

# 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:** 05:54:16.129 29.11.2016 ( week: 1925 sec: 194056.129 )  
**end:** 14:27:28.129 29.11.2016 ( week: 1925 sec: 224848.129 )  
**duration:** 08:33:12 ..

### quality

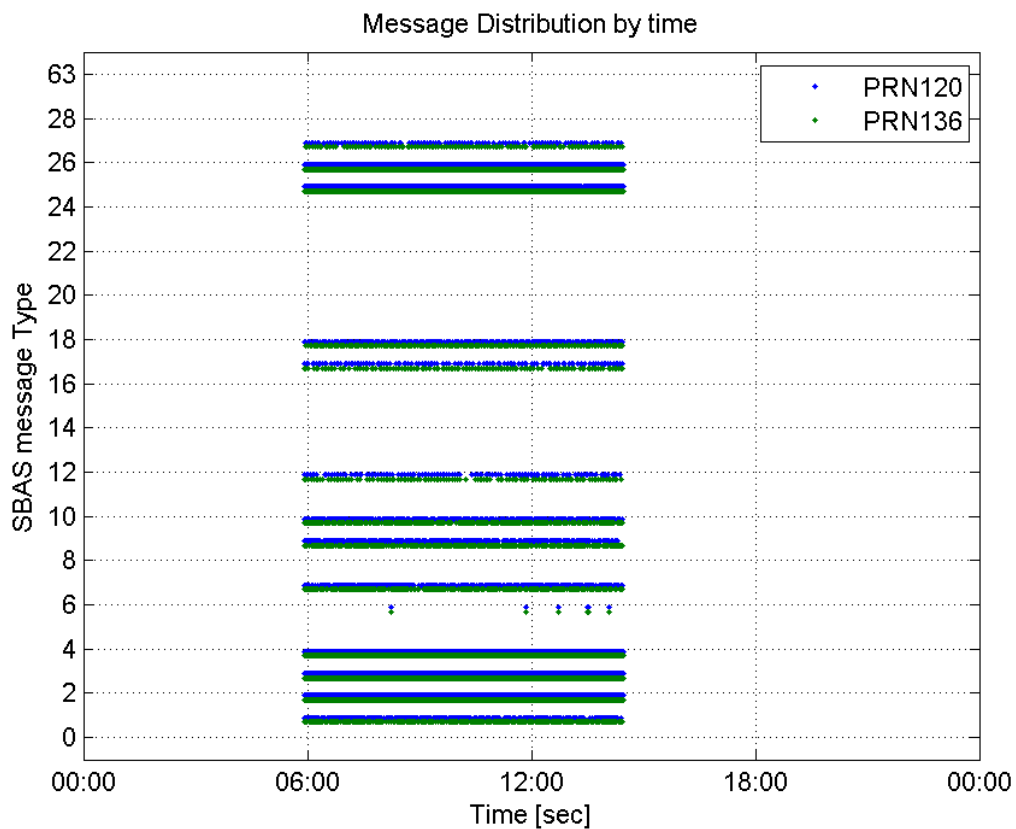
**valid samples** 47004  
**total samples** 47004  
**number of SBAS PRNs** 2

### SBAS SIS Overview

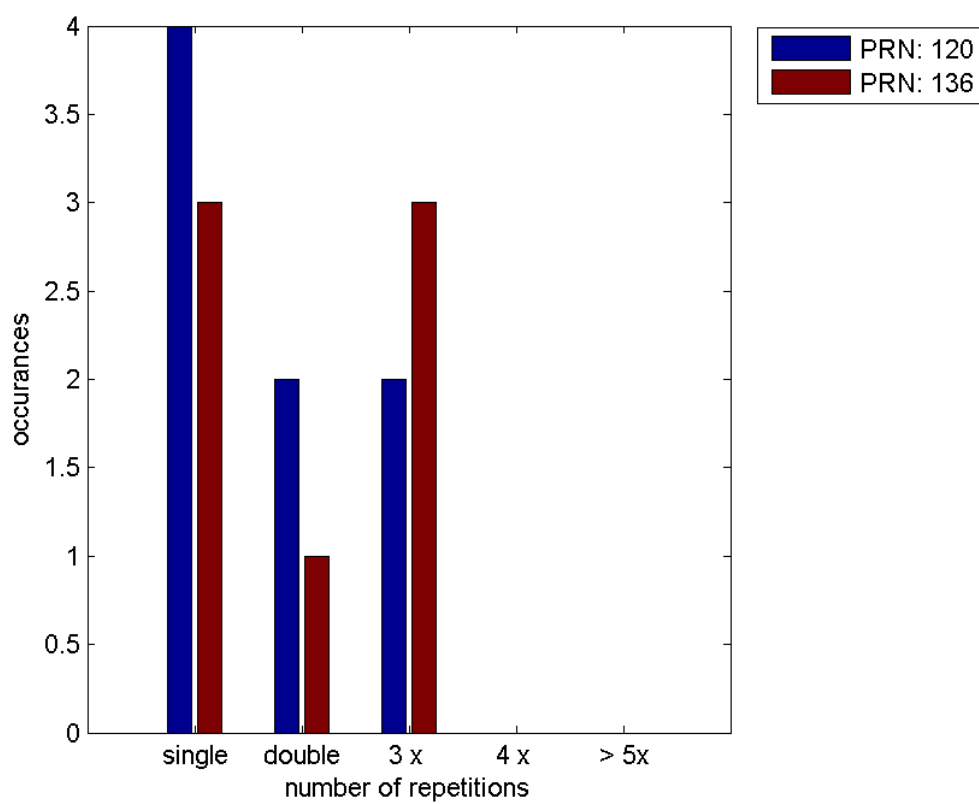
#### Message Type 6 repetitions :

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

#### Message Distribution by time:



**Message Type 6 repetitions:**



## Broadcast SBAS Messages :

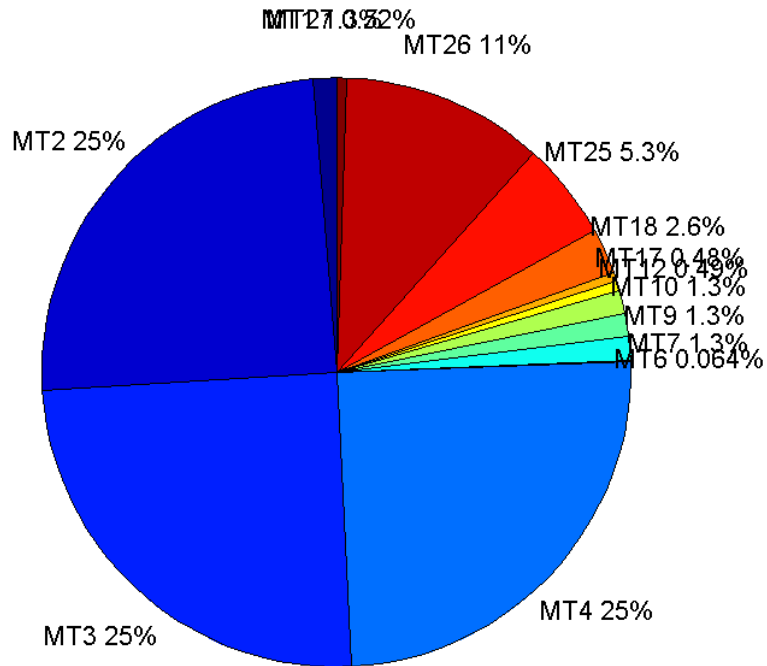
	number of messages	%
MT 0	0	0
MT 1	303	1.28986
MT 2	5803	24.7031
MT 3	5828	24.8095
MT 4	5821	24.7797
MT 5	0	0
MT 6	15	0.0638542
MT 7	301	1.28134
MT 9	303	1.28986
MT 10	304	1.29411
MT 12	114	0.485292
MT 17	113	0.481035
MT 18	600	2.55417
MT 24	0	0
MT 25	1249	5.31693
MT 26	2614	11.1277
MT 27	123	0.523605
MT 28	0	0
MT 62	0	0
MT 63	0	0
<b>Total</b>	23491	100

## Update intervals :

	Minimum [s]	Maximum [s]	Mean value	Exceed Max update	Exceed NPA timeout	Exceed PA timeout
MT 0	--	--	--	--	--	--
MT 1	76	556	101.252	54	0	0
MT 2	4	20	5.30714	1678	1	22
MT 3	4	21	5.28351	1671	1	15
MT 4	4	18	5.28986	1675	0	15
MT 5	--	--	--	--	--	--
MT 6	1	13056	1502.14	4	4	4
MT 7	76	398	102.42	59	1	7
MT 9	76	400	100.172	0	0	0
MT 10	76	321	101.314	62	0	6
MT 12	189	1189	269.584	113	29	29
MT 17	188	600	273.768	0	0	0
MT 18	4	200	51.2287	0	0	0
MT 24	--	--	--	--	--	--
MT 25	2	140	24.649	0	0	0
MT 26	2	76	11.7834	0	0	0
MT						

27	192	768	249.721	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	297	1.26313
MT 2	5837	24.8246
MT 3	5843	24.8501
MT 4	5809	24.7055
MT 5	0	0
MT 6	15	0.0637945
MT 7	279	1.18658
MT 9	296	1.25888
MT 10	306	1.30141
MT 12	114	0.484838
MT 17	124	0.527368

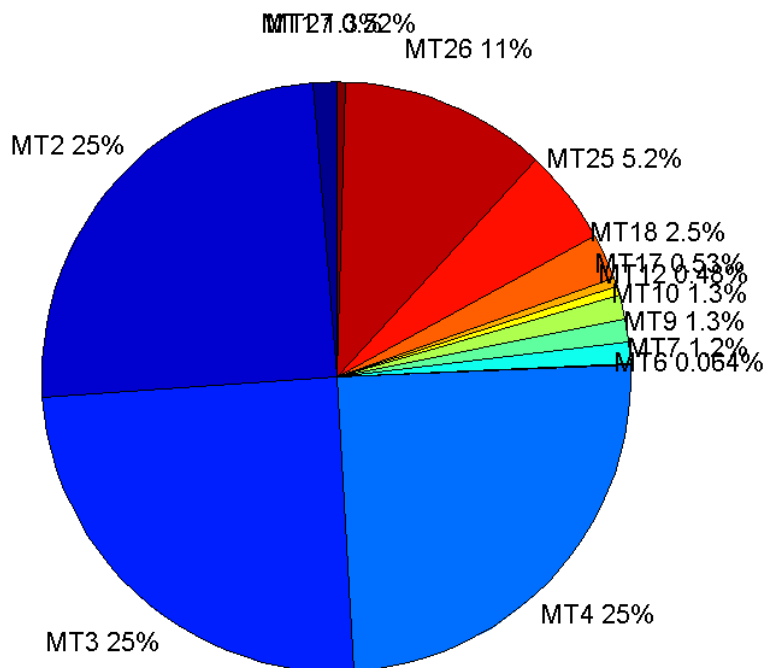
MT 18	586	2.49224
MT 24	0	0
MT 25	1231	5.2354
MT 26	2654	11.2874
MT 27	122	0.518862
MT 28	0	0
MT 62	0	0
MT 63	0	0
<b>Total</b>	23513	100

## Update intervals :

	Minimum [s]	Maximum [s]	Mean value	Exceed Max update	Exceed NPA timeout	Exceed PA timeout
MT 0	--	--	--	--	--	--
MT 1	76	321	103.787	68	0	0
MT 2	4	17	5.27553	1671	0	10
MT 3	4	17	5.27063	1671	0	15
MT 4	4	17	5.30096	1686	0	12
MT 5	--	--	--	--	--	--
MT 6	1	13056	1502.14	4	4	4
MT 7	76	392	110.191	72	1	11
MT 9	76	322	104.112	0	0	0
MT 10	75	480	100.607	55	2	11
MT 12	188	982	270.381	113	30	30
MT 17	188	777	249.992	0	0	0
MT 18	3	205	52.2667	0	0	0
MT 24	--	--	--	--	--	--
MT 25	1	140	25.0187	0	0	0
MT 26	2	80	11.5963	0	0	0
MT 27	188	788	252.438	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_11_29EGNOS2Hz/01_User/01_User
Outputfile	System	D:/PegasusDateJob/job/2016_11_29EGNOS2Hz/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:** 05:54:16 29.11.2016 ( week: 1925 sec: 194056 )  
**end:** 14:27:29 29.11.2016 ( week: 1925 sec: 224849 )  
**duration:** 08:33:14 ..

