

# 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 17/12/2016

## SBAS Messages

**start:** 05:59:39.129 13.12.2016 ( week: 1927 sec: 194379.129 )  
**end:** 14:42:48.129 13.12.2016 ( week: 1927 sec: 225768.129 )  
**duration:** 08:43:09 ..

### quality

**valid samples** 49384  
**total samples** 49384  
**number of SBAS PRNs** 2

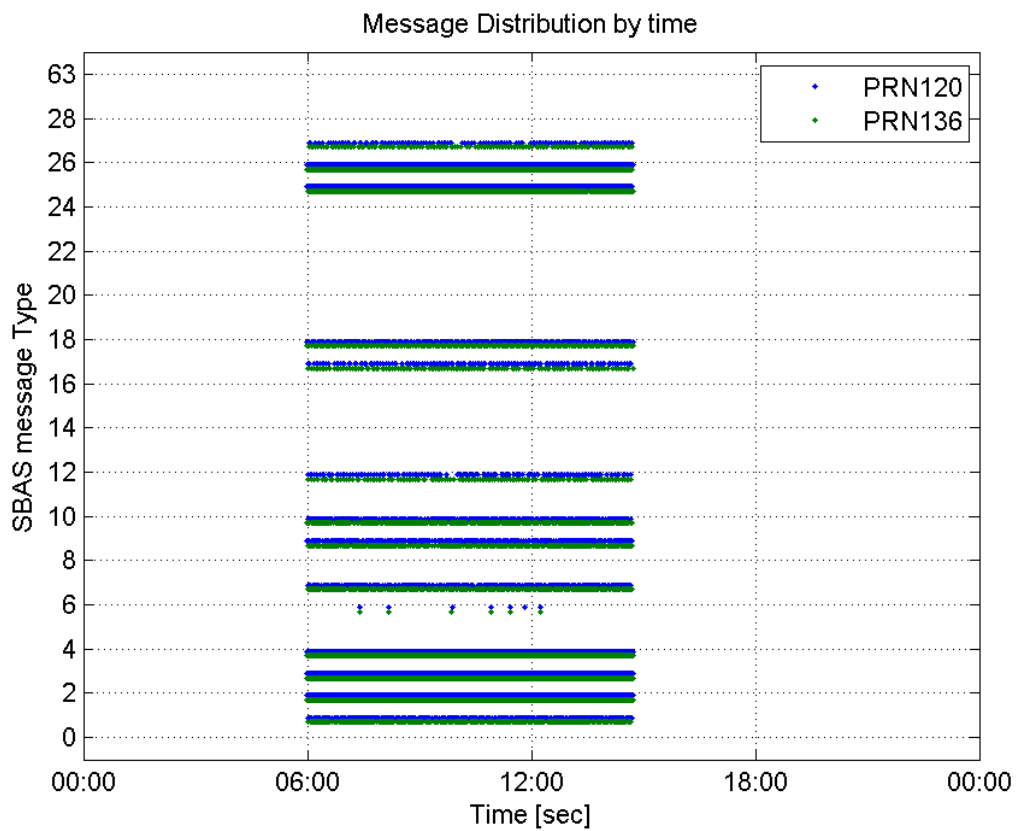
### SBAS SIS Overview

#### Message Type 6 repetitions :

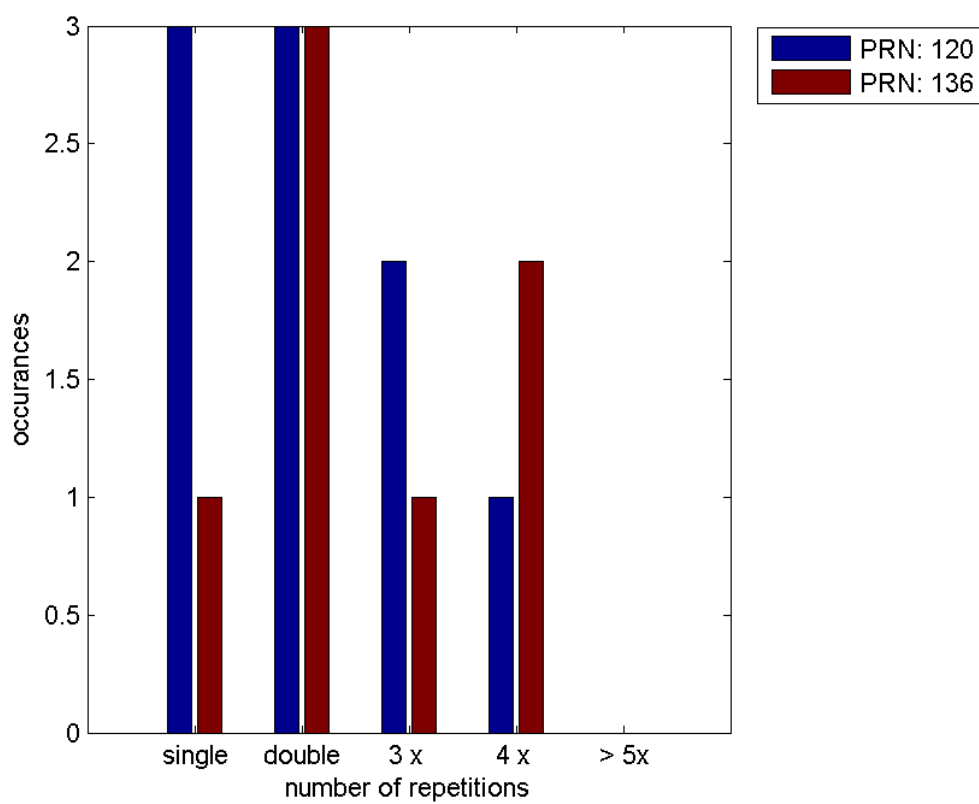
	single	double	3 x	4 x	> 5x
<b>PRN 120</b>	3	3	2	1	0
<b>PRN 136</b>	1	3	1	2	0

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#### Message Distribution by time:



**Message Type 6 repetitions:**



## Broadcast SBAS Messages :

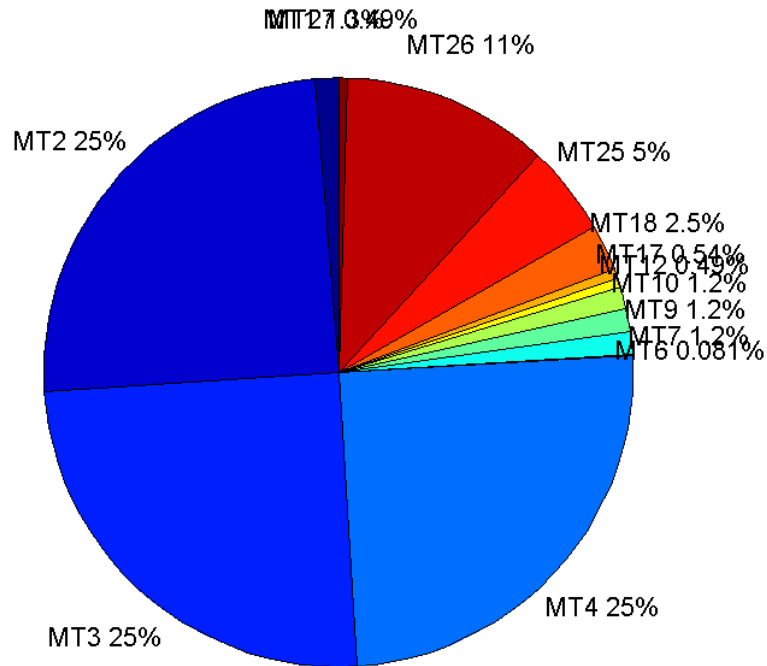
	number of messages	%
MT 0	0	0
MT 1	316	1.27971
MT 2	6115	24.7641
MT 3	6162	24.9544
MT 4	6155	24.9261
MT 5	0	0
MT 6	20	0.0809946
MT 7	302	1.22302
MT 9	307	1.24327
MT 10	292	1.18252
MT 12	122	0.494067
MT 17	134	0.542664
MT 18	625	2.53108
MT 24	0	0
MT 25	1230	4.98117
MT 26	2791	11.3028
MT 27	122	0.494067
MT 28	0	0
MT 62	0	0
MT 63	0	0
<b>Total</b>	24693	100

## Update intervals :

	Minimum [s]	Maximum [s]	Mean value	Exceed Max update	Exceed NPA timeout	Exceed PA timeout
MT 0	--	--	--	--	--	--
MT 1	76	320	99.3206	58	0	0
MT 2	4	20	5.13379	1587	2	10
MT 3	4	20	5.09382	1548	1	11
MT 4	4	17	5.09961	1548	0	9
MT 5	--	--	--	--	--	--
MT 6	1	6159	916.526	6	6	6
MT 7	76	476	103.671	68	1	5
MT 9	75	310	102.464	0	0	0
MT 10	76	321	106.973	83	0	4
MT 12	188	974	257.727	121	30	30
MT 17	186	596	234.504	0	0	0
MT 18	4	211	50.2981	0	0	0
MT 24	--	--	--	--	--	--
MT 25	3	118	25.5151	0	0	0
MT 26	3	60	11.2409	0	0	0
MT						

27	186	980	257.702	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	320	1.29602
MT 2	6109	24.7418
MT 3	6122	24.7945
MT 4	6186	25.0537
MT 5	0	0
MT 6	19	0.0769511
MT 7	314	1.27172
MT 9	315	1.27577
MT 10	329	1.33247
MT 12	127	0.514357
MT 17	124	0.502207

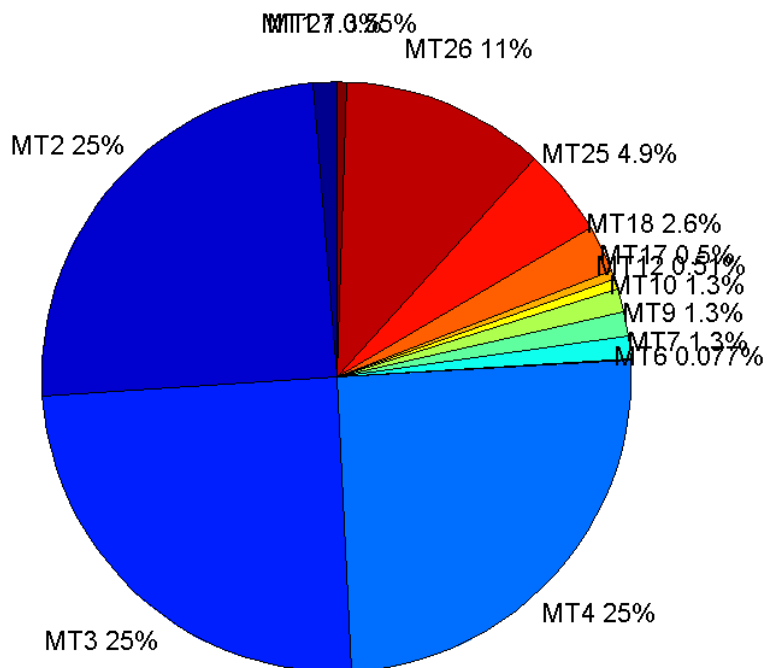
MT 18	635	2.57179
MT 24	0	0
MT 25	1199	4.85602
MT 26	2757	11.166
MT 27	135	0.546758
MT 28	0	0
MT 62	0	0
MT 63	0	0
<b>Total</b>	24691	100

## Update intervals :

	Minimum [s]	Maximum [s]	Mean value	Exceed Max update	Exceed NPA timeout	Exceed PA timeout
MT 0	--	--	--	--	--	--
MT 1	76	400	97.8683	50	0	0
MT 2	4	17	5.13834	1613	0	8
MT 3	4	17	5.12743	1597	0	8
MT 4	4	20	5.07502	1541	1	7
MT 5	--	--	--	--	--	--
MT 6	1	6125	967.5	5	5	5
MT 7	75	320	99.6869	66	0	4
MT 9	73	397	99.6338	0	0	0
MT 10	76	401	95.4665	49	1	5
MT 12	188	592	247.048	126	27	27
MT 17	184	600	254.675	0	0	0
MT 18	1	208	49.4779	0	0	0
MT 24	--	--	--	--	--	--
MT 25	2	160	26.1611	0	0	0
MT 26	3	83	11.3734	0	0	0
MT 27	185	592	232.276	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/2016_12_13EGNOS2Hz/01_User/01_User
Outputfile	System	D:/PegasusDateJob/job/2016_12_13EGNOS2Hz/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:** 05:59:39 13.12.2016 ( week: 1927 sec: 194379 )  
**end:** 14:42:49 13.12.2016 ( week: 1927 sec: 225769 )  
**duration:** 08:43:11 ..

