

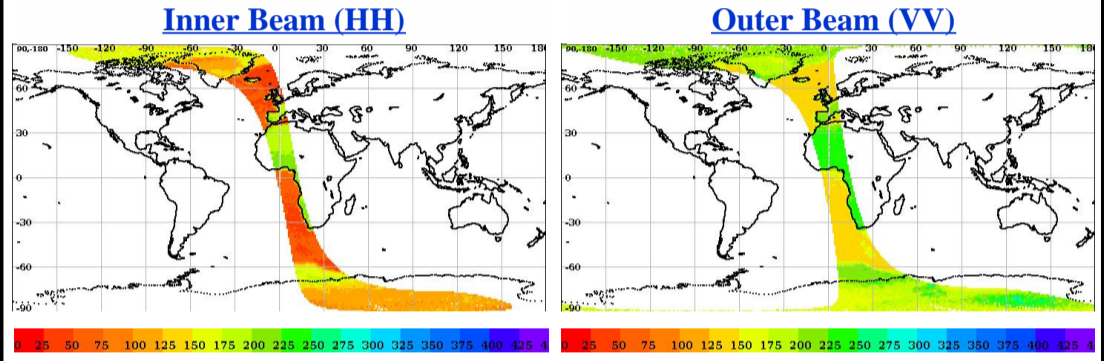
# SCATSAT-1 Scatterometer Level-1B Data Quality Evaluation Report

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<b>Satellite Id</b>	ScatSat-1	<b>Start Orbit</b>	547	<b>Total Scans</b>	1018
<b>Sensor Name</b>	Scatterometer	<b>End Orbit</b>	548	<b>No of Inner FootPrints</b>	281
<b>Processor Version</b>	1.0	<b>Rev. Number</b>	00547_00548	<b>No Of Outer FootPrints</b>	282
<b>Half Orbit Direction</b>	SN	<b>Data Production Date</b>	02-11-2016	<b>No. Of Inner Slices</b>	9
<b>Equator Crossing Date</b>	02-11-2016	<b>Equator Crossing Time</b>	20:52:25.000	<b>No Of Outer Slices</b>	15

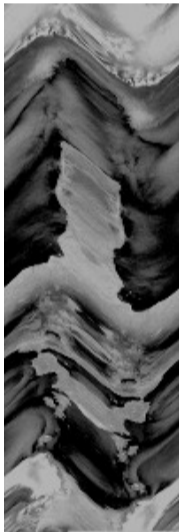
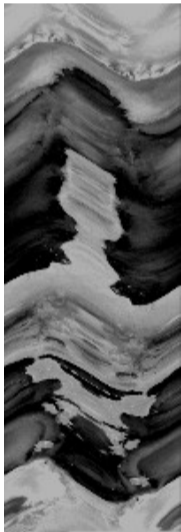
## Brightness Temperature(k) Footprint trace



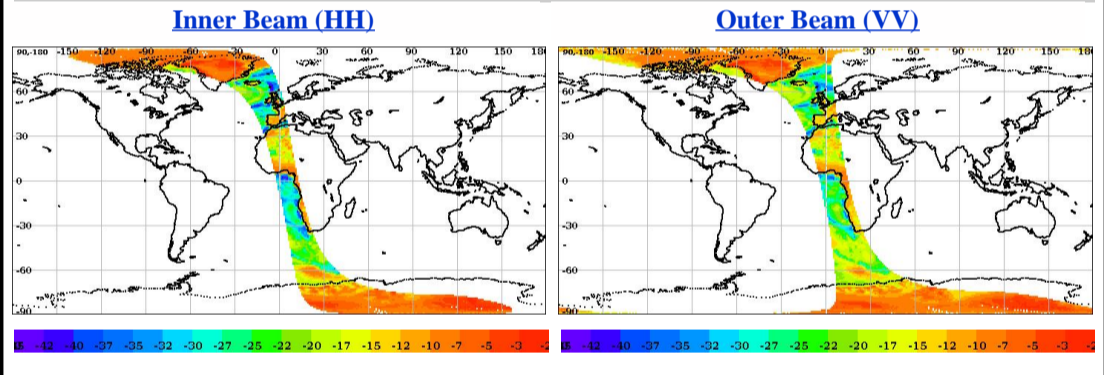
## Image Snapshot for Inner & Outer Beam

Inner (HH)

Outer (VV)



## Sigma0(dB) Footprint trace



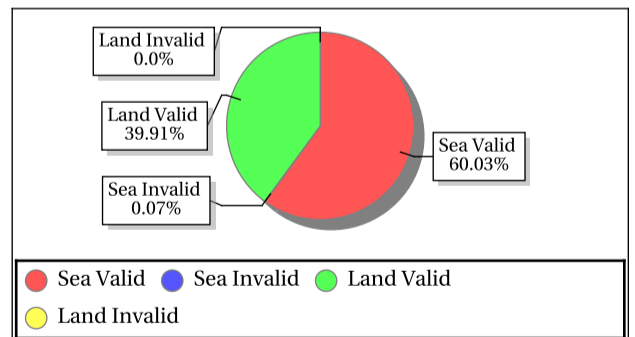
## Invalid and Poor Sigma-0 Quality Flag Statistics for Inner/Outer Slices\*

Sigma-0 Flags	Inner Beam	Outer Beam
Invalid Sigma0(%)	0.07	0.07
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(%)	0.00	0.01
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 (%)	100.0	100.0

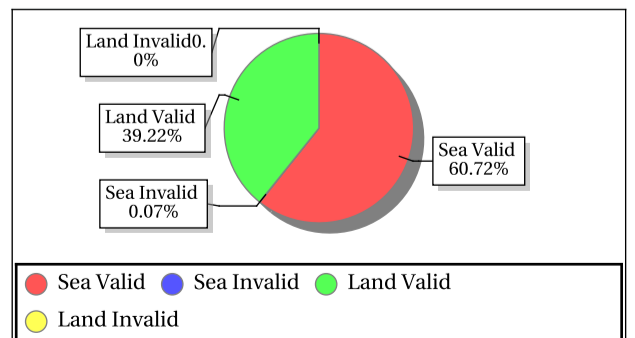
\*DP Format Document

## 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	-5.32	-4.03	-4.90	0.49	82.05	115.18	100.23	11.86
GreenLand_2	77.50	-41.50	Inner	DSC	Fore	-4.62	-2.84	-3.92	0.57	74.21	137.37	113.77	20.40
GreenLand_3	71.55	-42.45	Inner	DSC	Aft	-11.03	-7.57	-9.96	0.85	103.16	152.62	131.54	12.68
GreenLand_3	71.55	-42.45	Inner	DSC	Fore	-10.99	-8.31	-9.70	0.65	113.38	147.06	129.88	9.45
GreenLand_1	74.69	-42.50	Inner	DSC	Aft	-9.32	-7.89	-8.66	0.41	96.48	146.22	119.74	14.04
GreenLand_1	74.69	-42.50	Inner	DSC	Fore	-9.04	-6.80	-7.97	0.74	82.89	135.36	115.06	15.47
ANT_1	-75.00	121.00	Outer	DSC	Aft	-9.21	-7.56	-8.37	0.61	157.70	203.30	183.77	15.42
GreenLand_2	77.50	-41.50	Outer	DSC	Aft	-5.33	-4.41	-4.85	0.35	198.47	215.49	204.41	6.56
GreenLand_2	77.50	-41.50	Outer	DSC	Fore	-4.45	-3.86	-4.24	0.27	171.53	209.68	187.28	16.27
GreenLand_3	71.55	-42.45	Outer	DSC	Aft	-11.28	-9.56	-10.72	0.51	176.02	219.45	191.87	12.40
GreenLand_3	71.55	-42.45	Outer	DSC	Fore	-11.39	-9.64	-10.49	0.60	154.06	200.63	187.29	12.39
GreenLand_1	74.69	-42.50	Outer	DSC	Aft	-9.62	-8.22	-8.87	0.49	170.38	203.89	192.51	12.48
GreenLand_1	74.69	-42.50	Outer	DSC	Fore	-8.87	-7.08	-7.83	0.68	174.94	211.16	195.30	10.01



## 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	263.17	0.22	1.378	0.10	219.39	0.23	1.568	0.10	0.19	0.10	0.000	0.10	0.20	0.10	0.000
<b>Kpa</b>	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000
<b>Kpb</b>	0.01	0.02	0.01	0.000	0.01	0.02	0.01	0.000	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000
<b>Kpc</b>	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000
<b>SNR</b>	-34.94	26.72	6.37	1.907	-34.15	27.30	7.59	5.759	-0.82	30.96	20.04	34.046	-1.29	31.78	20.09	33.859

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	187.80	0.19	1.344	0.08	172.74	0.19	1.342	0.08	48.42	0.09	0.017	0.08	6.28	0.09	0.030
<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	0.00	0.00	0.000	0.00	0.00	0.00	0.000	0.00	0.00	0.00	0.000	0.00	0.00	0.00	0.000
<b>SNR</b>	-34.49	20.61	4.39	0.000	-34.12	20.46	5.44	0.000	-28.59	25.24	14.25	3.261	-19.69	25.51	13.91	3.489

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 (VV)				Outer Beam (VV)				Parameter Specifications		
	Min	Max	Mean	Bad Occ. (%)	Min	Max	Mean	Bad Occ. (%)	Parameter	Min	Max
<b>Incidence Angle (deg)</b>	49.00	49.38	49.10	0.000	57.76	58.25	58.06	0.000	Inci.(Inner)	47.10	49.90
<b>Azimuth Diff. (deg)</b>	0.0026	1.29	1.11	0.155	0.0026	1.29	1.13	0.167	Inci.(Outer)	57.30	58.90
<b>Range(Km)</b>	1042.32	1095.58	1063.15	0.000	1221.39	1287.73	1246.53	14.430	Azimuth Diff.	0.60	2.00
<b>X Factor(dbm)</b>	-91.26	-90.14	-90.35	0.000	-93.02	-92.08	-92.25	0.000	Range(Inner)	1025.00	1095.70
<b>Across Distance (Km)</b>	15.45	15.89	15.56	0.000	20.38	20.89	20.44	0.000	Range(Outer)	1210.00	1280.00
<b>Along Distance (Km)</b>	19.05	20.53	19.70	0.000	18.84	20.47	19.61	0.000	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

