

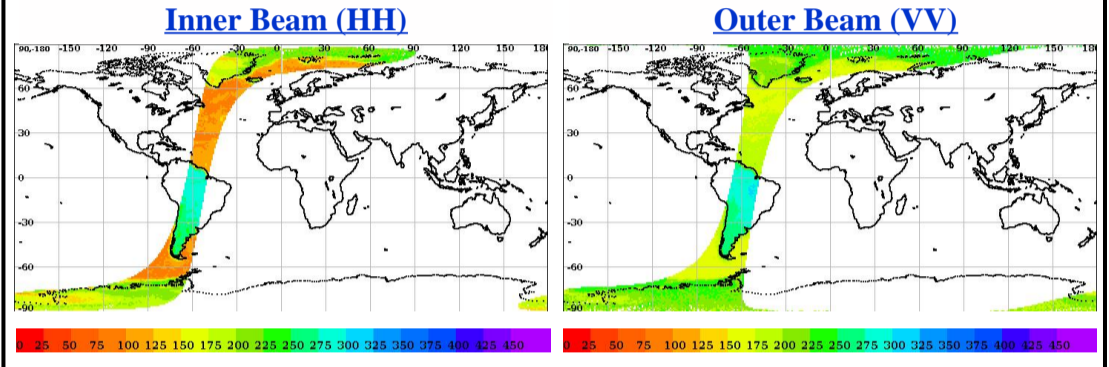
# SCATSAT-1 Scatterometer Level-1B Data Quality Evaluation Report

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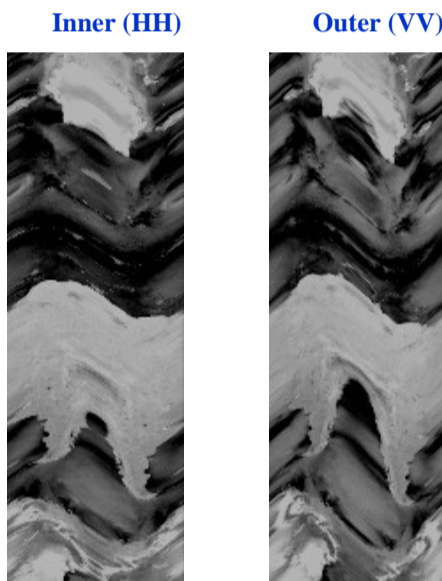
- Half-Orbit Coverage using BT & Sigma-0
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<b>Satellite Id</b>	ScatSat-1	<b>Start Orbit</b>	6297	<b>Total Scans</b>	1015
<b>Sensor Name</b>	Scatterometer	<b>End Orbit</b>	6298	<b>No of Inner FootPrints</b>	281
<b>Processor Version</b>	v1.1.2	<b>Rev. Number</b>	06297_06298	<b>No Of Outer FootPrints</b>	282
<b>Half Orbit Direction</b>	NS	<b>Data Production Date</b>	04-12-2017	<b>No. Of Inner Slices</b>	9
<b>Equator Crossing Date</b>	04-12-2017	<b>Equator Crossing Time</b>	12:30:17.000	<b>No Of Outer Slices</b>	14

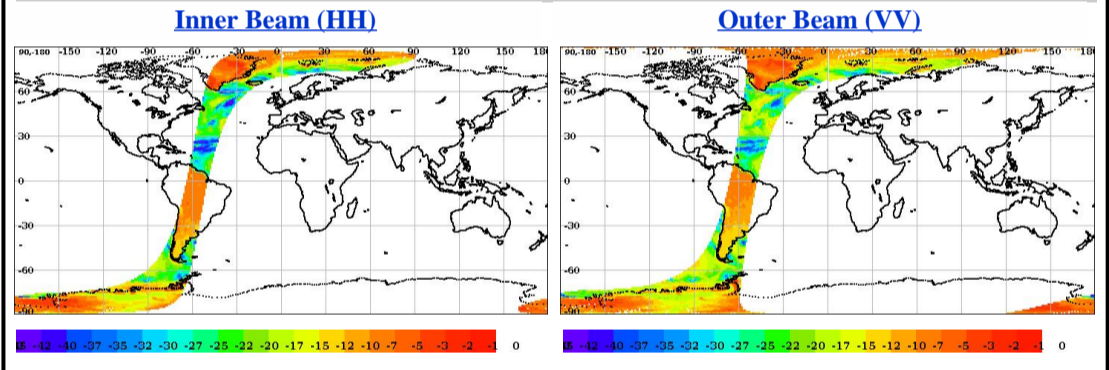
## Brightness Temperature(k) Footprint trace



## Image Snapshot for Inner & Outer Beam



## Sigma0(dB) Footprint trace



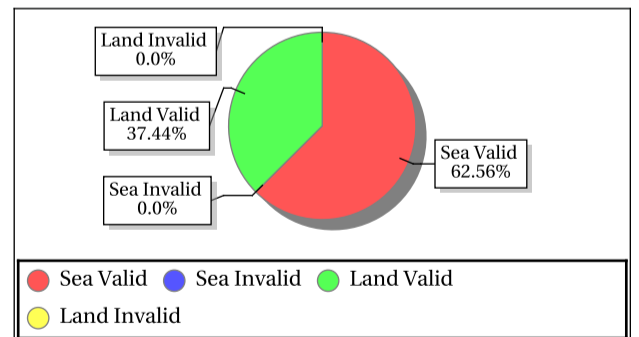
## Invalid and Poor Sigma-0 Quality Flag Statistics for Inner/Outer Slices\*

Sigma-0 Flags	Inner Beam	Outer Beam
Invalid Sigma0(%)	0.00	0.00
Data Not Available From Payload (%)	0.0	0.0
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

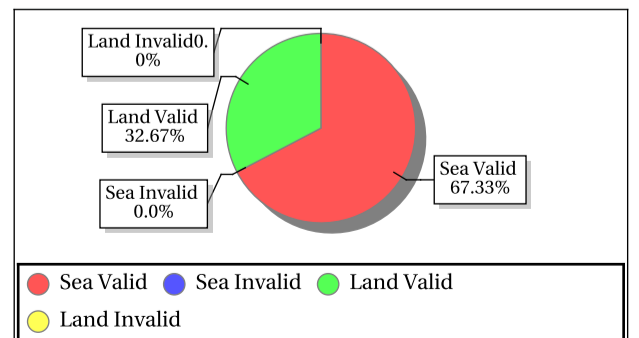
\*DP Format Document

## 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
GreenLand_2	77.50	-41.50	Inner	DSC	Aft	-5.78	-3.72	-4.82	0.60	132.02	174.83	155.03	12.07
GreenLand_2	77.50	-41.50	Inner	DSC	Fore	-5.89	-4.48	-5.29	0.36	129.24	186.26	161.47	15.64
GreenLand_3	71.55	-42.45	Inner	DSC	Aft	-11.47	-9.02	-10.40	0.68	166.27	221.20	194.69	14.27
GreenLand_3	71.55	-42.45	Inner	DSC	Fore	-12.01	-9.39	-10.90	0.62	167.73	203.74	185.77	10.42
Amazon_3	-6.00	-61.00	Inner	DSC	Aft	-9.24	-6.80	-7.96	0.52	260.05	338.80	287.74	19.17
Amazon_3	-6.00	-61.00	Inner	DSC	Fore	-9.36	-7.05	-7.97	0.48	250.63	319.73	286.17	17.86
GreenLand_1	74.69	-42.50	Inner	DSC	Aft	-10.99	-7.38	-8.55	0.85	147.98	195.16	169.14	15.27
GreenLand_1	74.69	-42.50	Inner	DSC	Fore	-11.32	-7.23	-9.11	0.90	149.88	201.79	171.93	14.83
Amazon_2	-3.00	-61.00	Inner	DSC	Aft	-11.21	-6.77	-8.43	0.94	223.09	326.78	267.07	23.21
Amazon_2	-3.00	-61.00	Inner	DSC	Fore	-10.31	-7.02	-8.62	0.86	231.41	313.10	268.27	20.52
GreenLand_2	77.50	-41.50	Outer	DSC	Aft	-5.95	-4.41	-4.86	0.63	196.75	248.10	212.83	20.62
GreenLand_2	77.50	-41.50	Outer	DSC	Fore	-5.62	-4.26	-4.89	0.49	191.34	221.39	199.94	10.89
GreenLand_3	71.55	-42.45	Outer	DSC	Aft	-11.59	-10.28	-10.85	0.45	197.72	232.66	221.46	10.83
GreenLand_3	71.55	-42.45	Outer	DSC	Fore	-12.95	-11.05	-11.85	0.56	190.94	269.07	220.25	21.41
Amazon_3	-6.00	-61.00	Outer	DSC	Aft	-9.72	-8.22	-8.91	0.39	267.42	319.84	289.49	15.49
Amazon_3	-6.00	-61.00	Outer	DSC	Fore	-10.74	-8.24	-9.42	0.58	247.29	320.12	281.15	18.53
GreenLand_1	74.69	-42.50	Outer	DSC	Aft	-9.96	-7.49	-8.86	0.69	201.86	236.19	220.64	11.54
GreenLand_1	74.69	-42.50	Outer	DSC	Fore	-10.32	-7.57	-8.79	0.83	203.45	237.98	221.79	9.62
Amazon_2	-3.00	-61.00	Outer	DSC	Aft	-11.43	-8.30	-9.41	0.75	241.28	315.31	276.78	16.89
Amazon_2	-3.00	-61.00	Outer	DSC	Fore	-11.46	-8.42	-9.91	0.74	236.27	294.60	268.64	16.49



## 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	243.26	0.37	3.727	0.10	260.42	0.31	2.998	0.10	0.21	0.10	0.000	0.10	0.14	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	0.02	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>	-34.59	22.55	4.80	0.014	-34.89	23.68	4.77	0.118	-1.58	27.83	18.80	11.014	3.26	31.02	20.14	24.410

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	170.62	0.31	3.094	0.08	201.28	0.29	2.577	0.08	0.17	0.09	0.000	0.08	0.15	0.09	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	0.01	0.00	0.000	0.00	0.00	0.00	0.000	0.00	0.00	0.00	0.000
<b>SNR</b>	-33.93	17.07	3.21	0.000	-34.65	17.80	3.16	0.000	-1.37	22.60	13.91	0.025	-0.47	23.87	14.57	0.713

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)

