

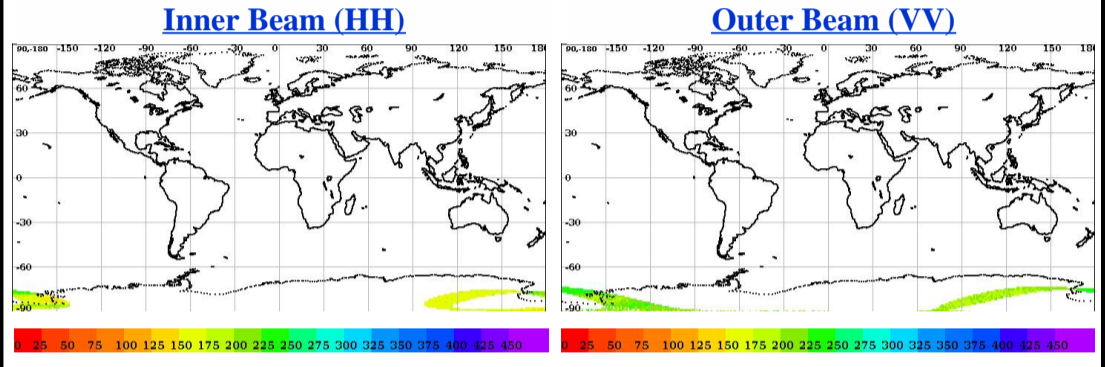
# SCATSAT-1 Scatterometer Level-1B Data Quality Evaluation Report

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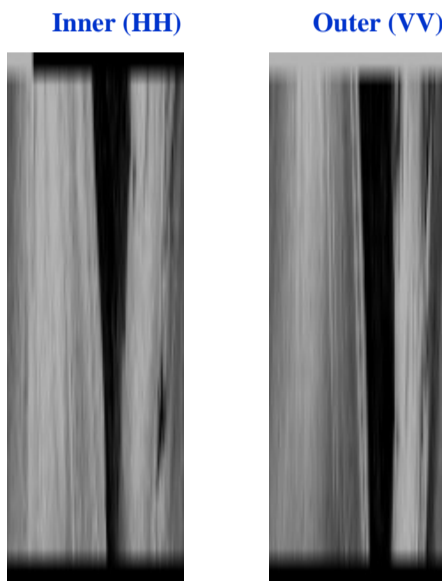
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<b>Satellite Id</b>	ScatSat-1	<b>Start Orbit</b>	10228	<b>Total Scans</b>	23
<b>Sensor Name</b>	Scatterometer	<b>End Orbit</b>	10229	<b>No of Inner FootPrints</b>	281
<b>Processor Version</b>	v1.1.3	<b>Rev. Number</b>	10228_10229	<b>No Of Outer FootPrints</b>	282
<b>Half Orbit Direction</b>	SN	<b>Data Production Date</b>	01-09-2018	<b>No. Of Inner Slices</b>	9
<b>Equator Crossing Date</b>	01-01-1970	<b>Equator Crossing Time</b>	null	<b>No Of Outer Slices</b>	15

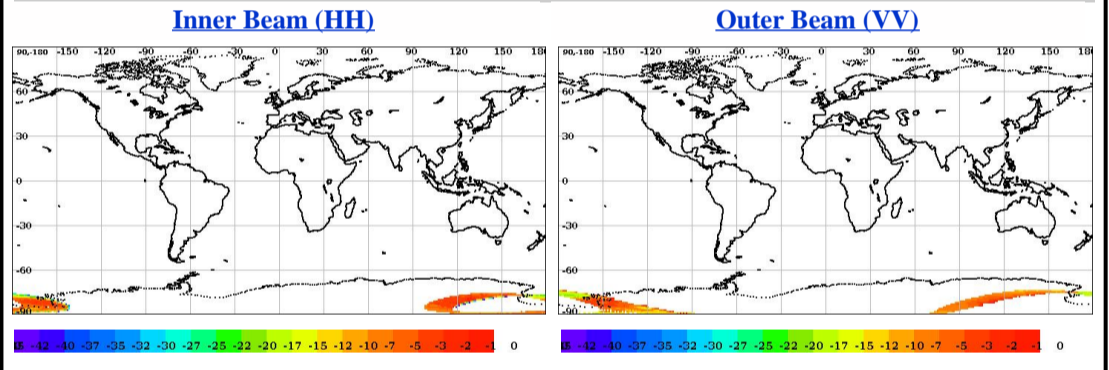
## Brightness Temperature(k) Footprint trace



## Image Snapshot for Inner & Outer Beam



## Sigma0(dB) Footprint trace



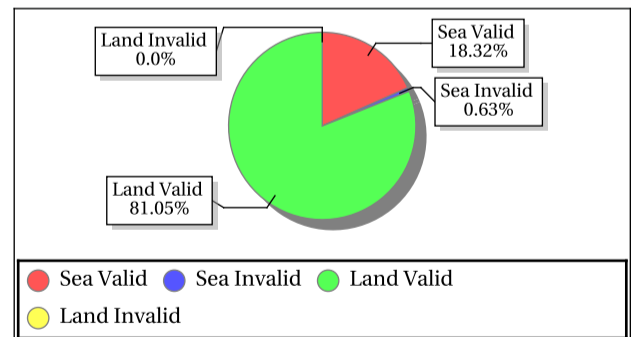
## Invalid and Poor Sigma-0 Quality Flag Statistics for Inner/Outer Slices\*

Sigma-0 Flags	Inner Beam	Outer Beam
<b>Invalid Sigma0(%)</b>	2.28	4.35
<b>Data Not Available From Payload (%)</b>	27.76523	14.53900
<b>Slice not within sample array limits (%)</b>	72.23	85.46
<b>C(S+N) - C(N) &lt; 0.1 (%)</b>	0.00	0.00
<b>Poor Sigma0(%)</b>	22.08	13.25
<b>Noise samples for blending Saturated</b>	0.0	0.0
<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>	0.015569	0.0

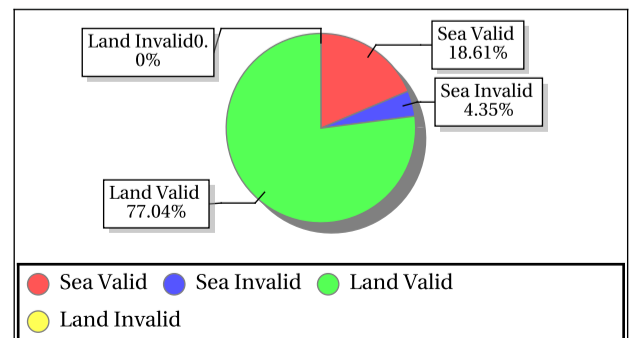
\*DP Format Document

## 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
ANT_1	-75.00	121.00	Outer	ASC	Fore	-9.19	-7.65	-8.28	0.51	170.22	226.73	197.70	16.44



## 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	28.28	0.34	4.084	0.12	5.77	1.14	45.455	0.12	138.11	0.23	1.675	0.12	57.02	0.22	2.128
<b>Kpa</b>	0.01	0.02	0.01	0.000	0.01	0.02	0.02	0.000	0.01	0.02	0.01	0.000	0.01	0.03	0.01	0.000
<b>Kpb</b>	0.02	0.03	0.02	0.000	0.02	0.03	0.02	0.000	0.02	0.03	0.02	0.000	0.02	0.04	0.02	0.000
<b>Kpc</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>SNR</b>	-23.55	16.91	10.81	0.000	-16.57	13.00	1.32	0.000	-30.45	28.26	21.87	63.254	-26.60	30.06	24.25	89.549

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	0.12	0.10	0.000	10000.00	-10000.00	0.00	0.000	0.09	0.11	0.09	0.000	0.09	0.09	0.09	0.000
<b>Kpa</b>	0.01	0.01	0.01	0.000	10000.00	-10000.00	0.00	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	10000.00	-10000.00	0.00	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	10000.00	-10000.00	0.00	0.000	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000
<b>SNR</b>	3.02	10.07	5.53	0.000	10000.00	-10000.00	0.00	0.000	4.55	23.50	16.21	1.480	11.25	23.02	17.13	1.739

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	49.22	49.12	0.000	57.89	58.04	57.96	0.000	Inci.(Inner)	47.10	49.90
<b>Azimuth Diff. (deg)</b>	0.0194	6.04	1.26	14.314	0.0000	296.49	1.30	19.334	Inci.(Outer)	57.30	58.90
<b>Range(Km)</b>	1061.19	1069.86	1067.85	0.000	1251.98	1256.34	1253.82	0.000	Azimuth Diff.	0.60	2.00
<b>X Factor(dbm)</b>	-93.36	-90.16	-90.69	0.000	-92.71	-92.20	-92.44	0.000	Range(Inner)	1025.00	1095.70
<b>Across Distance (Km)</b>	15.74	16.30	15.94	0.000	20.78	21.91	20.97	0.000	Range(Outer)	1210.00	1280.00
<b>Along Distance (Km)</b>	19.09	20.22	18.60	0.000	18.82	9964.48	452.06	3.000	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

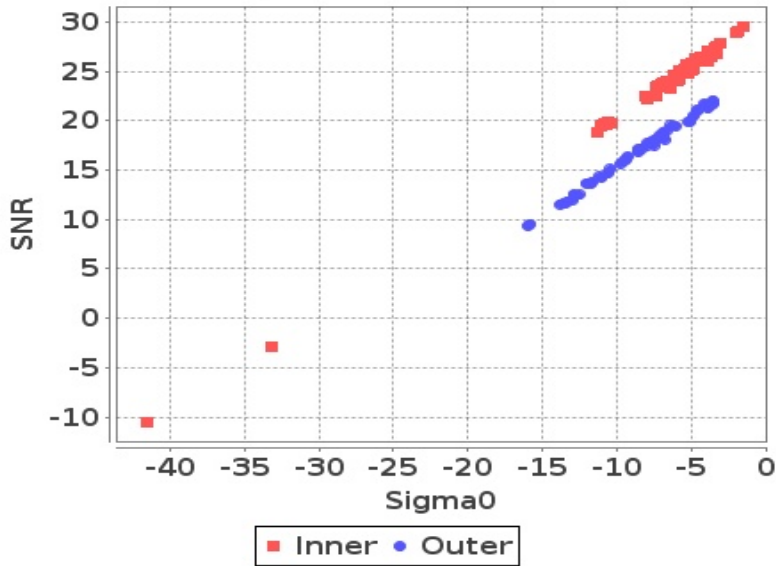
- Normal
- Deviations
- Alarming
- High Errors