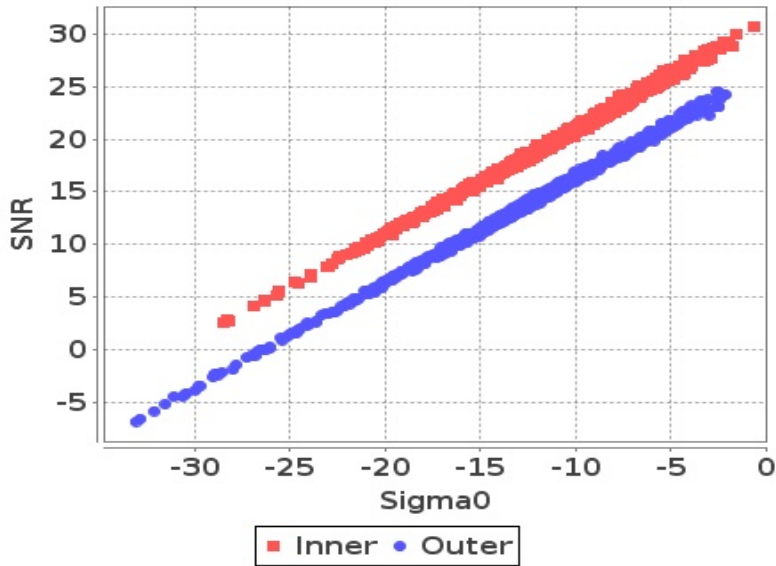
- Normal
- Deviations
- Alarming
- High Errors



## Sigma0 Behaviour (Sigma0 Vs SNR)

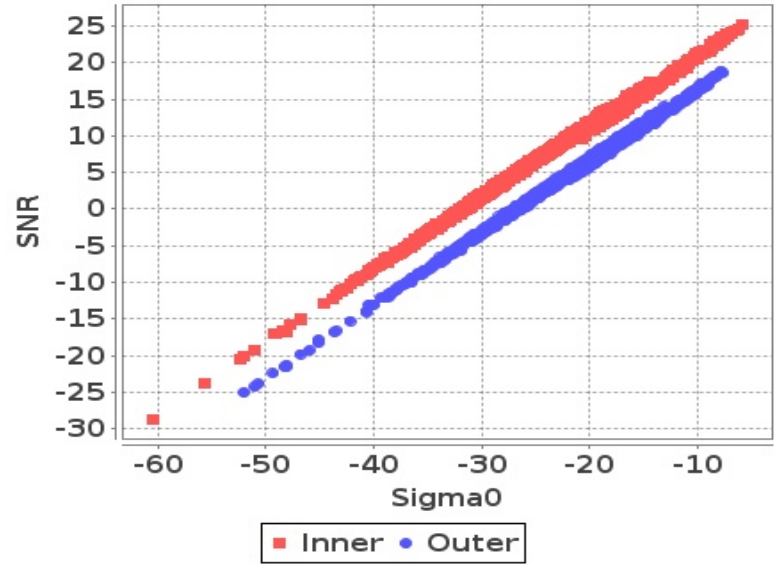
Footprint-Land

Sigma0 Vs SNR (Land)



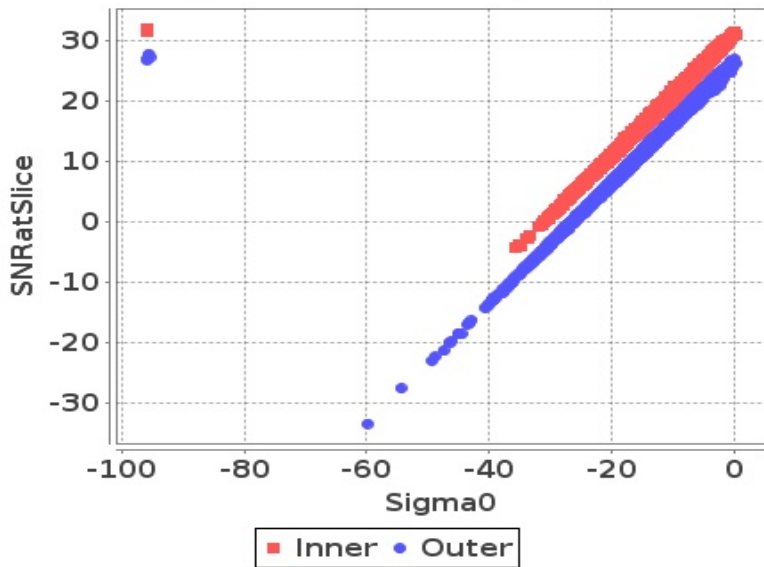
Footprint-Sea

Sigma0 Vs SNR (Sea)



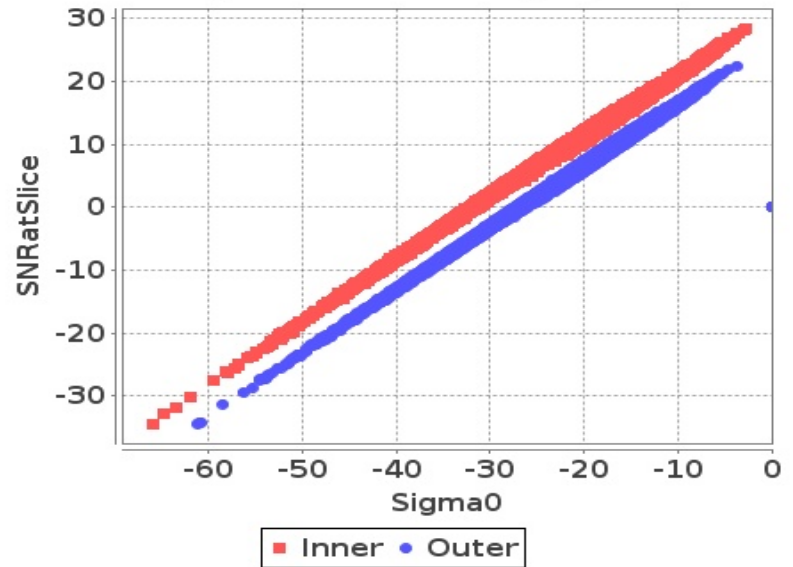
Slice-Land

Sigma0 Vs SNRatSlice (Land)



Slice-Sea

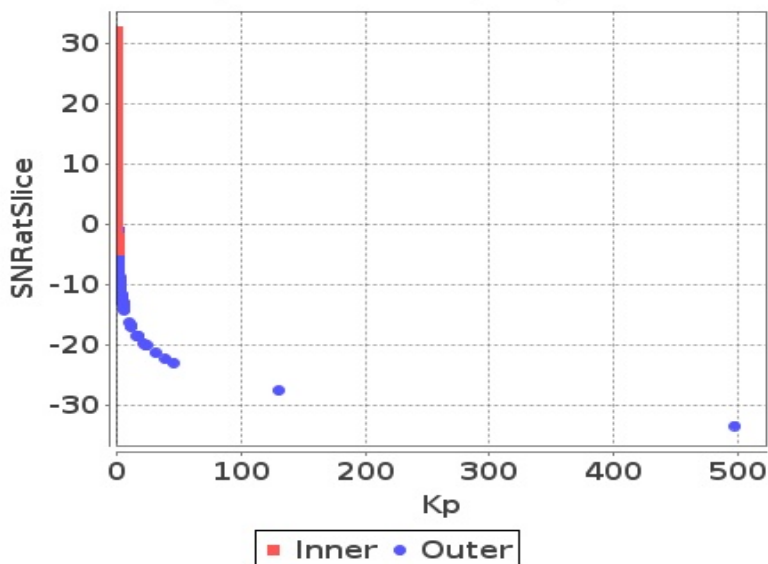
Sigma0 Vs SNRatSlice (Sea)



## Sigma0 Behaviour (Kp Vs SNR)

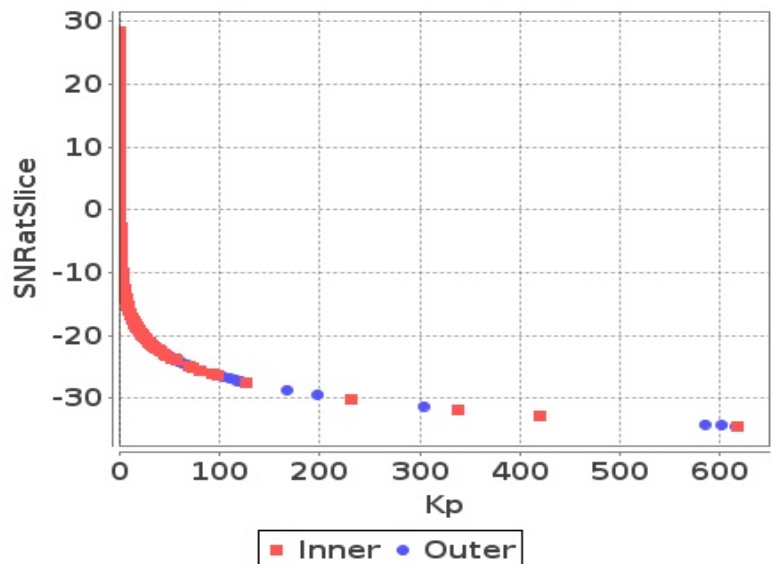
Slice

Kp Vs SNRatSlice (Land)



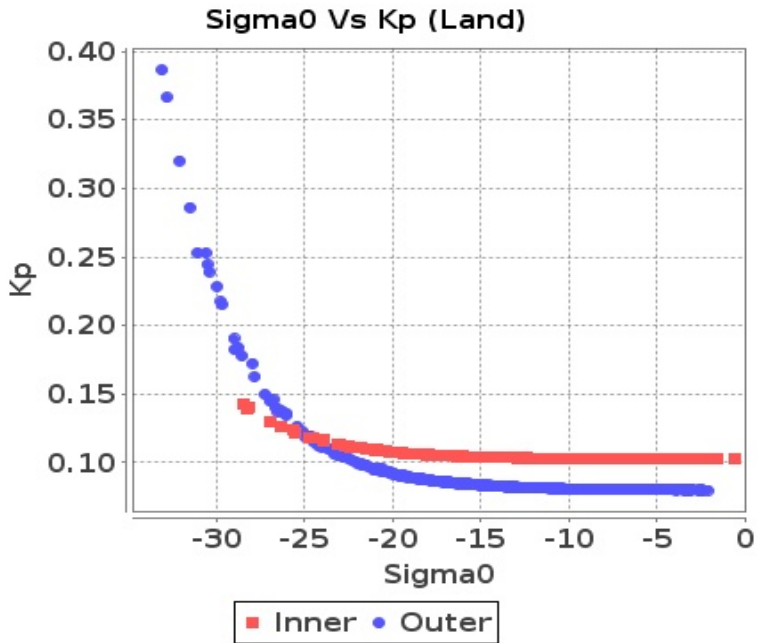
Slice

Kp Vs SNRatSlice (Sea)