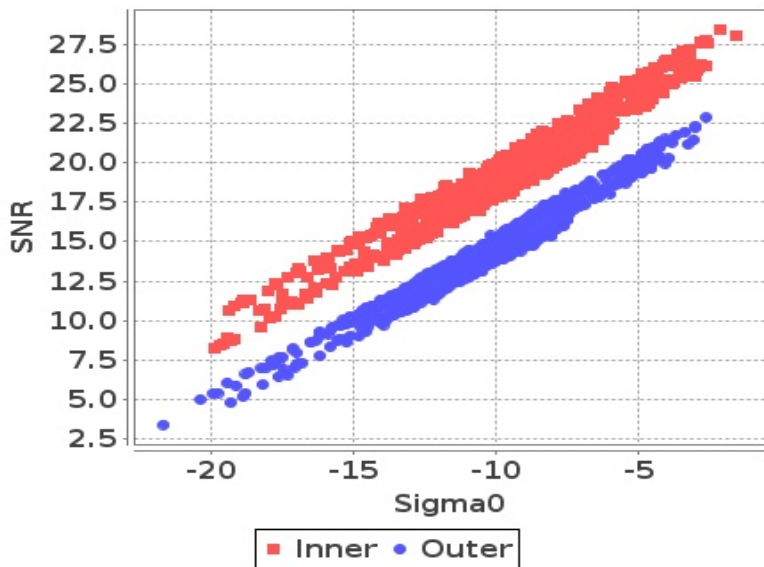
	Inner Beam (HH)				Outer Beam (VV)				Parameter Specifications		
	Min	Max	Mean	Bad Occ. (%)	Min	Max	Mean	Bad Occ. (%)	Parameter	Min	Max
<b>Incidence Angle (deg)</b>	48.89	49.42	49.05	0.000	57.75	58.30	58.00	0.000	Inci.(Inner)	47.10	49.90
<b>Azimuth Diff. (deg)</b>	0.0026	6.04	1.27	2.555	0.0000	299.55	1.27	3.619	Inci.(Outer)	57.30	58.90
<b>Range(Km)</b>	1055.54	1074.53	1063.21	0.000	1239.16	1264.02	1249.24	0.000	Azimuth Diff.	0.60	2.00
<b>X Factor(dbm)</b>	-92.19	-89.43	-90.60	0.000	-93.72	-91.84	-92.60	0.000	Range(Inner)	1025.00	1095.70
<b>Across Distance (Km)</b>	15.76	16.33	15.95	0.000	17.42	54.19	21.16	2.000	Range(Outer)	1210.00	1280.00
<b>Along Distance (Km)</b>	18.80	39.34	19.71	1.000	18.37	39.33	19.63	2.000	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; margin-right: 5px;"></span> Normal	<span style="display: inline-block; width: 15px; height: 15px; background-color: orange; margin-right: 5px;"></span> Alarming	
									<span style="display: inline-block; width: 15px; height: 15px; background-color: yellow; margin-right: 5px;"></span> Deviations	<span style="display: inline-block; width: 15px; height: 15px; background-color: red; margin-right: 5px;"></span> High Errors	



## Sigma0 Behaviour (Sigma0 Vs SNR)

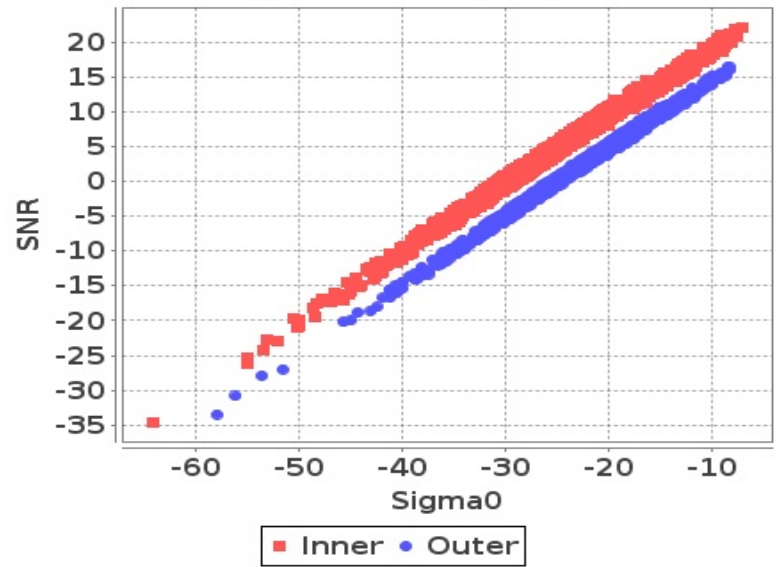
Footprint-Land

Sigma0 Vs SNR (Land)



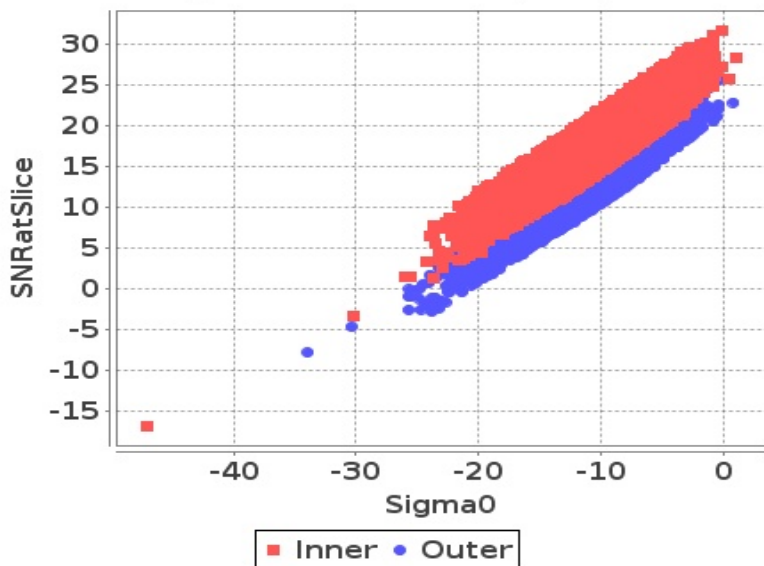
Footprint-Sea

Sigma0 Vs SNR (Sea)



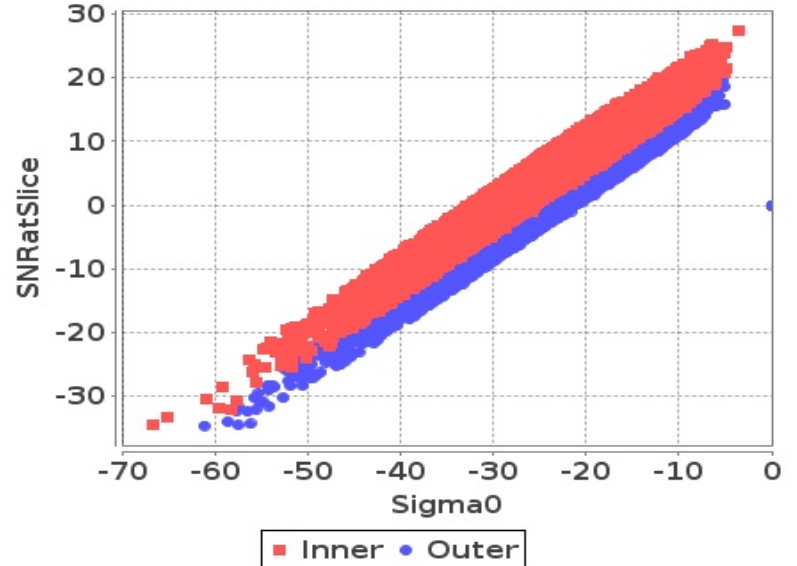
Slice-Land

Sigma0 Vs SNRatSlice (Land)



Slice-Sea

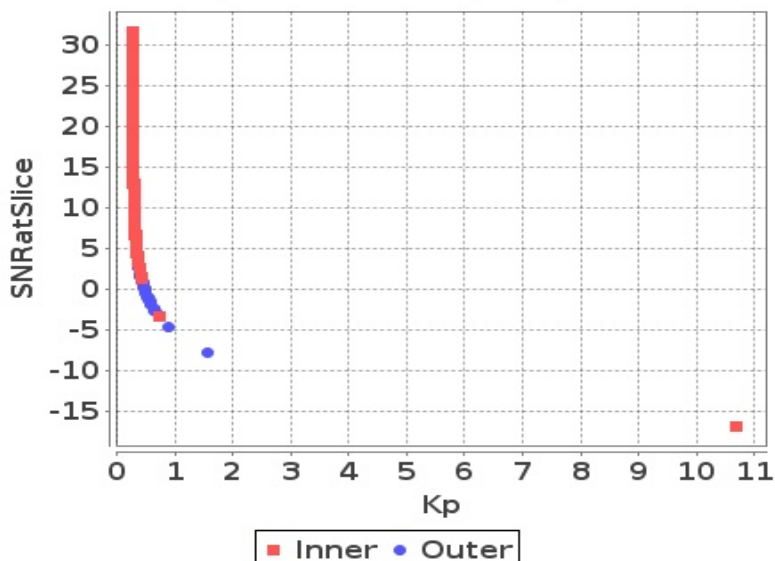
Sigma0 Vs SNRatSlice (Sea)



## Sigma0 Behaviour (Kp Vs SNR)

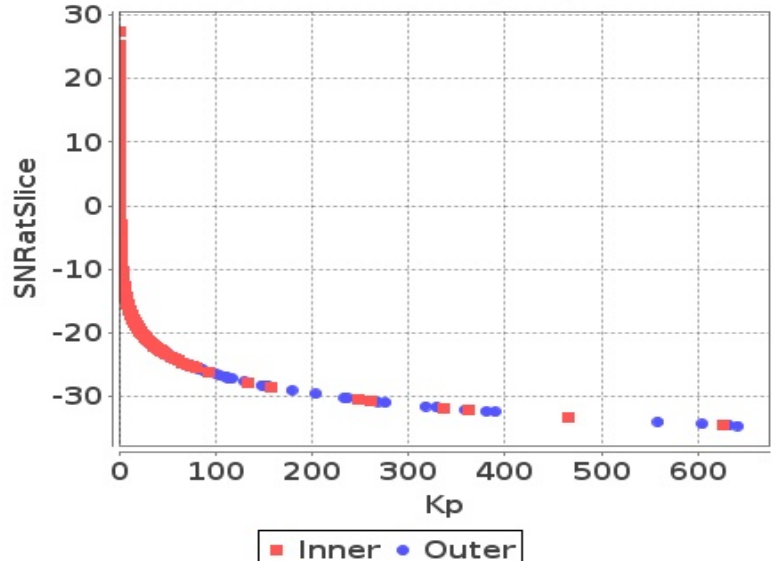
Slice

Kp Vs SNRatSlice (Land)



