

# 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 29/01/2017

## SBAS Messages

**start:** 09:18:9.129 27.01.2017 ( week: 1933 sec: 465489.129 )  
**end:** 14:42:48.129 27.01.2017 ( week: 1933 sec: 484968.129 )  
**duration:** 05:24:39 ..

### quality

**valid samples** 30704  
**total samples** 30704  
**number of SBAS PRNs** 2

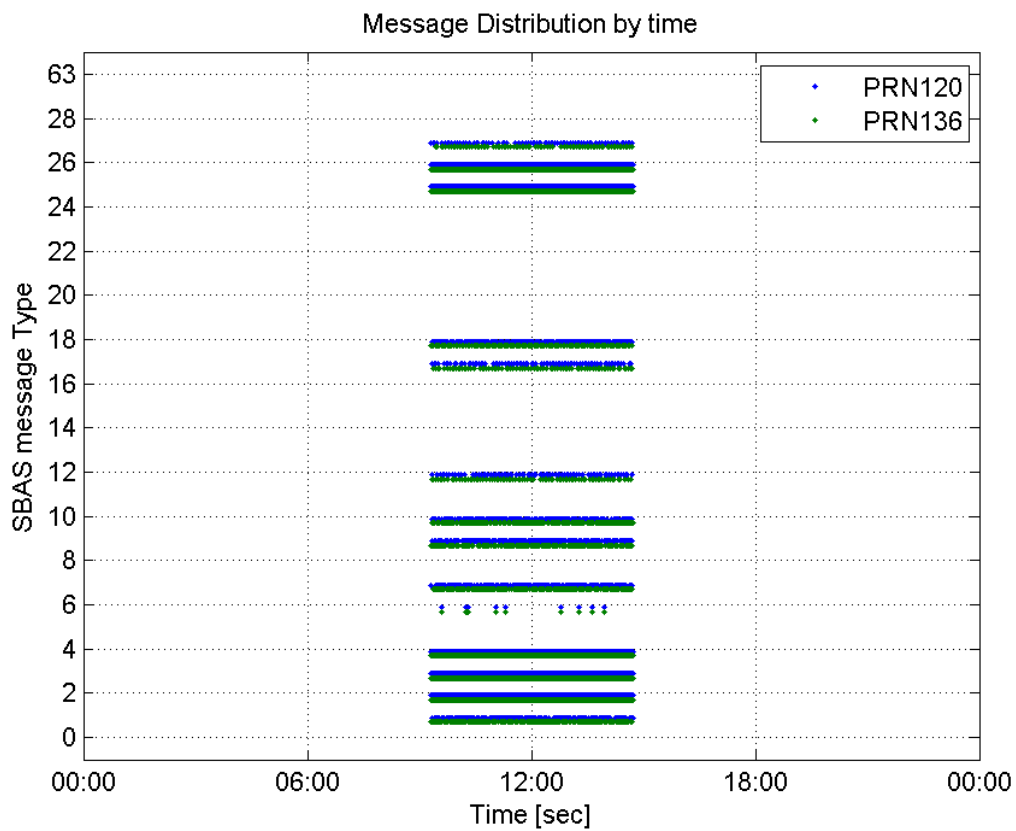
### SBAS SIS Overview

#### Message Type 6 repetitions :

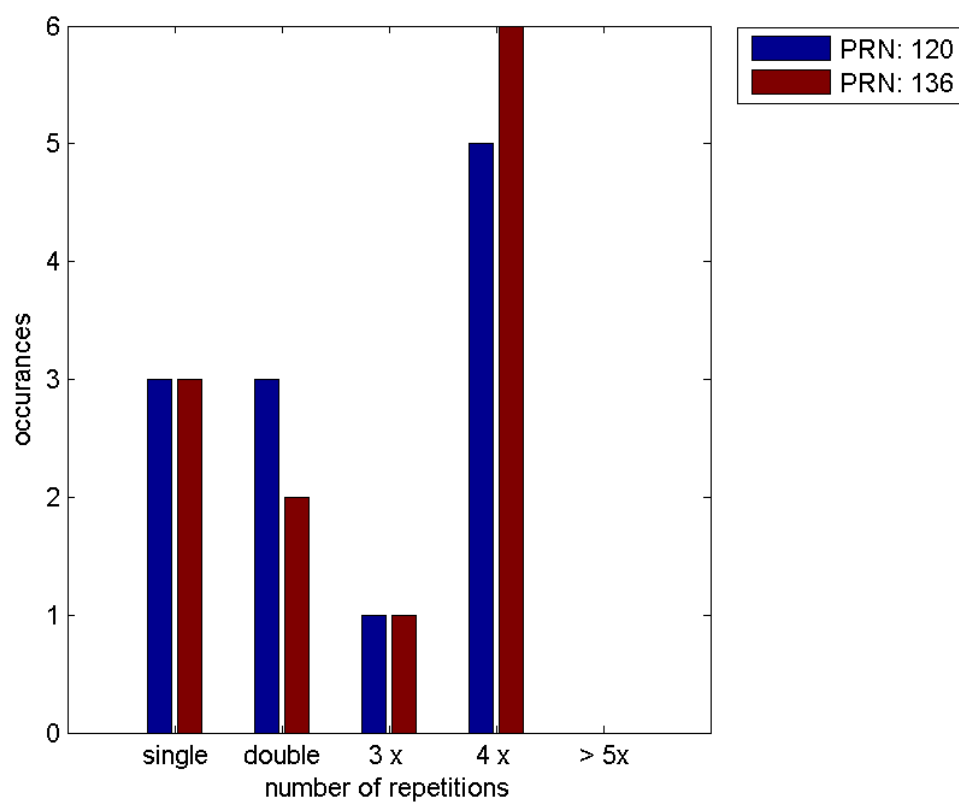
	single	double	3 x	4 x	> 5x
<b>PRN 120</b>	3	3	1	5	0
<b>PRN 136</b>	3	2	1	6	0

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#### Message Distribution by time:



**Message Type 6 repetitions:**



## Broadcast SBAS Messages :

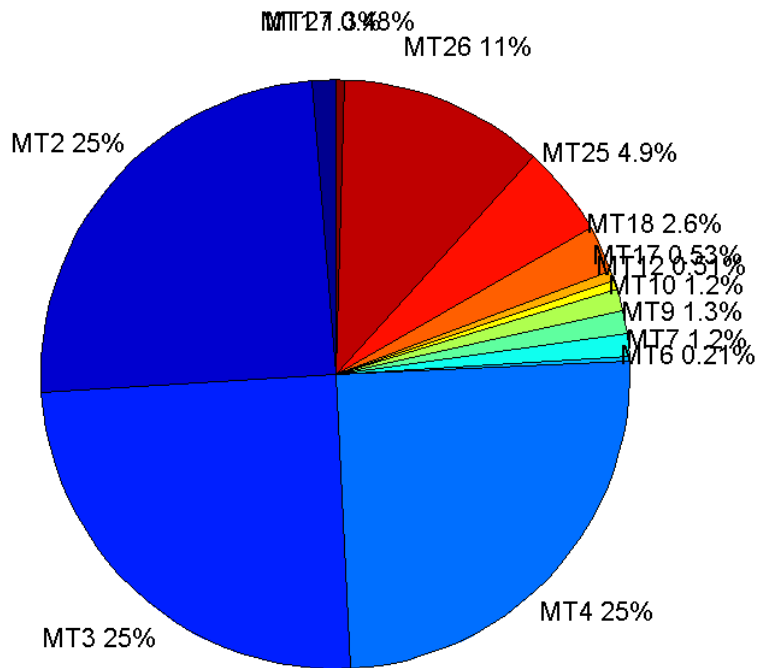
	number of messages	%
MT 0	0	0
MT 1	193	1.25659
MT 2	3801	24.7477
MT 3	3813	24.8258
MT 4	3826	24.9105
MT 5	0	0
MT 6	33	0.214858
MT 7	190	1.23706
MT 9	194	1.2631
MT 10	188	1.22404
MT 12	78	0.507846
MT 17	82	0.533889
MT 18	396	2.57829
MT 24	0	0
MT 25	760	4.94824
MT 26	1731	11.2703
MT 27	74	0.481802
MT 28	0	0
MT 62	0	0
MT 63	0	0
<b>Total</b>	15359	100

## Update intervals :

	Minimum [s]	Maximum [s]	Mean value	Exceed Max update	Exceed NPA timeout	Exceed PA timeout
MT 0	--	--	--	--	--	--
MT 1	76	400	100.672	31	0	0
MT 2	4	13	5.12474	979	0	1
MT 3	4	20	5.1086	967	1	4
MT 4	4	20	5.09255	950	1	14
MT 5	--	--	--	--	--	--
MT 6	1	5323	487.969	9	9	9
MT 7	76	480	102.799	40	1	2
MT 9	76	400	100.275	0	0	0
MT 10	75	473	102.909	37	1	3
MT 12	181	793	249.299	77	18	18
MT 17	184	784	236.975	0	0	0
MT 18	4	181	49.0051	0	0	0
MT 24	--	--	--	--	--	--
MT 25	2	116	25.6034	0	0	0
MT 26	1	51	11.2514	0	0	0
MT						

27	191	772	265.726	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	199	1.29684
MT 2	3805	24.7964
MT 3	3816	24.868
MT 4	3813	24.8485
MT 5	0	0
MT 6	35	0.228087
MT 7	192	1.25122
MT 9	186	1.21212
MT 10	200	1.30336
MT 12	82	0.534376
MT 17	78	0.508309

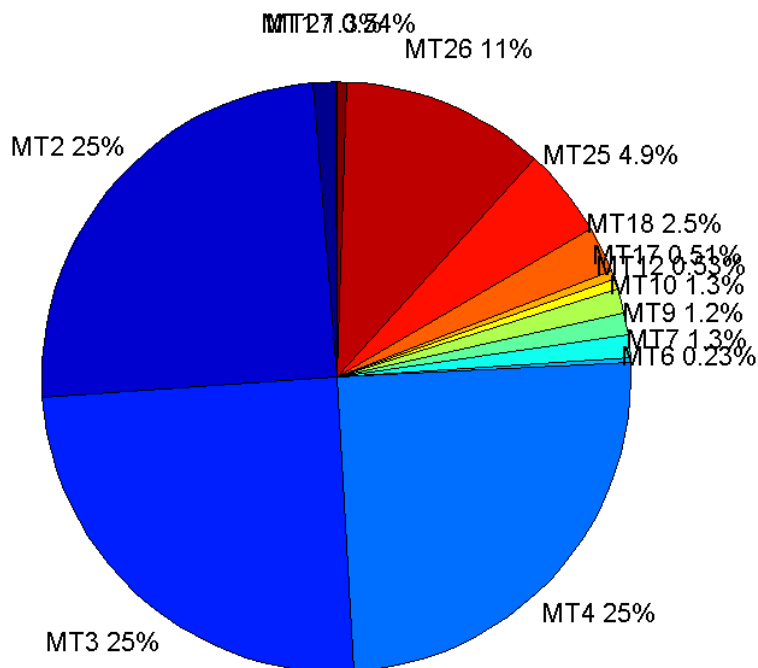
MT 18	384	2.50244
MT 24	0	0
MT 25	755	4.92017
MT 26	1717	11.1893
MT 27	83	0.540893
MT 28	0	0
MT 62	0	0
MT 63	0	0
<b>Total</b>	15345	100

## Update intervals :

	Minimum [s]	Maximum [s]	Mean value	Exceed Max update	Exceed NPA timeout	Exceed PA timeout
MT 0	--	--	--	--	--	--
MT 1	76	320	98.0657	36	0	0
MT 2	4	20	5.11935	964	1	11
MT 3	4	20	5.10459	972	1	5
MT 4	4	13	5.10965	973	0	7
MT 5	--	--	--	--	--	--
MT 6	1	5320	459.265	9	9	9
MT 7	76	401	100.304	39	1	3
MT 9	76	394	104.827	0	0	0
MT 10	75	317	97.1809	35	0	2
MT 12	188	774	236.407	81	15	15
MT 17	188	582	248.662	0	0	0
MT 18	4	200	50.5849	0	0	0
MT 24	--	--	--	--	--	--
MT 25	1	124	25.8064	0	0	0
MT 26	4	77	11.3462	0	0	0
MT 27	188	800	231.195	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_01_27EGNOS2Hz/01_User/01_User
Outputfile	System	D:/PegasusDateJob/job/2017_01_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:** 09:18:10 27.01.2017 ( week: 1933 sec: 465490 )  
**end:** 14:42:49 27.01.2017 ( week: 1933 sec: 484969 )  
**duration:** 05:24:40 ..

