

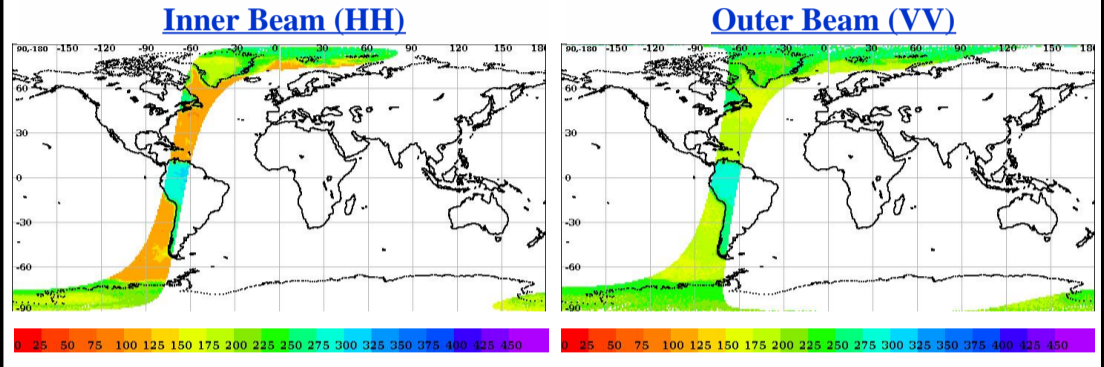
# SCATSAT-1 Scatterometer Level-1B Data Quality Evaluation Report

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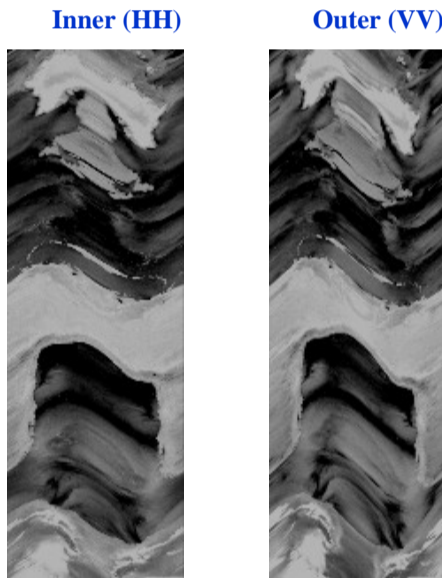
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<b>Satellite Id</b>	ScatSat-1	<b>Start Orbit</b>	19391	<b>Total Scans</b>	1016
<b>Sensor Name</b>	Scatterometer	<b>End Orbit</b>	19392	<b>No of Inner FootPrints</b>	281
<b>Processor Version</b>	v1.1.4	<b>Rev. Number</b>	19391_19392	<b>No Of Outer FootPrints</b>	282
<b>Half Orbit Direction</b>	NS	<b>Data Production Date</b>	25-05-2020	<b>No. Of Inner Slices</b>	9
<b>Equator Crossing Date</b>	25-05-2020	<b>Equator Crossing Time</b>	12:51:57.000	<b>No Of Outer Slices</b>	15

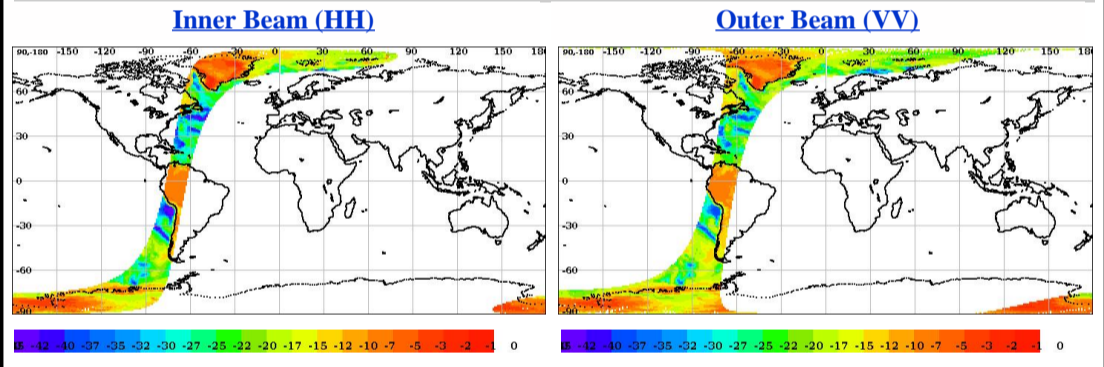
## Brightness Temperature(k) Footprint trace



## Image Snapshot for Inner & Outer Beam



## Sigma0(dB) Footprint trace



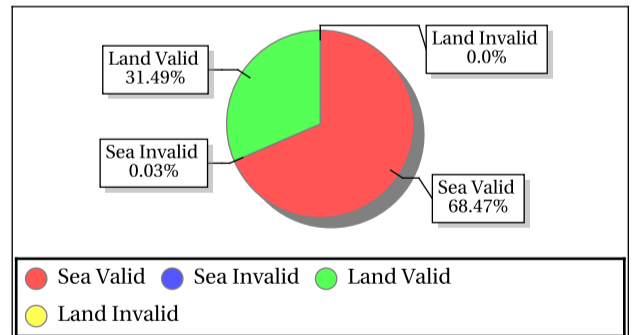
## Invalid and Poor Sigma-0 Quality Flag Statistics for Inner/Outer Slices\*

Sigma-0 Flags	Inner Beam	Outer Beam
<b>Invalid Sigma0(%)</b>	0.03	0.03
Data Not Available From Payload (%)	99.55307	99.3311
Slice not within sample array limits (%)	0.45	0.67
C(S+N) - C(N) < 0.1 (%)	0.00	0.00
<b>Poor Sigma0(%)</b>	22.22	13.34
Noise samples for blending Saturated	0.0	0.005233
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 (%)	0.044486	0.097684

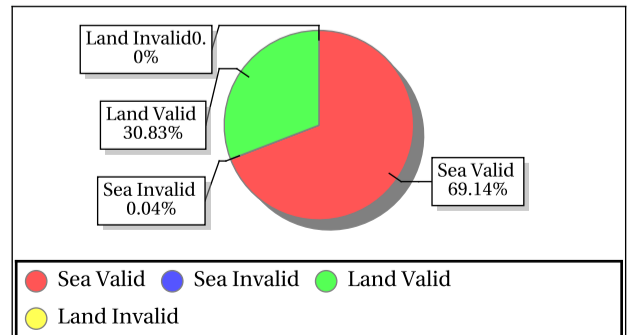
\*DP Format Document

## 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	-5.46	-4.68	-4.92	0.28	151.80	161.92	154.50	3.89
GreenLand_2	77.50	-41.50	Inner	DSC	Fore	-5.96	-4.97	-5.39	0.38	163.65	189.36	178.71	9.44
GreenLand_3	71.55	-42.45	Inner	DSC	Aft	-11.56	-8.72	-9.77	0.77	170.22	232.18	191.10	15.57
GreenLand_3	71.55	-42.45	Inner	DSC	Fore	-11.10	-9.10	-10.01	0.62	175.28	209.37	189.57	9.87
GreenLand_1	74.69	-42.50	Inner	DSC	Aft	-10.22	-8.08	-9.36	0.73	165.86	212.73	190.14	15.22
GreenLand_1	74.69	-42.50	Inner	DSC	Fore	-10.76	-8.21	-9.12	0.76	161.08	202.61	187.60	10.45
Amazon_1	0.00	-67.00	Inner	DSC	Aft	-9.61	-6.64	-7.73	0.58	254.10	327.36	299.13	15.97
Amazon_1	0.00	-67.00	Inner	DSC	Fore	-9.29	-6.40	-7.74	0.64	264.73	321.36	296.09	13.56
GreenLand_2	77.50	-41.50	Outer	DSC	Aft	-5.67	-5.51	-5.58	0.07	193.28	243.80	216.61	20.80
GreenLand_2	77.50	-41.50	Outer	DSC	Fore	-5.40	-4.84	-5.19	0.25	226.16	243.86	232.44	8.09
GreenLand_3	71.55	-42.45	Outer	DSC	Aft	-12.37	-10.67	-11.37	0.58	197.32	240.97	220.64	12.02
GreenLand_3	71.55	-42.45	Outer	DSC	Fore	-12.40	-10.53	-11.64	0.51	199.94	253.25	224.06	15.65
GreenLand_1	74.69	-42.50	Outer	DSC	Aft	-10.24	-8.06	-9.54	0.68	208.95	266.65	233.83	18.25
GreenLand_1	74.69	-42.50	Outer	DSC	Fore	-9.81	-7.81	-8.99	0.64	212.51	257.69	237.11	14.45
Amazon_2	-3.00	-61.00	Outer	DSC	Aft	-11.10	-8.85	-10.03	0.47	241.26	316.33	277.98	16.28
Amazon_2	-3.00	-61.00	Outer	DSC	Fore	-11.16	-8.77	-10.05	0.53	241.39	311.99	276.51	13.81
Amazon_1	0.00	-67.00	Outer	DSC	Aft	-9.72	-7.77	-8.75	0.43	264.00	332.79	293.41	15.33
Amazon_1	0.00	-67.00	Outer	DSC	Fore	-9.89	-7.87	-8.78	0.49	257.16	318.10	282.77	15.50



## 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	305.28	0.50	5.640	0.12	247.11	0.46	4.943	0.12	0.55	0.12	0.000	0.12	0.23	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	0.03	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	0.02	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>	-34.98	25.69	4.44	0.217	-34.06	26.26	4.46	0.299	-6.73	29.40	19.11	14.605	-1.06	29.93	20.06	28.291

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	221.90	0.41	4.851	0.09	232.24	0.41	4.715	0.09	0.20	0.09	0.000	0.09	0.19	0.09	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	0.01	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>	-34.76	21.67	2.28	0.000	-34.96	19.55	1.94	0.000	-2.31	22.43	13.37	0.017	-2.03	23.58	13.96	0.527

