

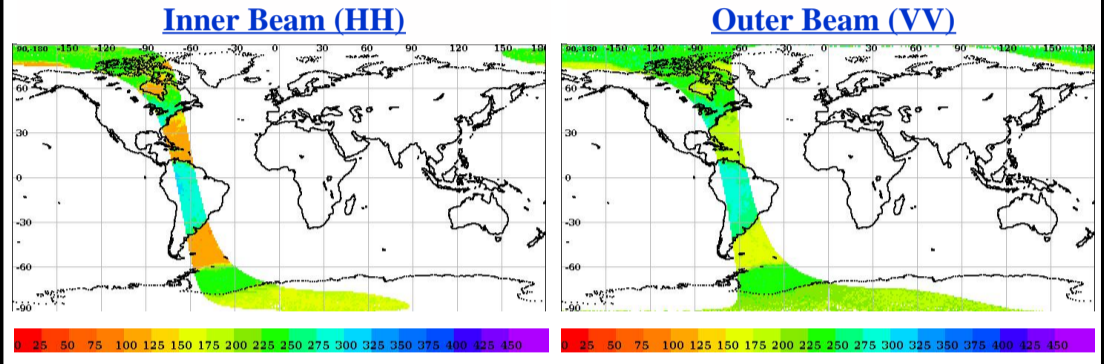
# SCATSAT-1 Scatterometer Level-1B Data Quality Evaluation Report

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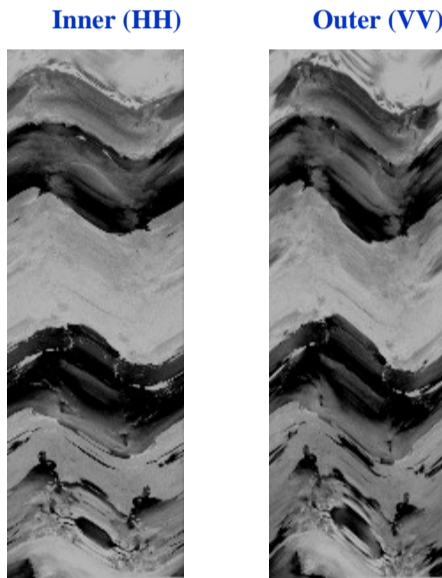
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<b>Satellite Id</b>	ScatSat-1	<b>Start Orbit</b>	16077	<b>Total Scans</b>	1016
<b>Sensor Name</b>	Scatterometer	<b>End Orbit</b>	16078	<b>No of Inner FootPrints</b>	281
<b>Processor Version</b>	v1.1.3	<b>Rev. Number</b>	16077_16078	<b>No Of Outer FootPrints</b>	282
<b>Half Orbit Direction</b>	SN	<b>Data Production Date</b>	10-10-2019	<b>No. Of Inner Slices</b>	9
<b>Equator Crossing Date</b>	10-10-2019	<b>Equator Crossing Time</b>	00:38:42.000	<b>No Of Outer Slices</b>	15

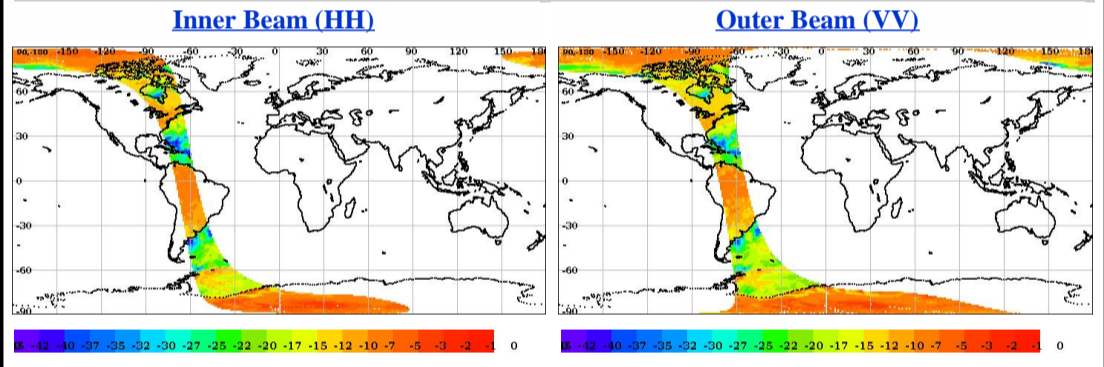
## Brightness Temperature(k) Footprint trace



## Image Snapshot for Inner & Outer Beam



## Sigma0(dB) Footprint trace



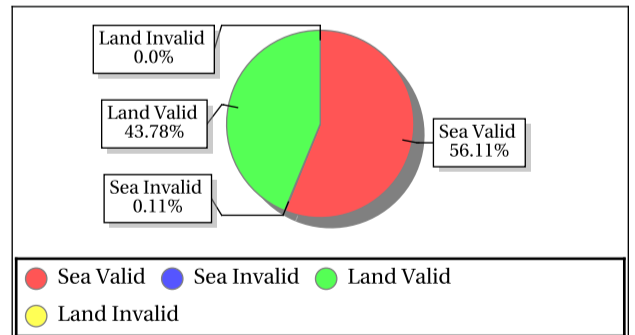
## Invalid and Poor Sigma-0 Quality Flag Statistics for Inner/Outer Slices\*

Sigma-0 Flags	Inner Beam	Outer Beam
Invalid Sigma0(%)	0.11	0.11
Data Not Available From Payload (%)	100.0	99.53211
Slice not within sample array limits (%)	0.00	0.47
C(S+N) - C(N) < 0.1 (%)	0.00	0.00
Poor Sigma0(%)	22.21	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 (%)	0.022426	0.056375

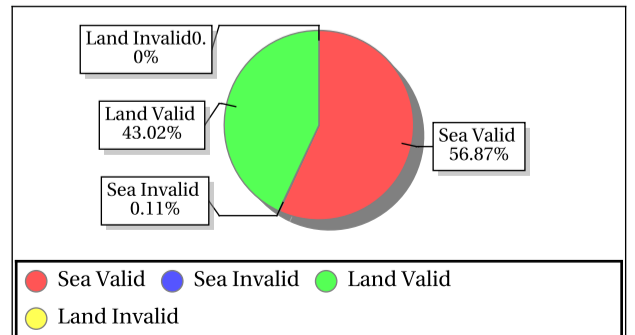
\*DP Format Document

## 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
Amazon_3	-6.00	-61.00	Inner	ASC	Aft	-9.40	-6.91	-8.38	0.56	257.35	337.50	295.12	16.09
Amazon_3	-6.00	-61.00	Inner	ASC	Fore	-9.47	-7.35	-8.25	0.57	266.48	315.19	291.12	10.92
Amazon_2	-3.00	-61.00	Inner	ASC	Aft	-11.64	-7.73	-9.03	0.98	202.04	320.52	272.94	22.97
Amazon_2	-3.00	-61.00	Inner	ASC	Fore	-11.57	-7.15	-9.08	1.14	224.94	308.62	271.56	24.31
Amazon_1	0.00	-67.00	Inner	ASC	Aft	-9.44	-6.07	-7.88	0.73	274.60	340.70	303.32	15.50
Amazon_1	0.00	-67.00	Inner	ASC	Fore	-9.12	-6.26	-7.82	0.64	253.81	348.60	300.35	18.14
Amazon_3	-6.00	-61.00	Outer	ASC	Aft	-10.89	-8.65	-9.65	0.48	244.24	315.67	283.55	16.88
Amazon_3	-6.00	-61.00	Outer	ASC	Fore	-10.76	-8.25	-9.43	0.62	252.73	333.80	285.10	17.81
Amazon_2	-3.00	-61.00	Outer	ASC	Aft	-11.55	-8.27	-10.04	0.77	230.48	298.84	271.88	15.25
Amazon_2	-3.00	-61.00	Outer	ASC	Fore	-12.07	-8.58	-10.04	0.79	229.95	315.63	268.32	18.42
Amazon_1	0.00	-67.00	Outer	ASC	Aft	-9.96	-7.51	-8.63	0.55	254.34	326.23	285.17	17.54
Amazon_1	0.00	-67.00	Outer	ASC	Fore	-9.89	-7.90	-8.73	0.54	251.91	310.14	282.05	14.13



## 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	291.47	0.36	3.472	0.12	293.62	0.31	2.563	0.12	4.90	0.12	0.005	0.12	0.92	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	0.02	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>	-34.78	25.81	6.72	0.507	-34.81	25.86	8.51	2.335	-16.96	27.85	18.74	7.844	-9.33	29.57	19.05	8.150

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	197.83	0.33	3.337	0.09	230.92	0.29	2.626	0.09	37.46	0.09	0.018	0.09	3.02	0.09	0.011
<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>	-34.27	21.11	3.25	0.000	-34.94	20.02	4.52	0.000	-27.03	22.33	13.20	0.008	-16.01	22.10	13.17	0.002

Parameter Specifications					
Parameter	Kp	Kpa	Kpb	Kpc	SNR
Min	0.00	0.00	0.00	0.00	-65.00
Max	1.00	1.00	1.00	1.00	22.00

- Normal
- Deviations
- Alarming
- High Errors

## Overall statistics for static parameter (Footprint-wise)

	Inner Beam (HH)				Outer Beam (VV)				Parameter Specifications		
	Min	Max	Mean	Bad Occ. (%)	Min	Max	Mean	Bad Occ. (%)	Parameter	Min	Max
<b>Incidence Angle (deg)</b>	48.73	49.41	49.05	0.000	57.53	58.25	57.93	0.000	Inci.(Inner)	47.10	49.90
<b>Azimuth Diff. (deg)</b>	0.0000	180.88	1.27	2.753	0.0000	299.02	1.27	4.082	Inci.(Outer)	57.30	58.90
<b>Range(Km)</b>	1031.50	1078.31	1050.74	0.000	1208.12	1266.94	1232.31	3.261	Azimuth Diff.	0.60	2.00
<b>X Factor(dbm)</b>	-91.59	-89.98	-90.48	0.000	-93.31	-92.02	-92.24	0.000	Range(Inner)	1025.00	1095.70
<b>Across Distance (Km)</b>	15.54	16.07	15.68	0.000	20.50	21.39	20.62	0.000	Range(Outer)	1210.00	1280.00
<b>Along Distance (Km)</b>	18.82	10110.99	39.61	3.000	7.65	10316.72	39.93	5.000	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