## Sigma0 Behaviour (Sigma0 Vs SNR)

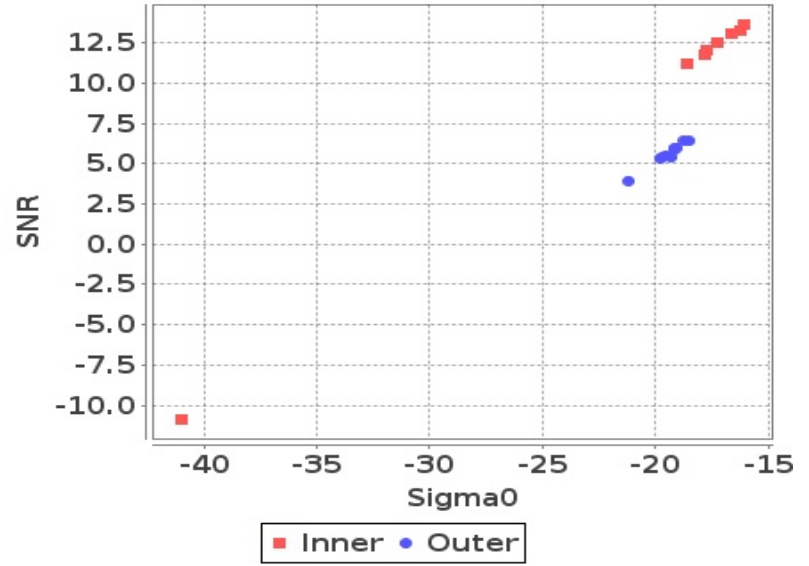
Footprint-Land

Sigma0 Vs SNR (Land)



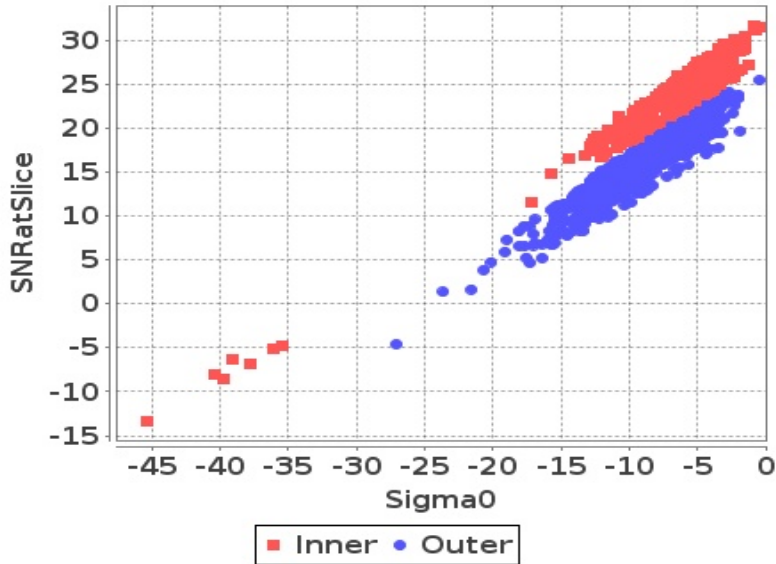
Footprint-Sea

Sigma0 Vs SNR (Sea)



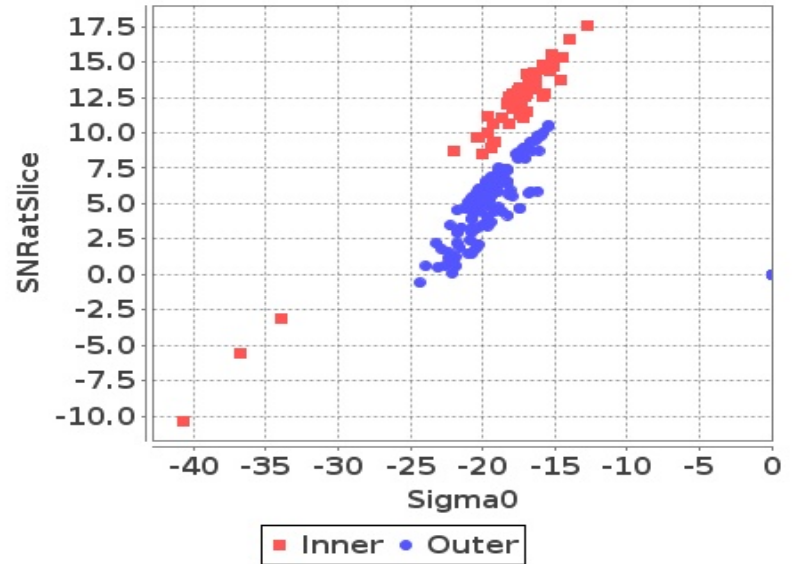
Slice-Land

Sigma0 Vs SNRatSlice (Land)



Slice-Sea

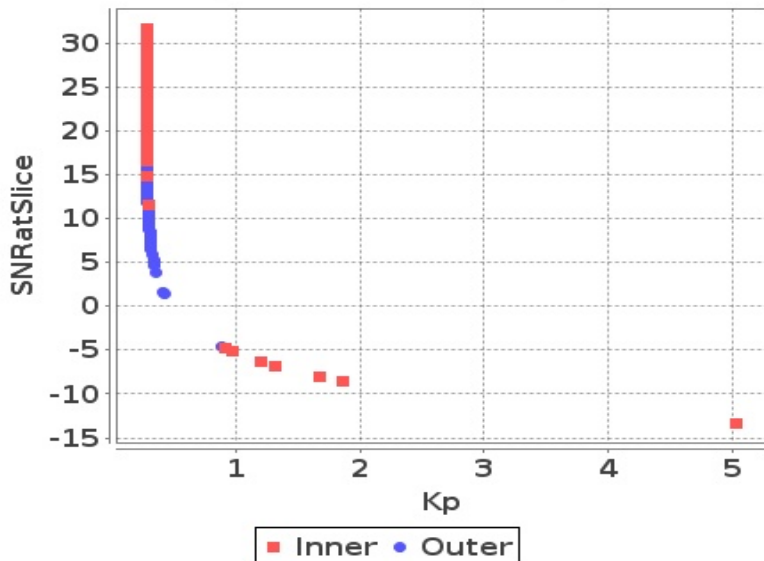
Sigma0 Vs SNRatSlice (Sea)



## Sigma0 Behaviour (Kp Vs SNR)

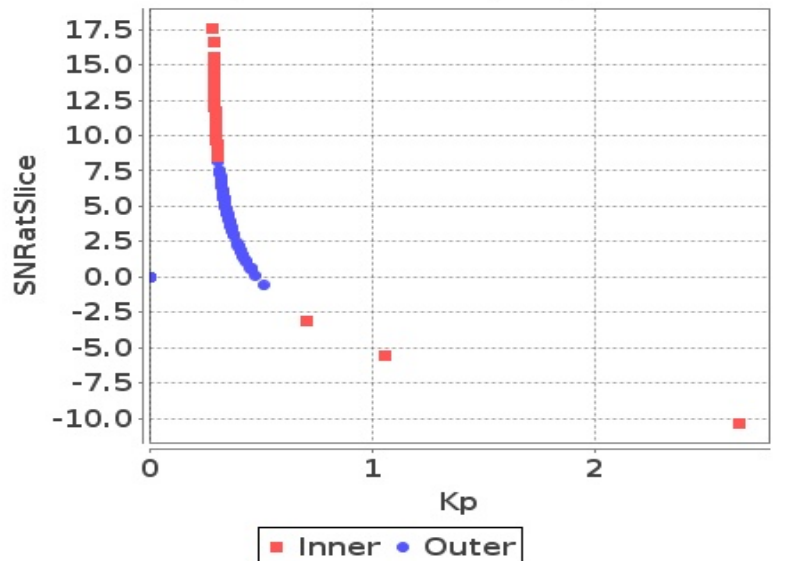
Slice

Kp Vs SNRatSlice (Land)



Slice

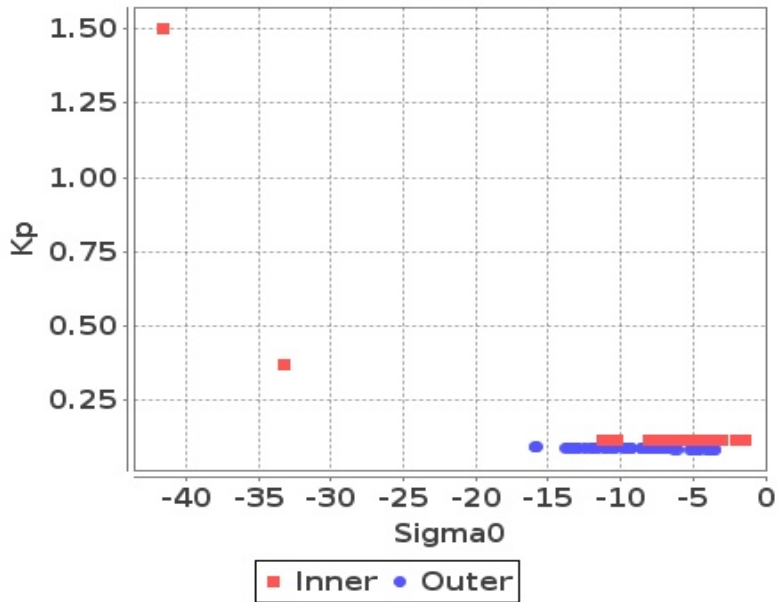
Kp Vs SNRatSlice (Sea)