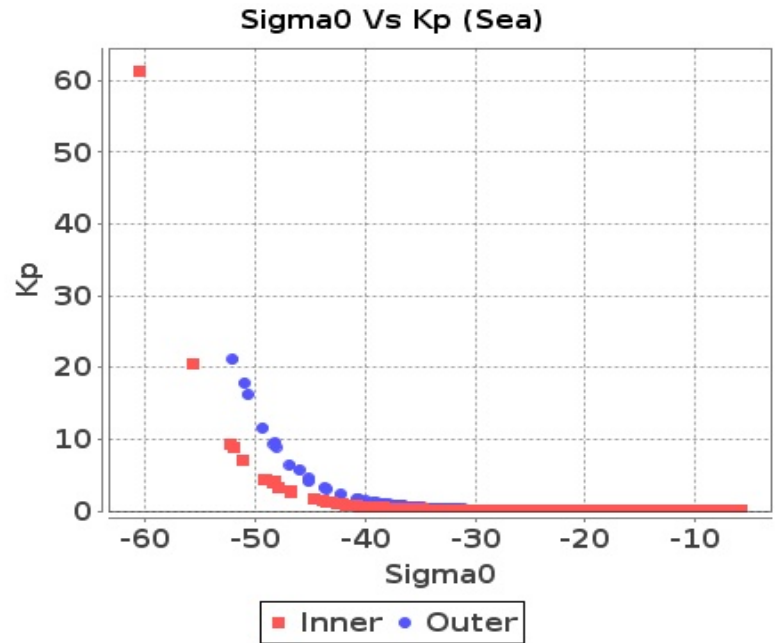


# Sigma0 Behaviour(Sigma0 Vs Kp)

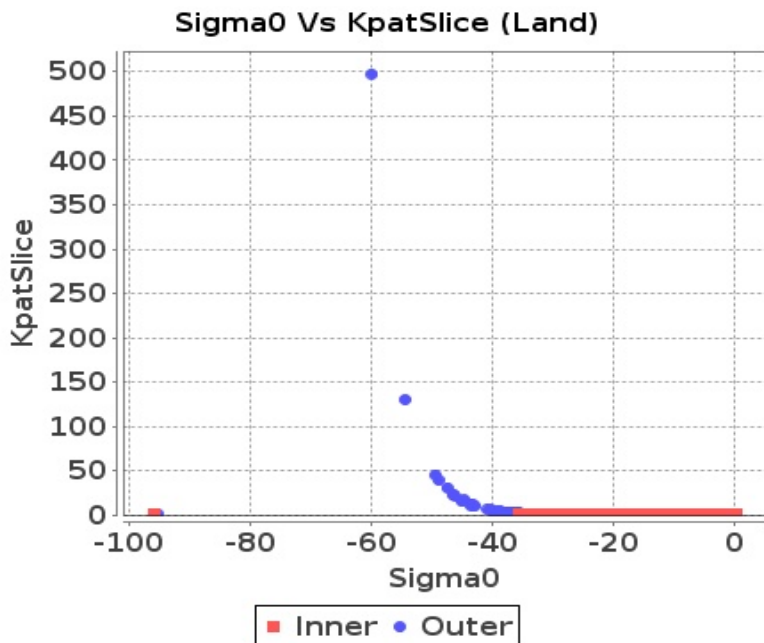
## Footprint-Land



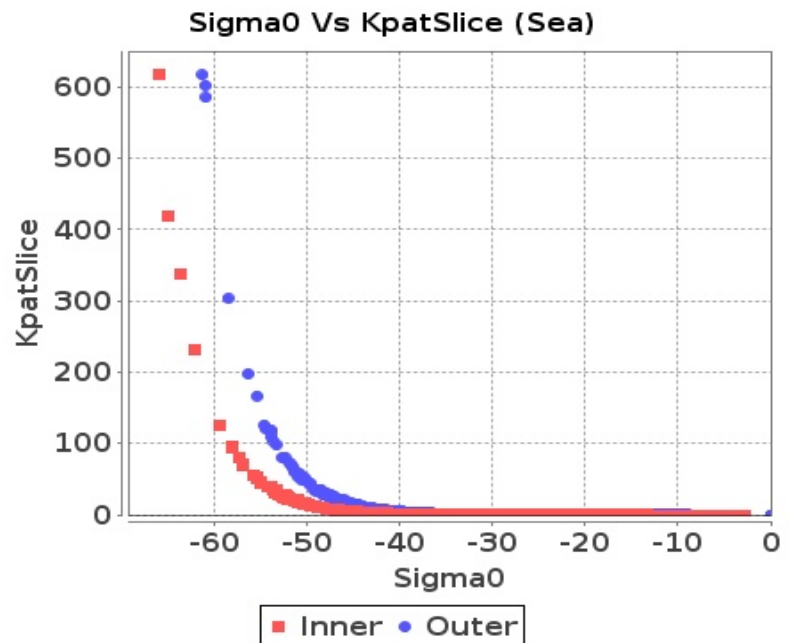
## Footprint-Sea



## Slice-Land



## Slice-Sea

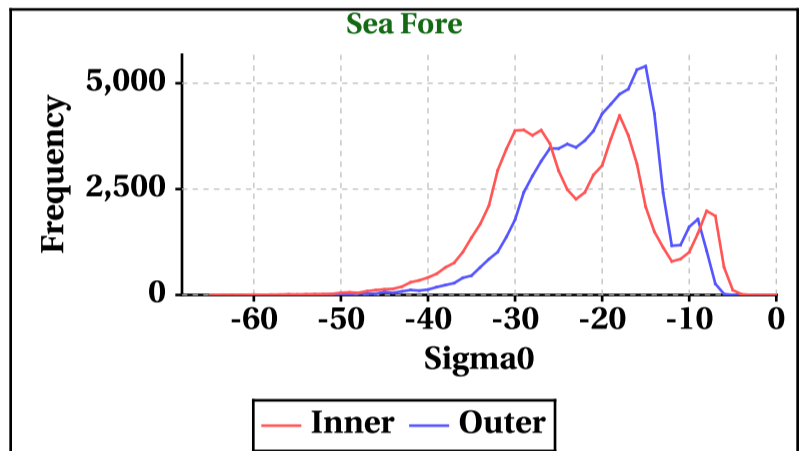
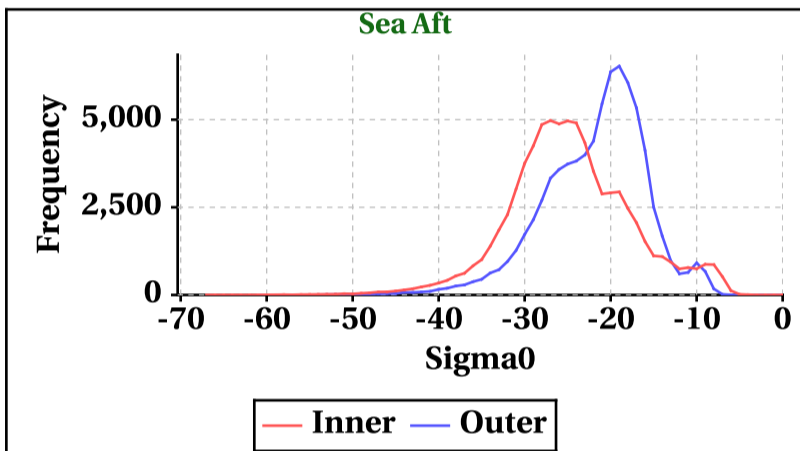
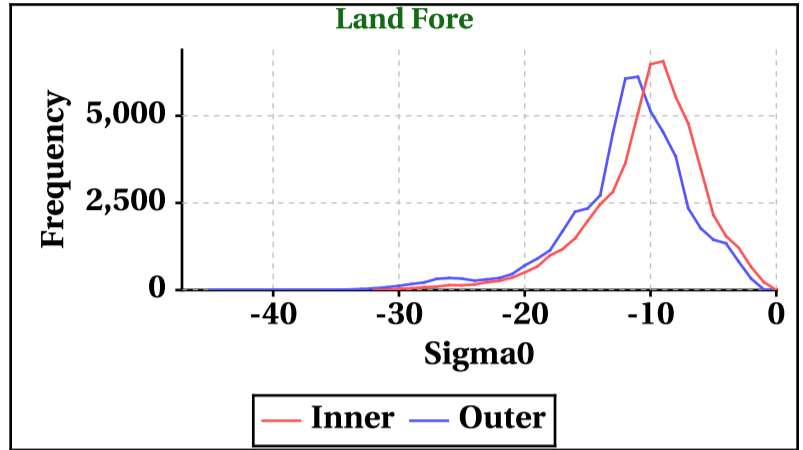
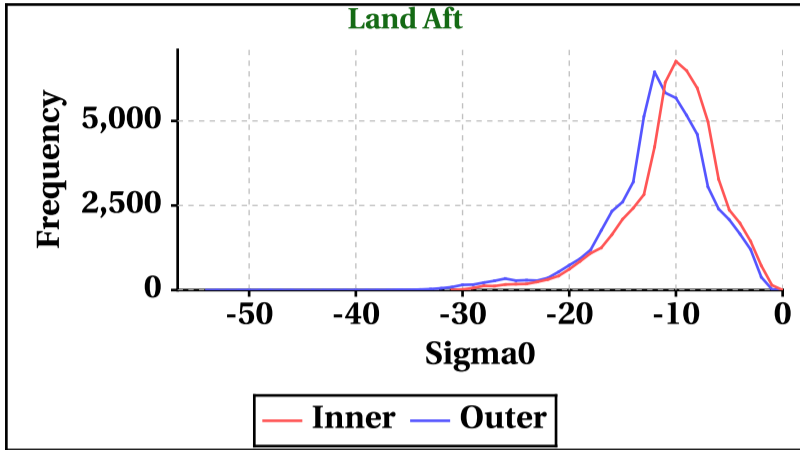


