

# 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:** 07:10:6.129 23.11.2016 ( week: 1924 sec: 285006.129 )  
**end:** 15:08:0.128998 23.11.2016 ( week: 1924 sec: 313680.129 )  
**duration:** 07:57:54 ..

### quality

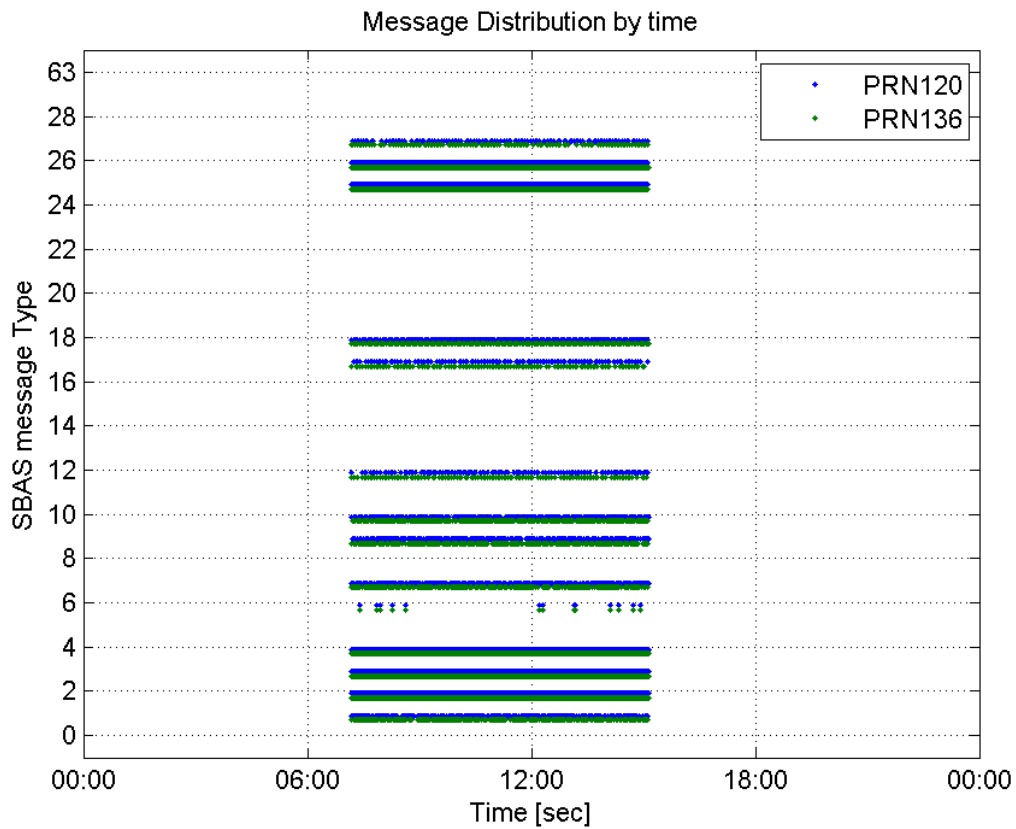
**valid samples** 44305  
**total samples** 44305  
**number of SBAS PRNs** 2

### SBAS SIS Overview

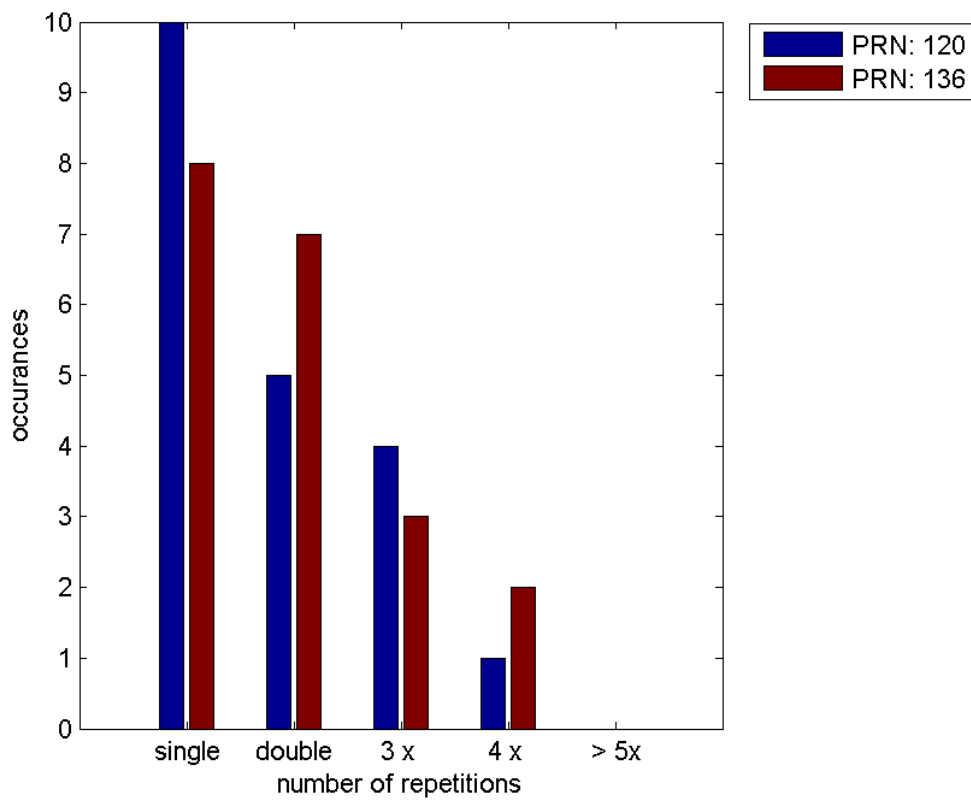
#### Message Type 6 repetitions :

	single	double	3 x	4 x	> 5x
<b>PRN 120</b>	10	5	4	1	0
<b>PRN 136</b>	8	7	3	2	0

#### Message Distribution by time:



**Message Type 6 repetitions:**



## Broadcast SBAS Messages :

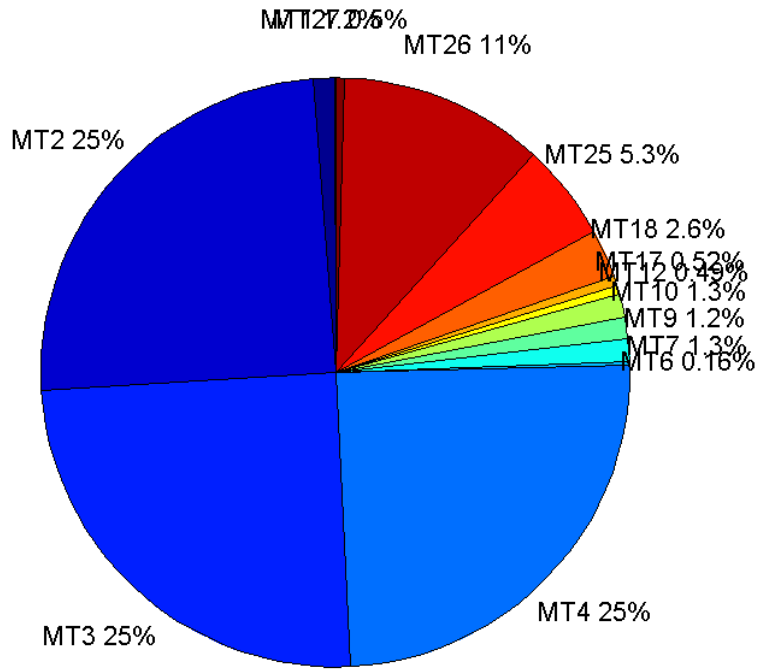
	number of messages	%
MT 0	0	0
MT 1	274	1.22931
MT 2	5511	24.7252
MT 3	5547	24.8867
MT 4	5479	24.5816
MT 5	0	0
MT 6	36	0.161515
MT 7	279	1.25174
MT 9	269	1.20687
MT 10	279	1.25174
MT 12	109	0.48903
MT 17	117	0.524923
MT 18	588	2.63807
MT 24	0	0
MT 25	1177	5.28063
MT 26	2512	11.2701
MT 27	112	0.50249
MT 28	0	0
MT 62	0	0
MT 63	0	0
<b>Total</b>	<b>22289</b>	<b>100</b>

## Update intervals :

	Minimum [s]	Maximum [s]	Mean value	Exceed Max update	Exceed NPA timeout	Exceed PA timeout
MT 0	--	--	--	--	--	--
MT 1	76	396	104.623	56	0	0
MT 2	4	20	5.20272	1495	1	14
MT 3	4	17	5.16985	1474	0	11
MT 4	4	17	5.23384	1506	0	12
MT 5	--	--	--	--	--	--
MT 6	1	12886	773.171	12	12	12
MT 7	76	400	102.957	60	1	8
MT 9	76	481	106.575	0	0	0
MT 10	75	400	102.928	60	3	8
MT 12	188	1000	264.574	108	30	30
MT 17	188	789	244.672	0	0	0
MT 18	4	185	48.7802	0	0	0
MT 24	--	--	--	--	--	--
MT 25	1	160	24.3452	0	0	0
MT 26	1	64	11.4098	0	0	0
MT						

27	188	789	255.631	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	278	1.26272
MT 2	5424	24.6366
MT 3	5436	24.6911
MT 4	5471	24.8501
MT 5	0	0
MT 6	39	0.177144
MT 7	257	1.16733
MT 9	267	1.21275
MT 10	293	1.33085
MT 12	118	0.535974
MT 17	118	0.535974

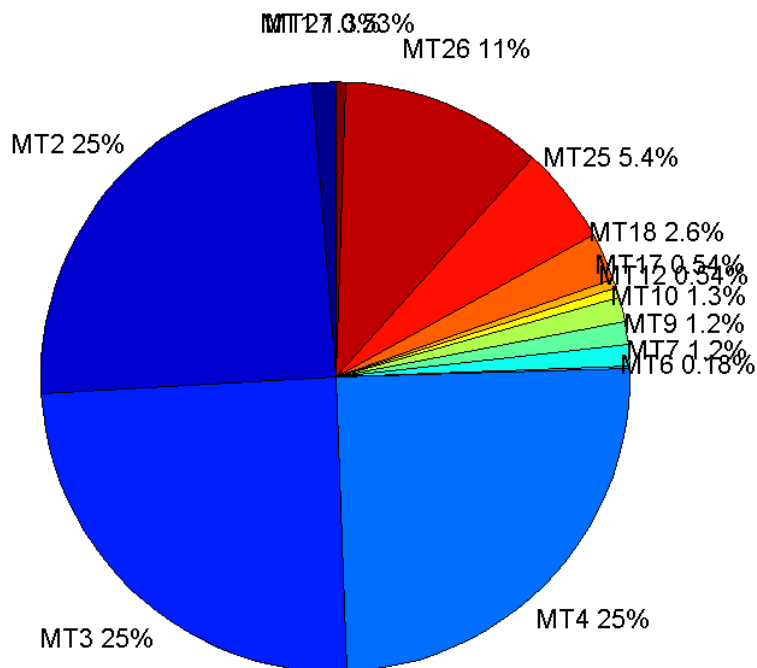
<b>MT 18</b>	572	2.59811
<b>MT 24</b>	0	0
<b>MT 25</b>	1180	5.35974
<b>MT 26</b>	2447	11.1146
<b>MT 27</b>	116	0.52689
<b>MT 28</b>	0	0
<b>MT 62</b>	0	0
<b>MT 63</b>	0	0
<b>Total</b>	22016	100

## Update intervals :

	Minimum [s]	Maximum [s]	Mean value	Exceed Max update	Exceed NPA timeout	Exceed PA timeout
<b>MT 0</b>	--	--	--	--	--	--
<b>MT 1</b>	76	475	103.278	52	0	0
<b>MT 2</b>	4	26	5.28711	1541	1	17
<b>MT 3</b>	4	20	5.27544	1539	1	20
<b>MT 4</b>	4	20	5.24168	1534	1	11
<b>MT 5</b>	--	--	--	--	--	--
<b>MT 6</b>	1	12886	712.132	12	12	12
<b>MT 7</b>	76	401	111.504	69	5	8
<b>MT 9</b>	76	480	107.263	0	0	0
<b>MT 10</b>	76	320	97.774	56	0	5
<b>MT 12</b>	188	593	242.906	117	24	24
<b>MT 17</b>	186	602	241.197	0	0	0
<b>MT 18</b>	4	196	50.1646	0	0	0
<b>MT 24</b>	--	--	--	--	--	--
<b>MT 25</b>	2	113	24.2409	0	0	0
<b>MT 26</b>	3	84	11.7138	0	0	0
<b>MT 27</b>	187	788	248.8	0	0	0
<b>MT 28</b>	--	--	--	--	--	--
<b>MT 62</b>	--	--	--	--	--	--
<b>MT 63</b>	--	--	--	--	--	--

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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_23EGNOS2Hz/01_User/01_User
Outputfile	System	D:/PegasusDateJob/job/2016_11_23EGNOS2Hz/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:** 07:10:06 23.11.2016 ( week: 1924 sec: 285006 )  
**end:** 15:08:01 23.11.2016 ( week: 1924 sec: 313681 )  
**duration:** 07:57:56 ..