# Sigma0 Behaviour(Sigma0 Vs Kp)

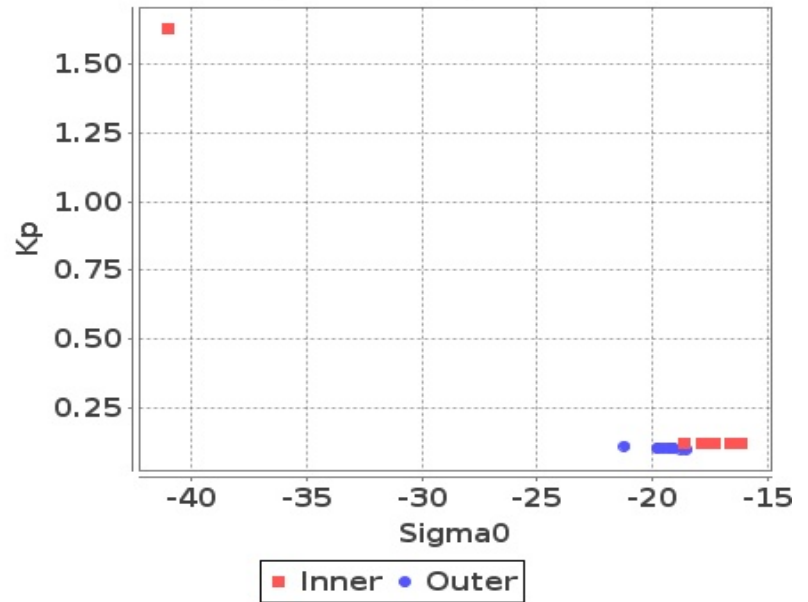
## Footprint-Land

### Sigma0 Vs Kp (Land)



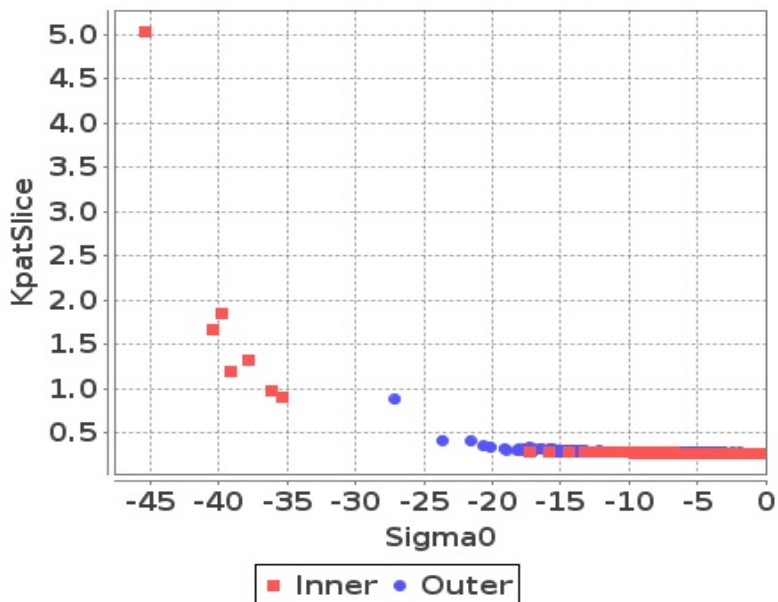
## Footprint-Sea

### Sigma0 Vs Kp (Sea)



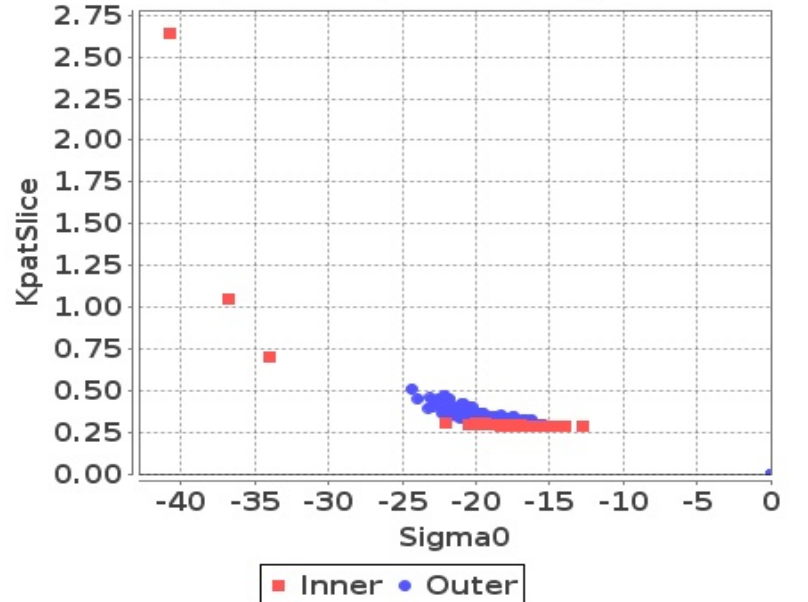
## Slice-Land

### Sigma0 Vs KpatSlice (Land)



## Slice-Sea

### Sigma0 Vs KpatSlice (Sea)

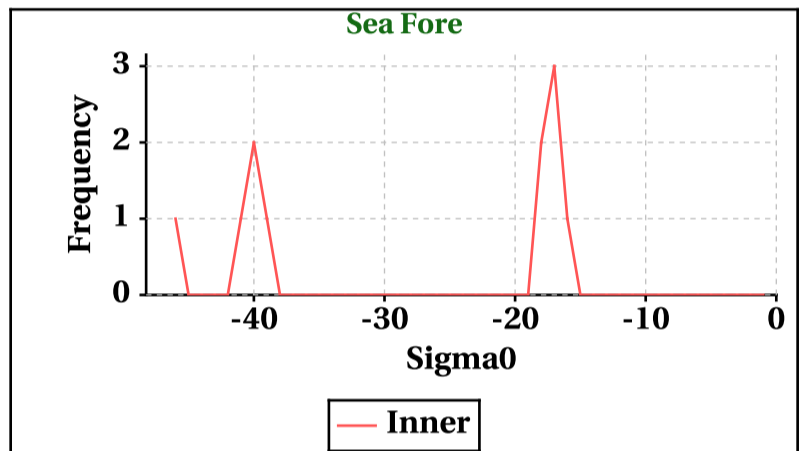
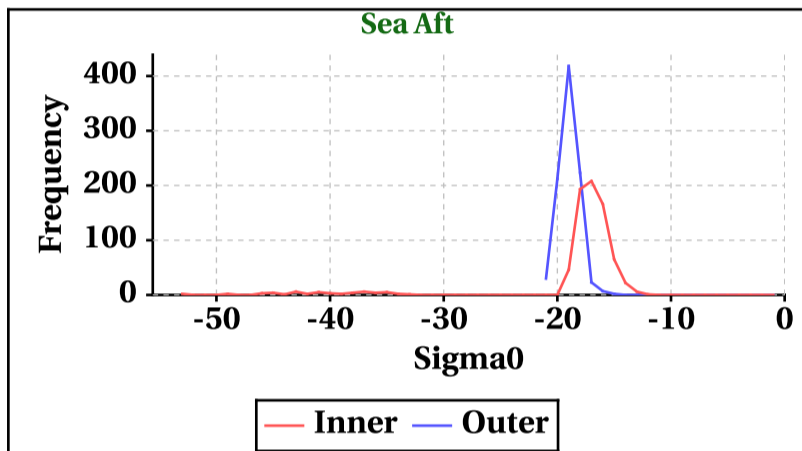
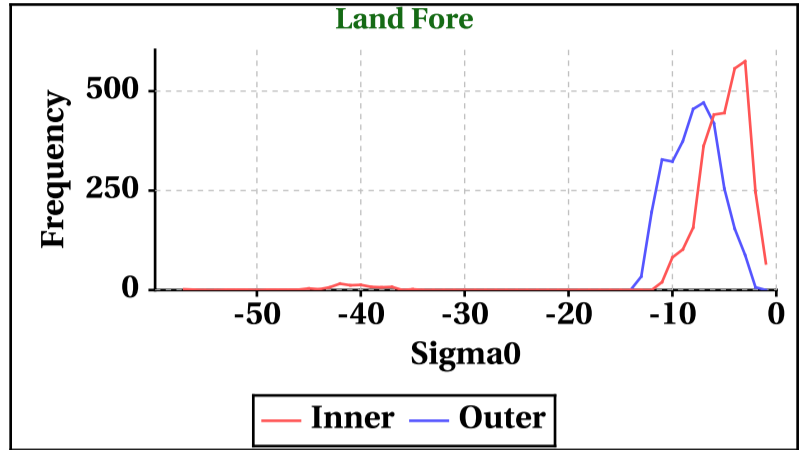
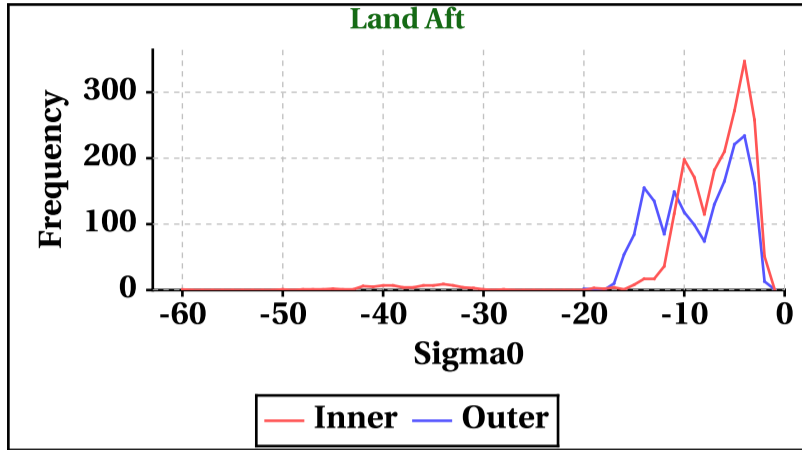


