

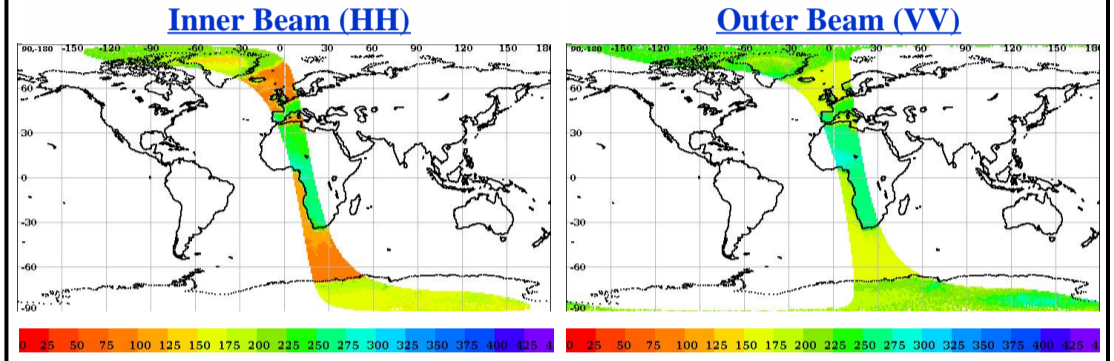
# SCATSAT-1 Scatterometer Level-1B Data Quality Evaluation Report

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<b>Satellite Id</b>	ScatSat-1	<b>Start Orbit</b>	2590	<b>Total Scans</b>	1018
<b>Sensor Name</b>	Scatterometer	<b>End Orbit</b>	2591	<b>No of Inner FootPrints</b>	281
<b>Processor Version</b>	1.1.1	<b>Rev. Number</b>	02590_02591	<b>No Of Outer FootPrints</b>	282
<b>Half Orbit Direction</b>	SN	<b>Data Production Date</b>	23-03-2017	<b>No. Of Inner Slices</b>	9
<b>Equator Crossing Date</b>	23-03-2017	<b>Equator Crossing Time</b>	20:09:33.000	<b>No Of Outer Slices</b>	15

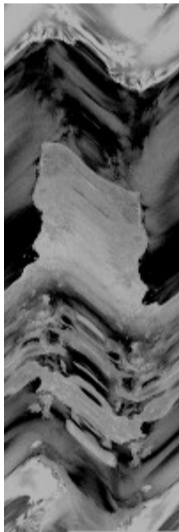
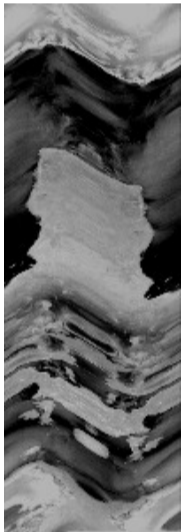
## Brightness Temperature(k) Footprint trace



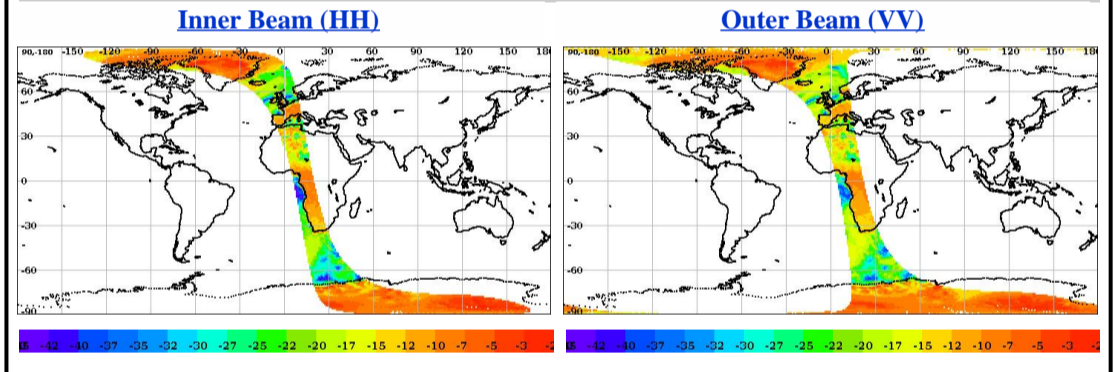
## Image Snapshot for Inner & Outer Beam

Inner (HH)

Outer (VV)



## Sigma0(dB) Footprint trace



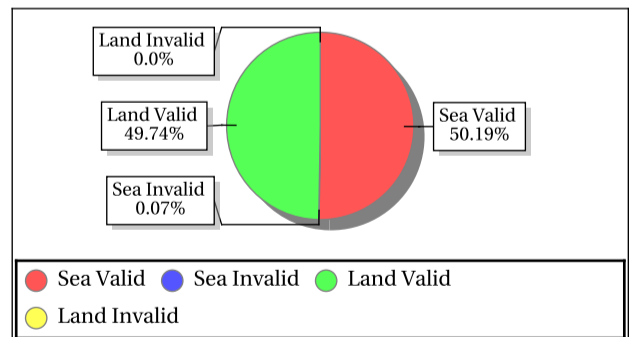
## Invalid and Poor Sigma-0 Quality Flag Statistics for Inner/Outer Slices\*

Sigma-0 Flags	Inner Beam	Outer Beam
Invalid Sigma0(%)	0.07	0.07
Data Not Available From Payload (%)	100.0	94.94949
Slice not within sample array limits (%)	0.00	5.05
C(S+N) - C(N) < 0.1 (%)	0.00	0.00
Poor Sigma0(%)	0.01	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

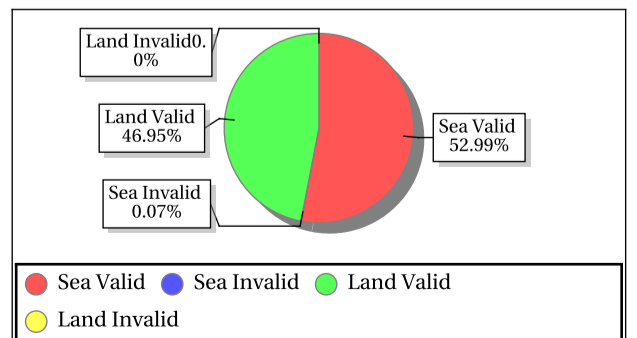
\*DP Format Document

## 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	-5.51	-4.27	-5.17	0.46	133.78	155.91	148.47	8.10
GreenLand_2	77.50	-41.50	Inner	DSC	Fore	-4.78	-3.66	-4.29	0.40	120.65	149.33	133.29	12.85
GreenLand_3	71.55	-42.45	Inner	DSC	Aft	-11.63	-8.92	-10.49	0.57	158.12	224.15	188.70	15.08
GreenLand_3	71.55	-42.45	Inner	DSC	Fore	-11.78	-8.90	-10.04	0.60	163.96	220.49	186.87	12.88
GreenLand_1	74.69	-42.50	Inner	DSC	Aft	-10.32	-7.42	-8.72	0.71	154.11	203.43	170.26	13.17
GreenLand_1	74.69	-42.50	Inner	DSC	Fore	-9.33	-7.57	-8.32	0.56	127.04	205.52	165.19	18.48
Sahara	19.10	14.30	Inner	DSC	Aft	-28.73	-22.18	-26.14	1.74	195.32	278.88	234.29	16.39
Sahara	19.10	14.30	Inner	DSC	Fore	-32.19	-20.52	-26.44	2.82	212.07	276.39	242.41	13.27
ANT_1	-75.00	121.00	Outer	DSC	Aft	-9.18	-6.81	-8.05	0.84	181.79	227.76	200.42	14.22
GreenLand_2	77.50	-41.50	Outer	DSC	Aft	-5.21	-4.51	-4.86	0.35	203.65	217.56	210.60	6.95
GreenLand_2	77.50	-41.50	Outer	DSC	Fore	-4.41	-3.88	-4.14	0.22	197.67	221.41	211.75	10.18
GreenLand_3	71.55	-42.45	Outer	DSC	Aft	-12.05	-9.70	-11.06	0.66	198.99	276.26	227.28	19.58
GreenLand_3	71.55	-42.45	Outer	DSC	Fore	-11.84	-9.87	-10.53	0.50	205.96	247.22	226.25	13.67
GreenLand_1	74.69	-42.50	Outer	DSC	Aft	-10.01	-8.41	-9.19	0.57	203.36	266.25	225.71	18.41
GreenLand_1	74.69	-42.50	Outer	DSC	Fore	-9.27	-6.70	-8.19	0.85	188.34	268.03	232.16	22.66
Sahara	19.10	14.30	Outer	DSC	Aft	-28.94	-20.46	-25.42	2.12	216.40	294.95	268.67	17.23
Sahara	19.10	14.30	Outer	DSC	Fore	-30.23	-20.94	-26.04	2.61	243.38	314.55	270.16	15.05



## 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	247.08	0.35	3.462	0.10	249.30	0.35	3.412	0.10	0.72	0.11	0.000	0.10	0.56	0.11	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	0.02	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>	-34.66	27.01	5.61	0.112	-34.70	28.02	6.23	0.976	-8.77	30.43	17.99	15.333	-7.50	30.38	18.12	15.503

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	179.57	0.34	3.607	0.08	194.55	0.36	3.813	0.08	16.00	0.09	0.011	0.08	4.84	0.09	0.003
<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	0.01	0.00	0.000	0.00	0.01	0.00	0.000	0.00	0.00	0.00	0.000	0.00	0.00	0.00	0.000
<b>SNR</b>	-34.29	20.51	3.05	0.000	-34.64	21.20	3.26	0.000	-23.77	22.97	12.59	0.048	-18.55	23.78	12.53	0.326

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>	48.64	49.41	49.06	0.000	57.54	58.36	58.04	0.000	Inci.(Inner)	47.10	49.90
<b>Azimuth Diff. (deg)</b>	0.0026	1.81	1.08	0.140	0.0027	1.99	1.08	0.202	Inci.(Outer)	57.30	58.90
<b>Range(Km)</b>	1029.14	1093.06	1052.93	0.000	1207.85	1287.12	1236.11	13.964	Azimuth Diff.	0.60	2.00
<b>X Factor(dbm)</b>	-91.31	-89.97	-90.21	0.000	-93.11	-92.00	-92.21	0.000	Range(Inner)	1025.00	1095.70
<b>Across Distance (Km)</b>	15.38	15.94	15.53	0.000	20.40	20.93	20.48	0.000	Range(Outer)	1210.00	1280.00
<b>Along Distance (Km)</b>	18.94	20.53	19.74	0.000	18.66	20.56	19.64	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

