

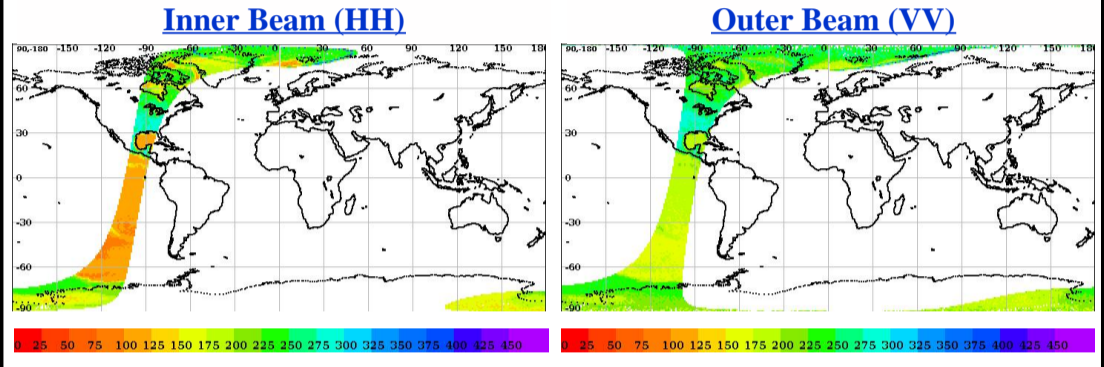
# SCATSAT-1 Scatterometer Level-1B Data Quality Evaluation Report

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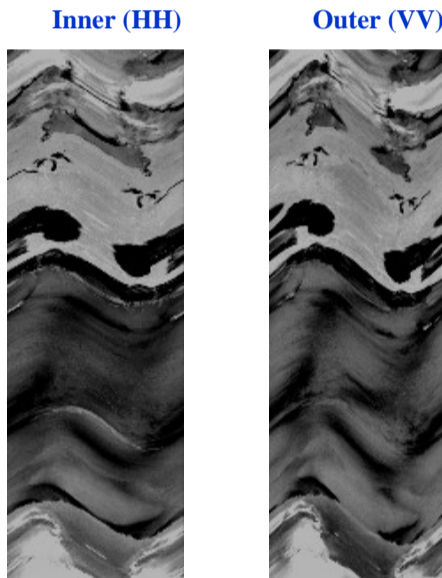
- Half-Orbit Coverage using BT & Sigma-0
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<b>Satellite Id</b>	ScatSat-1	<b>Start Orbit</b>	3718	<b>Total Scans</b>	1017
<b>Sensor Name</b>	Scatterometer	<b>End Orbit</b>	3719	<b>No of Inner FootPrints</b>	281
<b>Processor Version</b>	v1.1.2	<b>Rev. Number</b>	03718_03719	<b>No Of Outer FootPrints</b>	282
<b>Half Orbit Direction</b>	NS	<b>Data Production Date</b>	09-06-2017	<b>No. Of Inner Slices</b>	9
<b>Equator Crossing Date</b>	09-06-2017	<b>Equator Crossing Time</b>	15:19:54.000	<b>No Of Outer Slices</b>	14

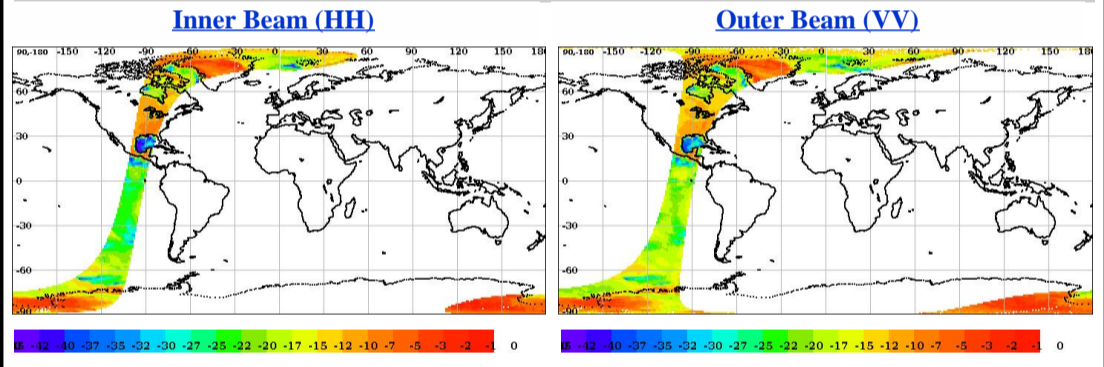
## Brightness Temperature(k) Footprint trace



## Image Snapshot for Inner & Outer Beam



## Sigma0(dB) Footprint trace



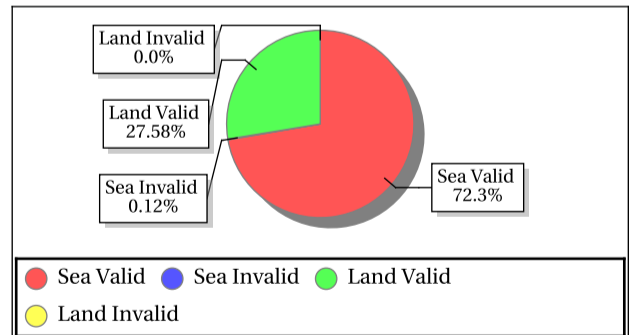
## Invalid and Poor Sigma-0 Quality Flag Statistics for Inner/Outer Slices\*

Sigma-0 Flags	Inner Beam	Outer Beam
<b>Invalid Sigma0(%)</b>	0.12	0.12
<b>Data Not Available From Payload (%)</b>	100.0	100.0
<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	0.00
<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

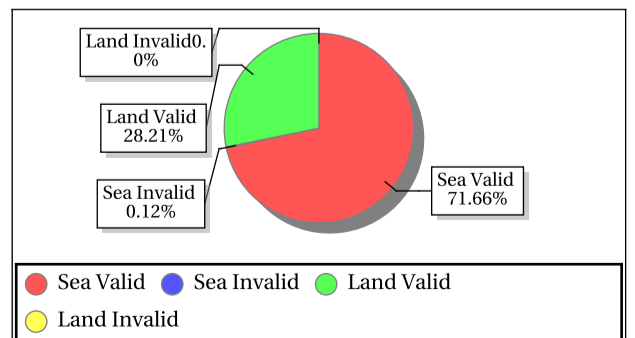
\*DP Format Document

## 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
GreenLand_2	77.50	-41.50	Inner	DSC	Aft	-5.67	-5.08	-5.43	0.22	155.85	181.88	168.40	10.48
GreenLand_2	77.50	-41.50	Inner	DSC	Fore	-4.57	-4.20	-4.42	0.15	154.65	184.65	171.11	13.34
GreenLand_3	71.55	-42.45	Inner	DSC	Aft	-12.09	-9.04	-10.59	0.68	156.81	232.36	192.60	16.08
GreenLand_3	71.55	-42.45	Inner	DSC	Fore	-11.59	-9.15	-10.21	0.54	173.84	225.37	200.05	13.78
GreenLand_1	74.69	-42.50	Inner	DSC	Aft	-10.26	-7.45	-8.73	0.82	150.25	214.71	184.70	18.26
GreenLand_1	74.69	-42.50	Inner	DSC	Fore	-9.61	-7.12	-8.49	0.65	150.48	208.10	179.28	15.30
GreenLand_2	77.50	-41.50	Outer	DSC	Aft	-5.34	-5.07	-5.21	0.13	206.84	219.81	213.32	6.48
GreenLand_2	77.50	-41.50	Outer	DSC	Fore	-5.70	-5.24	-5.47	0.23	234.98	238.05	236.51	1.54
GreenLand_3	71.55	-42.45	Outer	DSC	Aft	-12.13	-10.07	-11.22	0.55	208.16	246.87	230.50	10.46
GreenLand_3	71.55	-42.45	Outer	DSC	Fore	-12.08	-10.57	-11.13	0.46	217.85	250.99	232.39	8.18
GreenLand_1	74.69	-42.50	Outer	DSC	Aft	-10.40	-7.42	-8.65	0.80	197.84	249.45	224.04	14.60
GreenLand_1	74.69	-42.50	Outer	DSC	Fore	-9.52	-7.41	-8.67	0.80	204.20	247.83	232.35	15.19



## 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	193.43	0.26	2.587	0.10	245.29	0.28	2.133	0.10	48.61	0.12	0.204	0.10	71.03	0.11	0.159
<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>	-33.60	25.23	6.32	0.220	-34.63	25.53	7.66	0.332	-27.59	27.95	18.10	10.657	-29.24	33.19	20.08	25.494

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	210.36	0.21	1.729	0.08	178.54	0.21	1.682	0.08	60.07	0.09	0.094	0.08	113.44	0.09	0.057
<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>	-34.84	19.49	4.66	0.000	-34.13	20.25	5.37	0.000	-29.40	22.36	12.63	0.024	-32.16	24.69	14.10	2.260

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>	48.72	49.36	49.00	0.000	57.54	58.26	57.87	0.000	Inci.(Inner)	47.10	49.90
<b>Azimuth Diff. (deg)</b>	0.0026	6.35	1.08	0.210	0.0027	22.00	1.08	0.208	Inci.(Outer)	57.30	58.90
<b>Range(Km)</b>	1027.68	1086.97	1049.99	0.000	1205.32	1278.66	1233.45	11.117	Azimuth Diff.	0.60	2.00
<b>X Factor(dbm)</b>	-92.46	-89.04	-90.39	0.000	-93.71	-91.46	-92.46	0.000	Range(Inner)	1025.00	1095.70
<b>Across Distance (Km)</b>	15.99	16.56	16.15	0.000	21.11	22.35	21.30	1.000	Range(Outer)	1210.00	1280.00
<b>Along Distance (Km)</b>	18.88	8415.13	36.25	2.000	18.67	8187.85	35.71	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

