

Global View

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

SBAS Messages

start: 08:35:54.129 28.01.2016 (week: 1881 sec: 376554.129)
end: 13:39:22.129 28.01.2016 (week: 1881 sec: 394762.129)
duration: 05:03:28 ..

quality

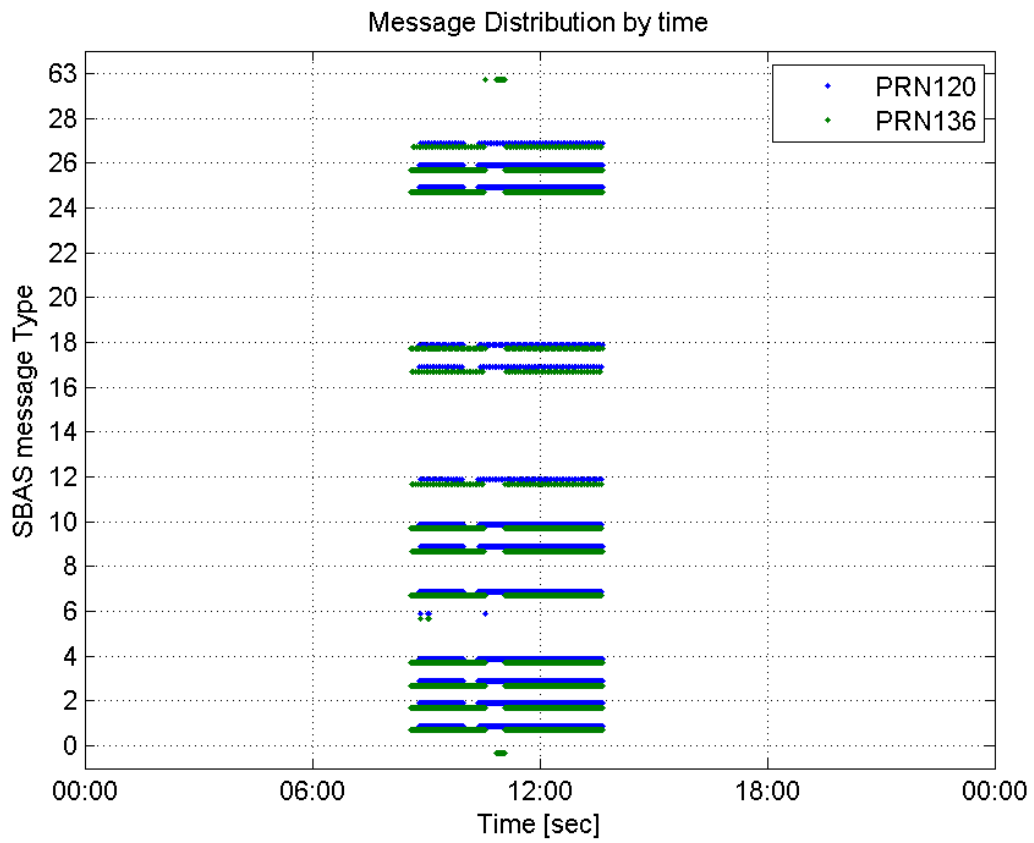
valid samples 33024
total samples 33024
number of SBAS PRNs 2

SBAS SIS Overview

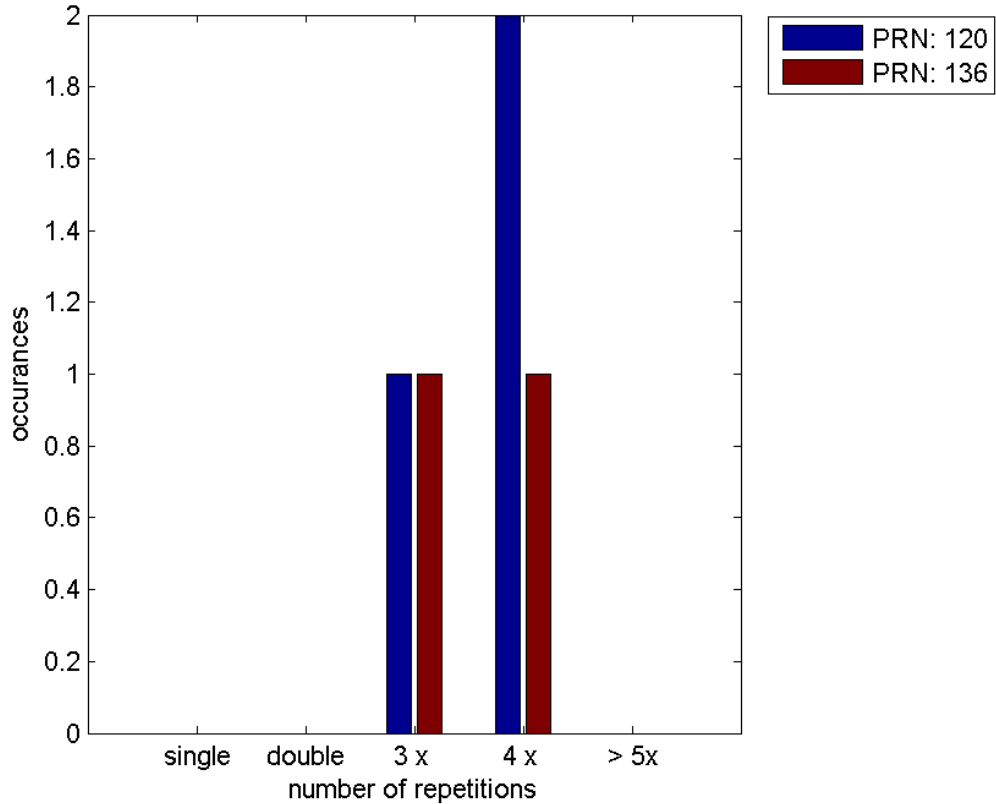
Message Type 6 repetitions :

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

Message Distribution by time:



Message Type 6 repetitions:



Broadcast SBAS Messages :

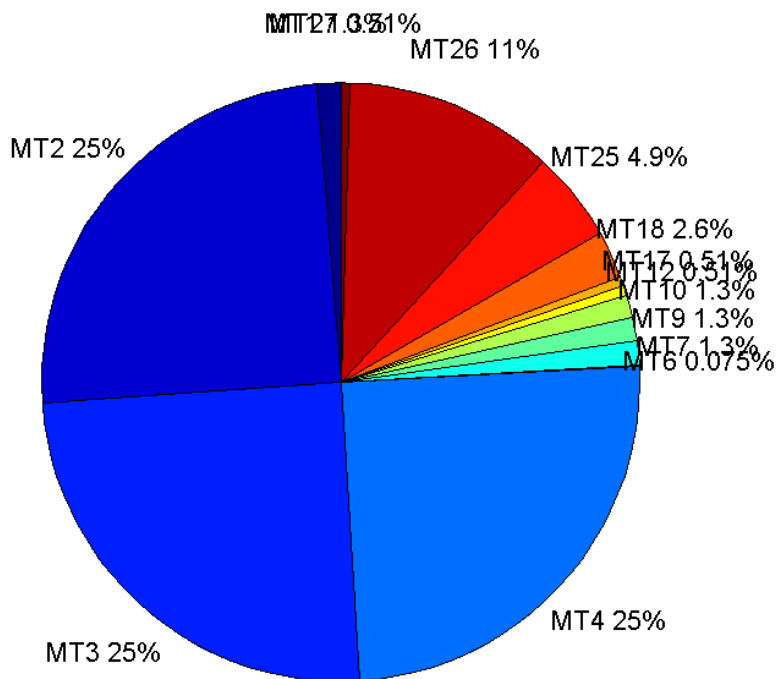
	number of messages	%
MT 0	0	0
MT 1	202	1.26274
MT 2	3978	24.8672
MT 3	3978	24.8672
MT 4	3978	24.8672
MT 5	0	0
MT 6	12	0.0750141
MT 7	202	1.26274
MT 9	201	1.25649
MT 10	202	1.26274
MT 12	82	0.512596
MT 17	81	0.506345
MT 18	410	2.56298
MT 24	0	0
MT 25	785	4.90717
MT 26	1804	11.2771
MT 27	82	0.512596
MT 28	0	0
MT 62	0	0
MT 63	0	0
Total	15997	100

Update intervals :

	Minimum [s]	Maximum [s]	Mean value	Exceed Max update	Exceed NPA timeout	Exceed PA timeout
MT 0	--	--	--	--	--	--
MT 1	76	1520	86.4726	1	1	1
MT 2	4	1404	4.3734	4	1	1
MT 3	4	1404	4.3734	4	1	1
MT 4	4	1400	4.37239	4	1	1
MT 5	--	--	--	--	--	--
MT 6	1	5369	555.182	2	2	2
MT 7	76	1440	86.1542	1	1	1
MT 9	76	1520	86.565	0	0	0
MT 10	76	1440	86.0945	1	1	1
MT 12	188	1580	212.309	81	1	1
MT 17	188	1772	214.963	0	0	0
MT 18	4	1557	42.5257	1	0	0
MT 24	--	--	--	--	--	--
MT 25	2	1420	22.1186	0	0	0
MT	4	1404	9.63339	0	0	0

26						
MT 27	188	1580	212.21	0	0	0
MT 28	--	--	--	--	--	--
MT 62	--	--	--	--	--	--
MT 63	--	--	--	--	--	--

Message Distribution PRN 120:



SBAS SIS Analysis

PRN 136

Broadcast SBAS Messages :

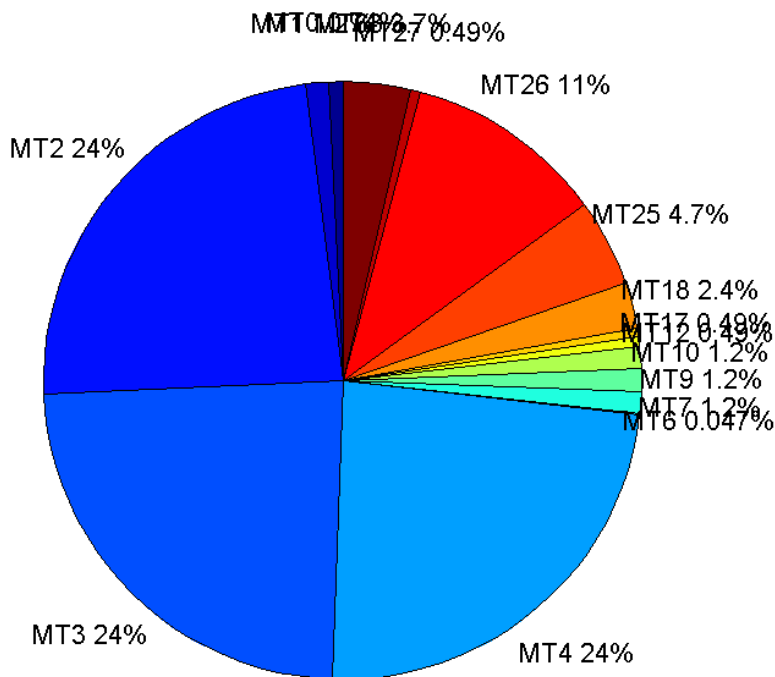
	number of messages	%
MT 0	126	0.740001
MT 1	208	1.22159
MT 2	4041	23.7329
MT 3	4042	23.7388
MT 4	4042	23.7388
MT 5	0	0
MT 6	8	0.0469842
MT 7	207	1.21572
MT 9	205	1.20397
MT 10	206	1.20984

MT 12	84	0.493334
MT 17	83	0.487461
MT 18	417	2.44905
MT 24	0	0
MT 25	804	4.72191
MT 26	1847	10.8475
MT 27	84	0.493334
MT 28	0	0
MT 62	0	0
MT 63	623	3.65889
Total	17027	100

Update intervals :

	Minimum [s]	Maximum [s]	Mean value	Exceed Max update	Exceed NPA timeout	Exceed PA timeout
MT 0	6	60	7.104	11	0	0
MT 1	60	1938	87.8696	1	1	1
MT 2	3	1917	4.50569	6	4	4
MT 3	3	1921	4.50557	6	3	4
MT 4	3	1920	4.50532	6	3	4
MT 5	--	--	--	--	--	--
MT 6	1	729	105	1	1	1
MT 7	61	1927	87.8883	1	1	1
MT 9	61	1960	88.7892	0	0	0
MT 10	61	1981	88.3561	1	1	1
MT 12	151	2074	216.687	83	1	1
MT 17	188	2117	219.329	0	0	0
MT 18	1	1955	43.7043	1	0	0
MT 24	--	--	--	--	--	--
MT 25	1	1959	22.6252	0	0	0
MT 26	1	1939	9.86132	0	0	0
MT 27	172	1987	216.639	0	0	0
MT 28	--	--	--	--	--	--
MT 62	--	--	--	--	--	--
MT 63	1	1026	3.07717	0	0	0

Message Distribution PRN 136:



Parameters

System

Name	Section	Value
Name	System	Convertor
Version	System	4.3
Inputfile	System	D:/PegasusDateGob/job/2016_01_28_EGNOS/01_User/01_User
Outputfile	System	D:/PegasusDateGob/job/2016_01_28_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

Range Domain

start: 08:35:54 28.01.2016 (week: 1881 sec: 376554)
end: 13:39:23 28.01.2016 (week: 1881 sec: 394763)
duration: 05:03:30 ..