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	49.38	49.01	0.000	57.52	58.21	57.91	0.000	Inci.(Inner)	47.10	49.90
<b>Azimuth Diff. (deg)</b>	0.0026	41.02	1.27	2.624	0.0000	299.49	1.28	3.892	Inci.(Outer)	57.30	58.90
<b>Range(Km)</b>	1040.60	1079.45	1056.80	0.000	1219.95	1267.96	1242.15	0.000	Azimuth Diff.	0.60	2.00
<b>X Factor(dbm)</b>	-92.60	-89.72	-90.22	0.000	-93.81	-91.76	-92.03	0.000	Range(Inner)	1025.00	1095.70
<b>Across Distance (Km)</b>	15.91	16.39	16.06	0.000	21.00	22.71	21.15	2.000	Range(Outer)	1210.00	1280.00
<b>Along Distance (Km)</b>	18.72	801.93	21.21	2.000	18.37	1053.81	21.61	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

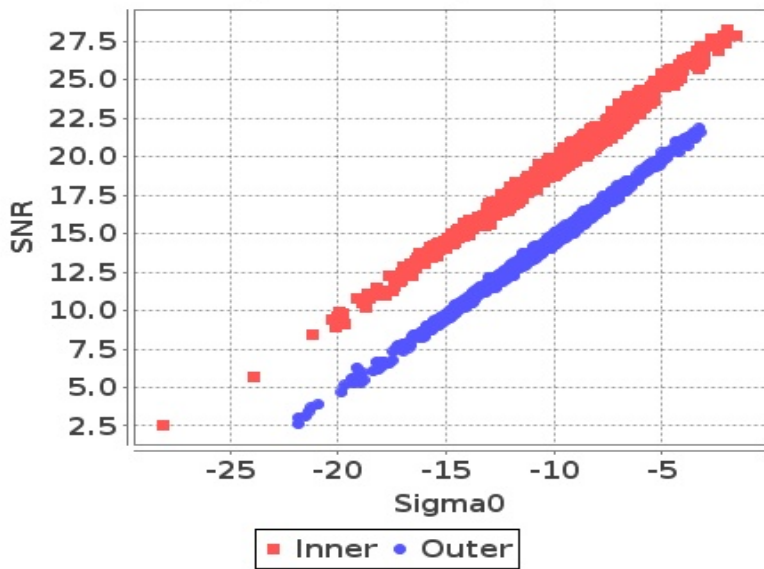
- Normal
- Deviations
- Alarming
- High Errors



## Sigma0 Behaviour (Sigma0 Vs SNR)

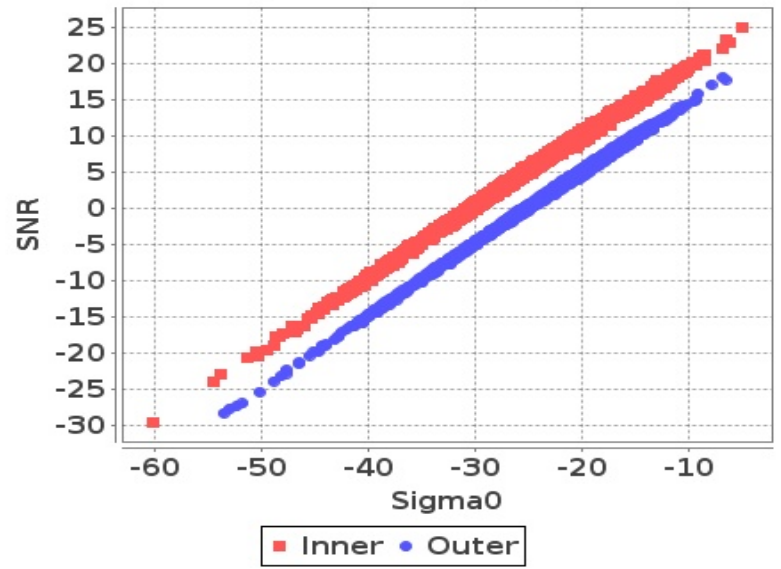
**Footprint-Land**

Sigma0 Vs SNR (Land)



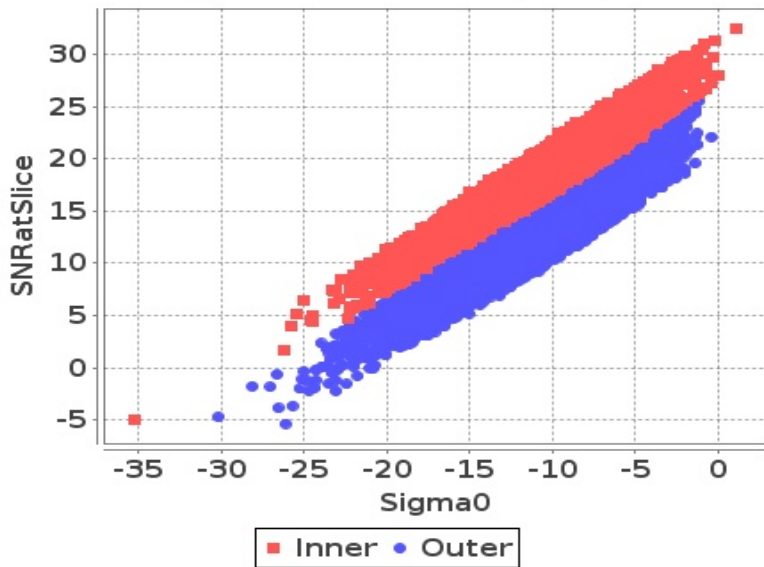
**Footprint-Sea**

Sigma0 Vs SNR (Sea)



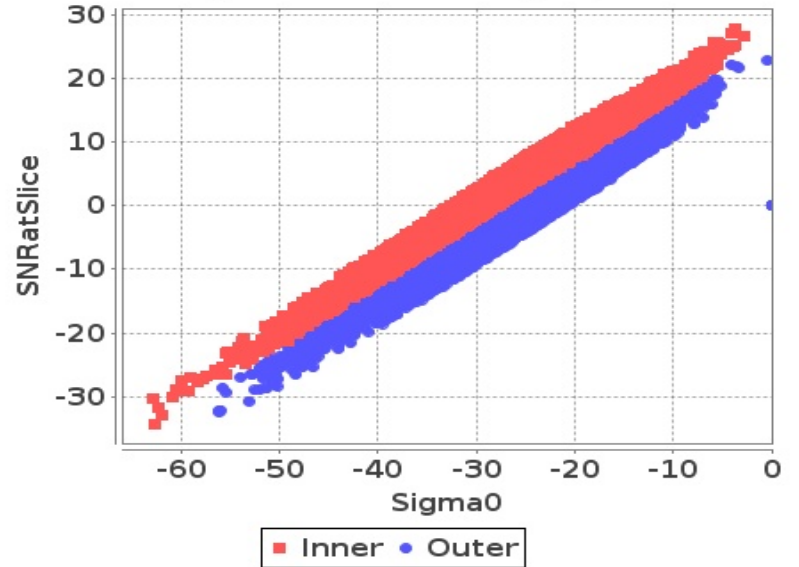
**Slice-Land**

Sigma0 Vs SNRatSlice (Land)



**Slice-Sea**

Sigma0 Vs SNRatSlice (Sea)



## Sigma0 Behaviour (Kp Vs SNR)

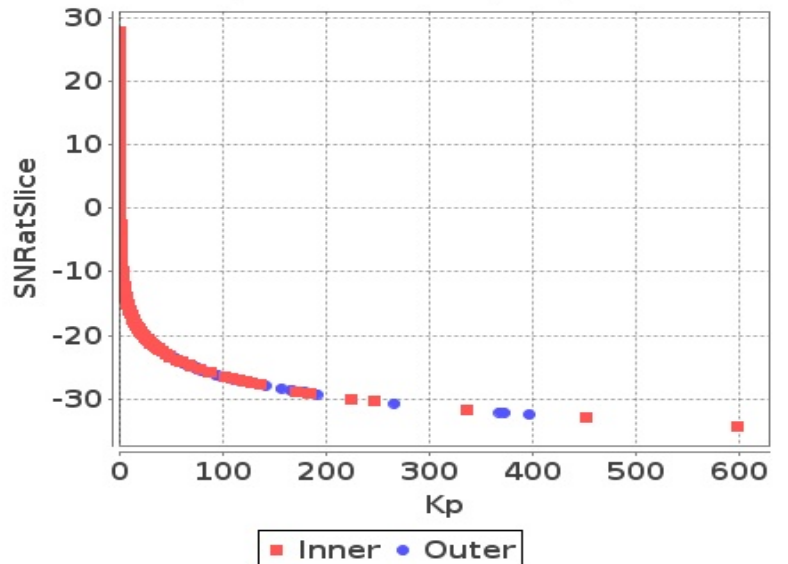
**Slice**

Kp Vs SNRatSlice (Land)



**Slice**

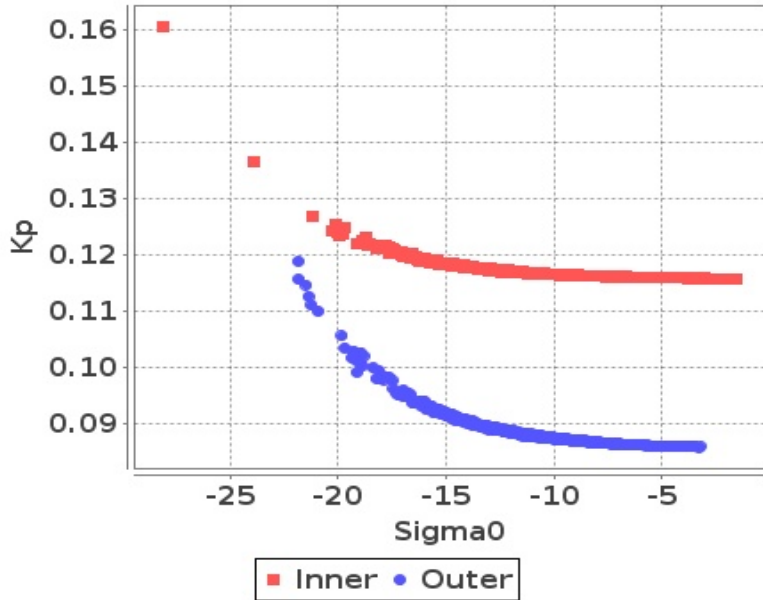
Kp Vs SNRatSlice (Sea)