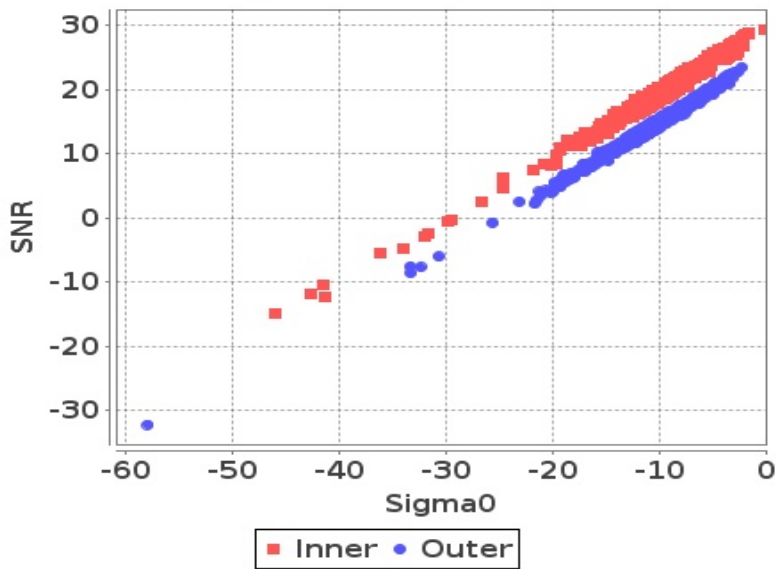
- Normal
- Deviations
- Alarming
- High Errors



## Sigma0 Behaviour (Sigma0 Vs SNR)

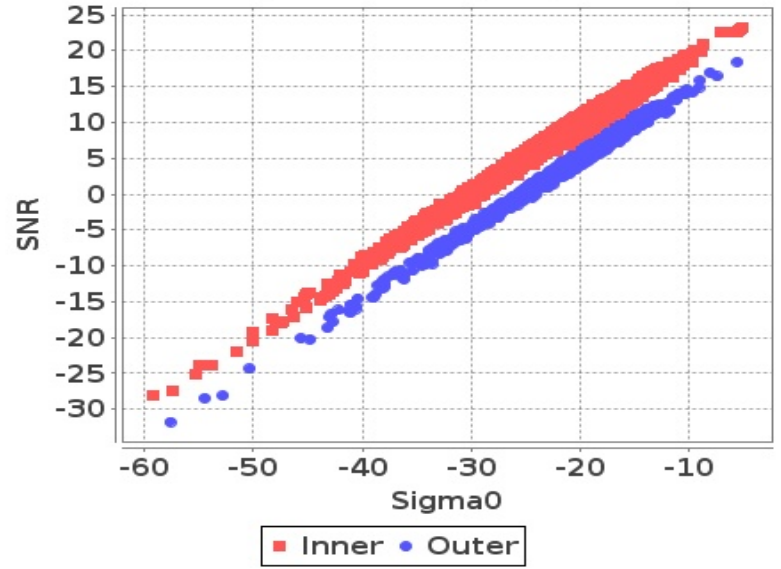
Footprint-Land

Sigma0 Vs SNR (Land)



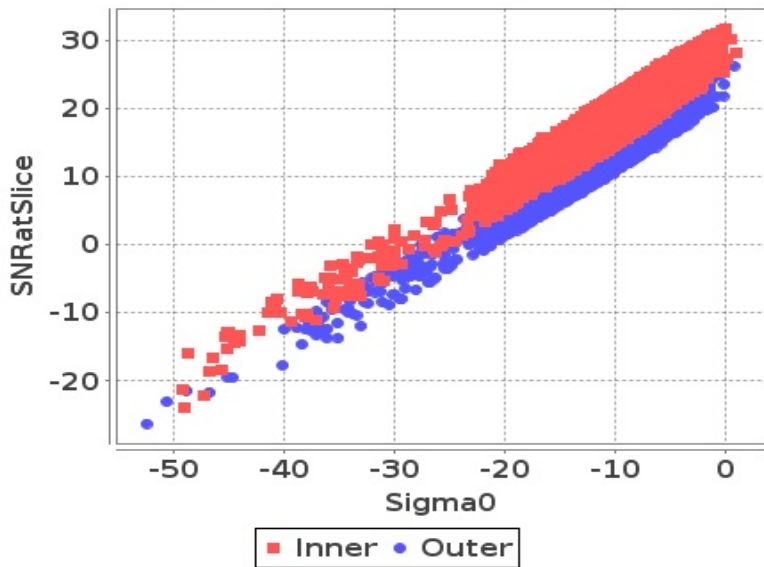
Footprint-Sea

Sigma0 Vs SNR (Sea)



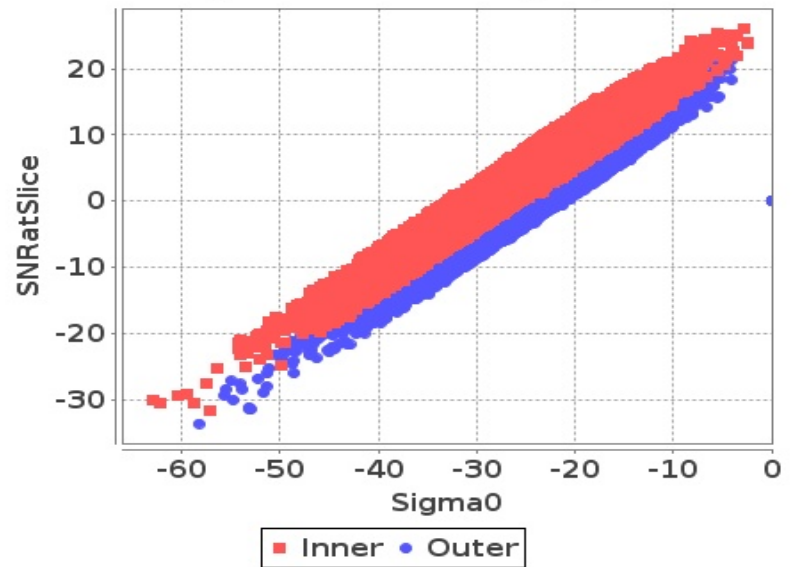
Slice-Land

Sigma0 Vs SNRatSlice (Land)



Slice-Sea

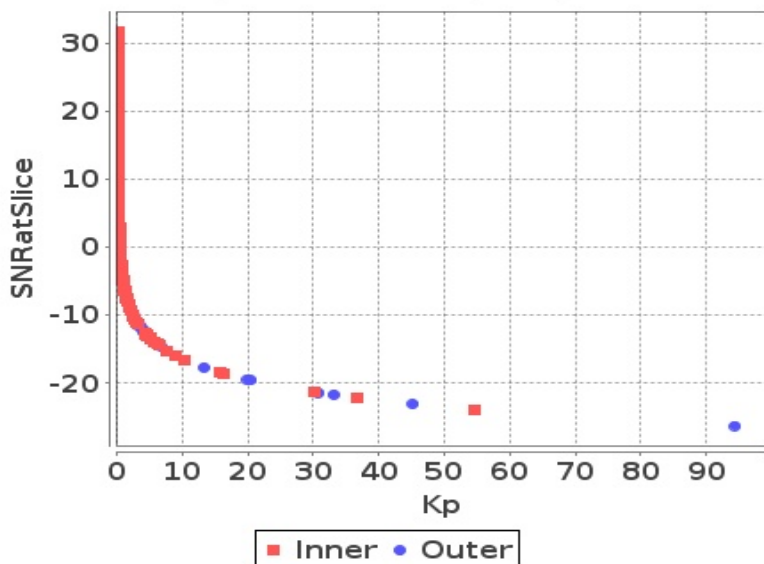
Sigma0 Vs SNRatSlice (Sea)



## Sigma0 Behaviour (Kp Vs SNR)

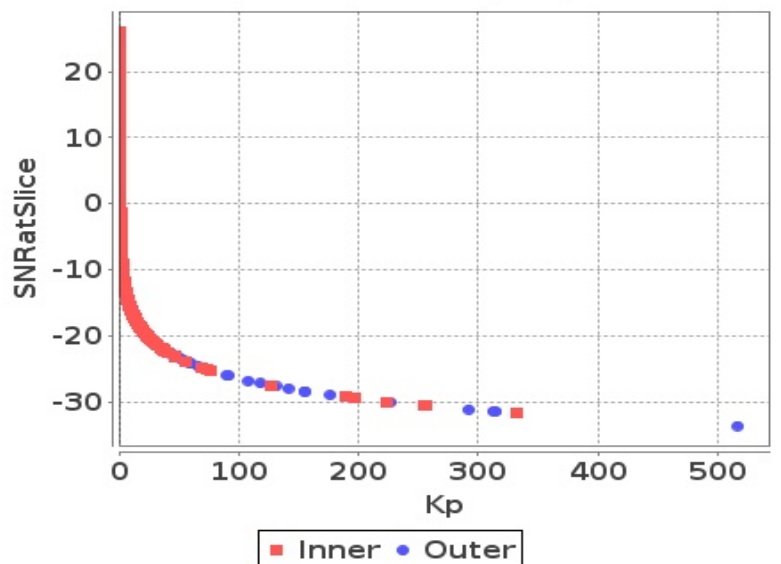
Slice

Kp Vs SNRatSlice (Land)



Slice

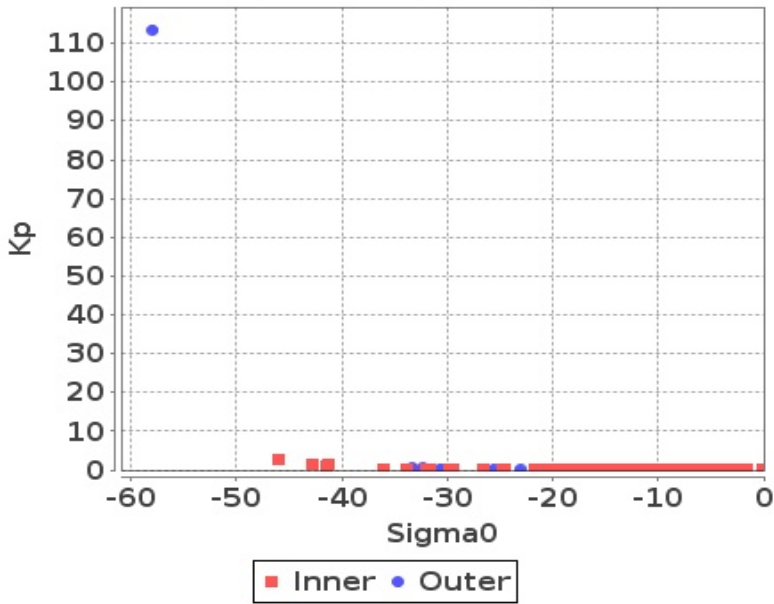
Kp Vs SNRatSlice (Sea)