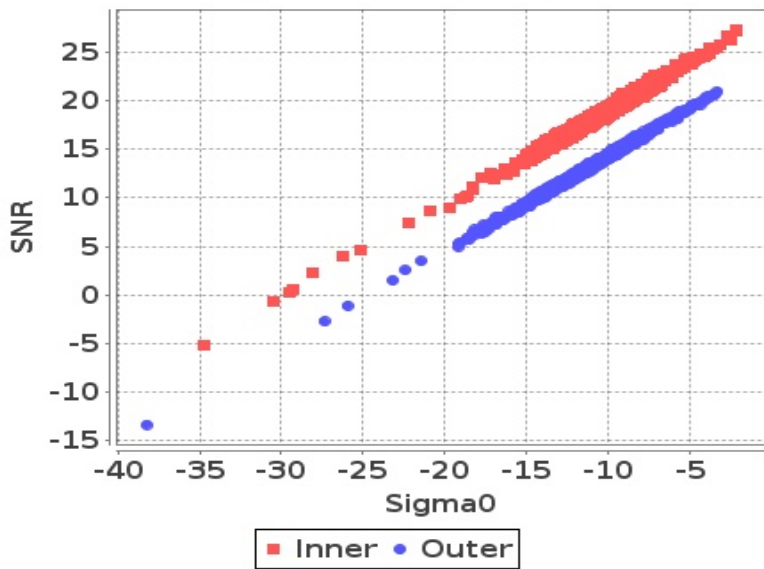
- Normal
- Deviations
- Alarming
- High Errors



## Sigma0 Behaviour (Sigma0 Vs SNR)

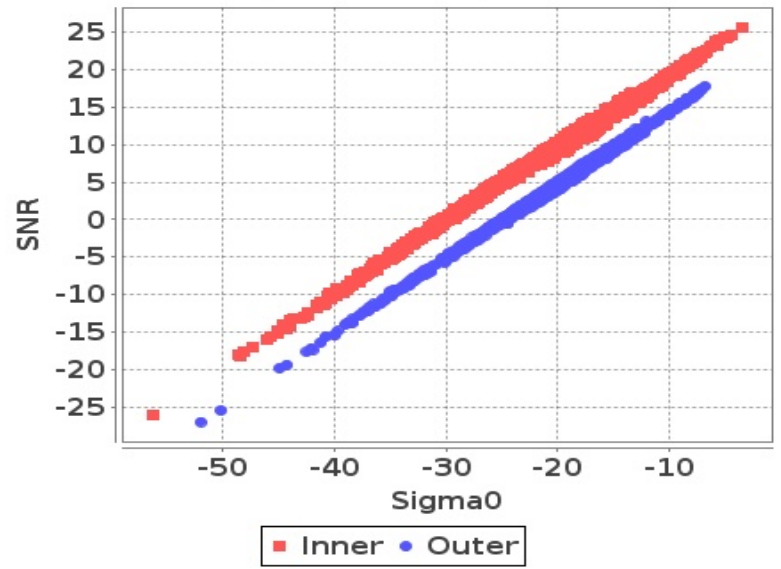
Footprint-Land

Sigma0 Vs SNR (Land)



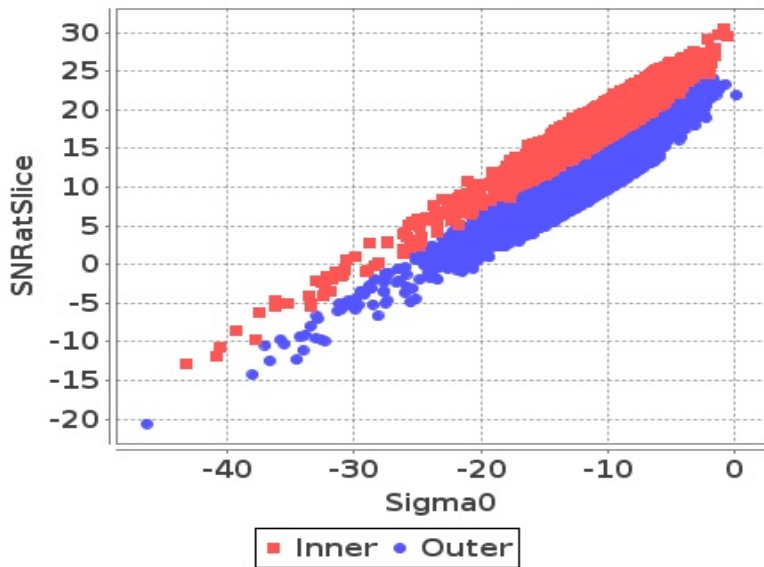
Footprint-Sea

Sigma0 Vs SNR (Sea)



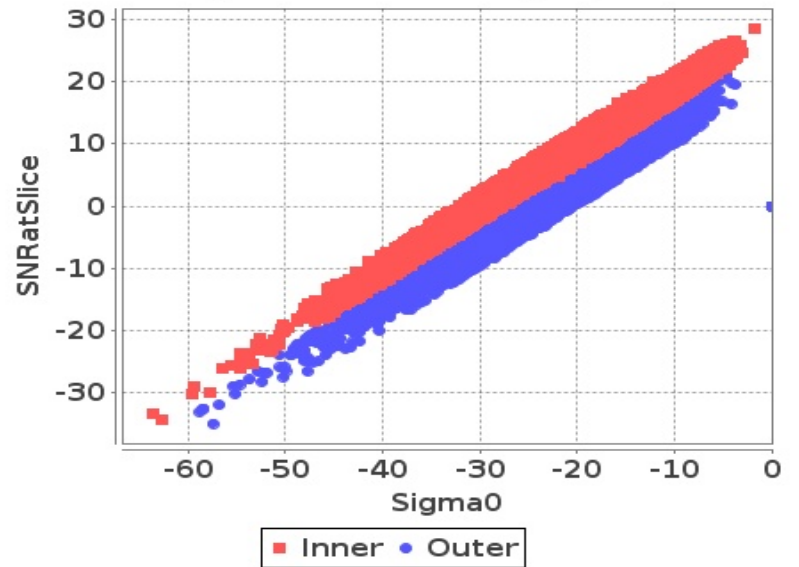
Slice-Land

Sigma0 Vs SNRatSlice (Land)



Slice-Sea

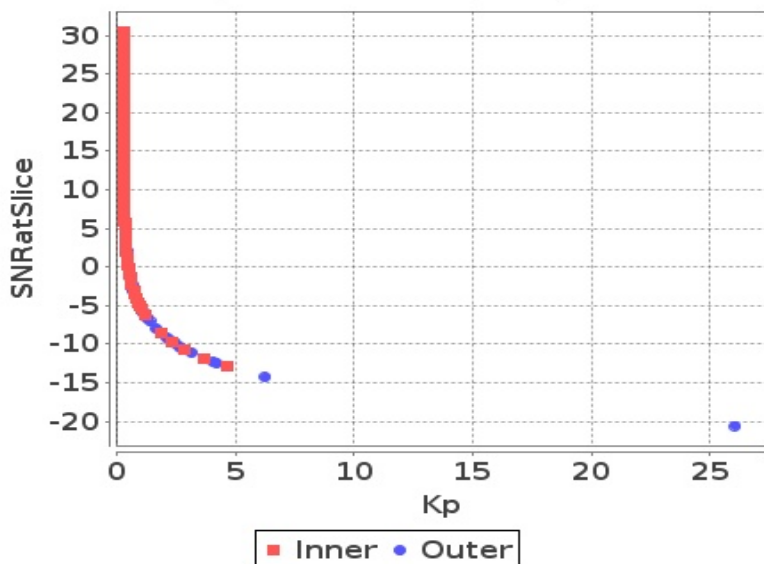
Sigma0 Vs SNRatSlice (Sea)



## Sigma0 Behaviour (Kp Vs SNR)

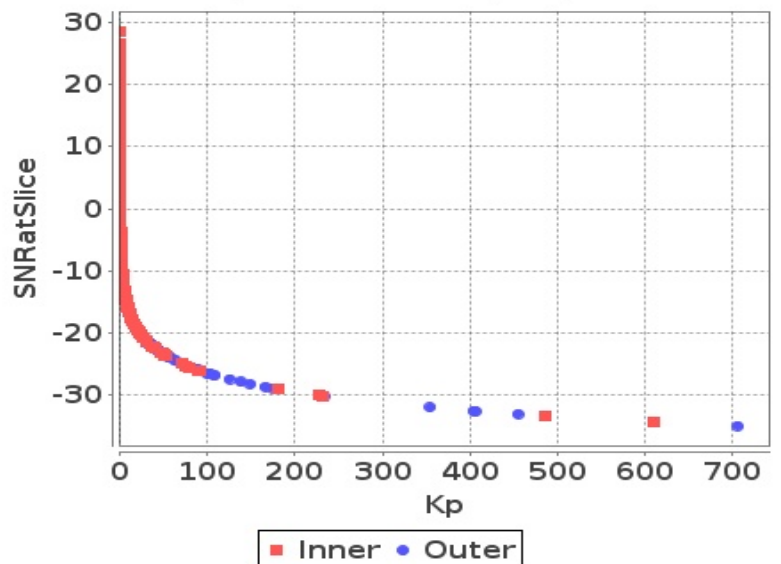
Slice

Kp Vs SNRatSlice (Land)



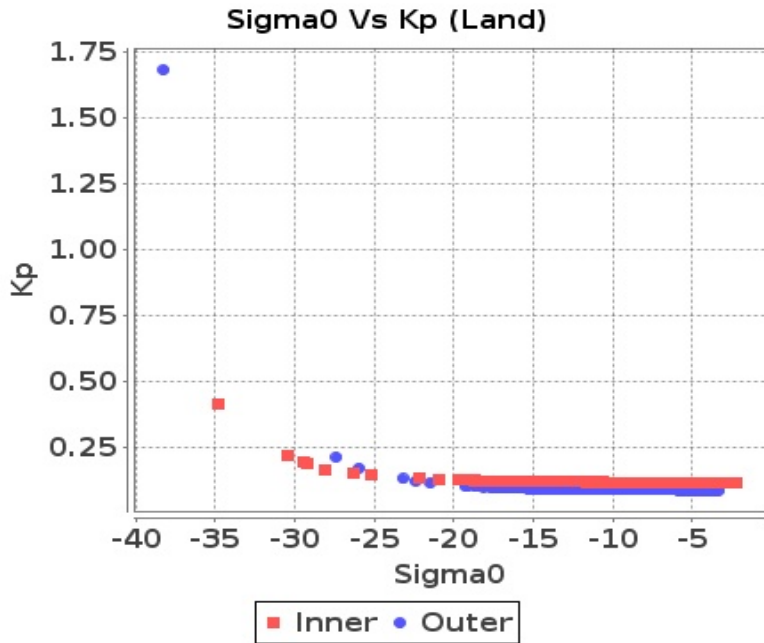
Slice

Kp Vs SNRatSlice (Sea)

