

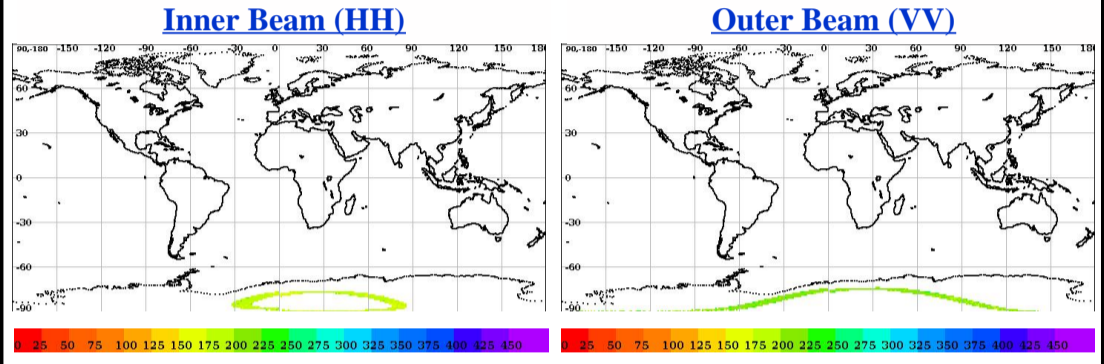
# SCATSAT-1 Scatterometer Level-1B Data Quality Evaluation Report

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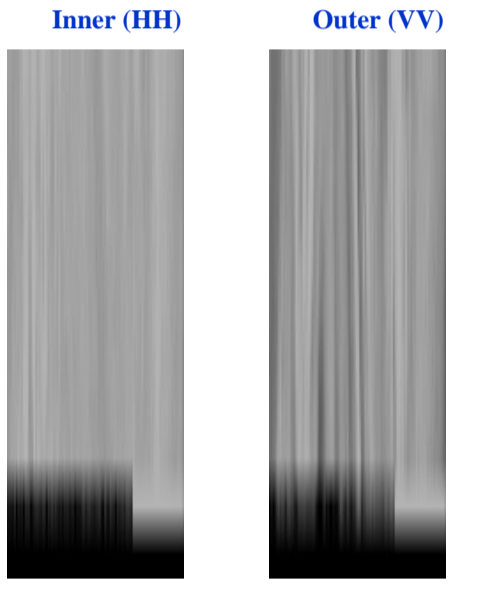
- Half-Orbit Coverage using BT & Sigma-0
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<b>Satellite Id</b>	ScatSat-1	<b>Start Orbit</b>	17078	<b>Total Scans</b>	10
<b>Sensor Name</b>	Scatterometer	<b>End Orbit</b>	17079	<b>No of Inner FootPrints</b>	281
<b>Processor Version</b>	v1.1.3	<b>Rev. Number</b>	17078_17079	<b>No Of Outer FootPrints</b>	282
<b>Half Orbit Direction</b>	NS	<b>Data Production Date</b>	18-12-2019	<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

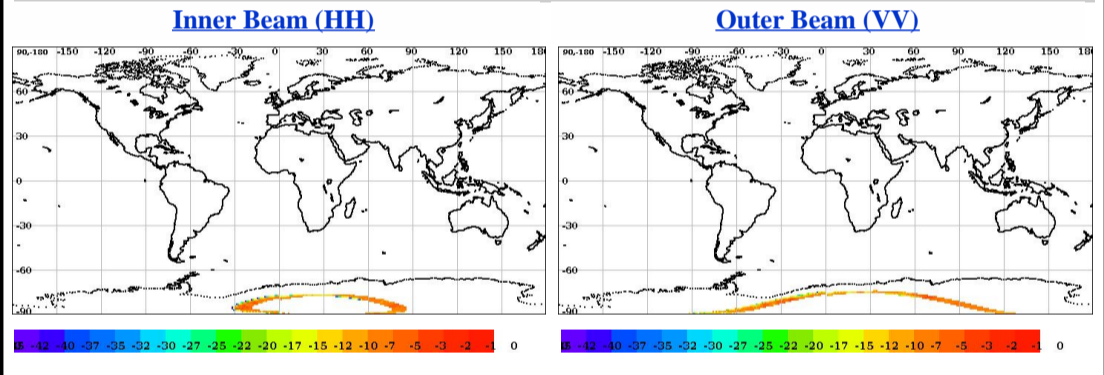
## Brightness Temperature(k) Footprint trace



## Image Snapshot for Inner & Outer Beam



## Sigma0(dB) Footprint trace

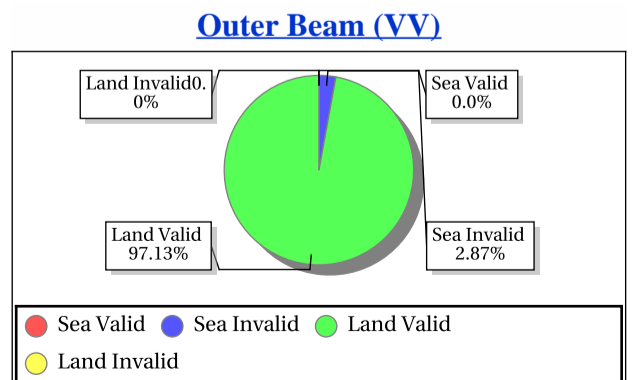
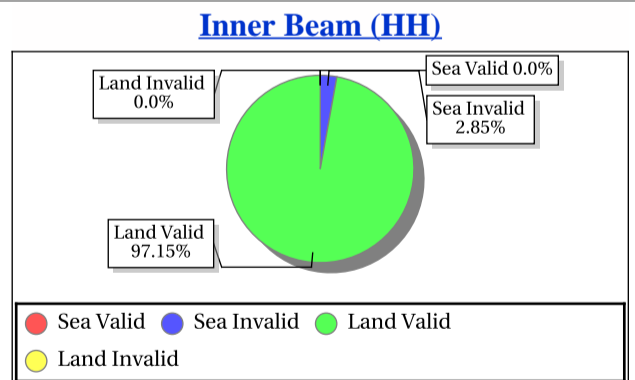


## Invalid and Poor Sigma-0 Quality Flag Statistics for Inner/Outer Slices\*

Sigma-0 Flags	Inner Beam	Outer Beam
<b>Invalid Sigma0(%)</b>	6.03	6.20
Data Not Available From Payload (%)	47.24409	46.33867
Slice not within sample array limits (%)	52.76	53.66
C(S+N) - C(N) < 0.1 (%)	0.00	0.00
<b>Poor Sigma0(%)</b>	21.59	12.95
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 (%)	0.018312	0.0

\*DP Format Document

## Sigma-0 Quality Flag Statistics for Inner/Outer Footprints



## 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>	10000 0.00	-10000 0.00	0.00	0.000	10000 0.00	-10000 0.00	0.00	0.000	0.12	312.85	0.43	1.742	0.12	186.60	0.76	6.884
<b>Kpa</b>	10000 0.00	-10000 0.00	0.00	0.000	10000 0.00	-10000 0.00	0.00	0.000	0.01	0.03	0.01	0.000	0.01	0.02	0.01	0.000
<b>Kpb</b>	10000 0.00	-10000 0.00	0.00	0.000	10000 0.00	-10000 0.00	0.00	0.000	0.02	0.04	0.02	0.000	0.02	0.03	0.02	0.000
<b>Kpc</b>	10000 0.00	-10000 0.00	0.00	0.000	10000 0.00	-10000 0.00	0.00	0.000	0.01	0.02	0.01	0.000	0.01	0.02	0.01	0.000
<b>SNR</b>	10000 0.00	-10000 0.00	0.00	0.000	10000 0.00	-10000 0.00	0.00	0.000	-34.00	24.37	18.53	8.788	-31.76	27.35	17.73	21.434

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>	10000 0.00	-10000 0.00	0.00	0.000	10000 0.00	-10000 0.00	0.00	0.000	0.09	0.45	0.09	0.000	0.09	176.13	0.28	0.989
<b>Kpa</b>	10000 0.00	-10000 0.00	0.00	0.000	10000 0.00	-10000 0.00	0.00	0.000	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000
<b>Kpb</b>	10000 0.00	-10000 0.00	0.00	0.000	10000 0.00	-10000 0.00	0.00	0.000	0.01	0.02	0.01	0.000	0.01	0.02	0.01	0.000
<b>Kpc</b>	10000 0.00	-10000 0.00	0.00	0.000	10000 0.00	-10000 0.00	0.00	0.000	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000
<b>SNR</b>	10000 0.00	-10000 0.00	0.00	0.000	10000 0.00	-10000 0.00	0.00	0.000	-5.63	20.94	14.98	0.000	-32.59	21.43	12.94	0.000

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)

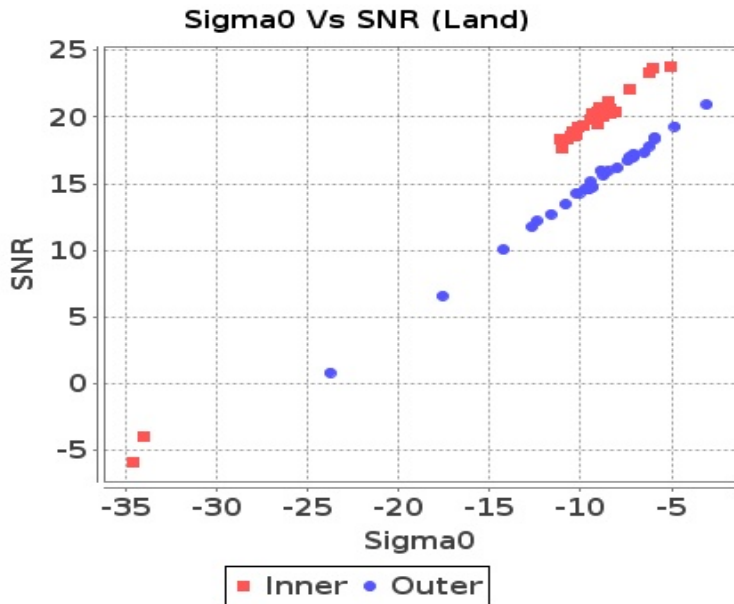
	Inner Beam (HH)				Outer Beam (VV)				Parameter Specifications		
	Min	Max	Mean	Bad Occ. (%)	Min	Max	Mean	Bad Occ. (%)	Parameter	Min	Max
<b>Incidence Angle (deg)</b>	48.87	49.28	49.21	0.000	57.65	58.14	58.07	0.000	Inci.(Inner)	47.10	49.90
<b>Azimuth Diff. (deg)</b>	0.0084	6.67	1.24	12.349	0.0000	27.78	0.94	43.373	Inci.(Outer)	57.30	58.90
<b>Range(Km)</b>	1077.95	1085.07	1083.85	0.000	1262.29	1274.82	1272.91	0.000	Azimuth Diff.	0.60	2.00
<b>X Factor(dbm)</b>	-94.37	-90.47	-91.06	0.000	-95.52	-92.52	-92.91	0.000	Range(Inner)	1025.00	1095.70
<b>Across Distance (Km)</b>	15.80	16.35	15.98	0.000	20.86	21.84	20.99	0.000	Range(Outer)	1210.00	1280.00
<b>Along Distance (Km)</b>	18.82	19.96	17.20	0.000	18.27	19.82	16.98	0.000	X-Factor	-100.00	-80.00

