908 |
| HPL | 13.7391 | 5.1076 | 12.0599 | 26.1792 | 34.0202 | 14.6577 |
| VPE | 0.629264 | 0.355815 | 0.609363 | 1.25088 | 1.54897 | 0.722892 |
| VPL | 19.4894 | 5.60289 | 18.5057 | 30.8271 | 42.8011 | 20.2787 |

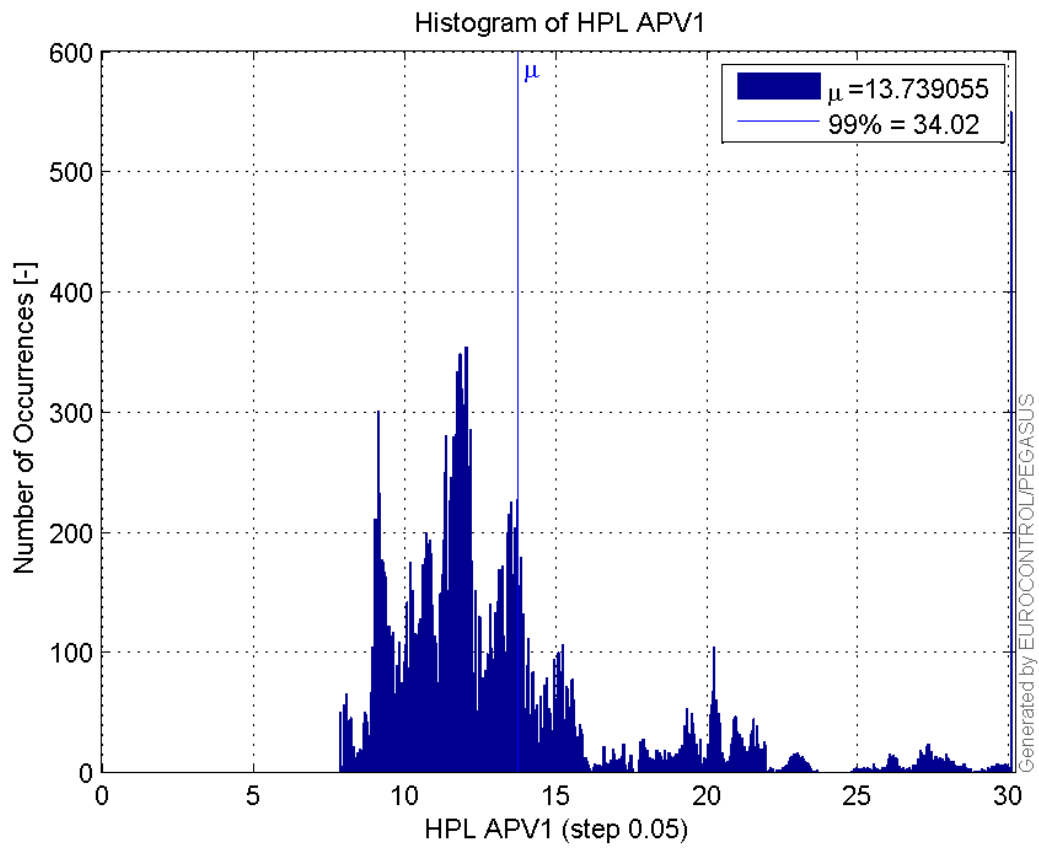
Histogram of HPE APV1:



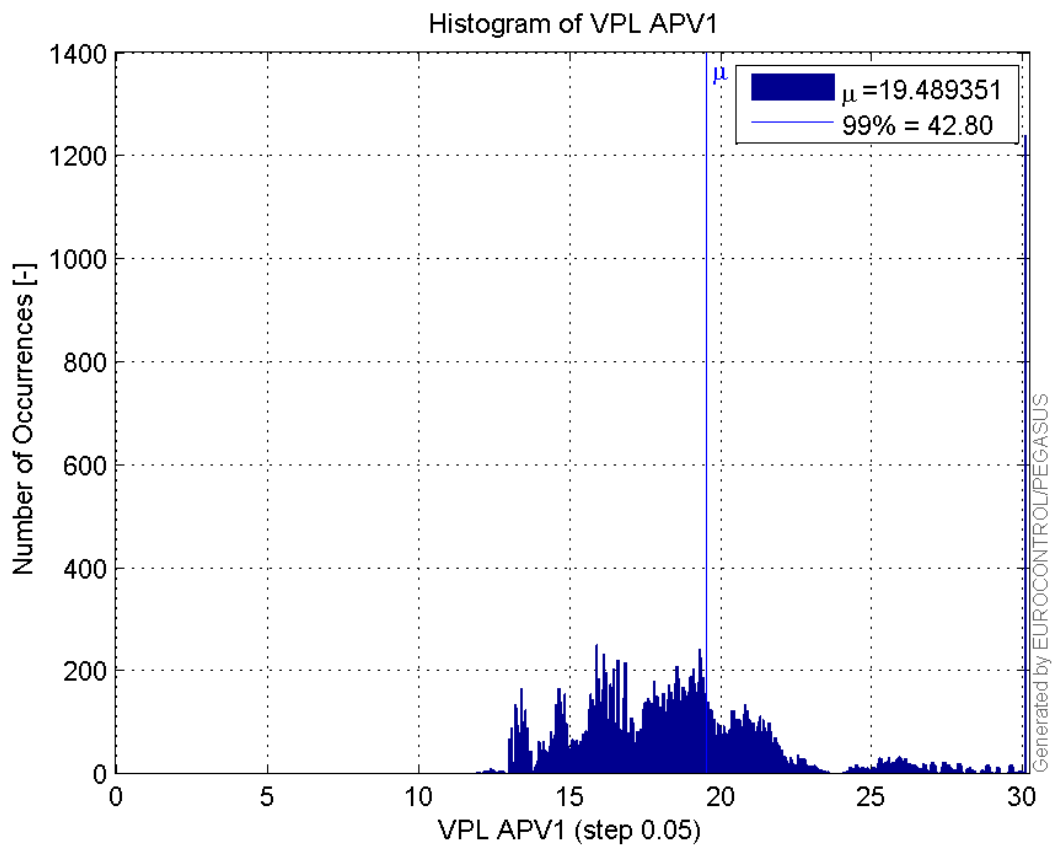
Histogram of VPE APV1:



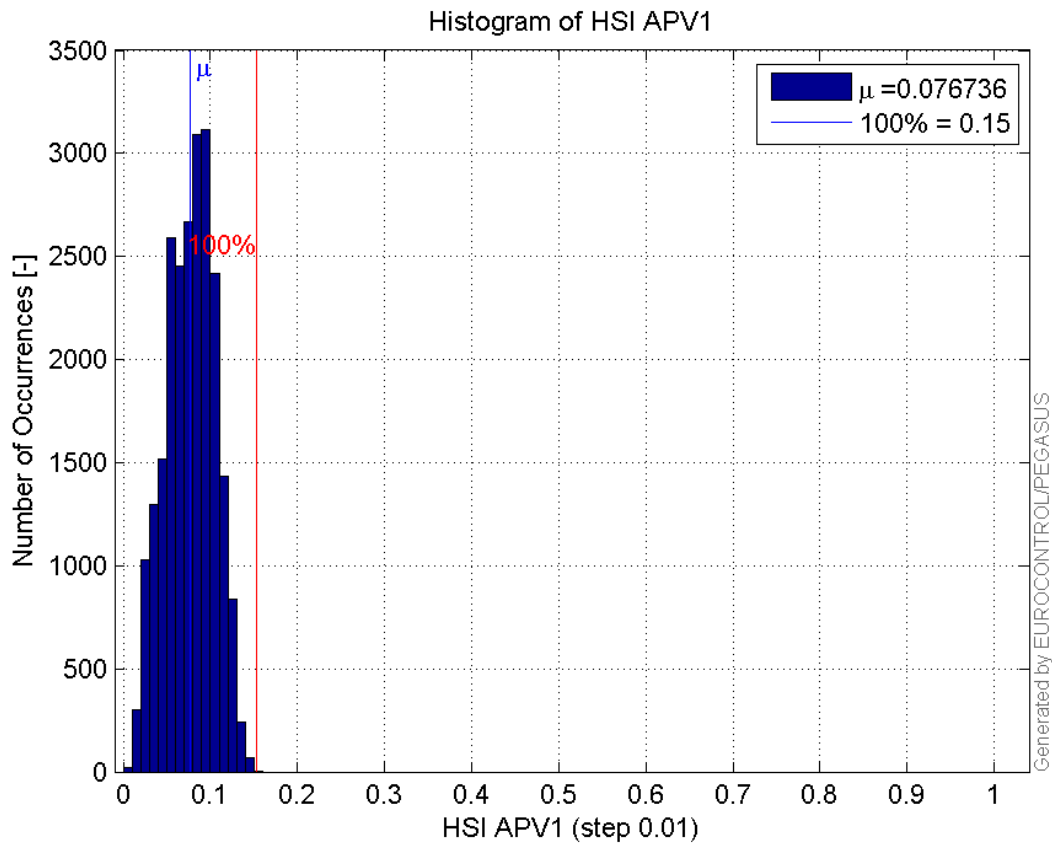
Histogram of HPL APV1:



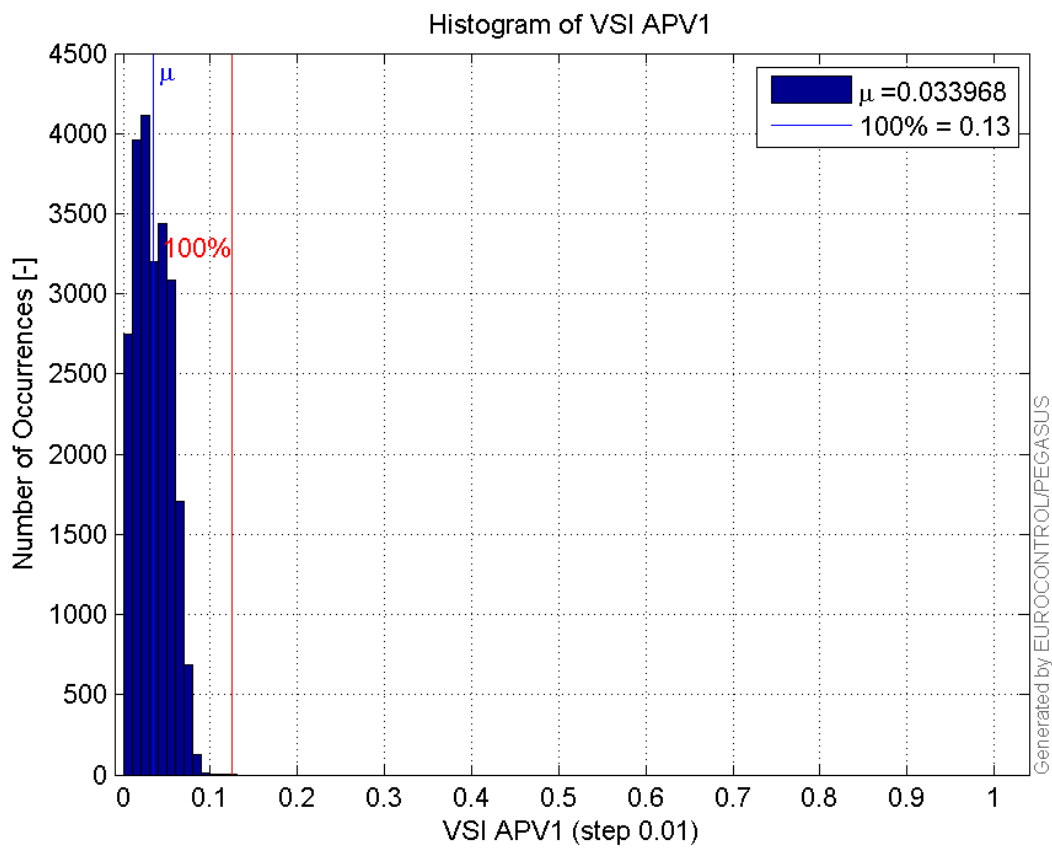
Histogram of VPL APV1:



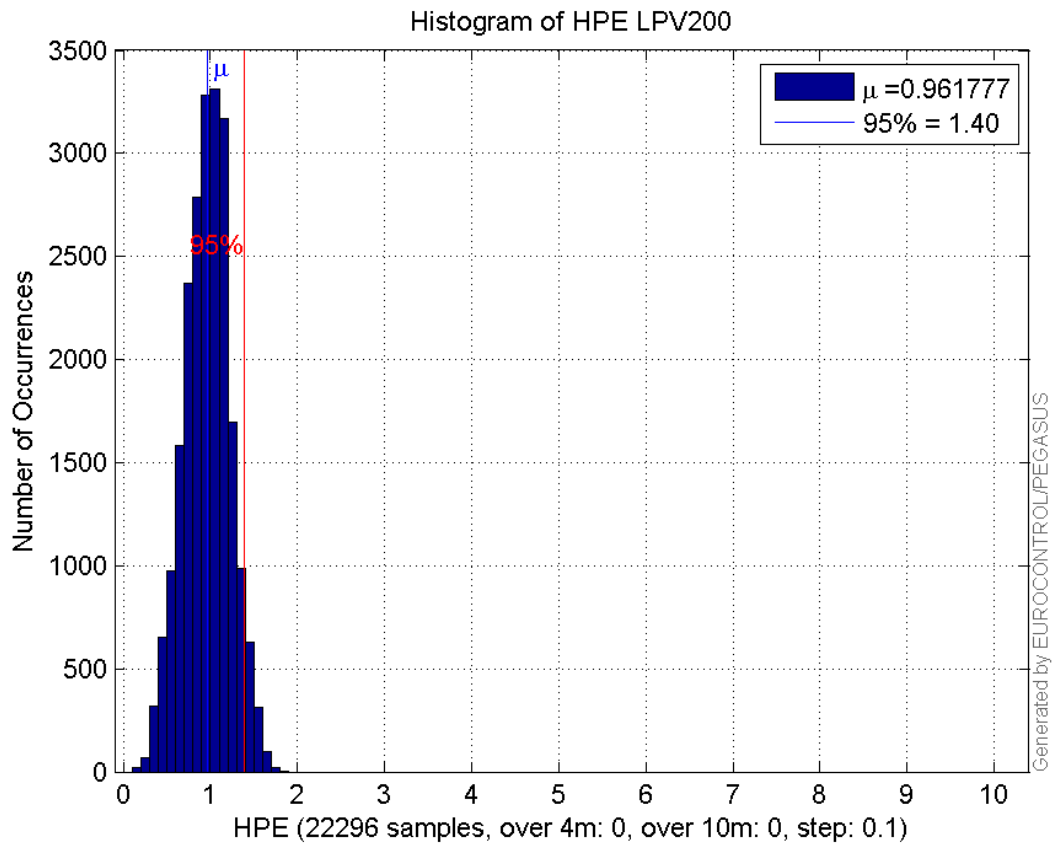
Histogram of HSI APV1:



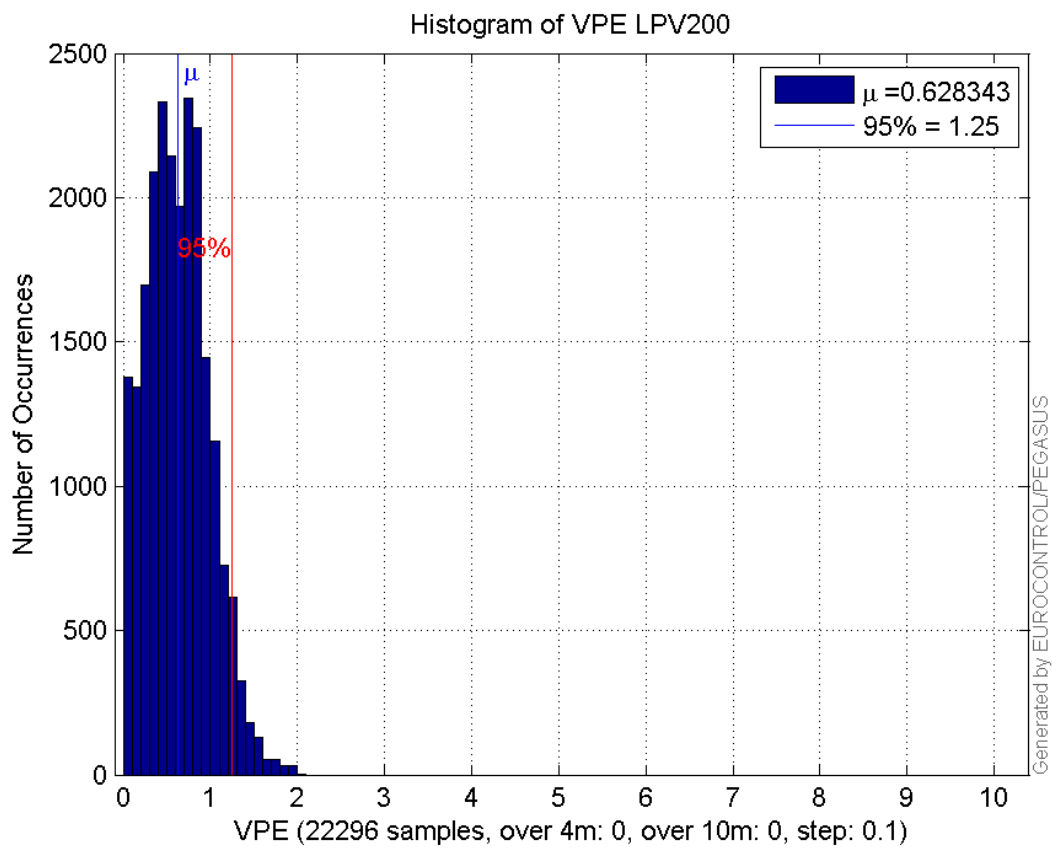
Histogram of VSI APV1:



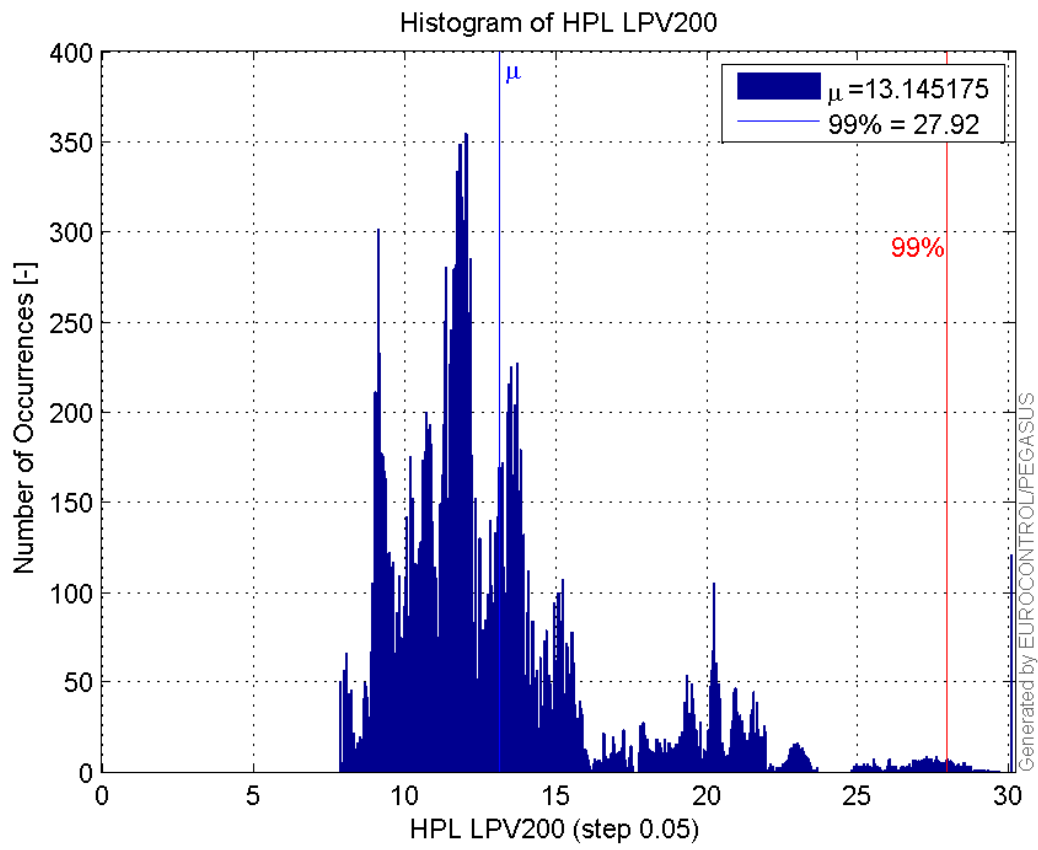
Histogram of HPE LPV200:



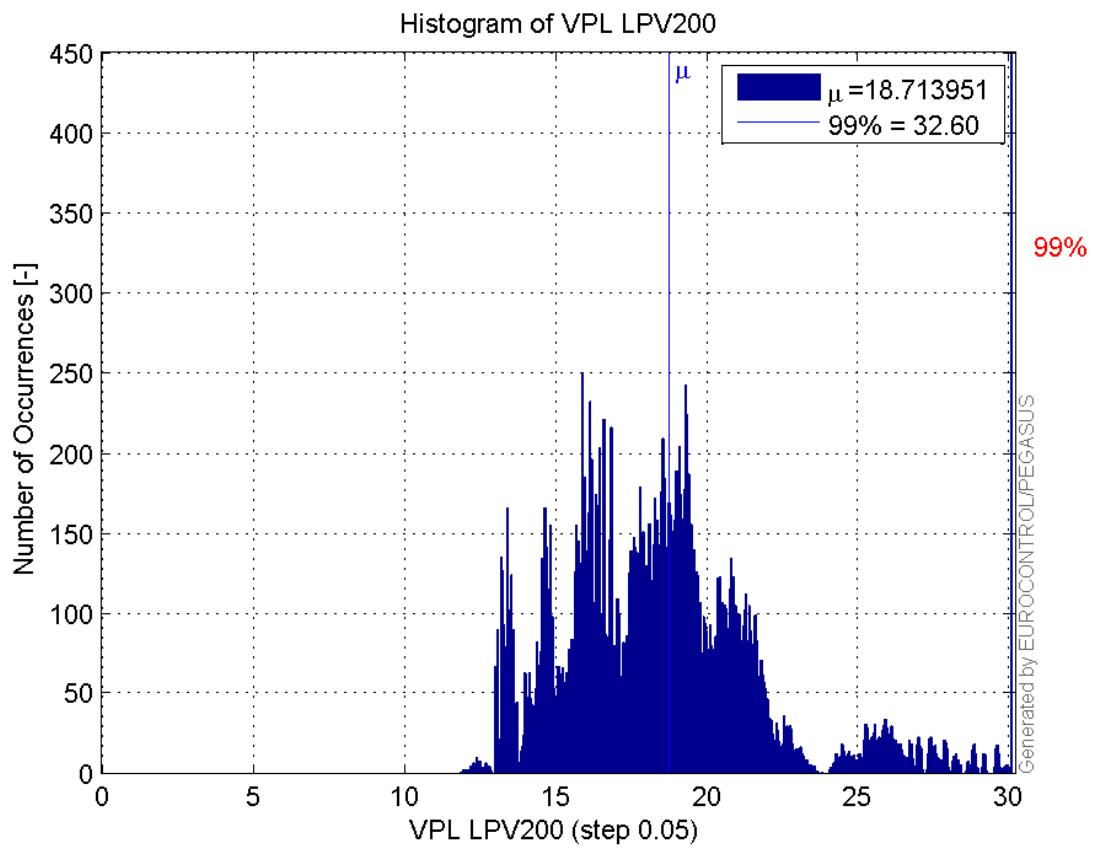
Histogram of VPE LPV200:



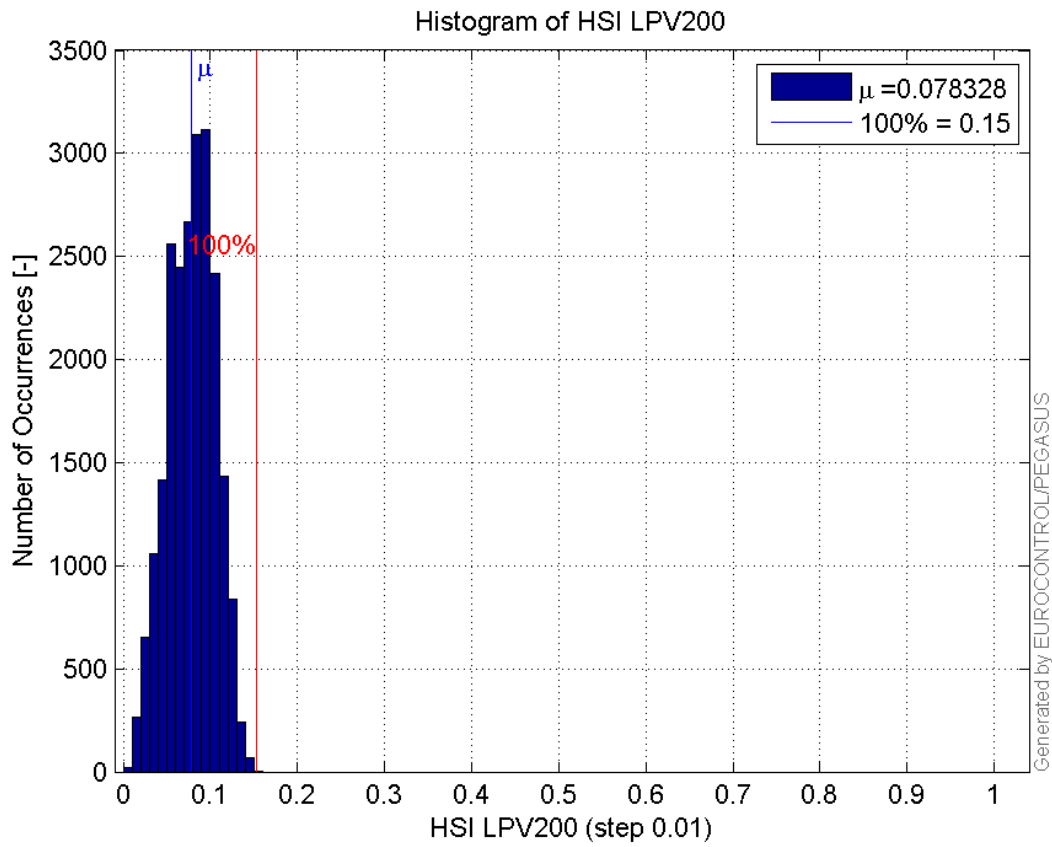
Histogram of HPL LPV200:



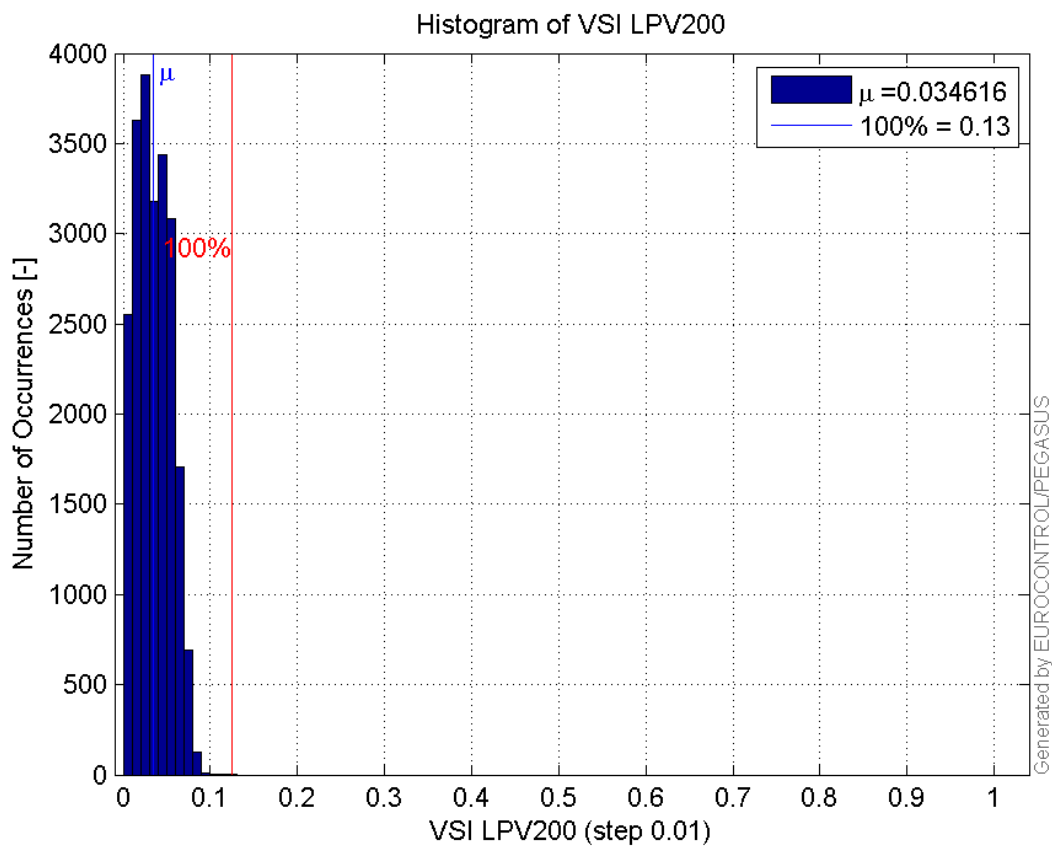
Histogram of VPL LPV200:



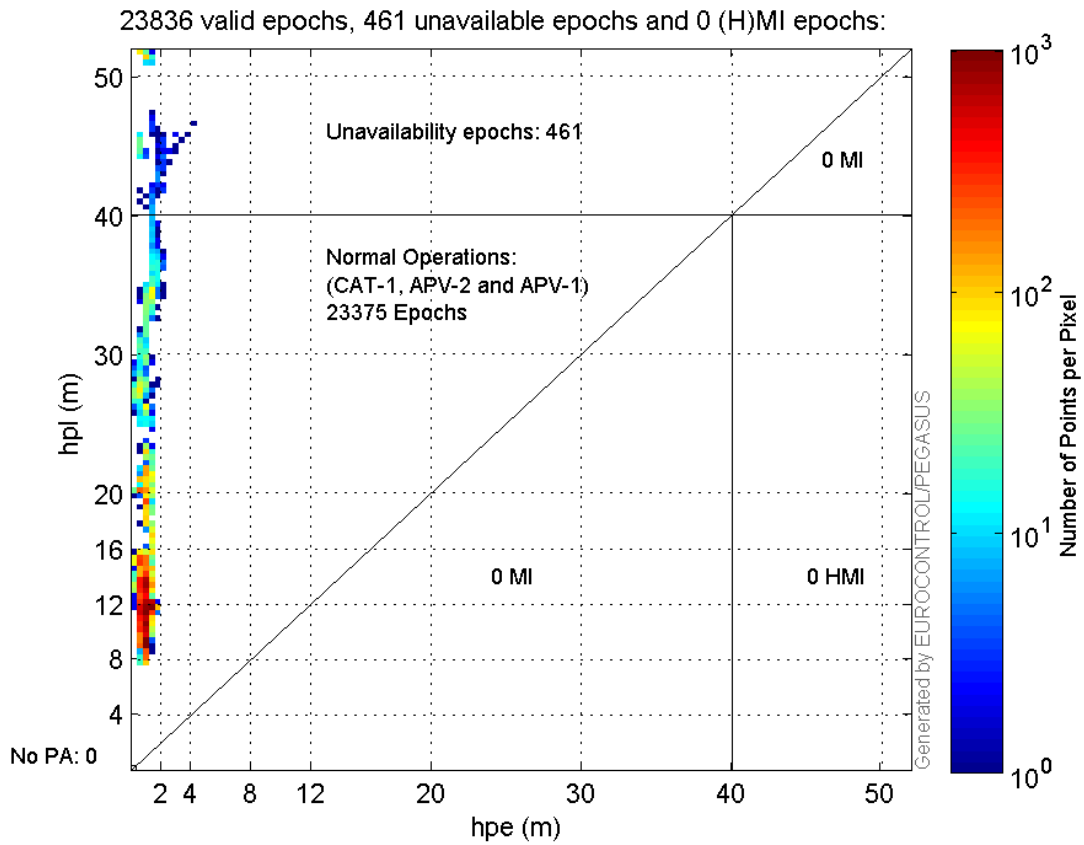
Histogram of HSI LPV200:



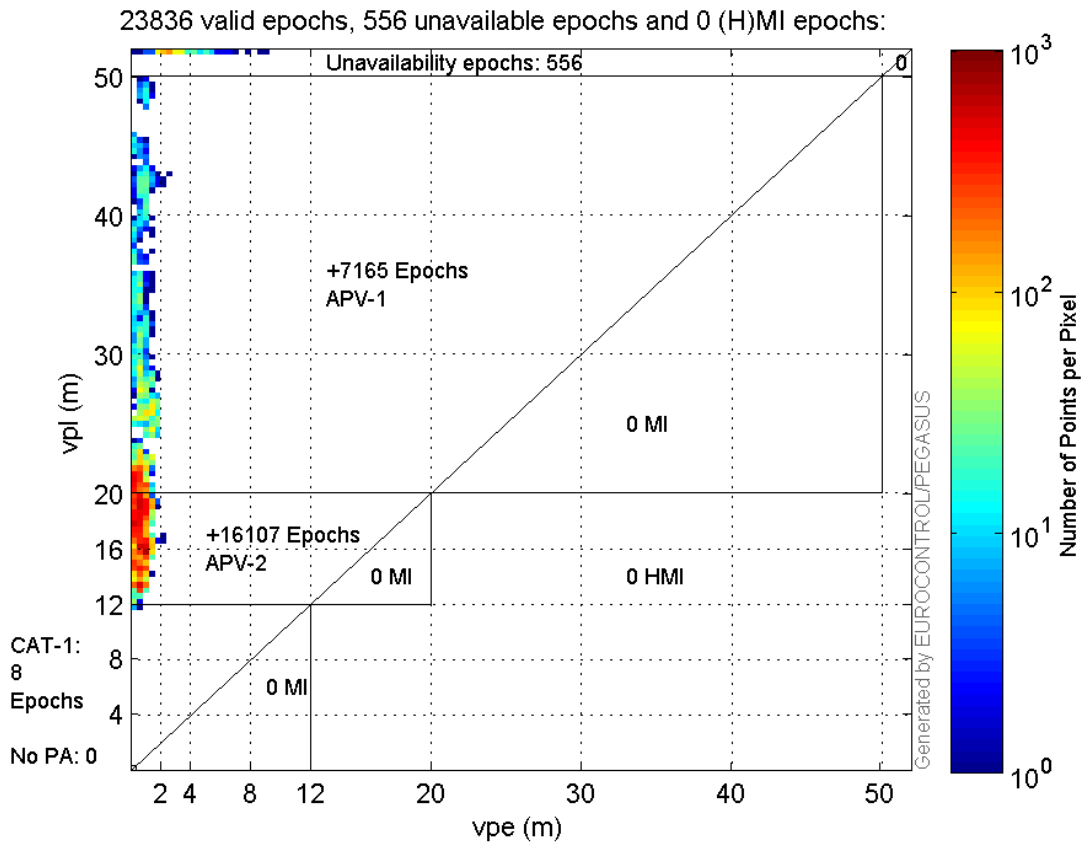
Histogram of VSI LPV200:



Horizontal_Stanford_Plot_SBAS:



Vertical_Stanford_Plot_SBAS:



Parameters

system

| Name | Section | Value |
|---------------|---------|--|
| name | system | GNSS_Solution |
| version | system | 4.8.4.0 |
| input_prefix | system | D:/PegasusDateJob/job/2016_09_05_EGNOS/02_Convertor/02_Convertor |
| output_prefix | system | D:/PegasusDateJob/job/2016_09_05_EGNOS/03_GNSS_Solution/03_GNSS_Solution_sol |

settings

| Name | Section | Value |
|--------------------------|----------|---------|
| ref_lat | settings | 50.439 |
| ref_lon | settings | 30.4297 |
| ref_alt | settings | 215.271 |
| smoothing | settings | yes |
| smoothing_constant | settings | 100 |
| smoothing_max_gap | settings | 10 |
| smoothing_max_divergence | settings | 3 |
| min_elevation | settings | 5 |
| aad_model | settings | a |
| output_range_file | settings | yes |
| sbas_prn | settings | 120 |
| gnss_mode | settings | sbas |

results

| Name | Section | Value |
|------------|---------|----------|
| init_lat | results | 50.4391 |
| init_lon | results | 30.4296 |
| init_alt | results | 240.7898 |
| mi_numbers | results | 0 |

Range Domain

start: 06:30:05 05.09.2016 (week: 1913 sec: 109805)
end: 13:13:21 05.09.2016 (week: 1913 sec: 134001)
duration: 06:43:17 ..

