

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

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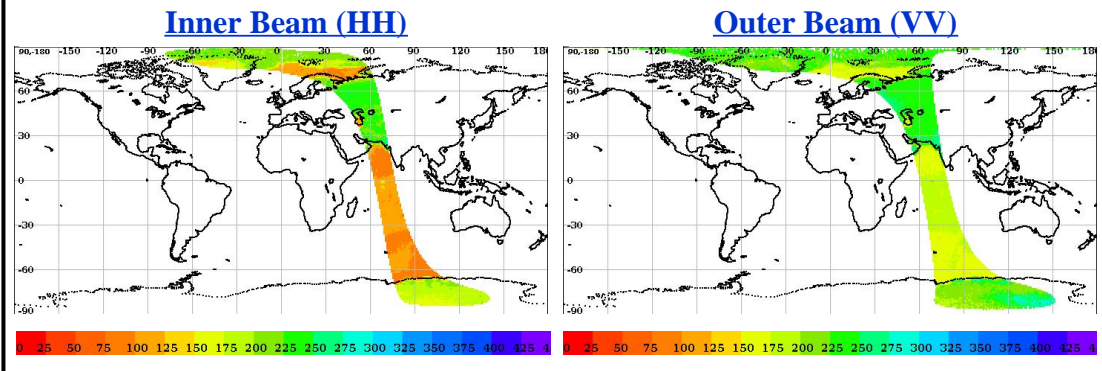
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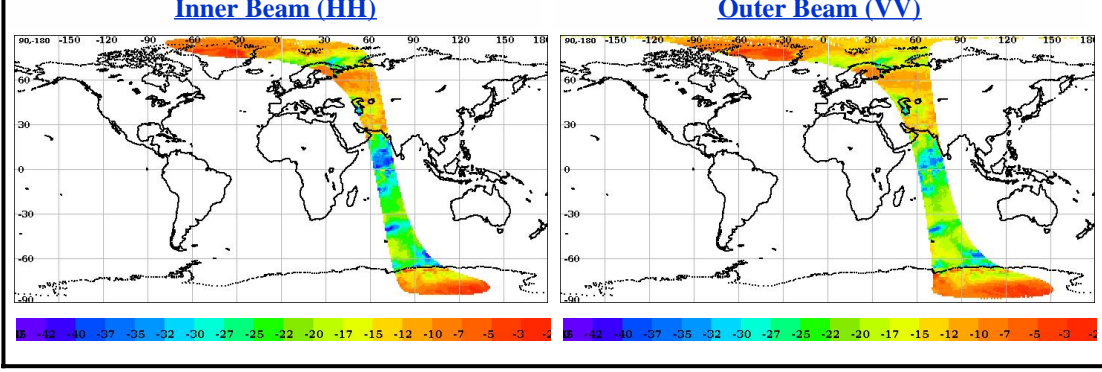
Half Orbit OAT Behaviour

Satellite Id	ScatSat-1	Start Orbit	2124	Total Scans	956
Sensor Name	Scatterometer	End Orbit	2125	No of Inner FootPrints	281
Processor Version	1.1.1	Rev. Number	02124_02125	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	16:26:41.000	No Of Outer Slices	15

Brightness Temprature(k) Footprint trace



Sigma0(dB) Footprint trace

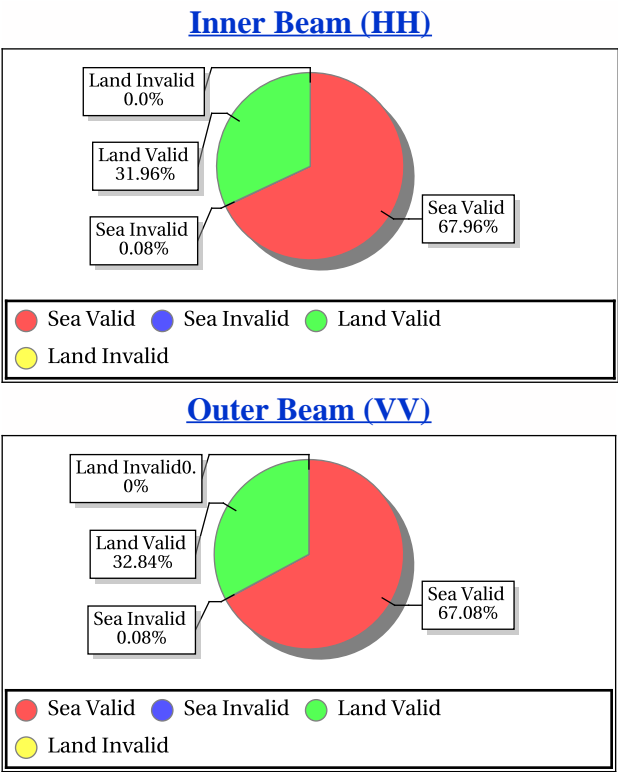


Invalid and Poor Sigma-0 Quality Flag Statistics for Inner/Outer Slices\*

Sigma-0 Flags	Inner Beam	Outer Beam
Invalid Sigma0(%)	0.08	0.08
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(%)	0.01	0.01
Noise samples for blending Saturated	0.0	6.912442
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	93.08755

\*DP Format Document

Sigma-0 Quality Flag Statistics for Inner/Outer Footprints



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
ANT_1	-75.00	121.00	Inner	DSC	Aft	-10.08	-7.10	-8.30	0.77	138.21	197.43	170.09	16.61
GreenLand_2	77.50	-41.50	Inner	DSC	Fore	-5.54	-3.85	-4.68	0.60	149.52	180.69	162.47	12.36
ROK	23.00	73.60	Outer	DSC	Aft	-13.05	-9.72	-11.44	0.80	230.86	300.72	258.63	15.85
ROK	23.00	73.60	Outer	DSC	Fore	-12.90	-8.70	-11.50	0.89	220.58	302.17	260.37	16.16
ANT_1	-75.00	121.00	Outer	DSC	Aft	-9.39	-7.78	-8.50	0.58	223.14	280.80	256.31	18.36
GreenLand_2	77.50	-41.50	Outer	DSC	Fore	-4.58	-3.96	-4.33	0.25	222.10	230.32	226.21	3.58
GreenLand_1	74.69	-42.50	Outer	DSC	Fore	-8.98	-7.21	-8.22	0.62	214.28	252.36	230.66	11.07



## 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	223.53	0.35	3.466	0.10	254.70	0.31	2.508	0.10	0.43	0.10	0.000	0.10	0.34	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>	-34.23	26.18	4.23	0.050	-34.79	26.73	5.17	0.212	-6.16	28.41	17.42	7.031	-4.72	29.45	17.85	7.898

	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	203.00	0.30	2.585	0.08	201.02	0.27	2.478	0.08	0.86	0.09	0.000	0.08	0.31	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	0.00	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>	-34.82	17.52	2.70	0.000	-34.78	20.74	3.01	0.000	-10.79	22.93	11.88	0.074	-5.70	23.65	12.23	0.437

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)

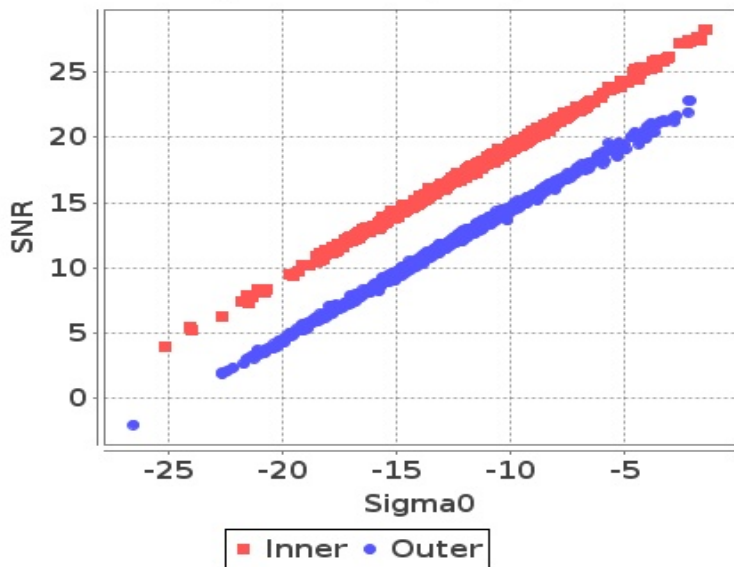
	Inner Beam (VV)				Outer Beam (VV)				Parameter Specifications		
	Min	Max	Mean	Bad Occ. (%)	Min	Max	Mean	Bad Occ. (%)	Parameter	Min	Max
<b>Incidence Angle (deg)</b>	48.81	49.42	49.07	0.000	57.70	58.40	58.05	0.000	Inci.(Inner)	47.10	49.90
<b>Azimuth Diff. (deg)</b>	0.0026	1.81	1.14	0.131	0.0027	1.99	1.13	0.192	Inci.(Outer)	57.30	58.90
<b>Range(Km)</b>	1046.34	1091.53	1063.56	0.000	1228.93	1285.66	1250.01	6.903	Azimuth Diff.	0.60	2.00
<b>X Factor(dbm)</b>	-91.68	-90.13	-90.30	0.000	-93.13	-92.15	-92.29	0.000	Range(Inner)	1025.00	1095.70
<b>Across Distance (Km)</b>	15.63	15.90	15.48	0.000	20.61	21.00	20.39	0.000	Range(Outer)	1210.00	1280.00
<b>Along Distance (Km)</b>	19.08	20.31	19.72	0.000	18.66	20.39	19.62	0.000	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
									<ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: green; border: 1px solid black;"></span> Normal</li> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: yellow; border: 1px solid black;"></span> Deviations</li> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: orange; border: 1px solid black;"></span> Alarming</li> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: red; border: 1px solid black;"></span> High Errors</li> </ul>		