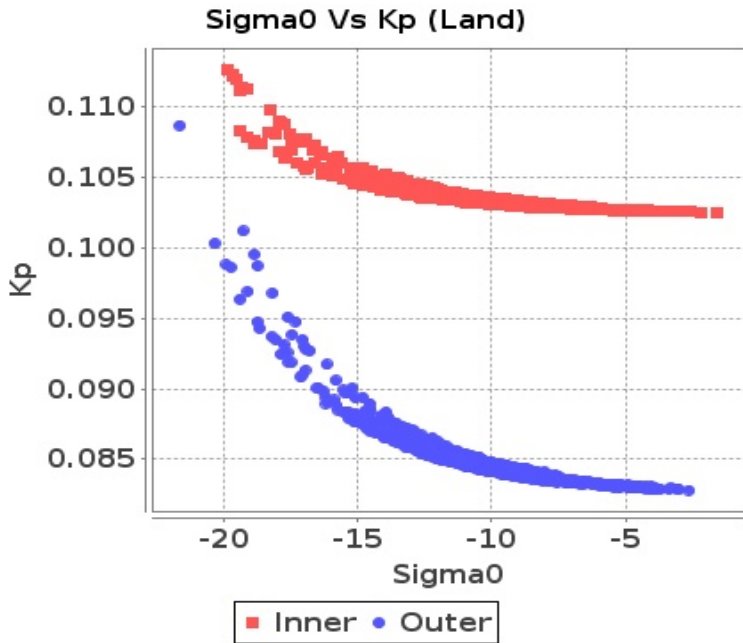
Slice

Kp Vs SNRatSlice (Sea)

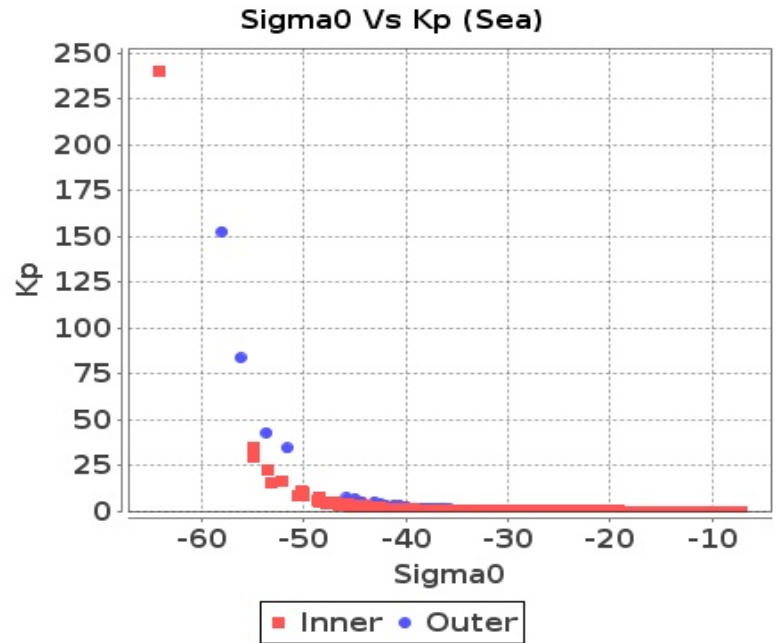


# Sigma0 Behaviour(Sigma0 Vs Kp)

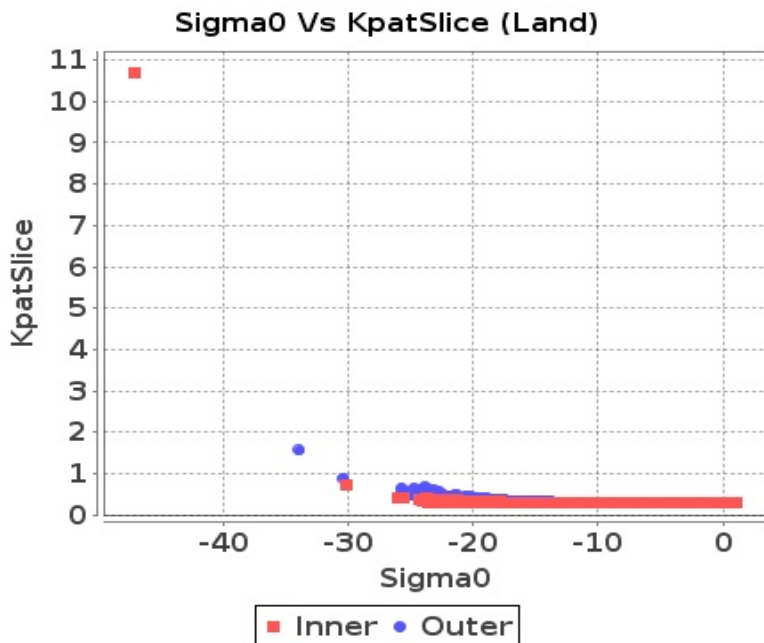
## Footprint-Land



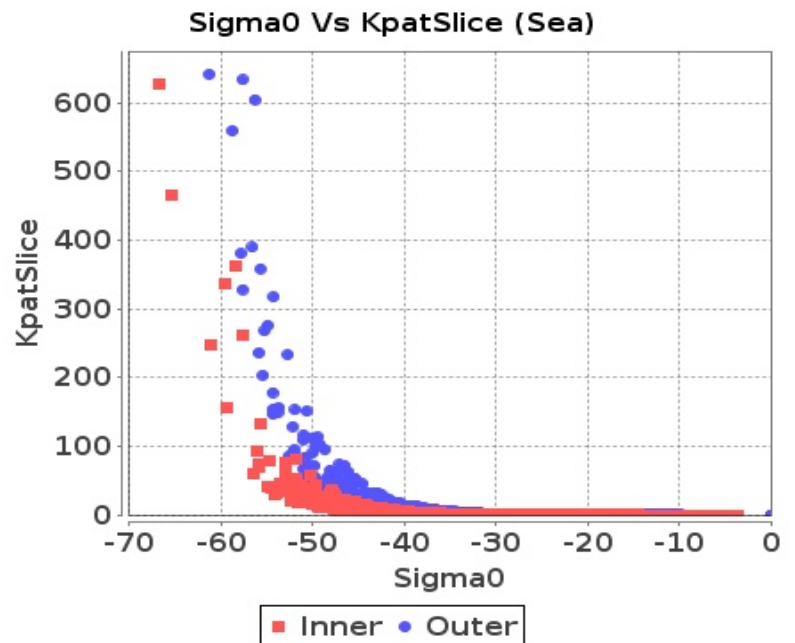
## Footprint-Sea



## Slice-Land



## Slice-Sea

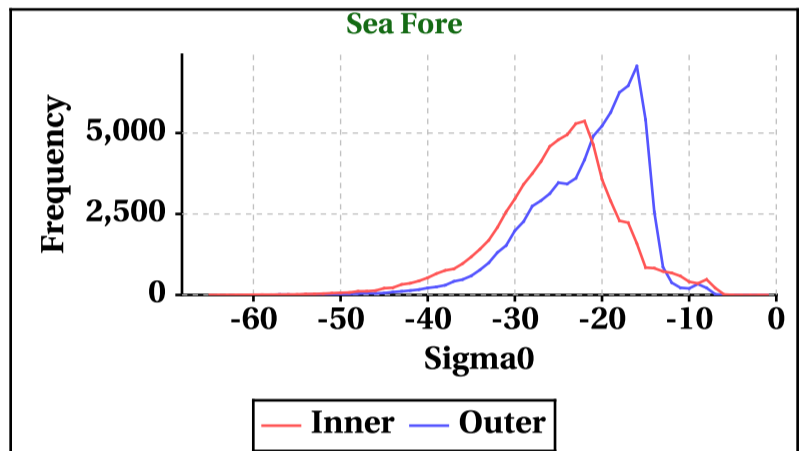
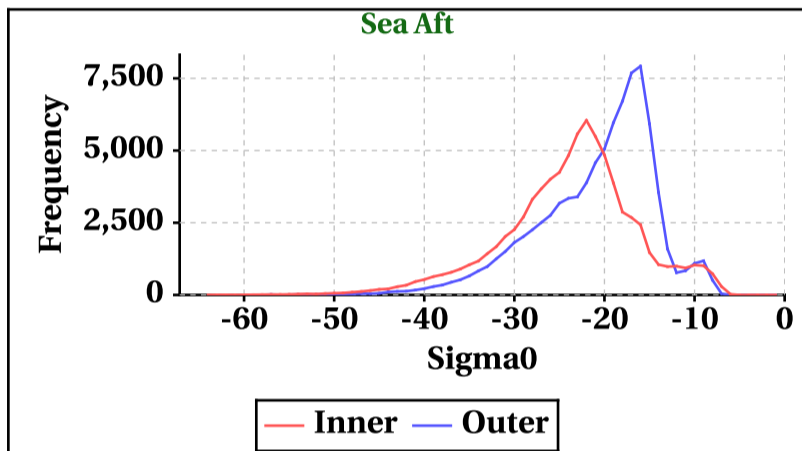
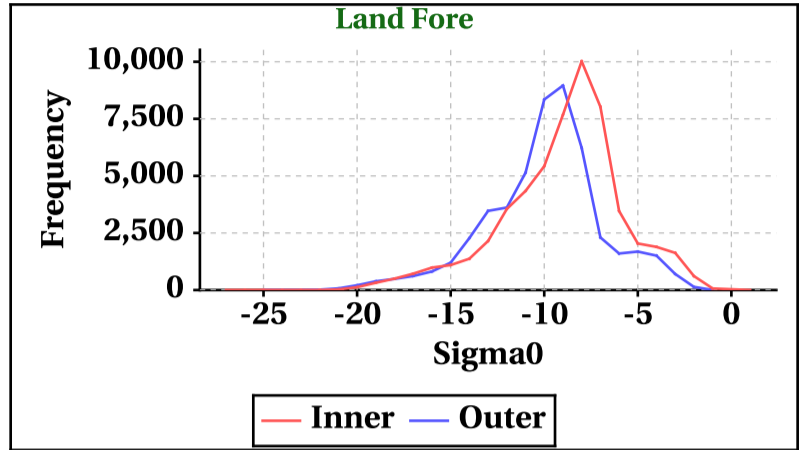
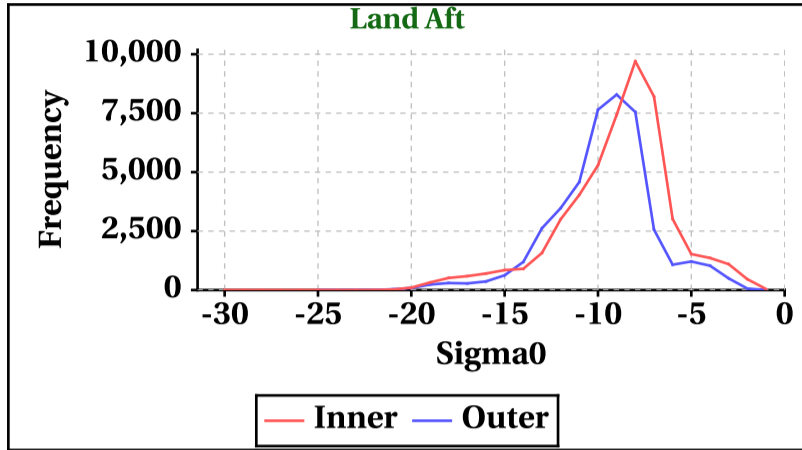


