

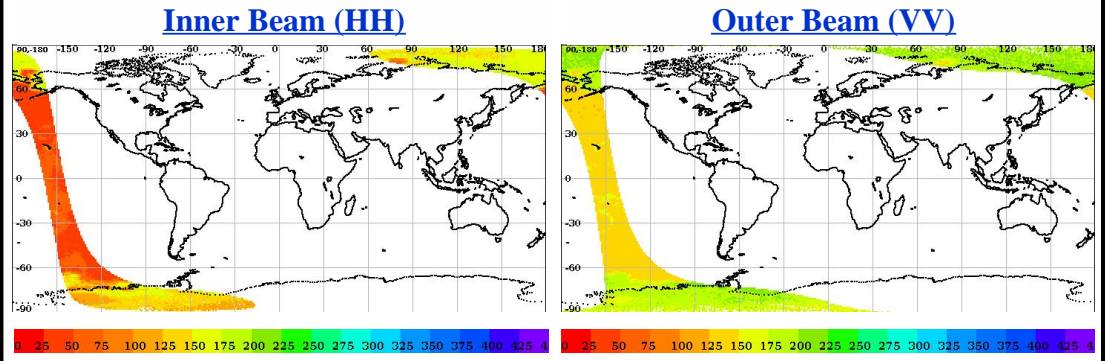
# SCATSAT-1 Scatterometer Level-1B Data Quality Evaluation Report

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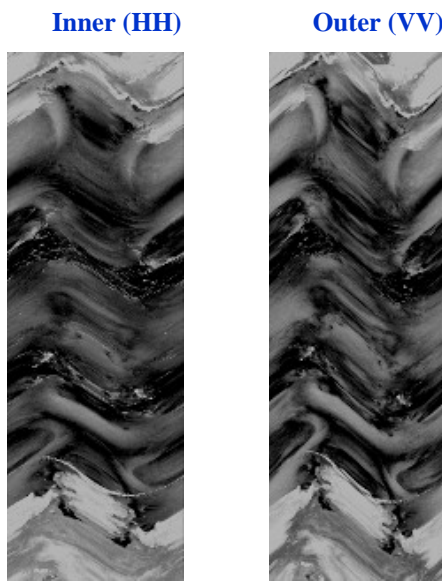
- Half-Orbit Coverage using BT & Sigma-0
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<b>Satellite Id</b>	ScatSat-1	<b>Start Orbit</b>	1104	<b>Total Scans</b>	1004
<b>Sensor Name</b>	Scatterometer	<b>End Orbit</b>	1105	<b>No of Inner FootPrints</b>	281
<b>Processor Version</b>	1.0	<b>Rev. Number</b>	01104_01105	<b>No Of Outer FootPrints</b>	282
<b>Half Orbit Direction</b>	SN	<b>Data Production Date</b>	11-12-2016	<b>No. Of Inner Slices</b>	9
<b>Equator Crossing Date</b>	11-12-2016	<b>Equator Crossing Time</b>	07:16:43.000	<b>No Of Outer Slices</b>	15

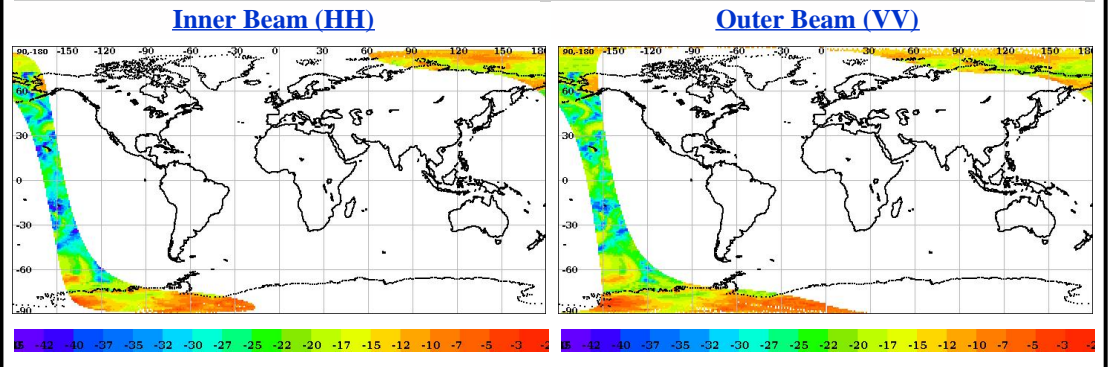
## Brightness Temperature(k) Footprint trace



## Image Snapshot for Inner & Outer Beam



## Sigma0(dB) Footprint trace



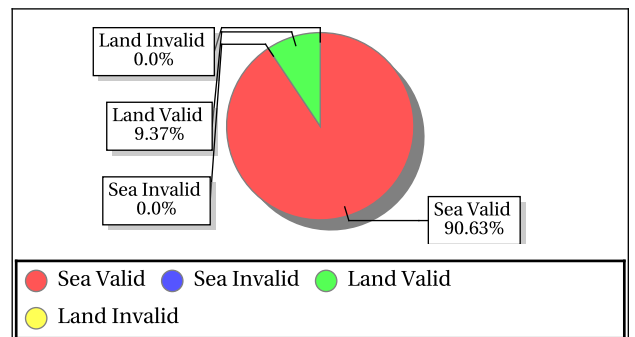
## Invalid and Poor Sigma-0 Quality Flag Statistics for Inner/Outer Slices\*

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	0.00
C(S+N) - C(N) < 0.1 (%)	0.00	0.00
Poor Sigma0(%)	0.01	0.01
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 (%)	100.0	100.0

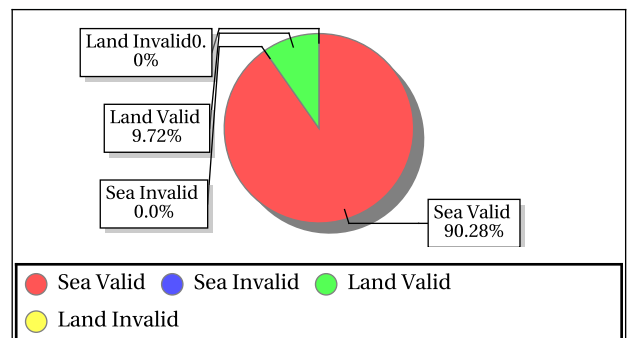
\*DP Format Document

## 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>	0.10	257.45	0.28	2.399	0.10	230.87	0.27	2.255	0.10	0.11	0.10	0.000	0.10	0.11	0.10	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	0.02	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>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>	-34.84	23.53	5.44	0.043	-34.37	25.55	6.29	0.273	8.05	28.54	19.15	21.538	8.62	28.78	19.53	20.642

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>	0.08	146.89	0.22	1.763	0.08	175.93	0.22	1.795	0.08	0.11	0.08	0.000	0.08	0.11	0.08	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>	0.00	0.01	0.00	0.000	0.00	0.00	0.00	0.000	0.00	0.00	0.00	0.000	0.00	0.00	0.00	0.000
<b>SNR</b>	-33.42	17.48	3.41	0.000	-34.20	17.94	3.99	0.000	2.57	23.84	14.76	2.544	2.98	23.82	15.40	3.993

