

# 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 09/02/2017

## SBAS Messages

**start:** 07:24:45.129 02.02.2017 ( week: 1934 sec: 372285.129 )  
**end:** 13:11:2.129 02.02.2017 ( week: 1934 sec: 393062.129 )  
**duration:** 05:46:17 ..

### quality

**valid samples** 32182  
**total samples** 32182  
**number of SBAS PRNs** 2

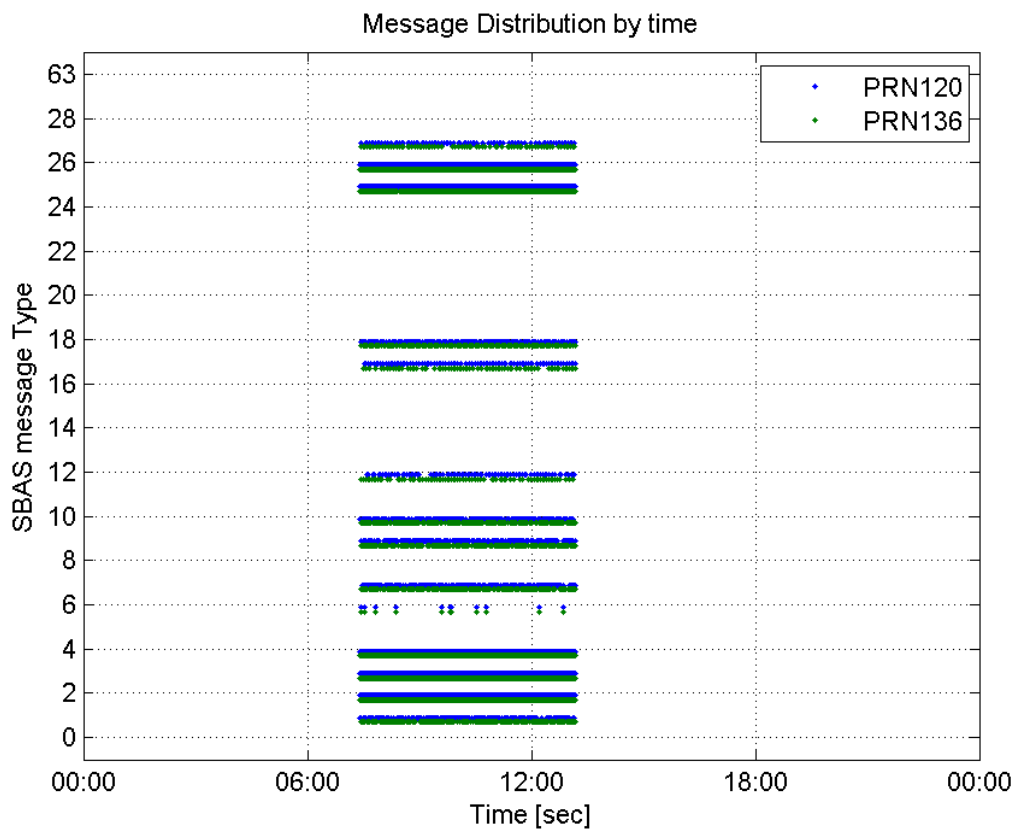
### SBAS SIS Overview

#### Message Type 6 repetitions :

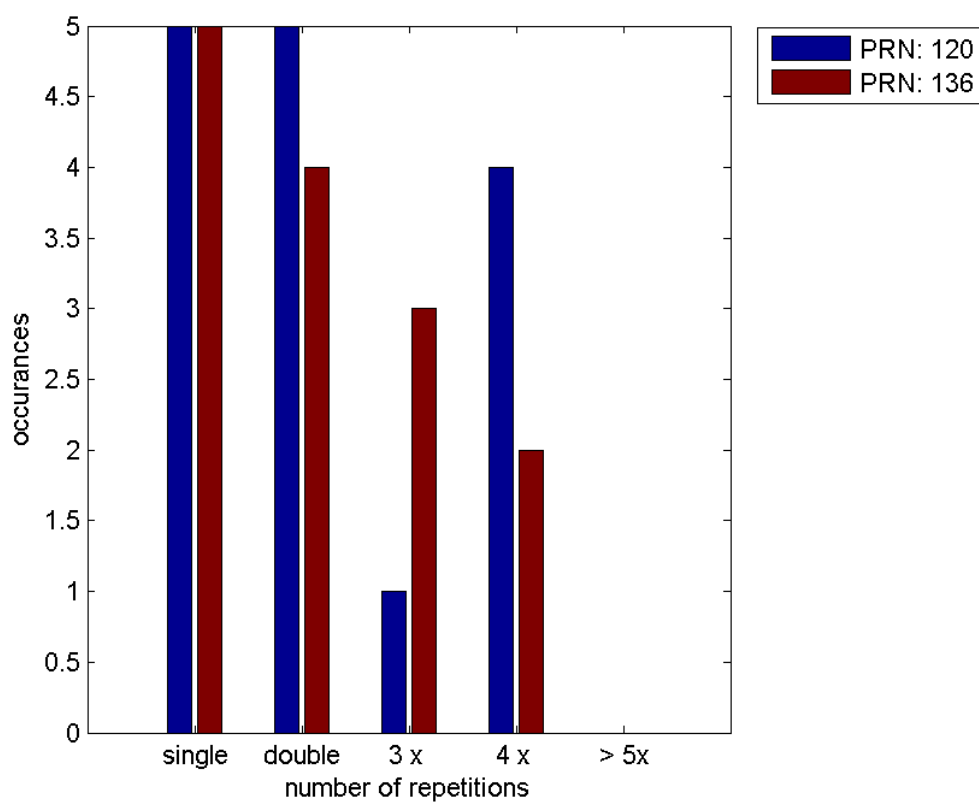
	single	double	3 x	4 x	> 5x
<b>PRN 120</b>	5	5	1	4	0
<b>PRN 136</b>	5	4	3	2	0

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#### Message Distribution by time:



**Message Type 6 repetitions:**



## Broadcast SBAS Messages :

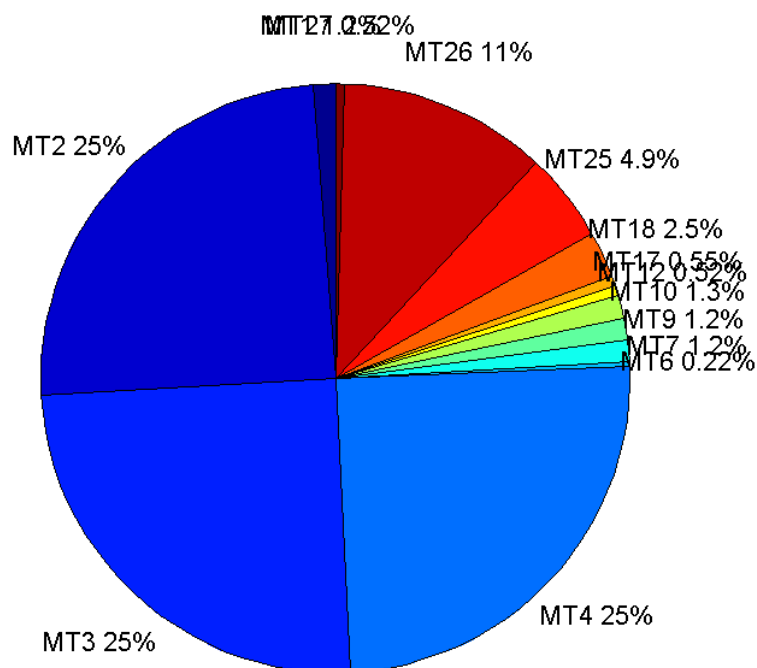
	number of messages	%
MT 0	0	0
MT 1	193	1.1998
MT 2	3974	24.7047
MT 3	4012	24.9409
MT 4	3993	24.8228
MT 5	0	0
MT 6	35	0.217581
MT 7	193	1.1998
MT 9	195	1.21223
MT 10	205	1.2744
MT 12	84	0.522193
MT 17	89	0.553276
MT 18	408	2.53637
MT 24	0	0
MT 25	791	4.91732
MT 26	1831	11.3826
MT 27	83	0.515977
MT 28	0	0
MT 62	0	0
MT 63	0	0
<b>Total</b>	16086	100

## Update intervals :

	Minimum [s]	Maximum [s]	Mean value	Exceed Max update	Exceed NPA timeout	Exceed PA timeout
MT 0	--	--	--	--	--	--
MT 1	76	480	107.422	41	0	0
MT 2	4	20	5.2293	1100	1	9
MT 3	4	20	5.17851	1072	1	12
MT 4	4	13	5.20416	1082	0	5
MT 5	--	--	--	--	--	--
MT 6	1	5027	574.382	10	10	10
MT 7	75	480	107.396	41	1	9
MT 9	76	480	106.686	0	0	0
MT 10	75	481	100.294	39	1	7
MT 12	188	1172	240.627	83	15	15
MT 17	188	394	231.398	0	0	0
MT 18	4	200	50.656	0	0	0
MT 24	--	--	--	--	--	--
MT 25	3	100	26.2962	0	0	0
MT 26	1	60	11.341	0	0	0
MT						

27	188	600	250.683	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	205	1.27361
MT 2	4000	24.8509
MT 3	4030	25.0373
MT 4	3985	24.7577
MT 5	0	0
MT 6	31	0.192594
MT 7	209	1.29846
MT 9	202	1.25497
MT 10	208	1.29225
MT 12	77	0.47838
MT 17	75	0.465954

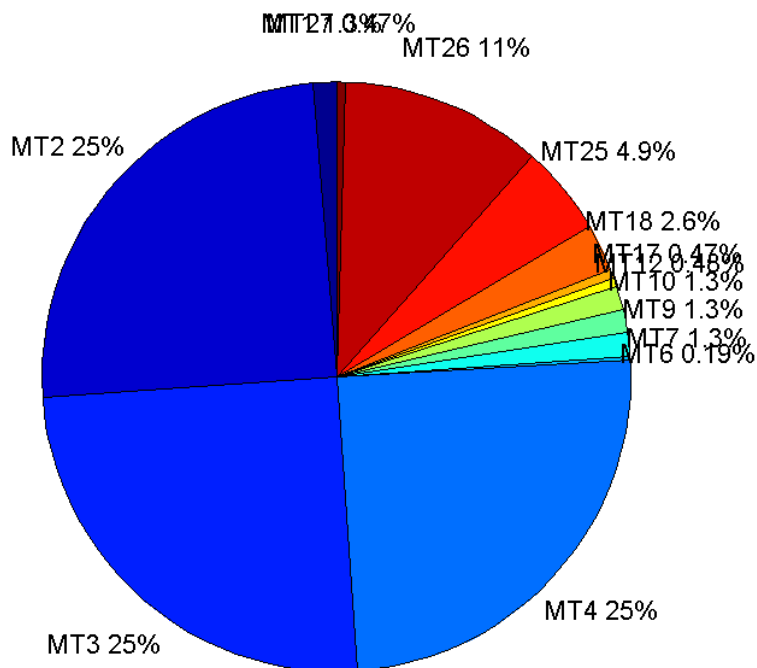
MT 18	424	2.63419
MT 24	0	0
MT 25	795	4.93912
MT 26	1779	11.0524
MT 27	76	0.472167
MT 28	0	0
MT 62	0	0
MT 63	0	0
<b>Total</b>	16096	100

## Update intervals :

	Minimum [s]	Maximum [s]	Mean value	Exceed Max update	Exceed NPA timeout	Exceed PA timeout
MT 0	--	--	--	--	--	--
MT 1	76	400	101.137	36	0	0
MT 2	4	20	5.19405	1082	1	8
MT 3	4	16	5.15637	1057	0	4
MT 4	4	20	5.21436	1099	1	6
MT 5	--	--	--	--	--	--
MT 6	1	5025	650.967	10	10	10
MT 7	75	400	99.1346	32	1	6
MT 9	76	400	102.985	0	0	0
MT 10	76	399	100.034	36	1	6
MT 12	188	789	268.842	76	19	19
MT 17	189	989	276.108	0	0	0
MT 18	4	188	48.8038	0	0	0
MT 24	--	--	--	--	--	--
MT 25	1	132	26.1108	0	0	0
MT 26	1	76	11.685	0	0	0
MT 27	185	995	274.933	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_02EGNOS2Hz/01_User/01_User
Outputfile	System	D:/PegasusDateJob/job/2017_02_02EGNOS2Hz/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:** 07:24:45.5 02.02.2017 ( week: 1934 sec: 372285.5 )  
**end:** 13:11:03 02.02.2017 ( week: 1934 sec: 393063 )  
**duration:** 05:46:19 ..