# Dynamic Range (Data Histograms)

## Sigma0(db)

Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-30	-27	-64	-65
Max	0	1	0	0

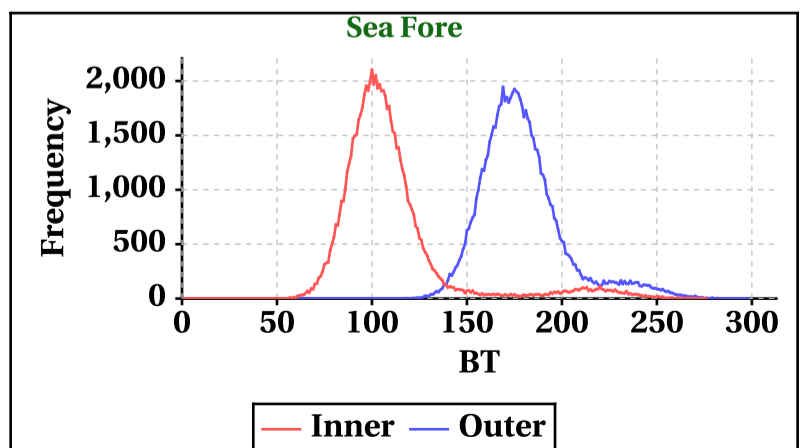
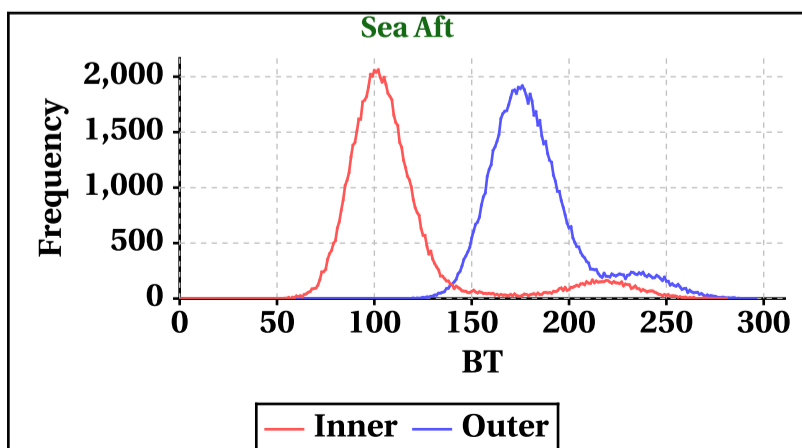
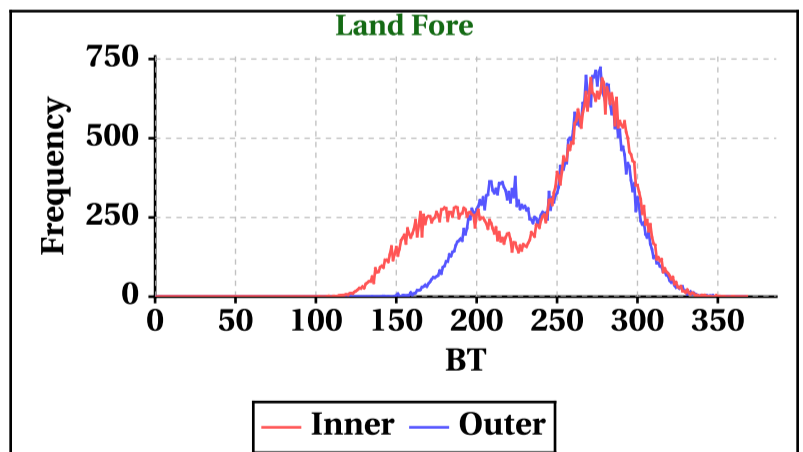
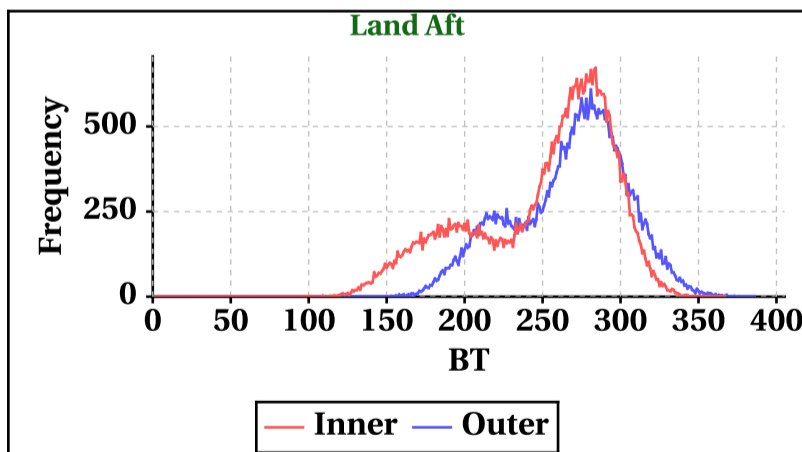
Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-25	-25	-58	-60
Max	0	0	0	0



## Brightness Temperature(K)

Inner Beam(HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	367	368	281	276

Outer Beam(VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	386	367	296	298

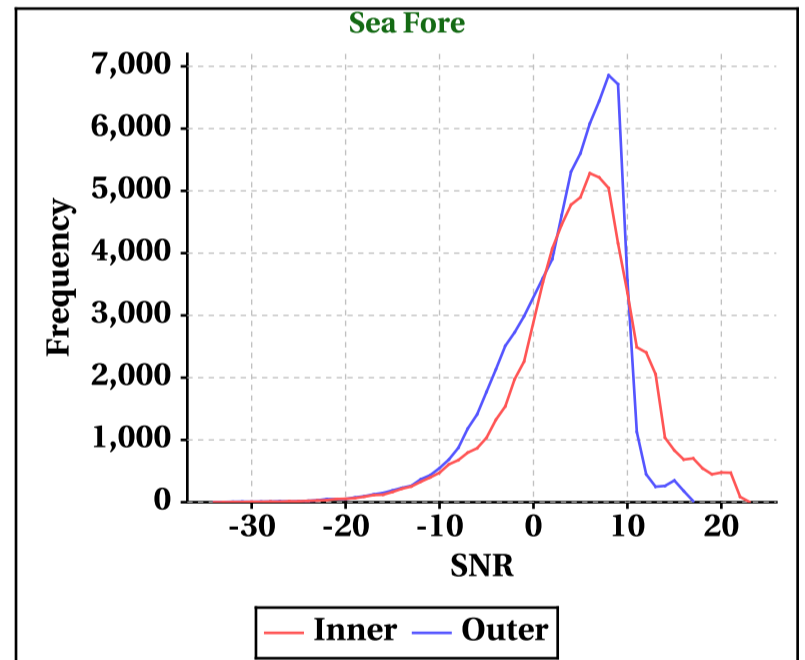
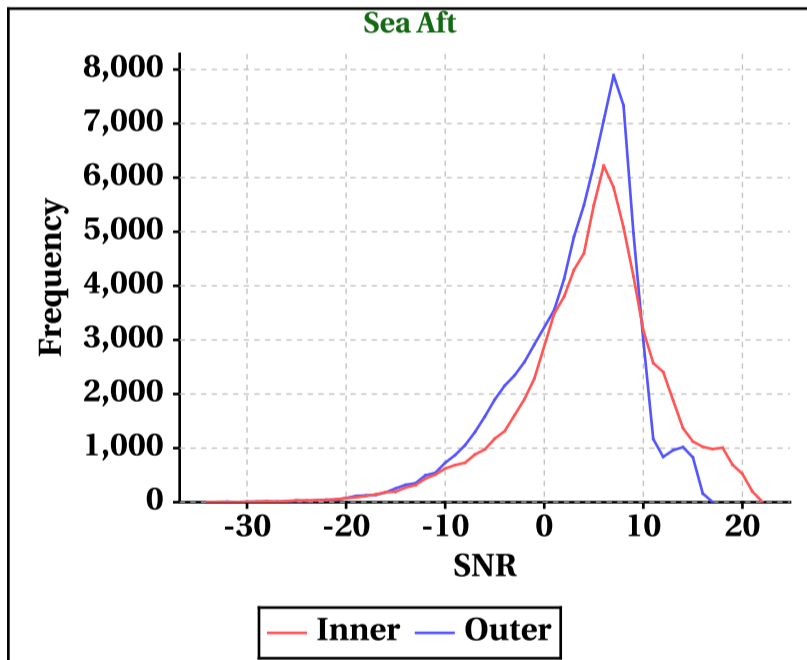
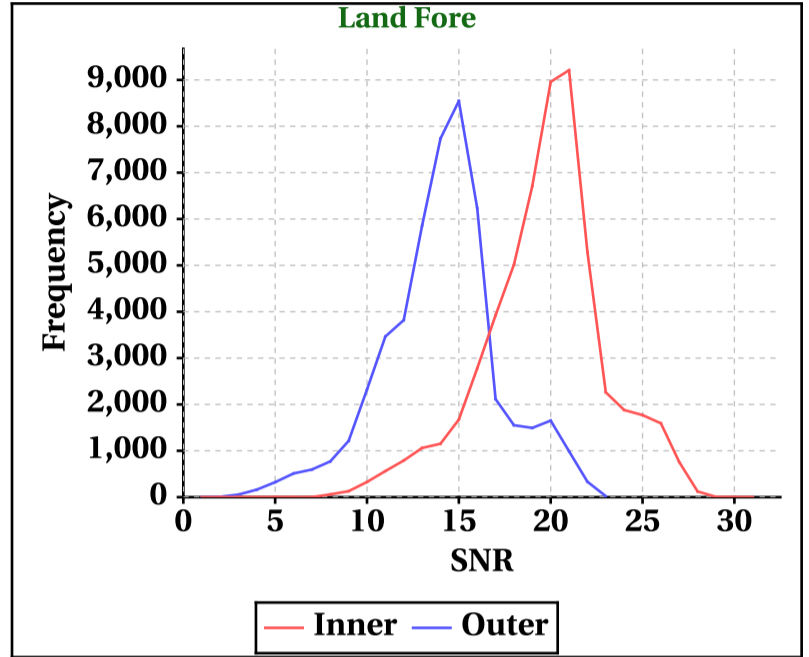
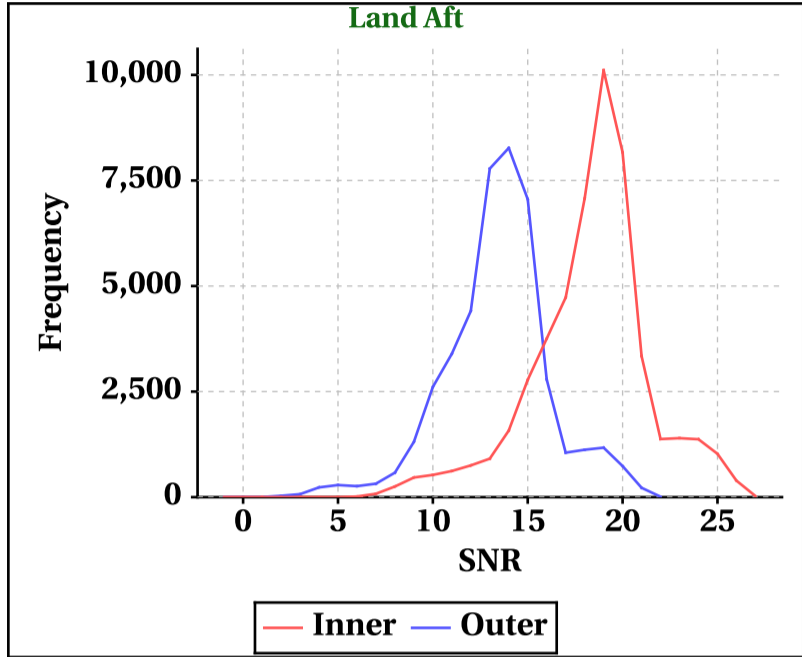