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 (VV)				Outer Beam (VV)				Parameter Specifications		
	Min	Max	Mean	Bad Occ. (%)	Min	Max	Mean	Bad Occ. (%)	Parameter	Min	Max
<b>Incidence Angle (deg)</b>	48.90	49.33	49.07	0.000	57.64	58.17	57.96	0.000	Inci.(Inner)	47.10	49.90
<b>Azimuth Diff. (deg)</b>	0.0026	1.29	1.12	0.153	0.0029	1.29	1.14	0.167	Inci.(Outer)	57.30	58.90
<b>Range(Km)</b>	1029.00	1085.90	1049.55	0.000	1205.28	1275.63	1231.64	13.469	Azimuth Diff.	0.60	2.00
<b>X Factor(dbm)</b>	-91.56	-90.03	-90.20	0.000	-93.19	-91.97	-92.18	0.000	Range(Inner)	1025.00	1095.70
<b>Across Distance (Km)</b>	15.56	16.06	15.77	0.000	12.20	94.84	21.02	5.000	Range(Outer)	1210.00	1280.00
<b>Along Distance (Km)</b>	19.02	59.50	19.79	1.000	18.68	59.39	19.70	1.000	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

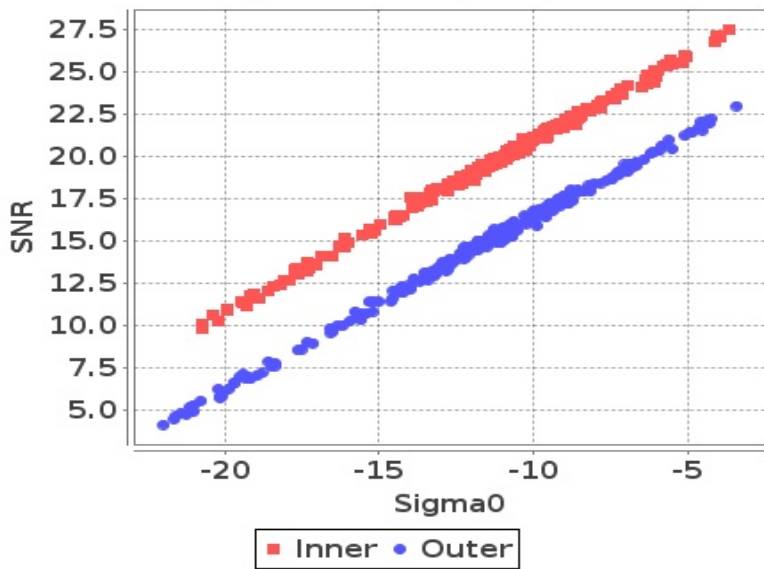
- Normal
- Deviations
- Alarming
- High Errors



## Sigma0 Behaviour (Sigma0 Vs SNR)

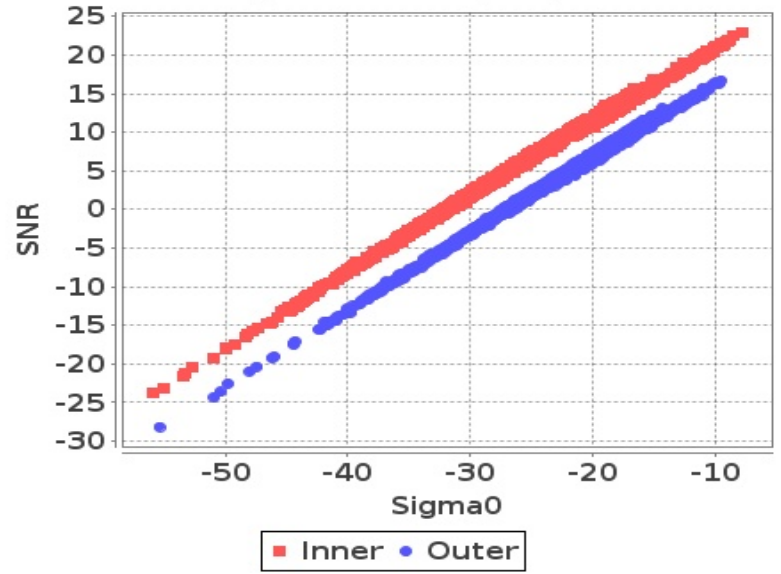
Footprint-Land

Sigma0 Vs SNR (Land)



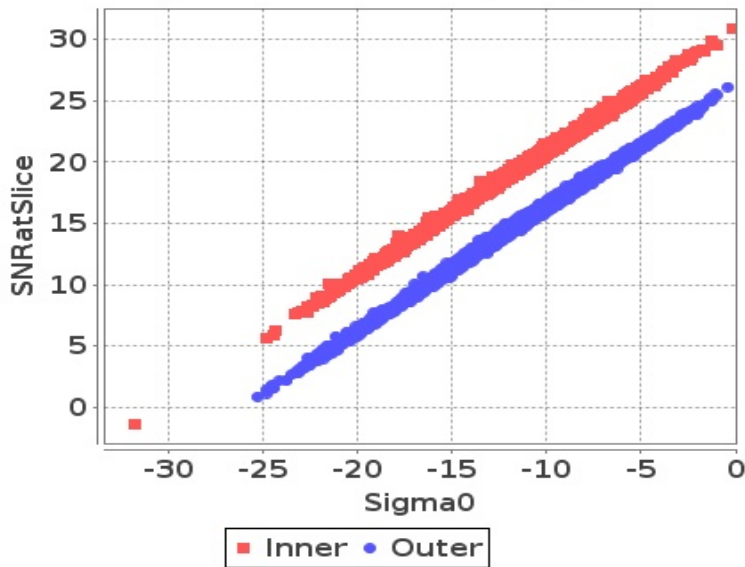
Footprint-Sea

Sigma0 Vs SNR (Sea)



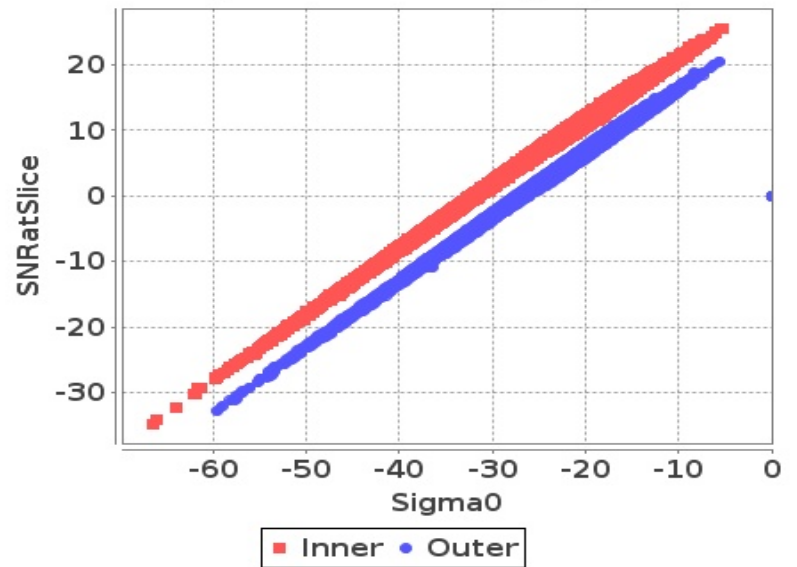
Slice-Land

Sigma0 Vs SNRatSlice (Land)