#### quality

**valid samples** 55506  
**total samples** 56167

## Event tables

**Position discontinuity events type** long  
**APV-I discontinuity events type** too many (34)  
**APV-35m discontinuity events type** too many (39)  
**LPV-200 discontinuity events type** too many (39)  
**CAT-I discontinuity events type** independent

extremes :

	Epoch	HPE	HPL	HPE/HPL	VPE	VPL	VPE/VPL
max normHor	223260	1.67841	9.26936	0.18107	-0.728843	17.8361	0.0408634
max normVer	201821	1.03991	11.8339	0.0878755	2.43053	17.9728	0.135234
max HPE	208968	15.8637	570.165	0.0278231	12.717	440.014	0.0289013
max VPE	214564	8.72542	168.284	0.0518494	13.522	266.452	0.0507483
min HPL	216793	1.15238	8.16514	0.141134	-0.484628	11.5929	0.0418039
min VPL	211184	0.813958	9.12144	0.0892357	0.616183	10.8207	0.0569448

Position discontinuity events :

#	Epoch	duration	stable period
1	194871	8.5	84.5
2	195025	4.5	52.5
3	208969	70	249.5
4	210456	178.5	478
5	213411	5.5	259.5

CAT-I discontinuity events :

#	Epoch	duration	stable period
1	210156	664.5	36.5
2	211319	100.5	33.5
3	211510	5269.5	16.5
4	216797	8.5	17.5

## First Glance analysis

**Duration** 30794  
**Number of Samples** 56167  
**Number of invalid sample** 661  
**Number of no position solution samples** 594  
**Number of missing sample** 5421  
**Logging Loss** 8.802  
**Processing Loss** 1.1768  
**Number of Misleading Information** 0  
**Data gaps** 14  
**Discontinuities** 66

Number of Samples :

Valid	APV-1	LPV-200	CAT-1	APV-35m
54912	51547	51066	1242	51066

Accuracy statistics :

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	Valid	APV-1	LPV-200	CAT-1	APV-35m
HPE 95%	1.47903	1.45911	1.45835	1.10015	1.45835
HPEscale 95%	NaN	4.50836	4.51459	4.47307	4.51459
VPE 95%	1.52242	1.41696	1.40683	0.647028	1.40683
VPEscale 95%	NaN	3.84111	2.69642	0.685252	2.69642

## Availability :

	Valid	APV-1	LPV-200	CAT-1	APV-35m
Signal in Space	0.989298	0.928674	0.920009	0.022376	0.920009
measurements	0.977656	0.917745	0.909182	0.0221126	0.909182
Operational	1.7832	1.67393	1.65831	0.0403325	1.65831

## Discontinuity events :

	Valid	APV-1	LPV-200	CAT-1	APV-35m
All	52	178	234	83	234
Long	5	44	58	22	58
Independent	5	34	39	4	39
P(disc.)	0.00136582	0.00989388	0.0114558	0.0483092	0.0114558
P(slide)	0.0139769	0.0481987	0.0612932	0.373188	0.0612932

## 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

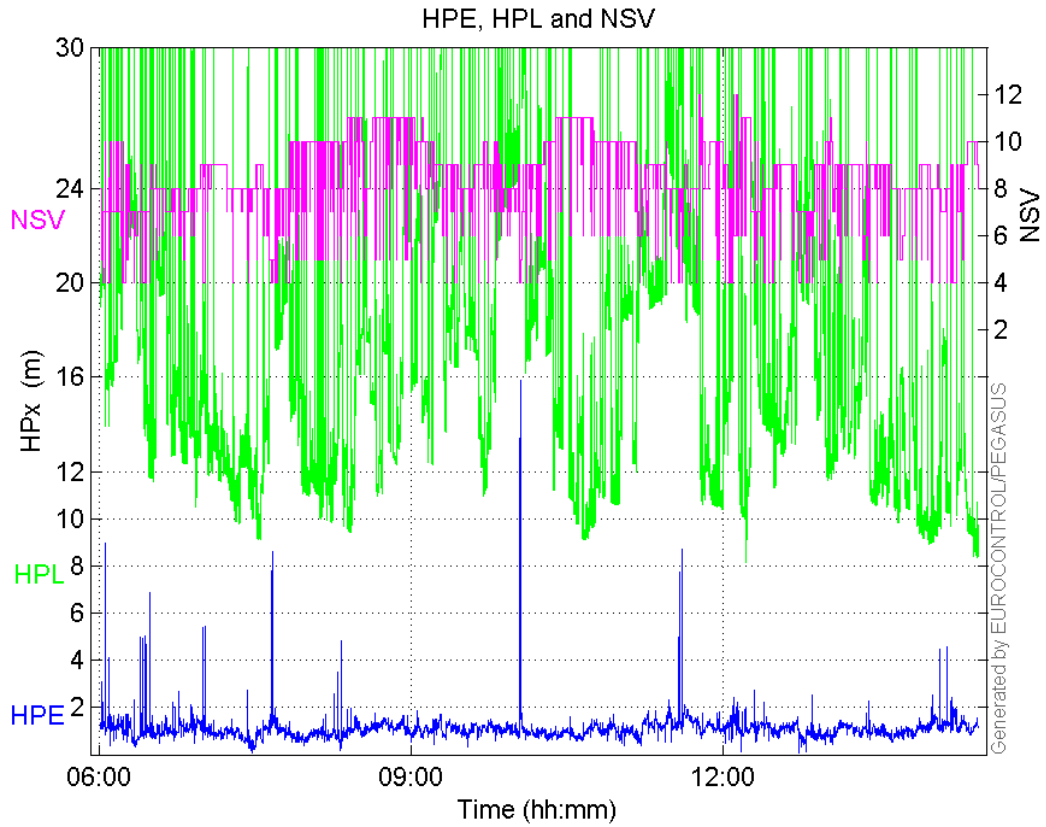
## Performance Summary :

	Valid	APV-1	LPV-200	CAT-1	APV-35m
Samples	54912	51547	51066	1242	51066
SIS Availability	0.989298	0.928674	0.920009	0.022376	0.920009
Local Availability	0.977656	0.917745	0.909182	0.0221126	0.909182
Operational Availability	1.7832	1.67393	1.65831	0.0403325	1.65831
HPE 95%	1.47903	1.45911	1.45835	1.10015	1.45835
HPEscale 95%	NaN	4.50836	4.51459	4.47307	4.51459
VPE 95%	1.52242	1.41696	1.40683	0.647028	1.40683
VPEscale 95%	NaN	3.84111	2.69642	0.685252	2.69642
All Discontinuity Events	52	178	234	83	234
Long Discontinuity Events	5	44	58	22	58
Independent Discontinuity Events	5	34	39	4	39
P(discontinuity)	0.00136582	0.00989388	0.0114558	0.0483092	0.0114558
P(sliding window)	0.0139769	0.0481987	0.0612932	0.373188	0.0612932
All Integrity Events	0	0	0	0	0
Horizontal Integrity Events	0	0	0	0	0
Vertical Integrity Events	0	0	0	0	0

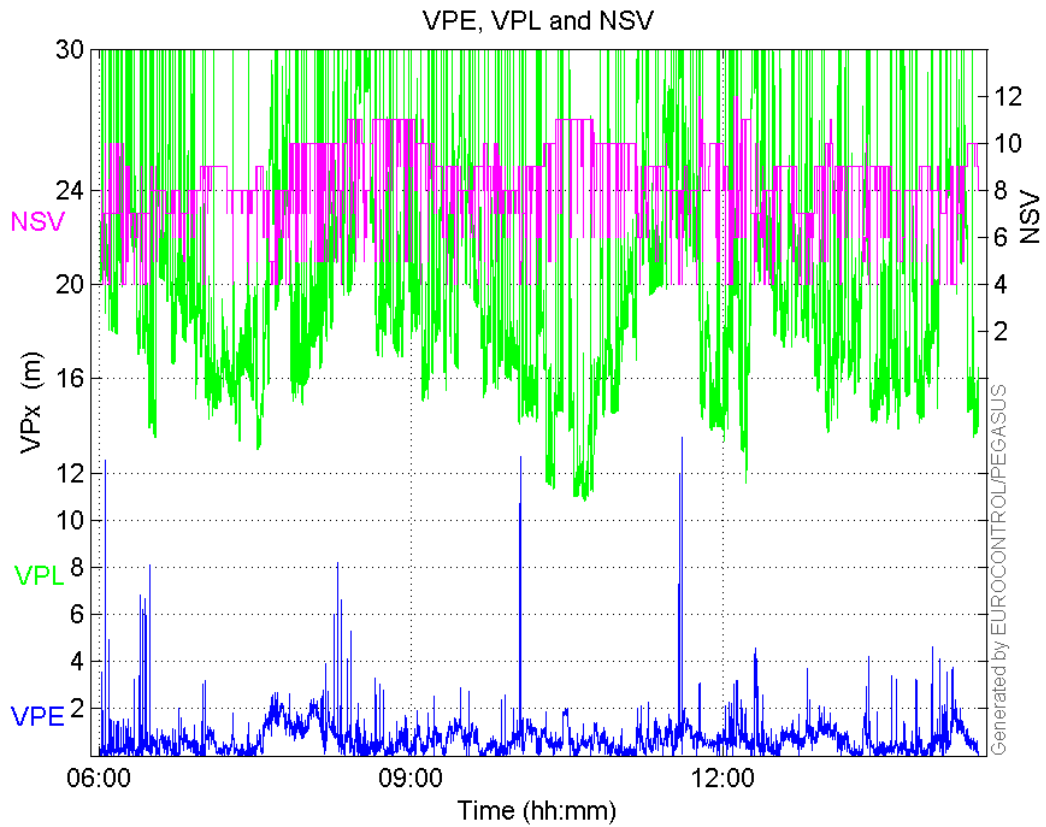


## Time Series

## HPE, HPL and NSV:

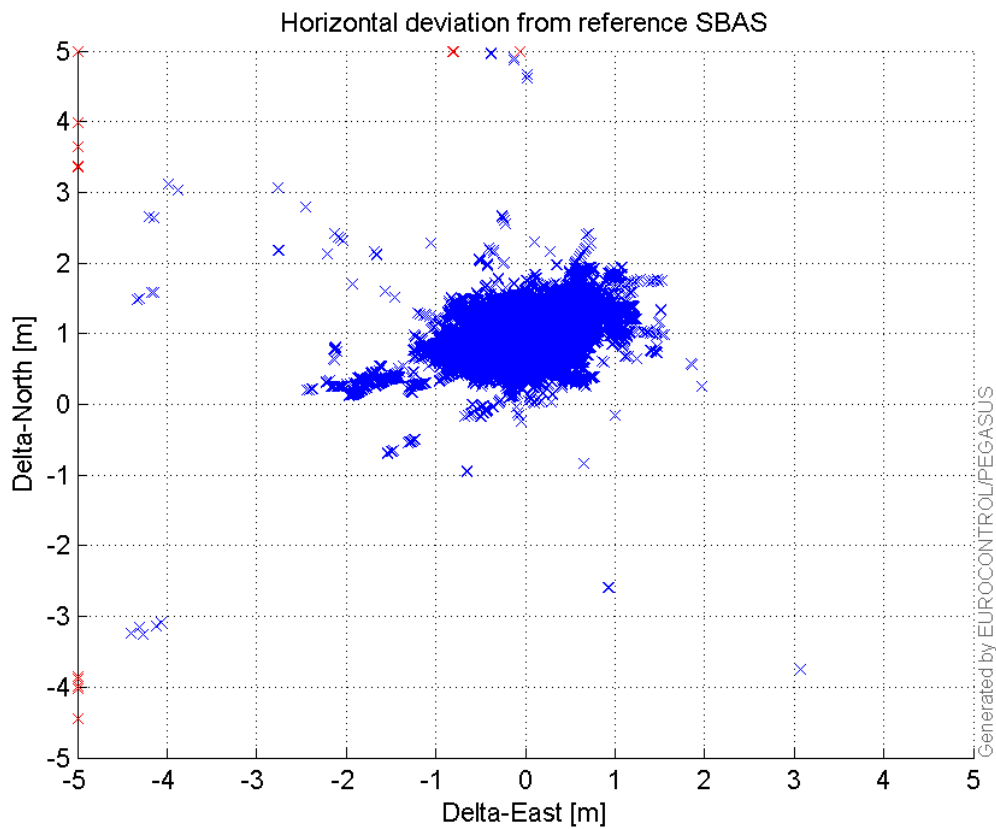


## VPE, VPL and NSV:



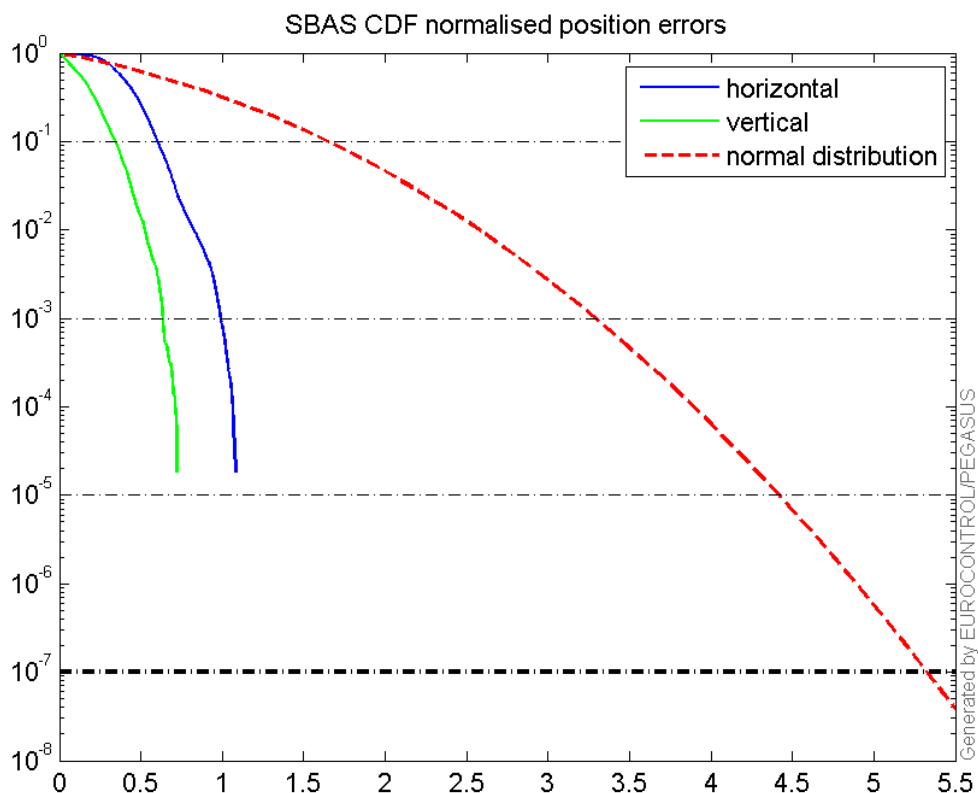
## Horizontal deviation

Horizontal deviation from reference SBAS:



## CDF position

SBAS CDF position domain:



## Statistics

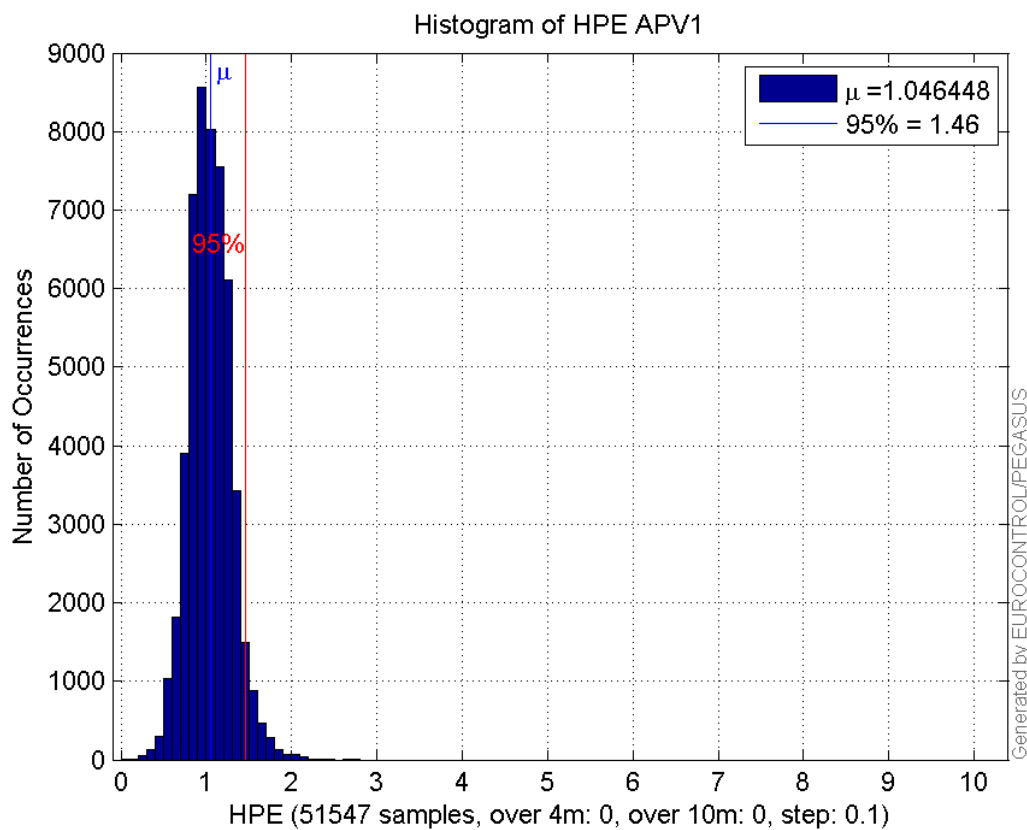
<b>number</b>	51547
<b>sum</b>	53941.242
<b>sum2</b>	59574.077
<b>prctile95</b>	1.4591135
<b>prctile99</b>	1.7151345
<b>number</b>	51547
<b>sum</b>	31570.438
<b>sum2</b>	29553.87
<b>prctile95</b>	1.4169554
<b>prctile99</b>	1.9972108
<b>number</b>	51547
<b>sum</b>	830094.6
<b>sum2</b>	14884394
<b>prctile95</b>	25.688135
<b>prctile99</b>	34.220251
<b>number</b>	51547
<b>sum</b>	998768.58
<b>sum2</b>	20500005
<b>prctile95</b>	28.60696
<b>prctile99</b>	34.741393
<b>number</b>	51547
<b>sum</b>	3632.6517
<b>sum2</b>	285.46505
<b>prctile95</b>	0.11270905
<b>prctile99</b>	0.13852361
<b>number</b>	51547
<b>sum</b>	1671.4066
<b>sum2</b>	82.041885
<b>prctile95</b>	0.076822187
<b>prctile99</b>	0.098886517
<b>number</b>	51066
<b>sum</b>	53515.106
<b>sum2</b>	59116.495
<b>prctile95</b>	1.4583509
<b>prctile99</b>	1.7121419
<b>number</b>	51066
<b>sum</b>	31091.978
<b>sum2</b>	28931.191
<b>prctile95</b>	1.4068302
<b>prctile99</b>	1.9835985
<b>number</b>	51066
<b>sum</b>	817373.7
<b>sum2</b>	14532947
<b>prctile95</b>	25.38856
<b>prctile99</b>	33.640376
<b>number</b>	51066
<b>sum</b>	979630.98
<b>sum2</b>	19732878
<b>prctile95</b>	27.96782
<b>prctile99</b>	32.252056

**number** 51066  
**sum** 3616.6311  
**sum2** 284.86351  
**prctile95** 0.11286482  
**prctile99** 0.13869848  
**number** 51066  
**sum** 1659.4583  
**sum2** 81.656256  
**prctile95** 0.077040692  
**prctile99** 0.099126806

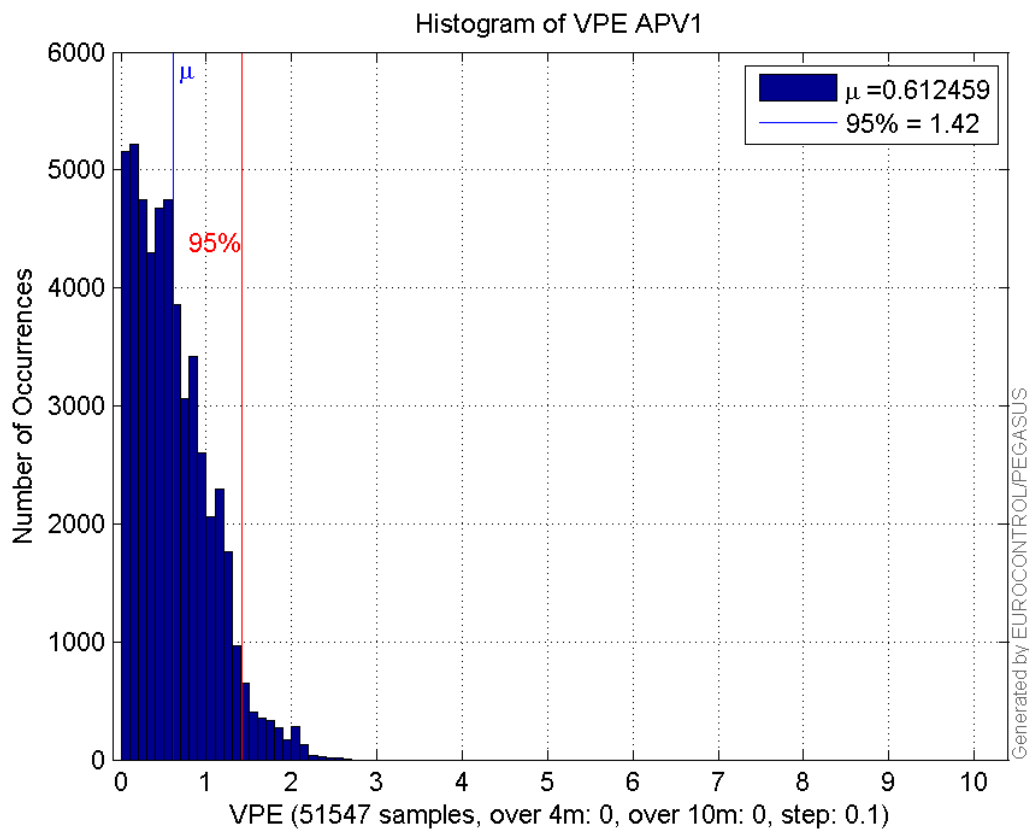
**Error and XPL Statistics :**

	Mean Value	Standard Deviation	50% Value	95% Value	99% Value	RMS Value
HPE	1.04645	0.246316	1.03453	1.45911	1.71513	1.07505
HPL	16.1036	5.42467	14.7254	25.6881	34.2203	16.9928
VPE	0.612459	0.445237	0.535191	1.41696	1.99721	0.757191
VPL	19.3759	4.71922	18.4181	28.607	34.7414	19.9423

