

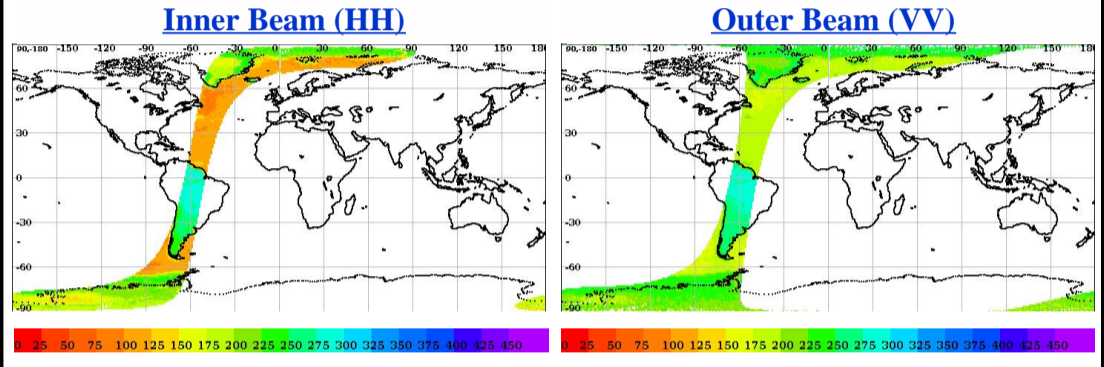
# SCATSAT-1 Scatterometer Level-1B Data Quality Evaluation Report

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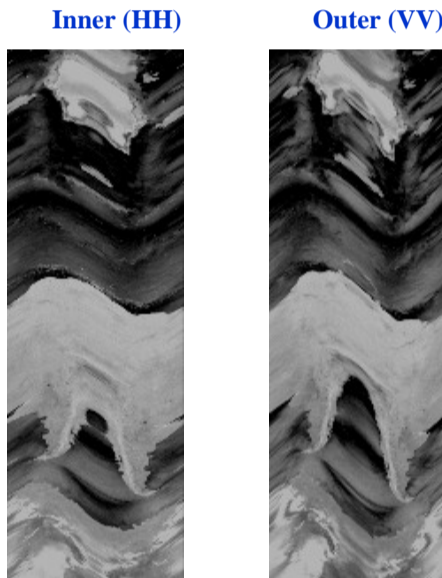
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<b>Satellite Id</b>	ScatSat-1	<b>Start Orbit</b>	9777	<b>Total Scans</b>	1015
<b>Sensor Name</b>	Scatterometer	<b>End Orbit</b>	9778	<b>No of Inner FootPrints</b>	281
<b>Processor Version</b>	v1.1.3	<b>Rev. Number</b>	09777_09778	<b>No Of Outer FootPrints</b>	282
<b>Half Orbit Direction</b>	NS	<b>Data Production Date</b>	01-08-2018	<b>No. Of Inner Slices</b>	9
<b>Equator Crossing Date</b>	01-08-2018	<b>Equator Crossing Time</b>	12:28:01.000	<b>No Of Outer Slices</b>	15

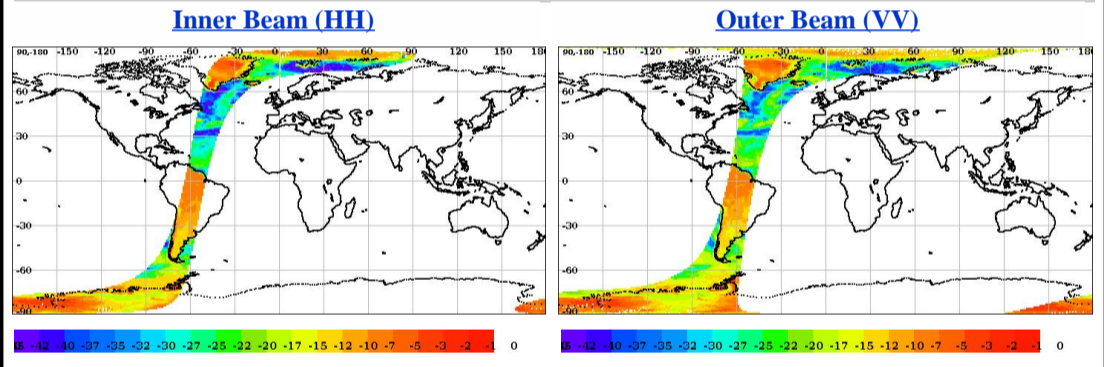
## Brightness Temperature(k) Footprint trace



## Image Snapshot for Inner & Outer Beam



## Sigma0(dB) Footprint trace



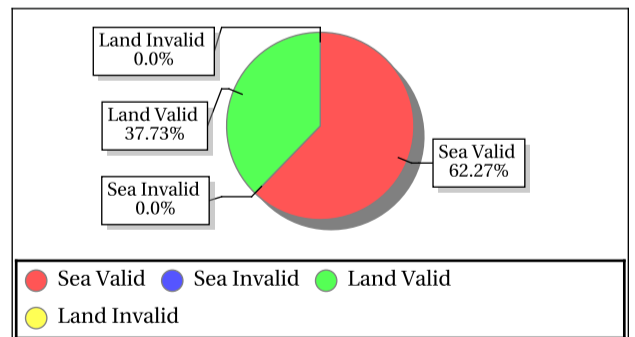
## Invalid and Poor Sigma-0 Quality Flag Statistics for Inner/Outer Slices\*

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(%)	22.23	13.35
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 (%)	0.046966	0.122682

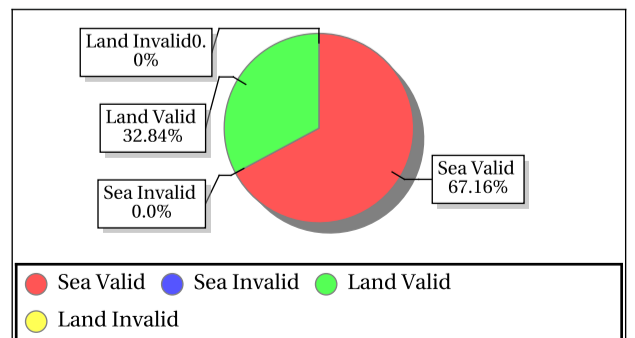
\*DP Format Document

## 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	-7.23	-5.30	-5.93	0.54	157.55	183.63	168.23	8.89
GreenLand_2	77.50	-41.50	Inner	DSC	Fore	-6.53	-4.97	-5.80	0.50	147.84	207.87	164.77	16.76
GreenLand_3	71.55	-42.45	Inner	DSC	Aft	-12.66	-10.50	-11.70	0.73	166.85	221.87	195.23	14.53
GreenLand_3	71.55	-42.45	Inner	DSC	Fore	-12.67	-10.83	-11.73	0.48	180.99	227.86	204.17	13.21
Amazon_3	-6.00	-61.00	Inner	DSC	Aft	-9.62	-6.74	-7.98	0.68	257.37	323.65	290.80	15.33
Amazon_3	-6.00	-61.00	Inner	DSC	Fore	-10.17	-6.97	-8.08	0.68	253.26	311.55	286.72	13.28
GreenLand_1	74.69	-42.50	Inner	DSC	Aft	-10.61	-8.73	-9.51	0.56	157.85	214.54	180.66	14.41
GreenLand_1	74.69	-42.50	Inner	DSC	Fore	-10.60	-8.89	-9.68	0.49	155.86	200.81	180.17	11.29
Amazon_2	-3.00	-61.00	Inner	DSC	Aft	-11.04	-6.80	-8.60	1.15	204.25	314.68	262.07	24.28
Amazon_2	-3.00	-61.00	Inner	DSC	Fore	-10.84	-6.36	-8.60	1.03	191.48	304.54	258.64	25.34
GreenLand_2	77.50	-41.50	Outer	DSC	Aft	-5.88	-5.27	-5.52	0.21	213.07	235.56	222.99	9.19
GreenLand_2	77.50	-41.50	Outer	DSC	Fore	-6.03	-4.67	-5.30	0.48	201.42	227.28	216.46	9.71
GreenLand_3	71.55	-42.45	Outer	DSC	Aft	-13.01	-11.57	-12.36	0.45	201.45	286.72	235.71	21.87
GreenLand_3	71.55	-42.45	Outer	DSC	Fore	-13.36	-11.13	-12.38	0.51	203.96	253.74	227.52	14.48
Amazon_3	-6.00	-61.00	Outer	DSC	Aft	-10.46	-8.39	-9.24	0.53	259.31	313.62	283.92	15.19
Amazon_3	-6.00	-61.00	Outer	DSC	Fore	-10.53	-9.05	-9.59	0.41	248.33	307.88	274.35	14.33
GreenLand_1	74.69	-42.50	Outer	DSC	Aft	-10.45	-8.07	-9.27	0.72	199.60	250.89	227.99	15.05
GreenLand_1	74.69	-42.50	Outer	DSC	Fore	-10.70	-8.19	-9.22	0.75	210.76	256.12	235.80	12.79
Amazon_2	-3.00	-61.00	Outer	DSC	Aft	-12.13	-8.13	-9.96	1.03	244.86	298.13	266.74	13.52
Amazon_2	-3.00	-61.00	Outer	DSC	Fore	-11.60	-8.56	-9.90	0.73	237.48	311.48	272.25	17.99



## 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>	0.12	294.86	0.63	7.532	0.12	304.88	0.55	6.070	0.12	0.16	0.12	0.000	0.12	0.18	0.12	0.000
<b>Kpa</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>Kpb</b>	0.02	0.02	0.02	0.000	0.02	0.02	0.02	0.000	0.02	0.02	0.02	0.000	0.02	0.02	0.02	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>	-34.83	24.14	3.36	0.079	-34.98	24.32	3.75	0.077	2.56	31.50	19.10	14.611	1.27	30.95	19.94	26.196

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>	0.09	222.03	0.57	7.221	0.09	220.17	0.48	5.699	0.09	0.17	0.09	0.000	0.09	1.32	0.09	0.002
<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>	0.01	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>	-34.77	20.79	1.21	0.000	-34.73	21.47	1.39	0.000	-1.26	23.13	13.76	0.084	-12.28	24.19	14.22	0.791

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)

