

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

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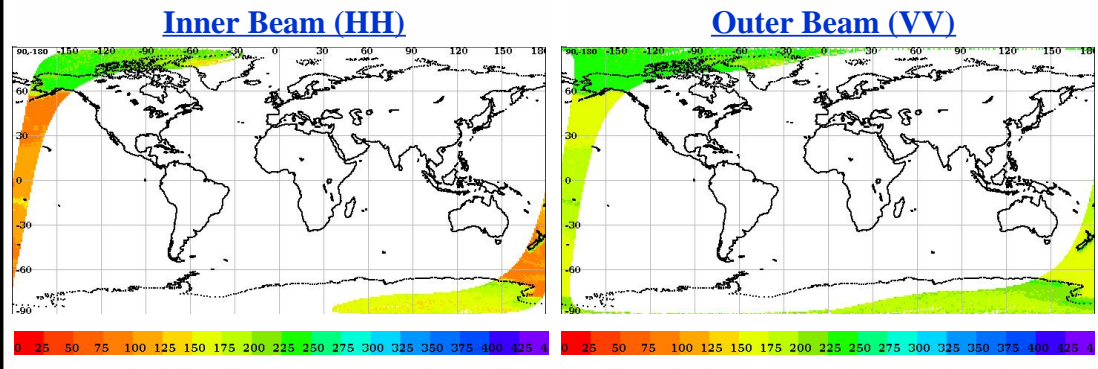
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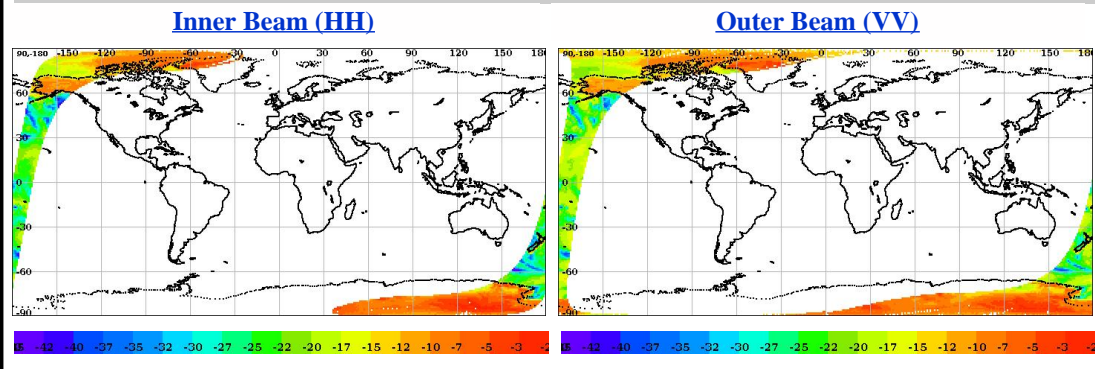
Half Orbit OAT Behaviour

Satellite Id	ScatSat-1	Start Orbit	2127	Total Scans	1013
Sensor Name	Scatterometer	End Orbit	2128	No of Inner FootPrints	281
Processor Version	1.1.1	Rev. Number	02127_02128	No Of Outer FootPrints	282
Half Orbit Direction	NS	Data Production Date	20-02-2017	No. Of Inner Slices	9
Equator Crossing Date	19-02-2017	Equator Crossing Time	20:34:59.000	No Of Outer Slices	15

## Brightness Temperature(k) Footprint trace



## Sigma0(dB) Footprint trace



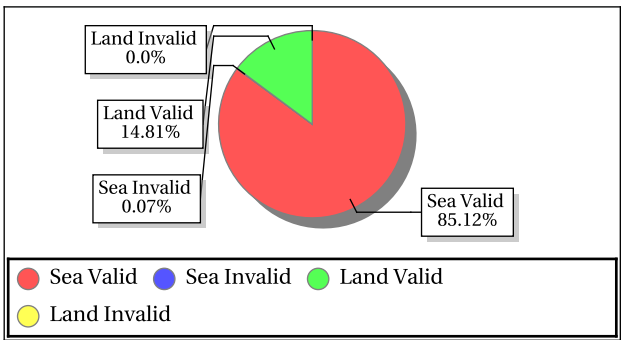
## Invalid and Poor Sigma-0 Quality Flag Statistics for Inner/Outer Slices\*

Sigma-0 Flags	Inner Beam	Outer Beam
Invalid Sigma0(%)	0.07	0.07
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	0.0
Count samp. for interpol. saturated (%)	0.00	0.00
Sigma0<lower bound (-96dB) (%)	0.0	0.0
Sigma0>upper bound (0 dB) (%)	0.00	0.00
SNR <-65 dB (%)	100.0	100.0

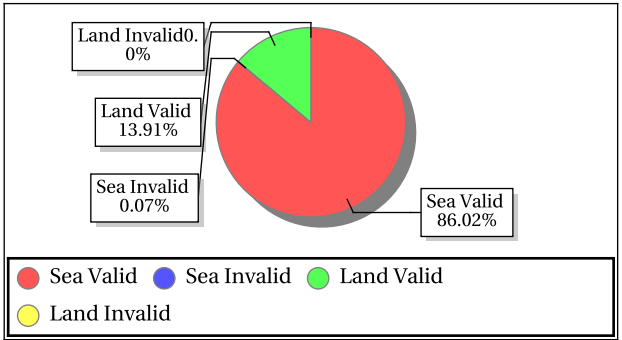
\*DP Format Document

## 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
ANT_1	-75.00	121.00	Inner	ASC	Aft	-8.32	-6.65	-7.66	0.44	149.89	189.53	168.01	13.18
ANT_1	-75.00	121.00	Inner	ASC	Fore	-8.96	-5.81	-7.49	0.97	138.13	194.15	165.85	14.38
ANT_1	-75.00	121.00	Outer	ASC	Aft	-9.30	-7.13	-8.55	0.63	184.23	241.25	210.48	16.02
ANT_1	-75.00	121.00	Outer	ASC	Fore	-10.04	-7.02	-8.19	0.90	179.99	208.00	193.90	9.83
GreenLand_2	77.50	-41.50	Outer	ASC	Aft	-4.92	-4.25	-4.59	0.34	203.75	209.94	206.85	3.09



## 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	215.05	0.22	1.595	0.10	260.70	0.21	1.407	0.10	0.11	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>	-34.06	25.86	5.92	0.358	-34.89	26.12	5.72	0.322	8.83	28.43	19.98	25.162	8.85	29.00	20.91	33.087

	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	186.29	0.20	1.416	0.08	167.31	0.19	1.239	0.08	0.12	0.08	0.000	0.08	0.12	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>	-34.45	19.43	3.91	0.000	-33.98	20.05	4.08	0.000	1.87	23.10	13.80	0.220	1.89	23.03	14.77	0.516

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

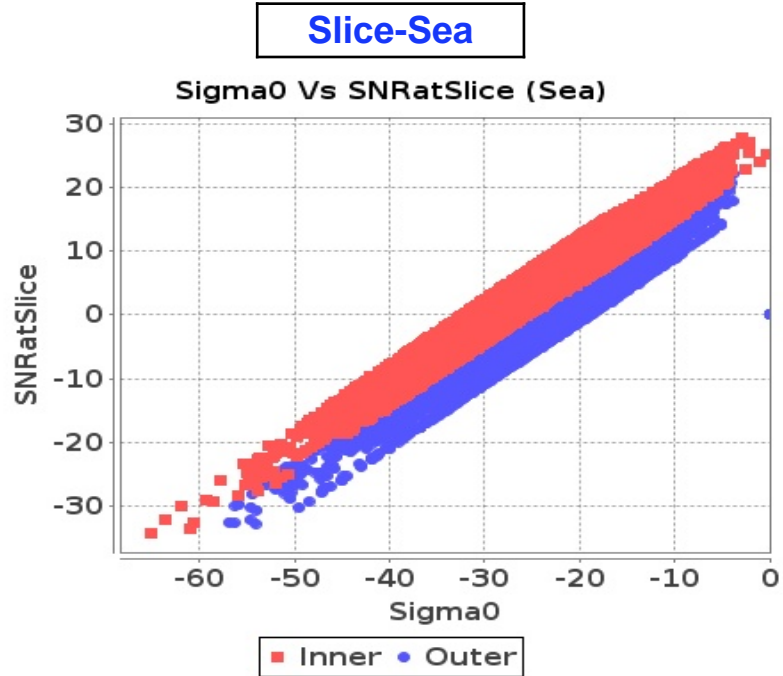
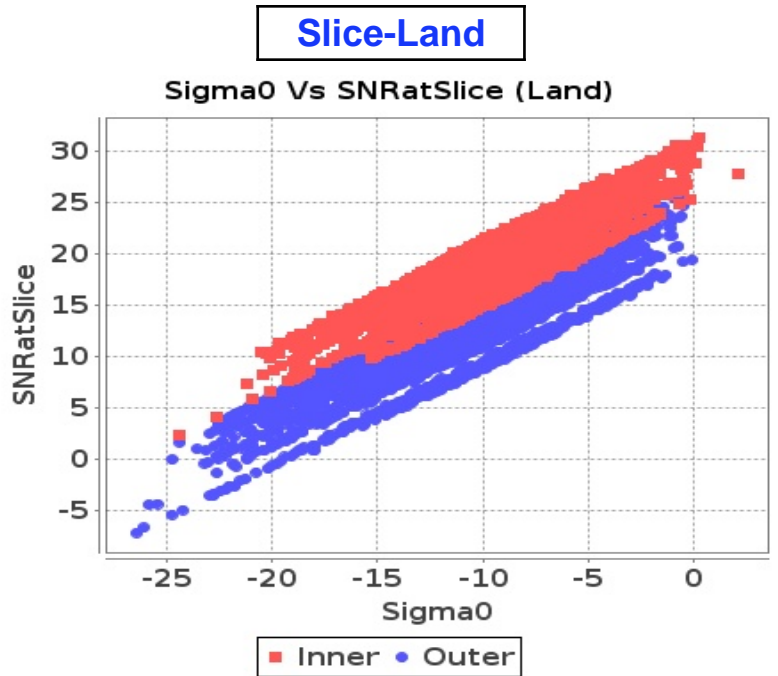
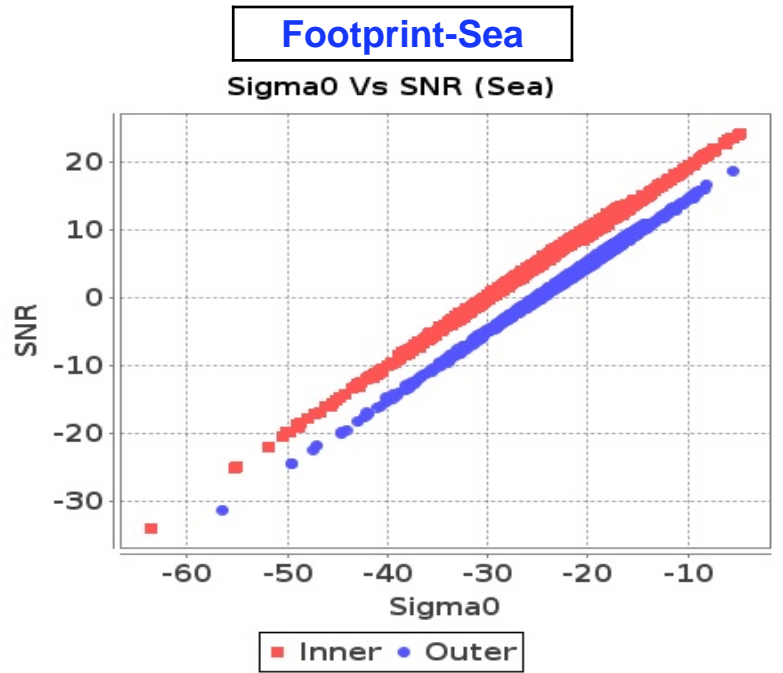
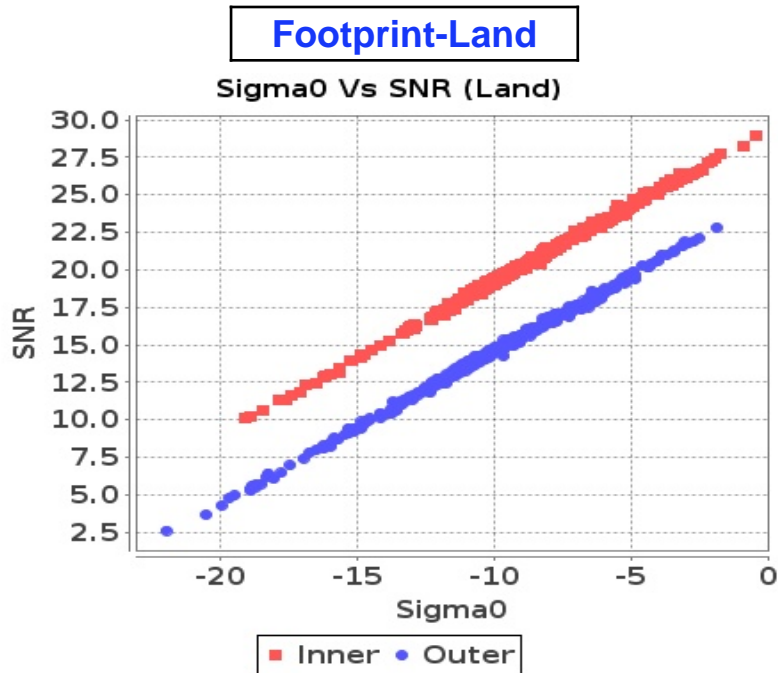
- Normal
- Deviations
- Alarming
- High Errors