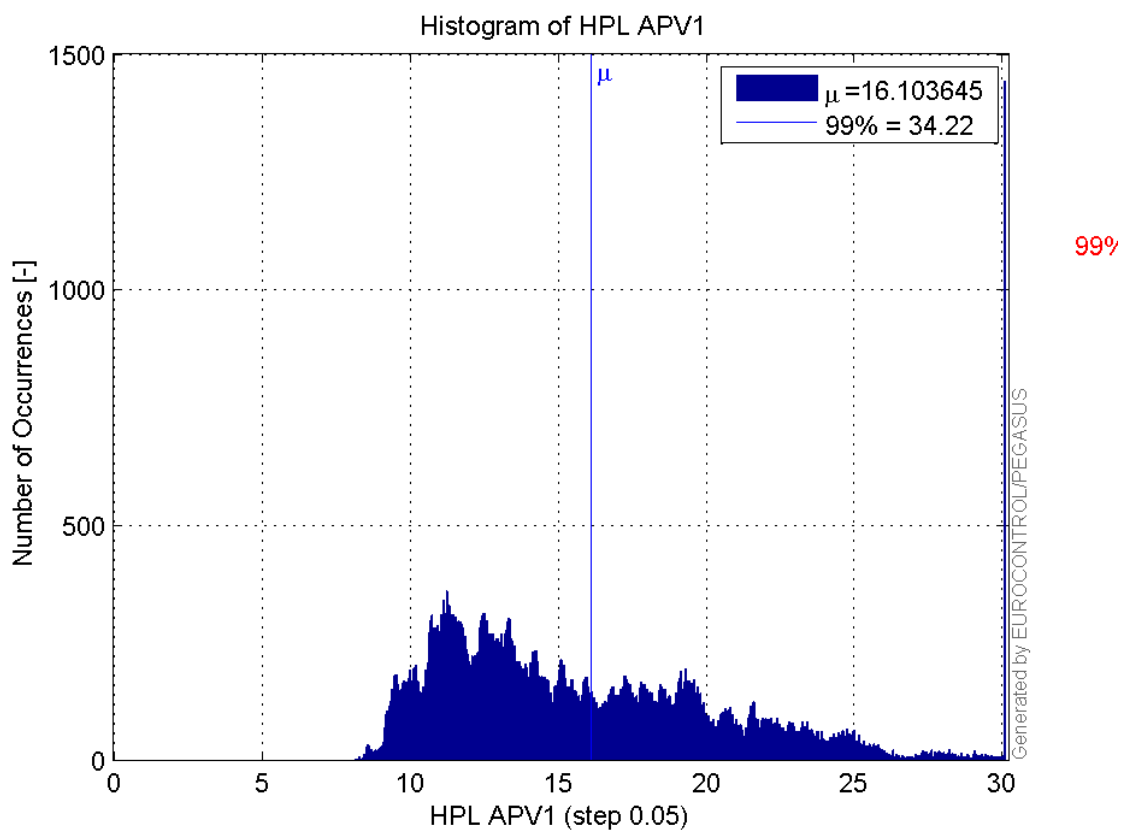
**Histogram of HPE APV1:**



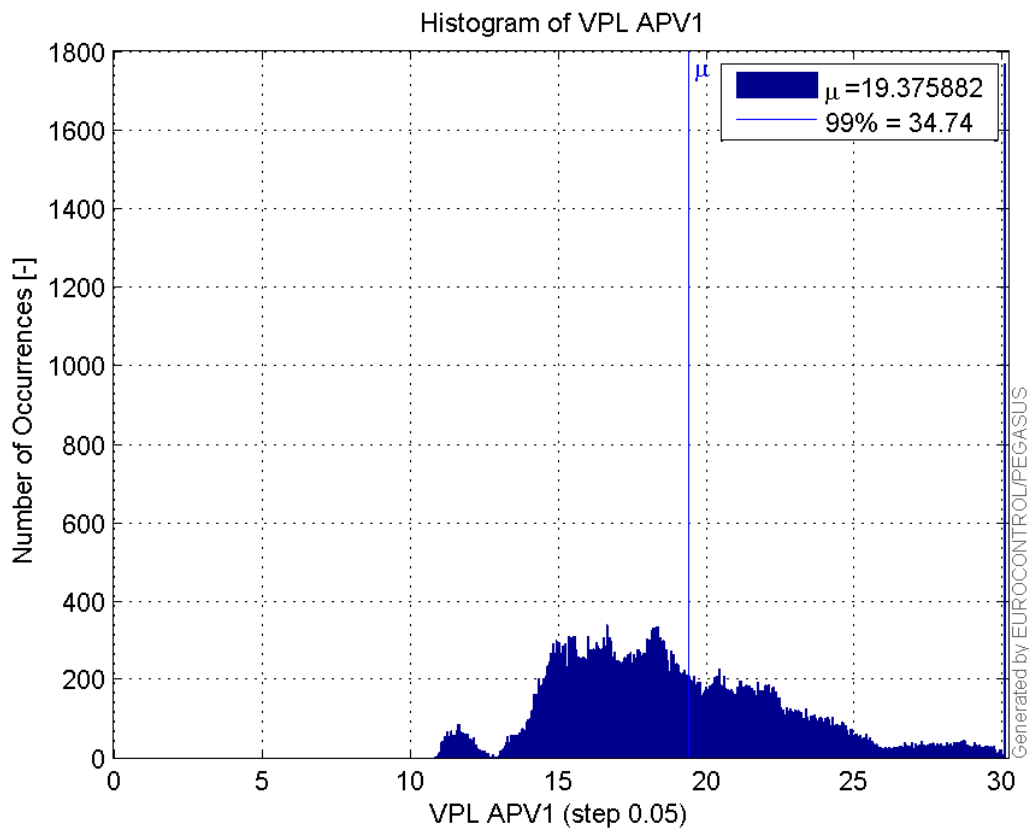
**Histogram of VPE APV1:**



**Histogram of HPL APV1:**

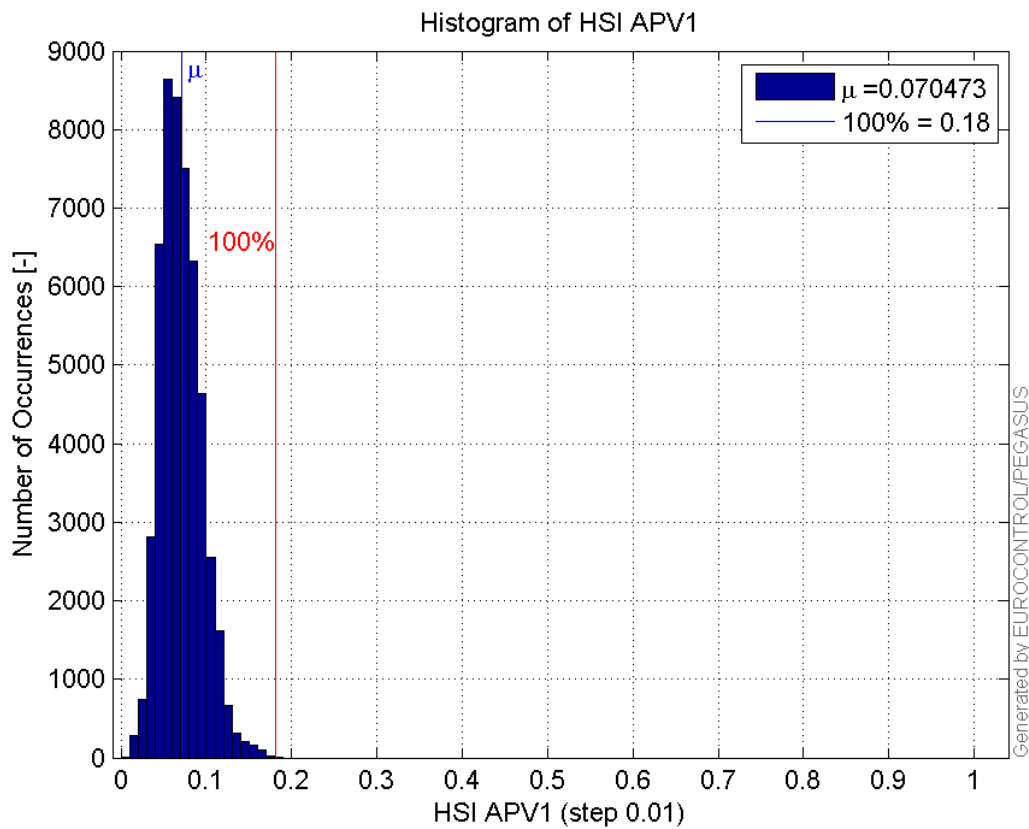


**Histogram of VPL APV1:**

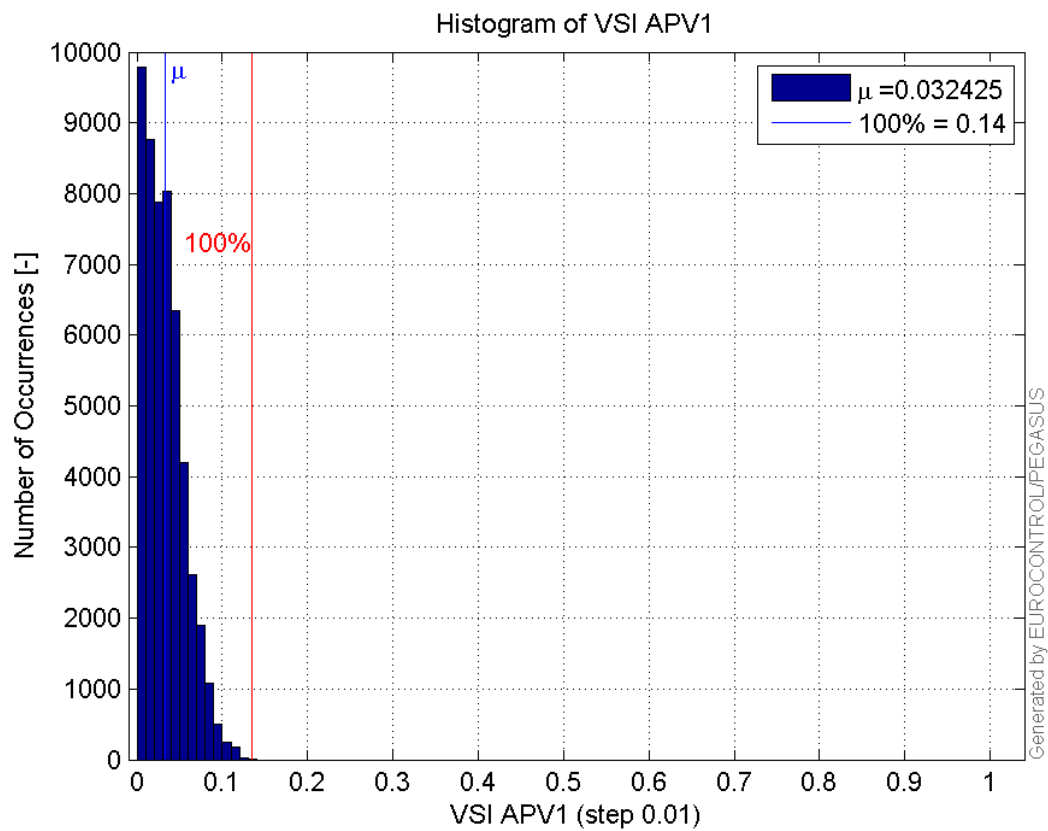


99

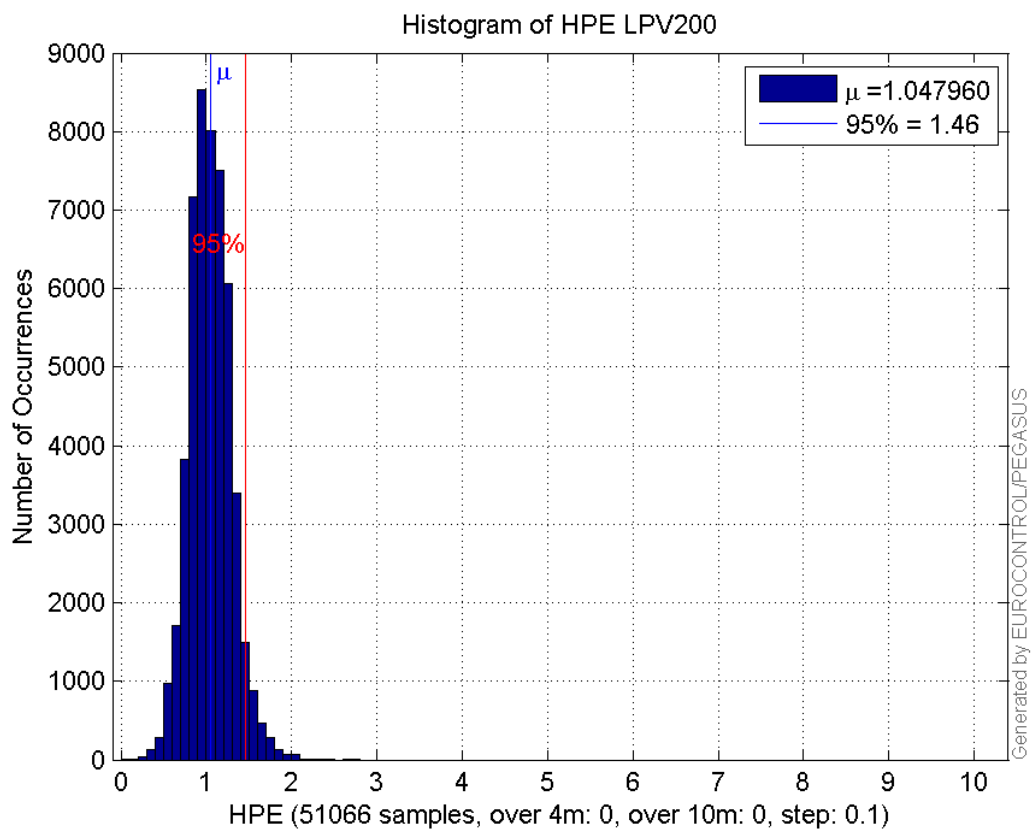
**Histogram of HSI APV1:**



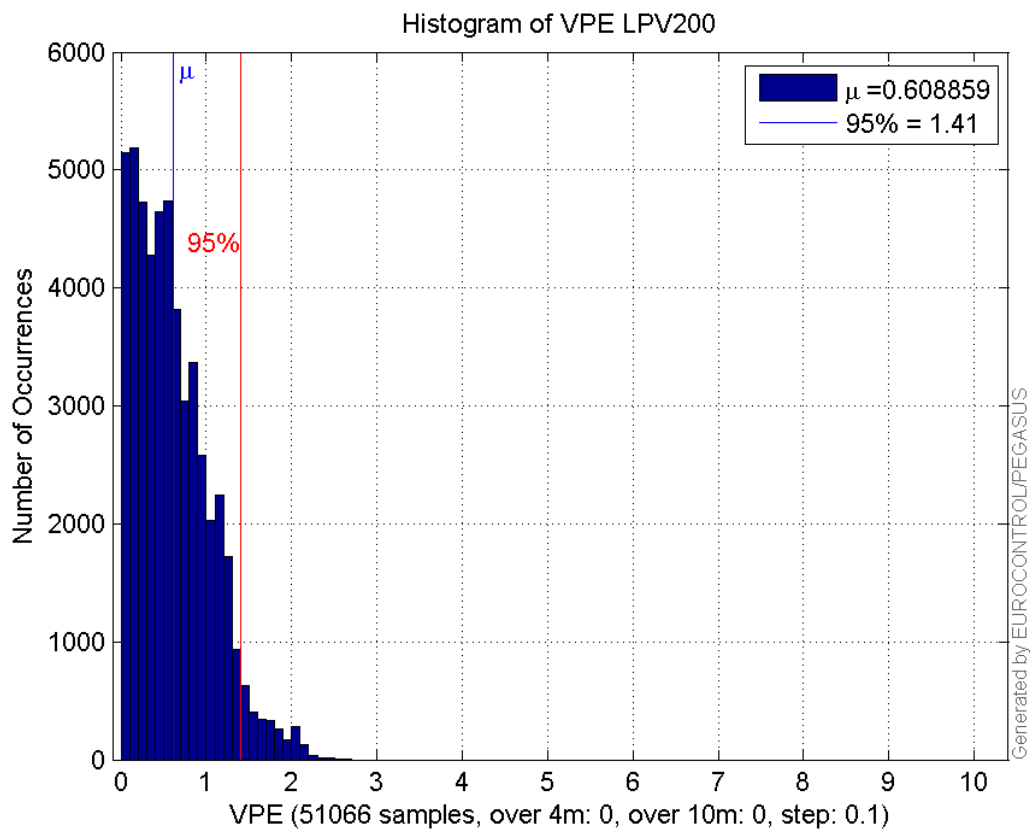
**Histogram of VSI APV1:**



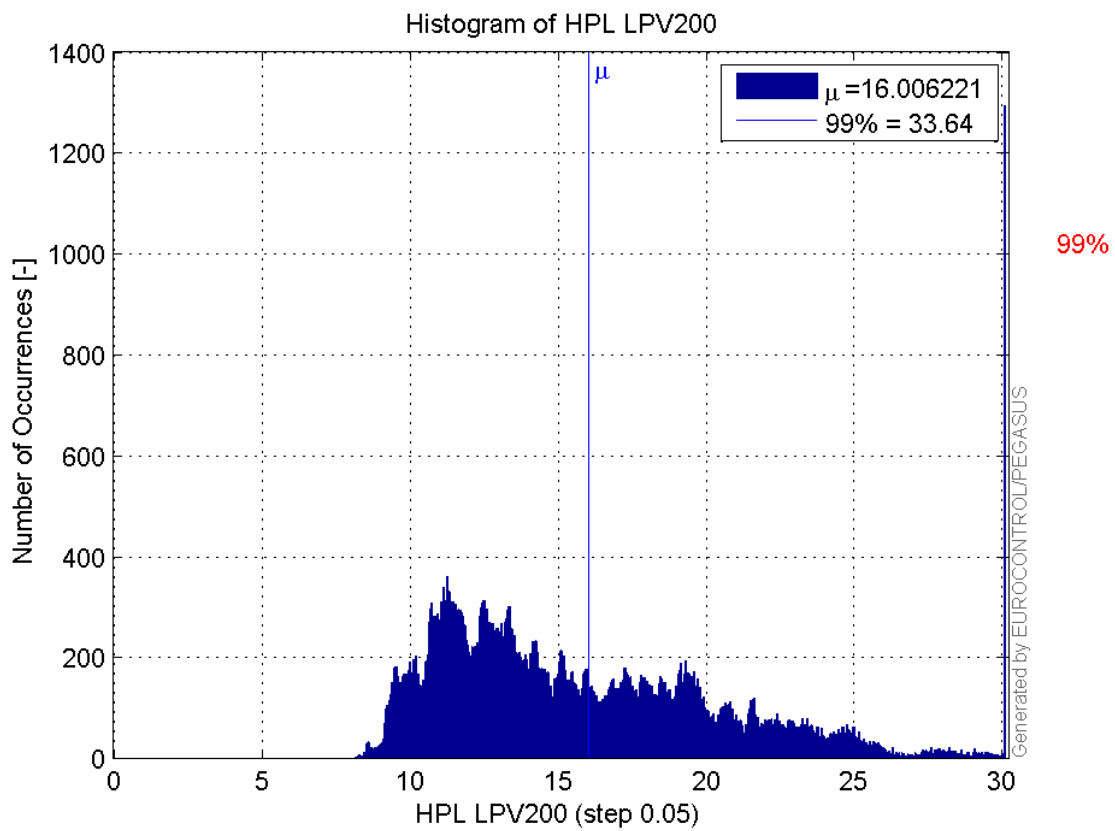
**Histogram of HPE LPV200:**



**Histogram of VPE LPV200:**

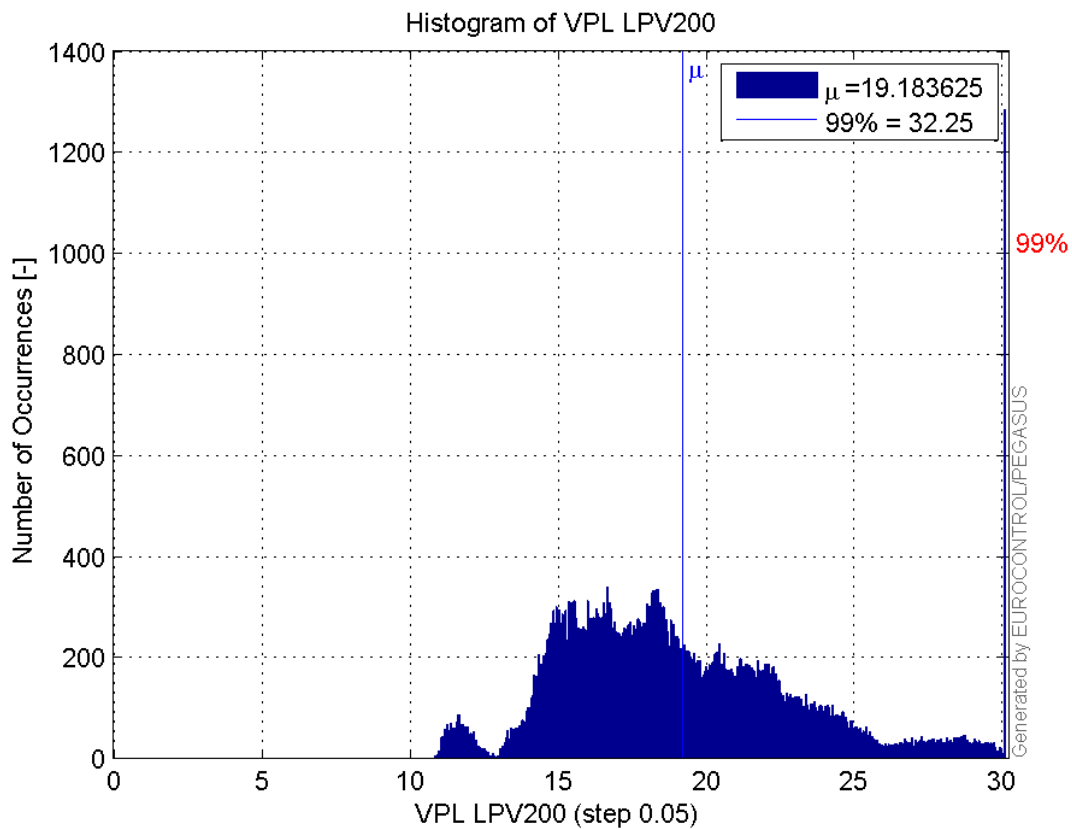


Histogram of HPL LPV200:

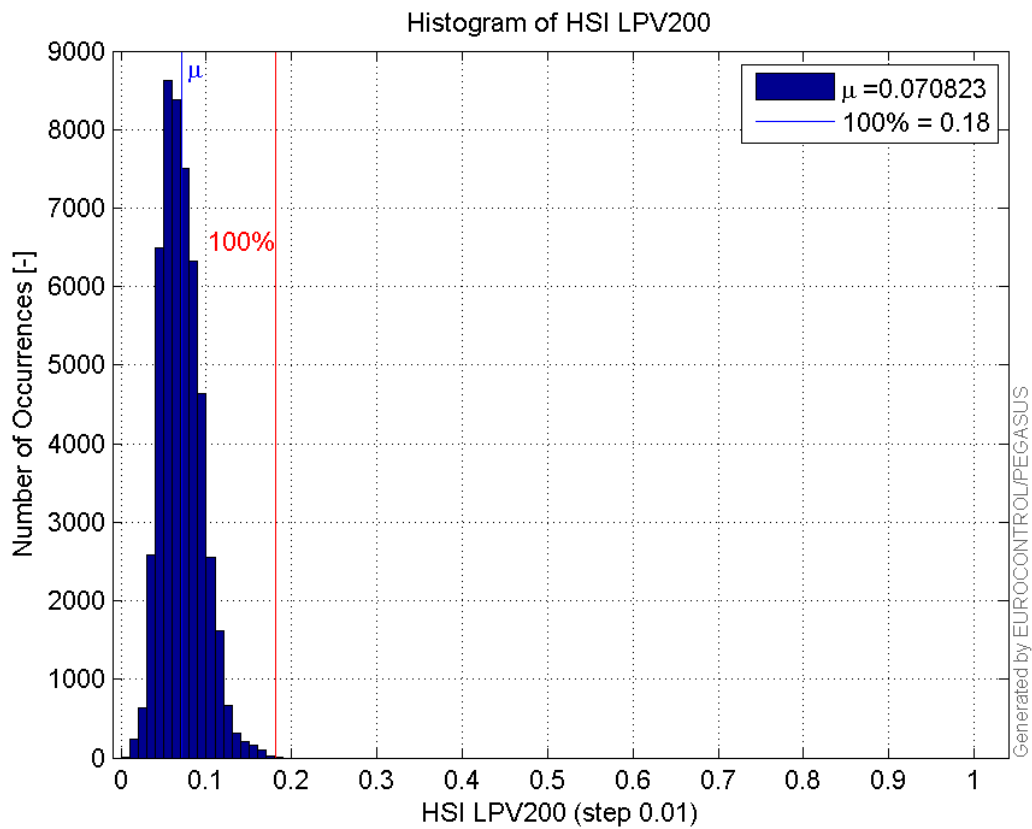


Histogram of VPL LPV200:

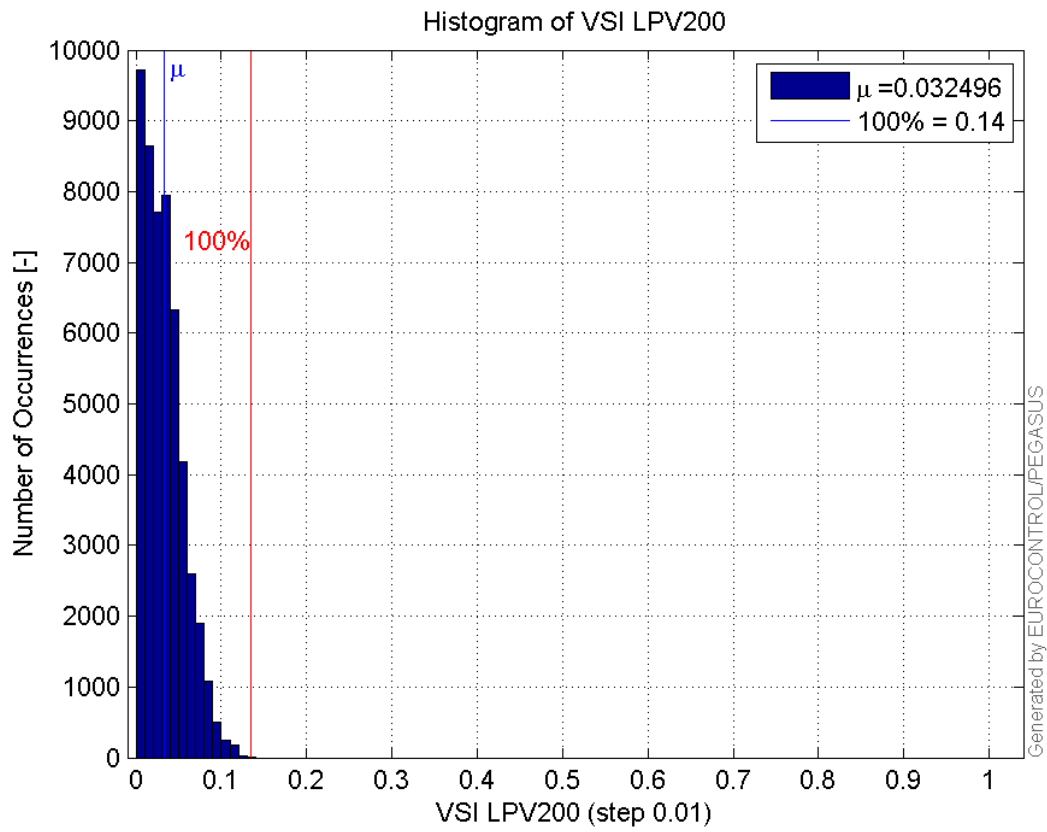