#### quality

**valid samples** 57344  
**total samples** 58028

## Event tables

**Position discontinuity events type** long  
**APV-I discontinuity events type** too many (23)  
**APV-35m discontinuity events type** too many (29)  
**LPV-200 discontinuity events type** too many (29)  
**CAT-I discontinuity events type** independent

## extremes :

	Epoch	HPE	HPL	HPE/HPL	VPE	VPL	VPE/VPL
max normHor	208968	1.82805	10.5535	0.173217	0.96384	16.2103	0.0594585
max normVer	216220	1.87947	12.2152	0.153863	-1.70311	14.0293	0.121397
max HPE	211508	15.5869	405.271	0.0384603	27.3714	676.817	0.0404414
max VPE	211508	15.5869	405.271	0.0384603	27.3714	676.817	0.0404414
min HPL	200886	1.0544	8.46516	0.124558	0.430479	18.4328	0.023354
min VPL	207569	1.05399	8.90818	0.118317	0.546408	11.0214	0.049577

## Position discontinuity events :

#	Epoch	duration	stable period
1	209454	190.5	2337
2	209723	4.5	78.5

## CAT-I discontinuity events :

#	Epoch	duration	stable period
1	206938	4.5	17.5
2	206985	11.5	17.5
3	207601	10.5	38.5
4	207756	4.5	36.5

## First Glance analysis

**Duration** 31391  
**Number of Samples** 58028  
**Number of invalid sample** 684  
**Number of no position solution samples** 669  
**Number of missing sample** 4754  
**Logging Loss** 7.5722  
**Processing Loss** 1.1787  
**Number of Misleading Information** 0  
**Data gaps** 10  
**Discontinuities** 53

## Number of Samples :

Valid	APV-1	LPV-200	CAT-1	APV-35m
56675	54006	51597	1044	51597

## Accuracy statistics :

	Valid	APV-1	LPV-200	CAT-1	APV-35m
HPE 95%	1.66217	1.59942	1.59944	1.06753	1.59944
HPEscale 95%	NaN	5.14165	5.16566	4.33214	5.16566

VPE 95%	1.3253	1.25792	1.24574	0.965668	1.24574
VPEscale 95%	NaN	3.17711	2.2532	0.990774	2.2532

## Availability :

	Valid	APV-1	LPV-200	CAT-1	APV-35m
Signal in Space	0.988334	0.94179	0.89978	0.0182059	0.89978
measurements	0.976684	0.930689	0.889174	0.0179913	0.889174
Operational	1.80545	1.72043	1.64369	0.0332579	1.64369

## Discontinuity events :

	Valid	APV-1	LPV-200	CAT-1	APV-35m
All	43	125	226	102	226
Long	2	27	65	42	65
Independent	2	23	29	4	29
P(disc.)	0.000529334	0.00638818	0.00843072	0.0574713	0.00843072
P(slide)	0.0109925	0.0324316	0.0457682	0.449234	0.0457682

## 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

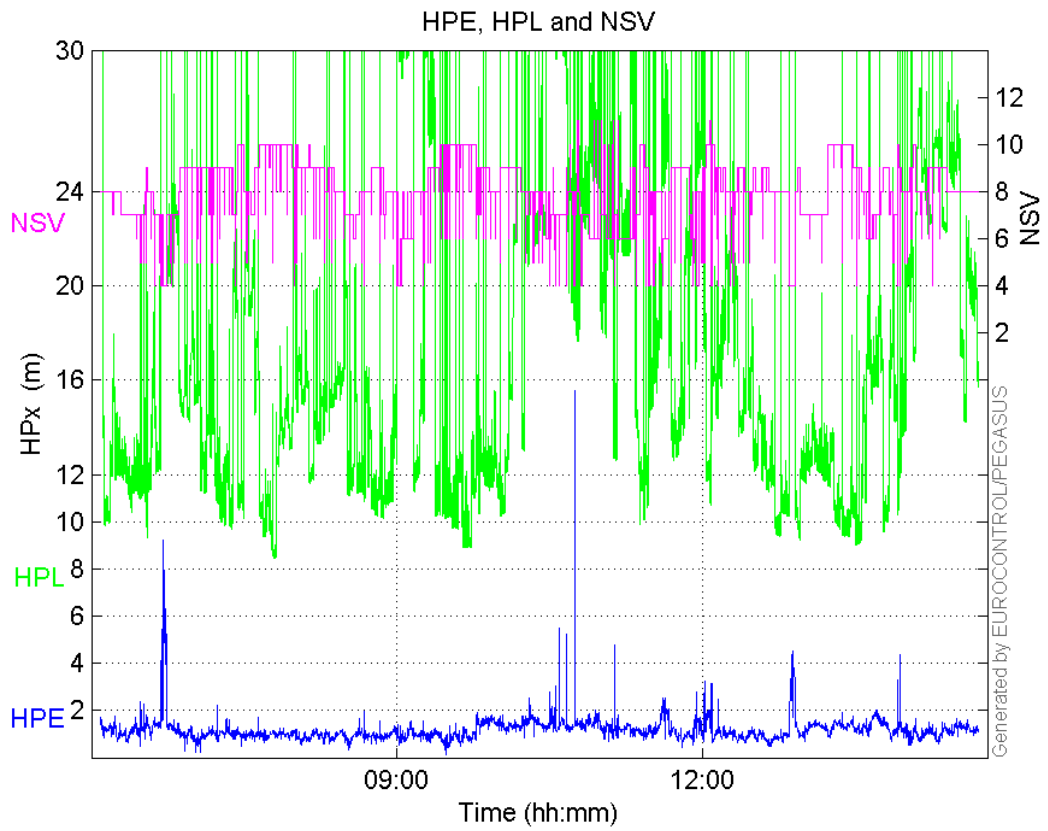
## Performance Summary :

	Valid	APV-1	LPV-200	CAT-1	APV-35m
Samples	56675	54006	51597	1044	51597
SIS Availability	0.988334	0.94179	0.89978	0.0182059	0.89978
Local Availability	0.976684	0.930689	0.889174	0.0179913	0.889174
Operational Availability	1.80545	1.72043	1.64369	0.0332579	1.64369
HPE 95%	1.66217	1.59942	1.59944	1.06753	1.59944
HPEScale 95%	NaN	5.14165	5.16566	4.33214	5.16566
VPE 95%	1.3253	1.25792	1.24574	0.965668	1.24574
VPEscale 95%	NaN	3.17711	2.2532	0.990774	2.2532
All Discontinuity Events	43	125	226	102	226
Long Discontinuity Events	2	27	65	42	65
Independent Discontinuity Events	2	23	29	4	29
P(discontinuity)	0.000529334	0.00638818	0.00843072	0.0574713	0.00843072
P(sliding window)	0.0109925	0.0324316	0.0457682	0.449234	0.0457682
All Integrity Events	0	0	0	0	0
Horizontal Integrity Events	0	0	0	0	0
Vertical Integrity Events	0	0	0	0	0

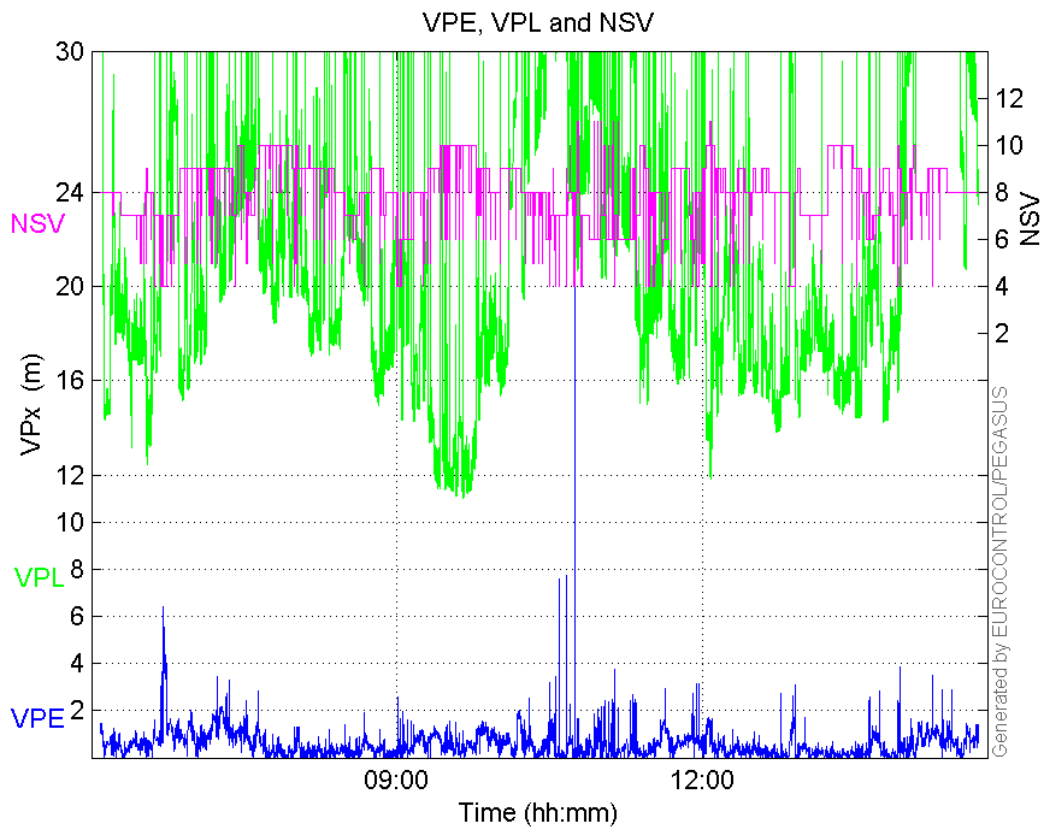
## Time Series

HPE, HPL and NSV:



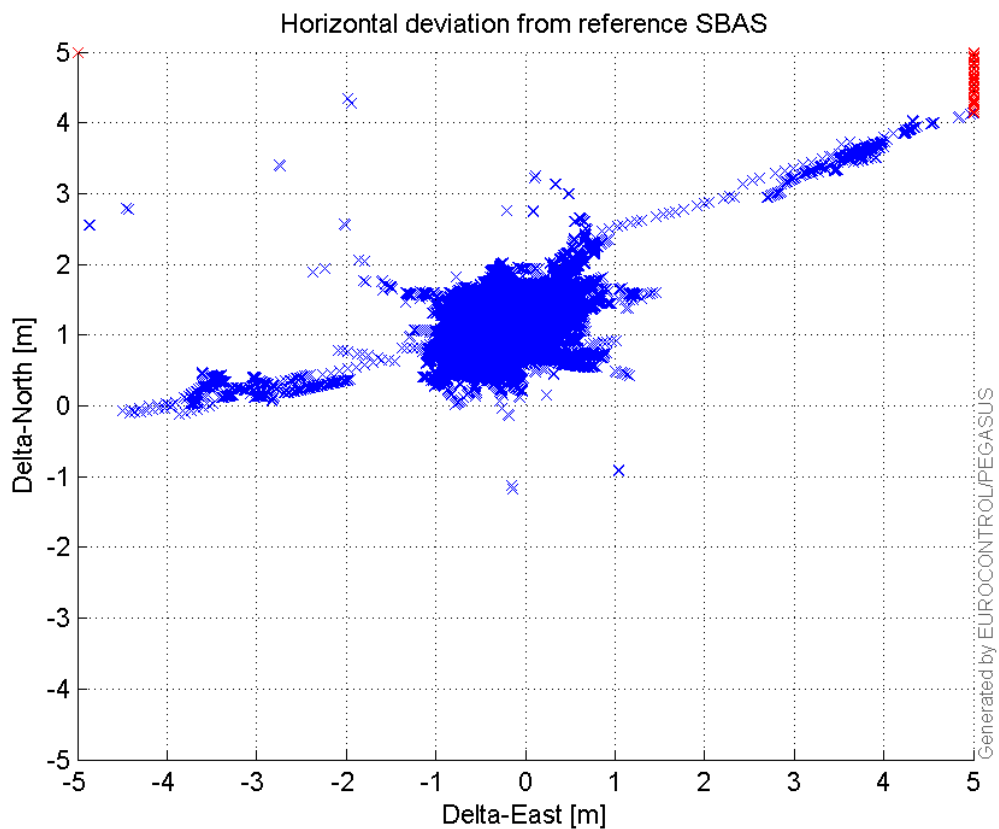


**VPE, VPL and NSV:**



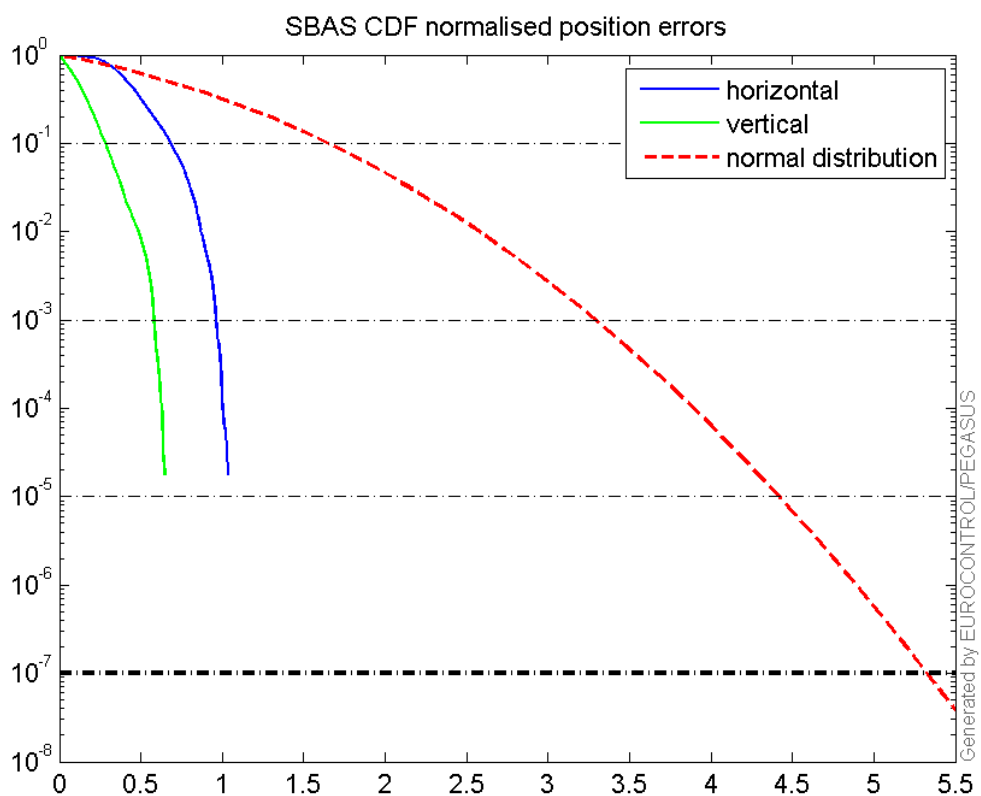
**Horizontal deviation**

**Horizontal deviation from reference SBAS:**



### CDF position

**SBAS CDF position domain:**



## Statistics

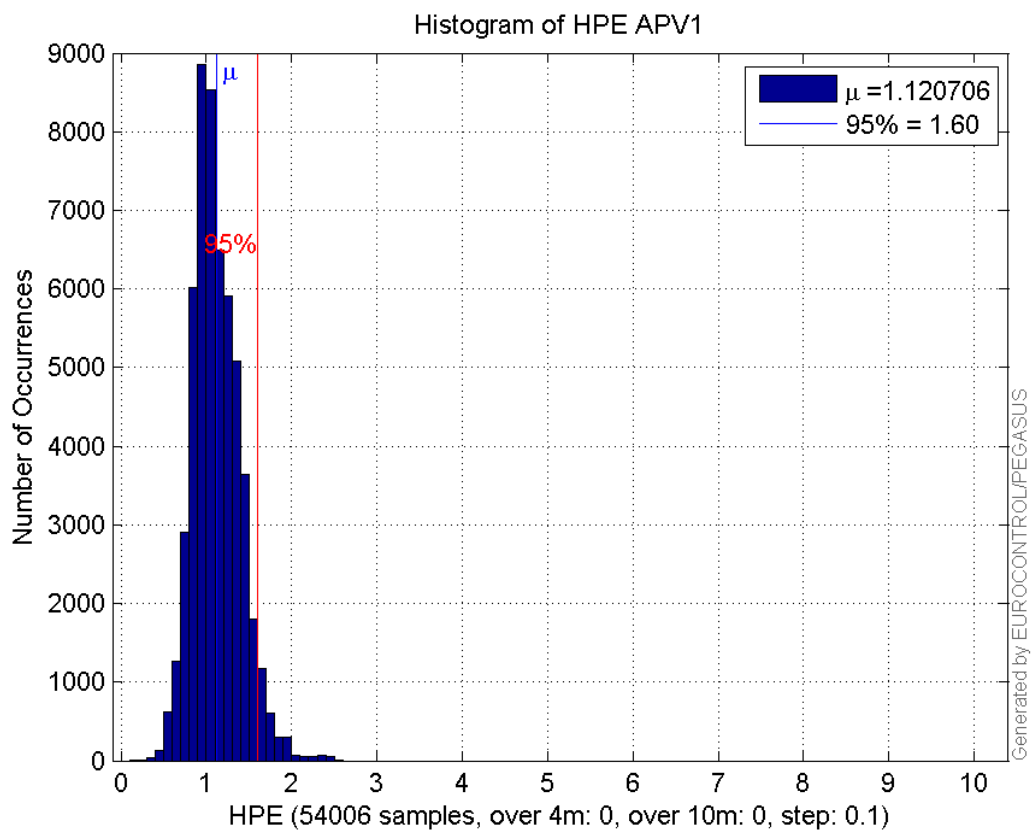
<b>number</b>	54006
<b>sum</b>	60524.857
<b>sum2</b>	71932.003
<b>prctile95</b>	1.599421
<b>prctile99</b>	1.9192064
<b>number</b>	54006
<b>sum</b>	27762.142
<b>sum2</b>	22659.215
<b>prctile95</b>	1.2579211
<b>prctile99</b>	1.603117
<b>number</b>	54006
<b>sum</b>	891759.91
<b>sum2</b>	16682764
<b>prctile95</b>	28.19144
<b>prctile99</b>	34.002404
<b>number</b>	54006
<b>sum</b>	1142912.2
<b>sum2</b>	26211914
<b>prctile95</b>	34.6407
<b>prctile99</b>	38.670028
<b>number</b>	54006
<b>sum</b>	4046.2632
<b>sum2</b>	344.15996
<b>prctile95</b>	0.12854137
<b>prctile99</b>	0.14524289
<b>number</b>	54006
<b>sum</b>	1367.5815
<b>sum2</b>	56.144699
<b>prctile95</b>	0.063542196
<b>prctile99</b>	0.091526401
<b>number</b>	51597
<b>sum</b>	57822.874
<b>sum2</b>	68729.332
<b>prctile95</b>	1.5994364
<b>prctile99</b>	1.9221712
<b>number</b>	51597
<b>sum</b>	25990.284
<b>sum2</b>	20911.262
<b>prctile95</b>	1.2457401
<b>prctile99</b>	1.6064252
<b>number</b>	51597
<b>sum</b>	824778.8
<b>sum2</b>	14778721
<b>prctile95</b>	26.793125
<b>prctile99</b>	32.153356
<b>number</b>	51597
<b>sum</b>	1052479.6
<b>sum2</b>	22809599
<b>prctile95</b>	30.994095
<b>prctile99</b>	34.32023
<b>number</b>	51597
<b>sum</b>	3948.2889
<b>sum2</b>	339.96278

**prctile95** 0.12914149  
**prctile99** 0.14591532  
**number** 51597  
**sum** 1320.5937  
**sum2** 54.928149  
**prctile95** 0.064377276  
**prctile99** 0.092166407

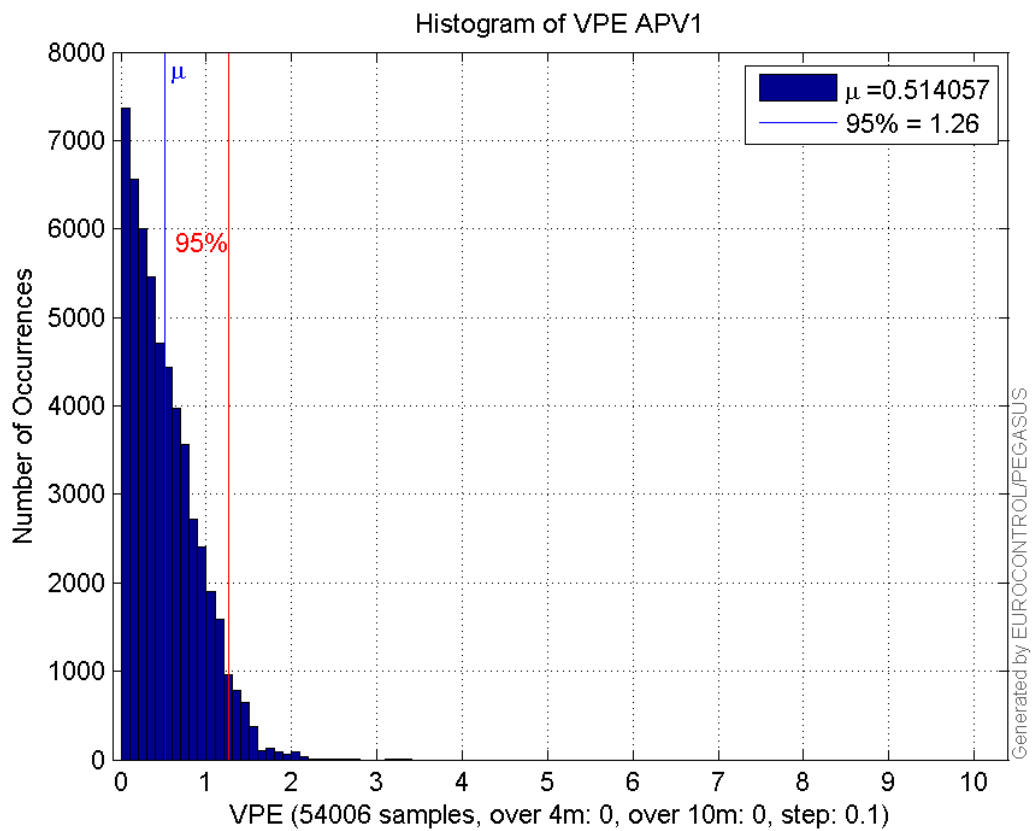
**Error and XPL Statistics :**

	Mean Value	Standard Deviation	50% Value	95% Value	99% Value	RMS Value
HPE	1.12071	0.275582	1.07886	1.59942	1.91921	1.15409
HPL	16.5122	6.021	14.6412	28.1914	34.0024	17.5757
VPE	0.514057	0.394103	0.432188	1.25792	1.60312	0.647741
VPL	21.1627	6.12317	19.5459	34.6407	38.67	22.0307

