

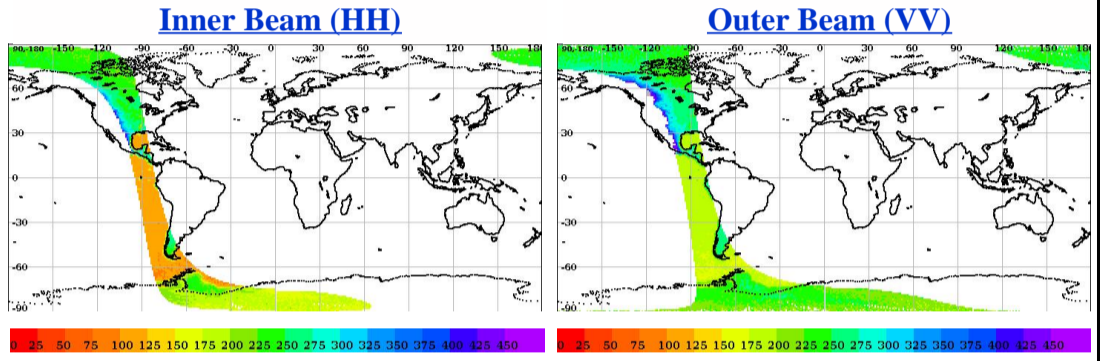
# SCATSAT-1 Scatterometer Level-1B Data Quality Evaluation Report

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<b>Satellite Id</b>	ScatSat-1	<b>Start Orbit</b>	12772	<b>Total Scans</b>	1003
<b>Sensor Name</b>	Scatterometer	<b>End Orbit</b>	12773	<b>No of Inner FootPrints</b>	281
<b>Processor Version</b>	v1.1.3	<b>Rev. Number</b>	12772_12773	<b>No Of Outer FootPrints</b>	282
<b>Half Orbit Direction</b>	SN	<b>Data Production Date</b>	24-02-2019	<b>No. Of Inner Slices</b>	9
<b>Equator Crossing Date</b>	24-02-2019	<b>Equator Crossing Time</b>	02:26:54.000	<b>No Of Outer Slices</b>	15

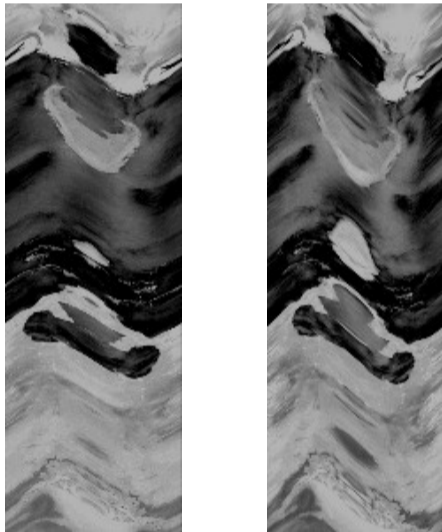
## Brightness Temperature(k) Footprint trace



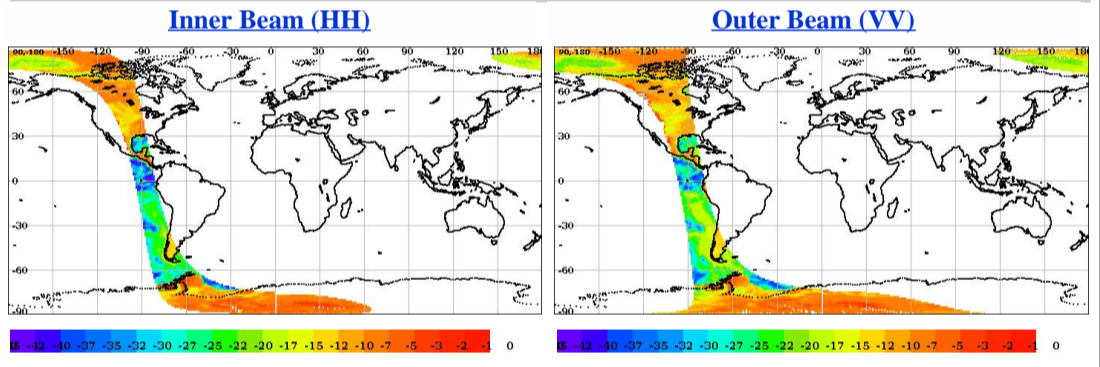
## Image Snapshot for Inner & Outer Beam

Inner (HH)

Outer (VV)



## Sigma0(dB) Footprint trace



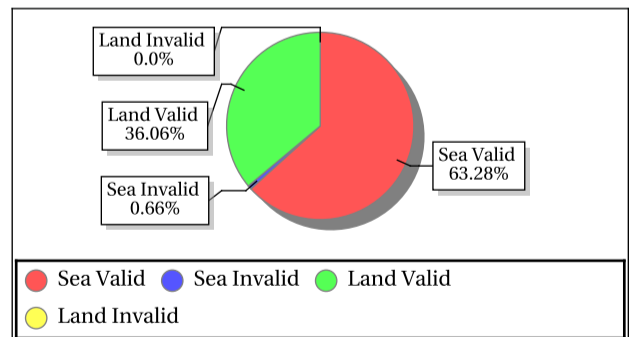
## Invalid and Poor Sigma-0 Quality Flag Statistics for Inner/Outer Slices\*

Sigma-0 Flags	Inner Beam	Outer Beam
Invalid Sigma0(%)	0.37	2.36
Data Not Available From Payload (%)	0.0	0.0
Slice not within sample array limits (%)	100.00	100.00
C(S+N) - C(N) < 0.1 (%)	0.00	0.00
Poor Sigma0(%)	22.72	14.38
Noise samples for blending Saturated	2.506381	7.892429
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 (%)	0.046671	0.098024

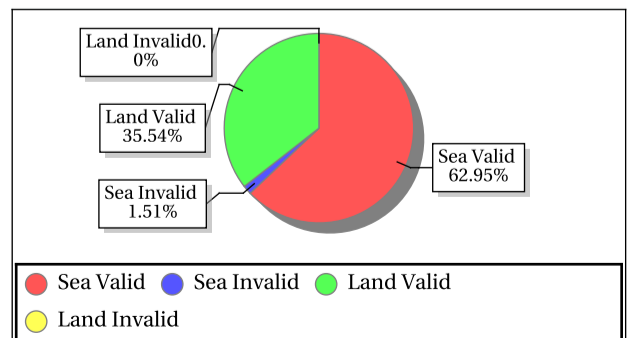
\*DP Format Document

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

### Inner Beam (HH)



### Outer Beam (VV)



## 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	288.76	0.49	5.874	0.12	206.58	0.46	4.788	0.12	0.13	0.12	0.000	0.12	0.13	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	0.02	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>	-34.74	27.20	3.98	2.813	-33.29	28.81	4.79	3.947	7.31	32.21	19.19	12.562	7.55	29.73	19.56	14.466

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	225.14	0.59	7.374	0.09	233.37	0.51	5.958	0.09	0.13	0.09	0.000	0.09	0.12	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	0.01	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>	-34.83	20.83	0.65	0.000	-34.98	21.15	1.95	0.000	1.62	22.79	13.22	0.006	1.95	22.70	13.27	0.030

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>	48.68	49.42	49.06	0.000	57.42	58.28	57.88	0.000	Inci.(Inner)	47.10	49.90
<b>Azimuth Diff. (deg)</b>	0.0026	6.76	1.27	2.487	0.0000	296.15	1.27	3.721	Inci.(Outer)	57.30	58.90
<b>Range(Km)</b>	1017.01	1092.48	1044.11	26.098	1190.98	1283.94	1225.19	47.993	Azimuth Diff.	0.60	2.00
<b>X Factor(dbm)</b>	-91.65	-89.72	-90.35	0.000	-93.27	-91.78	-92.18	0.000	Range(Inner)	1025.00	1095.70
<b>Across Distance (Km)</b>	15.29	15.80	15.53	0.000	20.02	47.10	20.87	9.000	Range(Outer)	1210.00	1280.00
<b>Along Distance (Km)</b>	18.83	11368.38	394.69	34.000	18.66	11885.05	947.19	80.000	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

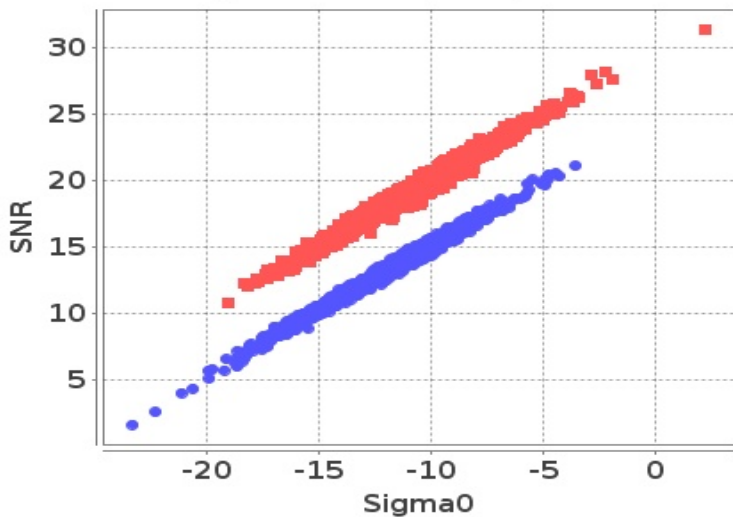
- Normal
- Deviations
- Alarming
- High Errors



