SCATSAT-1 Scatterometer Level-1B Data Quality Evaluation Report

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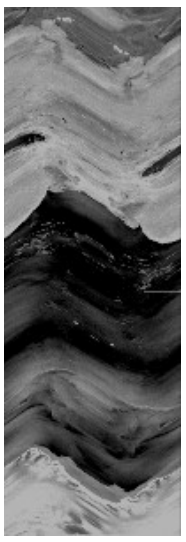
Doppler Variation (Across/Along Track for HH/VV Beam)

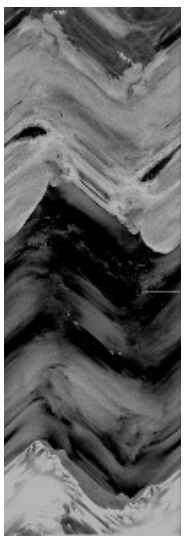
L1B Parameter as a function of Latitude

Half Orbit OAT Behaviour

Image Snapshot for Inner & Outer Beam

Inner (HH) **Outer (VV)**

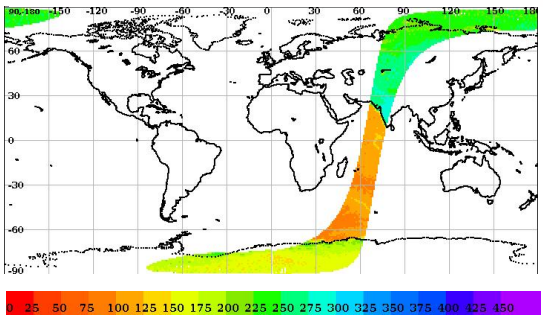




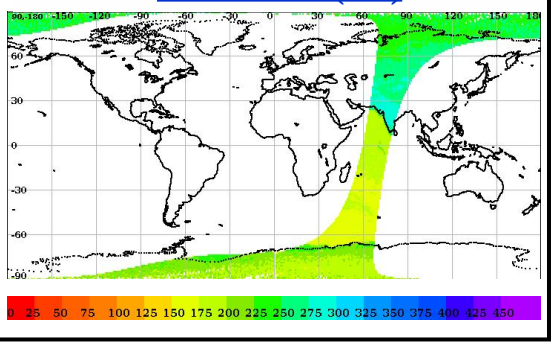
Satellite Id	ScatSat-1	Start Orbit	3494	Total Scans	1017
Sensor Name	Scatterometer	End Orbit	3495	No of Inner FootPrints	281
Processor Version	v1.1.2	Rev. Number	03494_03495	No Of Outer FootPrints	282
Half Orbit Direction	NS	Data Production Date	25-05-2017	No. Of Inner Slices	9
Equator Crossing Date	25-05-2017	Equator Crossing Time	04:22:56.000	No Of Outer Slices	14

Brightness Temprature(k) Footprint trace

Inner Beam (HH)

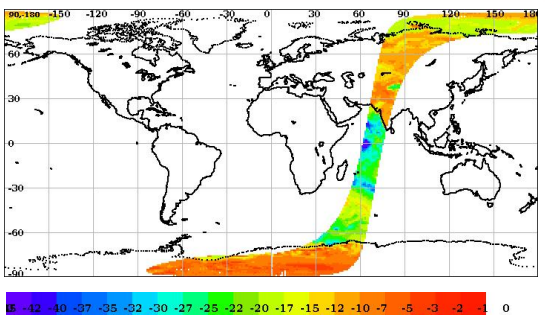


Outer Beam (VV)

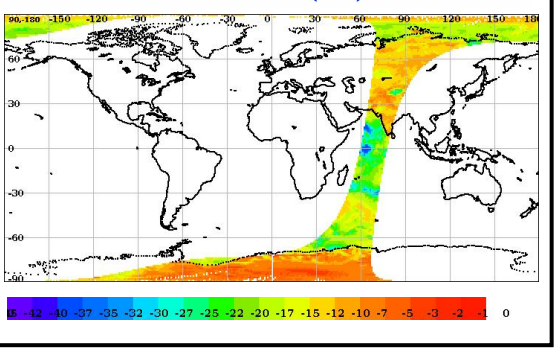


Sigma0(dB) Footprint trace

Inner Beam (HH)



Outer Beam (VV)



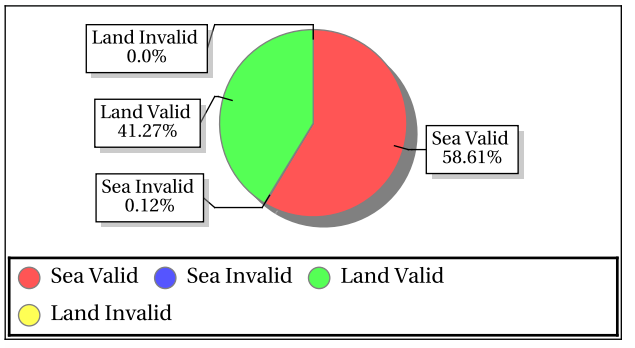
Invalid and Poor Sigma-0 Quality Flag Statistics for Inner/Outer Slices*

Sigma-0 Flags	Inner Beam	Outer Beam
Invalid Sigma0(%)	0.12	0.12
Data Not Available From Payload (%)	100.0	100.0
Slice not within sample array limits (%)	0.00	0.00
C(S+N) - C(N) < 0.1 (%)	0.00	0.00
Poor Sigma0(%)	0.00	0.01
Noise samples for blending Saturated	0.0	0.0
Count samp. for interpol. saturated (%)	0.00	0.00
Sigma0<lower bound (-96bB) (%)	0.0	0.0
Sigma0>upper bound (0 dB) (%)	0.00	0.00
SNR <-65 dB (%)	100.0	100.0

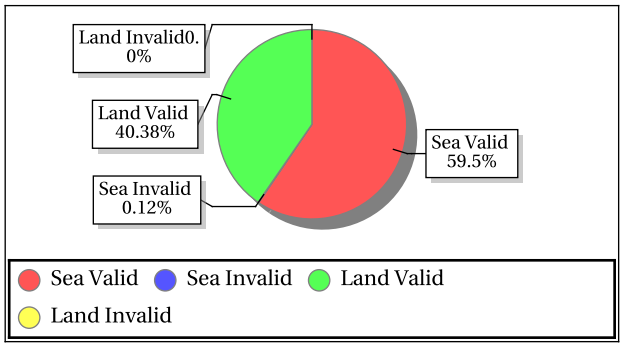
*DP Format Document

Sigma-0 Quality Flag Statistics for Inner/Outer Footprints

Inner Beam (HH)



Outer Beam (VV)



Invariant Site Sigma-0 Statistics for Ascending/Descending, Fore/Aft in HH/VV beams

Site Name	Center Lat	Center Lon	Beam	Node	ScanDir	Sigma0 Min	Sigma0 Max	Sigma0 Mean	Sigma0 Std	BT Min	BT Max	BT Mean	BT Std
ROK	23.00	73.60	Inner	ASC	Aft	-11.90	-9.14	-10.53	0.64	240.48	309.75	281.19	17.19
ROK	23.00	73.60	Inner	ASC	Fore	-11.43	-8.67	-10.08	0.76	249.75	320.50	283.59	17.45
ROK	23.00	73.60	Outer	ASC	Aft	-12.71	-10.42	-11.67	0.49	254.37	318.92	284.82	15.76
ROK	23.00	73.60	Outer	ASC	Fore	-12.89	-10.41	-11.74	0.57	257.76	337.20	291.41	17.30

Overall statistics for the Static Parameters (Footprint-wise)

Inner Beam (HH)

	Sea Aft				Sea Fore				Land Aft				Land fore			
	Min	Max	Mean	Bad Occ. (%)	Min	Max	Mean	Bad Occ. (%)	Min	Max	Mean	Bad Occ. (%)	Min	Max	Mean	Bad Occ. (%)
Kp	0.10	240.73	0.24	1.891	0.10	173.81	0.23	1.699	0.10	0.20	0.10	0.000	0.10	1.76	0.10	0.002
Kpa	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000
Kpb	0.01	0.02	0.01	0.000	0.01	0.02	0.01	0.000	0.01	0.02	0.01	0.000	0.01	0.01	0.01	0.000
Kpc	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000
SNR	-34.55	22.74	5.89	0.001	-33.13	22.01	7.26	0.001	-1.20	28.28	17.58	6.560	-12.98	29.50	19.08	17.180

Outer Beam (VV)

	Sea Aft				Sea Fore				Land Aft				Land fore			
	Min	Max	Mean	Bad Occ. (%)	Min	Max	Mean	Bad Occ. (%)	Min	Max	Mean	Bad Occ. (%)	Min	Max	Mean	Bad Occ. (%)
Kp	0.08	194.34	0.22	1.860	0.08	153.68	0.20	1.664	0.08	0.40	0.09	0.000	0.08	4.11	0.09	0.034
Kpa	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000
Kpb	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000
Kpc	0.00	0.01	0.00	0.000	0.00	0.01	0.00	0.000	0.00	0.01	0.00	0.000	0.00	0.01	0.00	0.000
SNR	-34.50	14.57	3.65	0.000	-33.48	15.72	4.90	0.000	-6.87	22.48	12.21	0.002	-17.69	23.44	13.36	0.181

Parameter Specifications					
Parameter	Kp	Kpa	Kpb	Kpc	SNR
Min	0.00	0.00	0.00	0.00	-65.00
Max	1.00	1.00	1.00	1.00	22.00

Normal
Deviations
Alarming
High Errors

Overall statistics for static parameter (Footprint-wise)

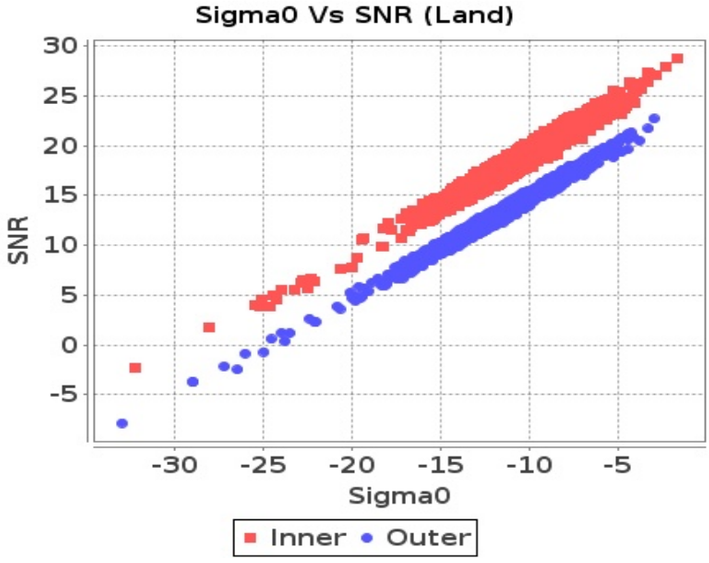
	Inner Beam (HH)				Outer Beam (VV)			
	Min	Max	Mean	Bad Occ. (%)	Min	Max	Mean	Bad Occ. (%)
Incidence Angle (deg)	48.82	49.32	49.02	0.000	57.63	58.20	57.93	0.000
Azimuth Diff. (deg)	0.0026	1.80	1.08	0.187	0.0026	1.97	1.08	0.149
Range(Km)	1032.66	1076.96	1052.06	0.000	1211.53	1266.20	1233.07	0.000
X Factor(dbm)	-91.97	-89.09	-90.43	0.000	-93.66	-91.50	-92.46	0.000
Across Distance (Km)	15.91	16.40	15.91	0.000	21.02	21.94	20.95	0.000
Along Distance (Km)	18.91	8070.65	35.61	3.000	18.76	8293.65	35.95	3.000