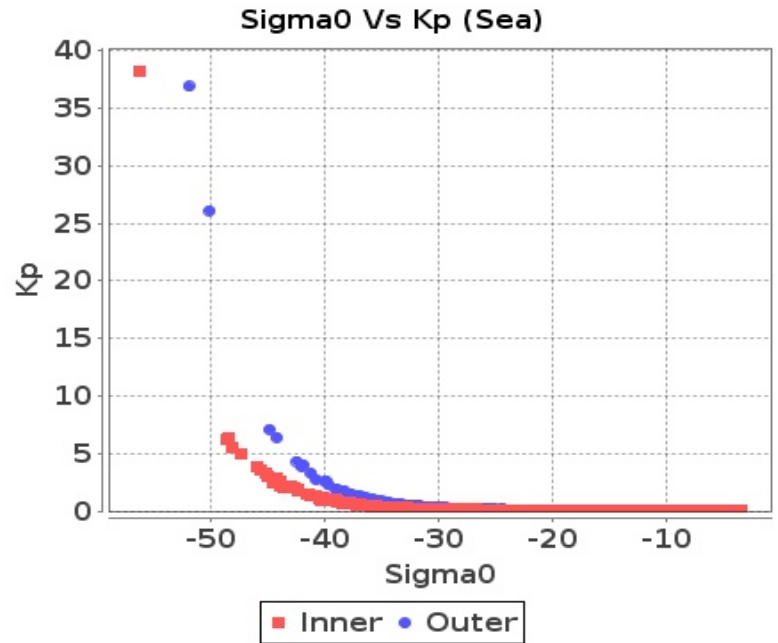


# Sigma0 Behaviour(Sigma0 Vs Kp)

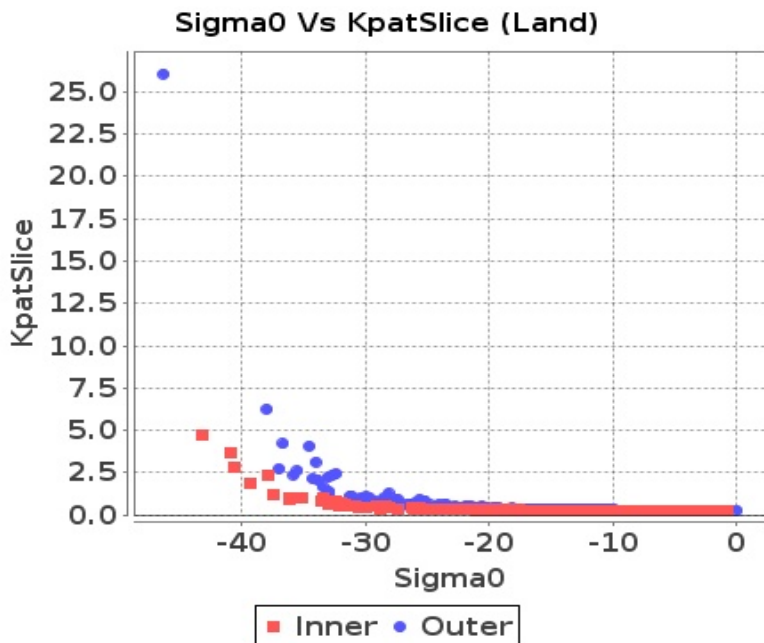
## Footprint-Land



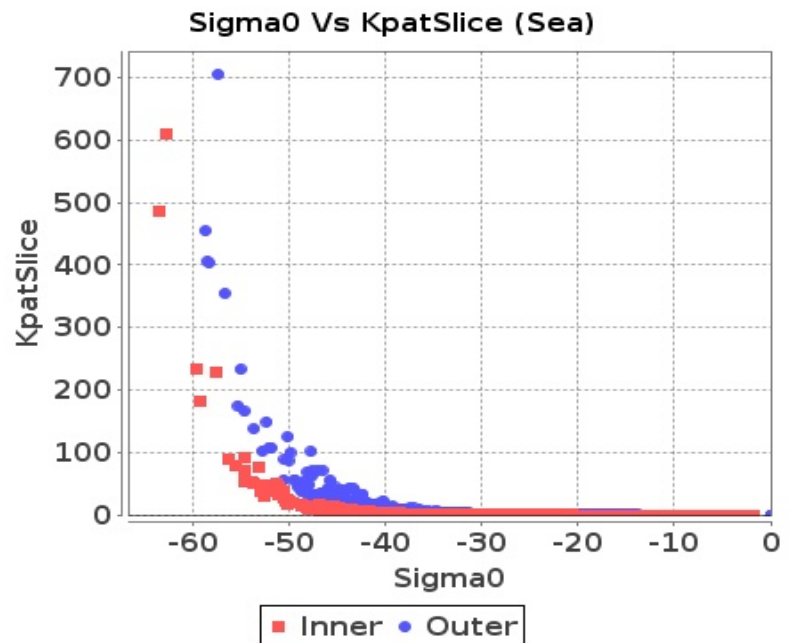
## Footprint-Sea



## Slice-Land



## Slice-Sea



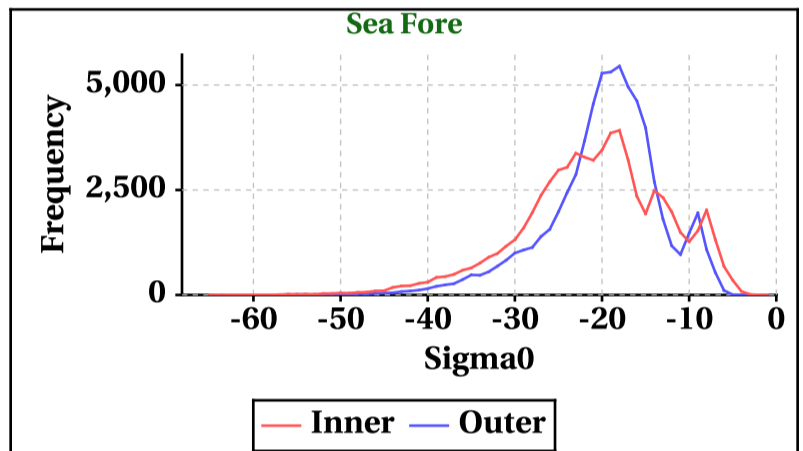
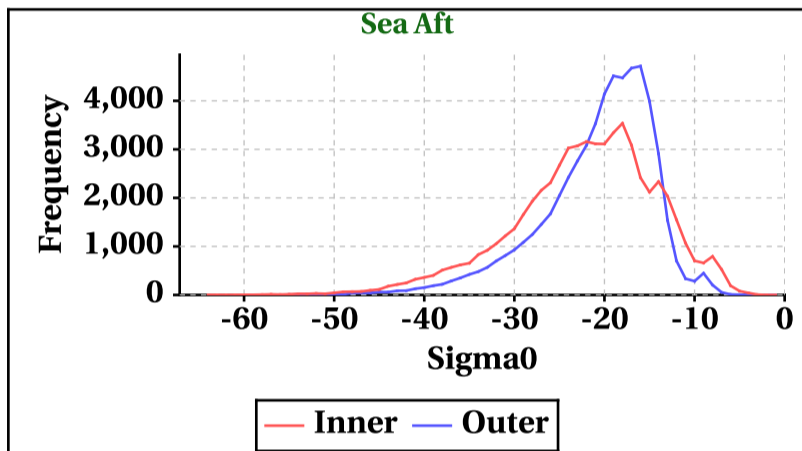
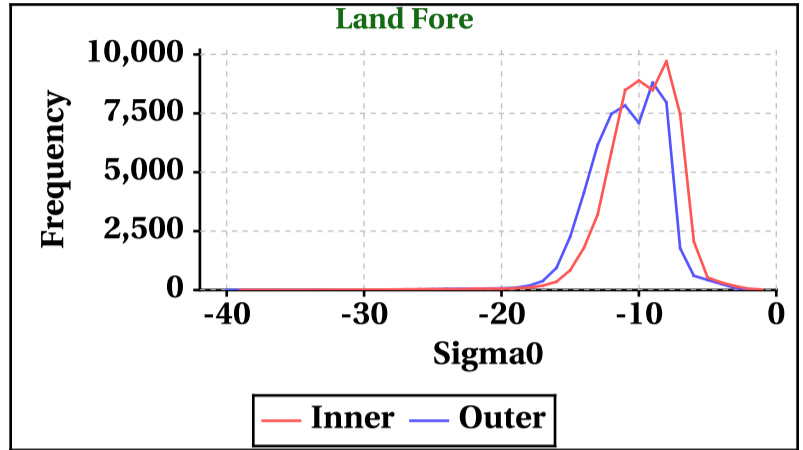
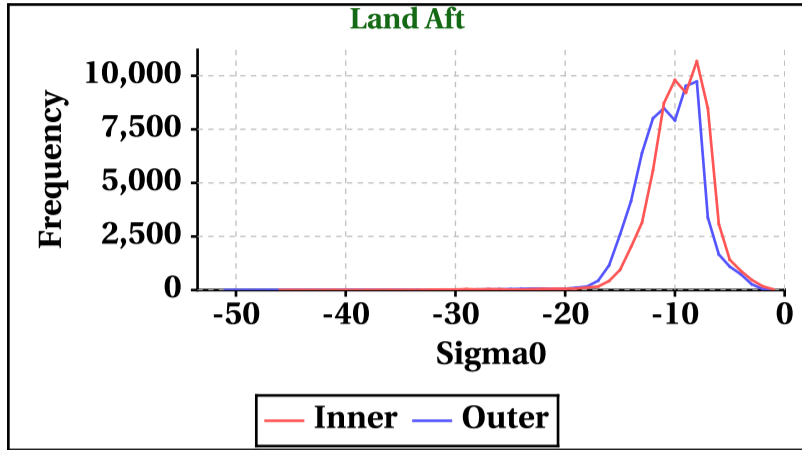