# Sigma0 Behaviour(Sigma0 Vs Kp)

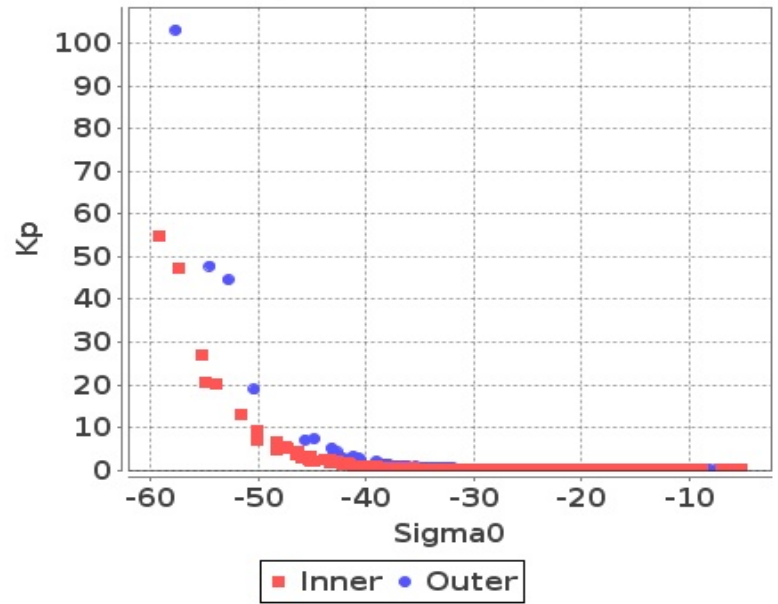
## Footprint-Land

### Sigma0 Vs Kp (Land)



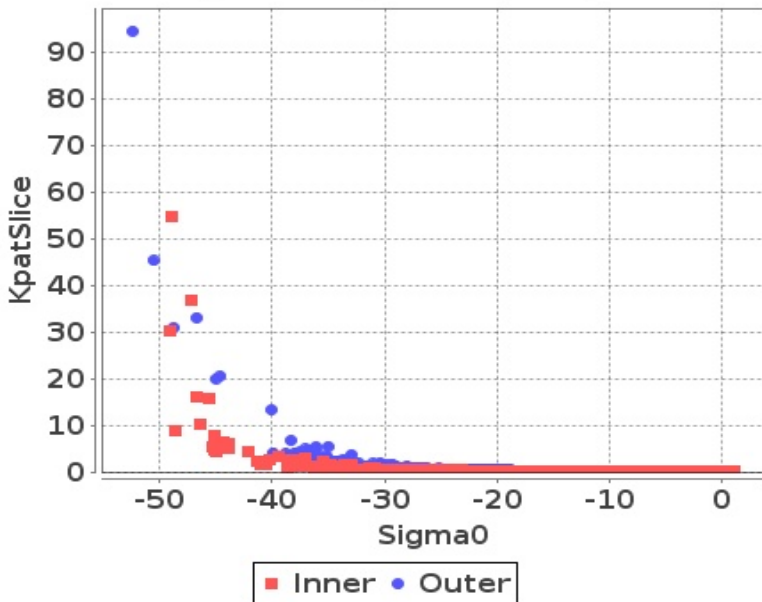
## Footprint-Sea

### Sigma0 Vs Kp (Sea)



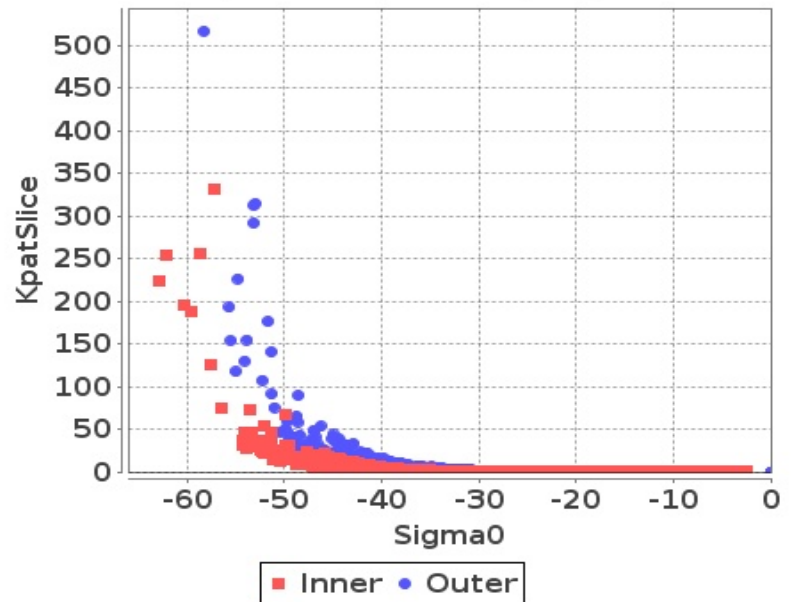
## Slice-Land

### Sigma0 Vs KpatSlice (Land)



## Slice-Sea

### Sigma0 Vs KpatSlice (Sea)

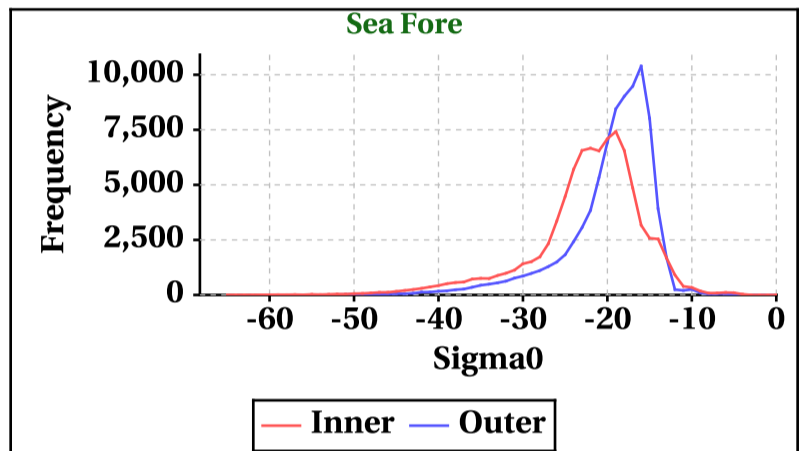
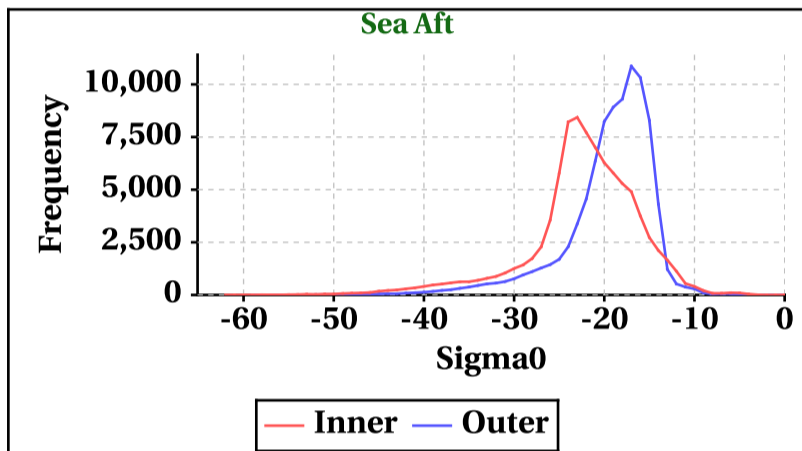
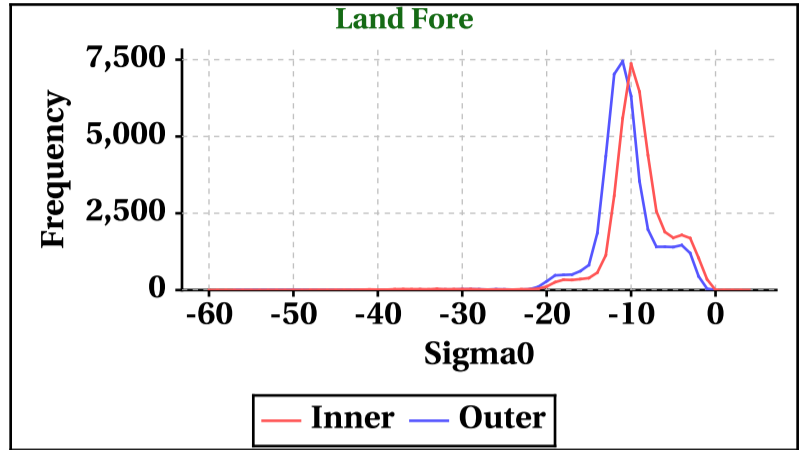
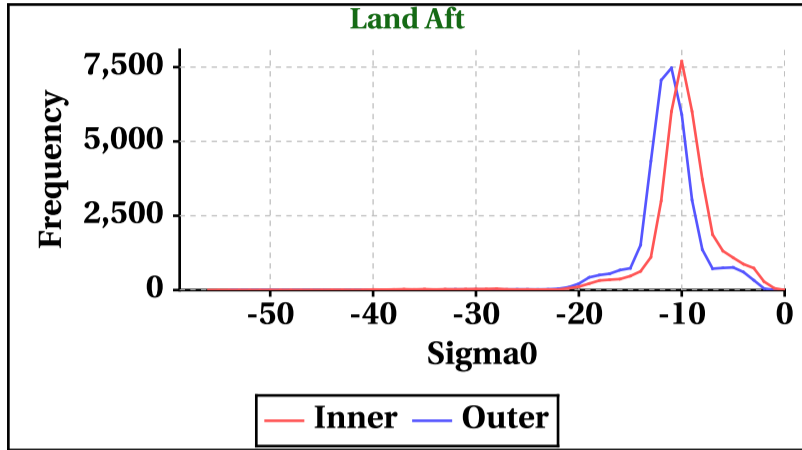


