

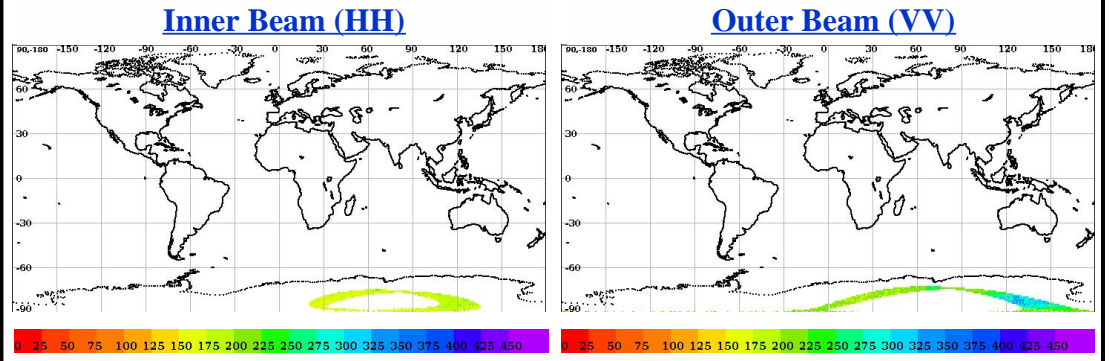
# SCATSAT-1 Scatterometer Level-1B Data Quality Evaluation Report

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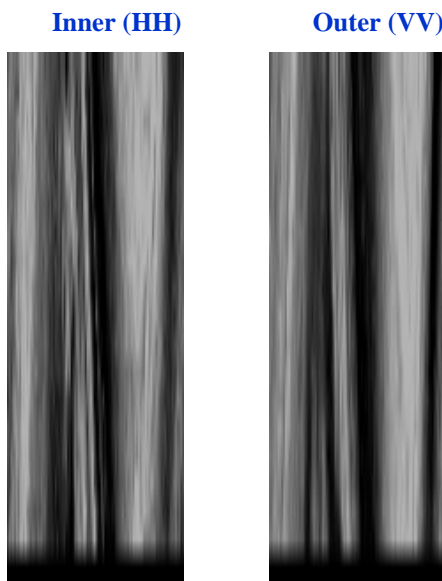
- Half-Orbit Coverage using BT & Sigma-0
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<b>Satellite Id</b>	ScatSat-1	<b>Start Orbit</b>	12348	<b>Total Scans</b>	18
<b>Sensor Name</b>	Scatterometer	<b>End Orbit</b>	12349	<b>No of Inner FootPrints</b>	281
<b>Processor Version</b>	v1.1.3	<b>Rev. Number</b>	12348_12349	<b>No Of Outer FootPrints</b>	282
<b>Half Orbit Direction</b>	SN	<b>Data Production Date</b>	26-01-2019	<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

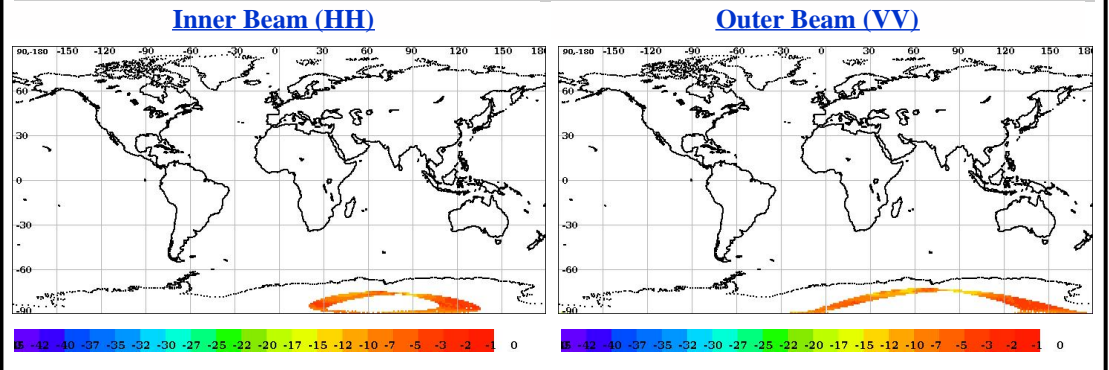
## Brightness Temperature(k) Footprint trace



## Image Snapshot for Inner & Outer Beam



## Sigma0(dB) Footprint trace

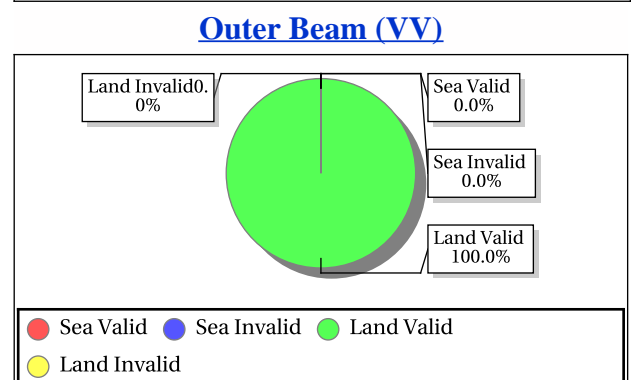
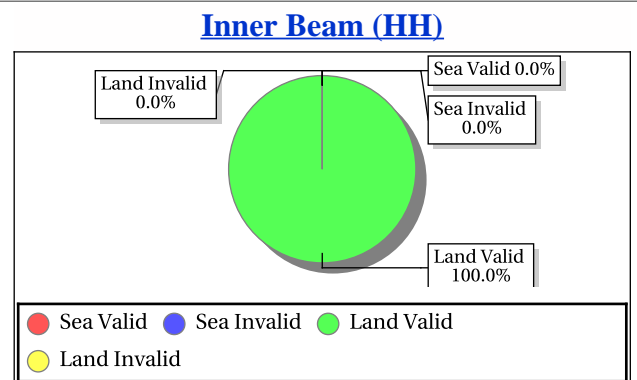


## Invalid and Poor Sigma-0 Quality Flag Statistics for Inner/Outer Slices\*

Sigma-0 Flags	Inner Beam	Outer Beam
Invalid Sigma0(%)	0.00	0.00
Data Not Available From Payload (%)	0.0	0.0
Slice not within sample array limits (%)	0.00	100.00
C(S+N) - C(N) < 0.1 (%)	0.00	0.00
Poor Sigma0(%)	22.22	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 (%)	0.0	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	0.12	0.12	0.000	0.12	0.12	0.12	0.000
<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	0.02	0.02	0.02	0.000	0.02	0.02	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	0.01	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	15.12	28.78	22.05	51.825	15.55	29.42	22.74	62.293

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	0.09	0.09	0.000	0.09	0.09	0.09	0.000
<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	0.01	0.01	0.000	0.01	0.01	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	7.99	22.28	16.00	0.158	8.42	22.72	16.21	0.197

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>	49.21	49.39	49.30	0.000	58.10	58.28	58.19	0.000	Inci.(Inner)	47.10	49.90
<b>Azimuth Diff. (deg)</b>	0.0027	6.07	1.27	13.780	0.0000	280.75	1.27	15.327	Inci.(Outer)	57.30	58.90
<b>Range(Km)</b>	1093.93	1097.06	1095.32	40.945	1285.19	1289.83	1287.28	100.000	Azimuth Diff.	0.60	2.00
<b>X Factor(dbm)</b>	-91.39	-90.42	-90.90	0.000	-92.96	-92.47	-92.71	0.000	Range(Inner)	1025.00	1095.70
<b>Across Distance (Km)</b>	16.15	16.71	16.34	0.000	21.34	22.28	21.52	3.000	Range(Outer)	1210.00	1280.00
<b>Along Distance (Km)</b>	19.08	19.67	18.23	0.000	18.58	19.78	18.07	0.000	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

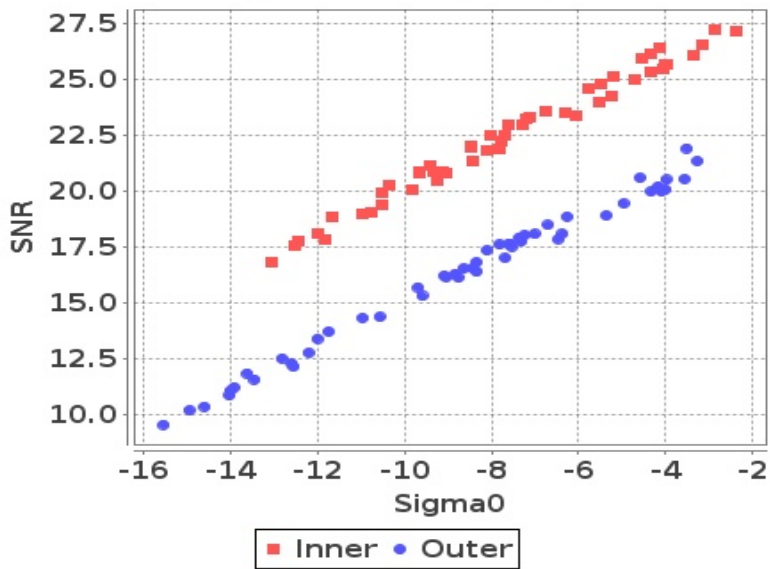
- Normal
- Deviations
- Alarming
- High Errors



## Sigma0 Behaviour (Sigma0 Vs SNR)

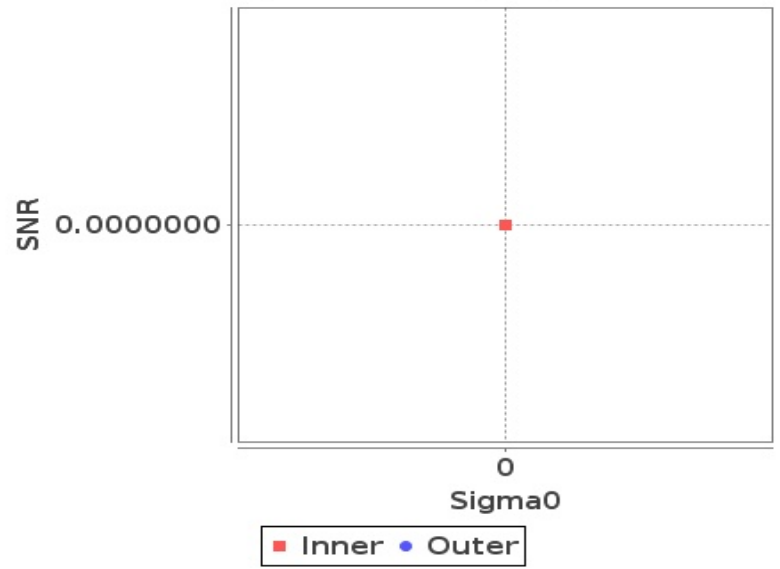
**Footprint-Land**

Sigma0 Vs SNR (Land)