# Dynamic Range (Data Histograms)

## Sigma0(db)

Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-46	-39	-64	-65
Max	0	0	0	0

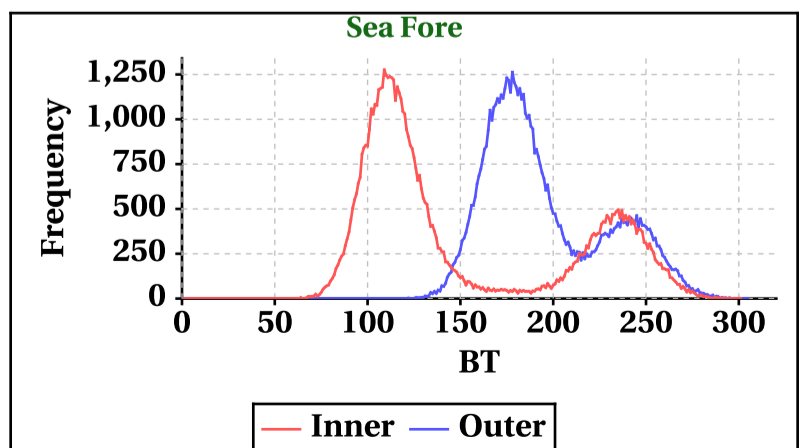
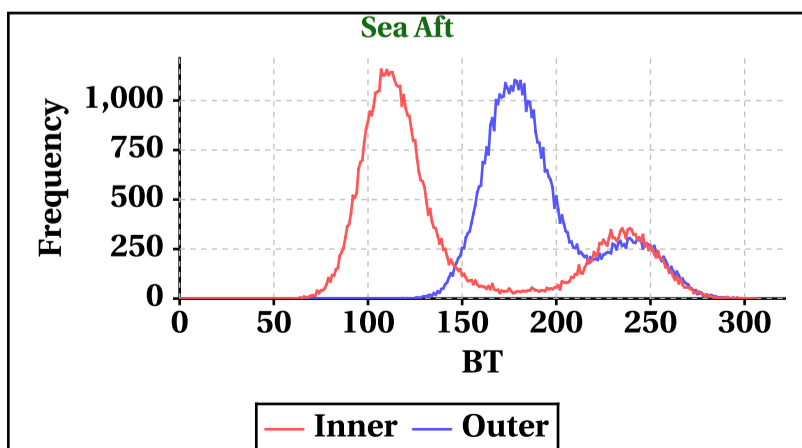
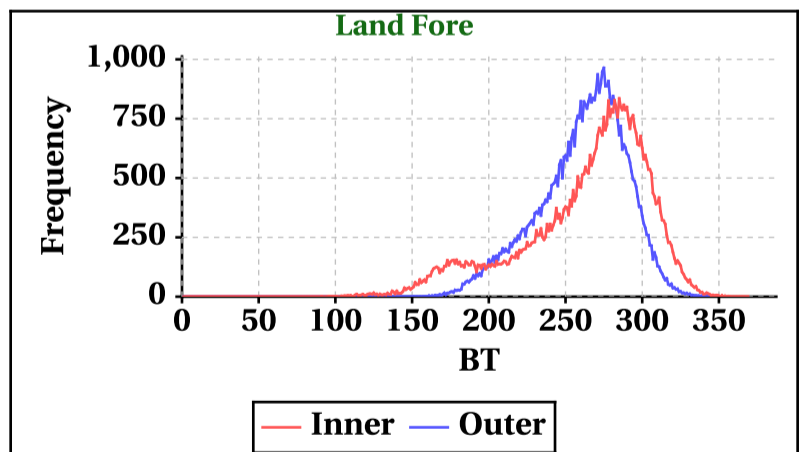
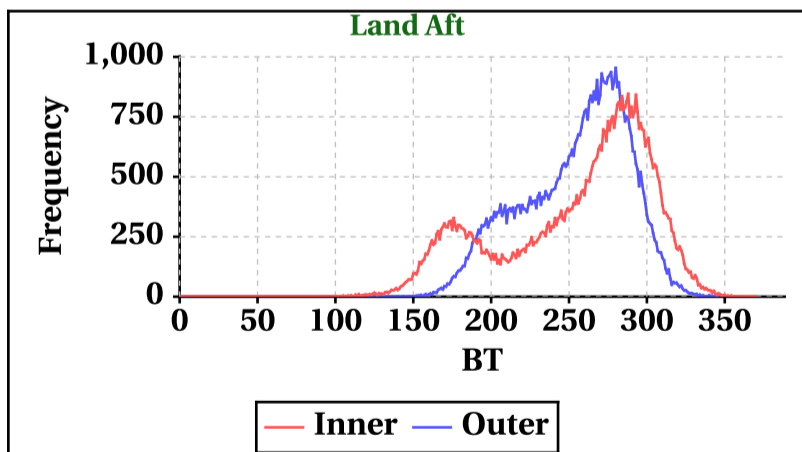
Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-51	-40	-59	-59
Max	0	0	0	0



## Brightness Temperature(K)

Inner Beam(HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	370	369	306	301

Outer Beam(VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	349	348	299	305

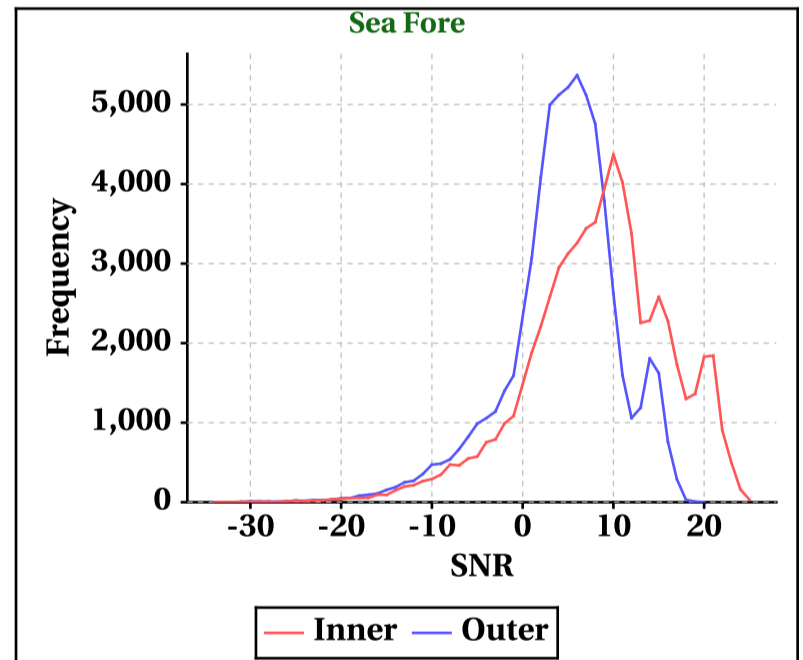
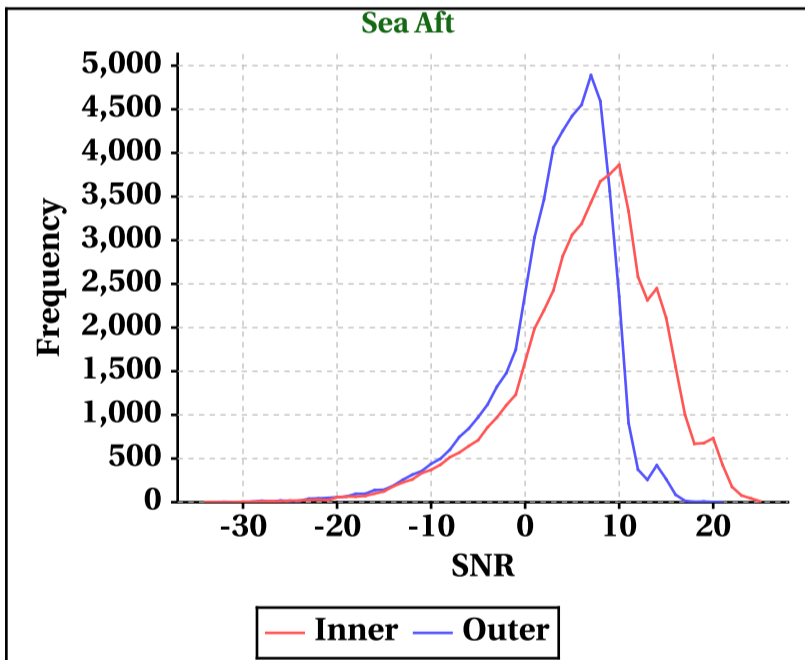
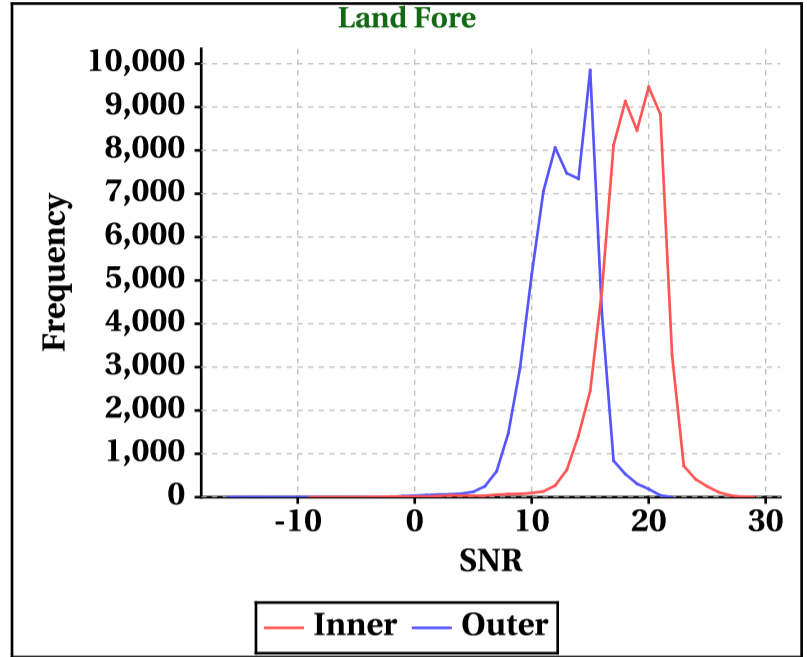
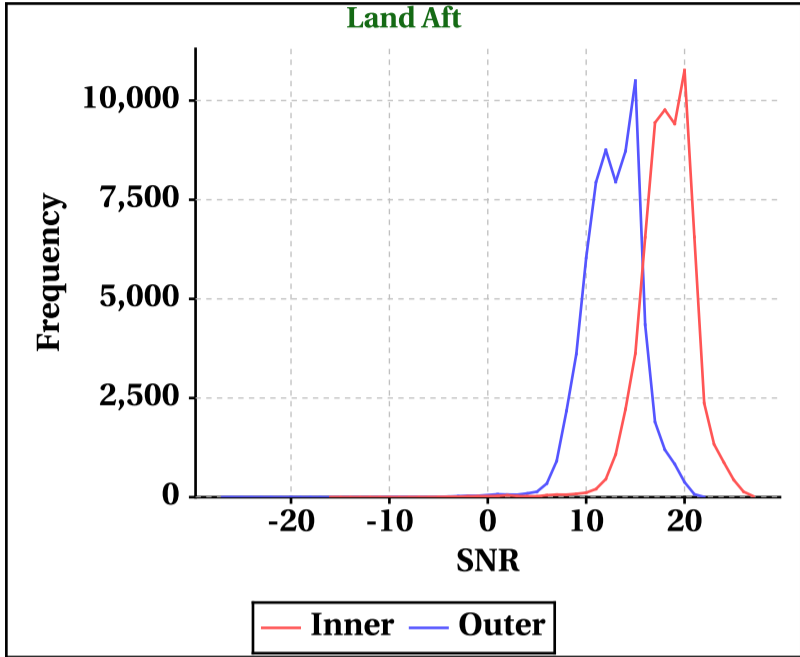