# Sigma0 Behaviour(Sigma0 Vs Kp)

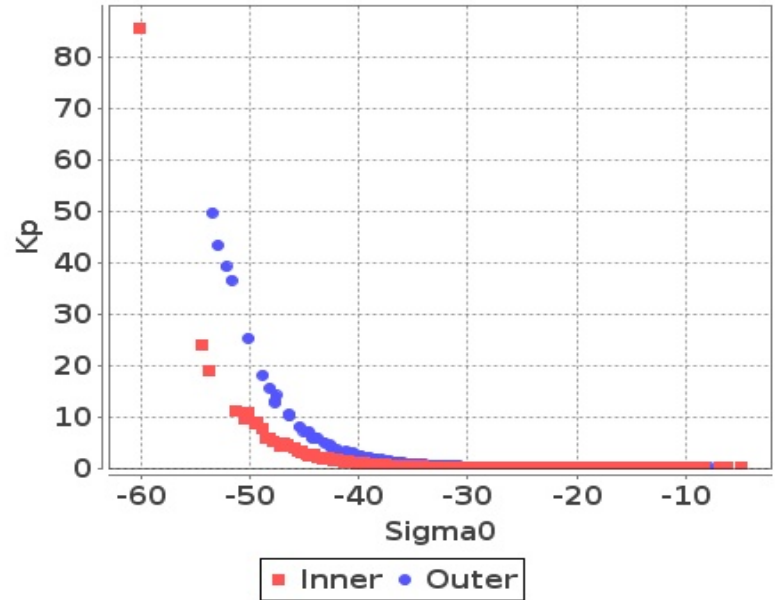
## Footprint-Land

### Sigma0 Vs Kp (Land)



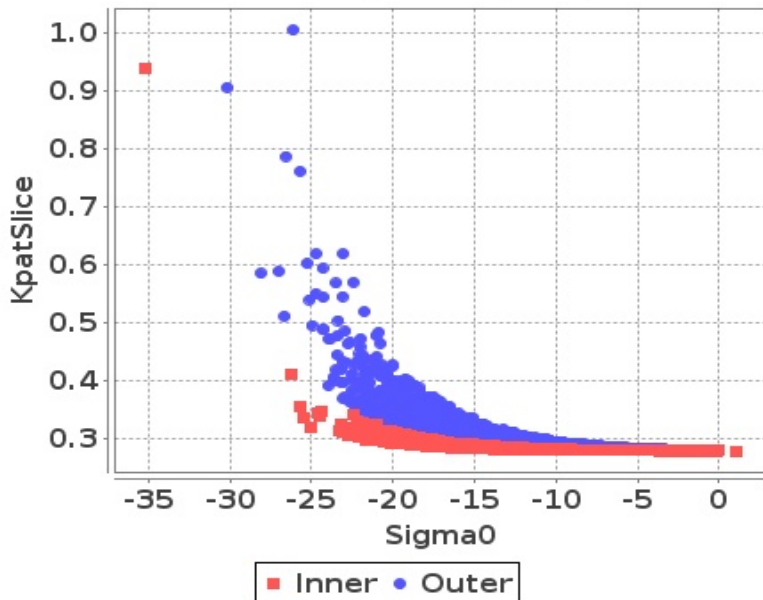
## Footprint-Sea

### Sigma0 Vs Kp (Sea)



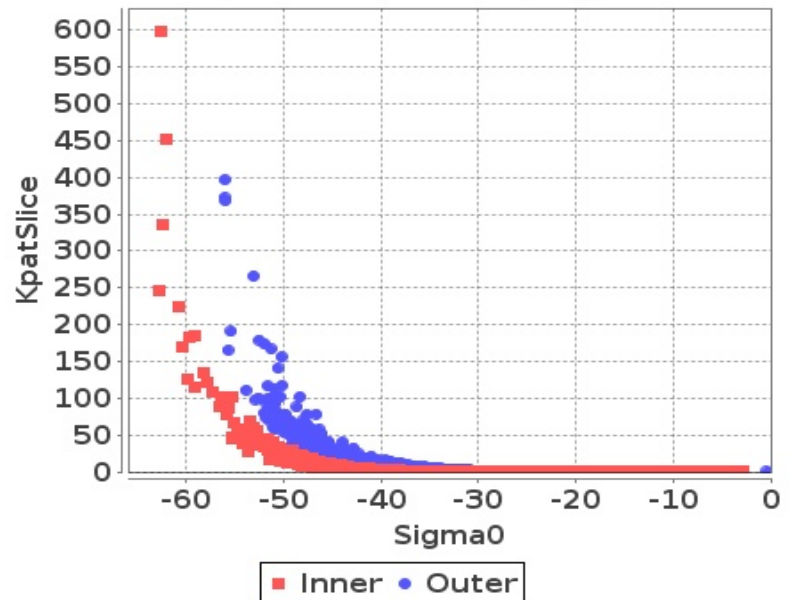
## Slice-Land

### Sigma0 Vs KpatSlice (Land)



## Slice-Sea

### Sigma0 Vs KpatSlice (Sea)

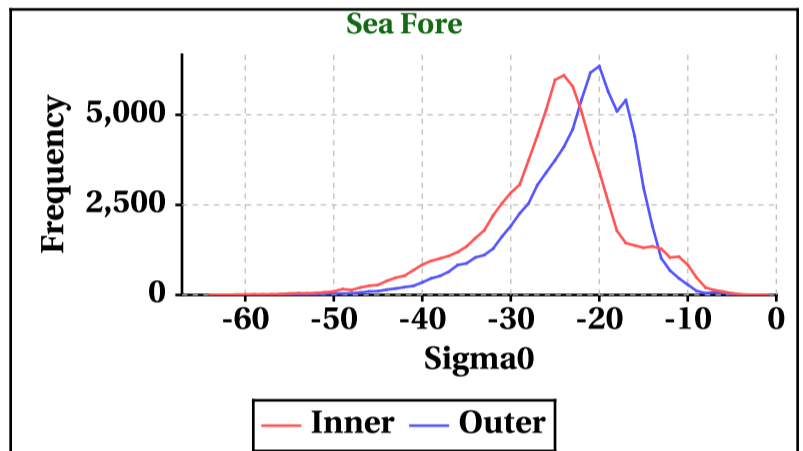
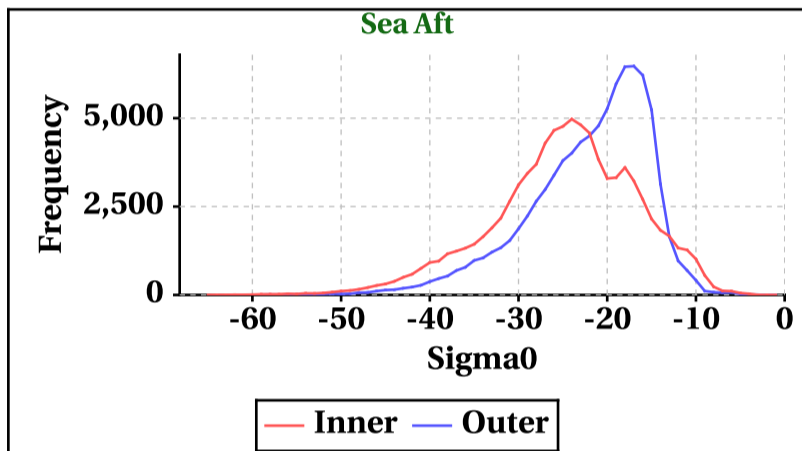
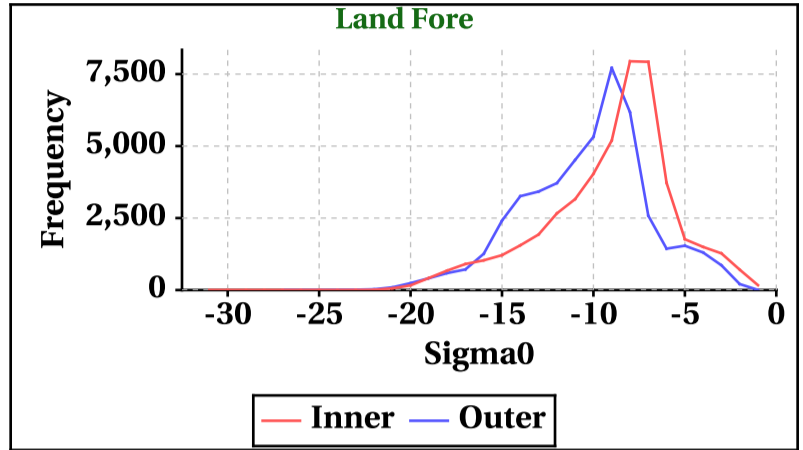
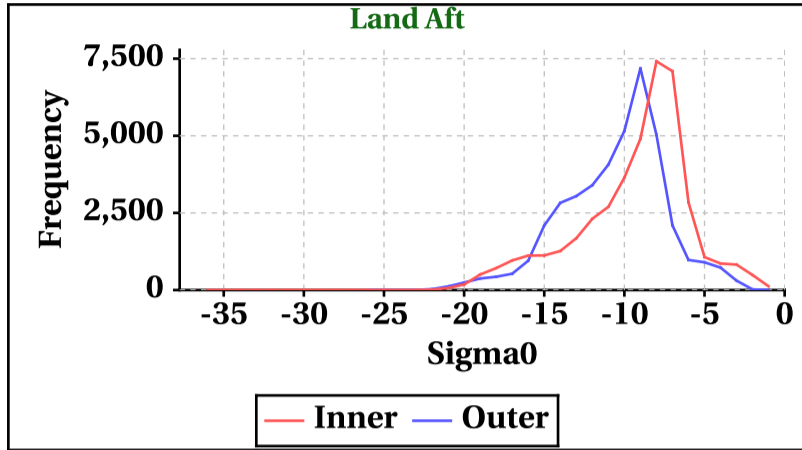