- Normal
- Deviations
- Alarming
- High Errors

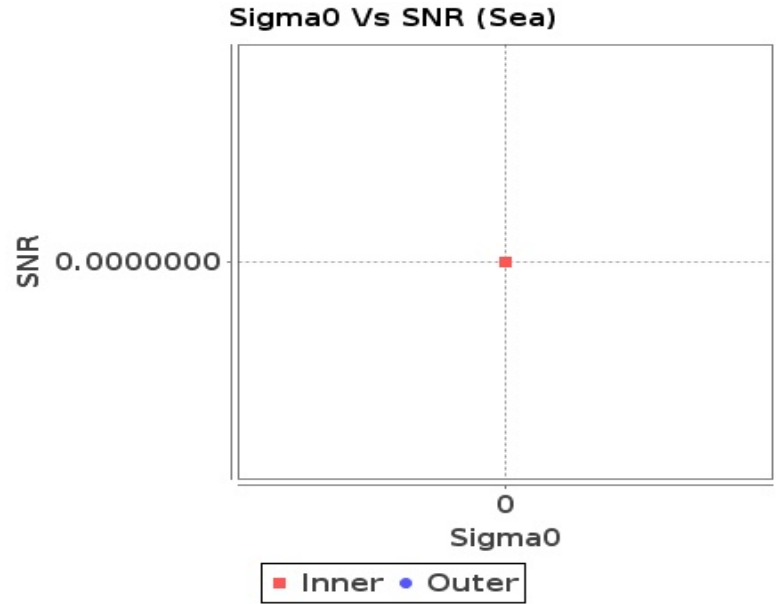


## Sigma0 Behaviour (Sigma0 Vs SNR)

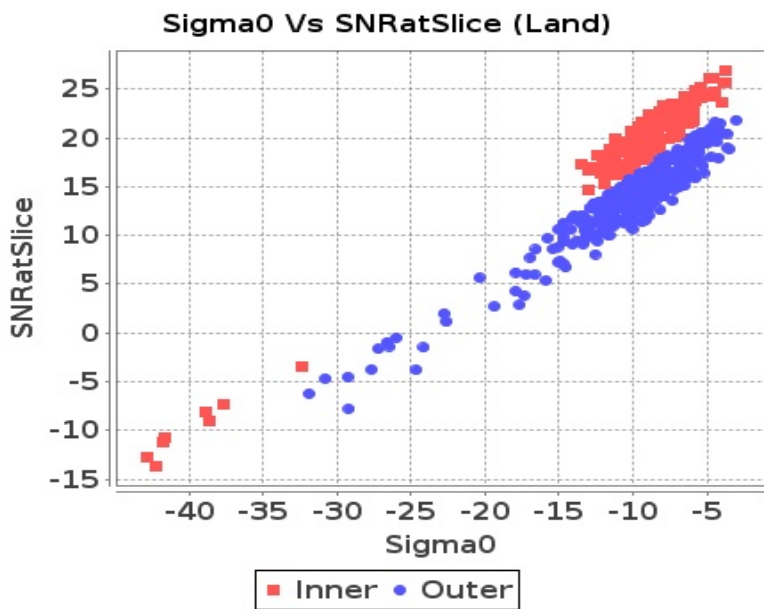
Footprint-Land



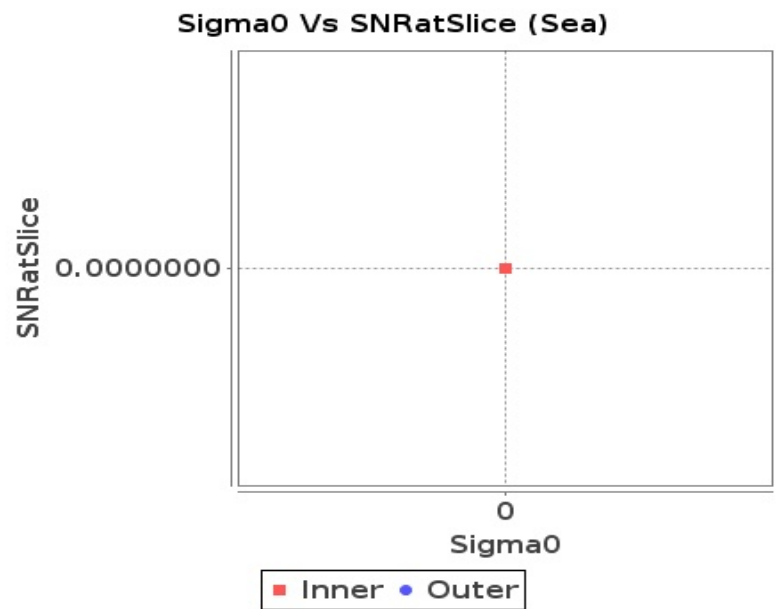
Footprint-Sea



Slice-Land

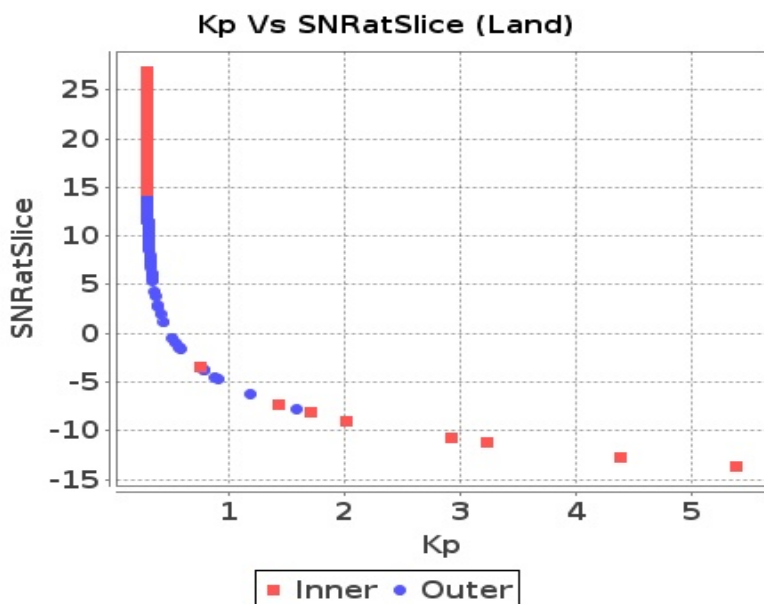


Slice-Sea

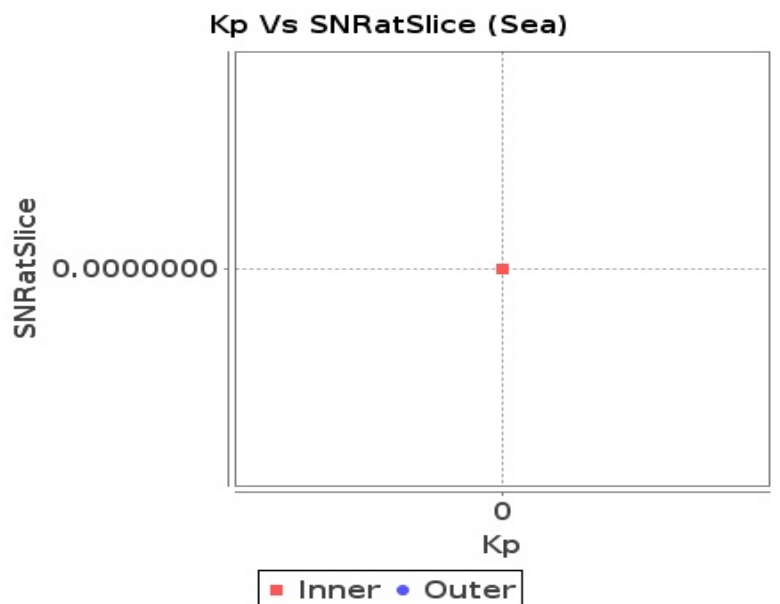


## Sigma0 Behaviour (Kp Vs SNR)

Slice



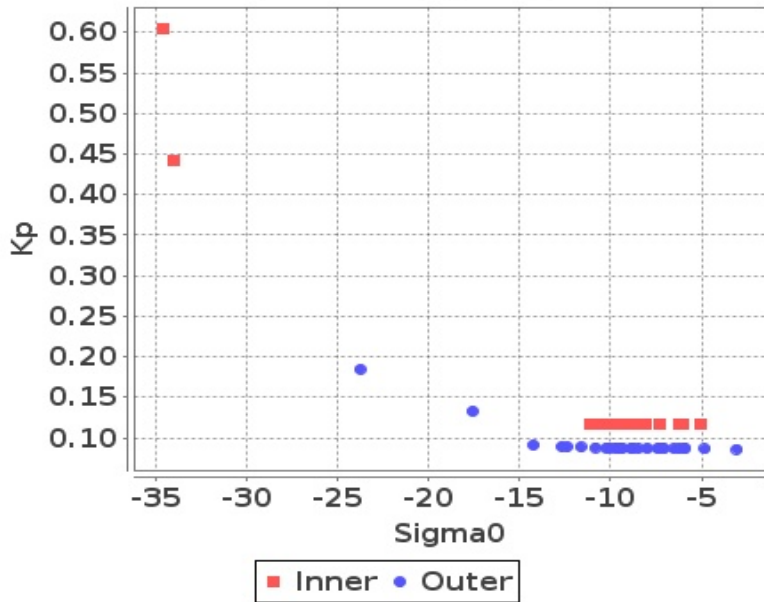
Slice



