

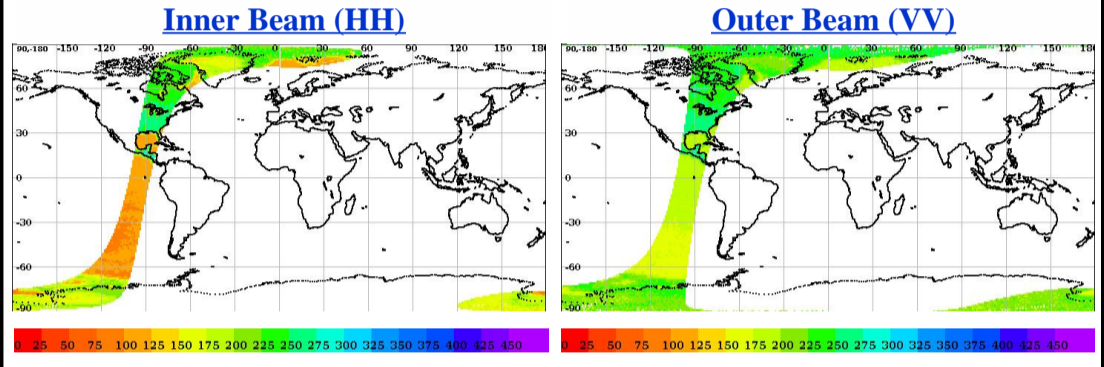
# SCATSAT-1 Scatterometer Level-1B Data Quality Evaluation Report

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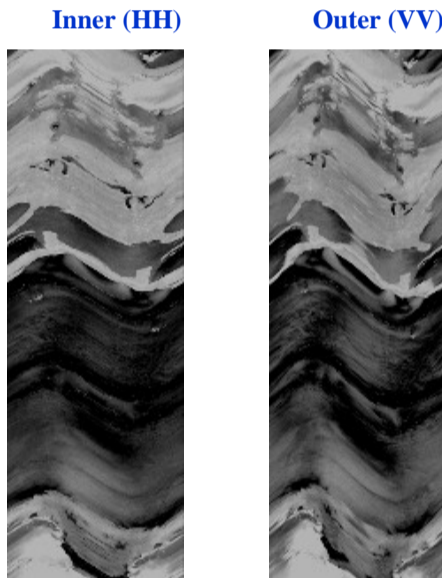
- Half-Orbit Coverage using BT & Sigma-0
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<b>Satellite Id</b>	ScatSat-1	<b>Start Orbit</b>	11678	<b>Total Scans</b>	1016
<b>Sensor Name</b>	Scatterometer	<b>End Orbit</b>	11679	<b>No of Inner FootPrints</b>	281
<b>Processor Version</b>	v1.1.3	<b>Rev. Number</b>	11678_11679	<b>No Of Outer FootPrints</b>	282
<b>Half Orbit Direction</b>	NS	<b>Data Production Date</b>	10-12-2018	<b>No. Of Inner Slices</b>	9
<b>Equator Crossing Date</b>	10-12-2018	<b>Equator Crossing Time</b>	14:54:15.000	<b>No Of Outer Slices</b>	15

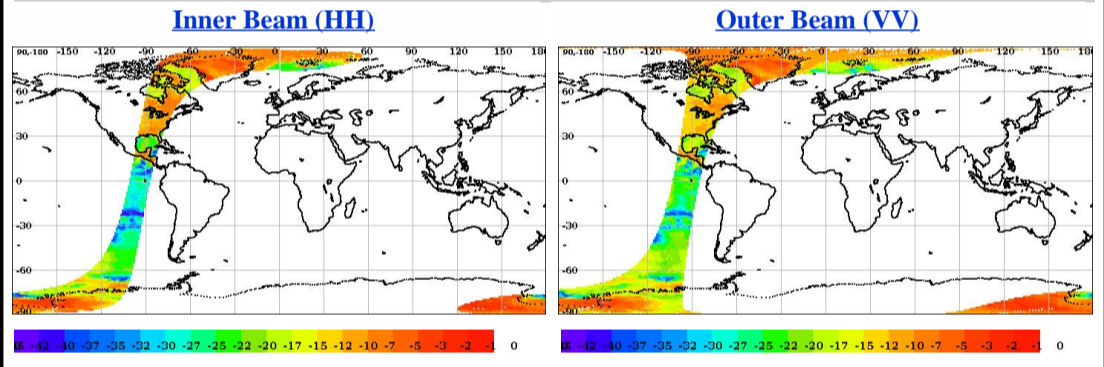
## Brightness Temperature(k) Footprint trace



## Image Snapshot for Inner & Outer Beam



## Sigma0(dB) Footprint trace



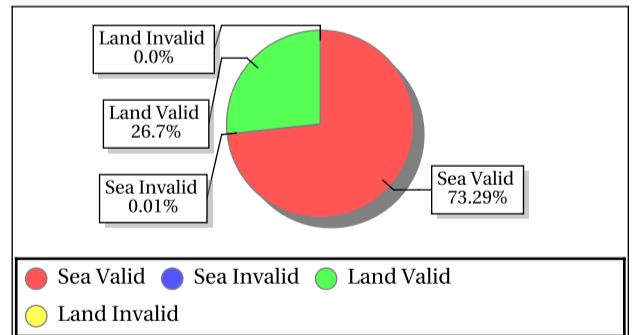
## Invalid and Poor Sigma-0 Quality Flag Statistics for Inner/Outer Slices\*

Sigma-0 Flags	Inner Beam	Outer Beam
Invalid Sigma0(%)	0.01	0.01
Data Not Available From Payload (%)	100.0	98.78049
Slice not within sample array limits (%)	0.00	1.22
C(S+N) - C(N) < 0.1 (%)	0.00	0.00
Poor Sigma0(%)	22.23	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 (%)	0.03222	0.071867

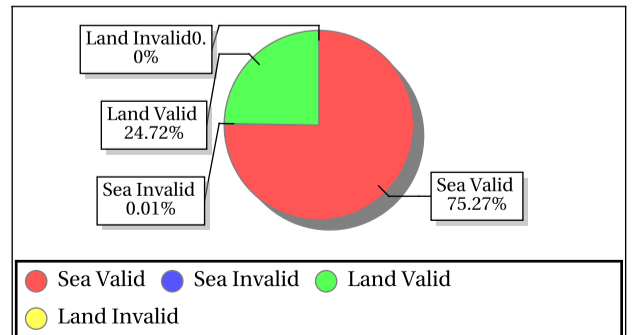
\*DP Format Document

## 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	-6.28	-5.02	-5.71	0.48	133.12	155.62	148.52	8.97
GreenLand_2	77.50	-41.50	Inner	DSC	Fore	-6.16	-5.72	-5.99	0.17	150.26	176.55	163.95	10.53
GreenLand_3	71.55	-42.45	Inner	DSC	Aft	-13.18	-10.67	-11.87	0.63	182.71	229.31	203.35	14.31
GreenLand_3	71.55	-42.45	Inner	DSC	Fore	-12.84	-10.61	-11.61	0.66	179.80	237.05	206.75	15.53
GreenLand_1	74.69	-42.50	Inner	DSC	Aft	-11.37	-8.00	-9.50	0.96	157.14	208.01	183.94	12.86
GreenLand_1	74.69	-42.50	Inner	DSC	Fore	-10.32	-8.05	-9.61	0.60	151.24	202.32	175.34	15.45
GreenLand_2	77.50	-41.50	Outer	DSC	Aft	-5.27	-4.69	-5.06	0.20	197.29	239.50	216.62	14.85
GreenLand_2	77.50	-41.50	Outer	DSC	Fore	-5.00	-4.72	-4.89	0.12	169.44	209.96	194.68	17.98
GreenLand_3	71.55	-42.45	Outer	DSC	Aft	-13.25	-10.66	-11.97	0.62	201.29	259.10	229.47	15.36
GreenLand_3	71.55	-42.45	Outer	DSC	Fore	-12.72	-11.61	-12.35	0.31	213.81	263.05	235.17	14.36
GreenLand_1	74.69	-42.50	Outer	DSC	Aft	-10.10	-8.12	-9.08	0.63	214.20	247.73	230.66	12.08
GreenLand_1	74.69	-42.50	Outer	DSC	Fore	-10.59	-7.66	-9.23	0.92	203.25	247.86	226.63	14.39



## 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	282.30	0.35	2.982	0.12	294.63	0.33	2.932	0.12	11.90	0.12	0.034	0.12	8.13	0.12	0.017
<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>	-34.64	27.37	5.47	0.456	-34.83	25.36	5.91	0.572	-20.86	31.56	19.25	15.519	-19.19	30.13	20.58	28.041

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	210.38	0.29	2.770	0.09	213.61	0.30	2.799	0.09	5.46	0.09	0.012	0.09	66.66	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>	-34.53	21.82	3.52	0.000	-34.60	19.85	3.46	0.000	-18.62	22.90	13.05	0.223	-29.54	24.70	14.16	2.118

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

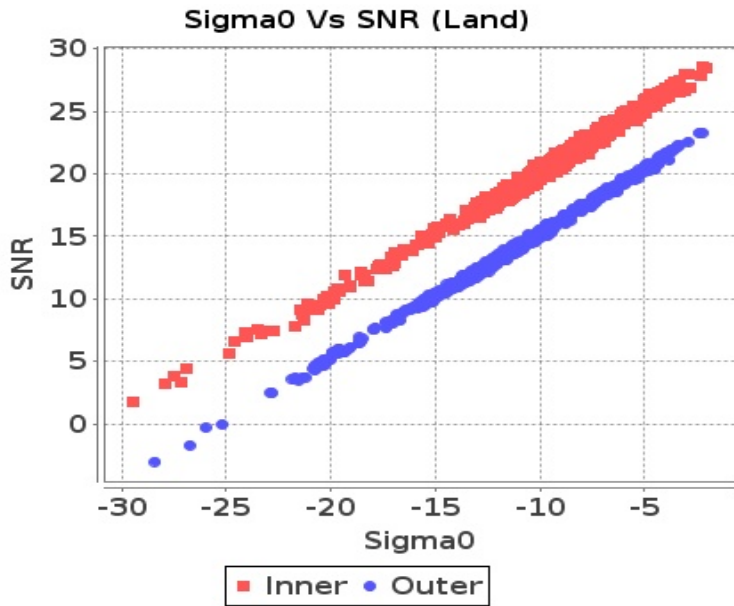
## Overall statistics for static parameter (Footprint-wise)

