

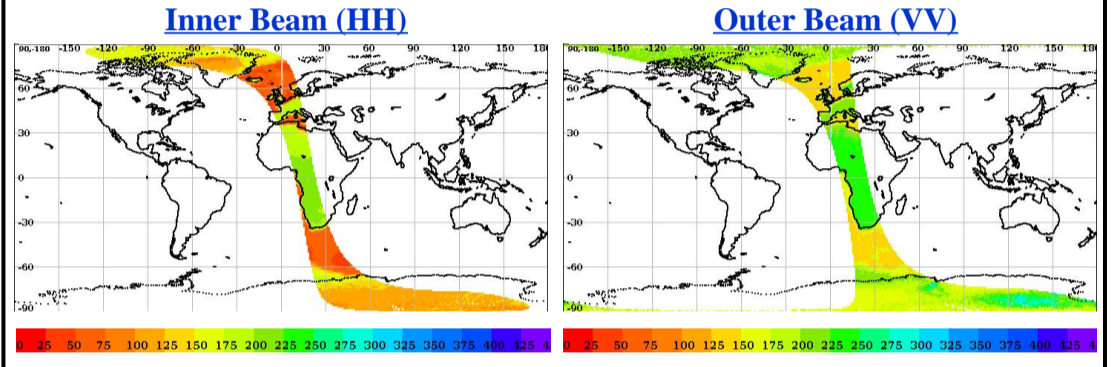
# SCATSAT-1 Scatterometer Level-1B Data Quality Evaluation Report

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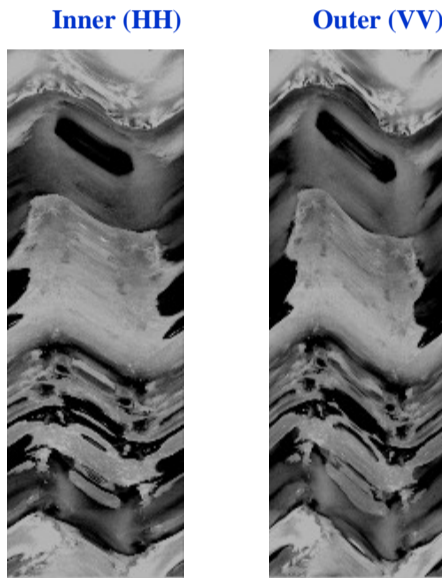
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<b>Satellite Id</b>	ScatSat-1	<b>Start Orbit</b>	706	<b>Total Scans</b>	1018
<b>Sensor Name</b>	Scatterometer	<b>End Orbit</b>	707	<b>No of Inner FootPrints</b>	281
<b>Processor Version</b>	1.0	<b>Rev. Number</b>	00706_00707	<b>No Of Outer FootPrints</b>	282
<b>Half Orbit Direction</b>	SN	<b>Data Production Date</b>	13-11-2016	<b>No. Of Inner Slices</b>	9
<b>Equator Crossing Date</b>	13-11-2016	<b>Equator Crossing Time</b>	20:10:55.000	<b>No Of Outer Slices</b>	15

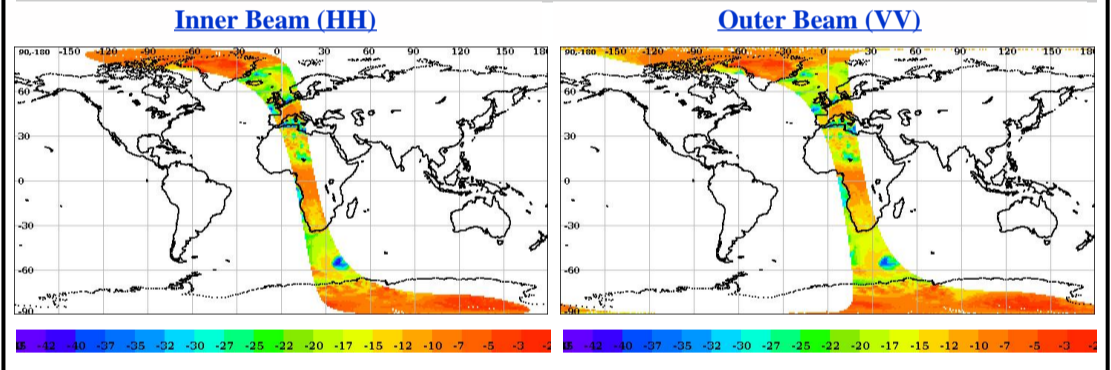
## Brightness Temperature(k) Footprint trace



## Image Snapshot for Inner & Outer Beam



## Sigma0(dB) Footprint trace



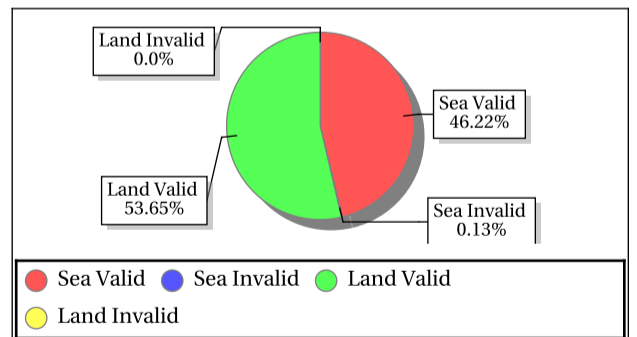
## Invalid and Poor Sigma-0 Quality Flag Statistics for Inner/Outer Slices\*

Sigma-0 Flags	Inner Beam	Outer Beam
Invalid Sigma0(%)	0.13	0.13
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	0.00
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

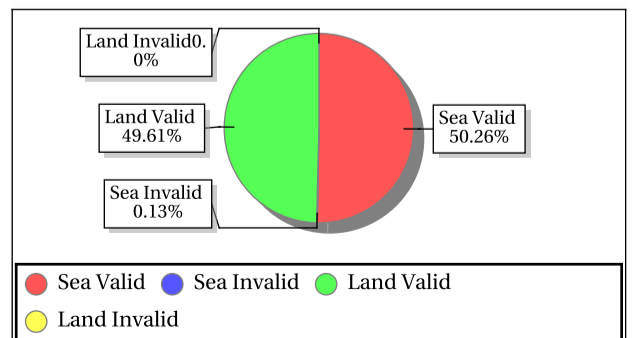
\*DP Format Document

## 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	-5.35	-4.56	-5.04	0.28	86.71	107.01	95.40	7.06
GreenLand_2	77.50	-41.50	Inner	DSC	Fore	-5.03	-3.84	-4.29	0.48	91.24	122.13	101.98	12.27
GreenLand_3	71.55	-42.45	Inner	DSC	Aft	-11.70	-9.29	-10.36	0.71	109.58	154.83	128.74	12.90
GreenLand_3	71.55	-42.45	Inner	DSC	Fore	-11.19	-9.59	-10.30	0.43	99.72	140.19	122.08	10.63
GreenLand_1	74.69	-42.50	Inner	DSC	Aft	-10.31	-7.45	-8.67	0.71	104.52	145.18	118.73	12.30
GreenLand_1	74.69	-42.50	Inner	DSC	Fore	-9.99	-7.73	-8.41	0.60	94.16	137.15	115.12	11.94
Sahara	19.10	14.30	Inner	DSC	Aft	-29.57	-21.62	-24.88	1.57	160.66	209.64	186.54	12.20
Sahara	19.10	14.30	Inner	DSC	Fore	-28.85	-20.94	-24.55	1.58	152.94	210.36	184.76	14.85
ANT_1	-75.00	121.00	Outer	DSC	Aft	-9.70	-7.35	-8.50	0.74	164.40	218.86	187.33	14.79
GreenLand_2	77.50	-41.50	Outer	DSC	Fore	-5.02	-3.99	-4.72	0.43	180.35	209.03	196.53	10.87
GreenLand_3	71.55	-42.45	Outer	DSC	Aft	-12.29	-9.64	-10.85	0.59	182.50	250.25	213.54	20.12
GreenLand_3	71.55	-42.45	Outer	DSC	Fore	-11.81	-9.61	-10.54	0.65	160.80	233.52	194.13	16.47
GreenLand_1	74.69	-42.50	Outer	DSC	Aft	-9.79	-7.70	-8.73	0.67	184.11	225.50	204.41	13.03
GreenLand_1	74.69	-42.50	Outer	DSC	Fore	-9.00	-6.65	-7.73	0.67	168.67	235.65	194.82	16.69
Sahara	19.10	14.30	Outer	DSC	Aft	-28.61	-20.26	-25.73	1.96	207.11	281.37	241.13	19.14
Sahara	19.10	14.30	Outer	DSC	Fore	-30.85	-20.19	-25.19	2.56	210.74	287.41	235.69	16.40



## 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	231.67	0.19	1.224	0.10	242.62	0.19	1.056	0.10	0.28	0.10	0.000	0.10	0.22	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>	-34.38	26.62	10.79	1.941	-34.58	26.71	11.23	6.782	-3.63	31.01	19.81	30.927	-1.98	34.96	19.98	32.881

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	205.34	0.17	0.984	0.08	202.16	0.17	1.037	0.08	4.97	0.08	0.004	0.08	5.11	0.08	0.001
<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>	-34.87	18.73	7.07	0.000	-34.81	20.78	7.39	0.000	-18.66	25.12	14.23	1.866	-18.78	25.75	14.19	2.100

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>	48.95	49.39	49.10	0.000	57.70	58.27	58.05	0.000	Inci.(Inner)	47.10	49.90
<b>Azimuth Diff. (deg)</b>	0.0026	1.29	1.11	0.156	0.0029	1.29	1.13	0.169	Inci.(Outer)	57.30	58.90
<b>Range(Km)</b>	1035.81	1096.95	1058.24	3.259	1213.29	1289.20	1239.97	13.356	Azimuth Diff.	0.60	2.00
<b>X Factor(dbm)</b>	-91.44	-90.09	-90.32	0.000	-93.07	-92.00	-92.24	0.000	Range(Inner)	1025.00	1095.70
<b>Across Distance (Km)</b>	99999.99	-99999.99	0.00	0.000	99999.99	-99999.99	0.00	0.000	Range(Outer)	1210.00	1280.00
<b>Along Distance (Km)</b>	18.92	20.43	19.72	0.000	18.63	20.52	19.63	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