# Sigma0 Behaviour (Sigma0 Vs SNR)

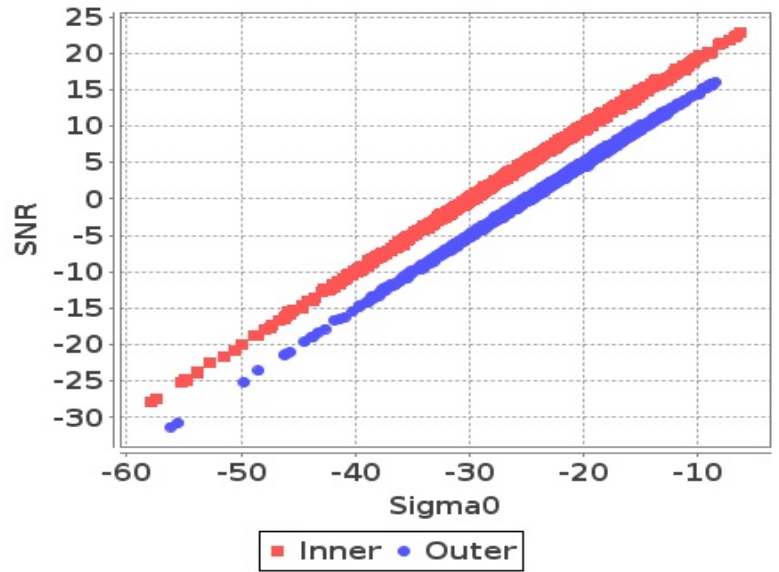
Footprint-Land

Sigma0 Vs SNR (Land)



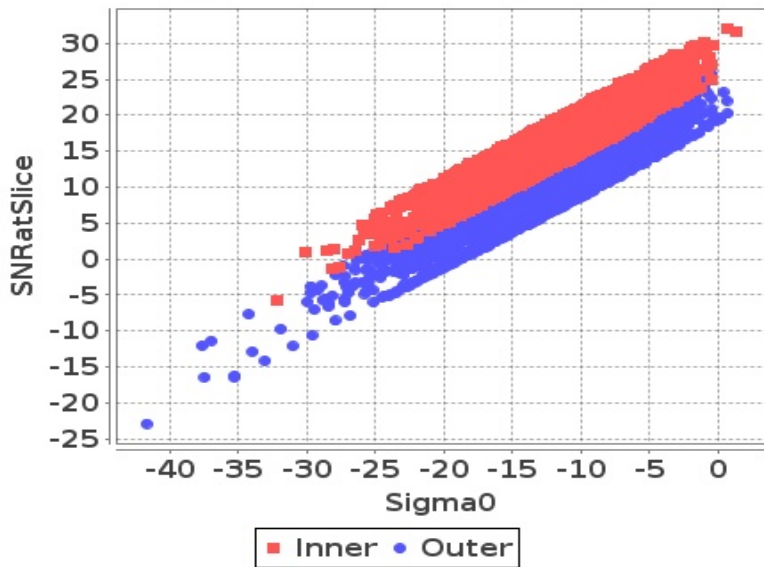
Footprint-Sea

Sigma0 Vs SNR (Sea)



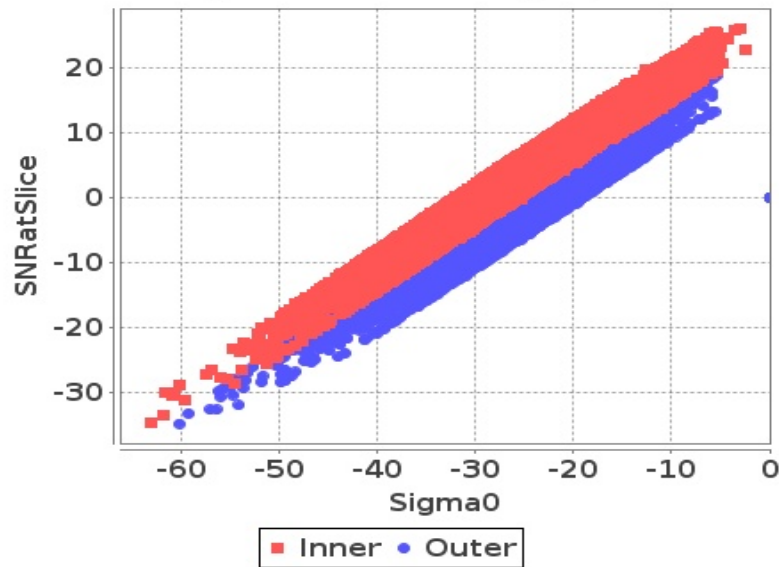
Slice-Land

Sigma0 Vs SNRatSlice (Land)



Slice-Sea

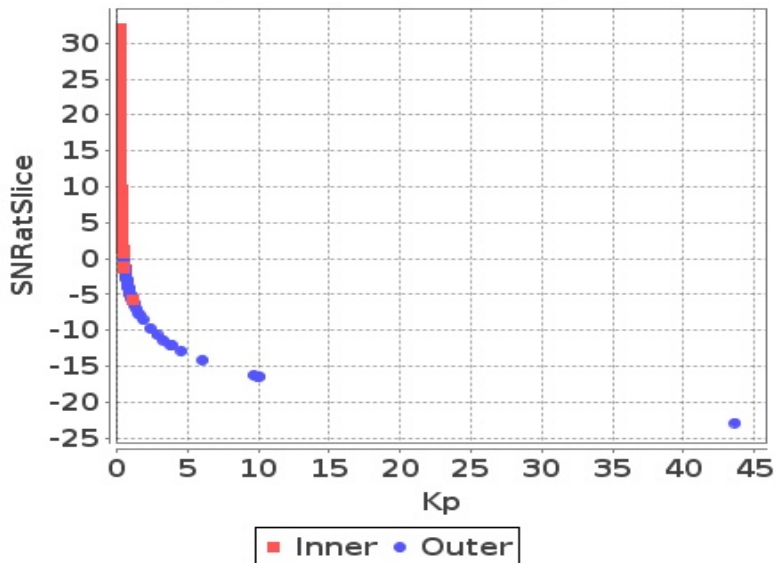
Sigma0 Vs SNRatSlice (Sea)



# Sigma0 Behaviour (Kp Vs SNR)

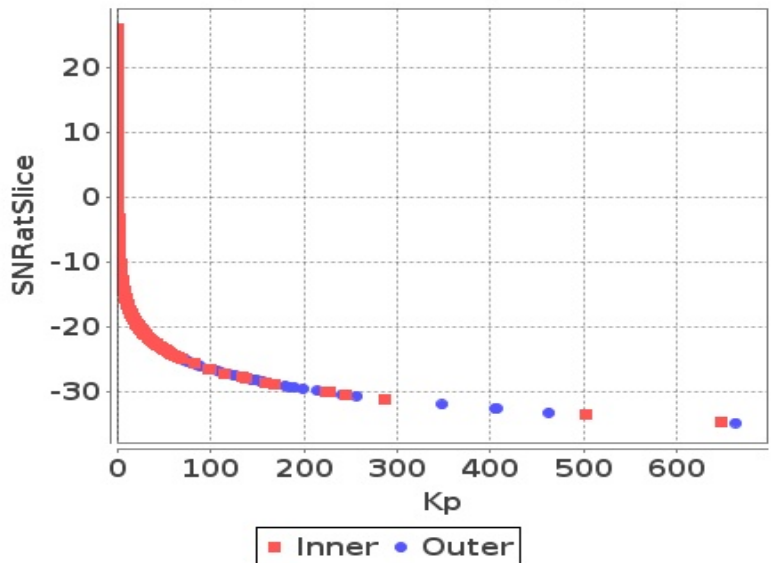
Slice

Kp Vs SNRatSlice (Land)



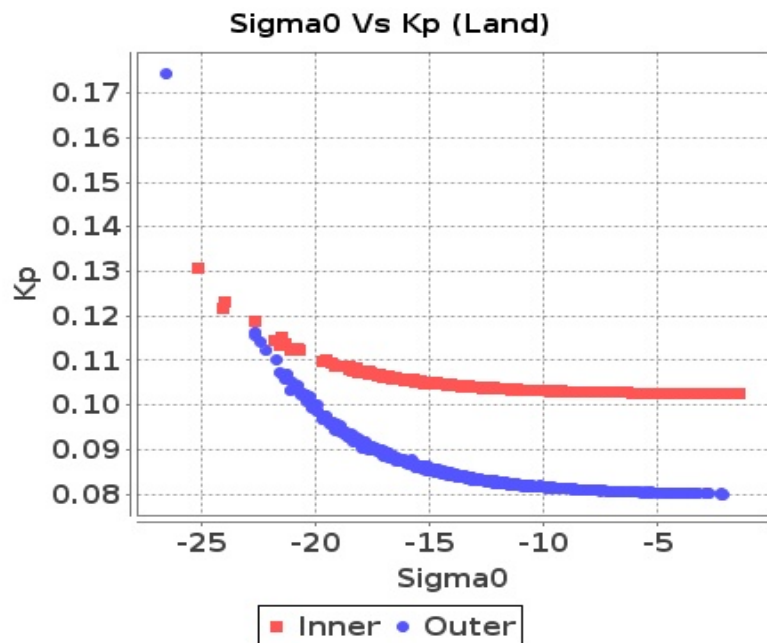
Slice

Kp Vs SNRatSlice (Sea)

