

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

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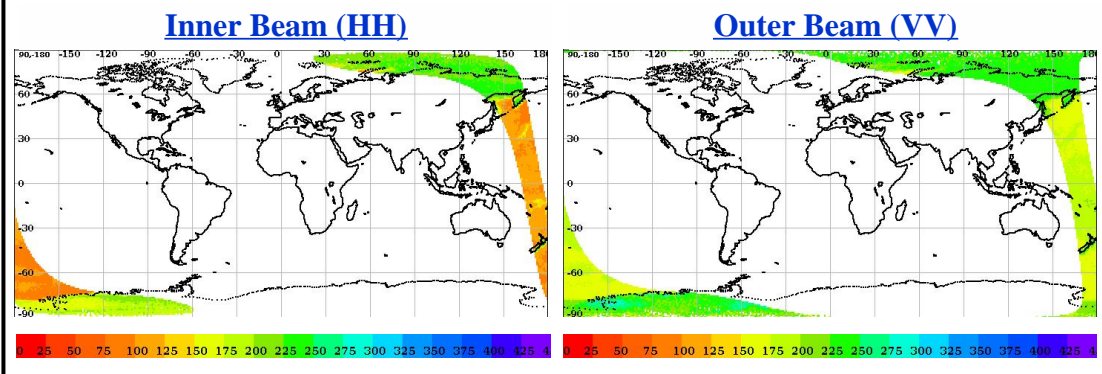
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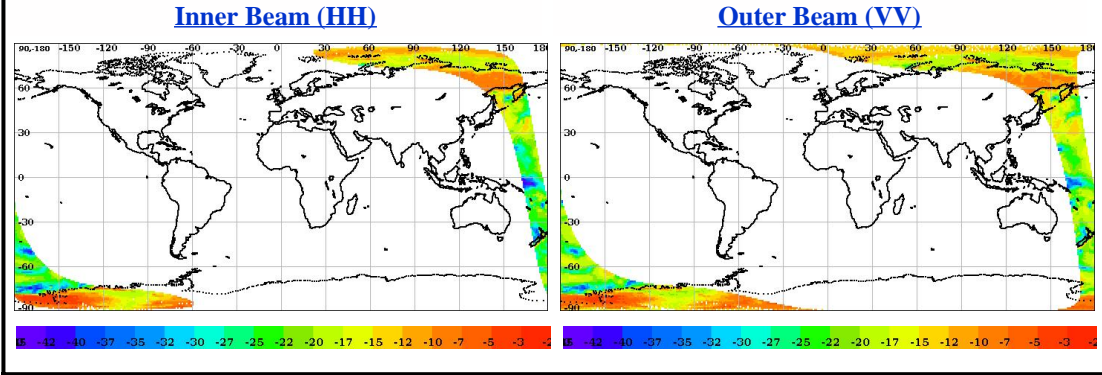
Half Orbit OAT Behaviour

Satellite Id	ScatSat-1	Start Orbit	2120	Total Scans	1005
Sensor Name	Scatterometer	End Orbit	2121	No of Inner FootPrints	281
Processor Version	1.1.1	Rev. Number	02120_02121	No Of Outer FootPrints	282
Half Orbit Direction	SN	Data Production Date	20-02-2017	No. Of Inner Slices	9
Equator Crossing Date	19-02-2017	Equator Crossing Time	09:49:14.000	No Of Outer Slices	15

Brightness Temperature(k) Footprint trace



Sigma0(dB) Footprint trace

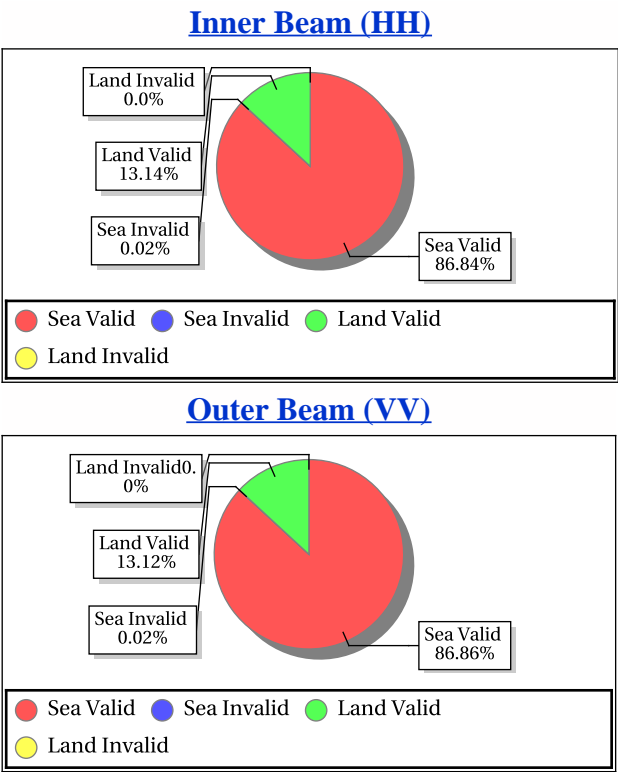


Invalid and Poor Sigma-0 Quality Flag Statistics for Inner/Outer Slices\*

Sigma-0 Flags	Inner Beam	Outer Beam
Invalid Sigma0(%)	0.02	0.02
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



## 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. (%)
<b>Kp</b>	0.10	234.28	0.23	1.594	0.10	193.07	0.20	1.231	0.10	0.12	0.10	0.000	0.10	0.11	0.10	0.000
<b>Kpa</b>	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
<b>Kpb</b>	0.01	0.02	0.01	0.000	0.01	0.02	0.01	0.000	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000
<b>Kpc</b>	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
<b>SNR</b>	-34.43	24.14	6.21	0.010	-33.59	25.78	7.24	0.011	4.92	27.87	19.20	17.392	8.23	28.26	20.60	19.620

	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. (%)
<b>Kp</b>	0.08	208.92	0.20	1.516	0.08	200.07	0.19	1.373	0.08	0.13	0.08	0.000	0.08	0.09	0.08	0.000
<b>Kpa</b>	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
<b>Kpb</b>	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
<b>Kpc</b>	0.00	0.01	0.00	0.000	0.00	0.00	0.00	0.000	0.00	0.00	0.00	0.000	0.00	0.00	0.00	0.000
<b>SNR</b>	-34.95	17.28	4.02	0.000	-34.76	16.89	4.44	0.000	0.94	21.89	13.68	0.000	8.99	21.61	14.68	0.000

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

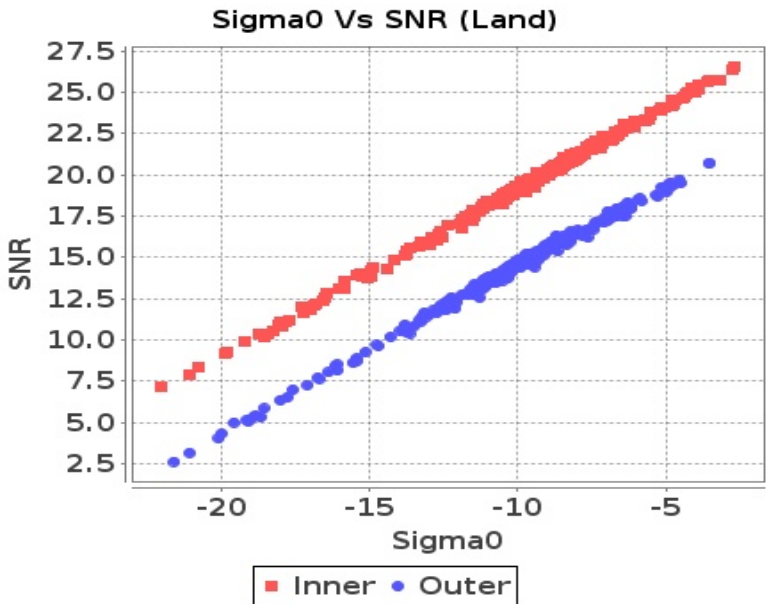
## Overall statistics for static parameter (Footprint-wise)

	Inner Beam (VV)				Outer Beam (VV)				Parameter Specifications		
	Min	Max	Mean	Bad Occ. (%)	Min	Max	Mean	Bad Occ. (%)	Parameter	Min	Max
<b>Incidence Angle (deg)</b>	48.77	49.43	49.07	0.000	57.69	58.42	58.06	0.000	Inci.(Inner)	47.10	49.90
<b>Azimuth Diff. (deg)</b>	0.0029	1.81	1.10	0.139	0.0027	1.99	1.09	0.200	Inci.(Outer)	57.30	58.90
<b>Range(Km)</b>	1046.24	1091.68	1064.49	0.000	1228.61	1285.40	1251.53	10.952	Azimuth Diff.	0.60	2.00
<b>X Factor(dbm)</b>	-91.31	-90.18	-90.33	0.000	-93.16	-92.20	-92.32	0.000	Range(Inner)	1025.00	1095.70
<b>Across Distance (Km)</b>	15.39	15.97	15.64	0.000	11.53	31.36	20.67	7.000	Range(Outer)	1210.00	1280.00
<b>Along Distance (Km)</b>	18.86	39.62	19.72	1.000	18.66	39.67	19.62	1.000	X-Factor	-100.00	-80.00
									Ac.Distance(Inner)	15.00	20.00
									Ac.Distance(Outer)	15.00	22.00
									Al.Distance(Inner)	15.00	30.00
									Al.Distance(Outer)	10.00	30.00
									<span style="display: inline-block; width: 15px; height: 15px; background-color: green; border: 1px solid black;"></span> Normal <span style="display: inline-block; width: 15px; height: 15px; background-color: orange; border: 1px solid black;"></span> Alarming		
									<span style="display: inline-block; width: 15px; height: 15px; background-color: yellow; border: 1px solid black;"></span> Deviations <span style="display: inline-block; width: 15px; height: 15px; background-color: red; border: 1px solid black;"></span> High Errors		