#### quality

**valid samples** 37445  
**total samples** 38095

## Event tables

**Position discontinuity events type** long  
**APV-I discontinuity events type** too many (20)  
**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
max normHor	381908	1.54495	11.0861	0.13936	0.456503	19.6992	0.0231737
max normVer	389824	1.22113	20.0742	0.0608307	1.87452	17.3457	0.108068
max HPE	373961	6.44961	89.3758	0.0721628	6.15384	78.5785	0.0783145
max VPE	391570	5.53441	239.732	0.0230858	-7.51042	281.042	0.0267235
min HPL	391949	0.558325	8.62614	0.0647248	0.215039	14.2799	0.0150589
min VPL	383499	1.06159	9.26161	0.114623	0.546801	13.3522	0.0409521

Position discontinuity events :

#	Epoch	duration	stable period
1	373841	6	851
2	374145	5	19
3	377426	5.5	705
4	378790	174.5	217.5
5	381675	8.5	79.5
6	387977	340	462.5

## First Glance analysis

**Duration** 20779  
**Number of Samples** 38095  
**Number of invalid sample** 650  
**Number of no position solution samples** 1214  
**Number of missing sample** 3463  
**Logging Loss** 8.3329  
**Processing Loss** 1.7063  
**Number of Misleading Information** 0  
**Data gaps** 13  
**Discontinuities** 63

Number of Samples :

Valid	APV-1	LPV-200	CAT-1	APV-35m
36231	30436	29509	0	29509

Accuracy statistics :

	Valid	APV-1	LPV-200	CAT-1	APV-35m
HPE 95%	1.4213	1.24766	1.24416	NaN	1.24416
HPEscale 95%	NaN	3.41842	3.4316	NaN	3.4316
VPE 95%	1.45896	1.41014	1.40804	NaN	1.40804
VPEscale 95%	NaN	3.65003	2.56915	NaN	2.56915

## Availability :

	Valid	APV-1	LPV-200	CAT-1	APV-35m
Signal in Space	0.967579	0.812819	0.788062	0	0.788062
measurements	0.95107	0.79895	0.774616	0	0.774616
Operational	1.74364	1.46475	1.42014	0	1.42014

## Discontinuity events :

	Valid	APV-1	LPV-200	CAT-1	APV-35m
All	50	96	126	--	126
Long	6	23	32	--	32
Independent	6	20	23	--	23
P(disc.)	0.00248406	0.00985675	0.0116913	NaN	0.0116913
P(slide)	0.0204521	0.0458667	0.0550171	NaN	0.0550171

## 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

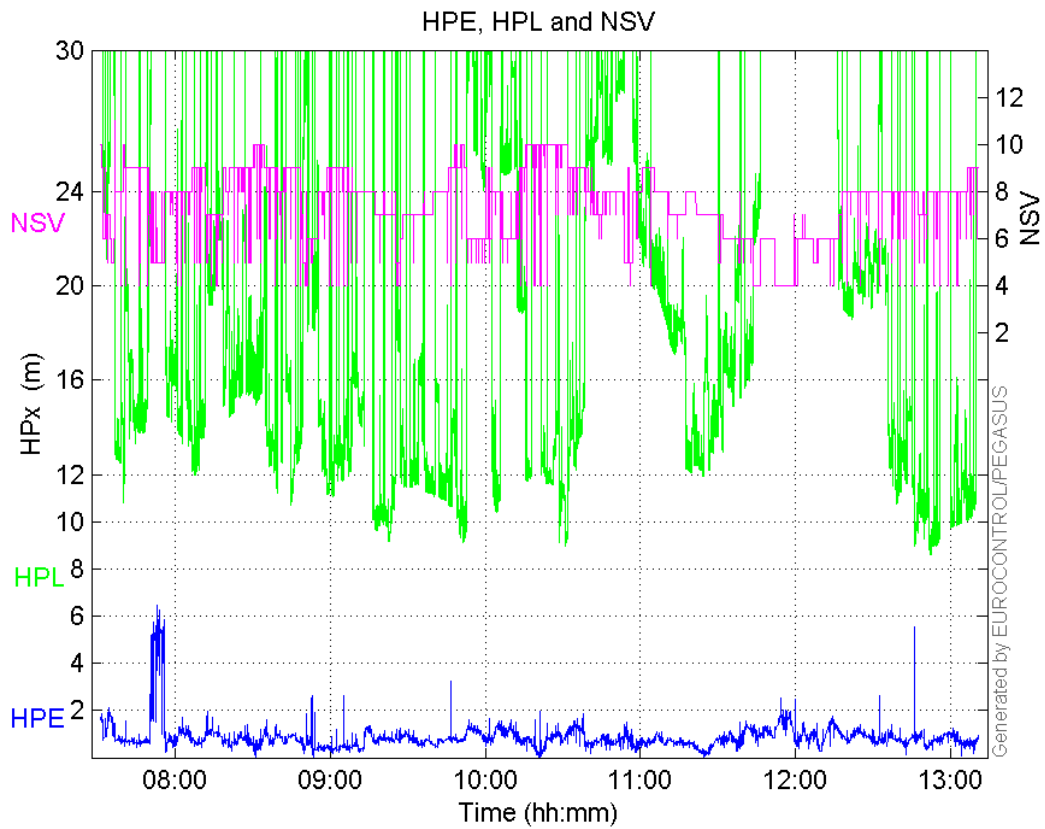
## Performance Summary :

	Valid	APV-1	LPV-200	CAT-1	APV-35m
Samples	36231	30436	29509	0	29509
SIS Availability	0.967579	0.812819	0.788062	0	0.788062
Local Availability	0.95107	0.79895	0.774616	0	0.774616
Operational Availability	1.74364	1.46475	1.42014	0	1.42014
HPE 95%	1.4213	1.24766	1.24416	NaN	1.24416
HPEScale 95%	NaN	3.41842	3.4316	NaN	3.4316
VPE 95%	1.45896	1.41014	1.40804	NaN	1.40804
VPEscale 95%	NaN	3.65003	2.56915	NaN	2.56915
All Discontinuity Events	50	96	126	--	126
Long Discontinuity Events	6	23	32	--	32
Independent Discontinuity Events	6	20	23	--	23
P(discontinuity)	0.00248406	0.00985675	0.0116913	NaN	0.0116913
P(sliding window)	0.0204521	0.0458667	0.0550171	NaN	0.0550171
All Integrity Events	0	0	0	0	0
Horizontal Integrity Events	0	0	0	0	0
Vertical Integrity Events	0	0	0	0	0

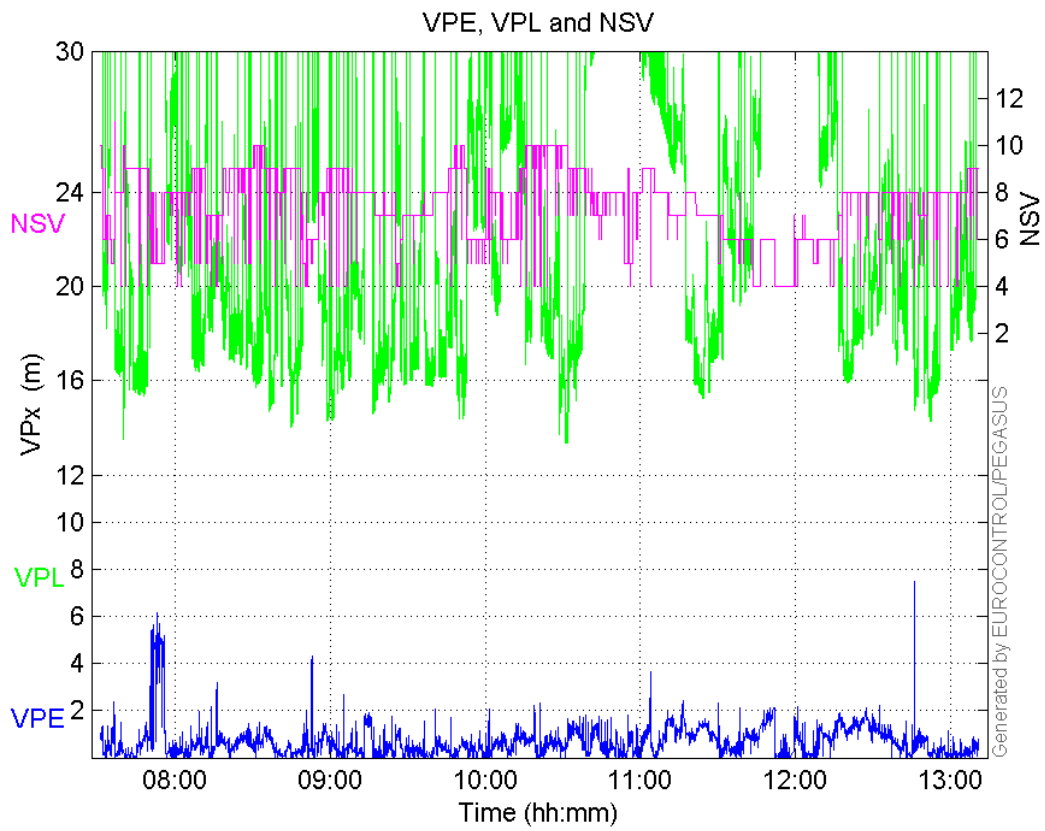
## Time Series

HPE, HPL and NSV:



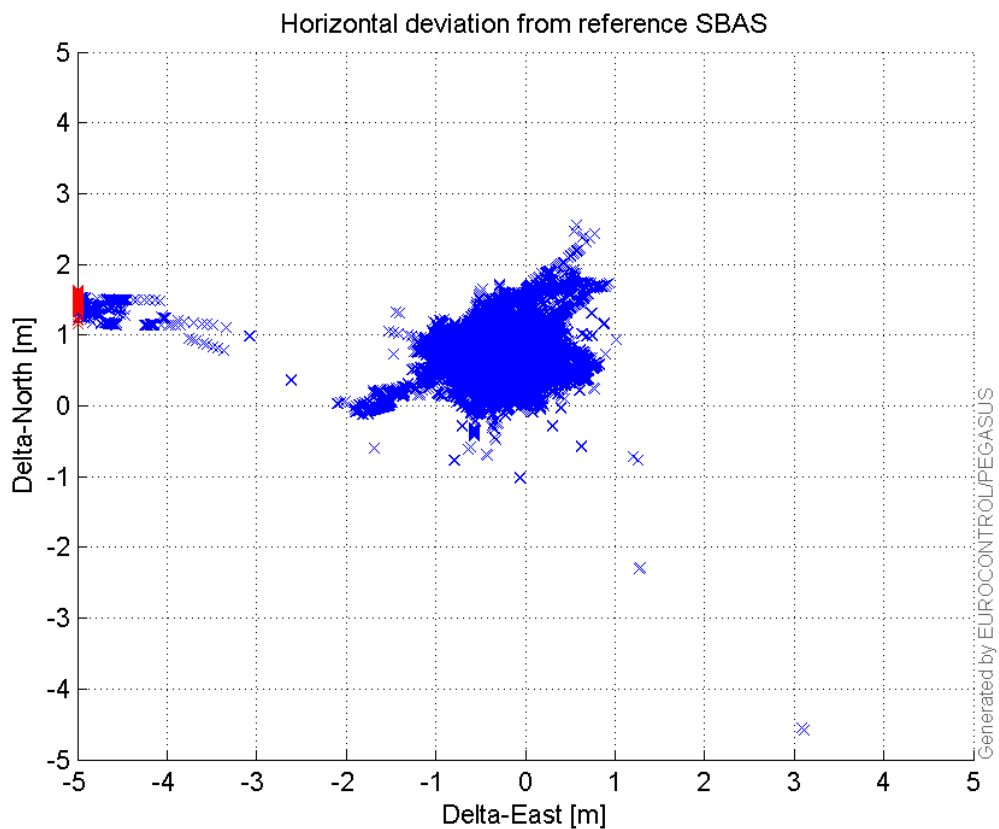


**VPE, VPL and NSV:**



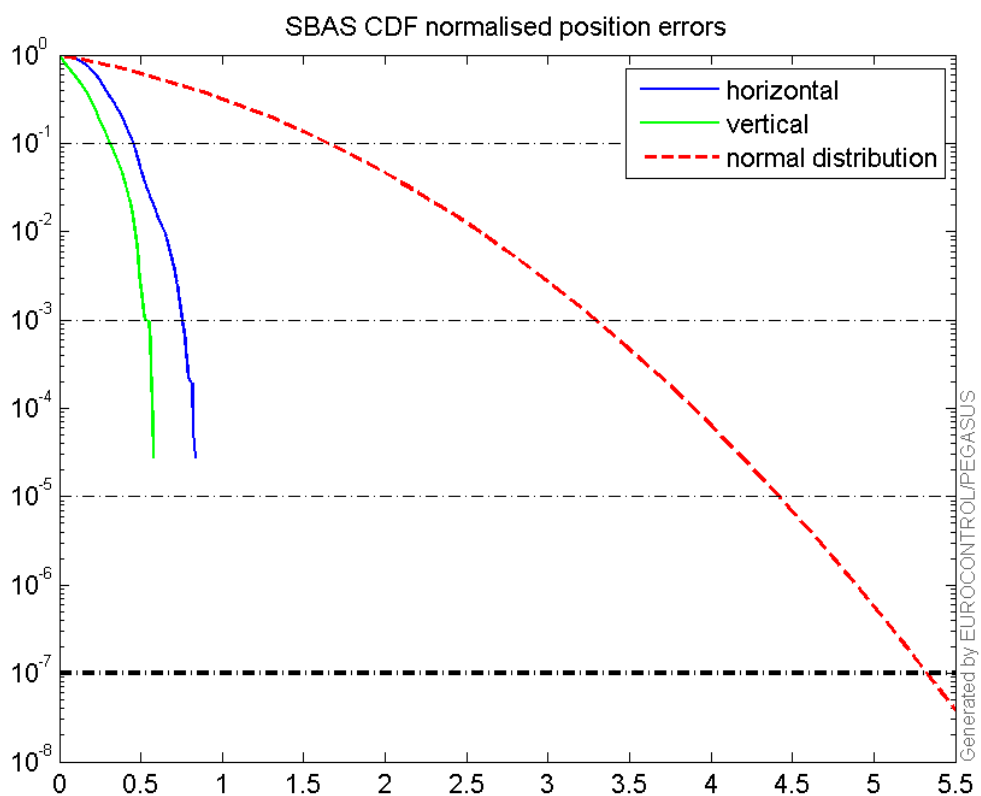
Horizontal deviation

**Horizontal deviation from reference SBAS:**



### CDF position

SBAS CDF position domain:



## Statistics

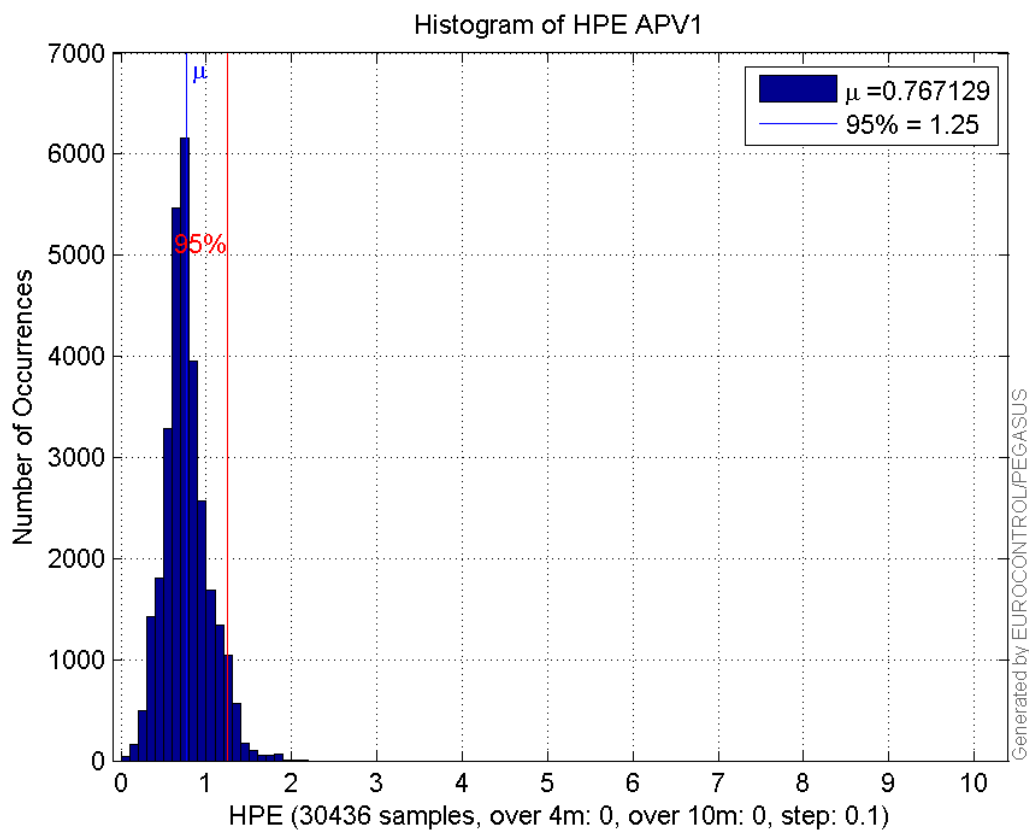
<b>number</b>	30436
<b>sum</b>	23348.353
<b>sum2</b>	19966.89
<b>prctile95</b>	1.2476648
<b>prctile99</b>	1.4801246
<b>number</b>	30436
<b>sum</b>	18217.295
<b>sum2</b>	16392.288
<b>prctile95</b>	1.4101442
<b>prctile99</b>	1.6924327
<b>number</b>	30436
<b>sum</b>	513419.02
<b>sum2</b>	9656323.1
<b>prctile95</b>	28.4204
<b>prctile99</b>	32.32354
<b>number</b>	30436
<b>sum</b>	648145.04
<b>sum2</b>	14746067
<b>prctile95</b>	32.92333
<b>prctile99</b>	38.130174
<b>number</b>	30436
<b>sum</b>	1500.7779
<b>sum2</b>	86.796235
<b>prctile95</b>	0.085460437
<b>prctile99</b>	0.10964698
<b>number</b>	30436
<b>sum</b>	894.90886
<b>sum2</b>	40.394255
<b>prctile95</b>	0.073000656
<b>prctile99</b>	0.088285647
<b>number</b>	29509
<b>sum</b>	22646.288
<b>sum2</b>	19364.189
<b>prctile95</b>	1.2441579
<b>prctile99</b>	1.4547343
<b>number</b>	29509
<b>sum</b>	17637.17
<b>sum2</b>	15847.929
<b>prctile95</b>	1.408044
<b>prctile99</b>	1.6875121
<b>number</b>	29509
<b>sum</b>	486705.98
<b>sum2</b>	8881505.5
<b>prctile95</b>	26.545905
<b>prctile99</b>	31.963626
<b>number</b>	29509
<b>sum</b>	612688.75
<b>sum2</b>	13382166
<b>prctile95</b>	30.654815
<b>prctile99</b>	33.695392
<b>number</b>	29509
<b>sum</b>	1476.6318
<b>sum2</b>	86.10564

**prctile95** 0.085790005  
**prctile99** 0.11006828  
**number** 29509  
**sum** 879.89909  
**sum2** 40.035689  
**prctile95** 0.073404227  
**prctile99** 0.088447861

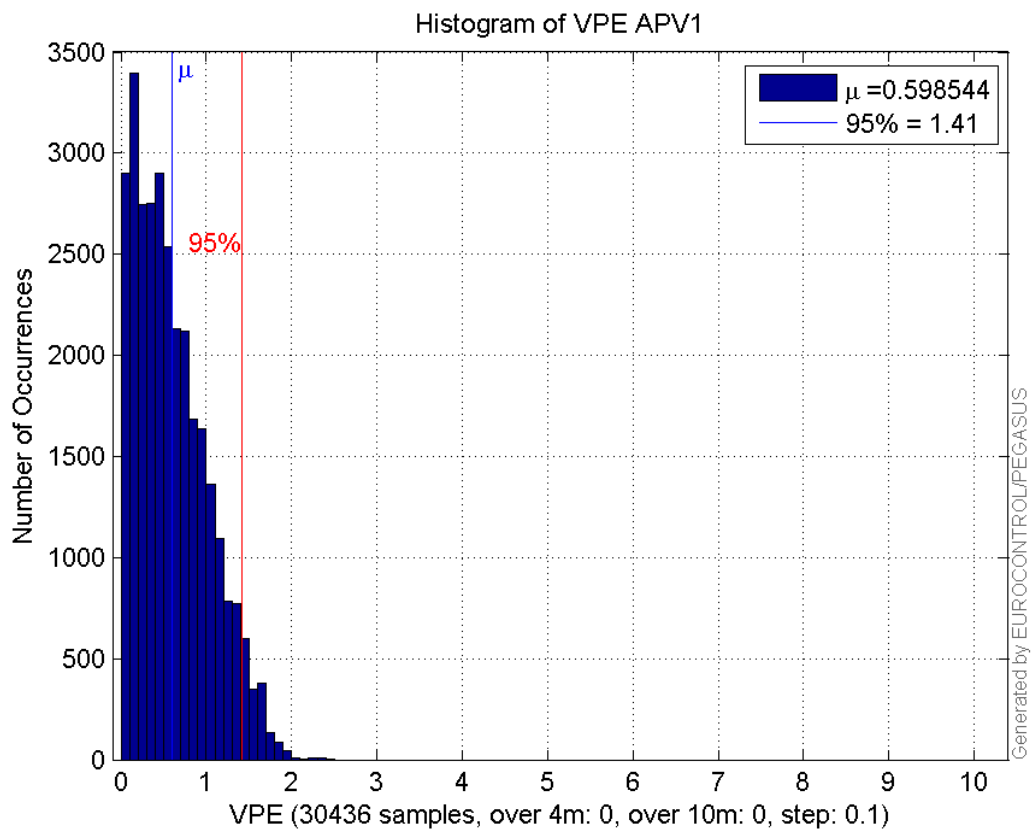
**Error and XPL Statistics :**

	Mean Value	Standard Deviation	50% Value	95% Value	99% Value	RMS Value
HPE	0.767129	0.259891	0.743309	1.24766	1.48012	0.809956
HPL	16.8688	5.71935	15.2356	28.4204	32.3235	17.812
VPE	0.598544	0.424656	0.521764	1.41014	1.69243	0.733882
VPL	21.2953	5.56809	19.5607	32.9233	38.1302	22.0112