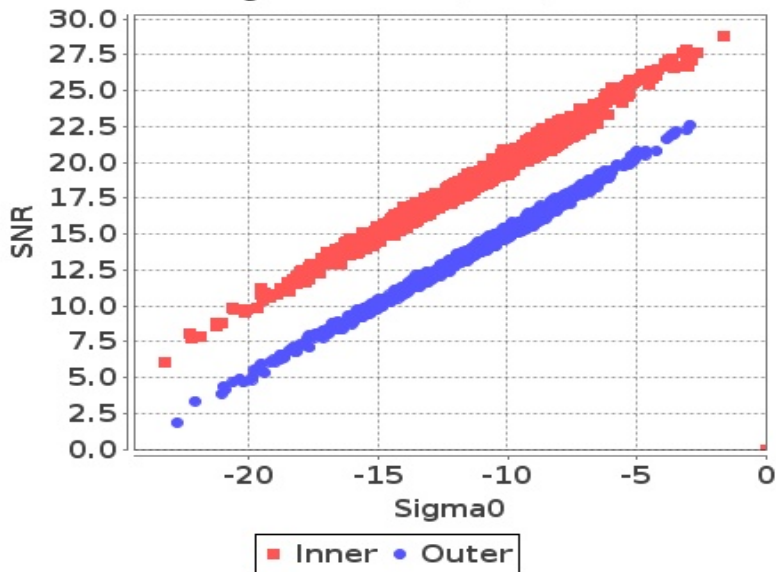
	Inner Beam (HH)				Outer Beam (VV)				Parameter Specifications		
	Min	Max	Mean	Bad Occ. (%)	Min	Max	Mean	Bad Occ. (%)	Parameter	Min	Max
<b>Incidence Angle (deg)</b>	48.80	49.49	49.06	0.000	57.64	58.30	57.97	0.000	Inci.(Inner)	47.10	49.90
<b>Azimuth Diff. (deg)</b>	0.0026	209.98	1.27	2.631	0.0000	299.32	1.28	3.572	Inci.(Outer)	57.30	58.90
<b>Range(Km)</b>	1051.82	1073.51	1061.71	0.000	1232.97	1261.86	1244.71	0.000	Azimuth Diff.	0.60	2.00
<b>X Factor(dbm)</b>	-91.74	-90.05	-90.49	0.000	-94.05	-92.10	-92.23	0.000	Range(Inner)	1025.00	1095.70
<b>Across Distance (Km)</b>	15.70	16.27	15.88	0.000	6.28	38.82	21.11	8.000	Range(Outer)	1210.00	1280.00
<b>Along Distance (Km)</b>	19.09	1152.73	21.90	2.000	18.83	1503.87	22.52	3.000	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; margin-right: 5px;"></span> Normal	<span style="display: inline-block; width: 15px; height: 15px; background-color: orange; border: 1px solid black; margin-right: 5px;"></span> Alarming	
									<span style="display: inline-block; width: 15px; height: 15px; background-color: yellow; border: 1px solid black; margin-right: 5px;"></span> Deviations	<span style="display: inline-block; width: 15px; height: 15px; background-color: red; border: 1px solid black; margin-right: 5px;"></span> High Errors	



## Sigma0 Behaviour (Sigma0 Vs SNR)

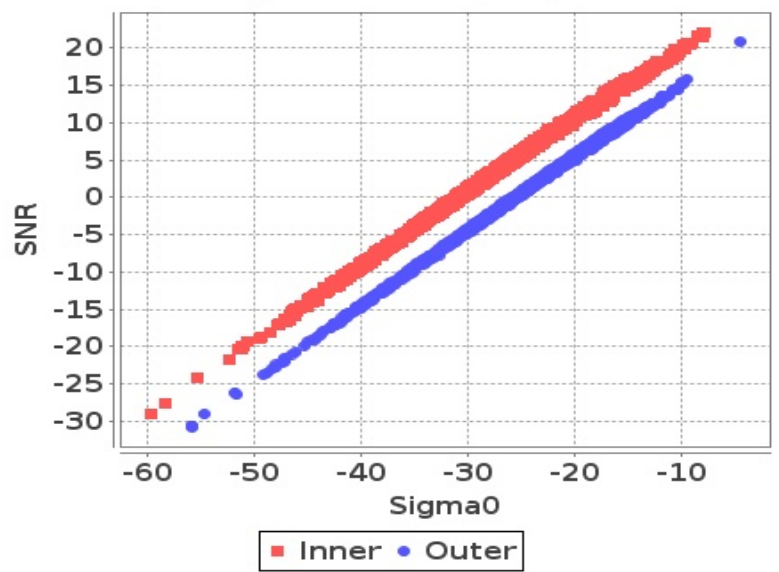
**Footprint-Land**

Sigma0 Vs SNR (Land)



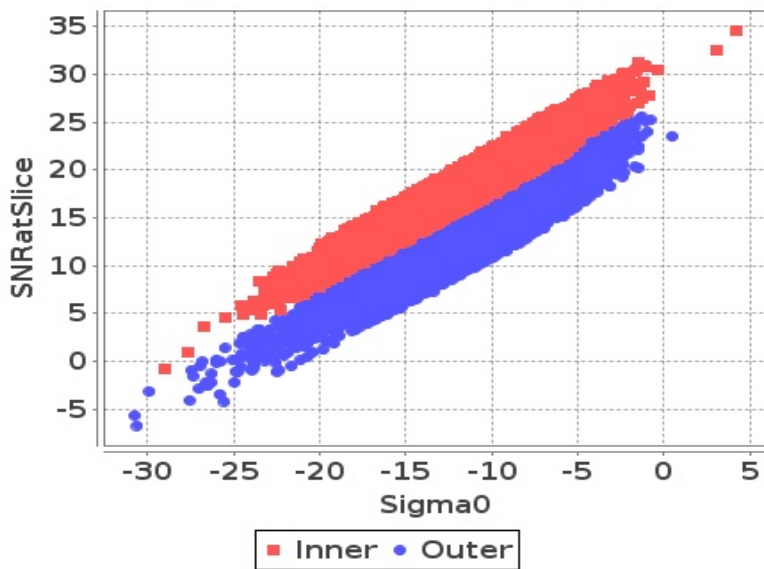
**Footprint-Sea**

Sigma0 Vs SNR (Sea)



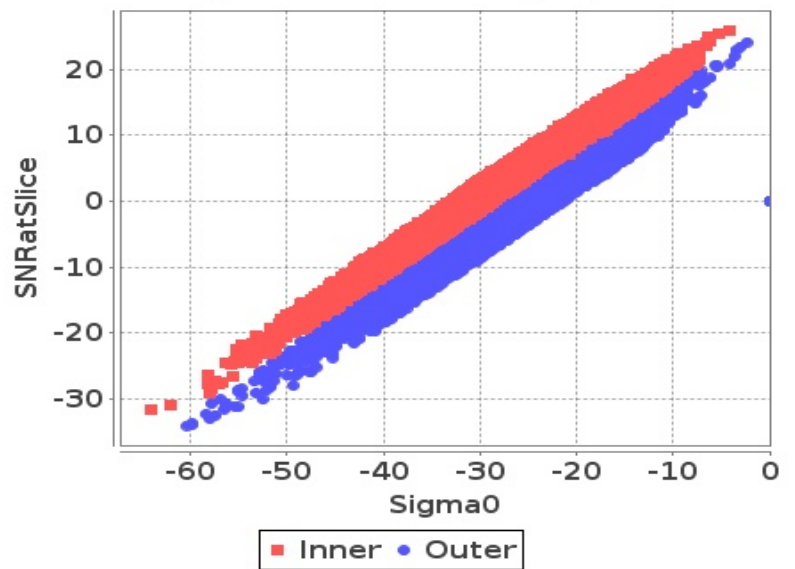
**Slice-Land**

Sigma0 Vs SNRatSlice (Land)



**Slice-Sea**

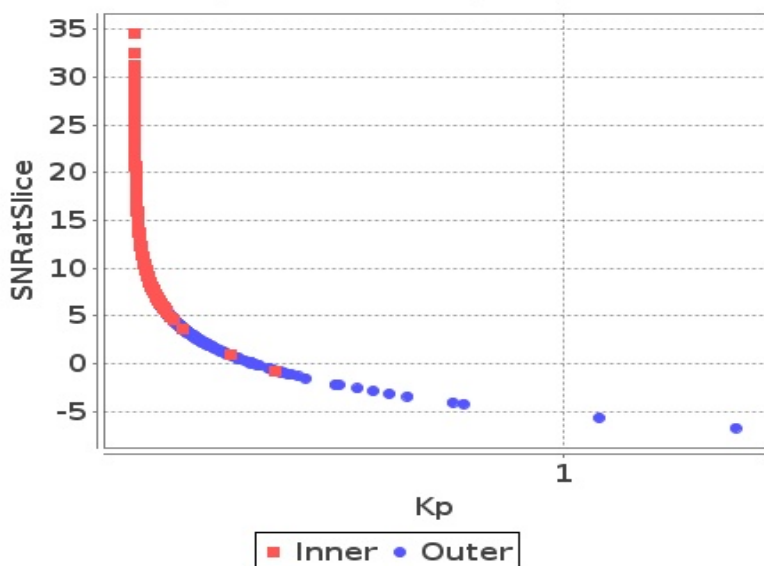
Sigma0 Vs SNRatSlice (Sea)



## Sigma0 Behaviour (Kp Vs SNR)

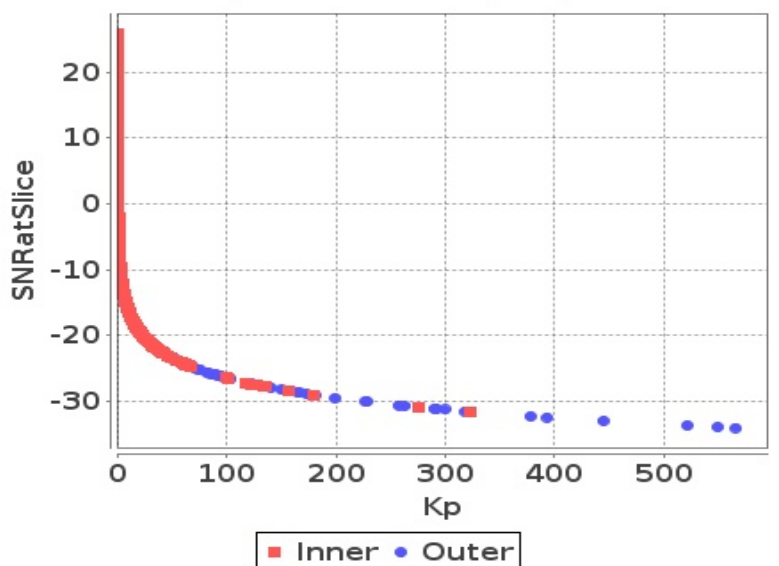
**Slice**

Kp Vs SNRatSlice (Land)