# Dynamic Range (Data Histograms)

## SNR(dBm)

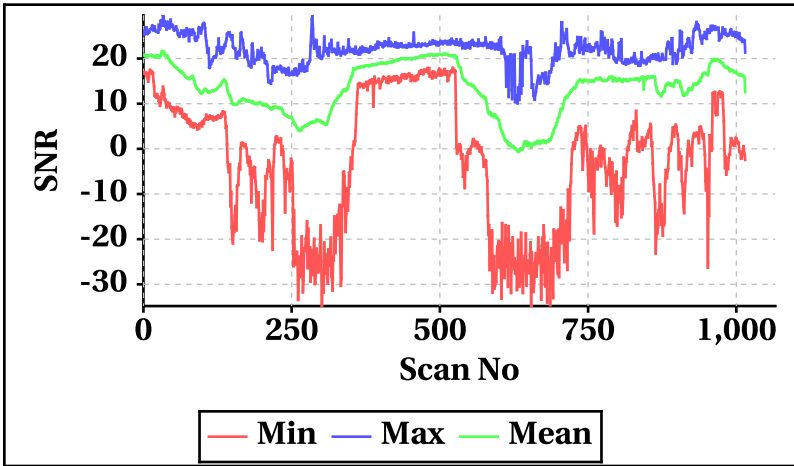
Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-16	-9	-34	-34
Max	27	29	25	25

Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-27	-16	-34	-34
Max	22	22	21	20

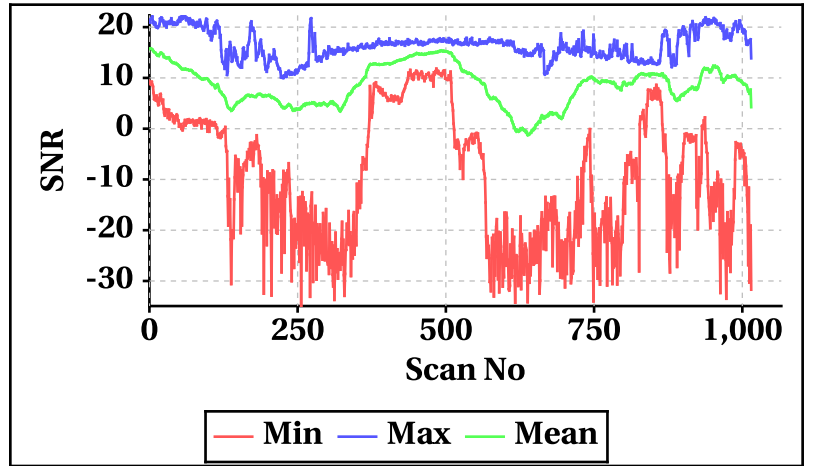


## Orbit-wise behaviour of SNR

Inner Beam (HH)

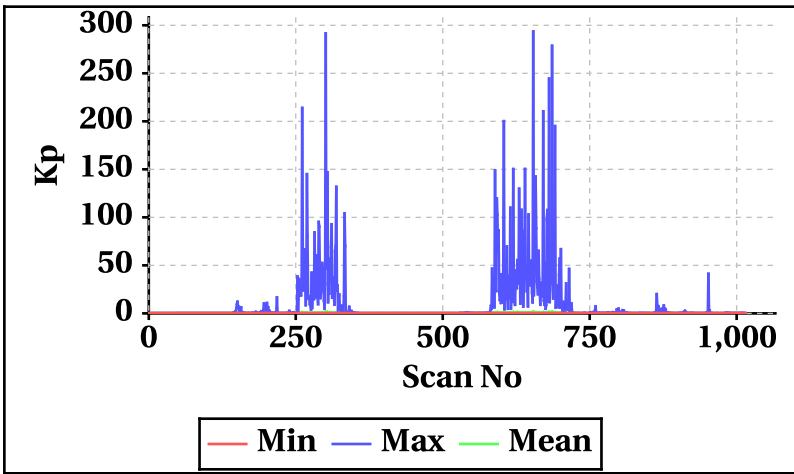


Outer Beam(VV)

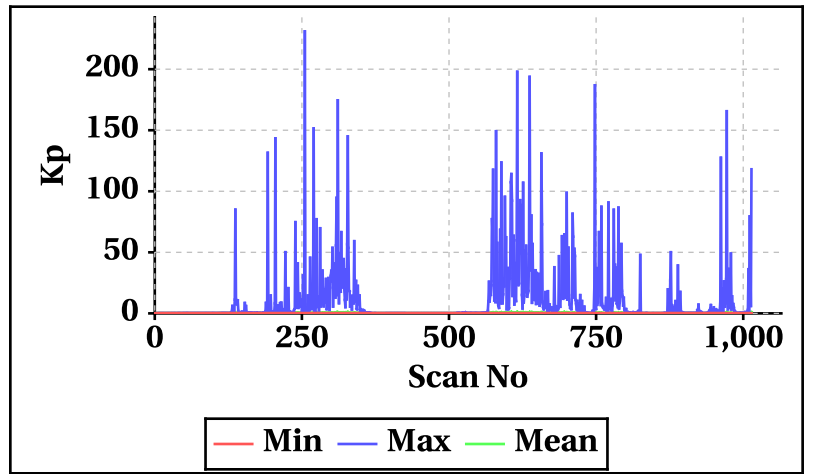


## Orbit-wise behaviour of Kp,Kpa,Kpb,Kpc

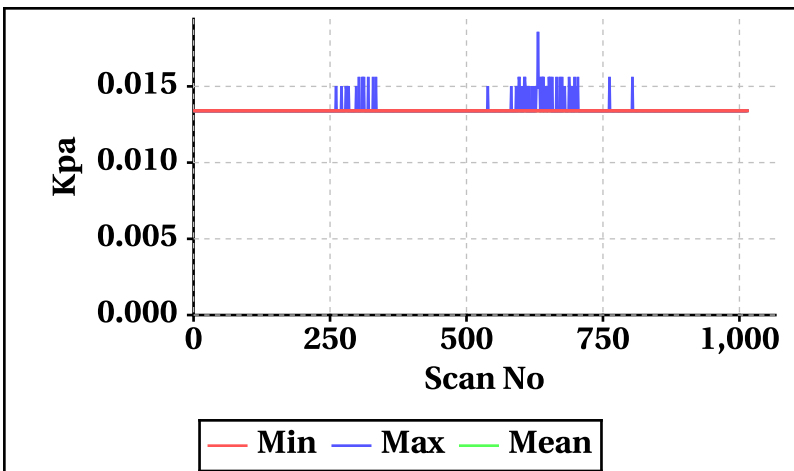
Inner Beam(HH)



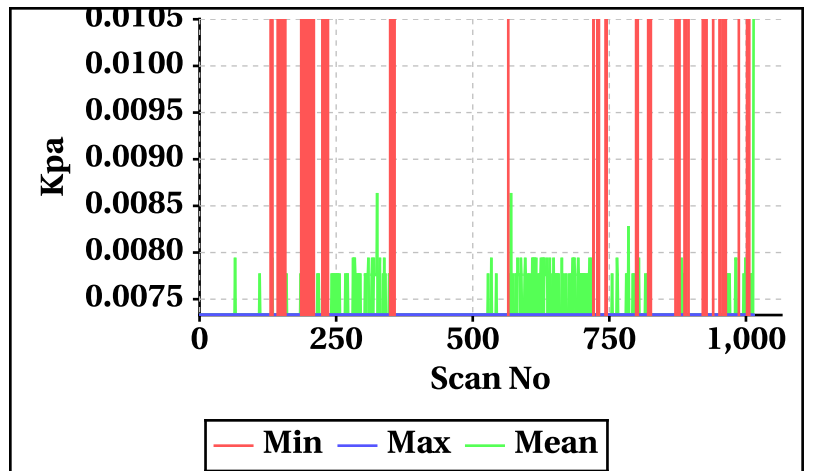
Outer Beam(VV)



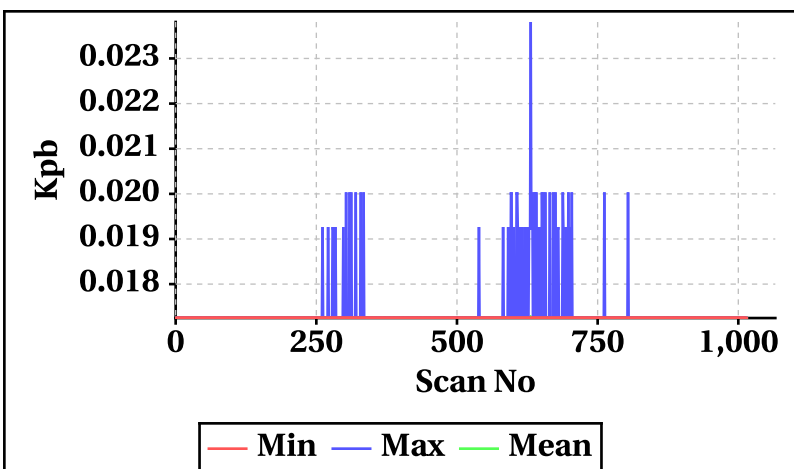
Inner Beam(HH)