## Sigma0 Behaviour (Sigma0 Vs SNR)

Footprint-Land

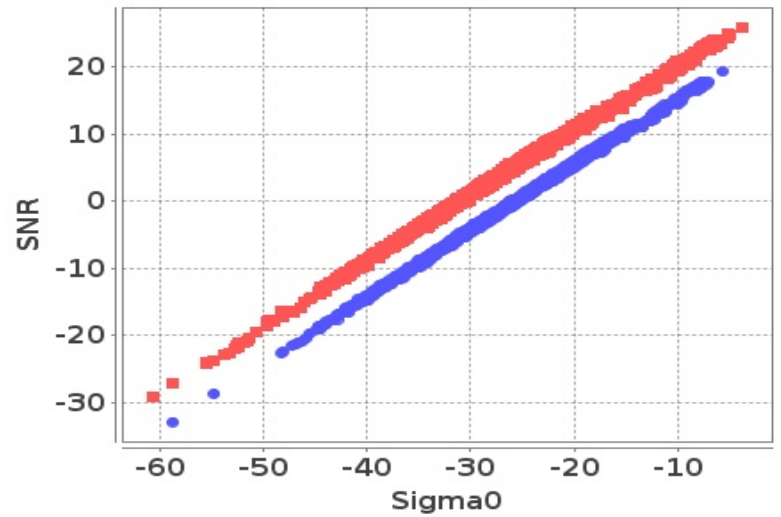
Sigma0 Vs SNR (Land)



Inner • Outer

Footprint-Sea

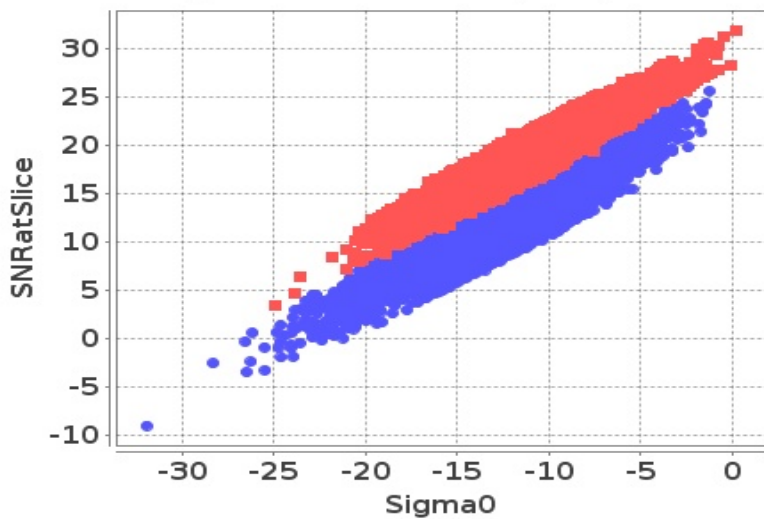
Sigma0 Vs SNR (Sea)



Inner • Outer

Slice-Land

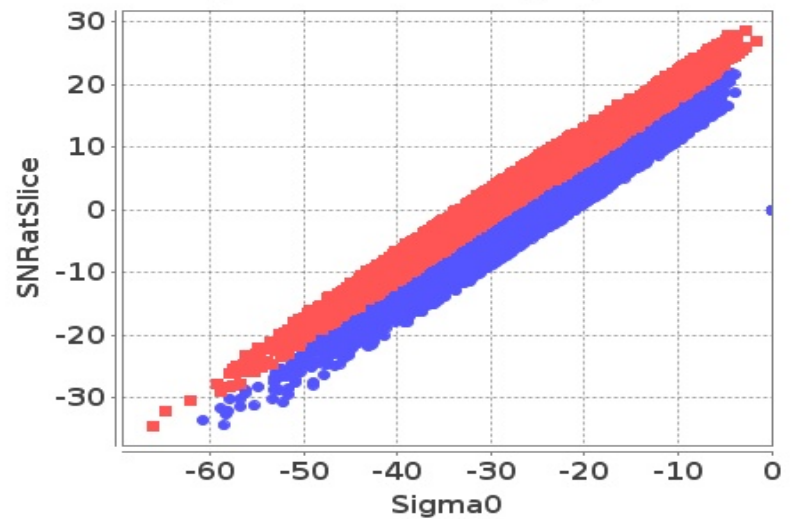
Sigma0 Vs SNRatSlice (Land)



Inner • Outer

Slice-Sea

Sigma0 Vs SNRatSlice (Sea)

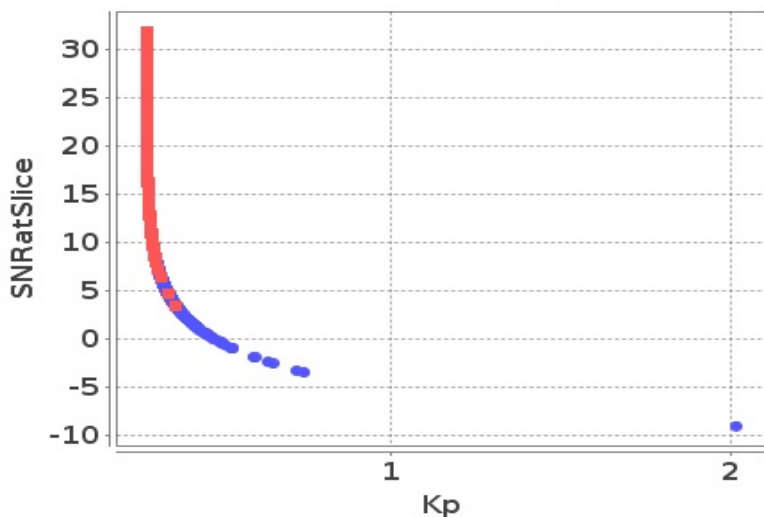


Inner • Outer

## Sigma0 Behaviour (Kp Vs SNR)

Slice

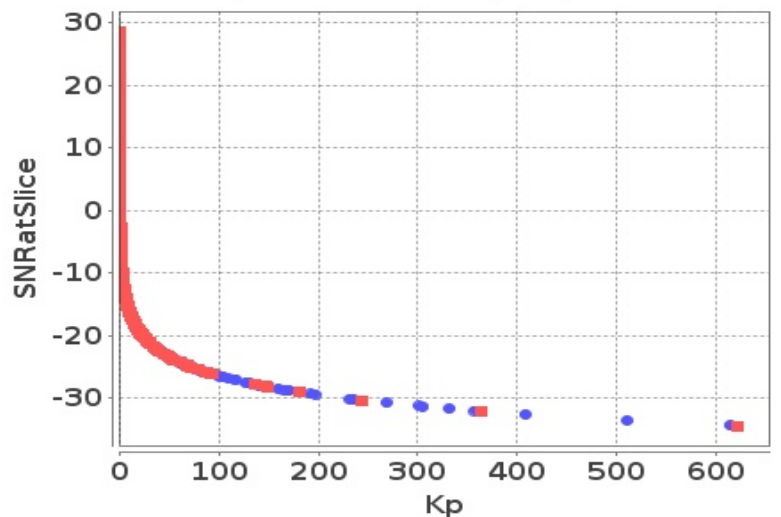
Kp Vs SNRatSlice (Land)



Inner • Outer

Slice

Kp Vs SNRatSlice (Sea)



