

# 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 16/03/2017

## Range Domain

**start:** 11:14:17 07.03.2017 ( week: 1939 sec: 213257 )  
**end:** 15:04:21.5 07.03.2017 ( week: 1939 sec: 227061.5 )  
**duration:** 03:50:05 ..

### quality

**valid samples** 27003

**total samples** 27003

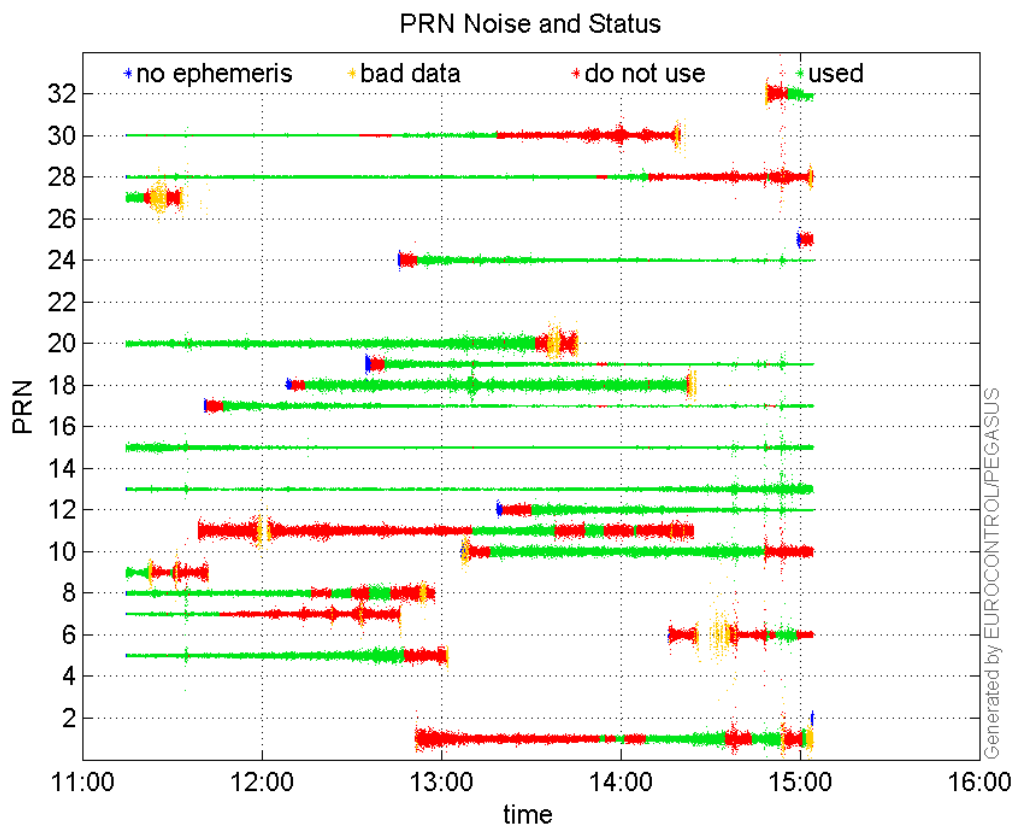
### PRN overview

**Number of Visible GPS Satellites** 22

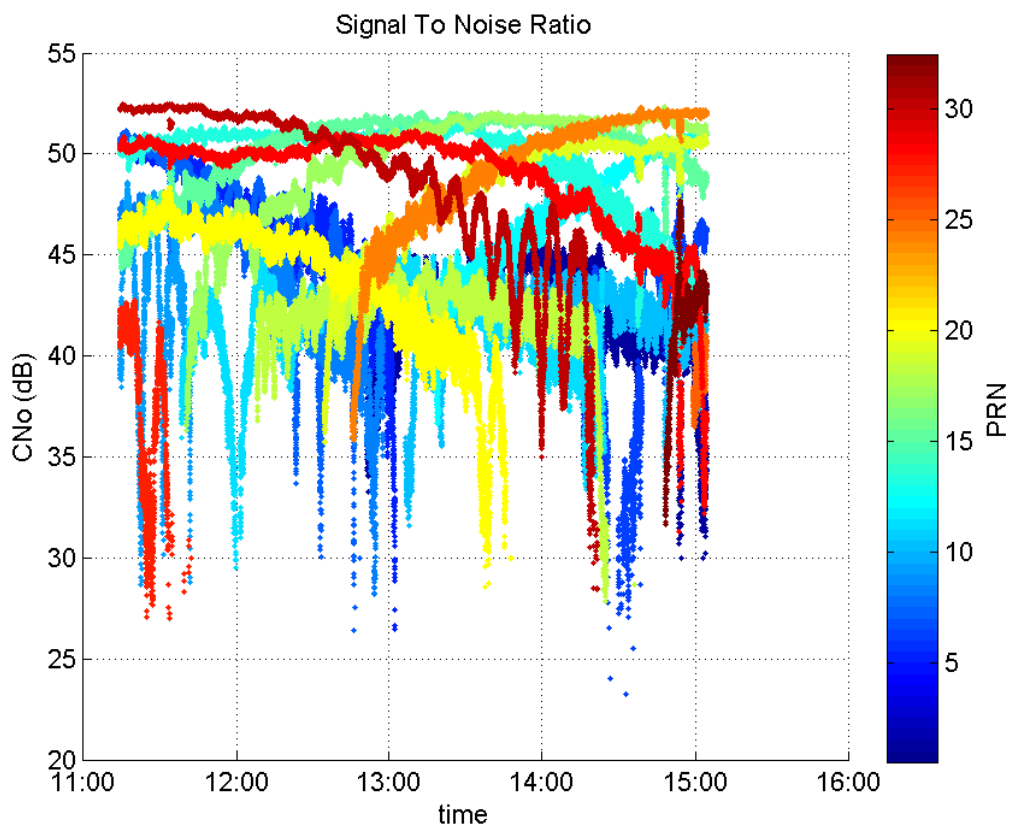
**Number of Visible SBAS Satellites** 2

### signal quality and status

**PRN Noise and Status:**



**Signal To Noise Ratio:**



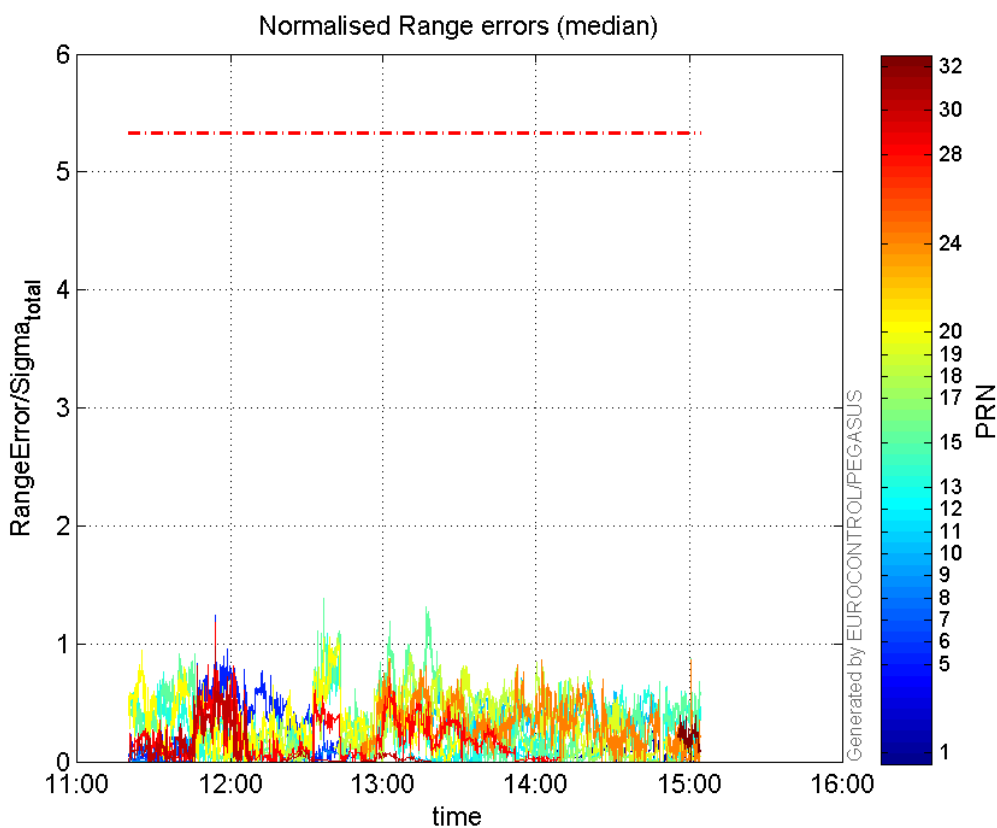
range errors

**Number of Overbounding Norm Errors 0**

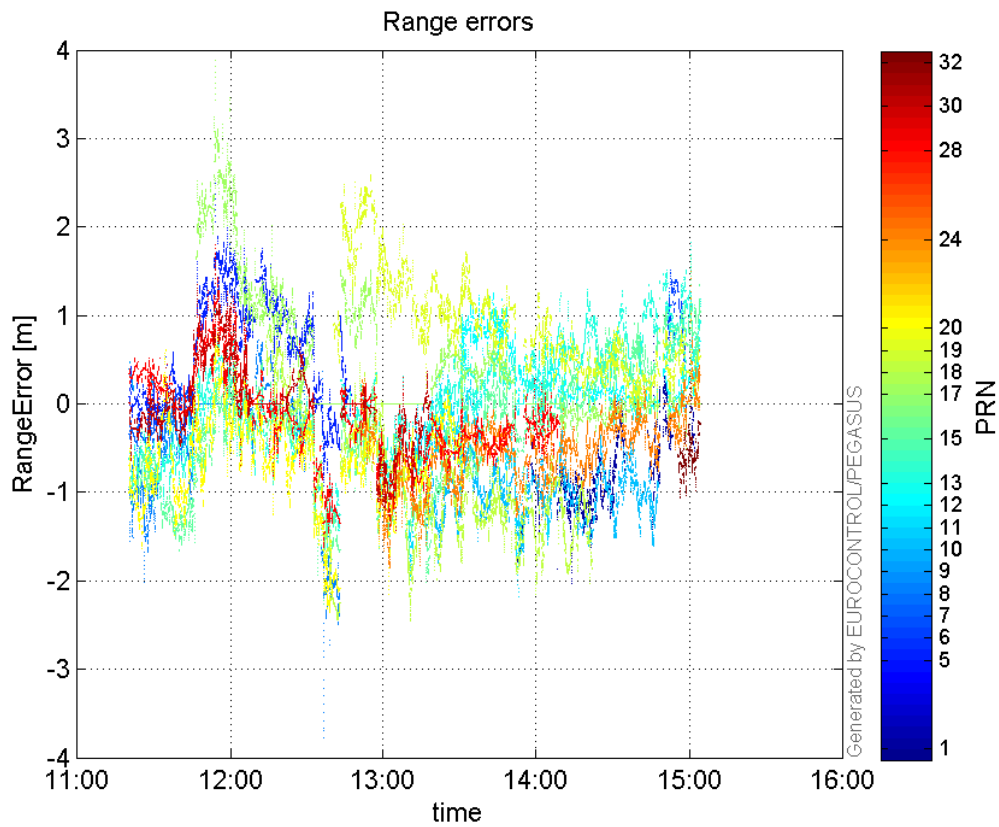
**Max Norm Errors :**

GPS Week	GPS Second	PRN	Norm Error	Range Error	Sigma
1939	225951	1	0.270024	-1.57567	5.83531
1939	215637	5	1.24638	2.49812	2.0043
1939	226352	6	0.0499366	1.51926	30.4237
1939	215127	7	0.0507729	-0.441529	8.69615
1939	215067	8	0.278105	-1.08171	3.88959
1939	213625	9	0.0199254	0.482676	24.2242
1939	222848	10	0.711984	-1.69374	2.37891
1939	221438	11	0.128603	-1.04103	8.09494
1939	226835	12	0.871284	1.48583	1.70533
1939	218278	13	1.08539	-1.70397	1.56991
1939	218206	15	1.38559	-2.26765	1.63659
1939	215987	17	0.686277	3.46493	5.04888
1939	218523	18	1.04883	-2.44032	2.32672
1939	221499	19	0.816579	1.59991	1.95928
1939	218334	20	1.0602	-2.29467	2.16439
1939	219746	24	0.871104	-1.85784	2.13274
1939	215637	28	1.17984	1.80133	1.52677
1939	215637	30	0.97672	1.69292	1.73327
1939	226952	32	0.391672	-0.980839	2.50424