# Dynamic Range (Data Histograms)

## Sigma0(db)

Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-31	-32	-67	-65
Max	0	0	0	0

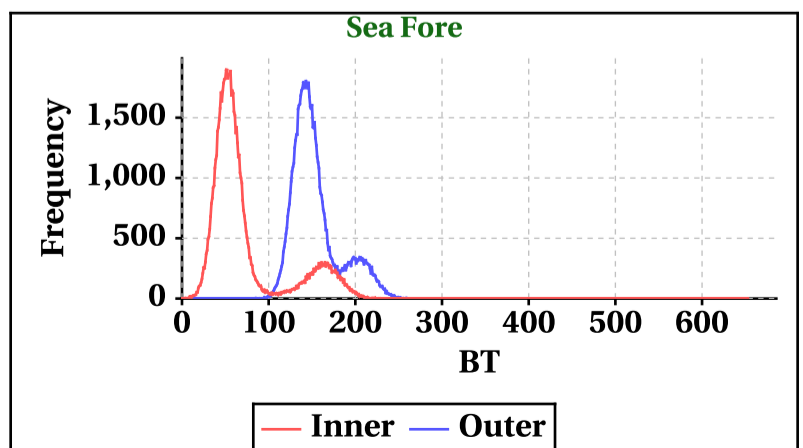
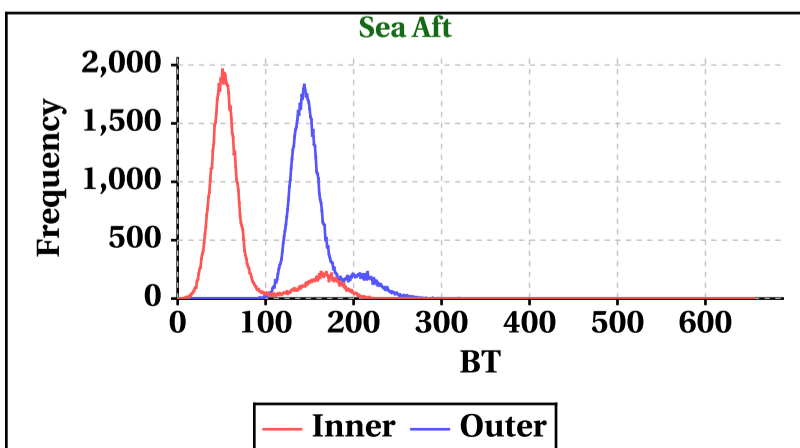
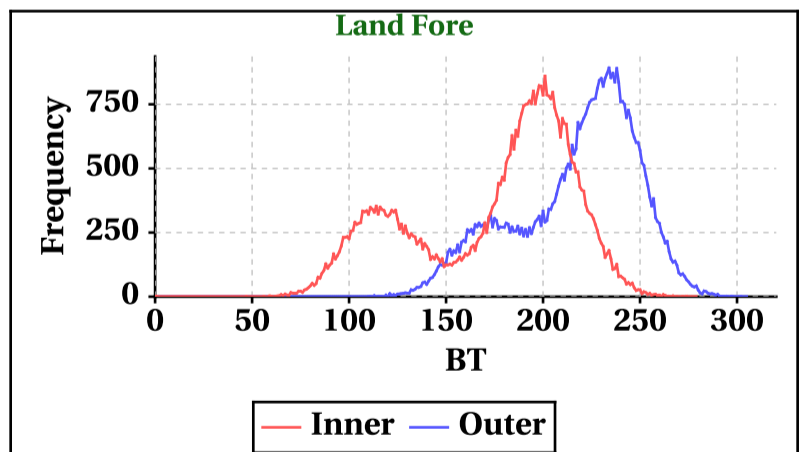
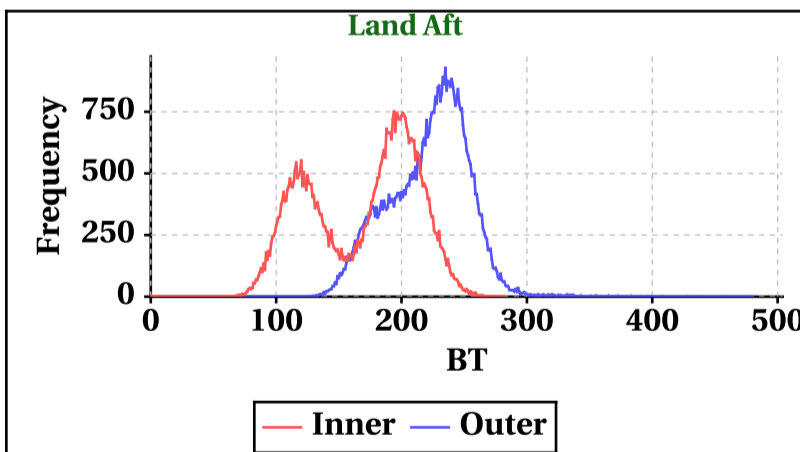
Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-54	-45	-61	-60
Max	0	0	0	0



## Brightness Temperature(K)

Inner Beam(HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	282	279	655	653

Outer Beam(VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	480	305	443	266

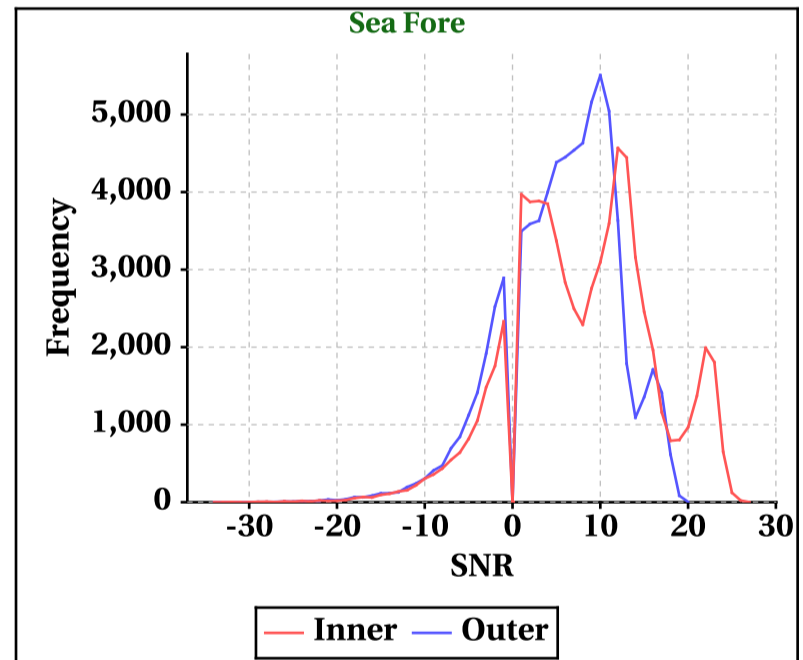
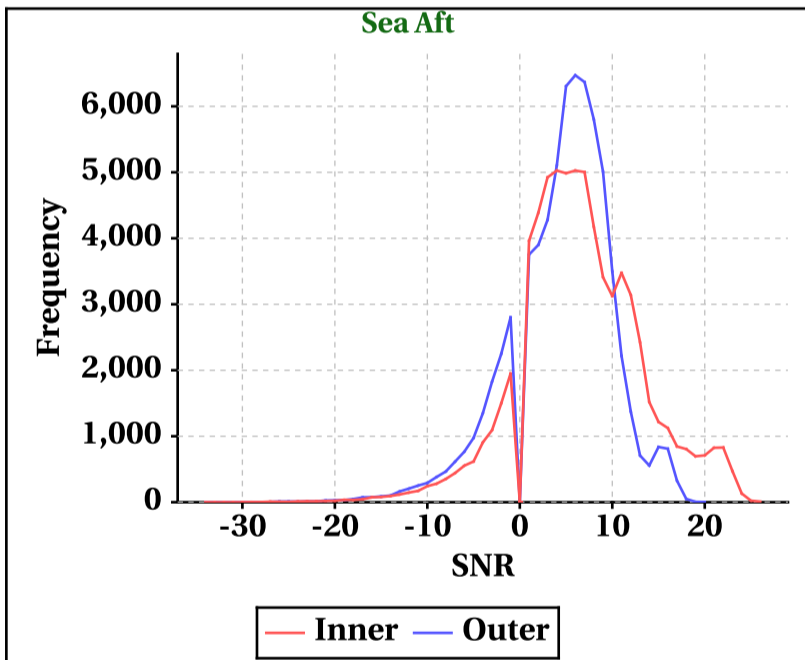
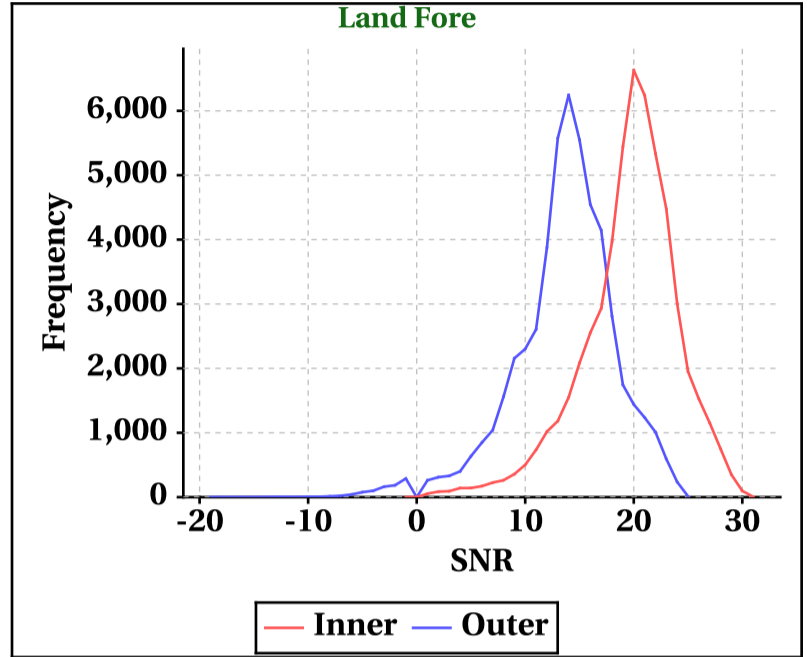
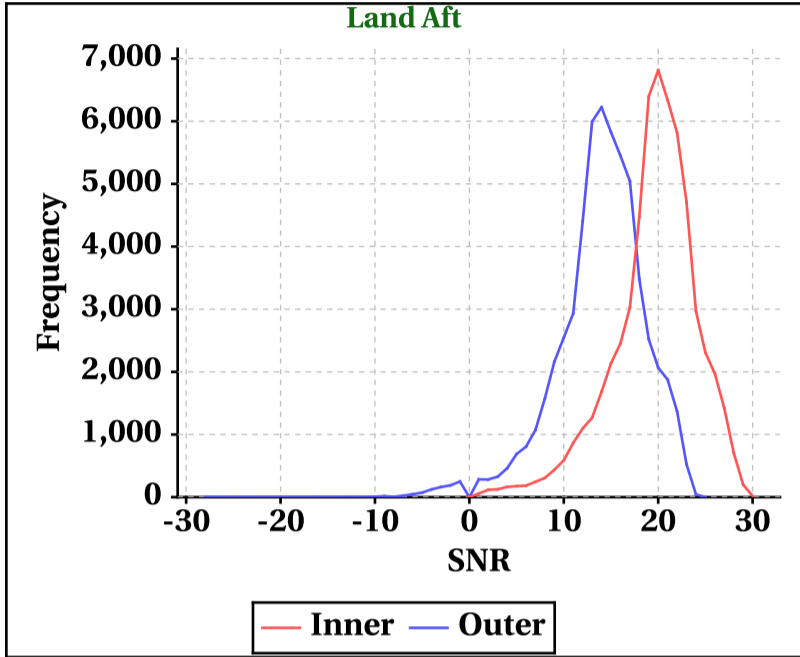


