

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 15/03/2017

SBAS Messages

start: 08:03:49.129 15.02.2017 (week: 1936 sec: 288229.129)
end: 13:45:58.129 15.02.2017 (week: 1936 sec: 308758.129)
duration: 05:42:9.00001 ..

quality

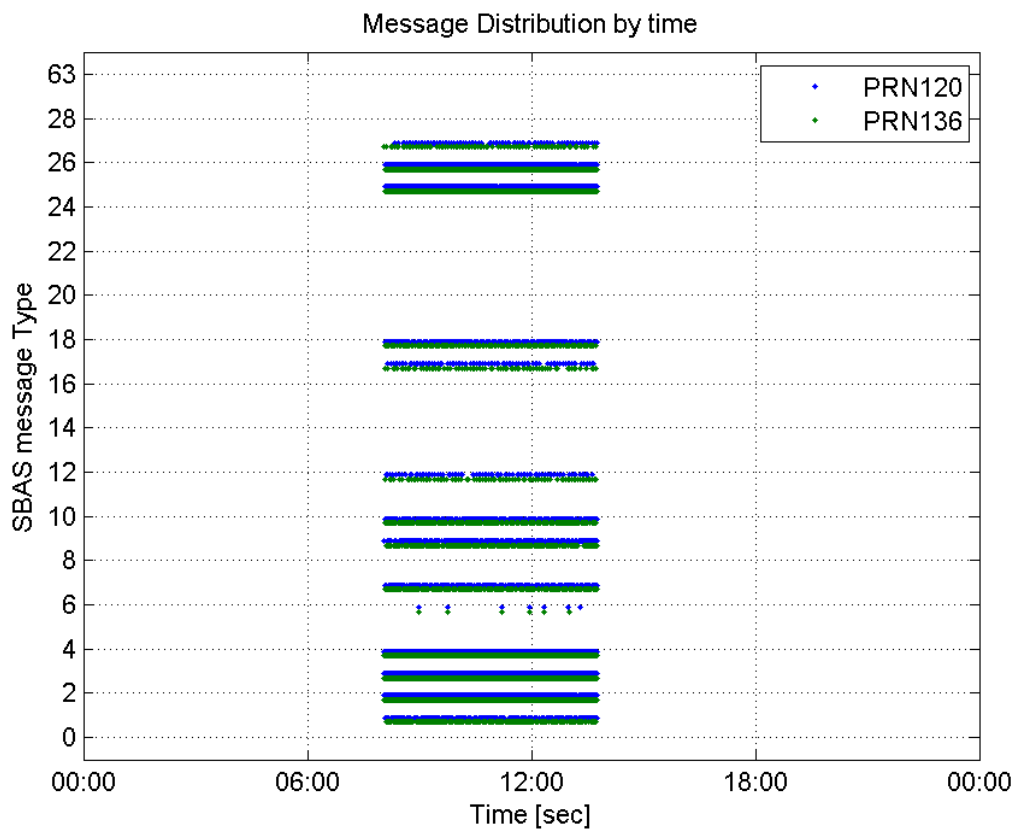
valid samples 32247
total samples 32247
number of SBAS PRNs 2

SBAS SIS Overview

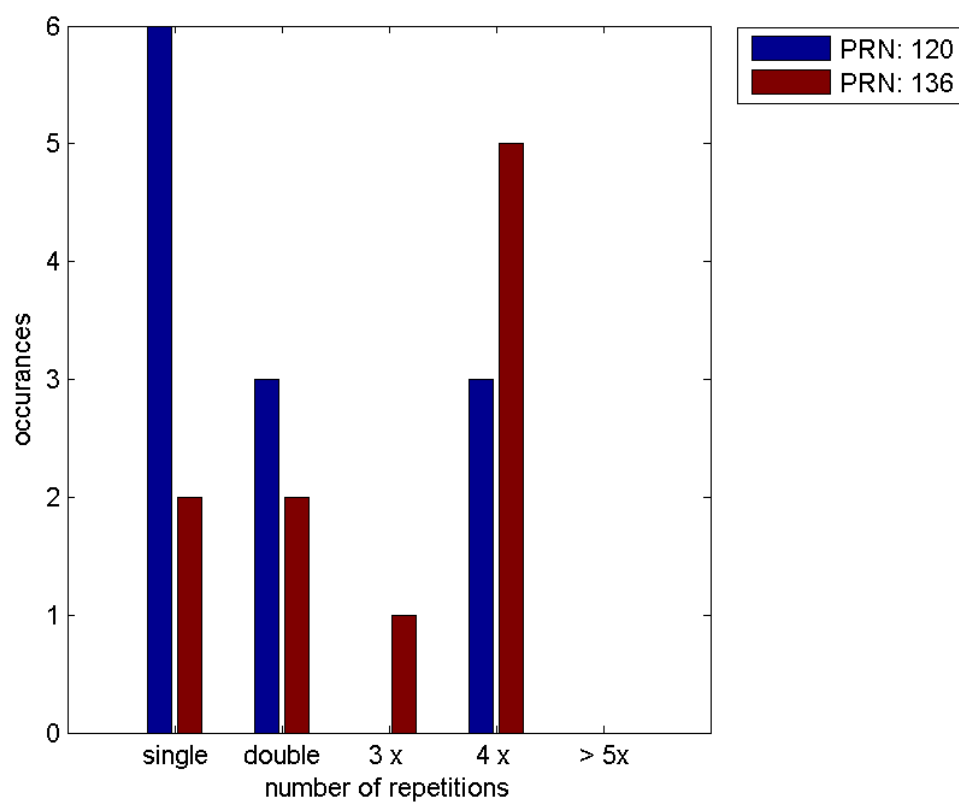
Message Type 6 repetitions :

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

Message Distribution by time:



Message Type 6 repetitions:



Broadcast SBAS Messages :

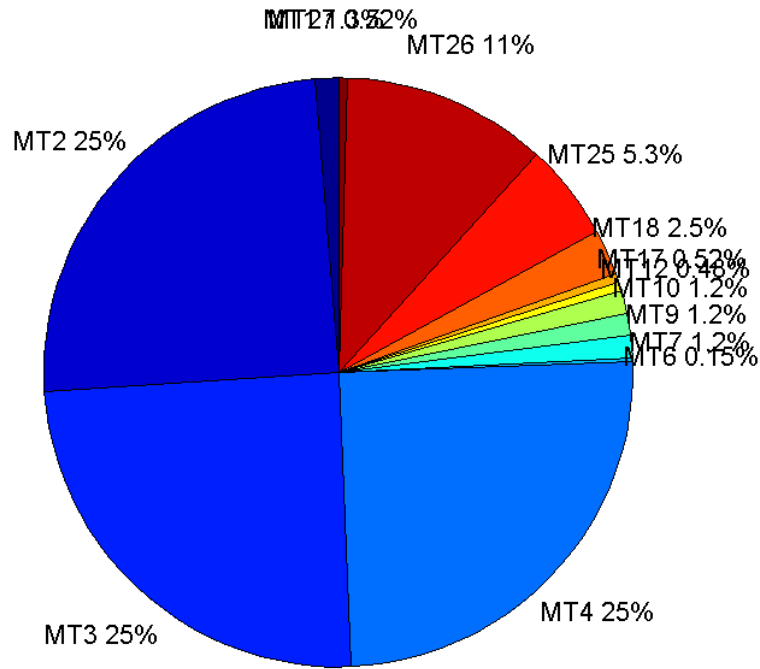
	number of messages	%
MT 0	0	0
MT 1	204	1.27238
MT 2	3970	24.7614
MT 3	3951	24.6429
MT 4	3998	24.9361
MT 5	0	0
MT 6	24	0.149691
MT 7	197	1.22872
MT 9	200	1.24743
MT 10	197	1.22872
MT 12	77	0.480259
MT 17	83	0.517682
MT 18	400	2.49485
MT 24	0	0
MT 25	848	5.28909
MT 26	1801	11.2331
MT 27	83	0.517682
MT 28	0	0
MT 62	0	0
MT 63	0	0
Total	16033	100

Update intervals :

	Minimum [s]	Maximum [s]	Mean value	Exceed Max update	Exceed NPA timeout	Exceed PA timeout
MT 0	--	--	--	--	--	--
MT 1	76	480	100.813	33	0	0
MT 2	4	186	5.17158	1010	3	10
MT 3	4	182	5.19544	1031	2	10
MT 4	4	179	5.1346	997	2	11
MT 5	--	--	--	--	--	--
MT 6	1	5164	676.478	7	6	7
MT 7	76	320	104.418	44	0	6
MT 9	76	320	102.925	0	0	0
MT 10	76	322	104.439	44	0	4
MT 12	188	973	261.803	76	21	21
MT 17	184	786	242.695	0	0	0
MT 18	4	198	51.3233	0	0	0
MT 24	--	--	--	--	--	--
MT 25	1	201	24.2279	0	0	0
MT 26	2	209	11.4006	0	0	0
MT						

27	190	774	237.878	0	0	0
MT 28	--	--	--	--	--	--
MT 62	--	--	--	--	--	--
MT 63	--	--	--	--	--	--

Message Distribution PRN 120:



SBAS SIS Analysis

PRN 136

Broadcast SBAS Messages :

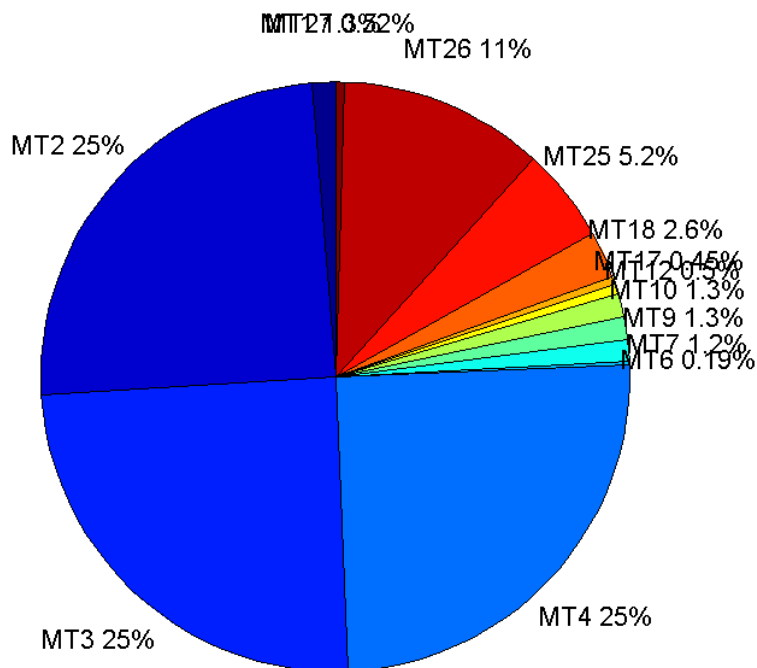
	number of messages	%
MT 0	0	0
MT 1	210	1.29518
MT 2	4002	24.6824
MT 3	4008	24.7194
MT 4	4046	24.9537
MT 5	0	0
MT 6	30	0.185025
MT 7	197	1.215
MT 9	204	1.25817
MT 10	207	1.27667
MT 12	81	0.499568
MT 17	73	0.450228

MT 18	417	2.57185
MT 24	0	0
MT 25	836	5.15604
MT 26	1819	11.2187
MT 27	84	0.518071
MT 28	0	0
MT 62	0	0
MT 63	0	0
Total	16214	100

Update intervals :

	Minimum [s]	Maximum [s]	Mean value	Exceed Max update	Exceed NPA timeout	Exceed PA timeout
MT 0	--	--	--	--	--	--
MT 1	76	320	97.1053	35	0	0
MT 2	4	18	5.13022	1027	0	7
MT 3	4	17	5.12229	1029	0	7
MT 4	4	20	5.07342	989	1	6
MT 5	--	--	--	--	--	--
MT 6	1	5164	500.241	7	5	6
MT 7	76	321	104.321	45	0	6
MT 9	75	480	99.9951	0	0	0
MT 10	76	242	98.1456	44	0	1
MT 12	188	779	254.188	80	17	17
MT 17	186	971	282.375	0	0	0
MT 18	4	192	48.9688	0	0	0
MT 24	--	--	--	--	--	--
MT 25	1	99	24.5257	0	0	0
MT 26	3	73	11.2866	0	0	0
MT 27	186	594	245	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:/PegasusDateJob/job/2017_02_15EGNOS2Hz/01_User/01_User
Outputfile	System	D:/PegasusDateJob/job/2017_02_15EGNOS2Hz/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: 08:03:49.5 15.02.2017 (week: 1936 sec: 288229.5)
end: 13:45:59 15.02.2017 (week: 1936 sec: 308759)
duration: 05:42:11 ..

quality

valid samples 37363
total samples 38040

Event tables

Position discontinuity events type long
APV-I discontinuity events type independent
APV-35m discontinuity events type too many (23)
LPV-200 discontinuity events type too many (23)
CAT-I discontinuity events type nothing

extremes :

	Epoch	HPE	HPL	HPE/HPL	VPE	VPL	VPE/VPL
max normHor	292307	1.59825	8.57138	0.186464	0.903467	18.1123	0.0498814
max normVer	299914	1.14555	32.1354	0.0356476	2.02212	17.4089	0.116154
max HPE	306083	9.23684	380.475	0.0242771	-23.6474	744.323	0.0317704
max VPE	306083	9.23684	380.475	0.0242771	-23.6474	744.323	0.0317704
min HPL	292130	1.39784	8.29919	0.16843	0.070087	17.1323	0.00409093
min VPL	293908	1.30261	9.52135	0.136809	0.46197	14.1859	0.0325654

Position discontinuity events :

#	Epoch	duration	stable period
1	296329	8.5	221.5
2	299292	137.5	1
3	299444	13.5	14.5
4	306826	171.5	682.5
5	307005	89.5	7.5