**Histogram of HSI LPV200:**

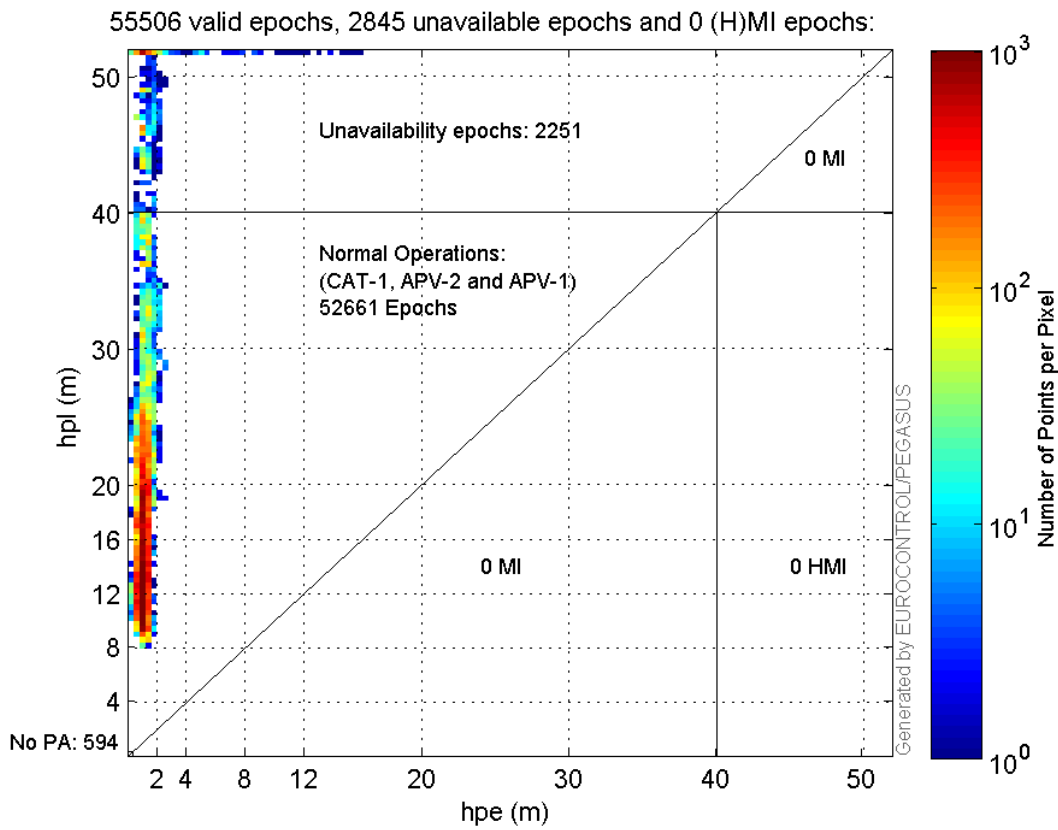


**Histogram of VSI LPV200:**



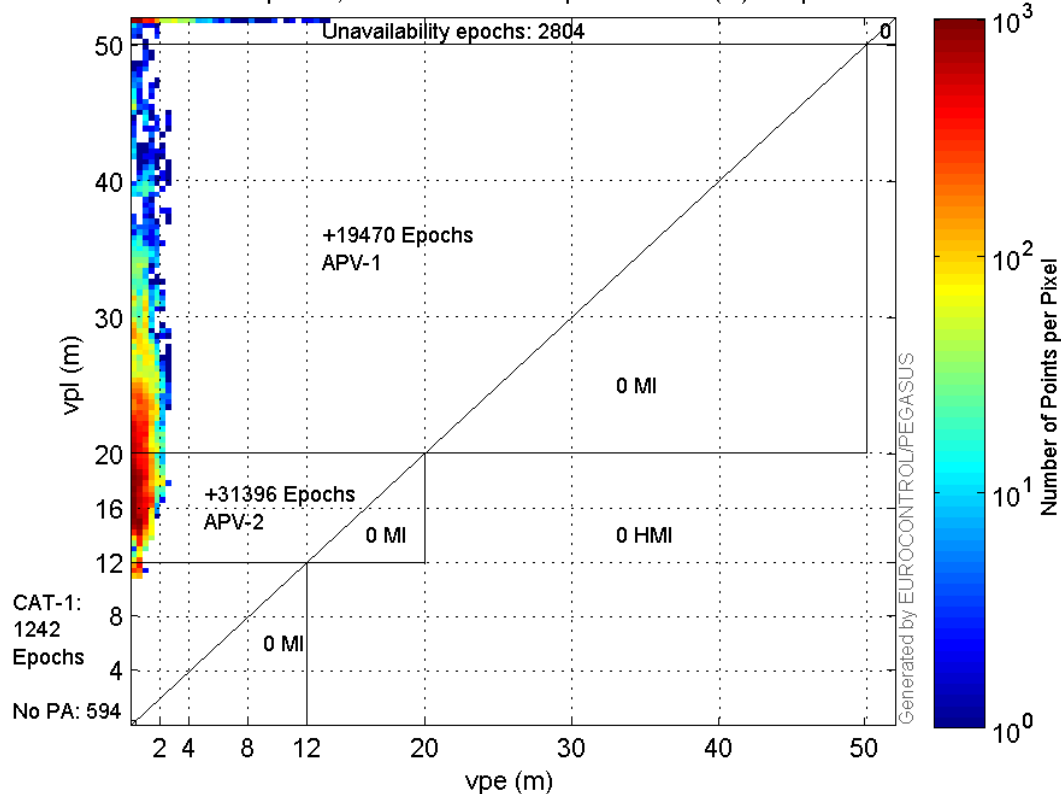
### Stanford Plots

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



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

55506 valid epochs, 3398 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_11_29EGNOS2Hz/02_Convertor/02_Convertor
output_prefix	system	D:/PegasusDateJob/job/2016_11_29EGNOS2Hz/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	220.0355
mi_numbers	results	0

## Range Domain

**start:** 05:54:16 29.11.2016 ( week: 1925 sec: 194056 )  
**end:** 14:27:29 29.11.2016 ( week: 1925 sec: 224849 )  
**duration:** 08:33:14 ..

