

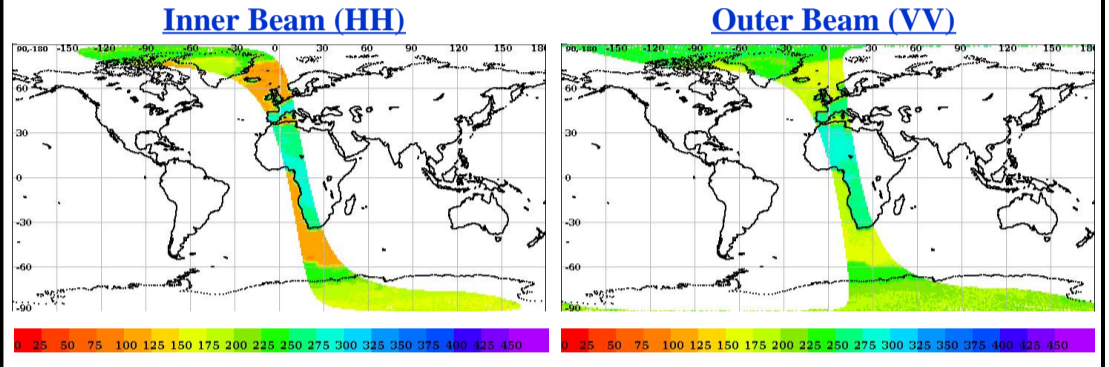
# SCATSAT-1 Scatterometer Level-1B Data Quality Evaluation Report

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<b>Satellite Id</b>	ScatSat-1	<b>Start Orbit</b>	15813	<b>Total Scans</b>	1017
<b>Sensor Name</b>	Scatterometer	<b>End Orbit</b>	15814	<b>No of Inner FootPrints</b>	281
<b>Processor Version</b>	v1.1.3	<b>Rev. Number</b>	15813_15814	<b>No Of Outer FootPrints</b>	282
<b>Half Orbit Direction</b>	SN	<b>Data Production Date</b>	22-09-2019	<b>No. Of Inner Slices</b>	9
<b>Equator Crossing Date</b>	21-09-2019	<b>Equator Crossing Time</b>	19:41:30.000	<b>No Of Outer Slices</b>	15

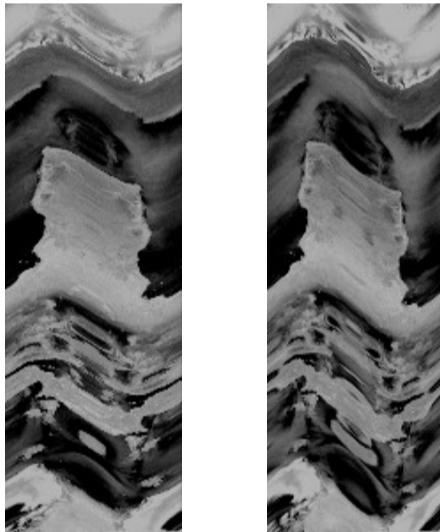
## Brightness Temperature(k) Footprint trace



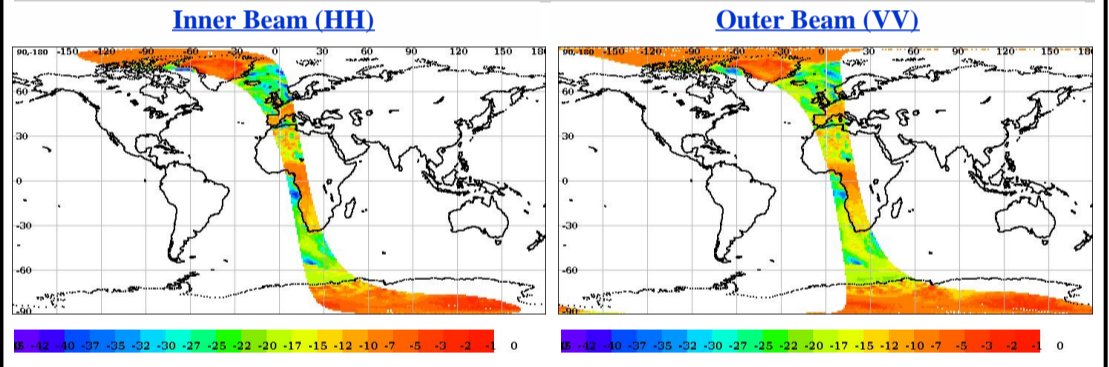
## Image Snapshot for Inner & Outer Beam

Inner (HH)

Outer (VV)



## Sigma0(dB) Footprint trace



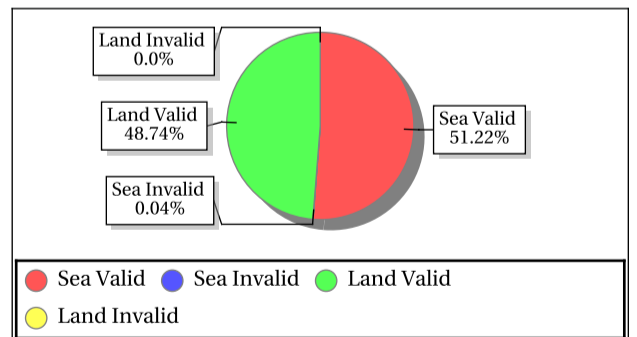
## Invalid and Poor Sigma-0 Quality Flag Statistics for Inner/Outer Slices\*

Sigma-0 Flags	Inner Beam	Outer Beam
Invalid Sigma0(%)	0.04	0.05
Data Not Available From Payload (%)	100.0	82.94931
Slice not within sample array limits (%)	0.00	17.05
C(S+N) - C(N) < 0.1 (%)	0.00	0.00
Poor Sigma0(%)	22.22	13.33
Noise samples for blending Saturated	0.0	0.0
Count samp. for interpol. saturated (%)	0.00	0.00
Sigma0 < lower bound (-96dB) (%)	0.0	0.0
Sigma0 > upper bound (0 dB) (%)	0.00	0.00
SNR < -65 dB (%)	0.021352	0.051608

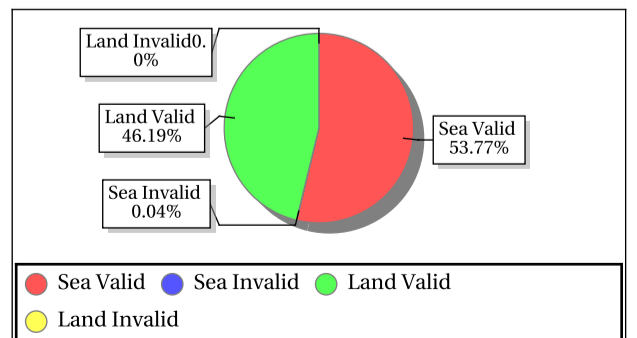
\*DP Format Document

## 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	ASC	Aft	-5.77	-4.49	-5.10	0.43	154.43	200.53	179.10	15.01
GreenLand_2	77.50	-41.50	Inner	ASC	Fore	-5.60	-3.92	-4.83	0.69	150.71	173.31	165.66	10.57
GreenLand_3	71.55	-42.45	Inner	ASC	Aft	-11.25	-6.61	-8.35	0.92	150.64	221.06	192.92	14.79
GreenLand_3	71.55	-42.45	Inner	ASC	Fore	-10.19	-6.72	-8.41	0.87	157.91	220.44	193.53	14.36
GreenLand_1	74.69	-42.50	Inner	ASC	Aft	-9.91	-8.02	-8.86	0.58	163.50	209.02	186.54	15.13
GreenLand_1	74.69	-42.50	Inner	ASC	Fore	-9.82	-6.83	-8.70	0.73	169.17	213.80	187.65	12.99
Sahara	19.10	14.30	Inner	ASC	Aft	-31.30	-20.95	-26.82	2.65	219.71	290.36	257.59	14.23
Sahara	19.10	14.30	Inner	ASC	Fore	-34.08	-20.63	-27.35	3.06	231.88	303.55	258.78	14.35
ANT_1	-75.00	121.00	Outer	ASC	Aft	-9.69	-6.90	-7.92	0.72	169.37	218.21	196.18	15.85
GreenLand_2	77.50	-41.50	Outer	ASC	Aft	-4.88	-4.73	-4.81	0.08	219.65	256.98	238.31	18.67
GreenLand_2	77.50	-41.50	Outer	ASC	Fore	-5.96	-4.19	-5.00	0.59	214.76	265.70	239.16	14.89
GreenLand_3	71.55	-42.45	Outer	ASC	Aft	-10.95	-9.55	-10.29	0.39	215.99	257.46	233.04	10.49
GreenLand_3	71.55	-42.45	Outer	ASC	Fore	-11.54	-9.52	-10.68	0.57	211.62	261.52	235.53	18.53
GreenLand_1	74.69	-42.50	Outer	ASC	Aft	-10.23	-7.87	-9.01	0.69	223.50	264.39	241.79	13.34
GreenLand_1	74.69	-42.50	Outer	ASC	Fore	-8.83	-7.79	-8.45	0.33	213.75	254.11	237.96	11.62
Sahara	19.10	14.30	Outer	ASC	Aft	-32.22	-21.45	-26.23	2.59	234.34	308.22	277.89	15.93
Sahara	19.10	14.30	Outer	ASC	Fore	-33.35	-21.05	-27.21	3.04	242.04	328.05	276.79	16.58



## 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	182.60	0.23	1.499	0.12	282.94	0.28	2.056	0.12	0.73	0.12	0.000	0.12	0.40	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	0.02	0.02	0.000	0.02	0.02	0.02	0.000	0.02	0.02	0.02	0.000	0.02	0.02	0.02	0.000
<b>Kpc</b>	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000
<b>SNR</b>	-32.75	24.04	6.83	0.567	-34.65	24.58	6.89	2.966	-8.21	29.11	18.08	16.097	-5.04	29.79	18.36	17.548

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	211.28	0.21	1.351	0.09	206.07	0.22	1.438	0.09	1.93	0.09	0.012	0.09	29.95	0.09	0.027
<b>Kpa</b>	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000
<b>Kpb</b>	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000
<b>Kpc</b>	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000
<b>SNR</b>	-34.55	17.47	3.71	0.000	-34.44	18.42	4.04	0.000	-14.01	23.20	12.40	0.063	-26.06	22.93	12.34	0.101