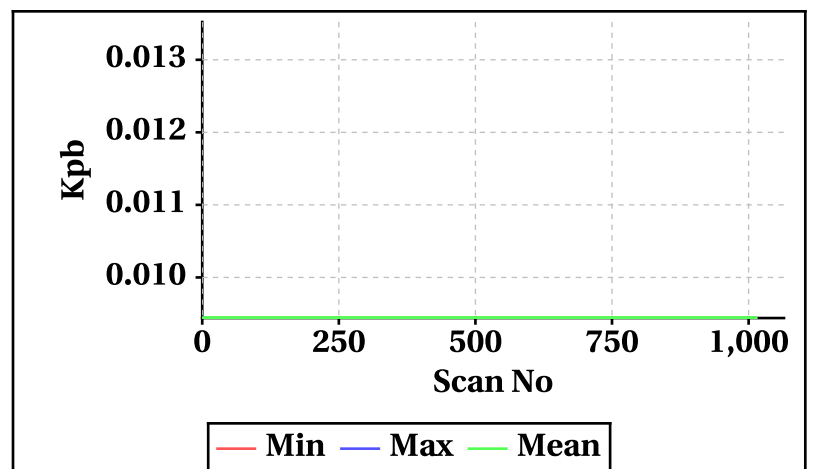
Outer Beam(VV)



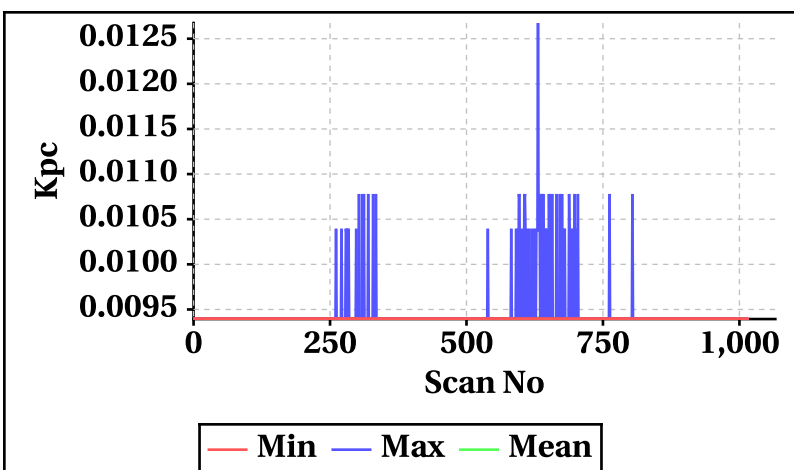
Inner Beam(HH)



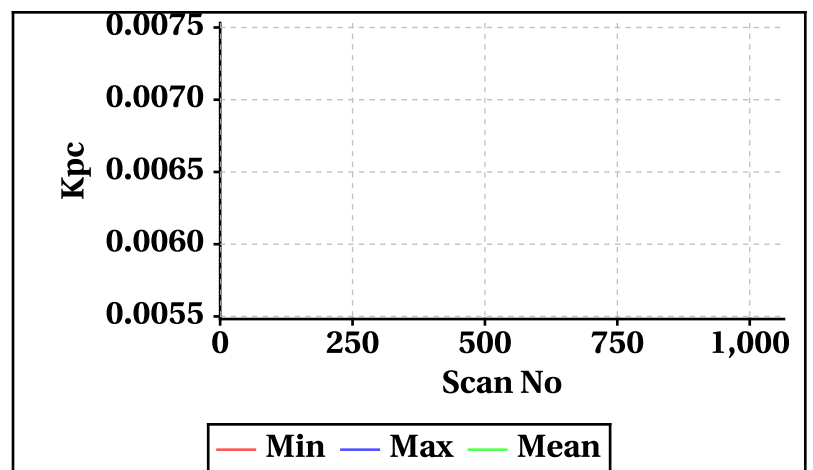
Outer Beam(VV)



Inner Beam(HH)



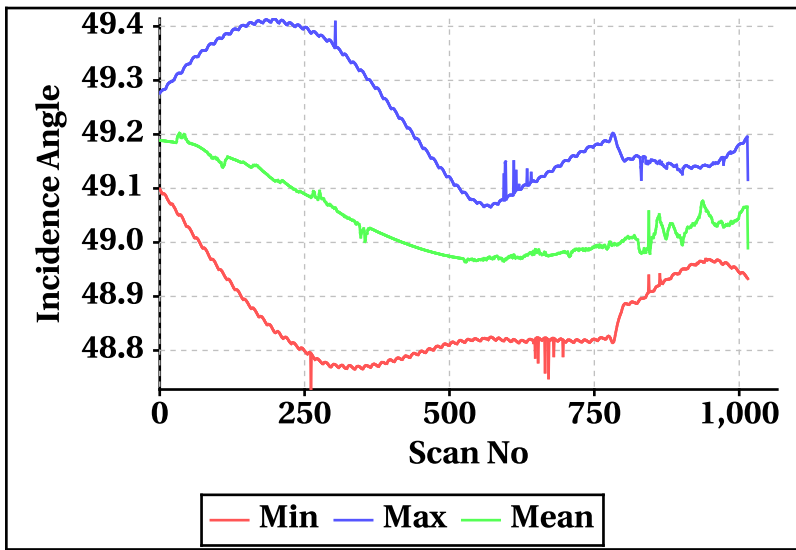
Outer Beam(VV)



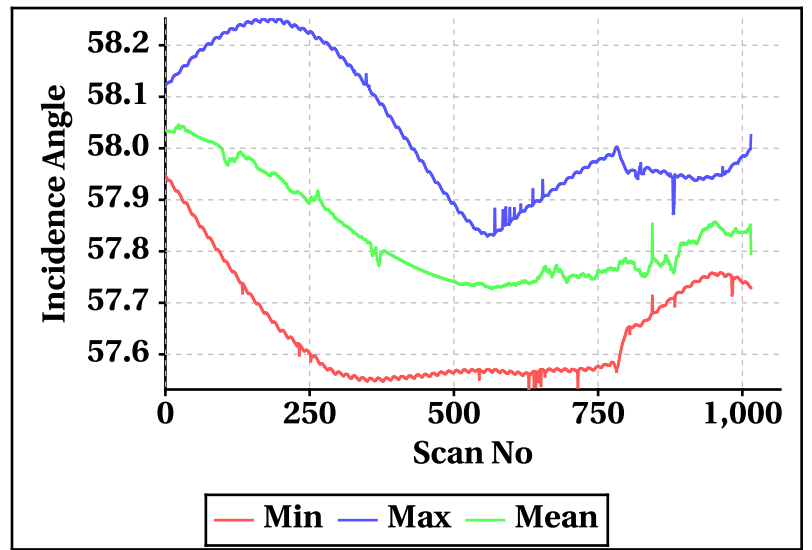


Orbit-wise behaviour of Incidence, Azimuth, Range, X-Factor

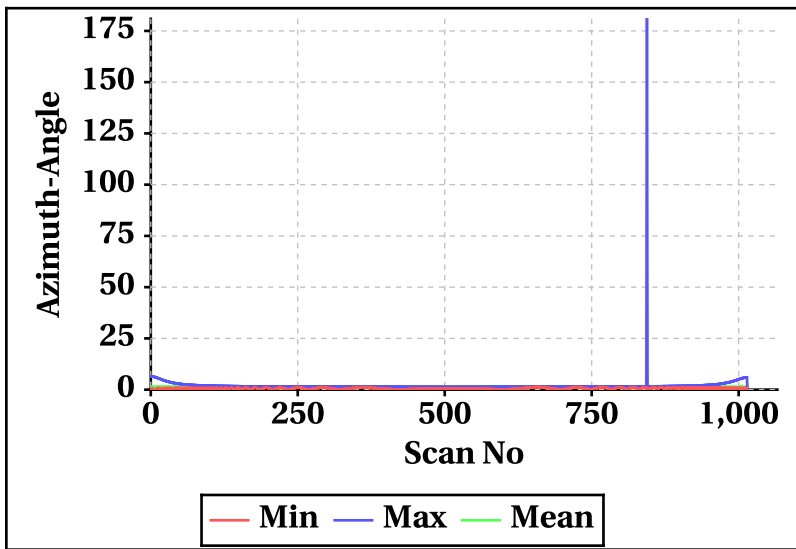
Inner Beam (HH)



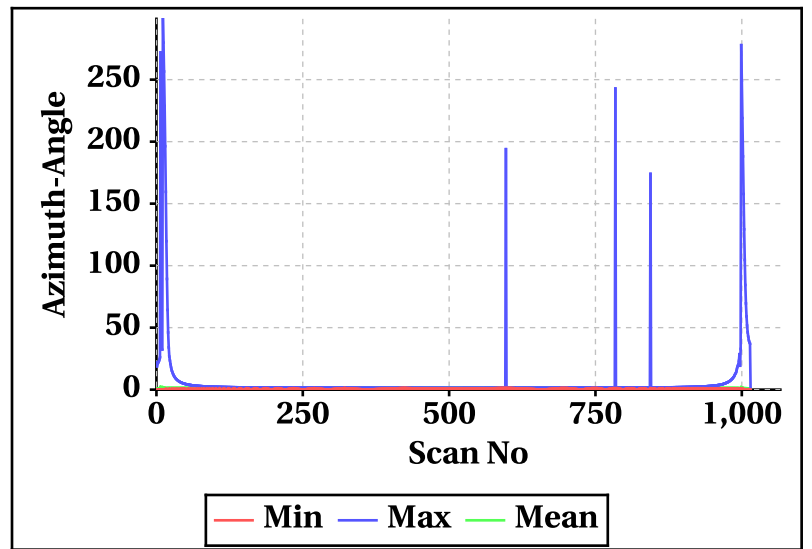
Outer Beam(VV)