quality

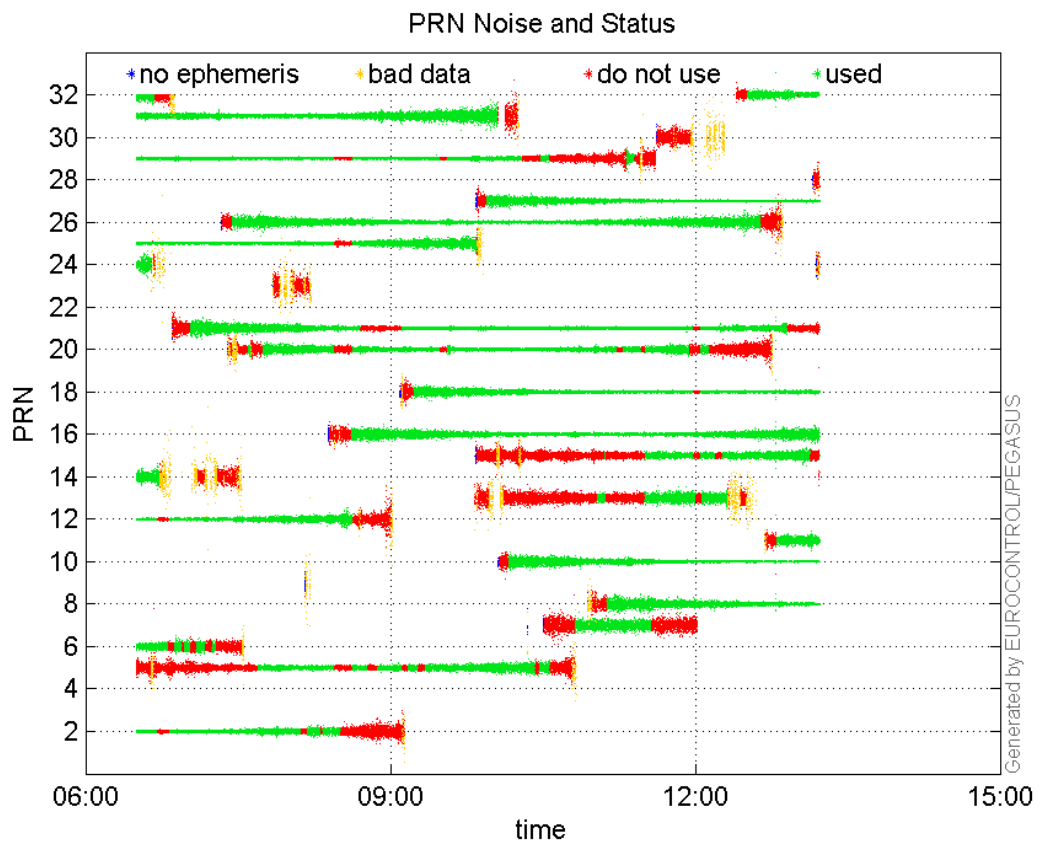
valid samples 24197
total samples 24197

PRN overview

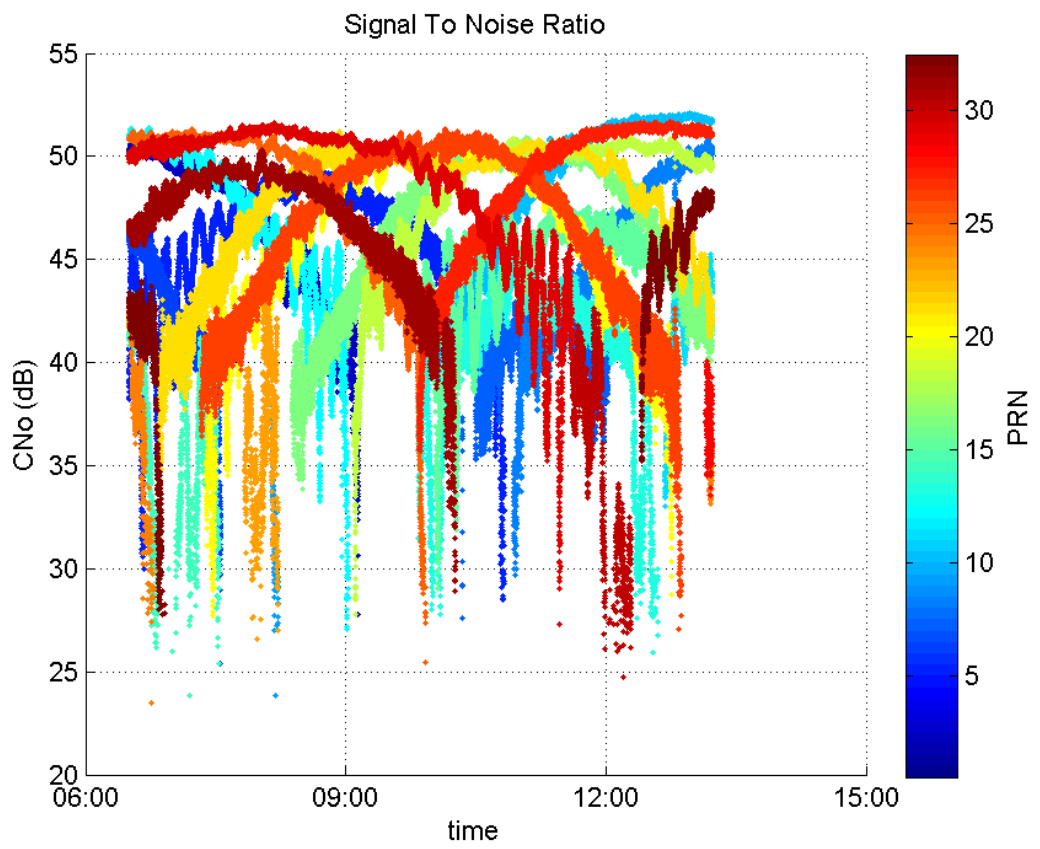
Number of Visible GPS Satellites 26
Number of Visible SBAS Satellites 2

signal quality and status

PRN Noise and Status:



Signal To Noise Ratio:



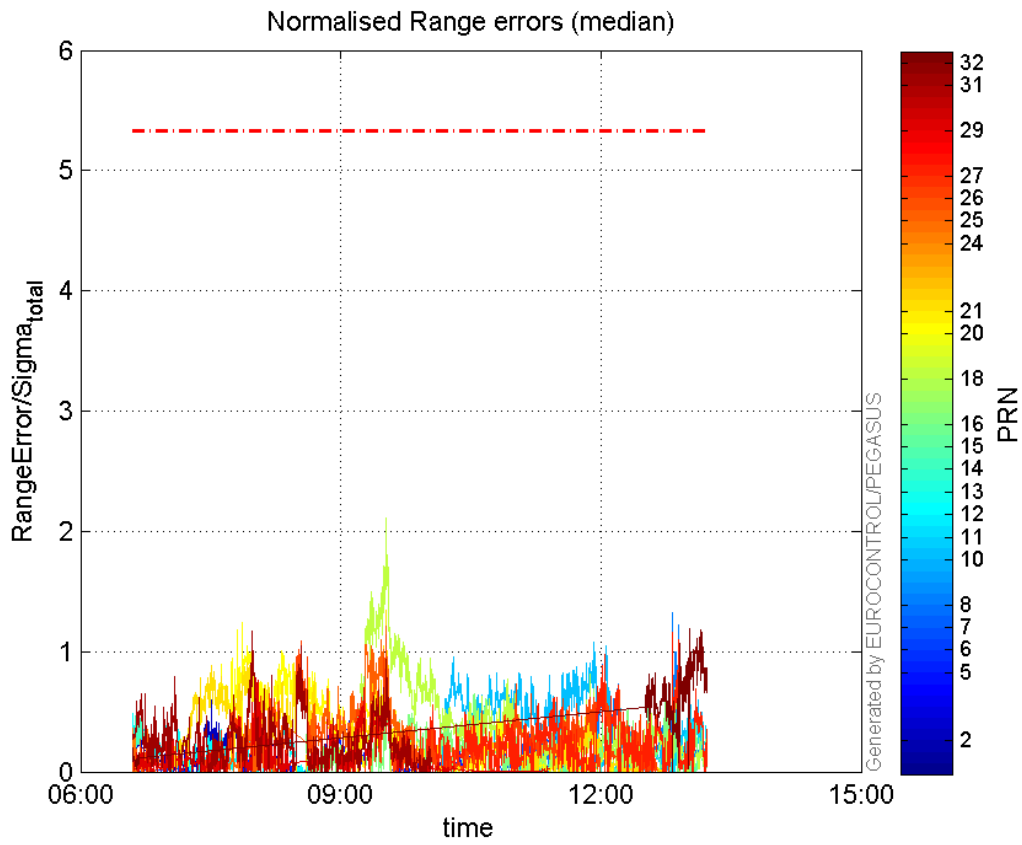
range errors

Number of Overbounding Norm Errors 0

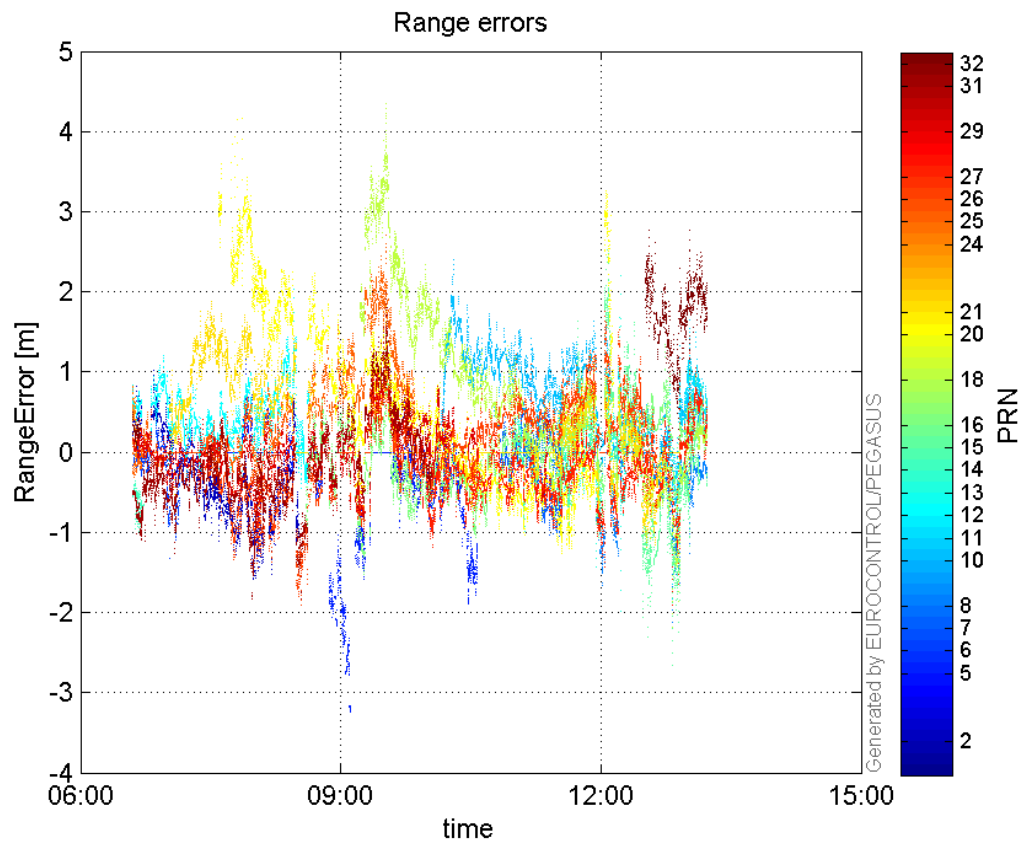
Max Norm Errors :

| GPS Week | GPS Second | PRN | Norm Error | Range Error | Sigma |
|----------|------------|-----|------------|-------------|---------|
| 1913 | 113453 | 2 | 0.594637 | -1.03821 | 1.74596 |
| 1913 | 119205 | 5 | 0.433402 | -3.23621 | 7.46699 |
| 1913 | 110730 | 6 | 0.102603 | -0.258872 | 2.52304 |
| 1913 | 127479 | 7 | 0.378118 | -1.03022 | 2.7246 |
| 1913 | 132552 | 8 | 1.32155 | -2.11789 | 1.60258 |
| 1913 | 129302 | 10 | 1.07848 | 1.63771 | 1.51854 |
| 1913 | 133289 | 11 | 0.750365 | 1.77261 | 2.36233 |
| 1913 | 110186 | 12 | 0.482074 | 0.841751 | 1.7461 |
| 1913 | 129811 | 13 | 0.319091 | 1.03983 | 3.25873 |
| 1913 | 110419 | 14 | 0.472391 | -0.986477 | 2.08827 |
| 1913 | 131547 | 15 | 0.554218 | -2.30925 | 4.16668 |
| 1913 | 120694 | 16 | 0.900916 | 1.59404 | 1.76936 |
| 1913 | 120695 | 18 | 2.11346 | 4.34567 | 2.05618 |
| 1913 | 114694 | 20 | 1.23971 | 4.1594 | 3.35513 |
| 1913 | 120695 | 21 | 1.34396 | 1.82372 | 1.35698 |
| 1913 | 110184 | 24 | 0.364093 | 0.827302 | 2.27223 |
| 1913 | 120663 | 25 | 1.21248 | 2.70172 | 2.22827 |
| 1913 | 120695 | 26 | 1.1442 | 1.61618 | 1.41249 |
| 1913 | 132552 | 27 | 1.15961 | -1.89972 | 1.63824 |
| 1913 | 115261 | 29 | 0.785375 | -1.12319 | 1.43013 |
| 1913 | 115138 | 31 | 1.1745 | -1.80695 | 1.53848 |
| 1913 | 133289 | 32 | 1.19022 | 2.77311 | 2.32992 |

