

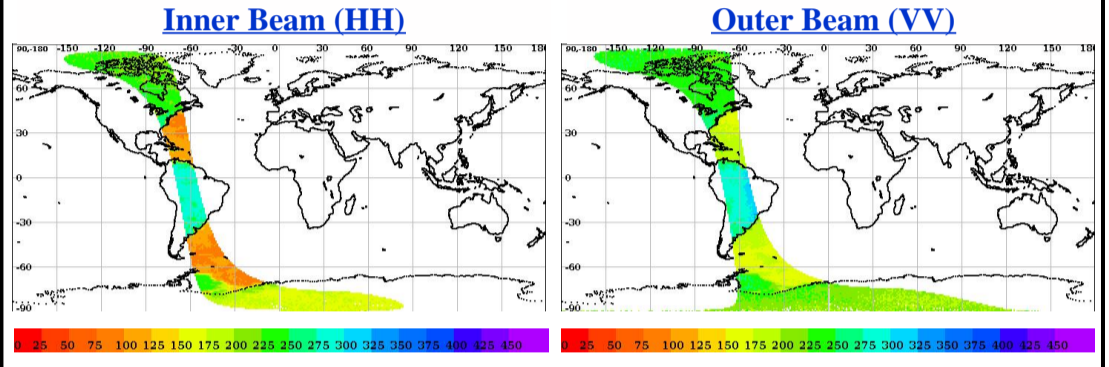
# SCATSAT-1 Scatterometer Level-1B Data Quality Evaluation Report

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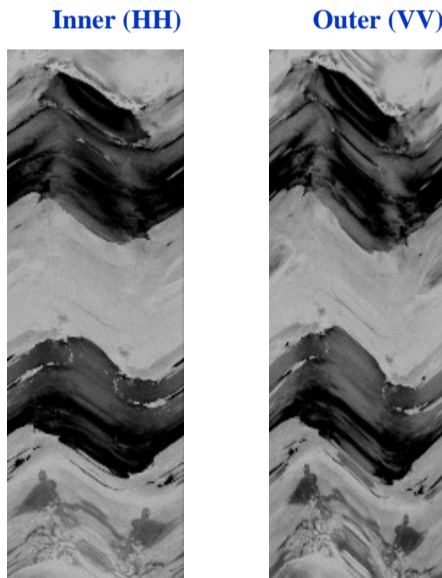
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<b>Satellite Id</b>	ScatSat-1	<b>Start Orbit</b>	7000	<b>Total Scans</b>	969
<b>Sensor Name</b>	Scatterometer	<b>End Orbit</b>	7001	<b>No Of Inner FootPrints</b>	281
<b>Processor Version</b>	v1.1.2	<b>Rev. Number</b>	07000_07001	<b>No Of Outer FootPrints</b>	282
<b>Half Orbit Direction</b>	SN	<b>Data Production Date</b>	22-01-2018	<b>No. Of Inner Slices</b>	9
<b>Equator Crossing Date</b>	22-01-2018	<b>Equator Crossing Time</b>	00:55:00.000	<b>No Of Outer Slices</b>	14

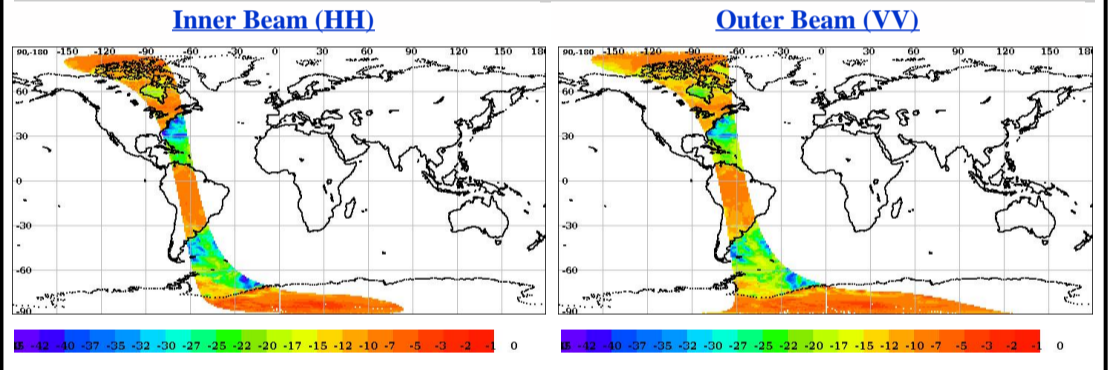
## Brightness Temperature(k) Footprint trace



## Image Snapshot for Inner & Outer Beam



## Sigma0(dB) Footprint trace



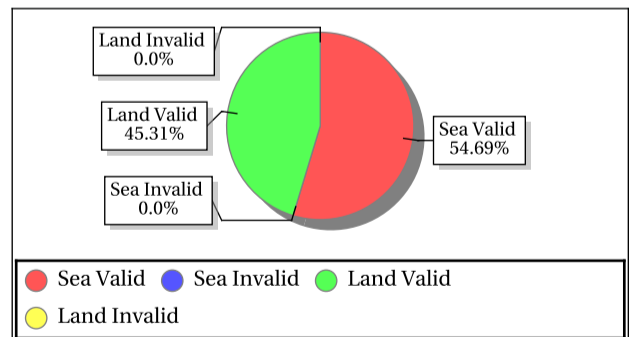
## Invalid and Poor Sigma-0 Quality Flag Statistics for Inner/Outer Slices\*

Sigma-0 Flags	Inner Beam	Outer Beam
<b>Invalid Sigma0(%)</b>	0.00	0.00
<b>Data Not Available From Payload (%)</b>	0.0	0.0
<b>Slice not within sample array limits (%)</b>	0.00	0.00
<b>C(S+N) - C(N) &lt; 0.1 (%)</b>	0.00	0.00
<b>Poor Sigma0(%)</b>	0.01	0.01
<b>Noise samples for blending Saturated</b>	0.0	0.0
<b>Count samp. for interpol. saturated (%)</b>	0.00	0.00
<b>Sigma0 &lt; lower bound (-96dB) (%)</b>	0.0	0.0
<b>Sigma0 &gt; upper bound (0 dB) (%)</b>	0.00	0.00
<b>SNR &lt; -65 dB (%)</b>	100.0	100.0

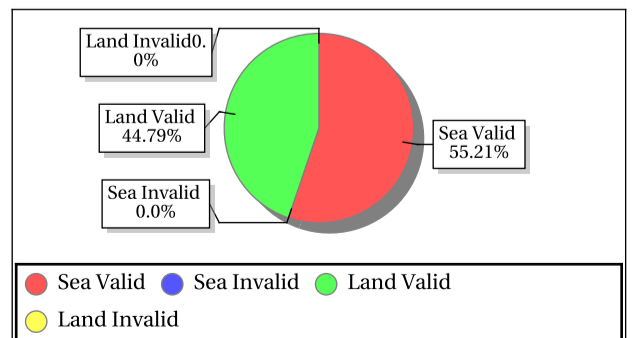
\*DP Format Document

## 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
Amazon_3	-6.00	-61.00	Inner	ASC	Aft	-9.35	-7.11	-8.43	0.48	244.53	323.19	283.17	17.87
Amazon_3	-6.00	-61.00	Inner	ASC	Fore	-10.01	-7.27	-8.15	0.62	248.54	317.19	284.91	17.68
Amazon_2	-3.00	-61.00	Inner	ASC	Aft	-11.83	-7.44	-8.74	0.94	192.06	309.48	268.53	23.46
Amazon_2	-3.00	-61.00	Inner	ASC	Fore	-10.95	-7.02	-8.38	0.95	202.95	322.12	259.75	28.03
Amazon_1	0.00	-67.00	Inner	ASC	Aft	-8.91	-6.58	-7.57	0.48	247.04	315.69	286.72	17.13
Amazon_1	0.00	-67.00	Inner	ASC	Fore	-8.70	-6.19	-7.48	0.64	257.17	334.49	289.93	18.09
Amazon_3	-6.00	-61.00	Outer	ASC	Aft	-10.64	-8.45	-9.50	0.50	256.46	329.93	292.09	17.91
Amazon_3	-6.00	-61.00	Outer	ASC	Fore	-10.01	-8.49	-9.26	0.42	239.65	295.29	272.10	16.48
Amazon_2	-3.00	-61.00	Outer	ASC	Aft	-12.31	-8.51	-9.70	0.94	225.67	314.22	284.77	19.58
Amazon_2	-3.00	-61.00	Outer	ASC	Fore	-11.34	-8.67	-9.88	0.74	225.84	292.39	261.09	15.85
Amazon_1	0.00	-67.00	Outer	ASC	Aft	-9.00	-7.80	-8.44	0.32	236.63	319.55	283.34	16.86
Amazon_1	0.00	-67.00	Outer	ASC	Fore	-9.86	-7.83	-8.55	0.46	258.10	307.53	279.98	13.18



## 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	261.85	0.44	4.498	0.10	264.80	0.31	2.891	0.10	135.22	0.11	0.029	0.10	7.84	0.10	0.034
<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>	-34.91	22.11	3.14	0.004	-34.96	25.45	6.25	1.978	-32.04	27.87	19.16	6.398	-19.63	31.44	20.13	14.464

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	195.20	0.38	4.562	0.08	198.99	0.33	3.580	0.08	11.32	0.09	0.012	0.08	29.67	0.09	0.016
<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	0.01	0.00	0.000	0.00	0.01	0.00	0.000
<b>SNR</b>	-34.52	16.47	1.56	0.000	-34.60	18.94	3.57	0.000	-22.13	21.96	13.84	0.000	-26.33	22.71	14.23	0.014

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)