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>	48.74	49.45	49.06	0.000	57.53	58.30	57.95	0.000	Inci.(Inner)	47.10	49.90
<b>Azimuth Diff. (deg)</b>	0.0029	282.58	1.27	2.592	0.0000	299.14	1.27	3.791	Inci.(Outer)	57.30	58.90
<b>Range(Km)</b>	1030.22	1084.02	1050.82	0.000	1206.82	1274.07	1231.28	7.100	Azimuth Diff.	0.60	2.00
<b>X Factor(dbm)</b>	-91.65	-89.96	-90.47	0.000	-93.13	-92.01	-92.25	0.000	Range(Inner)	1025.00	1095.70
<b>Across Distance (Km)</b>	15.43	15.91	15.61	0.000	20.37	36.85	21.18	7.000	Range(Outer)	1210.00	1280.00
<b>Along Distance (Km)</b>	18.84	20.72	19.75	0.000	18.66	20.69	19.66	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

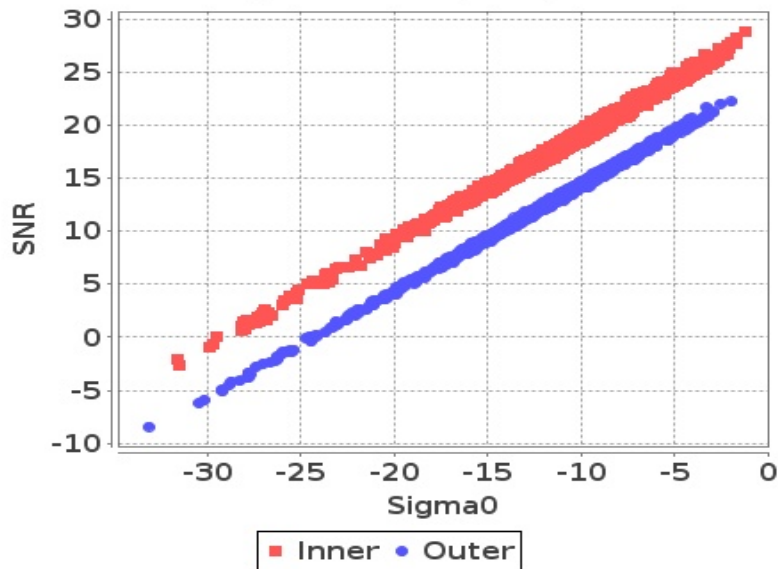
- Normal
- Deviations
- Alarming
- High Errors



## Sigma0 Behaviour (Sigma0 Vs SNR)

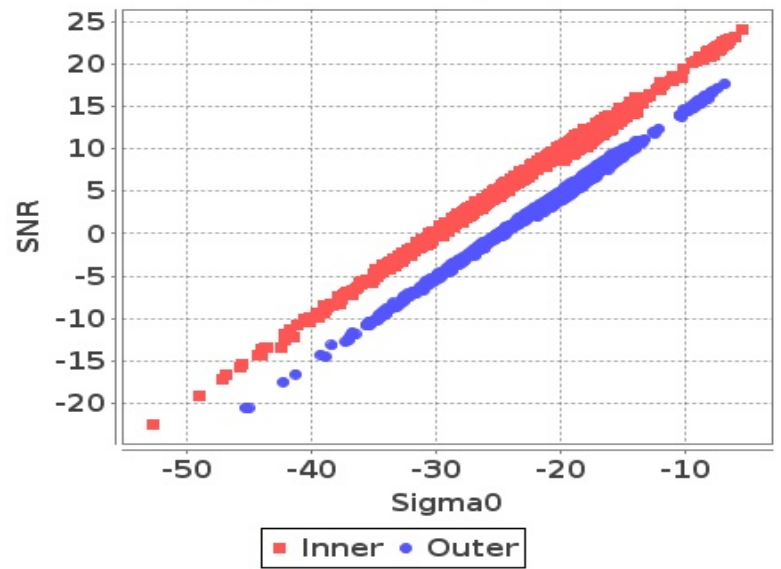
Footprint-Land

Sigma0 Vs SNR (Land)



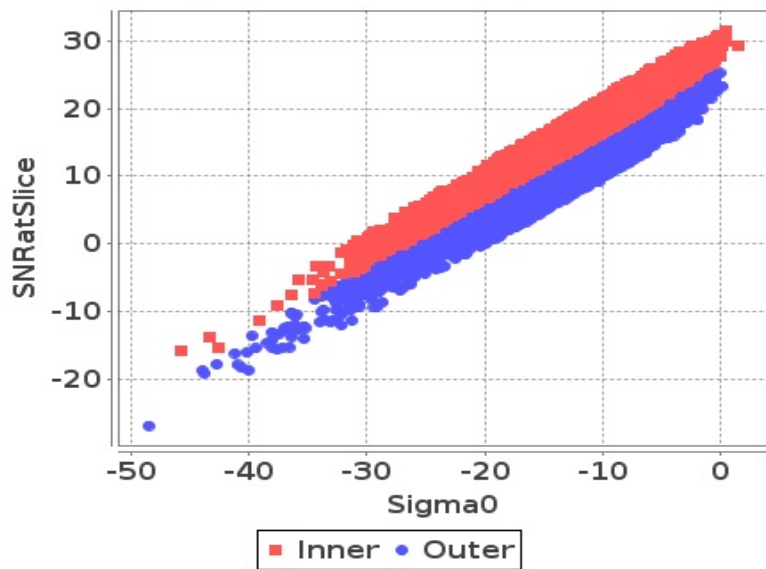
Footprint-Sea

Sigma0 Vs SNR (Sea)



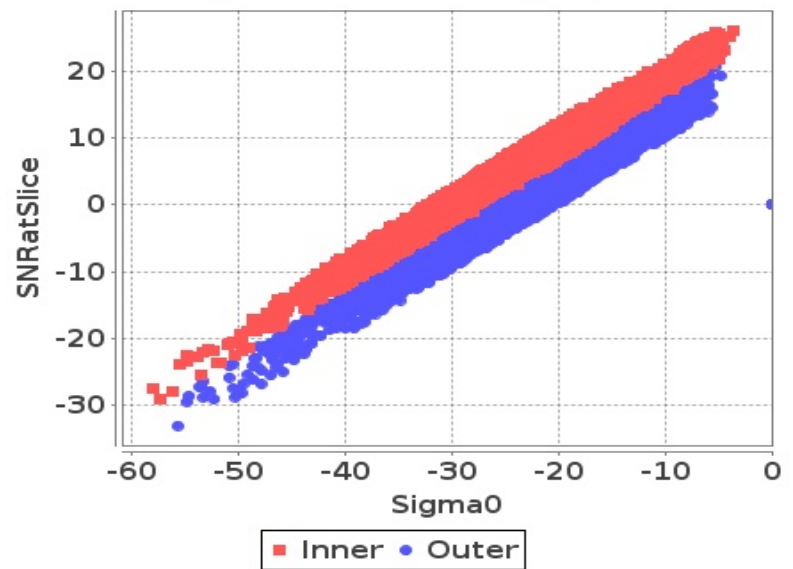
Slice-Land

Sigma0 Vs SNRatSlice (Land)



Slice-Sea

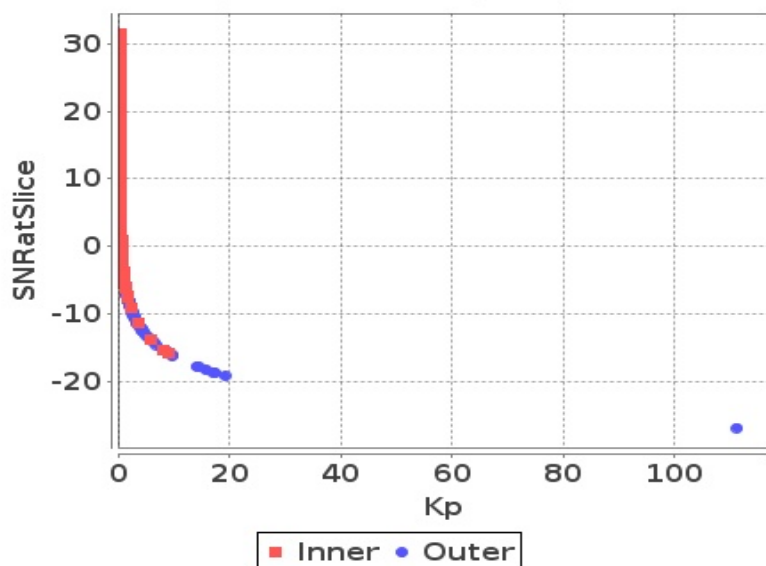
Sigma0 Vs SNRatSlice (Sea)



## Sigma0 Behaviour (Kp Vs SNR)

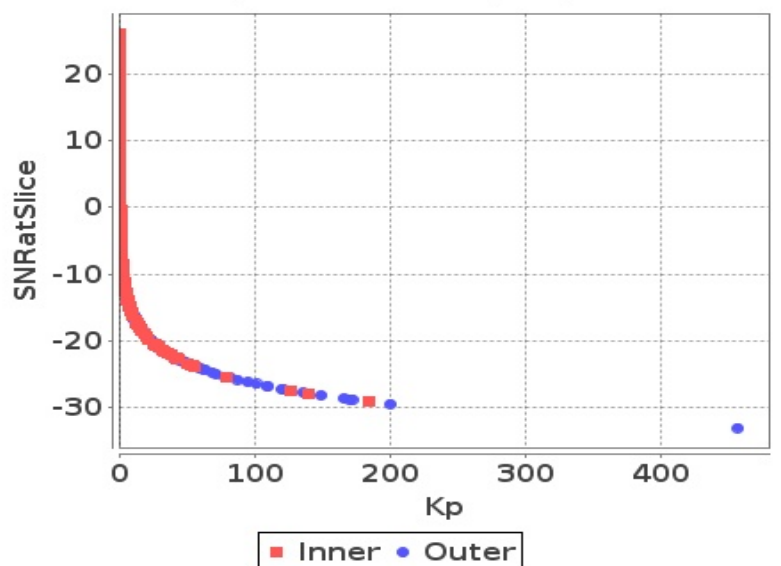
Slice

Kp Vs SNRatSlice (Land)



