

# Global View

comment Konin V., Shyshkov F. InsideGNSS, Jan-Feb 2015,  
P.50 - 54  
city Kiev  
country Ukraine  
abbreviation NAU  
site Laboratory satellite systems  
version 4.8.2  
program Pegasus  
date 29/01/2016

## Range Domain

**start:** 09:22:43 21.01.2016 ( week: 1880 sec: 379363 )  
**end:** 14:16:38 21.01.2016 ( week: 1880 sec: 396998 )  
**duration:** 04:53:56 ..

### quality

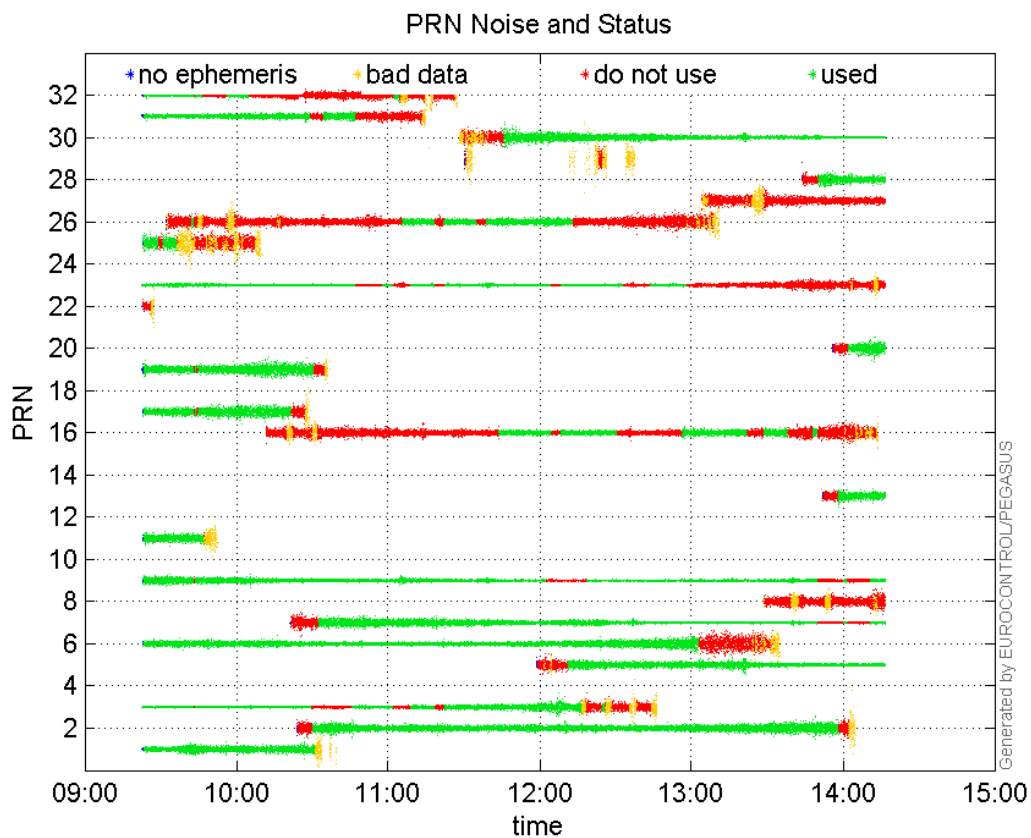
**valid samples** 17636  
**total samples** 17636

### PRN overview

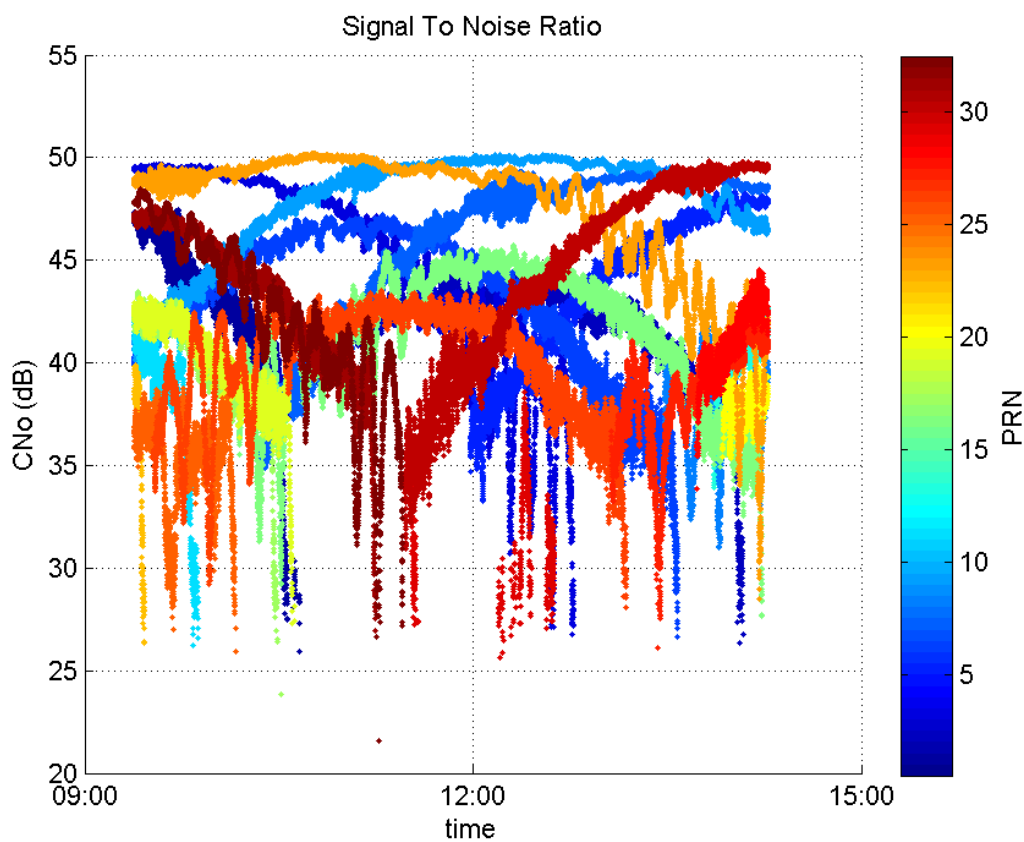
**Number of Visible GPS Satellites** 24  
**Number of Visible SBAS Satellites** 2

### signal quality and status

**PRN Noise and Status:**



**Signal To Noise Ratio:**



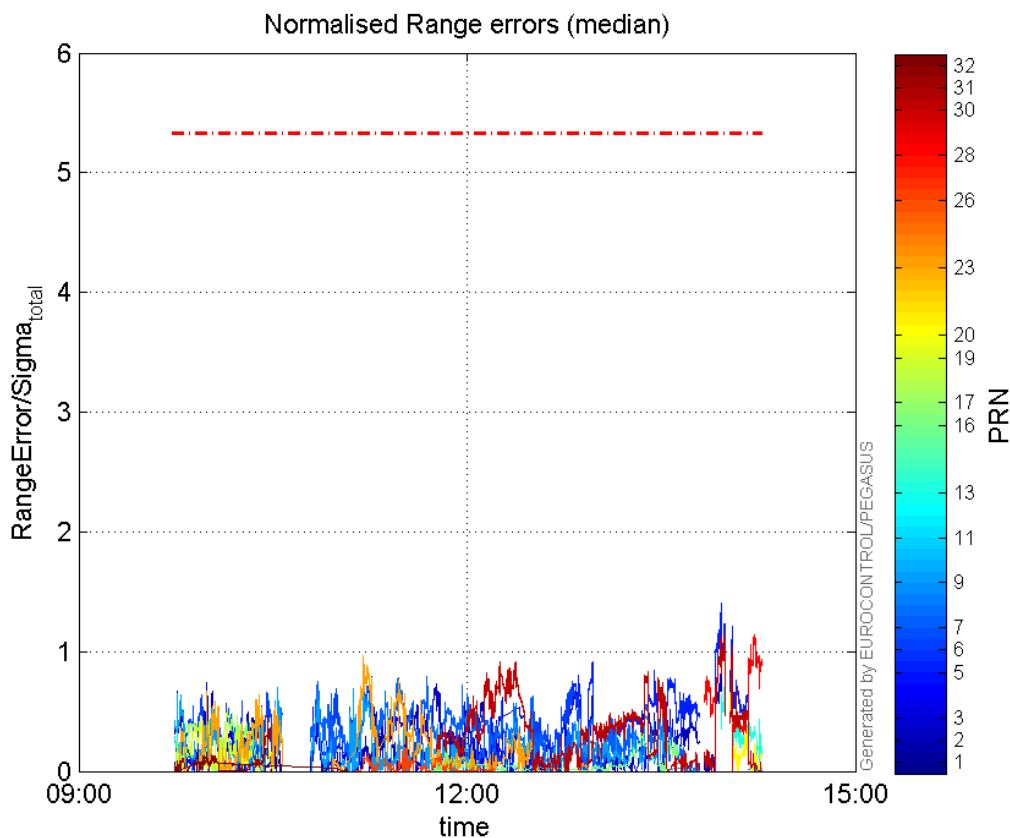
range errors

**Number of Overbounding Norm Errors 0**

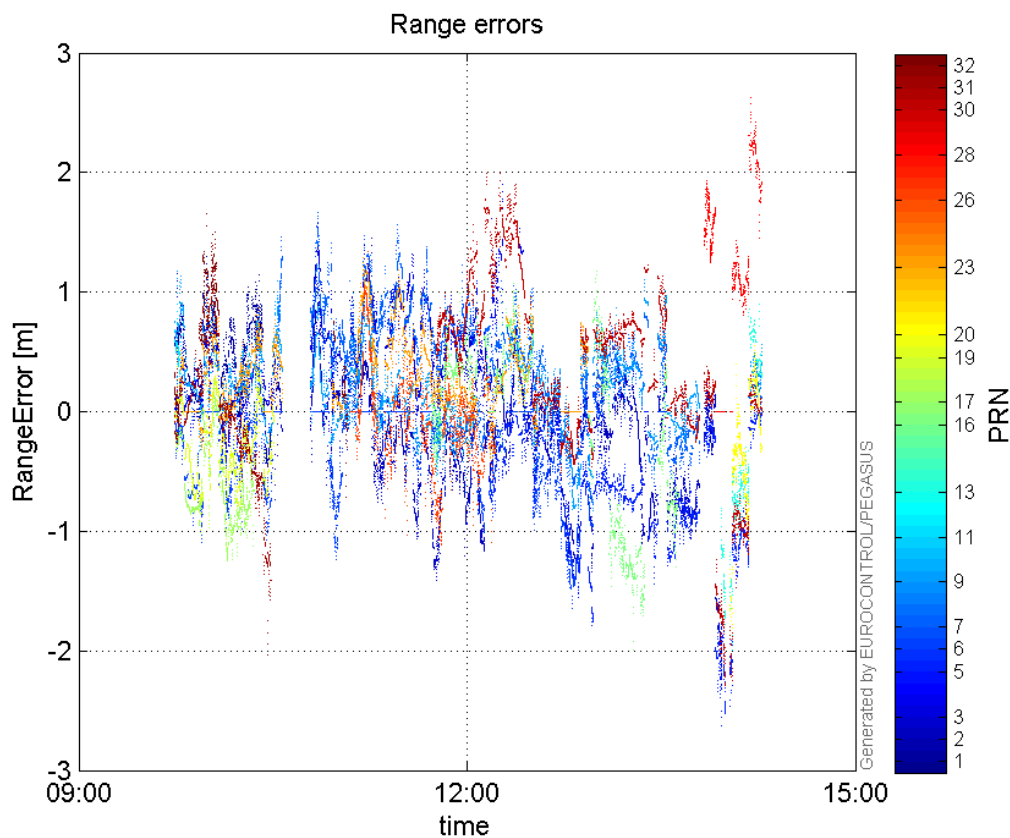
**Max Norm Errors :**

GPS Week	GPS Second	PRN	Norm Error	Range Error	Sigma
1880	381556	1	0.697634	1.29761	1.86001
1880	395866	2	0.837591	-2.31663	2.76582
1880	386140	3	0.791762	1.45391	1.8363
1880	395865	5	1.40462	-2.62594	1.8695
1880	391733	6	0.748159	-1.64528	2.1991
1880	387672	7	0.794005	1.37894	1.73669
1880	383518	9	0.699849	1.09113	1.55909
1880	380731	11	0.372806	0.895662	2.40249
1880	396167	13	0.844263	-1.99828	2.36689
1880	393628	16	0.31852	-1.68471	5.28917
1880	382148	17	0.50376	-1.24346	2.46836
1880	382099	19	0.480593	-1.12586	2.34264
1880	396166	20	0.697015	-1.81151	2.59895
1880	385915	23	0.97021	1.28432	1.32375
1880	387143	26	0.267899	-1.03213	3.85268
1880	396780	28	1.13849	2.30371	2.02348
1880	395943	30	1.1685	-2.13407	1.82633
1880	383266	31	0.469415	-2.03586	4.33702
1880	381556	32	0.157317	1.65389	10.5131