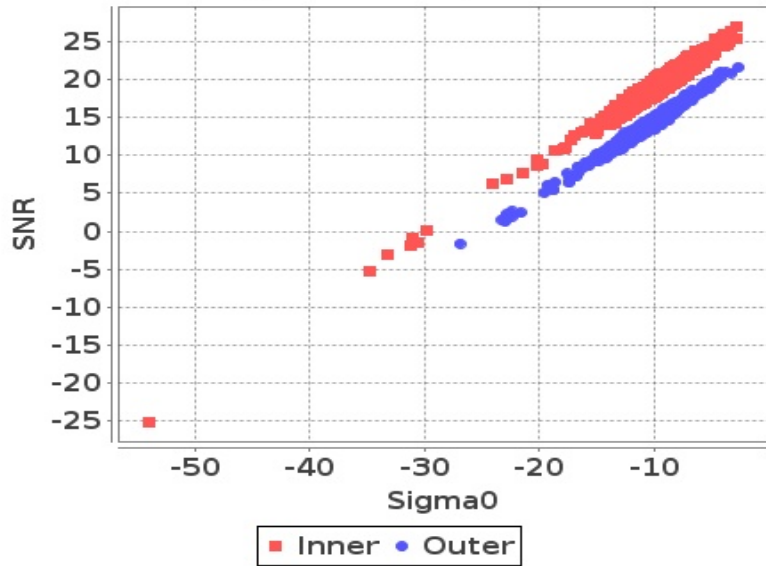
	Inner Beam (HH)				Outer Beam (VV)				Parameter Specifications		
	Min	Max	Mean	Bad Occ. (%)	Min	Max	Mean	Bad Occ. (%)	Parameter	Min	Max
<b>Incidence Angle (deg)</b>	48.86	49.48	49.10	0.000	57.72	58.37	58.05	0.000	Inci.(Inner)	47.10	49.90
<b>Azimuth Diff. (deg)</b>	0.0026	6.27	1.27	1.998	0.0000	292.52	1.27	3.292	Inci.(Outer)	57.30	58.90
<b>Range(Km)</b>	1054.03	1085.17	1066.12	0.000	1236.96	1277.20	1254.96	0.000	Azimuth Diff.	0.60	2.00
<b>X Factor(dbm)</b>	-92.16	-89.59	-90.64	0.000	-93.58	-92.07	-92.56	0.000	Range(Inner)	1025.00	1095.70
<b>Across Distance (Km)</b>	15.49	16.09	15.77	0.000	20.51	21.12	20.76	0.000	Range(Outer)	1210.00	1280.00
<b>Along Distance (Km)</b>	18.81	20.54	19.68	0.000	18.36	34.24	19.60	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; 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)

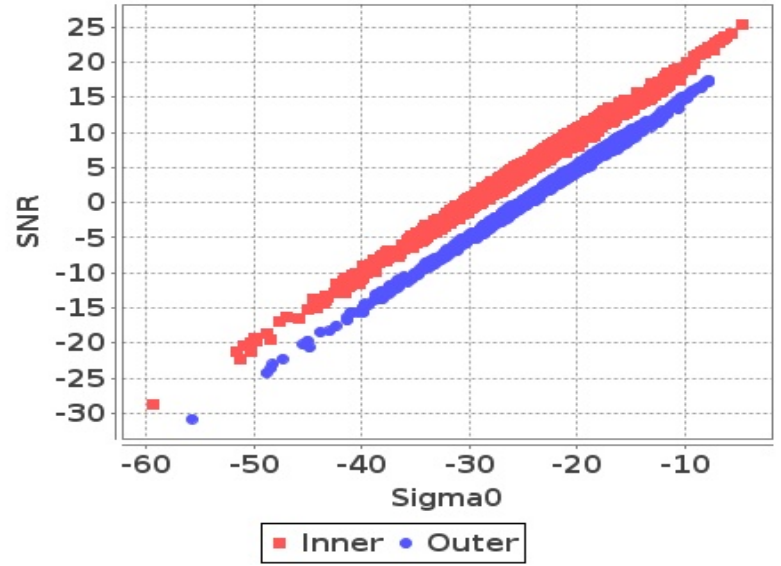
Footprint-Land

Sigma0 Vs SNR (Land)



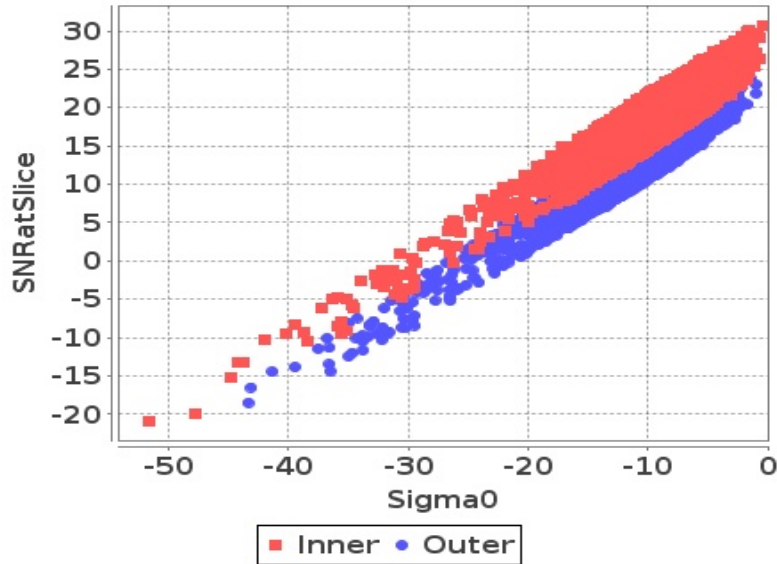
Footprint-Sea

Sigma0 Vs SNR (Sea)



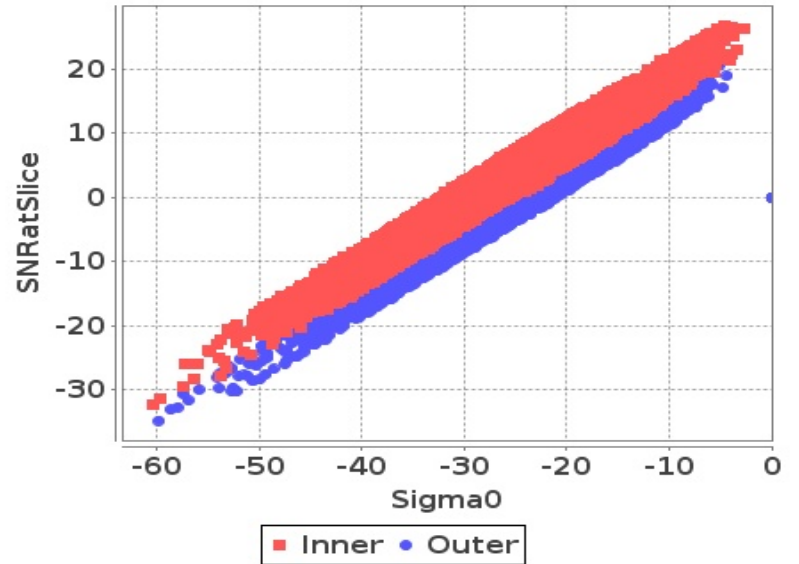
Slice-Land

Sigma0 Vs SNRatSlice (Land)



Slice-Sea

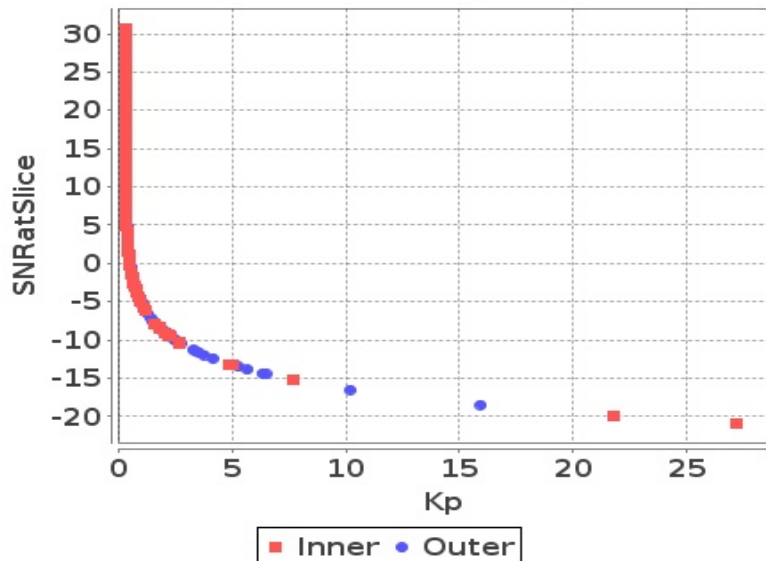
Sigma0 Vs SNRatSlice (Sea)



## Sigma0 Behaviour (Kp Vs SNR)

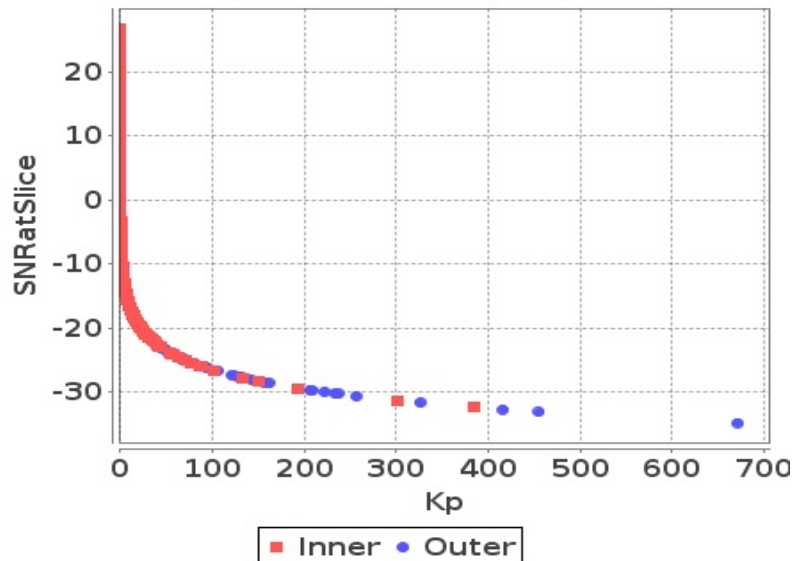
Slice

Kp Vs SNRatSlice (Land)



Slice

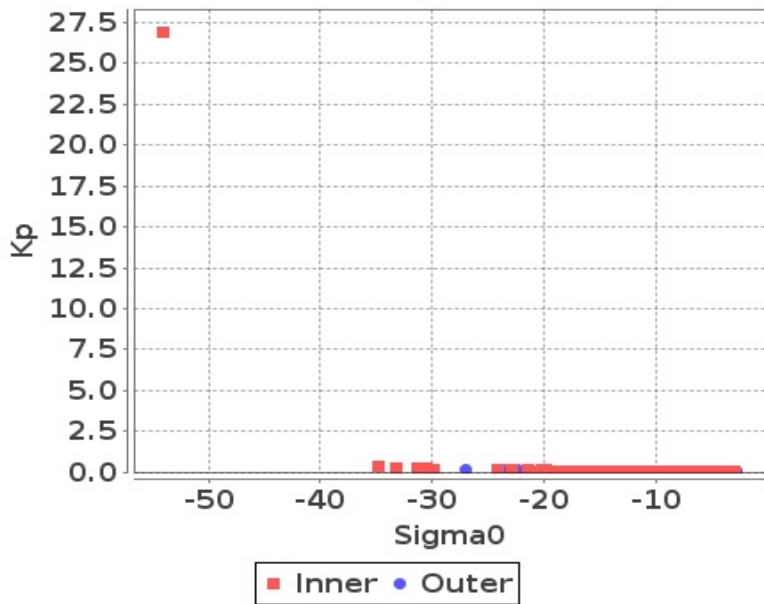
Kp Vs SNRatSlice (Sea)



