

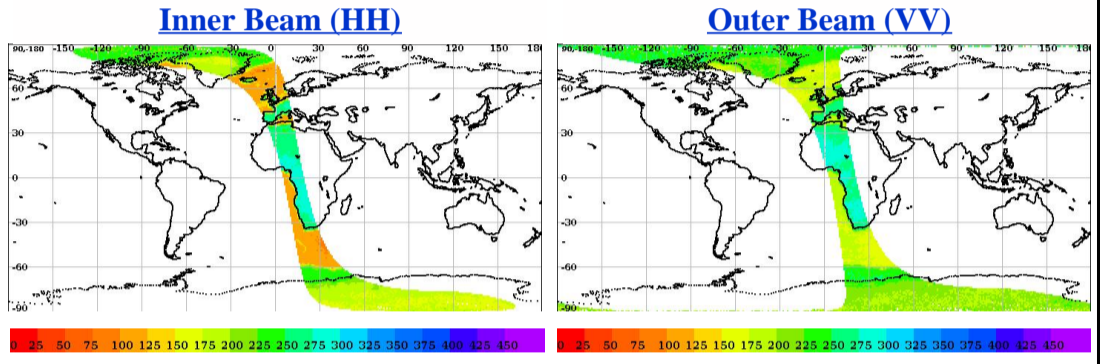
# SCATSAT-1 Scatterometer Level-1B Data Quality Evaluation Report

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- Half Orbit OAT Behaviour

<b>Satellite Id</b>	ScatSat-1	<b>Start Orbit</b>	16306	<b>Total Scans</b>	1017
<b>Sensor Name</b>	Scatterometer	<b>End Orbit</b>	16307	<b>No of Inner FootPrints</b>	281
<b>Processor Version</b>	v1.1.3	<b>Rev. Number</b>	16306_16307	<b>No Of Outer FootPrints</b>	282
<b>Half Orbit Direction</b>	SN	<b>Data Production Date</b>	25-10-2019	<b>No. Of Inner Slices</b>	9
<b>Equator Crossing Date</b>	25-10-2019	<b>Equator Crossing Time</b>	19:40:11.000	<b>No Of Outer Slices</b>	15

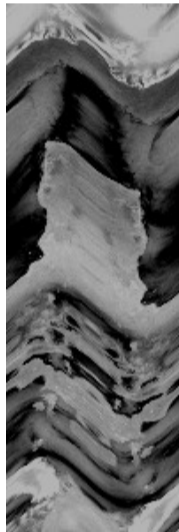
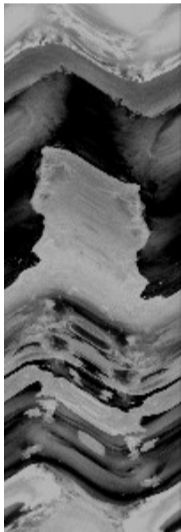
## Brightness Temperature(k) Footprint trace



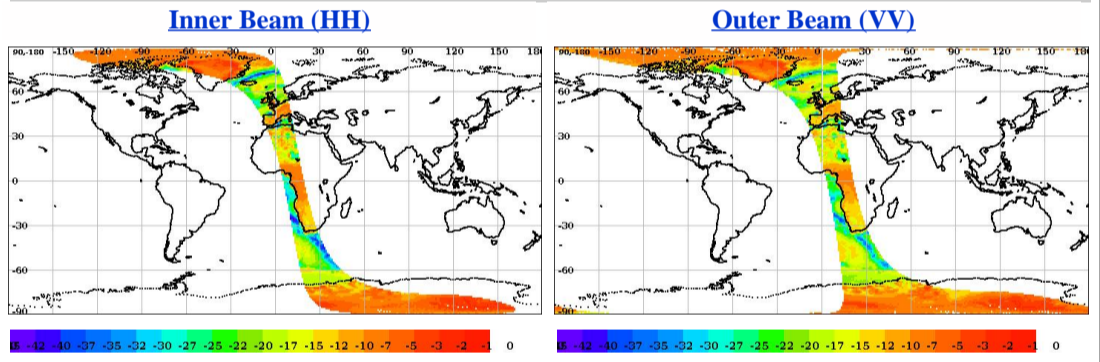
## Image Snapshot for Inner & Outer Beam

Inner (HH)

Outer (VV)



## Sigma0(dB) Footprint trace



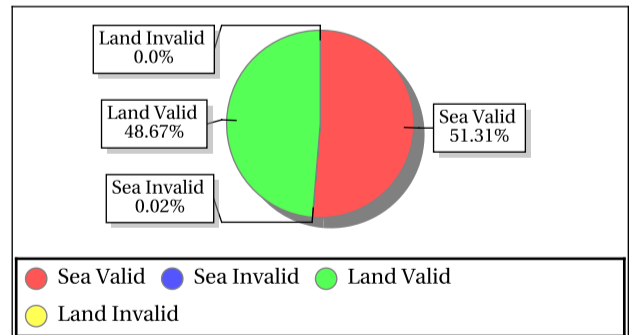
## Invalid and Poor Sigma-0 Quality Flag Statistics for Inner/Outer Slices\*

Sigma-0 Flags	Inner Beam	Outer Beam
Invalid Sigma0(%)	0.02	0.02
Data Not Available From Payload (%)	100.0	100.0
Slice not within sample array limits (%)	0.00	0.00
C(S+N) - C(N) < 0.1 (%)	0.00	0.00
Poor Sigma0(%)	22.22	13.34
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 (%)	0.029218	0.068144

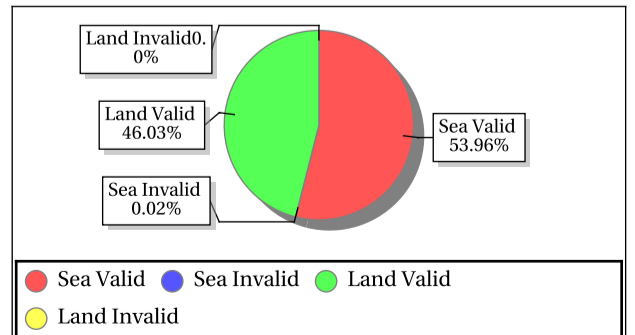
\*DP Format Document

## 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	ASC	Aft	-5.30	-5.25	-5.28	0.03	185.78	188.84	187.31	1.53
GreenLand_2	77.50	-41.50	Inner	ASC	Fore	-5.14	-2.90	-4.15	0.83	165.20	197.57	186.93	12.72
GreenLand_3	71.55	-42.45	Inner	ASC	Aft	-9.41	-6.89	-8.19	0.59	148.89	227.95	191.69	17.05
GreenLand_3	71.55	-42.45	Inner	ASC	Fore	-10.67	-6.80	-8.57	0.88	162.93	219.82	193.16	14.05
GreenLand_1	74.69	-42.50	Inner	ASC	Aft	-9.66	-7.94	-8.75	0.48	179.31	197.29	186.29	6.62
GreenLand_1	74.69	-42.50	Inner	ASC	Fore	-9.89	-7.54	-8.78	0.71	147.64	188.54	176.41	11.49
Sahara	19.10	14.30	Inner	ASC	Aft	-30.69	-20.60	-26.39	2.70	216.77	288.86	256.62	14.82
Sahara	19.10	14.30	Inner	ASC	Fore	-33.50	-20.79	-27.00	3.07	205.84	301.30	253.97	17.05
ANT_1	-75.00	121.00	Outer	ASC	Aft	-9.11	-6.88	-8.24	0.66	171.41	227.17	201.33	16.39
GreenLand_2	77.50	-41.50	Outer	ASC	Aft	-6.07	-5.52	-5.80	0.28	221.76	237.27	229.51	7.76
GreenLand_2	77.50	-41.50	Outer	ASC	Fore	-5.21	-4.21	-4.81	0.43	198.84	244.33	218.38	19.12
GreenLand_3	71.55	-42.45	Outer	ASC	Aft	-11.76	-9.57	-10.31	0.58	193.82	240.38	220.12	10.73
GreenLand_3	71.55	-42.45	Outer	ASC	Fore	-11.52	-10.14	-10.71	0.42	208.17	242.50	226.63	12.78
GreenLand_1	74.69	-42.50	Outer	ASC	Aft	-9.69	-7.74	-9.02	0.61	192.13	273.86	227.43	21.73
GreenLand_1	74.69	-42.50	Outer	ASC	Fore	-9.89	-6.59	-8.40	0.85	221.06	258.03	232.81	9.73
Sahara	19.10	14.30	Outer	ASC	Aft	-31.70	-20.43	-25.93	2.55	258.52	318.43	282.64	11.25
Sahara	19.10	14.30	Outer	ASC	Fore	-41.57	-20.39	-27.84	3.83	250.21	316.27	284.93	16.65



## 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	289.89	0.35	3.180	0.12	257.45	0.33	2.978	0.12	0.37	0.12	0.000	0.12	0.41	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>	-34.76	24.03	5.70	0.170	-34.24	23.91	7.00	1.483	-4.55	29.43	17.98	15.815	-5.04	29.46	18.25	17.411

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	164.73	0.28	2.607	0.09	222.04	0.29	2.616	0.09	57.50	0.10	0.012	0.09	15.81	0.09	0.013
<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>	-33.47	17.44	3.10	0.000	-34.77	17.78	3.85	0.000	-28.90	22.89	12.28	0.074	-23.27	22.90	12.23	0.107

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>	48.73	49.41	49.05	0.000	57.54	58.27	57.93	0.000	Inci.(Inner)	47.10	49.90
<b>Azimuth Diff. (deg)</b>	0.0027	6.36	1.27	2.576	0.0000	298.34	1.27	3.790	Inci.(Outer)	57.30	58.90
<b>Range(Km)</b>	1034.81	1075.37	1052.07	0.000	1212.71	1263.57	1235.05	0.000	Azimuth Diff.	0.60	2.00
<b>X Factor(dbm)</b>	-92.09	-90.01	-90.52	0.000	-93.12	-92.06	-92.25	0.000	Range(Inner)	1025.00	1095.70
<b>Across Distance (Km)</b>	15.52	16.10	15.80	0.000	3.69	37.56	20.89	6.000	Range(Outer)	1210.00	1280.00
<b>Along Distance (Km)</b>	18.82	20.70	19.74	0.000	7.92	34.80	19.65	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