Slice

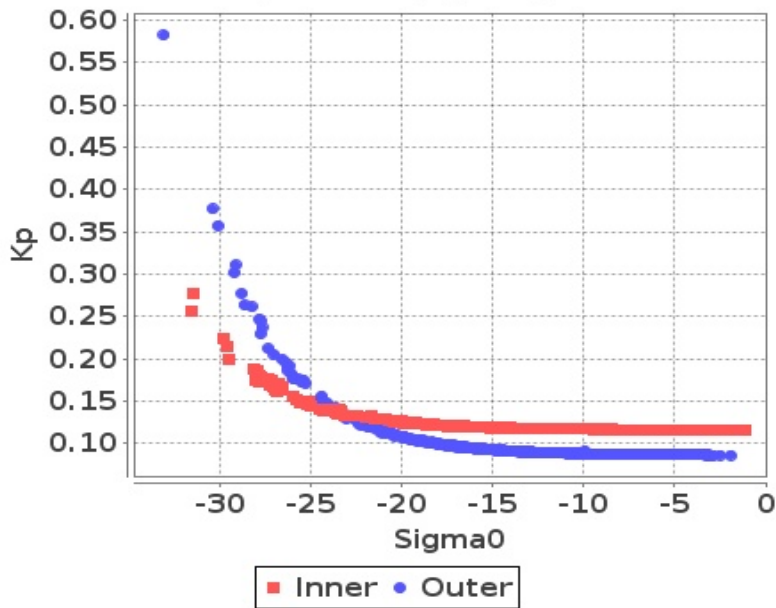
Kp Vs SNRatSlice (Sea)



# Sigma0 Behaviour(Sigma0 Vs Kp)

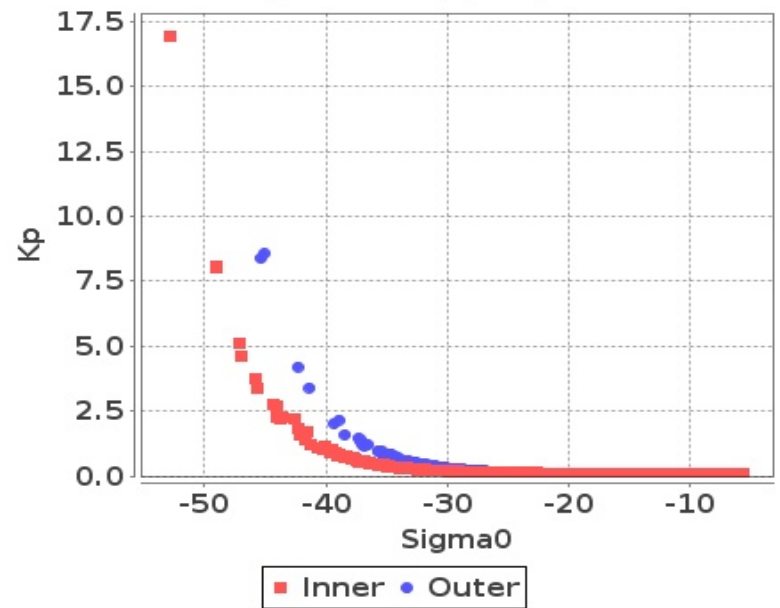
## Footprint-Land

### Sigma0 Vs Kp (Land)



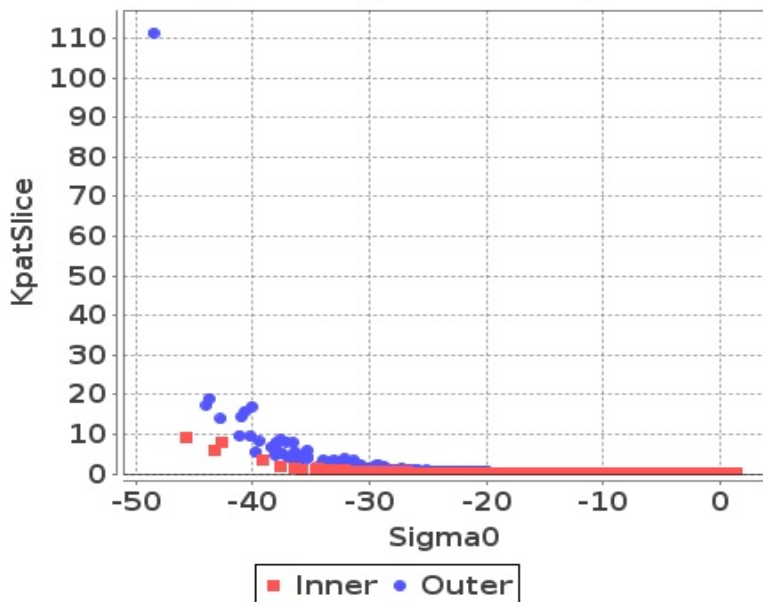
## Footprint-Sea

### Sigma0 Vs Kp (Sea)



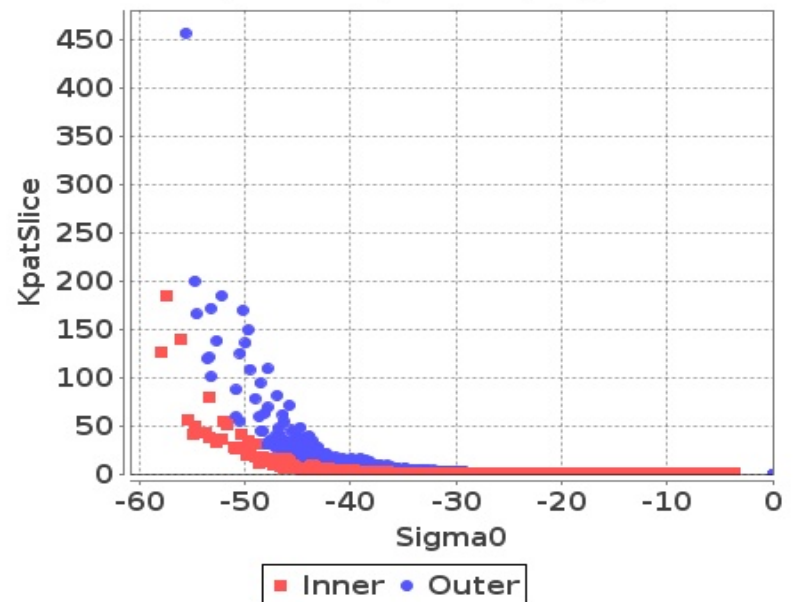
## Slice-Land

### Sigma0 Vs KpatSlice (Land)



## Slice-Sea

### Sigma0 Vs KpatSlice (Sea)

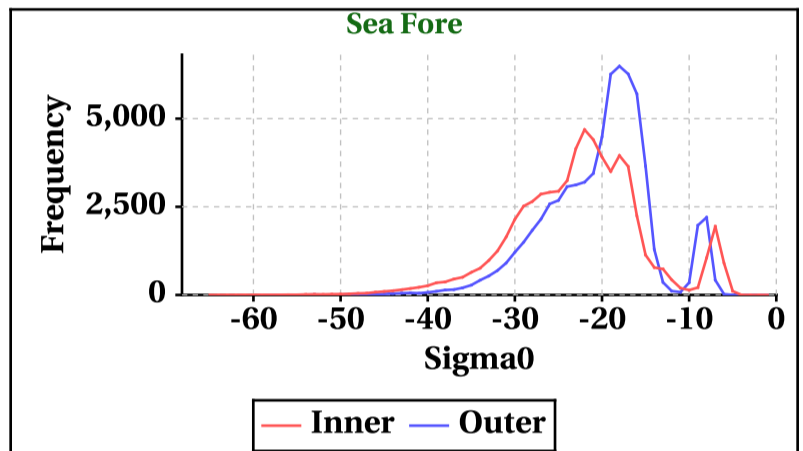
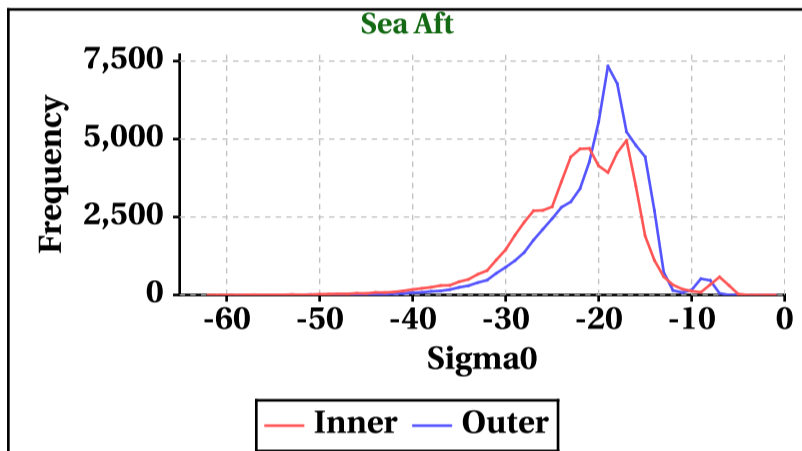
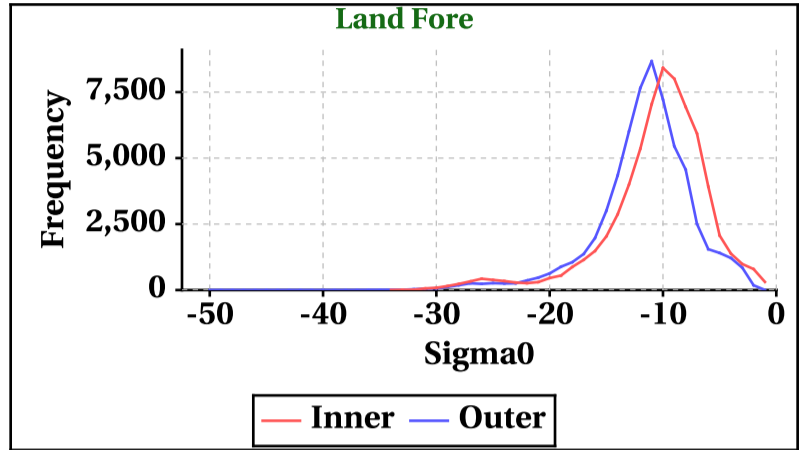
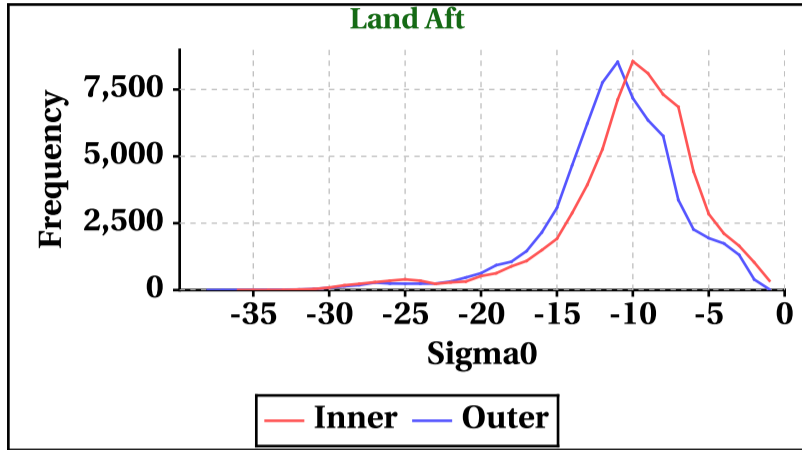