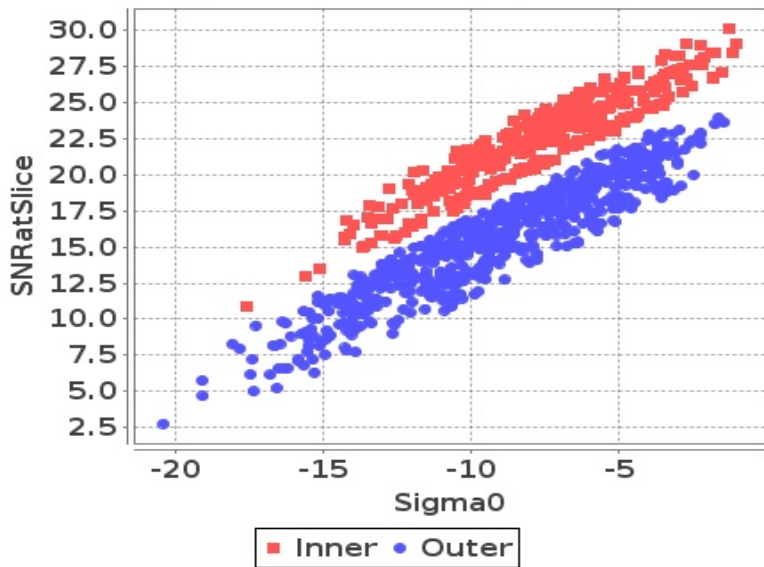
**Footprint-Sea**

Sigma0 Vs SNR (Sea)



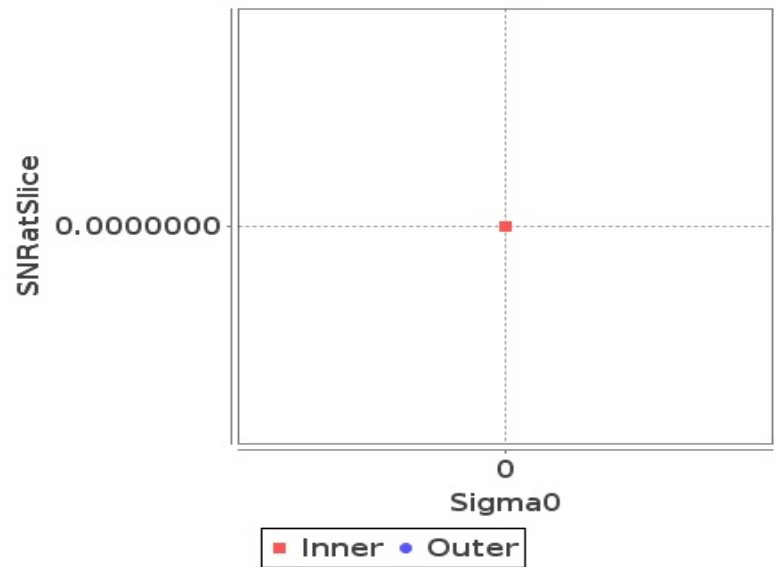
**Slice-Land**

Sigma0 Vs SNRatSlice (Land)



**Slice-Sea**

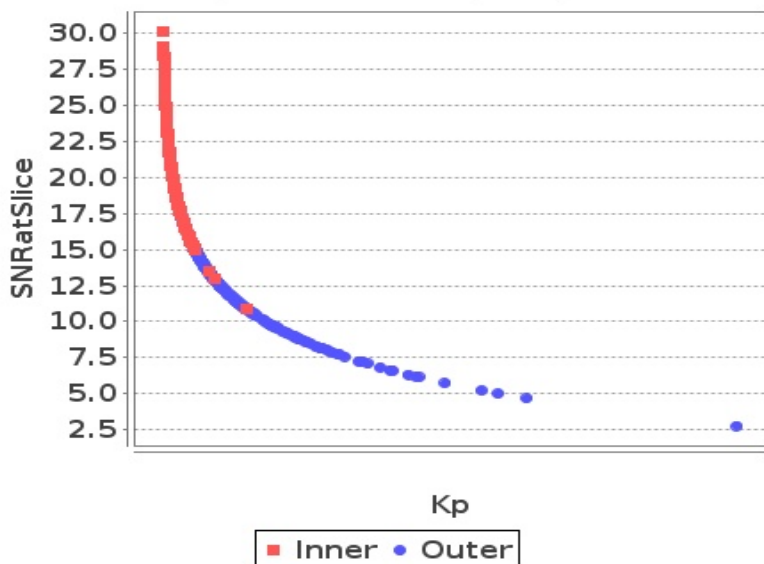
Sigma0 Vs SNRatSlice (Sea)



## Sigma0 Behaviour (Kp Vs SNR)

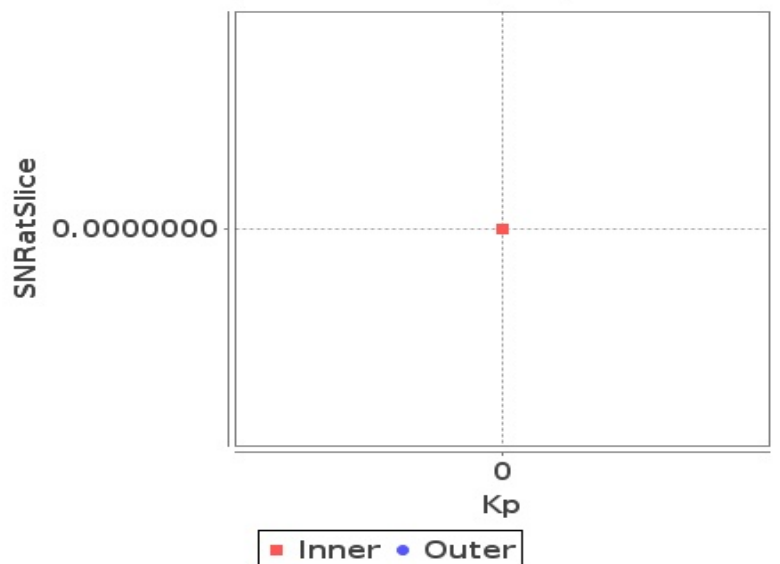
**Slice**

Kp Vs SNRatSlice (Land)



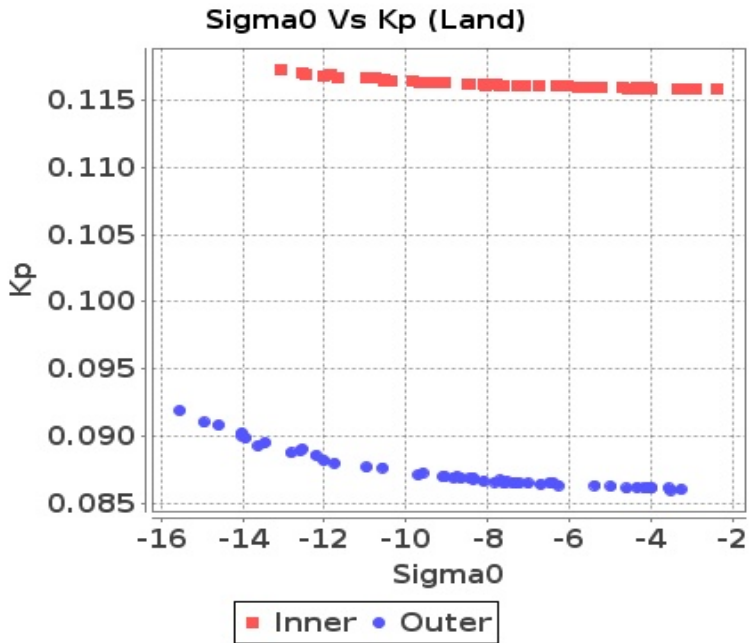
**Slice**

Kp Vs SNRatSlice (Sea)

