

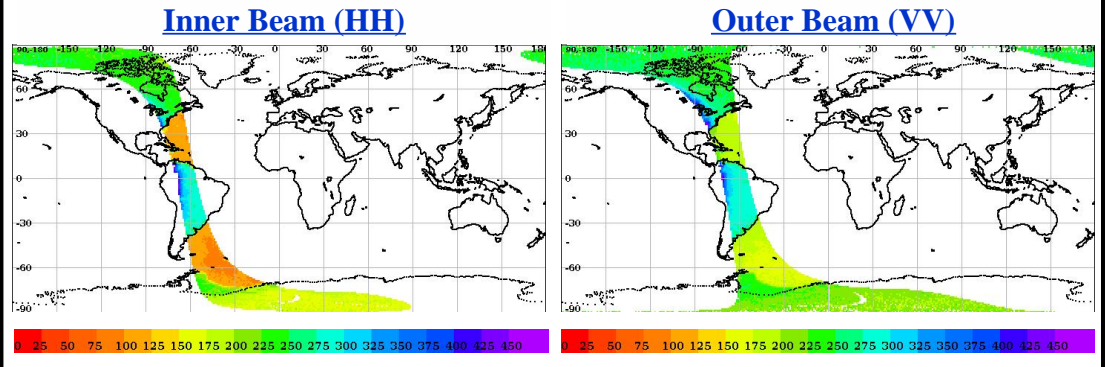
# SCATSAT-1 Scatterometer Level-1B Data Quality Evaluation Report

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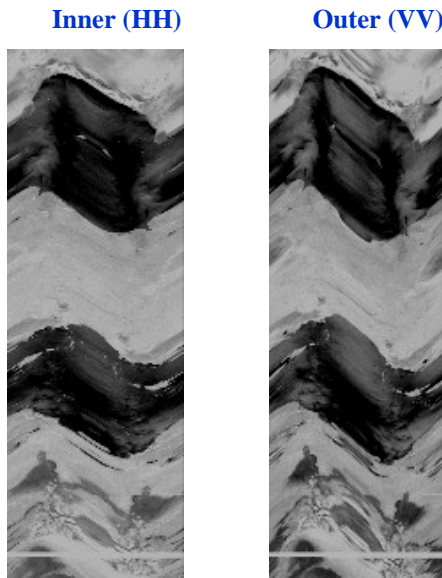
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<b>Satellite Id</b>	ScatSat-1	<b>Start Orbit</b>	12887	<b>Total Scans</b>	1009
<b>Sensor Name</b>	Scatterometer	<b>End Orbit</b>	12888	<b>No of Inner FootPrints</b>	281
<b>Processor Version</b>	v1.1.3	<b>Rev. Number</b>	12887_12888	<b>No Of Outer FootPrints</b>	282
<b>Half Orbit Direction</b>	SN	<b>Data Production Date</b>	04-03-2019	<b>No. Of Inner Slices</b>	9
<b>Equator Crossing Date</b>	04-03-2019	<b>Equator Crossing Time</b>	00:47:16.000	<b>No Of Outer Slices</b>	15

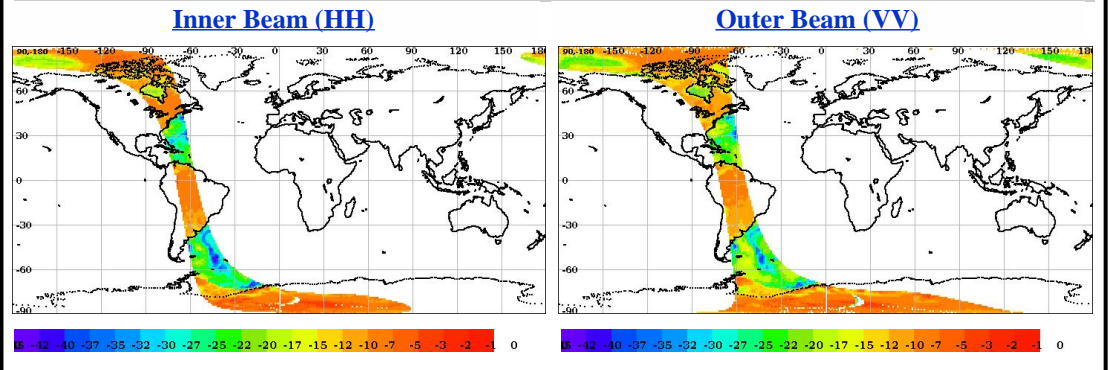
## Brightness Temperature(k) Footprint trace



## Image Snapshot for Inner & Outer Beam



## Sigma0(dB) Footprint trace



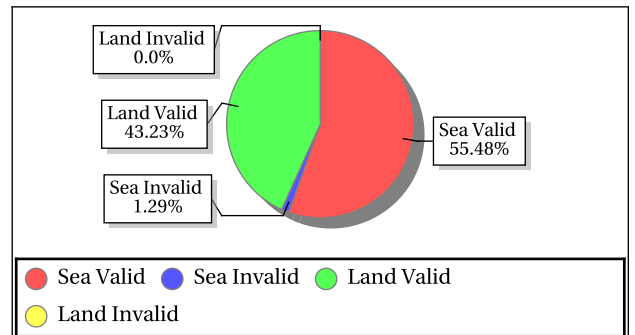
## Invalid and Poor Sigma-0 Quality Flag Statistics for Inner/Outer Slices\*

<b>Sigma-0 Flags</b>	<b>Inner Beam</b>	<b>Outer Beam</b>
<b>Invalid Sigma0(%)</b>	1.24	2.61
<b>Data Not Available From Payload (%)</b>	74.74932	35.66129
<b>Slice not within sample array limits (%)</b>	25.25	64.34
<b>C(S+N) - C(N) &lt; 0.1 (%)</b>	0.00	0.00
<b>Poor Sigma0(%)</b>	22.32	13.32
<b>Noise samples for blending Saturated</b>	1.47245	0.698683
<b>Count samp. for interpol. saturated (%)</b>	0.00	0.00
<b>Sigma0 &lt; lower bound (-96dB) (%)</b>	0.0	0.0
<b>Sigma0 &gt; upper bound (0 dB) (%)</b>	0.00	0.00
<b>SNR &lt; -65 dB (%)</b>	0.019485	0.03818

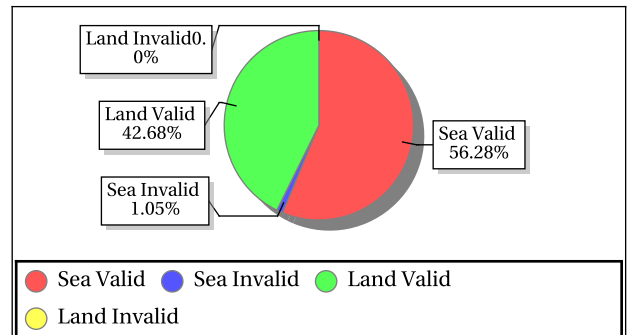
\*DP Format Document

## 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	-9.70	-7.22	-8.51	0.63	257.61	331.60	293.79	16.56
Amazon_3	-6.00	-61.00	Inner	ASC	Fore	-9.21	-6.96	-8.13	0.60	246.92	329.43	292.15	20.07
Amazon_2	-3.00	-61.00	Inner	ASC	Aft	-13.52	-7.45	-9.37	1.21	211.04	344.01	275.04	26.57
Amazon_2	-3.00	-61.00	Inner	ASC	Fore	-12.10	-7.37	-9.16	1.00	209.52	320.94	267.72	25.36
Amazon_1	0.00	-67.00	Inner	ASC	Aft	-9.55	-6.75	-8.16	0.55	366.32	523.93	433.51	33.82
Amazon_1	0.00	-67.00	Inner	ASC	Fore	-9.28	-6.87	-8.04	0.60	279.45	377.97	326.22	21.95
Amazon_3	-6.00	-61.00	Outer	ASC	Aft	-10.39	-8.58	-9.57	0.49	257.49	327.63	288.55	17.87
Amazon_3	-6.00	-61.00	Outer	ASC	Fore	-10.29	-7.80	-9.03	0.54	245.99	334.99	292.42	16.79
Amazon_2	-3.00	-61.00	Outer	ASC	Aft	-13.12	-8.82	-10.44	0.96	234.39	328.70	284.69	20.98
Amazon_2	-3.00	-61.00	Outer	ASC	Fore	-11.51	-8.71	-9.95	0.80	250.97	306.07	280.42	15.79
Amazon_1	0.00	-67.00	Outer	ASC	Aft	-9.70	-7.69	-8.76	0.50	290.67	367.66	324.94	18.27
Amazon_1	0.00	-67.00	Outer	ASC	Fore	-9.42	-7.57	-8.68	0.49	264.68	353.55	308.01	19.82



## 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	266.86	0.28	1.617	0.12	162.64	0.22	1.276	0.12	19.56	0.12	0.002	0.12	0.33	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	0.02	0.01	0.000
<b>Kpb</b>	0.02	0.02	0.02	0.000	0.02	0.03	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	0.02	0.01	0.000	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000
<b>SNR</b>	-34.40	25.95	6.18	1.845	-32.25	26.07	7.38	4.038	-23.03	29.42	20.29	14.125	-3.77	30.66	20.91	27.149

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	120.17	0.22	1.661	0.09	187.61	0.24	1.700	0.09	0.66	0.09	0.000	0.09	0.22	0.09	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	0.01	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>	-32.10	21.86	3.49	0.000	-34.04	22.31	4.45	0.003	-9.03	22.53	14.55	0.014	-3.14	23.14	14.82	0.028

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>	48.70	49.39	49.04	0.000	57.42	58.21	57.86	0.000	Inci.(Inner)	47.10	49.90
<b>Azimuth Diff. (deg)</b>	0.0000	246.83	1.28	2.956	0.0000	291.91	1.28	4.095	Inci.(Outer)	57.30	58.90
<b>Range(Km)</b>	1016.71	1085.03	1041.90	29.388	1190.62	1274.77	1220.99	44.830	Azimuth Diff.	0.60	2.00
<b>X Factor(dbm)</b>	-92.53	-89.72	-90.33	0.000	-93.87	-91.77	-92.15	0.000	Range(Inner)	1025.00	1095.70
<b>Across Distance (Km)</b>	15.42	15.93	15.64	0.000	6.28	49.82	20.68	5.000	Range(Outer)	1210.00	1280.00
<b>Along Distance (Km)</b>	18.92	11174.42	281.94	34.000	18.66	11380.65	118.29	12.000	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

