

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 4.8.2
 date 17/02/2016

SBAS Messages

start: 10:57:53.129 16.02.2016 (week: 1884 sec: 212273.129)
end: 14:19:1.129 16.02.2016 (week: 1884 sec: 224341.129)
duration: 03:21:08 ..

quality

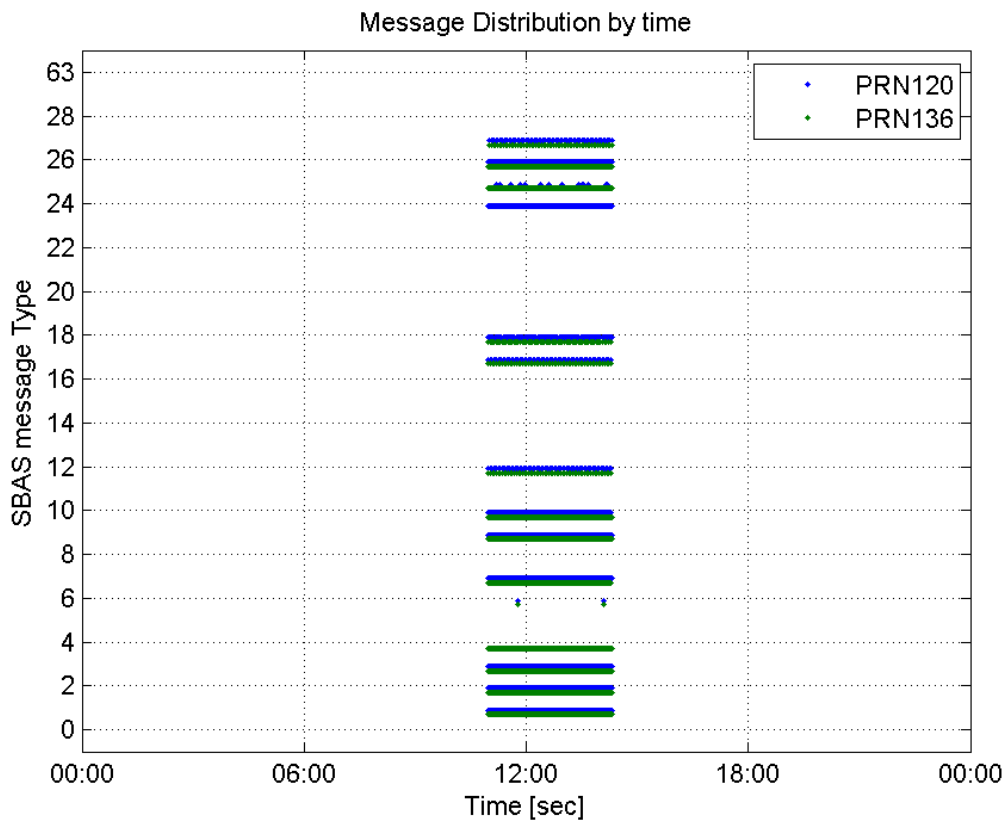
valid samples 24138
total samples 24138
number of SBAS PRNs 2

SBAS SIS Overview

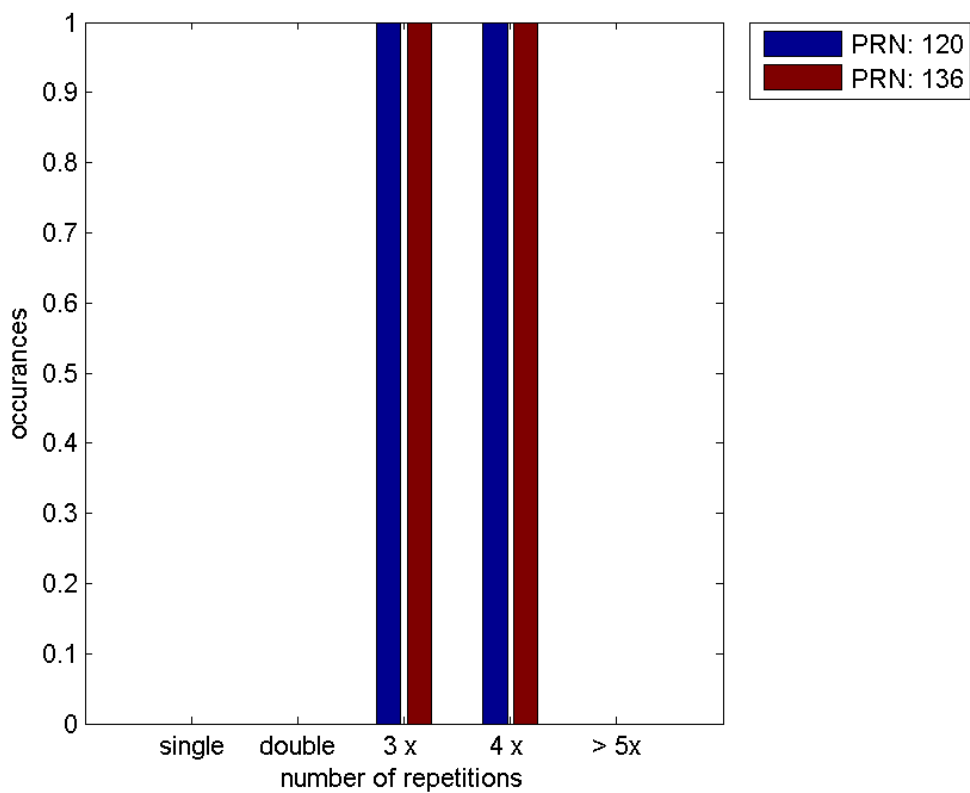
Message Type 6 repetitions :

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

Message Distribution by time:



Message Type 6 repetitions:



SBAS SIS Analysis

PRN 120

Broadcast SBAS Messages :

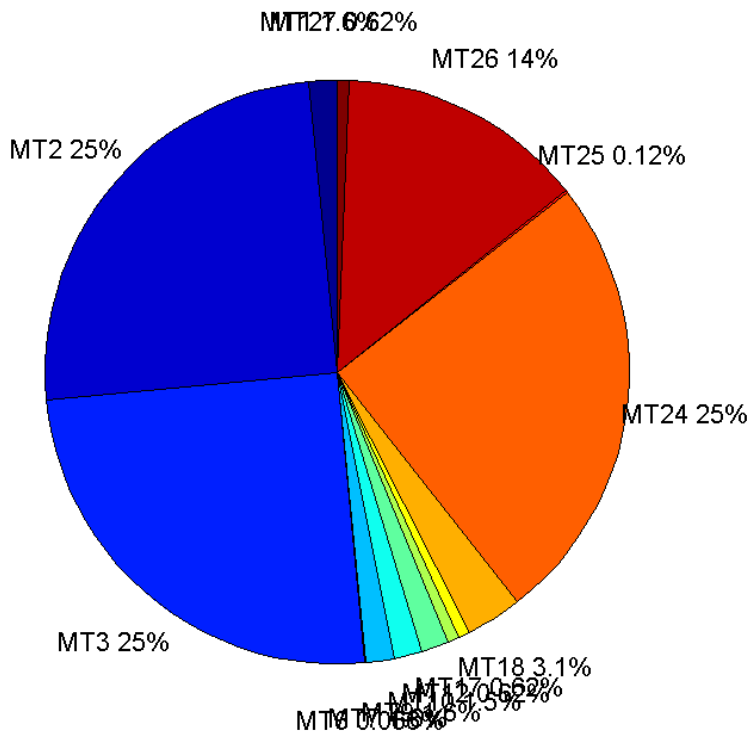
| | number of messages | % |
|--------------|--------------------|-----------|
| MT 0 | 0 | 0 |
| MT 1 | 188 | 1.55771 |
| MT 2 | 3013 | 24.9648 |
| MT 3 | 3014 | 24.9731 |
| MT 4 | 0 | 0 |
| MT 5 | 0 | 0 |
| MT 6 | 8 | 0.0662855 |
| MT 7 | 188 | 1.55771 |
| MT 9 | 188 | 1.55771 |
| MT 10 | 187 | 1.54942 |
| MT 12 | 75 | 0.621427 |
| MT 17 | 75 | 0.621427 |
| MT 18 | 376 | 3.11542 |
| MT 24 | 3014 | 24.9731 |
| MT 25 | 14 | 0.116 |
| MT 26 | 1654 | 13.7045 |
| MT 27 | 75 | 0.621427 |
| MT 28 | 0 | 0 |
| MT 62 | 0 | 0 |
| MT 63 | 0 | 0 |
| Total | 12069 | 100 |

Update intervals :

| | Minimum [s] | Maximum [s] | Mean value | Exceed Max update | Exceed NPA timeout | Exceed PA timeout |
|-------|-------------|-------------|------------|-------------------|--------------------|-------------------|
| MT 0 | -- | -- | -- | -- | -- | -- |
| MT 1 | 64 | 69 | 64.3262 | 0 | 0 | 0 |
| MT 2 | 4 | 8 | 4.00498 | 2 | 0 | 0 |
| MT 3 | 4 | 7 | 4.00465 | 2 | 0 | 0 |
| MT 4 | -- | -- | -- | -- | -- | -- |
| MT 5 | -- | -- | -- | -- | -- | -- |
| MT 6 | 1 | 8391 | 1199.57 | 1 | 1 | 1 |
| MT 7 | 64 | 69 | 64.3048 | 0 | 0 | 0 |
| MT 9 | 64 | 69 | 64.3262 | 0 | 0 | 0 |
| MT 10 | 64 | 69 | 64.328 | 0 | 0 | 0 |
| MT 12 | 156 | 167 | 160.5 | 74 | 0 | 0 |
| MT 17 | 156 | 167 | 160.554 | 0 | 0 | 0 |
| MT 18 | 4 | 135 | 32.0987 | 0 | 0 | 0 |
| MT 24 | 4 | 8 | 4.00465 | 0 | 0 | 0 |
| MT 25 | 70 | 1757 | 834.077 | 0 | 0 | 0 |
| MT 26 | 4 | 29 | 7.29401 | 0 | 0 | 0 |
| MT 27 | 156 | 167 | 160.554 | 0 | 0 | 0 |
| | | | | | | |

| | | | | | | |
|-------|----|----|----|----|----|----|
| MT 28 | -- | -- | -- | -- | -- | -- |
| MT 62 | -- | -- | -- | -- | -- | -- |
| MT 63 | -- | -- | -- | -- | -- | -- |

Message Distribution PRN 120:



SBAS SIS Analysis

PRN 136

Broadcast SBAS Messages :

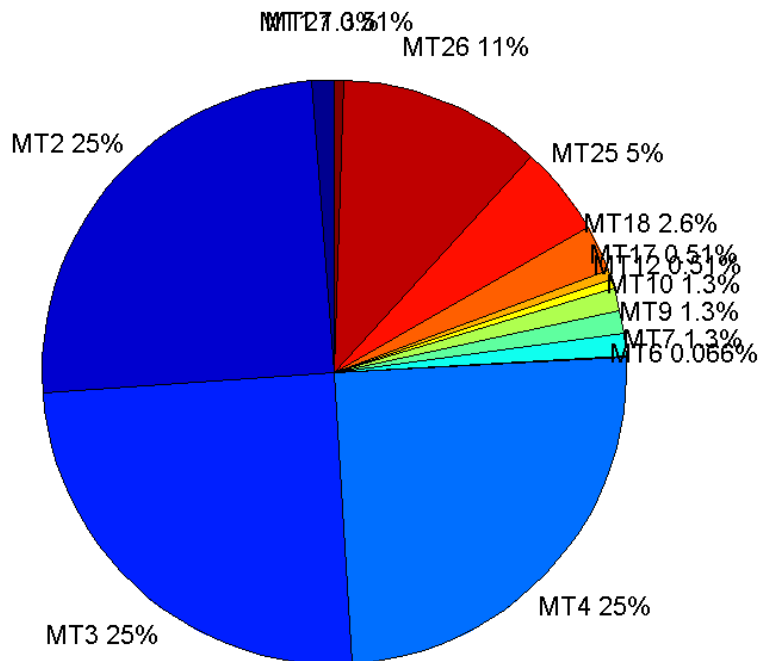
| | number of messages | % |
|-------|--------------------|-----------|
| MT 0 | 0 | 0 |
| MT 1 | 152 | 1.25942 |
| MT 2 | 2999 | 24.8488 |
| MT 3 | 2998 | 24.8405 |
| MT 4 | 2999 | 24.8488 |
| MT 5 | 0 | 0 |
| MT 6 | 8 | 0.0662855 |
| MT 7 | 152 | 1.25942 |
| MT 9 | 152 | 1.25942 |
| MT 10 | 152 | 1.25942 |
| MT 12 | 62 | 0.513713 |
| MT 17 | 62 | 0.513713 |
| MT 18 | 309 | 2.56028 |
| MT 24 | 0 | 0 |

| | | |
|--------------|-------|----------|
| MT 25 | 602 | 4.98799 |
| MT 26 | 1360 | 11.2685 |
| MT 27 | 62 | 0.513713 |
| MT 28 | 0 | 0 |
| MT 62 | 0 | 0 |
| MT 63 | 0 | 0 |
| Total | 12069 | 100 |

Update intervals :

| | Minimum [s] | Maximum [s] | Mean value | Exceed Max update | Exceed NPA timeout | Exceed PA timeout |
|-------|-------------|-------------|------------|-------------------|--------------------|-------------------|
| MT 0 | -- | -- | -- | -- | -- | -- |
| MT 1 | 76 | 80 | 79.5894 | 0 | 0 | 0 |
| MT 2 | 4 | 7 | 4.02468 | 2 | 0 | 0 |
| MT 3 | 4 | 7 | 4.02469 | 2 | 0 | 0 |
| MT 4 | 4 | 7 | 4.02468 | 2 | 0 | 0 |
| MT 5 | -- | -- | -- | -- | -- | -- |
| MT 6 | 1 | 8391 | 1199.57 | 1 | 1 | 1 |
| MT 7 | 76 | 87 | 79.4834 | 0 | 0 | 0 |
| MT 9 | 76 | 82 | 79.6689 | 0 | 0 | 0 |
| MT 10 | 76 | 84 | 79.5629 | 0 | 0 | 0 |
| MT 12 | 188 | 201 | 195.18 | 61 | 0 | 0 |
| MT 17 | 188 | 201 | 195.246 | 0 | 0 | 0 |
| MT 18 | 4 | 161 | 38.7338 | 0 | 0 | 0 |
| MT 24 | -- | -- | -- | -- | -- | -- |
| MT 25 | 1 | 64 | 20.0499 | 0 | 0 | 0 |
| MT 26 | 4 | 32 | 8.86387 | 0 | 0 | 0 |
| MT 27 | 188 | 201 | 195.049 | 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:/PEGASUS_DAT_job/JOB/2016_02_16EGNOS/01_User/01_User |
| Outputfile | System | D:/PEGASUS_DAT_job/JOB/2016_02_16EGNOS/02_Convertor/02_Convertor |

