

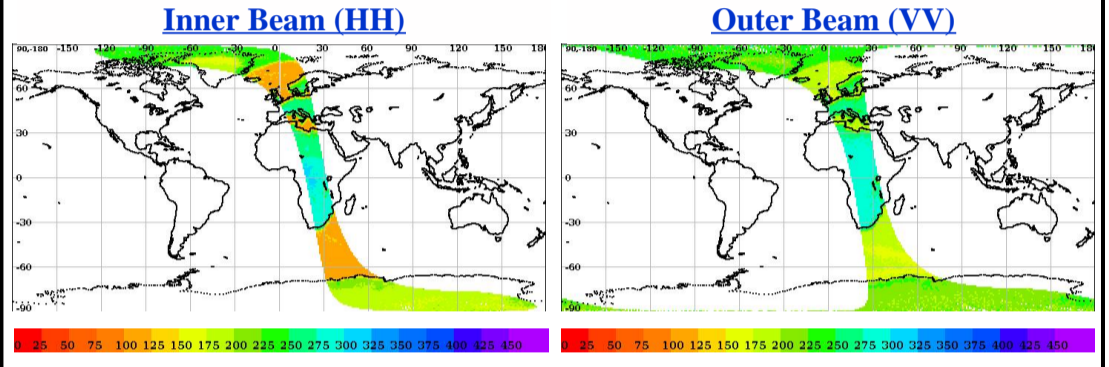
# SCATSAT-1 Scatterometer Level-1B Data Quality Evaluation Report

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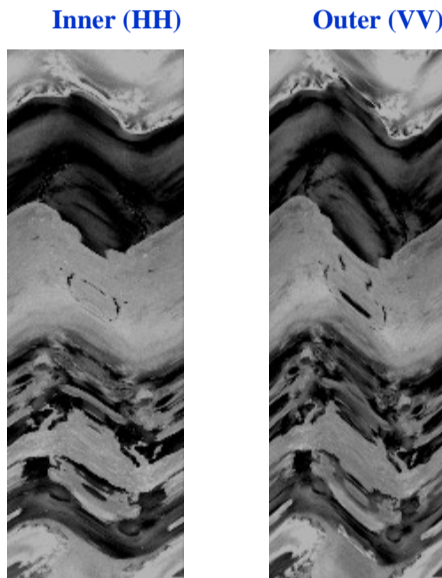
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<b>Satellite Id</b>	ScatSat-1	<b>Start Orbit</b>	18263	<b>Total Scans</b>	1017
<b>Sensor Name</b>	Scatterometer	<b>End Orbit</b>	18264	<b>No of Inner FootPrints</b>	281
<b>Processor Version</b>	v1.1.4	<b>Rev. Number</b>	18263_18264	<b>No Of Outer FootPrints</b>	282
<b>Half Orbit Direction</b>	SN	<b>Data Production Date</b>	09-03-2020	<b>No. Of Inner Slices</b>	9
<b>Equator Crossing Date</b>	08-03-2020	<b>Equator Crossing Time</b>	18:43:41.000	<b>No Of Outer Slices</b>	15

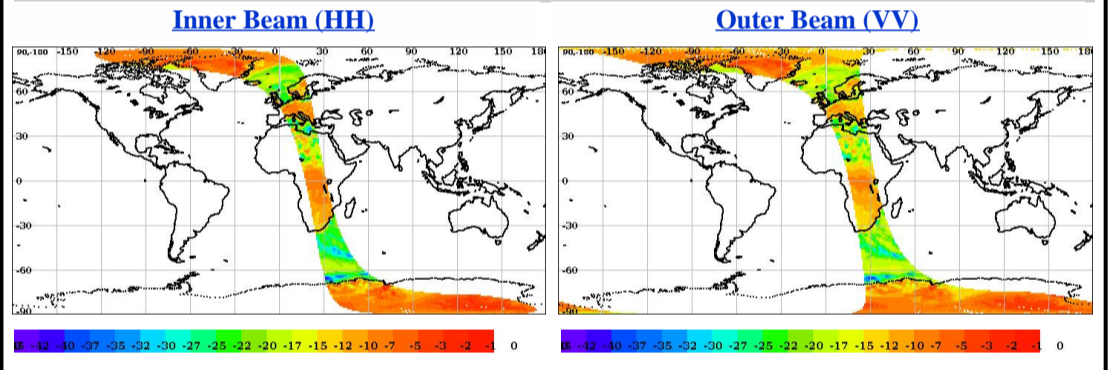
## Brightness Temperature(k) Footprint trace



## Image Snapshot for Inner & Outer Beam



## Sigma0(dB) Footprint trace



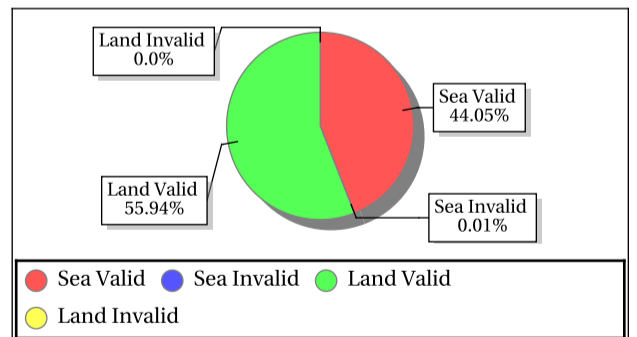
## Invalid and Poor Sigma-0 Quality Flag Statistics for Inner/Outer Slices\*

Sigma-0 Flags	Inner Beam	Outer Beam
<b>Invalid Sigma0(%)</b>	0.01	0.01
<b>Data Not Available From Payload (%)</b>	100.0	99.39759
<b>Slice not within sample array limits (%)</b>	0.00	0.60
<b>C(S+N) - C(N) &lt; 0.1 (%)</b>	0.00	0.00
<b>Poor Sigma0(%)</b>	22.22	13.34
<b>Noise samples for blending Saturated</b>	0.003149	0.031371
<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>	0.006824	0.028408

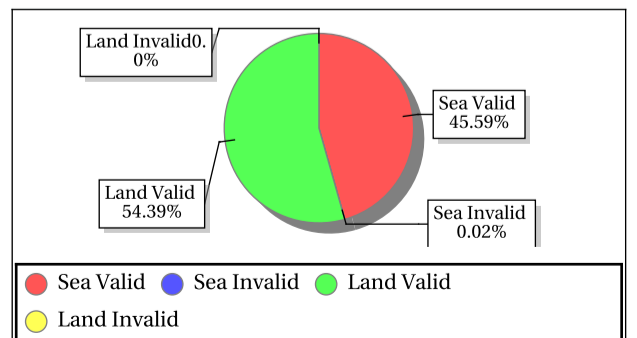
\*DP Format Document

## 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
ANT_1	-75.00	121.00	Inner	ASC	Aft	-8.15	-6.04	-6.74	0.55	160.36	223.06	179.65	15.66
GreenLand_2	77.50	-41.50	Inner	ASC	Aft	-5.90	-4.40	-5.15	0.72	160.38	185.79	170.61	9.99
GreenLand_2	77.50	-41.50	Inner	ASC	Fore	-5.90	-4.97	-5.60	0.34	141.67	186.97	172.38	13.92
GreenLand_1	74.69	-42.50	Inner	ASC	Aft	-11.86	-7.97	-9.38	0.91	156.37	213.45	186.22	15.53
GreenLand_1	74.69	-42.50	Inner	ASC	Fore	-11.17	-7.16	-9.43	0.89	145.38	217.28	181.19	17.37
Sahara	19.10	14.30	Inner	ASC	Aft	-32.08	-19.05	-26.40	3.40	232.16	318.35	261.26	17.46
Sahara	19.10	14.30	Inner	ASC	Fore	-32.69	-20.06	-26.67	3.23	230.45	296.29	262.74	14.53
ANT_1	-75.00	121.00	Outer	ASC	Aft	-9.84	-7.30	-8.45	0.75	182.54	239.79	204.45	16.95
GreenLand_2	77.50	-41.50	Outer	ASC	Fore	-5.00	-3.66	-4.37	0.55	207.58	236.56	224.17	12.20
GreenLand_3	71.55	-42.45	Outer	ASC	Aft	-12.38	-10.00	-11.18	0.56	197.96	264.09	227.20	14.98
GreenLand_3	71.55	-42.45	Outer	ASC	Fore	-12.09	-10.11	-11.19	0.57	199.85	260.25	229.50	12.98
GreenLand_1	74.69	-42.50	Outer	ASC	Aft	-10.21	-8.20	-9.33	0.63	221.51	251.93	236.41	10.02
GreenLand_1	74.69	-42.50	Outer	ASC	Fore	-9.94	-8.19	-9.14	0.61	213.80	262.42	238.06	16.25
Sahara	19.10	14.30	Outer	ASC	Aft	-34.81	-19.65	-26.68	3.84	246.61	328.18	287.08	16.83
Sahara	19.10	14.30	Outer	ASC	Fore	-35.62	-19.66	-26.85	4.01	259.99	337.06	288.59	16.60



## 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	290.65	0.19	0.628	0.12	135.31	0.17	0.492	0.12	6.30	0.12	0.006	0.12	43.90	0.12	0.006
<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	0.02	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>	-34.77	25.61	6.89	0.091	-31.45	26.34	8.48	1.212	-18.07	32.88	17.93	12.695	-26.55	30.97	18.25	12.951

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	228.25	0.18	0.916	0.09	202.96	0.15	0.701	0.09	108.39	0.10	0.071	0.09	27.73	0.10	0.043
<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>	-34.89	19.21	4.59	0.000	-34.38	18.98	5.51	0.000	-31.65	22.70	11.87	0.028	-25.72	23.20	11.90	0.098

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>	48.84	49.39	49.06	0.000	57.60	58.27	57.95	0.000	Inci.(Inner)	47.10	49.90
<b>Azimuth Diff. (deg)</b>	0.0027	215.16	1.27	2.612	0.0000	288.26	1.27	3.916	Inci.(Outer)	57.30	58.90
<b>Range(Km)</b>	1040.78	1076.22	1054.61	0.000	1219.70	1264.59	1240.16	0.000	Azimuth Diff.	0.60	2.00
<b>X Factor(dbm)</b>	-91.40	-89.72	-90.25	0.000	-92.76	-91.76	-92.08	0.000	Range(Inner)	1025.00	1095.70
<b>Across Distance (Km)</b>	15.54	16.07	15.78	0.000	9.90	36.69	20.87	7.000	Range(Outer)	1210.00	1280.00
<b>Along Distance (Km)</b>	18.77	20.62	19.73	0.000	10.40	35.11	19.64	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