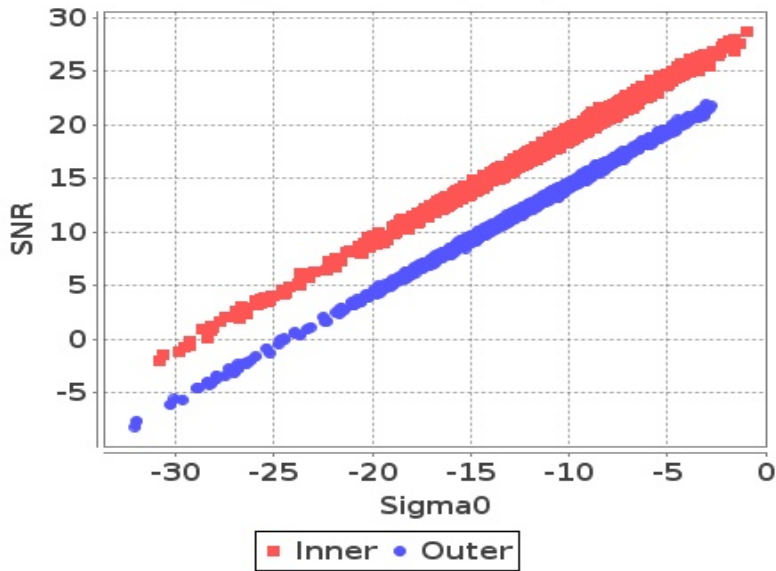
- Normal
- Deviations
- Alarming
- High Errors



## Sigma0 Behaviour (Sigma0 Vs SNR)

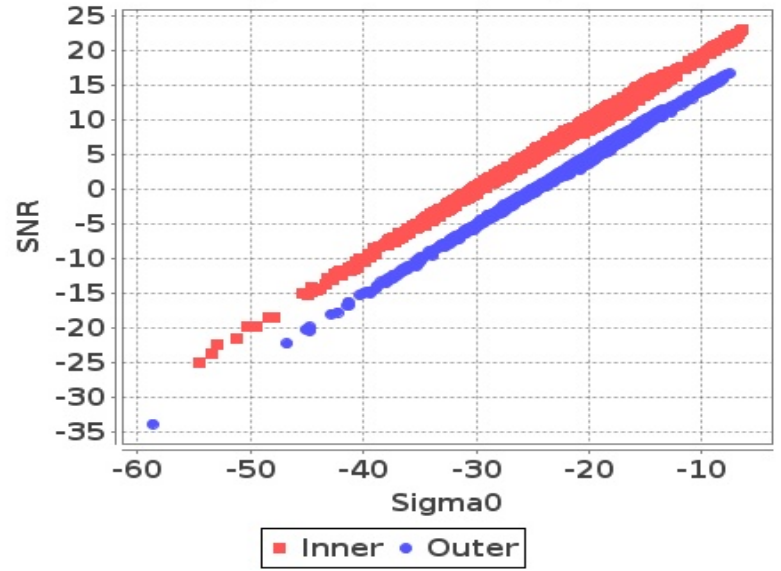
Footprint-Land

Sigma0 Vs SNR (Land)



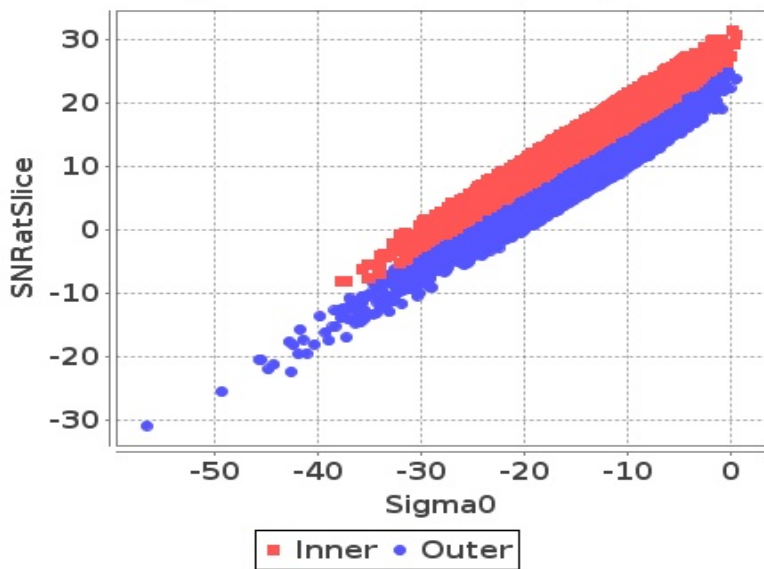
Footprint-Sea

Sigma0 Vs SNR (Sea)



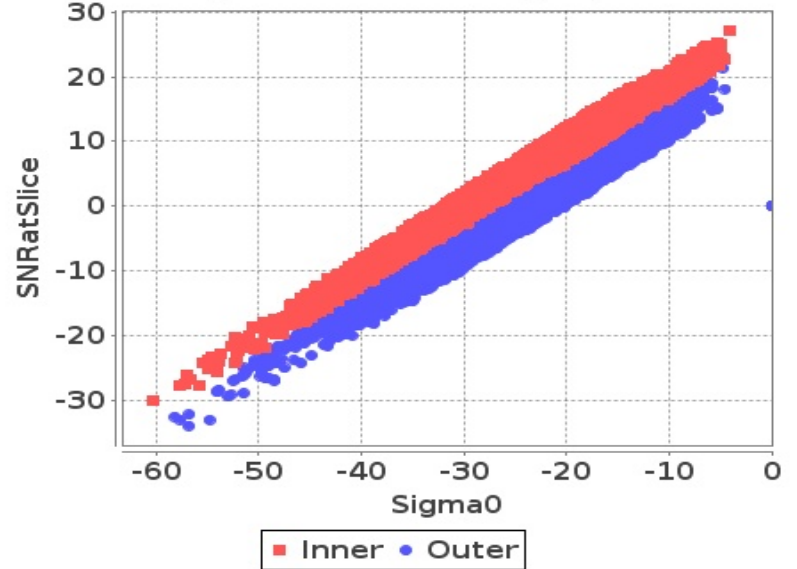
Slice-Land

Sigma0 Vs SNRatSlice (Land)



Slice-Sea

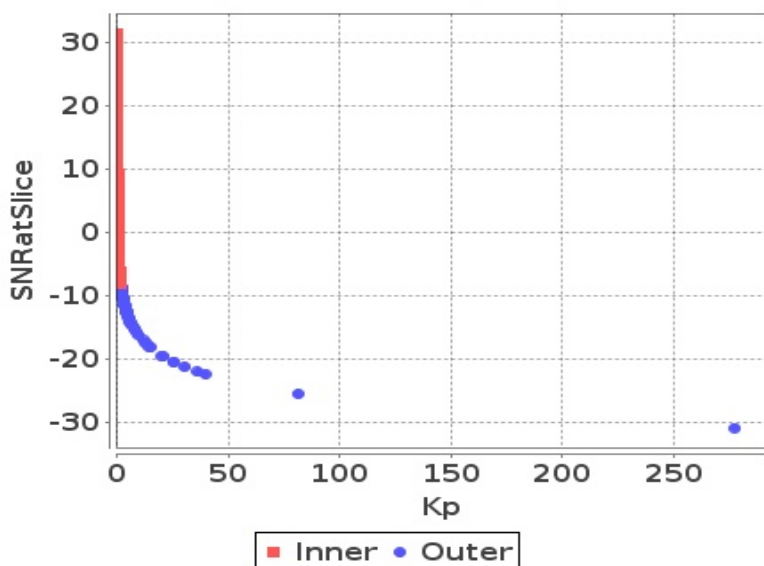
Sigma0 Vs SNRatSlice (Sea)



## Sigma0 Behaviour (Kp Vs SNR)

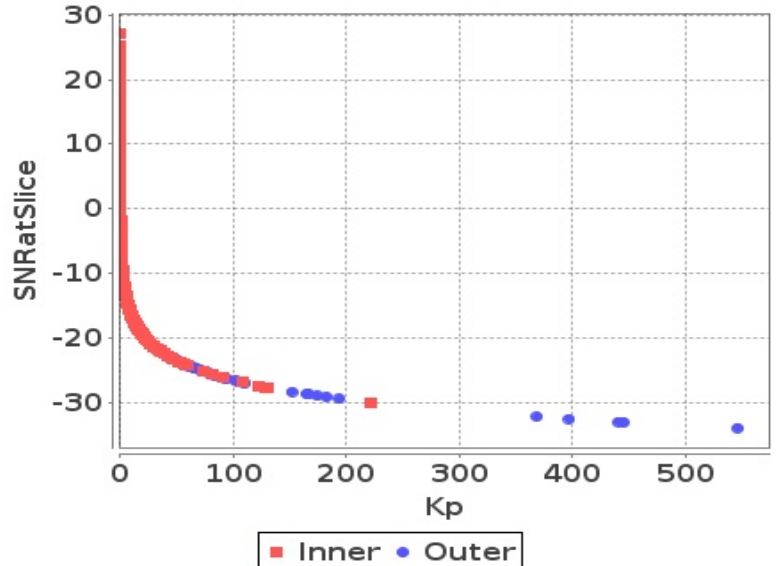
Slice

Kp Vs SNRatSlice (Land)



Slice

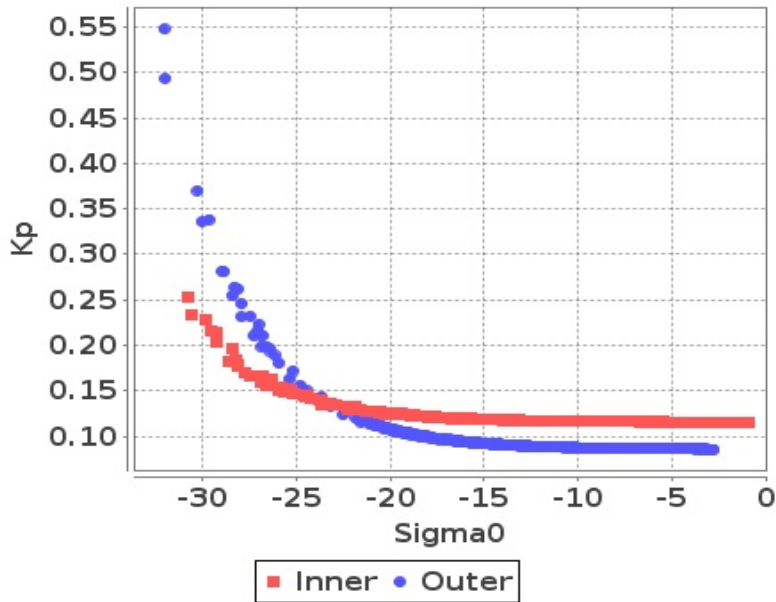
Kp Vs SNRatSlice (Sea)