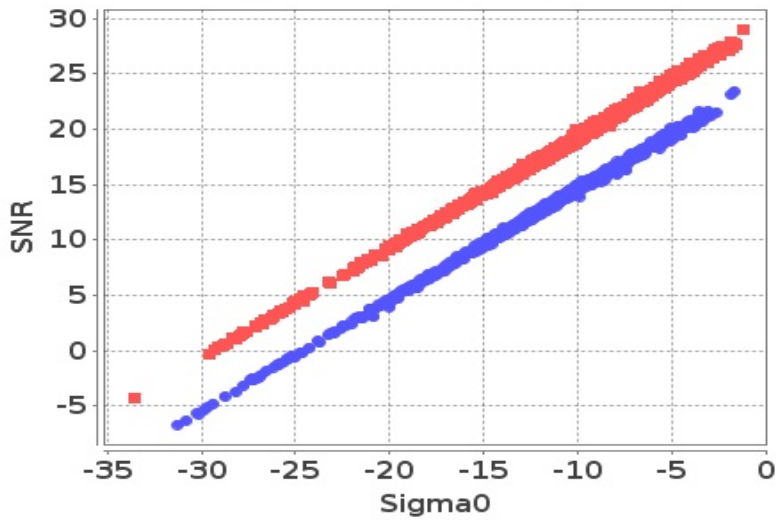
- Normal
- Deviations
- Alarming
- High Errors



## Sigma0 Behaviour (Sigma0 Vs SNR)

**Footprint-Land**

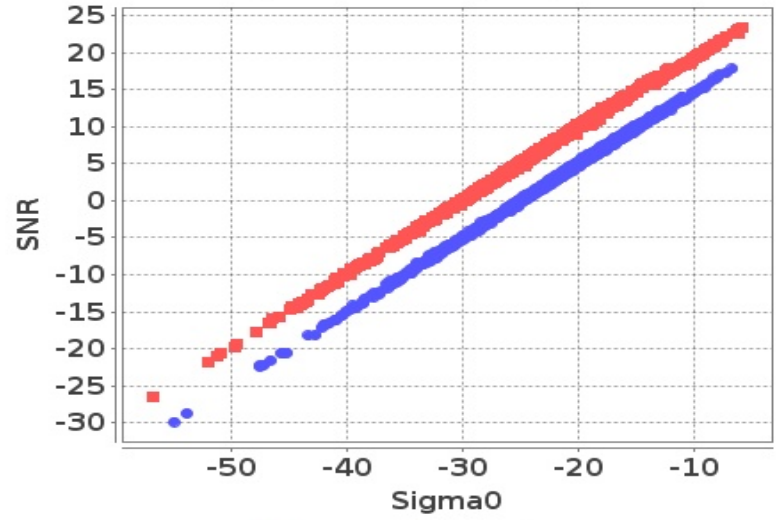
Sigma0 Vs SNR (Land)



■ Inner ● Outer

**Footprint-Sea**

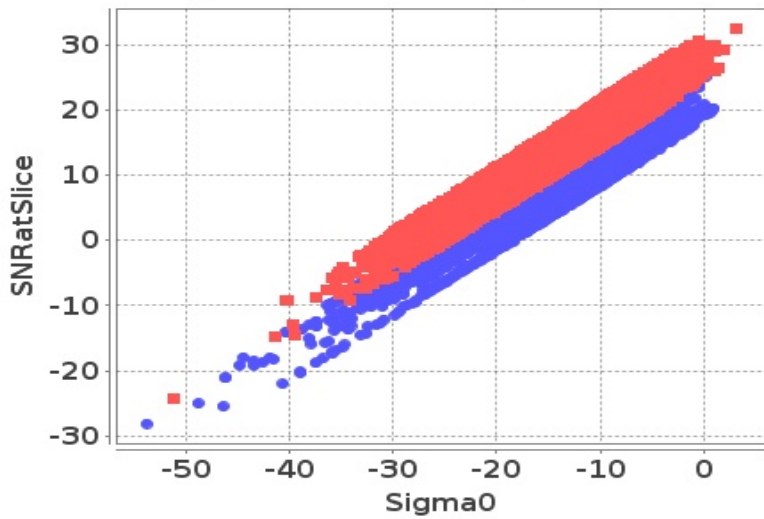
Sigma0 Vs SNR (Sea)



■ Inner ● Outer

**Slice-Land**

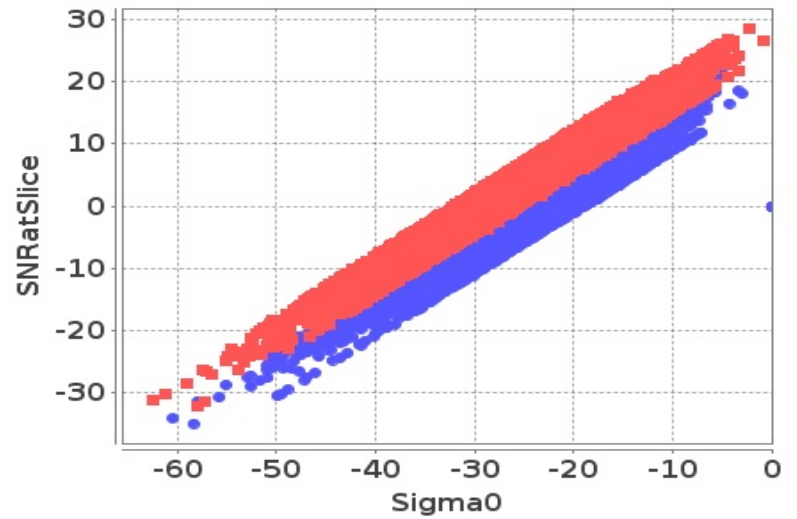
Sigma0 Vs SNRatSlice (Land)



■ Inner ● Outer

**Slice-Sea**

Sigma0 Vs SNRatSlice (Sea)

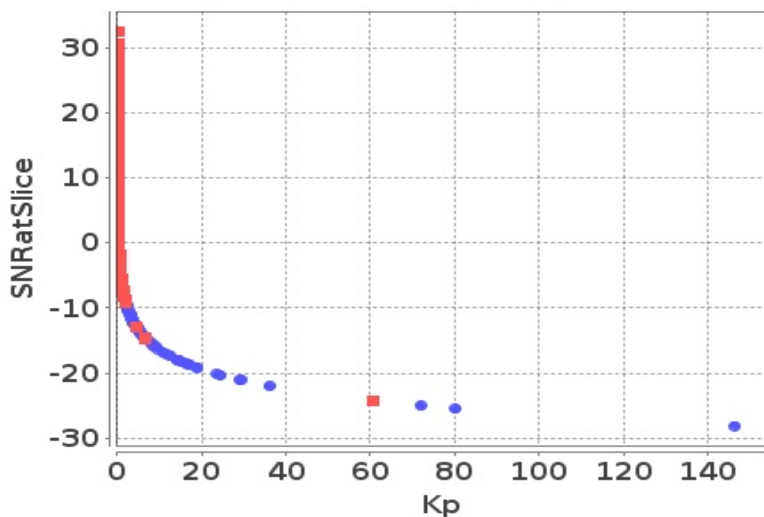


■ Inner ● Outer

## Sigma0 Behaviour (Kp Vs SNR)

**Slice**

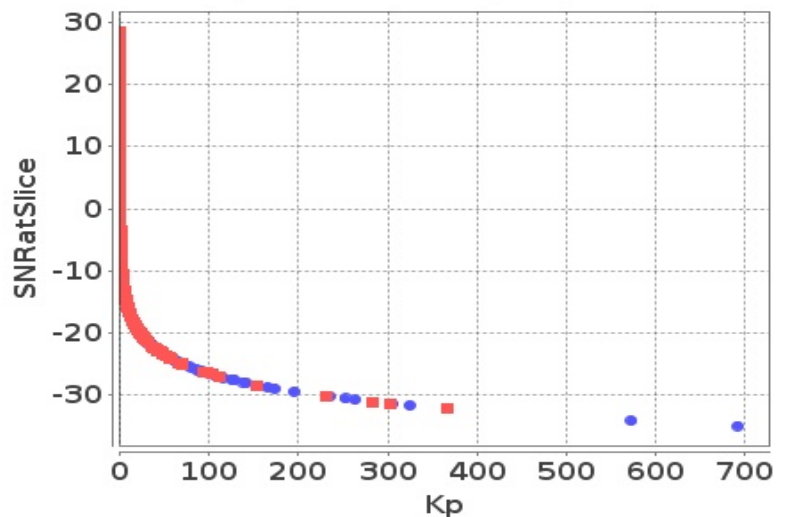
Kp Vs SNRatSlice (Land)



■ Inner ● Outer

**Slice**

Kp Vs SNRatSlice (Sea)