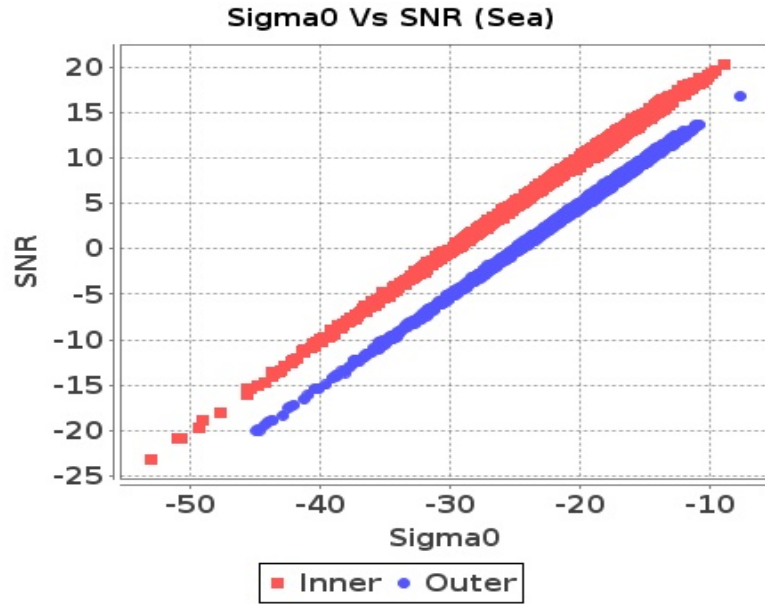


# Sigma0 Behaviour (Sigma0 Vs SNR)

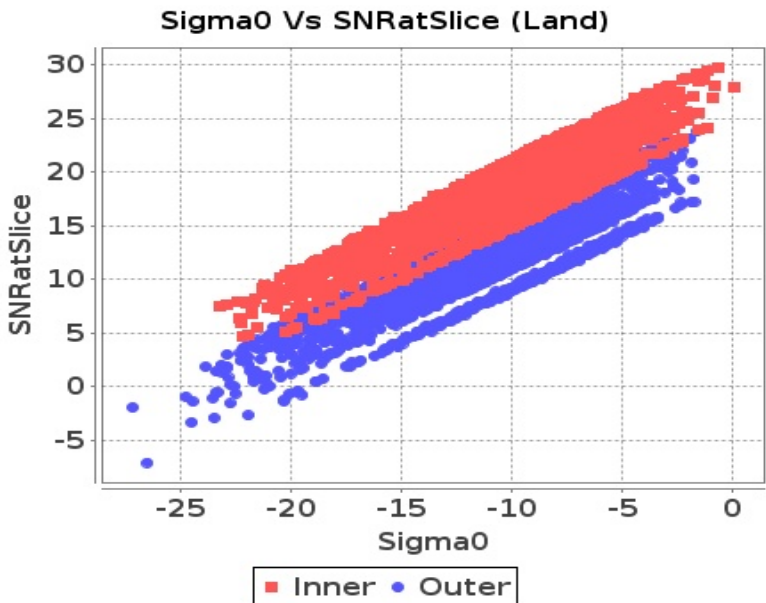
Footprint-Land



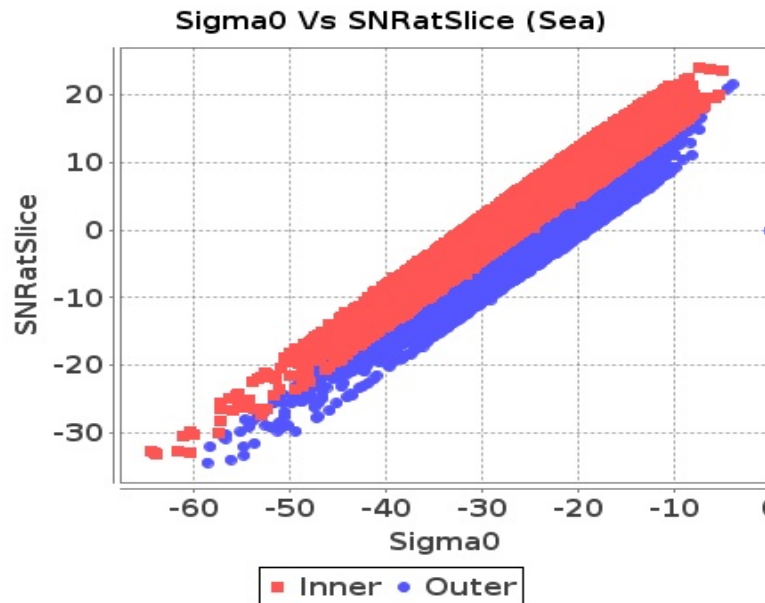
Footprint-Sea



Slice-Land

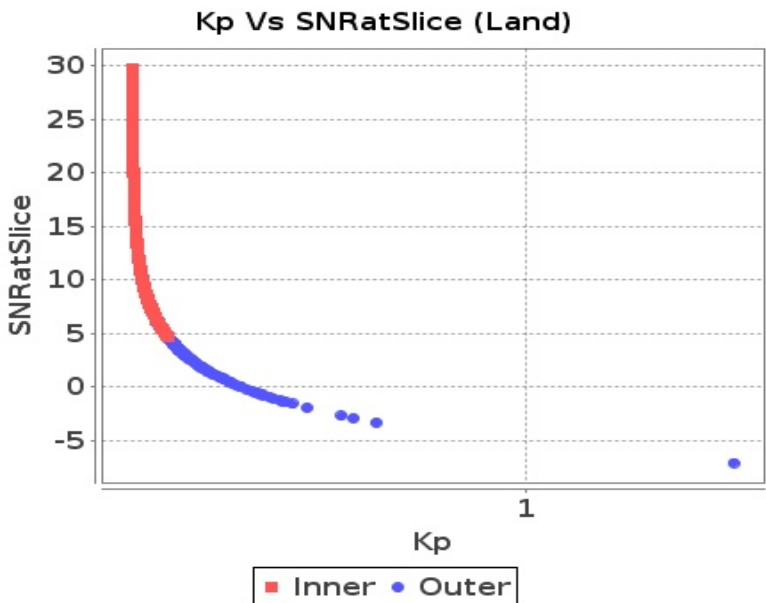


Slice-Sea

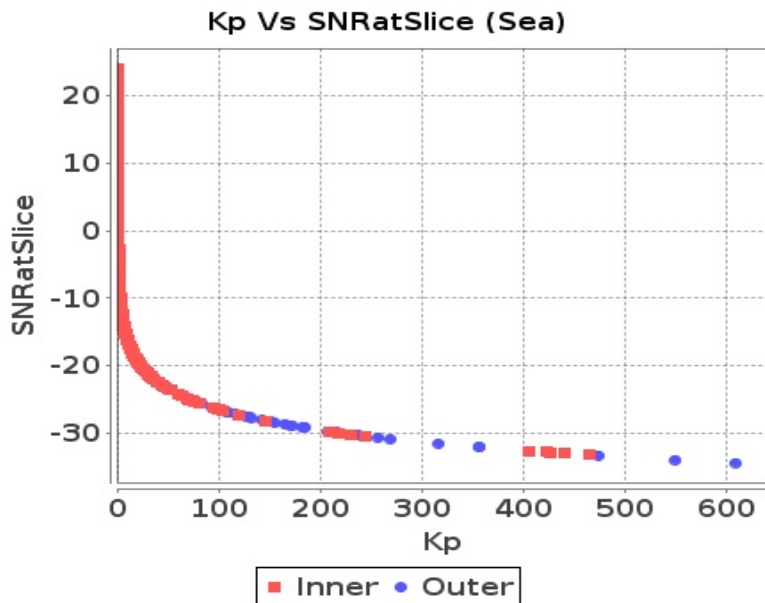


# Sigma0 Behaviour (Kp Vs SNR)

Slice

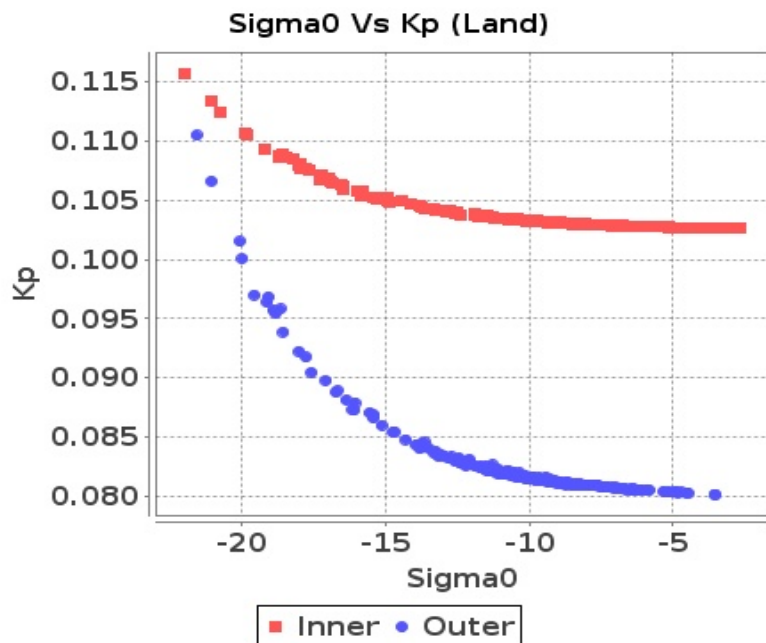


Slice