# Sigma0 Behaviour(Sigma0 Vs Kp)

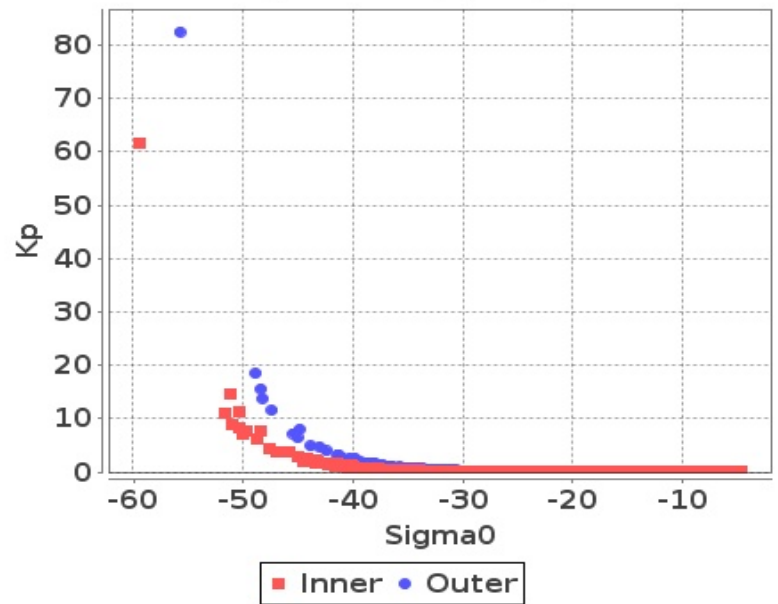
## Footprint-Land

### Sigma0 Vs Kp (Land)



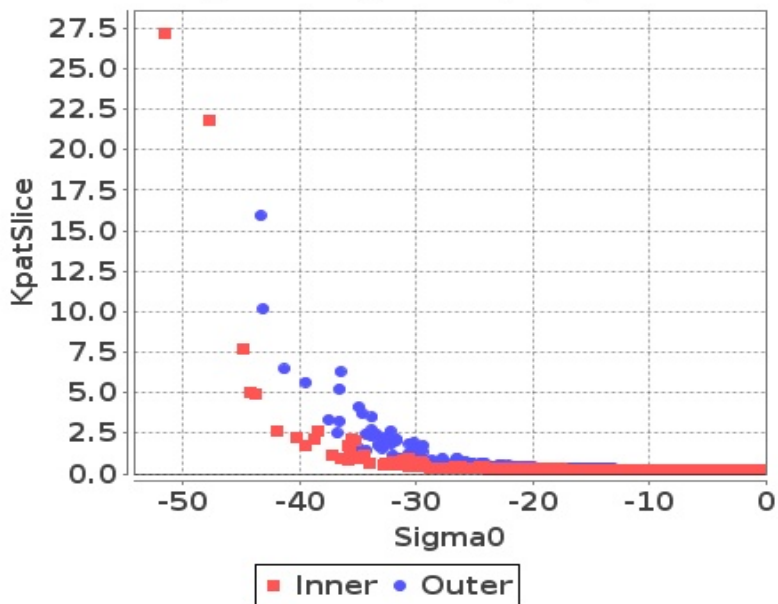
## Footprint-Sea

### Sigma0 Vs Kp (Sea)



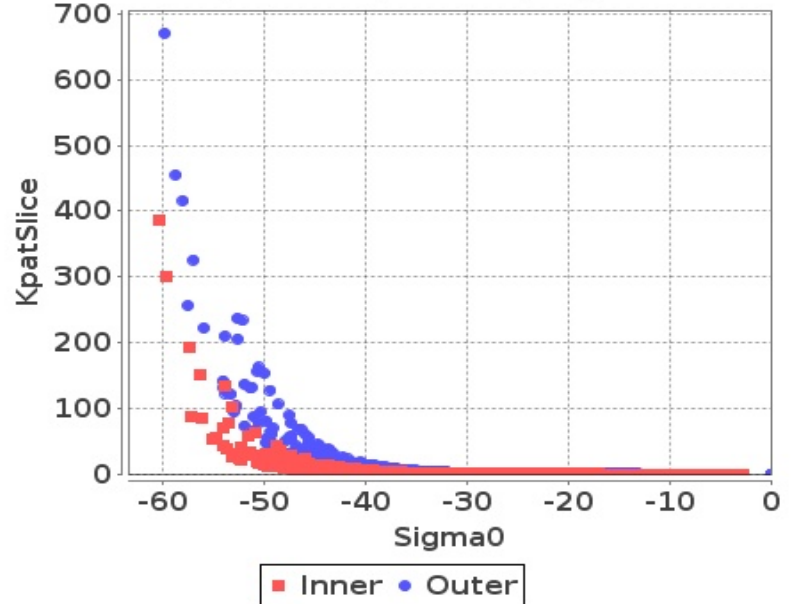
## Slice-Land

### Sigma0 Vs KpatSlice (Land)



## Slice-Sea

### Sigma0 Vs KpatSlice (Sea)

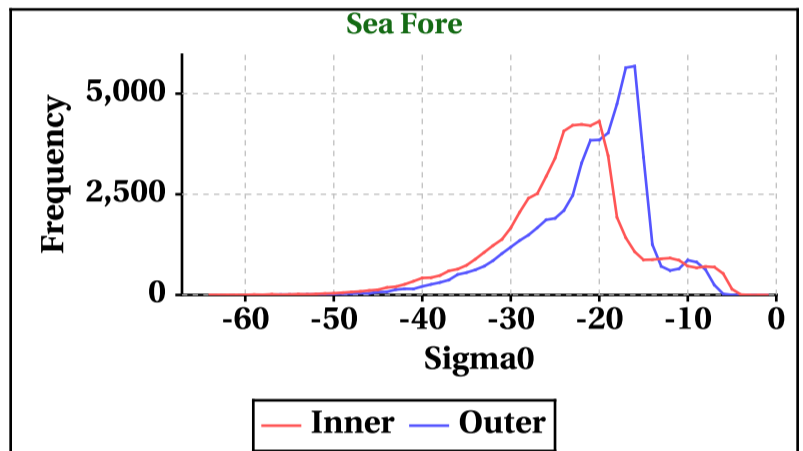
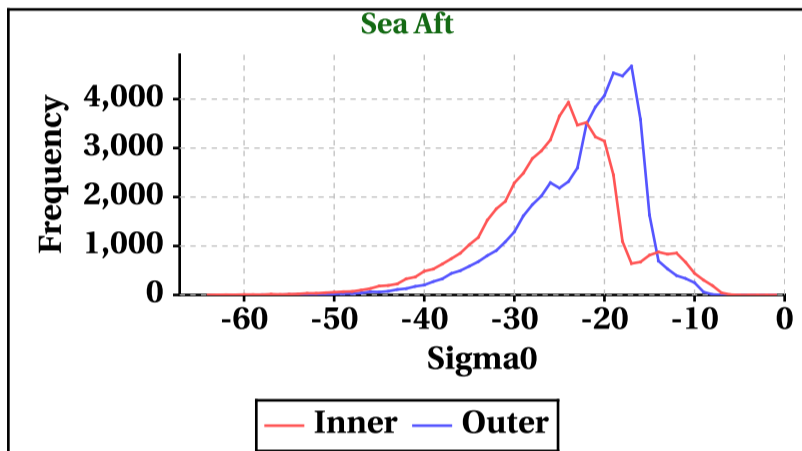
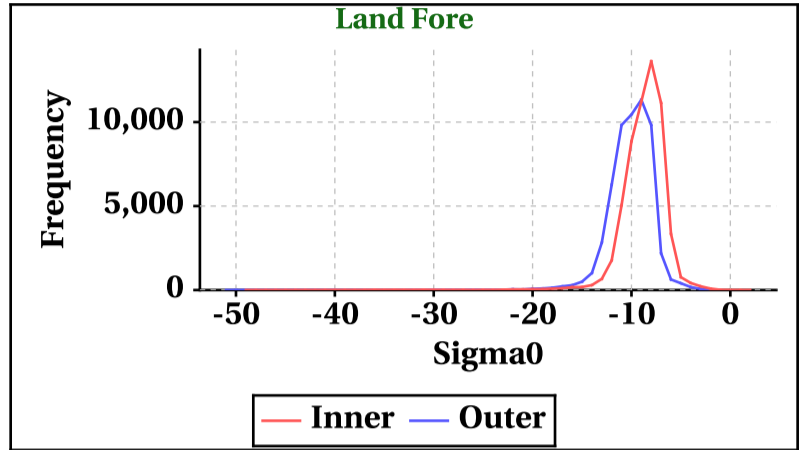
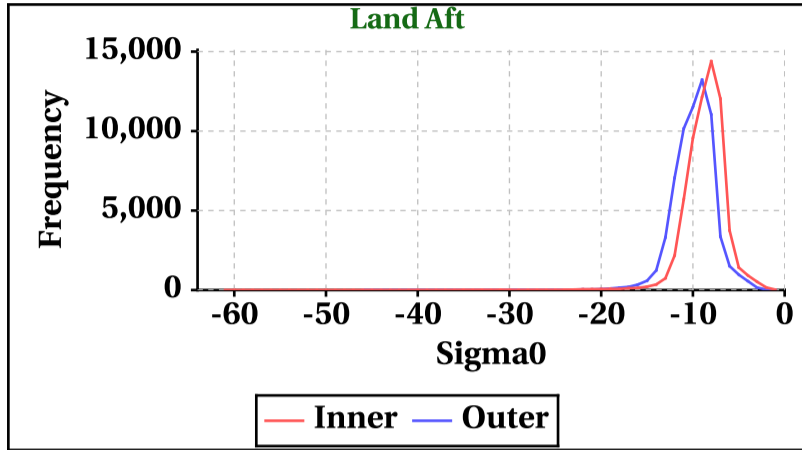