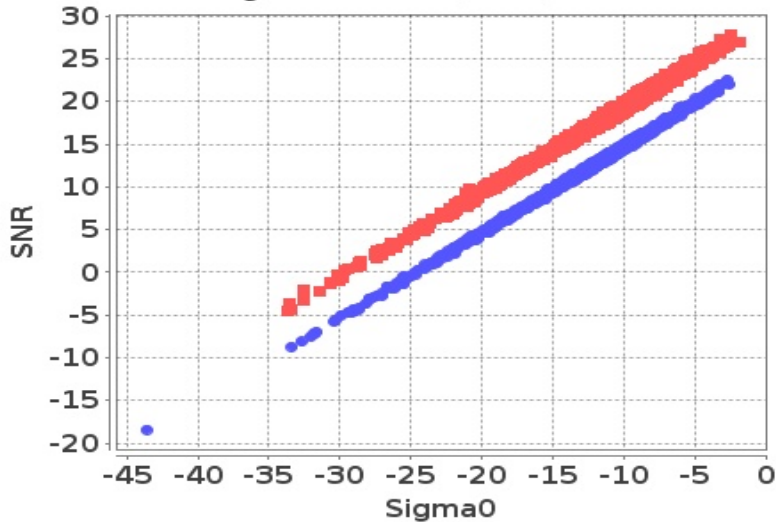
- Normal
- Deviations
- Alarming
- High Errors



## Sigma0 Behaviour (Sigma0 Vs SNR)

Footprint-Land

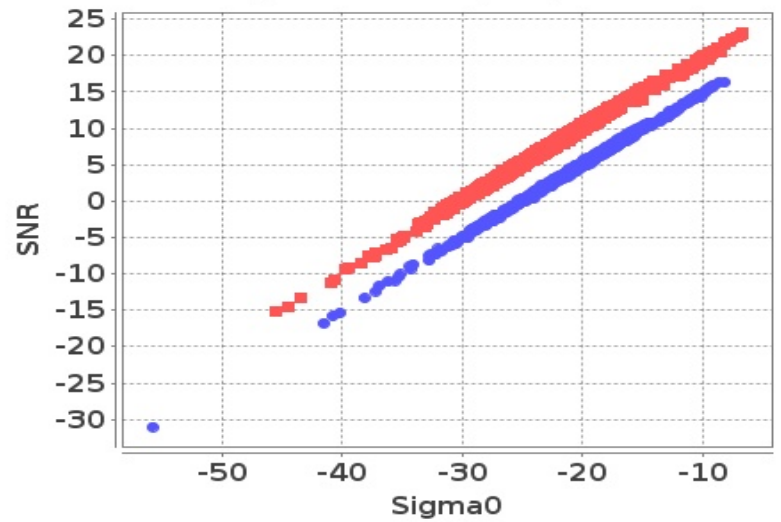
Sigma0 Vs SNR (Land)



Inner • Outer

Footprint-Sea

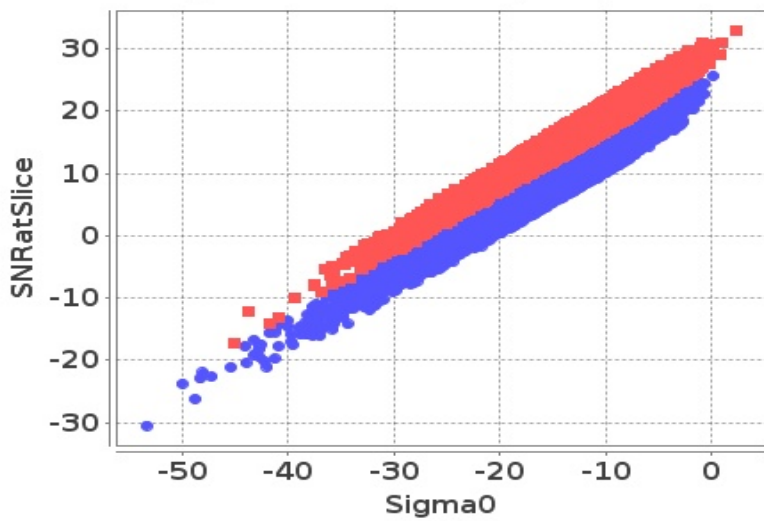
Sigma0 Vs SNR (Sea)



Inner • Outer

Slice-Land

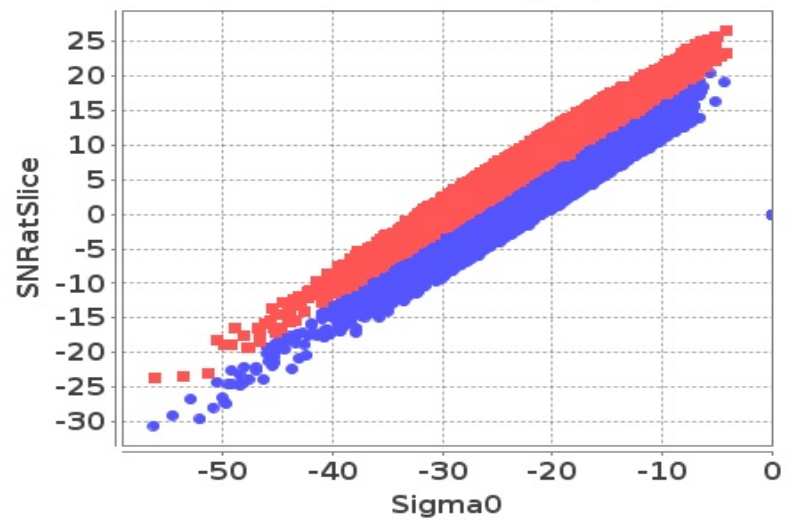
Sigma0 Vs SNRatSlice (Land)



Inner • Outer

Slice-Sea

Sigma0 Vs SNRatSlice (Sea)

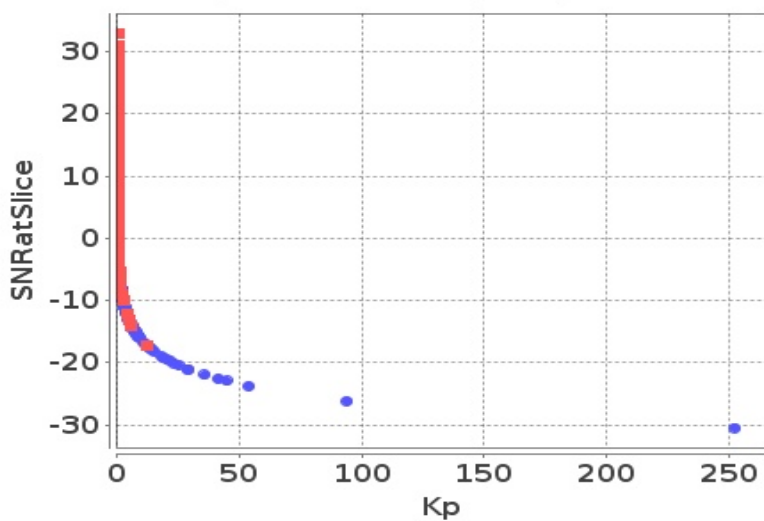


Inner • Outer

## Sigma0 Behaviour (Kp Vs SNR)

Slice

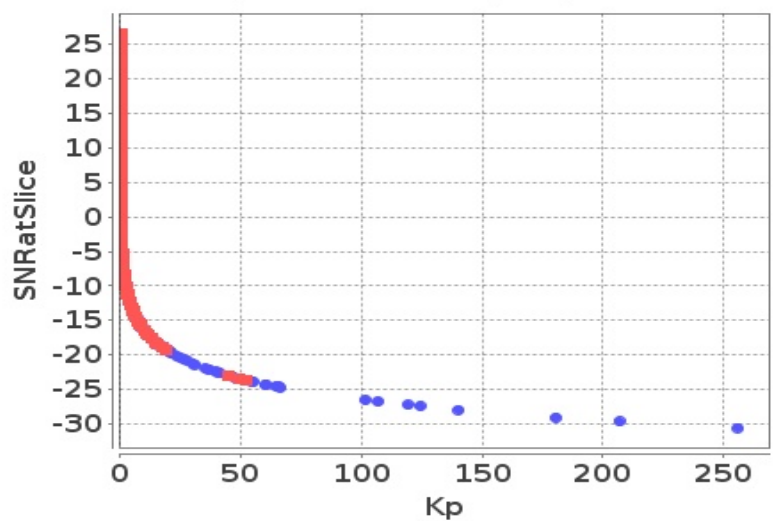
Kp Vs SNRatSlice (Land)



Inner • Outer

Slice

Kp Vs SNRatSlice (Sea)



