

# Global View

program Pegasus  
 version 4.8.4  
 site Laboratory satellite systems  
 abbreviation NAU  
 country Ukraine  
 city Kiev  
 comment Konin V., Shyshkov F. InsideGNSS, Jan-Feb 2015,  
 P.50 - 54  
 date 16/03/2017

## SBAS Messages

**start:** 07:06:19.129 27.02.2017 ( week: 1938 sec: 111979.129 )  
**end:** 13:35:52.129 27.02.2017 ( week: 1938 sec: 135352.129 )  
**duration:** 06:29:33 ..

### quality

**valid samples** 37249  
**total samples** 37249  
**number of SBAS PRNs** 2

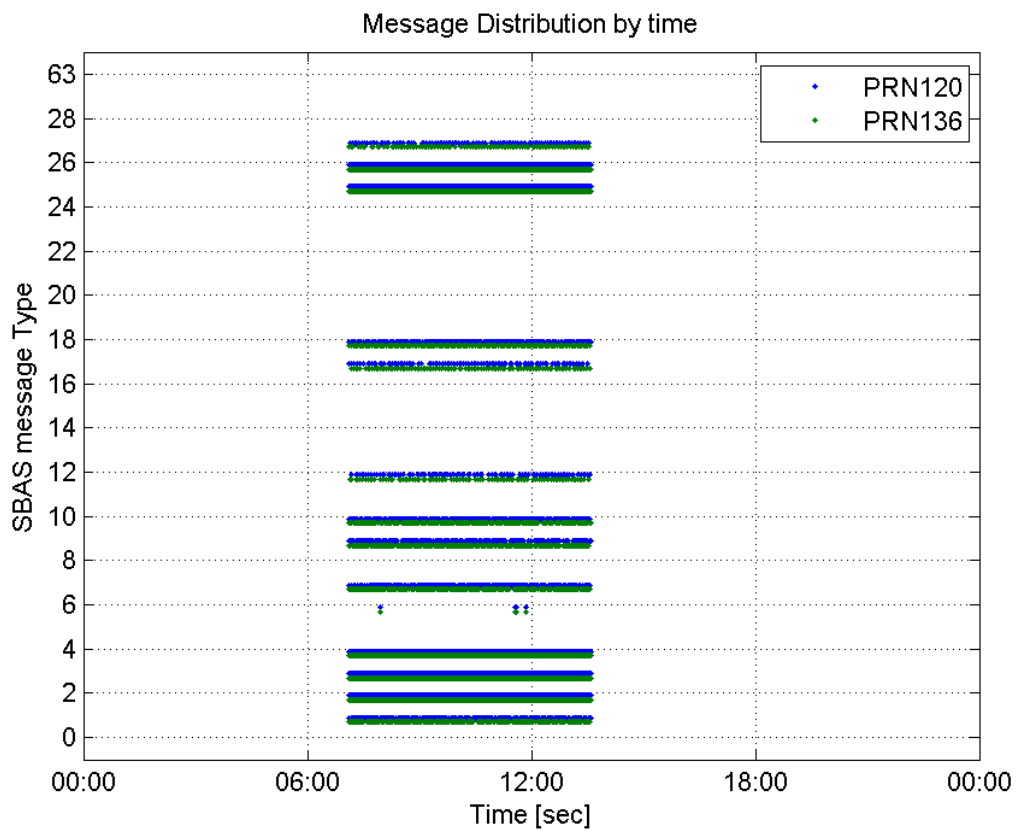
### SBAS SIS Overview

#### Message Type 6 repetitions :

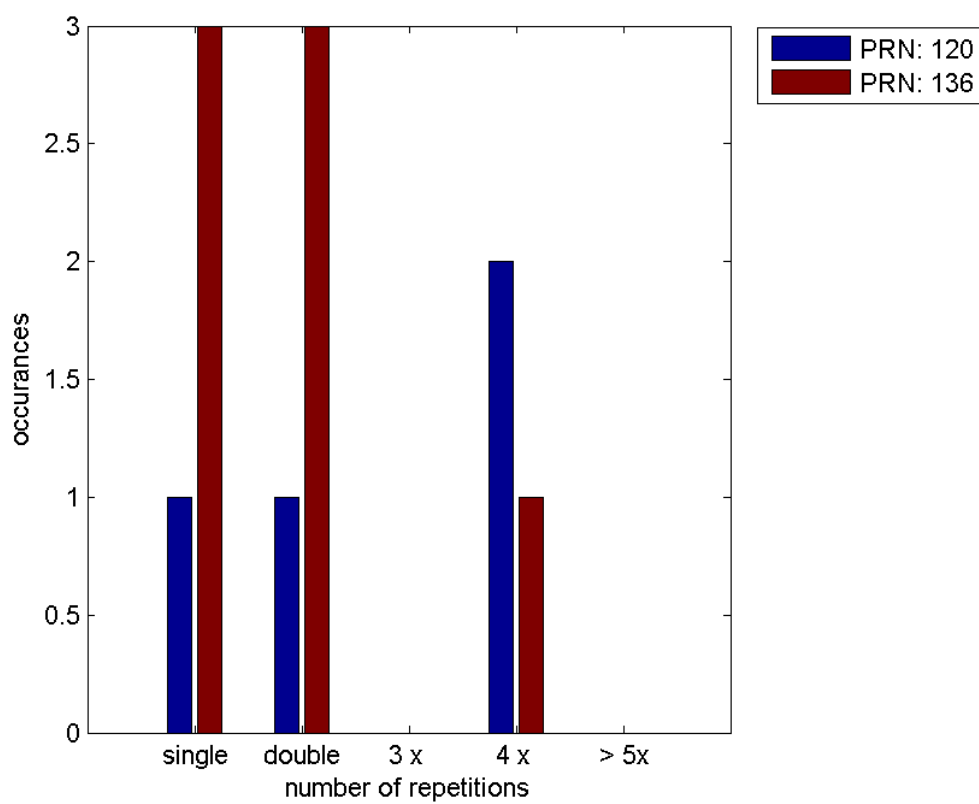
	single	double	3 x	4 x	> 5x
<b>PRN 120</b>	1	1	0	2	0
<b>PRN 136</b>	3	3	0	1	0

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#### Message Distribution by time:



**Message Type 6 repetitions:**



## Broadcast SBAS Messages :

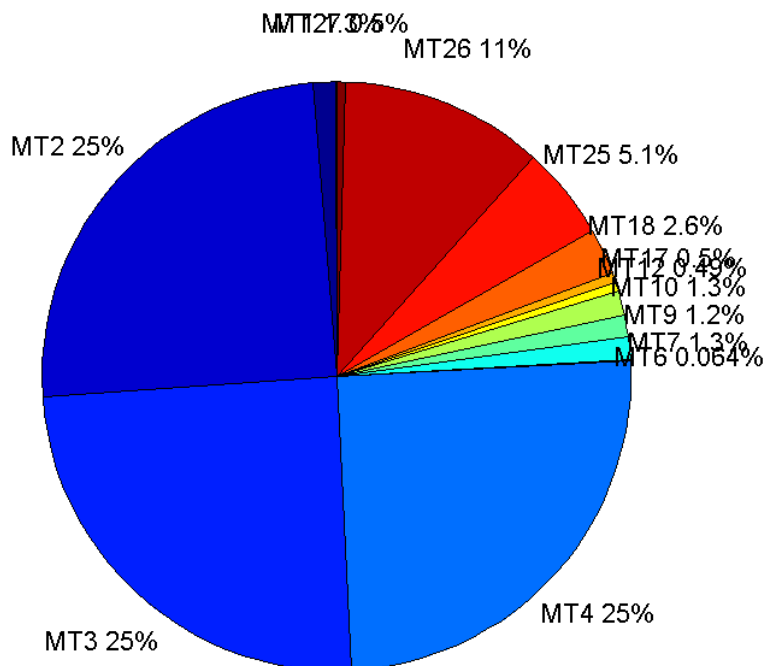
	number of messages	%
MT 0	0	0
MT 1	242	1.2971
MT 2	4633	24.8325
MT 3	4604	24.6771
MT 4	4669	25.0255
MT 5	0	0
MT 6	12	0.064319
MT 7	237	1.2703
MT 9	225	1.20598
MT 10	247	1.3239
MT 12	92	0.493113
MT 17	94	0.503832
MT 18	481	2.57812
MT 24	0	0
MT 25	947	5.07584
MT 26	2080	11.1486
MT 27	94	0.503832
MT 28	0	0
MT 62	0	0
MT 63	0	0
<b>Total</b>	18657	100

## Update intervals :

	Minimum [s]	Maximum [s]	Mean value	Exceed Max update	Exceed NPA timeout	Exceed PA timeout
MT 0	--	--	--	--	--	--
MT 1	75	320	96.6888	36	0	0
MT 2	4	36	5.04426	1124	1	2
MT 3	4	36	5.07669	1130	1	10
MT 4	4	36	5.00707	1082	1	7
MT 5	--	--	--	--	--	--
MT 6	1	13015	1281.73	3	3	3
MT 7	76	320	98.4492	42	0	4
MT 9	76	400	104.062	0	0	0
MT 10	76	240	94.5122	43	0	0
MT 12	185	786	251.758	91	22	22
MT 17	189	796	246.387	0	0	0
MT 18	4	192	48.6875	0	0	0
MT 24	--	--	--	--	--	--
MT 25	1	81	24.666	0	0	0
MT 26	1	48	11.2333	0	0	0
MT						

27	191	800	246.387	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	237	1.27474
MT 2	4623	24.8655
MT 3	4609	24.7902
MT 4	4603	24.758
MT 5	0	0
MT 6	14	0.0753012
MT 7	243	1.30701
MT 9	243	1.30701
MT 10	236	1.26936
MT 12	92	0.494836
MT 17	100	0.537866

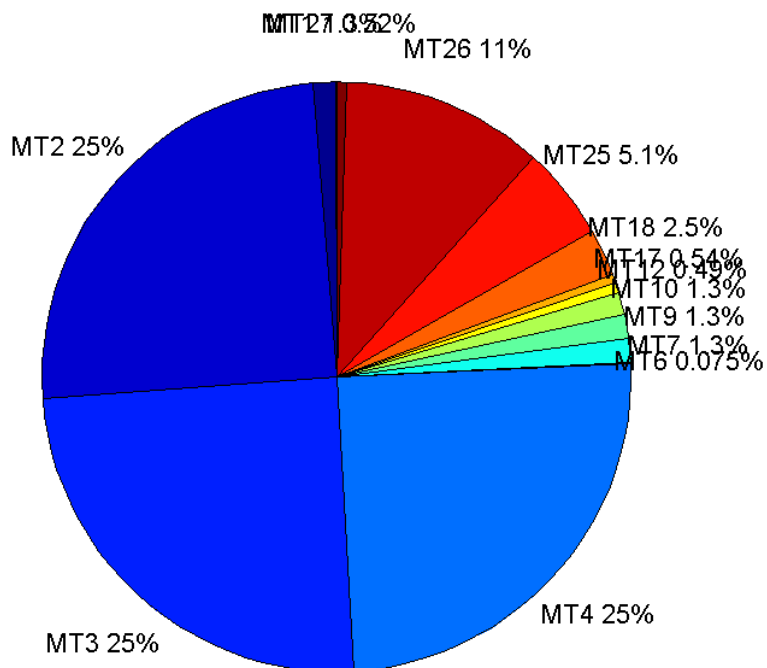
MT 18	474	2.54948
MT 24	0	0
MT 25	948	5.09897
MT 26	2073	11.15
MT 27	97	0.52173
MT 28	0	0
MT 62	0	0
MT 63	0	0
<b>Total</b>	18592	100

## Update intervals :

	Minimum [s]	Maximum [s]	Mean value	Exceed Max update	Exceed NPA timeout	Exceed PA timeout
MT 0	--	--	--	--	--	--
MT 1	76	398	98.2881	41	0	0
MT 2	4	20	5.05582	1123	1	8
MT 3	4	17	5.07118	1137	0	7
MT 4	4	20	5.07866	1150	1	7
MT 5	--	--	--	--	--	--
MT 6	1	13006	1084.54	4	4	4
MT 7	76	480	95.8843	38	2	2
MT 9	74	320	95.5372	0	0	0
MT 10	74	480	99.1021	43	1	3
MT 12	187	597	252.44	91	20	20
MT 17	186	597	232.091	0	0	0
MT 18	4	193	49.074	0	0	0
MT 24	--	--	--	--	--	--
MT 25	2	91	24.6631	0	0	0
MT 26	3	73	11.278	0	0	0
MT 27	184	592	241.333	0	0	0
MT 28	--	--	--	--	--	--
MT 62	--	--	--	--	--	--
MT 63	--	--	--	--	--	--

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Message Distribution PRN 136:



### Parameters

#### System

Name	Section	Value
Name	System	Convertor
Version	System	4.3
Inputfile	System	D:/PegasusDateJob/job/2017_02_27EGNOS2Hz/01_User/01_User
Outputfile	System	D:/PegasusDateJob/job/2017_02_27EGNOS2Hz/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:** 07:06:19 27.02.2017 ( week: 1938 sec: 111979 )  
**end:** 13:35:52.5 27.02.2017 ( week: 1938 sec: 135352.5 )  
**duration:** 06:29:34 ..