# Dynamic Range (Data Histograms)

## Sigma0(db)

Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-56	-60	-62	-65
Max	0	4	0	0

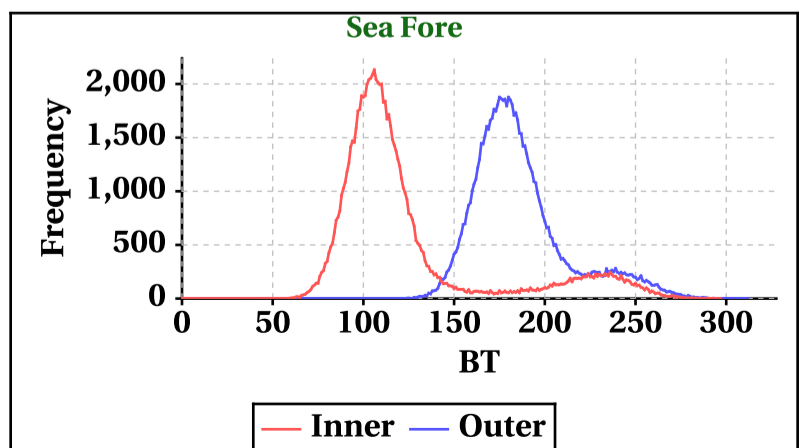
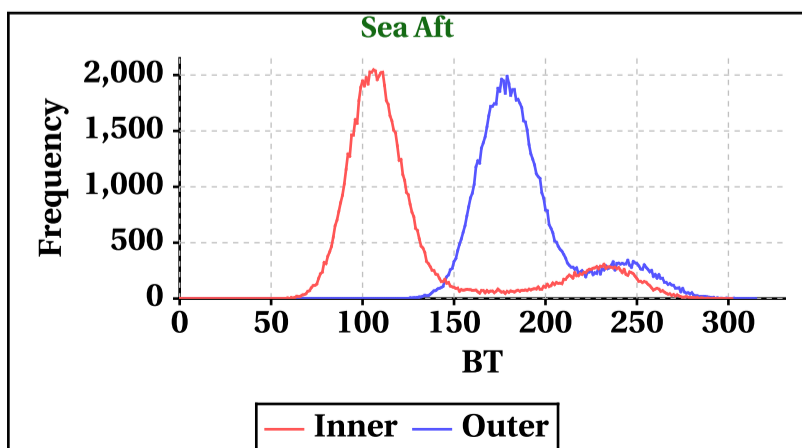
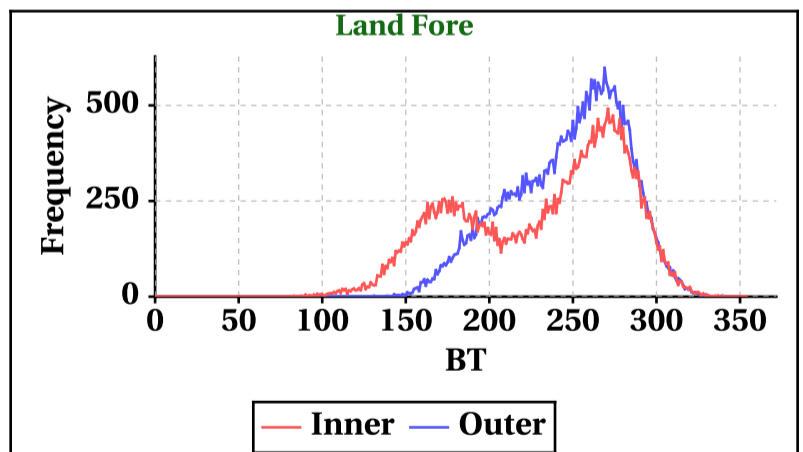
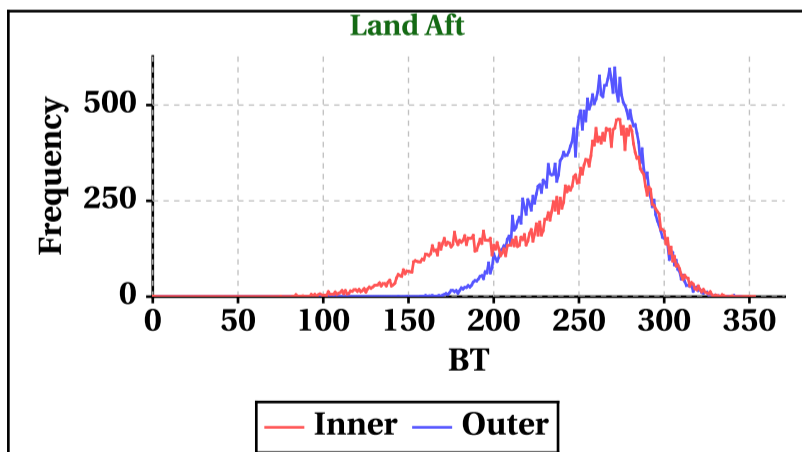
Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-54	-57	-59	-60
Max	0	0	0	0



## Brightness Temperature(K)

Inner Beam(HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	353	354	302	297

Outer Beam(VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	345	350	315	312

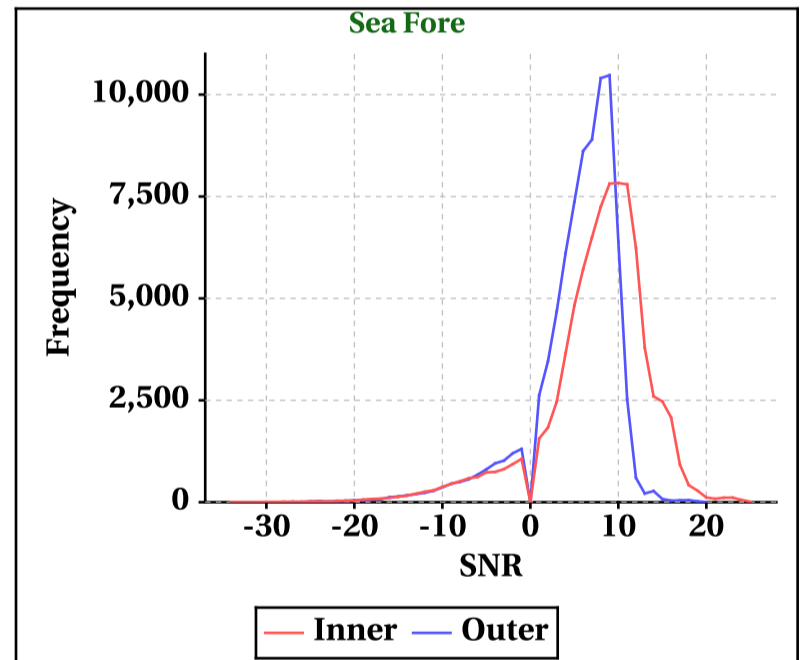
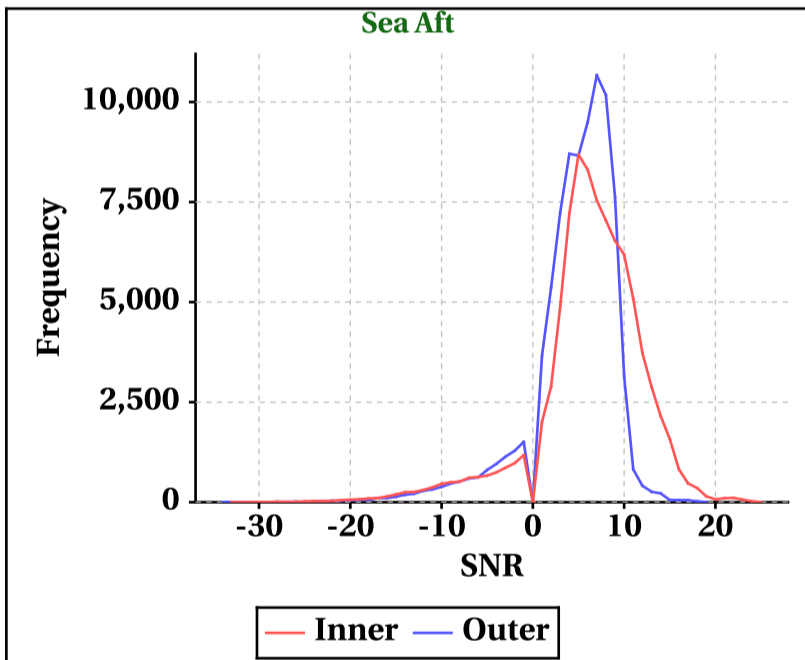
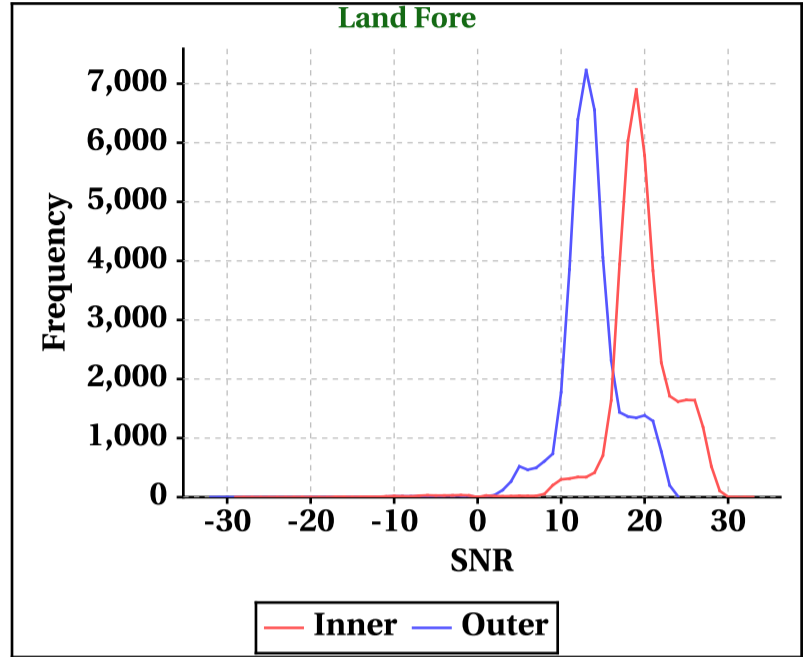
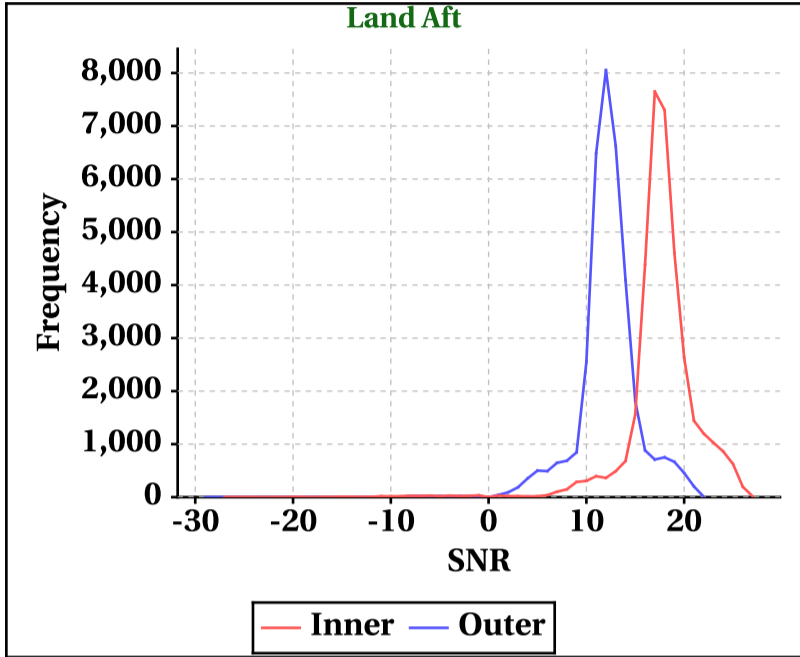