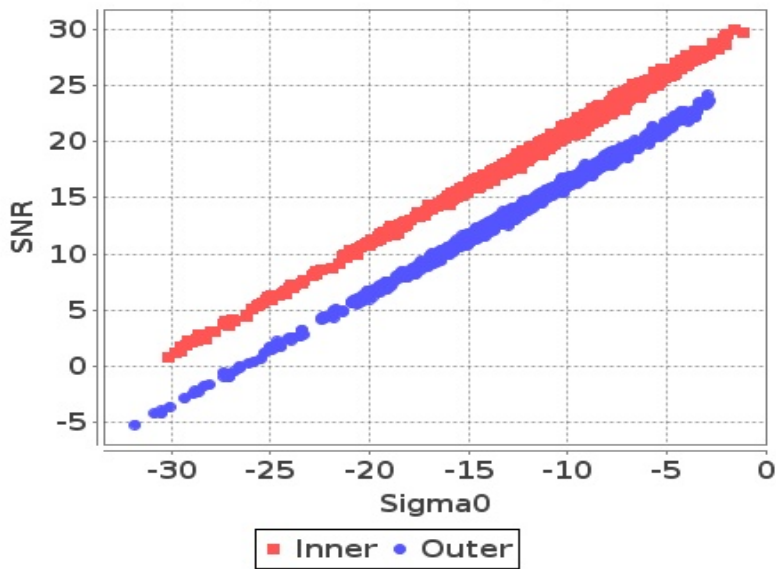
- Normal
- Deviations
- Alarming
- High Errors



# Sigma0 Behaviour (Sigma0 Vs SNR)

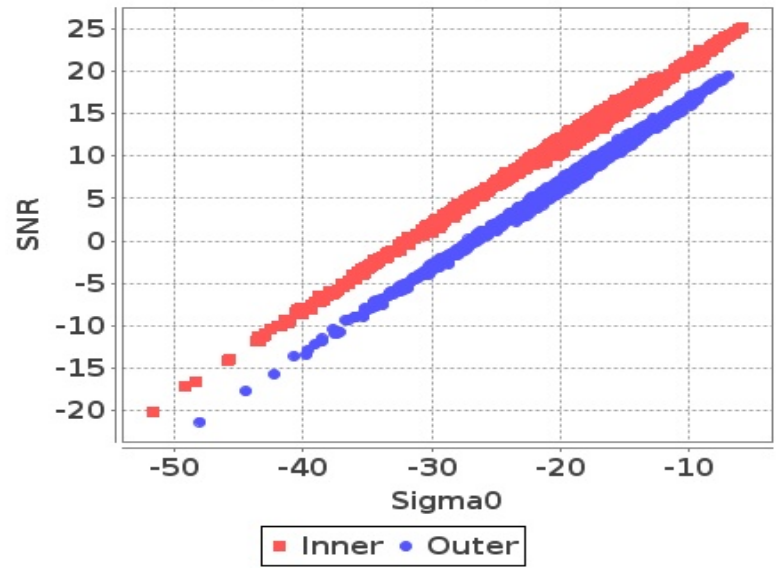
## Footprint-Land

### Sigma0 Vs SNR (Land)



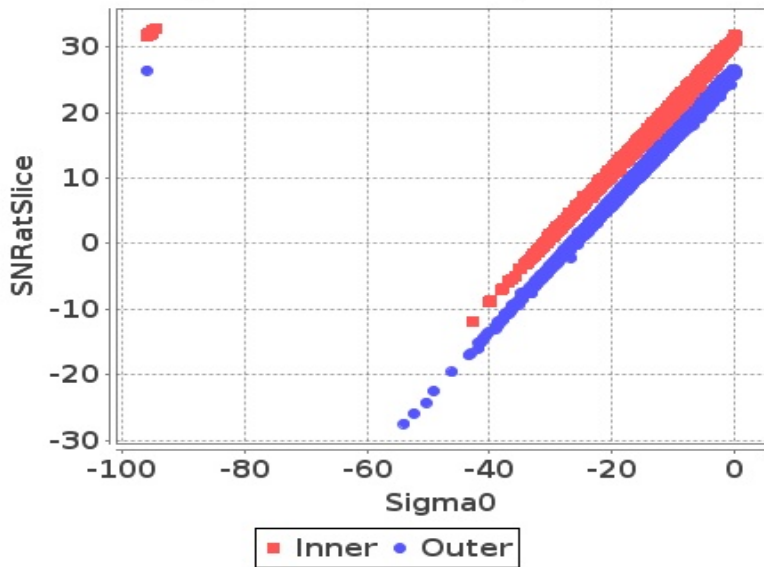
## Footprint-Sea

### Sigma0 Vs SNR (Sea)



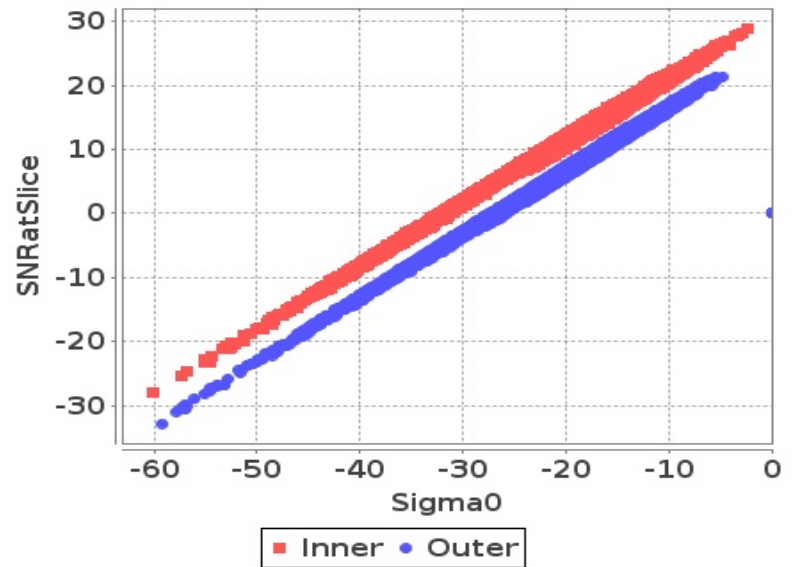
## Slice-Land

### Sigma0 Vs SNRatSlice (Land)



## Slice-Sea

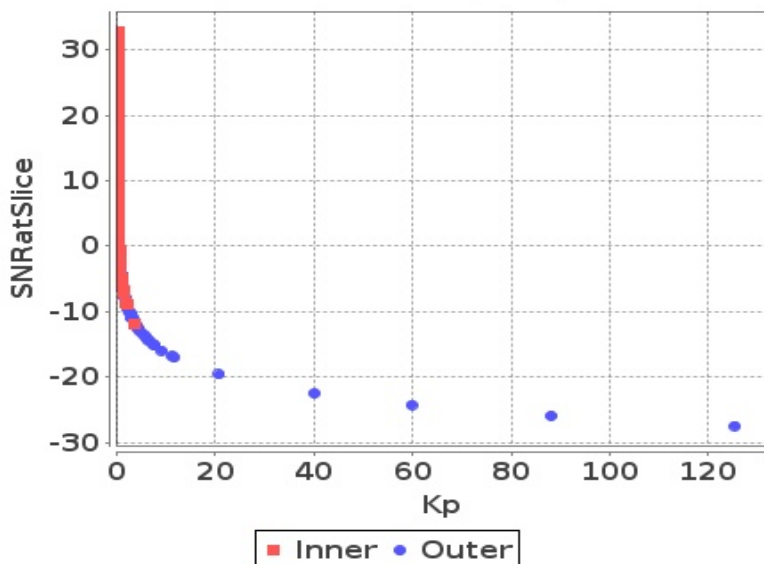
### Sigma0 Vs SNRatSlice (Sea)



# Sigma0 Behaviour (Kp Vs SNR)

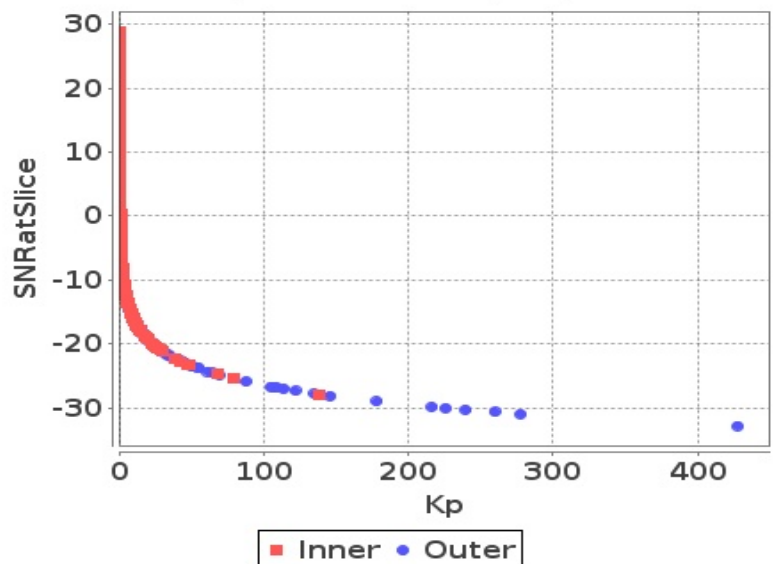
## Slice

### Kp Vs SNRatSlice (Land)



## Slice

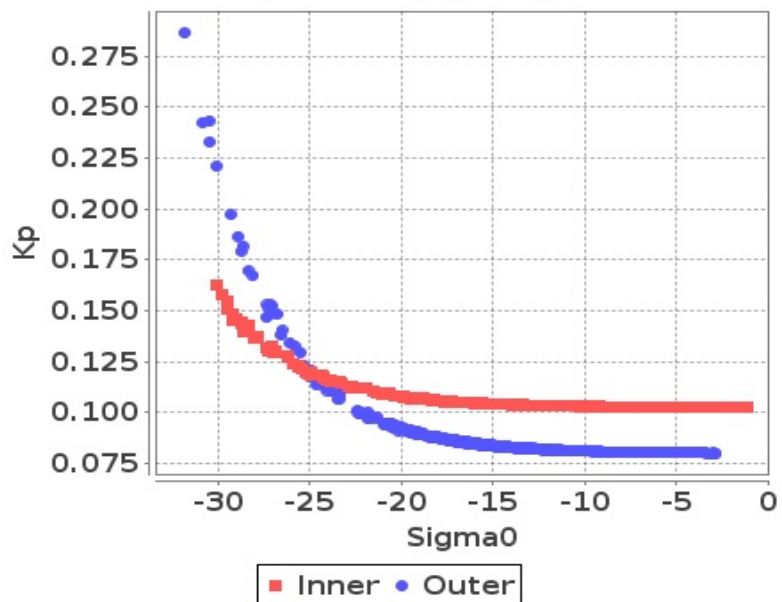
### Kp Vs SNRatSlice (Sea)