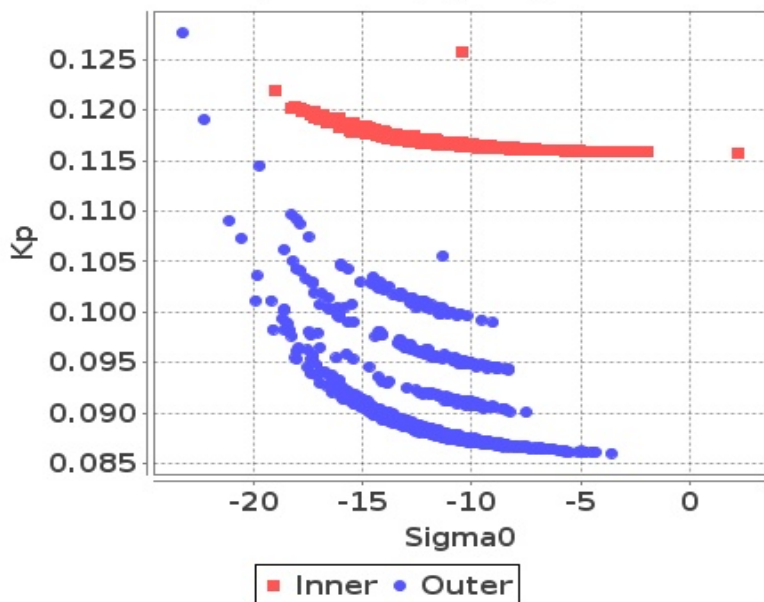
Inner • Outer



# Sigma0 Behaviour(Sigma0 Vs Kp)

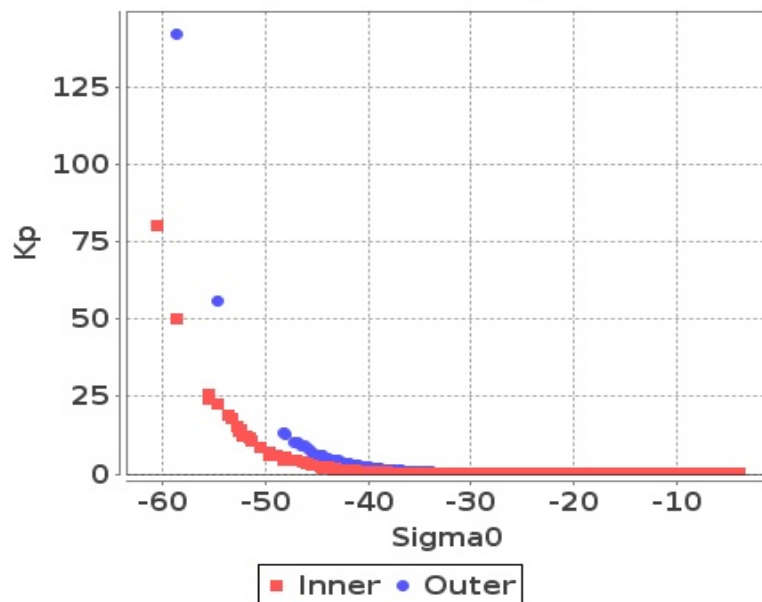
## Footprint-Land

### Sigma0 Vs Kp (Land)



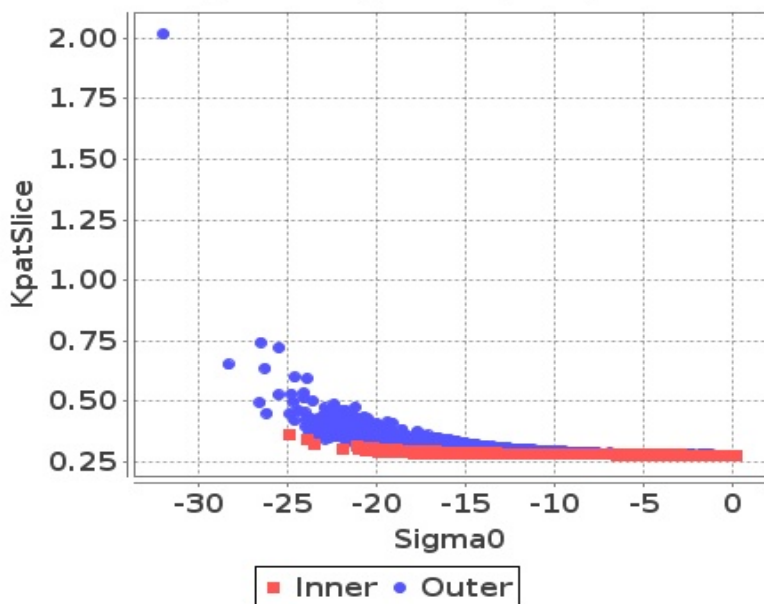
## Footprint-Sea

### Sigma0 Vs Kp (Sea)



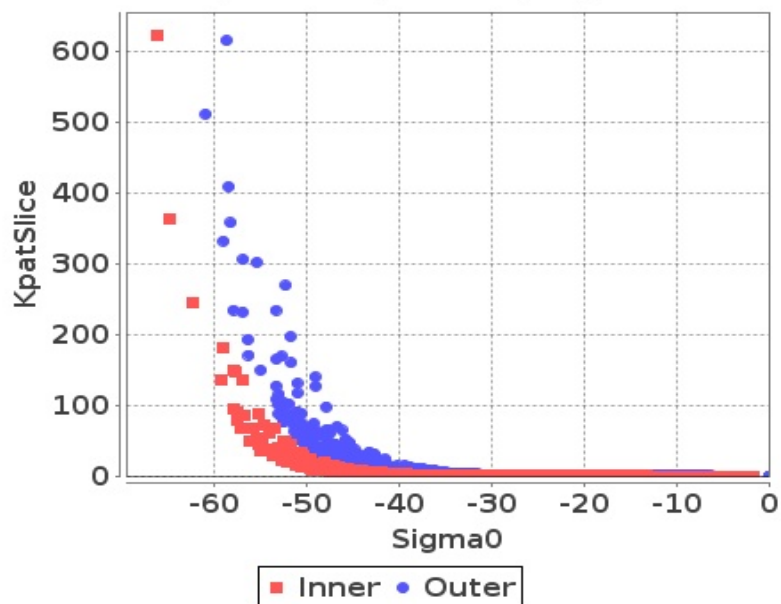
## Slice-Land

### Sigma0 Vs KpatSlice (Land)



## Slice-Sea

### Sigma0 Vs KpatSlice (Sea)

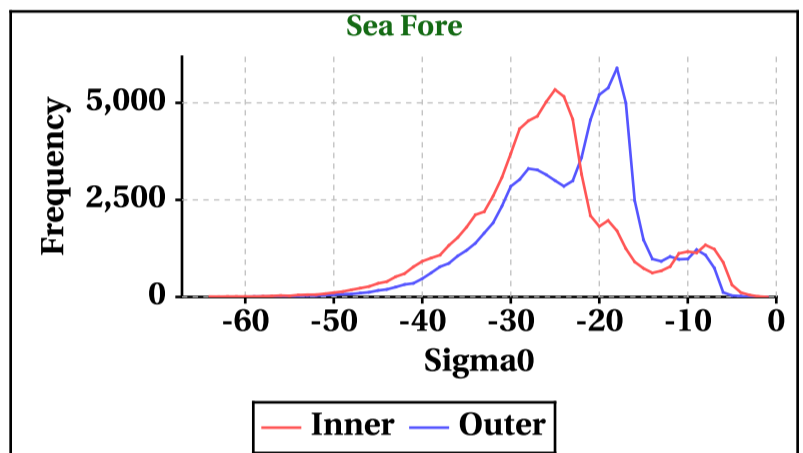
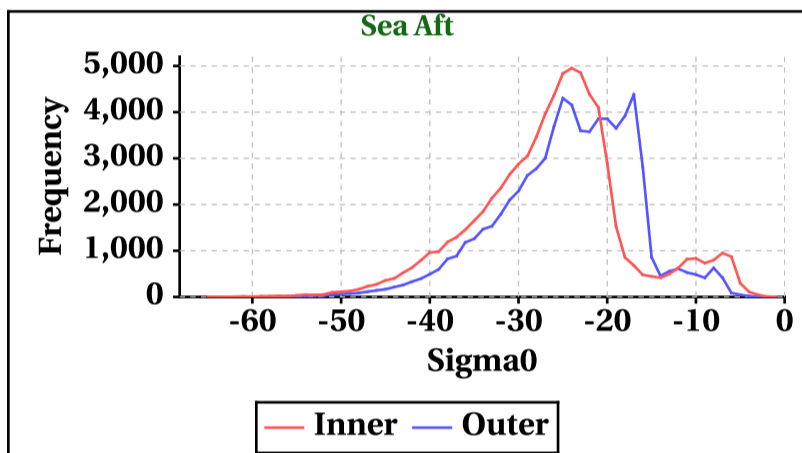
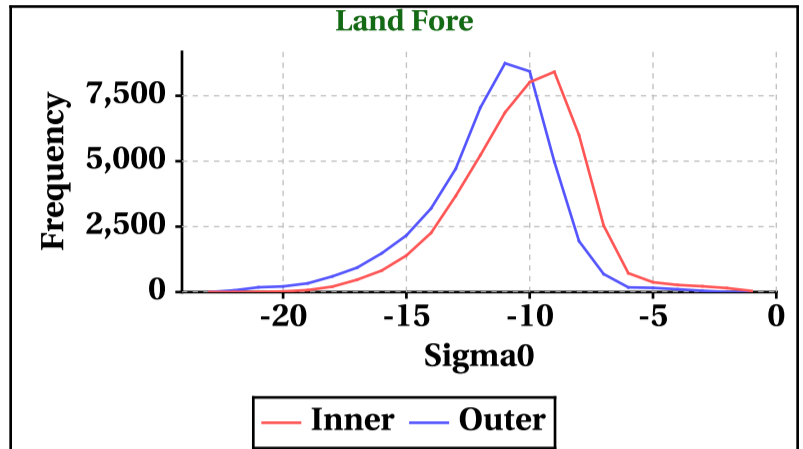
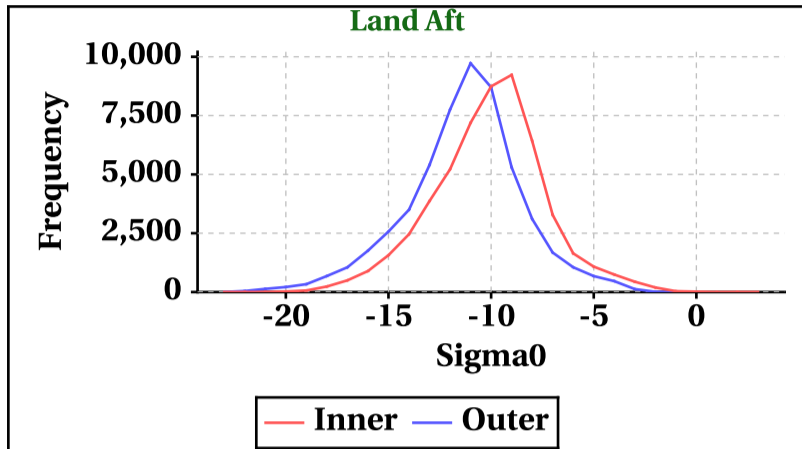