# Dynamic Range (Data Histograms)

## Sigma0(db)

Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-36	-31	-65	-64
Max	0	0	0	0

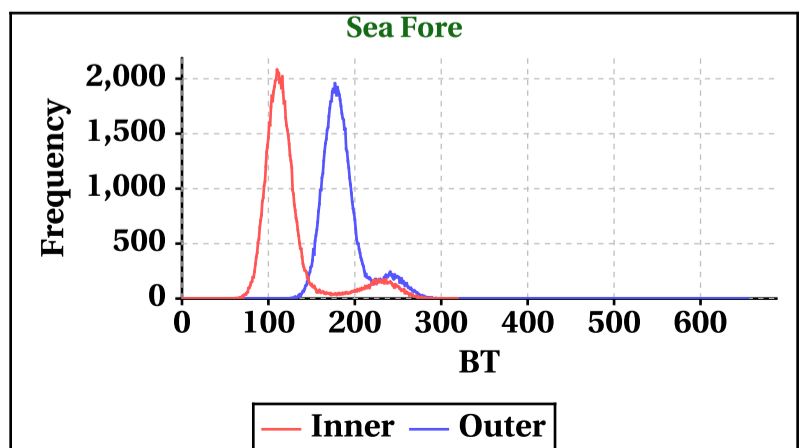
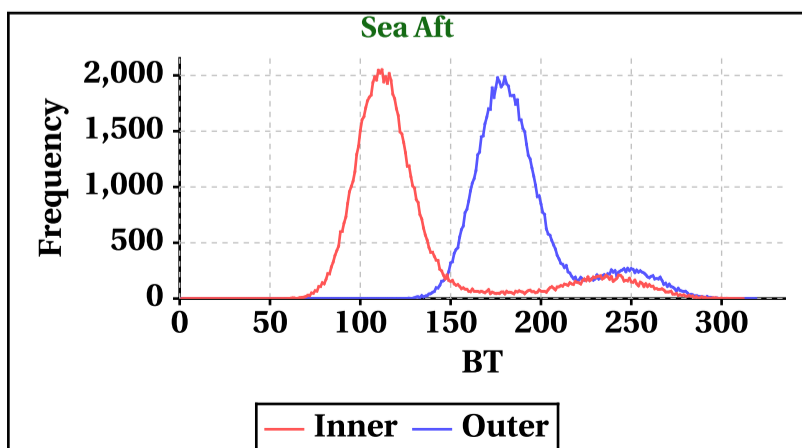
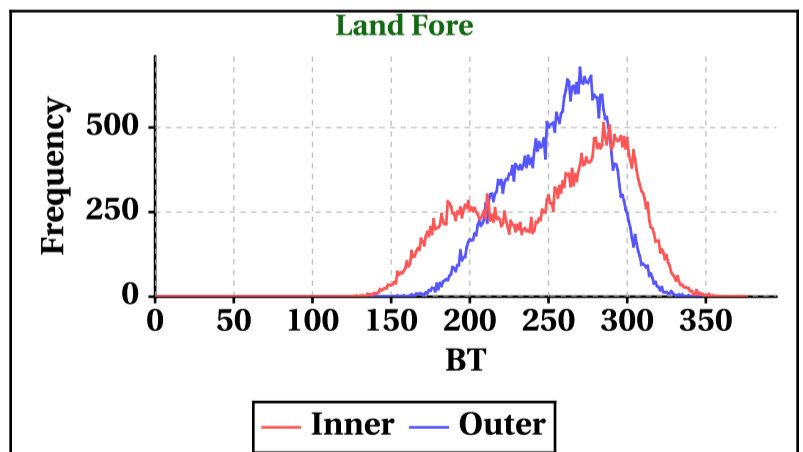
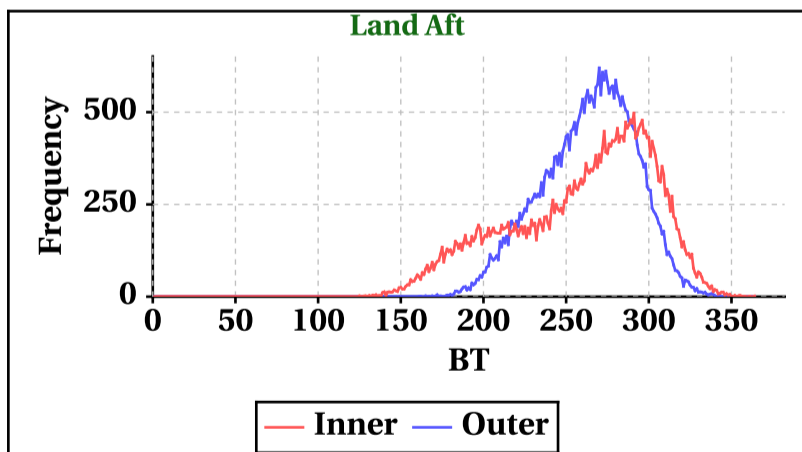
Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-26	-27	-59	-60
Max	0	0	0	0



## Brightness Temperature(K)

Inner Beam(HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	364	376	312	319

Outer Beam(VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	364	354	319	655

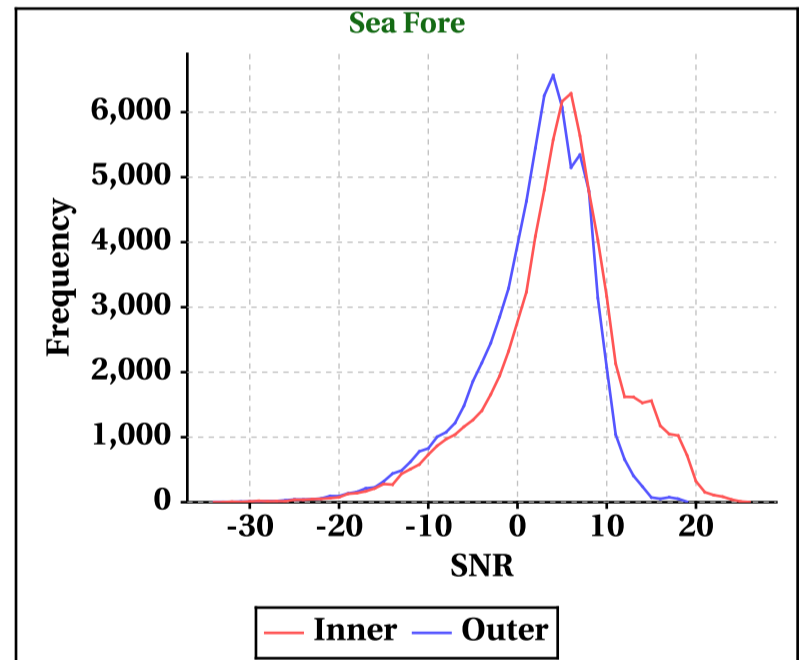
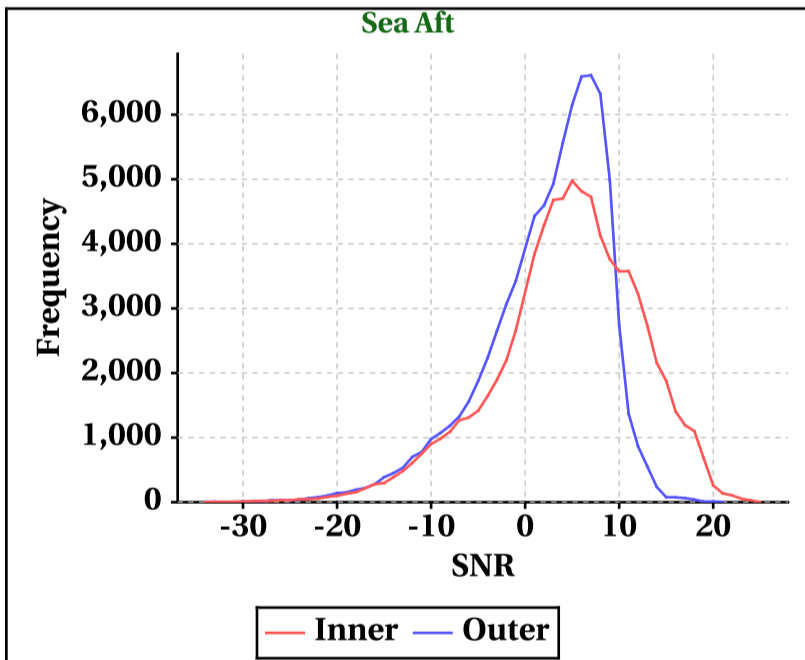
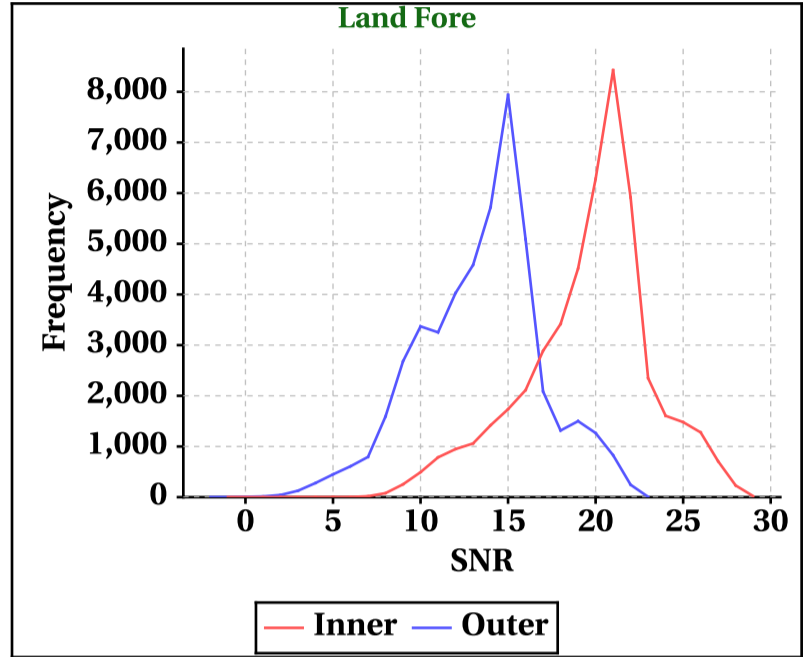
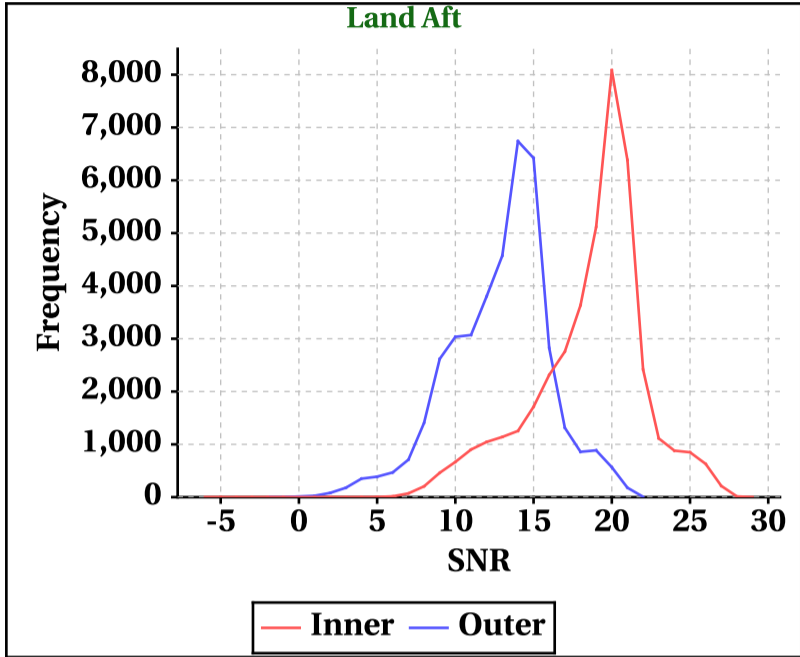