#### quality

**valid samples** 35311  
**total samples** 35959

## Event tables

**Position discontinuity events type** long  
**APV-I discontinuity events type** long  
**APV-35m discontinuity events type** independent  
**LPV-200 discontinuity events type** independent  
**CAT-I discontinuity events type** nothing

extremes :

	Epoch	HPE	HPL	HPE/HPL	VPE	VPL	VPE/VPL
max normHor	469285	1.44011	8.95424	0.160829	0.356748	14.9315	0.0238923
max normVer	478056	0.92847	19.677	0.0471856	1.93992	17.1041	0.113418
max HPE	466807	3.64276	62.6095	0.0581822	-0.110739	23.6368	0.00468501
max VPE	468852	1.45178	33.206	0.0437204	5.55759	123.665	0.0449407
min HPL	469323	1.24063	8.3862	0.147937	0.442846	13.5677	0.0326397
min VPL	469323	1.24063	8.3862	0.147937	0.442846	13.5677	0.0326397

Position discontinuity events :

#	Epoch	duration	stable period
1	476116	173.5	110.5

APV-I discontinuity events :

#	Epoch	duration	stable period
1	468846	5.5	9.5
2	472337	12.5	90.5
3	474427	8	4
4	475386	5.5	6.5
5	475444	4.5	32.5
6	475534	1905.5	77.5
7	477732	53.5	1.5
8	478166	9.5	150.5
9	478577	12.5	141.5
10	480053	5.5	990.5
11	482361	5.5	148.5
12	482642	232.5	1
13	483698	178.5	164.5

APV-35m discontinuity events :

#	Epoch	duration	stable period
1	472337	12.5	90.5
2	475444	4.5	32.5
3	475534	1905.5	77.5
4	478166	9.5	150.5
5	478577	12.5	141.5
6	481521	5.5	276.5
7	482045	71.5	57.5
8	482361	5.5	148.5
9	482614	260.5	247.5
10	483350	38.5	146.5

11	483508	14.5	31.5
12	483698	178.5	164.5

**LPV-200 discontinuity events :**

#	Epoch	duration	stable period
1	472337	12.5	90.5
2	475444	4.5	32.5
3	475534	1905.5	77.5
4	478166	9.5	150.5
5	478577	12.5	141.5
6	481521	5.5	276.5
7	482045	71.5	57.5
8	482361	5.5	148.5
9	482614	260.5	247.5
10	483350	38.5	146.5
11	483508	14.5	31.5
12	483698	178.5	164.5

**First Glance analysis**

<b>Duration</b>	19480
<b>Number of Samples</b>	35959
<b>Number of invalid sample</b>	648
<b>Number of no position solution samples</b>	640
<b>Number of missing sample</b>	3001
<b>Logging Loss</b>	7.7028
<b>Processing Loss</b>	1.8021
<b>Number of Misleading Information</b>	0
<b>Data gaps</b>	11
<b>Discontinuities</b>	56

**Number of Samples :**

Valid	APV-1	LPV-200	CAT-1	APV-35m
34671	30461	30074	0	30074

**Accuracy statistics :**

	Valid	APV-1	LPV-200	CAT-1	APV-35m
<b>HPE 95%</b>	1.61801	1.57773	1.57649	NaN	1.57649
<b>HPEScale 95%</b>	NaN	4.90902	4.91677	NaN	4.91677
<b>VPE 95%</b>	1.37152	1.35011	1.3369	NaN	1.3369
<b>VPEscale 95%</b>	NaN	3.34699	2.35231	NaN	2.35231

**Availability :**

	Valid	APV-1	LPV-200	CAT-1	APV-35m
<b>Signal in Space</b>	0.981875	0.862649	0.851689	0	0.851689
<b>measurements</b>	0.964181	0.847104	0.836341	0	0.836341
<b>Operational</b>	1.77983	1.56371	1.54384	0	1.54384



## Discontinuity events :

	Valid	APV-1	LPV-200	CAT-1	APV-35m
All	45	74	98	--	98
Long	1	13	20	--	20
Independent	1	8	12	--	12
P(disc.)	0.000432638	0.00393946	0.00598524	NaN	0.00598524
P(slide)	0.0188774	0.0332885	0.0415641	NaN	0.0415641

## Integrity events :

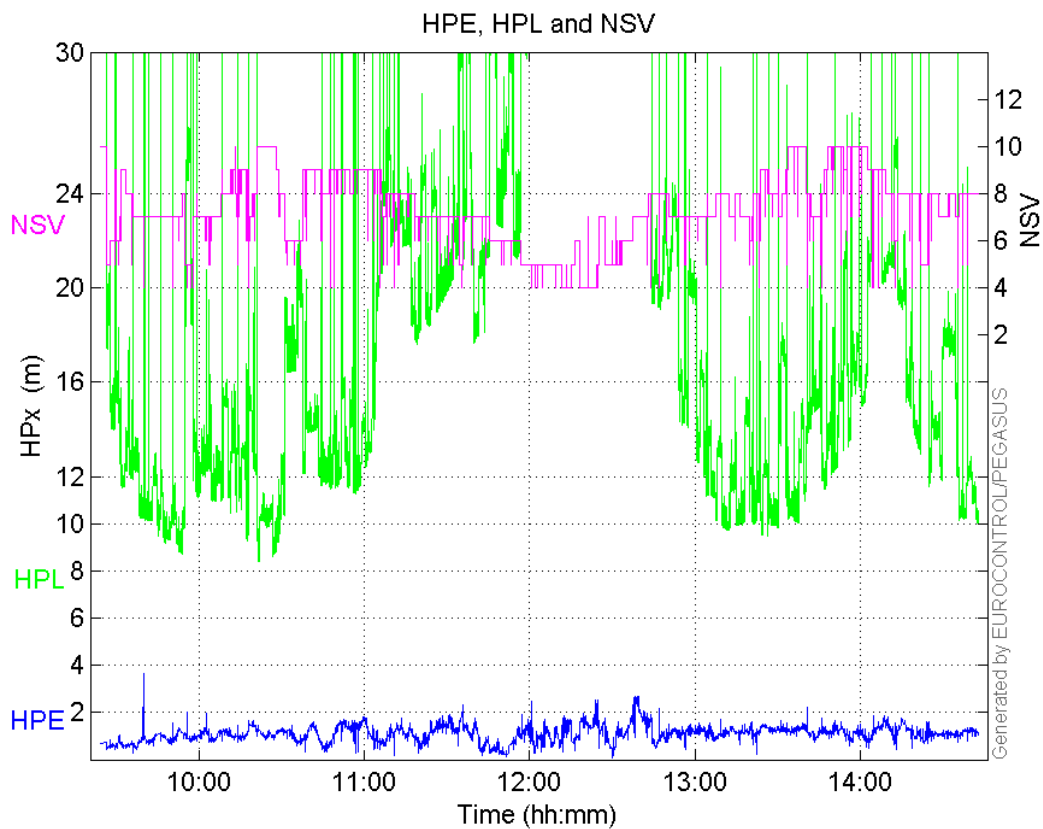
	MI	HMI APV-1	HMI LPV-200	HMI CAT-1	HMI APV-35m
Total	0	0	0	0	0
Horizontal	0	0	0	0	0
Vertical	0	0	0	0	0

## Performance Summary :

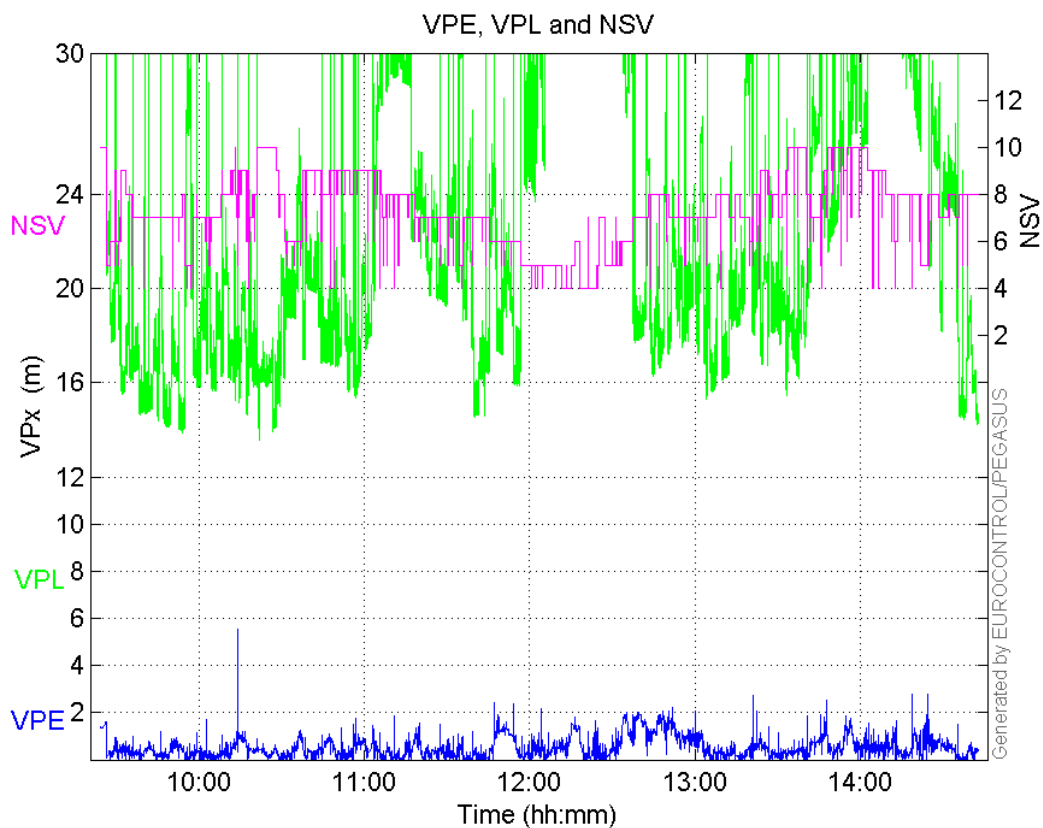
	Valid	APV-1	LPV-200	CAT-1	APV-35m
Samples	34671	30461	30074	0	30074
SIS Availability	0.981875	0.862649	0.851689	0	0.851689
Local Availability	0.964181	0.847104	0.836341	0	0.836341
Operational Availability	1.77983	1.56371	1.54384	0	1.54384
HPE 95%	1.61801	1.57773	1.57649	NaN	1.57649
HPEscale 95%	NaN	4.90902	4.91677	NaN	4.91677
VPE 95%	1.37152	1.35011	1.3369	NaN	1.3369
VPEscale 95%	NaN	3.34699	2.35231	NaN	2.35231
All Discontinuity Events	45	74	98	--	98
Long Discontinuity Events	1	13	20	--	20
Independent Discontinuity Events	1	8	12	--	12
P(discontinuity)	0.000432638	0.00393946	0.00598524	NaN	0.00598524
P(sliding window)	0.0188774	0.0332885	0.0415641	NaN	0.0415641
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:

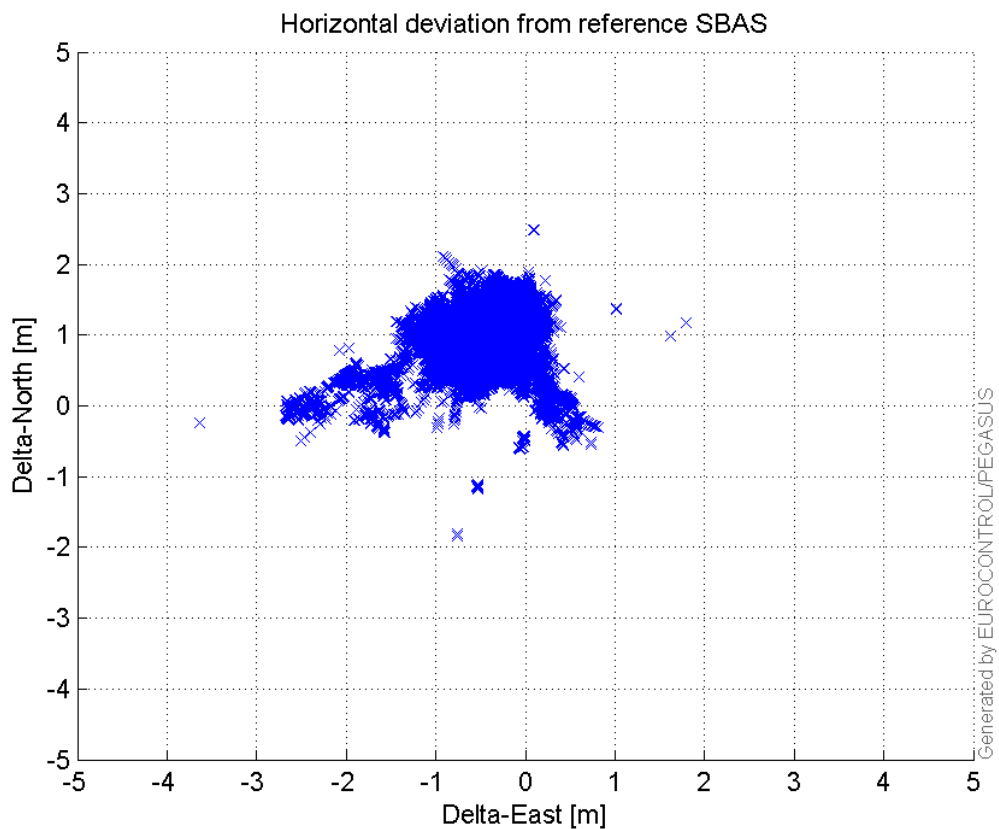


**VPE, VPL and NSV:**



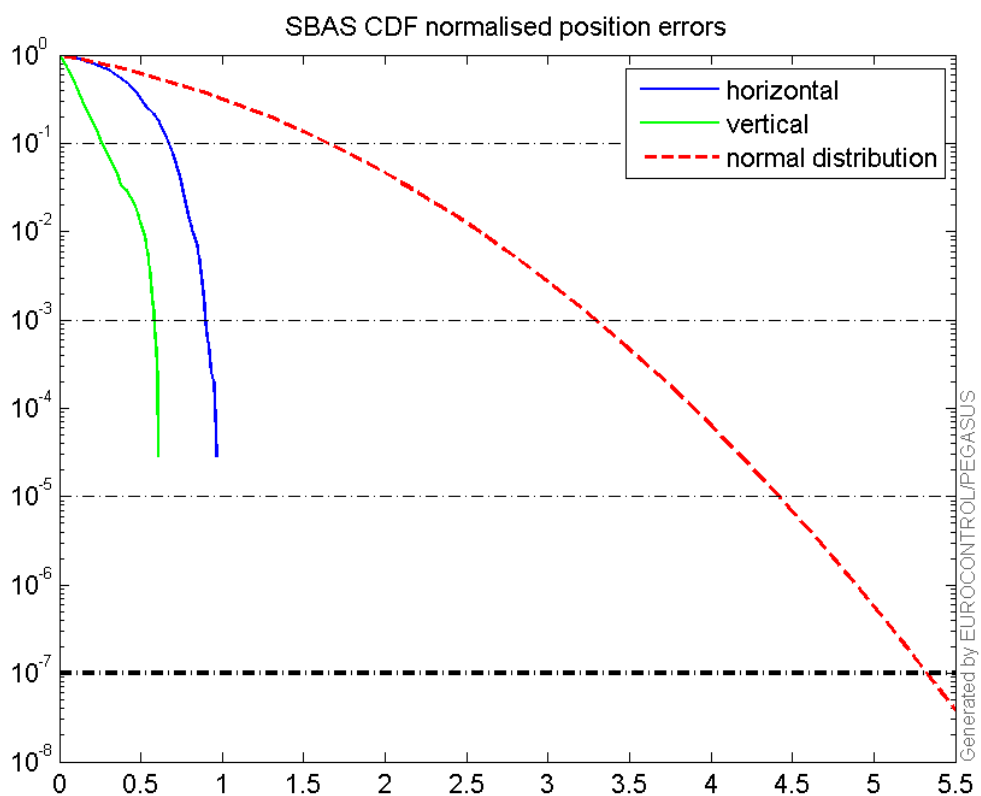
**Horizontal deviation**

**Horizontal deviation from reference SBAS:**



### CDF position

SBAS CDF position domain:



## Statistics

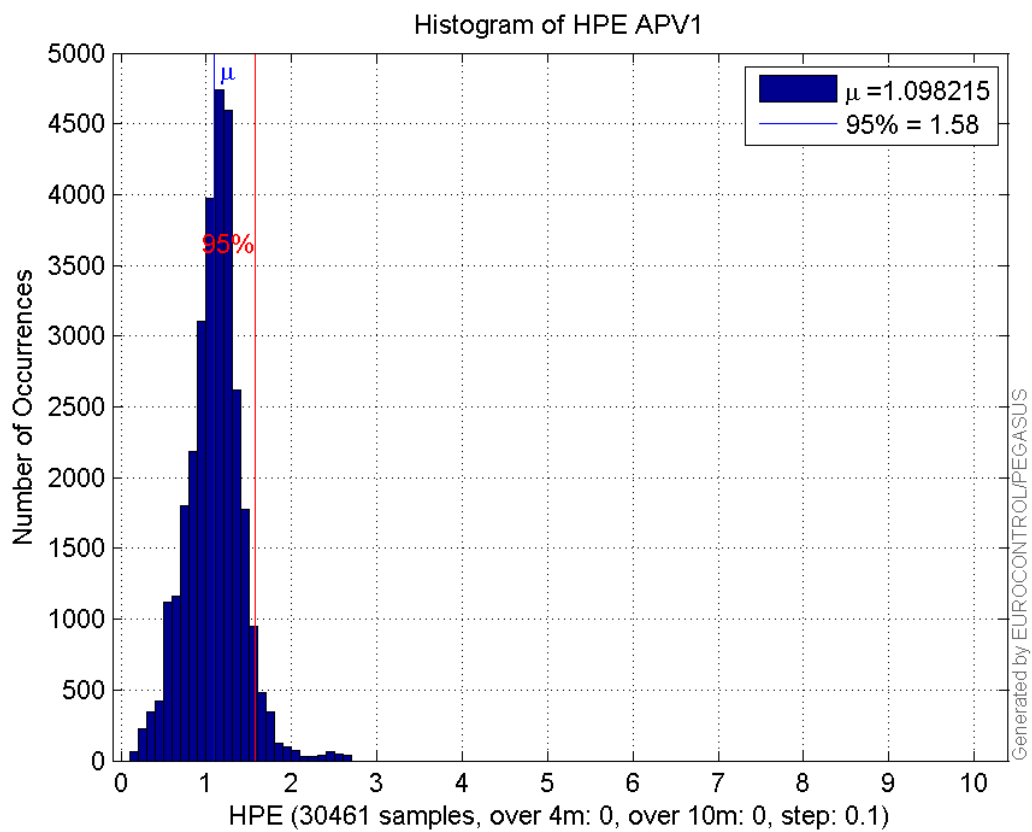
<b>number</b>	30461
<b>sum</b>	33452.735
<b>sum2</b>	39963.732
<b>prctile95</b>	1.5777336
<b>prctile99</b>	2.0195895
<b>number</b>	30461
<b>sum</b>	14987.815
<b>sum2</b>	12425.5
<b>prctile95</b>	1.3501099
<b>prctile99</b>	1.7969561
<b>number</b>	30461
<b>sum</b>	514291.64
<b>sum2</b>	9960810.8
<b>prctile95</b>	31.861245
<b>prctile99</b>	37.451203
<b>number</b>	30461
<b>sum</b>	648282.06
<b>sum2</b>	14606784
<b>prctile95</b>	31.51236
<b>prctile99</b>	35.728204
<b>number</b>	30461
<b>sum</b>	2232.6201
<b>sum2</b>	190.59318
<b>prctile95</b>	0.12272559
<b>prctile99</b>	0.1385215
<b>number</b>	30461
<b>sum</b>	728.3021
<b>sum2</b>	30.135603
<b>prctile95</b>	0.066939746
<b>prctile99</b>	0.098127768
<b>number</b>	30074
<b>sum</b>	33000.593
<b>sum2</b>	39405.544
<b>prctile95</b>	1.5764868
<b>prctile99</b>	2.0230563
<b>number</b>	30074
<b>sum</b>	14709.112
<b>sum2</b>	12121.72
<b>prctile95</b>	1.3368994
<b>prctile99</b>	1.7958556
<b>number</b>	30074
<b>sum</b>	505834.64
<b>sum2</b>	9772992.1
<b>prctile95</b>	31.88338
<b>prctile99</b>	37.459388
<b>number</b>	30074
<b>sum</b>	633821.85
<b>sum2</b>	14065241
<b>prctile95</b>	30.91094
<b>prctile99</b>	33.251132
<b>number</b>	30074
<b>sum</b>	2211.4751
<b>sum2</b>	189.34394

**prctile95** 0.12291925  
**prctile99** 0.13873193  
**number** 30074  
**sum** 720.79266  
**sum2** 29.915115  
**prctile95** 0.067208728  
**prctile99** 0.098234266

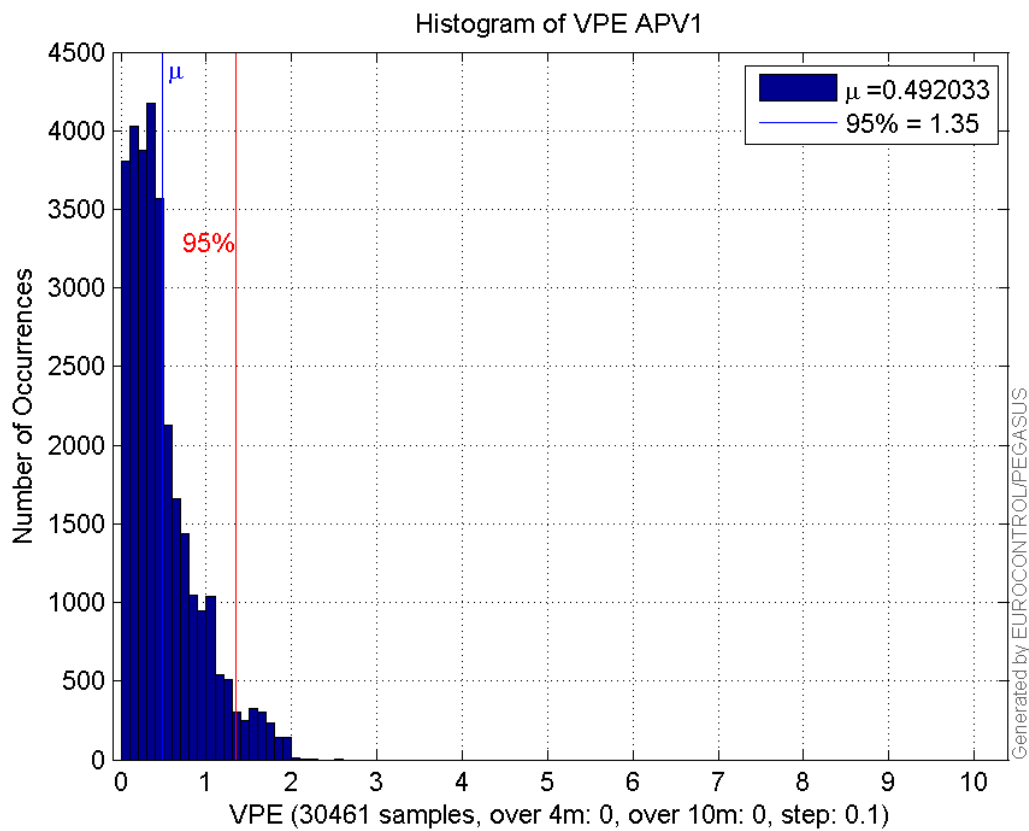
**Error and XPL Statistics :**

	Mean Value	Standard Deviation	50% Value	95% Value	99% Value	RMS Value
HPE	1.09822	0.325408	1.11913	1.57773	2.01959	1.14541
HPL	16.8836	6.47667	14.823	31.8612	37.4512	18.0832
VPE	0.492033	0.407215	0.384447	1.35011	1.79696	0.638682
VPL	21.2824	5.15616	19.8567	31.5124	35.7282	21.898