Slice-Sea

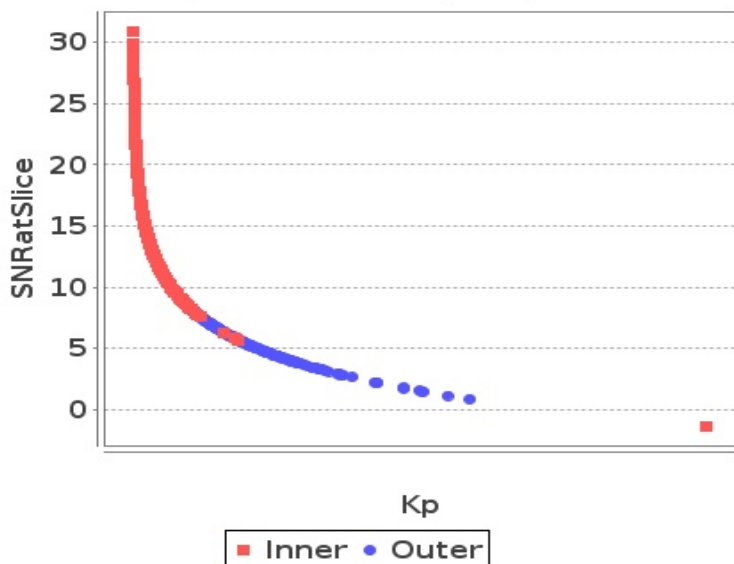
Sigma0 Vs SNRatSlice (Sea)



## Sigma0 Behaviour (Kp Vs SNR)

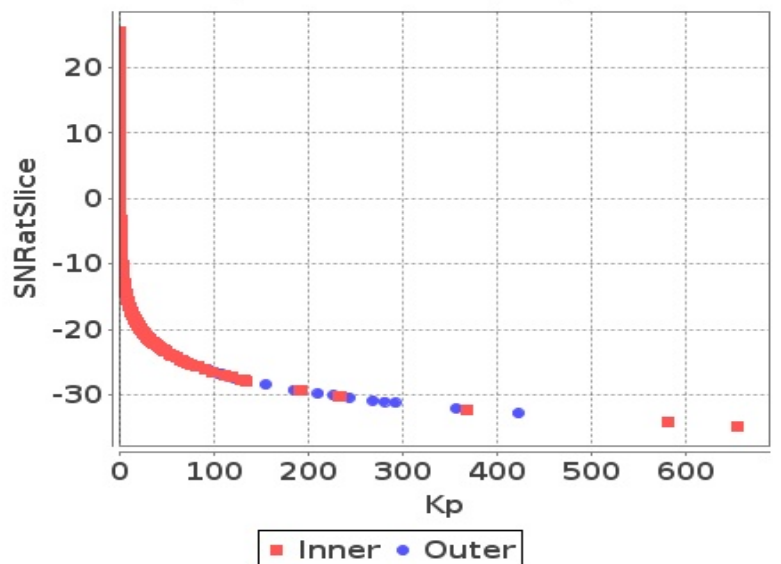
Slice

Kp Vs SNRatSlice (Land)



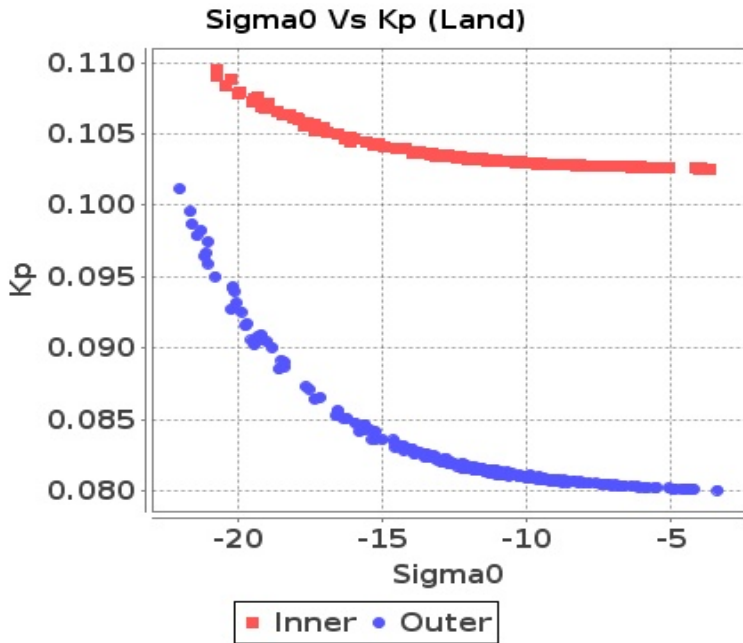
Slice

Kp Vs SNRatSlice (Sea)