Parameter Specifications		
Parameter	Min	Max
Inci.(Inner)	47.10	49.90
Inci.(Outer)	57.30	58.90
Azimuth Diff.	0.60	2.00
Range(Inner)	1025.00	1095.70
Range(Outer)	1210.00	1280.00
X-Factor	-100.00	-80.00
Ac.Dist(Inner)	15.00	20.00
Ac.Dist(Outer)	15.00	22.00
Al.Dist(Inner)	15.00	30.00
Al.Dist(Outer)	10.00	30.00

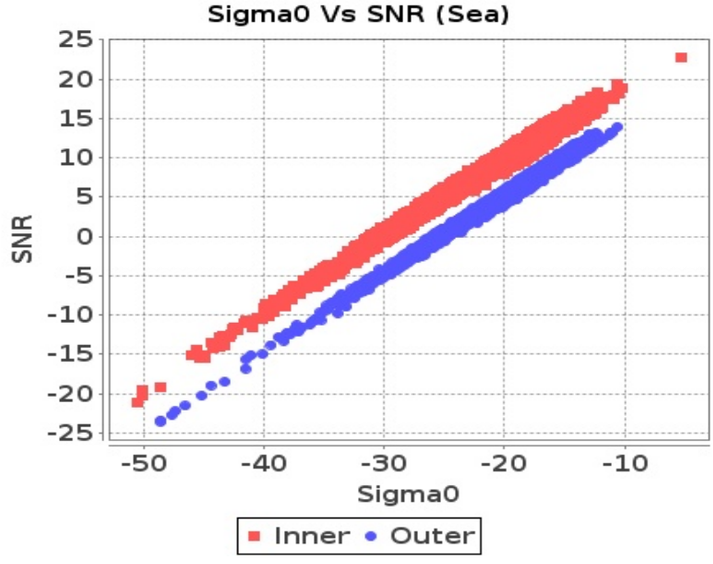
Normal
Deviations
Alarming
High Errors

Sigma0 Behaviour (Sigma0 Vs SNR)

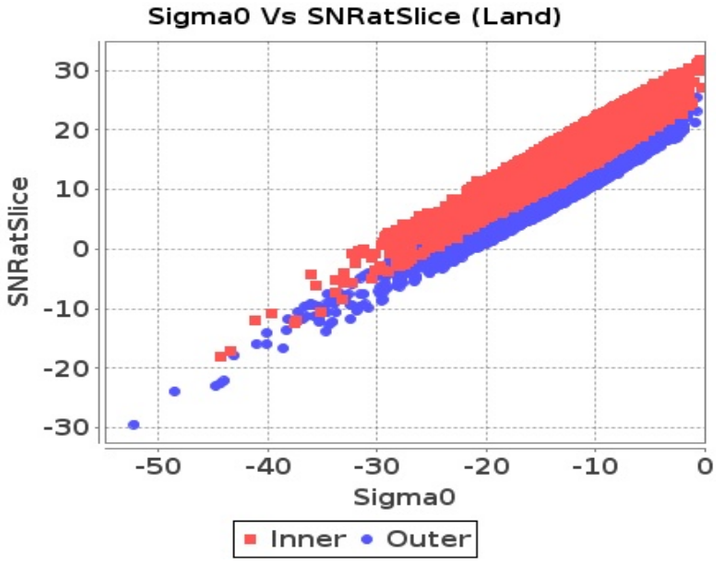
Footprint-Land



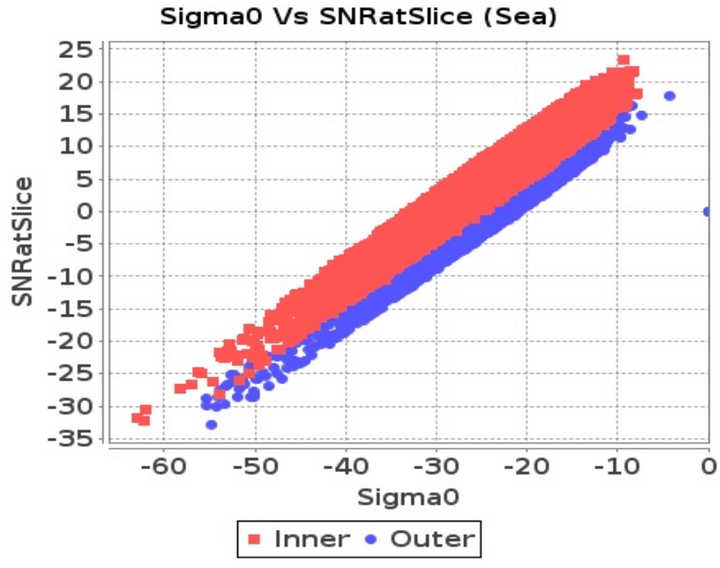
Footprint-Sea



Slice-Land

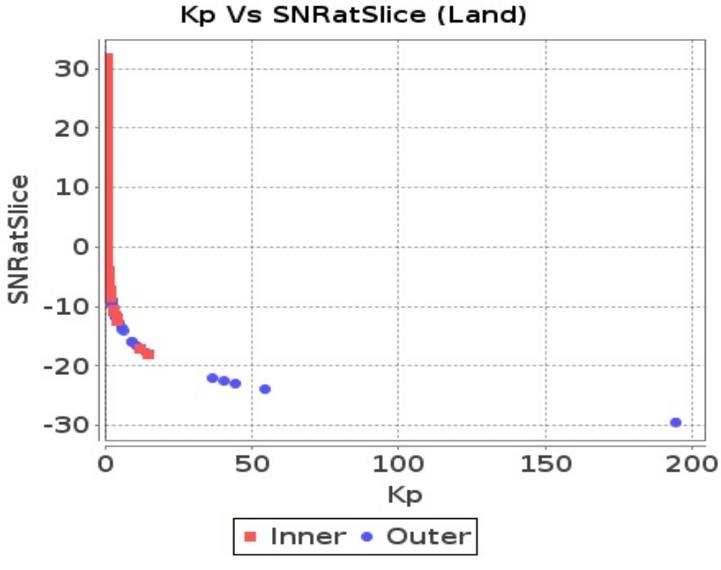


Slice-Sea

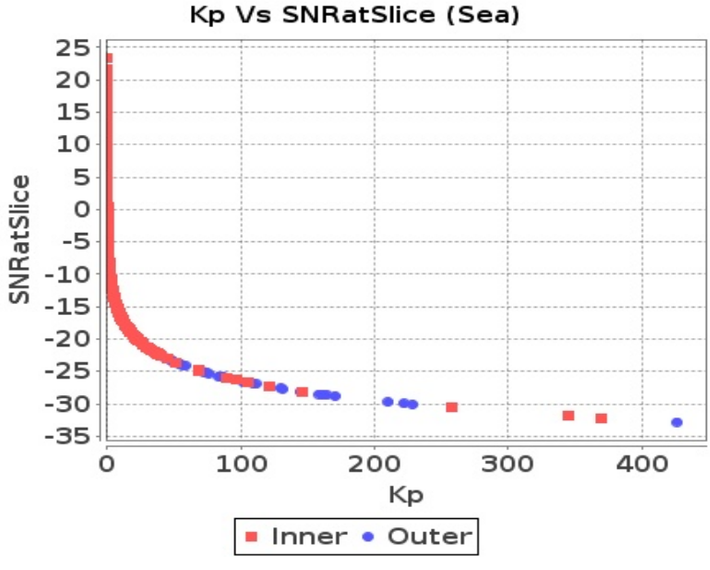


Sigma0 Behaviour (Kp Vs SNR)

Slice

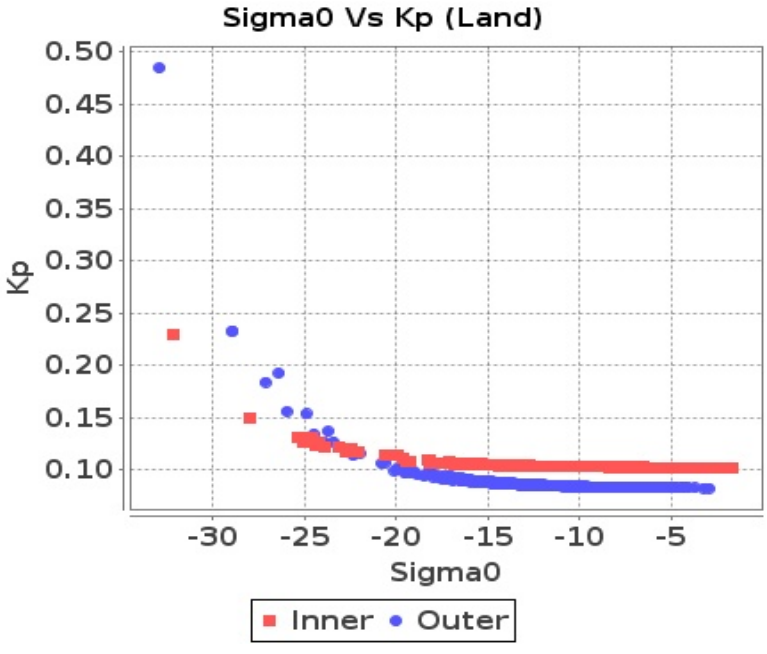


Slice

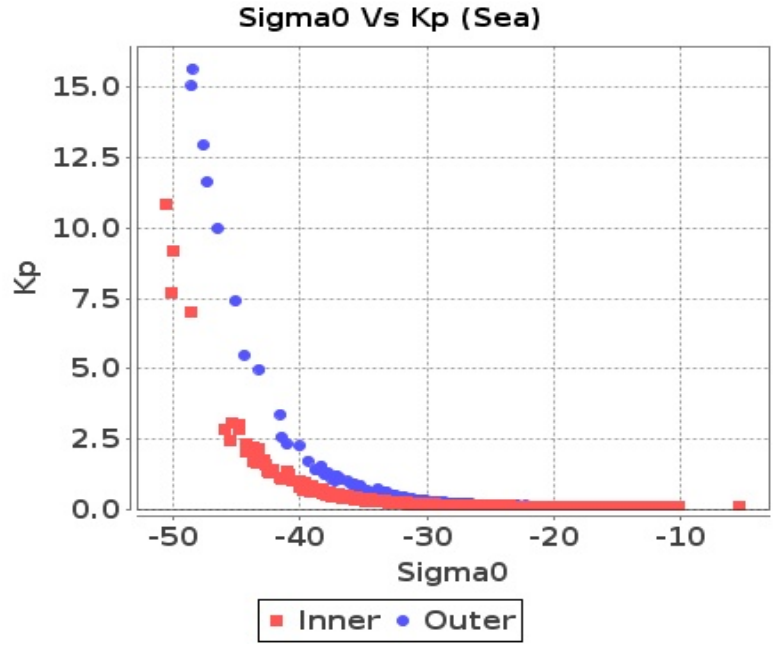


Sigma0 Behaviour(Sigma0 Vs Kp)