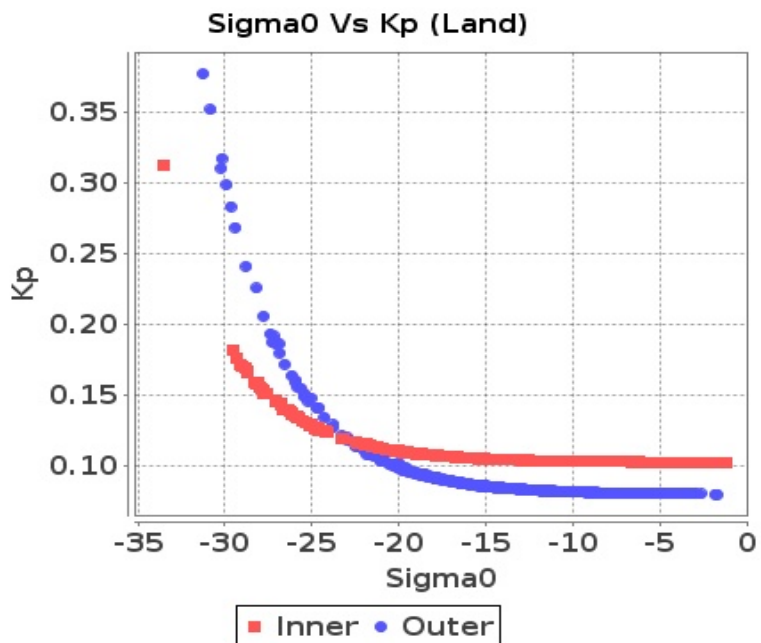


■ Inner ● Outer

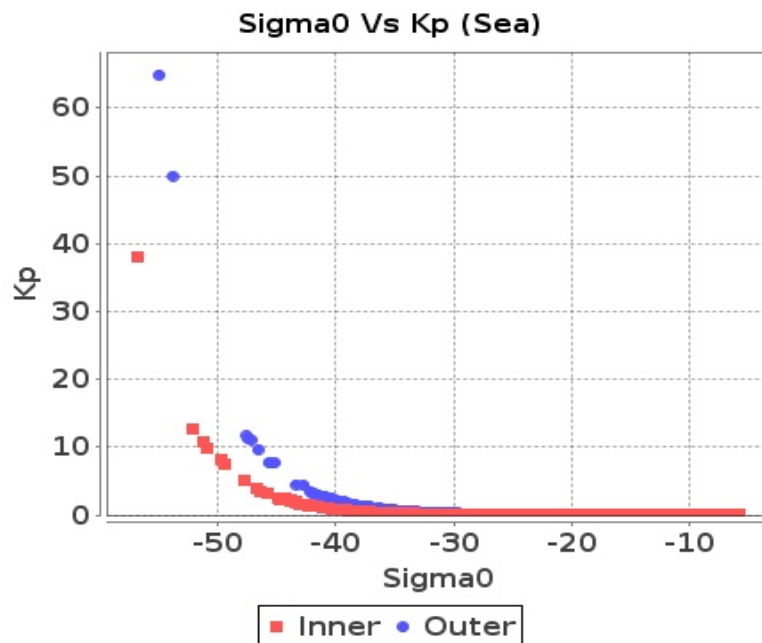


# Sigma0 Behaviour(Sigma0 Vs Kp)

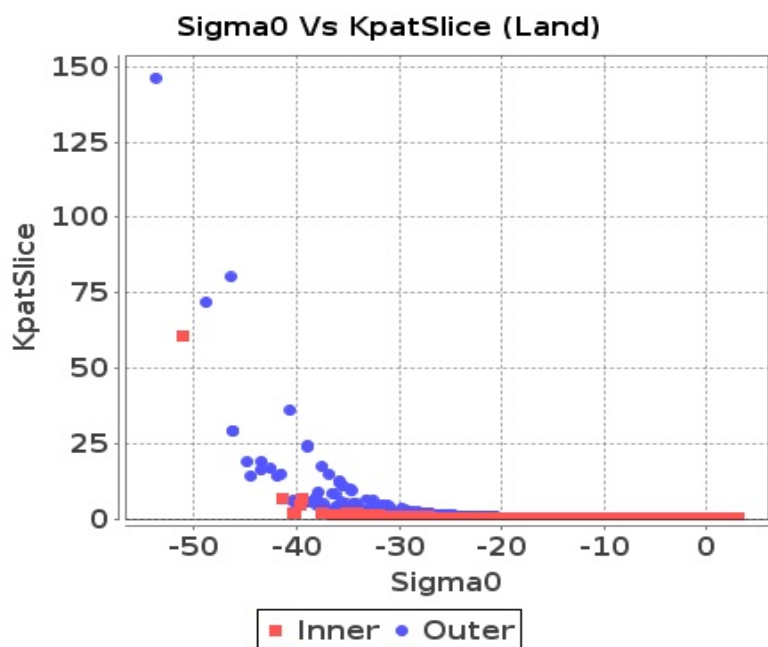
## Footprint-Land



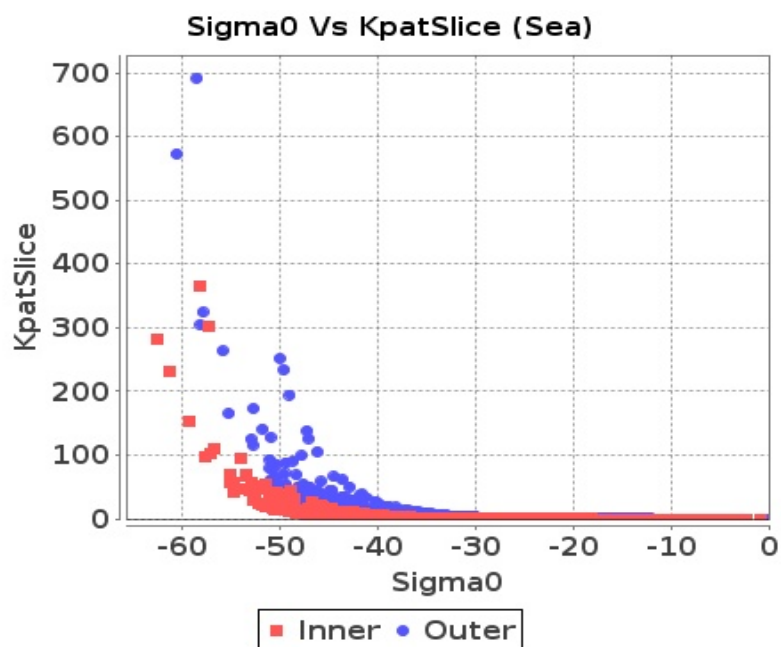
## Footprint-Sea



## Slice-Land



## Slice-Sea

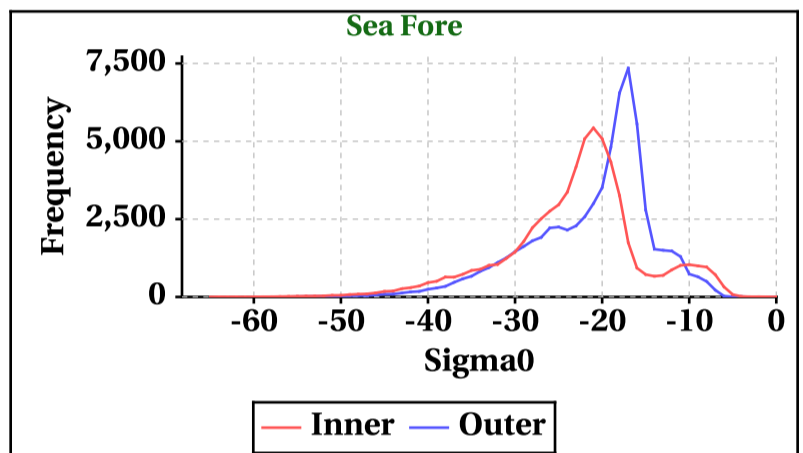
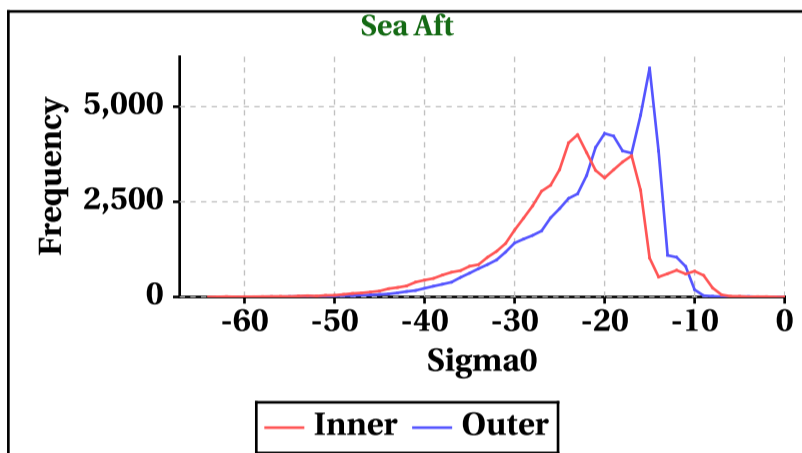
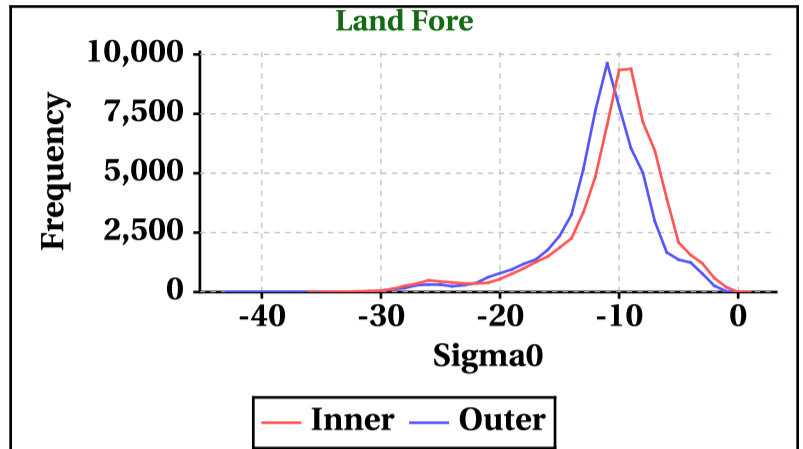
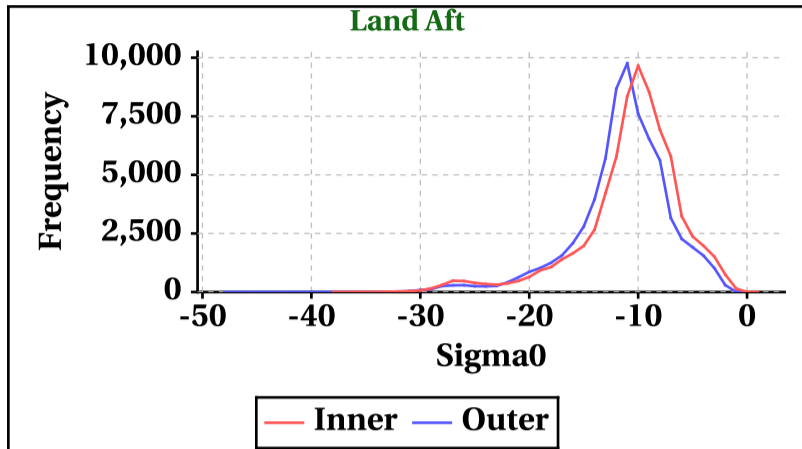