# Dynamic Range (Data Histograms)

## Sigma0(db)

Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-36	-34	-62	-65
Max	0	0	0	0

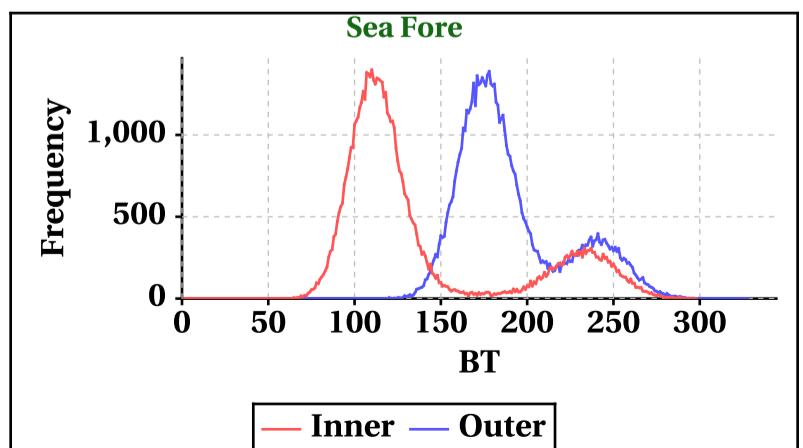
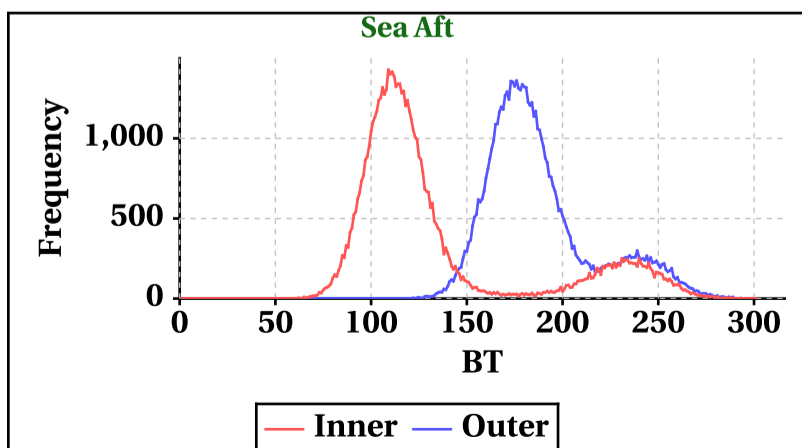
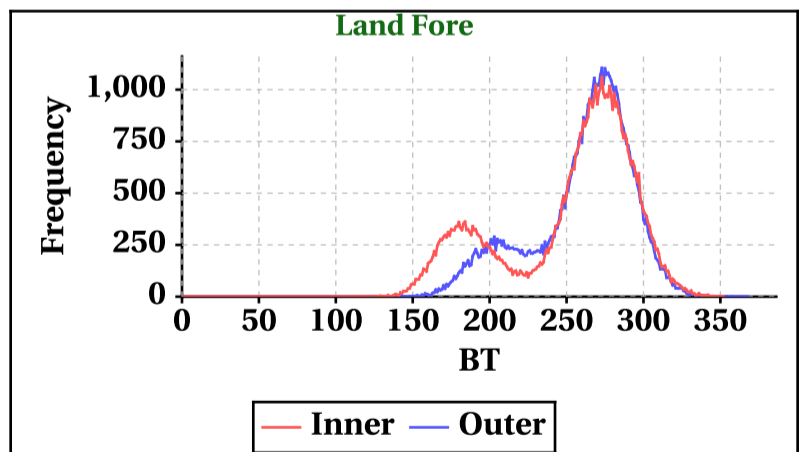
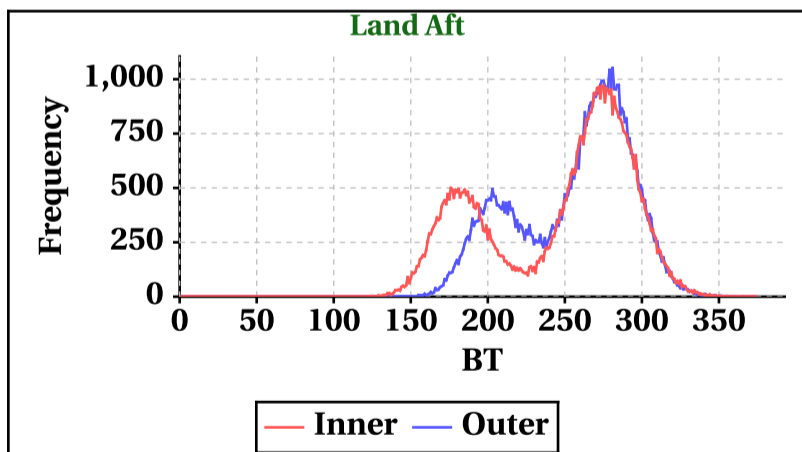
Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-38	-50	-59	-59
Max	0	0	0	0



## Brightness Temperature(K)

Inner Beam(HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	374	352	301	298

Outer Beam(VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	373	368	299	328

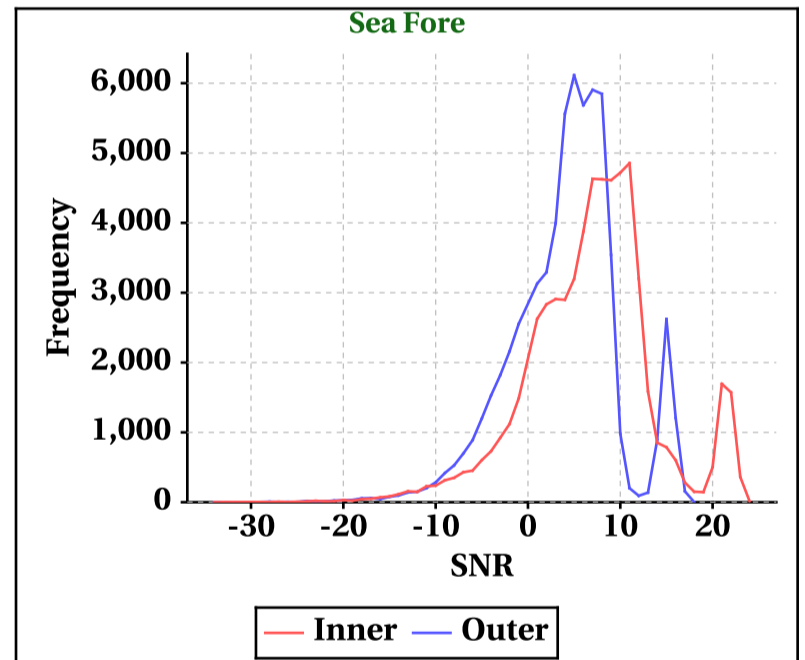
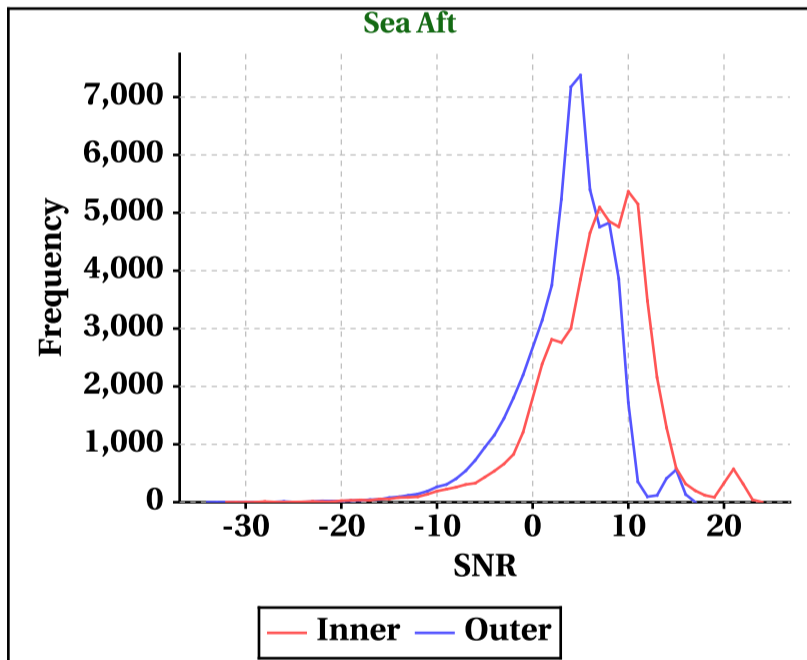
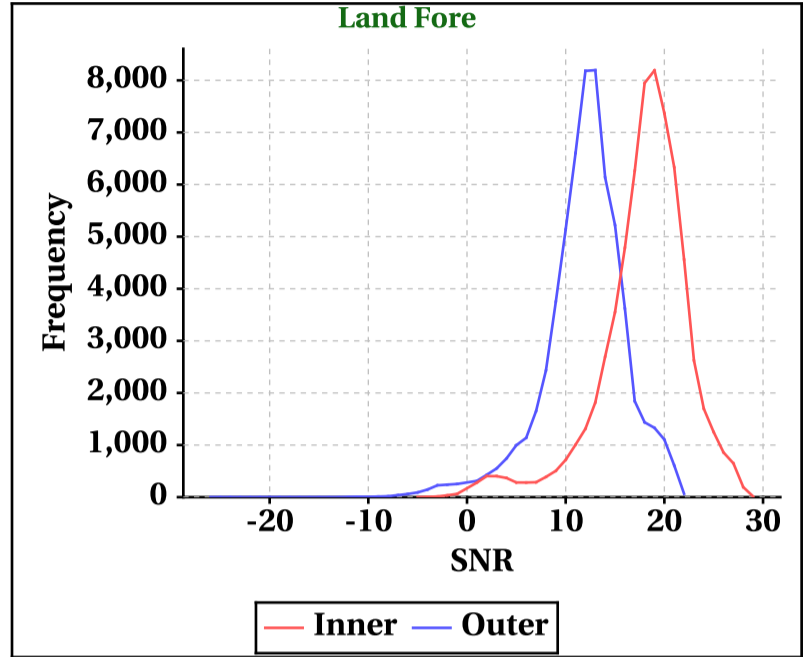
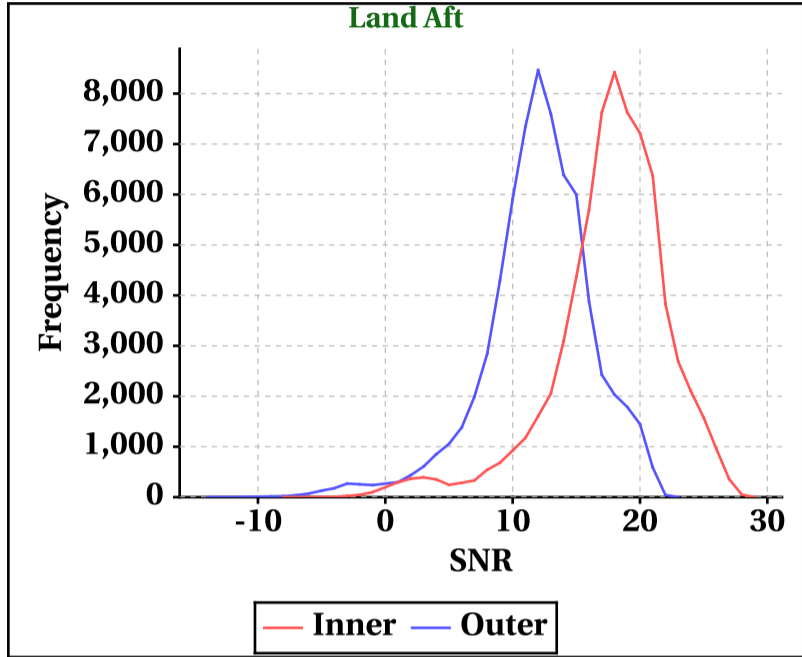