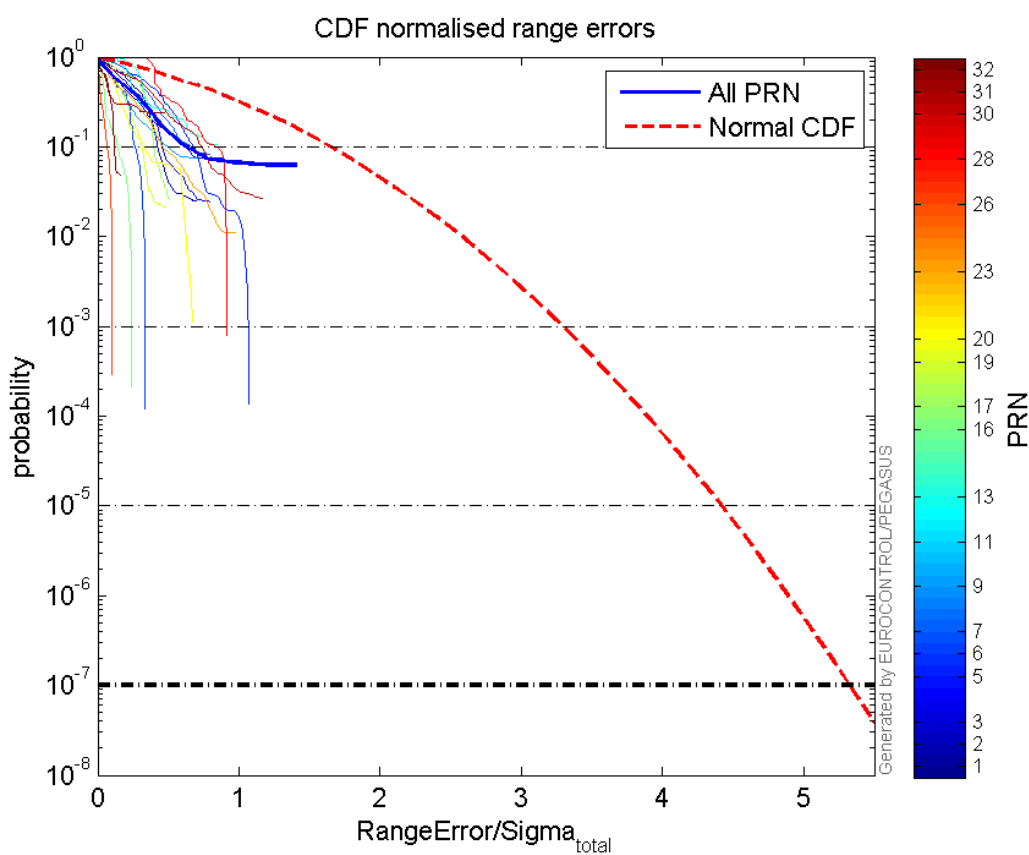
**Normalised Range errors (median):**



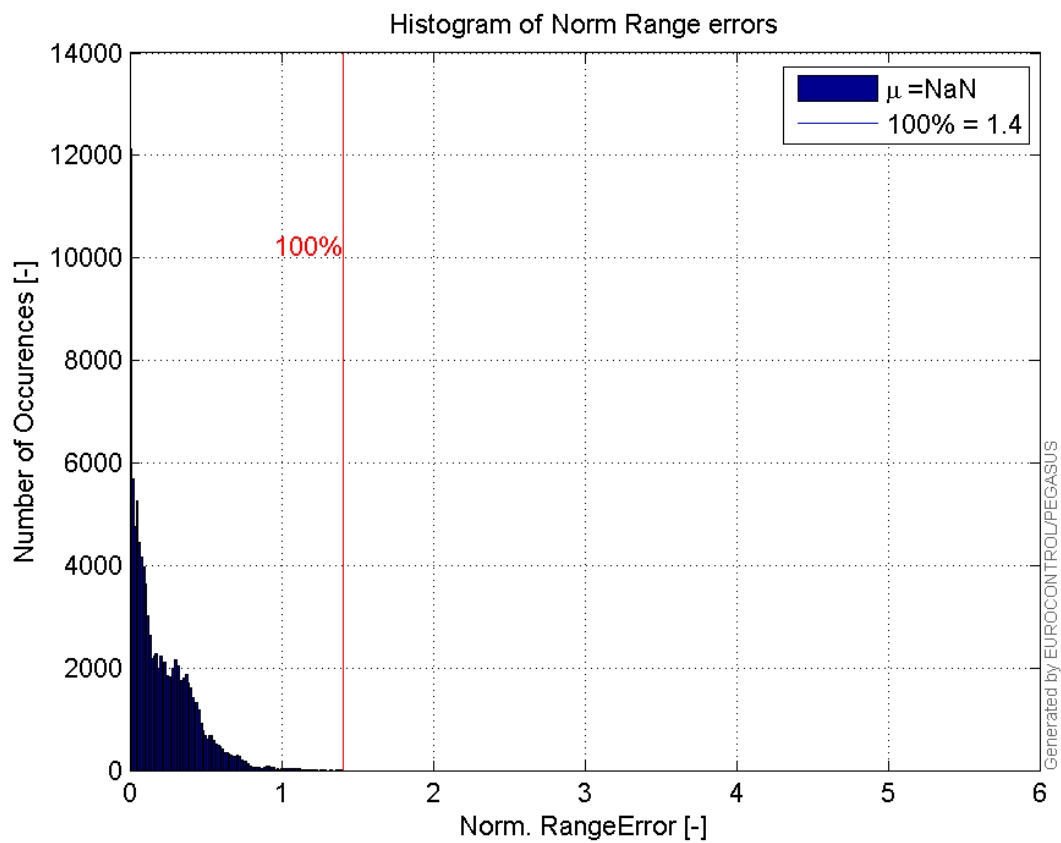
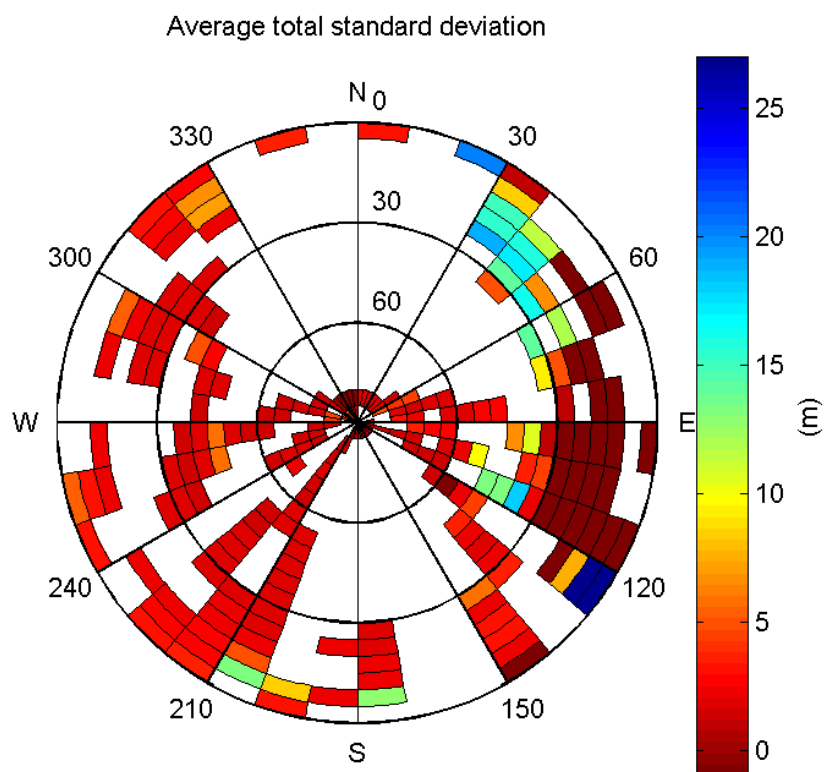
**Range errors:**