# Dynamic Range (Data Histograms)

## Sigma0(db)

Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-23	-23	-65	-64
Max	3	0	0	0

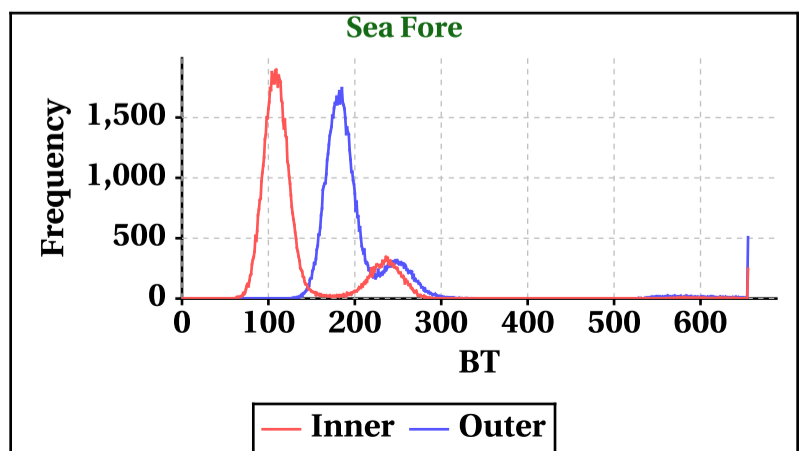
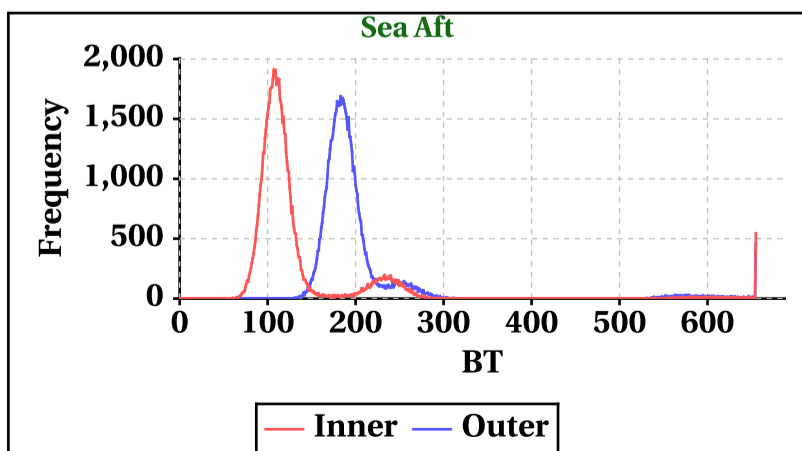
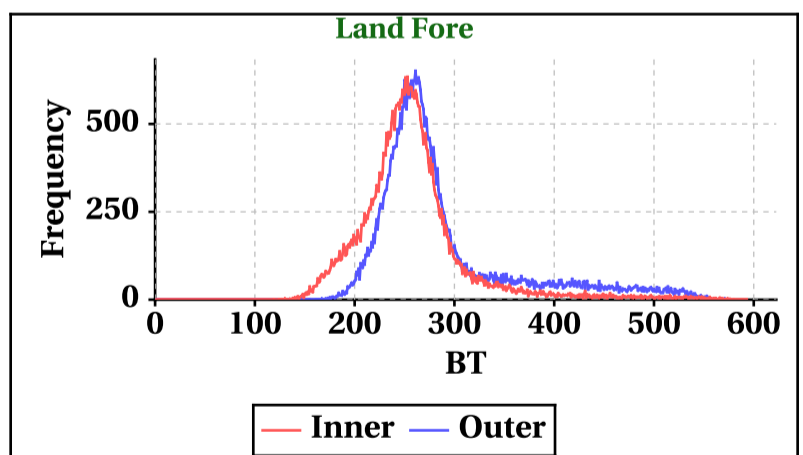
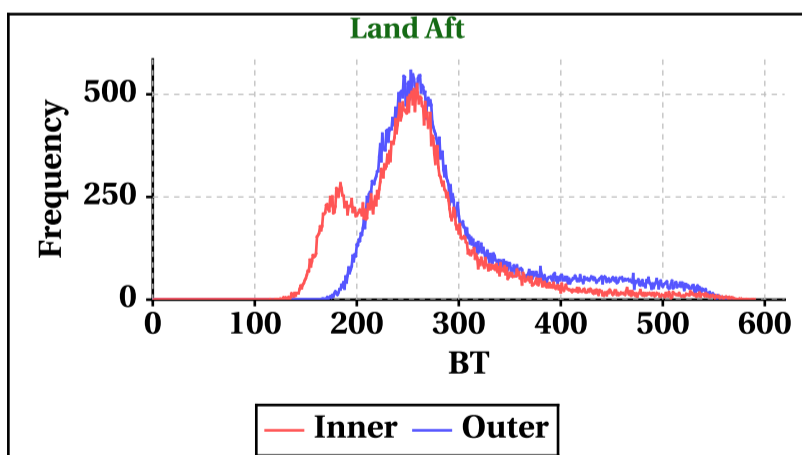
Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-23	-23	-60	-60
Max	0	0	0	0



## Brightness Temperature(K)

Inner Beam(HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	590	593	655	655

Outer Beam(VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	578	573	655	655

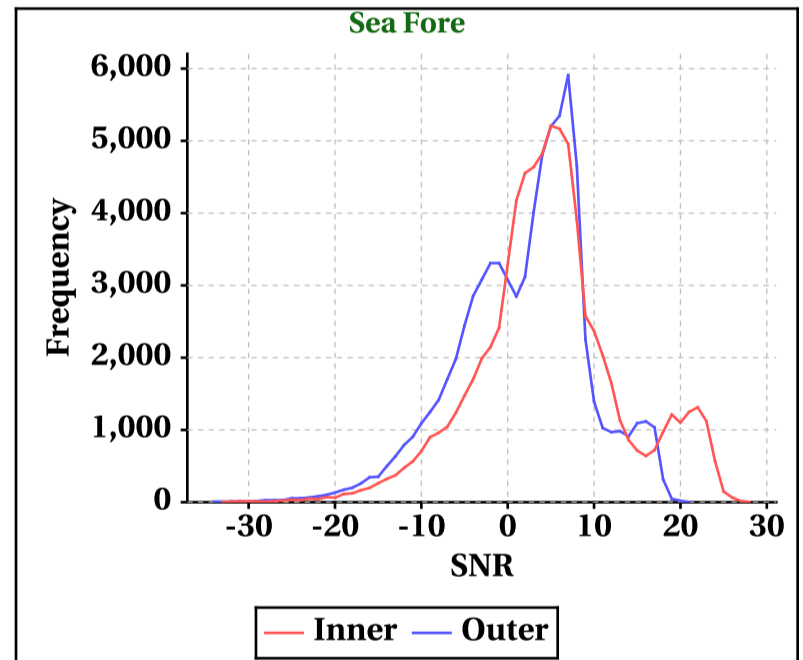
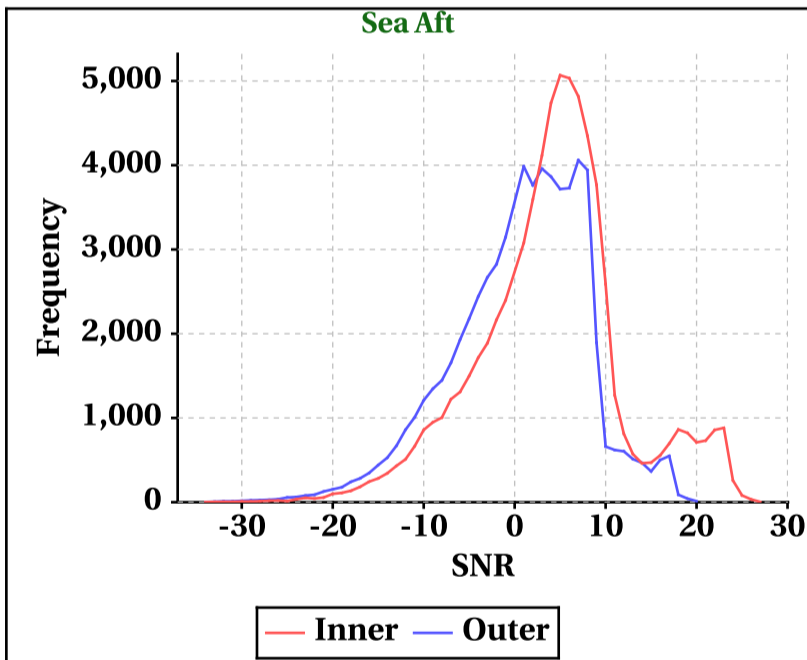
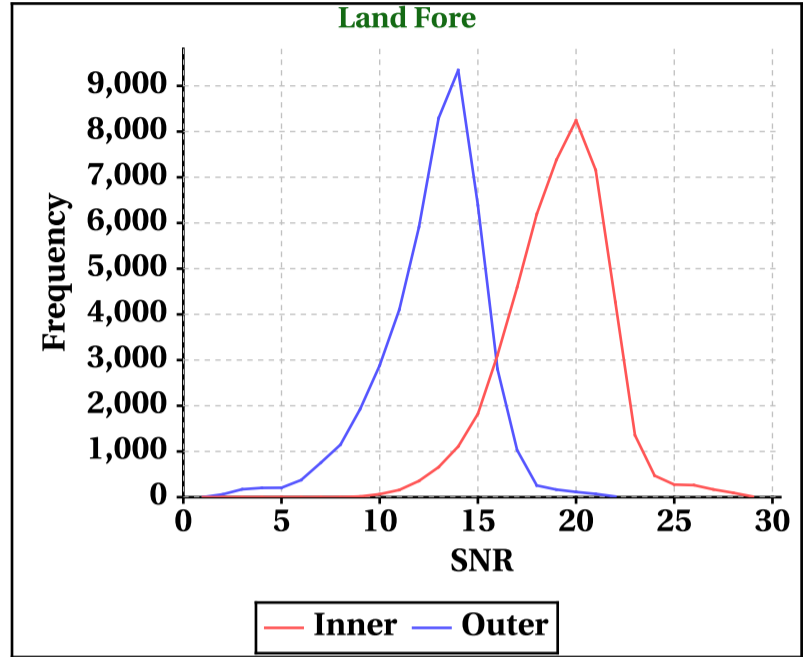
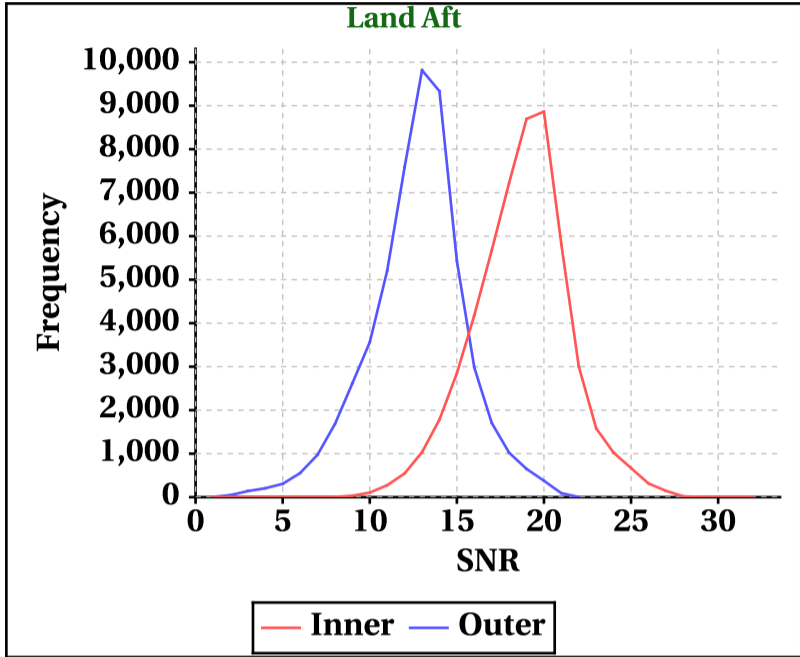