quality

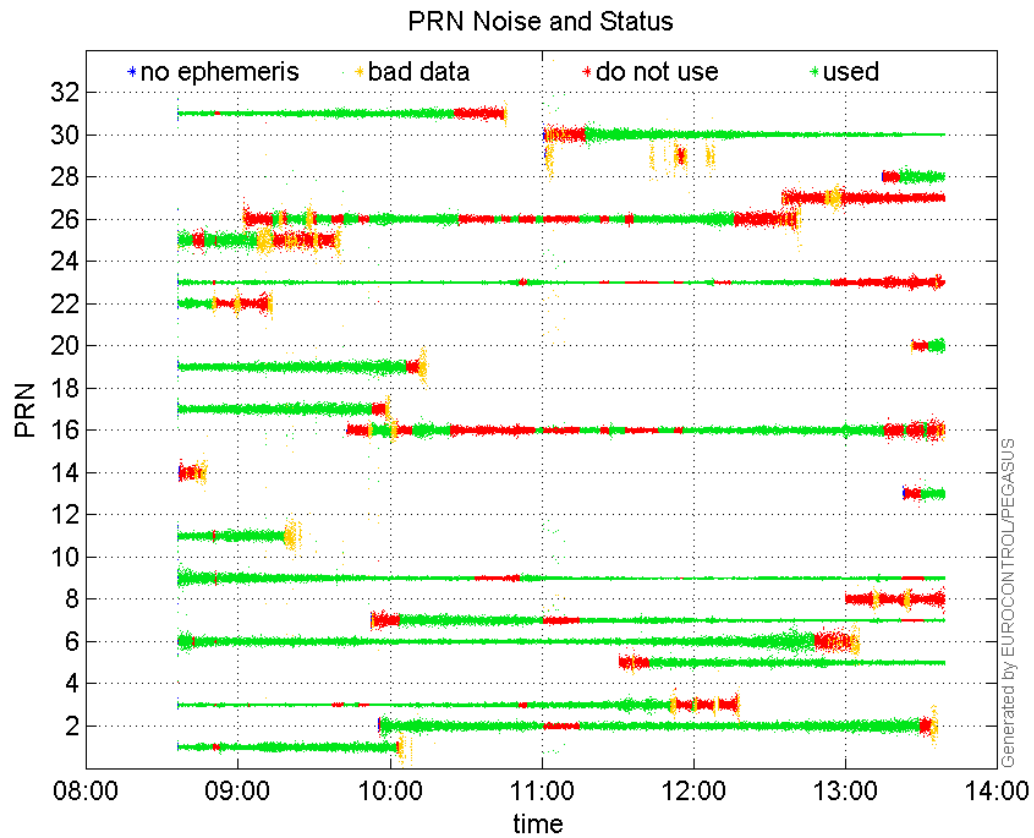
valid samples 18210
total samples 18210

PRN overview

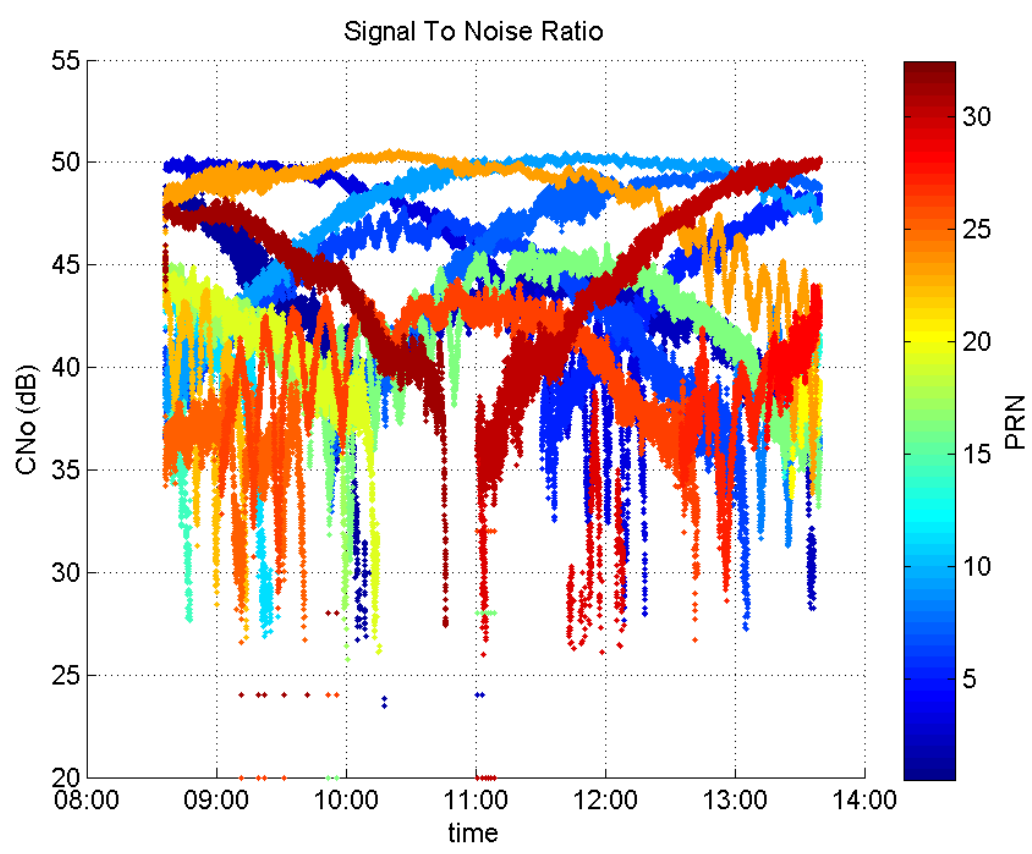
Number of Visible GPS Satellites 24
Number of Visible SBAS Satellites 2

signal quality and status

PRN Noise and Status:



Signal To Noise Ratio:



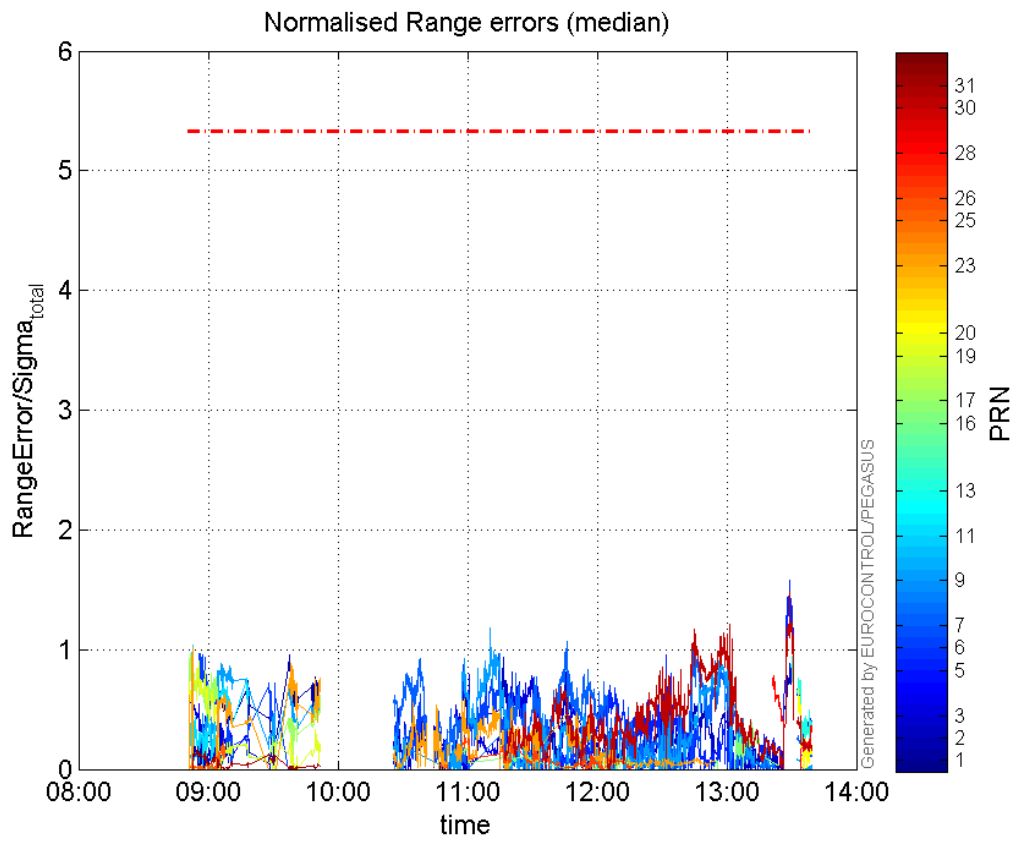
range errors

Number of Overbounding Norm Errors 0

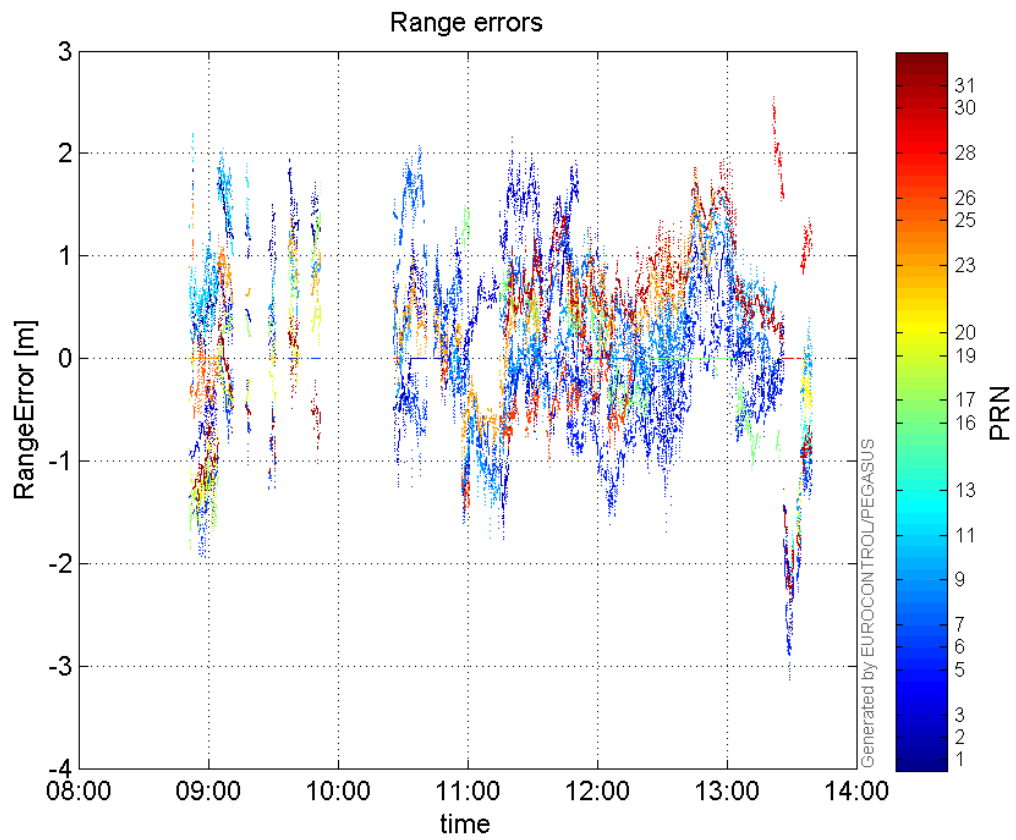
Max Norm Errors :

GPS Week	GPS Second	PRN	Norm Error	Range Error	Sigma
1881	380218	1	0.952906	1.94135	2.03729
1881	386191	2	0.935632	-1.76186	1.88307
1881	386430	3	0.808416	2.15642	2.66747
1881	394159	5	1.58147	-3.13671	1.98342
1881	377768	6	0.967257	-1.93618	2.00173
1881	391484	7	1.10142	1.60683	1.45887
1881	385819	9	1.18052	-1.75173	1.48387
1881	377552	11	1.03773	2.0474	1.97296
1881	394212	13	0.947894	-2.18467	2.30476
1881	393107	16	0.391662	-1.08198	2.76253
1881	377463	17	0.967032	-1.8223	1.88443
1881	377707	19	0.90497	-1.70332	1.88219
1881	394390	20	0.664531	-1.77361	2.66897
1881	377530	23	1.02169	1.46976	1.43856
1881	378392	25	0.227152	1.06056	4.66896
1881	385114	26	0.259391	-1.49256	5.75411
1881	393689	28	0.778773	2.55705	3.28344
1881	394147	30	1.47994	-2.80981	1.8986
1881	377645	31	0.155304	-1.51862	9.77838

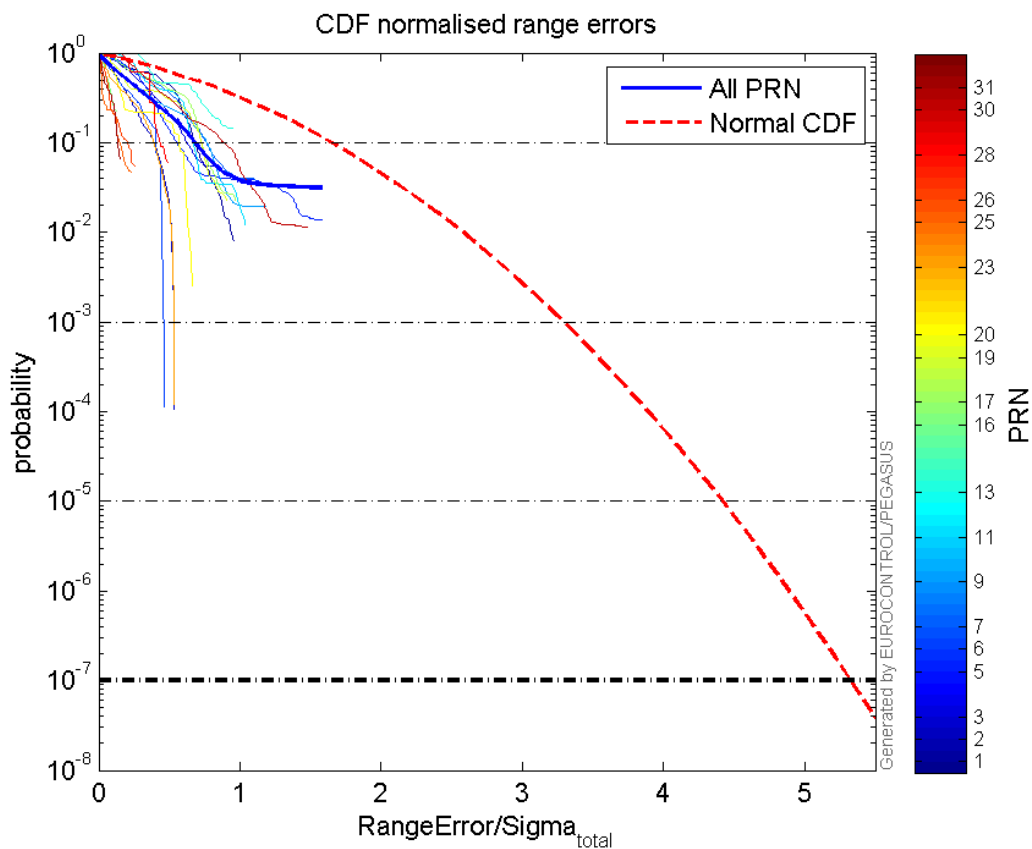
Normalised Range errors (median):