# Dynamic Range (Data Histograms)

## Sigma0(db)

Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-38	-36	-64	-65
Max	1	1	0	0

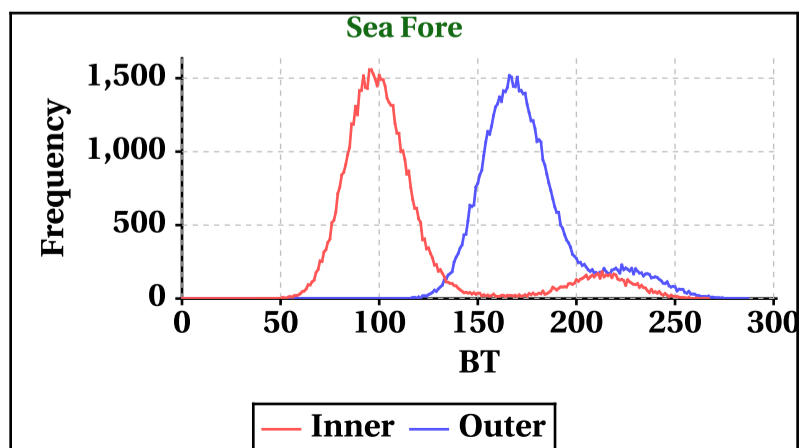
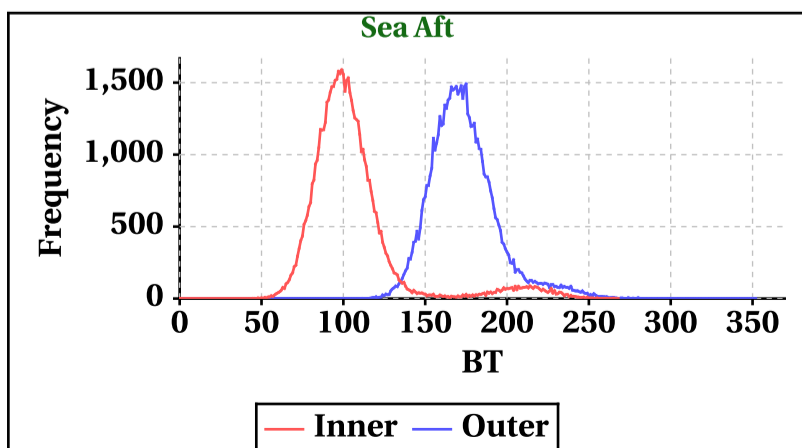
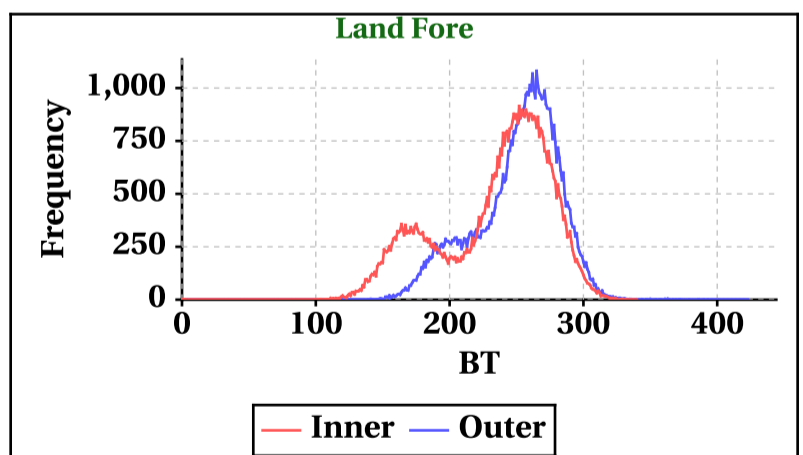
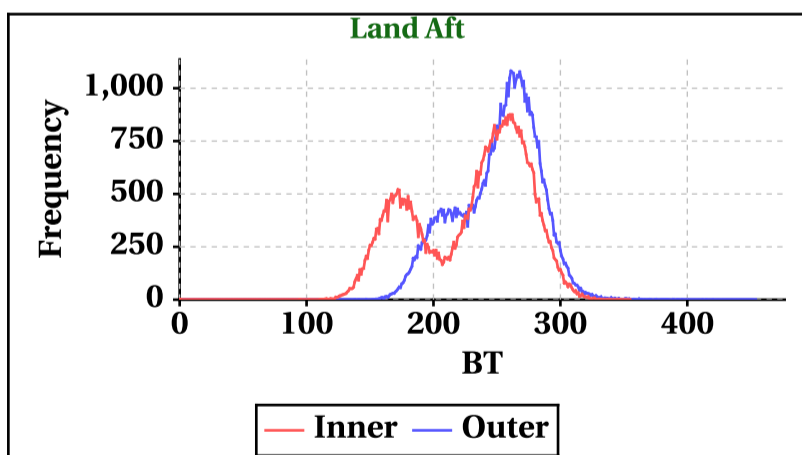
Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-48	-43	-59	-59
Max	0	0	0	0



## Brightness Temperature(K)

Inner Beam(HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	355	340	268	267

Outer Beam(VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	454	423	352	287

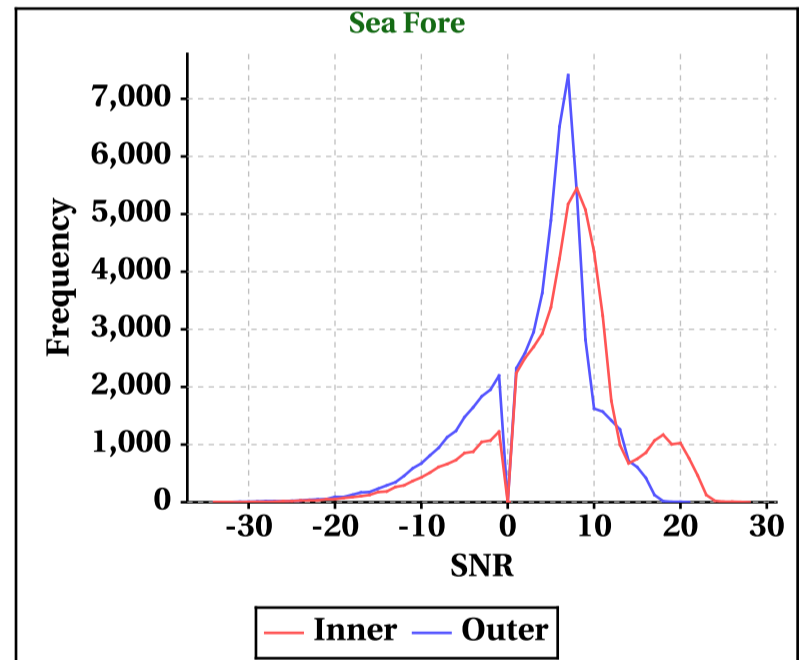
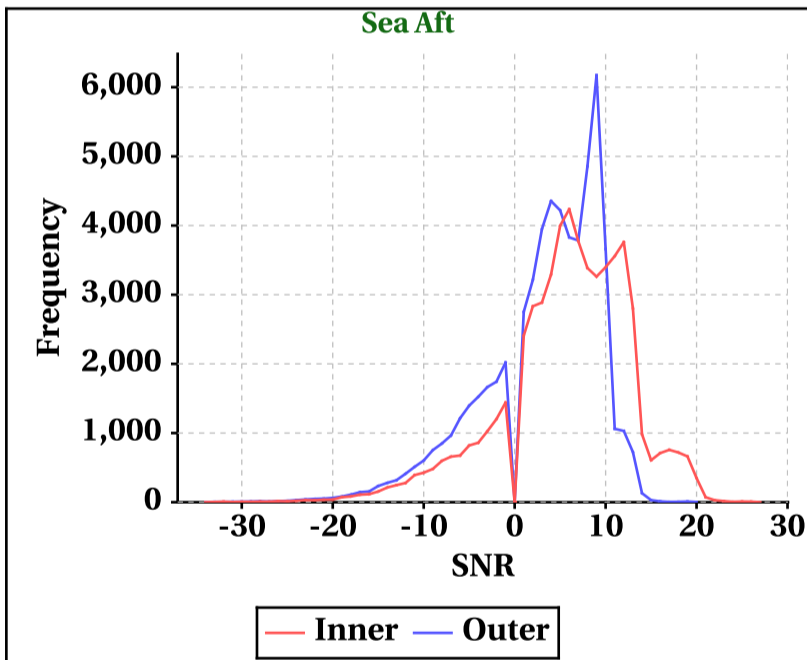
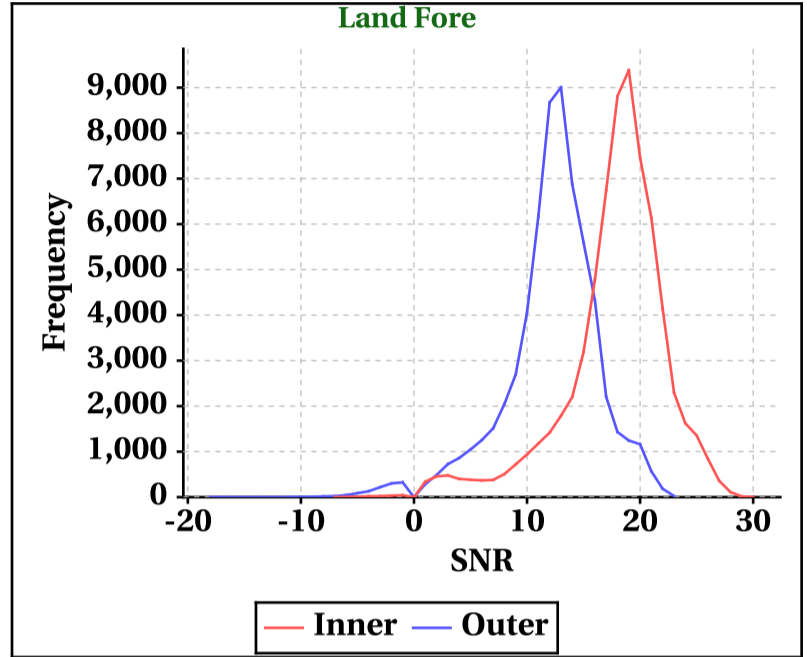
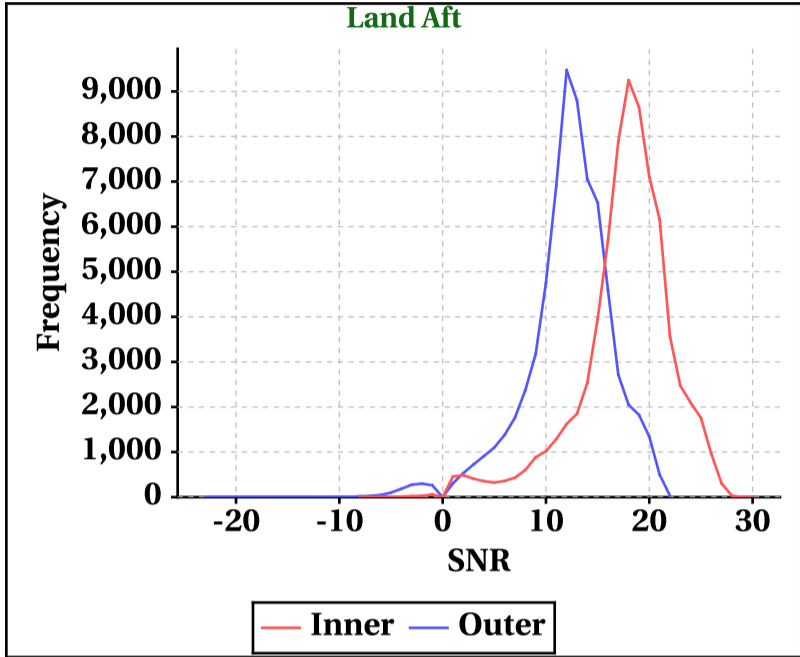


