

Global View

comment Konin V., Shyshkov F. InsideGNSS, Jan-Feb 2015,
P.50 - 54
program Pegasus
version 4.8.4
site Laboratory satellite systems
abbreviation NAU
country Ukraine
city Kiev
date 05/07/2016

SBAS Messages

start: 07:20:37.129 21.06.2016 (week: 1902 sec: 199237.129)
end: 12:26:43.129 21.06.2016 (week: 1902 sec: 217603.129)
duration: 05:06:06 ..

quality

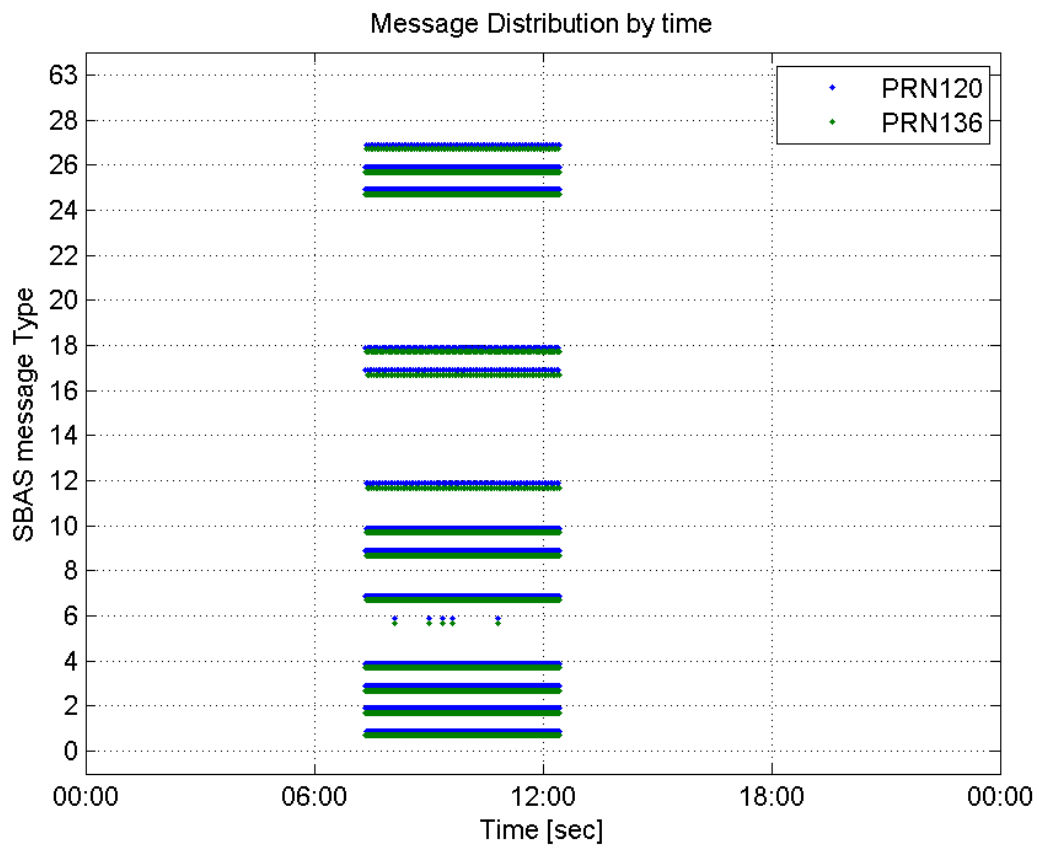
valid samples 36734
total samples 36734
number of SBAS PRNs 2

SBAS SIS Overview

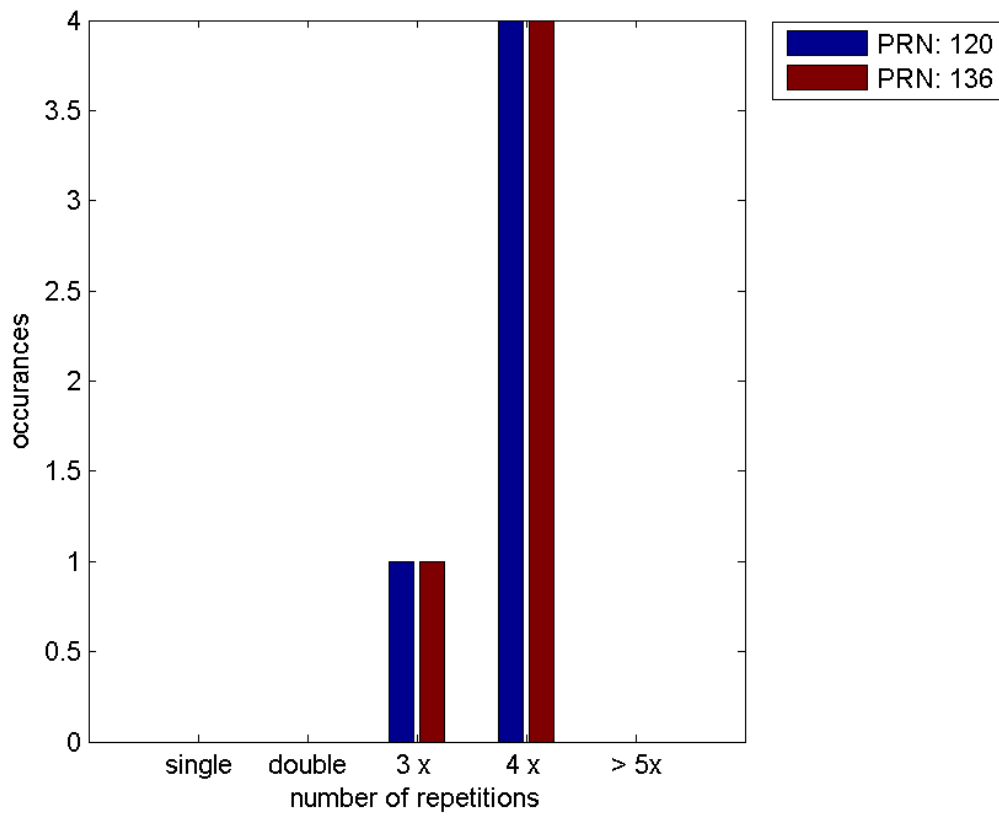
Message Type 6 repetitions :

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

Message Distribution by time:



Message Type 6 repetitions:



Broadcast SBAS Messages :

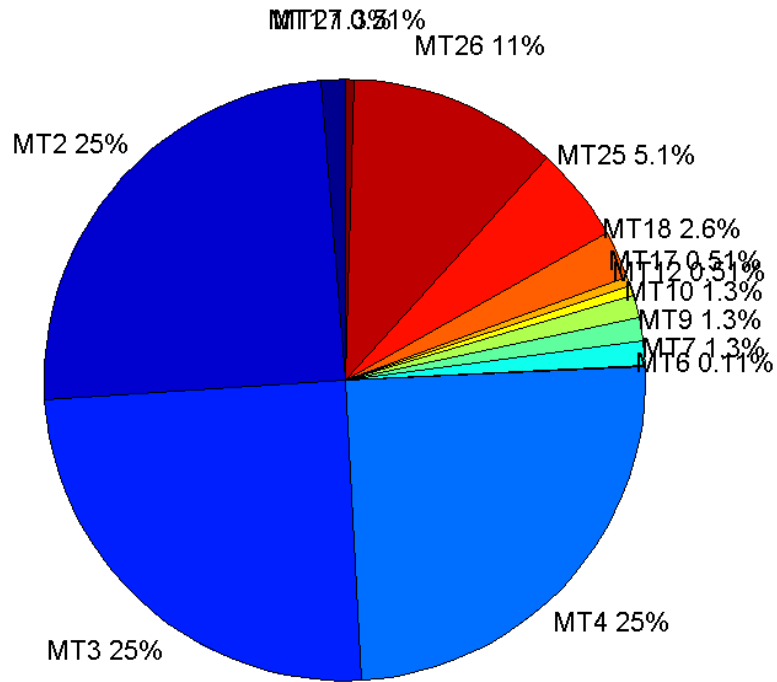
	number of messages	%
MT 0	0	0
MT 1	230	1.25225
MT 2	4558	24.8162
MT 3	4558	24.8162
MT 4	4558	24.8162
MT 5	0	0
MT 6	20	0.108891
MT 7	230	1.25225
MT 9	230	1.25225
MT 10	230	1.25225
MT 12	94	0.511787
MT 17	94	0.511787
MT 18	469	2.55349
MT 24	0	0
MT 25	939	5.11243
MT 26	2063	11.2321
MT 27	94	0.511787
MT 28	0	0
MT 62	0	0
MT 63	0	0
Total	18367	100

Update intervals :

	Minimum [s]	Maximum [s]	Mean value	Exceed Max update	Exceed NPA timeout	Exceed PA timeout
MT 0	--	--	--	--	--	--
MT 1	76	86	79.7686	0	0	0
MT 2	4	8	4.02962	5	0	0
MT 3	4	8	4.02962	5	0	0
MT 4	4	8	4.02962	5	0	0
MT 5	--	--	--	--	--	--
MT 6	1	4303	513.895	4	4	4
MT 7	76	81	79.7686	0	0	0
MT 9	76	81	79.786	0	0	0
MT 10	76	81	79.7686	0	0	0
MT 12	188	201	195.882	93	0	0
MT 17	188	202	195.839	0	0	0
MT 18	4	165	38.985	0	0	0
MT 24	--	--	--	--	--	--
MT 25	1	57	19.5597	0	0	0
MT	4	32	8.89767	0	0	0

26						
MT 27	188	201	195.849	0	0	0
MT 28	--	--	--	--	--	--
MT 62	--	--	--	--	--	--
MT 63	--	--	--	--	--	--

Message Distribution PRN 120:



SBAS SIS Analysis

PRN 136

Broadcast SBAS Messages :

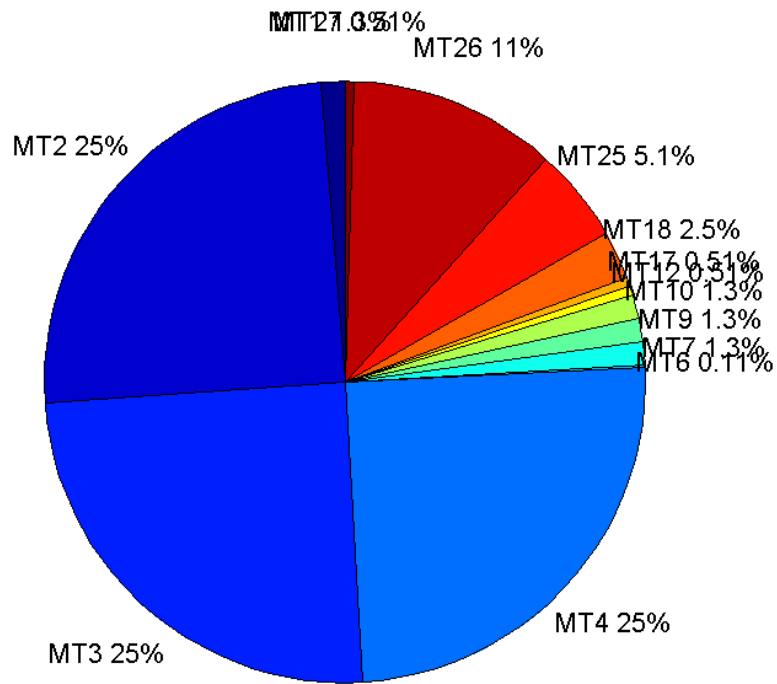
	number of messages	%
MT 0	0	0
MT 1	231	1.25769
MT 2	4564	24.8489
MT 3	4563	24.8435
MT 4	4563	24.8435
MT 5	0	0
MT 6	20	0.108891
MT 7	230	1.25225
MT 9	230	1.25225
MT 10	230	1.25225

MT 12	93	0.506343
MT 17	93	0.506343
MT 18	465	2.53171
MT 24	0	0
MT 25	937	5.10154
MT 26	2055	11.1885
MT 27	93	0.506343
MT 28	0	0
MT 62	0	0
MT 63	0	0
Total	18367	100

Update intervals :

	Minimum [s]	Maximum [s]	Mean value	Exceed Max update	Exceed NPA timeout	Exceed PA timeout
MT 0	--	--	--	--	--	--
MT 1	76	83	79.6609	0	0	0
MT 2	4	8	4.02455	5	0	0
MT 3	4	8	4.02477	5	0	0
MT 4	4	8	4.02477	5	0	0
MT 5	--	--	--	--	--	--
MT 6	1	4303	513.895	4	4	4
MT 7	74	81	79.8166	0	0	0
MT 9	76	81	79.7991	0	0	0
MT 10	76	86	79.8166	0	0	0
MT 12	188	201	196.891	92	0	0
MT 17	188	206	196.891	0	0	0
MT 18	4	163	39.1164	0	0	0
MT 24	--	--	--	--	--	--
MT 25	1	52	19.5962	0	0	0
MT 26	4	37	8.94158	0	0	0
MT 27	189	203	196.891	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/2016_06_21_EGNOS/01_User/01_User
Outputfile	System	D:/PegasusDateJob/job/2016_06_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

Position Domain

start: 07:20:38 21.06.2016 (week: 1902 sec: 199238)
end: 12:26:44 21.06.2016 (week: 1902 sec: 217604)
duration: 05:06:07 ..

quality

valid samples 18005
total samples 18366

Event tables

Position discontinuity events type no (0)
APV-I discontinuity events type all
APV-35m discontinuity events type all
LPV-200 discontinuity events type all
CAT-I discontinuity events type nothing

extremes :

	Epoch	HPE	HPL	HPE/HPL	VPE	VPL	VPE/VPL
max normHor	208711	1.71966	8.75709	0.196374	1.36048	14.2802	0.0952705
max normVer	208076	1.74283	11.4383	0.152368	2.2834	16.6268	0.137333
max HPE	216376	3.04976	43.9837	0.0693384	2.79676	44.3166	0.0631087
max VPE	216376	3.04976	43.9837	0.0693384	2.79676	44.3166	0.0631087
min HPL	203166	0.693929	8.17714	0.0848621	0.0567651	13.3526	0.00425124
min VPL	205953	0.566134	8.52396	0.0664168	1.05312	12.0377	0.0874853

APV-I discontinuity events :

#	Epoch	duration	stable period
1	204136	66	4537
2	216241	196	2777
3	216777	414	340

APV-35m discontinuity events :