# Dynamic Range (Data Histograms)

## SNR(dBm)

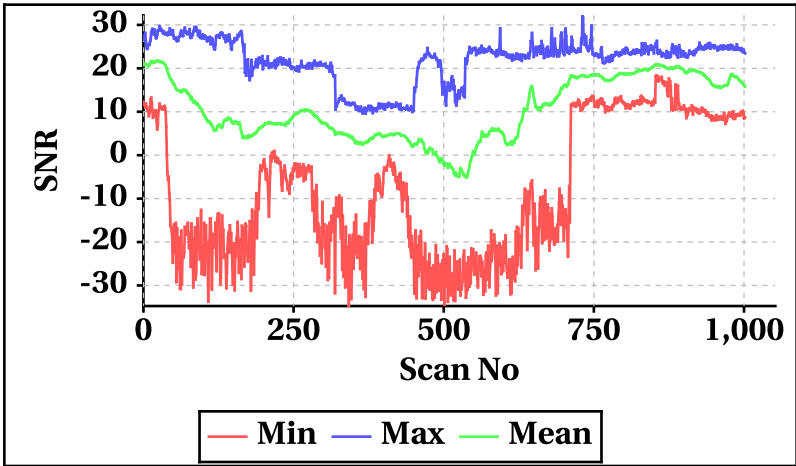
Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	-34	-33
Max	32	29	27	28

Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	-34	-34
Max	22	22	20	21

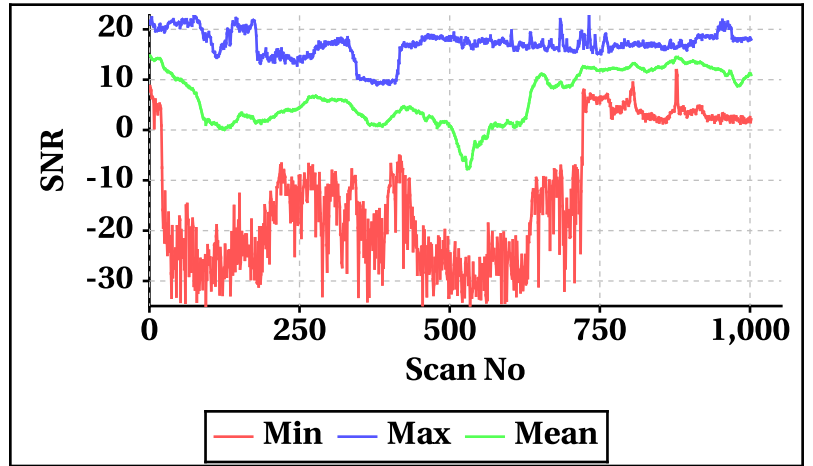


## Orbit-wise behaviour of SNR

Inner Beam (HH)

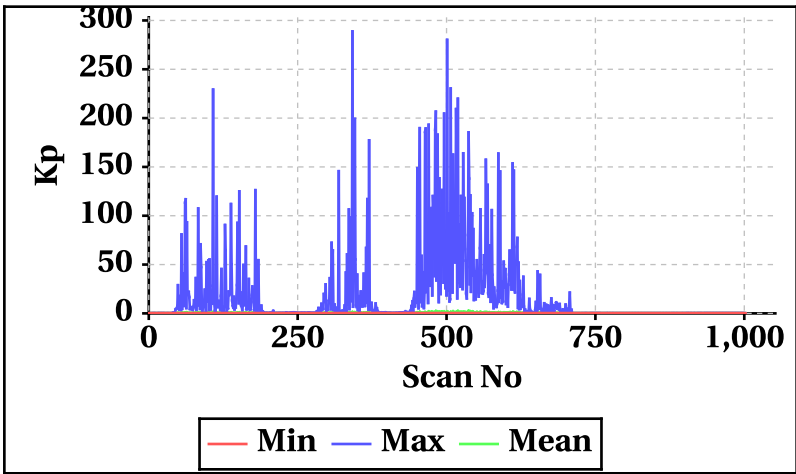


Outer Beam(VV)

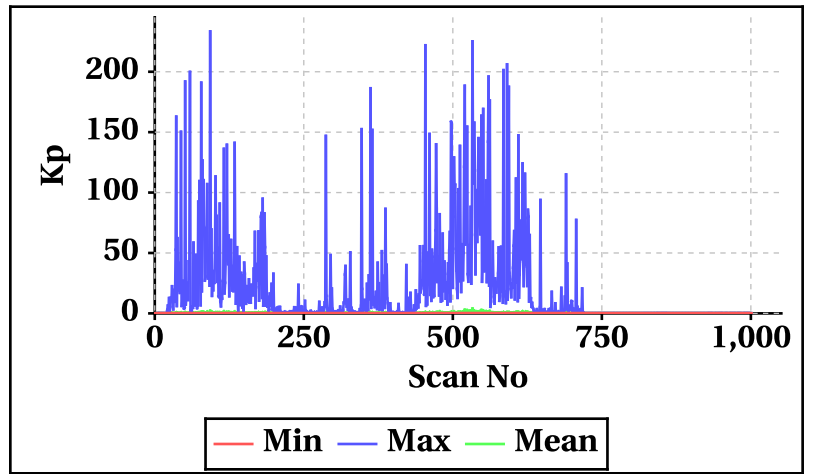


## Orbit-wise behaviour of Kp,Kpa,Kpb,Kpc

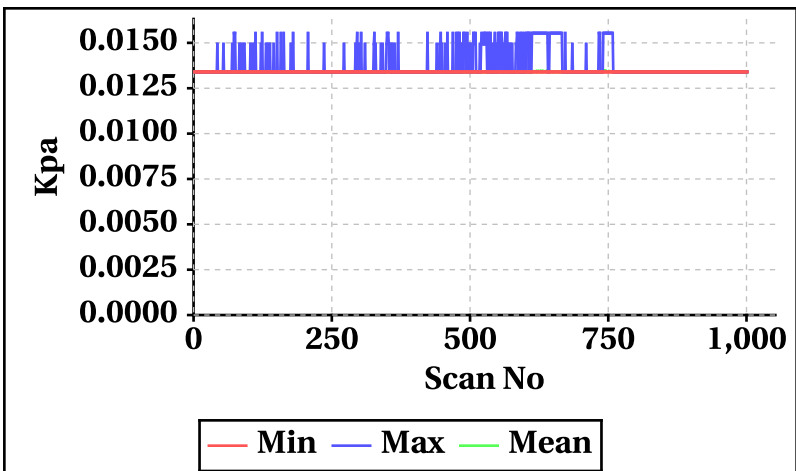
Inner Beam(HH)



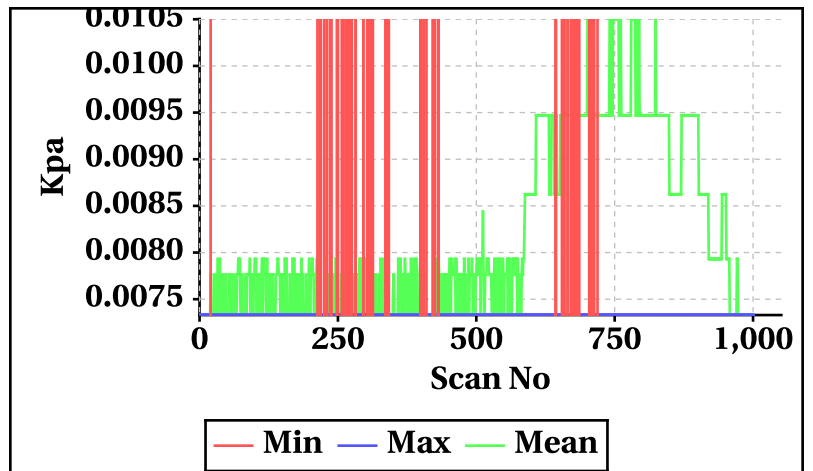
Outer Beam(VV)



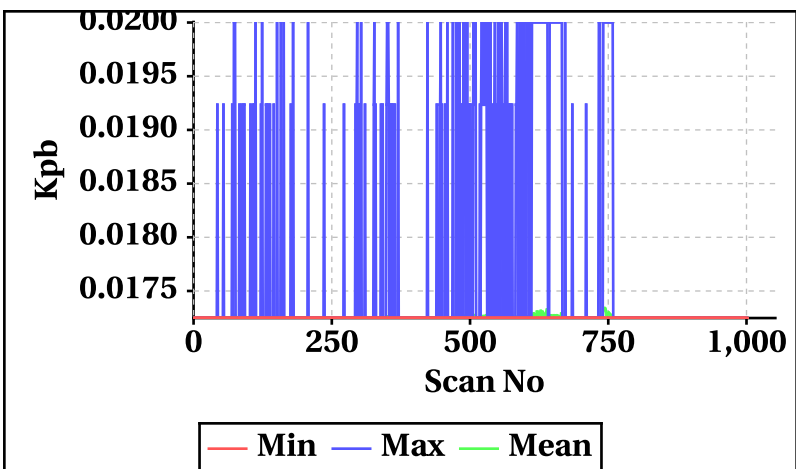
Inner Beam(HH)



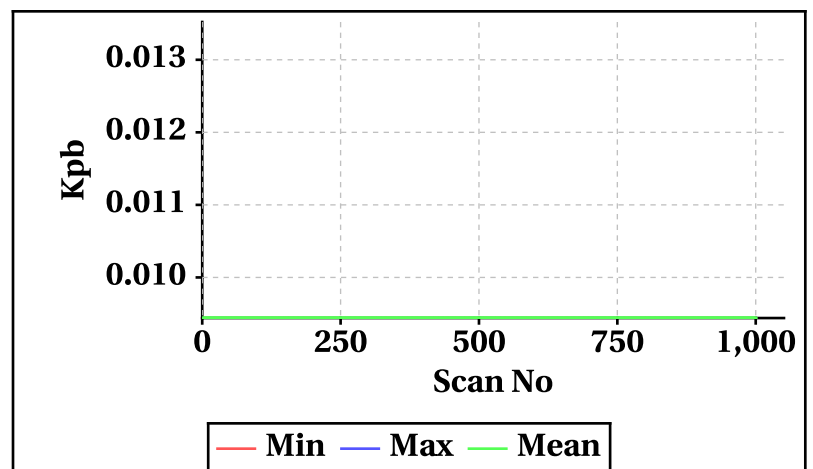
Outer Beam(VV)