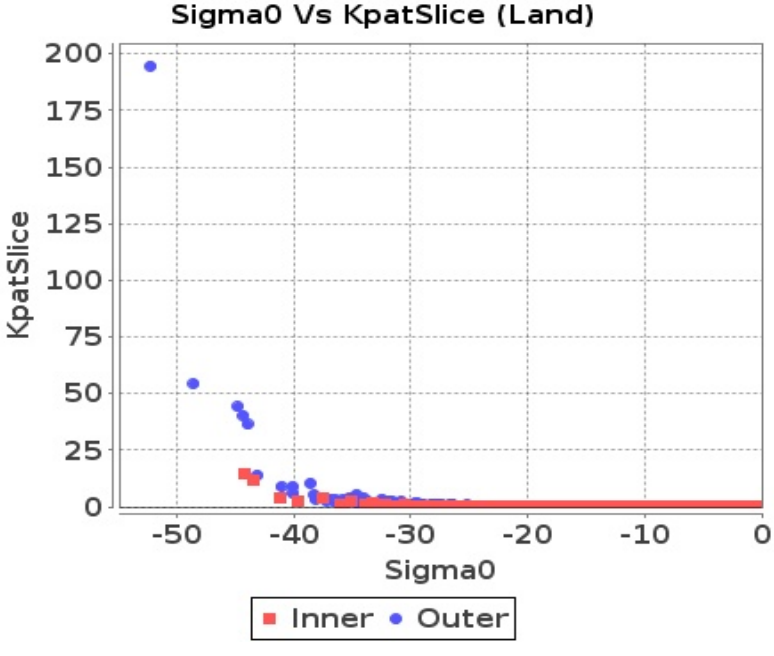
Footprint-Land



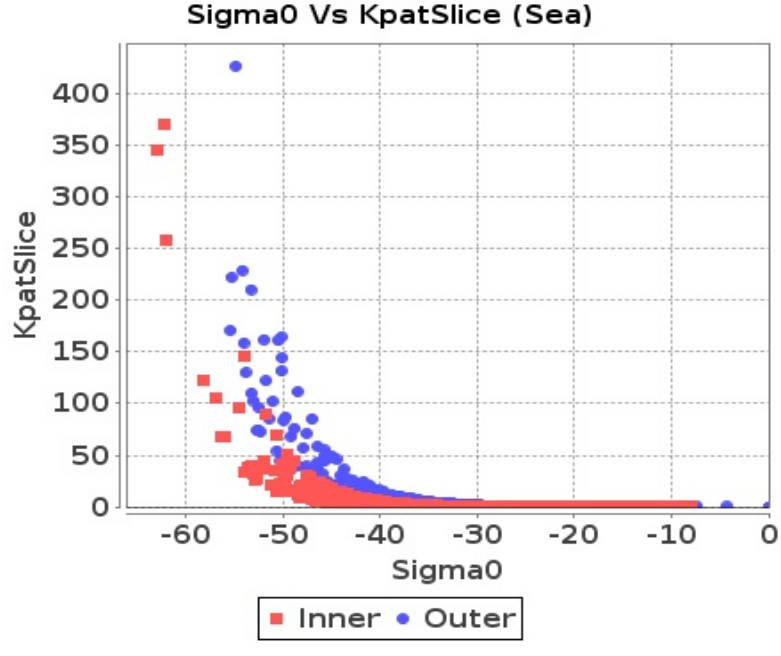
Footprint-Sea



Slice-Land



Slice-Sea

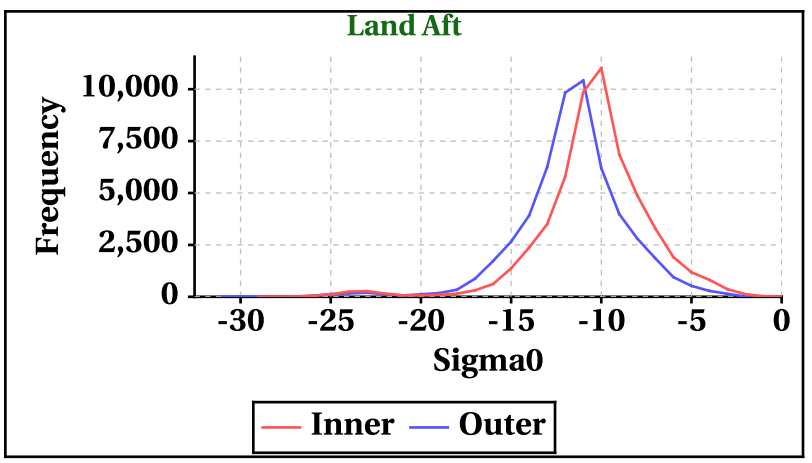


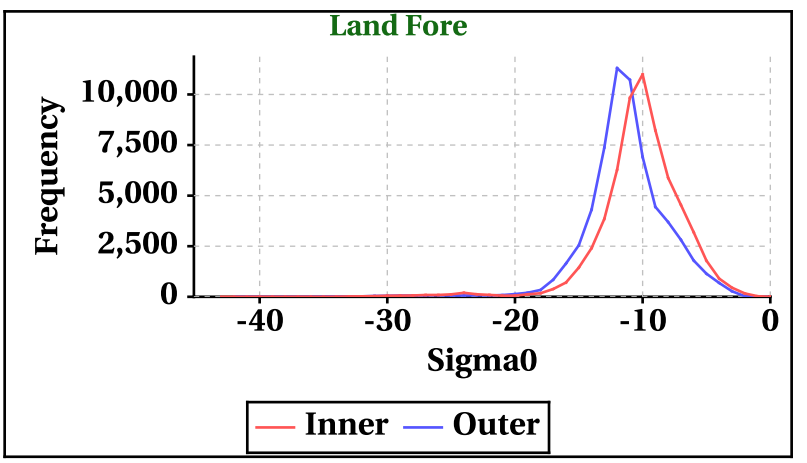
Dynamic Range (Data Histograms)

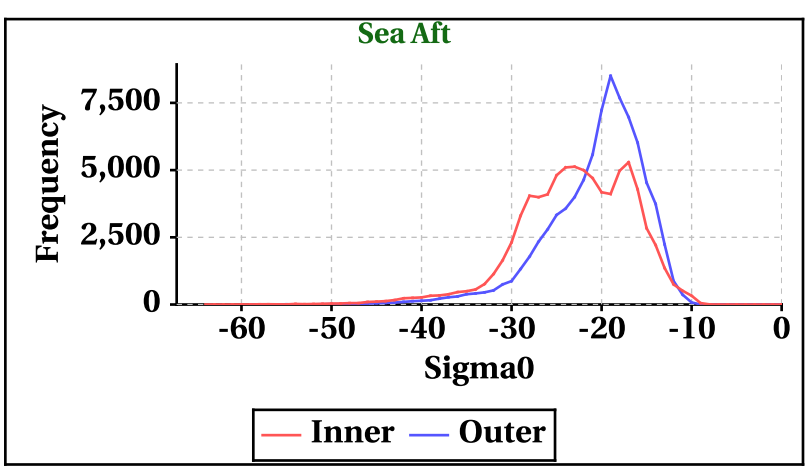
Sigma0(db)

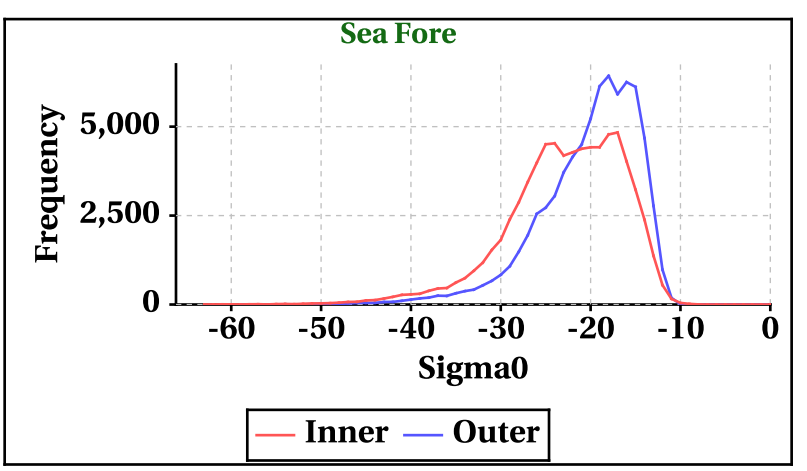
Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-29	-43	-64	-63
Max	0	0	0	0

Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-31	-42	-59	-59
Max	0	0	0	0





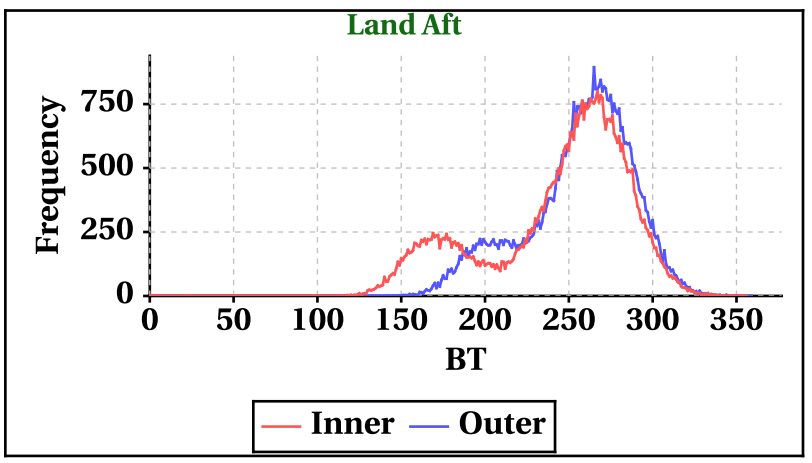


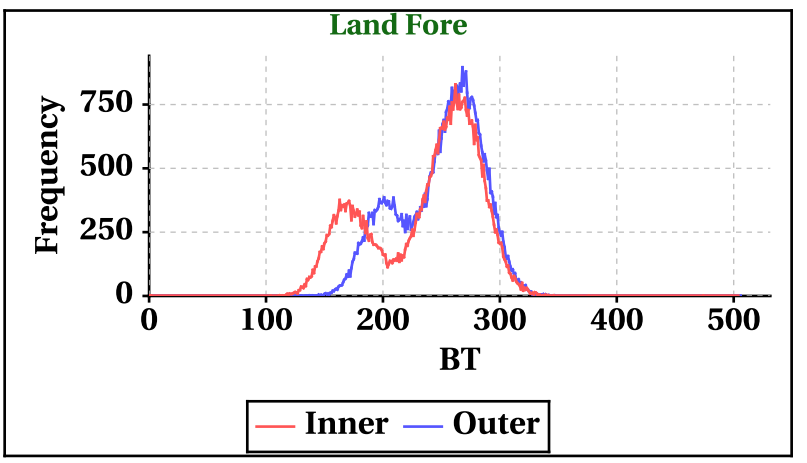


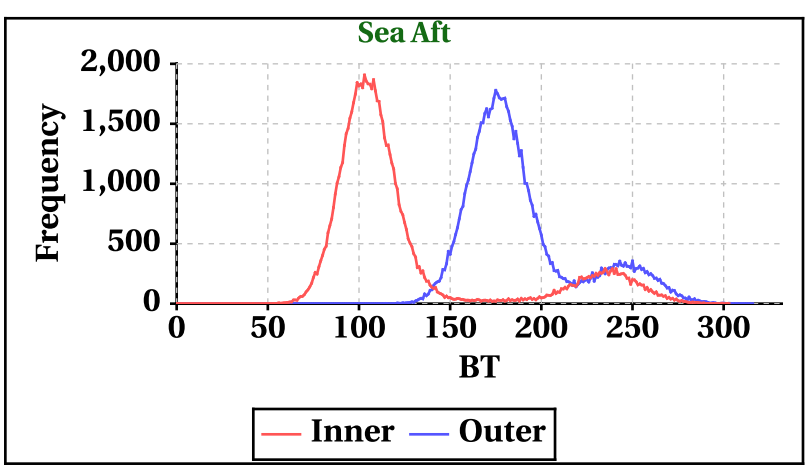
Brightness Temperature(K)