# Sigma0 Behaviour(Sigma0 Vs Kp)

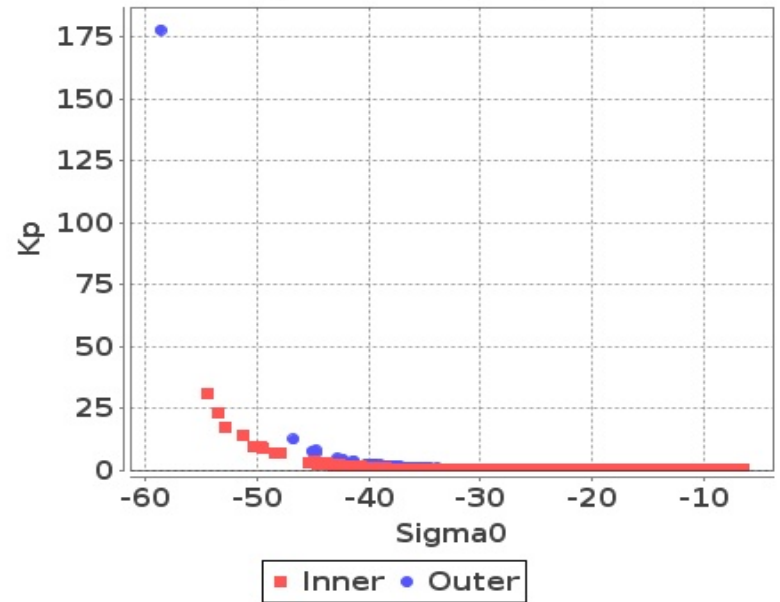
## Footprint-Land

### Sigma0 Vs Kp (Land)



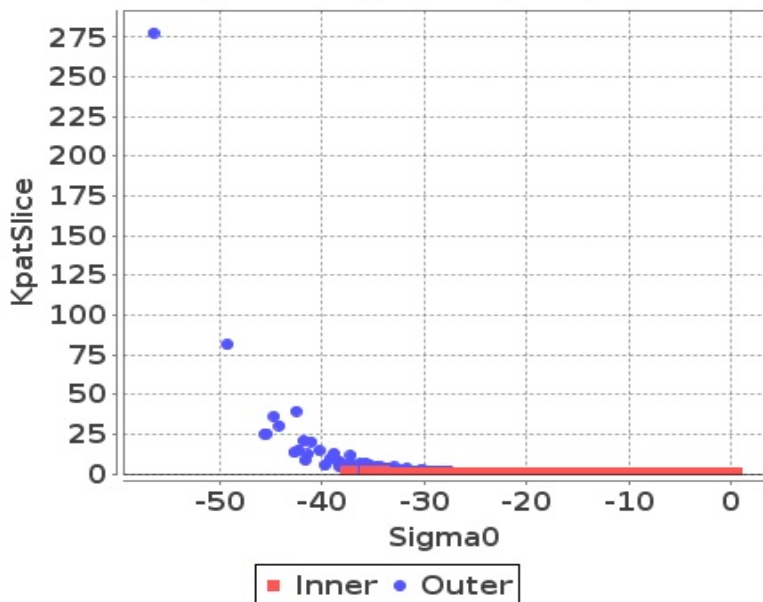
## Footprint-Sea

### Sigma0 Vs Kp (Sea)



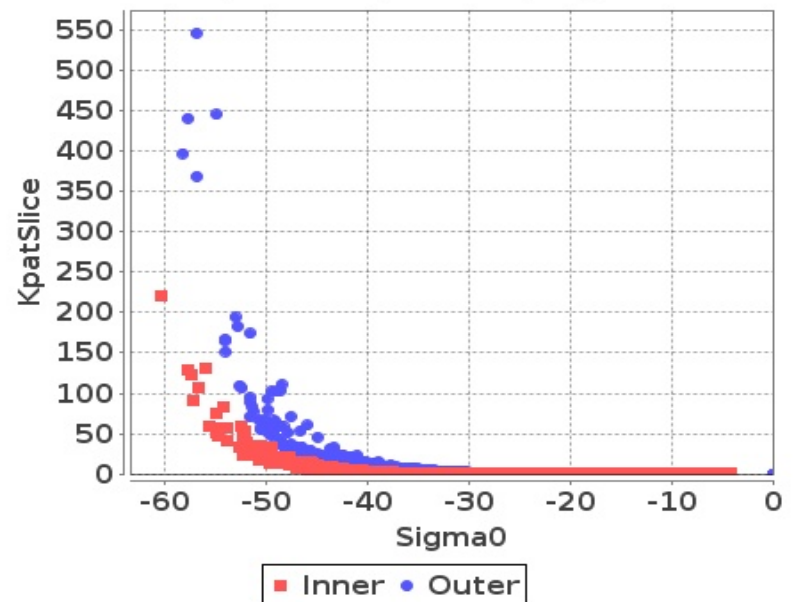
## Slice-Land

### Sigma0 Vs KpatSlice (Land)



## Slice-Sea

### Sigma0 Vs KpatSlice (Sea)



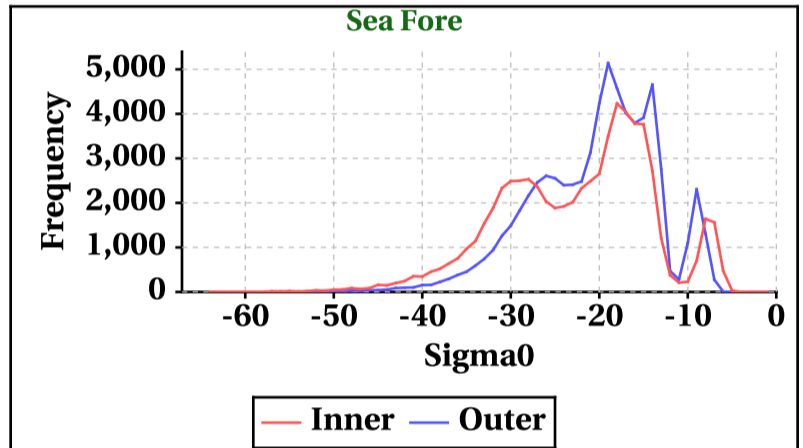
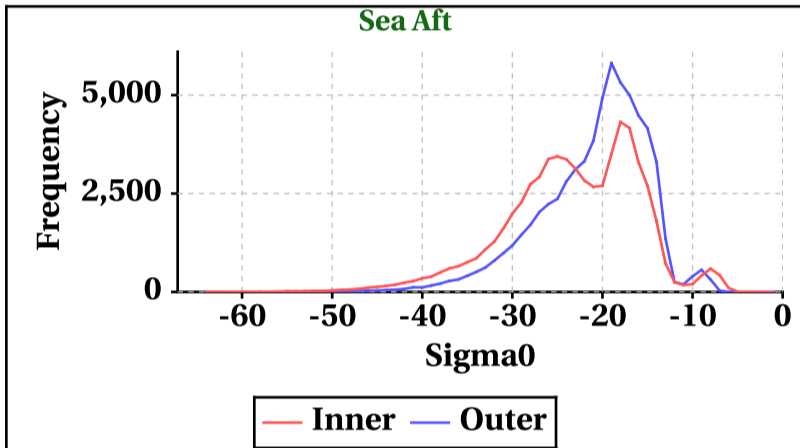
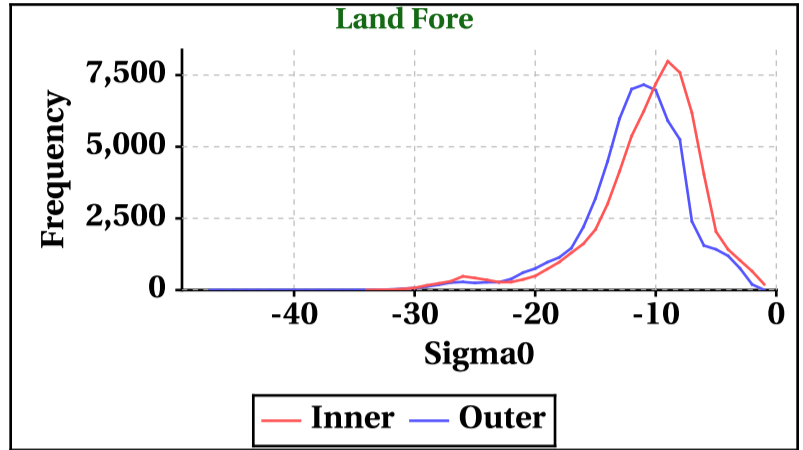
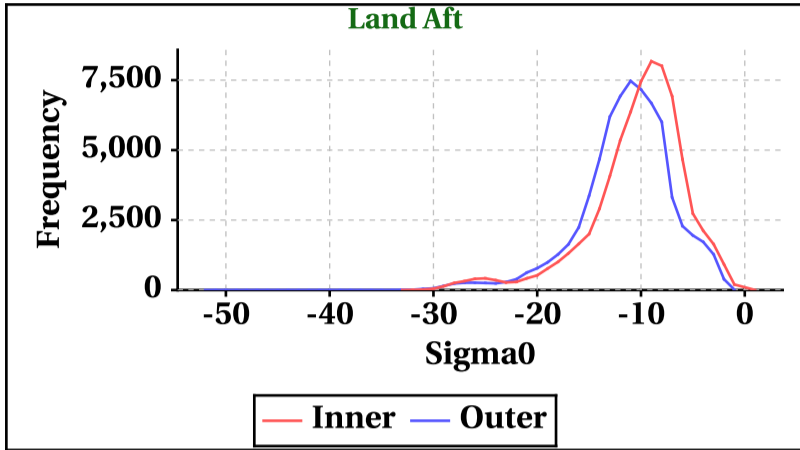