# Dynamic Range (Data Histograms)

## Sigma0(db)

Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-61	-49	-64	-64
Max	0	2	0	0

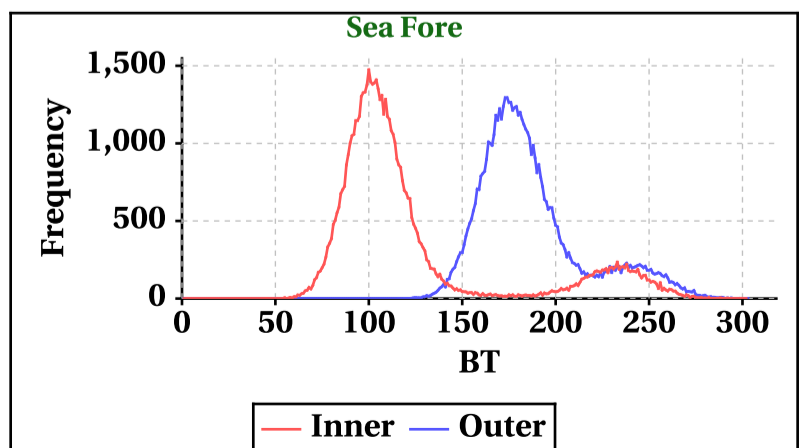
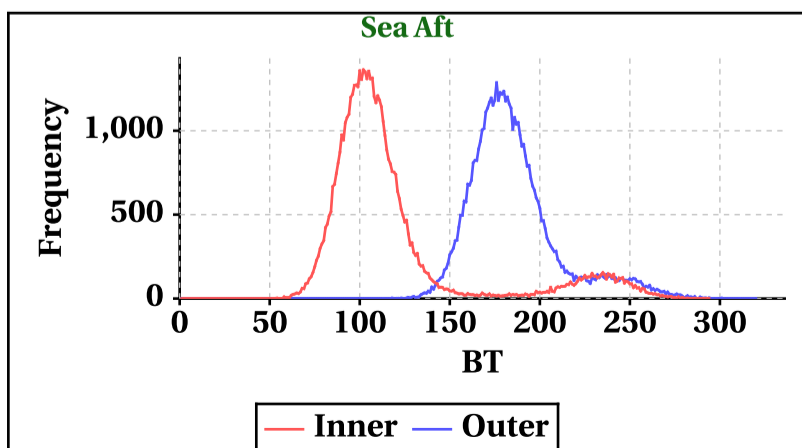
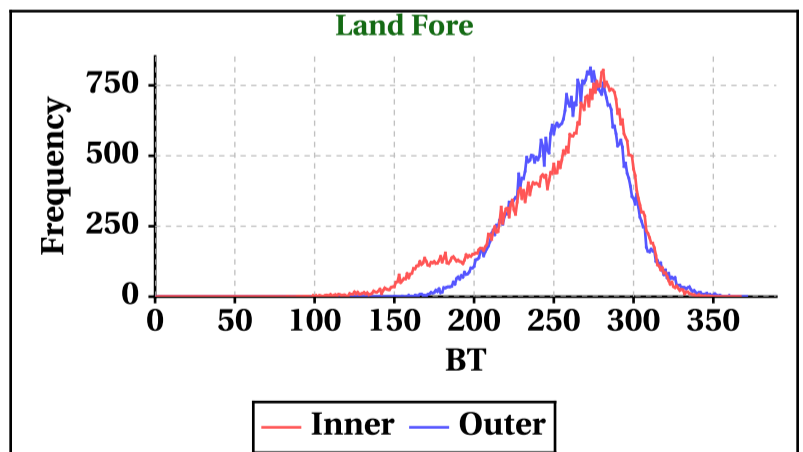
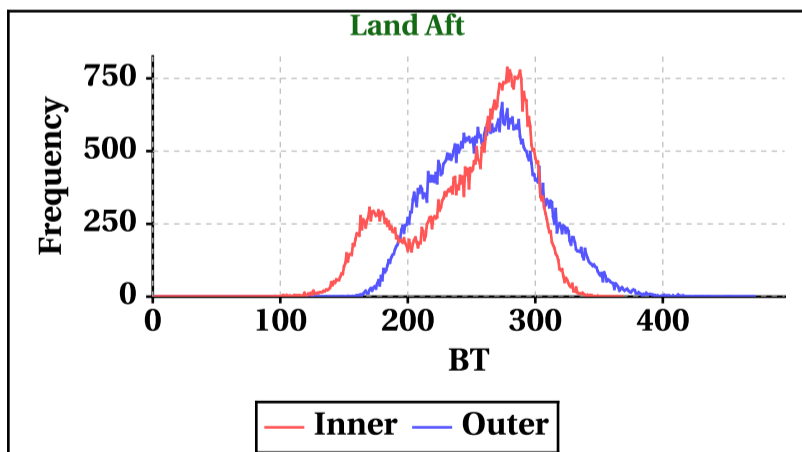
Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-46	-51	-59	-59
Max	0	0	0	0



## Brightness Temperature(K)

Inner Beam(HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	368	367	294	302

Outer Beam(VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	472	371	320	303

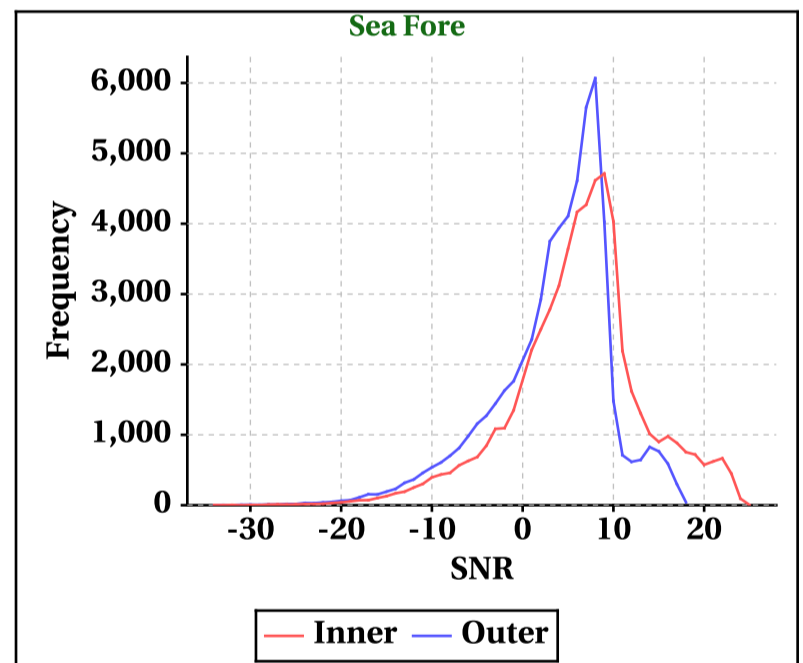
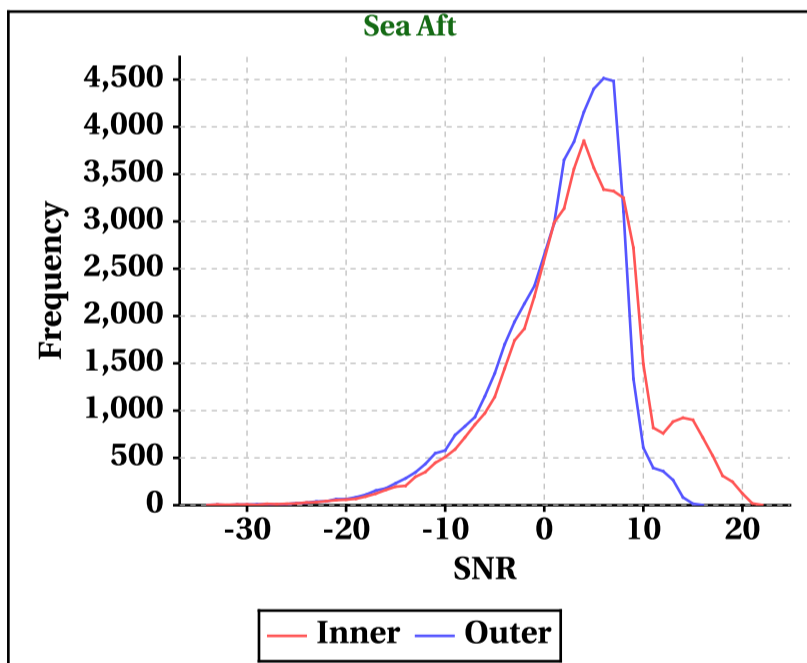
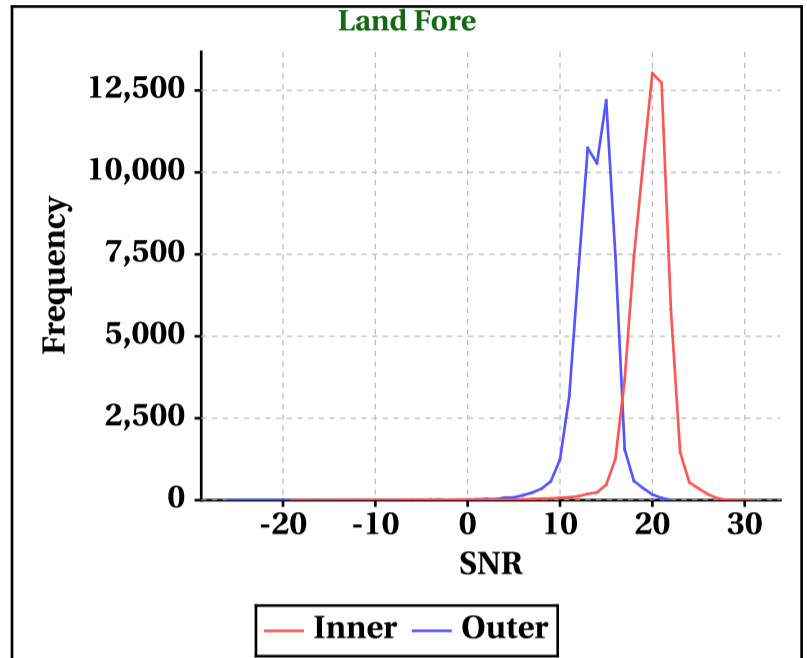
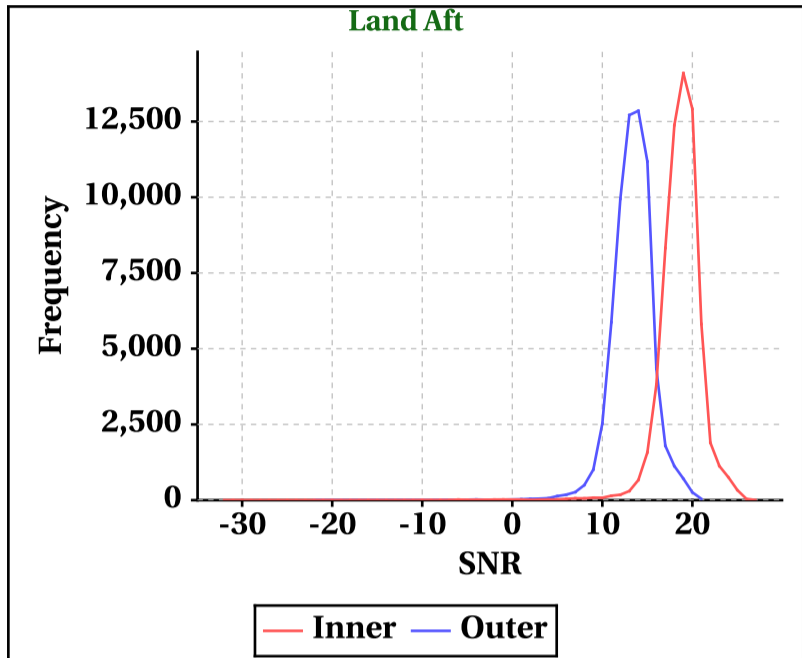