APV-I discontinuity events :

#	Epoch	duration	stable period
1	289637	81.5	86.5
2	291326	9.5	140.5
3	293250	5.5	83.5
4	294382	5.5	68.5
5	294857	78.5	68.5
6	296329	12.5	221.5
7	296361	5.5	19.5
8	298742	1161.5	239.5
9	300135	79.5	139.5
10	300387	5.5	64.5
11	300485	360.5	47.5
12	303574	80.5	968.5
13	304389	5.5	19.5
14	304909	79.5	78.5
15	305549	75.5	82.5
16	306082	5.5	161
17	306621	5.5	179.5
18	306826	175.5	74.5

First Glance analysis

Duration

20531

Number of Samples	38040
Number of invalid sample	677
Number of no position solution samples	870
Number of missing sample	3022
Logging Loss	7.3596
Processing Loss	1.7797
Number of Misleading Information	0
Data gaps	17
Discontinuities	60

Number of Samples :

Valid	APV-1	LPV-200	CAT-1	APV-35m
36493	32546	30638	0	30638

Accuracy statistics :

	Valid	APV-1	LPV-200	CAT-1	APV-35m
HPE 95%	1.80776	1.73277	1.72328	NaN	1.72328
HPEScale 95%	NaN	5.07747	5.11802	NaN	5.11802
VPE 95%	1.48155	1.29945	1.22786	NaN	1.22786
VPEscale 95%	NaN	3.00097	2.06996	NaN	2.06996

Availability :

	Valid	APV-1	LPV-200	CAT-1	APV-35m
Signal in Space	0.976715	0.871076	0.820009	0	0.820009
measurements	0.959332	0.855573	0.805415	0	0.805415
Operational	1.77746	1.58521	1.49228	0	1.49228

Discontinuity events :

	Valid	APV-1	LPV-200	CAT-1	APV-35m
All	43	91	169	--	169
Long	5	20	49	--	49
Independent	2	18	23	--	23
P(disc.)	0.000822075	0.00829595	0.0112605	NaN	0.0112605
P(slide)	0.0164004	0.0400971	0.0617207	NaN	0.0617207

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

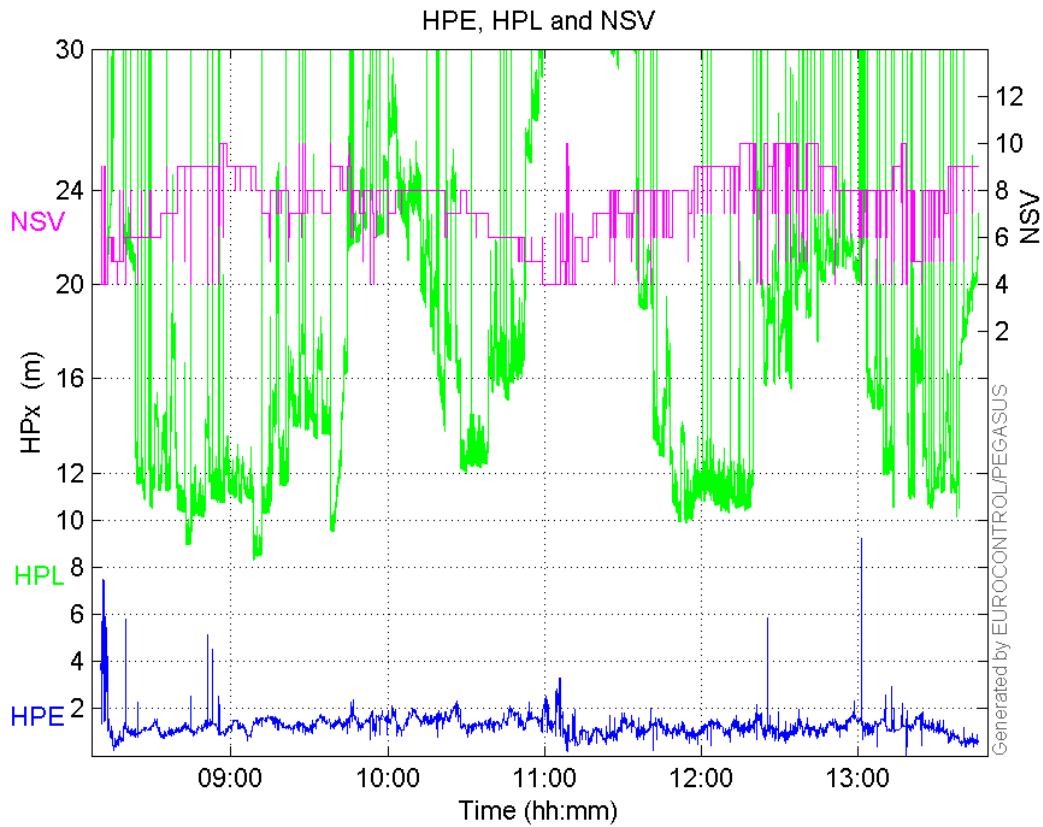
Performance Summary :

	Valid	APV-1	LPV-200	CAT-1	APV-35m
Samples	36493	32546	30638	0	30638
SIS Availability	0.976715	0.871076	0.820009	0	0.820009
Local Availability	0.959332	0.855573	0.805415	0	0.805415
Operational Availability	1.77746	1.58521	1.49228	0	1.49228
HPE 95%	1.80776	1.73277	1.72328	NaN	1.72328

HPEscale 95%	NaN	5.07747	5.11802	NaN	5.11802
VPE 95%	1.48155	1.29945	1.22786	NaN	1.22786
VPEScale 95%	NaN	3.00097	2.06996	NaN	2.06996
All Discontinuity Events	43	91	169	--	169
Long Discontinuity Events	5	20	49	--	49
Independent Discontinuity Events	2	18	23	--	23
P(discontinuity)	0.000822075	0.00829595	0.0112605	NaN	0.0112605
P(sliding window)	0.0164004	0.0400971	0.0617207	NaN	0.0617207
All Integrity Events	0	0	0	0	0
Horizontal Integrity Events	0	0	0	0	0
Vertical Integrity Events	0	0	0	0	0

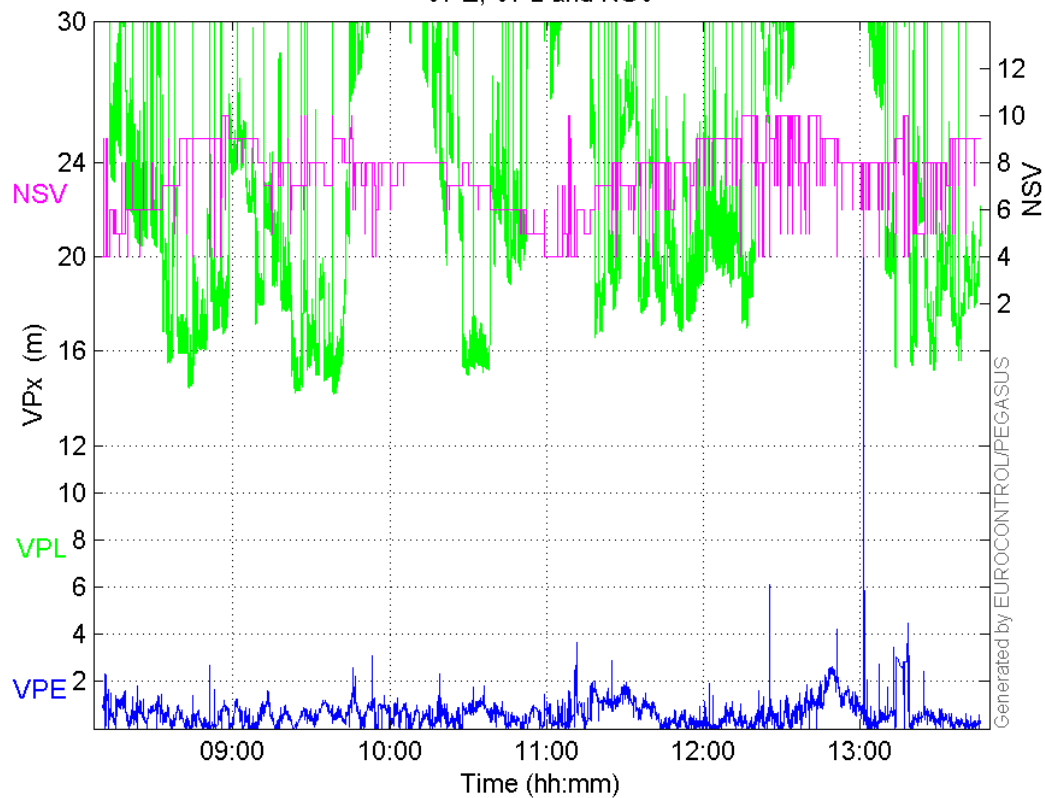
Time Series

HPE, HPL and NSV:



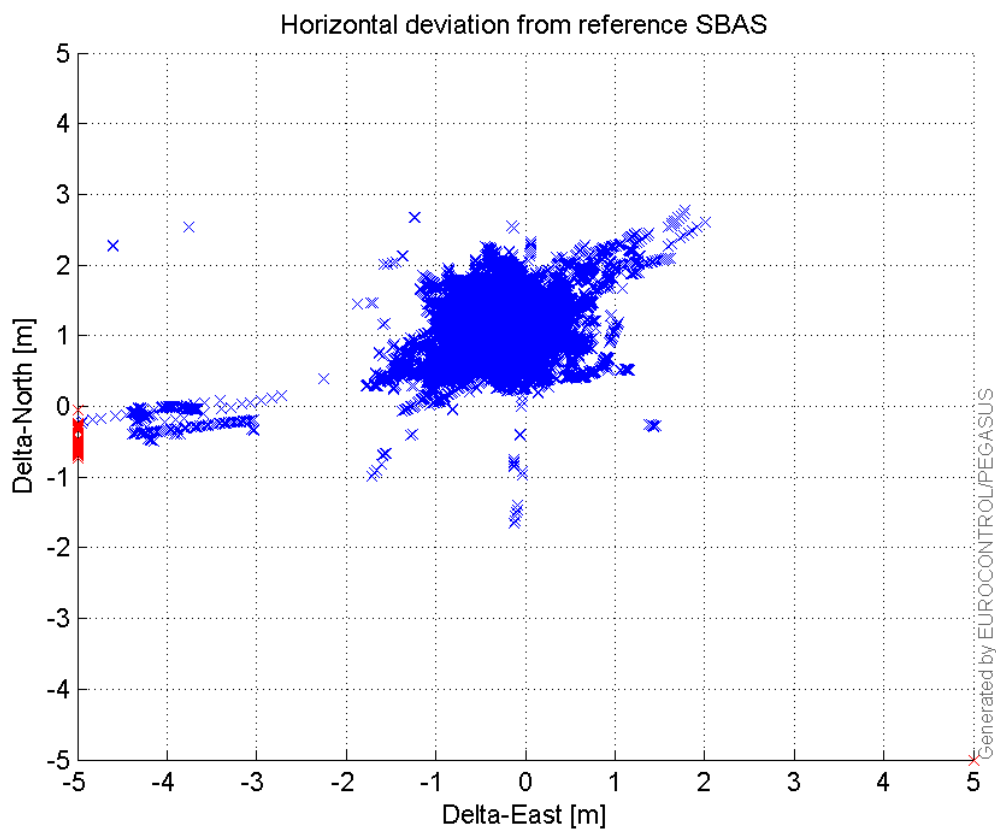
VPE, VPL and NSV:

VPE, VPL and NSV



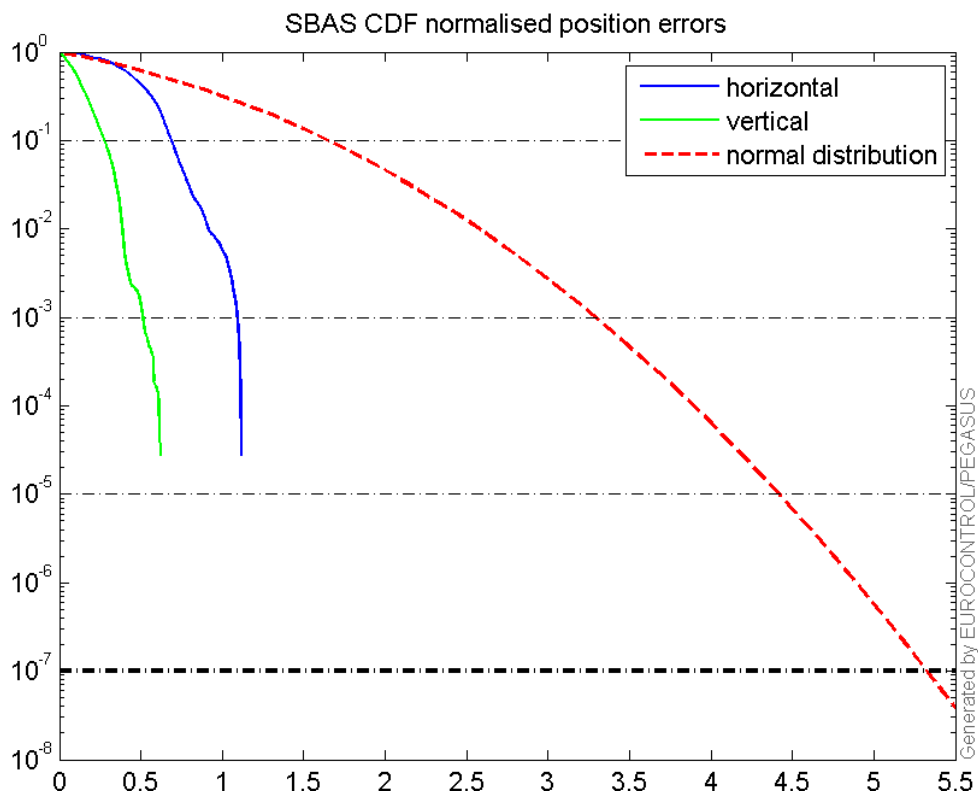
Horizontal deviation

Horizontal deviation from reference SBAS:



CDF position

SBAS CDF position domain:



Statistics

```

number 32546
sum 40770.228
sum2 53923.654
prctile95 1.7327672
prctile99 1.9425822
number 32546
sum 18969.49
sum2 16999.834
prctile95 1.2994497
prctile99 2.1265617
number 32546
sum 550386.7
sum2 10457505
prctile95 29.11526
prctile99 34.8665
number 32546
sum 765443.37
sum2 19423383
prctile95 35.46602
prctile99 38.963828
number 32546
sum 2664.2125
sum2 245.01137
prctile95 0.12693668

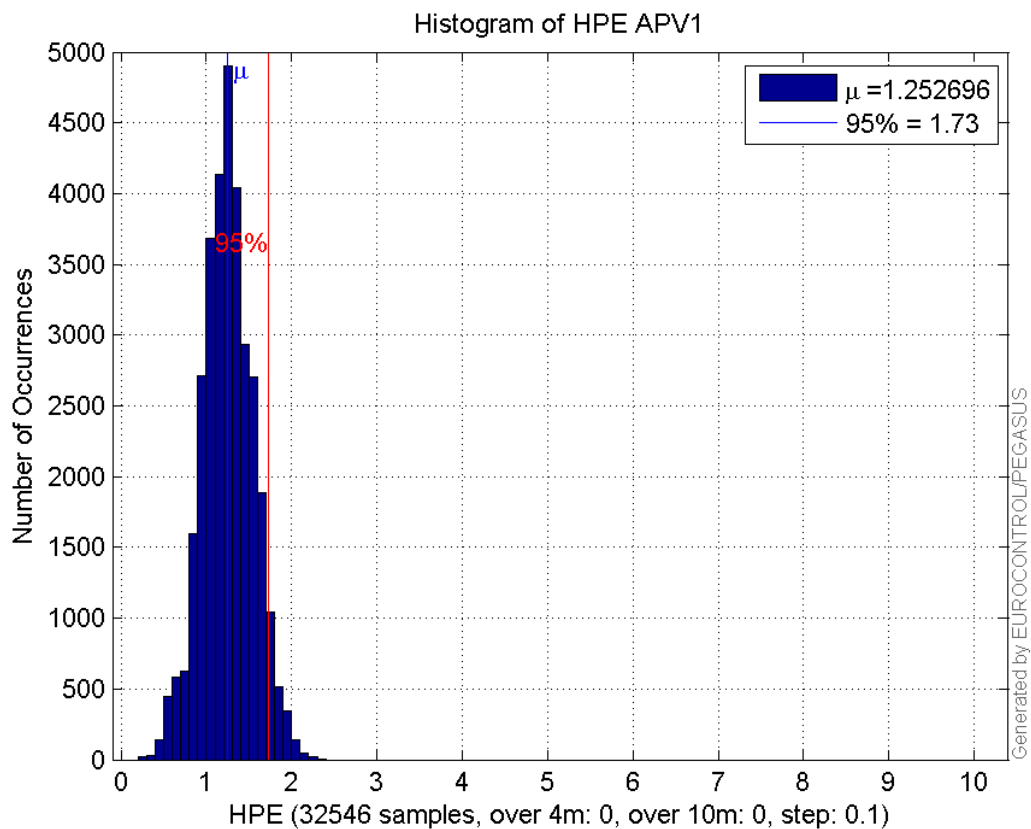
```

prctile99 0.1553338
number 32546
sum 826.14436
sum2 31.228229
prctile95 0.060019395
prctile99 0.072455284
number 30638
sum 38084.446
sum2 49997.8
prctile95 1.7232759
prctile99 1.9404801
number 30638
sum 17301.951
sum2 14640.026
prctile95 1.2278643
prctile99 1.8005851
number 30638
sum 502434.46
sum2 9232864.9
prctile95 26.97022
prctile99 34.892164
number 30638
sum 694229.72
sum2 16758361
prctile95 33.16976
prctile99 34.394356
number 30638
sum 2557.2487
sum2 238.86239
prctile95 0.12795052
prctile99 0.15742651
number 30638
sum 781.17092
sum2 29.480505
prctile95 0.059141848
prctile99 0.072564756

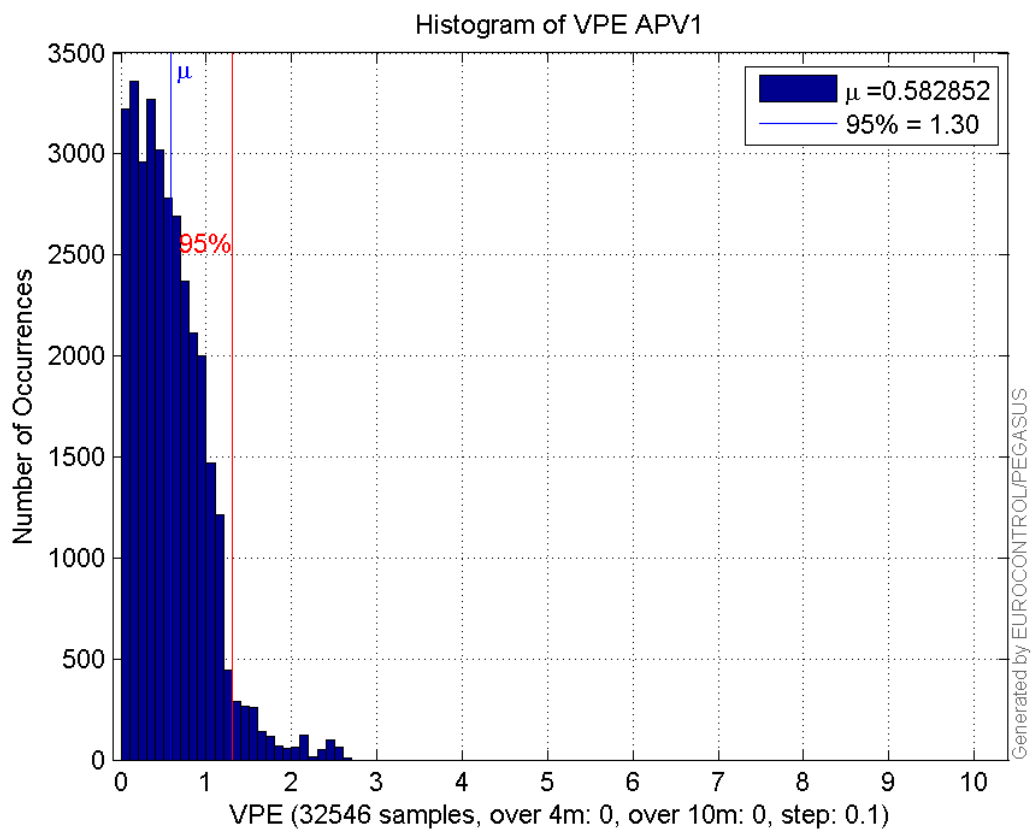
Error and XPL Statistics :

	Mean Value	Standard Deviation	50% Value	95% Value	99% Value	RMS Value
HPE	1.2527	0.295975	1.24772	1.73277	1.94258	1.28718
HPL	16.911	5.94411	15.6289	29.1153	34.8665	17.9253
VPE	0.582852	0.427343	0.51551	1.29945	2.12656	0.722726
VPL	23.5188	6.60791	21.4684	35.466	38.9638	24.4294

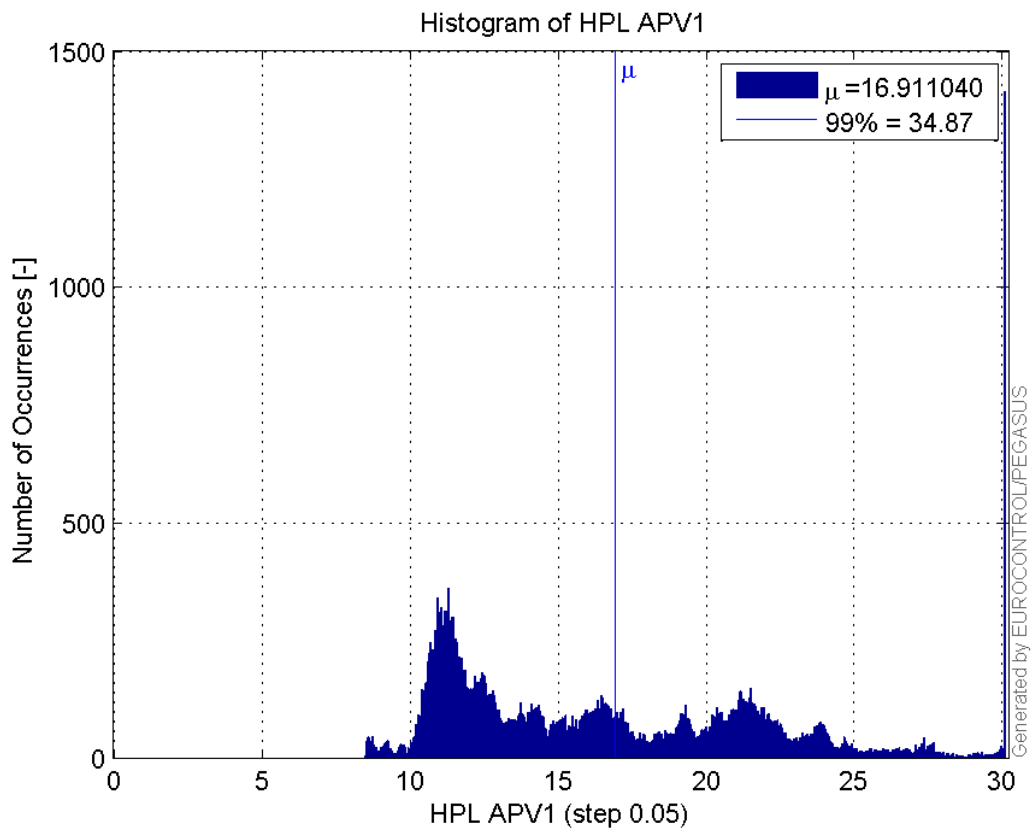
Histogram of HPE APV1:



Histogram of VPE APV1:

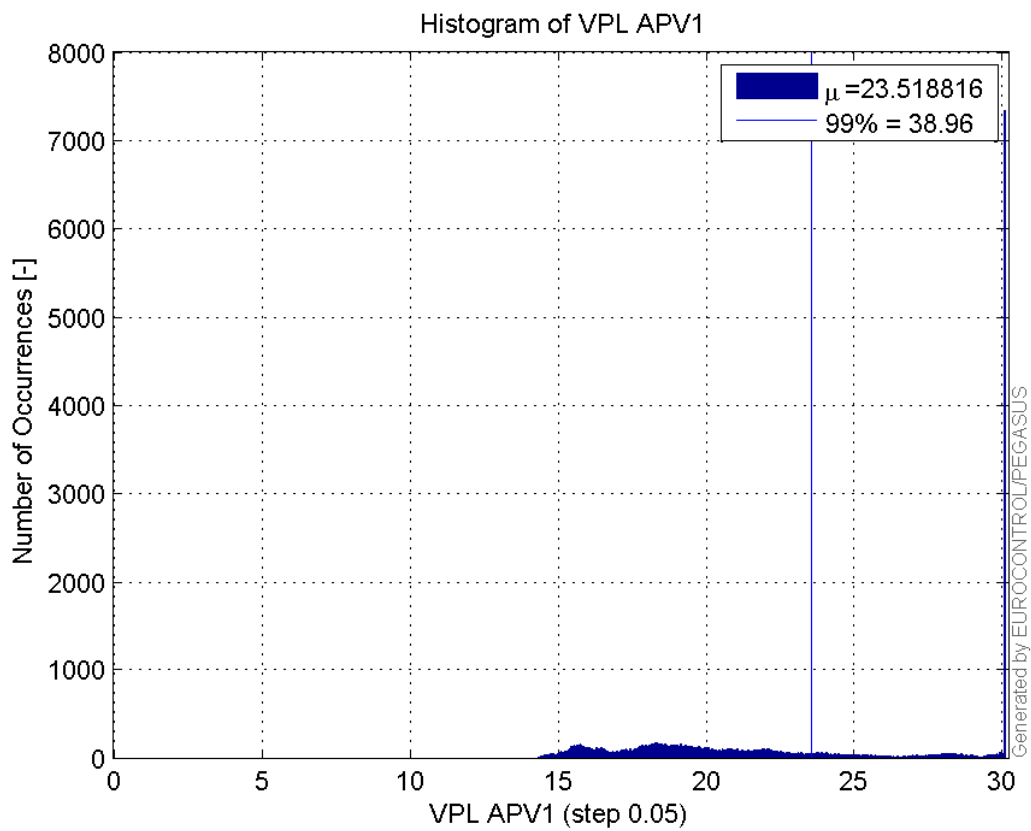


Histogram of HPL APV1:

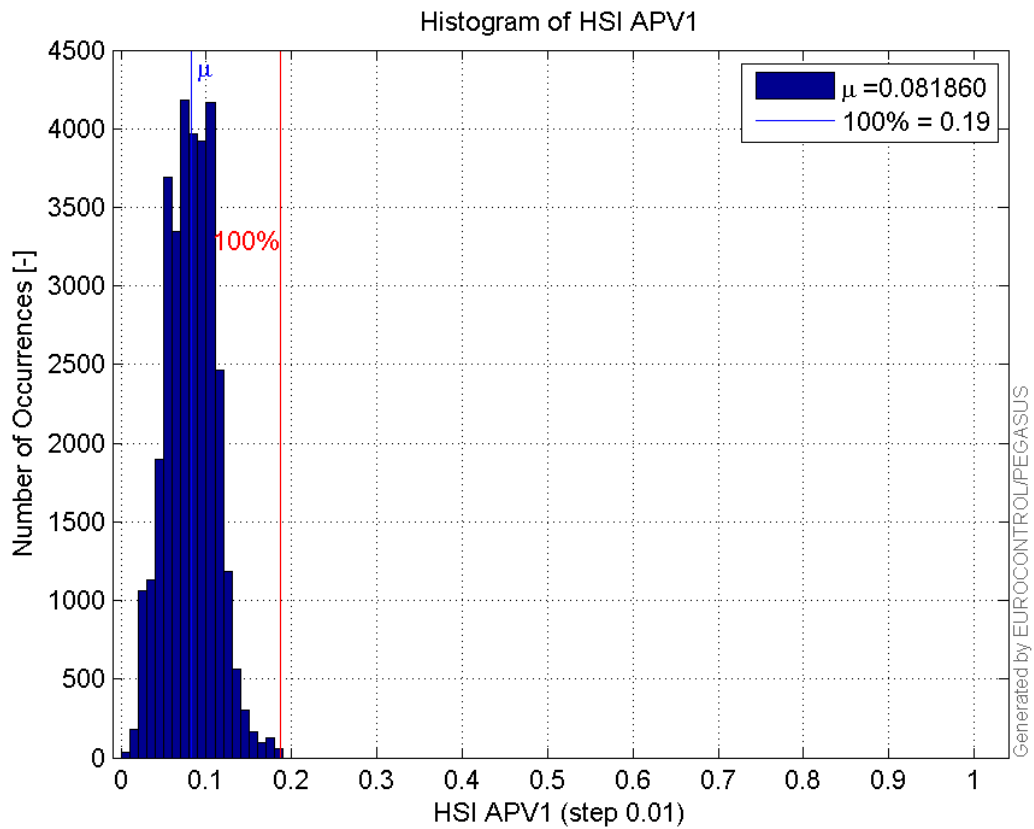


99

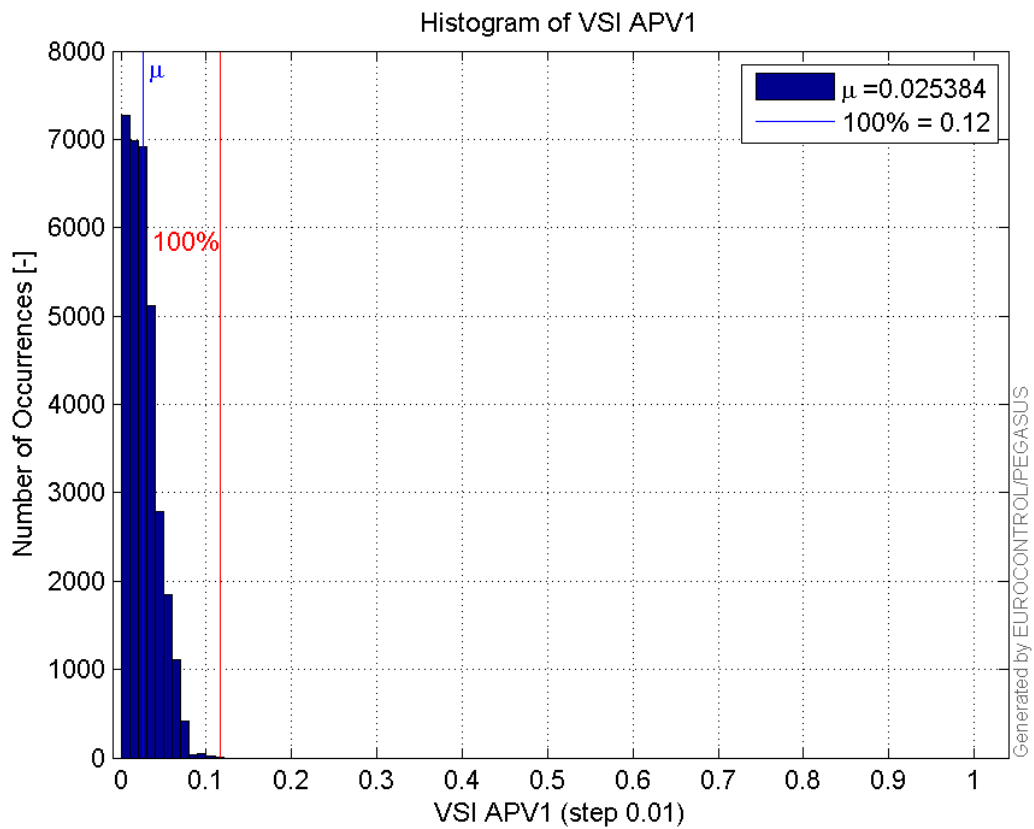
Histogram of VPL APV1:



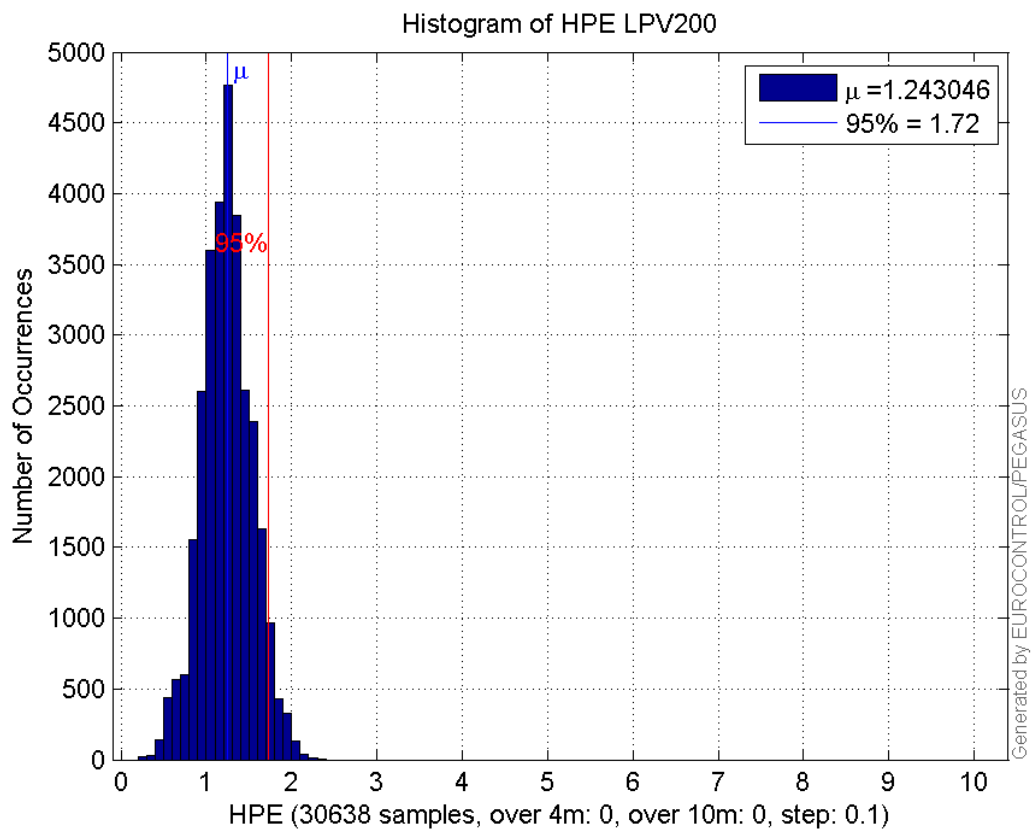
Histogram of HSI APV1:



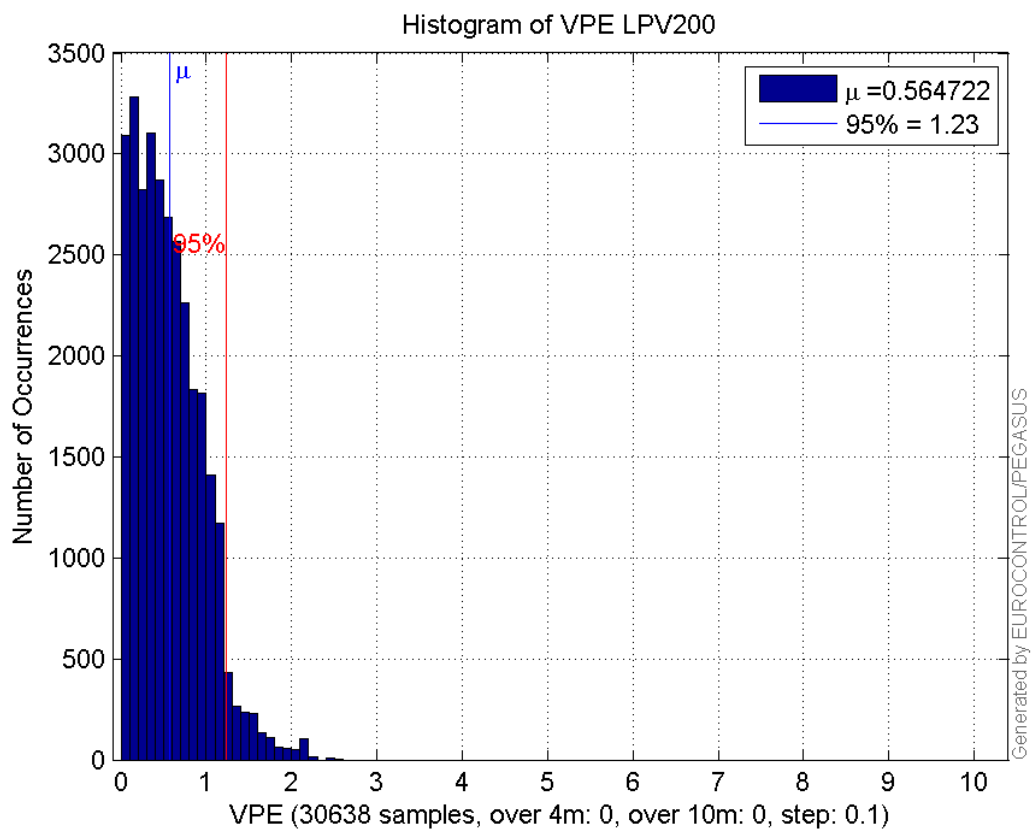
Histogram of VSI APV1:



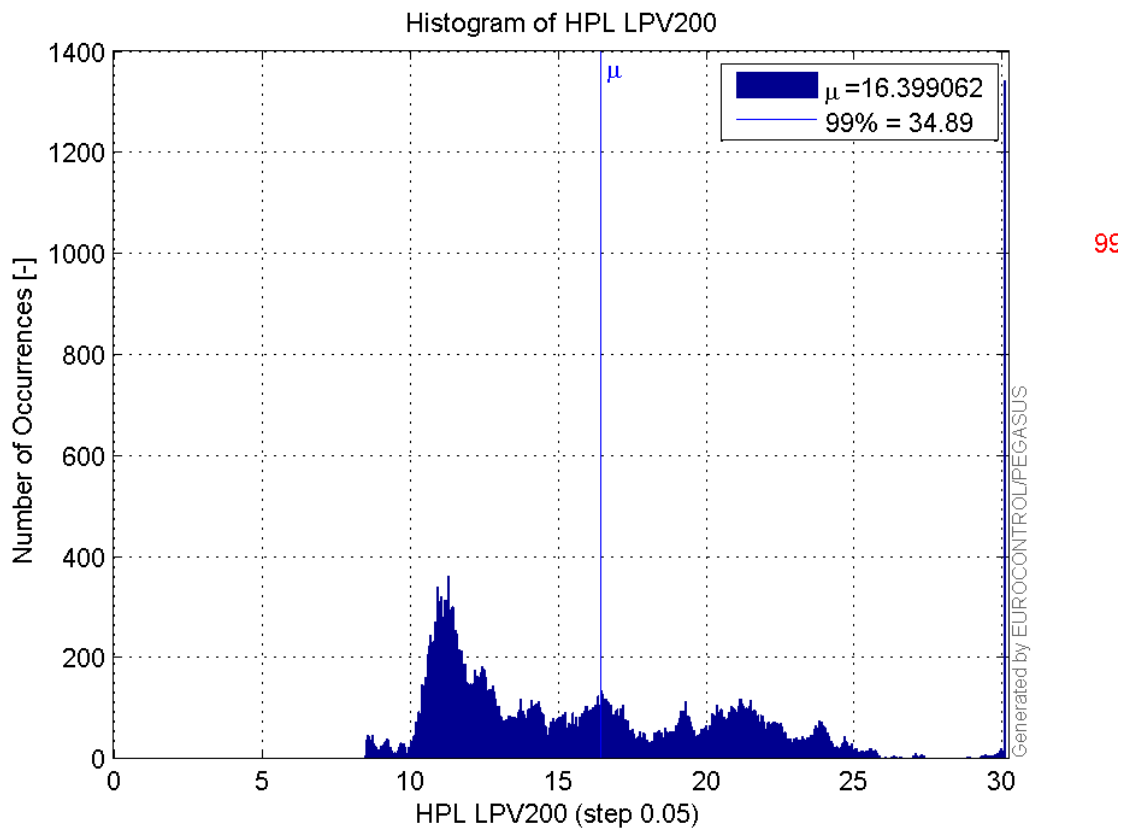
Histogram of HPE LPV200:



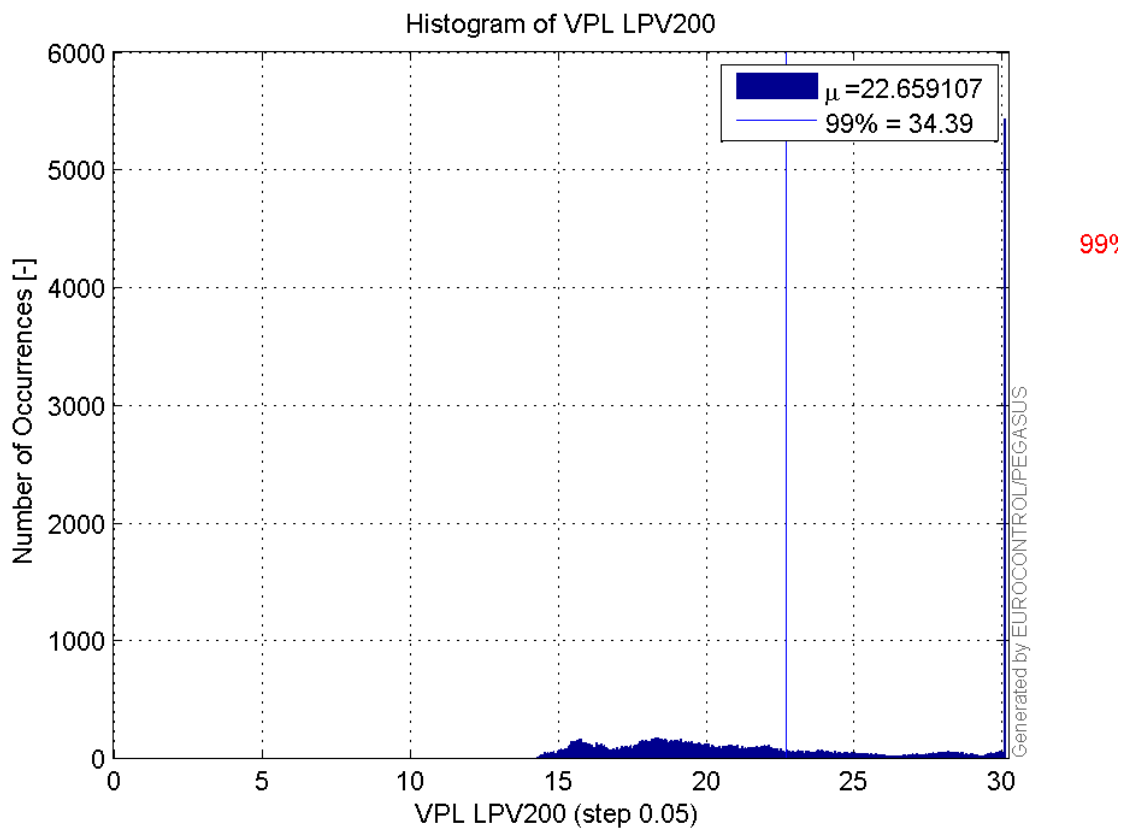
Histogram of VPE LPV200:



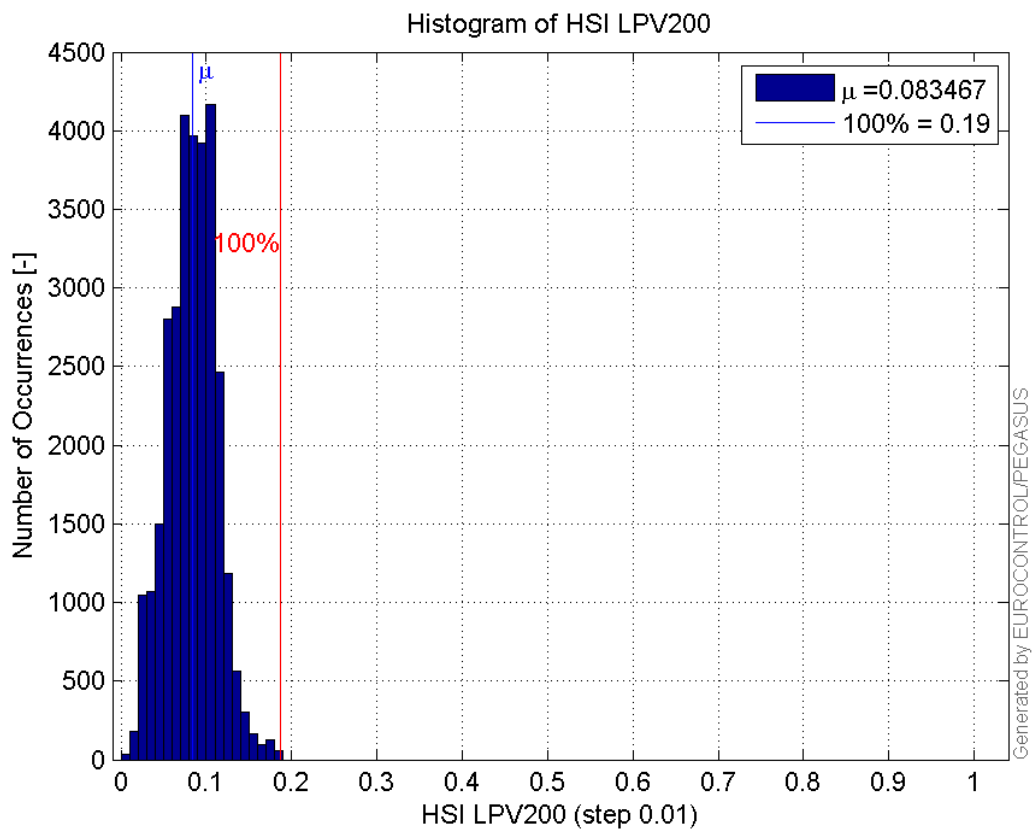
Histogram of HPL LPV200:



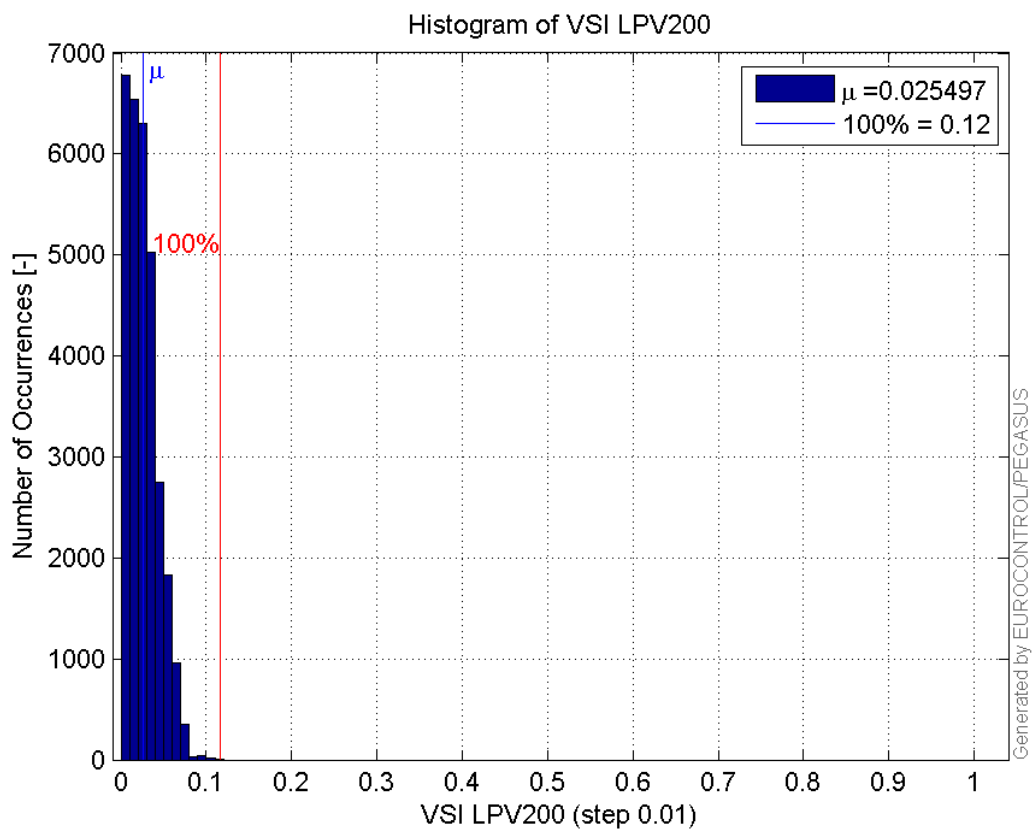
Histogram of VPL LPV200:



Histogram of HSI LPV200:

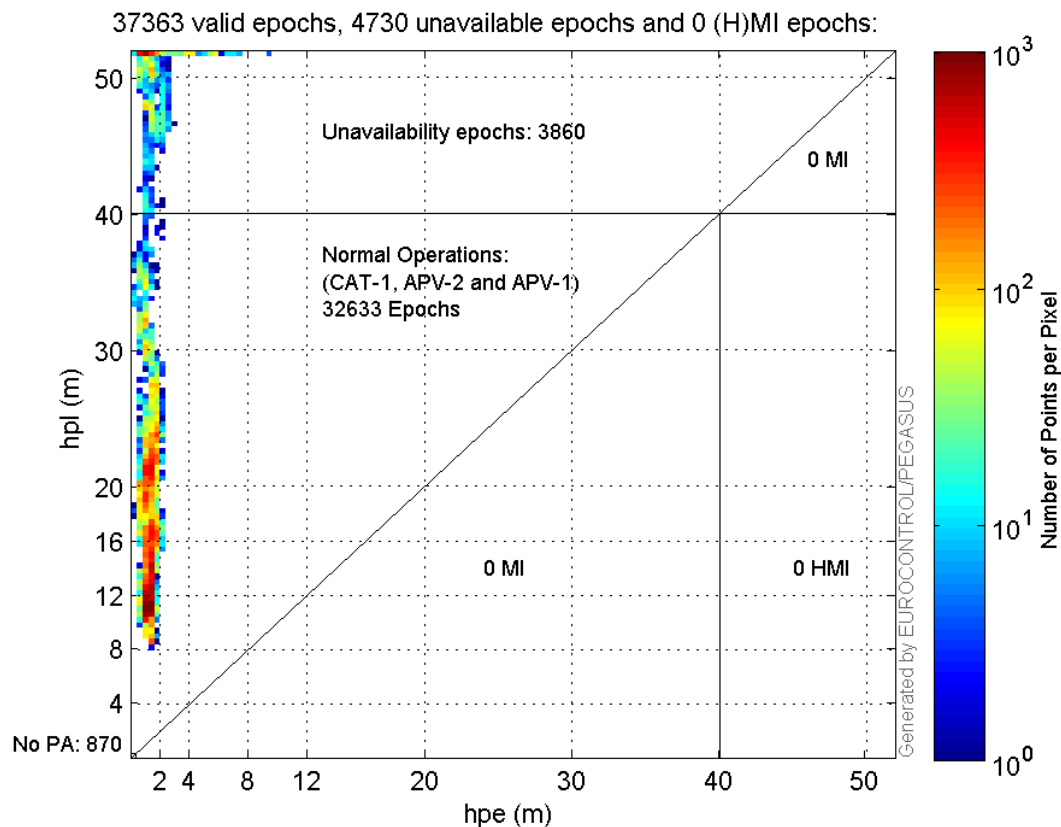


Histogram of VSI LPV200:

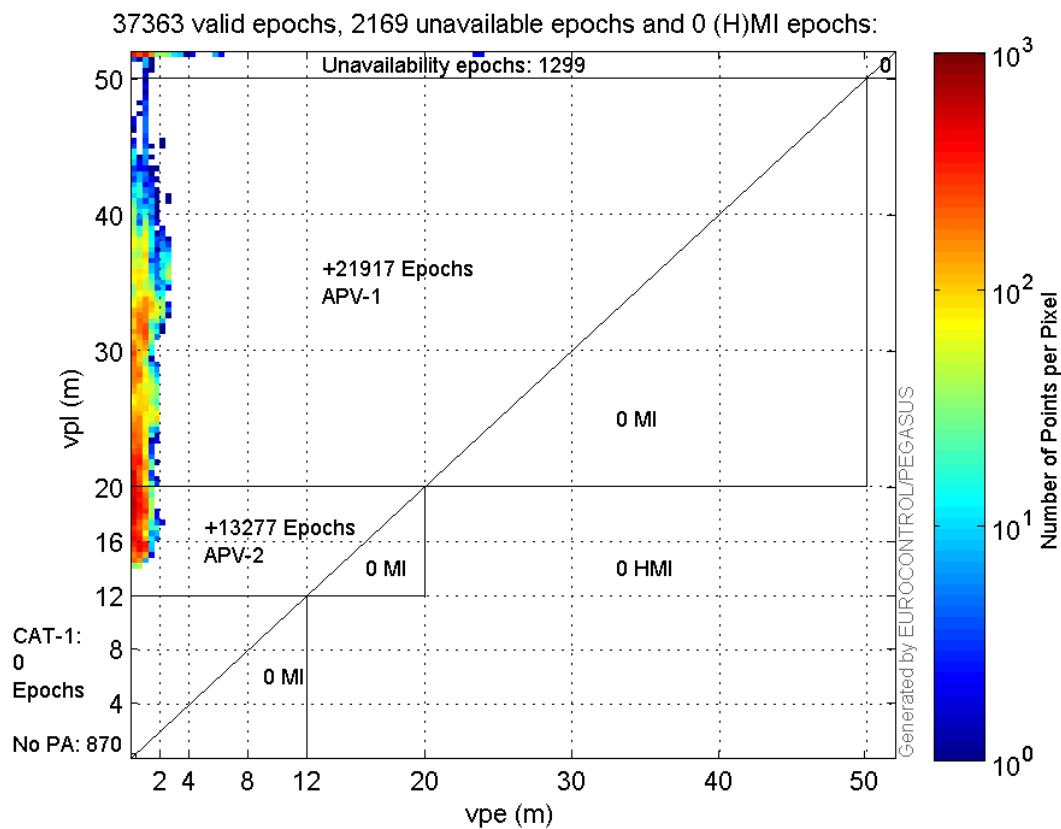


Stanford Plots

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_02_15EGNOS2Hz/02_Convertor/02_Convertor
output_prefix	system	D:/PegasusDateJob/job/2017_02_15EGNOS2Hz/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	234.0568
mi_numbers	results	0