# Dynamic Range (Data Histograms)

## Sigma0(db)

Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-33	-34	-64	-64
Max	1	0	0	0

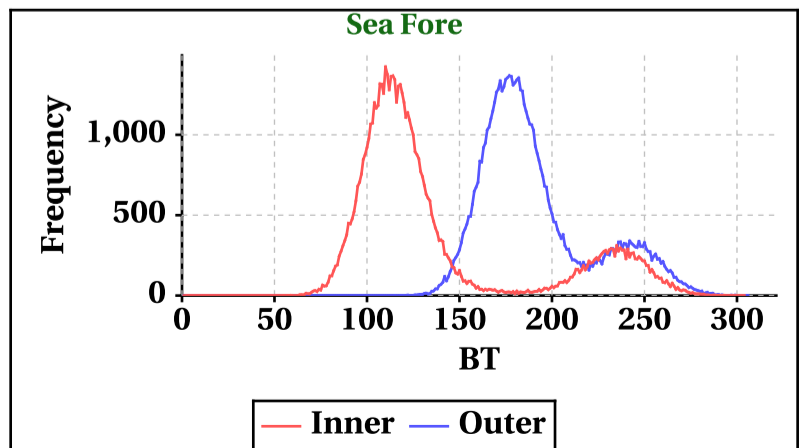
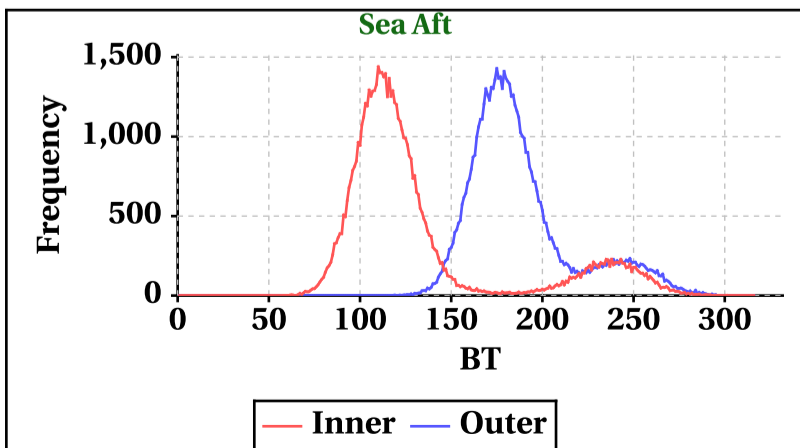
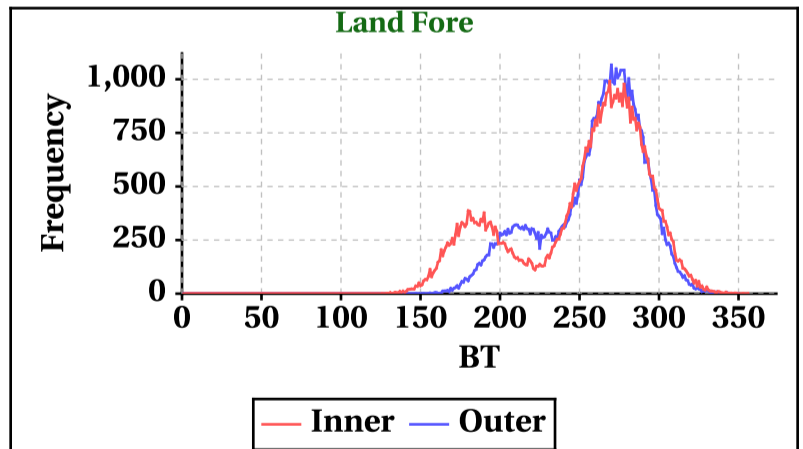
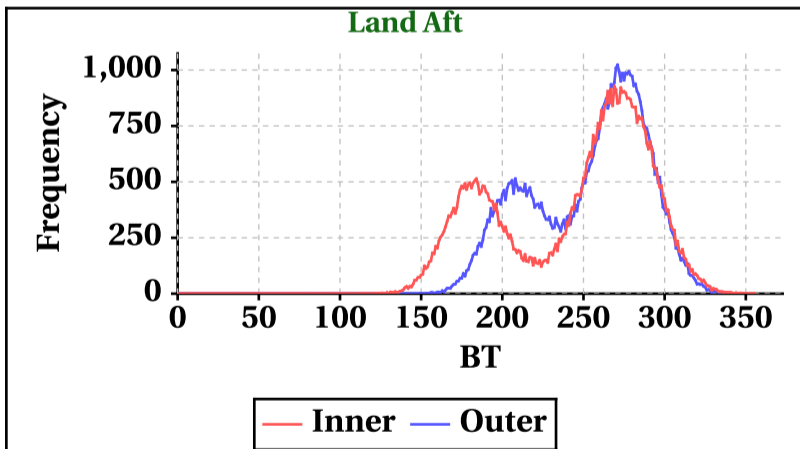
Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-52	-47	-58	-59
Max	0	0	0	0



## Brightness Temperature(K)

Inner Beam(HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	355	356	316	304

Outer Beam(VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	348	350	316	306

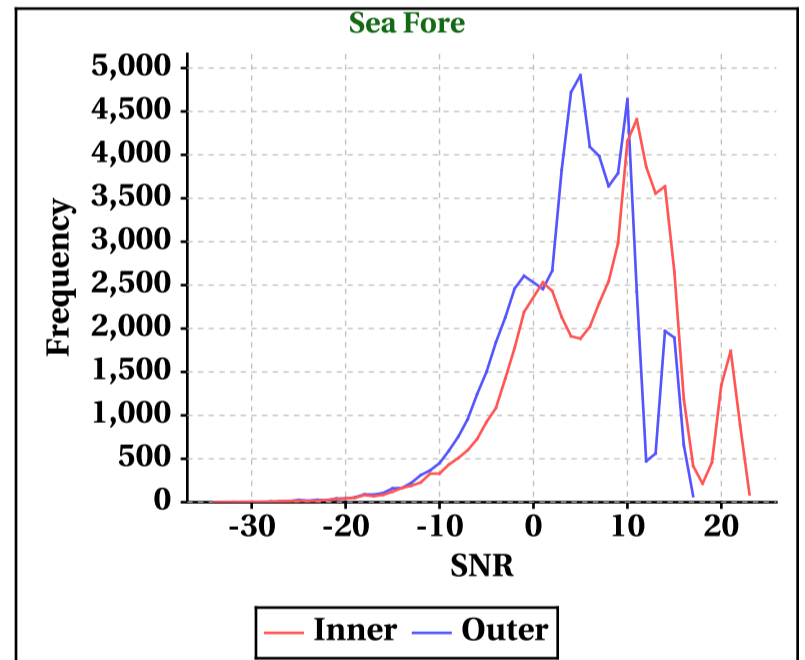
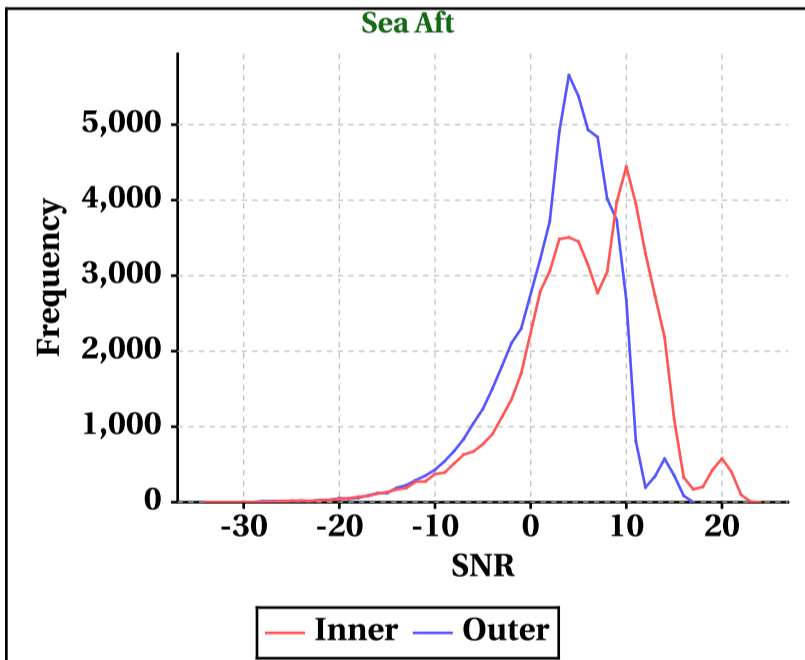
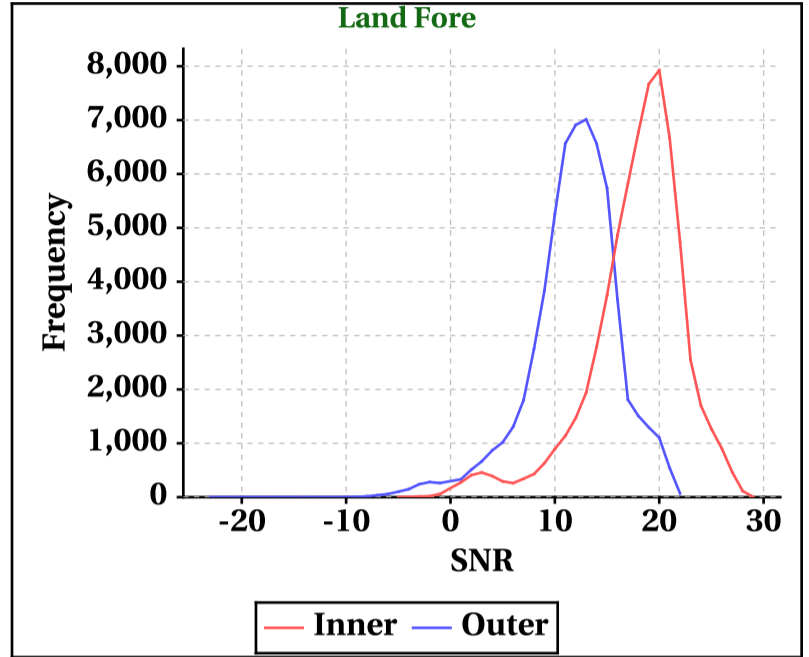
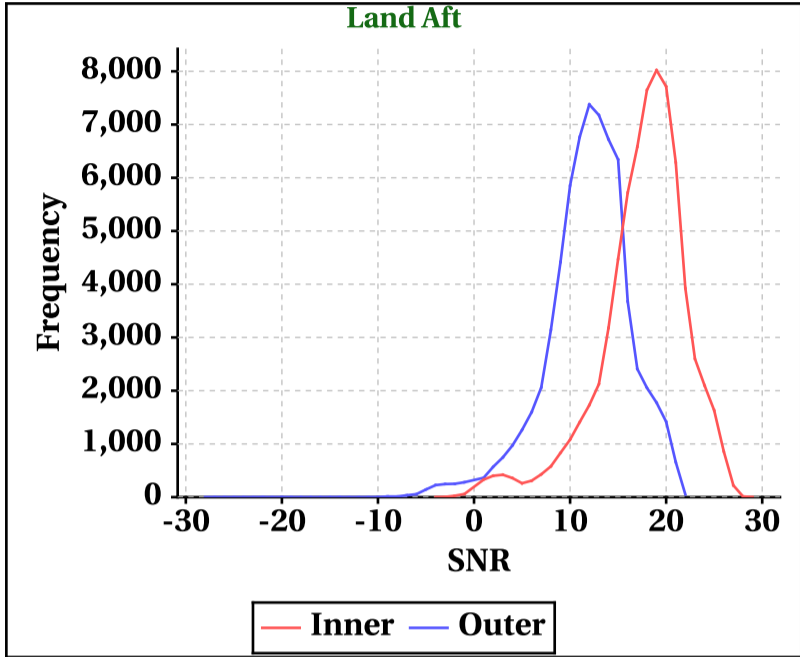