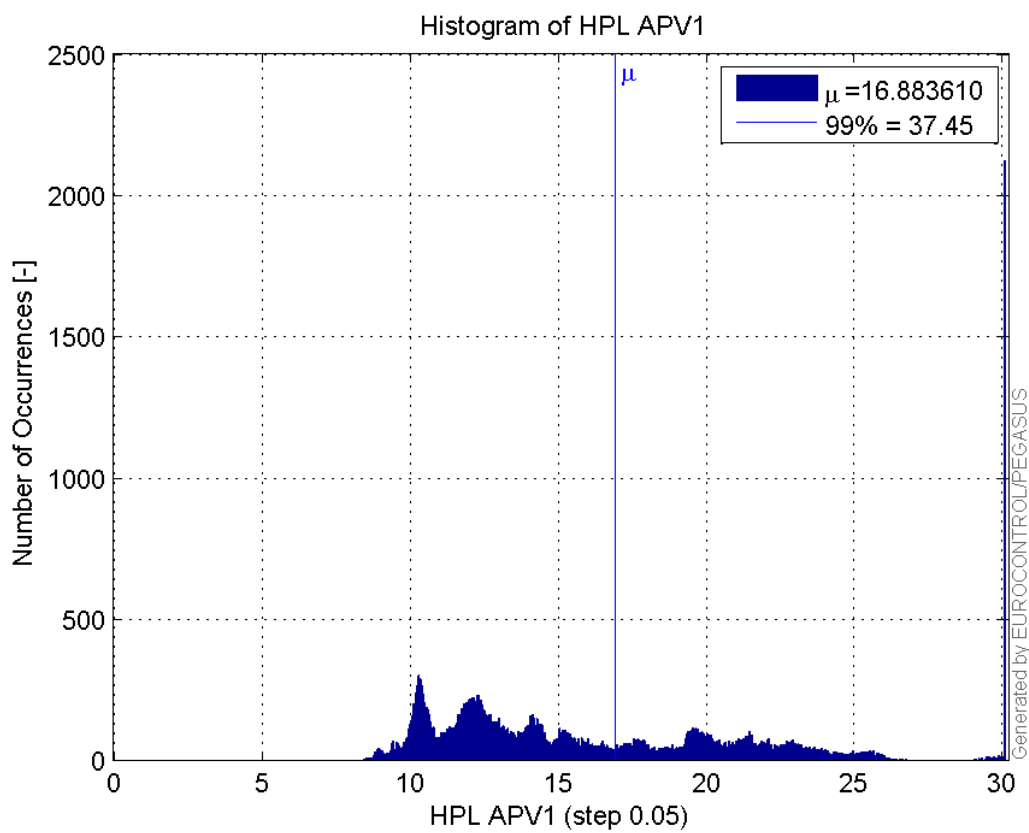
**Histogram of HPE APV1:**



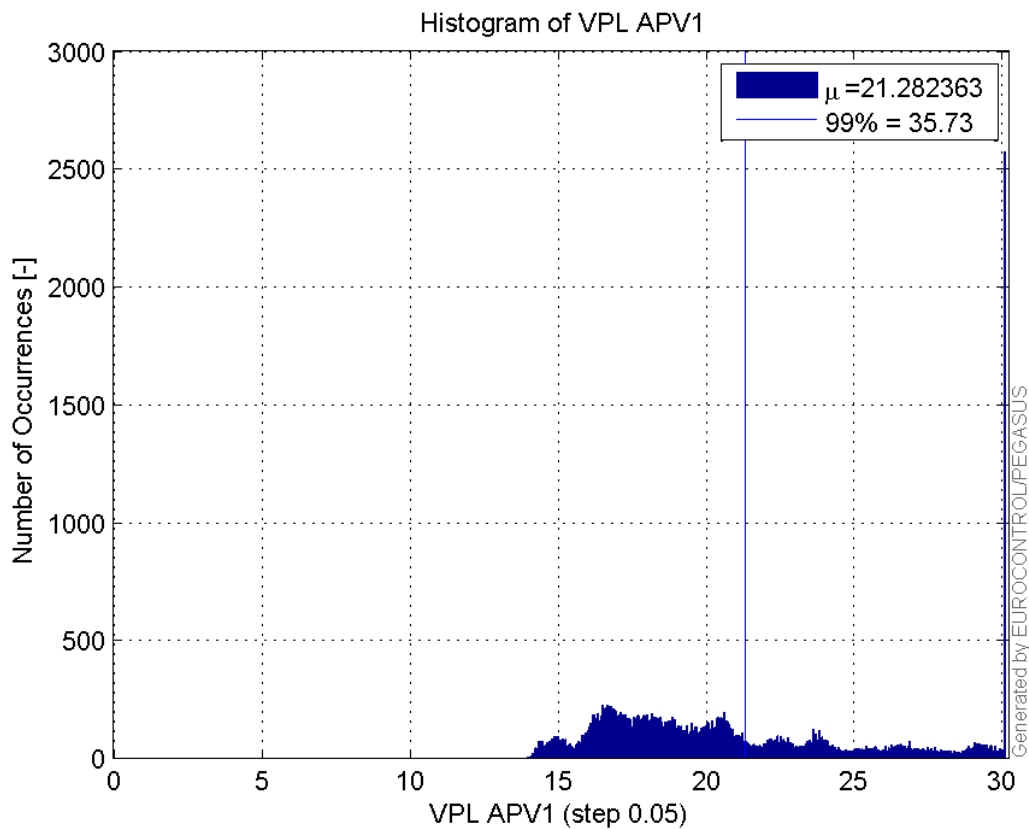
**Histogram of VPE APV1:**



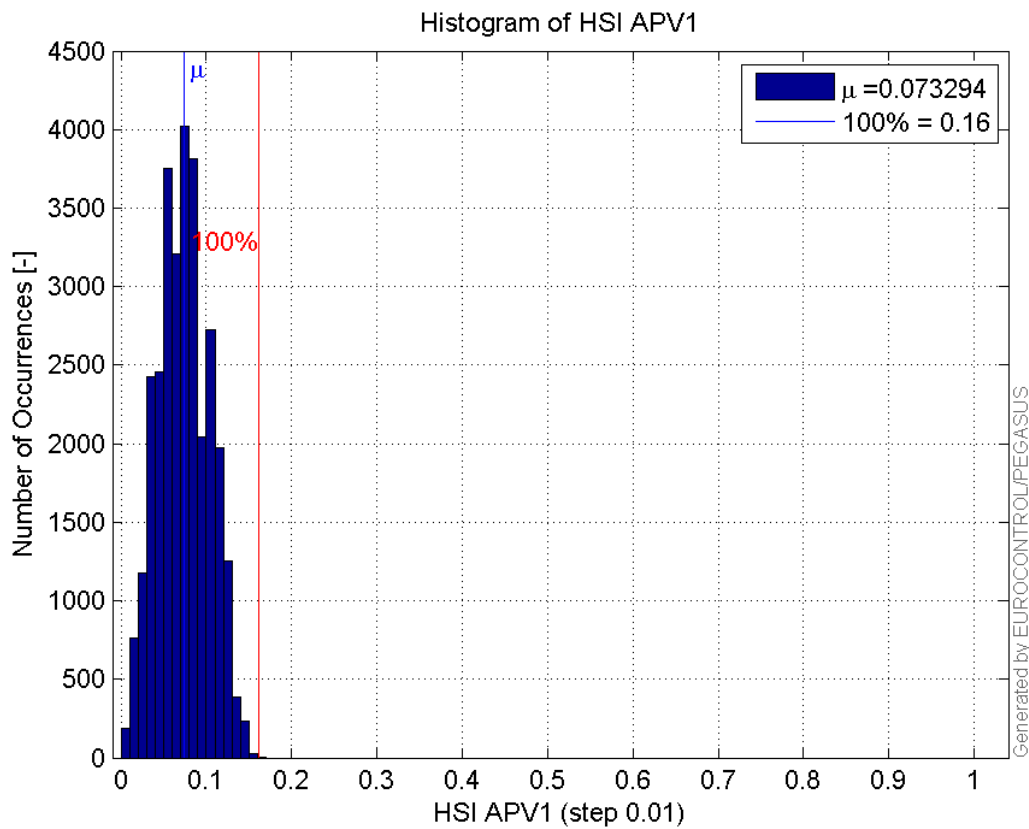
**Histogram of HPL APV1:**



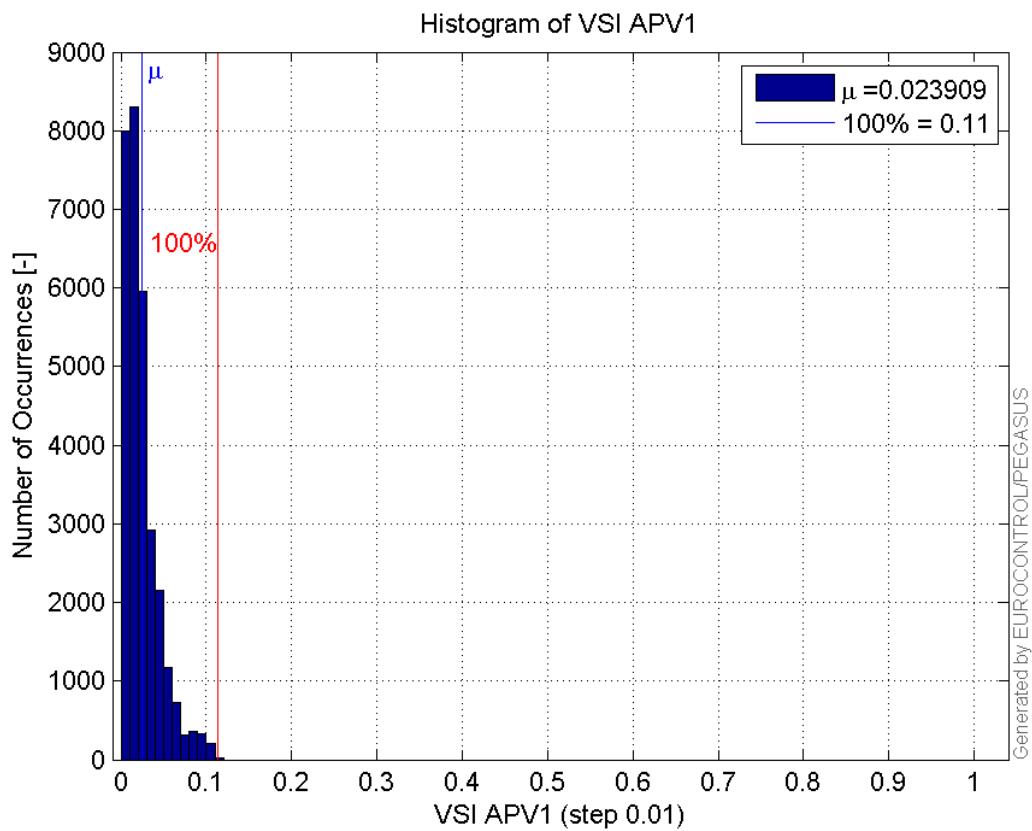
**Histogram of VPL APV1:**



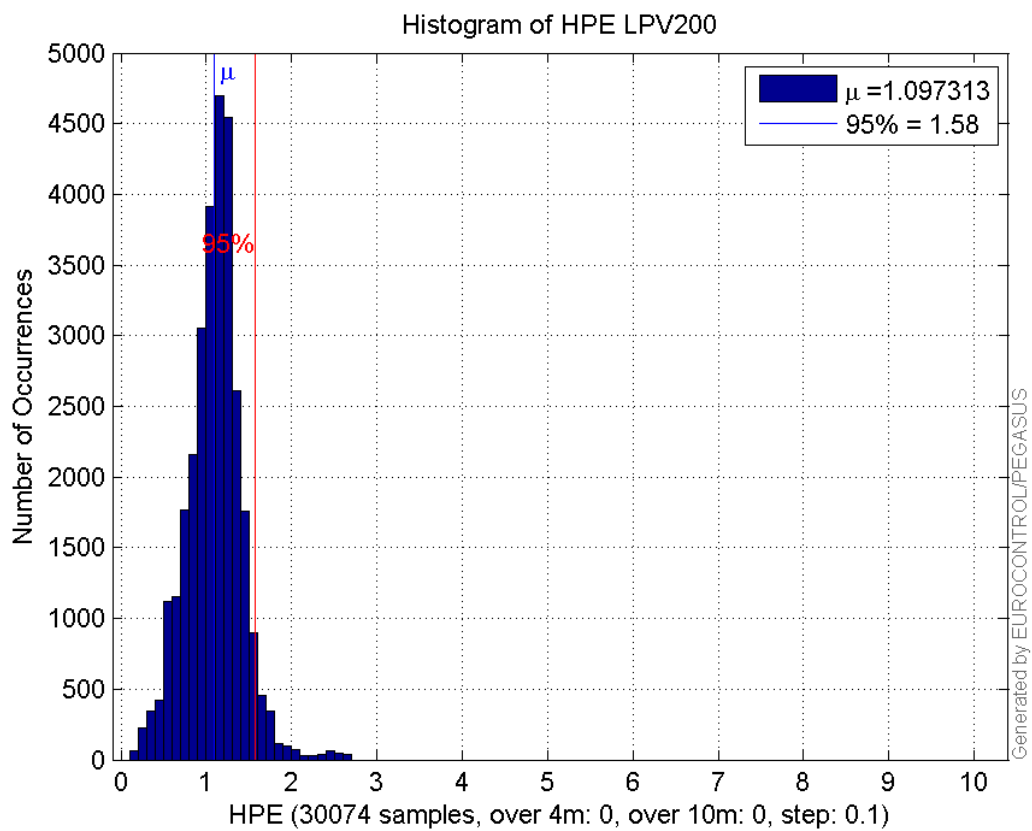
**Histogram of HSI APV1:**



**Histogram of VSI APV1:**

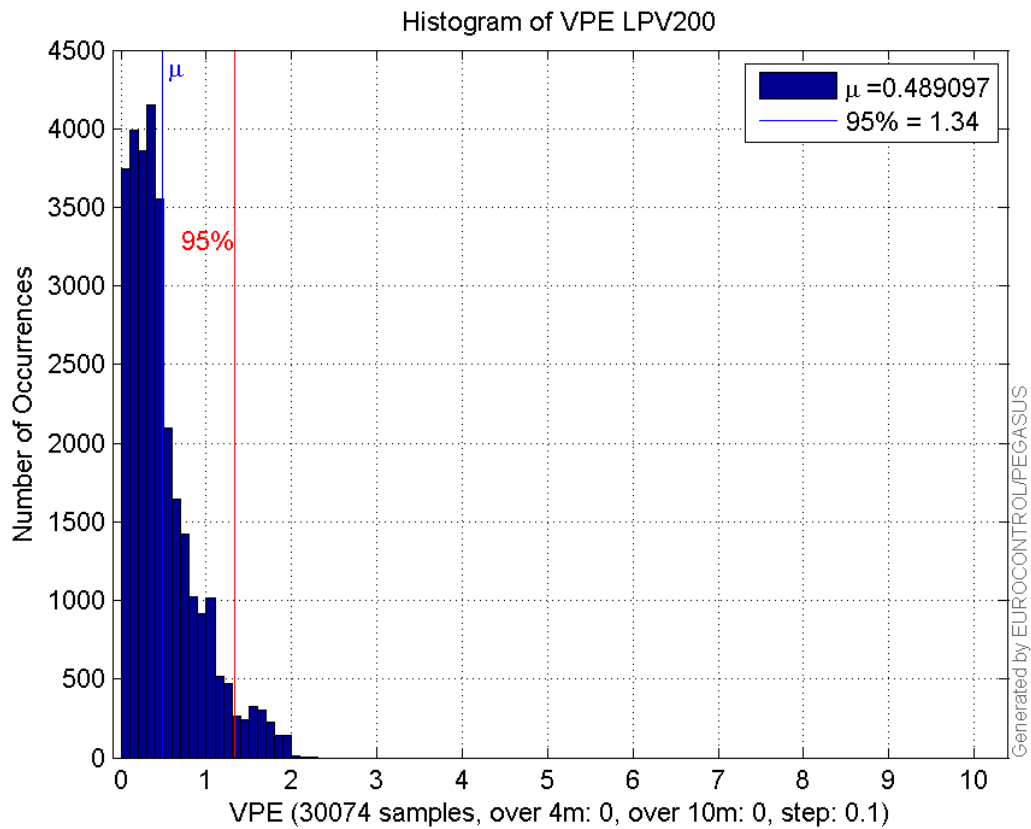


**Histogram of HPE LPV200:**

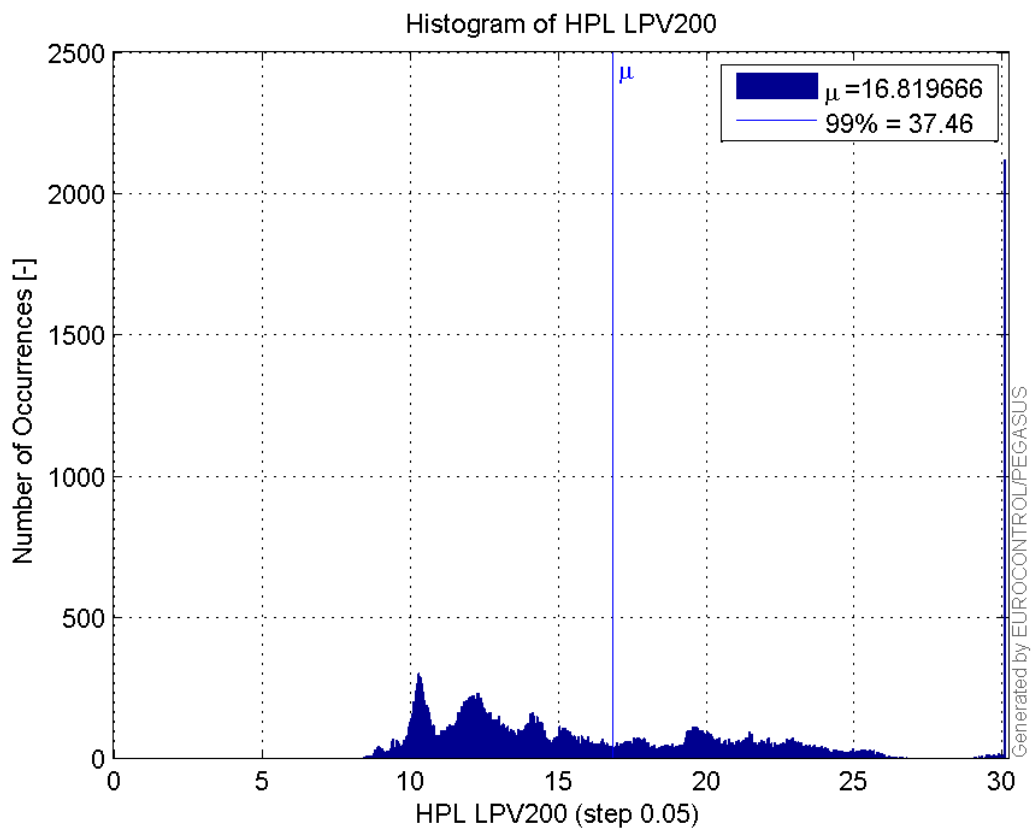


**Histogram of VPE LPV200:**

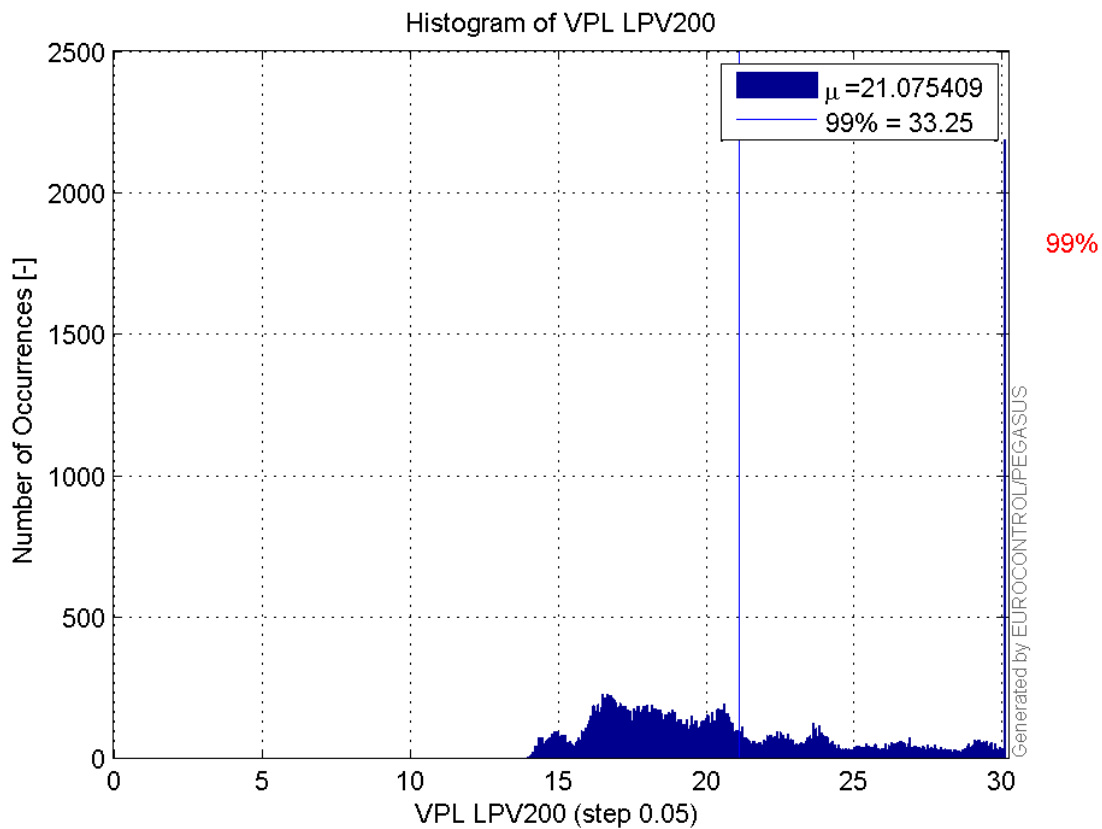




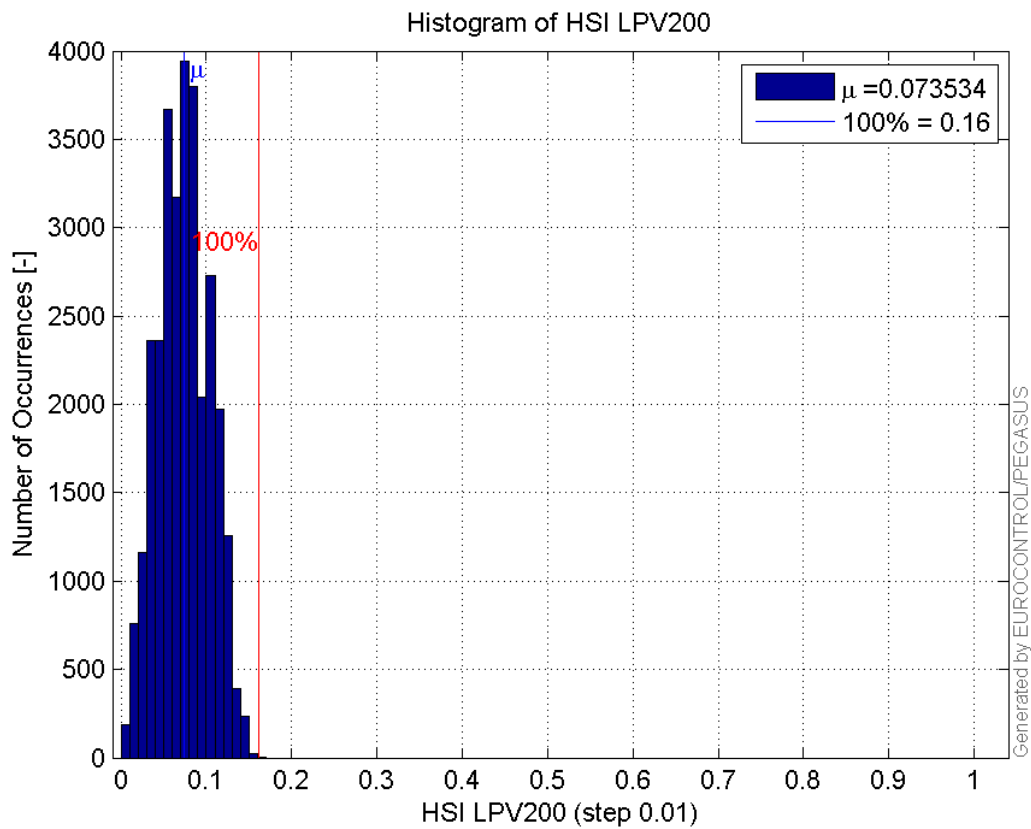
Histogram of HPL LPV200:



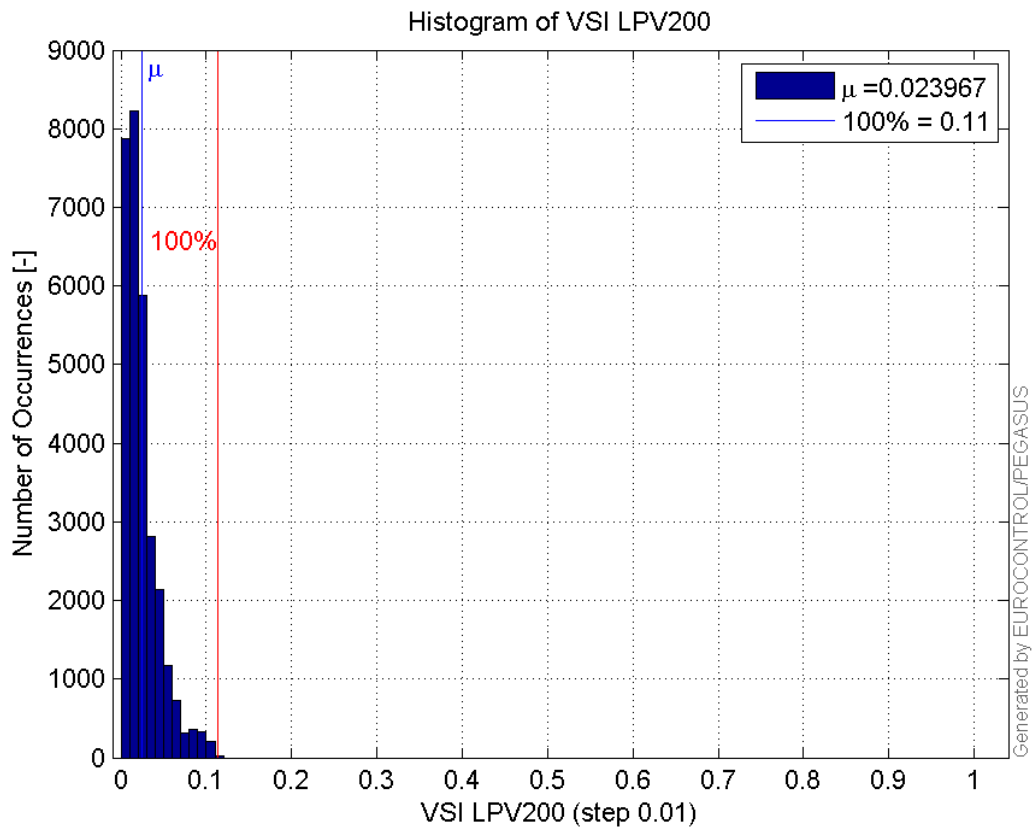
Histogram of VPL LPV200:



**Histogram of HSI LPV200:**

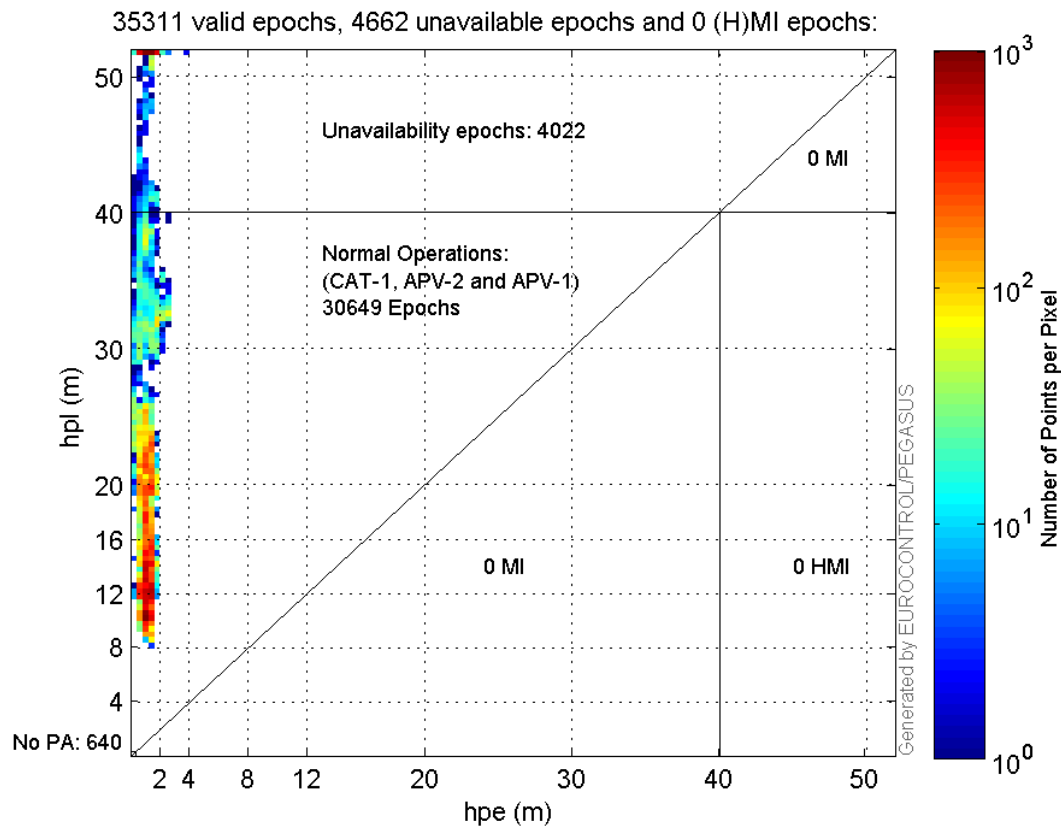


**Histogram of VSI LPV200:**

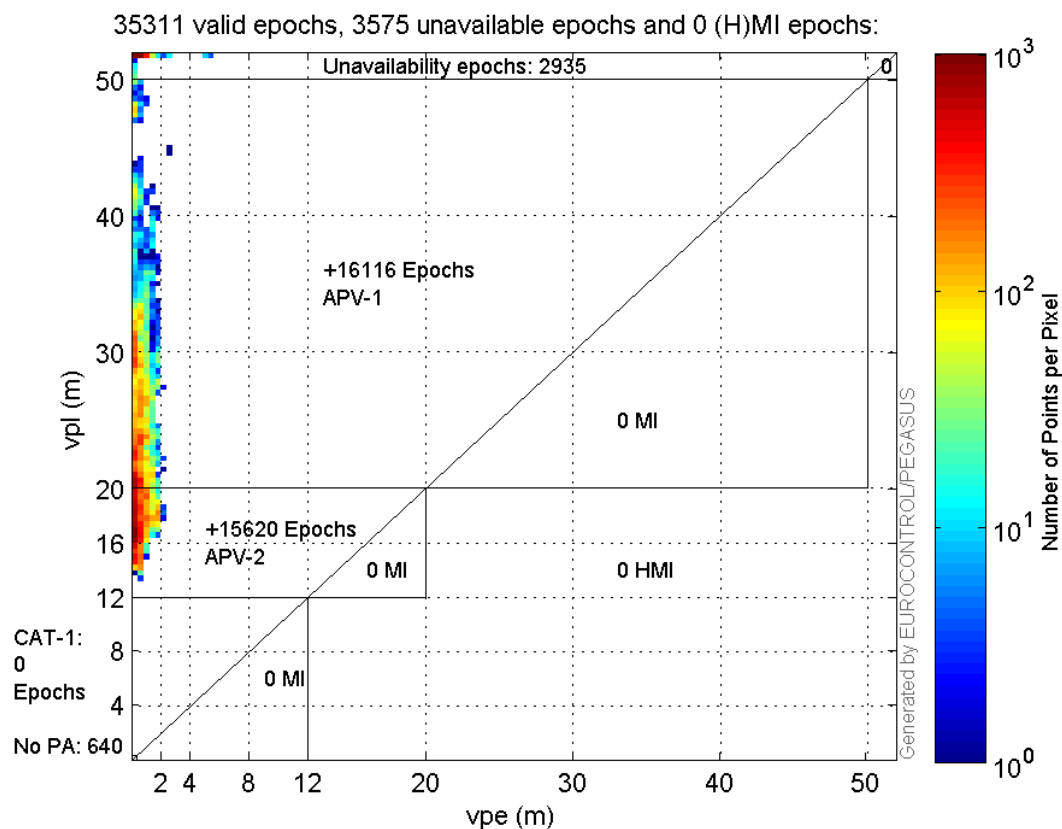


### Stanford Plots

#### 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_01_27EGNOS2Hz/02_Convertor/02_Convertor
output_prefix	system	D:/PegasusDateJob/job/2017_01_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	50.4391

init_lon	results	30.4298
init_alt	results	229.8775
mi_numbers	results	0

## Range Domain

**start:** 09:18:10 27.01.2017 ( week: 1933 sec: 465490 )  
**end:** 14:42:49 27.01.2017 ( week: 1933 sec: 484969 )  
**duration:** 05:24:40 ..