### quality

**valid samples** 56167  
**total samples** 56167

### PRN overview

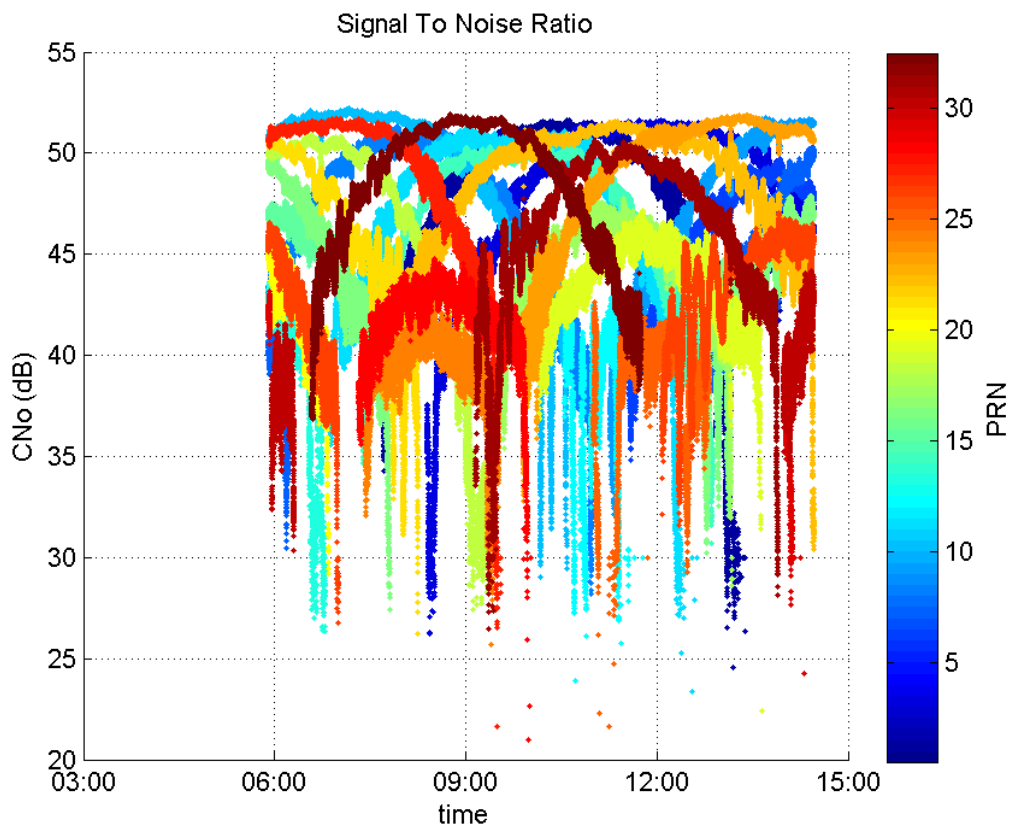
**Number of Visible GPS Satellites** 30  
**Number of Visible SBAS Satellites** 2

### signal quality and status

#### PRN Noise and Status:



#### Signal To Noise Ratio:



## range errors

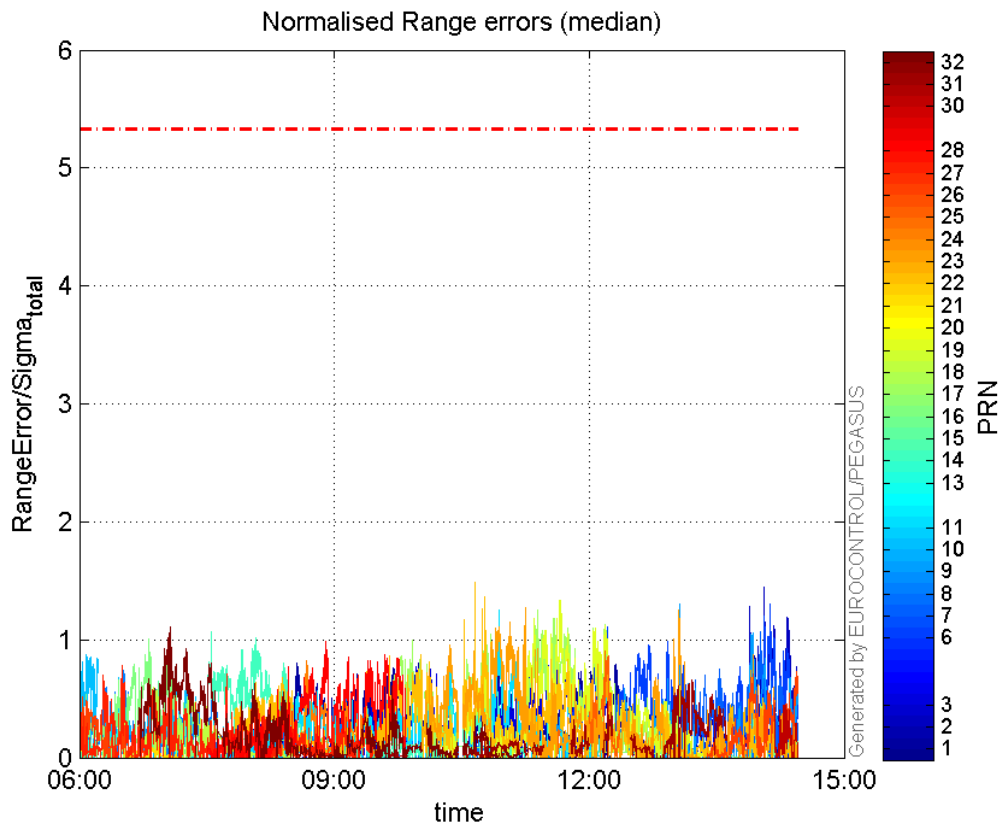
Number of Overbounding Norm Errors 0

## Max Norm Errors :

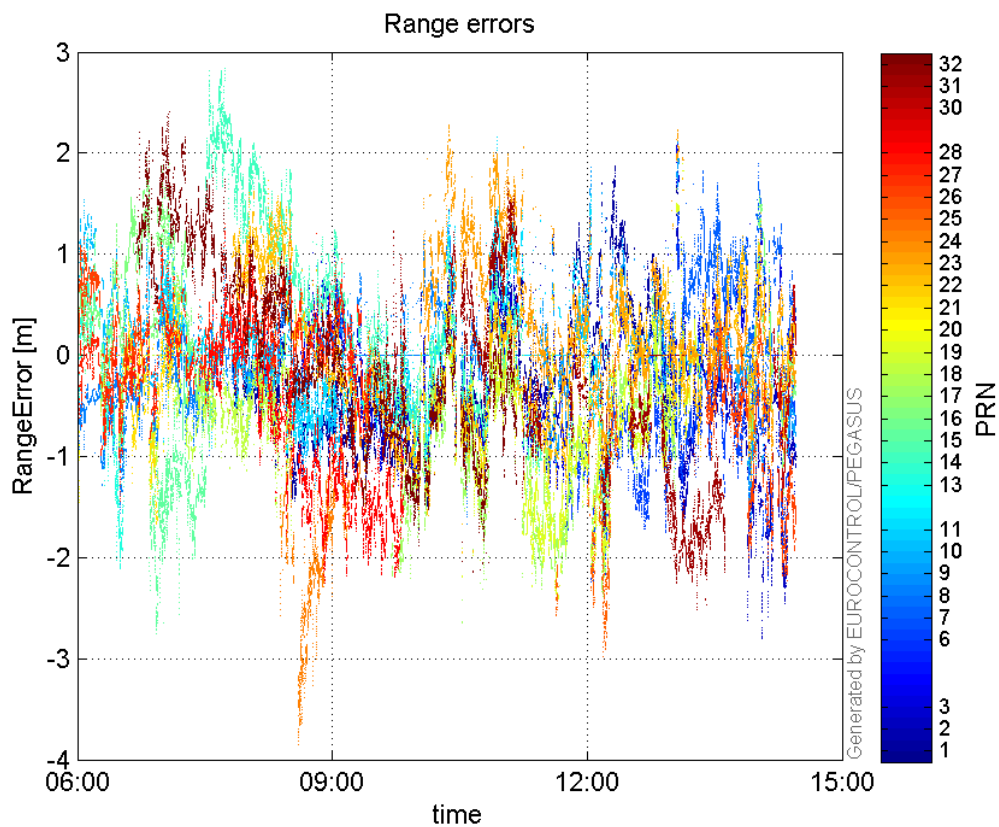
GPS Week	GPS Second	PRN	Norm Error	Range Error	Sigma
1925	210136	1	0.902976	1.42671	1.58001
1925	223416	2	1.44383	-2.77274	1.9204
1925	215089	3	1.0116	-1.46138	1.44462
1925	223650	6	1.30223	-2.2187	1.70377
1925	223246	7	1.07222	1.89334	1.76581
1925	196228	8	0.767697	-1.41647	1.84509
1925	219848	9	1.30603	2.16277	1.65599
1925	194663	10	0.874124	1.53323	1.75402
1925	212201	11	1.24867	1.90277	1.52384
1925	196234	13	0.648181	-2.10456	3.24687
1925	199980	14	1.06594	2.81134	2.63743
1925	197748	15	0.645338	-2.75141	4.26352
1925	197312	16	1.00939	1.93198	1.914
1925	211551	17	1.2533	-2.31009	1.8432
1925	197540	18	0.600845	-1.31621	2.1906
1925	214765	19	1.33818	-2.40137	1.7945
1925	194476	20	0.112572	-1.45145	12.8935
1925	196738	21	0.110788	-1.26211	11.3921
1925	211139	22	1.48551	-1.92669	1.29699
1925	213327	23	1.26982	2.05916	1.62162
1925	204009	24	0.821978	-3.38288	4.11554
1925	216676	25	0.902043	-2.97829	3.30171

1925	224804	26	0.732973	-1.89557	2.58614
1925	196232	27	0.781413	-1.348	1.72508
1925	204860	28	0.986851	-2.19648	2.22575
1925	224240	30	0.446123	-1.23124	2.75987
1925	220349	31	0.657776	-2.09768	3.18906
1925	198278	32	1.11258	2.40687	2.16333