# Dynamic Range (Data Histograms)

## SNR(dBm)

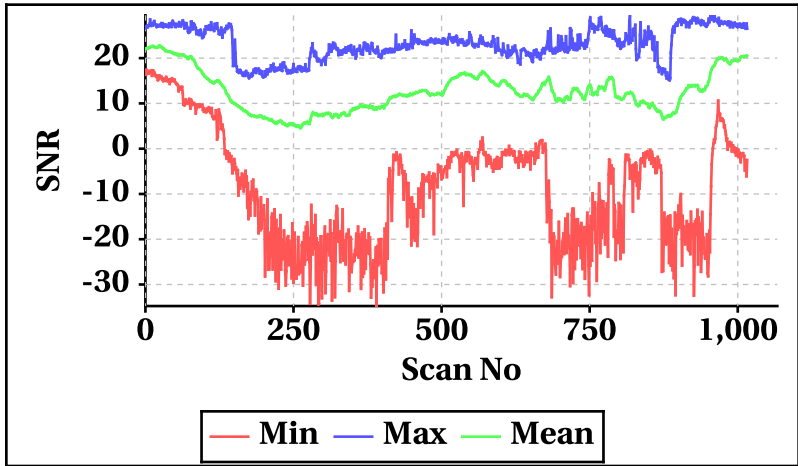
Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-4	-5	-34	-34
Max	29	29	24	23

Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-28	-23	-33	-34
Max	22	22	17	17

