

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: 07:38:58.129 29.06.2016 (week: 1903 sec: 286738.129)
end: 13:47:35.129 29.06.2016 (week: 1903 sec: 308855.129)
duration: 06:08:37 ..

quality

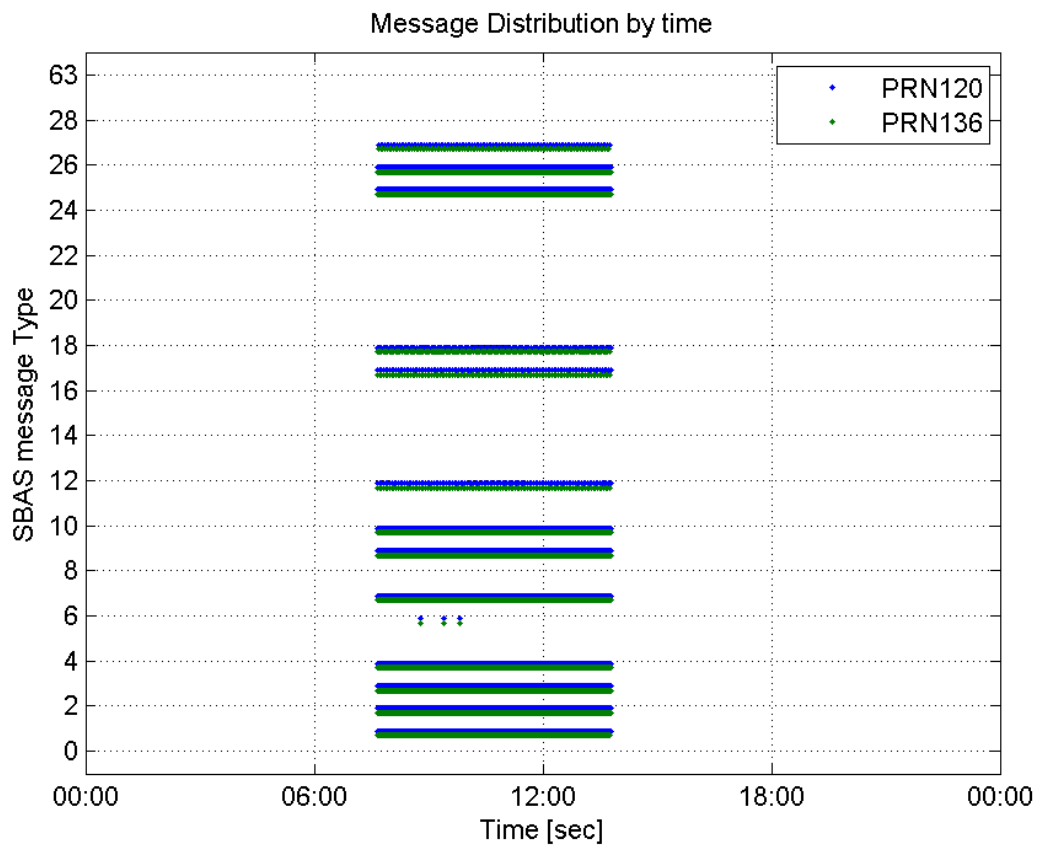
valid samples 44236
total samples 44236
number of SBAS PRNs 2

SBAS SIS Overview

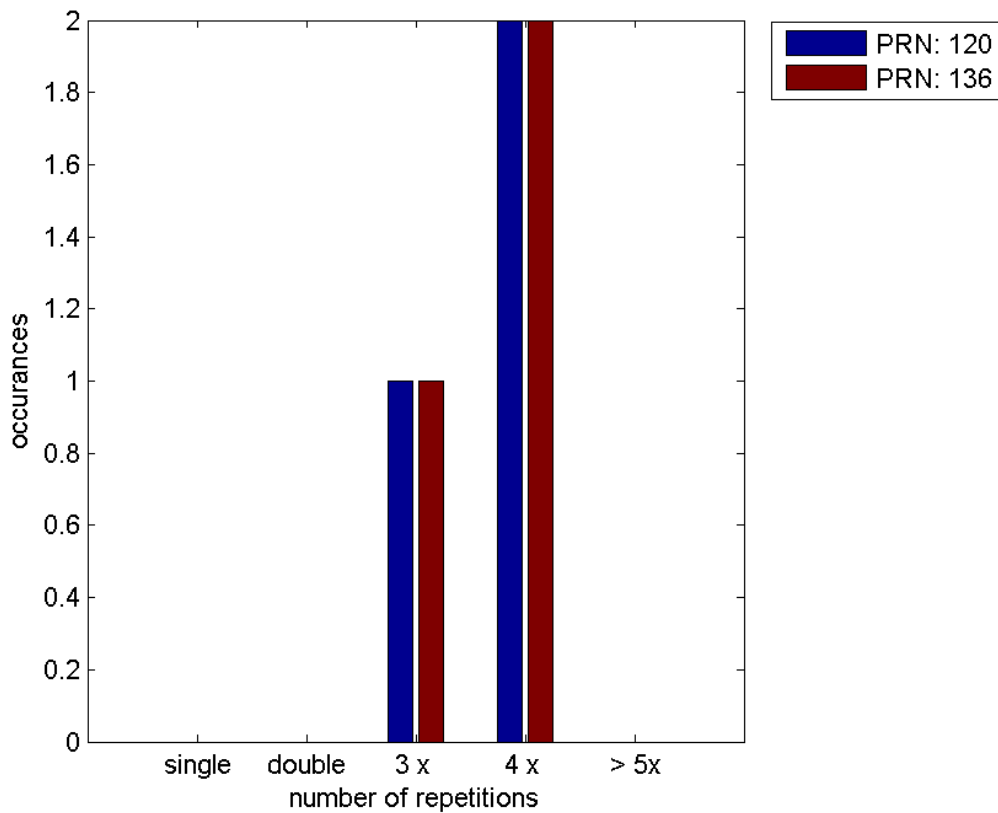
Message Type 6 repetitions :

	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:



Broadcast SBAS Messages :

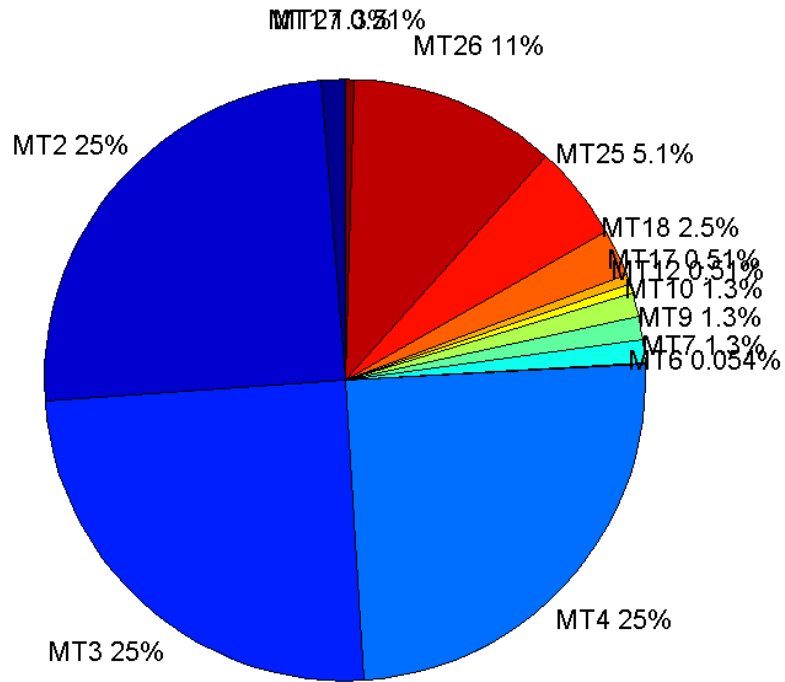
	number of messages	%
MT 0	0	0
MT 1	278	1.25689
MT 2	5499	24.8621
MT 3	5499	24.8621
MT 4	5498	24.8576
MT 5	0	0
MT 6	12	0.0542545
MT 7	278	1.25689
MT 9	278	1.25689
MT 10	278	1.25689
MT 12	113	0.510896
MT 17	113	0.510896
MT 18	563	2.54544
MT 24	0	0
MT 25	1126	5.09088
MT 26	2471	11.1719
MT 27	112	0.506375
MT 28	0	0
MT 62	0	0
MT 63	0	0
Total	22118	100

Update intervals :

	Minimum [s]	Maximum [s]	Mean value	Exceed Max update	Exceed NPA timeout	Exceed PA timeout
MT 0	--	--	--	--	--	--
MT 1	76	81	79.6715	0	0	0
MT 2	4	8	4.02237	3	0	0
MT 3	4	7	4.02255	3	0	0
MT 4	4	8	4.02256	3	0	0
MT 5	--	--	--	--	--	--
MT 6	1	2171	339.909	2	2	2
MT 7	75	81	79.6101	0	0	0
MT 9	76	81	79.6318	0	0	0
MT 10	75	88	79.6859	0	0	0
MT 12	187	201	196.732	112	0	0
MT 17	188	201	196.768	0	0	0
MT 18	3	161	39.2473	0	0	0
MT 24	--	--	--	--	--	--
MT 25	4	56	19.6418	0	0	0
MT	3	32	8.94777	0	0	0

26						
MT 27	184	201	196.766	0	0	0
MT 28	--	--	--	--	--	--
MT 62	--	--	--	--	--	--
MT 63	--	--	--	--	--	--

Message Distribution PRN 120:



SBAS SIS Analysis

PRN 136

Broadcast SBAS Messages :

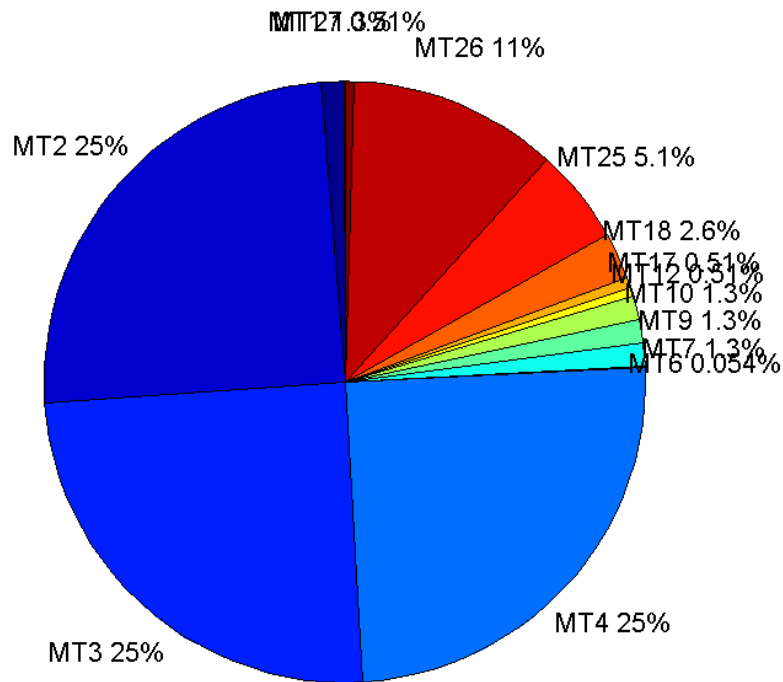
	number of messages	%
MT 0	0	0
MT 1	277	1.25237
MT 2	5495	24.844
MT 3	5494	24.8395
MT 4	5494	24.8395
MT 5	0	0
MT 6	12	0.0542545
MT 7	278	1.25689
MT 9	277	1.25237
MT 10	278	1.25689

MT 12	113	0.510896
MT 17	113	0.510896
MT 18	565	2.55448
MT 24	0	0
MT 25	1126	5.09088
MT 26	2484	11.2307
MT 27	112	0.506375
MT 28	0	0
MT 62	0	0
MT 63	0	0
Total	22118	100

Update intervals :

	Minimum [s]	Maximum [s]	Mean value	Exceed Max update	Exceed NPA timeout	Exceed PA timeout
MT 0	--	--	--	--	--	--
MT 1	76	81	79.6558	0	0	0
MT 2	4	8	4.02548	3	0	0
MT 3	4	7	4.02549	3	0	0
MT 4	4	7	4.02549	3	0	0
MT 5	--	--	--	--	--	--
MT 6	1	2171	339.909	2	2	2
MT 7	75	83	79.7256	0	0	0
MT 9	76	81	79.721	0	0	0
MT 10	75	85	79.6715	0	0	0
MT 12	188	201	196.009	112	0	0
MT 17	186	202	195.973	0	0	0
MT 18	4	164	38.9858	0	0	0
MT 24	--	--	--	--	--	--
MT 25	3	44	19.6302	0	0	0
MT 26	1	34	8.90375	0	0	0
MT 27	188	201	196.027	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_29_EGNOS/01_User/01_User
Outputfile	System	D:/PegasusDateJob/job/2016_06_29_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: 07:38:58 29.06.2016 (week: 1903 sec: 286738)
end: 13:47:36 29.06.2016 (week: 1903 sec: 308856)
duration: 06:08:39 ..

quality

valid samples 21756
total samples 22119

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	303041	2.02161	10.7534	0.187997	0.822418	12.8146	0.0641782
max normVer	289917	0.686848	14.7756	0.0464853	1.62022	15.7507	0.102866
max HPE	301066	2.94386	37.487	0.0785302	1.59607	33.5491	0.047574
max VPE	306477	0.934764	12.427	0.0752204	2.03489	25.8396	0.078751
min HPL	287638	0.749243	8.54193	0.0877135	0.540316	13.7077	0.039417
min VPL	303049	1.92054	10.5517	0.182013	0.932253	12.7522	0.0731053

APV-I discontinuity events :

#	Epoch	duration	stable period
1	300641	200	13540
2	301200	826	359

APV-35m discontinuity events :

#	Epoch	duration	stable period
1	288551	31	1450
2	300027	21	11445
3	300641	200	593
4	301200	826	359
5	306936	35	4910
6	306972	3	1
7	306976	3	1
8	306980	3	1
9	306985	2	2
10	306989	1	2
11	306992	3	2
12	306996	3	1
13	307001	2	2
14	307005	2	2

LPV-200 discontinuity events :

#	Epoch	duration	stable period
1	288551	31	1450
2	300027	21	11445
3	300641	200	593
4	301200	826	359
5	306936	35	4910
6	306972	3	1