#### quality

**valid samples** 51645  
**total samples** 52312

## Event tables

**Position discontinuity events type** long  
**APV-I discontinuity events type** too many (21)  
**APV-35m discontinuity events type** too many (26)  
**LPV-200 discontinuity events type** too many (26)  
**CAT-I discontinuity events type** independent

## extremes :

	Epoch	HPE	HPL	HPE/HPL	VPE	VPL	VPE/VPL
max normHor	300107	2.10216	12.1435	0.17311	1.44236	17.3241	0.0832575
max normVer	289815	1.45425	11.0012	0.13219	2.65071	17.5817	0.150765
max HPE	302763	6.77502	343.871	0.0197022	10.0943	564.346	0.0178867
max VPE	302763	6.77502	343.871	0.0197022	10.0943	564.346	0.0178867
min HPL	292043	0.966648	8.23826	0.117336	-0.233057	16.1618	0.0144203
min VPL	298153	0.821928	8.56448	0.0959694	0.451006	11.0146	0.0409462

## Position discontinuity events :

#	Epoch	duration	stable period
1	294963	4.5	182
2	303308	401.5	1588

## First Glance analysis

**Duration** 28676  
**Number of Samples** 52312  
**Number of invalid sample** 667  
**Number of no position solution samples** 908  
**Number of missing sample** 5040  
**Logging Loss** 8.7878  
**Processing Loss** 1.275  
**Number of Misleading Information** 0  
**Data gaps** 18  
**Discontinuities** 44

## Number of Samples :

Valid	APV-1	LPV-200	CAT-1	APV-35m
50737	48062	47697	513	47697

## Accuracy statistics :

	Valid	APV-1	LPV-200	CAT-1	APV-35m
HPE 95%	1.99934	1.9794	1.97849	1.18903	1.97849
HPEscale 95%	NaN	5.27666	5.28076	4.83258	5.28076
VPE 95%	1.89129	1.89863	1.89957	0.978948	1.89957
VPEscale 95%	NaN	4.47935	3.14073	0.997678	3.14073

## Availability :

	Valid	APV-1	LPV-200	CAT-1	APV-35m
Signal in Space	0.982418	0.930623	0.923555	0.0099332	0.923555
measurements	0.969892	0.918757	0.911779	0.00980655	0.911779

<b>Operational</b>	1.76932	1.67604	1.66331	0.0178895	1.66331
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**Discontinuity events :**

	Valid	APV-1	LPV-200	CAT-1	APV-35m
<b>All</b>	27	126	145	63	145
<b>Long</b>	2	23	28	22	28
<b>Independent</b>	2	21	26	0	26
<b>P(disc.)</b>	0.000591284	0.00655403	0.00817661	0	0.00817661
<b>P(slide)</b>	0.00798234	0.0380238	0.0438812	0.486355	0.0438812

**Integrity events :**

	MI	HMI APV-1	HMI LPV-200	HMI CAT-1	HMI APV-35m
<b>Total</b>	0	0	0	0	0
<b>Horizontal</b>	0	0	0	0	0
<b>Vertical</b>	0	0	0	0	0

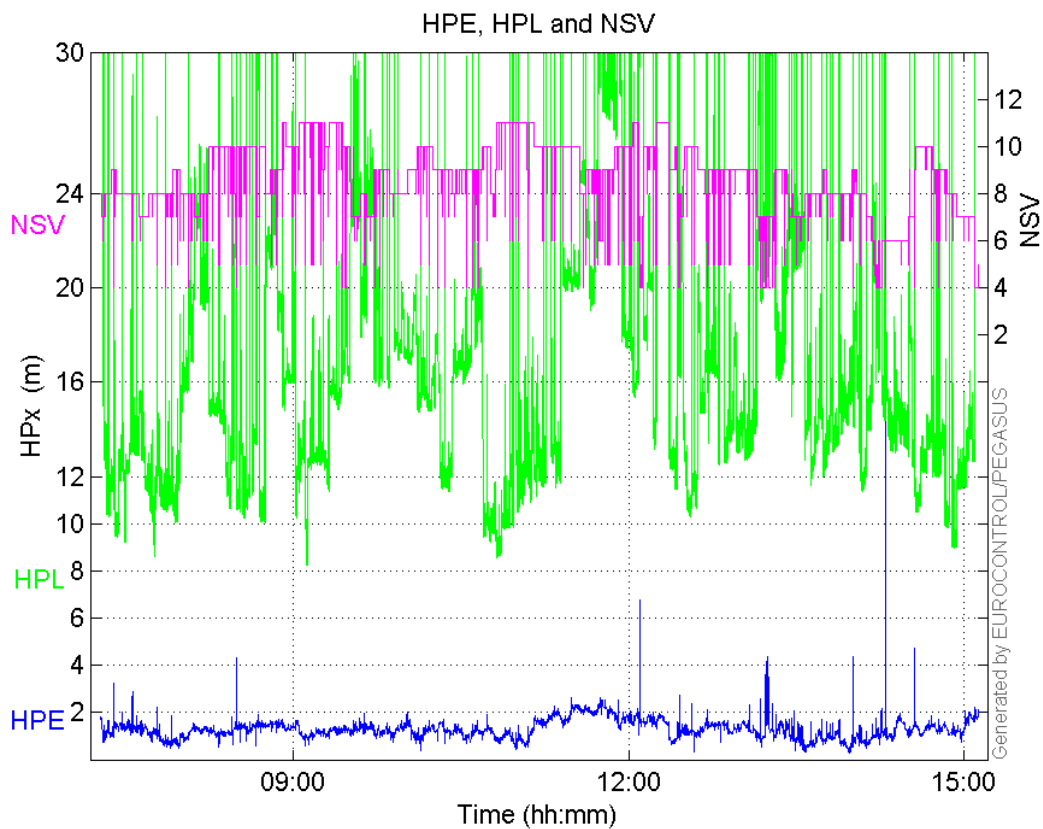
**Performance Summary :**

	Valid	APV-1	LPV-200	CAT-1	APV-35m
<b>Samples</b>	50737	48062	47697	513	47697
<b>SIS Availability</b>	0.982418	0.930623	0.923555	0.0099332	0.923555
<b>Local Availability</b>	0.969892	0.918757	0.911779	0.00980655	0.911779
<b>Operational Availability</b>	1.76932	1.67604	1.66331	0.0178895	1.66331
<b>HPE 95%</b>	1.99934	1.9794	1.97849	1.18903	1.97849
<b>HPEScale 95%</b>	NaN	5.27666	5.28076	4.83258	5.28076
<b>VPE 95%</b>	1.89129	1.89863	1.89957	0.978948	1.89957
<b>VPEscale 95%</b>	NaN	4.47935	3.14073	0.997678	3.14073
<b>All Discontinuity Events</b>	27	126	145	63	145
<b>Long Discontinuity Events</b>	2	23	28	22	28
<b>Independent Discontinuity Events</b>	2	21	26	0	26
<b>P(discontinuity)</b>	0.000591284	0.00655403	0.00817661	0	0.00817661
<b>P(sliding window)</b>	0.00798234	0.0380238	0.0438812	0.486355	0.0438812
<b>All Integrity Events</b>	0	0	0	0	0
<b>Horizontal Integrity Events</b>	0	0	0	0	0
<b>Vertical Integrity Events</b>	0	0	0	0	0

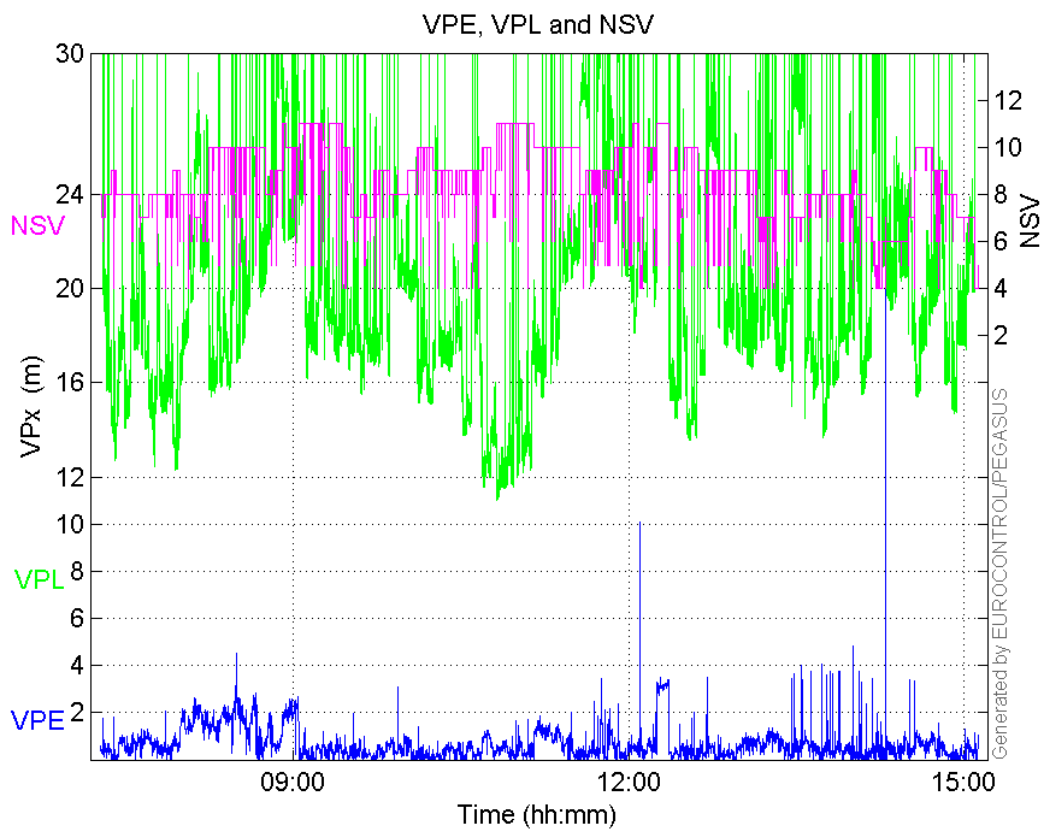
**Time Series**

HPE, HPL and NSV:



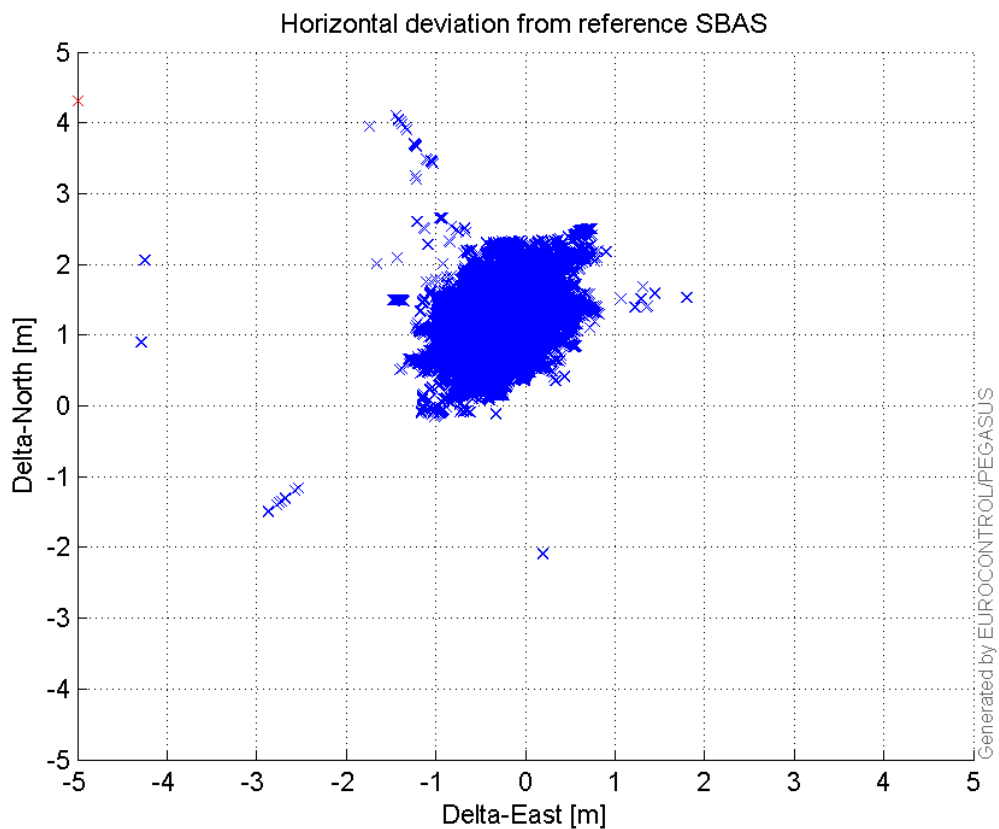


**VPE, VPL and NSV:**



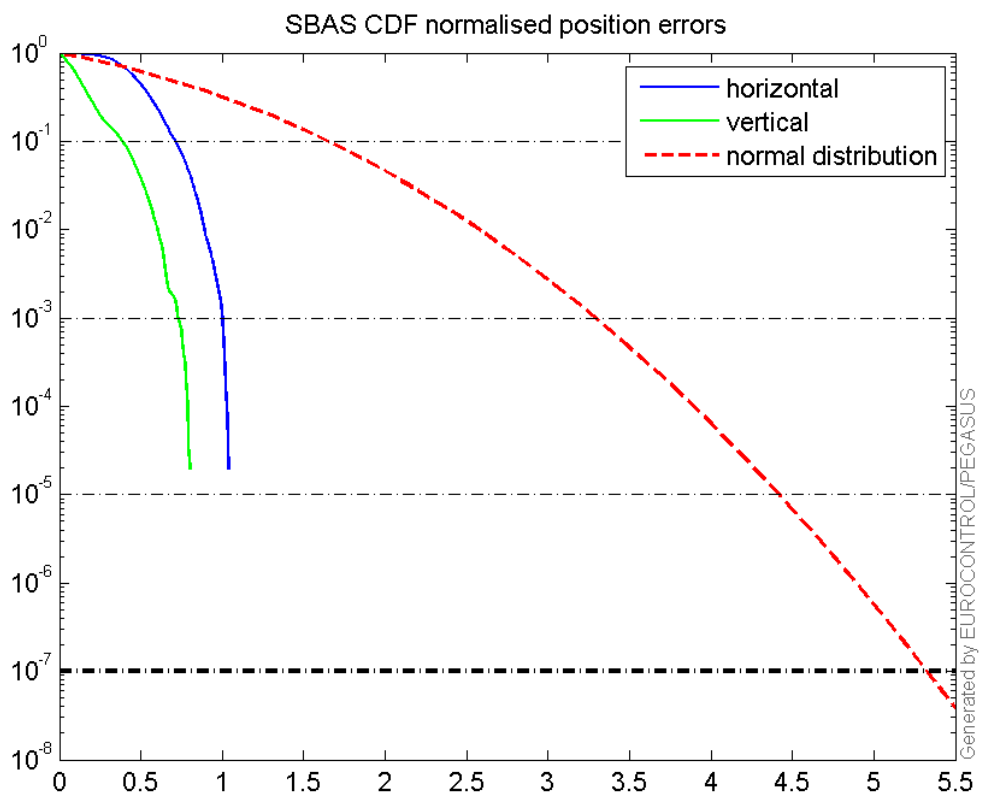
**Horizontal deviation**

**Horizontal deviation from reference SBAS:**



### CDF position

**SBAS CDF position domain:**



## Statistics

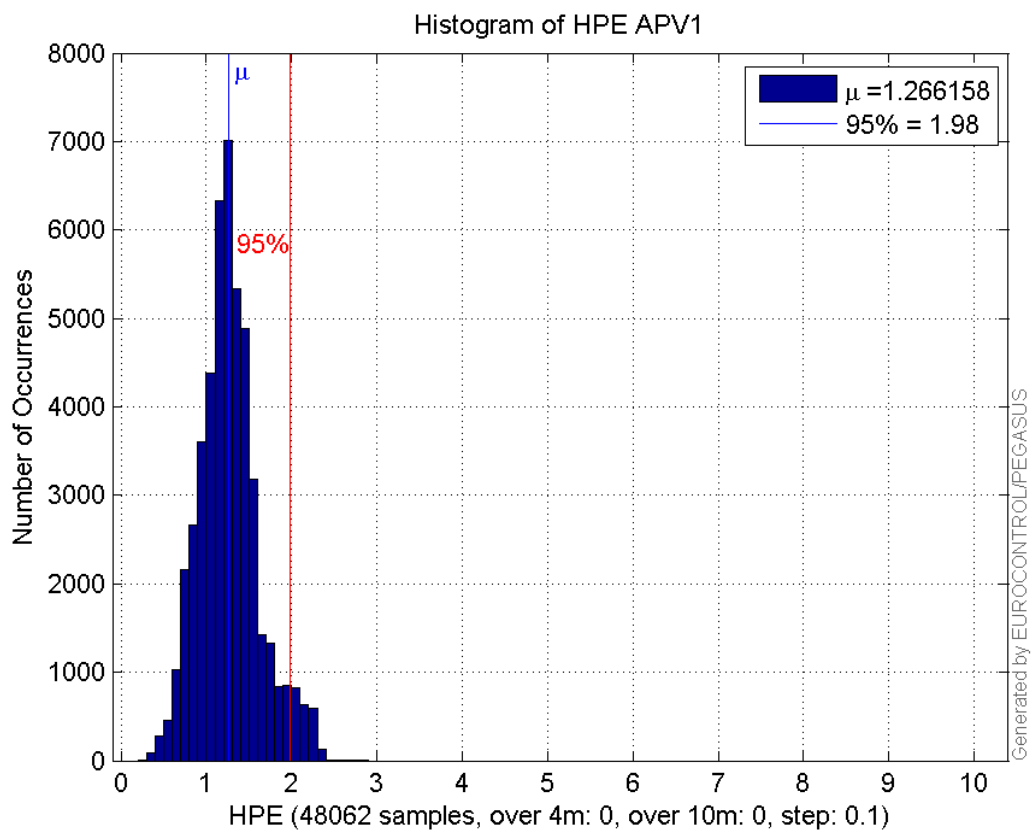
<b>number</b>	48062
<b>sum</b>	60854.078
<b>sum2</b>	83004.478
<b>prctile95</b>	1.9793959
<b>prctile99</b>	2.2307263
<b>number</b>	48062
<b>sum</b>	29255.265
<b>sum2</b>	31317.479
<b>prctile95</b>	1.8986262
<b>prctile99</b>	2.2915852
<b>number</b>	48062
<b>sum</b>	768630.47
<b>sum2</b>	13380655
<b>prctile95</b>	25.17392
<b>prctile99</b>	30.695864
<b>number</b>	48062
<b>sum</b>	945732.36
<b>sum2</b>	19633172
<b>prctile95</b>	28.0151
<b>prctile99</b>	33.697824
<b>number</b>	48062
<b>sum</b>	4005.9595
<b>sum2</b>	366.84372
<b>prctile95</b>	0.13191653
<b>prctile99</b>	0.14872014
<b>number</b>	48062
<b>sum</b>	1519.4766
<b>sum2</b>	82.380445
<b>prctile95</b>	0.089587069
<b>prctile99</b>	0.11361749
<b>number</b>	47697
<b>sum</b>	60288.817
<b>sum2</b>	82082.041
<b>prctile95</b>	1.9784901
<b>prctile99</b>	2.2309893
<b>number</b>	47697
<b>sum</b>	29026.865
<b>sum2</b>	31080.01
<b>prctile95</b>	1.8995675
<b>prctile99</b>	2.2884121
<b>number</b>	47697
<b>sum</b>	757849.76
<b>sum2</b>	13052717
<b>prctile95</b>	24.68109
<b>prctile99</b>	30.138809
<b>number</b>	47697
<b>sum</b>	930147.01
<b>sum2</b>	18957728
<b>prctile95</b>	27.72393
<b>prctile99</b>	31.726699
<b>number</b>	47697
<b>sum</b>	3986.3538
<b>sum2</b>	365.72875

**prctile95** 0.13201889  
**prctile99** 0.1487846  
**number** 47697  
**sum** 1514.083  
**sum2** 82.237479  
**prctile95** 0.089735064  
**prctile99** 0.11363857

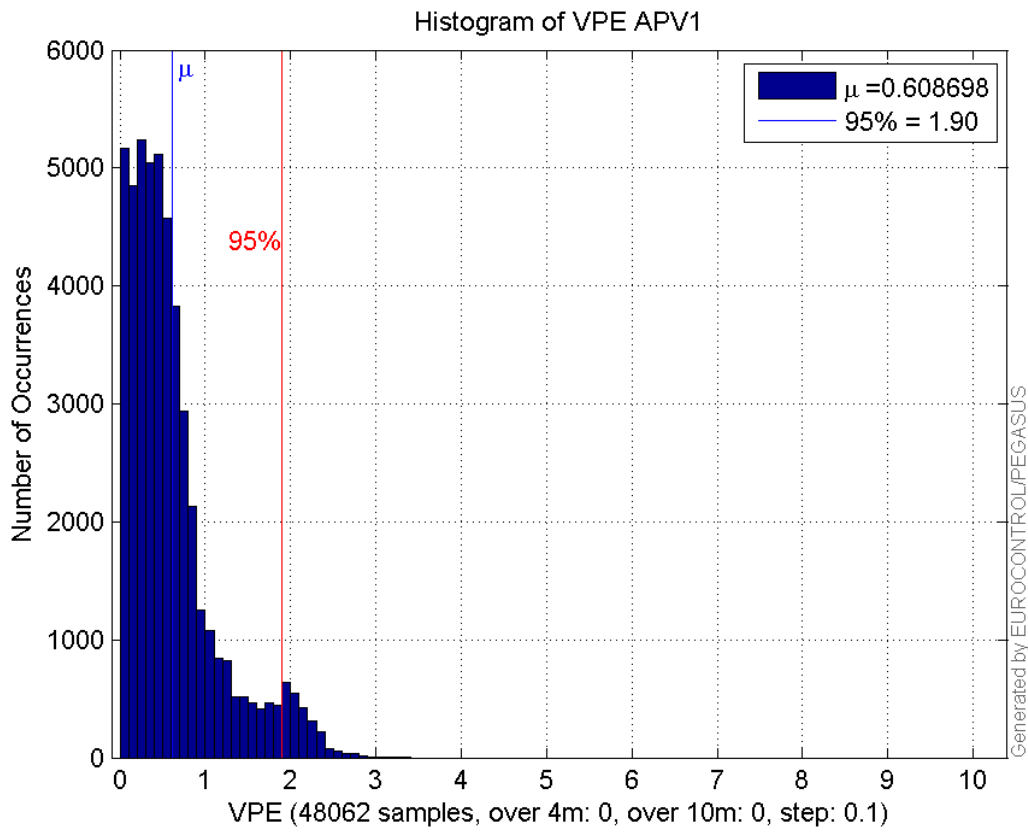
**Error and XPL Statistics :**

	Mean Value	Standard Deviation	50% Value	95% Value	99% Value	RMS Value
HPE	1.26616	0.35196	1.24127	1.9794	2.23073	1.31416
HPL	15.9925	4.75869	14.9039	25.1739	30.6959	16.6854
VPE	0.608698	0.530187	0.472097	1.89863	2.29159	0.807221
VPL	19.6773	4.61514	18.6324	28.0151	33.6978	20.2113

