

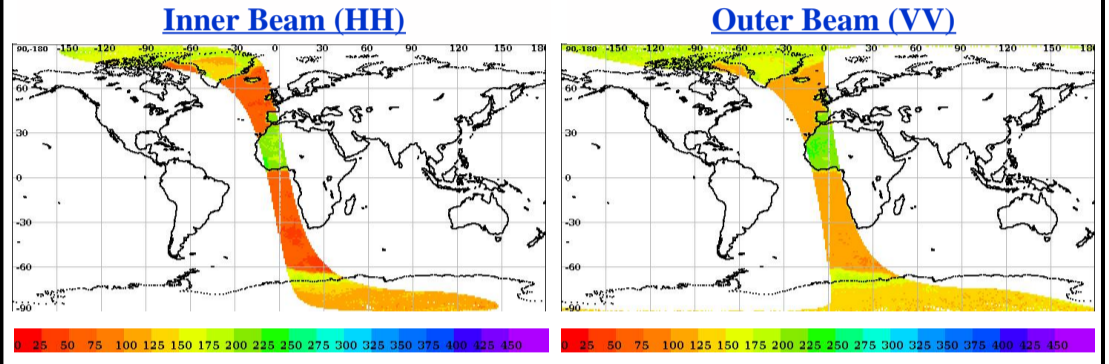
# SCATSAT-1 Scatterometer Level-1B Data Quality Evaluation Report

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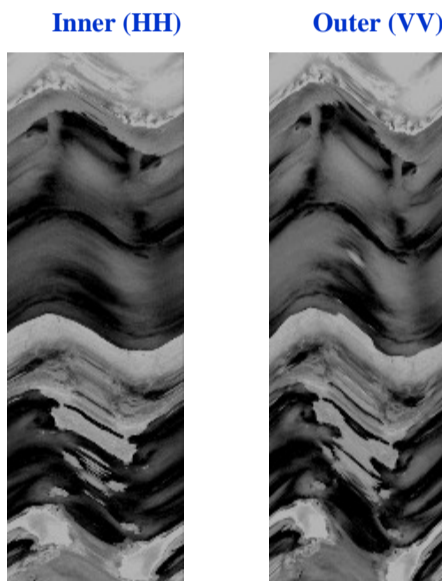
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<b>Satellite Id</b>	ScatSat-1	<b>Start Orbit</b>	14668	<b>Total Scans</b>	1017
<b>Sensor Name</b>	Scatterometer	<b>End Orbit</b>	14669	<b>No of Inner FootPrints</b>	281
<b>Processor Version</b>	v1.1.3	<b>Rev. Number</b>	14668_14669	<b>No Of Outer FootPrints</b>	282
<b>Half Orbit Direction</b>	SN	<b>Data Production Date</b>	05-07-2019	<b>No. Of Inner Slices</b>	9
<b>Equator Crossing Date</b>	04-07-2019	<b>Equator Crossing Time</b>	20:34:15.000	<b>No Of Outer Slices</b>	15

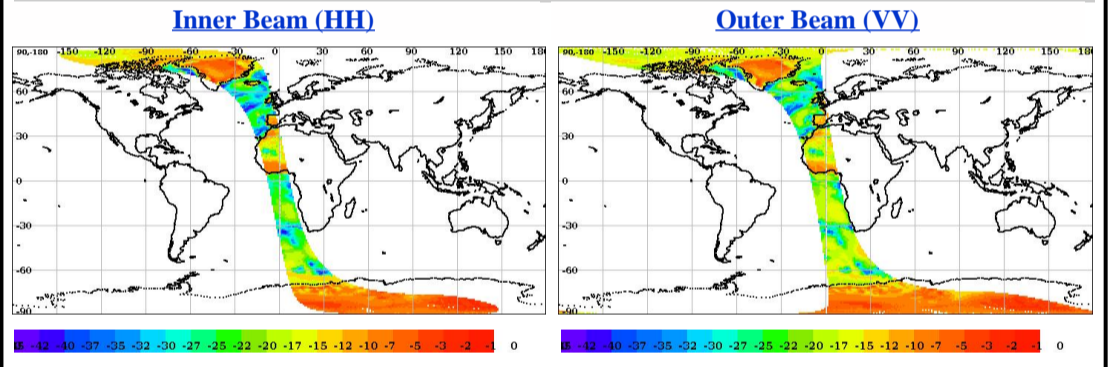
## Brightness Temperature(k) Footprint trace



## Image Snapshot for Inner & Outer Beam



## Sigma0(dB) Footprint trace



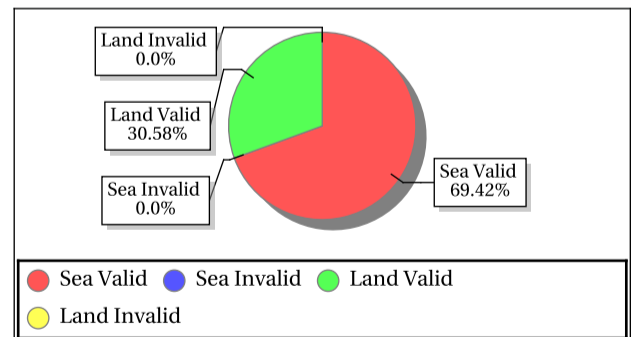
## Invalid and Poor Sigma-0 Quality Flag Statistics for Inner/Outer Slices\*

Sigma-0 Flags	Inner Beam	Outer Beam
Invalid Sigma0(%)	0.00	0.00
Data Not Available From Payload (%)	0.0	0.0
Slice not within sample array limits (%)	0.00	0.00
C(S+N) - C(N) < 0.1 (%)	0.00	0.00
Poor Sigma0(%)	22.23	13.34
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 (%)	0.036559	0.103823

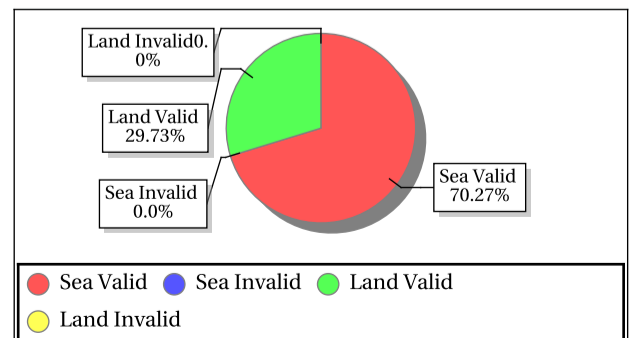
\*DP Format Document

## 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	-6.72	-4.87	-6.02	0.69	112.33	133.04	123.16	8.44
GreenLand_2	77.50	-41.50	Inner	ASC	Fore	-4.83	-3.87	-4.55	0.39	118.59	134.82	126.37	7.71
GreenLand_3	71.55	-42.45	Inner	ASC	Aft	-12.60	-10.80	-11.64	0.54	125.04	164.20	147.48	9.07
GreenLand_3	71.55	-42.45	Inner	ASC	Fore	-13.19	-9.77	-11.15	0.82	122.99	164.89	139.10	12.83
GreenLand_1	74.69	-42.50	Inner	ASC	Aft	-11.15	-7.98	-9.43	0.90	125.10	148.34	135.93	7.62
GreenLand_1	74.69	-42.50	Inner	ASC	Fore	-10.48	-8.05	-9.01	0.77	109.80	157.59	132.53	11.47
ANT_1	-75.00	121.00	Outer	ASC	Aft	-8.32	-6.42	-7.52	0.52	126.94	157.78	146.11	10.10
GreenLand_2	77.50	-41.50	Outer	ASC	Aft	-5.98	-5.78	-5.88	0.10	123.92	141.95	132.93	9.02
GreenLand_2	77.50	-41.50	Outer	ASC	Fore	-6.37	-4.36	-4.92	0.84	138.13	171.46	152.32	12.55
GreenLand_3	71.55	-42.45	Outer	ASC	Aft	-12.60	-11.37	-12.07	0.44	131.95	190.66	164.11	16.96
GreenLand_3	71.55	-42.45	Outer	ASC	Fore	-12.77	-10.71	-11.82	0.58	154.83	181.91	170.07	9.73
GreenLand_1	74.69	-42.50	Outer	ASC	Aft	-10.55	-8.35	-9.37	0.76	146.13	187.67	170.01	14.25
GreenLand_1	74.69	-42.50	Outer	ASC	Fore	-9.10	-7.20	-8.53	0.59	147.28	200.34	170.10	16.33



## 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	265.41	0.34	3.139	0.12	231.19	0.30	2.381	0.12	0.86	0.12	0.000	0.12	0.62	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	0.02	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>	-34.37	23.53	4.42	0.002	-33.78	25.87	5.47	0.005	-8.97	28.88	17.98	20.231	-7.37	29.04	18.04	22.023

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	228.82	0.39	4.074	0.09	229.33	0.36	3.928	0.09	5.15	0.10	0.047	0.09	58.94	0.10	0.090
<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>	-34.90	15.71	1.96	0.000	-34.91	16.93	2.85	0.000	-18.37	23.05	12.52	0.123	-29.00	22.66	12.07	0.049

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)