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

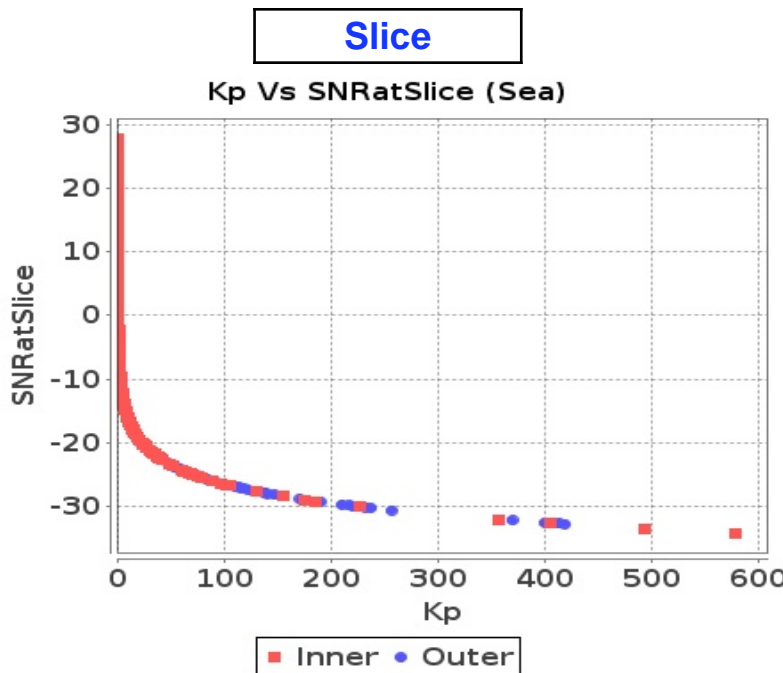
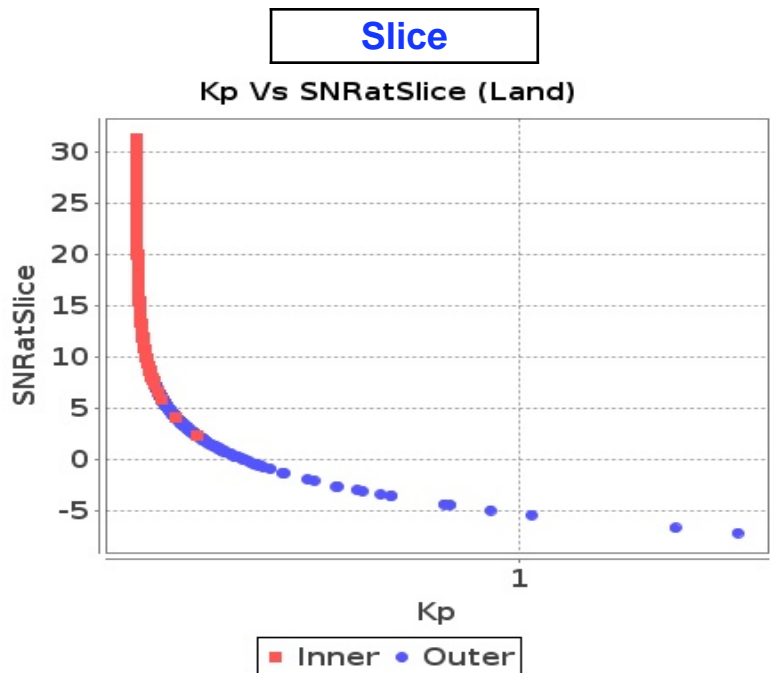
	Inner Beam (VV)				Outer Beam (VV)				Parameter Specifications		
	Min	Max	Mean	Bad Occ. (%)	Min	Max	Mean	Bad Occ. (%)	Parameter	Min	Max
<b>Incidence Angle (deg)</b>	48.71	49.35	48.98	0.000	57.54	58.31	57.90	0.000	Inci.(Inner)	47.10	49.90
<b>Azimuth Diff. (deg)</b>	0.0026	1.81	1.09	0.188	0.0026	1.98	1.08	0.151	Inci.(Outer)	57.30	58.90
<b>Range(Km)</b>	1027.46	1090.09	1050.36	0.000	1205.87	1283.42	1234.78	13.814	Azimuth Diff.	0.60	2.00
<b>X Factor(dbm)</b>	-91.26	-89.99	-90.11	0.000	-93.11	-92.01	-92.10	0.000	Range(Inner)	1025.00	1095.70
<b>Across Distance (Km)</b>	16.11	16.62	16.12	0.000	21.35	22.19	21.28	1.000	Range(Outer)	1210.00	1280.00
<b>Along Distance (Km)</b>	19.01	118.73	19.84	1.000	18.67	118.49	19.75	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
									<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)