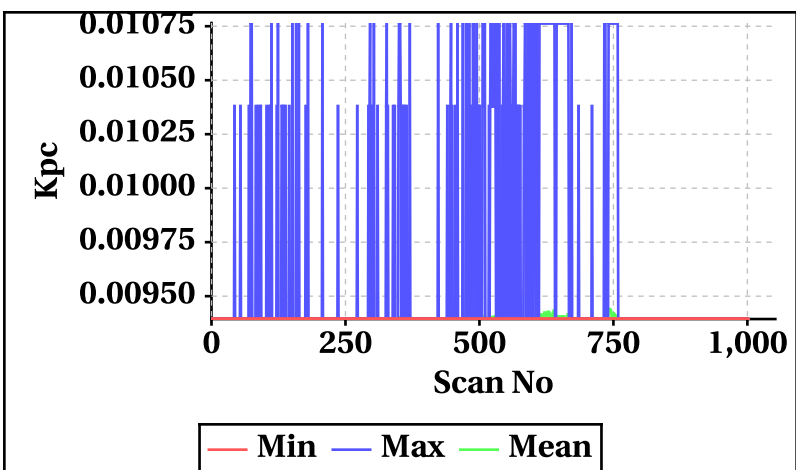
Inner Beam(HH)



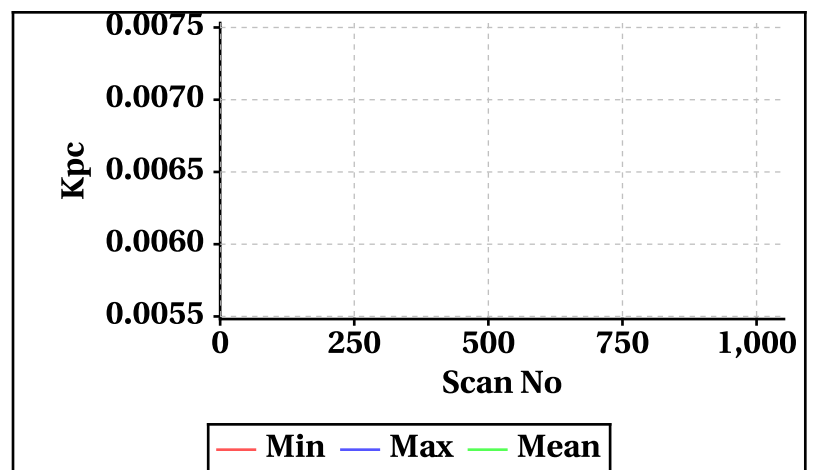
Outer Beam(VV)



Inner Beam(HH)

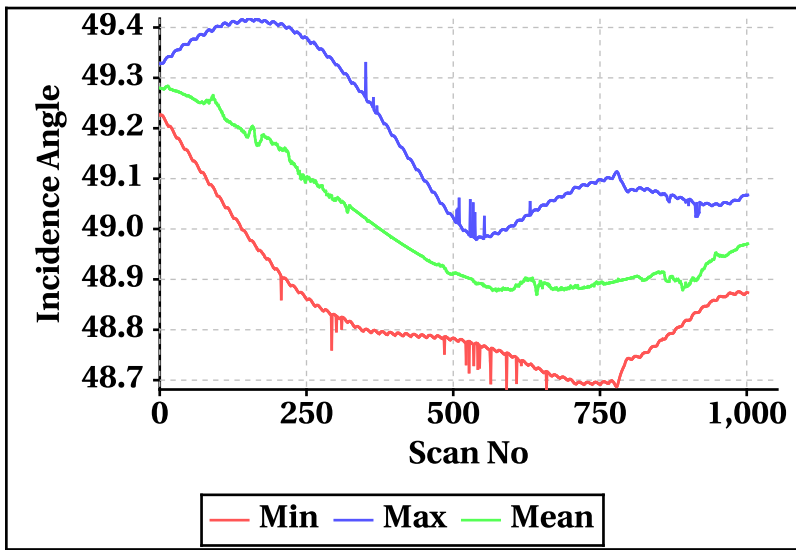


Outer Beam(VV)

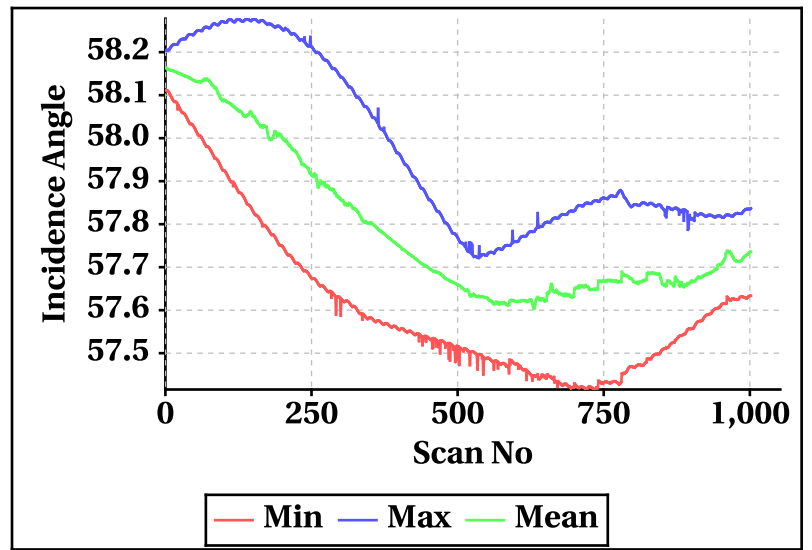


Orbit-wise behaviour of Incidence, Azimuth, Range, X-Factor

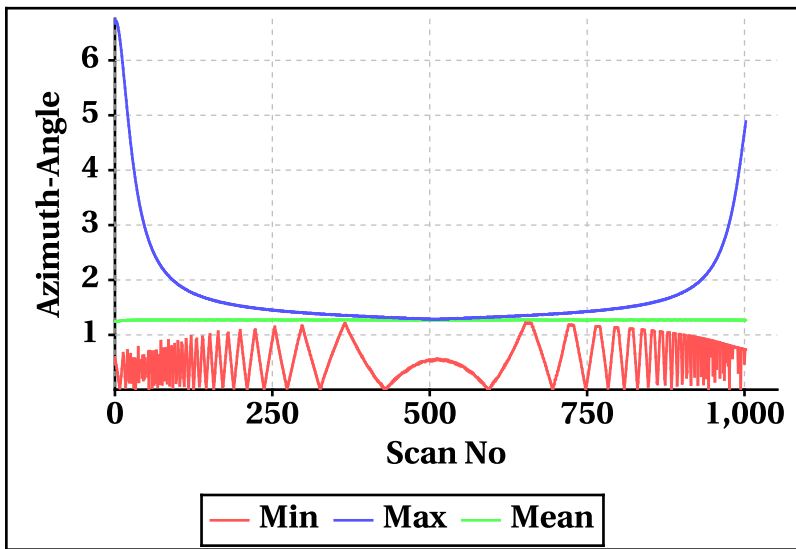
Inner Beam (HH)



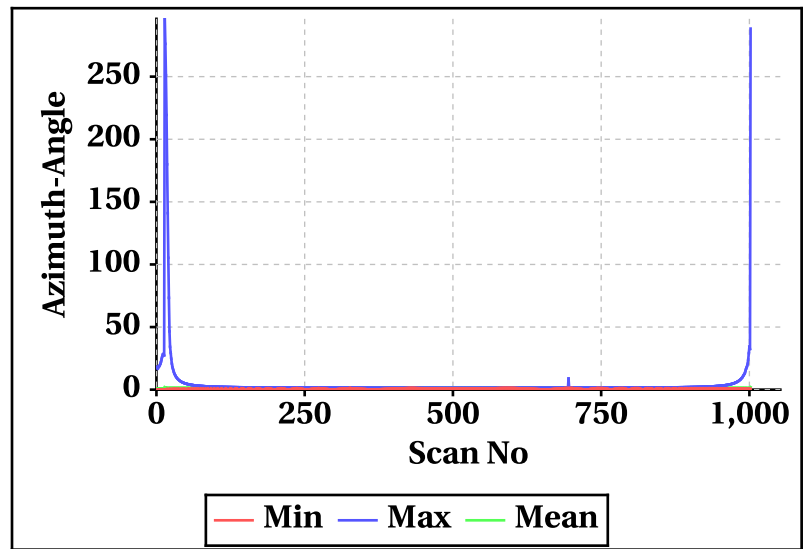
Outer Beam(VV)



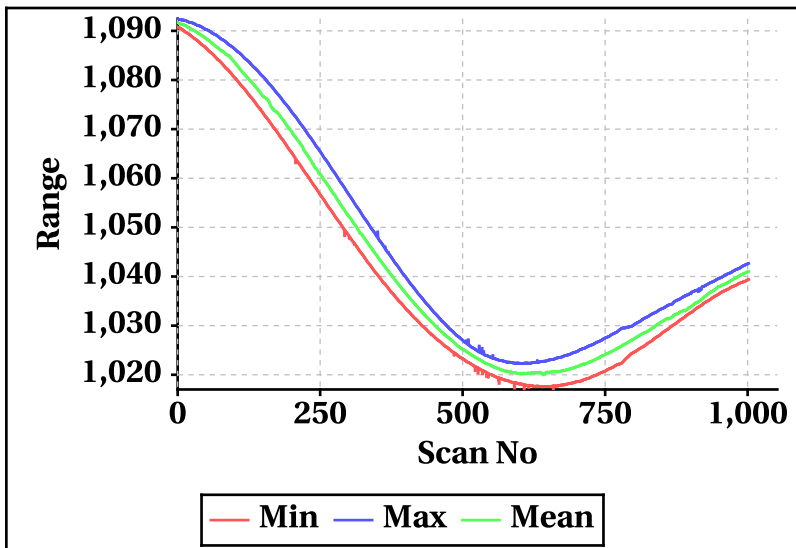
Inner Beam (HH)