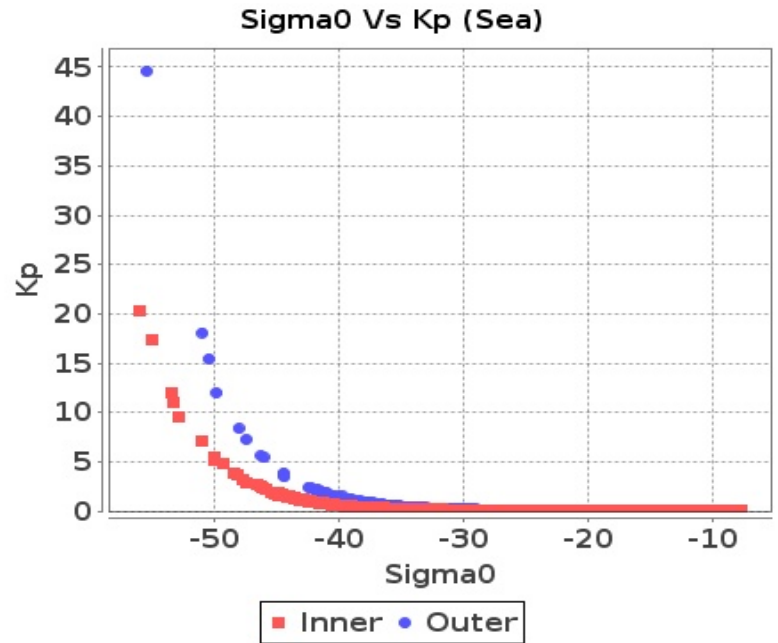


# Sigma0 Behaviour(Sigma0 Vs Kp)

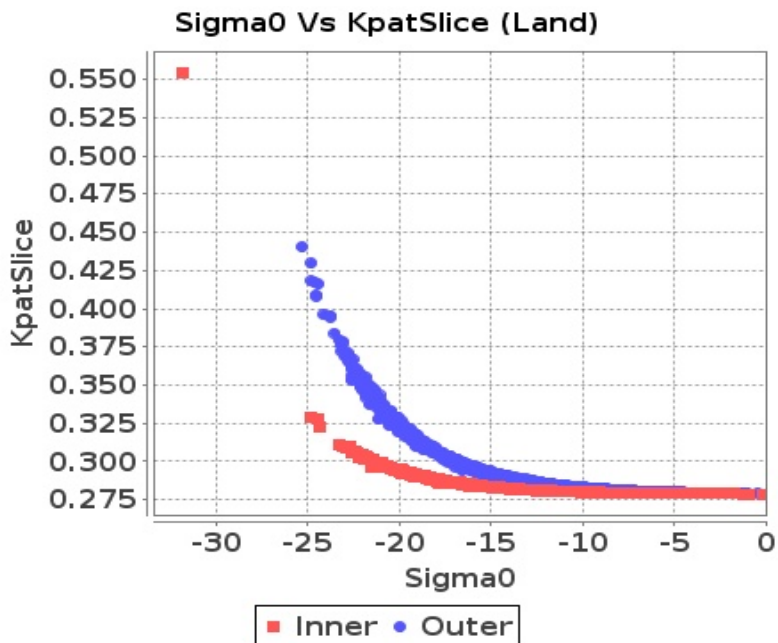
## Footprint-Land



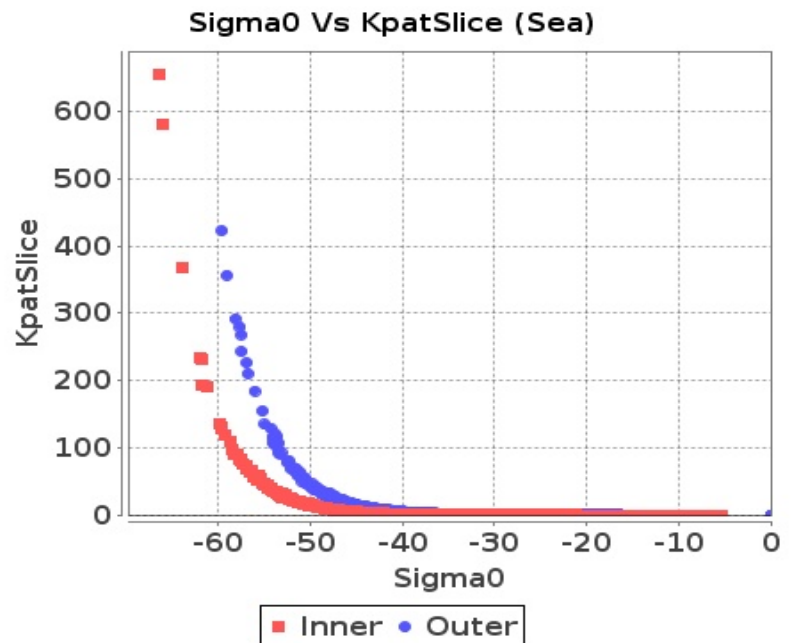
## Footprint-Sea



## Slice-Land



## Slice-Sea



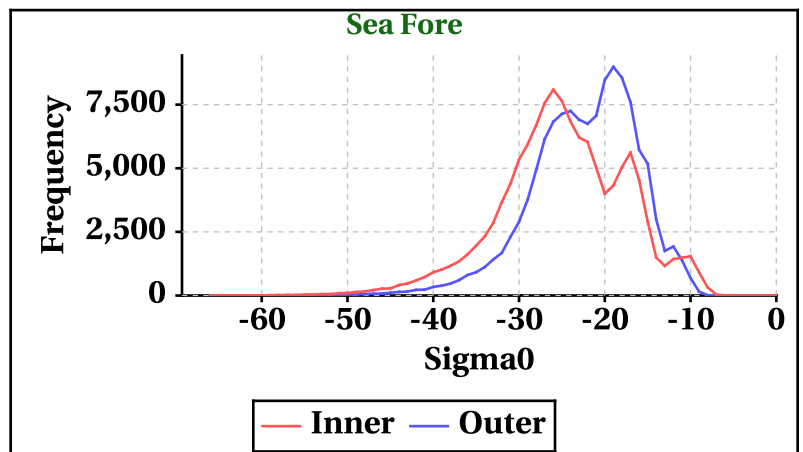
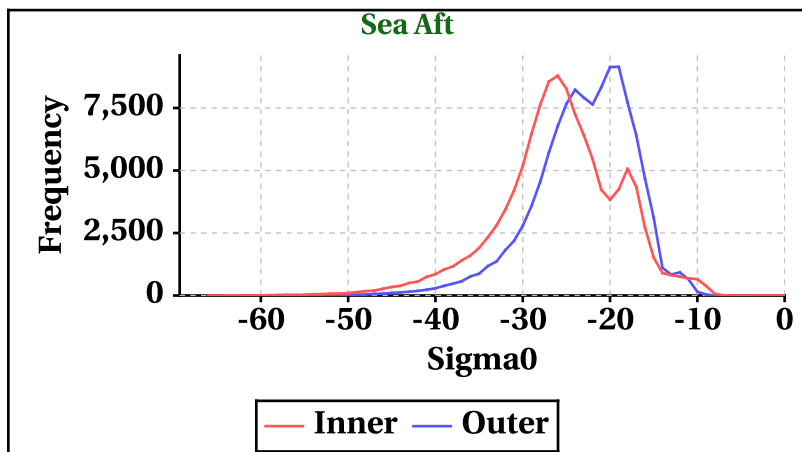
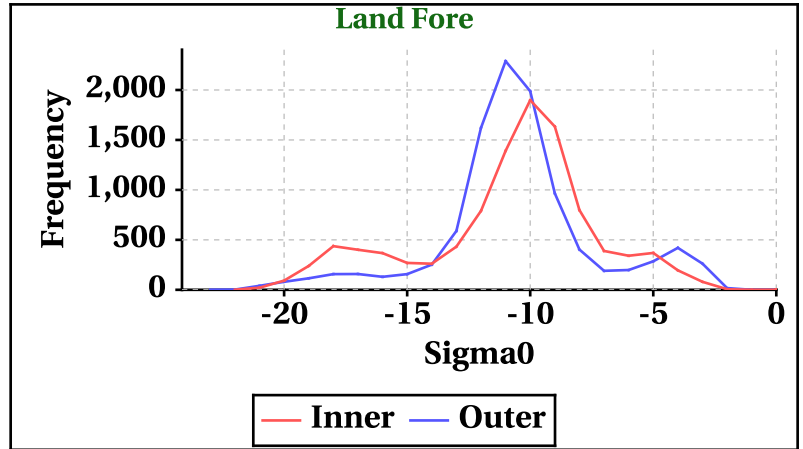
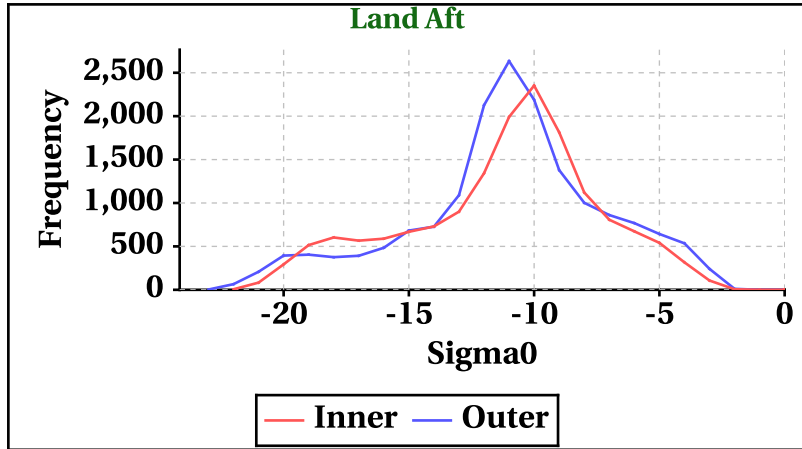