#	Epoch	duration	stable period
1	204136	66	4537
2	215602	55	2138
3	216241	196	584
4	216777	414	340

LPV-200 discontinuity events :

#	Epoch	duration	stable period
1	204136	66	4537
2	215602	55	2138
3	216241	196	584
4	216777	414	340

First Glance analysis

Duration 18367
Number of Samples 18366
Number of invalid sample 361
Number of no position solution samples 0
Number of missing sample 1
Logging Loss 0.0054445
Processing Loss 1.9656
Number of Misleading Information 0

Data gaps 1

Discontinuities 1

Number of Samples :

Valid	APV-1	LPV-200	CAT-1	APV-35m
18005	16935	16880	0	16880

Accuracy statistics :

	Valid	APV-1	LPV-200	CAT-1	APV-35m
HPE 95%	1.83243	1.62844	1.62933	NaN	1.62933
HPEscale 95%	NaN	4.96861	4.97185	NaN	4.97185
VPE 95%	1.44046	1.38061	1.38324	NaN	1.38324
VPEscale 95%	NaN	4.55383	3.18965	NaN	3.18965

Availability :

	Valid	APV-1	LPV-200	CAT-1	APV-35m
Signal in Space	1	0.940572	0.937517	0	0.937517
measurements	0.980344	0.922084	0.91909	0	0.91909
Operational	0.980291	0.922034	0.91904	0	0.91904

Discontinuity events :

	Valid	APV-1	LPV-200	CAT-1	APV-35m
All	--	3	4	--	4
Long	--	3	4	--	4
Independent	--	3	4	--	4
P(disc.)	NaN	0.00265722	0.0035545	NaN	0.0035545
P(slide)	NaN	0.00265722	0.0035545	NaN	0.0035545

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

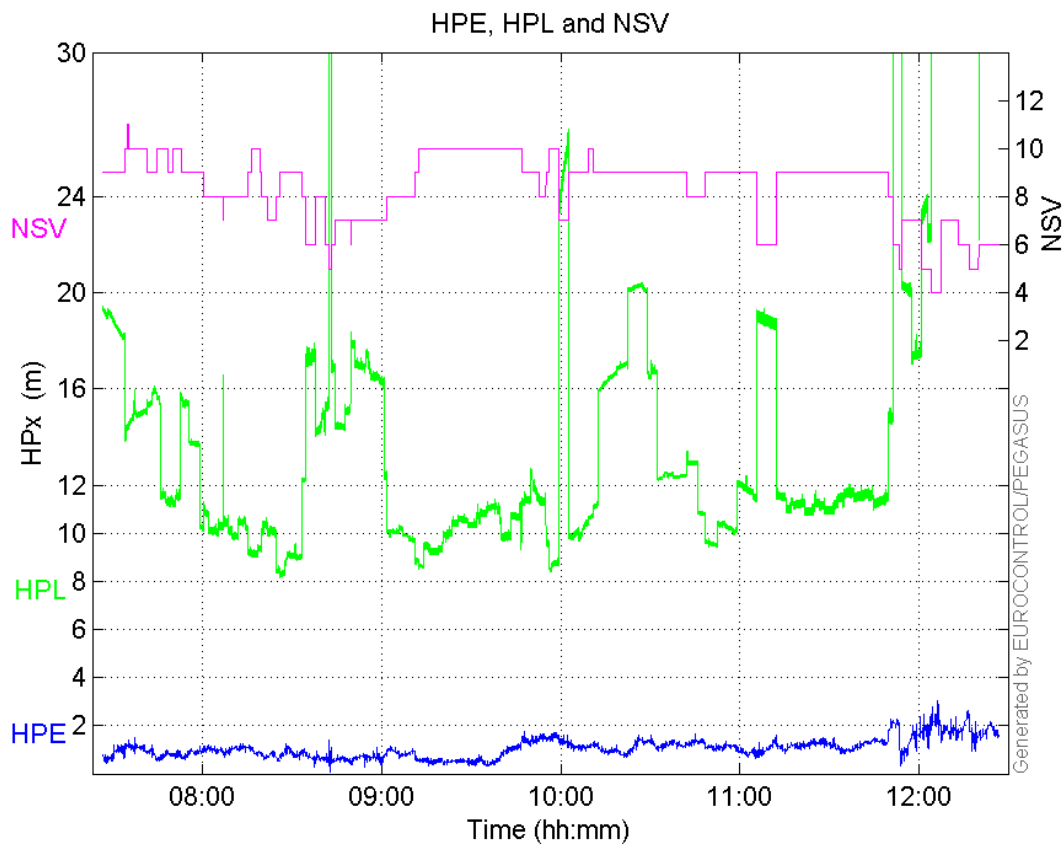
Performance Summary :

	Valid	APV-1	LPV-200	CAT-1	APV-35m
Samples	18005	16935	16880	0	16880
SIS Availability	1	0.940572	0.937517	0	0.937517
Local Availability	0.980344	0.922084	0.91909	0	0.91909
Operational Availability	0.980291	0.922034	0.91904	0	0.91904
HPE 95%	1.83243	1.62844	1.62933	NaN	1.62933
HPEscale 95%	NaN	4.96861	4.97185	NaN	4.97185
VPE 95%	1.44046	1.38061	1.38324	NaN	1.38324
VPEscale 95%	NaN	4.55383	3.18965	NaN	3.18965
All Discontinuity Events	--	3	4	--	4
Long Discontinuity Events	--	3	4	--	4
Independent Discontinuity Events	--	3	4	--	4

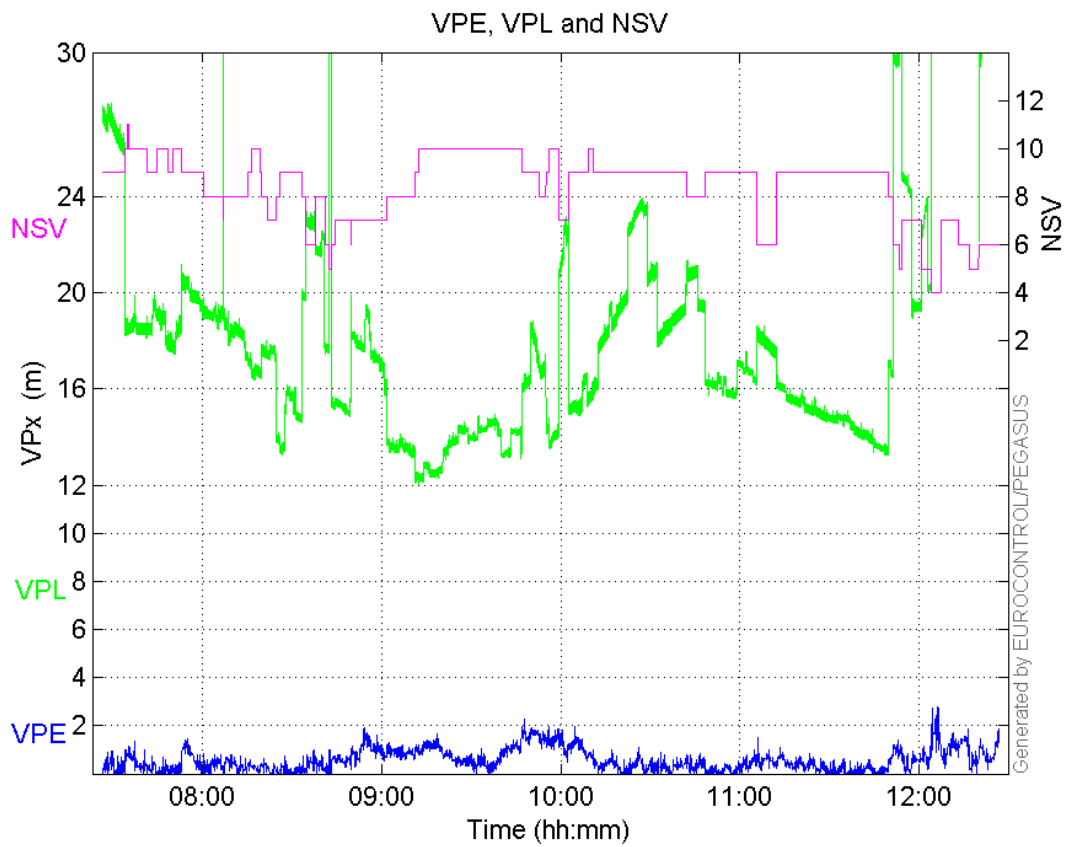
P(discontinuity)	NaN	0.00265722	0.0035545	NaN	0.0035545
P(sliding window)	NaN	0.00265722	0.0035545	NaN	0.0035545
All Integrity Events	0	0	0	0	0
Horizontal Integrity Events	0	0	0	0	0
Vertical Integrity Events	0	0	0	0	0

Time Series

HPE, HPL and NSV:

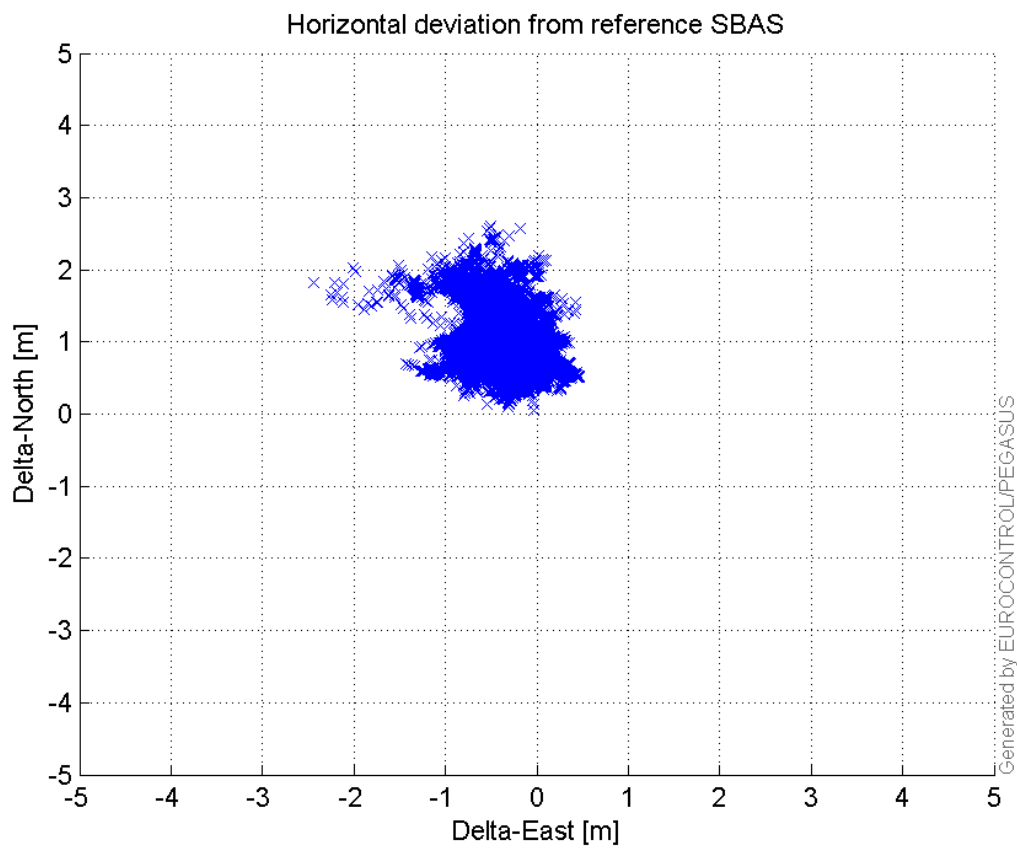


VPE, VPL and NSV:



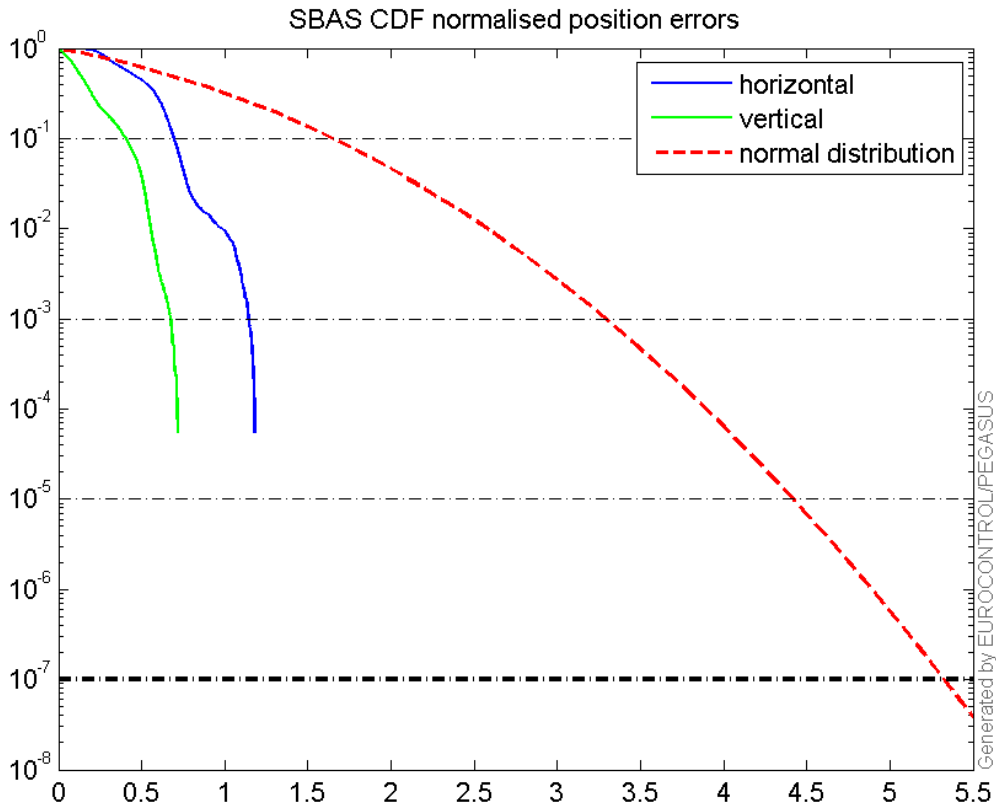
Horizontal deviation

Horizontal deviation from reference SBAS:



CDF position

SBAS CDF position domain:



Statistics

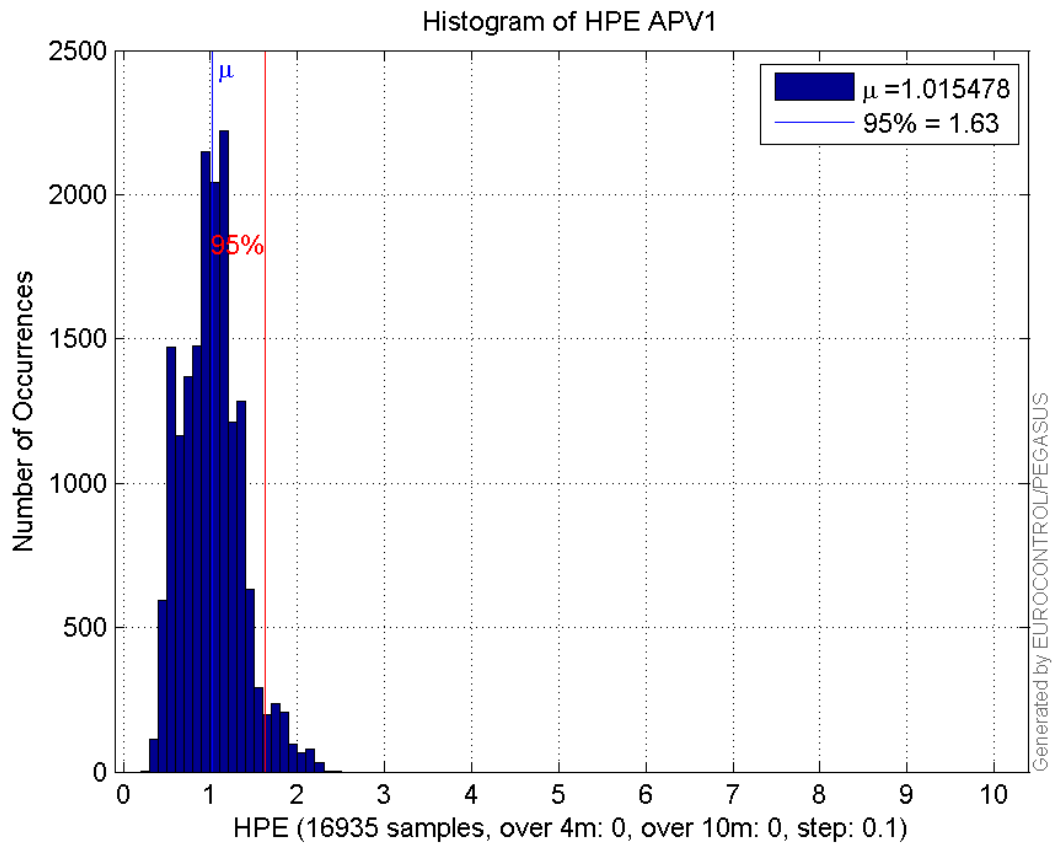
number	16935
sum	17197.114
sum2	19429.764
prctile95	1.6284395
prctile99	2.0186937
number	16935
sum	9293.987
sum2	8068.6618
prctile95	1.3806066
prctile99	1.6895229
number	16935
sum	231646.85
sum2	3668173.1
prctile95	22.856325
prctile99	37.279305
number	16935
sum	301033.76
sum2	5649695.5
prctile95	26.569775
prctile99	33.409375
number	16935
sum	1354.9767
sum2	123.71098

prctile95 0.12421525
prctile99 0.1665599
number 16935
sum 552.52473
sum2 30.414027
prctile95 0.091076638
prctile99 0.10440924
number 16880
sum 17159.594
sum2 19401.722
prctile95 1.6293255
prctile99 2.0267172
number 16880
sum 9238.8257
sum2 8012.8935
prctile95 1.3832386
prctile99 1.6896668
number 16880
sum 229587.48
sum2 3591062.2
prctile95 22.3802
prctile99 37.13612
number 16880
sum 298960.42
sum2 5571534.9
prctile95 26.3243
prctile99 33.27889
number 16880
sum 1353.9754
sum2 123.69104
prctile95 0.12429637
prctile99 0.16657014
number 16880
sum 551.06124
sum2 30.374761
prctile95 0.091132814
prctile99 0.1044146

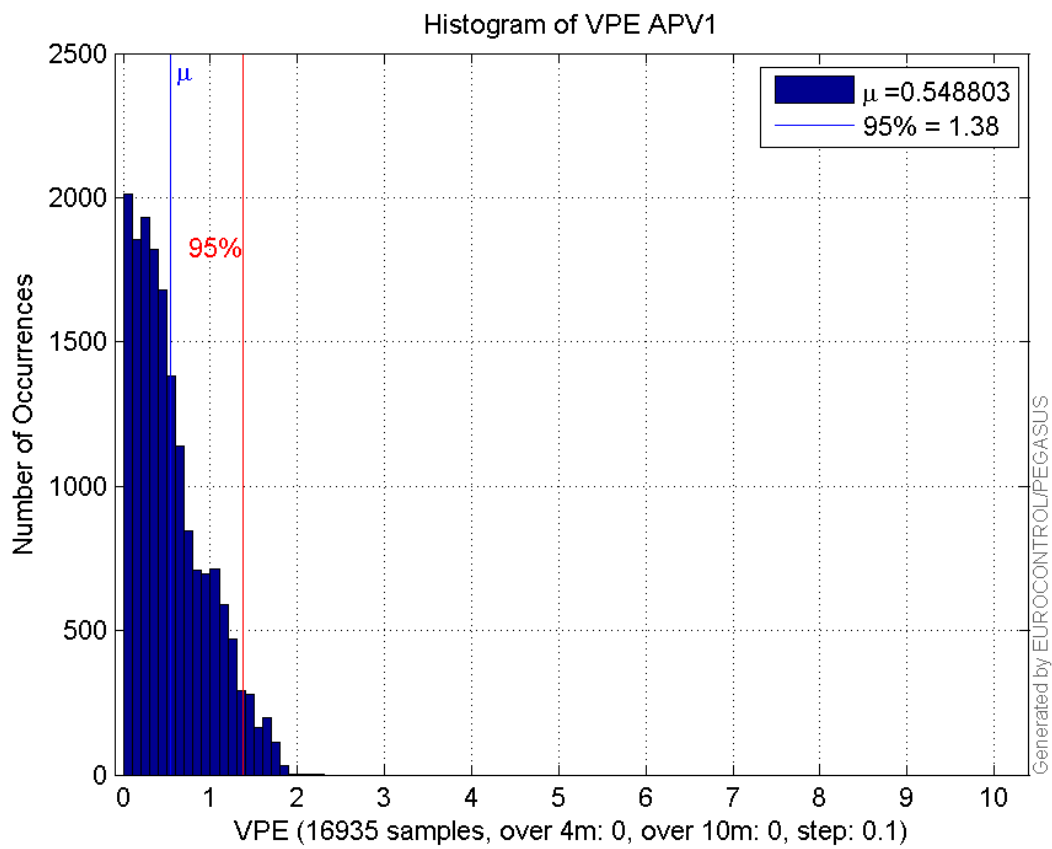
Error and XPL Statistics :

	Mean Value	Standard Deviation	50% Value	95% Value	99% Value	RMS Value
HPE	1.01548	0.340773	1.00643	1.62844	2.01869	1.07113
HPL	13.6786	5.43149	11.4876	22.8563	37.2793	14.7174
VPE	0.548803	0.418657	0.445692	1.38061	1.68952	0.690253
VPL	17.7758	4.19897	17.1135	26.5698	33.4094	18.265

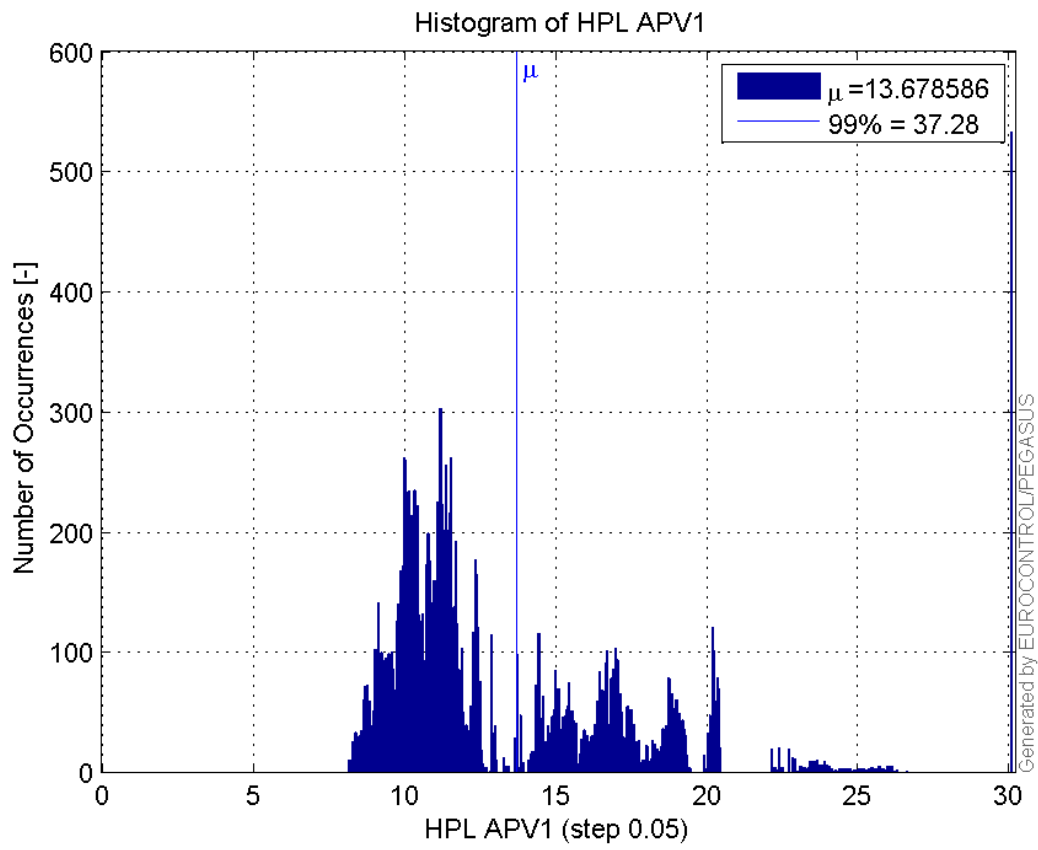
Histogram of HPE APV1:



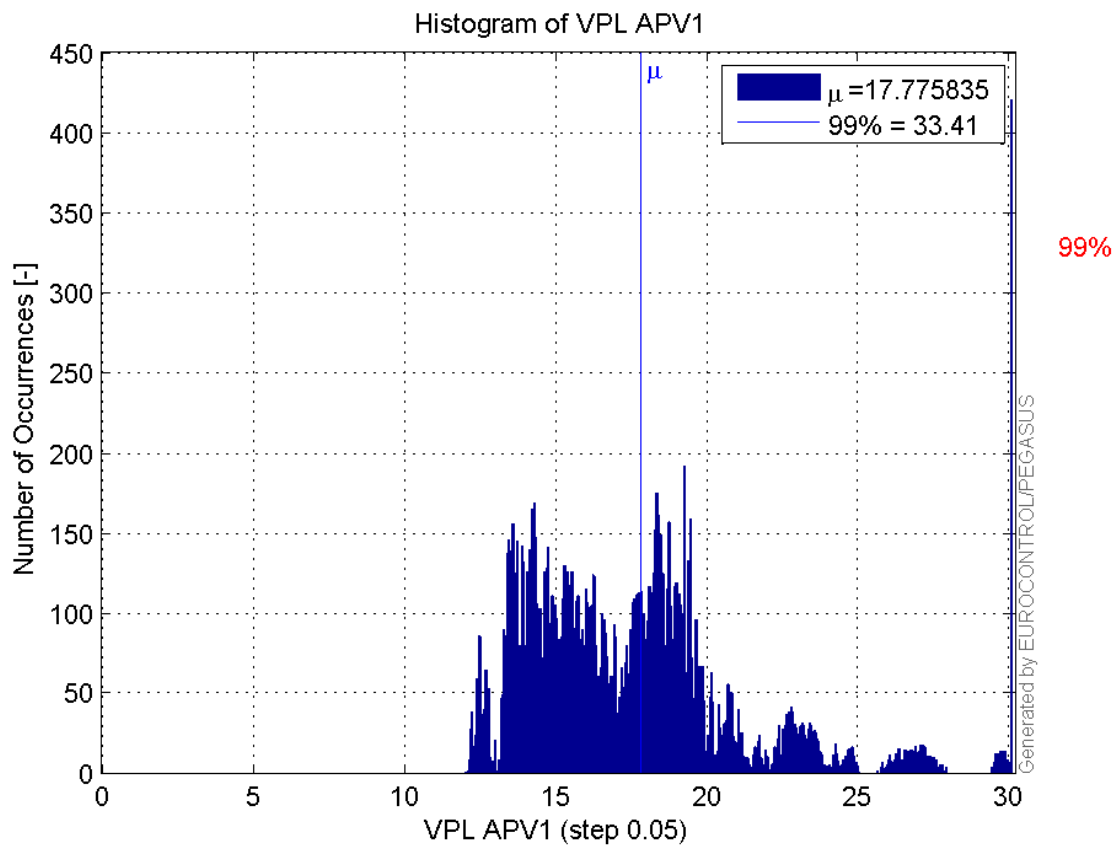
Histogram of VPE APV1:



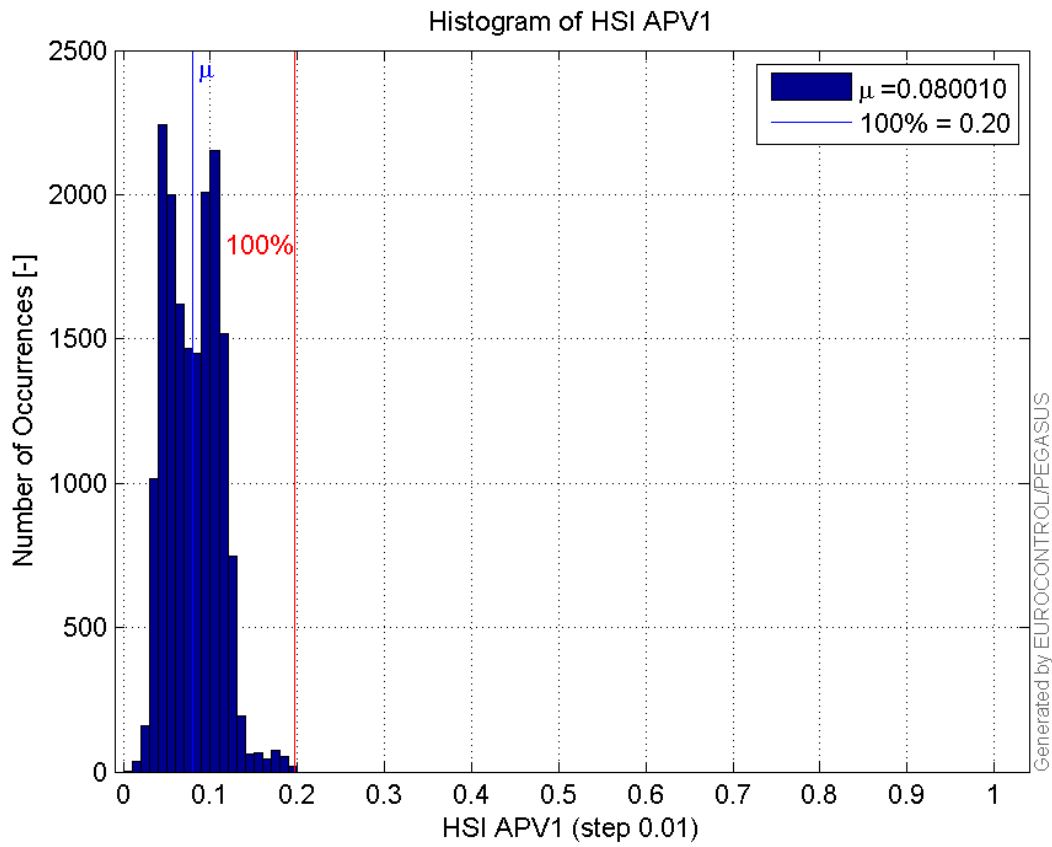
Histogram of HPL APV1:



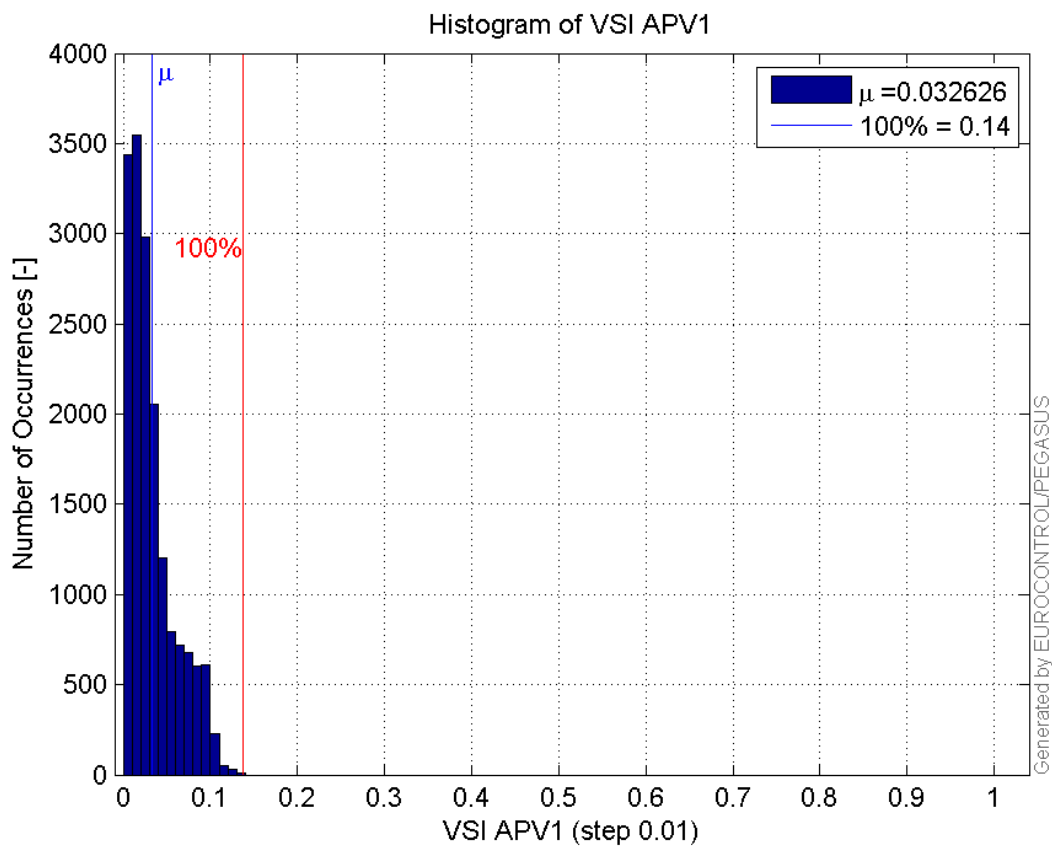
Histogram of VPL APV1:



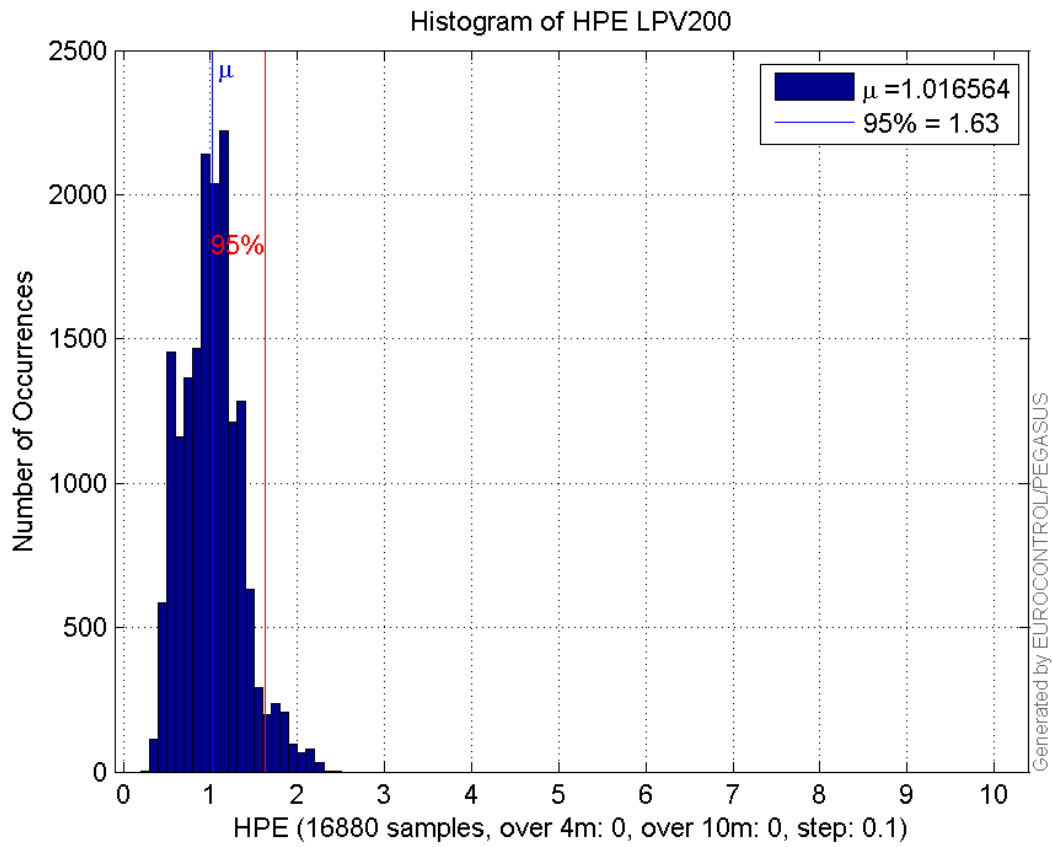
Histogram of HSI APV1:



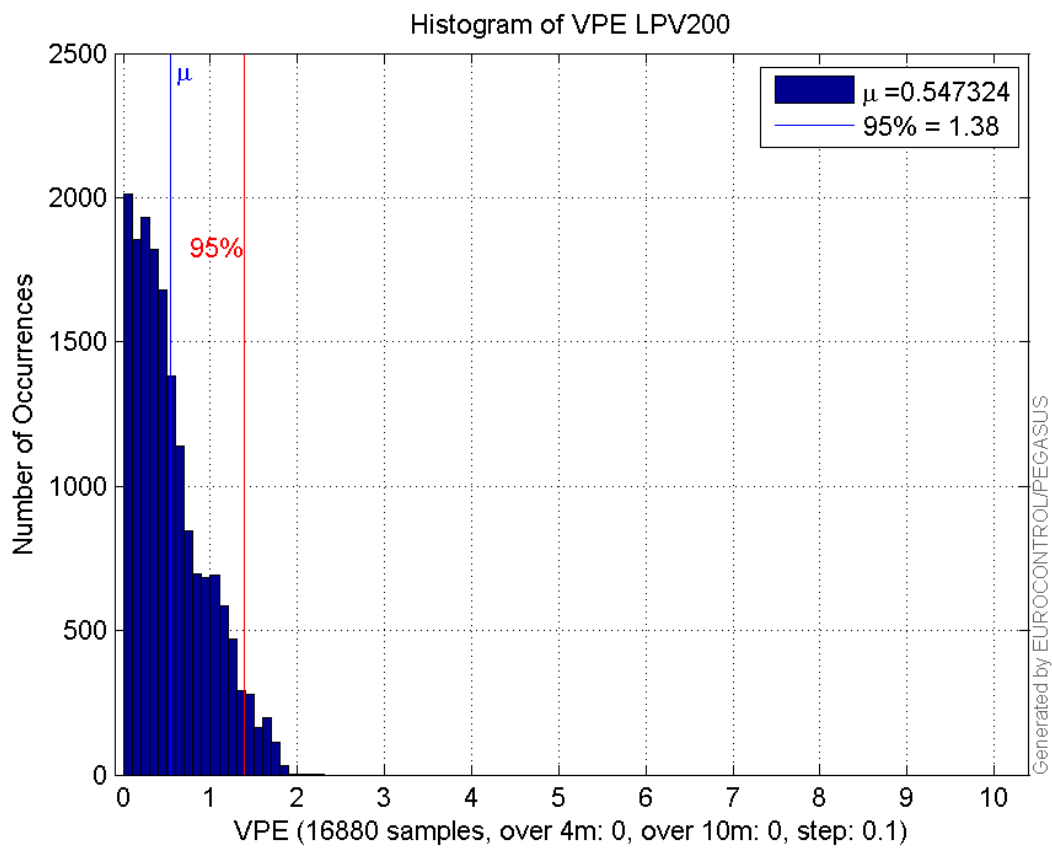
Histogram of VSI APV1:



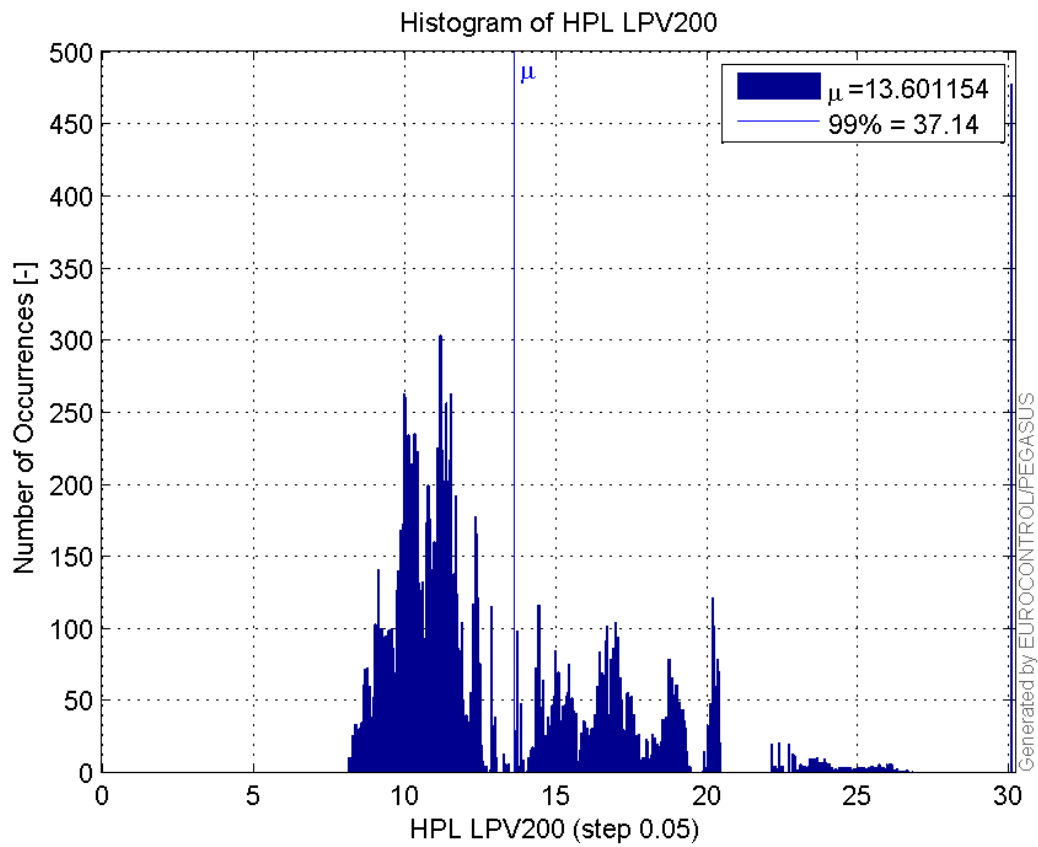
Histogram of HPE LPV200:



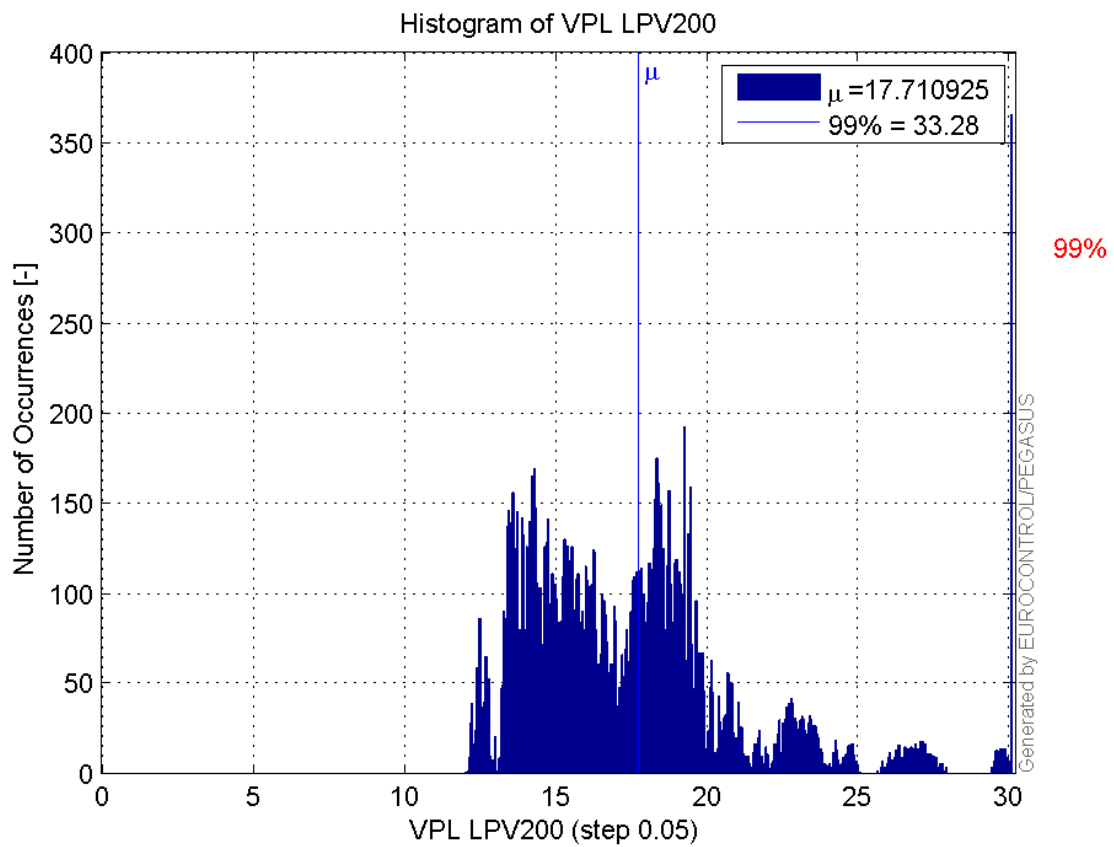
Histogram of VPE LPV200:



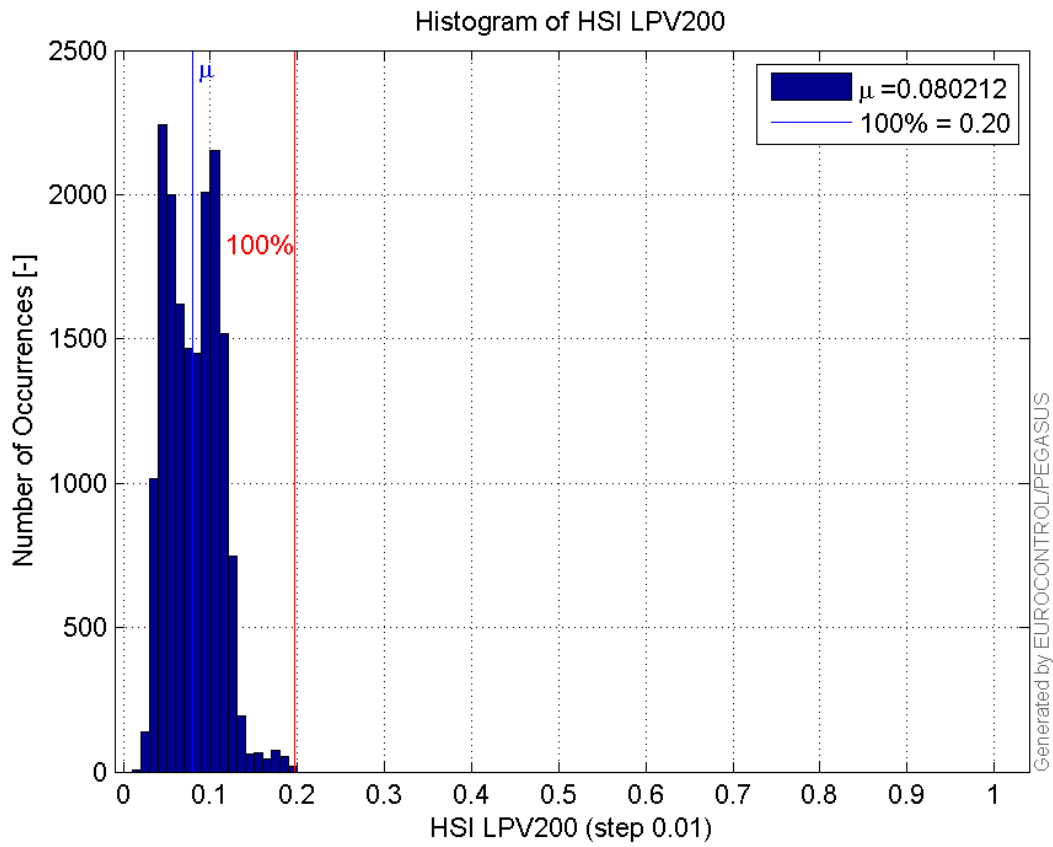
Histogram of HPL LPV200:



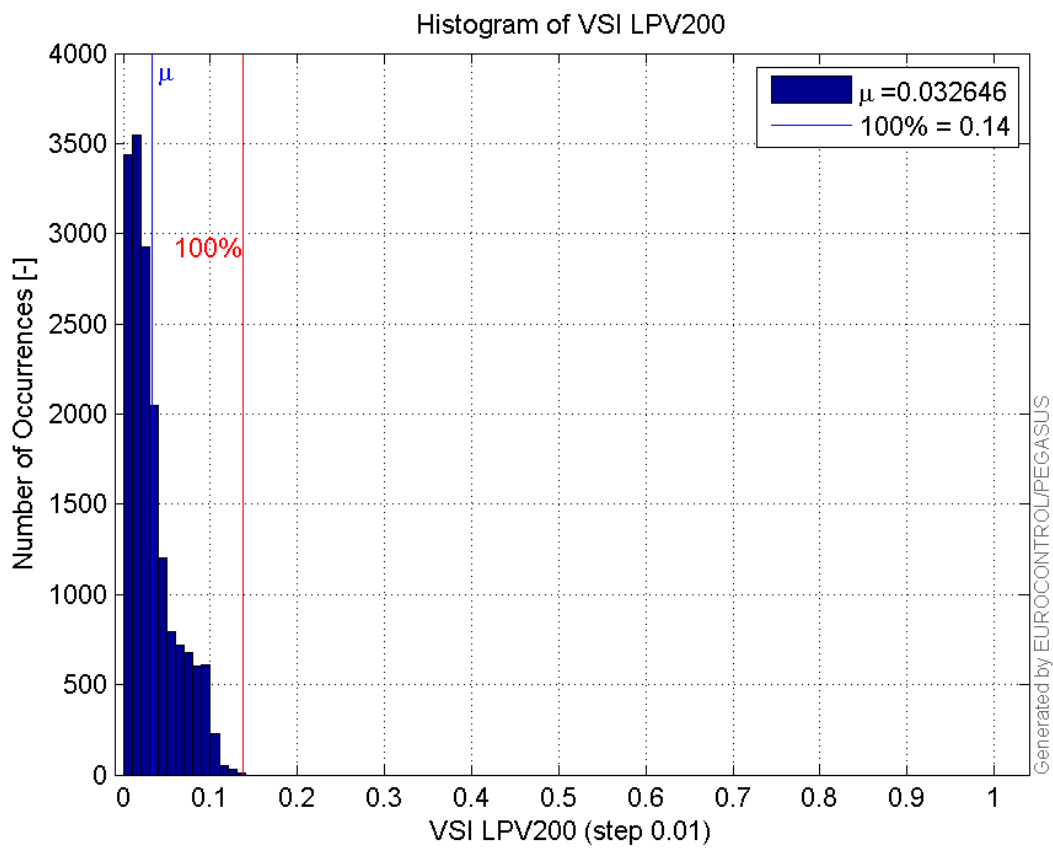
Histogram of VPL LPV200:



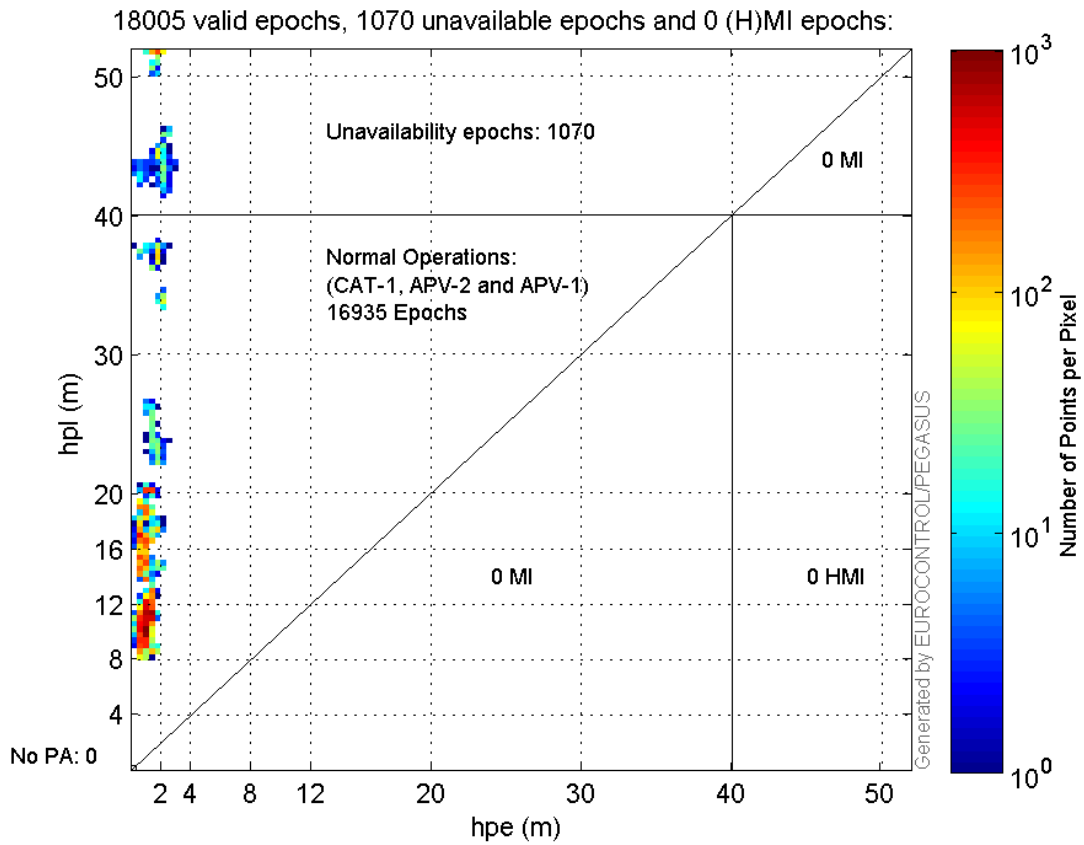
Histogram of HSI LPV200:



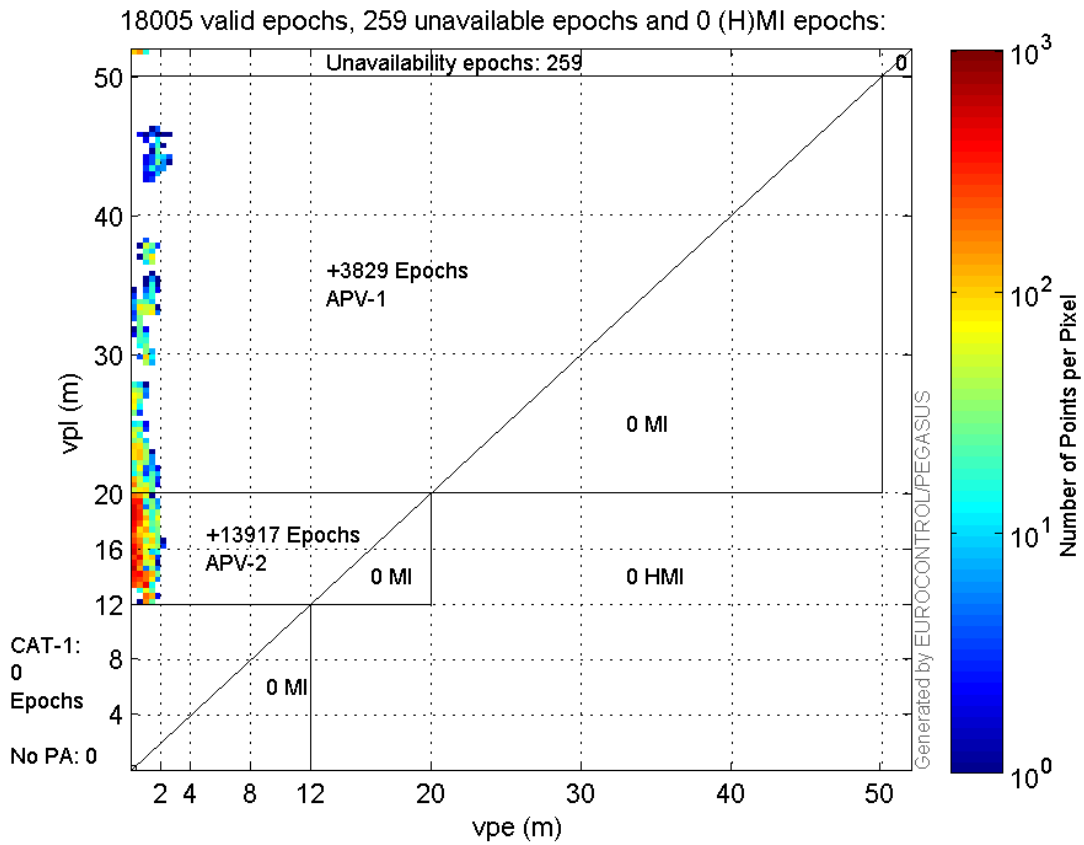
Histogram of VSI LPV200:



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/2016_06_21_EGNOS/02_Convertor/02_Convertor
output_prefix	system	D:/PegasusDateJob/job/2016_06_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	229.2045
mi_numbers	results	0

Range Domain

start: 07:20:38 21.06.2016 (week: 1902 sec: 199238)
end: 12:26:44 21.06.2016 (week: 1902 sec: 217604)
duration: 05:06:07 ..