# Sigma0 Behaviour(Sigma0 Vs Kp)

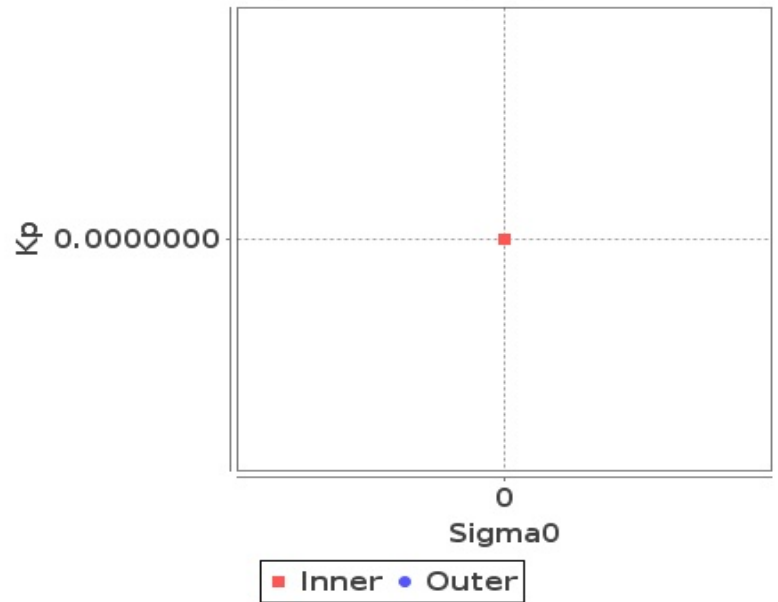
## Footprint-Land

### Sigma0 Vs Kp (Land)



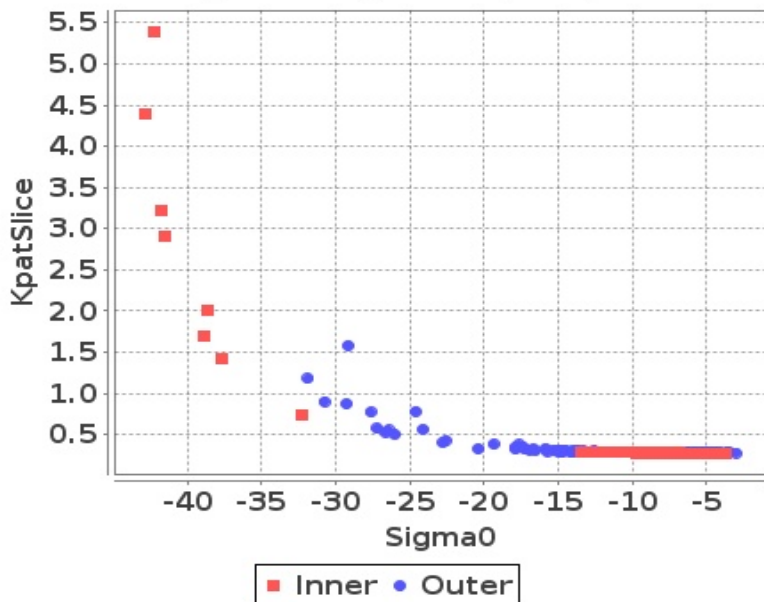
## Footprint-Sea

### Sigma0 Vs Kp (Sea)



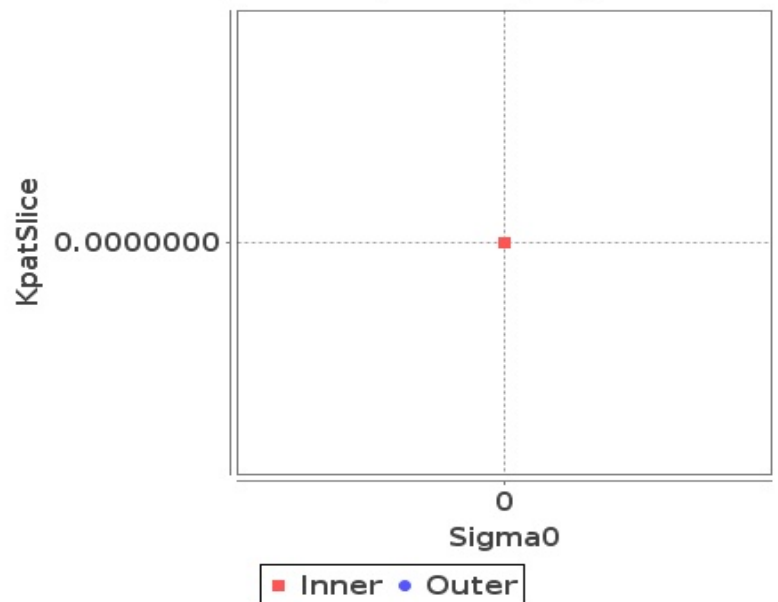
## Slice-Land

### Sigma0 Vs KpatSlice (Land)



## Slice-Sea

### Sigma0 Vs KpatSlice (Sea)

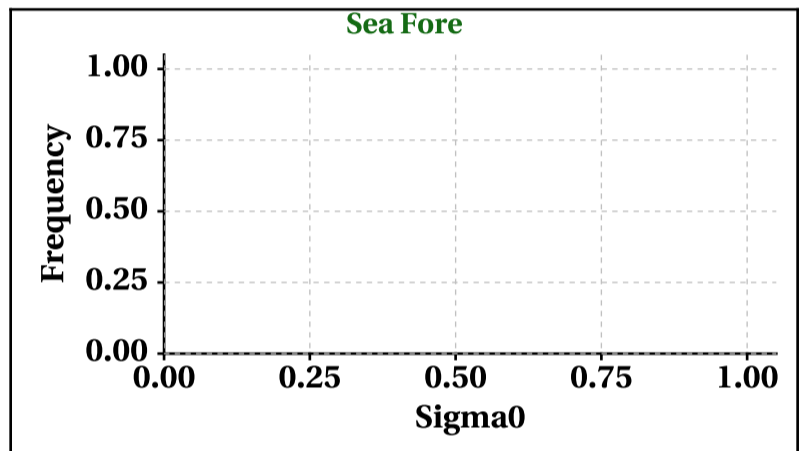
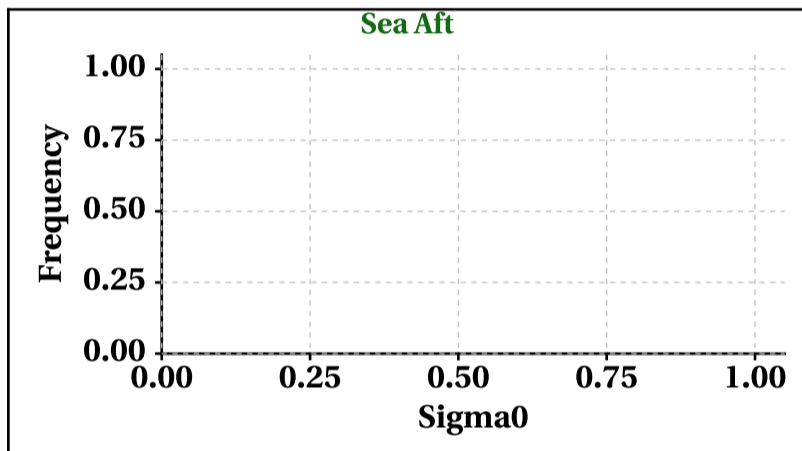
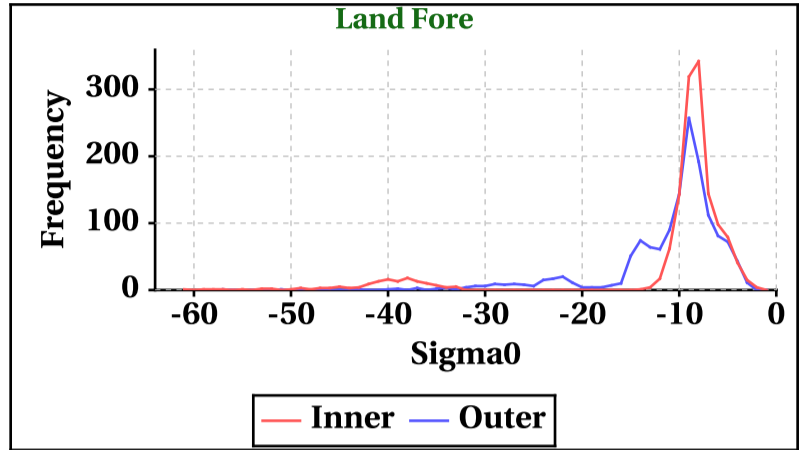
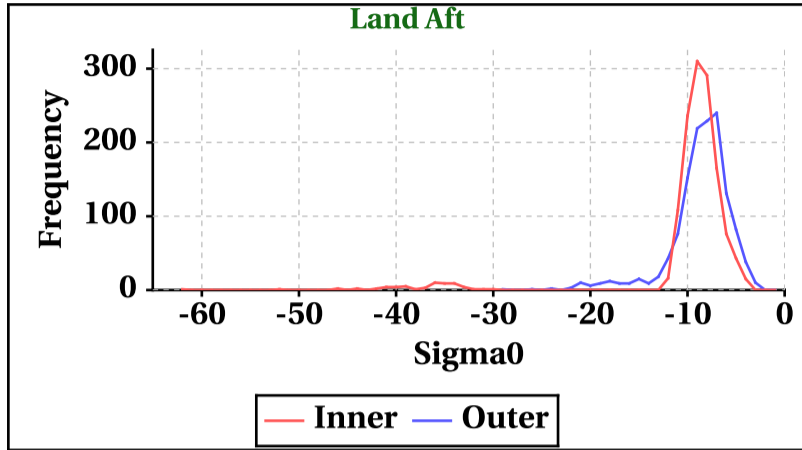