#### quality

**valid samples** 42619  
**total samples** 43361

## Event tables

**Position discontinuity events type** long  
**APV-I discontinuity events type** independent  
**APV-35m discontinuity events type** too many (23)  
**LPV-200 discontinuity events type** too many (23)  
**CAT-I discontinuity events type** nothing

## extremes :

	Epoch	HPE	HPL	HPE/HPL	VPE	VPL	VPE/VPL
<b>max normHor</b>	116088	1.83075	9.97967	0.183448	0.400554	16.3091	0.0245601
<b>max normVer</b>	133699	1.45642	23.9912	0.0607065	1.65451	17.0908	0.0968069
<b>max HPE</b>	119747	9.76301	760.719	0.0128339	-2.59919	85.0252	0.0305697
<b>max VPE</b>	130612	7.6221	406.161	0.0187662	13.5802	787.532	0.017244
<b>min HPL</b>	115879	1.3547	9.87365	0.137204	0.688809	16.433	0.0419162
<b>min VPL</b>	121377	1.11312	12.7532	0.0872814	-0.252039	15.5519	0.0162063

## Position discontinuity events :

#	Epoch	duration	stable period
1	119583	83.5	787
2	122953	18	105.5
3	123520	23	32.5
4	124295	4.5	103.5
5	127200	25.5	473
6	132686	179.5	1395.5
7	133203	18.5	58.5
8	133250	7.5	25.5

## APV-I discontinuity events :

#	Epoch	duration	stable period
1	113469	6.5	264.5
2	119059	7.5	263
3	119283	7.5	176.5
4	122387	10.5	30
5	122517	79.5	119.5
6	122629	5.5	32.5
7	122713	1421.5	78.5
8	124153	753.5	18.5
9	127200	29.5	118.5
10	127991	5.5	126.5
11	131177	181.5	400.5
12	132686	179.5	424.5
13	133017	240.5	151.5
14	134718	79.5	18

## First Glance analysis

**Duration** 23374  
**Number of Samples** 43361  
**Number of invalid sample** 742

Number of no position solution samples	1168
Number of missing sample	3387
Logging Loss	7.2452
Processing Loss	1.7112
Number of Misleading Information	0
Data gaps	8
Discontinuities	53

## Number of Samples :

Valid	APV-1	LPV-200	CAT-1	APV-35m
41451	34117	30243	0	30243

## Accuracy statistics :

	Valid	APV-1	LPV-200	CAT-1	APV-35m
HPE 95%	1.86325	1.59651	1.51106	NaN	1.51106
HPEscale 95%	NaN	4.12507	4.19423	NaN	4.19423
VPE 95%	1.9201	1.28554	1.12258	NaN	1.12258
VPEscale 95%	NaN	2.50633	1.73963	NaN	1.73963

## Availability :

	Valid	APV-1	LPV-200	CAT-1	APV-35m
Signal in Space	0.972594	0.800512	0.709613	0	0.709613
measurements	0.955951	0.786813	0.69747	0	0.69747
Operational	1.77338	1.45961	1.29387	0	1.29387

## Discontinuity events :

	Valid	APV-1	LPV-200	CAT-1	APV-35m
All	45	105	136	--	136
Long	8	30	38	--	38
Independent	8	14	23	--	23
P(disc.)	0.00289498	0.00615529	0.0114076	NaN	0.0114076
P(slide)	0.0159707	0.0299557	0.0496479	NaN	0.0496479

## 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 :

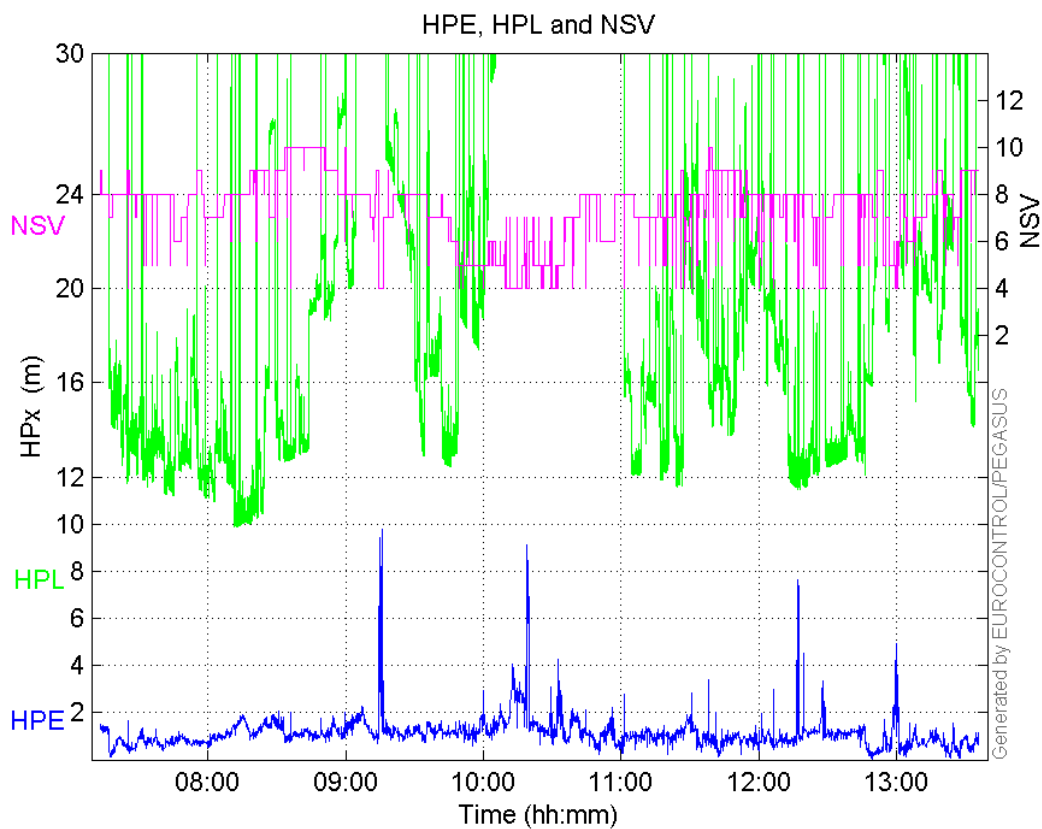
	Valid	APV-1	LPV-200	CAT-1	APV-35m
Samples	41451	34117	30243	0	30243
SIS Availability	0.972594	0.800512	0.709613	0	0.709613
Local Availability	0.955951	0.786813	0.69747	0	0.69747
Operational Availability	1.77338	1.45961	1.29387	0	1.29387
HPE 95%	1.86325	1.59651	1.51106	NaN	1.51106
HPEscale 95%	NaN	4.12507	4.19423	NaN	4.19423
VPE 95%	1.9201	1.28554	1.12258	NaN	1.12258



VPEscale 95%	NaN	2.50633	1.73963	NaN	1.73963
All Discontinuity Events	45	105	136	--	136
Long Discontinuity Events	8	30	38	--	38
Independent Discontinuity Events	8	14	23	--	23
P(discontinuity)	0.00289498	0.00615529	0.0114076	NaN	0.0114076
P(sliding window)	0.0159707	0.0299557	0.0496479	NaN	0.0496479
All Integrity Events	0	0	0	0	0
Horizontal Integrity Events	0	0	0	0	0
Vertical Integrity Events	0	0	0	0	0

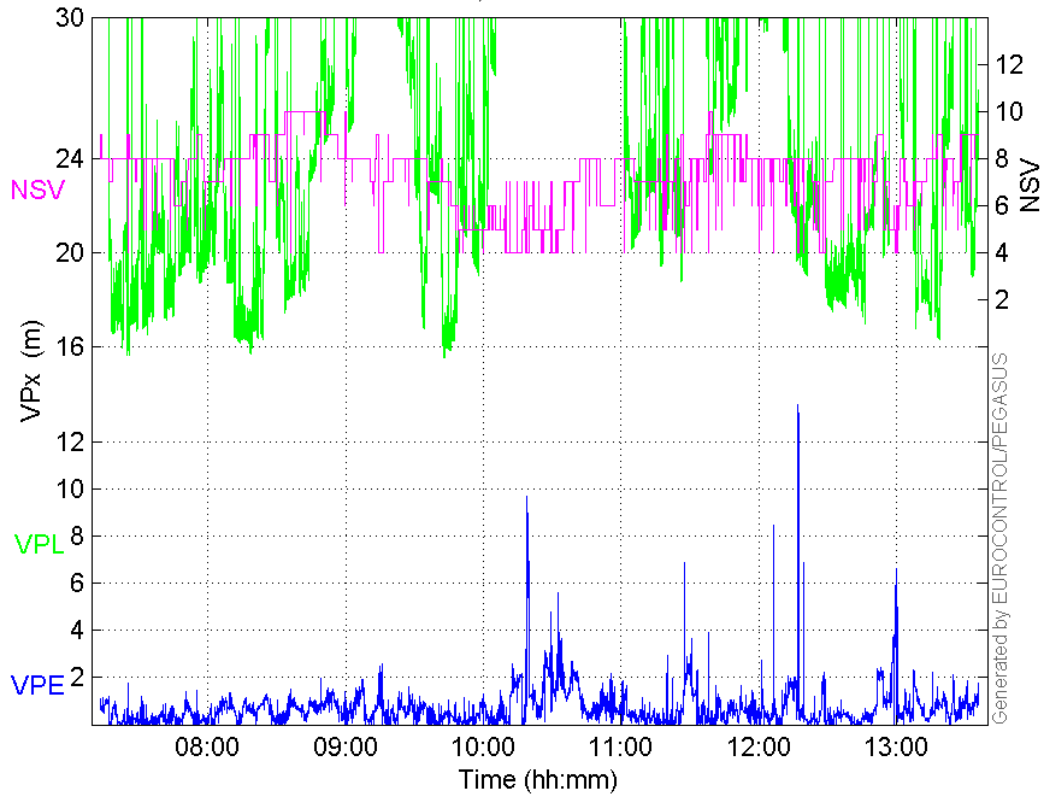
Time Series

HPE, HPL and NSV:



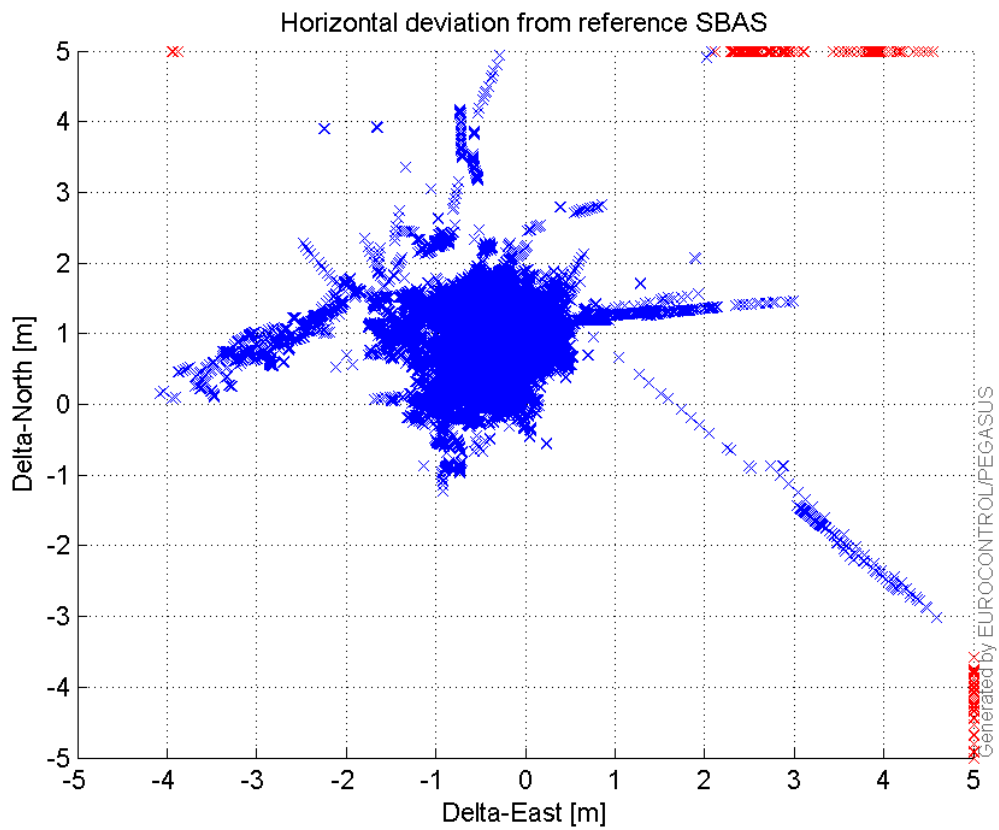
VPE, VPL and NSV:

VPE, VPL and NSV



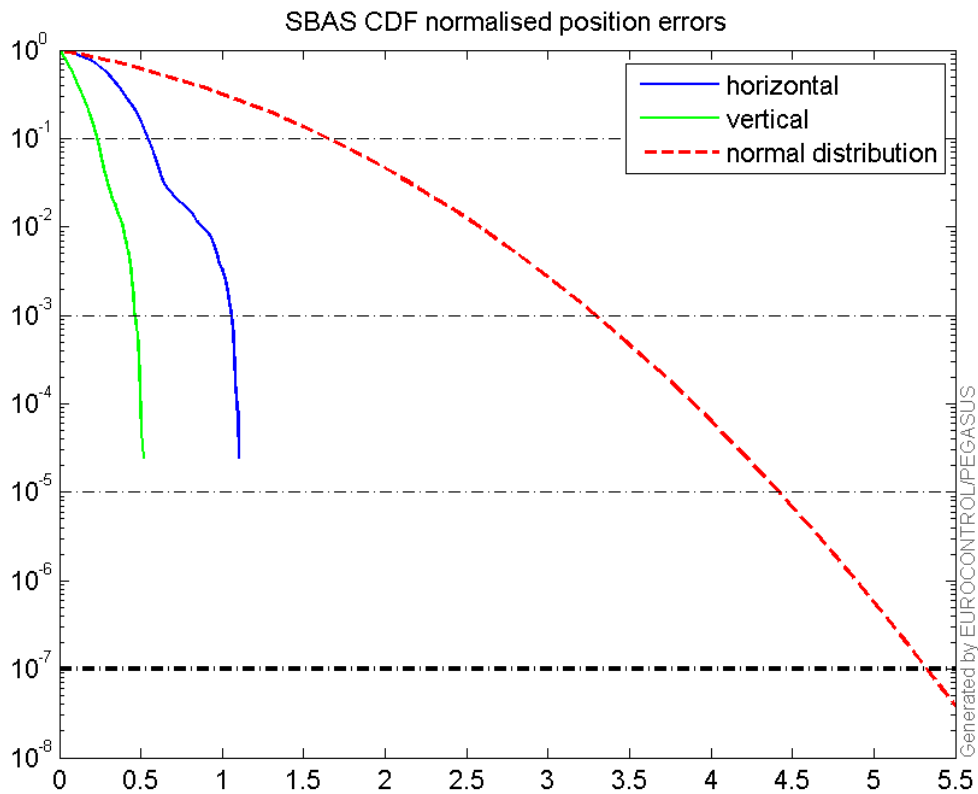
Horizontal deviation

Horizontal deviation from reference SBAS:



## CDF position

SBAS CDF position domain:



## Statistics

```

number 34117
sum 34048.008
sum2 37861.981
prctile95 1.5965109
prctile99 1.8385196
number 34117
sum 17826.696
sum2 15216.532
prctile95 1.2855408
prctile99 1.8907516
number 34117
sum 605681.91
sum2 11948451
prctile95 30.52658
prctile99 38.037397
number 34117
sum 847796.33
sum2 22679888
prctile95 38.793475
prctile99 43.386227
number 34117
sum 2093.3575
sum2 152.82544
prctile95 0.10312682

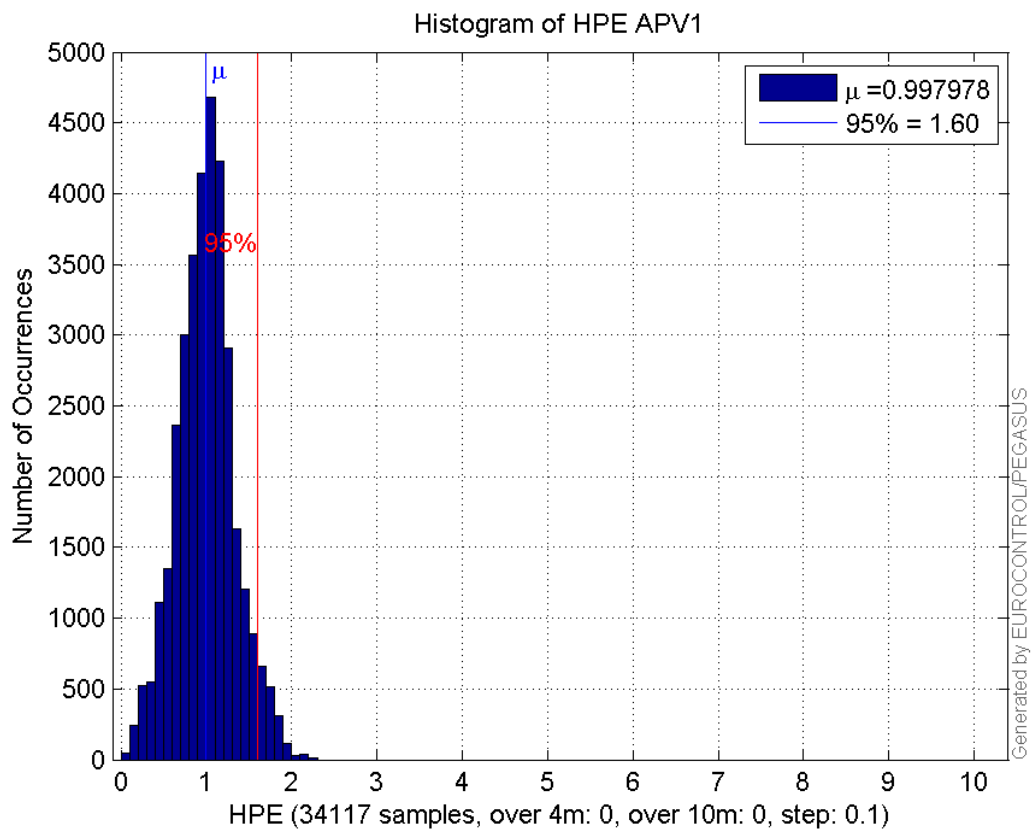
```

**prctile99** 0.15308357  
**number** 34117  
**sum** 730.15234  
**sum2** 24.651331  
**prctile95** 0.050126555  
**prctile99** 0.074341121  
**number** 30243  
**sum** 29651.642  
**sum2** 32062.296  
**prctile95** 1.5110623  
**prctile99** 1.7517604  
**number** 30243  
**sum** 14655.778  
**sum2** 11112.73  
**prctile95** 1.1225814  
**prctile99** 1.6540325  
**number** 30243  
**sum** 498251.18  
**sum2** 8803643.1  
**prctile95** 25.07734  
**prctile99** 29.577691  
**number** 30243  
**sum** 696573.93  
**sum2** 16738293  
**prctile95** 32.25021  
**prctile99** 34.533663  
**number** 30243  
**sum** 1930.1136  
**sum2** 144.90691  
**prctile95** 0.10485567  
**prctile99** 0.15612164  
**number** 30243  
**sum** 649.19787  
**sum2** 21.963753  
**prctile95** 0.04970372  
**prctile99** 0.074386841

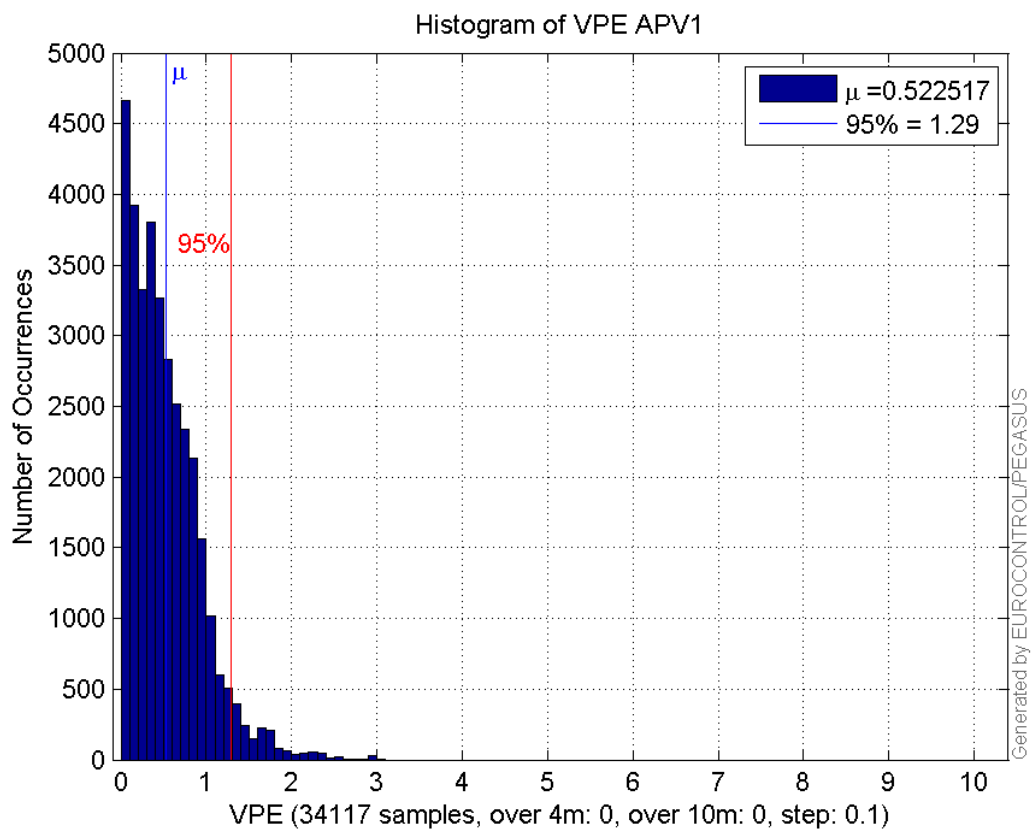
**Error and XPL Statistics :**

	Mean Value	Standard Deviation	50% Value	95% Value	99% Value	RMS Value
<b>HPE</b>	0.997978	0.337361	1.00299	1.59651	1.83852	1.05346
<b>HPL</b>	17.7531	5.92022	16.1719	30.5266	38.0374	18.7142
<b>VPE</b>	0.522517	0.415923	0.442316	1.28554	1.89075	0.66784
<b>VPL</b>	24.8497	6.87481	22.734	38.7935	43.3862	25.7831