# Dynamic Range (Data Histograms)

## SNR(dBm)

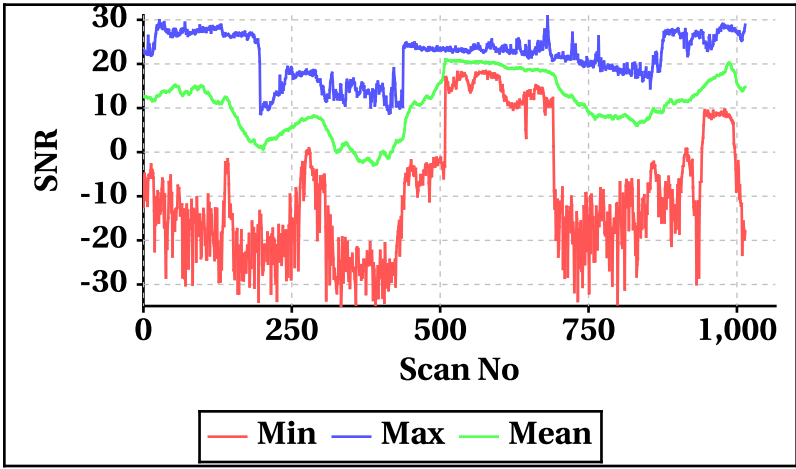
Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-1	0	-34	-34
Max	27	31	22	23

Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-1	0	-33	-34
Max	22	23	17	17

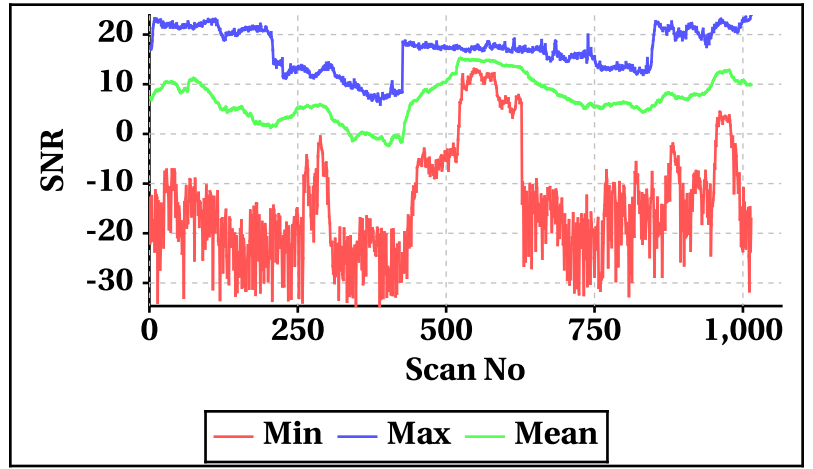


## Orbit-wise behaviour of SNR

Inner Beam (HH)

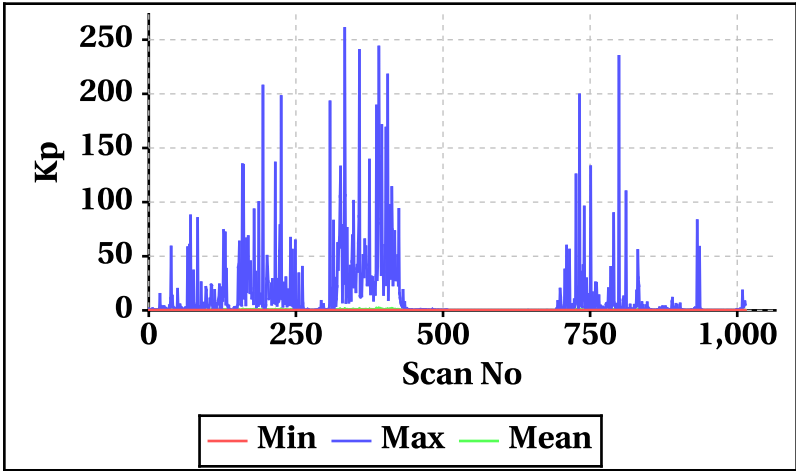


Outer Beam(VV)

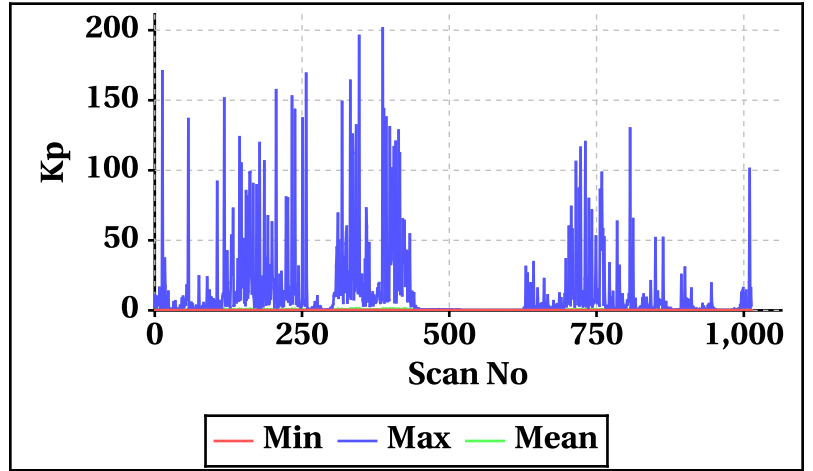


## Orbit-wise behaviour of Kp,Kpa,Kpb,Kpc

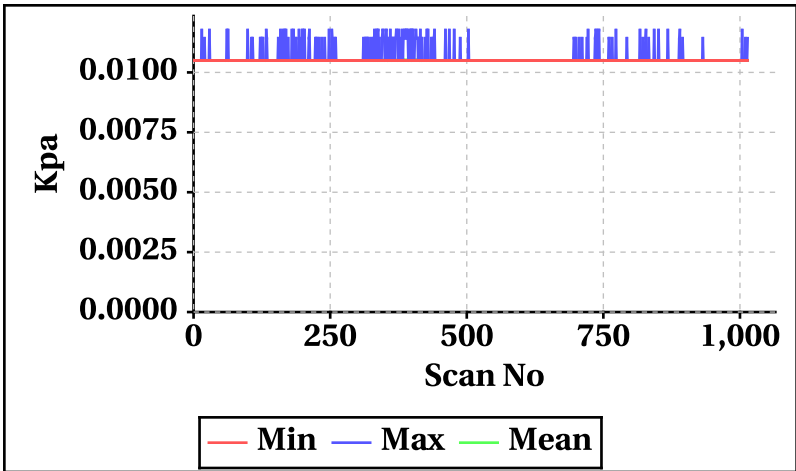
Inner Beam(HH)



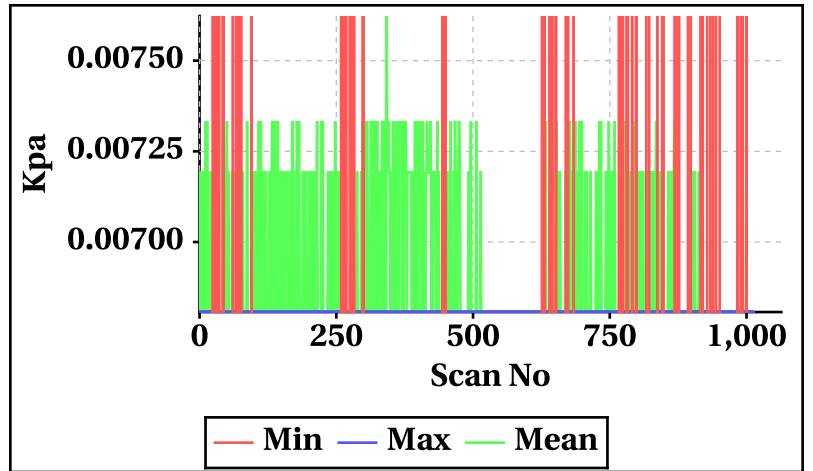
Outer Beam(VV)



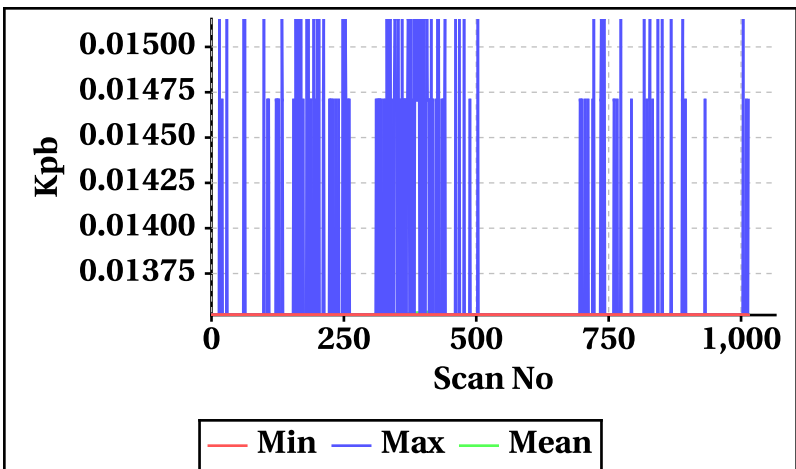
Inner Beam(HH)