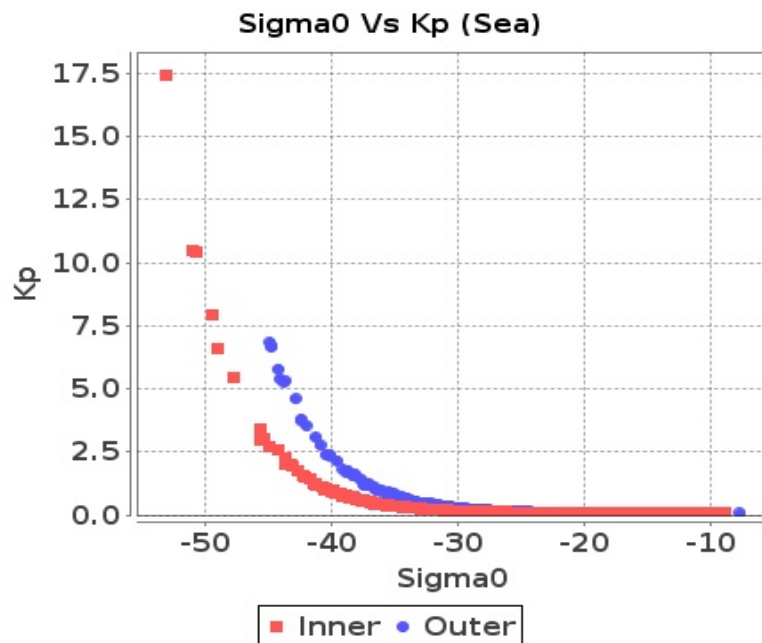


## Sigma0 Behaviour(Sigma0 Vs Kp)

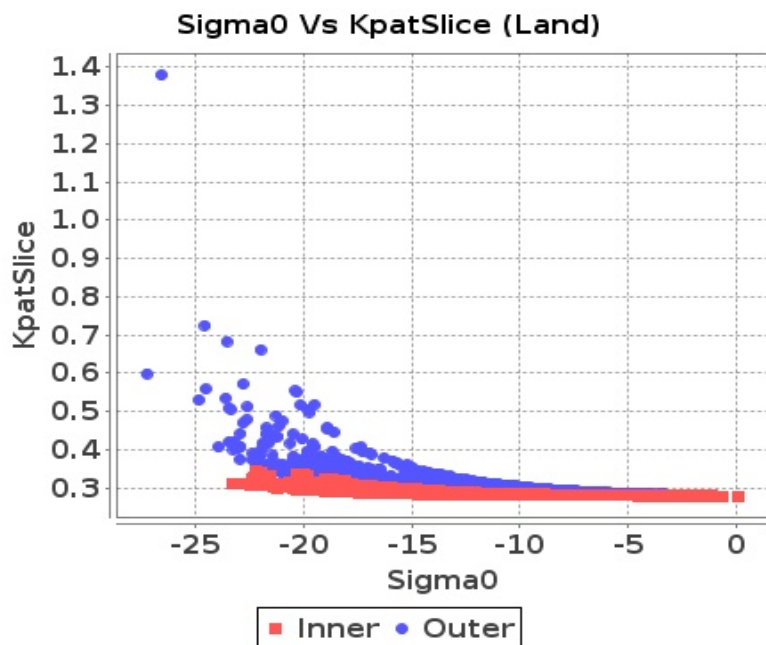
Footprint-Land



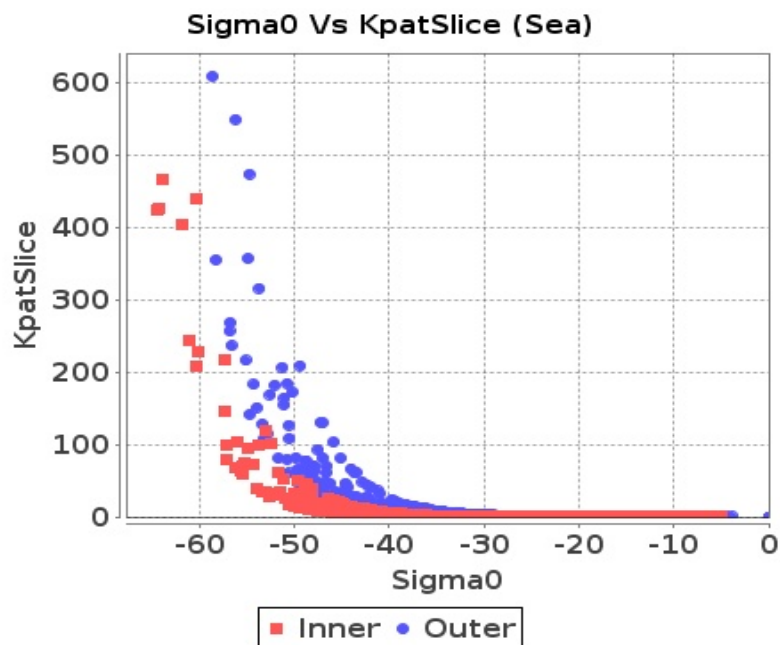
Footprint-Sea



Slice-Land



Slice-Sea



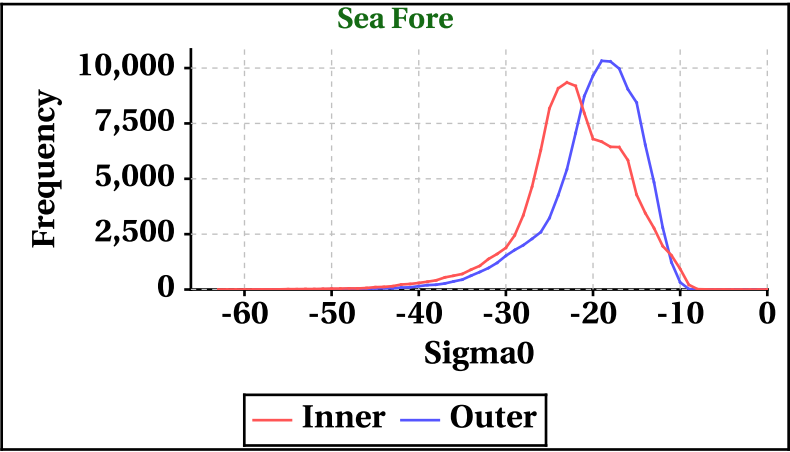
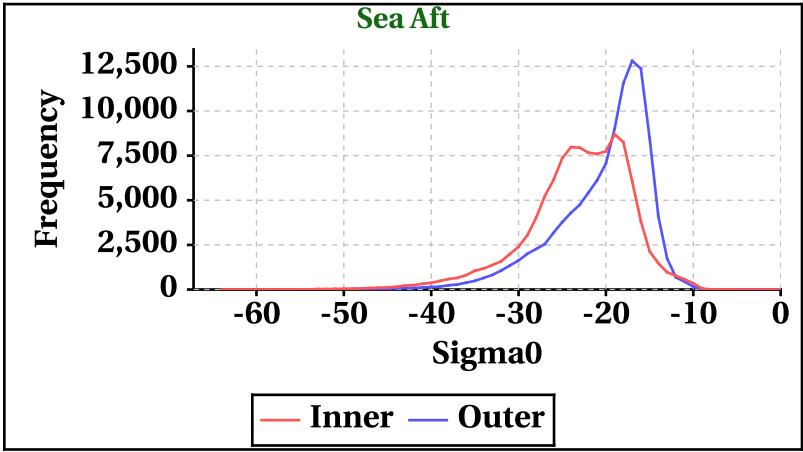
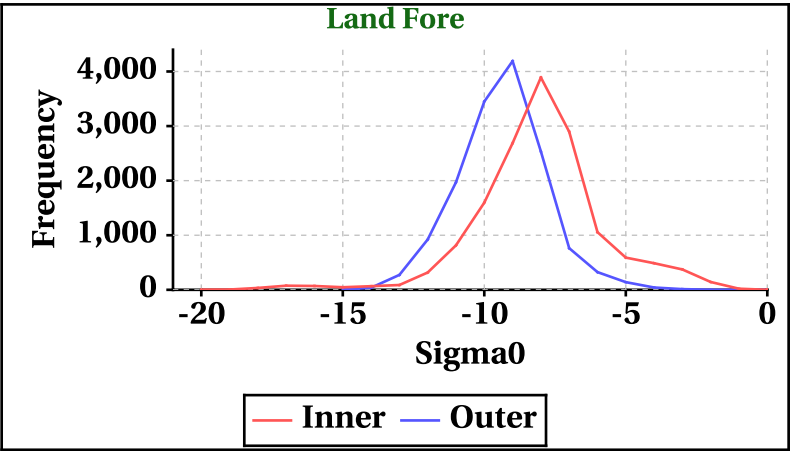
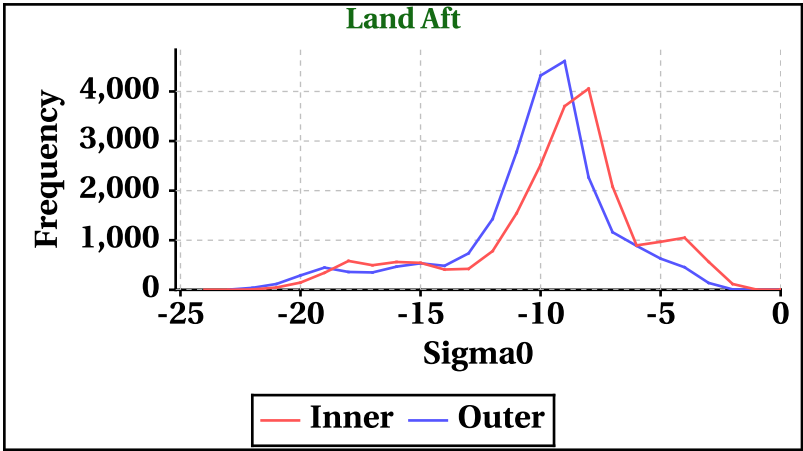


Dynamic Range (Data Histograms)

Sigma0(db)

Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-24	-20	-64	-63
Max	0	0	0	0

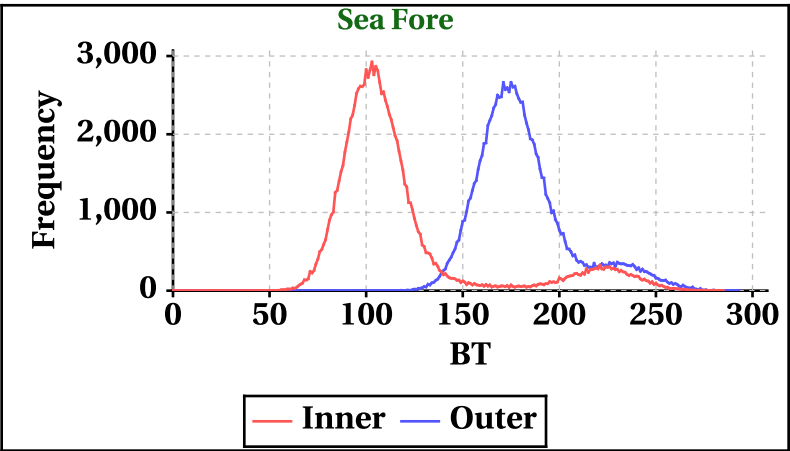
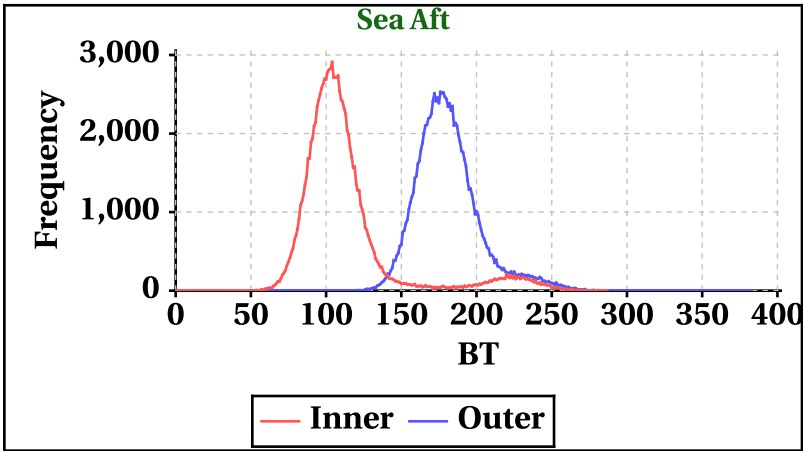
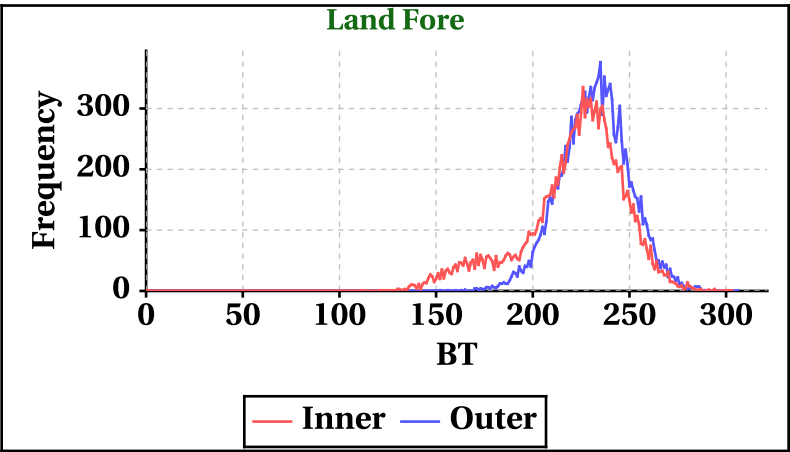
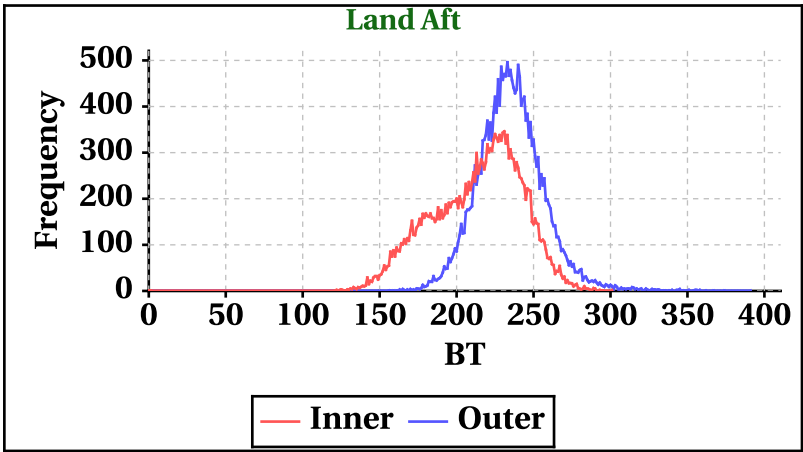
Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-23	-15	-59	-59
Max	0	0	0	0



Brightness Temperature(K)

Inner Beam(HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	301	303	287	285

Outer Beam(VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	391	306	383	293

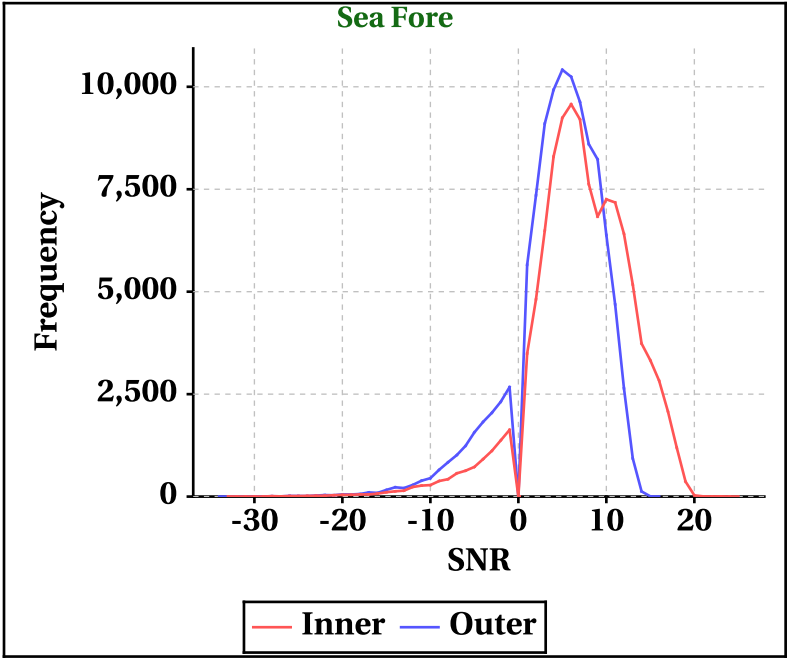
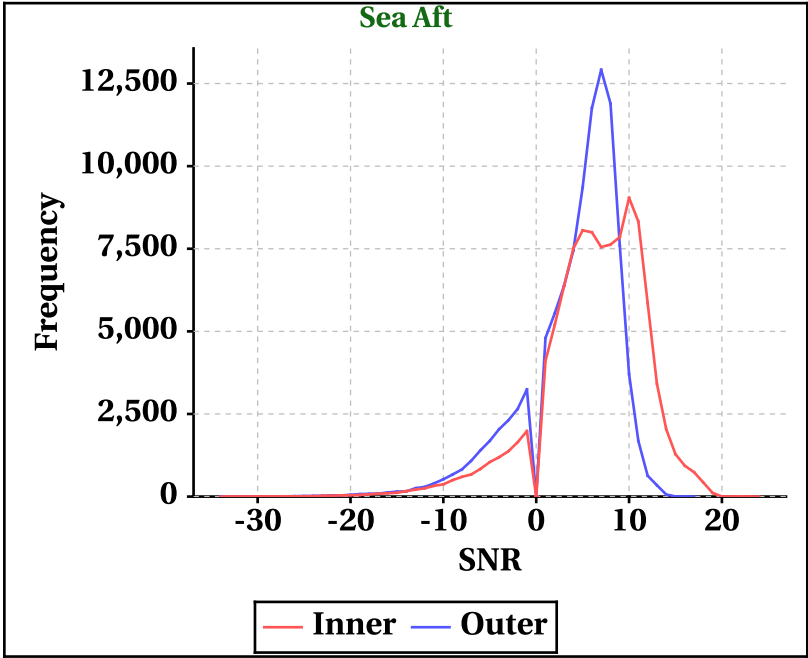
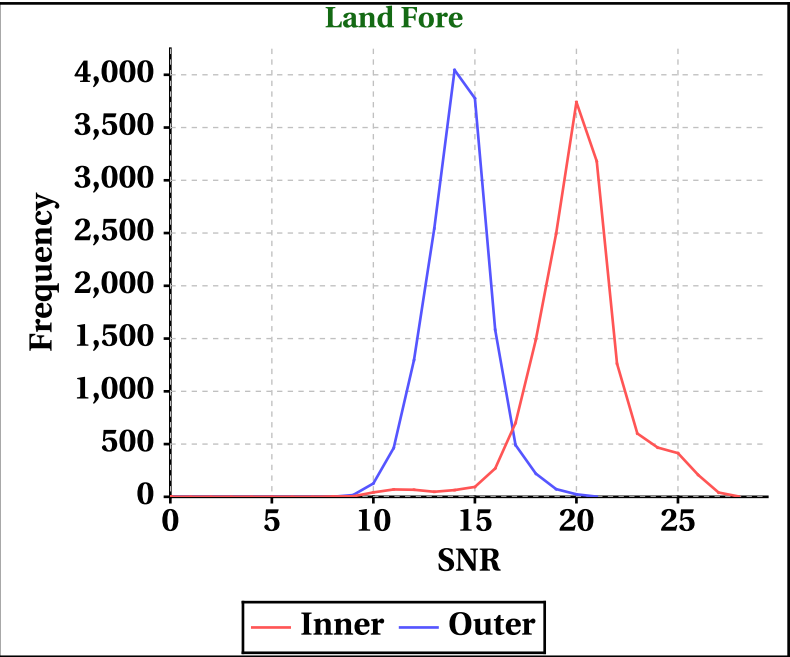
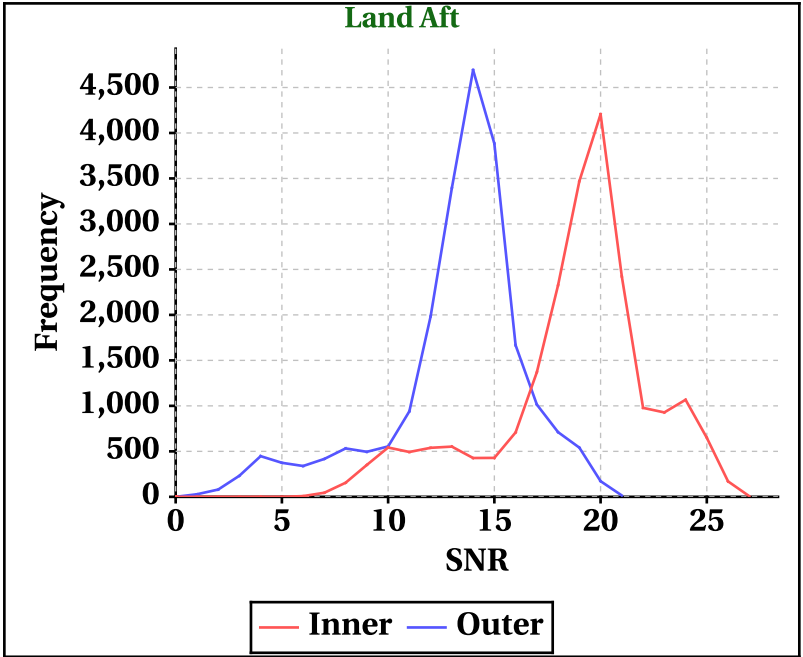