# Dynamic Range (Data Histograms)

## SNR(dBm)

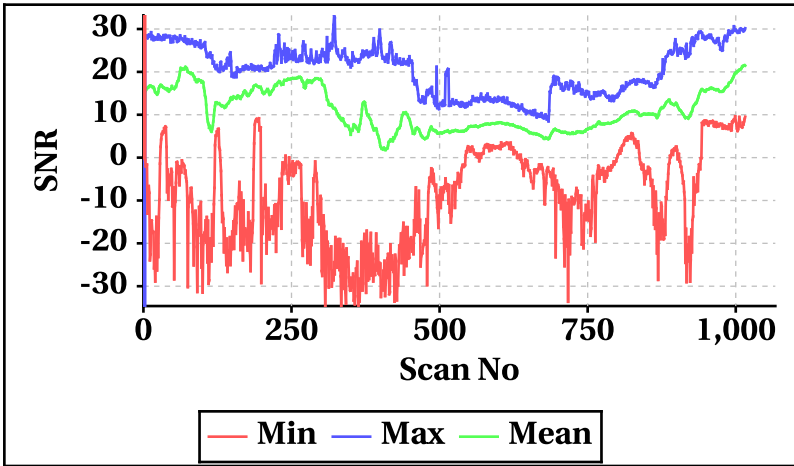
Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-27	-29	-33	-34
Max	27	33	25	25

Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-29	-32	-34	-34
Max	22	24	19	20

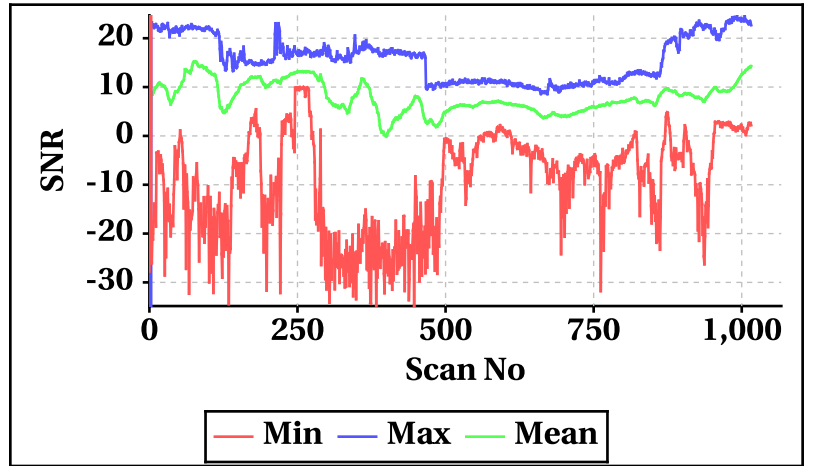


## Orbit-wise behaviour of SNR

Inner Beam (HH)

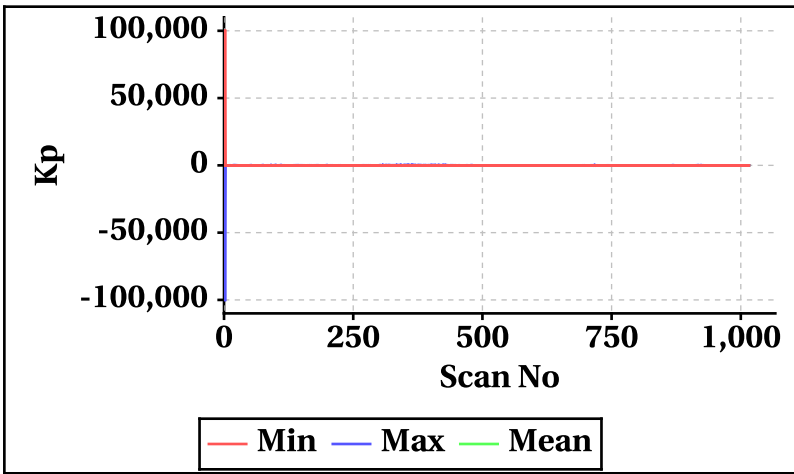


Outer Beam(VV)

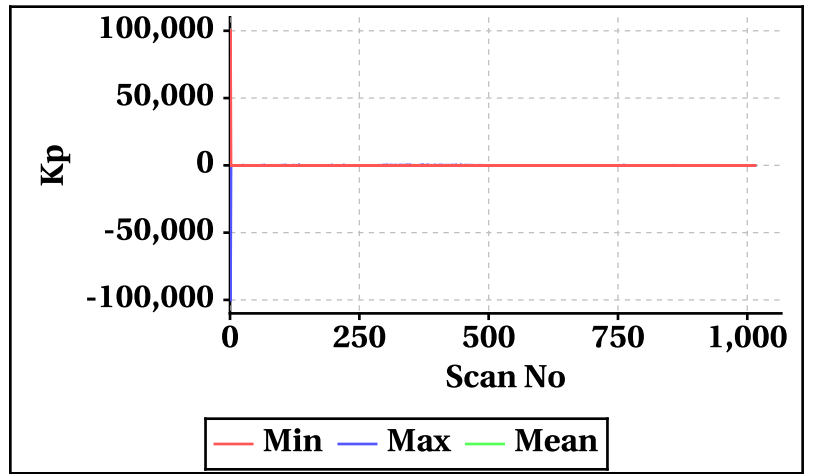


## Orbit-wise behaviour of Kp,Kpa,Kpb,Kpc

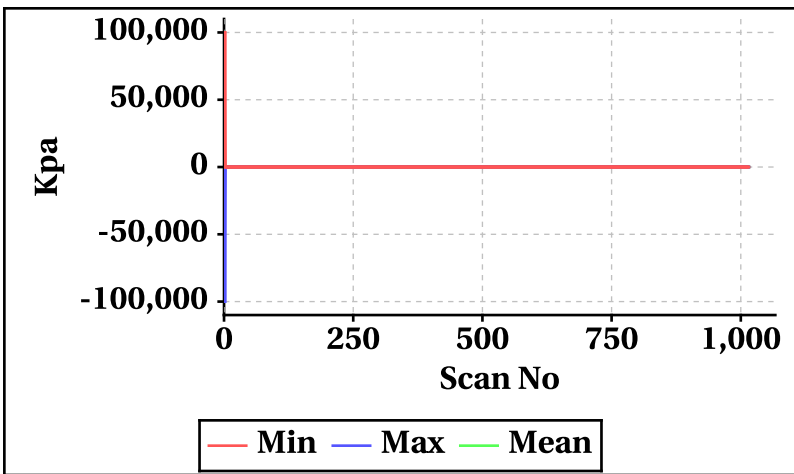
Inner Beam(HH)



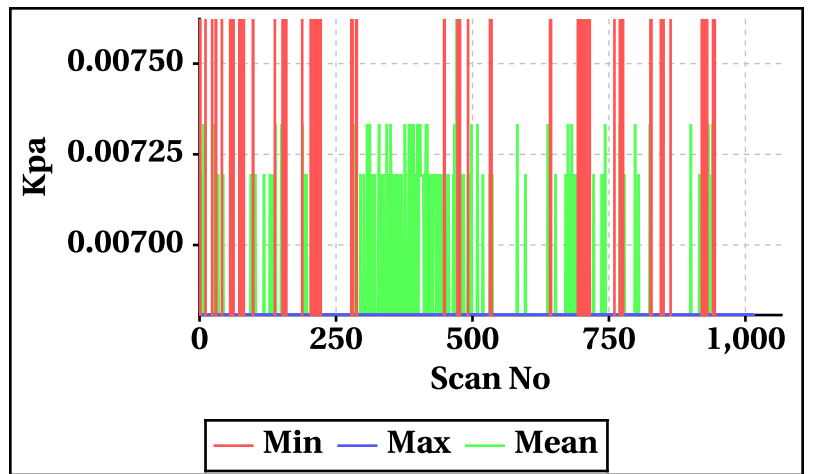
Outer Beam(VV)



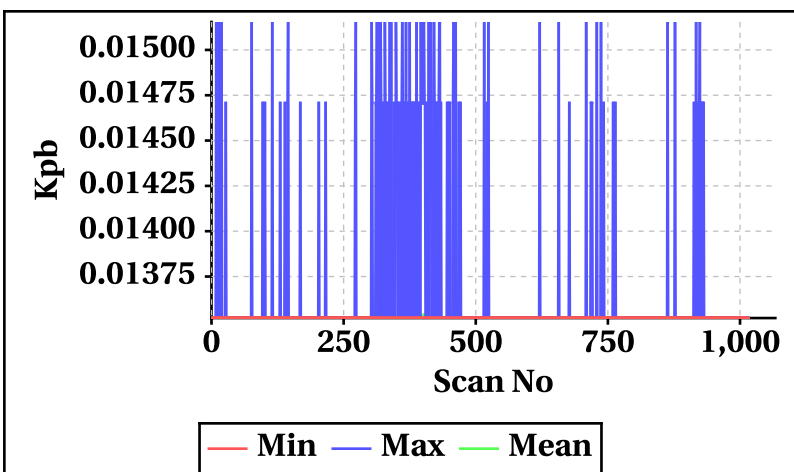
Inner Beam(HH)