**Slice**

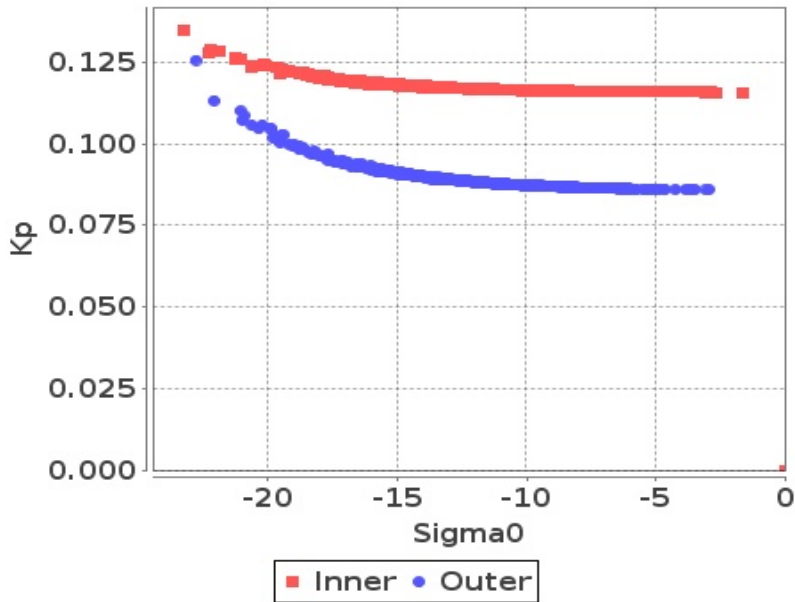
Kp Vs SNRatSlice (Sea)



# Sigma0 Behaviour(Sigma0 Vs Kp)

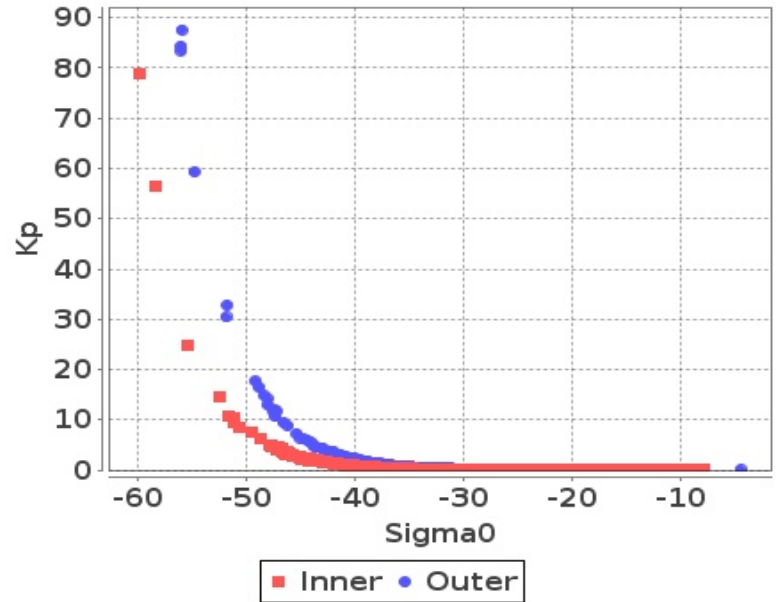
## Footprint-Land

### Sigma0 Vs Kp (Land)



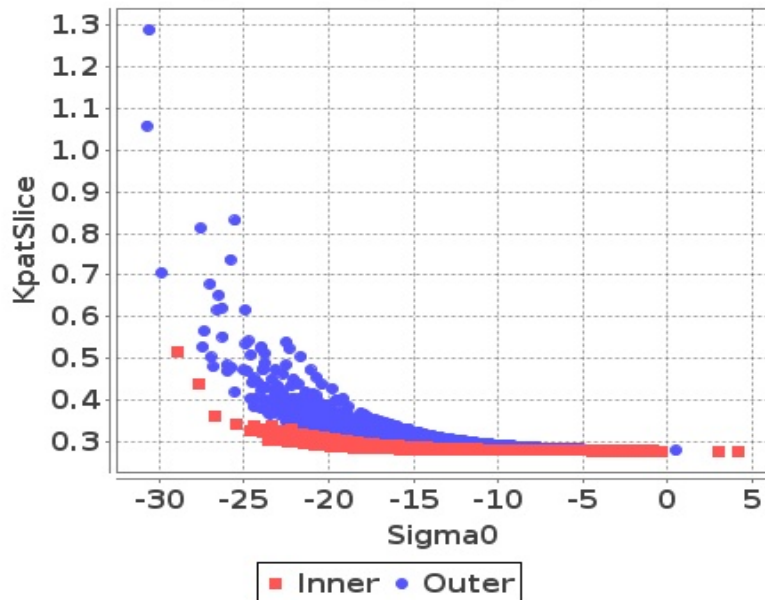
## Footprint-Sea

### Sigma0 Vs Kp (Sea)



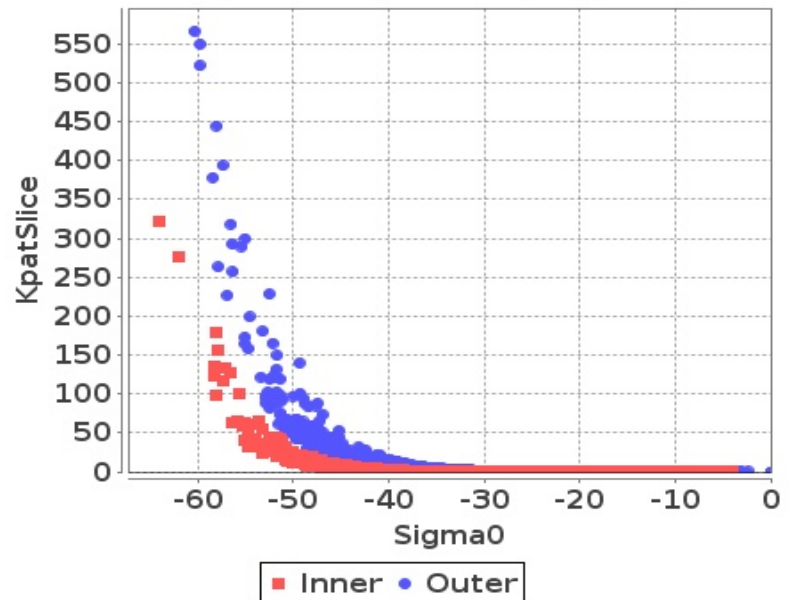
## Slice-Land

### Sigma0 Vs KpatSlice (Land)



## Slice-Sea

### Sigma0 Vs KpatSlice (Sea)

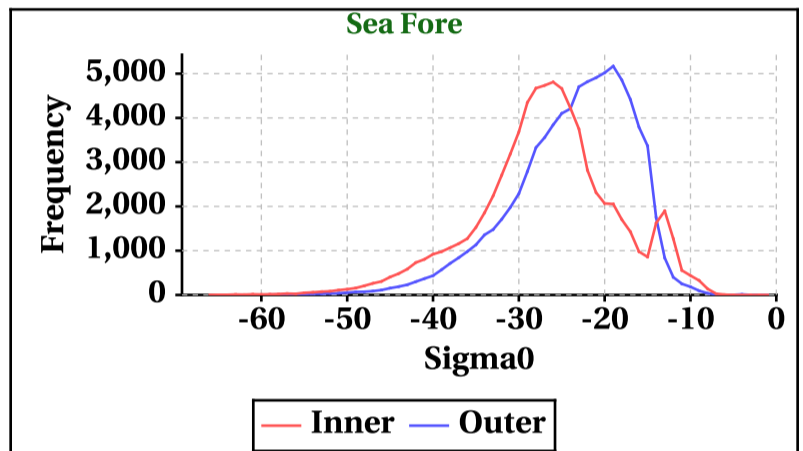
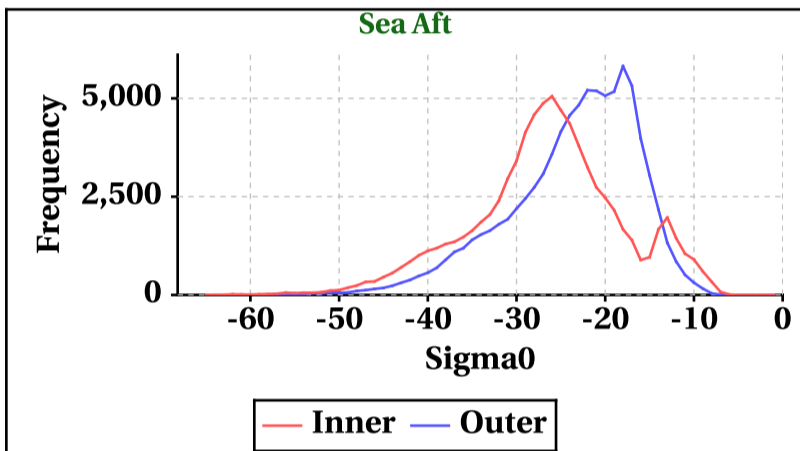
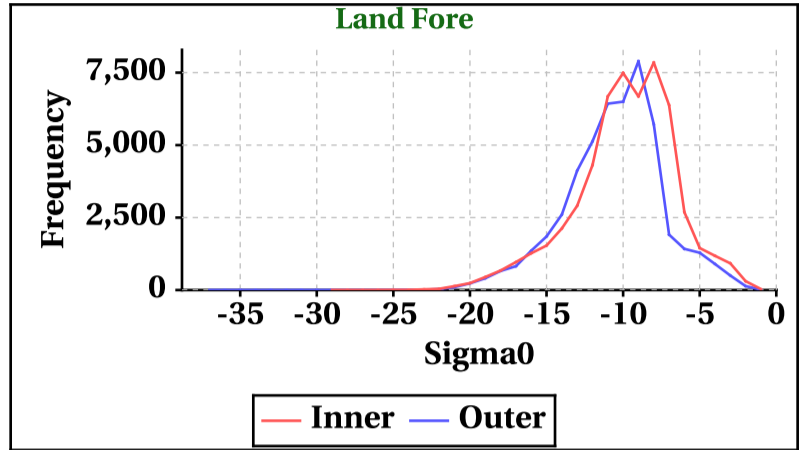
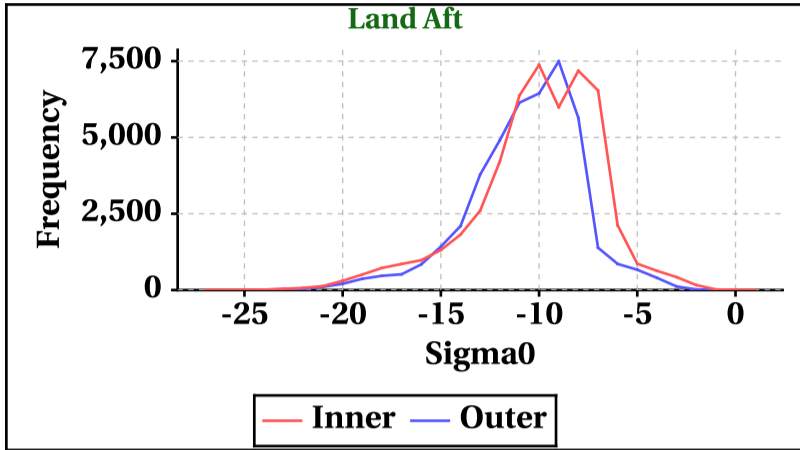