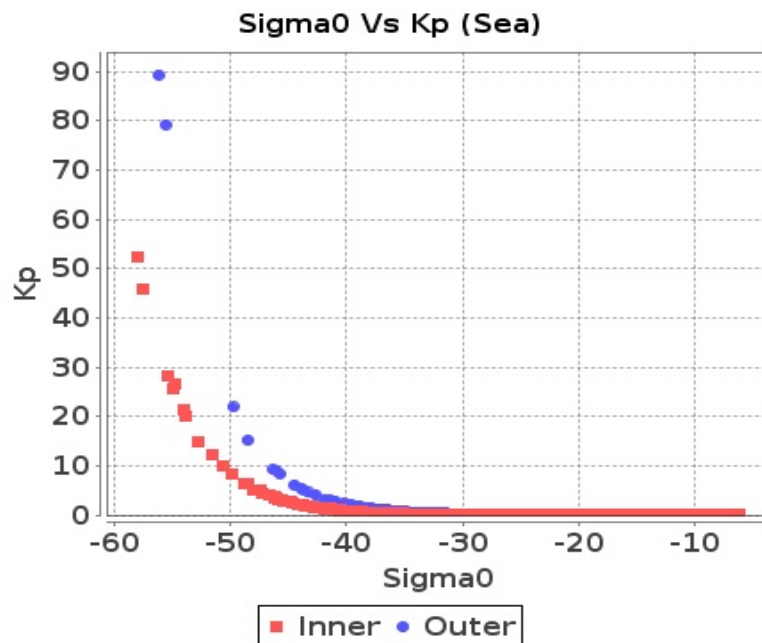


# Sigma0 Behaviour(Sigma0 Vs Kp)

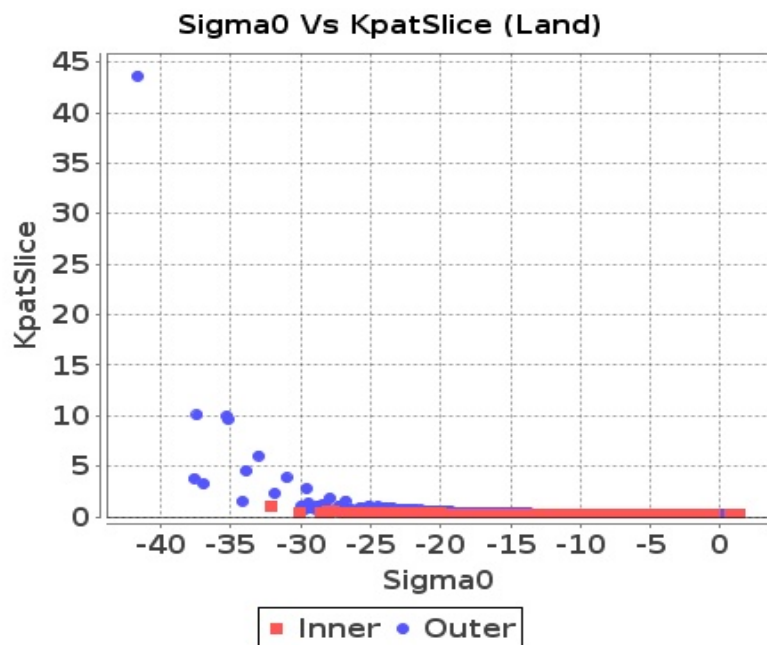
## Footprint-Land



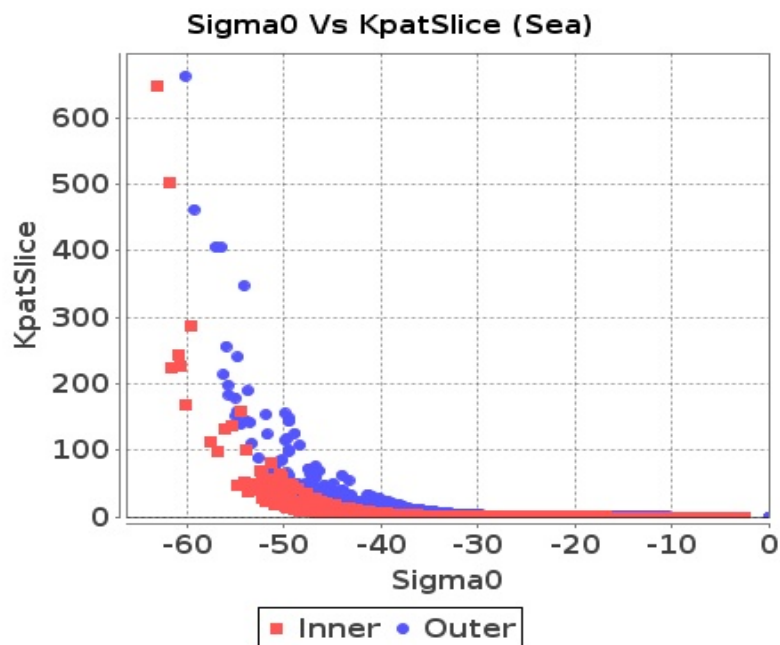
## Footprint-Sea



## Slice-Land



## Slice-Sea



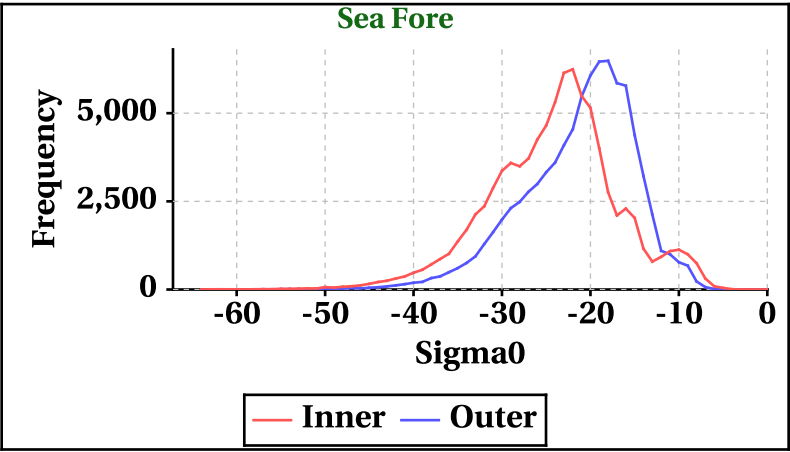
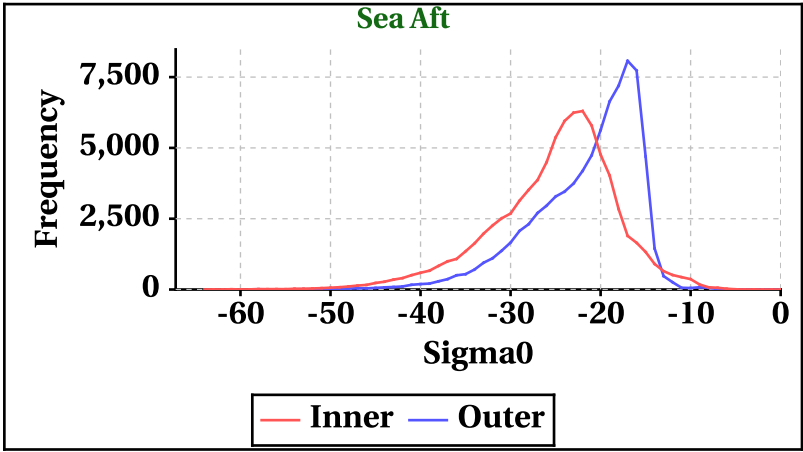
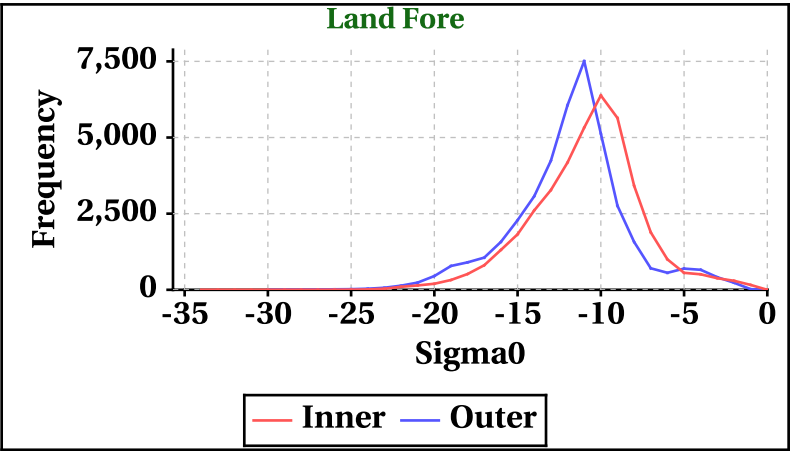
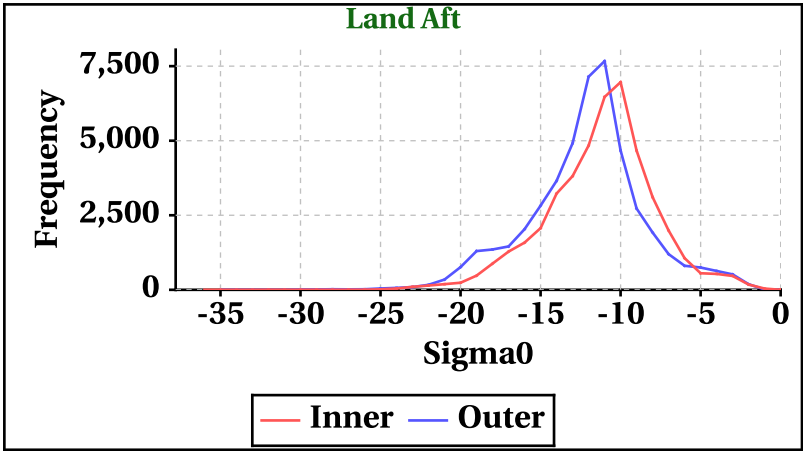


Dynamic Range (Data Histograms)

Sigma0(db)

Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-36	-34	-64	-64
Max	0	0	0	0

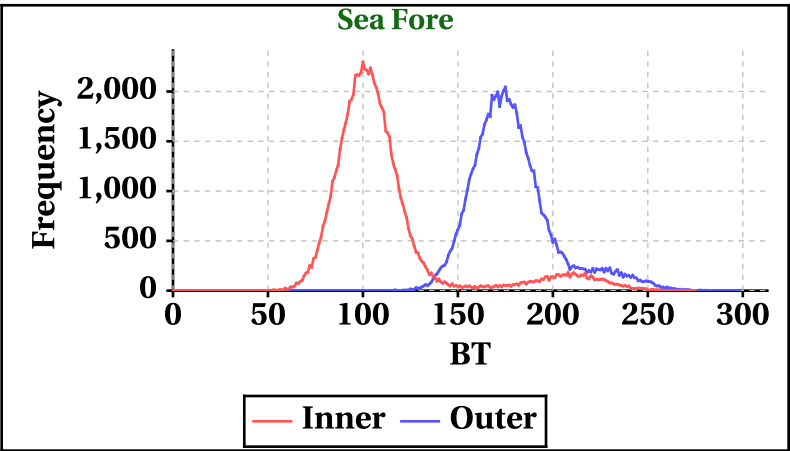
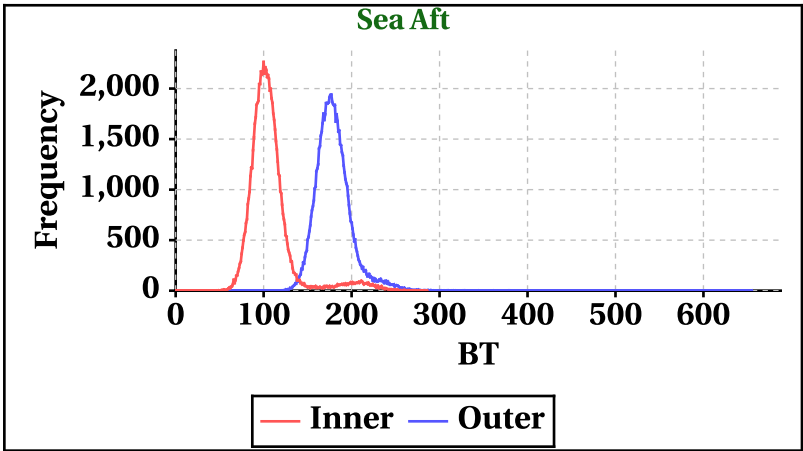
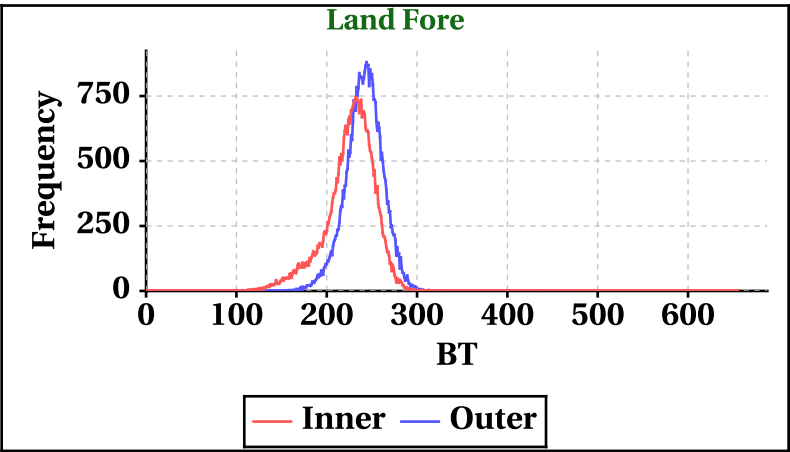
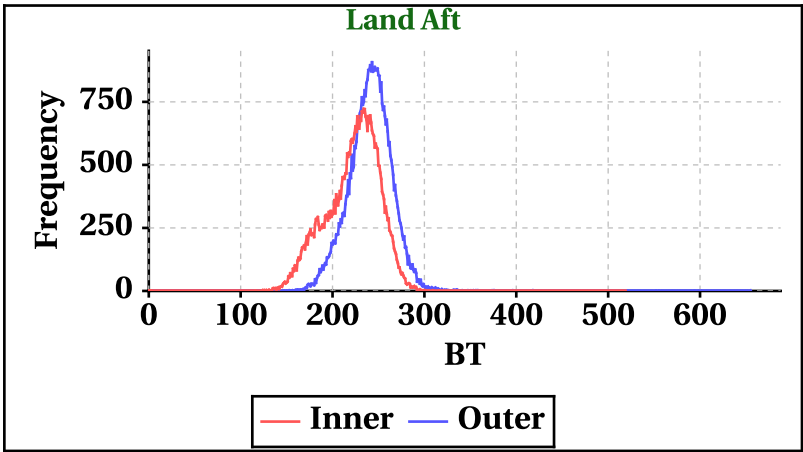
Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-35	-30	-59	-59
Max	0	0	0	0



Brightness Temperature(K)

Inner Beam(HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	519	655	286	275

Outer Beam(VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	655	462	655	298

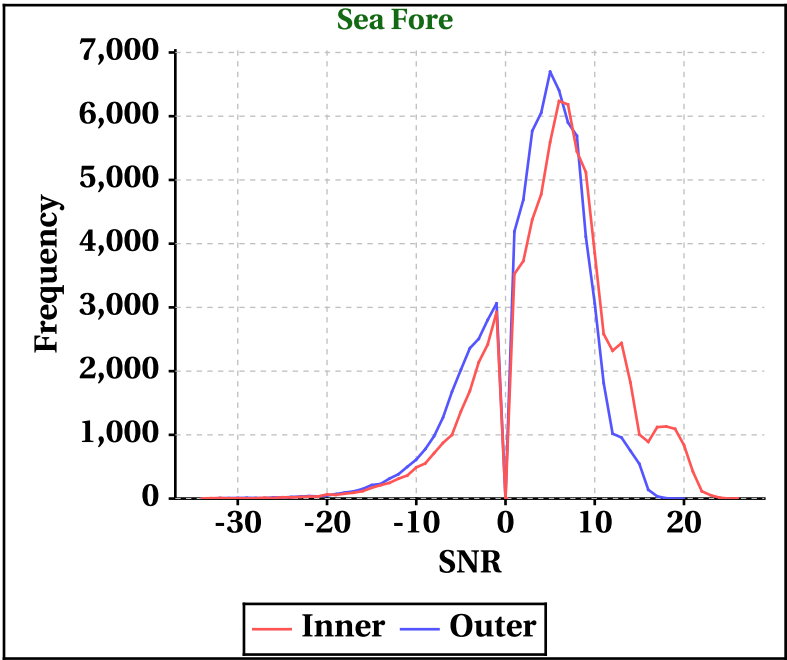
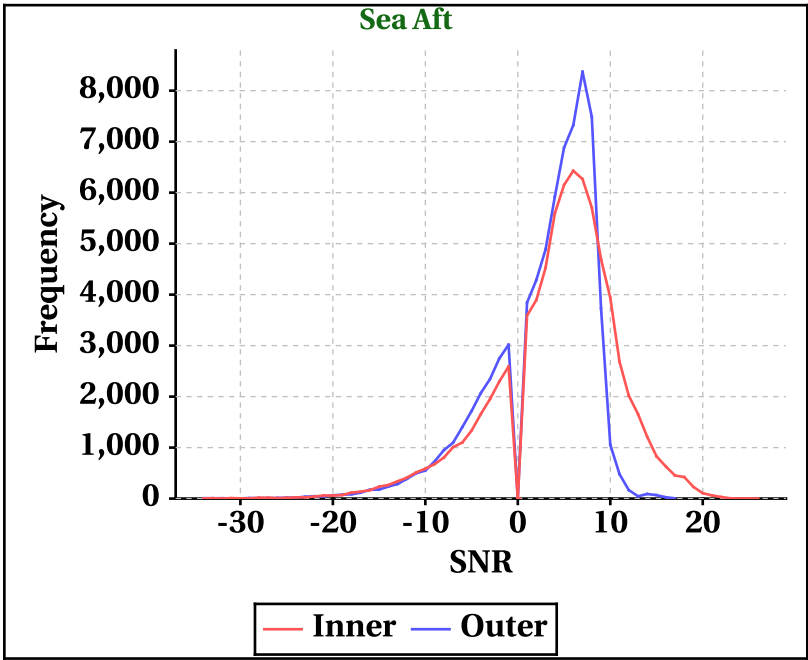
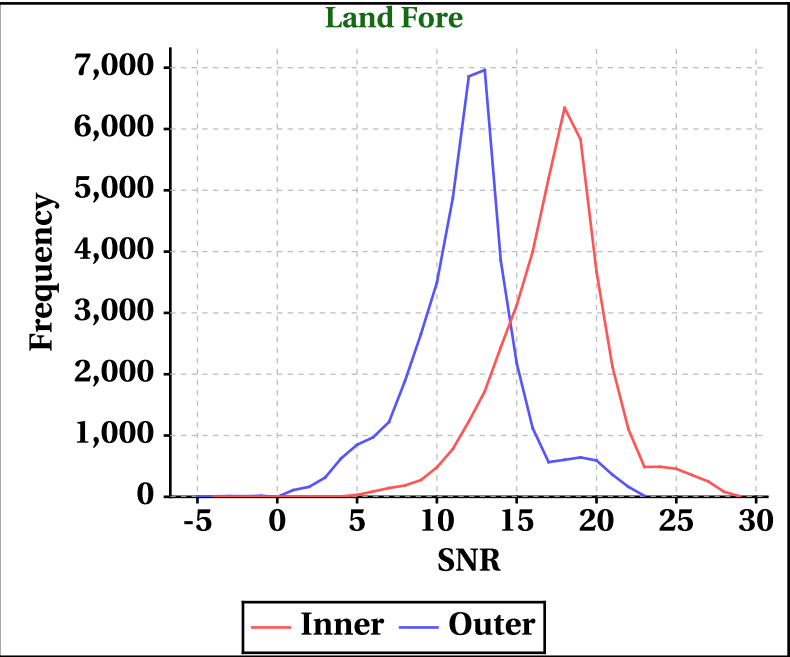
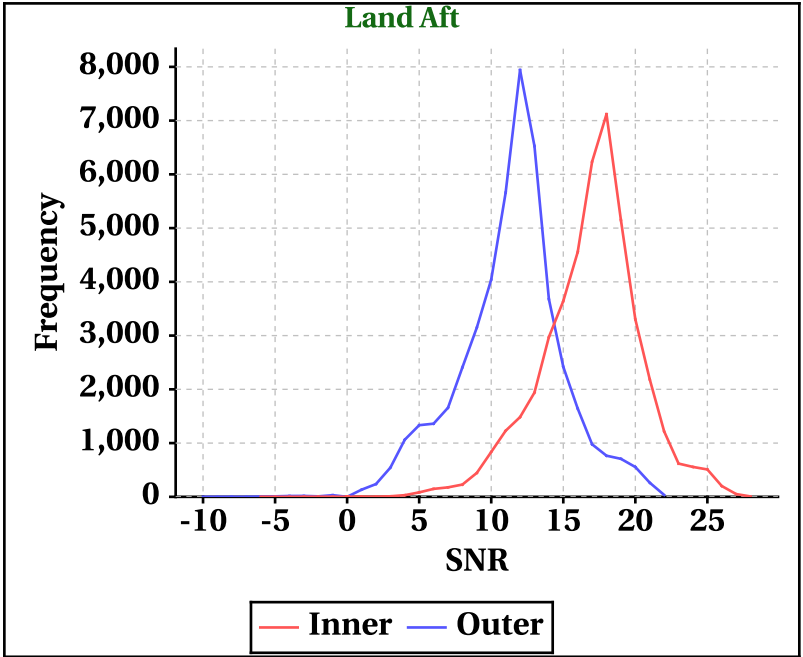