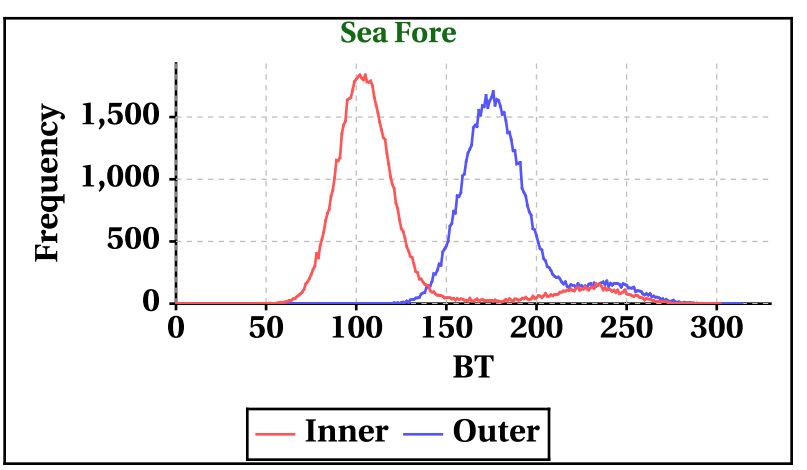
Inner Beam(HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	356	504	303	302

Outer Beam(VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	359	506	316	314







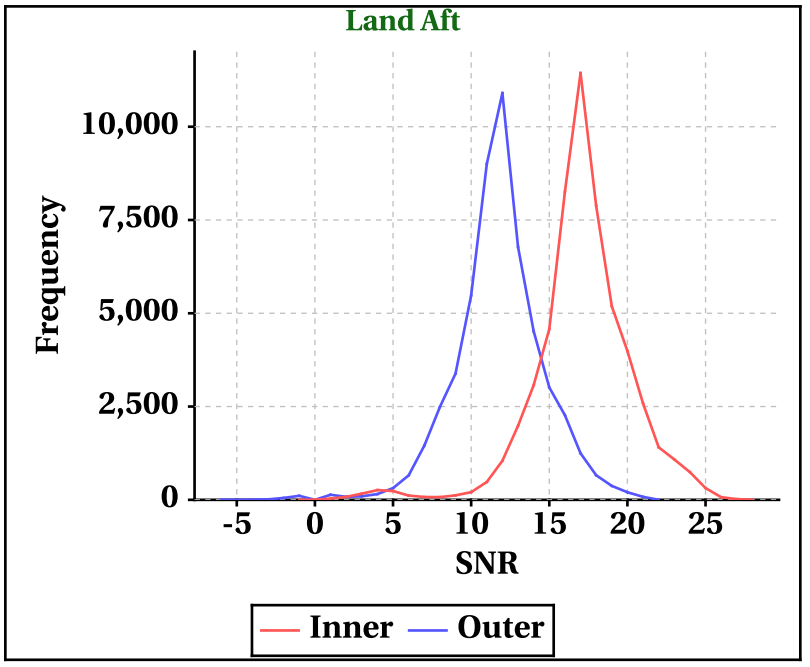


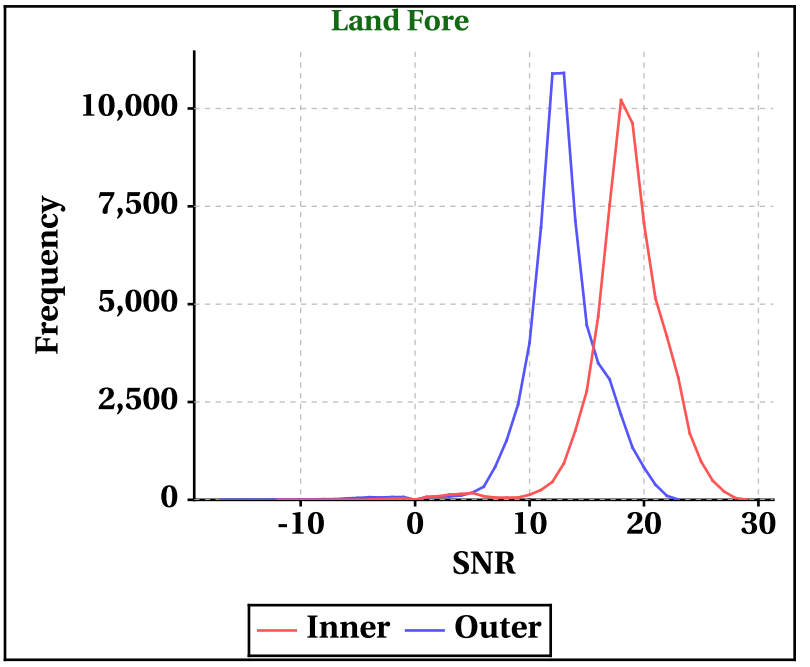
Dynamic Range (Data Histograms)

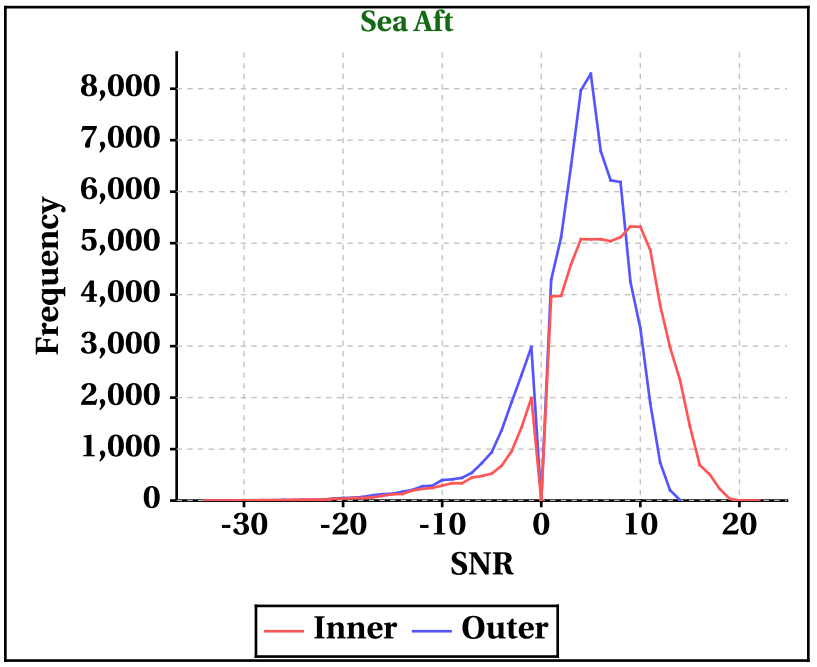
SNR(dBm)

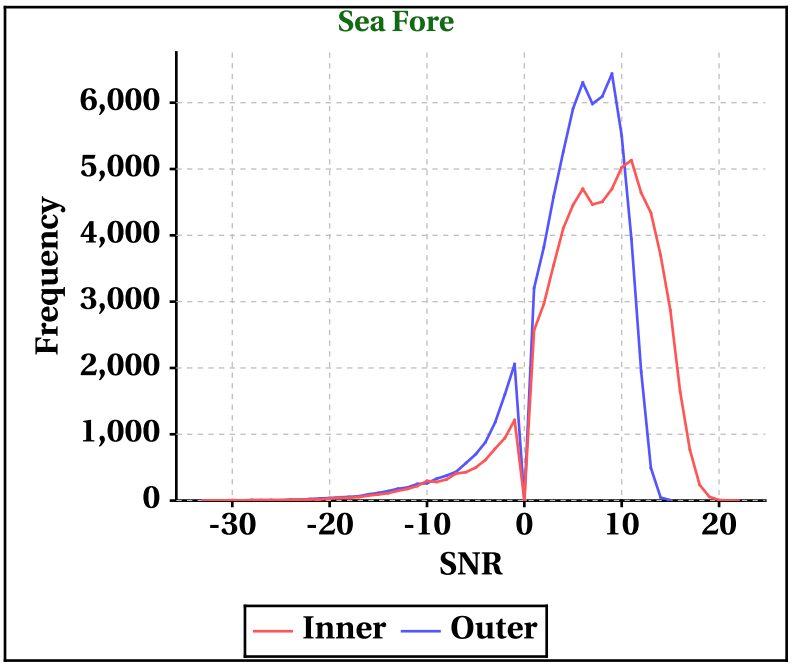
Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-1	-12	-34	-33
Max	28	29	22	22

Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-6	-17	-34	-33
Max	22	23	14	15



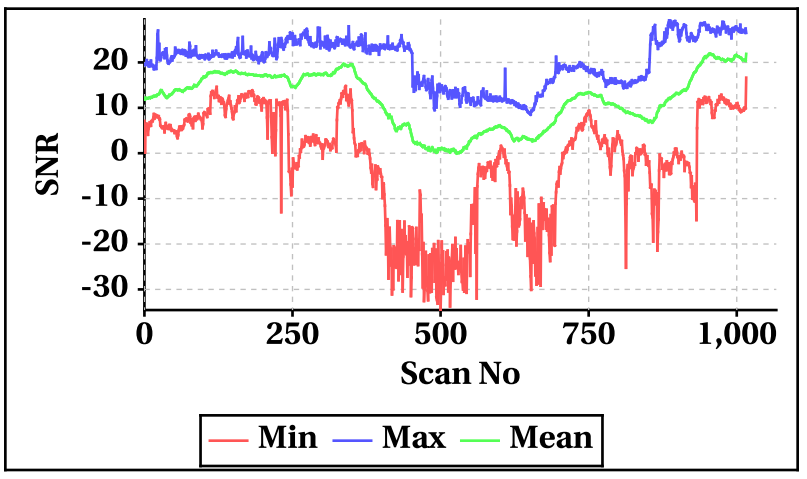




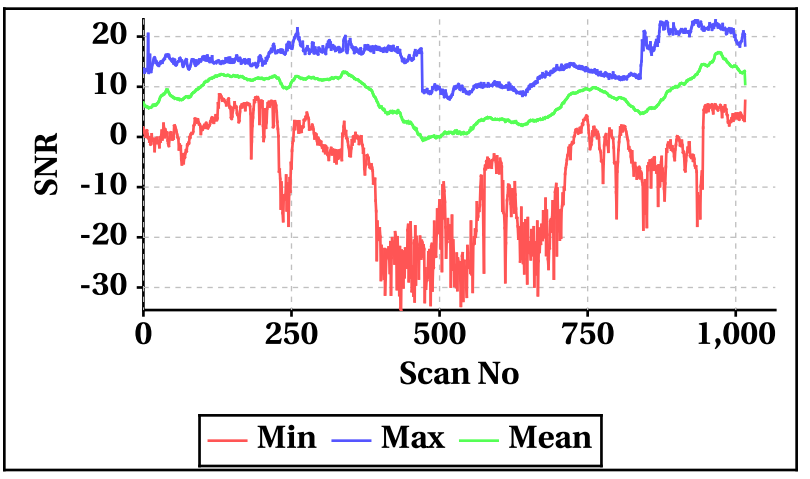


Orbit-wise behaviour of SNR

Inner Beam (HH)

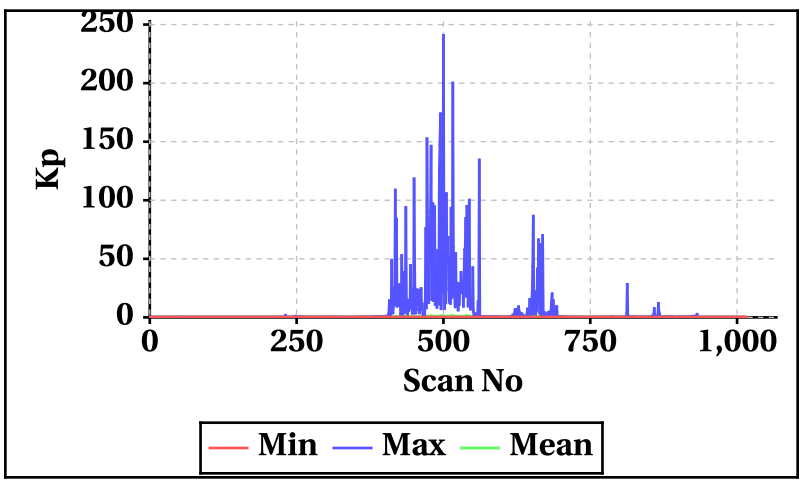


Outer Beam(VV)