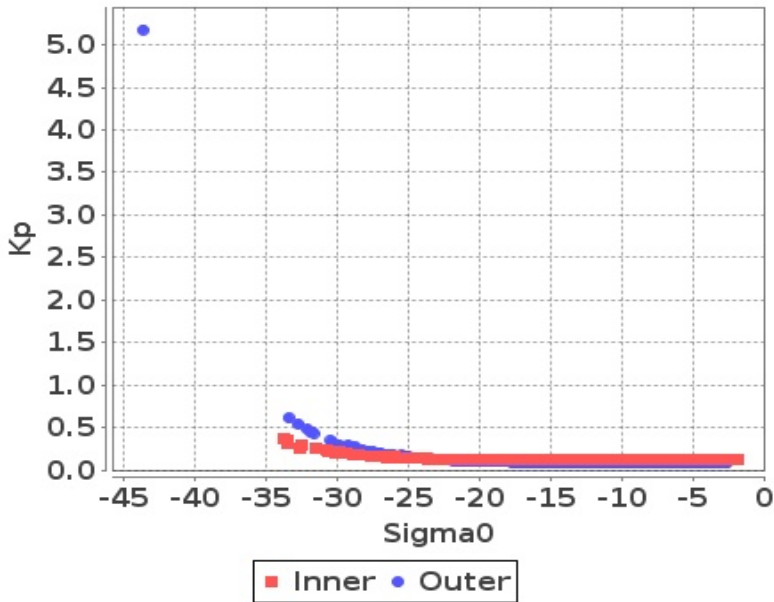
Inner • Outer



# Sigma0 Behaviour(Sigma0 Vs Kp)

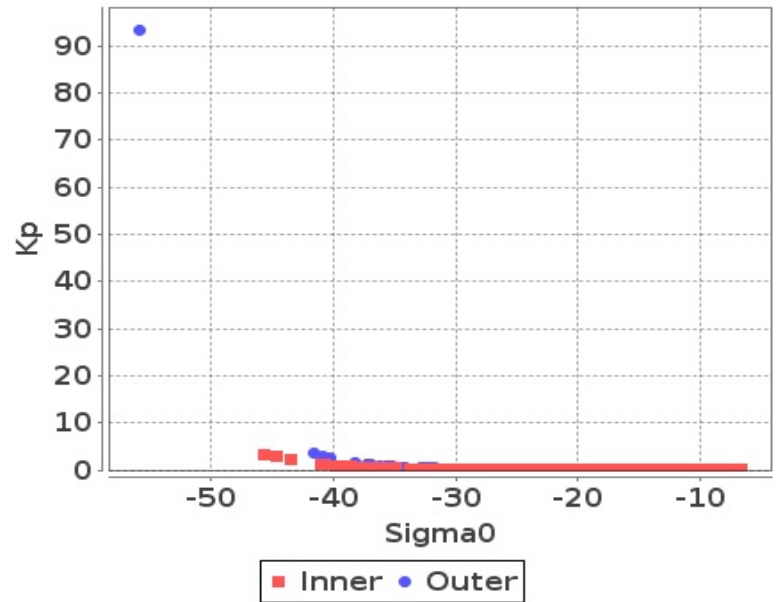
## Footprint-Land

### Sigma0 Vs Kp (Land)



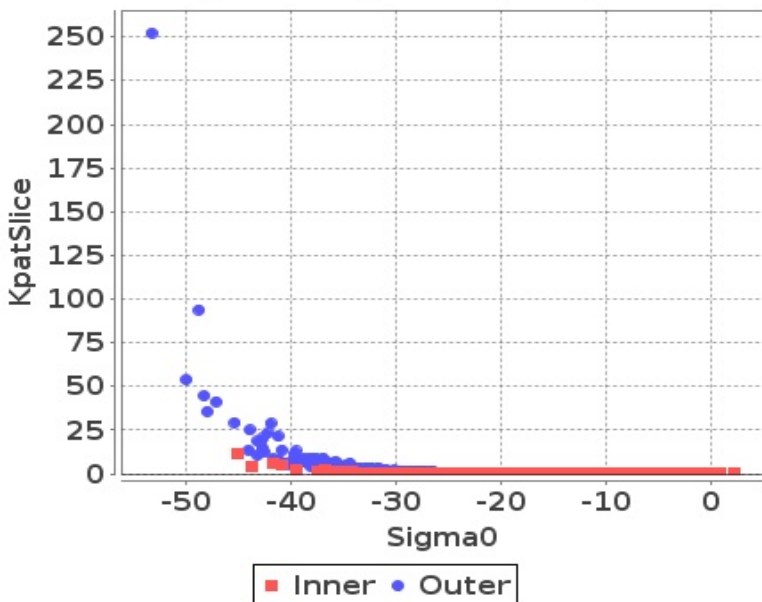
## Footprint-Sea

### Sigma0 Vs Kp (Sea)



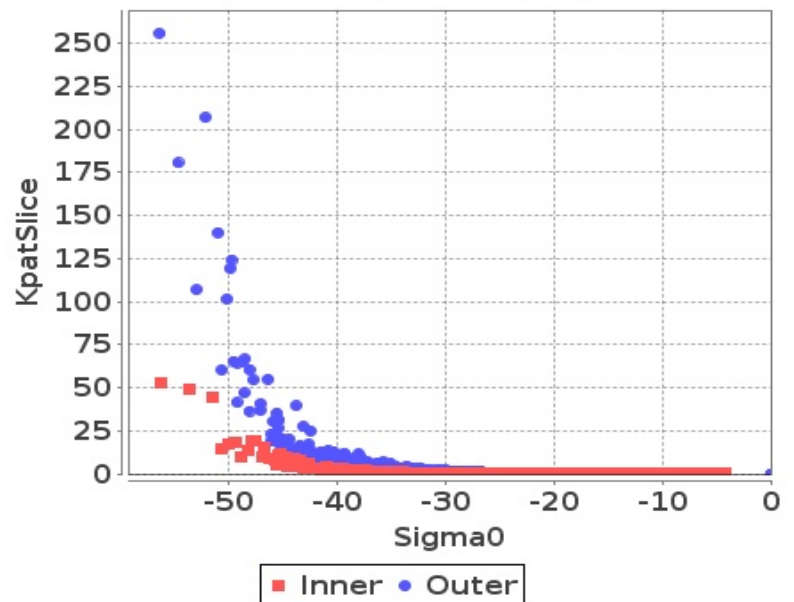
## Slice-Land

### Sigma0 Vs KpatSlice (Land)



## Slice-Sea

### Sigma0 Vs KpatSlice (Sea)

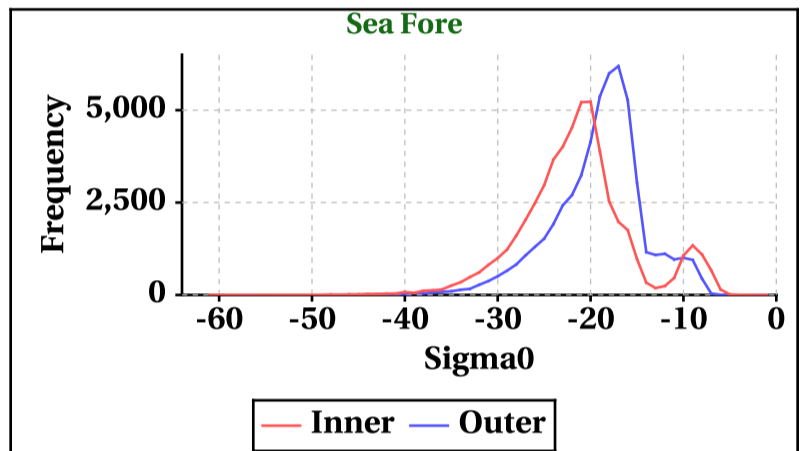
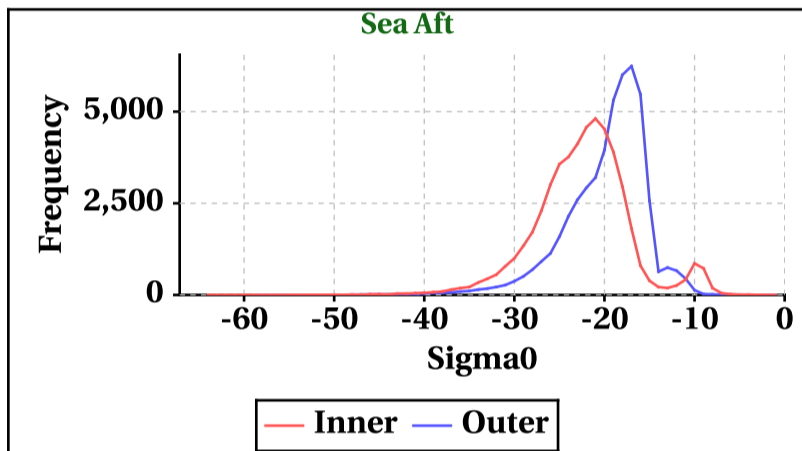
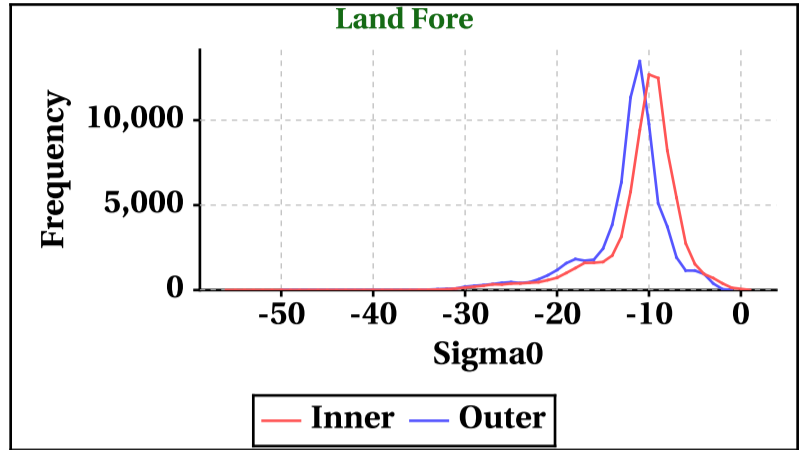
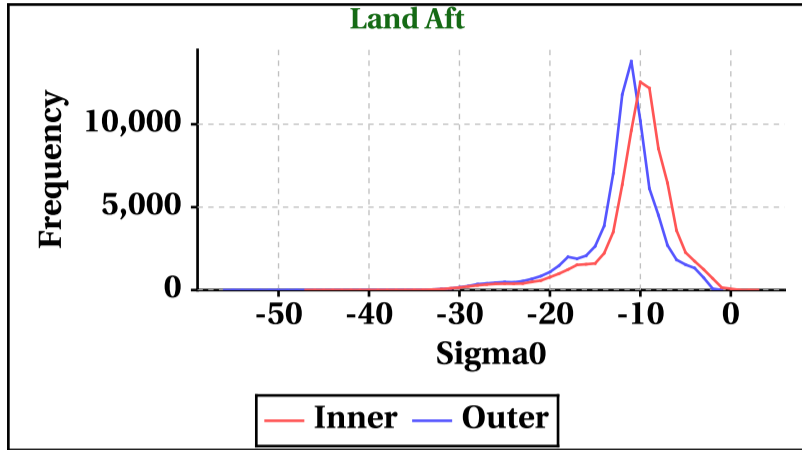