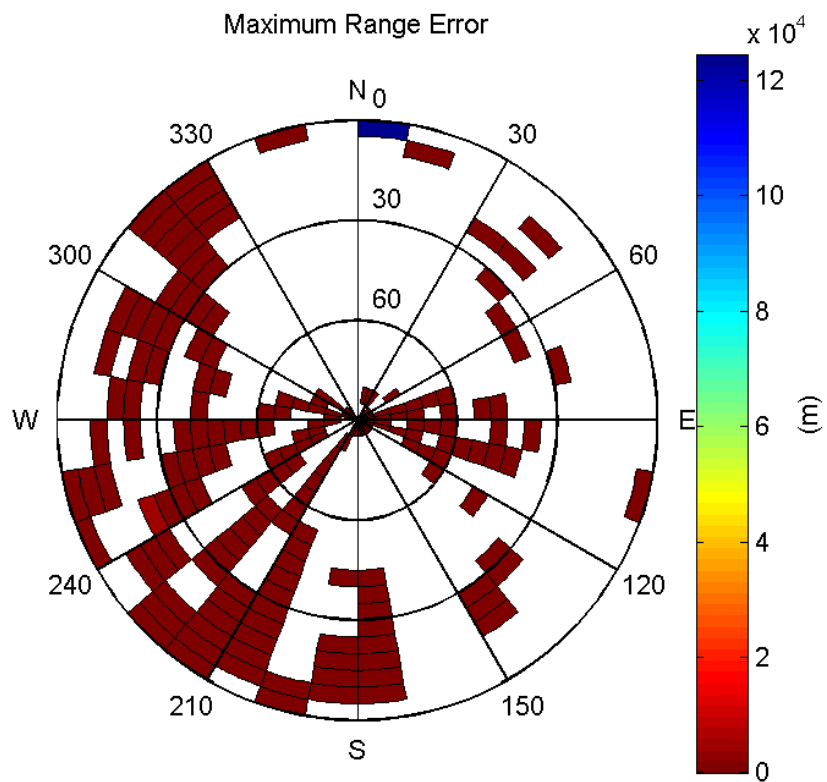


**CDF normalised range errors:**



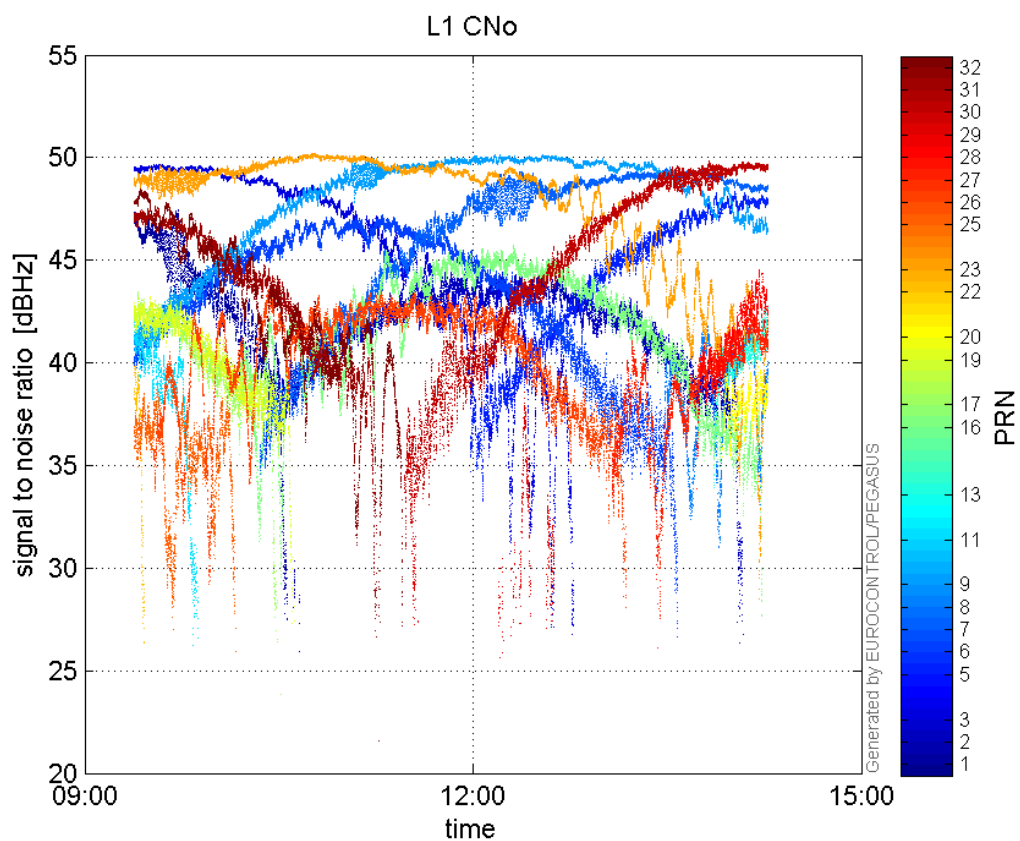
**Histogram of Norm Range errors:**

**Sigma Sky Plot:****Norm Error Sky Plot:**

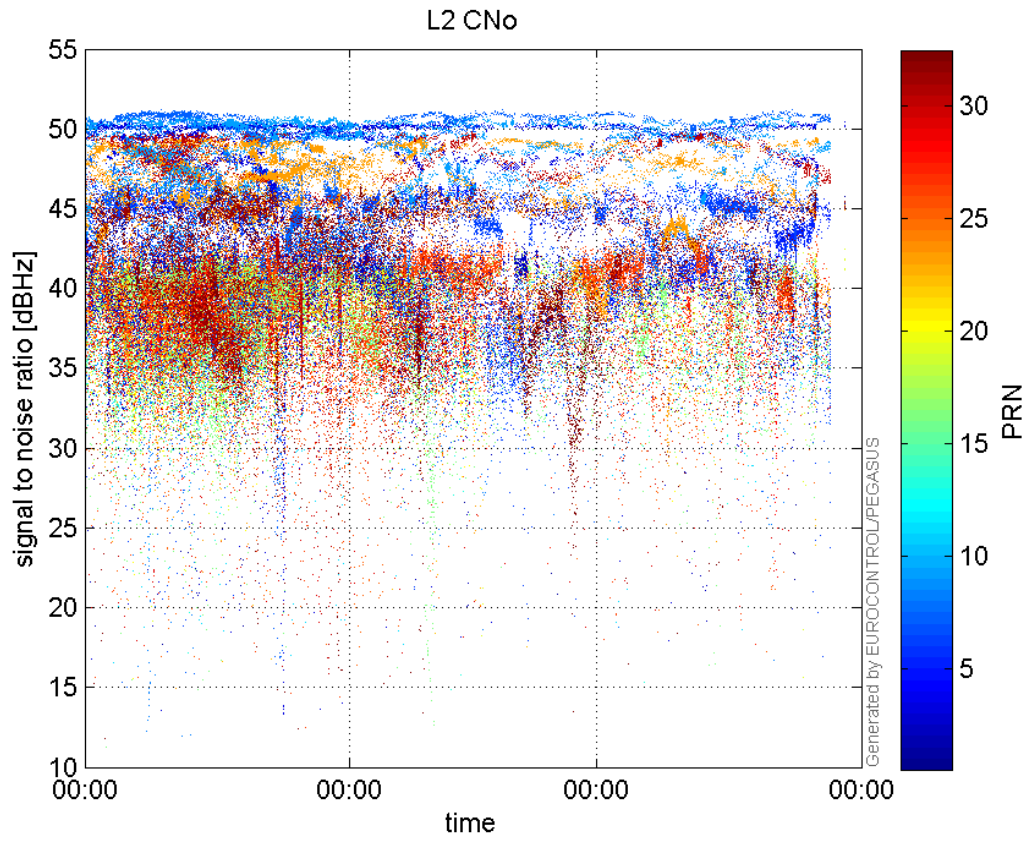


### signal quality

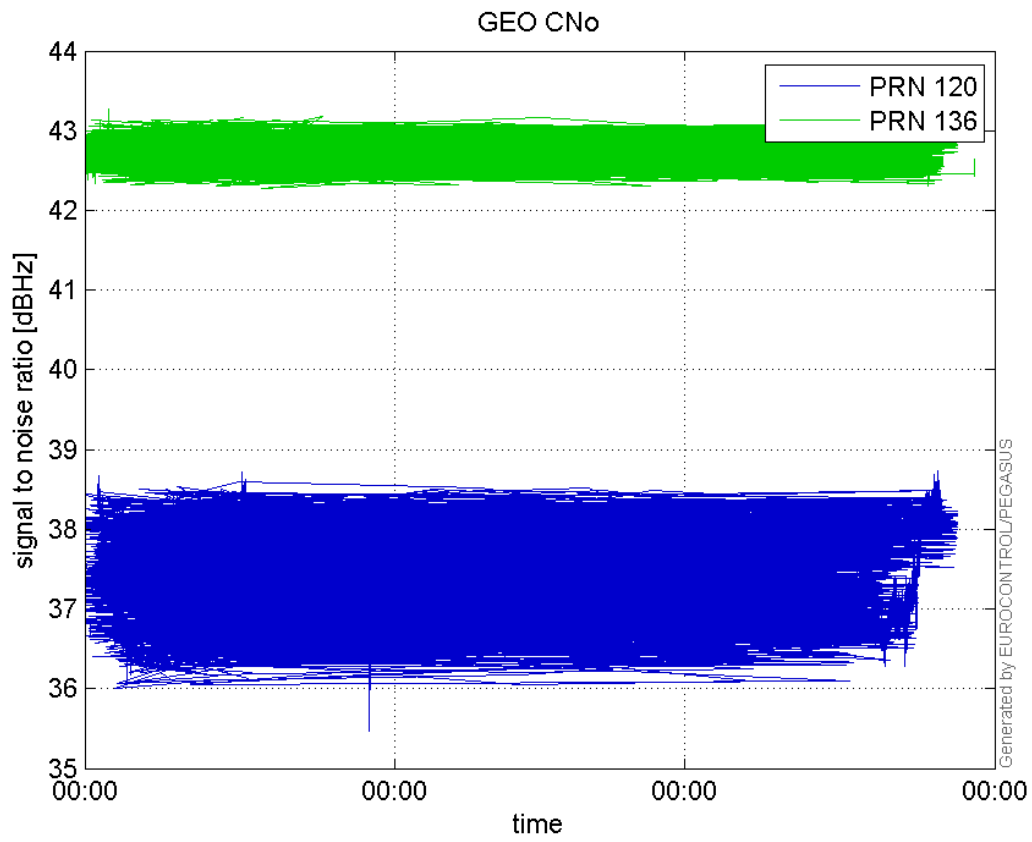
**L1 CNo:**



**L2 CNo:**

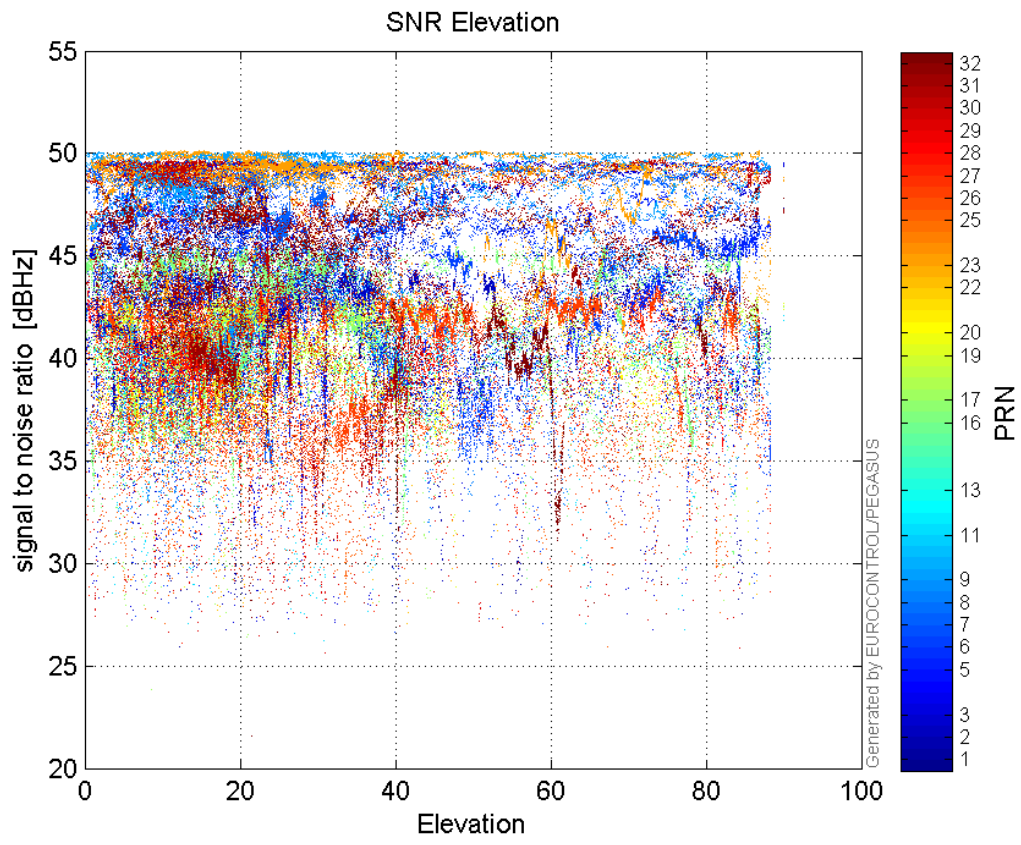


**GEO CNo:**

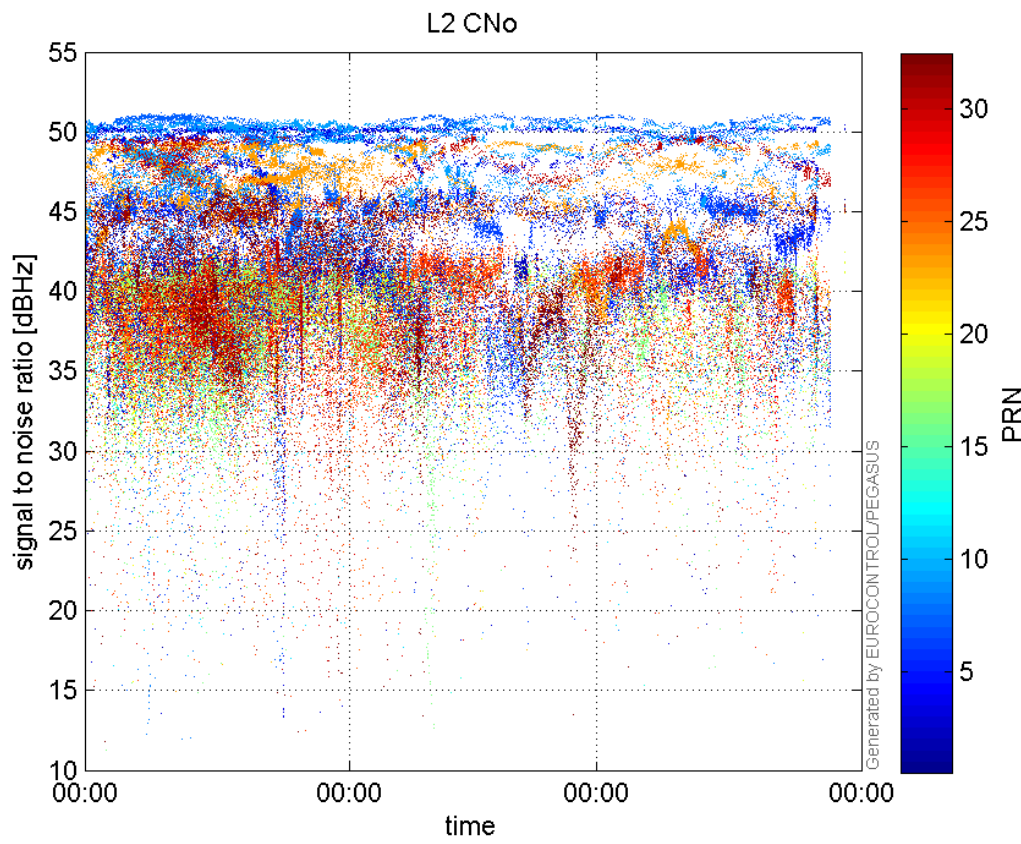


**SNR Elevation:**



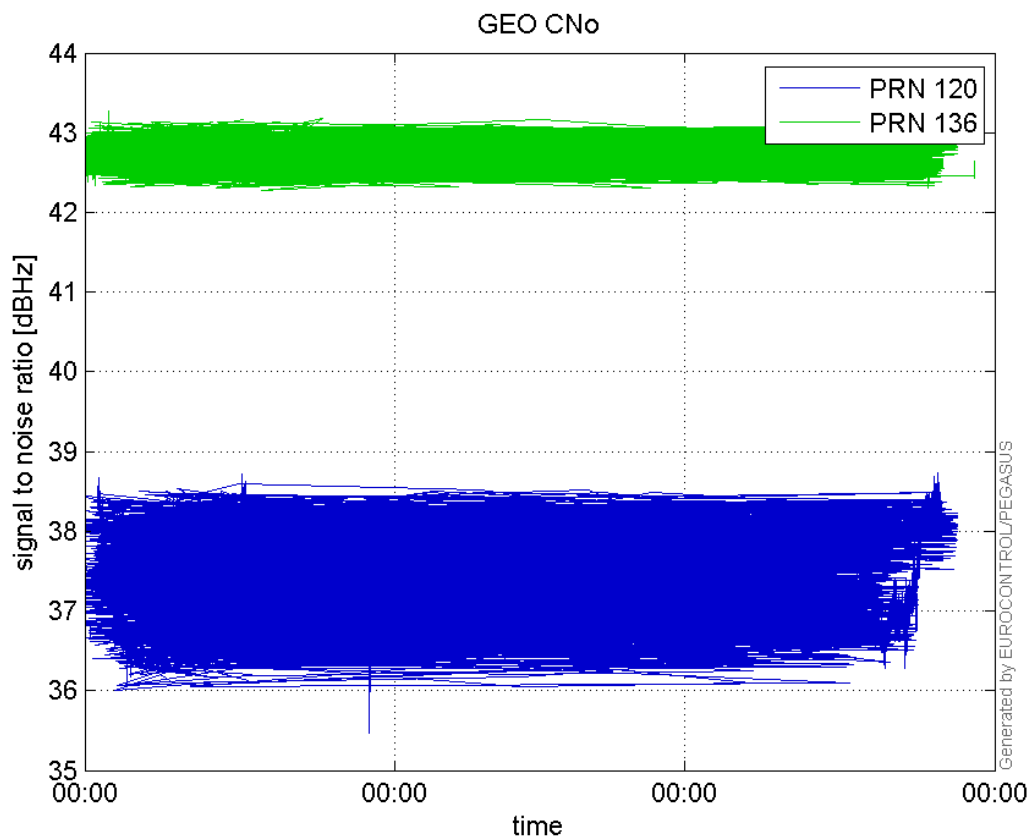


**L2 CNo:**



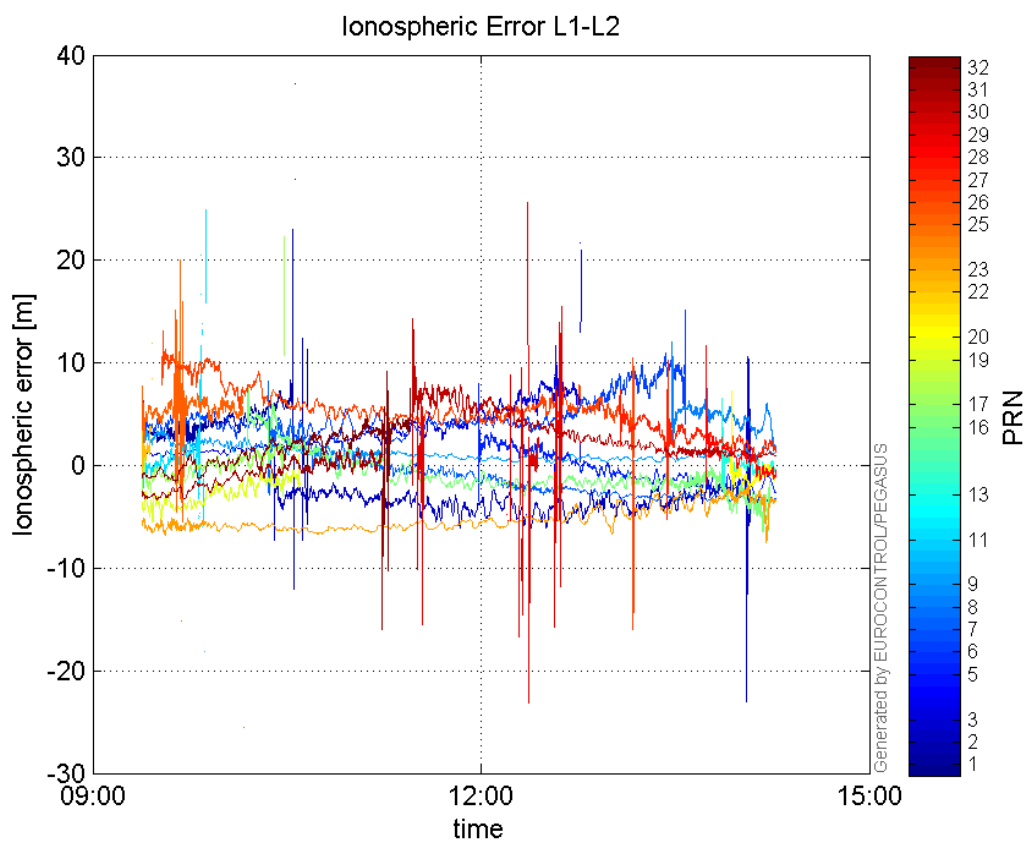
**GEO CNo:**





### dual frequency

#### Ionospheric Error L1-L2:



## Parameters

## system

Name	Section	Value
name	system	GNSS_Solution
version	system	4.8.2.1
input_prefix	system	D:/PegasusDateGob/job/2016_01_21_EGNOS/02_Convertor/02_Convertor
output_prefix	system	D:/PegasusDateGob/job/2016_01_21_EGNOS/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	220.1414
mi_numbers	results	0

## Position Domain

**start:** 09:22:43 21.01.2016 ( week: 1880 sec: 379363 )  
**end:** 14:16:38 21.01.2016 ( week: 1880 sec: 396998 )  
**duration:** 04:53:56 ..