# Sigma0 Behaviour(Sigma0 Vs Kp)

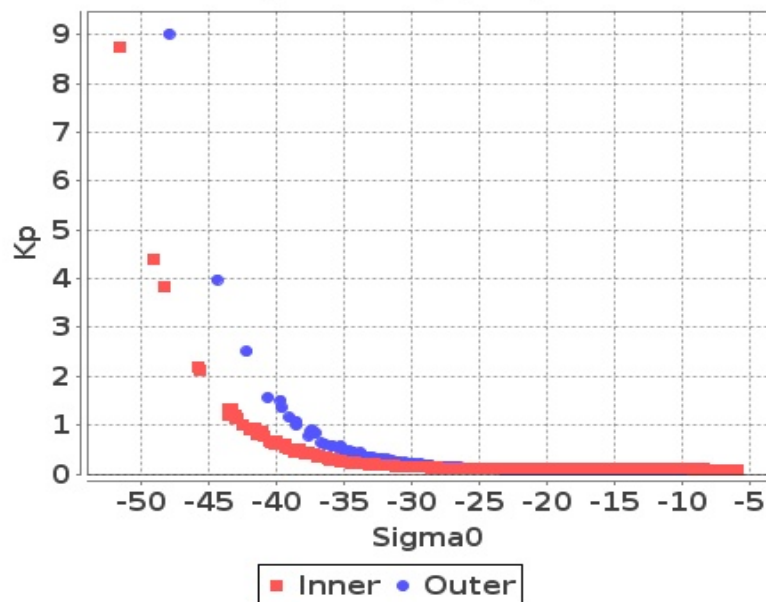
## Footprint-Land

### Sigma0 Vs Kp (Land)



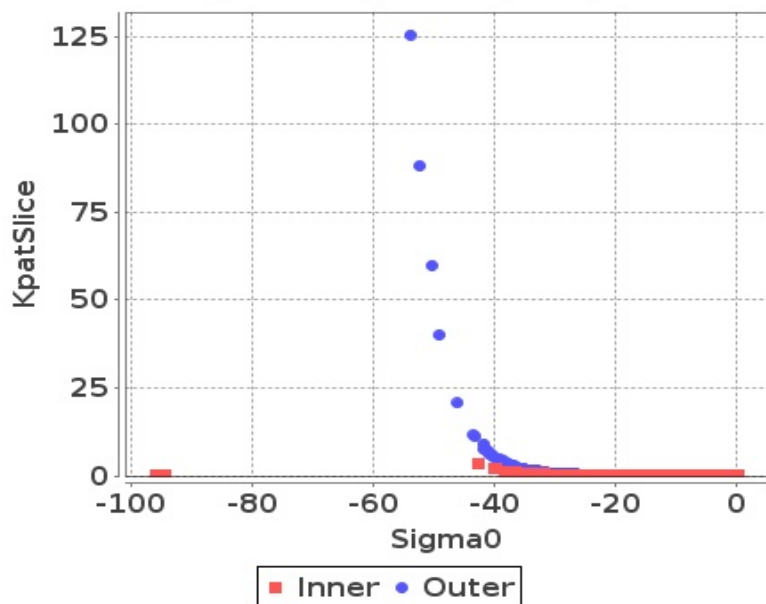
## Footprint-Sea

### Sigma0 Vs Kp (Sea)



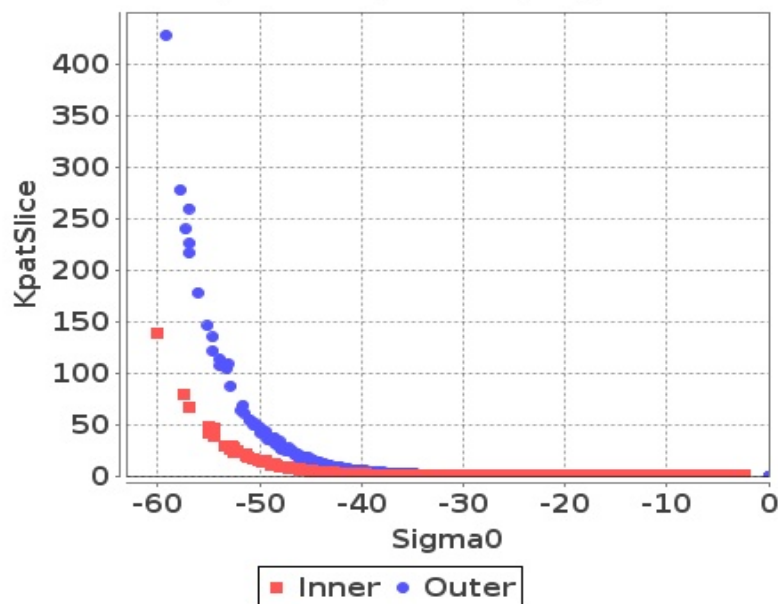
## Slice-Land

### Sigma0 Vs KpatSlice (Land)



## Slice-Sea

### Sigma0 Vs KpatSlice (Sea)

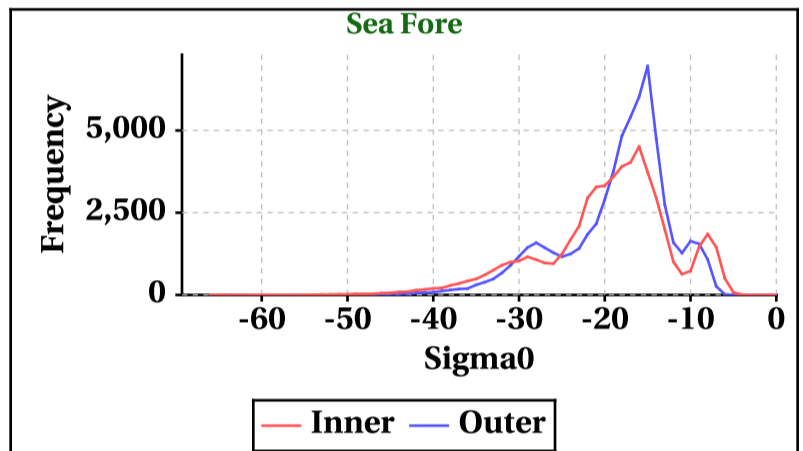
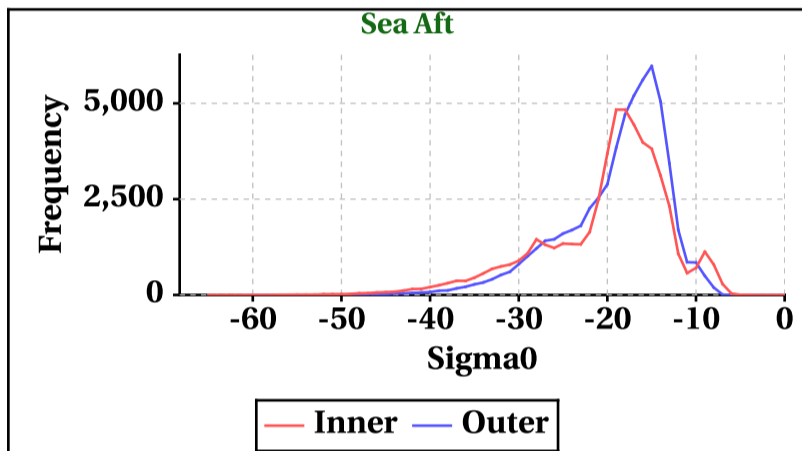
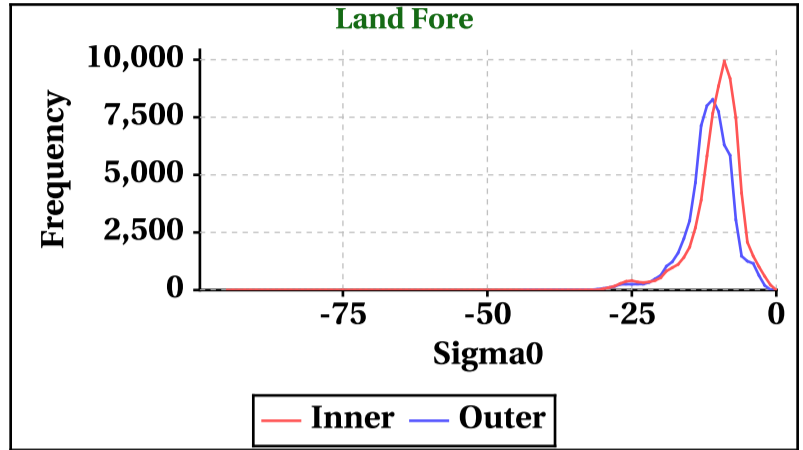
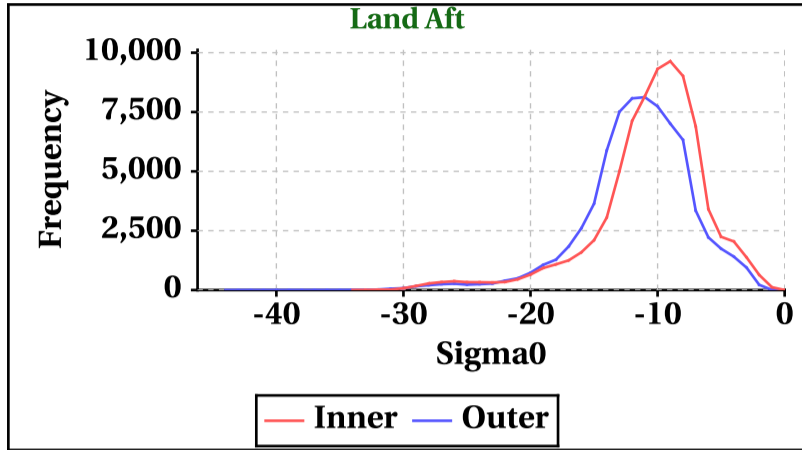