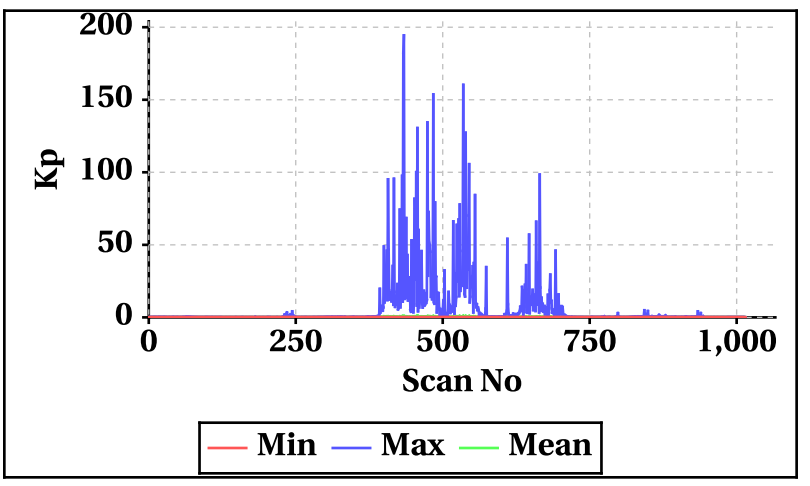


Orbit-wise behaviour of Kp,Kpa,Kpb,Kpc

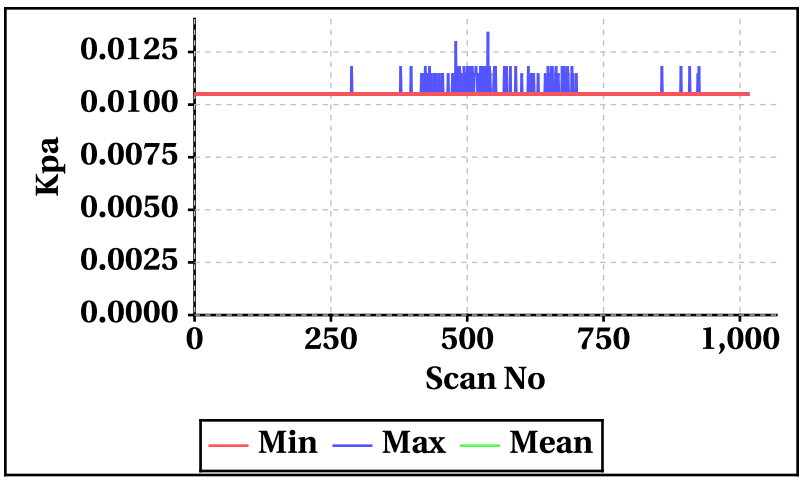
Inner Beam(HH)



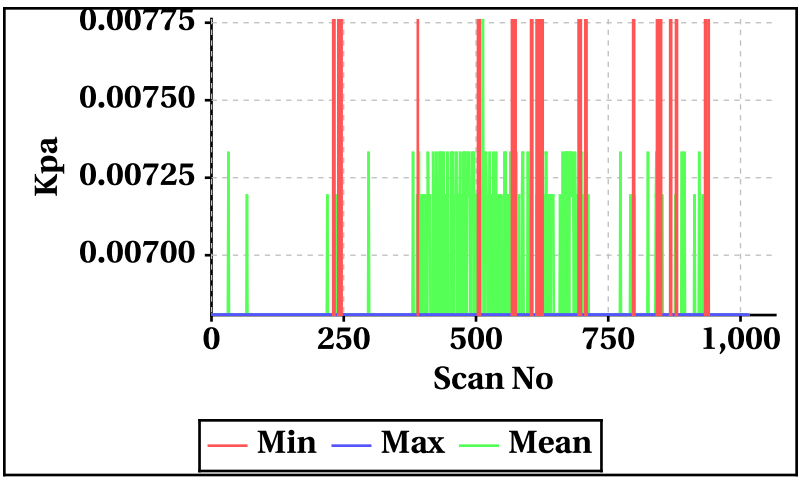
Outer Beam(VV)



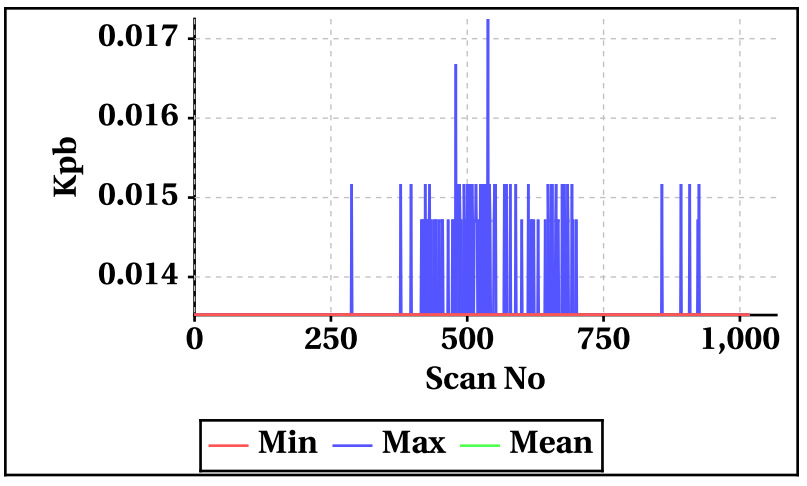
Inner Beam(HH)



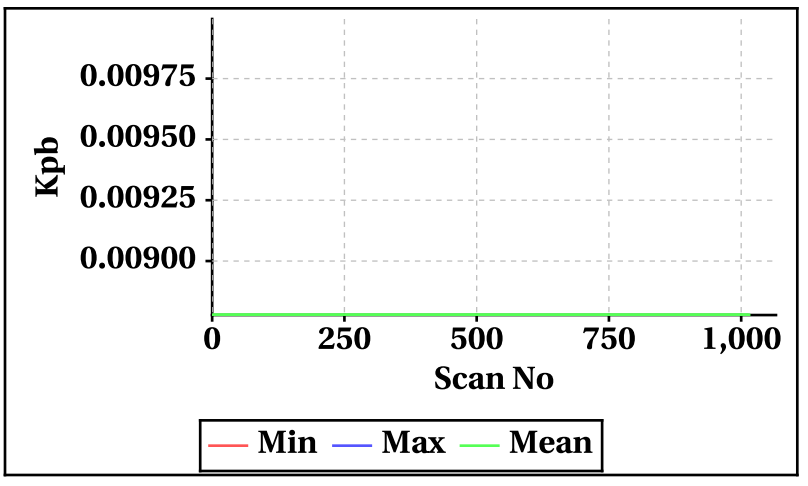
Outer Beam(VV)



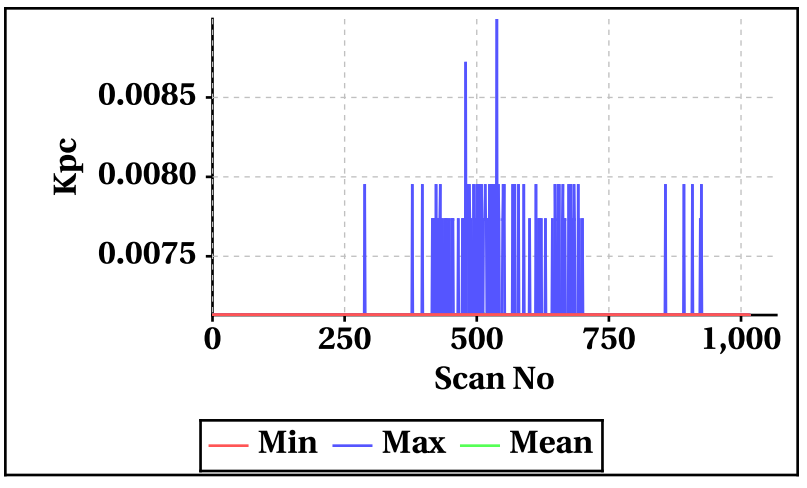
Inner Beam(HH)



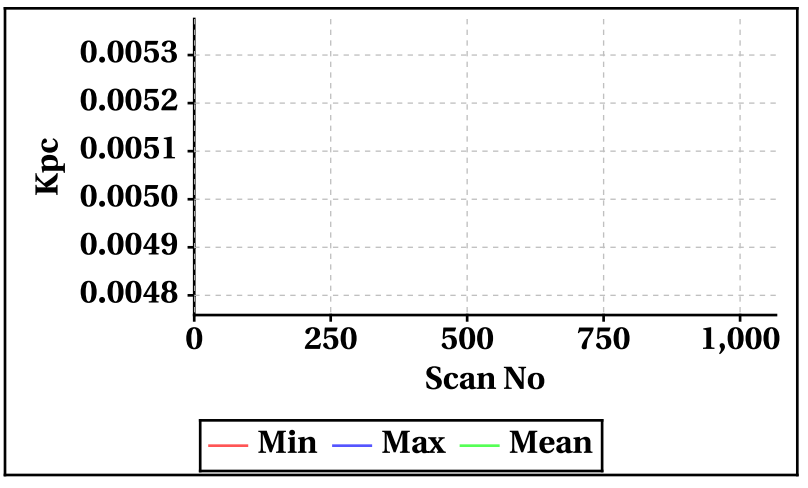
Outer Beam(VV)



Inner Beam(HH)

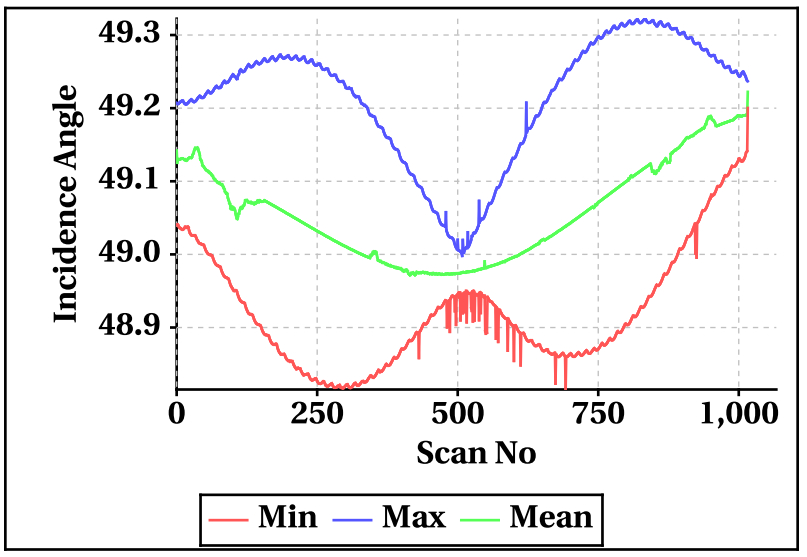


Outer Beam(VV)