# Dynamic Range (Data Histograms)

## Sigma0(db)

Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-22	-22	-66	-66
Max	0	0	0	0

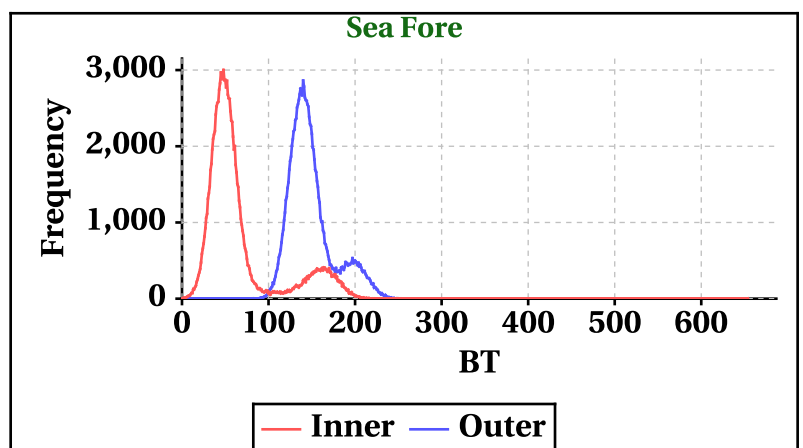
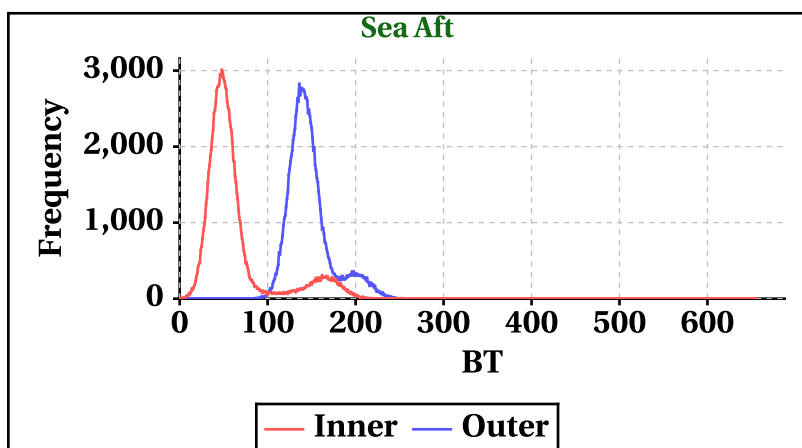
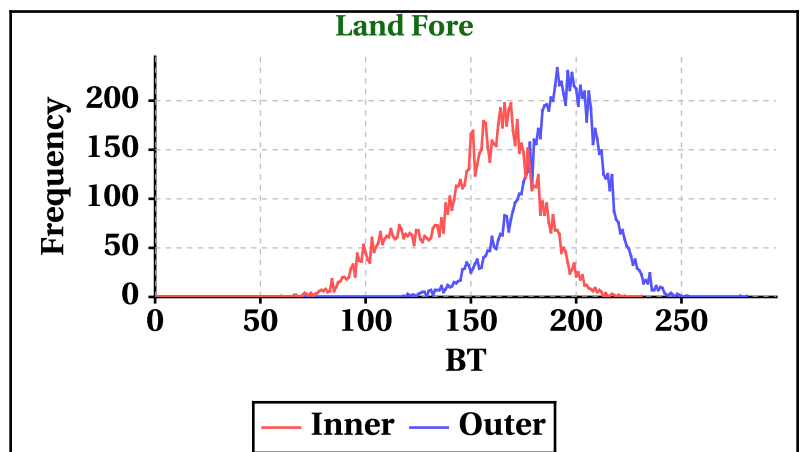
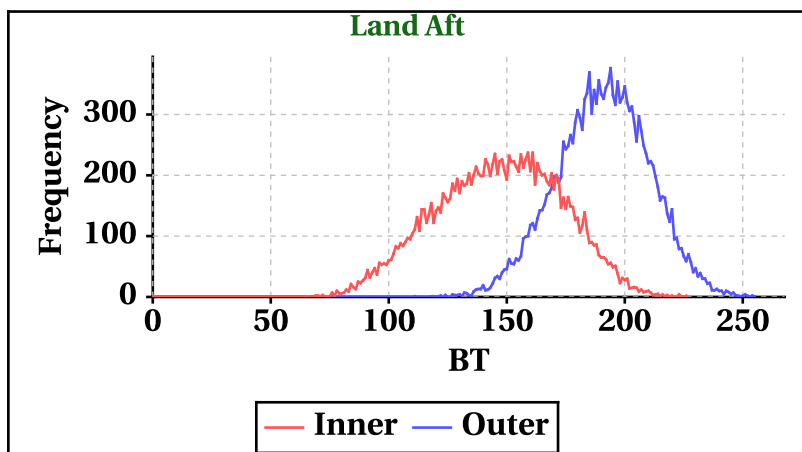
Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-23	-23	-60	-61
Max	0	0	0	0



## Brightness Temperature(K)

Inner Beam(HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	226	231	655	654

Outer Beam(VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	255	281	265	262