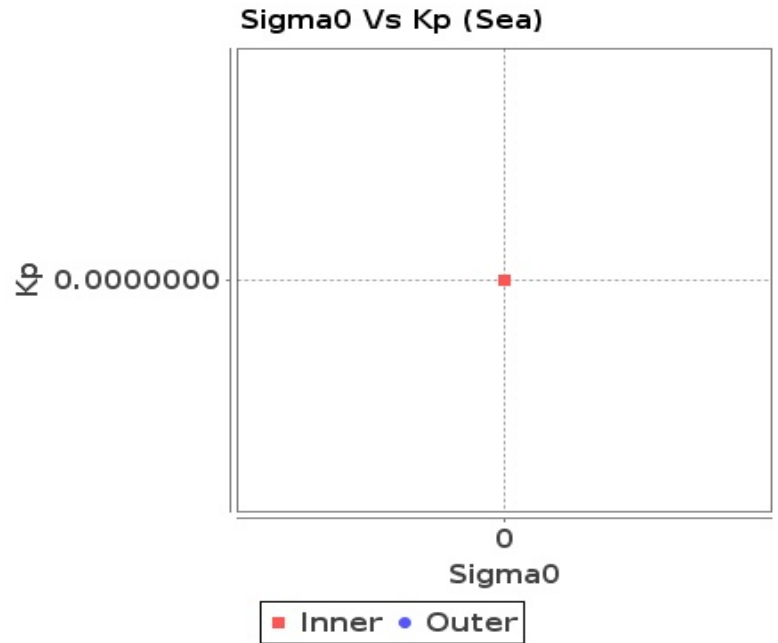


# Sigma0 Behaviour(Sigma0 Vs Kp)

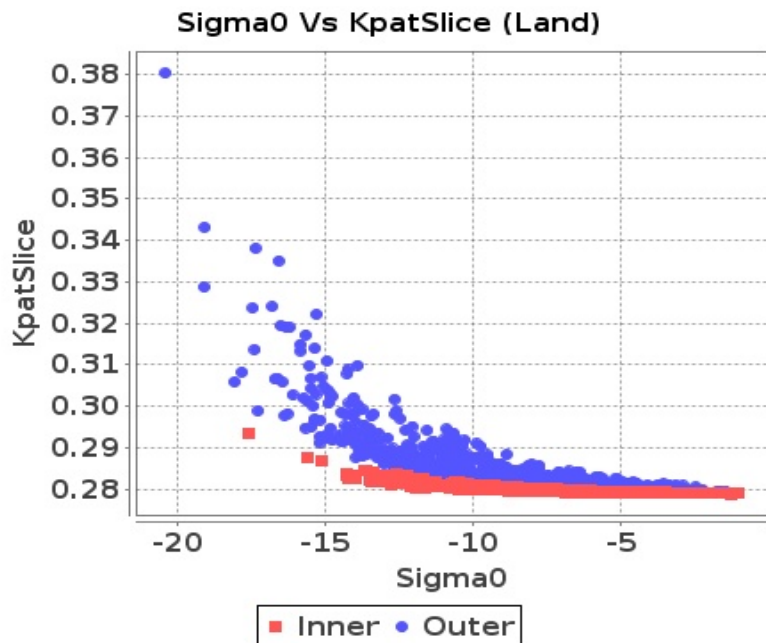
## Footprint-Land



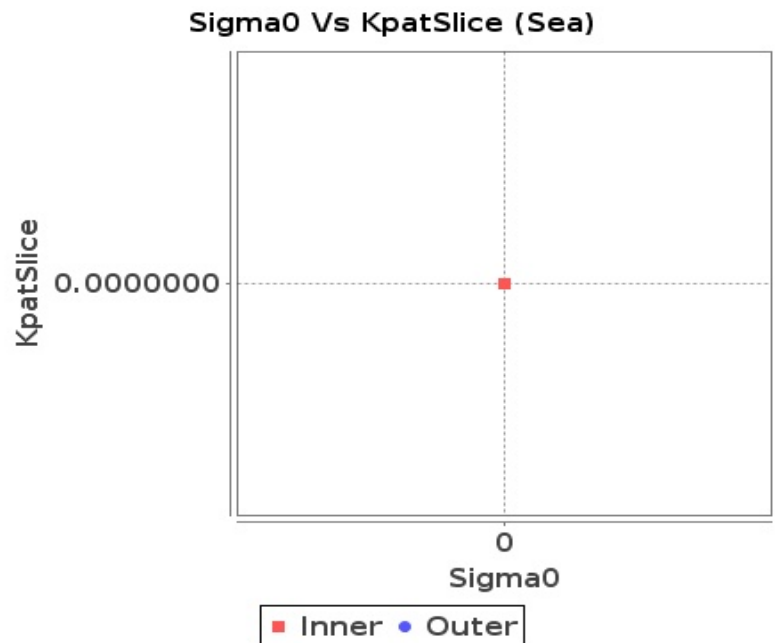
## Footprint-Sea



## Slice-Land



## Slice-Sea

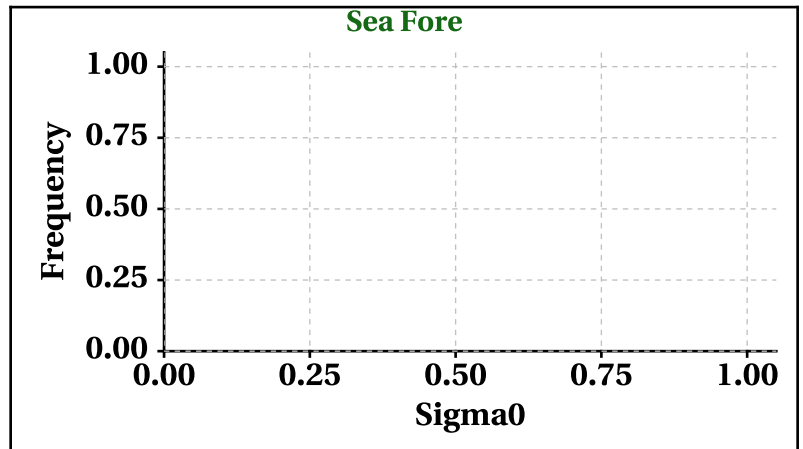
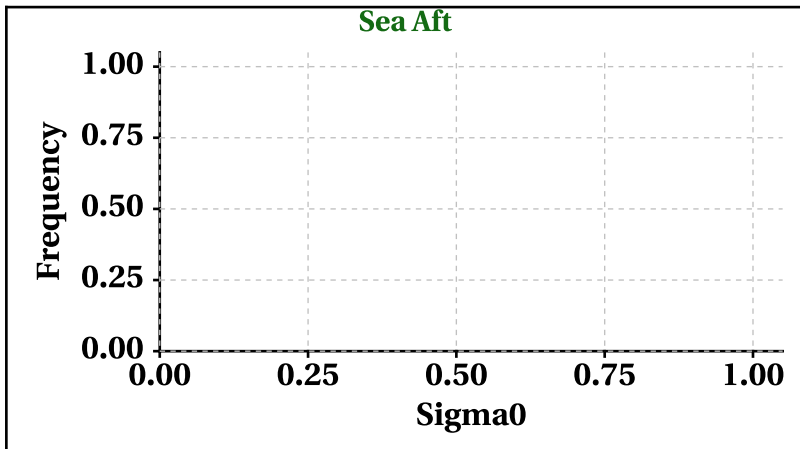
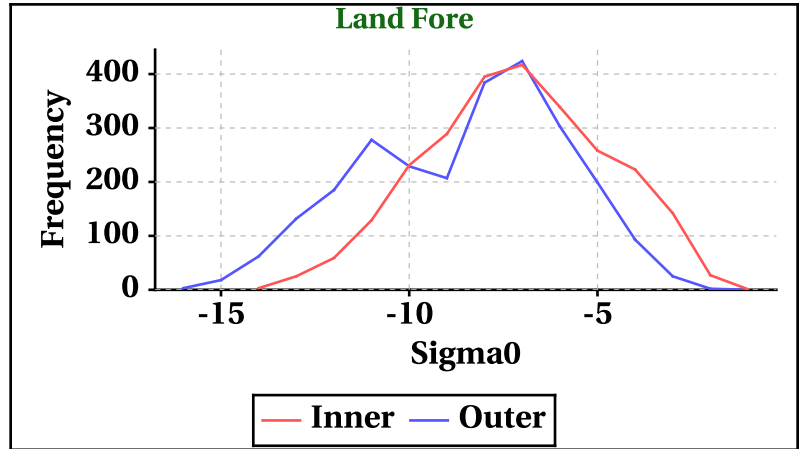
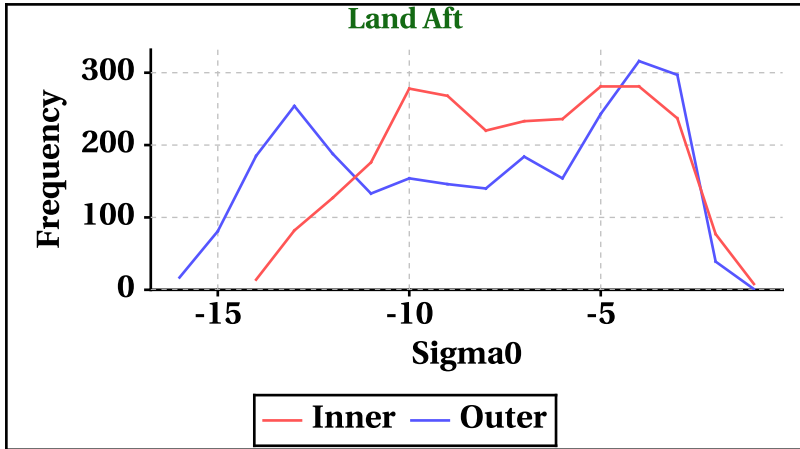


# Dynamic Range (Data Histograms)

## Sigma0(db)

Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-14	-14	0	0
Max	0	0	0	0

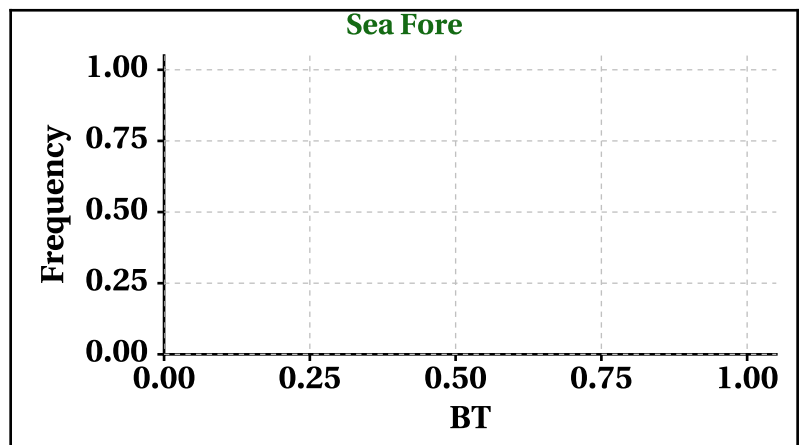
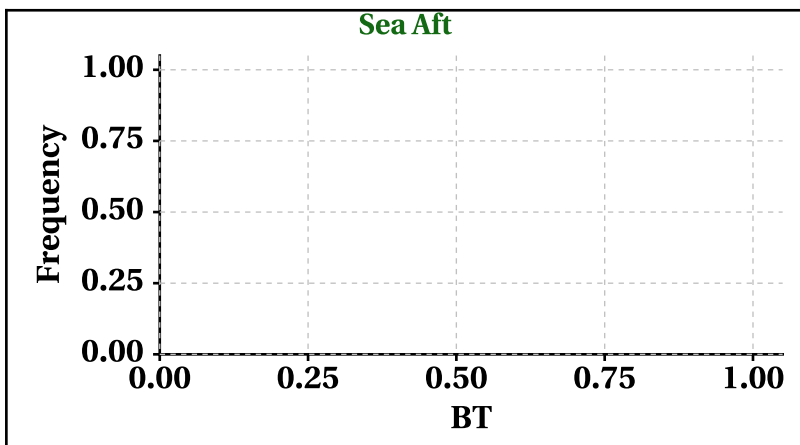
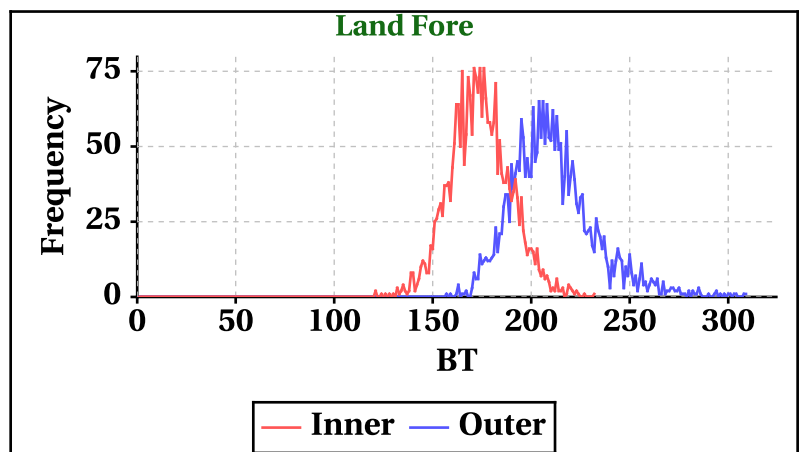
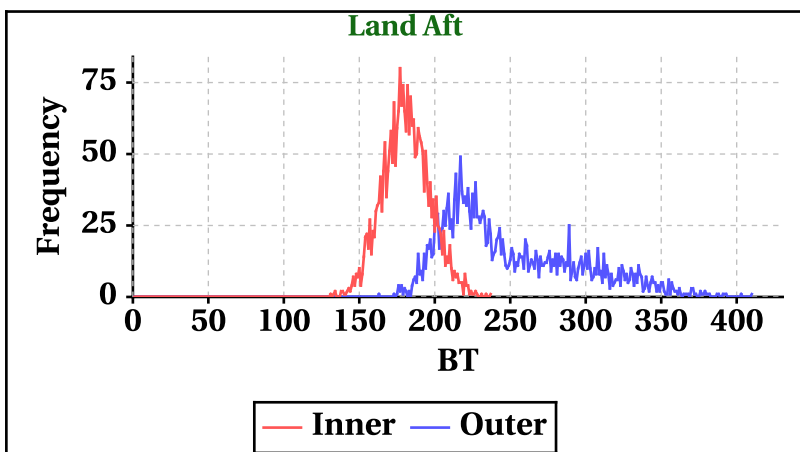
Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-16	-16	0	0
Max	0	0	0	0