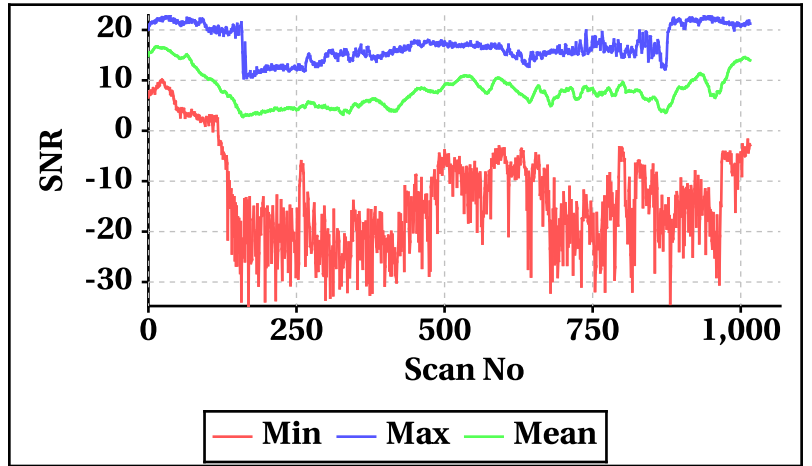


## Orbit-wise behaviour of SNR

**Inner Beam (HH)**

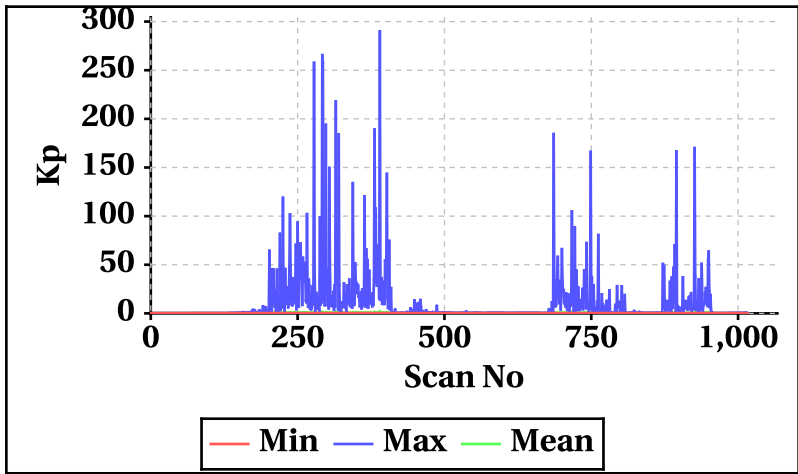


**Outer Beam(VV)**

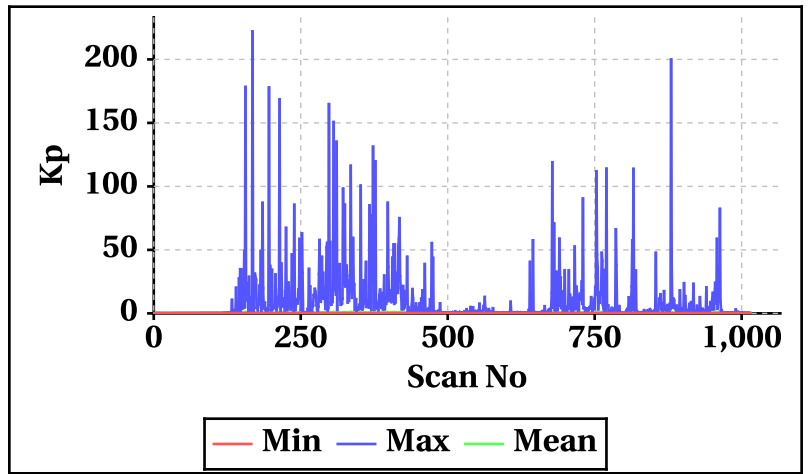


## Orbit-wise behaviour of Kp,Kpa,Kpb,Kpc

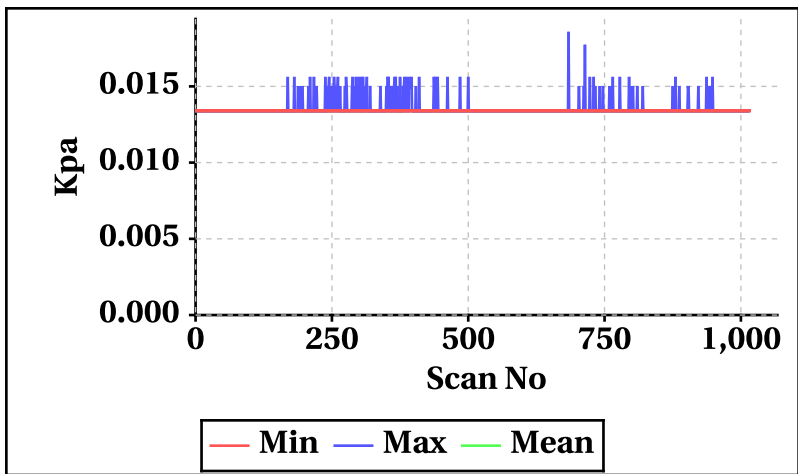
**Inner Beam(HH)**



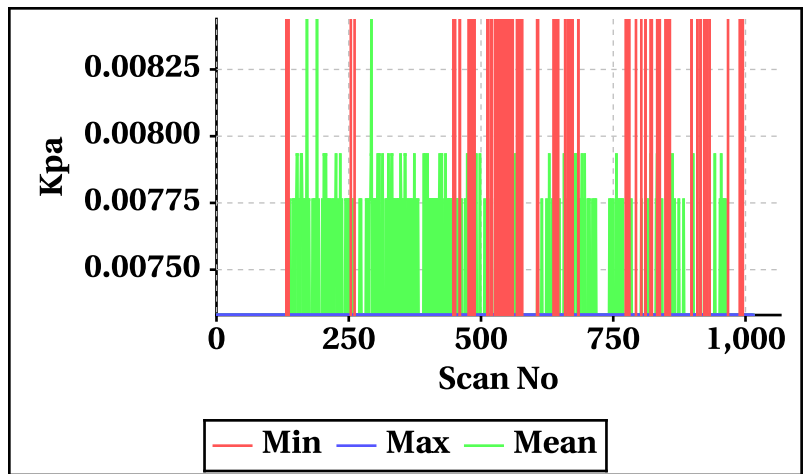
**Outer Beam(VV)**



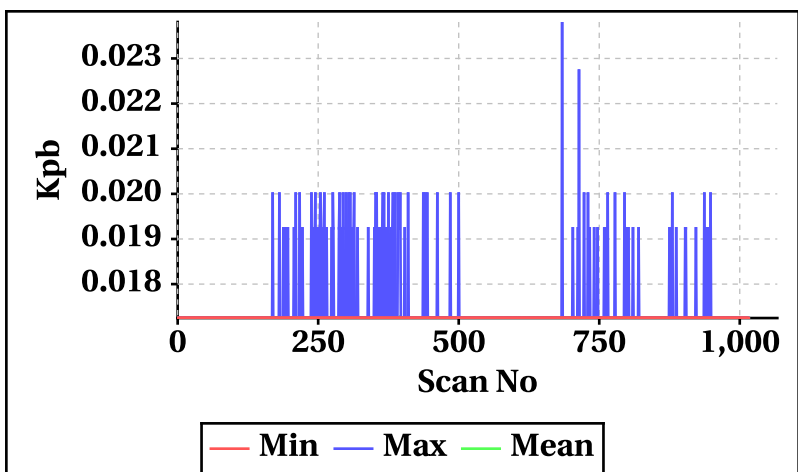
**Inner Beam(HH)**



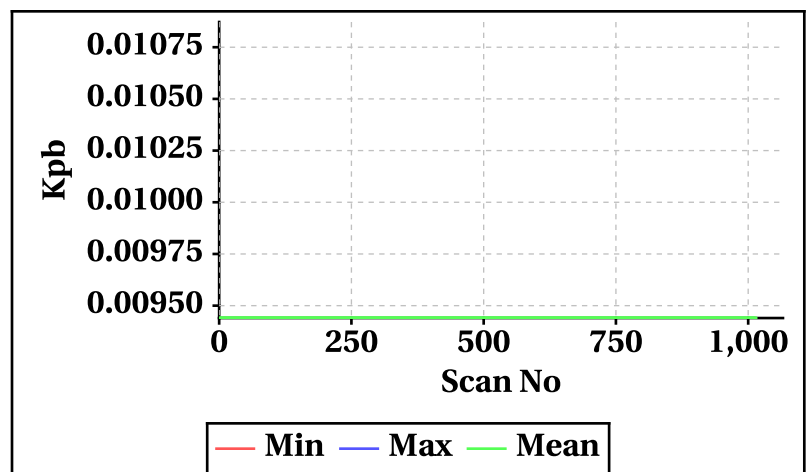
**Outer Beam(VV)**



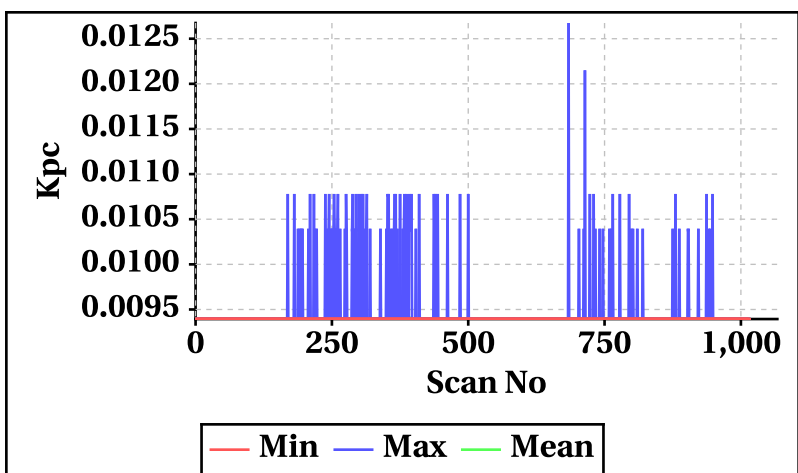
**Inner Beam(HH)**



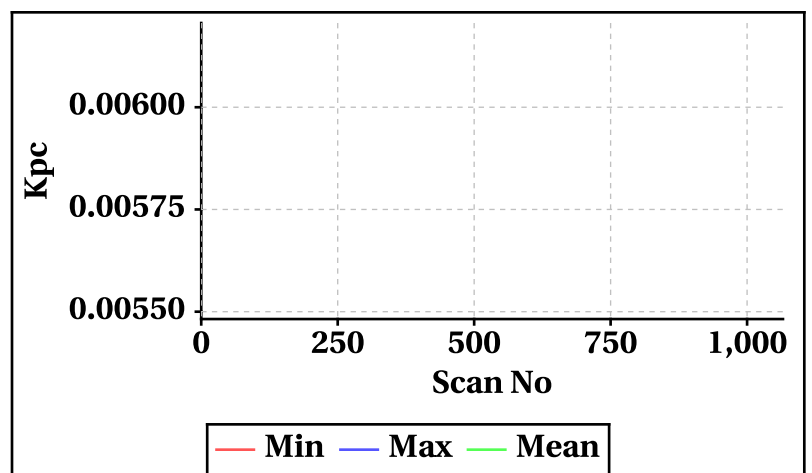
**Outer Beam(VV)**



**Inner Beam(HH)**



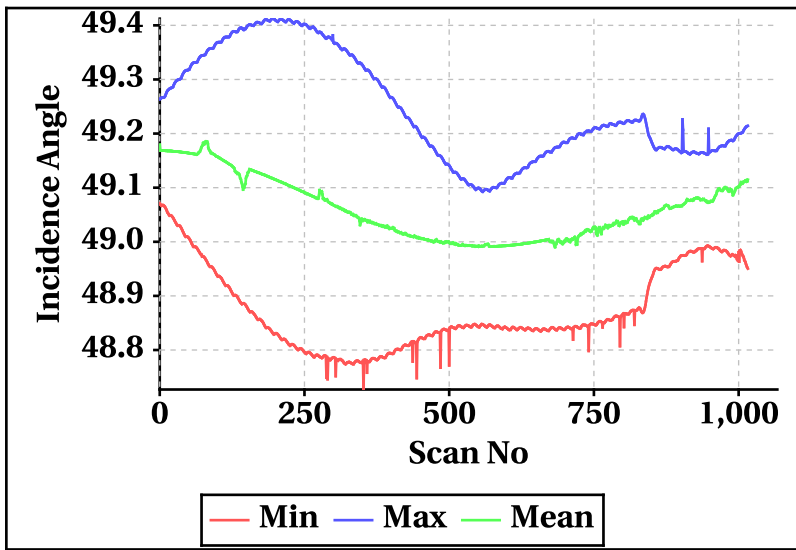
**Outer Beam(VV)**



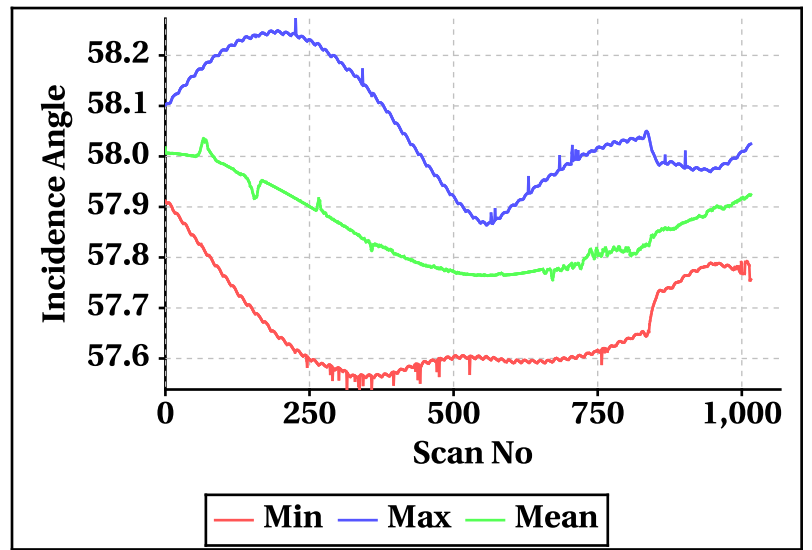


# Orbit-wise behaviour of Incidence, Azimuth, Range, X-Factor

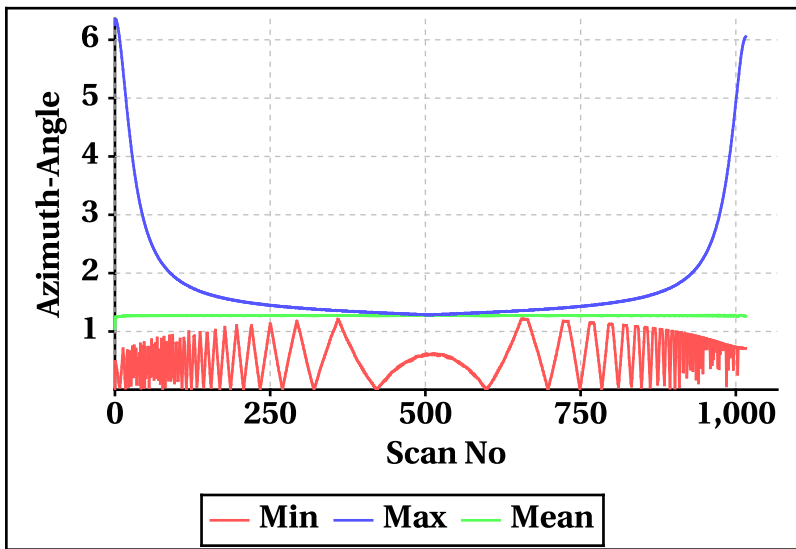
**Inner Beam (HH)**



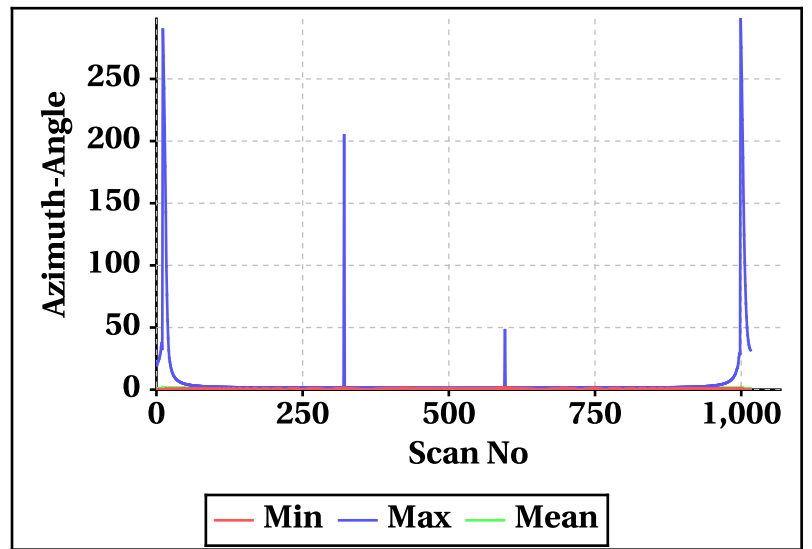
**Outer Beam(VV)**



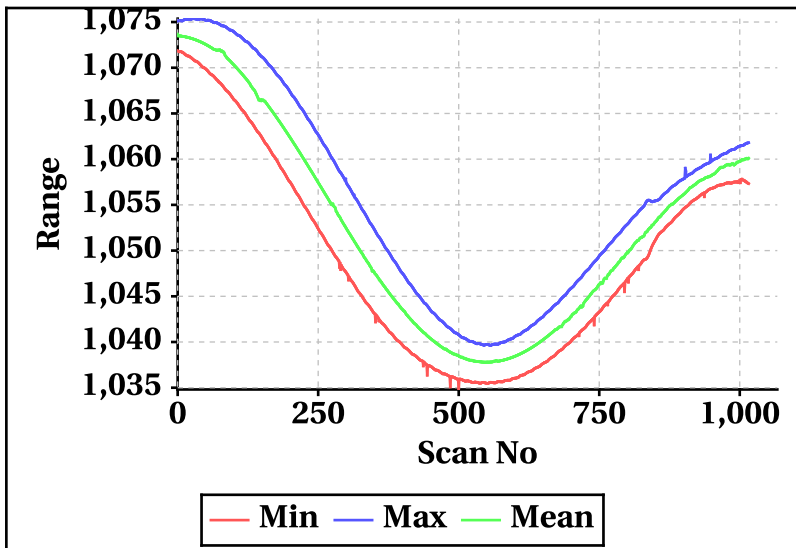