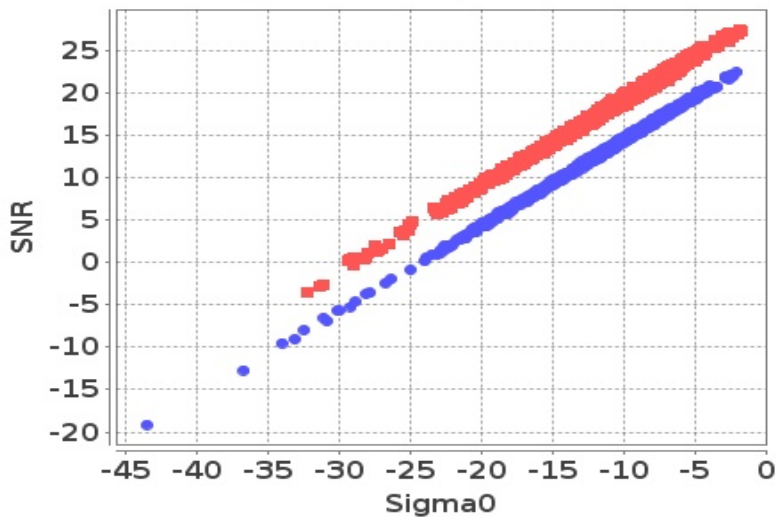
	Inner Beam (HH)				Outer Beam (VV)				Parameter Specifications		
	Min	Max	Mean	Bad Occ. (%)	Min	Max	Mean	Bad Occ. (%)	Parameter	Min	Max
<b>Incidence Angle (deg)</b>	48.76	49.42	49.05	0.000	57.59	58.22	57.94	0.000	Inci.(Inner)	47.10	49.90
<b>Azimuth Diff. (deg)</b>	0.0027	274.00	1.27	2.576	0.0000	298.23	1.27	3.716	Inci.(Outer)	57.30	58.90
<b>Range(Km)</b>	1037.10	1075.34	1052.64	0.000	1215.25	1263.28	1236.03	0.000	Azimuth Diff.	0.60	2.00
<b>X Factor(dbm)</b>	-91.73	-90.08	-90.59	0.000	-93.16	-92.12	-92.31	0.000	Range(Inner)	1025.00	1095.70
<b>Across Distance (Km)</b>	15.57	16.13	15.81	0.000	2.94	37.75	20.90	6.000	Range(Outer)	1210.00	1280.00
<b>Along Distance (Km)</b>	18.74	20.54	19.72	0.000	10.77	36.38	19.63	1.000	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
									<span style="display: inline-block; width: 15px; height: 15px; background-color: green; margin-right: 5px;"></span> Normal	<span style="display: inline-block; width: 15px; height: 15px; background-color: orange; margin-right: 5px;"></span> Alarming	
									<span style="display: inline-block; width: 15px; height: 15px; background-color: yellow; margin-right: 5px;"></span> Deviations	<span style="display: inline-block; width: 15px; height: 15px; background-color: red; margin-right: 5px;"></span> High Errors	



## Sigma0 Behaviour (Sigma0 Vs SNR)

Footprint-Land

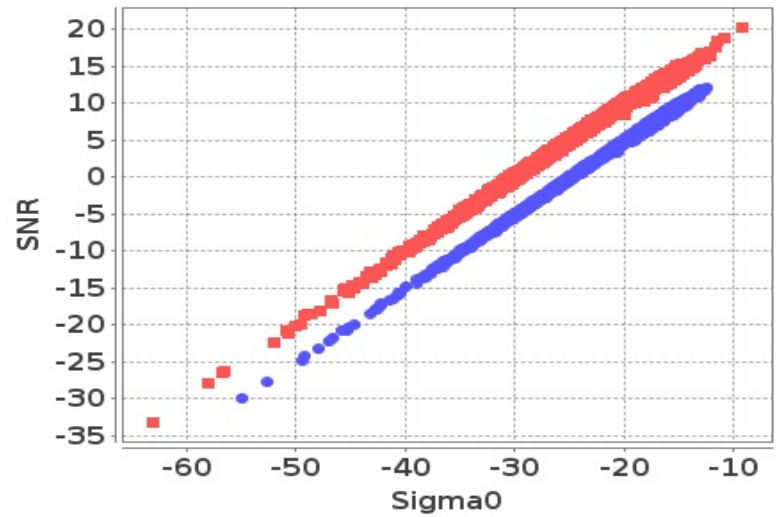
Sigma0 Vs SNR (Land)



Inner • Outer

Footprint-Sea

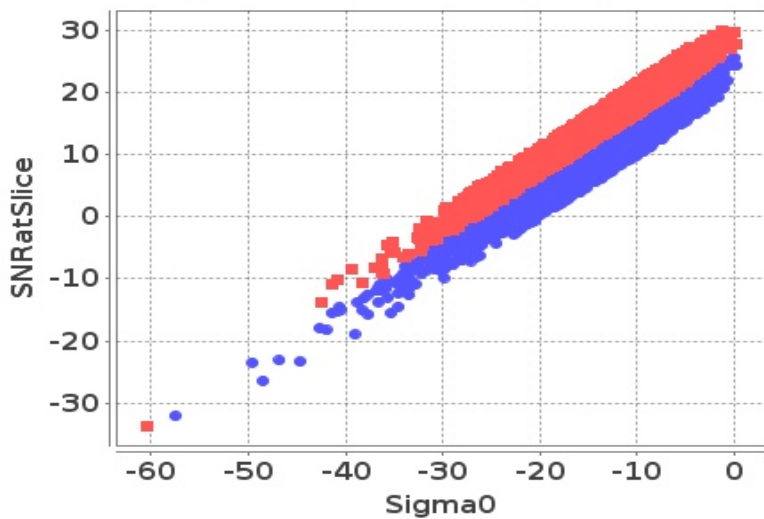
Sigma0 Vs SNR (Sea)



Inner • Outer

Slice-Land

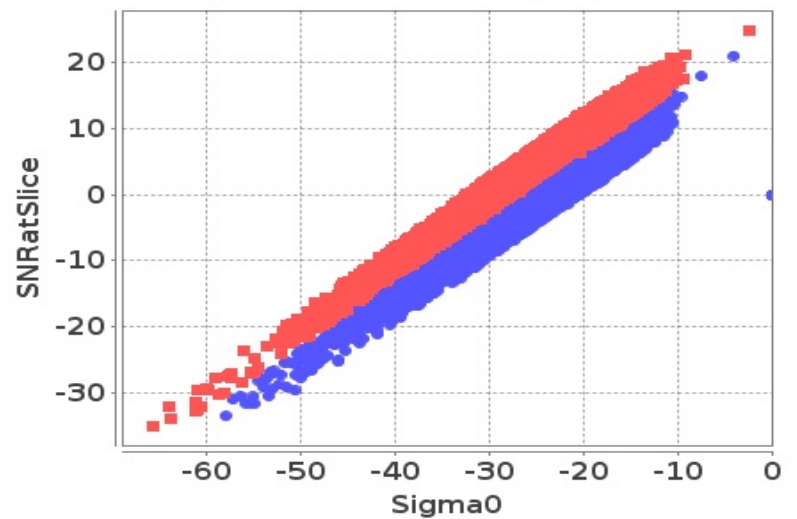
Sigma0 Vs SNRatSlice (Land)



Inner • Outer

Slice-Sea

Sigma0 Vs SNRatSlice (Sea)

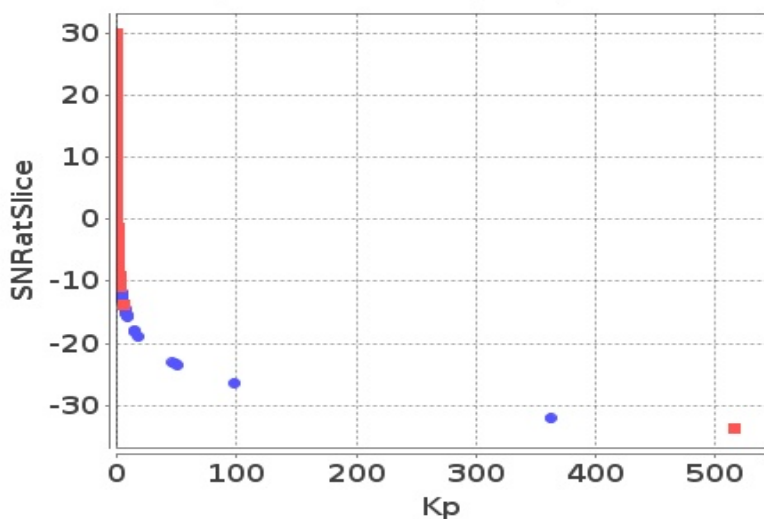


Inner • Outer

## Sigma0 Behaviour (Kp Vs SNR)

Slice

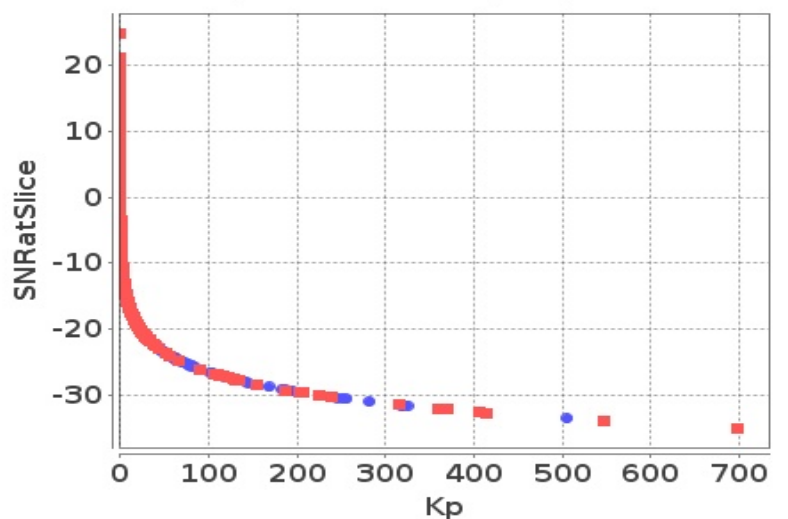
Kp Vs SNRatSlice (Land)



Inner • Outer

Slice

Kp Vs SNRatSlice (Sea)