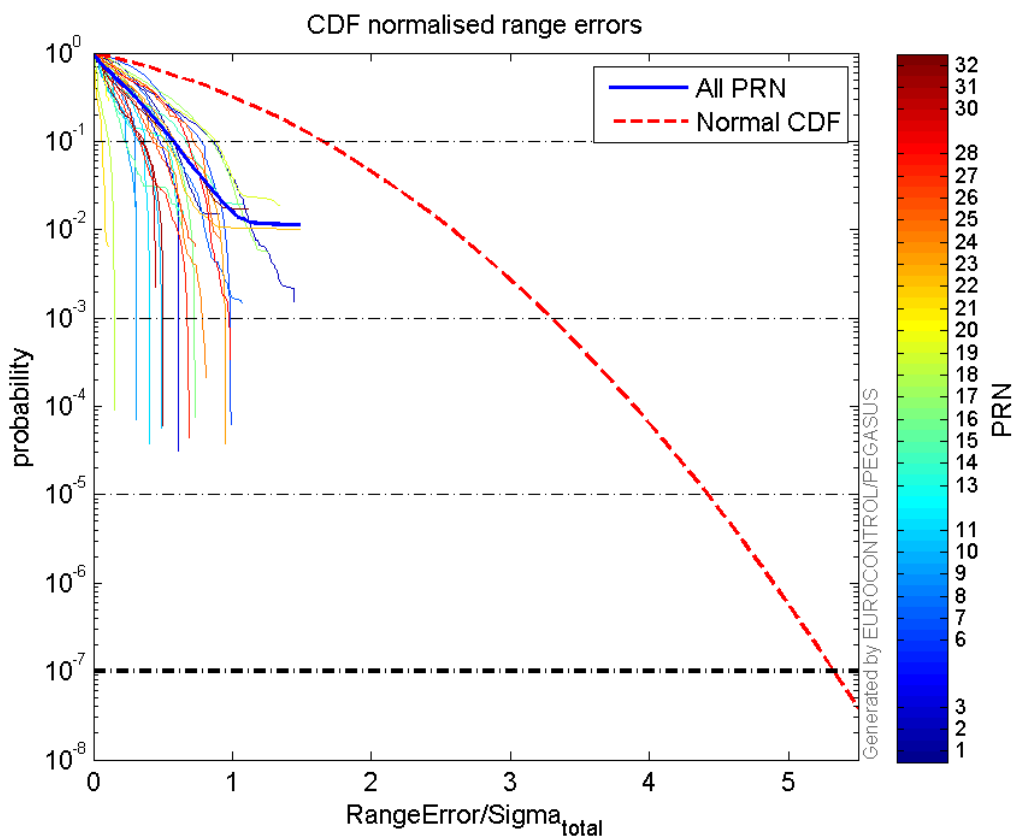
**Normalised Range errors (median):**



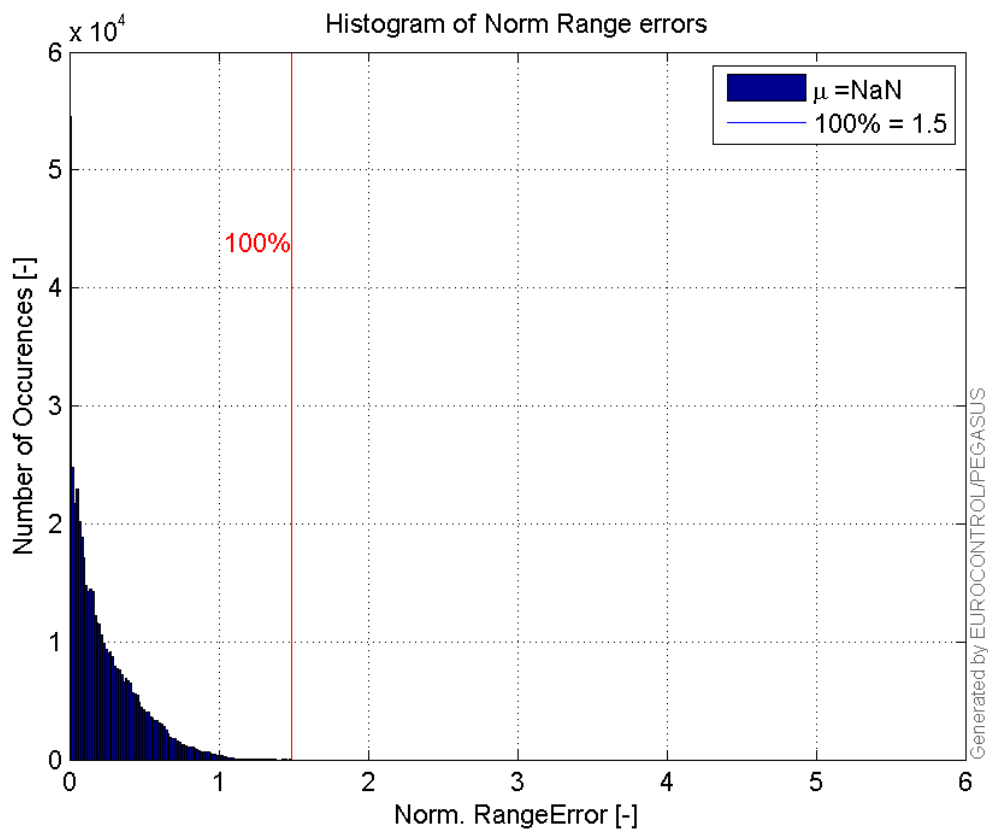
**Range errors:**



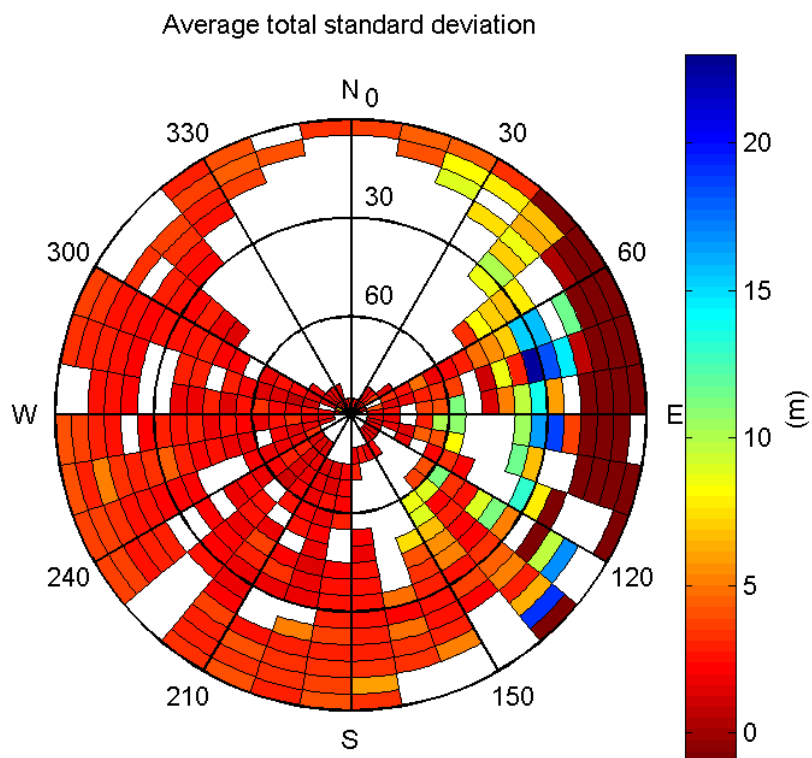
**CDF normalised range errors:**



**Histogram of Norm Range errors:**

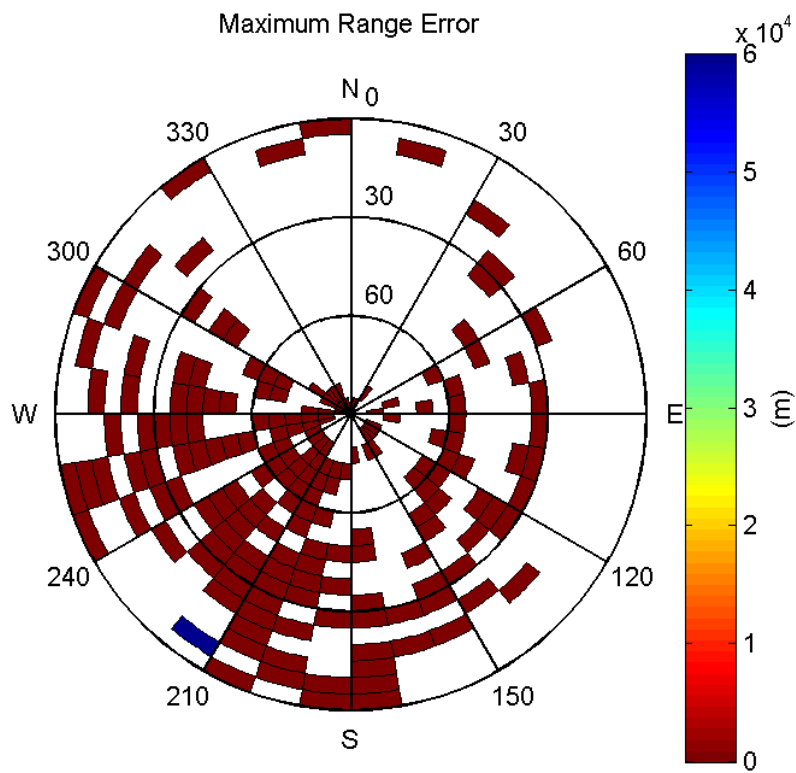


**Sigma Sky Plot:**



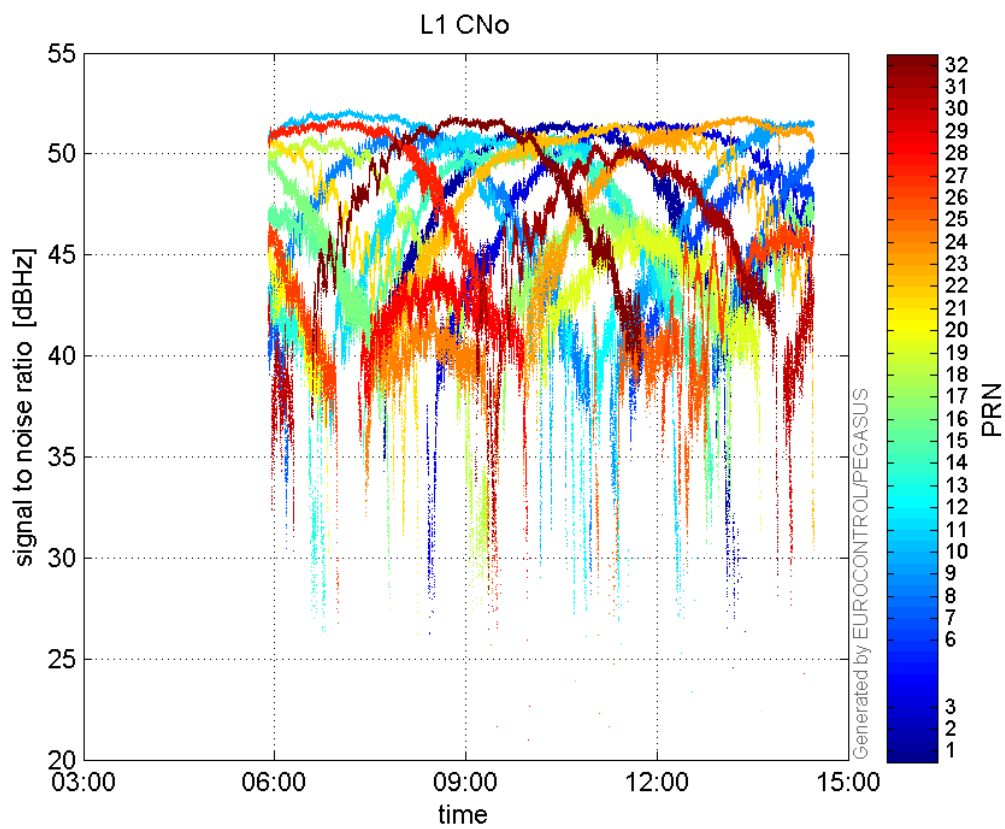
**Norm Error Sky Plot:**



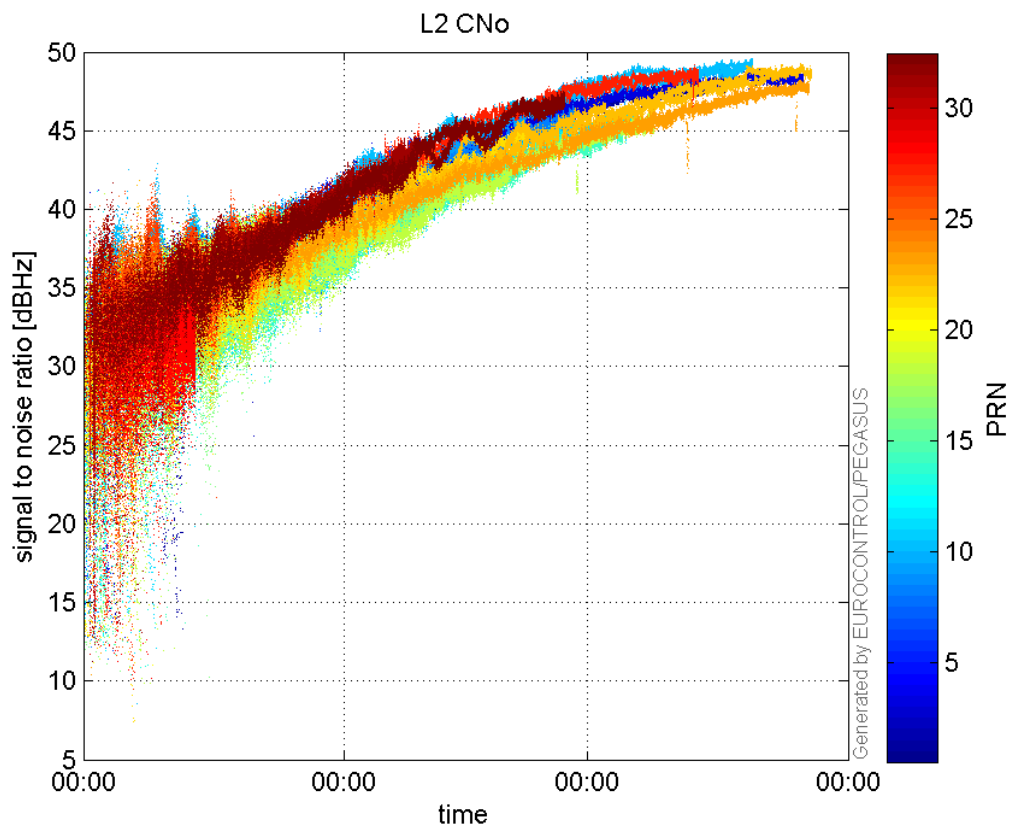


### signal quality

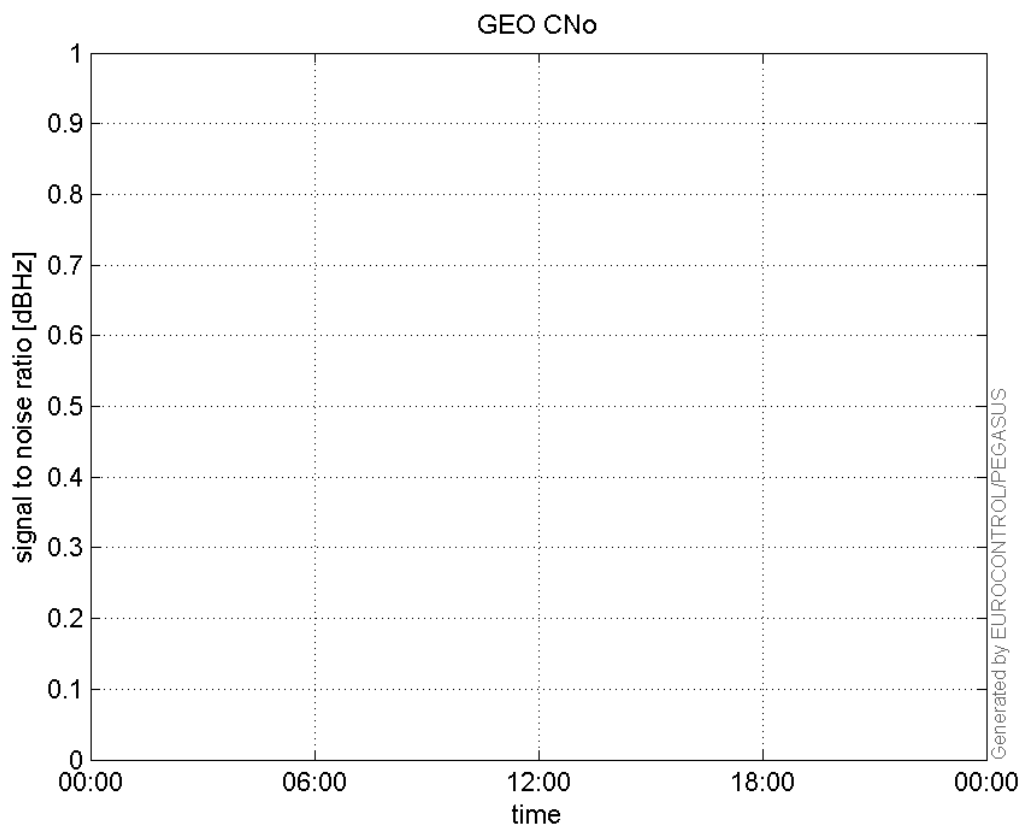