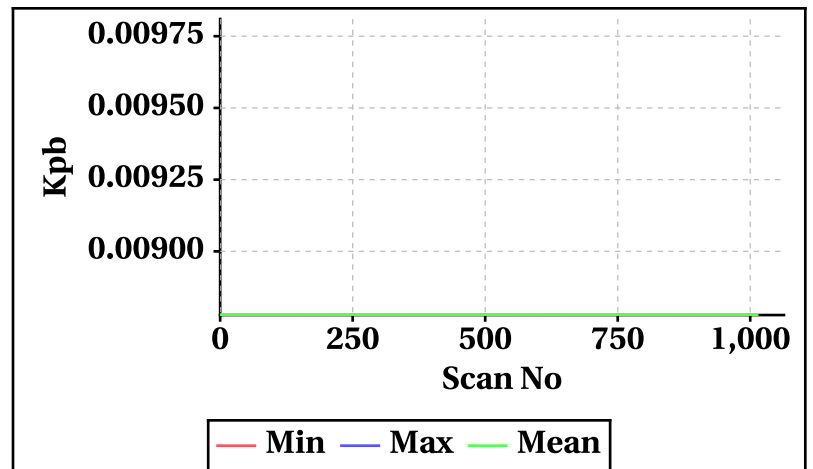
Outer Beam(VV)



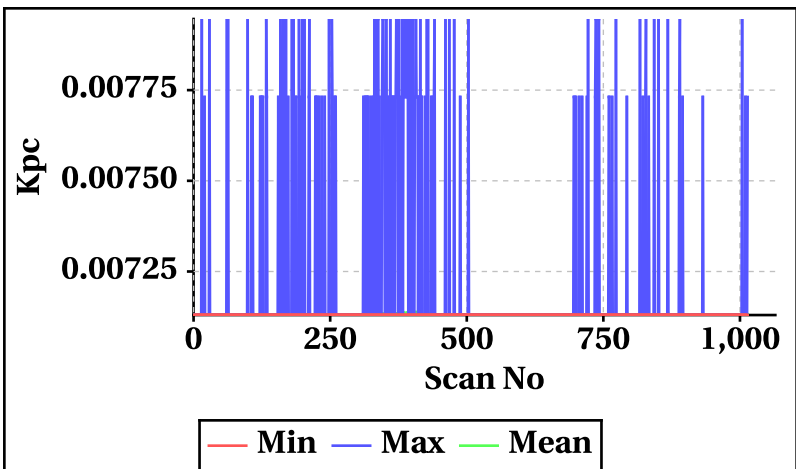
Inner Beam(HH)



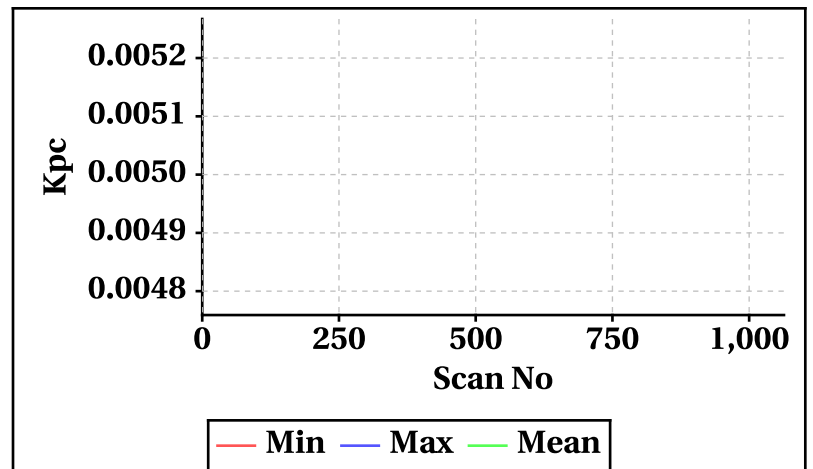
Outer Beam(VV)



Inner Beam(HH)



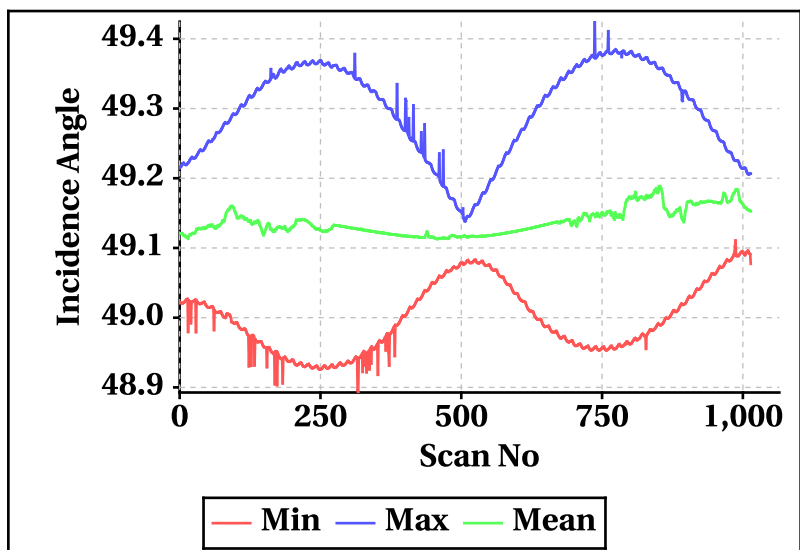
Outer Beam(VV)



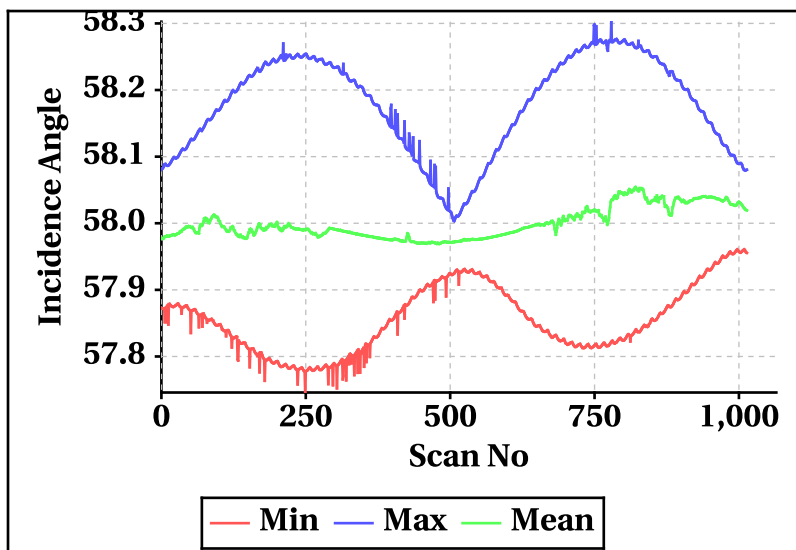


Orbit-wise behaviour of Incidence, Azimuth, Range, X-Factor

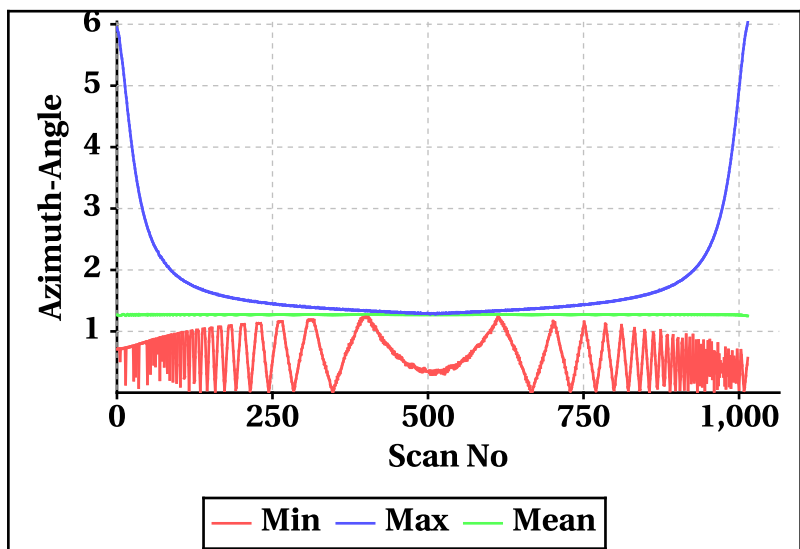
Inner Beam (HH)



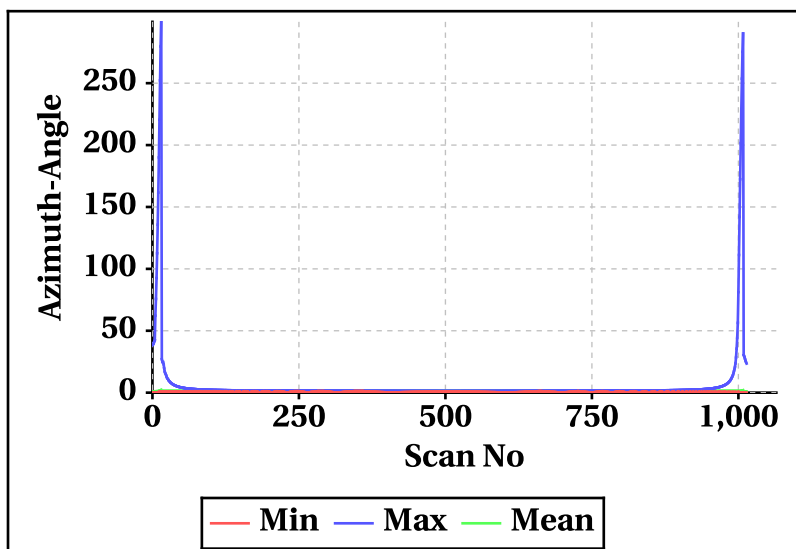
Outer Beam(VV)