# Dynamic Range (Data Histograms)

## SNR(dBm)

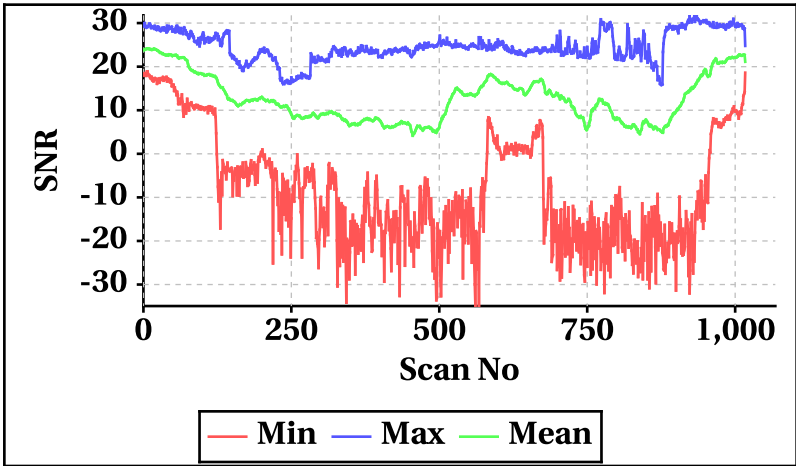
Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	-1	-34	-34
Max	30	31	26	27

Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-28	-19	-34	-34
Max	25	25	20	20