# Dynamic Range (Data Histograms)

## Sigma0(db)

Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-27	-29	-65	-66
Max	1	0	0	0

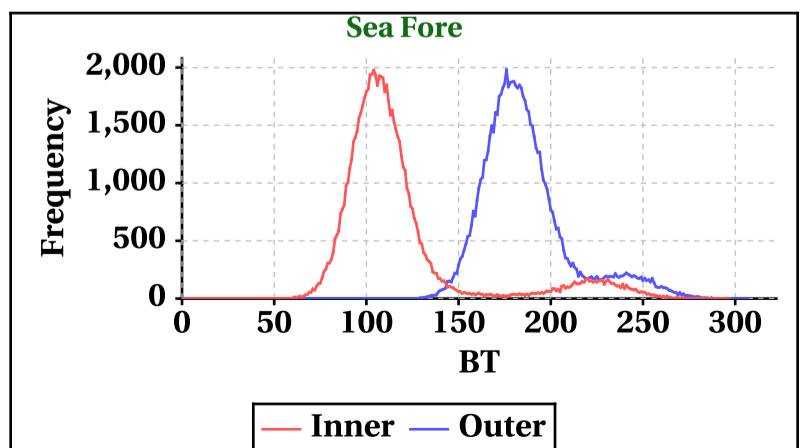
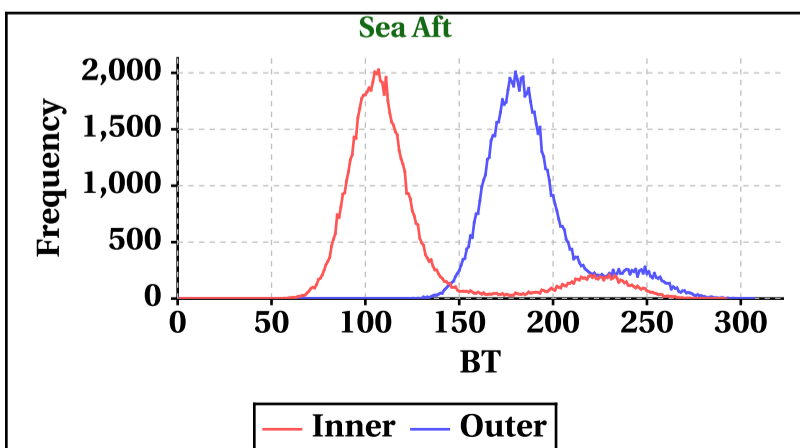
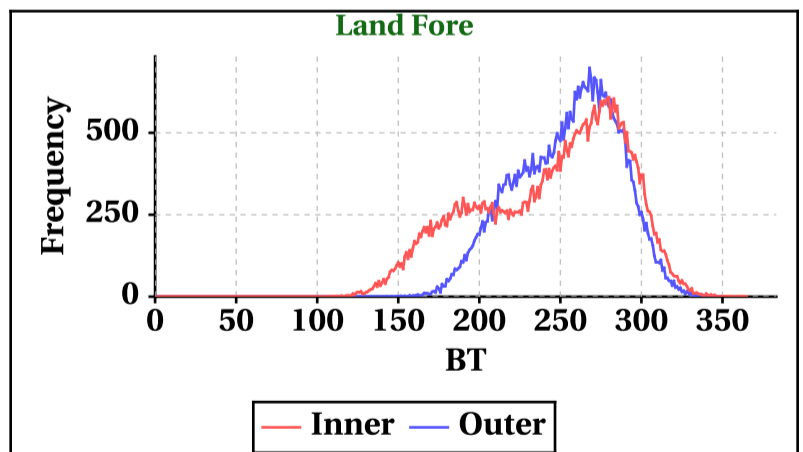
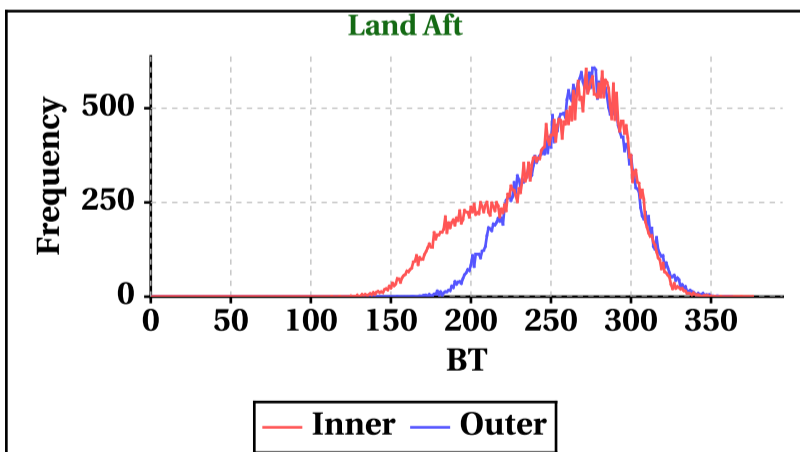
Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-25	-37	-60	-60
Max	0	0	0	0



## Brightness Temperature(K)

Inner Beam(HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	376	365	292	297

Outer Beam(VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	363	349	307	307

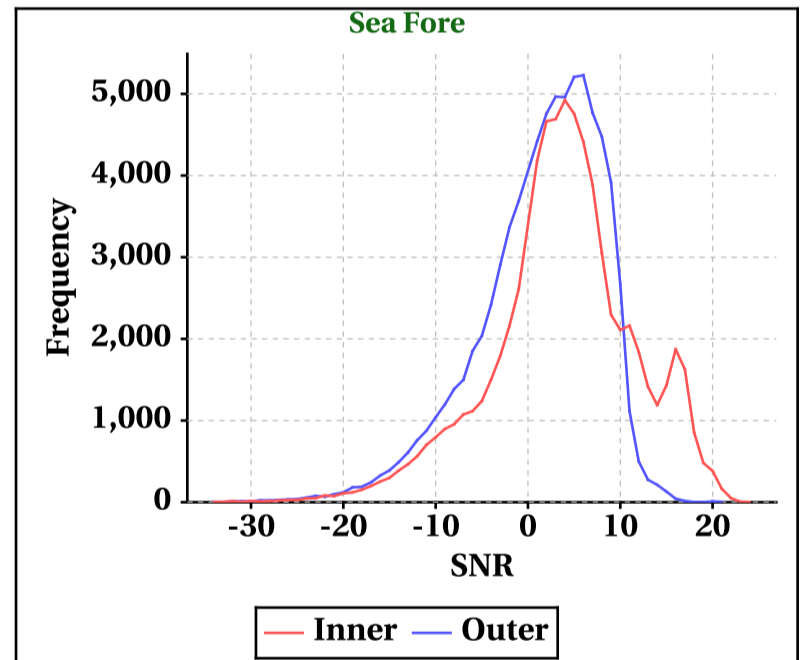
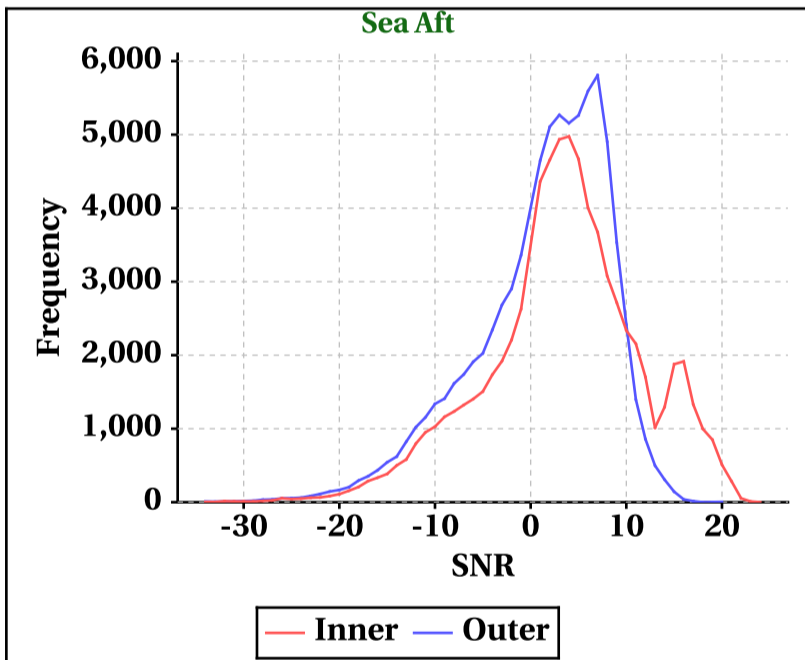
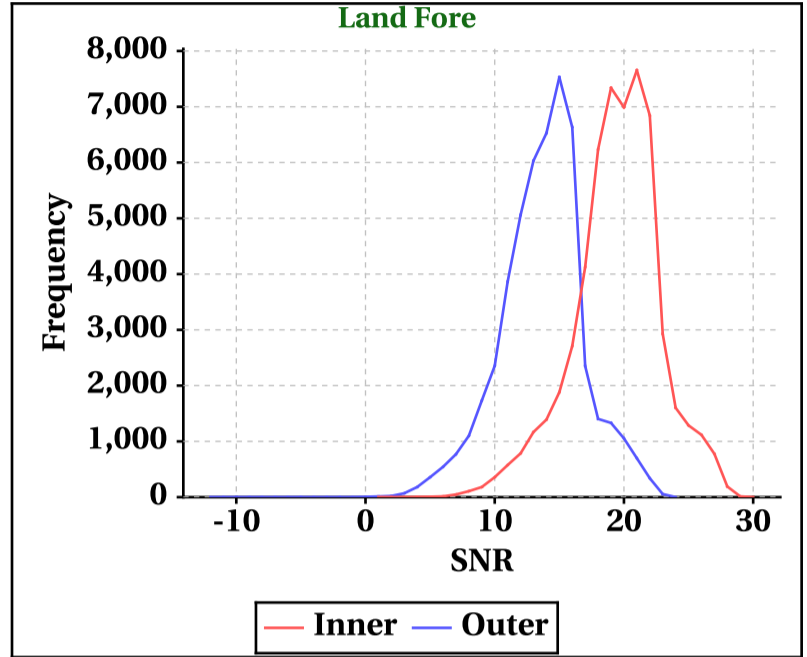
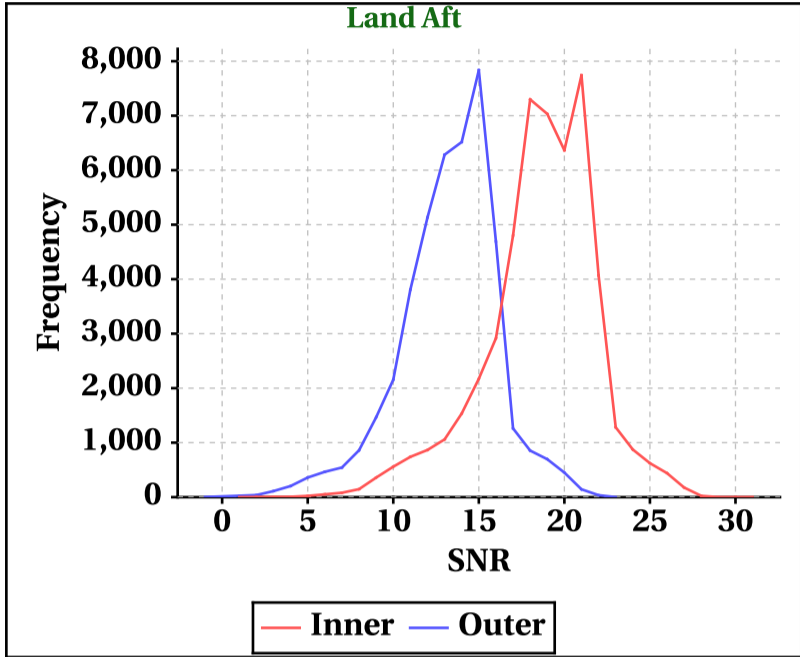