# Dynamic Range (Data Histograms)

## Sigma0(db)

Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-34	-95	-65	-66
Max	0	0	0	0

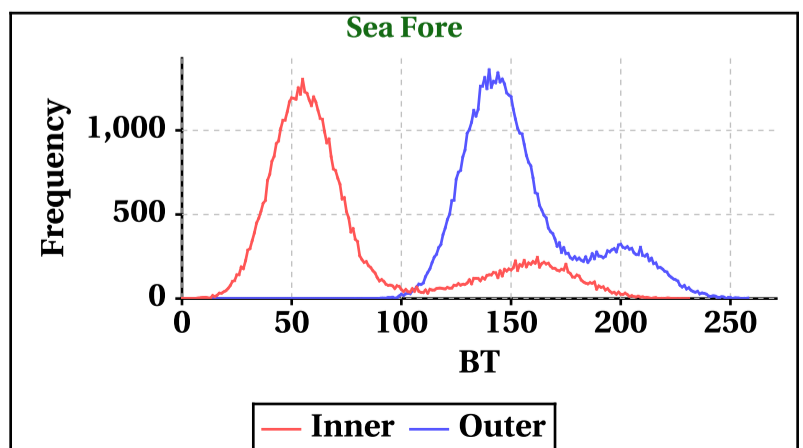
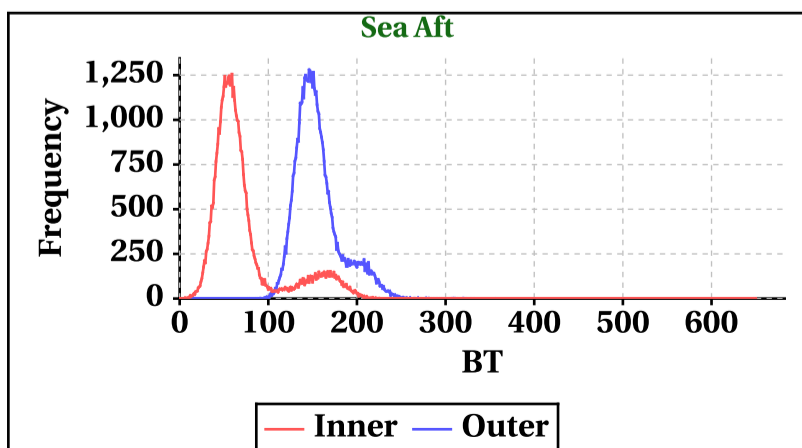
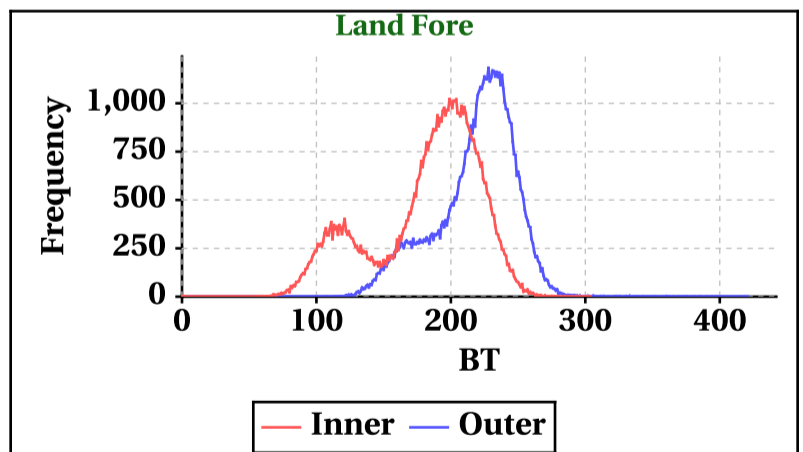
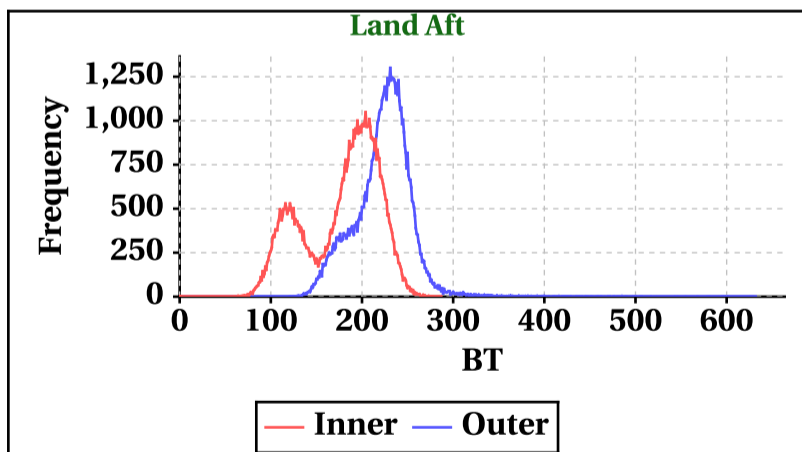
Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-44	-44	-61	-61
Max	0	0	0	0



## Brightness Temperature(K)

Inner Beam(HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	287	304	650	231

Outer Beam(VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	632	421	355	258

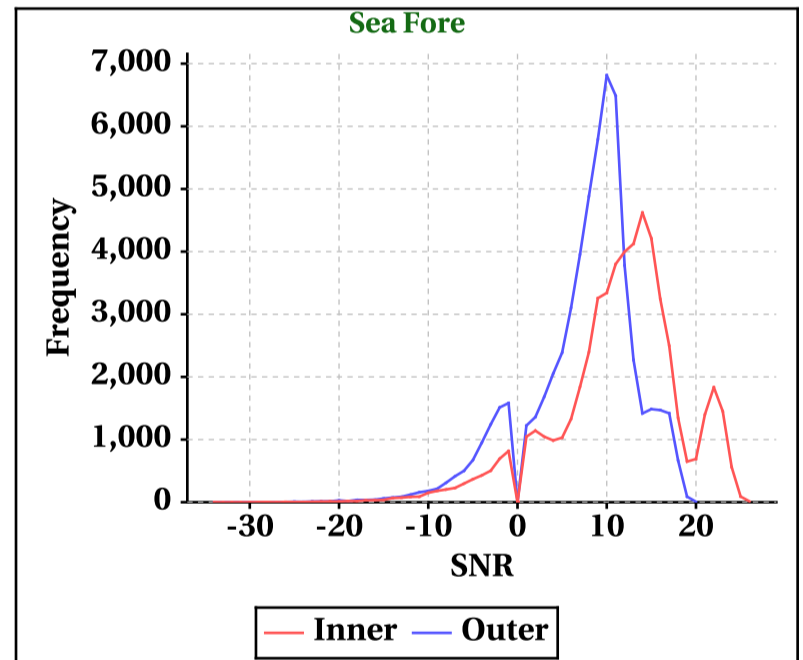
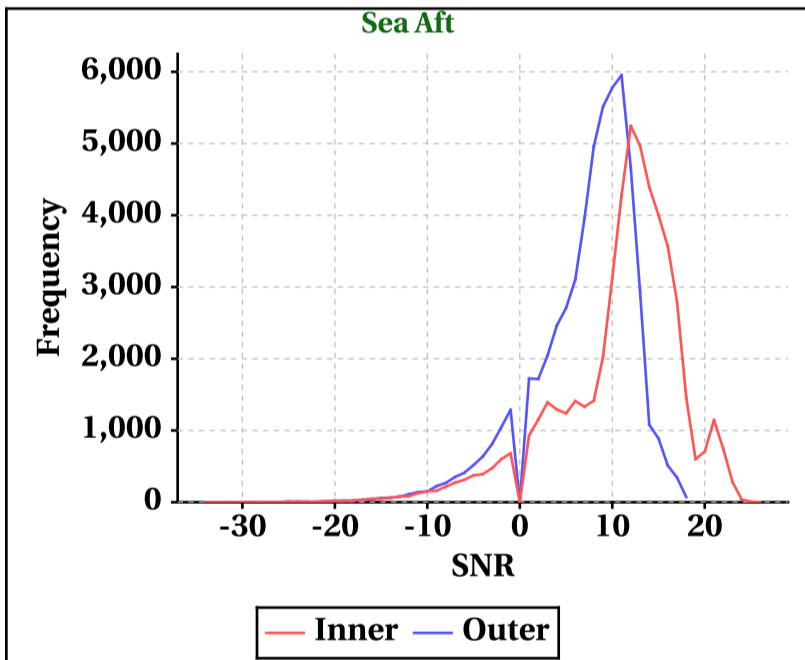
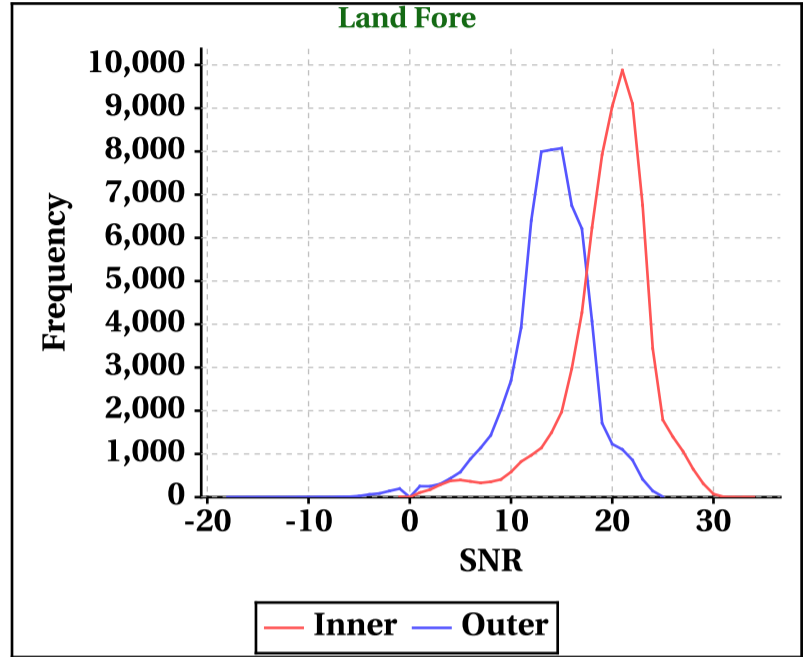
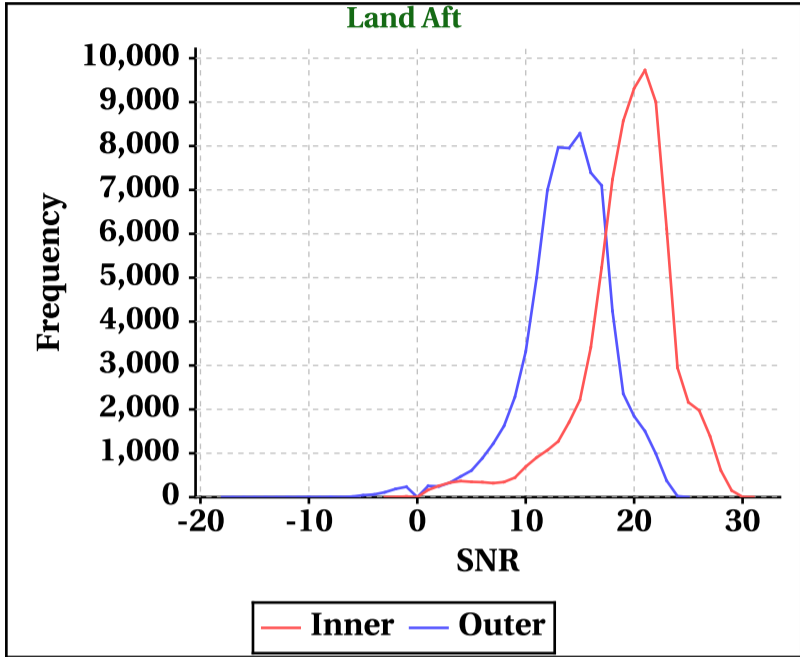