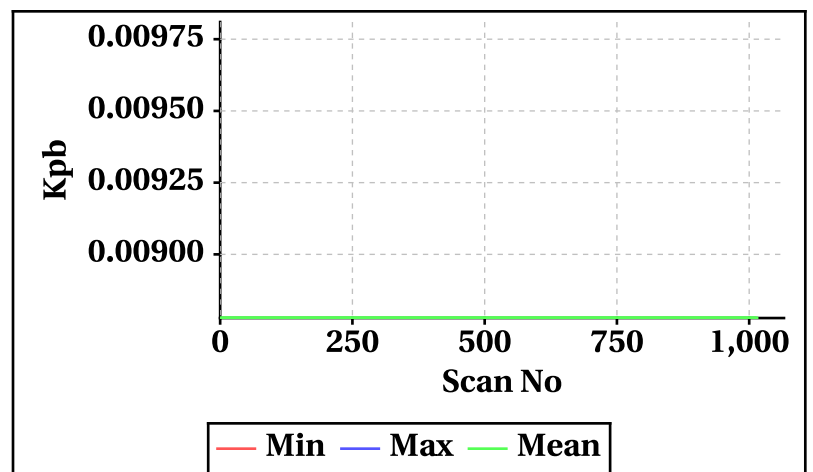
Outer Beam(VV)



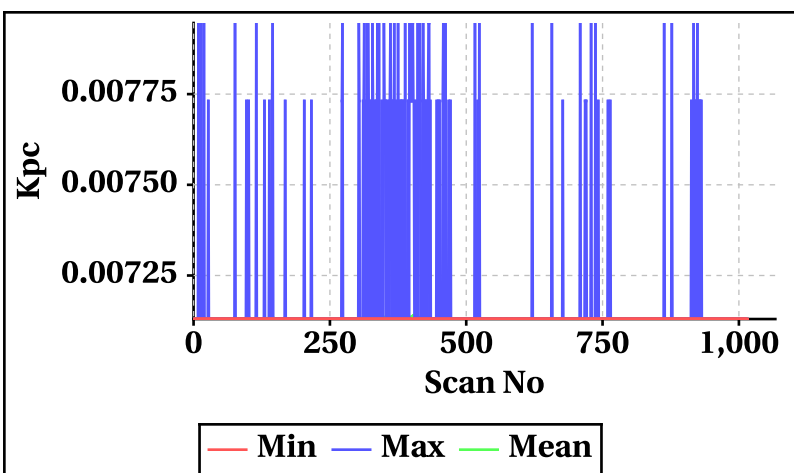
Inner Beam(HH)



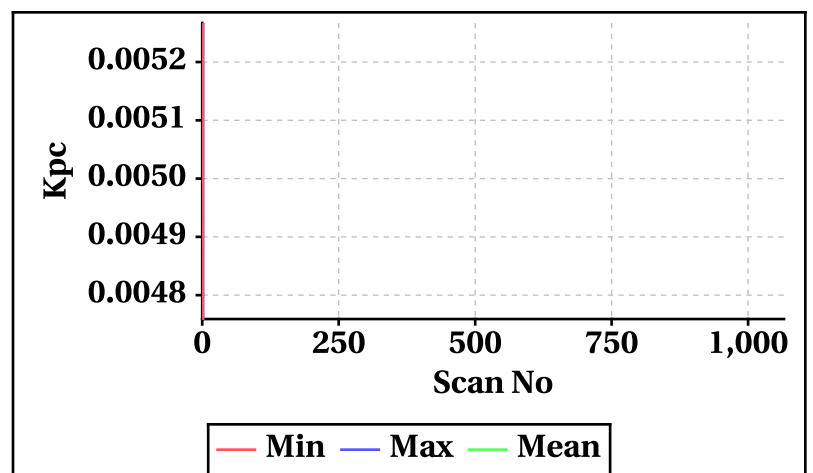
Outer Beam(VV)



Inner Beam(HH)



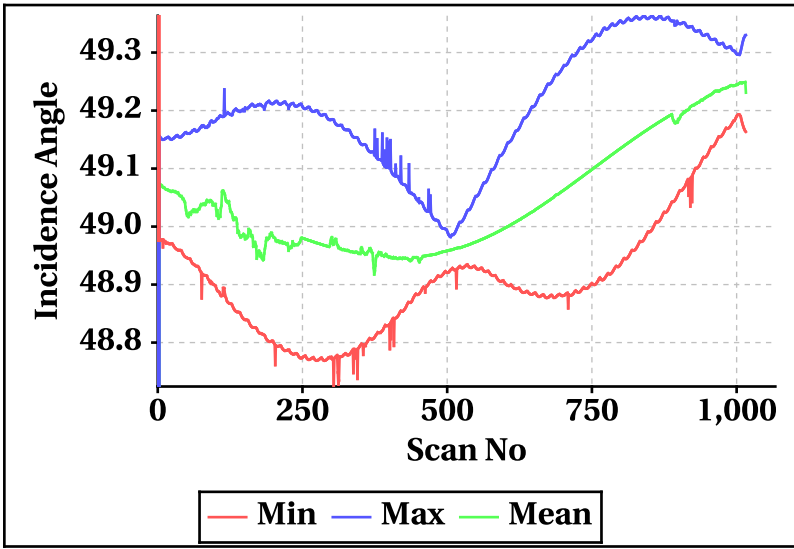
Outer Beam(VV)