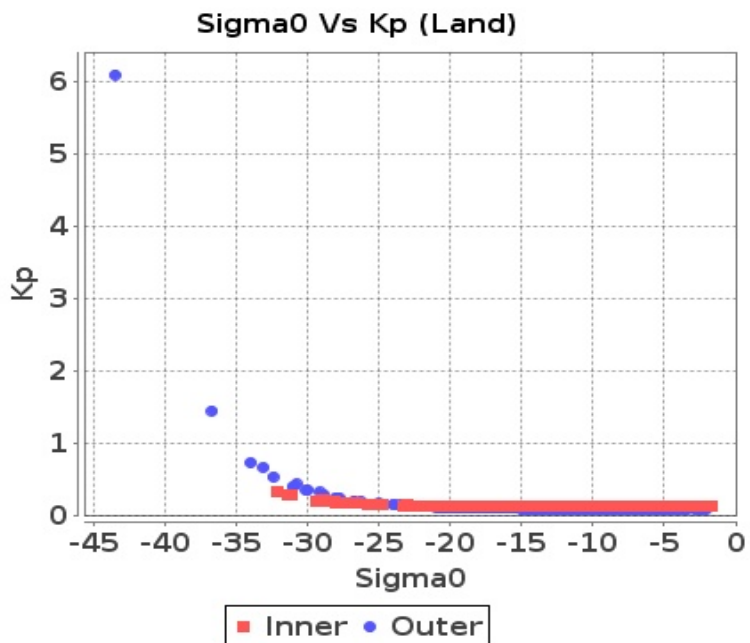


Inner • Outer

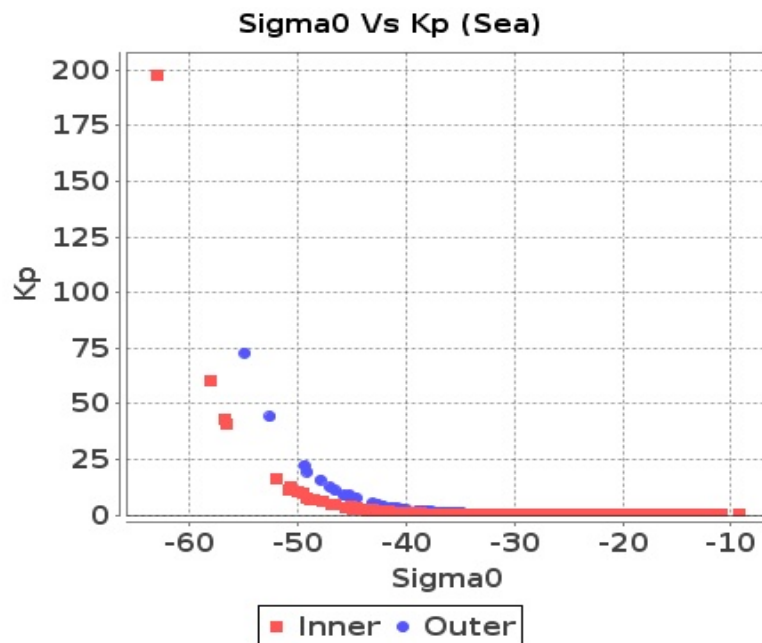


# Sigma0 Behaviour(Sigma0 Vs Kp)

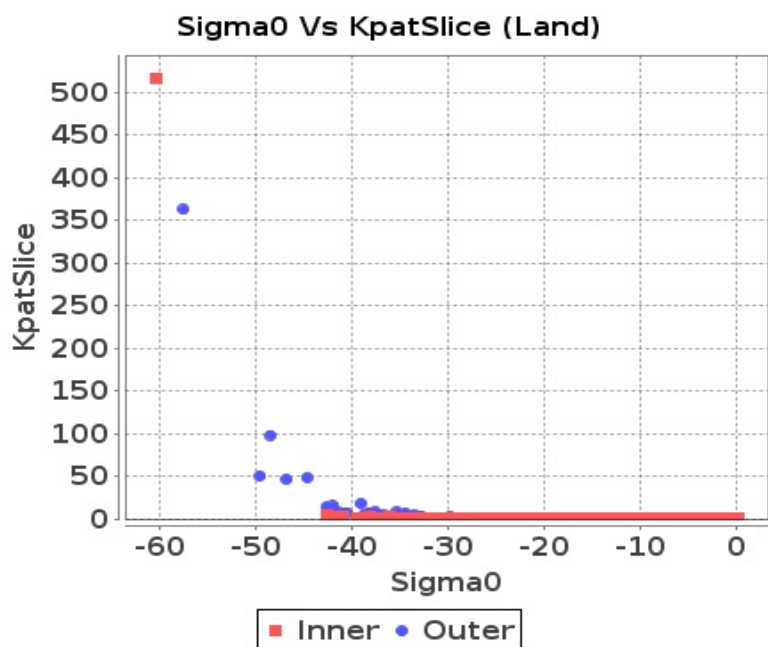
## Footprint-Land



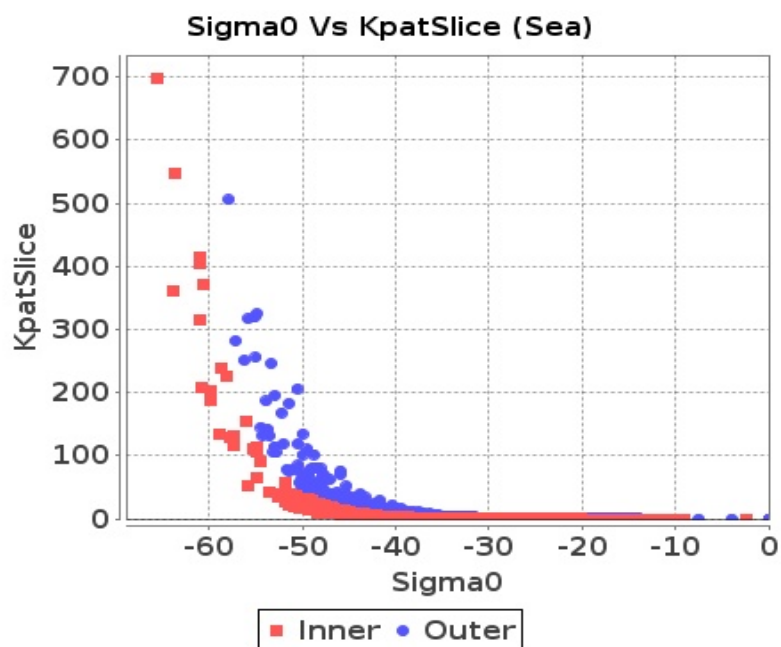
## Footprint-Sea



## Slice-Land



## Slice-Sea

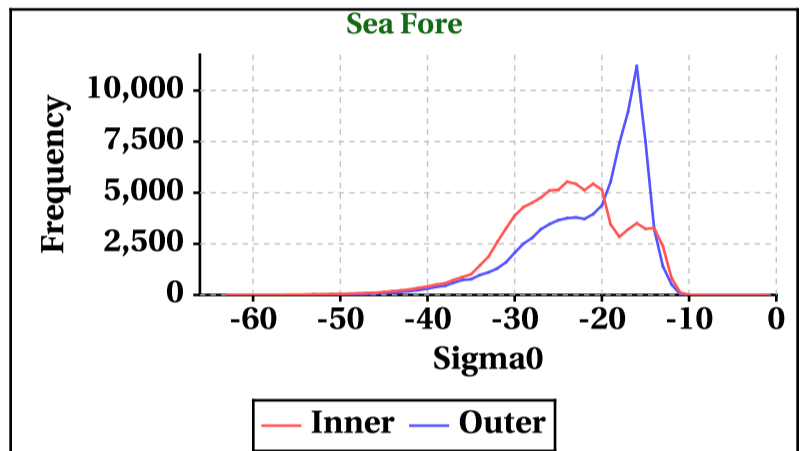
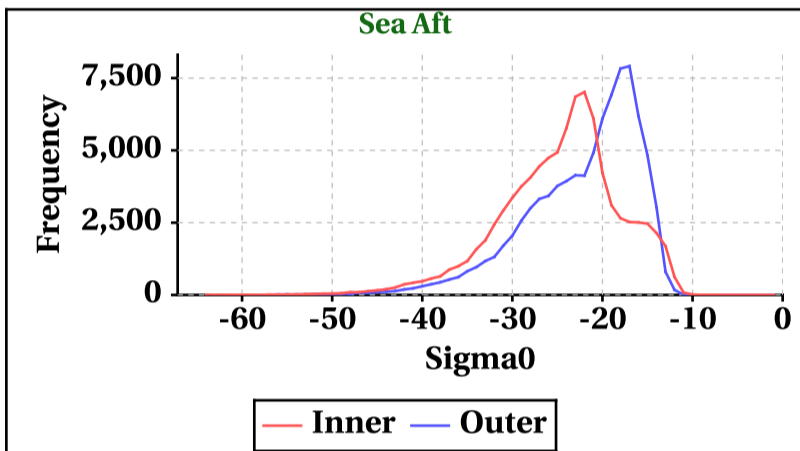
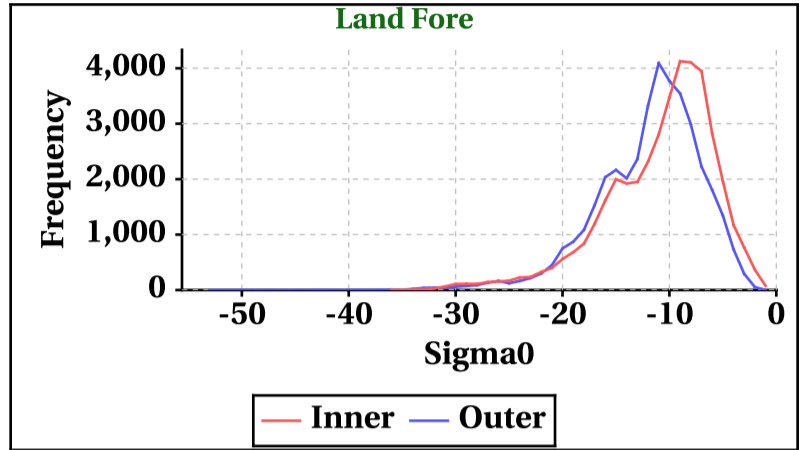
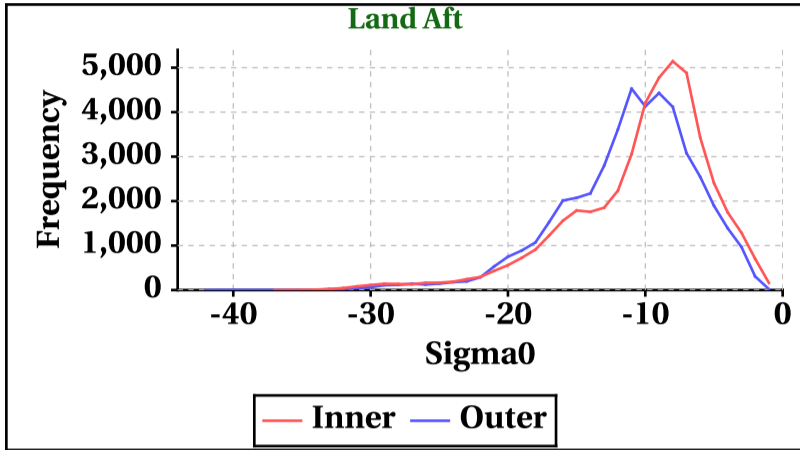