	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>	48.81	49.39	49.03	0.000	57.61	58.23	57.93	0.000	Inci.(Inner)	47.10	49.90
<b>Azimuth Diff. (deg)</b>	0.0029	41.66	1.27	2.743	0.0000	299.33	1.28	3.834	Inci.(Outer)	57.30	58.90
<b>Range(Km)</b>	1038.26	1075.97	1051.78	0.000	1216.61	1265.63	1234.62	0.000	Azimuth Diff.	0.60	2.00
<b>X Factor(dbm)</b>	-92.02	-89.93	-90.38	0.000	-93.93	-91.98	-92.14	0.000	Range(Inner)	1025.00	1095.70
<b>Across Distance (Km)</b>	15.60	16.17	15.80	0.000	10.59	53.60	21.03	6.000	Range(Outer)	1210.00	1280.00
<b>Along Distance (Km)</b>	18.84	818.30	21.26	2.000	18.66	1085.37	21.72	4.000	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	

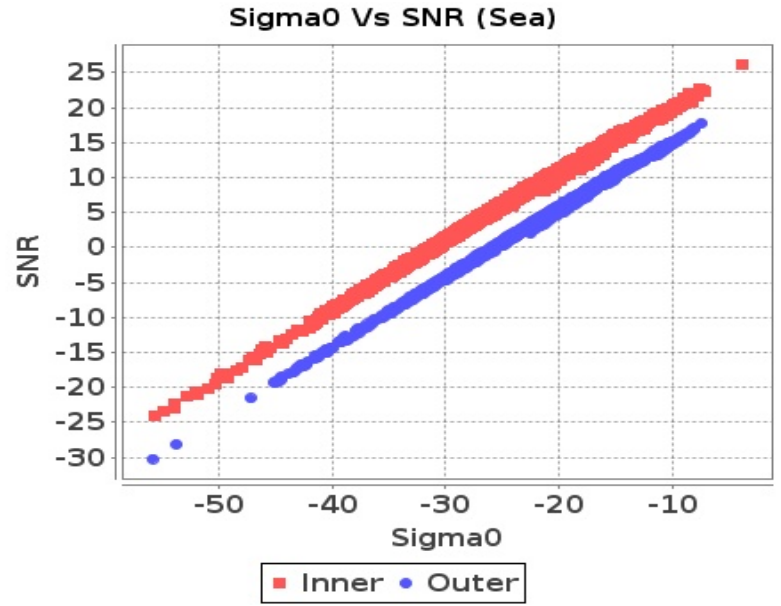