## Brightness Temperature(K)

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

Outer Beam(VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	410	309	0	0

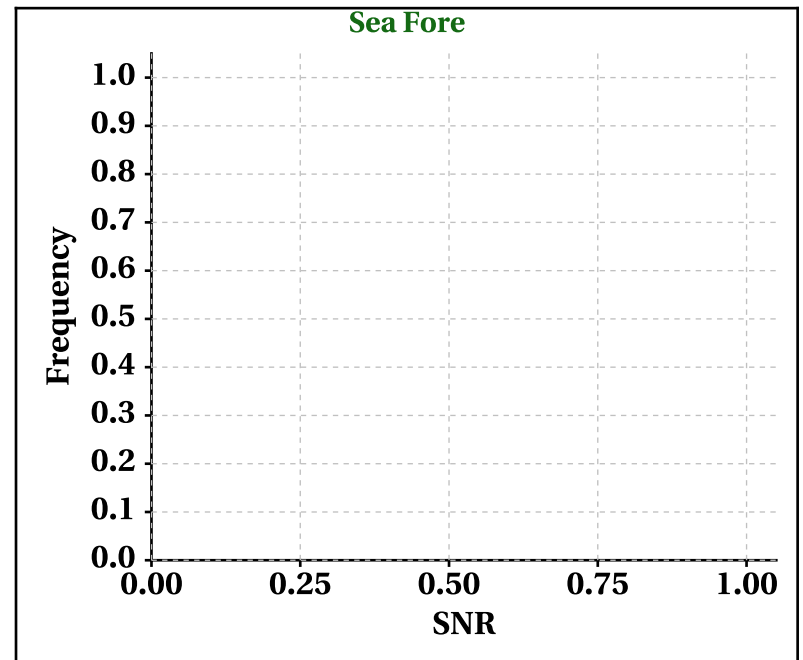
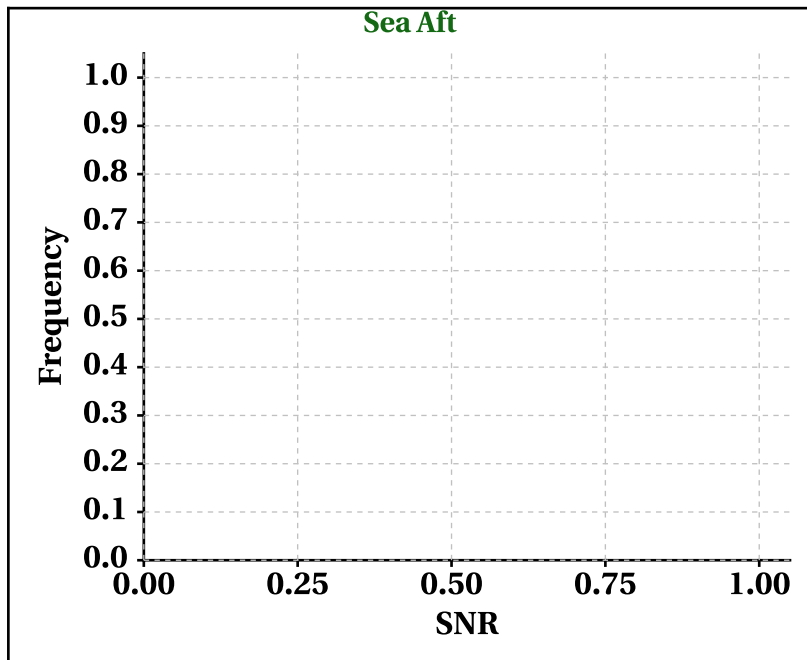
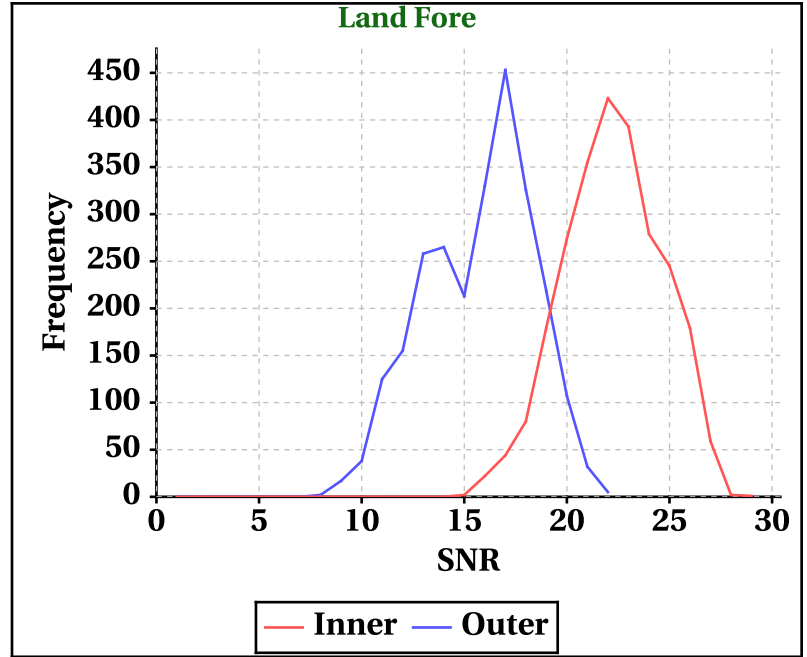
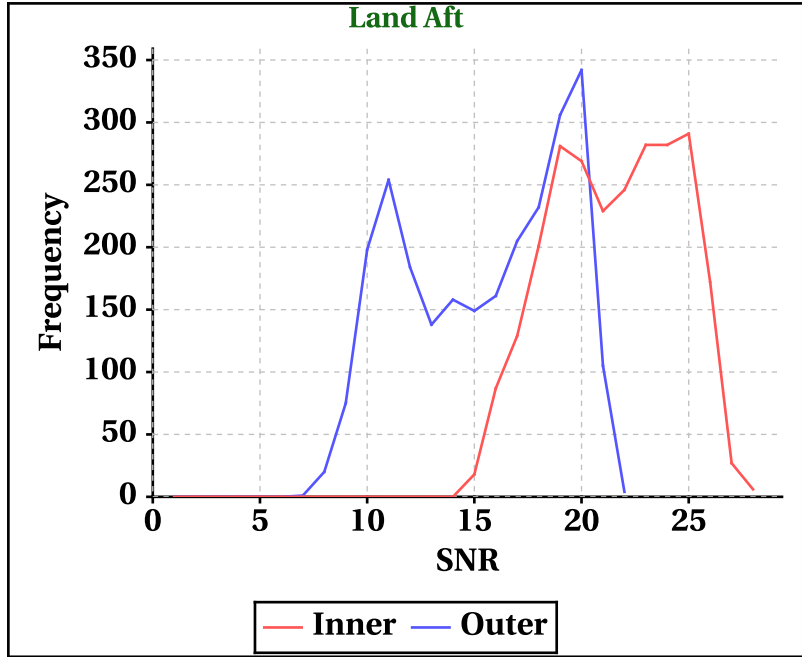


# Dynamic Range (Data Histograms)

## SNR(dBm)

Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	28	29	0	0

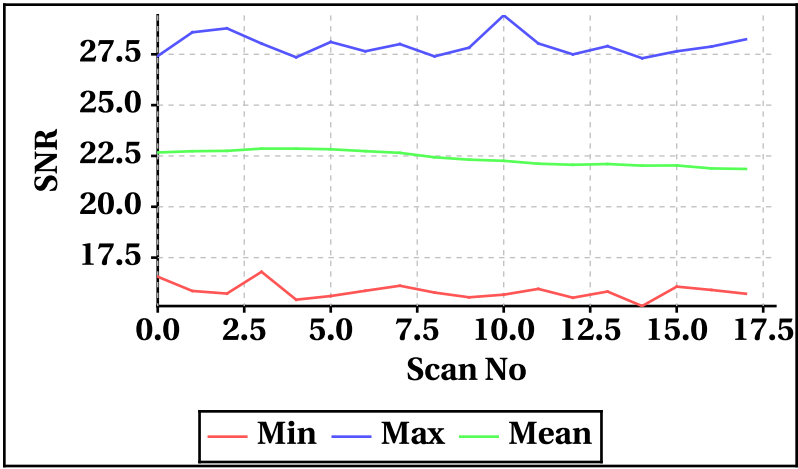
Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	22	22	0	0