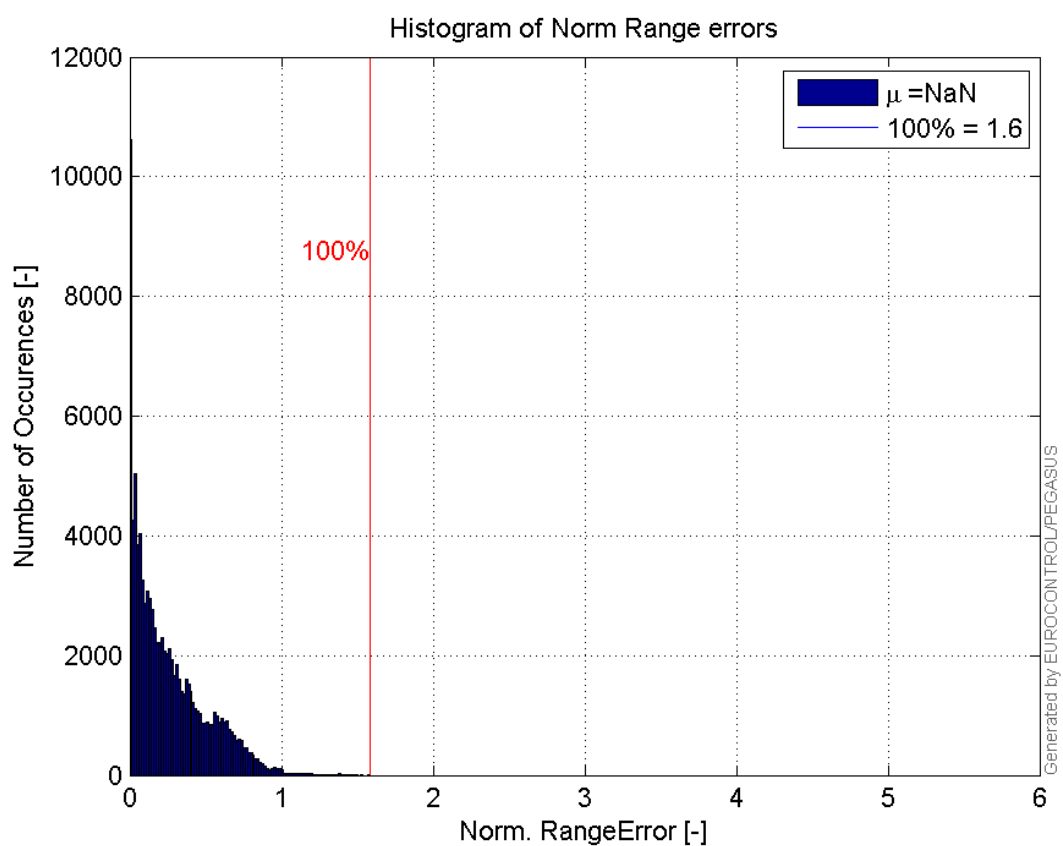
Range errors:



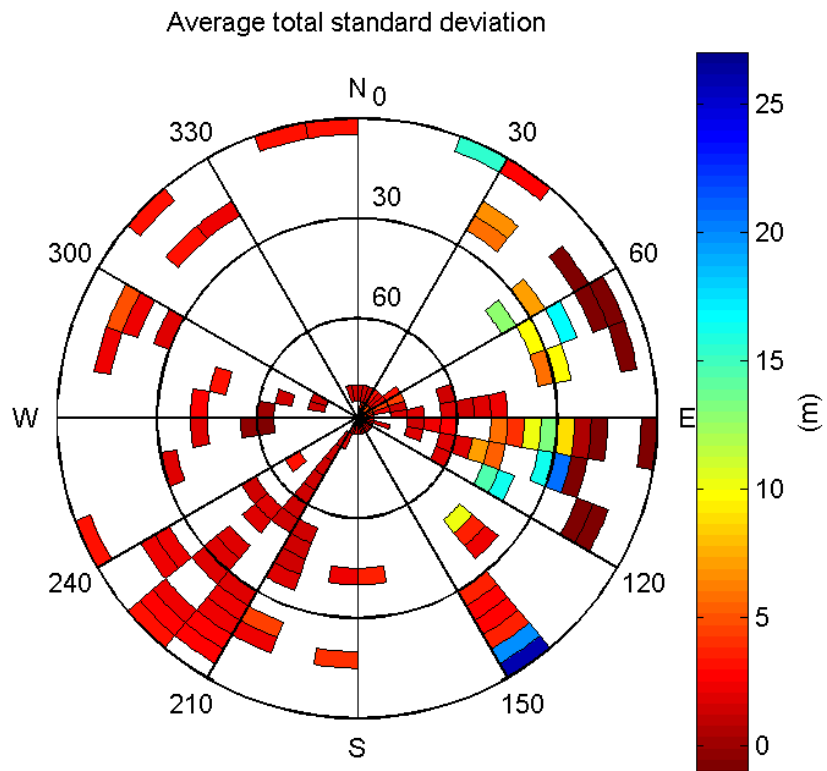
CDF normalised range errors:



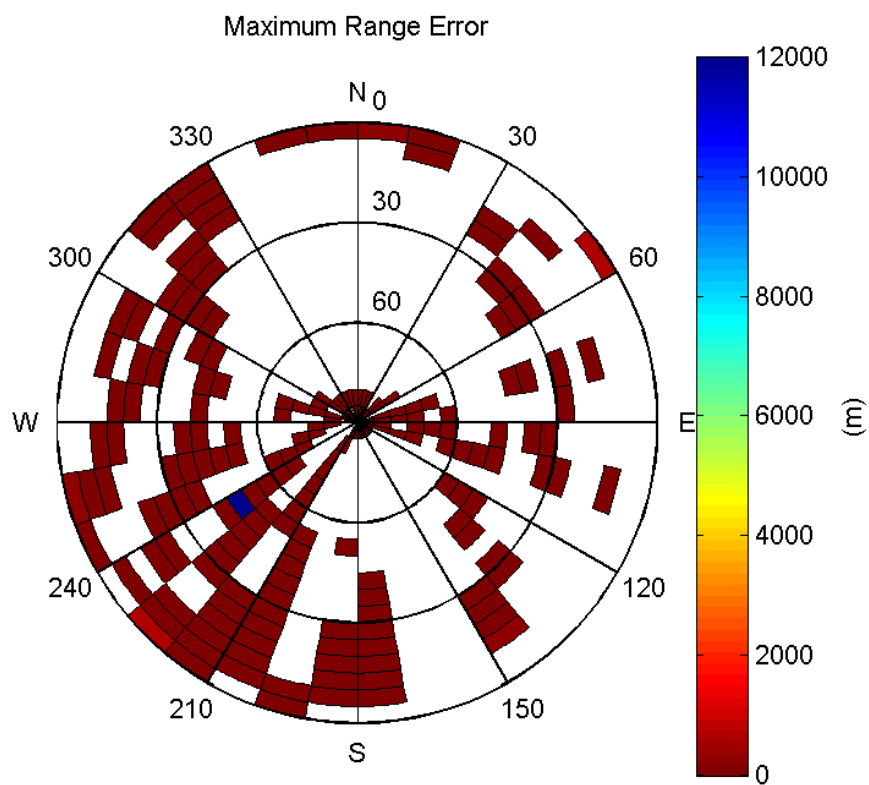
Histogram of Norm Range errors:



Sigma Sky Plot:

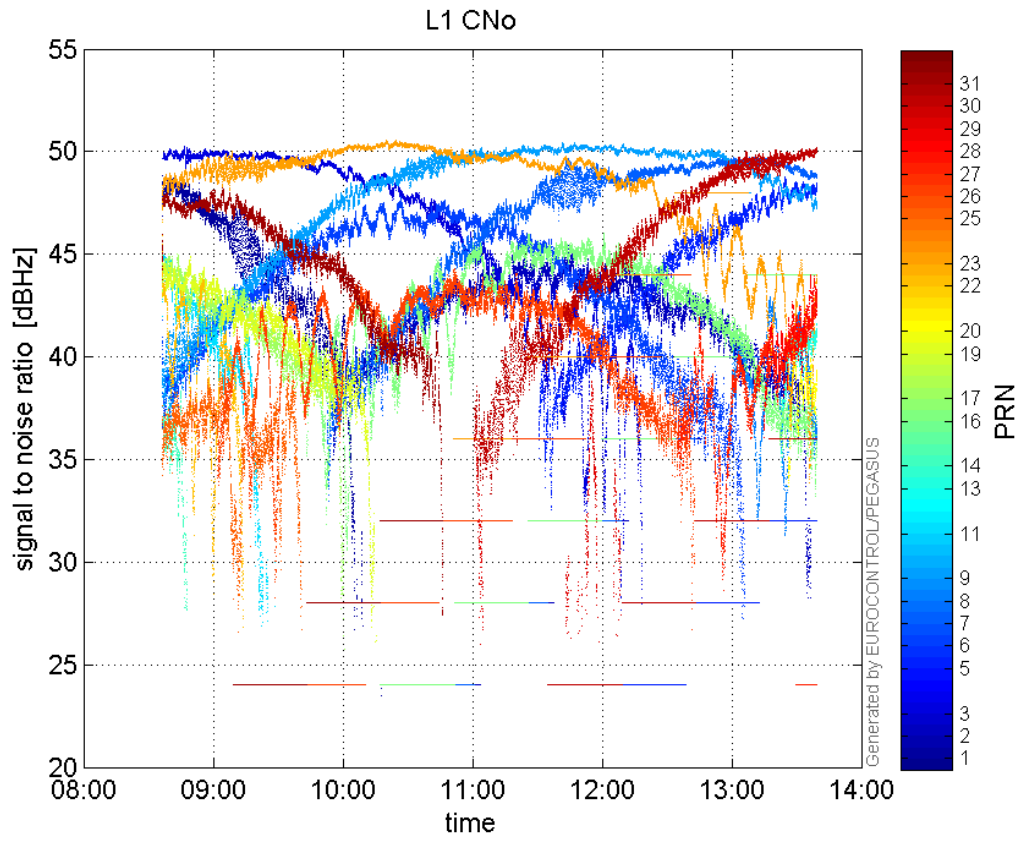


Norm Error Sky Plot:

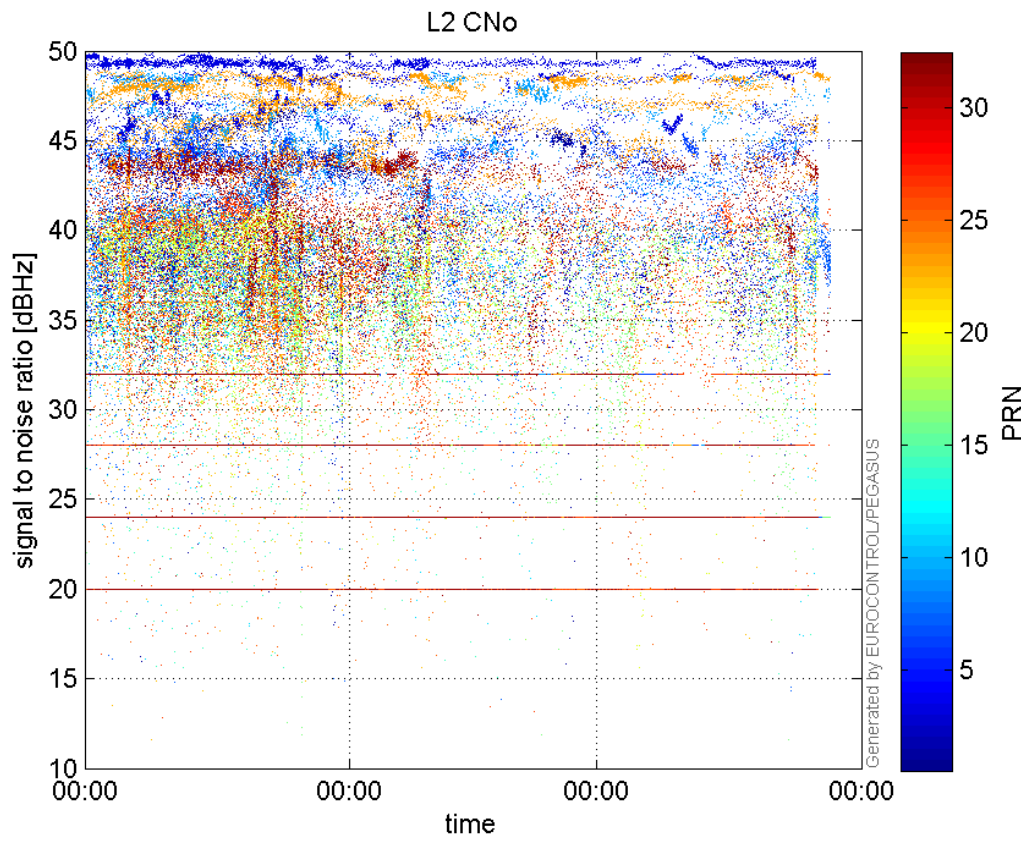


signal quality

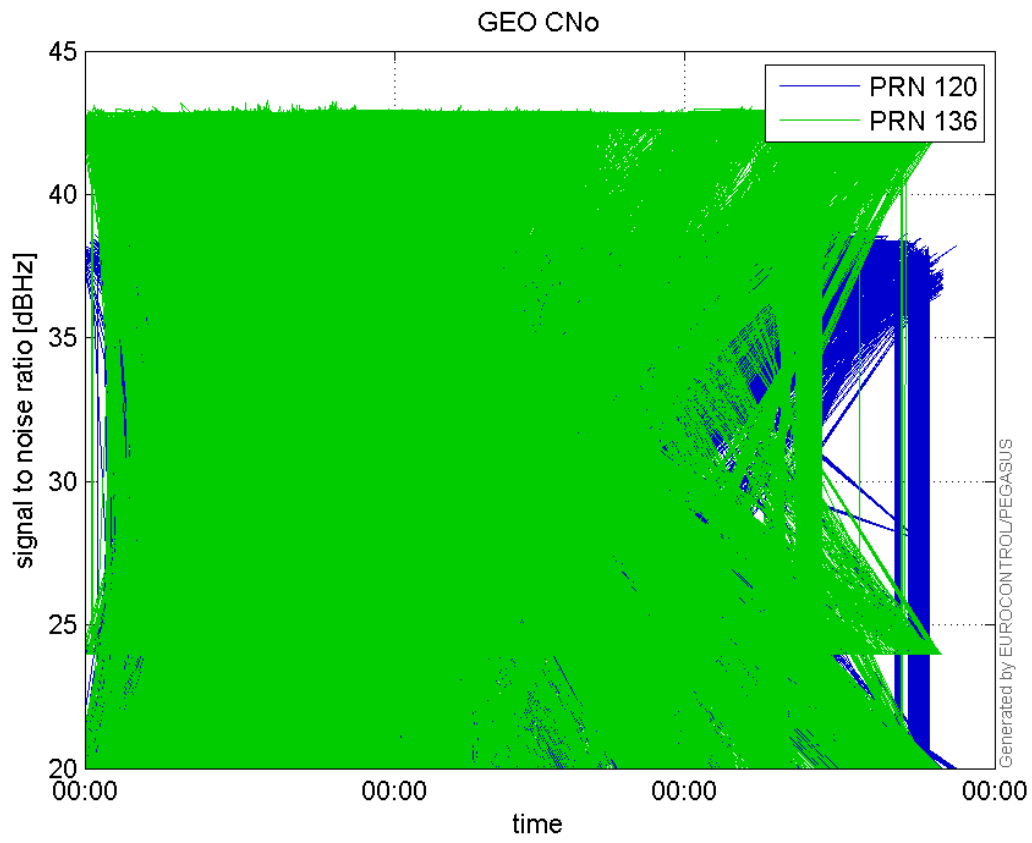
L1 CNo:



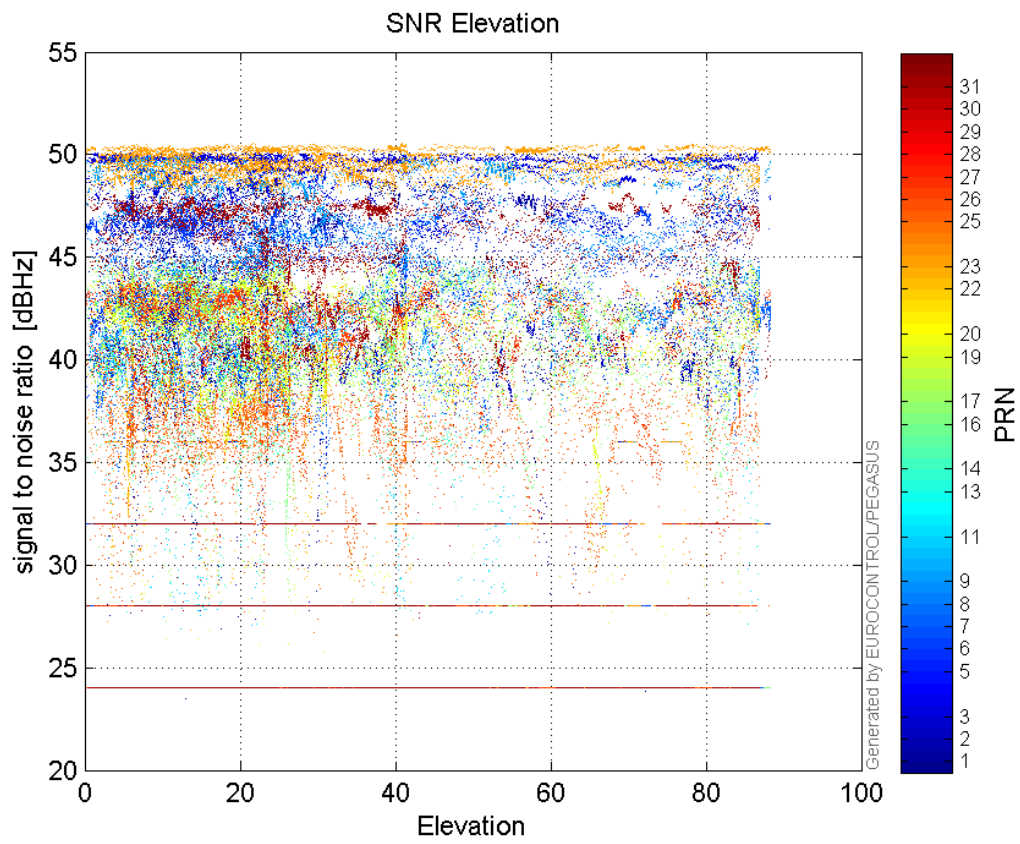
L2 CNo:



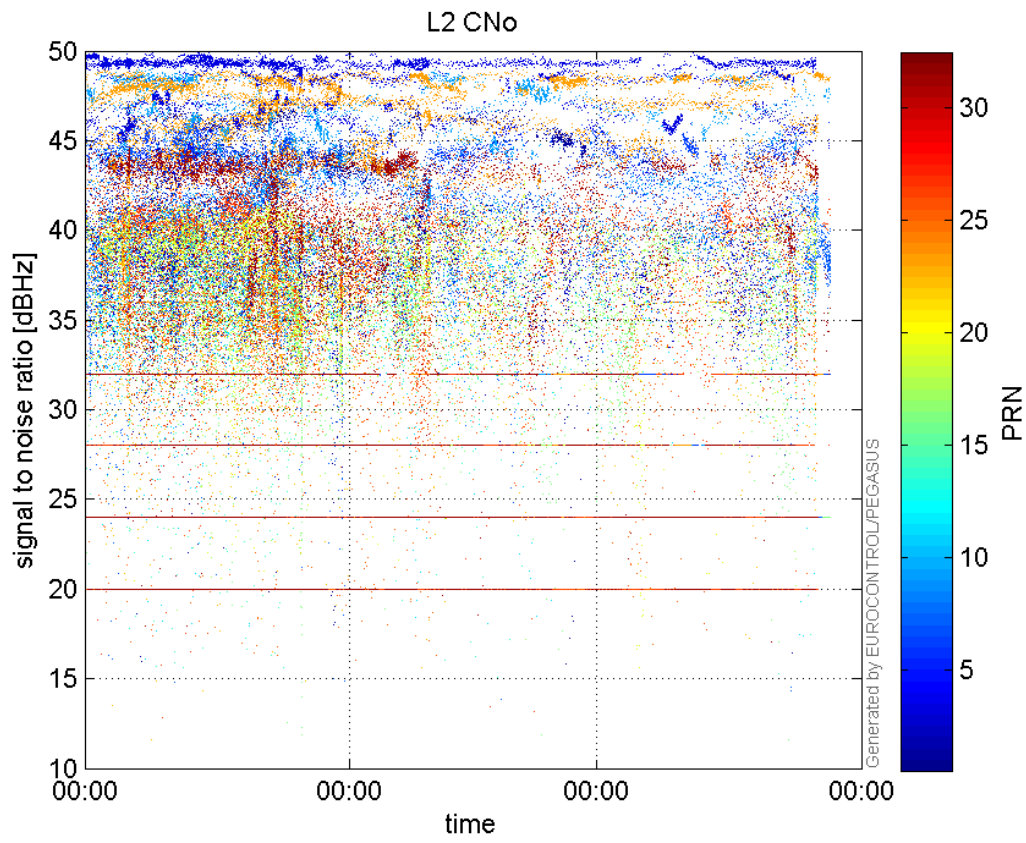
GEO CNo:



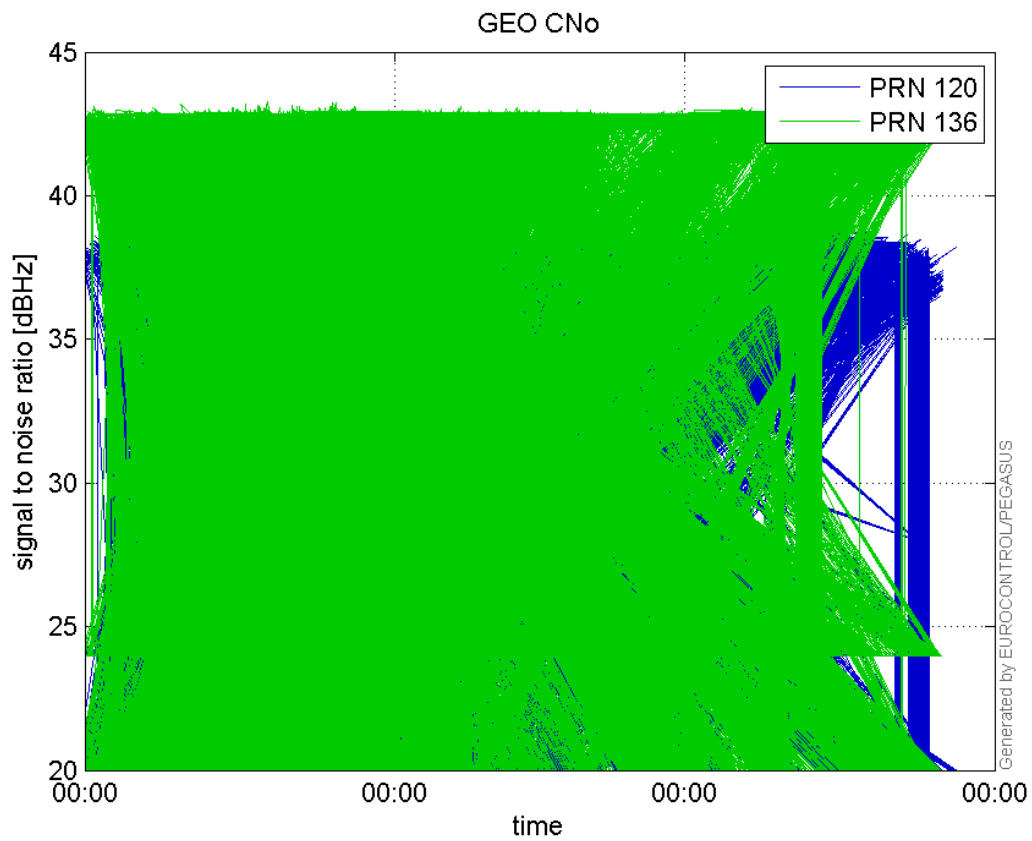
SNR Elevation:



L2 CNo:

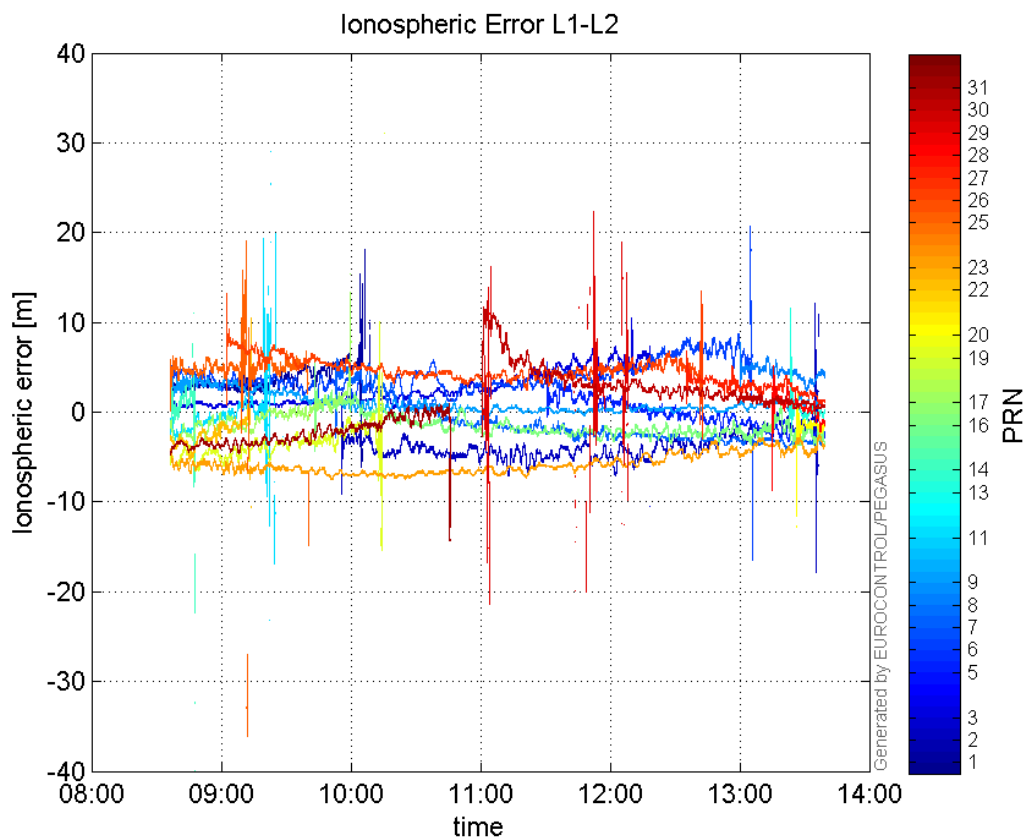


GEO CNo:



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_28_EGNOS/02_Convertor/02_Convertor
output_prefix	system	D:/PegasusDateGob/job/2016_01_28_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	229.3513
mi_numbers	results	0

Position Domain

start: 08:35:54 28.01.2016 (week: 1881 sec: 376554)

end: 13:39:23 28.01.2016 (week: 1881 sec: 394763)

duration: 05:03:30 ..

quality

valid samples 15628

total samples 18210

Event tables

Position discontinuity events type all
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	387041	1.60268	10.0122	0.160073	-0.0181323	15.8135	0.00114663
max normVer	383634	2.36376	22.9403	0.10304	2.45958	25.4854	0.0965094
max HPE	394223	9.68927	475.833	0.0203628	4.27986	122.039	0.0350696
max VPE	385819	2.24869	72.2539	0.0311221	4.9788	76.439	0.0651343
min HPL	386589	0.961315	9.0517	0.106203	0.198094	14.8343	0.0133538
min VPL	387819	0.570054	12.7802	0.0446045	0.0747021	14.6011	0.0051162

Position discontinuity events :

#	Epoch	duration	stable period
1	384060	192	932
2	384640	29	388
3	394179	14	8452
4	394261	83	68

APV-I discontinuity events :

#	Epoch	duration	stable period
1	384060	192	932
2	384640	197	388

3	393326	145	7241
4	393559	808	88

APV-35m discontinuity events :