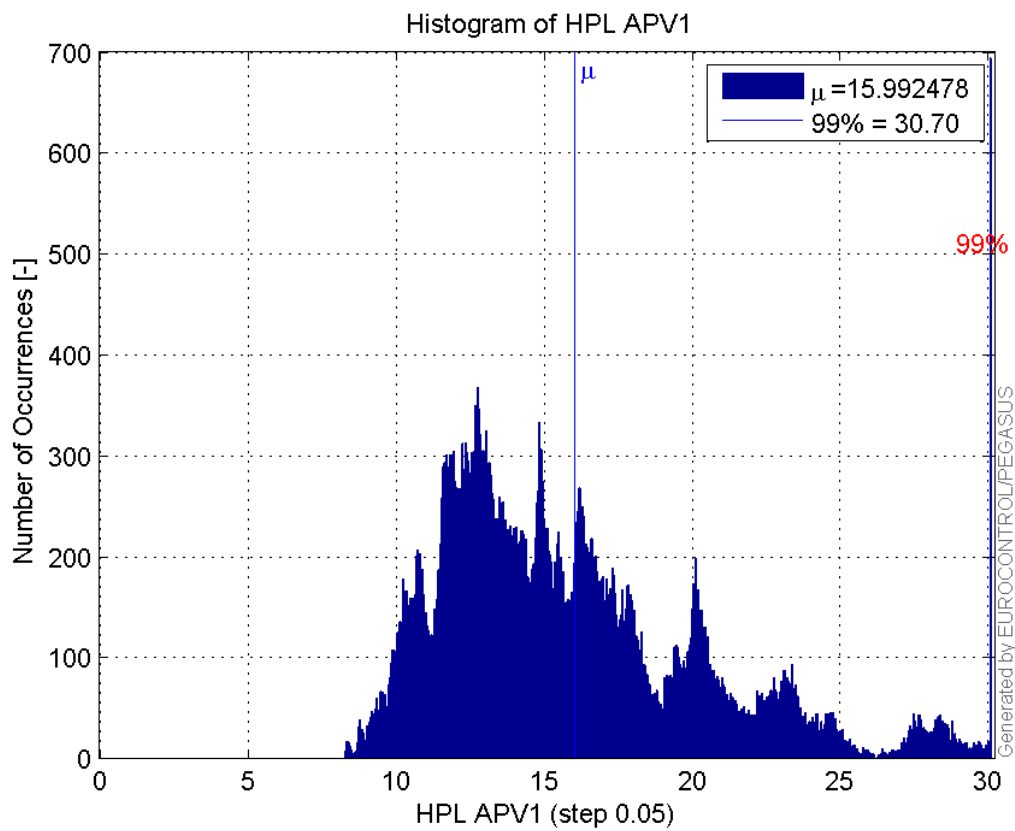
**Histogram of HPE APV1:**



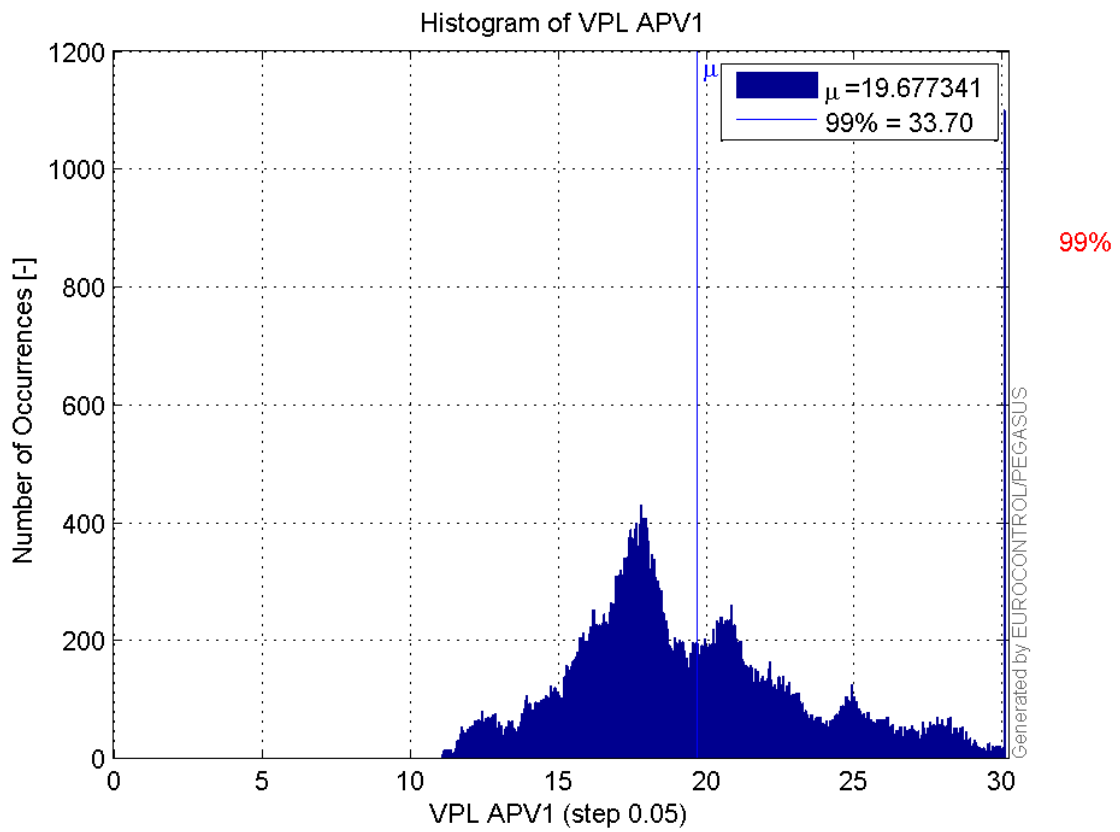
**Histogram of VPE APV1:**



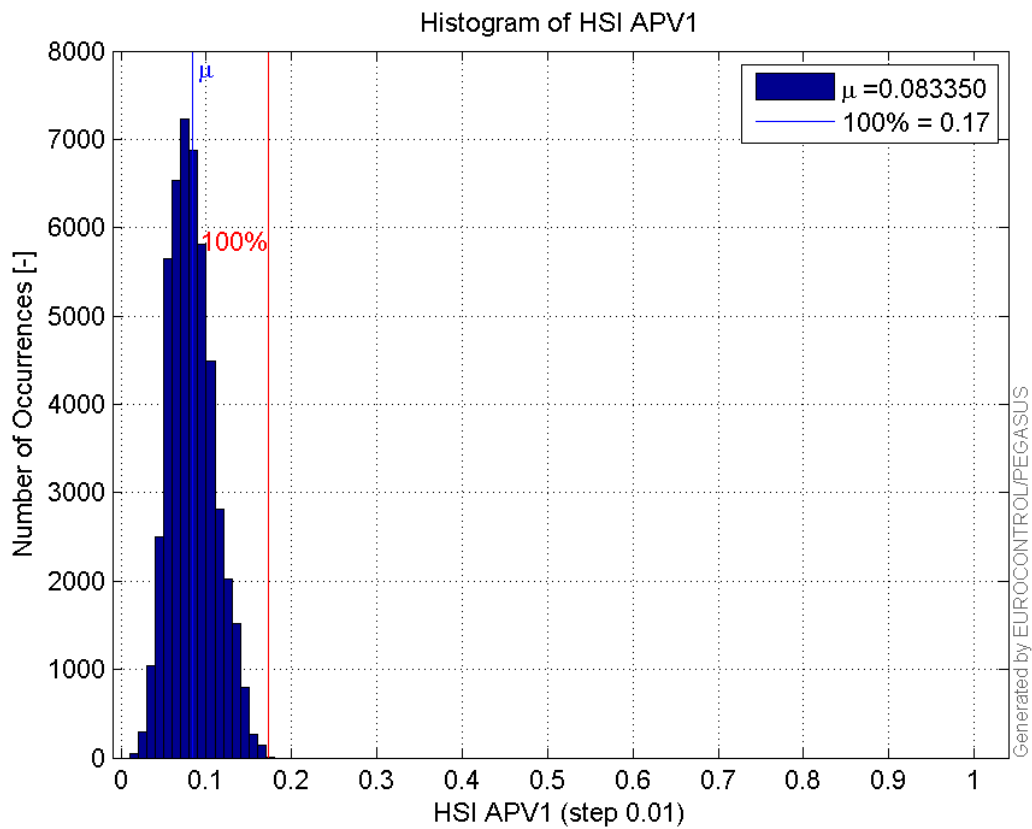
**Histogram of HPL APV1:**



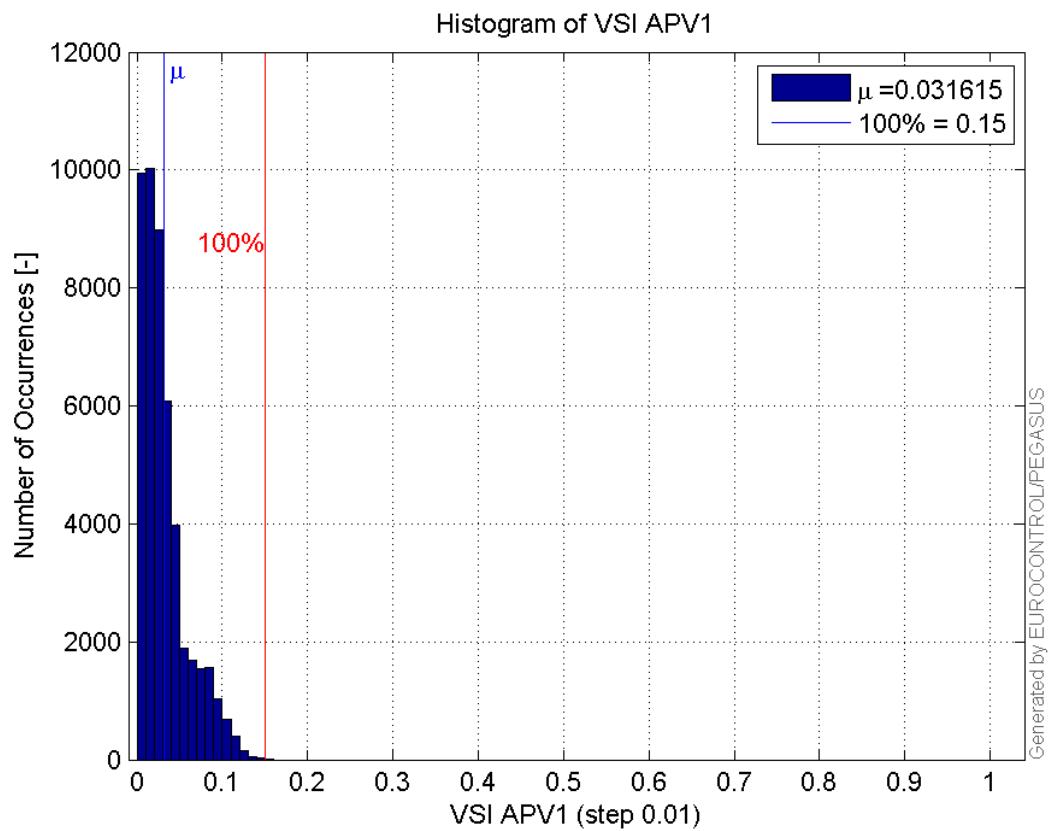
**Histogram of VPL APV1:**



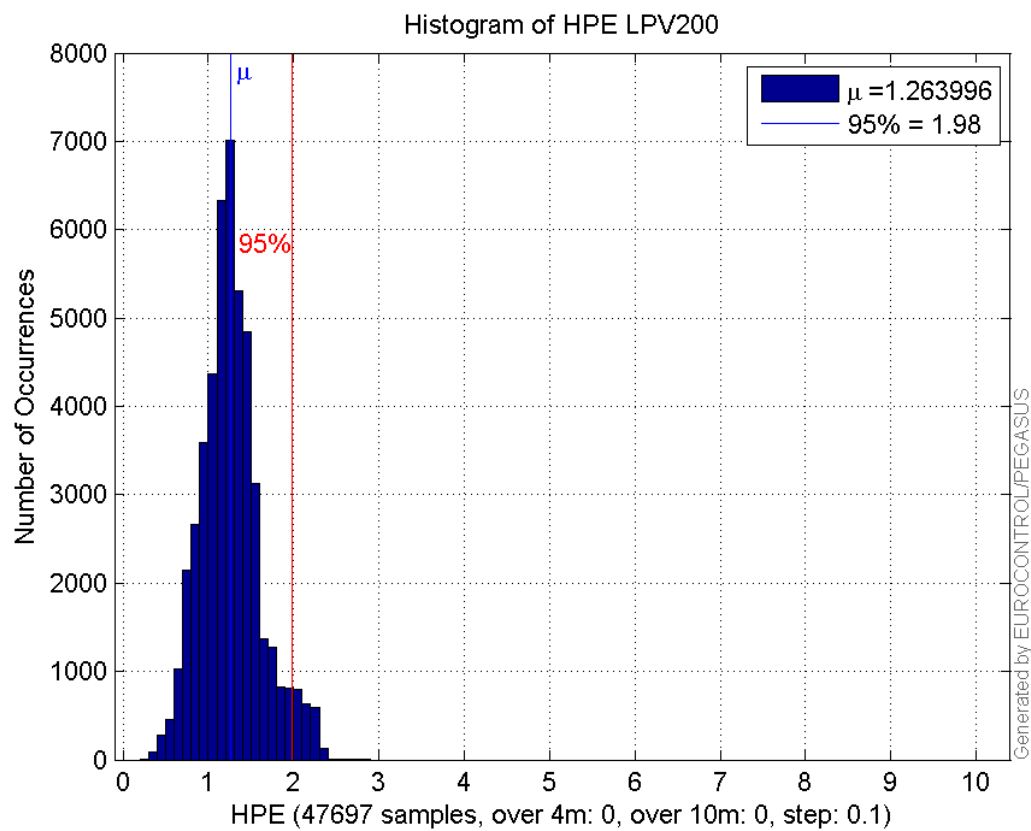
**Histogram of HSI APV1:**



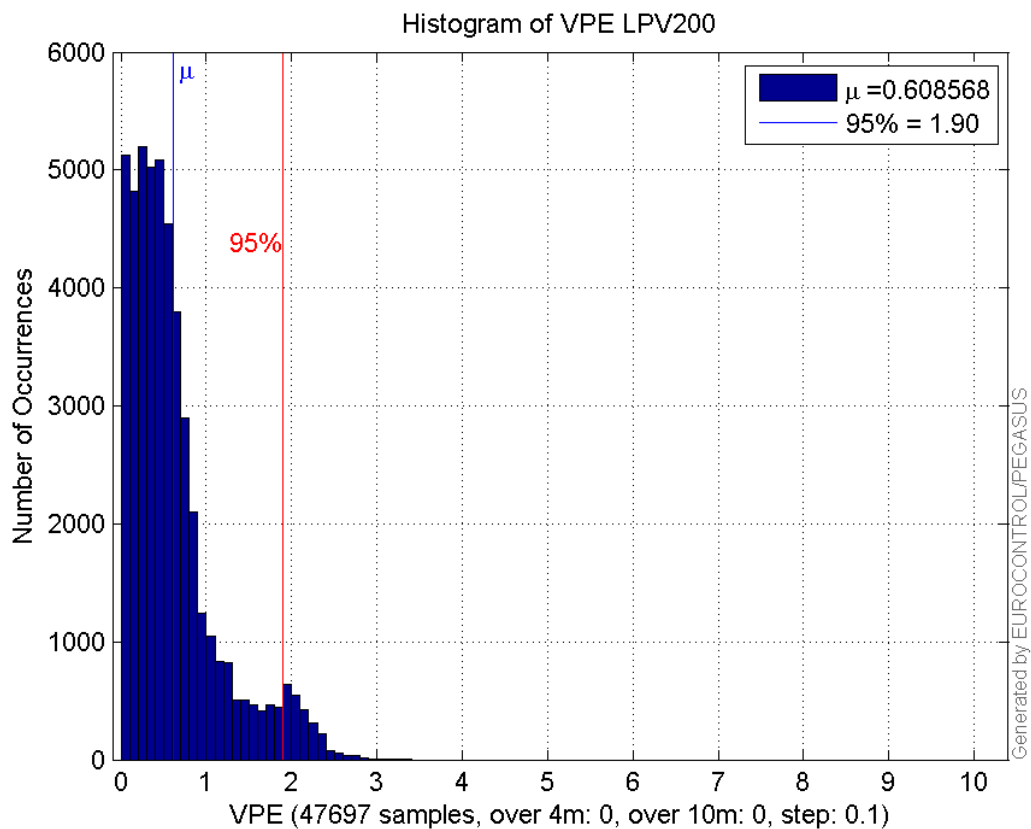
**Histogram of VSI APV1:**



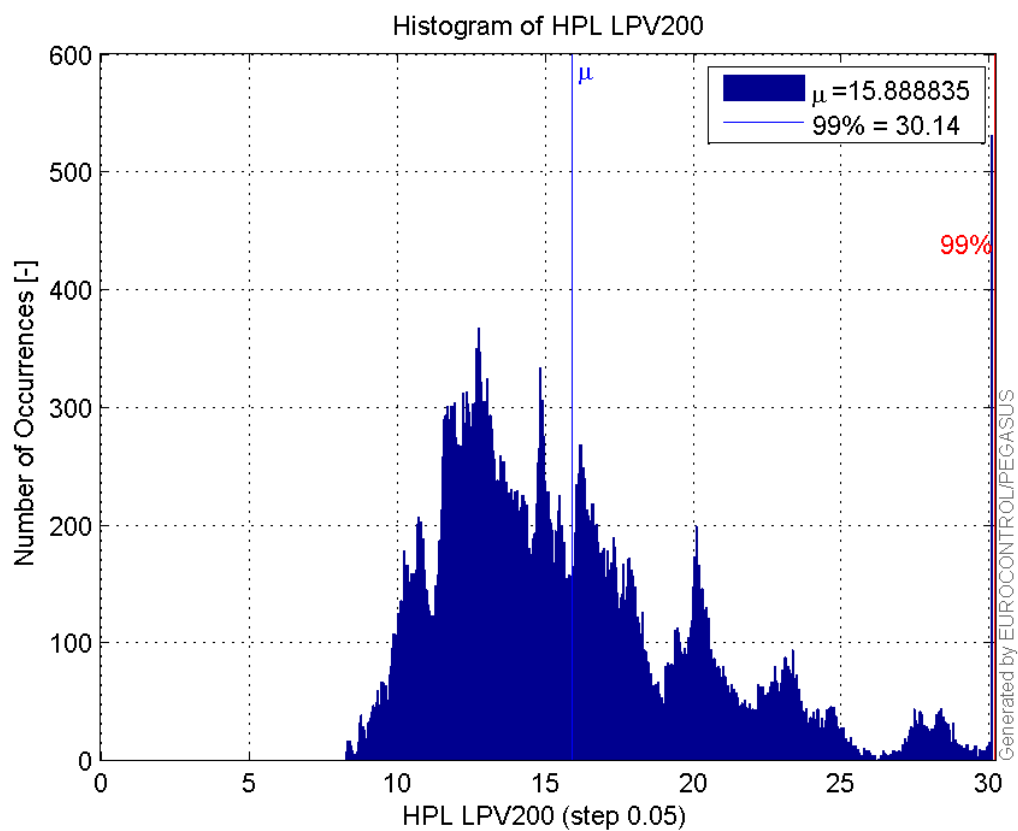
**Histogram of HPE LPV200:**



**Histogram of VPE LPV200:**

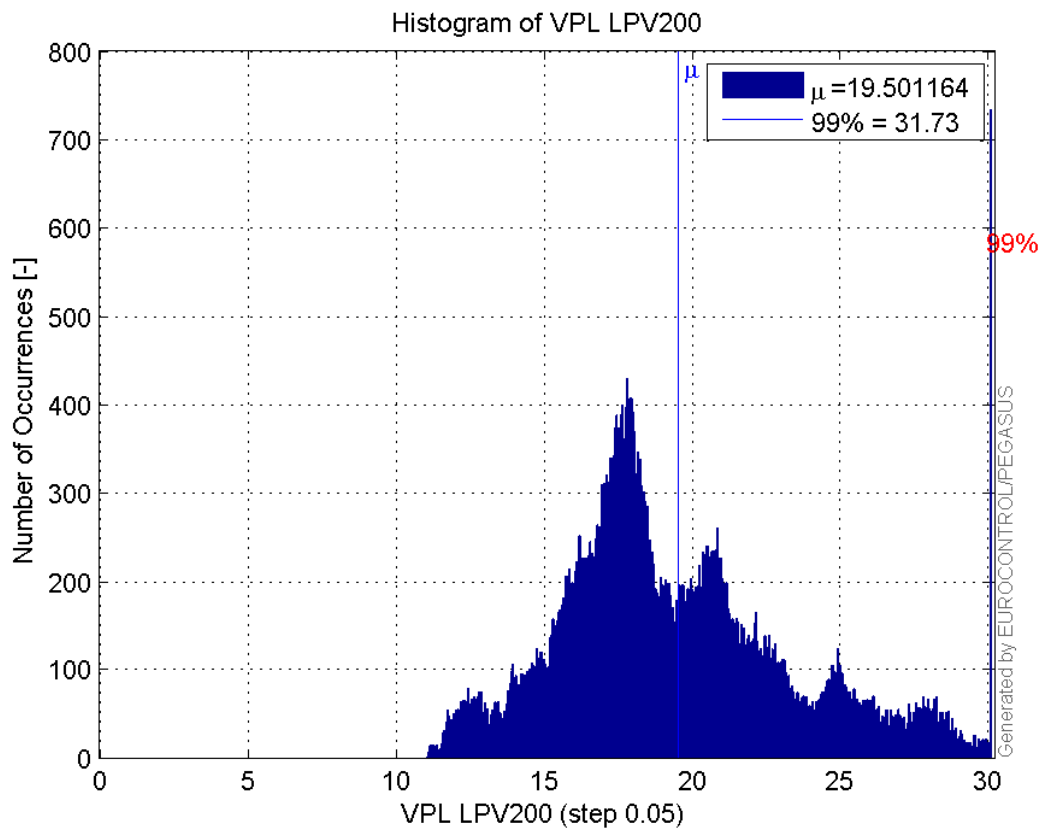


Histogram of HPL LPV200:

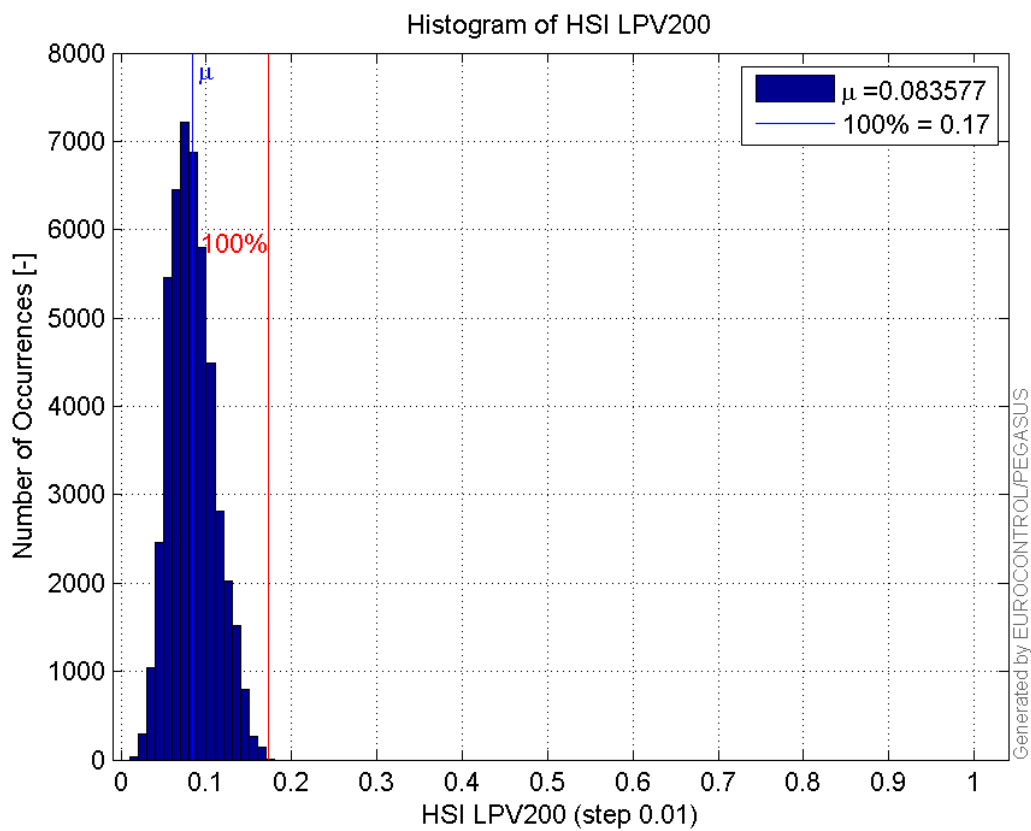


Histogram of VPL LPV200:

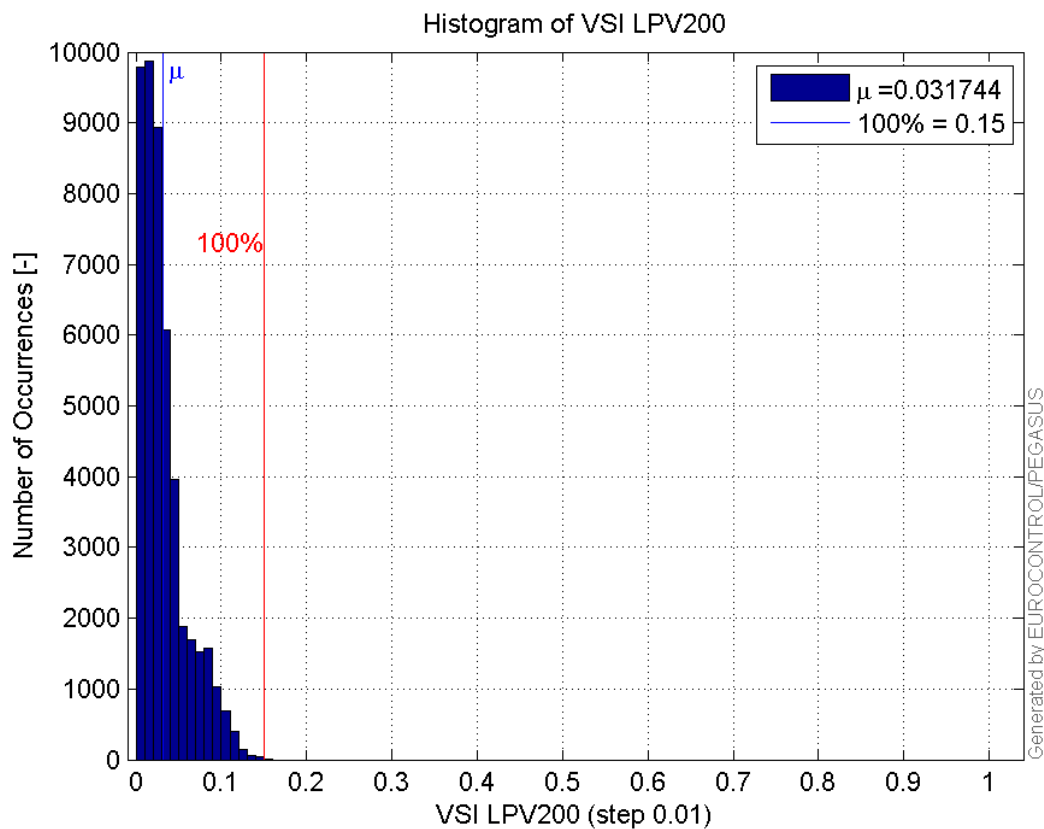