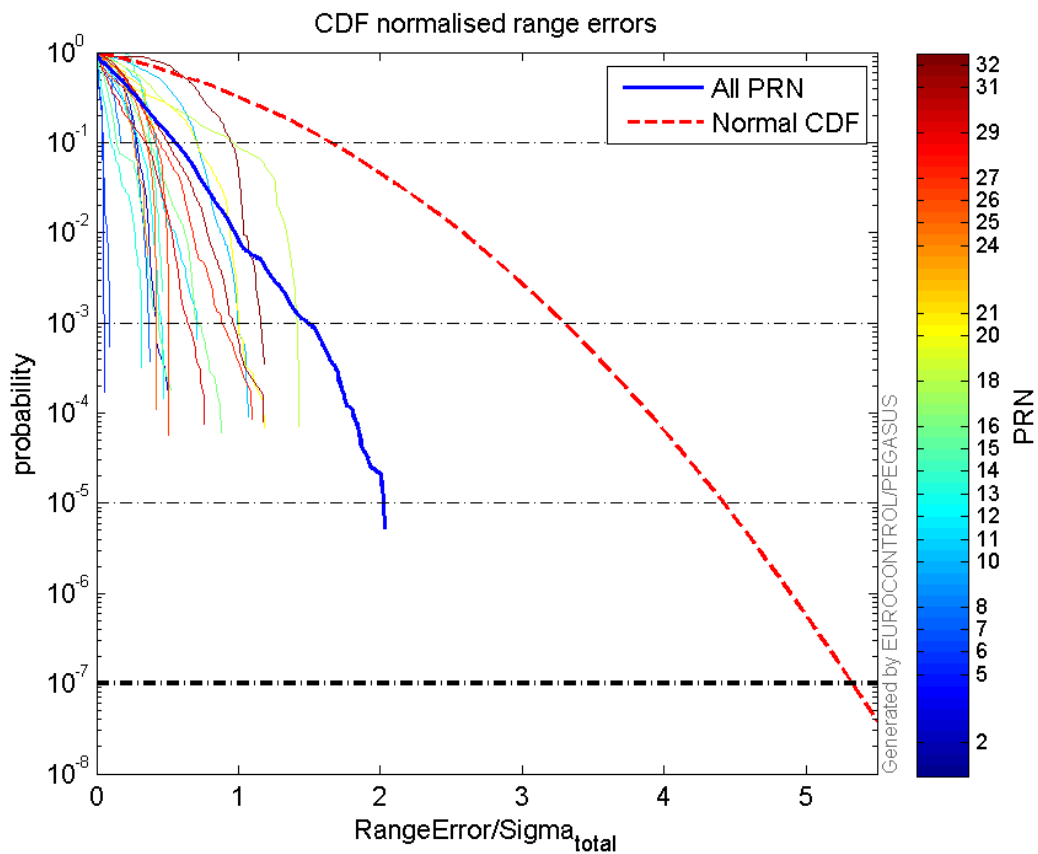
Normalised Range errors (median):



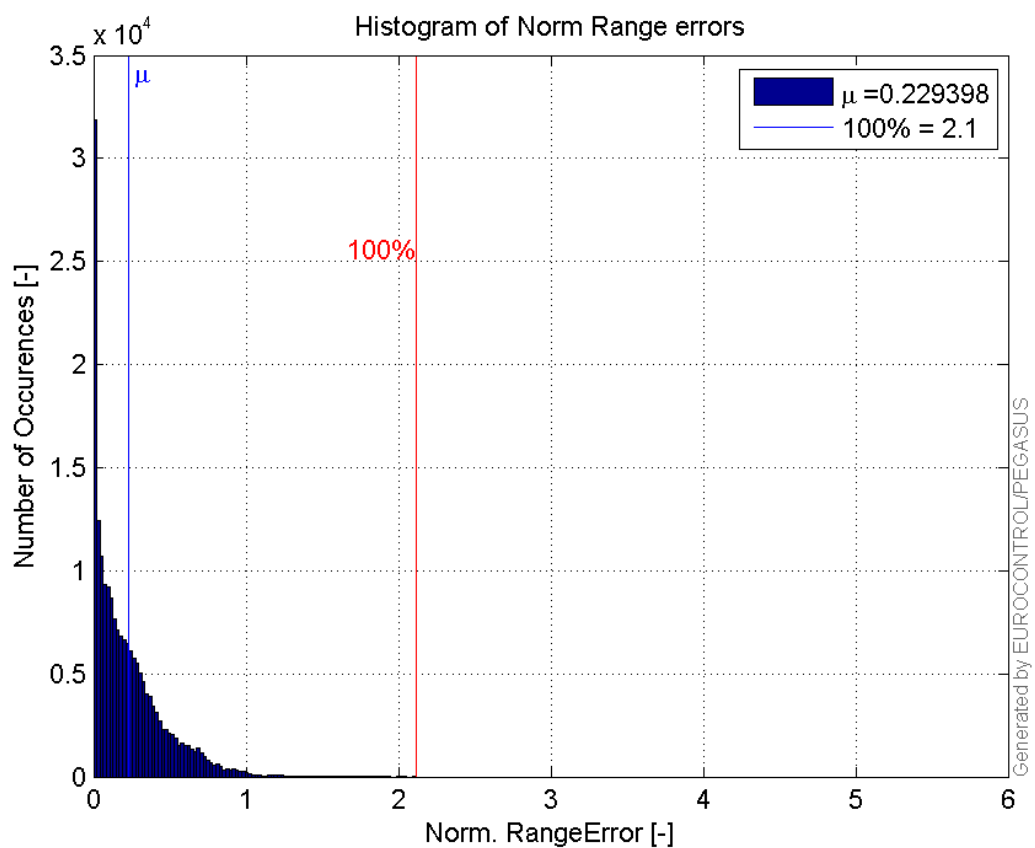
Range errors:



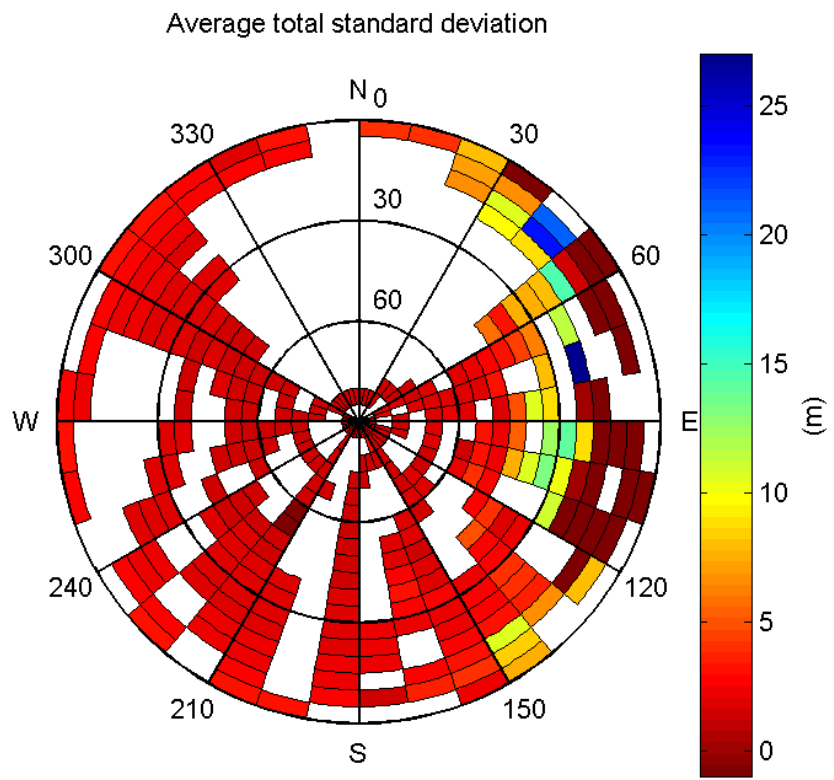
CDF normalised range errors:



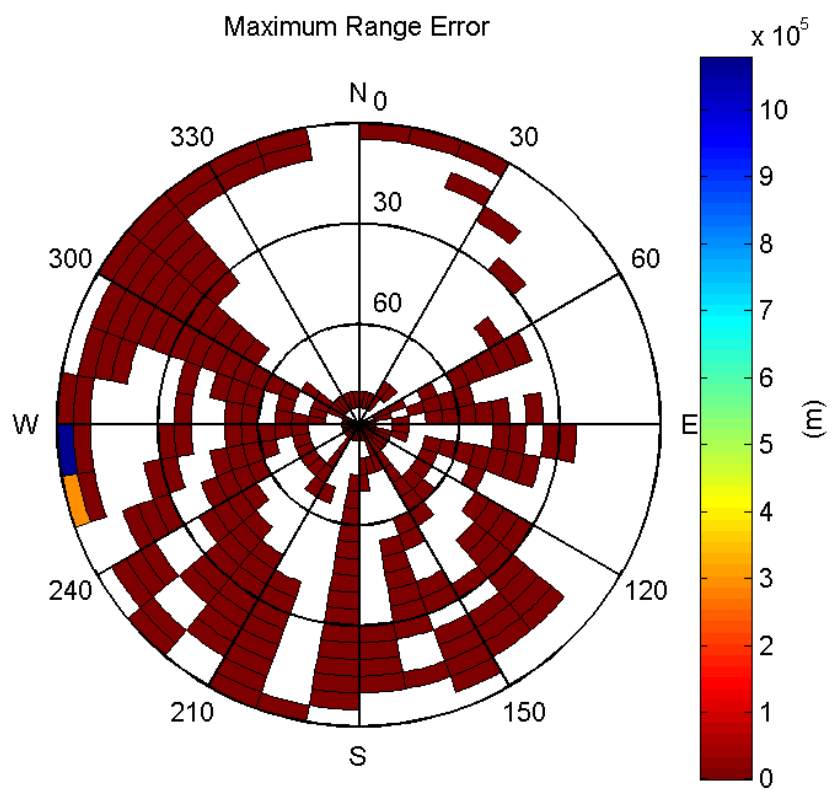
Histogram of Norm Range errors:



Sigma Sky Plot:

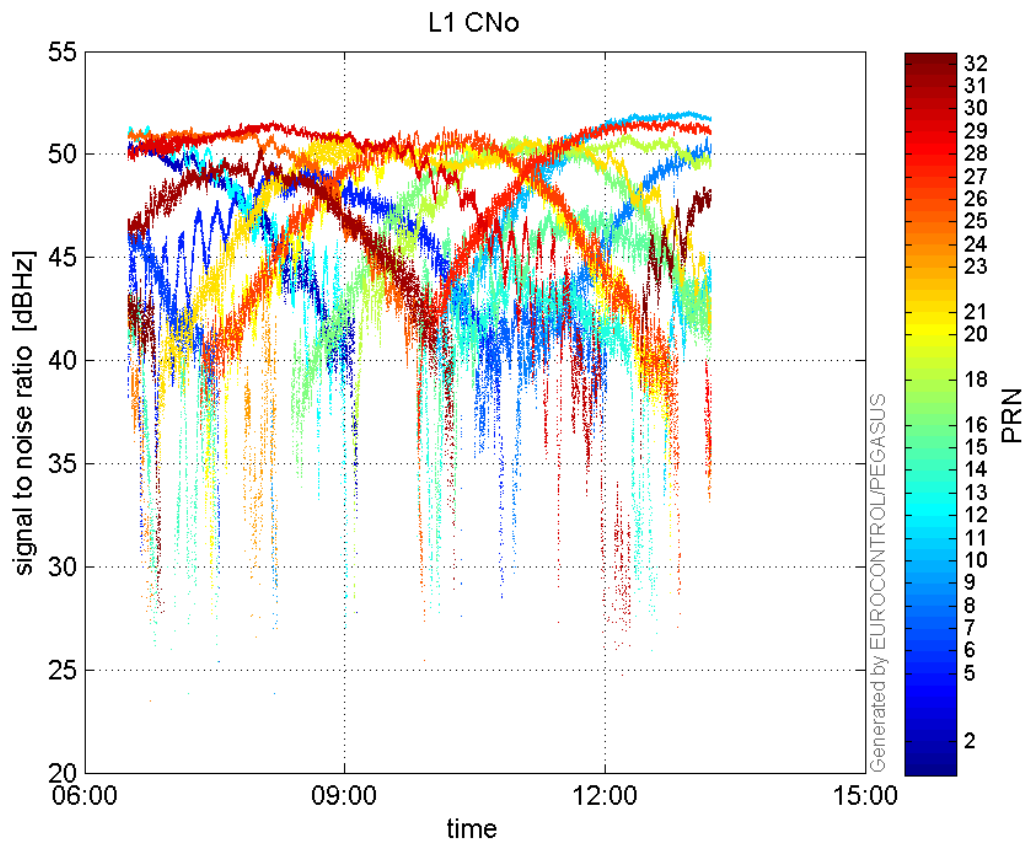


Norm Error Sky Plot:

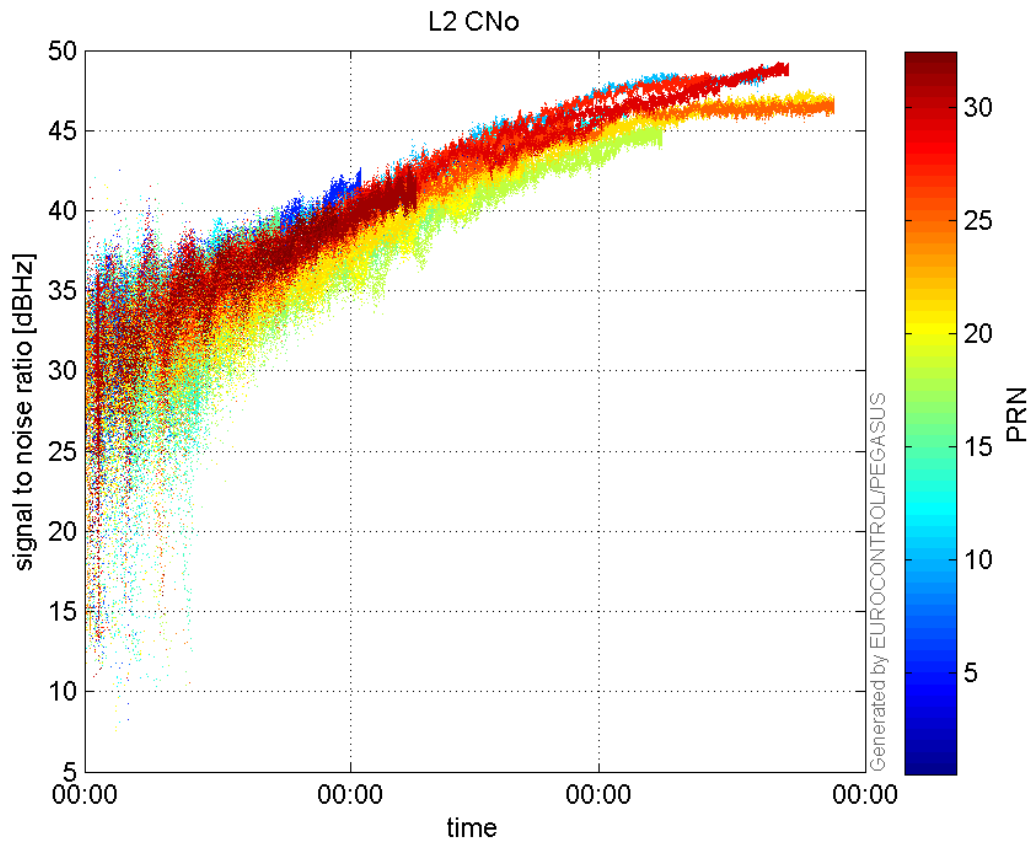


signal quality

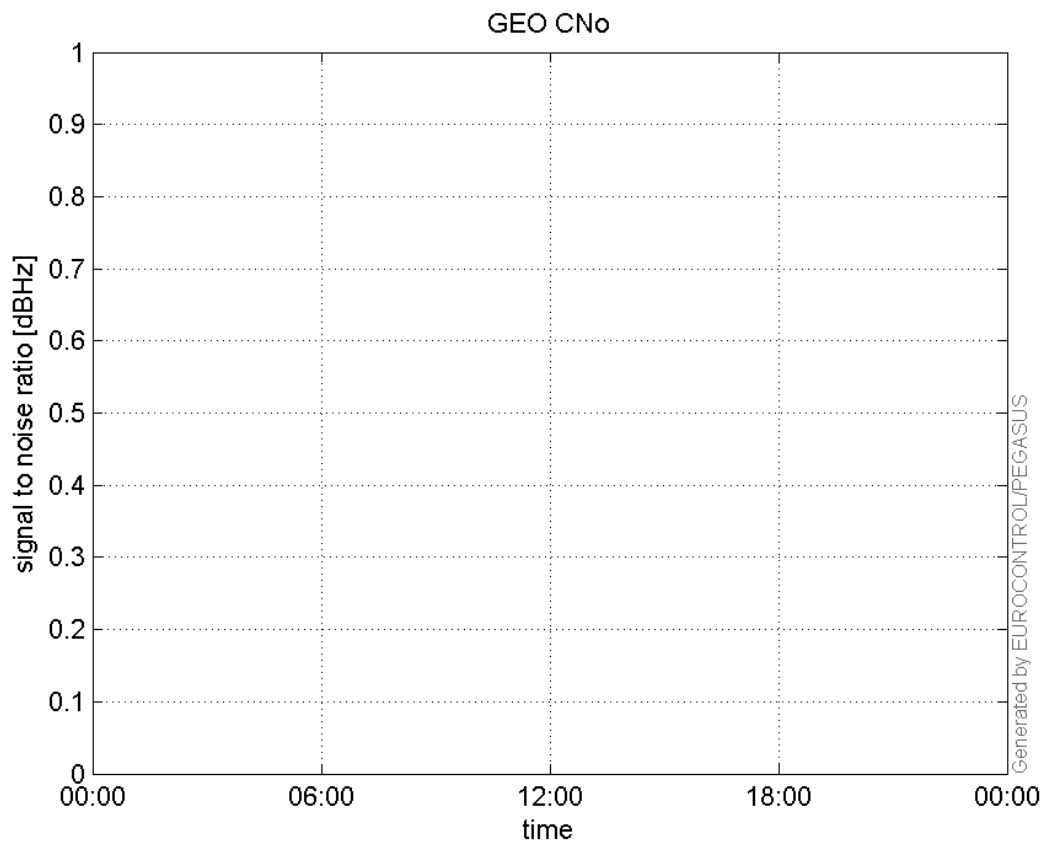
L1 CNo:



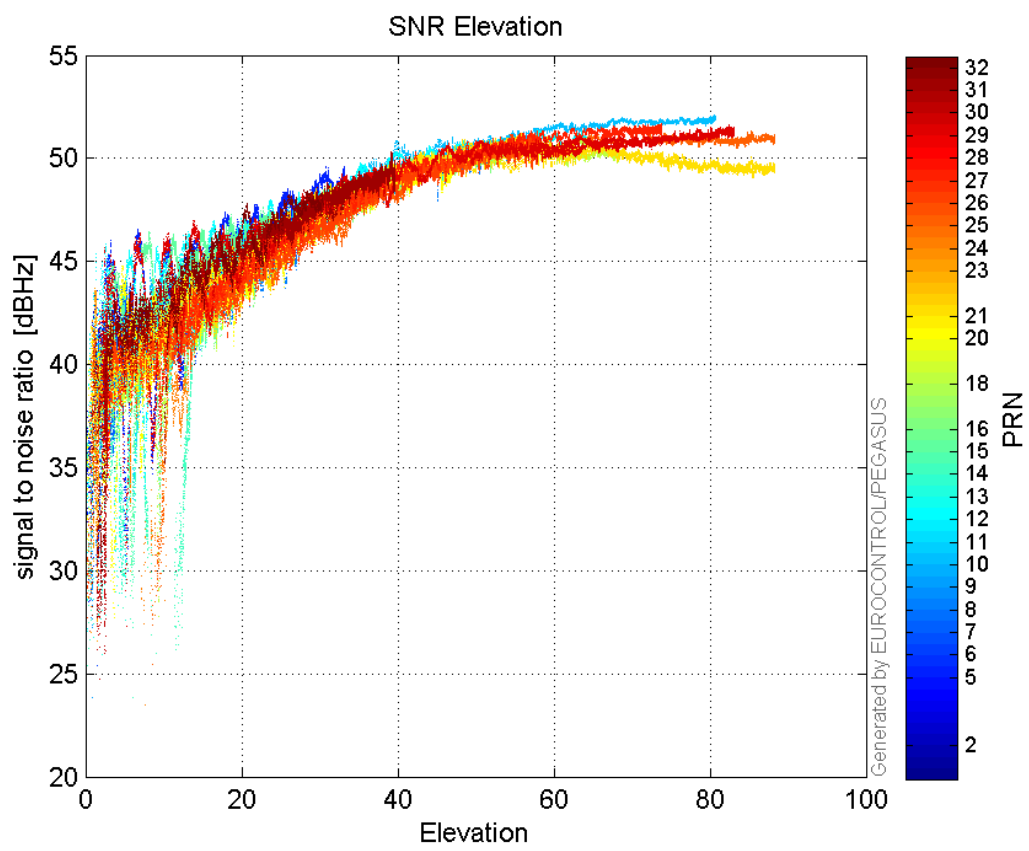
L2 CNo:



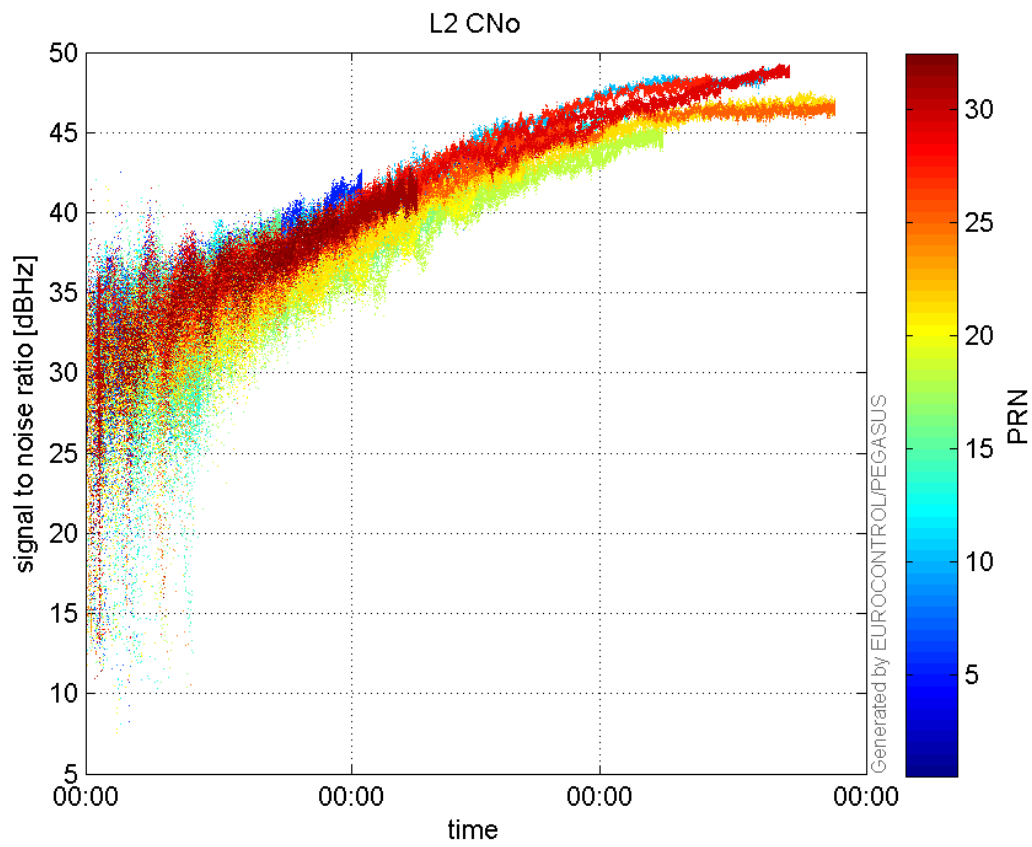
GEO CNo:



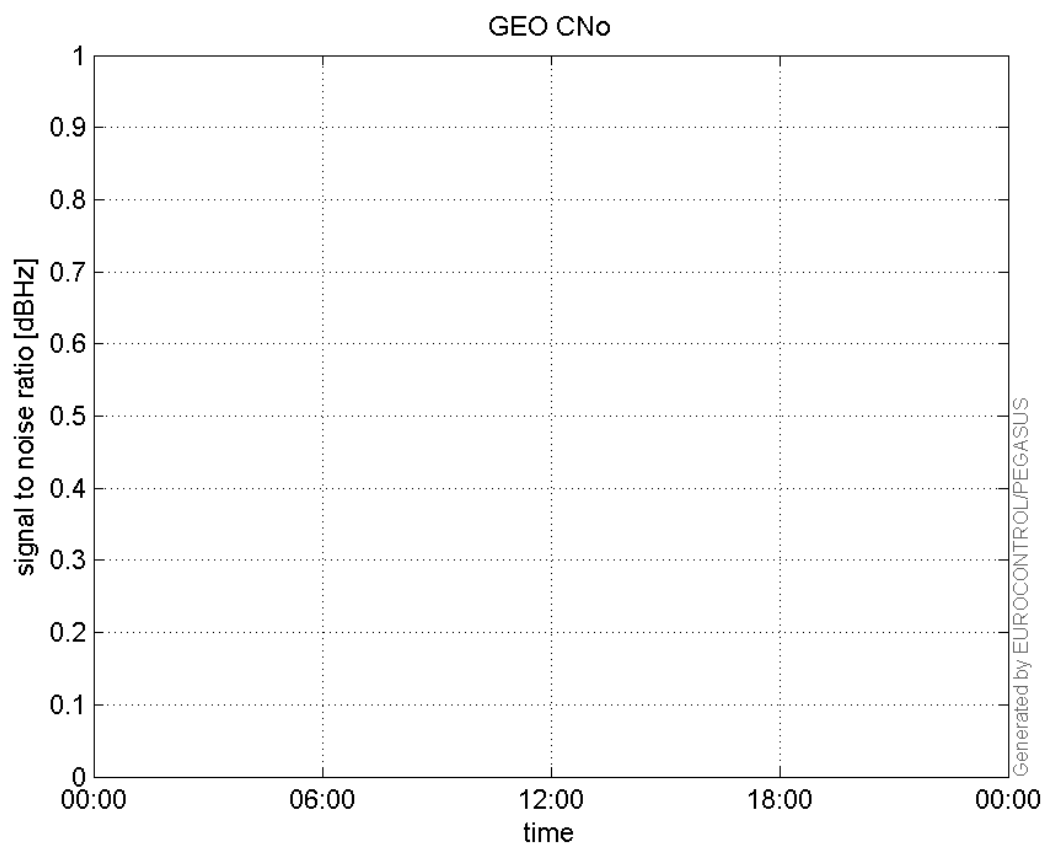
SNR Elevation:



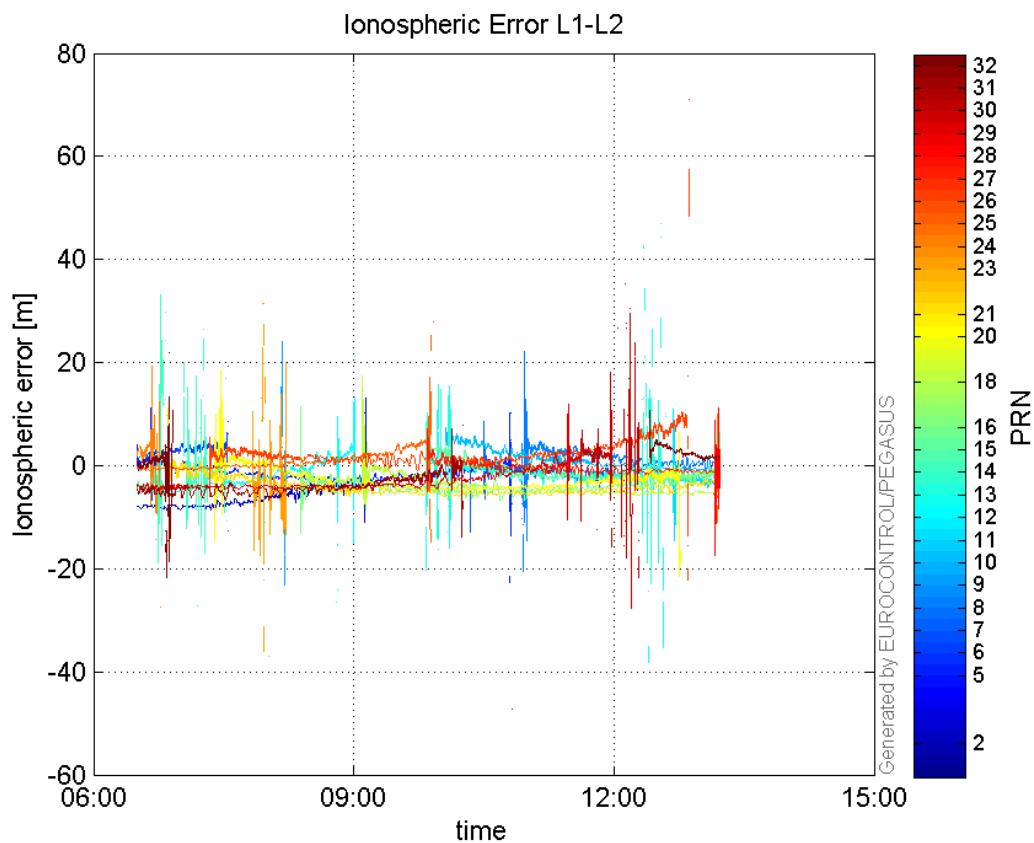
L2 CNo:



GEO CNo:



Ionospheric Error L1-L2:



Parameters

system

| Name | Section | Value |
|---------------|---------|--|
| name | system | GNSS_Solution |
| version | system | 4.8.4.0 |
| input_prefix | system | D:/PegasusDateJob/job/2016_09_05_EGNOS/02_Convertor/02_Convertor |
| output_prefix | system | D:/PegasusDateJob/job/2016_09_05_EGNOS/03_GNSS_Solution/03_GNSS_Solution_sol |

settings

| Name | Section | Value |
|--------------------------|----------|---------|
| ref_lat | settings | 50.439 |
| ref_lon | settings | 30.4297 |
| ref_alt | settings | 215.271 |
| smoothing | settings | yes |
| smoothing_constant | settings | 100 |
| smoothing_max_gap | settings | 10 |
| smoothing_max_divergence | settings | 3 |
| min_elevation | settings | 5 |
| aad_model | settings | a |
| output_range_file | settings | yes |
| sbas_prn | settings | 120 |
| gnss_mode | settings | sbas |

results

| Name | Section | Value |
|------------|---------|----------|
| init_lat | results | 50.4391 |
| init_lon | results | 30.4296 |
| init_alt | results | 240.7898 |
| mi_numbers | results | 0 |