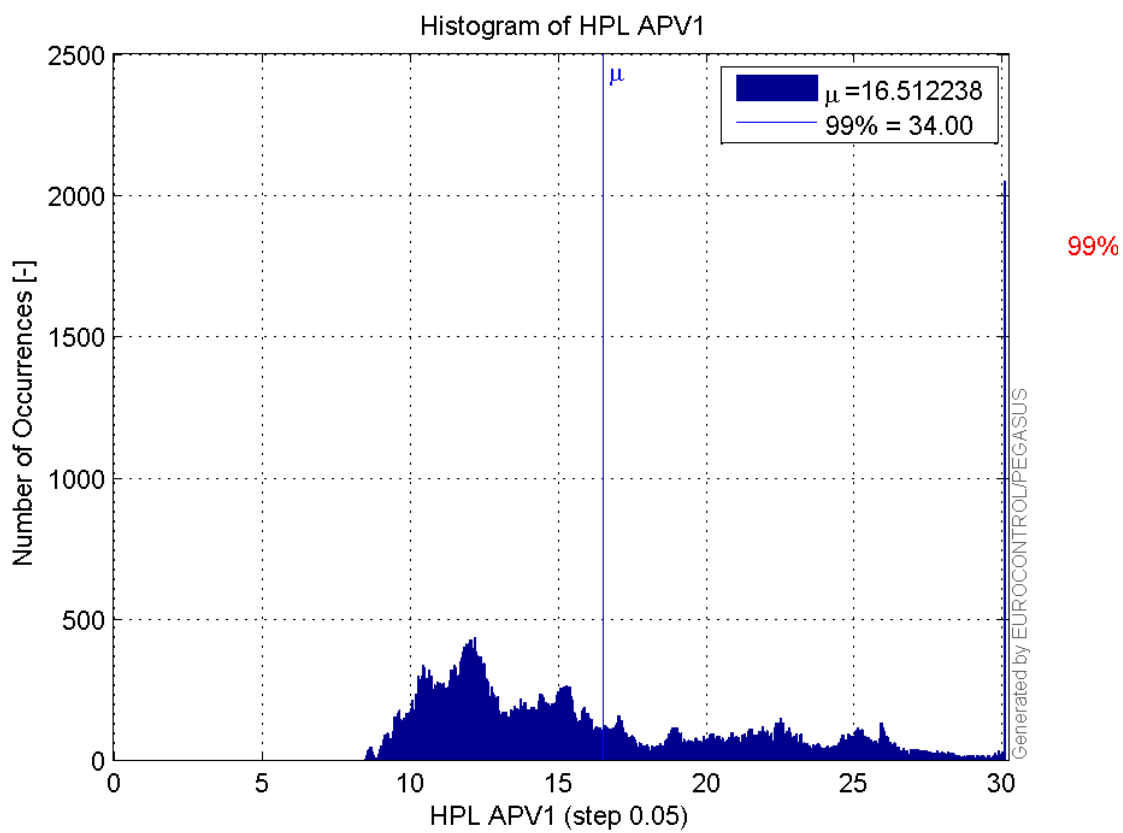
**Histogram of HPE APV1:**



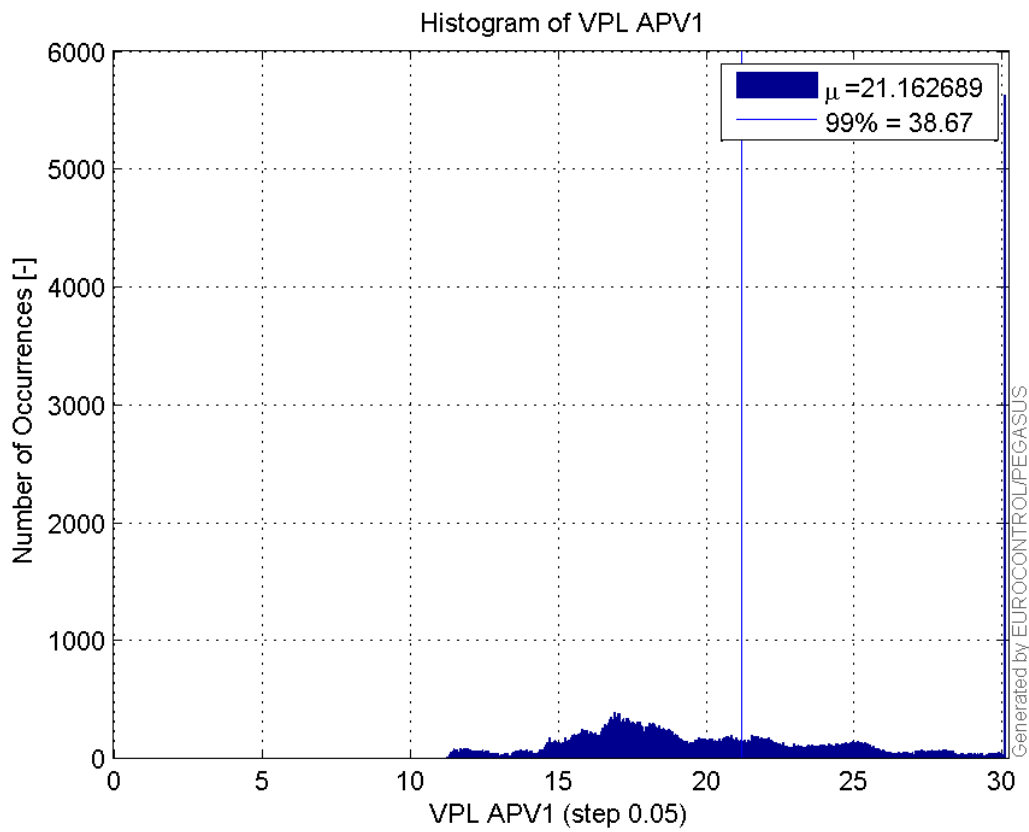
**Histogram of VPE APV1:**



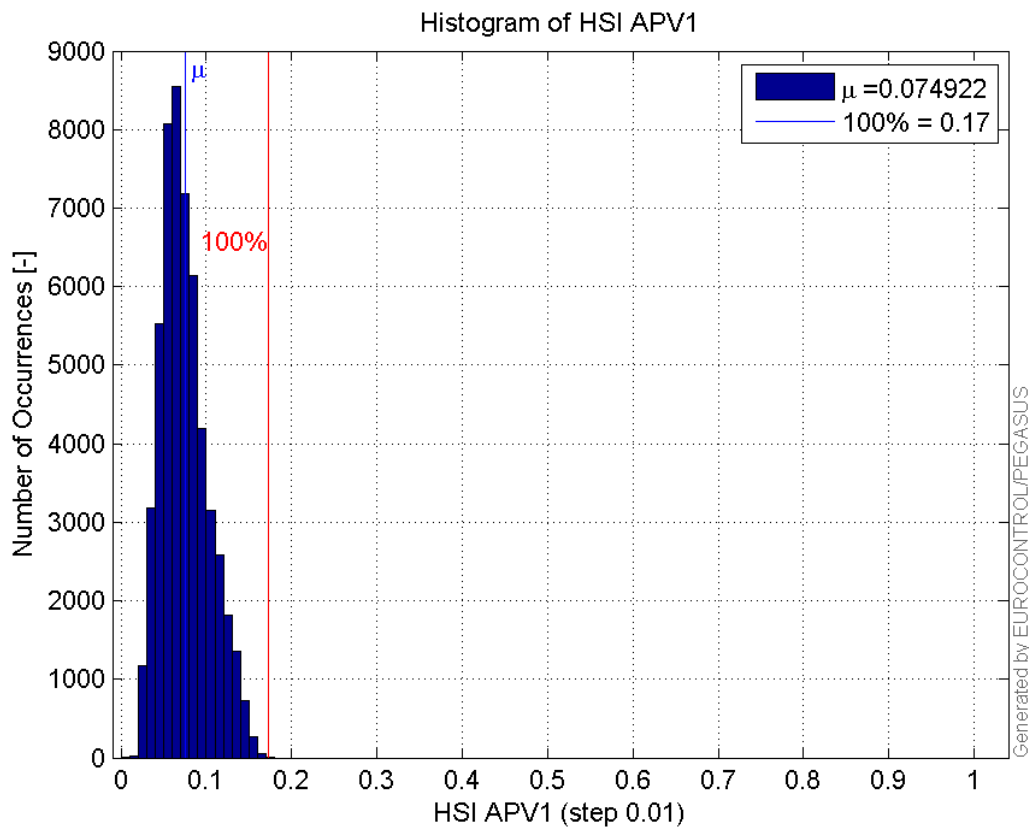
**Histogram of HPL APV1:**



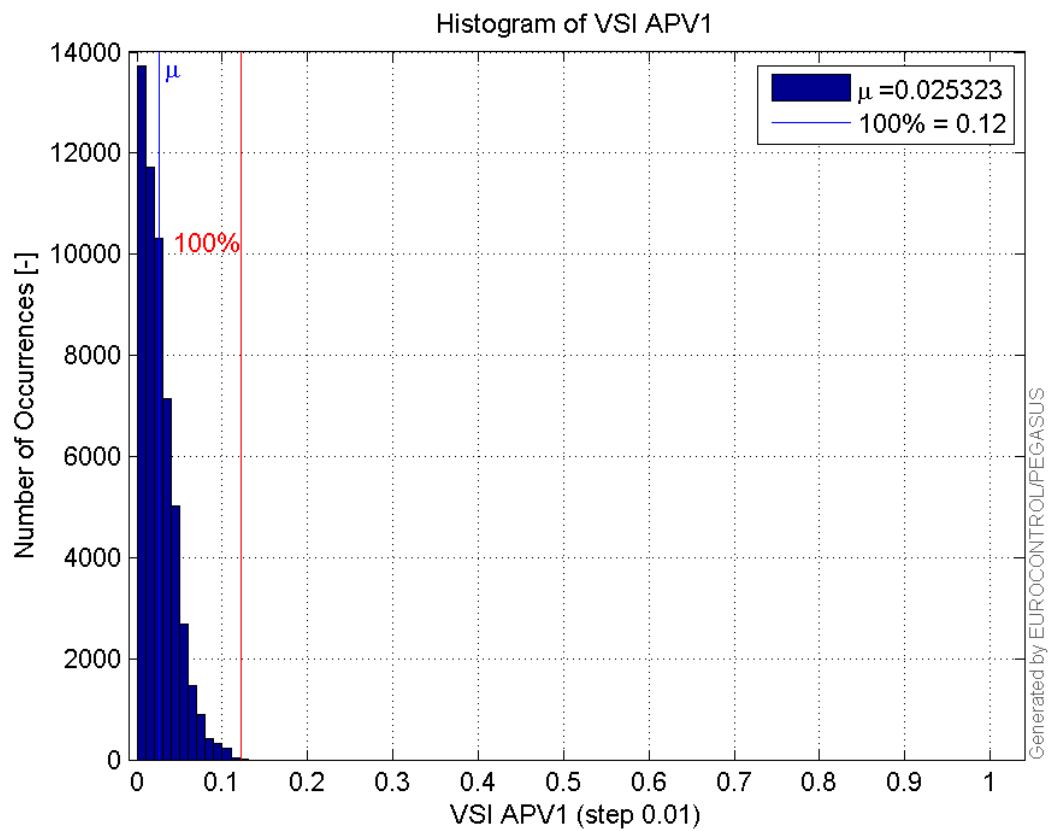
**Histogram of VPL APV1:**



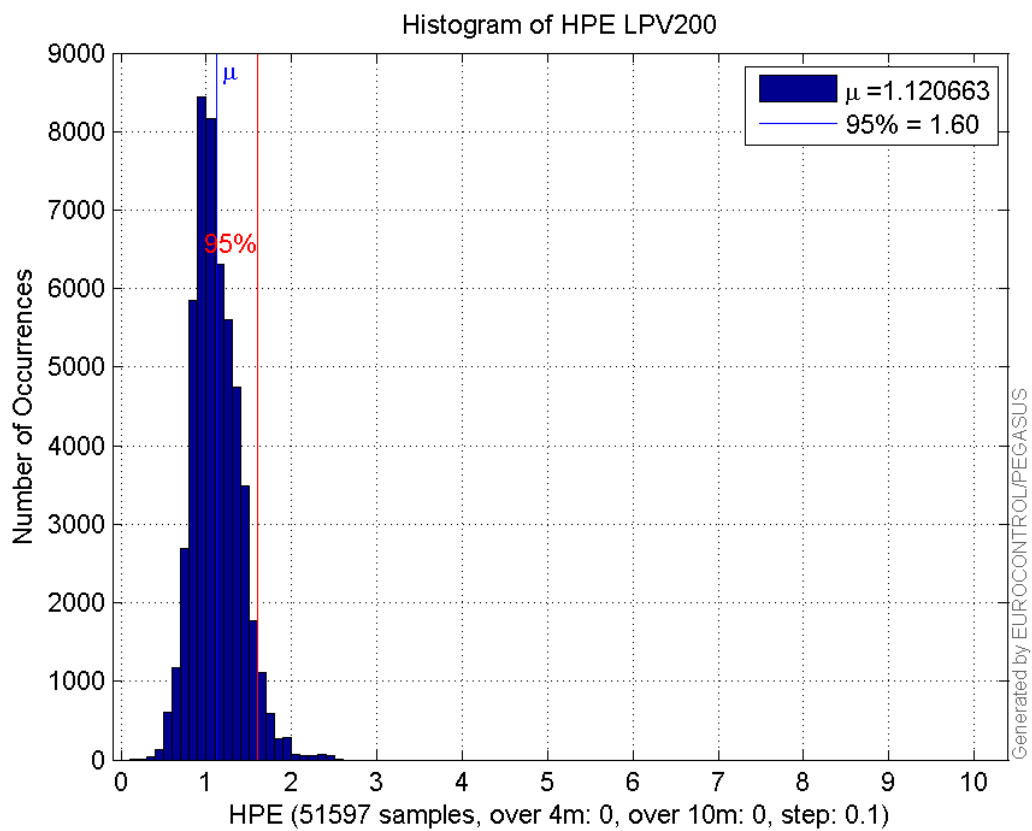
**Histogram of HSI APV1:**



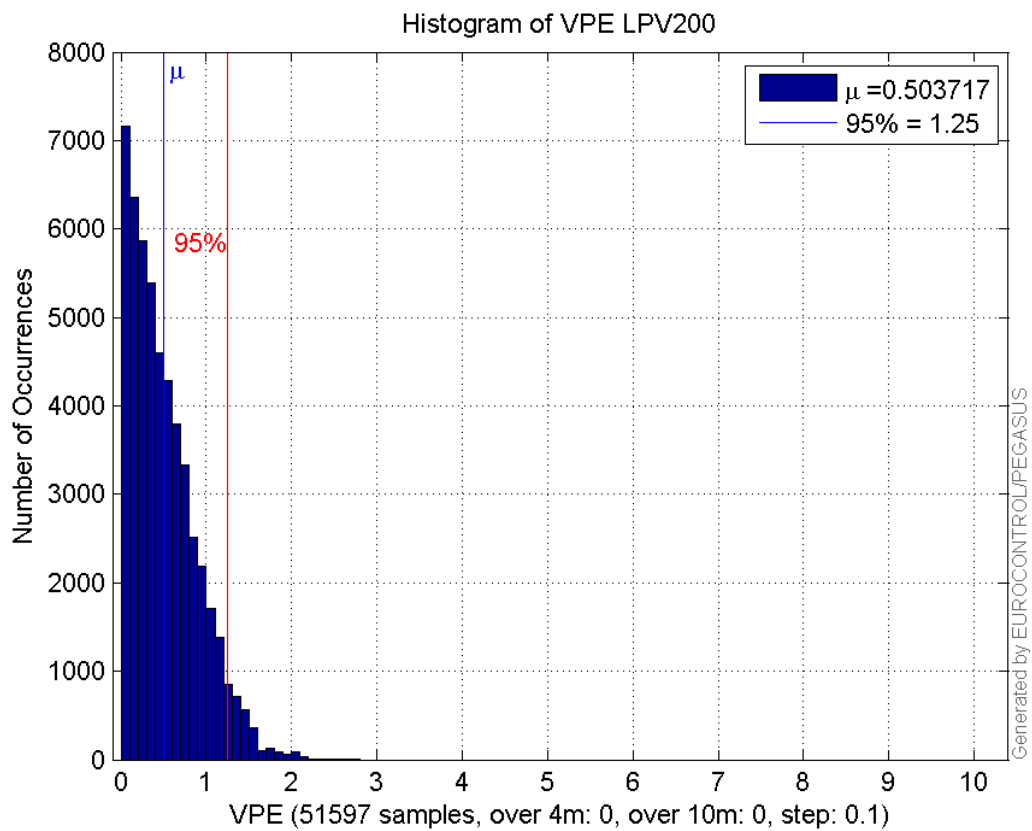
**Histogram of VSI APV1:**



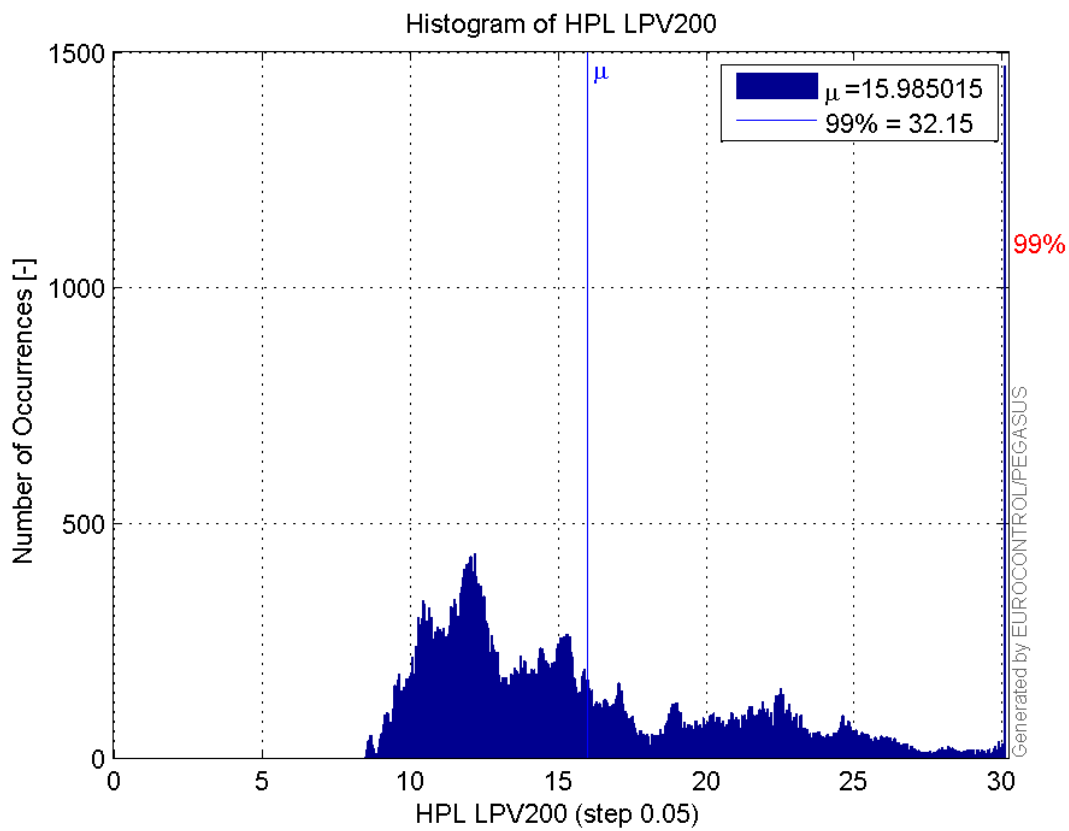
**Histogram of HPE LPV200:**



**Histogram of VPE LPV200:**

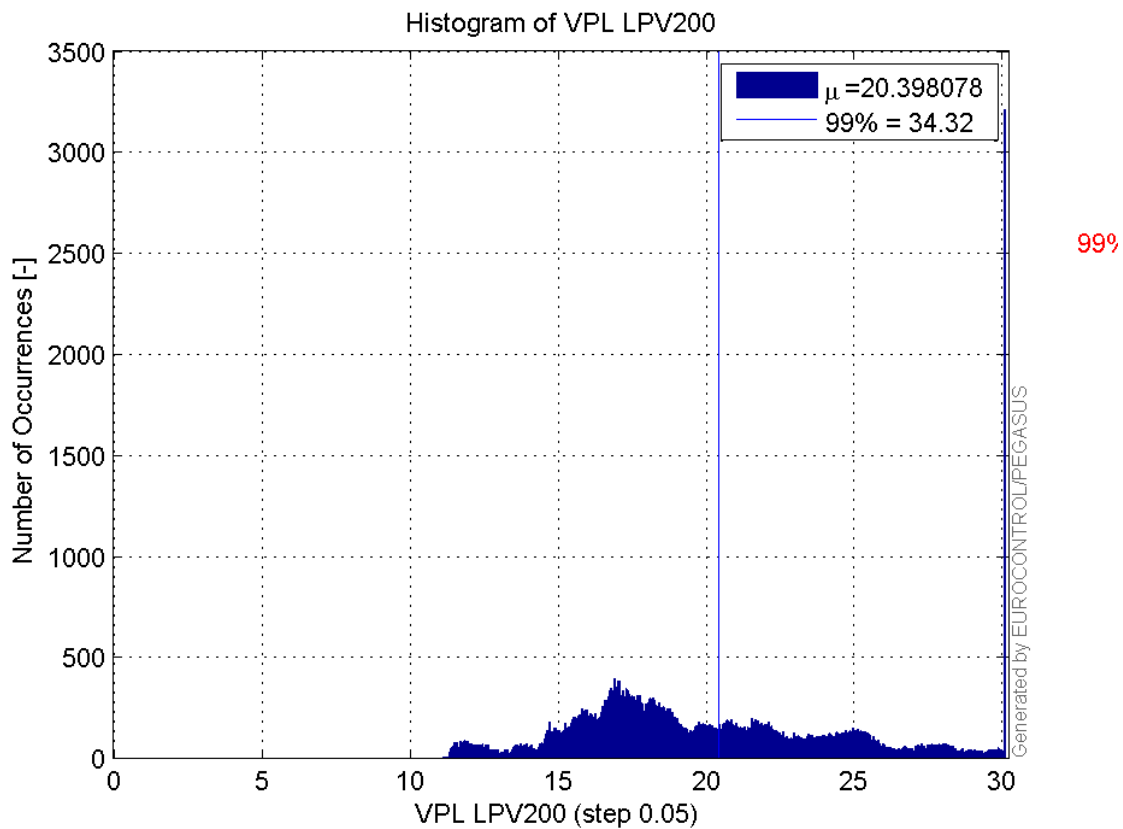


**Histogram of HPL LPV200:**

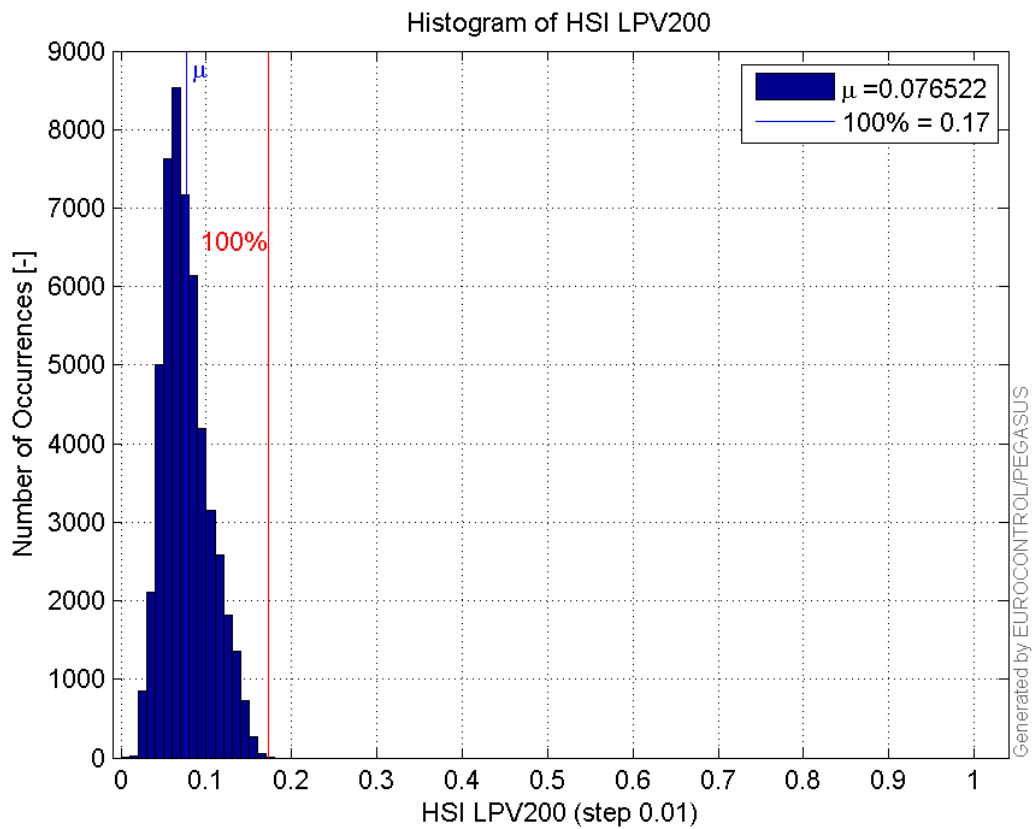


**Histogram of VPL LPV200:**

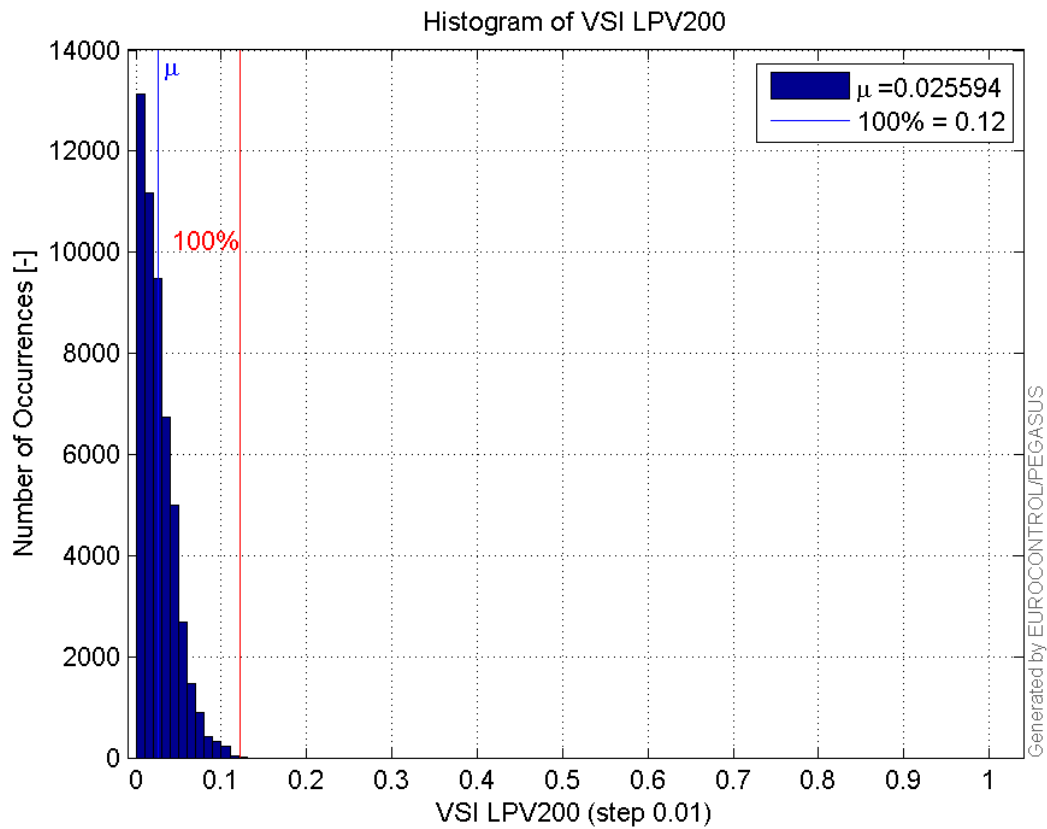




**Histogram of HSI LPV200:**

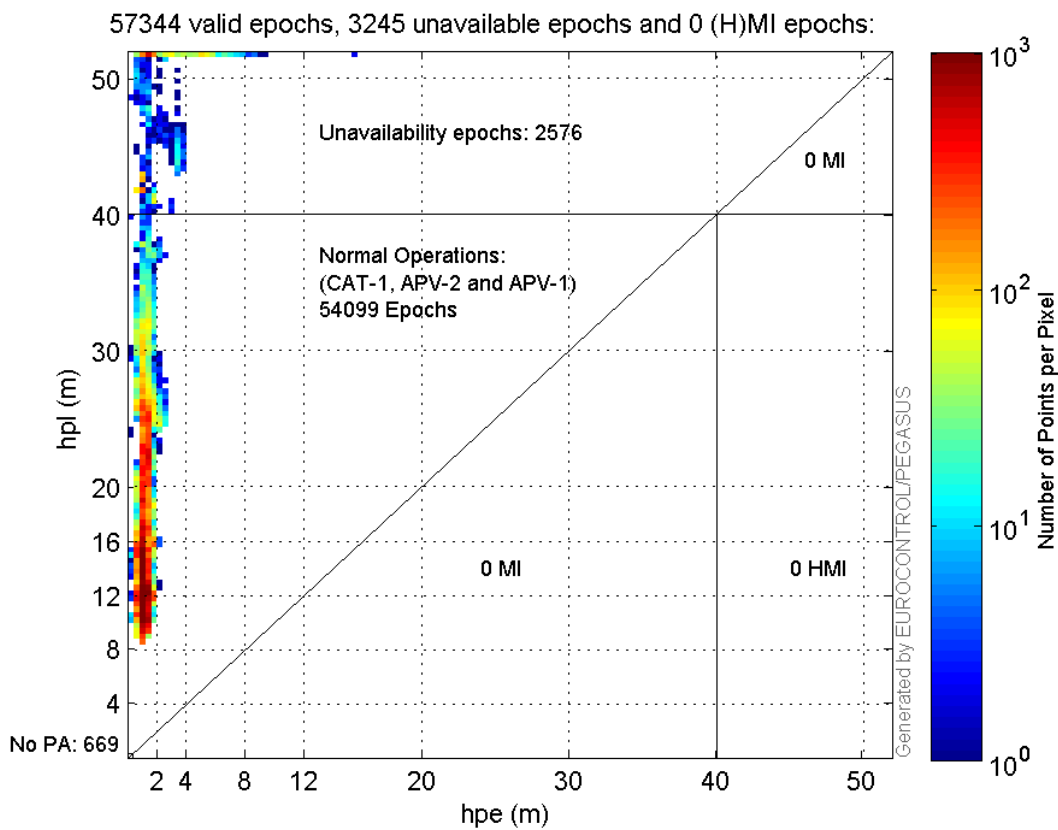