Dynamic Range (Data Histograms)

SNR(dBm)

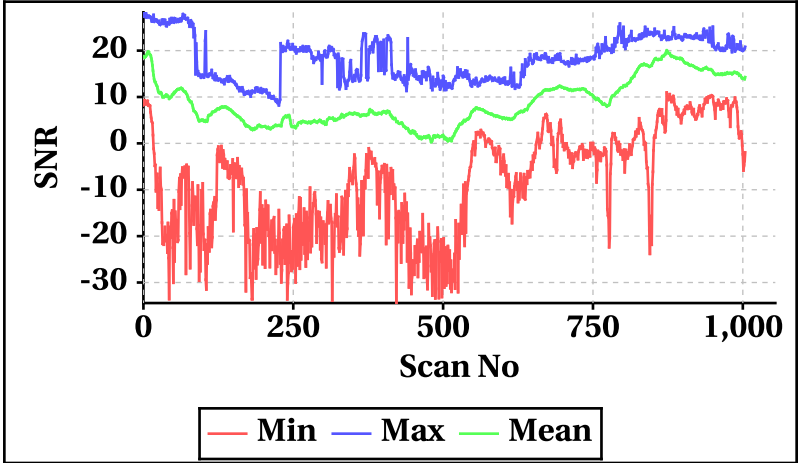
Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	-34	-33
Max	27	28	24	25

Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	-34	-34
Max	21	21	17	16

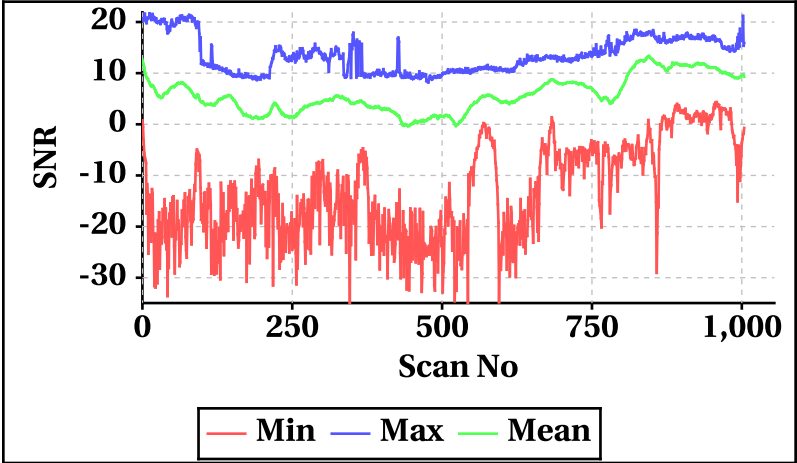


## Orbit-wise behaviour of SNR

Inner Beam (HH)

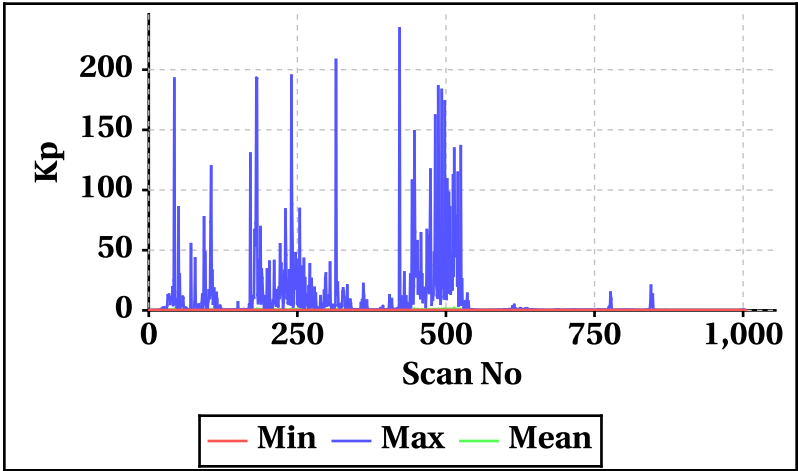


Outer Beam(VV)

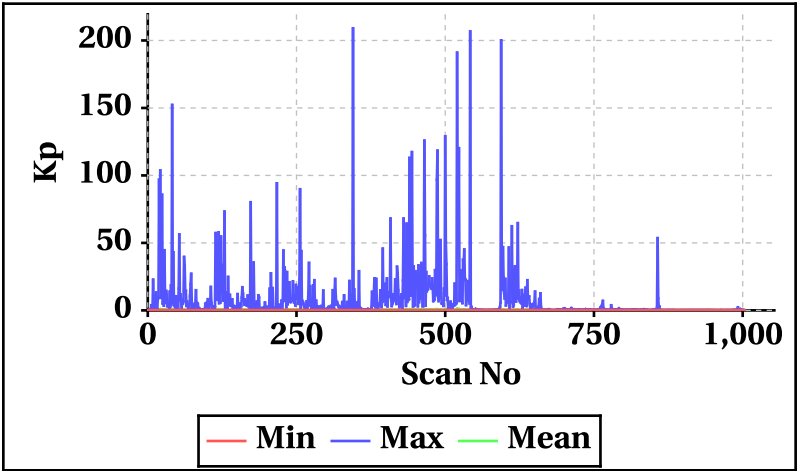


## Orbit-wise behaviour of Kp,Kpa,Kpb,Kpc

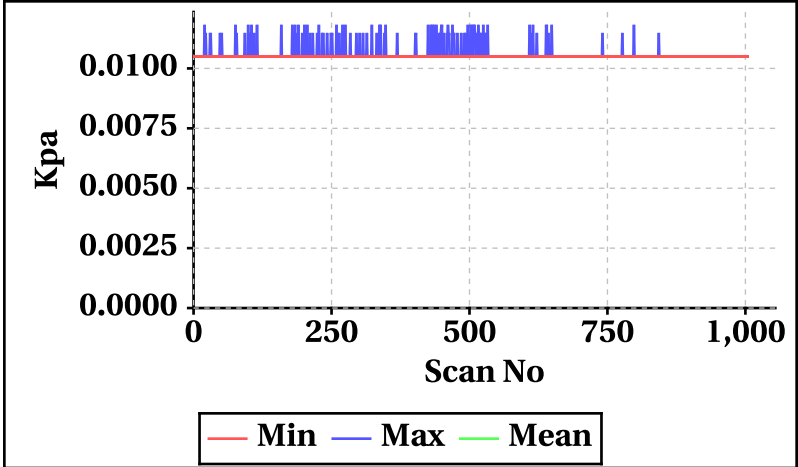
Inner Beam(HH)



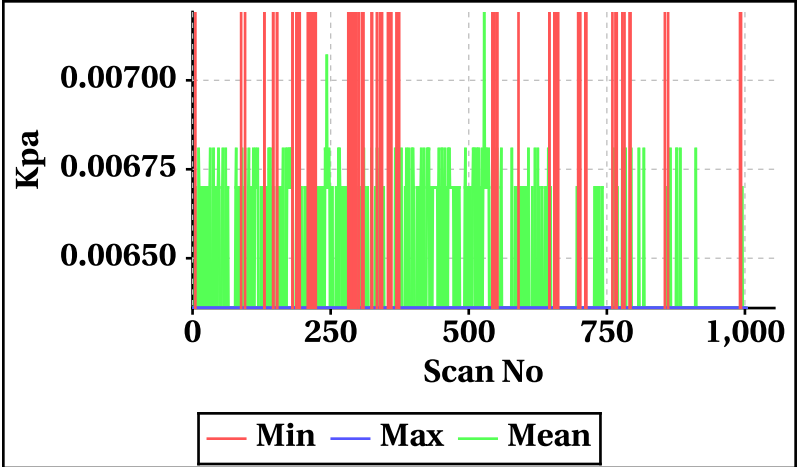
Outer Beam(VV)



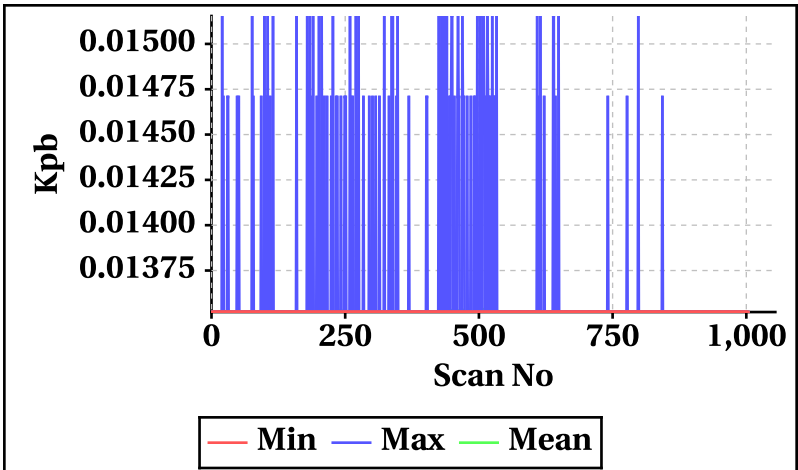
Inner Beam(HH)



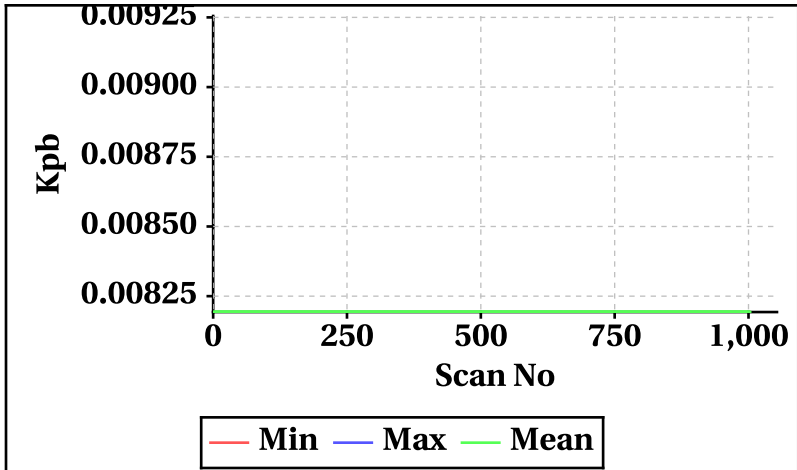
Outer Beam(VV)