Dynamic Range (Data Histograms)

SNR(dBm)

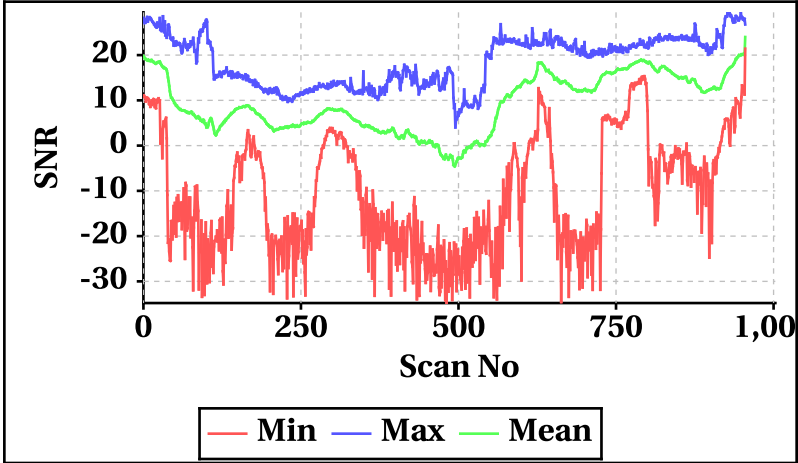
Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-6	-4	-34	-34
Max	28	29	26	26

Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-10	-5	-34	-34
Max	22	23	17	20

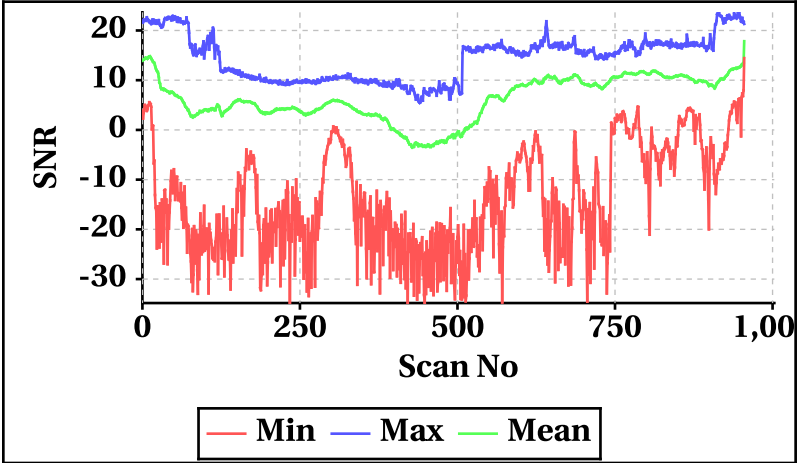


# Orbit-wise behaviour of SNR

Inner Beam (HH)

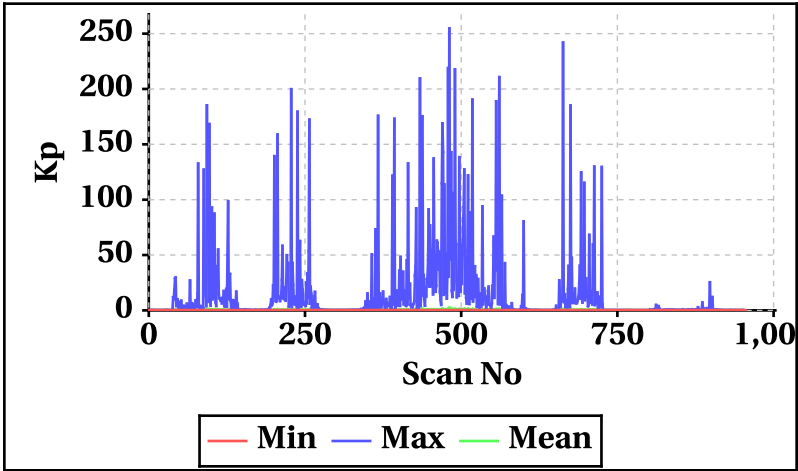


Outer Beam(VV)

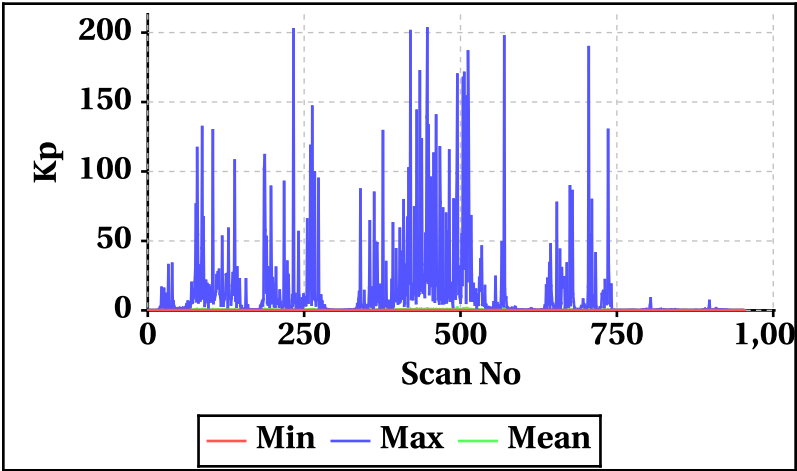


# Orbit-wise behaviour of Kp,Kpa,Kpb,Kpc

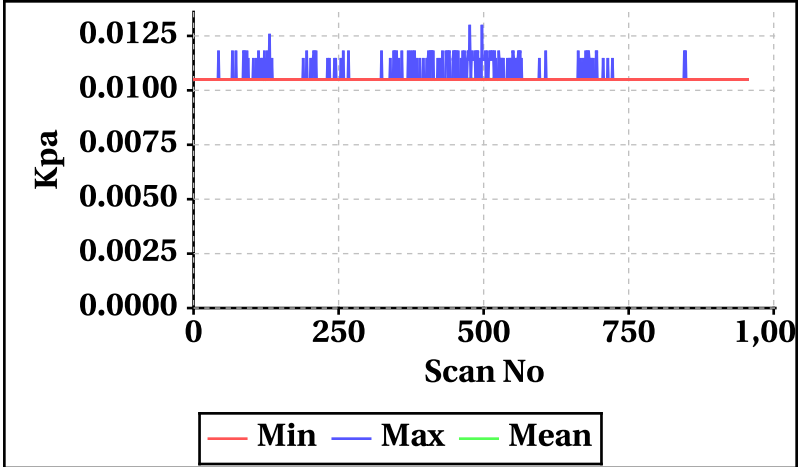
Inner Beam(HH)



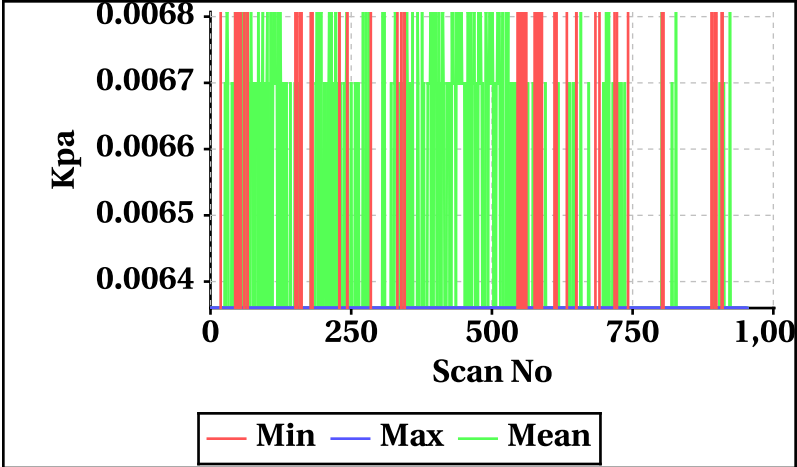
Outer Beam(VV)



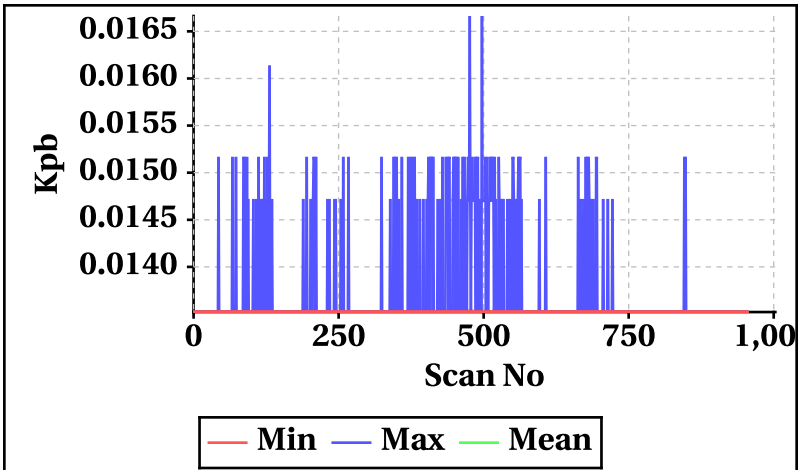
Inner Beam(HH)



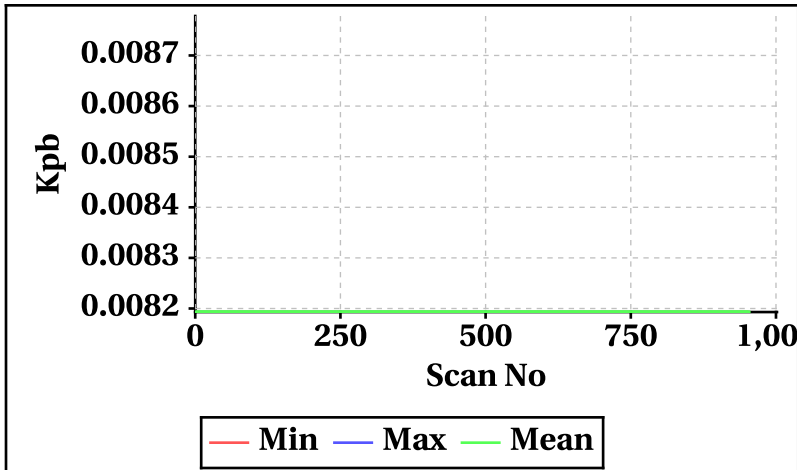
Outer Beam(VV)