**Histogram of VSI LPV200:**



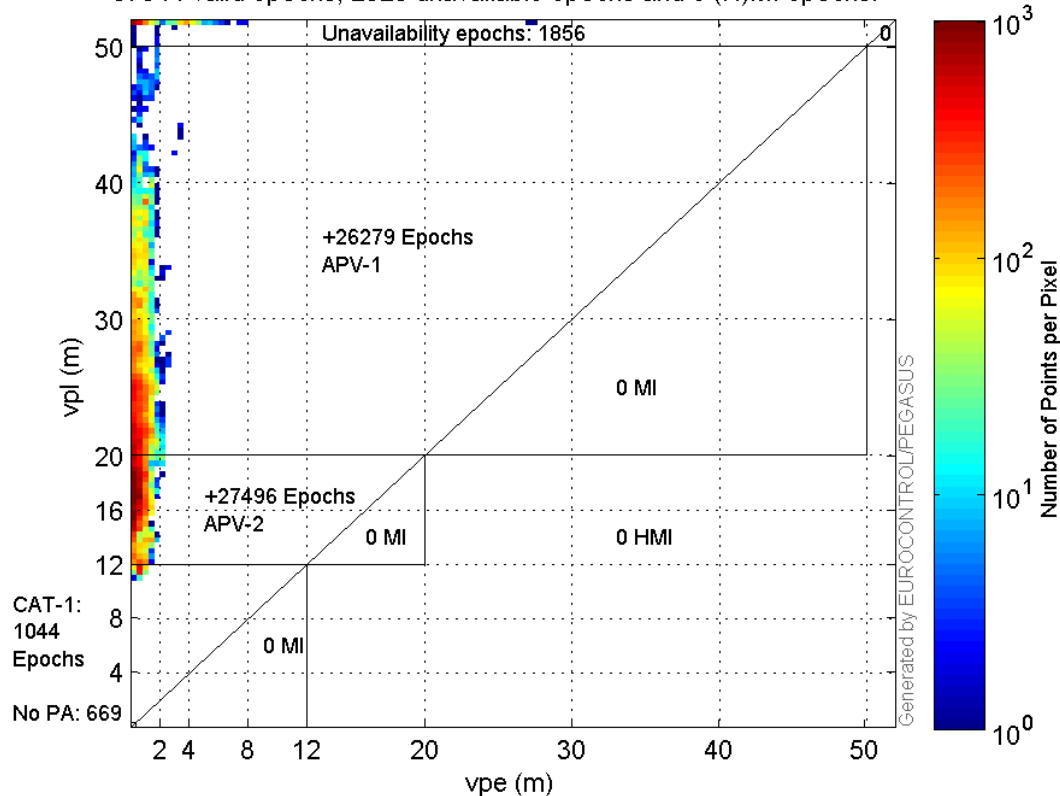
### Stanford Plots

#### Horizontal\_Stanford\_Plot\_SBAS:



#### Vertical\_Stanford\_Plot\_SBAS:

57344 valid epochs, 2525 unavailable epochs and 0 (H)MI epochs:



## Parameters

## system

Name	Section	Value
name	system	GNSS_Solution
version	system	4.8.4.0
input_prefix	system	D:/PegasusDateJob/job/2016_12_13EGNOS2Hz/02_Convertor/02_Convertor
output_prefix	system	D:/PegasusDateJob/job/2016_12_13EGNOS2Hz/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	220.6915
mi_numbers	results	0

## Range Domain

**start:** 05:59:39 13.12.2016 ( week: 1927 sec: 194379 )  
**end:** 14:42:49 13.12.2016 ( week: 1927 sec: 225769 )  
**duration:** 08:43:11 ..