## Sigma0 Behaviour (Sigma0 Vs SNR)

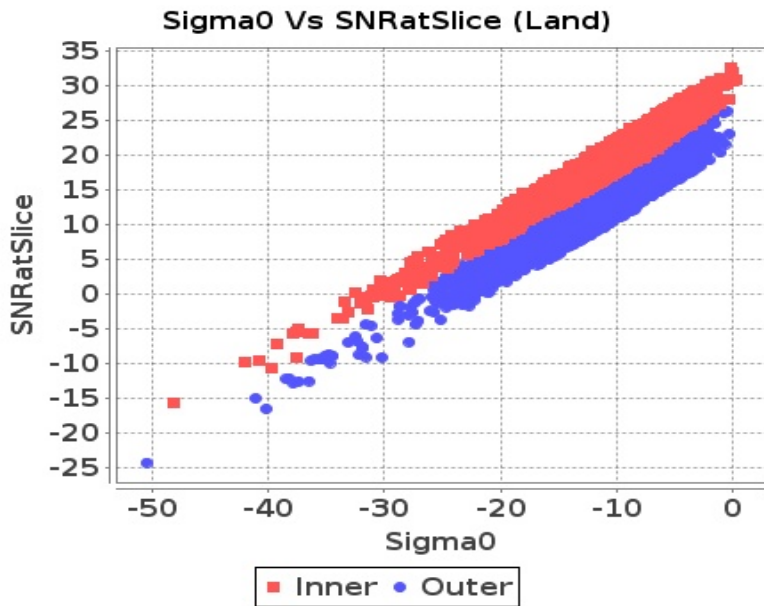
Footprint-Land



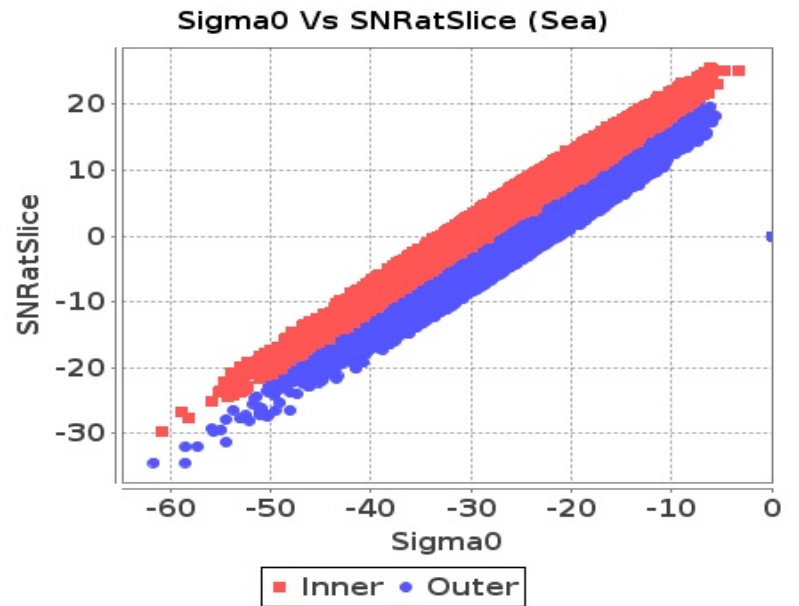
Footprint-Sea



Slice-Land

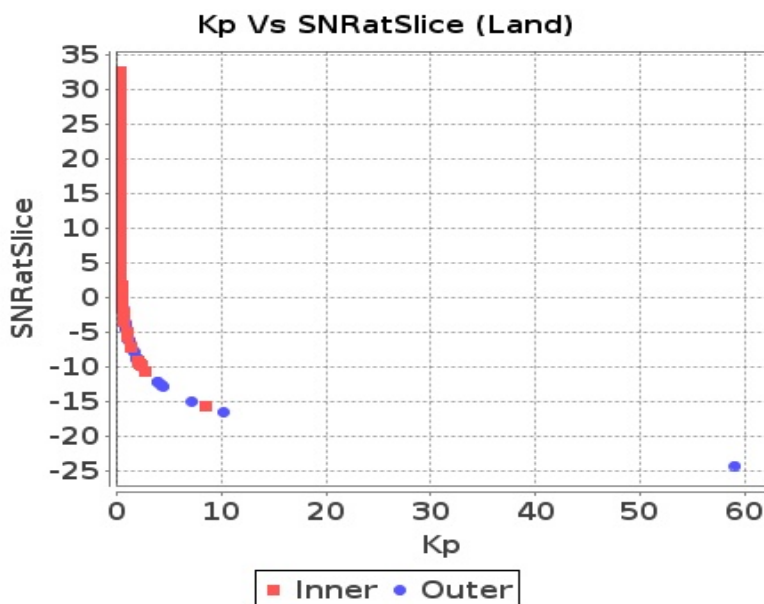


Slice-Sea

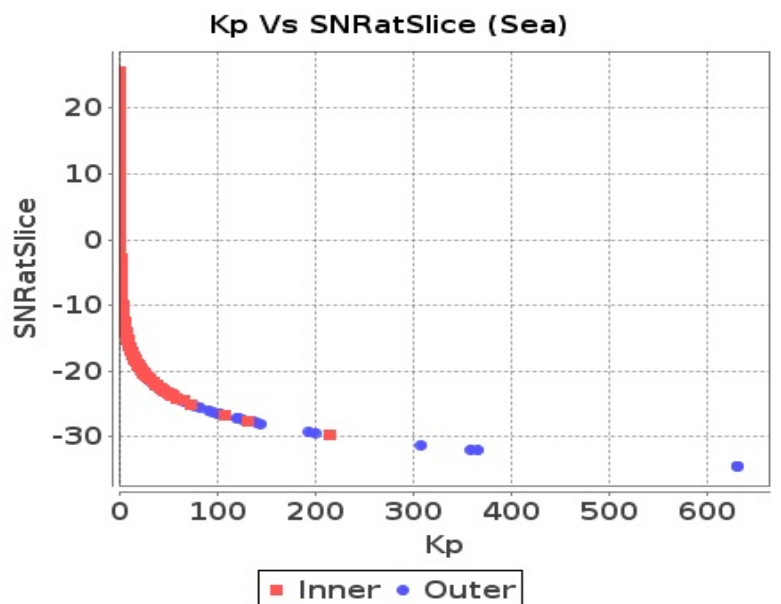


## Sigma0 Behaviour (Kp Vs SNR)

Slice

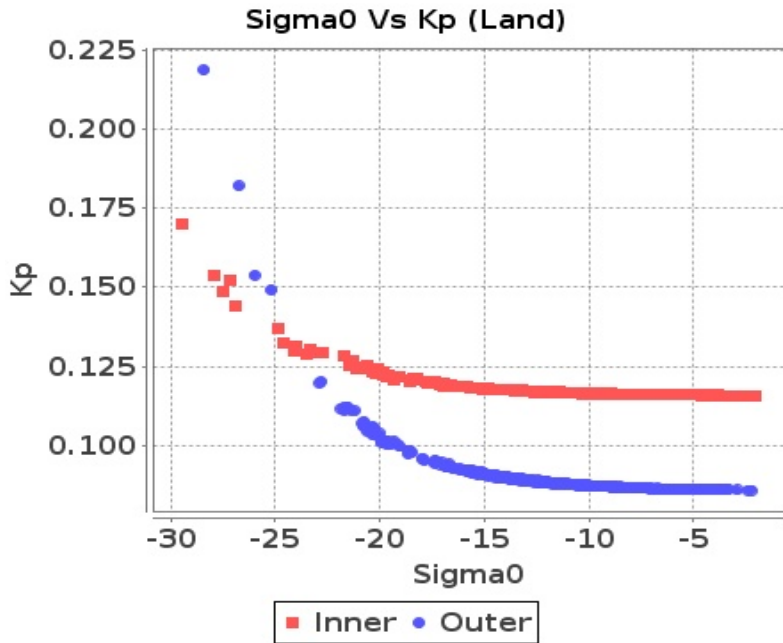


Slice

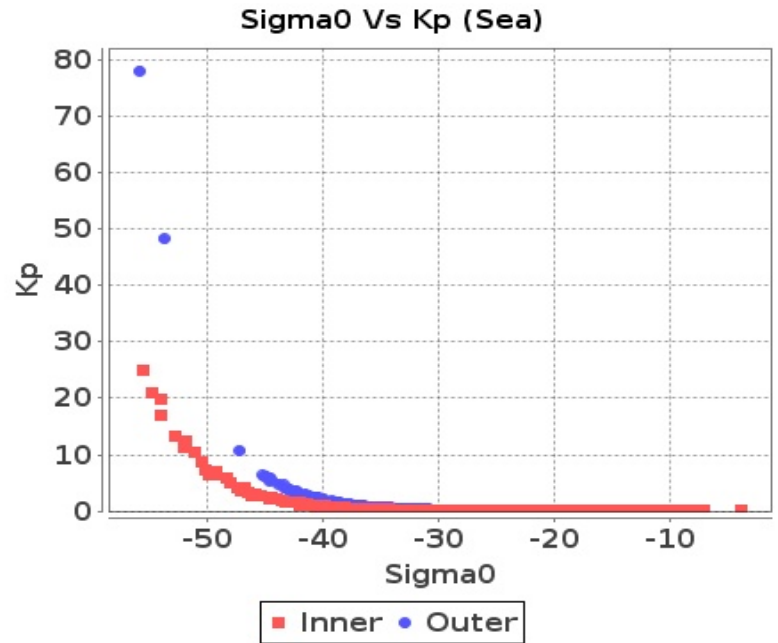


# Sigma0 Behaviour(Sigma0 Vs Kp)

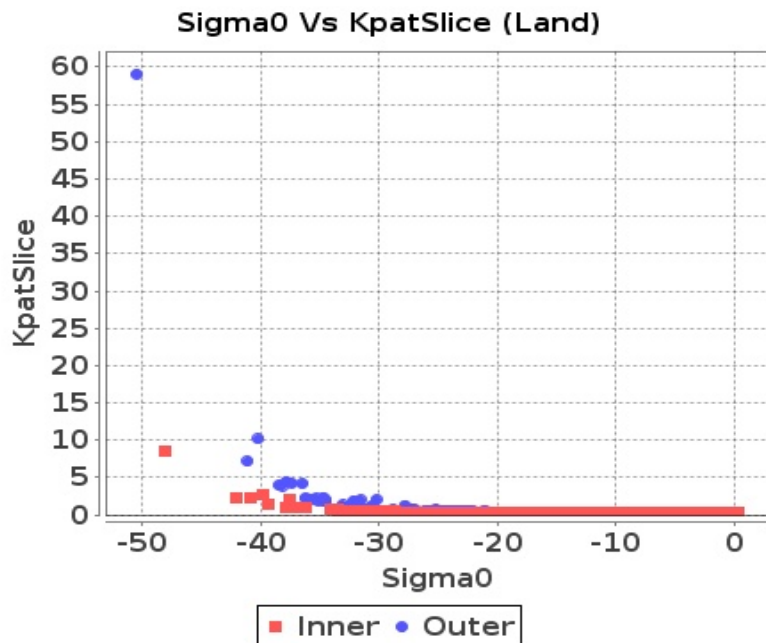
## Footprint-Land



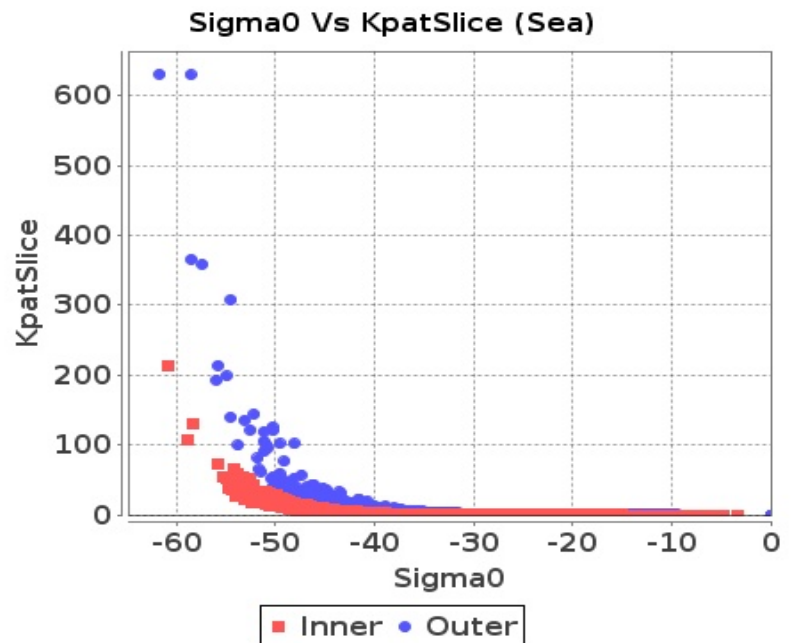
## Footprint-Sea



## Slice-Land



## Slice-Sea

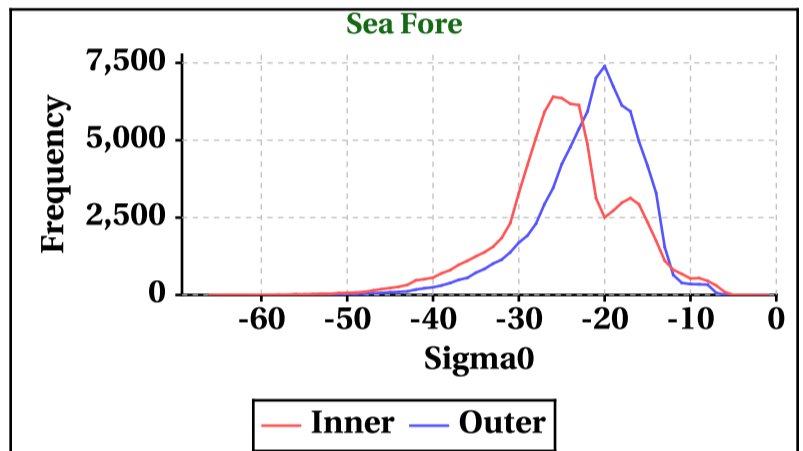
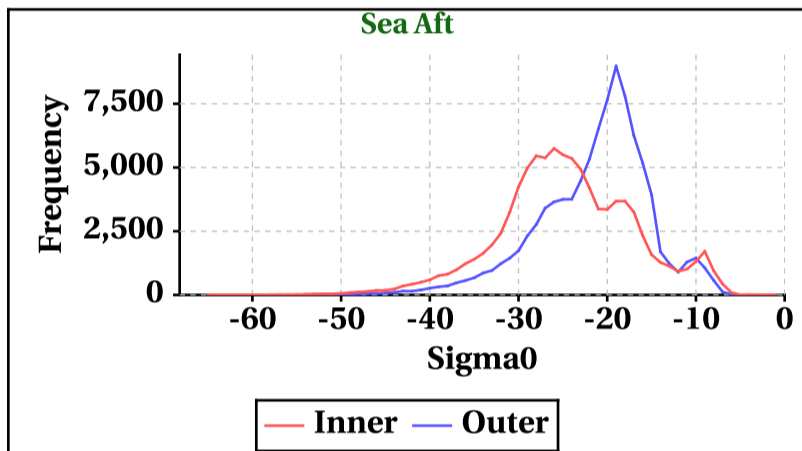
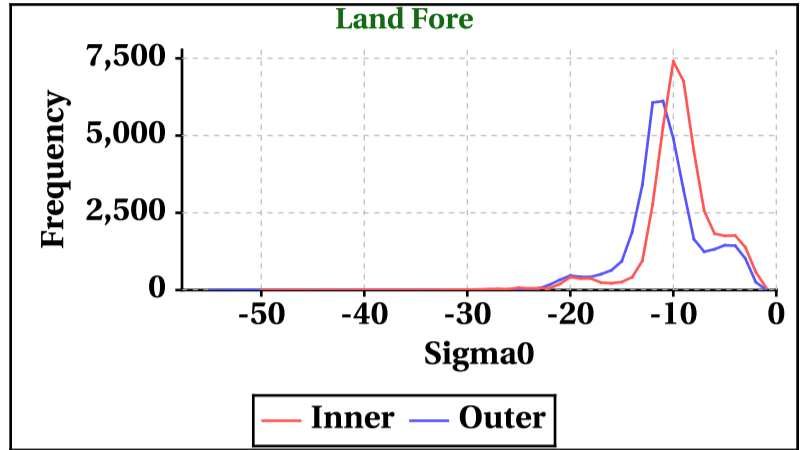
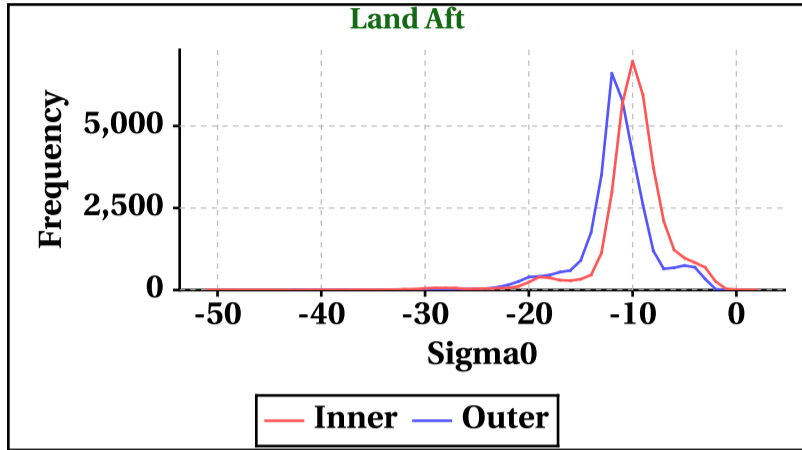