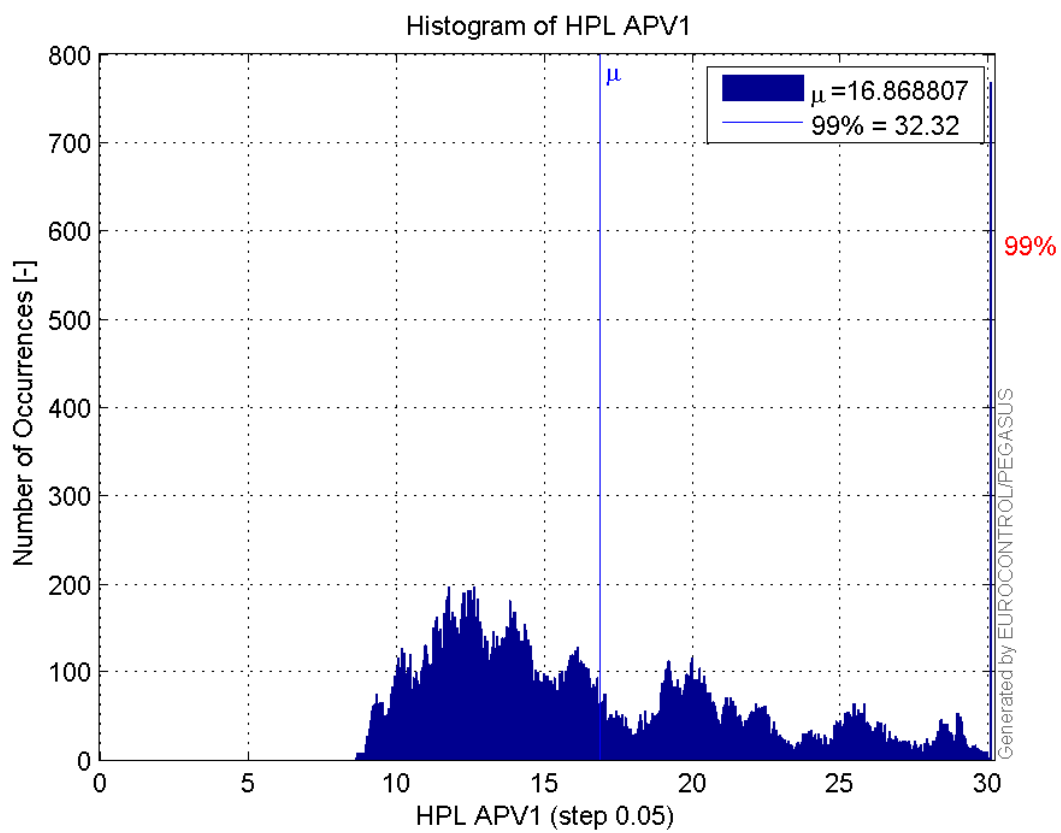
**Histogram of HPE APV1:**



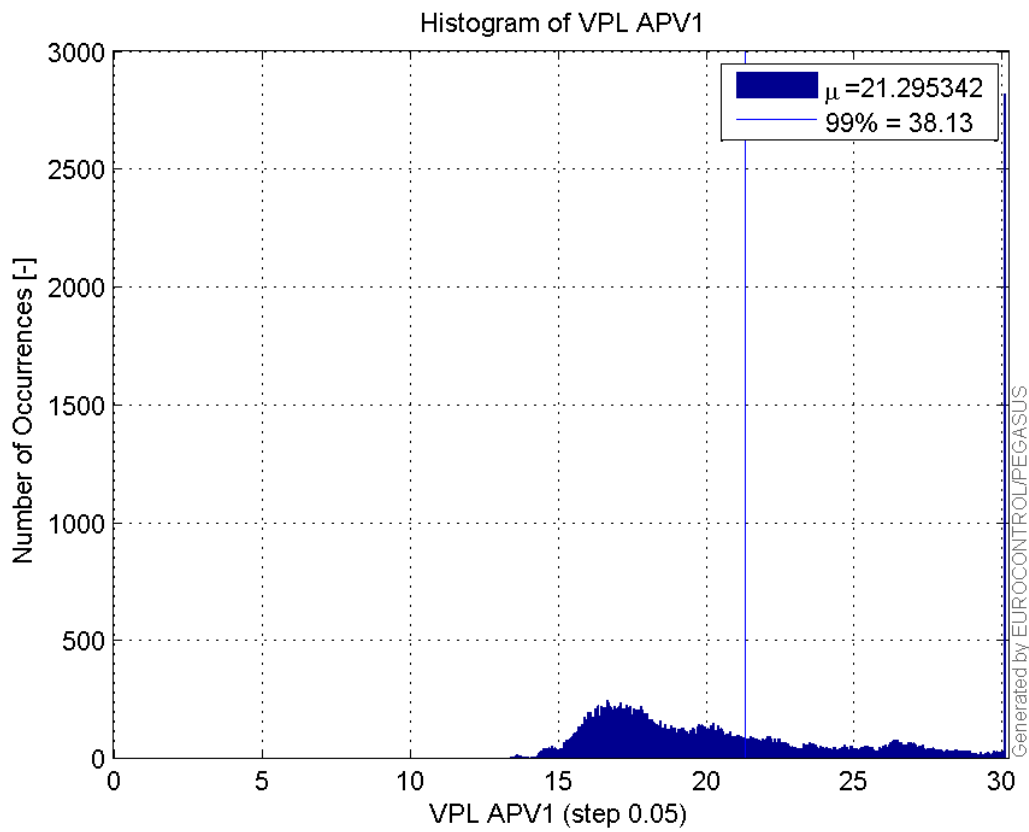
**Histogram of VPE APV1:**



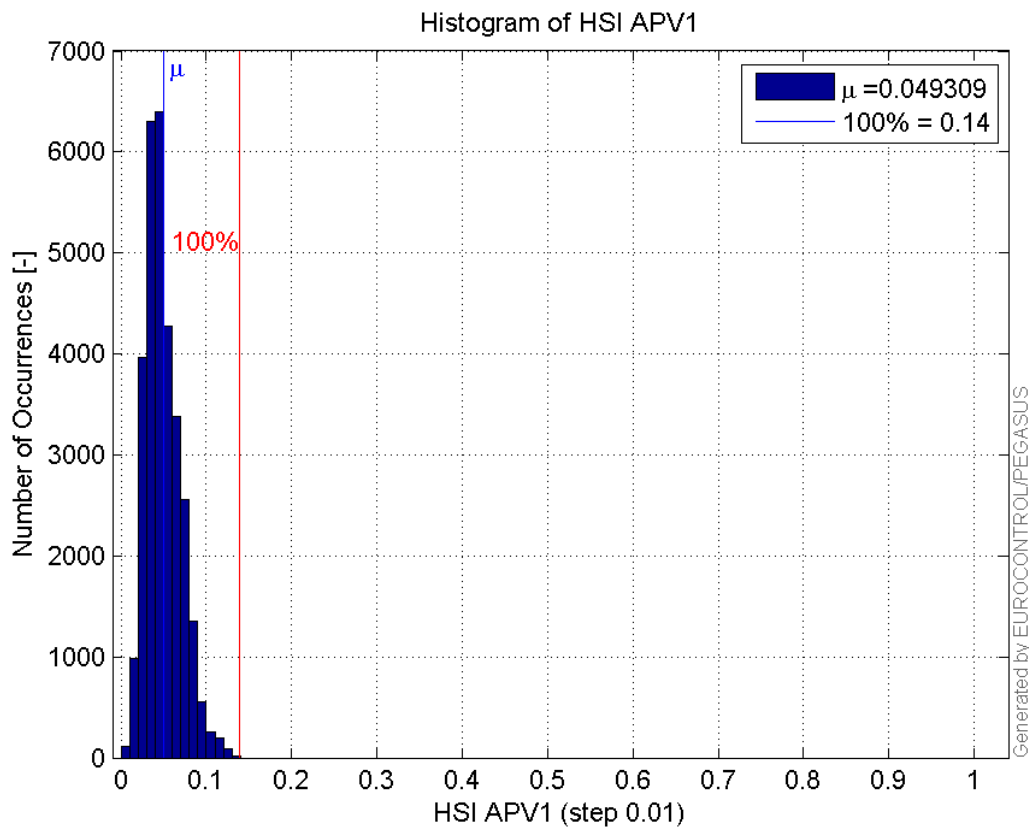
**Histogram of HPL APV1:**



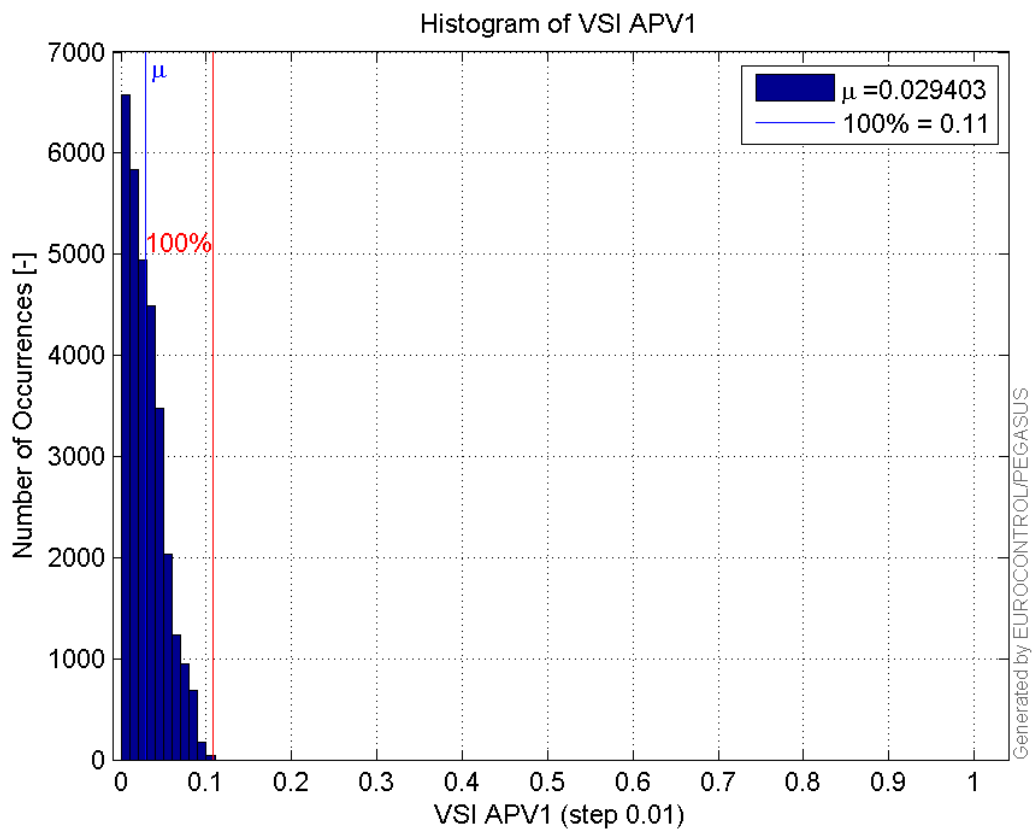
**Histogram of VPL APV1:**



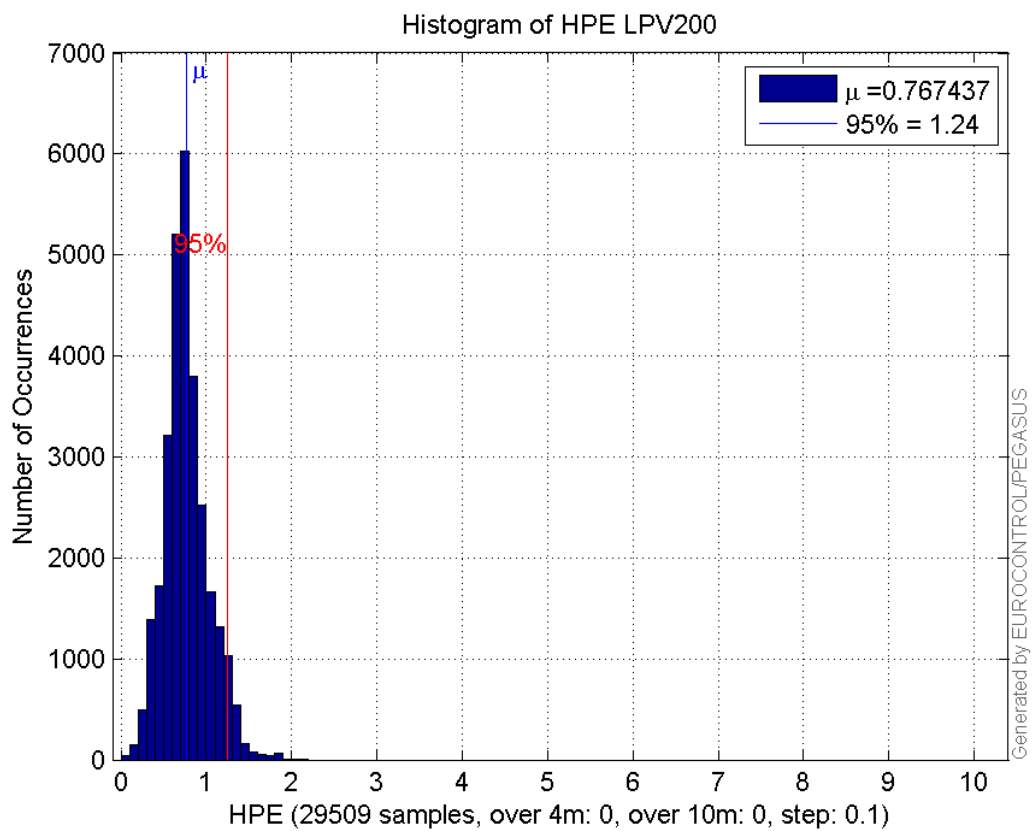
**Histogram of HSI APV1:**



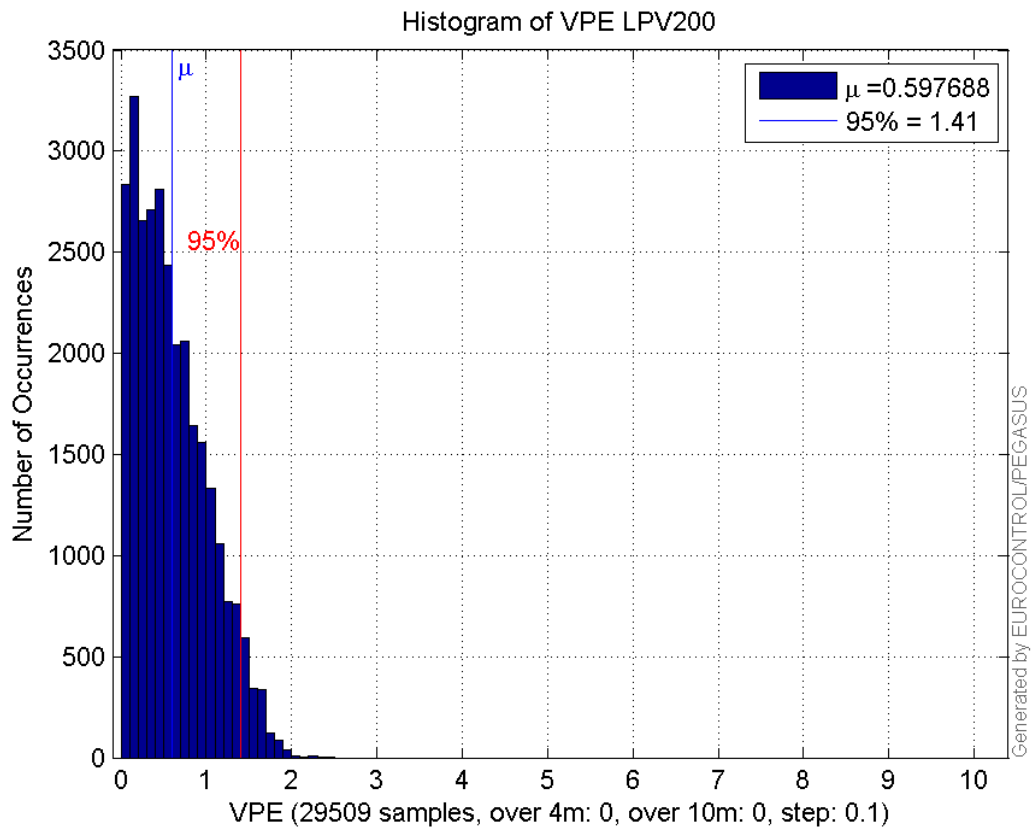
**Histogram of VSI APV1:**



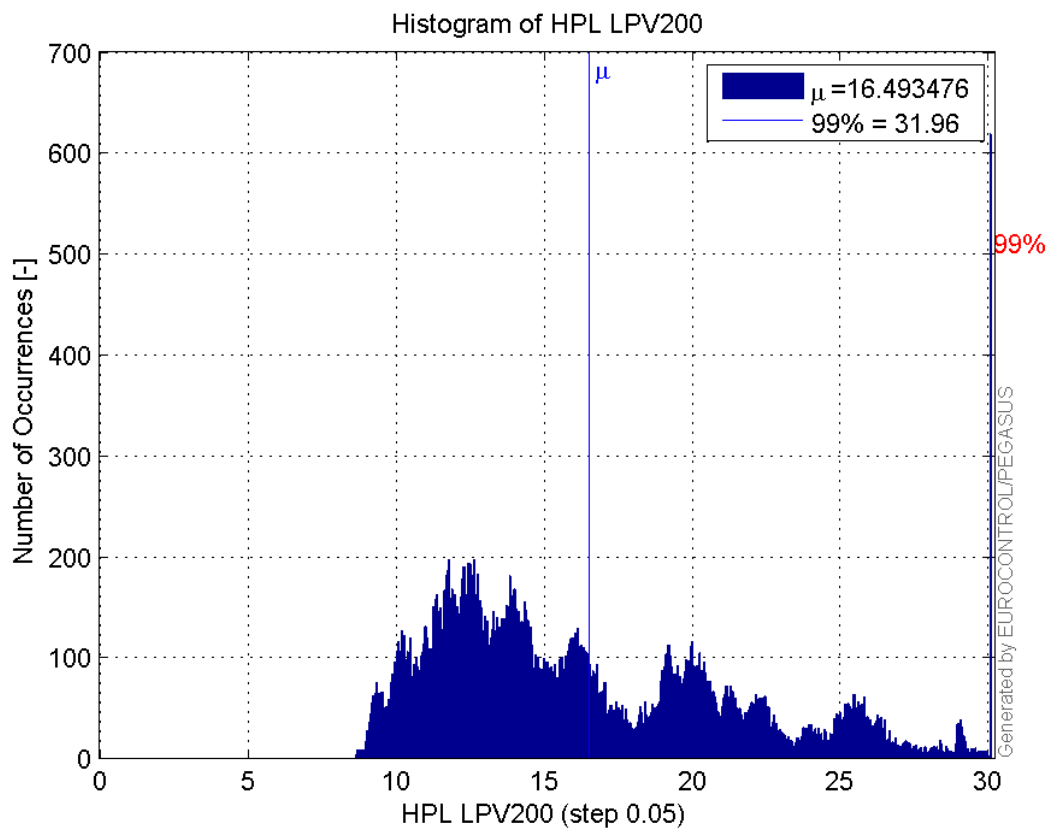
**Histogram of HPE LPV200:**



**Histogram of VPE LPV200:**

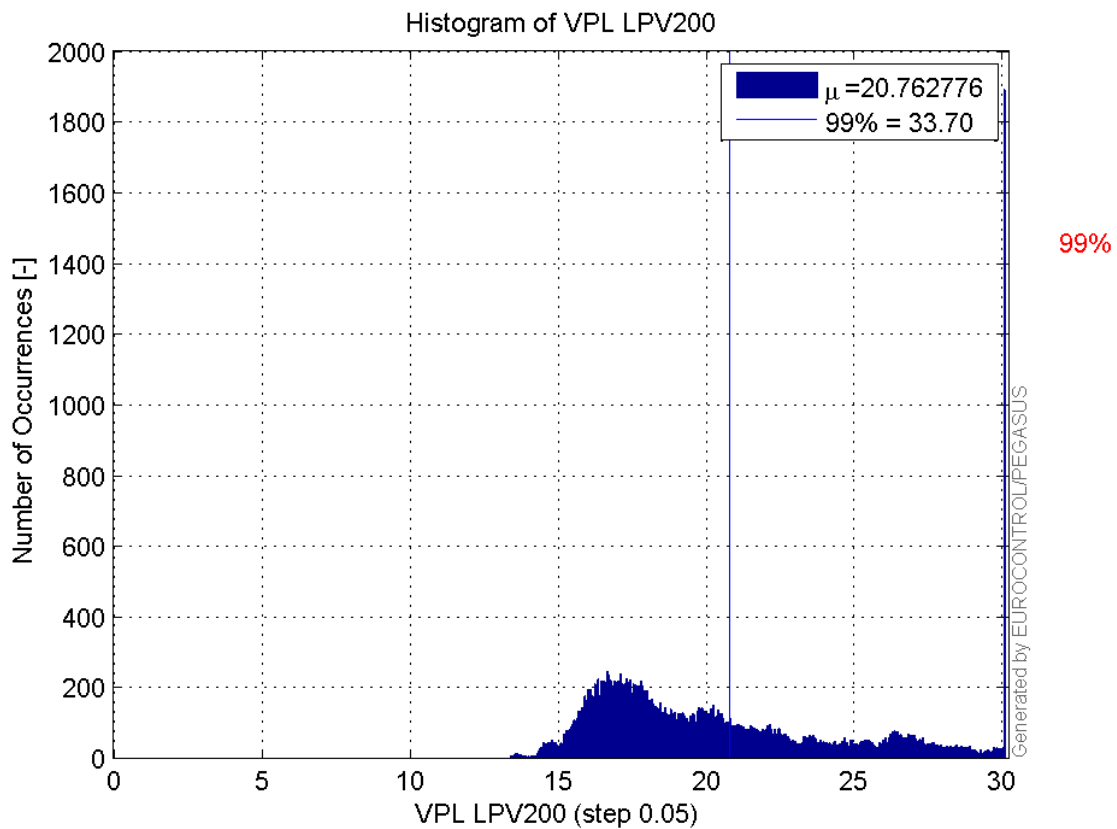


**Histogram of HPL LPV200:**

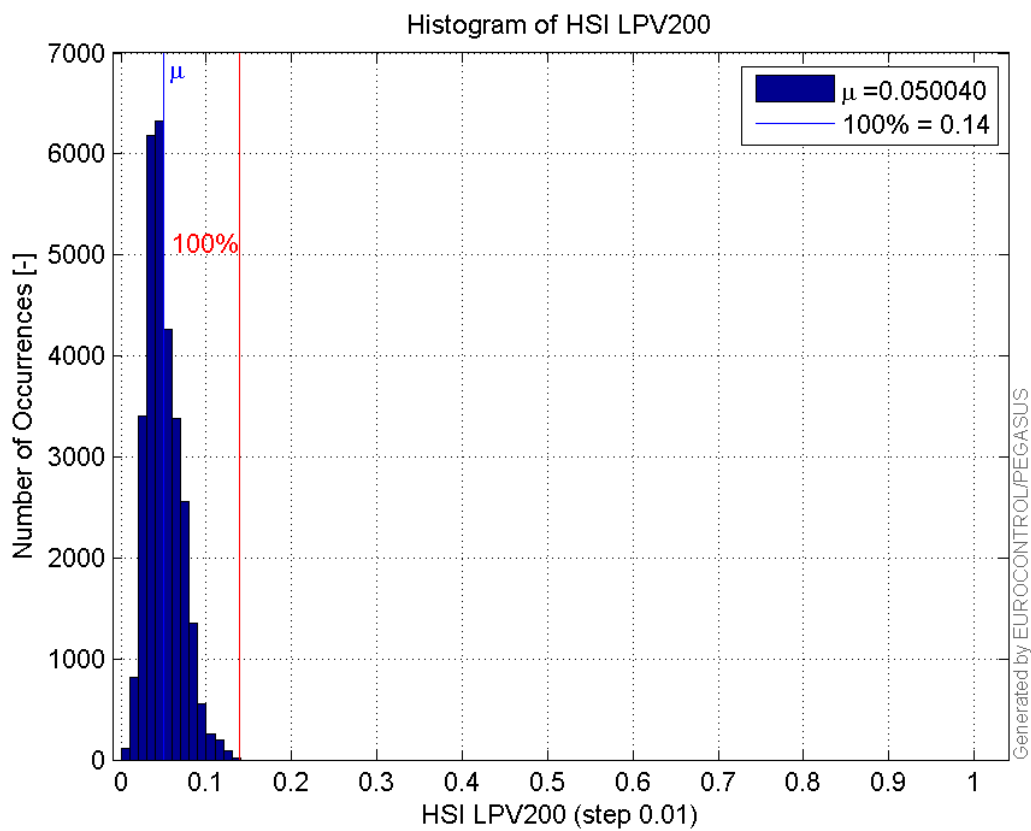