## quality

**valid samples** 17258  
**total samples** 17636

## Event tables

**Position discontinuity events type** all  
**APV-I discontinuity events type** long  
**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>	388812	1.48843	12.2606	0.1214	-0.522862	19.334	0.0270436
<b>max normVer</b>	396783	1.3208	30.4241	0.0434131	2.25615	16.4135	0.137457
<b>max HPE</b>	395971	6.00628	862.567	0.00696326	0.191581	229.209	0.000835837
<b>max VPE</b>	395877	4.68077	59.7625	0.0783228	3.2104	30.4791	0.105331
<b>min HPL</b>	380753	0.501691	7.87846	0.0636788	0.192332	12.85	0.0149675
<b>min VPL</b>	380789	0.5173	7.90133	0.06547	0.0633129	12.8213	0.0049381

## Position discontinuity events :

#	Epoch	duration	stable period
1	383654	787	2996
2	395274	121	10833
3	395994	119	599

## APV-I discontinuity events :

#	Epoch	duration	stable period
1	383654	787	124
2	385326	389	885
3	386309	47	594
4	386402	94	2
5	392953	154	6445
6	394888	1311	1721
7	396293	57	2
8	396359	137	9
9	396534	11	2

## APV-35m discontinuity events :

#	Epoch	duration	stable period
1	383468	62	2810
2	383654	787	124
3	385326	389	885
4	386309	47	594
5	386402	94	2
6	390793	609	4285
7	391594	188	192
8	392365	6	583
9	392572	766	129
10	394888	1311	1550
11	396293	57	2
12	396359	137	9
13	396534	11	2

**LPV-200 discontinuity events :**

#	Epoch	duration	stable period
1	383468	62	2810
2	383654	787	124
3	385326	389	885
4	386309	47	594
5	386402	94	2
6	390793	609	4285
7	391594	188	192
8	392365	6	583
9	392572	766	129
10	394888	1311	1550
11	396293	57	2
12	396359	137	9
13	396534	11	2

**First Glance analysis**

<b>Duration</b>	17636
<b>Number of Samples</b>	17636
<b>Number of invalid sample</b>	378
<b>Number of no position solution samples</b>	1944
<b>Number of missing sample</b>	0
<b>Logging Loss</b>	0
<b>Processing Loss</b>	2.1433
<b>Number of Misleading Information</b>	0
<b>Data gaps</b>	0
<b>Discontinuities</b>	3

**Number of Samples :**

Valid	APV-1	LPV-200	CAT-1	APV-35m
15314	13209	11737	0	11737

**Accuracy statistics :**

	Valid	APV-1	LPV-200	CAT-1	APV-35m
<b>HPE 95%</b>	1.54278	1.39688	1.36798	NaN	1.36798
<b>HPEscale 95%</b>	NaN	3.38429	3.43945	NaN	3.43945
<b>VPE 95%</b>	1.79065	1.52638	1.54477	NaN	1.54477
<b>VPEscale 95%</b>	NaN	3.80765	2.75678	NaN	2.75678

**Availability :**

	Valid	APV-1	LPV-200	CAT-1	APV-35m
<b>Signal in Space</b>	0.887357	0.765384	0.68009	0	0.68009
<b>measurements</b>	0.868337	0.748979	0.665514	0	0.665514
<b>Operational</b>	0.868337	0.748979	0.665514	0	0.665514

**Discontinuity events :**

	Valid	APV-1	LPV-200	CAT-1	APV-35m
All	3	96	95	--	95
Long	3	9	13	--	13
Independent	3	5	9	--	9
P(disc.)	0.00293849	0.00567795	0.0115021	NaN	0.0115021
P(slide)	0.00293849	0.0208948	0.026327	NaN	0.026327

## Integrity events :

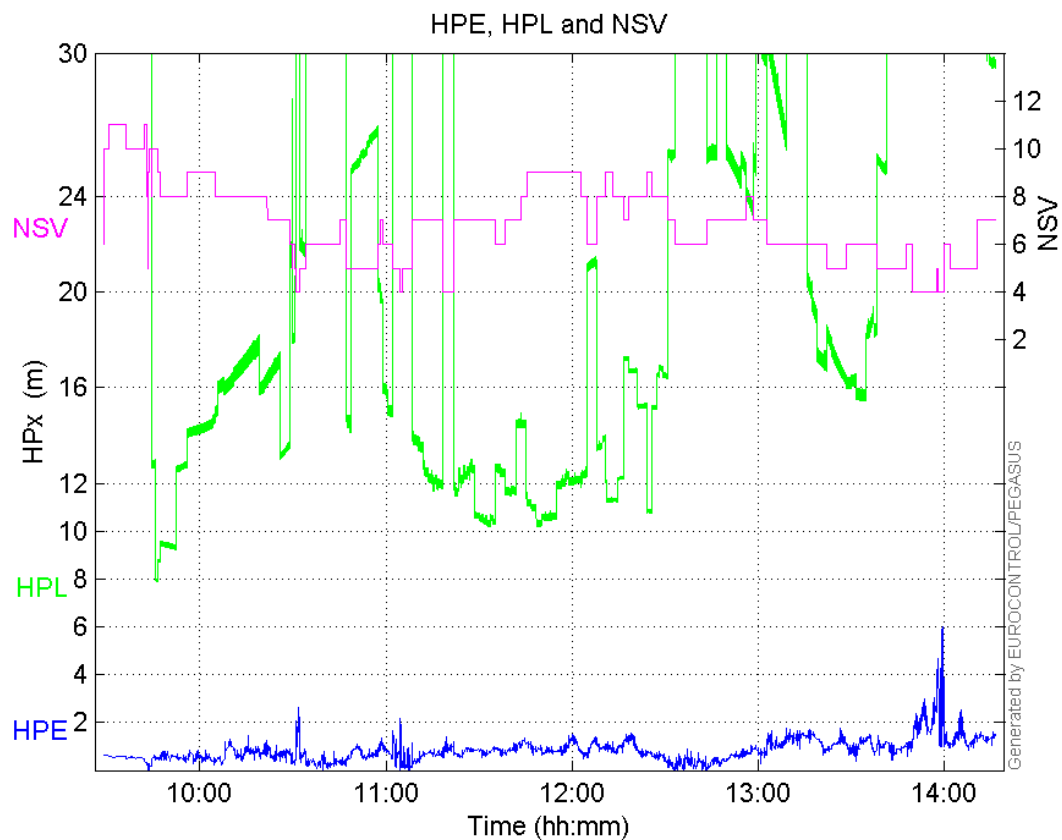
	MI	HMI APV-1	HMI LPV-200	HMI CAT-1	HMI APV-35m
Total	0	0	0	0	0
Horizontal	0	0	0	0	0
Vertical	0	0	0	0	0

## Performance Summary :

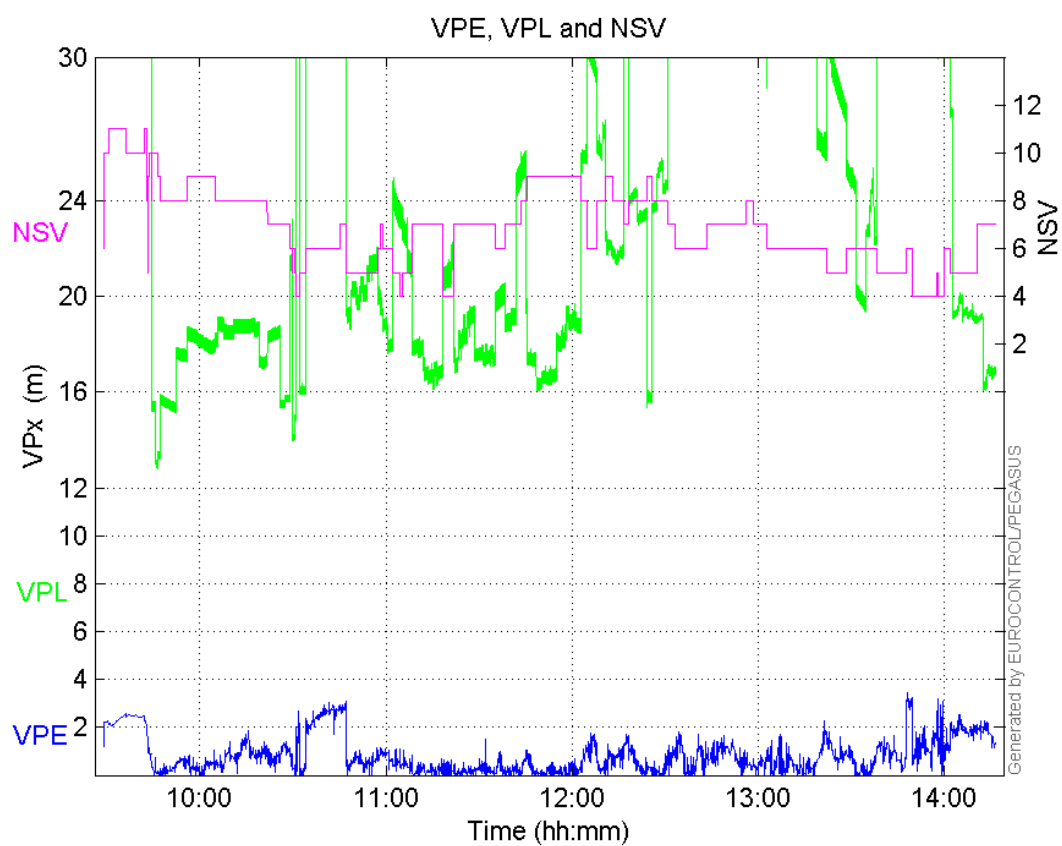
	Valid	APV-1	LPV-200	CAT-1	APV-35m
Samples	15314	13209	11737	0	11737
SIS Availability	0.887357	0.765384	0.68009	0	0.68009
Local Availability	0.868337	0.748979	0.665514	0	0.665514
Operational Availability	0.868337	0.748979	0.665514	0	0.665514
HPE 95%	1.54278	1.39688	1.36798	NaN	1.36798
HPEScale 95%	NaN	3.38429	3.43945	NaN	3.43945
VPE 95%	1.79065	1.52638	1.54477	NaN	1.54477
VPEscale 95%	NaN	3.80765	2.75678	NaN	2.75678
All Discontinuity Events	3	96	95	--	95
Long Discontinuity Events	3	9	13	--	13
Independent Discontinuity Events	3	5	9	--	9
P(discontinuity)	0.00293849	0.00567795	0.0115021	NaN	0.0115021
P(sliding window)	0.00293849	0.0208948	0.026327	NaN	0.026327
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:

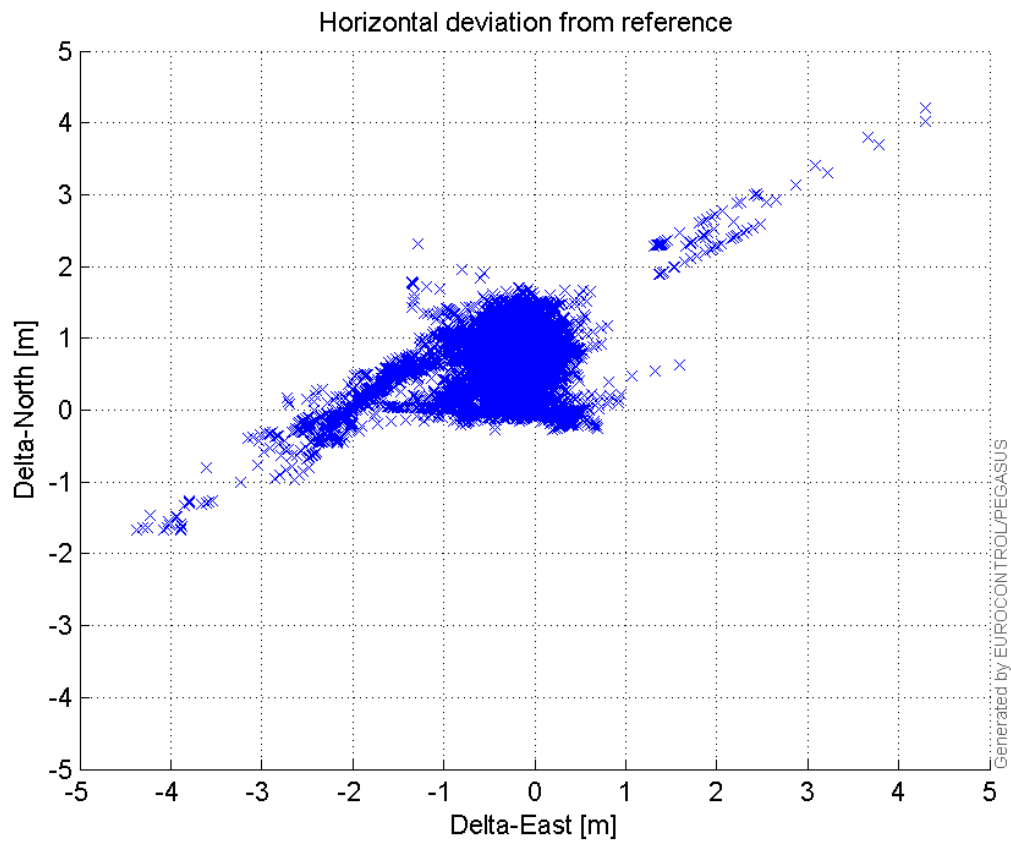


**VPE, VPL and NSV:**



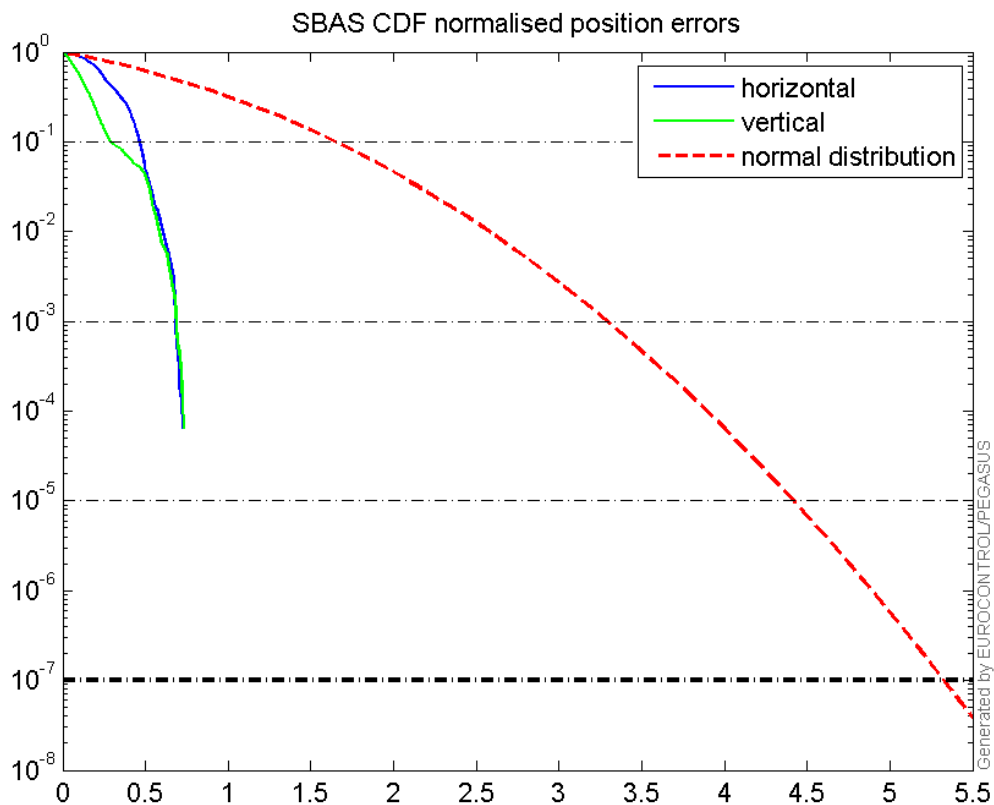
**Horizontal deviation**

**Horizontal deviation from reference :**



### CDF position

SBAS CDF position domain:





## Statistics

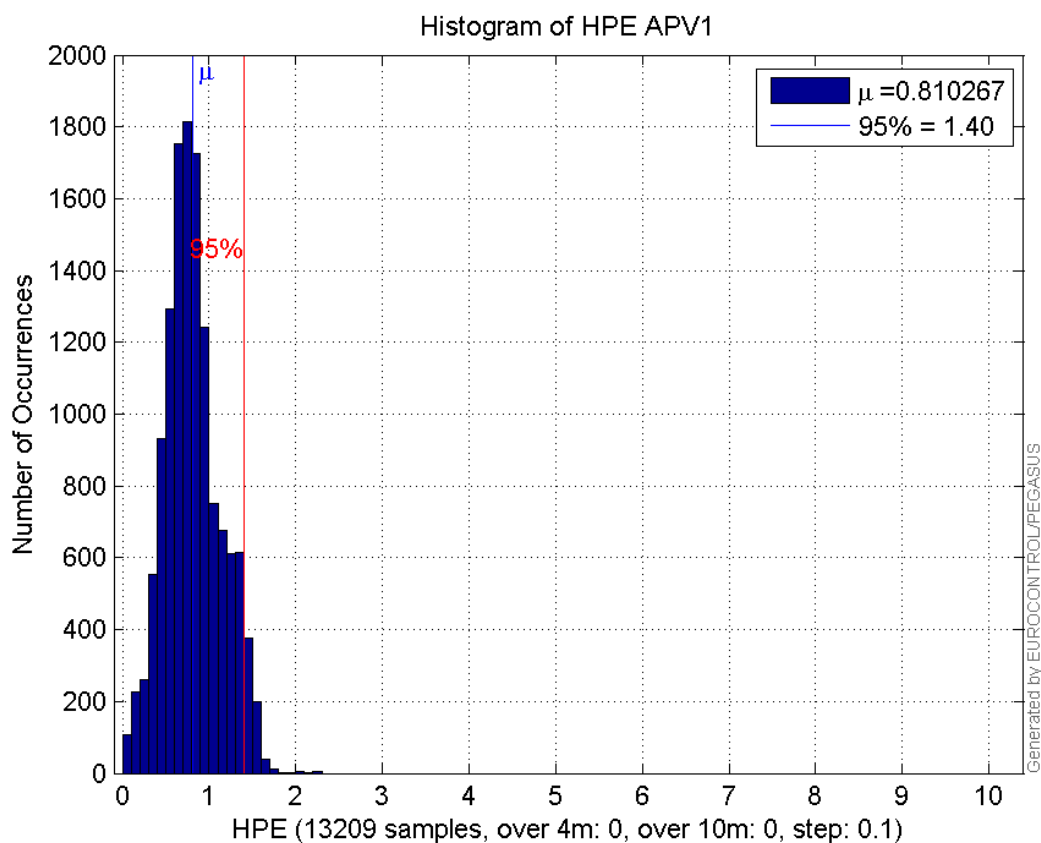
<b>number</b>	13209
<b>sum</b>	10702.823
<b>sum2</b>	10049.93
<b>prctile95</b>	1.3968836
<b>prctile99</b>	1.5379384
<b>number</b>	13209
<b>sum</b>	7900.8257
<b>sum2</b>	7673.3225
<b>prctile95</b>	1.5263753
<b>prctile99</b>	1.949836
<b>number</b>	13209
<b>sum</b>	249058.64
<b>sum2</b>	5516208.5
<b>prctile95</b>	35.22838
<b>prctile99</b>	39.299692
<b>number</b>	13209
<b>sum</b>	317885.39
<b>sum2</b>	8654957.6
<b>prctile95</b>	43.453825
<b>prctile99</b>	48.248261
<b>number</b>	13209
<b>sum</b>	651.93171
<b>sum2</b>	39.078765
<b>prctile95</b>	0.084607242
<b>prctile99</b>	0.10233429
<b>number</b>	13209
<b>sum</b>	348.55767
<b>sum2</b>	16.1324
<b>prctile95</b>	0.076152971
<b>prctile99</b>	0.10837565
<b>number</b>	11737
<b>sum</b>	9600.415
<b>sum2</b>	8856.911
<b>prctile95</b>	1.3679797
<b>prctile99</b>	1.5189039
<b>number</b>	11737
<b>sum</b>	6941.3548
<b>sum2</b>	6699.9999
<b>prctile95</b>	1.544768
<b>prctile99</b>	1.9565254
<b>number</b>	11737
<b>sum</b>	200212.82
<b>sum2</b>	3875835.7
<b>prctile95</b>	29.72316
<b>prctile99</b>	39.221182
<b>number</b>	11737
<b>sum</b>	254214.13
<b>sum2</b>	5880373.5
<b>prctile95</b>	33.150115
<b>prctile99</b>	34.386139
<b>number</b>	11737

**sum** 617.71547  
**sum2** 37.922712  
**prctile95** 0.085986257  
**prctile99** 0.1032539  
**number** 11737  
**sum** 325.60632  
**sum2** 15.560152  
**prctile95** 0.078765208  
**prctile99** 0.10972154

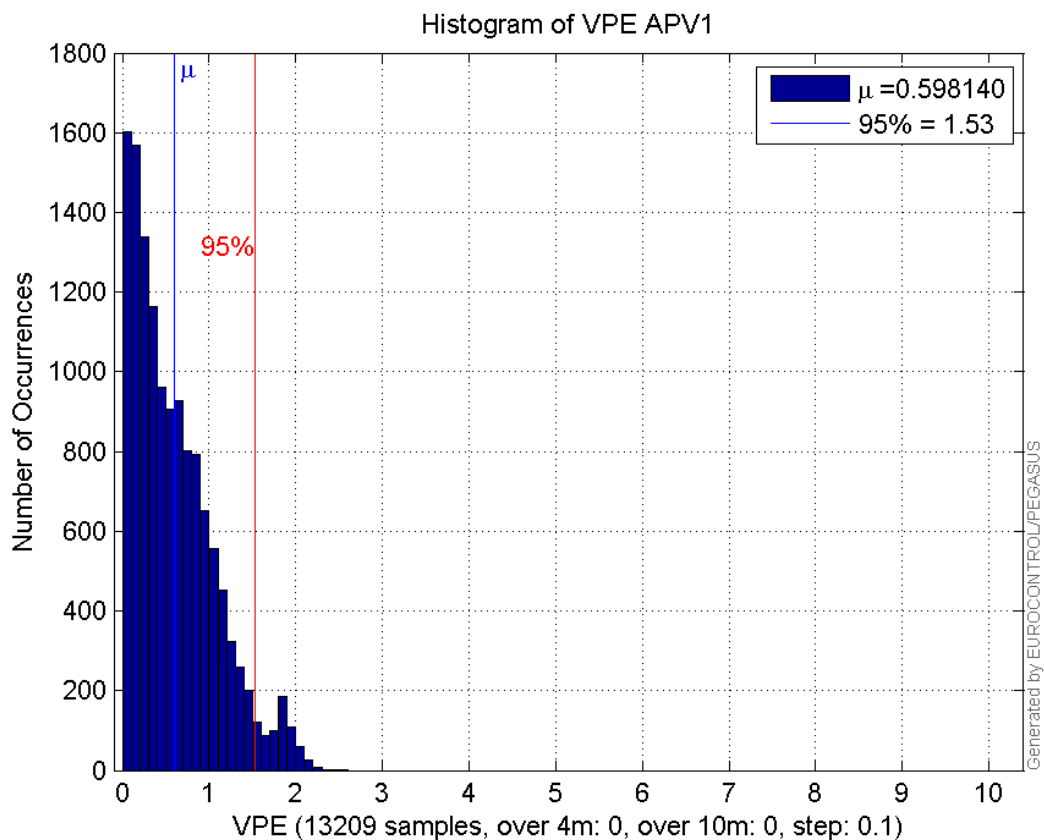
**Error and XPL Statistics :**

	Mean Value	Standard Deviation	50% Value	95% Value	99% Value	RMS Value
<b>HPE</b>	0.810267	0.322977	0.779172	1.39688	1.53794	0.872261
<b>HPL</b>	18.8552	7.88004	16.3468	35.2284	39.2997	20.4355
<b>VPE</b>	0.59814	0.4724	0.496929	1.52638	1.94984	0.762179
<b>VPL</b>	24.0658	8.72204	19.7093	43.4538	48.2483	25.5975