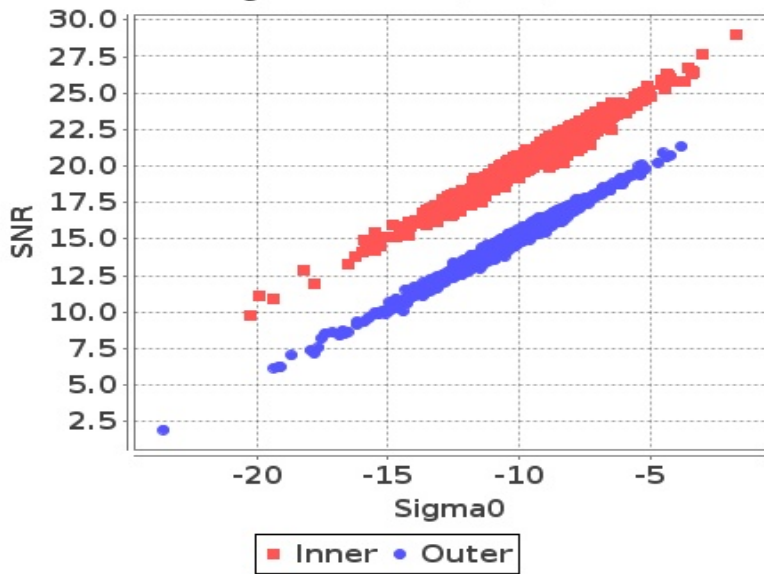
- Normal
- Deviations
- Alarming
- High Errors



## Sigma0 Behaviour (Sigma0 Vs SNR)

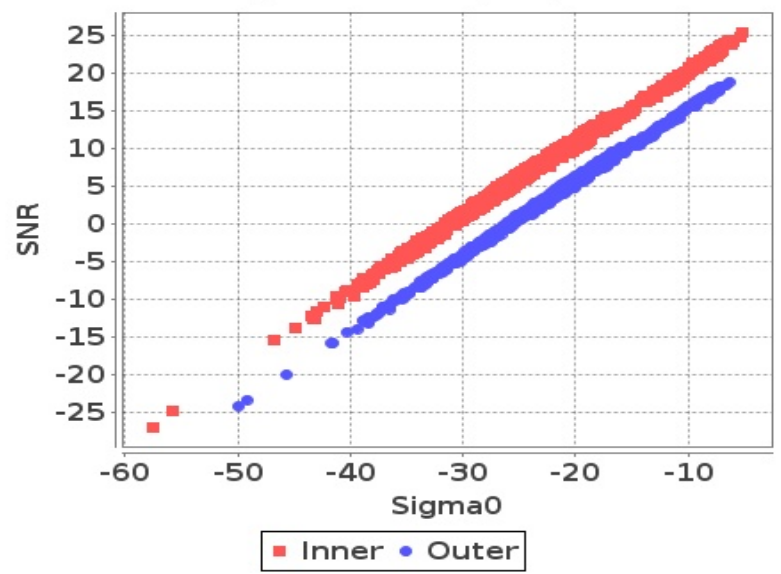
Footprint-Land

Sigma0 Vs SNR (Land)



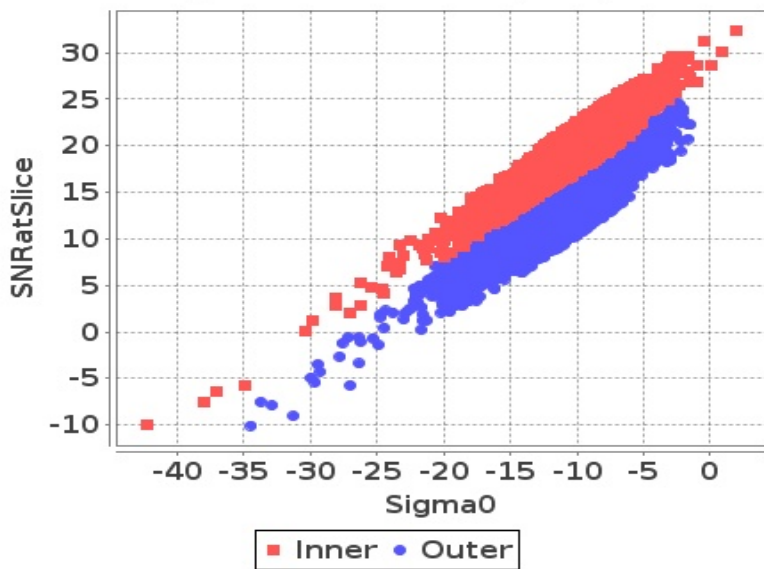
Footprint-Sea

Sigma0 Vs SNR (Sea)



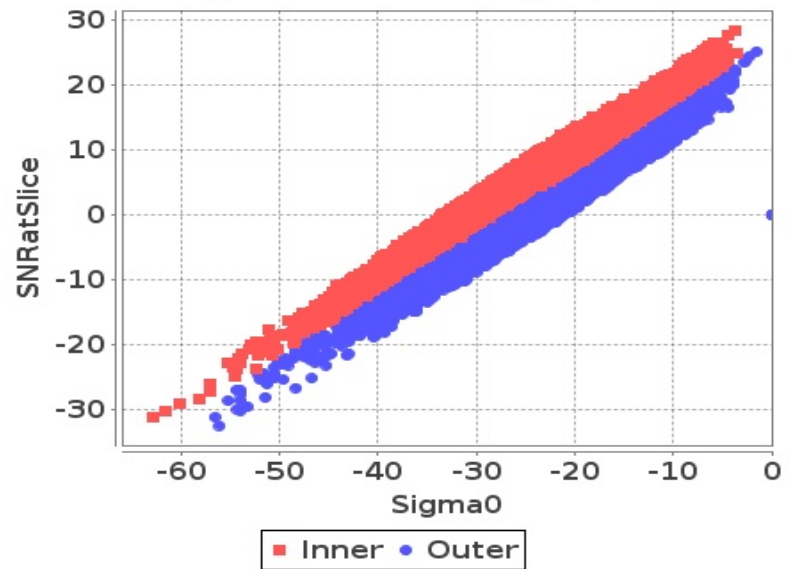
Slice-Land

Sigma0 Vs SNRatSlice (Land)



Slice-Sea

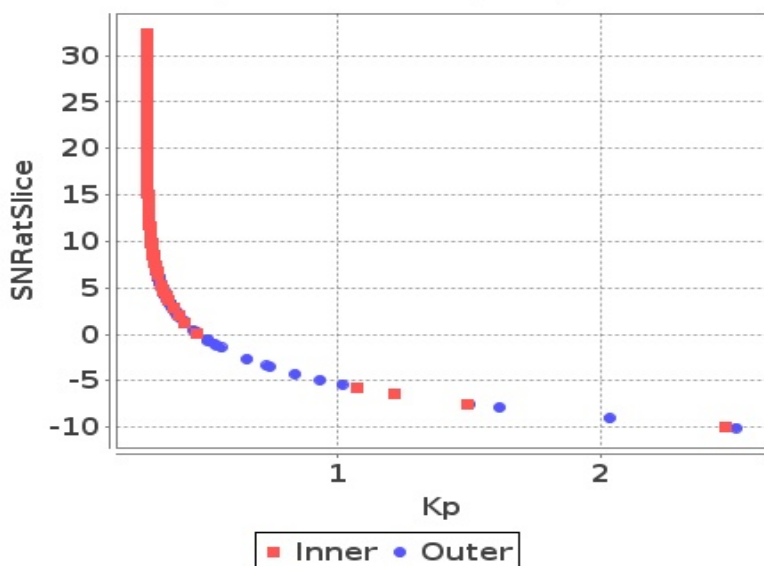
Sigma0 Vs SNRatSlice (Sea)



## Sigma0 Behaviour (Kp Vs SNR)

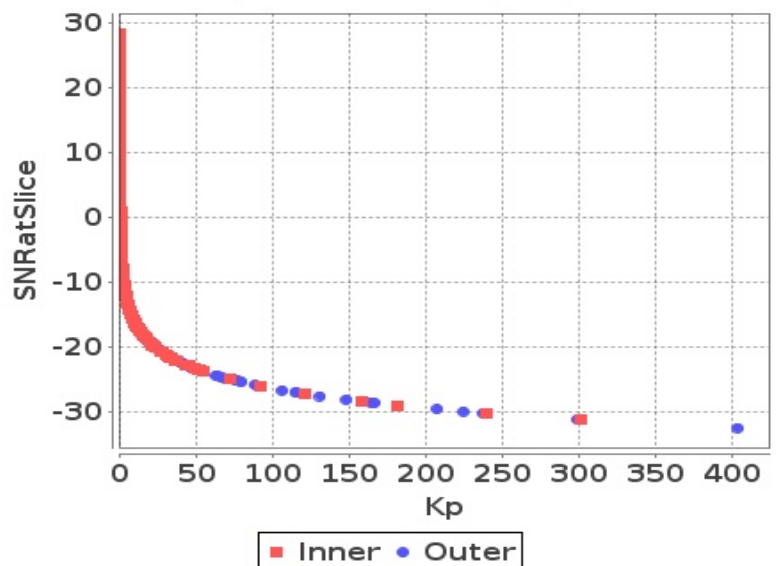
Slice

Kp Vs SNRatSlice (Land)



Slice

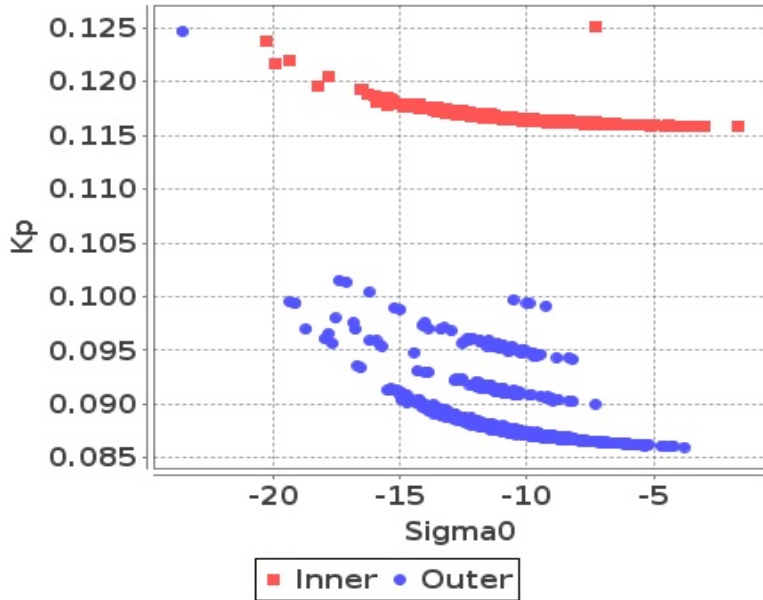
Kp Vs SNRatSlice (Sea)