# Dynamic Range (Data Histograms)

## Sigma0(db)

Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-60	-57	-53	-46
Max	0	0	0	0

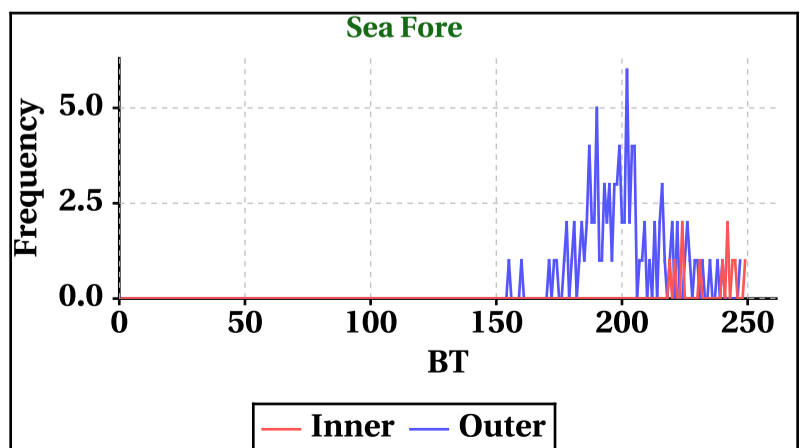
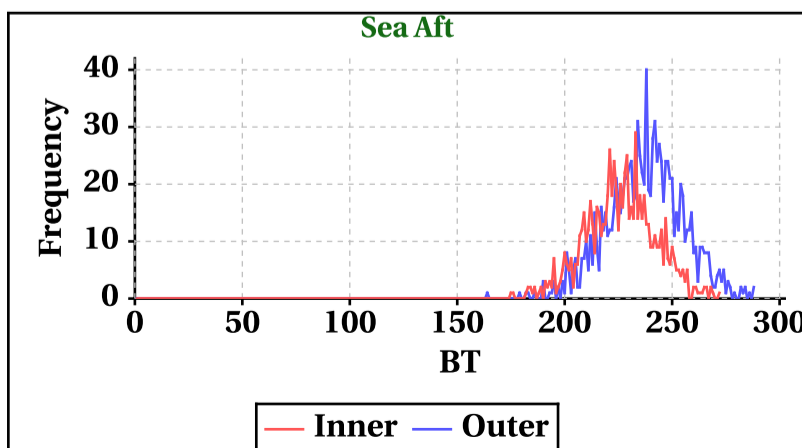
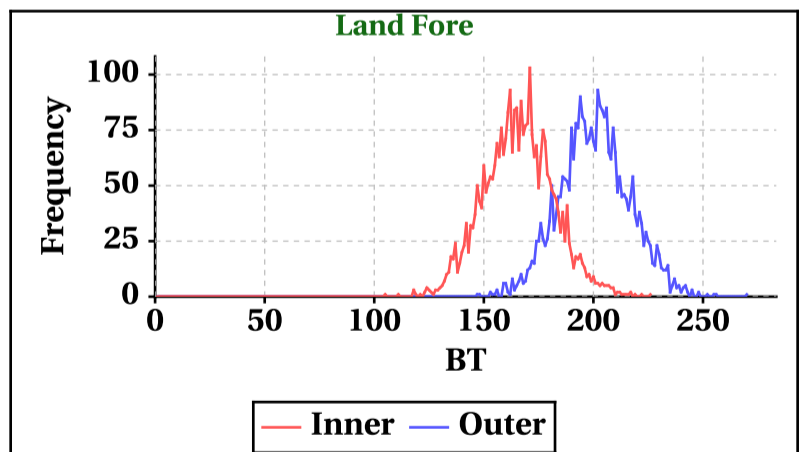
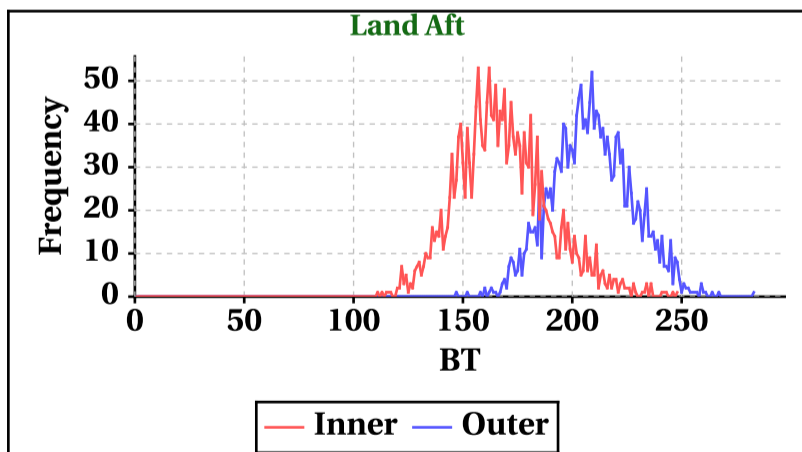
Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-20	-14	-21	0
Max	0	0	0	0



## Brightness Temperature(K)

Inner Beam(HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	248	226	272	249

Outer Beam(VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	283	270	288	247

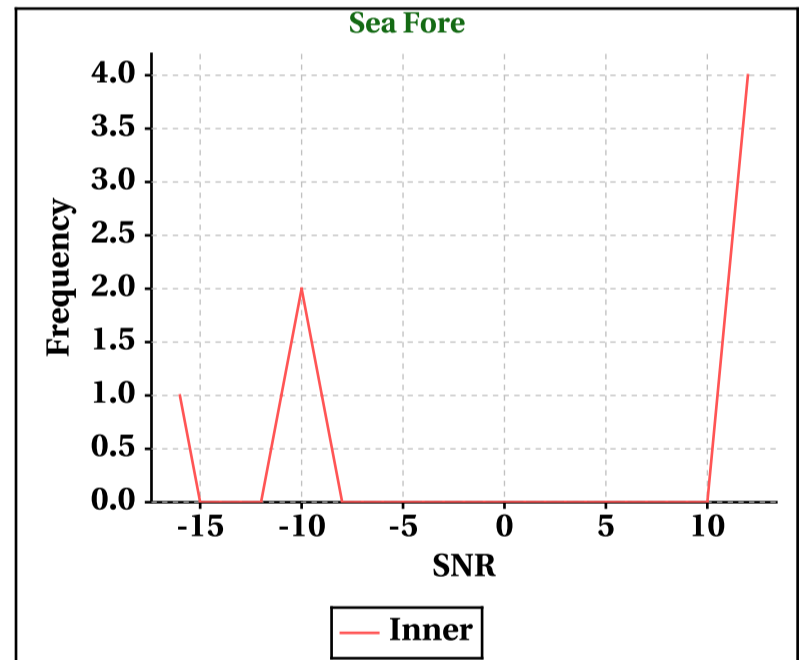
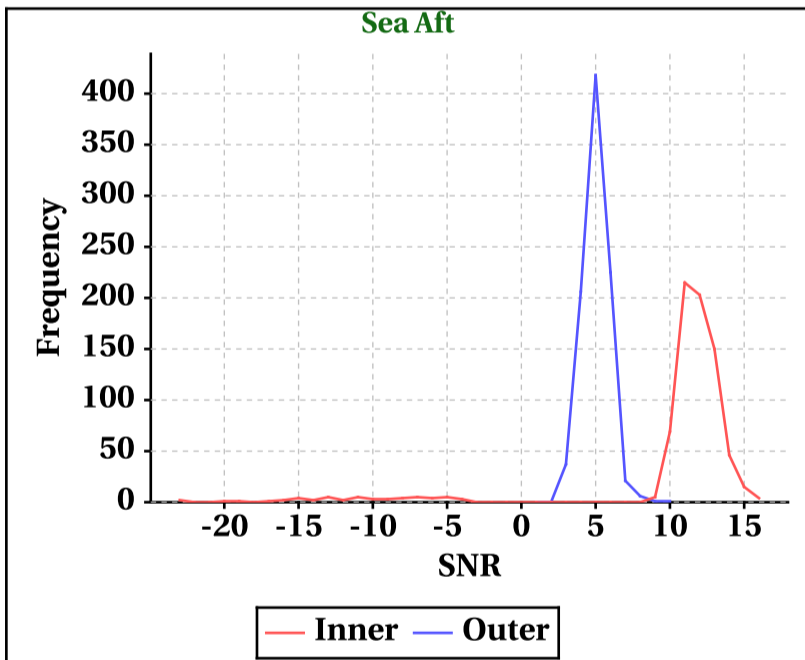
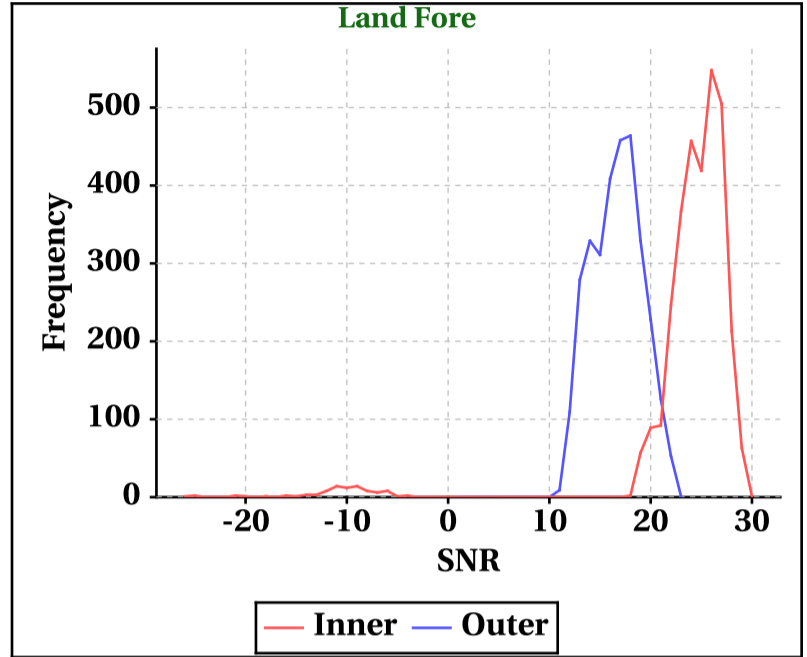
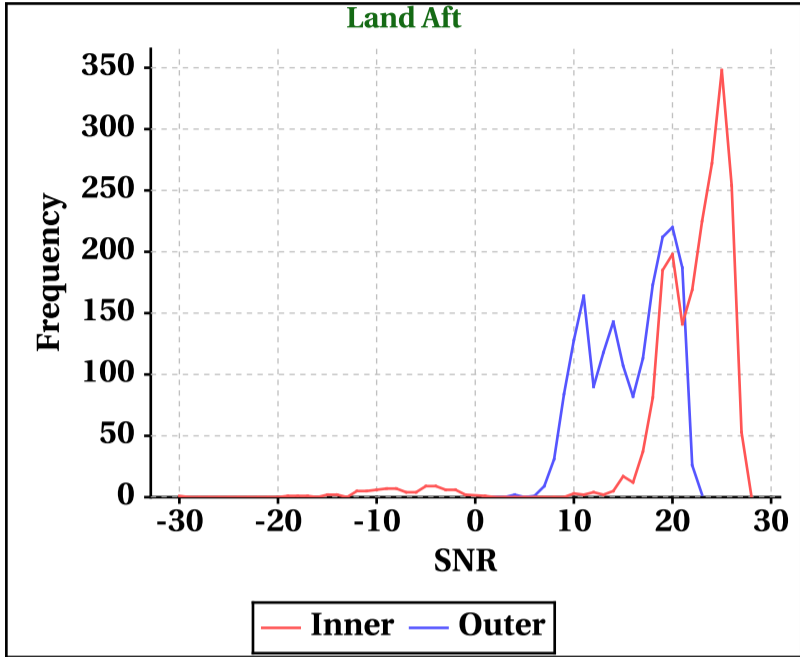