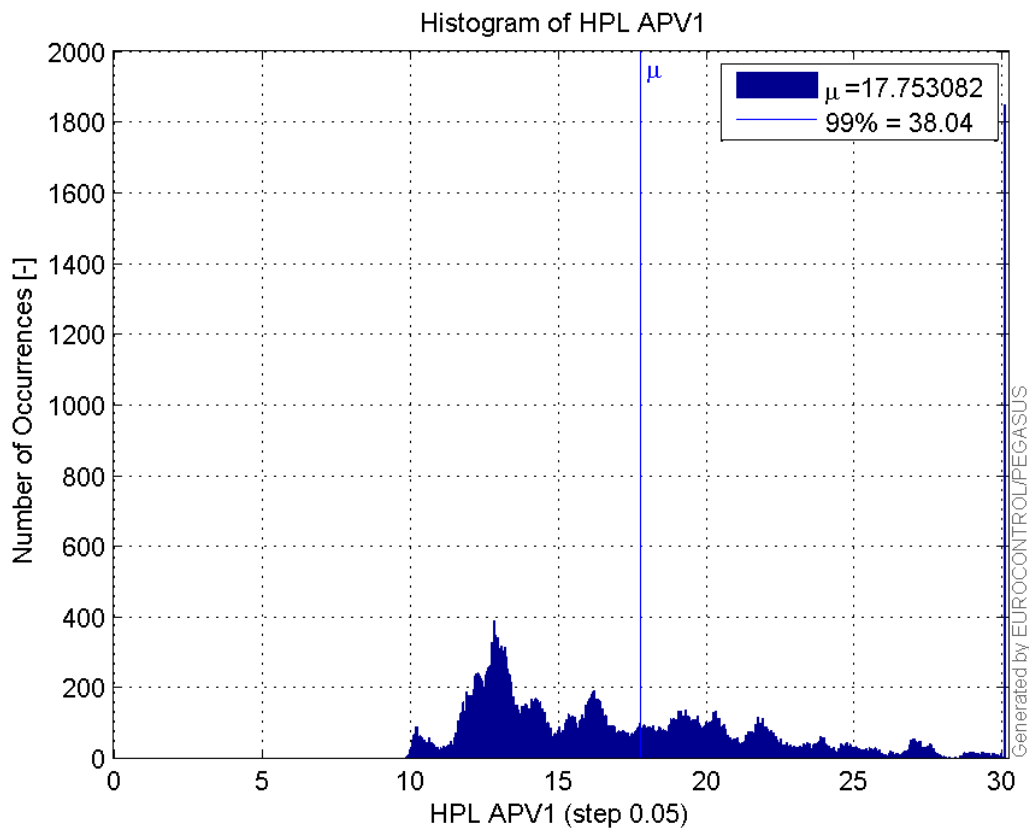
**Histogram of HPE APV1:**



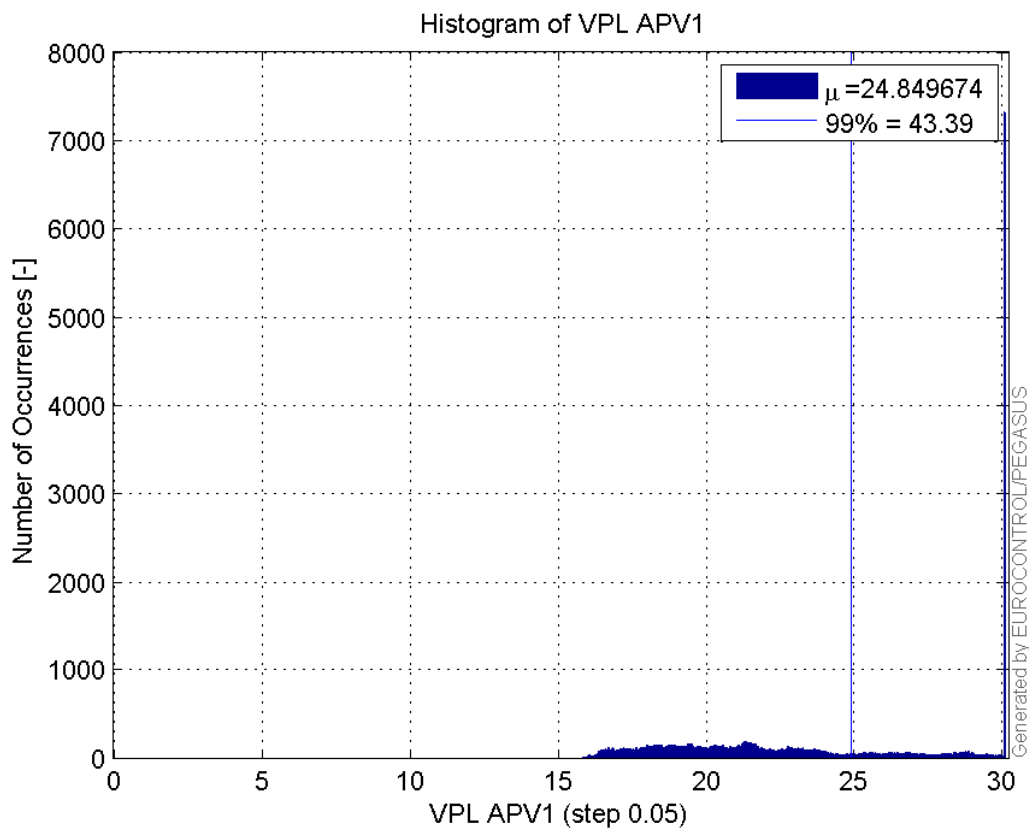
**Histogram of VPE APV1:**



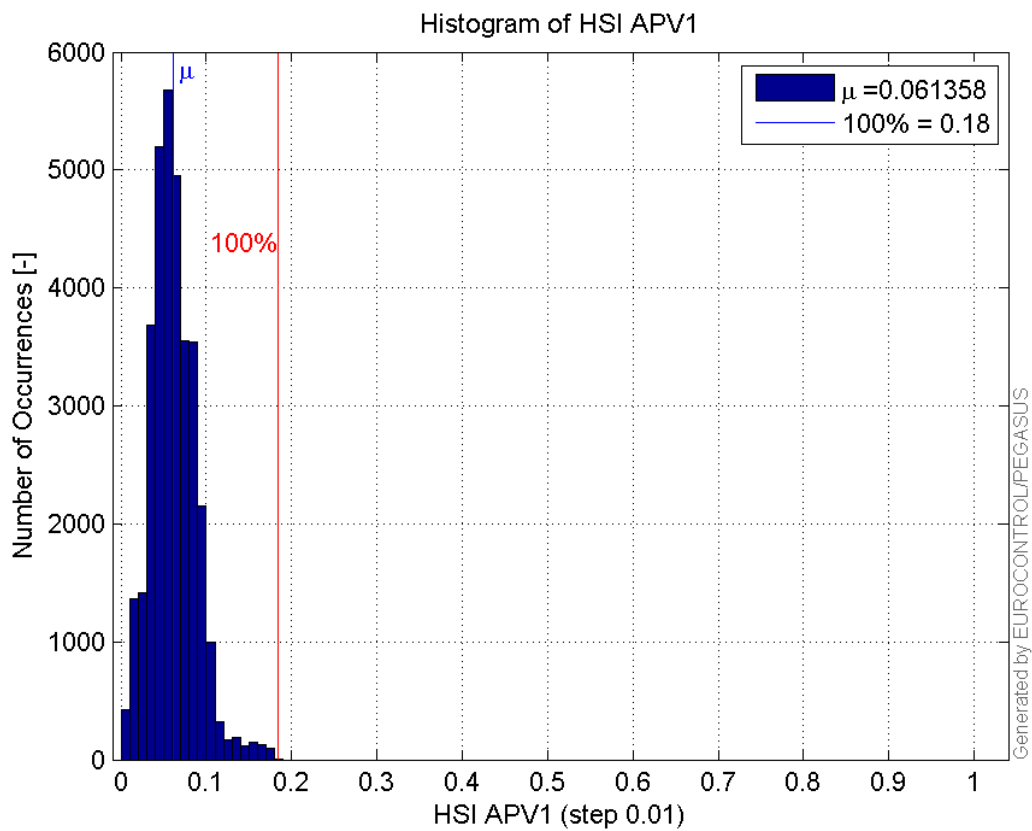
**Histogram of HPL APV1:**



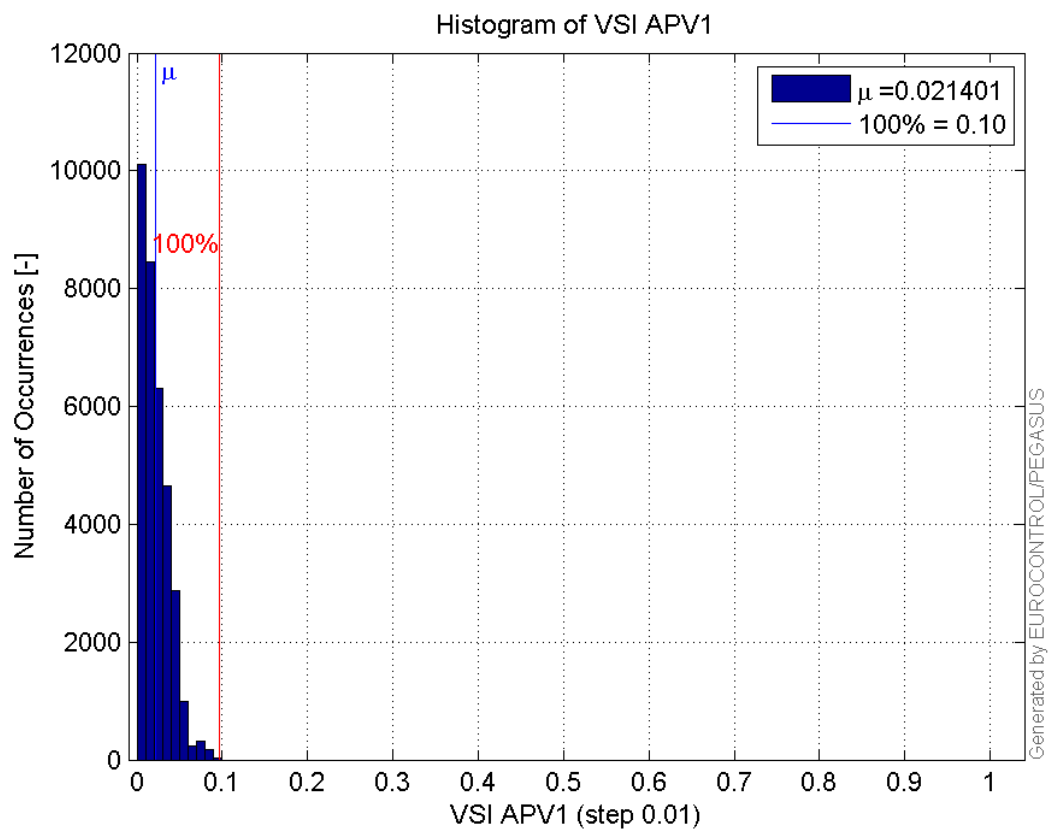
**Histogram of VPL APV1:**



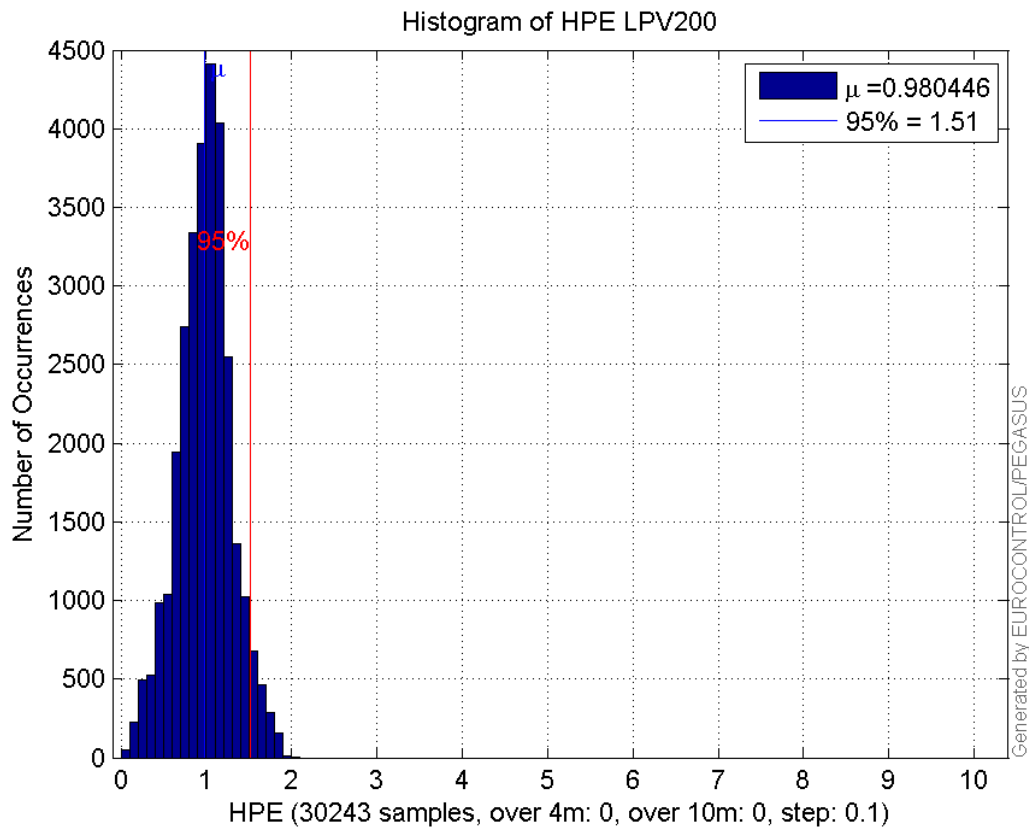
**Histogram of HSI APV1:**



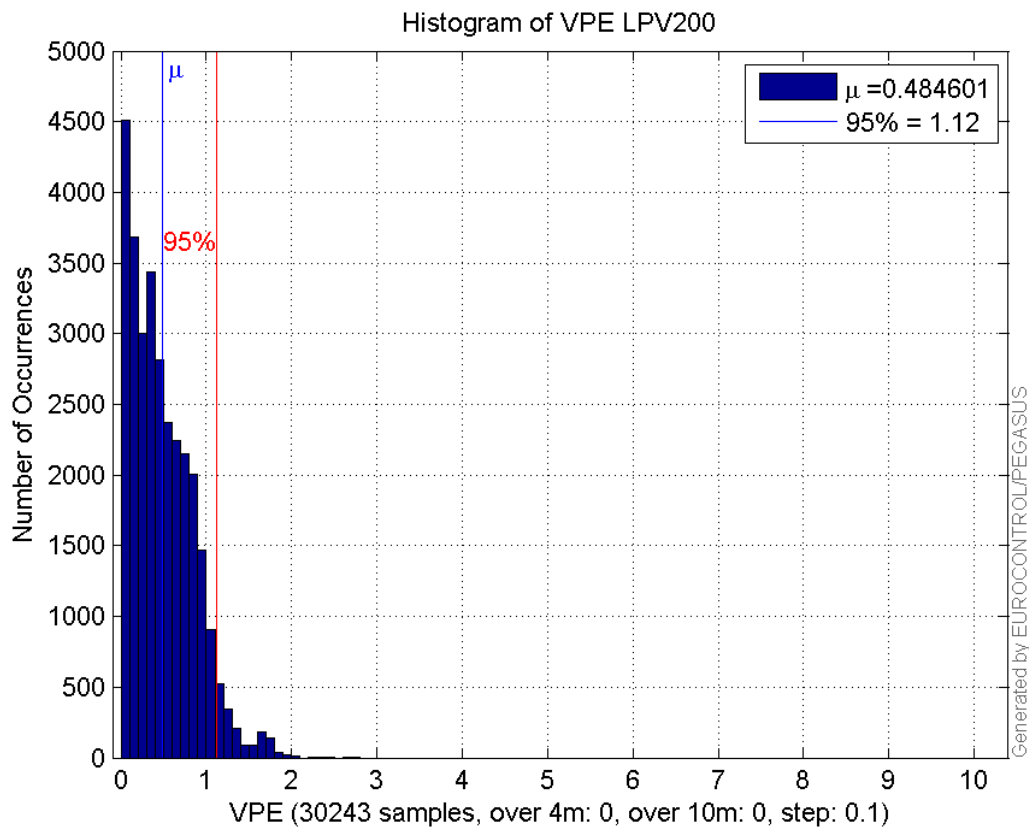
**Histogram of VSI APV1:**



**Histogram of HPE LPV200:**

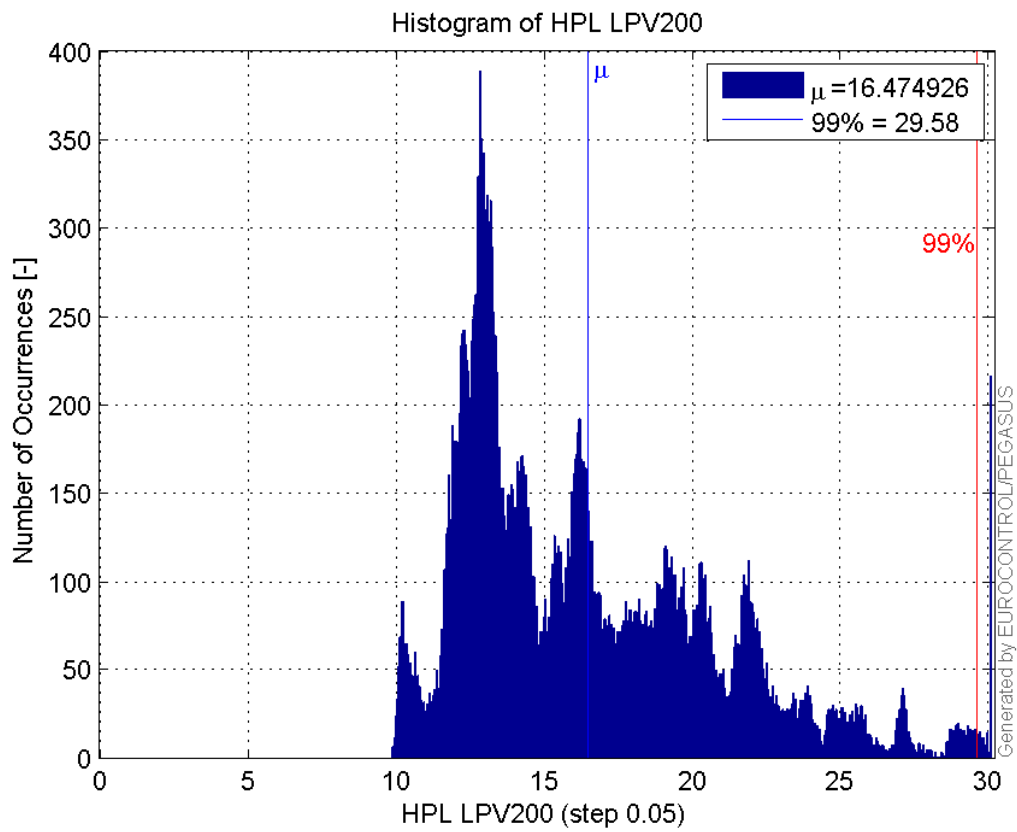


**Histogram of VPE LPV200:**

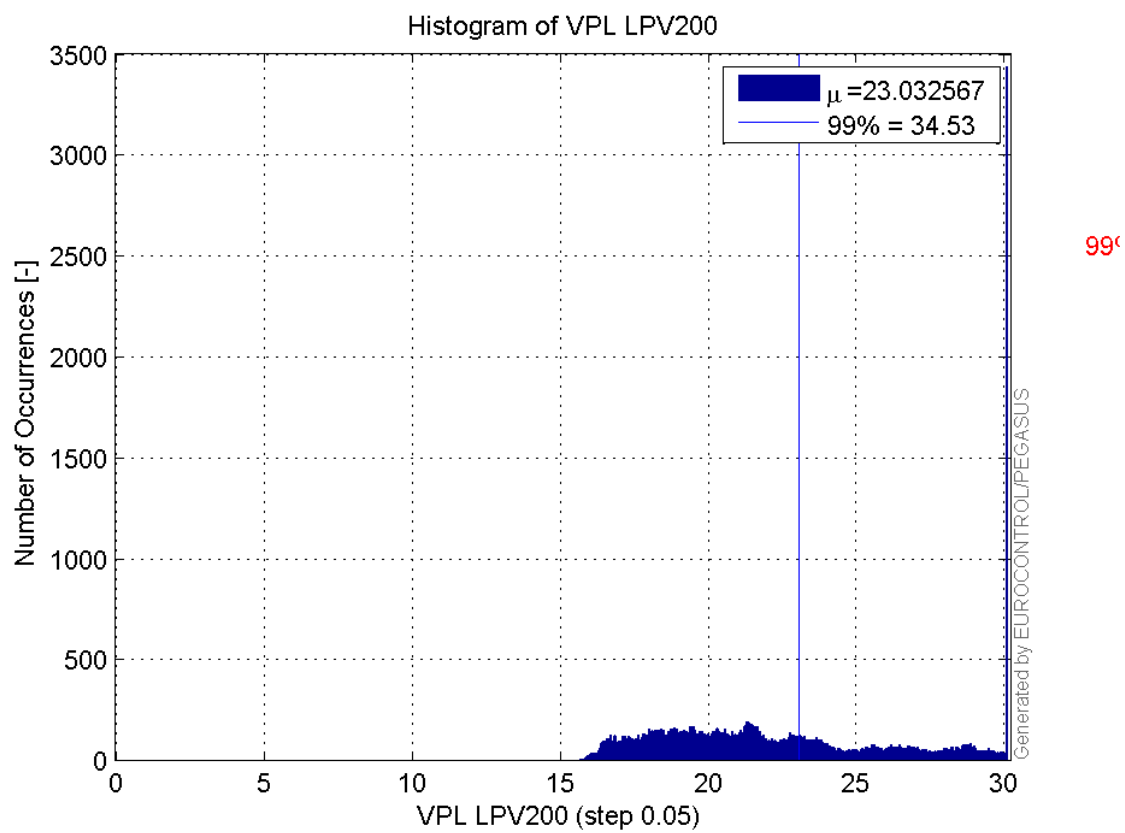


**Histogram of HPL LPV200:**

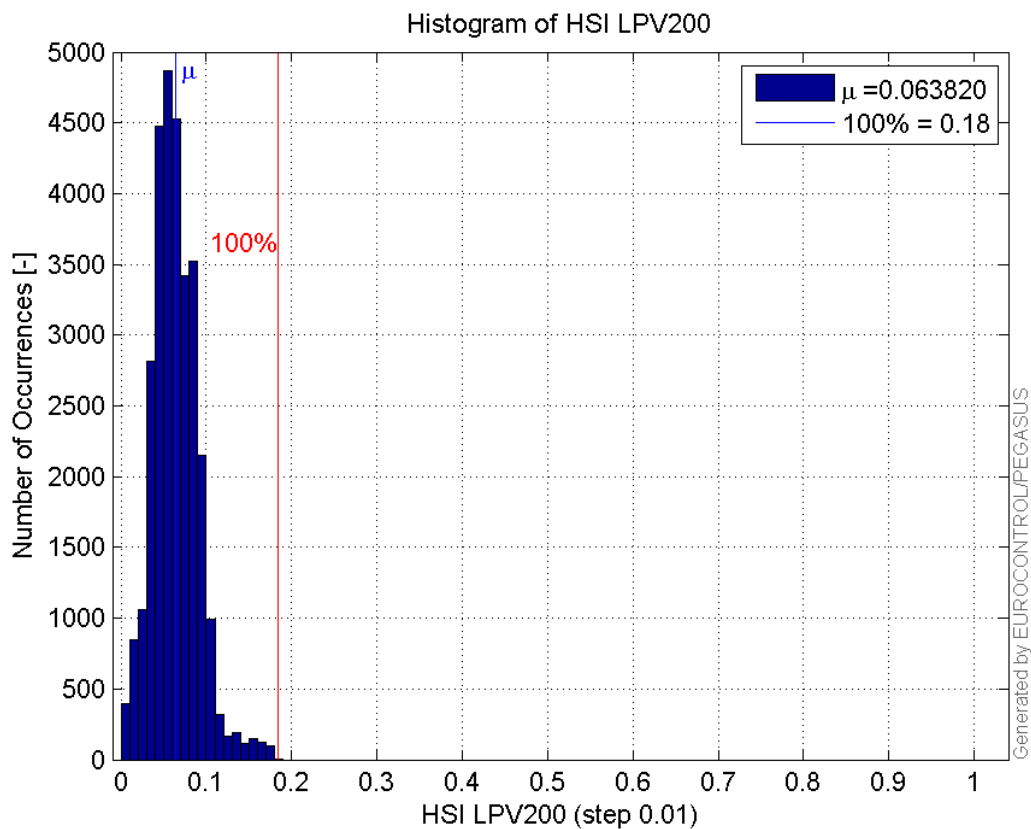




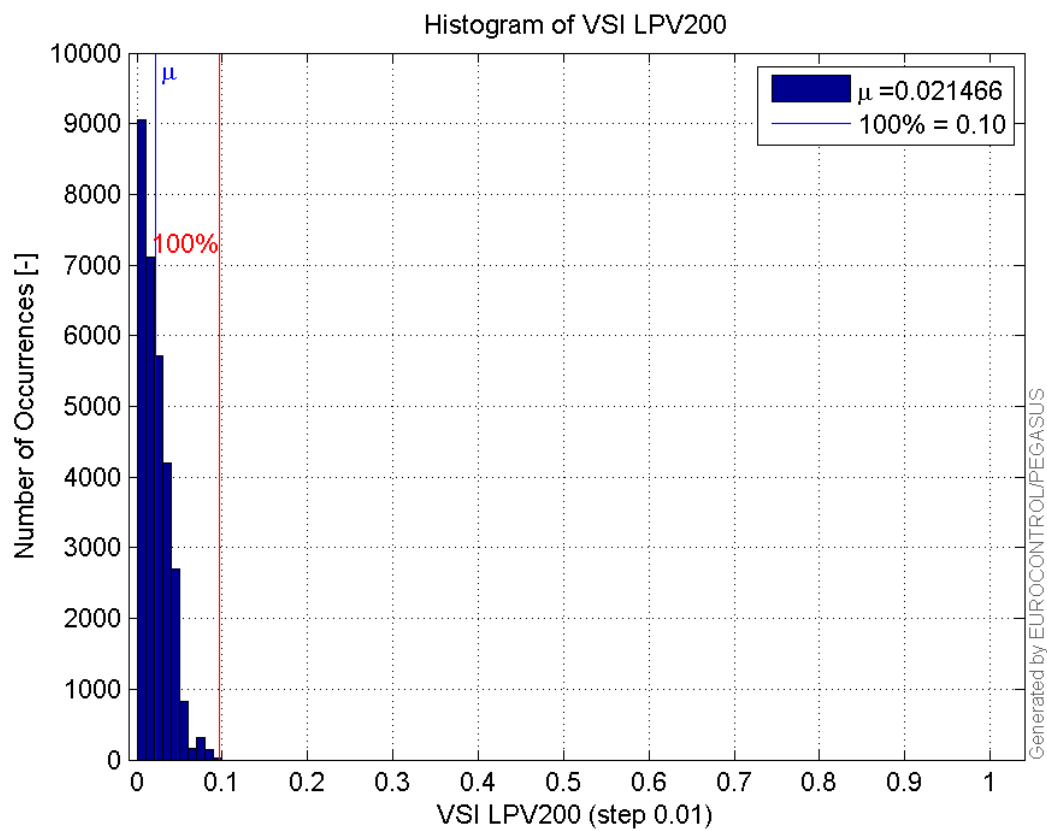
Histogram of VPL LPV200:



Histogram of HSI LPV200:

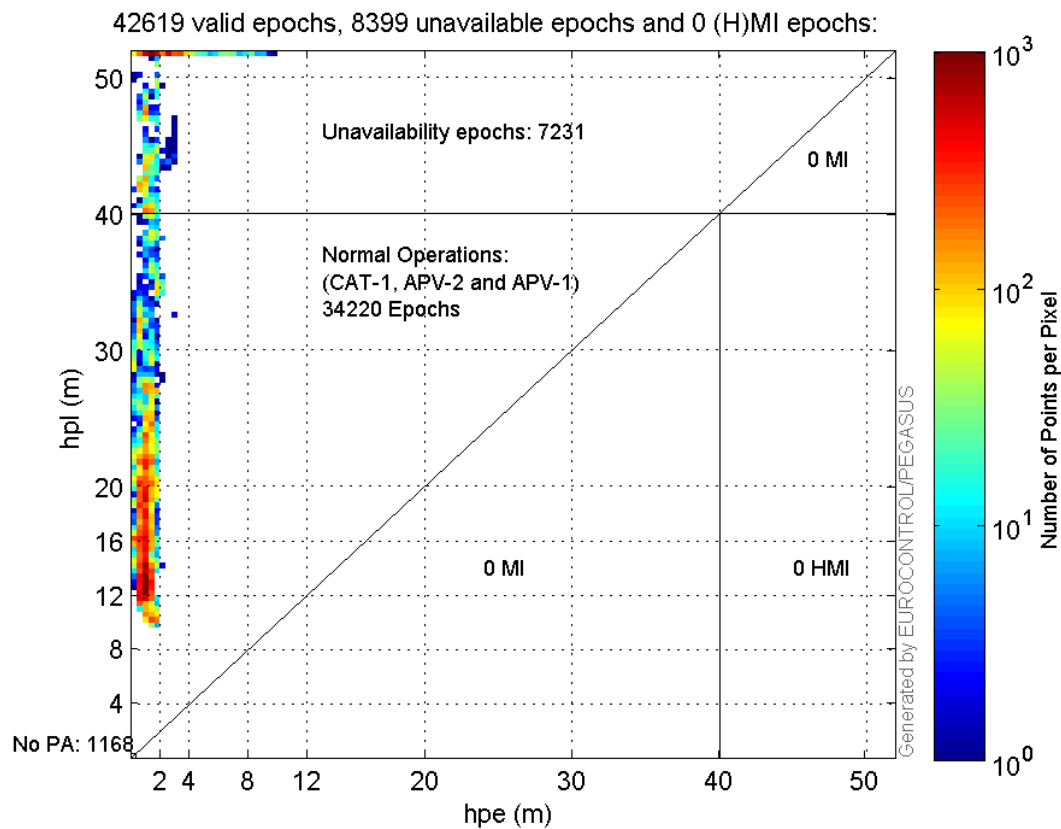


Histogram of VSI LPV200:

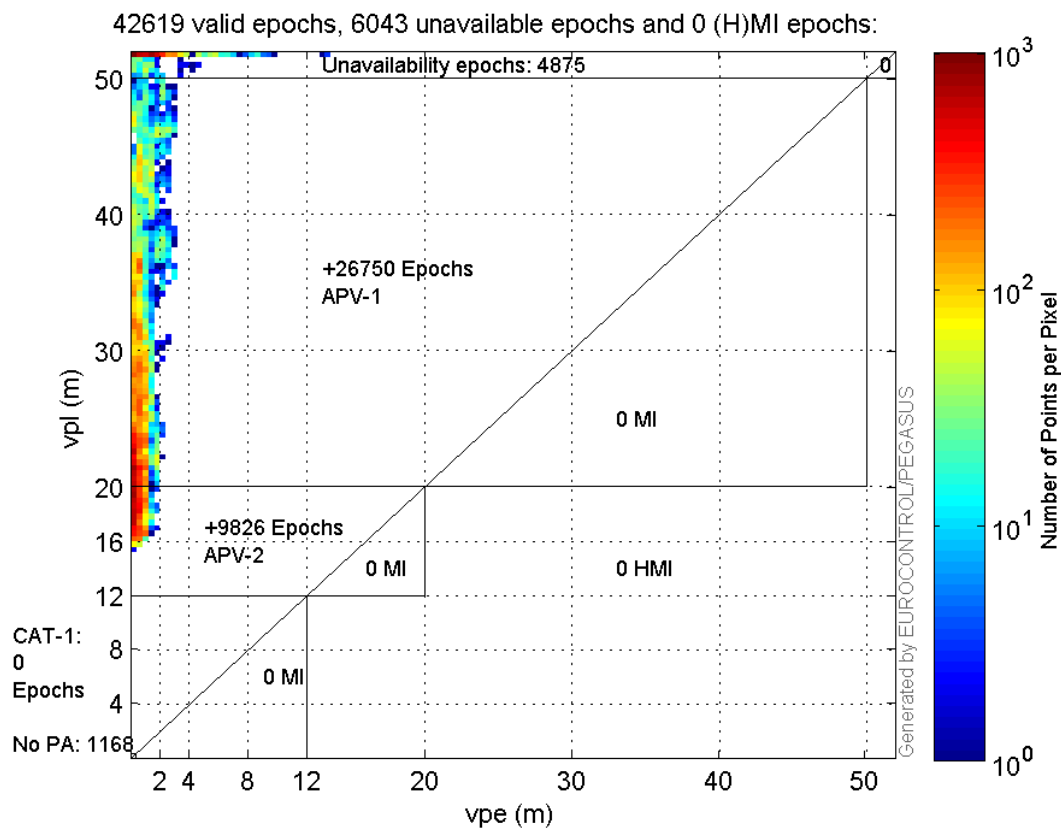


## Stanford Plots

Horizontal\_Stanford\_Plot\_SBAS:



**Vertical\_Stanford\_Plot\_SBAS:**



**Parameters**

system

Name	Section	Value
name	system	GNSS_Solution
version	system	4.8.4.0
input_prefix	system	D:/PegasusDateJob/job/2017_02_27EGNOS2Hz/02_Convertor/02_Convertor
output_prefix	system	D:/PegasusDateJob/job/2017_02_27EGNOS2Hz/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	50.439
init_lon	results	30.4297
init_alt	results	230.2388
mi_numbers	results	0

## Range Domain

**start:** 07:06:19 27.02.2017 ( week: 1938 sec: 111979 )  
**end:** 13:35:52.5 27.02.2017 ( week: 1938 sec: 135352.5 )  
**duration:** 06:29:34 ..