**Inner Beam (HH)**



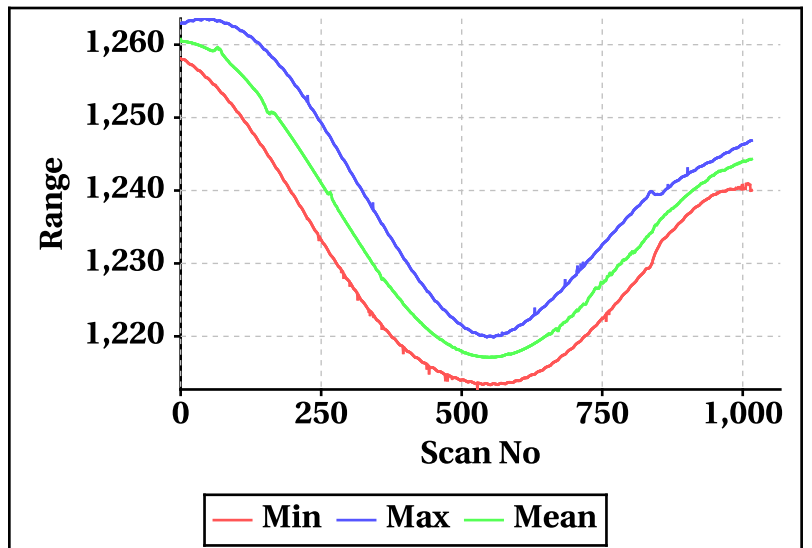
**Outer Beam(VV)**



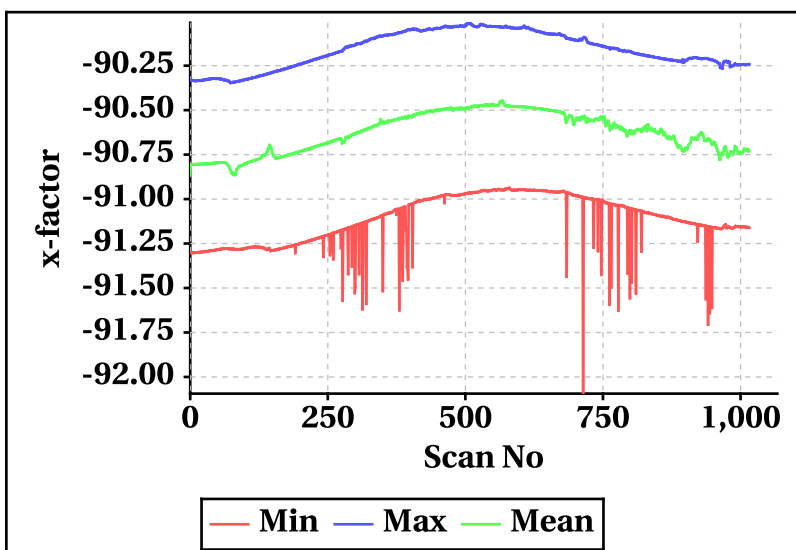
**Inner Beam (HH)**



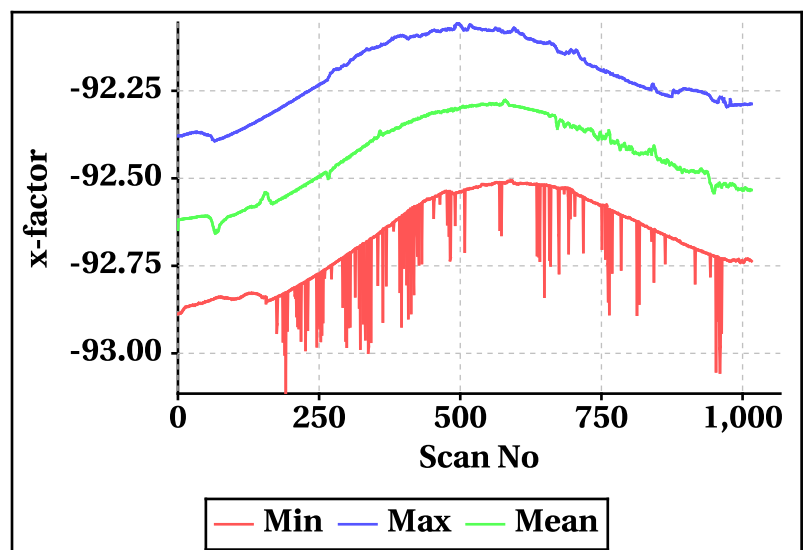
**Outer Beam(VV)**



**Inner Beam (HH)**



**Outer Beam(VV)**

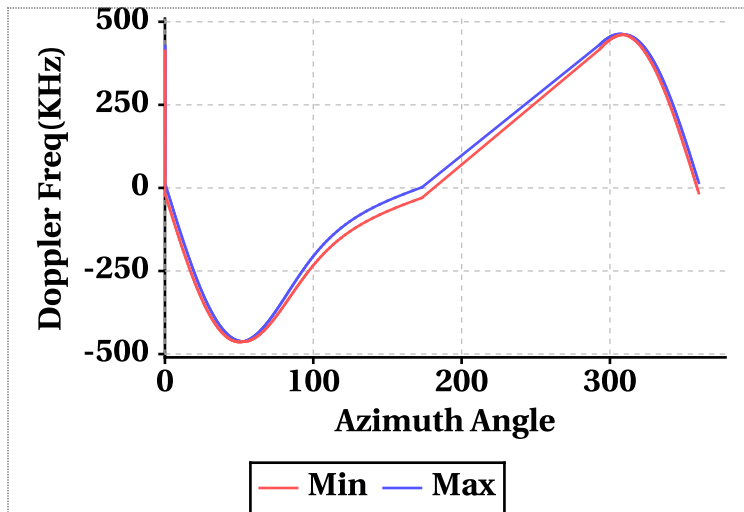


# Doppler Frequency Variation

**Doppler Frequency(KHz) variation statistics Over the half Orbit**

	Inner Beam (HH)	Outer Beam (VV)
<b>Min</b>	-463.64	-519.52
<b>Max</b>	463.02	518.98

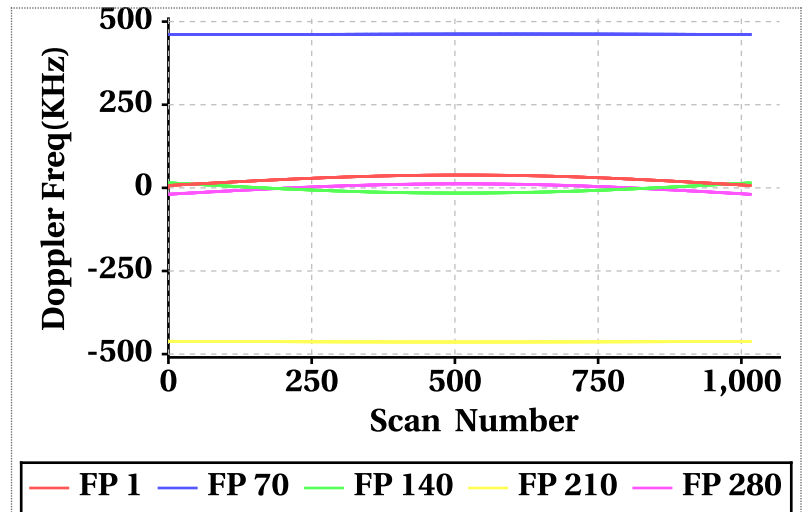
**Footprint wise Doppler frequency variation Inner Beam (HH)**



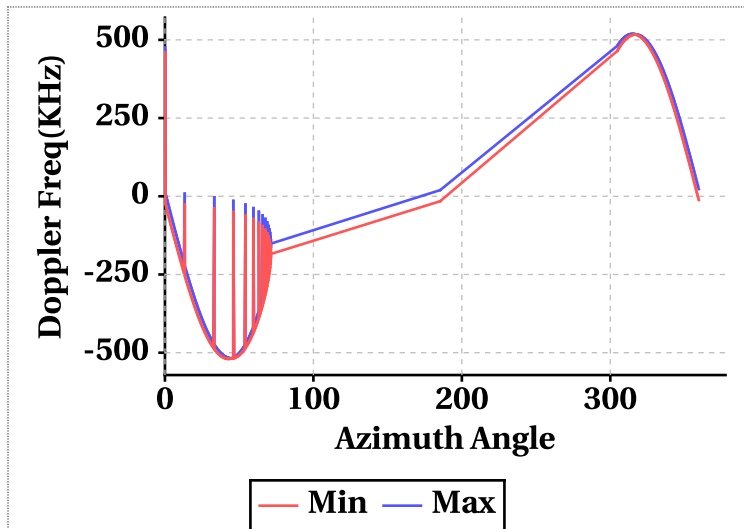
**Doppler Frequency(KHz) variation**

Doppler_FP	Inner Beam (HH)			Outer Beam (VV)		
	Min	Max	Mean	Min	Max	Mean
Doppler_1	0.00	38.54	27.12	-19.44	37.62	24.83
Doppler_70	460.84	462.54	461.89	516.46	518.66	517.85
Doppler_140	-15.72	15.28	-4.51	-23.42	11.40	-10.82
Doppler_210	-463.56	-461.50	-462.87	-519.30	-517.34	-518.65
Doppler_280	-19.44	12.24	0.70	-15.78	19.66	6.76