### quality

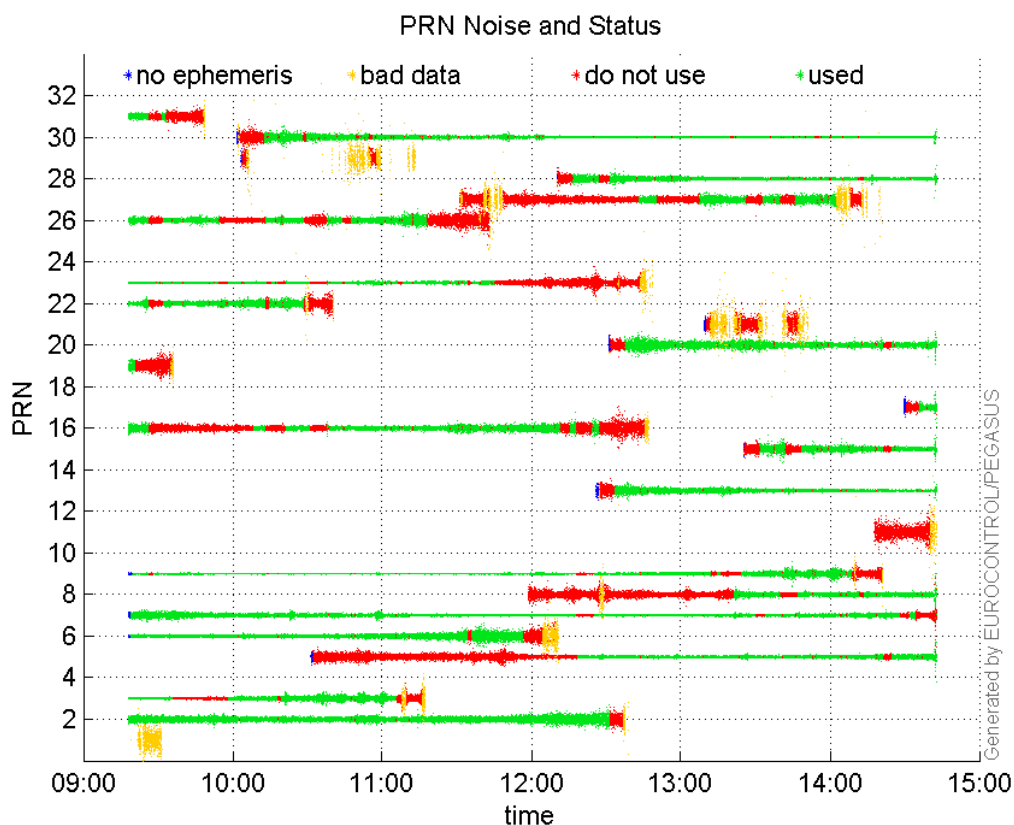
**valid samples** 35959  
**total samples** 35959

### PRN overview

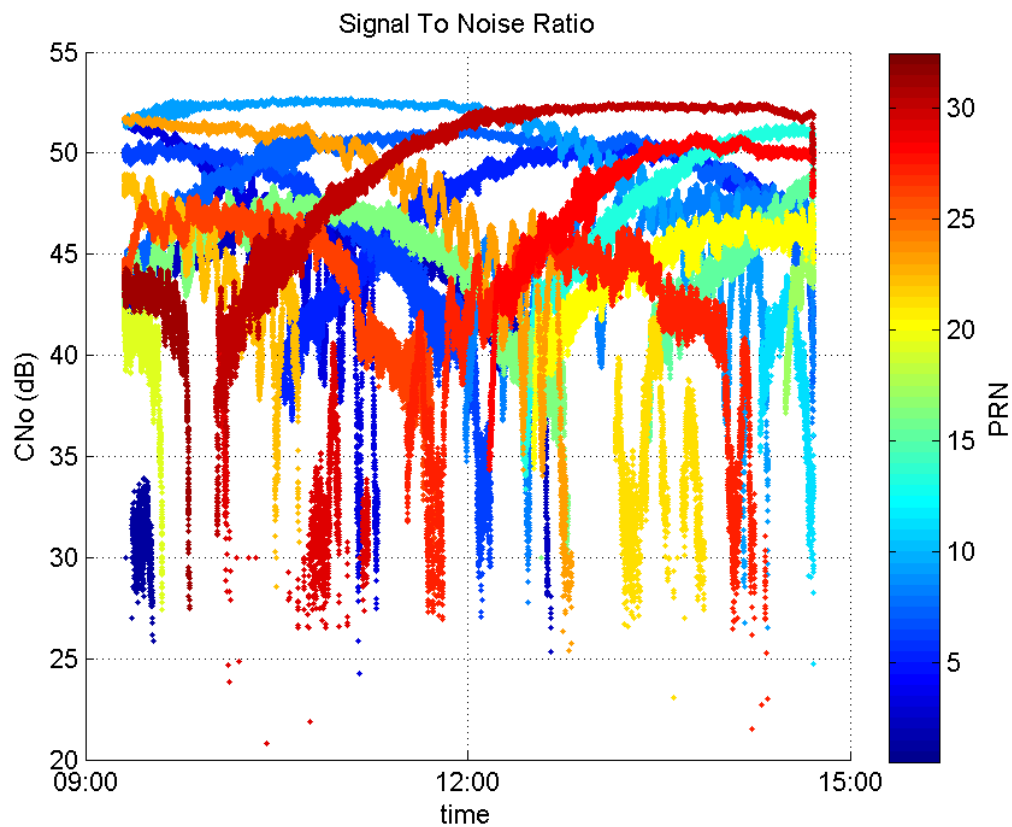
**Number of Visible GPS Satellites** 24  
**Number of Visible SBAS Satellites** 2

### signal quality and status

#### PRN Noise and Status:



#### Signal To Noise Ratio:



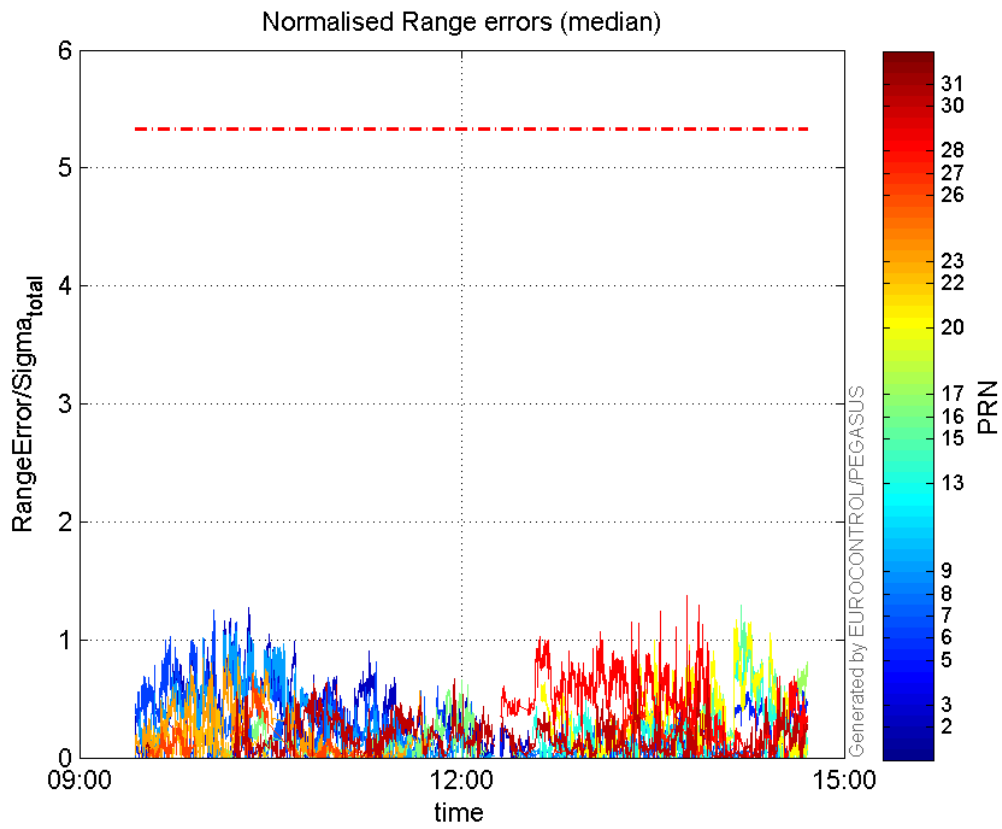
## range errors

Number of Overbounding Norm Errors 0

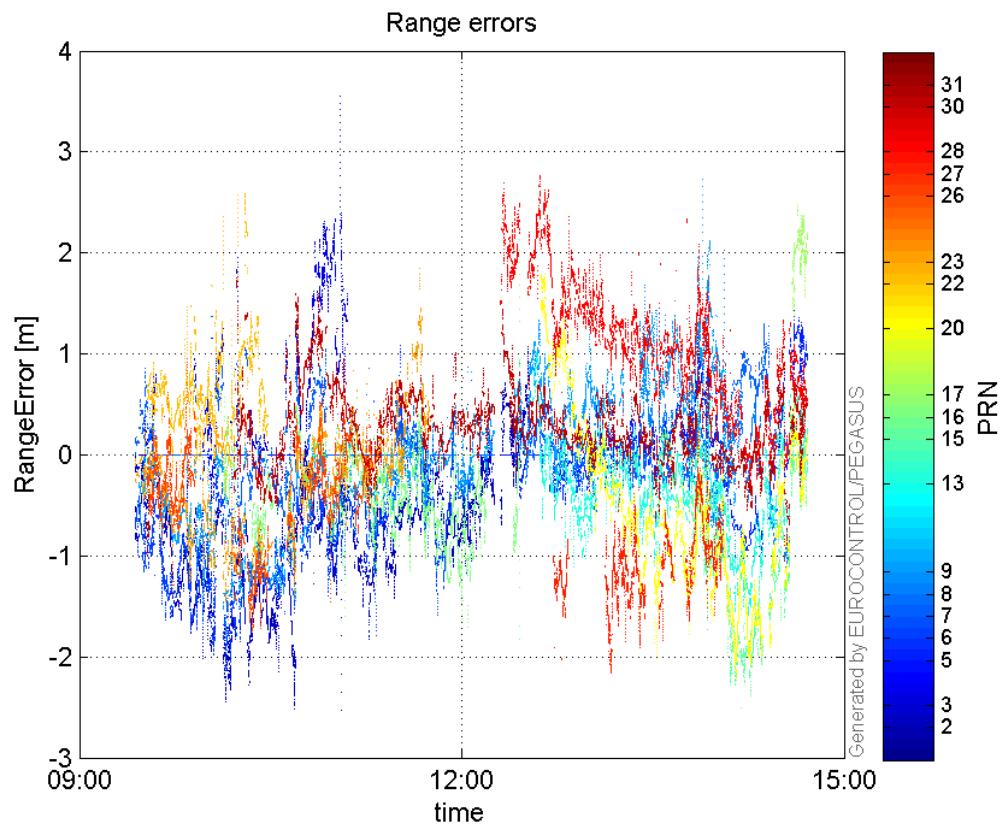
## Max Norm Errors :

GPS Week	GPS Second	PRN	Norm Error	Range Error	Sigma
1933	469183	2	1.2737	-2.27913	1.78938
1933	468885	3	0.7051	1.95268	2.76936
1933	481892	5	0.831167	1.38301	1.66394
1933	468203	6	1.2495	-1.91775	1.53482
1933	468142	7	0.865006	1.36785	1.58132
1933	484381	8	0.393045	-1.27118	3.23419
1933	468826	9	1.07266	-1.47328	1.37348
1933	483306	13	1.09805	-1.55284	1.41418
1933	483085	15	1.29504	-2.50351	1.93315
1933	475206	16	0.66141	-1.62061	2.45023
1933	484966	17	0.814602	2.13506	2.62098
1933	482951	20	1.17218	-2.02443	1.72706
1933	468885	22	0.856653	2.57781	3.00916
1933	468590	23	0.870109	-1.63807	1.8826
1933	469285	26	0.708195	-1.74422	2.4629
1933	480043	27	0.522821	-1.49823	2.86566
1933	481562	28	1.37039	2.29816	1.67701
1933	480206	30	0.873021	1.27581	1.46137
1933	466328	31	0.130344	-1.00498	7.71022