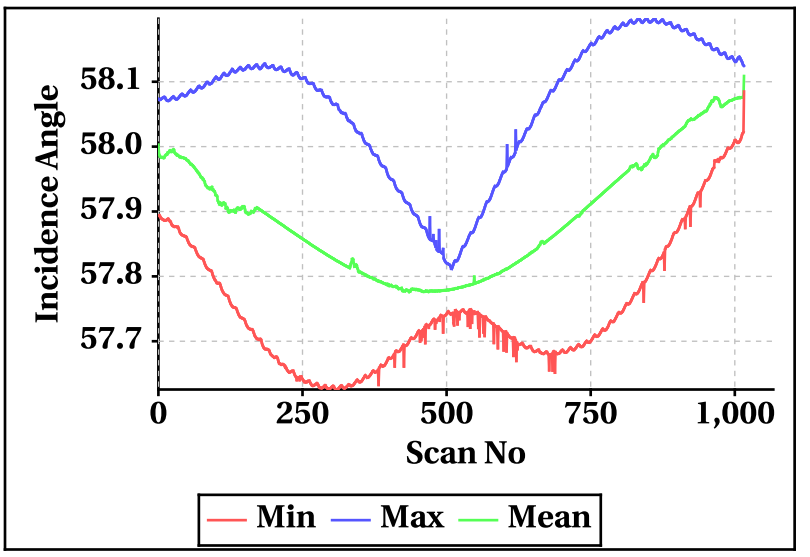


Orbt-wise behaviour of Incidence,Azimuth,Range,X-Factor

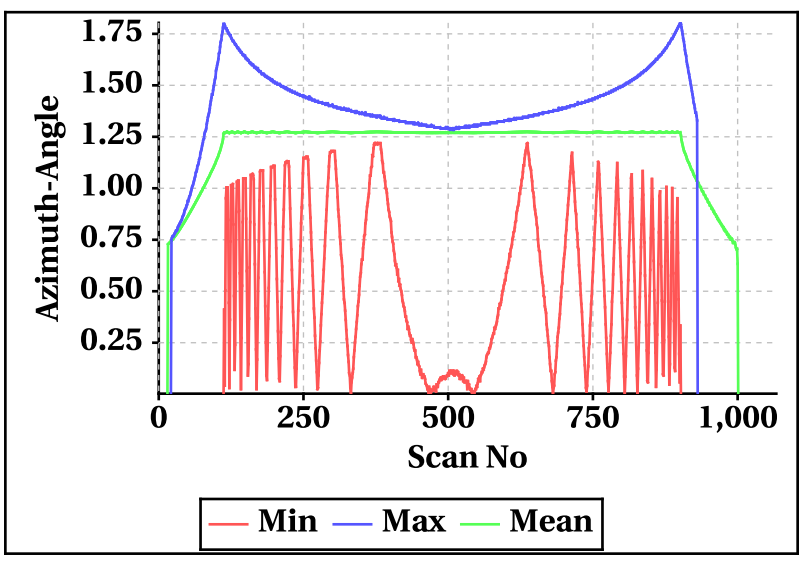
Inner Beam (HH)



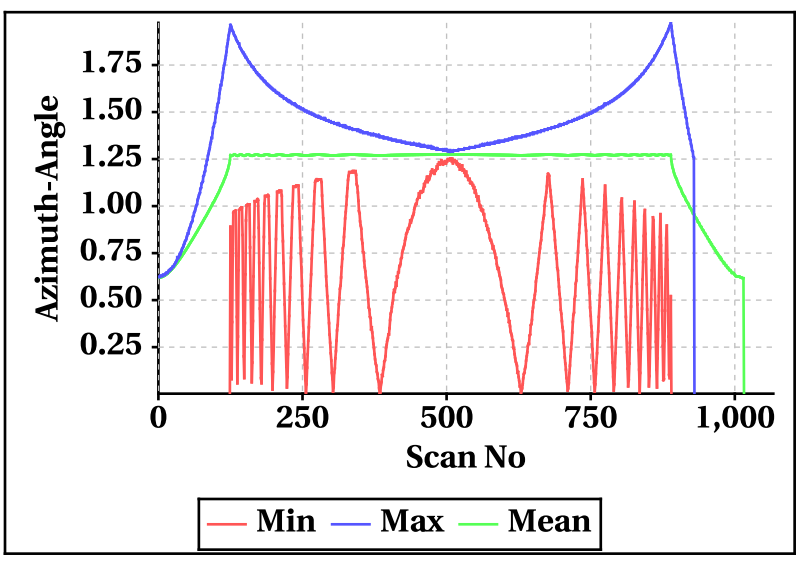
Outer Beam(VV)



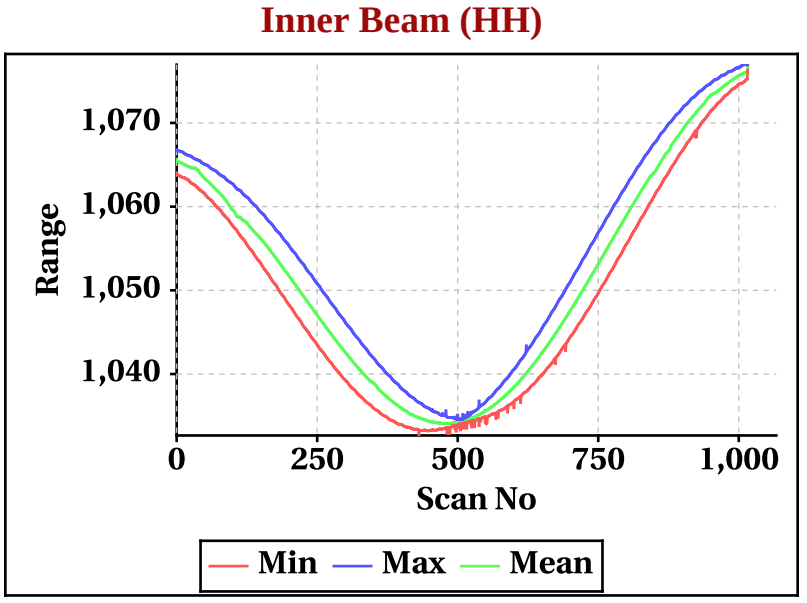
Inner Beam (HH)



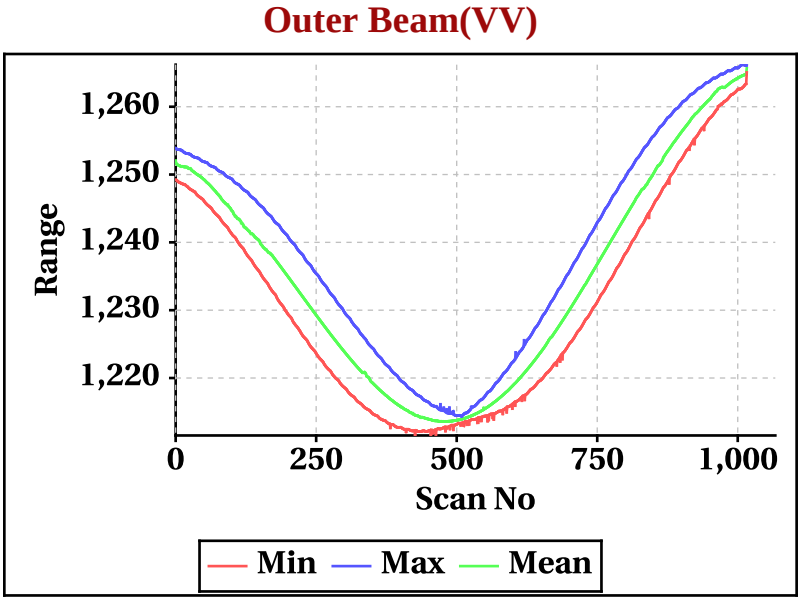
Outer Beam(VV)



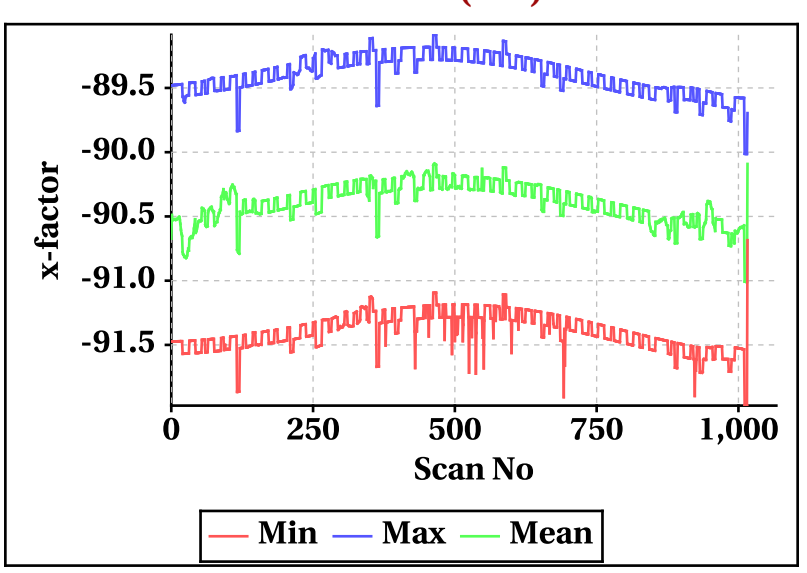
Inner Beam (HH)



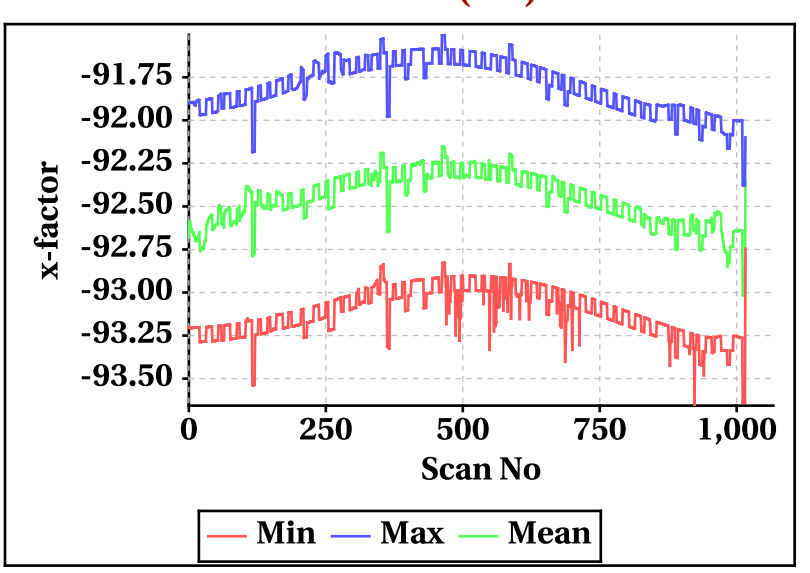
Outer Beam(VV)



Inner Beam (HH)



Outer Beam(VV)



Doppler Frequency Variation

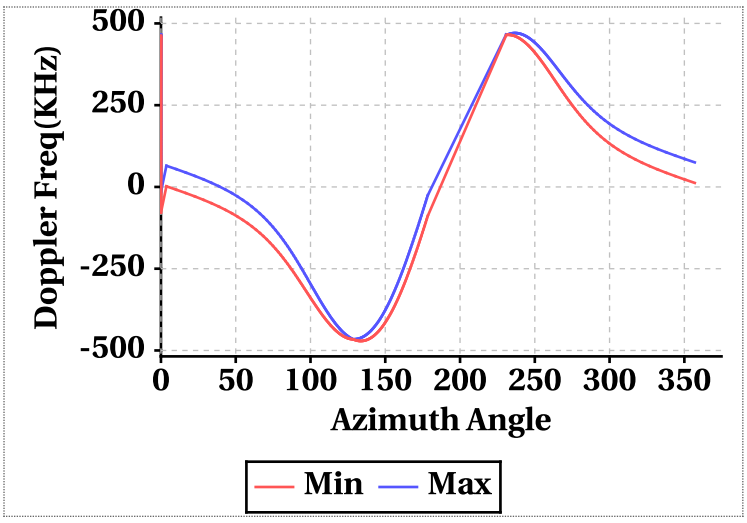
Doppler Frequency(KHz) variation statistics Over the half Orbit