7	306976	3	1
8	306980	3	1
9	306985	2	2
10	306989	1	2
11	306992	3	2
12	306996	3	1
13	307001	2	2
14	307005	2	2

First Glance analysis

Duration	22119
Number of Samples	22119
Number of invalid sample	363
Number of no position solution samples	0
Number of missing sample	0
Logging Loss	0
Processing Loss	1.6411
Number of Misleading Information	0
Data gaps	0
Discontinuities	0

Number of Samples :

Valid	APV-1	LPV-200	CAT-1	APV-35m
21756	20730	20621	0	20621

Accuracy statistics :

	Valid	APV-1	LPV-200	CAT-1	APV-35m
HPE 95%	1.71487	1.67379	1.67492	NaN	1.67492
HPEScale 95%	NaN	5.40646	5.40877	NaN	5.40877
VPE 95%	1.19242	1.19703	1.19532	NaN	1.19532
VPEscale 95%	NaN	3.42181	2.39651	NaN	2.39651

Availability :

	Valid	APV-1	LPV-200	CAT-1	APV-35m
Signal in Space	1	0.952841	0.94783	0	0.94783
measurements	0.983589	0.937203	0.932275	0	0.932275
Operational	0.983589	0.937203	0.932275	0	0.932275

Discontinuity events :

	Valid	APV-1	LPV-200	CAT-1	APV-35m
All	--	2	14	--	14
Long	--	2	5	--	5
Independent	--	2	5	--	5
P(disc.)	NaN	0.00144718	0.00363707	NaN	0.00363707
P(slide)	NaN	0.00144718	0.00431599	NaN	0.00431599

Integrity events :

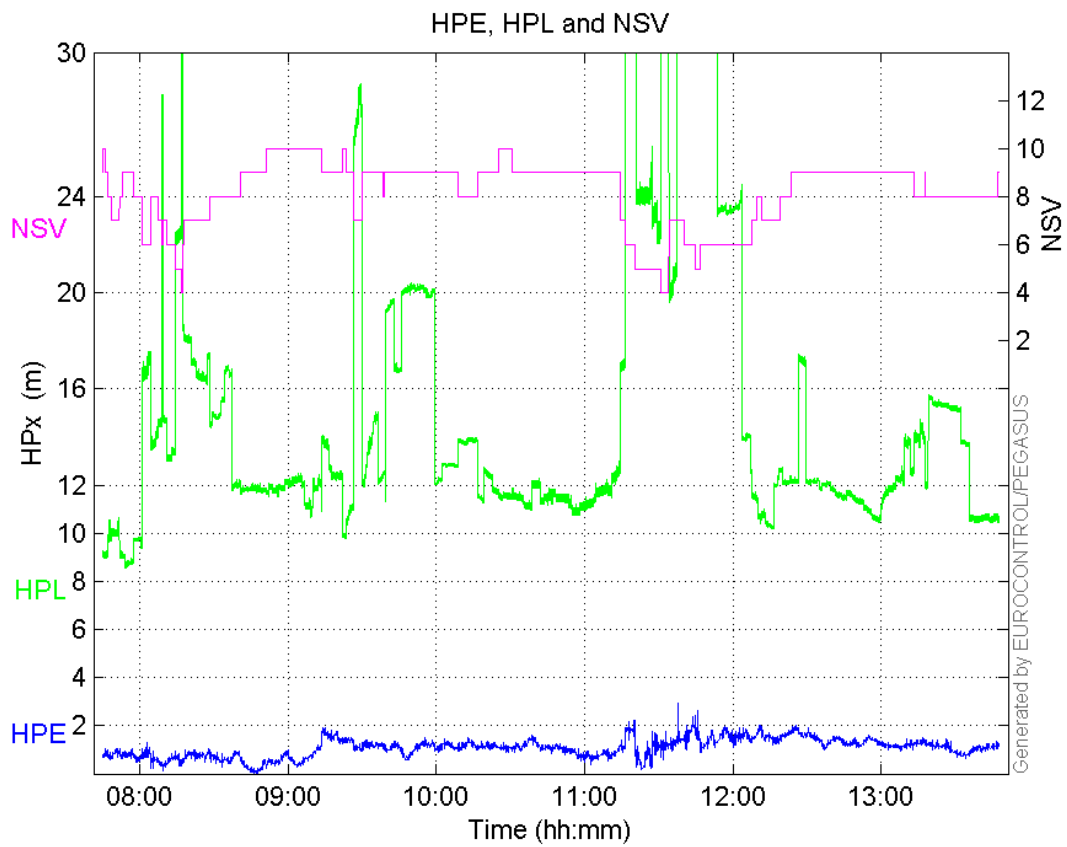
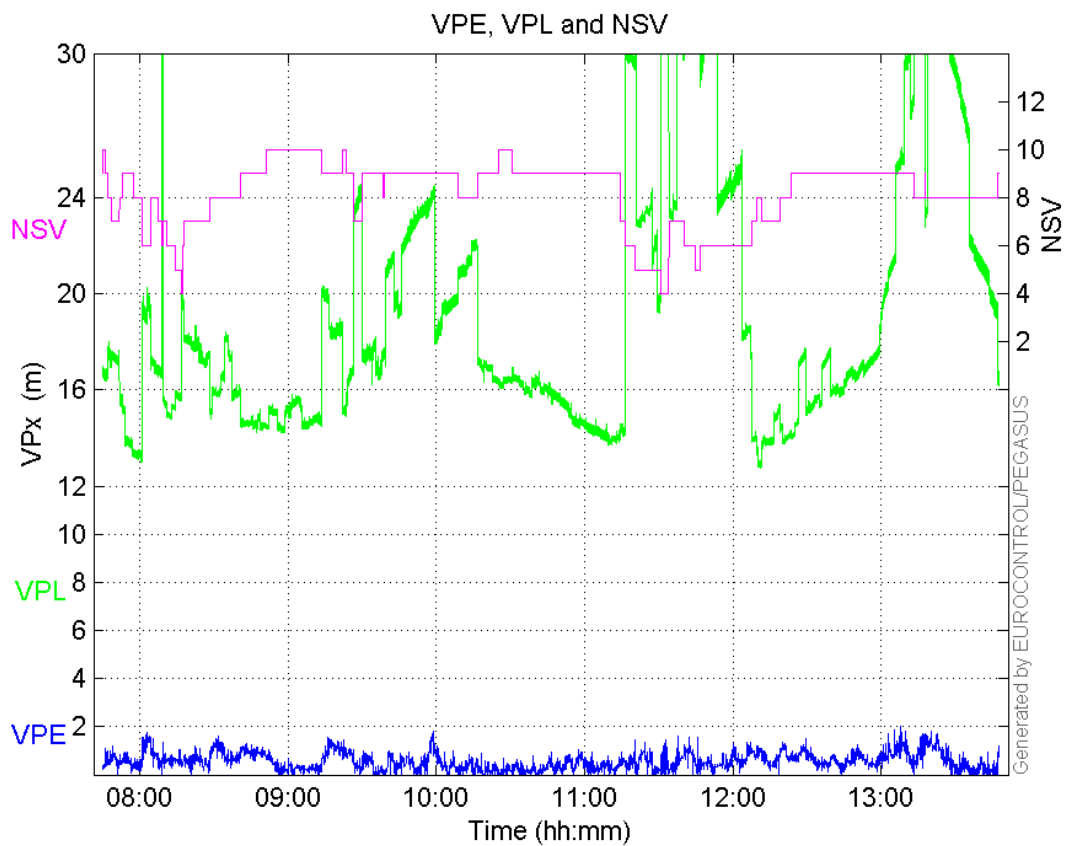
	MI	HMI APV-1	HMI LPV-200	HMI CAT-1	HMI APV-35m
Total	0	0	0	0	0
Horizontal	0	0	0	0	0
Vertical	0	0	0	0	0

Performance Summary :

	Valid	APV-1	LPV-200	CAT-1	APV-35m
Samples	21756	20730	20621	0	20621
SIS Availability	1	0.952841	0.94783	0	0.94783
Local Availability	0.983589	0.937203	0.932275	0	0.932275
Operational Availability	0.983589	0.937203	0.932275	0	0.932275
HPE 95%	1.71487	1.67379	1.67492	NaN	1.67492
HPEScale 95%	NaN	5.40646	5.40877	NaN	5.40877
VPE 95%	1.19242	1.19703	1.19532	NaN	1.19532
VPEscale 95%	NaN	3.42181	2.39651	NaN	2.39651
All Discontinuity Events	--	2	14	--	14
Long Discontinuity Events	--	2	5	--	5
Independent Discontinuity Events	--	2	5	--	5
P(discontinuity)	NaN	0.00144718	0.00363707	NaN	0.00363707
P(sliding window)	NaN	0.00144718	0.00431599	NaN	0.00431599
All Integrity Events	0	0	0	0	0
Horizontal Integrity Events	0	0	0	0	0
Vertical Integrity Events	0	0	0	0	0

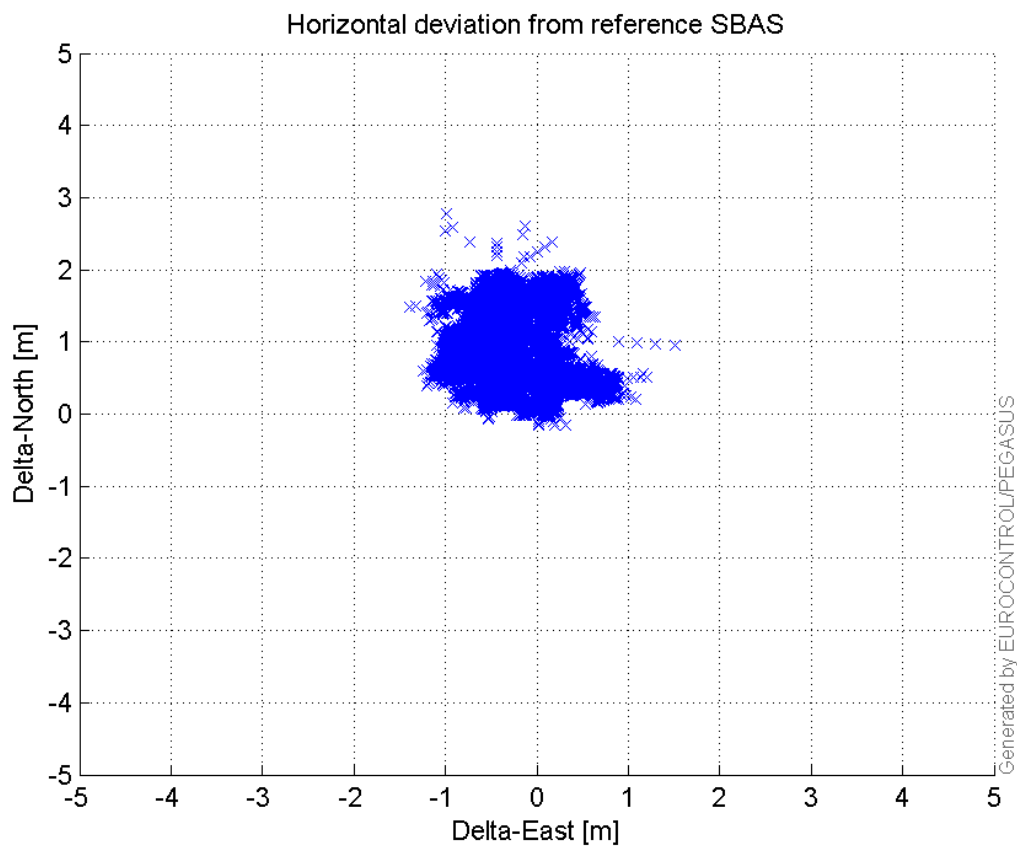
Time Series

HPE, HPL and NSV:

**VPE, VPL and NSV:**

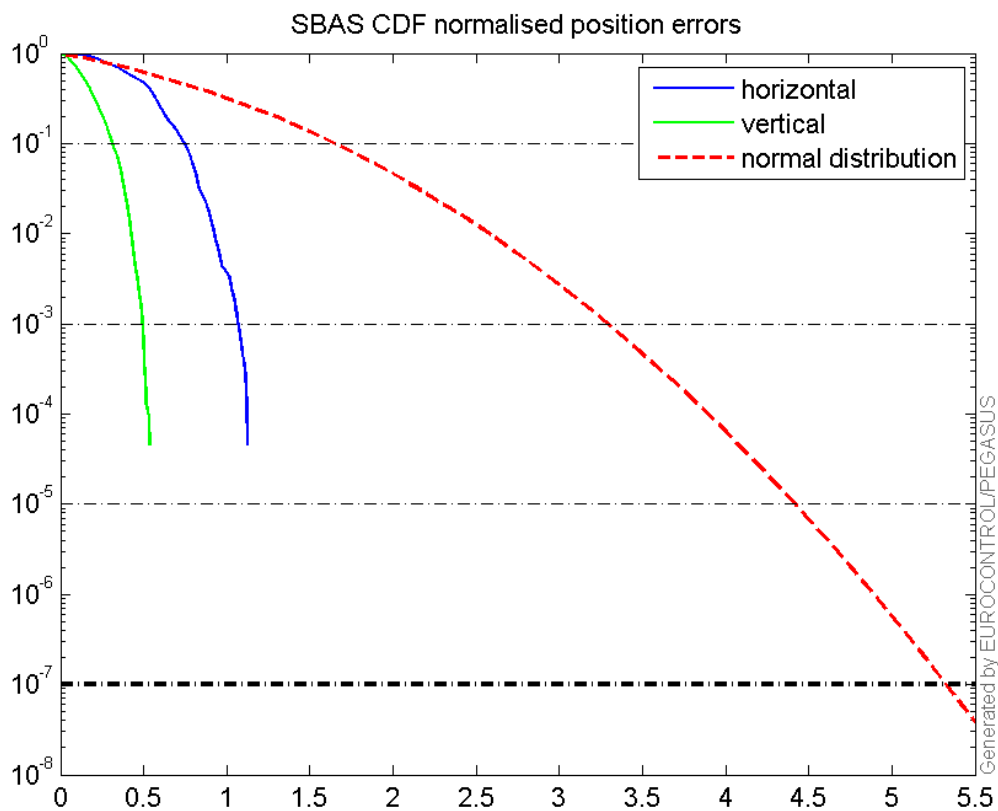
Horizontal deviation

Horizontal deviation from reference SBAS:



CDF position

SBAS CDF position domain:



Statistics

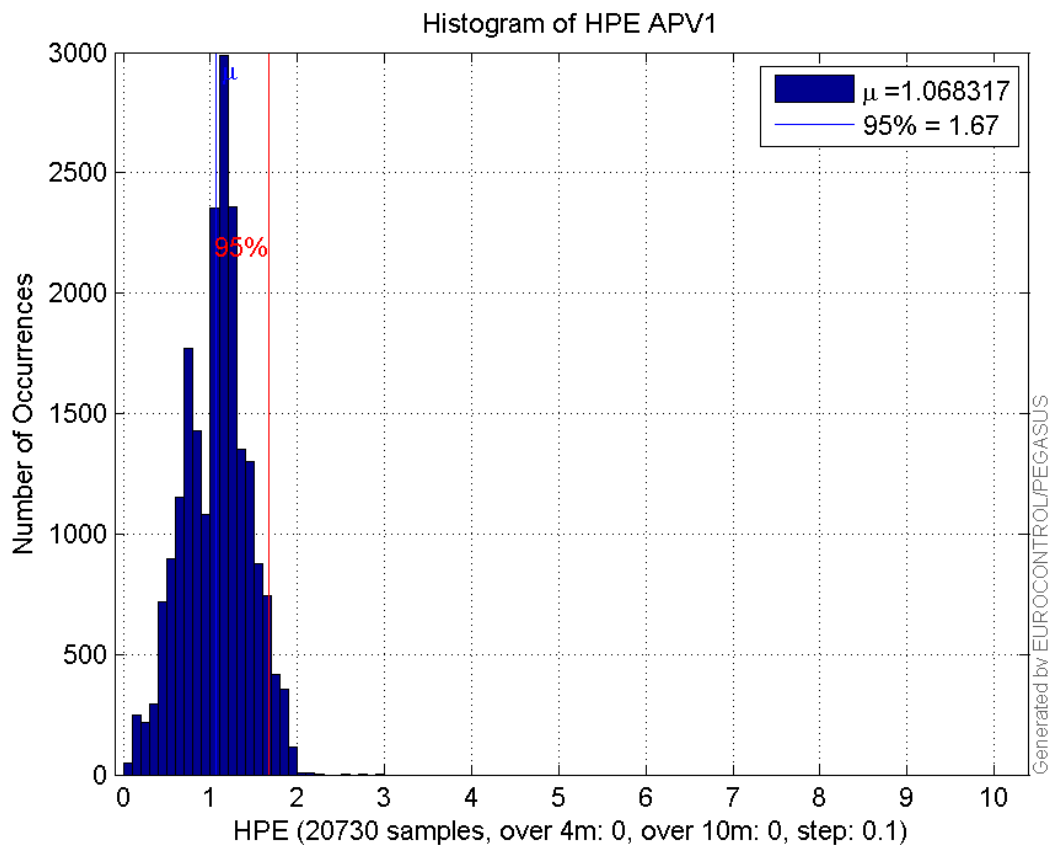
number	20730
sum	22146.209
sum2	26552.945
prctile95	1.6737936
prctile99	1.8714699
number	20730
sum	11821.791
sum2	9177.665
prctile95	1.1970278
prctile99	1.443628
number	20730
sum	297443.5
sum2	4787875.1
prctile95	23.8674
prctile99	34.8768
number	20730
sum	390305.9
sum2	7848415.6
prctile95	30.0252
prctile99	33.54154
number	20730
sum	1660.3351
sum2	155.61573
prctile95	0.13516147
prctile99	0.15441989
number	20730
sum	653.57636
sum2	28.418423
prctile95	0.068436227
prctile99	0.079952921
number	20621
sum	22045.326
sum2	26433.334
prctile95	1.6749234
prctile99	1.8716799
number	20621
sum	11729.482
sum2	9080.9041
prctile95	1.1953194
prctile99	1.4395315
number	20621
sum	294955.38
sum2	4721537.9
prctile95	23.73768
prctile99	34.766287
number	20621
sum	386235.25
sum2	7695765.8
prctile95	29.863935
prctile99	33.128341

number 20621
sum 1654.3557
sum2 155.11458
prctile95 0.13521918
prctile99 0.15448615
number 20621
sum 651.07102
sum2 28.345717
prctile95 0.068471578
prctile99 0.079989025

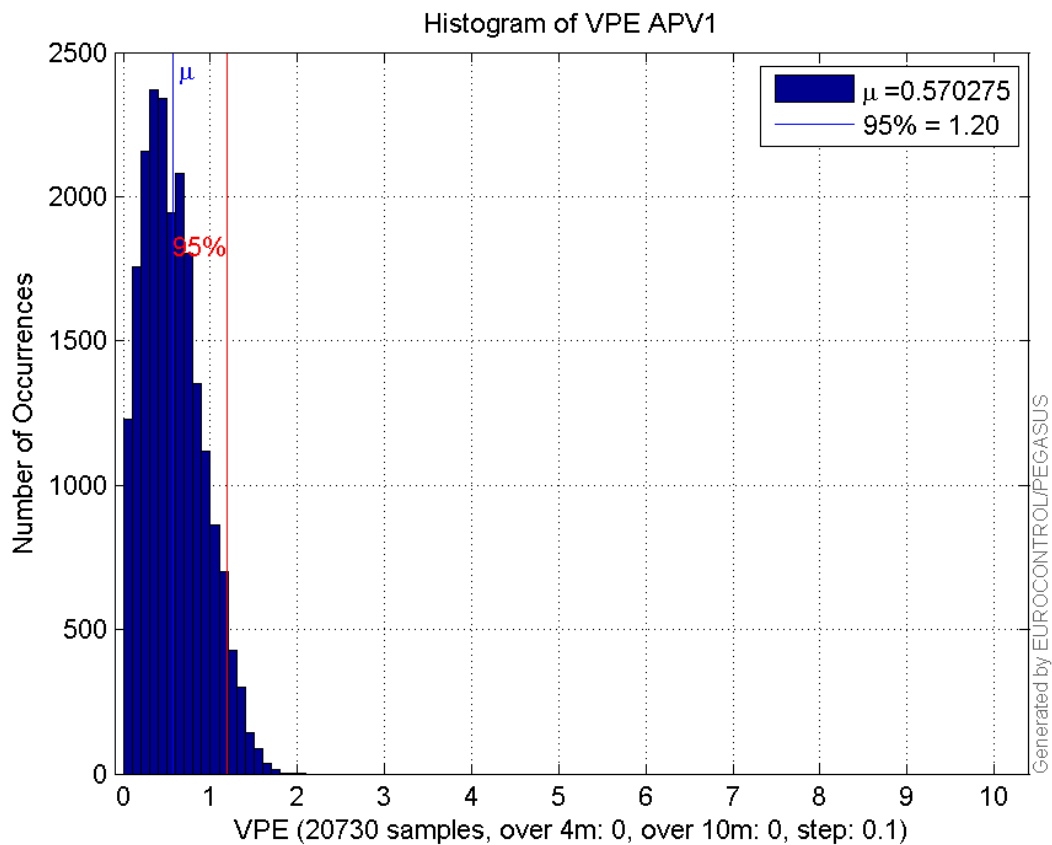
Error and XPL Statistics :

	Mean Value	Standard Deviation	50% Value	95% Value	99% Value	RMS Value
HPE	1.06832	0.373631	1.10579	1.67379	1.87147	1.13177
HPL	14.3485	5.00865	12.1911	23.8674	34.8768	15.1975
VPE	0.570275	0.342807	0.526284	1.19703	1.44363	0.665375
VPL	18.8281	4.90986	17.0639	30.0252	33.5415	19.4577

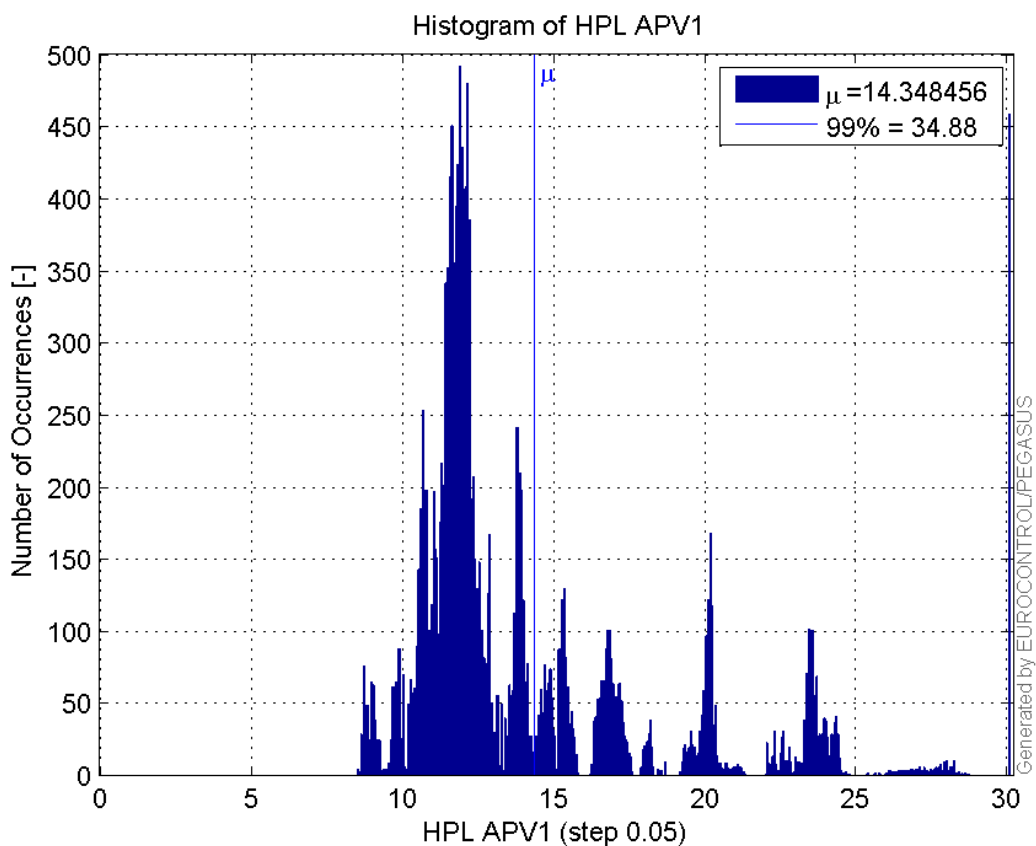
Histogram of HPE APV1:



Histogram of VPE APV1:

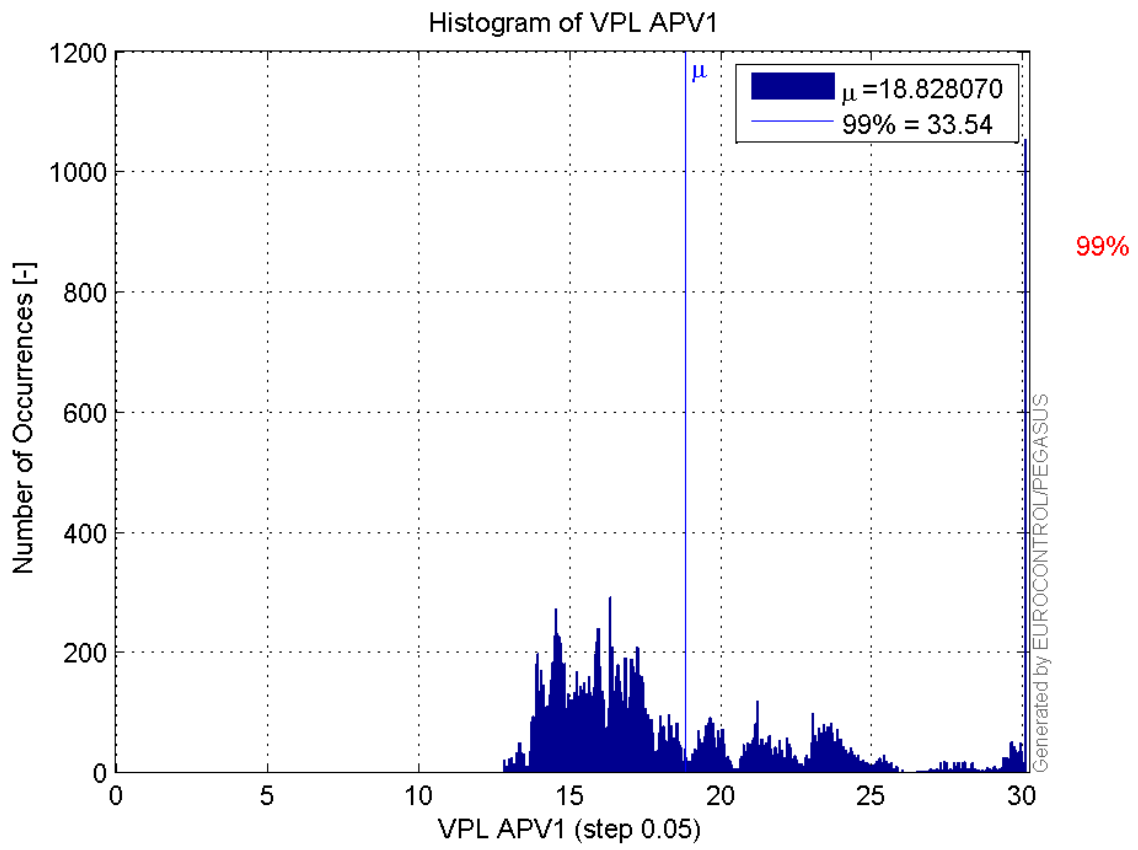


Histogram of HPL APV1:

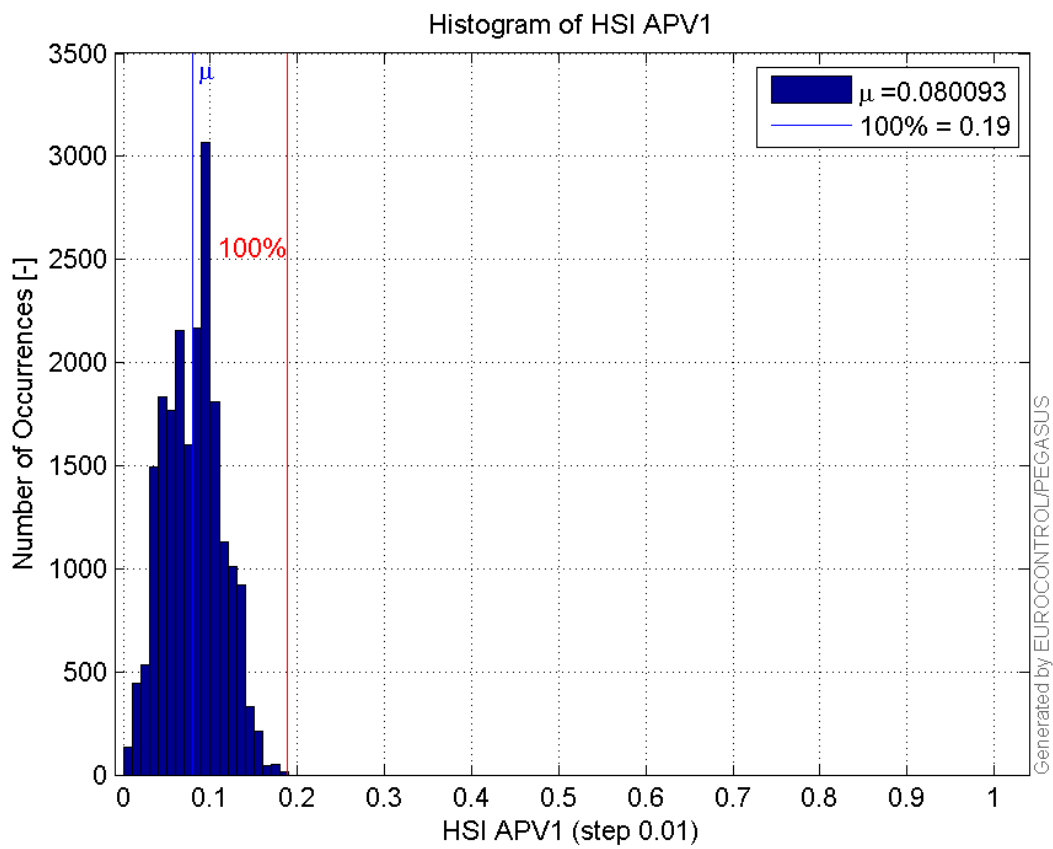


95

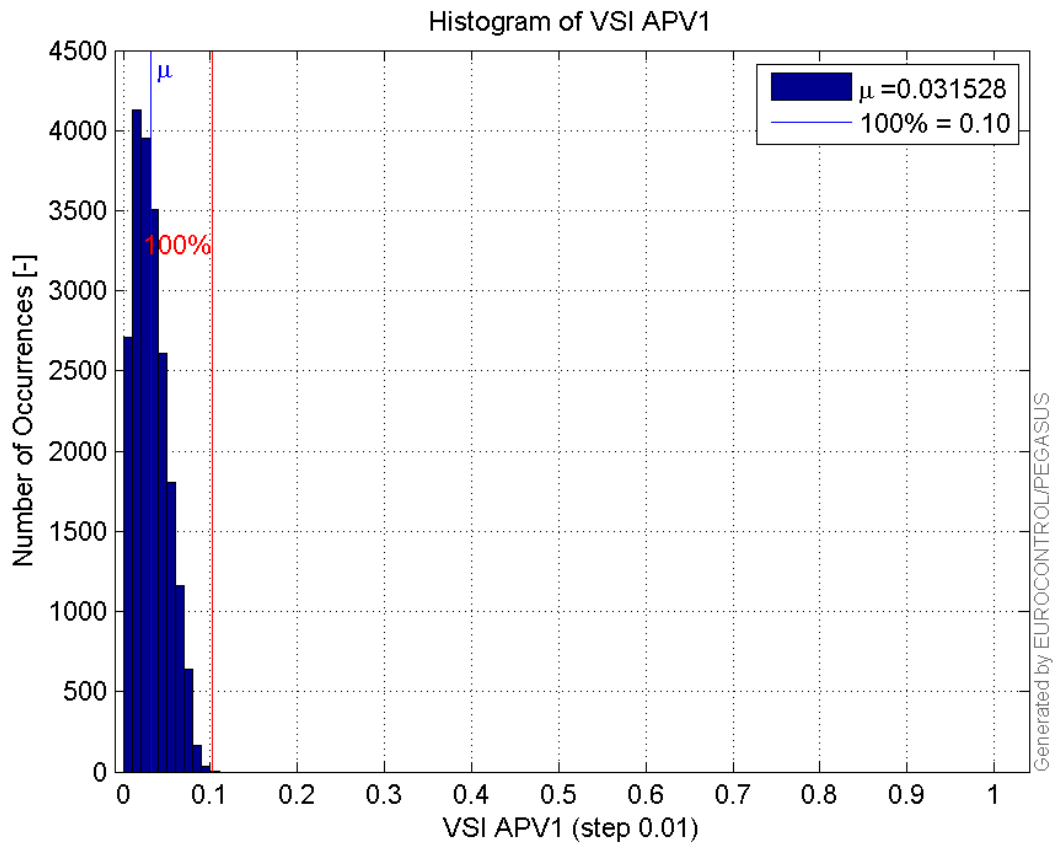
Histogram of VPL APV1:



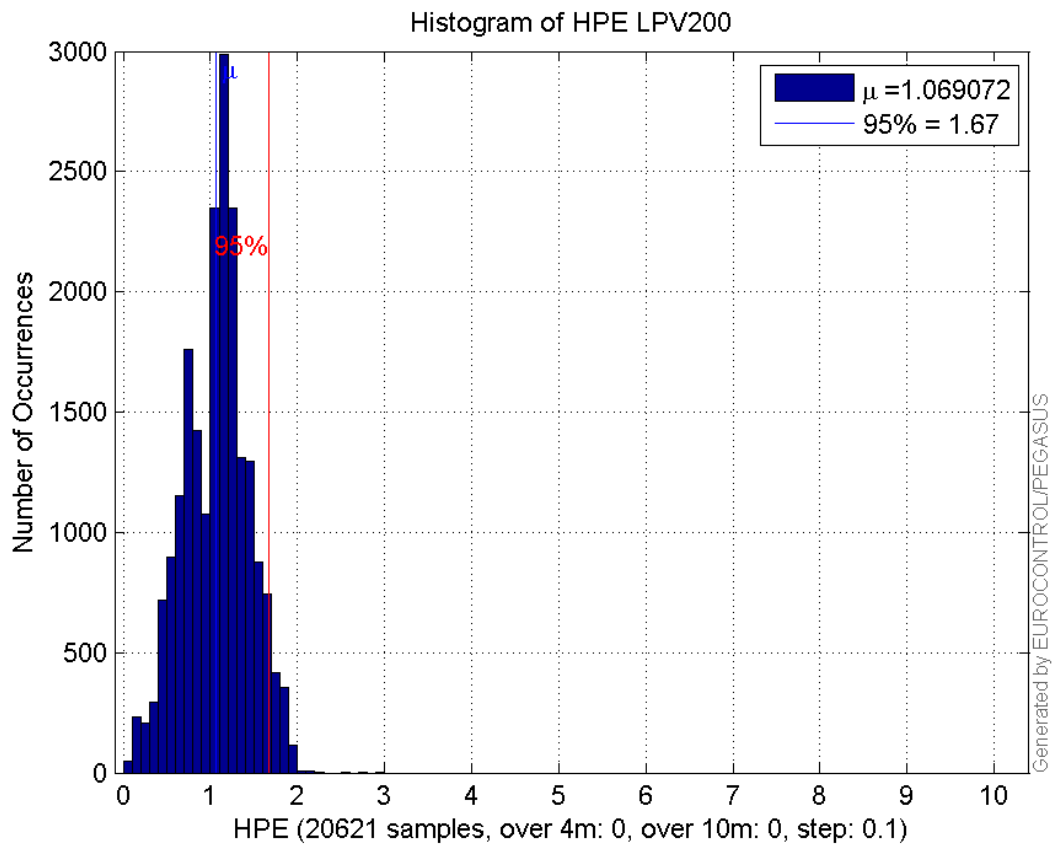
Histogram of HSI APV1:



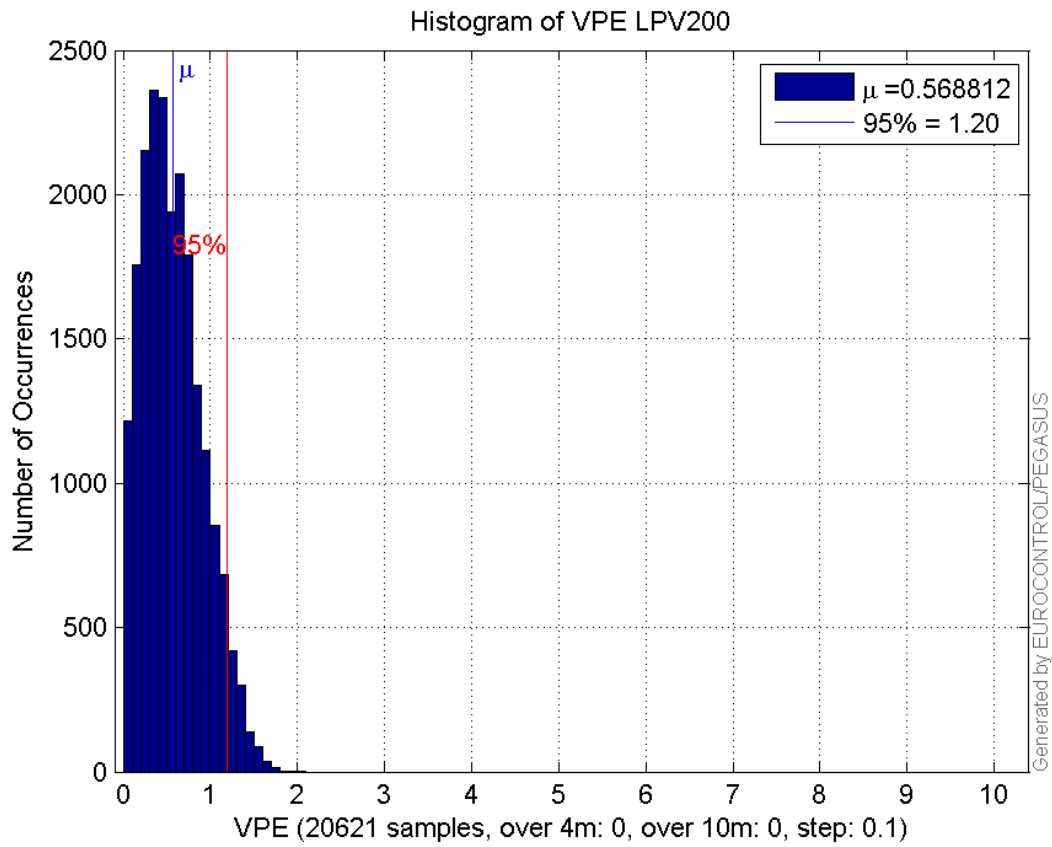
Histogram of VSI APV1:



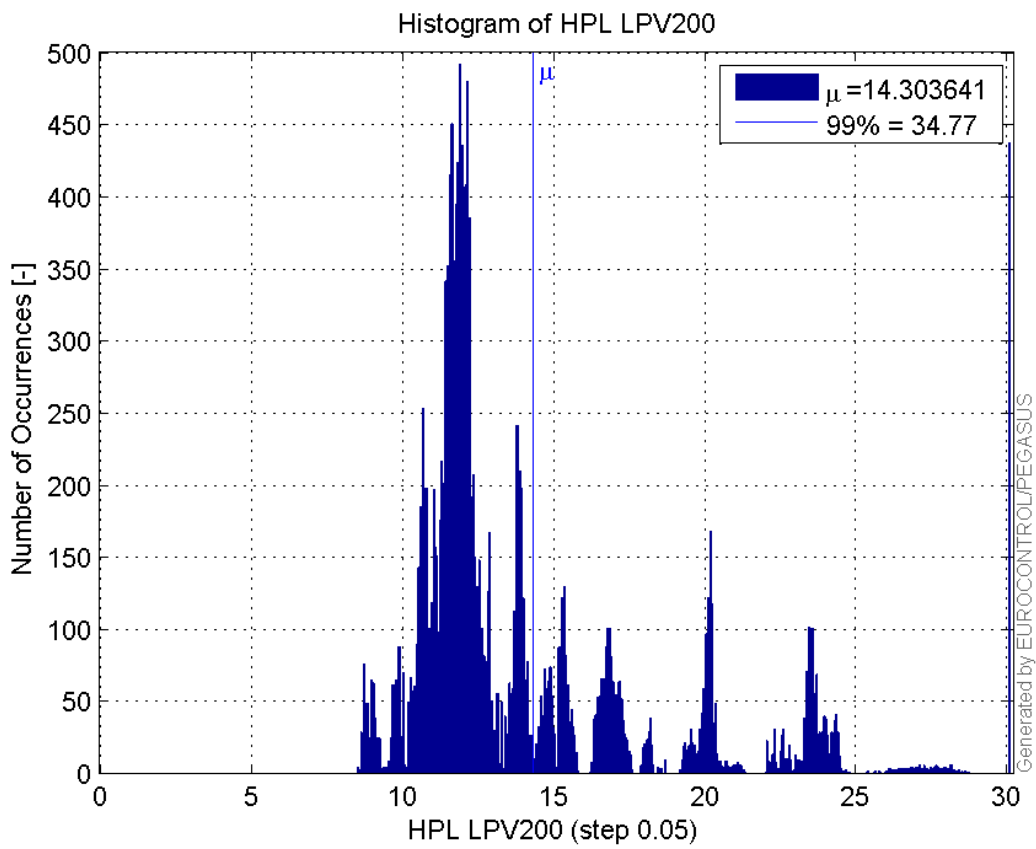
Histogram of HPE LPV200:



Histogram of VPE LPV200:

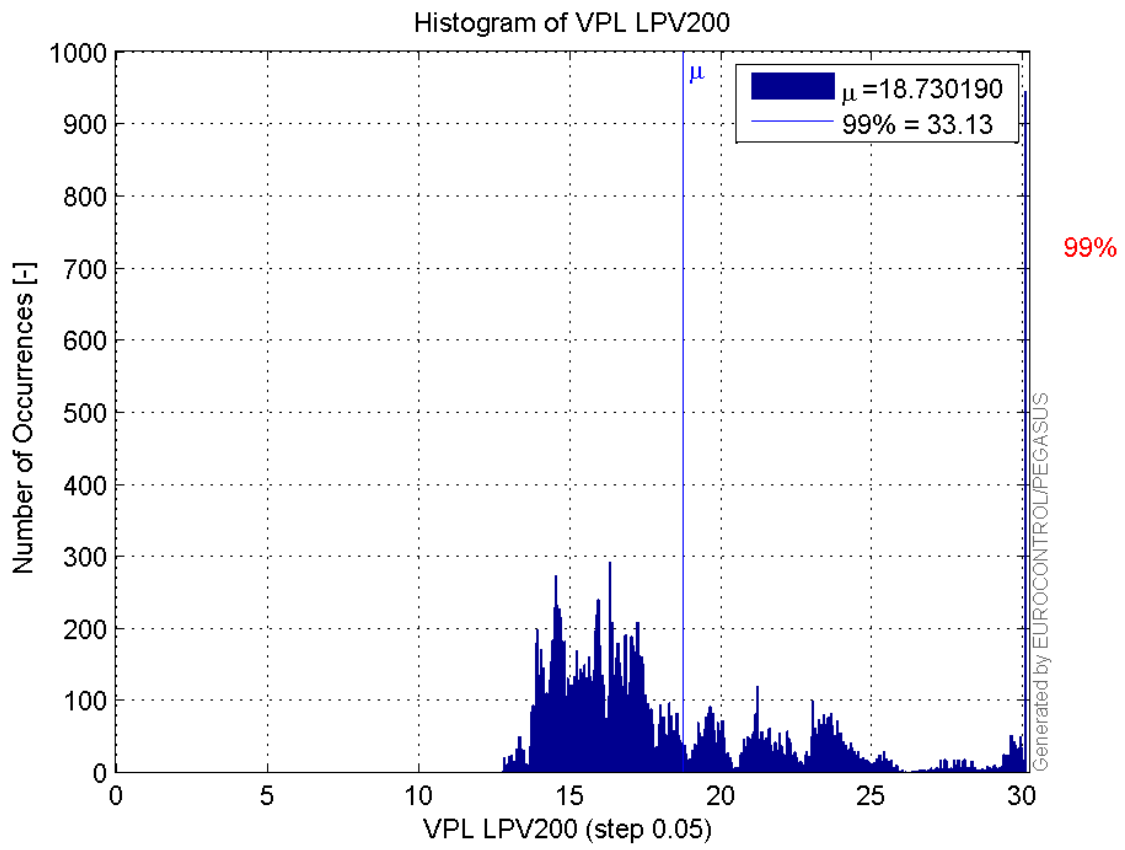


Histogram of HPL LPV200:

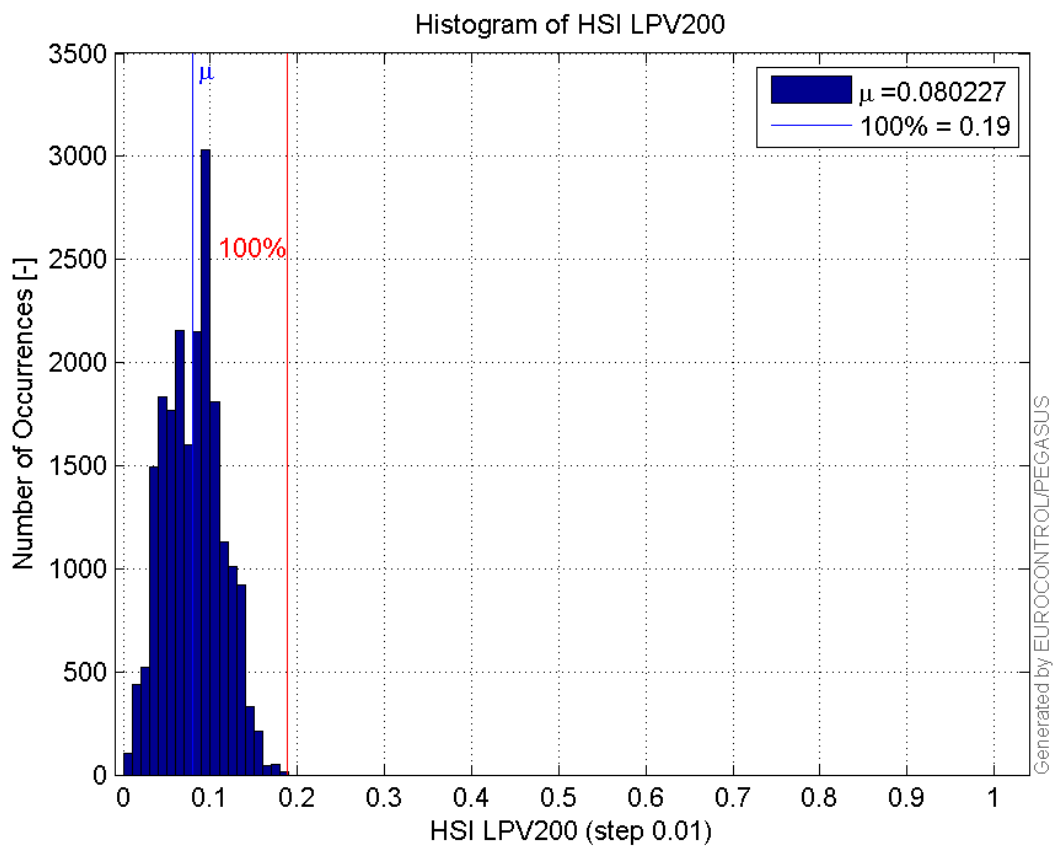


99

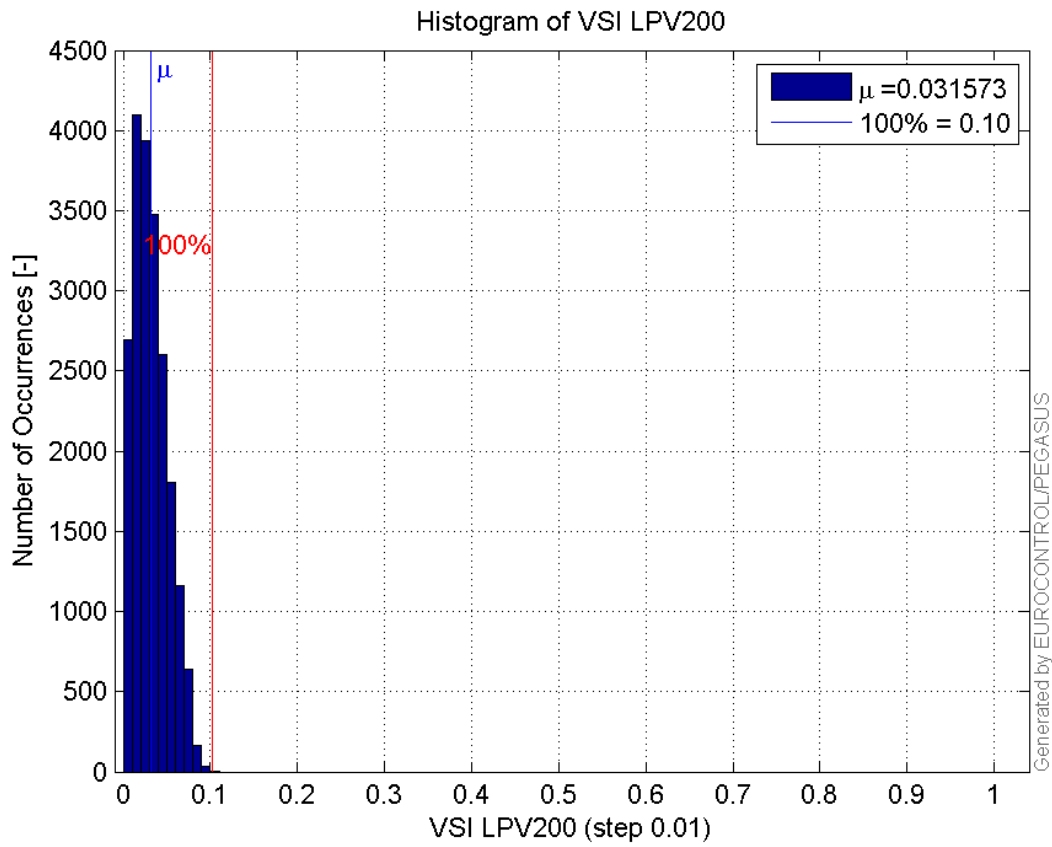
Histogram of VPL LPV200:



Histogram of HSI LPV200:

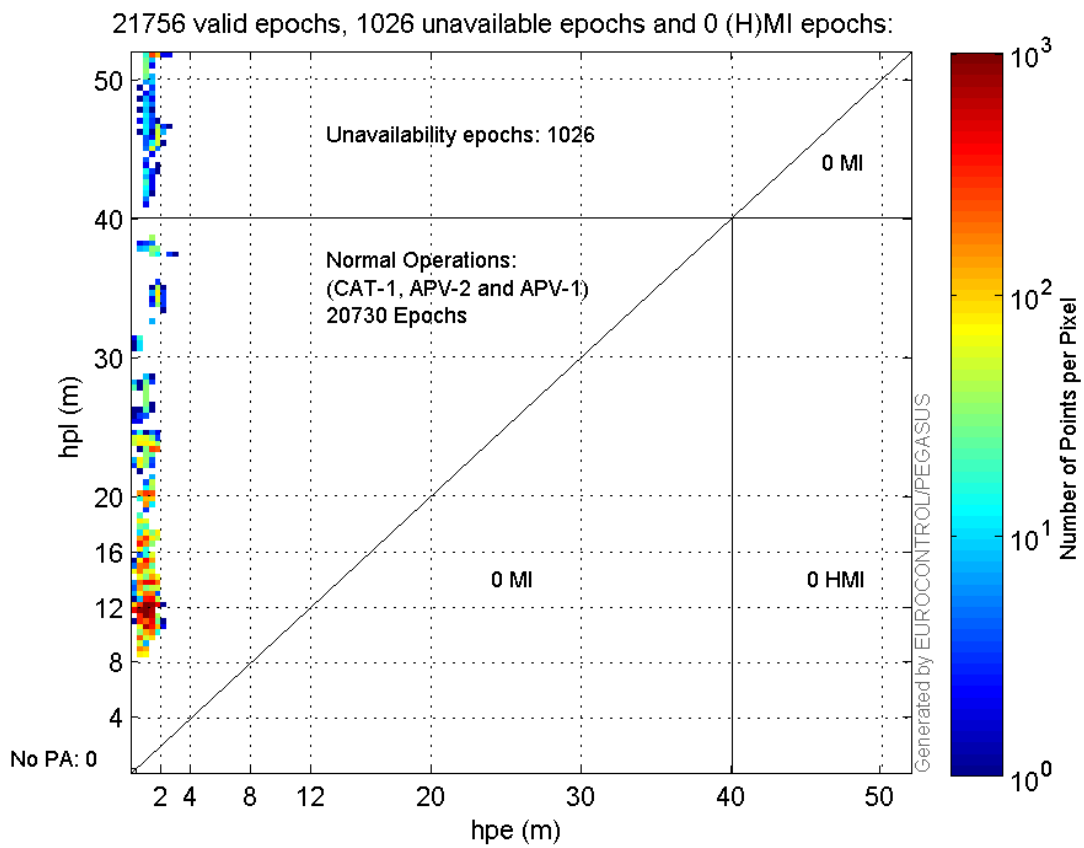


Histogram of VSI LPV200:

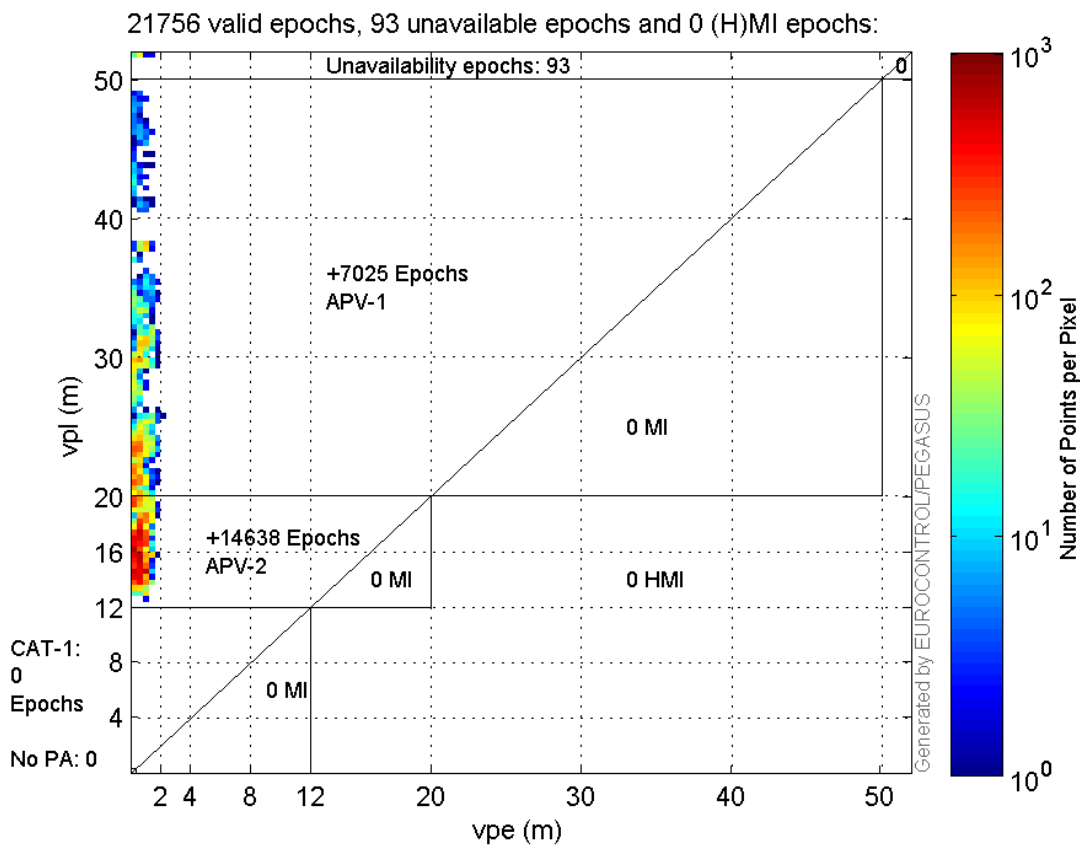


Stanford Plots

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/2016_06_29_EGNOS/02_Convertor/02_Convertor
output_prefix	system	D:/PegasusDateJob/job/2016_06_29_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	237.7057
mi_numbers	results	0