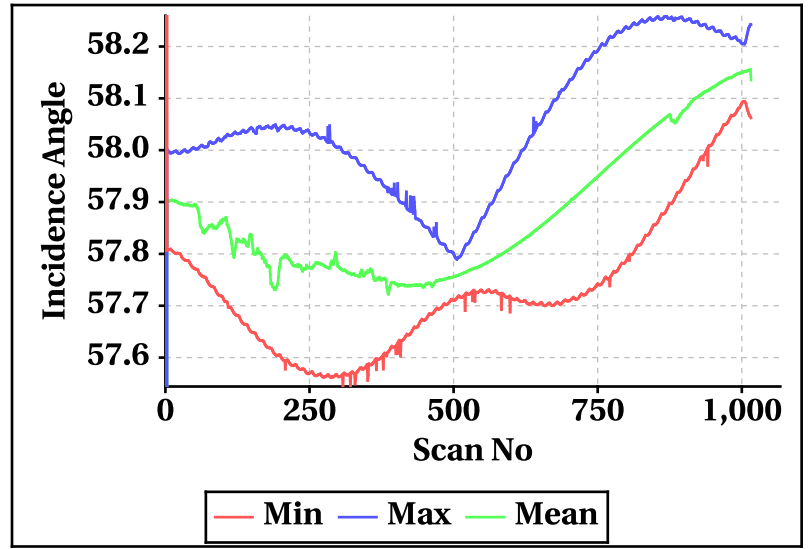


# Orbt-wise behaviour of Incidence, Azimuth, Range, X-Factor

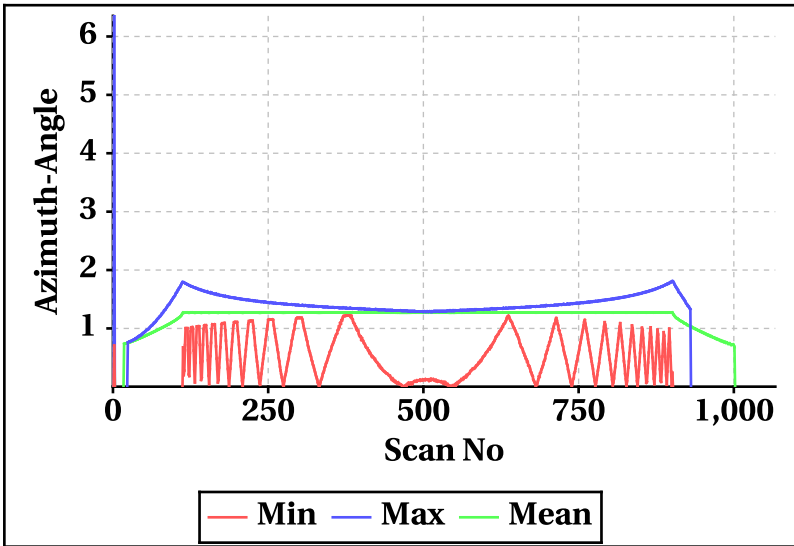
**Inner Beam (HH)**



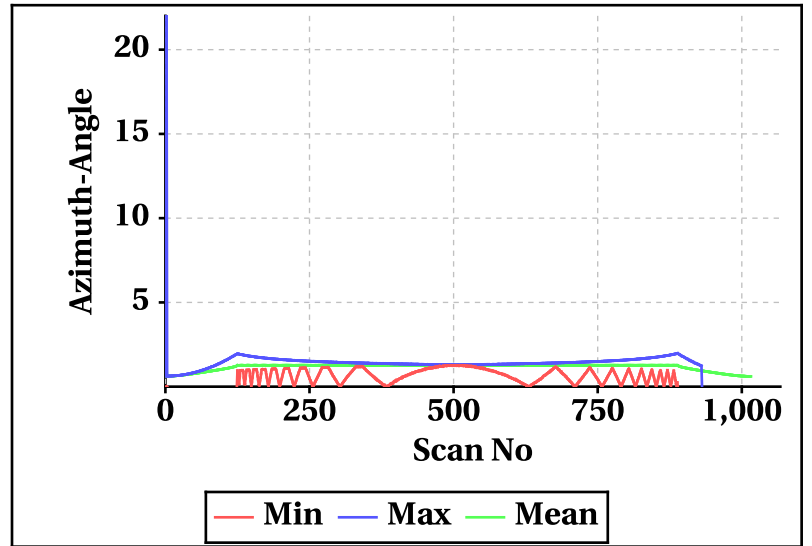
**Outer Beam(VV)**



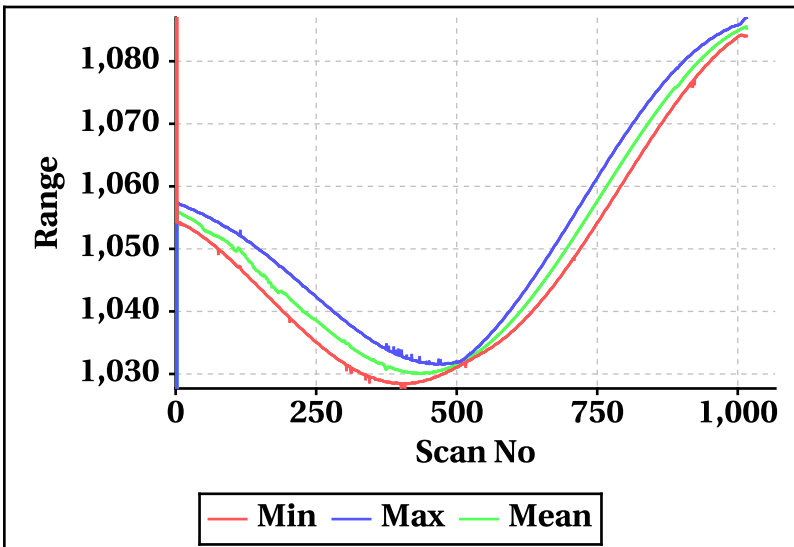
**Inner Beam (HH)**



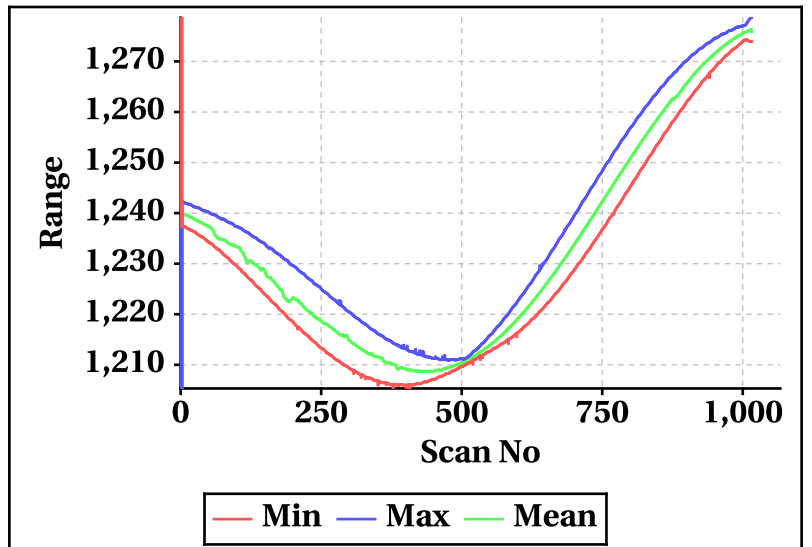
**Outer Beam(VV)**



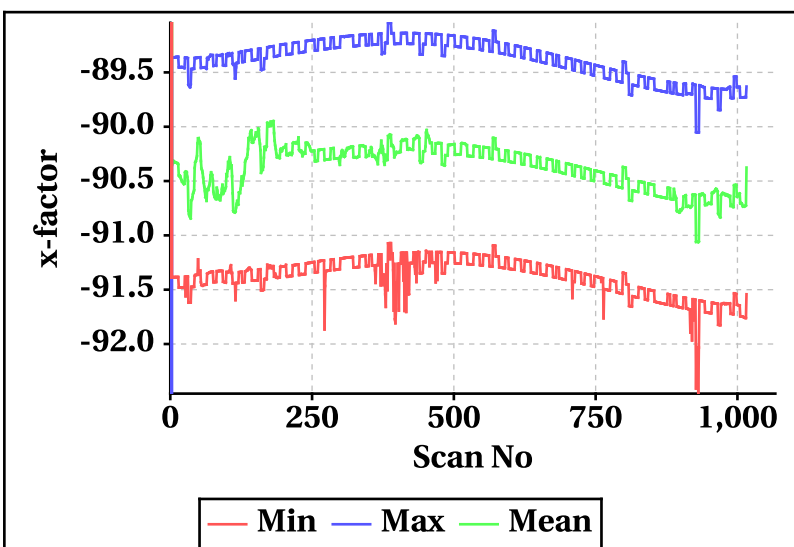
**Inner Beam (HH)**



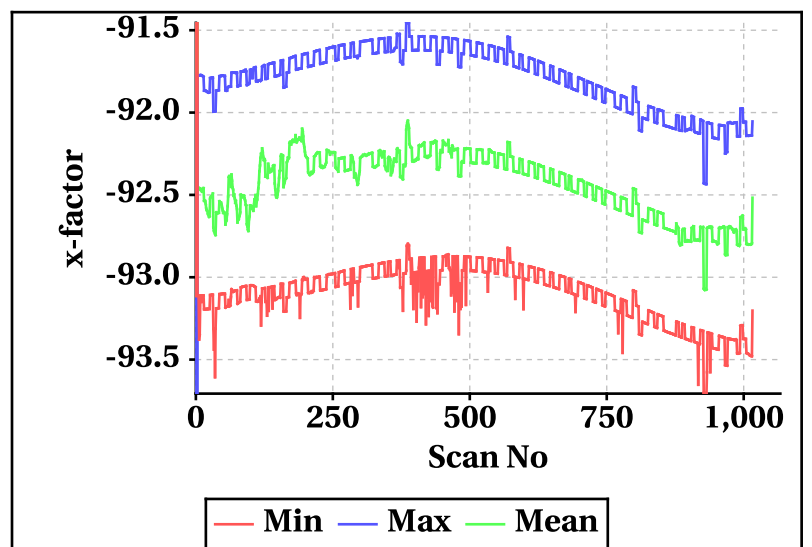
**Outer Beam(VV)**



**Inner Beam (HH)**



**Outer Beam(VV)**

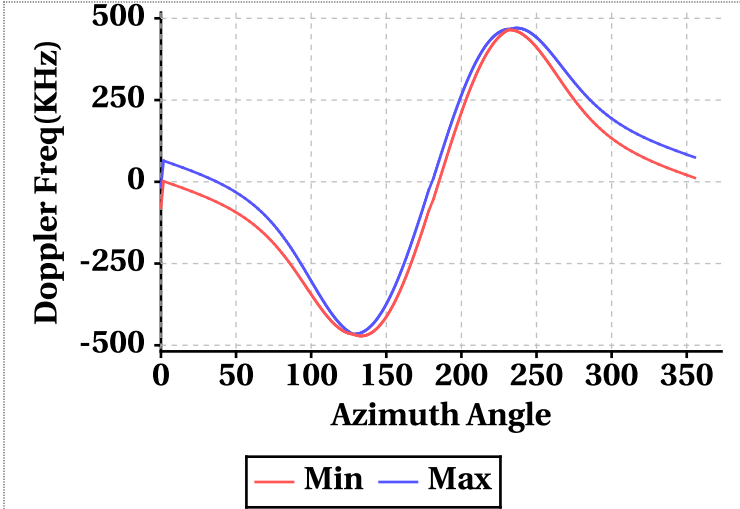


# Doppler Frequency Variation

Doppler Frequency(KHz) variation statistics Over the half Orbit

	Inner Beam (HH)	Outer Beam (VV)
Min	-471.56	-528.30
Max	470.24	527.16

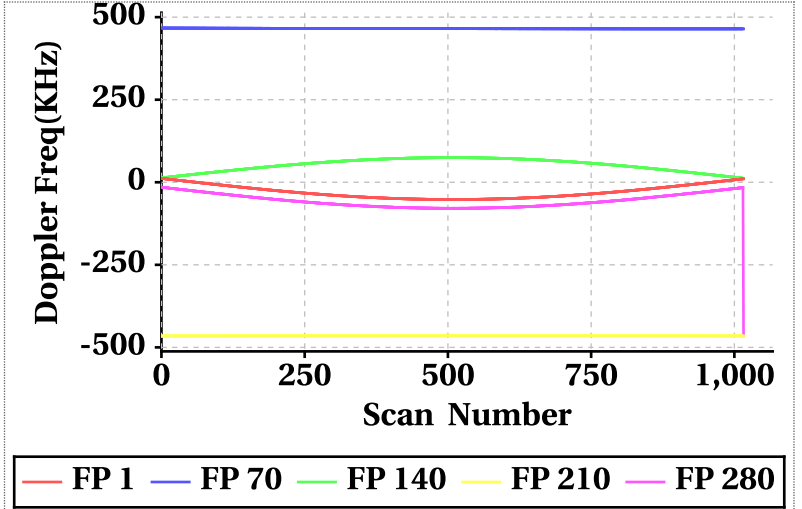
Footprint wise Doppler frequency variation Inner Beam (HH)



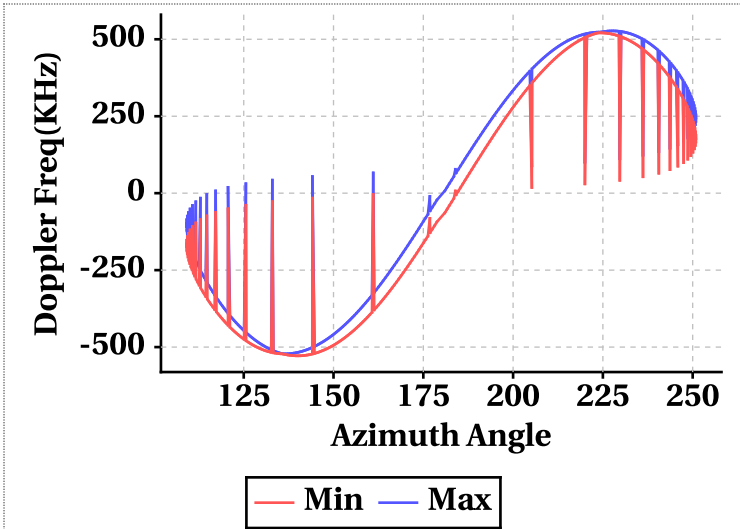
Doppler Frequency(KHz) variation

Doppler_FP	Inner Beam (HH)			Outer Beam (VV)		
	Min	Max	Mean	Min	Max	Mean
Doppler_1	-52.20	11.76	-29.10	-63.48	7.92	-37.65
Doppler_70	464.52	466.94	465.35	520.30	523.08	521.08
Doppler_140	12.02	74.68	51.99	7.10	77.42	51.89
Doppler_210	-465.46	-464.24	-464.69	-522.00	-521.04	-521.46
Doppler_280	-465.40	-15.10	-56.19	-521.18	-10.60	-56.42