# Dynamic Range (Data Histograms)

## SNR(dBm)

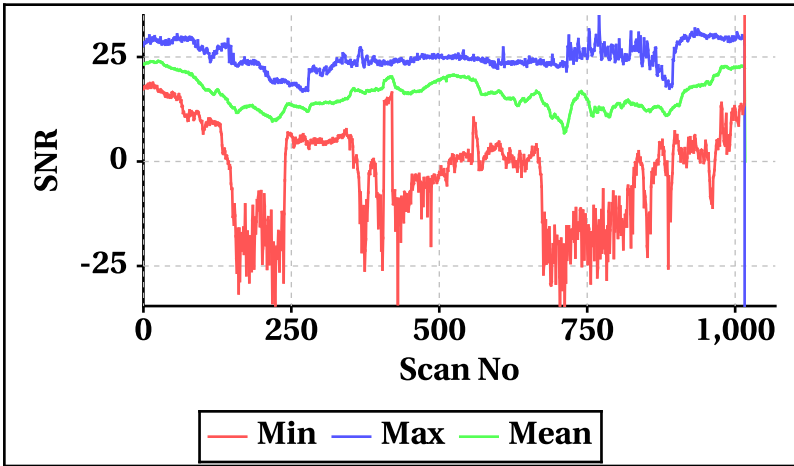
Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-3	-1	-34	-34
Max	31	34	26	26

Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-18	-18	-34	-34
Max	25	25	18	20

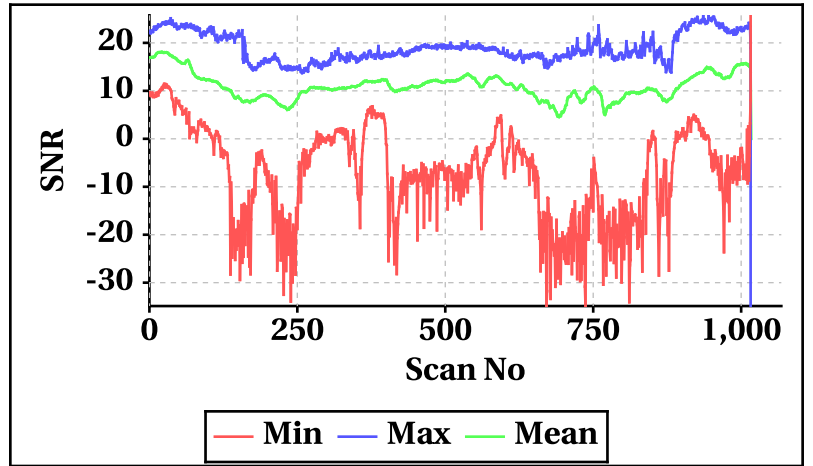


## Orbit-wise behaviour of SNR

Inner Beam (HH)

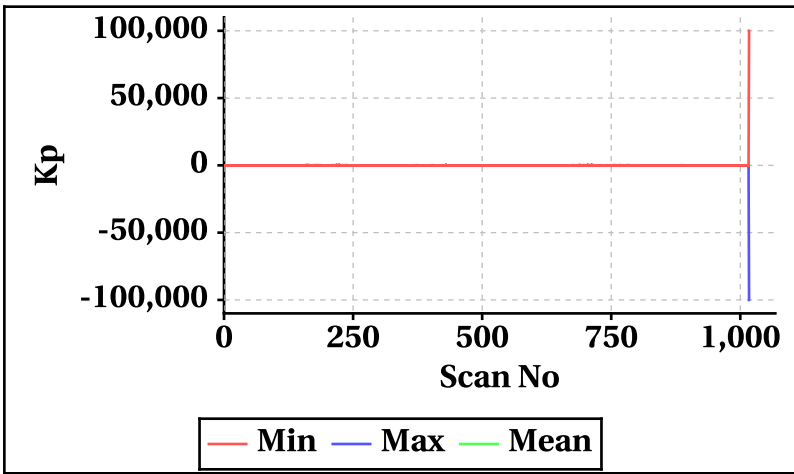


Outer Beam(VV)

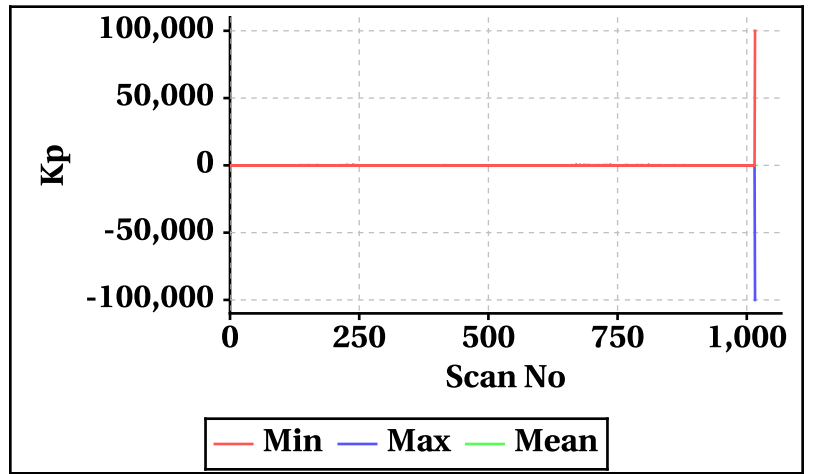


## Orbit-wise behaviour of Kp,Kpa,Kpb,Kpc

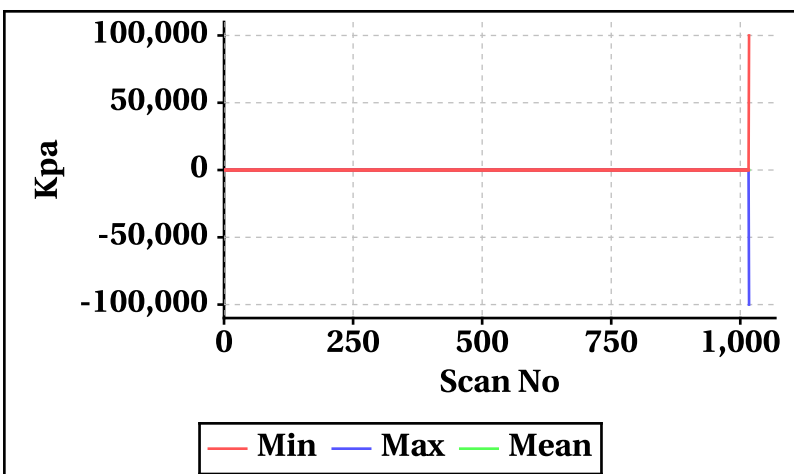
Inner Beam(HH)



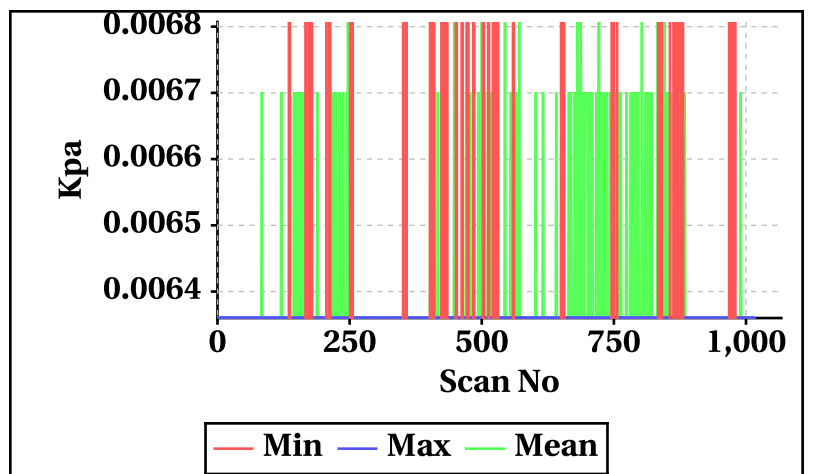
Outer Beam(VV)



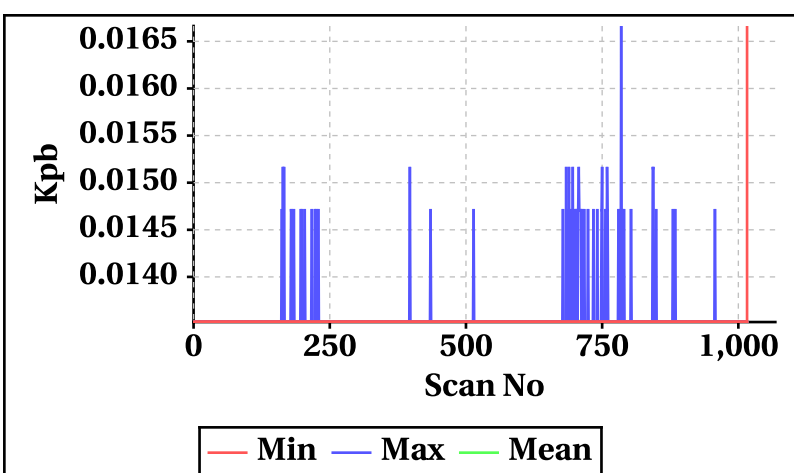
Inner Beam(HH)