# Dynamic Range (Data Histograms)

## SNR(dBm)

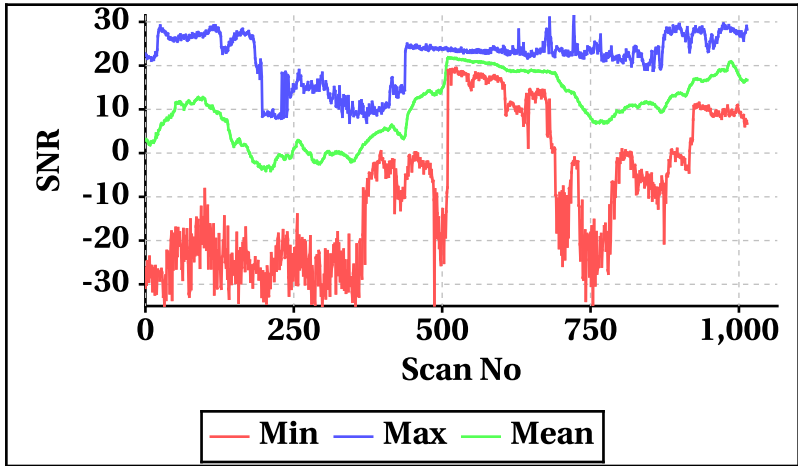
Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	-34	-34
Max	31	30	24	24

Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-1	-12	-34	-34
Max	23	24	20	21

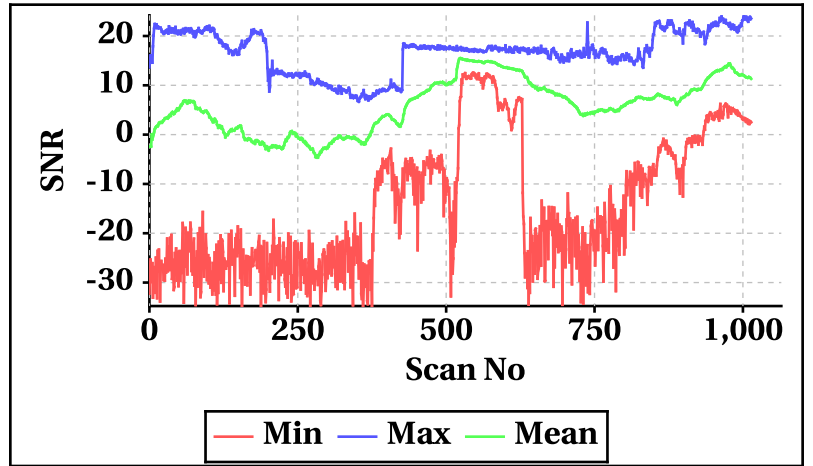


## Orbit-wise behaviour of SNR

Inner Beam (HH)

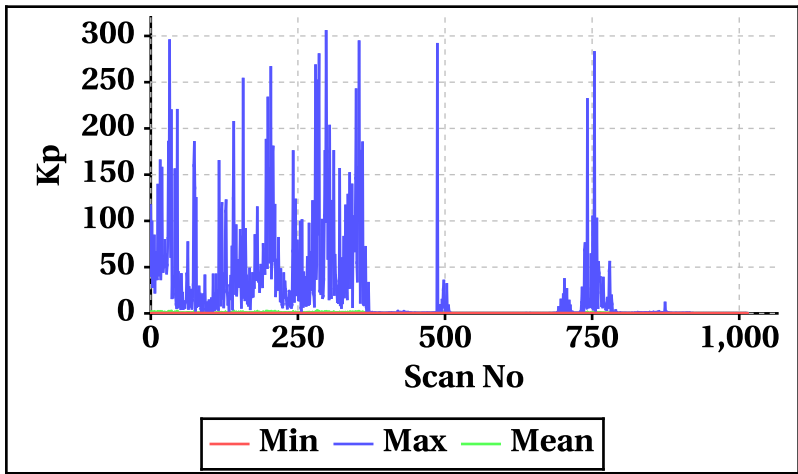


Outer Beam(VV)

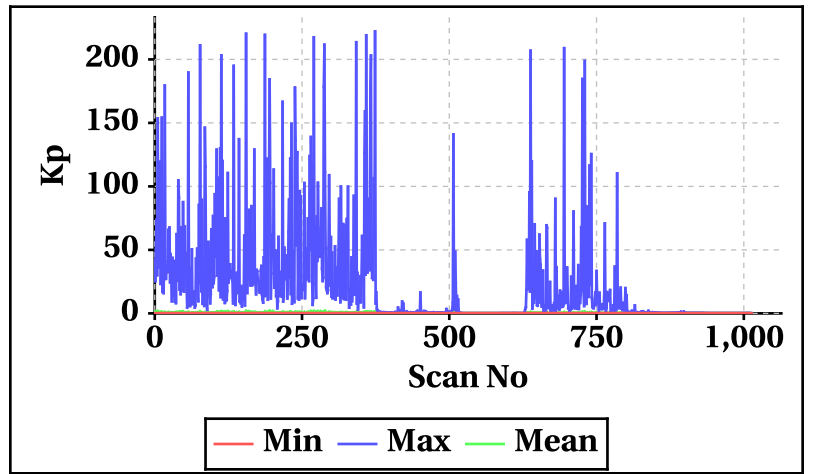


## Orbit-wise behaviour of Kp,Kpa,Kpb,Kpc

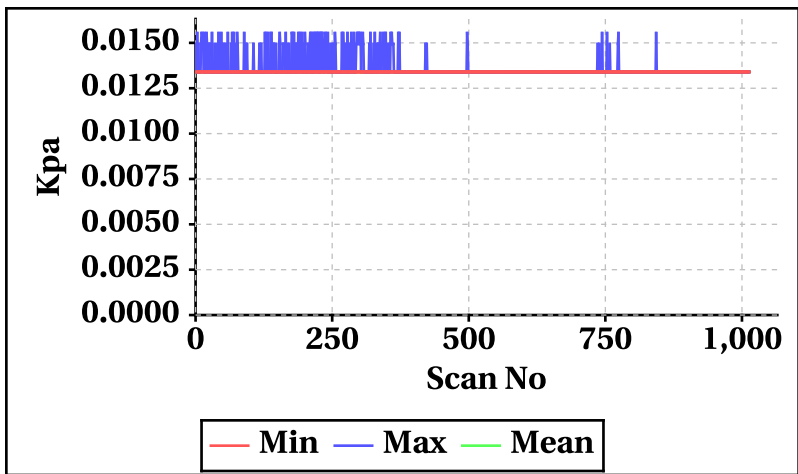
Inner Beam(HH)



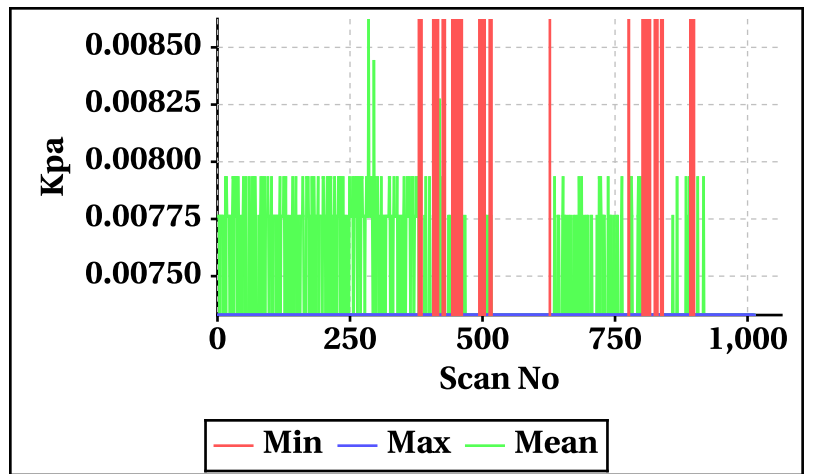
Outer Beam(VV)



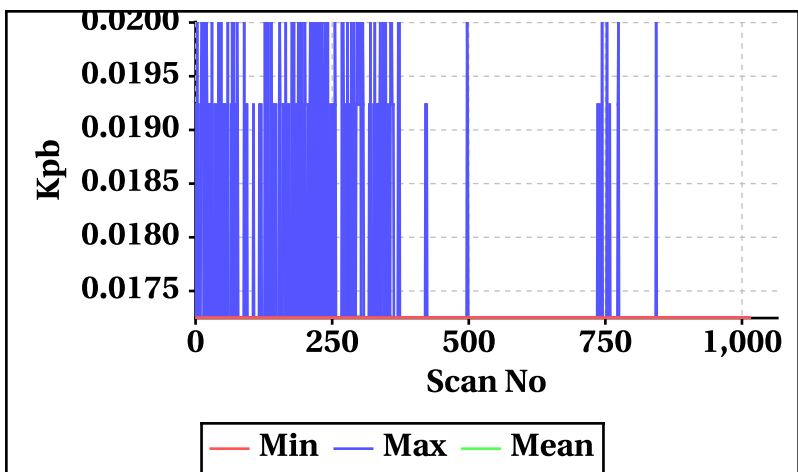
Inner Beam(HH)