# Dynamic Range (Data Histograms)

## SNR(dBm)

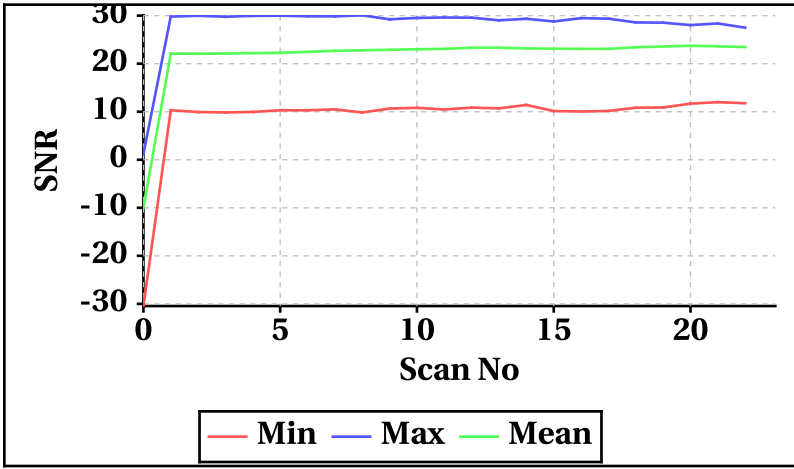
Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-30	-26	-23	-16
Max	28	30	16	12

Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	23	23	10	0

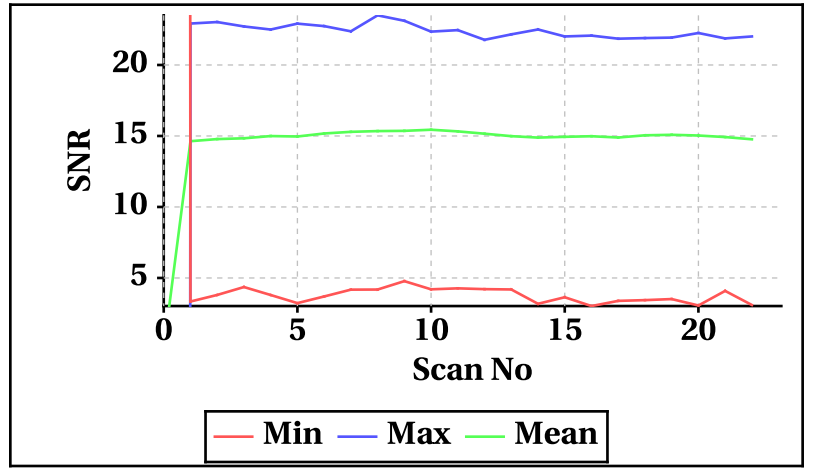


## Orbit-wise behaviour of SNR

**Inner Beam (HH)**

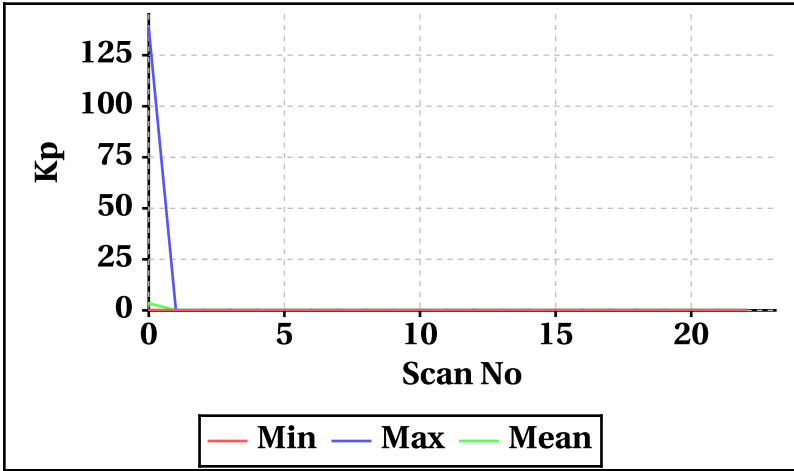


**Outer Beam(VV)**

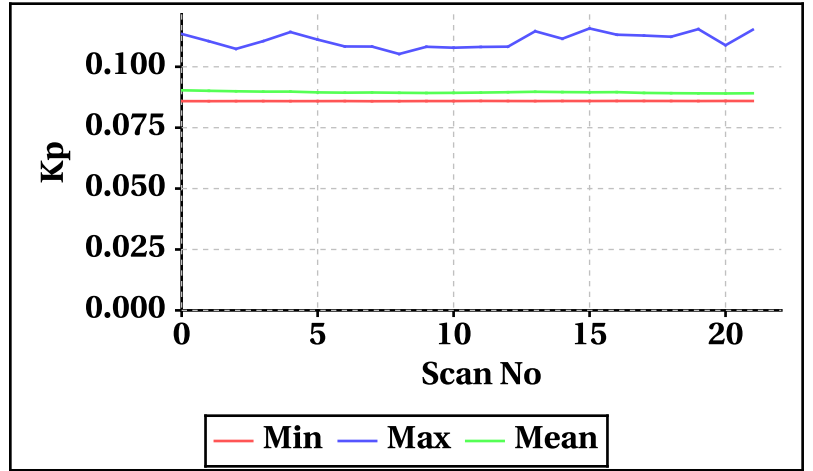


## Orbit-wise behaviour of Kp,Kpa,Kpb,Kpc

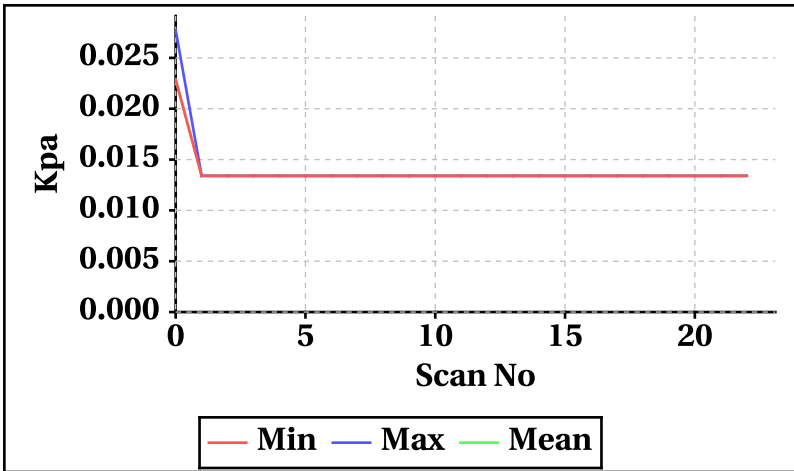
**Inner Beam(HH)**



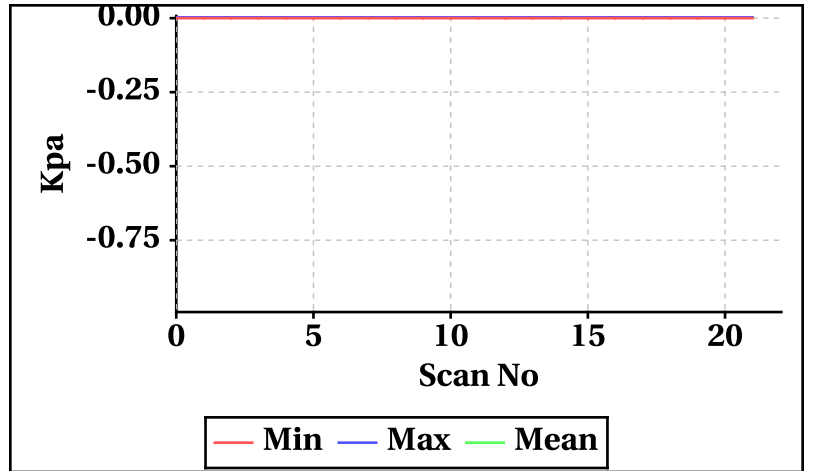
**Outer Beam(VV)**



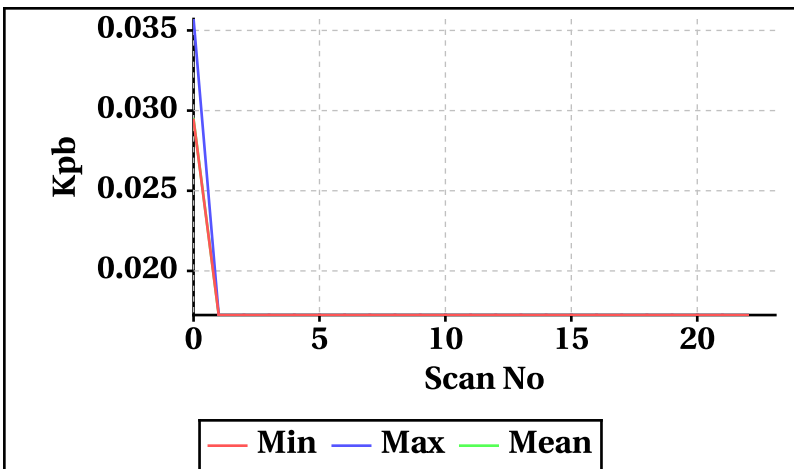
**Inner Beam(HH)**



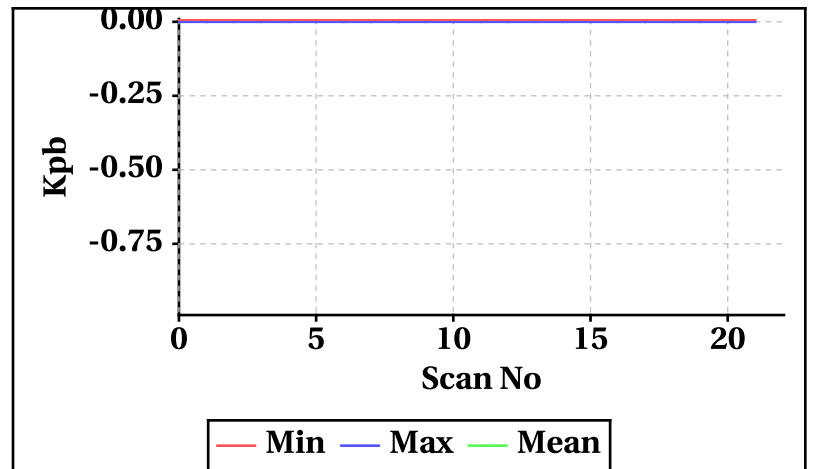
**Outer Beam(VV)**



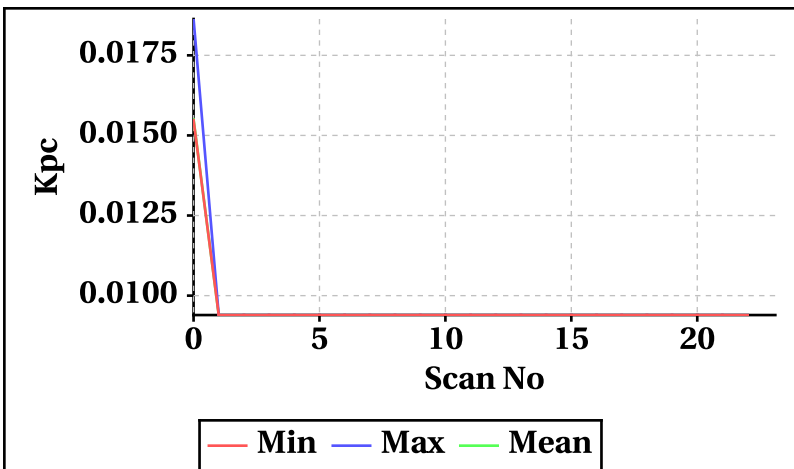
**Inner Beam(HH)**



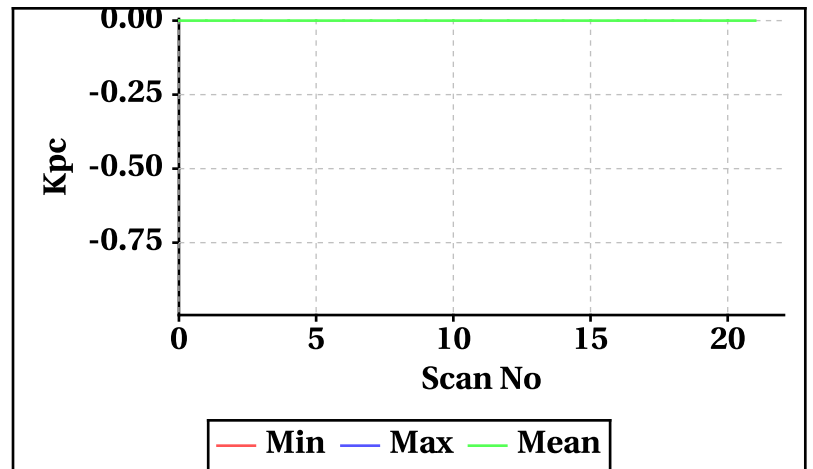
**Outer Beam(VV)**



**Inner Beam(HH)**



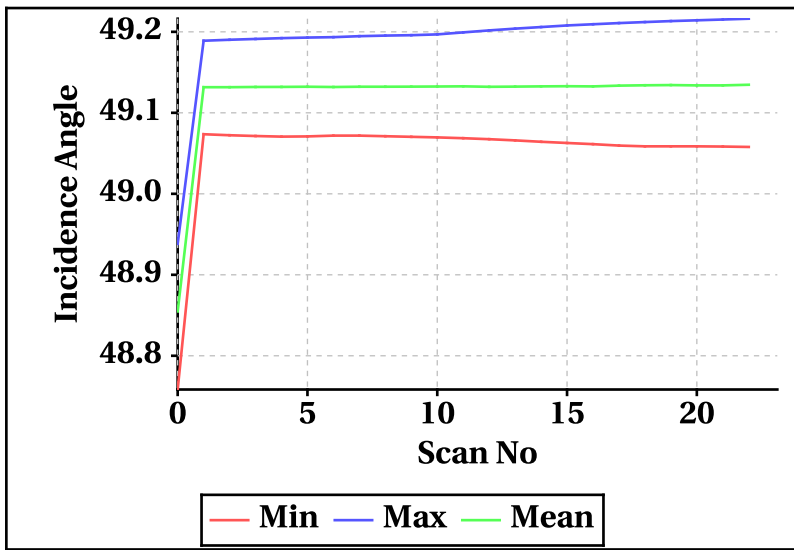
**Outer Beam(VV)**



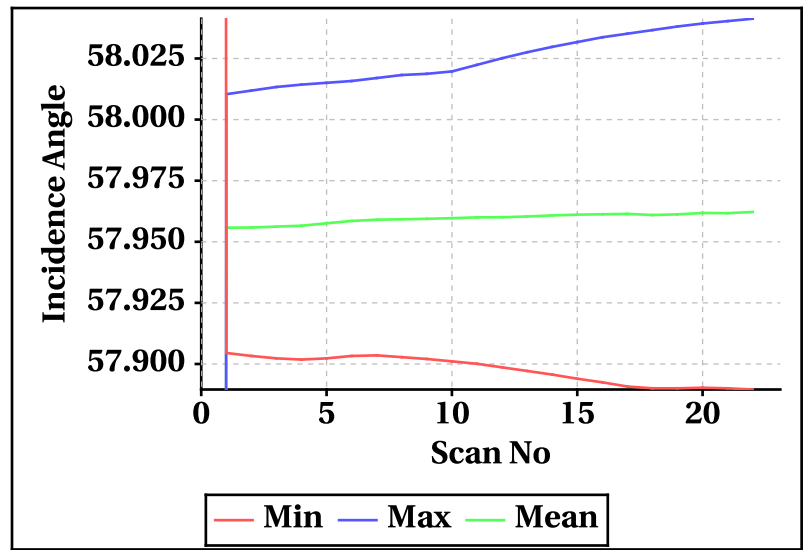


# Orbit-wise behaviour of Incidence, Azimuth, Range, X-Factor

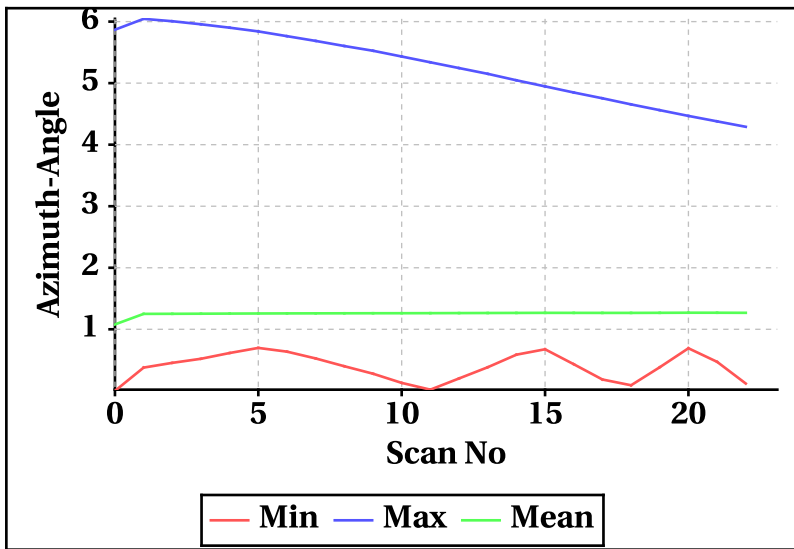
### Inner Beam (HH)



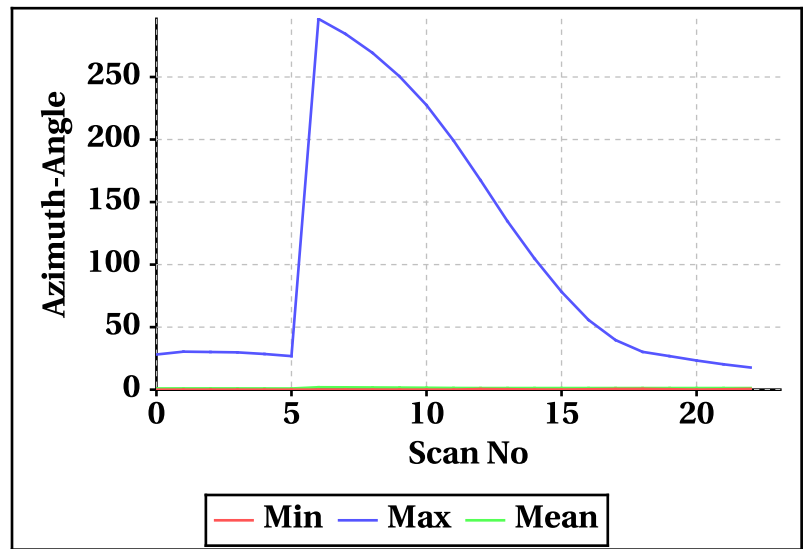
### Outer Beam(VV)



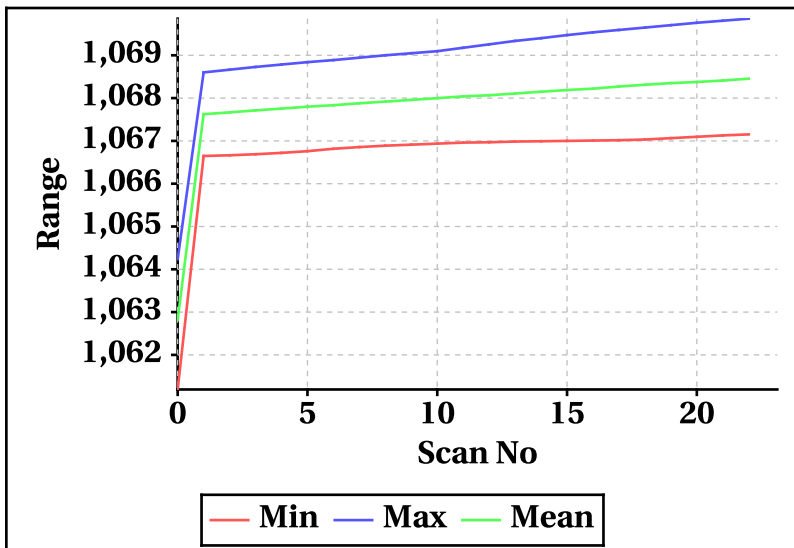
### Inner Beam (HH)