**Histogram of VPL LPV200:**

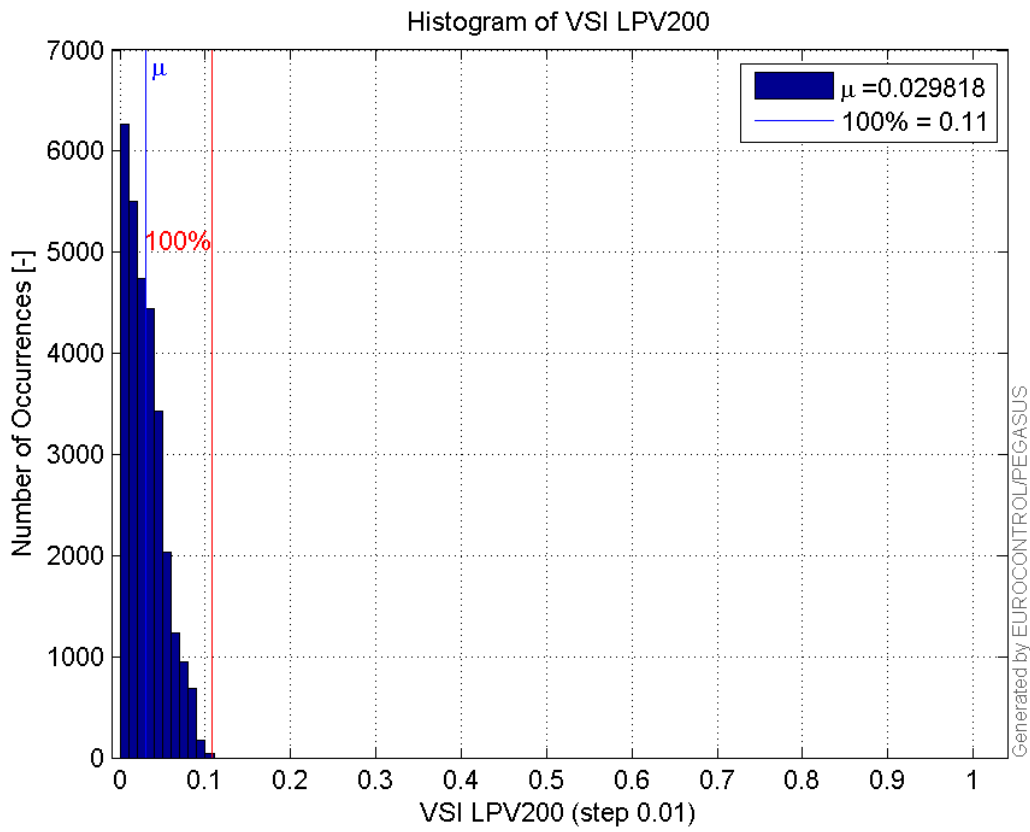




**Histogram of HSI LPV200:**

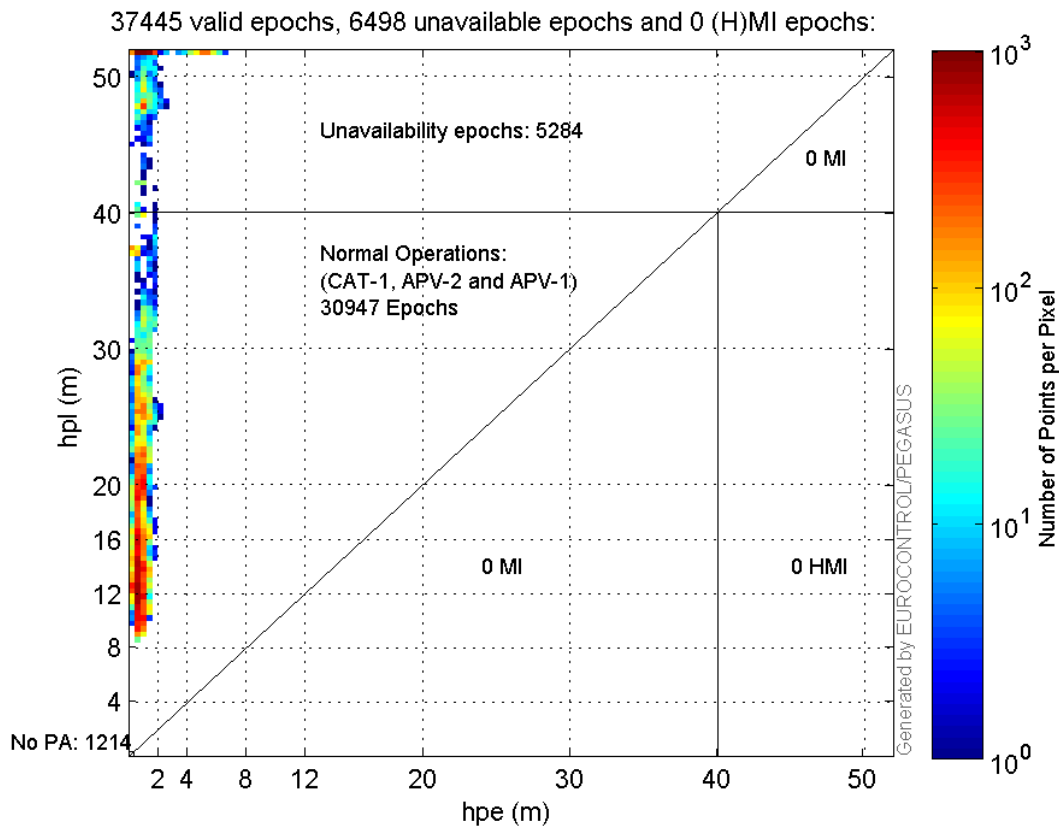


**Histogram of VSI LPV200:**

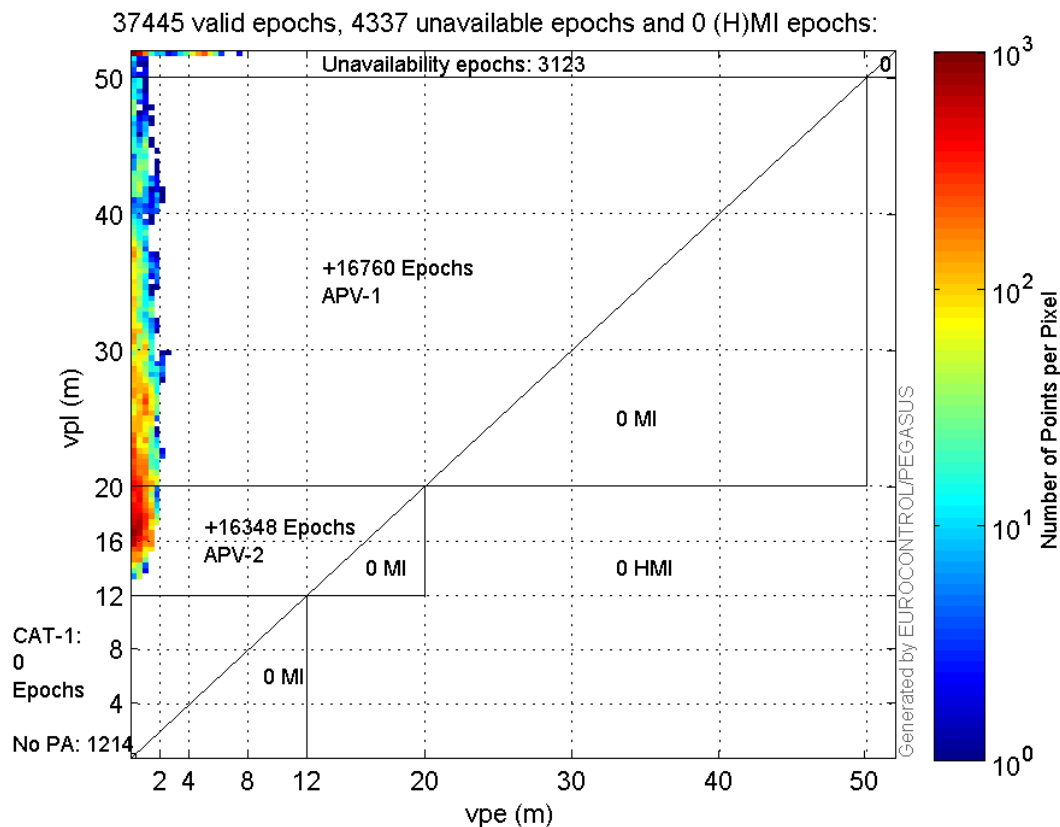


### Stanford Plots

#### 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_02EGNOS2Hz/02_Convertor/02_Convertor
output_prefix	system	D:/PegasusDateJob/job/2017_02_02EGNOS2Hz/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	225.4885
mi_numbers	results	0

## Range Domain

**start:** 07:24:45.5 02.02.2017 ( week: 1934 sec: 372285.5 )  
**end:** 13:11:03 02.02.2017 ( week: 1934 sec: 393063 )  
**duration:** 05:46:19 ..