Histogram of HSI LPV200:

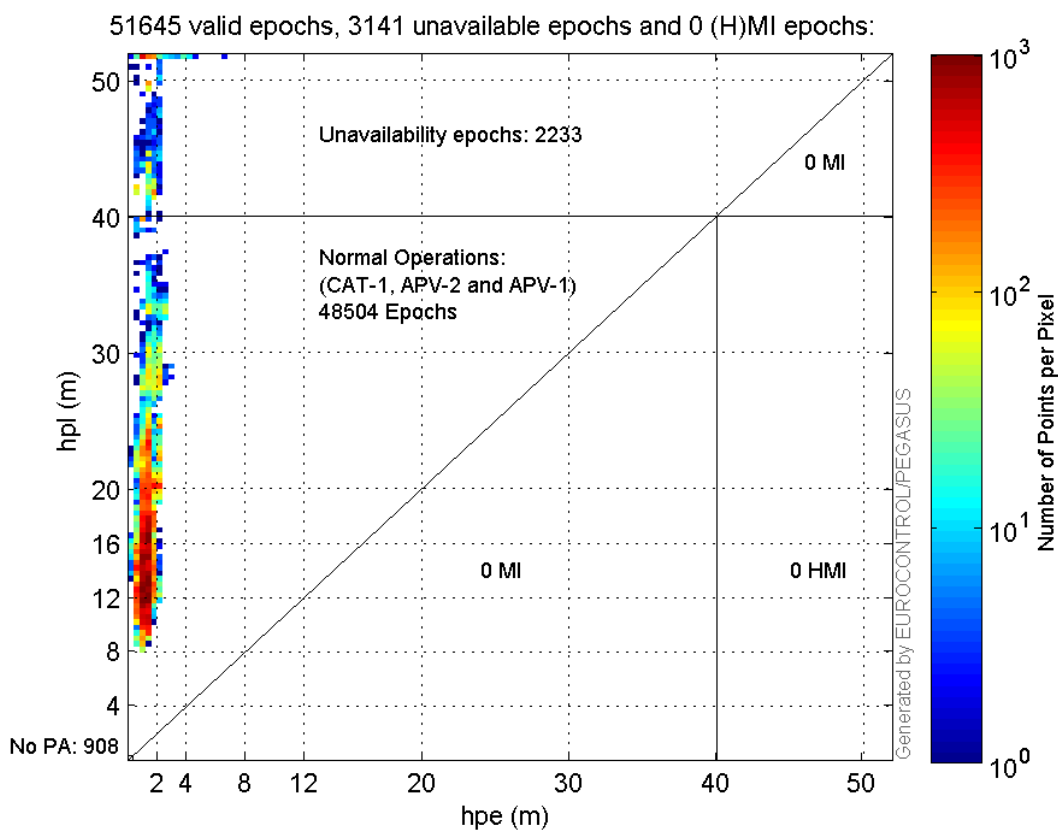


Histogram of VSI LPV200:



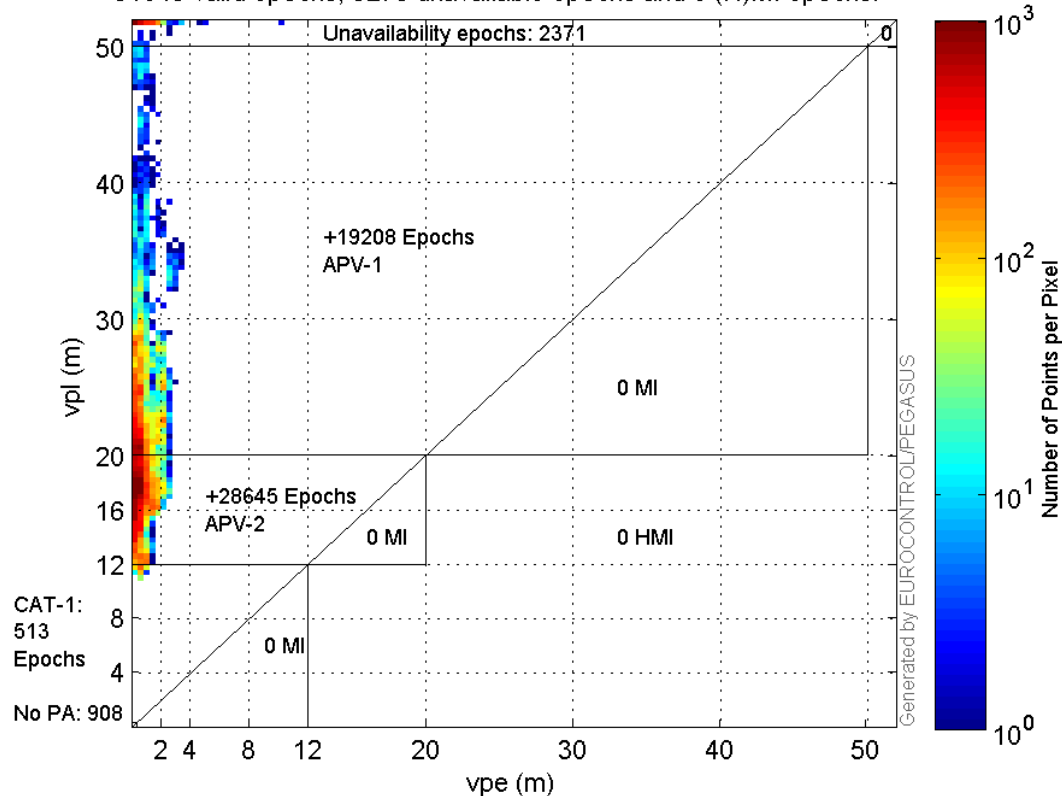
### Stanford Plots

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



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

51645 valid epochs, 3279 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_23EGNOS2Hz/02_Convertor/02_Convertor
output_prefix	system	D:/PegasusDateJob/job/2016_11_23EGNOS2Hz/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	241.4672
mi_numbers	results	0

## Range Domain

**start:** 07:10:06 23.11.2016 ( week: 1924 sec: 285006 )  
**end:** 15:08:01 23.11.2016 ( week: 1924 sec: 313681 )  
**duration:** 07:57:56 ..