### quality

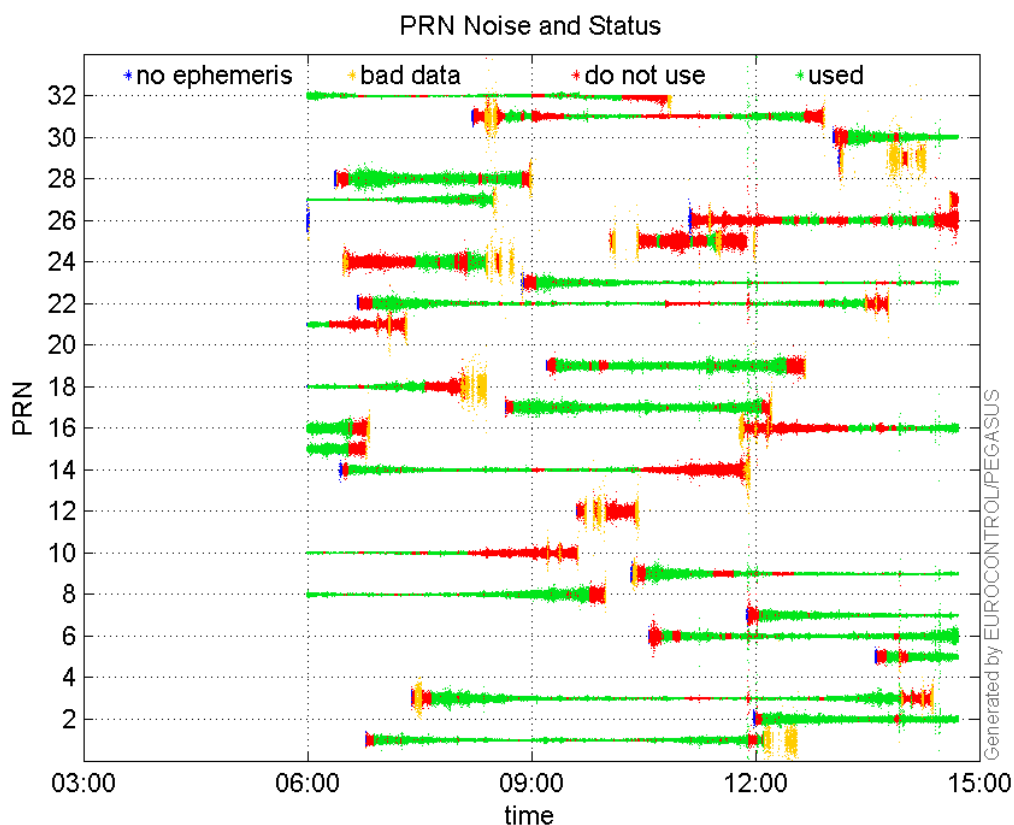
**valid samples** 58028  
**total samples** 58028

### PRN overview

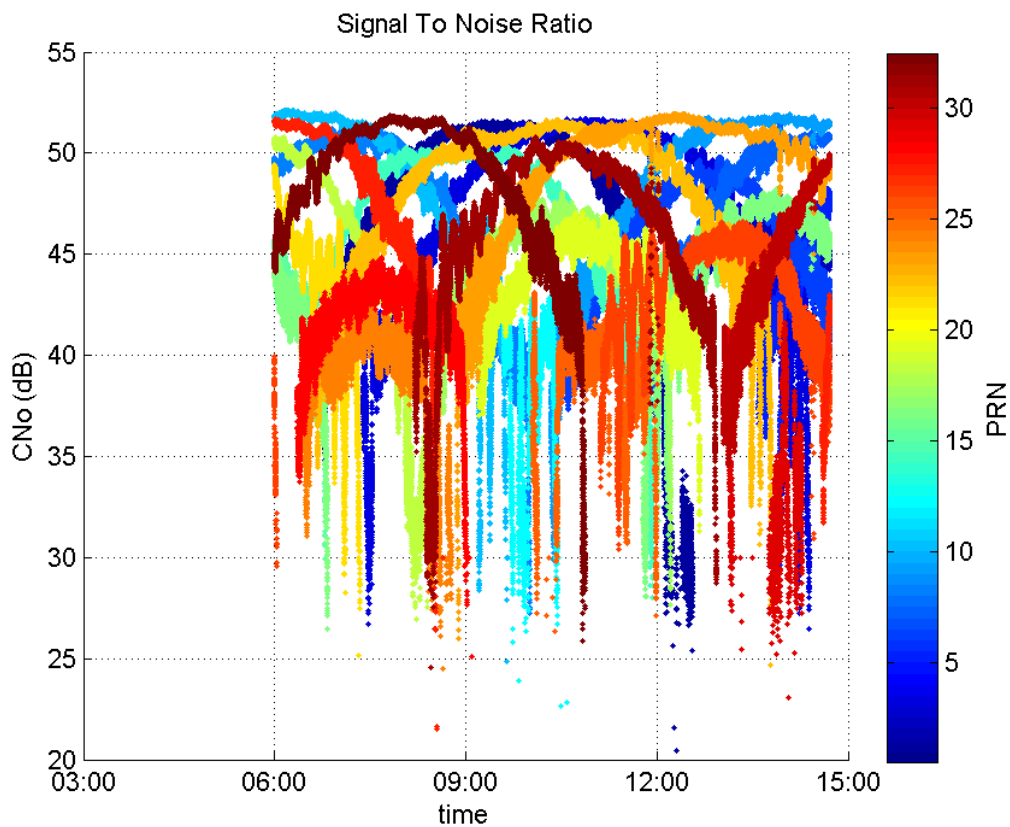
**Number of Visible GPS Satellites** 28  
**Number of Visible SBAS Satellites** 2

### signal quality and status

#### PRN Noise and Status:



#### Signal To Noise Ratio:



## range errors

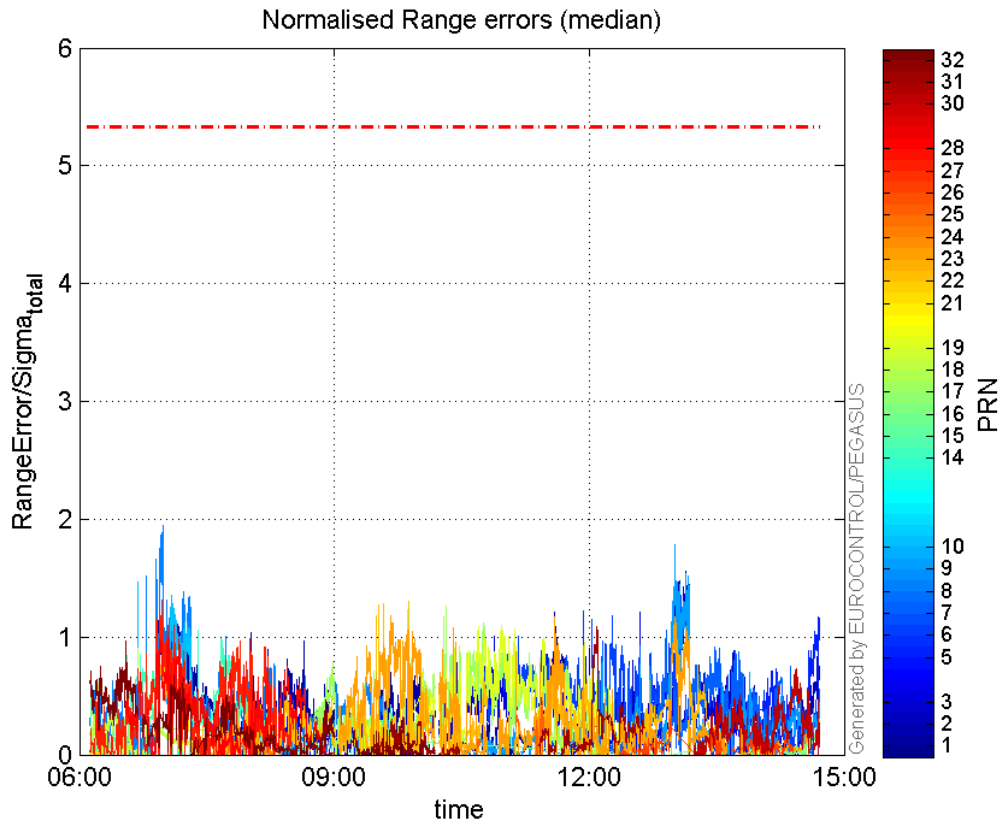
Number of Overbounding Norm Errors 0

## Max Norm Errors :

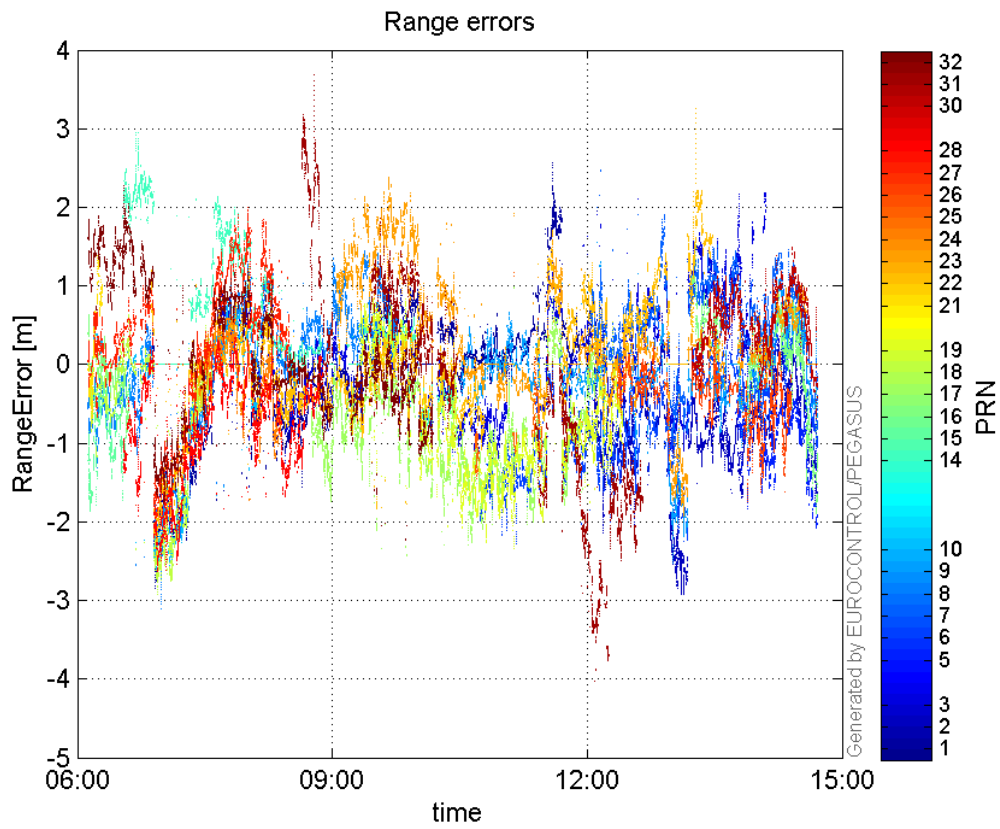
GPS Week	GPS Second	PRN	Norm Error	Range Error	Sigma
1927	197682	1	1.23138	-2.83888	2.30545
1927	220078	2	1.56322	-2.92528	1.87131
1927	218141	3	1.21212	2.10174	1.73393
1927	225721	5	1.16876	-2.07011	1.77121
1927	220086	6	1.46358	-2.25242	1.53899
1927	219261	7	1.06052	1.89403	1.78595
1927	197936	8	1.94532	-2.82625	1.45284
1927	219625	9	1.78765	-2.52325	1.41149
1927	196852	10	1.46959	-2.25735	1.53604
1927	199406	14	1.05642	2.10543	1.99298
1927	194954	15	0.524106	-1.86331	3.55521
1927	225292	16	0.404633	-1.48563	3.67154
1927	208345	17	1.29452	-2.41904	1.86867
1927	196852	18	0.903906	-2.3469	2.5964
1927	212285	19	1.0938	-1.94574	1.77888
1927	195302	21	0.0601763	1.46605	24.3626
1927	208345	22	1.30587	-1.77353	1.35813
1927	207603	23	1.18349	2.38722	2.0171
1927	202106	24	0.268146	-1.25425	4.6775
1927	214015	25	0.453955	-1.30456	2.87376
1927	219460	26	0.376219	-1.16587	3.09891
1927	197874	27	1.31303	-2.06189	1.57033

1927	198134	28	1.03892	-2.61551	2.51754
1927	224762	30	0.73545	1.43645	1.95315
1927	216340	31	1.09139	-4.02812	3.69083
1927	196370	32	0.965914	2.28258	2.36313