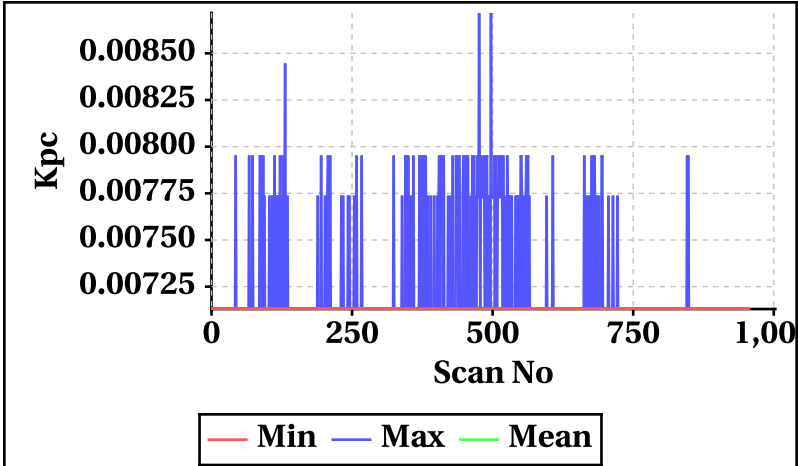
Inner Beam(HH)



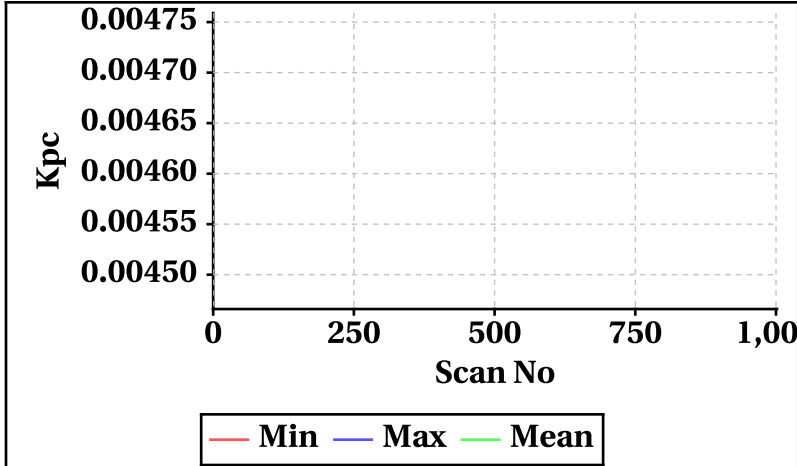
Outer Beam(VV)



Inner Beam(HH)



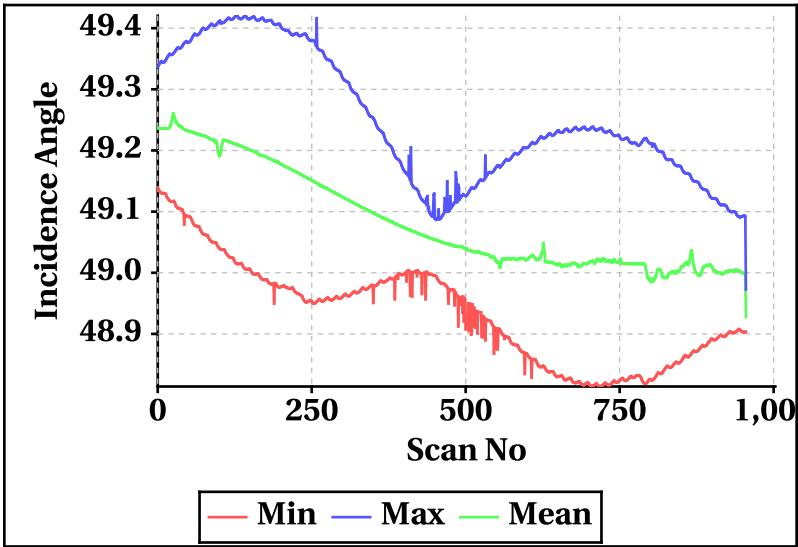
Outer Beam(VV)



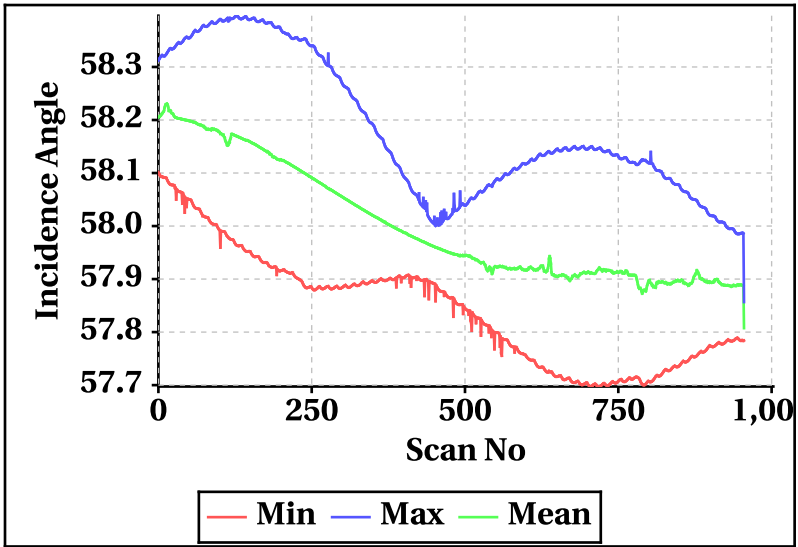


Orbt-wise behaviour of Incidence,Azimuth,Range,X-Factor

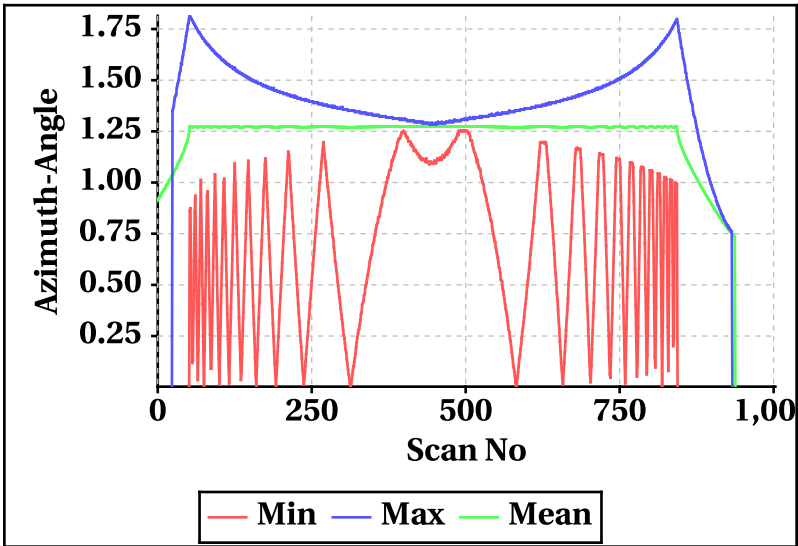
Inner Beam (HH)



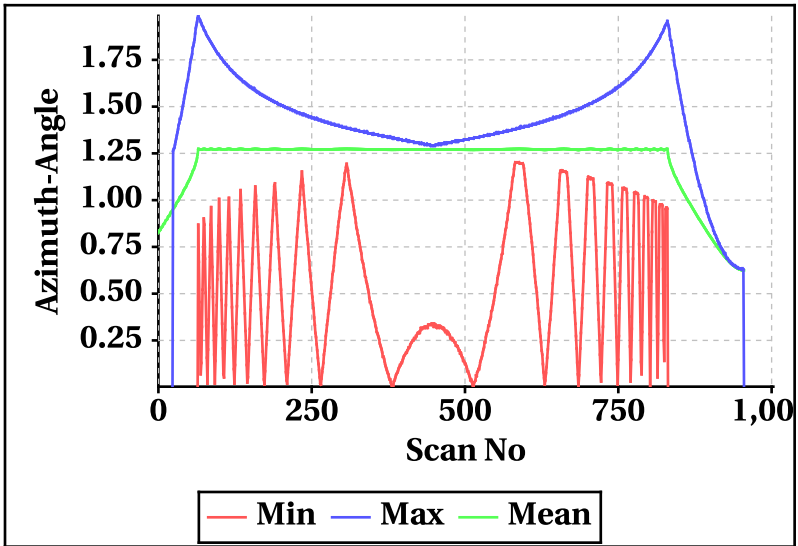
Outer Beam(VV)



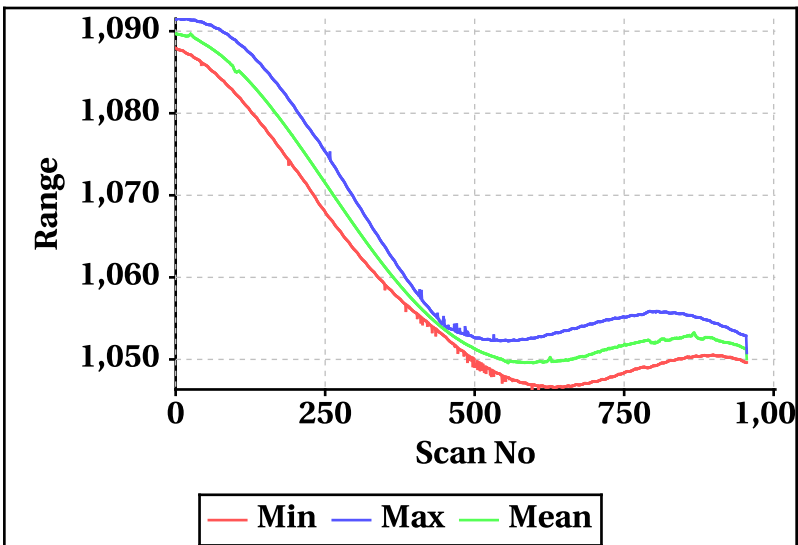
Inner Beam (HH)