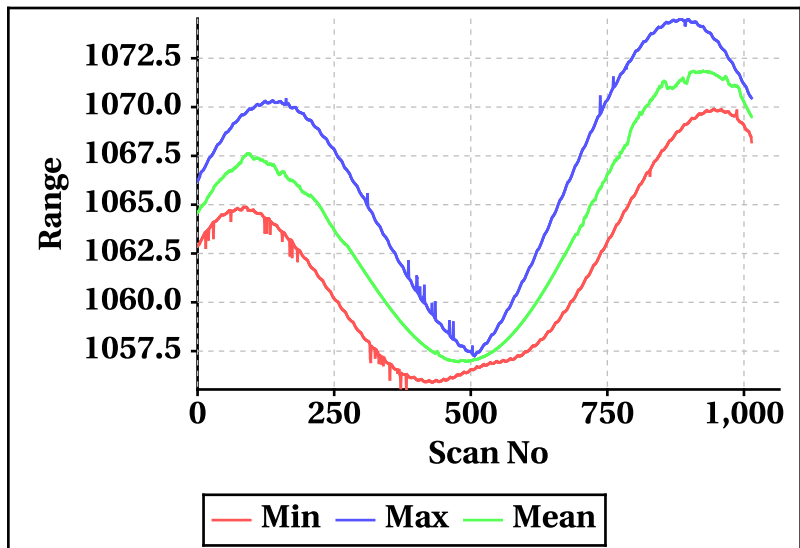
Inner Beam (HH)



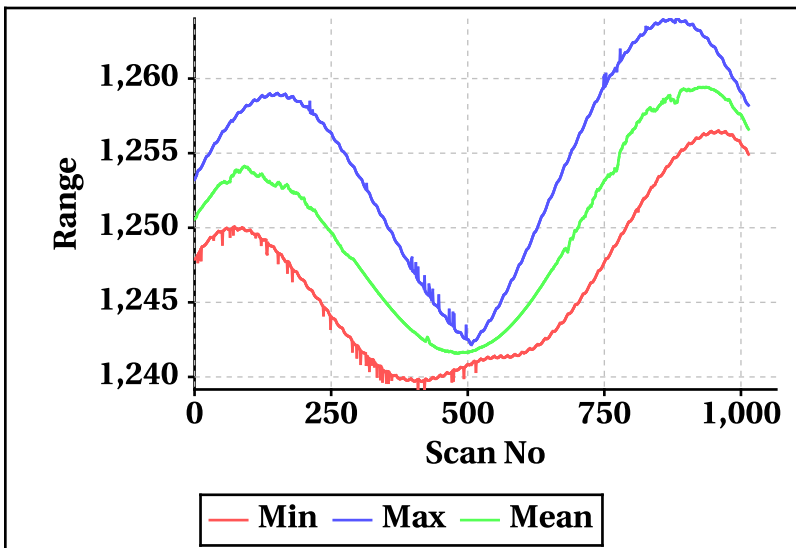
Outer Beam(VV)



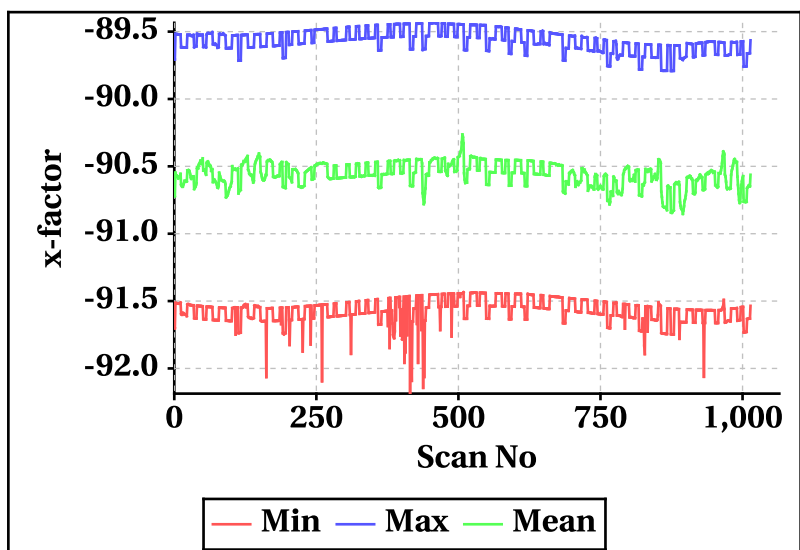
Inner Beam (HH)



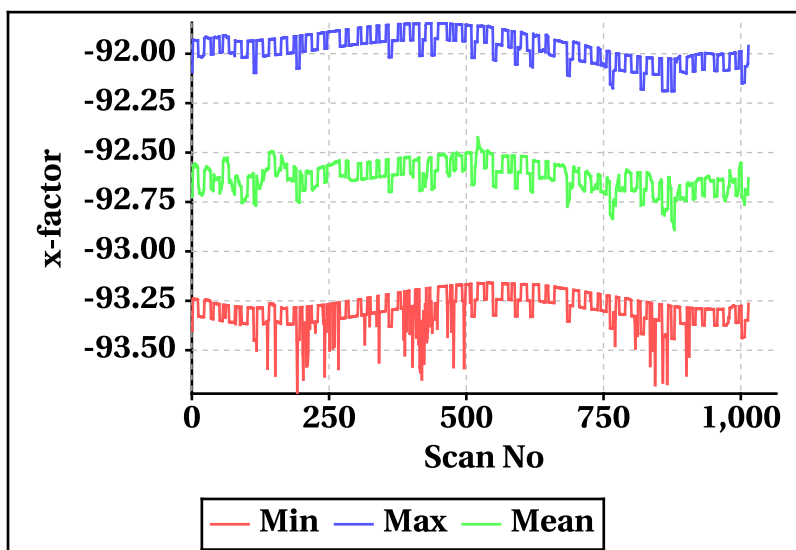
Outer Beam(VV)



Inner Beam (HH)



Outer Beam(VV)

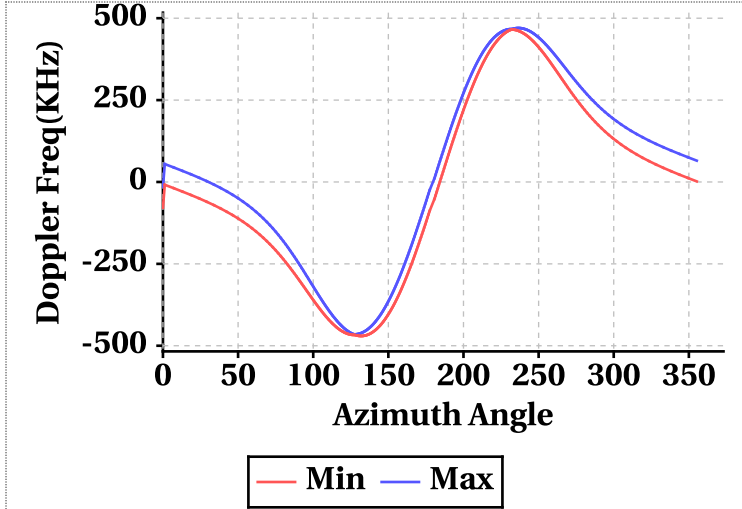


# Doppler Frequency Variation

Doppler Frequency(KHz) variation statistics Over the half Orbit

	Inner Beam (HH)	Outer Beam (VV)
Min	-470.22	-526.90
Max	469.94	526.70

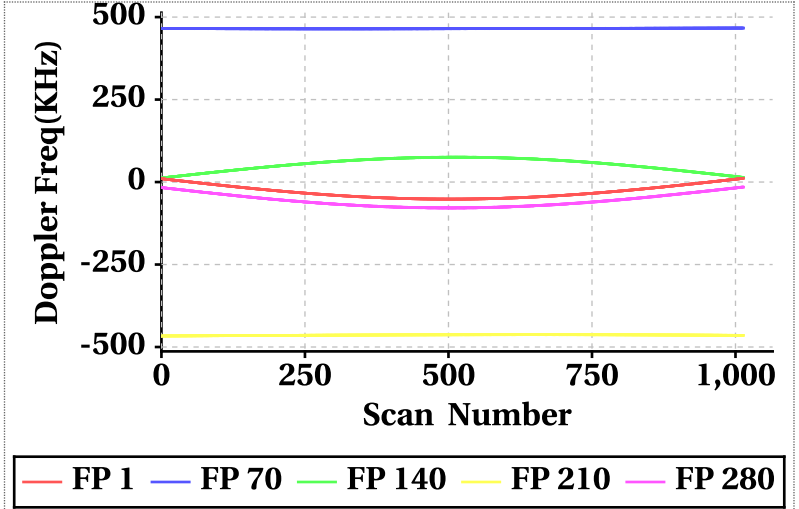
Footprint wise Doppler frequency variation Inner Beam (HH)



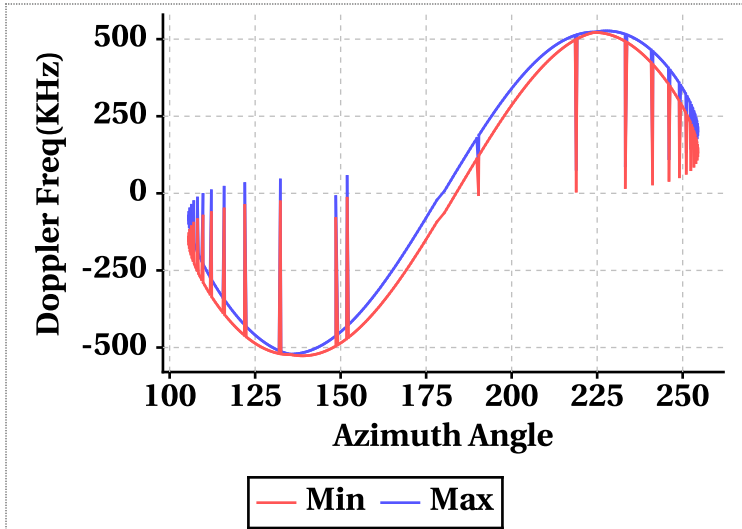
Doppler Frequency(KHz) variation

Doppler_FP	Inner Beam (HH)			Outer Beam (VV)		
	Min	Max	Mean	Min	Max	Mean
Doppler_1	-51.76	11.34	-29.00	-63.12	7.40	-37.63
Doppler_70	464.44	466.78	465.26	519.98	522.82	520.90
Doppler_140	12.14	75.42	52.61	7.28	78.06	52.51
Doppler_210	-466.62	-462.58	-463.88	-522.98	-519.52	-520.63
Doppler_280	-78.54	-15.16	-55.63	-81.58	-10.68	-55.87