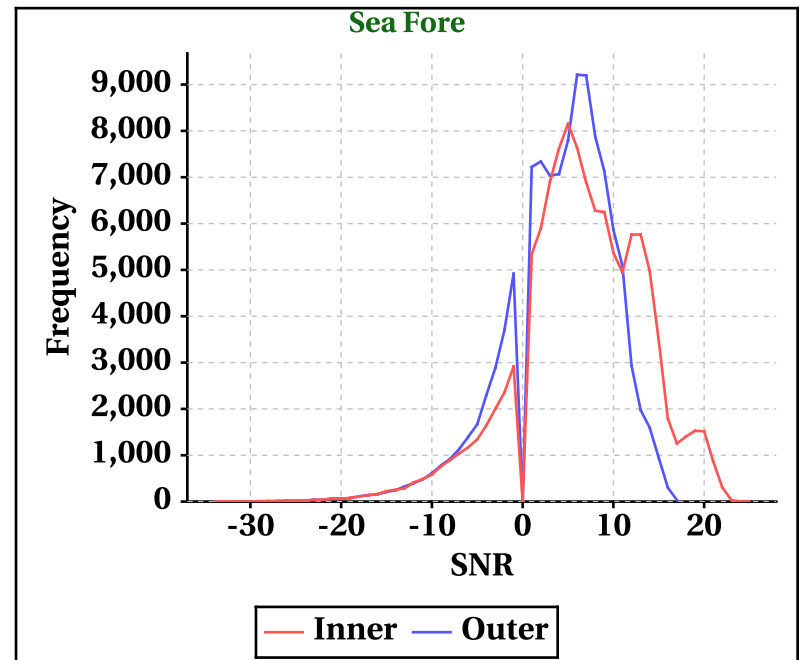
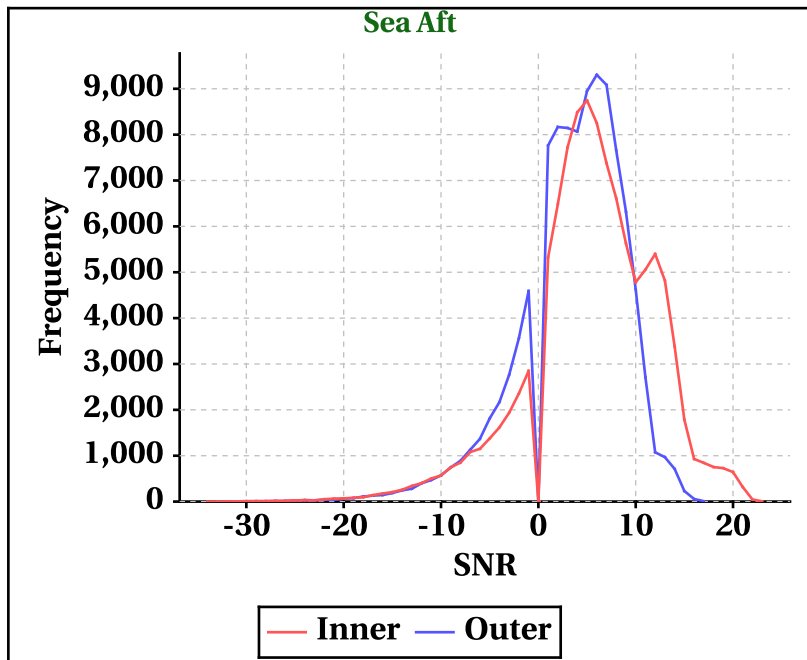
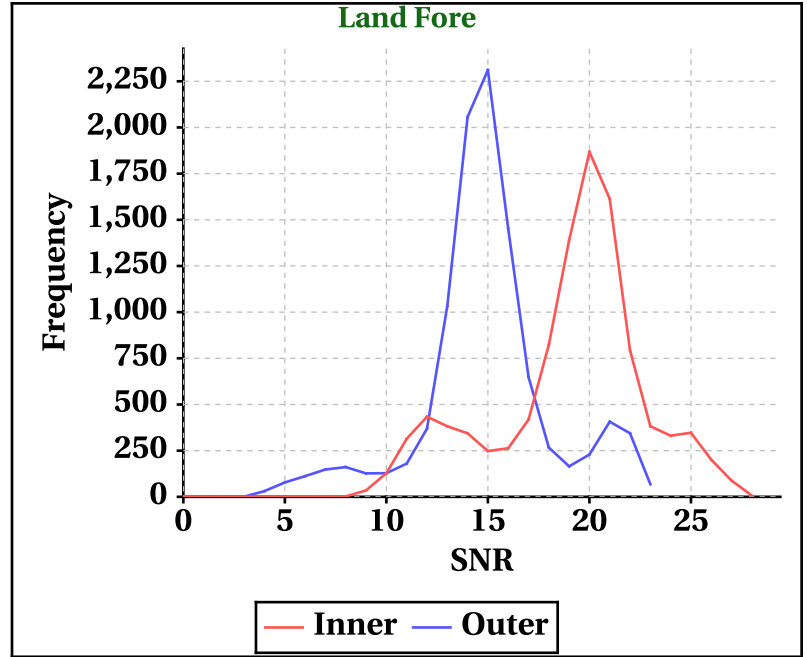
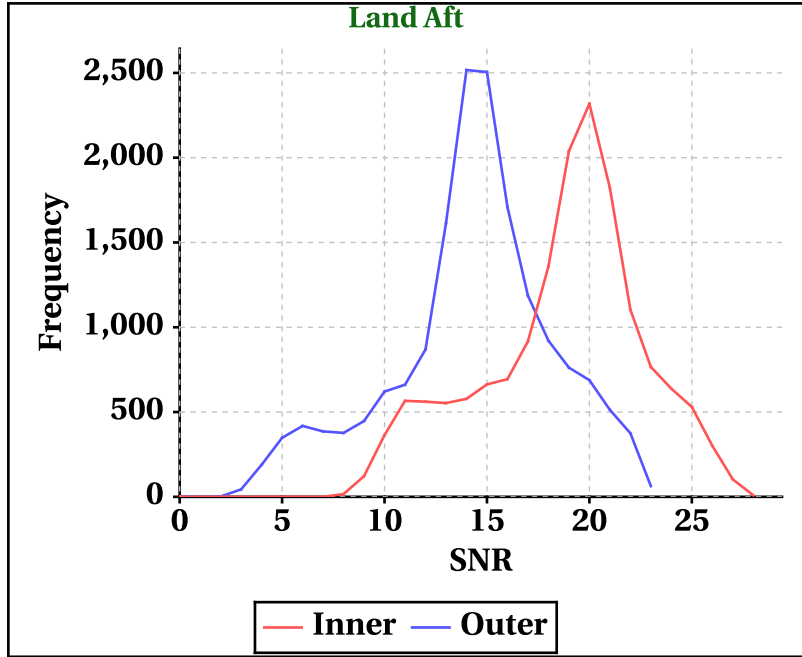


# Dynamic Range (Data Histograms)

## SNR(dBm)

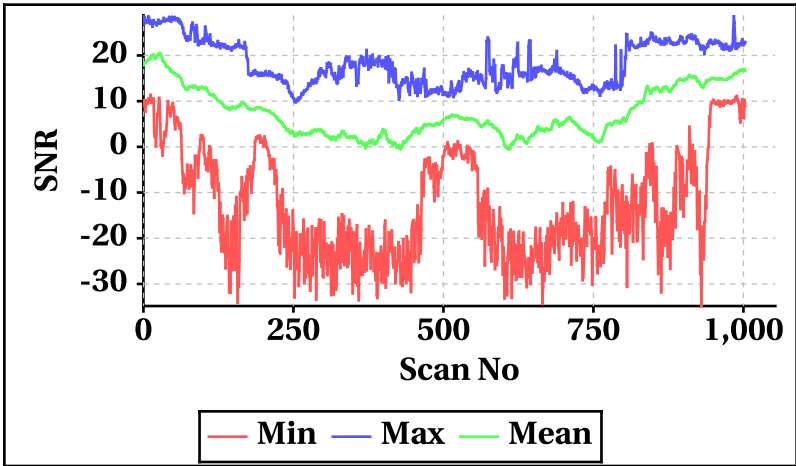
Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	-34	-34
Max	28	28	23	25

Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	-33	-34
Max	23	23	17	17

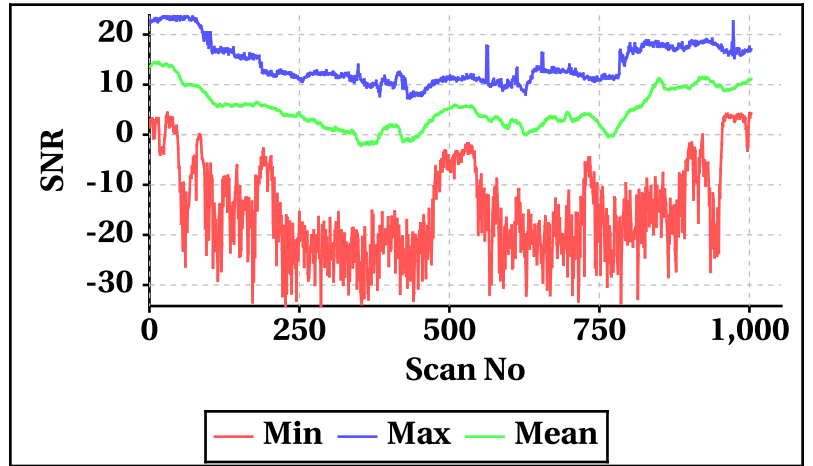


## Orbit-wise behaviour of SNR

Inner Beam (HH)

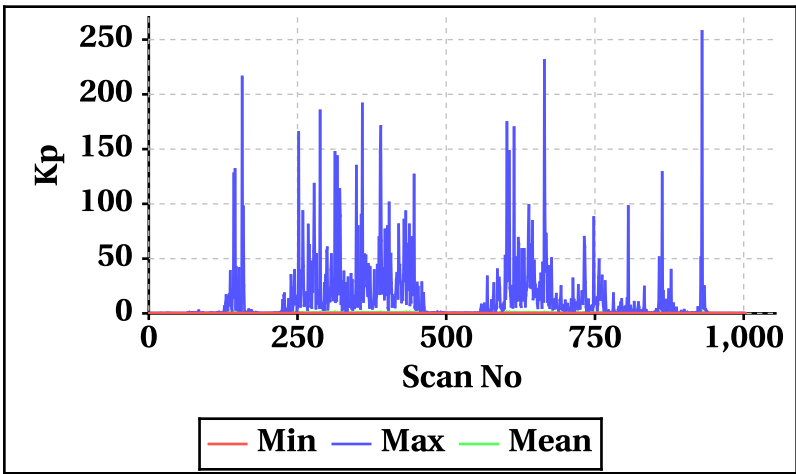


Outer Beam(VV)

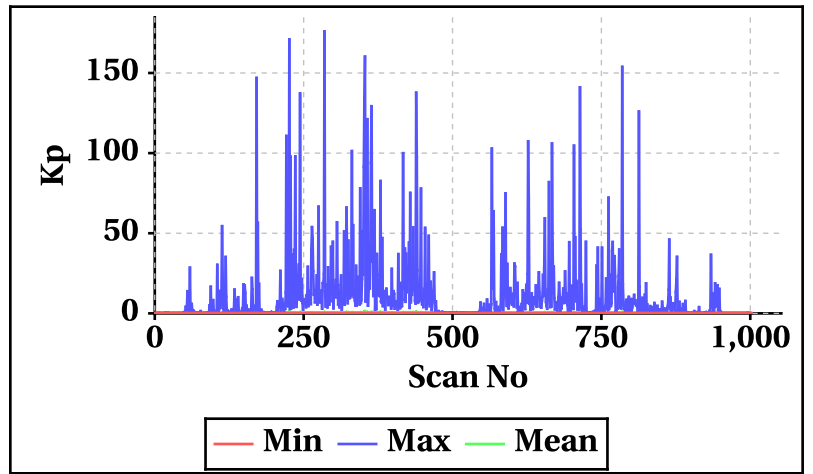


## Orbit-wise behaviour of Kp, Kpa, Kpb, Kpc

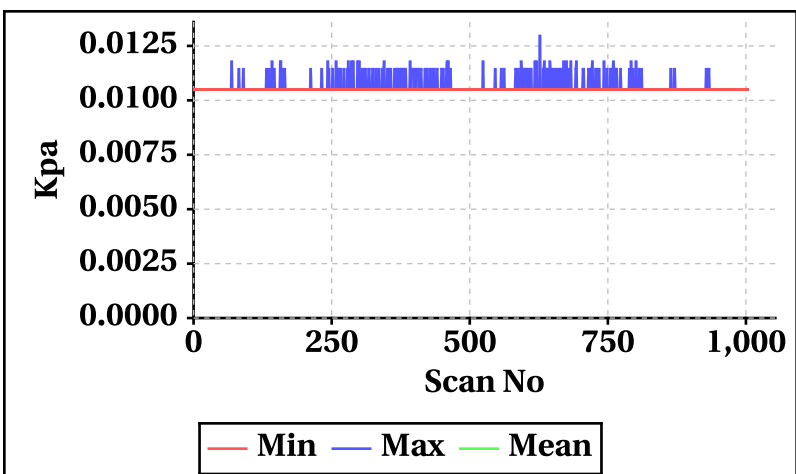
Inner Beam(HH)



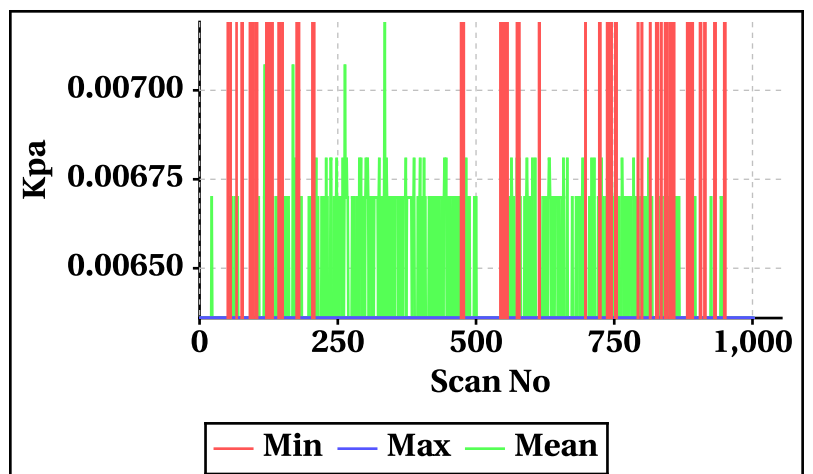
Outer Beam(VV)



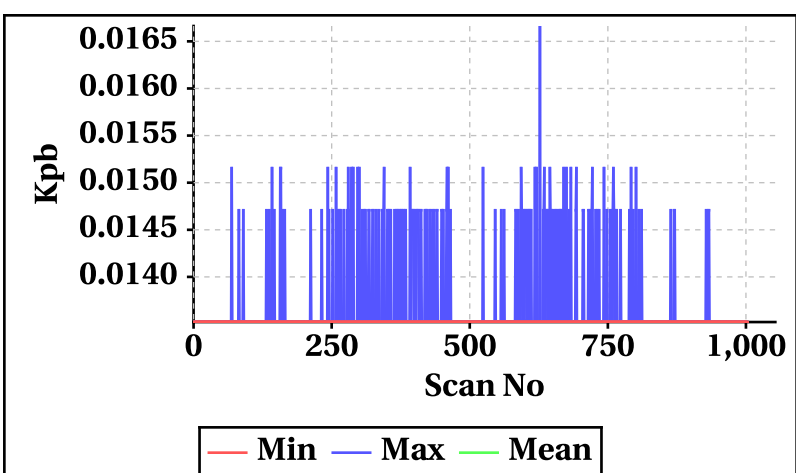
Inner Beam(HH)