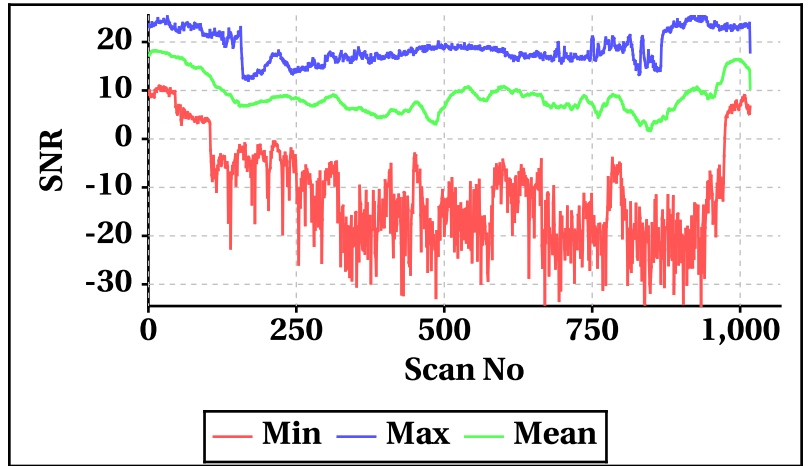


## Orbit-wise behaviour of SNR

**Inner Beam (HH)**

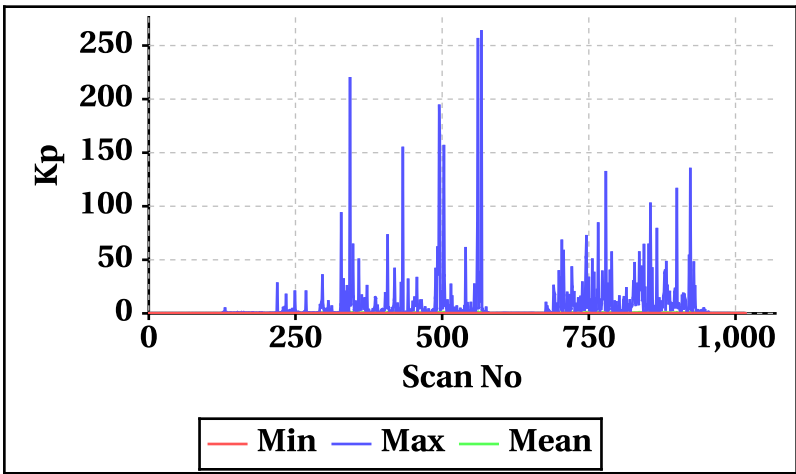


**Outer Beam(VV)**

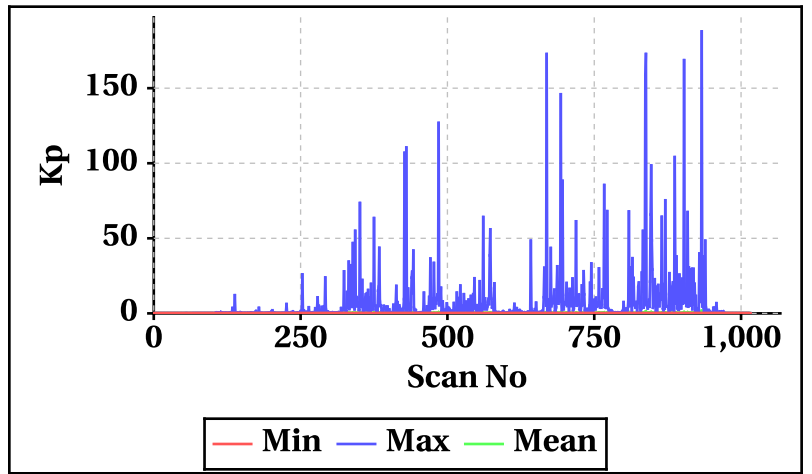


## Orbit-wise behaviour of Kp,Kpa,Kpb,Kpc

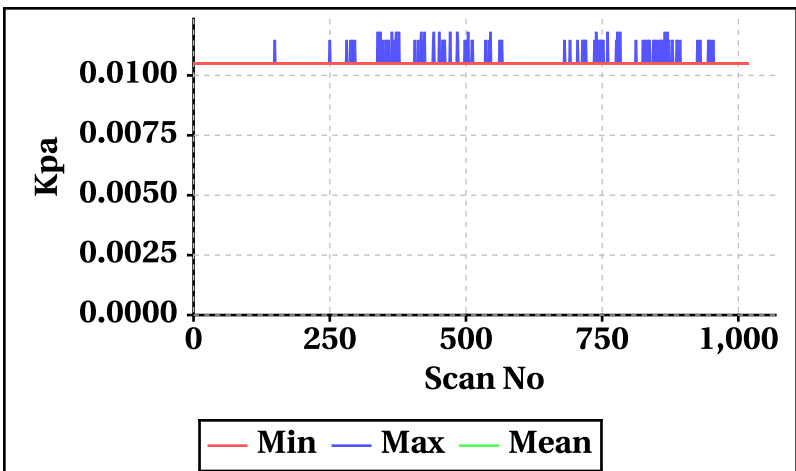
**Inner Beam(HH)**



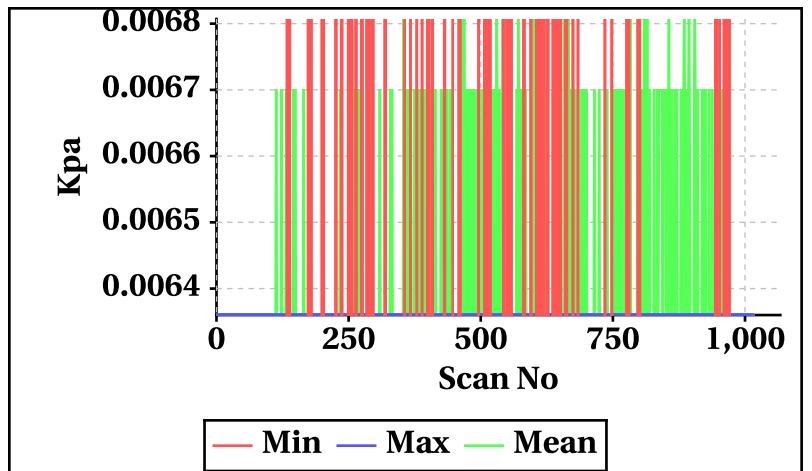
**Outer Beam(VV)**



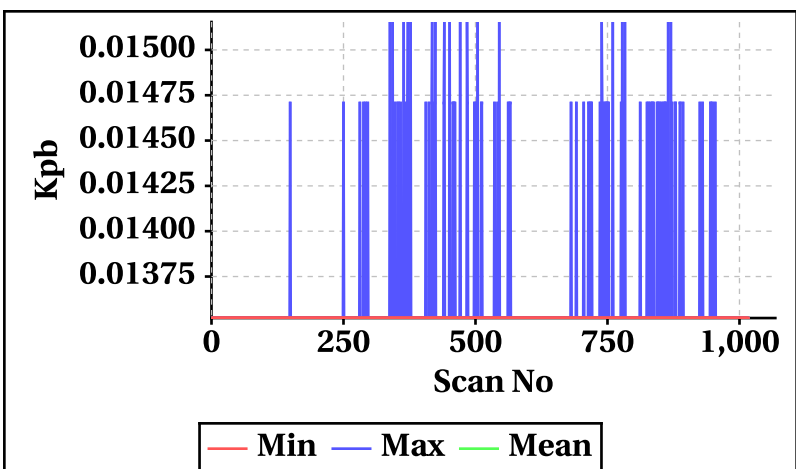
**Inner Beam(HH)**



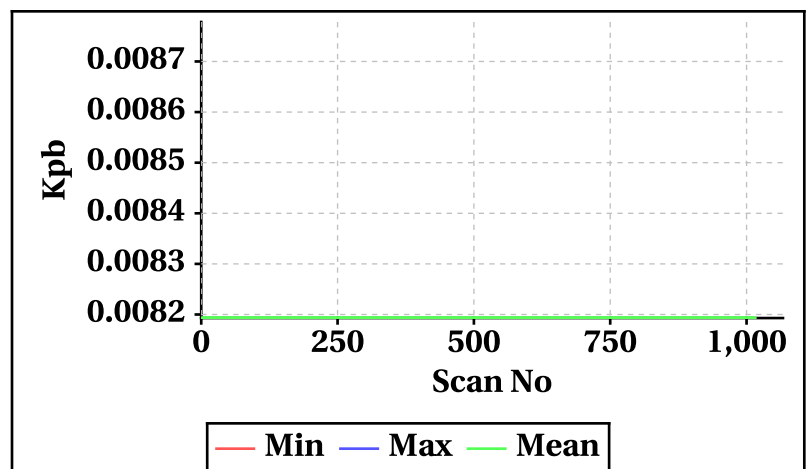
**Outer Beam(VV)**



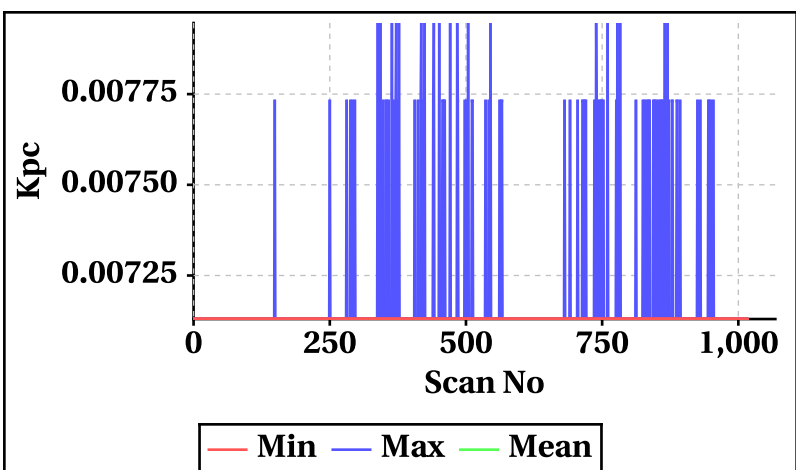
**Inner Beam(HH)**



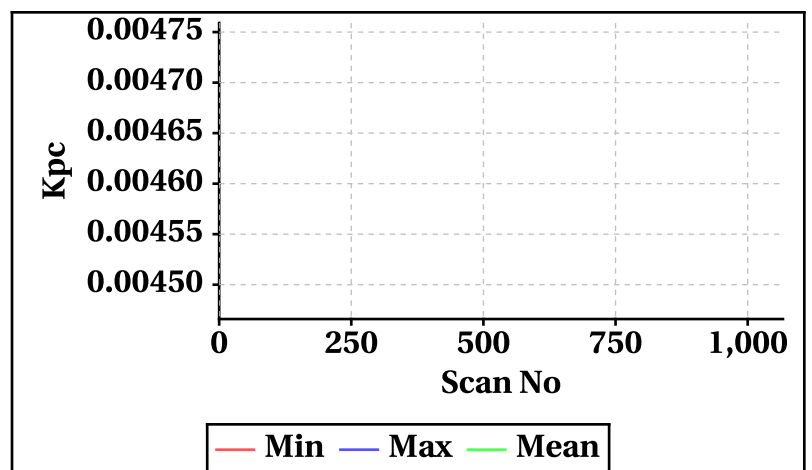
**Outer Beam(VV)**



**Inner Beam(HH)**



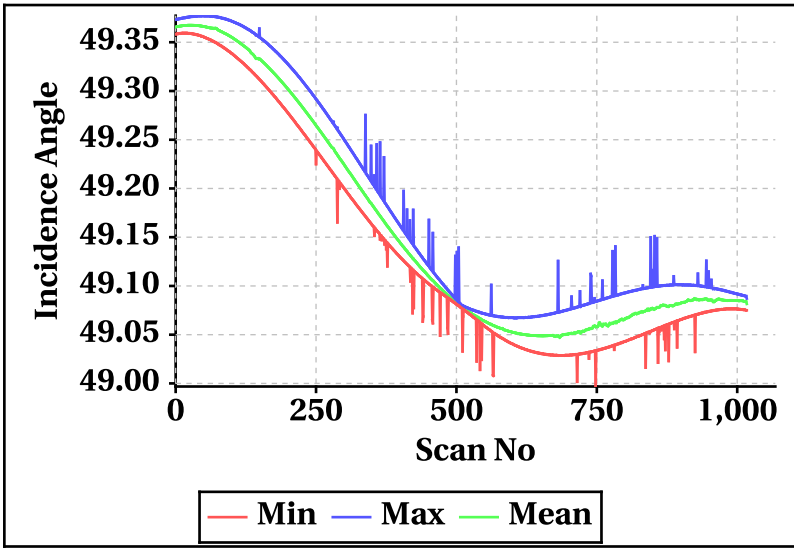
**Outer Beam(VV)**



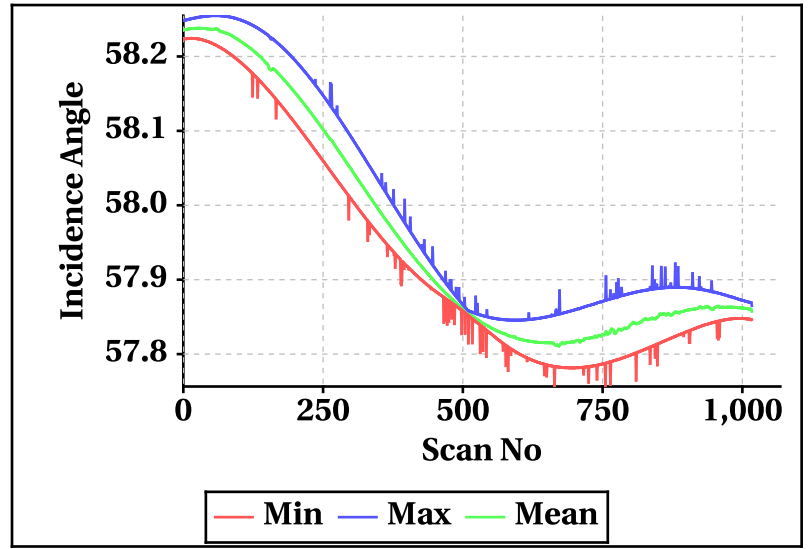


Orbt-wise behaviour of Incidence,Azimuth,Range,X-Factor

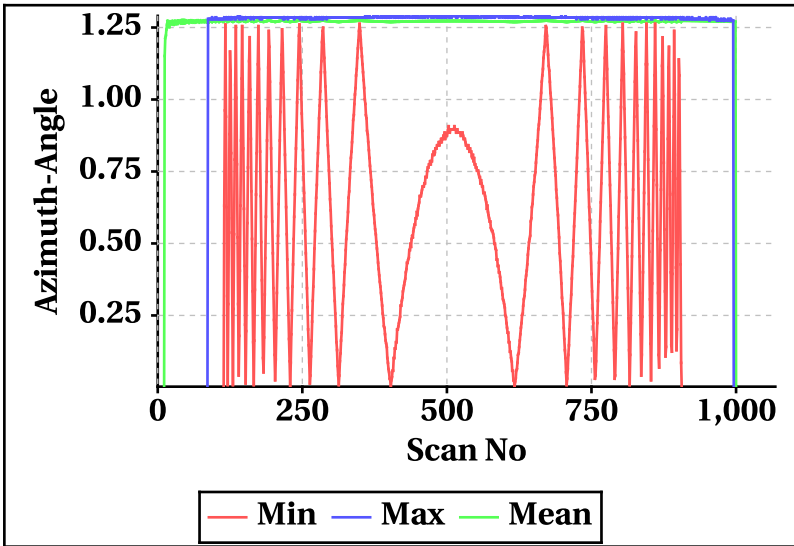
Inner Beam (HH)



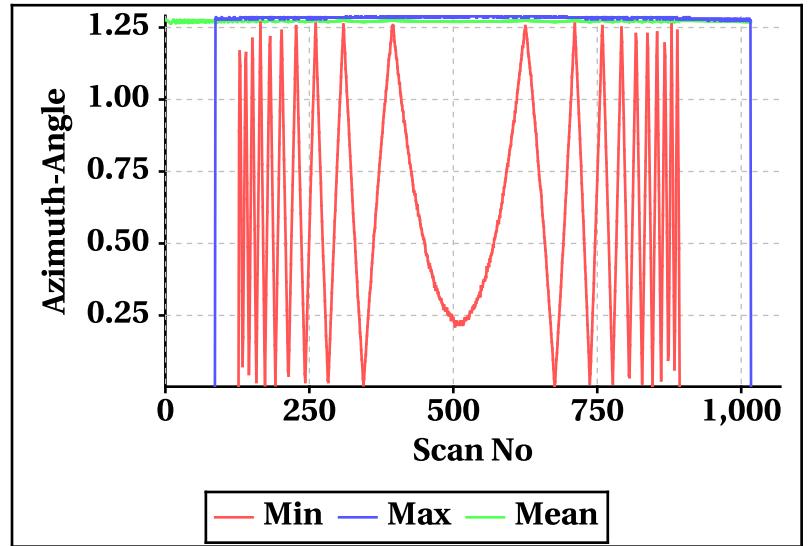
Outer Beam(VV)



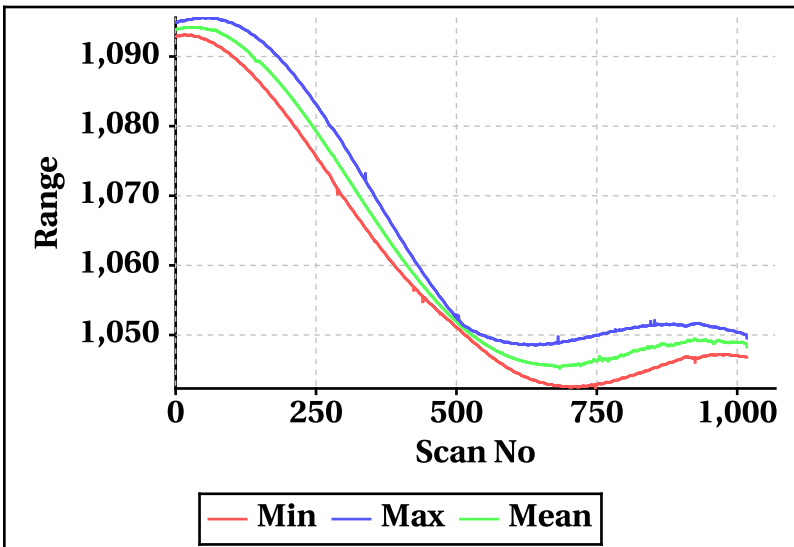
Inner Beam (HH)



