Global View

program	Pegasus
version	4.8.4
site	Laboratory satellite systems
abreviation	NAU
country	Ukraine
city	Kiev
comment	Konin V., Shyshkov F. InsideGNSS, Jan-Feb 2015, P.50 - 54
date	29/01/2017

SBAS Messages

start: 05:57:50.129 23.01.2017 (week: 1933 sec: 107870.129)
end: 12:09:47.129 23.01.2017 (week: 1933 sec: 130187.129)
duration: 06:11:57 ..

quality

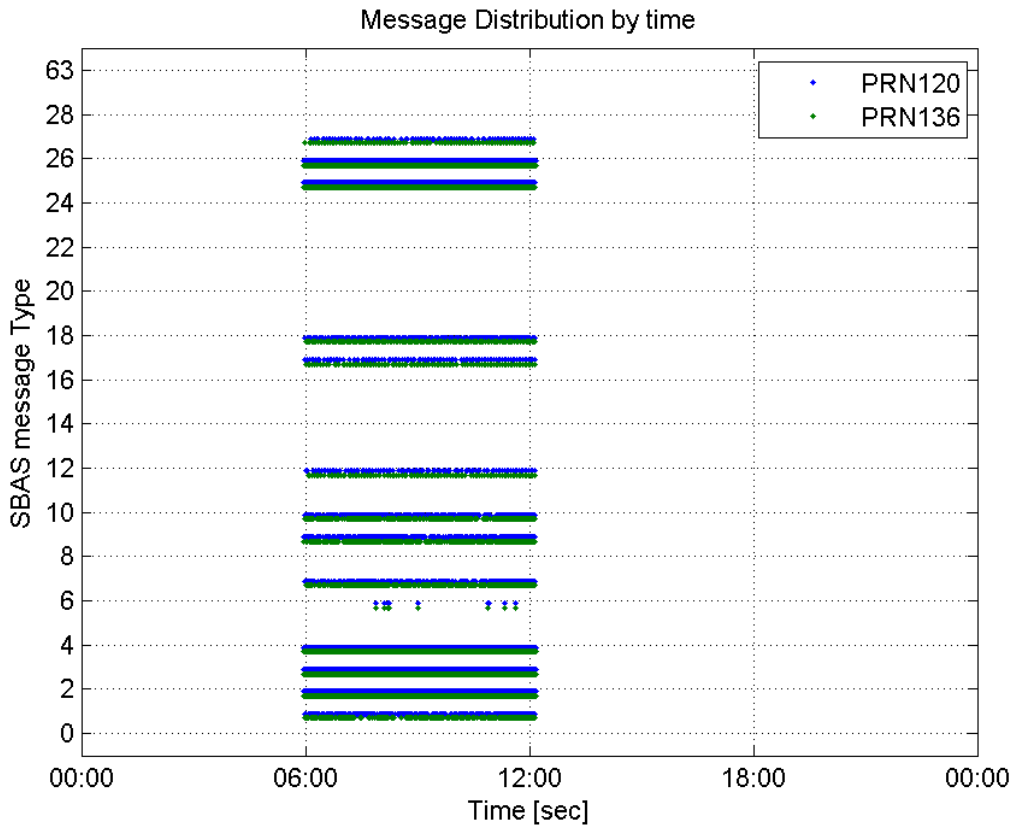
valid samples	36076
total samples	36076
number of SBAS PRNs	2

SBAS SIS Overview

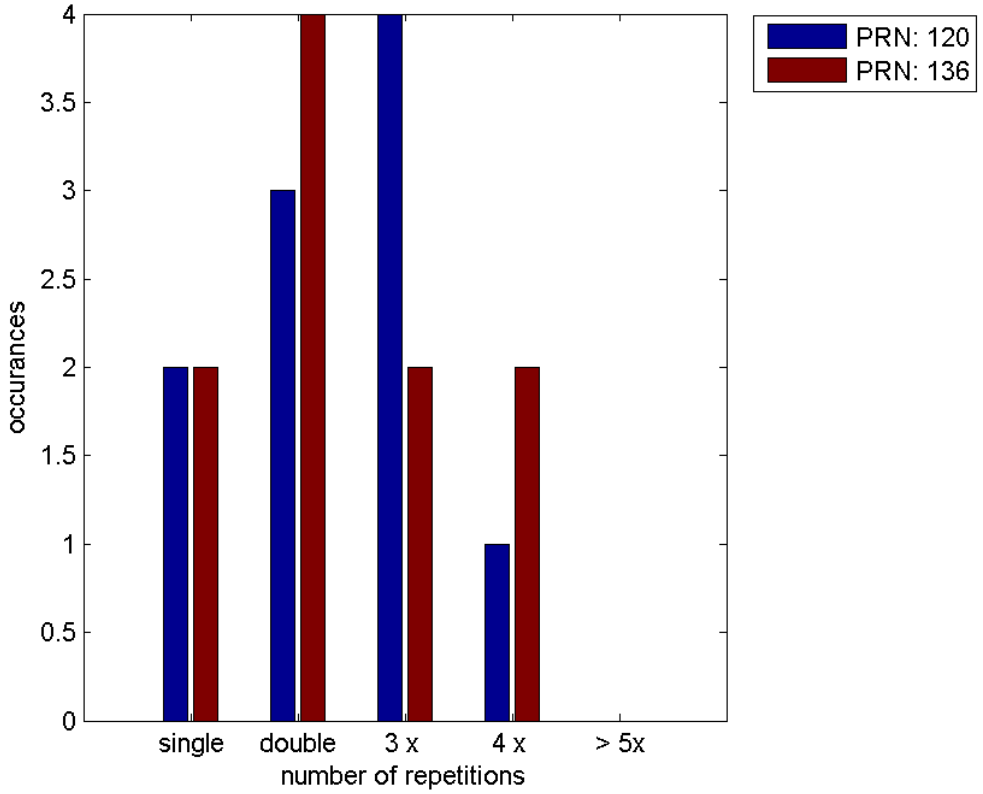
Message Type 6 repetitions :

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

Message Distribution by time:



Message Type 6 repetitions:



SBAS SIS Analysis

PRN 120

Broadcast SBAS Messages :

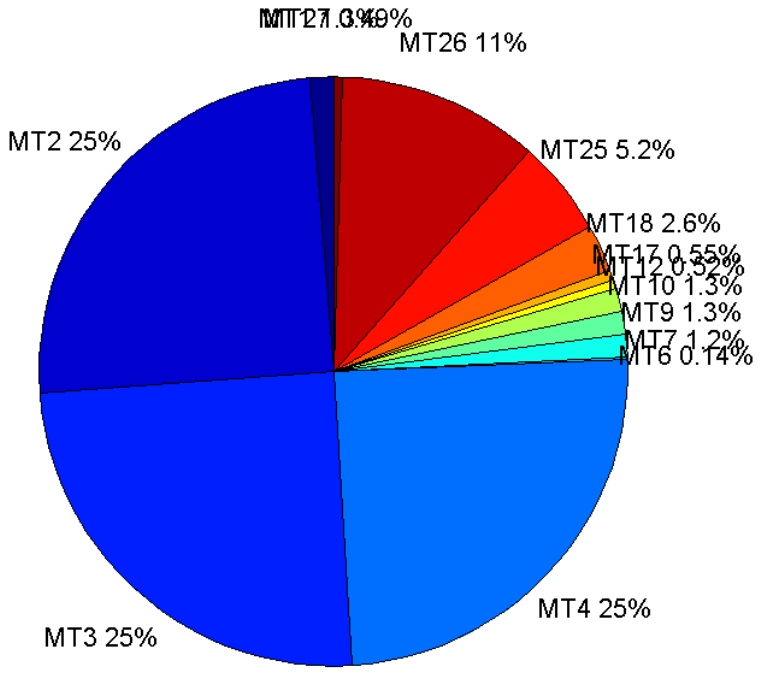
	number of messages	%
MT 0	0	0
MT 1	231	1.28276
MT 2	4481	24.8834
MT 3	4473	24.839
MT 4	4436	24.6335
MT 5	0	0
MT 6	25	0.138827
MT 7	222	1.23279
MT 9	229	1.27166
MT 10	226	1.255
MT 12	94	0.52199
MT 17	99	0.549756
MT 18	465	2.58219
MT 24	0	0
MT 25	941	5.22546
MT 26	1997	11.0895
MT 27	89	0.494225
MT 28	0	0
MT 62	0	0
MT 63	0	0
Total	18008	100

Update intervals :

	Minimum [s]	Maximum [s]	Mean value	Exceed Max update	Exceed NPA timeout	Exceed PA timeout
MT 0	--	--	--	--	--	--
MT 1	76	480	96.587	30	0	0
MT 2	4	16	4.98125	996	0	7
MT 3	4	20	4.98927	995	1	7
MT 4	4	17	5.03112	1009	0	11
MT 5	--	--	--	--	--	--
MT 6	1	6826	564	7	7	7
MT 7	76	480	100.593	30	3	7
MT 9	76	396	97.5395	0	0	0
MT 10	76	560	98.6978	33	2	5
MT 12	188	590	237.882	93	16	16
MT 17	188	587	225.786	0	0	0
MT 18	4	196	47.8254	0	0	0
MT 24	--	--	--	--	--	--
MT 25	1	96	23.7181	0	0	0
MT 26	1	60	11.1738	0	0	0
MT						

27	188	782	244.807	0	0	0
MT 28	--	--	--	--	--	--
MT 62	--	--	--	--	--	--
MT 63	--	--	--	--	--	--

Message Distribution PRN 120:



SBAS SIS Analysis

PRN 136

Broadcast SBAS Messages :

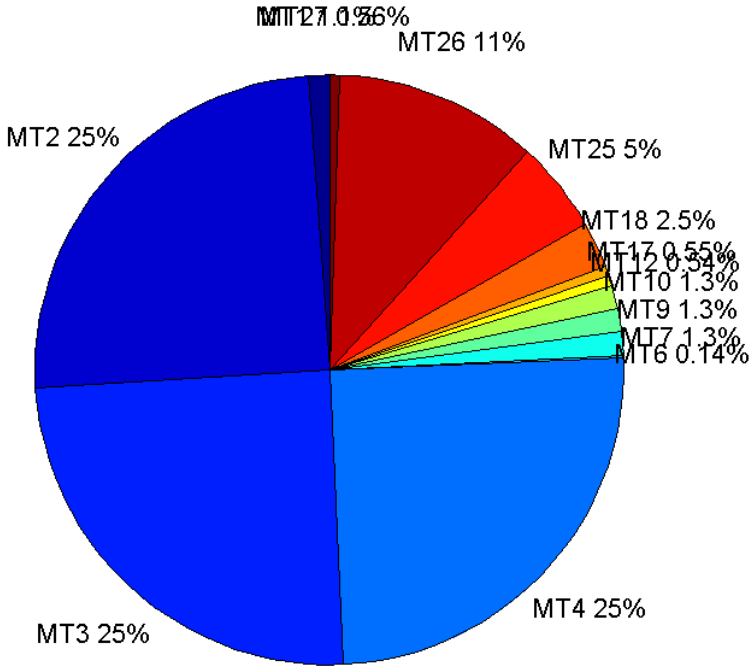
	number of messages	%
MT 0	0	0
MT 1	201	1.11246
MT 2	4497	24.8893
MT 3	4476	24.7731
MT 4	4496	24.8838
MT 5	0	0
MT 6	25	0.138366
MT 7	232	1.28404
MT 9	231	1.2785
MT 10	227	1.25636
MT 12	98	0.542395
MT 17	100	0.553465

MT 18	450	2.49059
MT 24	0	0
MT 25	909	5.03099
MT 26	2024	11.2021
MT 27	102	0.564534
MT 28	0	0
MT 62	0	0
MT 63	0	0
Total	18068	100

Update intervals :

	Minimum [s]	Maximum [s]	Mean value	Exceed Max update	Exceed NPA timeout	Exceed PA timeout
MT 0	--	--	--	--	--	--
MT 1	76	720	111.105	39	2	2
MT 2	4	20	4.9633	984	1	7
MT 3	4	20	4.9857	1000	1	6
MT 4	4	17	4.96418	984	0	11
MT 5	--	--	--	--	--	--
MT 6	1	6827	564	7	7	7
MT 7	76	400	95.5714	34	1	2
MT 9	76	480	96.6783	0	0	0
MT 10	76	560	98.3009	35	1	4
MT 12	188	593	225.289	97	13	13
MT 17	188	587	222.717	0	0	0
MT 18	4	196	49.2049	0	0	0
MT 24	--	--	--	--	--	--
MT 25	1	104	24.5595	0	0	0
MT 26	4	64	11.0311	0	0	0
MT 27	188	581	218.347	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_01_23EGNOS2Hz/01_User/01_User
Outputfile	System	D:/PegasusDateJob/job/2017_01_23EGNOS2Hz/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: 05:57:51 23.01.2017 (week: 1933 sec: 107871)
end: 12:09:47.5 23.01.2017 (week: 1933 sec: 130187.5)
duration: 06:11:58 ..

quality

valid samples 40757
total samples 41442

Event tables

Position discontinuity events type	long
APV-I discontinuity events type	too many (22)
APV-35m discontinuity events type	too many (21)
LPV-200 discontinuity events type	too many (21)
CAT-I discontinuity events type	independent

extremes :

	Epoch	HPE	HPL	HPE/HPL	VPE	VPL	VPE/VPL
max normHor	124518	1.39409	9.80439	0.14219	-0.345823	16.0062	0.0216056
max normVer	129850	0.324323	12.5836	0.0257735	-1.60594	15.9202	0.100874
max HPE	121240	9.18254	149.204	0.0615435	-1.52428	54.0775	0.028187
max VPE	117002	1.94054	34.6604	0.0559873	-7.26295	133.613	0.0543581
min HPL	126873	0.860683	9.40848	0.0914794	-0.0637822	13.6564	0.0046705
min VPL	110409	0.748483	9.62679	0.07775	-0.535063	11.1964	0.0477889