quality

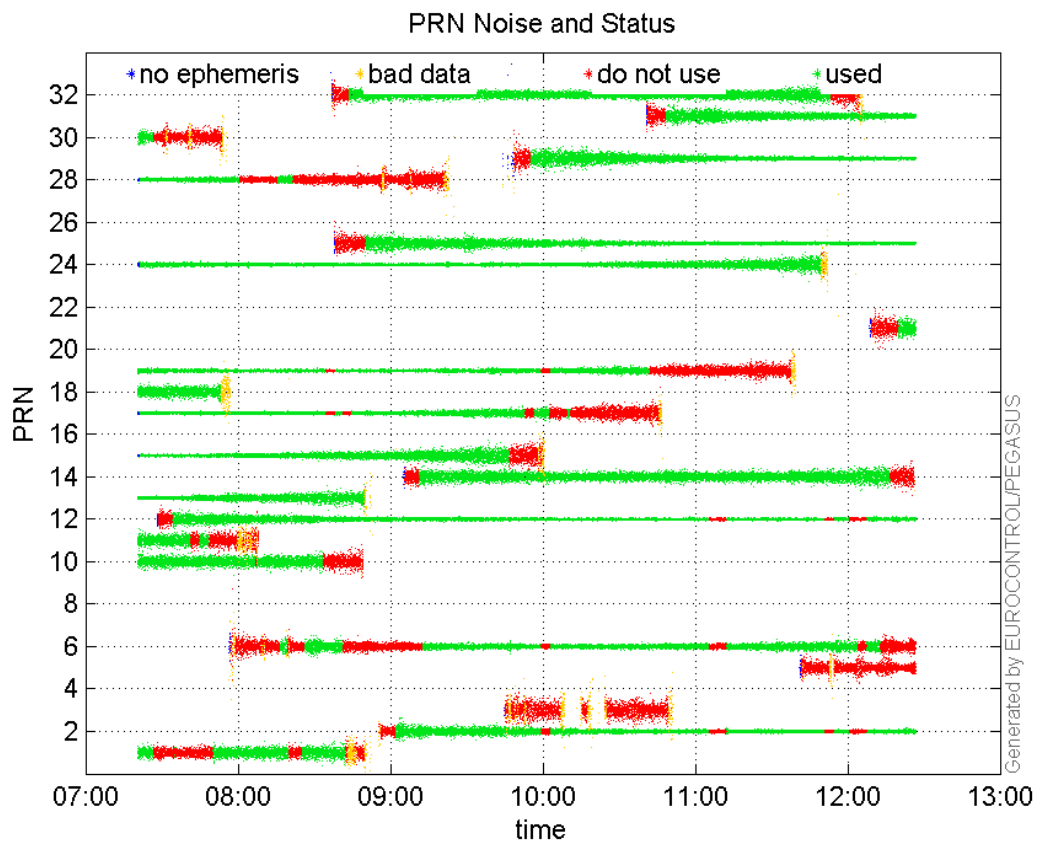
valid samples 18366
total samples 18366

PRN overview

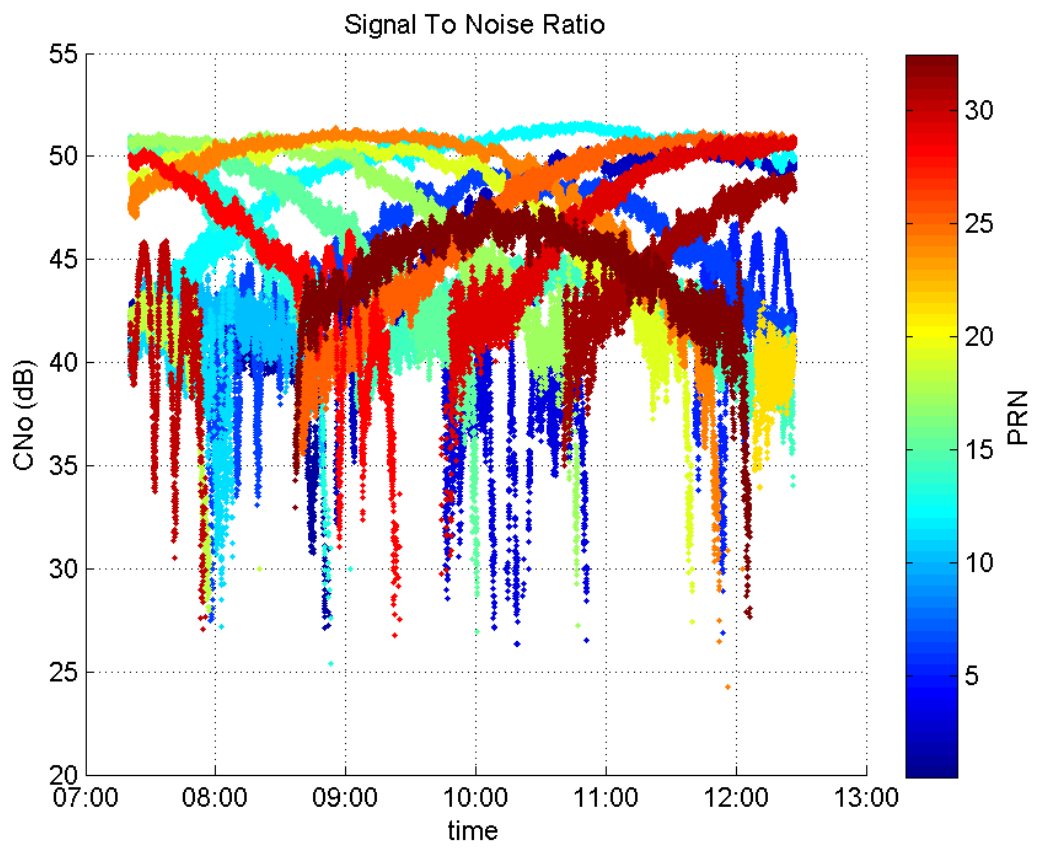
Number of Visible GPS Satellites 22
Number of Visible SBAS Satellites 2

signal quality and status

PRN Noise and Status:



Signal To Noise Ratio:



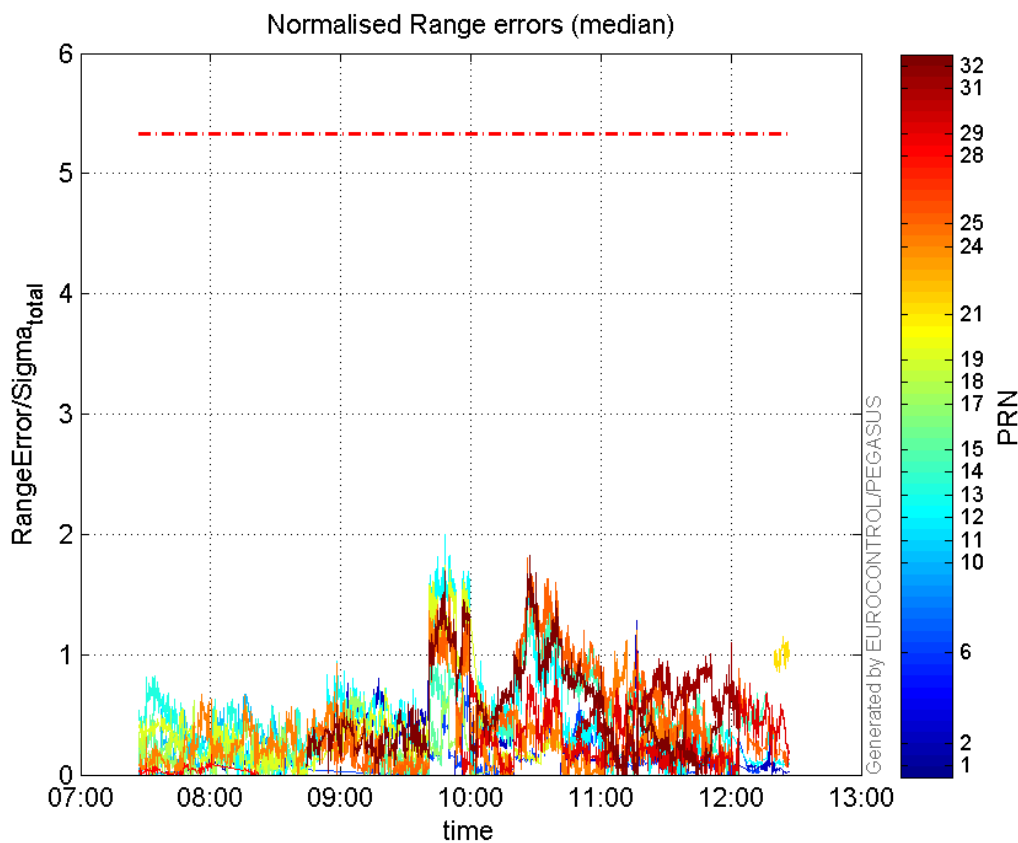
range errors

Number of Overbounding Norm Errors 0

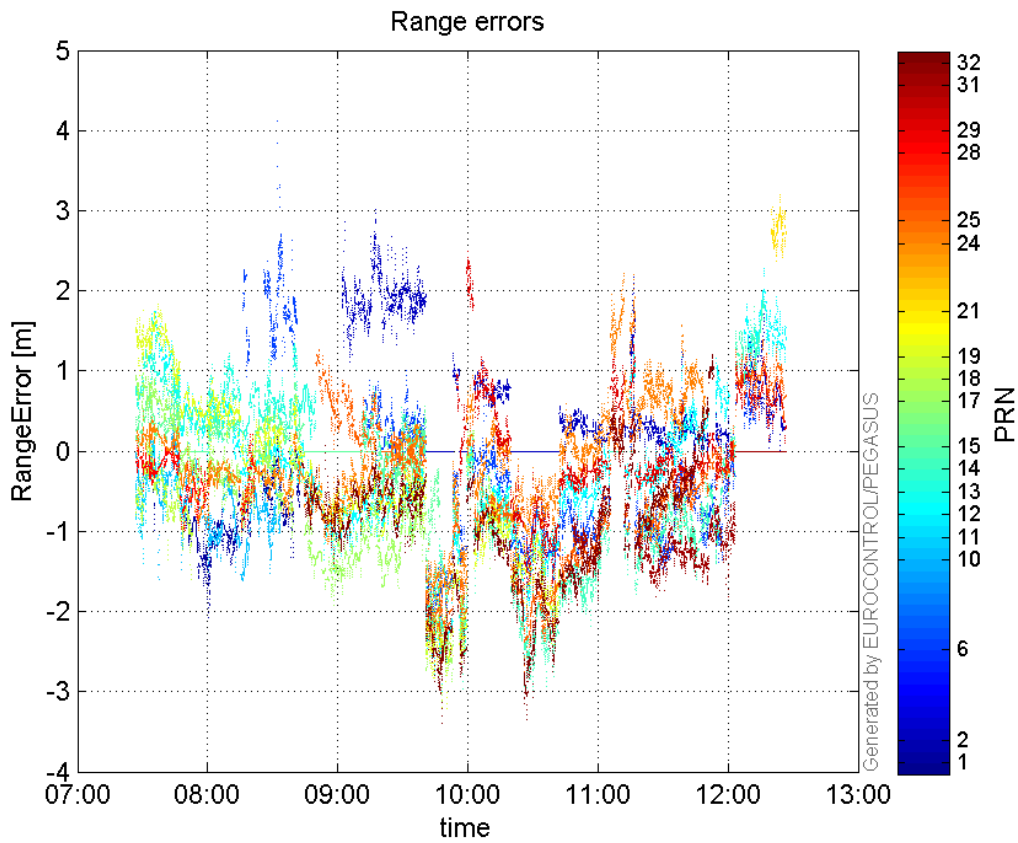
Max Norm Errors :

GPS Week	GPS Second	PRN	Norm Error	Range Error	Sigma
1902	203906	1	0.252185	-1.32918	5.27067
1902	213391	2	1.28241	2.16718	1.68993
1902	208711	6	0.924619	-1.93511	2.09287
1902	202570	10	0.673972	-1.61342	2.39389
1902	199818	11	0.0822468	-1.39734	16.9896
1902	208076	12	1.9937	-3.00234	1.50591
1902	200053	13	0.825658	1.35933	1.64636
1902	210607	14	1.51327	-2.98757	1.97424
1902	207650	15	0.686792	-1.77672	2.58698
1902	208076	17	0.756672	-3.21292	4.24612
1902	201132	18	0.620287	-1.5981	2.57639
1902	208076	19	1.74161	-3.19455	1.83425
1902	217428	21	1.15361	3.19803	2.7722
1902	208076	24	1.70082	-2.48112	1.45878
1902	210351	25	1.80049	-2.74467	1.5244
1902	201617	28	0.163791	-0.966473	5.90065
1902	211132	29	1.04986	-2.01765	1.92183
1902	216018	31	1.1015	-1.82118	1.65337
1902	210443	32	1.82206	-3.34295	1.83471

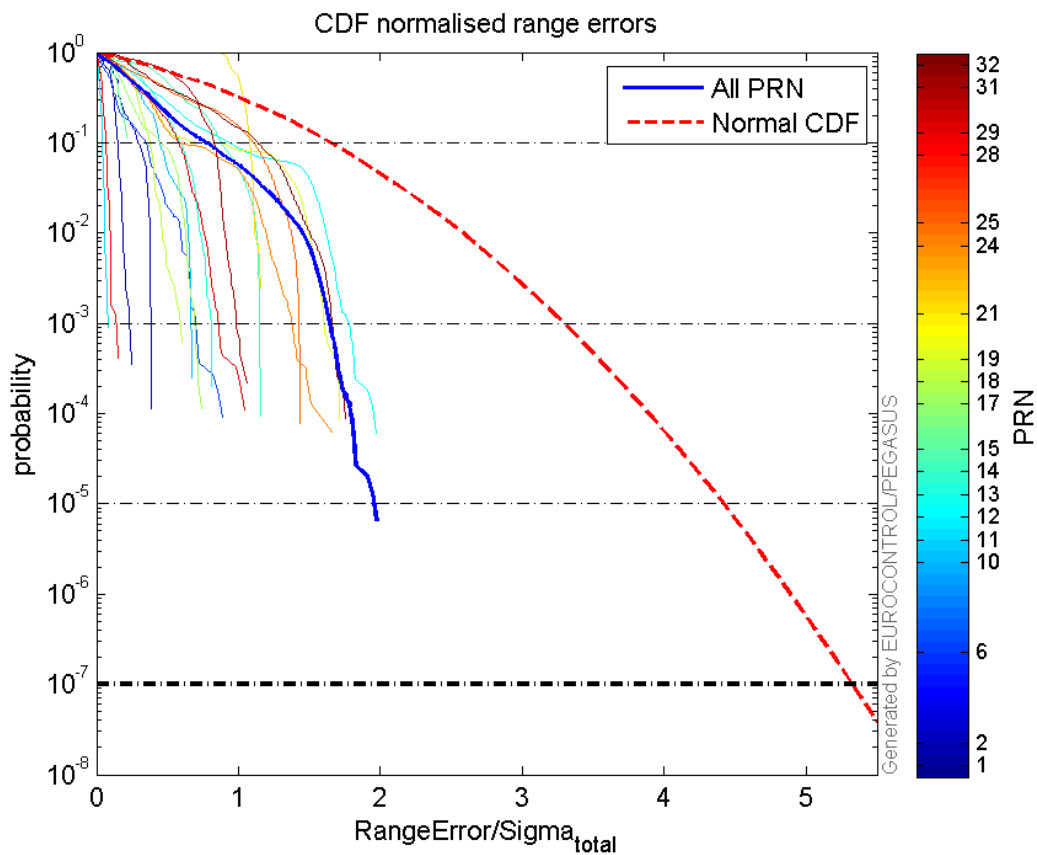
Normalised Range errors (median):