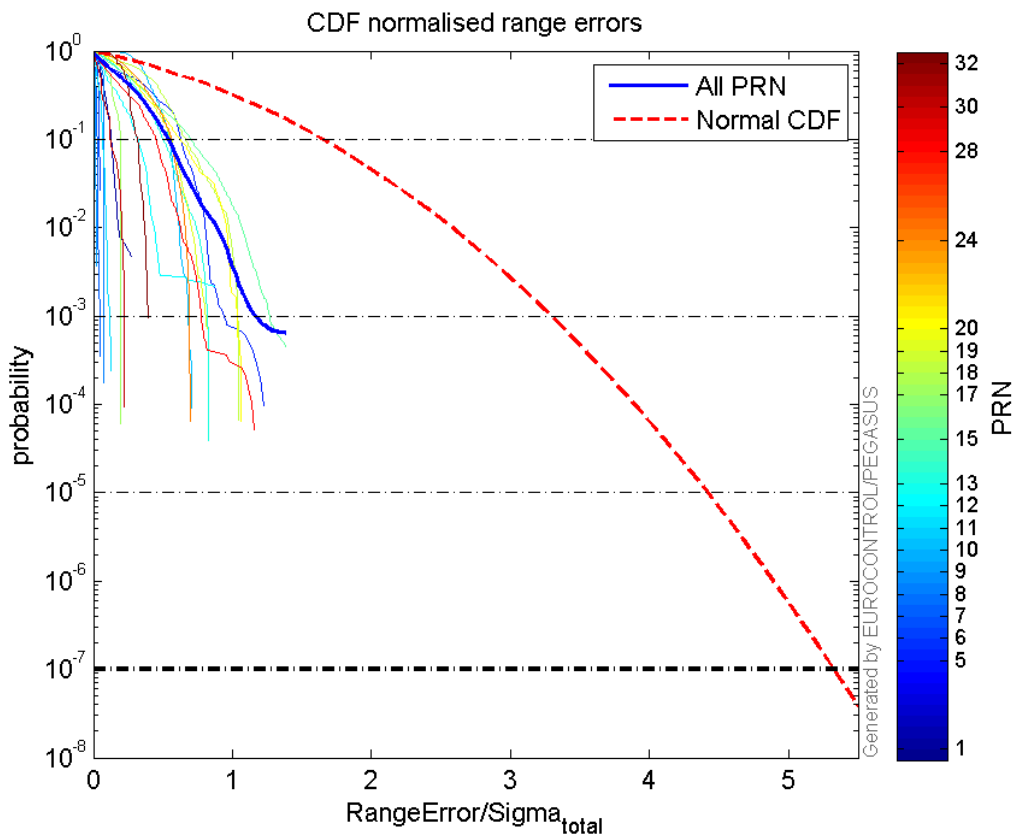
**Normalised Range errors (median):**



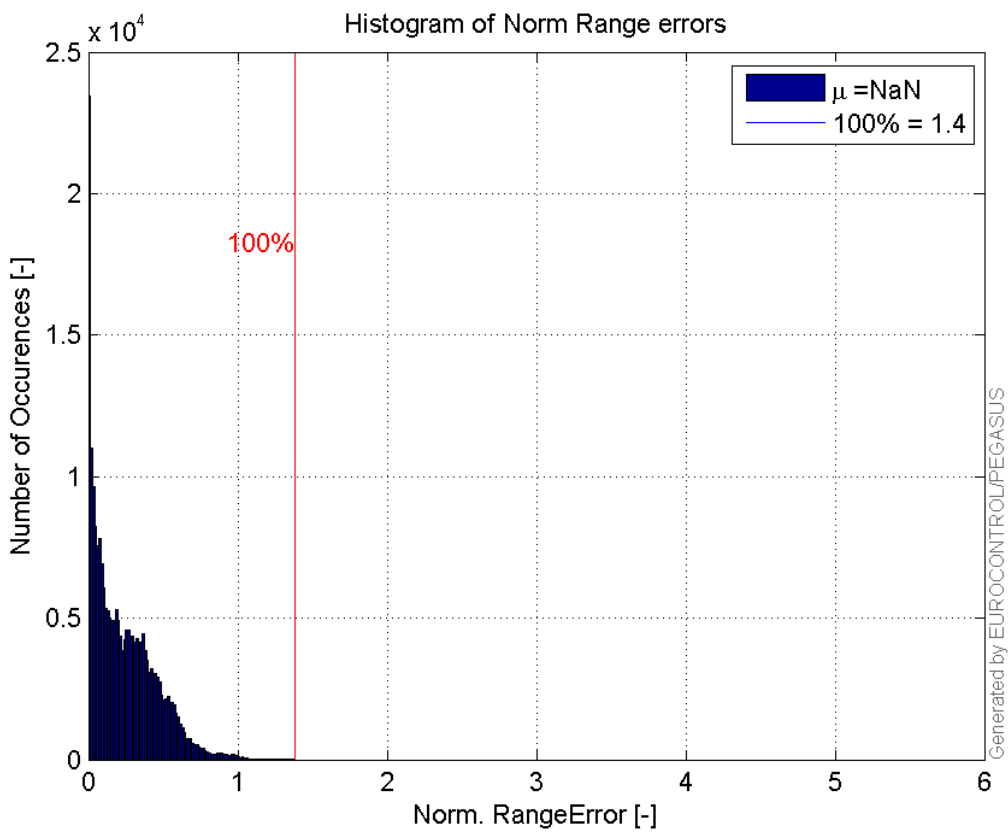
**Range errors:**



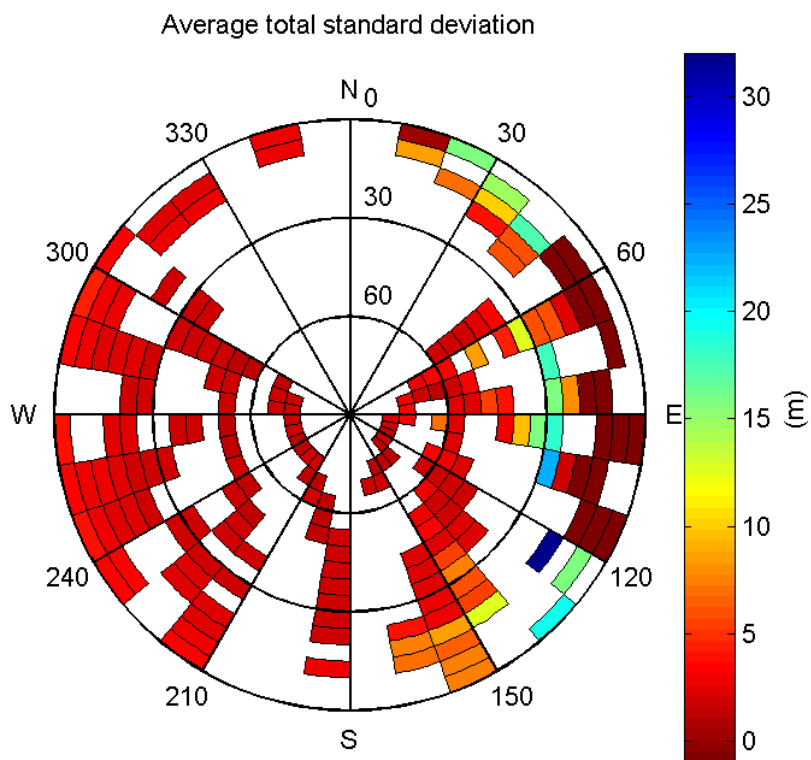
**CDF normalised range errors:**



**Histogram of Norm Range errors:**

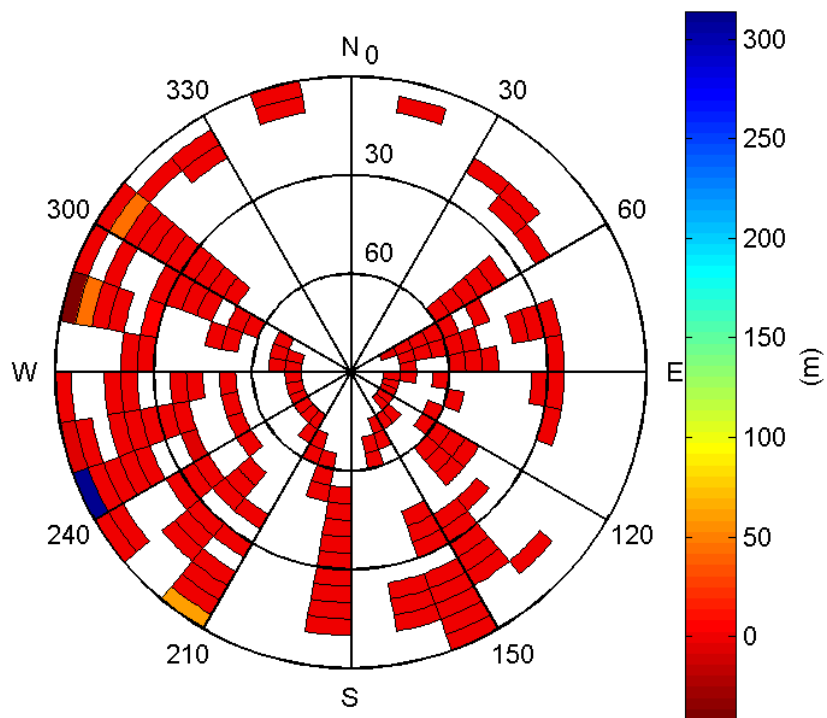


**Sigma Sky Plot:**



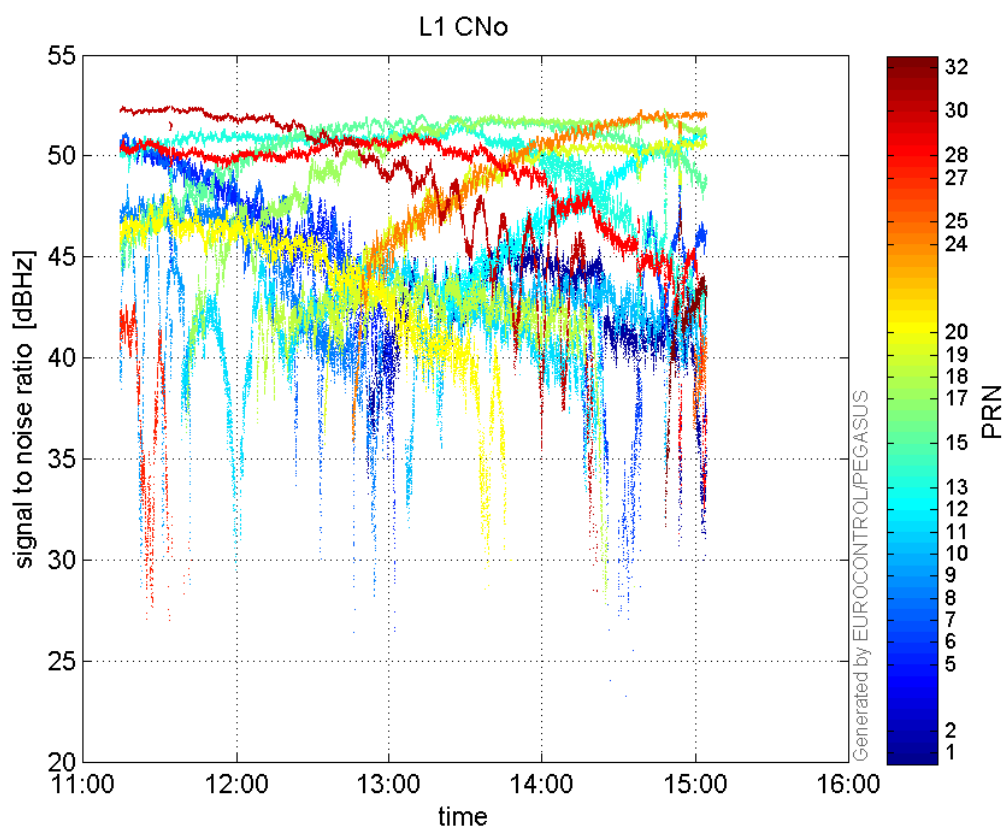
**Norm Error Sky Plot:**

Maximum Range Error

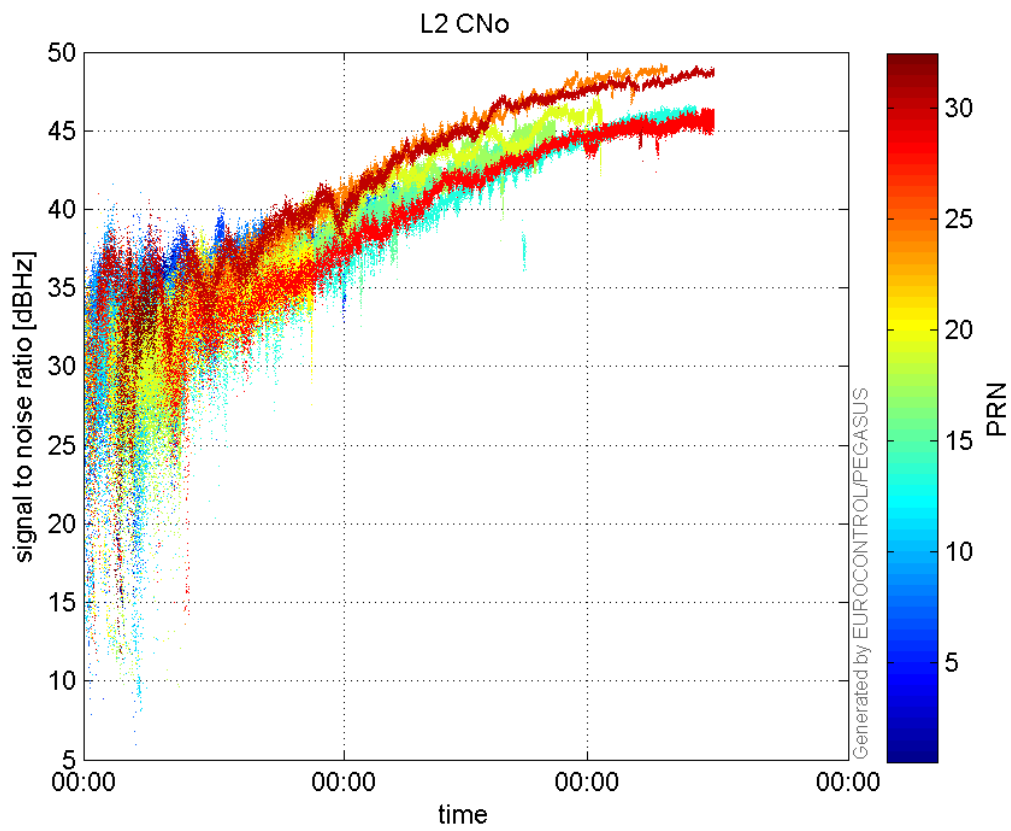


signal quality

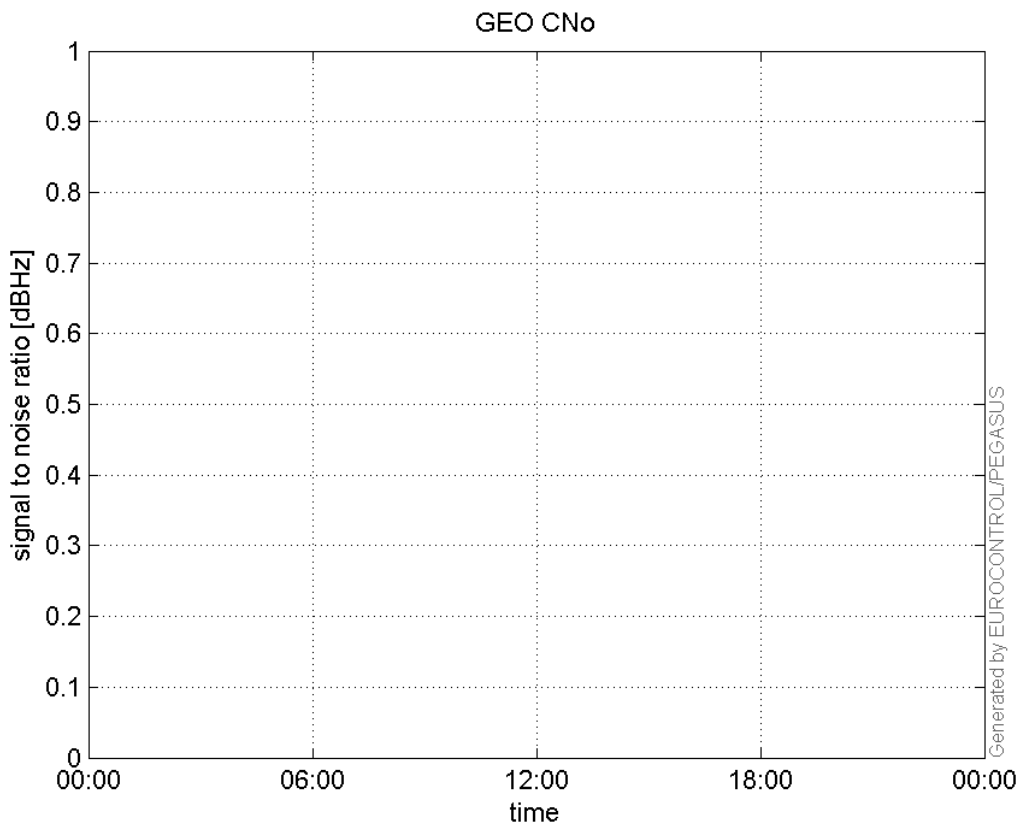
L1 CNo:



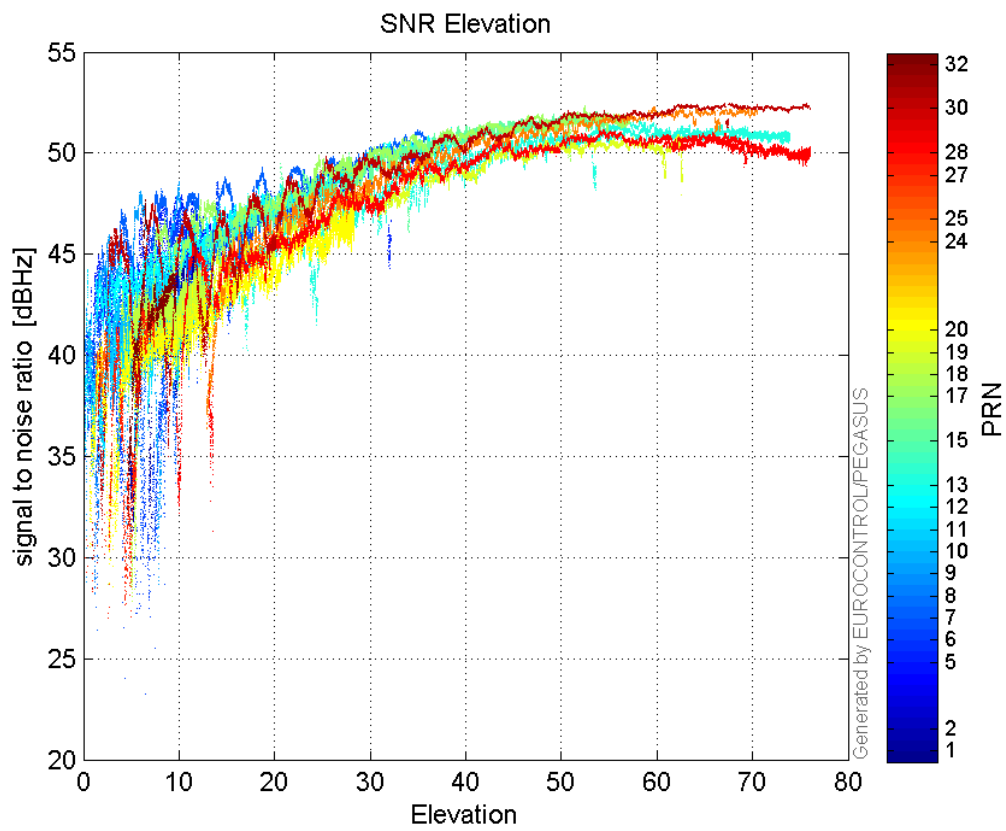
L2 CNo:



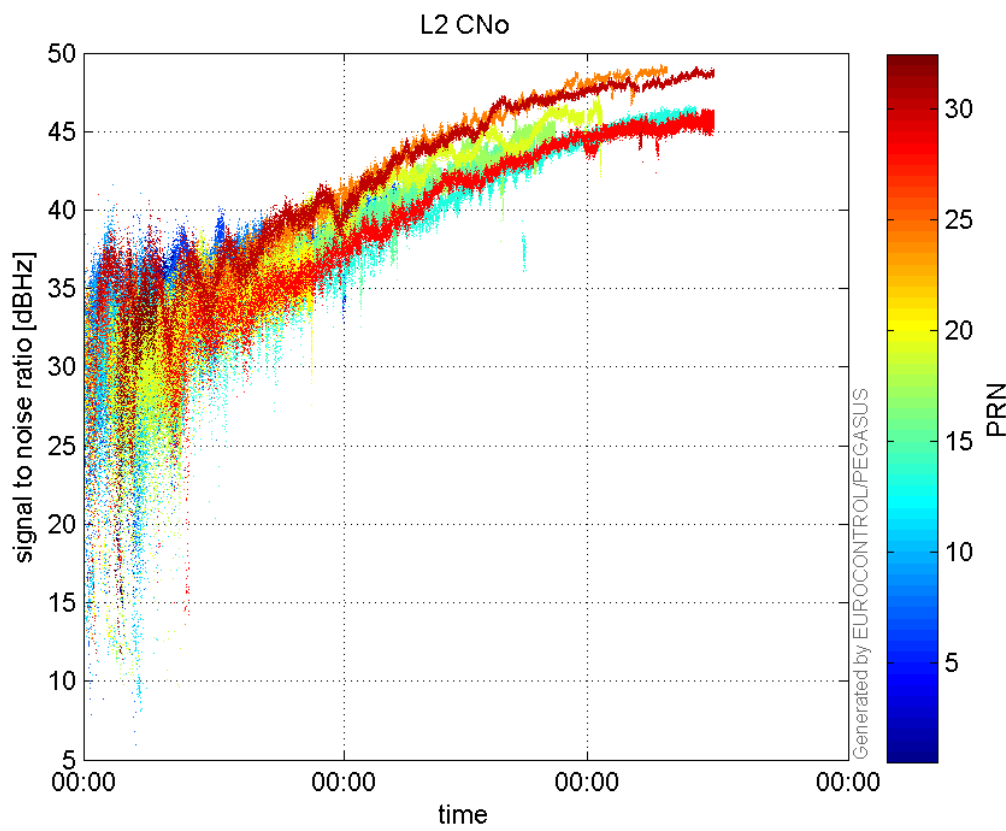
**GEO CNo:**



**SNR Elevation:**

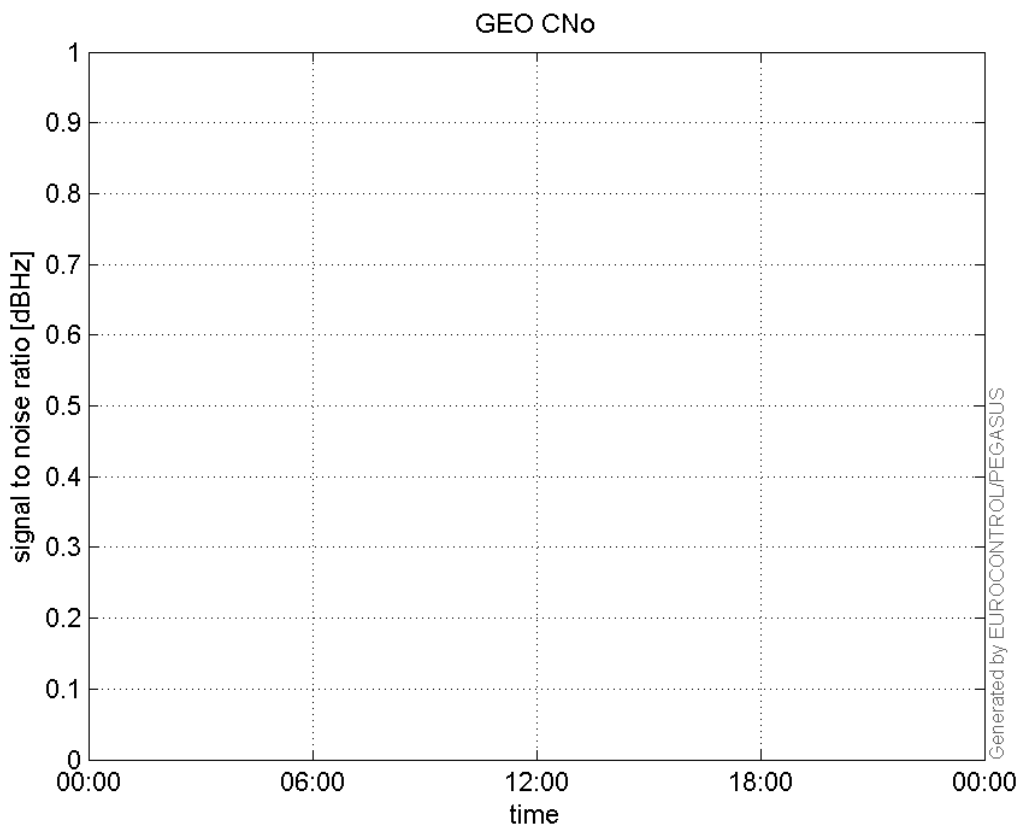


**L2 CNo:**



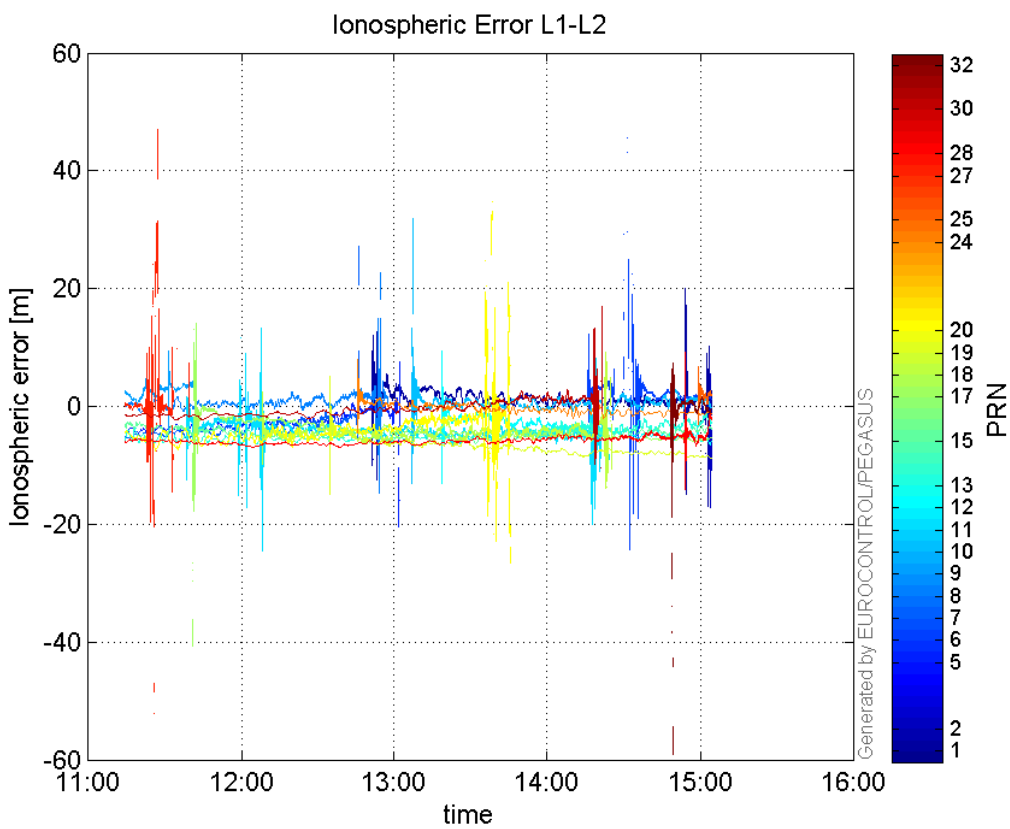
**GEO CNo:**





### 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/2017_03_07EGNOS2Hz/02_Convertor/02_Convertor
output_prefix	system	D:/PegasusDateJob/job/2017_03_07EGNOS2Hz/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	230.2259
mi_numbers	results	0

## SBAS Messages

**start:** 11:14:16.129 07.03.2017 ( week: 1939 sec: 213256.129 )  
**end:** 15:04:21.129 07.03.2017 ( week: 1939 sec: 227061.129 )  
**duration:** 03:50:05 ..