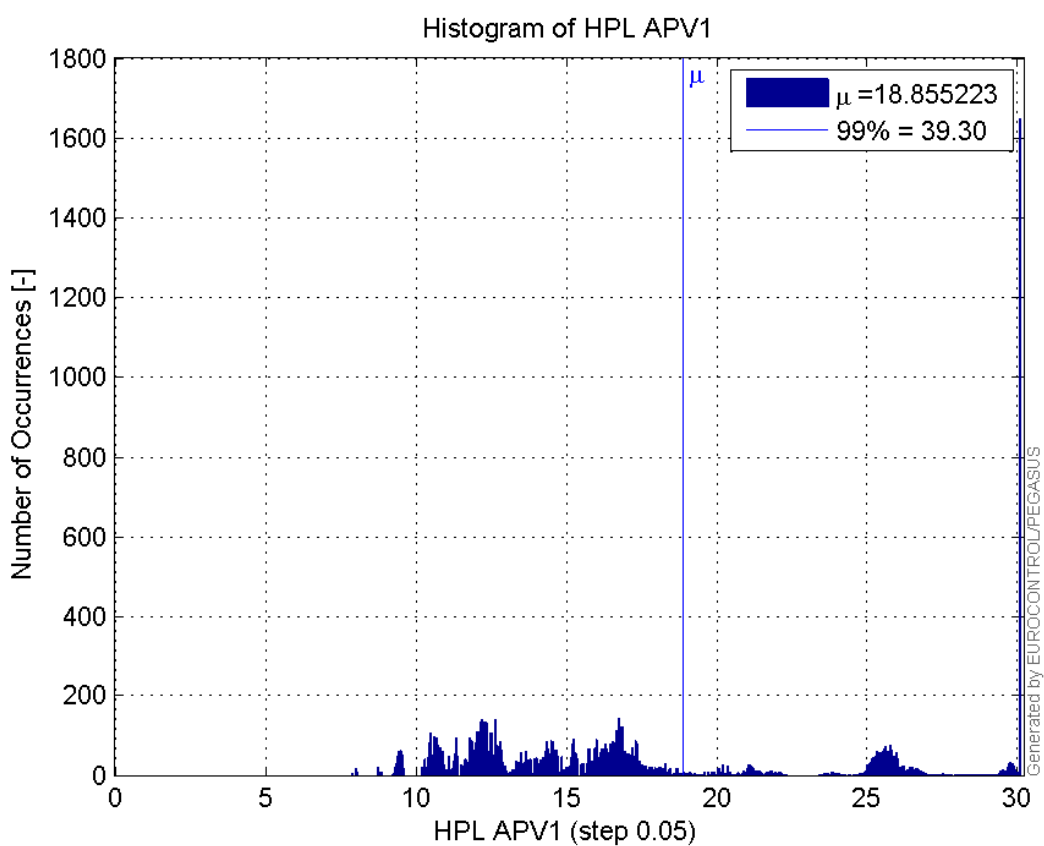
**Histogram of HPE APV1:**



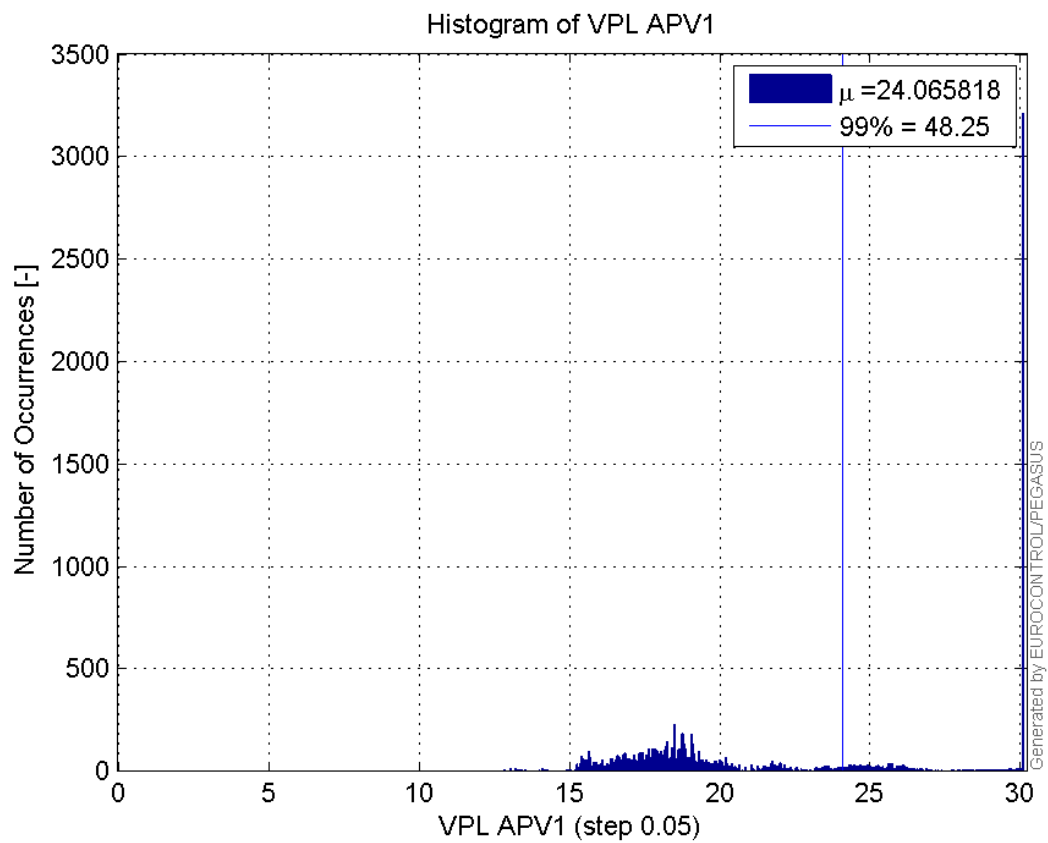
**Histogram of VPE APV1:**



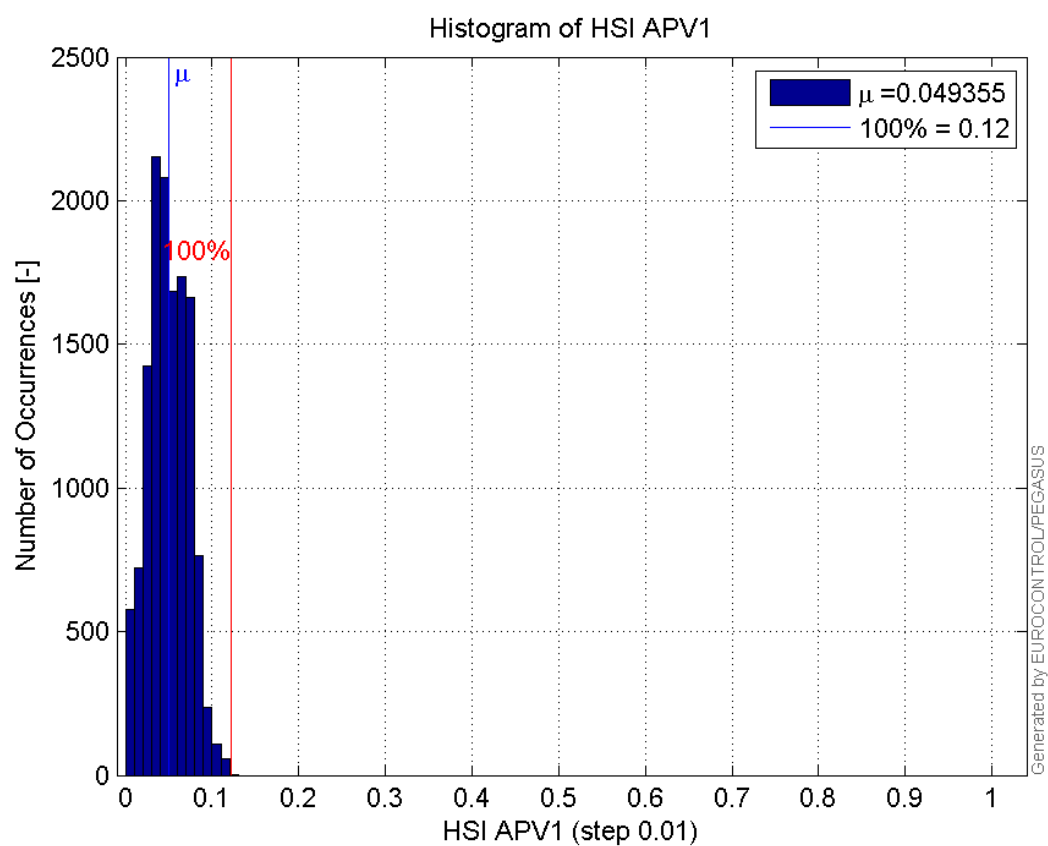
**Histogram of HPL APV1:**



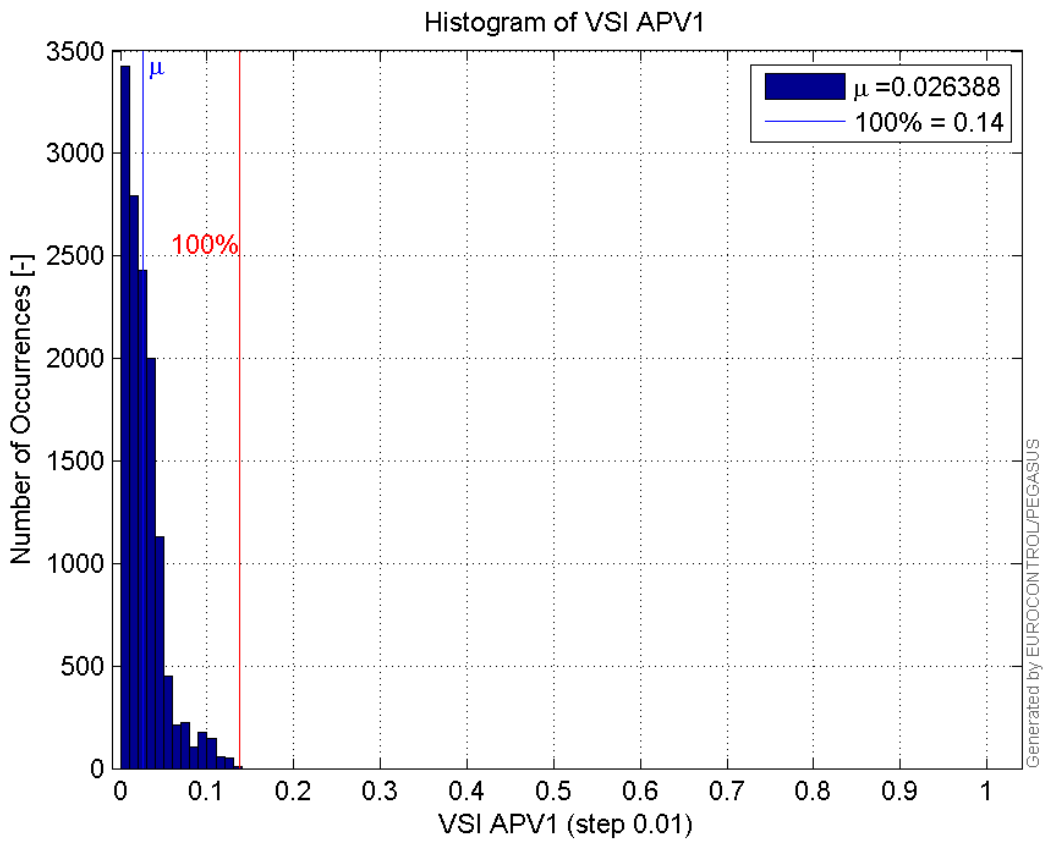
**Histogram of VPL APV1:**



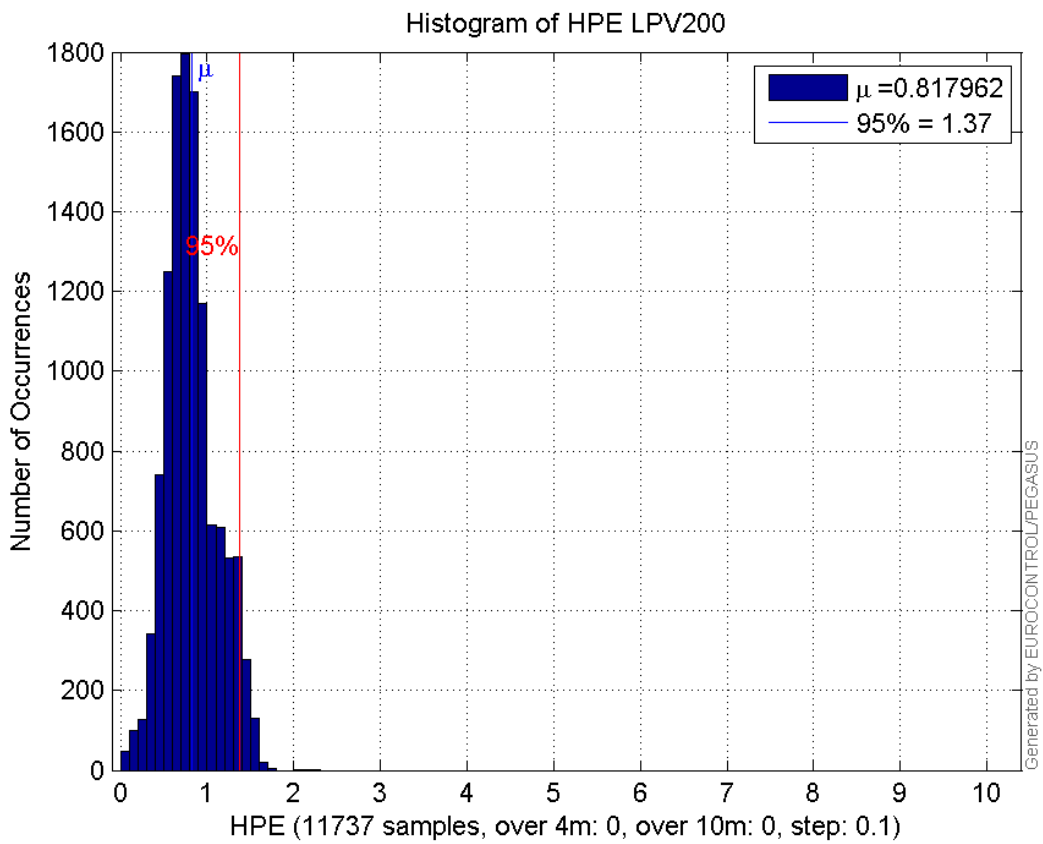
Histogram of HSI APV1:



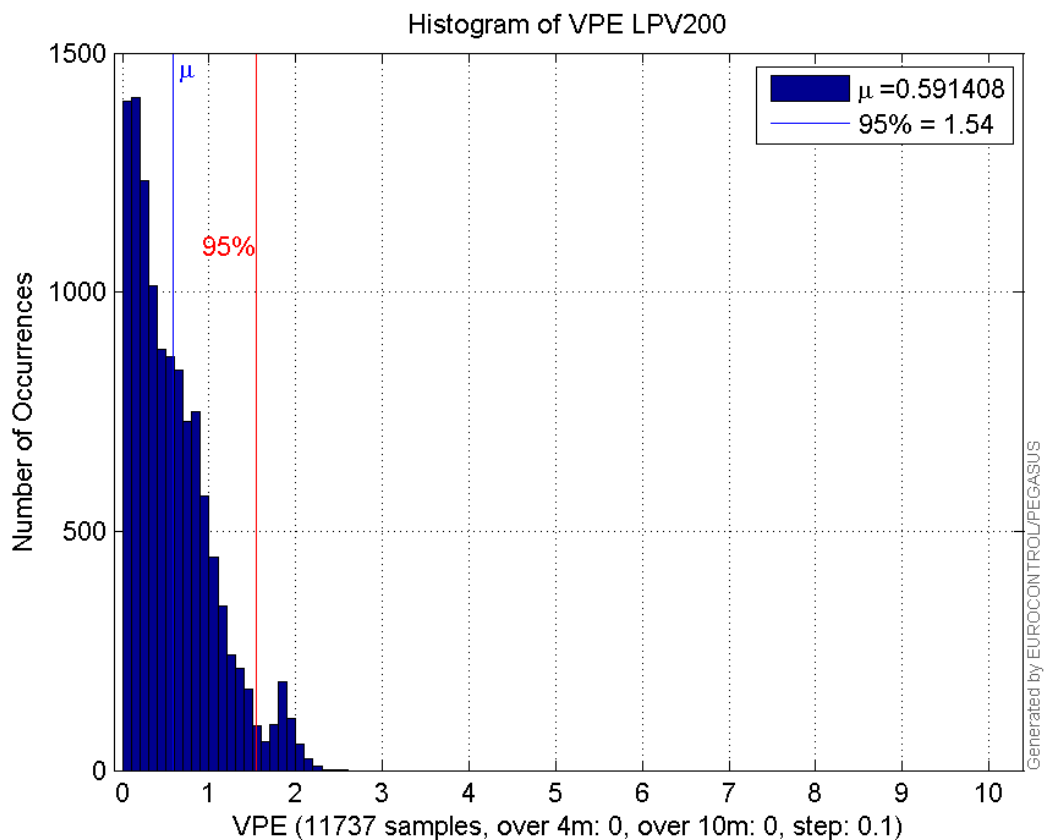
Histogram of VSI APV1:



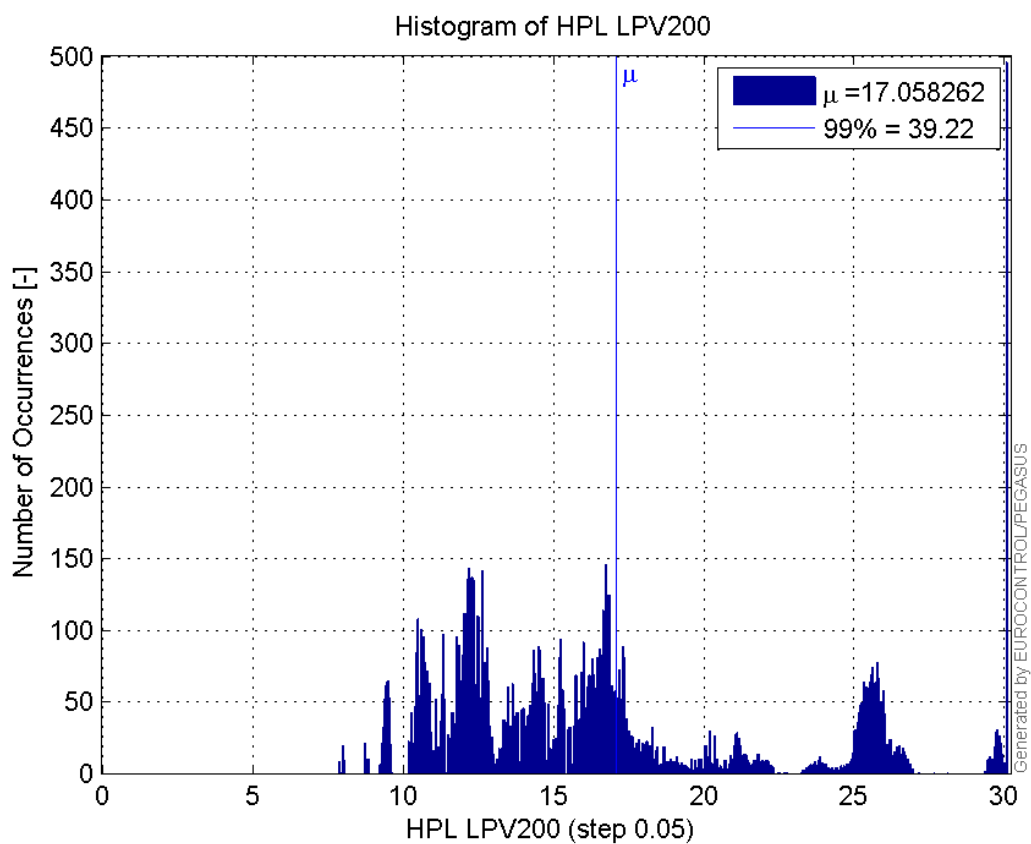
**Histogram of HPE LPV200:**



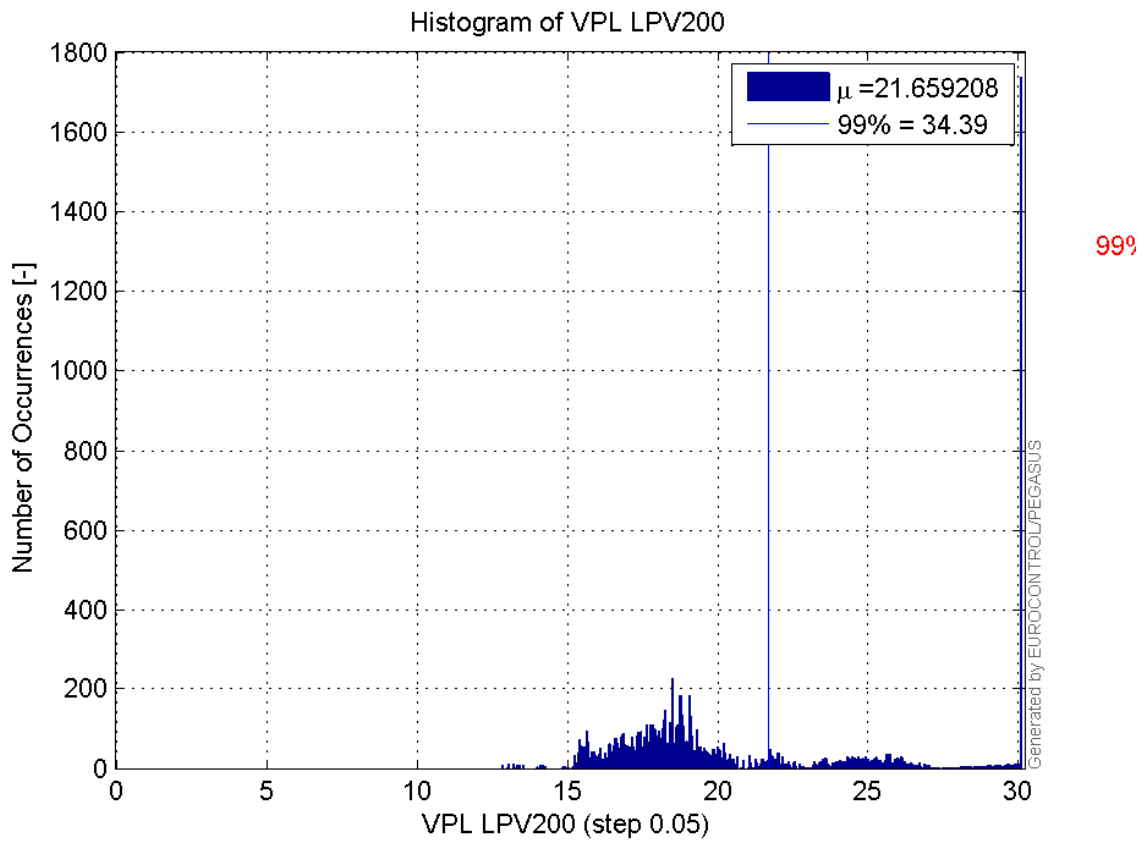
**Histogram of VPE LPV200:**



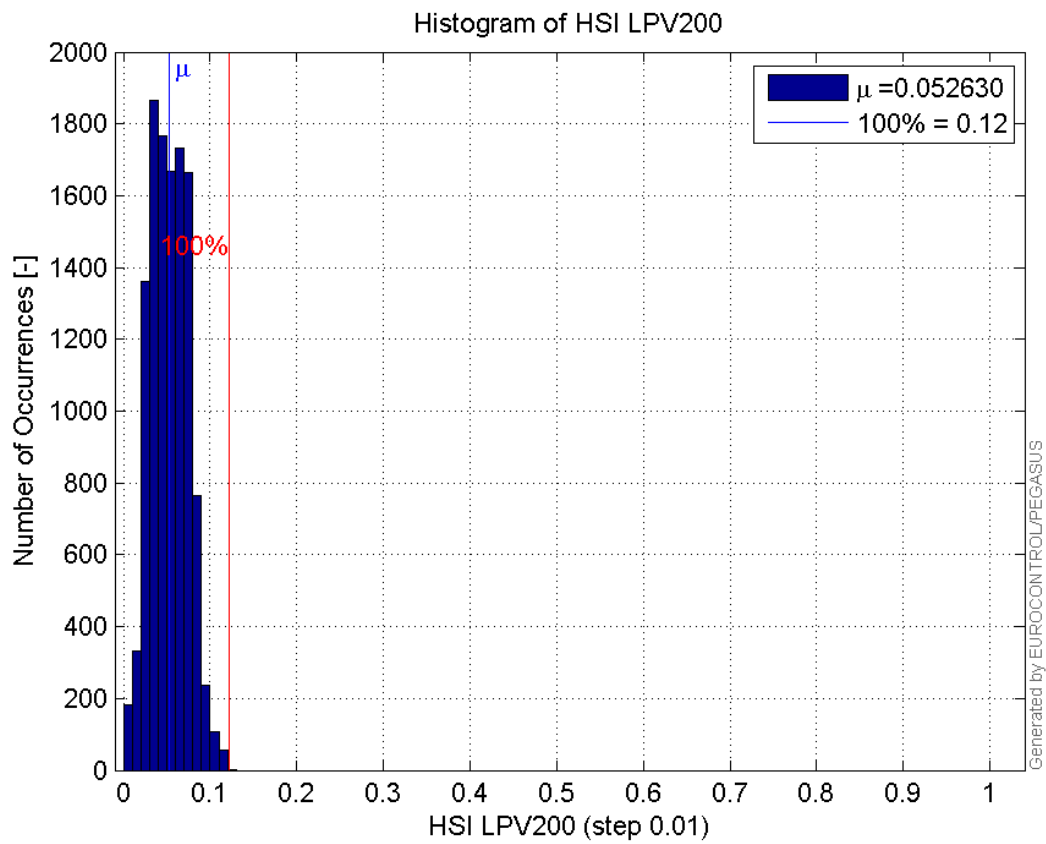
**Histogram of HPL LPV200:**



**Histogram of VPL LPV200:**

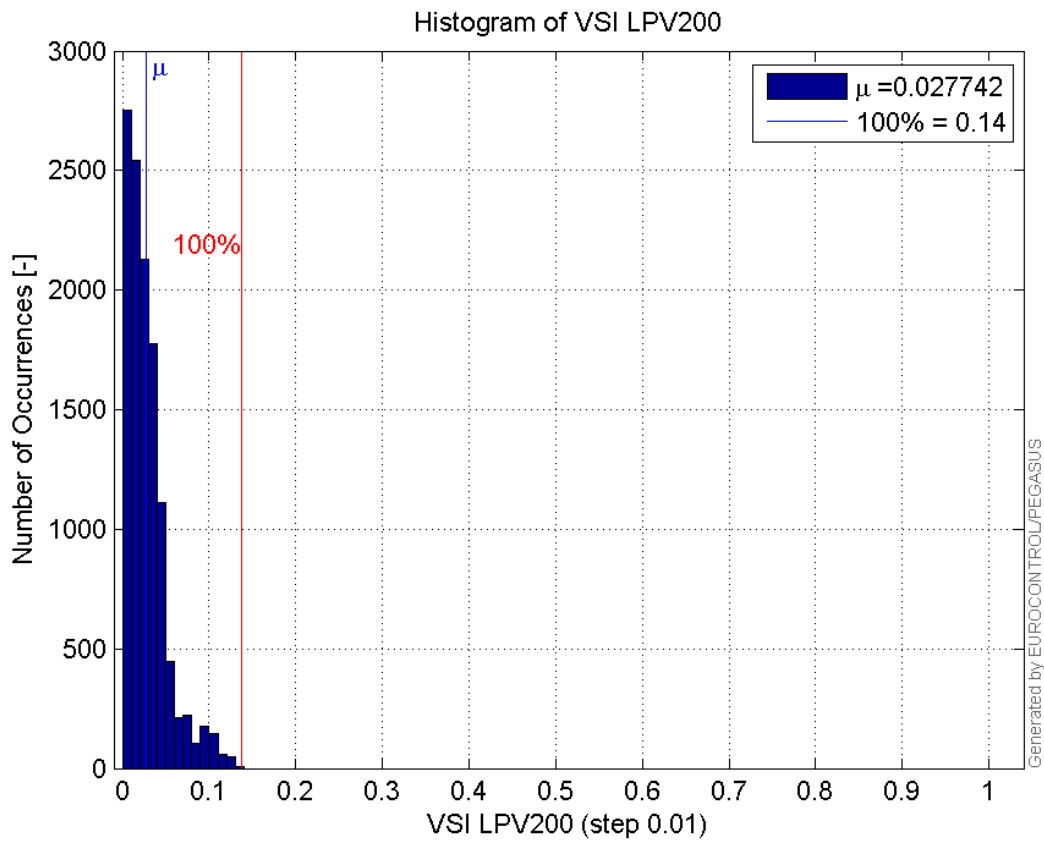


**Histogram of HSI LPV200:**



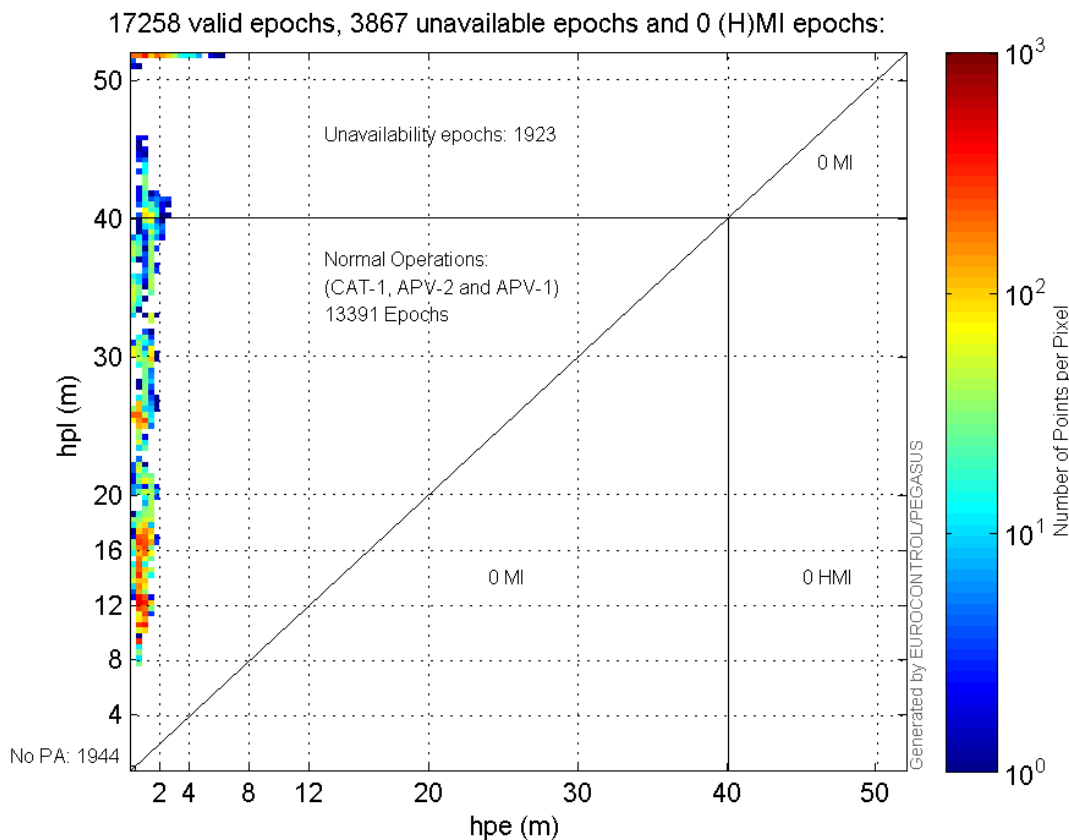
**Histogram of VSI LPV200:**



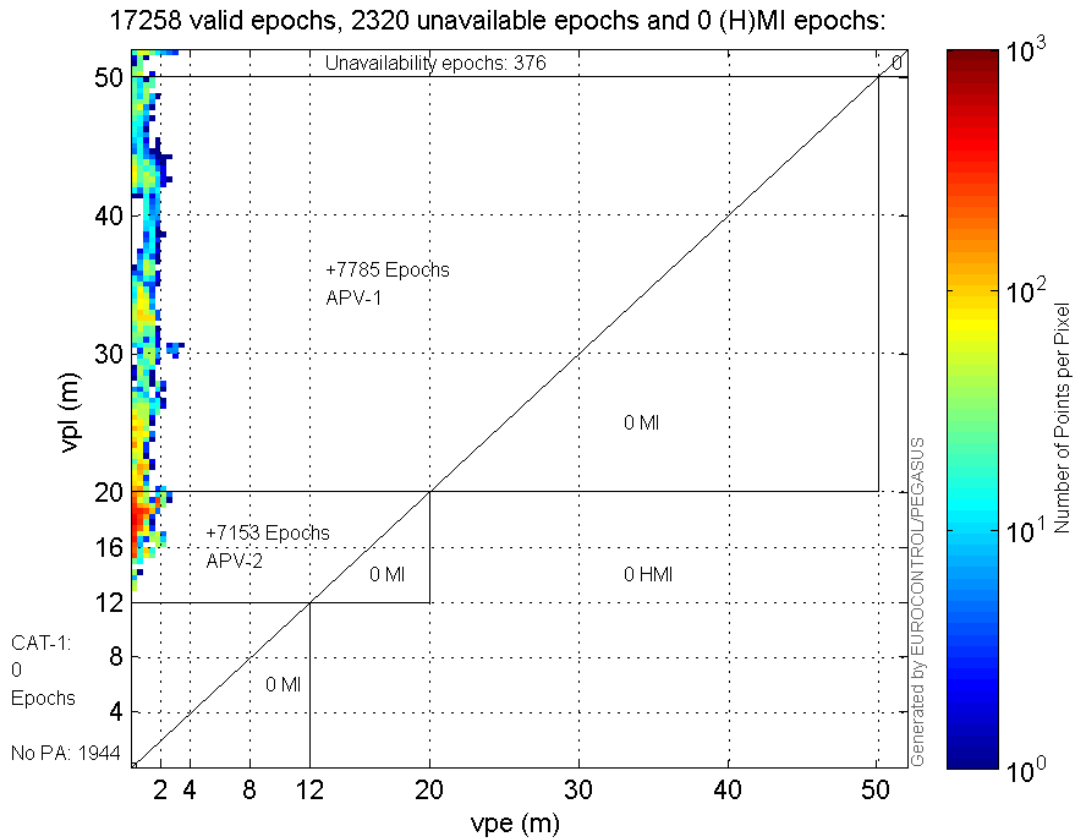


### Stanford Plots

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



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



### Parameters

#### system

Name	Section	Value
name	system	GNSS_Solution
version	system	4.8.2.1
input_prefix	system	D:/PegasusDateGob/job/2016_01_21_EGNOS/02_Convertor/02_Convertor
output_prefix	system	D:/PegasusDateGob/job/2016_01_21_EGNOS/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	220.1414
mi_numbers	results	0

## SBAS Messages

**start:** 09:22:42.129 21.01.2016 ( week: 1880 sec: 379362.129 )  
**end:** 14:16:37.129 21.01.2016 ( week: 1880 sec: 396997.129 )  
**duration:** 04:53:55 ..