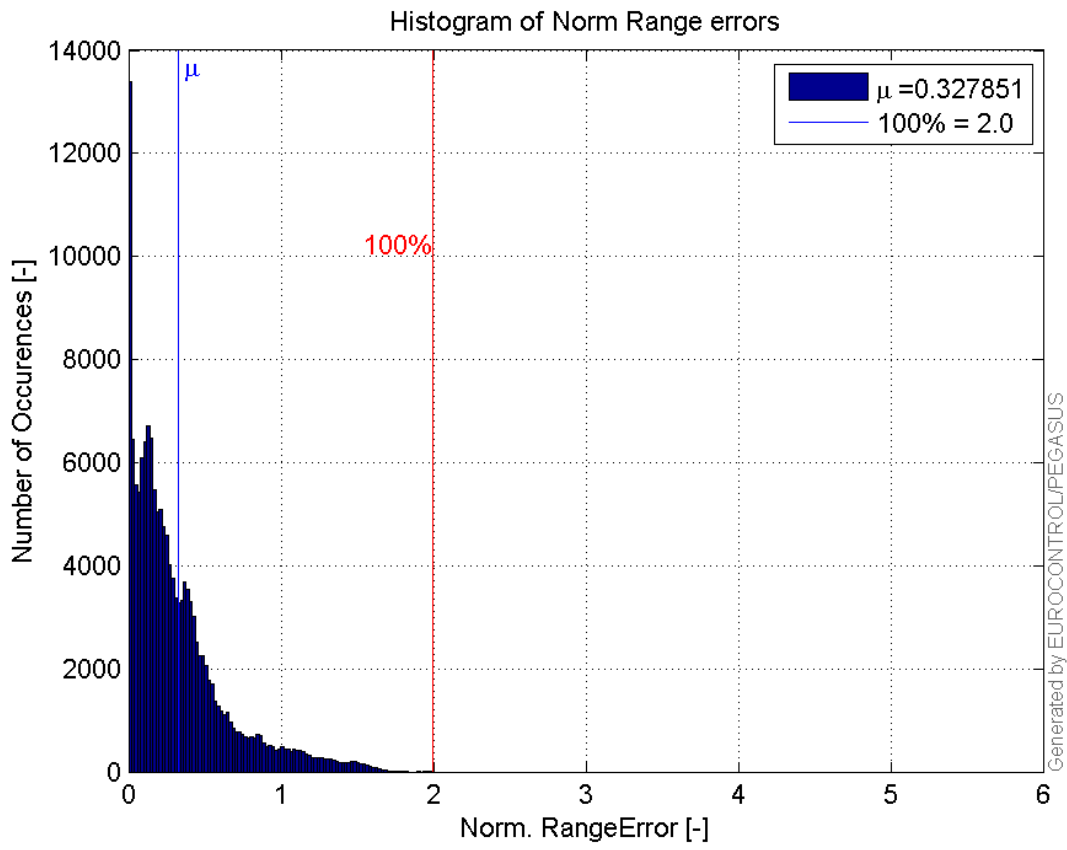
Range errors:



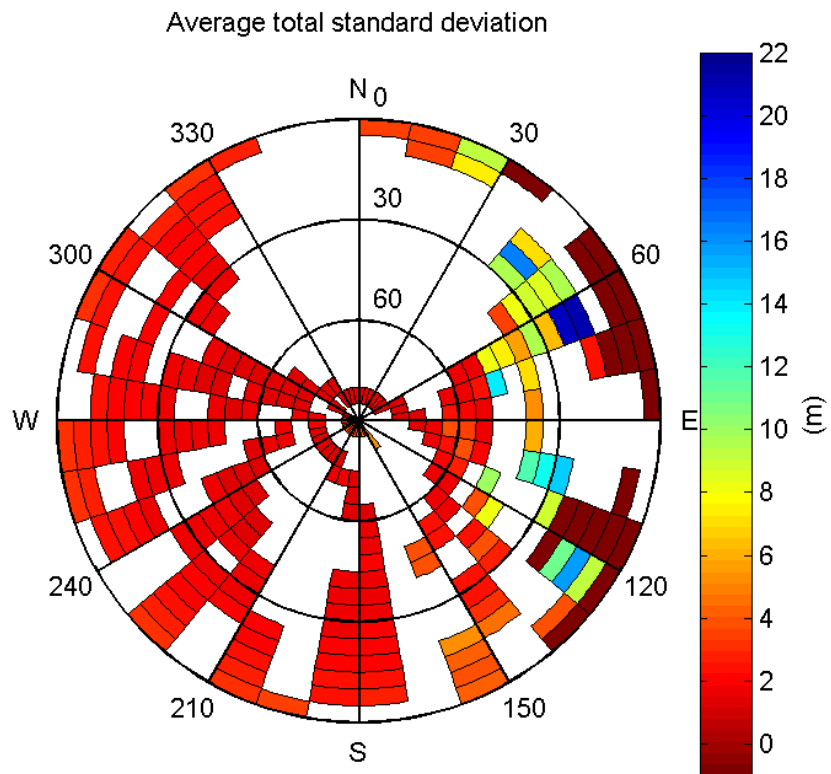
CDF normalised range errors:



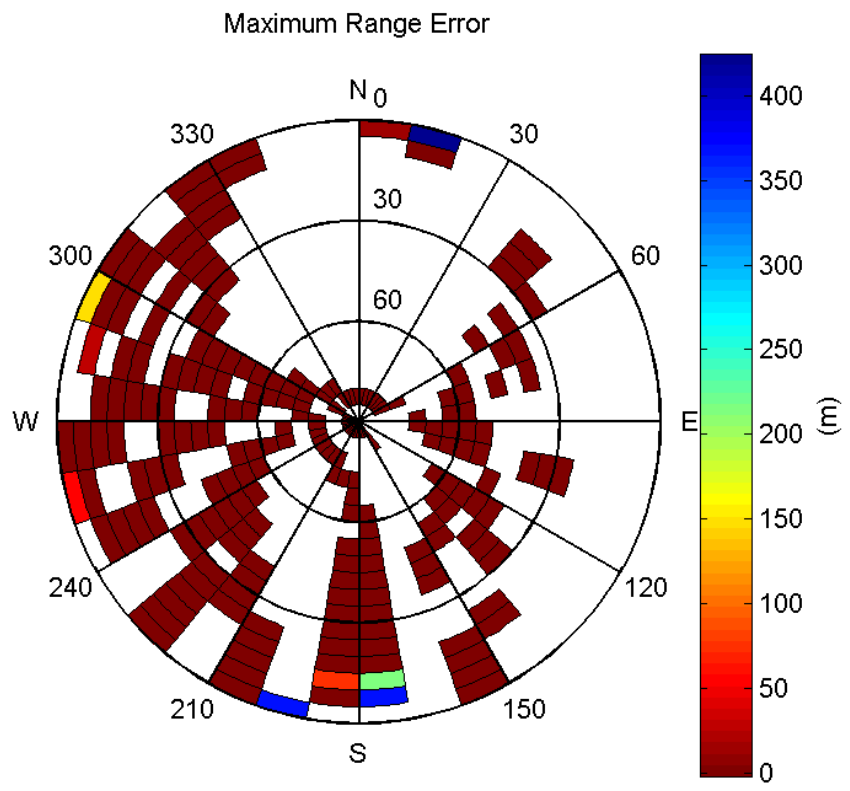
Histogram of Norm Range errors:



Sigma Sky Plot:

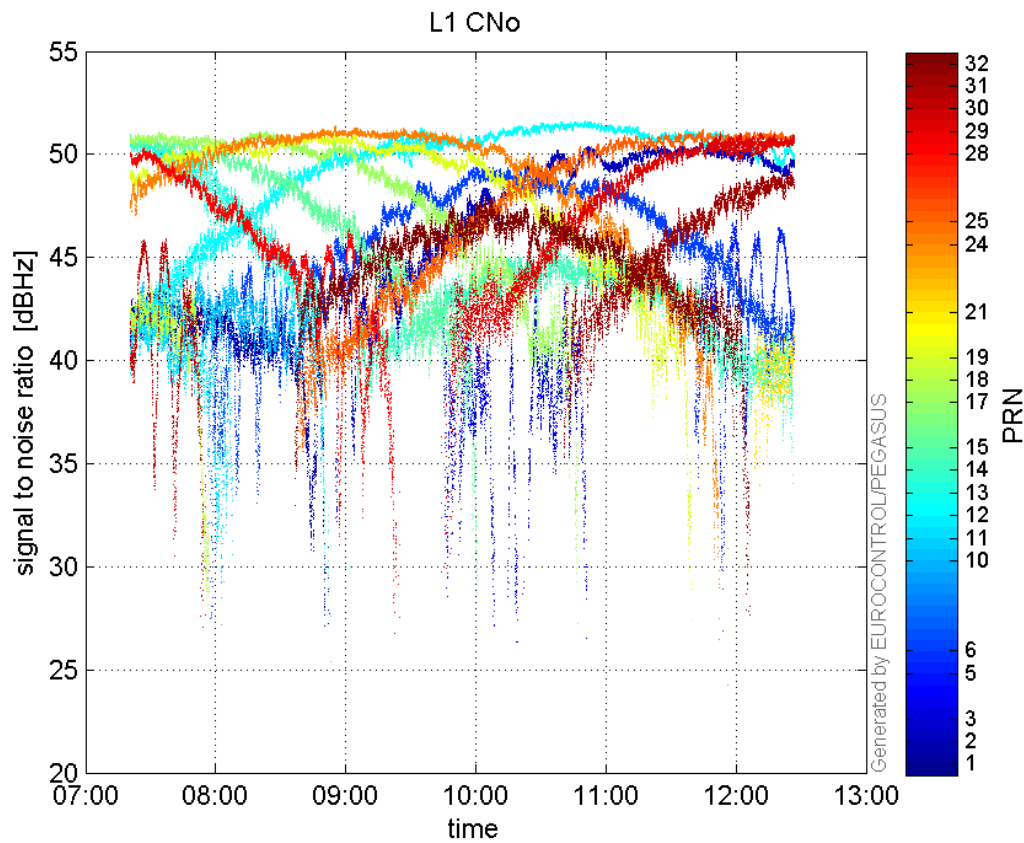


Norm Error Sky Plot:

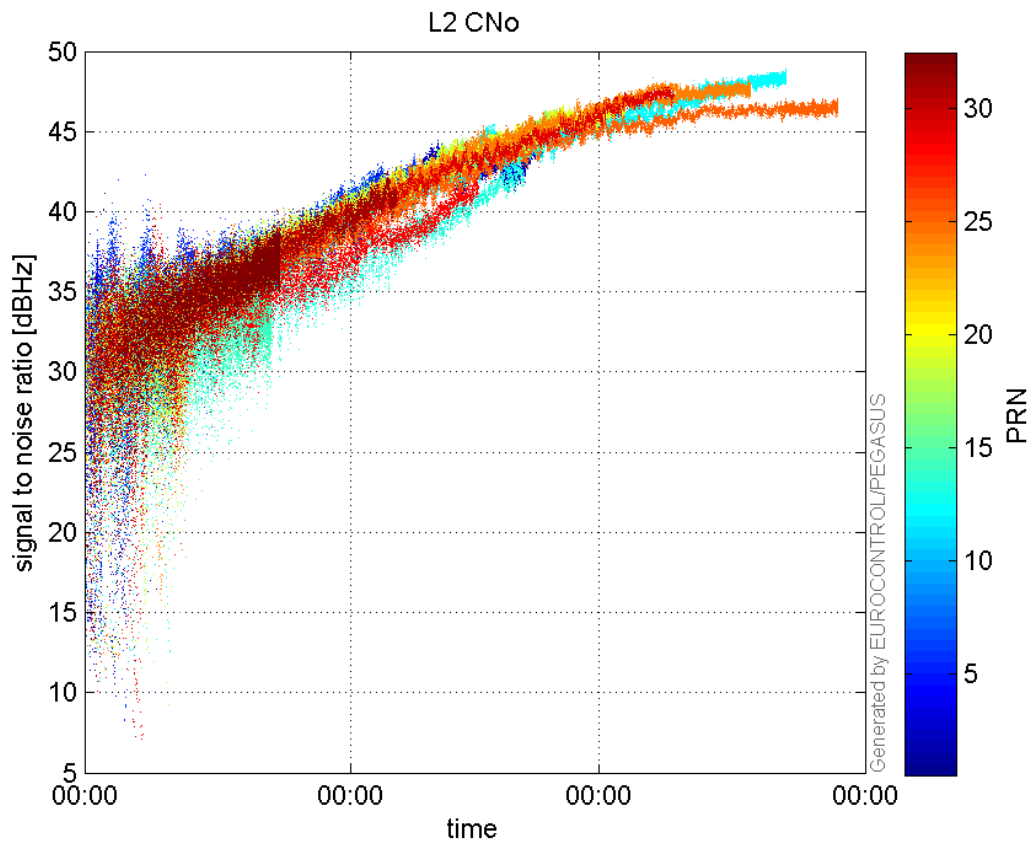


signal quality

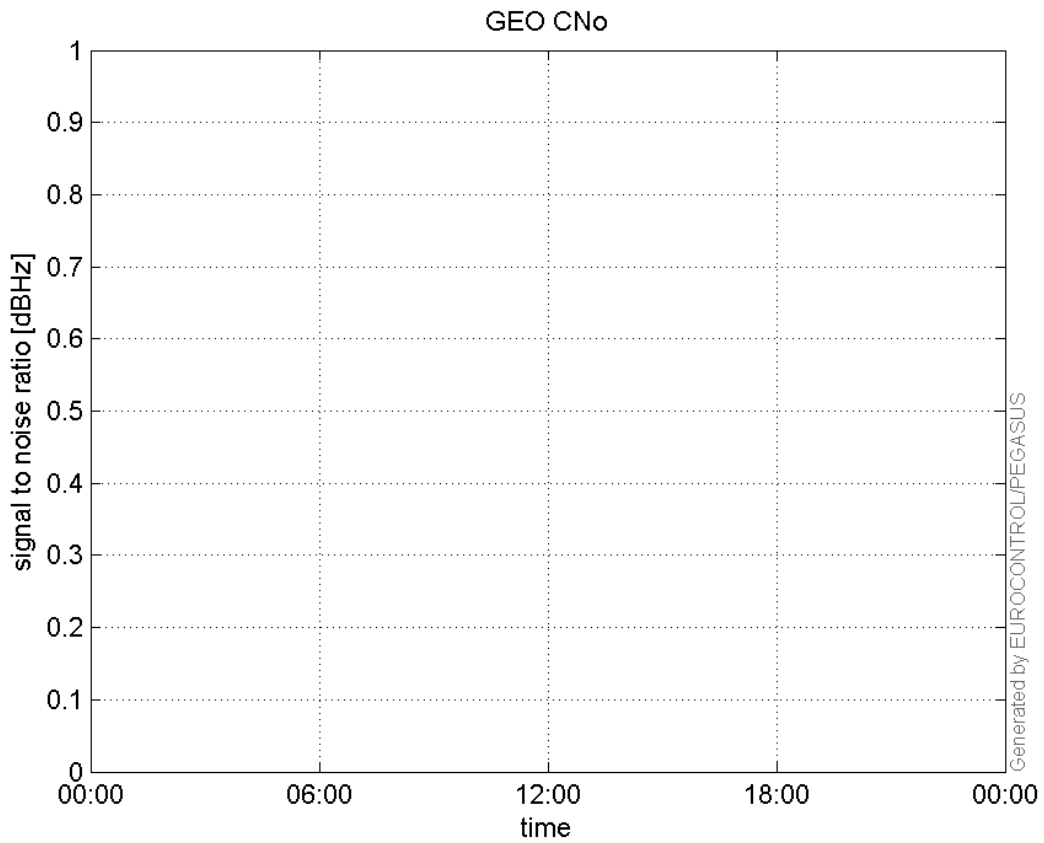
L1 CNo:



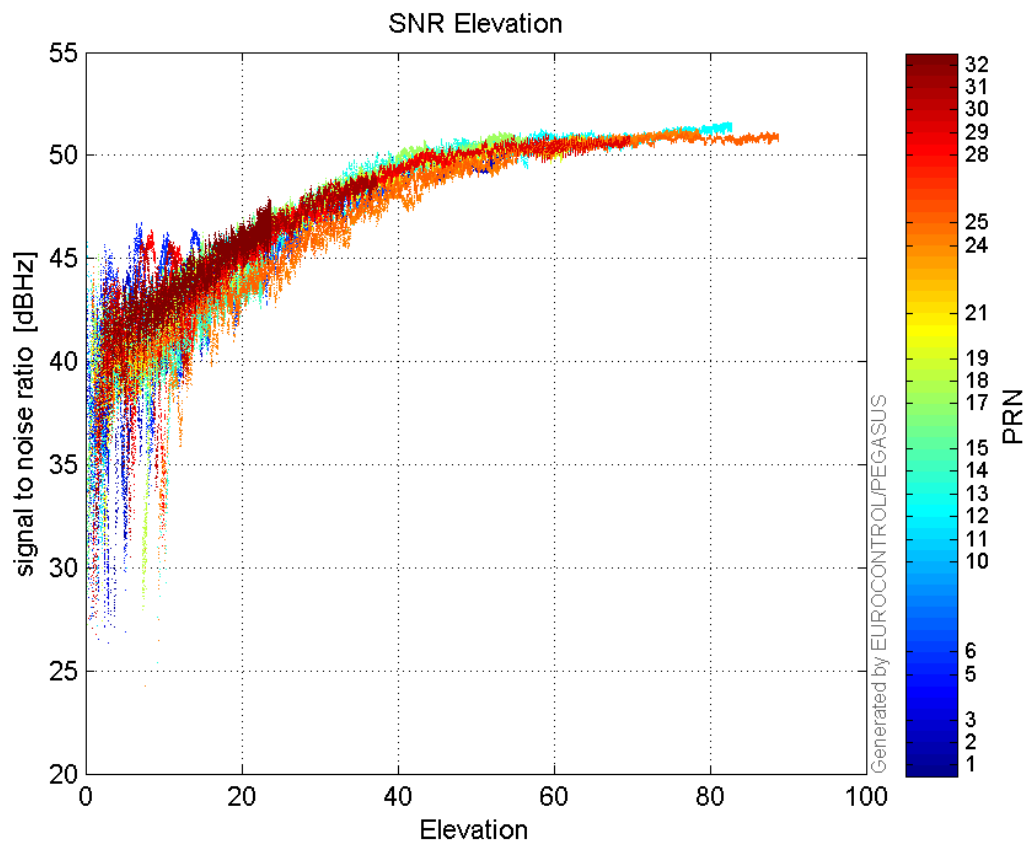
L2 CNo:



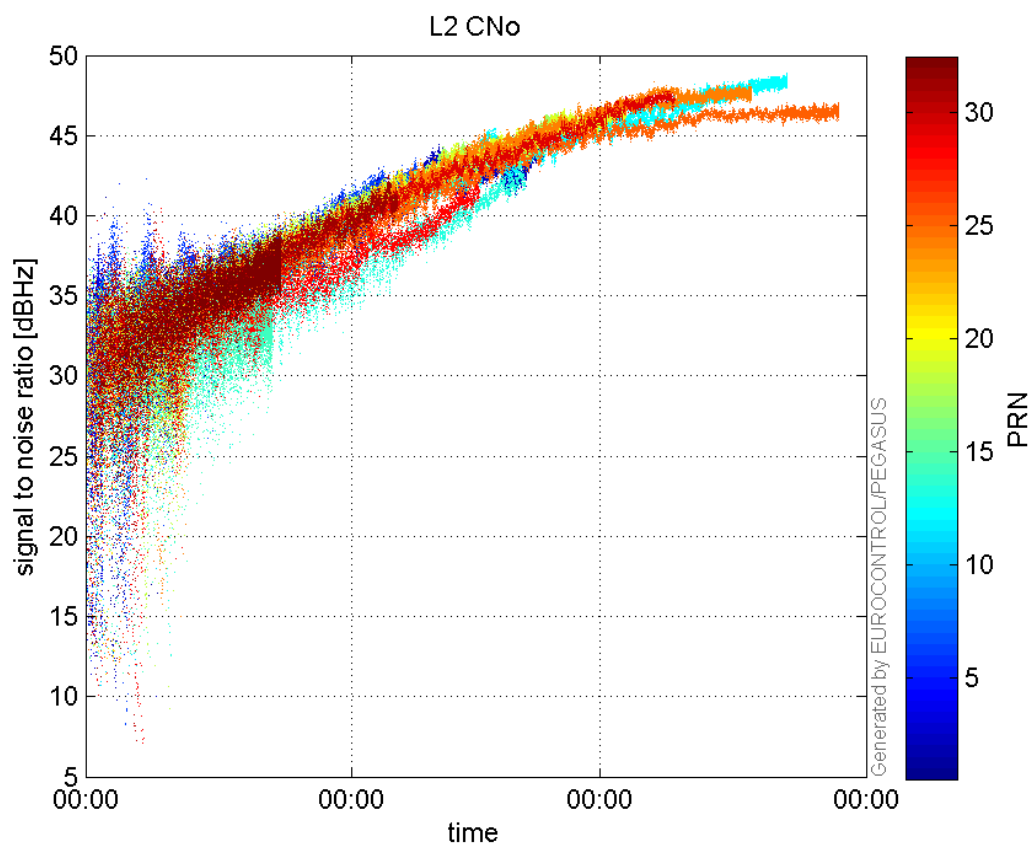
GEO CNo:



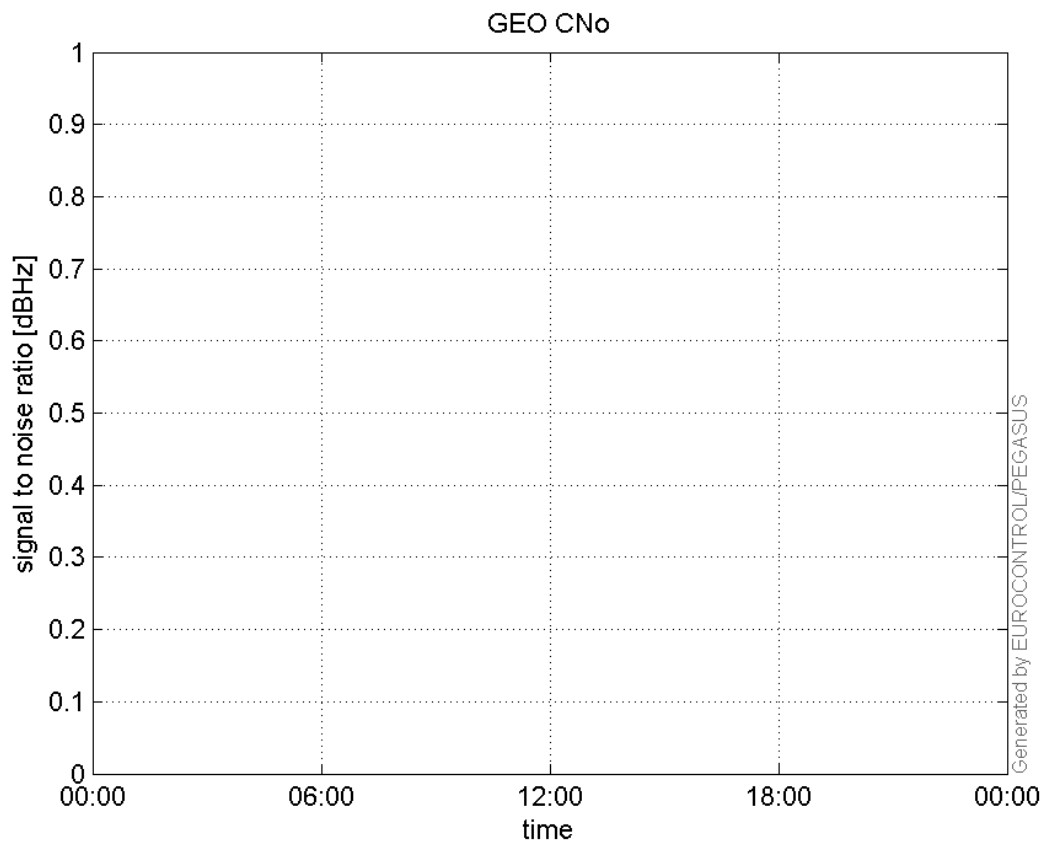
SNR Elevation:



L2 CNo:

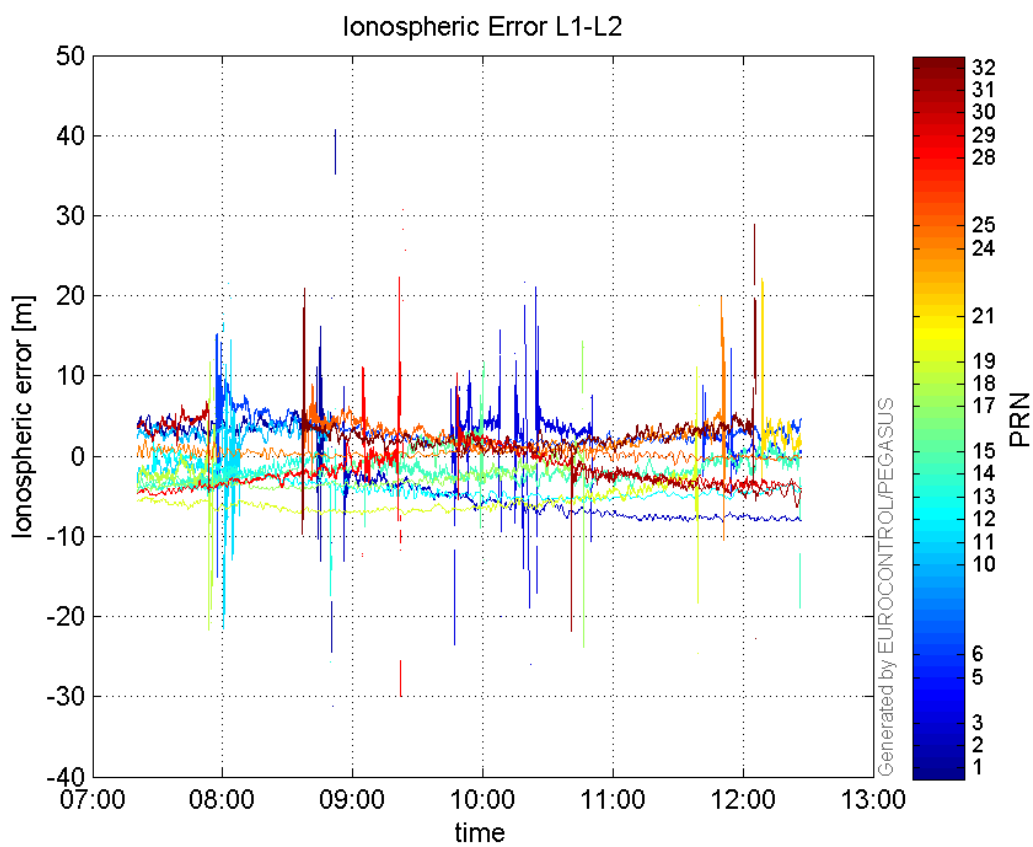


GEO CNo:



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/2016_06_21_EGNOS/02_Convertor/02_Convertor
output_prefix	system	D:/PegasusDateJob/job/2016_06_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	229.2045
mi_numbers	results	0