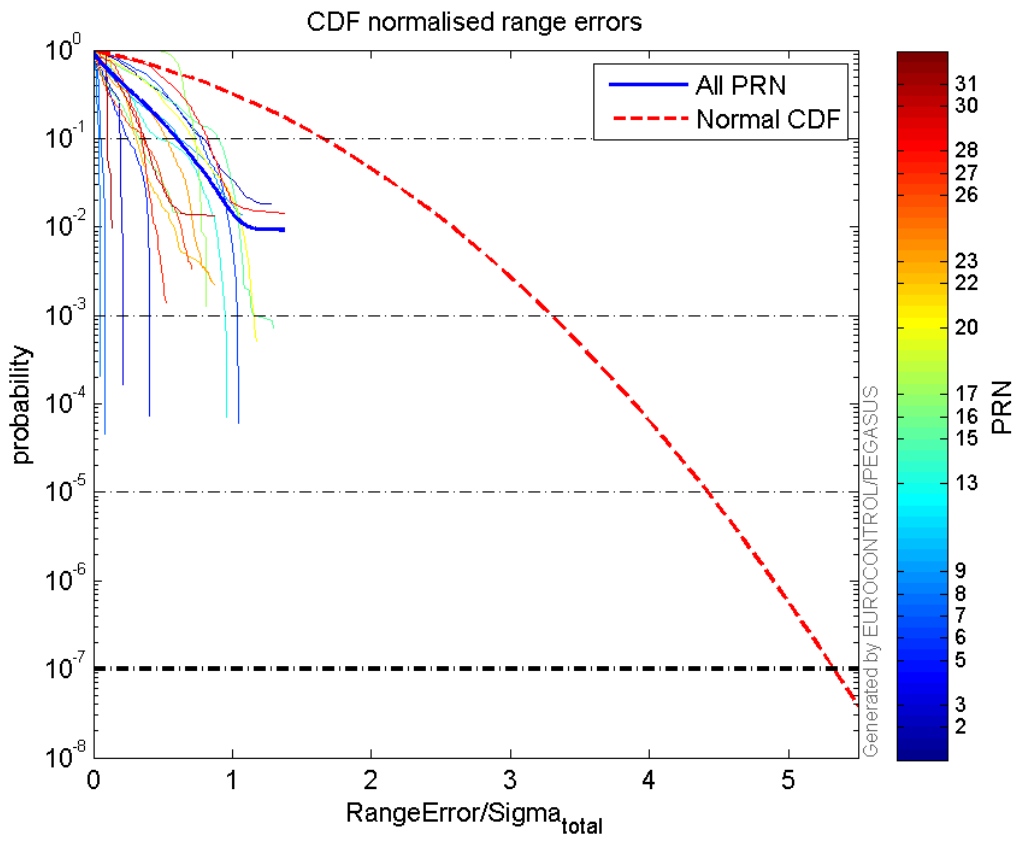
Normalised Range errors (median):



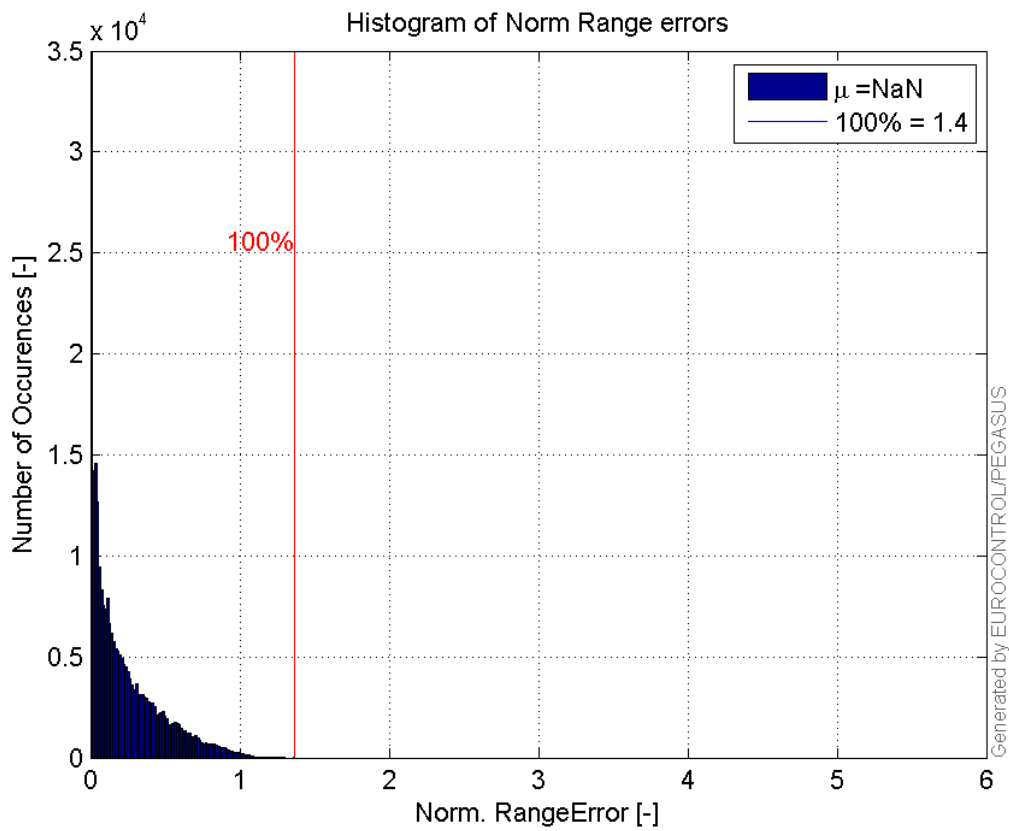
**Range errors:**



**CDF normalised range errors:**

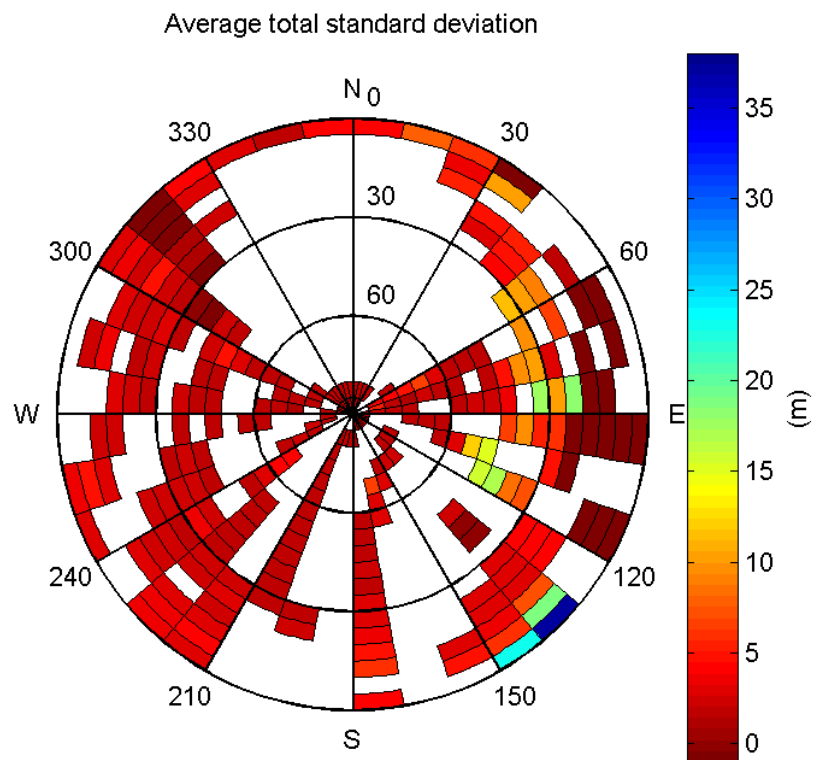


**Histogram of Norm Range errors:**

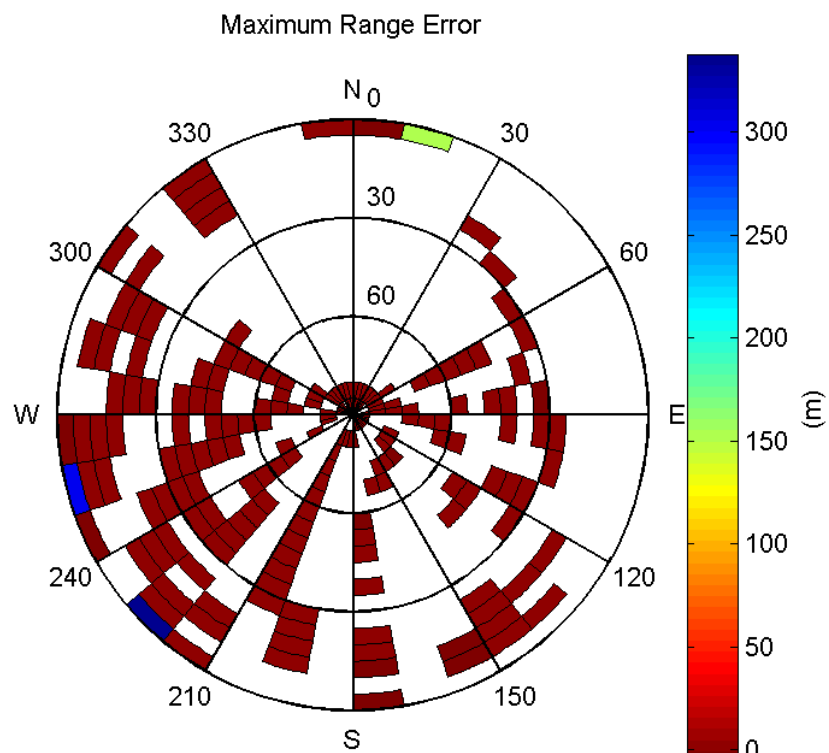


**Sigma Sky Plot:**



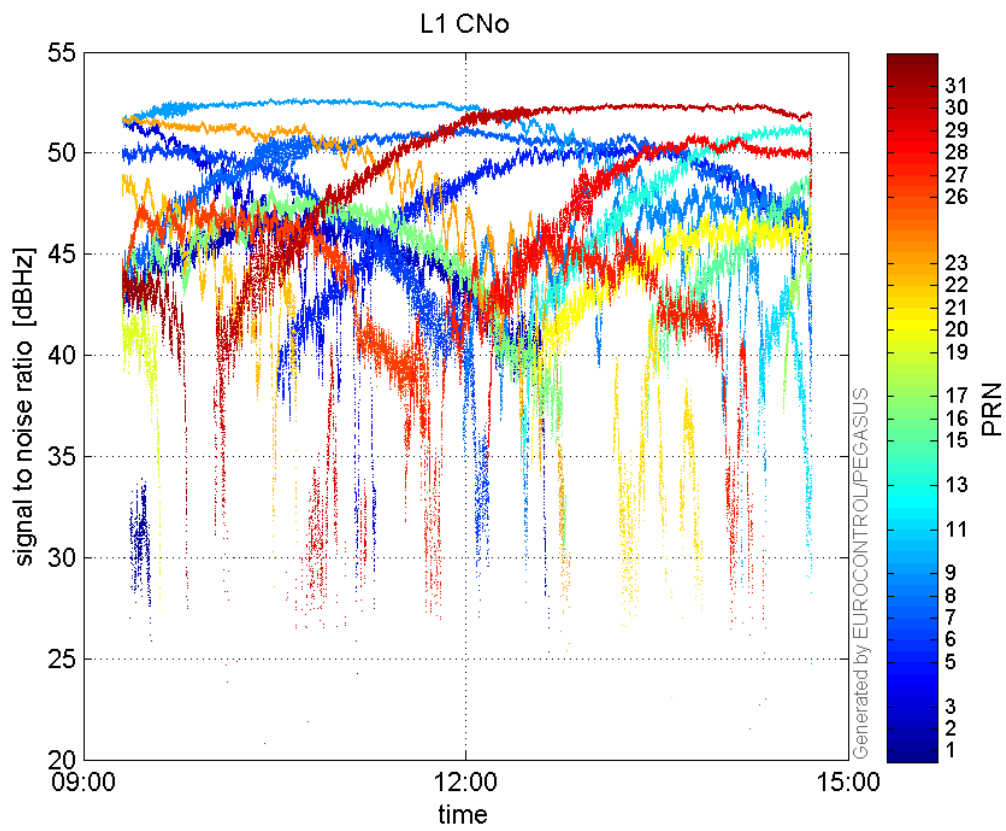


Norm Error Sky Plot:

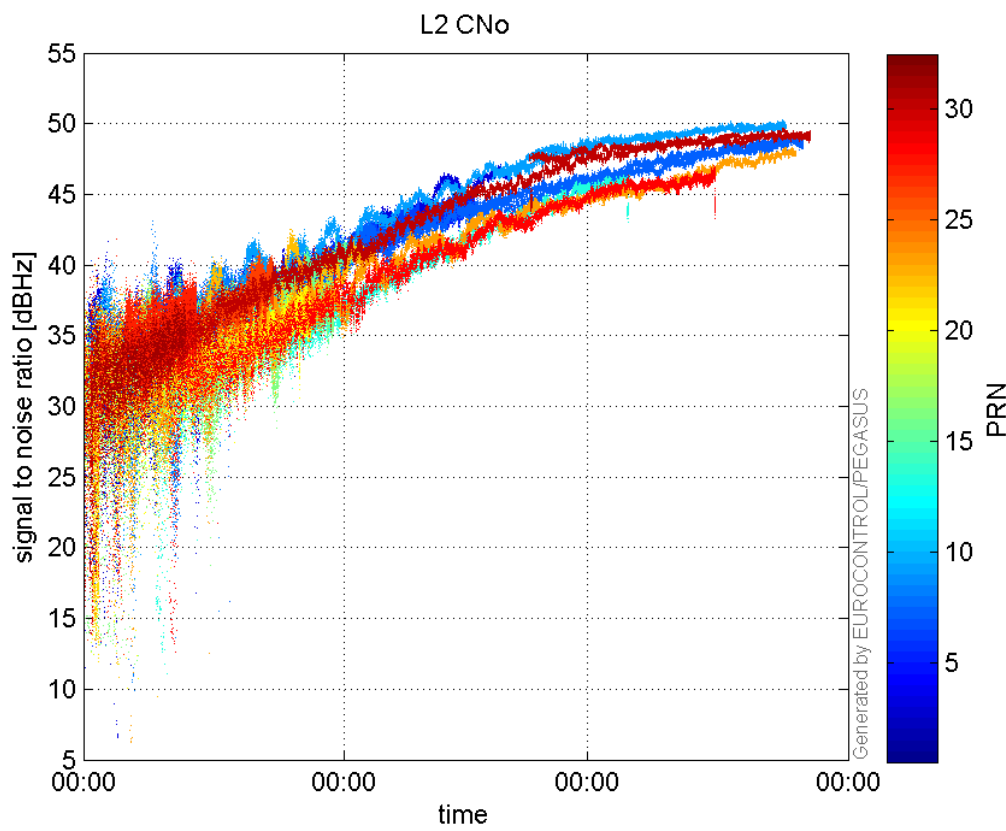


signal quality

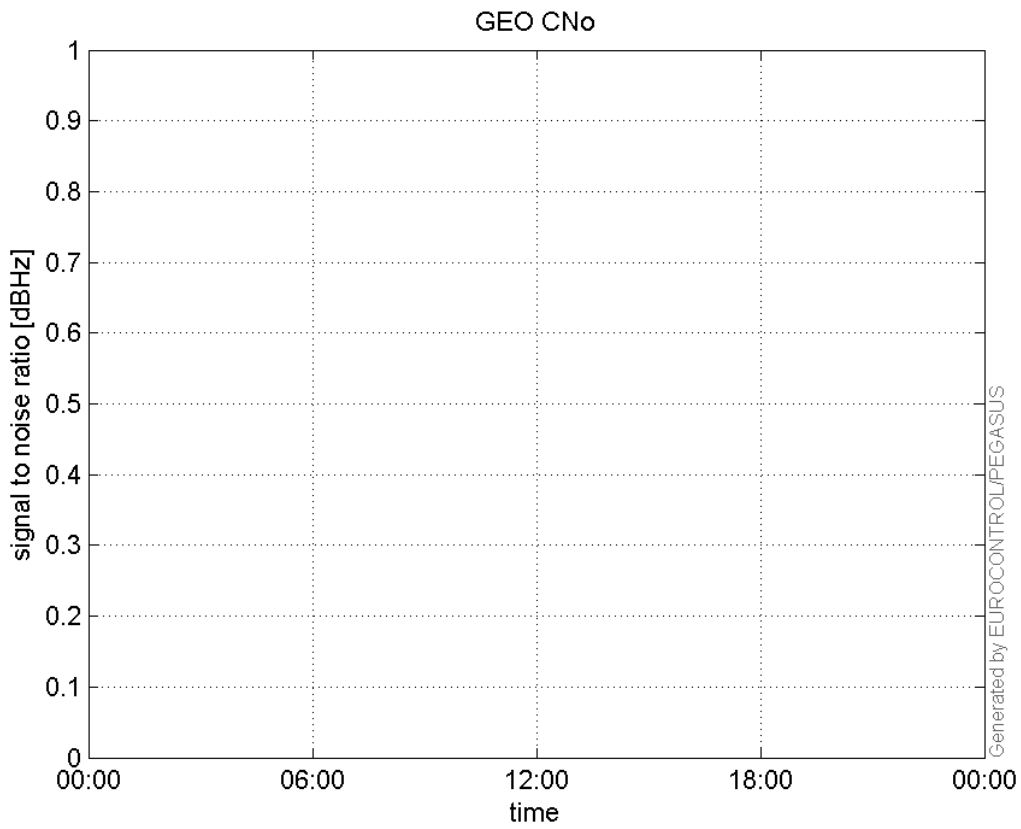
L1 CNo:



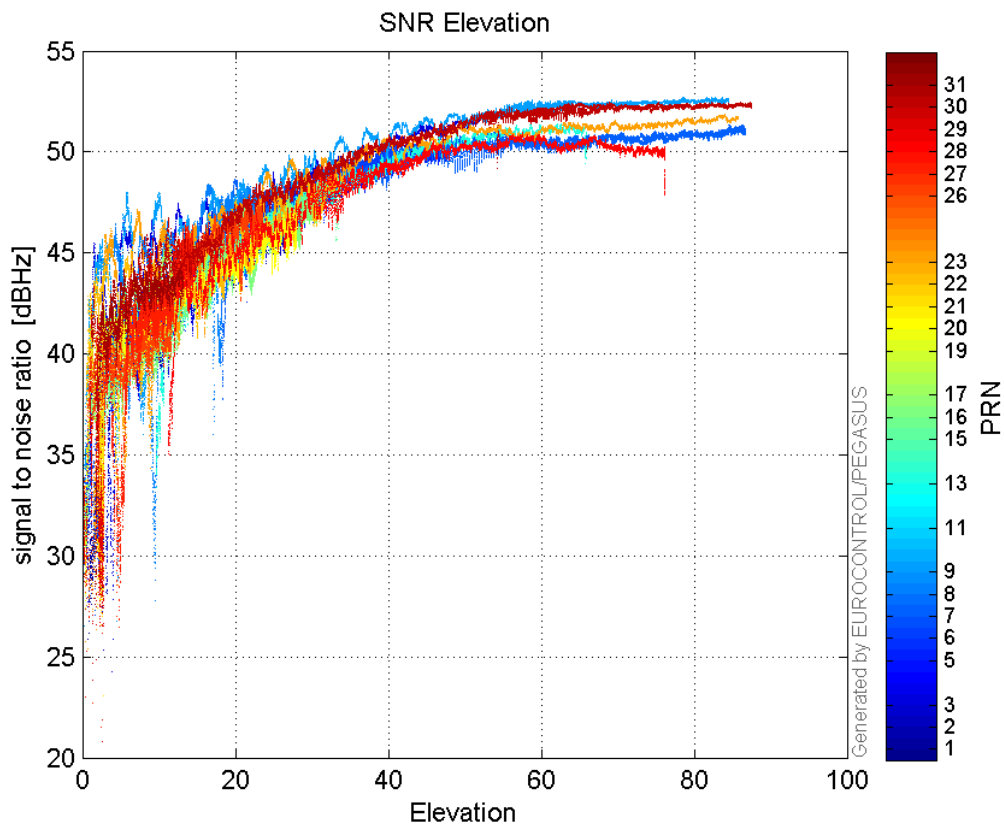
**L2 CNo:**



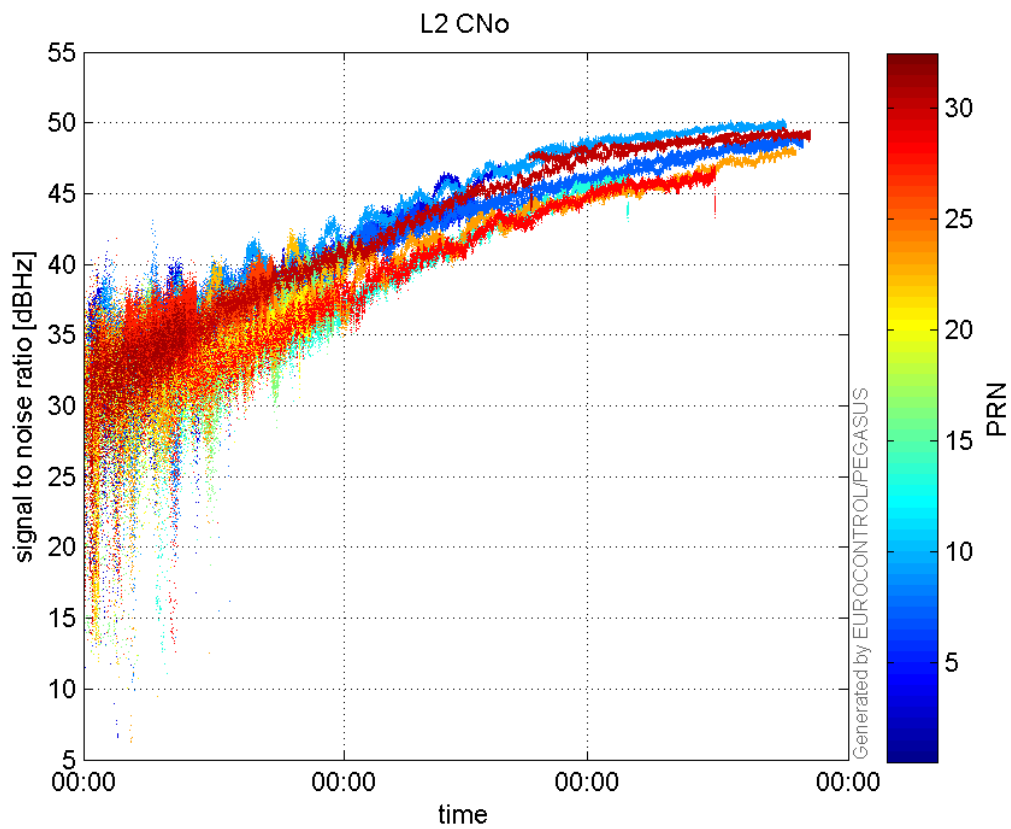
**GEO CNo:**



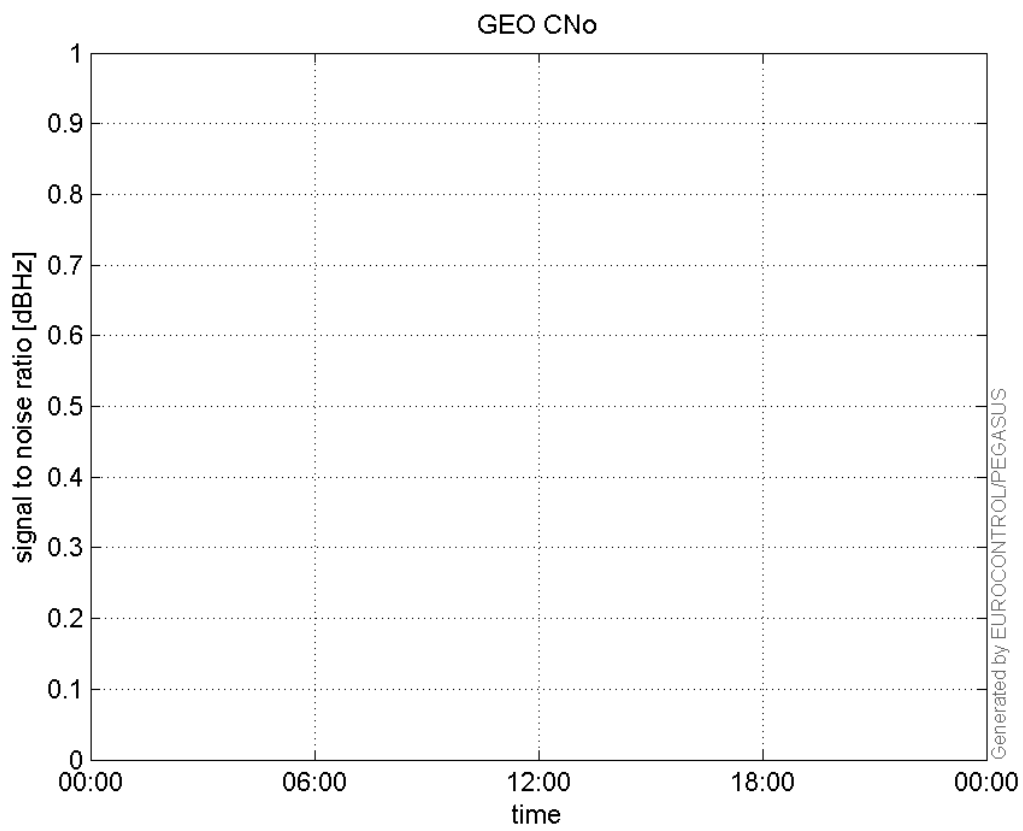
**SNR Elevation:**



**L2 CNo:**

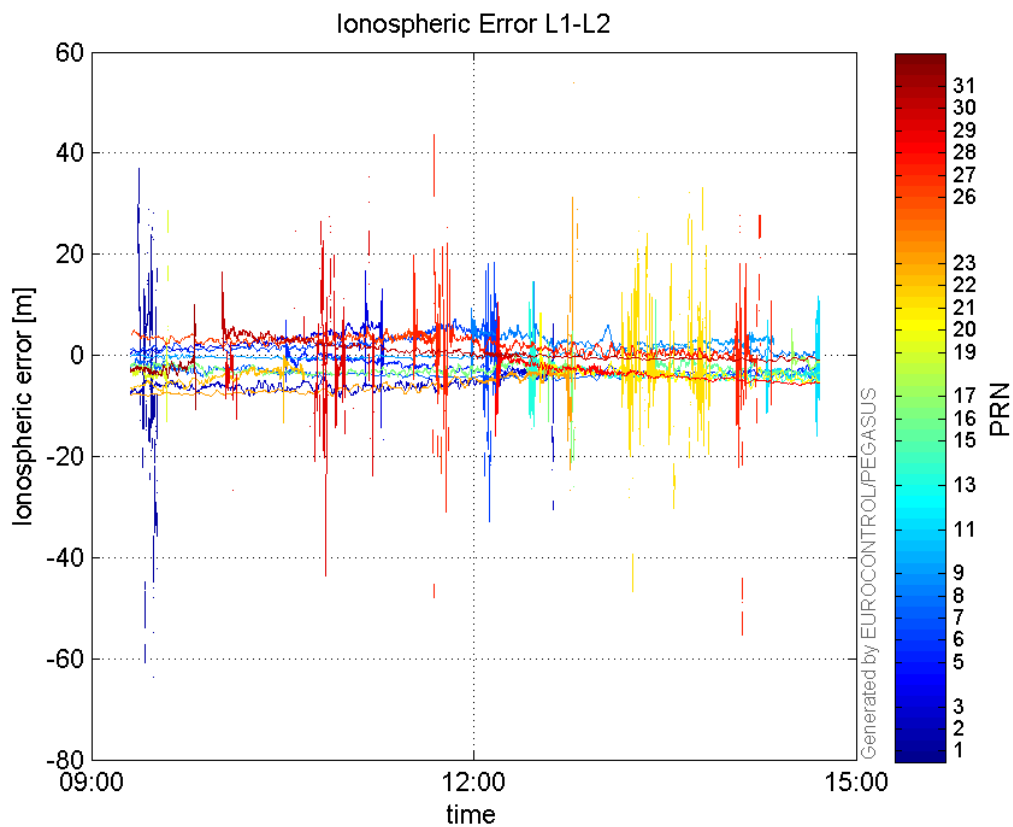


GEO CNo:



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_01_27EGNOS2Hz/02_Convertor/02_Convertor
output_prefix	system	D:/PegasusDateJob/job/2017_01_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	50.4391

<b>init_lon</b>	results	30.4298
<b>init_alt</b>	results	229.8775
<b>mi_numbers</b>	results	0