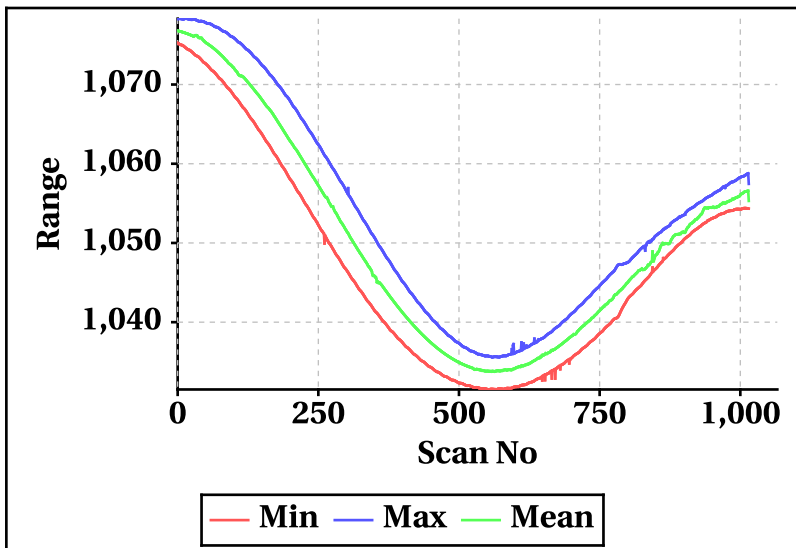
Inner Beam (HH)



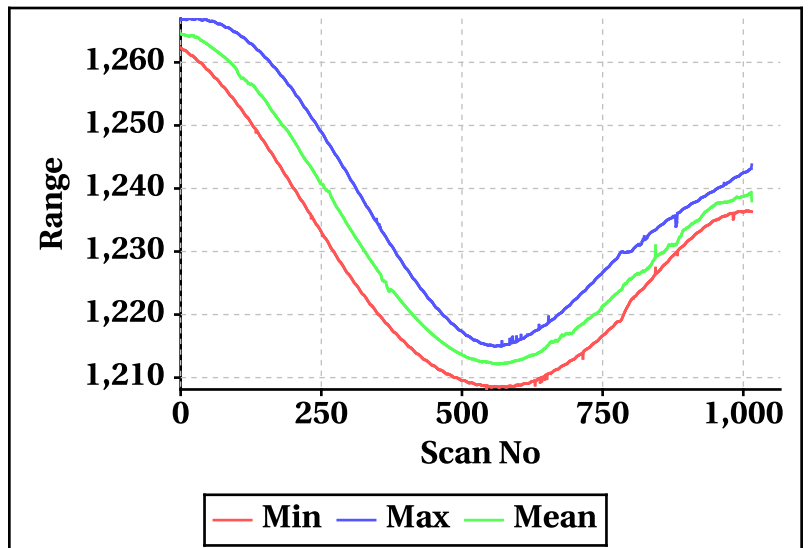
Outer Beam(VV)



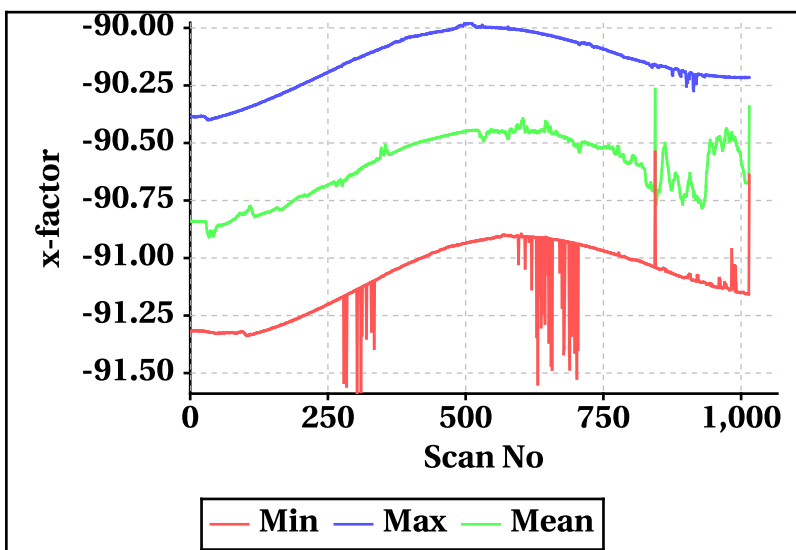
Inner Beam (HH)



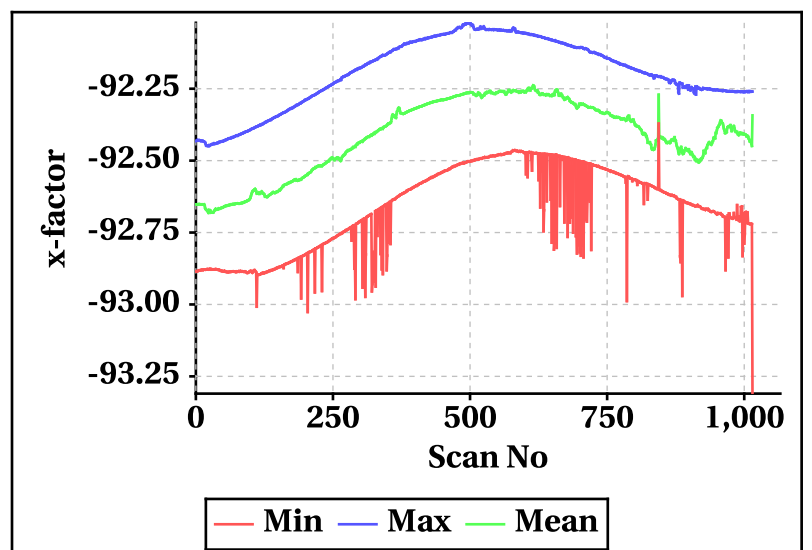
Outer Beam(VV)



Inner Beam (HH)



Outer Beam(VV)

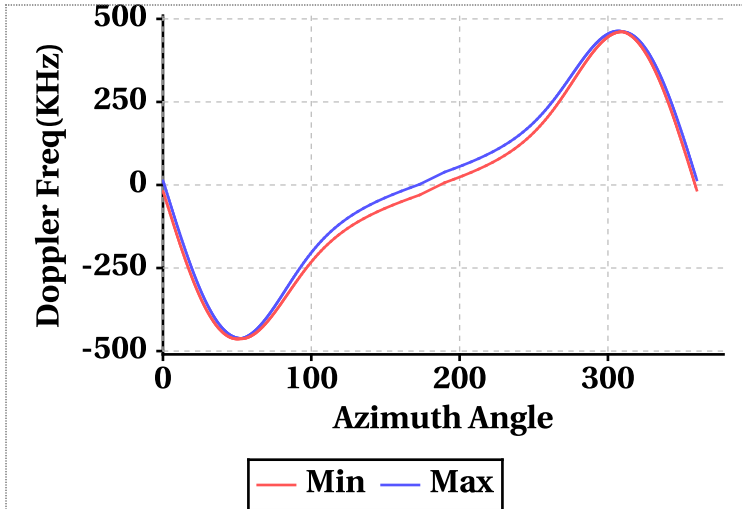


# Doppler Frequency Variation

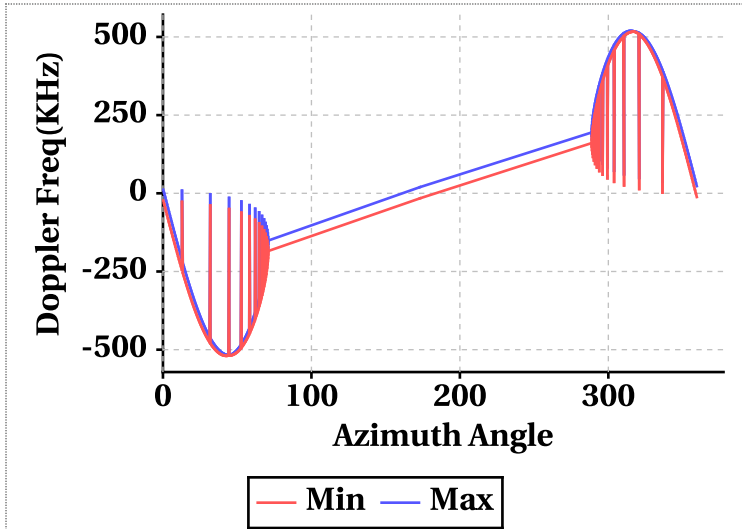
**Doppler Frequency(KHz) variation statistics Over the half Orbit**

	Inner Beam (HH)	Outer Beam (VV)
<b>Min</b>	-463.64	-519.56
<b>Max</b>	463.34	519.28

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



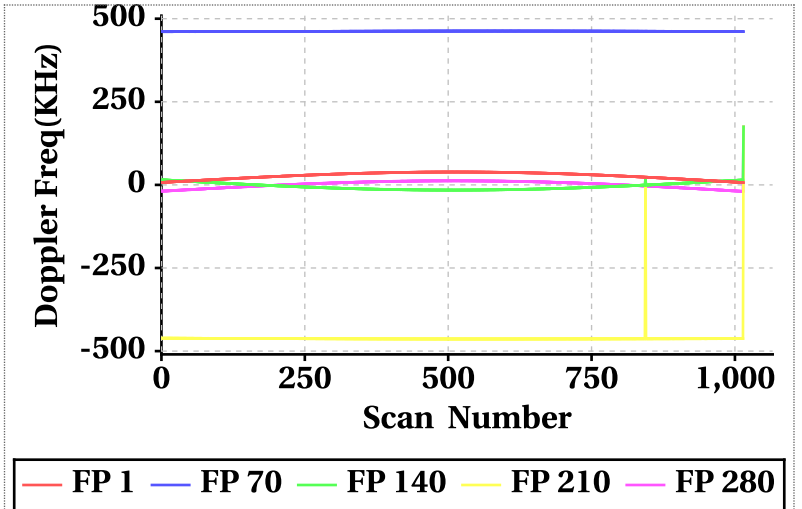
**Footprint wise Doppler frequency variation Outer Beam (VV)**



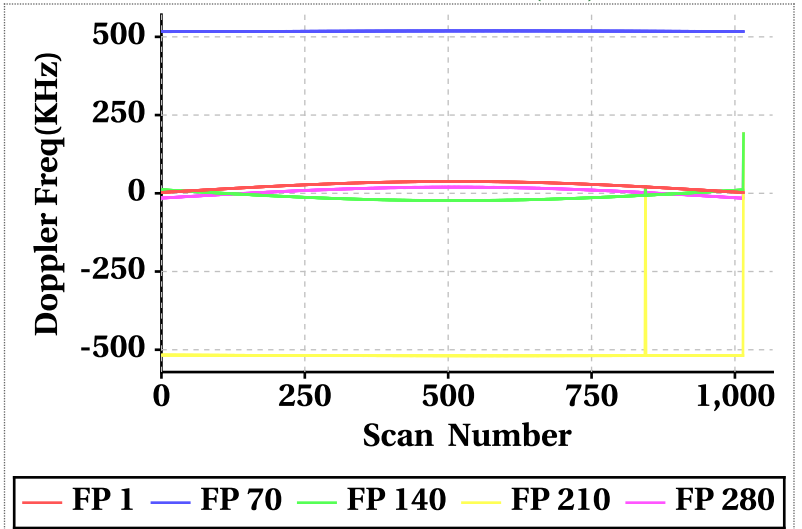
**Doppler Frequency(KHz) variation**

Doppler_FP	Inner Beam (HH)			Outer Beam (VV)		
	Min	Max	Mean	Min	Max	Mean
Doppler_1	6.88	38.76	27.24	2.26	37.84	24.96
Doppler_70	460.92	462.84	462.10	516.50	518.98	518.06
Doppler_140	-15.64	174.86	-4.21	-23.36	190.72	-10.51
Doppler_210	-463.58	174.86	-461.75	-519.36	190.72	-517.42
Doppler_280	-19.68	174.86	1.03	-16.00	190.72	7.08