## quality

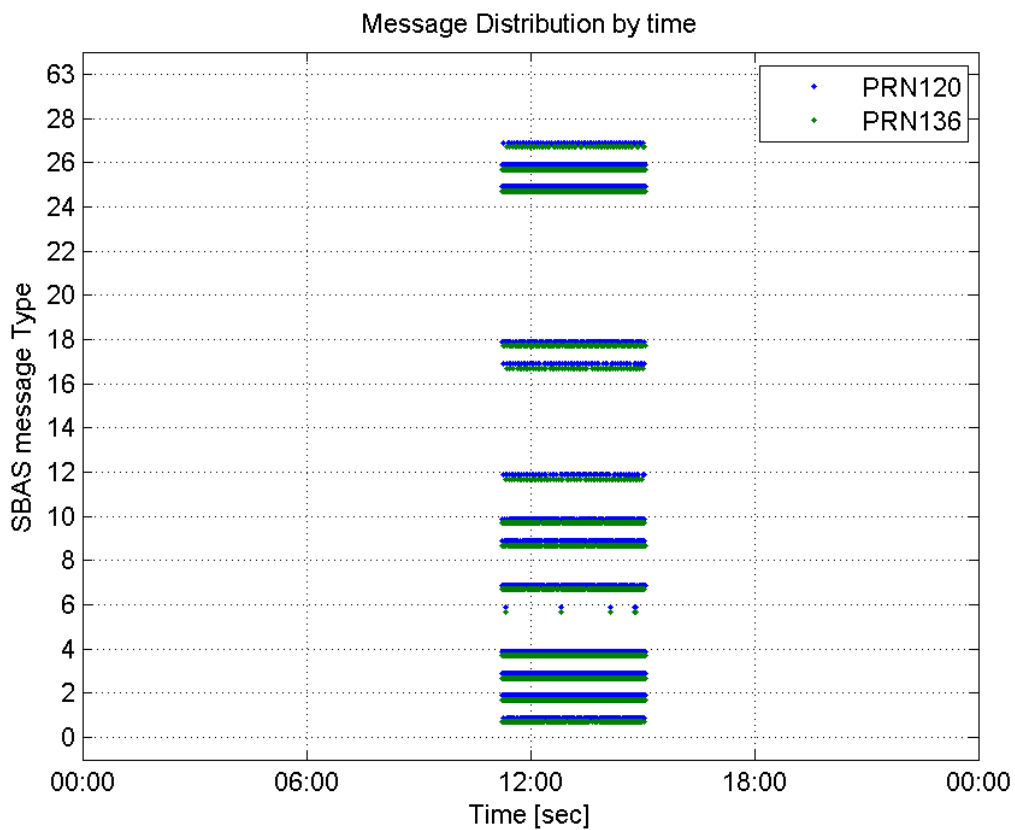
**valid samples**            24955  
**total samples**            24955  
**number of SBAS PRNs**    2

## SBAS SIS Overview

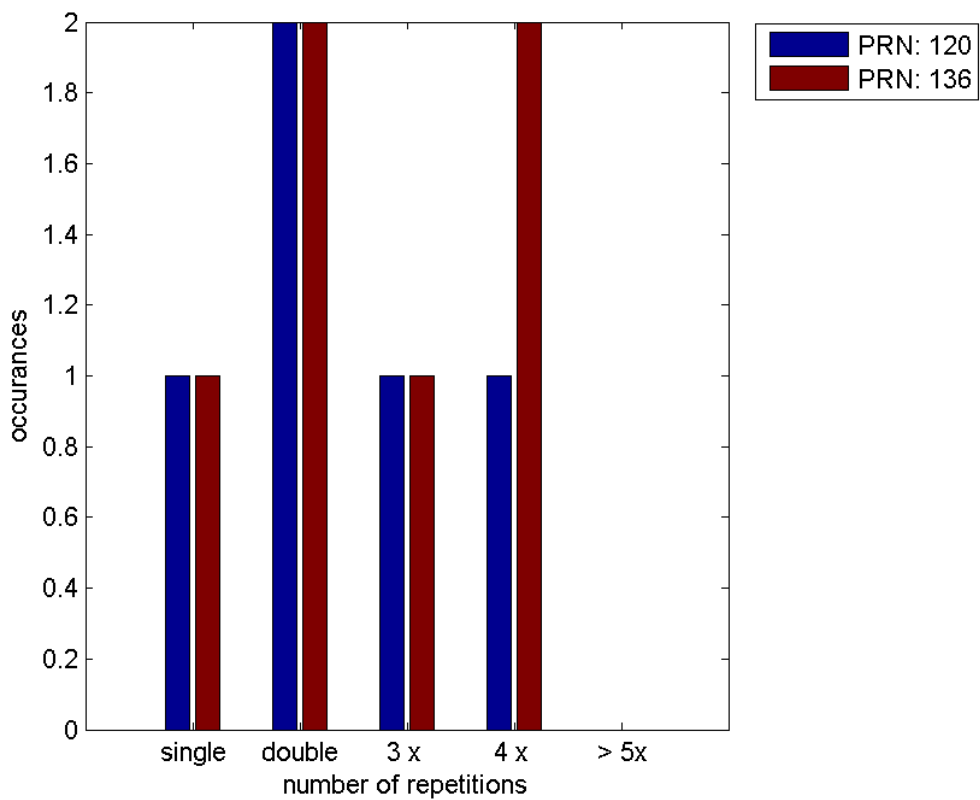
## Message Type 6 repetitions :

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

**Message Distribution by time:**



**Message Type 6 repetitions:**



PRN 120

## Broadcast SBAS Messages :

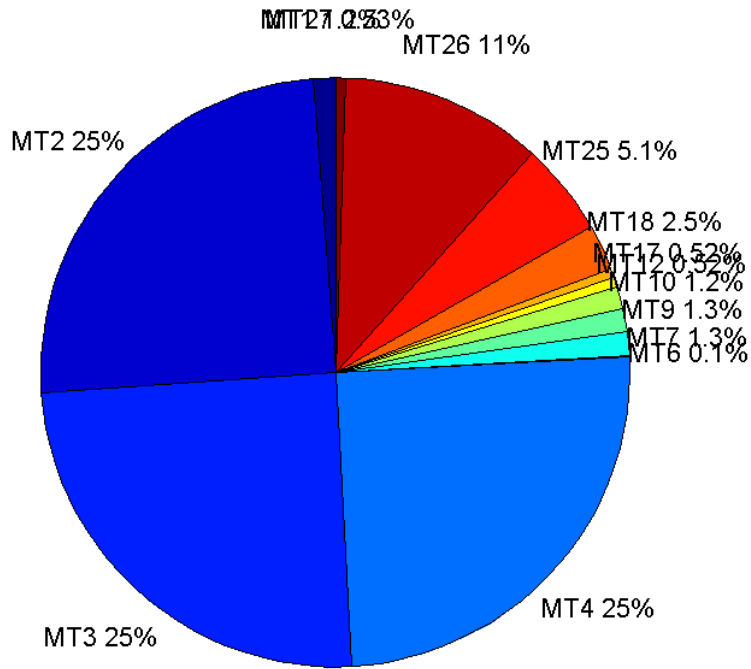
	number of messages	%
MT 0	0	0
MT 1	151	1.21256
MT 2	3097	24.8695
MT 3	3084	24.7651
MT 4	3112	24.99
MT 5	0	0
MT 6	13	0.104393
MT 7	159	1.2768
MT 9	157	1.26074
MT 10	153	1.22862
MT 12	65	0.521963
MT 17	65	0.521963
MT 18	307	2.46527
MT 24	0	0
MT 25	641	5.14735
MT 26	1383	11.1058
MT 27	66	0.529993
MT 28	0	0
MT 62	0	0
MT 63	0	0
Total	12453	100

## Update intervals :

	Minimum [s]	Maximum [s]	Mean value	Exceed Max update	Exceed NPA timeout	Exceed PA timeout
MT 0	--	--	--	--	--	--
MT 1	77	320	90.8067	16	0	0
MT 2	4	74	4.45801	324	1	1
MT 3	4	80	4.47584	331	1	3
MT 4	4	79	4.43523	302	1	2
MT 5	--	--	--	--	--	--
MT 6	1	5323	1036.33	3	3	3
MT 7	77	240	86.7911	12	0	0
MT 9	77	161	87.8782	0	0	0
MT 10	76	241	90.2697	15	0	2
MT 12	188	400	213.063	64	5	5
MT 17	187	400	213.016	0	0	0
MT 18	4	201	44.7484	0	0	0
MT 24	--	--	--	--	--	--
MT 25	2	105	21.5453	0	0	0
MT	1	81	9.98336	0	0	0

26						
MT 27	189	400	206.677	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	155	1.2398
MT 2	3099	24.788
MT 3	3115	24.916
MT 4	3103	24.82
MT 5	0	0
MT 6	17	0.135978
MT 7	162	1.29579
MT 9	161	1.28779
MT 10	165	1.31979
MT 12	61	0.487922

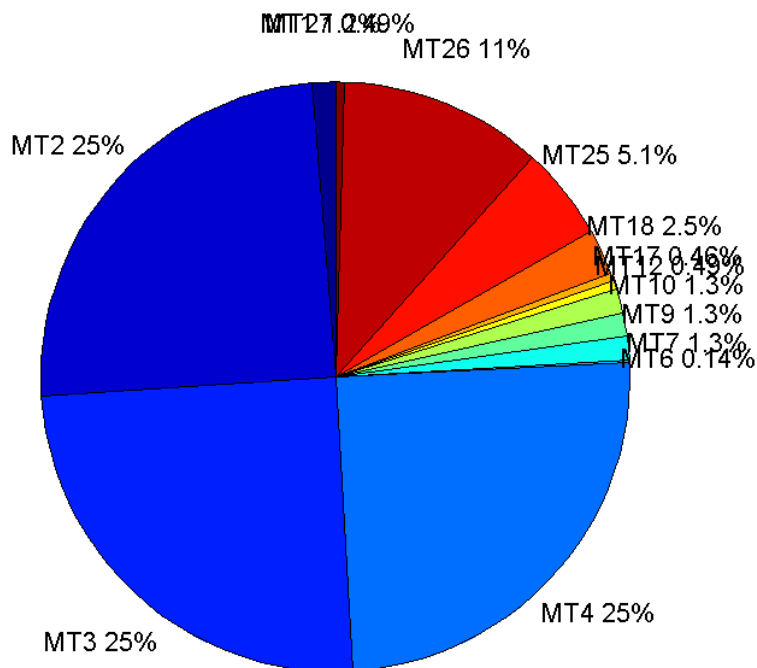
MT 17	57	0.455927
MT 18	312	2.4956
MT 24	0	0
MT 25	636	5.08719
MT 26	1398	11.1822
MT 27	61	0.487922
MT 28	0	0
MT 62	0	0
MT 63	0	0
Total	12502	100

## Update intervals :

	Minimum [s]	Maximum [s]	Mean value	Exceed Max update	Exceed NPA timeout	Exceed PA timeout
MT 0	--	--	--	--	--	--
MT 1	76	238	89.0584	17	0	0
MT 2	4	18	4.45449	329	0	1
MT 3	4	13	4.43224	312	0	2
MT 4	4	12	4.44874	325	0	0
MT 5	--	--	--	--	--	--
MT 6	1	5323	778.688	4	4	4
MT 7	76	240	85.236	9	0	0
MT 9	76	161	86.1188	0	0	0
MT 10	75	236	83.5793	7	0	0
MT 12	188	400	218.433	60	7	7
MT 17	185	586	234.143	0	0	0
MT 18	4	188	44.0611	0	0	0
MT 24	--	--	--	--	--	--
MT 25	1	123	21.7055	0	0	0
MT 26	4	63	9.86614	0	0	0
MT 27	189	400	221.85	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_03_07EGNOS2Hz/01_User/01_User
Outputfile	System	D:/PegasusDateJob/job/2017_03_07EGNOS2Hz/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:** 11:14:17 07.03.2017 ( week: 1939 sec: 213257 )  
**end:** 15:04:21.5 07.03.2017 ( week: 1939 sec: 227061.5 )  
**duration:** 03:50:05 ..

#### quality

**valid samples** 26340  
**total samples** 27003

## Event tables

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

## extremes :

	Epoch	HPE	HPL	HPE/HPL	VPE	VPL	VPE/VPL
<b>max normHor</b>	221405	1.46631	8.17327	0.179403	0.724078	14.7334	0.0491453
<b>max normVer</b>	221632	1.38484	9.35889	0.147971	1.87668	17.2495	0.108796
<b>max HPE</b>	214527	4.78258	88.7403	0.0538941	-12.2798	177.501	0.0691815
<b>max VPE</b>	214527	4.78207	89.2882	0.0535577	-12.2942	178.569	0.0688485
<b>min HPL</b>	221473	1.2334	8.04616	0.153291	0.481564	14.5103	0.0331877
<b>min VPL</b>	221461	1.22354	8.23454	0.148586	0.497799	14.4927	0.0343482

## Position discontinuity events :

#	Epoch	duration	stable period
1	226119	68.5	12501.5

## APV-I discontinuity events :

#	Epoch	duration	stable period
1	213748	0.5	130.5
2	214076	1.5	327.5
3	214526	0.5	448.5
4	220232	5.5	5705.5
5	220442	0.5	204.5
6	223758	8.5	3315.5
7	226119	76.5	2352.5
8	226408	128	212.5

## APV-35m discontinuity events :

#	Epoch	duration	stable period
1	213736	3.5	1.5
2	213770	41.5	15.5
3	214008	117.5	22.5
4	214275	3.5	4.5
5	220232	5.5	5705.5
6	223758	8.5	3315.5
7	226119	76.5	2352.5
8	226408	128	212.5

## LPV-200 discontinuity events :

#	Epoch	duration	stable period
1	213736	3.5	1.5
2	213770	41.5	15.5
3	214008	117.5	22.5
4	214275	3.5	4.5



5	220232	5.5	5705.5
6	223758	8.5	3315.5
7	226119	76.5	2352.5
8	226408	128	212.5

### First Glance analysis

<b>Duration</b>	13805
<b>Number of Samples</b>	27003
<b>Number of invalid sample</b>	663
<b>Number of no position solution samples</b>	137
<b>Number of missing sample</b>	607
<b>Logging Loss</b>	2.1985
<b>Processing Loss</b>	2.4553
<b>Number of Misleading Information</b>	0
<b>Data gaps</b>	0
<b>Discontinuities</b>	1

#### Number of Samples :

Valid	APV-1	LPV-200	CAT-1	APV-35m
26203	25897	25553	0	25553

#### Accuracy statistics :

	Valid	APV-1	LPV-200	CAT-1	APV-35m
<b>HPE 95%</b>	1.42195	1.42186	1.42294	NaN	1.42294
<b>HPEscale 95%</b>	NaN	5.54514	5.55057	NaN	5.55057
<b>VPE 95%</b>	1.31971	1.31906	1.32147	NaN	1.32147
<b>VPEscale 95%</b>	NaN	3.78148	2.65741	NaN	2.65741