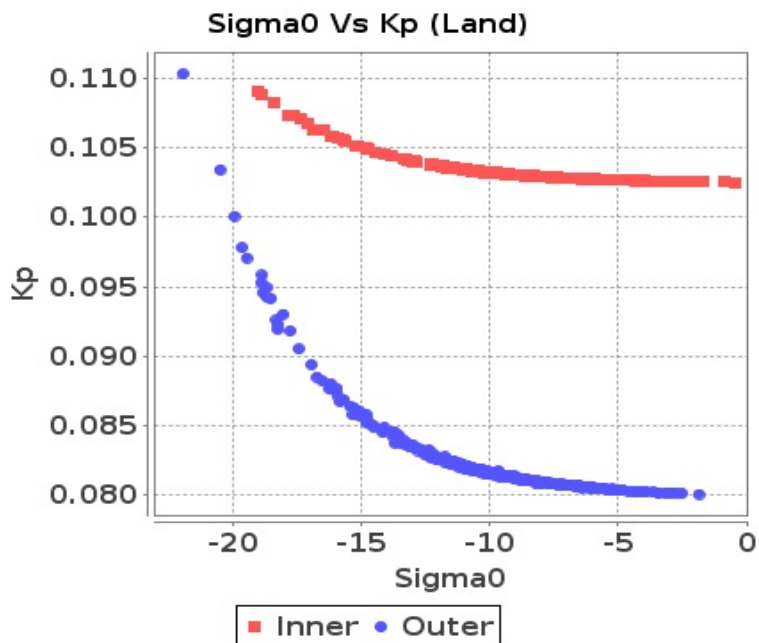


# Sigma0 Behaviour (Kp Vs SNR)

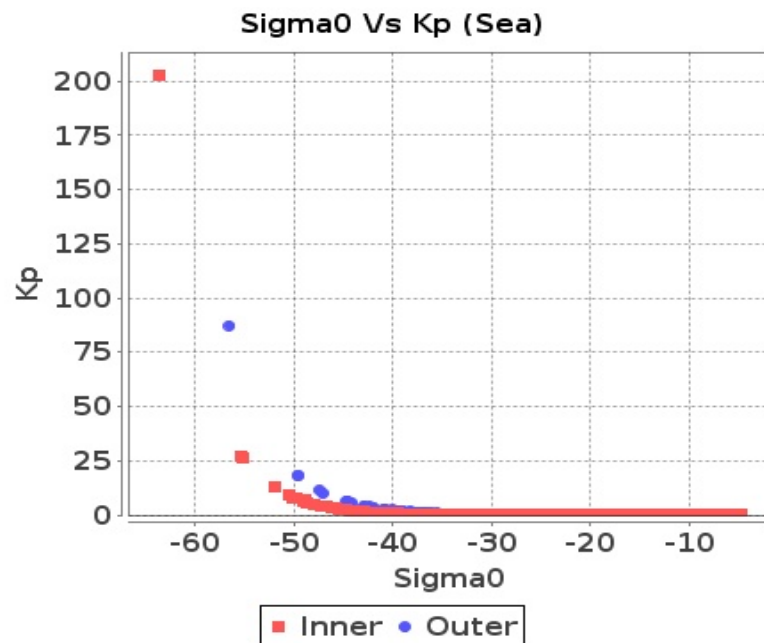


## Sigma0 Behaviour(Sigma0 Vs Kp)

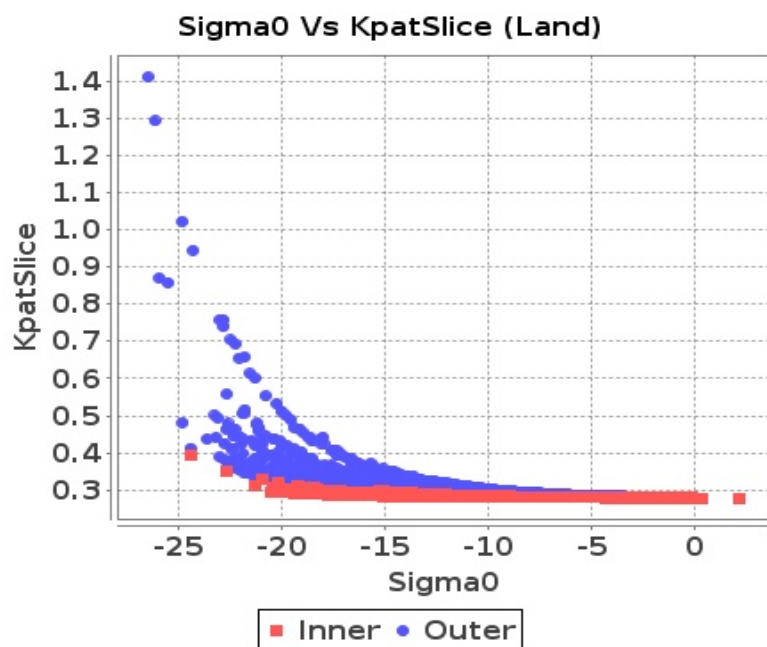
Footprint-Land



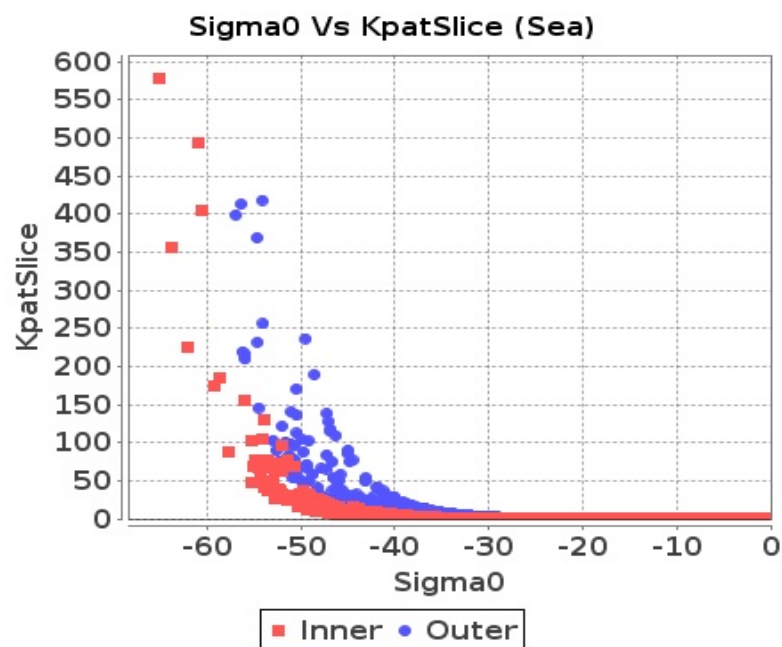
Footprint-Sea



Slice-Land



Slice-Sea



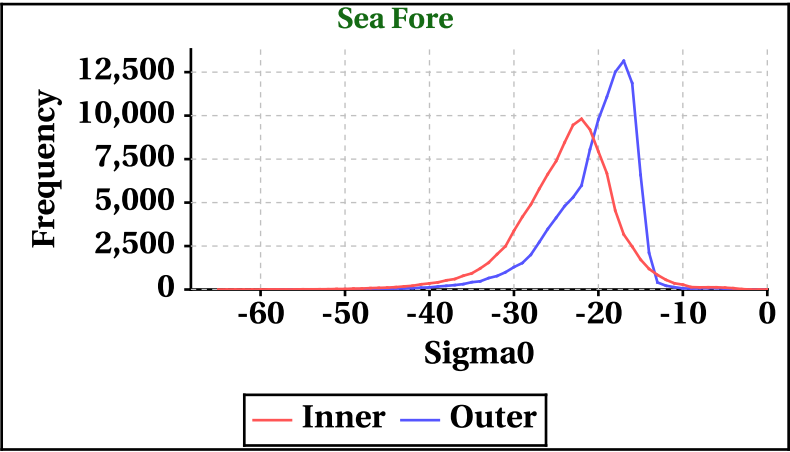
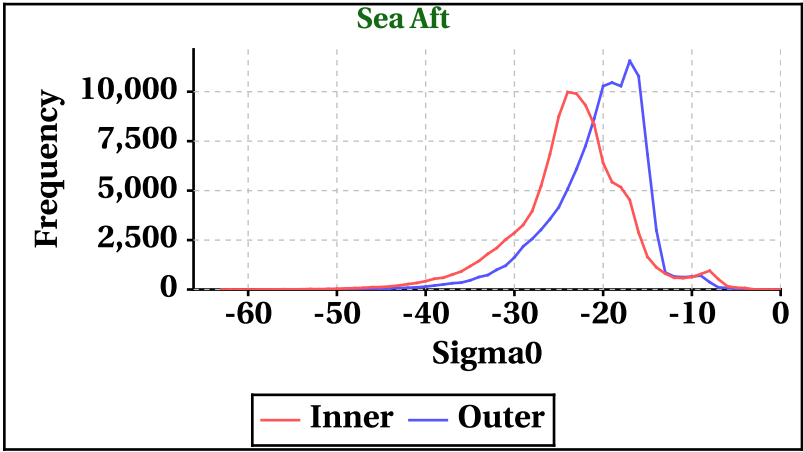
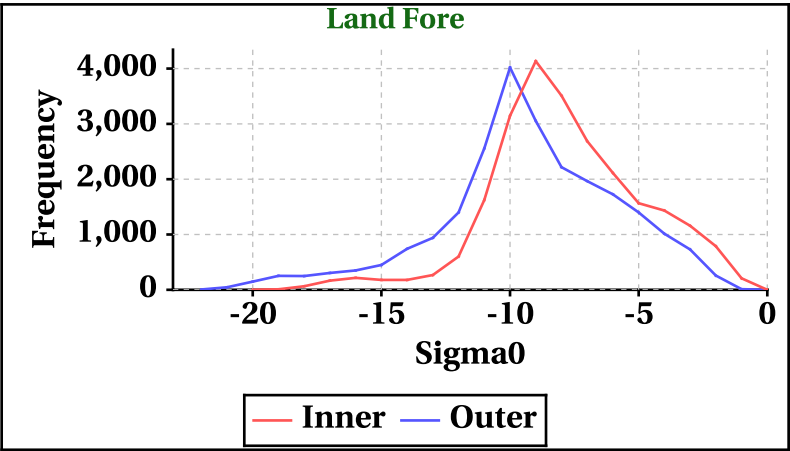
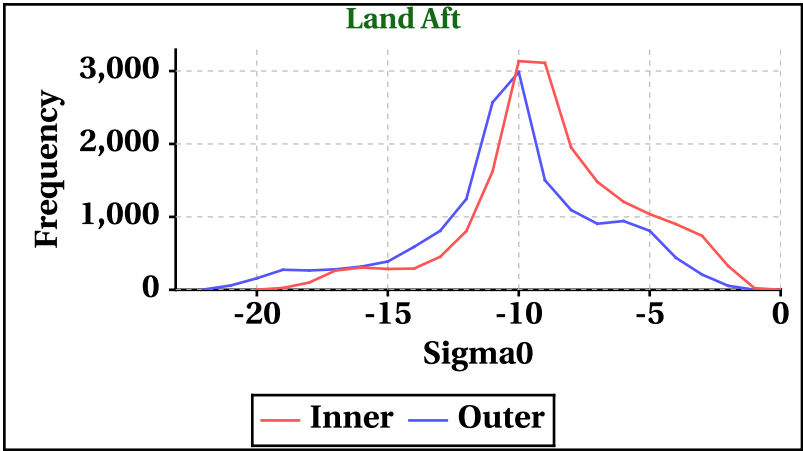


Dynamic Range (Data Histograms)

Sigma0(db)

Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-20	-20	-63	-65
Max	0	0	0	0

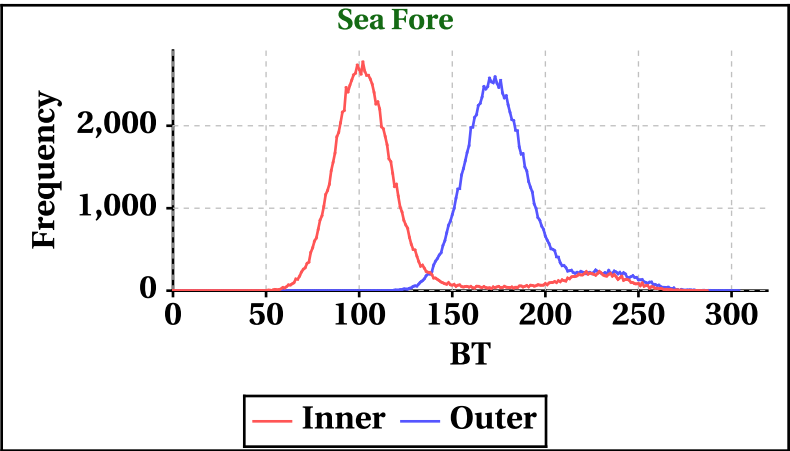
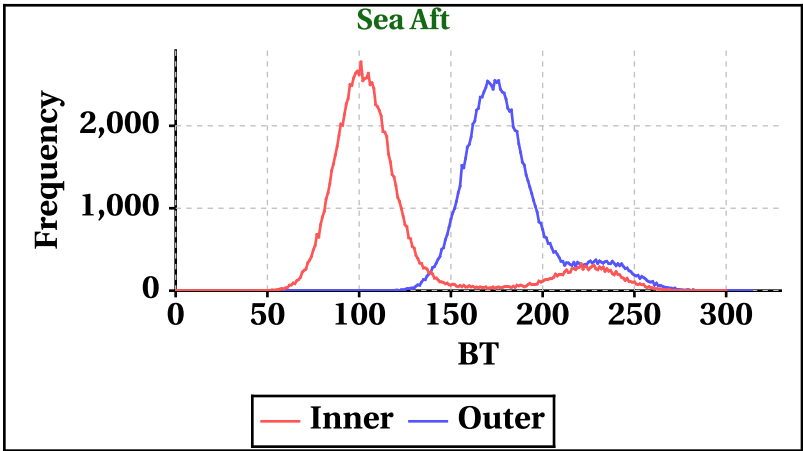
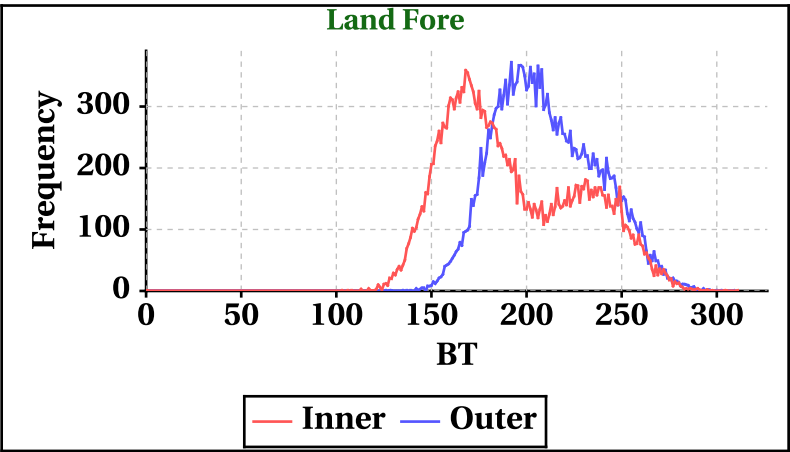
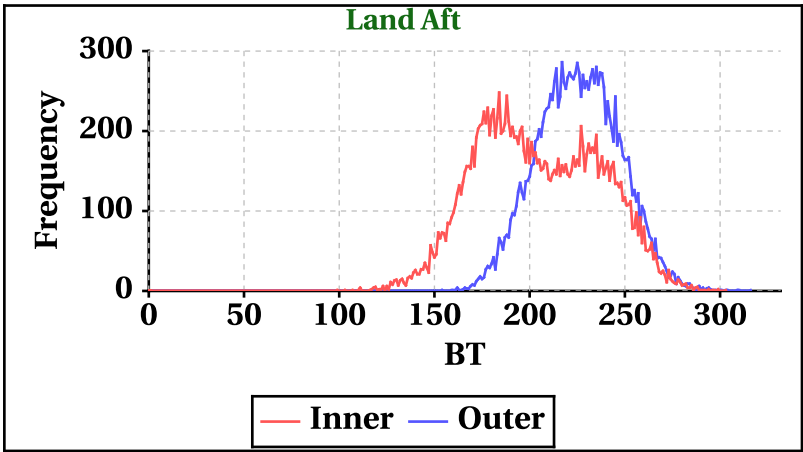
Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-22	-22	-59	-59
Max	0	0	0	0



Brightness Temperature(K)

Inner Beam(HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	303	311	300	287

Outer Beam(VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	316	309	314	304

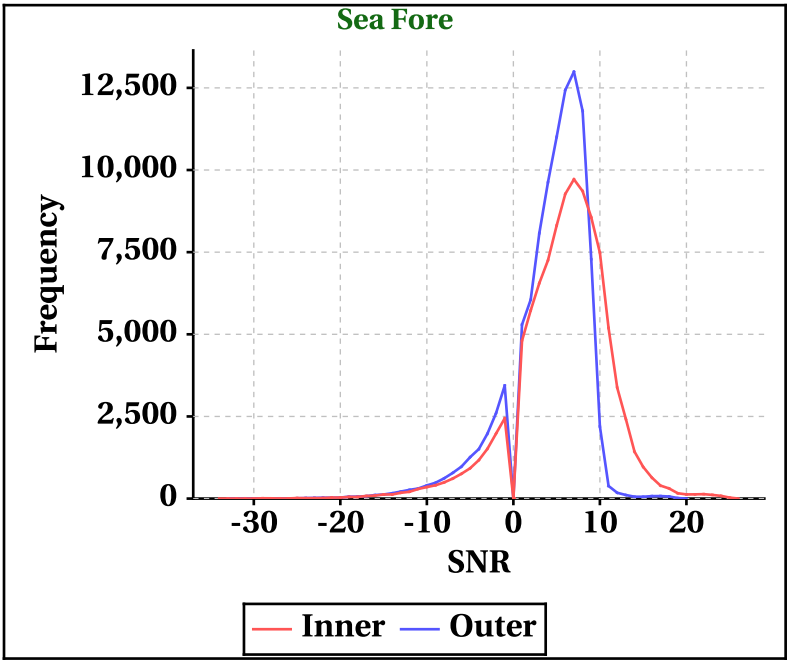
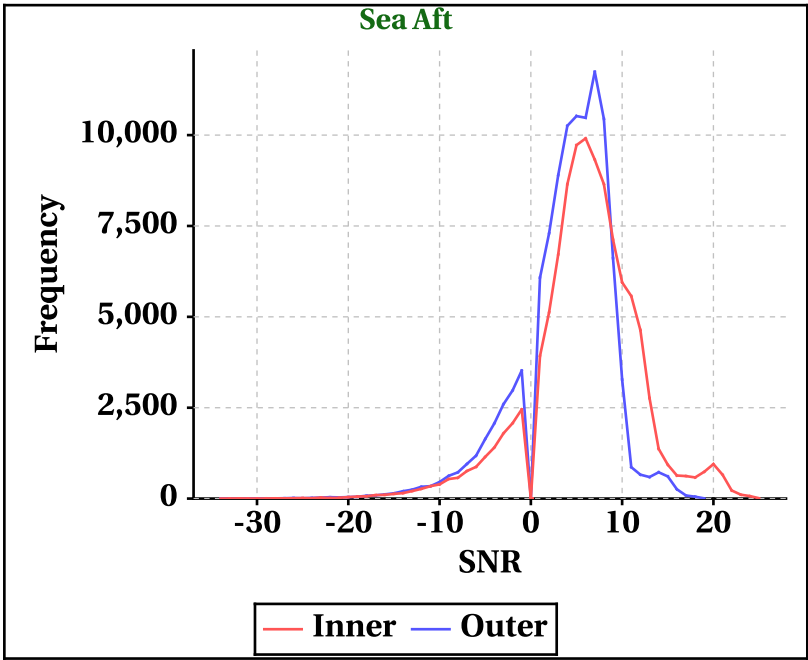
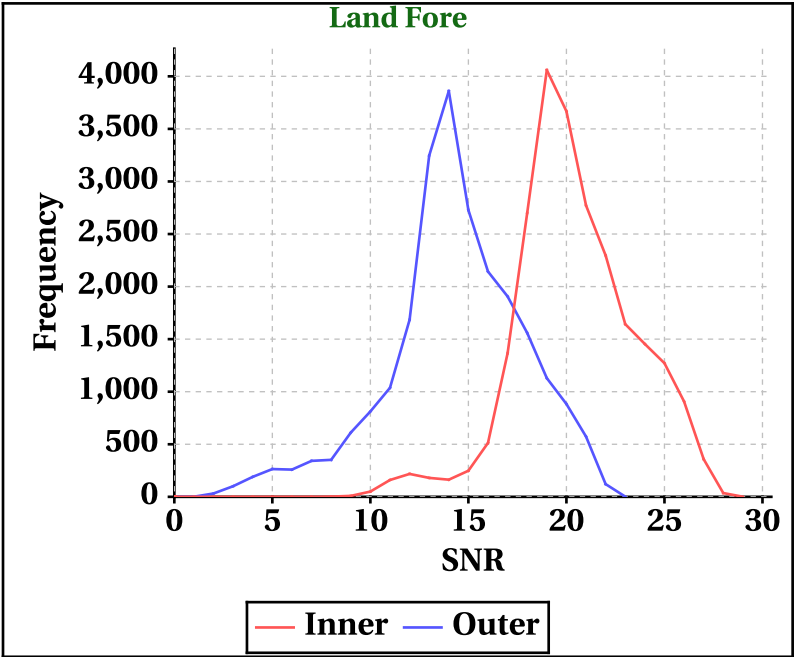
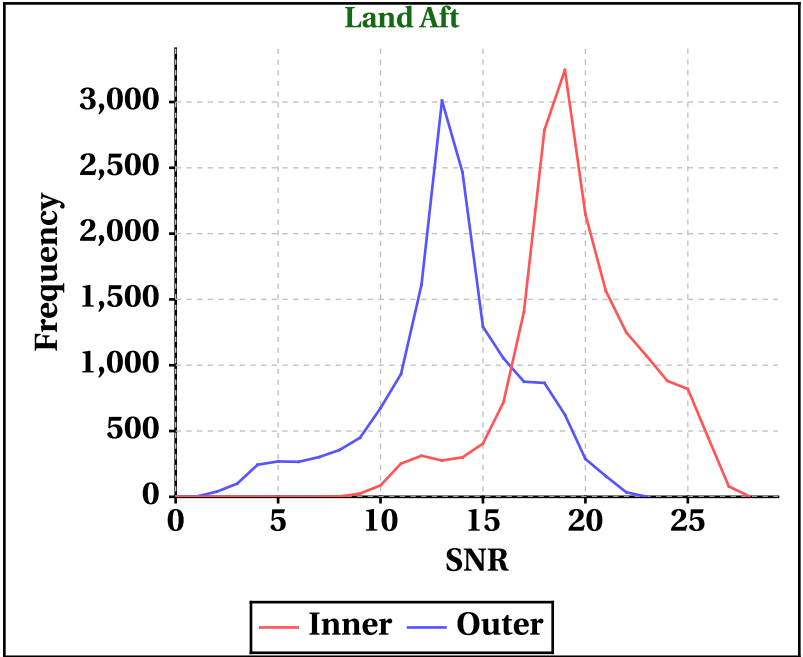