#	Epoch	duration	stable period
1	384060	192	932
2	384640	197	388
3	393326	146	7241
4	393473	1	1
5	393475	1	1
6	393479	1	3
7	393483	1	3
8	393487	1	3
9	393491	1	3
10	393559	881	67

LPV-200 discontinuity events :

#	Epoch	duration	stable period
1	384060	192	932
2	384640	197	388
3	393326	146	7241
4	393473	1	1
5	393475	1	1
6	393479	1	3
7	393483	1	3
8	393487	1	3
9	393491	1	3
10	393559	881	67

First Glance analysis

Duration	18210
Number of Samples	18210
Number of invalid sample	2582
Number of no position solution samples	2283
Number of missing sample	0
Logging Loss	0
Processing Loss	14.179
Number of Misleading Information	0
Data gaps	11
Discontinuities	15

Number of Samples :

Valid	APV-1	LPV-200	CAT-1	APV-35m
13345	11489	11409	0	11409

Accuracy statistics :

	Valid	APV-1	LPV-200	CAT-1	APV-35m

HPE 95%	1.63686	1.53285	1.53364	NaN	1.53364
HPEScale 95%	NaN	4.40249	4.40796	NaN	4.40796
VPE 95%	1.68254	1.4158	1.38709	NaN	1.38709
VPEscale 95%	NaN	2.87084	2.01218	NaN	2.01218

Availability :

	Valid	APV-1	LPV-200	CAT-1	APV-35m
Signal in Space	0.853916	0.735155	0.730036	0	0.730036
measurements	0.732839	0.630917	0.626524	0	0.626524
Operational	0.732839	0.630917	0.626524	0	0.626524

Discontinuity events :

	Valid	APV-1	LPV-200	CAT-1	APV-35m
All	4	4	10	--	10
Long	4	4	4	--	4
Independent	4	4	4	--	4
P(disc.)	0.00449607	0.00522239	0.00525901	NaN	0.00525901
P(slide)	0.00449607	0.00522239	0.00648611	NaN	0.00648611

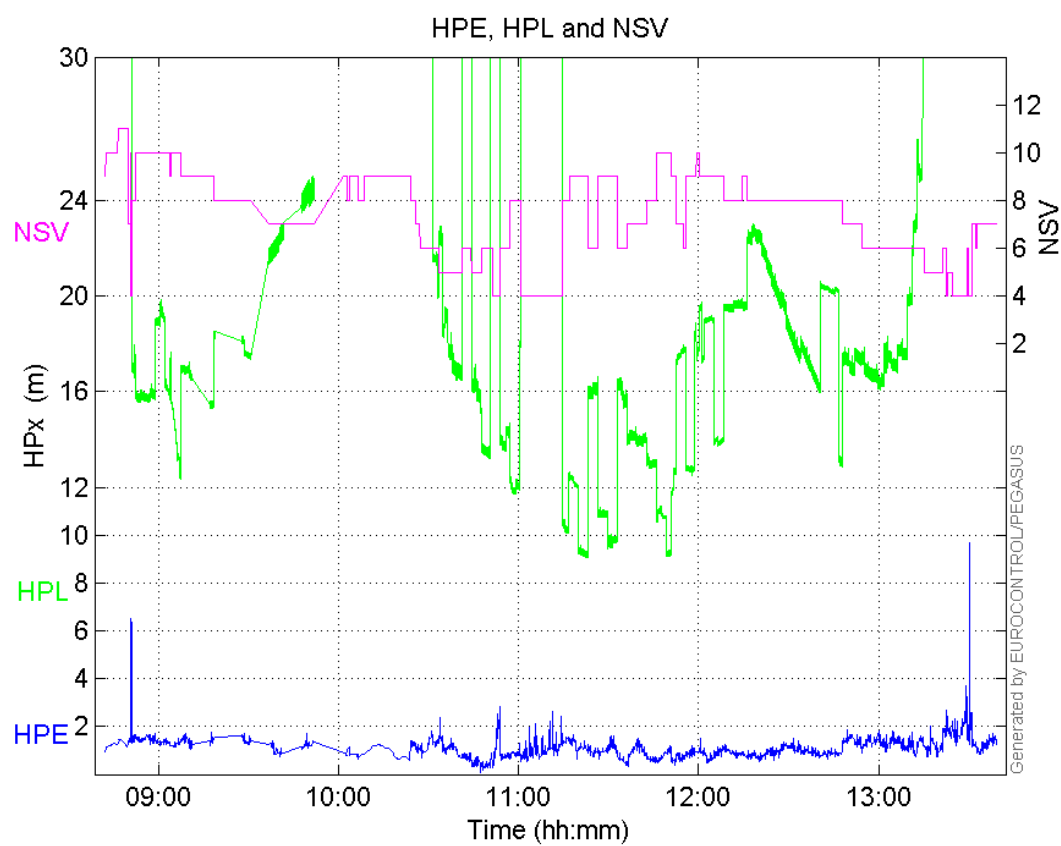
Integrity events :

	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

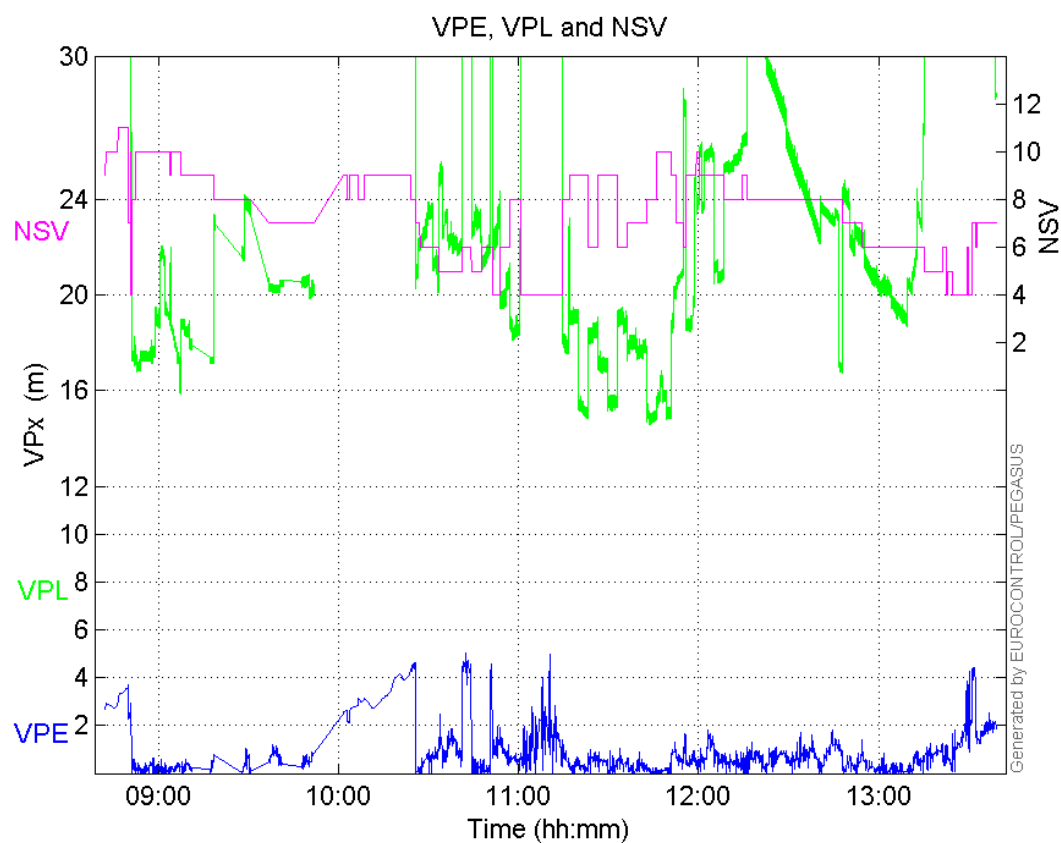
Performance Summary :

	Valid	APV-1	LPV-200	CAT-1	APV-35m
Samples	13345	11489	11409	0	11409
SIS Availability	0.853916	0.735155	0.730036	0	0.730036
Local Availability	0.732839	0.630917	0.626524	0	0.626524
Operational Availability	0.732839	0.630917	0.626524	0	0.626524
HPE 95%	1.63686	1.53285	1.53364	NaN	1.53364
HPEScale 95%	NaN	4.40249	4.40796	NaN	4.40796
VPE 95%	1.68254	1.4158	1.38709	NaN	1.38709
VPEscale 95%	NaN	2.87084	2.01218	NaN	2.01218
All Discontinuity Events	4	4	10	--	10
Long Discontinuity Events	4	4	4	--	4
Independent Discontinuity Events	4	4	4	--	4
P(discontinuity)	0.00449607	0.00522239	0.00525901	NaN	0.00525901
P(sliding window)	0.00449607	0.00522239	0.00648611	NaN	0.00648611
All Integrity Events	0	0	0	0	0
Horizontal Integrity Events	0	0	0	0	0
Vertical Integrity Events	0	0	0	0	0

HPE, HPL and NSV:

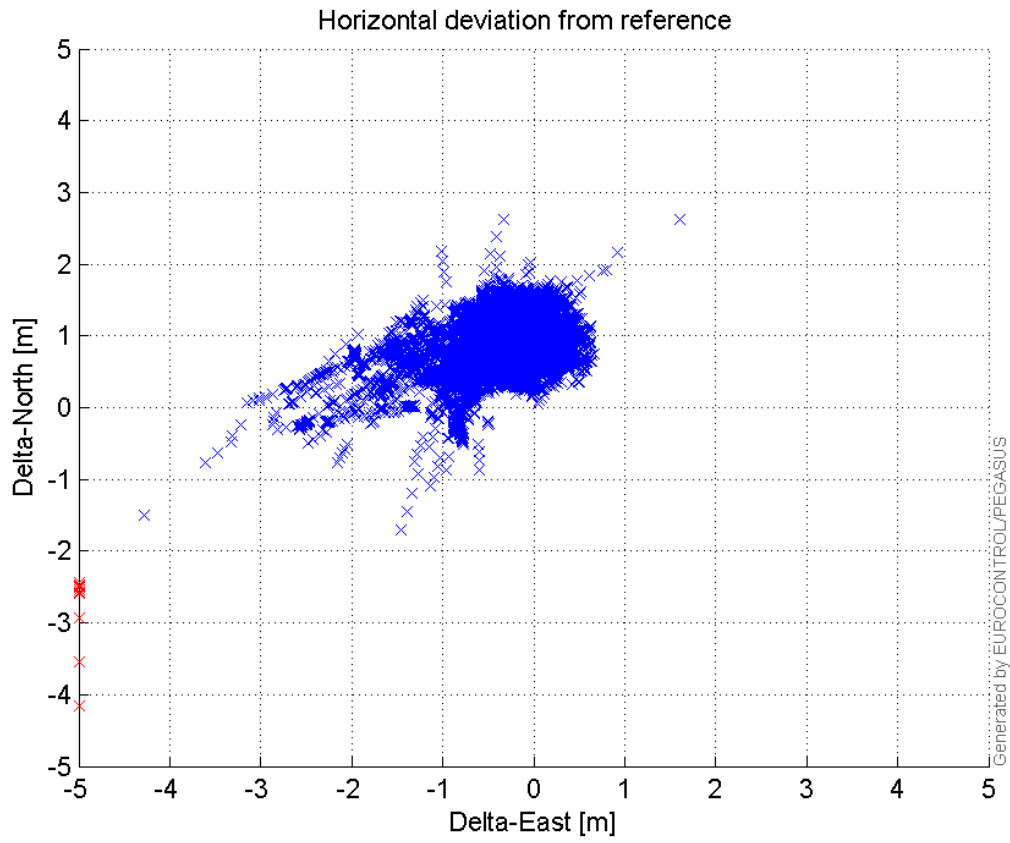


VPE, VPL and NSV:



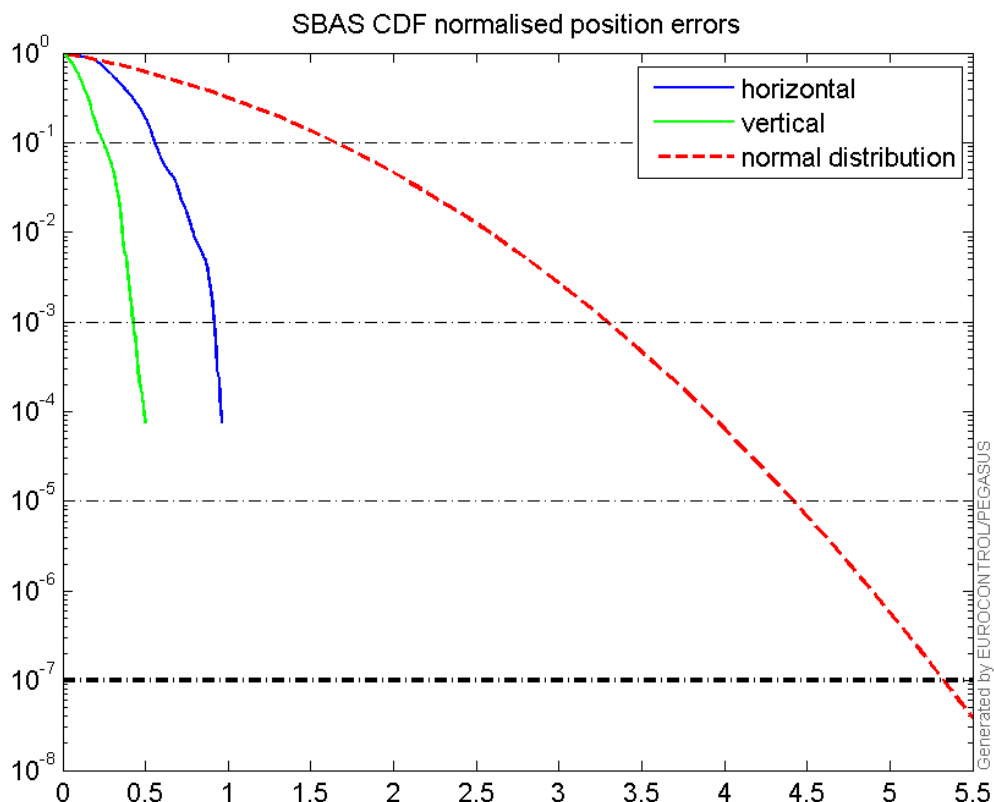
Horizontal deviation

Horizontal deviation from reference :