# Dynamic Range (Data Histograms)

## SNR(dBm)

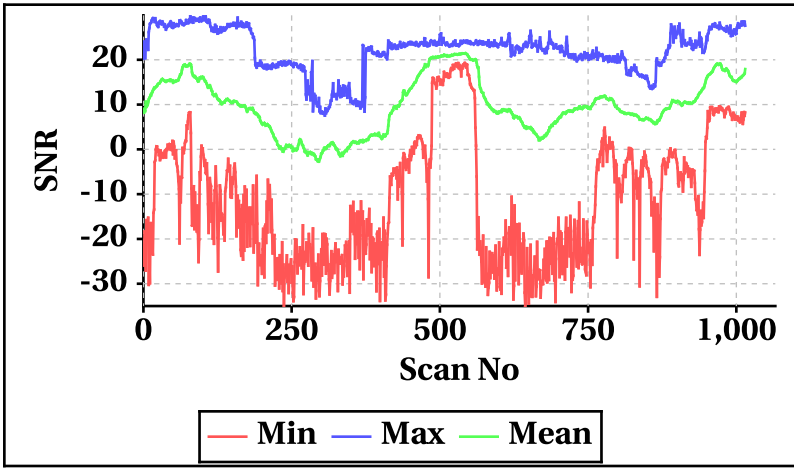
Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-6	-1	-34	-34
Max	29	29	25	26

Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-2	-2	-34	-34
Max	22	23	21	19

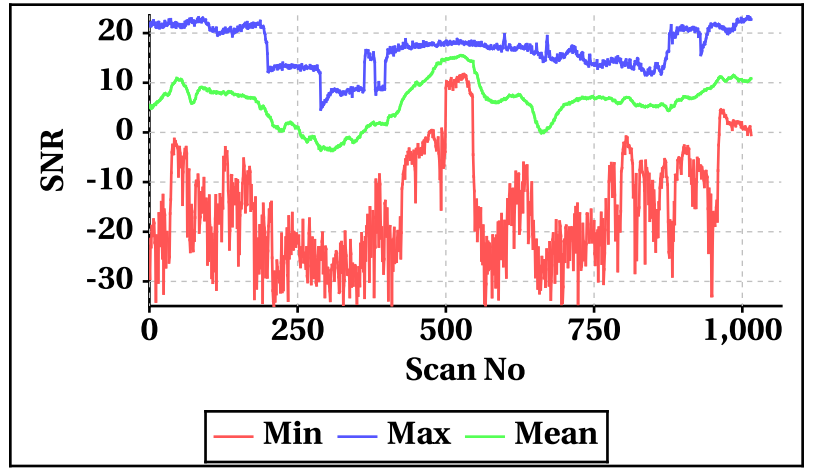


## Orbit-wise behaviour of SNR

Inner Beam (HH)

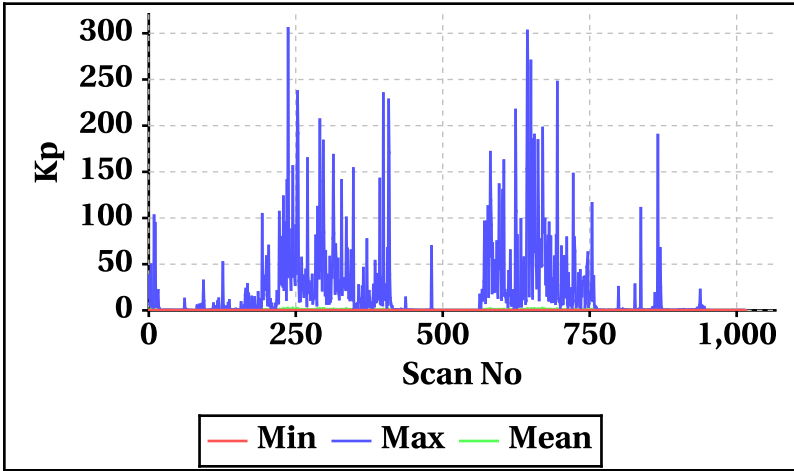


Outer Beam(VV)

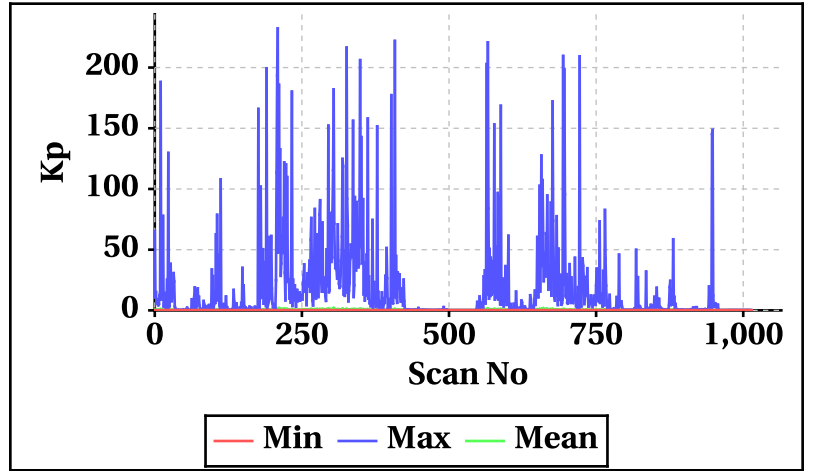


## Orbit-wise behaviour of Kp,Kpa,Kpb,Kpc

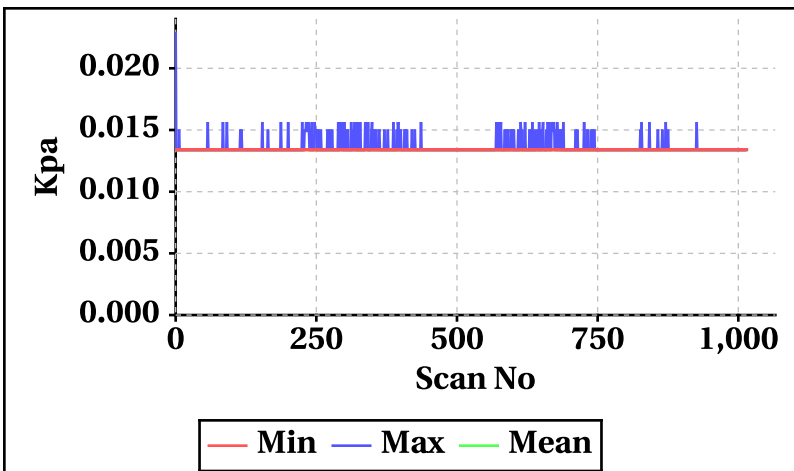
Inner Beam(HH)



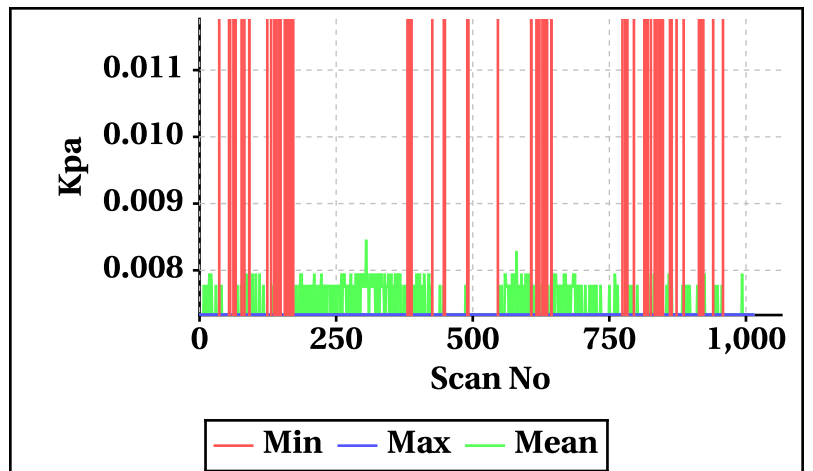
Outer Beam(VV)



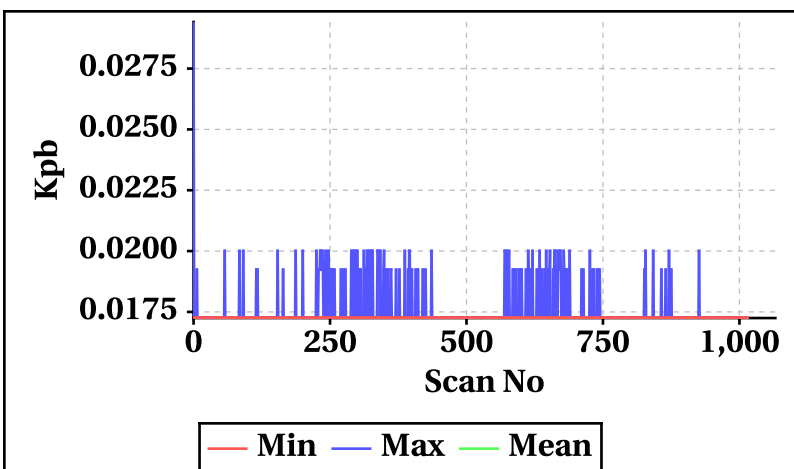
Inner Beam(HH)