# Dynamic Range (Data Histograms)

## SNR(dBm)

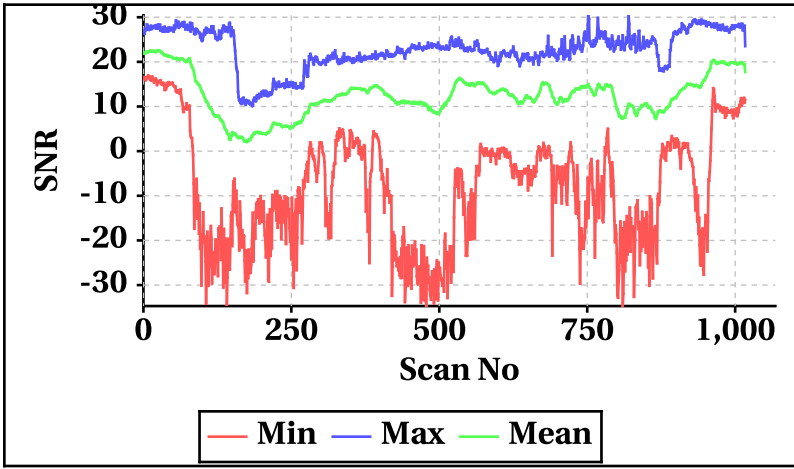
Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-8	-7	-34	-34
Max	30	30	27	28

Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-23	-18	-34	-34
Max	22	23	20	21

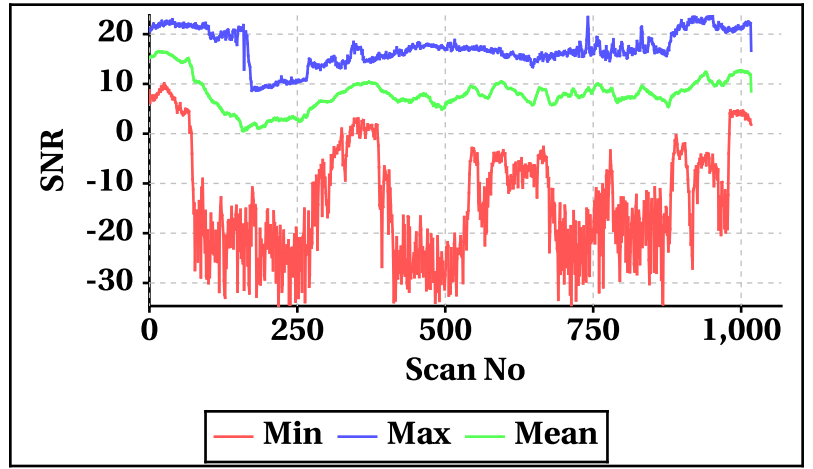


## Orbit-wise behaviour of SNR

Inner Beam (HH)

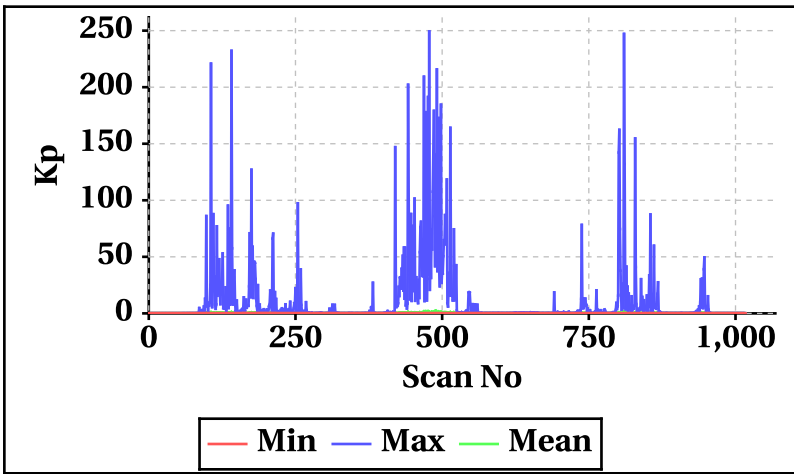


Outer Beam(VV)

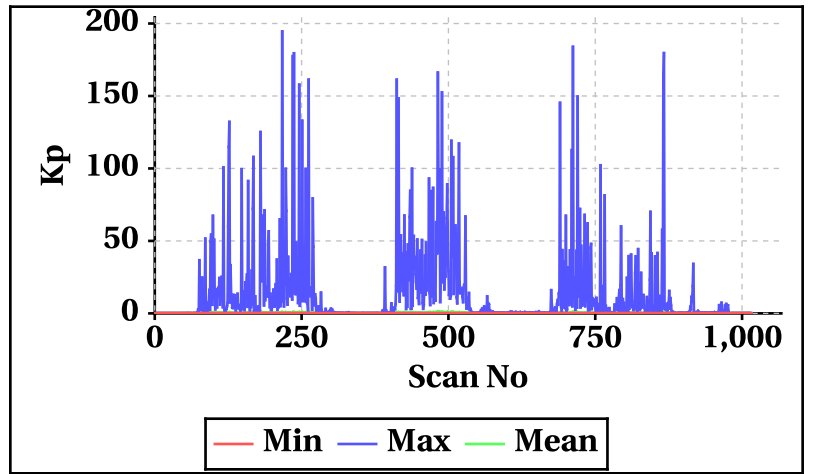


## Orbit-wise behaviour of Kp,Kpa,Kpb,Kpc

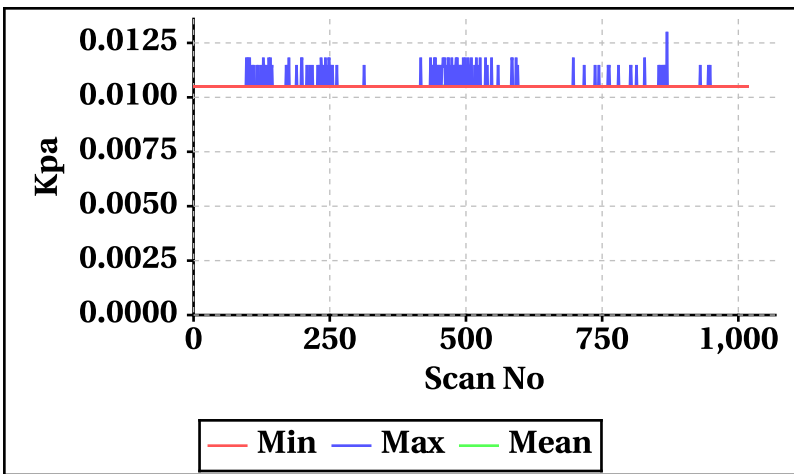
Inner Beam(HH)



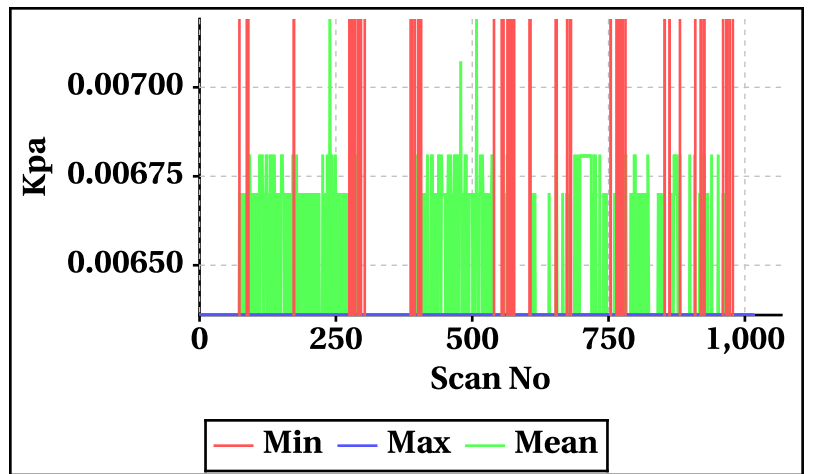
Outer Beam(VV)



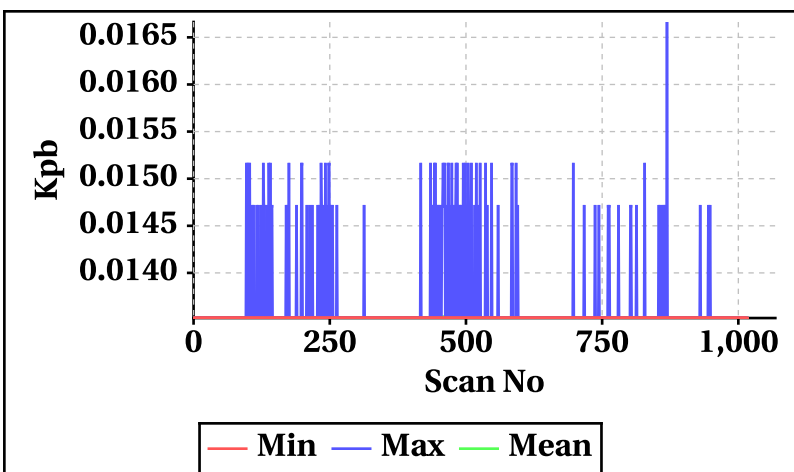
Inner Beam(HH)