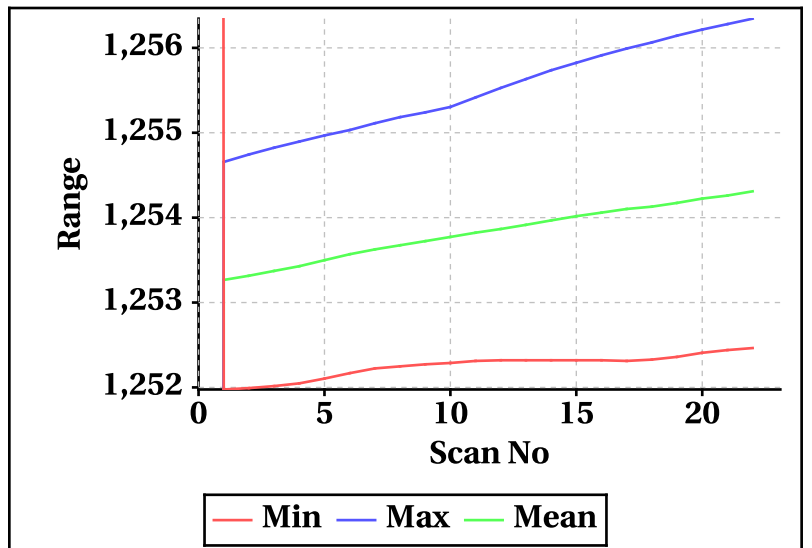
### Outer Beam(VV)



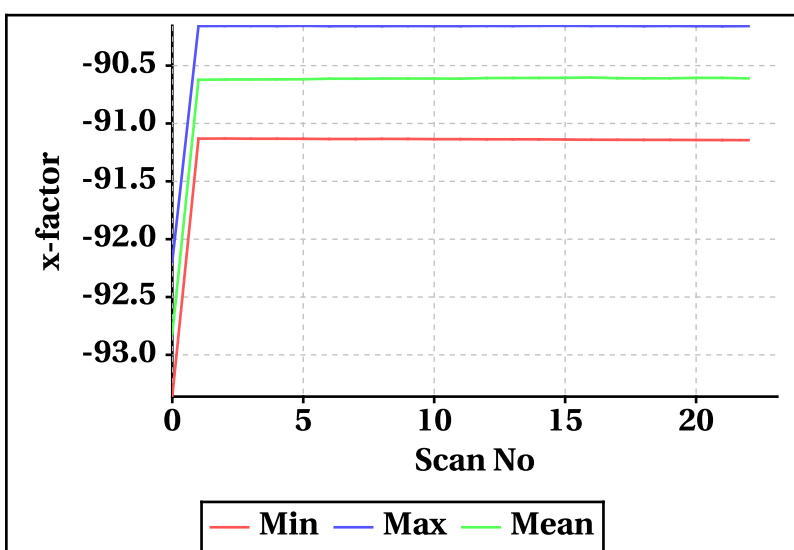
### Inner Beam (HH)



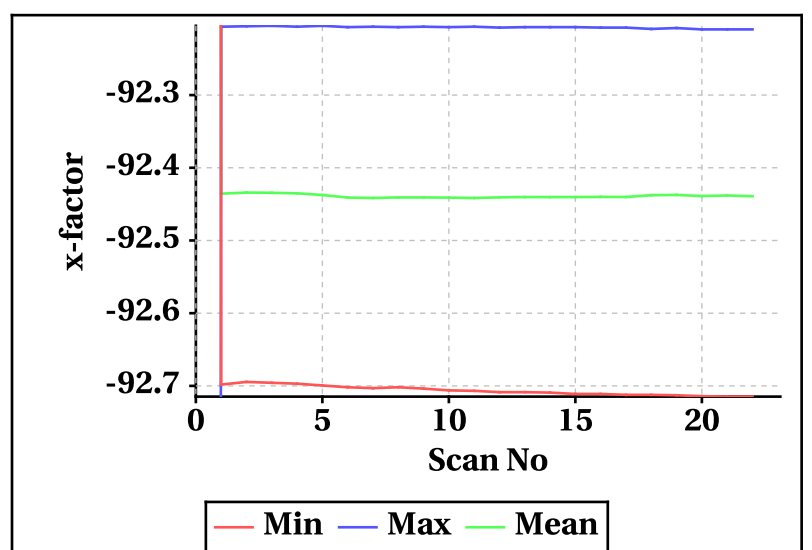
### Outer Beam(VV)



### Inner Beam (HH)



### Outer Beam(VV)

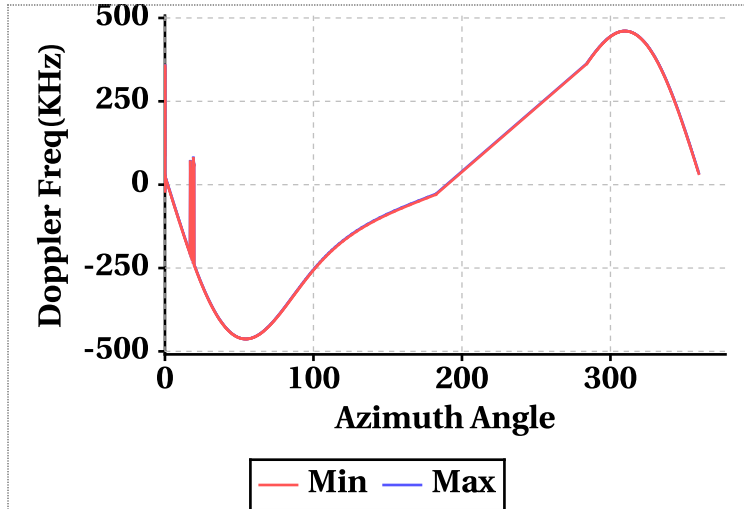


# Doppler Frequency Variation

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

	Inner Beam (HH)	Outer Beam (VV)
<b>Min</b>	-462.82	-518.44
<b>Max</b>	460.70	516.56

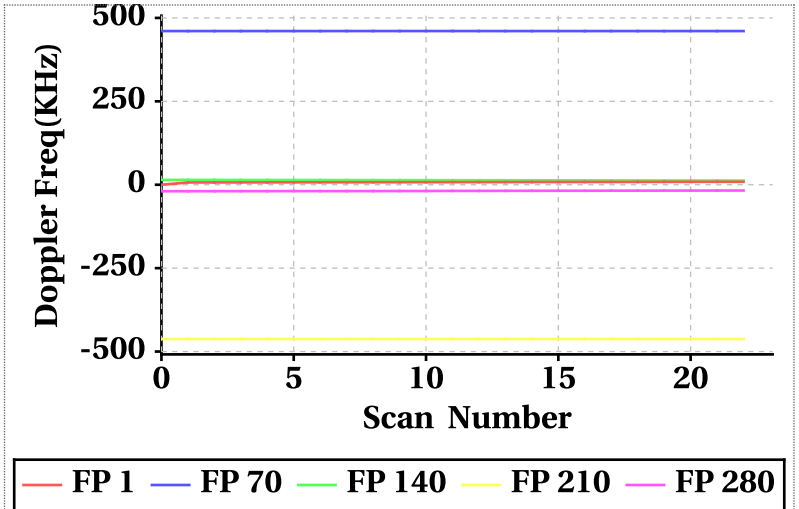
**Footprint wise Doppler frequency variation Inner Beam (HH)**



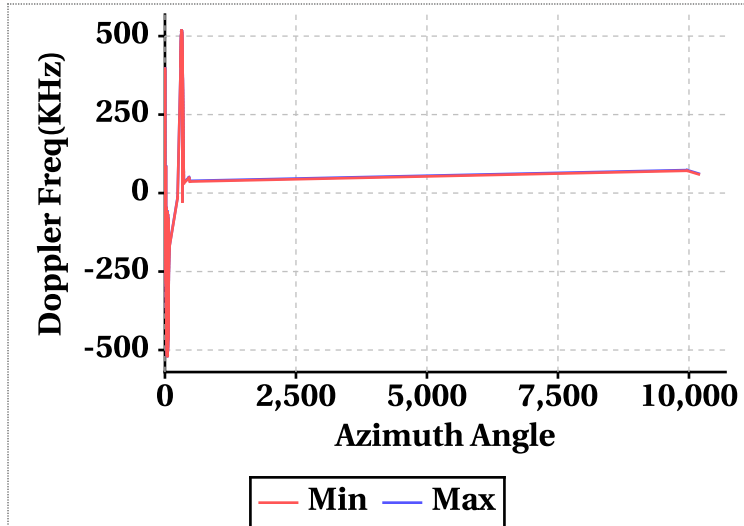
**Doppler Frequency(KHz) variation**

Doppler_FP	Inner Beam (HH)			Outer Beam (VV)		
	Min	Max	Mean	Min	Max	Mean
Doppler_1	0.00	8.78	7.46	-17.34	4.44	2.45
Doppler_70	460.60	460.64	460.62	516.32	516.36	516.35
Doppler_140	12.36	14.58	13.53	8.26	10.72	9.55
Doppler_210	-462.36	-462.28	-462.32	-518.14	-518.10	-518.12
Doppler_280	-19.48	-17.34	-18.50	-15.72	-13.32	-14.63

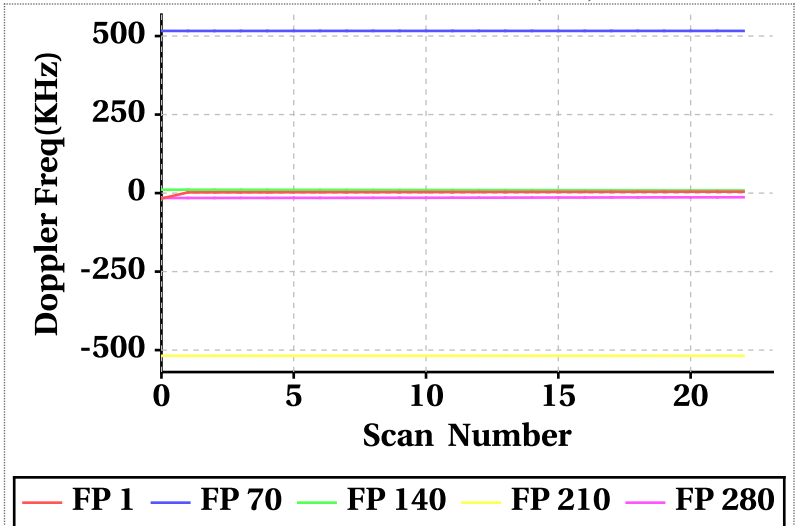
**Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Inner Beam (HH)**