# Dynamic Range (Data Histograms)

## Sigma0(db)

Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-37	-36	-64	-63
Max	0	0	0	0

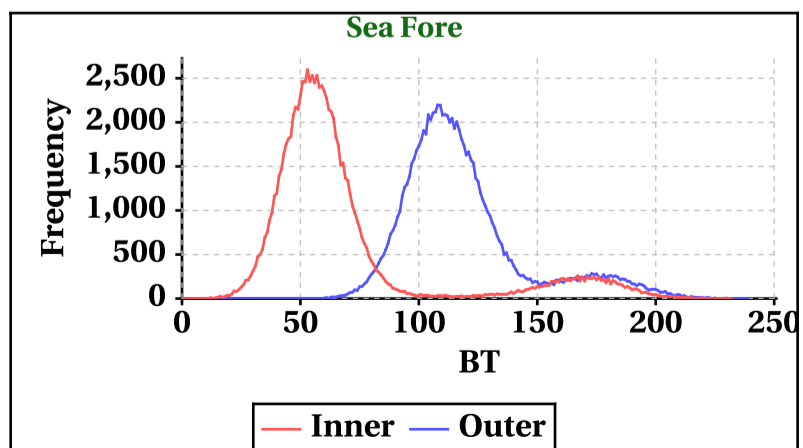
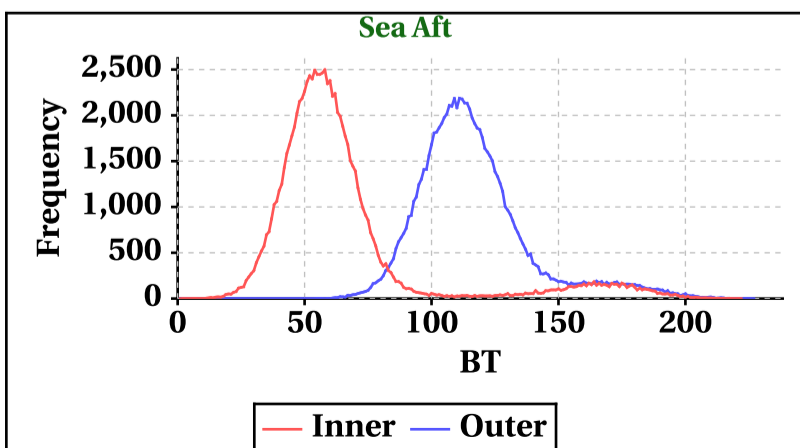
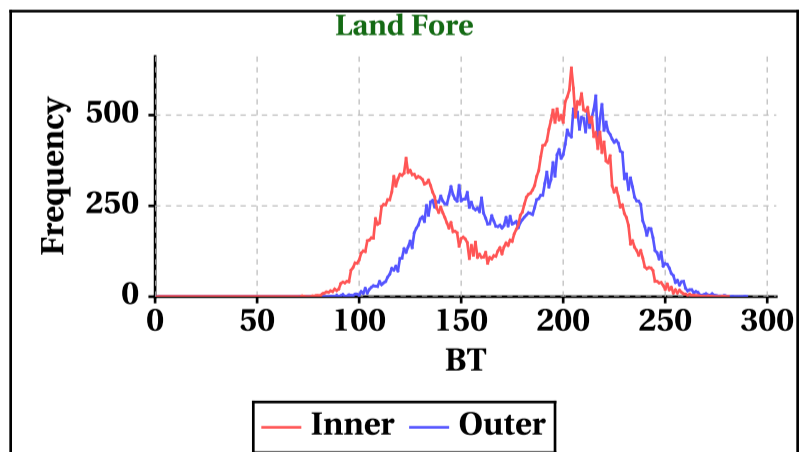
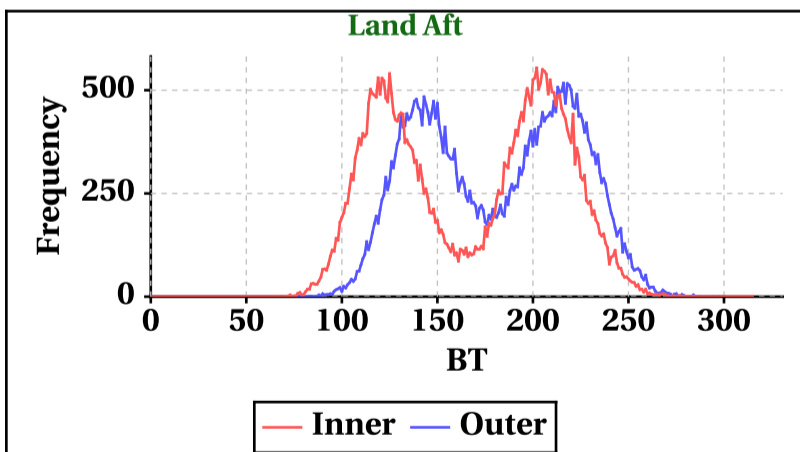
Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-42	-53	-59	-59
Max	0	0	0	0



## Brightness Temperature(K)

Inner Beam(HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	315	281	222	232

Outer Beam(VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	300	290	227	239

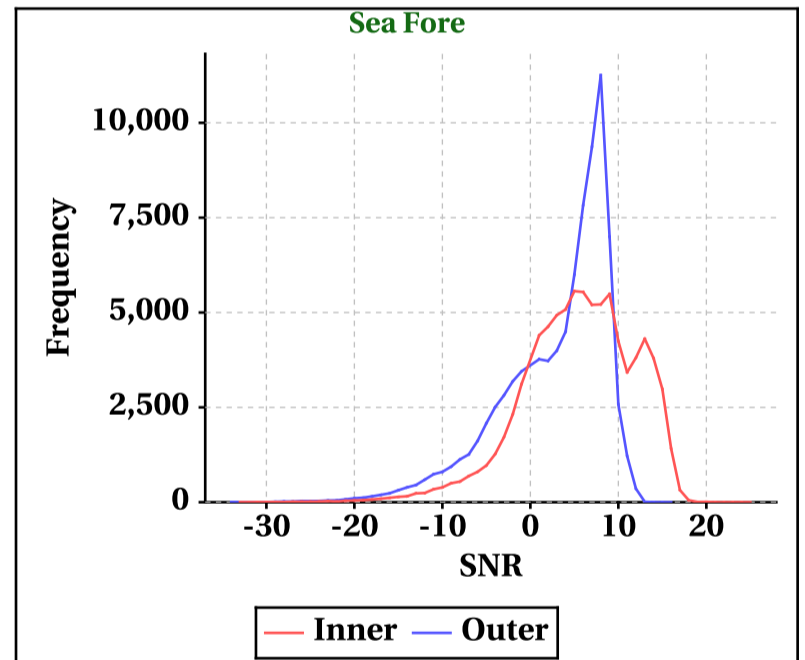
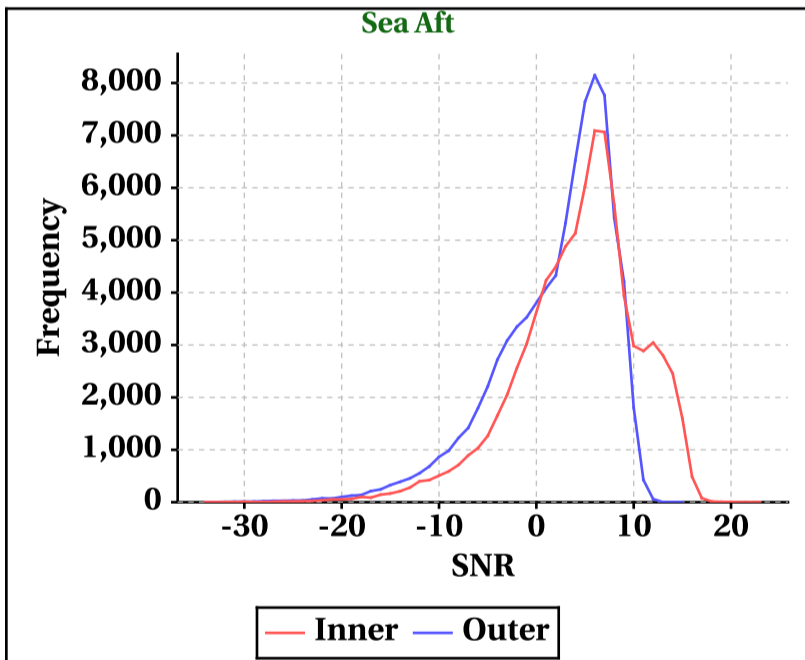
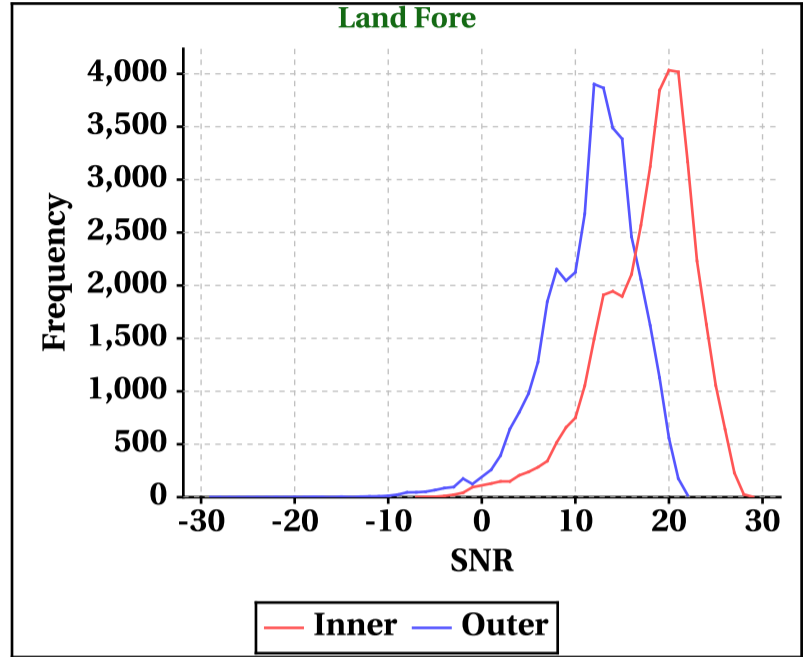
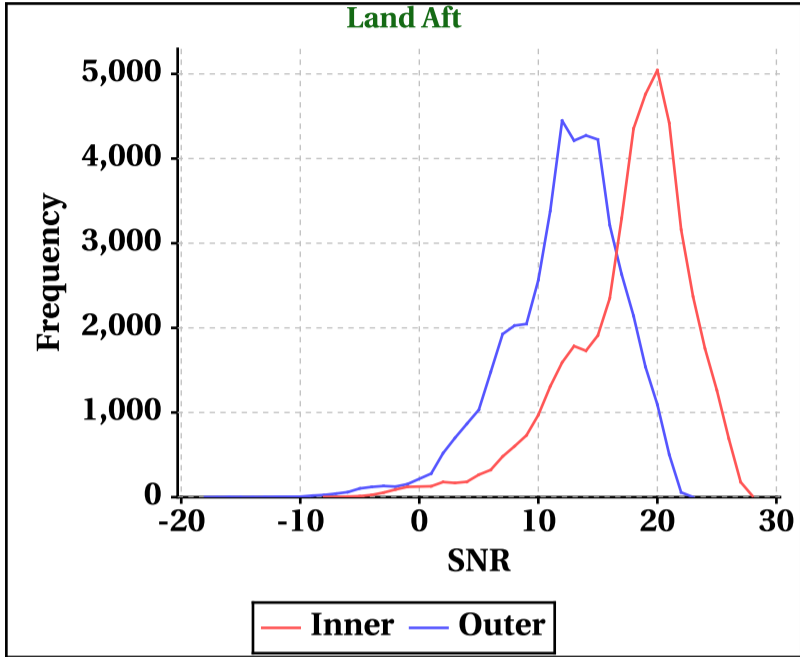