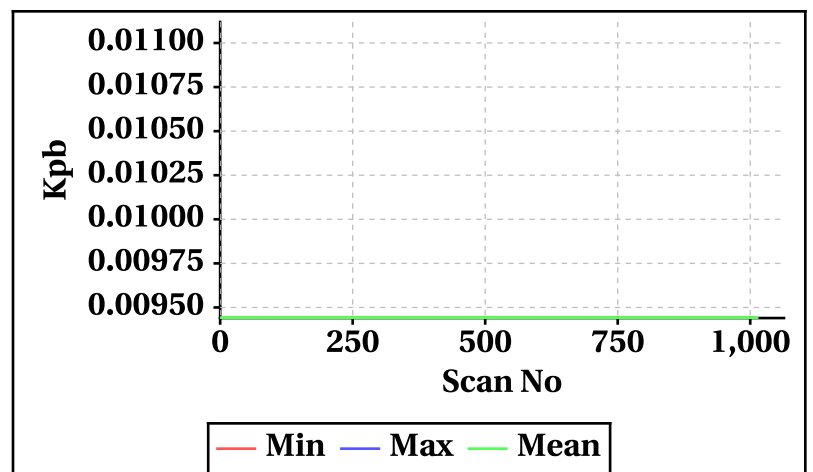
Outer Beam(VV)



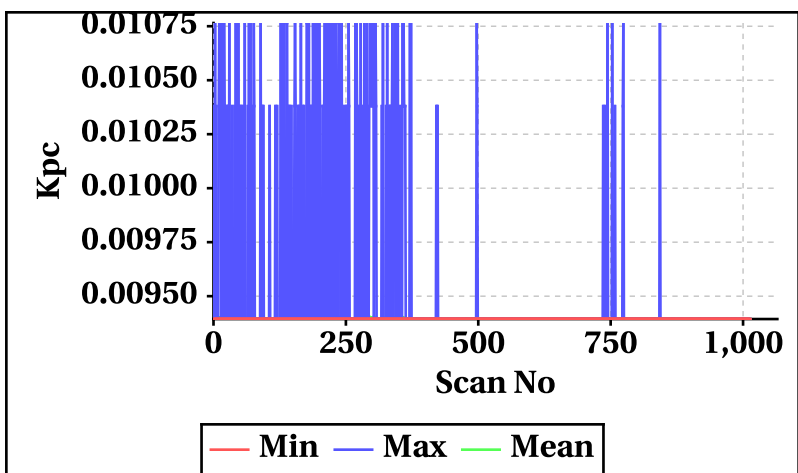
Inner Beam(HH)



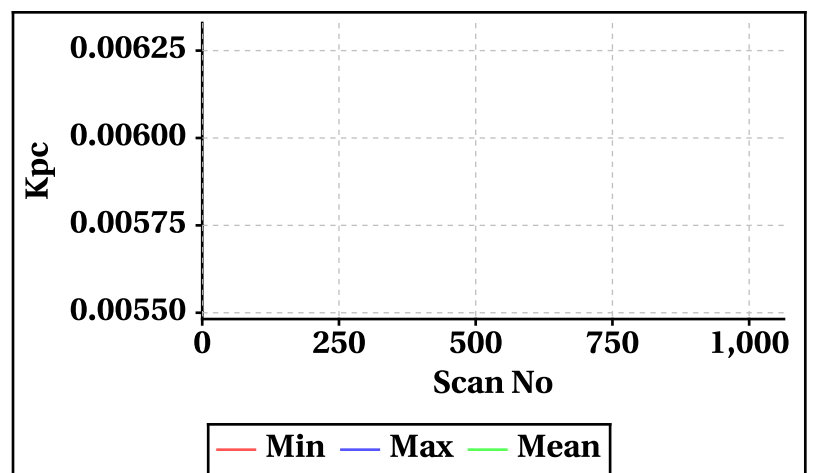
Outer Beam(VV)



Inner Beam(HH)



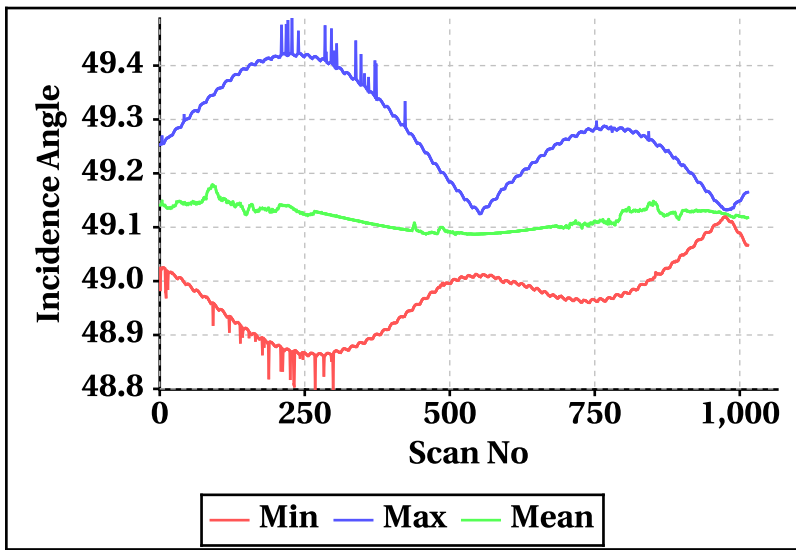
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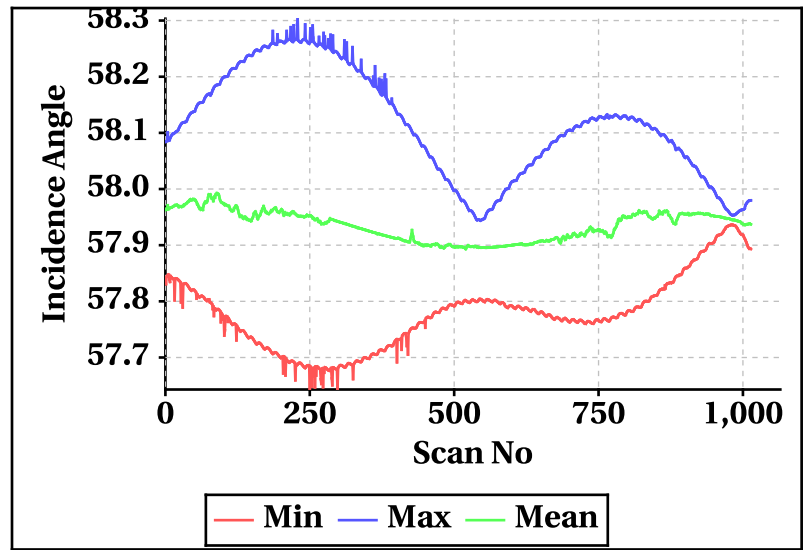


Orbit-wise behaviour of Incidence, Azimuth, Range, X-Factor

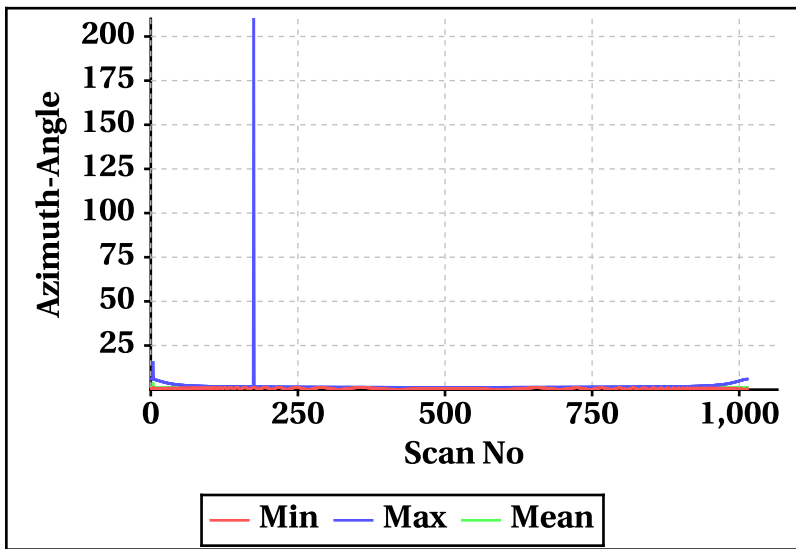
Inner Beam (HH)



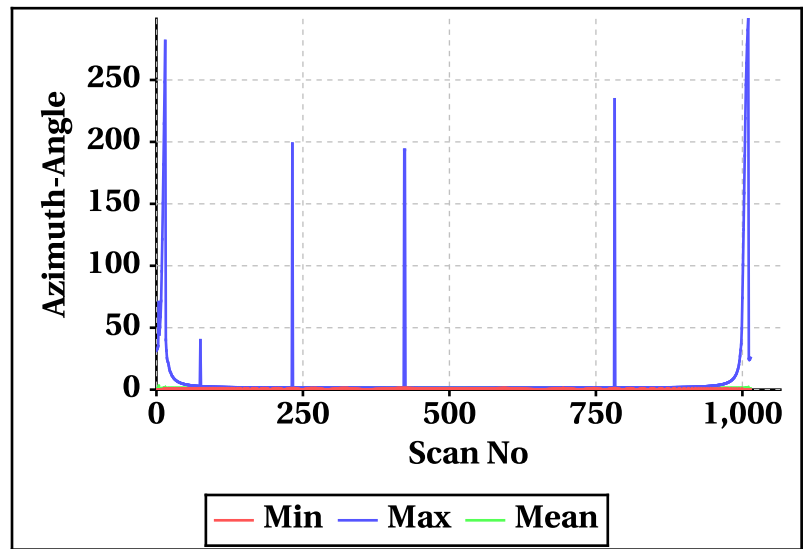
Outer Beam(VV)