# Dynamic Range (Data Histograms)

## SNR(dBm)

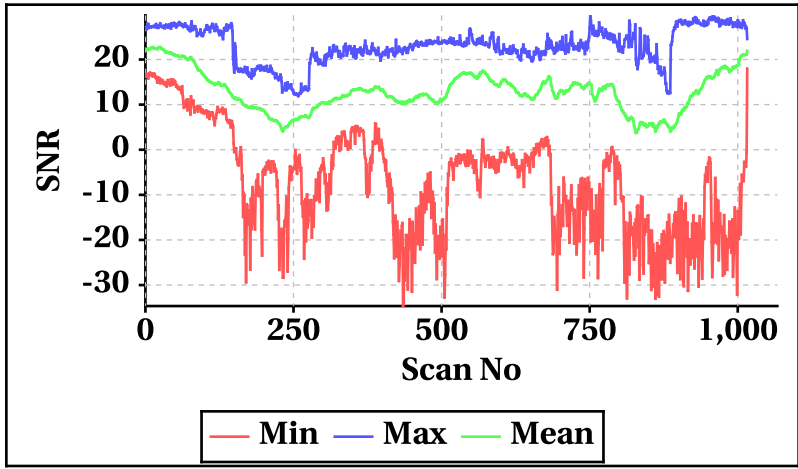
Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-8	-5	-32	-34
Max	29	29	24	24

Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-14	-26	-34	-34
Max	23	22	17	18

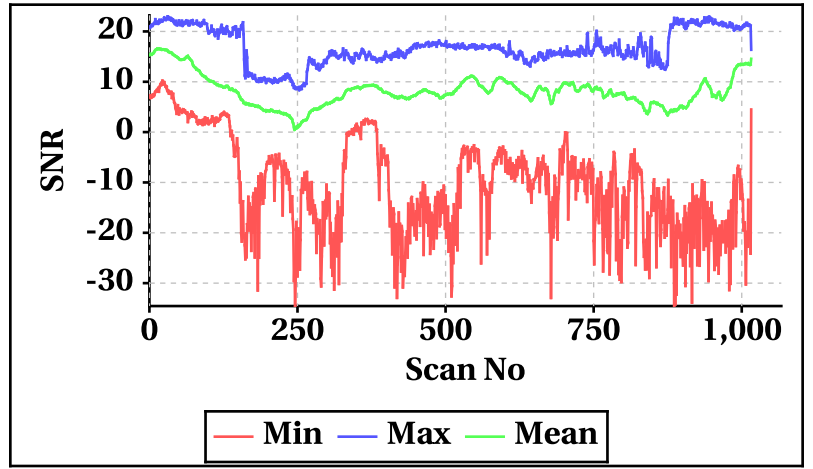


## Orbit-wise behaviour of SNR

Inner Beam (HH)

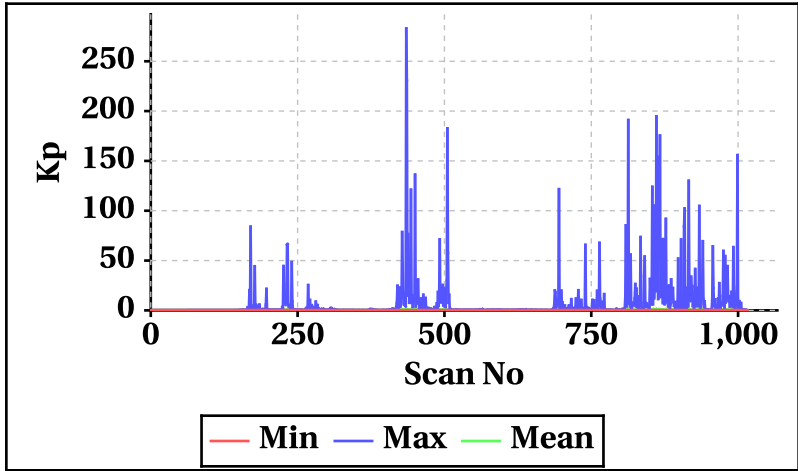


Outer Beam(VV)

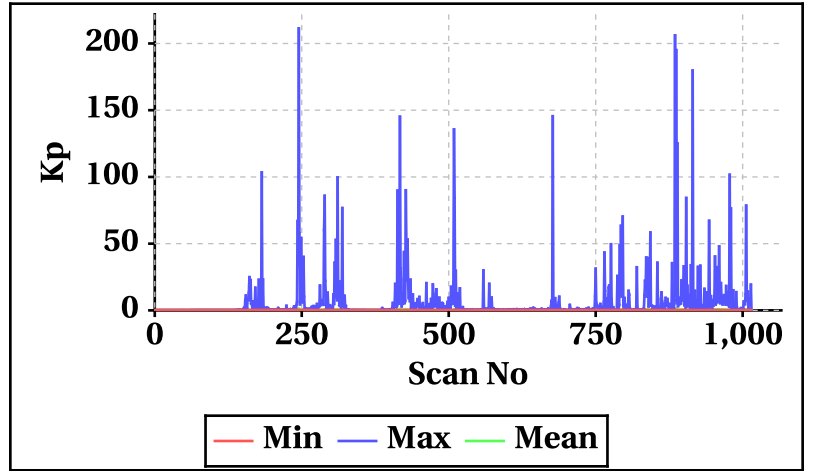


## Orbit-wise behaviour of Kp,Kpa,Kpb,Kpc

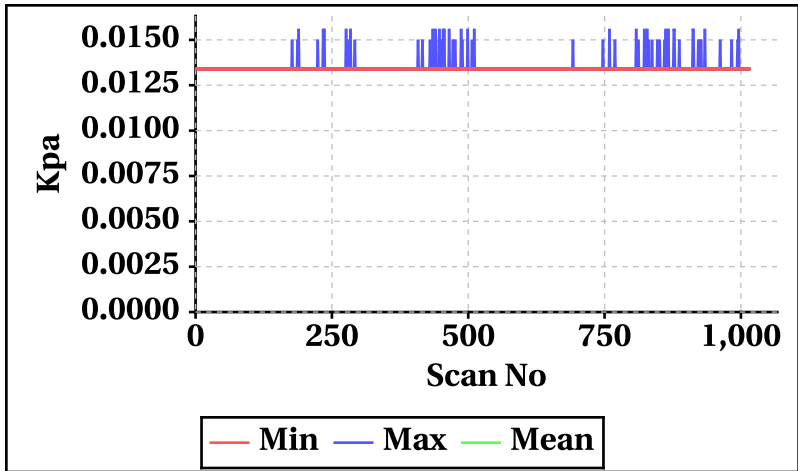
Inner Beam(HH)



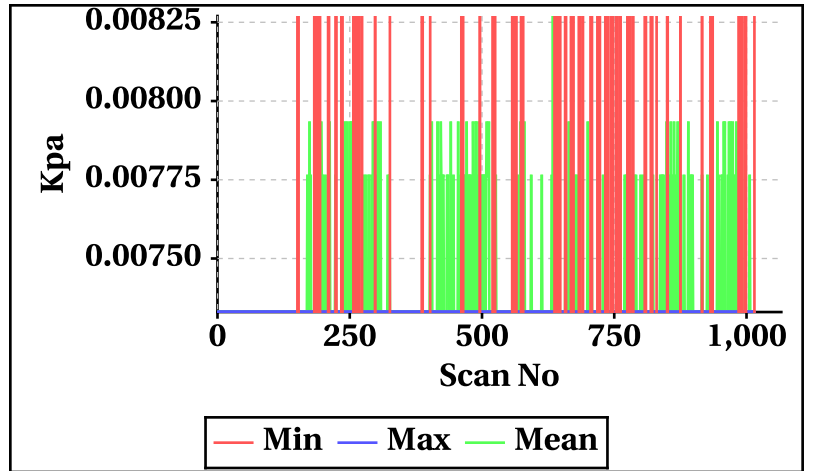
Outer Beam(VV)



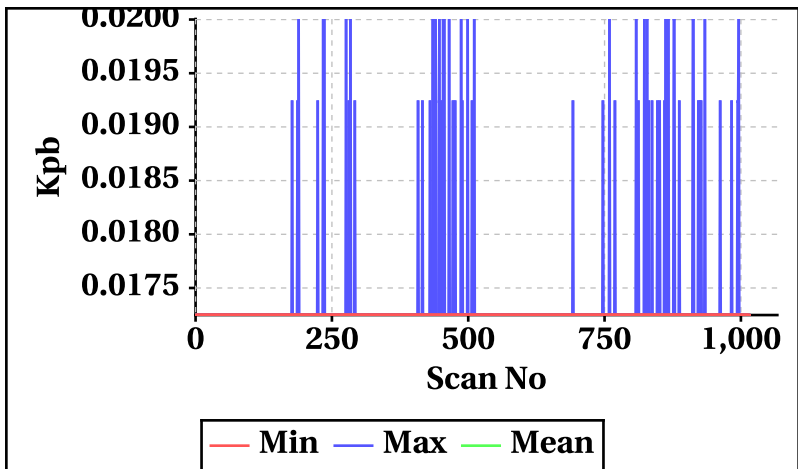
Inner Beam(HH)