Range Domain

start: 08:03:49.5 15.02.2017 (week: 1936 sec: 288229.5)
end: 13:45:59 15.02.2017 (week: 1936 sec: 308759)
duration: 05:42:11 ..

quality

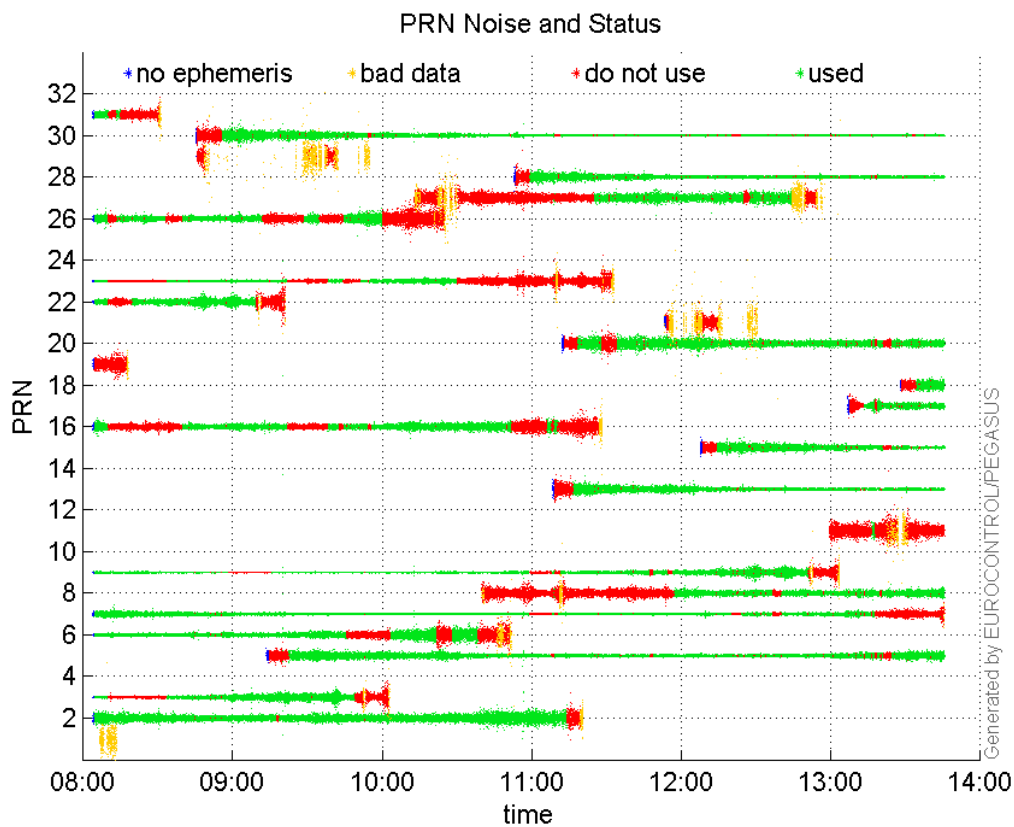
valid samples 38040
total samples 38040

PRN overview

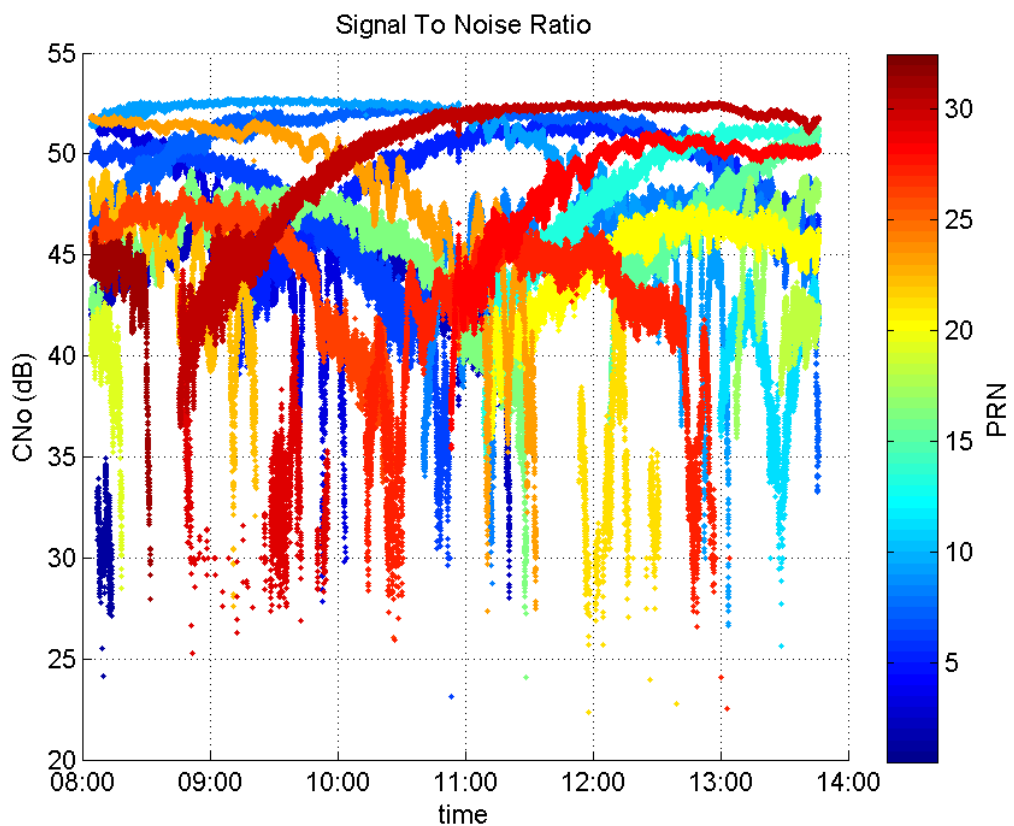
Number of Visible GPS Satellites 25
Number of Visible SBAS Satellites 2

signal quality and status

PRN Noise and Status:



Signal To Noise Ratio:



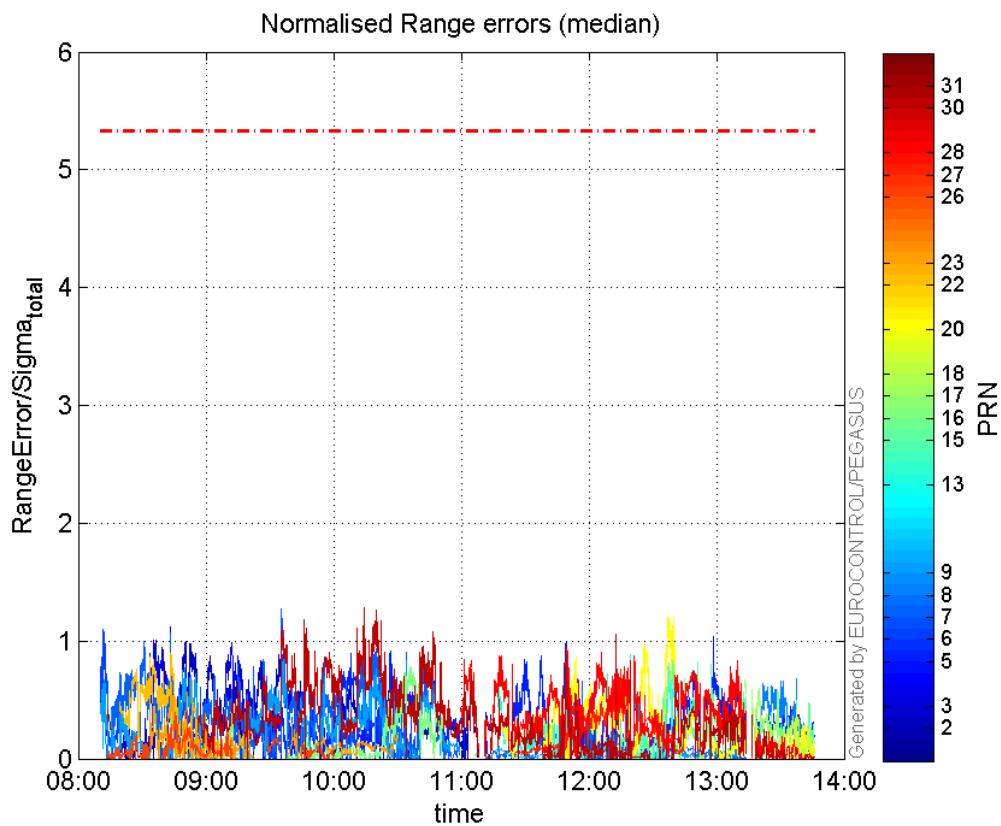
range errors

Number of Overbounding Norm Errors 0

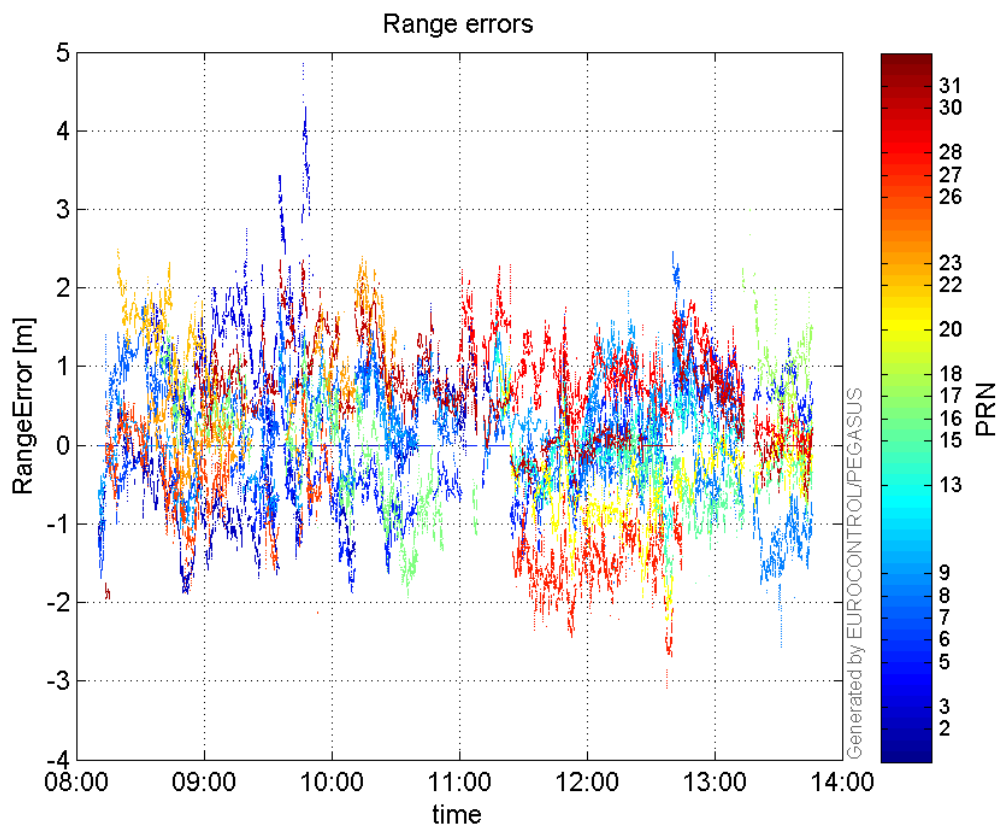
Max Norm Errors :

GPS Week	GPS Second	PRN	Norm Error	Range Error	Sigma
1936	290994	2	0.99887	-1.84355	1.84563
1936	290554	3	1.11652	2.15351	1.92878
1936	305910	5	1.03891	1.97528	1.9013
1936	288658	6	1.09987	-1.63739	1.48871
1936	293695	7	1.27485	1.81742	1.4256
1936	308268	8	0.680033	-1.94253	2.85652
1936	296506	9	0.96095	1.4872	1.54763
1936	303573	13	0.887289	-1.37865	1.55378
1936	304769	15	0.914671	-1.97005	2.15383
1936	297334	16	0.783218	-1.93857	2.47513
1936	306795	17	0.669286	2.24697	3.35727
1936	308200	18	0.310097	0.889321	2.86788
1936	304649	20	1.20886	-2.21779	1.83461
1936	290570	22	0.890001	2.24316	2.5204
1936	291186	23	0.670201	-1.06184	1.58436
1936	291058	26	0.400161	-1.88117	4.70102
1936	303280	27	0.761705	-2.21885	2.91301
1936	301770	28	0.952563	1.63712	1.71865
1936	296029	30	1.28463	2.04855	1.59466
1936	288786	31	0.413289	-1.88413	4.55887