	Inner Beam (HH)	Outer Beam (VV)
Min	-471.04	-527.82
Max	470.50	527.38

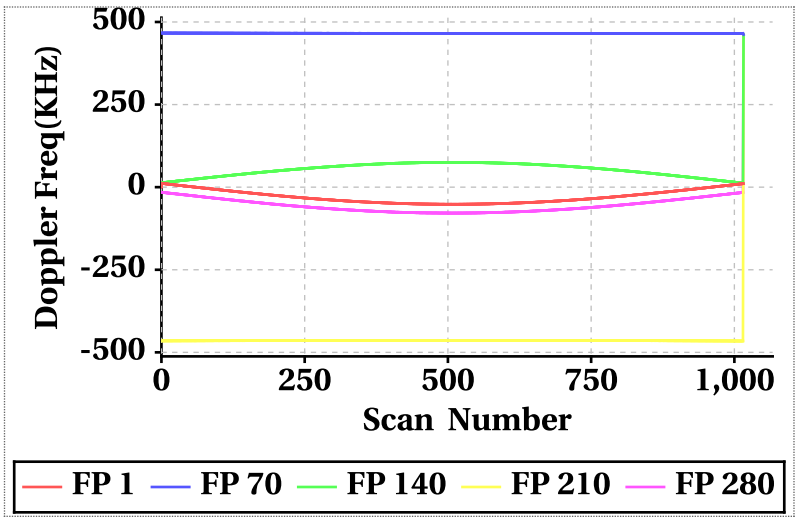
Doppler Frequency(KHz) variation

	Inner Beam (HH)			Outer Beam (VV)		
Doppler_FP	Min	Max	Mean	Min	Max	Mean
Doppler_1	-51.82	11.50	-28.86	-63.16	461.62	-36.99
Doppler_70	461.62	466.46	465.55	518.18	522.56	521.24
Doppler_140	12.30	461.62	52.70	7.38	518.18	52.64
Doppler_210	-465.58	461.62	-463.45	-521.92	518.18	-520.13
Doppler_280	-78.50	461.62	-55.02	-81.48	518.18	-55.17

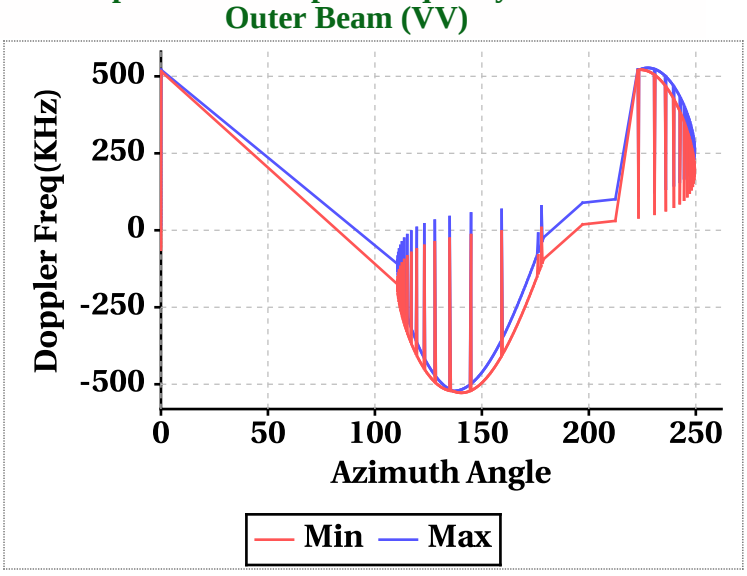
Footprint wise Doopler frequency variation Inner Beam (HH)



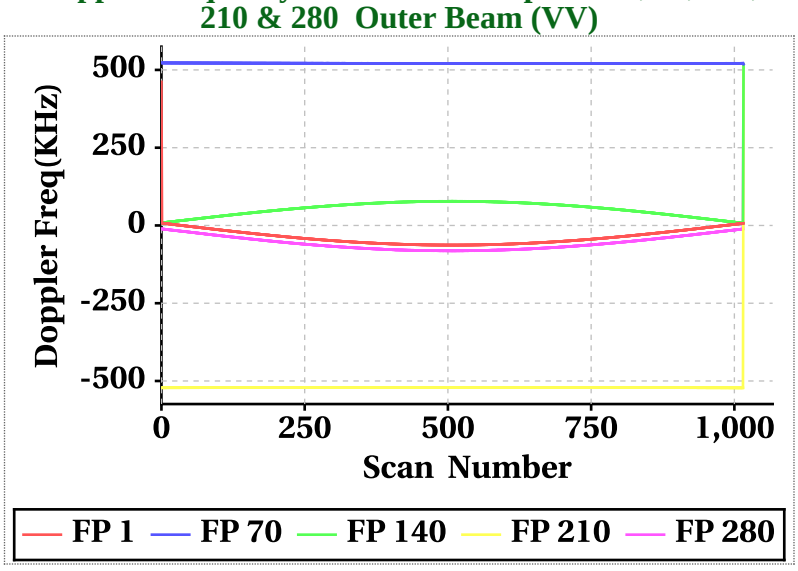
Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Inner Beam (HH)



Footprint wise Doopler frequency variation Outer Beam (VV)

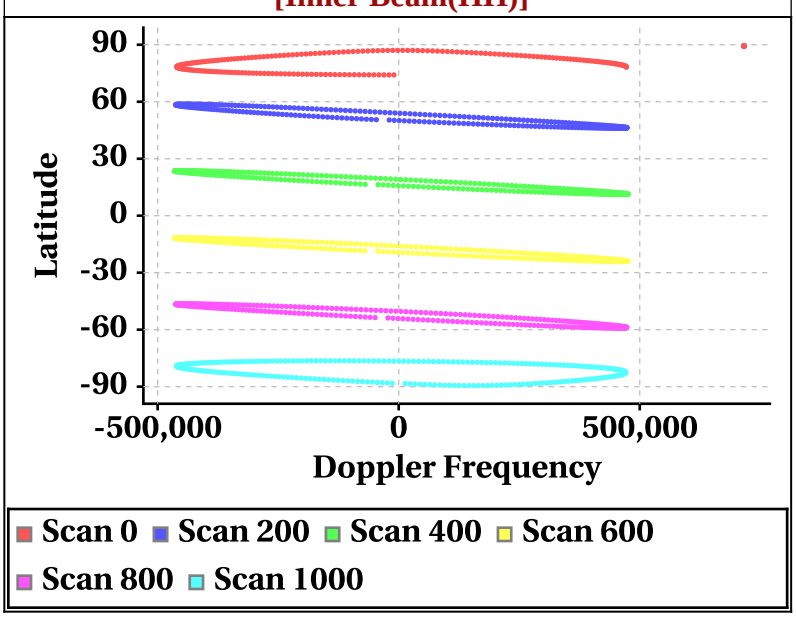


Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Outer Beam (VV)

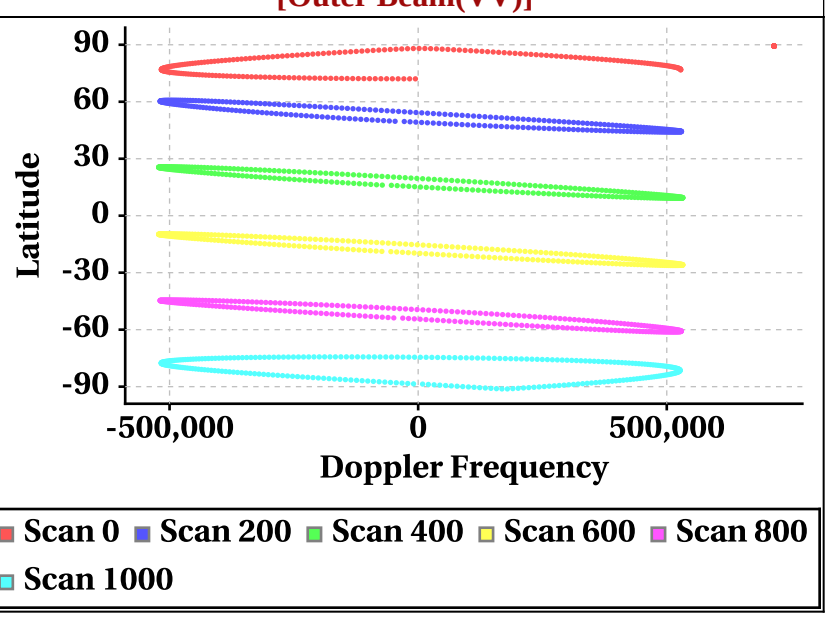


Latitude Vs Doppler Frequency

Doppler Frequency at Scan Interval of 200 [Inner Beam(HH)]



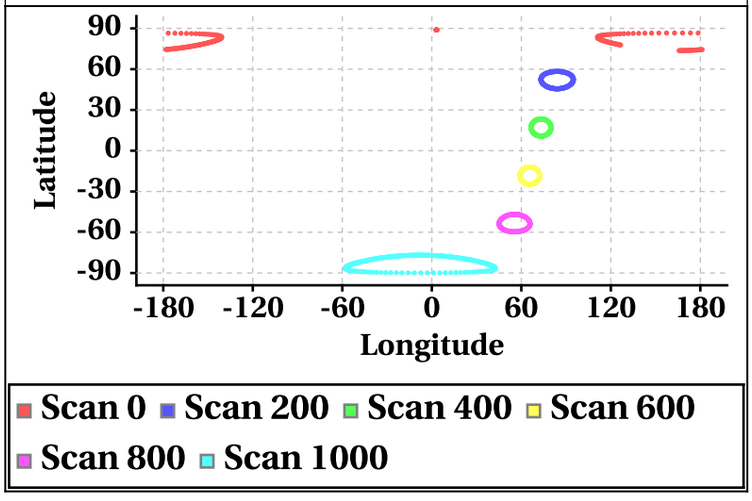
Doppler Frequency at Scan Interval of 200 [Outer Beam(VV)]



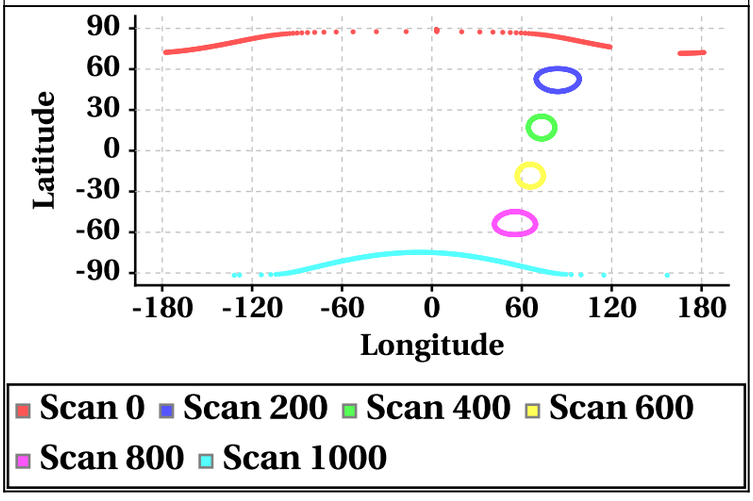
Parameter as a function of Latitude

Latitude Vs Longitude

Scan Trace [Inner Beam(HH)]