# Dynamic Range (Data Histograms)

## Sigma0(db)

Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-51	-50	-65	-66
Max	2	0	0	0

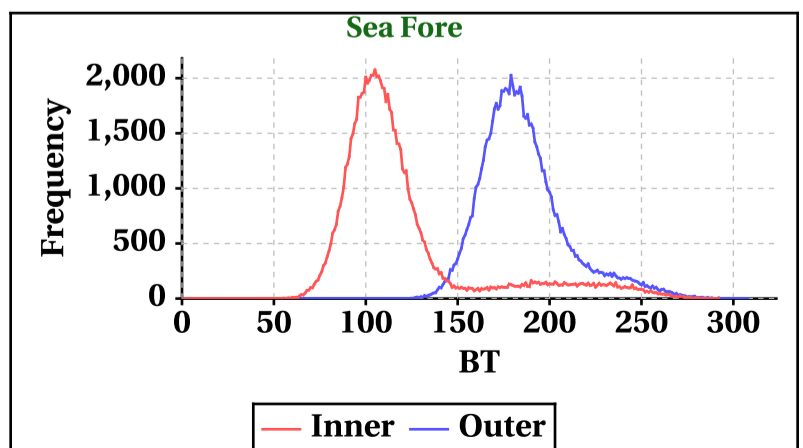
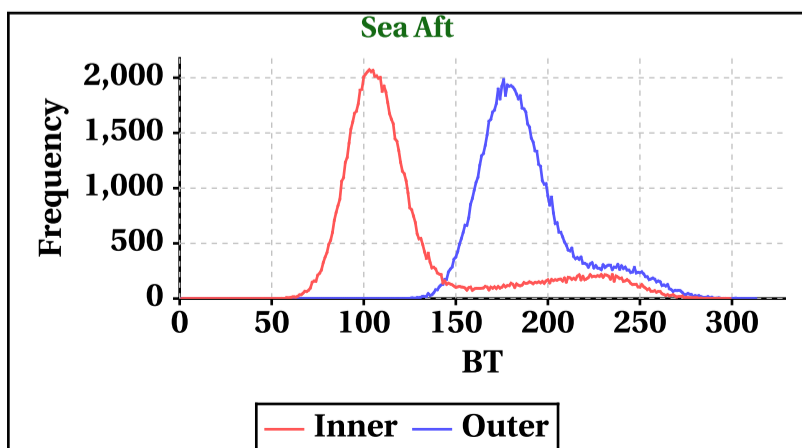
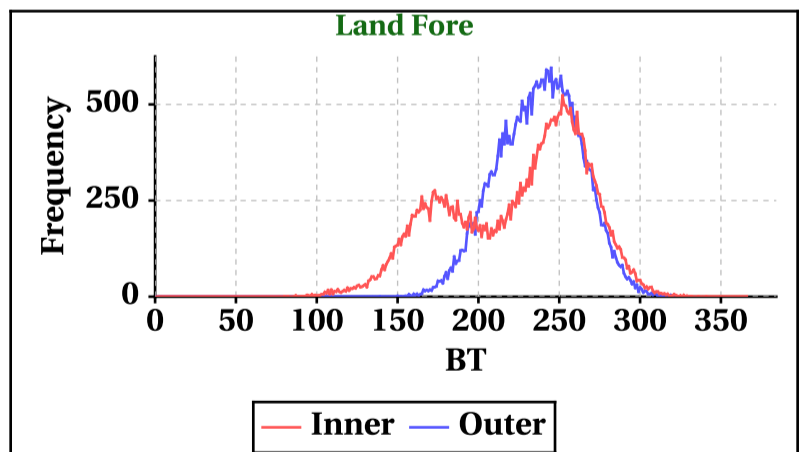
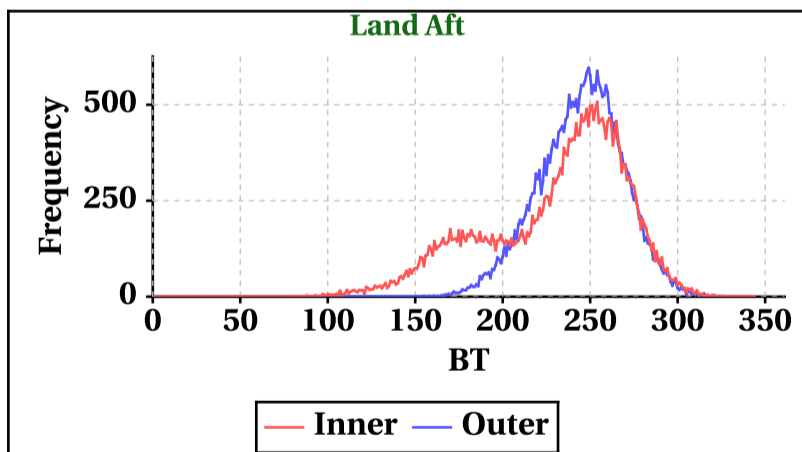
Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-43	-55	-60	-60
Max	0	0	0	0



## Brightness Temperature(K)

Inner Beam(HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	344	366	299	292

Outer Beam(VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	341	325	313	308

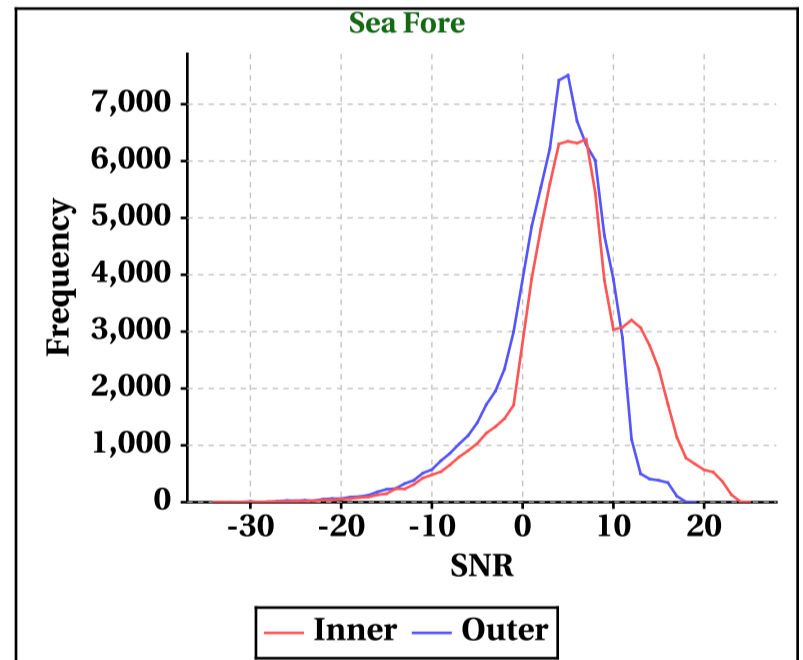
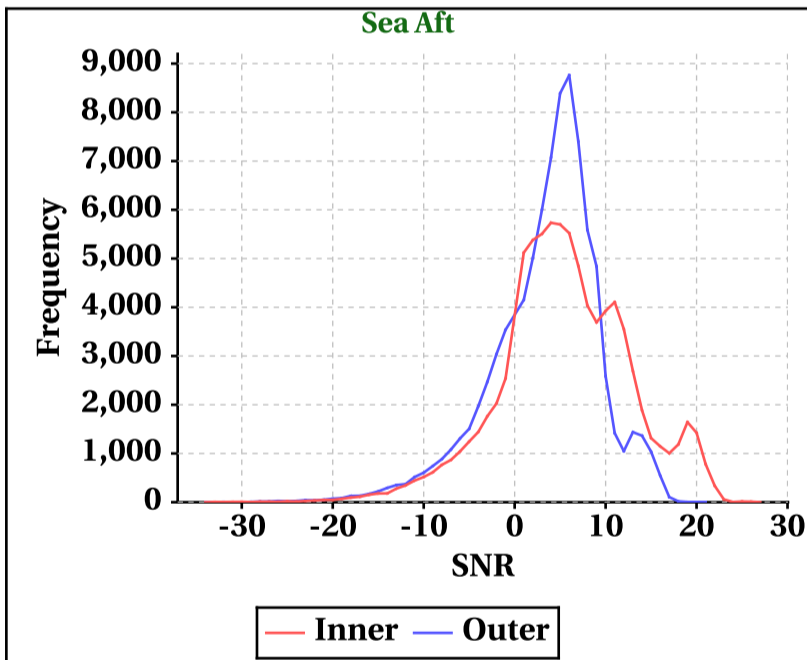
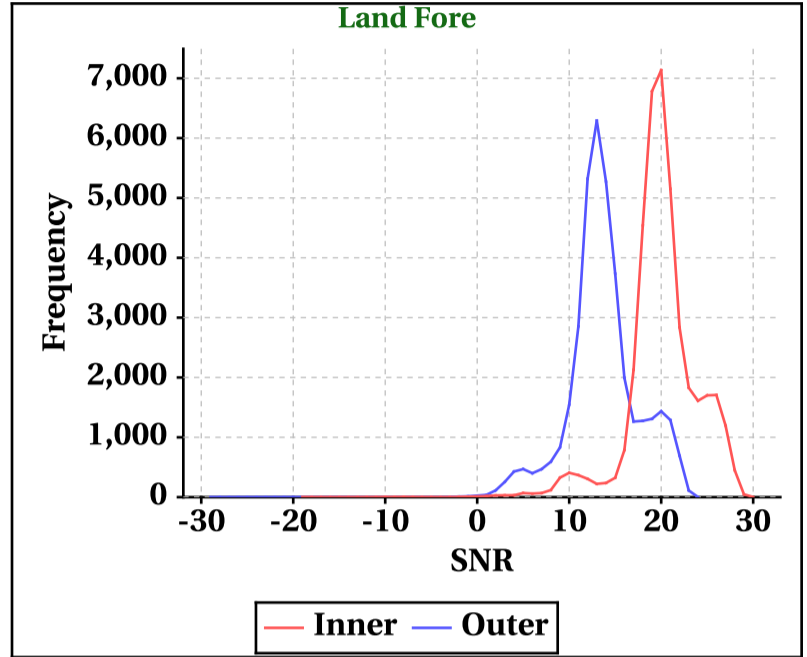
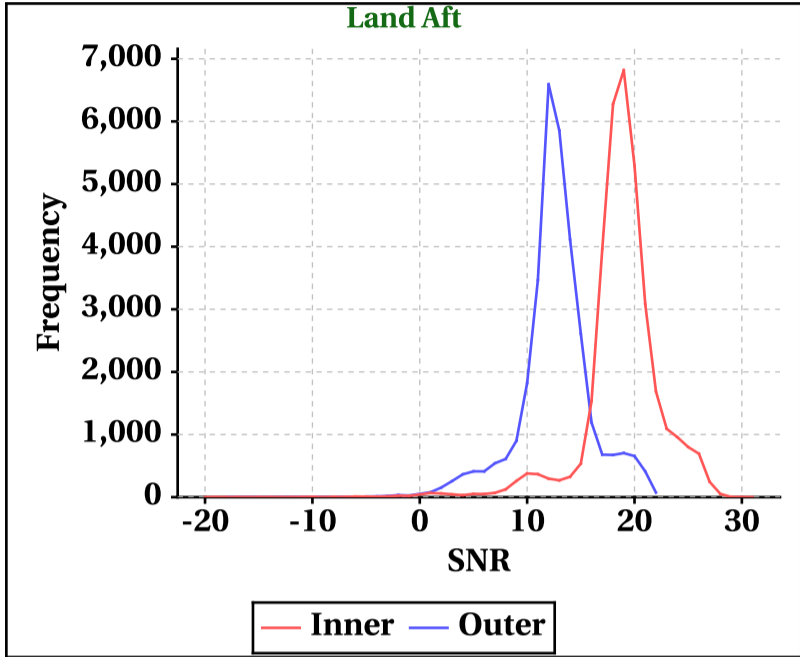