# Sigma0 Behaviour(Sigma0 Vs Kp)

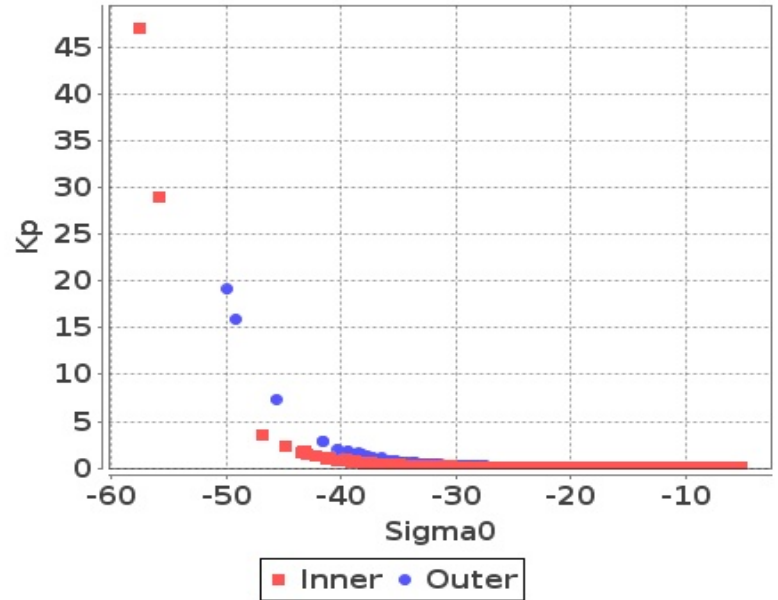
## Footprint-Land

### Sigma0 Vs Kp (Land)



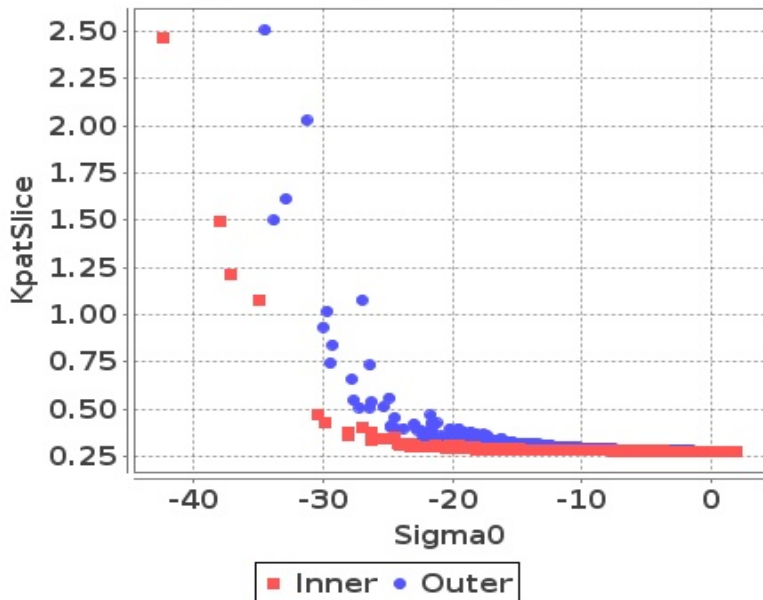
## Footprint-Sea

### Sigma0 Vs Kp (Sea)



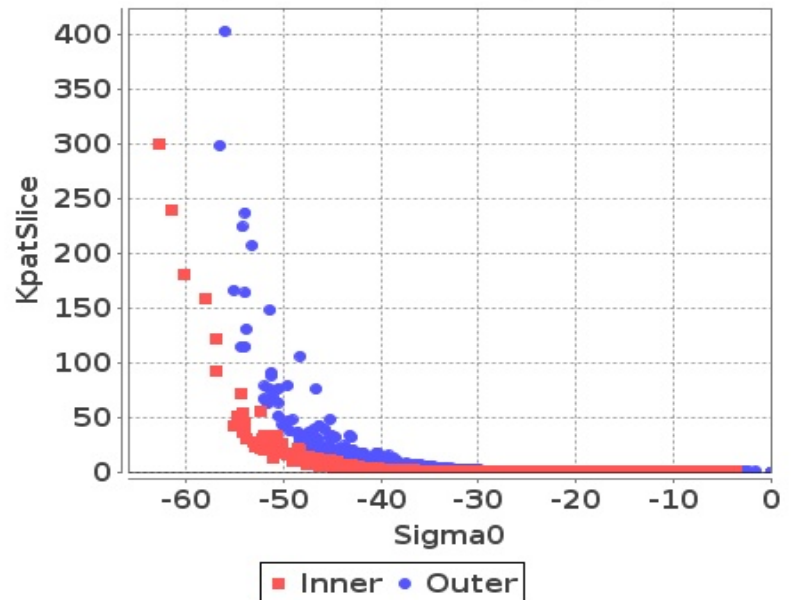
## Slice-Land

### Sigma0 Vs KpatSlice (Land)



## Slice-Sea

### Sigma0 Vs KpatSlice (Sea)



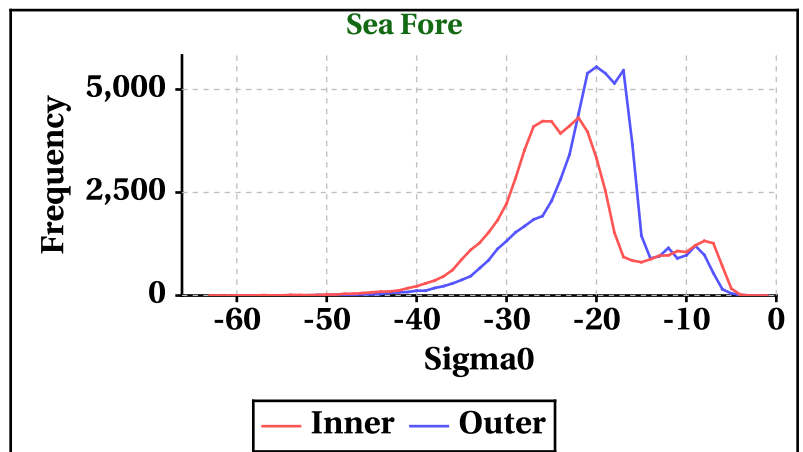
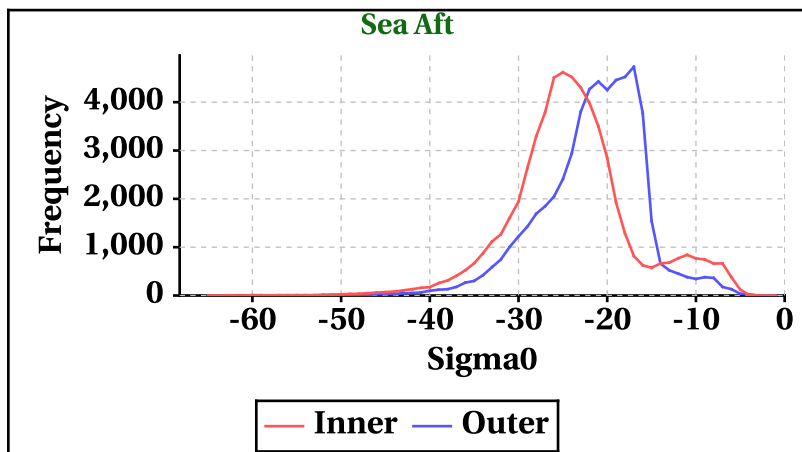
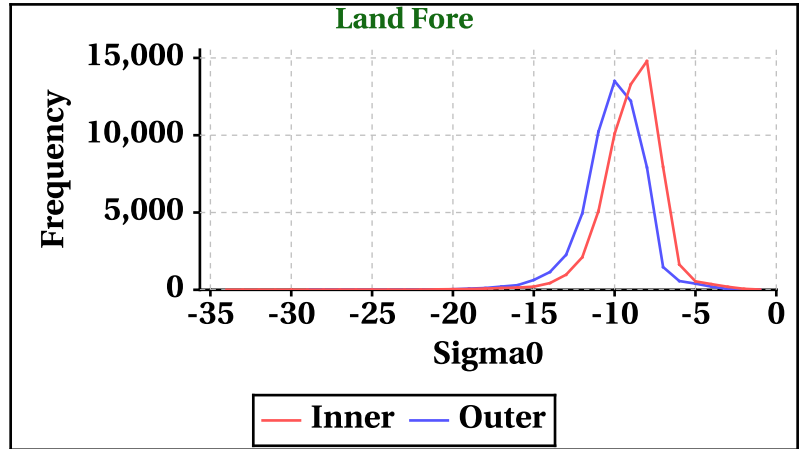
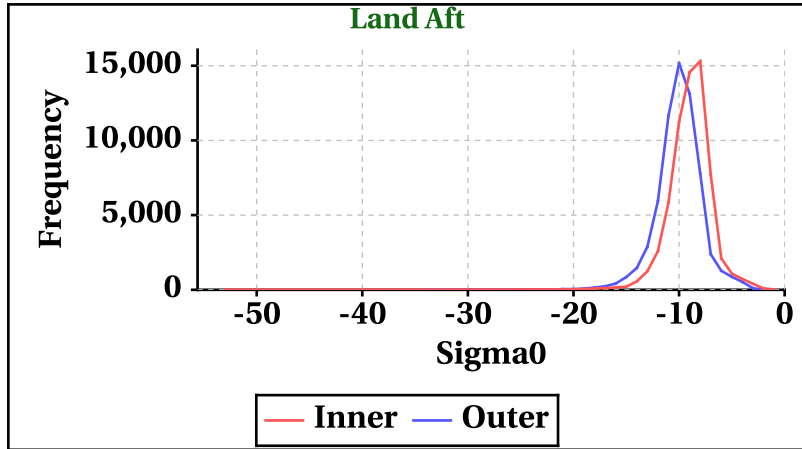