### quality

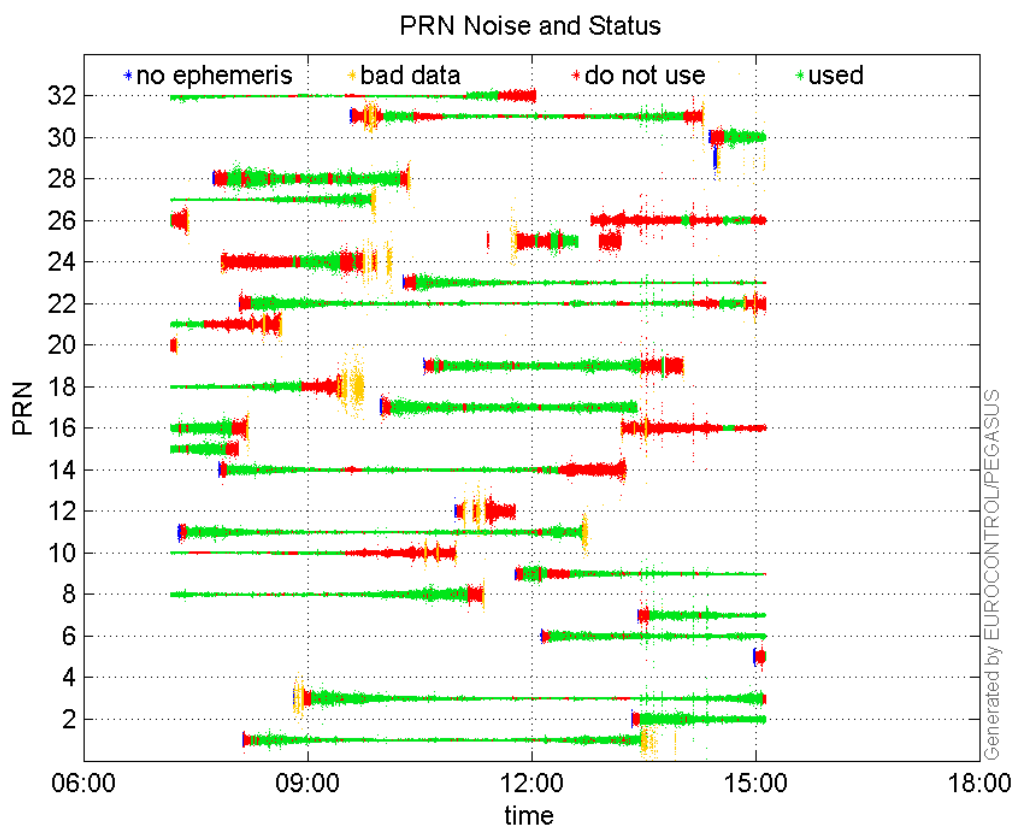
**valid samples** 52312  
**total samples** 52312

### PRN overview

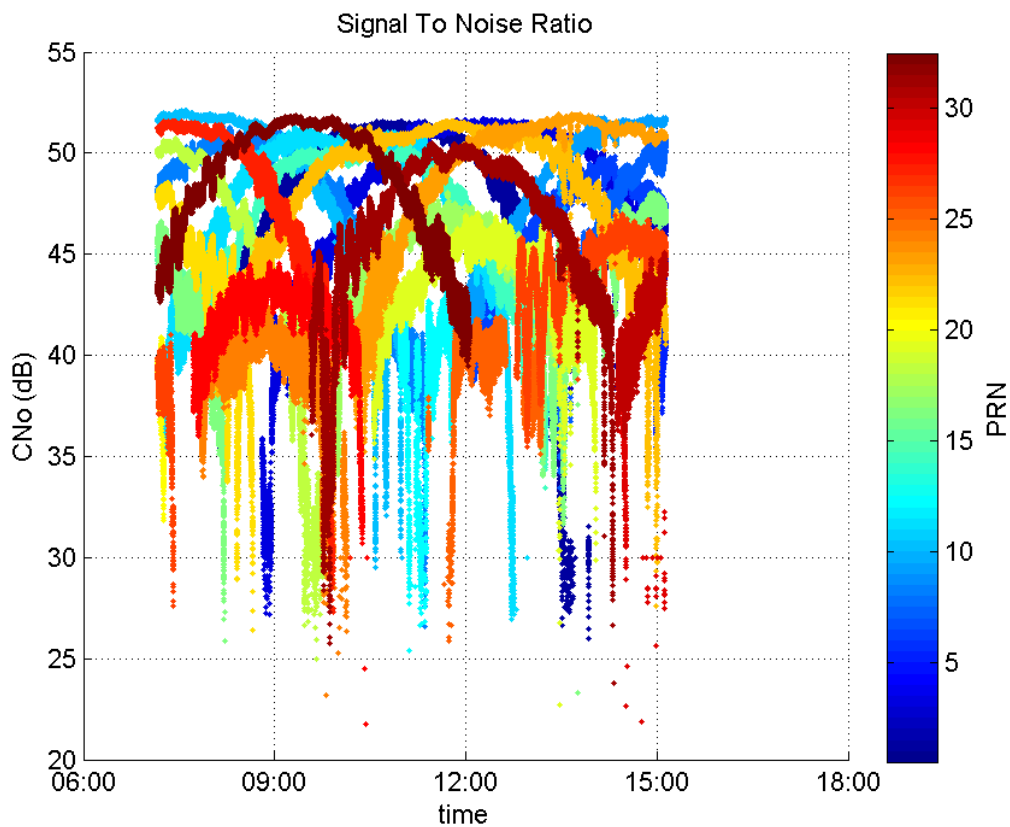
**Number of Visible GPS Satellites** 30  
**Number of Visible SBAS Satellites** 2

### signal quality and status

#### PRN Noise and Status:



#### Signal To Noise Ratio:



## range errors

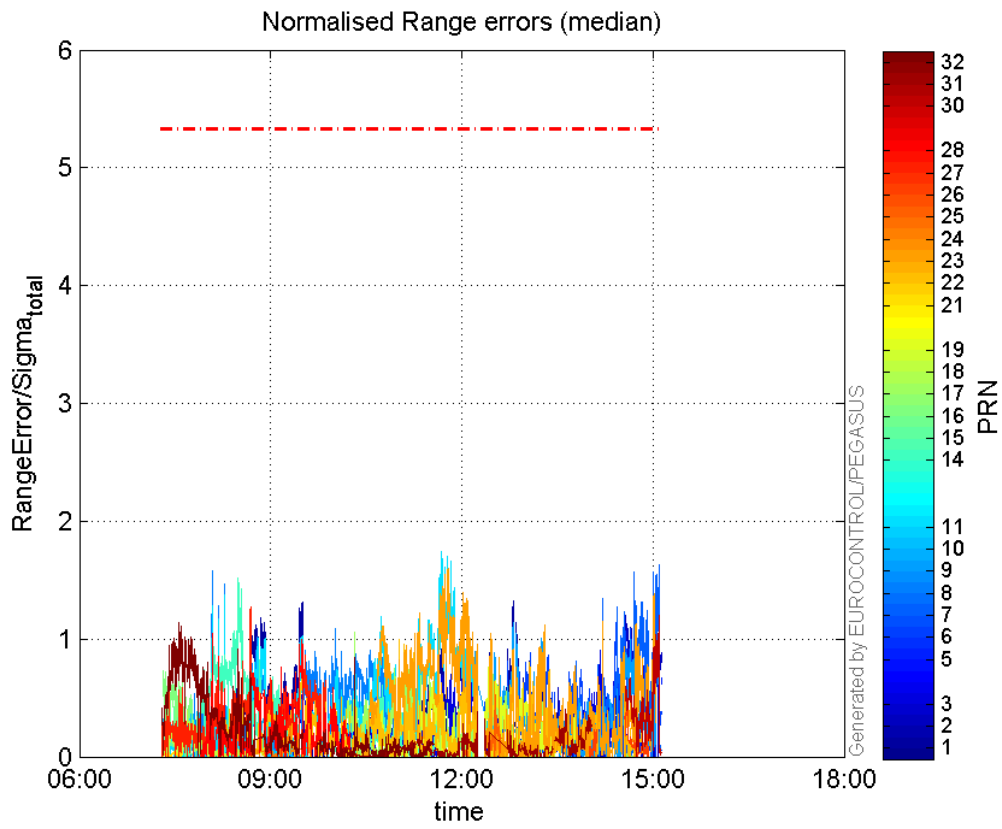
Number of Overbounding Norm Errors 0

Max Norm Errors :

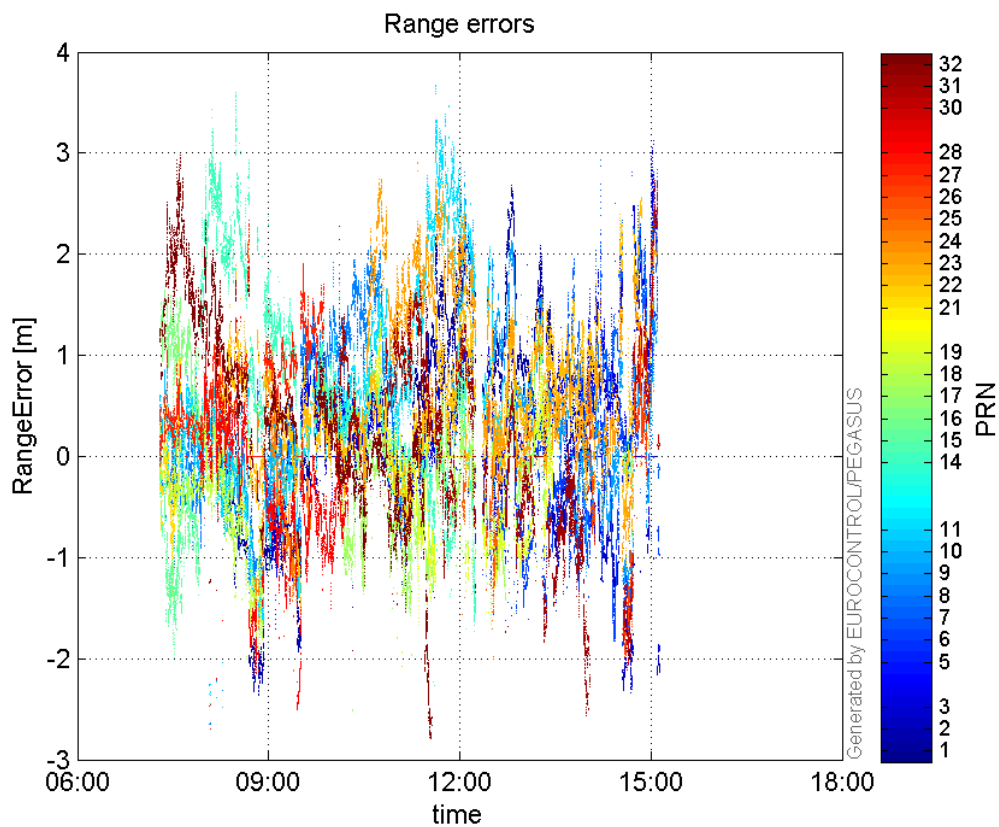
GPS Week	GPS Second	PRN	Norm Error	Range Error	Sigma
1924	305314	1	1.32619	2.61285	1.97019
1924	311642	2	1.20423	-2.30775	1.91636
1924	313252	3	1.14289	3.03172	2.65268
1924	313670	5	0.669592	-1.91398	2.85842
1924	311132	6	1.13788	-1.82472	1.60362
1924	313548	7	1.63038	2.55718	1.56845
1924	288320	8	1.57779	-2.65226	1.681
1924	305302	9	1.13498	2.08393	1.83609
1924	288320	10	1.09388	-2.3582	2.15582
1924	301271	11	1.74362	3.24862	1.86314
1924	289775	14	1.5137	3.30591	2.18399
1924	286298	15	0.545048	-1.99119	3.65324
1924	285508	16	0.72801	1.51945	2.08713
1924	296375	17	1.06247	-2.5122	2.36448
1924	286869	18	0.396002	-0.750951	1.89633
1924	303920	19	0.758471	-1.53667	2.02601
1924	286187	21	0.0624202	-1.42968	22.9042
1924	298848	22	1.00089	-1.36019	1.35899
1924	301654	23	1.59826	2.69675	1.6873
1924	292707	24	0.29635	-1.33095	4.49113
1924	304295	25	0.523308	-1.99922	3.82035
1924	311795	26	0.418488	-1.96915	4.70539

1924	290470	27	1.27406	2.16673	1.70065
1924	288320	28	1.05151	-2.69978	2.56752
1924	313541	30	1.20122	2.7193	2.26378
1924	308246	31	0.407997	-1.36489	3.34535
1924	286423	32	1.13476	2.93697	2.58819