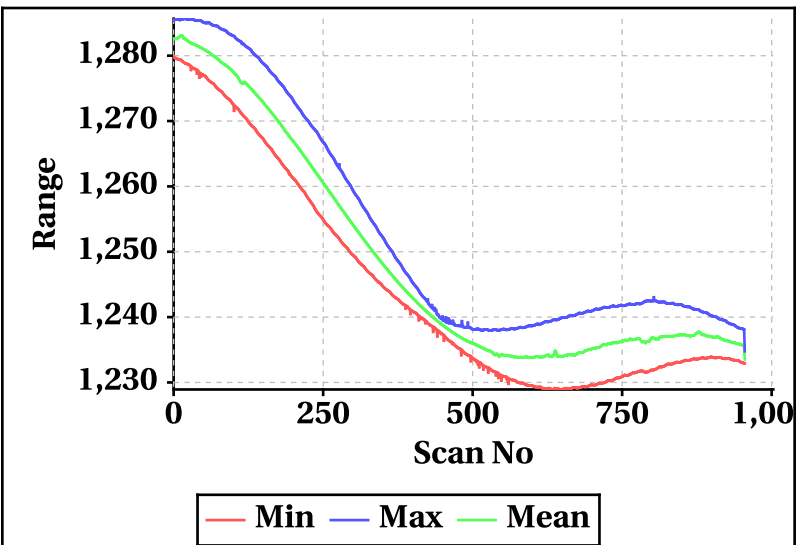
Outer Beam(VV)



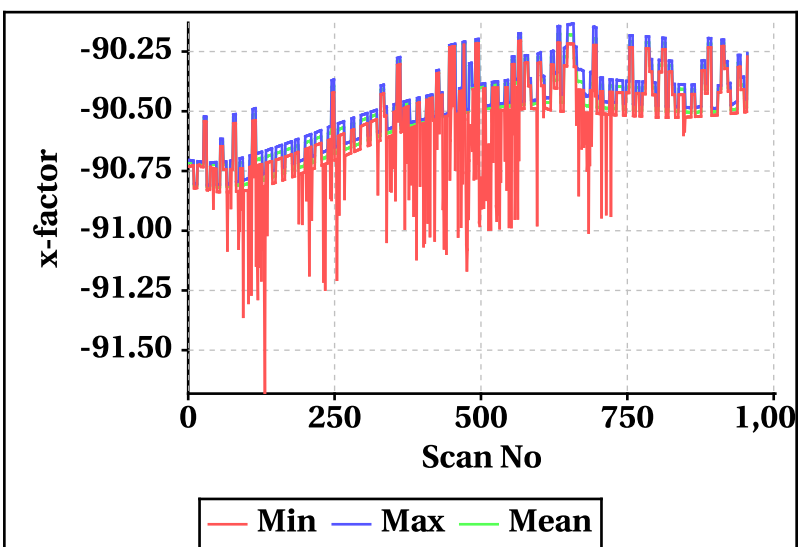
Inner Beam (HH)



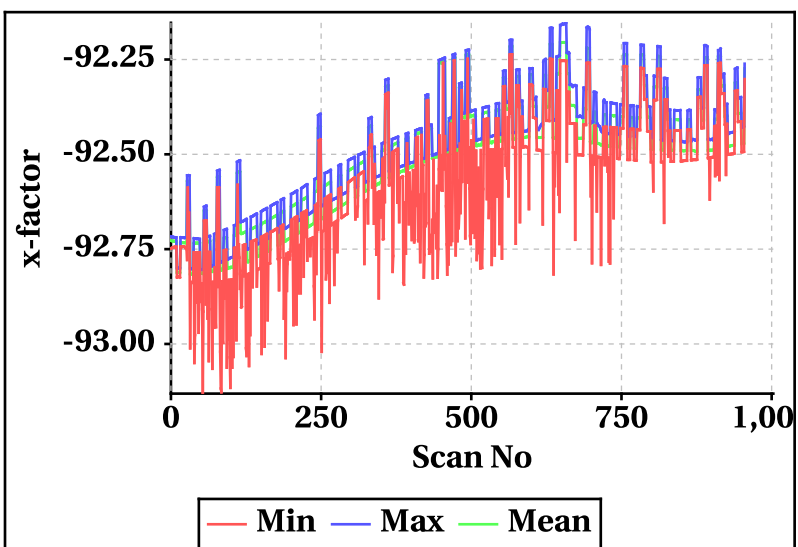
Outer Beam(VV)



Inner Beam (HH)



Outer Beam(VV)

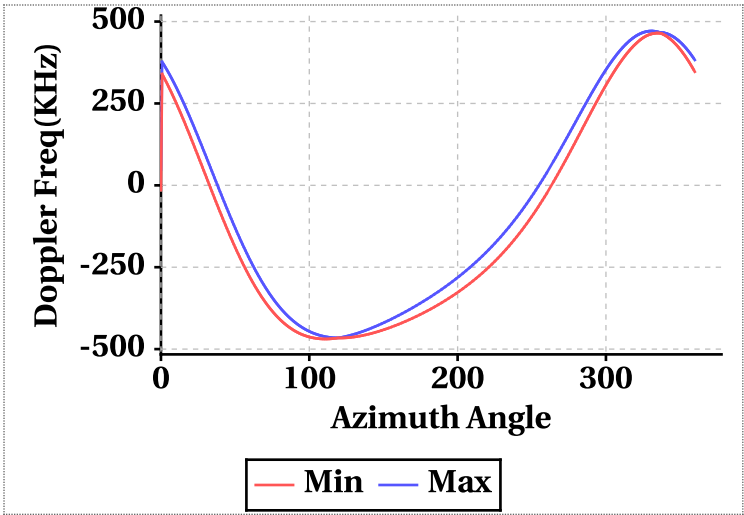


Doppler Frequency Variation

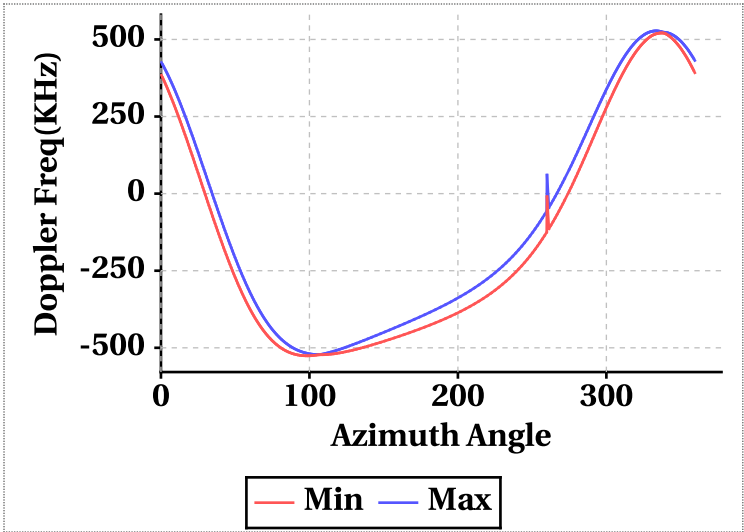
Doppler Frequency(KHz) variation statistics Over the half Orbit

	Inner Beam (HH)	Outer Beam (VV)
Min	-469.10	-525.90
Max	471.02	527.64

Footprint wise Doopler frequency variation Inner Beam (HH)



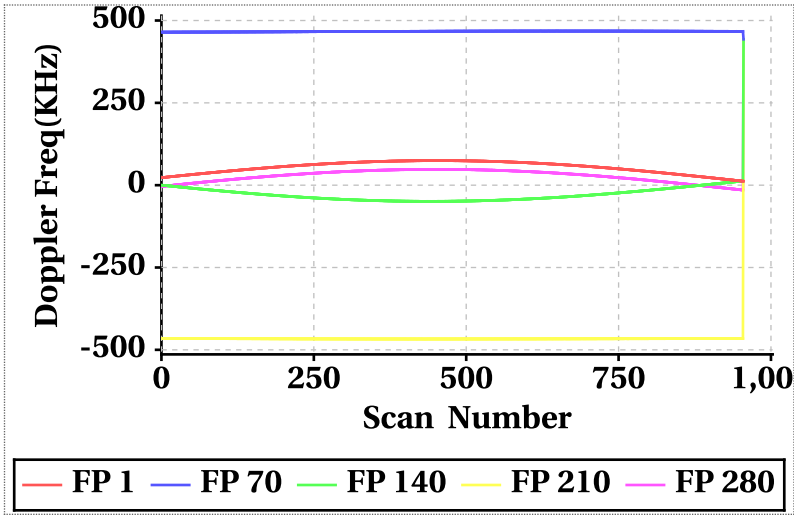
Footprint wise Doopler frequency variation Outer Beam (VV)



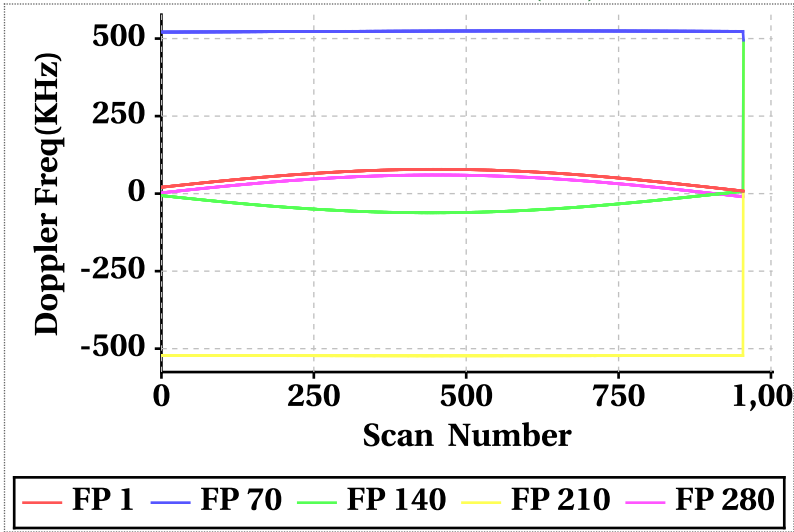
Doppler Frequency(KHz) variation

Doppler_FP	Inner Beam (HH)			Outer Beam (VV)		
	Min	Max	Mean	Min	Max	Mean
Doppler_1	11.98	74.62	53.90	8.18	78.30	55.15
Doppler_70	442.94	468.02	466.88	494.62	524.72	523.46
Doppler_140	-49.20	442.94	-28.48	-61.80	494.62	-38.55
Doppler_210	-467.10	442.94	-465.55	-523.04	494.62	-521.52
Doppler_280	-14.76	442.94	27.74	-10.16	494.62	37.42