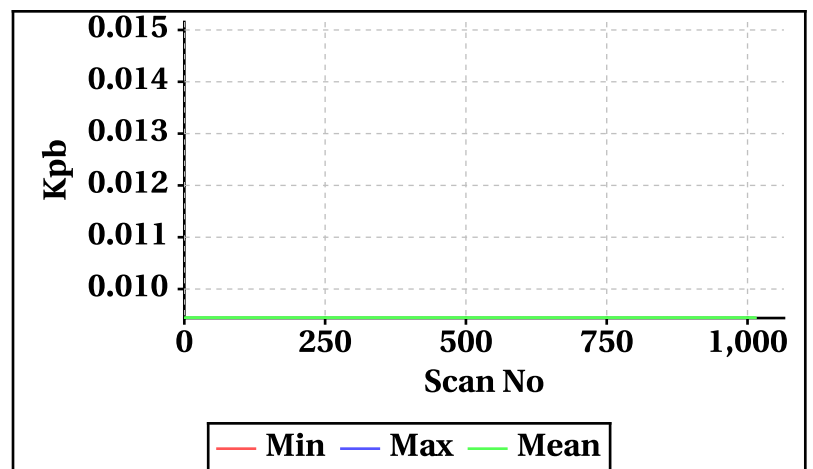
Outer Beam(VV)



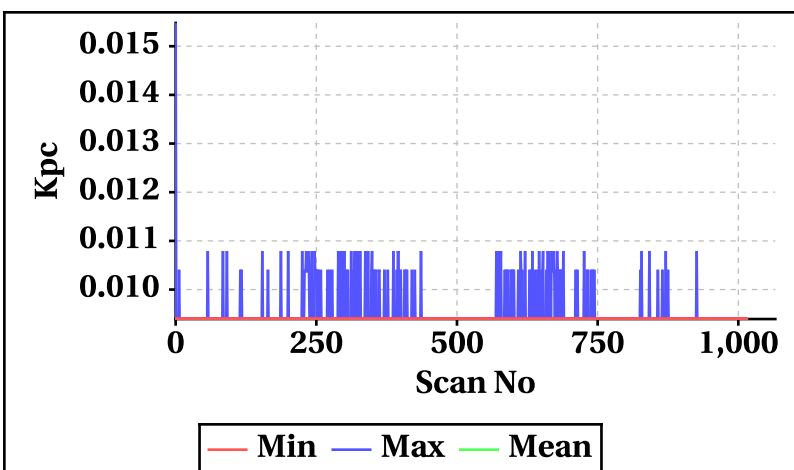
Inner Beam(HH)



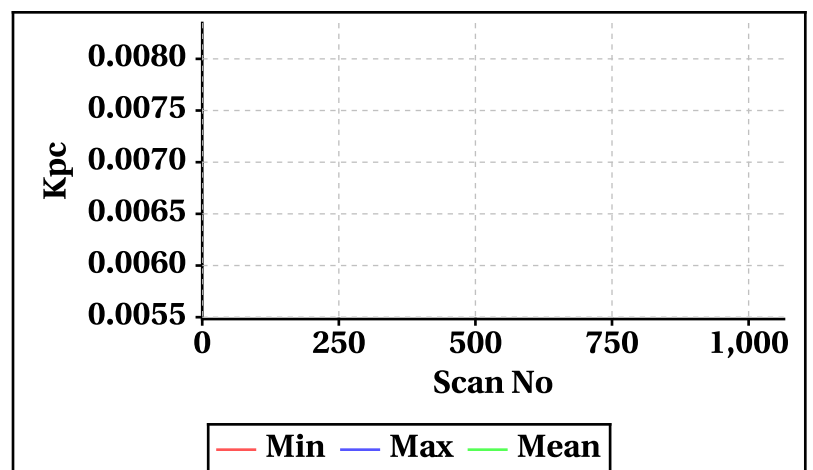
Outer Beam(VV)



Inner Beam(HH)



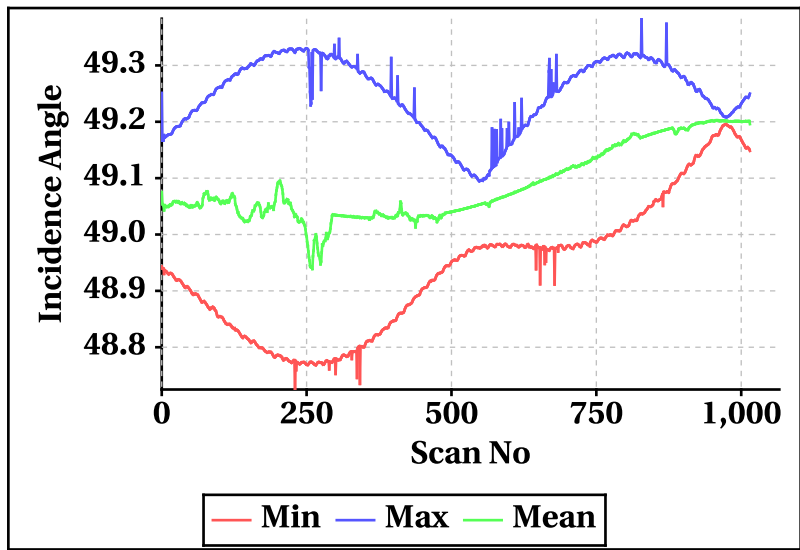
Outer Beam(VV)



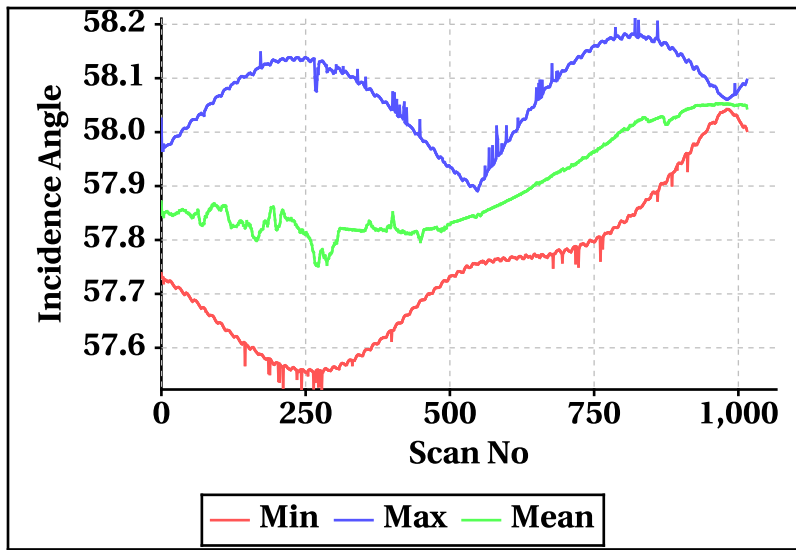


Orbit-wise behaviour of Incidence, Azimuth, Range, X-Factor

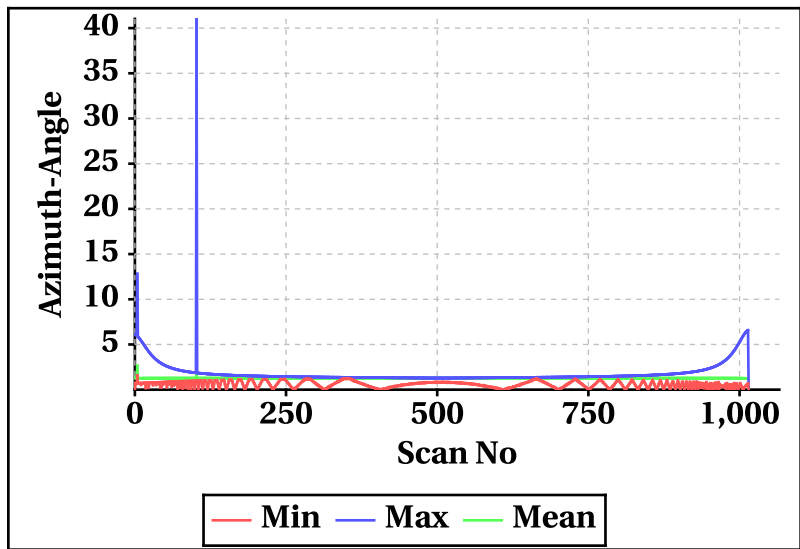
Inner Beam (HH)



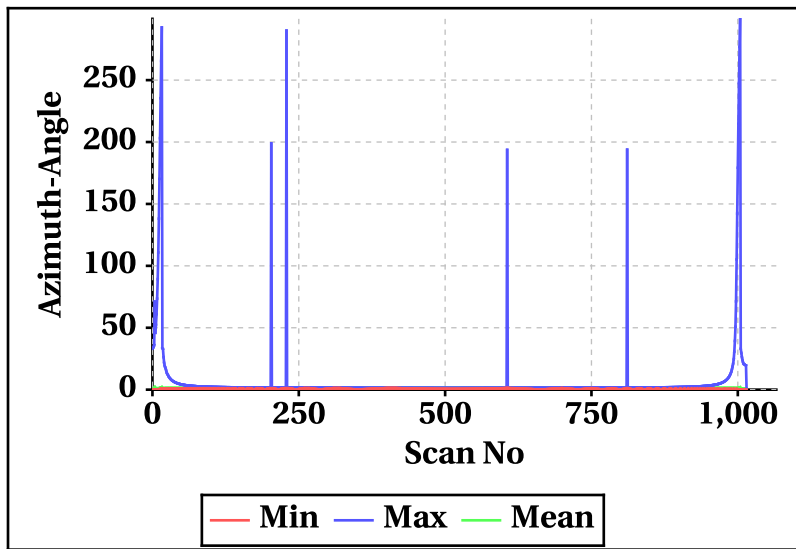
Outer Beam(VV)



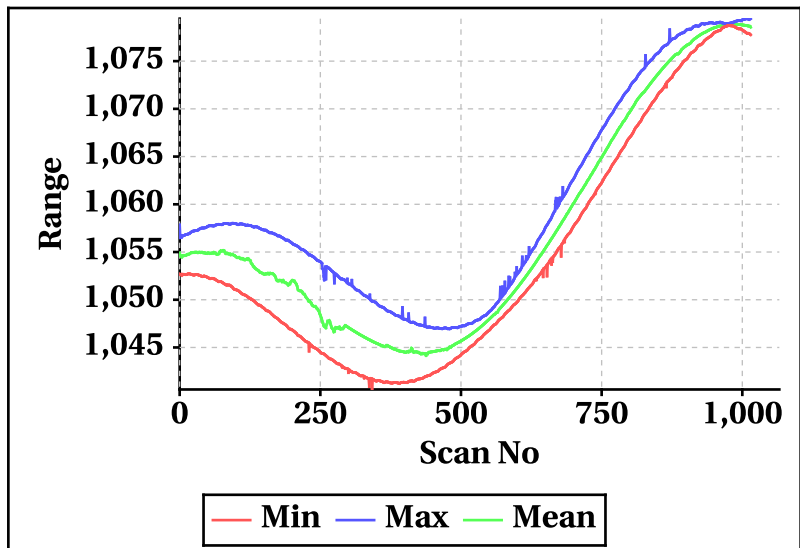
Inner Beam (HH)