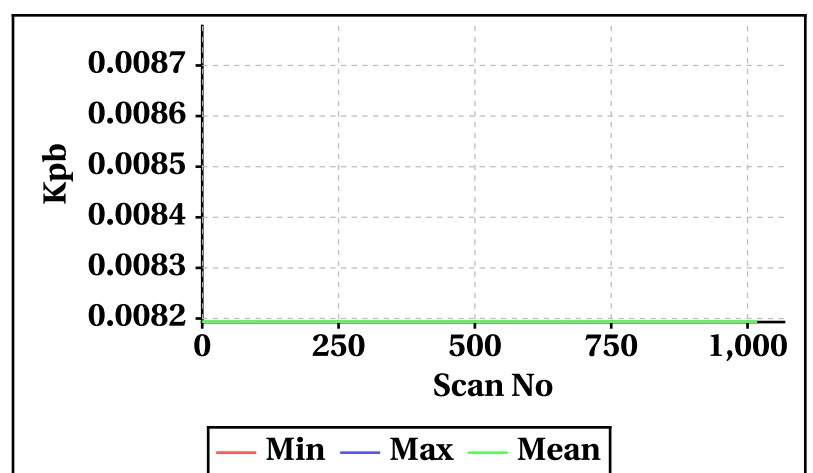
Outer Beam(VV)



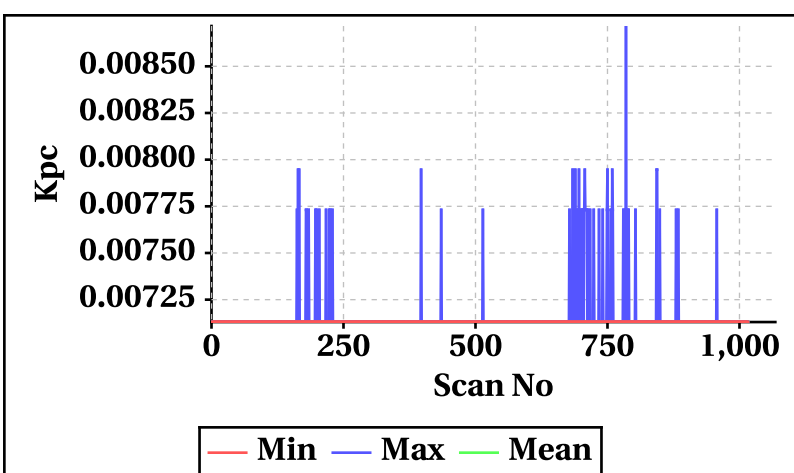
Inner Beam(HH)



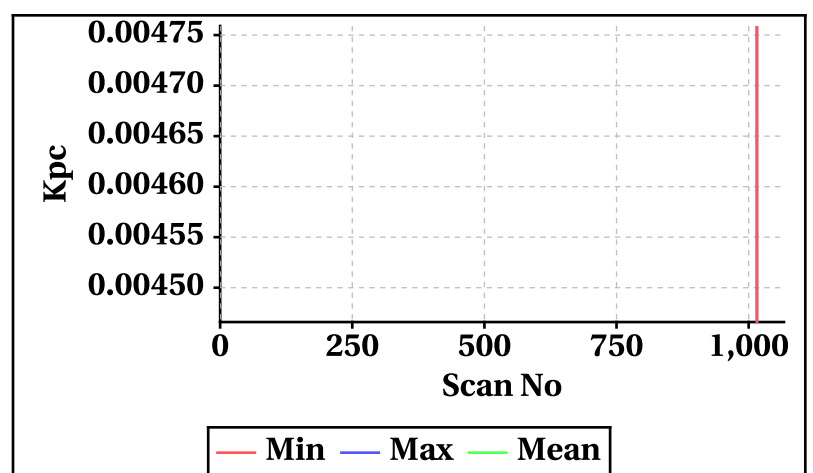
Outer Beam(VV)



Inner Beam(HH)



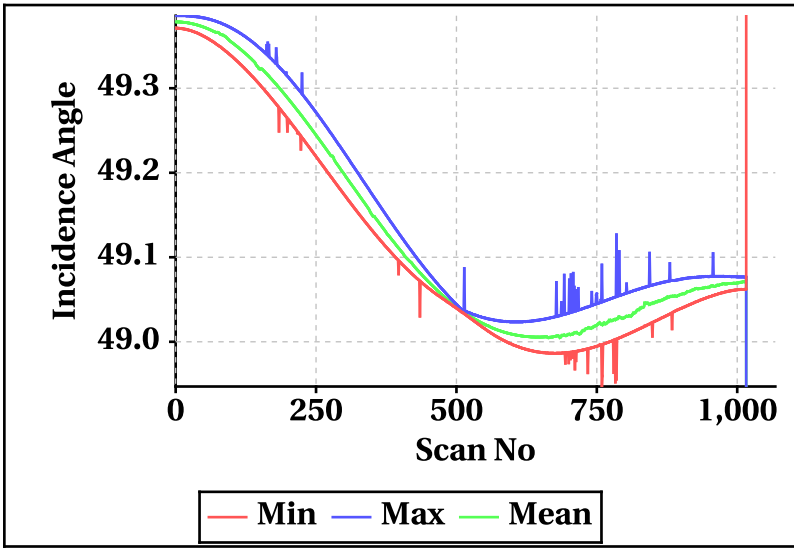
Outer Beam(VV)



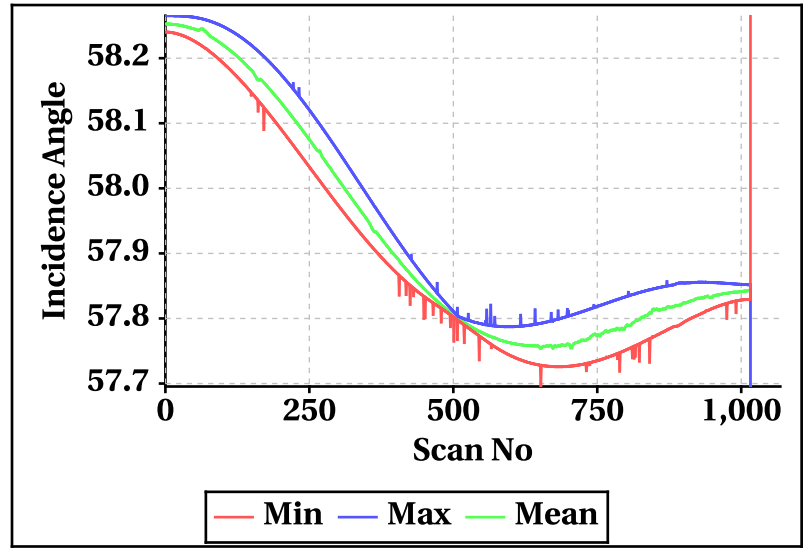


# Orbt-wise behaviour of Incidence, Azimuth, Range, X-Factor

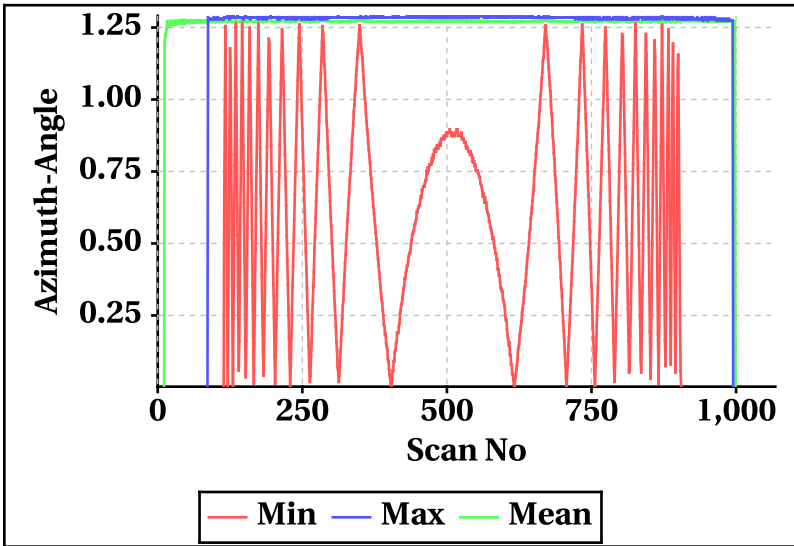
### Inner Beam (HH)



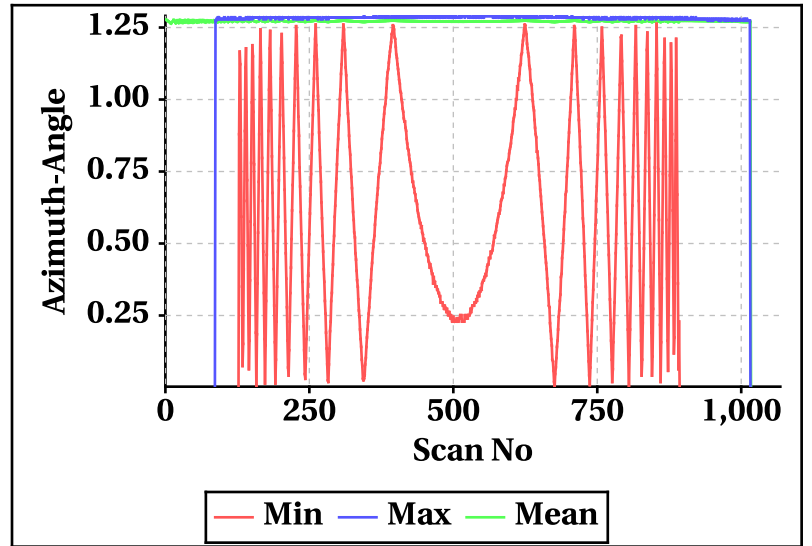
### Outer Beam(VV)