# Dynamic Range (Data Histograms)

## Sigma0(db)

Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-47	-56	-64	-61
Max	3	1	0	0

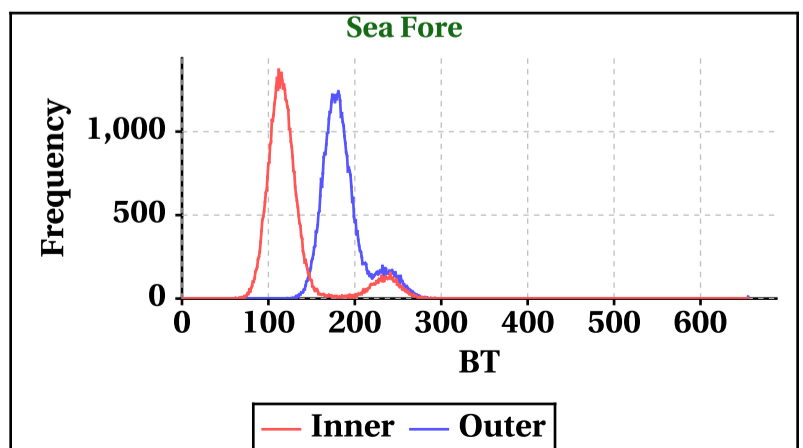
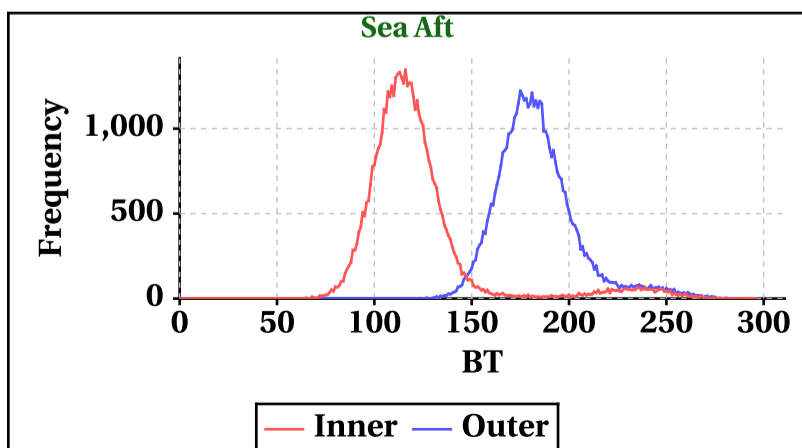
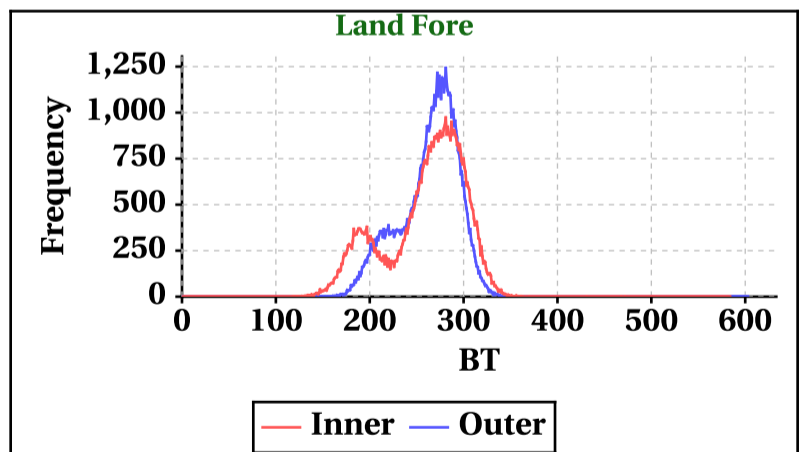
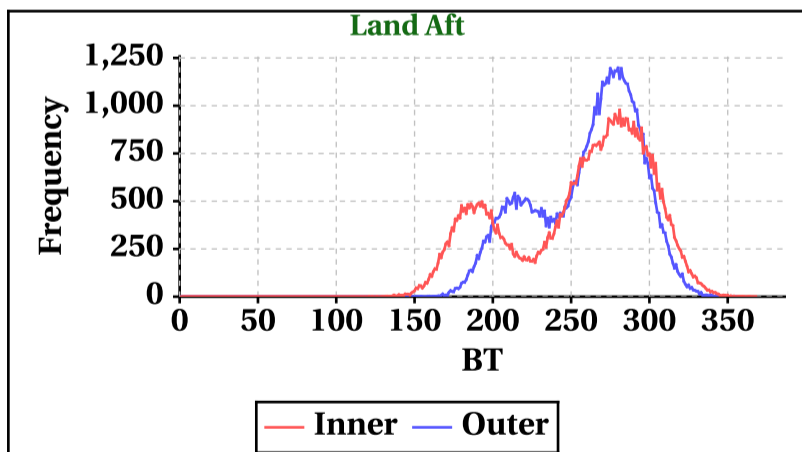
Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-56	-50	-59	-59
Max	0	0	0	0



## Brightness Temperature(K)

Inner Beam(HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	368	584	296	655

Outer Beam(VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	356	603	291	655

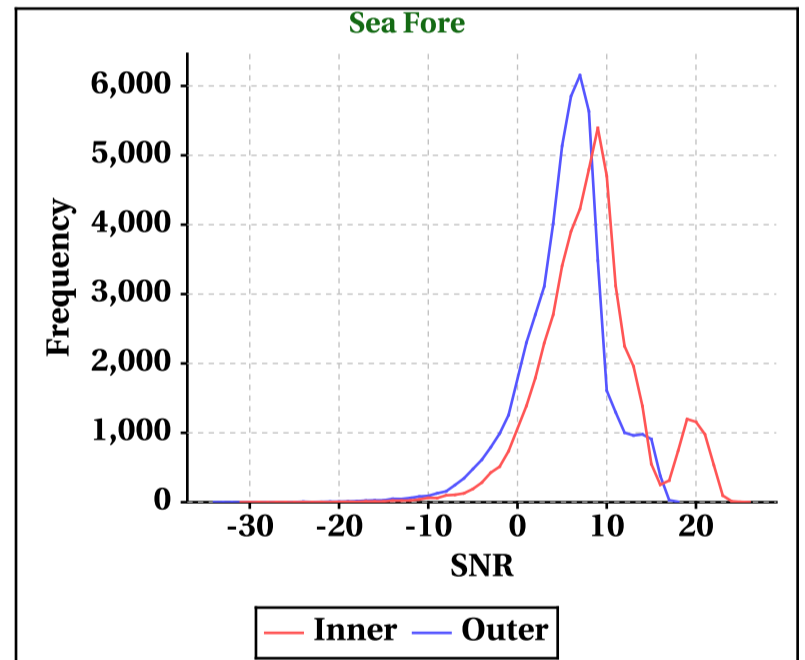
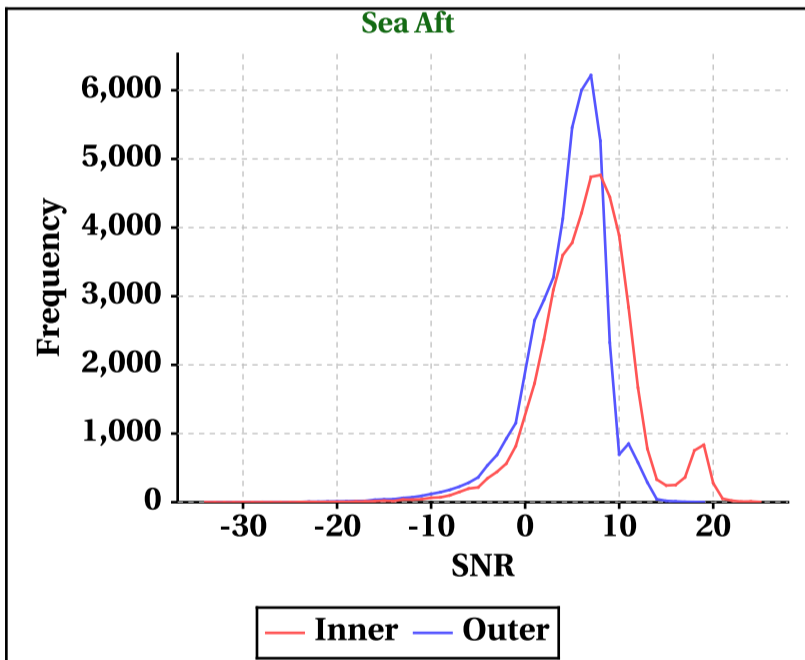
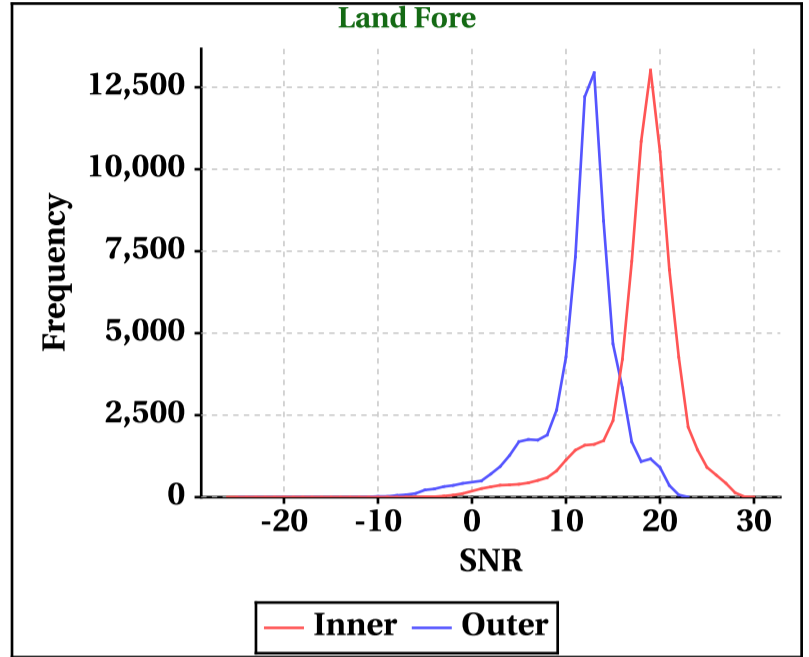
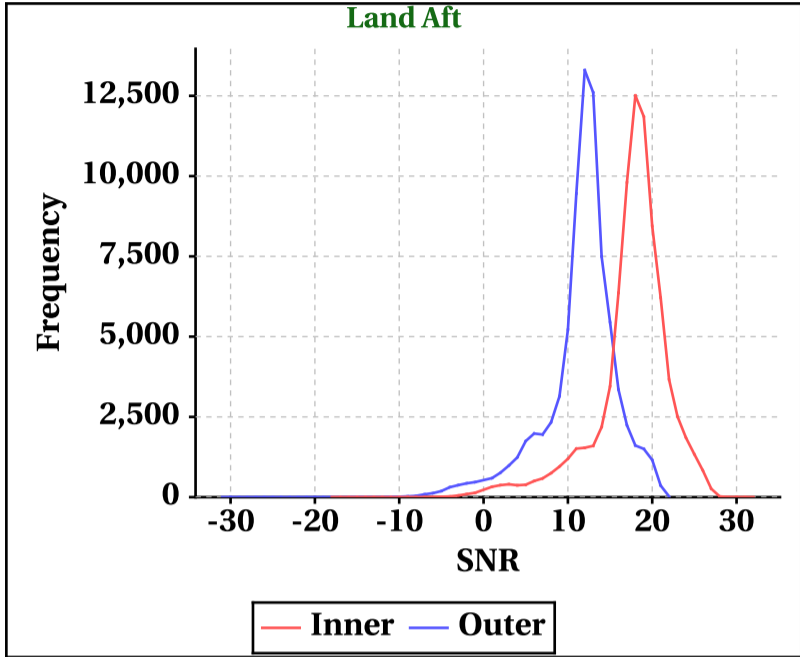