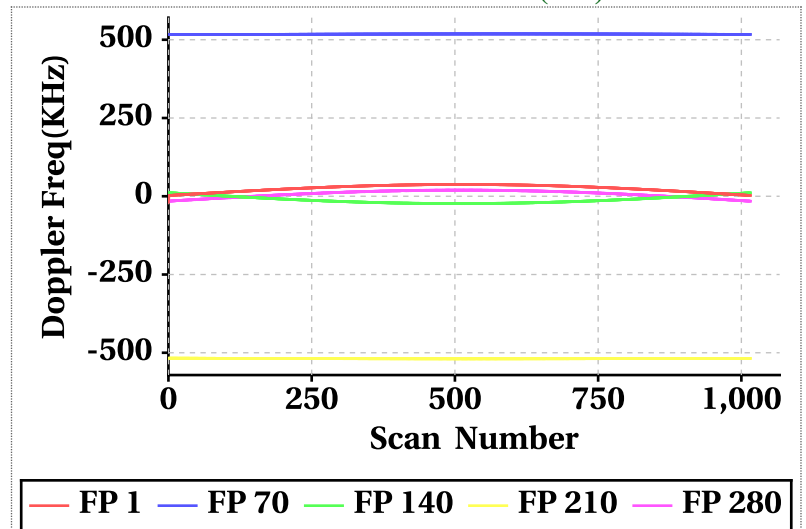
**Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Inner Beam (HH)**



**Footprint wise Doppler frequency variation Outer Beam (VV)**

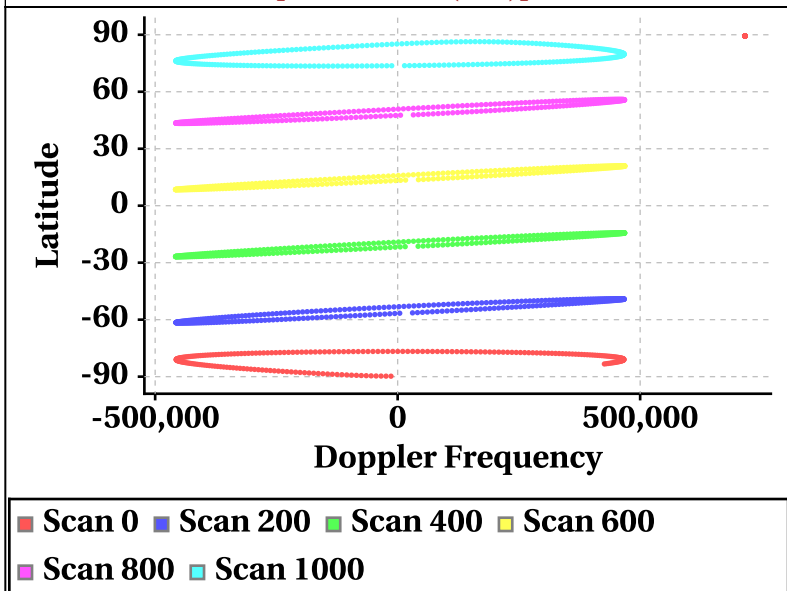


**Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Outer Beam (VV)**

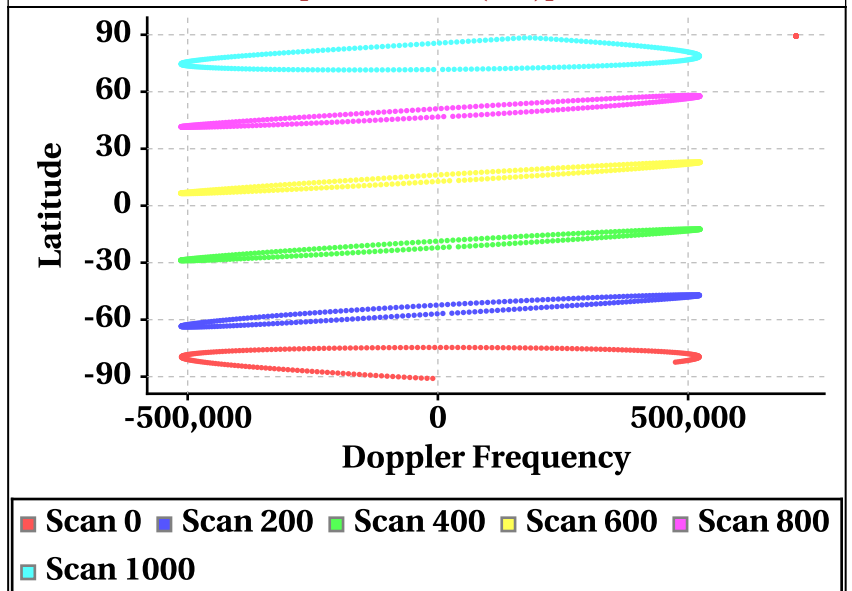


## Latitude Vs Doppler Frequency

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



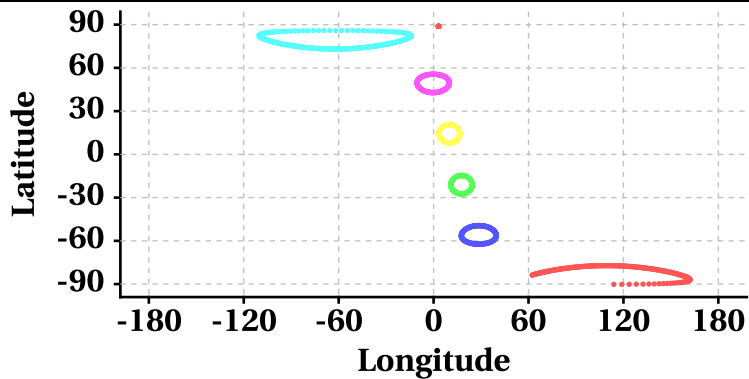
**Doppler Frequency at Scan Interval of 200 [Outer Beam(VV)]**



# Parameter as a function of Latitude

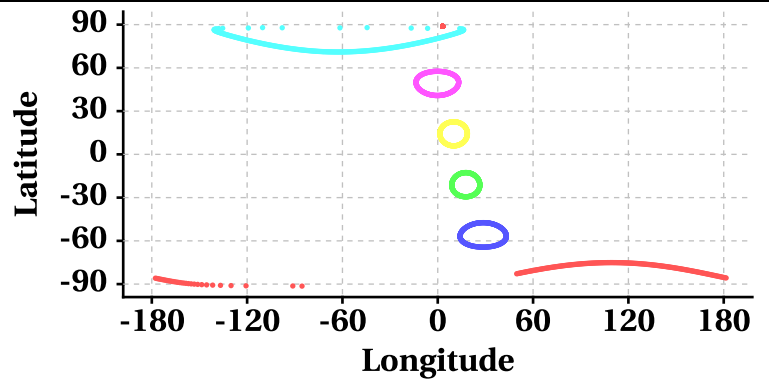
## Latitude Vs Longitude

Scan Trace [Inner Beam(HH)]



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

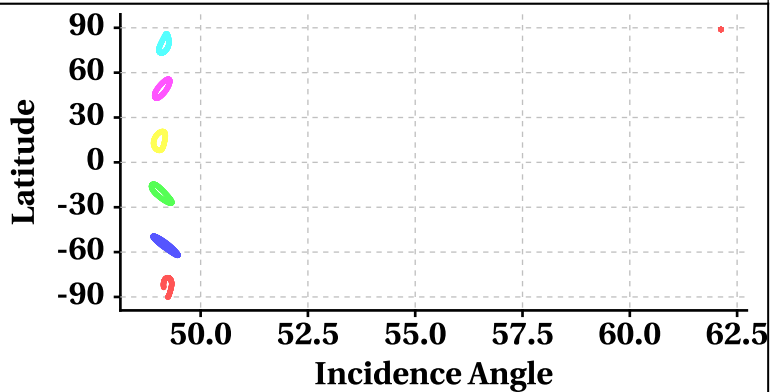
Scan Trace [Outer Beam (VV)]



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

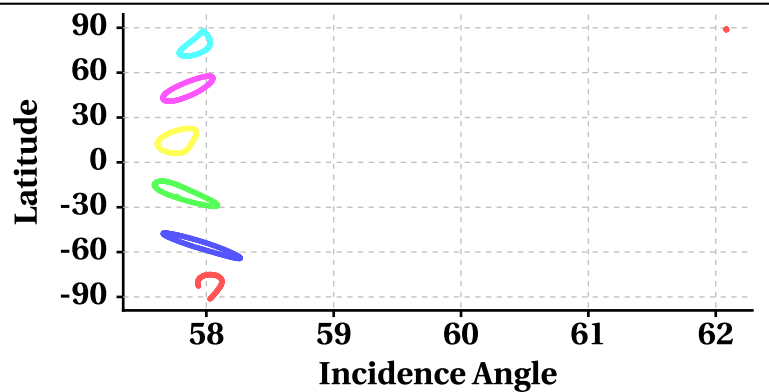
## Latitude Vs Incidence Angle

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



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

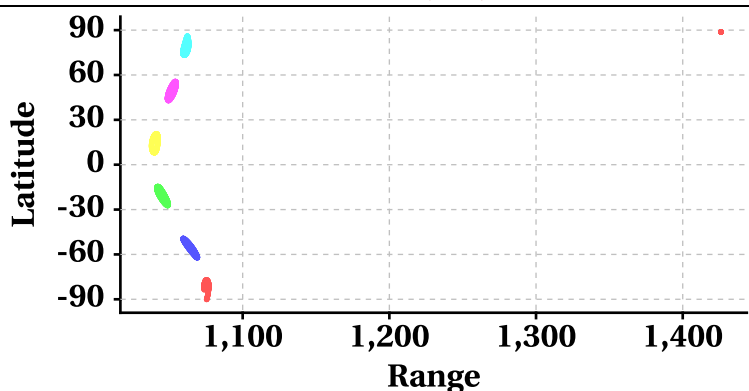
Incidence Angle at Scan Interval of 200 [Outer Beam (VV)]



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

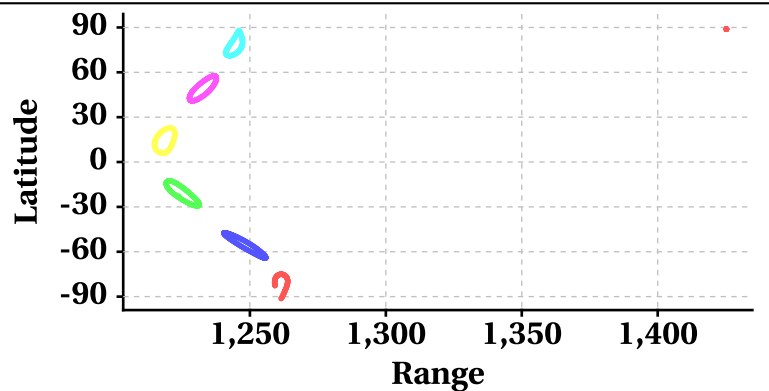
## Latitude Vs Range

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