#### Availability :

	Valid	APV-1	LPV-200	CAT-1	APV-35m
<b>Signal in Space</b>	0.994799	0.983181	0.970121	0	0.970121
<b>measurements</b>	0.970374	0.959042	0.946302	0	0.946302
<b>Operational</b>	1.89808	1.87591	1.851	0	1.851

#### Discontinuity events :

	Valid	APV-1	LPV-200	CAT-1	APV-35m
<b>All</b>	1	8	27	--	27
<b>Long</b>	1	4	8	--	8
<b>Independent</b>	1	4	6	--	6
<b>P(disc.)</b>	0.000572454	0.00231687	0.00352209	NaN	0.00352209
<b>P(slide)</b>	0.000572454	0.00463374	0.0120142	NaN	0.0120142

#### Integrity events :

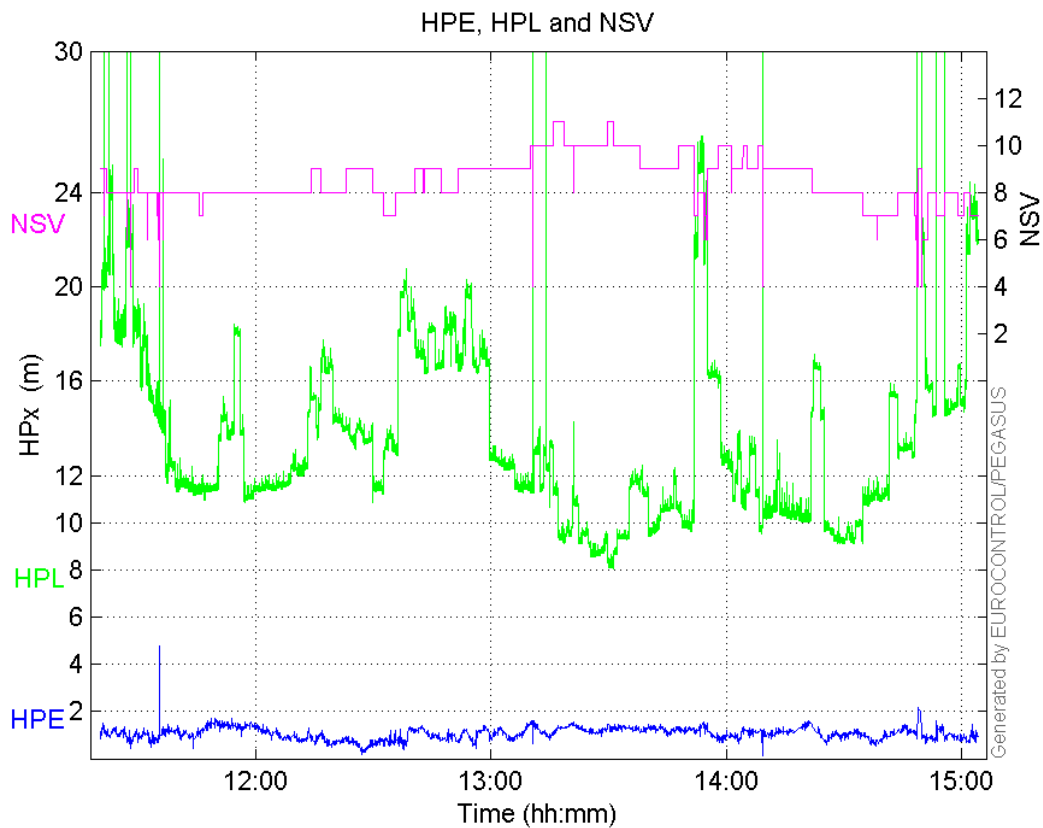
	MI	HMI APV-1	HMI LPV-200	HMI CAT-1	HMI APV-35m
<b>Total</b>	0	0	0	0	0
<b>Horizontal</b>	0	0	0	0	0
<b>Vertical</b>	0	0	0	0	0

**Performance Summary :**

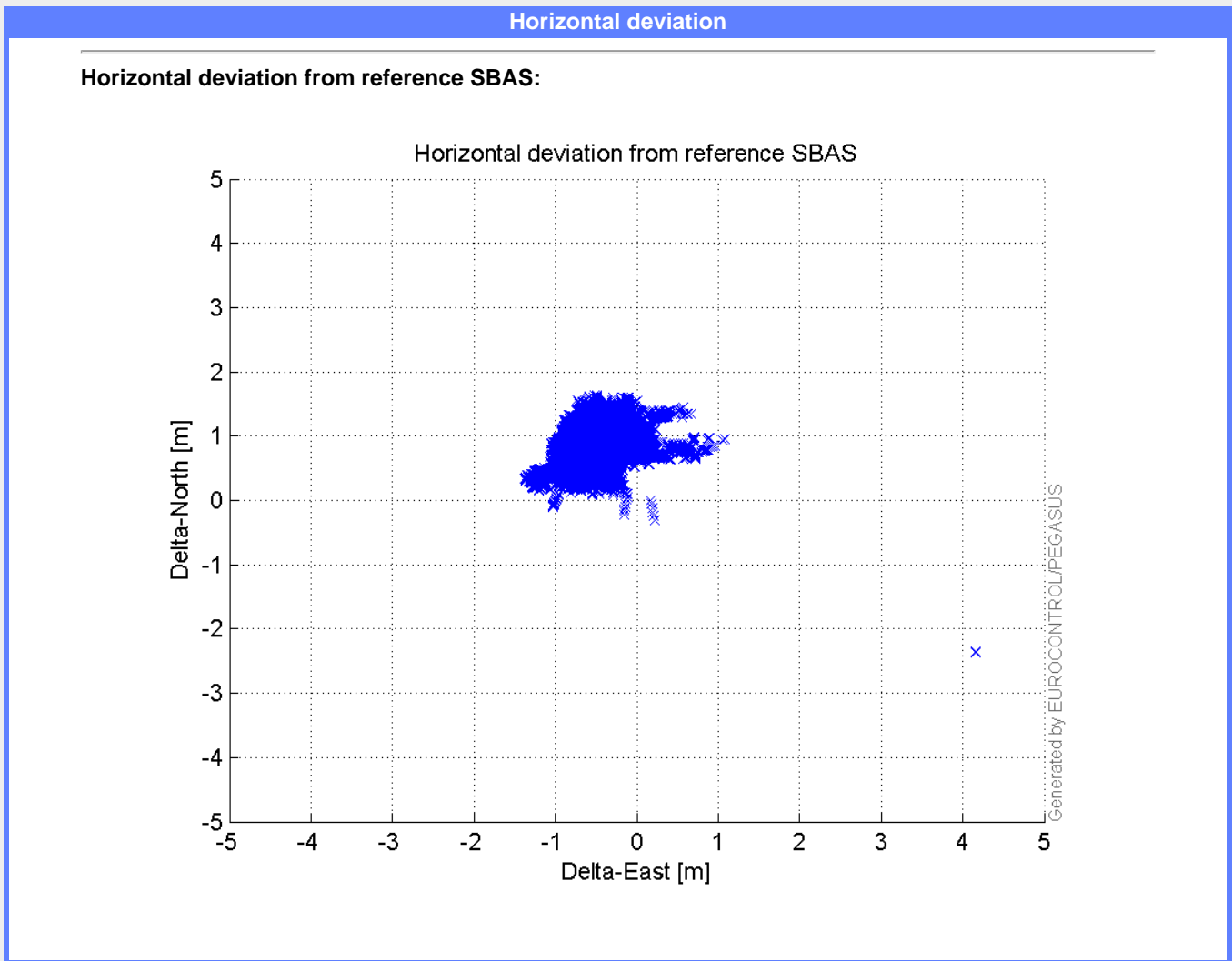
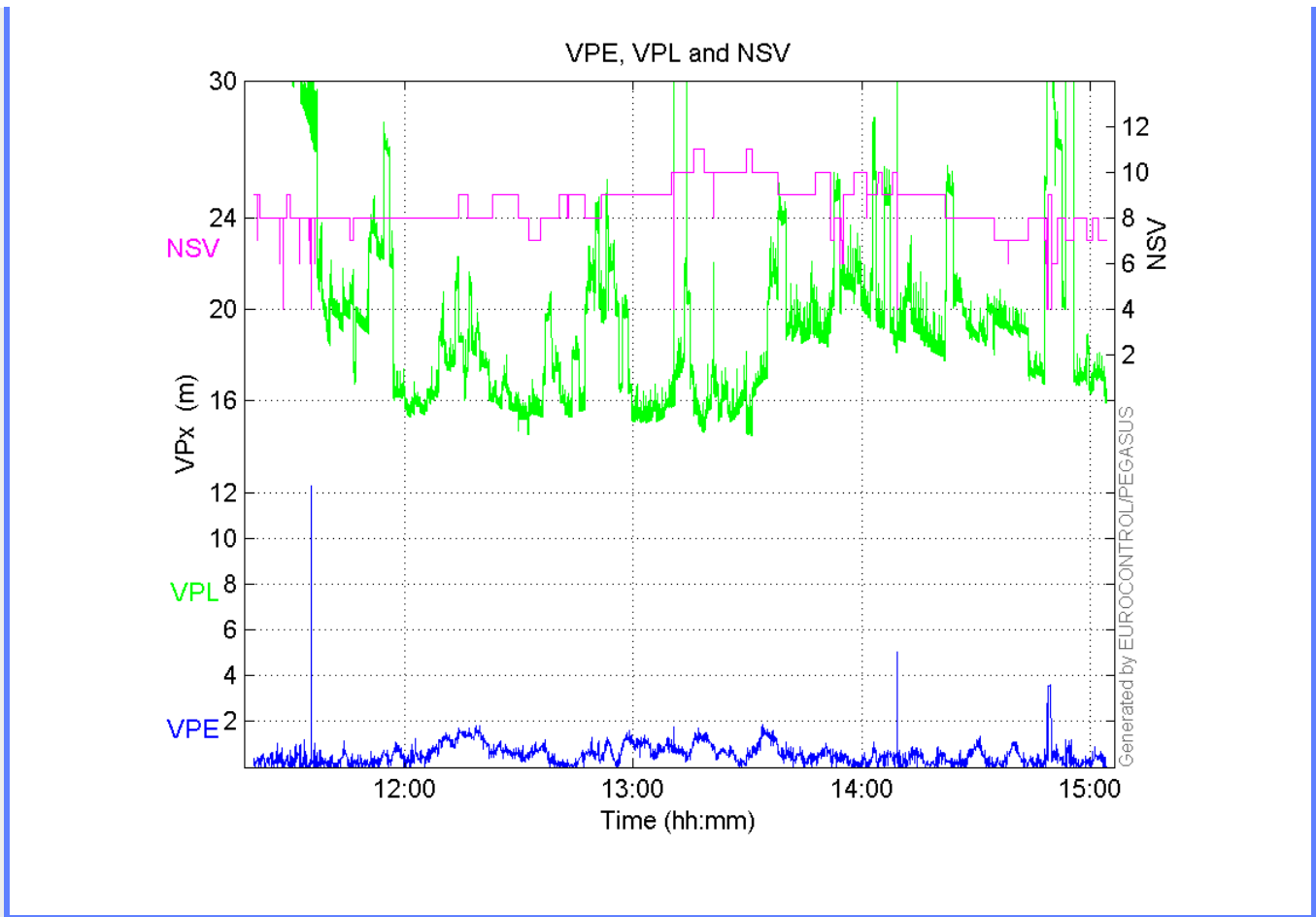
	Valid	APV-1	LPV-200	CAT-1	APV-35m
<b>Samples</b>	26203	25897	25553	0	25553
<b>SIS Availability</b>	0.994799	0.983181	0.970121	0	0.970121
<b>Local Availability</b>	0.970374	0.959042	0.946302	0	0.946302
<b>Operational Availability</b>	1.89808	1.87591	1.851	0	1.851
<b>HPE 95%</b>	1.42195	1.42186	1.42294	NaN	1.42294
<b>HPscale 95%</b>	NaN	5.54514	5.55057	NaN	5.55057
<b>VPE 95%</b>	1.31971	1.31906	1.32147	NaN	1.32147
<b>VPEscale 95%</b>	NaN	3.78148	2.65741	NaN	2.65741
<b>All Discontinuity Events</b>	1	8	27	--	27
<b>Long Discontinuity Events</b>	1	4	8	--	8
<b>Independent Discontinuity Events</b>	1	4	6	--	6
<b>P(discontinuity)</b>	0.000572454	0.00231687	0.00352209	NaN	0.00352209
<b>P(sliding window)</b>	0.000572454	0.00463374	0.0120142	NaN	0.0120142
<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:**

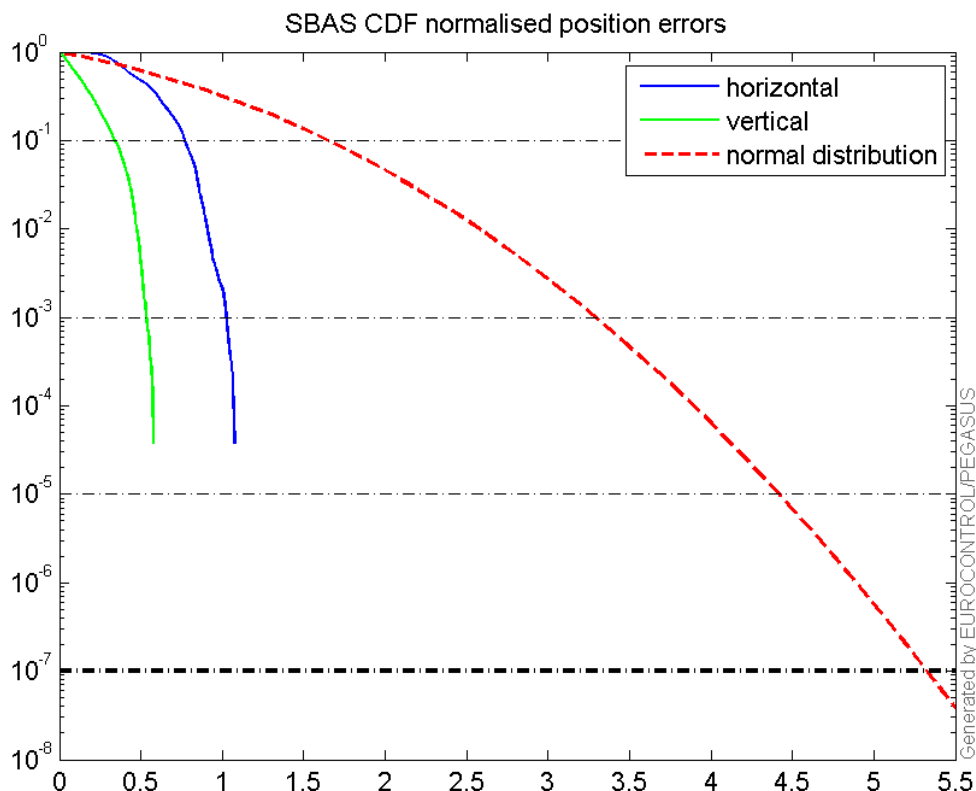


**VPE, VPL and NSV:**



## CDF position

SBAS CDF position domain:



## Statistics

```

number 25897
sum 27424.797
sum2 30488.614
prctile95 1.421864
prctile99 1.5341649
number 25897
sum 13982.585
sum2 11434.893
prctile95 1.3190639
prctile99 1.5581922
number 25897
sum 348683.39
sum2 5019853.7
prctile95 20.529695
prctile99 24.102537
number 25897
sum 513256.71
sum2 10783192
prctile95 31.581915
prctile99 42.574459
number 25897
sum 2193.786
sum2 210.43035
prctile95 0.13862843

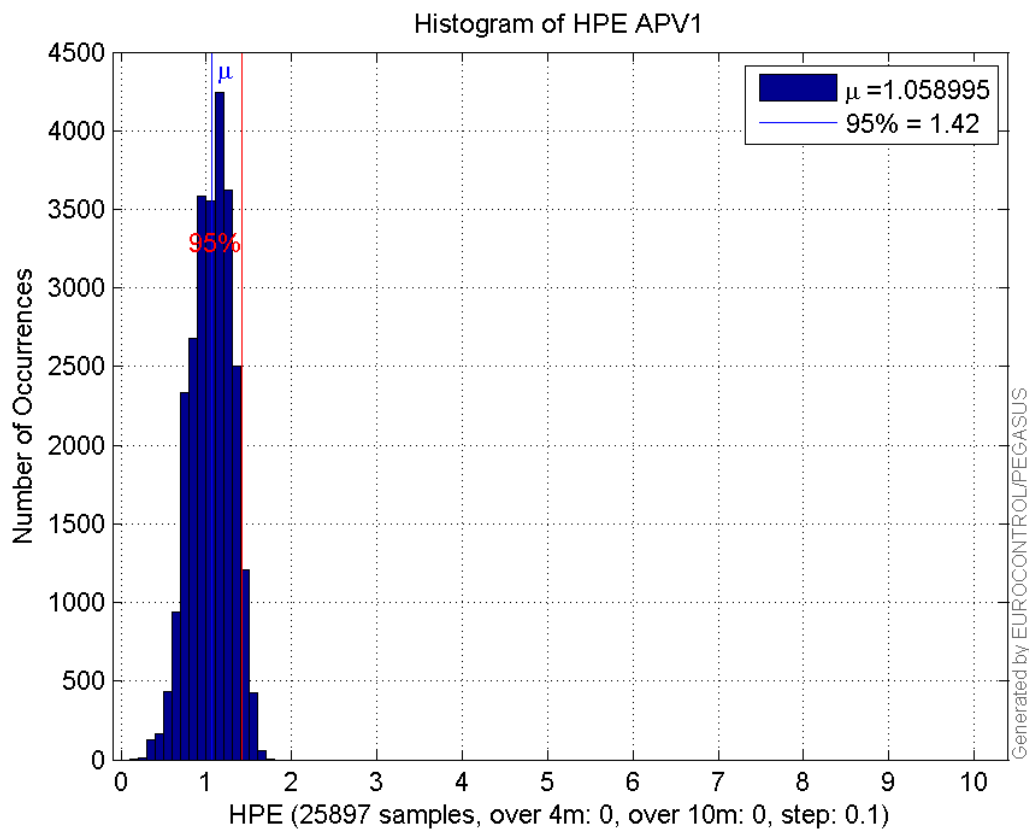
```

**prctile99** 0.15126632  
**number** 25897  
**sum** 763.12744  
**sum2** 35.976191  
**prctile95** 0.075629616  
**prctile99** 0.088917496  
**number** 25553  
**sum** 27104.901  
**sum2** 30179.416  
**prctile95** 1.4229372  
**prctile99** 1.5352613  
**number** 25553  
**sum** 13884.676  
**sum2** 11393.537  
**prctile95** 1.3214668  
**prctile99** 1.5599379  
**number** 25553  
**sum** 340987.3  
**sum2** 4846293.4  
**prctile95** 19.777735  
**prctile99** 23.688586  
**number** 25553  
**sum** 498651.54  
**sum2** 10159482  
**prctile95** 29.12675  
**prctile99** 33.727049  
**number** 25553  
**sum** 2179.3676  
**sum2** 209.79552  
**prctile95** 0.13876415  
**prctile99** 0.1514684  
**number** 25553  
**sum** 760.79284  
**sum2** 35.951849  
**prctile95** 0.075926126  
**prctile99** 0.089019862

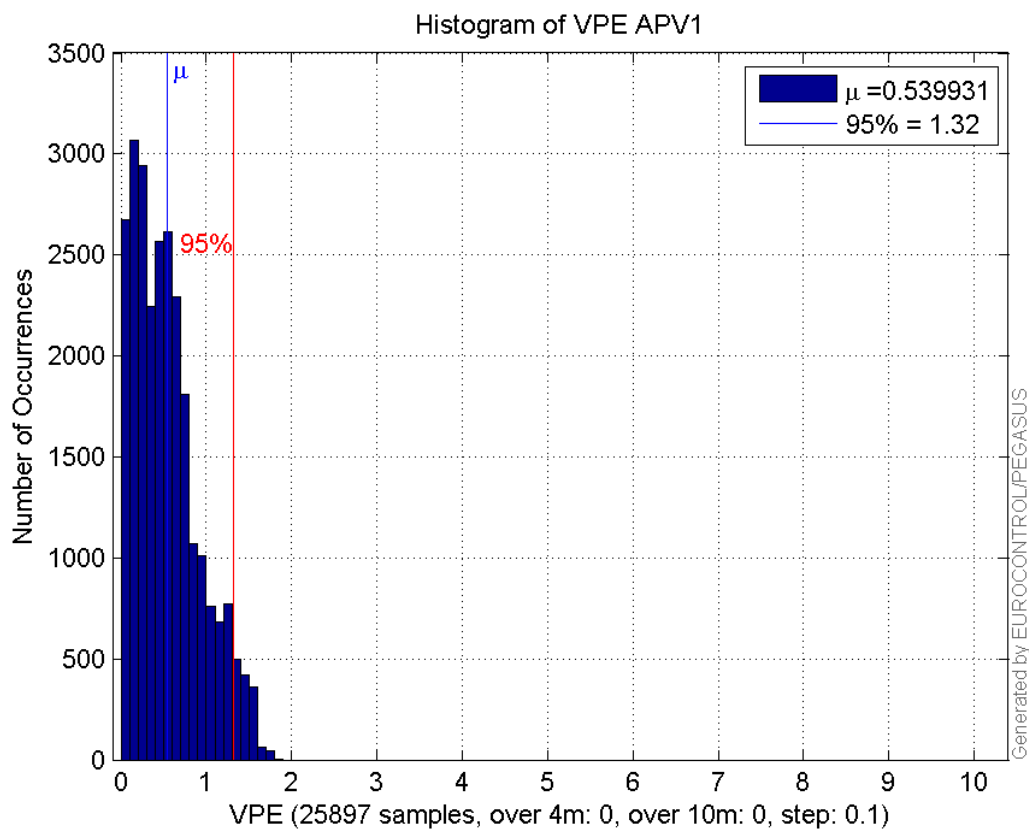
**Error and XPL Statistics :**

	Mean Value	Standard Deviation	50% Value	95% Value	99% Value	RMS Value
<b>HPE</b>	1.059	0.236293	1.0788	1.42186	1.53416	1.08504
<b>HPL</b>	13.4642	3.54316	12.4364	20.5297	24.1025	13.9226
<b>VPE</b>	0.539931	0.387342	0.480747	1.31906	1.55819	0.664494
<b>VPL</b>	19.8192	4.85691	18.9489	31.5819	42.5745	20.4056