# Dynamic Range (Data Histograms)

## Sigma0(db)

Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-53	-34	-65	-63
Max	0	0	0	0

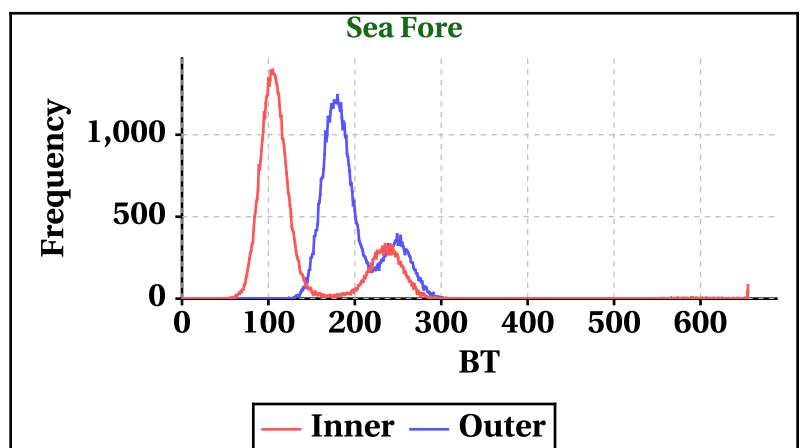
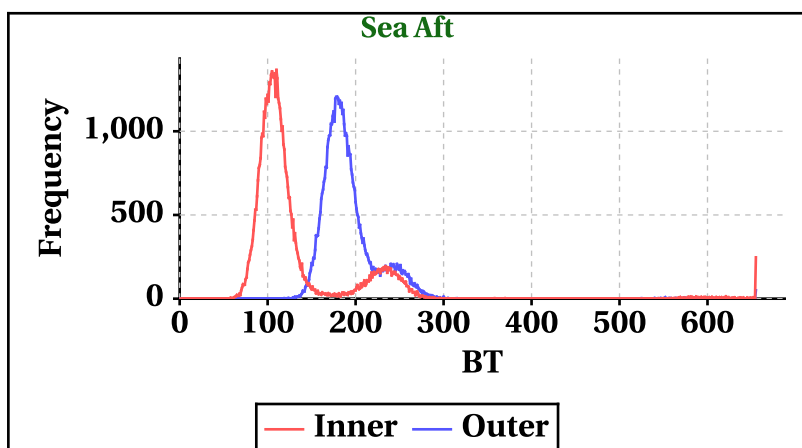
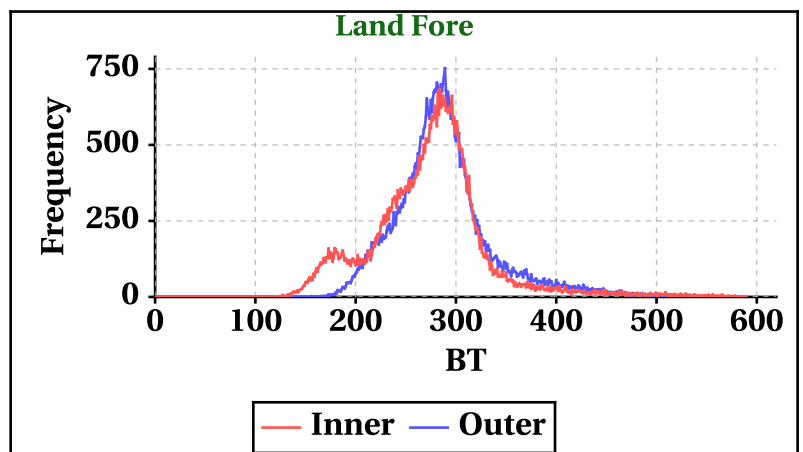
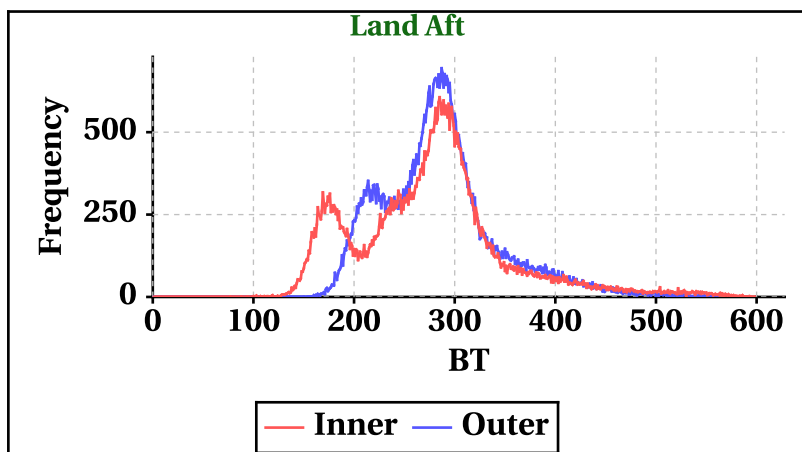
Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-34	-29	-57	-60
Max	0	0	0	0



## Brightness Temperature(K)

Inner Beam(HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	598	590	655	655

Outer Beam(VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	562	561	655	655

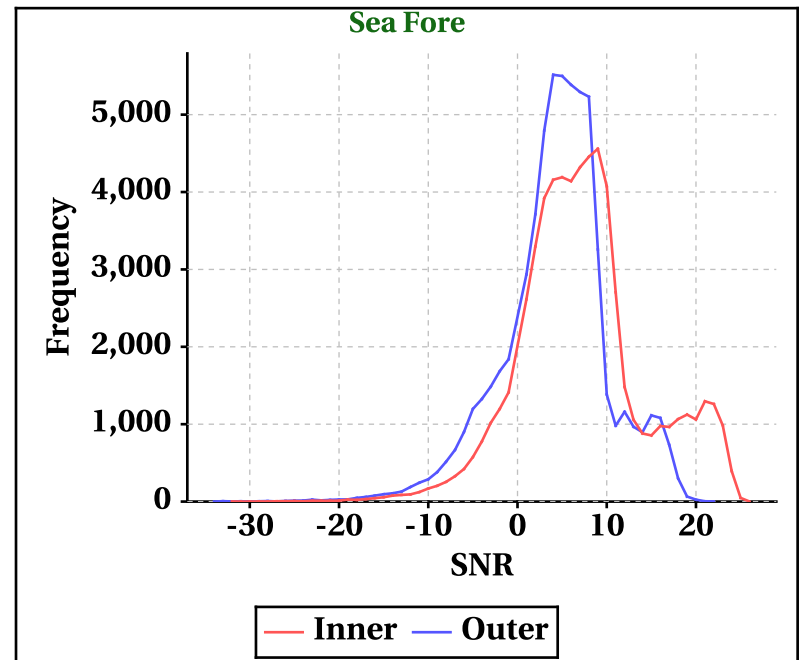
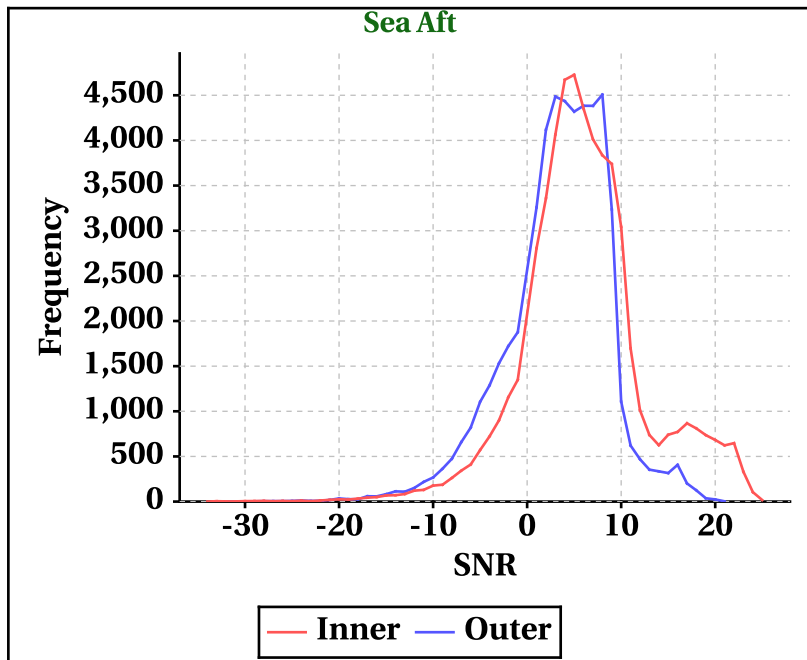
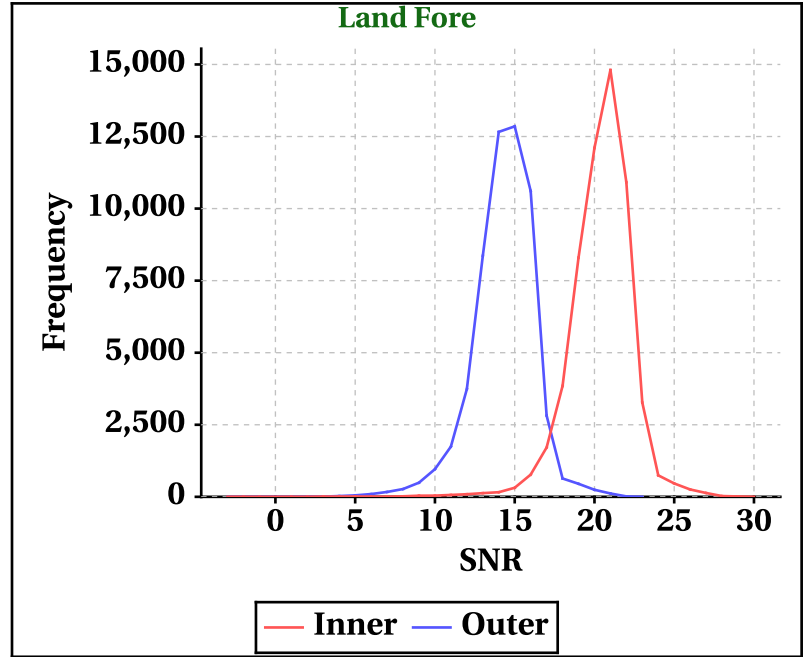
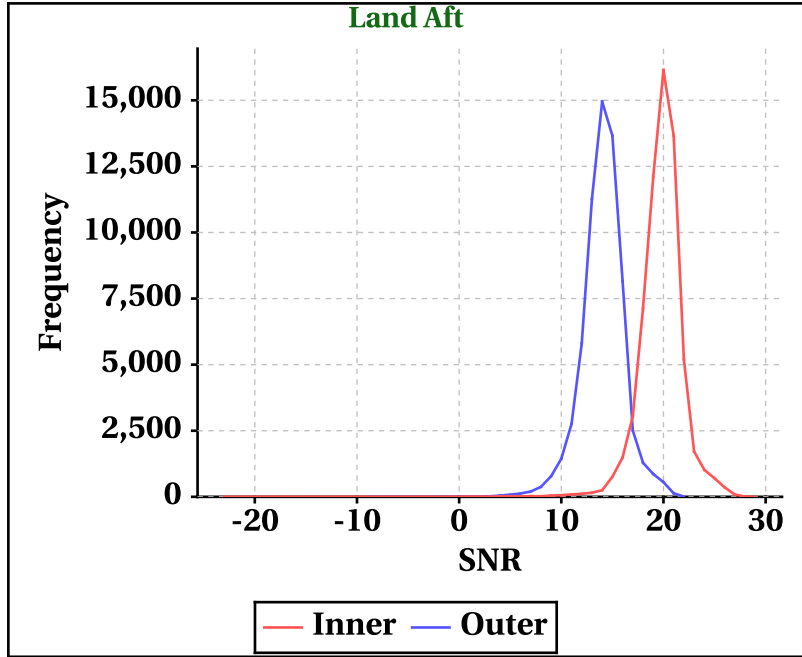