# Dynamic Range (Data Histograms)

## SNR(dBm)

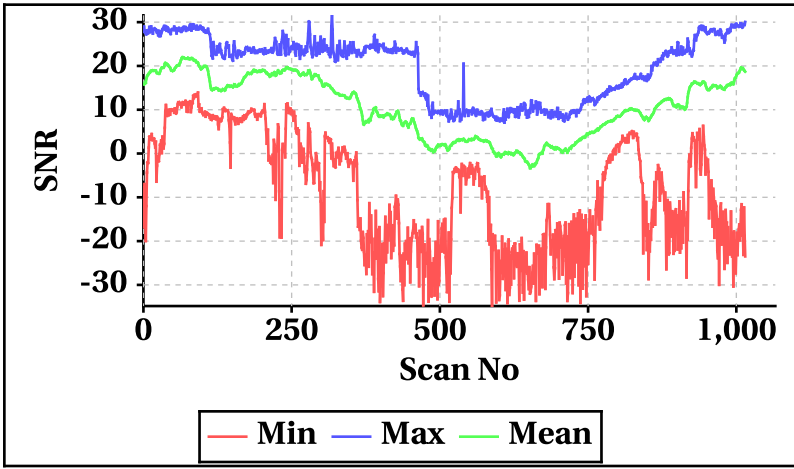
Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-20	-19	-34	-34
Max	31	30	27	25

Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-18	-29	-34	-34
Max	22	24	21	19

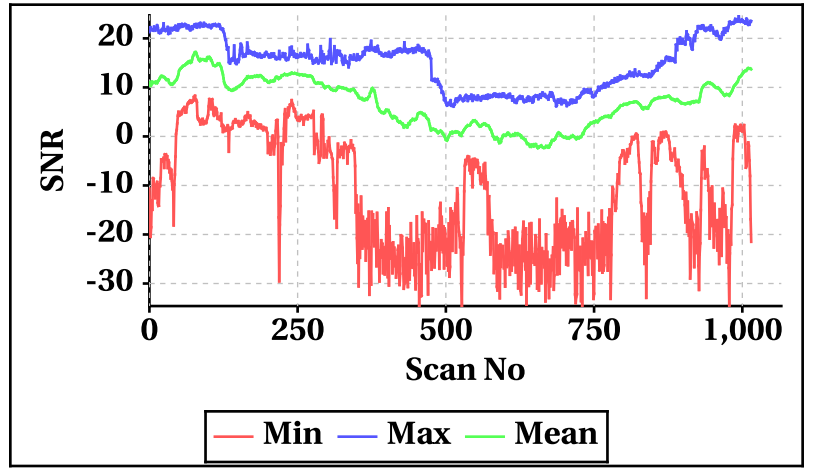


## Orbit-wise behaviour of SNR

Inner Beam (HH)

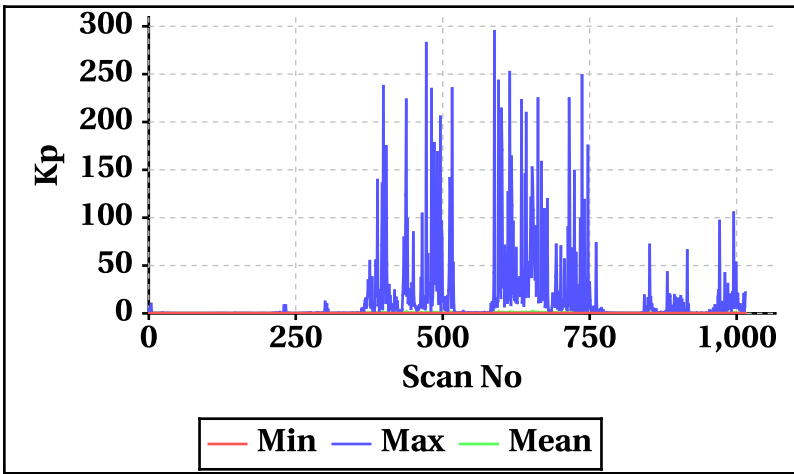


Outer Beam(VV)

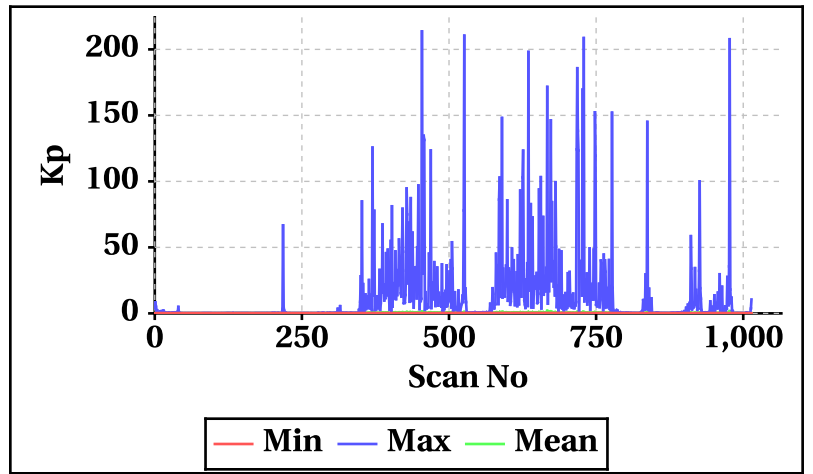


## Orbit-wise behaviour of Kp,Kpa,Kpb,Kpc

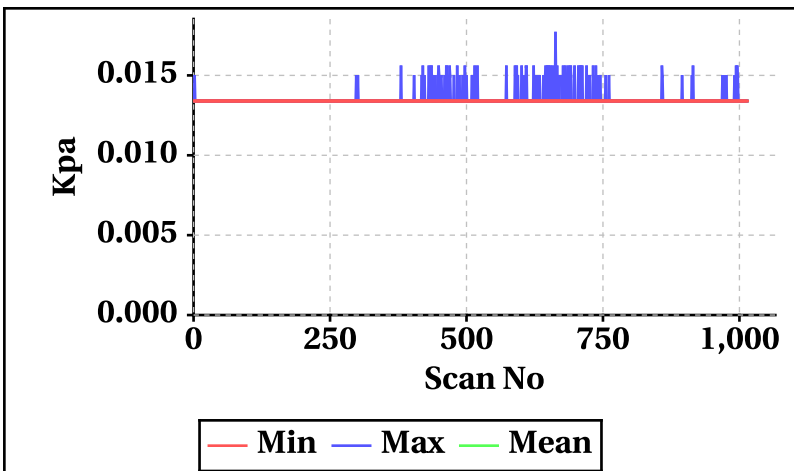
Inner Beam(HH)



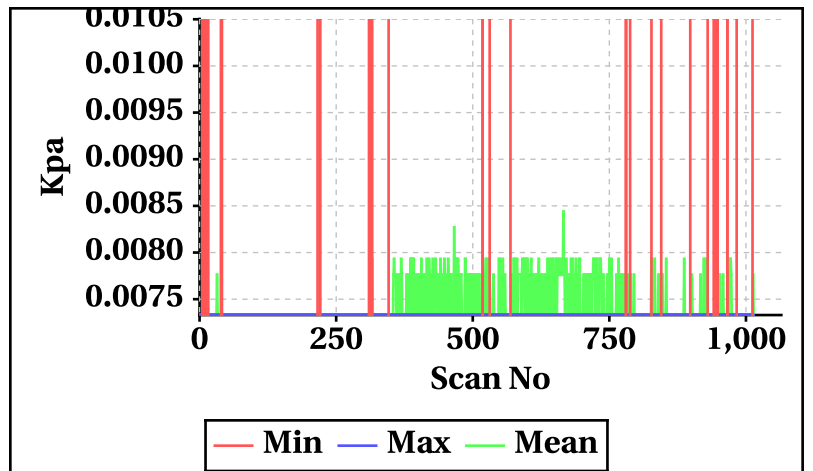
Outer Beam(VV)



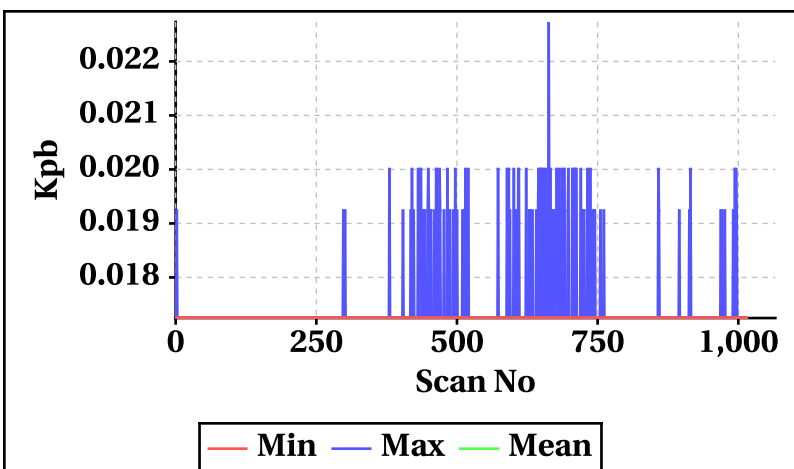
Inner Beam(HH)