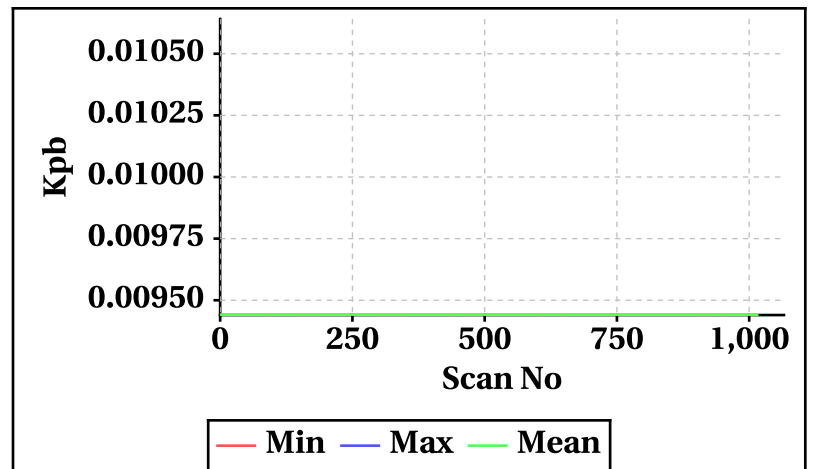
Outer Beam(VV)



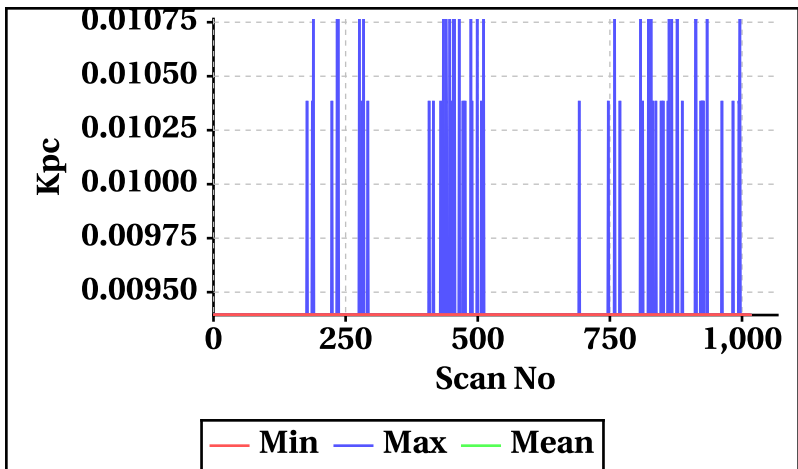
Inner Beam(HH)



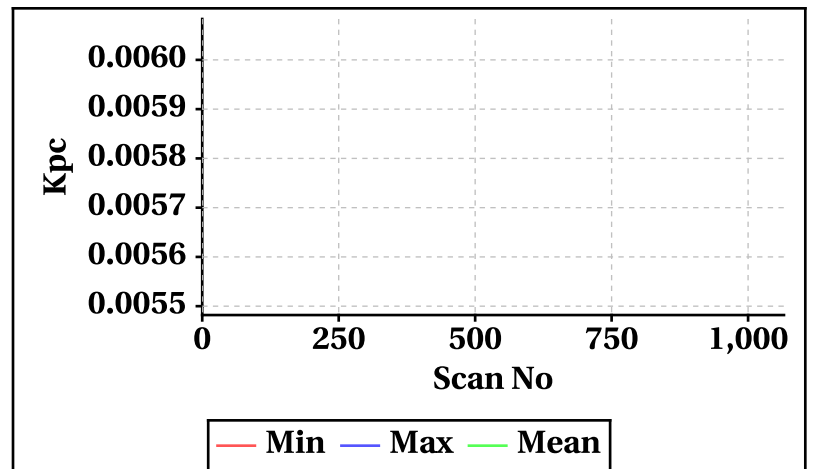
Outer Beam(VV)



Inner Beam(HH)



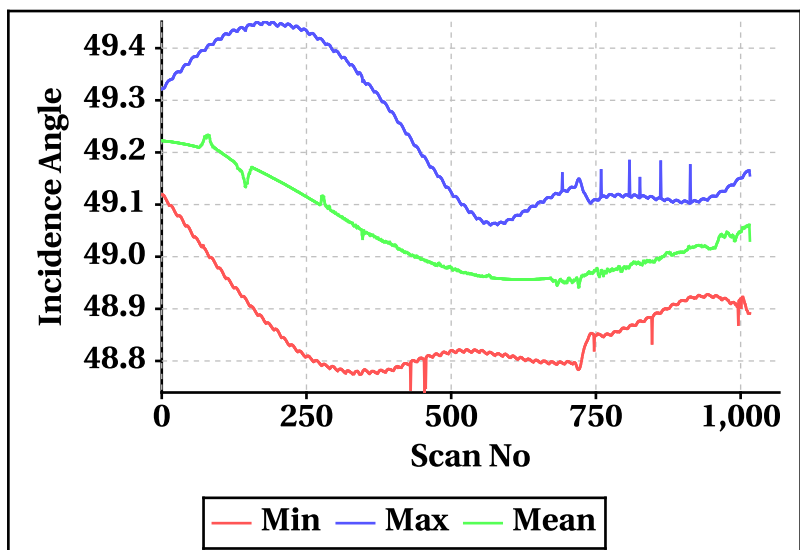
Outer Beam(VV)



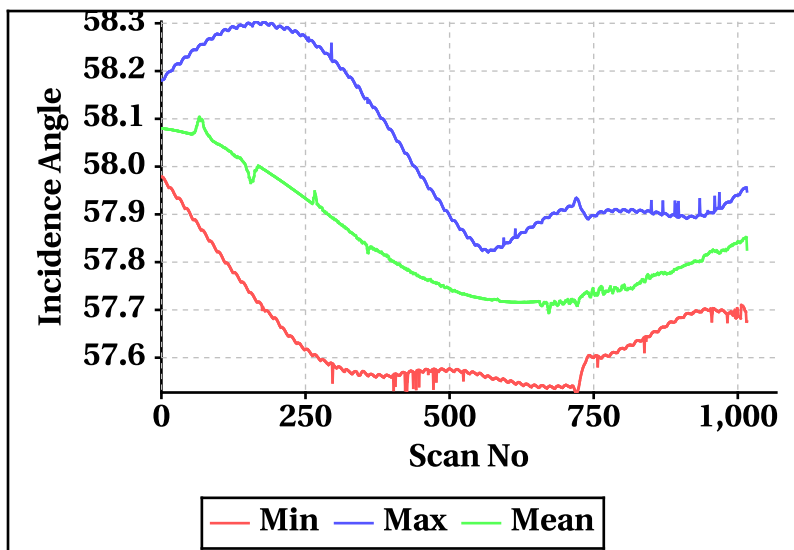


Orbit-wise behaviour of Incidence,Azimuth,Range,X-Factor

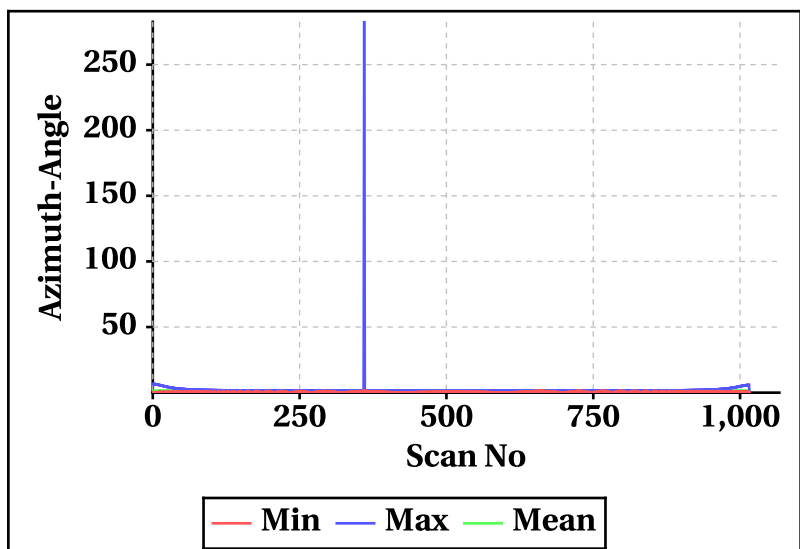
Inner Beam (HH)



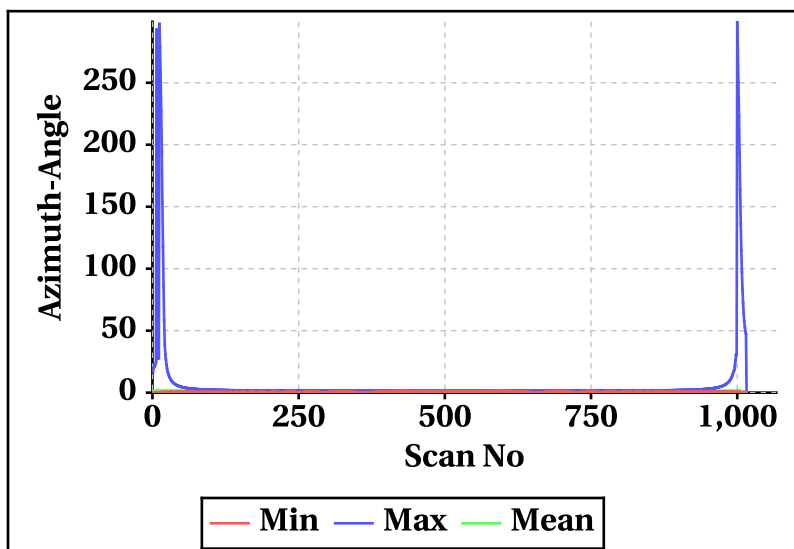
Outer Beam(VV)