# Dynamic Range (Data Histograms)

## SNR(dBm)

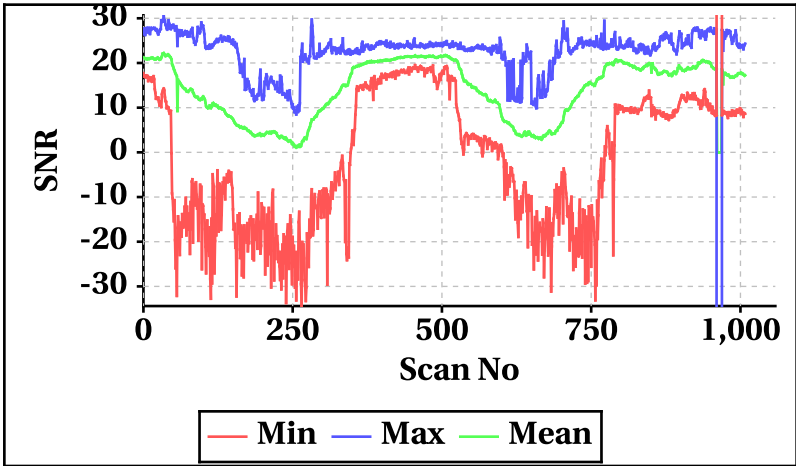
Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-23	-3	-34	-32
Max	29	30	25	26

Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-9	-3	-32	-34
Max	22	23	21	22

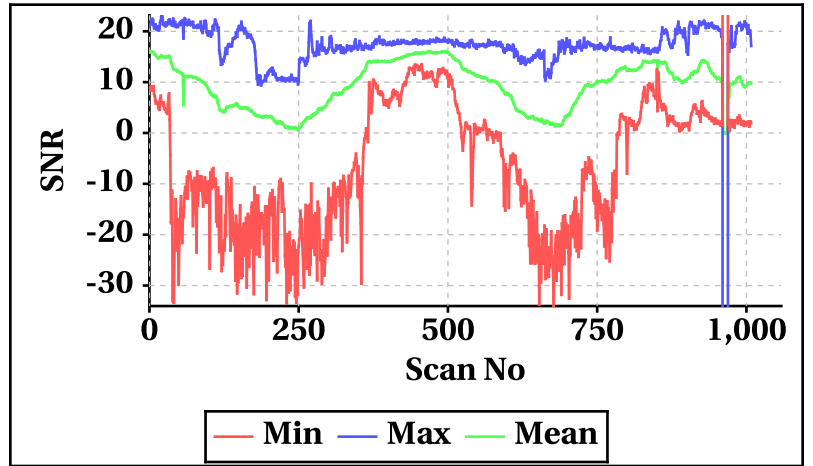


## Orbit-wise behaviour of SNR

Inner Beam (HH)

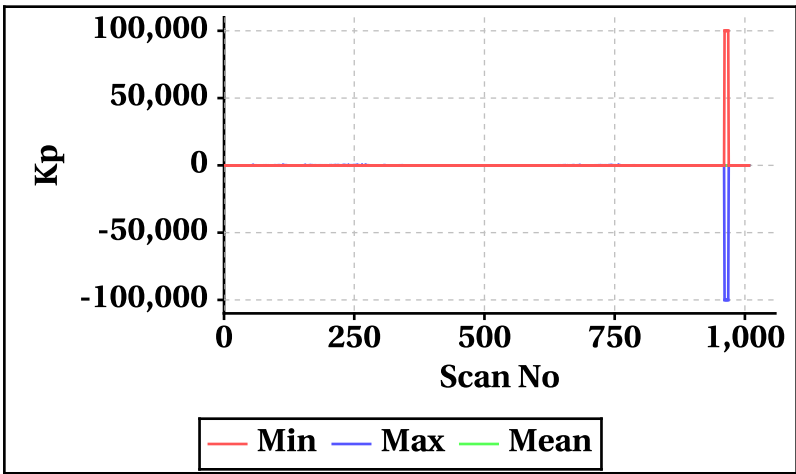


Outer Beam(VV)

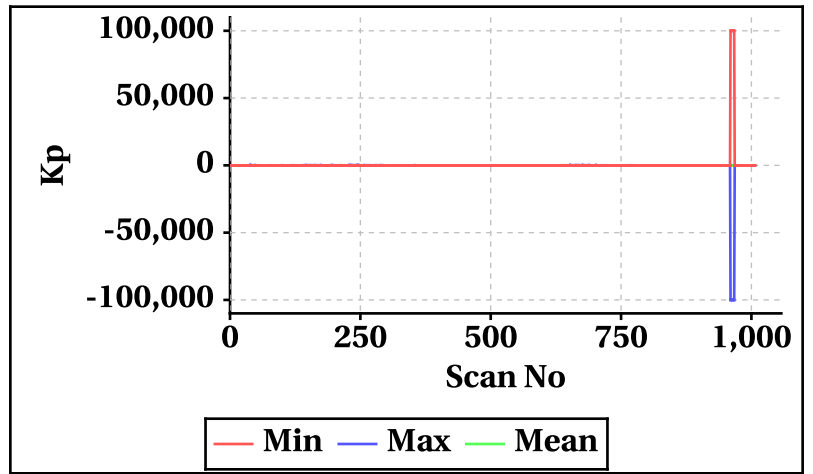


## Orbit-wise behaviour of Kp,Kpa,Kpb,Kpc

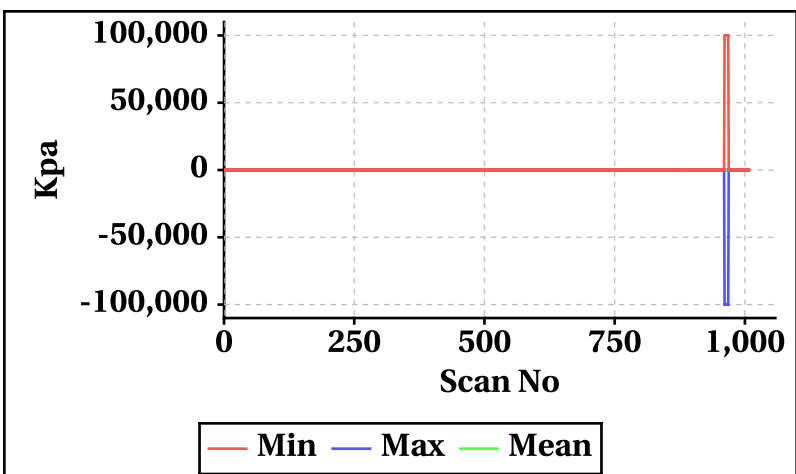
Inner Beam(HH)



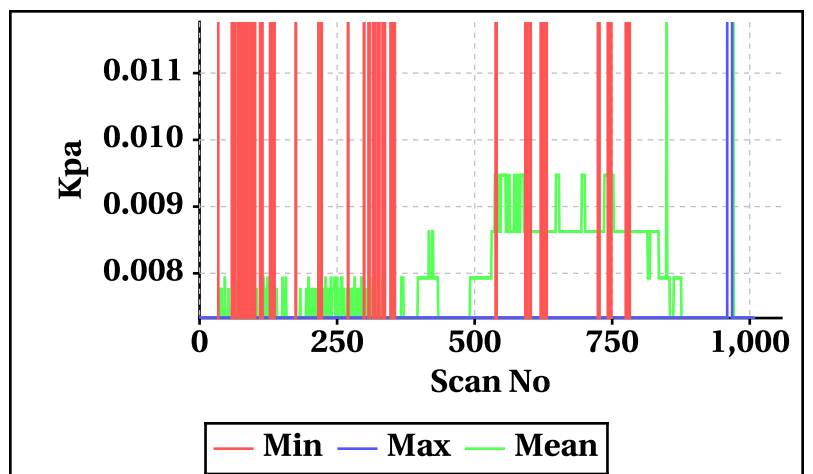
Outer Beam(VV)



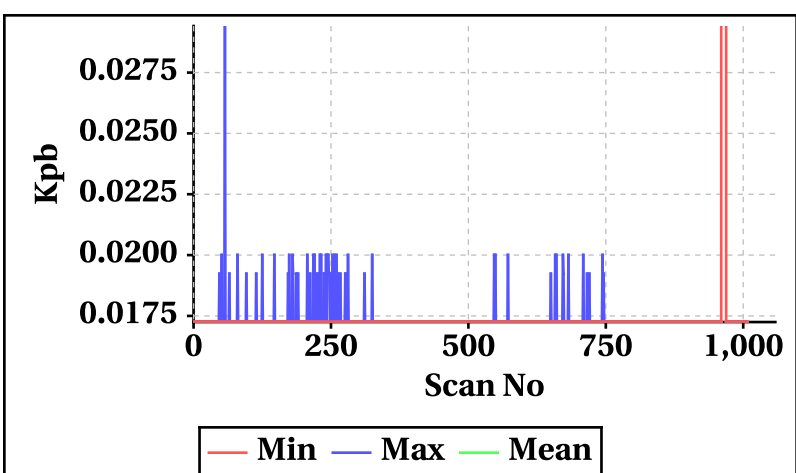
Inner Beam(HH)