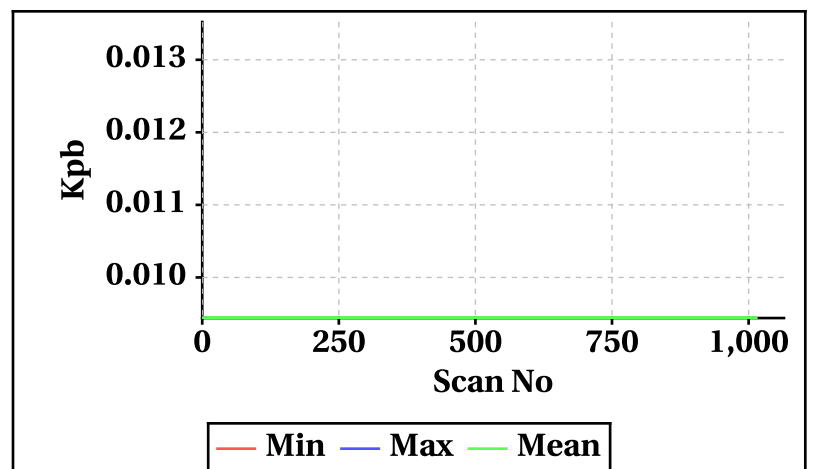
Outer Beam(VV)



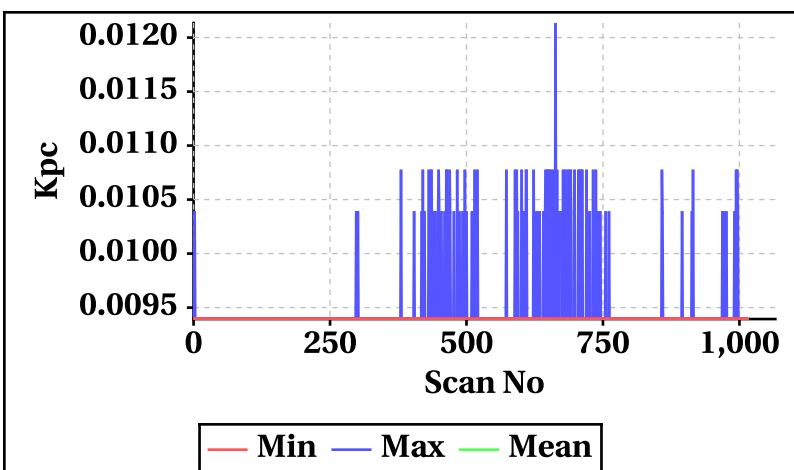
Inner Beam(HH)



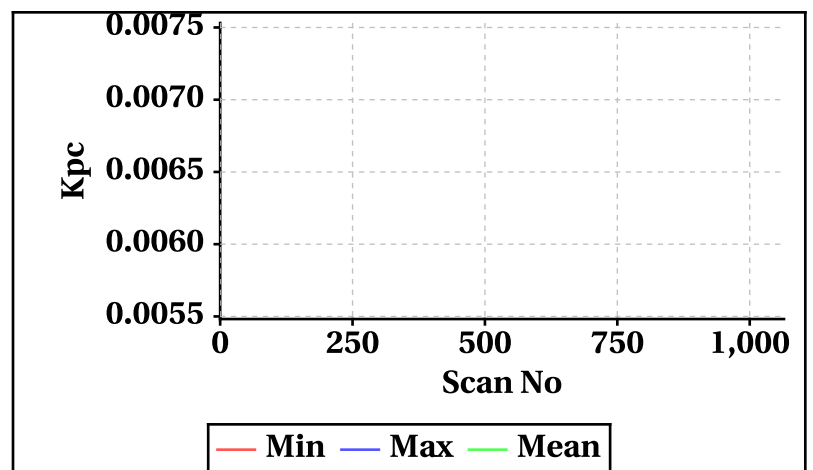
Outer Beam(VV)



Inner Beam(HH)



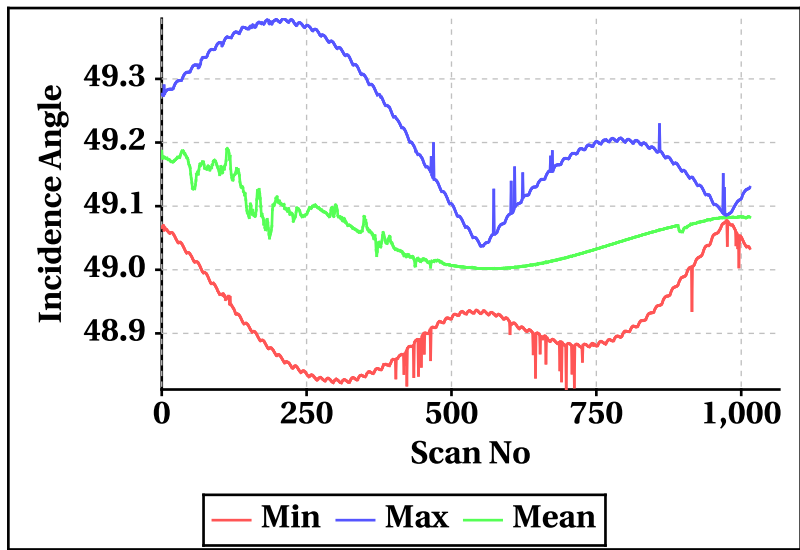
Outer Beam(VV)