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

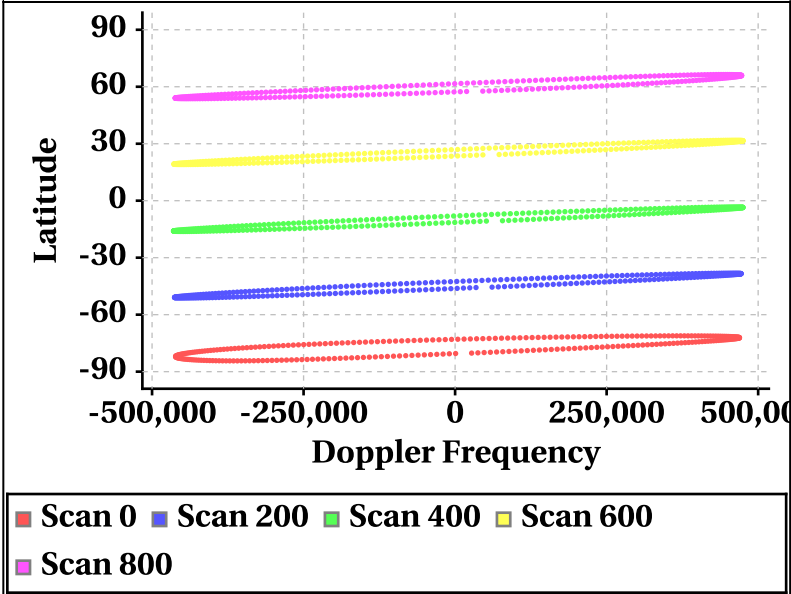


Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Outer Beam (VV)

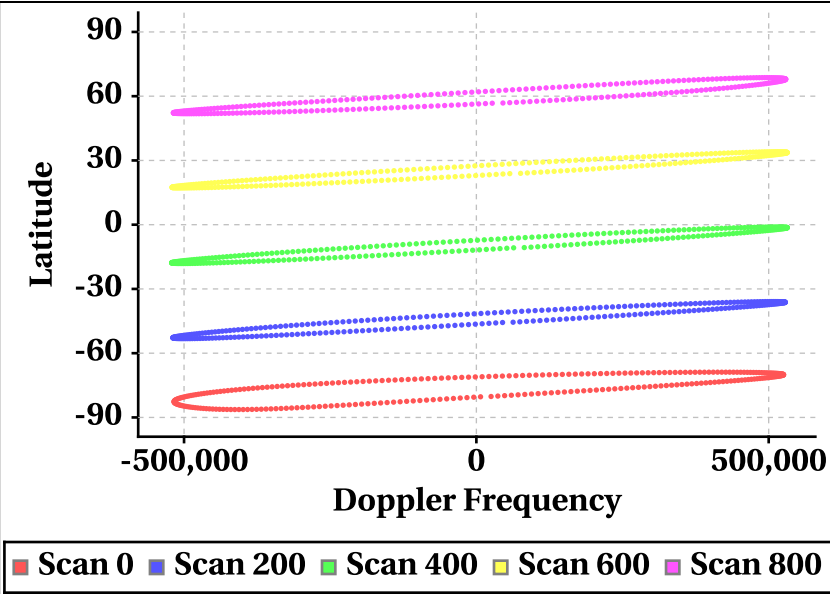


Latitude Vs Doppler Frequency

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



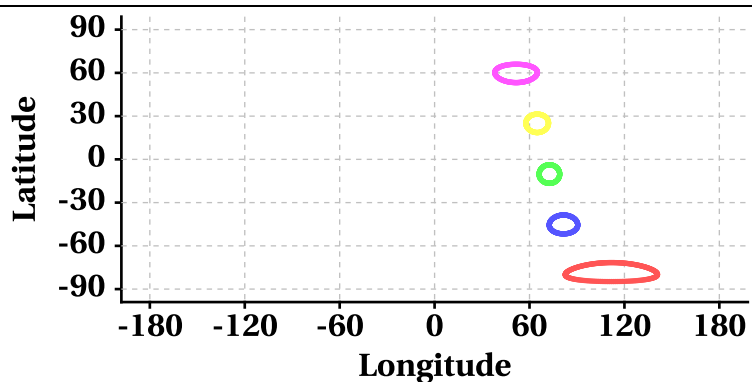
Doppler Frequency at Scan Interval of 200 [Outer Beam(VV)]



# Parameter as a function of Latitude

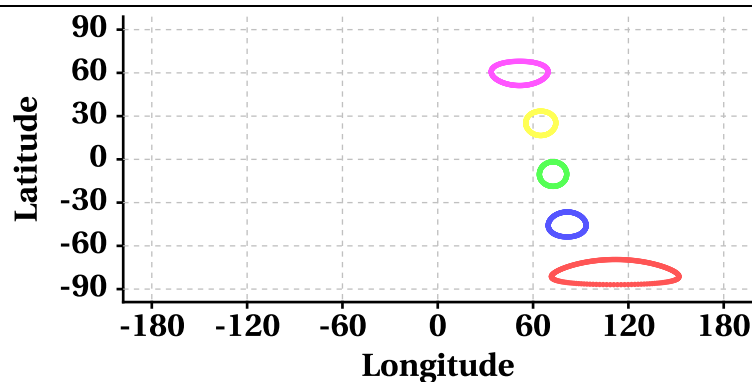
## Latitude Vs Longitude

Scan Trace [Inner Beam(HH)]



Scan 0 Scan 200 Scan 400 Scan 600  
Scan 800

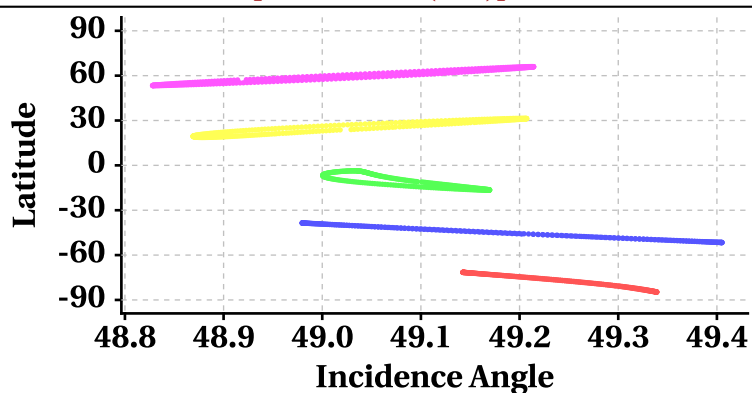
Scan Trace [Outer Beam (VV)]



Scan 0 Scan 200 Scan 400 Scan 600  
Scan 800

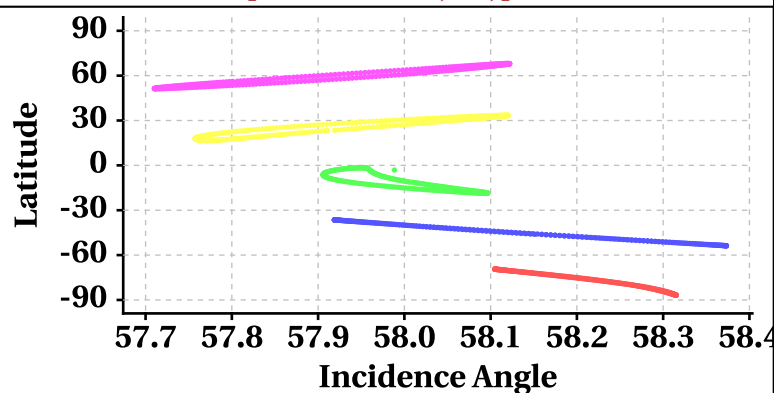
## Latitude Vs Incidence Angle

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



Scan 0 Scan 200 Scan 400 Scan 600  
Scan 800

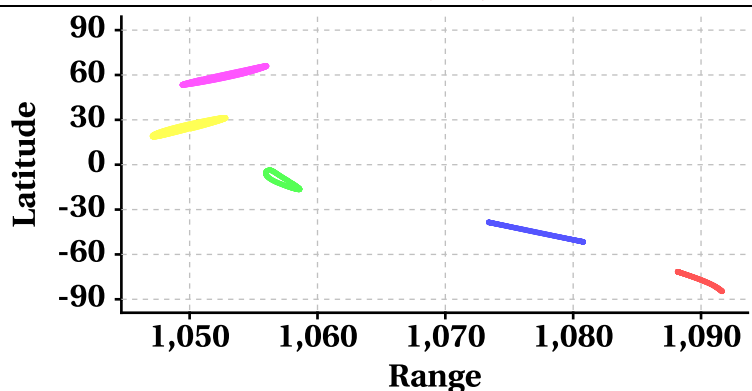
Incidence Angle at Scan Interval of 200  
[Outer Beam (VV)]



Scan 0 Scan 200 Scan 400 Scan 600  
Scan 800

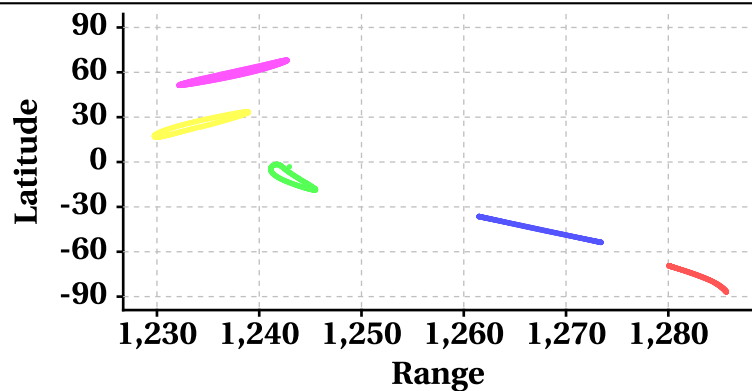
## Latitude Vs Range

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



Scan 0 Scan 200 Scan 400 Scan 600  
Scan 800

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



Scan 0 Scan 200 Scan 400 Scan 600  
Scan 800



Variation in Orbit and Attitude Parameters