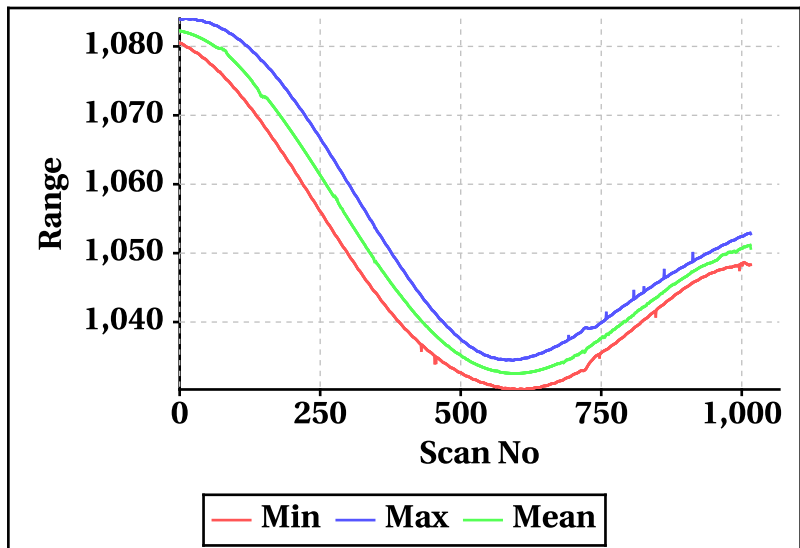
Inner Beam (HH)



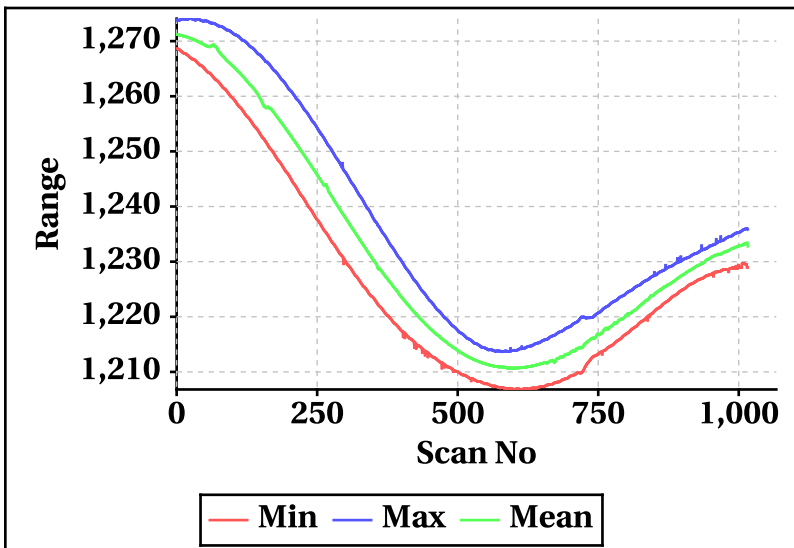
Outer Beam(VV)



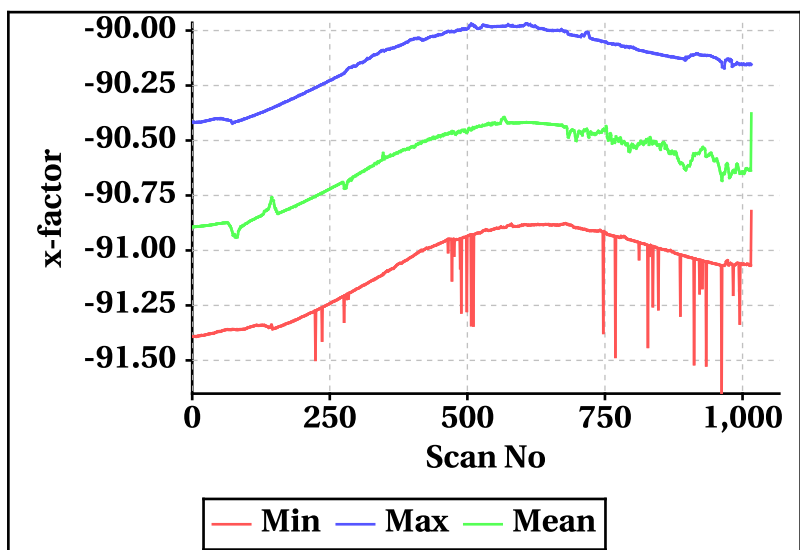
Inner Beam (HH)



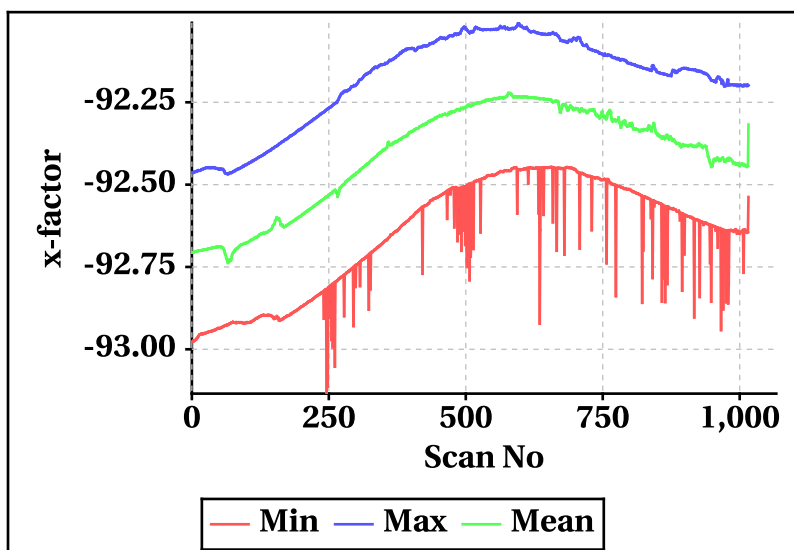
Outer Beam(VV)



Inner Beam (HH)



Outer Beam(VV)

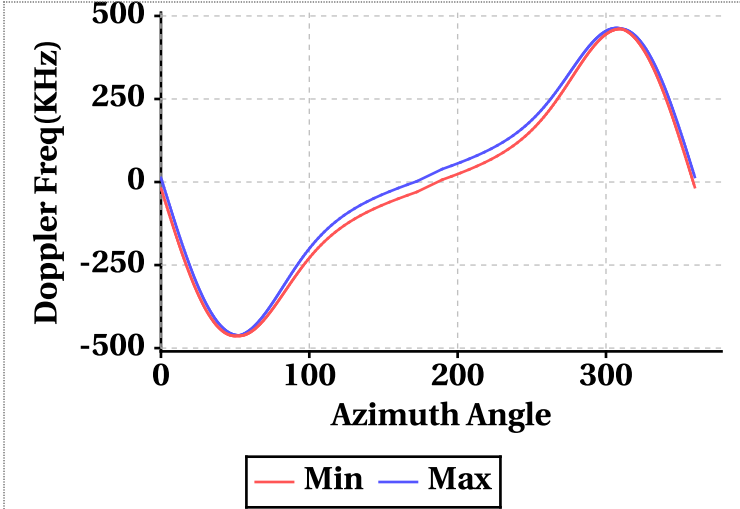


# Doppler Frequency Variation

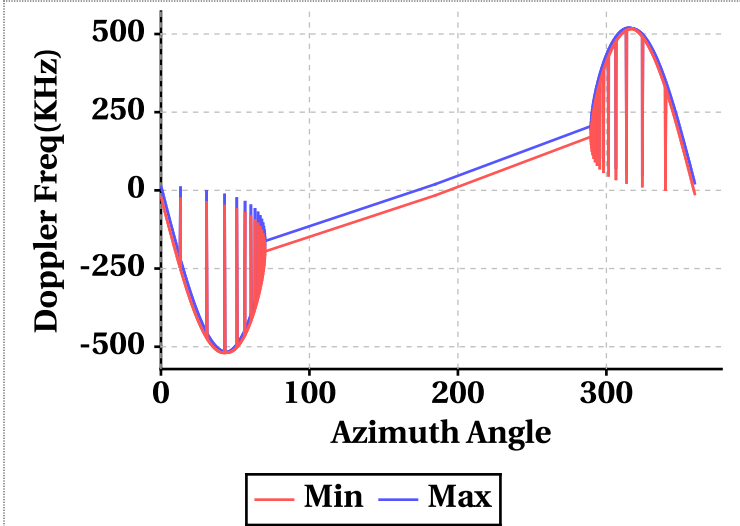
Doppler Frequency(KHz) variation statistics Over the half Orbit

	Inner Beam (HH)	Outer Beam (VV)
Min	-463.50	-519.44
Max	463.56	519.48

Footprint wise Doppler frequency variation Inner Beam (HH)



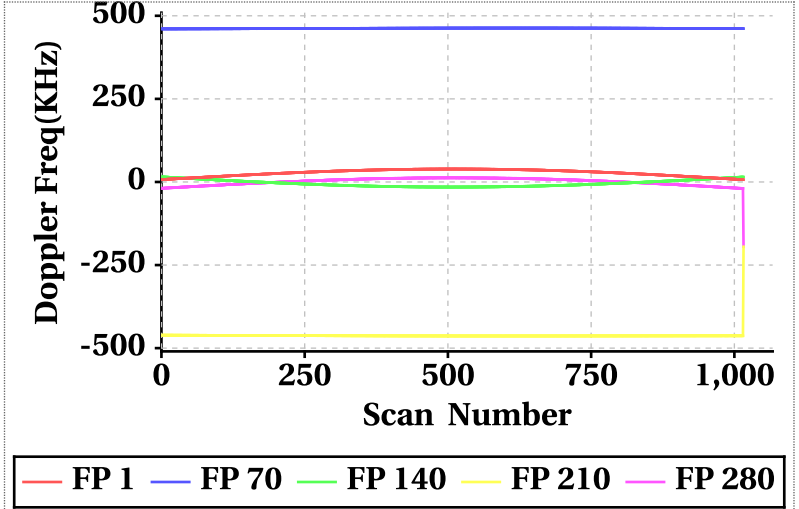
Footprint wise Doppler frequency variation Outer Beam (VV)