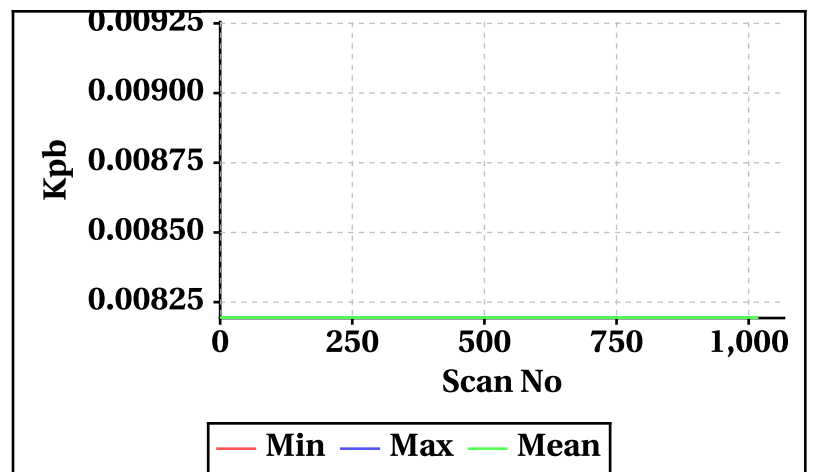
Outer Beam(VV)



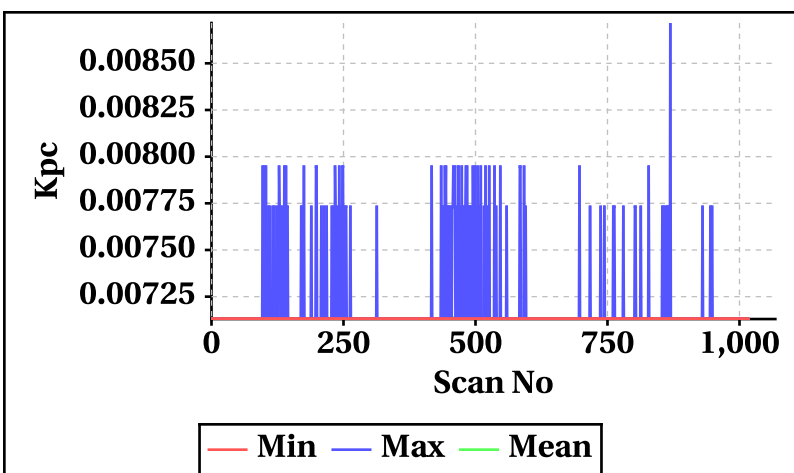
Inner Beam(HH)



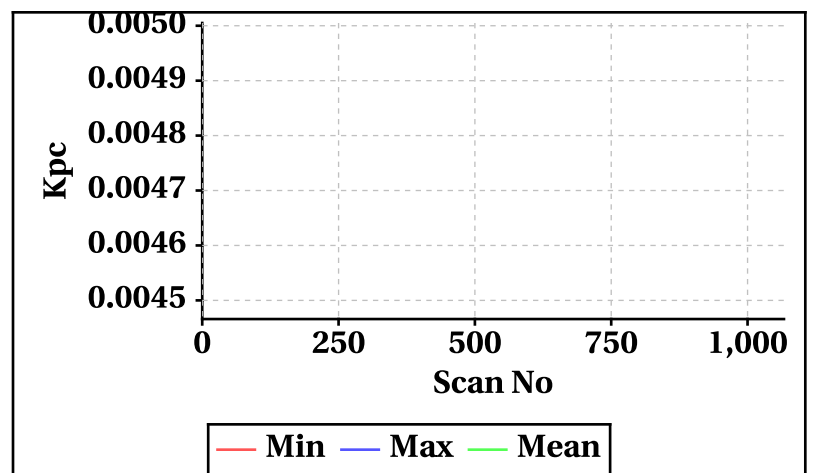
Outer Beam(VV)



Inner Beam(HH)



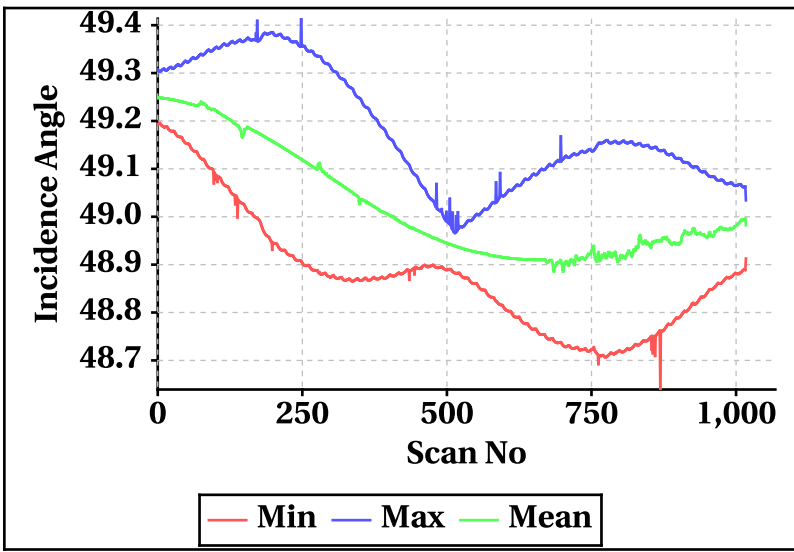
Outer Beam(VV)



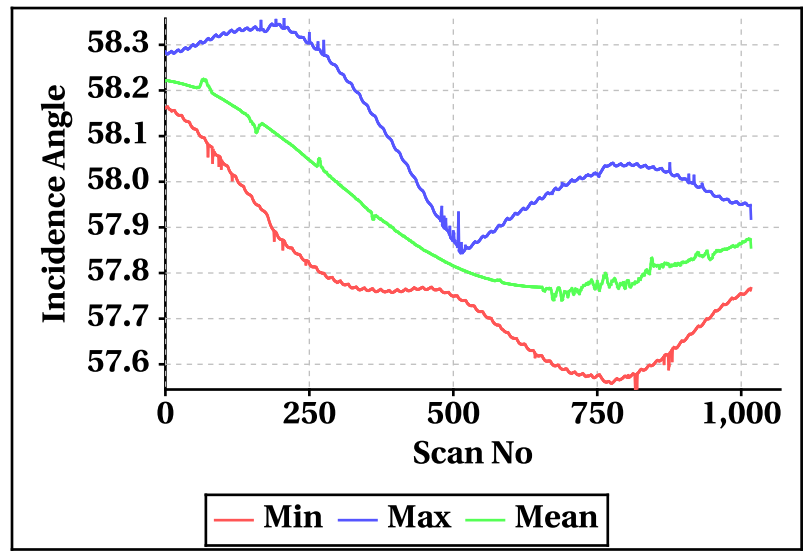


Orbt-wise behaviour of Incidence,Azimuth,Range,X-Factor

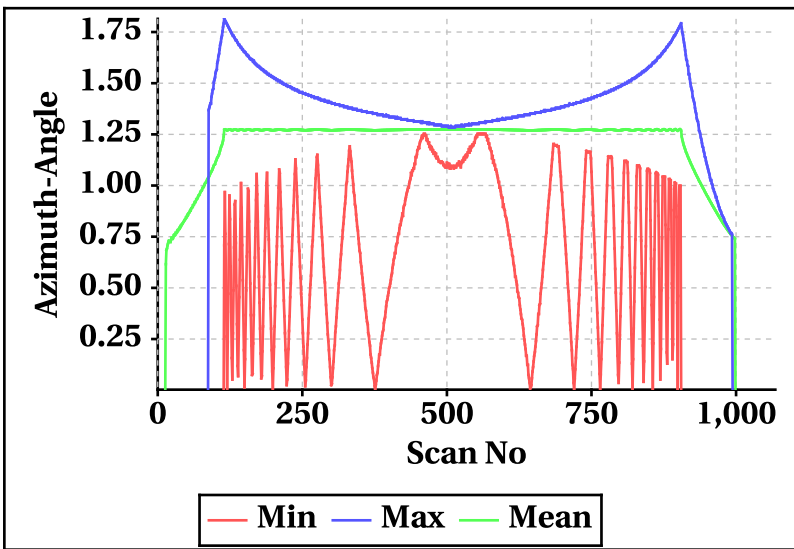
Inner Beam (HH)



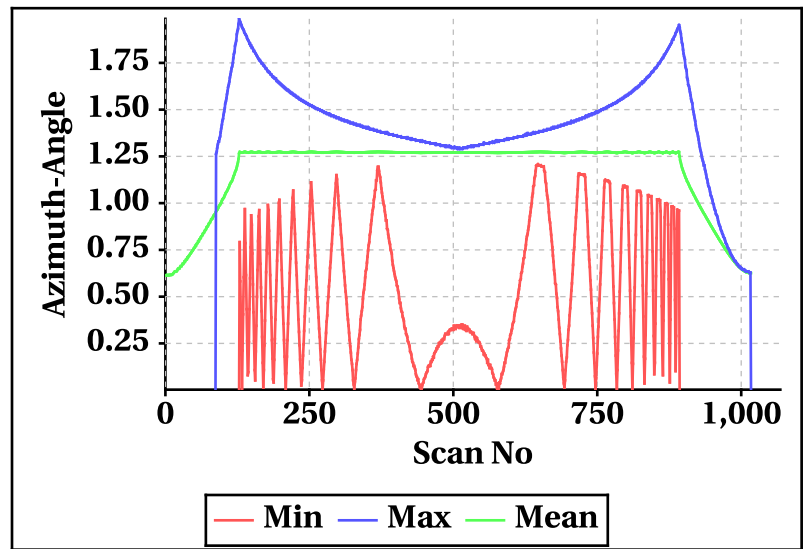
Outer Beam(VV)



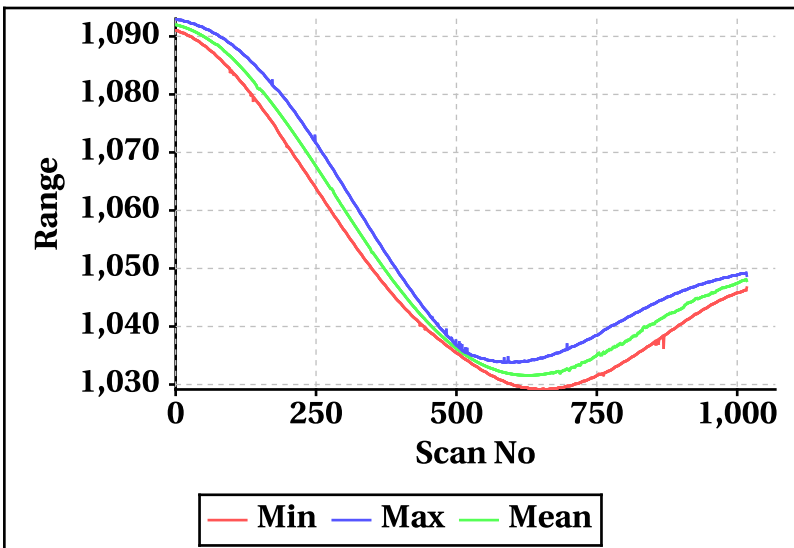
Inner Beam (HH)