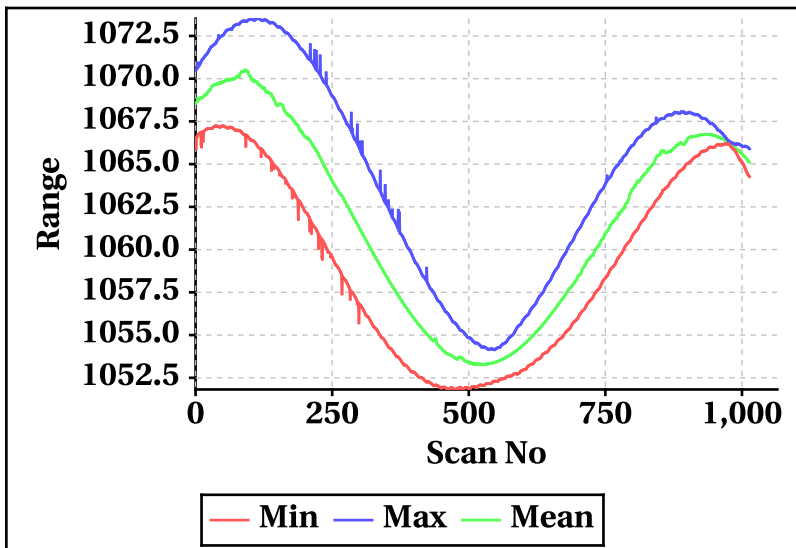
Inner Beam (HH)



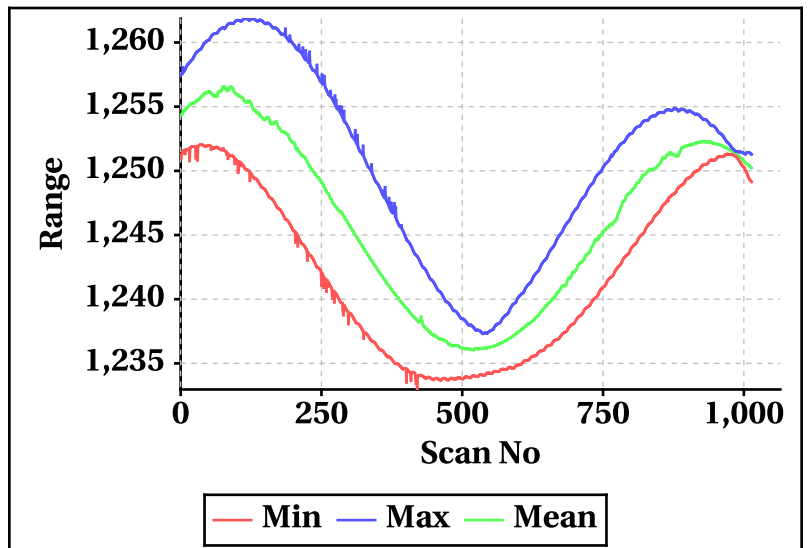
Outer Beam(VV)



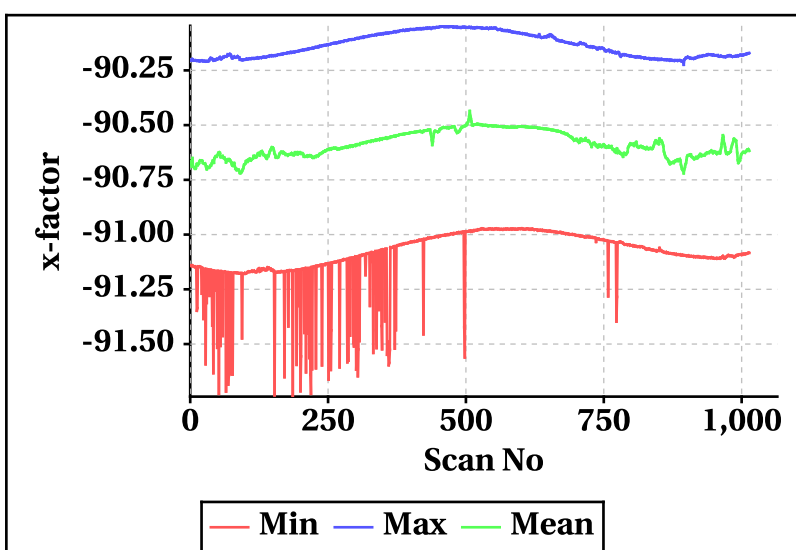
Inner Beam (HH)



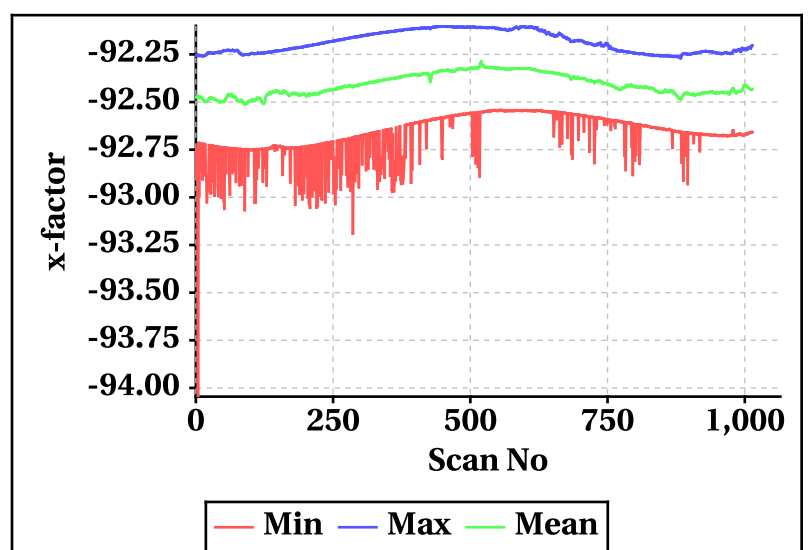
Outer Beam(VV)



Inner Beam (HH)



Outer Beam(VV)

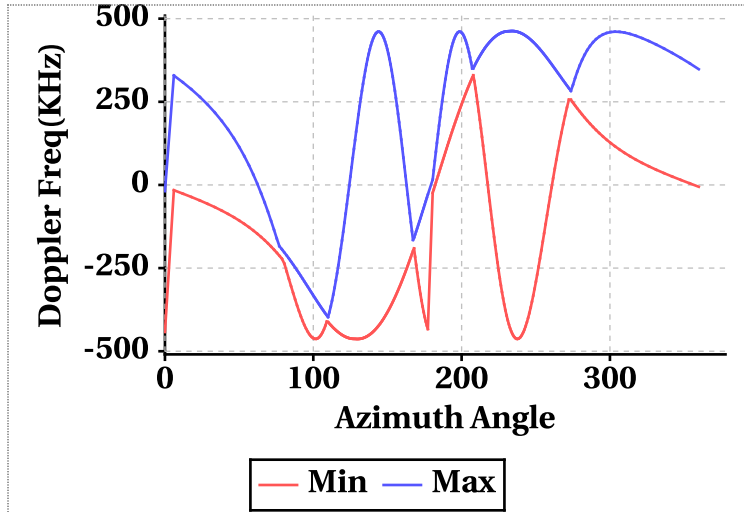


# Doppler Frequency Variation

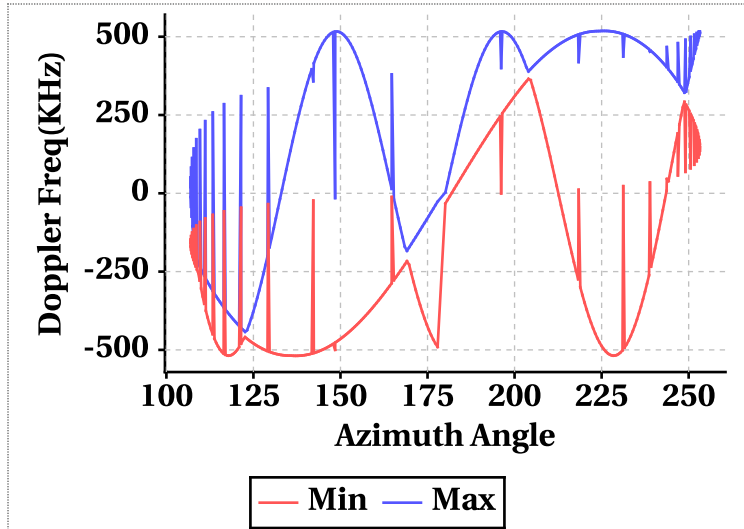
Doppler Frequency(KHz) variation statistics Over the half Orbit

	Inner Beam (HH)	Outer Beam (VV)
Min	-463.14	-518.88
Max	462.72	518.56

Footprint wise Doppler frequency variation Inner Beam (HH)



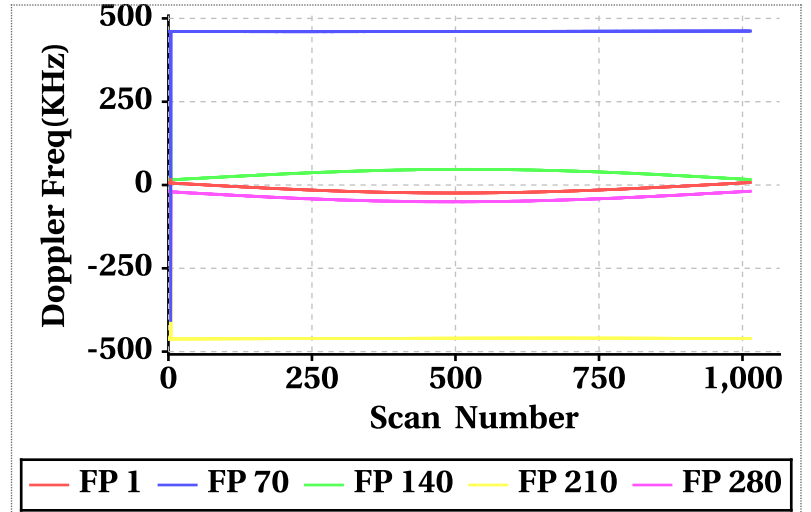
Footprint wise Doppler frequency variation Outer Beam (VV)