Dynamic Range (Data Histograms)

SNR(dBm)

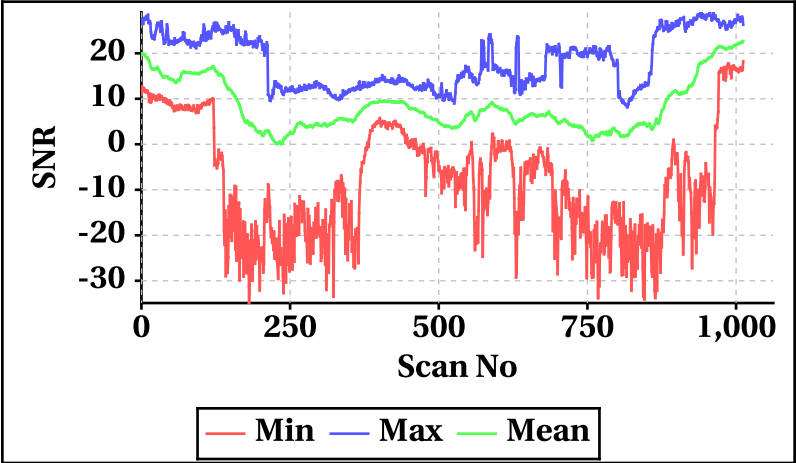
Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	-34	-34
Max	28	29	25	26

Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	-34	-33
Max	23	23	19	20

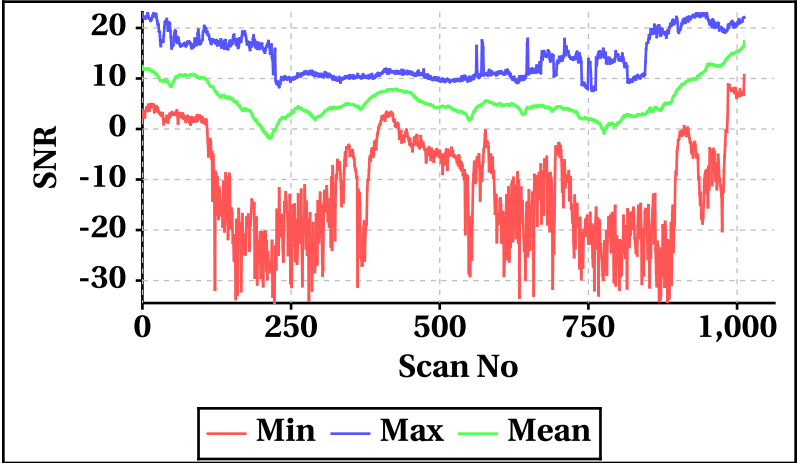


# Orbit-wise behaviour of SNR

Inner Beam (HH)

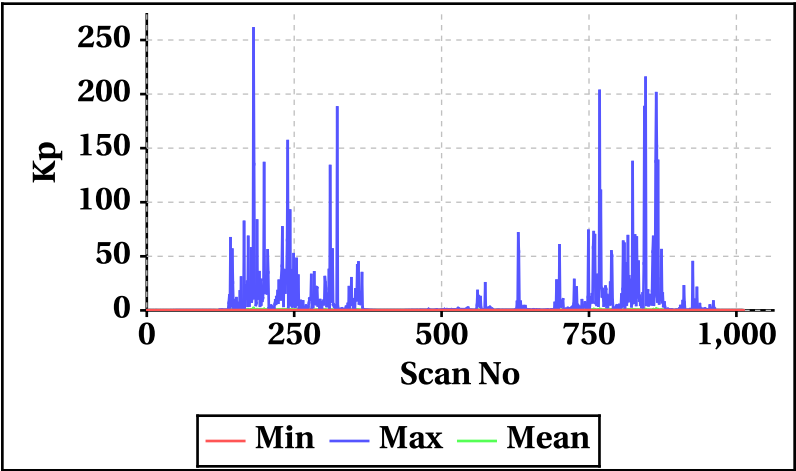


Outer Beam(VV)

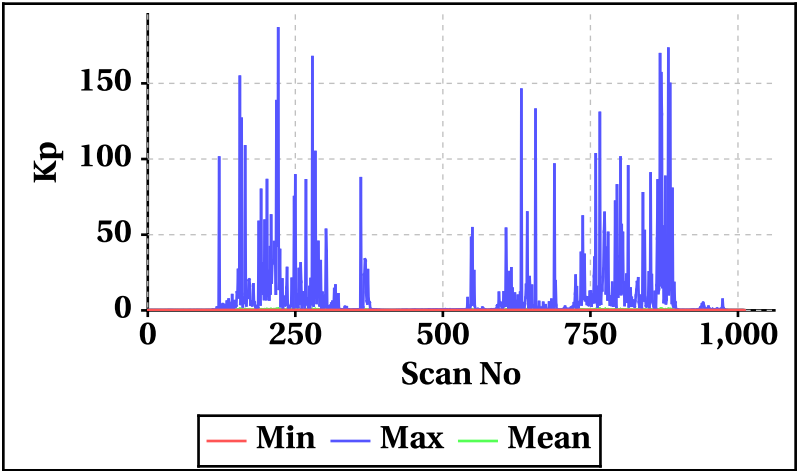


# Orbit-wise behaviour of Kp,Kpa,Kpb,Kpc

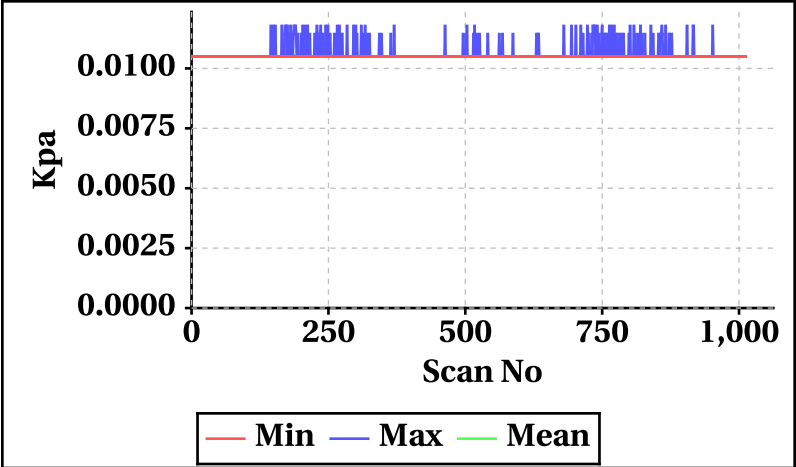
Inner Beam(HH)



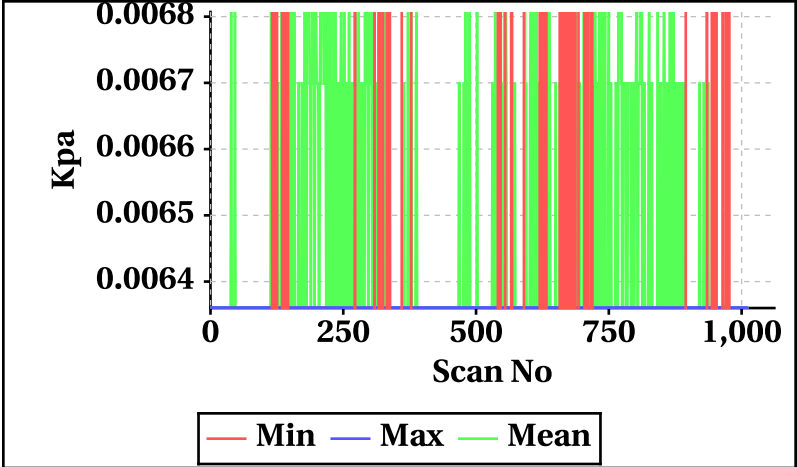
Outer Beam(VV)



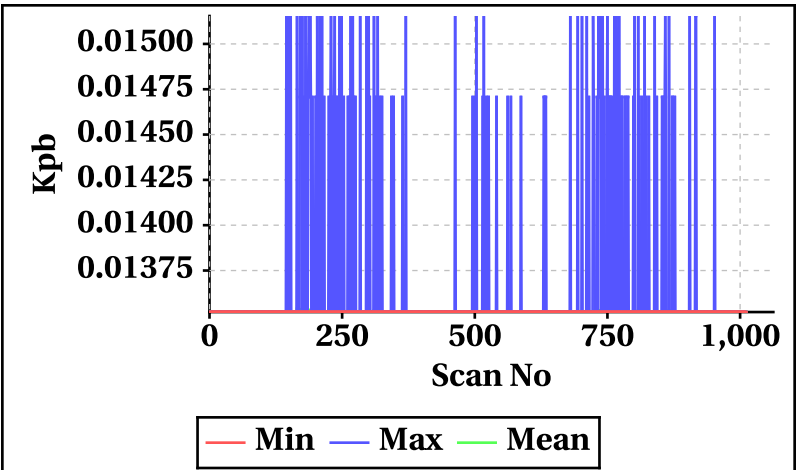
Inner Beam(HH)