# Dynamic Range (Data Histograms)

## Sigma0(db)

Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-62	-61	0	0
Max	0	0	0	0

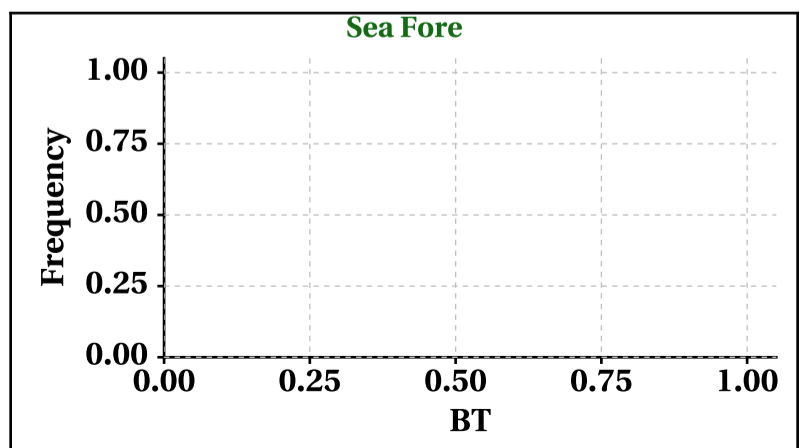
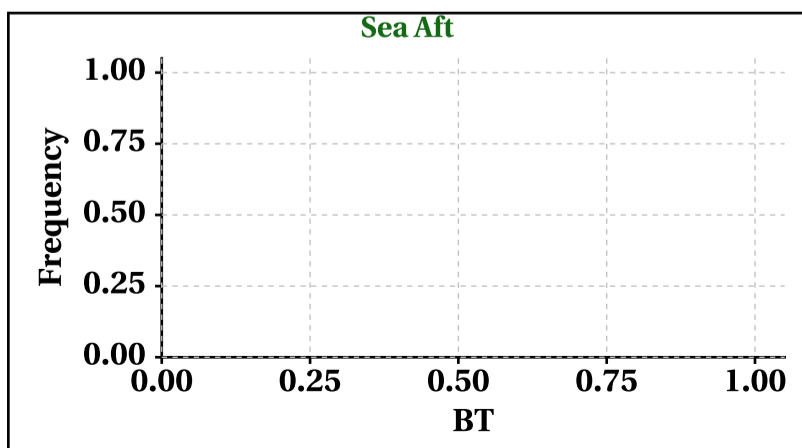
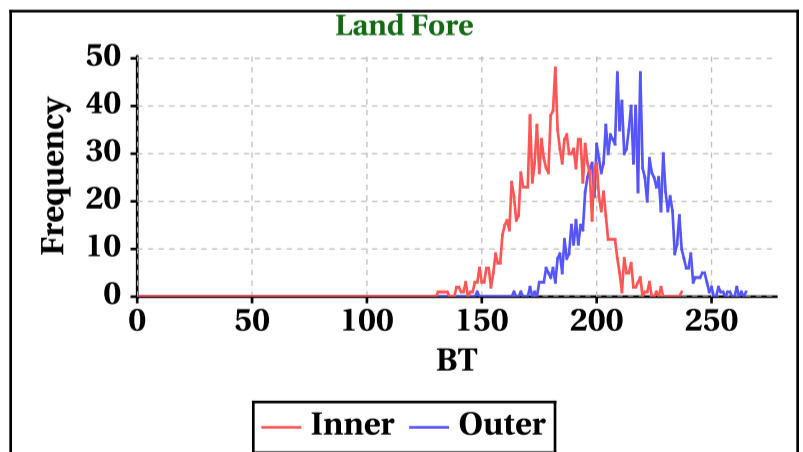
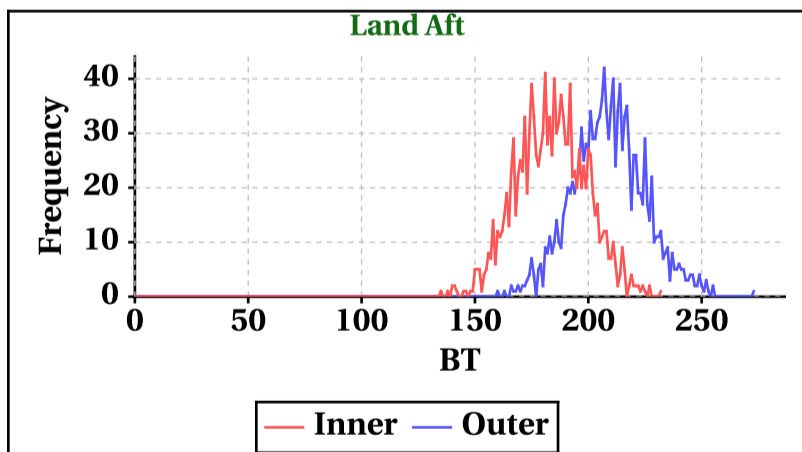
Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-29	-57	0	0
Max	0	0	0	0



## Brightness Temperature(K)

Inner Beam(HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	232	237	0	0

Outer Beam(VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	273	265	0	0

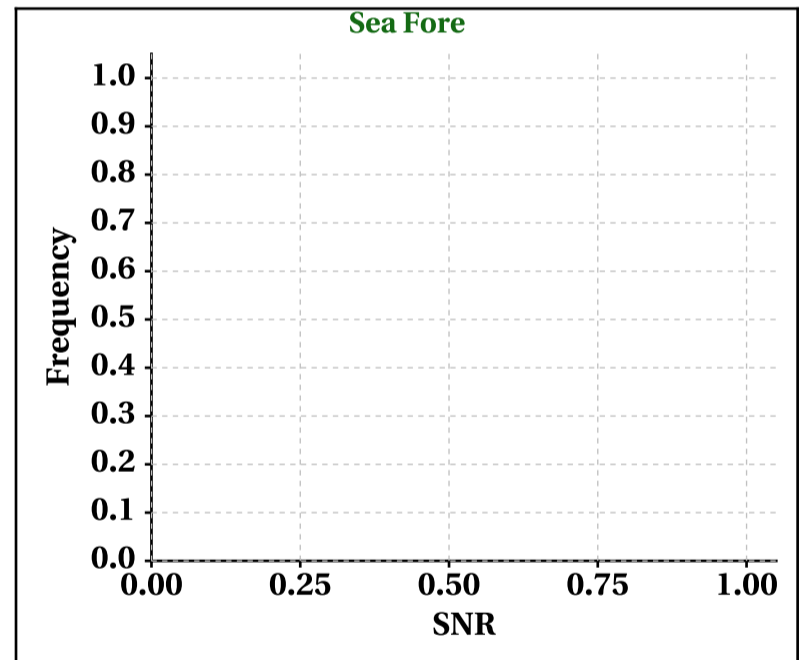
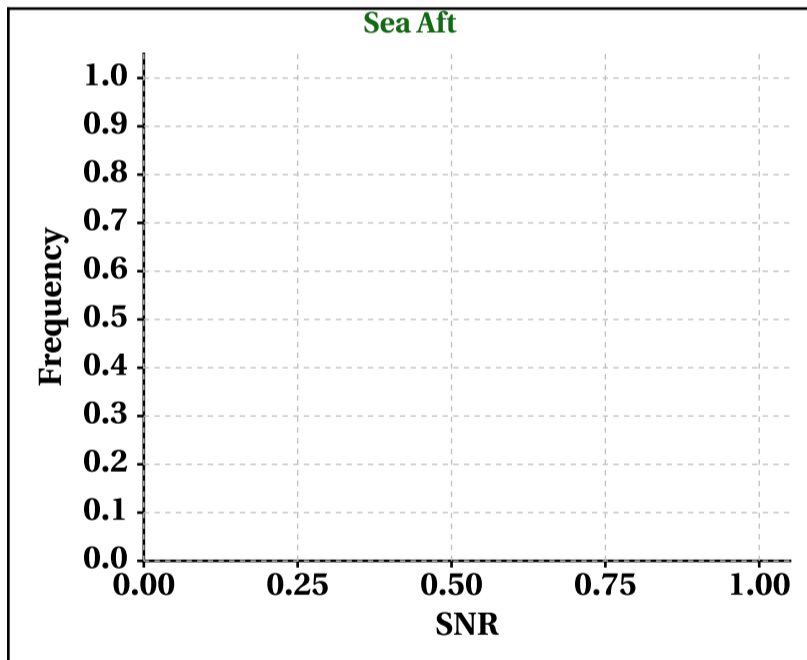
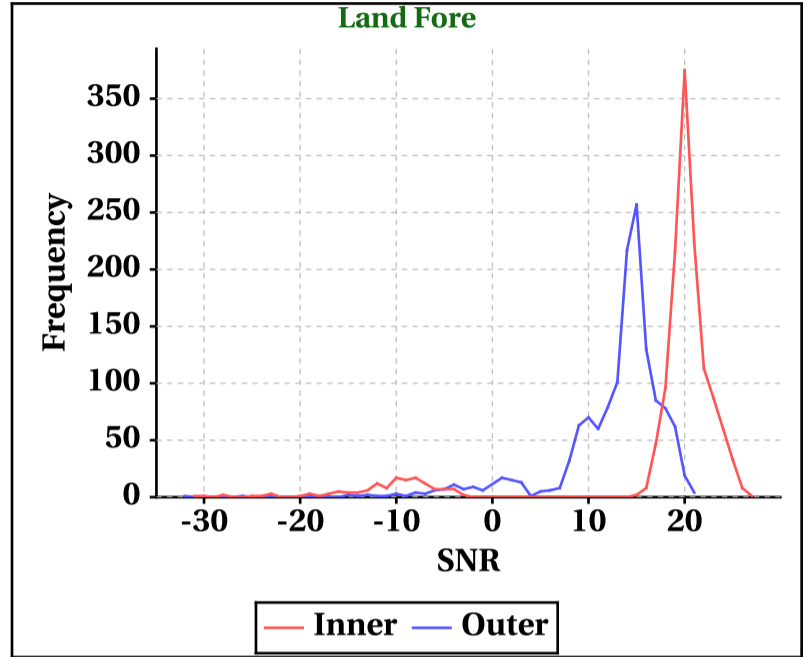
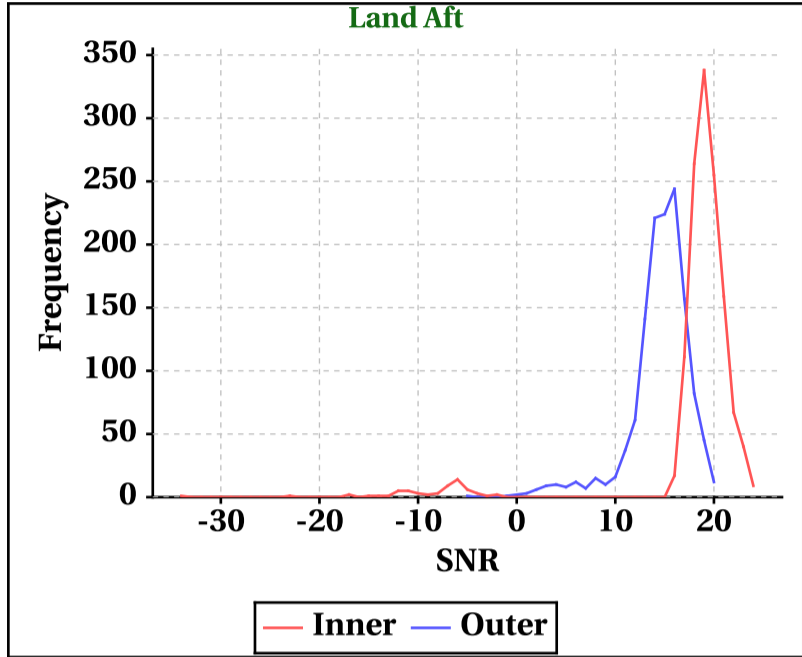