# Dynamic Range (Data Histograms)

## SNR(dBm)

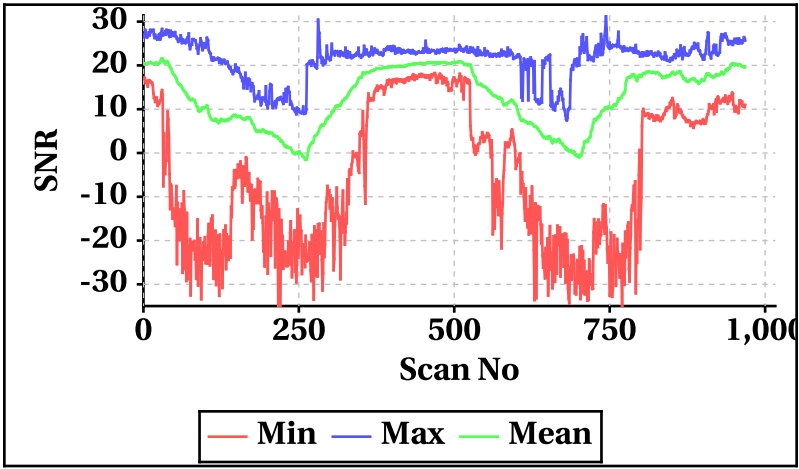
Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-32	-19	-34	-34
Max	27	31	22	25

Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-22	-26	-34	-34
Max	21	22	16	18