**L1 CNo:**



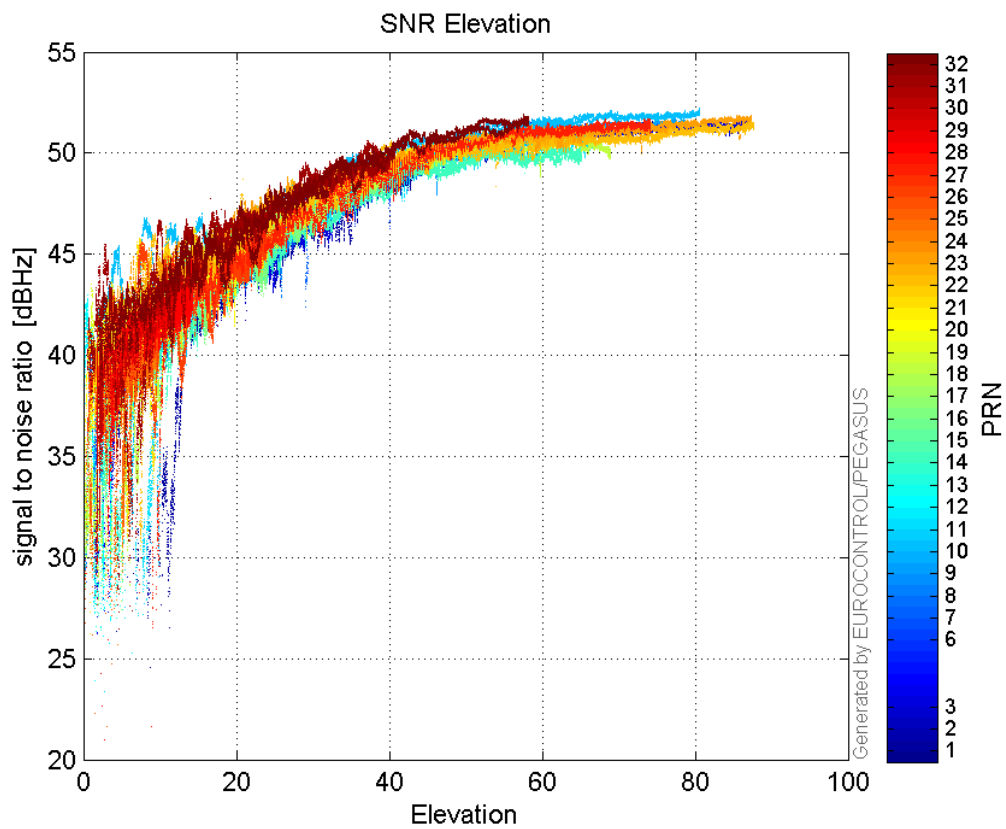
**L2 CNo:**



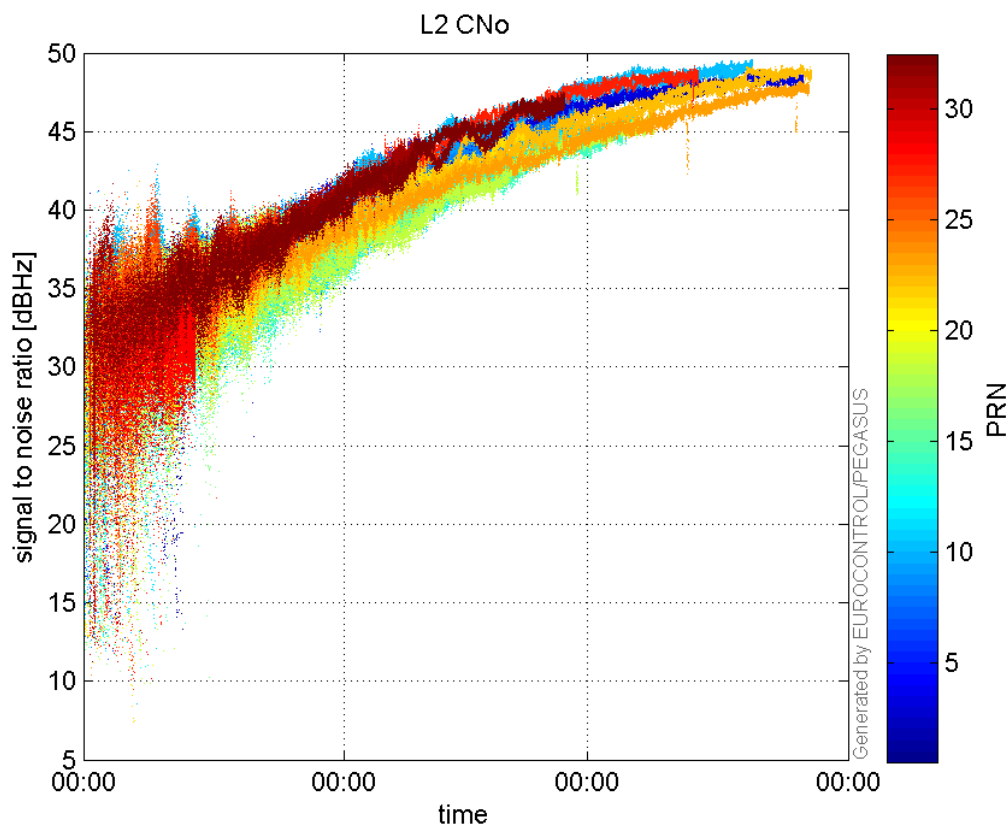
**GEO CNo:**



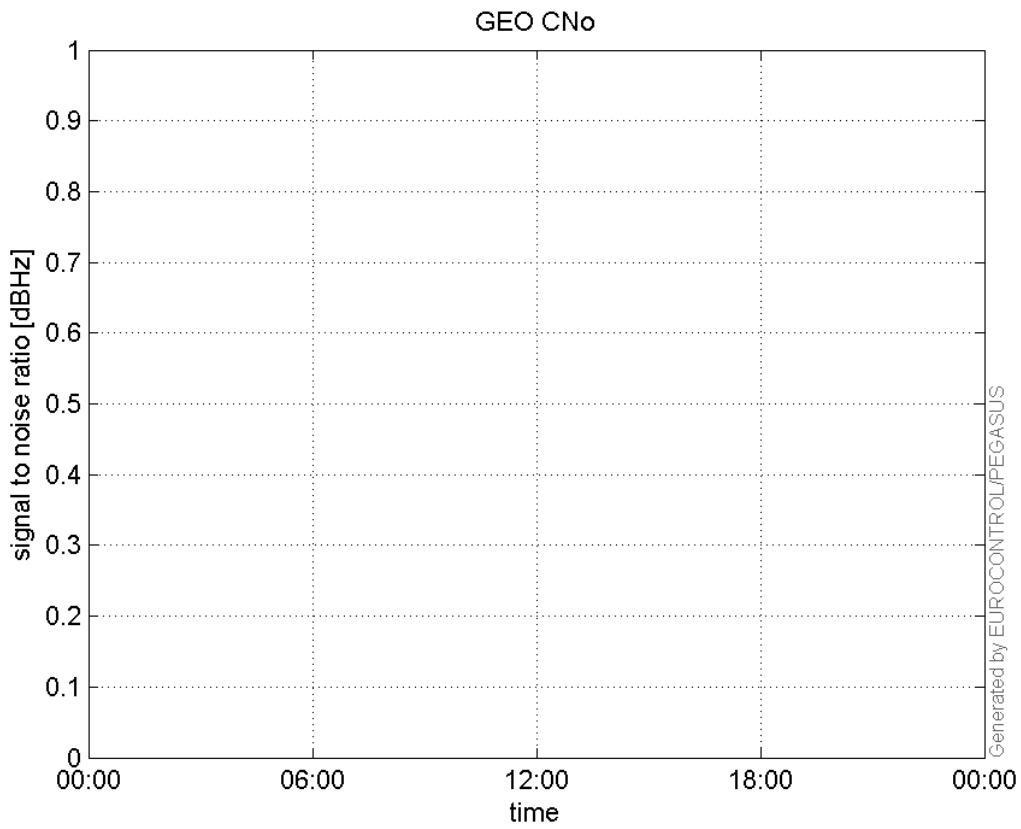
**SNR Elevation:**



L2 CNo:

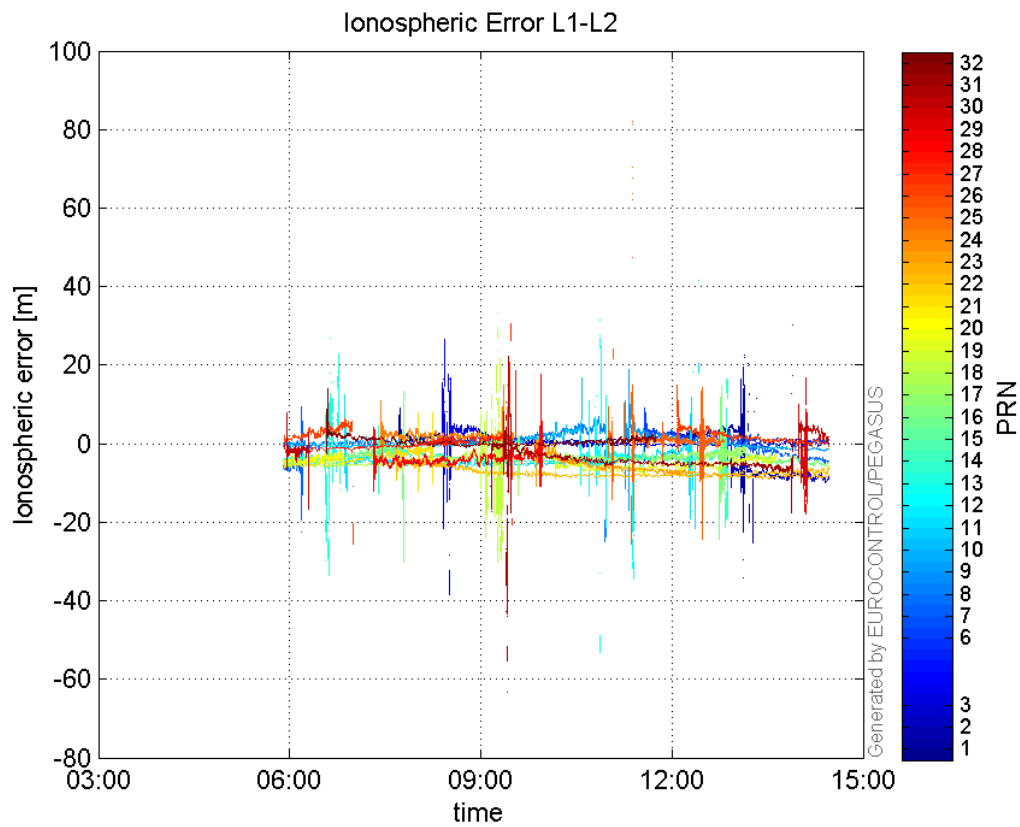


GEO CNo:



### 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_11_29EGNOS2Hz/02_Convertor/02_Convertor
output_prefix	system	D:/PegasusDateJob/job/2016_11_29EGNOS2Hz/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	220.0355
mi_numbers	results	0