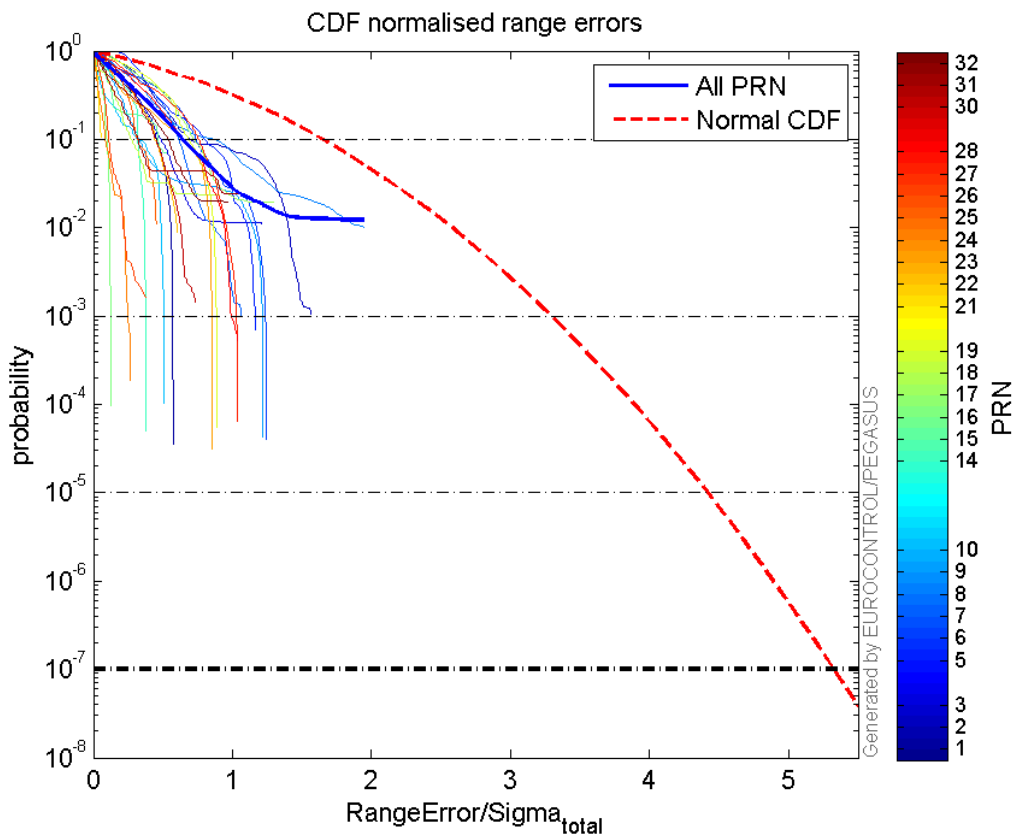
**Normalised Range errors (median):**



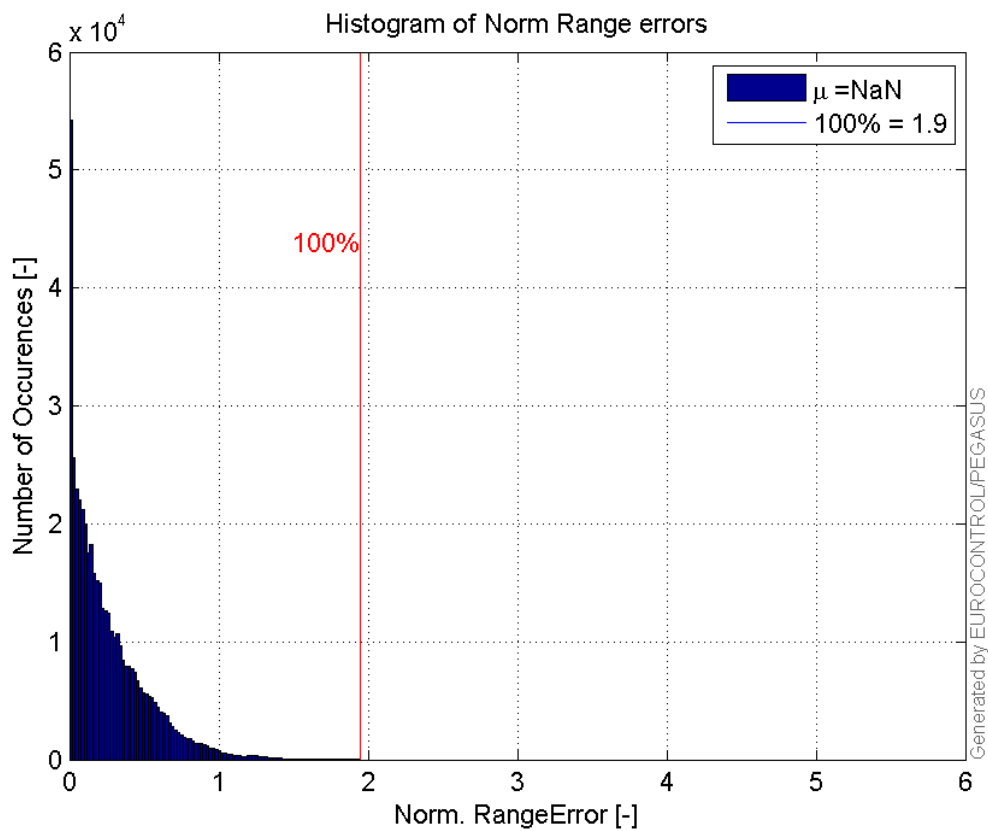
**Range errors:**



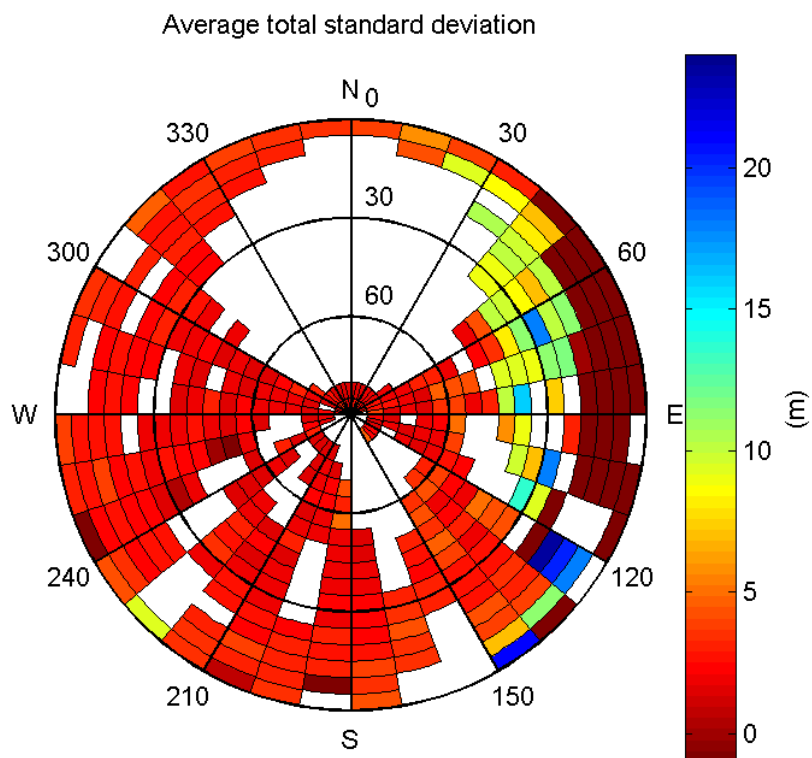
**CDF normalised range errors:**



**Histogram of Norm Range errors:**

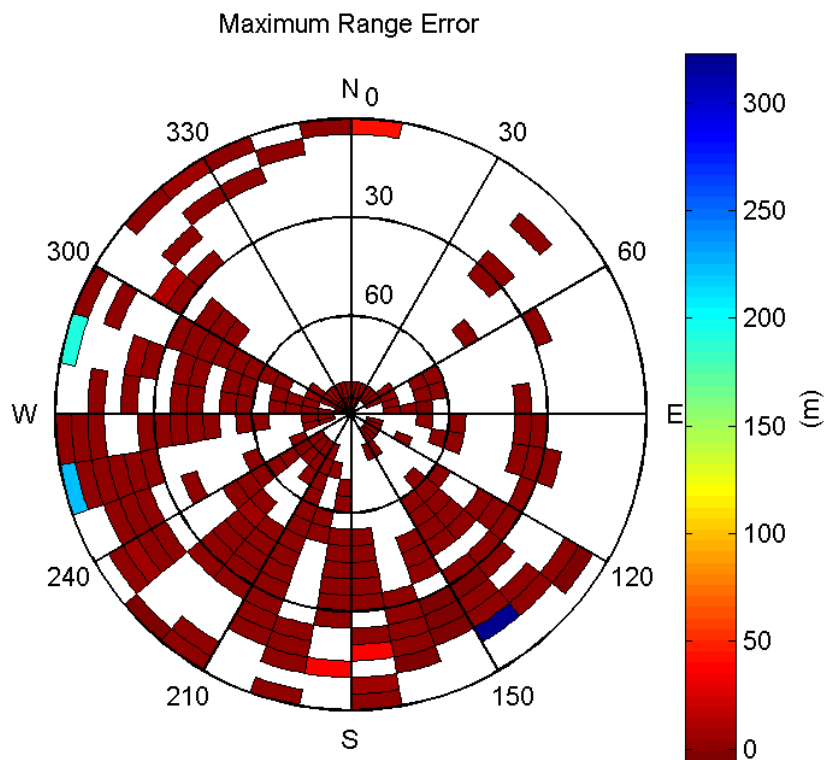


**Sigma Sky Plot:**



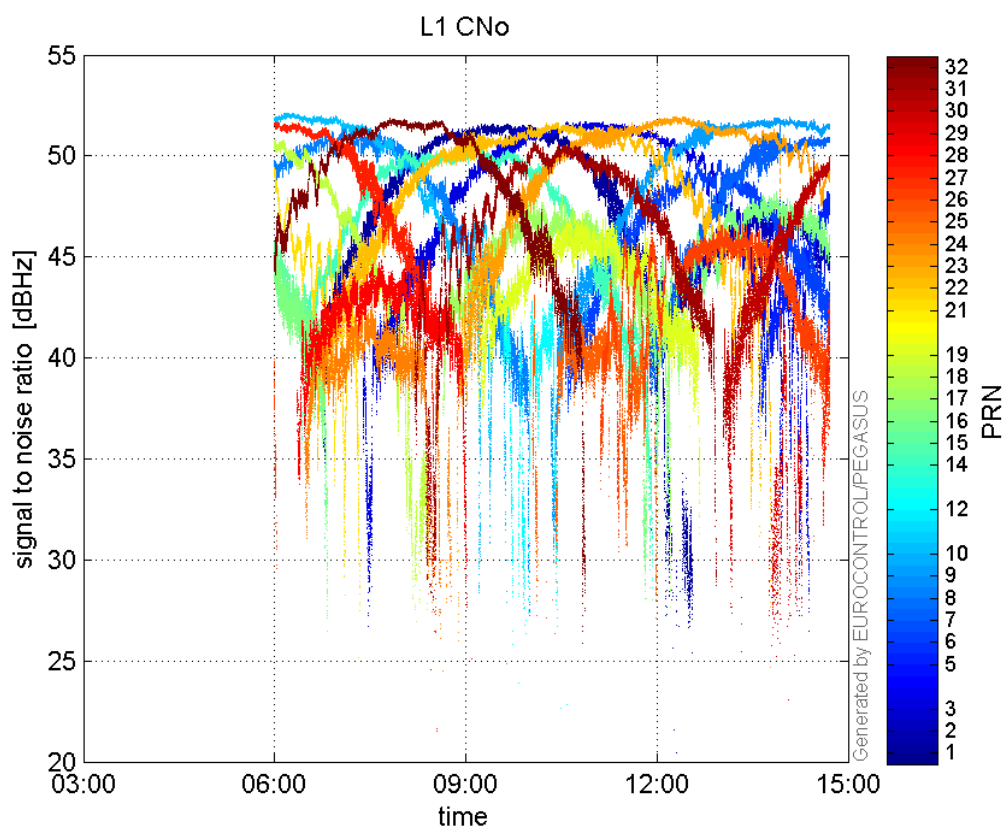
**Norm Error Sky Plot:**



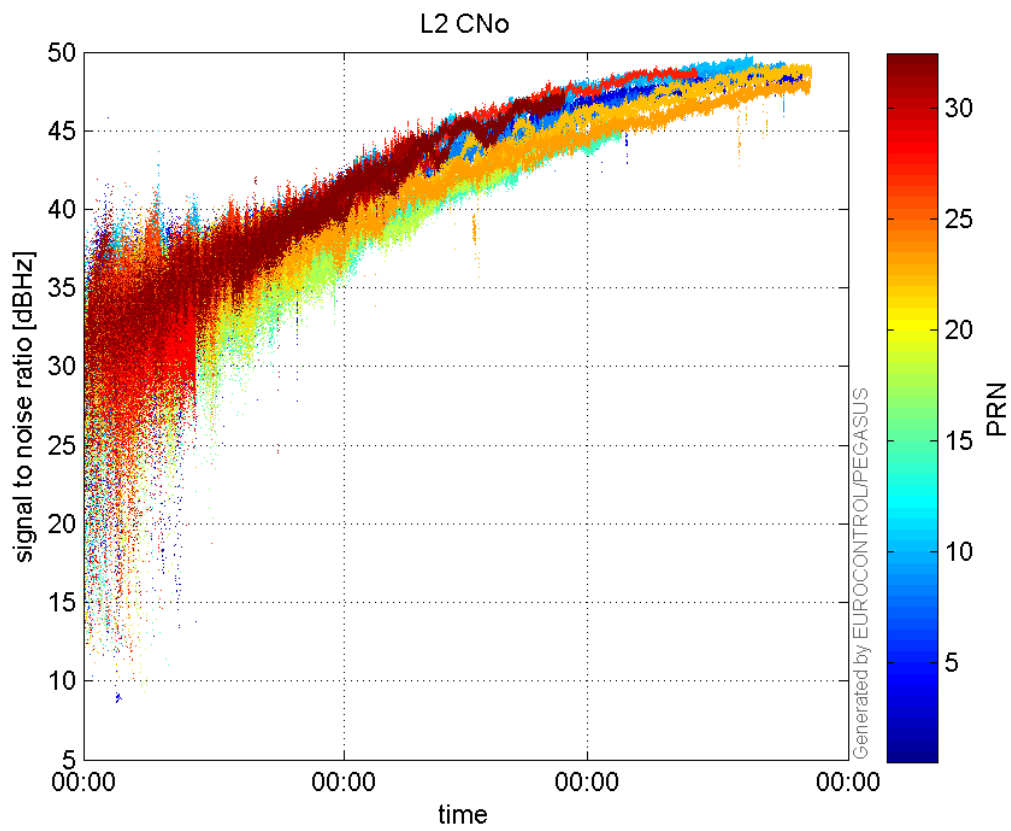


### signal quality

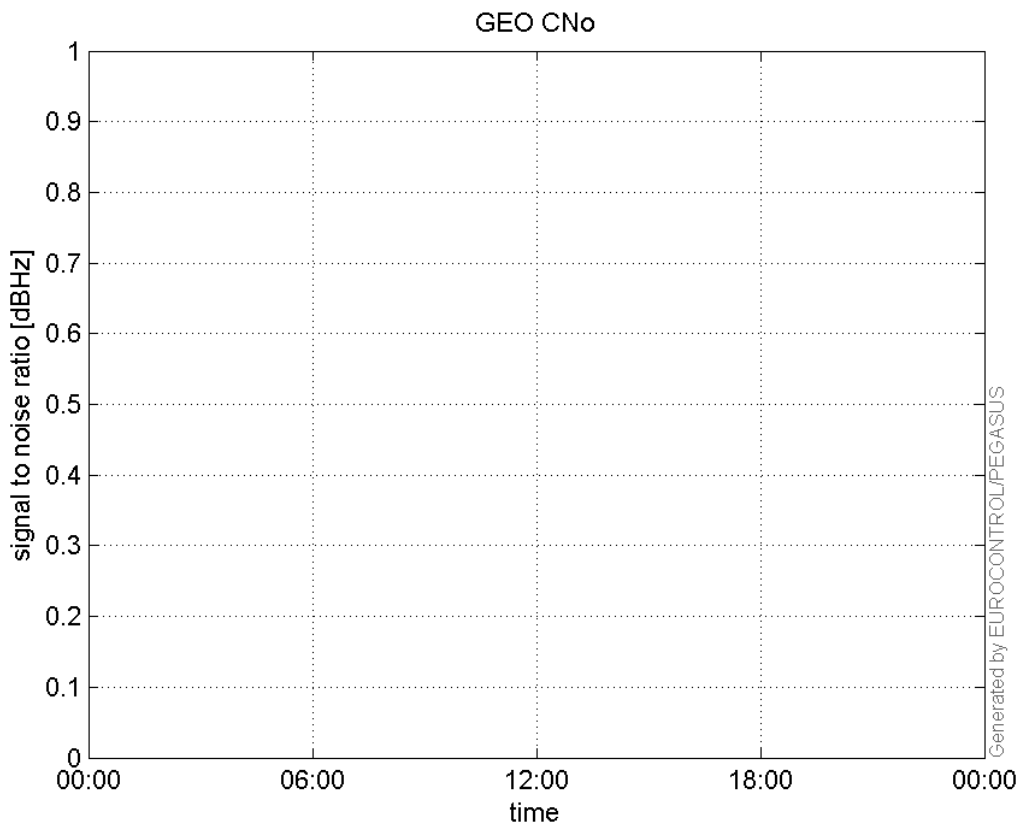