Position discontinuity events :

#	Epoch	duration	stable period
1	116955	9	284.5
2	121251	5.5	325.5
3	121731	24.5	474.5

First Glance analysis

Duration	22318
Number of Samples	41442
Number of invalid sample	685
Number of no position solution samples	129
Number of missing sample	3194
Logging Loss	7.1557
Processing Loss	1.6529
Number of Misleading Information	0
Data gaps	14
Discontinuities	44

Number of Samples :

Valid	APV-1	LPV-200	CAT-1	APV-35m
40628	36305	35542	841	35542

Accuracy statistics :

	Valid	APV-1	LPV-200	CAT-1	APV-35m
HPE 95%	1.60132	1.43561	1.39784	0.972269	1.39784
HPEscale 95%	NaN	3.82643	3.83863	3.5854	3.83863
VPE 95%	1.17962	1.14357	1.09168	0.523251	1.09168
VPEscale 95%	NaN	2.80154	1.96935	0.547353	1.96935

Availability :

	Valid	APV-1	LPV-200	CAT-1	APV-35m
Signal in Space	0.996835	0.890767	0.872047	0.0206345	0.872047

measurements	0.980358	0.876044	0.857632	0.0202934	0.857632
Operational	1.82041	1.62671	1.59253	0.0376826	1.59253

Discontinuity events :

	Valid	APV-1	LPV-200	CAT-1	APV-35m
All	30	91	108	93	108
Long	3	24	25	27	25
Independent	3	22	21	0	21
P(disc.)	0.00110761	0.00908966	0.00886275	0	0.00886275
P(slide)	0.0110761	0.0361383	0.0422036	0.447681	0.0422036

Integrity events :

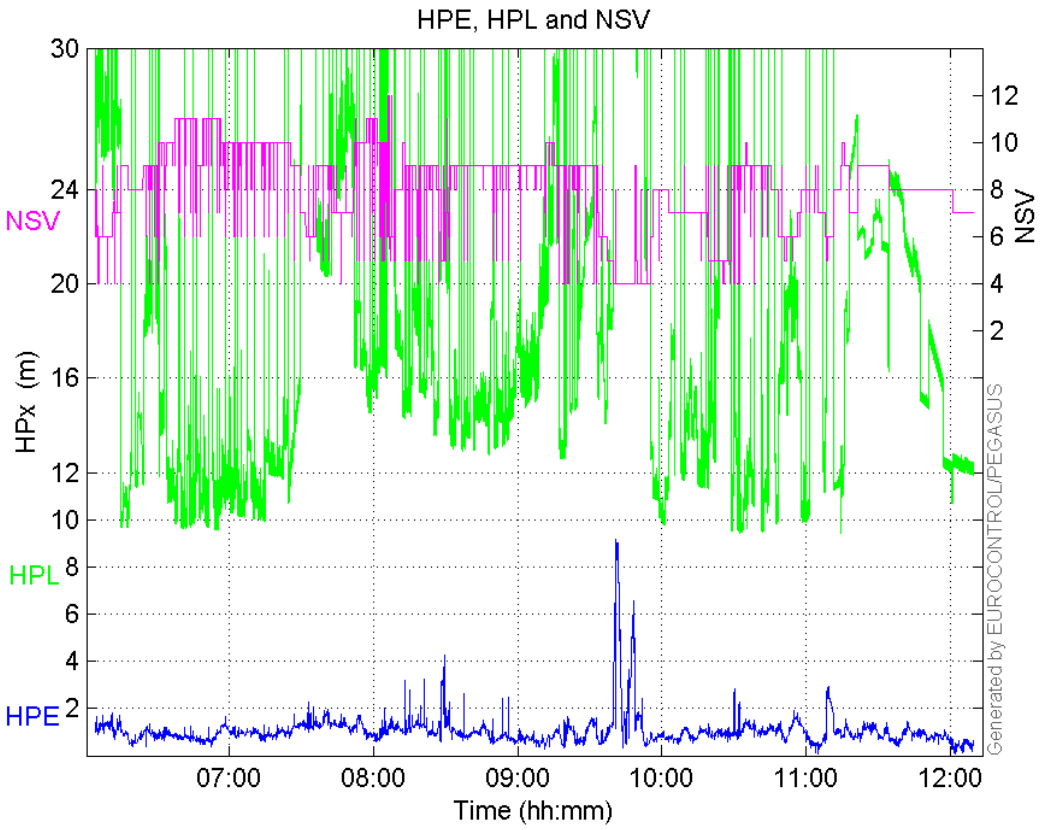
	MI	HMI APV-1	HMI LPV-200	HMI CAT-1	HMI APV-35m
Total	0	0	0	0	0
Horizontal	0	0	0	0	0
Vertical	0	0	0	0	0

Performance Summary :

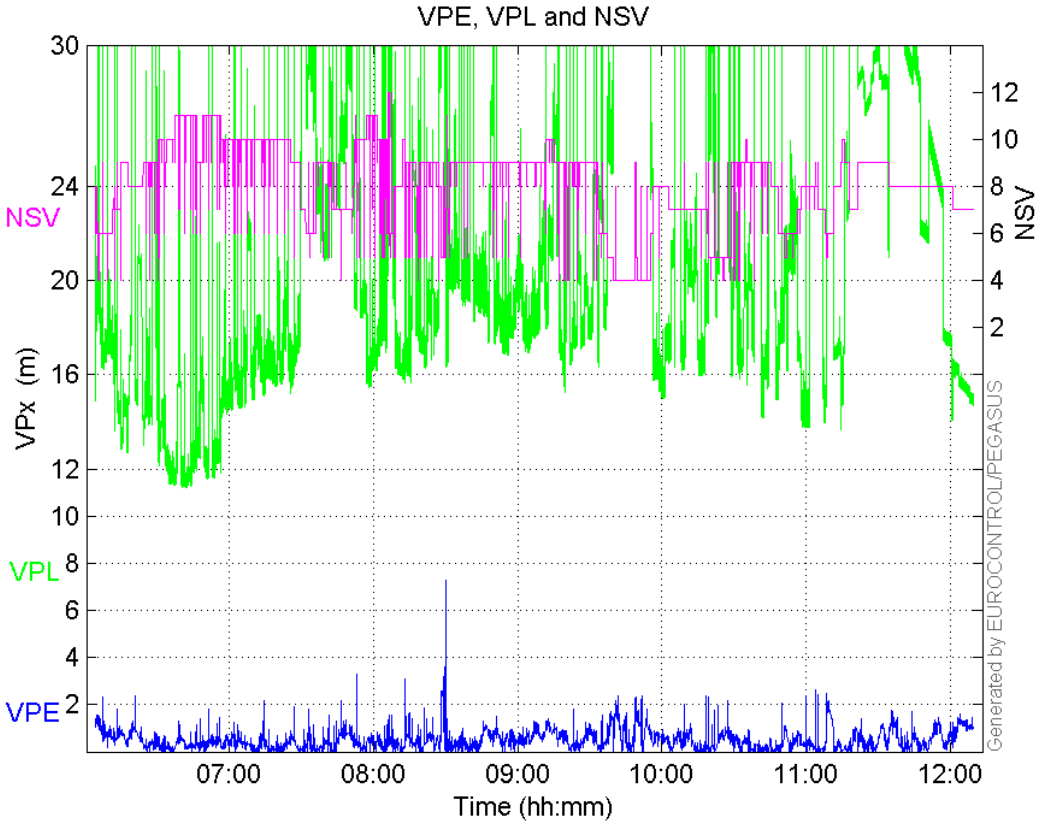
	Valid	APV-1	LPV-200	CAT-1	APV-35m
Samples	40628	36305	35542	841	35542
SIS Availability	0.996835	0.890767	0.872047	0.0206345	0.872047
Local Availability	0.980358	0.876044	0.857632	0.0202934	0.857632
Operational Availability	1.82041	1.62671	1.59253	0.0376826	1.59253
HPE 95%	1.60132	1.43561	1.39784	0.972269	1.39784
HPEscale 95%	NaN	3.82643	3.83863	3.5854	3.83863
VPE 95%	1.17962	1.14357	1.09168	0.523251	1.09168
VPEscale 95%	NaN	2.80154	1.96935	0.547353	1.96935
All Discontinuity Events	30	91	108	93	108
Long Discontinuity Events	3	24	25	27	25
Independent Discontinuity Events	3	22	21	0	21
P(discontinuity)	0.00110761	0.00908966	0.00886275	0	0.00886275
P(sliding window)	0.0110761	0.0361383	0.0422036	0.447681	0.0422036
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:

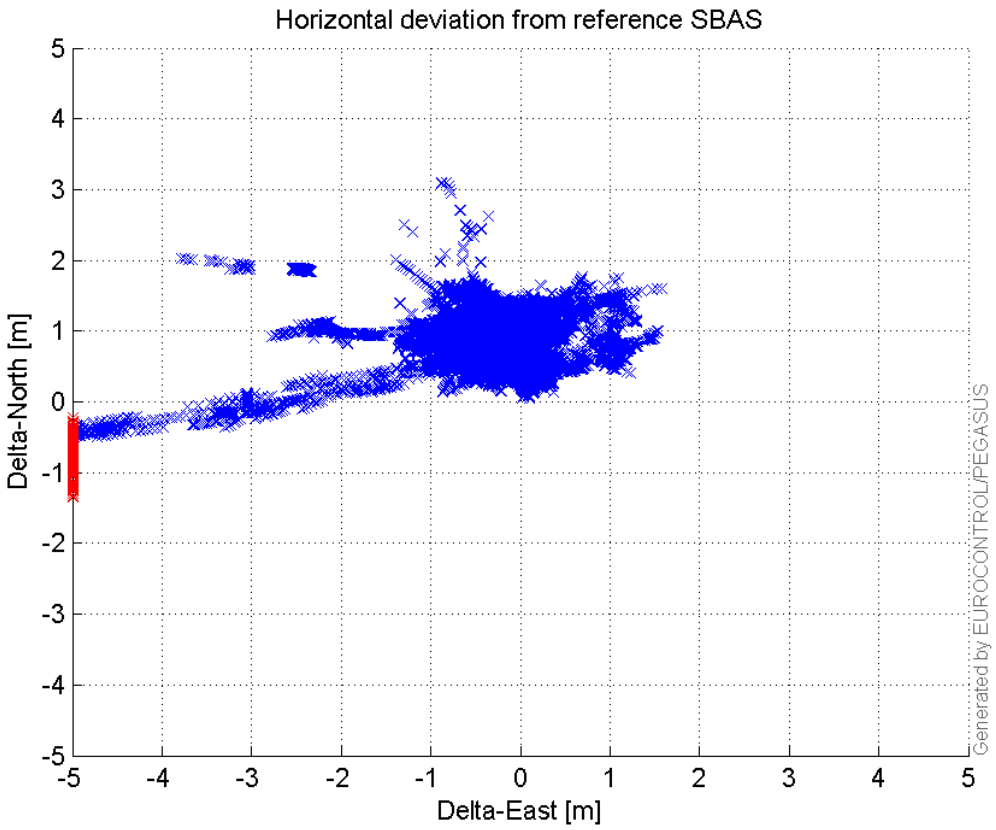


VPE, VPL and NSV:



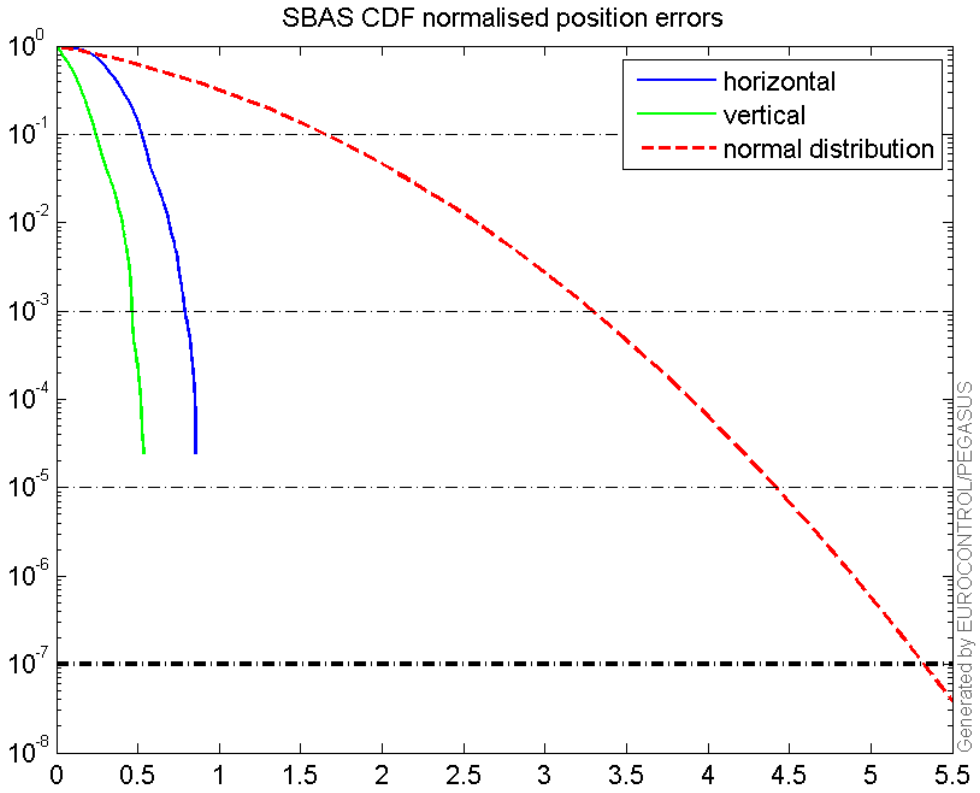
Horizontal deviation

Horizontal deviation from reference SBAS:



CDF position

SBAS CDF position domain:



Statistics

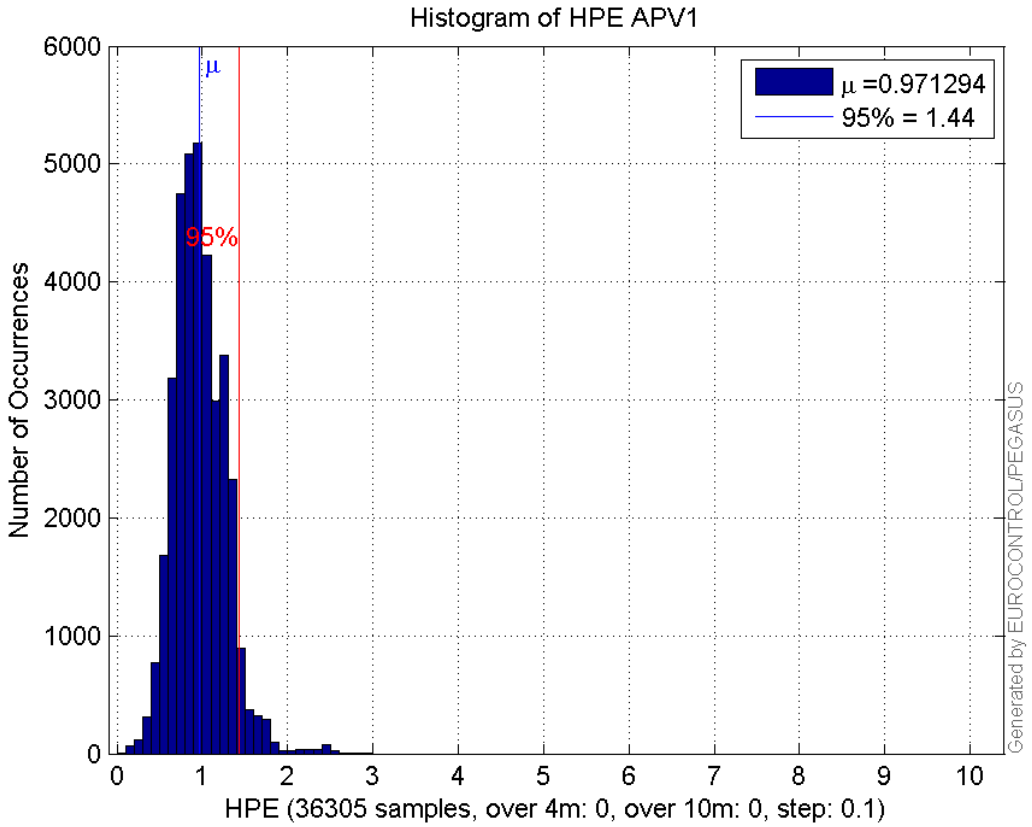
number	36305
sum	35262.815
sum2	37568.262
prctile95	1.4356077
prctile99	1.8127979
number	36305
sum	17296.702
sum2	12561.497
prctile95	1.1435702
prctile99	1.4559366
number	36305
sum	627303.99
sum2	12220900
prctile95	30.886075
prctile99	35.22735
number	36305
sum	743813.28
sum2	16621614
prctile95	32.3227
prctile99	43.620925
number	36305
sum	2193.7168
sum2	148.66218
prctile95	0.095660732
prctile99	0.11622033
number	36305
sum	874.91218
sum2	31.650587
prctile95	0.056030788
prctile99	0.07662076
number	35542
sum	34057.125
sum2	35333.98
prctile95	1.3978417
prctile99	1.6676413
number	35542
sum	16436.169
sum2	11398.768
prctile95	1.0916807
prctile99	1.3665481
number	35542
sum	602184.21
sum2	11378560
prctile95	27.84858
prctile99	34.261332
number	35542
sum	711276.2
sum2	15226074
prctile95	30.24176
prctile99	33.450432
number	35542
sum	2157.6509
sum2	146.70838

prctile95	0.095965823
prctile99	0.11640784
number	35542
sum	854.4665
sum2	30.977307
prctile95	0.056267261
prctile99	0.076775523

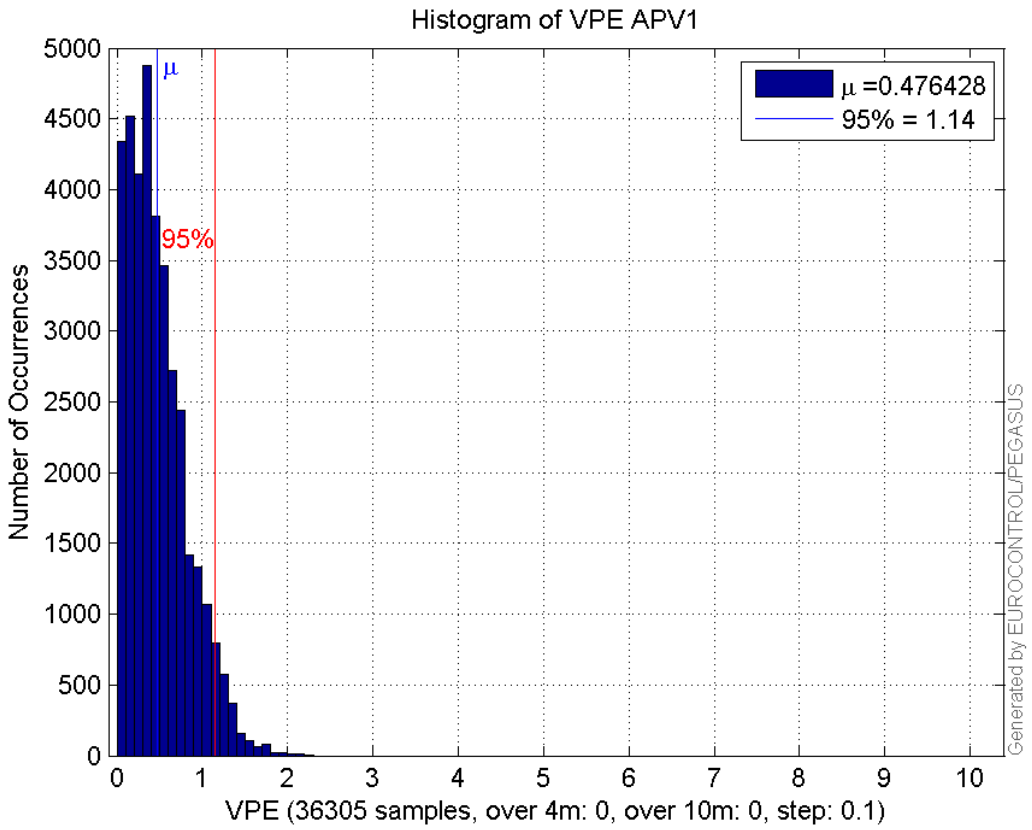
Error and XPL Statistics :

	Mean Value	Standard Deviation	50% Value	95% Value	99% Value	RMS Value
HPE	0.971294	0.302303	0.942846	1.43561	1.8128	1.01725
HPL	17.2787	6.16963	15.56	30.8861	35.2274	18.3471
VPE	0.476428	0.344992	0.407442	1.14357	1.45594	0.588217
VPL	20.4879	6.17086	18.5405	32.3227	43.6209	21.397

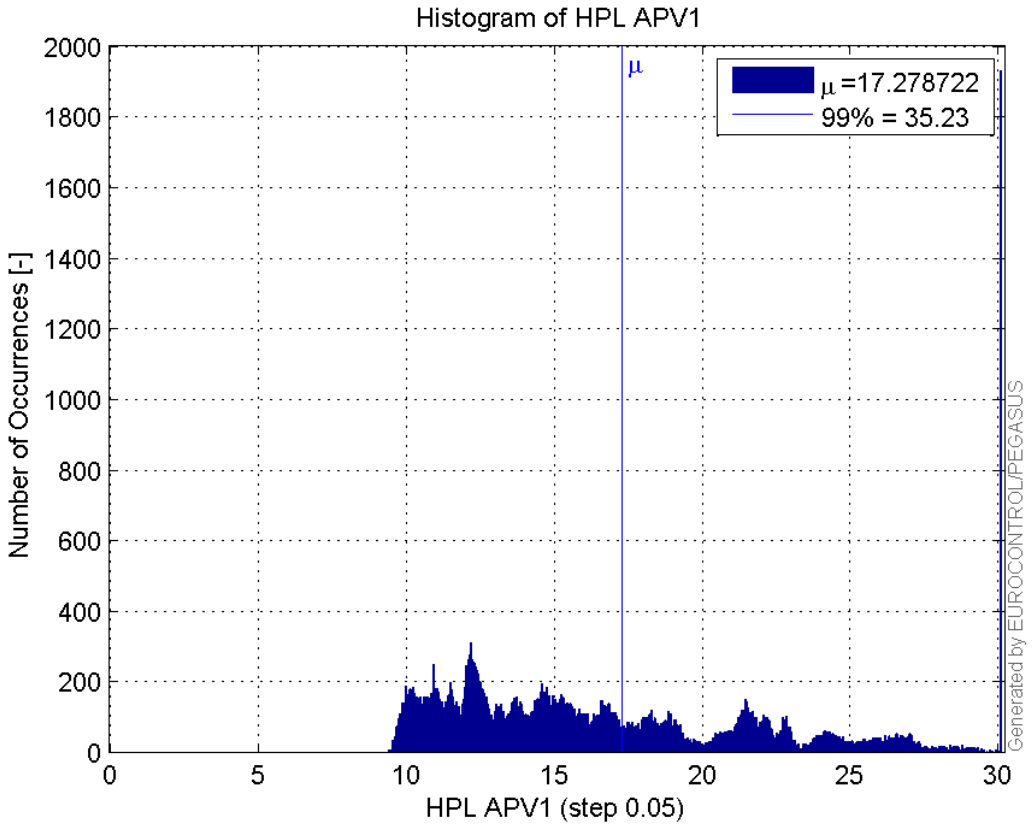
Histogram of HPE APV1:



Histogram of VPE APV1:

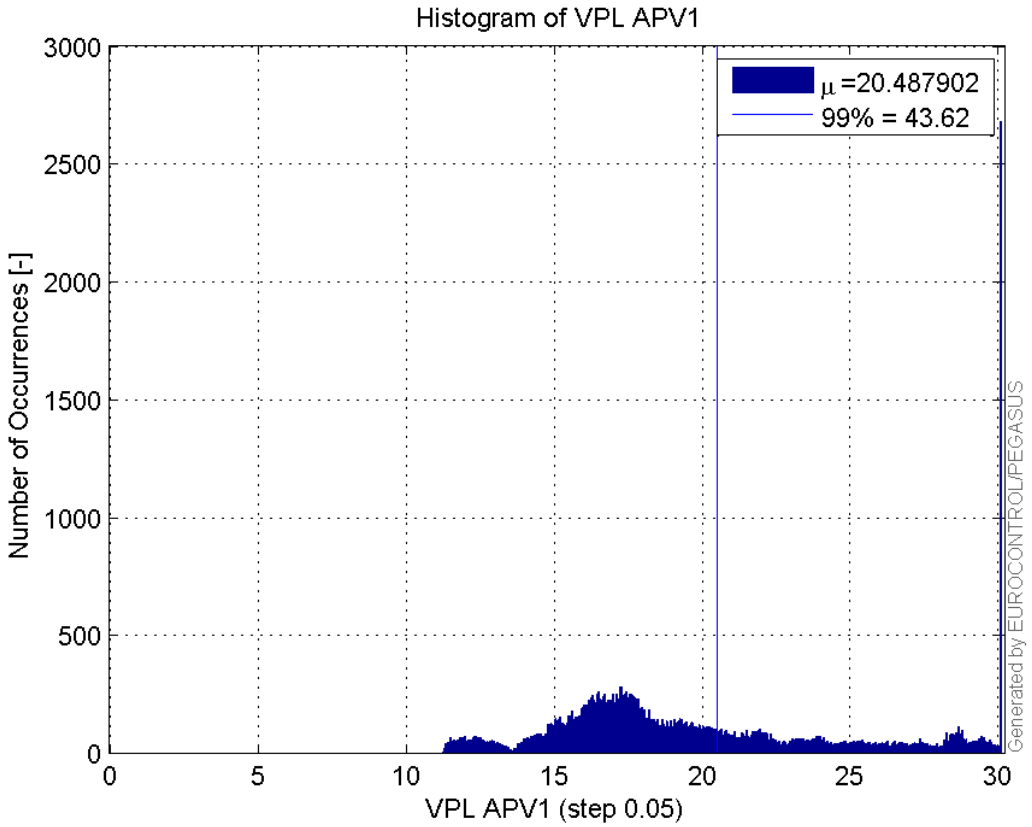


Histogram of HPL APV1:

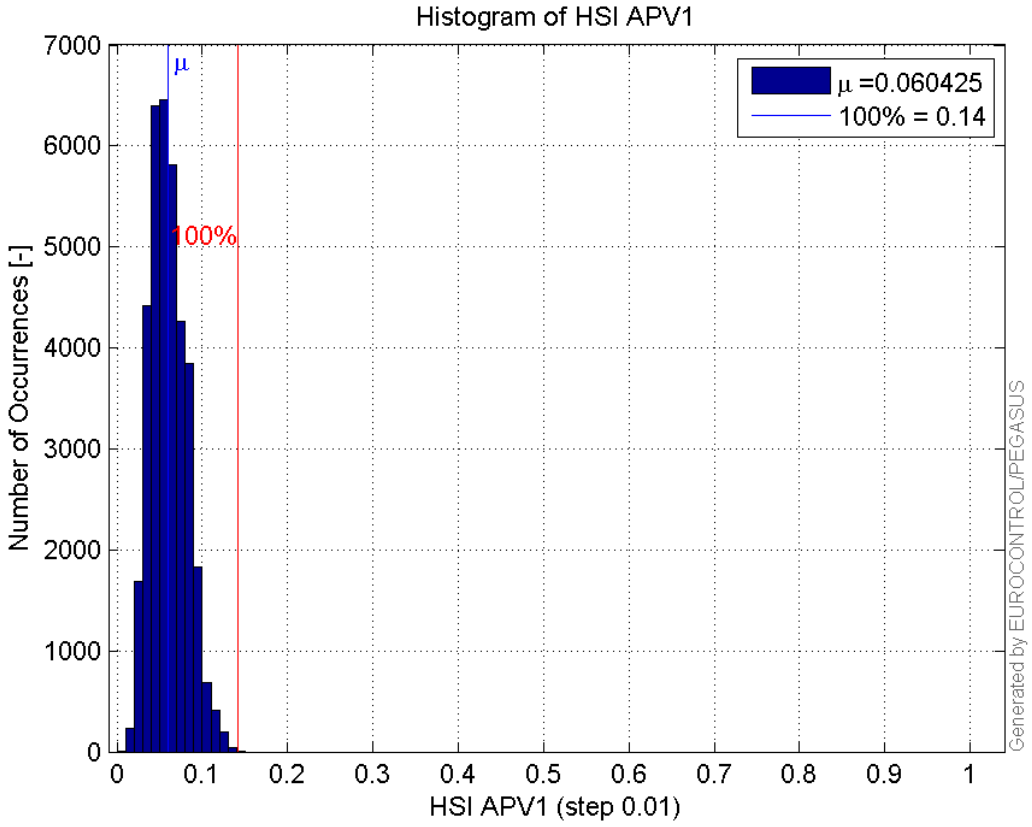


9

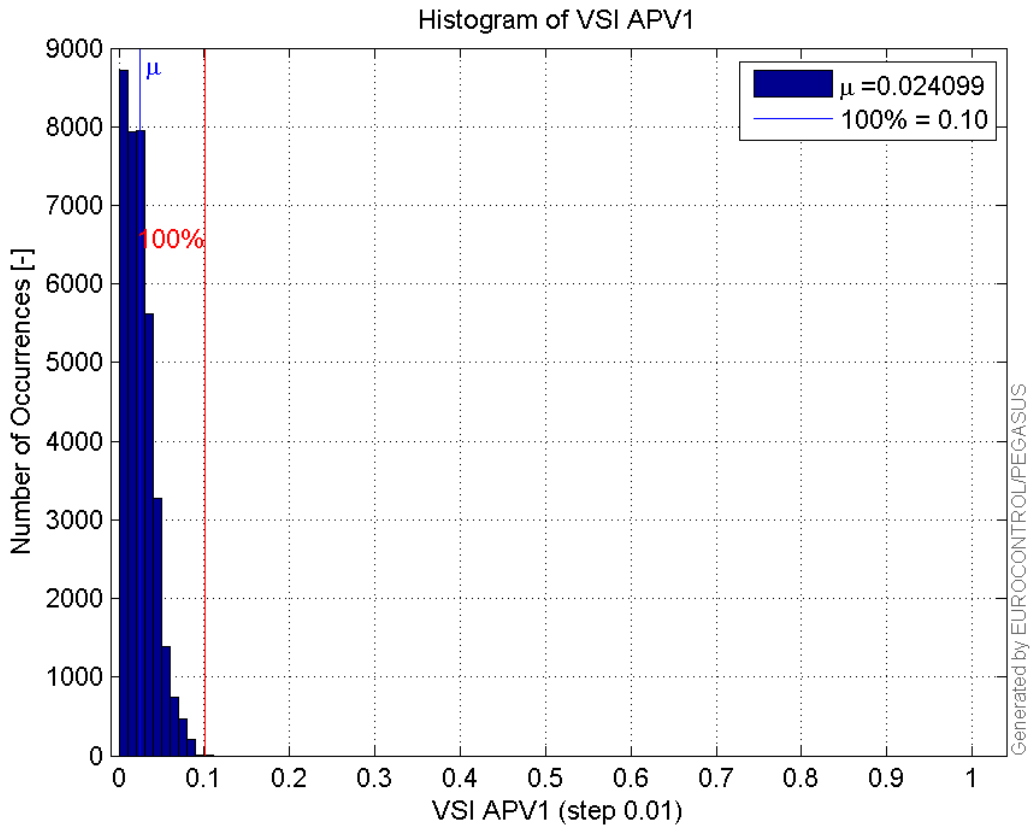
Histogram of VPL APV1:



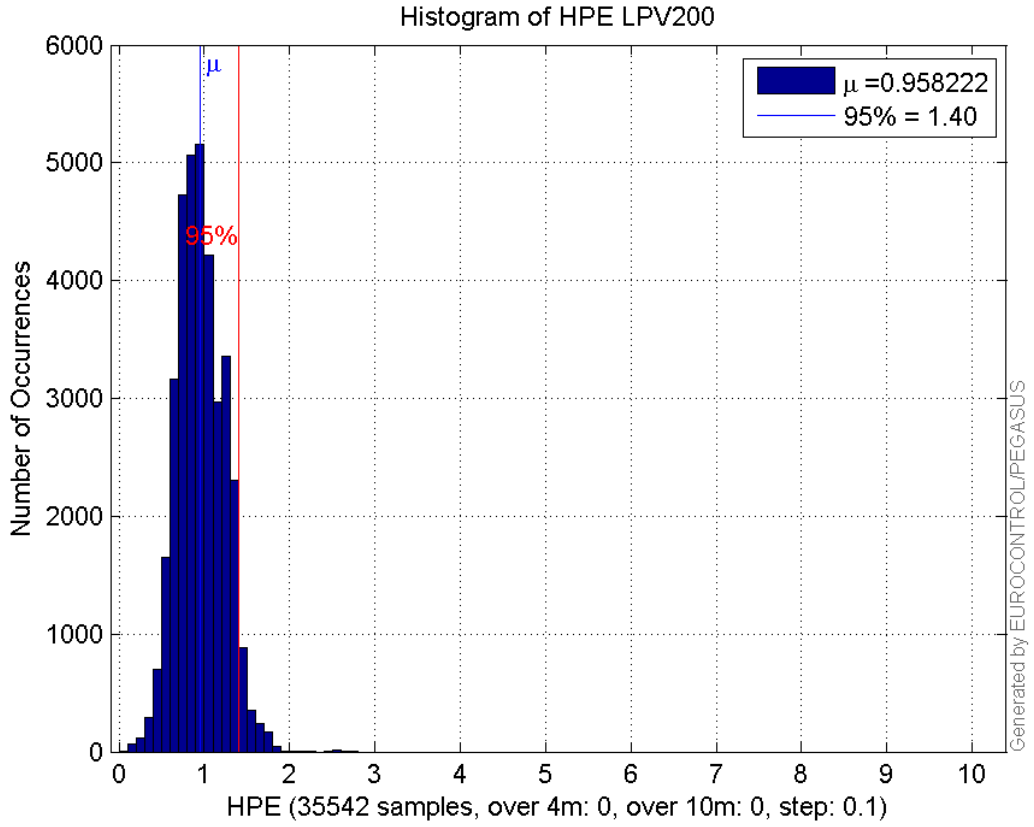
Histogram of HSI APV1:



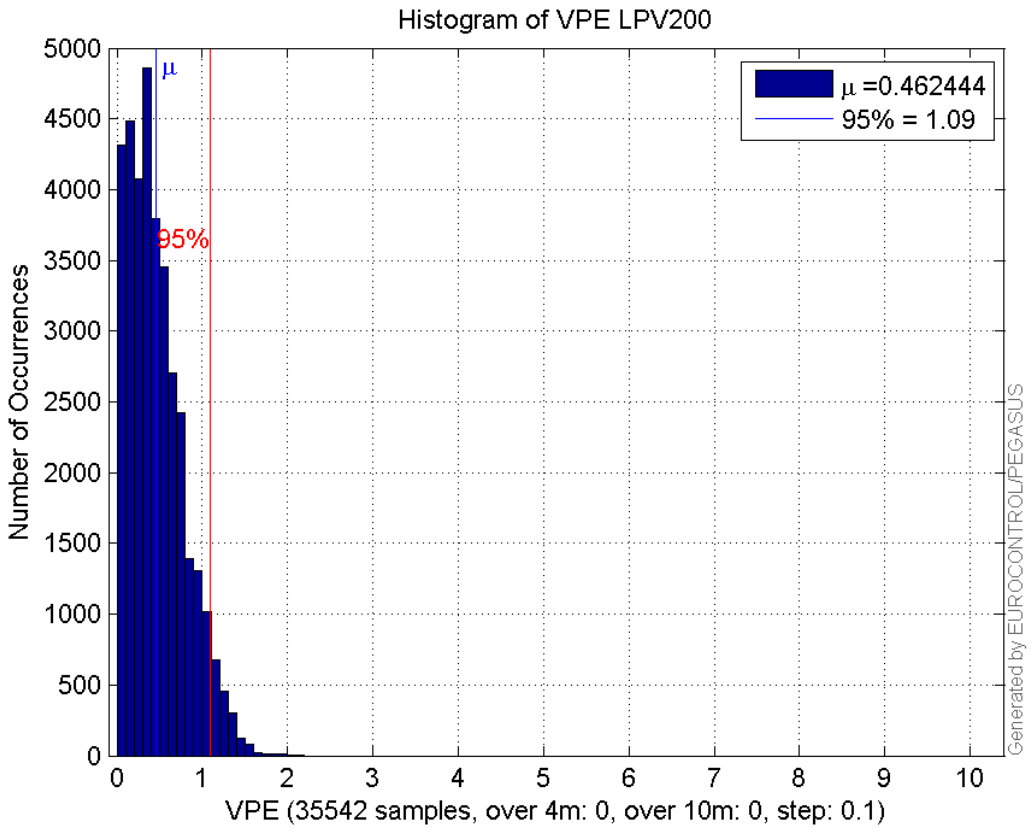
Histogram of VSI APV1:



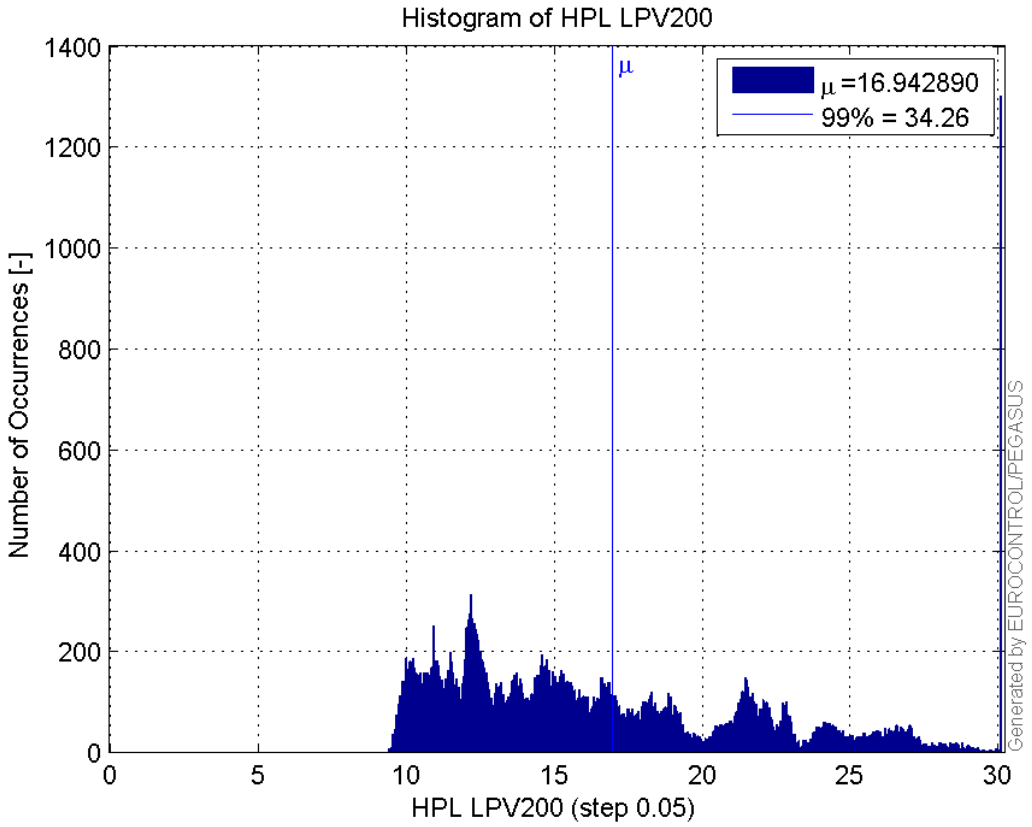
Histogram of HPE LPV200:



Histogram of VPE LPV200:

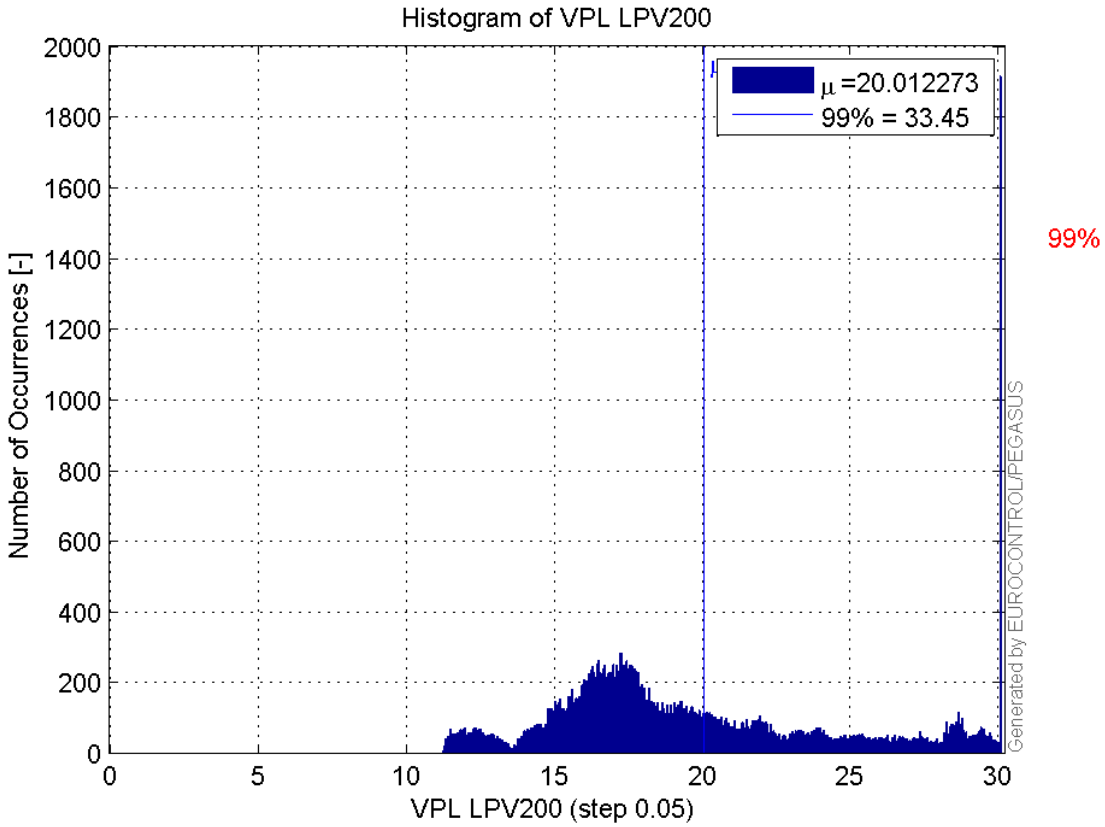


Histogram of HPL LPV200:

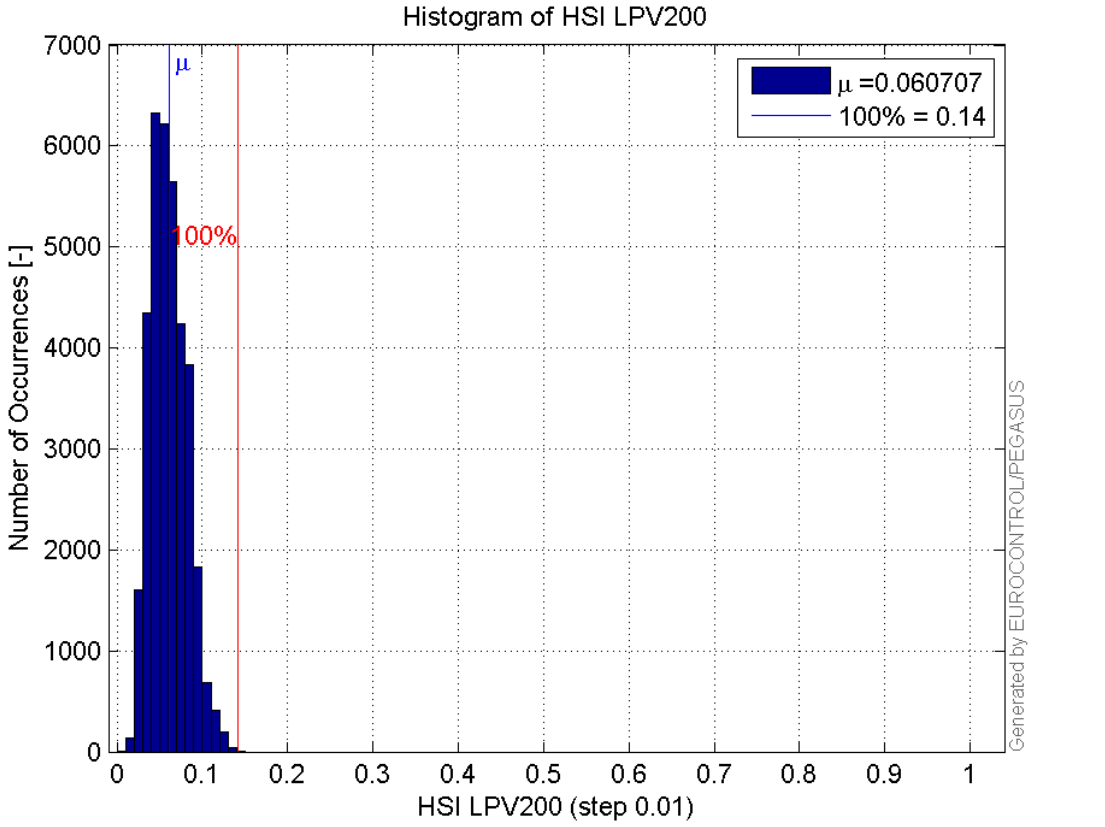


99%

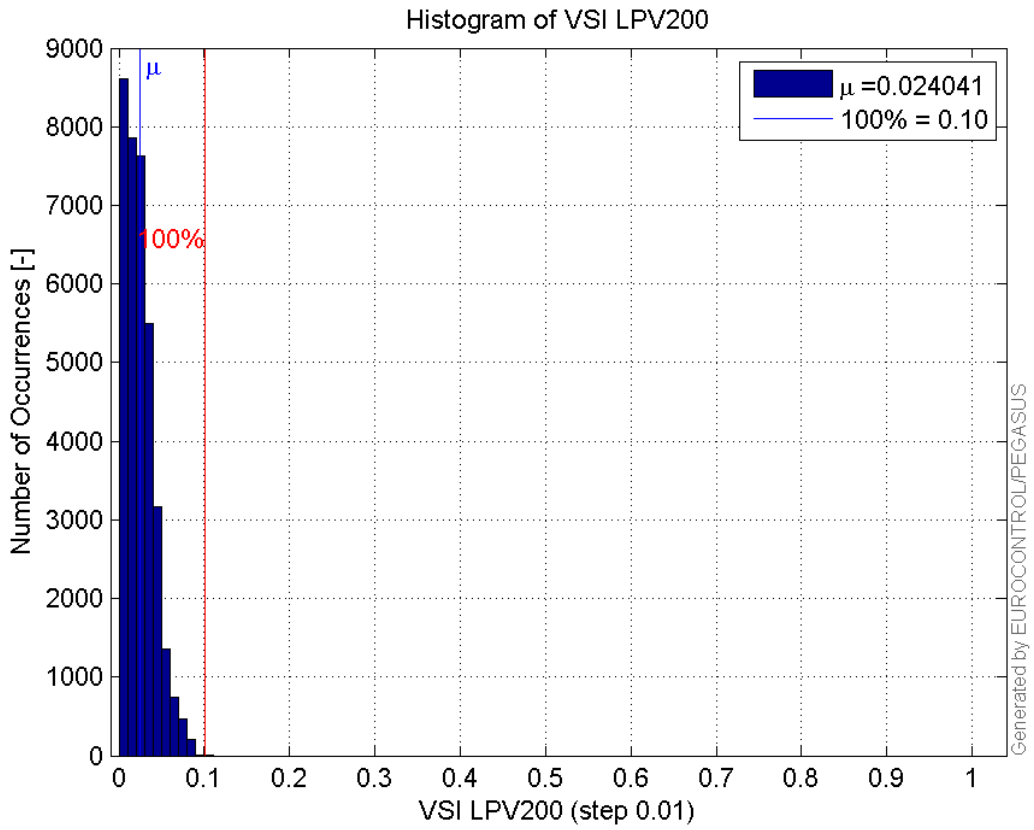
Histogram of VPL LPV200:



Histogram of HSI LPV200:

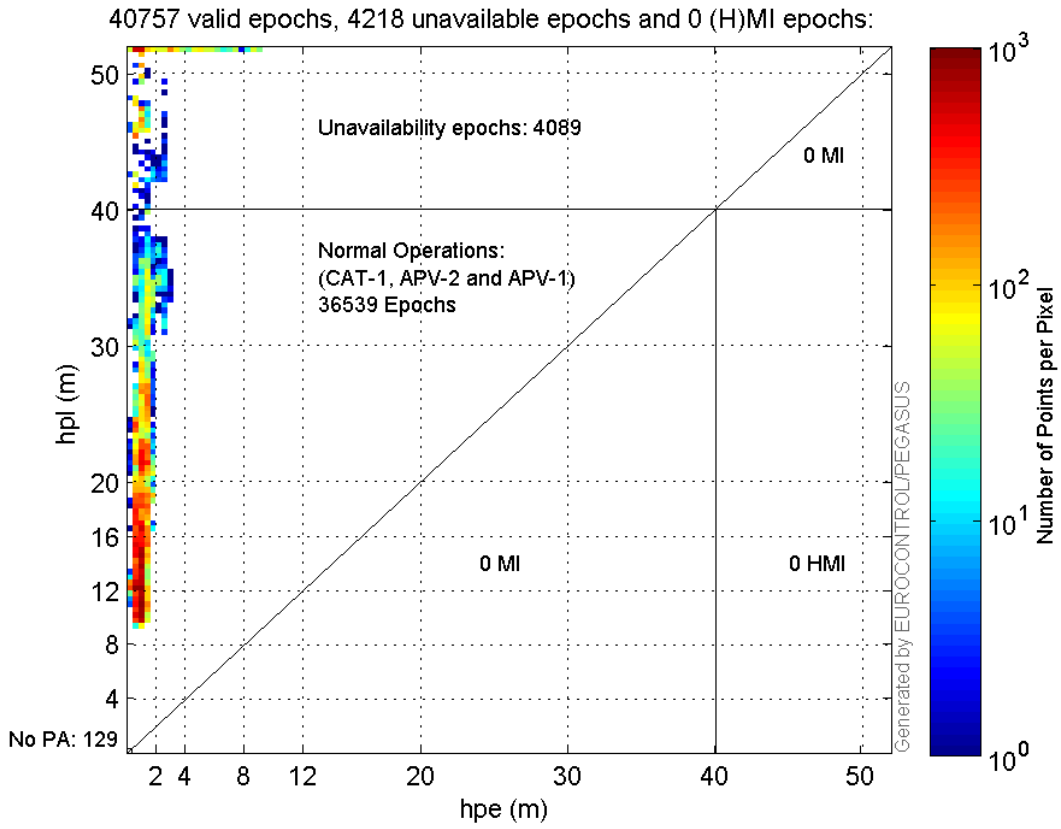


Histogram of VSI LPV200:

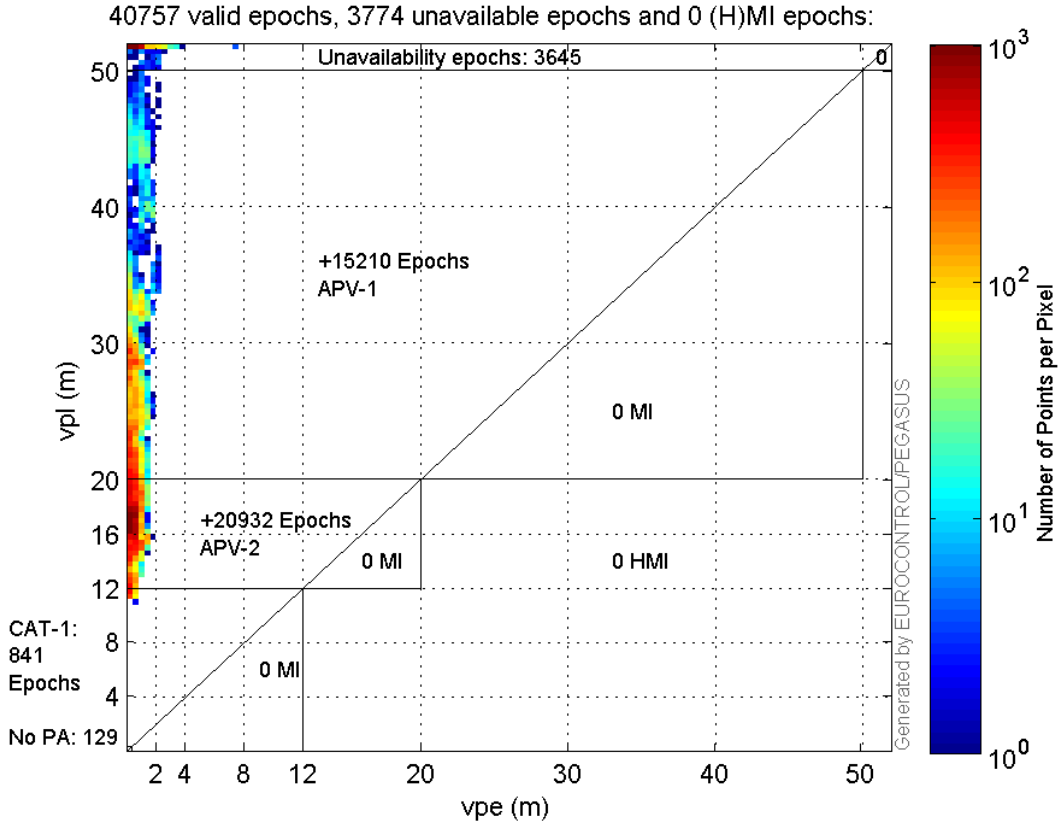


Stanford Plots

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/2017_01_23EGNOS2Hz/02_Convertor/02_Convertor
output_prefix	system	D:/PegasusDateJob/job/2017_01_23EGNOS2Hz/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	50.4389

init_lon	results	30.4296
init_alt	results	238.5932
mi_numbers	results	0

Range Domain

start: 05:57:51 23.01.2017 (week: 1933 sec: 107871)
end: 12:09:47.5 23.01.2017 (week: 1933 sec: 130187.5)
duration: 06:11:58 ..