# Dynamic Range (Data Histograms)

## SNR(dBm)

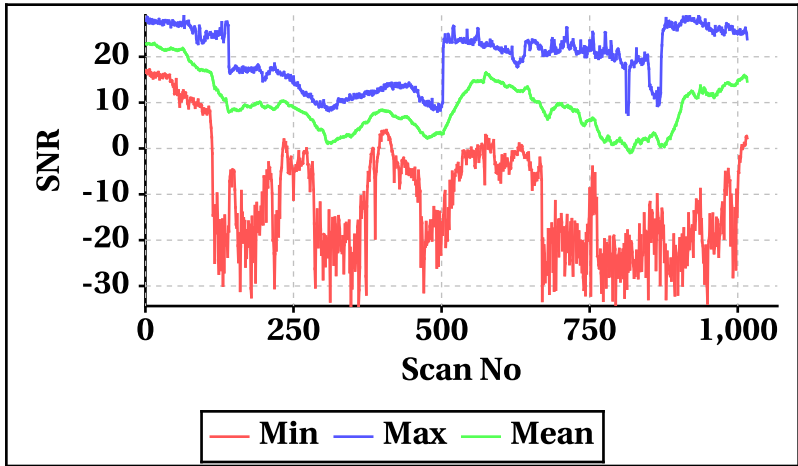
Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-8	-7	-34	-33
Max	28	29	23	25

Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-18	-29	-34	-34
Max	23	22	15	16