Configuration

| Name | Section | Value |
|-----------------|---------------|--------------|
| Receiver | Configuration | Novatel OEM4 |
| Leap_Seconds | Configuration | 15 |
| Correction_mode | Configuration | SBAS MODE 0 |
| Dual_Frequency | Configuration | no |

Position Domain

start: 10:57:54 16.02.2016 (week: 1884 sec: 212274)
end: 14:19:01 16.02.2016 (week: 1884 sec: 224341)
duration: 03:21:08 ..

quality

valid samples 11701
total samples 12068

Event tables

Position discontinuity events type all
APV-I discontinuity events type all
APV-35m discontinuity events type all
LPV-200 discontinuity events type all
CAT-I discontinuity events type nothing

extremes :

| | Epoch | HPE | HPL | HPE/HPL | VPE | VPL | VPE/VPL |
|--------------------|--------|----------|---------|-----------|----------|---------|-----------|
| max normHor | 214282 | 1.95415 | 12.8921 | 0.151577 | 0.652036 | 17.3274 | 0.0376304 |
| max normVer | 217904 | 1.50899 | 29.2561 | 0.0515788 | 3.70216 | 18.9276 | 0.195596 |
| max HPE | 216806 | 20.5755 | 872.778 | 0.0235747 | -2.71788 | 238.081 | 0.0114158 |
| max VPE | 216733 | 4.94291 | 65.8584 | 0.0750535 | 4.82093 | 43.5319 | 0.110745 |
| min HPL | 219854 | 0.536794 | 9.80656 | 0.0547382 | 0.689646 | 17.6846 | 0.038997 |
| min VPL | 214419 | 1.22882 | 12.6601 | 0.0970626 | 0.390313 | 15.9271 | 0.0245062 |

Position discontinuity events :

| # | Epoch | duration | stable period |
|---|--------|----------|---------------|
| 1 | 216828 | 35 | 4187 |

APV-I discontinuity events :

| # | Epoch | duration | stable period |
|---|--------|----------|---------------|
| 1 | 216224 | 868 | 3583 |

APV-35m discontinuity events :

| # | Epoch | duration | stable period |
|---|--------|----------|---------------|
| 1 | 216224 | 868 | 3583 |
| 2 | 220779 | 141 | 3687 |

LPV-200 discontinuity events :

| # | Epoch | duration | stable period |
|---|--------|----------|---------------|
| 1 | 216224 | 868 | 3583 |
| 2 | 220779 | 141 | 3687 |

First Glance analysis

Duration 12068
Number of Samples 12068
Number of invalid sample 367
Number of no position solution samples 35
Number of missing sample 0
Logging Loss 0
Processing Loss 3.0411
Number of Misleading Information 0
Data gaps 0
Discontinuities 1

Number of Samples :

| Valid | APV-1 | LPV-200 | CAT-1 | APV-35m |
|-------|-------|---------|-------|---------|
| 11666 | 10833 | 10692 | 0 | 10692 |

Accuracy statistics :

| | Valid | APV-1 | LPV-200 | CAT-1 | APV-35m |
|--------------|---------|---------|---------|-------|---------|
| HPE 95% | 1.70113 | 1.41163 | 1.41549 | NaN | 1.41549 |
| HPEscale 95% | NaN | 3.84524 | 3.85044 | NaN | 3.85044 |
| VPE 95% | 2.64028 | 2.51471 | 2.51475 | NaN | 2.51475 |
| VPEscale 95% | NaN | 6.39266 | 4.48397 | NaN | 4.48397 |

Availability :

| | Valid | APV-1 | LPV-200 | CAT-1 | APV-35m |
|-----------------|----------|----------|----------|-------|----------|
| Signal in Space | 0.997009 | 0.925818 | 0.913768 | 0 | 0.913768 |
| measurements | 0.966689 | 0.897663 | 0.885979 | 0 | 0.885979 |
| Operational | 0.966689 | 0.897663 | 0.885979 | 0 | 0.885979 |

Discontinuity events :

| | Valid | APV-1 | LPV-200 | CAT-1 | APV-35m |
|-------------|------------|------------|------------|-------|------------|
| All | 1 | 1 | 2 | -- | 2 |
| Long | 1 | 1 | 2 | -- | 2 |
| Independent | 1 | 1 | 2 | -- | 2 |
| P(disc.) | 0.00128579 | 0.00138466 | 0.00280584 | NaN | 0.00280584 |
| P(slide) | 0.00128579 | 0.00138466 | 0.00280584 | NaN | 0.00280584 |

Integrity events :

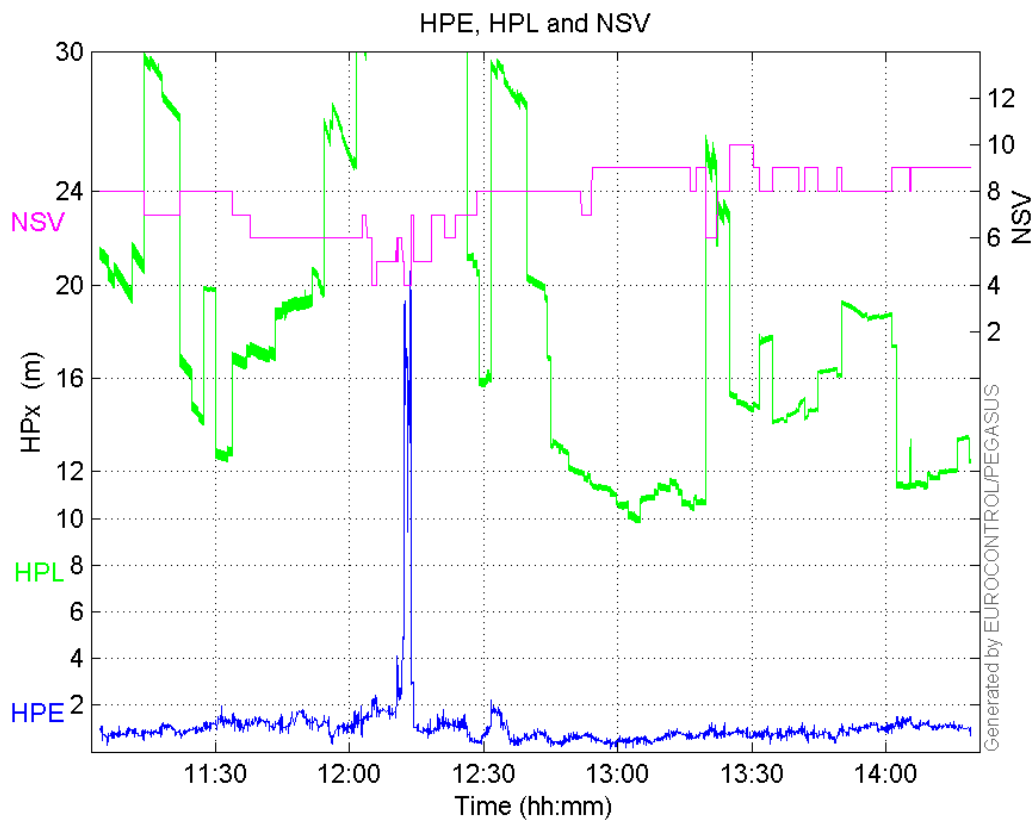
| | MI | HMI APV-1 | HMI LPV-200 | HMI CAT-1 | HMI APV-35m |
|------------|----|-----------|-------------|-----------|-------------|
| Total | 0 | 0 | 0 | 0 | 0 |
| Horizontal | 0 | 0 | 0 | 0 | 0 |
| Vertical | 0 | 0 | 0 | 0 | 0 |

Performance Summary :

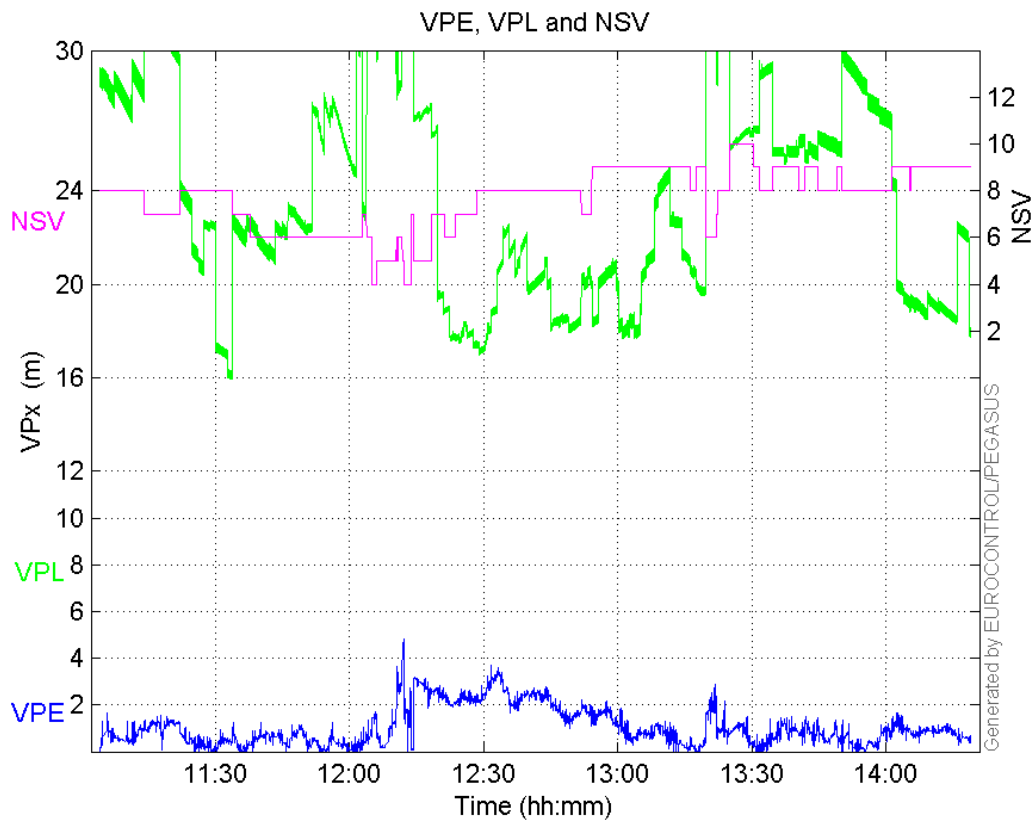
| | Valid | APV-1 | LPV-200 | CAT-1 | APV-35m |
|----------------------------------|------------|------------|------------|-------|------------|
| Samples | 11666 | 10833 | 10692 | 0 | 10692 |
| SIS Availability | 0.997009 | 0.925818 | 0.913768 | 0 | 0.913768 |
| Local Availability | 0.966689 | 0.897663 | 0.885979 | 0 | 0.885979 |
| Operational Availability | 0.966689 | 0.897663 | 0.885979 | 0 | 0.885979 |
| HPE 95% | 1.70113 | 1.41163 | 1.41549 | NaN | 1.41549 |
| HPEscale 95% | NaN | 3.84524 | 3.85044 | NaN | 3.85044 |
| VPE 95% | 2.64028 | 2.51471 | 2.51475 | NaN | 2.51475 |
| VPEscale 95% | NaN | 6.39266 | 4.48397 | NaN | 4.48397 |
| All Discontinuity Events | 1 | 1 | 2 | -- | 2 |
| Long Discontinuity Events | 1 | 1 | 2 | -- | 2 |
| Independent Discontinuity Events | 1 | 1 | 2 | -- | 2 |
| P(discontinuity) | 0.00128579 | 0.00138466 | 0.00280584 | NaN | 0.00280584 |
| P(sliding window) | 0.00128579 | 0.00138466 | 0.00280584 | NaN | 0.00280584 |
| 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:

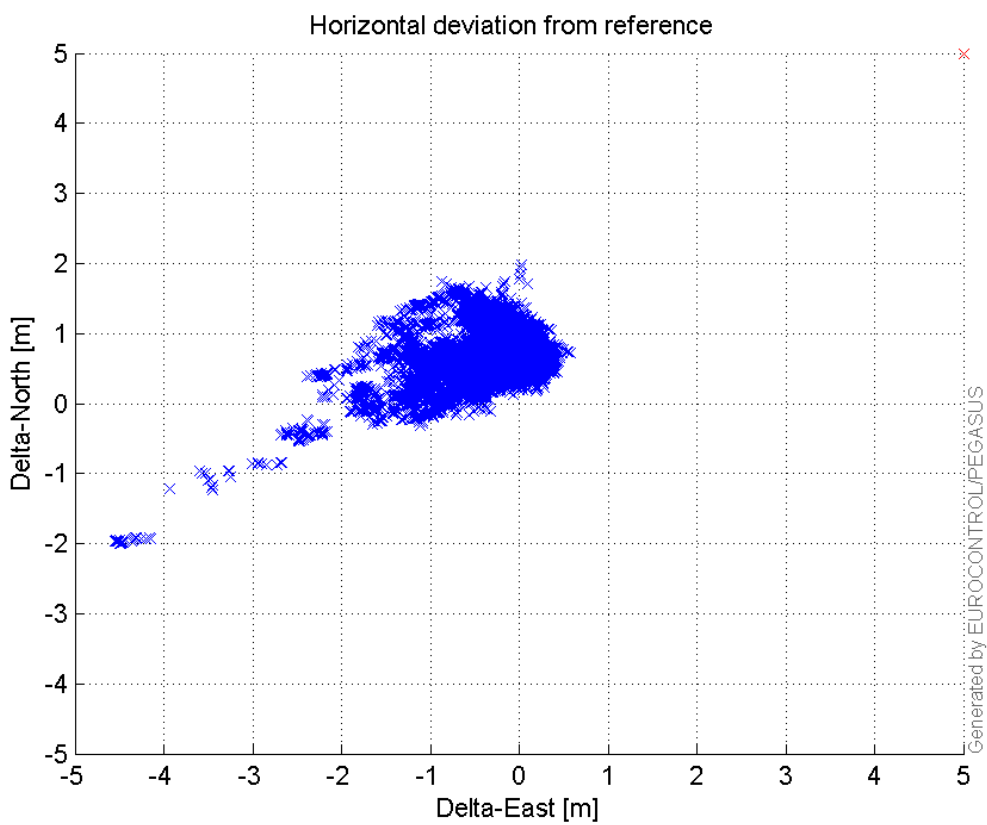


VPE, VPL and NSV:



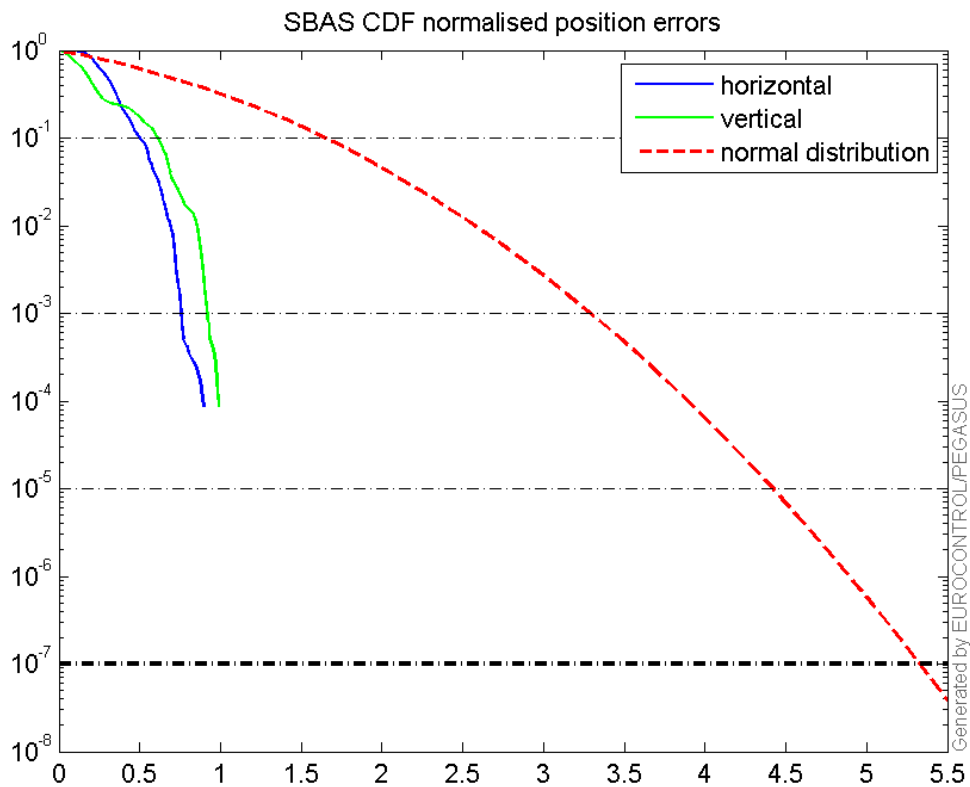
Horizontal deviation

Horizontal deviation from reference :



CDF position

SBAS CDF position domain:



Statistics

```

number  10833
sum      9825.208
sum2     9926.4702
prctile95  1.411631
prctile99  1.7511226
number  10833
sum      10920.959
sum2     17085.077
prctile95  2.5147061
prctile99  3.0992346
number  10833
sum      197315.82
sum2     4049196.9
prctile95  31.009245
prctile99  34.273825
number  10833
sum      255892.32
sum2     6308234.2
prctile95  31.22552
prctile99  45.521727
number  10833
sum      582.53862
sum2     36.314915
prctile95  0.096131085
prctile99  0.11554573
number  10833
sum      502.26096
sum2     39.971571

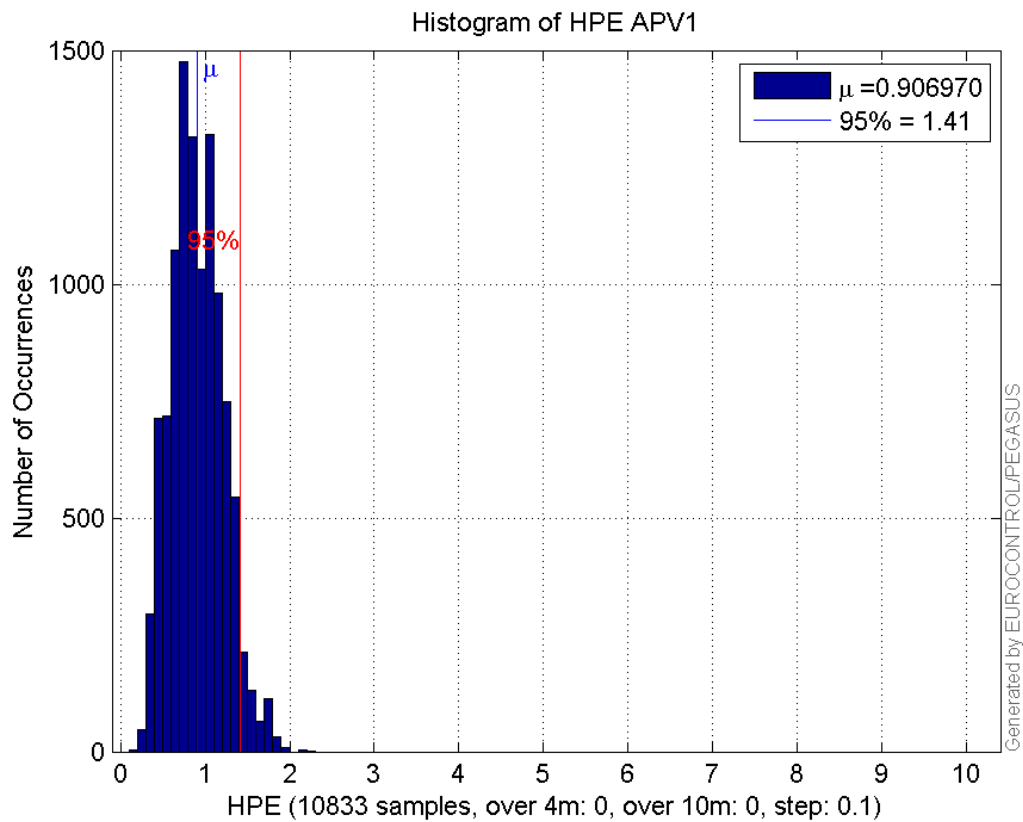
```

prctile95 0.12785317
prctile99 0.16101363
number 10692
sum 9697.2132
sum2 9808.3802
prctile95 1.4154904
prctile99 1.7520113
number 10692
sum 10647.62
sum2 16539.601
prctile95 2.5147499
prctile99 3.102221
number 10692
sum 193744.16
sum2 3958698.3
prctile95 31.10388
prctile99 34.27735
number 10692
sum 249340.74
sum2 6003616.1
prctile95 30.3844
prctile99 33.019734
number 10692
sum 577.48056
sum2 36.130143
prctile95 0.096261051
prctile99 0.11581055
number 10692
sum 496.35737
sum2 39.715486
prctile95 0.12811335
prctile99 0.16103127

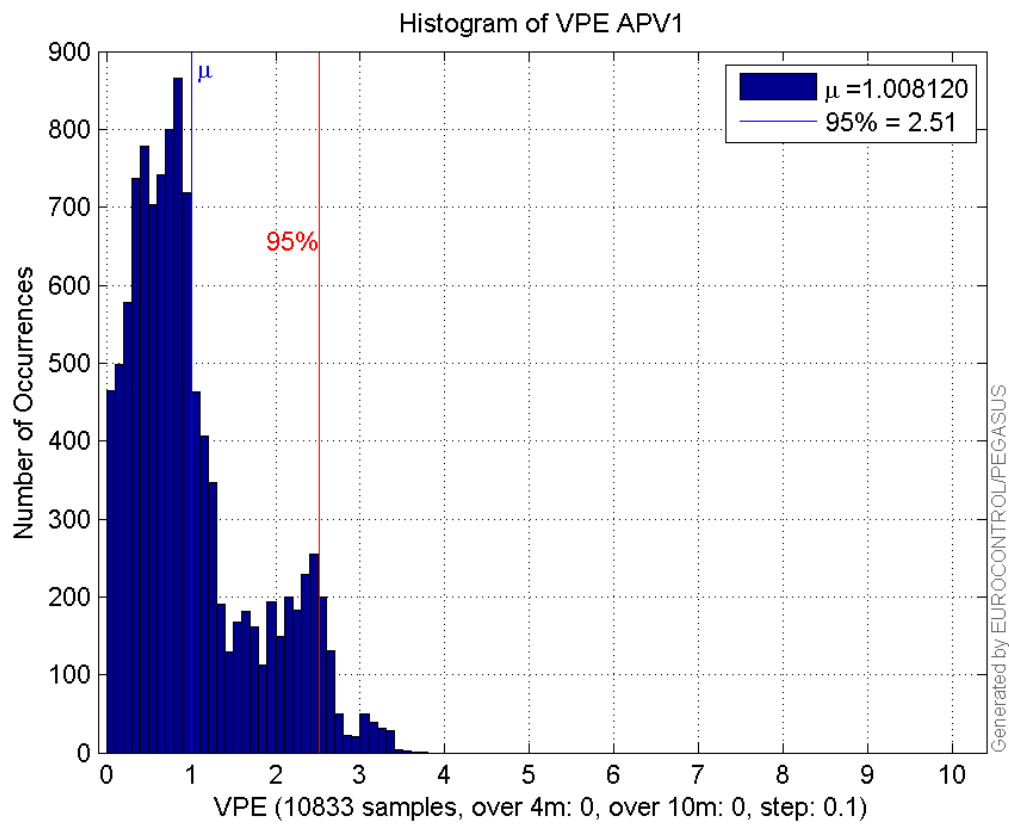
Error and XPL Statistics :

| | Mean Value | Standard Deviation | 50% Value | 95% Value | 99% Value | RMS Value |
|-----|------------|--------------------|-----------|-----------|-----------|-----------|
| HPE | 0.90697 | 0.306156 | 0.877601 | 1.41163 | 1.75112 | 0.957245 |
| HPL | 18.2143 | 6.48272 | 16.9235 | 31.0092 | 34.2738 | 19.3335 |
| VPE | 1.00812 | 0.748919 | 0.80941 | 2.51471 | 3.09923 | 1.25584 |
| VPL | 23.6216 | 4.93364 | 22.484 | 31.2255 | 45.5217 | 24.1312 |

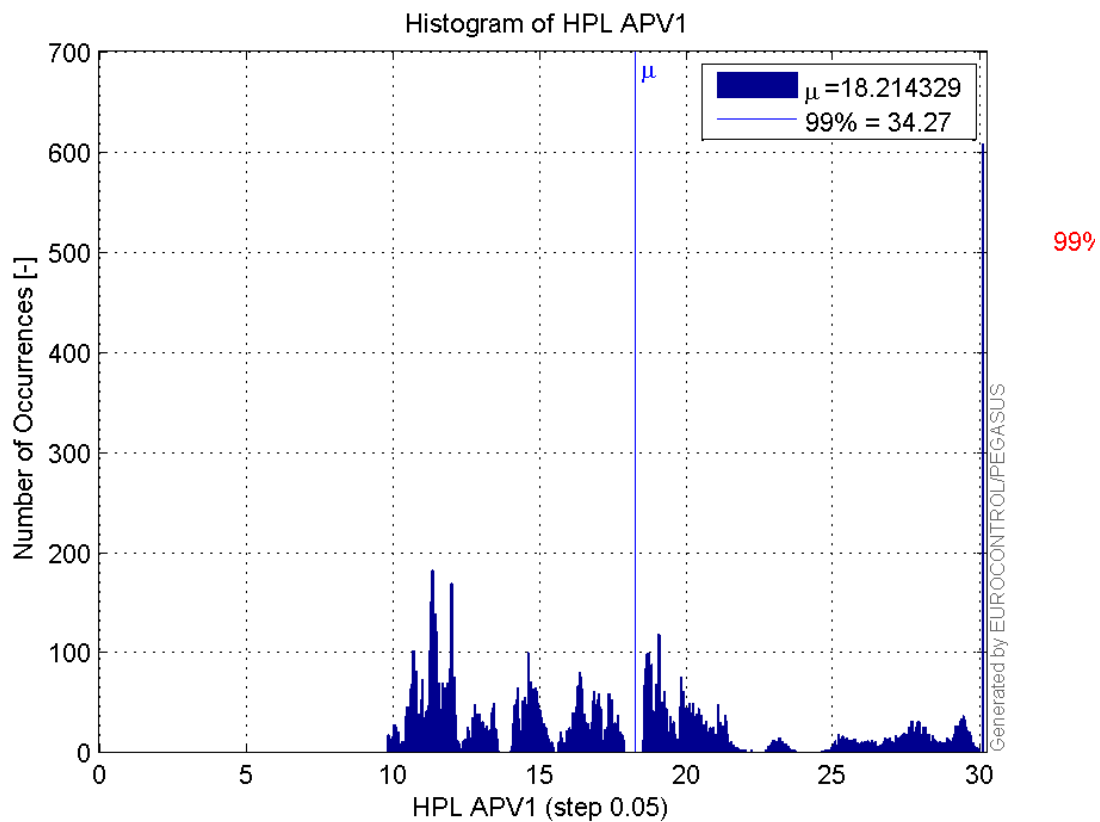
Histogram of HPE APV1:



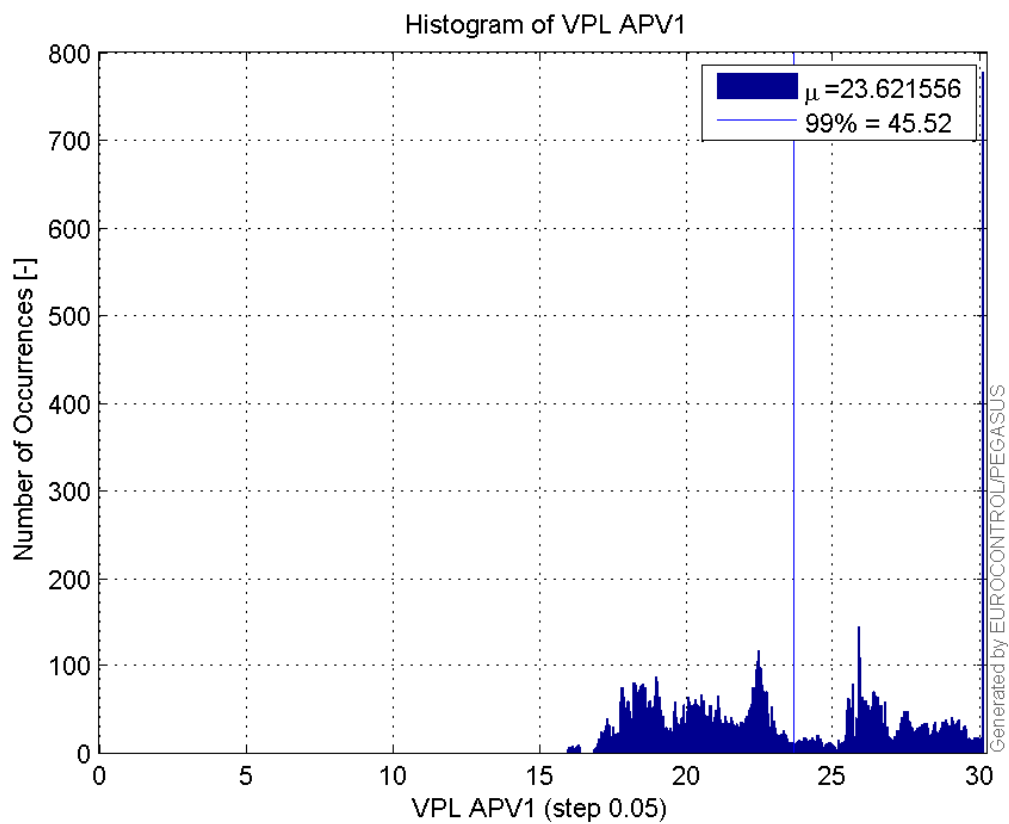
Histogram of VPE APV1:



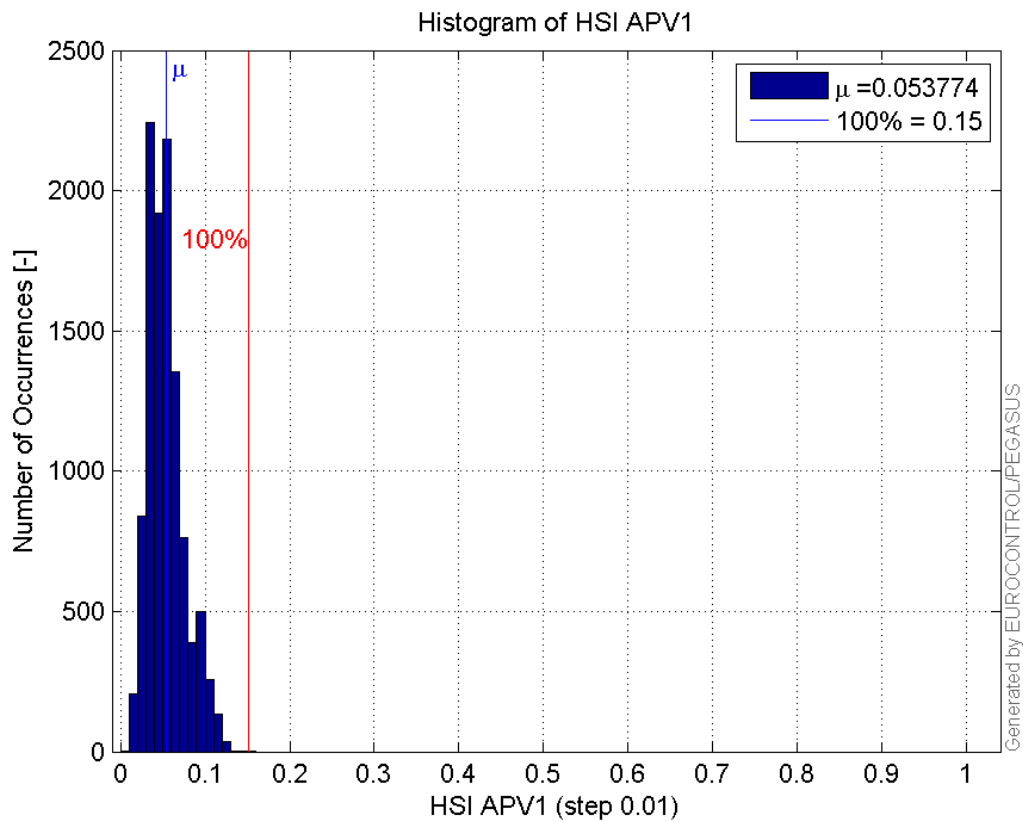
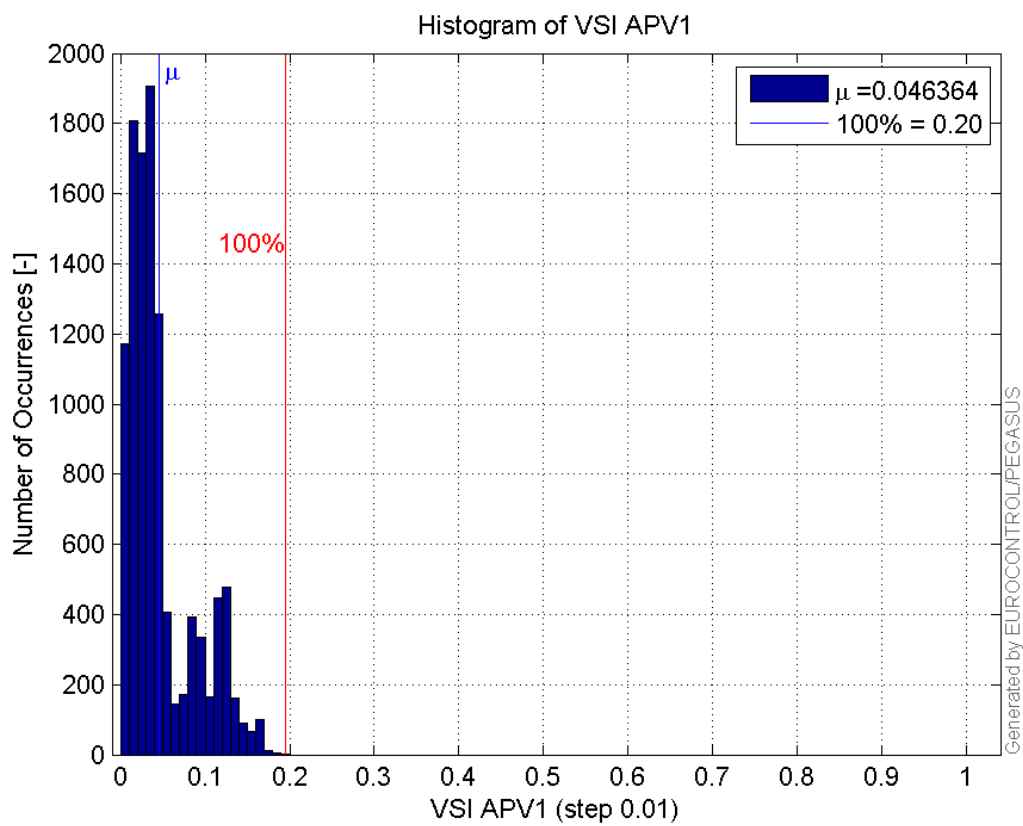
Histogram of HPL APV1:

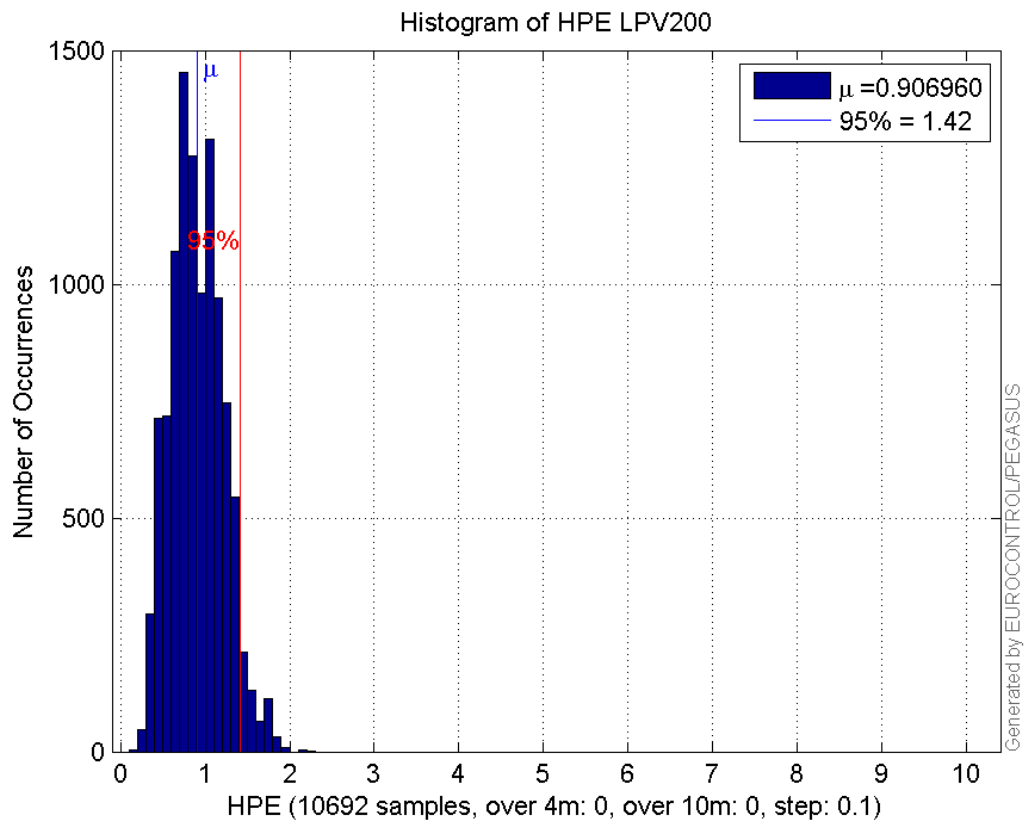


Histogram of VPL APV1:

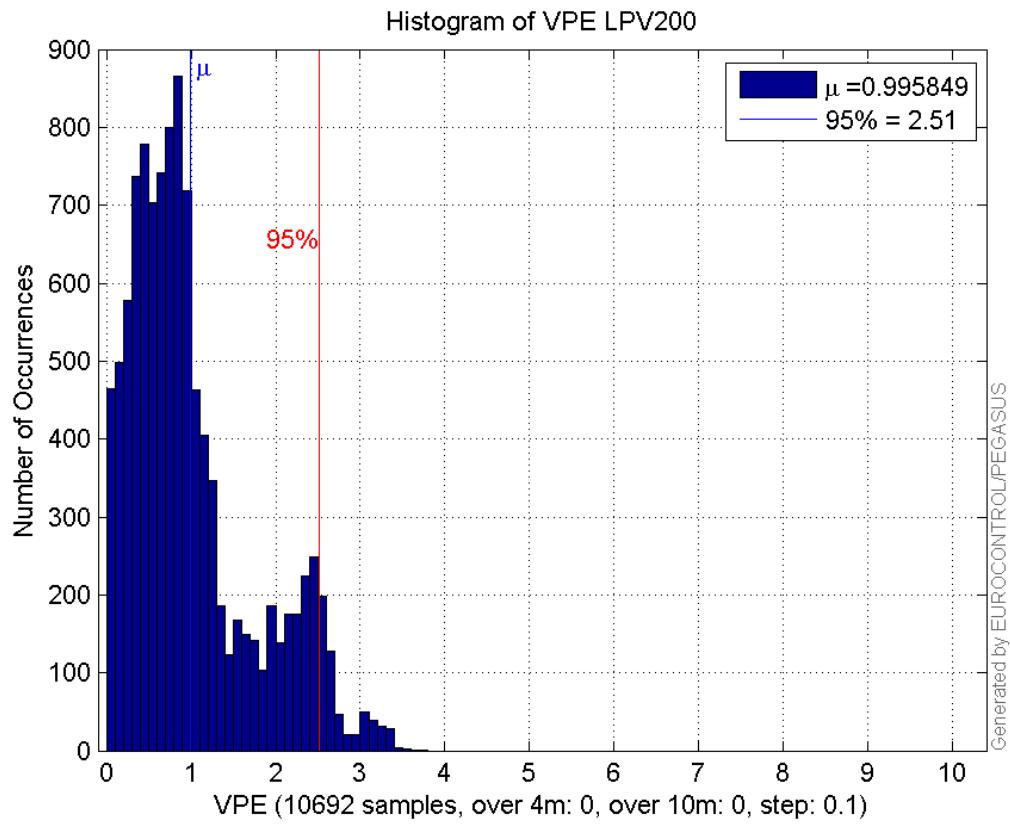


Histogram of HSI APV1:

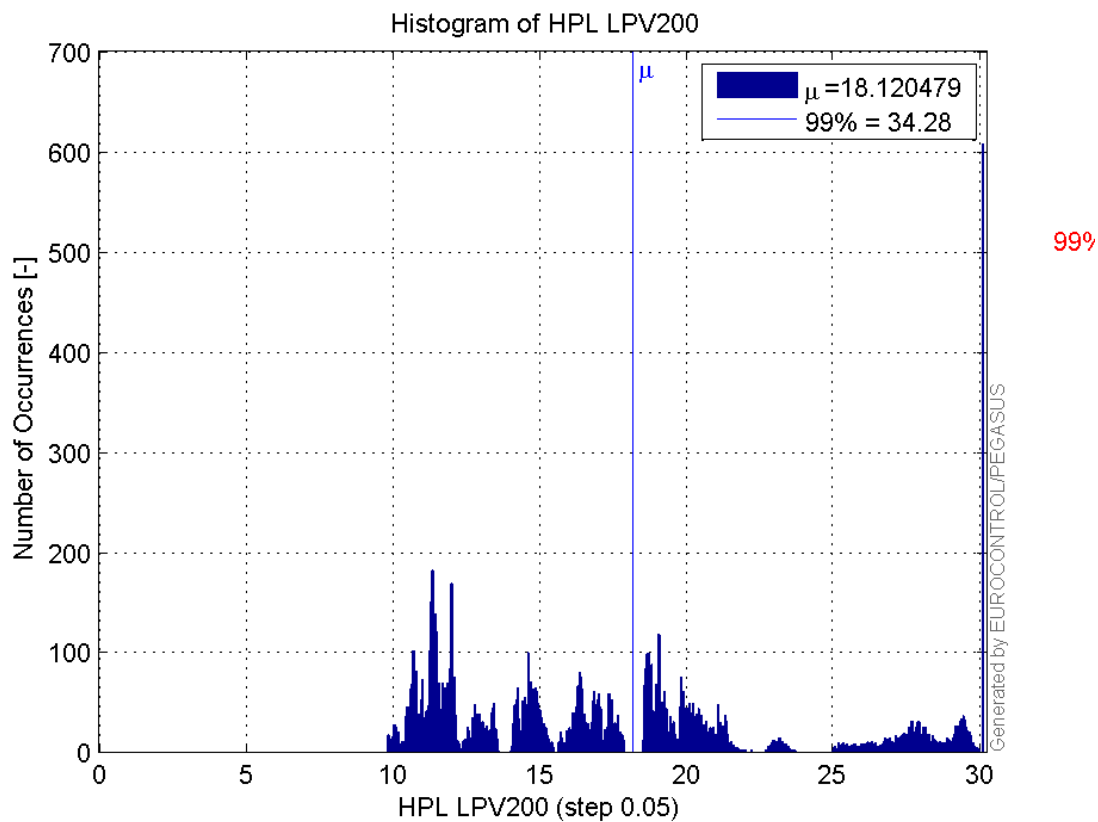
**Histogram of VSI APV1:****Histogram of HPE LPV200:**



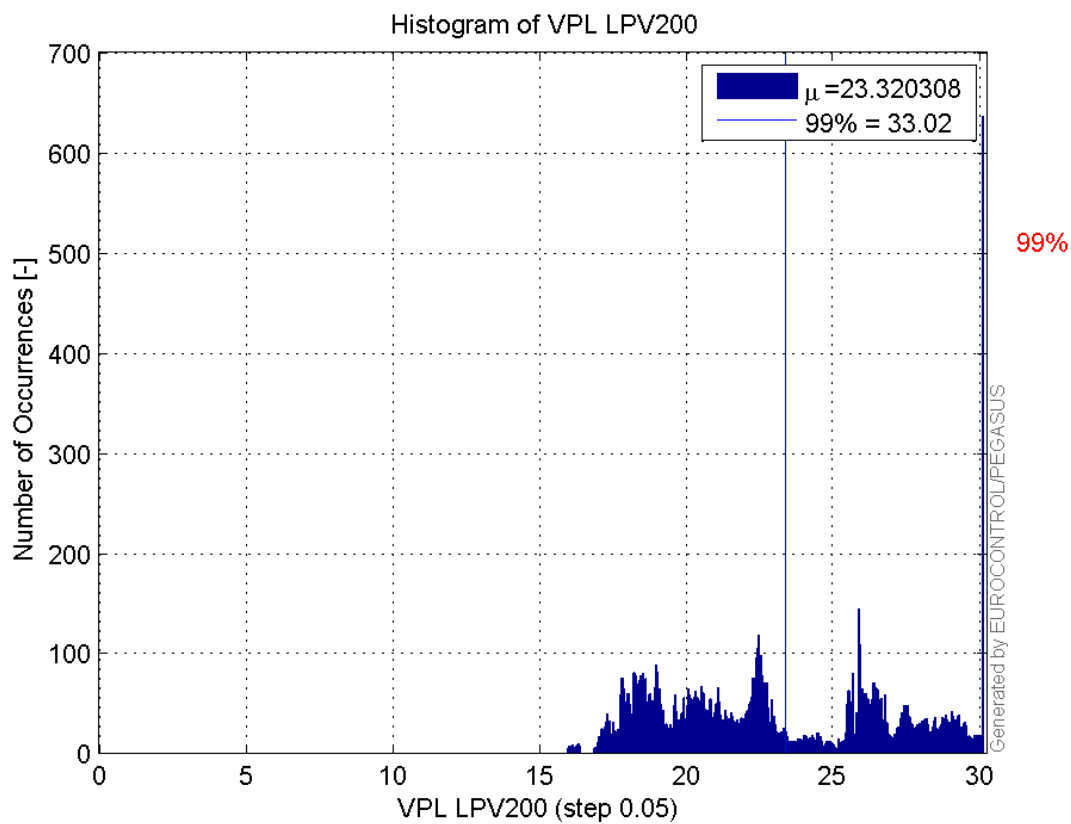
Histogram of VPE LPV200:



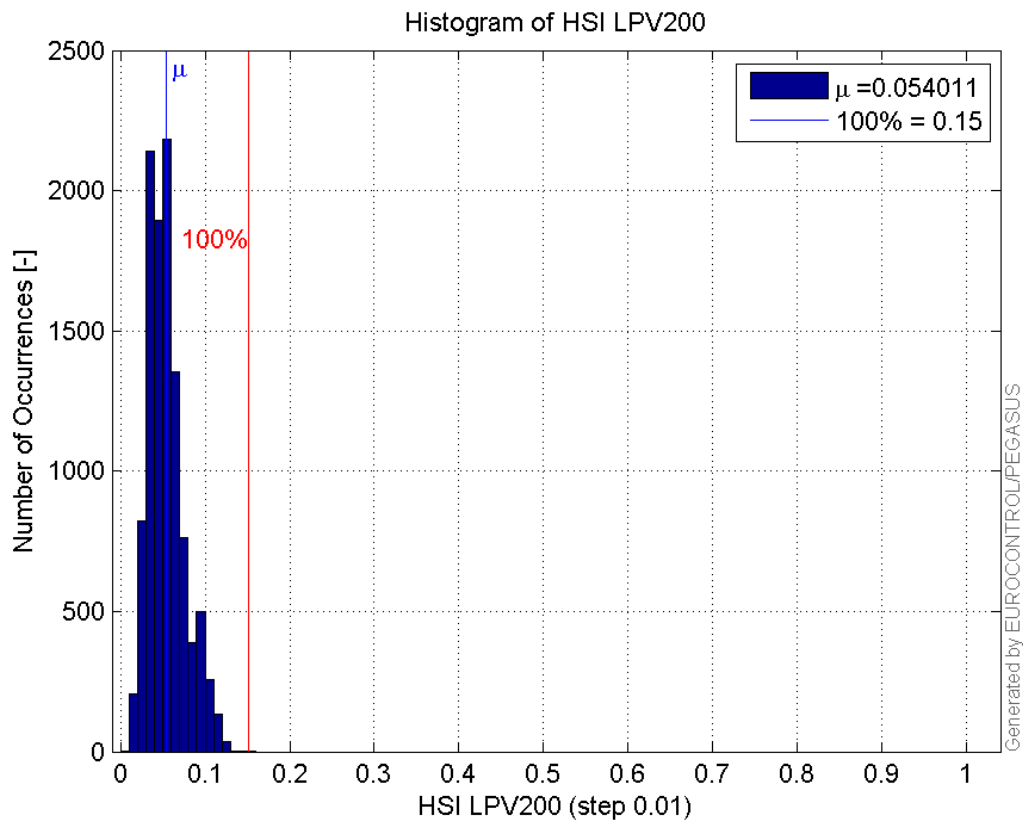
Histogram of HPL LPV200:



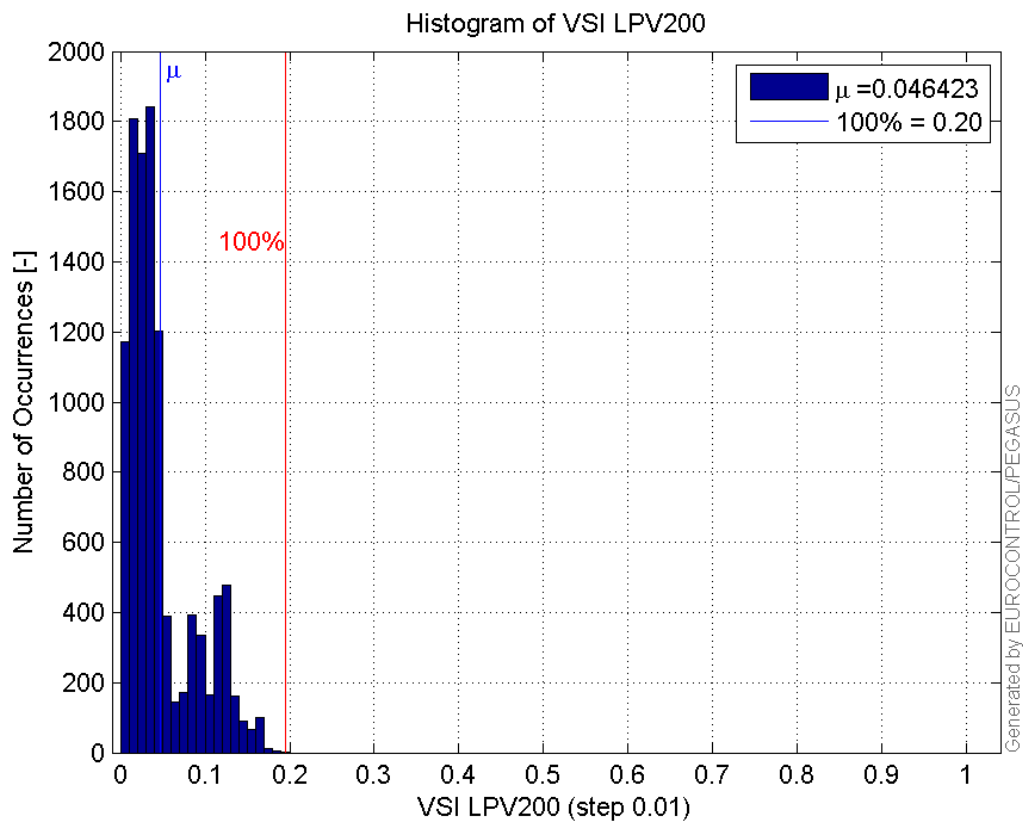
Histogram of VPL LPV200:



Histogram of HSI LPV200:

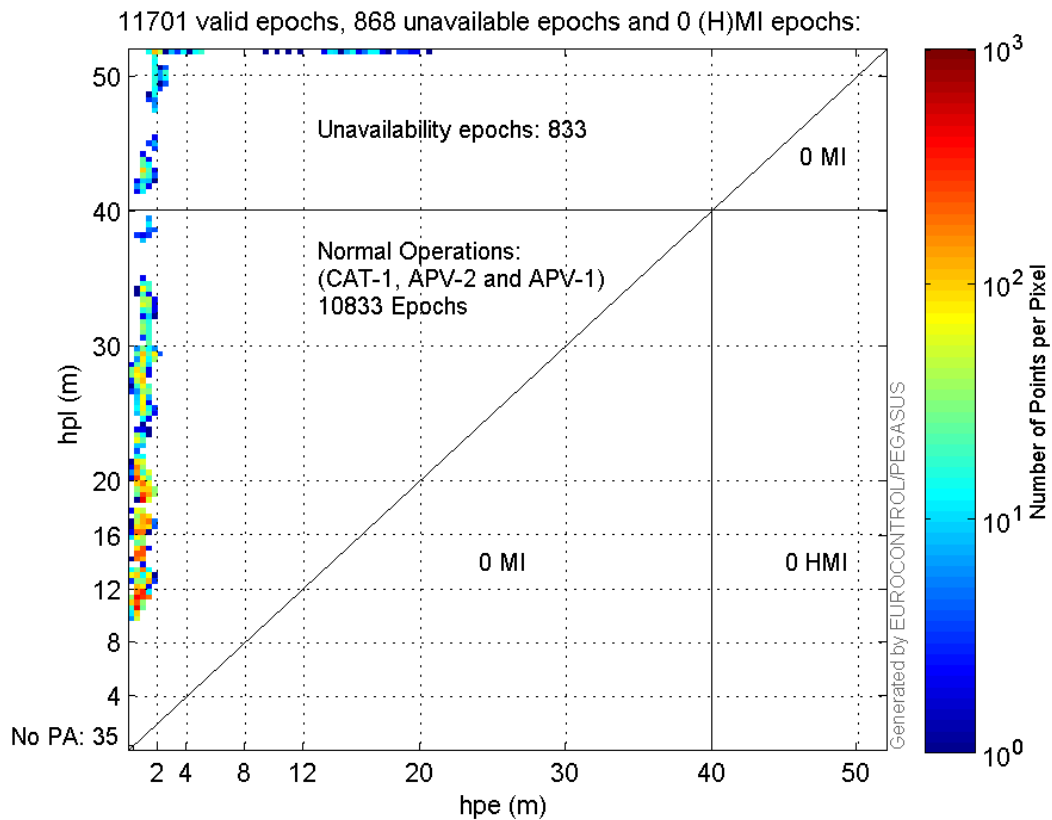


Histogram of VSI LPV200:

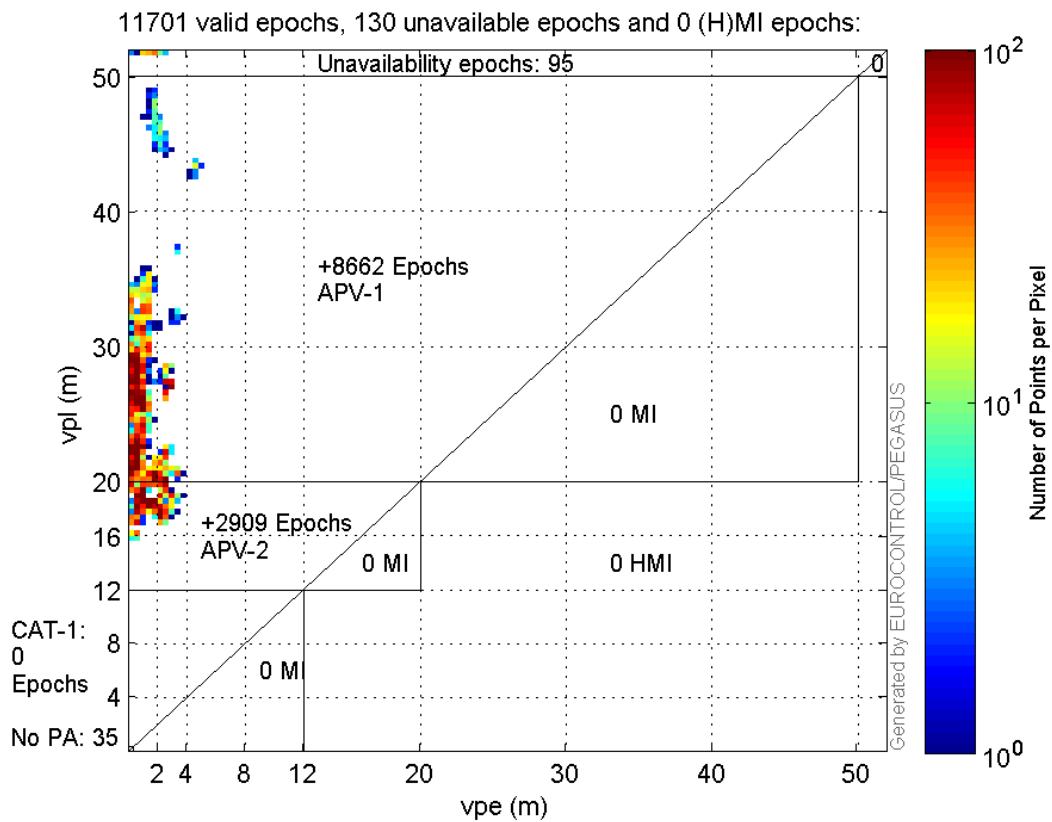


Stanford Plots

Horizontal_Stanford_Plot_SBAS:



Vertical_Stanford_Plot_SBAS:



Parameters

system

| Name | Section | Value |
|------|---------|-------|
|------|---------|-------|

| | | |
|----------------------|--------|--|
| name | system | GNSS_Solution |
| version | system | 4.8.2.1 |
| input_prefix | system | D:/PEGASUS_DAT_job/JOB/2016_02_16EGNOS/02_Convertor/02_Convertor |
| output_prefix | system | D:/PEGASUS_DAT_job/JOB/2016_02_16EGNOS/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 | 241.6451 |
| mi_numbers | results | 0 |

Range Domain

start: 10:57:54 16.02.2016 (week: 1884 sec: 212274)
end: 14:19:01 16.02.2016 (week: 1884 sec: 224341)
duration: 03:21:08 ..

quality

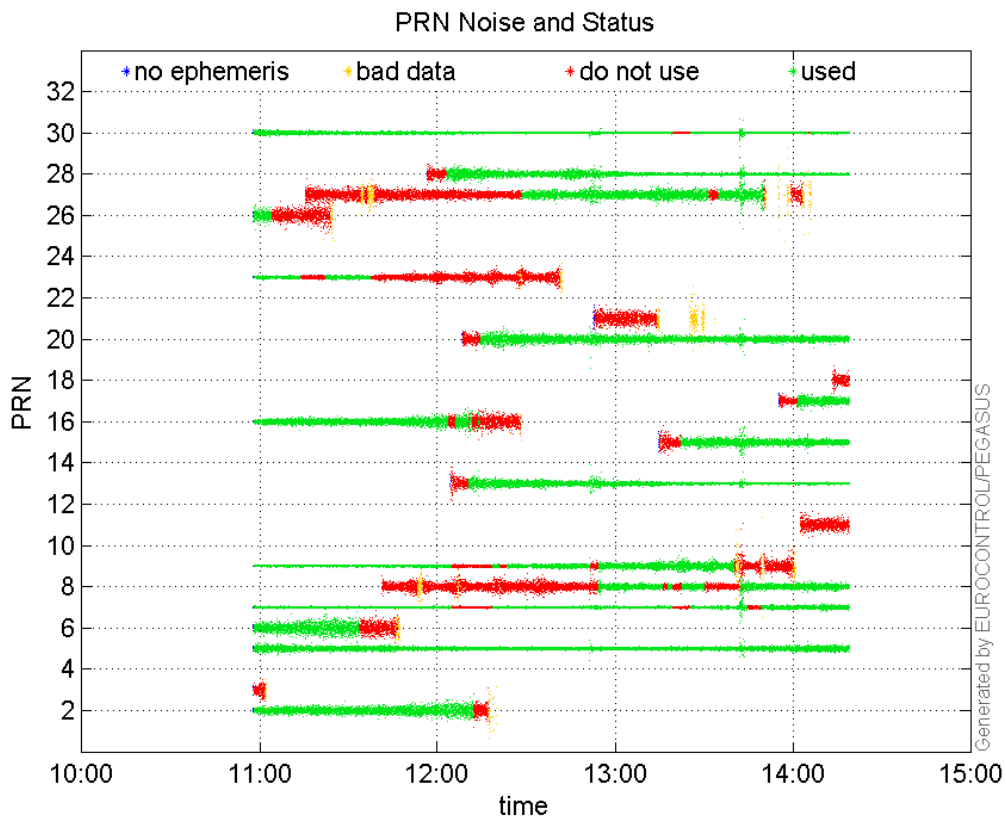
valid samples 12068
total samples 12068

PRN overview

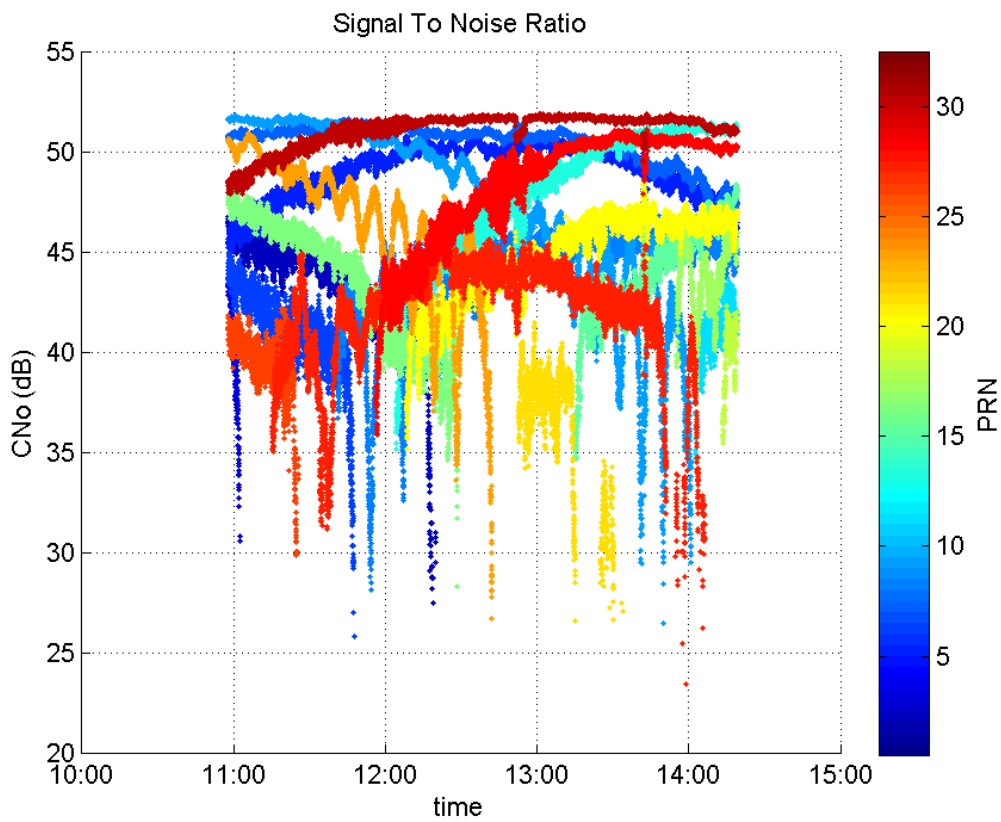
Number of Visible GPS Satellites 20
Number of Visible SBAS Satellites 2

signal quality and status

PRN Noise and Status:



Signal To Noise Ratio:



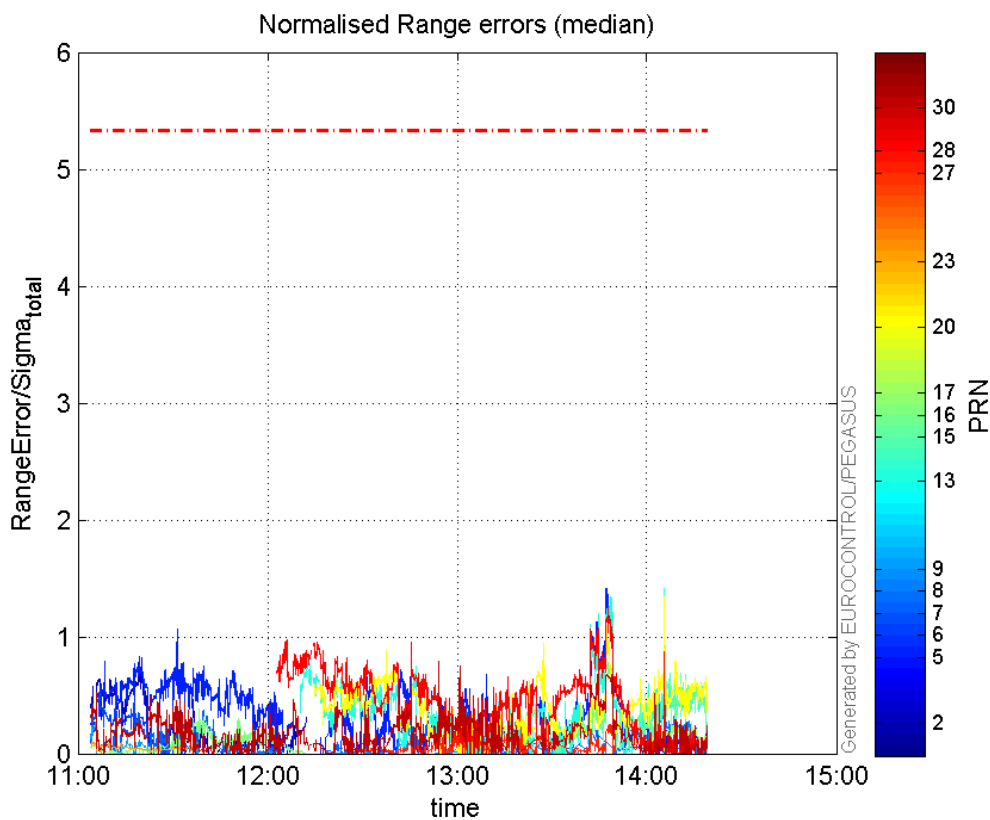
range errors

Number of Overbounding Norm Errors 0

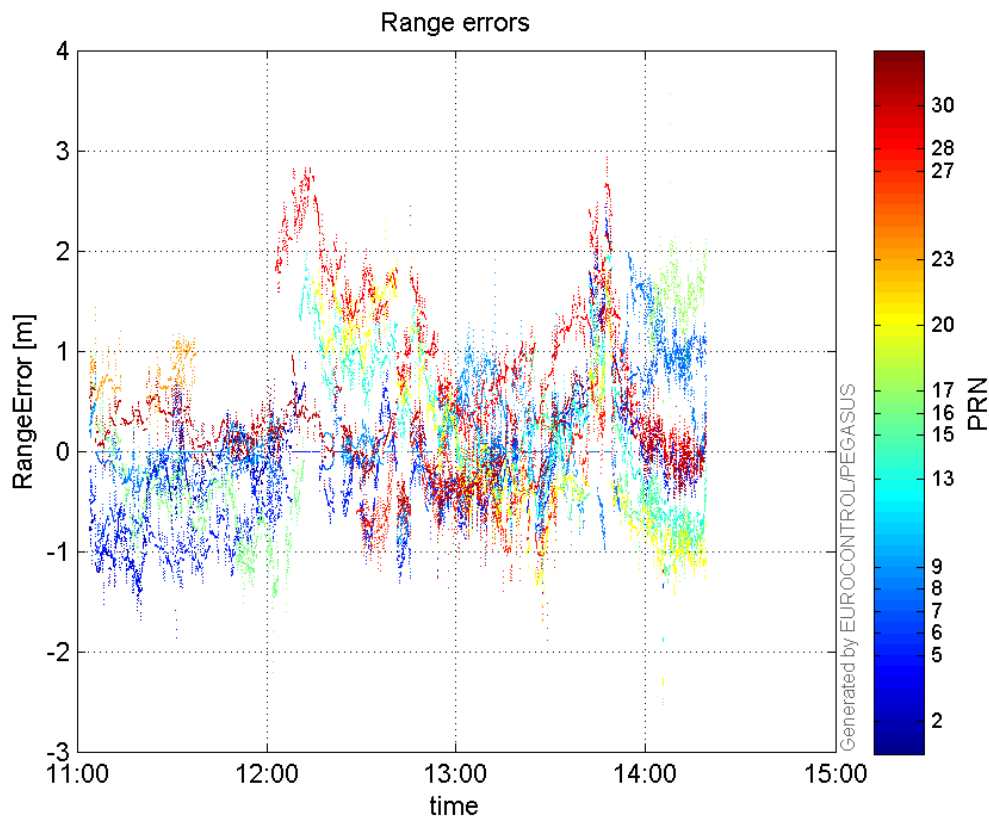
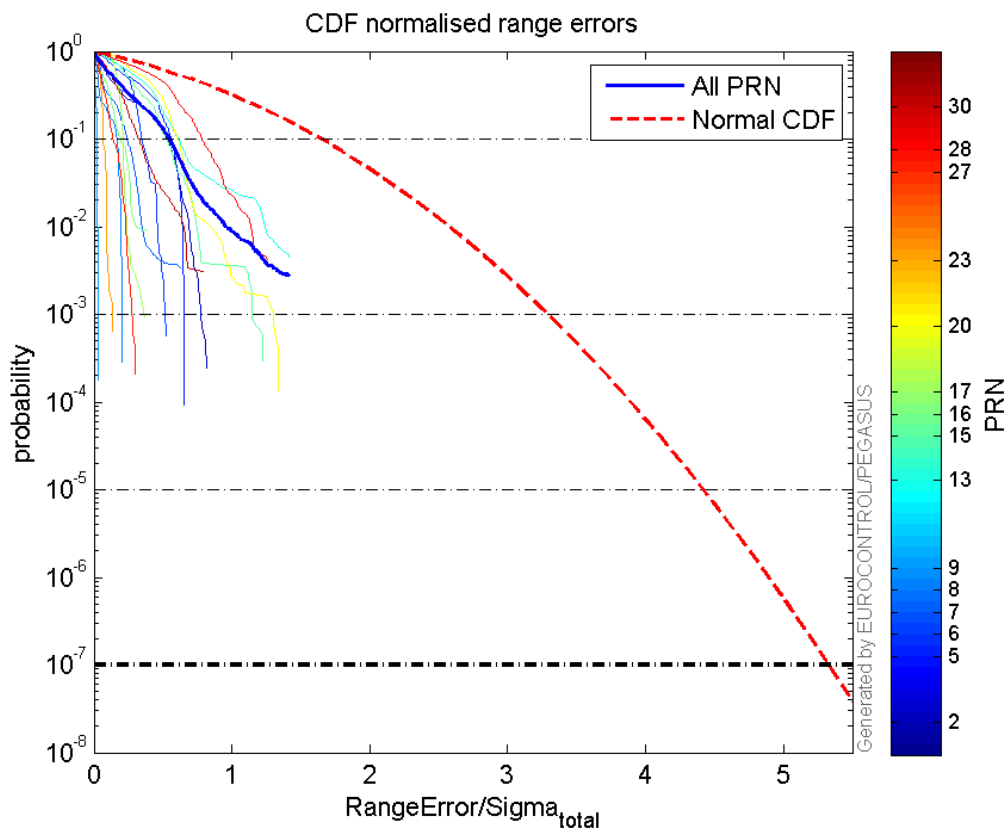
Max Norm Errors :