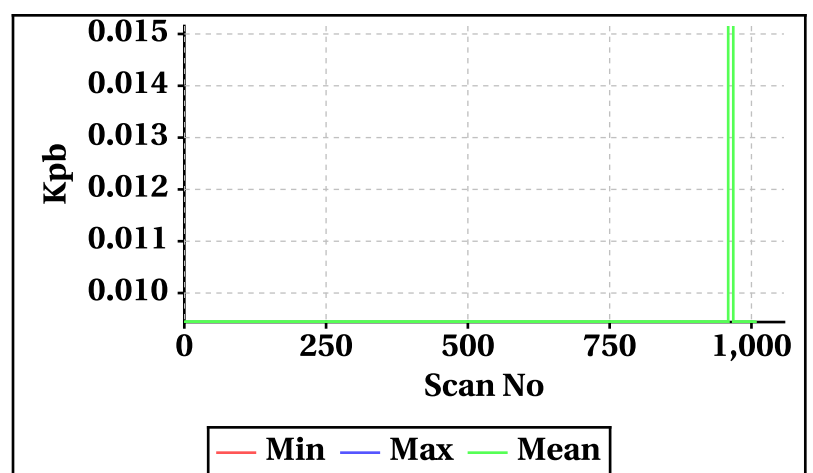
Outer Beam(VV)



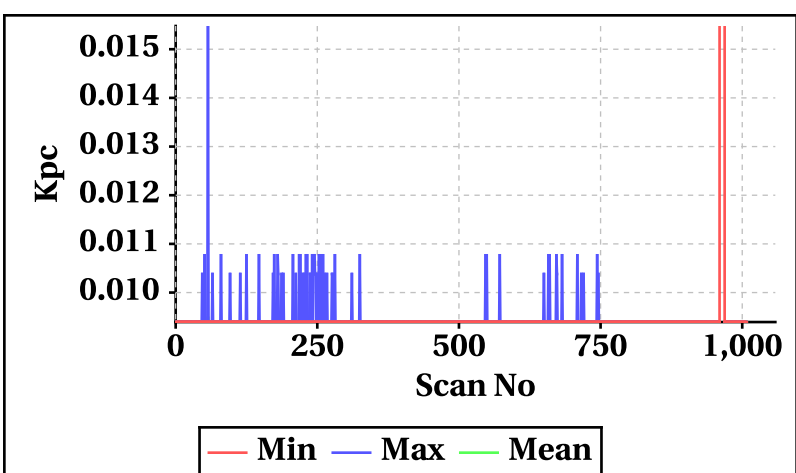
Inner Beam(HH)



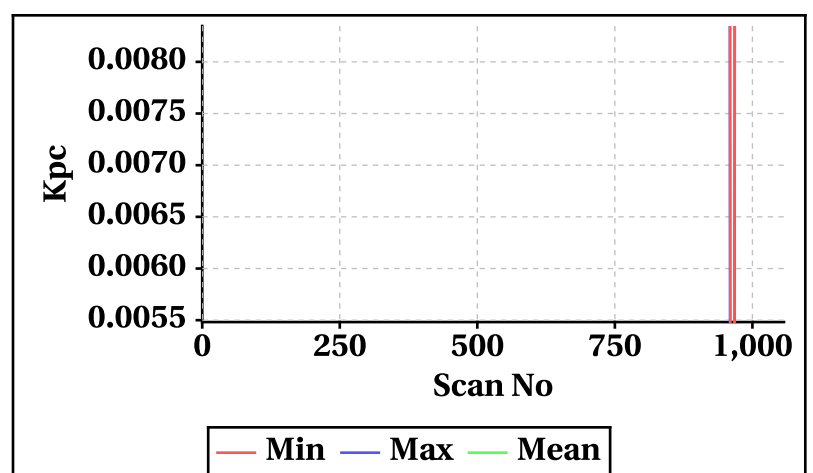
Outer Beam(VV)



Inner Beam(HH)



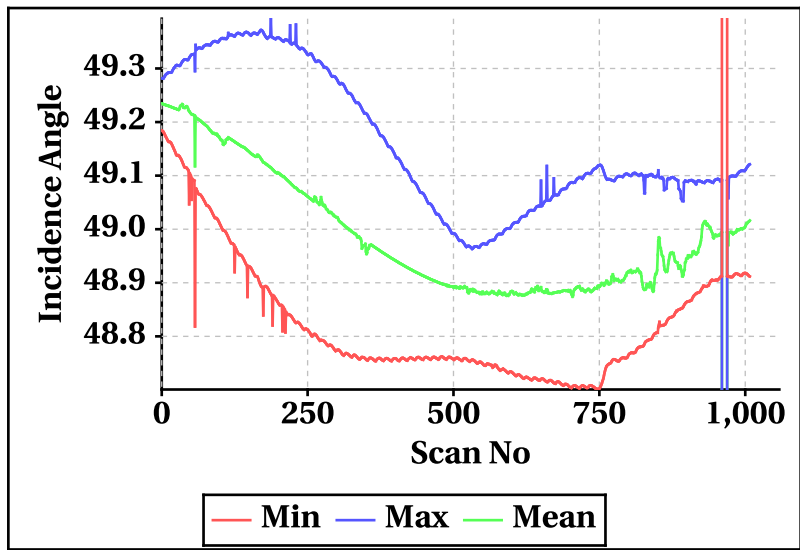
Outer Beam(VV)