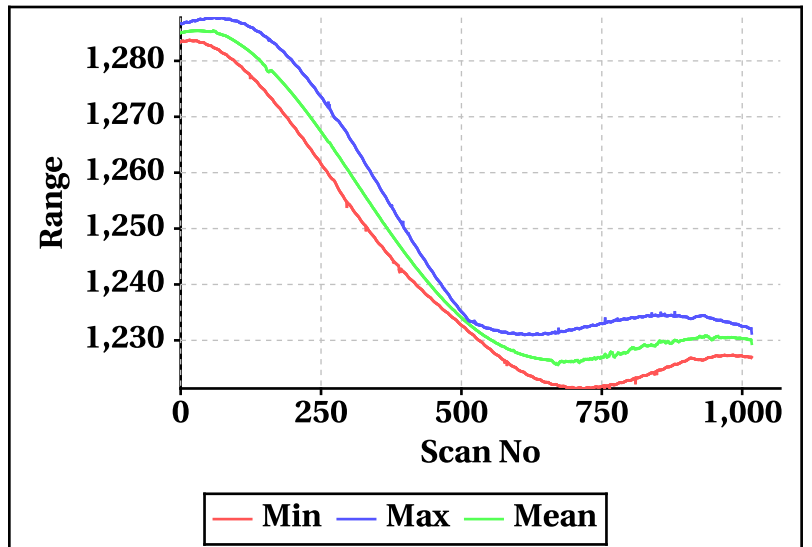
Outer Beam(VV)



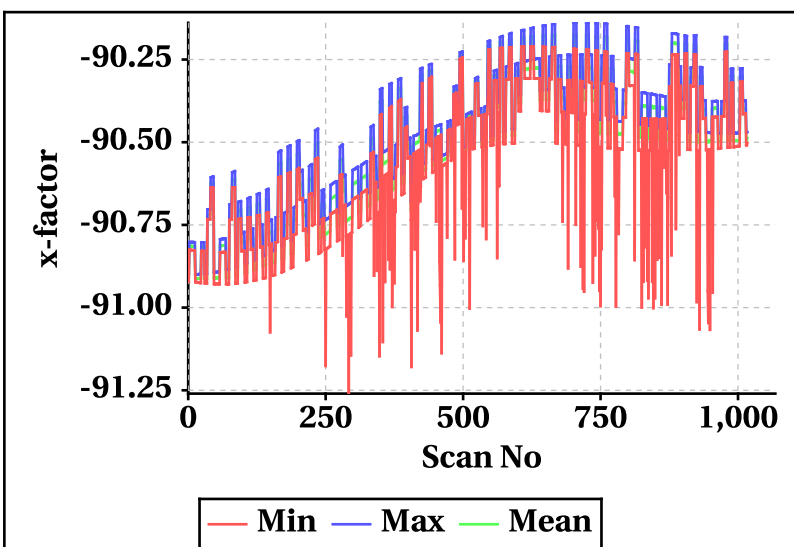
Inner Beam (HH)



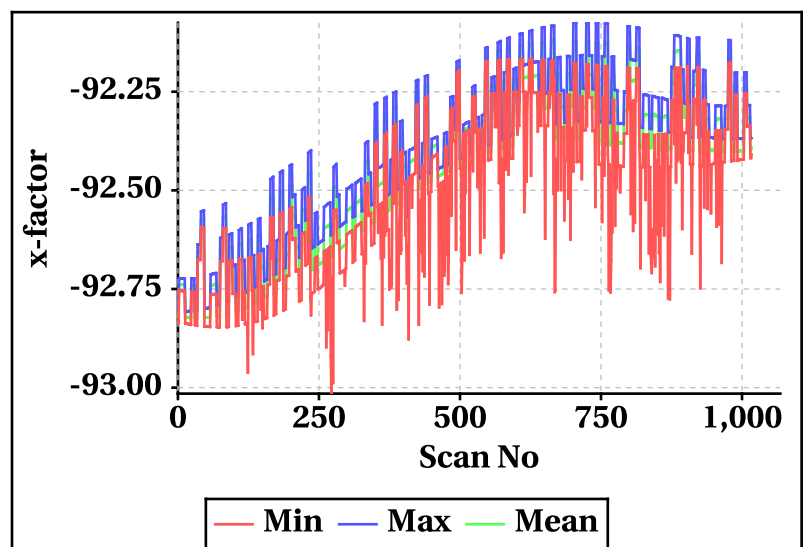
Outer Beam(VV)



Inner Beam (HH)



Outer Beam(VV)

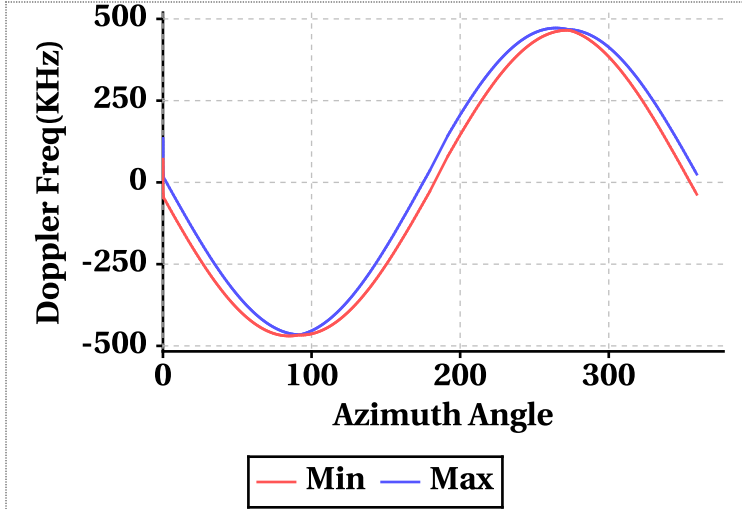


# Doppler Frequency Variation

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

	Inner Beam (HH)	Outer Beam (VV)
<b>Min</b>	-469.68	-525.70
<b>Max</b>	471.96	527.74

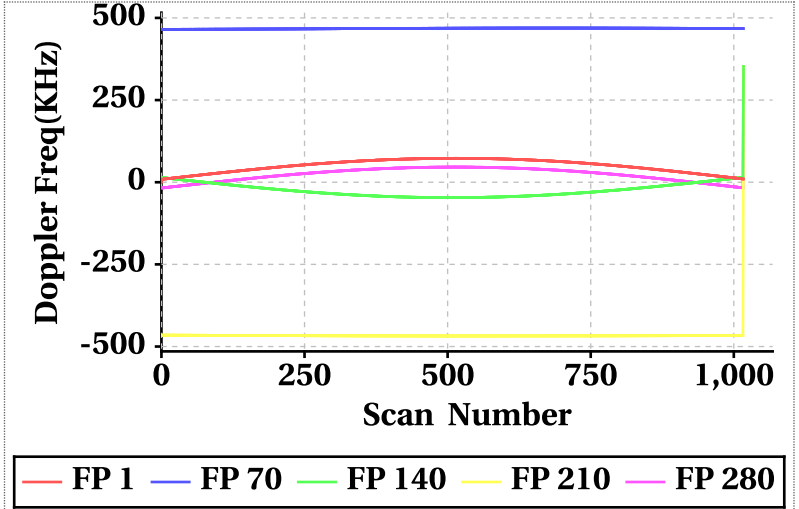
**Footprint wise Doppler frequency variation Inner Beam (HH)**



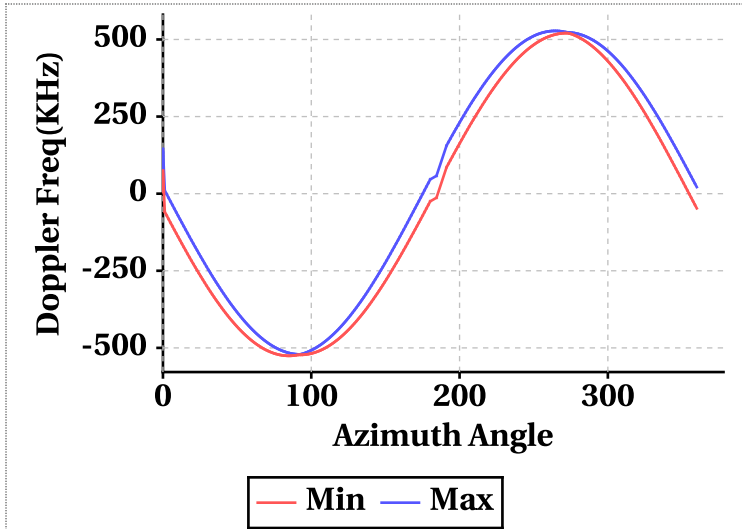
**Doppler Frequency(KHz) variation**

Doppler_FP	Inner Beam (HH)			Outer Beam (VV)		
	Min	Max	Mean	Min	Max	Mean
Doppler_1	0.00	72.74	49.66	5.06	352.58	50.64
Doppler_70	465.08	469.10	467.73	520.32	525.02	523.47
Doppler_140	-46.92	352.58	-24.22	-59.24	397.74	-33.74
Doppler_210	-467.88	352.58	-466.30	-523.12	397.74	-521.55
Doppler_280	-17.62	352.58	23.35	-13.18	397.74	32.45