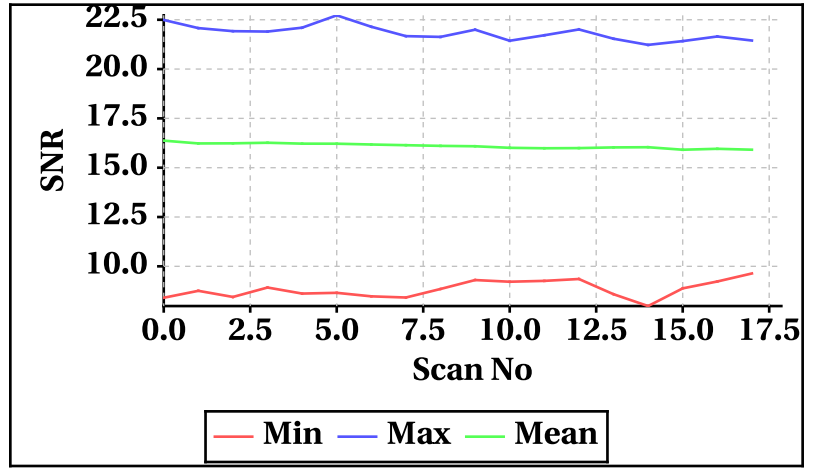


## Orbit-wise behaviour of SNR

**Inner Beam (HH)**

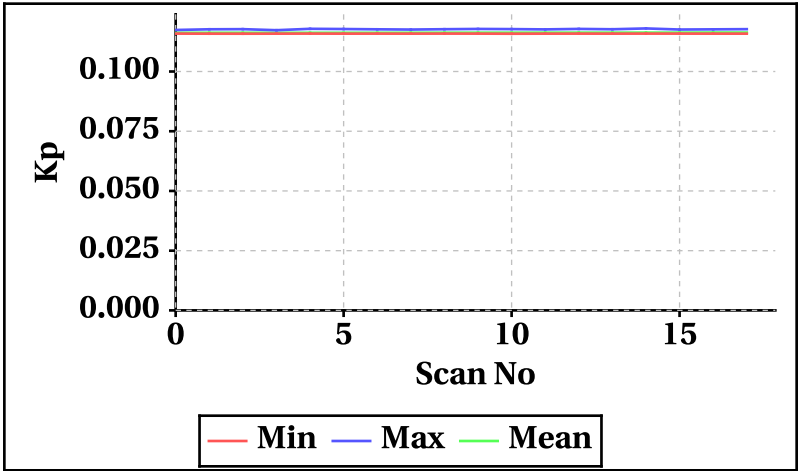


**Outer Beam(VV)**

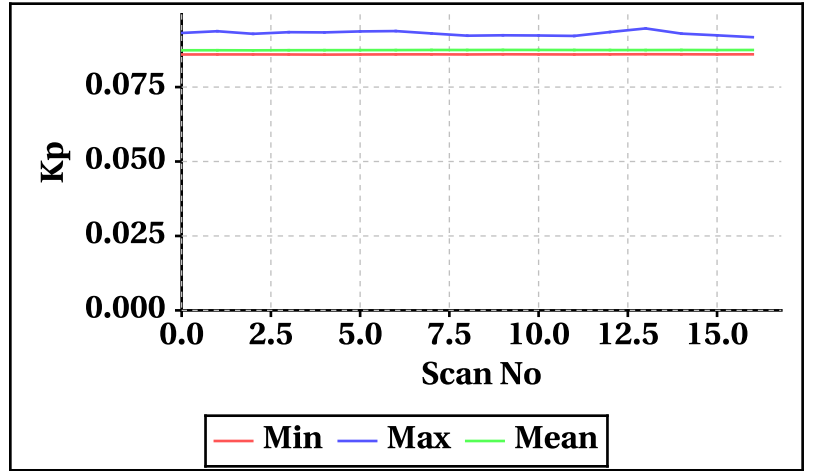


## Orbit-wise behaviour of Kp,Kpa,Kpb,Kpc

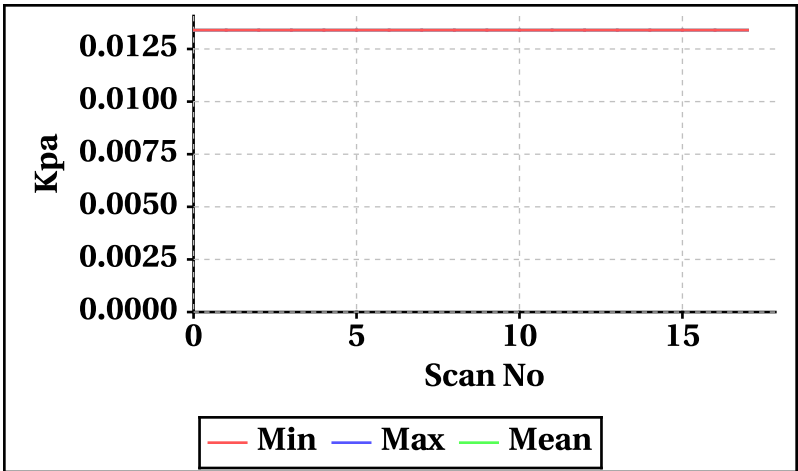
**Inner Beam(HH)**



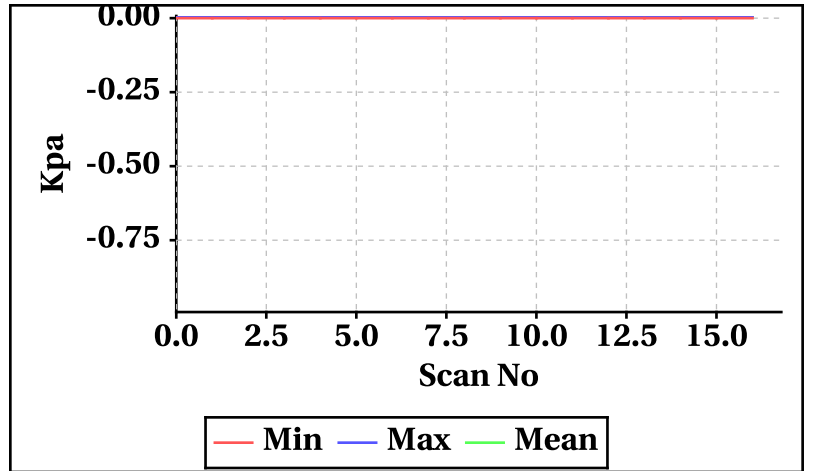
**Outer Beam(VV)**



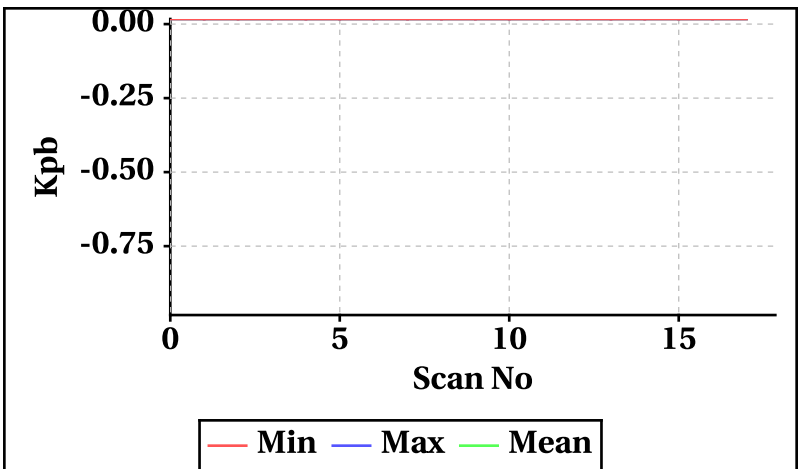
**Inner Beam(HH)**



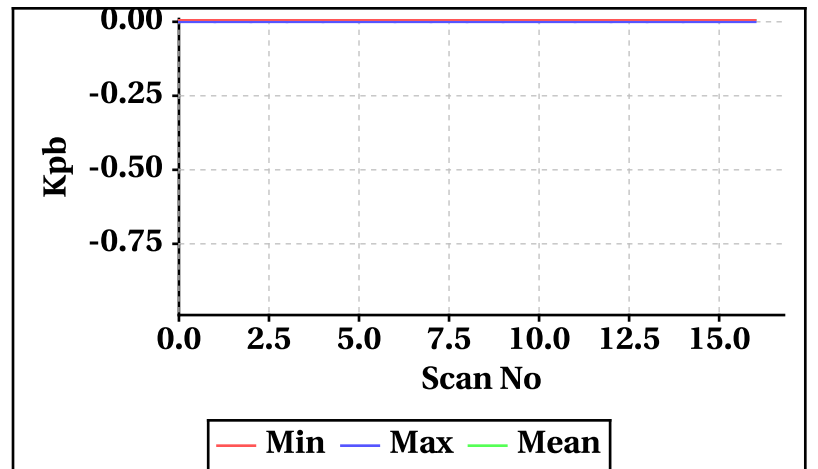
**Outer Beam(VV)**



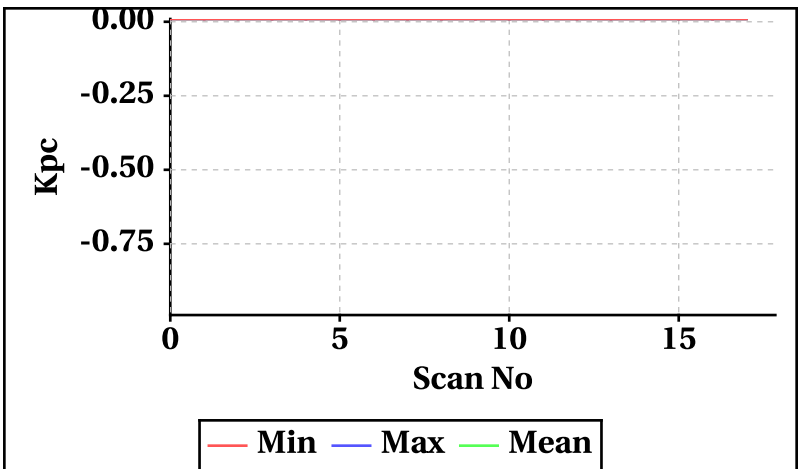
**Inner Beam(HH)**



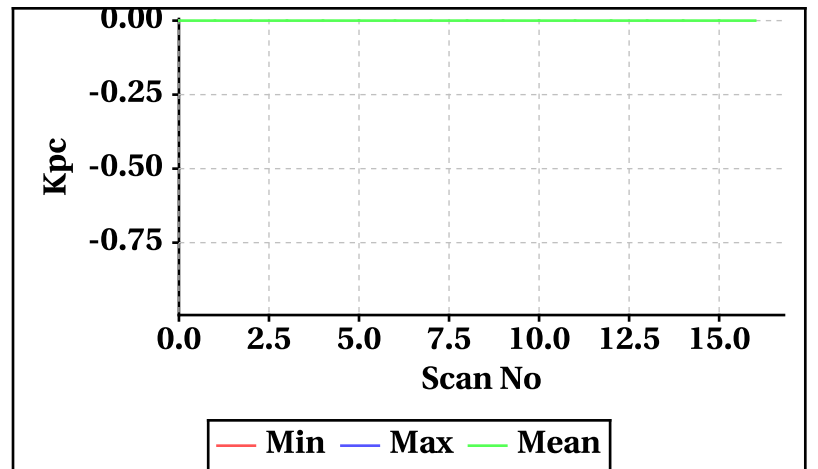
**Outer Beam(VV)**



**Inner Beam(HH)**

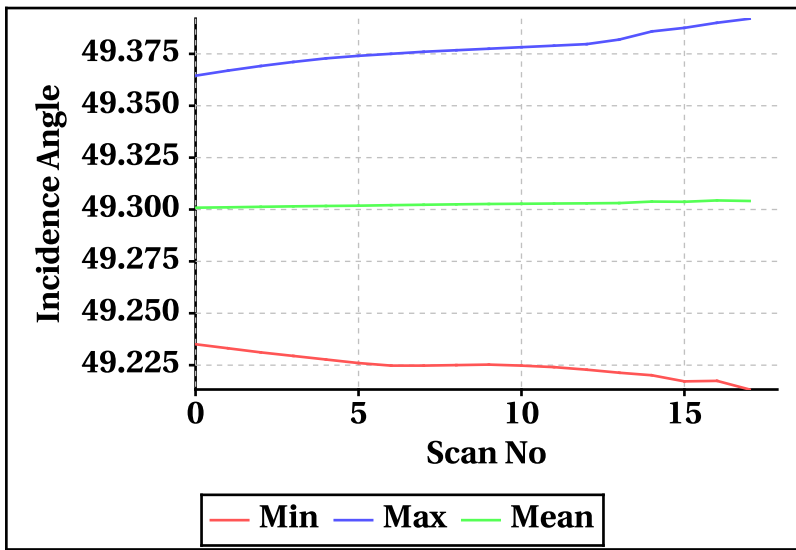


**Outer Beam(VV)**

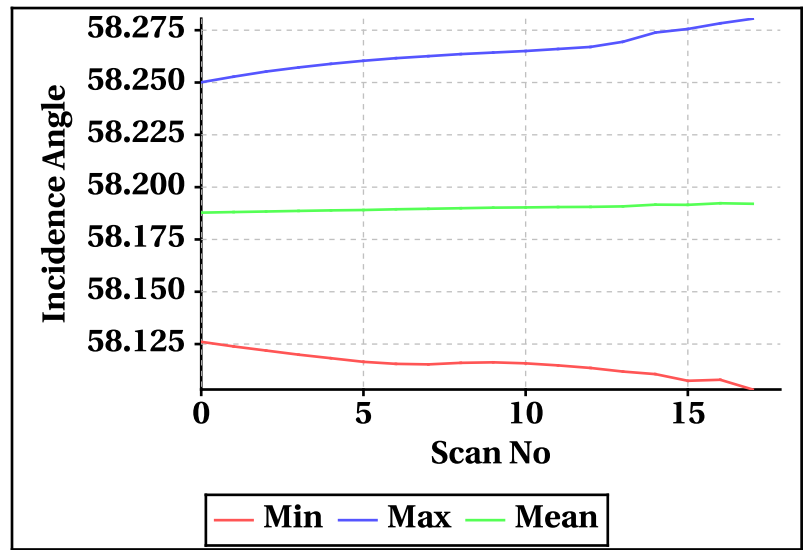