### quality

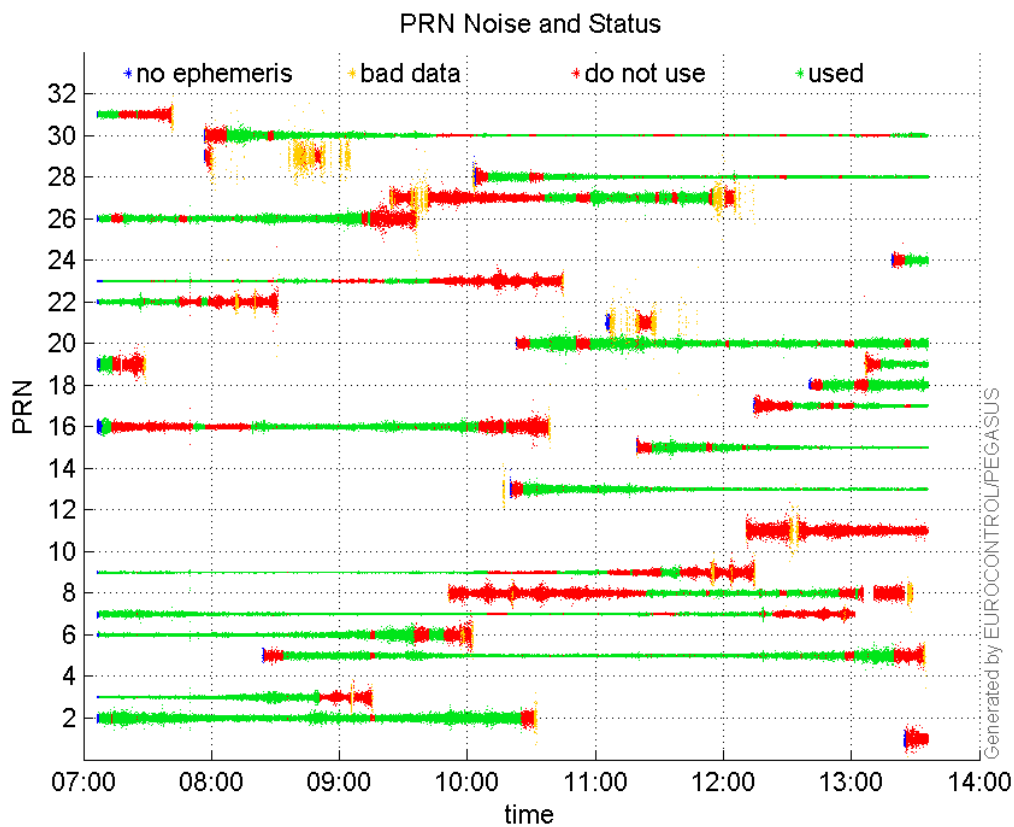
**valid samples** 43361  
**total samples** 43361

### PRN overview

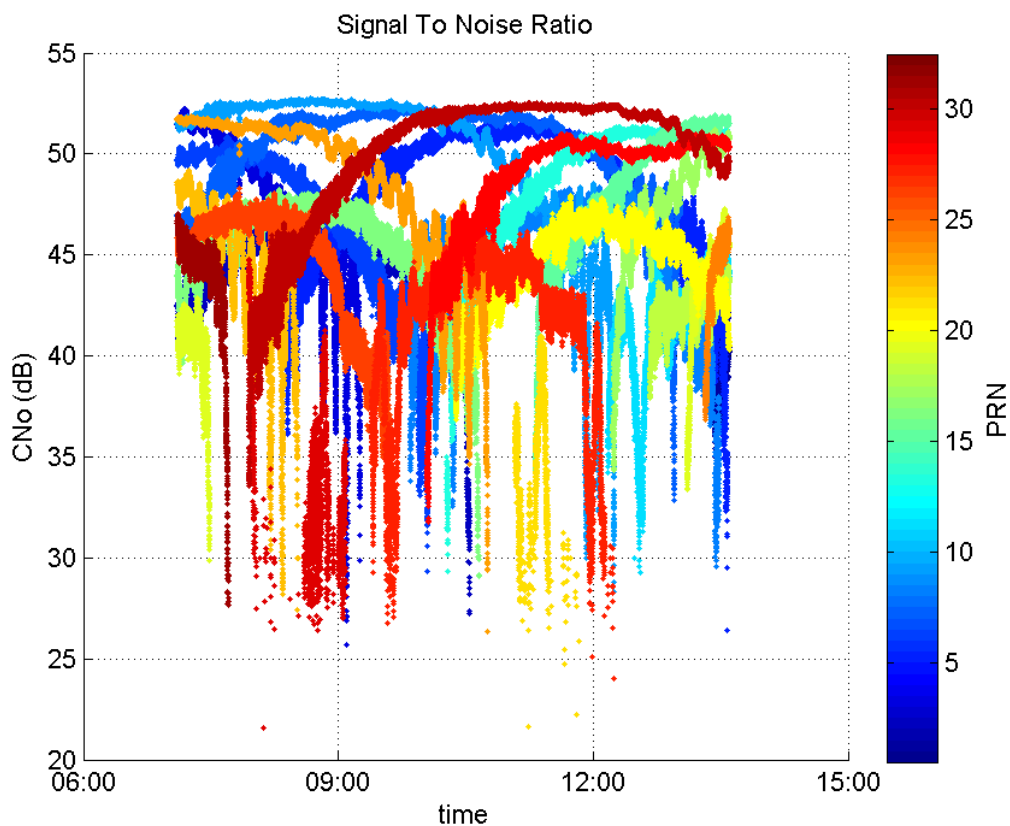
**Number of Visible GPS Satellites** 26  
**Number of Visible SBAS Satellites** 2

### signal quality and status

**PRN Noise and Status:**



**Signal To Noise Ratio:**



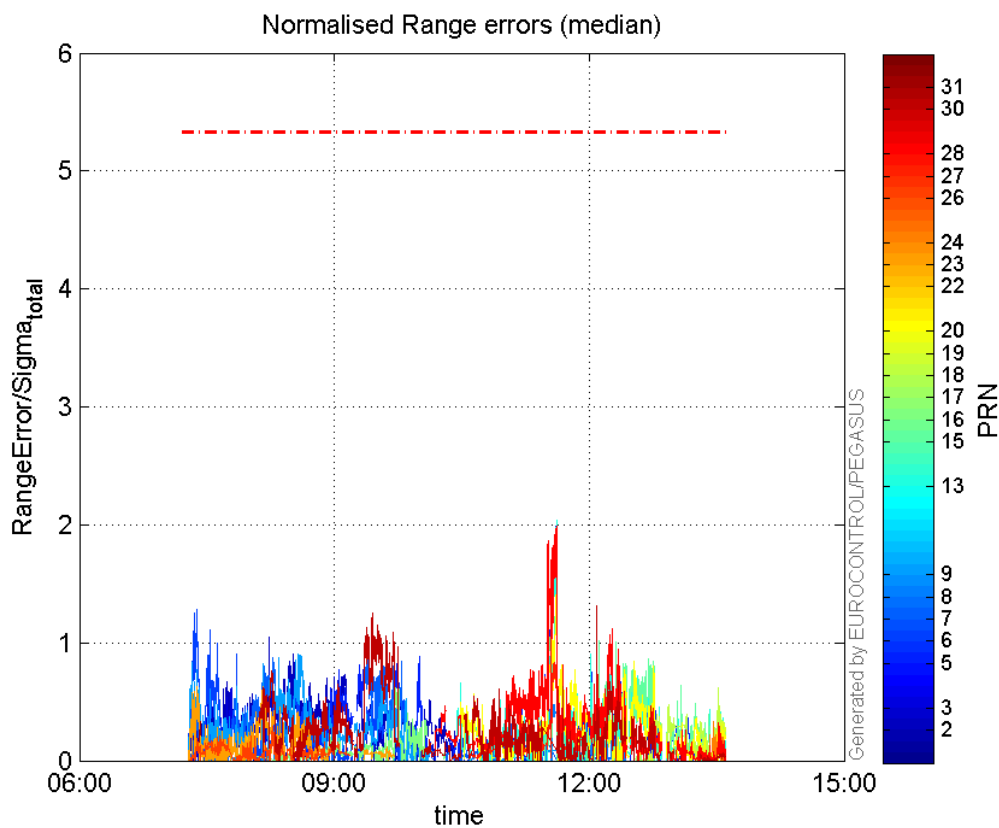
range errors

**Number of Overbounding Norm Errors 0**

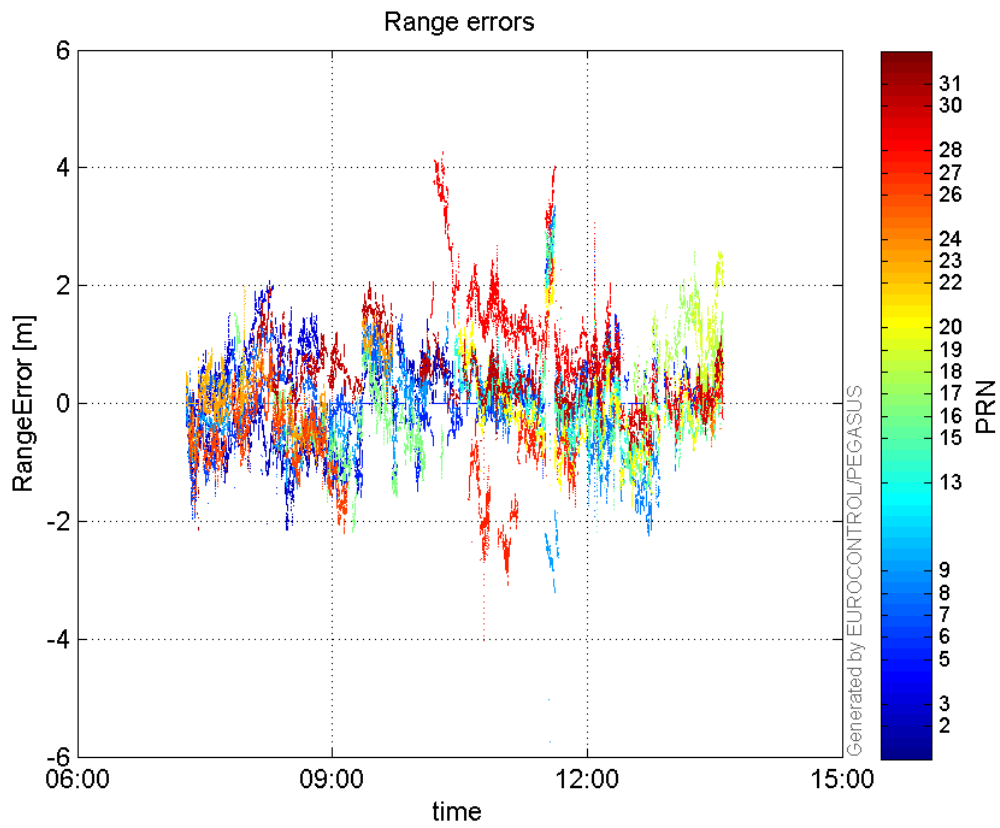
## Max Norm Errors :

GPS Week	GPS Second	PRN	Norm Error	Range Error	Sigma
1938	116045	2	1.05059	-2.04846	1.94983
1938	114430	3	0.621629	1.53876	2.47536
1938	128217	5	2.01764	3.17723	1.57473
1938	112969	6	1.28377	-1.92433	1.49897
1938	120222	7	0.933336	1.46432	1.56891
1938	132157	8	0.65125	-2.19619	3.37227
1938	117279	9	0.899986	-1.34246	1.49165
1938	128217	13	2.03424	3.0538	1.5012
1938	128220	15	1.35124	3.15072	2.33173
1938	121372	16	0.613693	-1.35244	2.20377
1938	135341	17	0.317826	1.54607	4.86453
1938	135084	18	0.620784	1.53431	2.47158
1938	135266	19	0.330015	2.58545	7.83433
1938	128220	20	1.45978	2.46583	1.68918
1938	115089	22	0.210298	1.97287	9.38135
1938	115769	23	0.627142	1.01154	1.61293
1938	134857	24	0.329611	-0.72978	2.21407
1938	116174	26	0.291534	1.03168	3.53879
1938	128111	27	0.834364	2.43805	2.92205
1938	128211	28	1.9859	3.99091	2.00962
1938	129900	30	1.31317	2.75771	2.10005
1938	113117	31	0.328311	-2.13637	6.50716