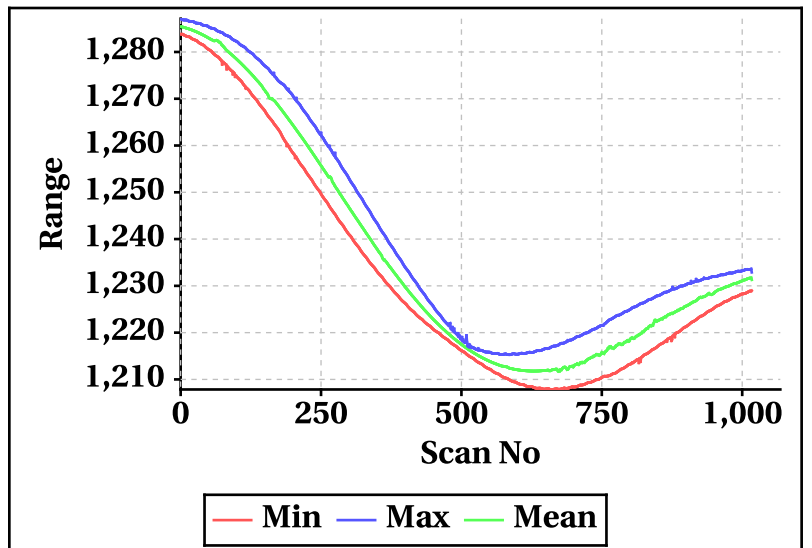
Outer Beam(VV)



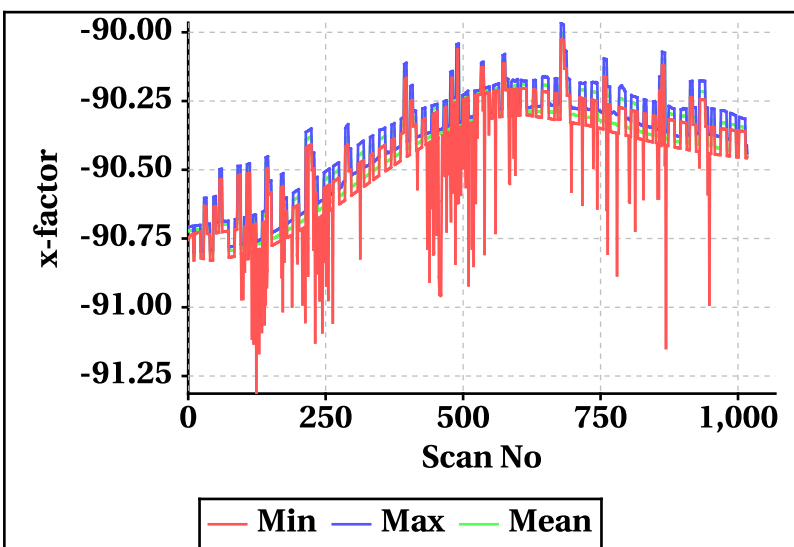
Inner Beam (HH)



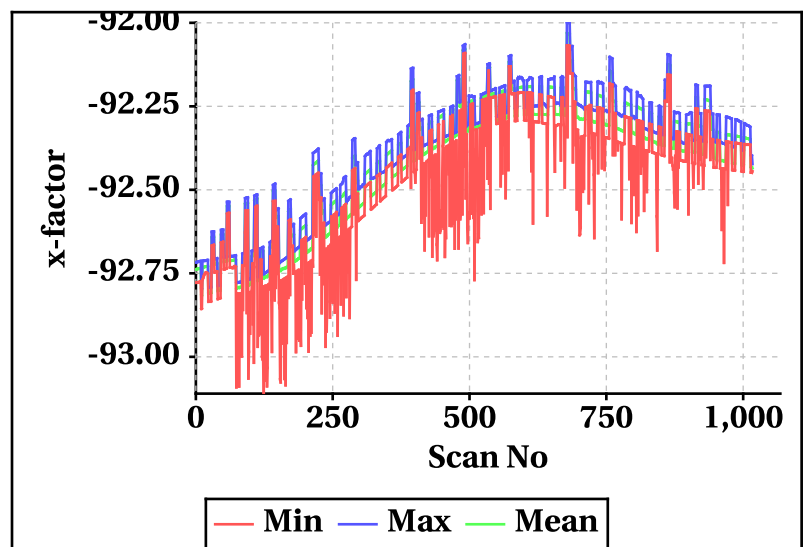
Outer Beam(VV)



Inner Beam (HH)



Outer Beam(VV)

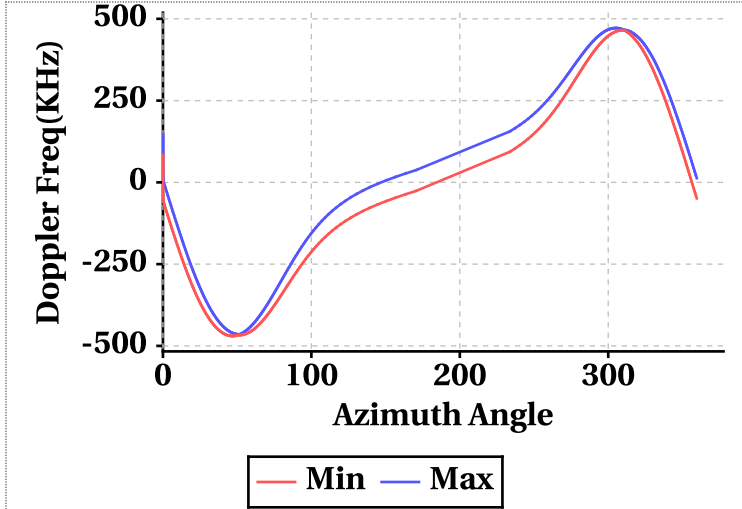


# Doppler Frequency Variation

Doppler Frequency(KHz) variation statistics Over the half Orbit

	Inner Beam (HH)	Outer Beam (VV)
Min	-469.70	-526.62
Max	471.80	528.52

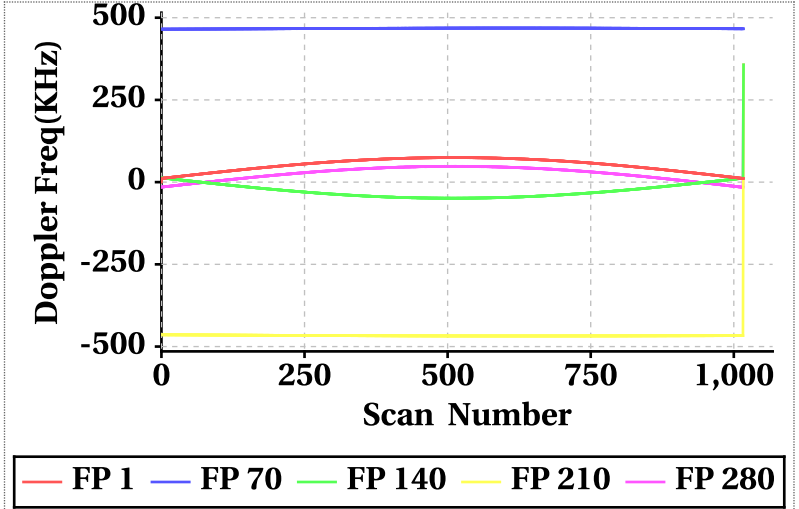
Footprint wise Doppler frequency variation Inner Beam (HH)



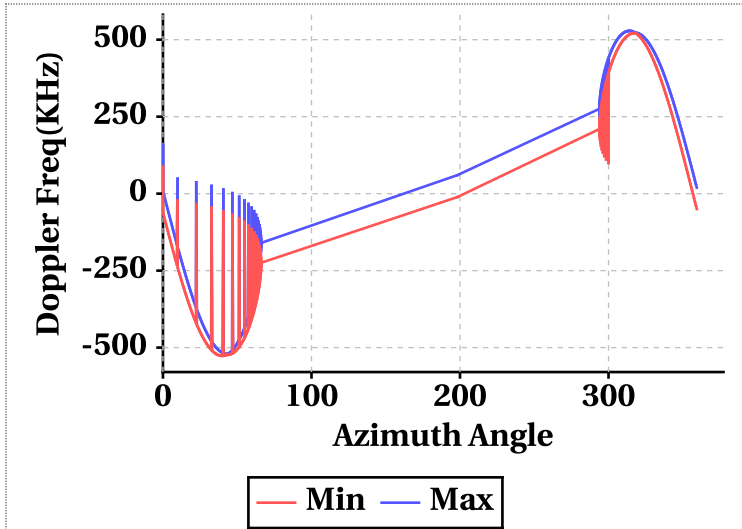
Doppler Frequency(KHz) variation

Doppler_FP	Inner Beam (HH)			Outer Beam (VV)		
	Min	Max	Mean	Min	Max	Mean
Doppler_1	0.00	74.68	51.58	7.38	356.90	52.89
Doppler_70	465.20	468.54	467.34	521.18	525.40	523.94
Doppler_140	-48.90	356.90	-26.20	-61.54	395.88	-36.01
Doppler_210	-467.82	356.90	-466.00	-523.94	395.88	-522.07
Doppler_280	-15.68	356.90	25.28	-10.98	395.88	34.67