# Dynamic Range (Data Histograms)

## SNR(dBm)

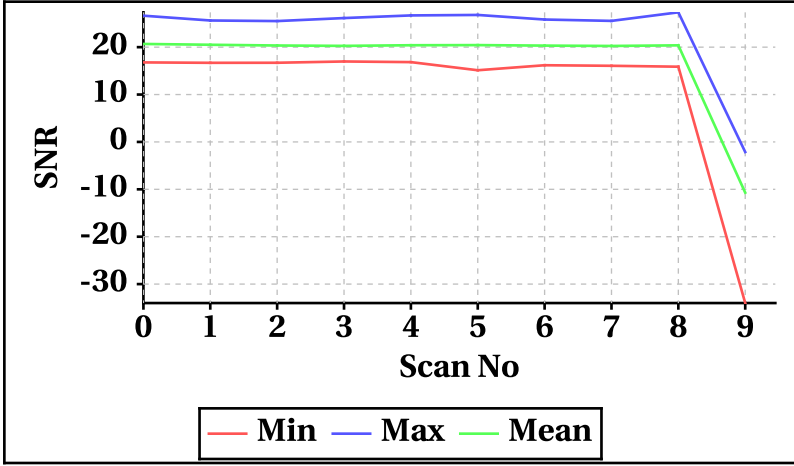
Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-34	-31	0	0
Max	24	27	0	0

Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-5	-32	0	0
Max	20	21	0	0

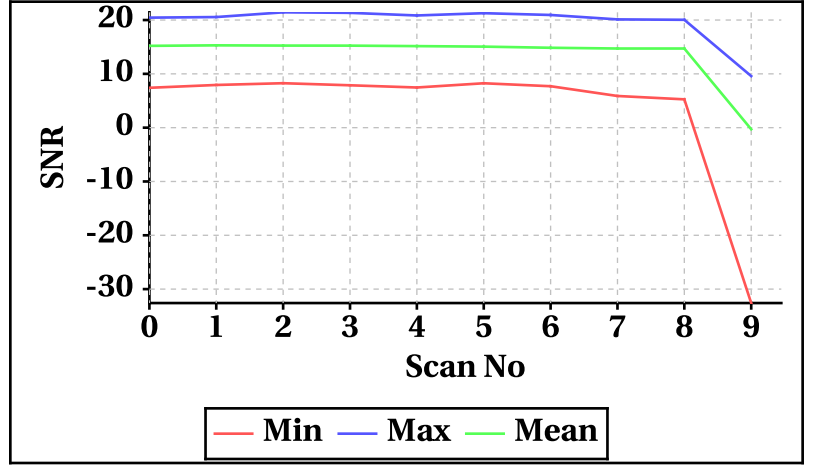


## Orbit-wise behaviour of SNR

**Inner Beam (HH)**

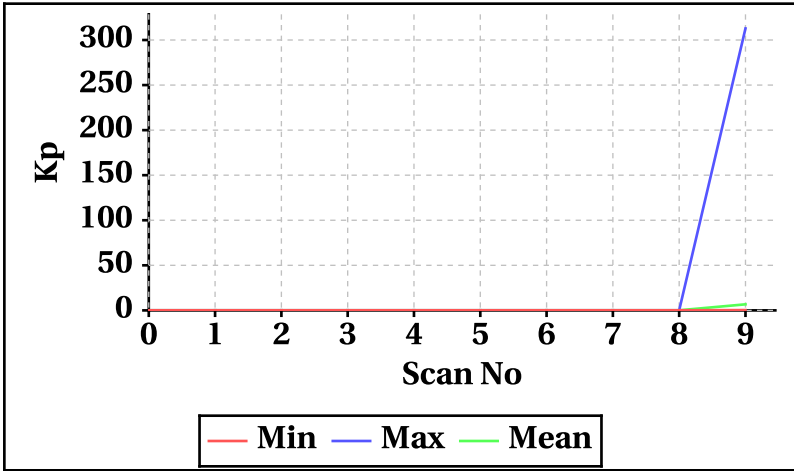


**Outer Beam(VV)**

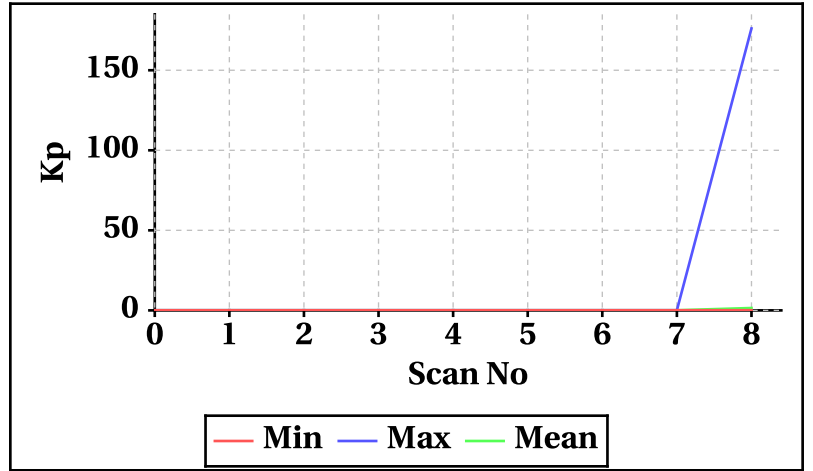


## Orbit-wise behaviour of Kp, Kpa, Kpb, Kpc

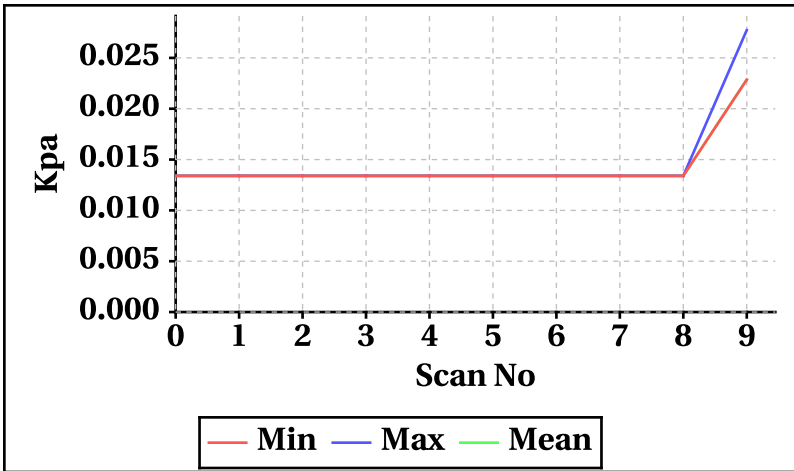
**Inner Beam(HH)**



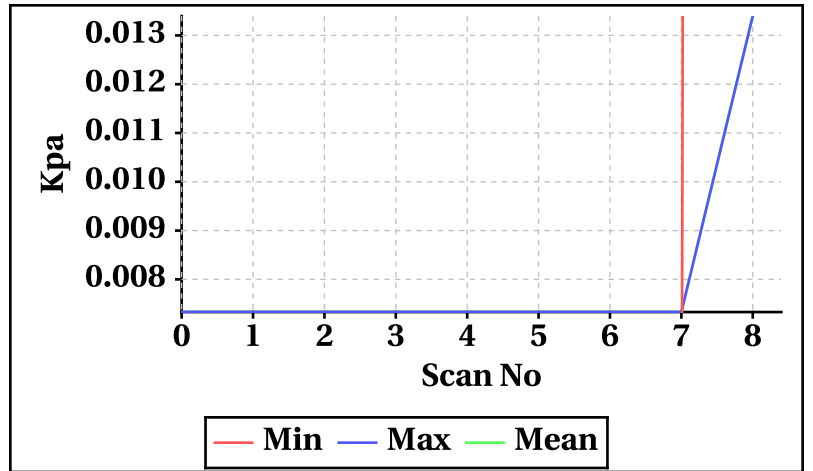
**Outer Beam(VV)**



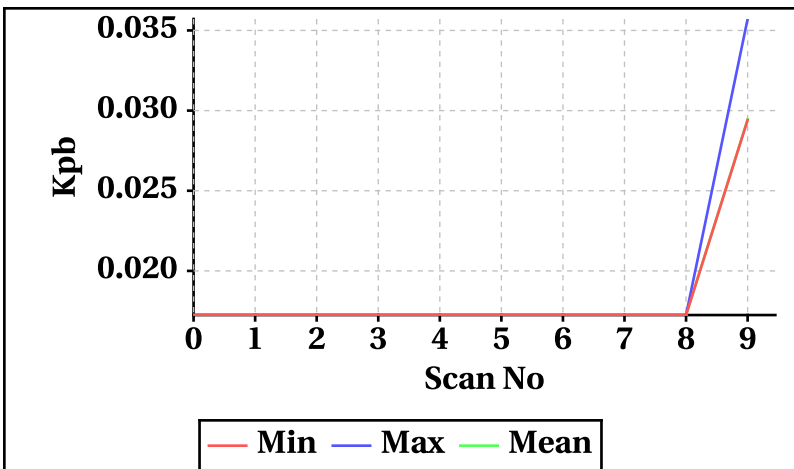
**Inner Beam(HH)**



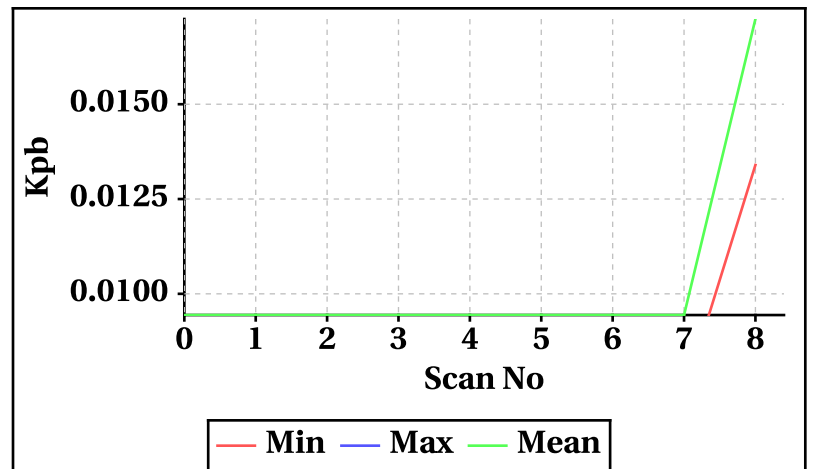
**Outer Beam(VV)**



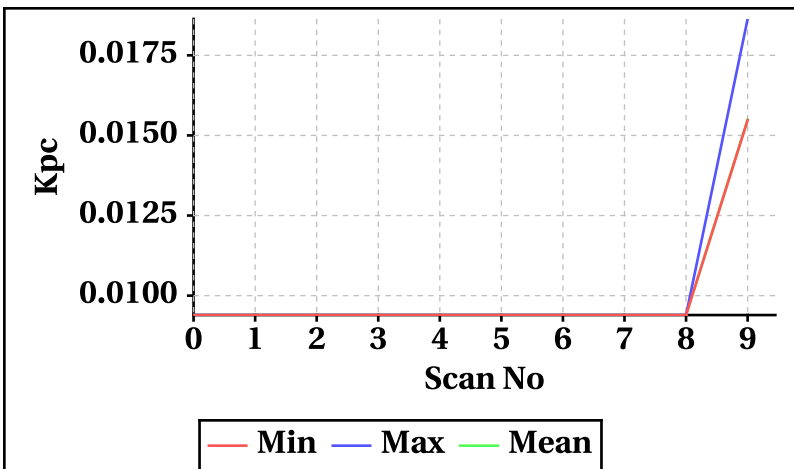
**Inner Beam(HH)**



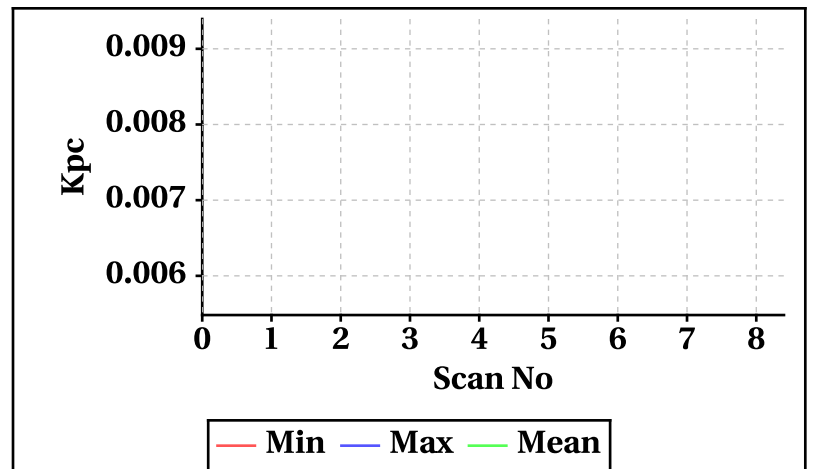
**Outer Beam(VV)**



**Inner Beam(HH)**

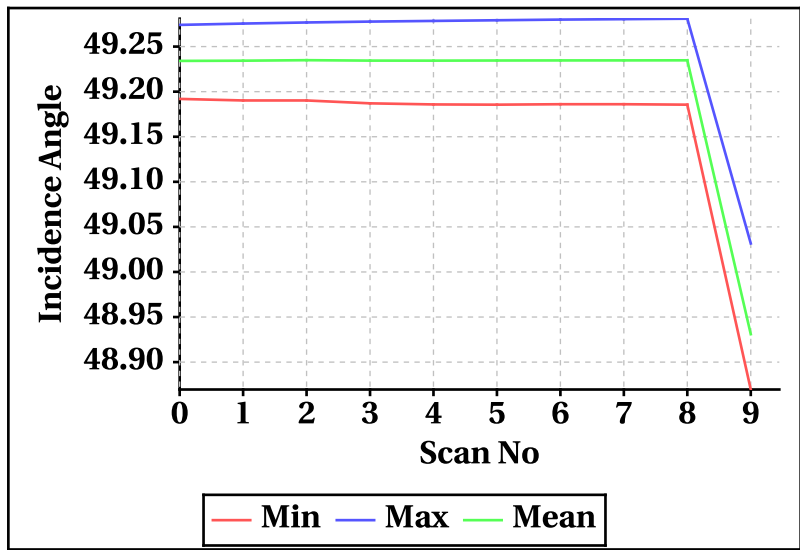


**Outer Beam(VV)**

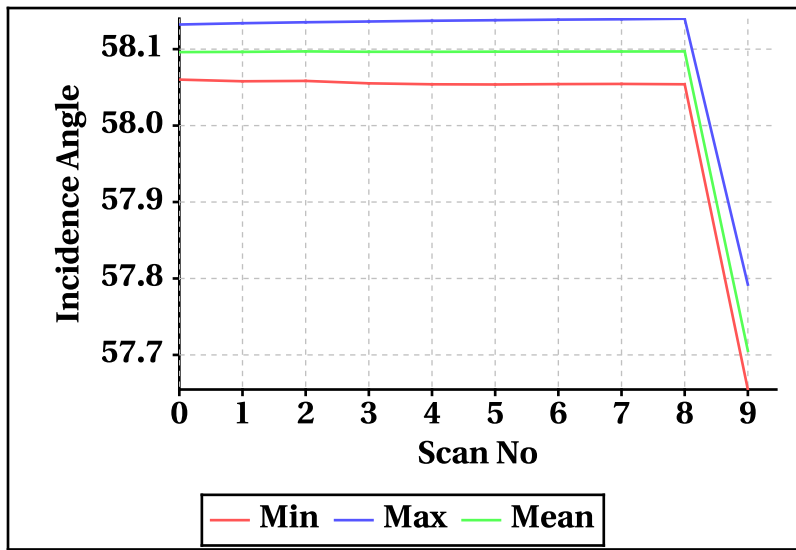


# Orbit-wise behaviour of Incidence, Azimuth, Range, X-Factor

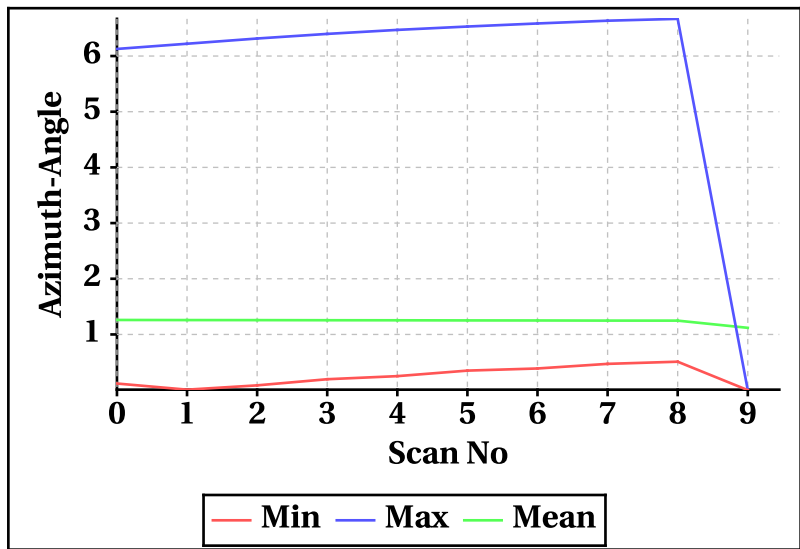
### Inner Beam (HH)



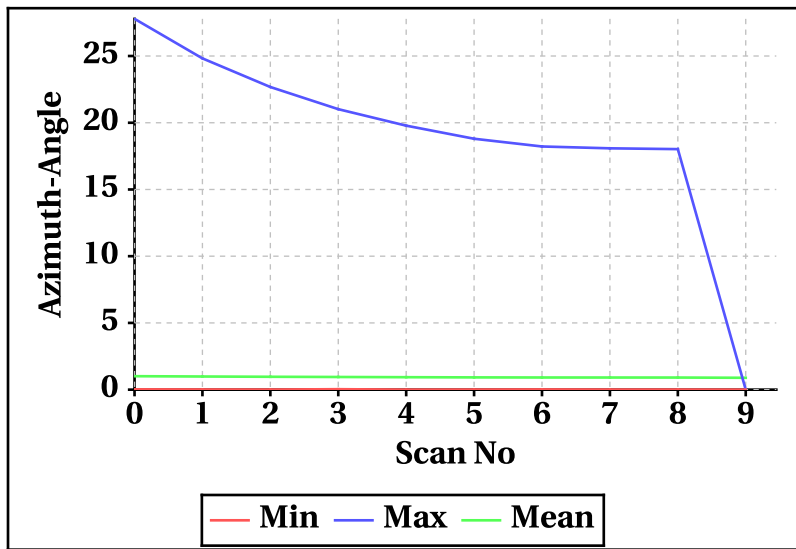
### Outer Beam(VV)



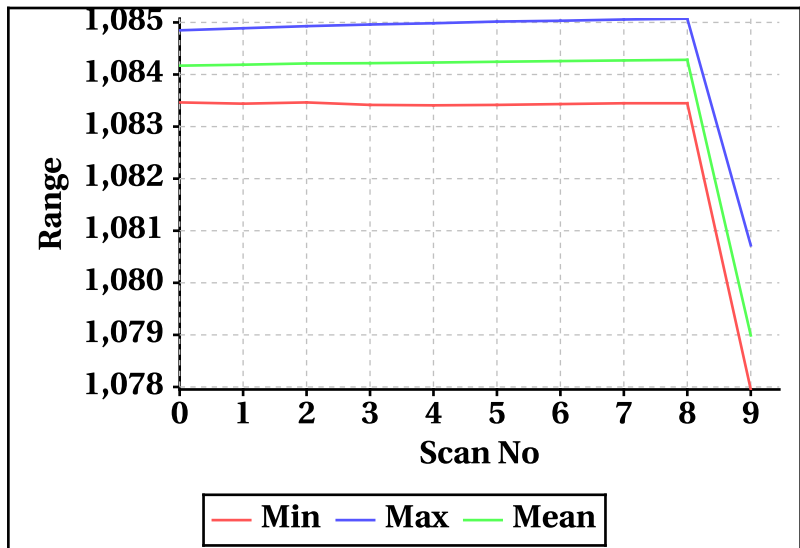
### Inner Beam (HH)