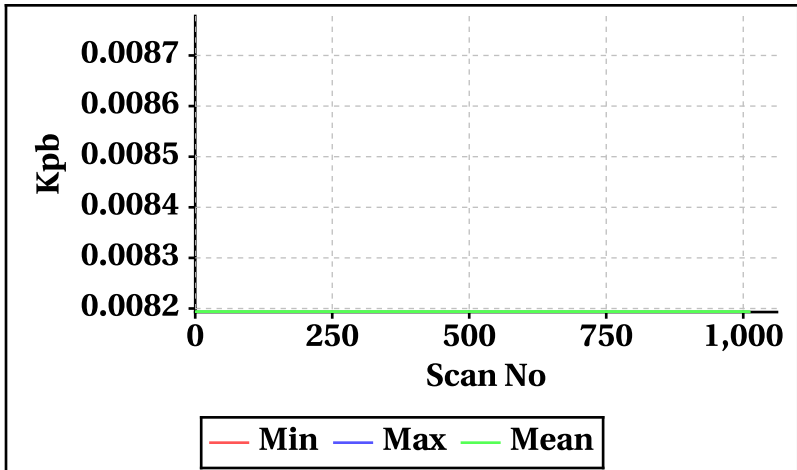
Outer Beam(VV)



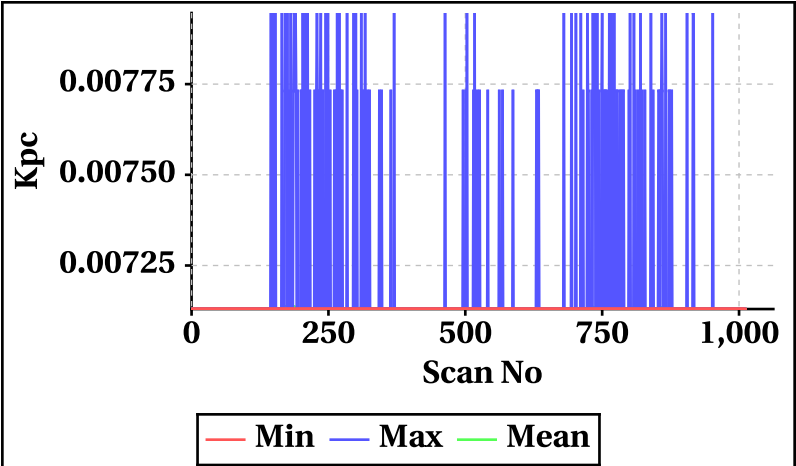
Inner Beam(HH)



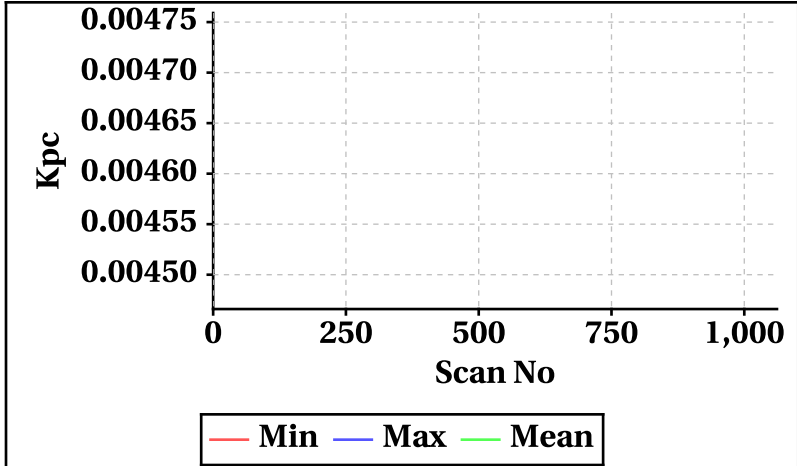
Outer Beam(VV)



Inner Beam(HH)



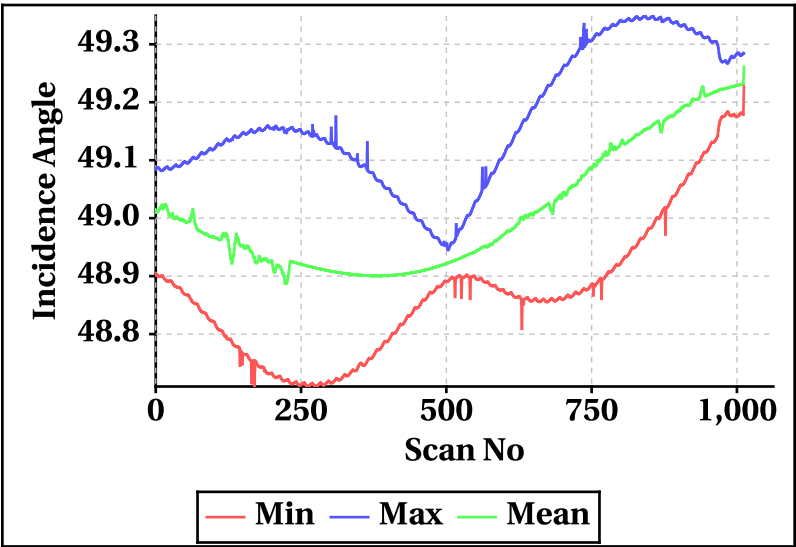
Outer Beam(VV)



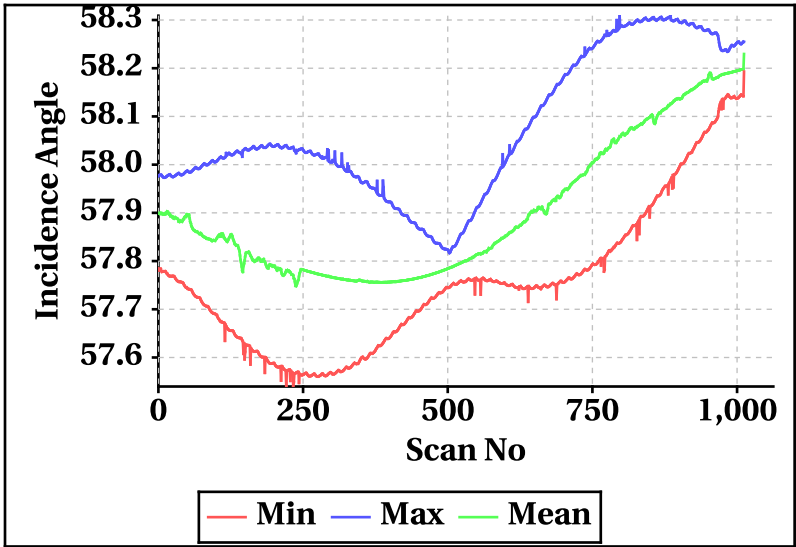


Orbt-wise behaviour of Incidence,Azimuth,Range,X-Factor

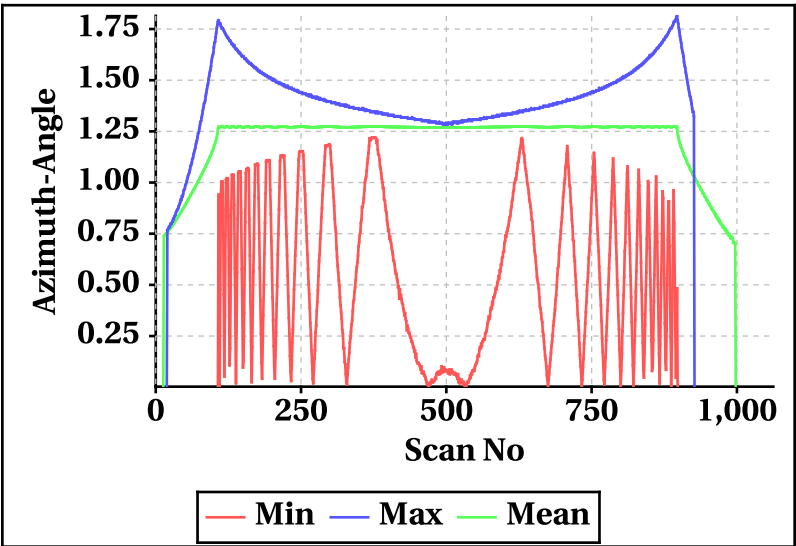
Inner Beam (HH)



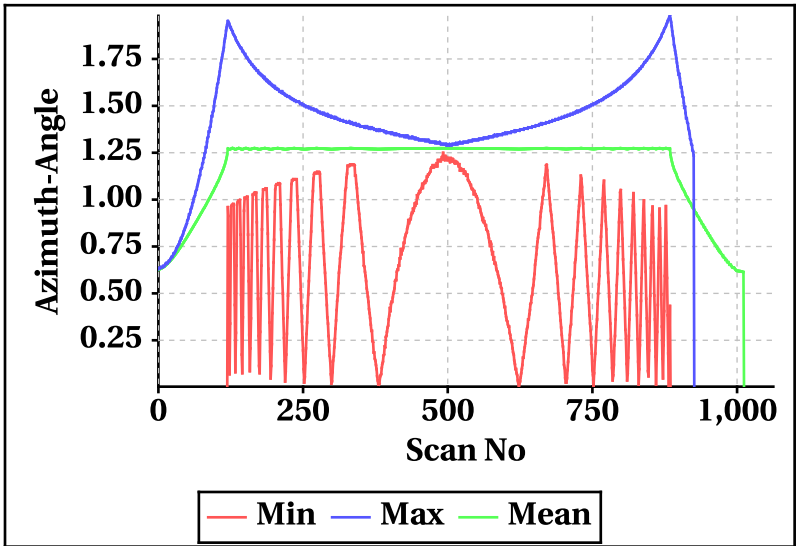
Outer Beam(VV)



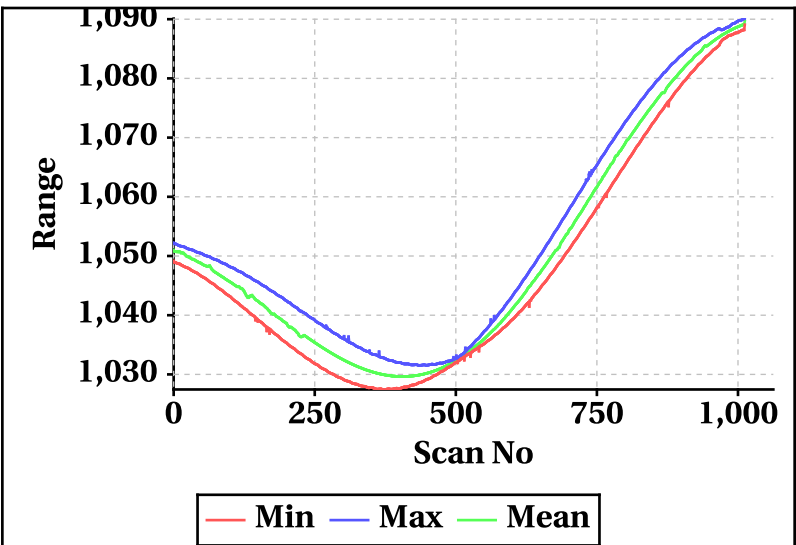
Inner Beam (HH)