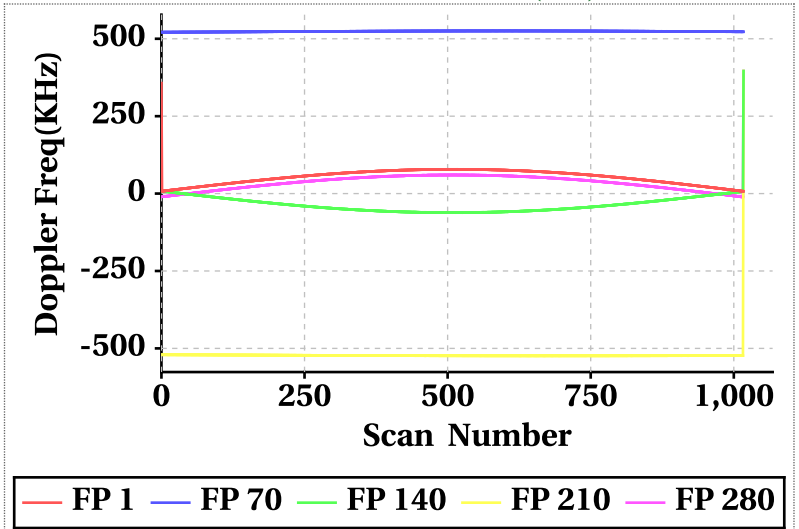
Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Inner Beam (HH)



Footprint wise Doppler frequency variation Outer Beam (VV)

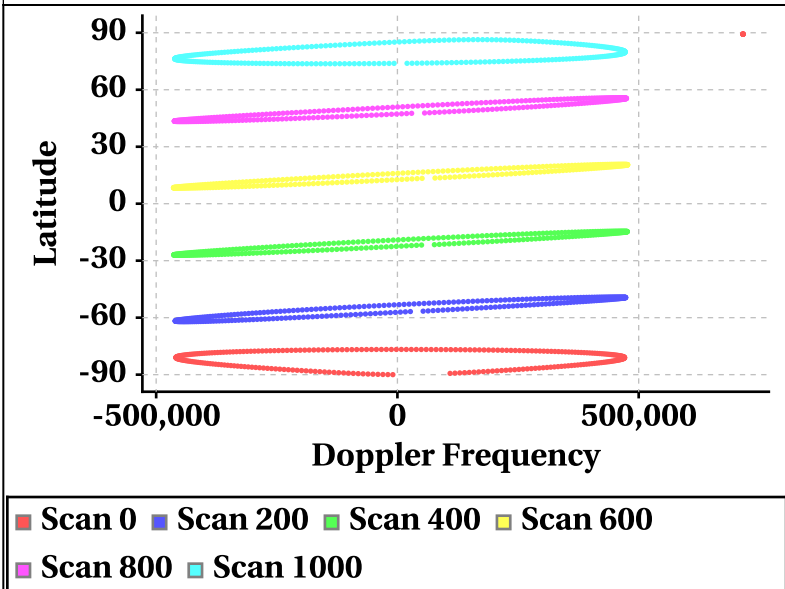


Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Outer Beam (VV)

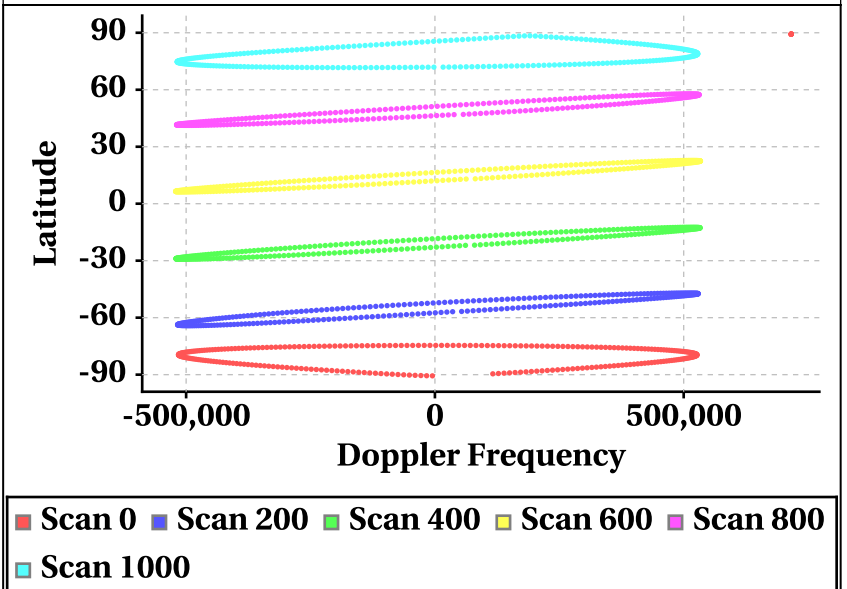


# Latitude Vs Doppler Frequency

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



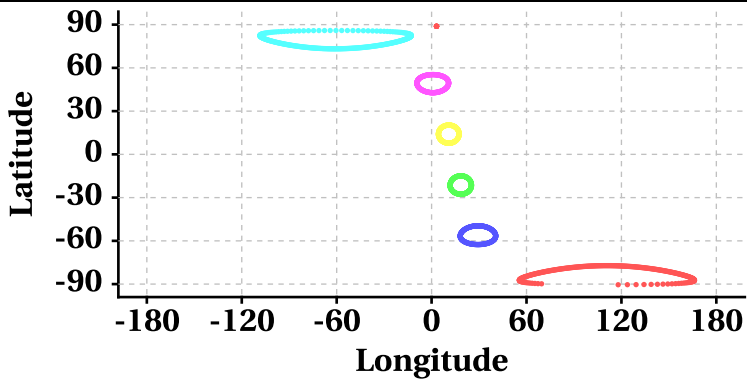
Doppler Frequency at Scan Interval of 200 [Outer Beam(VV)]



# Parameter as a function of Latitude

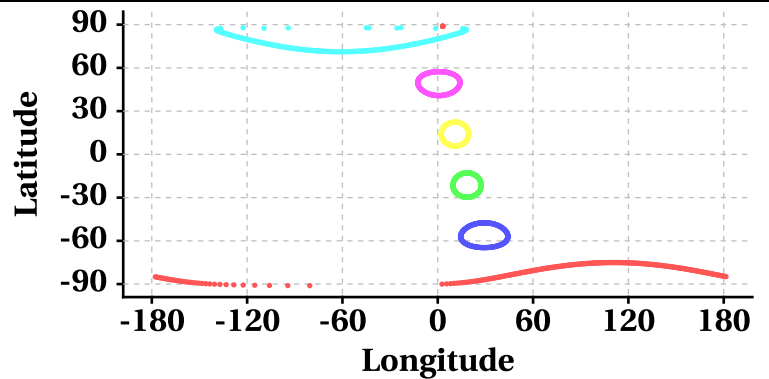
## Latitude Vs Longitude

Scan Trace [Inner Beam(HH)]



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

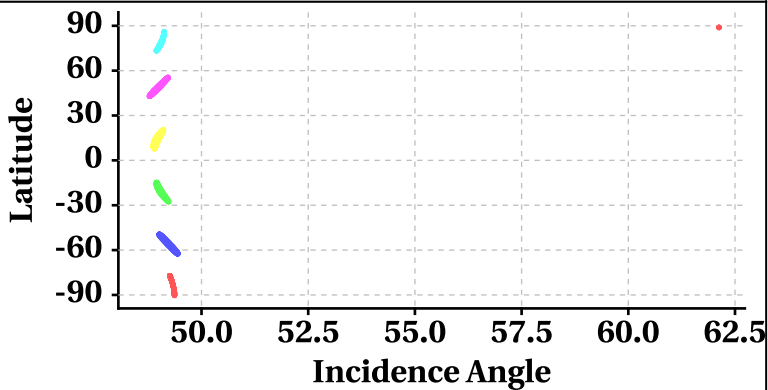
Scan Trace [Outer Beam (VV)]



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

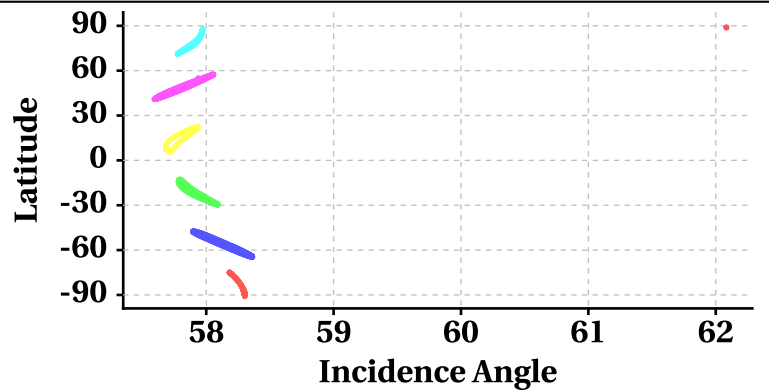
## Latitude Vs Incidence Angle

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



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

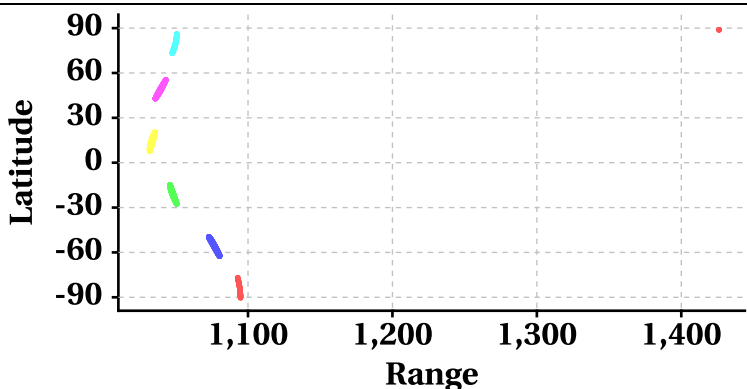
Incidence Angle at Scan Interval of 200 [Outer Beam (VV)]



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

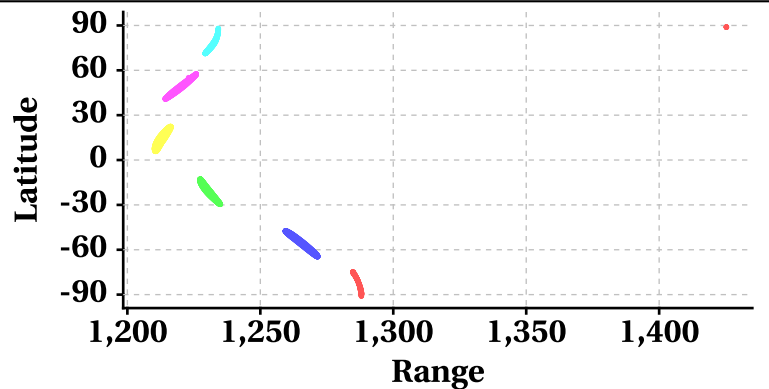
## Latitude Vs Range

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