**L1 CNo:**



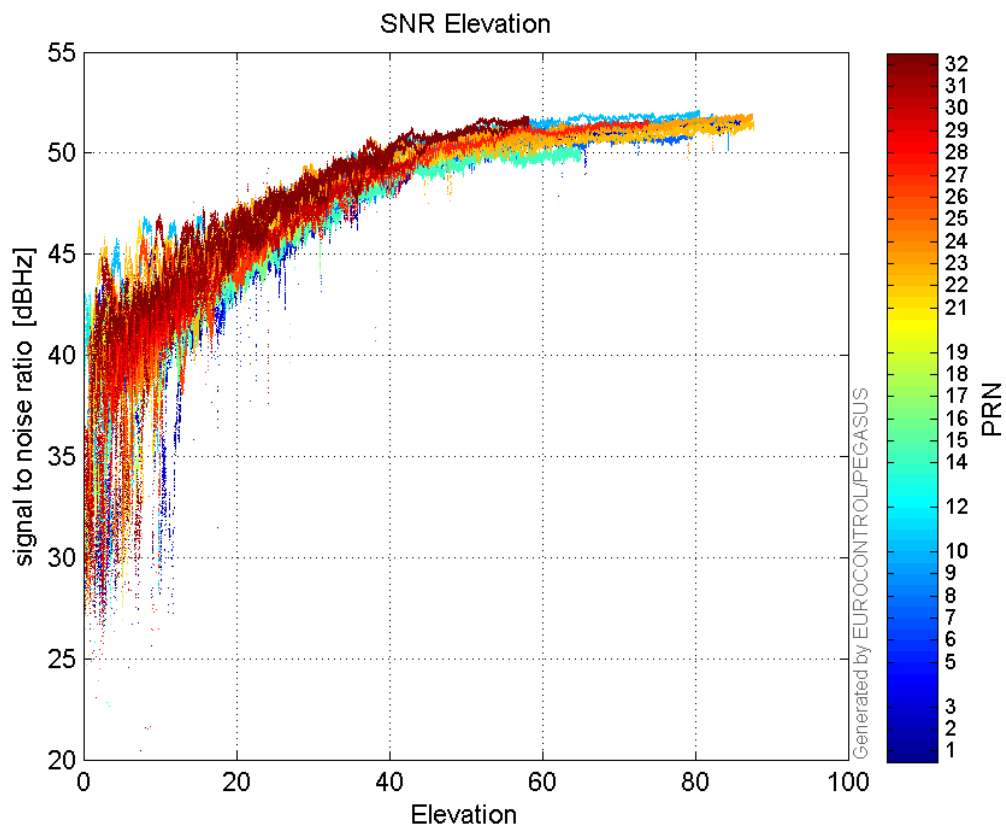
**L2 CNo:**



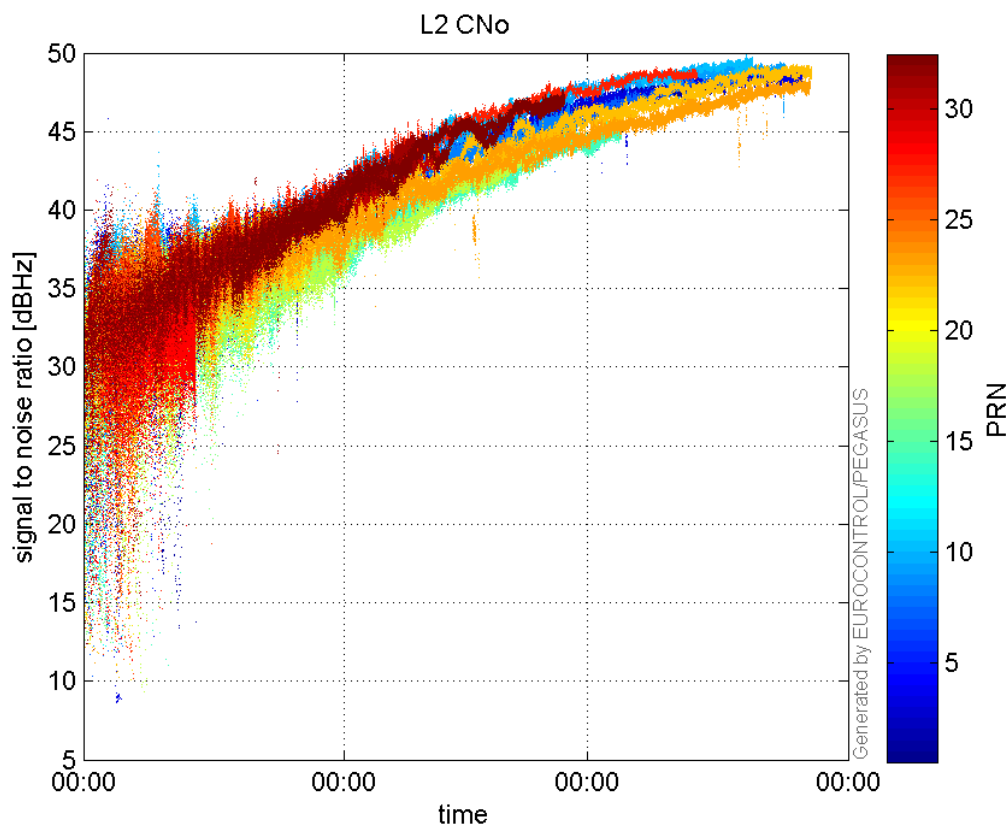
**GEO CNo:**



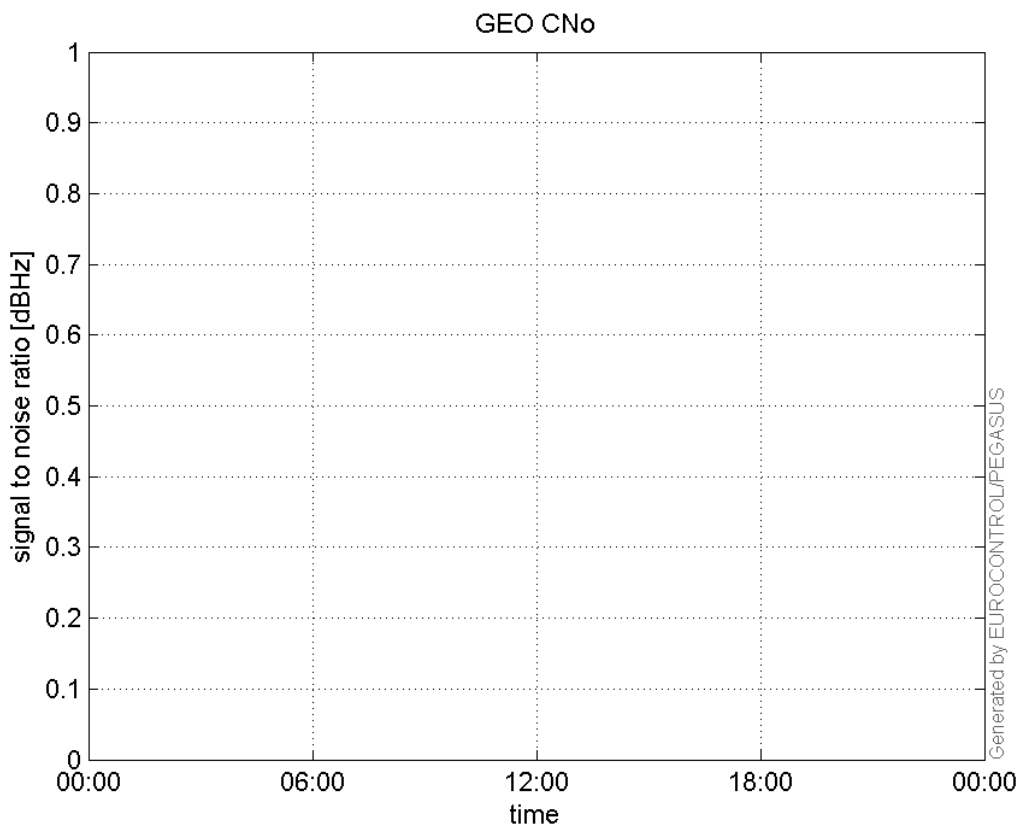
**SNR Elevation:**



**L2 CNo:**

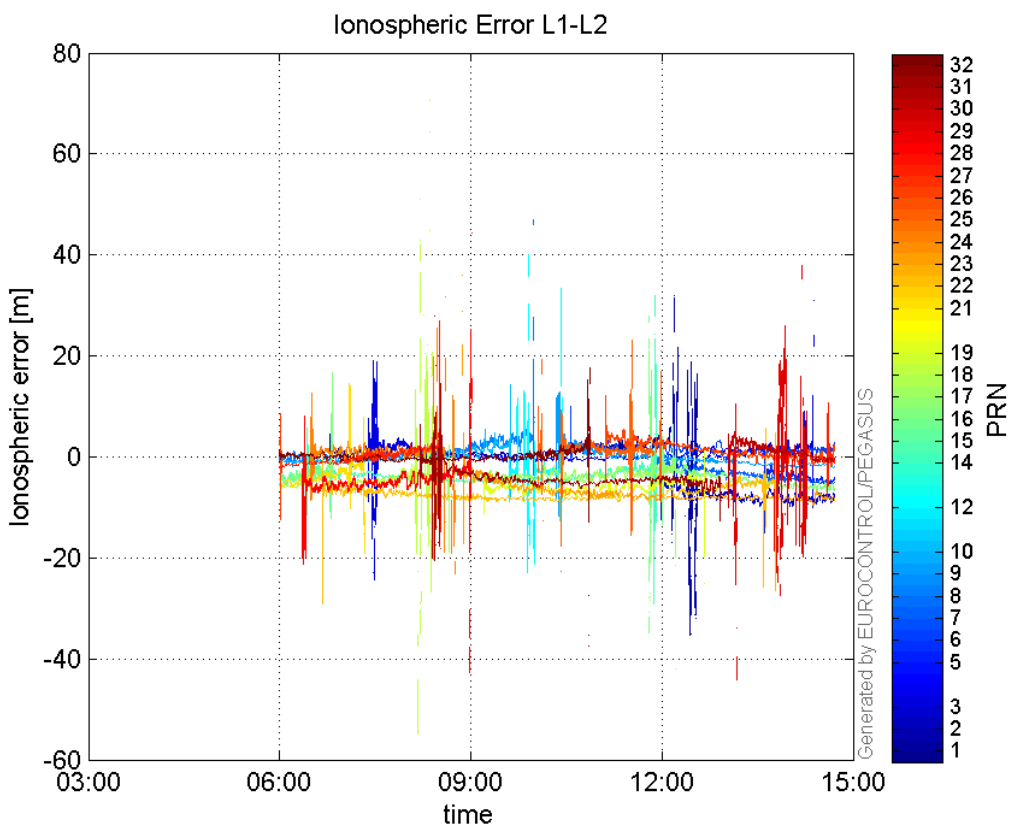


**GEO CNo:**



### 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/2016_12_13EGNOS2Hz/02_Convertor/02_Convertor
output_prefix	system	D:/PegasusDateJob/job/2016_12_13EGNOS2Hz/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	220.6915
mi_numbers	results	0