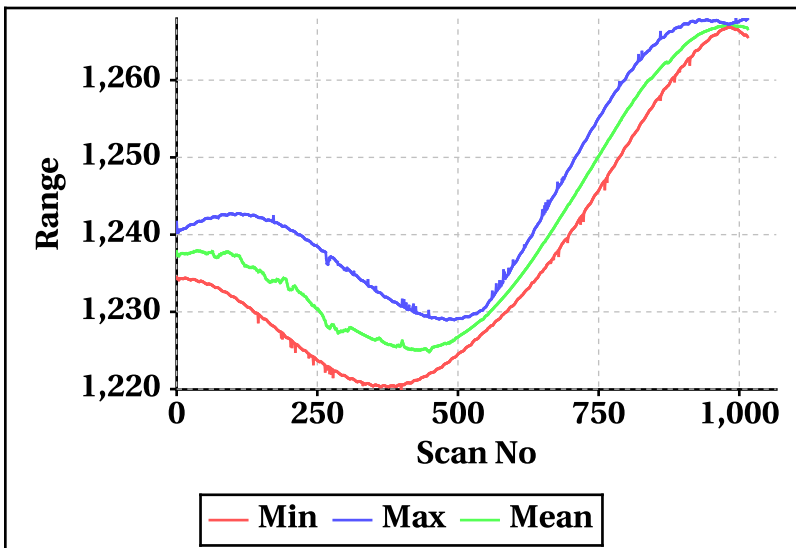
Outer Beam(VV)



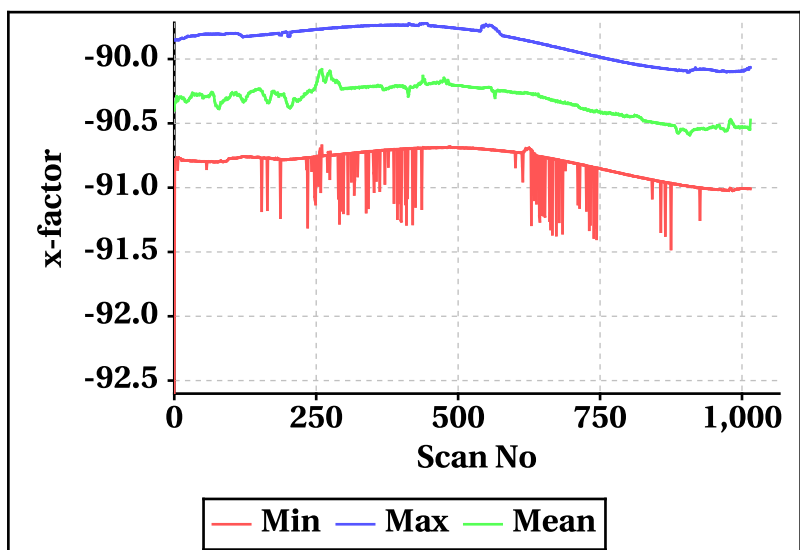
Inner Beam (HH)



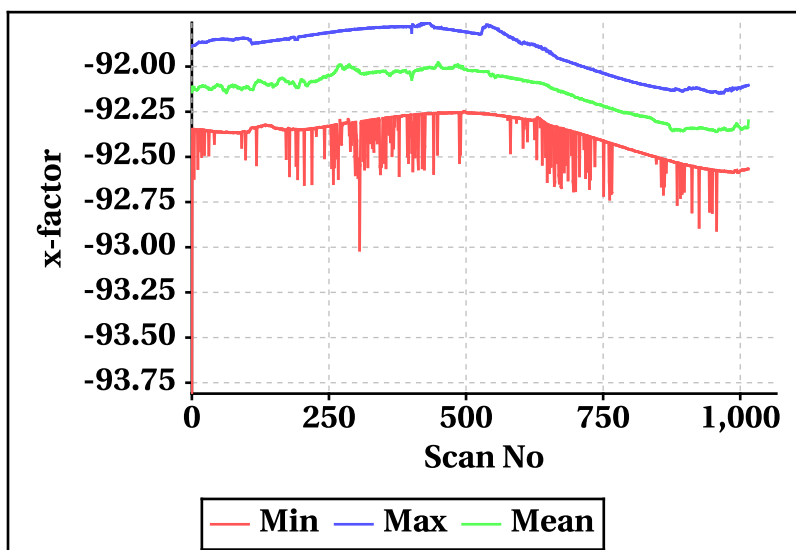
Outer Beam(VV)



Inner Beam (HH)



Outer Beam(VV)

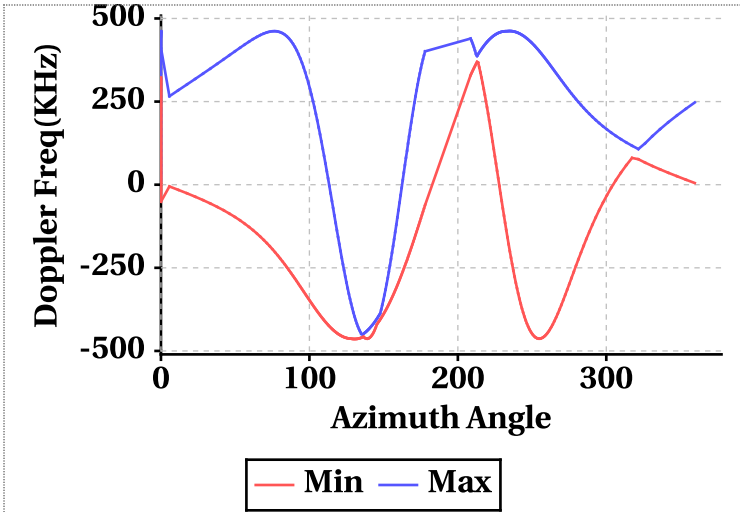


# Doppler Frequency Variation

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

	Inner Beam (HH)	Outer Beam (VV)
<b>Min</b>	-464.04	-519.78
<b>Max</b>	462.12	518.08

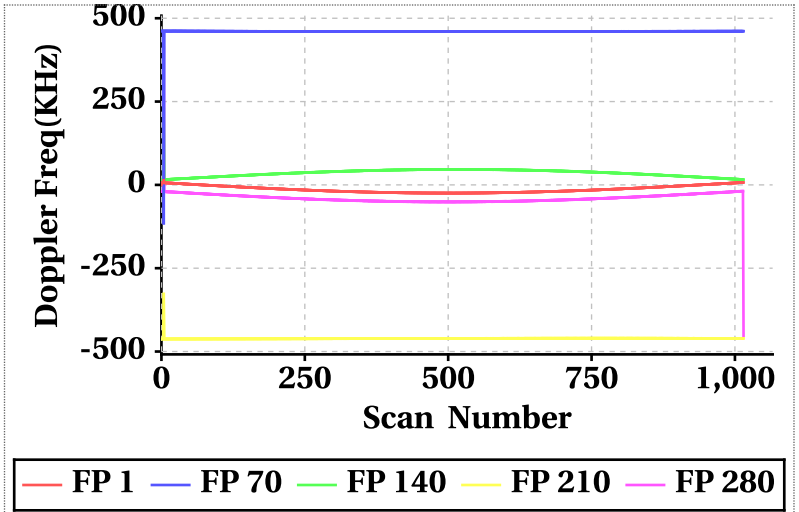
**Footprint wise Doppler frequency variation Inner Beam (HH)**



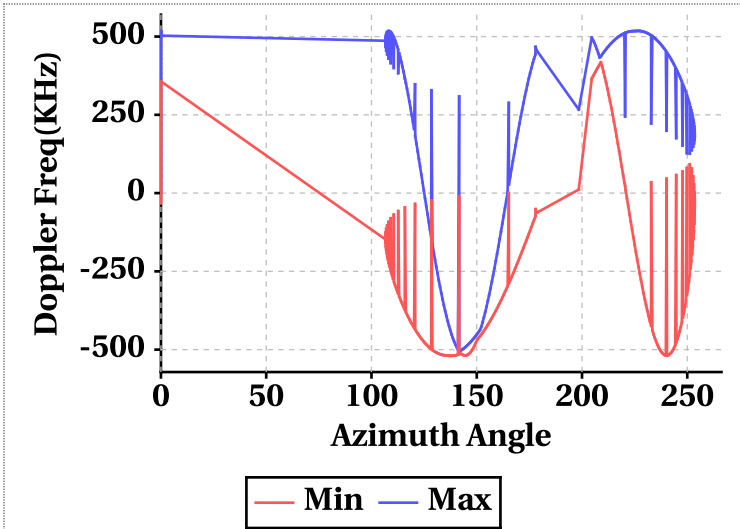
**Doppler Frequency(KHz) variation**

Doppler_FP	Inner Beam (HH)			Outer Beam (VV)		
	Min	Max	Mean	Min	Max	Mean
Doppler_1	-24.62	13.44	-13.04	-452.46	2.70	-20.55
Doppler_70	-114.92	461.54	460.06	-116.46	517.26	515.38
Doppler_140	15.28	228.06	35.36	11.42	266.70	33.96
Doppler_210	-462.36	-327.48	-460.81	-518.28	-375.74	-516.79
Doppler_280	-452.46	411.68	-39.42	-505.90	467.14	-38.18