# Dynamic Range (Data Histograms)

## SNR(dBm)

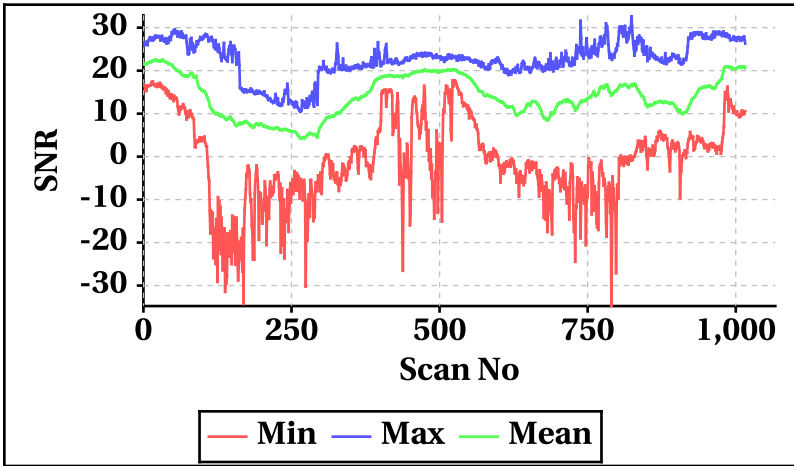
Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-18	-26	-34	-31
Max	32	30	25	26

Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-31	-25	-34	-34
Max	22	23	19	18