### quality

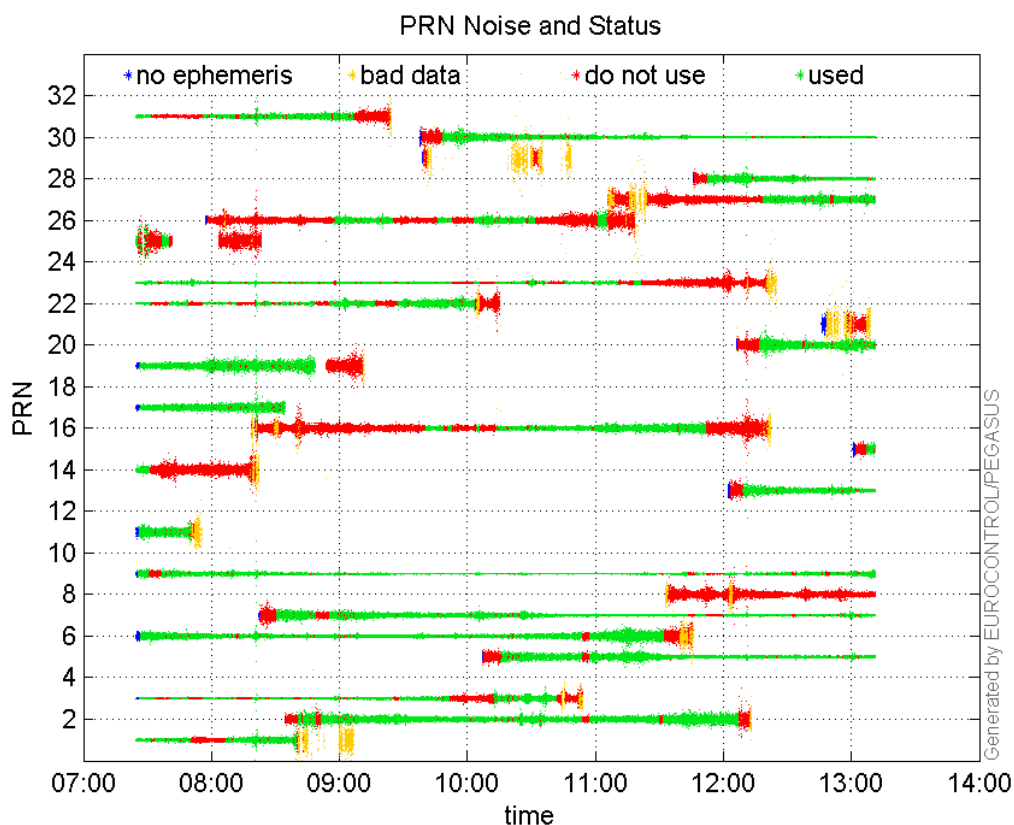
**valid samples** 38095  
**total samples** 38095

### PRN overview

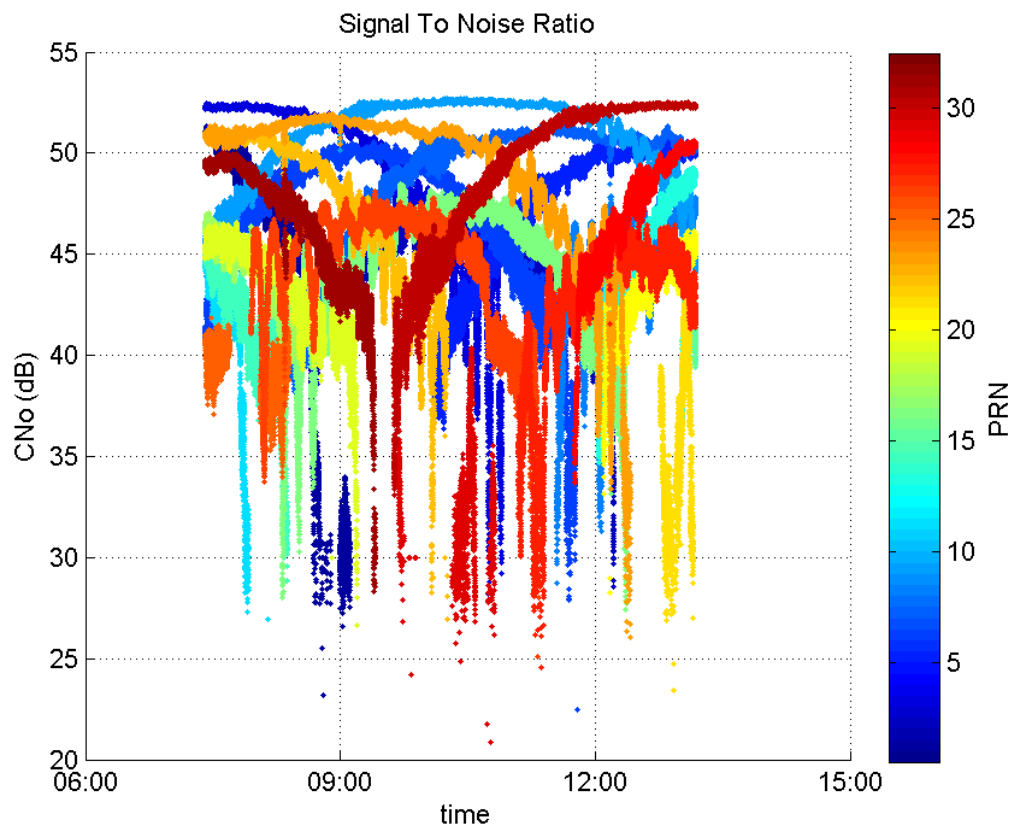
**Number of Visible GPS Satellites** 26  
**Number of Visible SBAS Satellites** 2

### 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
1934	375245	1	0.820406	1.73296	2.11232
1934	379747	2	0.965008	-1.87604	1.94407
1934	383864	3	0.834261	4.16038	4.9869
1934	385401	5	0.764129	-1.35258	1.7701
1934	379609	6	0.980289	-1.5353	1.56617
1934	379348	7	0.829548	1.53225	1.84709
1934	376761	9	1.05026	1.57	1.49487
1934	372786	11	0.66656	1.81431	2.7219
1934	391377	13	0.490012	0.983151	2.00638
1934	372646	14	NaN	NaN	9.62938
1934	392948	15	0.228205	0.601321	2.635
1934	386961	16	0.538458	-1.12979	2.09819
1934	372848	17	0.822147	-1.72708	2.10069
1934	376759	19	0.670812	1.64268	2.44879
1934	392448	20	0.54593	-1.08362	1.98491
1934	375005	22	0.854832	1.28296	1.50084
1934	372786	23	1.11998	1.55537	1.38874
1934	372997	25	0.243283	-0.891334	3.66378
1934	379077	26	0.311534	0.9025	2.89695
1934	392601	27	0.504477	-1.33976	2.65575
1934	391603	28	0.924386	1.53964	1.66559
1934	387309	30	1.10402	1.66631	1.50931

1934

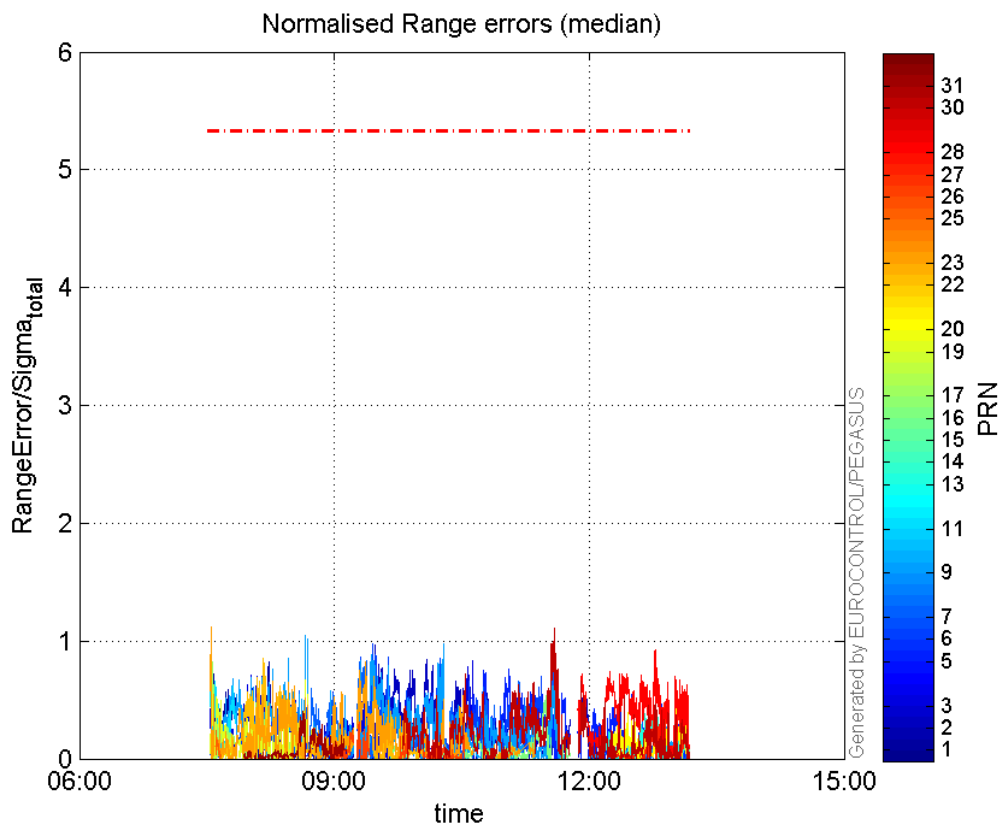
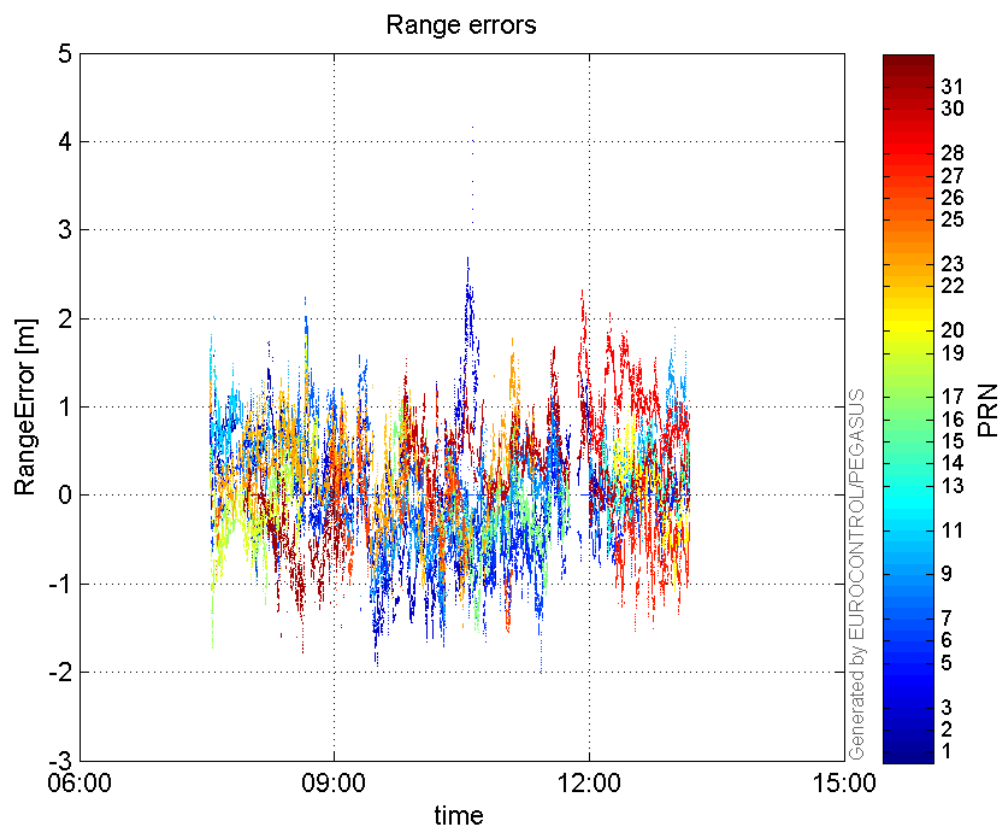
376660