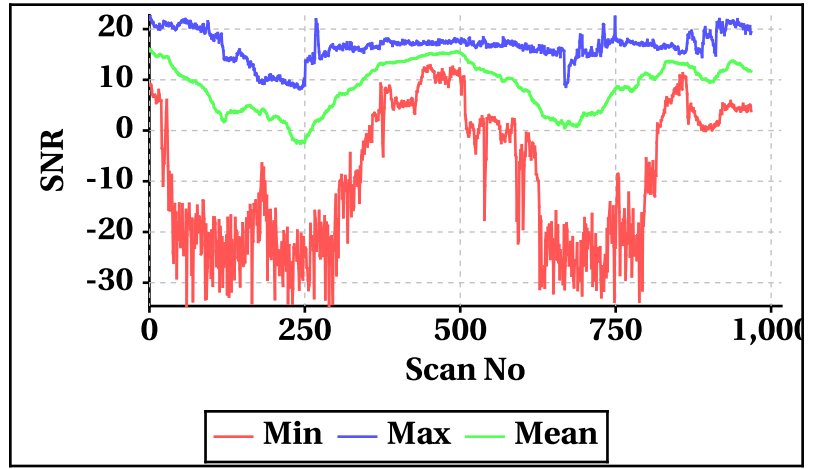


## Orbit-wise behaviour of SNR

**Inner Beam (HH)**

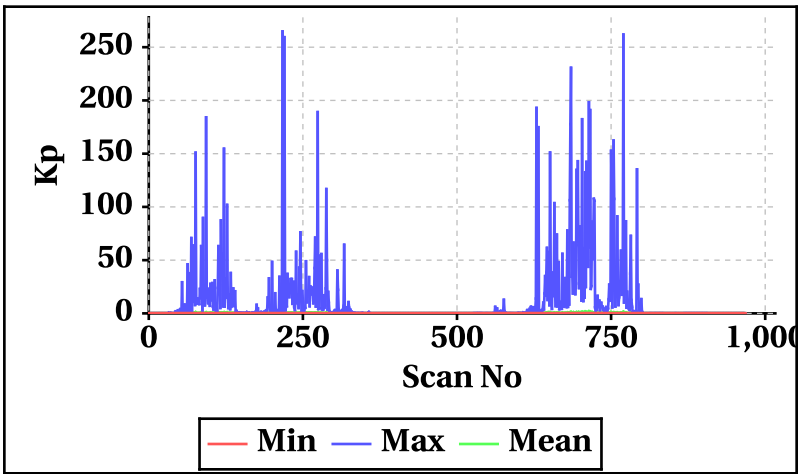


**Outer Beam (VV)**

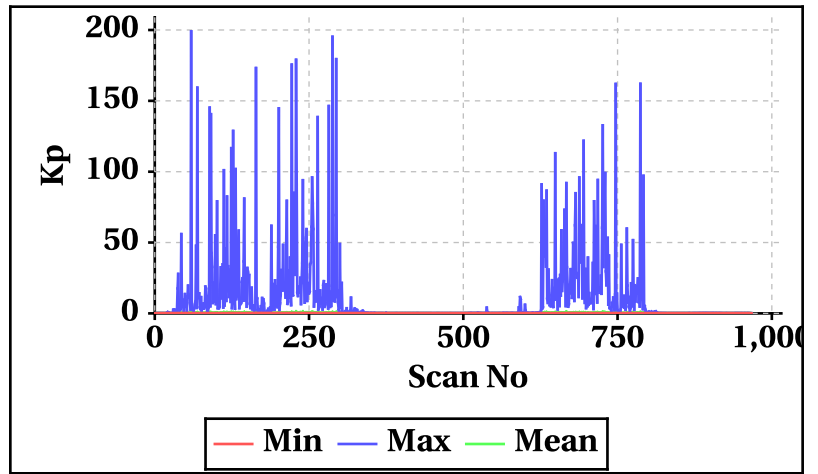


## Orbit-wise behaviour of Kp, Kpa, Kpb, Kpc

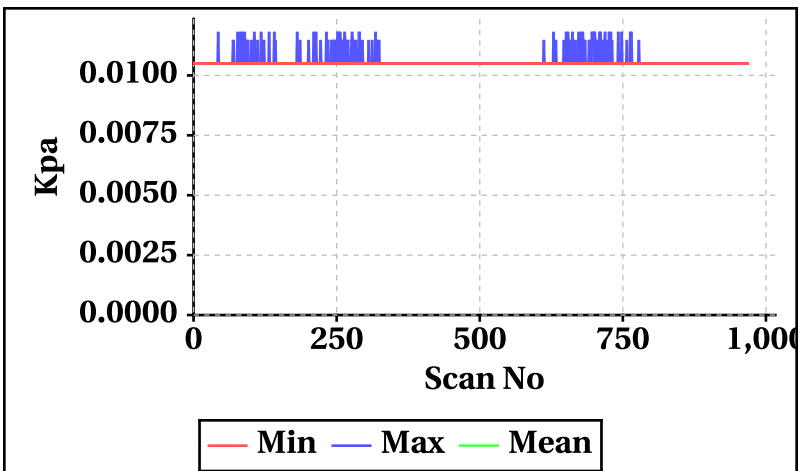
**Inner Beam (HH)**



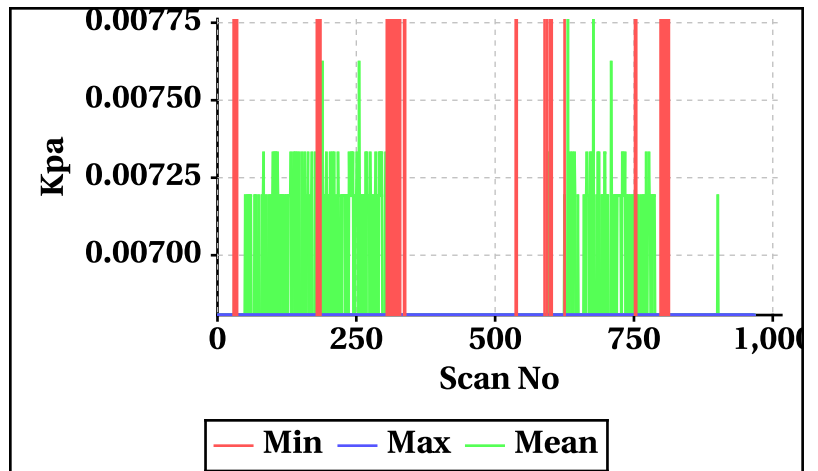
**Outer Beam (VV)**



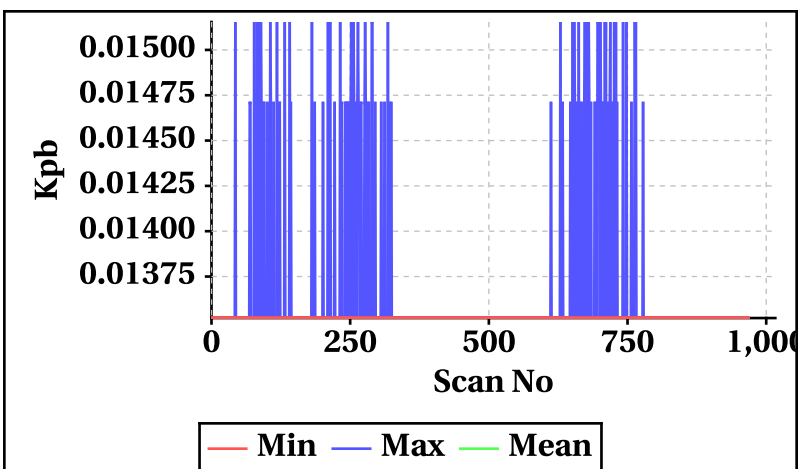
**Inner Beam (HH)**



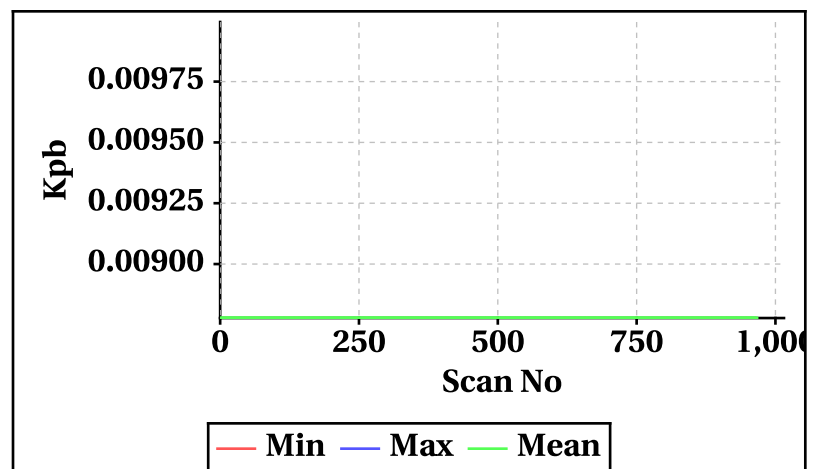
**Outer Beam (VV)**



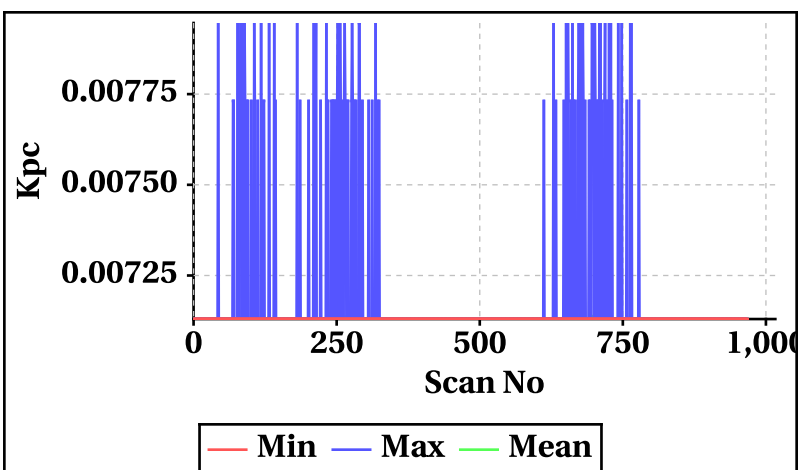
**Inner Beam (HH)**



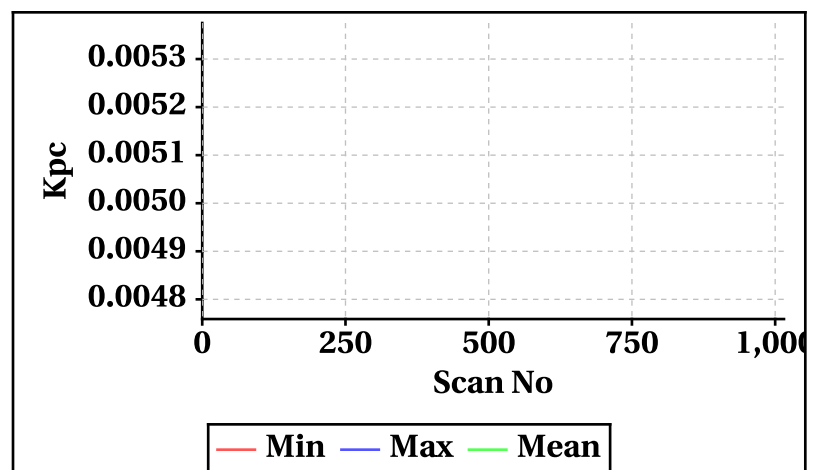
**Outer Beam (VV)**



**Inner Beam (HH)**



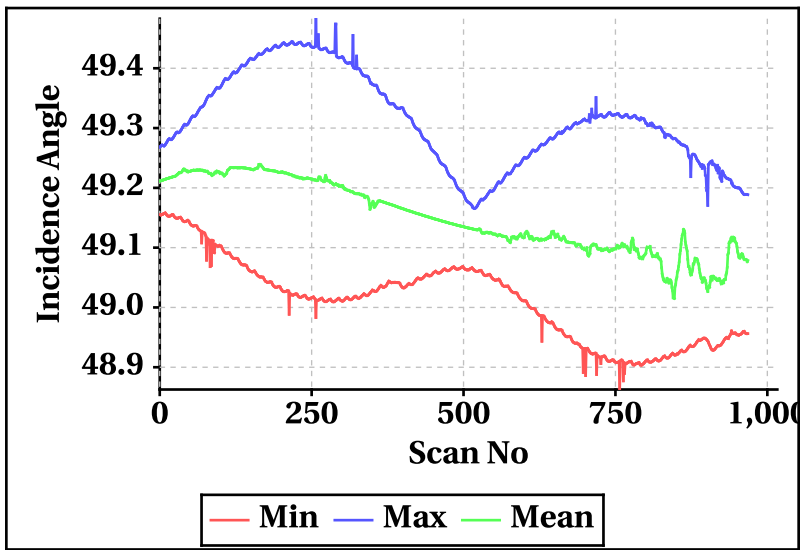
**Outer Beam (VV)**



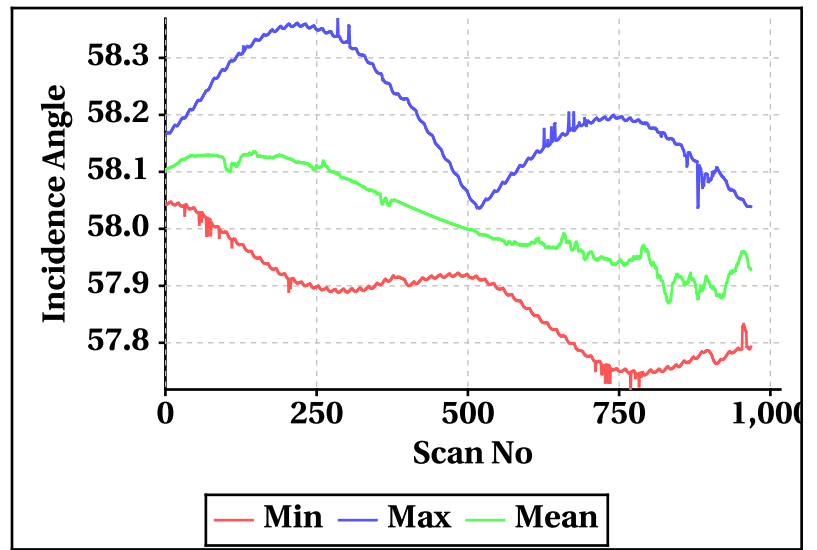


# Orbit-wise behaviour of Incidence, Azimuth, Range, X-Factor

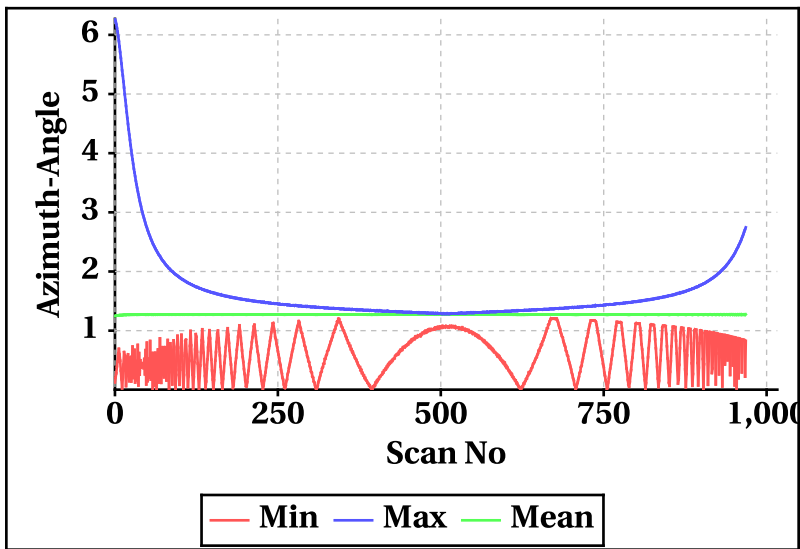
**Inner Beam (HH)**



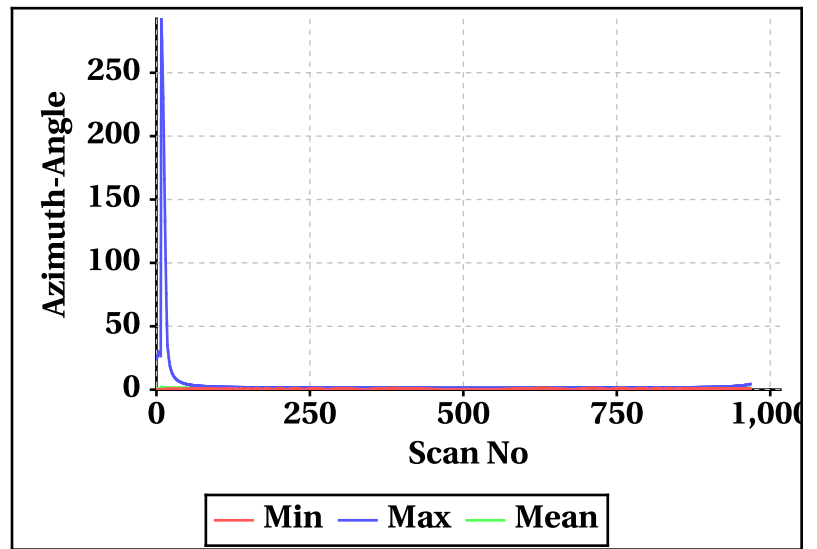
**Outer Beam(VV)**



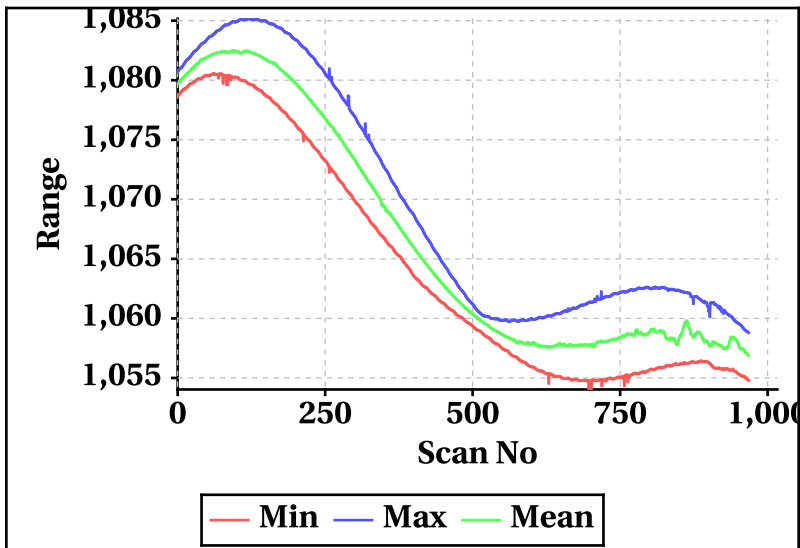