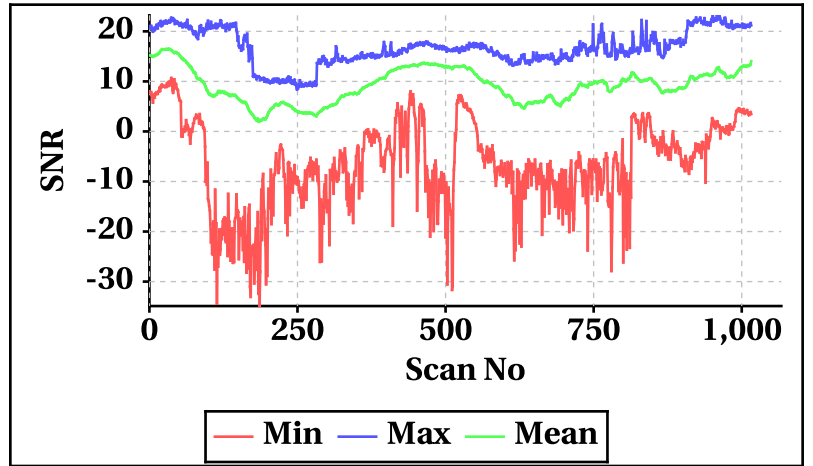


## Orbit-wise behaviour of SNR

**Inner Beam (HH)**

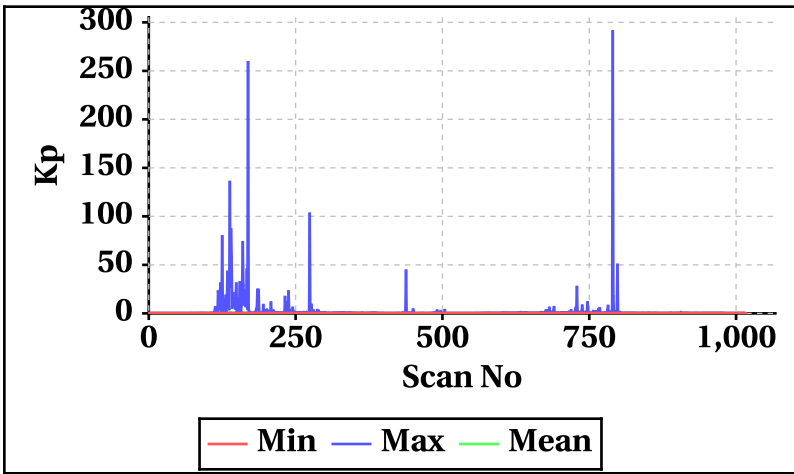


**Outer Beam(VV)**

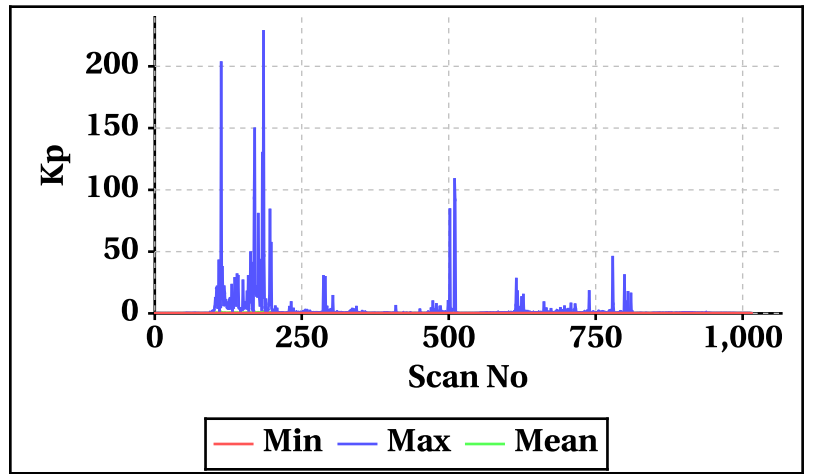


## Orbit-wise behaviour of Kp,Kpa,Kpb,Kpc

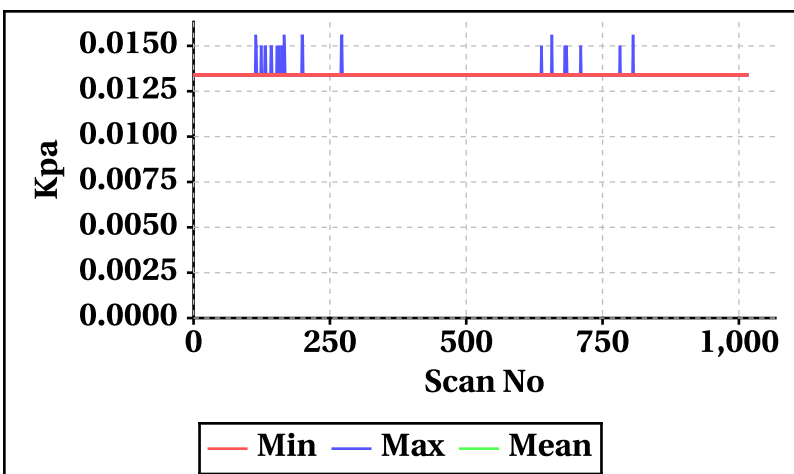
**Inner Beam(HH)**



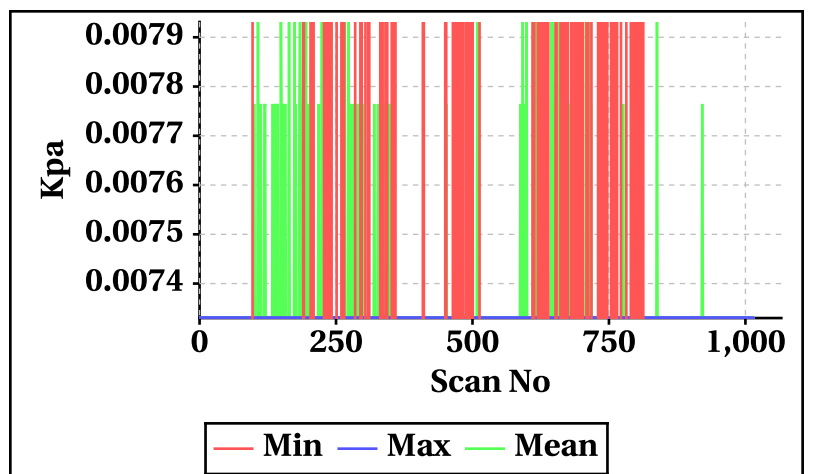
**Outer Beam(VV)**



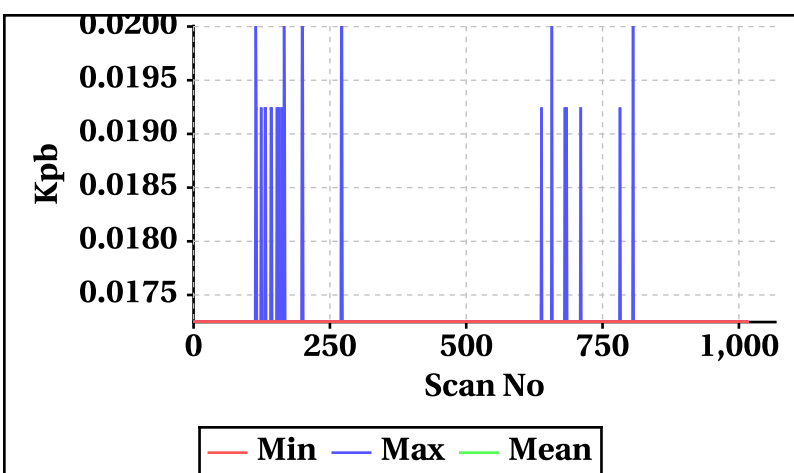
**Inner Beam(HH)**



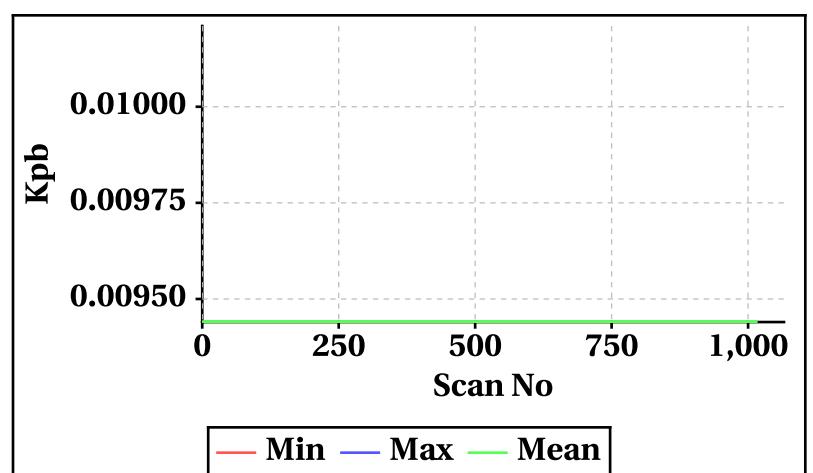
**Outer Beam(VV)**



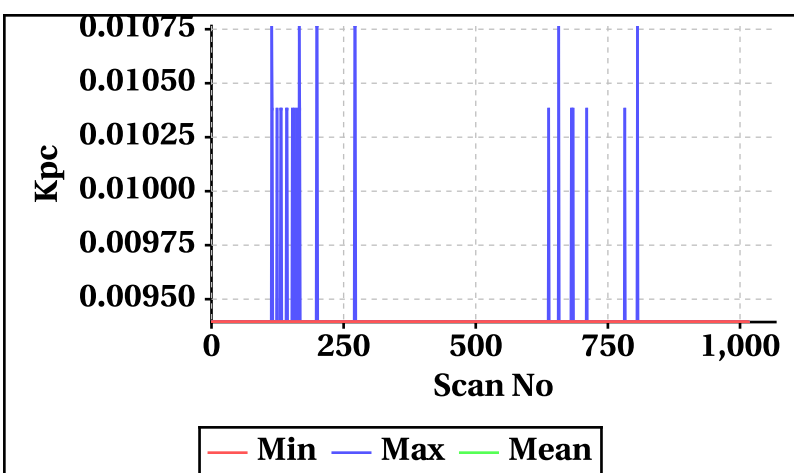
**Inner Beam(HH)**



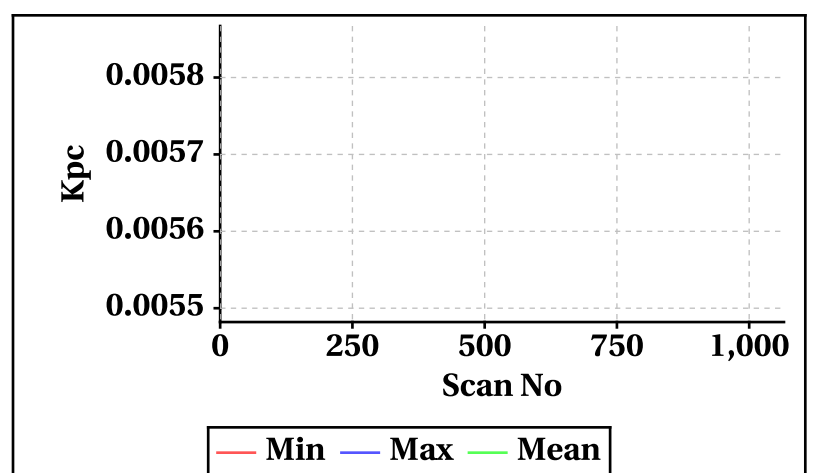
**Outer Beam(VV)**



**Inner Beam(HH)**



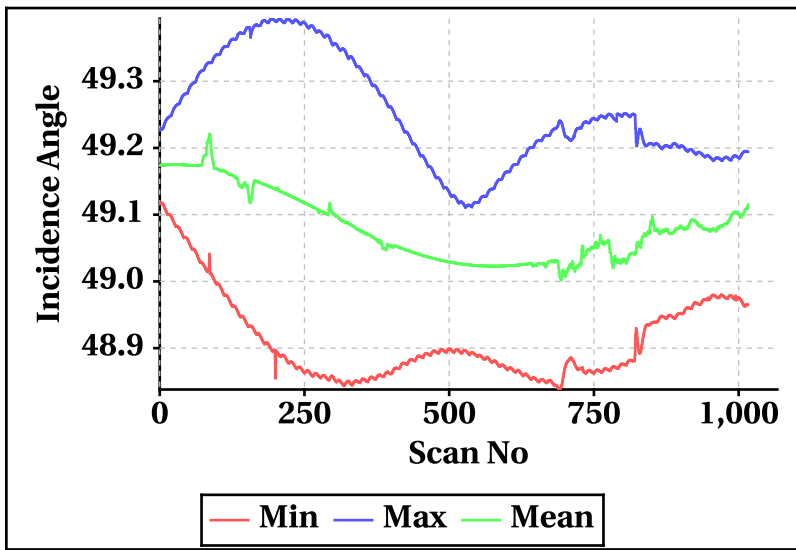
**Outer Beam(VV)**



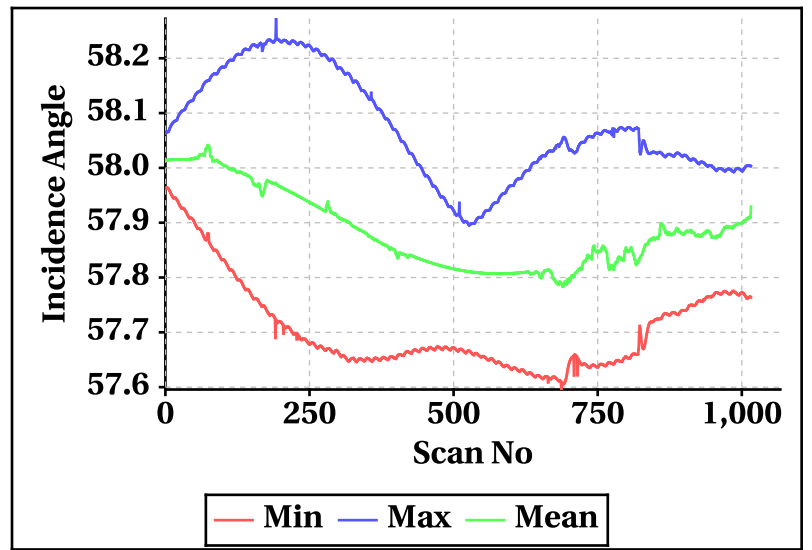


# Orbit-wise behaviour of Incidence, Azimuth, Range, X-Factor

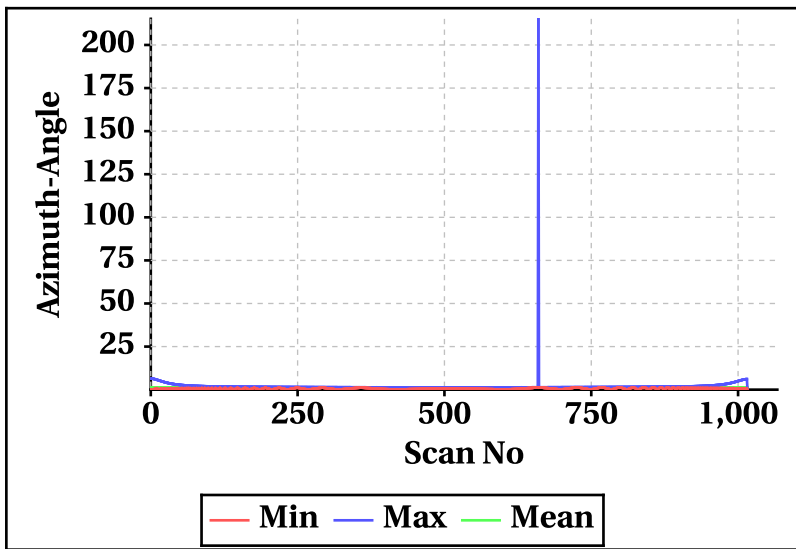
**Inner Beam (HH)**



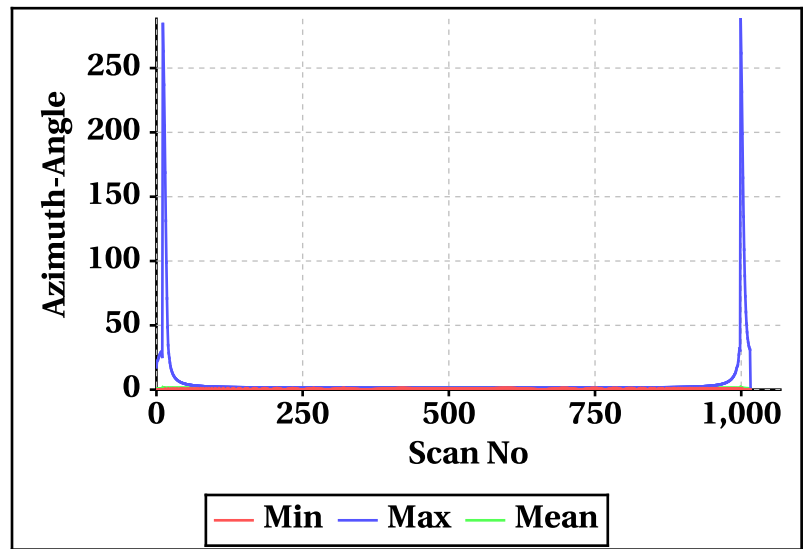
**Outer Beam(VV)**



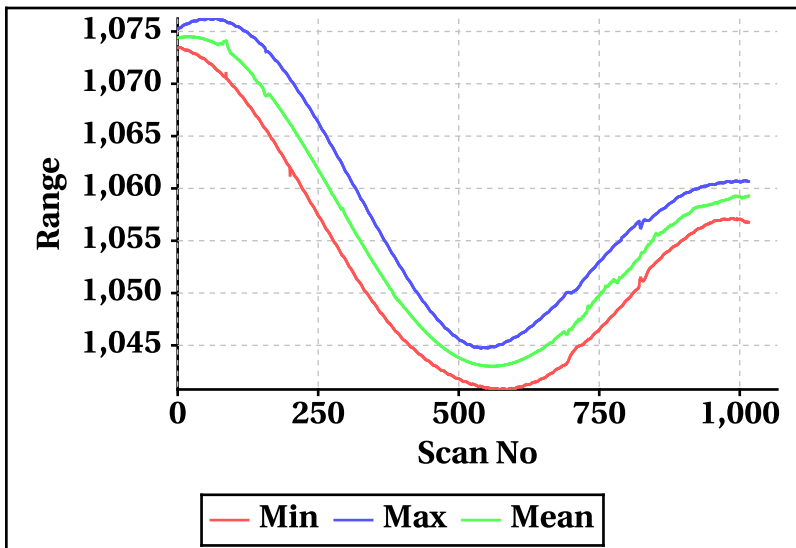
**Inner Beam (HH)**



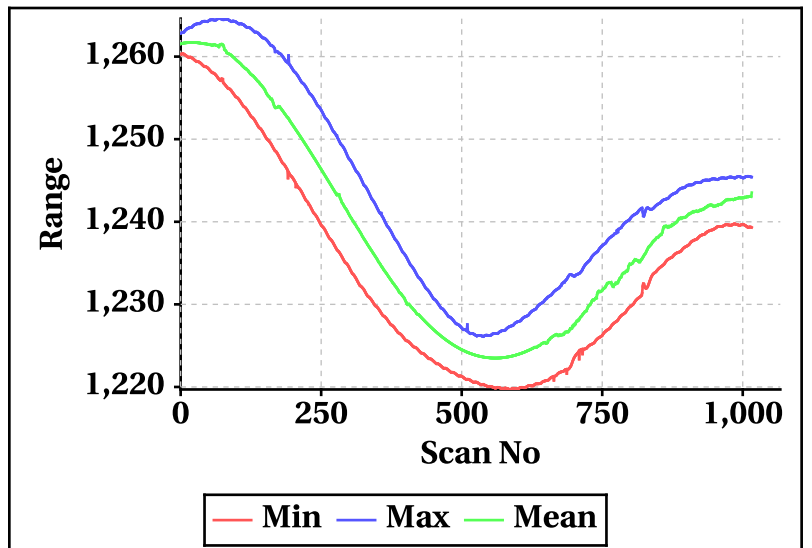