31

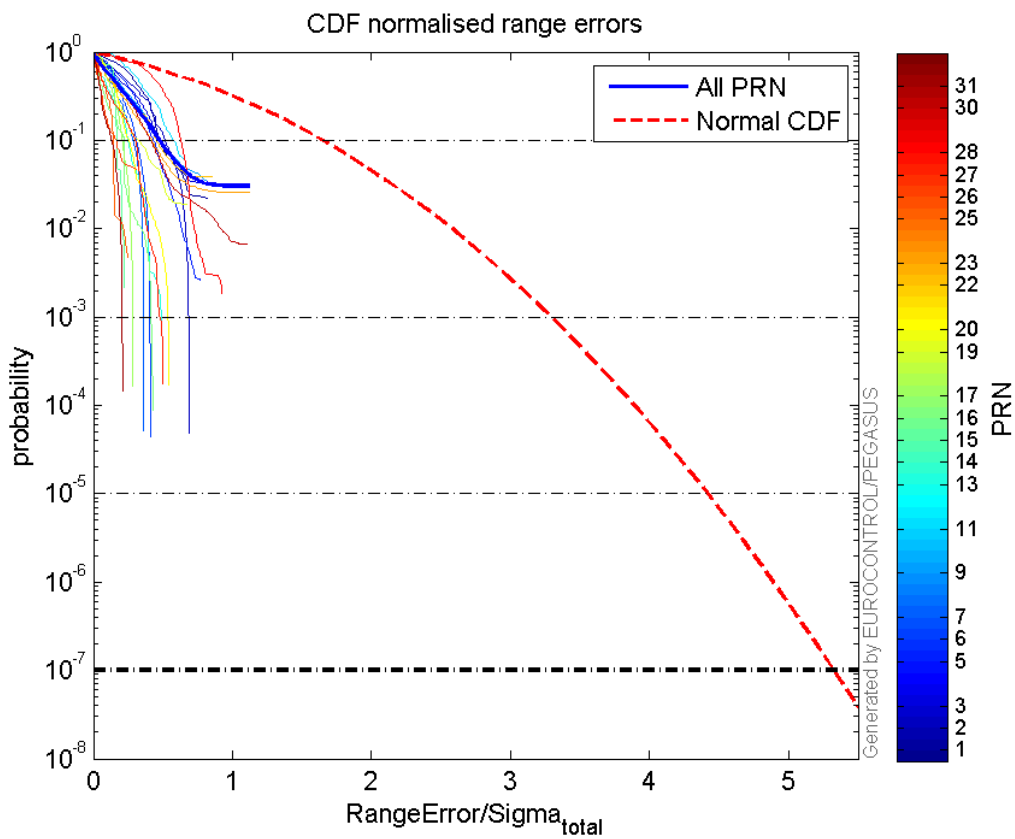
0.402406

-1.78261

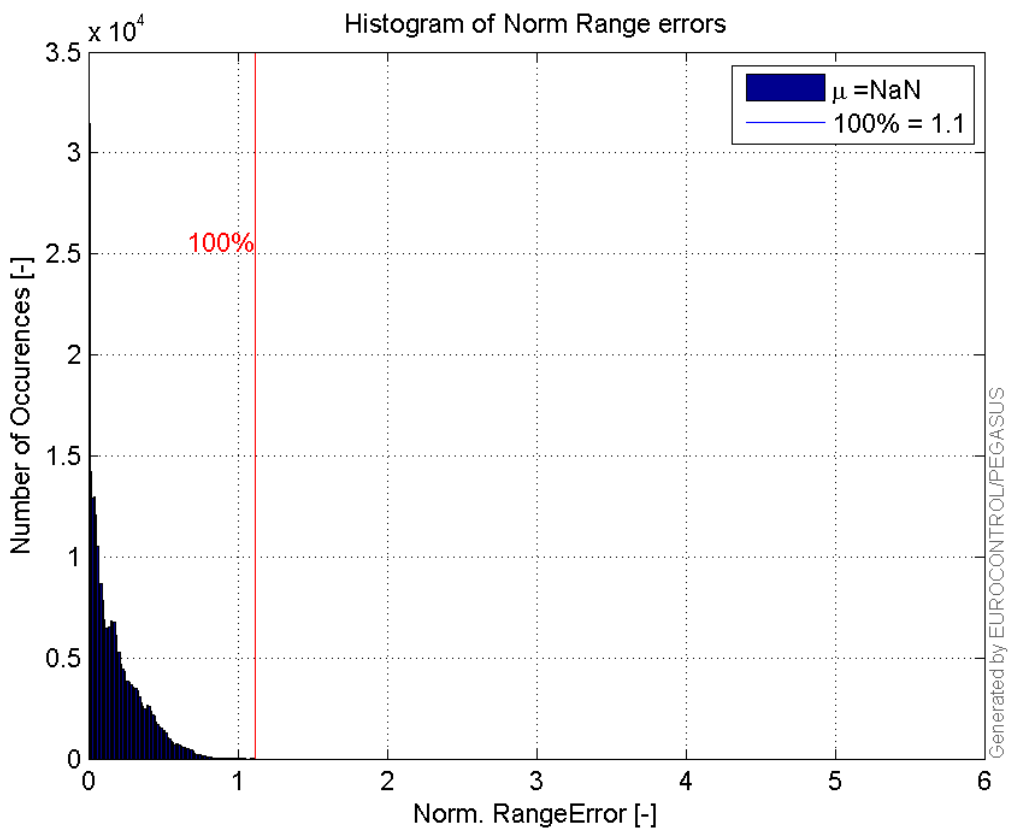
4.42989

**Normalised Range errors (median):****Range errors:**

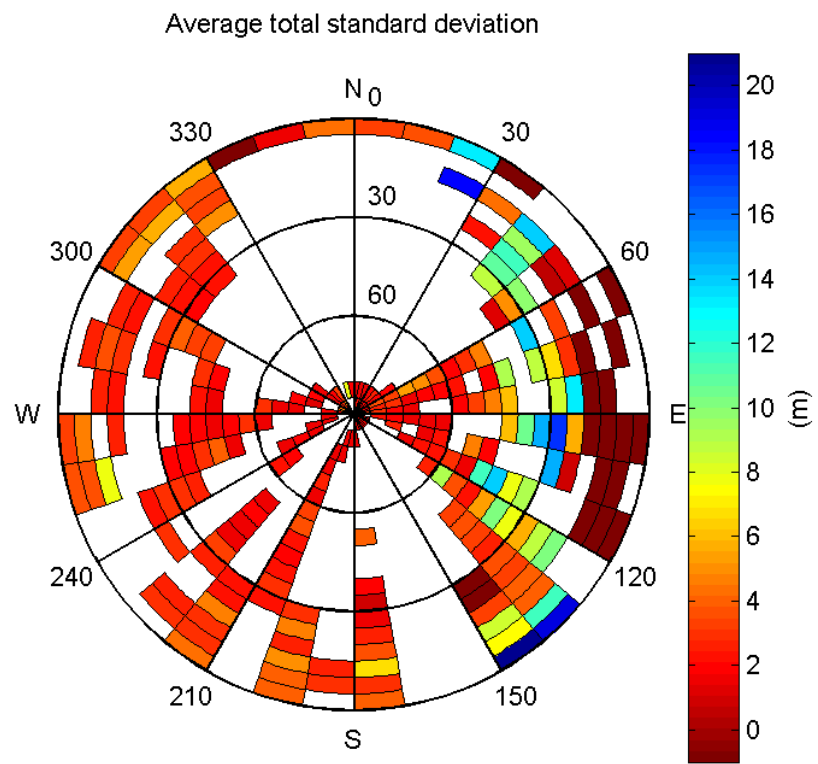
**CDF normalised range errors:**



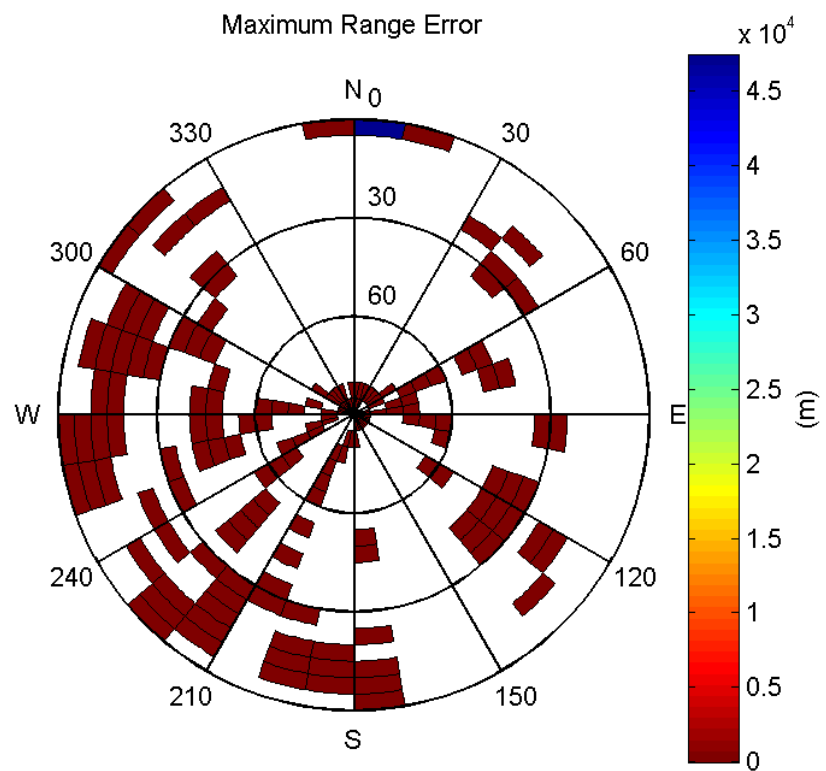
**Histogram of Norm Range errors:**



**Sigma Sky Plot:**



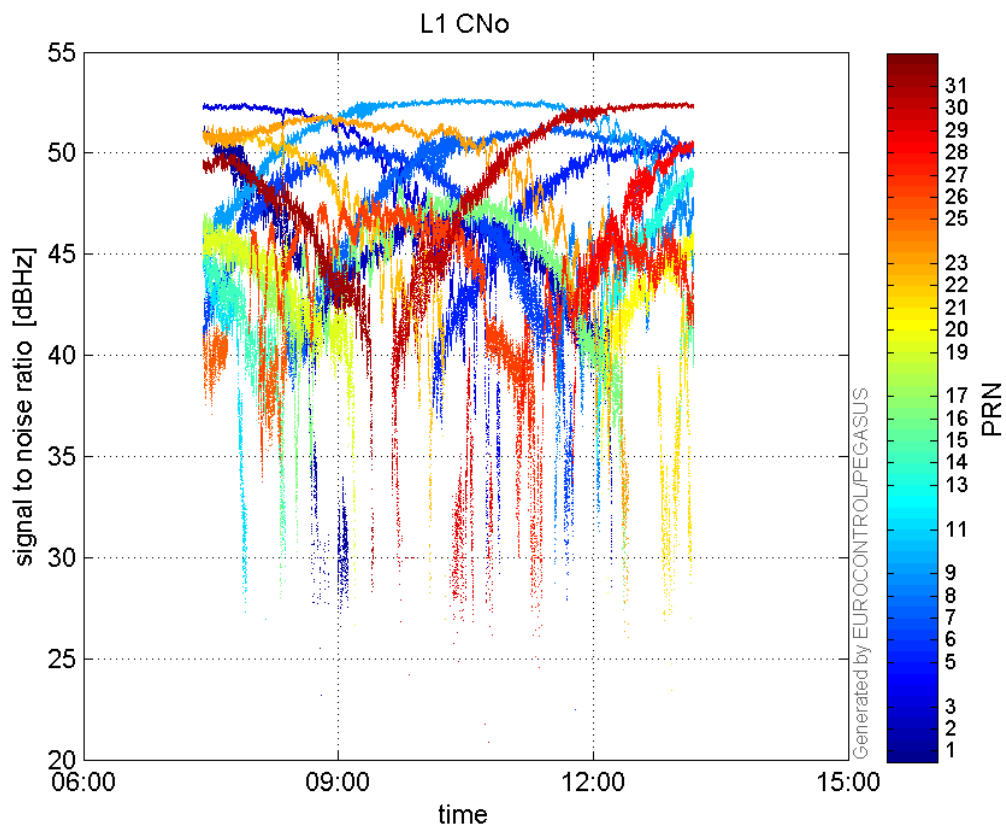
Norm Error Sky Plot:



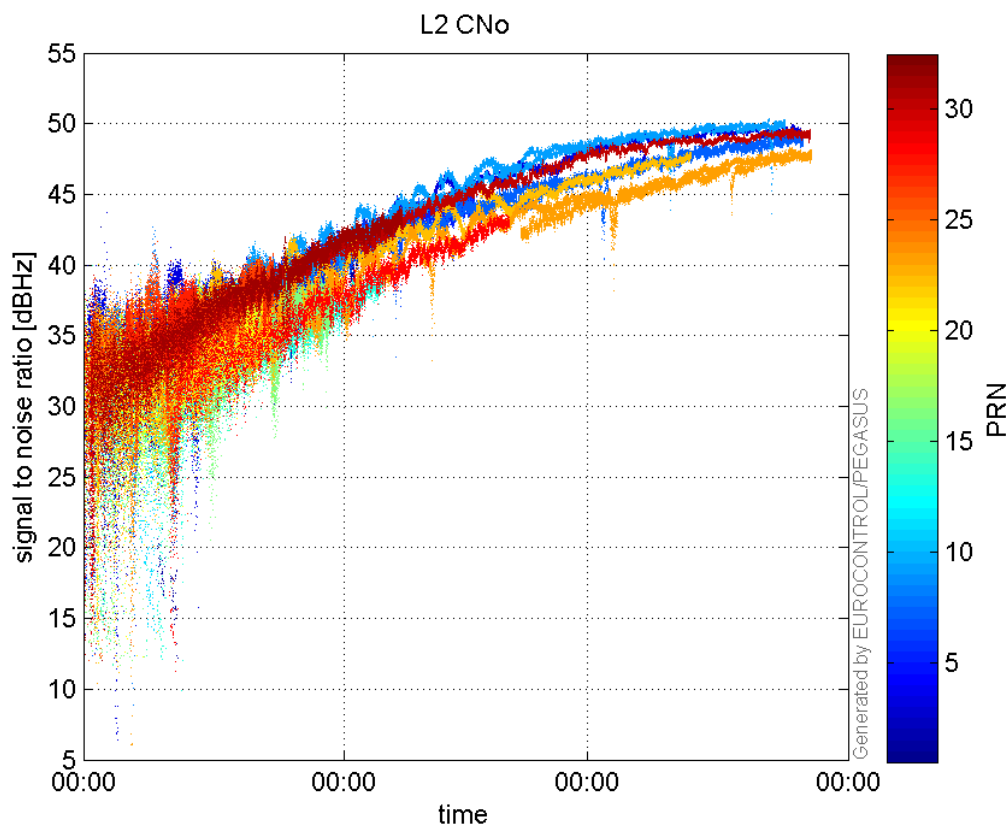
signal quality

L1 CNo:

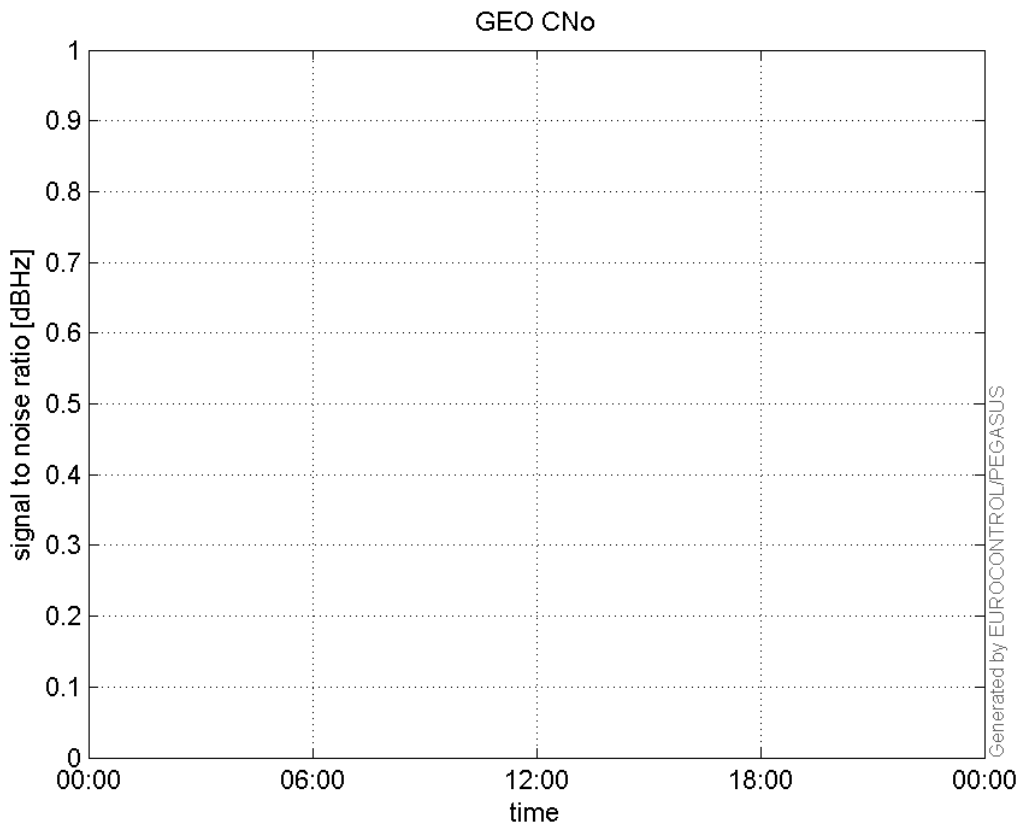




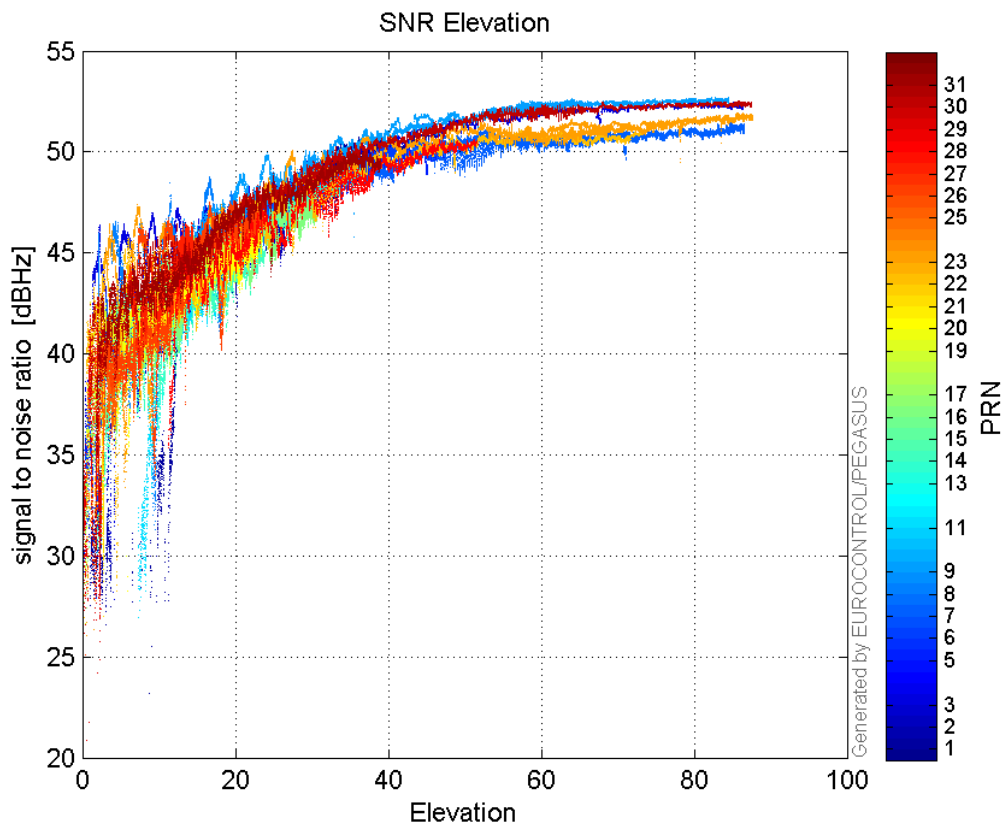
**L2 CNo:**



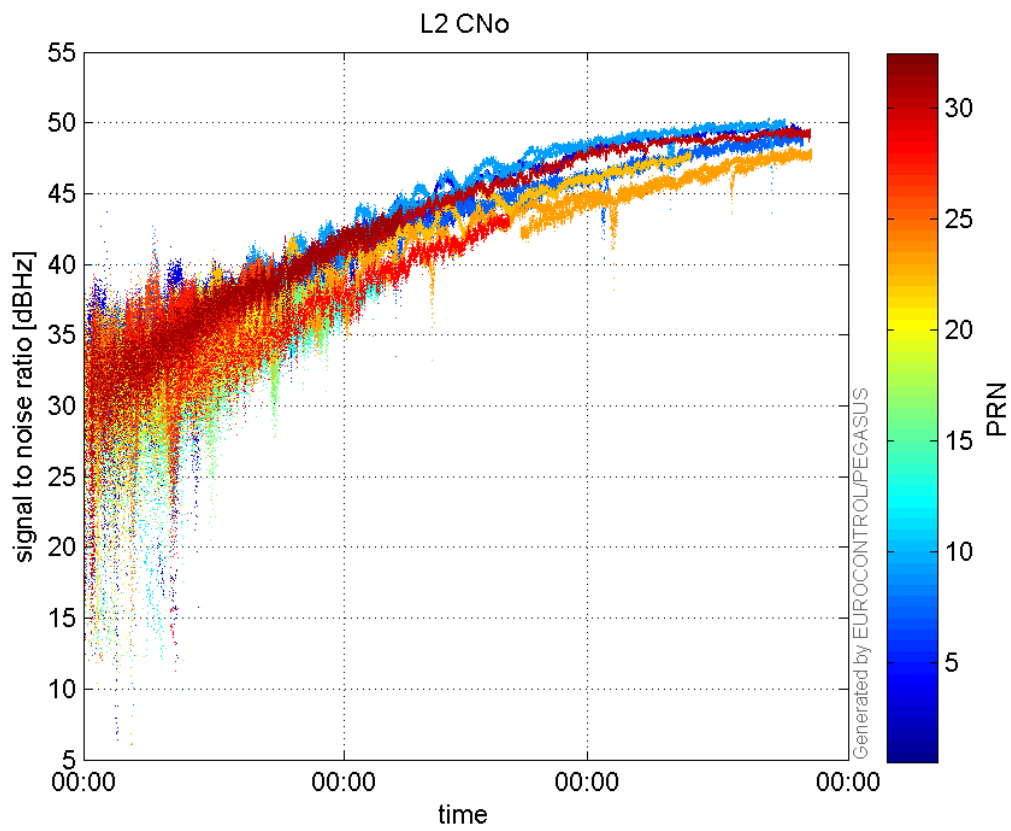
**GEO CNo:**



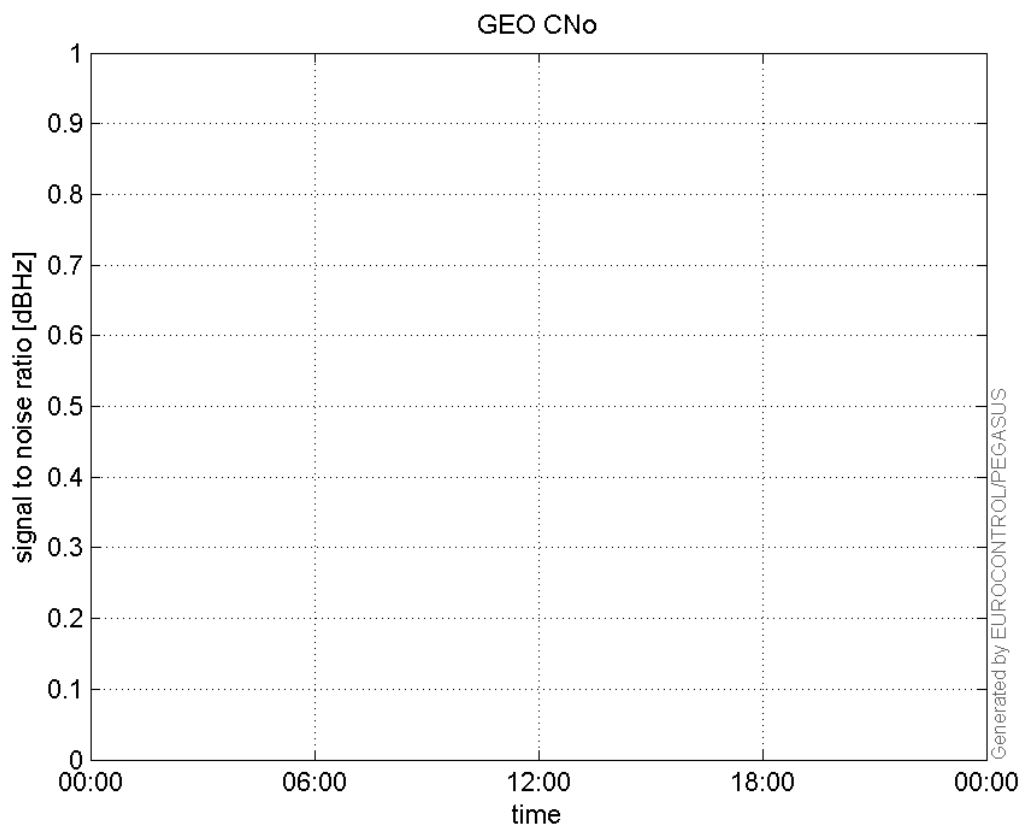
**SNR Elevation:**



**L2 CNo:**

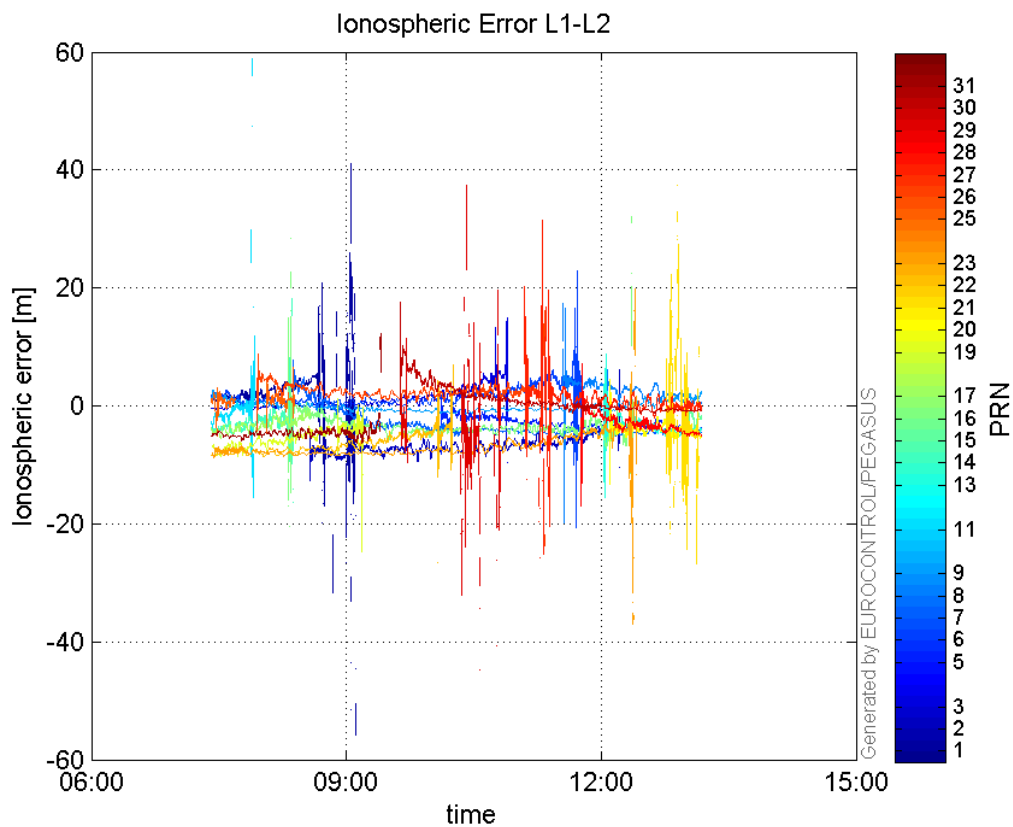


**GEO CNo:**



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_02EGNOS2Hz/02_Convertor/02_Convertor
output_prefix	system	D:/PegasusDateJob/job/2017_02_02EGNOS2Hz/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

<b>init_lon</b>	results	30.4297
<b>init_alt</b>	results	225.4885
<b>mi_numbers</b>	results	0