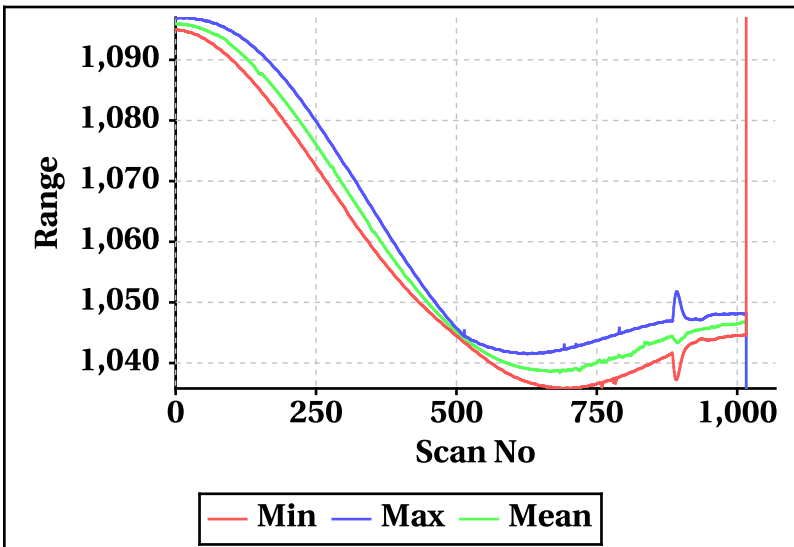
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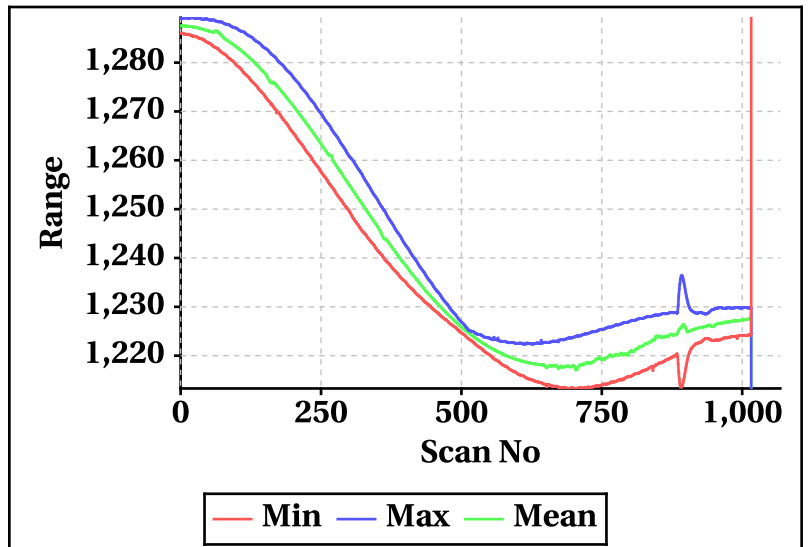
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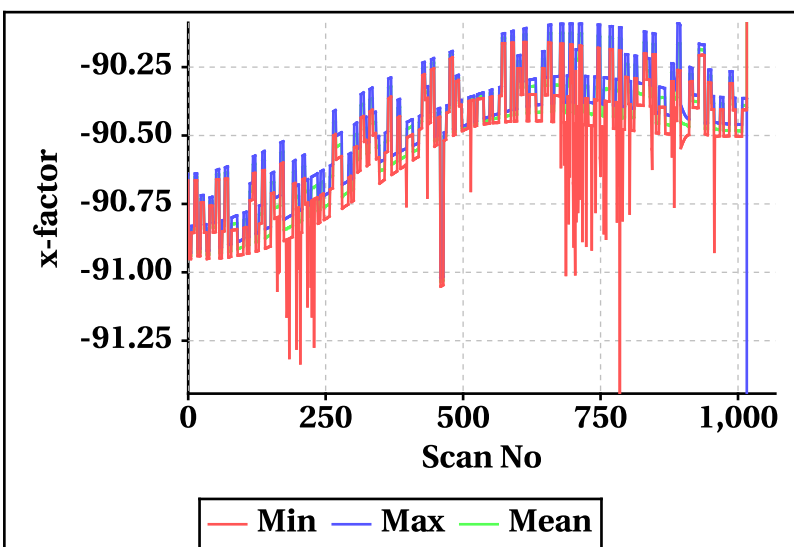
### Inner Beam (HH)



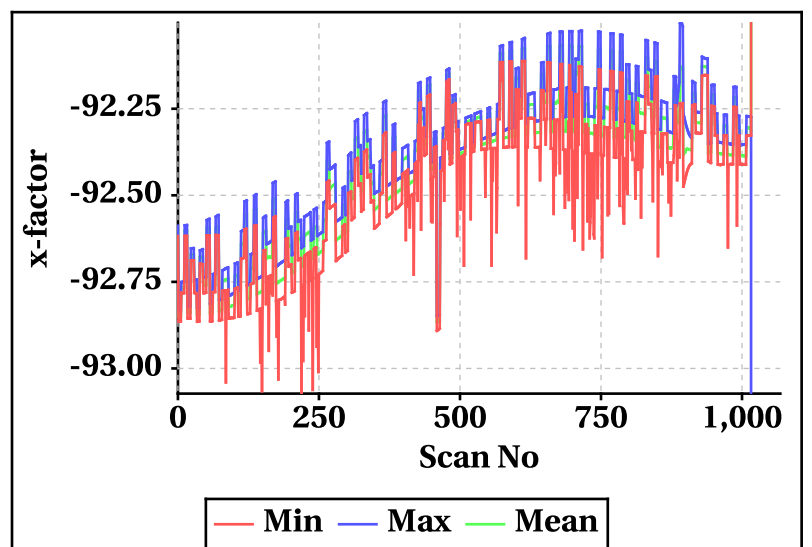
### Outer Beam(VV)



### Inner Beam (HH)



### Outer Beam(VV)

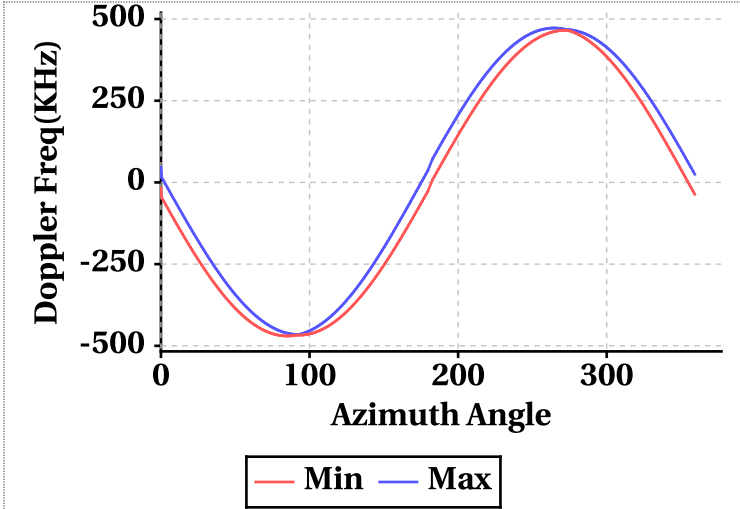


# Doppler Frequency Variation

Doppler Frequency(KHz) variation statistics Over the half Orbit

	Inner Beam (HH)	Outer Beam (VV)
Min	-469.88	-525.96
Max	472.28	528.08

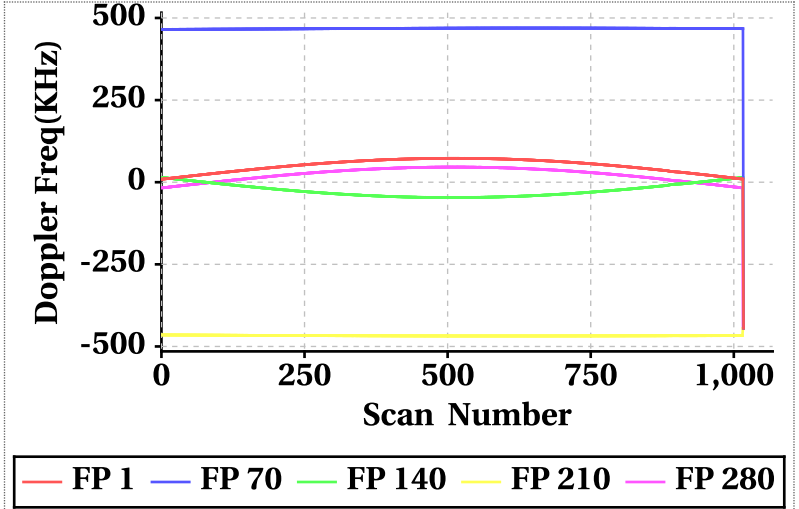
Footprint wise Doppler frequency variation Inner Beam (HH)



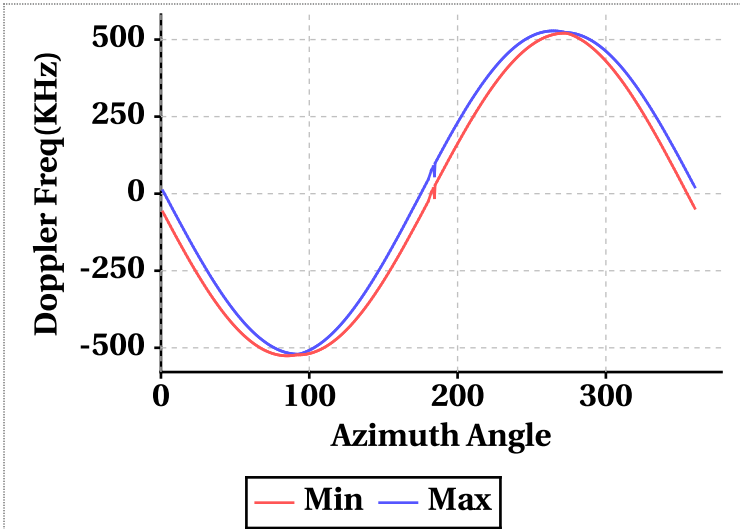
Doppler Frequency(KHz) variation

Doppler_FP	Inner Beam (HH)			Outer Beam (VV)		
	Min	Max	Mean	Min	Max	Mean
Doppler_1	-444.88	72.78	49.18	-496.14	76.00	49.74
Doppler_70	-444.88	469.32	467.06	-496.14	525.32	522.71
Doppler_140	-444.88	14.62	-24.84	-496.14	9.88	-34.45
Doppler_210	-468.12	-444.88	-467.19	-523.48	-496.14	-522.56
Doppler_280	-444.88	46.14	22.08	-496.14	57.84	31.02