**Outer Beam(VV)**



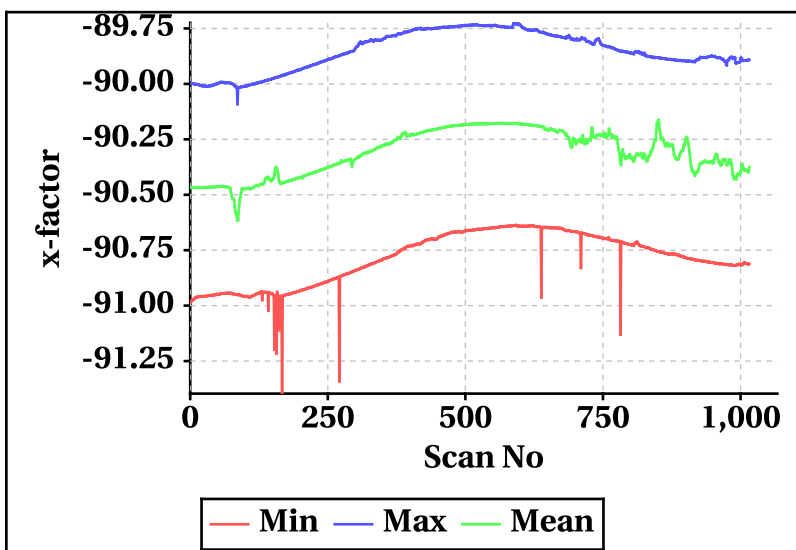
**Inner Beam (HH)**



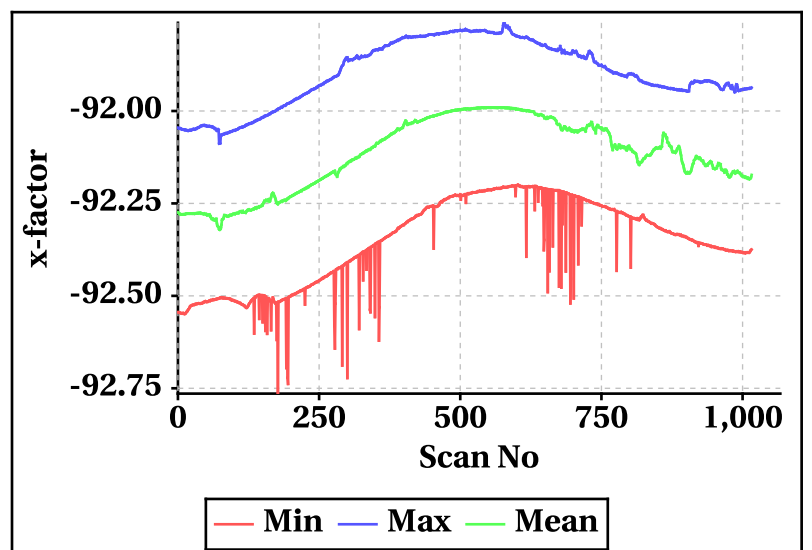
**Outer Beam(VV)**



**Inner Beam (HH)**



**Outer Beam(VV)**

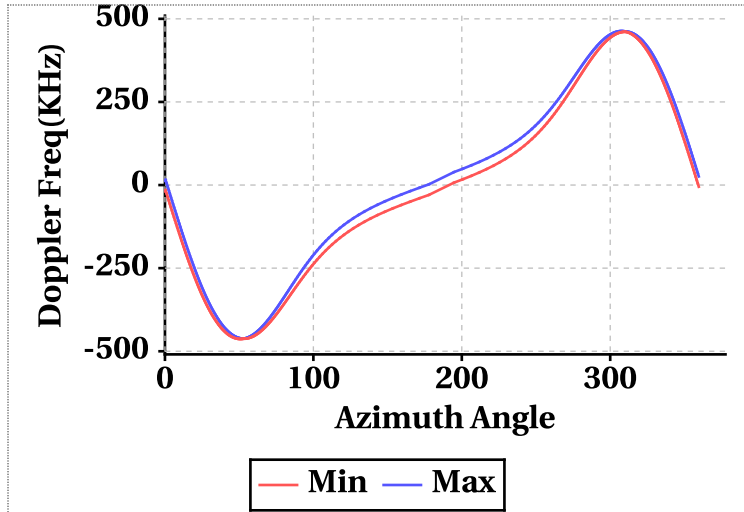


# Doppler Frequency Variation

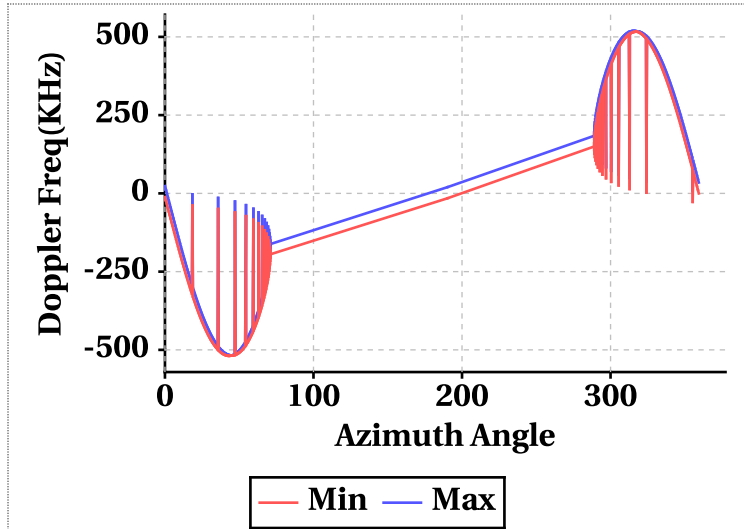
Doppler Frequency(KHz) variation statistics Over the half Orbit

	Inner Beam (HH)	Outer Beam (VV)
Min	-463.06	-518.94
Max	463.20	519.06

Footprint wise Doppler frequency variation Inner Beam (HH)



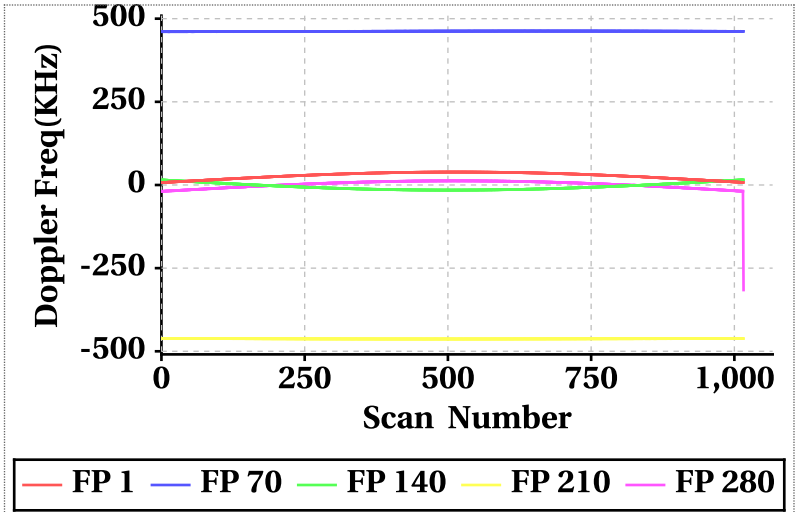
Footprint wise Doppler frequency variation Outer Beam (VV)



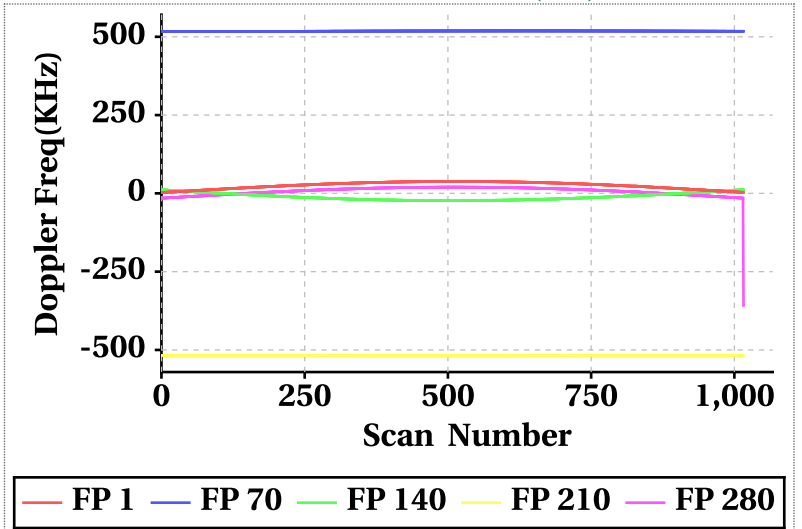
Doppler Frequency(KHz) variation

Doppler_FP	Inner Beam (HH)			Outer Beam (VV)		
	Min	Max	Mean	Min	Max	Mean
Doppler_1	7.16	38.88	27.47	2.50	37.92	25.17
Doppler_70	460.82	462.78	462.06	516.44	518.80	517.96
Doppler_140	-15.42	15.64	-4.21	-23.16	11.70	-10.56
Doppler_210	-462.98	-461.40	-462.39	-518.72	-517.24	-518.19
Doppler_280	-315.84	12.52	0.75	-358.04	19.90	6.73