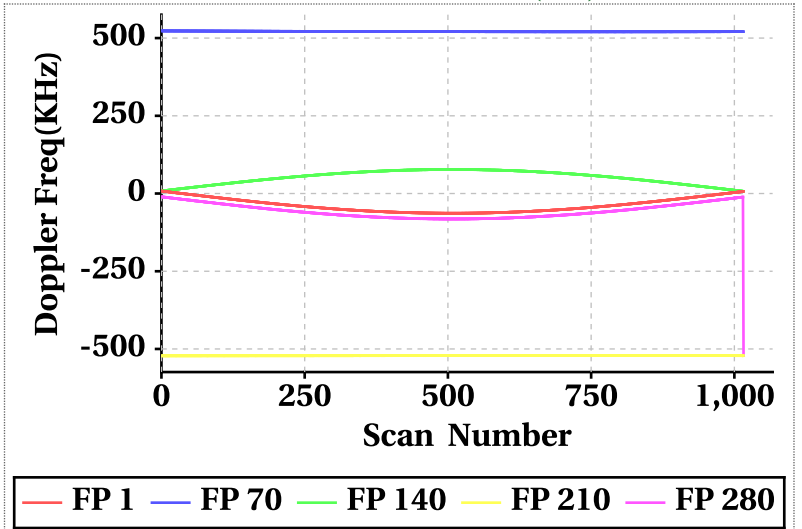
Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Inner Beam (HH)



Footprint wise Doppler frequency variation Outer Beam (VV)

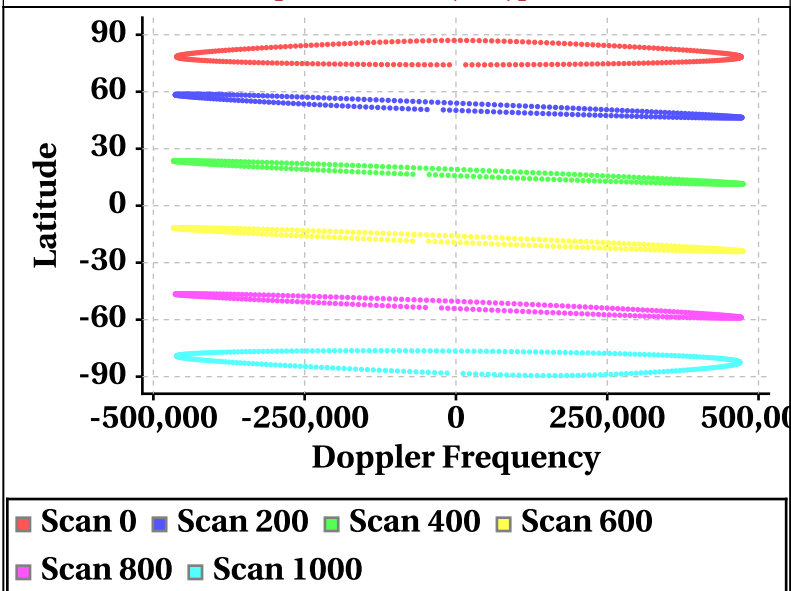


Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Outer Beam (VV)

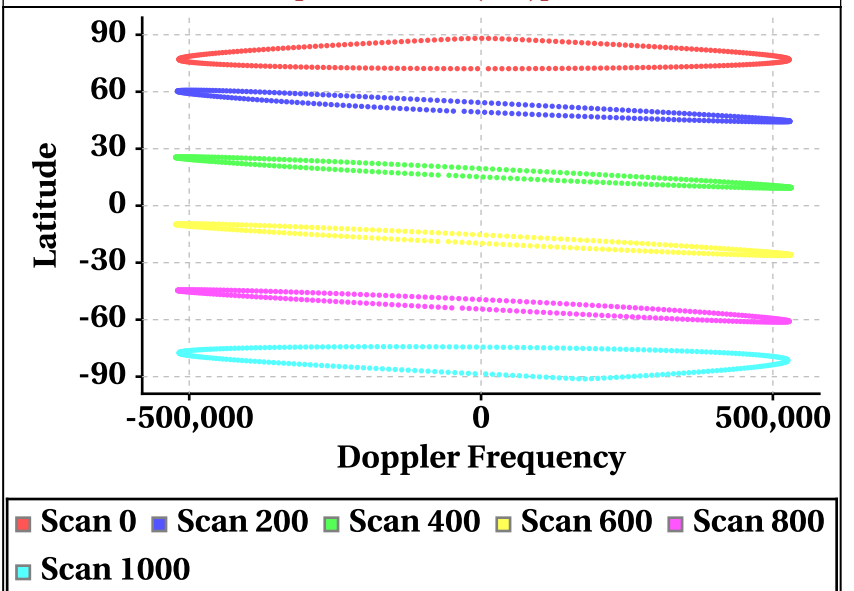


# Latitude Vs Doppler Frequency

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



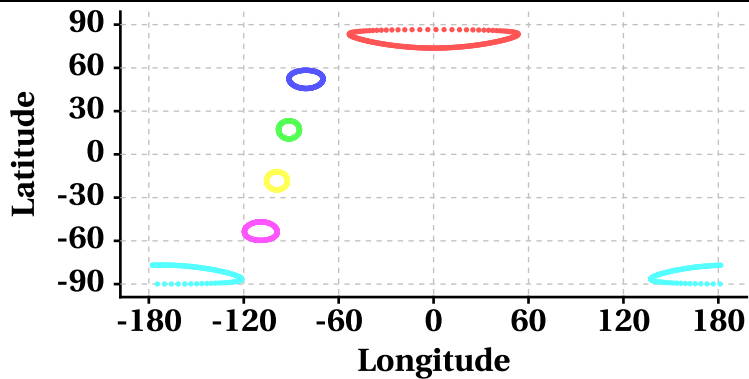
Doppler Frequency at Scan Interval of 200 [Outer Beam(VV)]



# Parameter as a function of Latitude

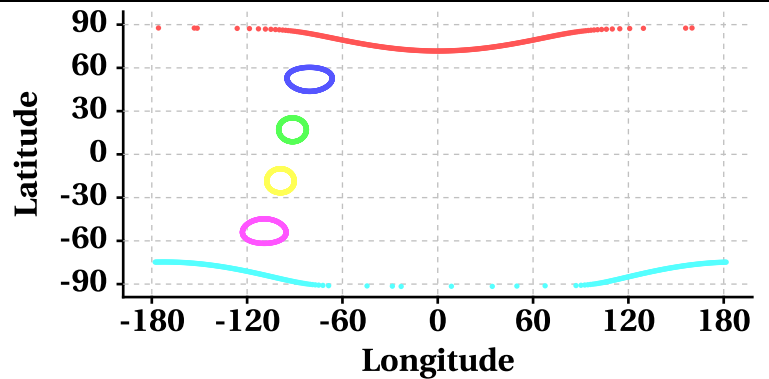
## Latitude Vs Longitude

Scan Trace [Inner Beam(HH)]



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

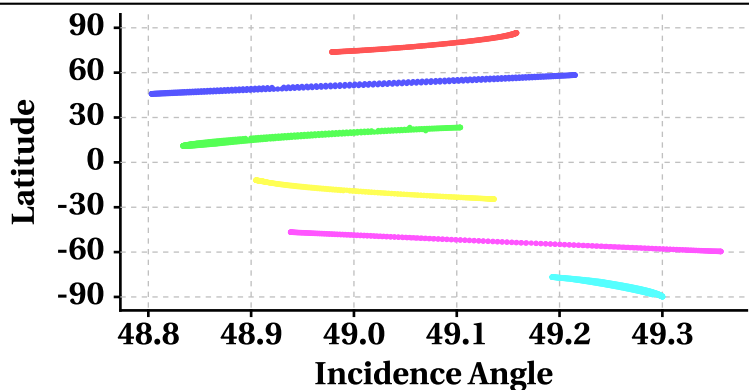
Scan Trace [Outer Beam (VV)]



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

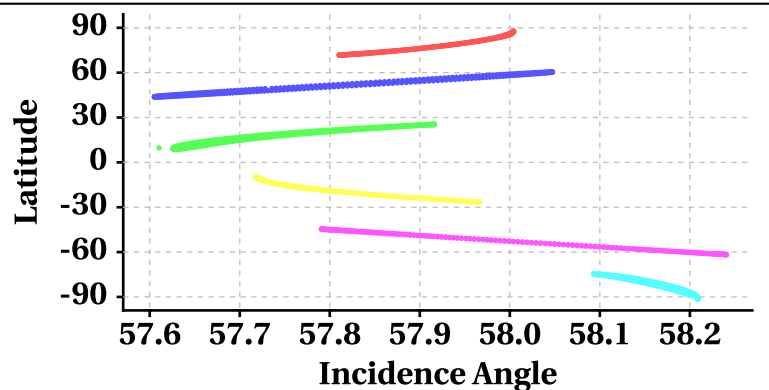
## Latitude Vs Incidence Angle

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



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

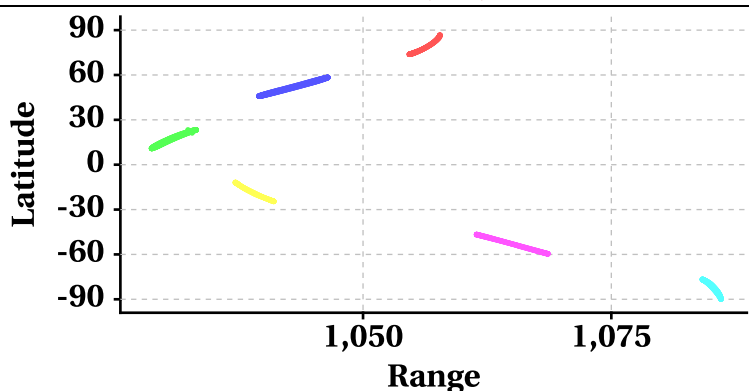
Incidence Angle at Scan Interval of 200 [Outer Beam (VV)]



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

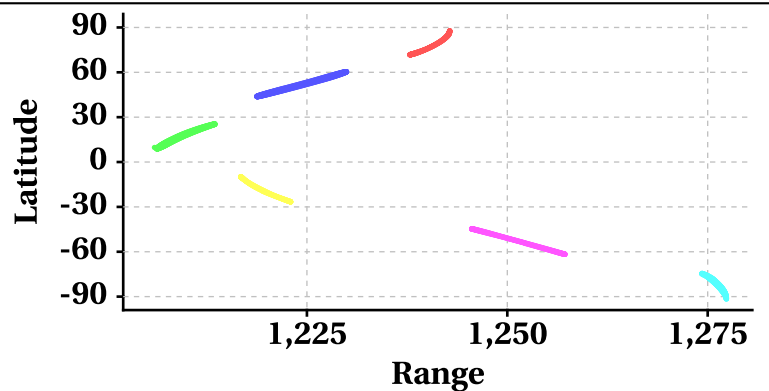
## Latitude Vs Range

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