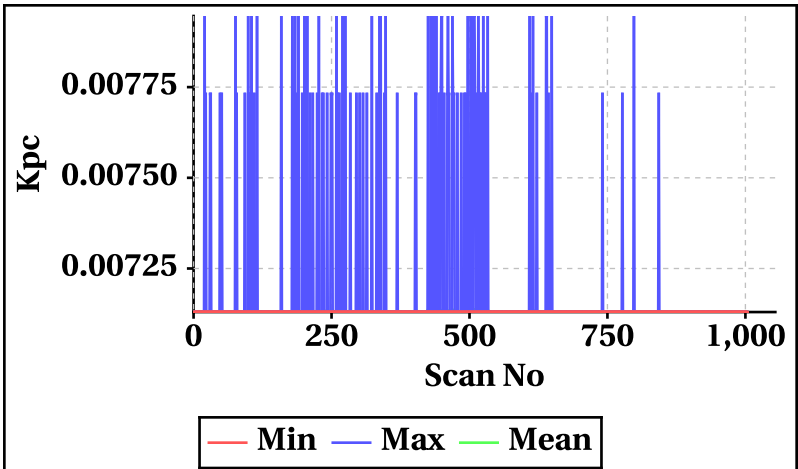
Inner Beam(HH)



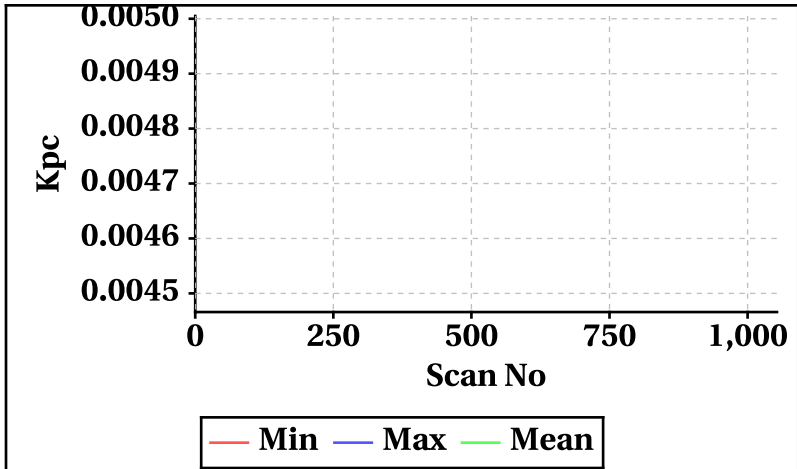
Outer Beam(VV)



Inner Beam(HH)

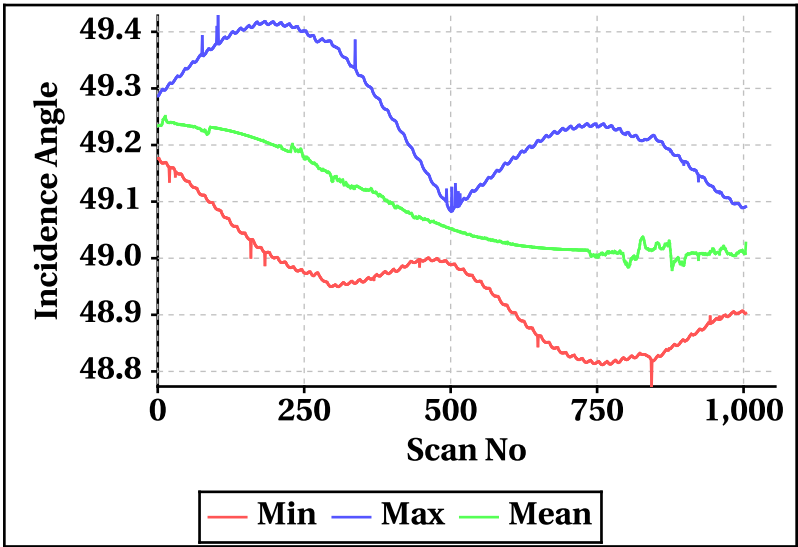


Outer Beam(VV)

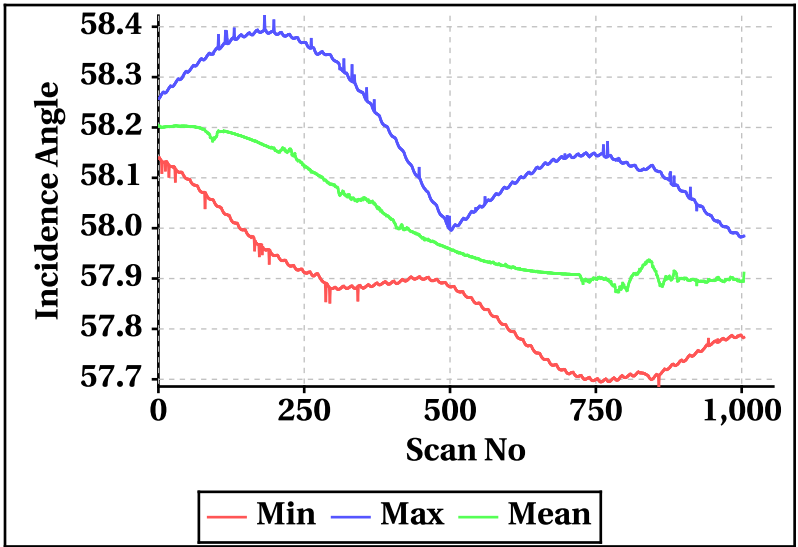


Orbt-wise behaviour of Incidence,Azimuth,Range,X-Factor

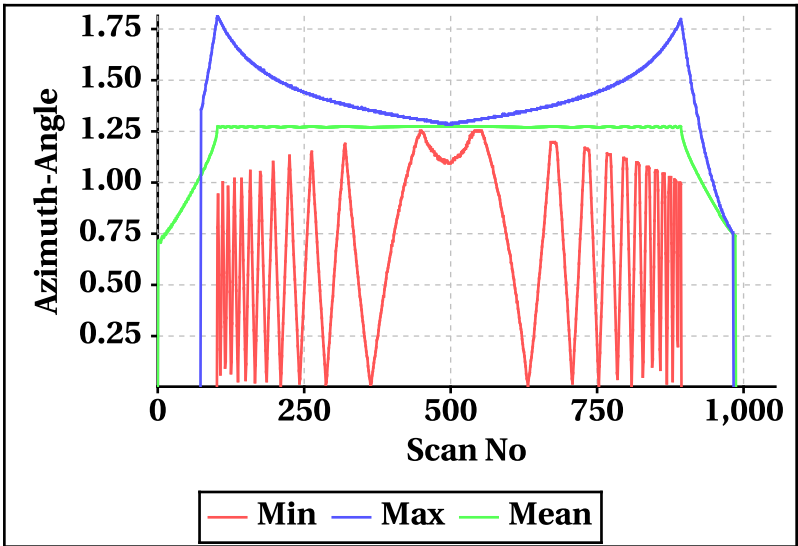
Inner Beam (HH)



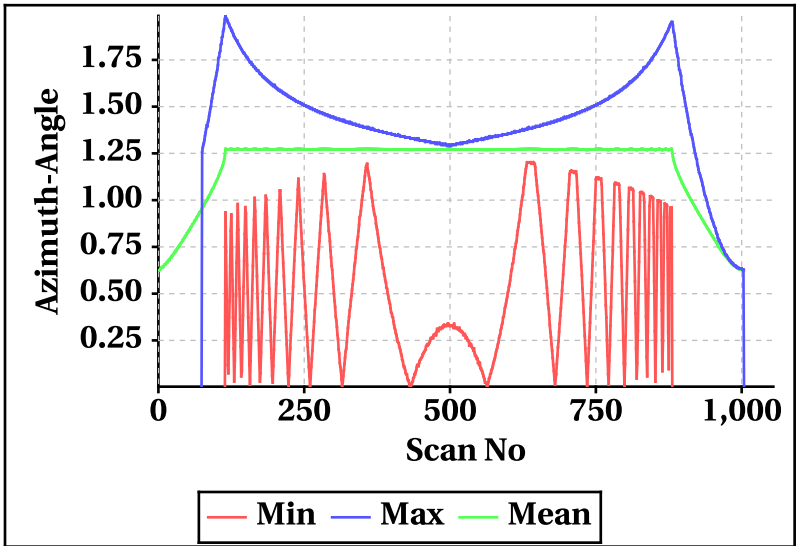
Outer Beam(VV)



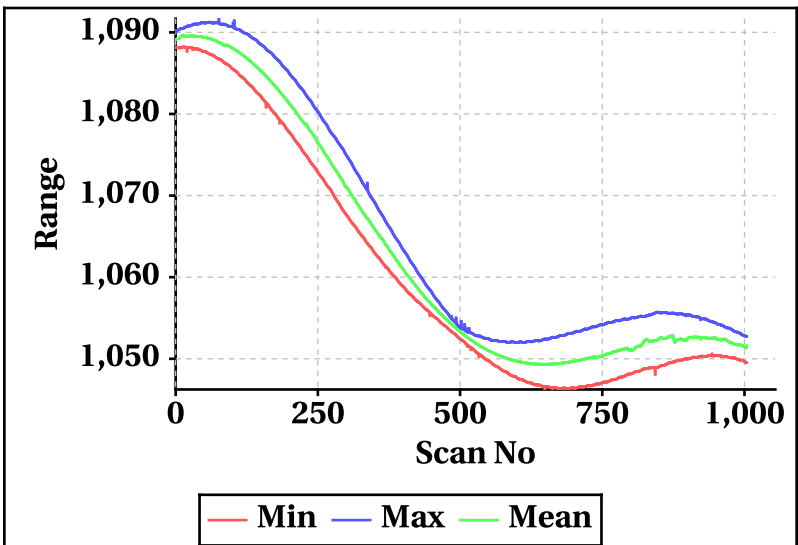
Inner Beam (HH)