quality

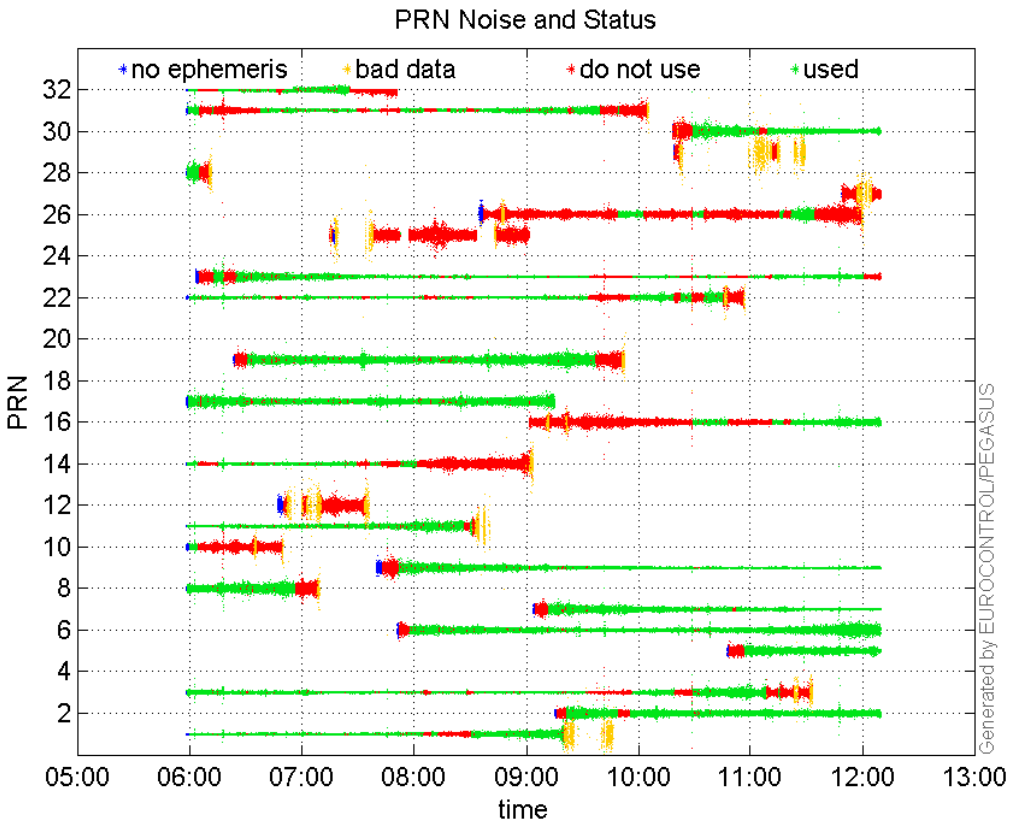
valid samples 41442
total samples 41442

PRN overview

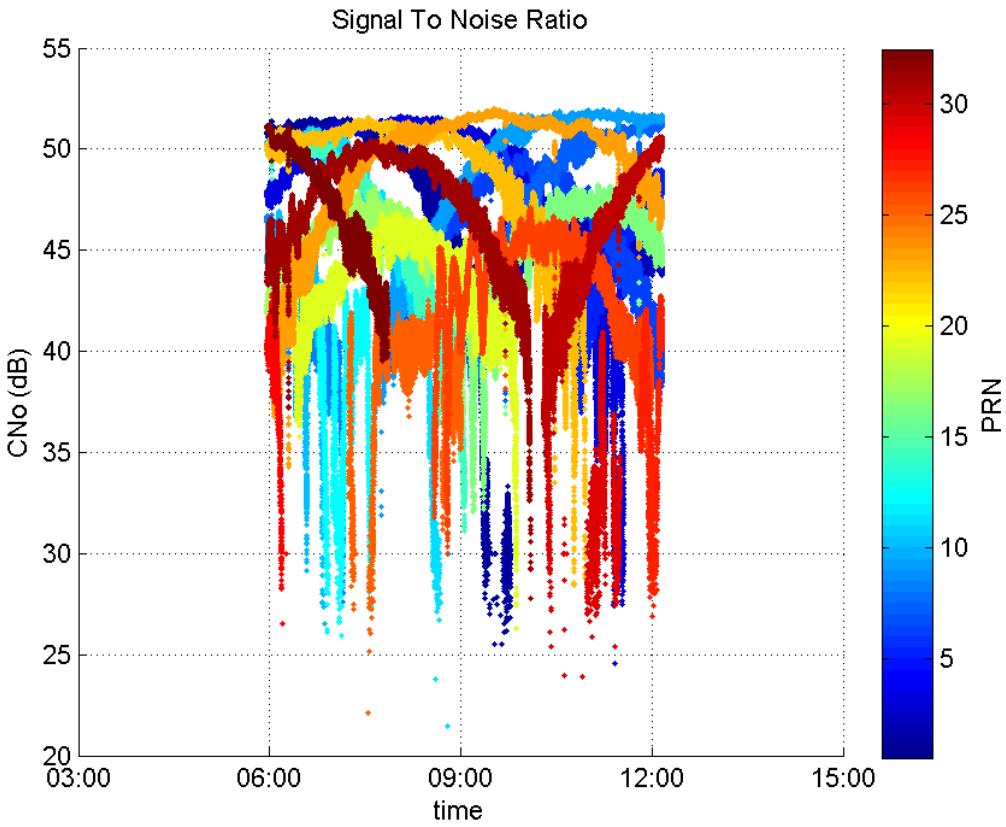
Number of Visible GPS Satellites 25
Number of Visible SBAS Satellites 2

signal quality and status

PRN Noise and Status:



Signal To Noise Ratio:



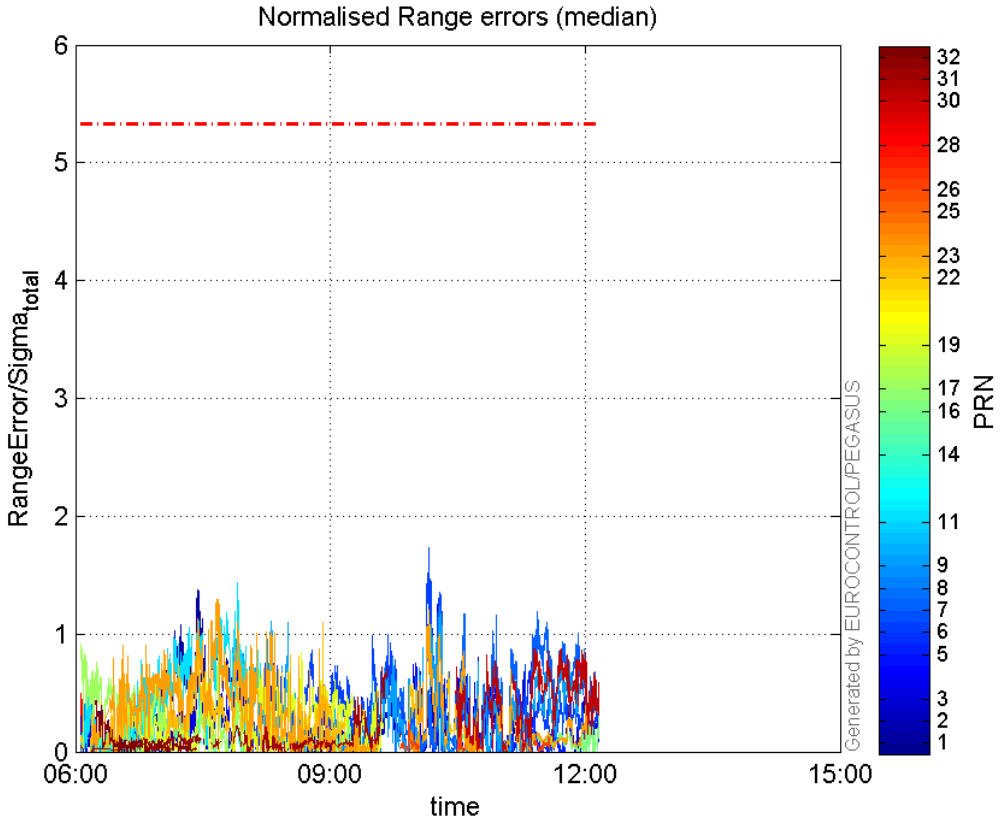
range errors

Number of Overbounding Norm Errors 0

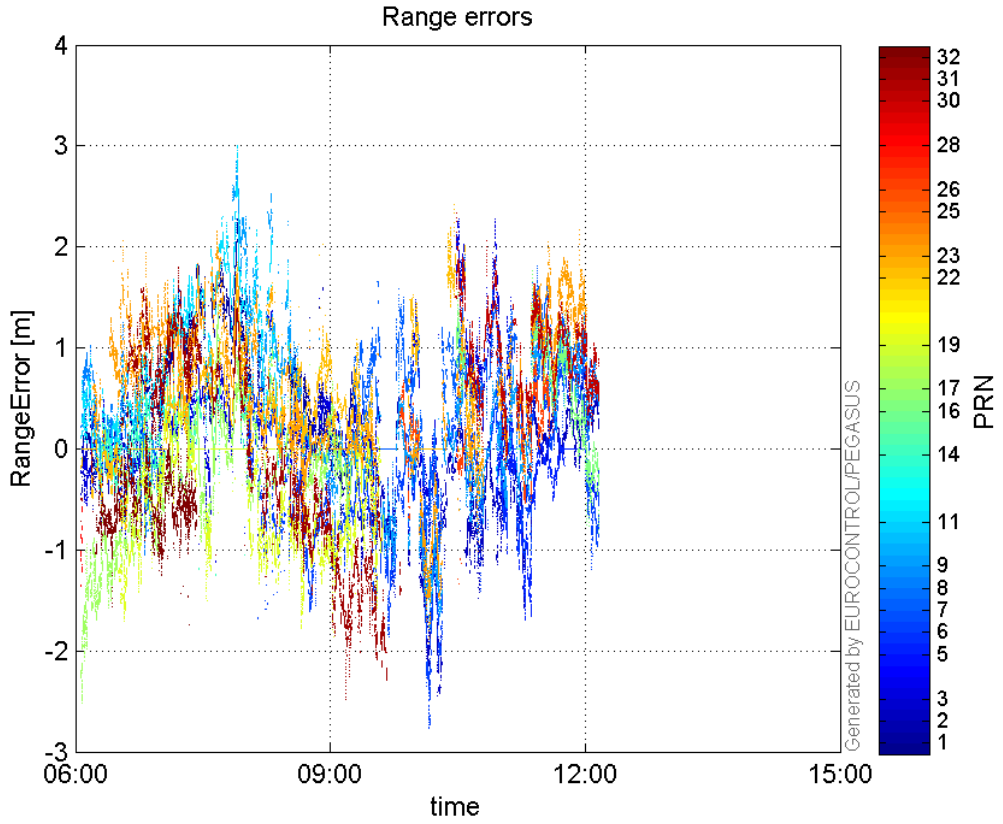
Max Norm Errors :

GPS Week	GPS Second	PRN	Norm Error	Range Error	Sigma
1933	113186	1	1.3763	1.82158	1.32354
1933	123433	2	1.28927	-2.41555	1.87359
1933	114872	3	0.903398	1.34339	1.48704
1933	127316	5	0.763981	-1.66266	2.17631
1933	122981	6	1.73039	-2.66058	1.53756
1933	127590	7	1.19333	1.81144	1.51797
1933	110027	8	0.548938	1.24704	2.27173
1933	123437	9	1.22966	-1.65947	1.34954
1933	114865	11	1.43647	2.93443	2.0428
1933	112469	14	0.544502	0.947187	1.73955
1933	130158	16	0.369138	-0.835403	2.26312
1933	108241	17	0.90972	-2.26904	2.49422
1933	117583	19	0.840118	-1.73826	2.06907
1933	118496	22	1.09797	2.03086	1.84965
1933	114029	23	1.29792	1.95908	1.50939
1933	114740	25	0.0047519	0.289788	60.9837
1933	124232	26	0.307356	-1.33188	4.33336
1933	108255	28	0.493041	-1.36087	2.76015
1933	127430	30	0.87314	1.62833	1.86492
1933	120991	31	0.719005	-2.13598	2.97074
1933	108871	32	0.436843	-1.03773	2.37552