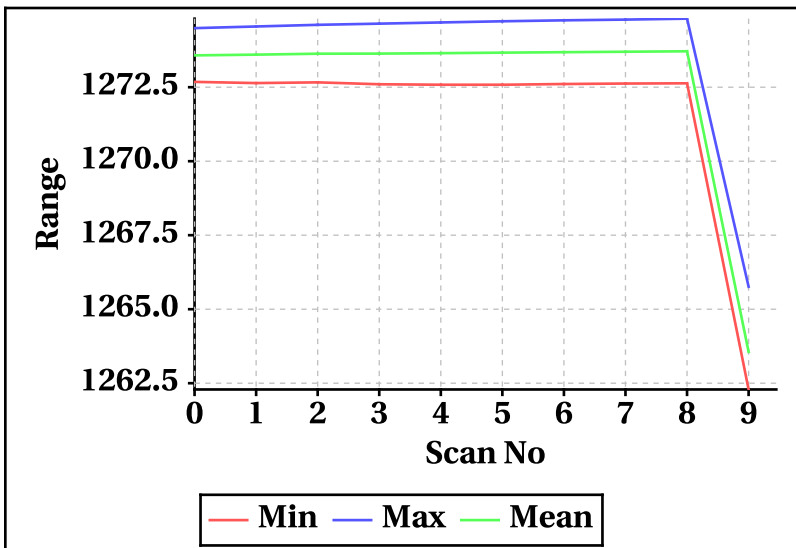
### Outer Beam(VV)



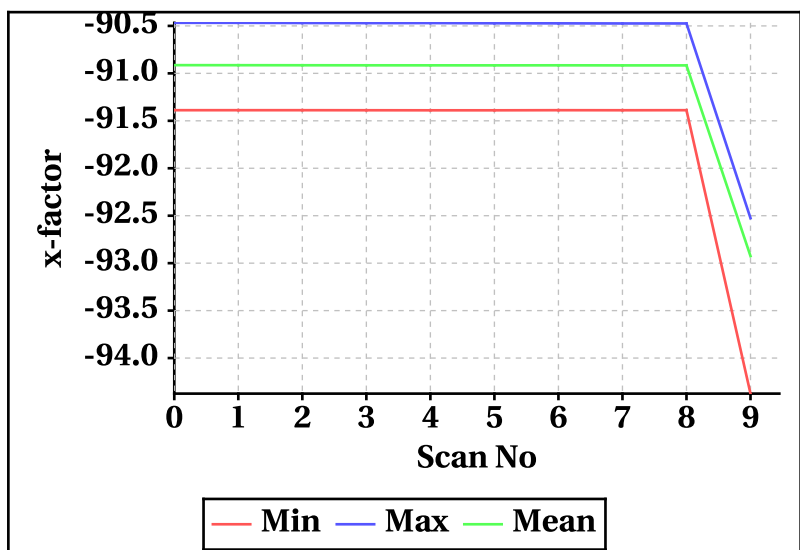
### Inner Beam (HH)



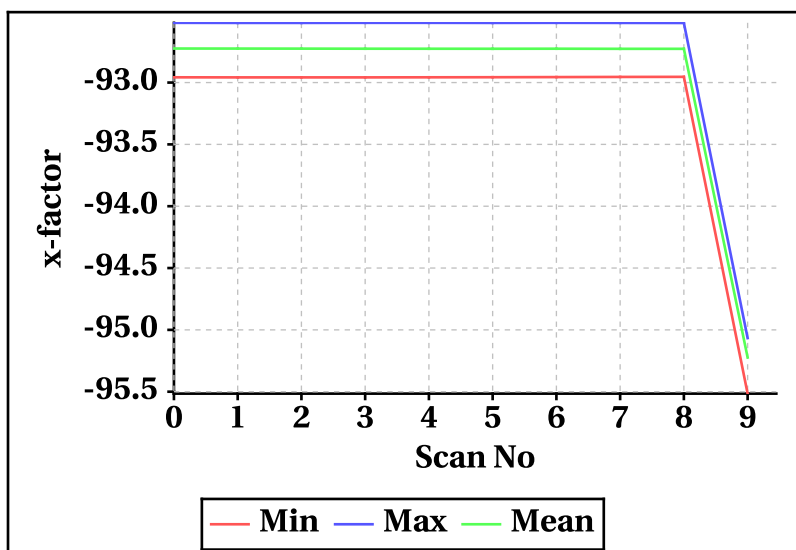
### Outer Beam(VV)



### Inner Beam (HH)



### Outer Beam(VV)



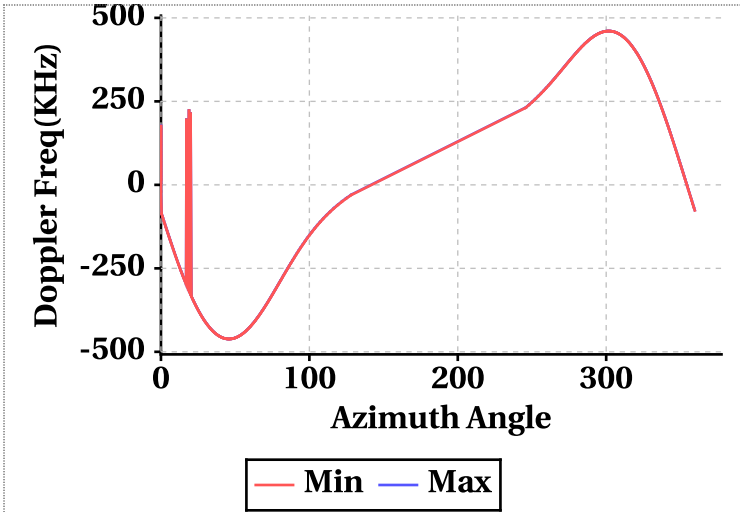


# Doppler Frequency Variation

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

	Inner Beam (HH)	Outer Beam (VV)
<b>Min</b>	-461.54	-517.14
<b>Max</b>	460.56	516.26

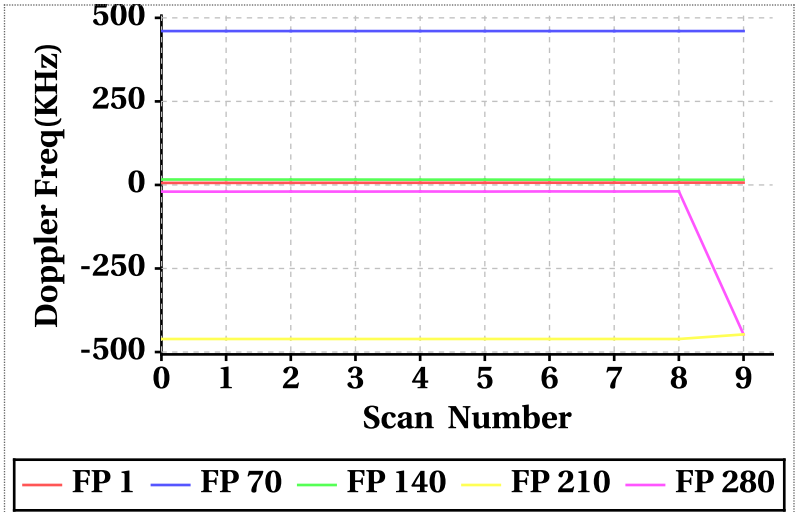
**Footprint wise Doppler frequency variation Inner Beam (HH)**



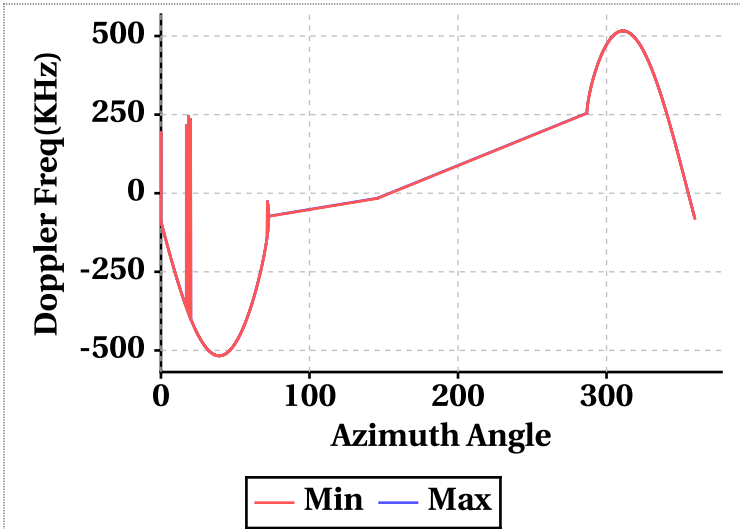
**Doppler Frequency(KHz) variation**

Doppler_FP	Inner Beam (HH)			Outer Beam (VV)		
	Min	Max	Mean	Min	Max	Mean
Doppler_1	6.14	7.00	6.58	1.36	2.32	1.85
Doppler_70	460.42	460.48	460.44	515.98	516.02	516.00
Doppler_140	15.40	16.24	15.83	11.54	12.46	12.01
Doppler_210	-460.96	-447.28	-459.59	-516.76	-499.76	-515.05
Doppler_280	-447.28	-19.20	-62.48	-499.76	-15.56	-64.50

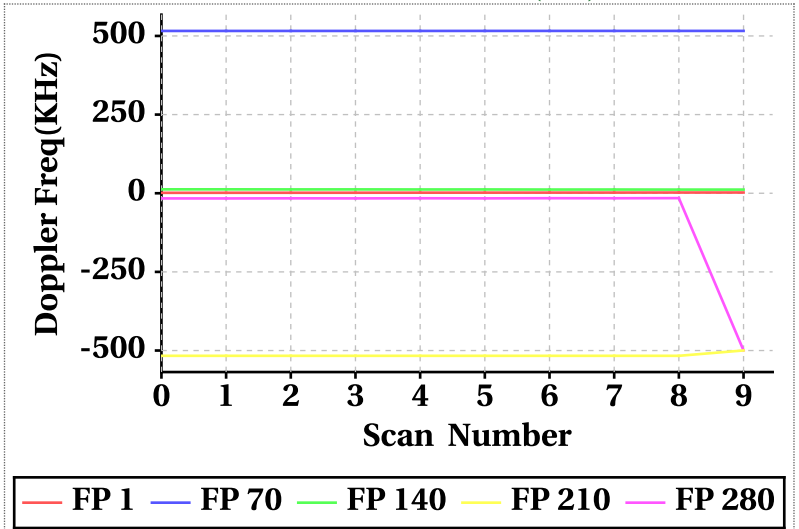
**Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Inner Beam (HH)**