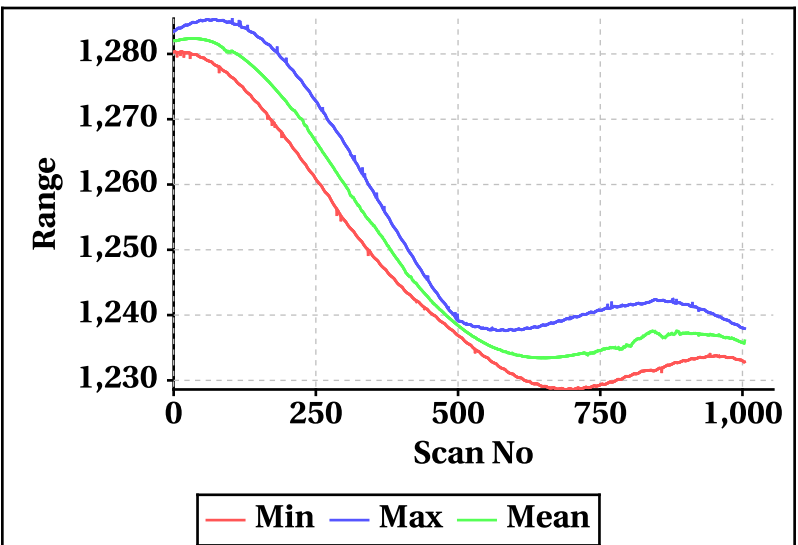
Outer Beam(VV)



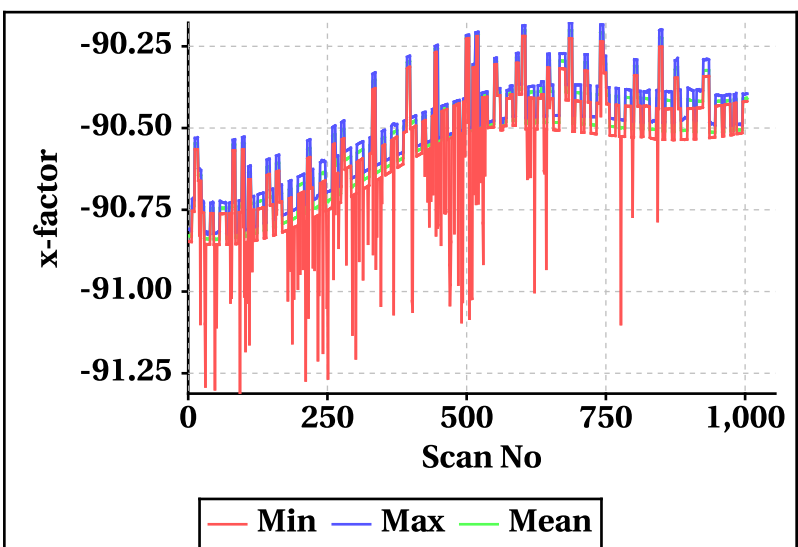
Inner Beam (HH)



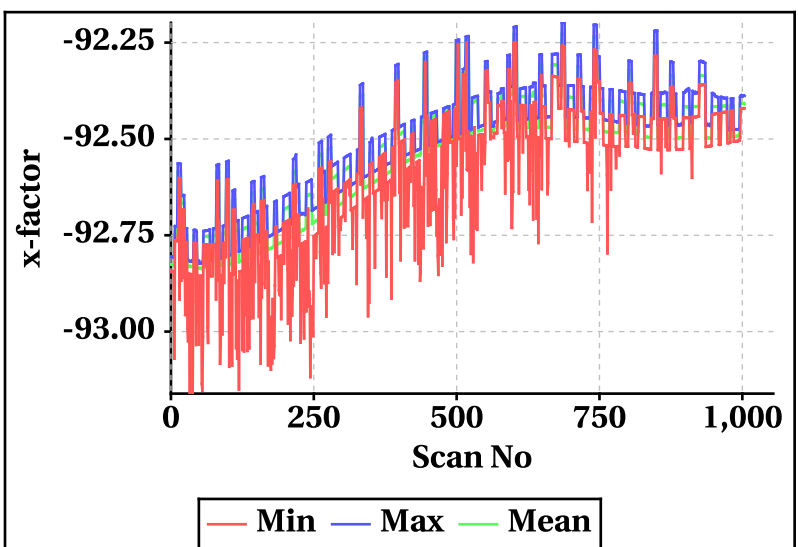
Outer Beam(VV)



Inner Beam (HH)



Outer Beam(VV)



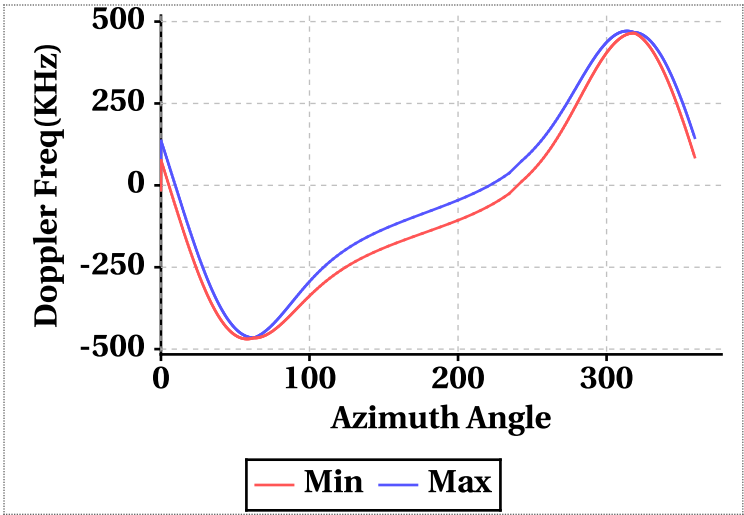


# Doppler Frequency Variation

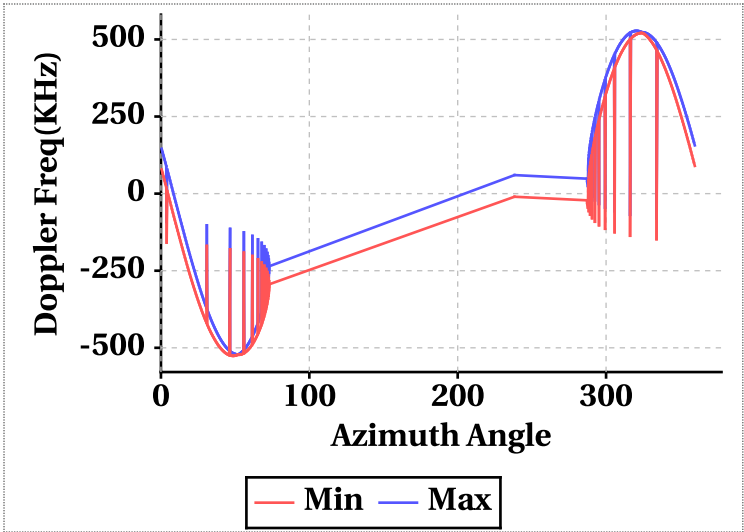
Doppler Frequency(KHz) variation statistics Over the half Orbit

	Inner Beam (HH)	Outer Beam (VV)
Min	-469.10	-525.92
Max	471.04	527.66

Footprint wise Doopler frequency variation Inner Beam (HH)



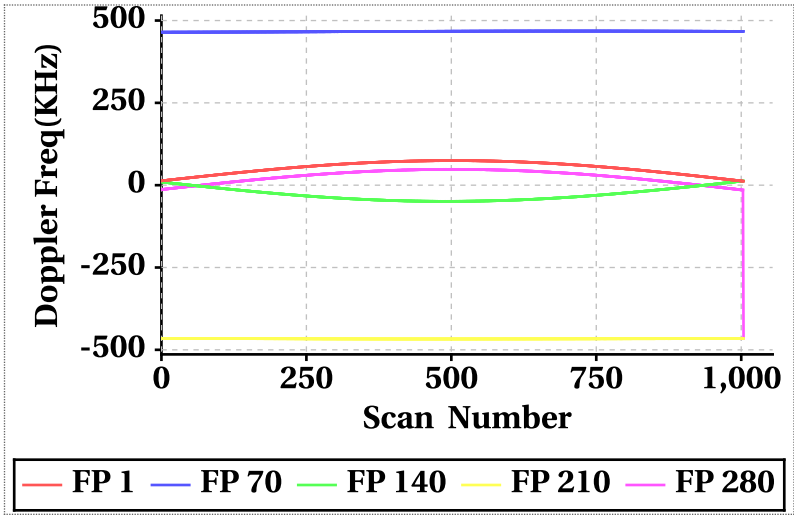
Footprint wise Doopler frequency variation Outer Beam (VV)



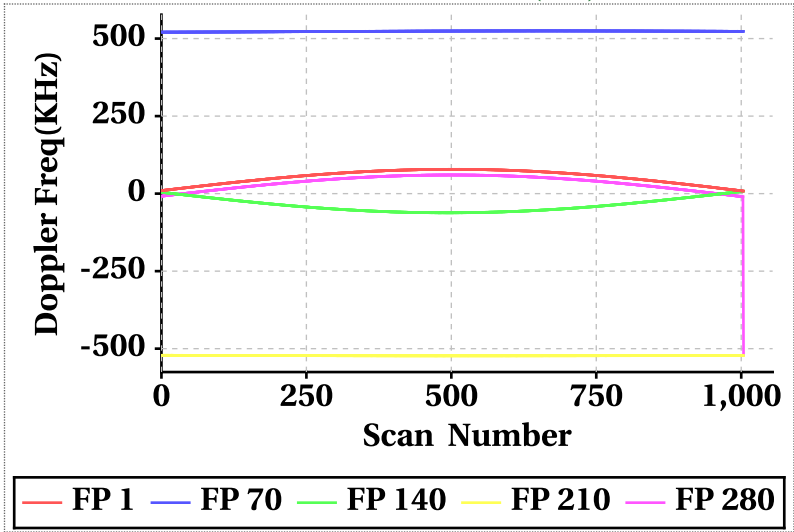
Doppler Frequency(KHz) variation

Doppler_FP	Inner Beam (HH)			Outer Beam (VV)		
	Min	Max	Mean	Min	Max	Mean
Doppler_1	12.04	74.64	52.15	8.26	78.32	53.20
Doppler_70	464.56	468.04	466.81	520.68	524.72	523.37
Doppler_140	-49.20	12.90	-27.27	-61.82	7.84	-37.19
Doppler_210	-467.12	-465.20	-466.45	-523.06	-521.44	-522.55
Doppler_280	-464.98	48.04	25.05	-520.72	60.14	34.43