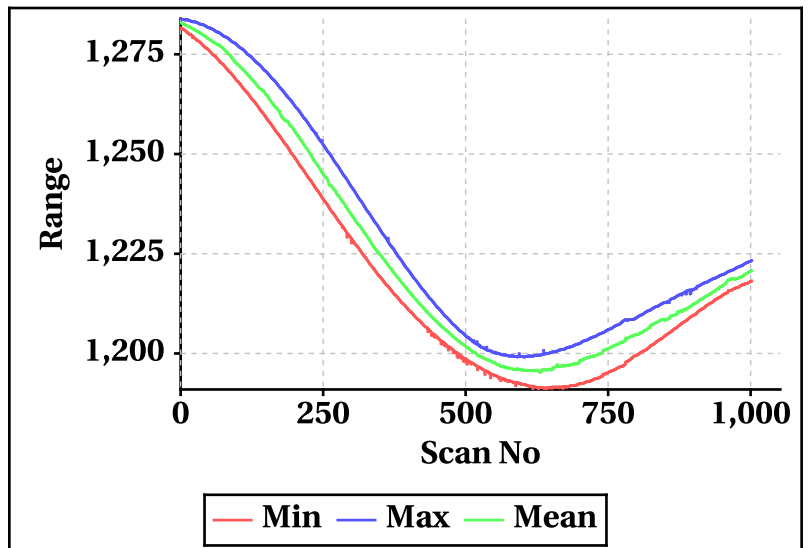
Outer Beam(VV)



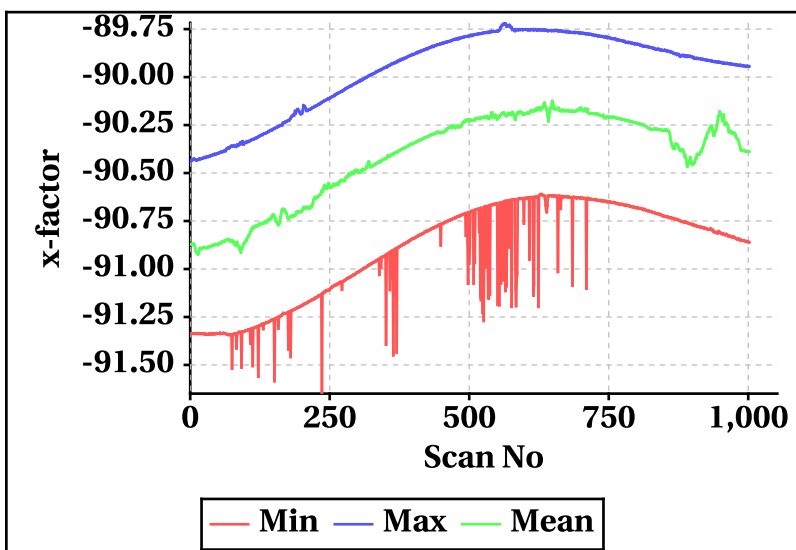
Inner Beam (HH)



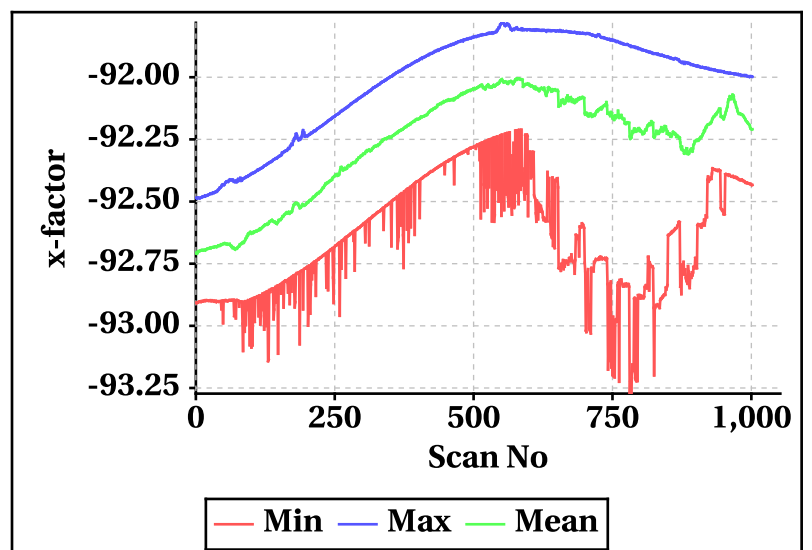
Outer Beam(VV)



Inner Beam (HH)



Outer Beam(VV)



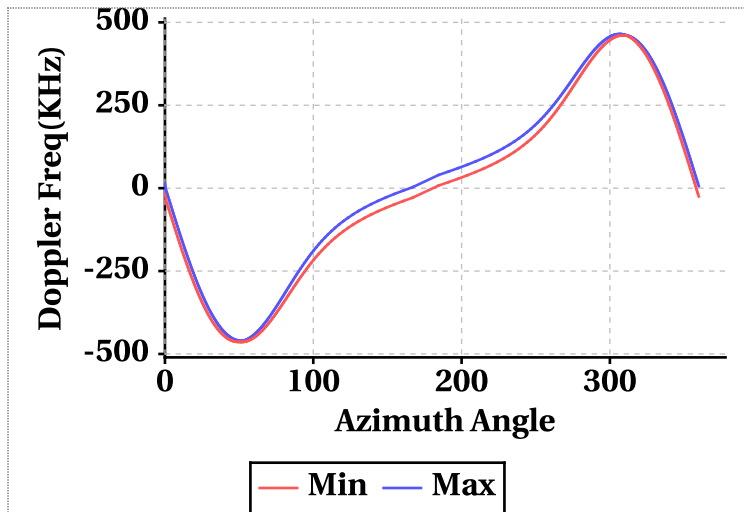


# Doppler Frequency Variation

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

	Inner Beam (HH)	Outer Beam (VV)
<b>Min</b>	-463.84	-519.58
<b>Max</b>	464.76	520.66

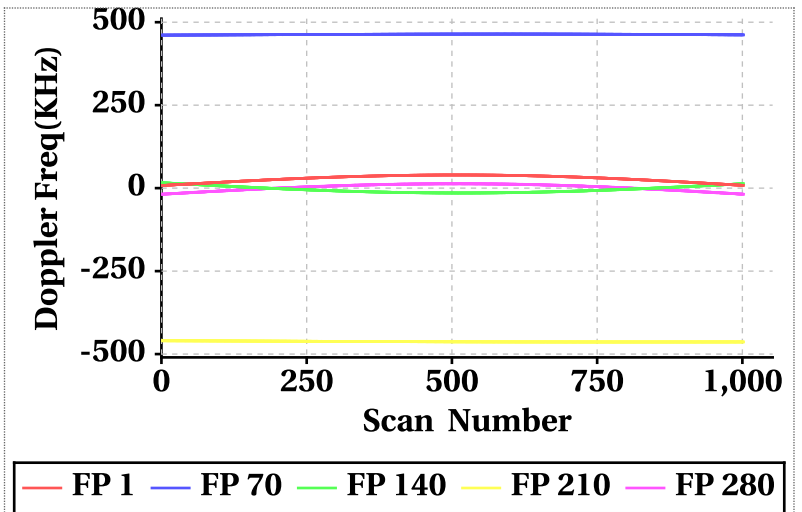
**Footprint wise Doppler frequency variation Inner Beam (HH)**



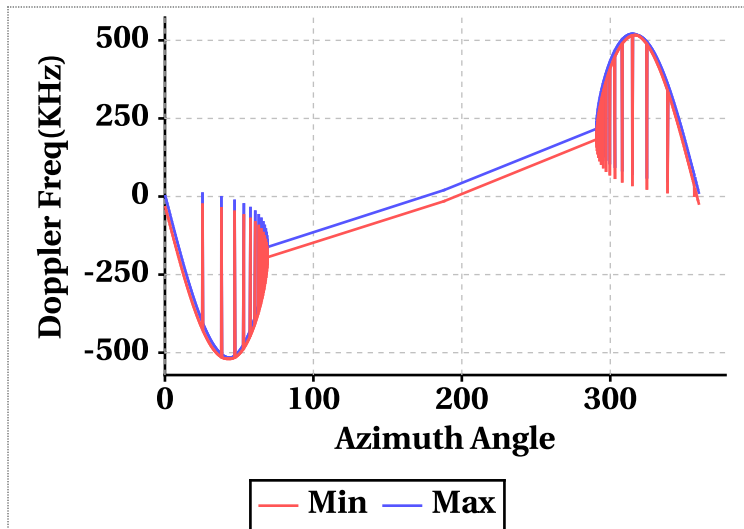
**Doppler Frequency(KHz) variation**

Doppler_FP	Inner Beam (HH)			Outer Beam (VV)		
	Min	Max	Mean	Min	Max	Mean
Doppler_1	7.80	39.68	28.19	3.02	38.62	25.84
Doppler_70	461.02	464.26	463.12	516.46	520.36	519.03
Doppler_140	-14.64	16.30	-3.85	-22.46	12.32	-10.29
Doppler_210	-463.56	-459.80	-462.40	-519.52	-515.66	-518.32
Doppler_280	-18.40	13.30	1.76	-14.88	20.60	7.74

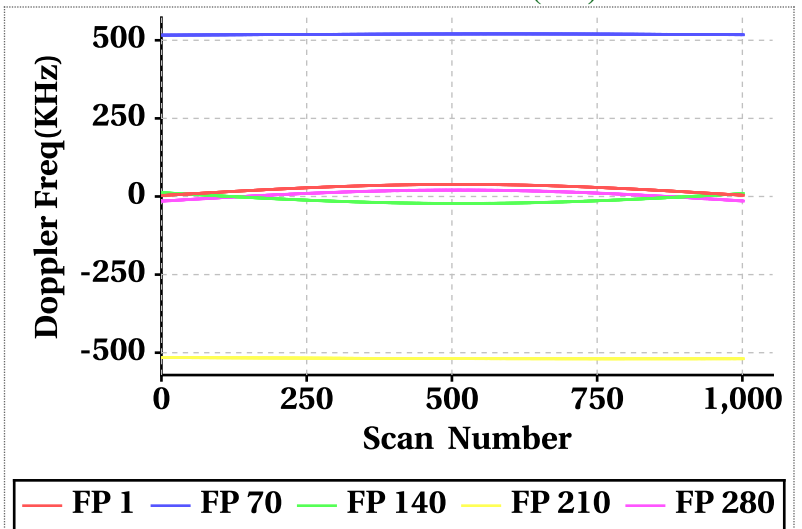
**Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Inner Beam (HH)**