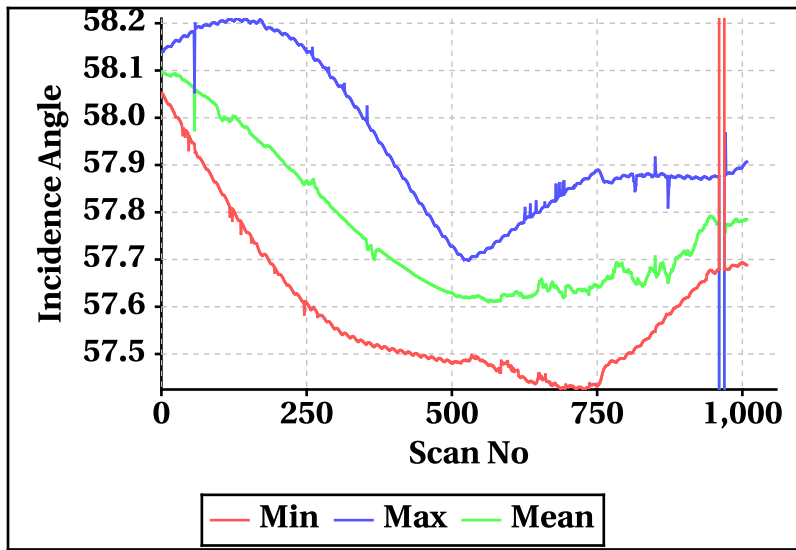


# Orbit-wise behaviour of Incidence, Azimuth, Range, X-Factor

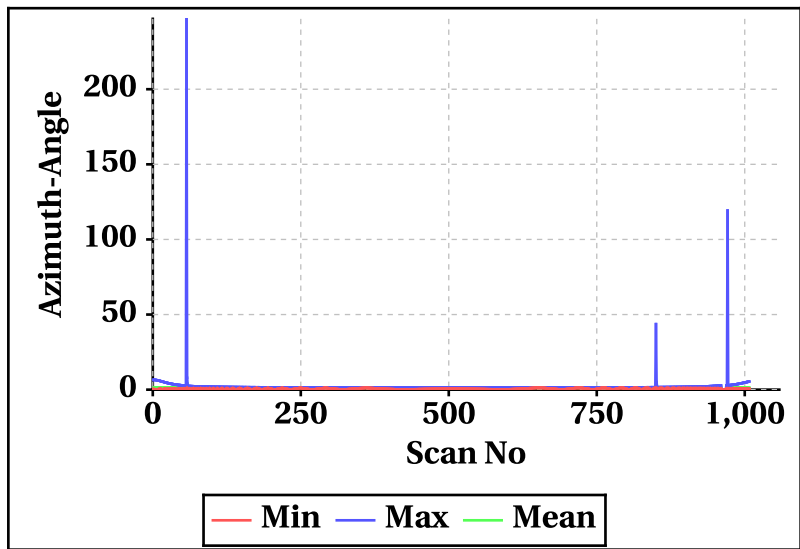
**Inner Beam (HH)**



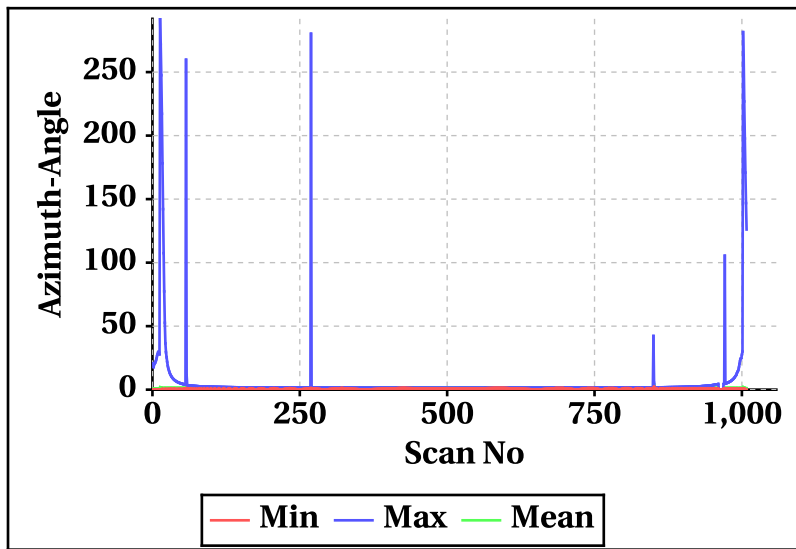
**Outer Beam(VV)**



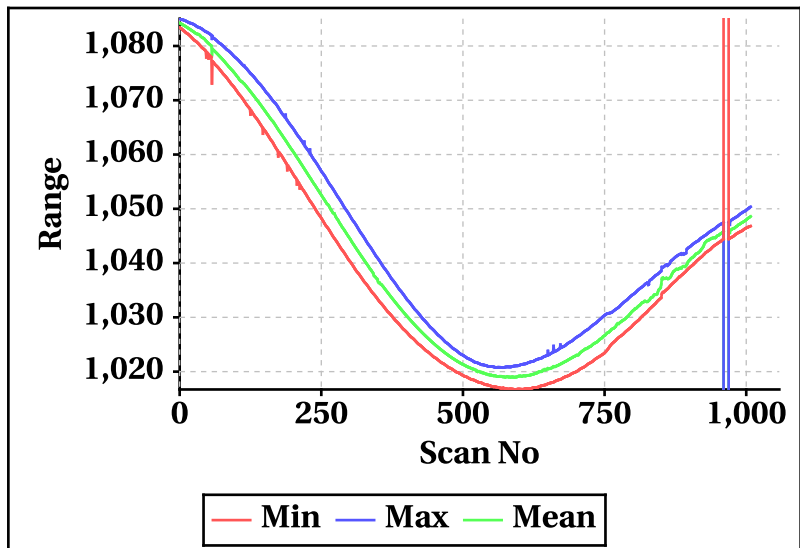
**Inner Beam (HH)**



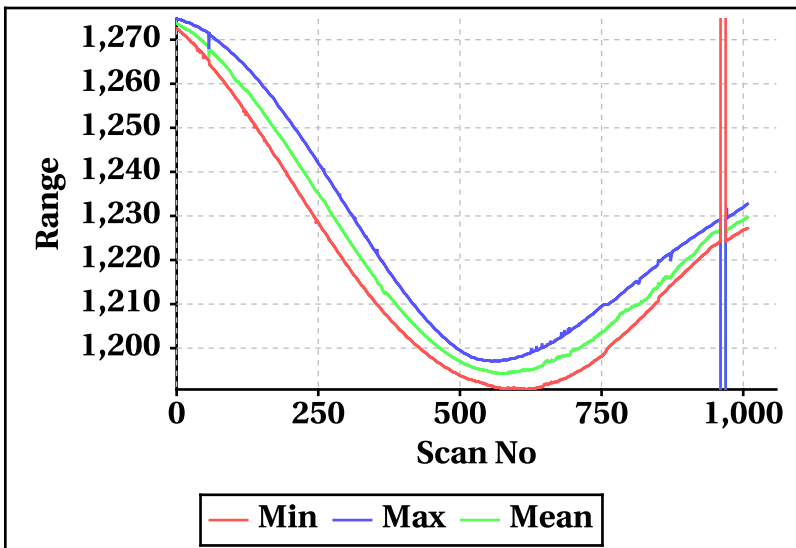
**Outer Beam(VV)**



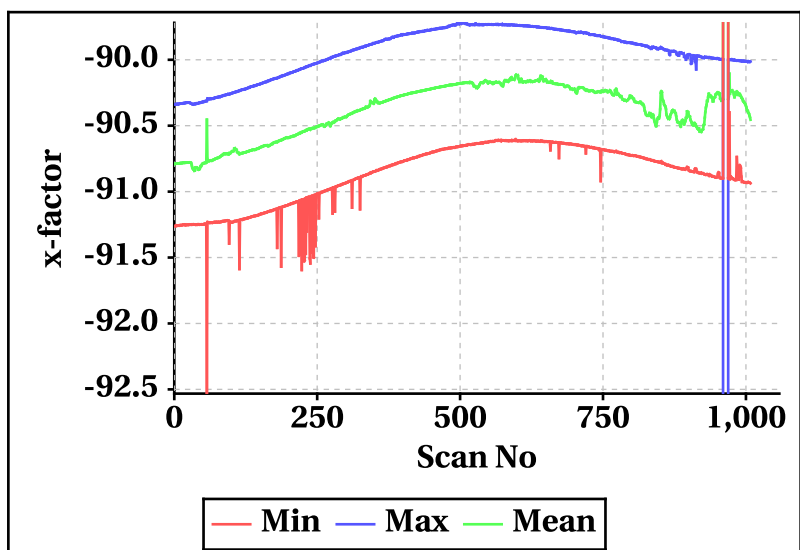
**Inner Beam (HH)**



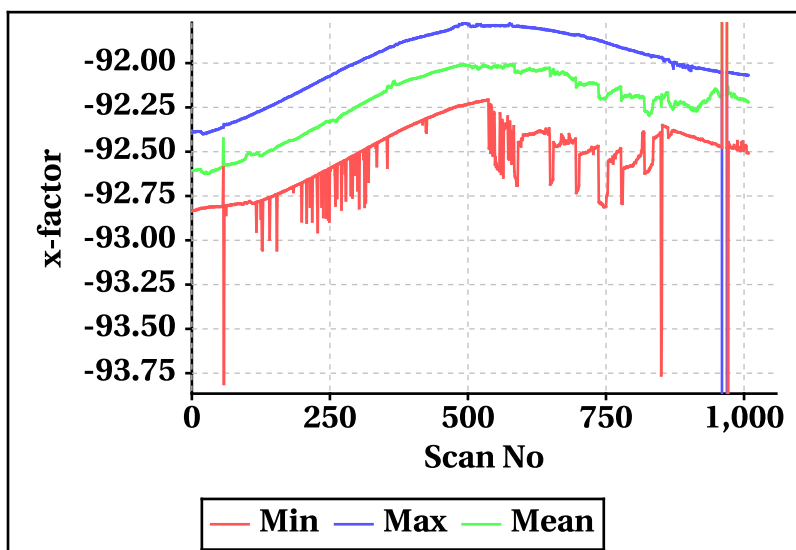
**Outer Beam(VV)**



**Inner Beam (HH)**



**Outer Beam(VV)**

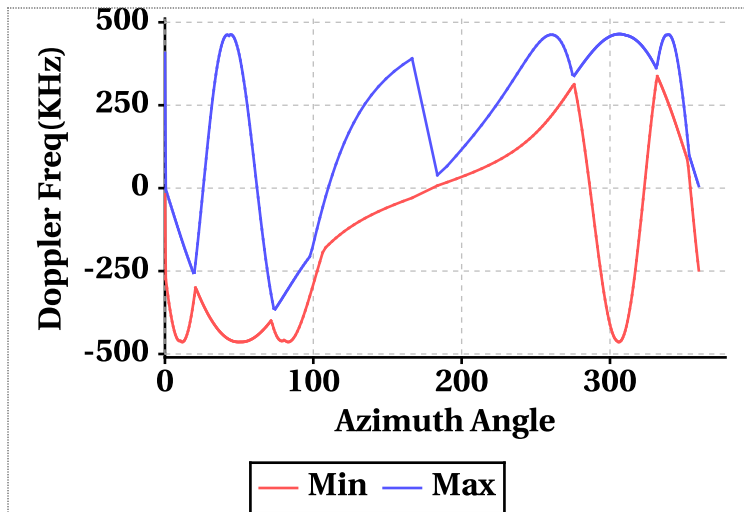


# Doppler Frequency Variation

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

	Inner Beam (HH)	Outer Beam (VV)
<b>Min</b>	-463.82	-519.88
<b>Max</b>	464.52	520.46

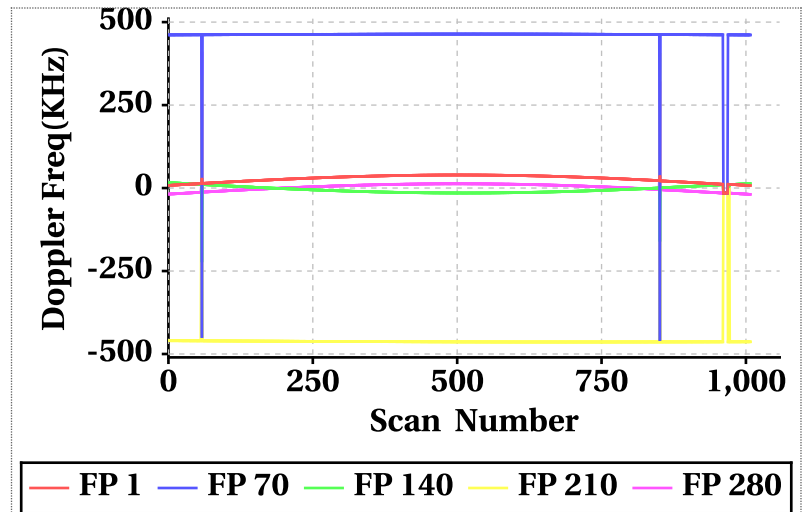
**Footprint wise Doppler frequency variation Inner Beam (HH)**



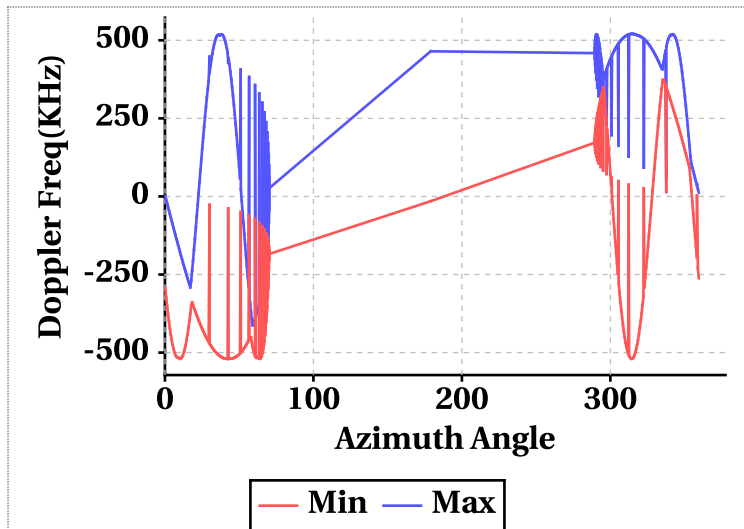
**Doppler Frequency(KHz) variation**

Doppler_FP	Inner Beam (HH)			Outer Beam (VV)		
	Min	Max	Mean	Min	Max	Mean
Doppler_1	-15.20	39.36	27.60	-10.94	38.34	25.31
Doppler_70	-456.66	464.00	457.39	-514.48	520.14	512.71
Doppler_140	-219.36	16.54	-4.51	-262.04	12.56	-10.88
Doppler_210	-463.82	402.56	-456.60	-519.74	442.02	-511.74
Doppler_280	-19.12	407.32	2.14	-15.28	464.76	8.22