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

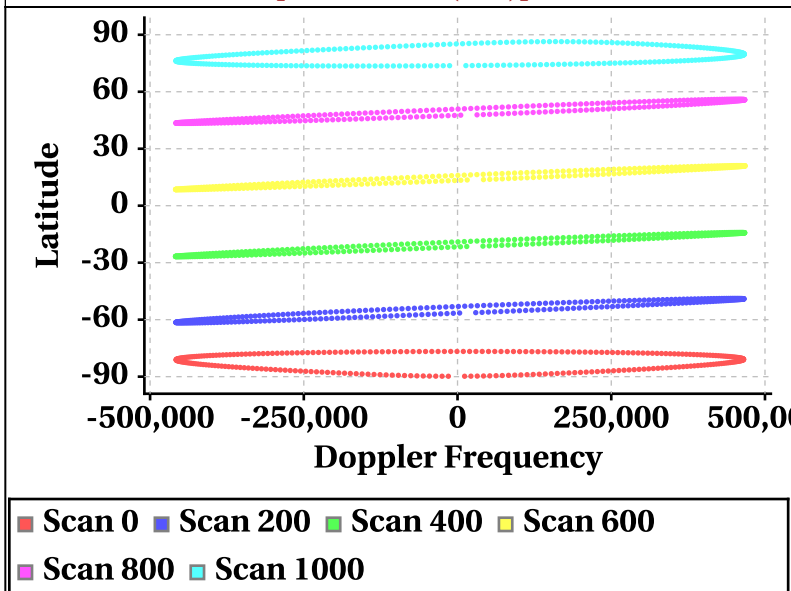


Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Outer Beam (VV)

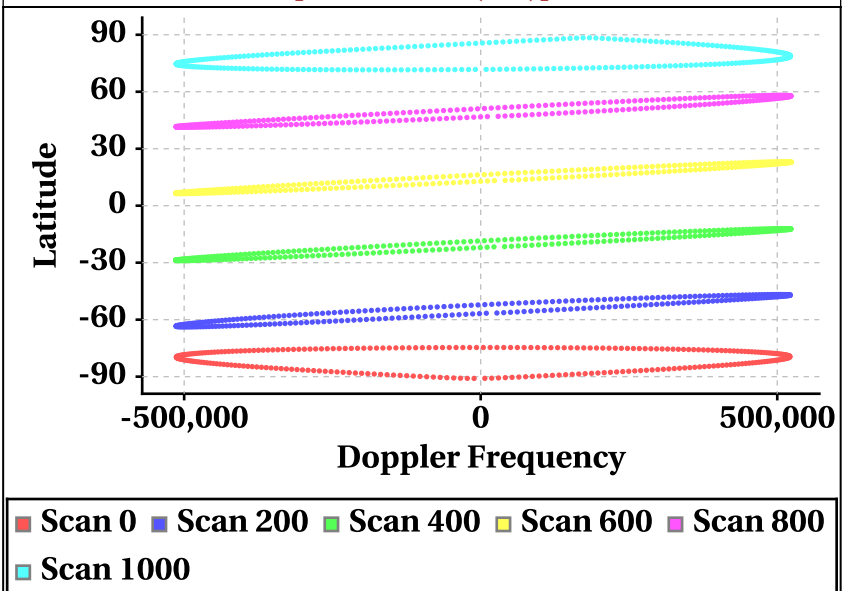


# Latitude Vs Doppler Frequency

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



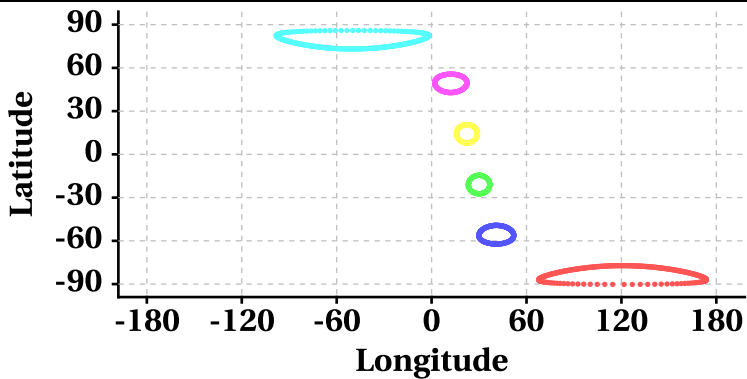
Doppler Frequency at Scan Interval of 200 [Outer Beam(VV)]



# Parameter as a function of Latitude

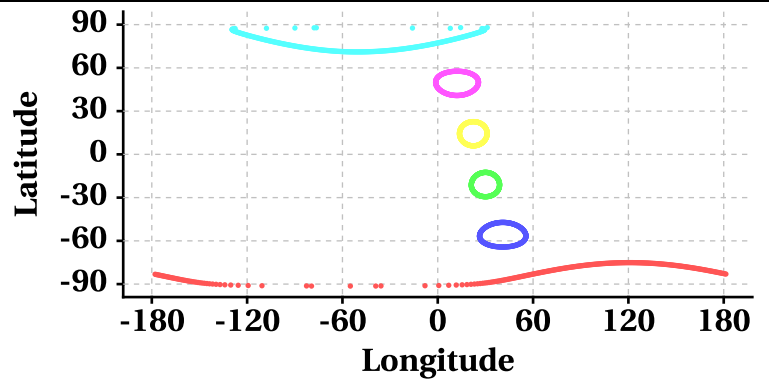
## Latitude Vs Longitude

Scan Trace [Inner Beam(HH)]



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

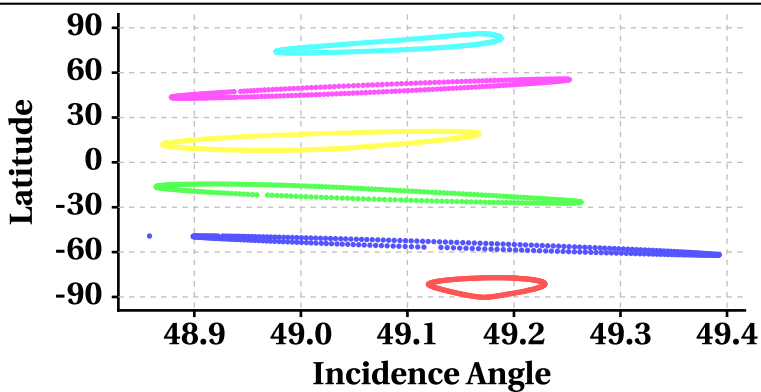
Scan Trace [Outer Beam (VV)]



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

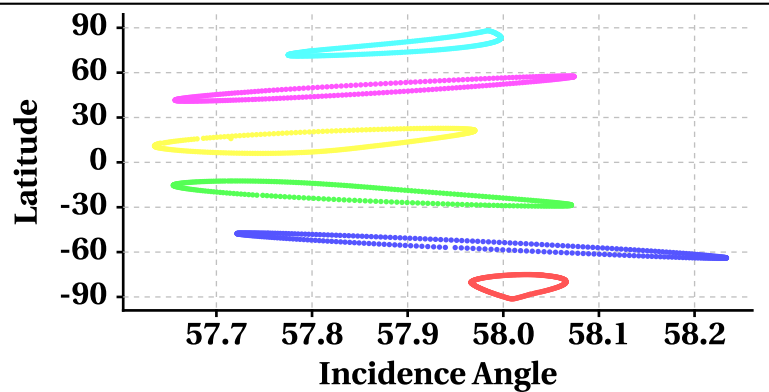
## Latitude Vs Incidence Angle

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



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

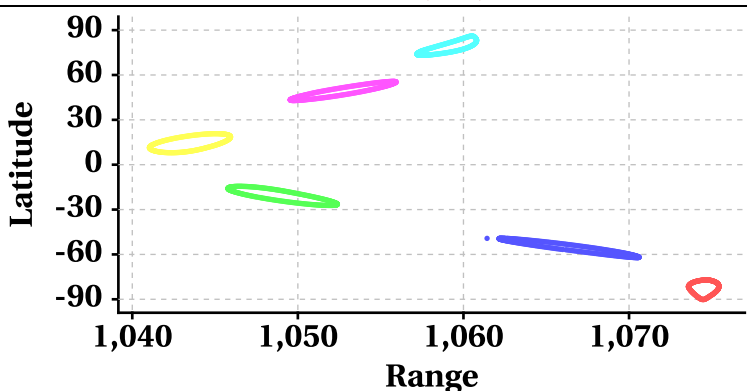
Incidence Angle at Scan Interval of 200 [Outer Beam (VV)]



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

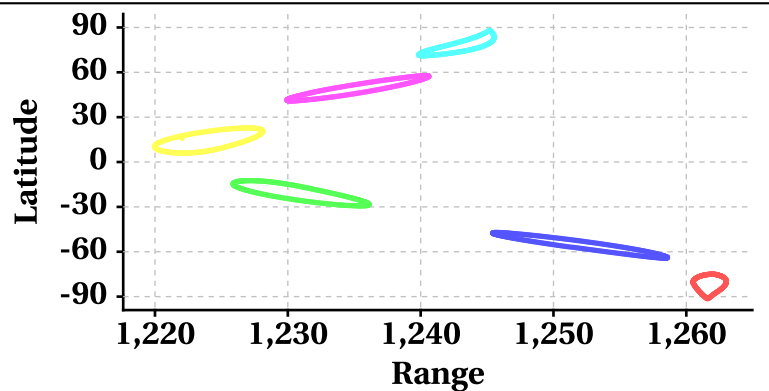
## Latitude Vs Range

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