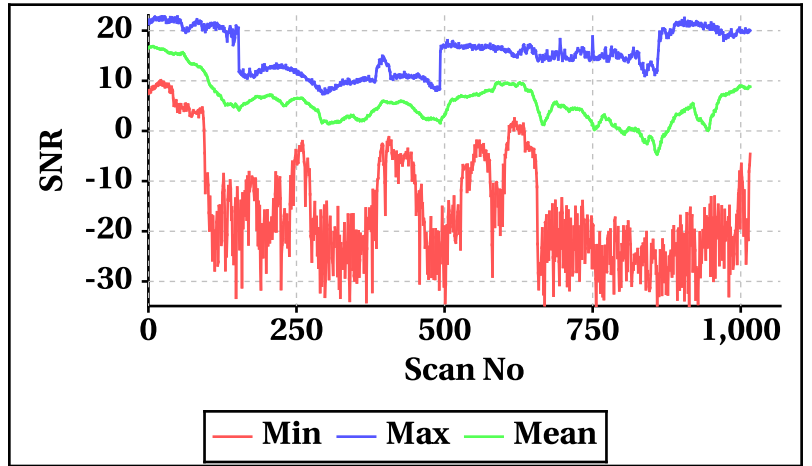


## Orbit-wise behaviour of SNR

**Inner Beam (HH)**

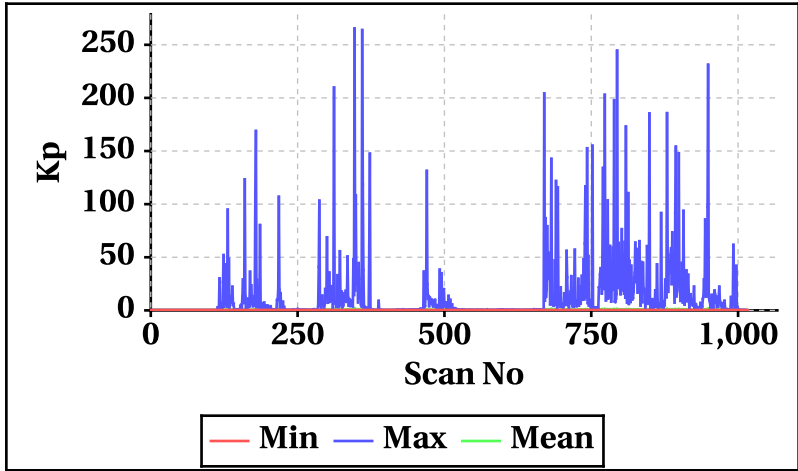


**Outer Beam(VV)**

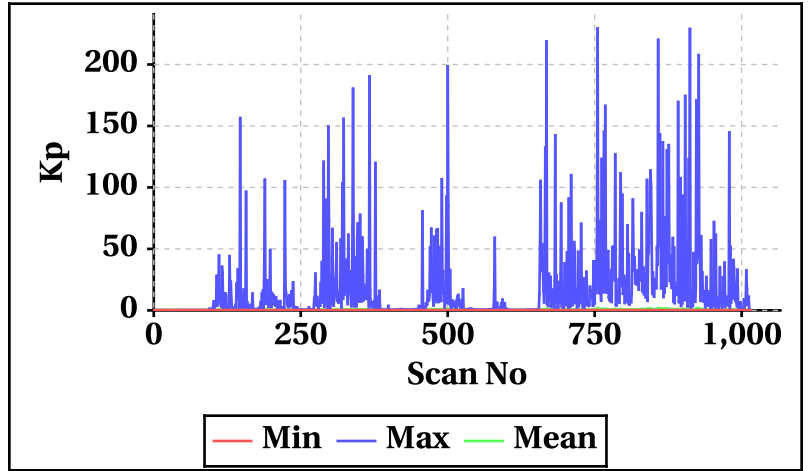


## Orbit-wise behaviour of Kp,Kpa,Kpb,Kpc

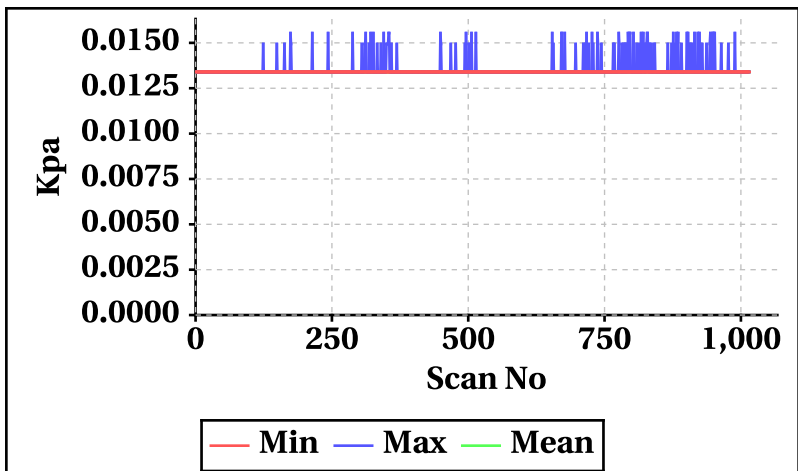
**Inner Beam(HH)**



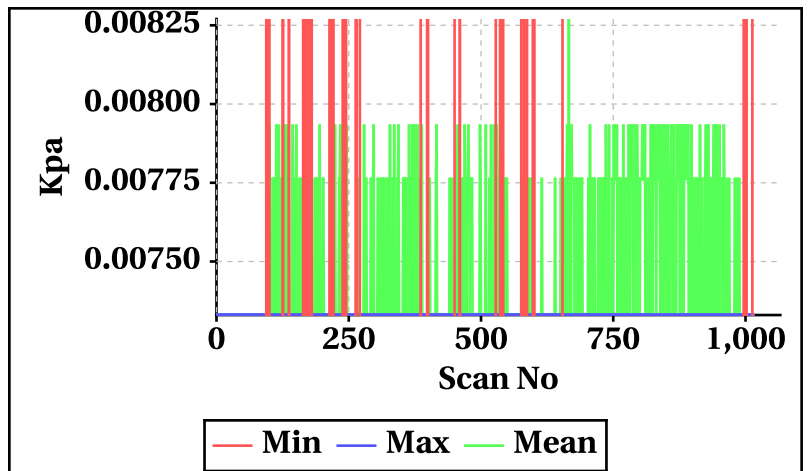
**Outer Beam(VV)**



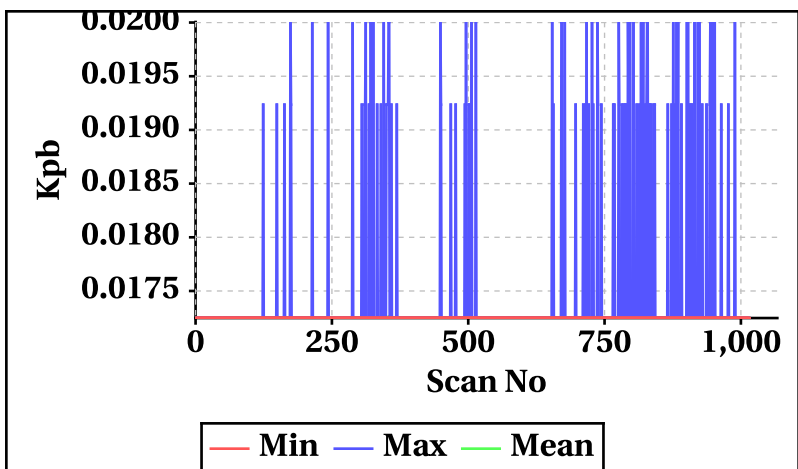
**Inner Beam(HH)**



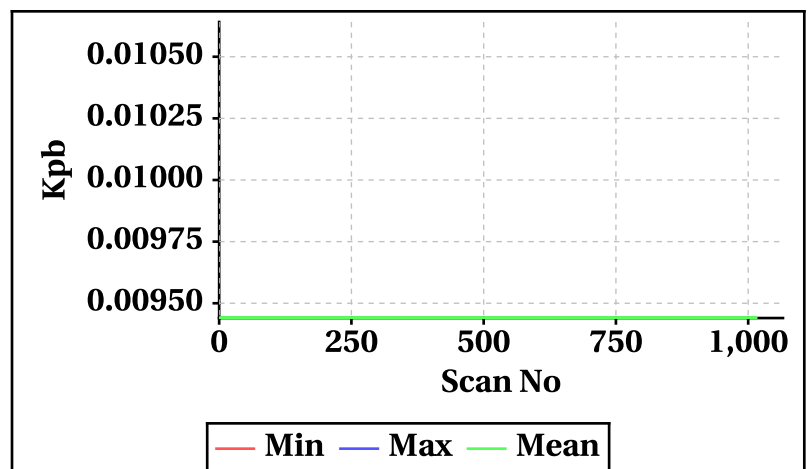
**Outer Beam(VV)**



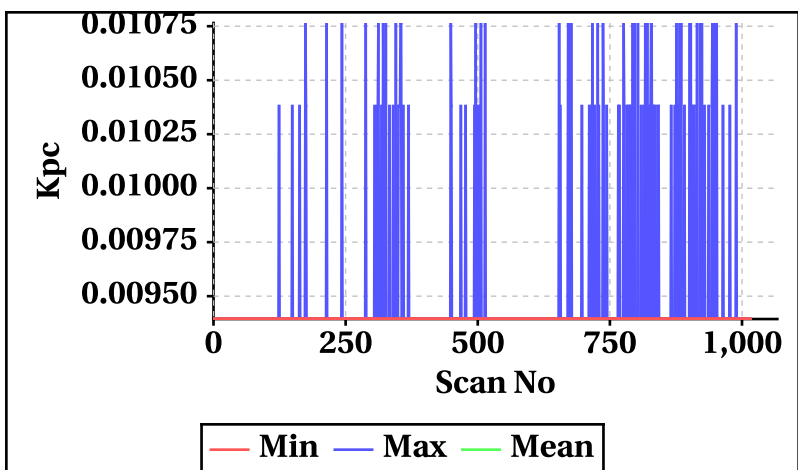
**Inner Beam(HH)**



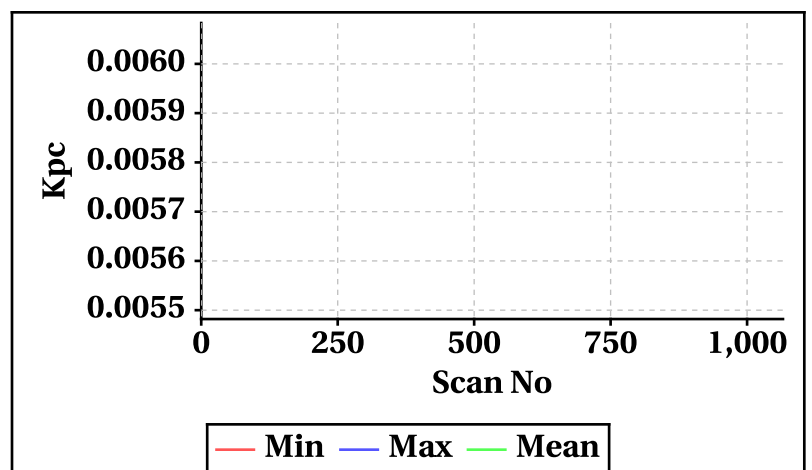
**Outer Beam(VV)**



**Inner Beam(HH)**



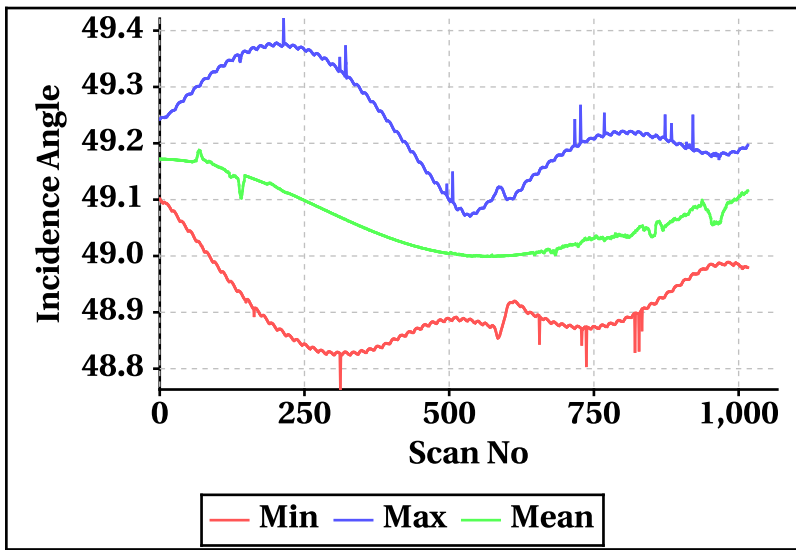
**Outer Beam(VV)**



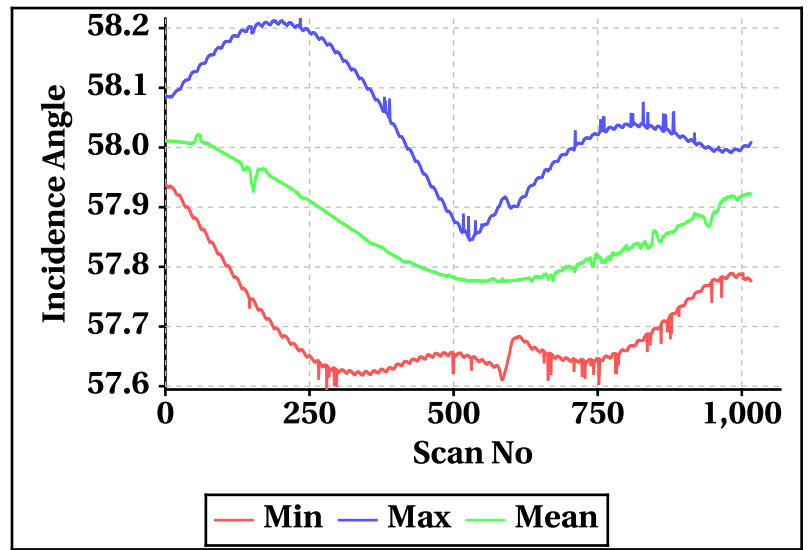


Orbit-wise behaviour of Incidence, Azimuth, Range, X-Factor

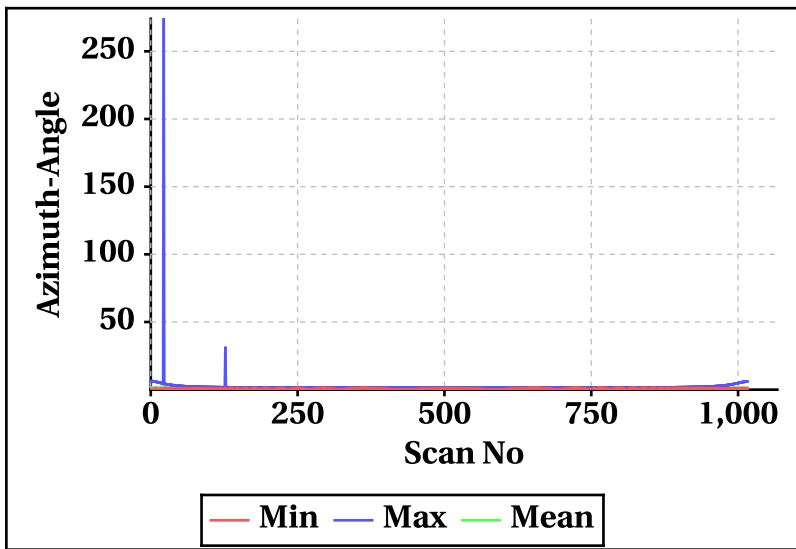
Inner Beam (HH)



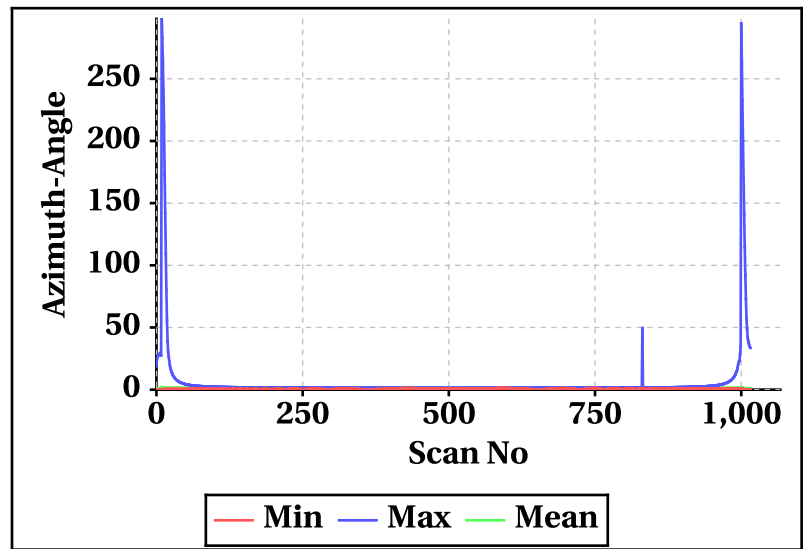
Outer Beam(VV)



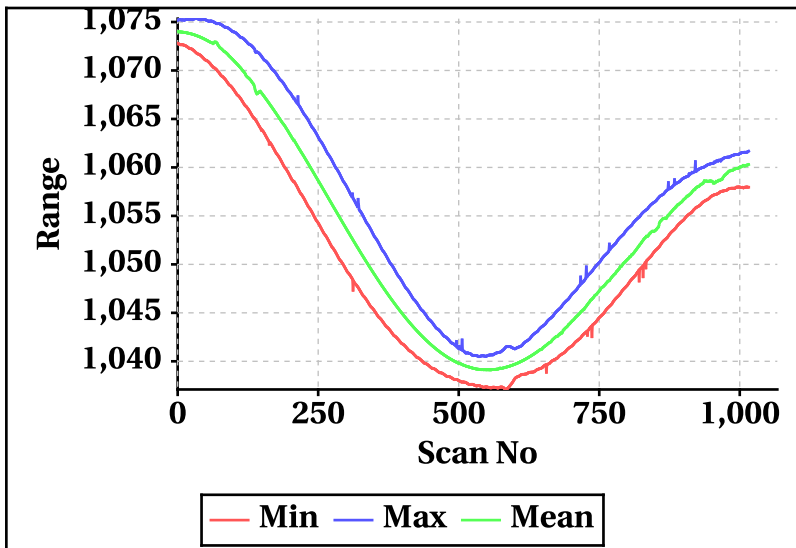
Inner Beam (HH)