CDF position

SBAS CDF position domain:



Statistics

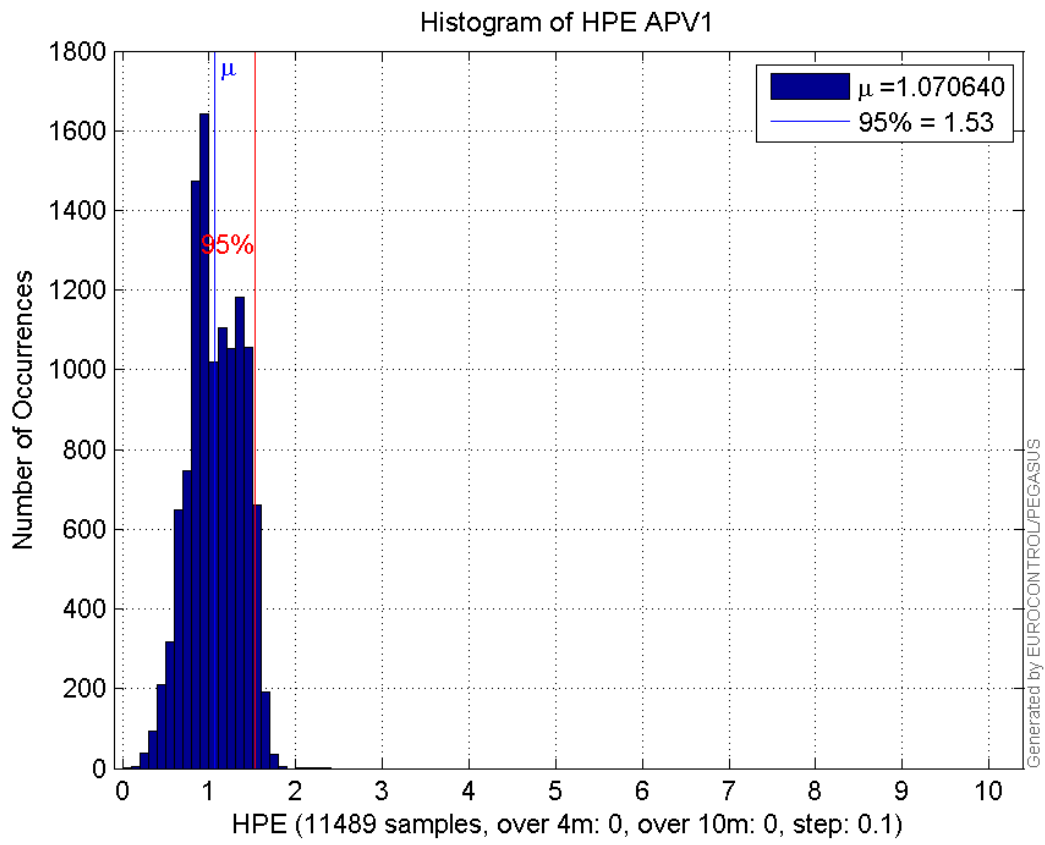
number	11489
sum	12300.586
sum2	14220.165
prctile95	1.532845
prctile99	1.6374151
number	11489
sum	6135.0467
sum2	5310.9211
prctile95	1.4157974
prctile99	2.0325229
number	11489
sum	209138.25
sum2	4217179.4
prctile95	34.670325
prctile99	37.21984
number	11489
sum	250085.83
sum2	5660063.8
prctile95	30.66424
prctile99	34.347132
number	11489
sum	729.91387
sum2	53.427809
prctile95	0.11006218
prctile99	0.13325722
number	11489
sum	270.85612

sum2 9.4199117
prctile95 0.05741676
prctile99 0.06753171
number 11409
sum 12218.276
sum2 14133.85
prctile95 1.5336406
prctile99 1.6379076
number 11409
sum 6025.6851
sum2 5155.9217
prctile95 1.3870906
prctile99 2.0339478
number 11409
sum 206368.59
sum2 4121188.7
prctile95 34.564975
prctile99 37.225705
number 11409
sum 247142.3
sum2 5551731.7
prctile95 30.524915
prctile99 31.923223
number 11409
sum 727.52284
sum2 53.353933
prctile95 0.11019912
prctile99 0.13342044
number 11409
sum 267.88942
sum2 9.3059997
prctile95 0.057490845
prctile99 0.067538014

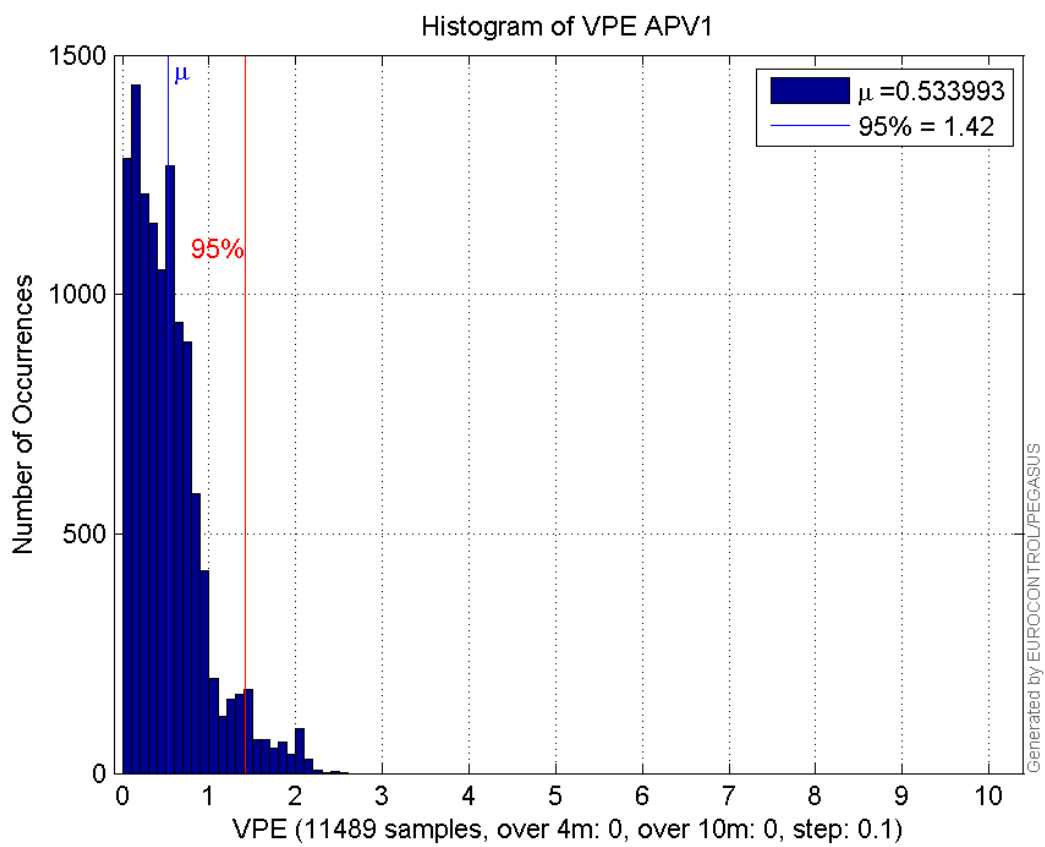
Error and XPL Statistics :

	Mean Value	Standard Deviation	50% Value	95% Value	99% Value	RMS Value
HPE	1.07064	0.302419	1.05235	1.53285	1.63742	1.11253
HPL	18.2033	5.97525	17.2992	34.6703	37.2198	19.1589
VPE	0.533993	0.420866	0.464591	1.4158	2.03252	0.679898
VPL	21.7674	4.33958	20.9669	30.6642	34.3471	22.1957

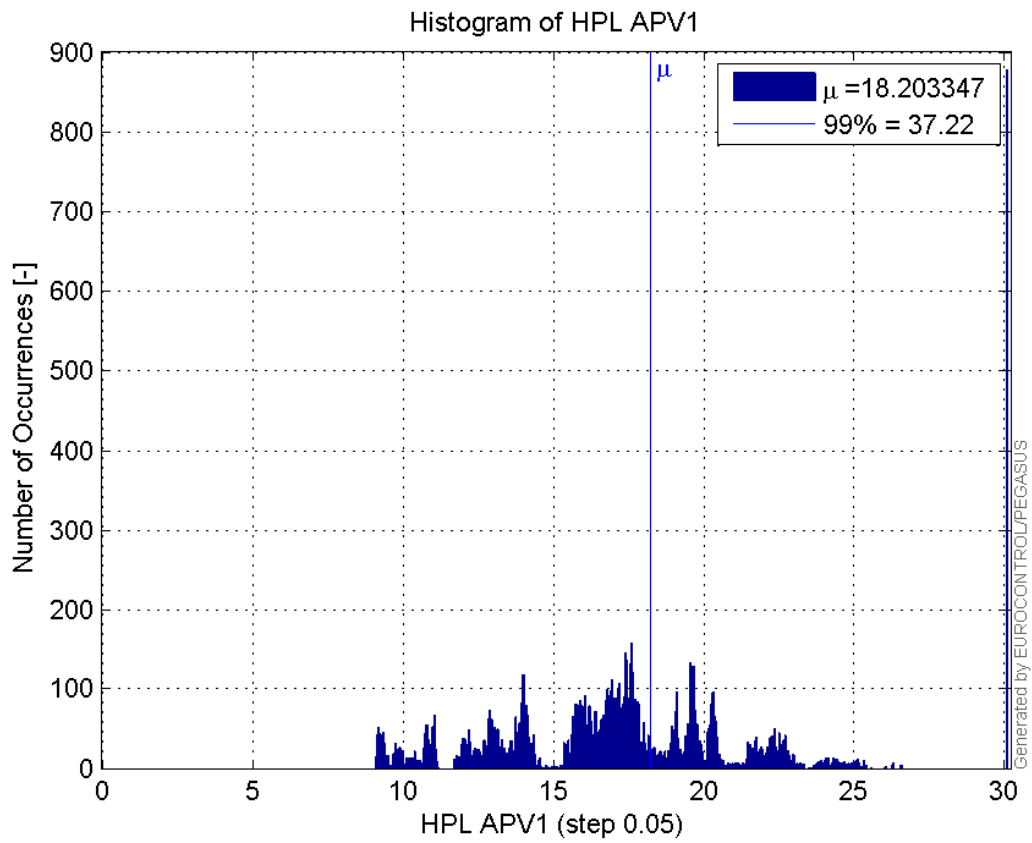
Histogram of HPE APV1:



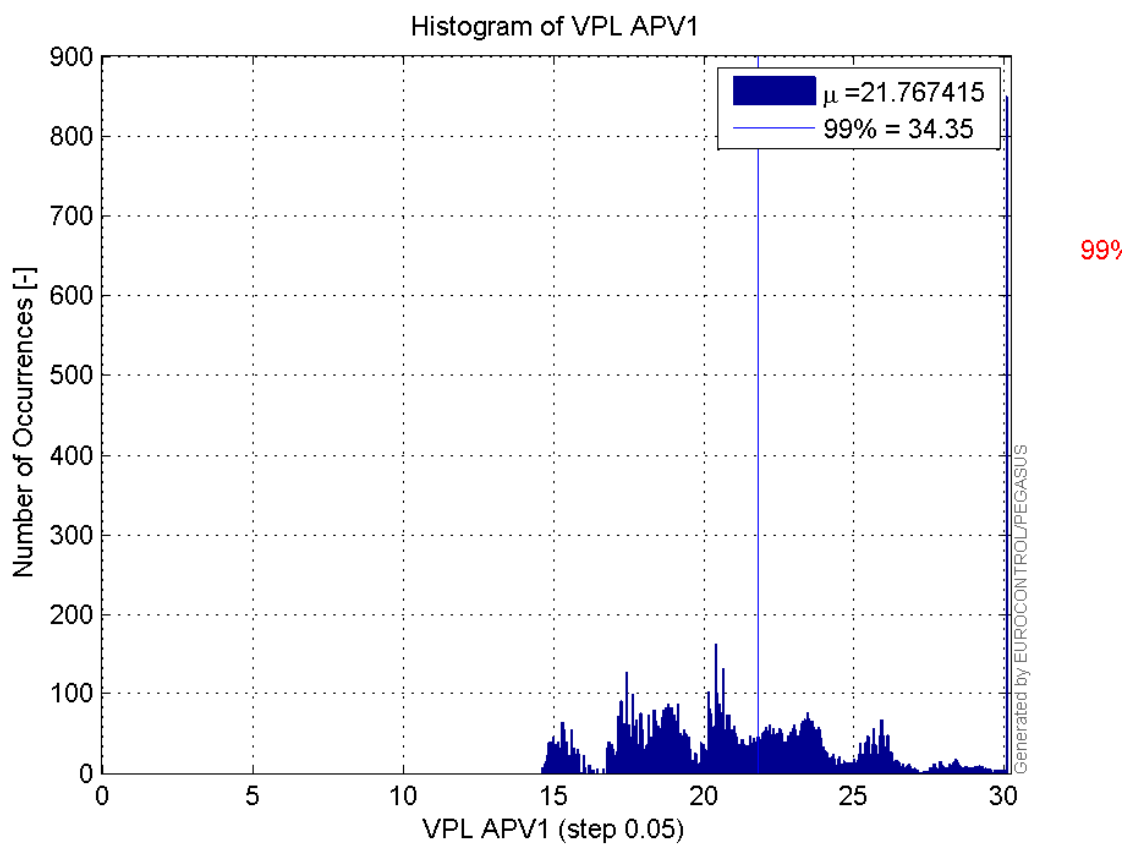
Histogram of VPE APV1:



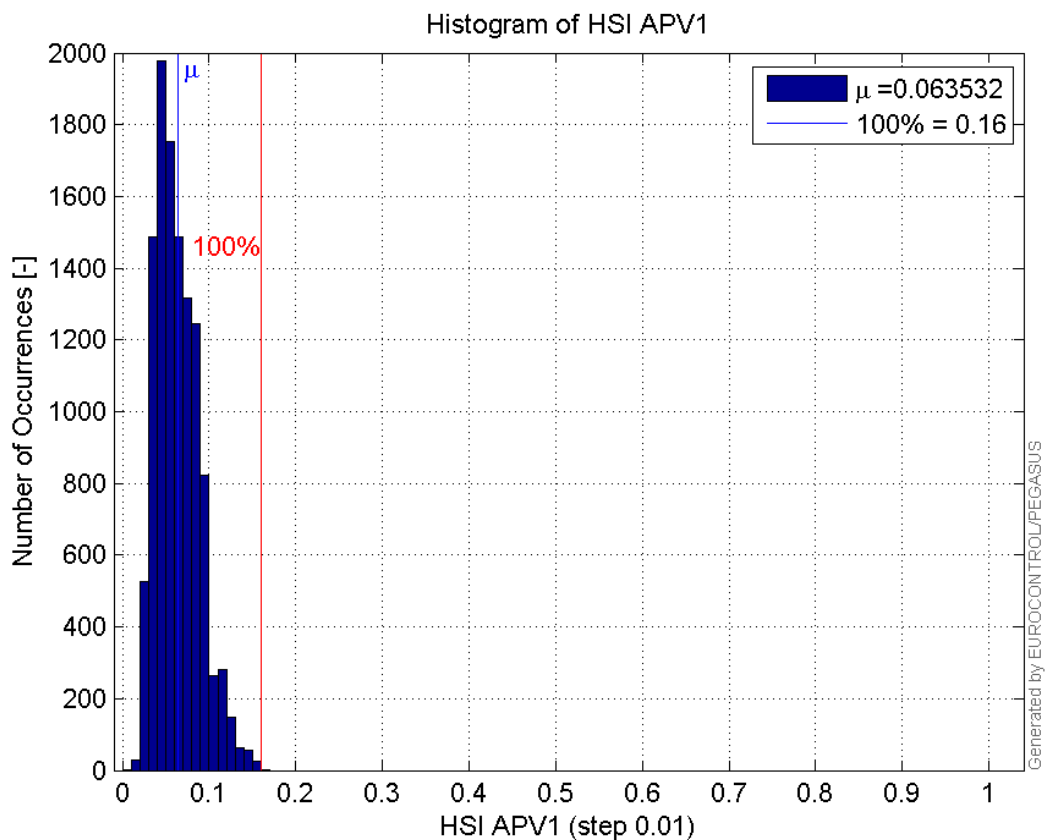
Histogram of HPL APV1:



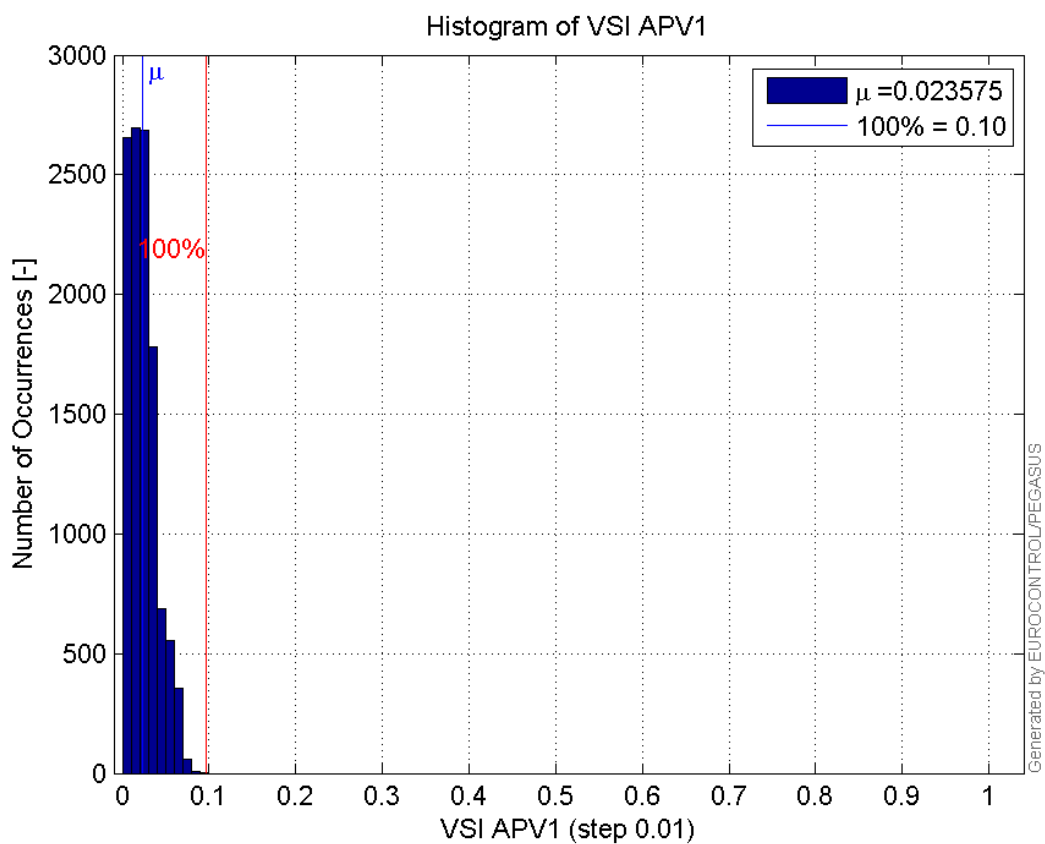
Histogram of VPL APV1:



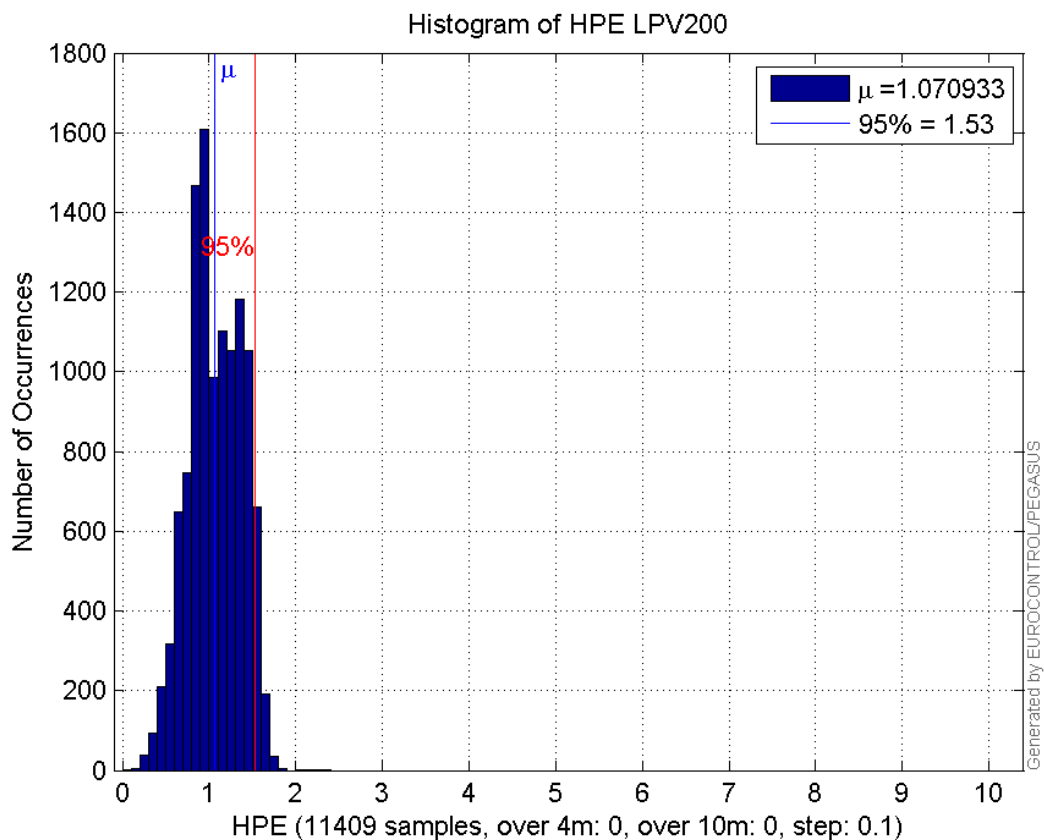
Histogram of HSI APV1:



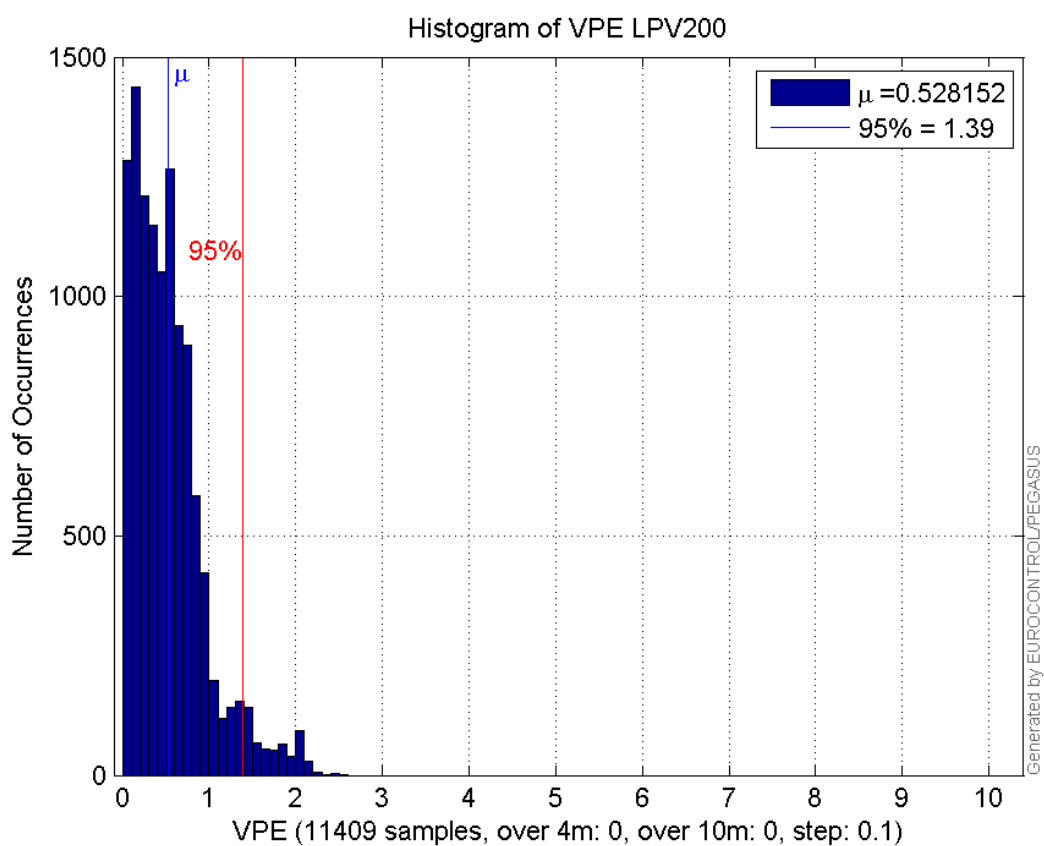
Histogram of VSI APV1:



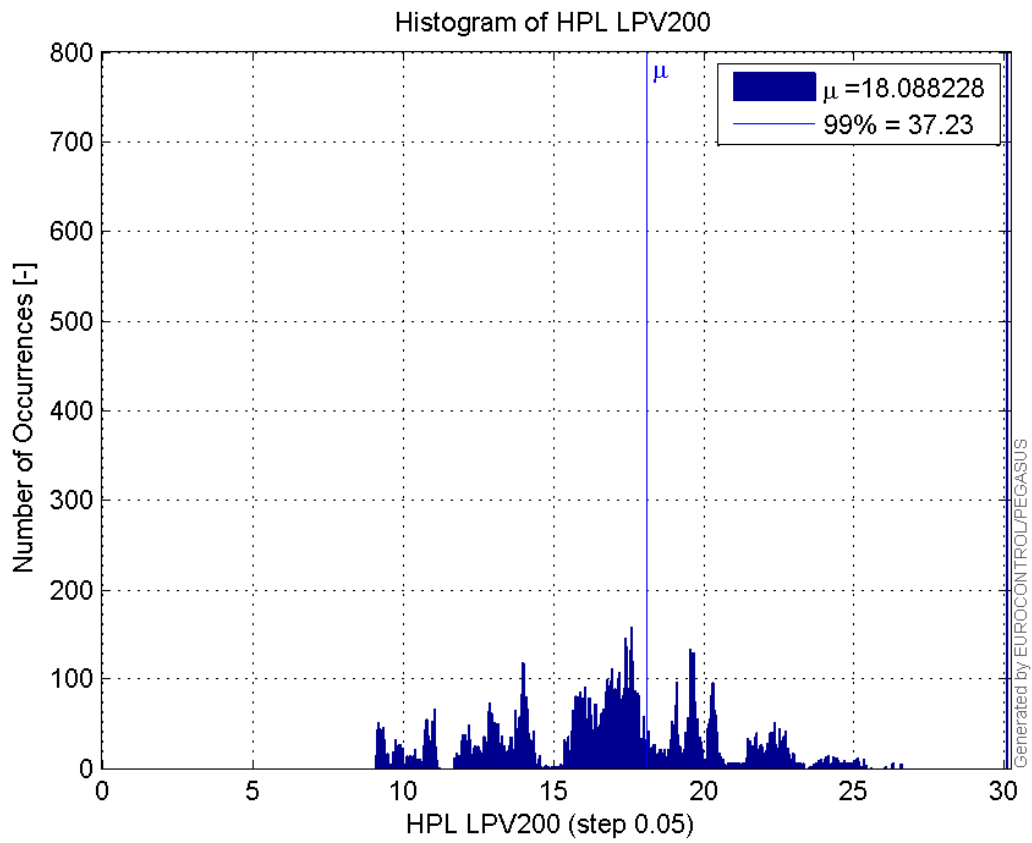
Histogram of HPE LPV200:



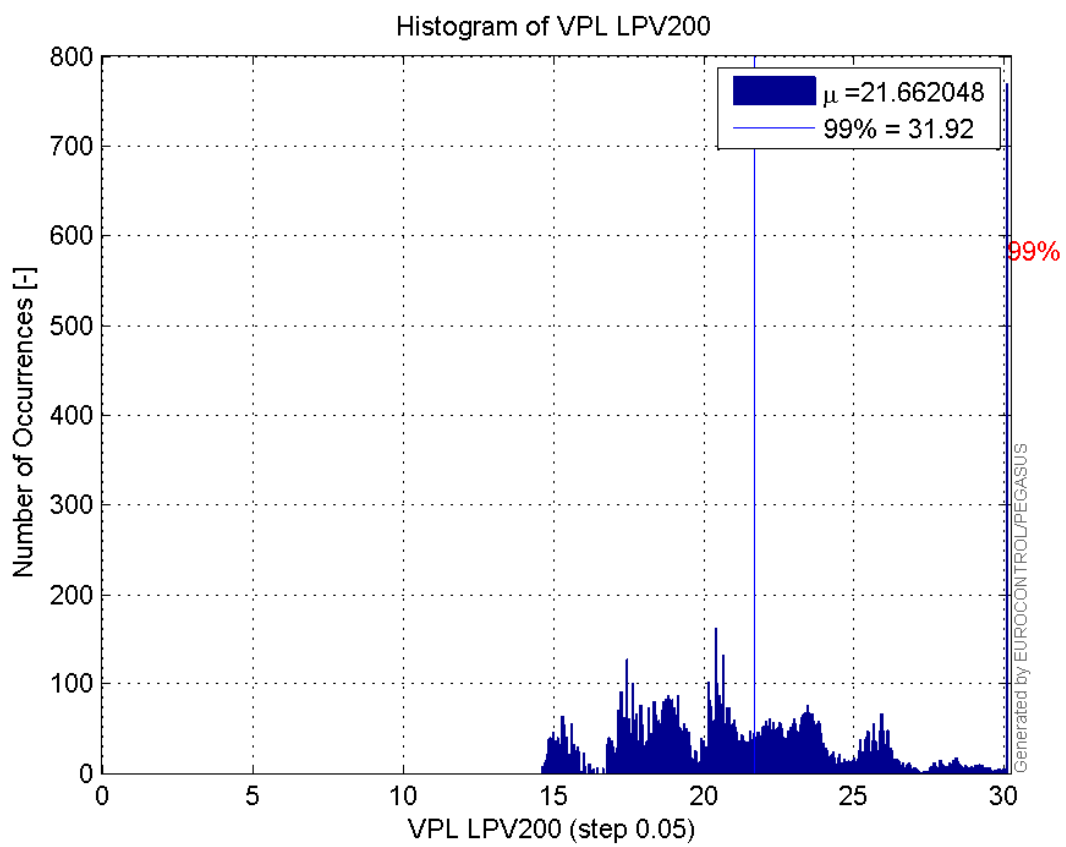
Histogram of VPE LPV200:



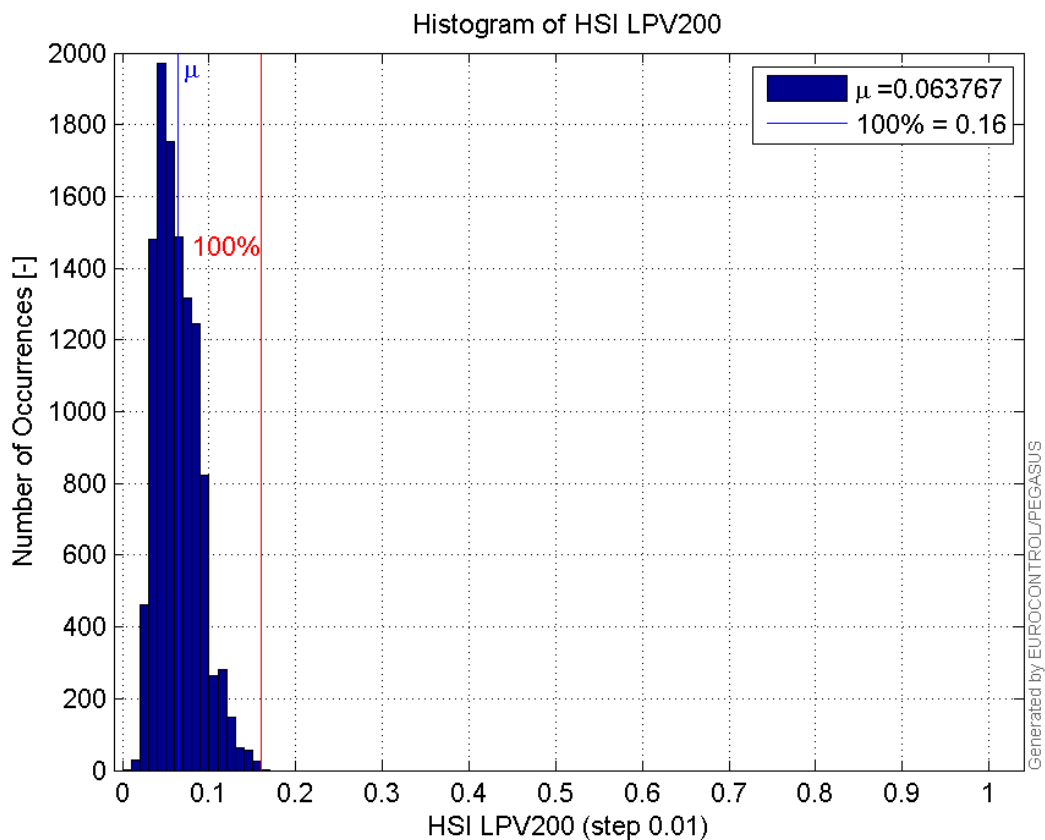
Histogram of HPL LPV200:



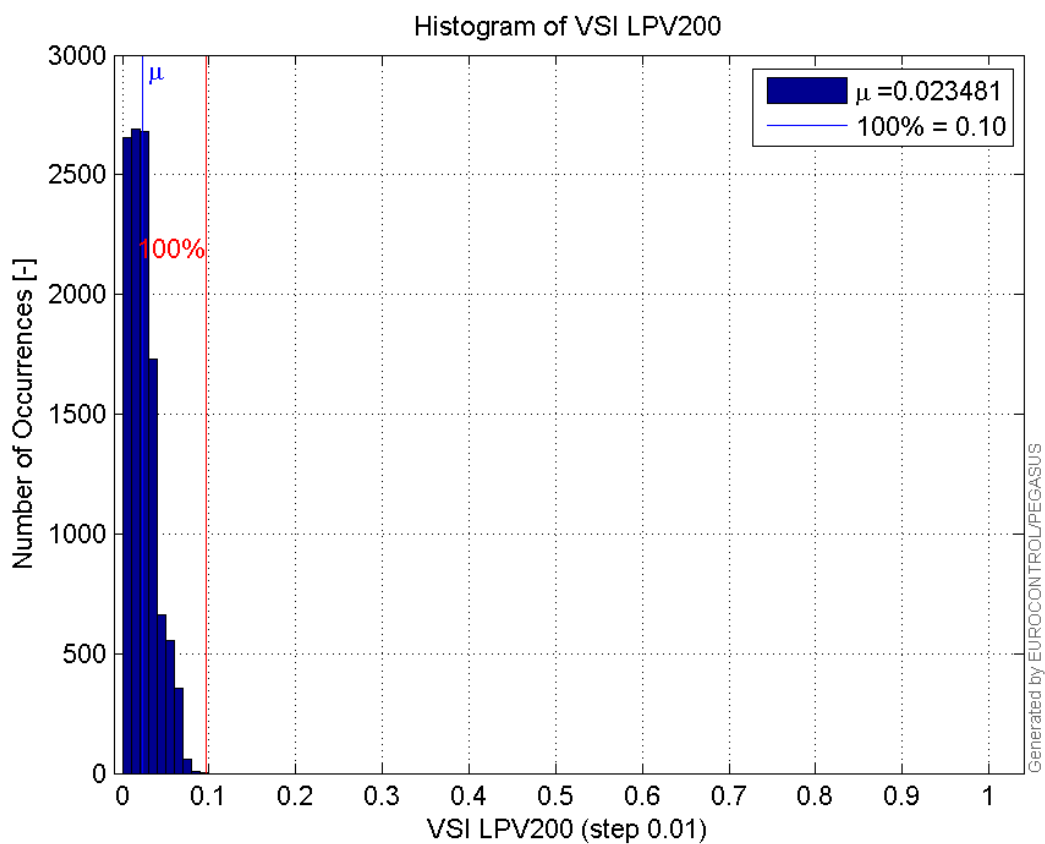
Histogram of VPL LPV200:



Histogram of HSI LPV200:

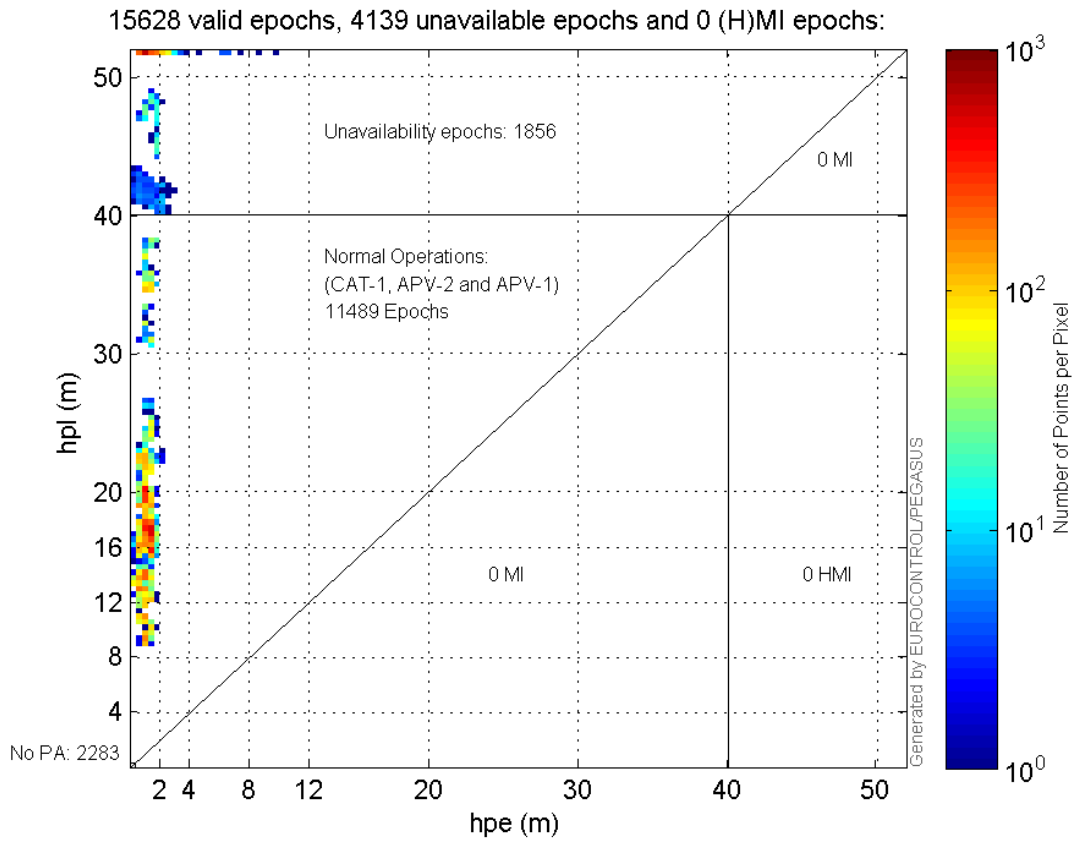


Histogram of VSI LPV200:

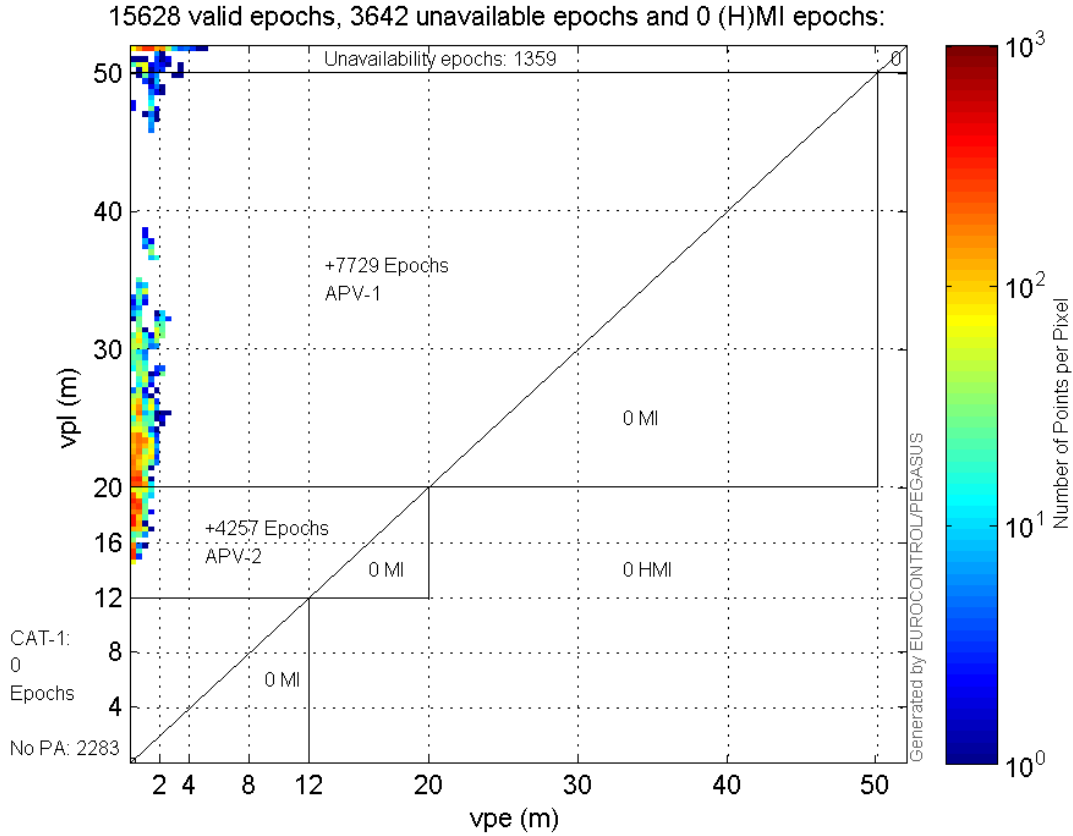


Stanford Plots

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_28_EGNOS/02_Convertor/02_Convertor
output_prefix	system	D:/PegasusDateGob/job/2016_01_28_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	229.3513
mi_numbers	results	0