### quality

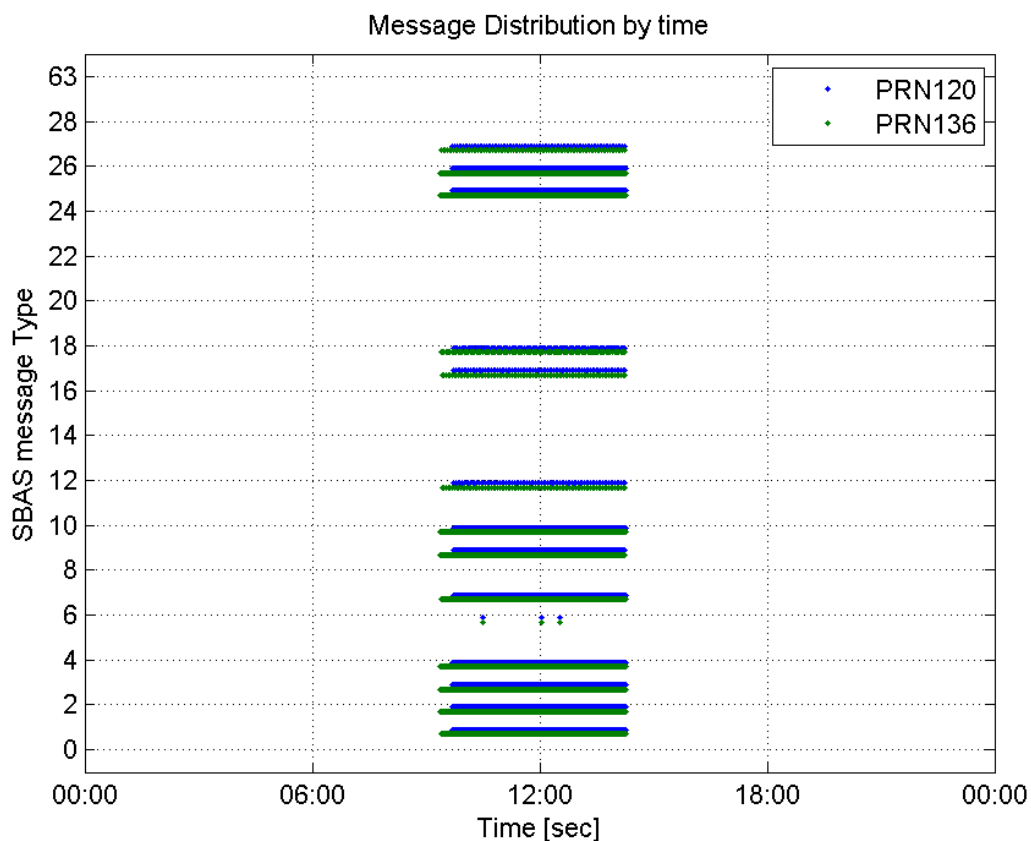
**valid samples** 34102  
**total samples** 34102  
**number of SBAS PRNs** 2

### SBAS SIS Overview

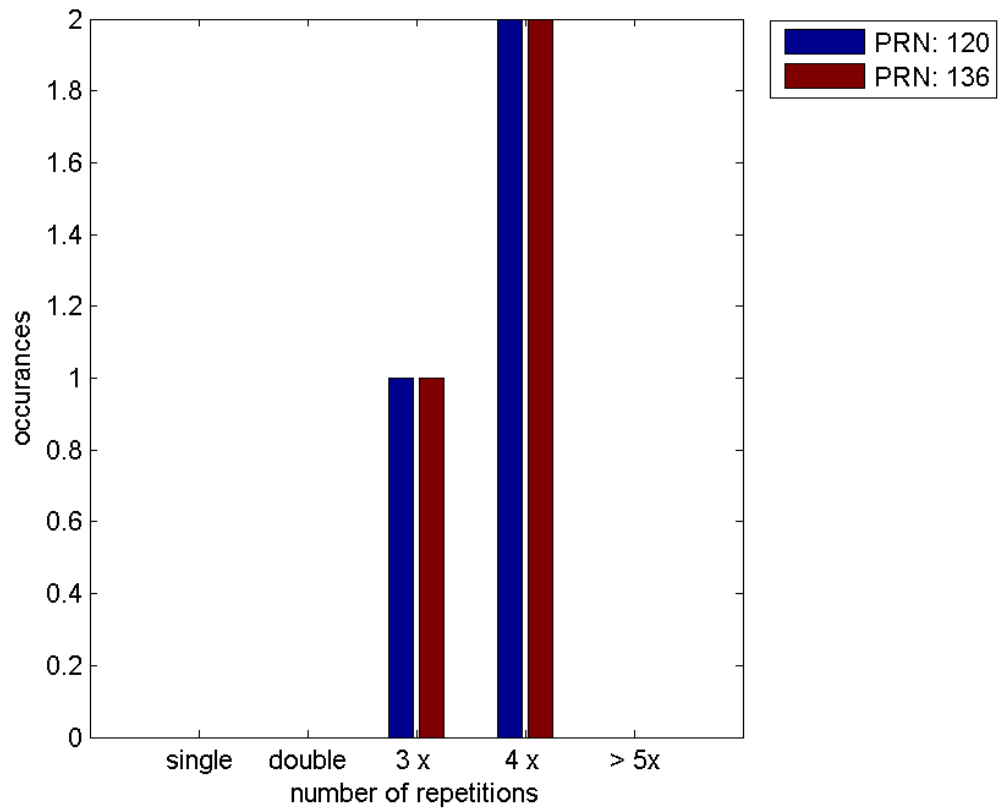
#### Message Type 6 repetitions :

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

#### Message Distribution by time:



## Message Type 6 repetitions:



## SBAS SIS Analysis

PRN 120

## Broadcast SBAS Messages :

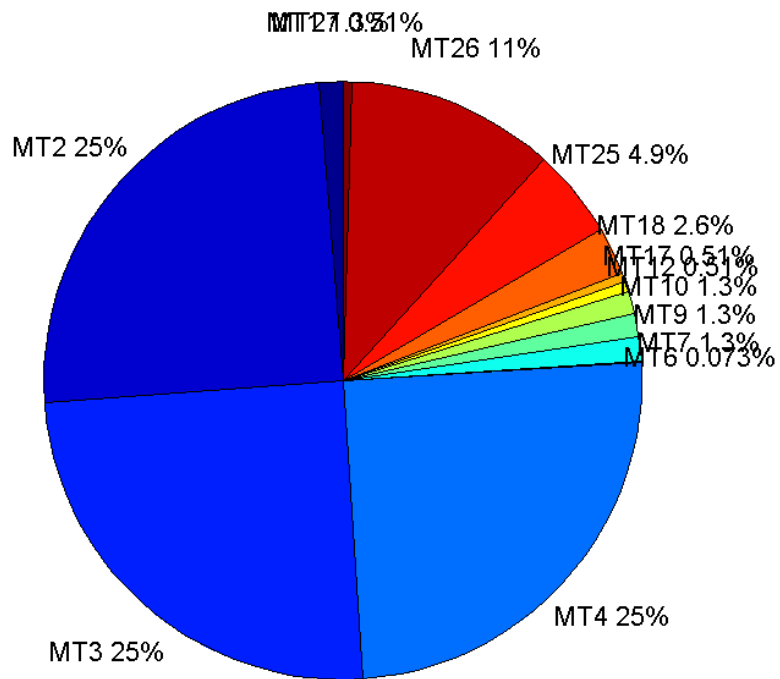
	number of messages	%
MT 0	0	0
MT 1	208	1.26321
MT 2	4102	24.9119
MT 3	4102	24.9119
MT 4	4102	24.9119
MT 5	0	0
MT 6	12	0.0728774
MT 7	208	1.26321
MT 9	207	1.25714
MT 10	208	1.26321
MT 12	84	0.510142
MT 17	84	0.510142
MT 18	420	2.55071
MT 24	0	0
MT 25	800	4.8585
MT 26	1845	11.2049
MT 27	84	0.510142
MT 28	0	0
MT 62	0	0

MT 63	0	0
<b>Total</b>	16466	100

## Update intervals :

	Minimum [s]	Maximum [s]	Mean value	Exceed Max update	Exceed NPA timeout	Exceed PA timeout
MT 0	--	--	--	--	--	--
MT 1	76	80	79.1787	0	0	0
MT 2	4	8	4.01414	3	0	0
MT 3	4	8	4.01414	3	0	0
MT 4	4	8	4.01414	3	0	0
MT 5	--	--	--	--	--	--
MT 6	1	5585	667.273	2	2	2
MT 7	76	81	79.2174	0	0	0
MT 9	76	82	79.233	0	0	0
MT 10	76	81	79.2367	0	0	0
MT 12	188	201	196.217	83	0	0
MT 17	188	201	196.217	0	0	0
MT 18	4	160	38.9547	0	0	0
MT 24	--	--	--	--	--	--
MT 25	4	37	20.6033	0	0	0
MT 26	4	36	8.92299	0	0	0
MT 27	188	200	196.217	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	222	1.25879
MT 2	4388	24.8809
MT 3	4389	24.8866
MT 4	4389	24.8866
MT 5	0	0
MT 6	12	0.0680426
MT 7	222	1.25879
MT 9	222	1.25879
MT 10	223	1.26446
MT 12	90	0.51032
MT 17	90	0.51032
MT 18	450	2.5516
MT 24	0	0
MT 25	858	4.86505
MT 26	1991	11.2894
MT 27	90	0.51032
MT 28	0	0
MT 62	0	0
MT 63	0	0
<b>Total</b>	<b>17636</b>	<b>100</b>

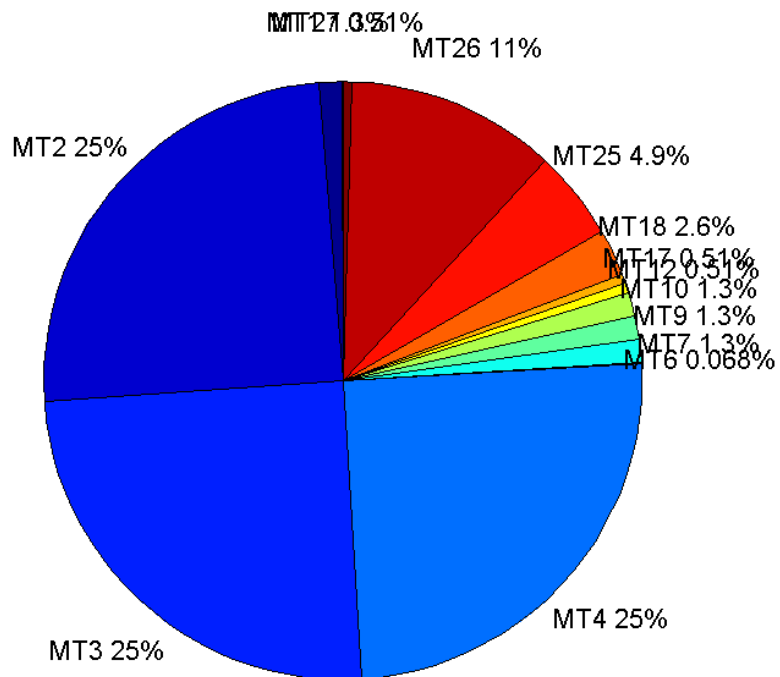
## Update intervals :

	Minimum [s]	Maximum [s]	Mean value	Exceed Max update	Exceed NPA timeout	Exceed PA timeout
MT 0	--	--	--	--	--	--
MT 1	76	83	79.2534	0	0	0
MT 2	4	8	4.01869	3	0	0
MT 3	4	8	4.01869	3	0	0
MT 4	4	8	4.01846	3	0	0
MT 5	--	--	--	--	--	--
MT 6	1	5585	667.273	2	2	2
MT 7	76	81	79.2534	0	0	0
MT 9	75	81	79.3122	0	0	0
MT 10	75	81	79.2027	0	0	0
MT 12	188	201	195.281	89	0	0
MT 17	188	201	195.236	0	0	0
MT 18	4	160	38.7884	0	0	0
MT 24	--	--	--	--	--	--
MT 25	3	46	20.5496	0	0	0
MT 26	4	32	8.8598	0	0	0
MT 27	188	201	195.27	0	0	0
MT 28	--	--	--	--	--	--
MT 62	--	--	--	--	--	--
MT 63	--	--	--	--	--	--

---

Message Distribution PRN 136:





### Parameters

#### System

Name	Section	Value
Name	System	Convertor
Version	System	4.3
Inputfile	System	D:/PegasusDateGob/job/2016_01_21_EGNOS/01_User/01_User
Outputfile	System	D:/PegasusDateGob/job/2016_01_21_EGNOS/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