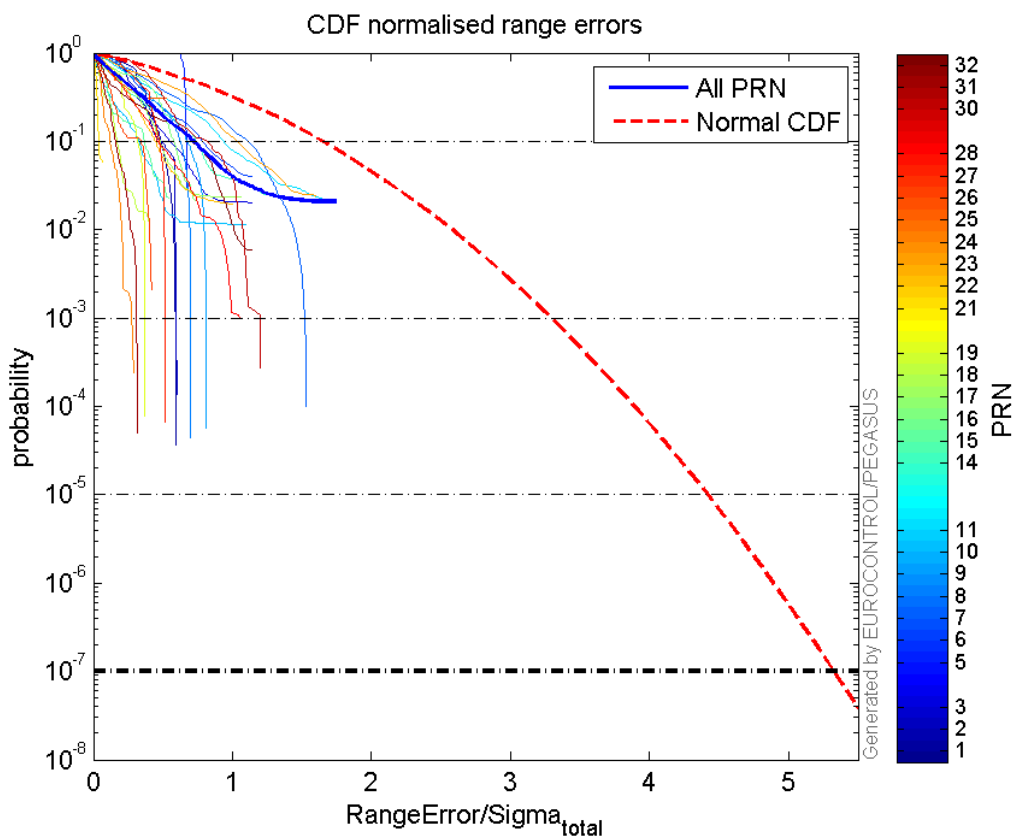
**Normalised Range errors (median):**



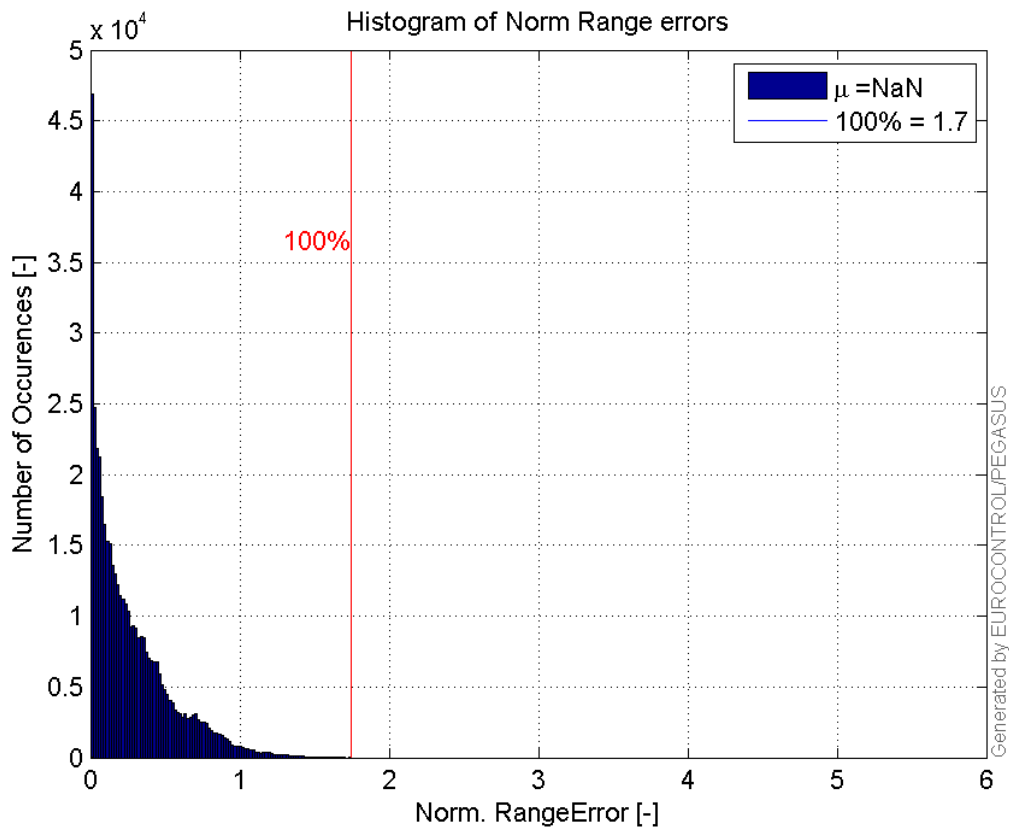
**Range errors:**



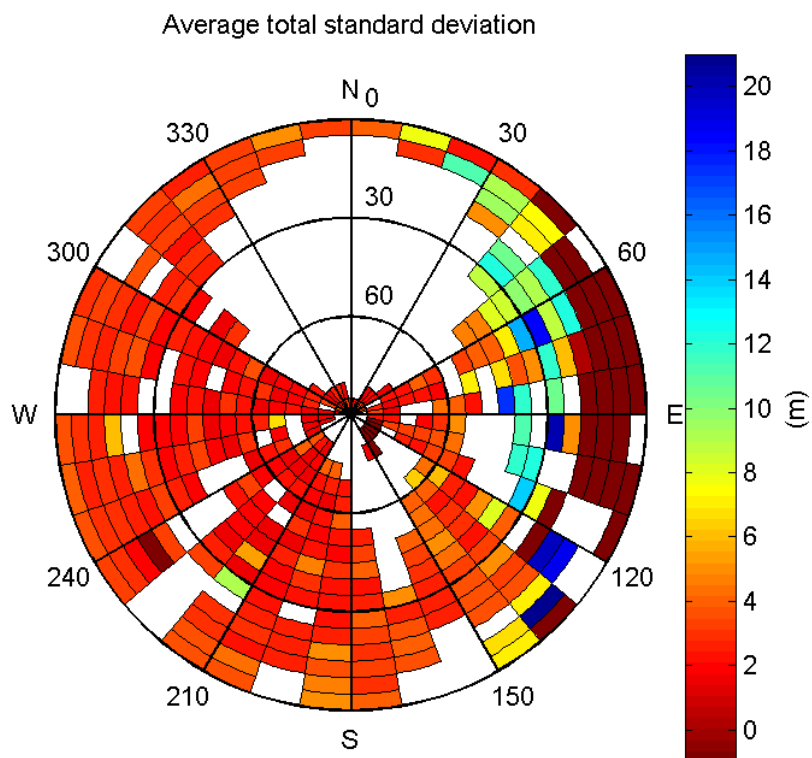
**CDF normalised range errors:**



**Histogram of Norm Range errors:**



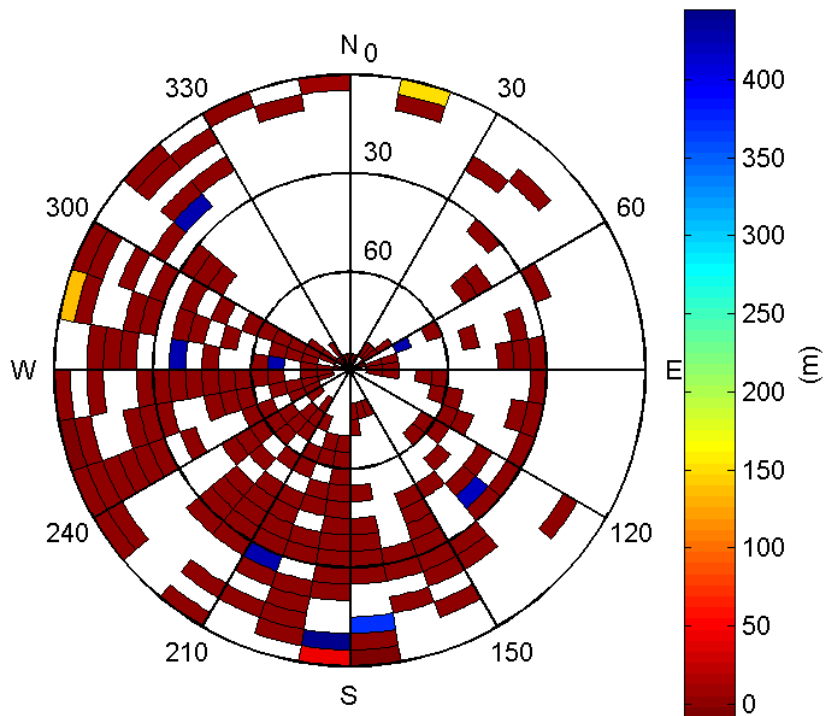
**Sigma Sky Plot:**



**Norm Error Sky Plot:**

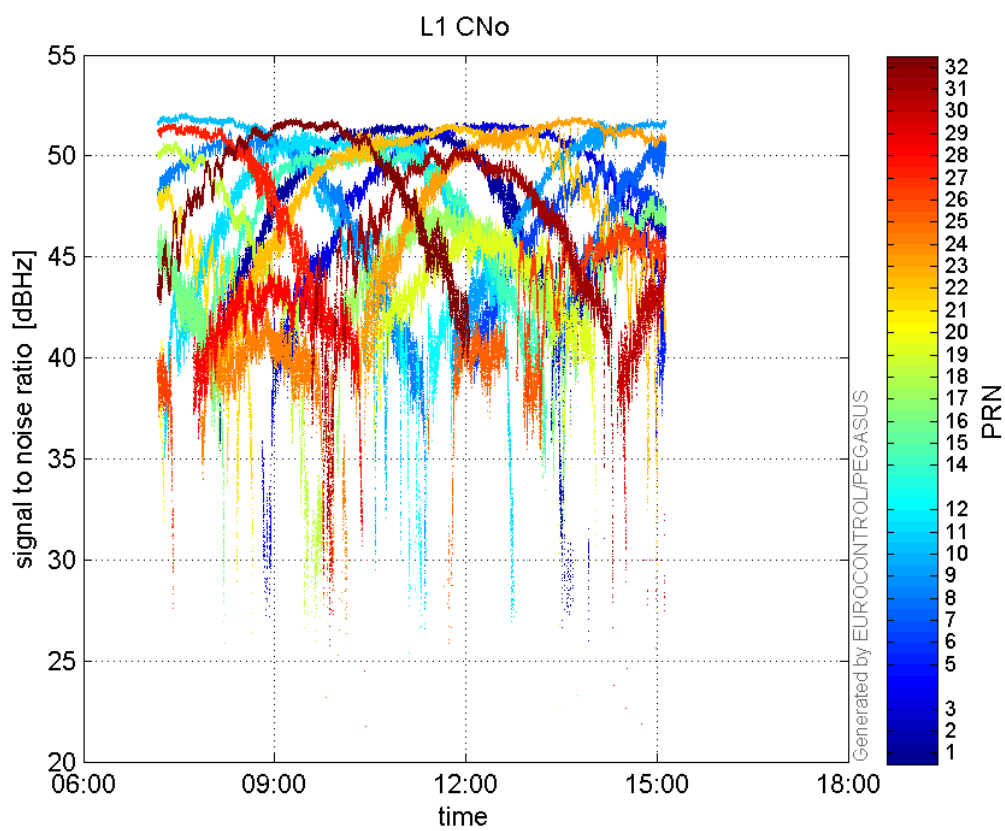


Maximum Range Error

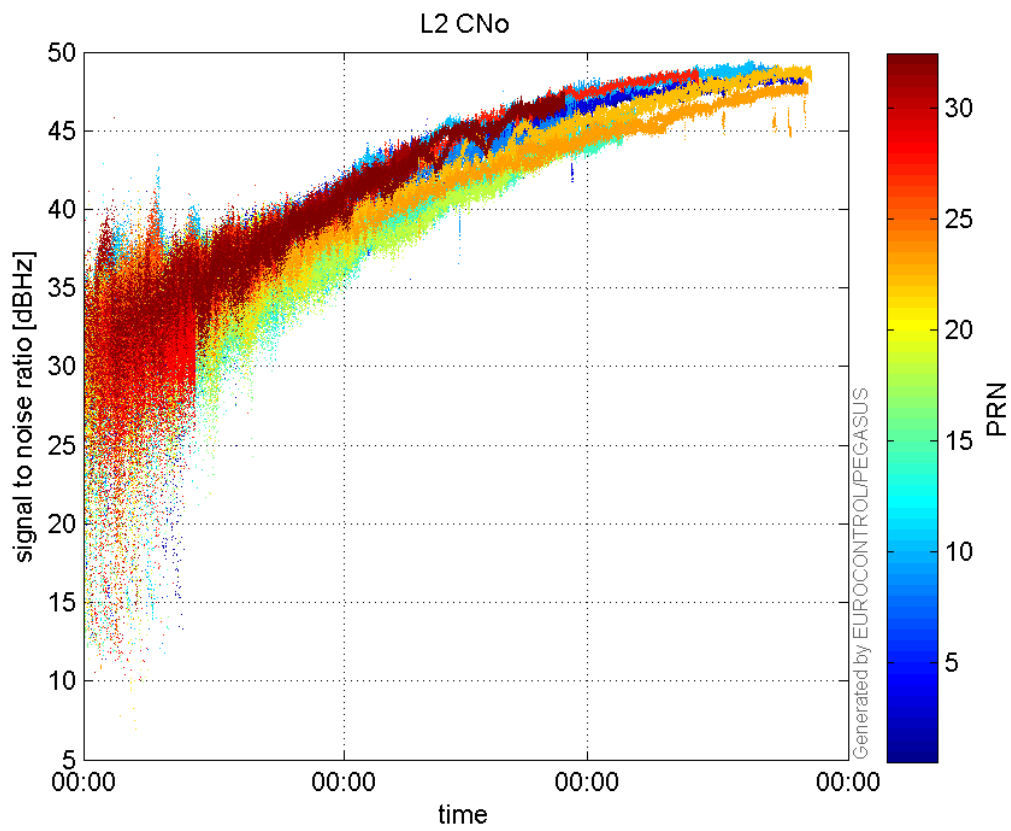


signal quality

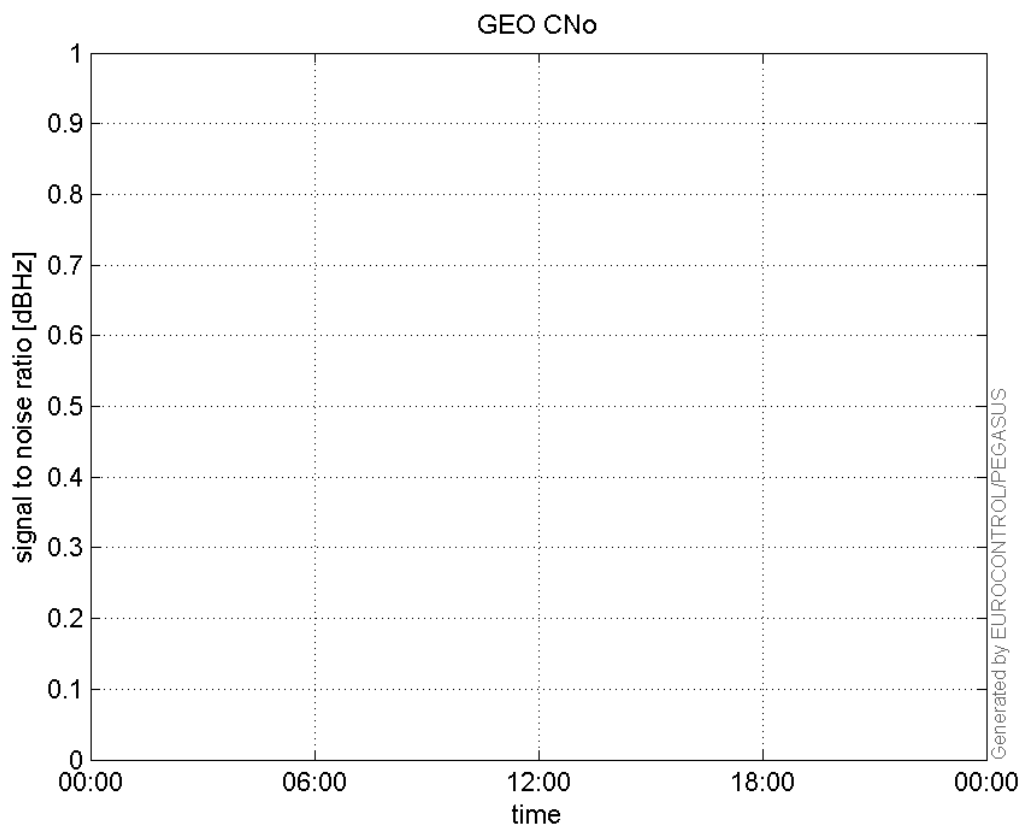
L1 CNo:



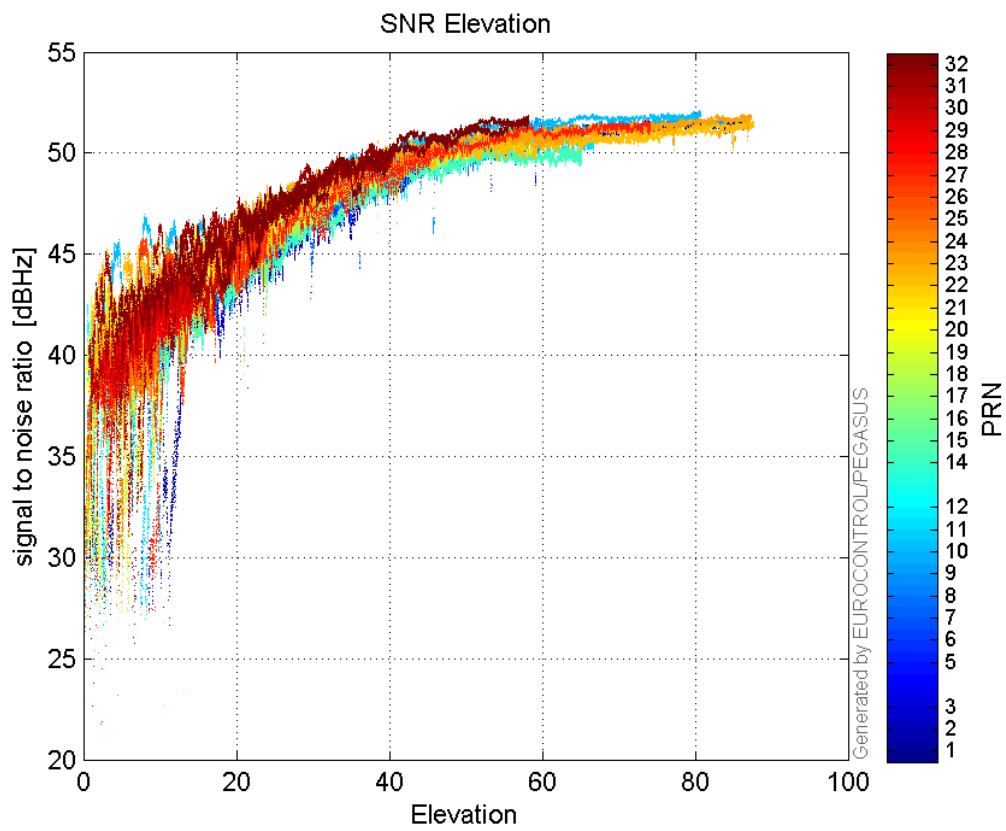
L2 CNo:



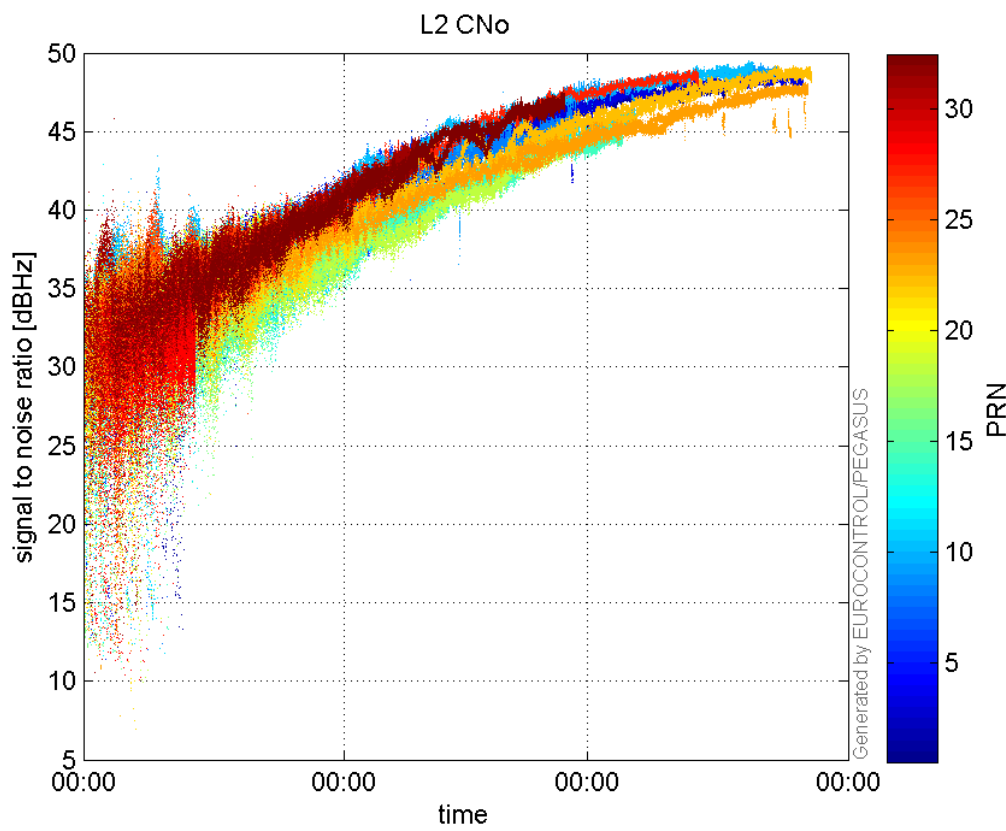
**GEO CNo:**



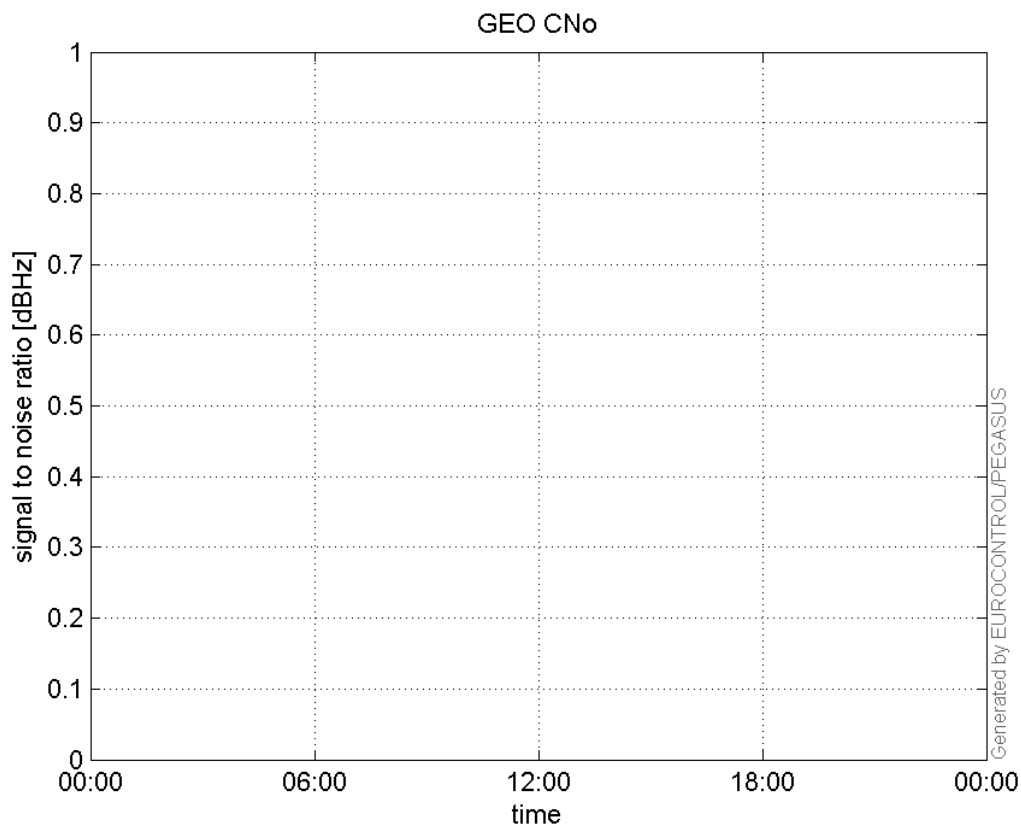
**SNR Elevation:**



**L2 CNo:**

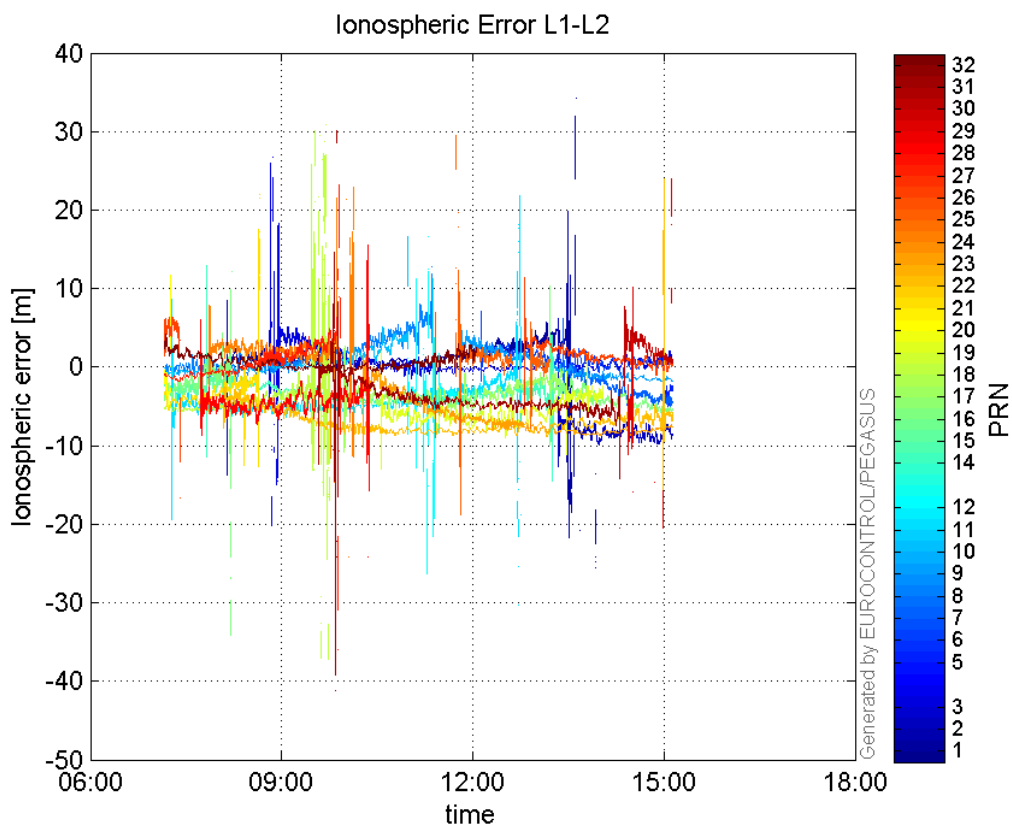


**GEO CNo:**



## dual frequency

## Ionospheric Error L1-L2:



## Parameters

## system

Name	Section	Value
name	system	GNSS_Solution
version	system	4.8.4.0
input_prefix	system	D:/PegasusDateJob/job/2016_11_23EGNOS2Hz/02_Convertor/02_Convertor
output_prefix	system	D:/PegasusDateJob/job/2016_11_23EGNOS2Hz/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	241.4672
mi_numbers	results	0