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

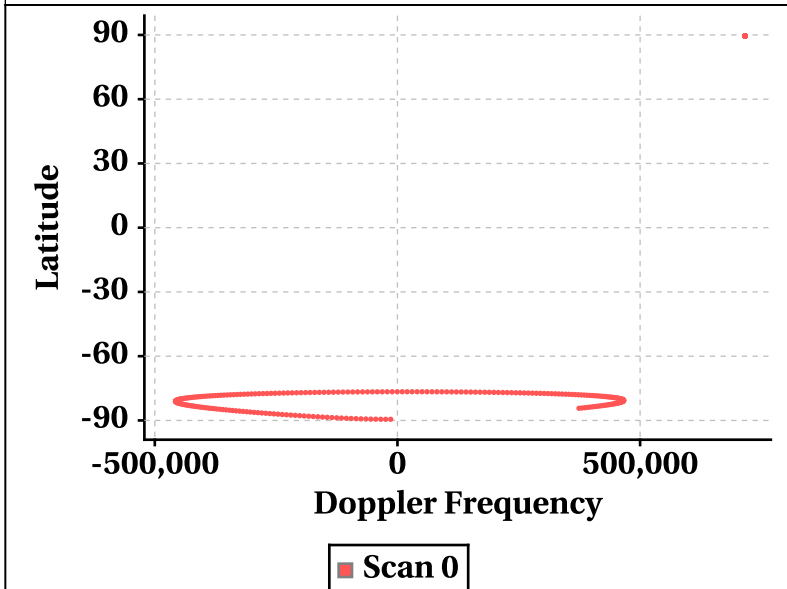


**Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Outer Beam (VV)**

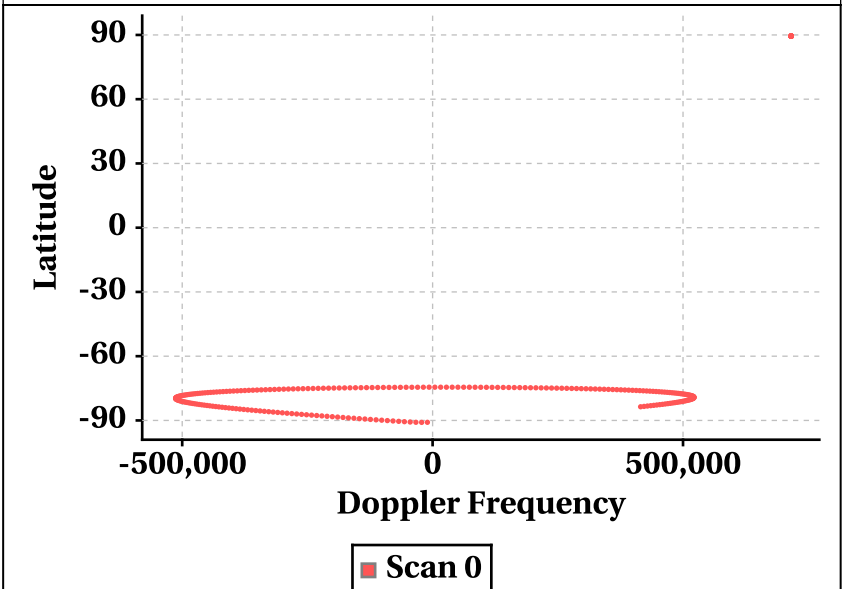


# Latitude Vs Doppler Frequency

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



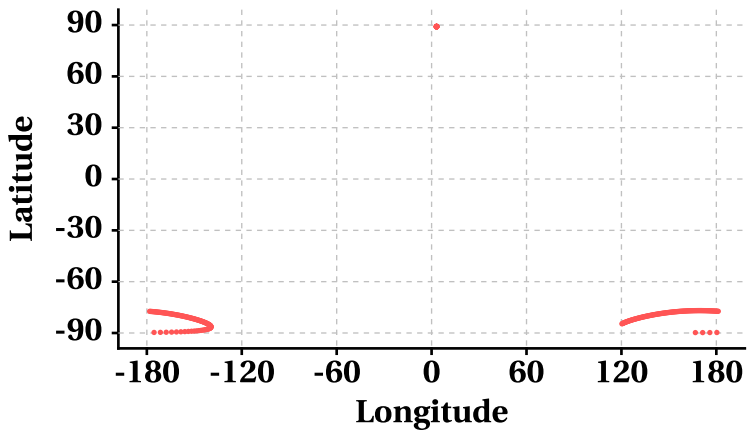
**Doppler Frequency at Scan Interval of 200 [Outer Beam(VV)]**



# Parameter as a function of Latitude

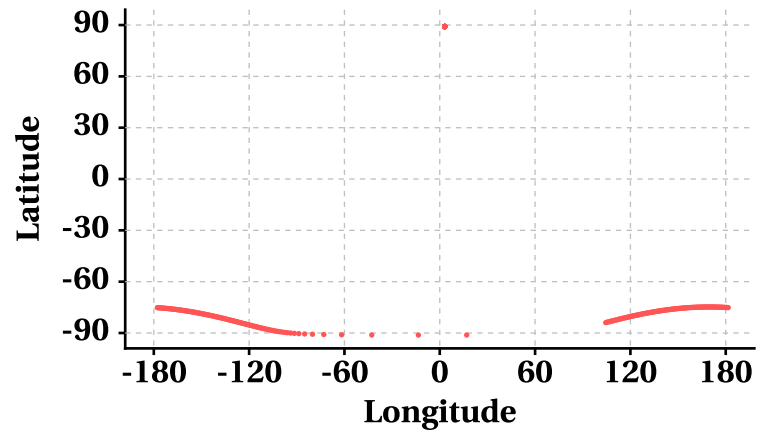
## Latitude Vs Longitude

Scan Trace [Inner Beam(HH)]



Scan 0

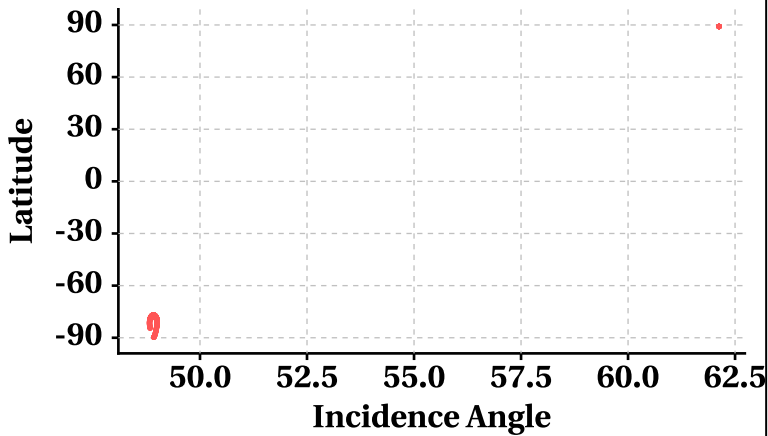
Scan Trace [Outer Beam (VV)]



Scan 0

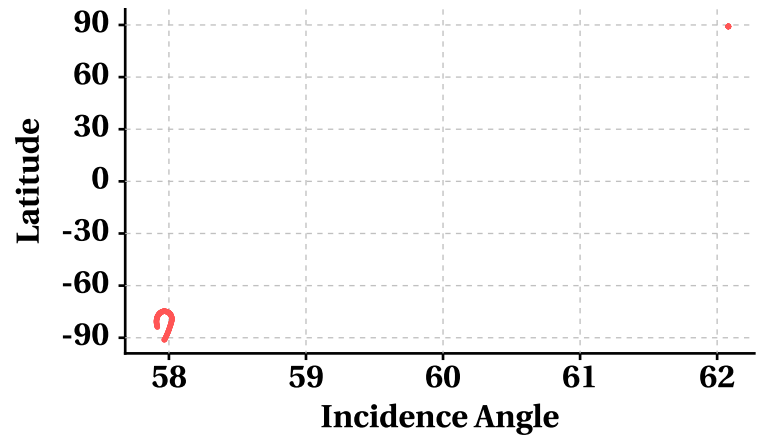
## Latitude Vs Incidence Angle

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



Scan 0

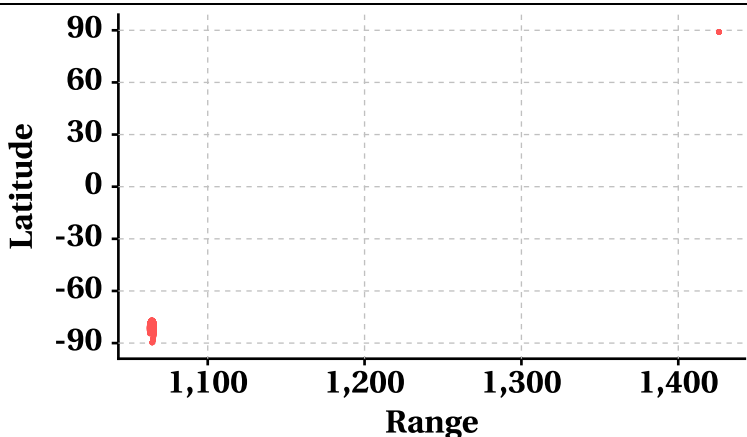
Incidence Angle at Scan Interval of 200 [Outer Beam (VV)]



Scan 0

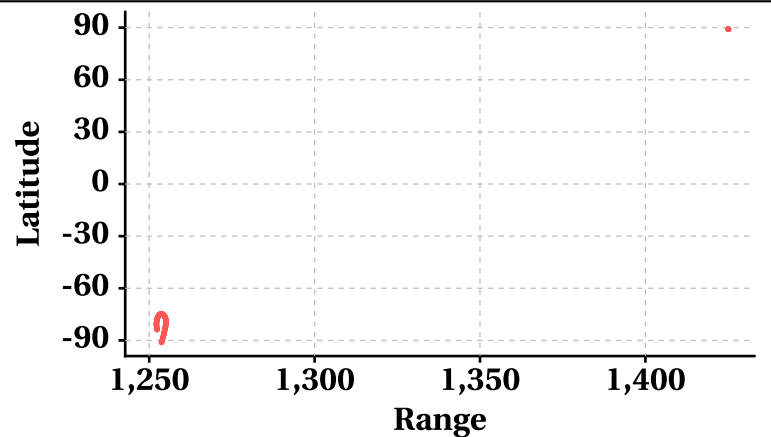
## Latitude Vs Range

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



Scan 0

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



Scan 0



# Variation in Orbit and Attitude Parameters