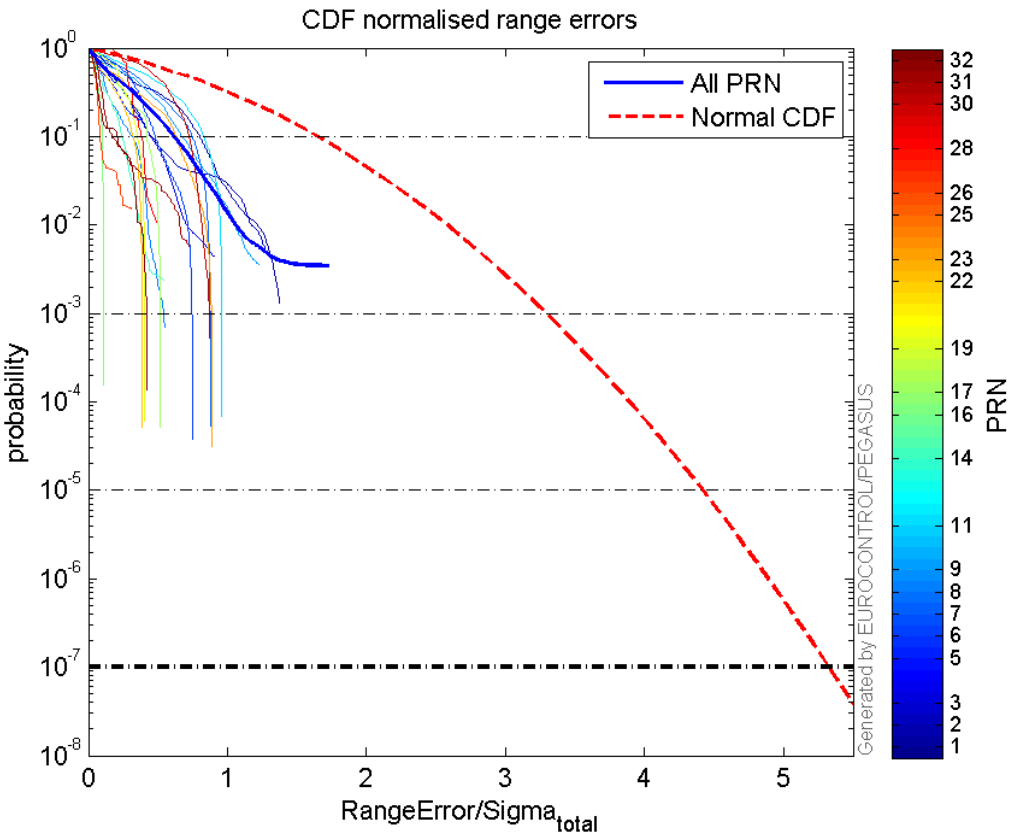
Normalised Range errors (median):



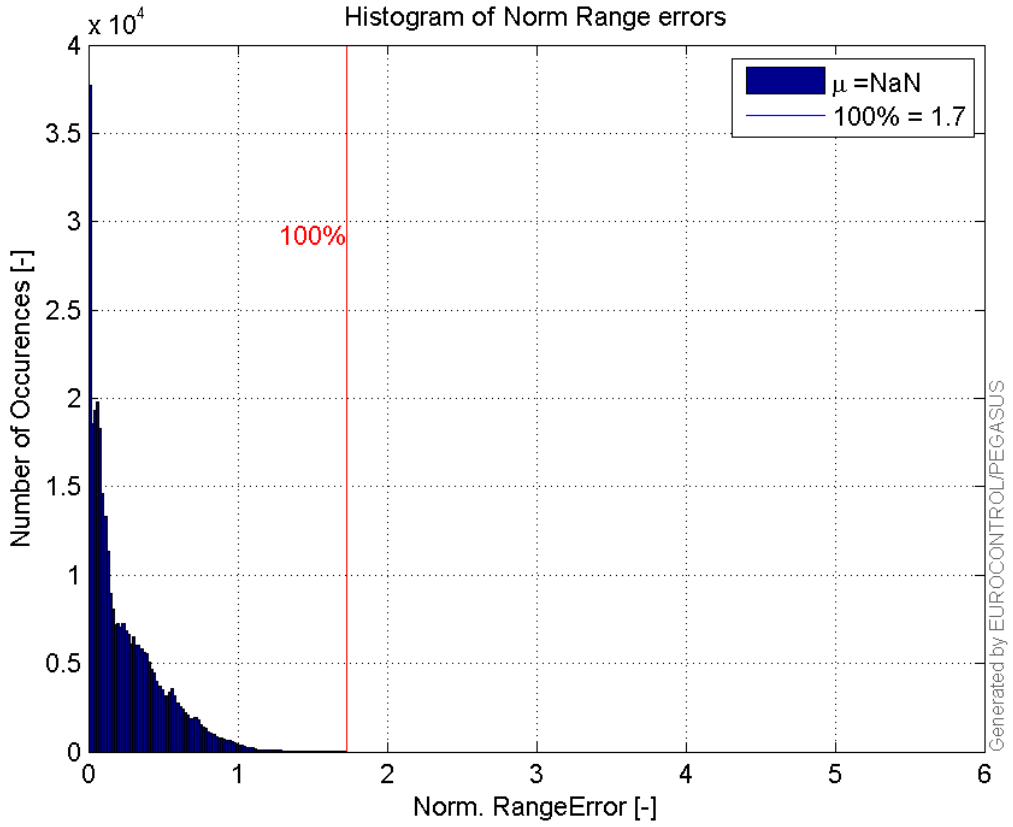
Range errors:



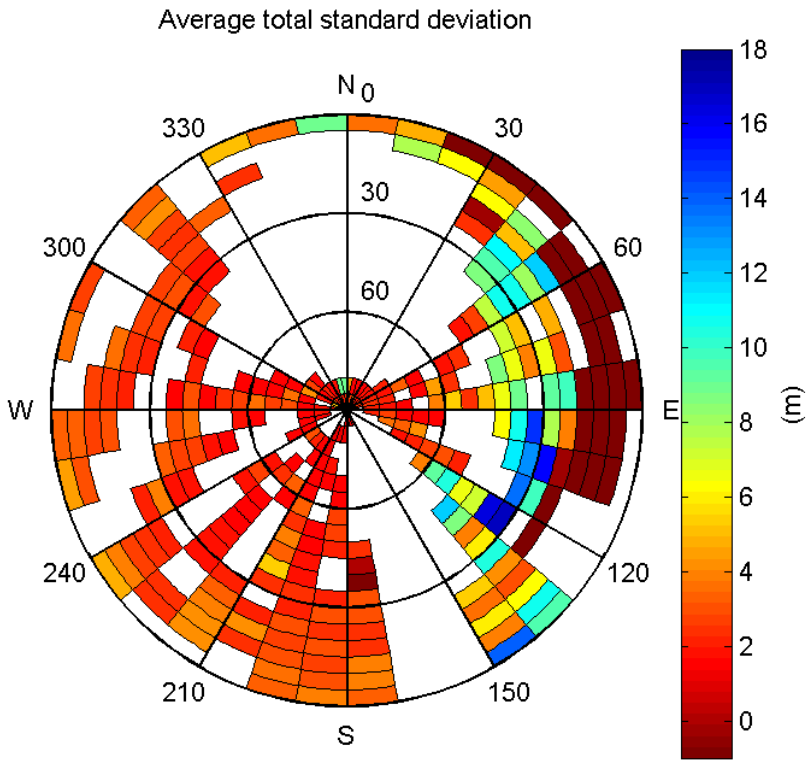
CDF normalised range errors:



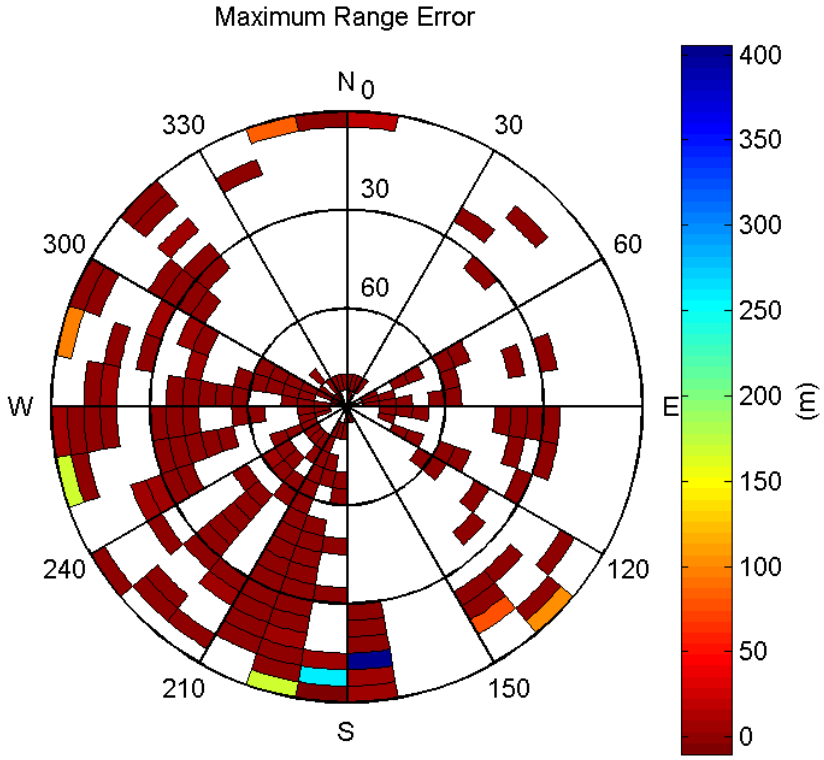
Histogram of Norm Range errors:



Sigma Sky Plot:

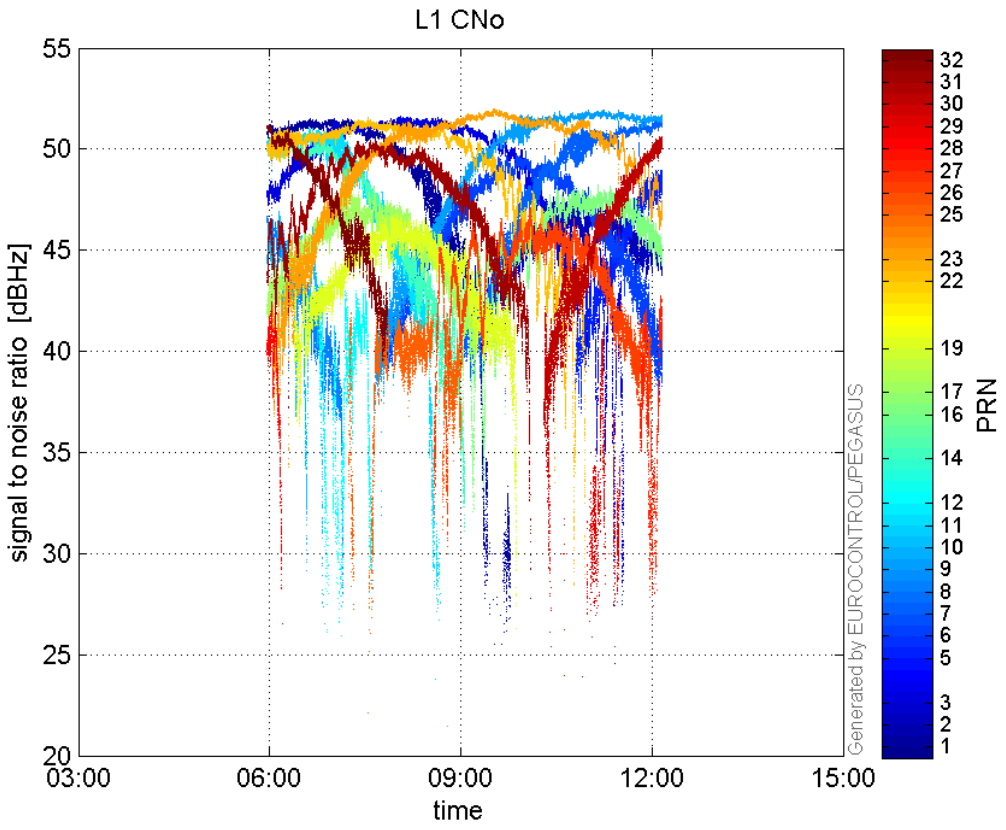


Norm Error Sky Plot:

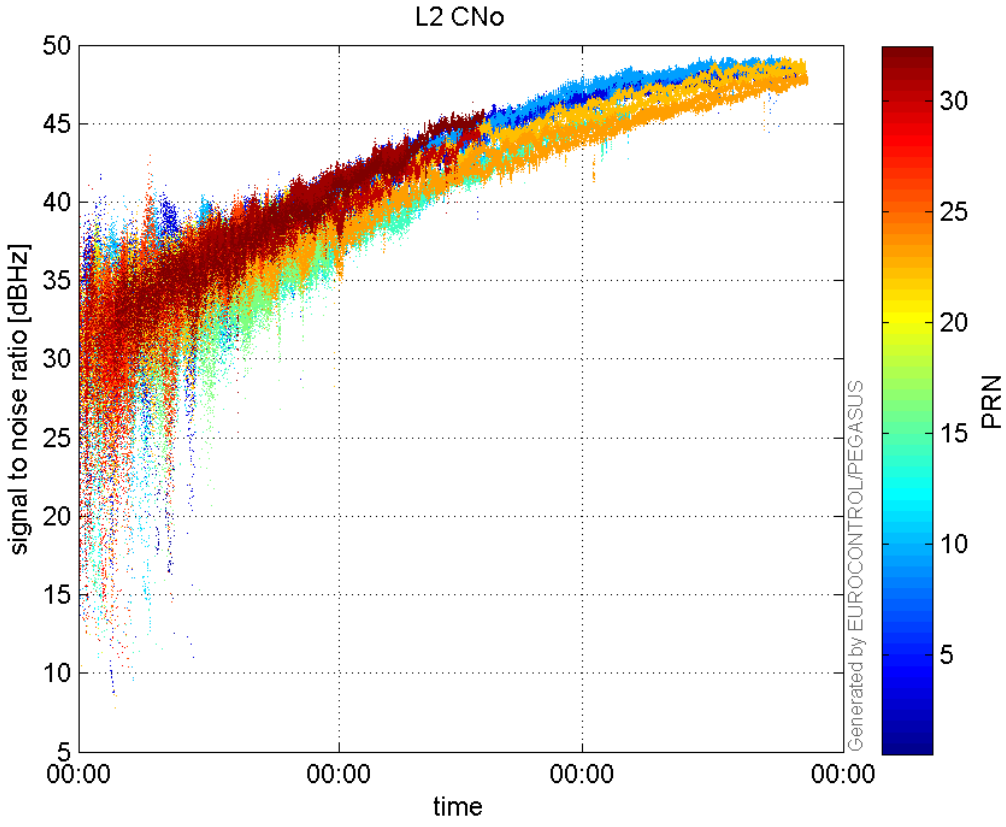


signal quality

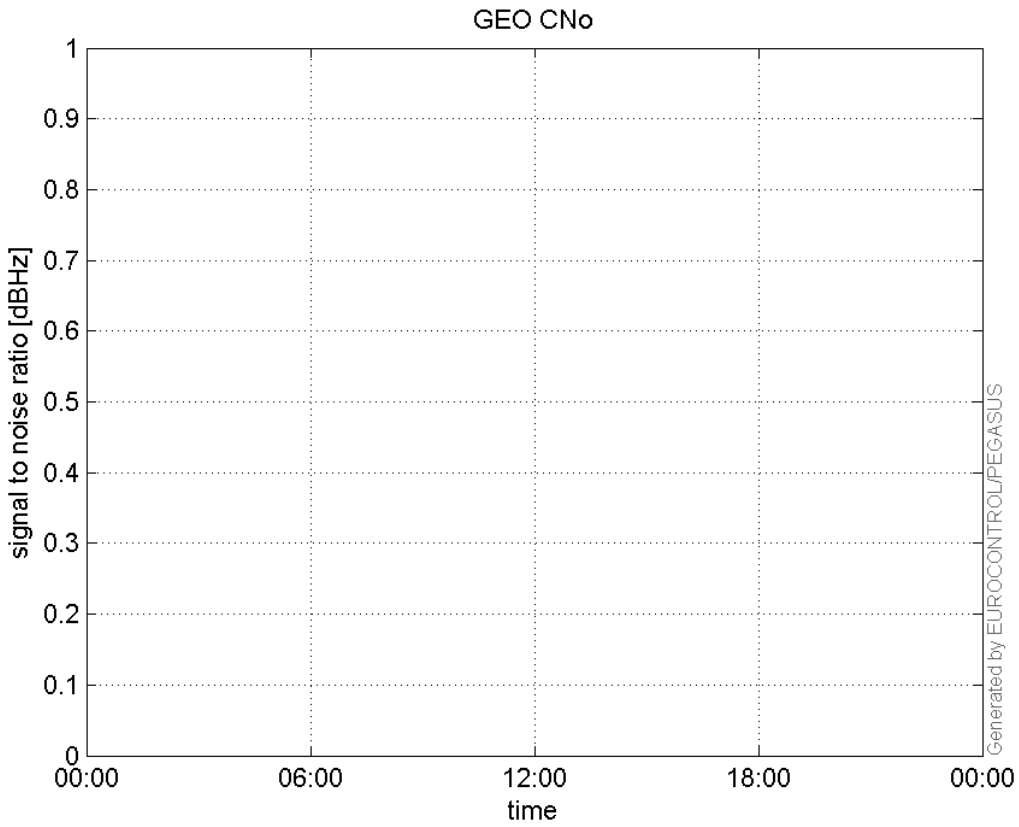
L1 CNo:



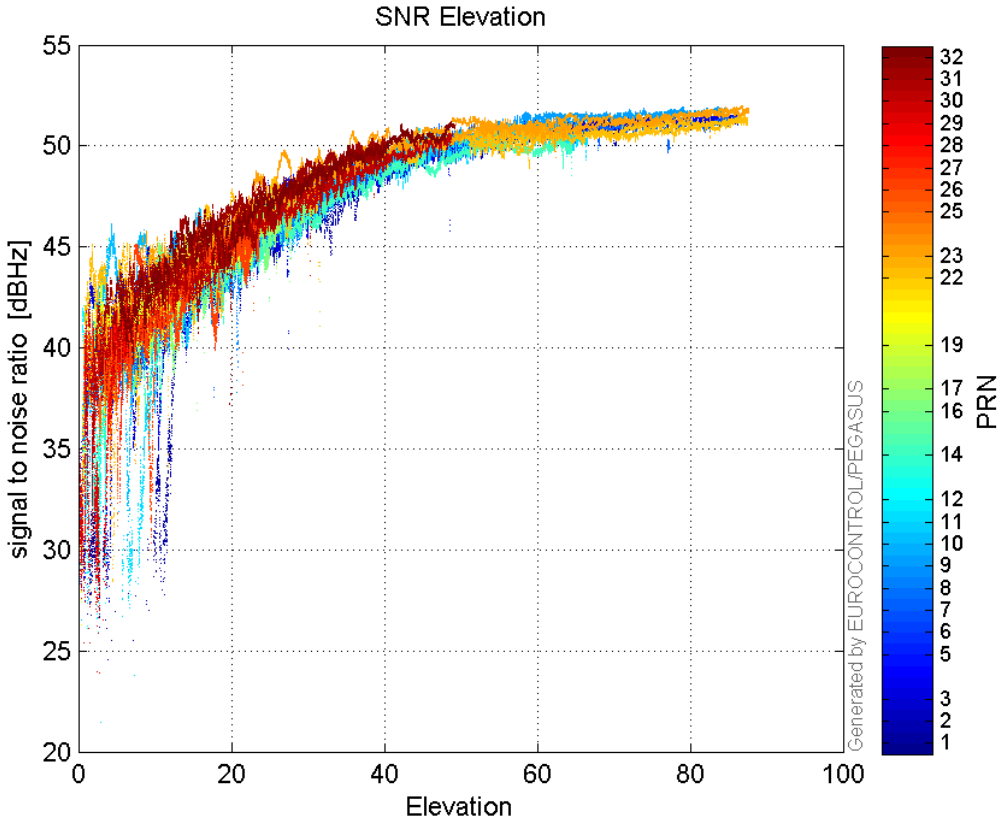
L2 CNo:



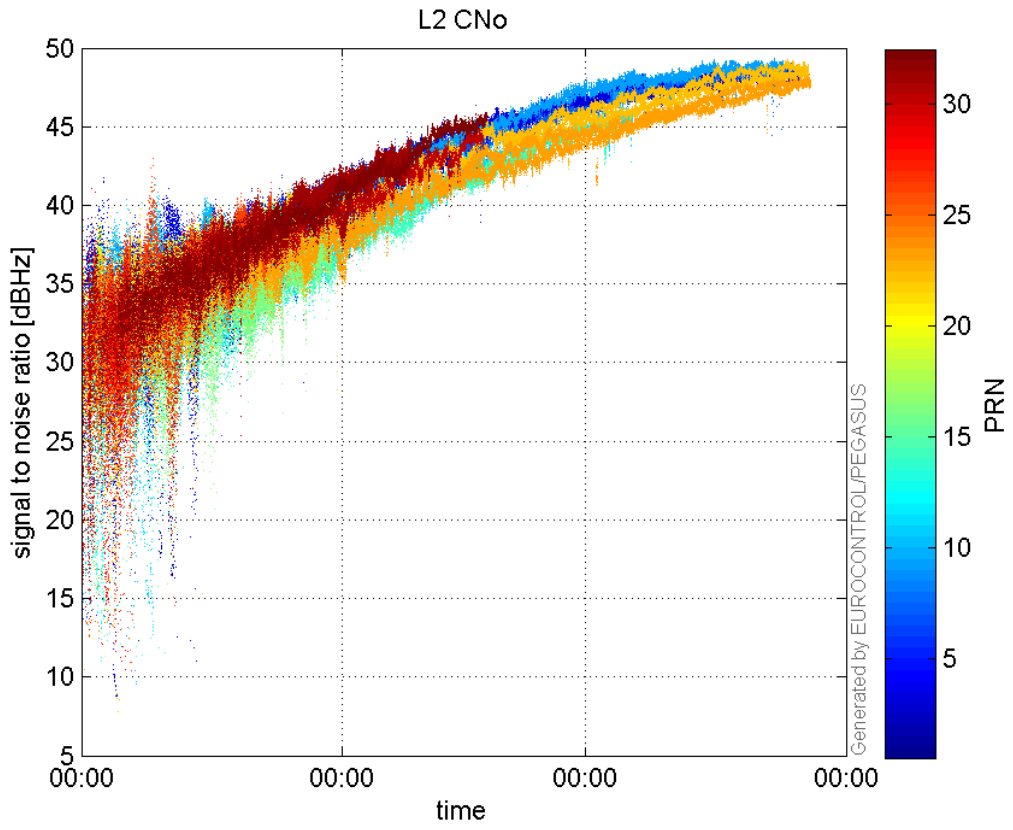
GEO CNo:



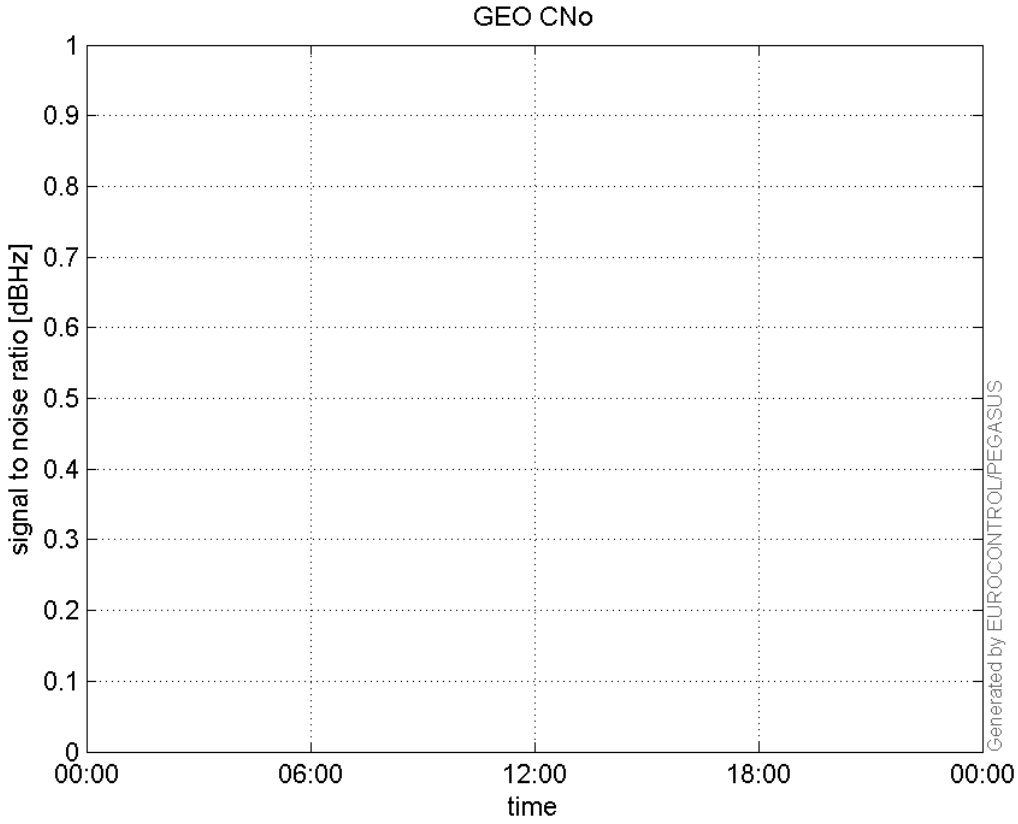
SNR Elevation:



L2 CNo:

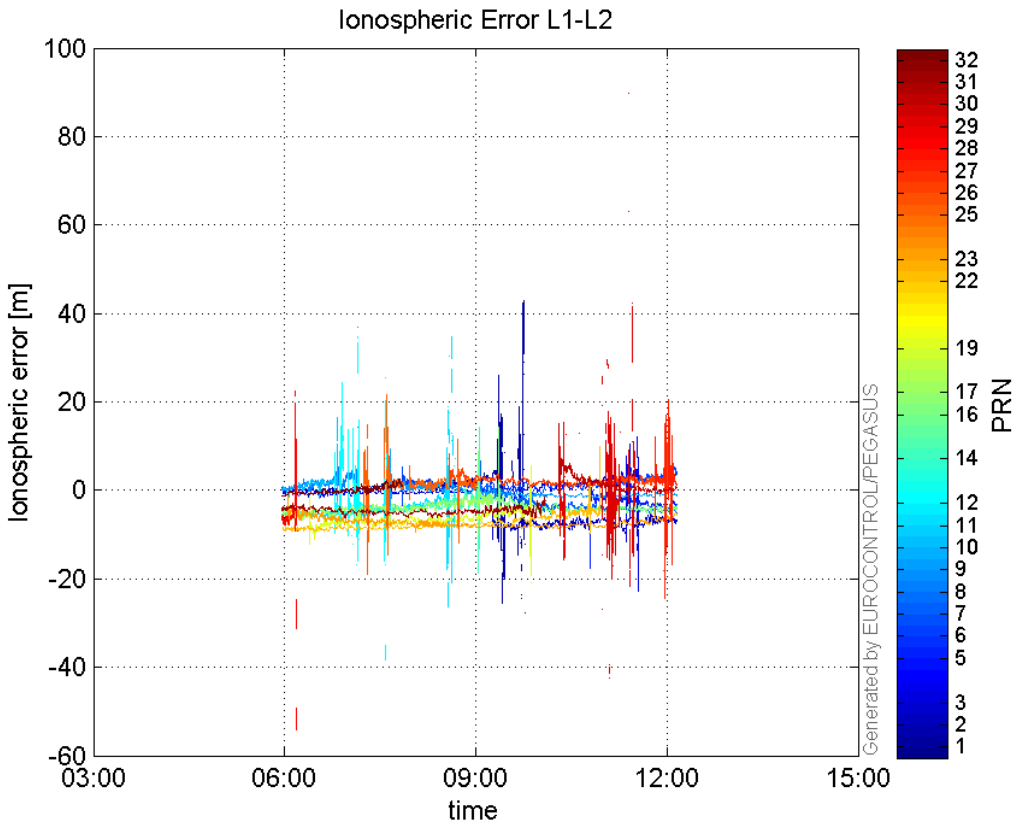


GEO CNo:



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/2017_01_23EGNOS2Hz/02_Convertor/02_Convertor
output_prefix	system	D:/PegasusDateJob/job/2017_01_23EGNOS2Hz/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	50.4389

init_lon	results	30.4296
init_alt	results	238.5932
mi_numbers	results	0