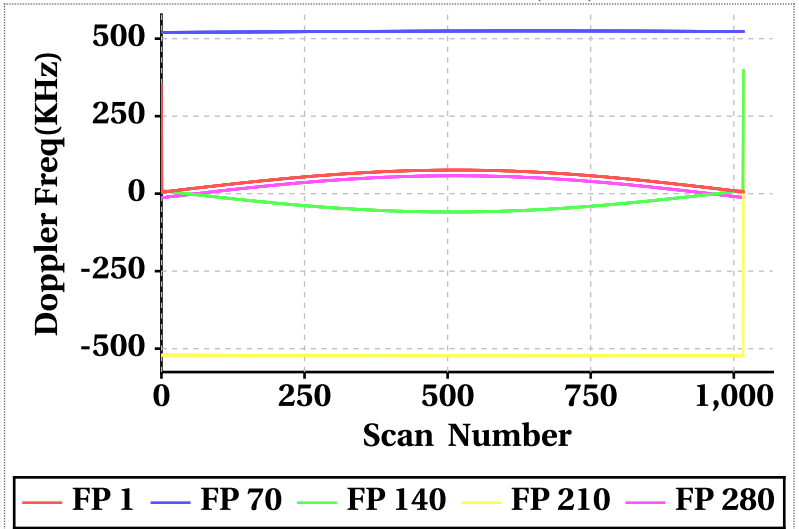
**Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Inner Beam (HH)**



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

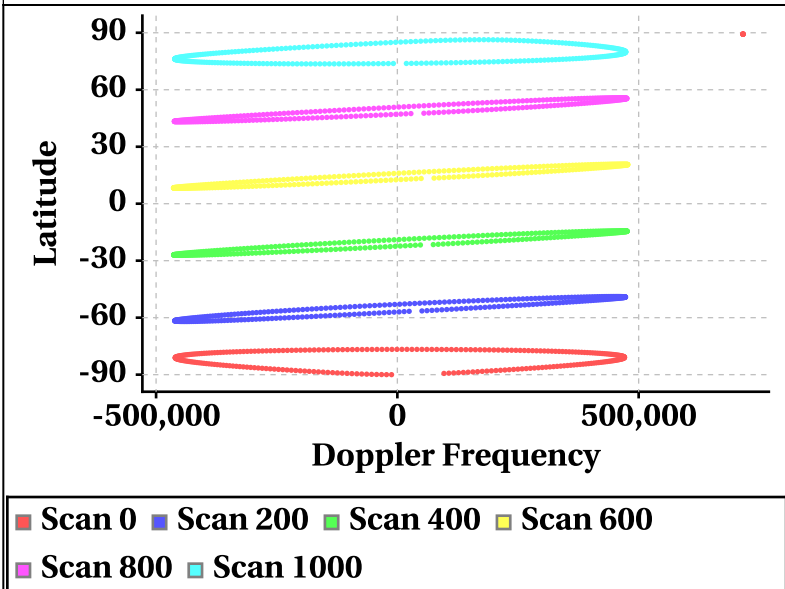


**Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Outer Beam (VV)**

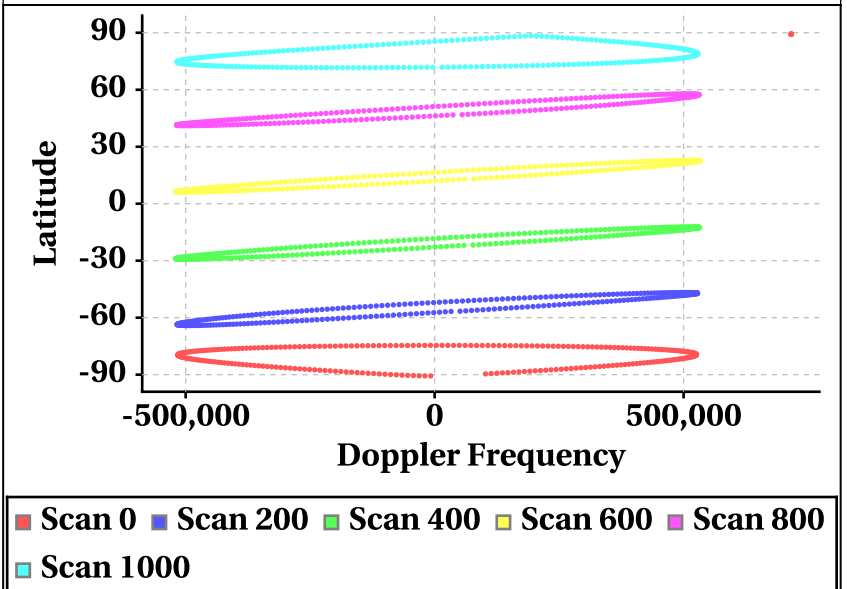


# Latitude Vs Doppler Frequency

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



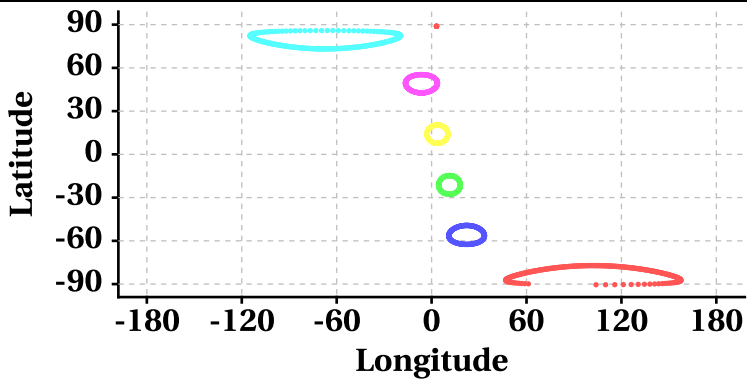
**Doppler Frequency at Scan Interval of 200 [Outer Beam(VV)]**



# Parameter as a function of Latitude

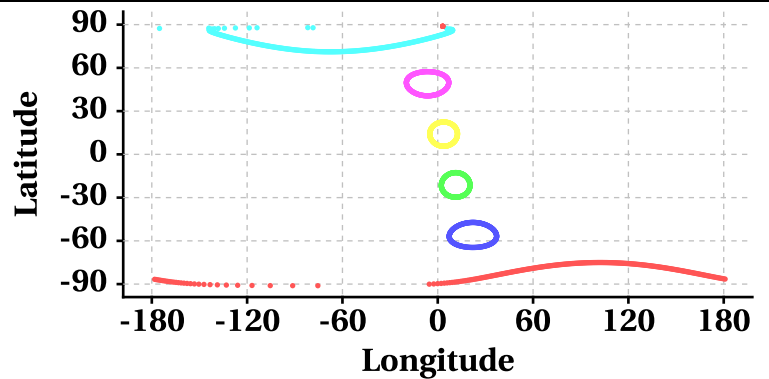
## Latitude Vs Longitude

Scan Trace [Inner Beam(HH)]



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

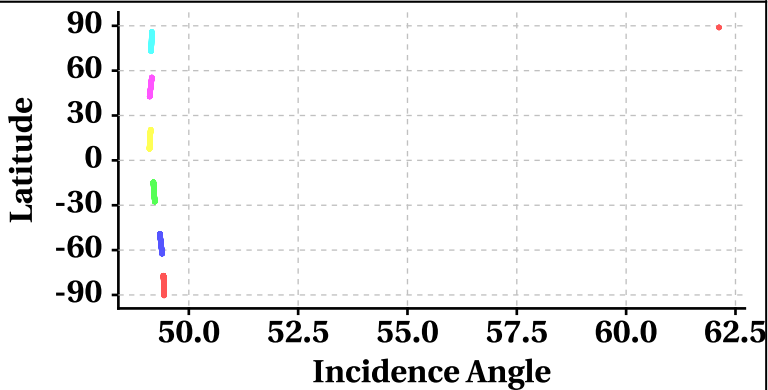
Scan Trace [Outer Beam (VV)]



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

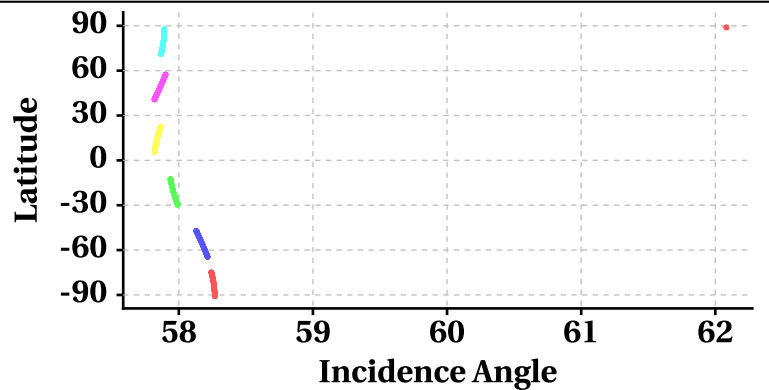
## Latitude Vs Incidence Angle

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



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

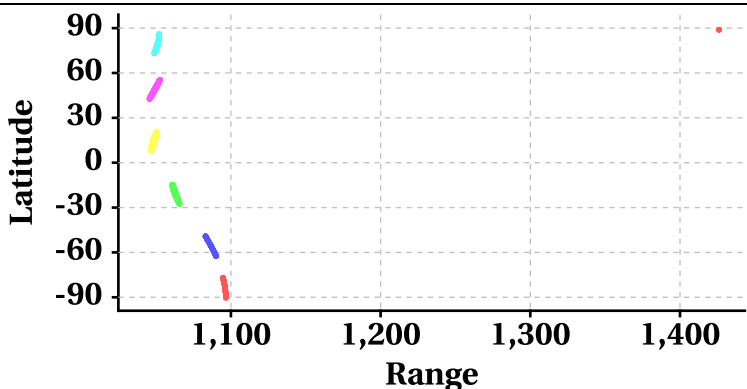
Incidence Angle at Scan Interval of 200 [Outer Beam (VV)]



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

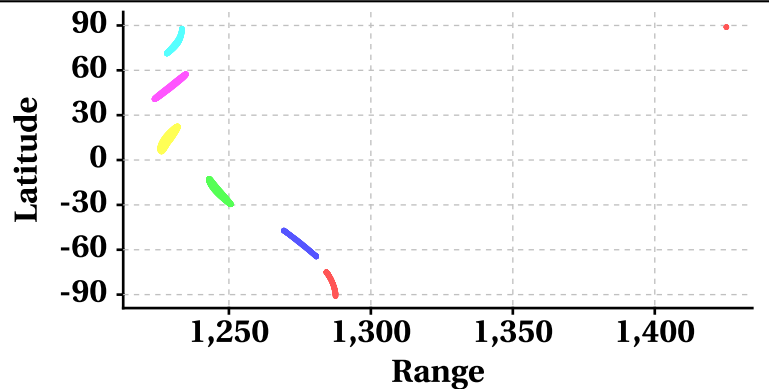
## Latitude Vs Range

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