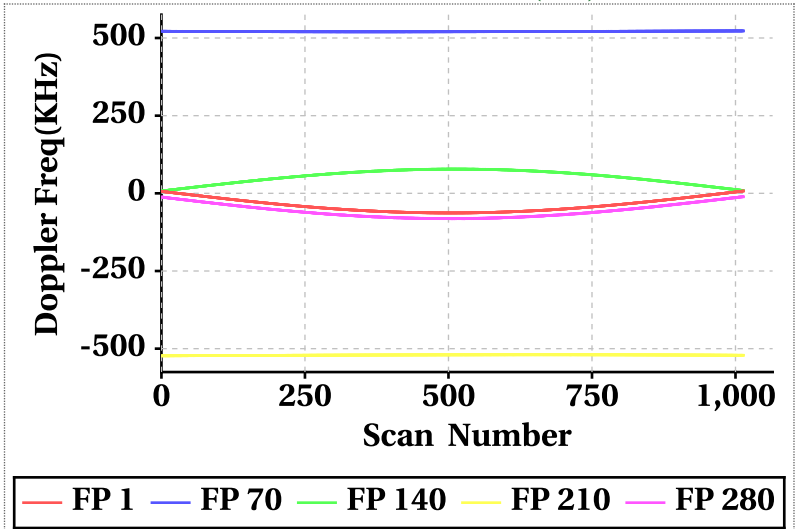
Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Inner Beam (HH)



Footprint wise Doppler frequency variation Outer Beam (VV)

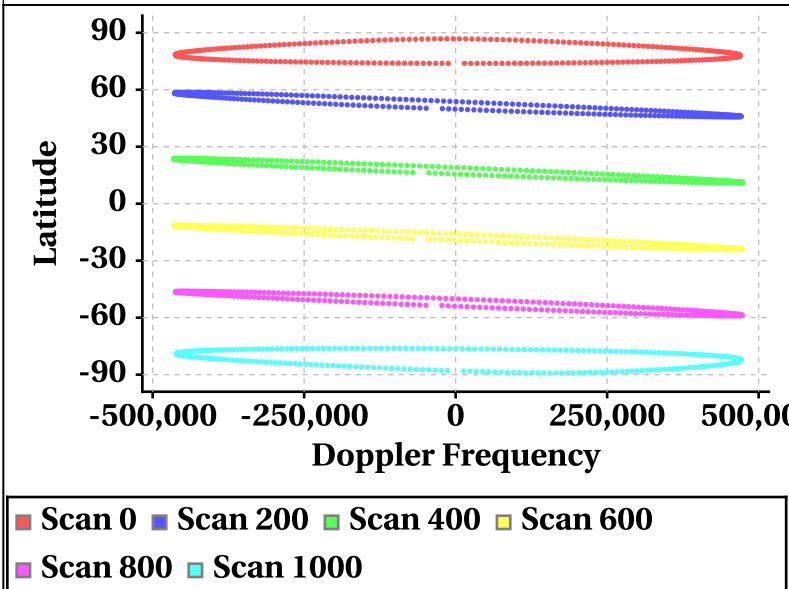


Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Outer Beam (VV)

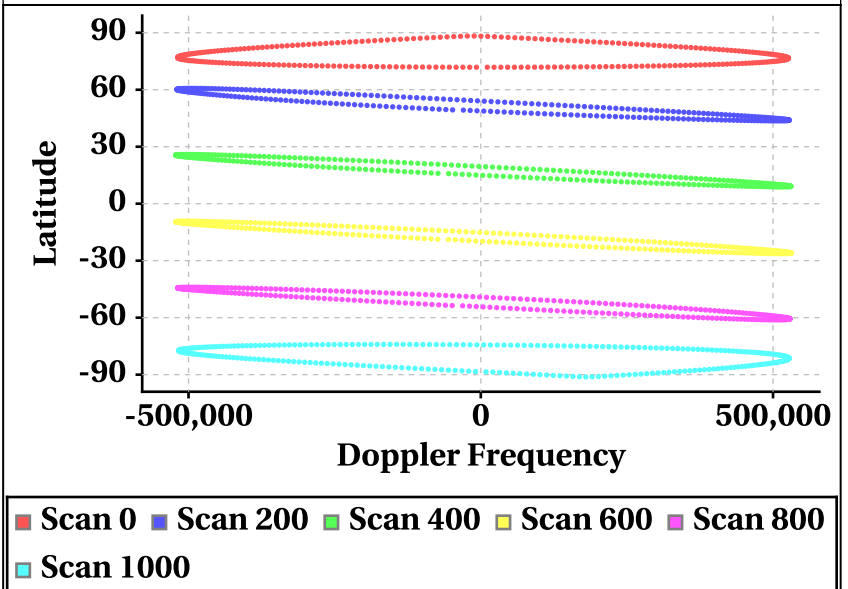


# Latitude Vs Doppler Frequency

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



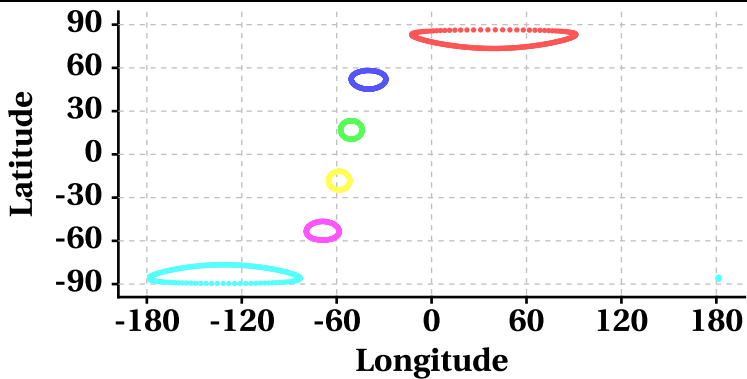
Doppler Frequency at Scan Interval of 200 [Outer Beam(VV)]



# Parameter as a function of Latitude

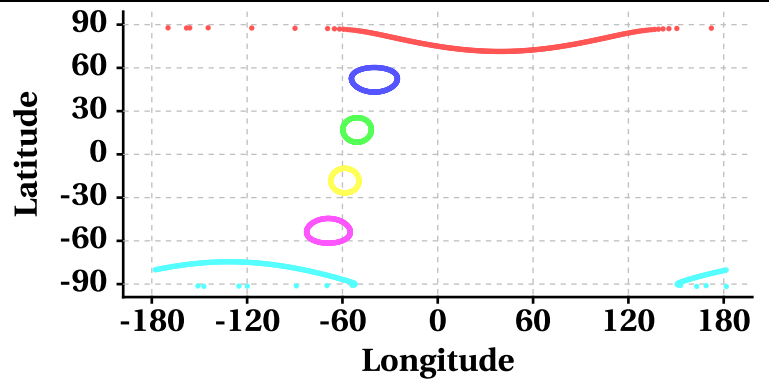
## Latitude Vs Longitude

Scan Trace [Inner Beam(HH)]



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

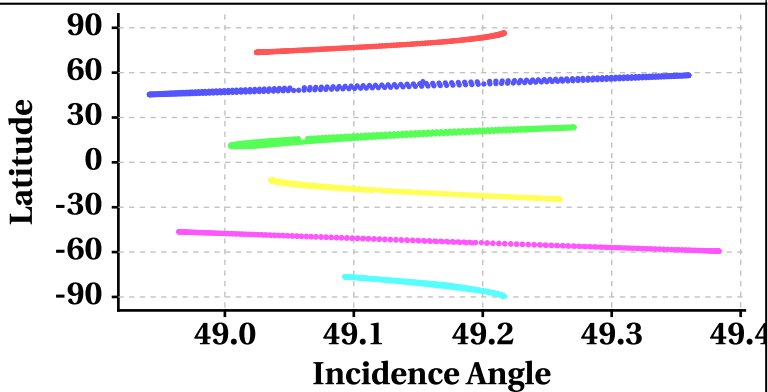
Scan Trace [Outer Beam (VV)]



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

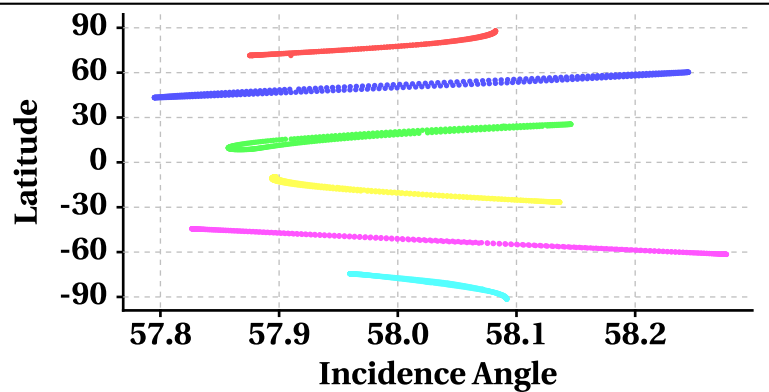
## Latitude Vs Incidence Angle

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



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

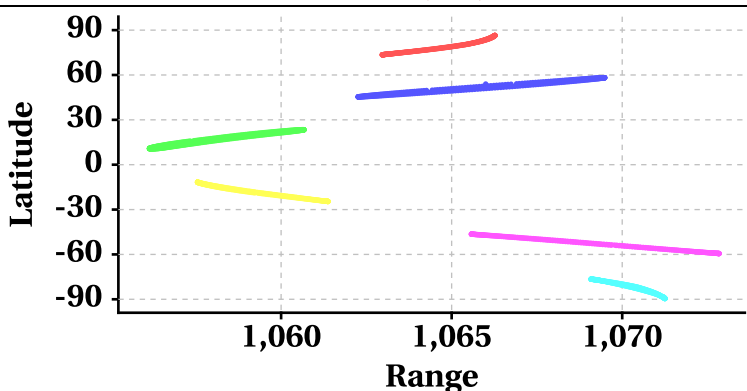
Incidence Angle at Scan Interval of 200 [Outer Beam (VV)]



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

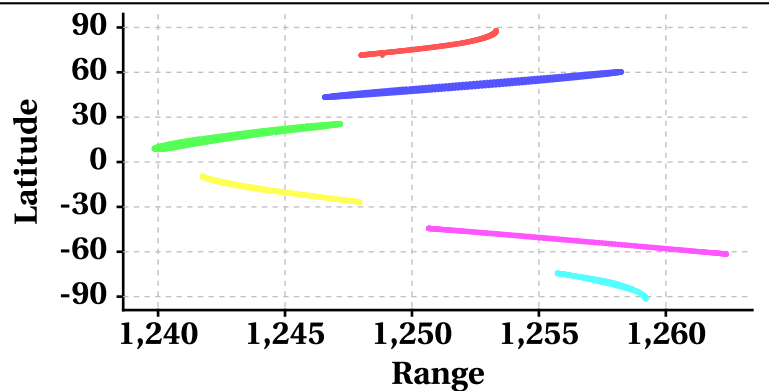
## Latitude Vs Range

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