# Orbit-wise behaviour of Incidence, Azimuth, Range, X-Factor

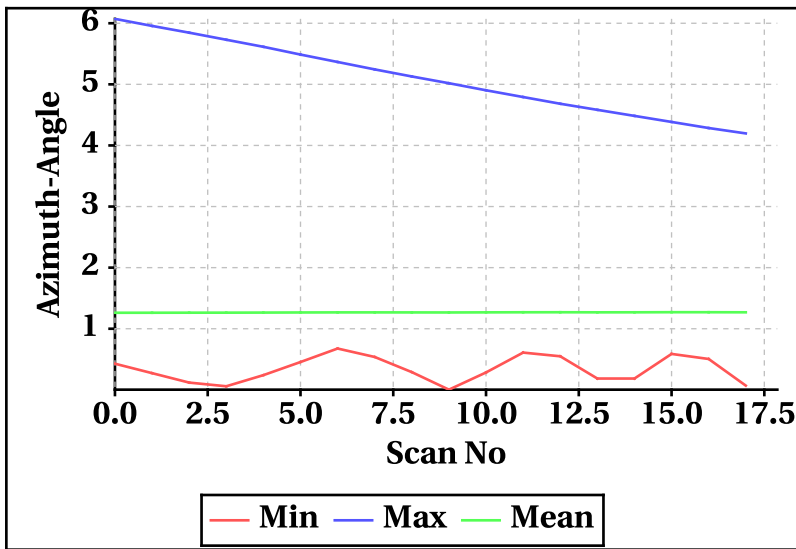
**Inner Beam (HH)**



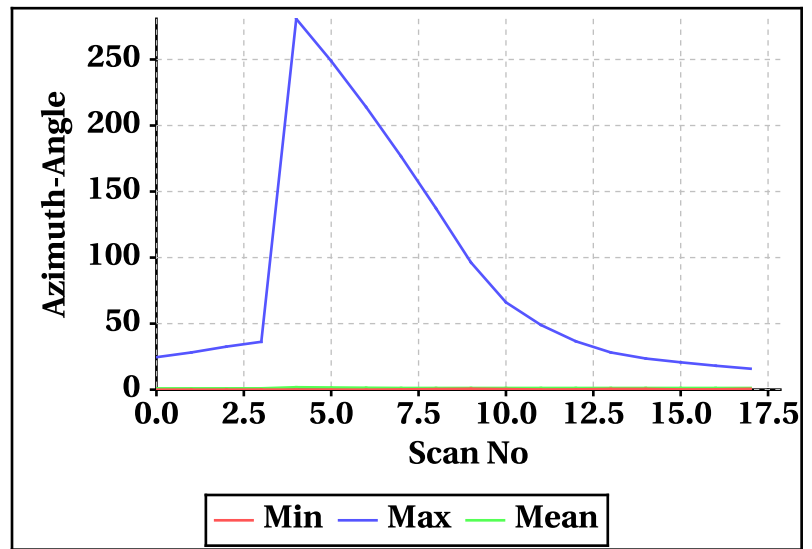
**Outer Beam(VV)**



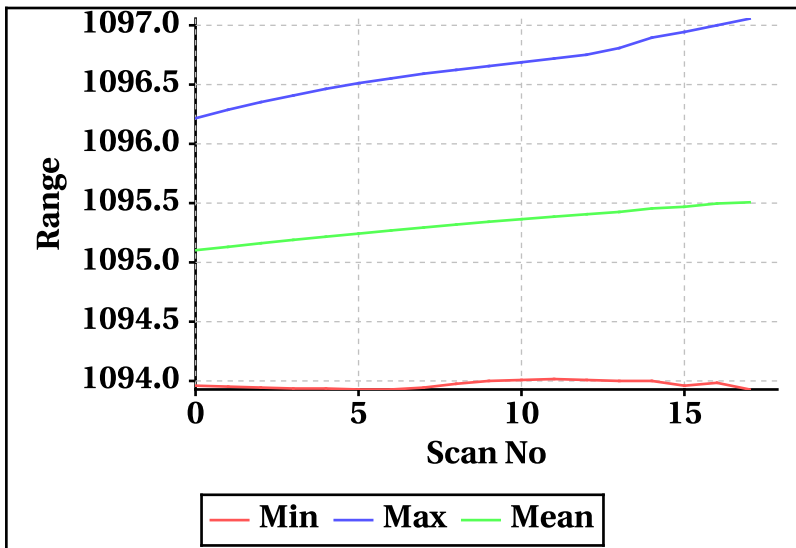
**Inner Beam (HH)**



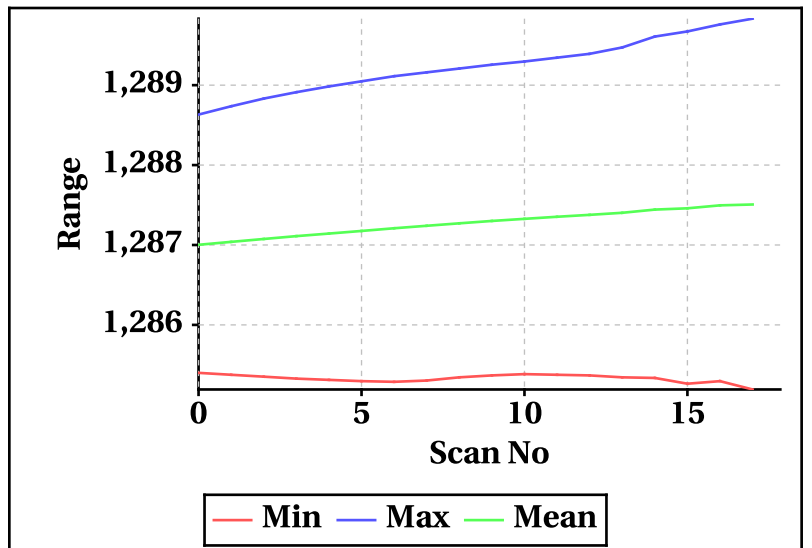
**Outer Beam(VV)**



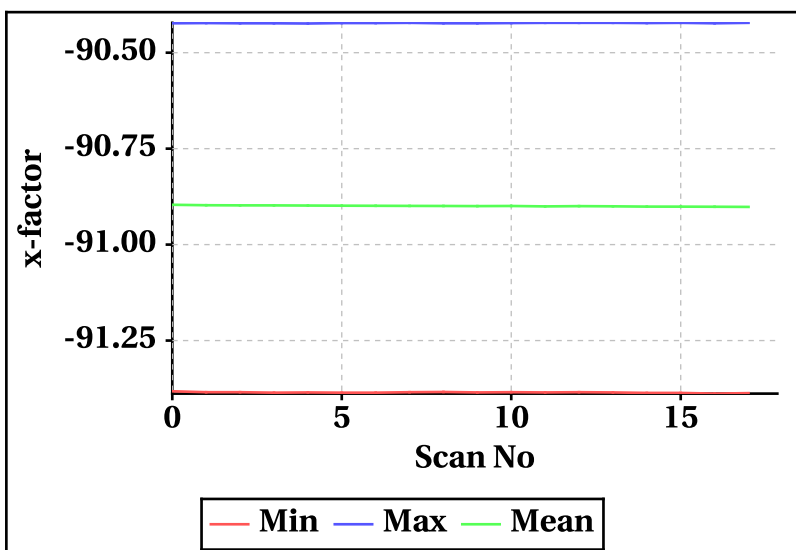
**Inner Beam (HH)**



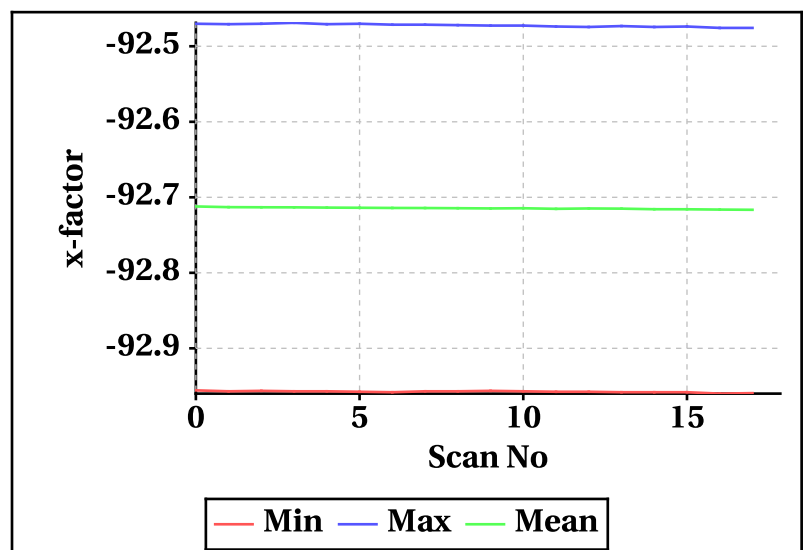
**Outer Beam(VV)**



**Inner Beam (HH)**



**Outer Beam(VV)**



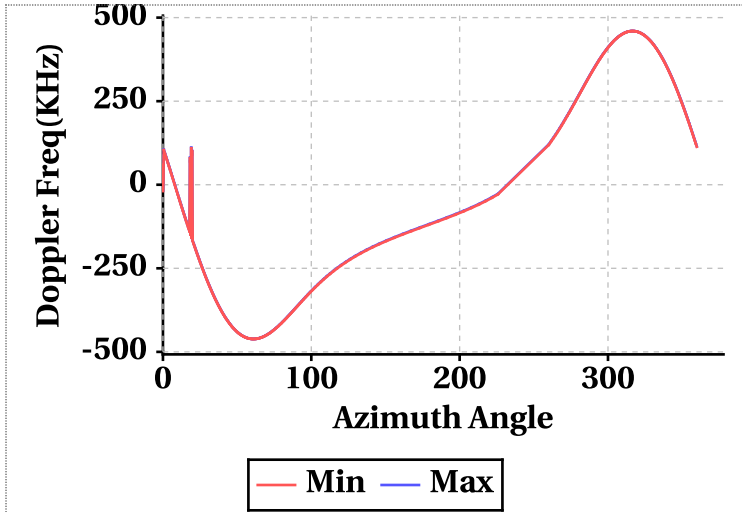


# Doppler Frequency Variation

Doppler Frequency(KHz) variation statistics Over the half Orbit

	Inner Beam (HH)	Outer Beam (VV)
Min	-461.46	-516.94
Max	459.76	515.48

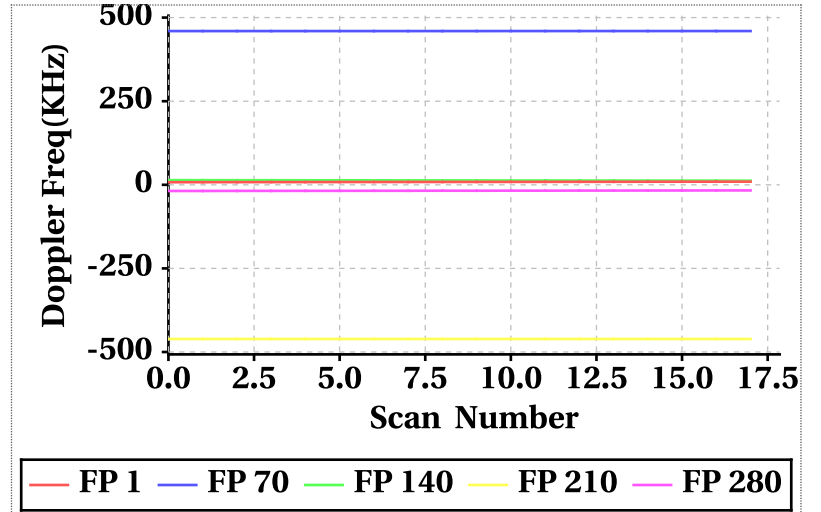