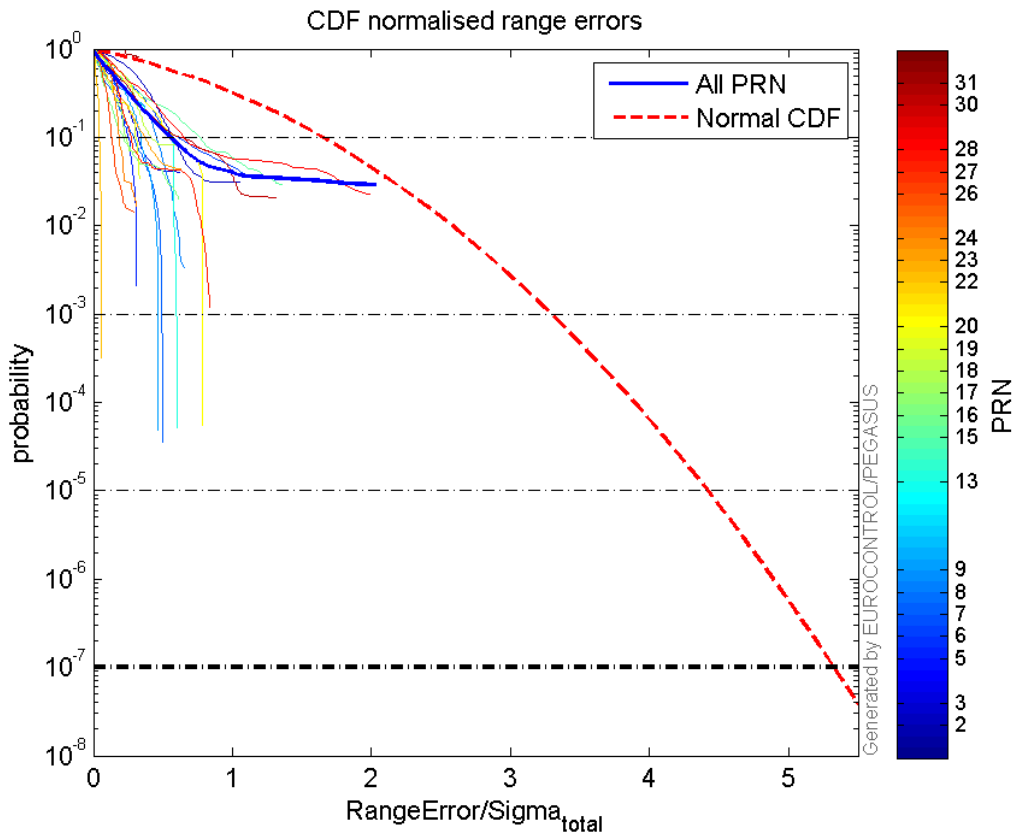
## Normalised Range errors (median):



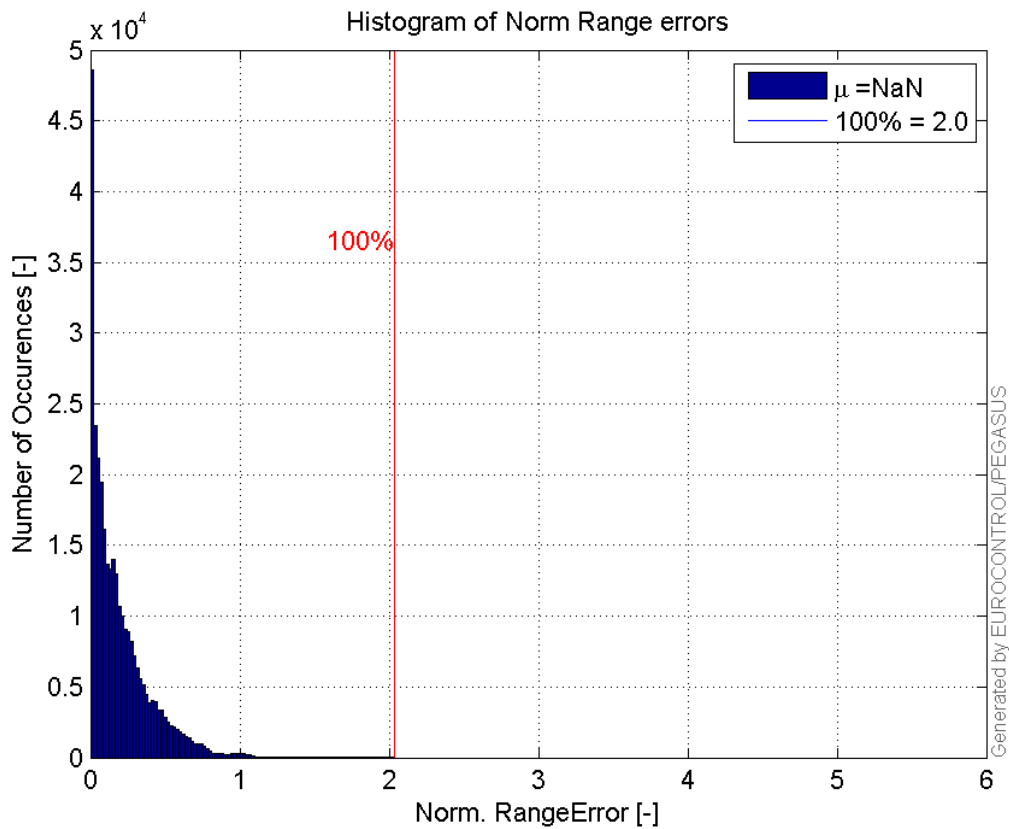
Range errors:



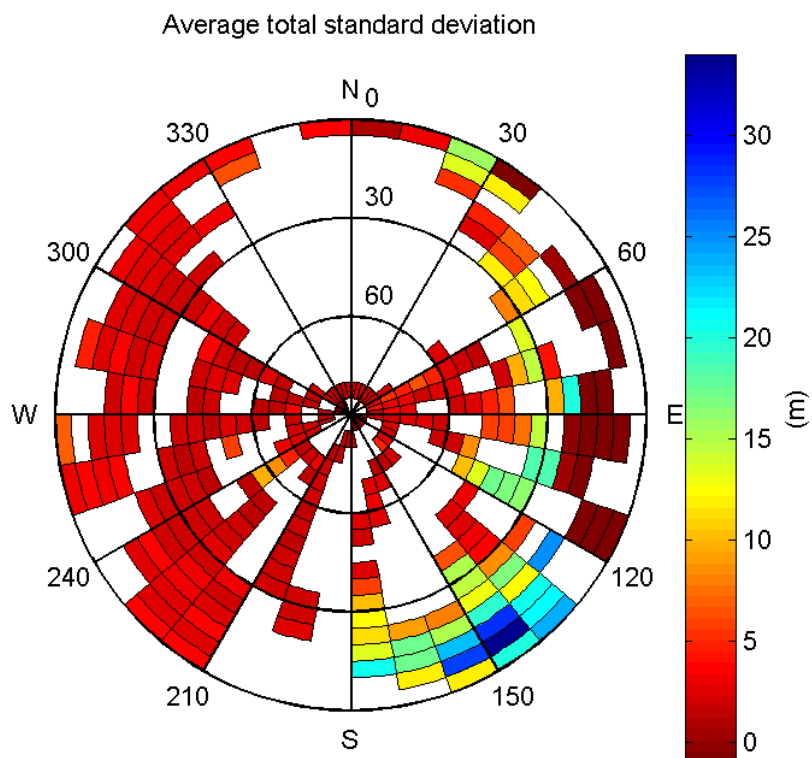
CDF normalised range errors:



Histogram of Norm Range errors:

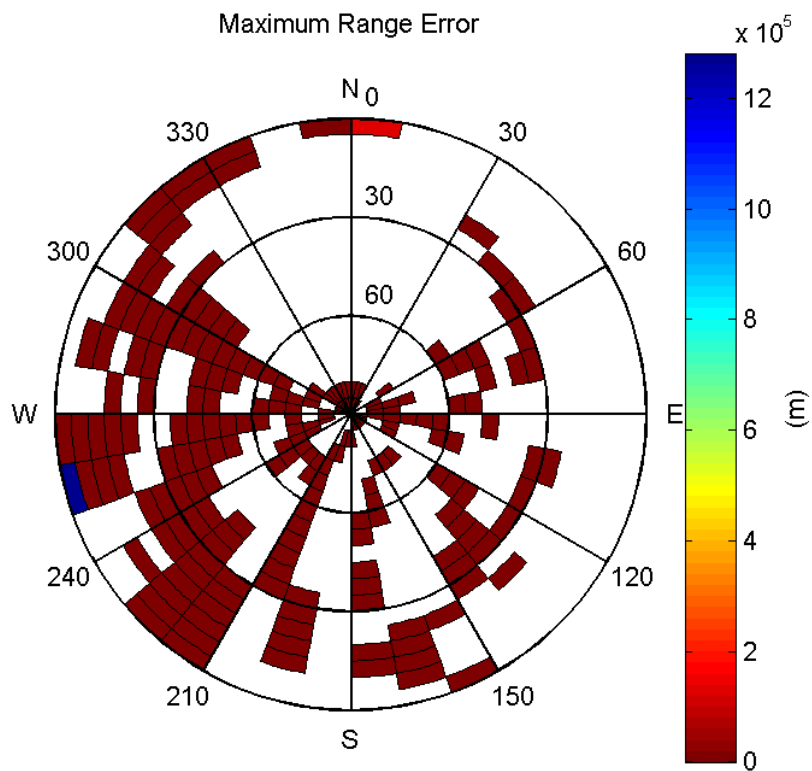


**Sigma Sky Plot:**



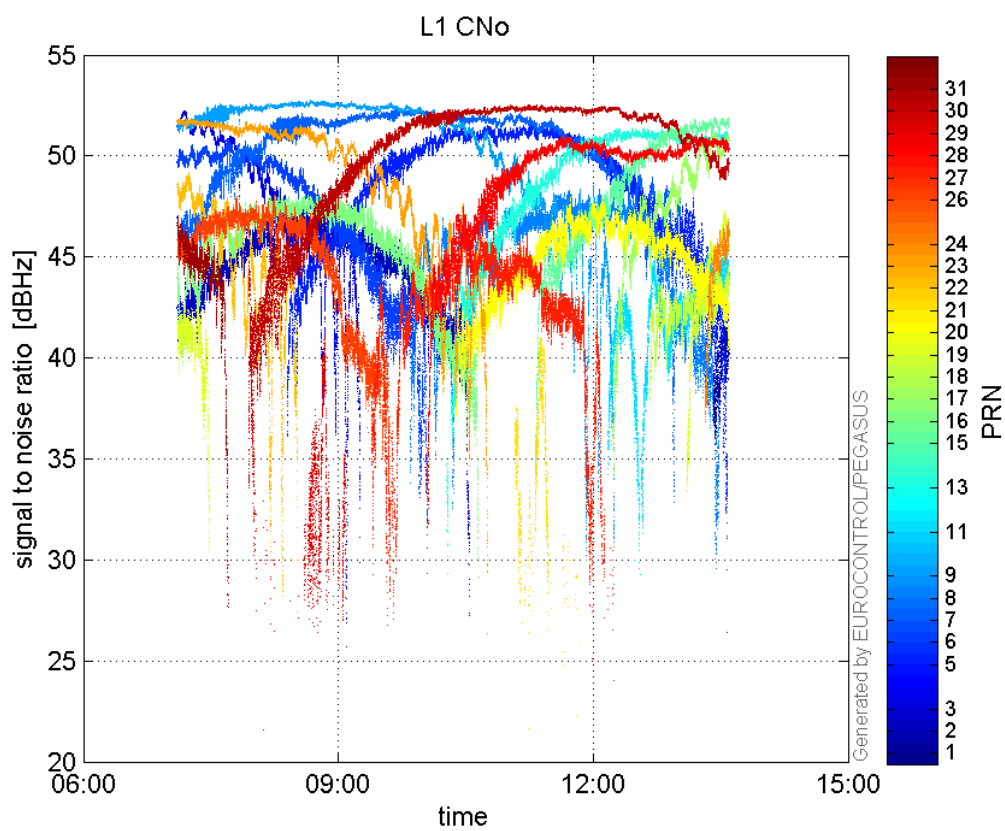
**Norm Error Sky Plot:**



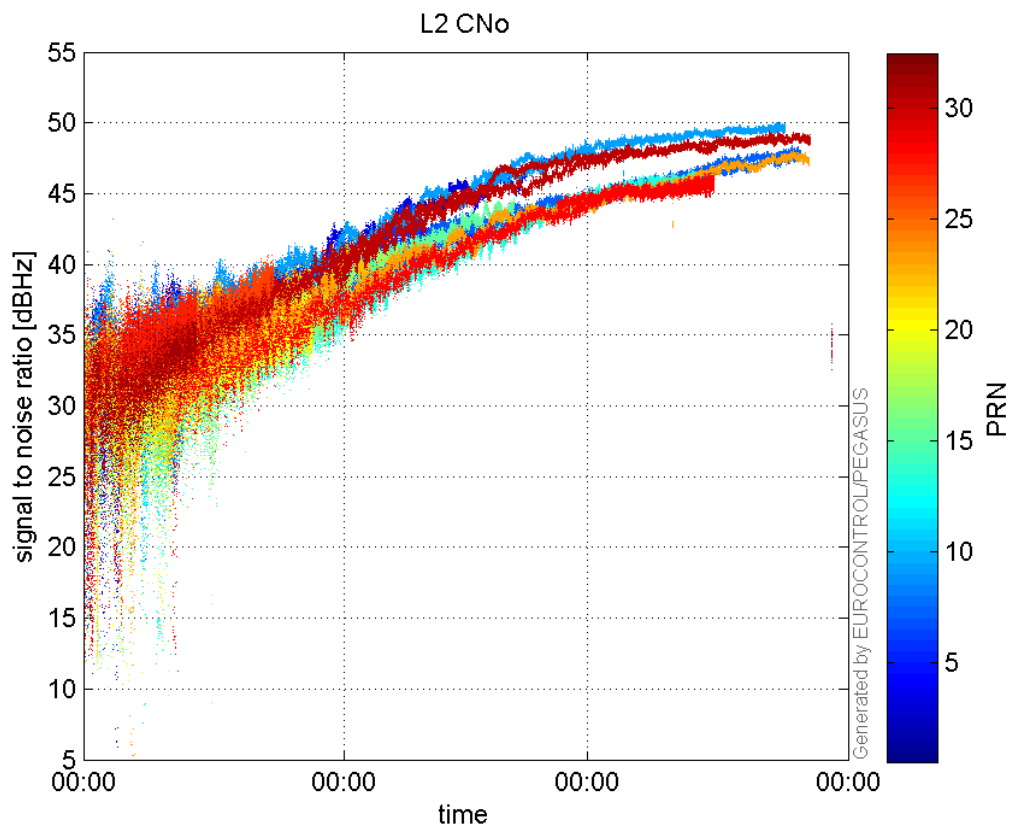


### signal quality

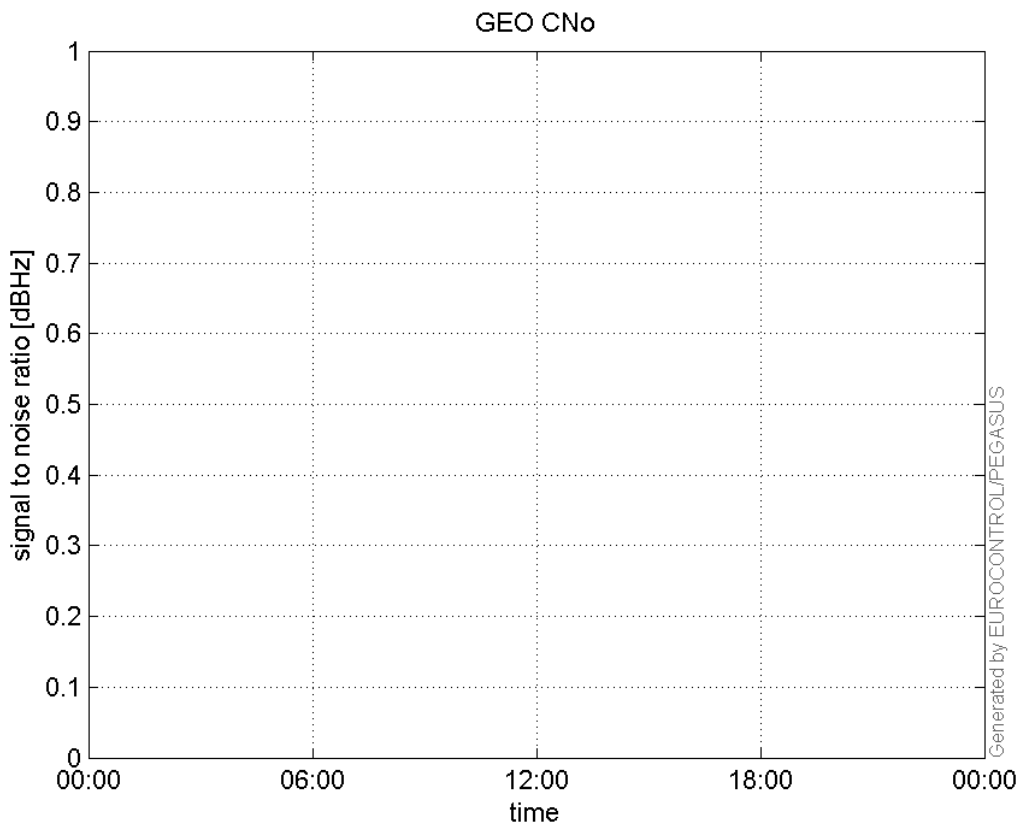
**L1 CNo:**



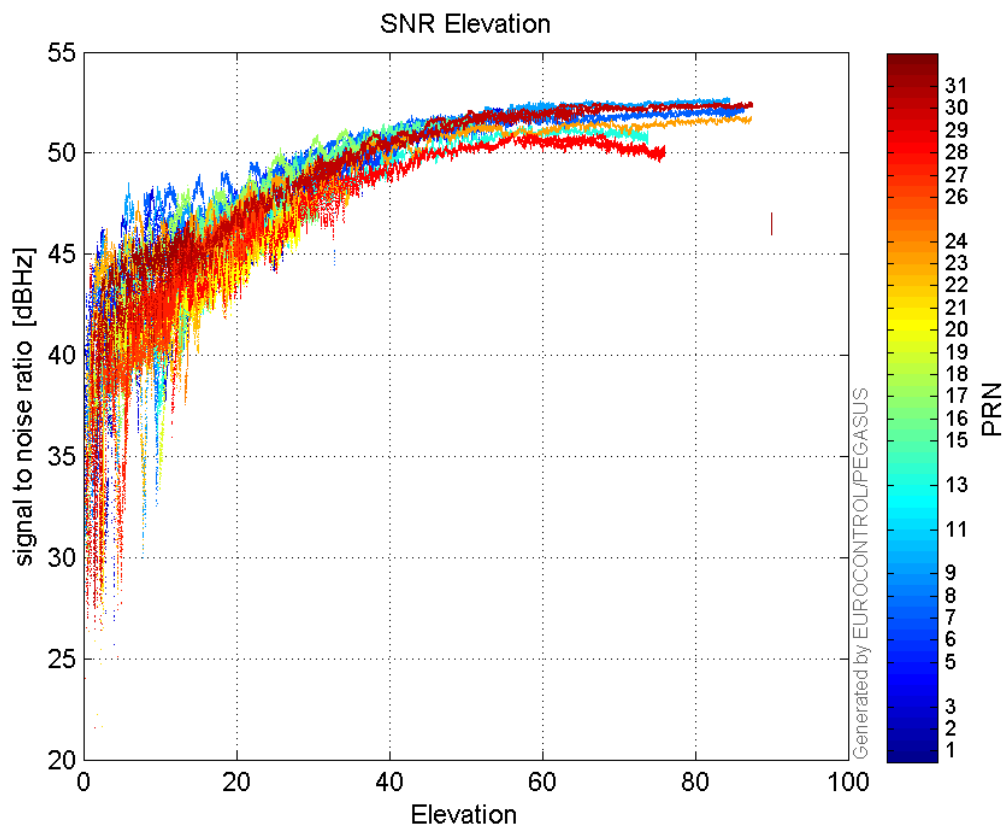
**L2 CNo:**



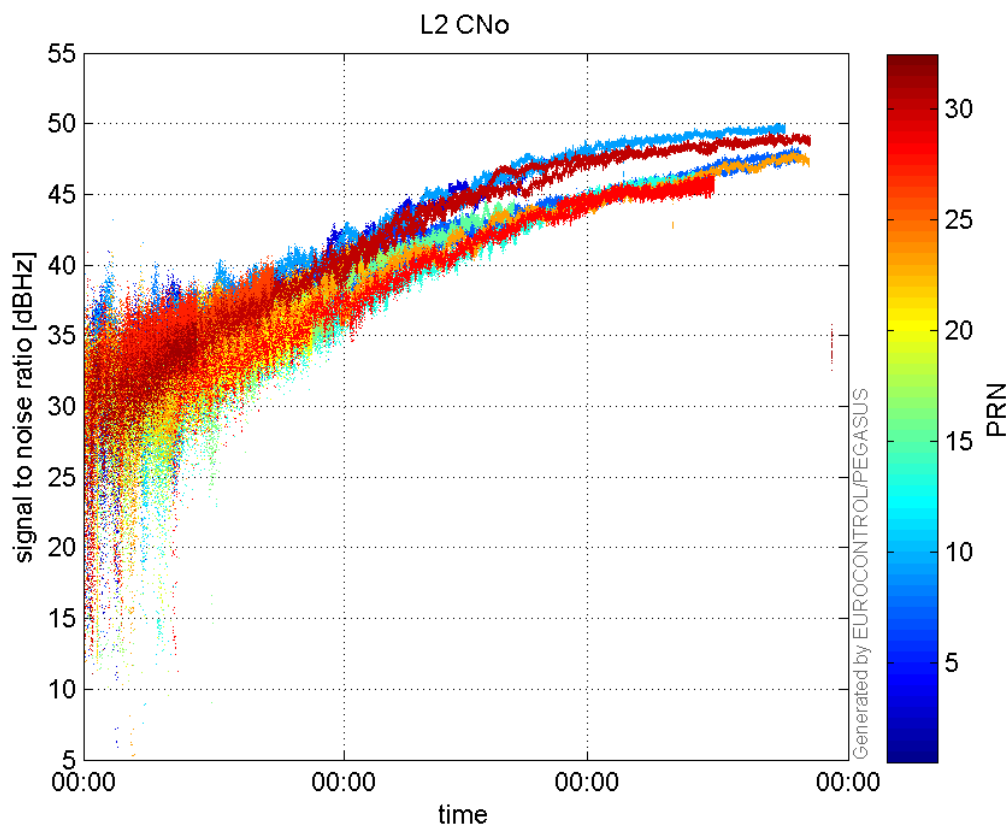
GEO CNo:



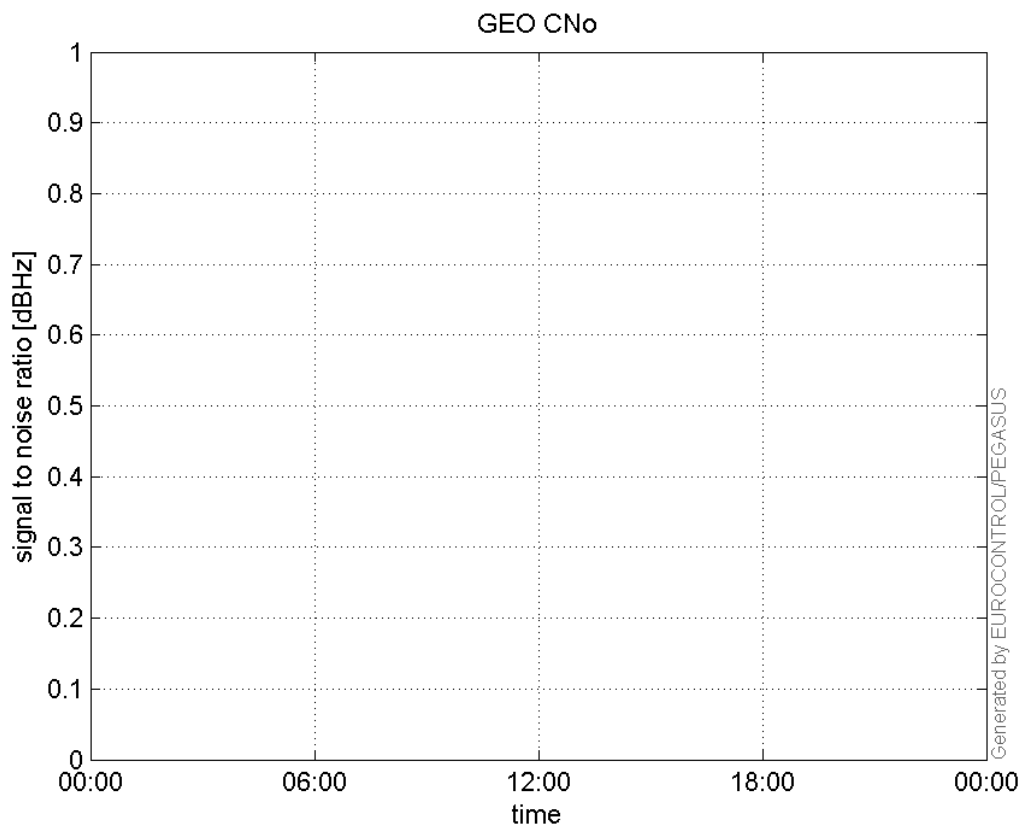
SNR Elevation:



L2 CNo:

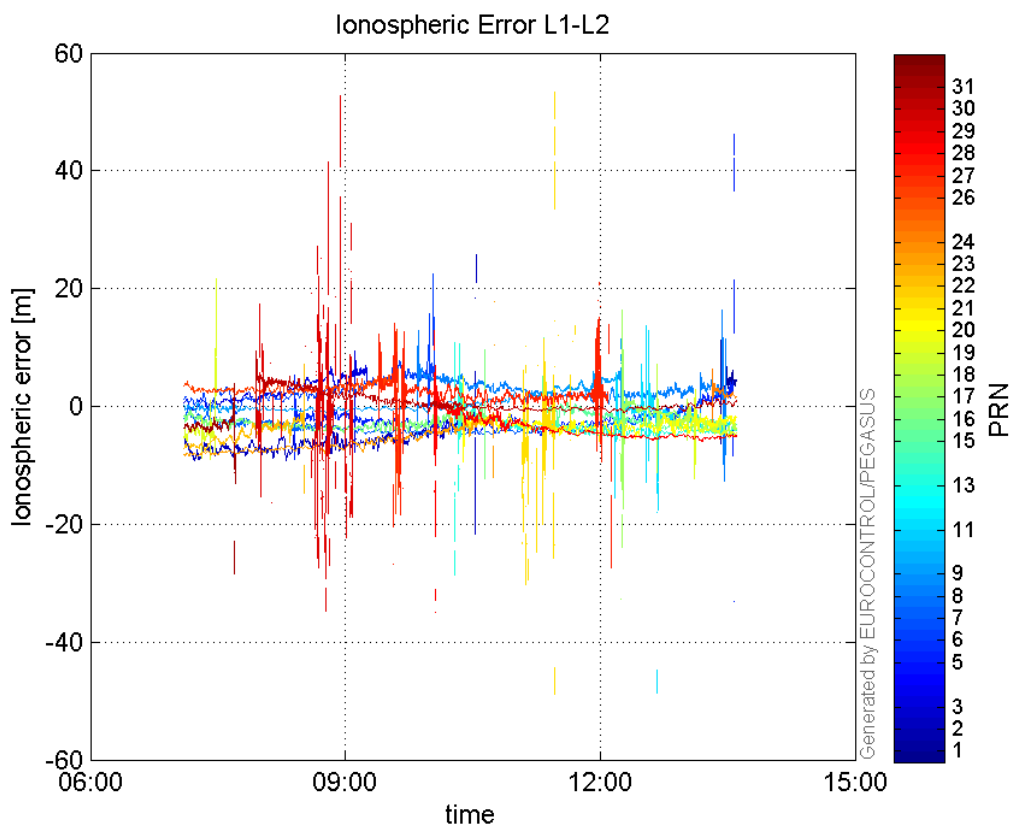


GEO CNo:



### dual frequency

#### 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/2017_02_27EGNOS2Hz/02_Convertor/02_Convertor
output_prefix	system	D:/PegasusDateJob/job/2017_02_27EGNOS2Hz/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	50.439
init_lon	results	30.4297
init_alt	results	230.2388
mi_numbers	results	0