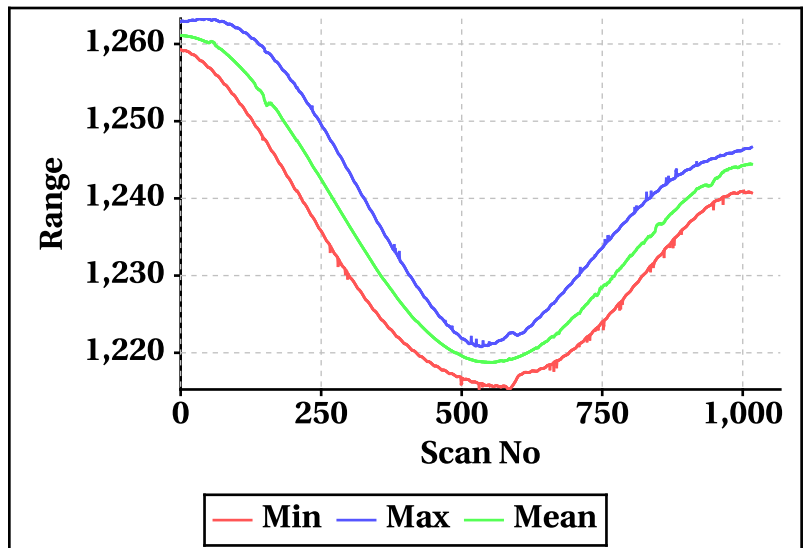
Outer Beam(VV)



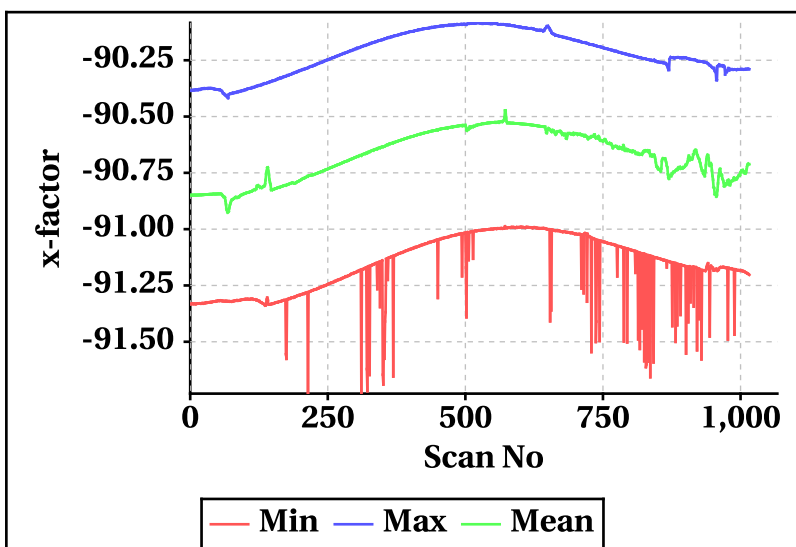
Inner Beam (HH)



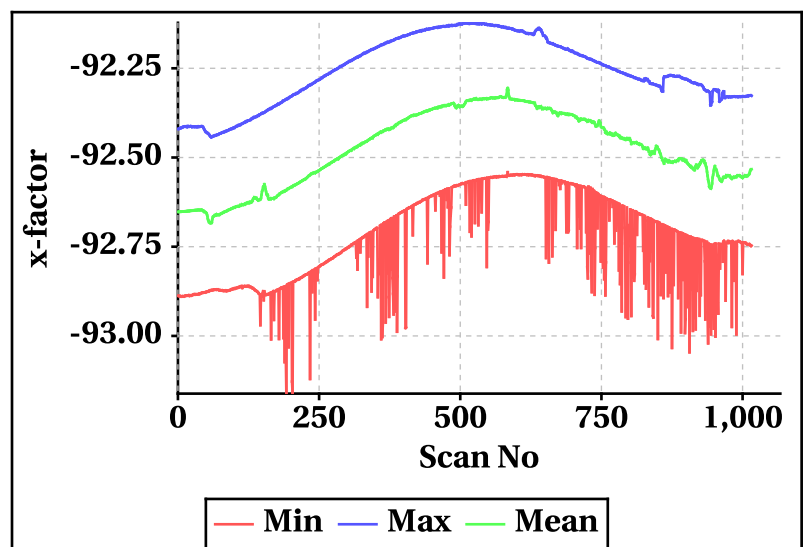
Outer Beam(VV)



Inner Beam (HH)



Outer Beam(VV)

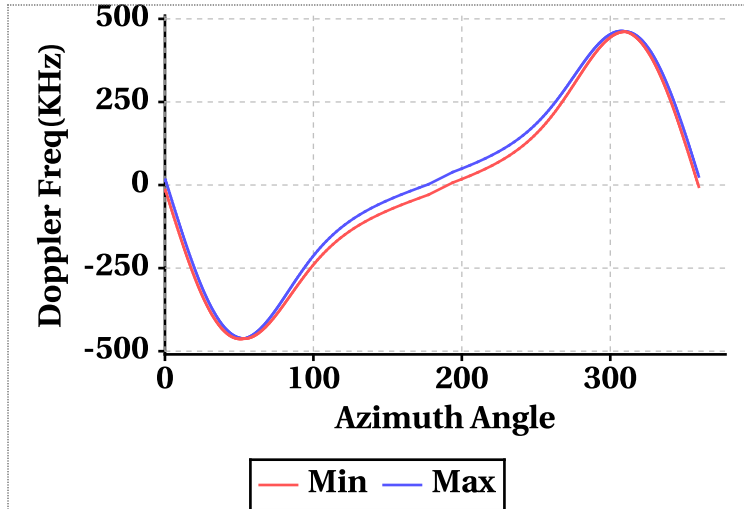


# Doppler Frequency Variation

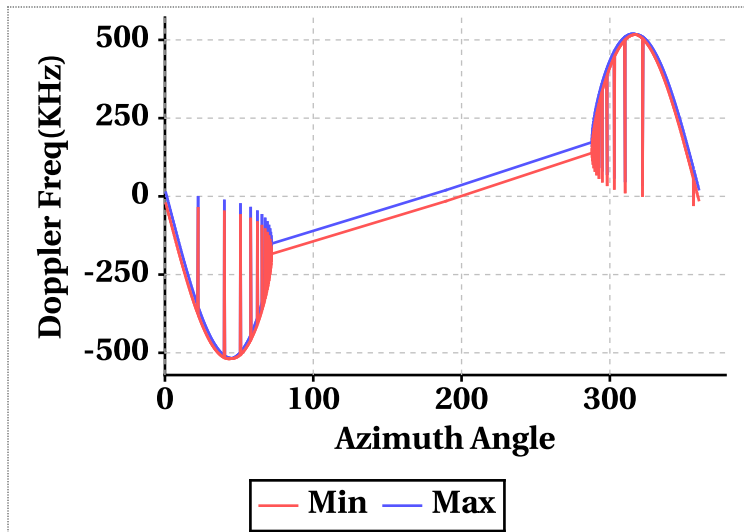
Doppler Frequency(KHz) variation statistics Over the half Orbit

	Inner Beam (HH)	Outer Beam (VV)
Min	-463.28	-519.20
Max	463.32	519.20

Footprint wise Doppler frequency variation Inner Beam (HH)



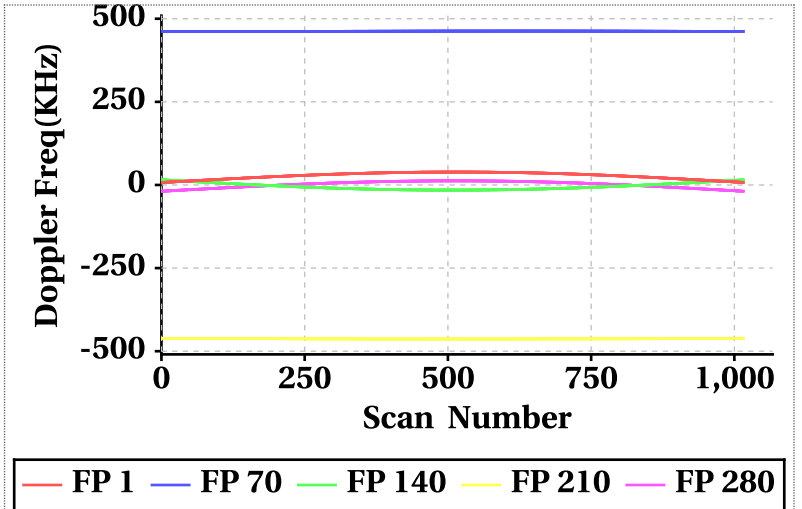
Footprint wise Doppler frequency variation Outer Beam (VV)



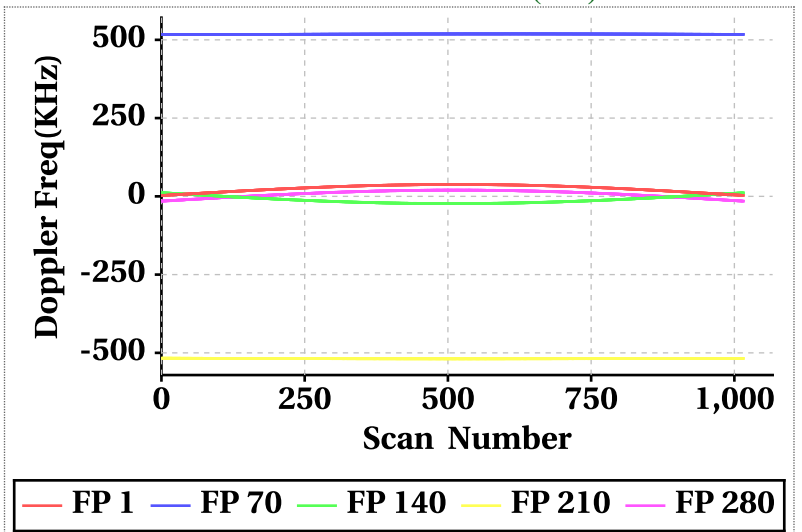
Doppler Frequency(KHz) variation

Doppler_FP	Inner Beam (HH)			Outer Beam (VV)		
	Min	Max	Mean	Min	Max	Mean
Doppler_1	7.26	38.88	27.46	2.58	37.92	25.16
Doppler_70	461.10	462.88	462.17	516.72	518.94	518.10
Doppler_140	-15.46	15.52	-4.23	-23.20	11.60	-10.57
Doppler_210	-463.20	-461.18	-462.54	-518.98	-517.06	-518.35
Doppler_280	-18.94	12.48	1.03	-15.30	19.88	7.06