Range Domain

start: 07:38:58 29.06.2016 (week: 1903 sec: 286738)
end: 13:47:36 29.06.2016 (week: 1903 sec: 308856)
duration: 06:08:39 ..

quality

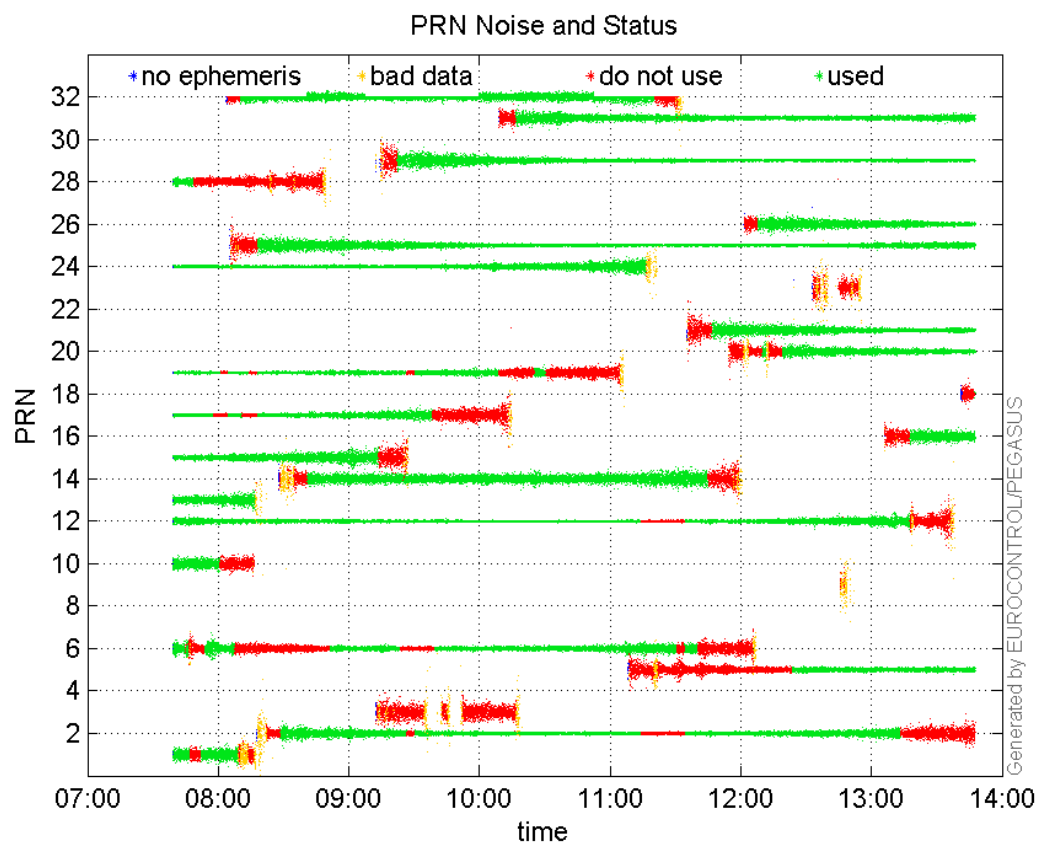
valid samples 22119
total samples 22119

PRN overview

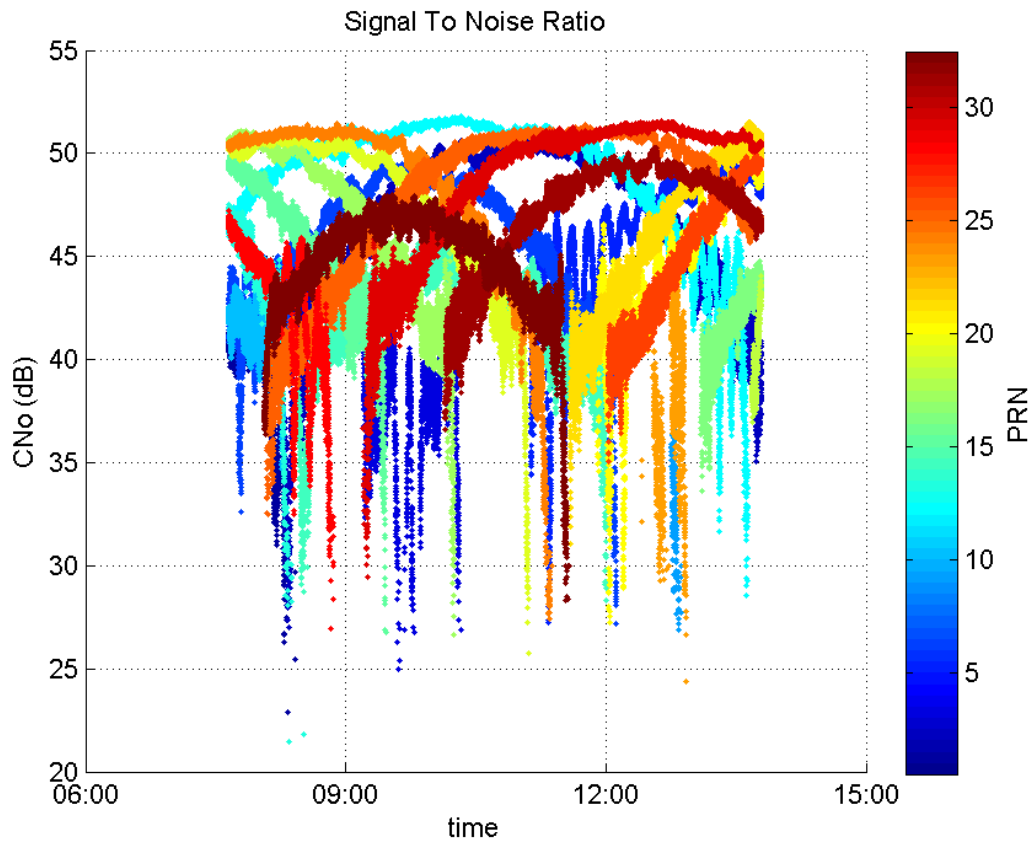
Number of Visible GPS Satellites 25
Number of Visible SBAS Satellites 2

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
1903	288177	1	0.464085	-1.38317	2.98042
1903	297329	2	1.12114	1.92567	1.71759
1903	308379	5	0.222686	-1.11388	5.00203
1903	288048	6	0.402524	2.06248	5.12387
1903	287188	10	0.7	-1.66831	2.3833
1903	299384	12	0.917374	1.58802	1.73105
1903	287516	13	0.441987	0.859943	1.94563
1903	296960	14	0.670872	-1.27359	1.89841
1903	287188	15	0.580534	-0.910836	1.56896
1903	308662	16	0.884258	-1.74024	1.96802
1903	287188	17	0.631332	-1.03548	1.64015
1903	308856	18	0.72766	1.92208	2.64146
1903	290768	19	0.627444	-1.31312	2.09281
1903	303692	20	0.879716	3.4419	3.91251
1903	303059	21	1.21168	2.78292	2.29674
1903	287188	24	1.35726	-1.88887	1.39167
1903	306843	25	0.977672	1.96064	2.00542
1903	308786	26	0.957013	-1.48432	1.55099
1903	287101	28	0	0	19.4808
1903	298822	29	0.952856	1.39141	1.46025
1903	301067	31	1.08815	-1.76785	1.62464

1903

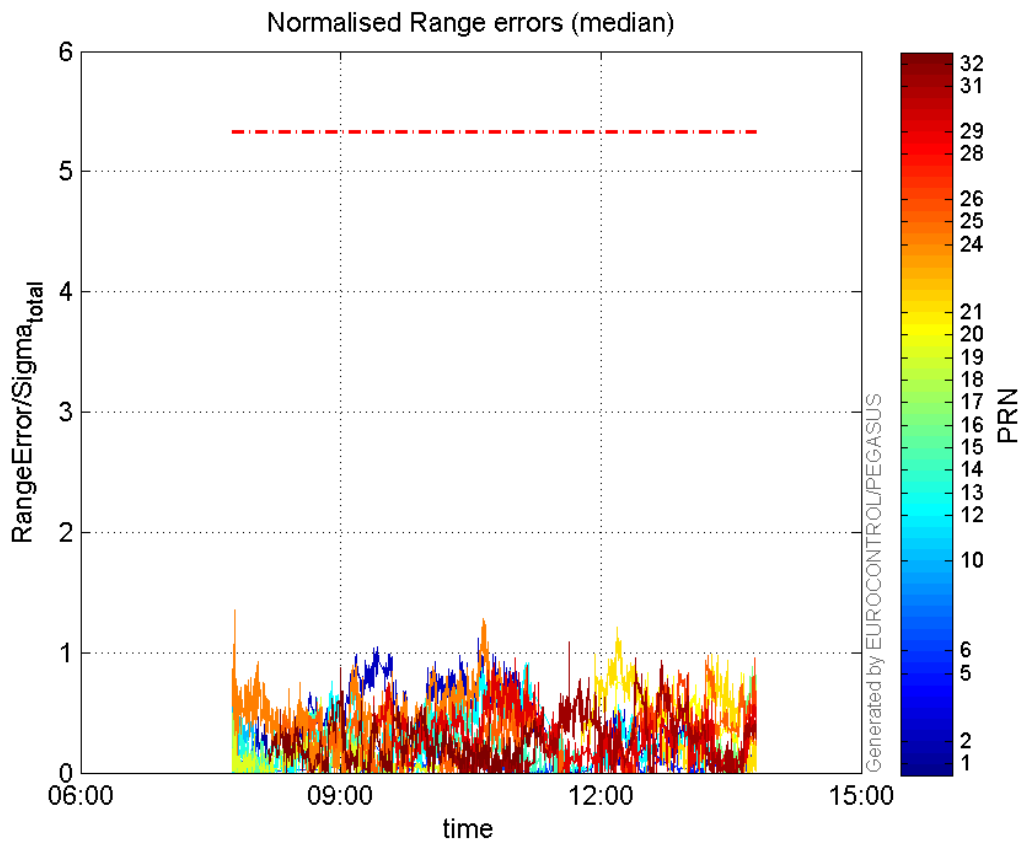
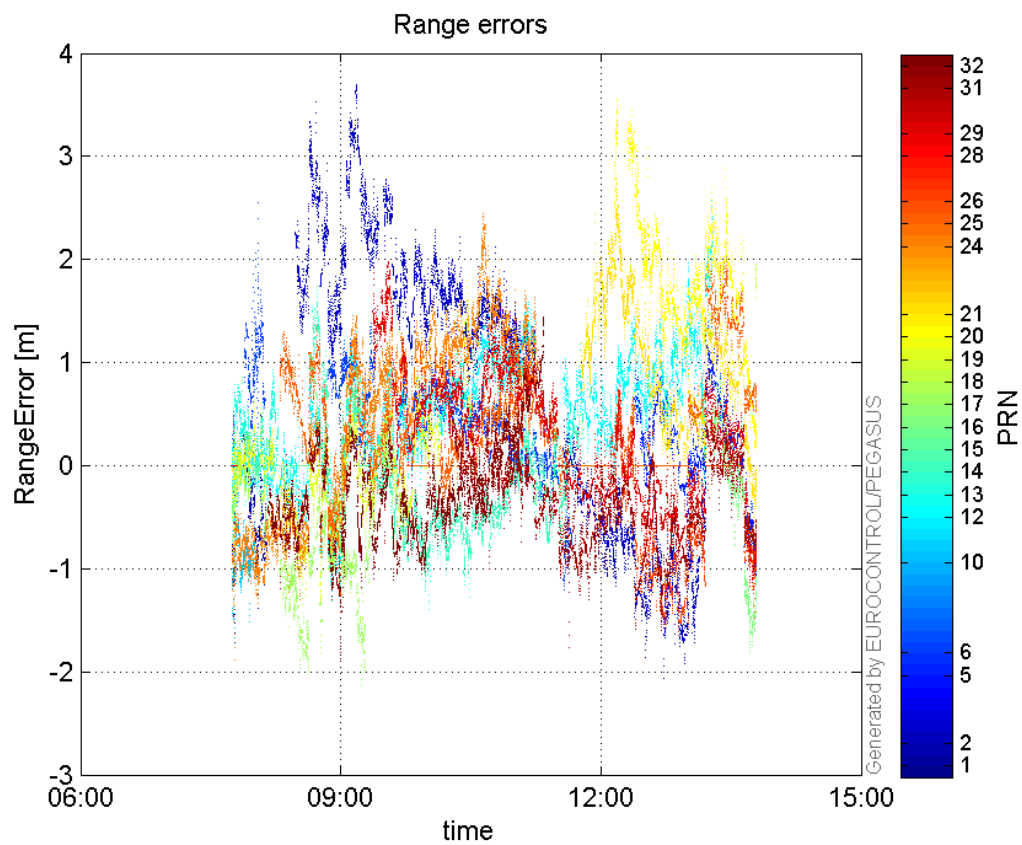
291610