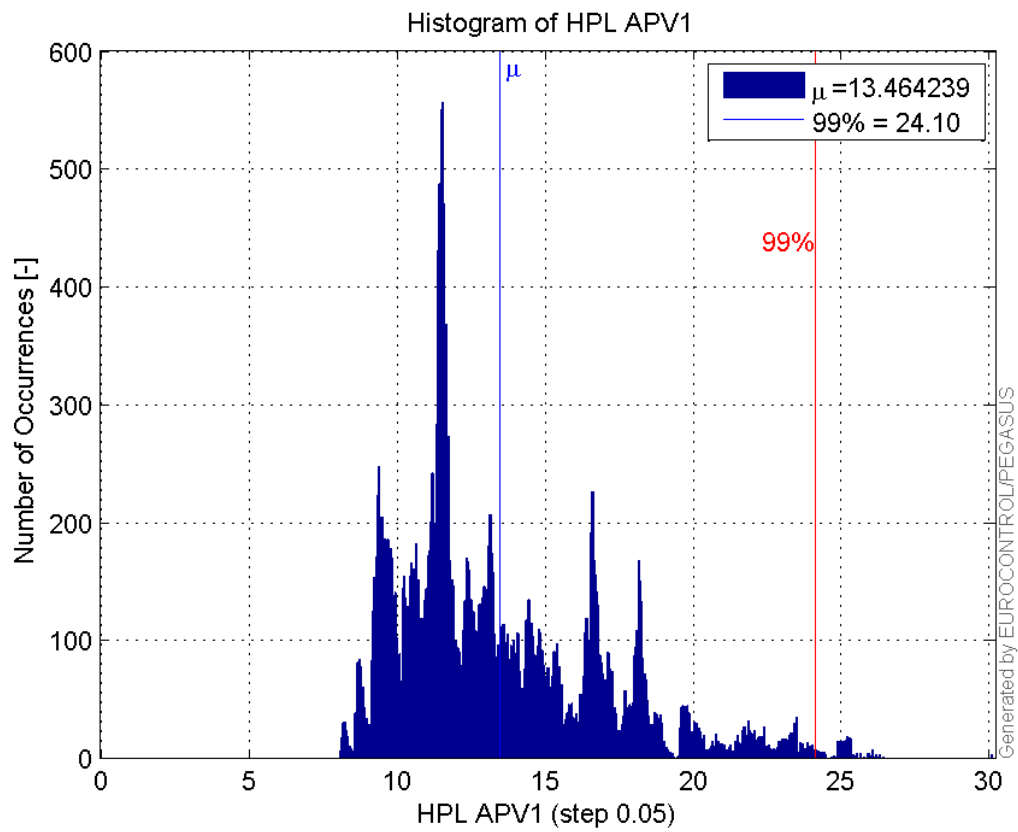
**Histogram of HPE APV1:**



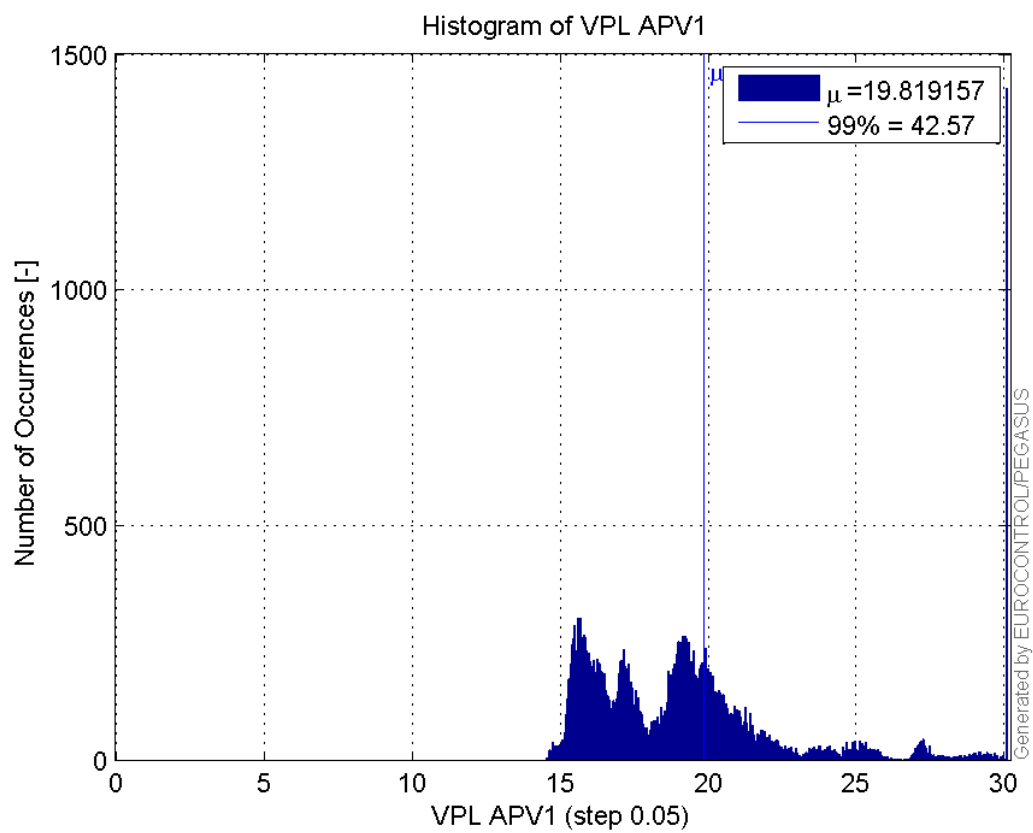
**Histogram of VPE APV1:**



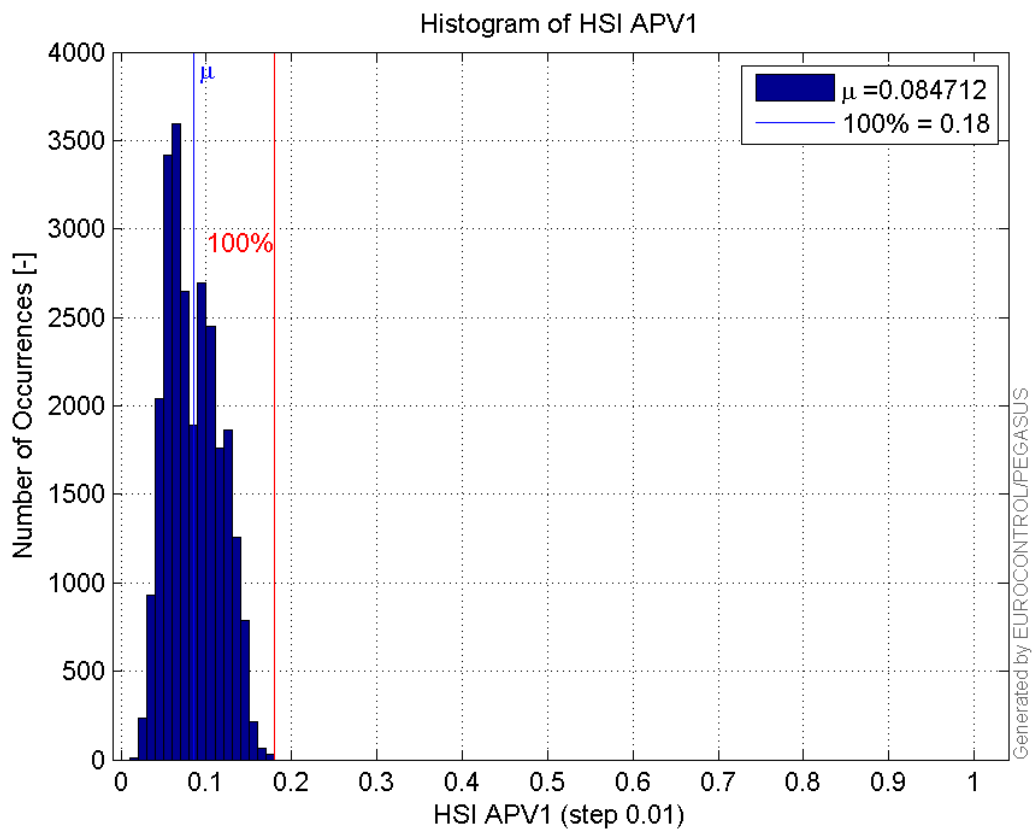
**Histogram of HPL APV1:**



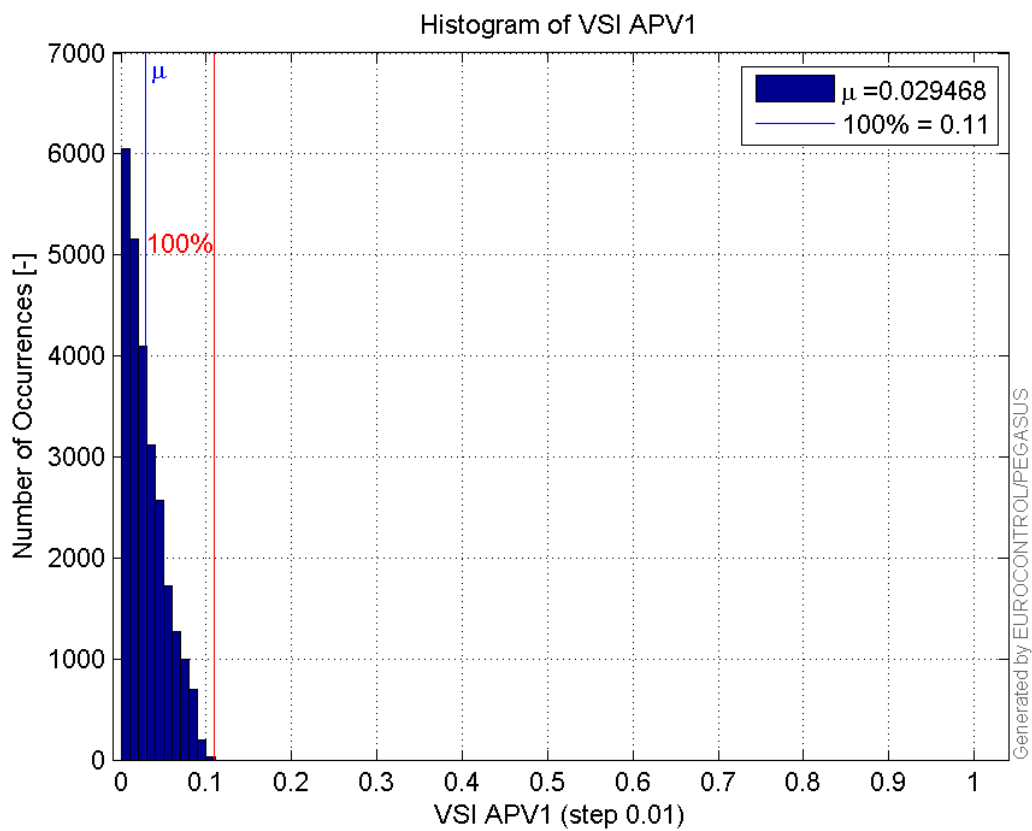
Histogram of VPL APV1:



Histogram of HSI APV1:

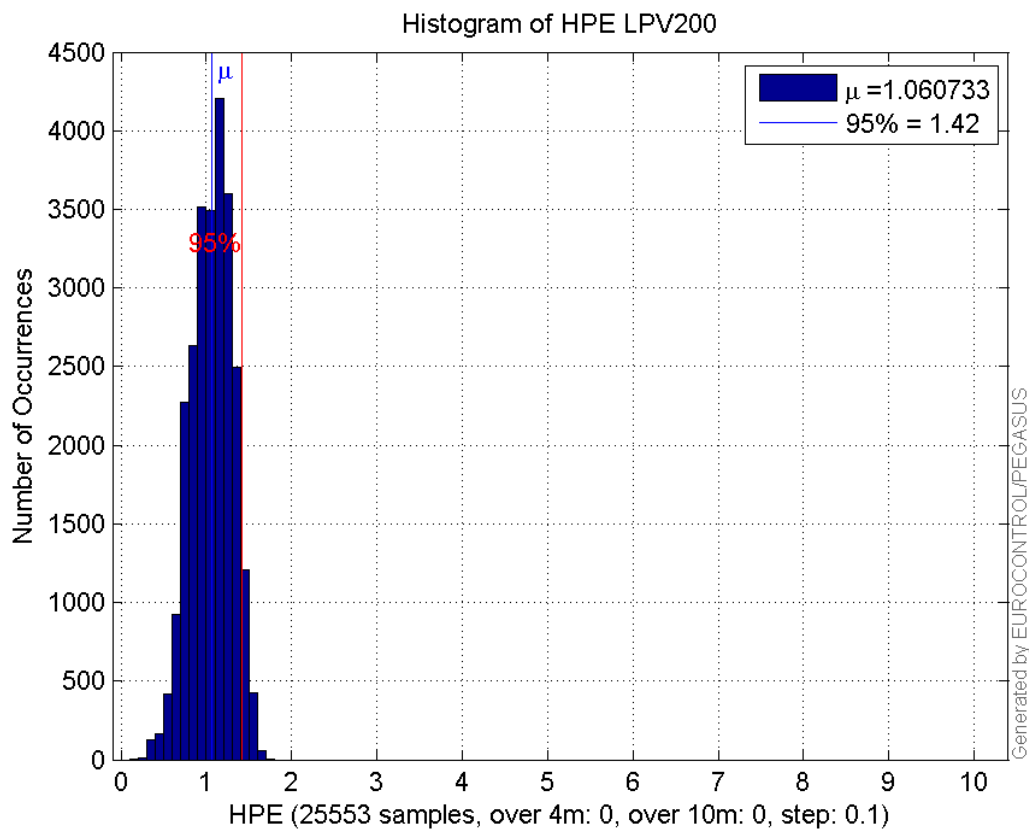


**Histogram of VSI APV1:**

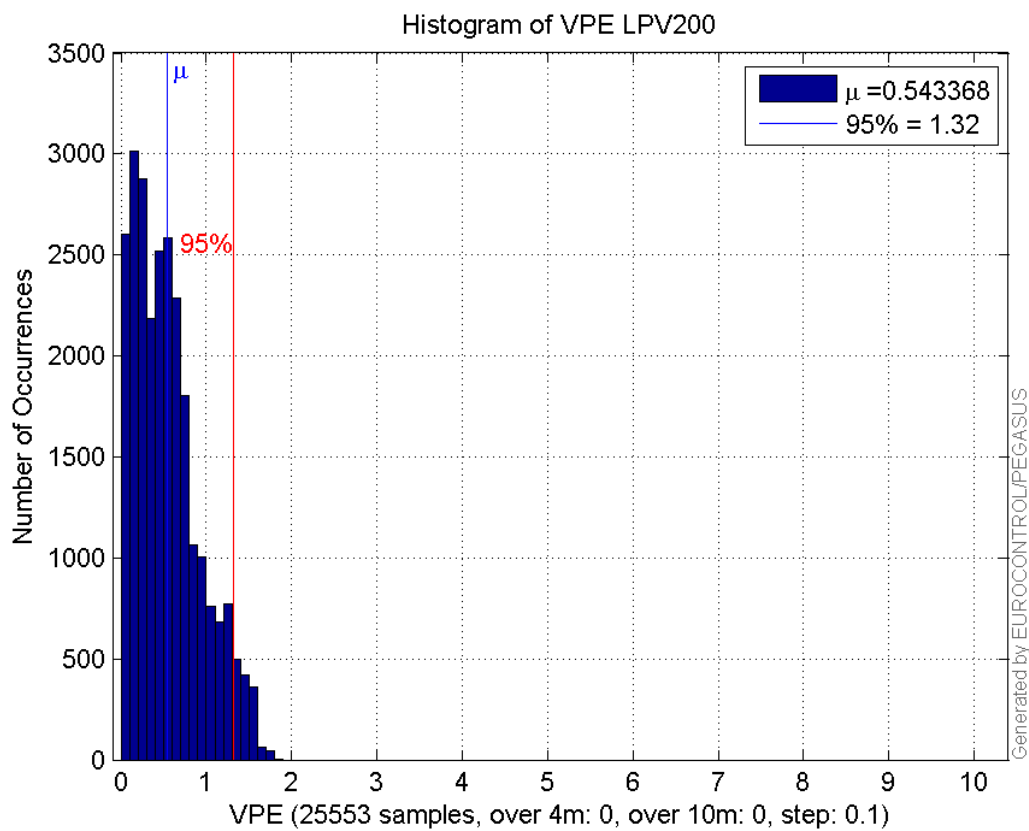


**Histogram of HPE LPV200:**

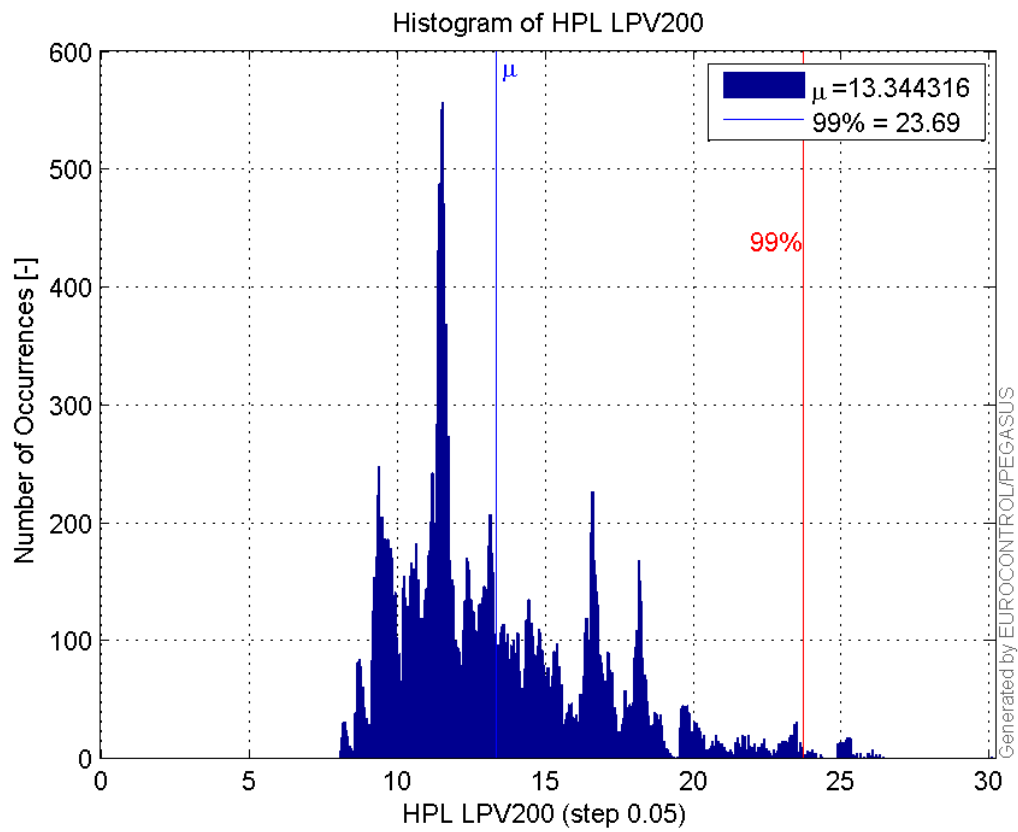




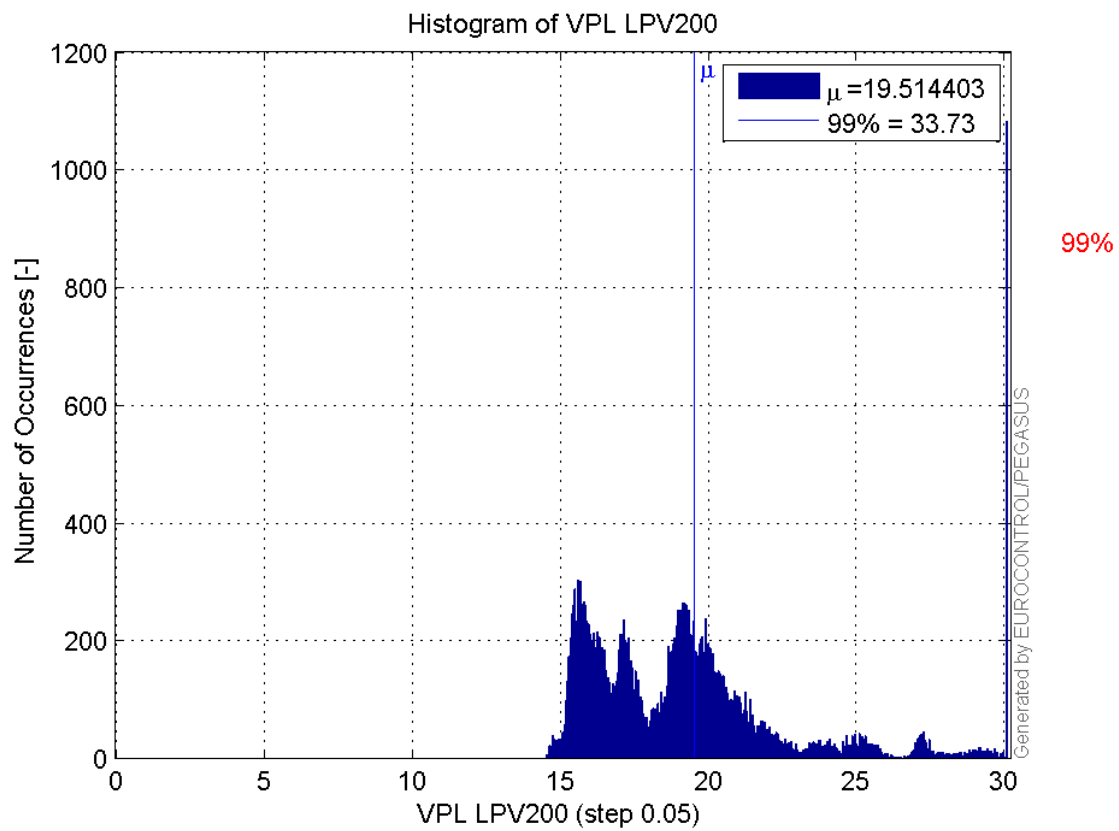
**Histogram of VPE LPV200:**



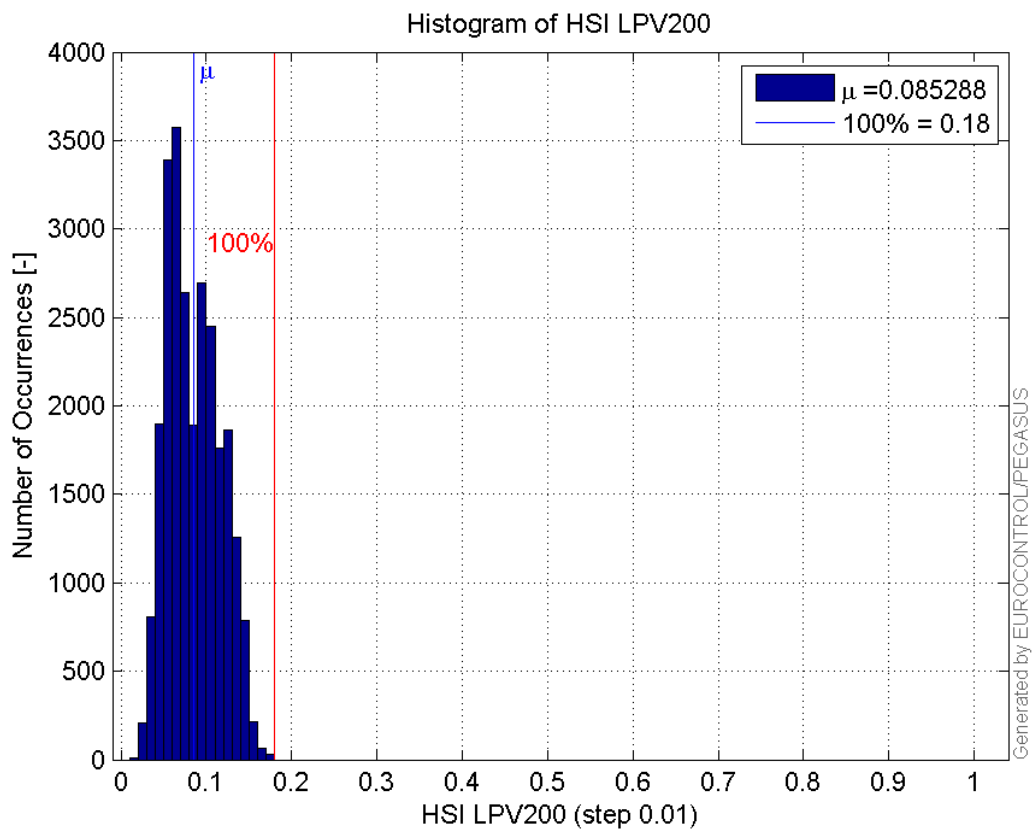
**Histogram of HPL LPV200:**



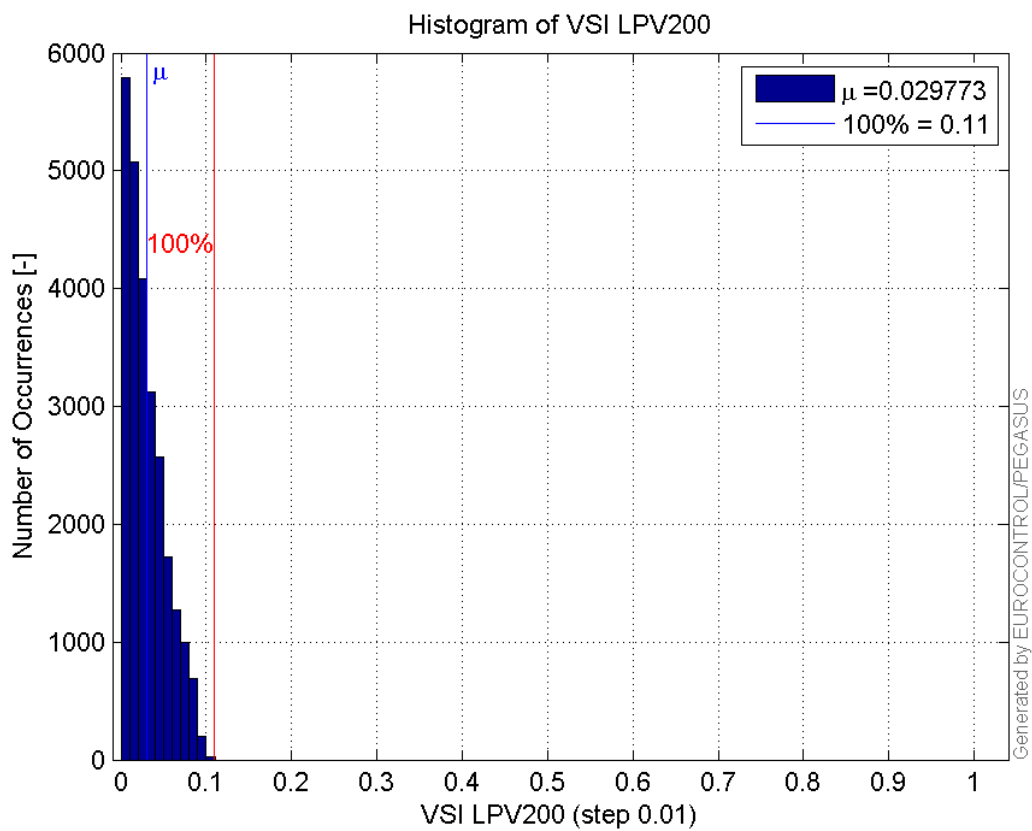
Histogram of VPL LPV200:



Histogram of HSI LPV200:

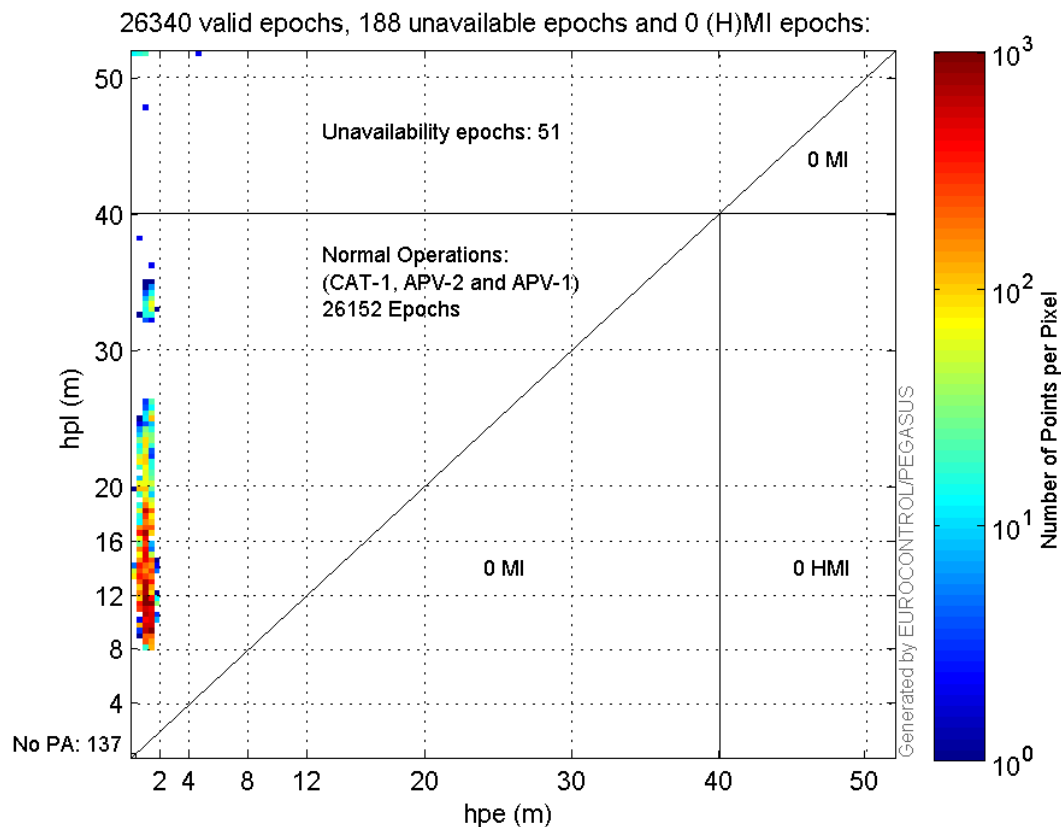


**Histogram of VSI LPV200:**

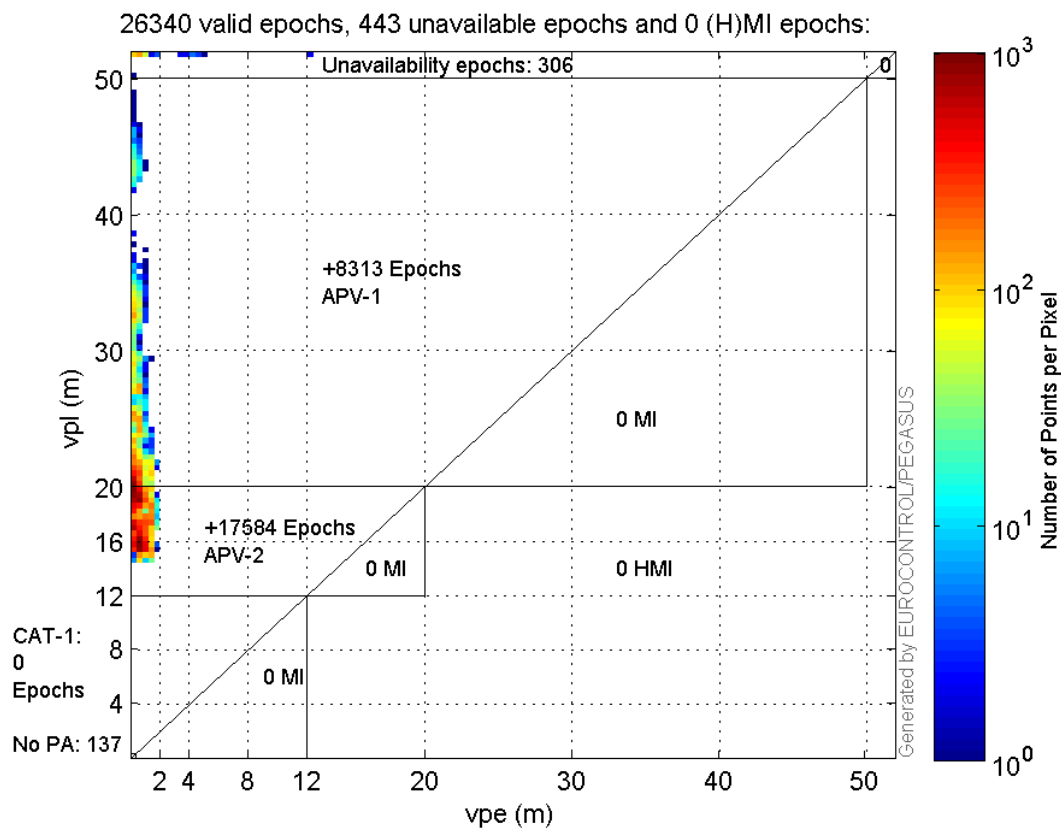


Stanford Plots

**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_03_07EGNOS2Hz/02_Convertor/02_Convertor
output_prefix	system	D:/PegasusDateJob/job/2017_03_07EGNOS2Hz/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	230.2259
mi_numbers	results	0