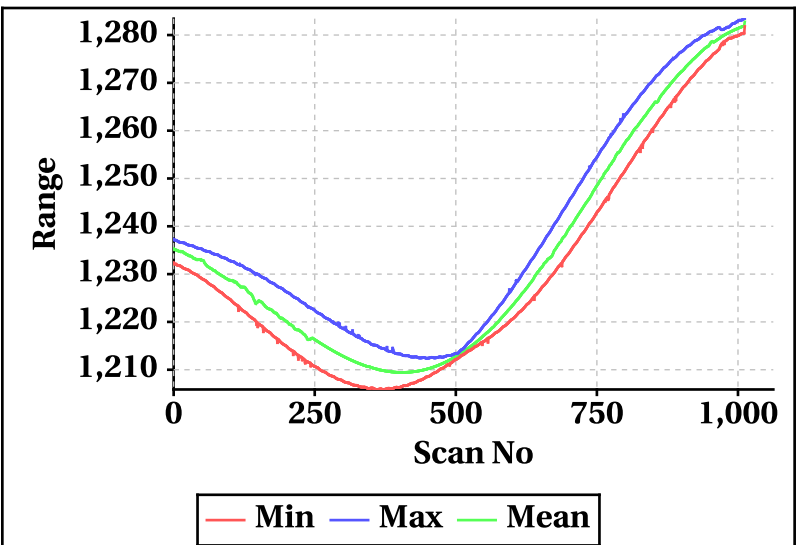
Outer Beam(VV)



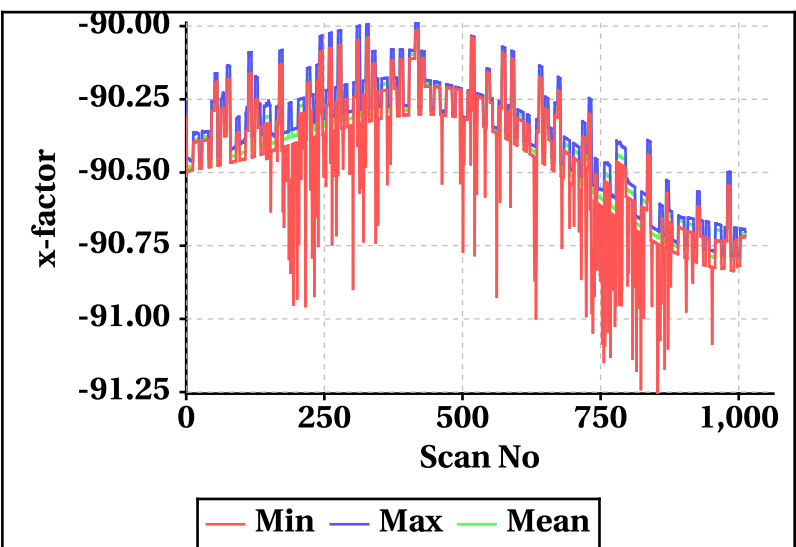
Inner Beam (HH)



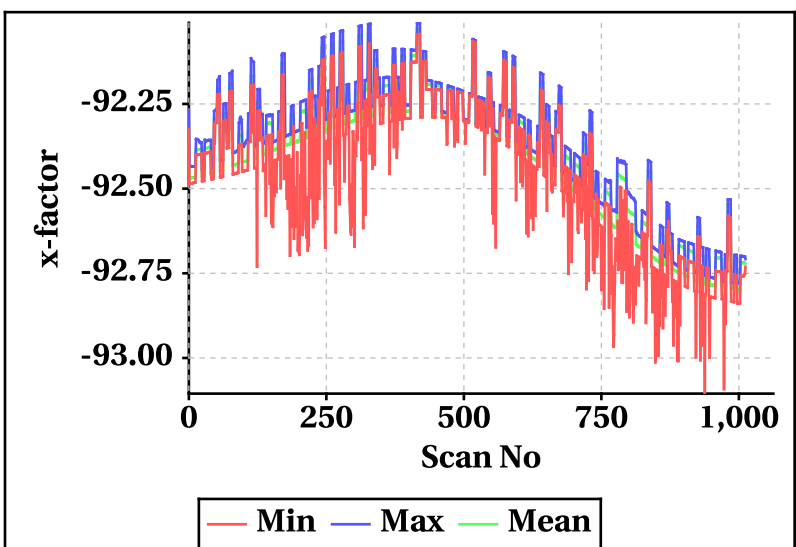
Outer Beam(VV)



Inner Beam (HH)



Outer Beam(VV)

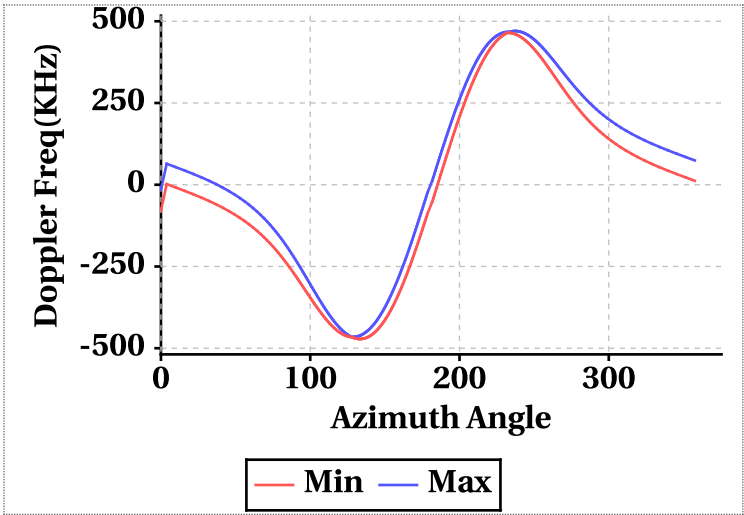


Doppler Frequency Variation

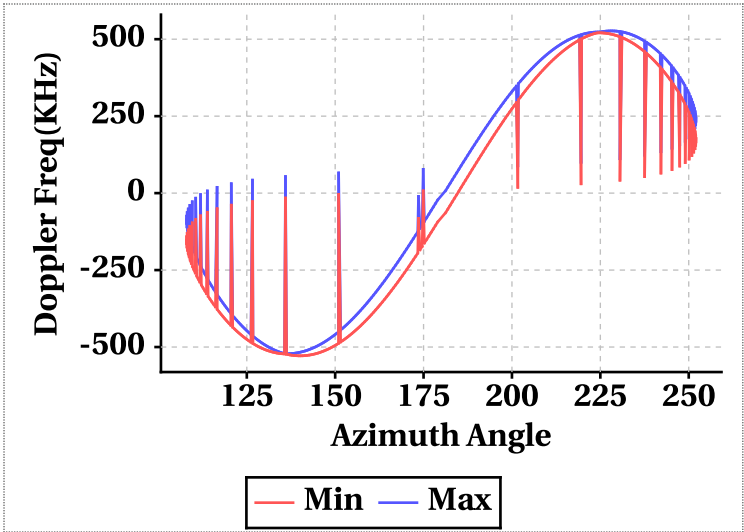
Doppler Frequency(KHz) variation statistics Over the half Orbit

	Inner Beam (HH)	Outer Beam (VV)
Min	-471.74	-528.46
Max	470.00	526.94

Footprint wise Doopler frequency variation Inner Beam (HH)



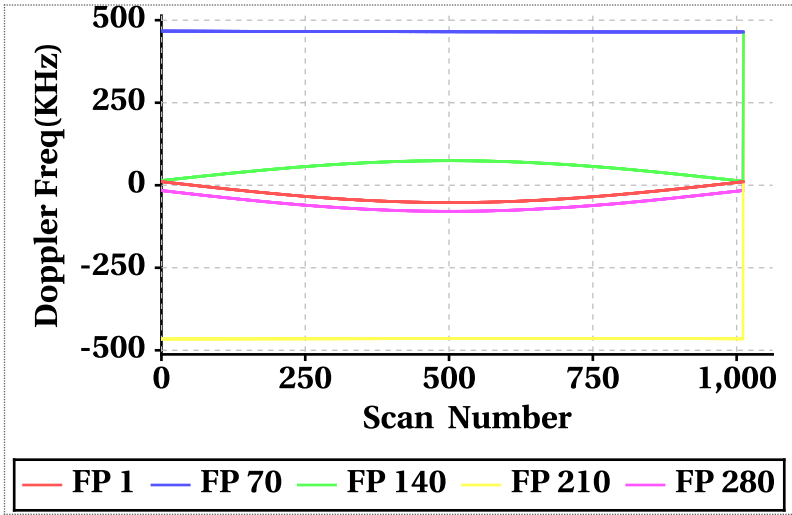
Footprint wise Doopler frequency variation Outer Beam (VV)



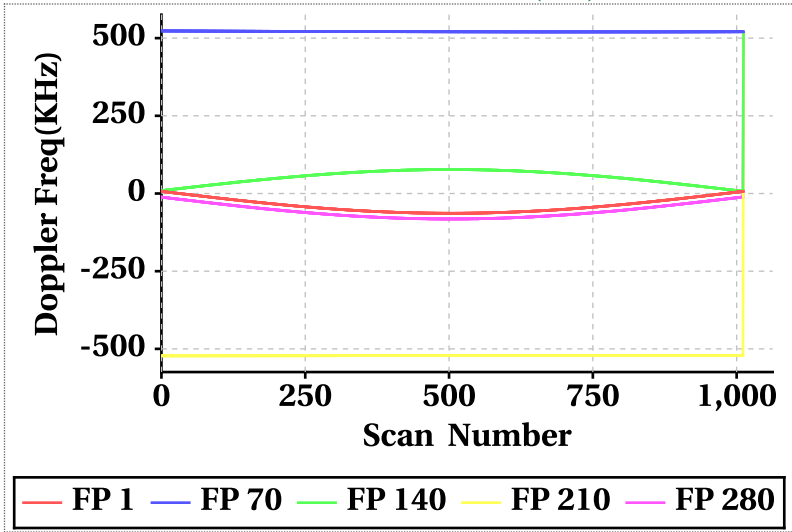
Doppler Frequency(KHz) variation

	Inner Beam (HH)			Outer Beam (VV)		
Doppler_FP	Min	Max	Mean	Min	Max	Mean
Doppler_1	-52.44	11.78	-29.40	-63.68	7.96	-37.95
Doppler_70	464.32	467.08	465.19	520.04	523.26	520.94
Doppler_140	12.12	459.82	52.45	7.26	514.46	52.45
Doppler_210	-465.74	459.82	-463.90	-522.30	514.46	-520.54
Doppler_280	-79.26	459.82	-55.57	-82.14	514.46	-55.69