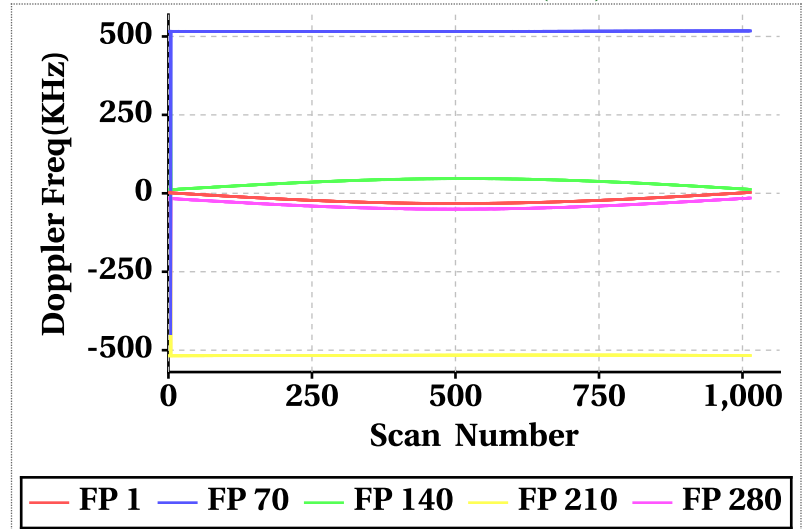
Doppler Frequency(KHz) variation

Doppler_FP	Inner Beam (HH)			Outer Beam (VV)		
	Min	Max	Mean	Min	Max	Mean
Doppler_1	-24.02	16.08	-12.67	-32.50	2.82	-19.79
Doppler_70	-406.18	462.06	460.03	-447.30	517.64	515.25
Doppler_140	15.06	381.90	35.96	11.26	419.20	34.51
Doppler_210	-462.12	52.84	-459.88	-517.94	75.04	-515.83
Doppler_280	-442.20	-18.64	-39.46	-499.74	-15.10	-38.32

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

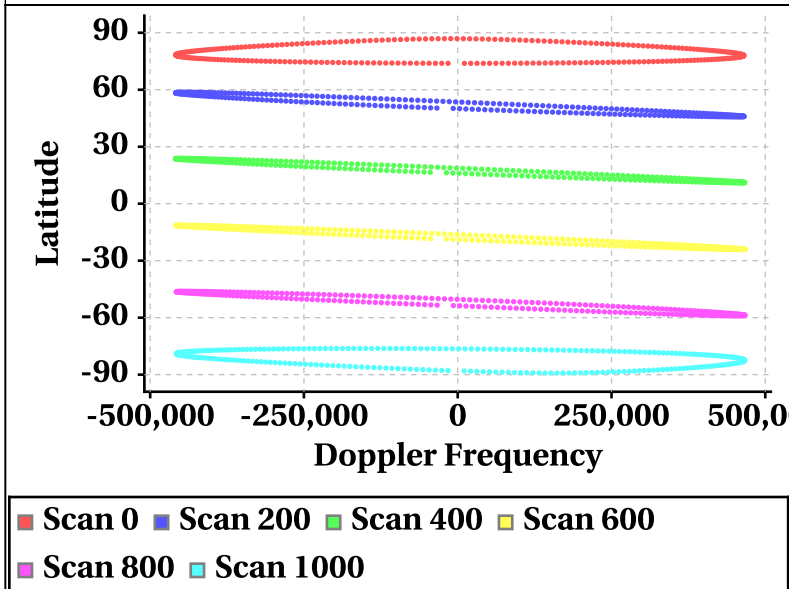


Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Outer Beam (VV)

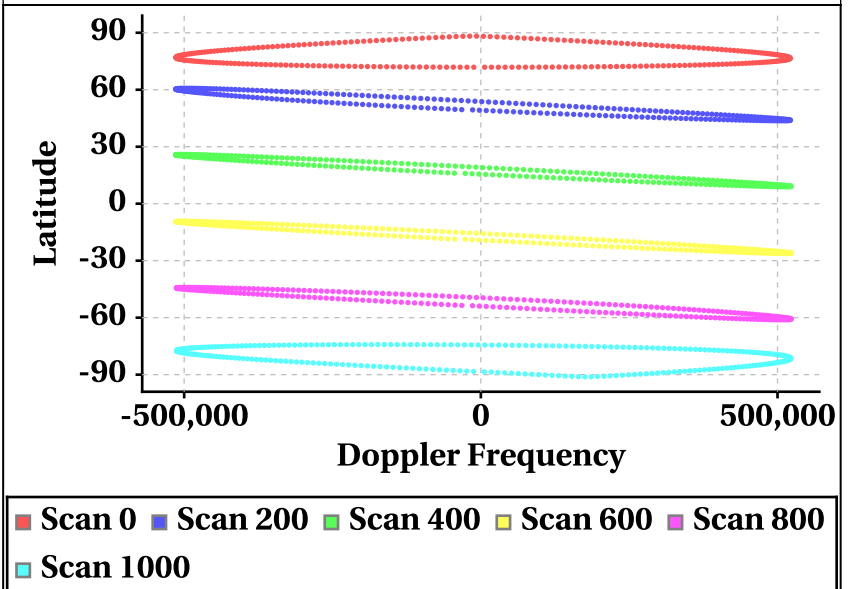


# Latitude Vs Doppler Frequency

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



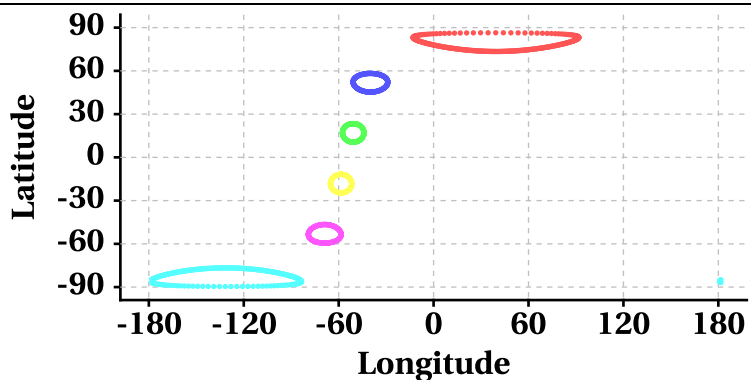
Doppler Frequency at Scan Interval of 200 [Outer Beam(VV)]



# Parameter as a function of Latitude

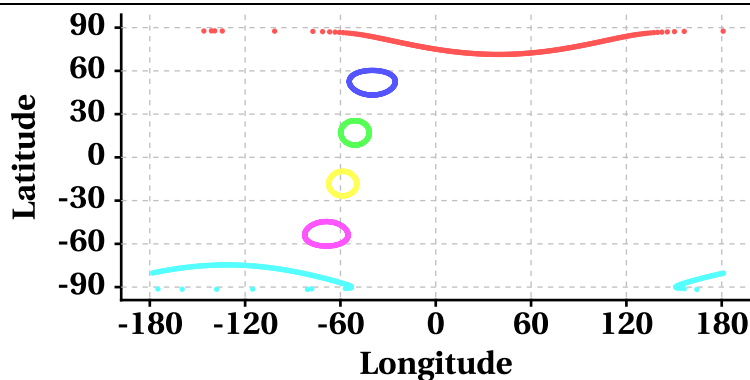
## Latitude Vs Longitude

Scan Trace [Inner Beam(HH)]



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

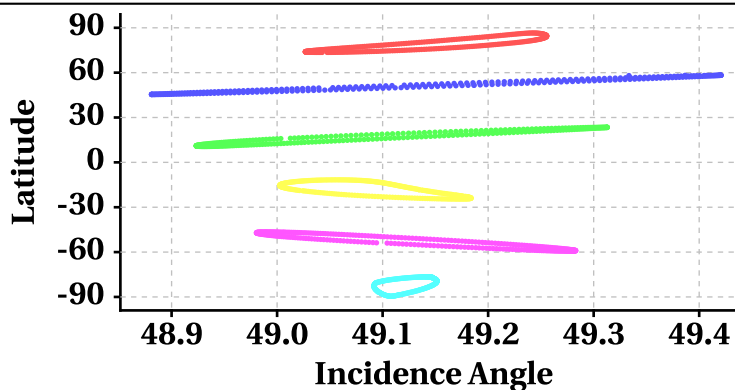
Scan Trace [Outer Beam (VV)]



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

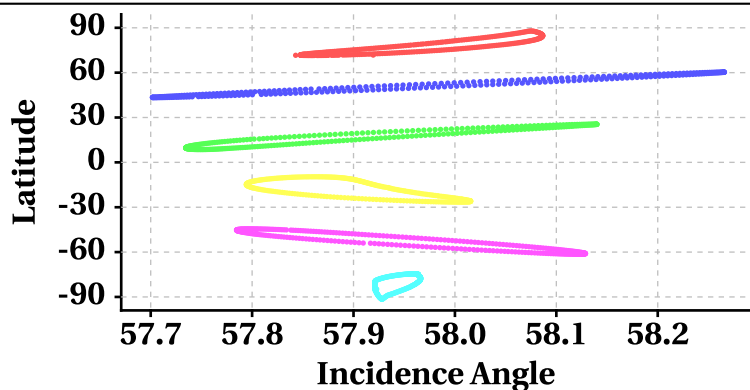
## Latitude Vs Incidence Angle

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



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

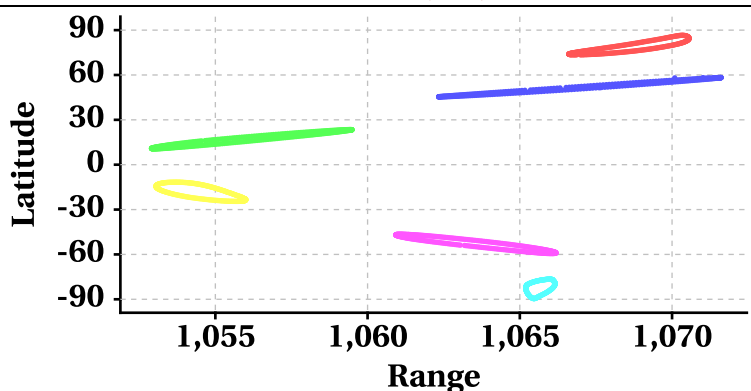
Incidence Angle at Scan Interval of 200 [Outer Beam (VV)]



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

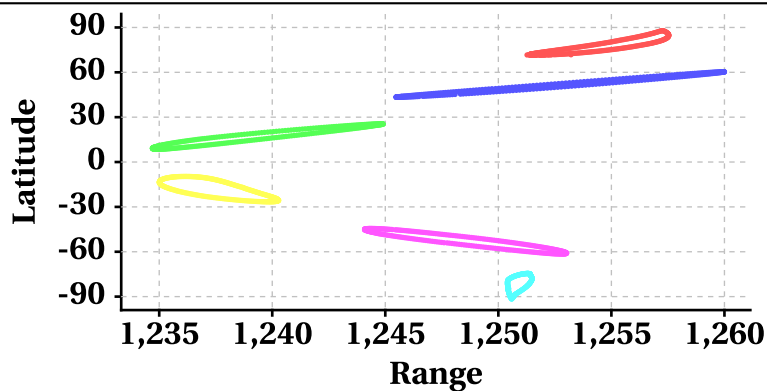
## Latitude Vs Range

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