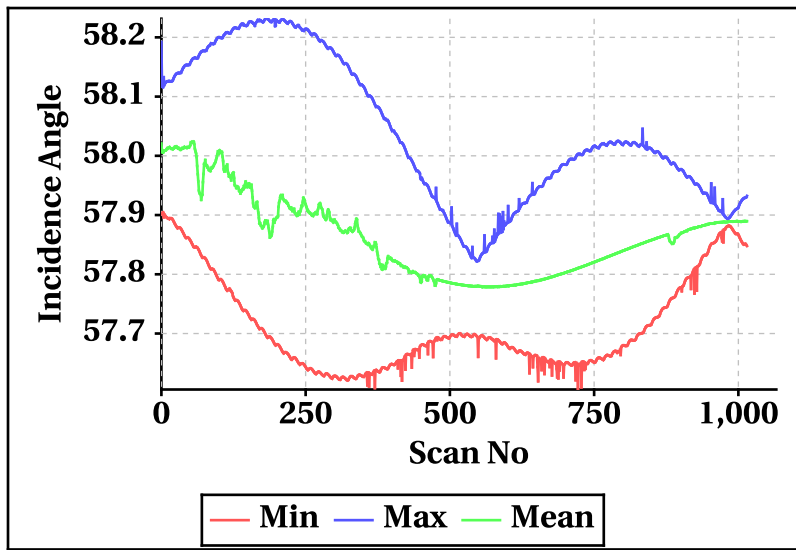


# Orbit-wise behaviour of Incidence, Azimuth, Range, X-Factor

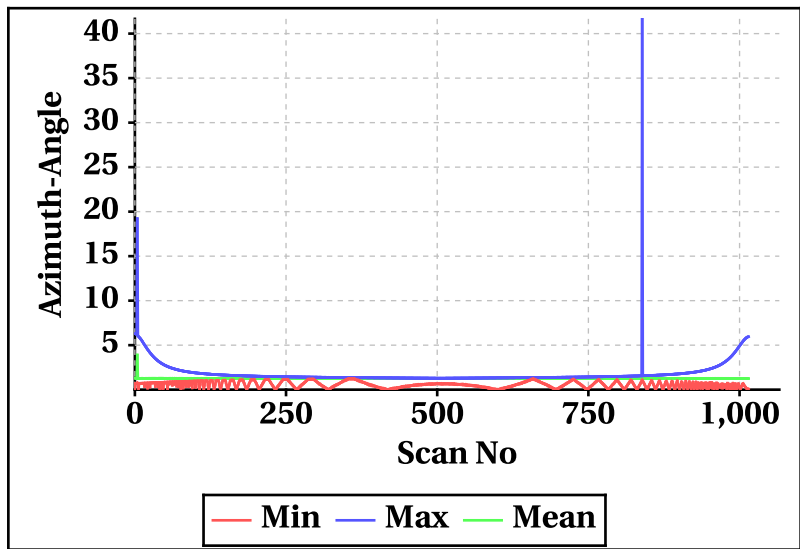
**Inner Beam (HH)**



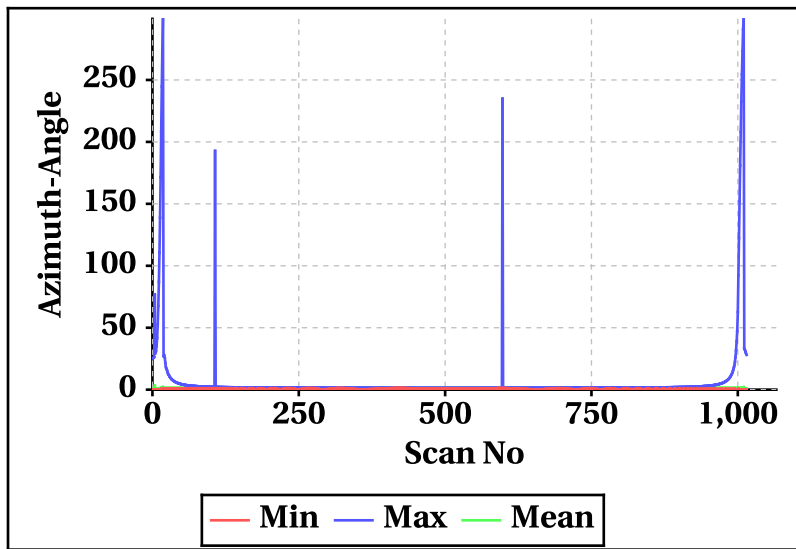
**Outer Beam(VV)**



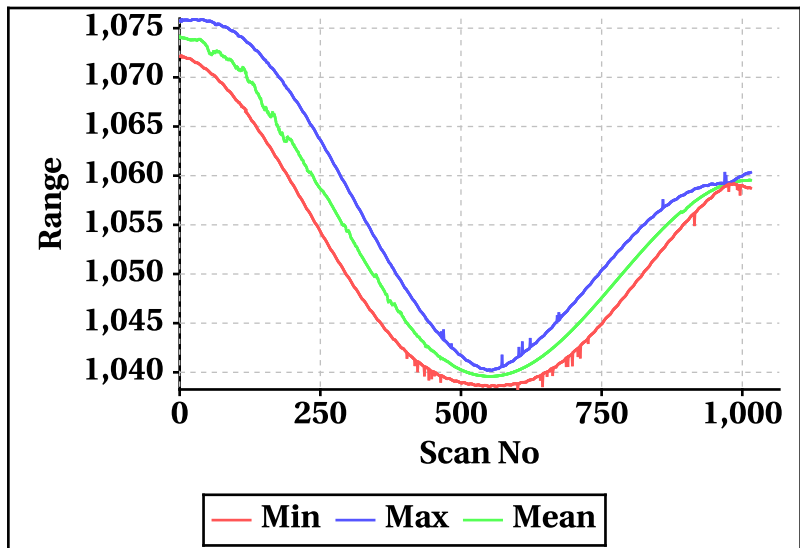
**Inner Beam (HH)**



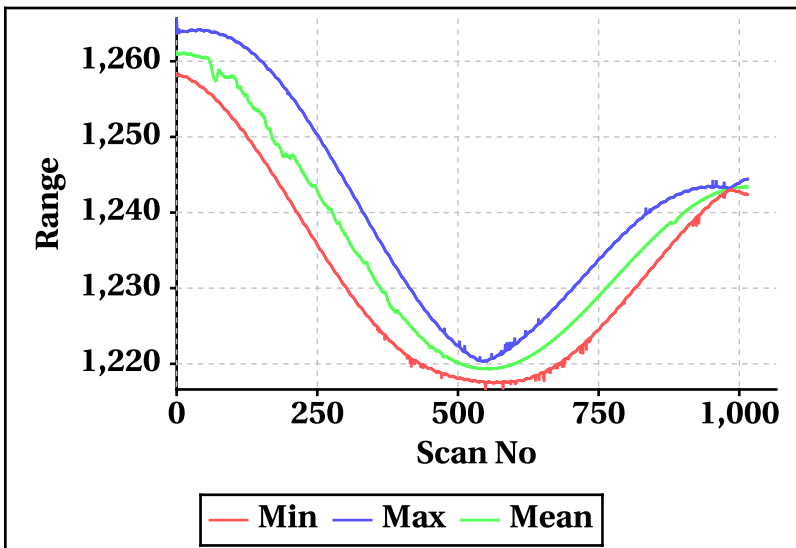
**Outer Beam(VV)**



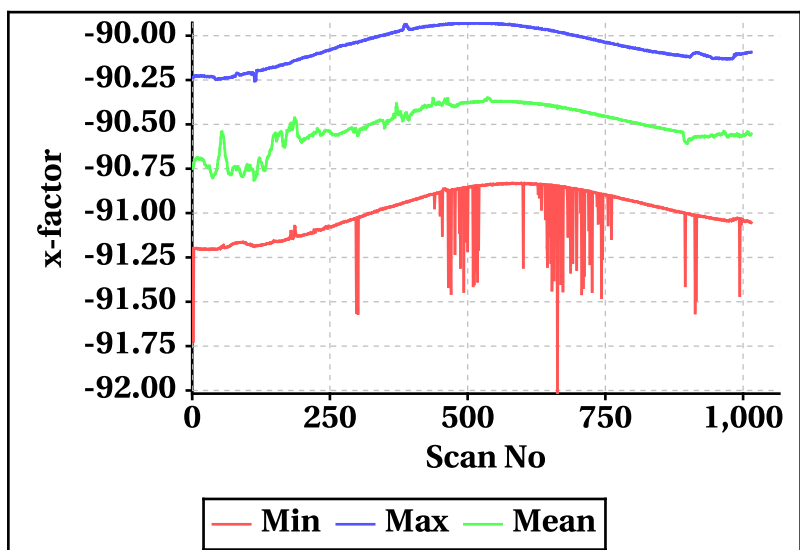
**Inner Beam (HH)**



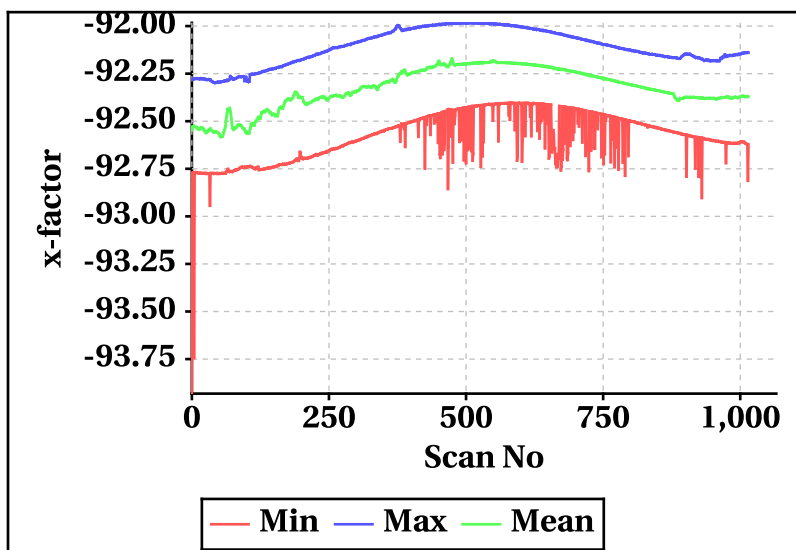
**Outer Beam(VV)**



**Inner Beam (HH)**



**Outer Beam(VV)**

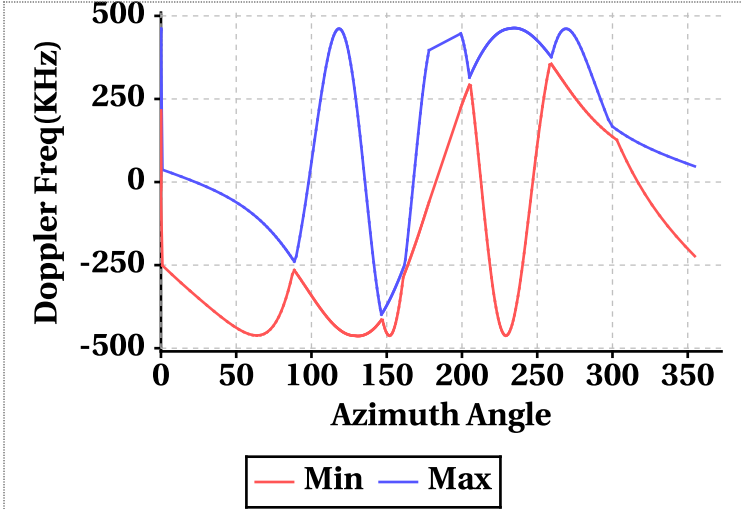


# Doppler Frequency Variation

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

	Inner Beam (HH)	Outer Beam (VV)
<b>Min</b>	-463.22	-519.14
<b>Max</b>	463.36	519.26

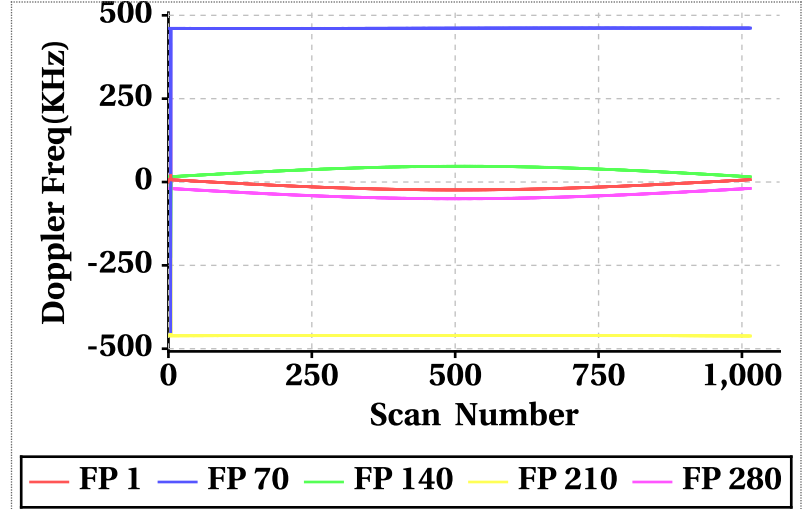
**Footprint wise Doppler frequency variation Inner Beam (HH)**



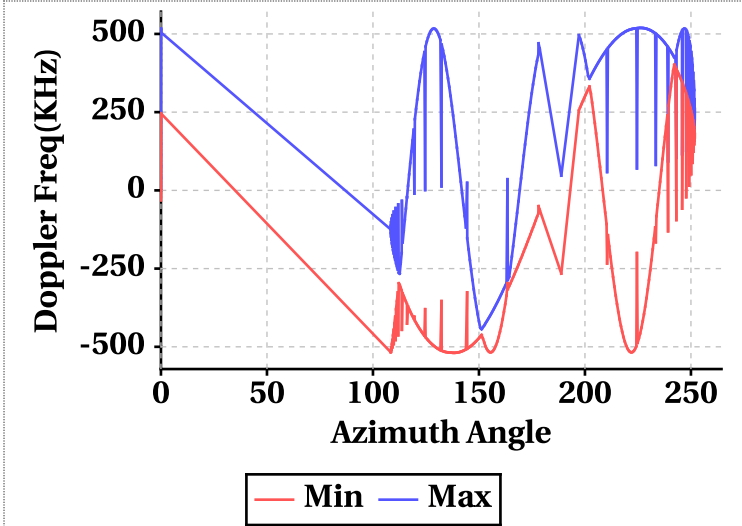
**Doppler Frequency(KHz) variation**

Doppler_FP	Inner Beam (HH)			Outer Beam (VV)		
	Min	Max	Mean	Min	Max	Mean
Doppler_1	-23.72	19.62	-12.43	-32.22	3.78	-19.58
Doppler_70	-448.92	461.82	460.49	-507.00	517.36	515.72
Doppler_140	-223.02	47.30	35.46	-265.90	47.16	33.90
Doppler_210	-461.84	331.28	-459.80	-517.78	358.24	-515.80
Doppler_280	-50.24	412.22	-38.41	-50.46	470.04	-37.17