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

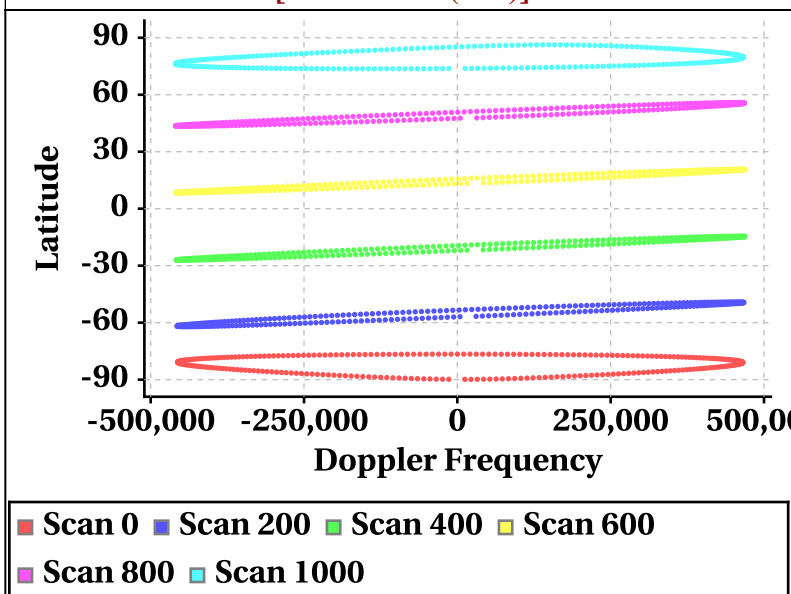


**Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Outer Beam (VV)**

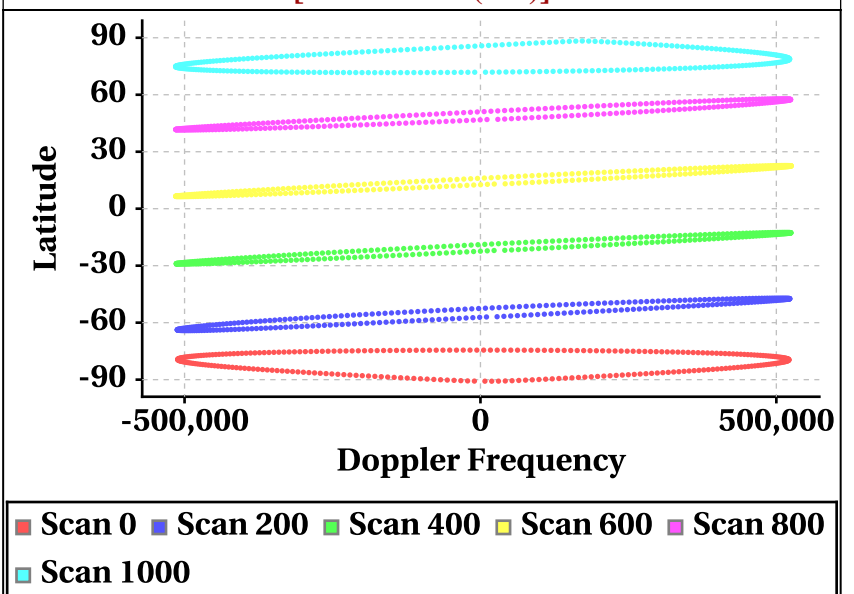


## Latitude Vs Doppler Frequency

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



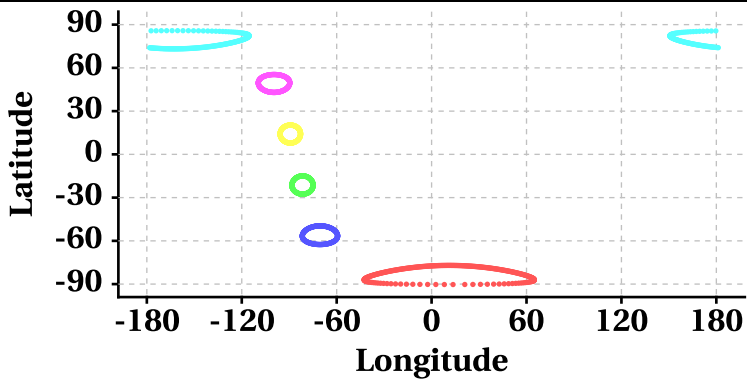
**Doppler Frequency at Scan Interval of 200 [Outer Beam(VV)]**



# Parameter as a function of Latitude

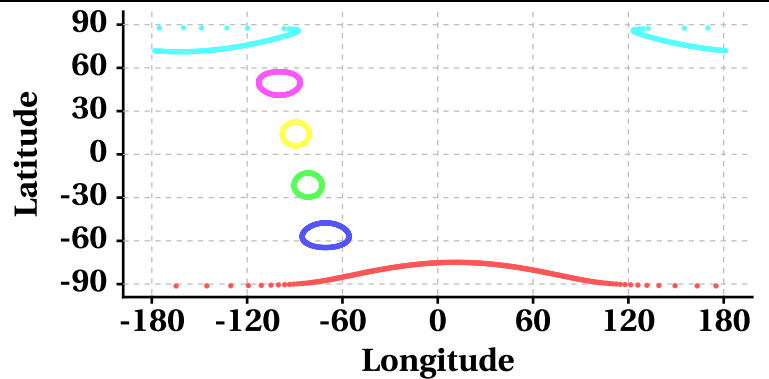
## Latitude Vs Longitude

Scan Trace [Inner Beam(HH)]



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

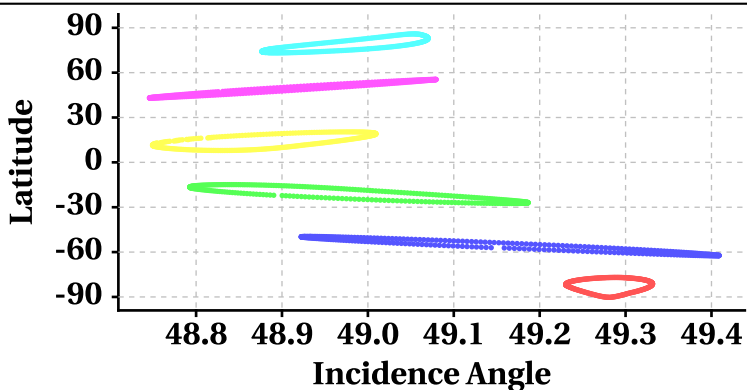
Scan Trace [Outer Beam (VV)]



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

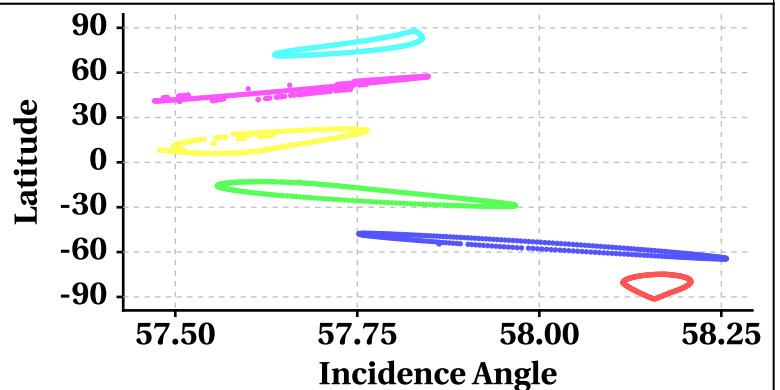
## Latitude Vs Incidence Angle

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



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

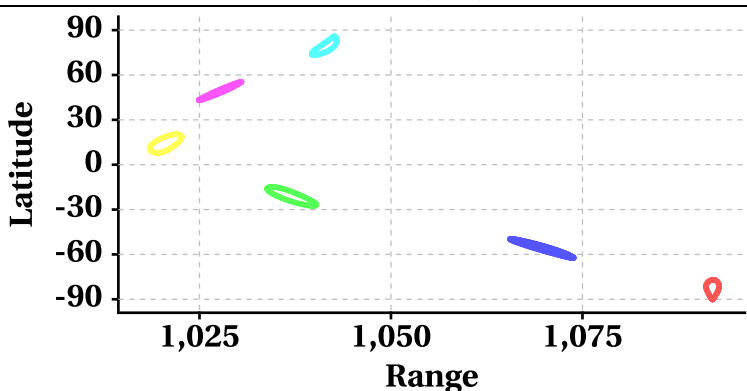
Incidence Angle at Scan Interval of 200 [Outer Beam (VV)]



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

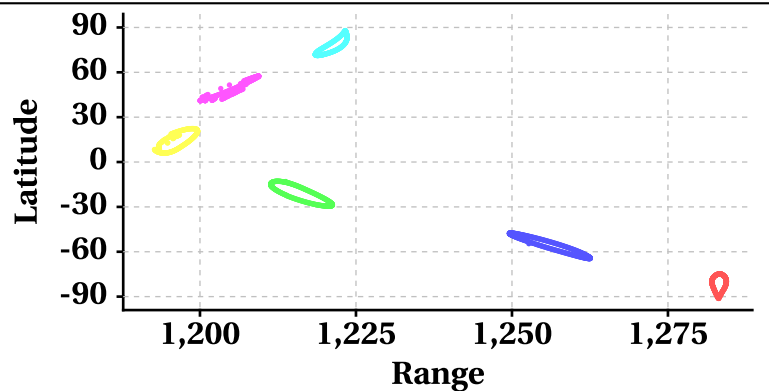
## Latitude Vs Range

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