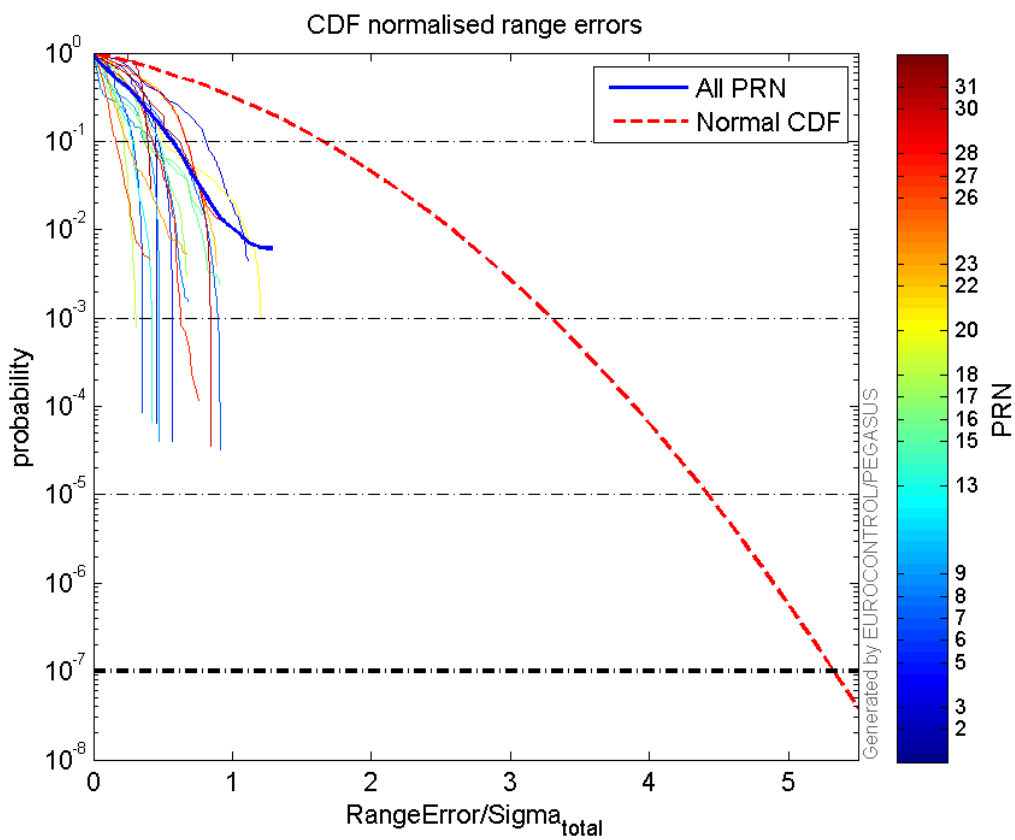
Normalised Range errors (median):



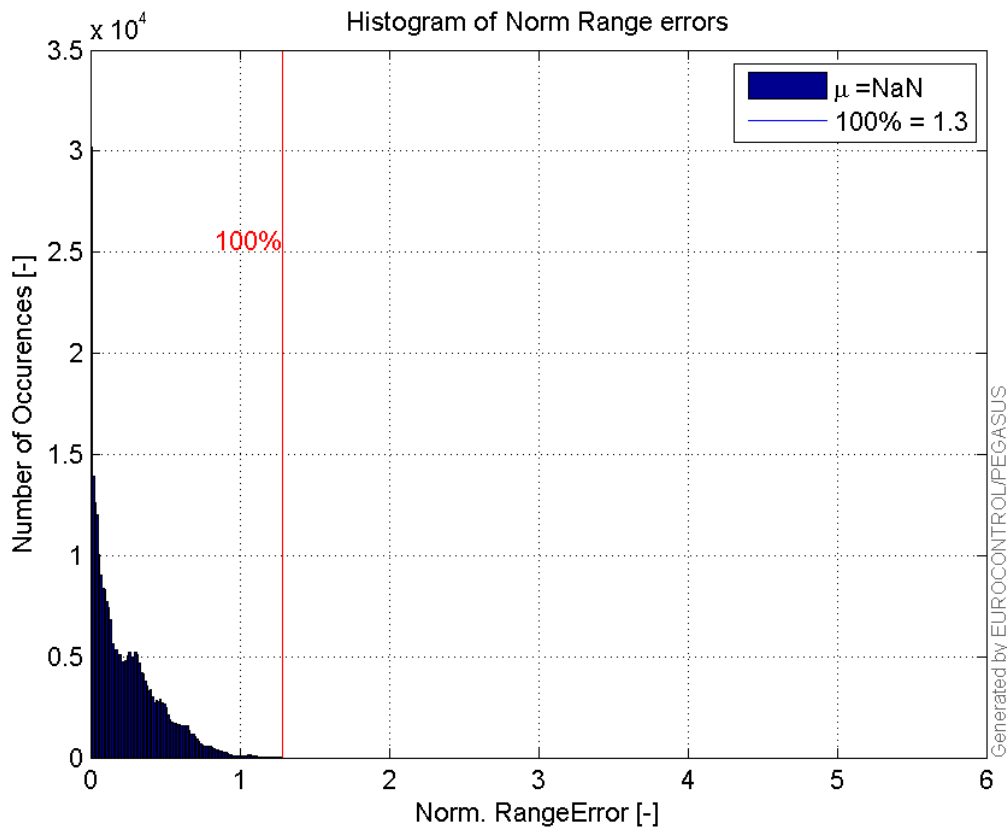
Range errors:



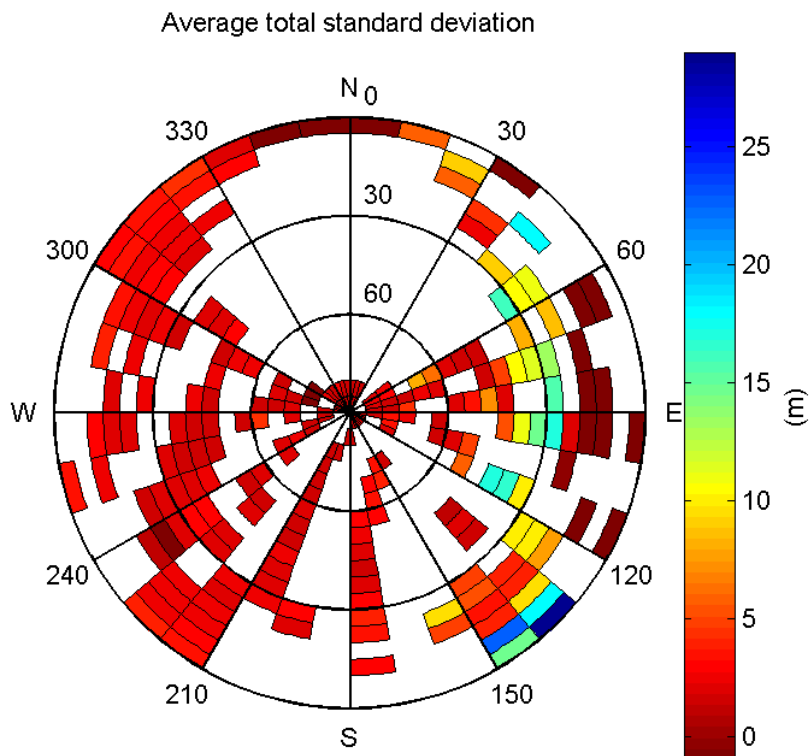
CDF normalised range errors:



Histogram of Norm Range errors:

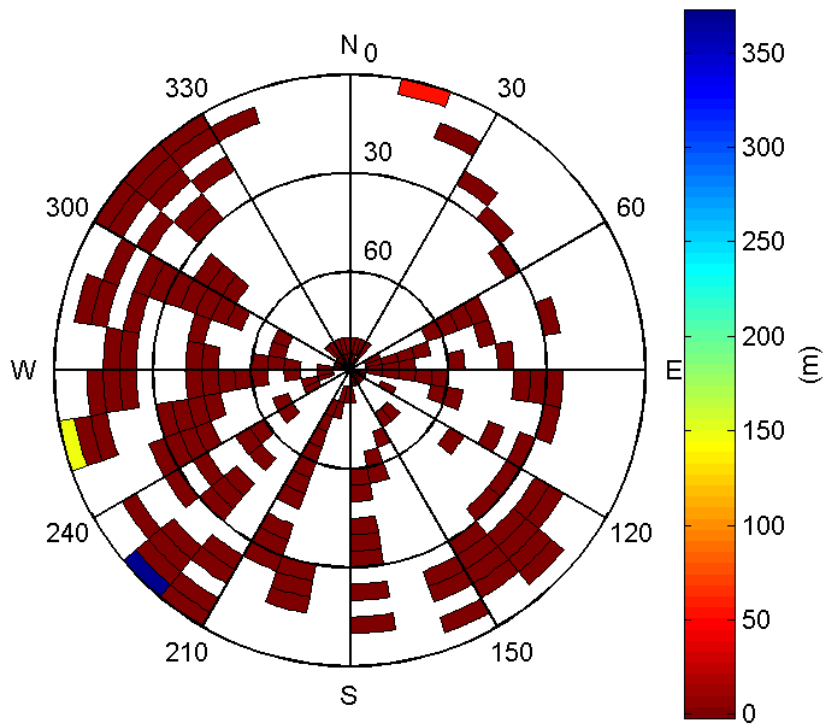


Sigma Sky Plot:



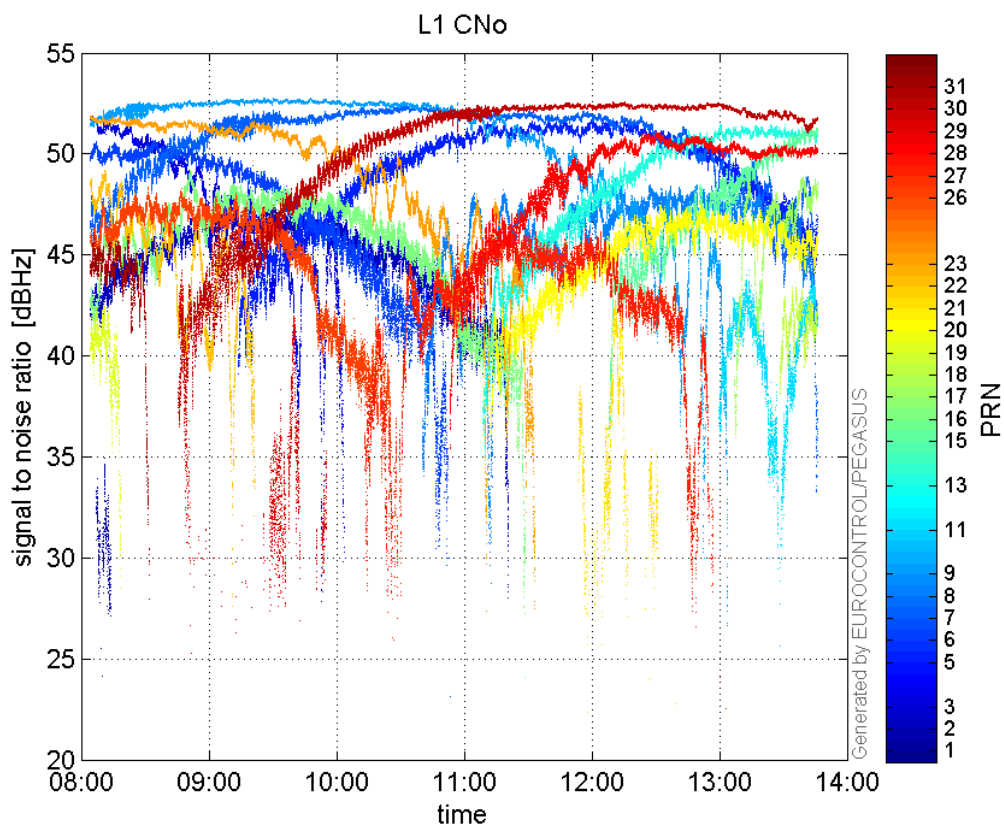
Norm Error Sky Plot:

Maximum Range Error

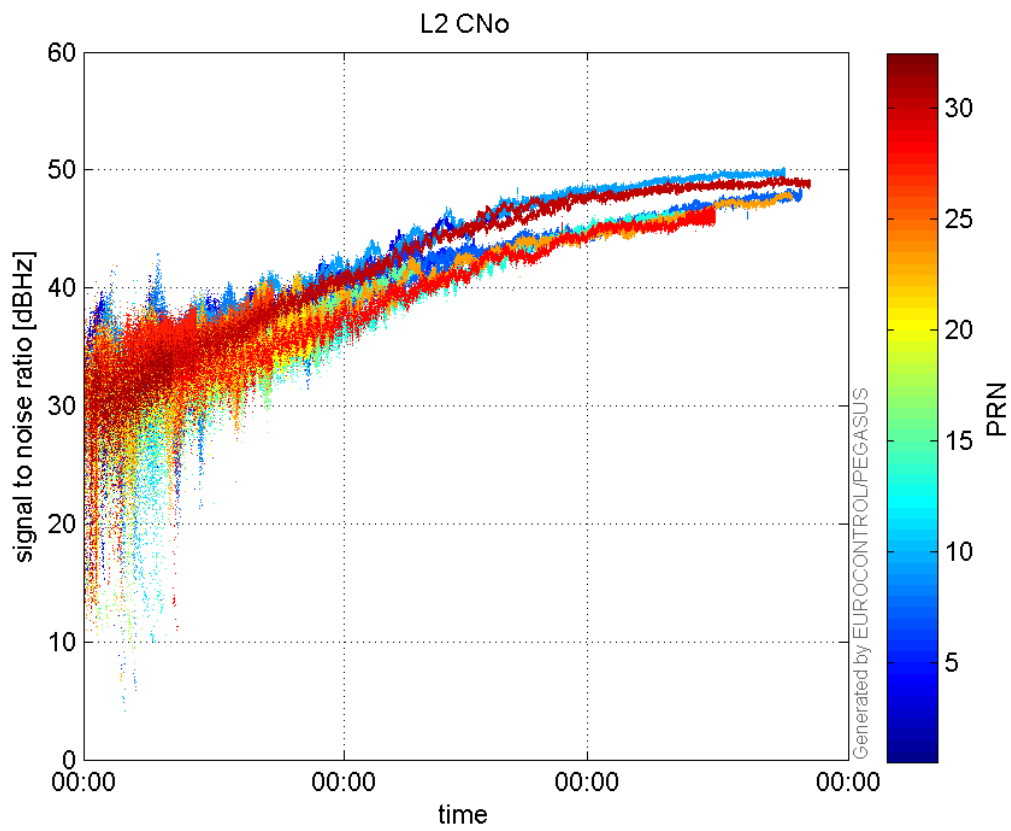


signal quality

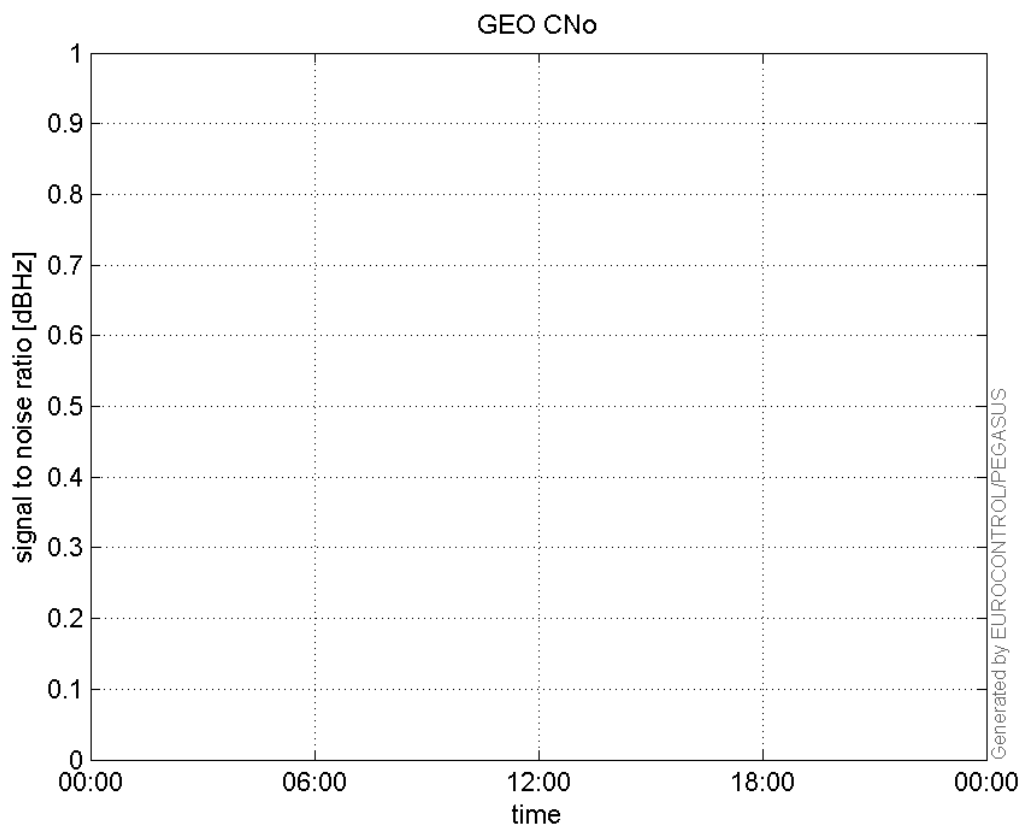
L1 CNo:



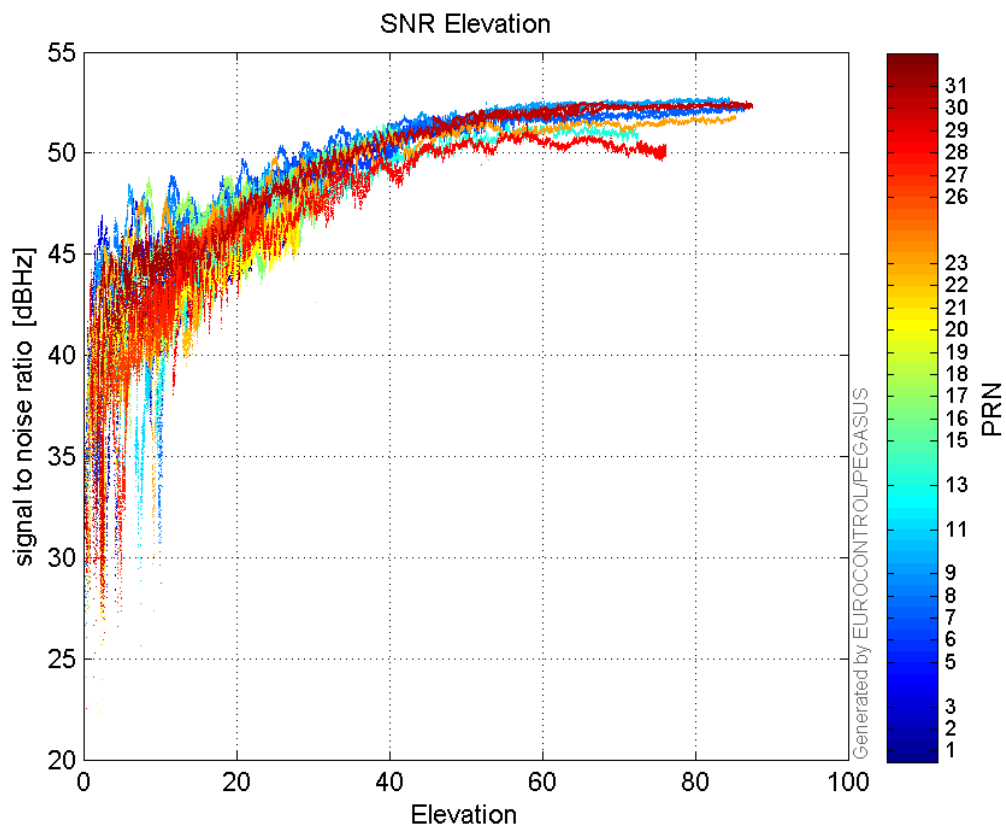
L2 CNo:



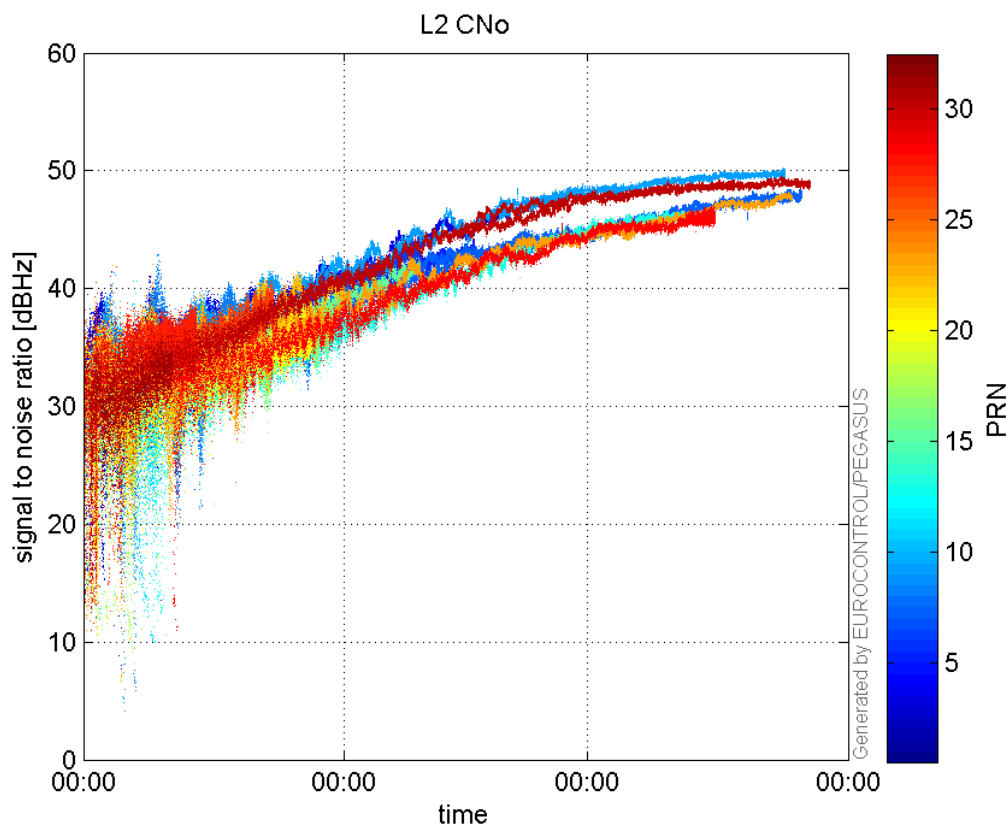
GEO CNo:



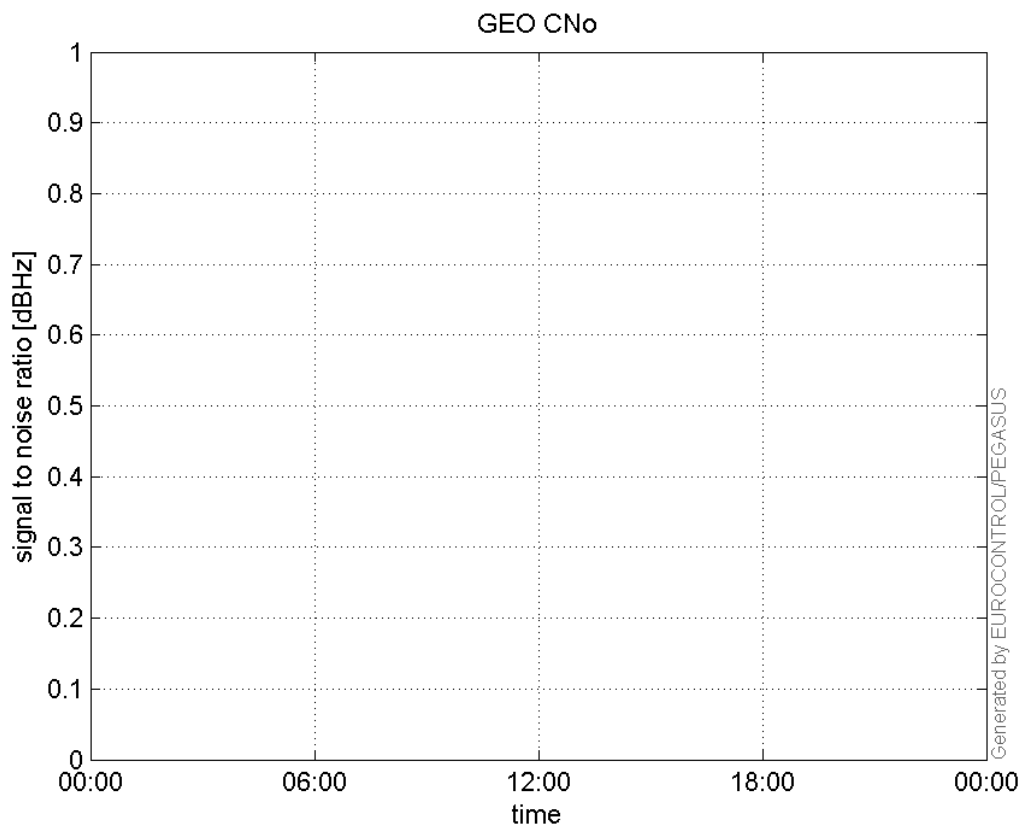
SNR Elevation:



L2 CNo:

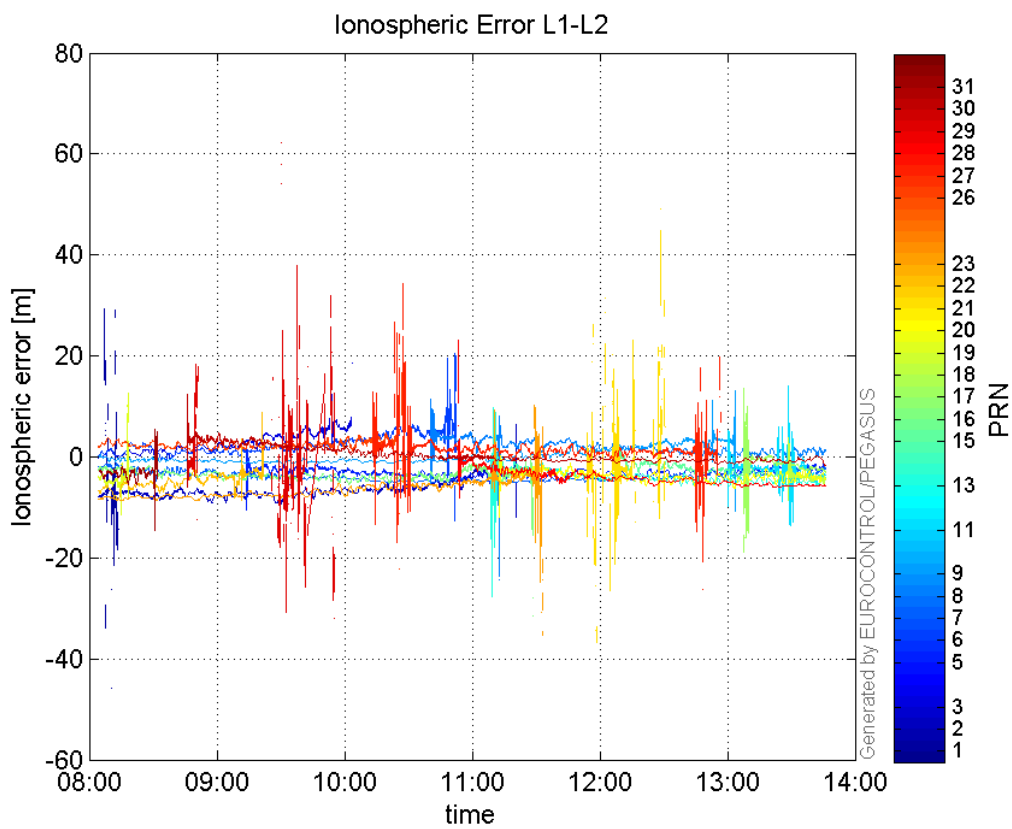


GEO CNo:



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_02_15EGNOS2Hz/02_Convertor/02_Convertor
output_prefix	system	D:/PegasusDateJob/job/2017_02_15EGNOS2Hz/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	234.0568
mi_numbers	results	0