**Inner Beam (HH)**



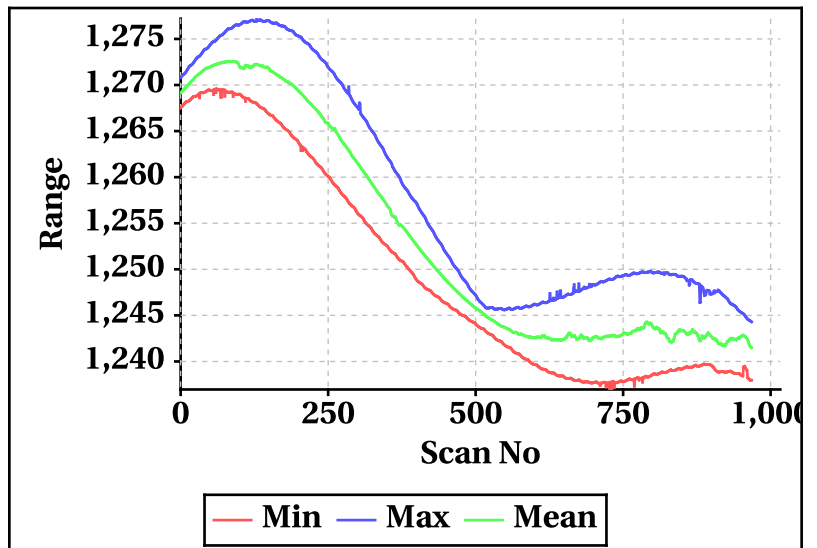
**Outer Beam(VV)**



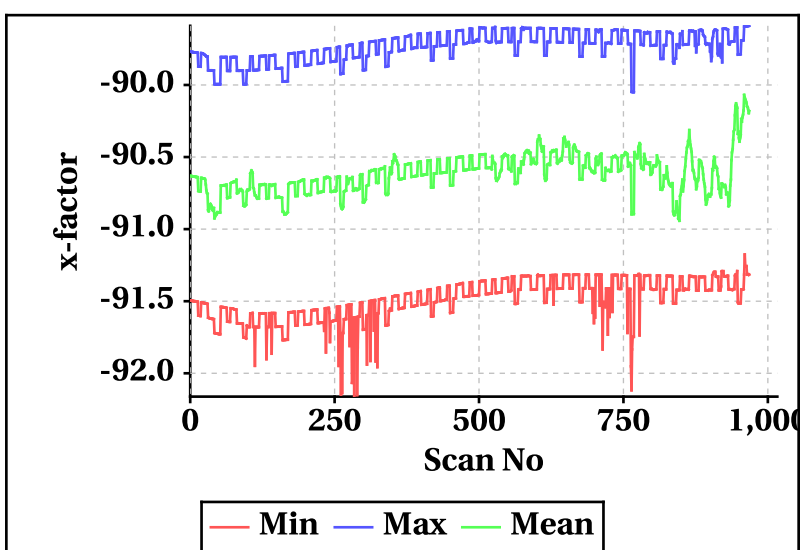
**Inner Beam (HH)**



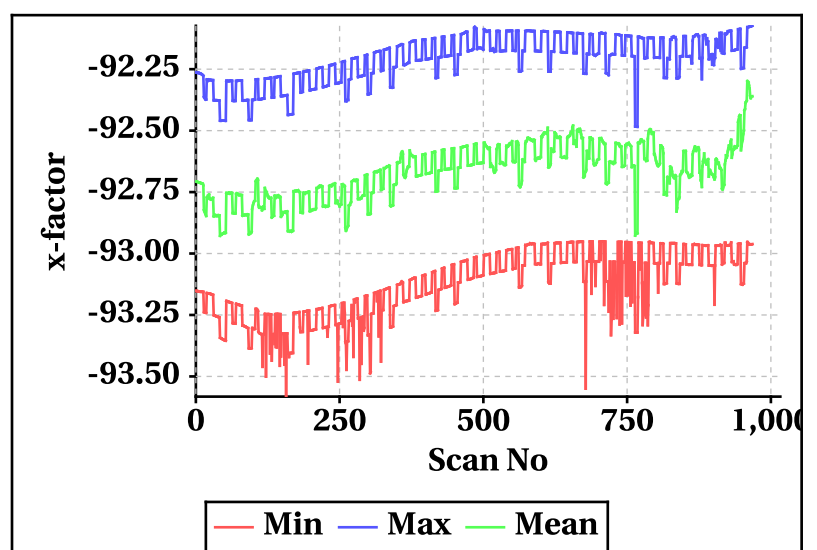
**Outer Beam(VV)**



**Inner Beam (HH)**



**Outer Beam(VV)**

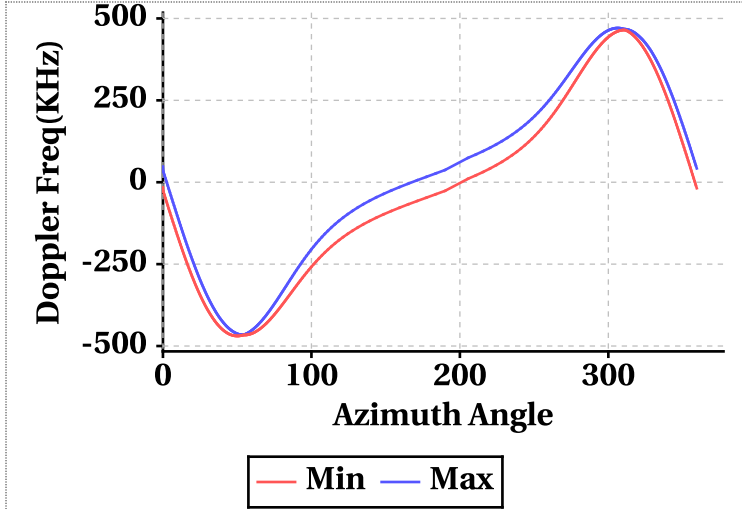


# Doppler Frequency Variation

Doppler Frequency(KHz) variation statistics Over the half Orbit

	Inner Beam (HH)	Outer Beam (VV)
Min	-469.36	-526.10
Max	470.70	527.30

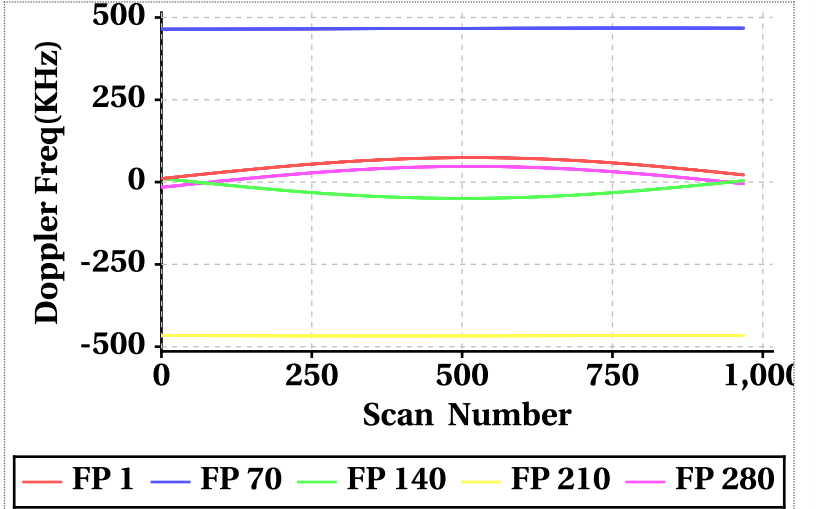
Footprint wise Doppler frequency variation Inner Beam (HH)



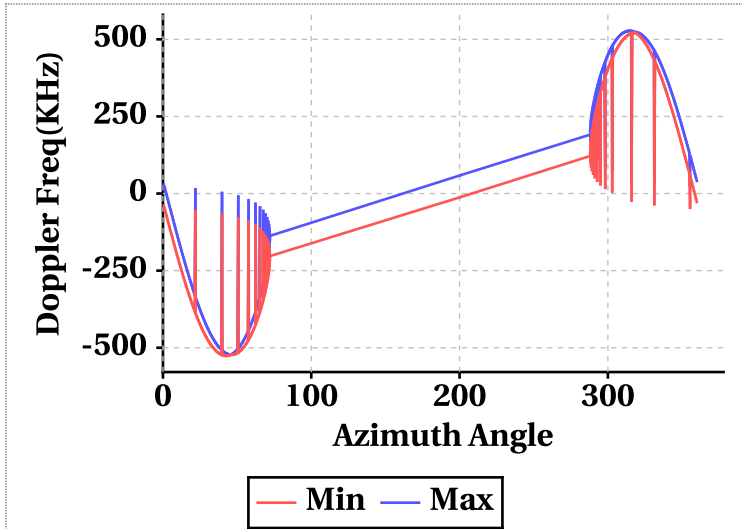
Doppler Frequency(KHz) variation

Doppler_FP	Inner Beam (HH)			Outer Beam (VV)		
	Min	Max	Mean	Min	Max	Mean
Doppler_1	10.64	74.36	53.22	7.04	78.10	54.46
Doppler_70	464.62	467.92	466.58	520.86	524.50	523.18
Doppler_140	-49.60	11.20	-28.81	-62.16	6.26	-38.86
Doppler_210	-467.48	-465.48	-466.73	-523.34	-522.00	-522.79
Doppler_280	-15.90	47.82	26.58	-11.10	59.92	36.21