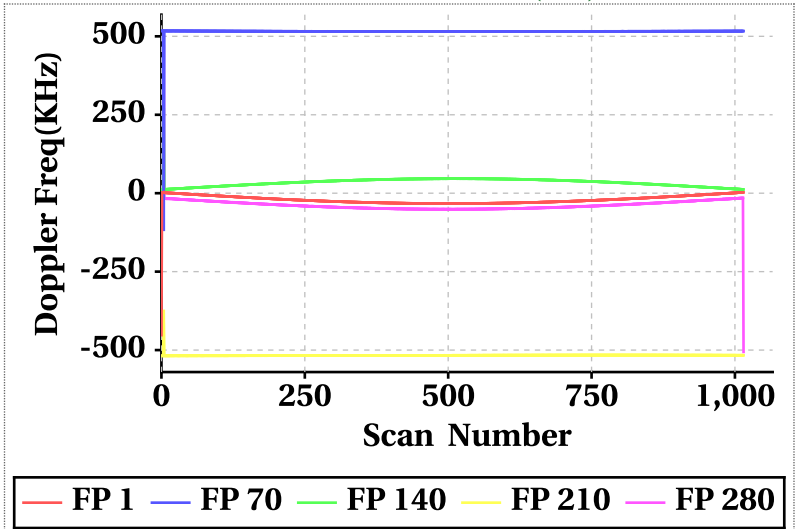
**Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Inner Beam (HH)**



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

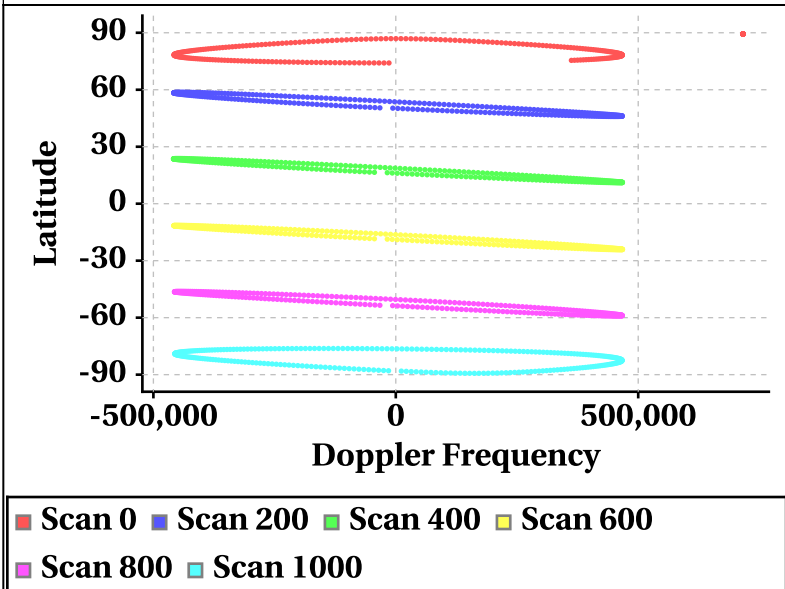


**Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Outer Beam (VV)**

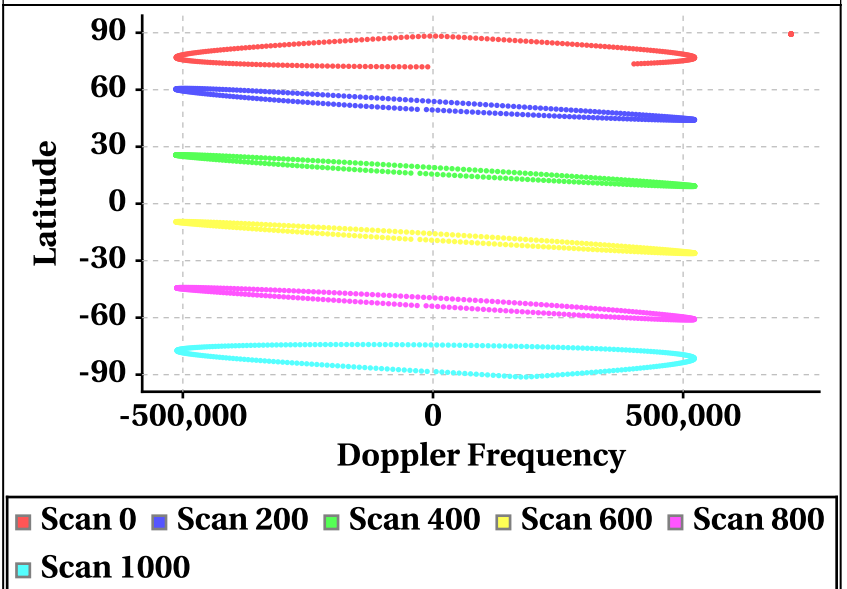


# Latitude Vs Doppler Frequency

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



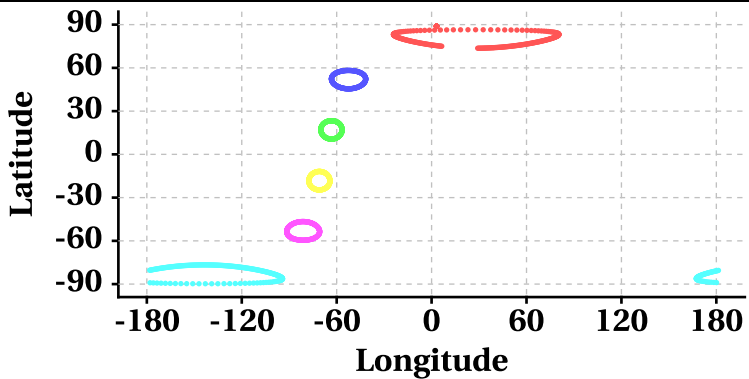
**Doppler Frequency at Scan Interval of 200 [Outer Beam(VV)]**



# Parameter as a function of Latitude

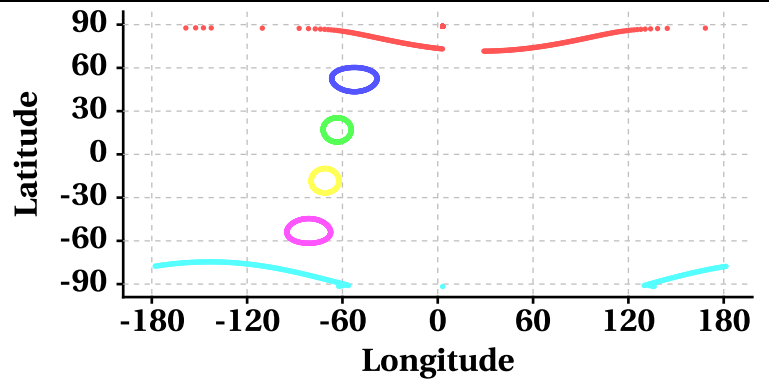
## Latitude Vs Longitude

Scan Trace [Inner Beam(HH)]



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

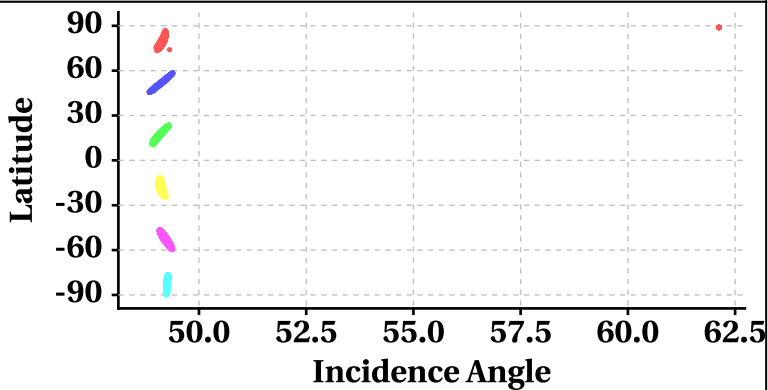
Scan Trace [Outer Beam (VV)]



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

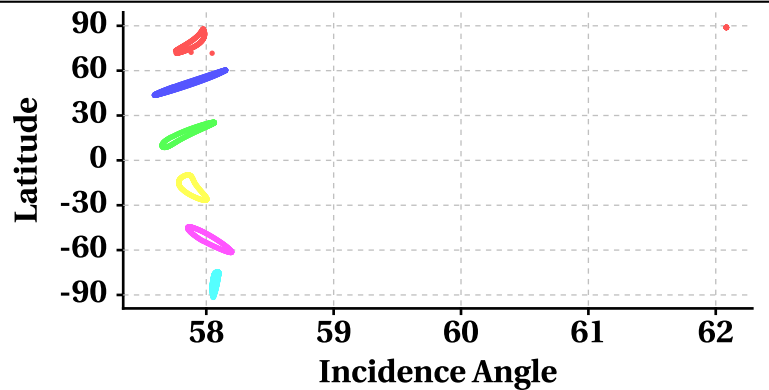
## Latitude Vs Incidence Angle

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



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

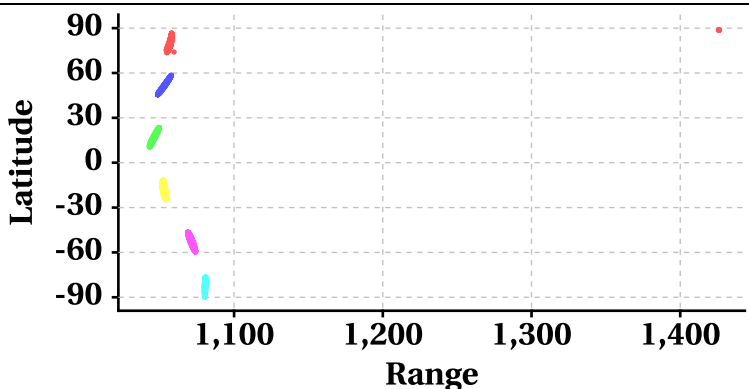
Incidence Angle at Scan Interval of 200 [Outer Beam (VV)]



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

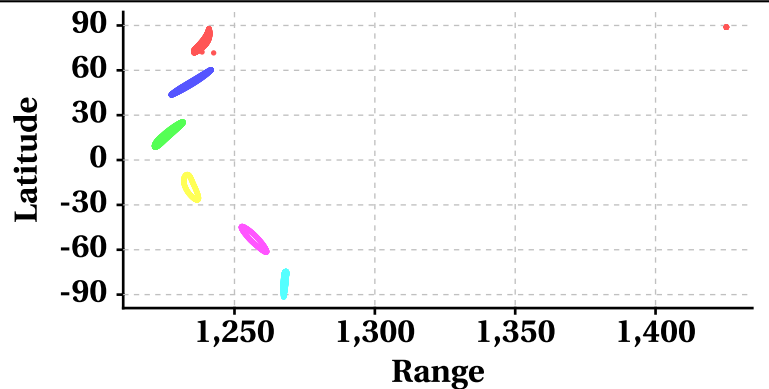
## Latitude Vs Range

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