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

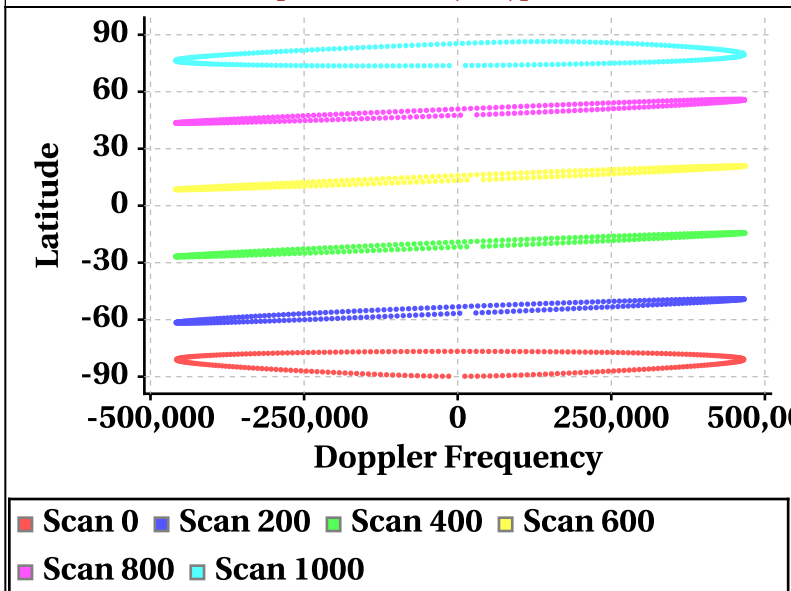


**Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Outer Beam (VV)**

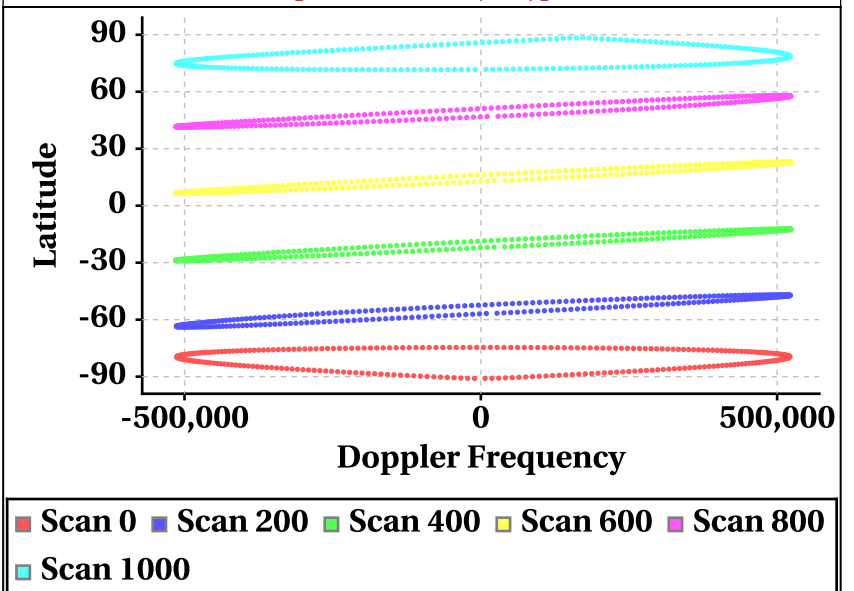


# Latitude Vs Doppler Frequency

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



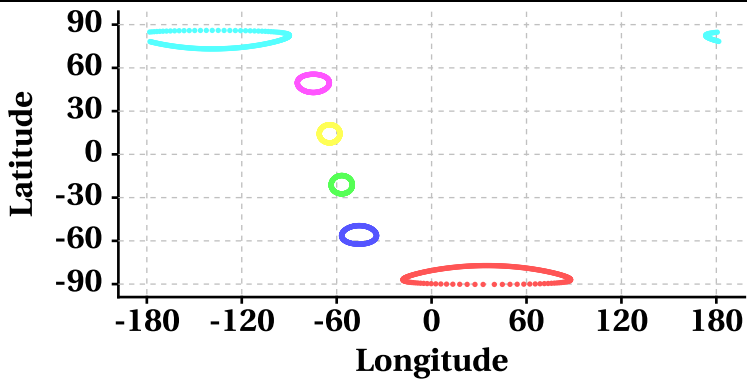
**Doppler Frequency at Scan Interval of 200 [Outer Beam(VV)]**



# Parameter as a function of Latitude

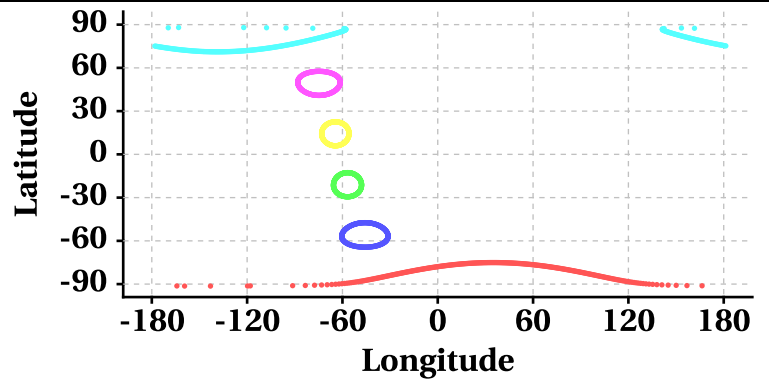
## Latitude Vs Longitude

Scan Trace [Inner Beam(HH)]



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

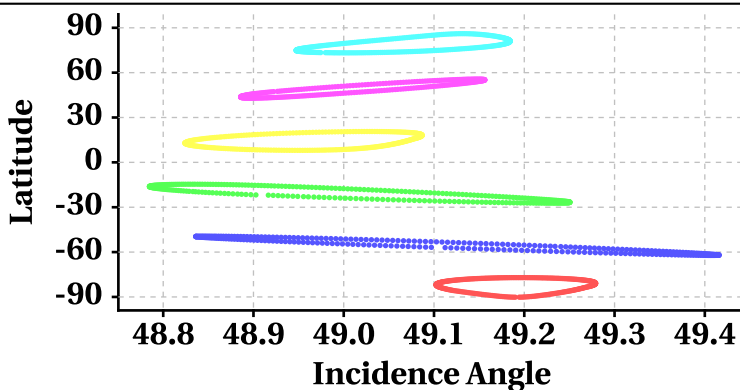
Scan Trace [Outer Beam (VV)]



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

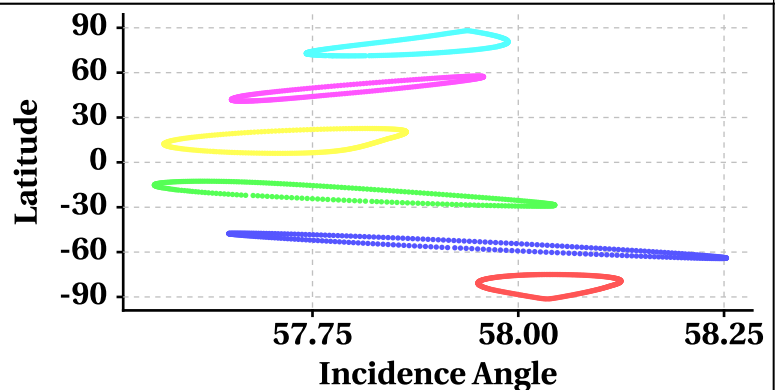
## Latitude Vs Incidence Angle

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



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

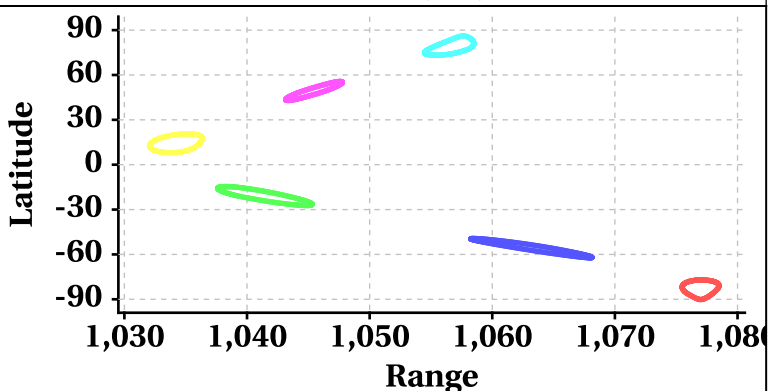
Incidence Angle at Scan Interval of 200 [Outer Beam (VV)]



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

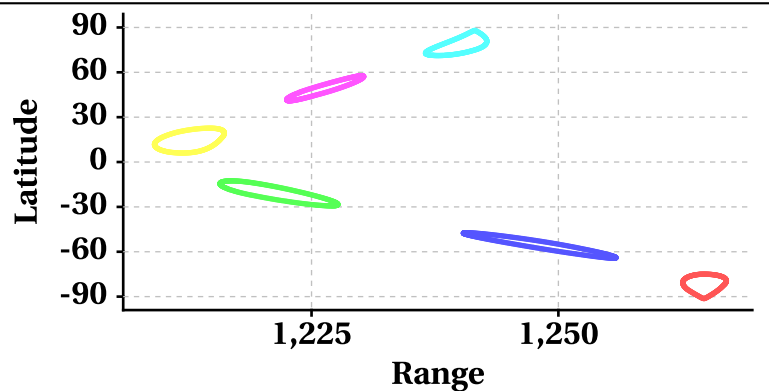
## Latitude Vs Range

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