32

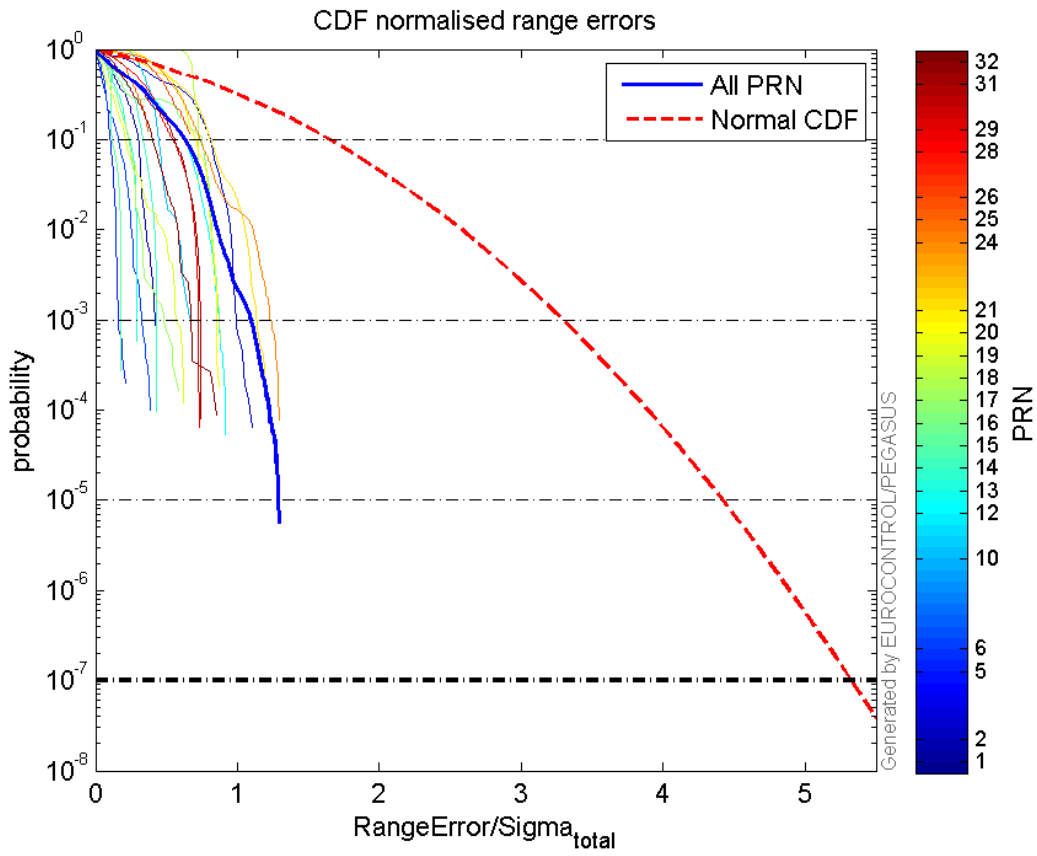
0.869148

-1.87106

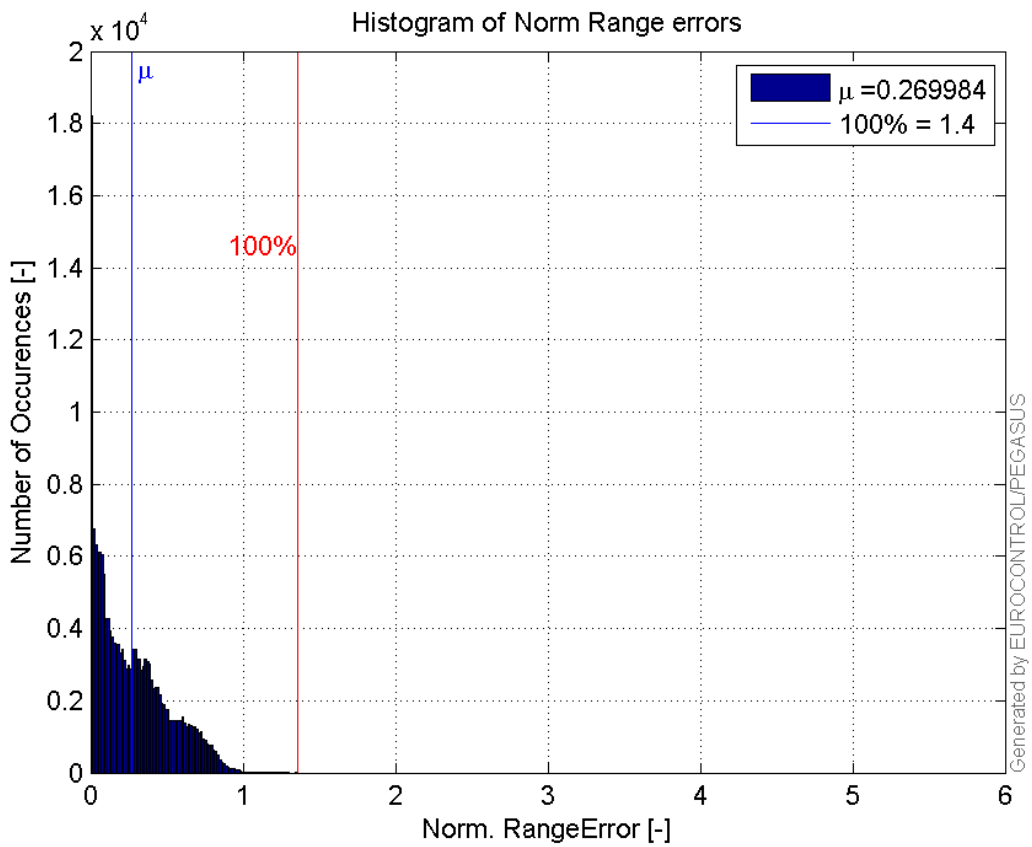
2.15275

Normalised Range errors (median):**Range errors:**

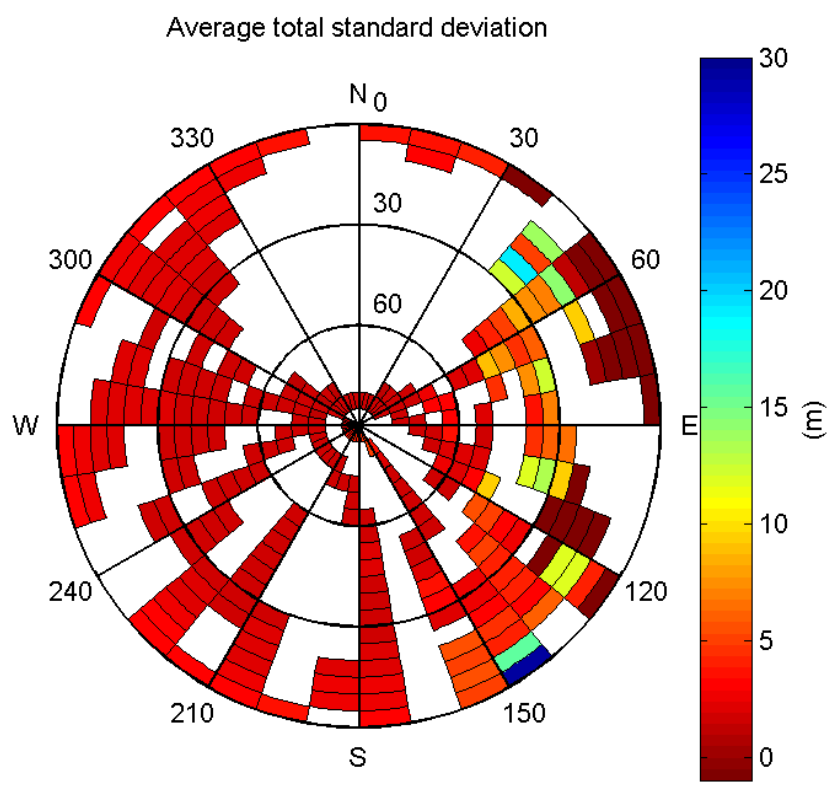
CDF normalised range errors:



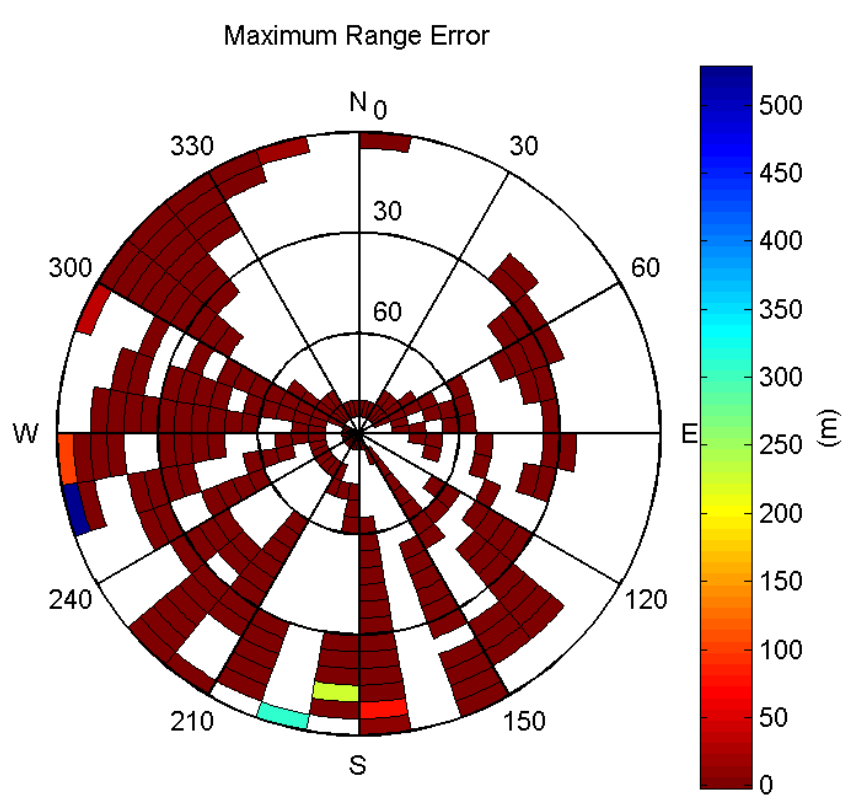
Histogram of Norm Range errors:



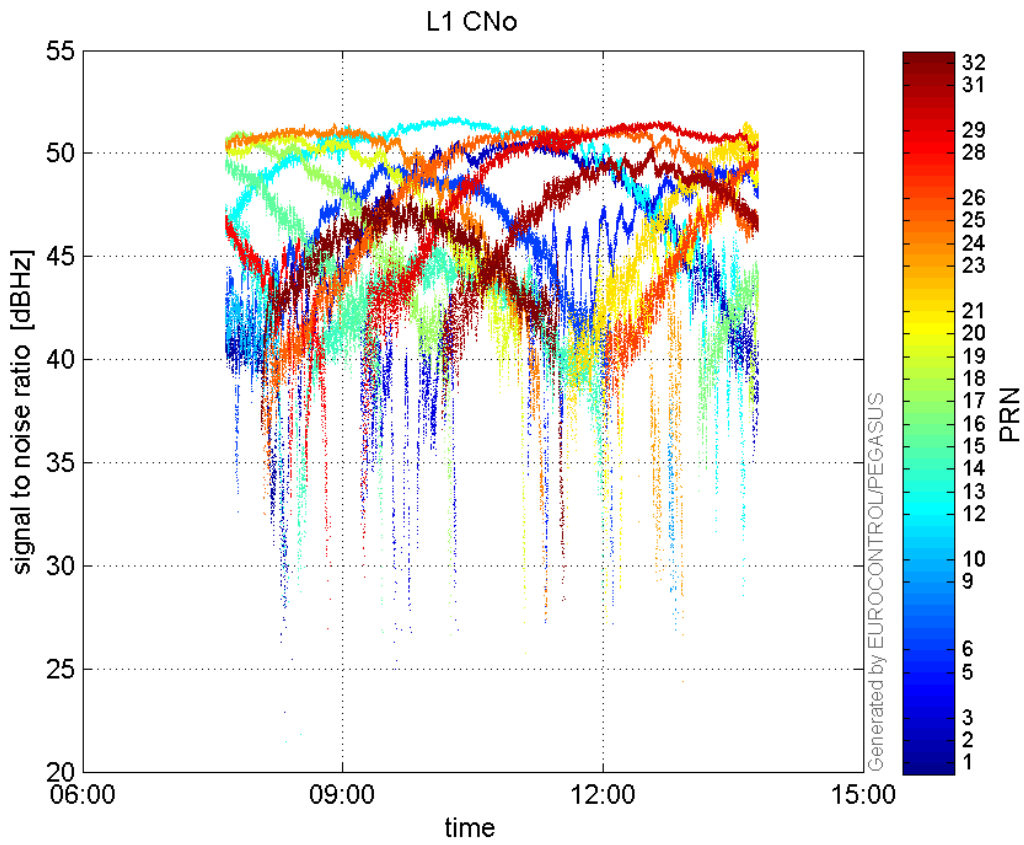
Sigma Sky Plot:



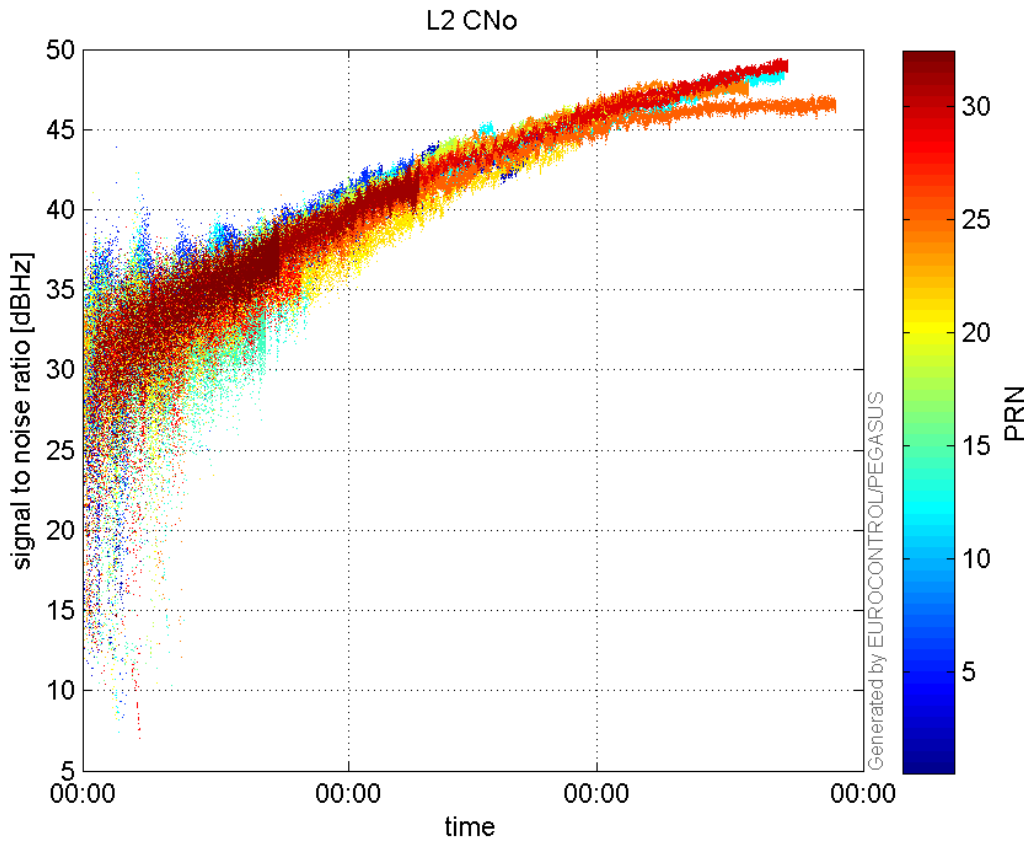
Norm Error Sky Plot:



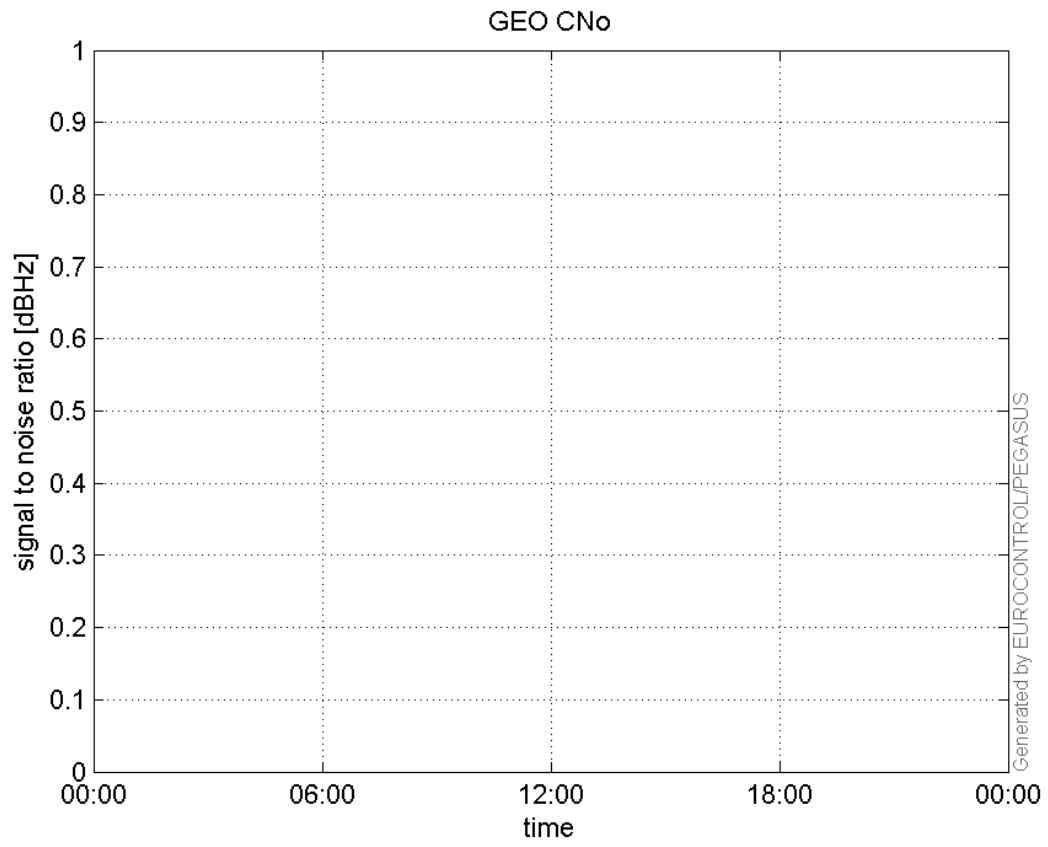
L1 CNo:



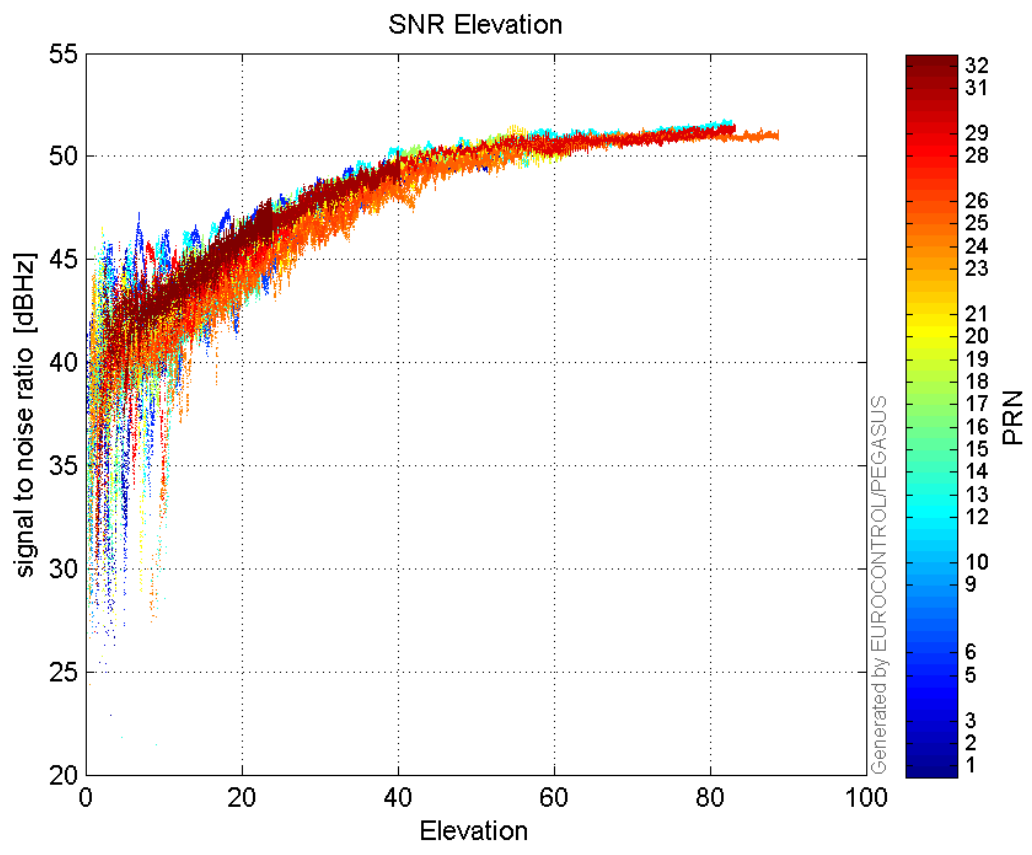
L2 CNo:



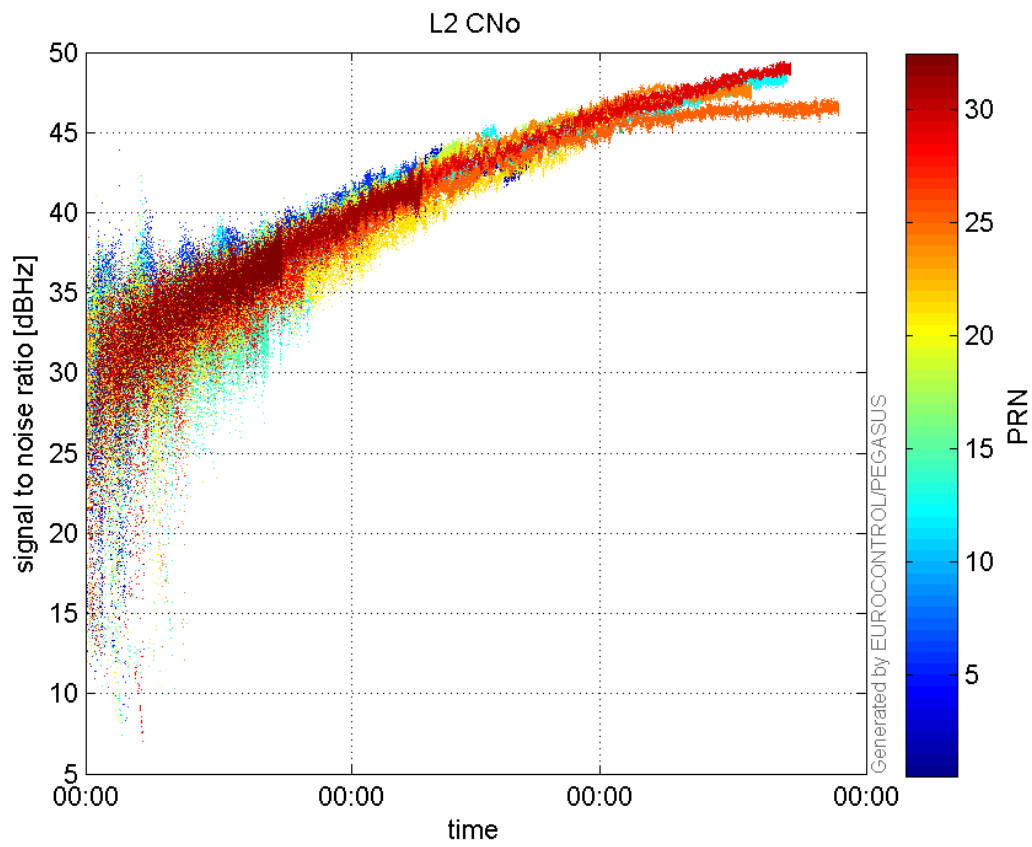
GEO CNo:



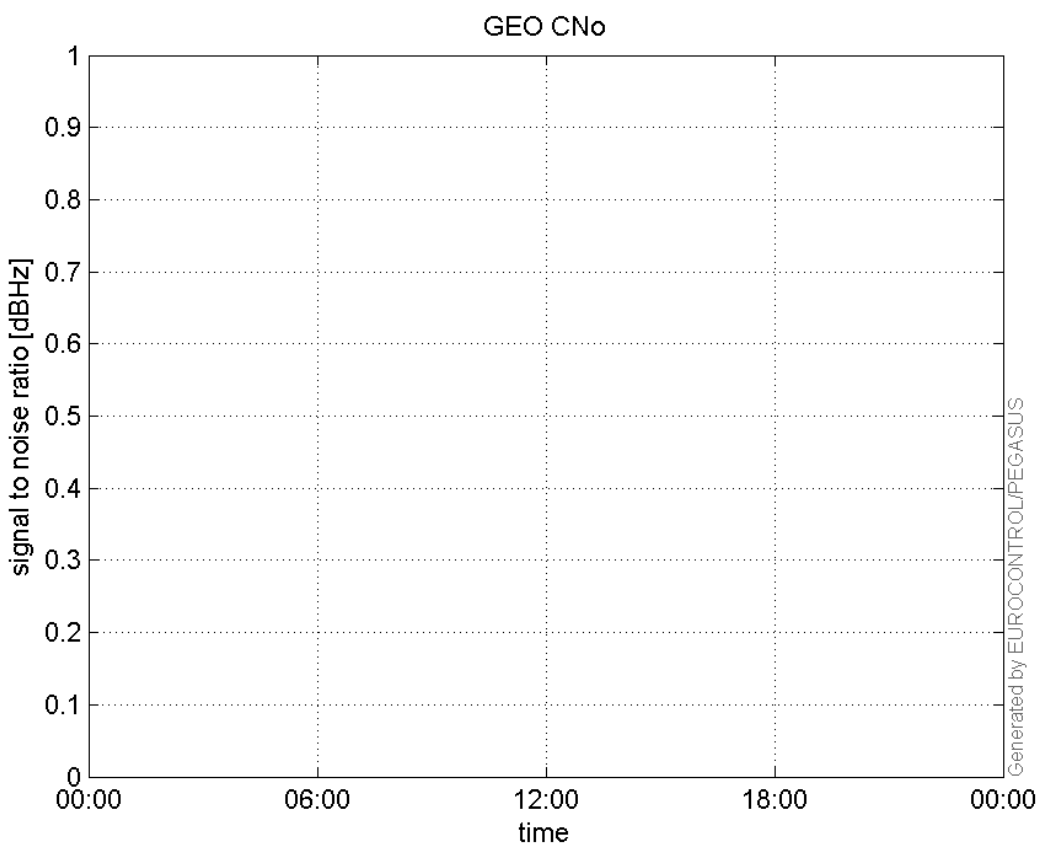
SNR Elevation:



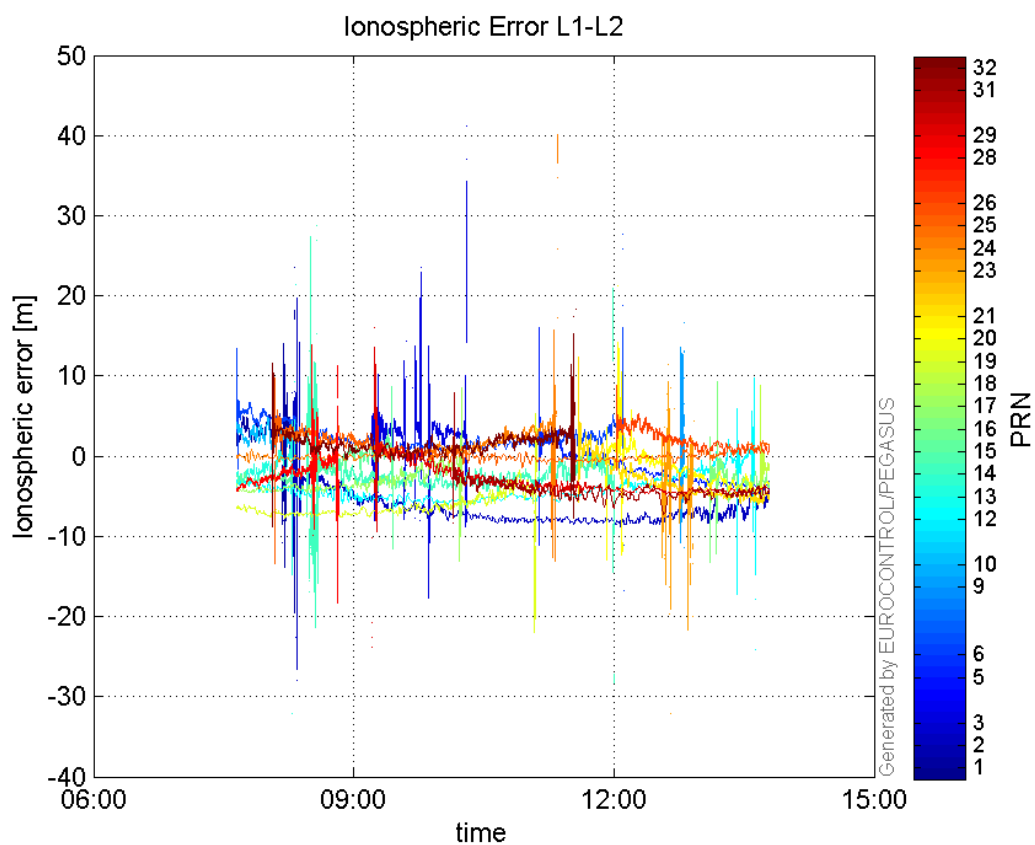
L2 CNo:



GEO CNo:



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_29_EGNOS/02_Convertor/02_Convertor
output_prefix	system	D:/PegasusDateJob/job/2016_06_29_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	237.7057
mi_numbers	results	0