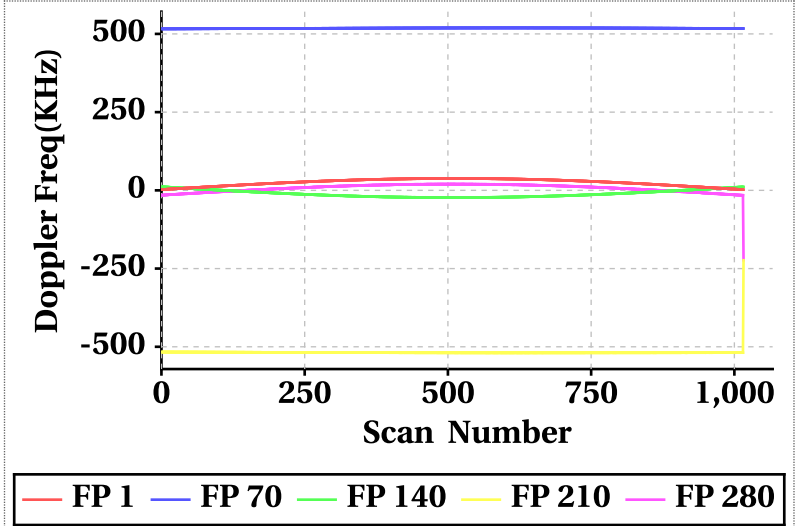
Doppler Frequency(KHz) variation

Doppler_FP	Inner Beam (HH)			Outer Beam (VV)		
	Min	Max	Mean	Min	Max	Mean
Doppler_1	6.88	38.90	27.32	2.26	37.94	25.03
Doppler_70	460.58	463.10	462.20	516.16	519.20	518.15
Doppler_140	-15.38	15.30	-4.28	-23.12	11.40	-10.61
Doppler_210	-463.44	-194.88	-462.50	-519.26	-223.50	-518.28
Doppler_280	-194.88	12.52	0.72	-223.50	19.90	6.72

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

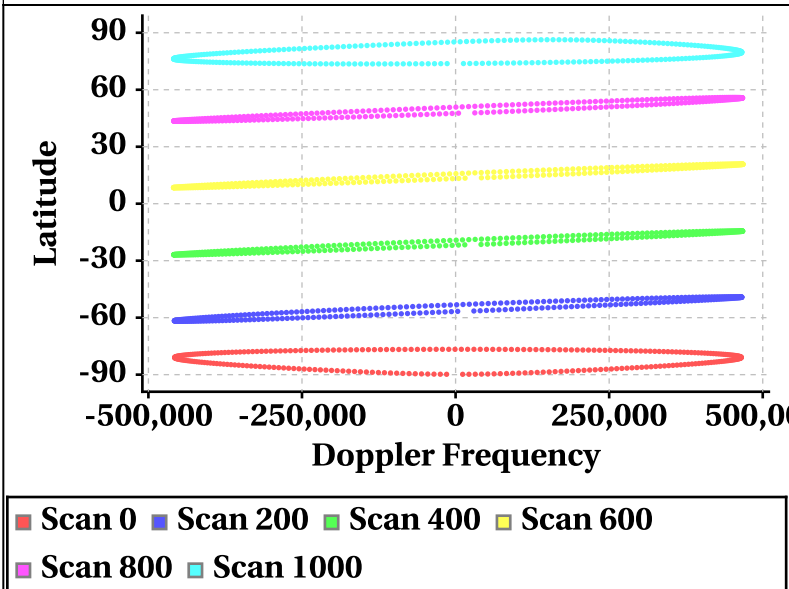


Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Outer Beam (VV)

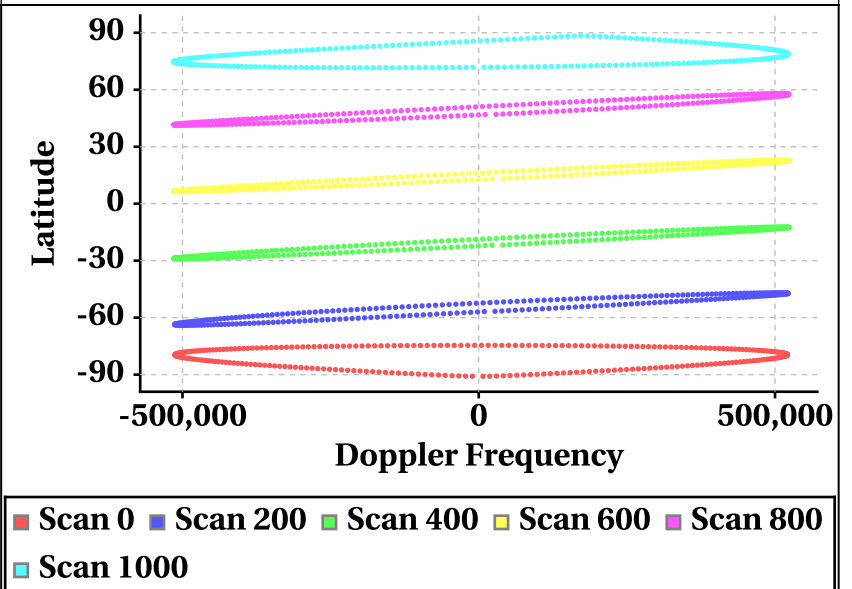


# Latitude Vs Doppler Frequency

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



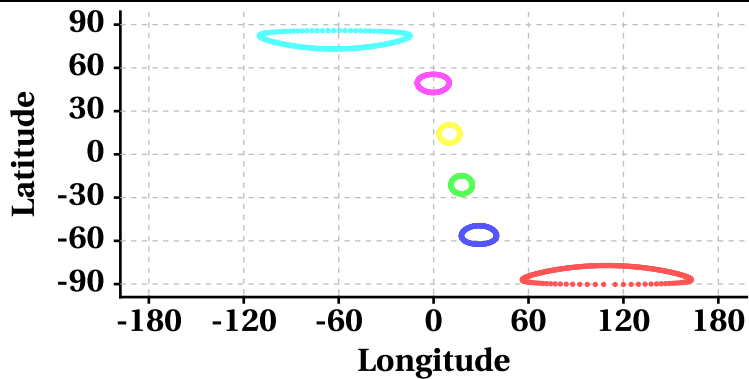
Doppler Frequency at Scan Interval of 200 [Outer Beam(VV)]



# Parameter as a function of Latitude

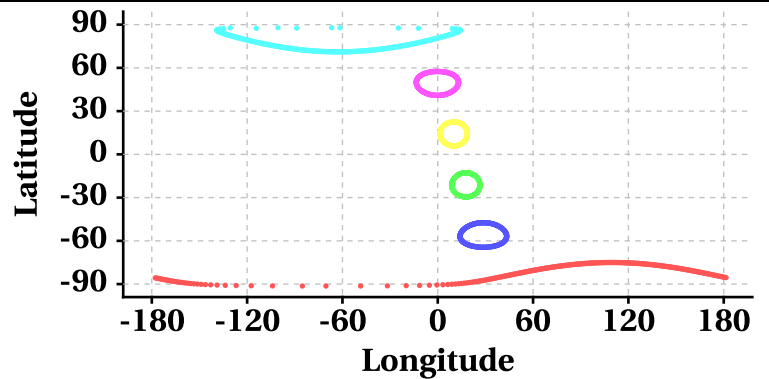
## Latitude Vs Longitude

Scan Trace [Inner Beam(HH)]



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

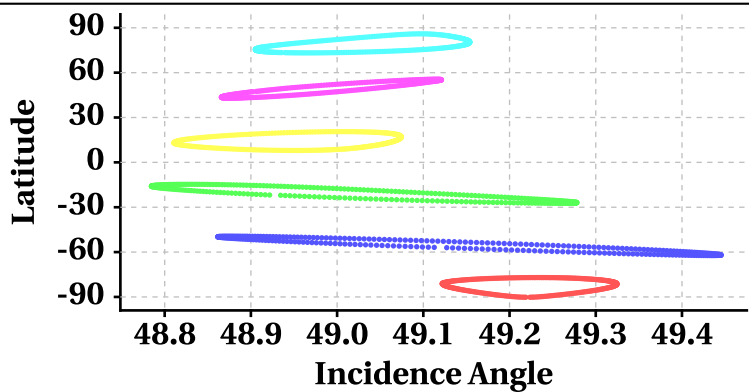
Scan Trace [Outer Beam (VV)]



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

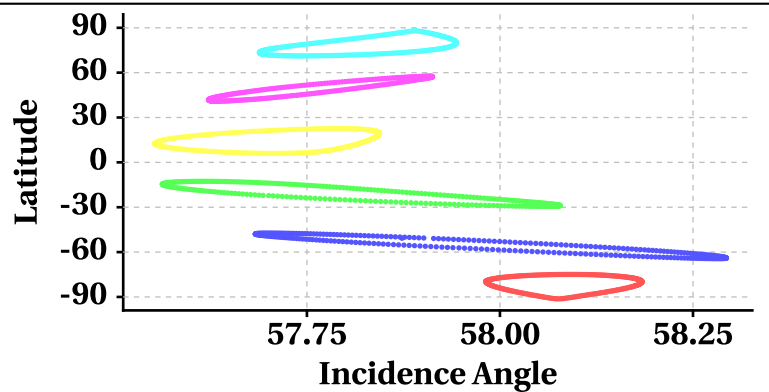
## Latitude Vs Incidence Angle

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



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

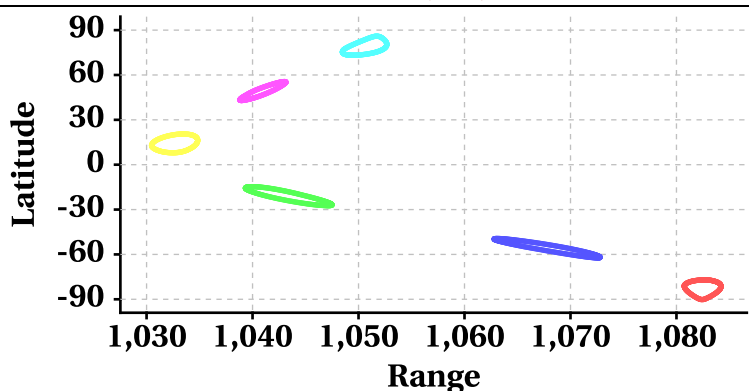
Incidence Angle at Scan Interval of 200 [Outer Beam (VV)]



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

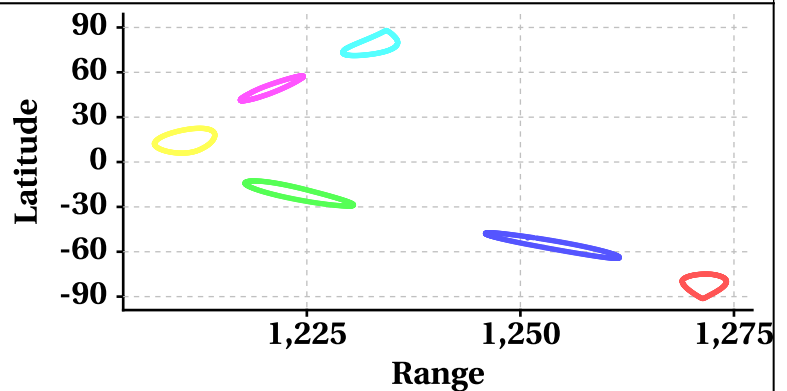
## Latitude Vs Range

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