Footprint wise Doppler frequency variation Inner Beam (HH)



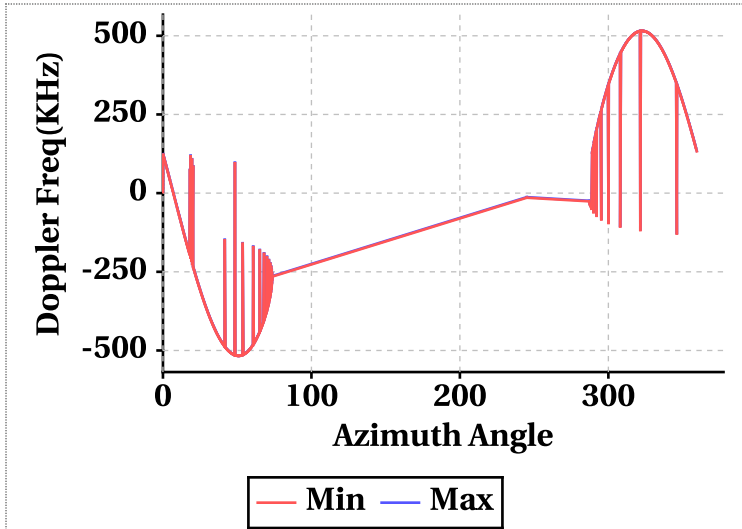
Doppler Frequency(KHz) variation

Doppler_FP	Inner Beam (HH)			Outer Beam (VV)		
	Min	Max	Mean	Min	Max	Mean
Doppler_1	7.72	9.42	8.57	3.24	5.12	4.18
Doppler_70	459.66	459.72	459.69	515.24	515.30	515.27
Doppler_140	12.30	13.86	13.09	8.14	9.90	9.03
Doppler_210	-461.02	-460.96	-460.99	-516.68	-516.64	-516.67
Doppler_280	-18.46	-16.78	-17.65	-14.64	-12.78	-13.74

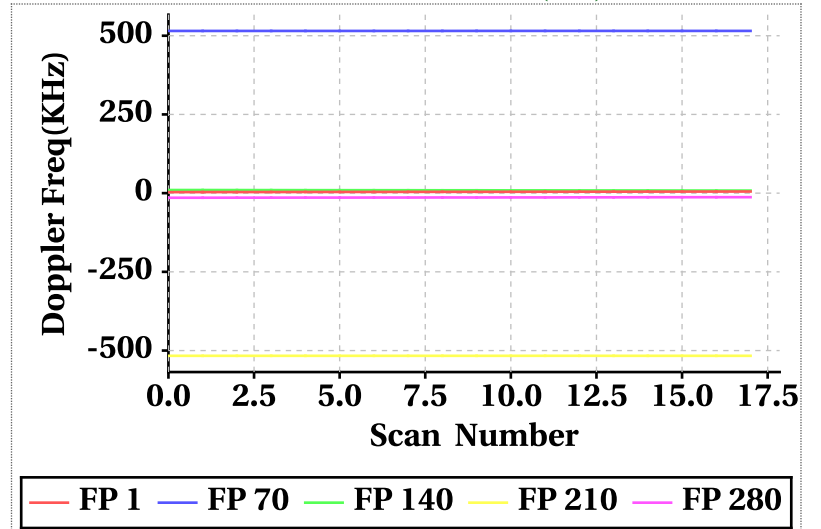
Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Inner Beam (HH)



Footprint wise Doppler frequency variation Outer Beam (VV)

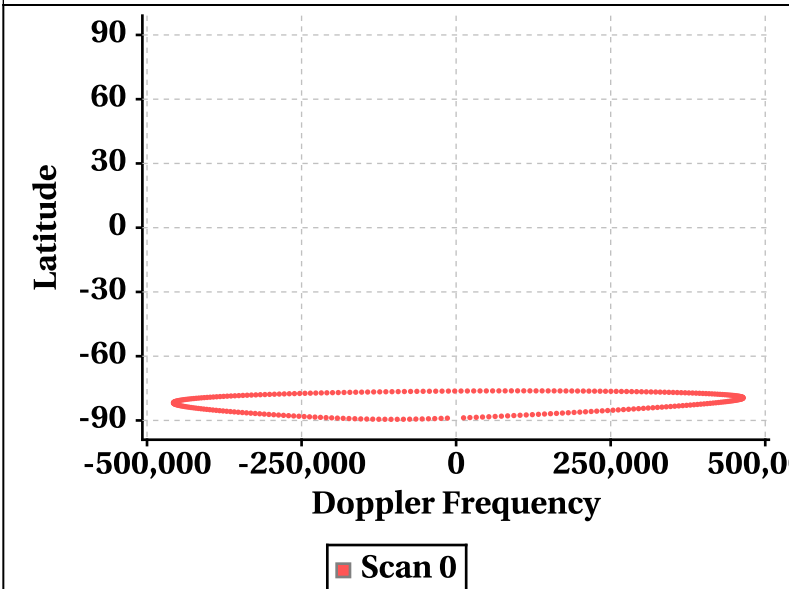


Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Outer Beam (VV)