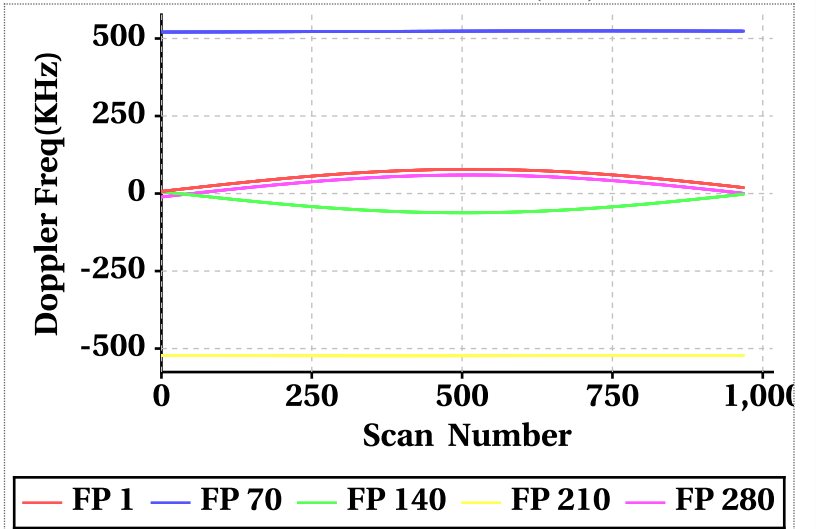
Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Inner Beam (HH)



Footprint wise Doppler frequency variation Outer Beam (VV)

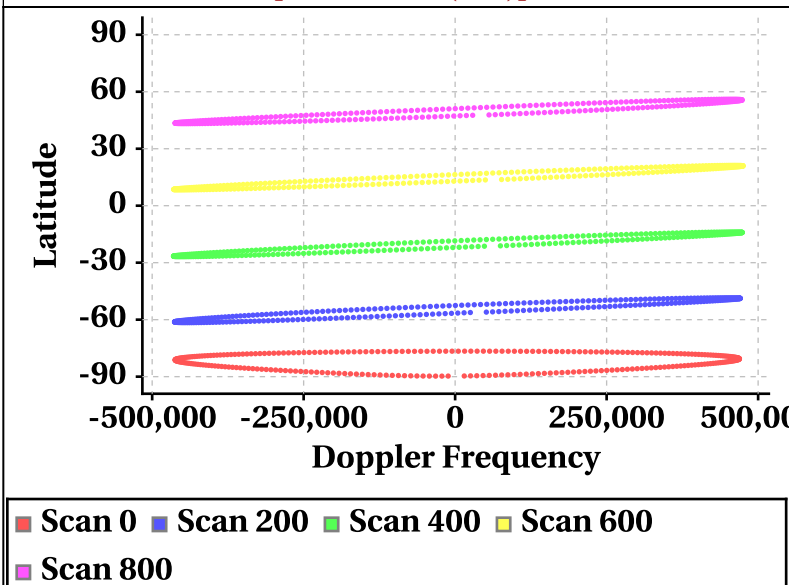


Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Outer Beam (VV)

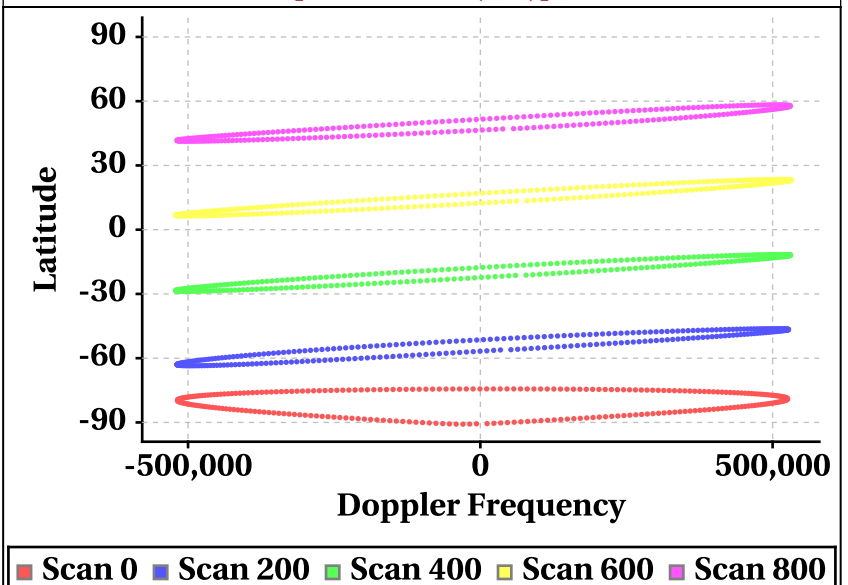


# Latitude Vs Doppler Frequency

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



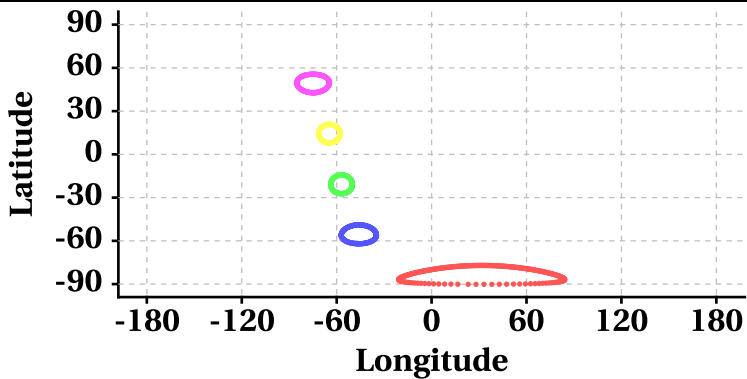
Doppler Frequency at Scan Interval of 200 [Outer Beam(VV)]



# Parameter as a function of Latitude

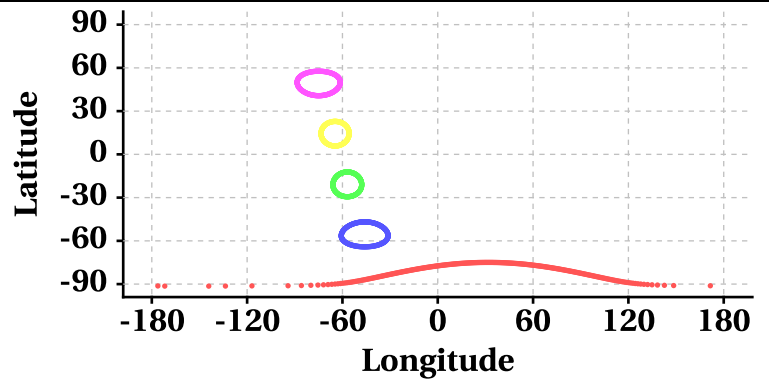
## Latitude Vs Longitude

Scan Trace [Inner Beam(HH)]



Scan 0 Scan 200 Scan 400 Scan 600  
Scan 800

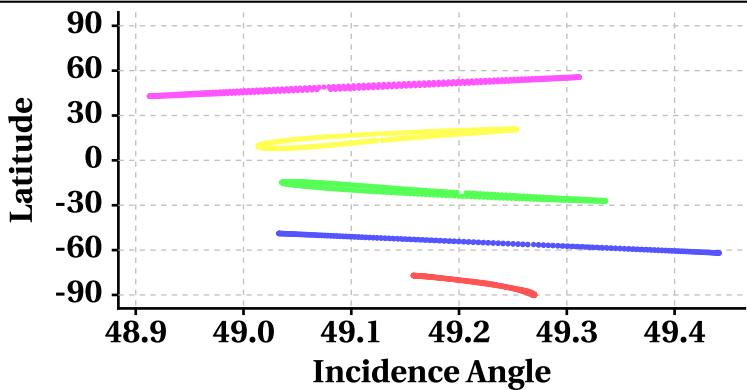
Scan Trace [Outer Beam (VV)]



Scan 0 Scan 200 Scan 400 Scan 600  
Scan 800

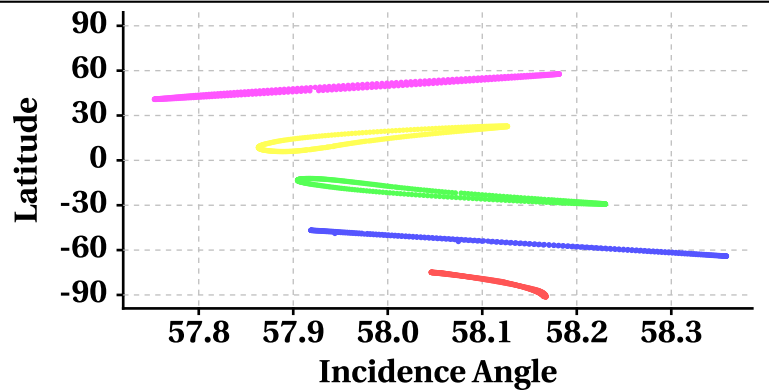
## Latitude Vs Incidence Angle

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



Scan 0 Scan 200 Scan 400 Scan 600  
Scan 800

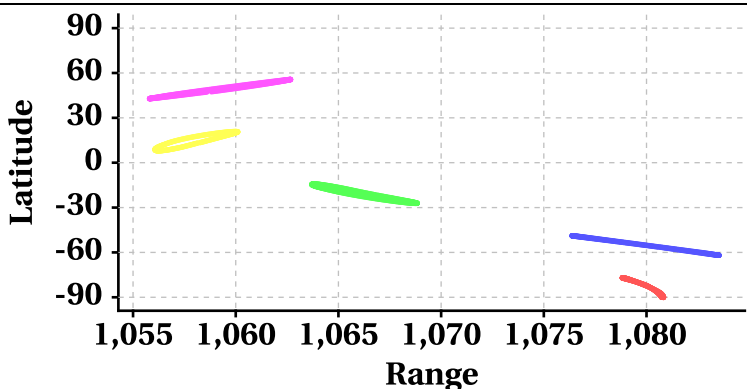
Incidence Angle at Scan Interval of 200 [Outer Beam (VV)]



Scan 0 Scan 200 Scan 400 Scan 600  
Scan 800

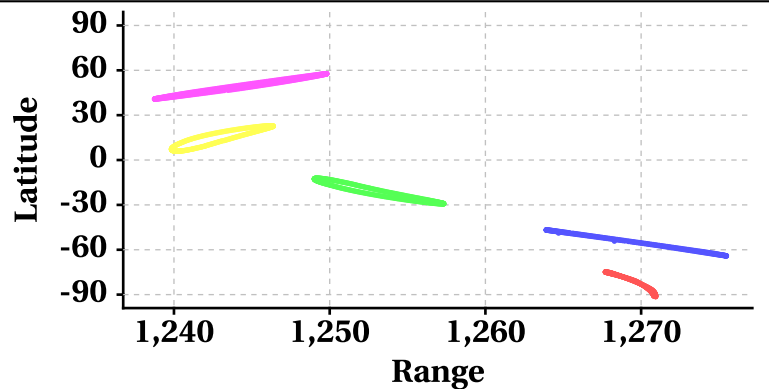
## Latitude Vs Range

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