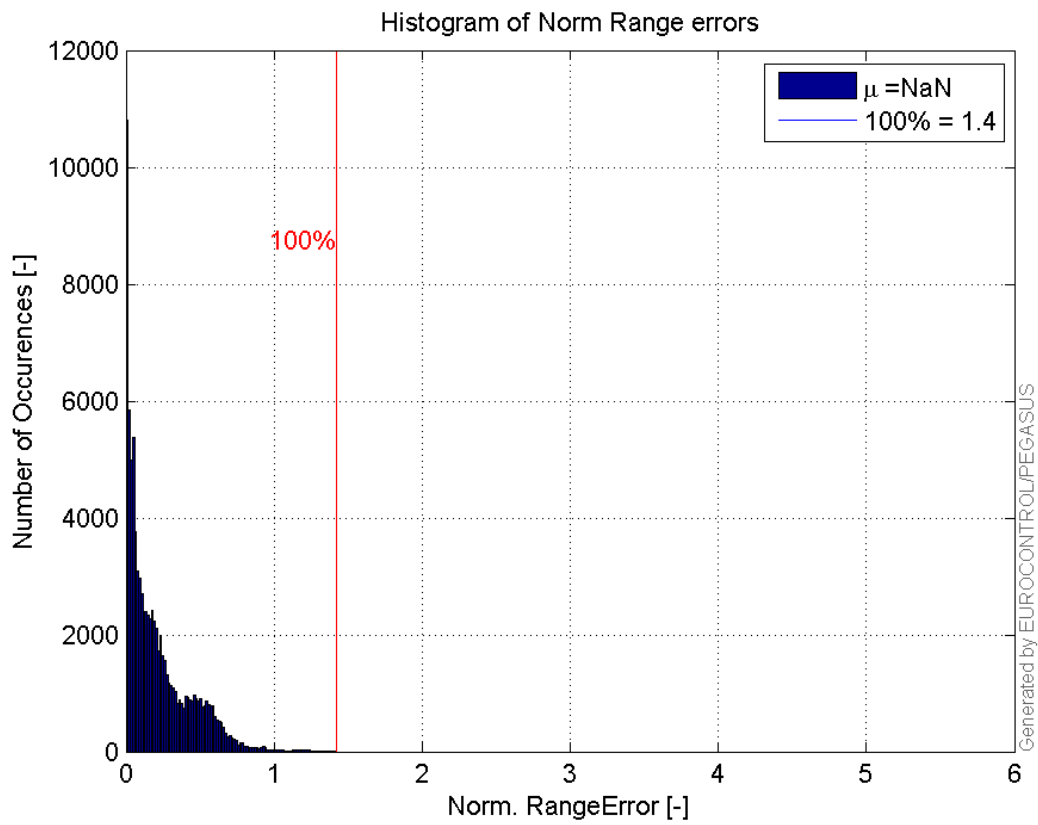
| GPS Week | GPS Second | PRN | Norm Error | Range Error | Sigma |
|----------|------------|-----|------------|-------------|---------|
| 1884 | 213610 | 2 | 0.824182 | -1.67944 | 2.03771 |
| 1884 | 222429 | 5 | 1.41749 | 2.43577 | 1.71837 |
| 1884 | 212800 | 6 | 0.522667 | -1.17752 | 2.2529 |
| 1884 | 219248 | 7 | 0.629337 | -1.07826 | 1.71333 |
| 1884 | 223450 | 8 | 0.413753 | 1.65039 | 3.98884 |
| 1884 | 212748 | 9 | 0.430864 | 0.763649 | 1.77237 |
| 1884 | 223527 | 13 | 1.41594 | -1.90432 | 1.34492 |
| 1884 | 223538 | 15 | 1.22762 | -2.50142 | 2.03761 |
| 1884 | 214709 | 16 | 0.386692 | -1.13842 | 2.944 |
| 1884 | 223660 | 17 | 0.397438 | 3.57129 | 8.98578 |
| 1884 | 223527 | 20 | 1.34343 | -2.34179 | 1.74314 |
| 1884 | 212747 | 23 | 0.143125 | 1.43196 | 10.0049 |
| 1884 | 219832 | 27 | 0.306096 | -0.876377 | 2.86307 |
| 1884 | 222459 | 28 | 1.25472 | 2.93403 | 2.3384 |
| 1884 | 219248 | 30 | 0.79299 | -1.2612 | 1.59043 |

Normalised Range errors (median):

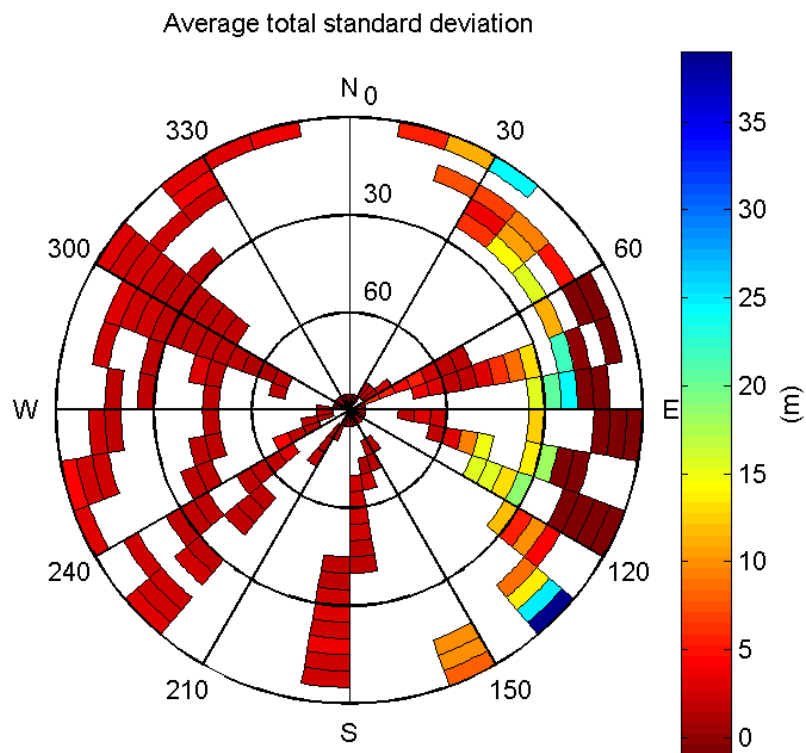


Range errors:

**CDF normalised range errors:****Histogram of Norm Range errors:**

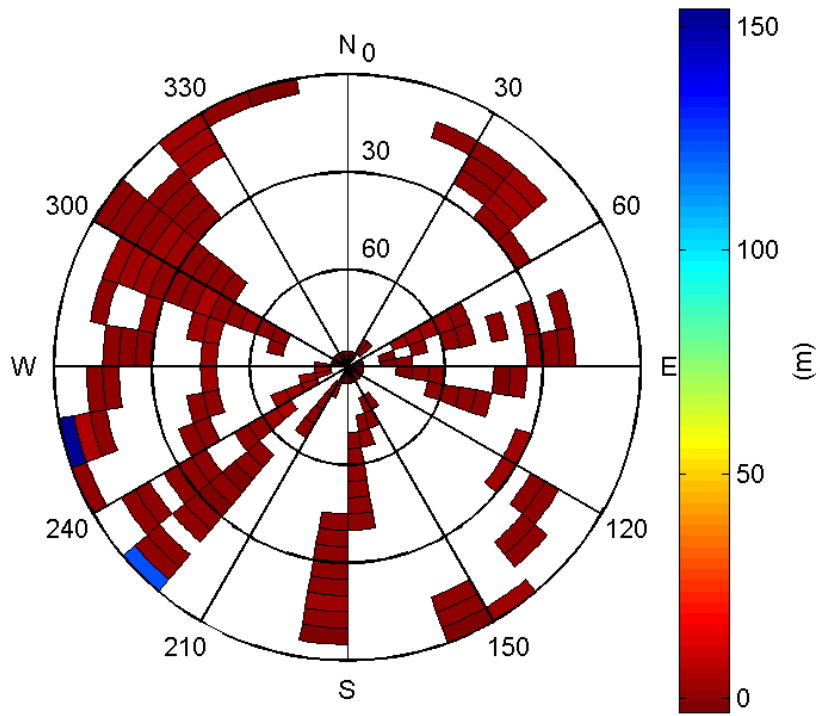


Sigma Sky Plot:



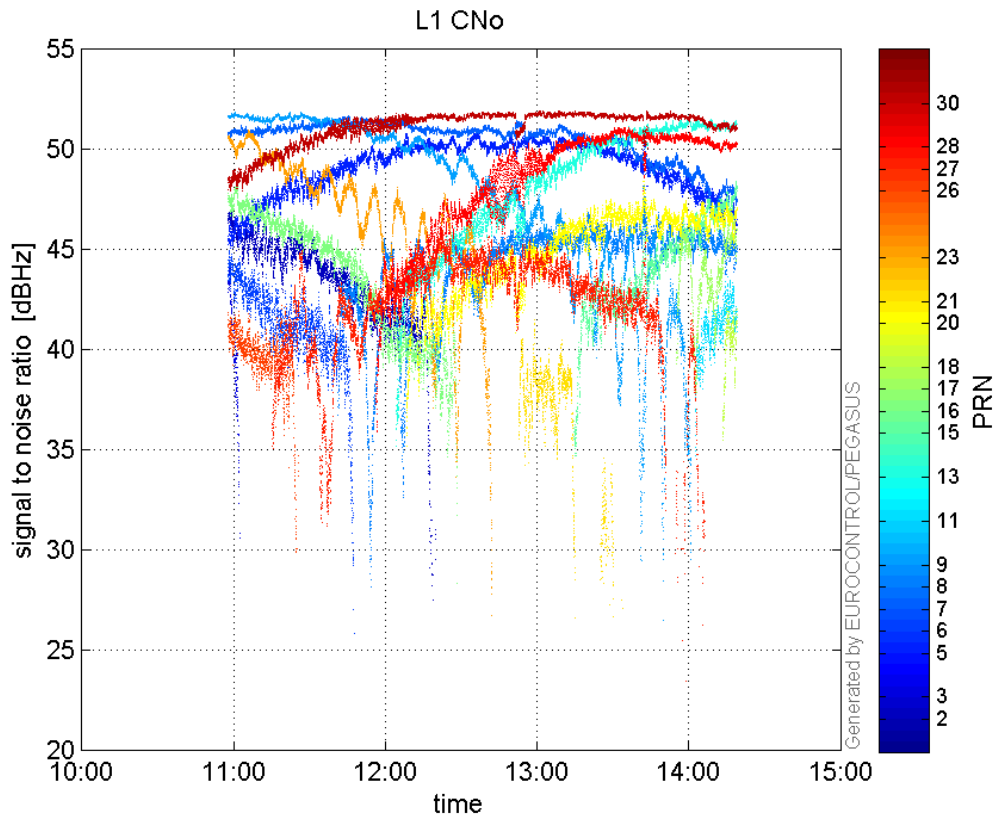
Norm Error Sky Plot:

Maximum Range Error

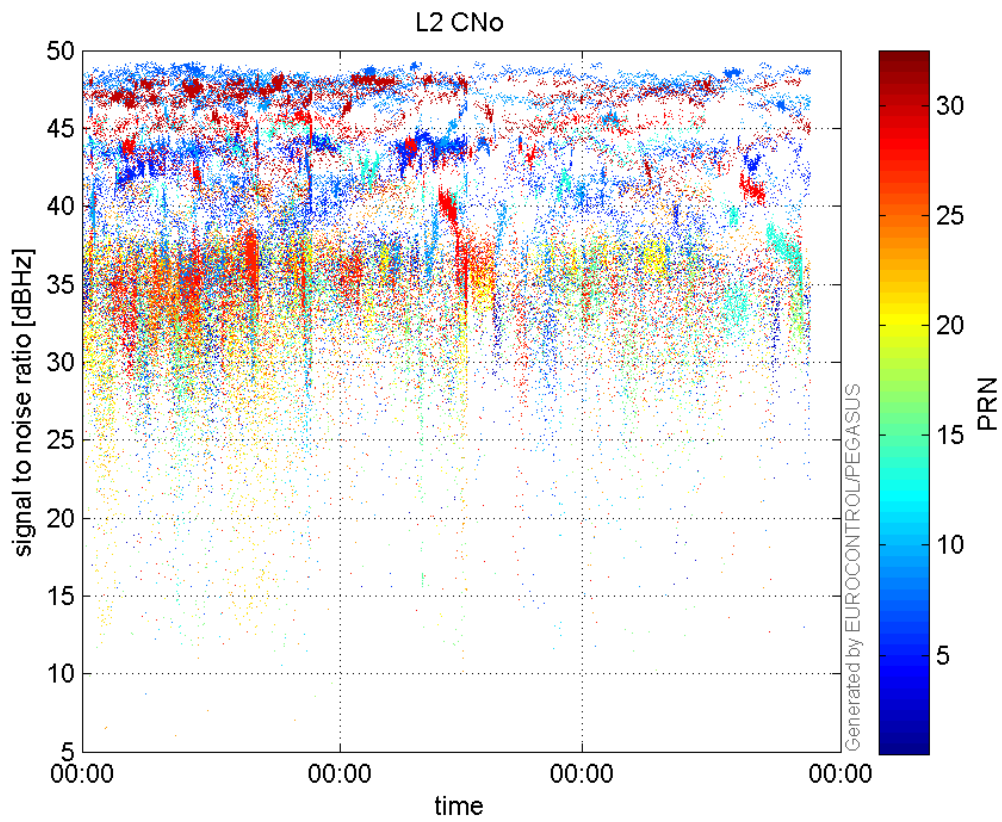


signal quality

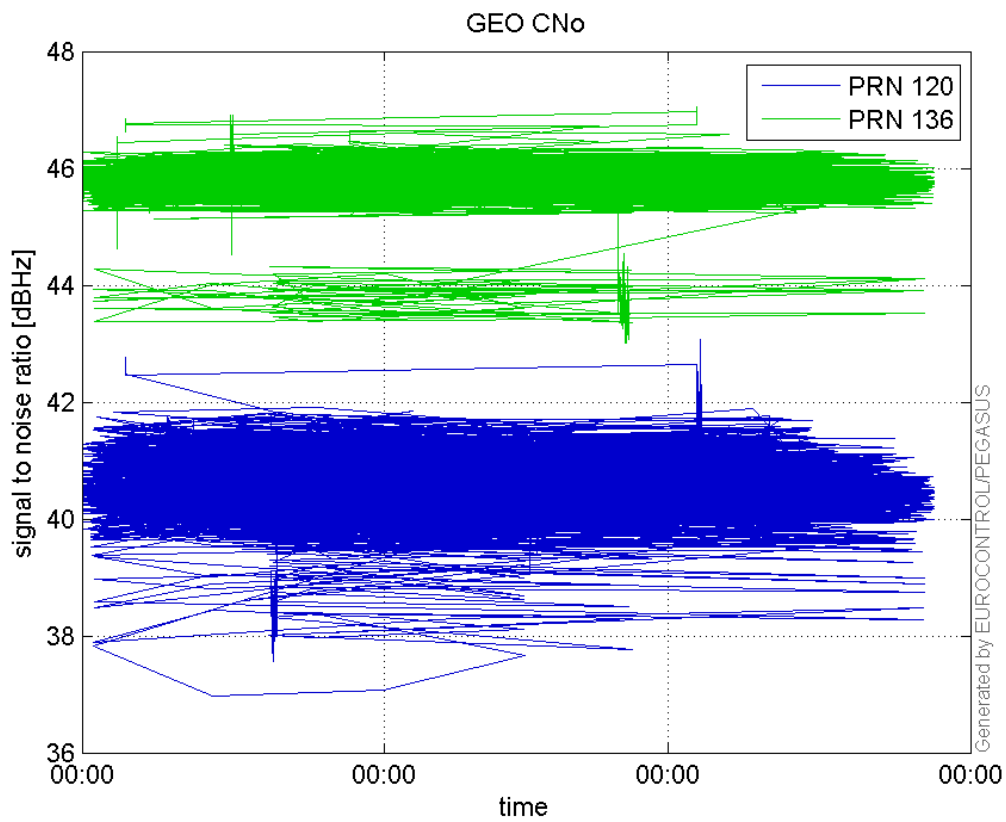
L1 CNo:



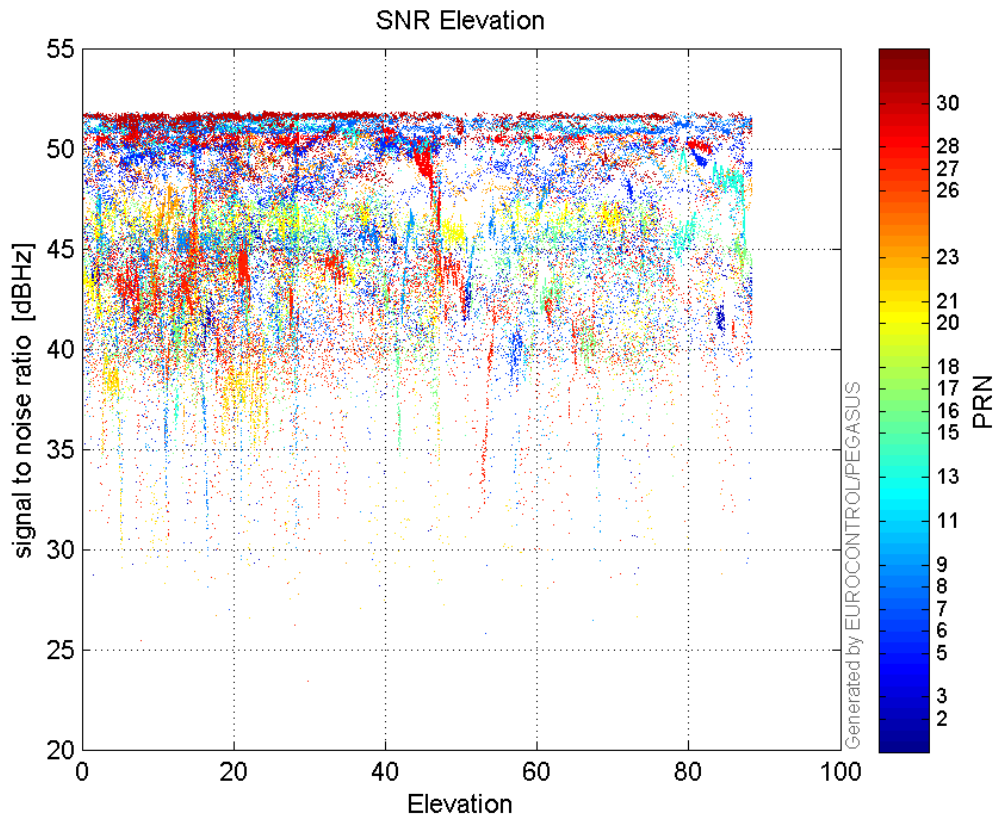
L2 CNo:



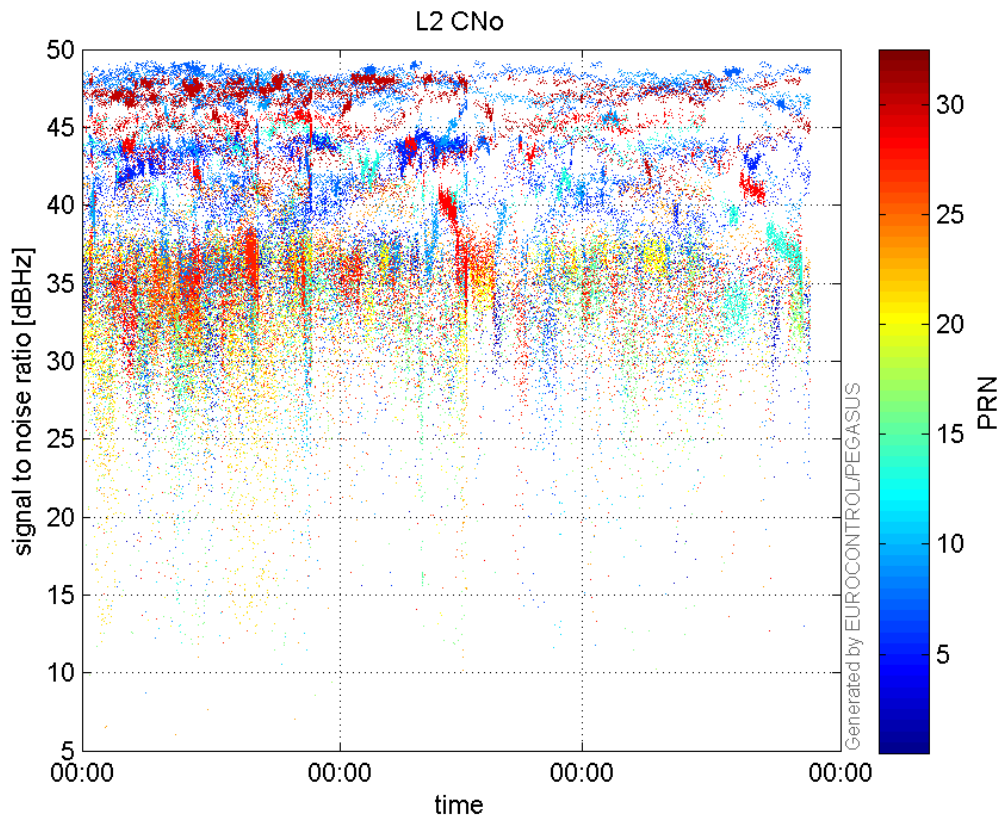
GEO CNo:



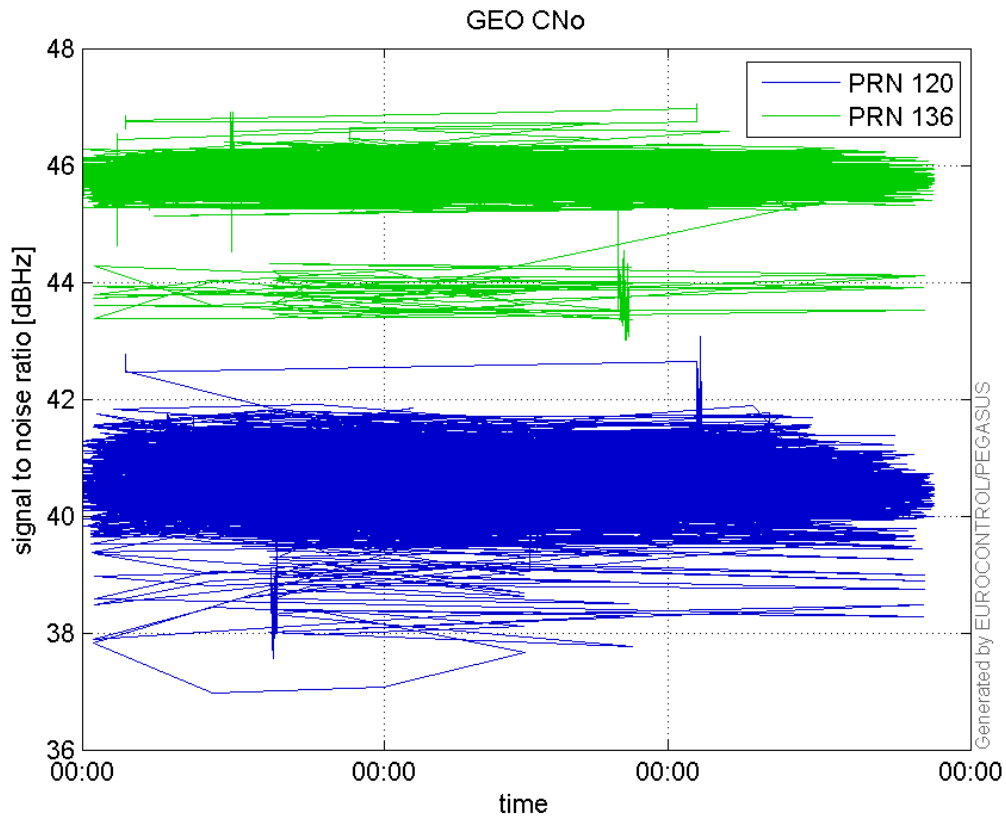
SNR Elevation:



L2 CNo:

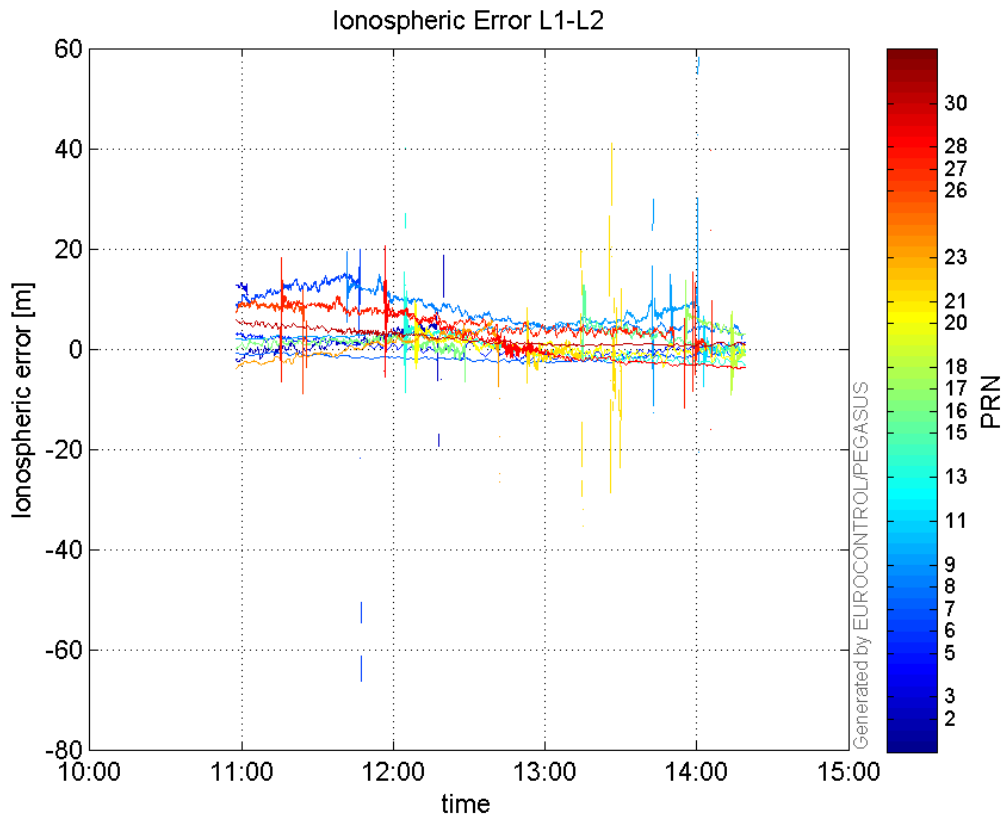


GEO CNo:



dual frequency

Ionospheric Error L1-L2:



Parameters

system

| Name | Section | Value |
|---------------|---------|--|
| name | system | GNSS_Solution |
| version | system | 4.8.2.1 |
| input_prefix | system | D:/PEGASUS_DAT_job/JOB/2016_02_16EGNOS/02_Convertor/02_Convertor |
| output_prefix | system | D:/PEGASUS_DAT_job/JOB/2016_02_16EGNOS/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 | 241.6451 |
| mi_numbers | results | 0 |