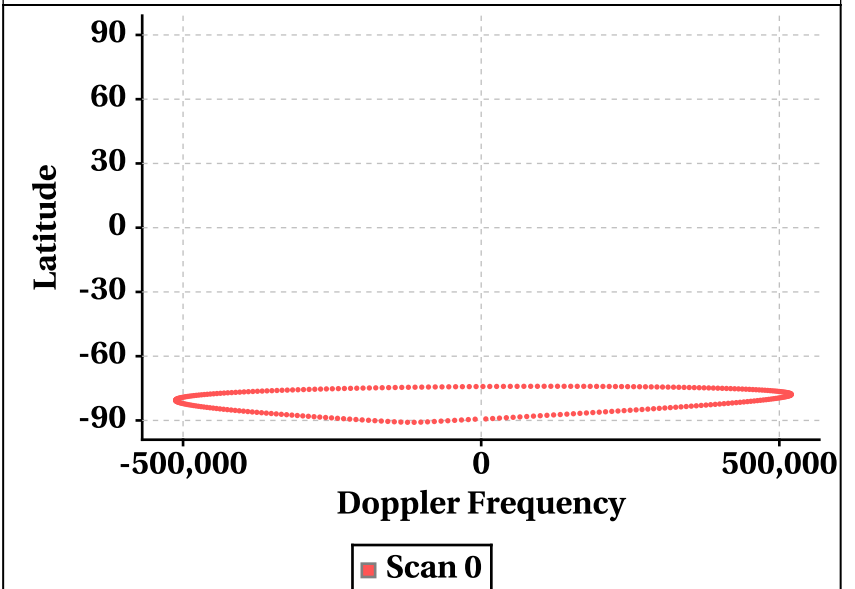


# Latitude Vs Doppler Frequency

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



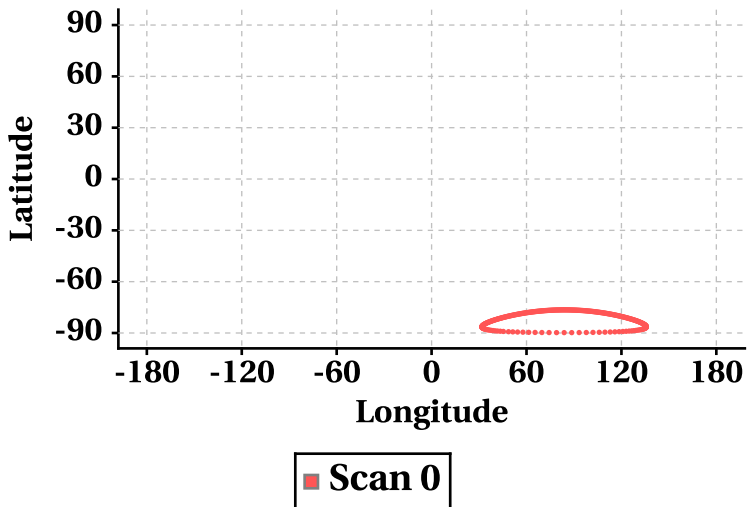
Doppler Frequency at Scan Interval of 200 [Outer Beam(VV)]



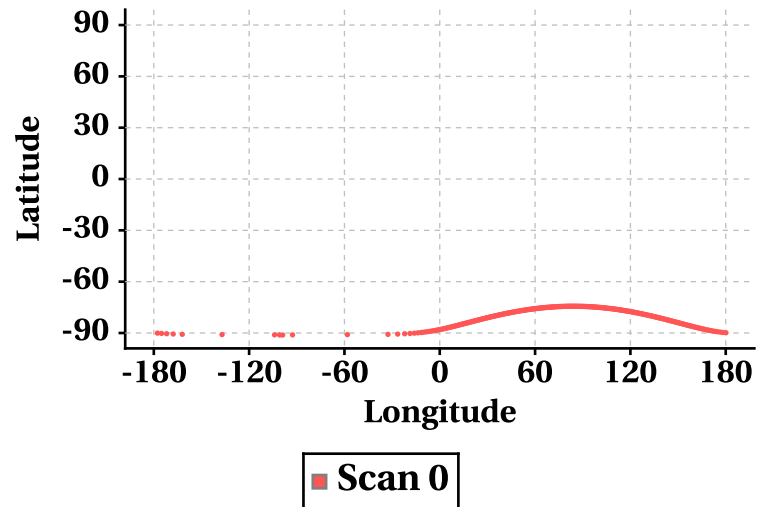
# Parameter as a function of Latitude

## Latitude Vs Longitude

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

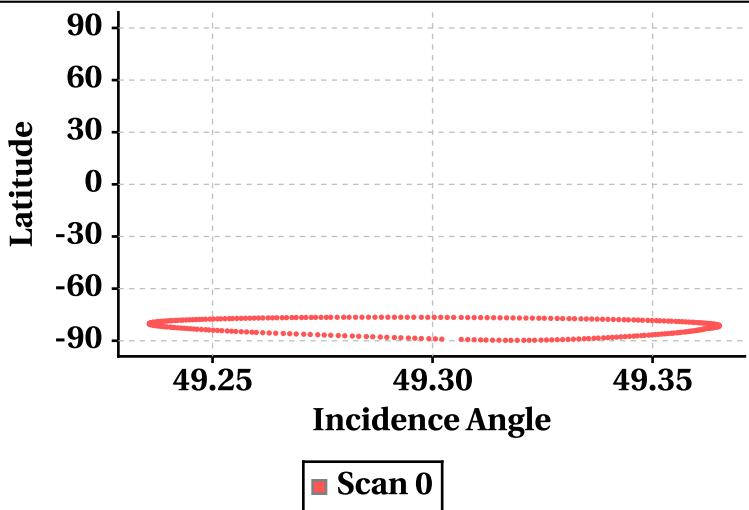


### Scan Trace [Outer Beam (VV)]

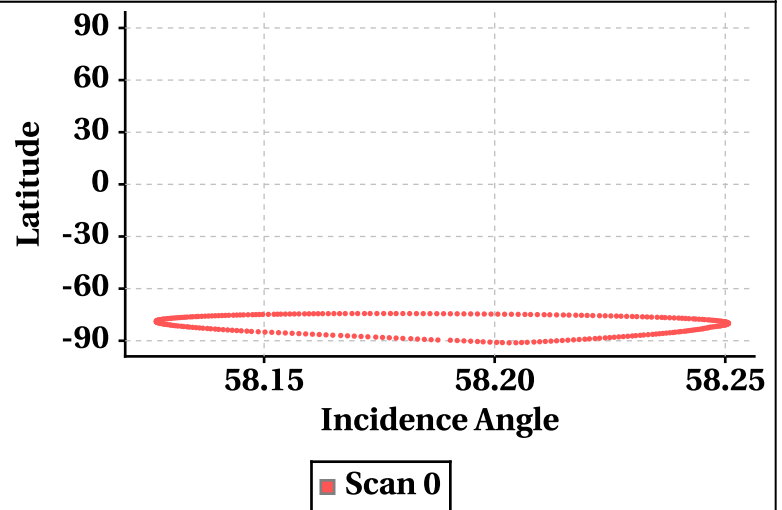


## Latitude Vs Incidence Angle

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

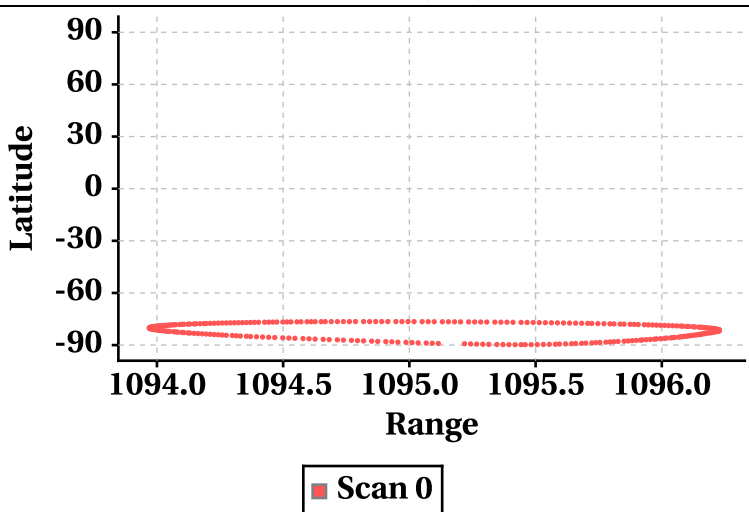


### Incidence Angle at Scan Interval of 200 [Outer Beam (VV)]

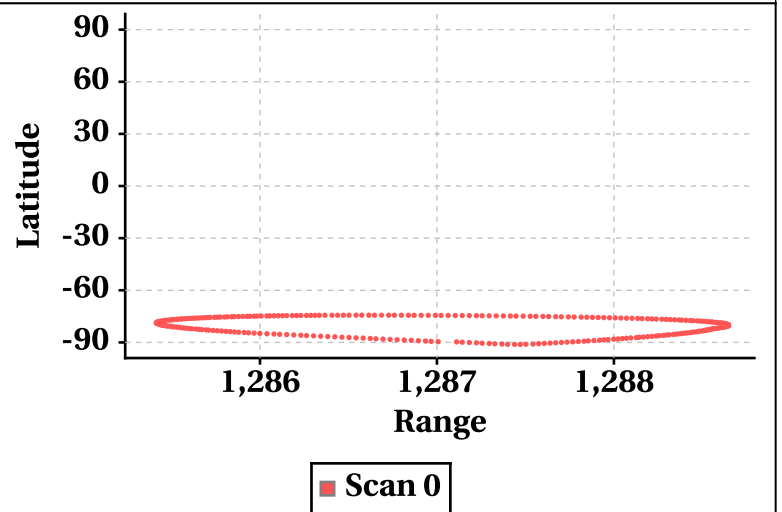


## Latitude Vs Range

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



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



# Variation in Orbit and Attitude Parameters