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

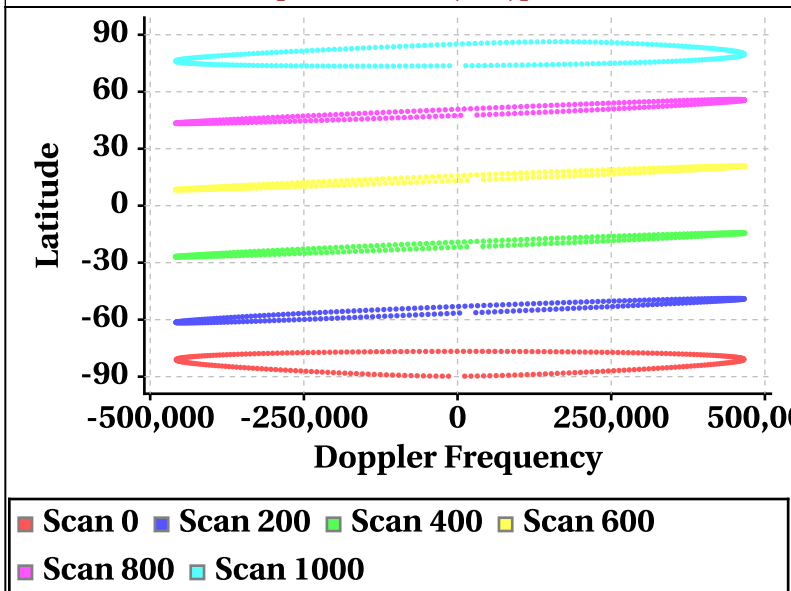


Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Outer Beam (VV)

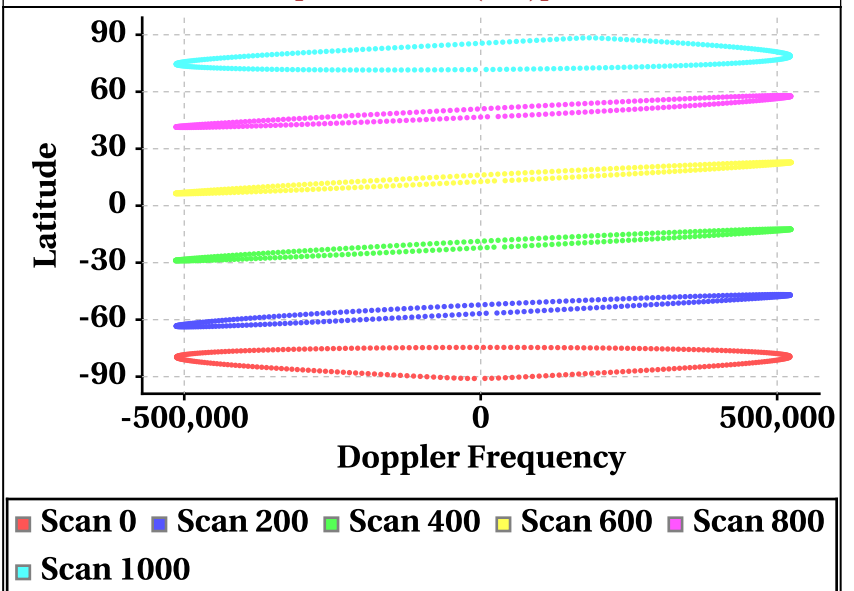


# Latitude Vs Doppler Frequency

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



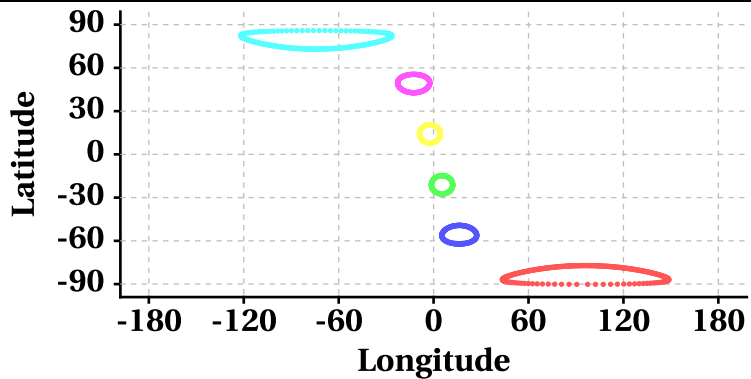
Doppler Frequency at Scan Interval of 200 [Outer Beam(VV)]



# Parameter as a function of Latitude

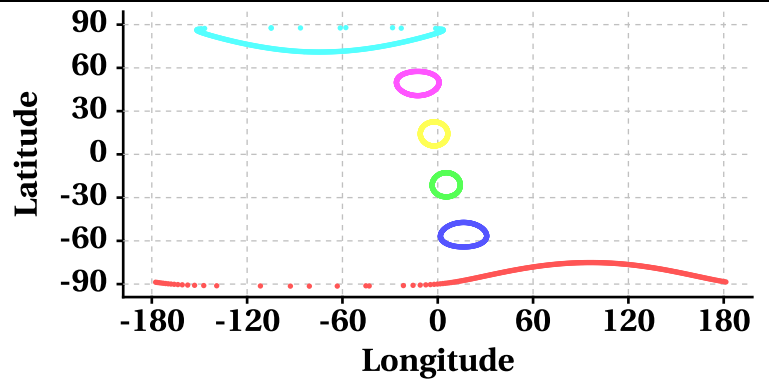
## Latitude Vs Longitude

Scan Trace [Inner Beam(HH)]



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

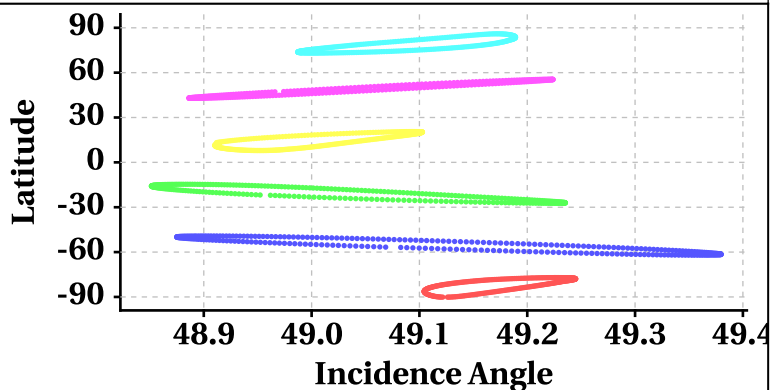
Scan Trace [Outer Beam (VV)]



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

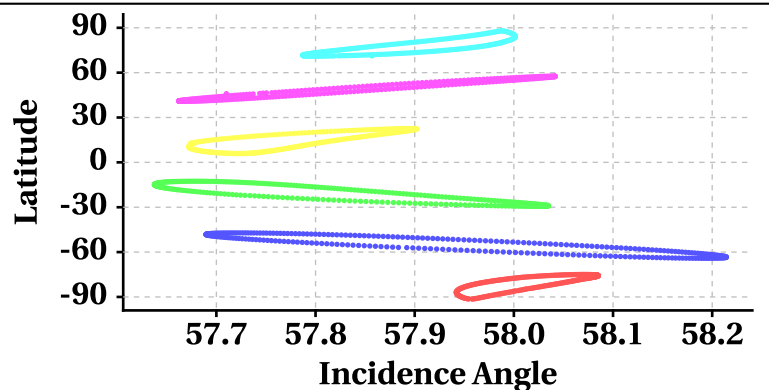
## Latitude Vs Incidence Angle

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



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

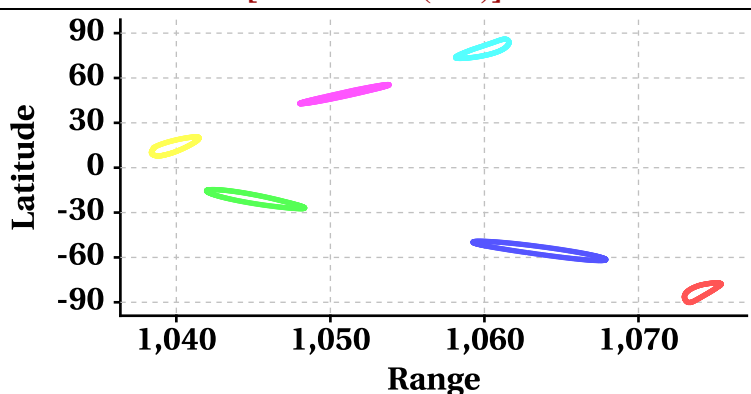
Incidence Angle at Scan Interval of 200 [Outer Beam (VV)]



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

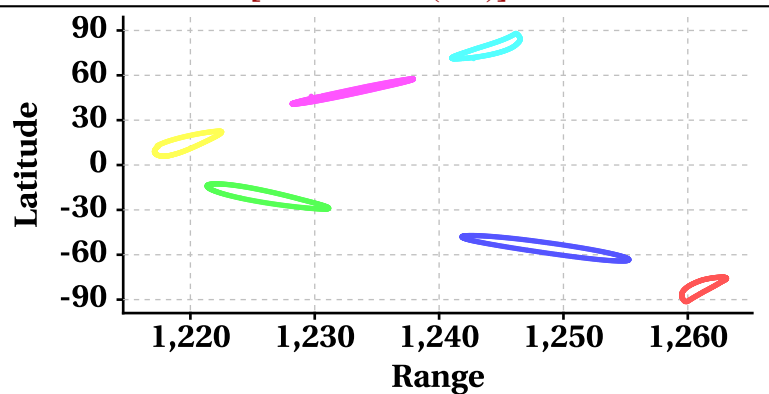
## Latitude Vs Range

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