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

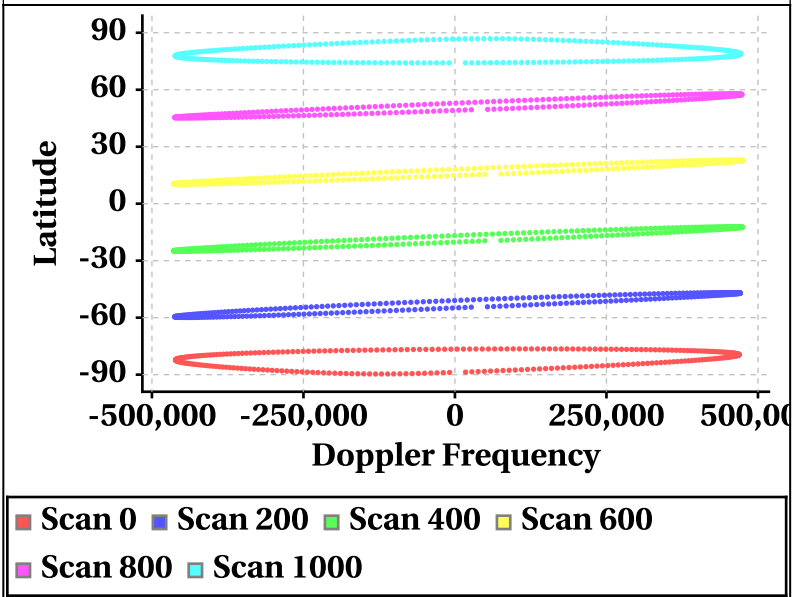


Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Outer Beam (VV)

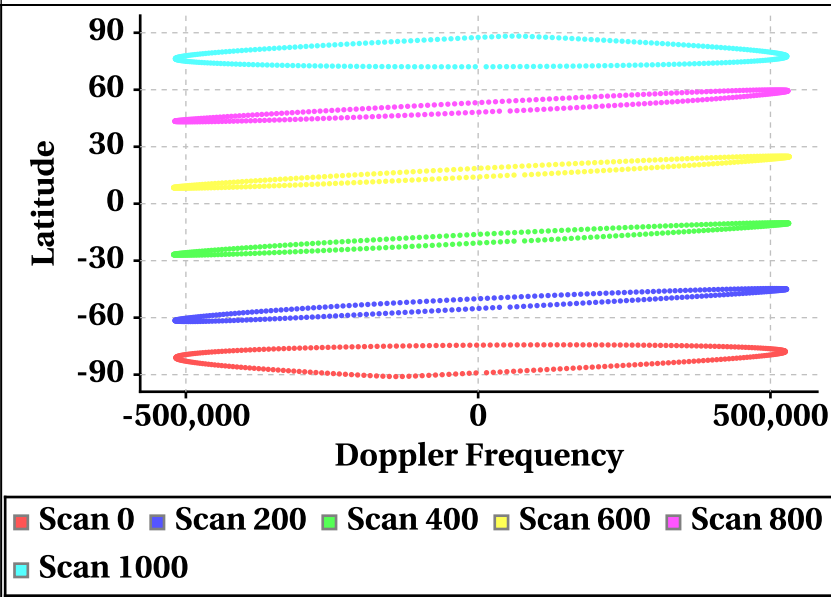


## Latitude Vs Doppler Frequency

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



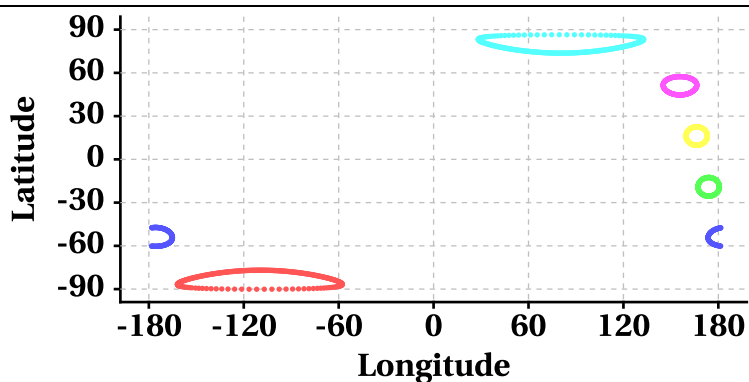
Doppler Frequency at Scan Interval of 200 [Outer Beam(VV)]



# Parameter as a function of Latitude

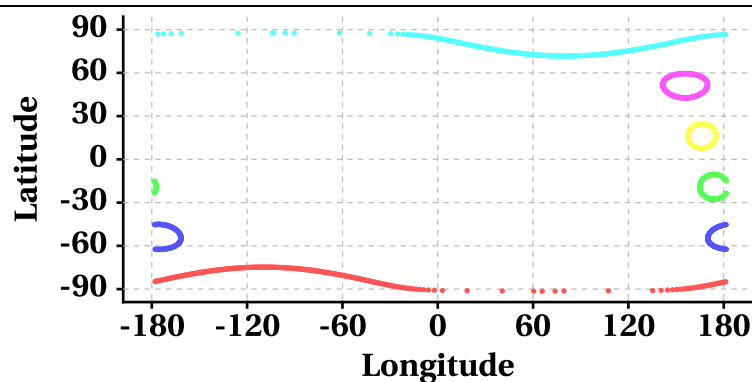
## Latitude Vs Longitude

Scan Trace [Inner Beam(HH)]



Scan 0 Scan 200 Scan 400 Scan 600  
Scan 800 Scan 1000

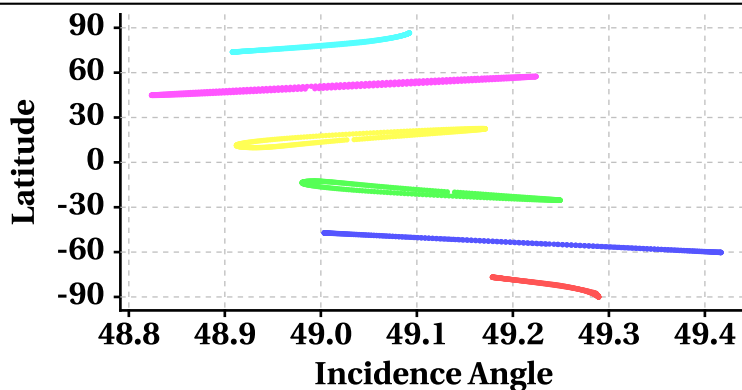
Scan Trace [Outer Beam (VV)]



Scan 0 Scan 200 Scan 400 Scan 600  
Scan 800 Scan 1000

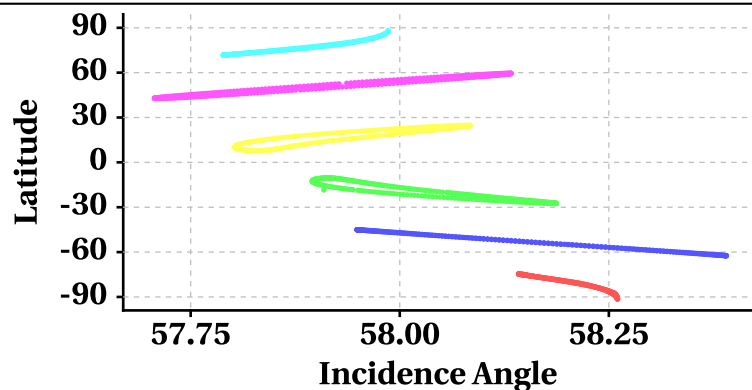
## Latitude Vs Incidence Angle

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



Scan 0 Scan 200 Scan 400 Scan 600  
Scan 800 Scan 1000

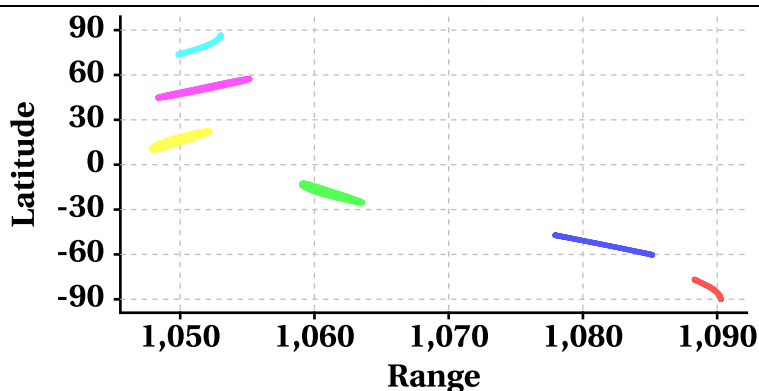
Incidence Angle at Scan Interval of 200  
[Outer Beam (VV)]



Scan 0 Scan 200 Scan 400 Scan 600  
Scan 800 Scan 1000

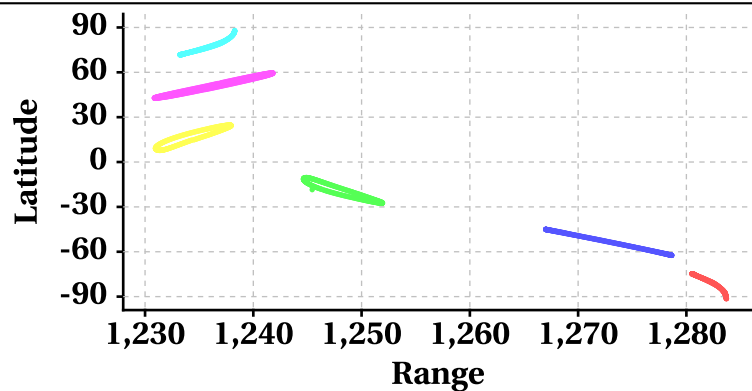
## Latitude Vs Range

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



Scan 0 Scan 200 Scan 400 Scan 600  
Scan 800 Scan 1000

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



Scan 0 Scan 200 Scan 400 Scan 600  
Scan 800 Scan 1000



Variation in Orbit and Attitude Parameters