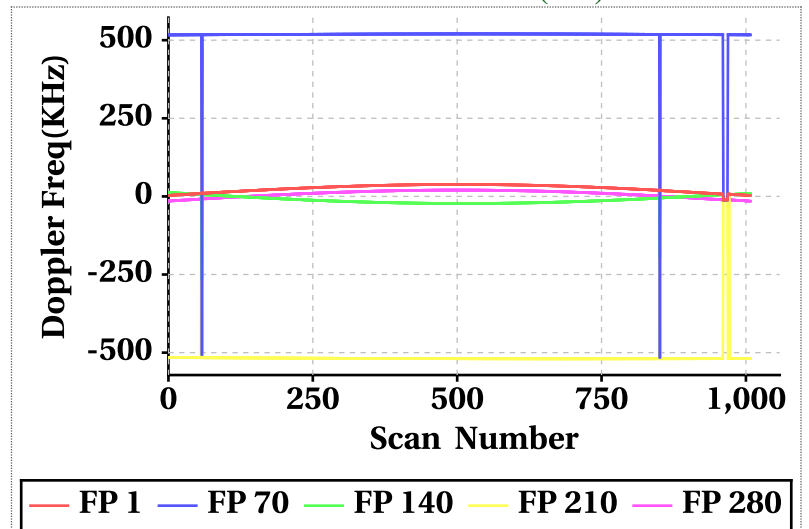
**Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Inner Beam (HH)**



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

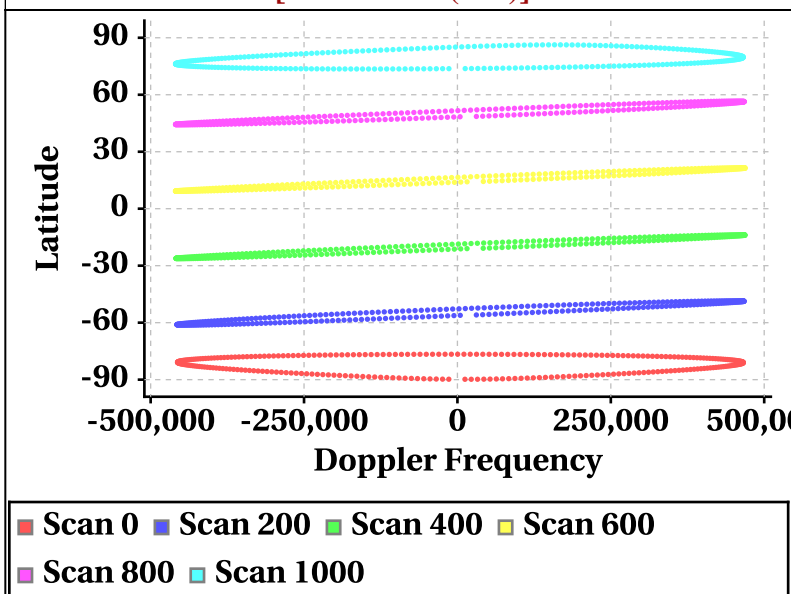


**Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Outer Beam (VV)**

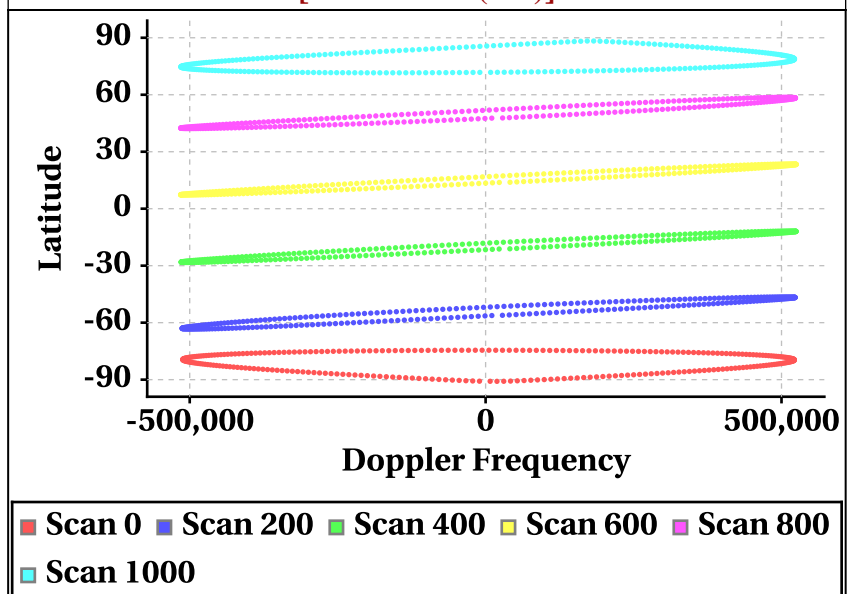


# Latitude Vs Doppler Frequency

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



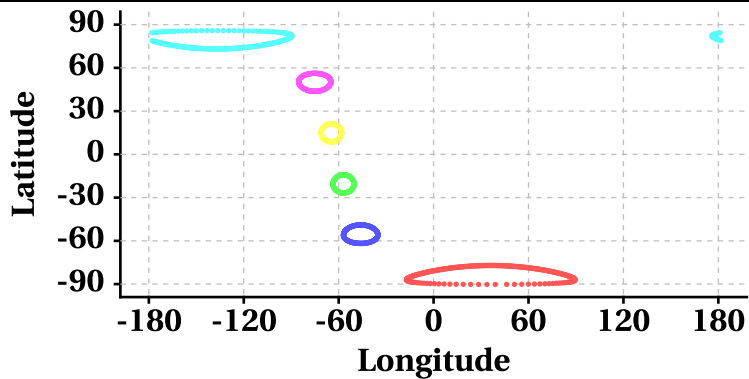
**Doppler Frequency at Scan Interval of 200 [Outer Beam(VV)]**



# Parameter as a function of Latitude

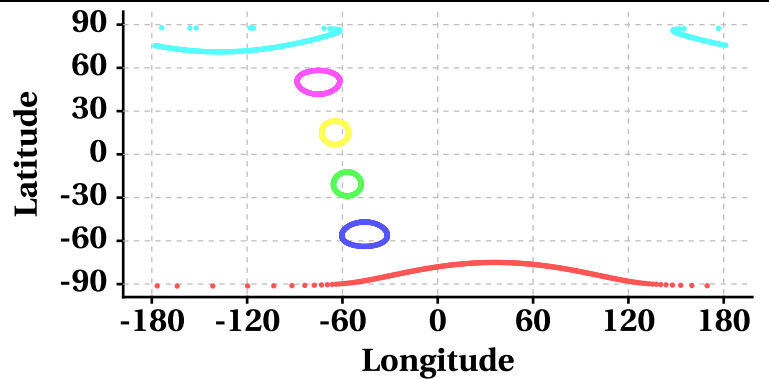
## Latitude Vs Longitude

Scan Trace [Inner Beam(HH)]



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

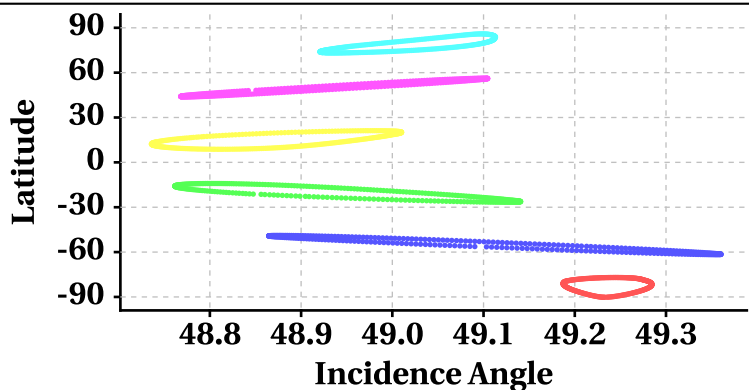
Scan Trace [Outer Beam (VV)]



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

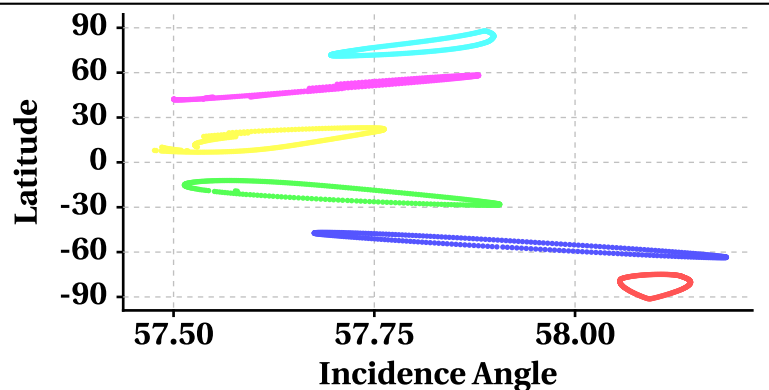
## Latitude Vs Incidence Angle

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



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

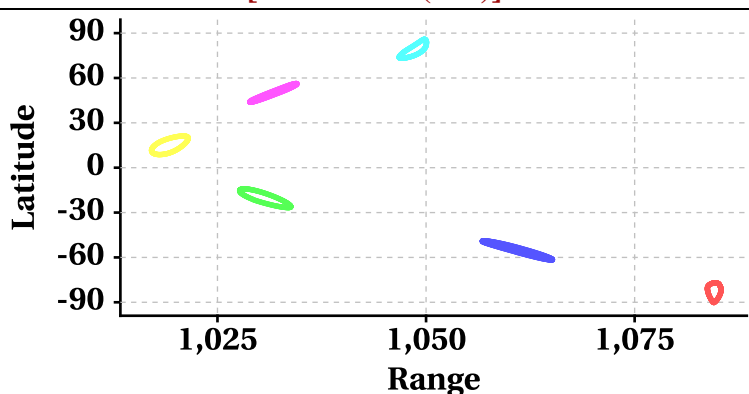
Incidence Angle at Scan Interval of 200 [Outer Beam (VV)]



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

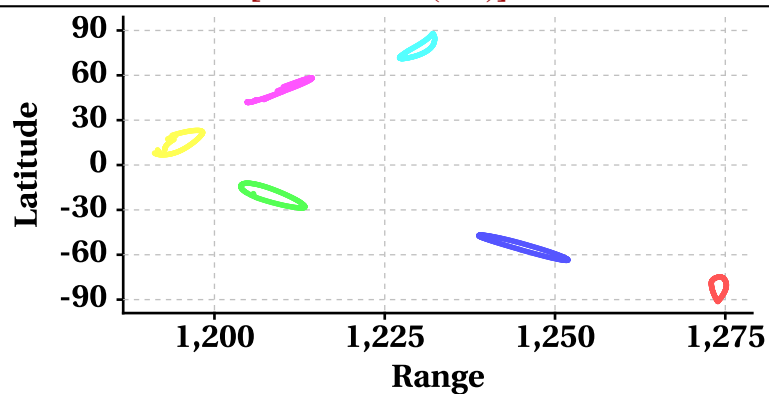
## Latitude Vs Range

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