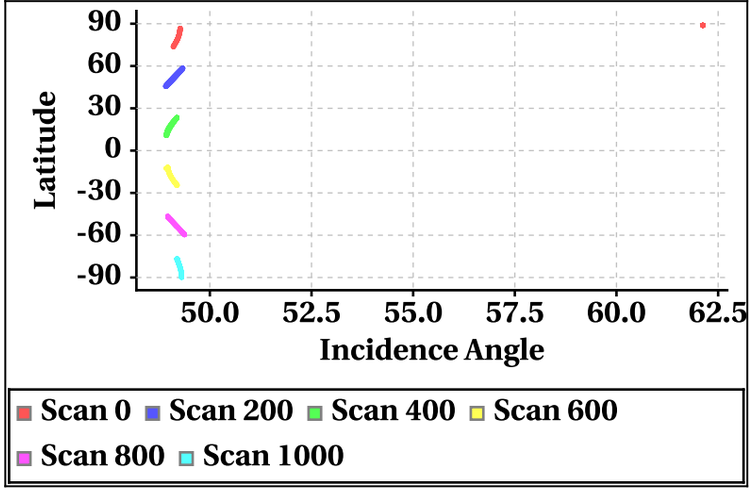


Scan Trace [Outer Beam (VV)]

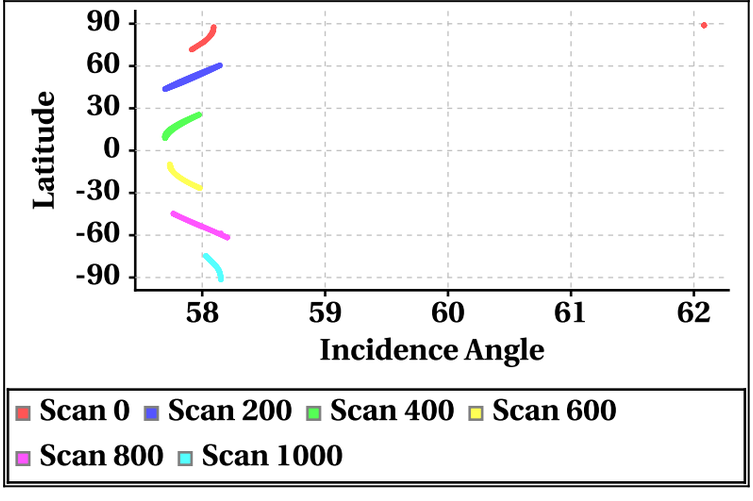


Latitude Vs Incidence Angle

Incidence Angle at Scan Interval of 200 [Inner Beam(HH)]

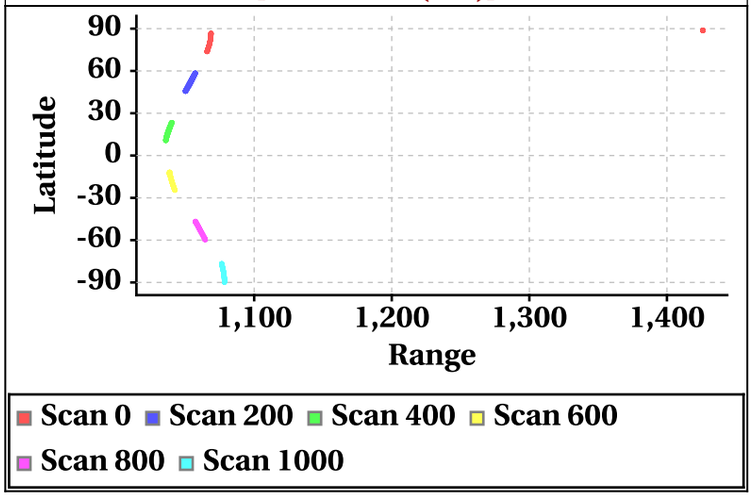


Incidence Angle at Scan Interval of 200 [Outer Beam (VV)]

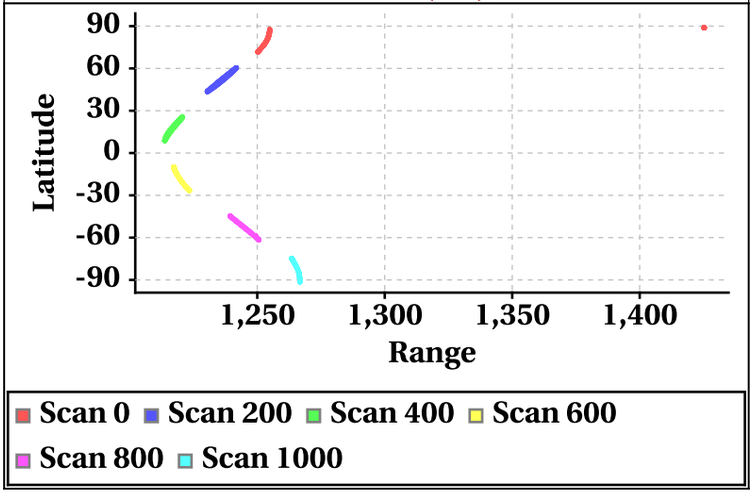


Latitude Vs Range

Range at Scan Interval of 200 [Inner Beam(HH)]



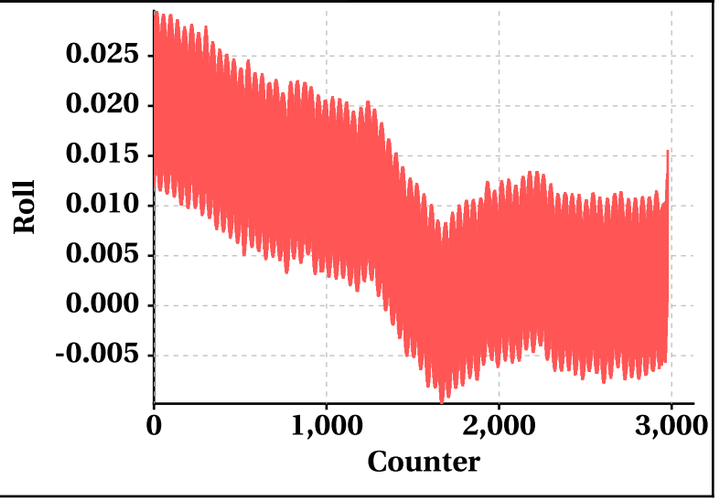
Range at Scan Interval of 200 [Outer Beam(VV)]



Variation in Orbit and Attitude Parameters

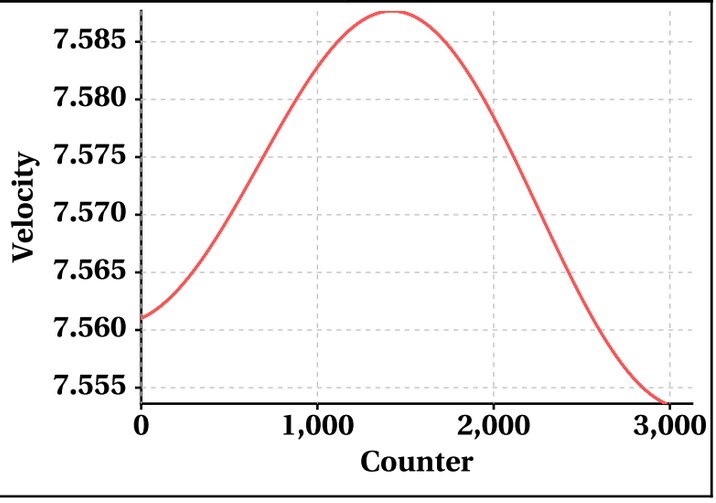
Roll

Min Roll(deg)	-0.00981
Max Roll(deg)	0.029502



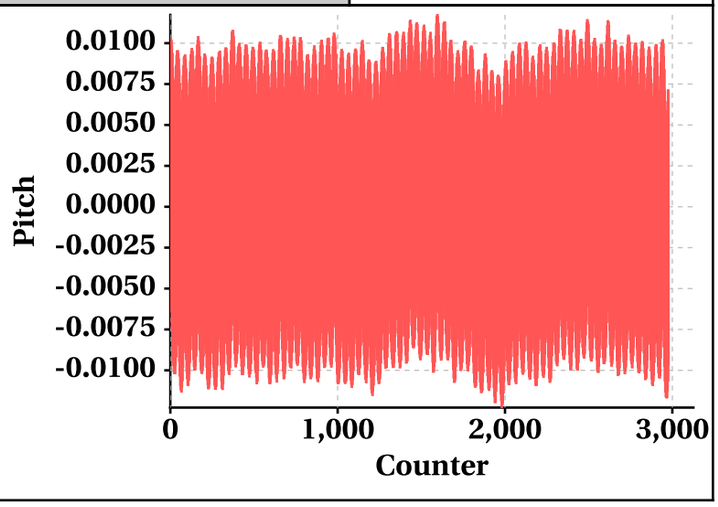
Velocity

Min Velocity(km/s)	7.553612
Max Velocity(km/s)	7.58767



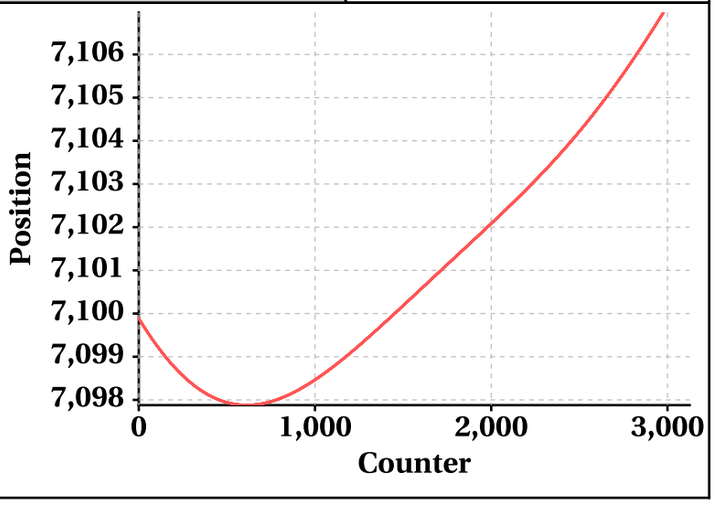
Pitch

Min Pitch(deg)	-0.012278
Max Pitch(deg)	0.011729



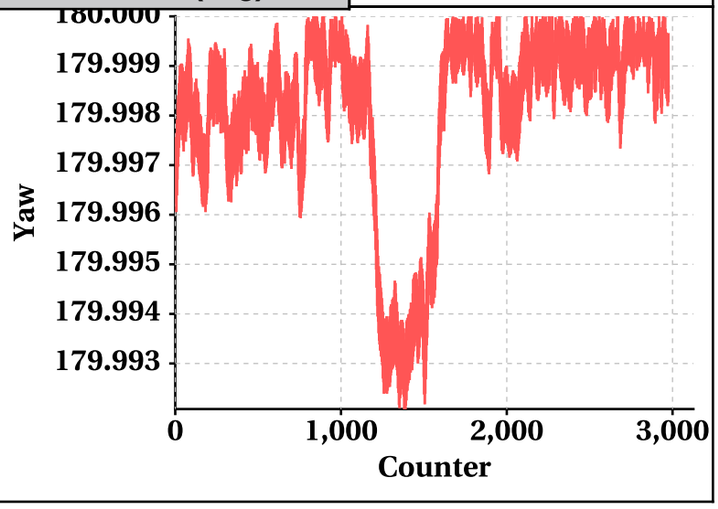
Position

Min Position(km)	7097.878418
Max Position(km)	7106.972656



Yaw

Min Yaw(deg)	179.992081
Max Yaw(deg)	180.0



TimeDifference

Min TimeDifference	1.0
Max TimeDifference	1.0