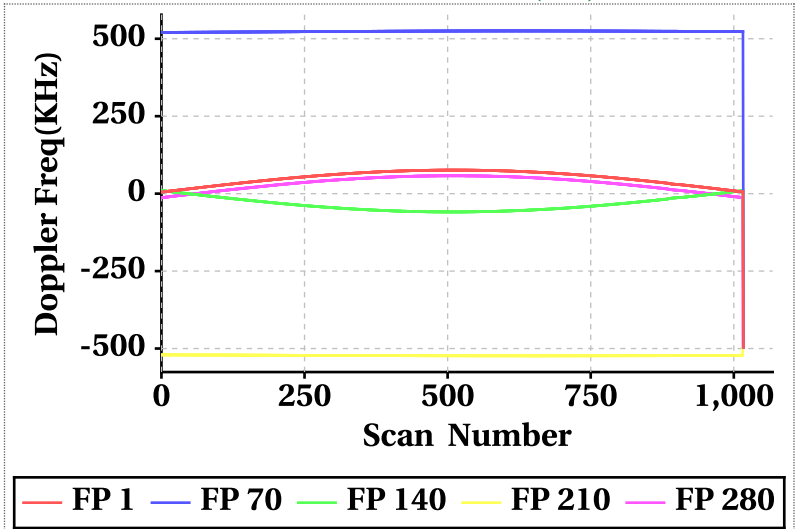
Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Inner Beam (HH)



Footprint wise Doppler frequency variation Outer Beam (VV)

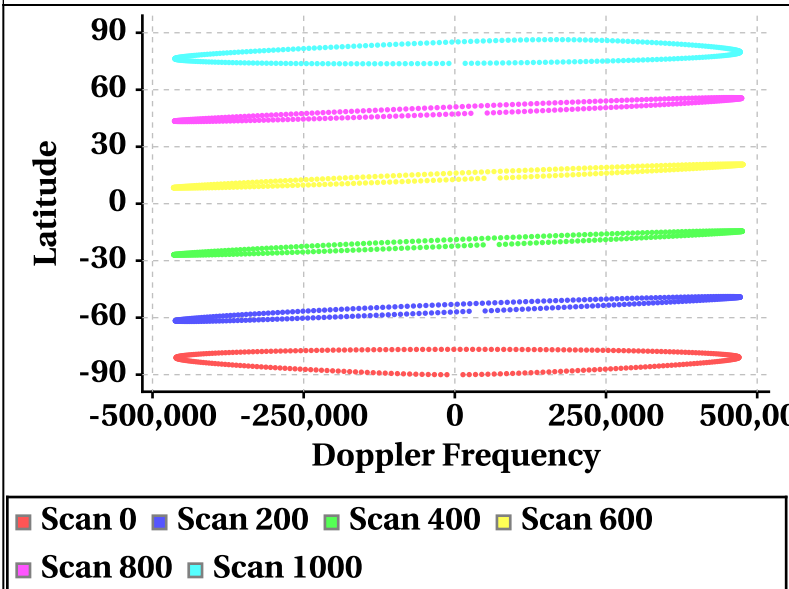


Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Outer Beam (VV)

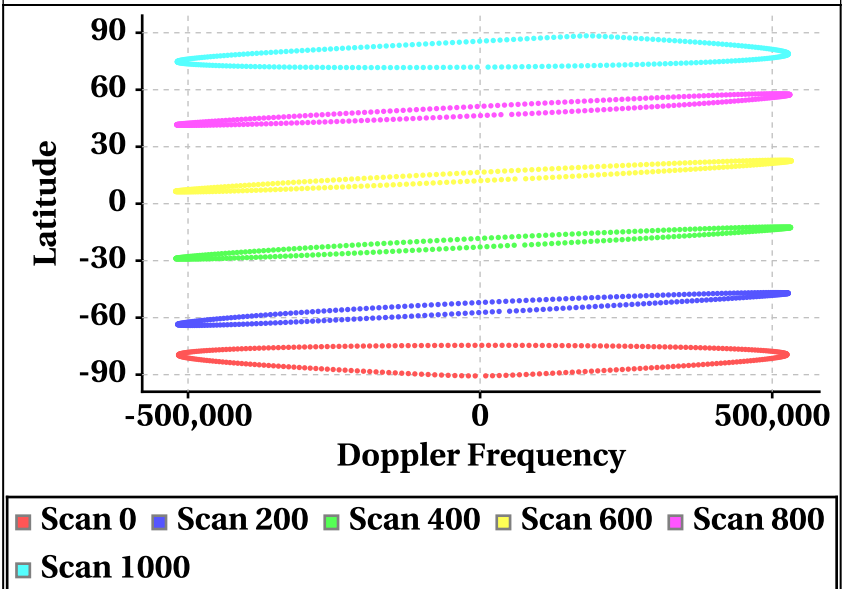


# Latitude Vs Doppler Frequency

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



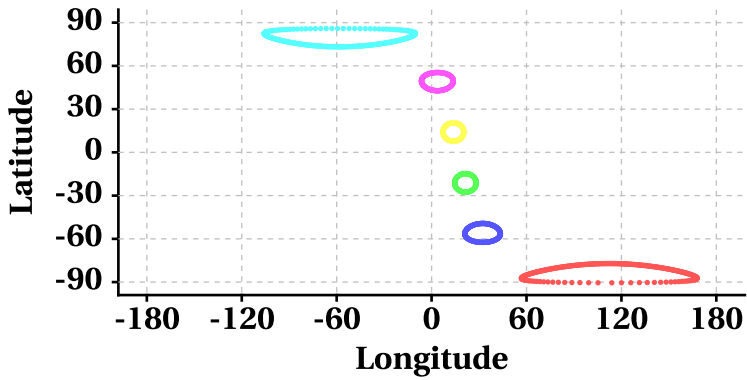
Doppler Frequency at Scan Interval of 200 [Outer Beam(VV)]



# Parameter as a function of Latitude

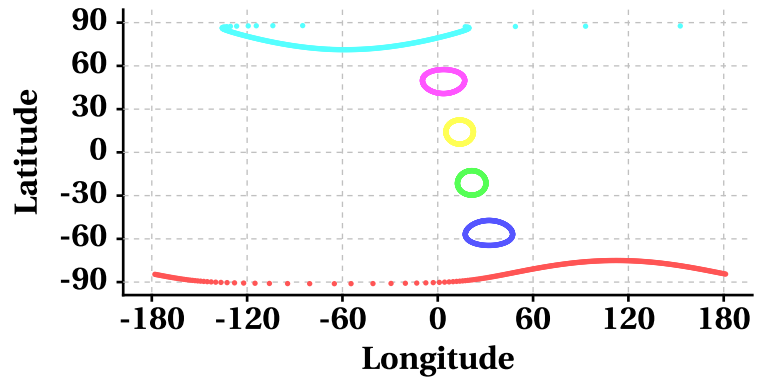
## Latitude Vs Longitude

Scan Trace [Inner Beam(HH)]



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

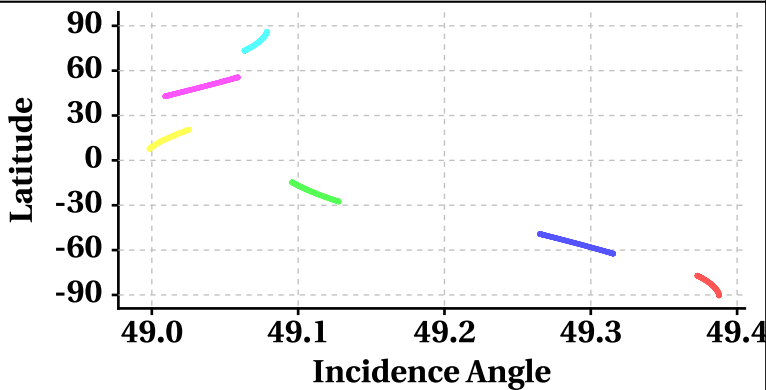
Scan Trace [Outer Beam (VV)]



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

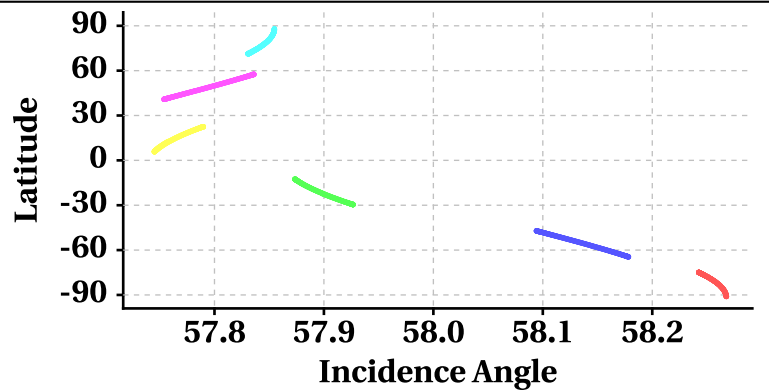
## Latitude Vs Incidence Angle

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



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

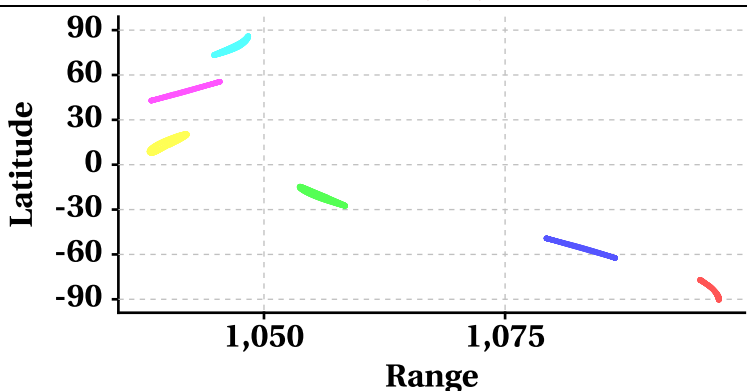
Incidence Angle at Scan Interval of 200 [Outer Beam (VV)]



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

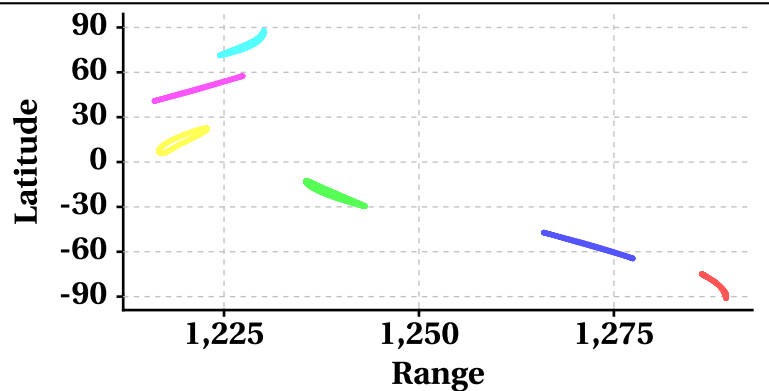
## Latitude Vs Range

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