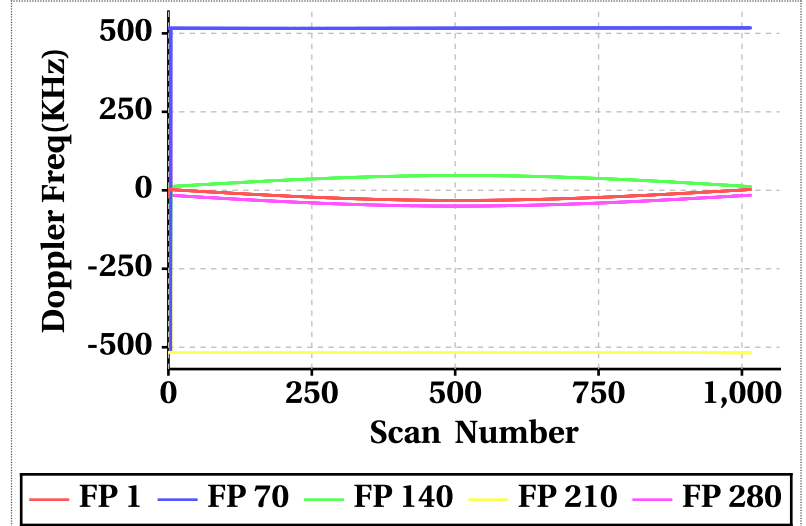
**Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Inner Beam (HH)**



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

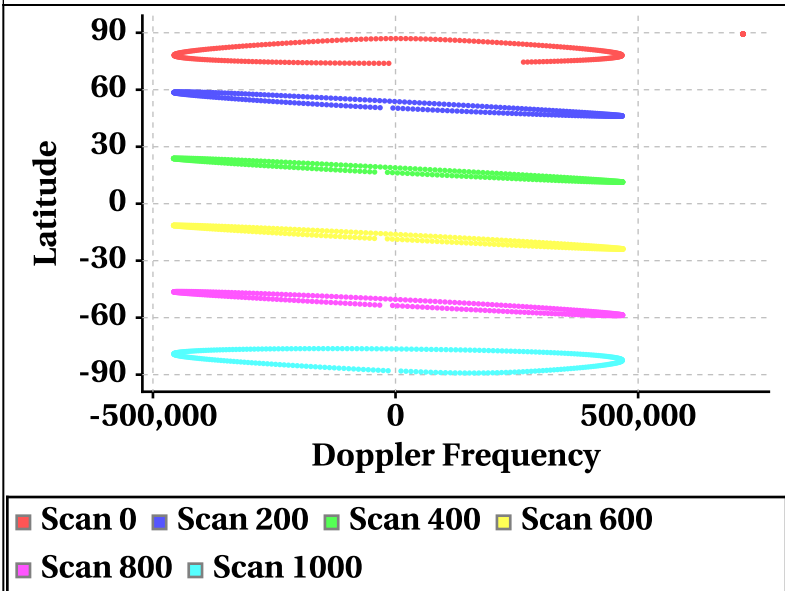


**Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Outer Beam (VV)**

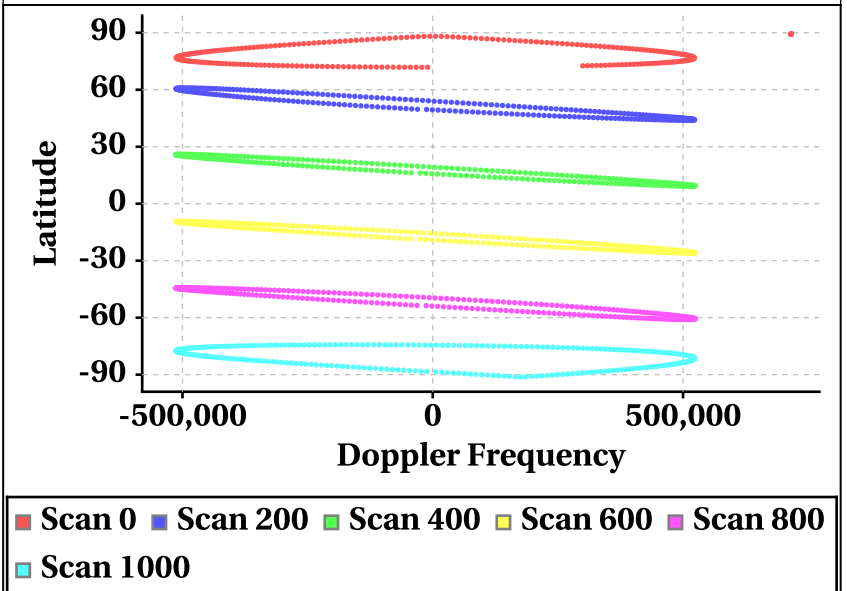


# Latitude Vs Doppler Frequency

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



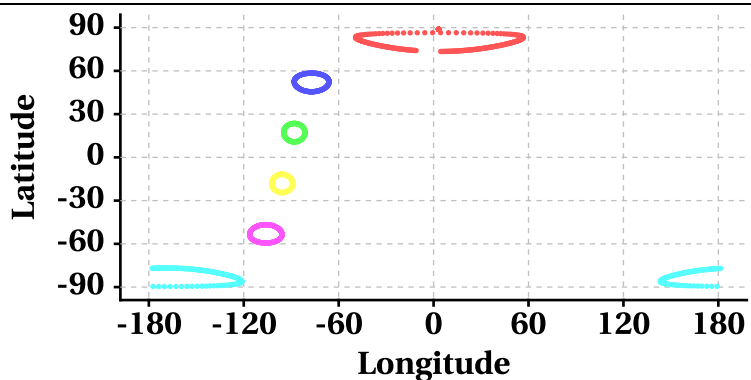
**Doppler Frequency at Scan Interval of 200 [Outer Beam(VV)]**



# Parameter as a function of Latitude

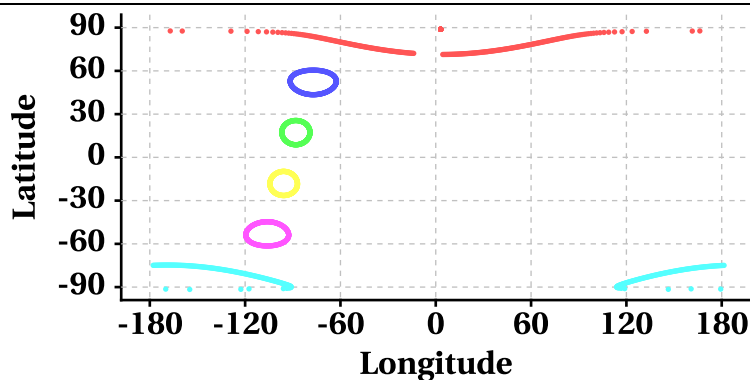
## Latitude Vs Longitude

Scan Trace [Inner Beam(HH)]



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

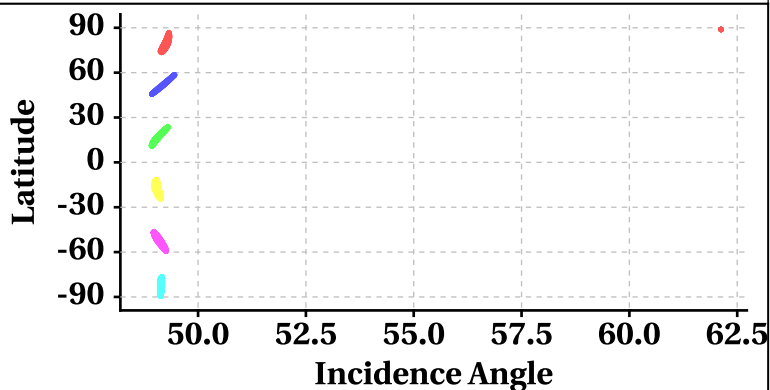
Scan Trace [Outer Beam (VV)]



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

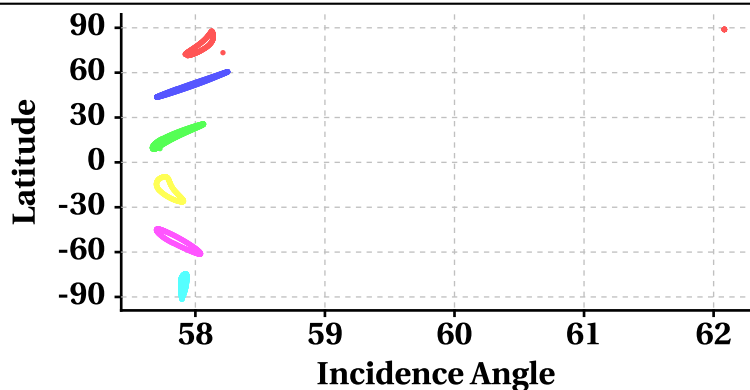
## Latitude Vs Incidence Angle

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



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

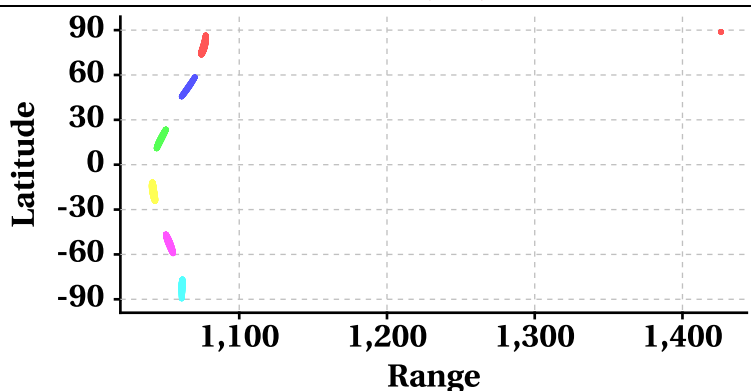
Incidence Angle at Scan Interval of 200 [Outer Beam (VV)]



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

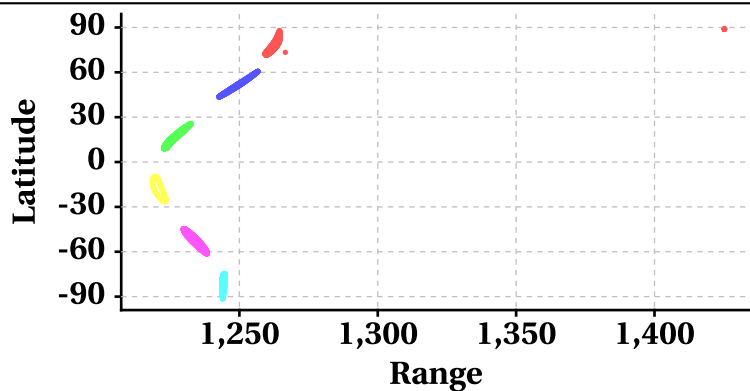
## Latitude Vs Range

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