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

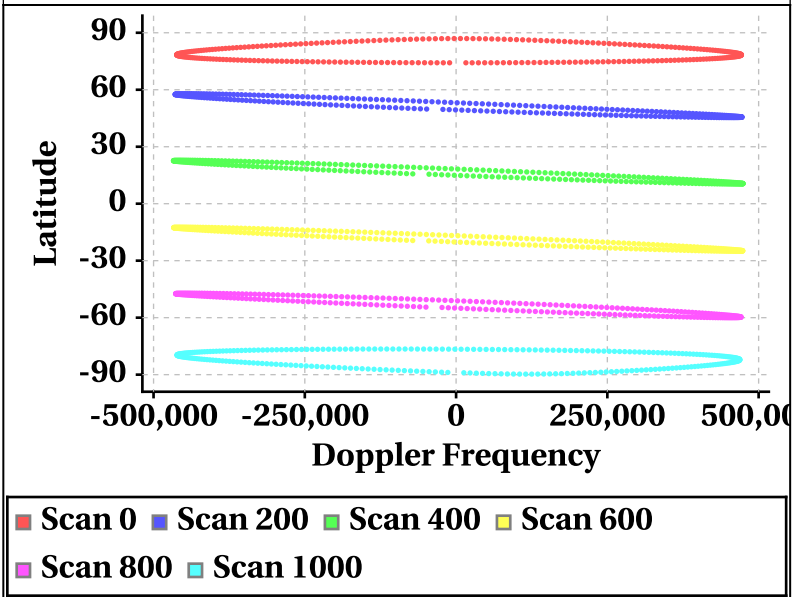


Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Outer Beam (VV)

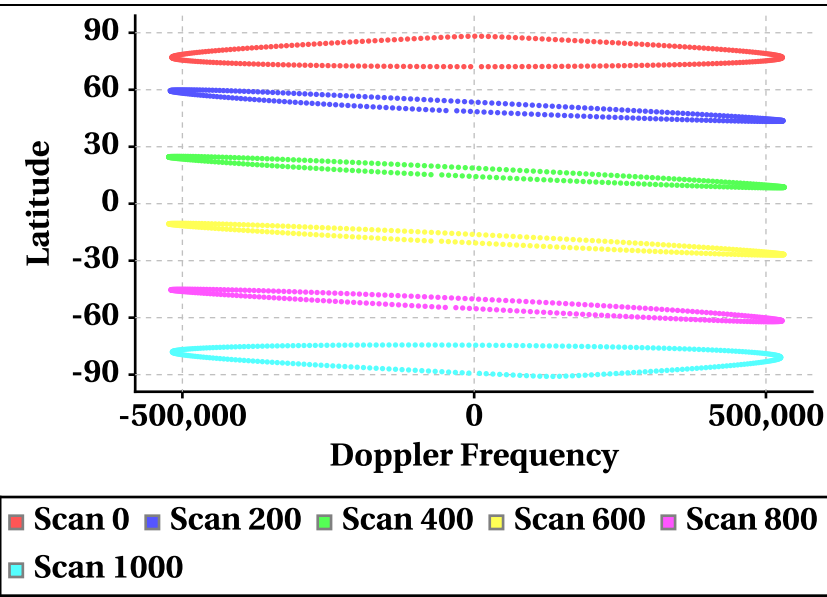


Latitude Vs Doppler Frequency

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



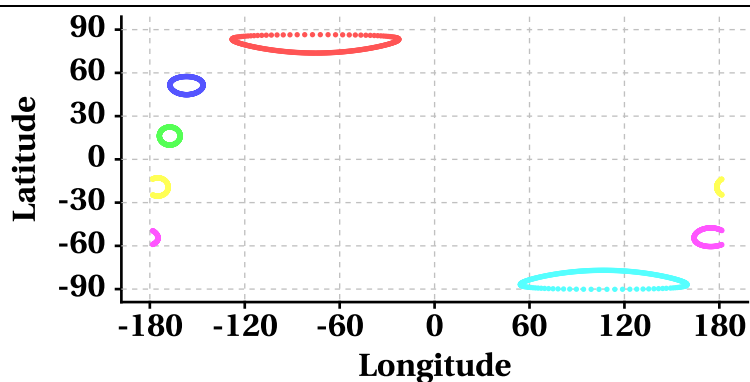
Doppler Frequency at Scan Interval of 200 [Outer Beam(VV)]



# Parameter as a function of Latitude

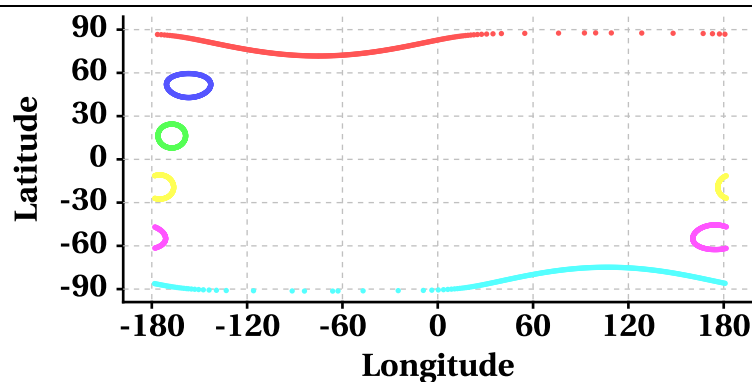
## Latitude Vs Longitude

Scan Trace [Inner Beam(HH)]



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

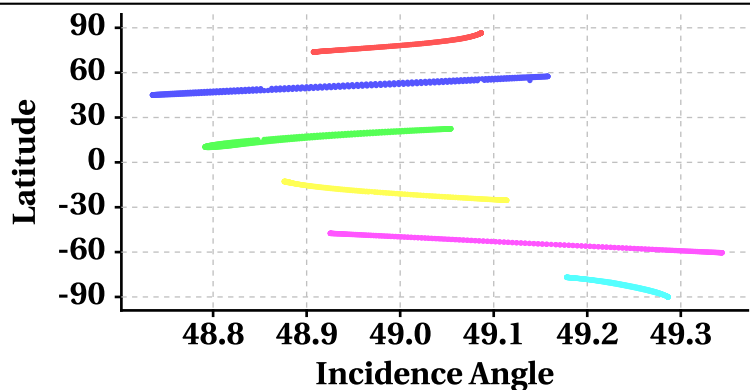
Scan Trace [Outer Beam (VV)]



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

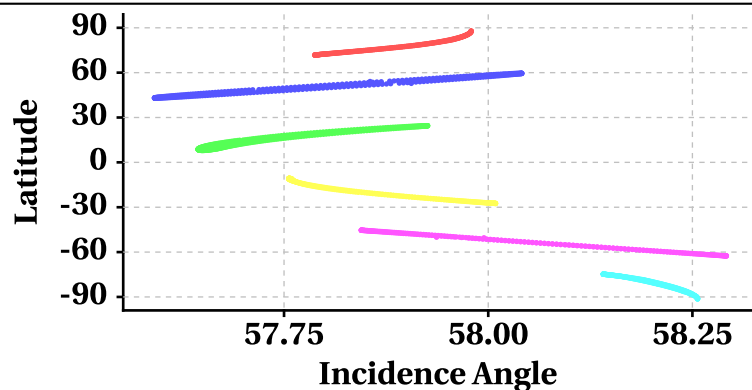
## Latitude Vs Incidence Angle

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



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

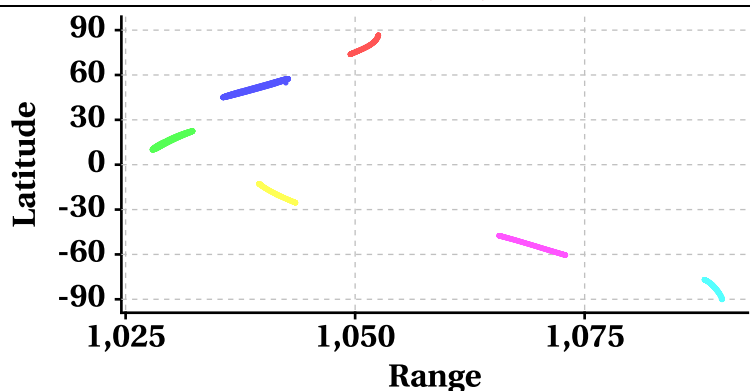
Incidence Angle at Scan Interval of 200 [Outer Beam (VV)]



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

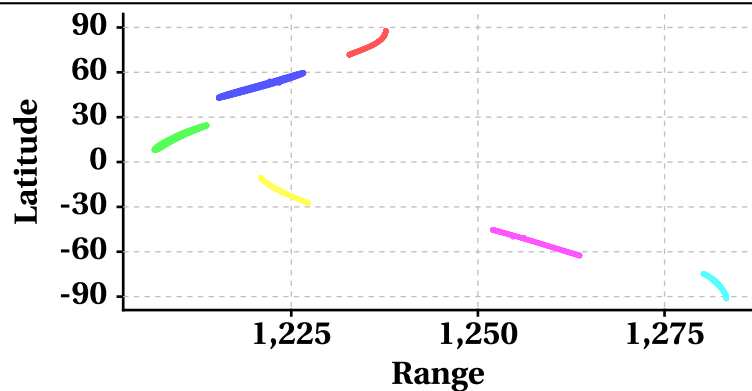
## Latitude Vs Range

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