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

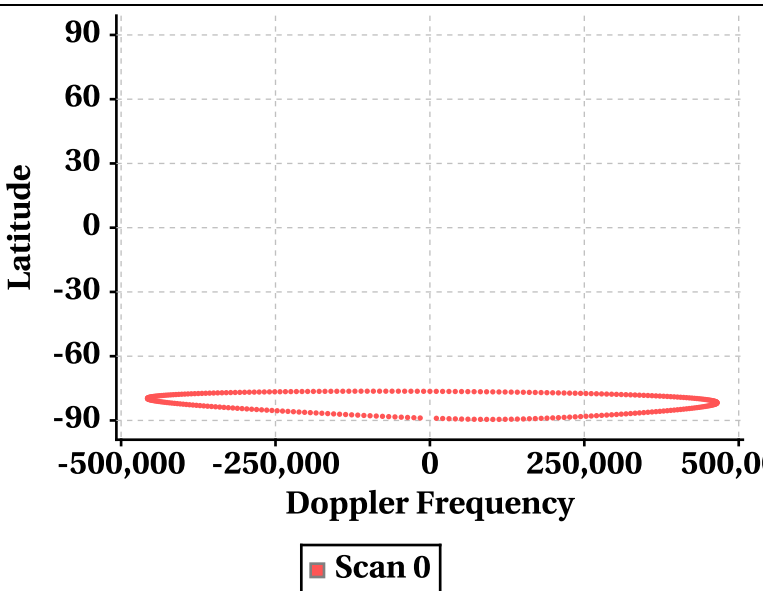


**Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Outer Beam (VV)**

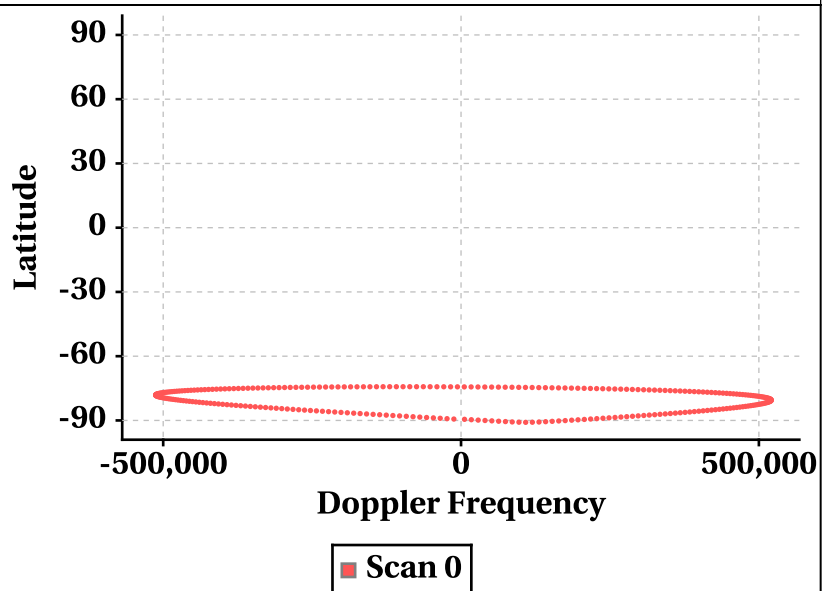


# Latitude Vs Doppler Frequency

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



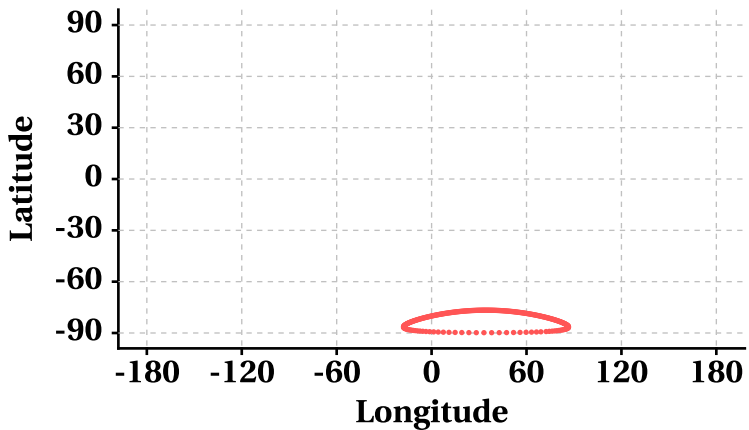
**Doppler Frequency at Scan Interval of 200 [Outer Beam(VV)]**



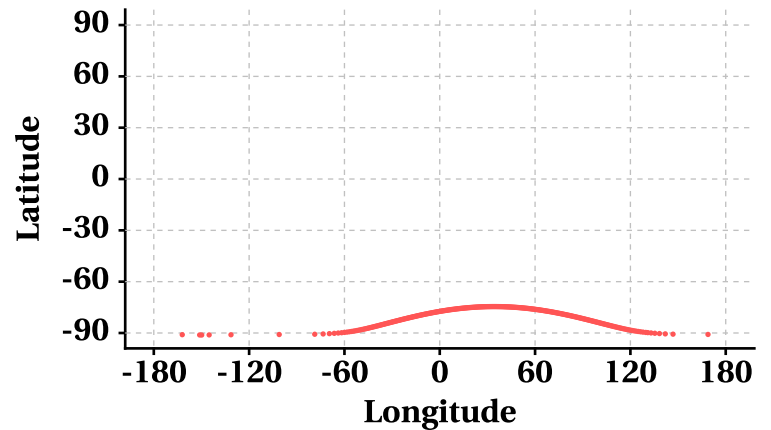
# Parameter as a function of Latitude

## Latitude Vs Longitude

### Scan Trace [Inner Beam(HH)]

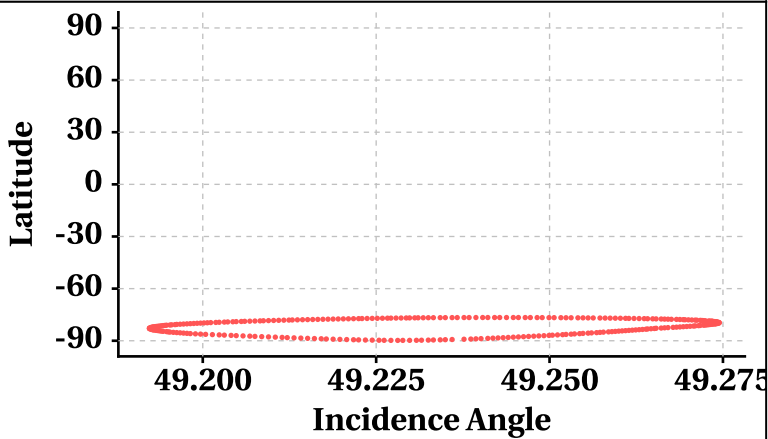


### Scan Trace [Outer Beam (VV)]

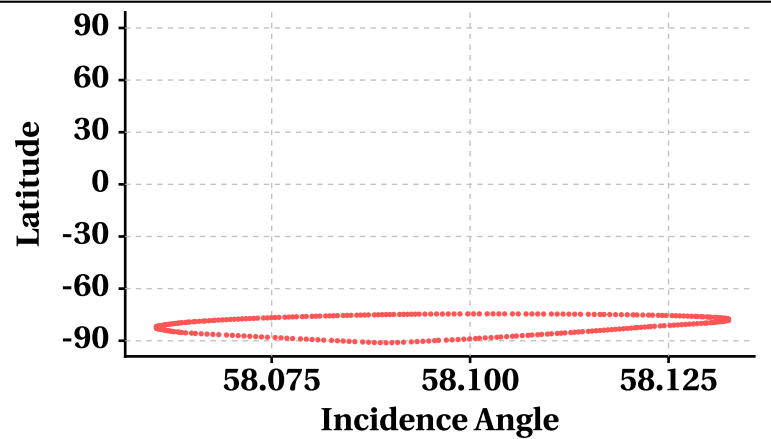


## Latitude Vs Incidence Angle

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

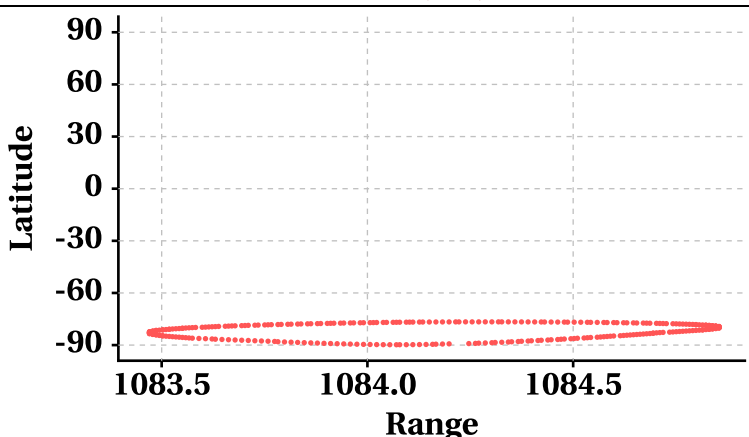


### Incidence Angle at Scan Interval of 200 [Outer Beam (VV)]

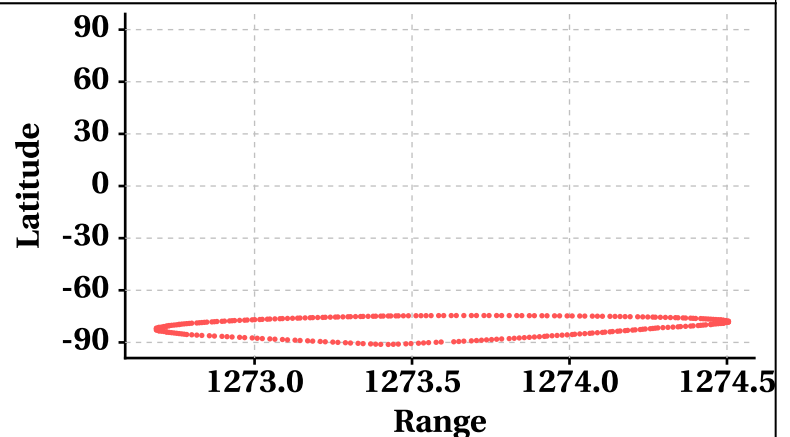


## Latitude Vs Range

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



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



# Variation in Orbit and Attitude Parameters