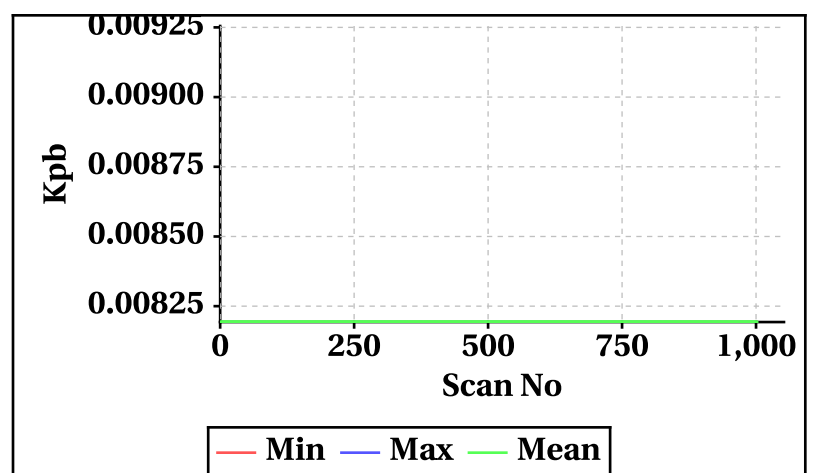
Outer Beam(VV)



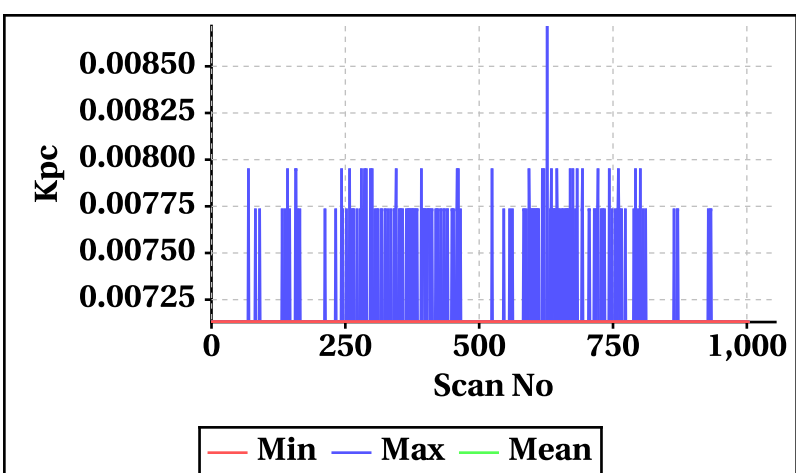
Inner Beam(HH)



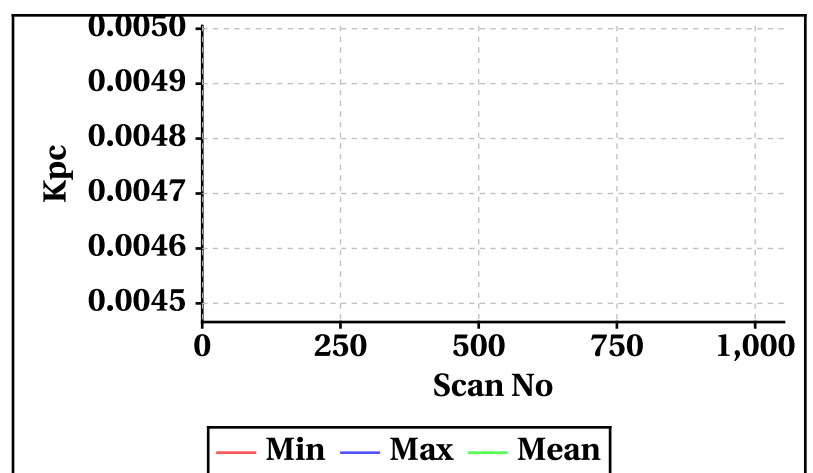
Outer Beam(VV)



Inner Beam(HH)

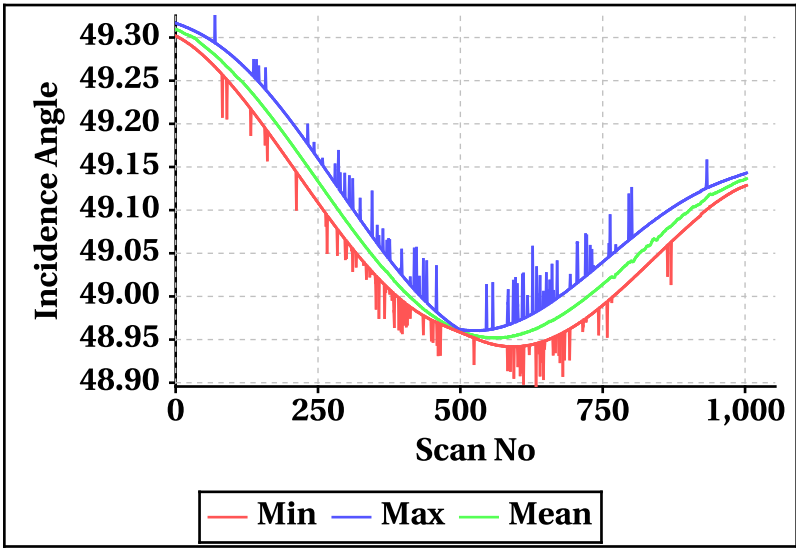


Outer Beam(VV)

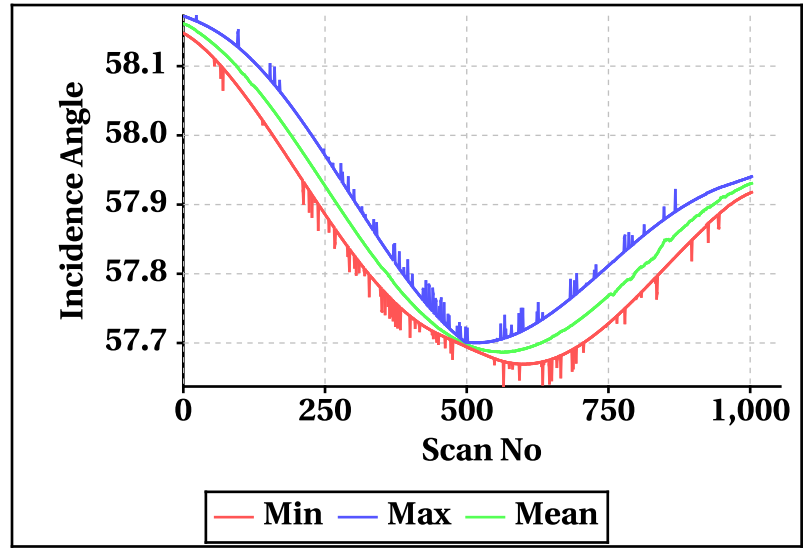


Orbt-wise behaviour of Incidence, Azimuth, Range, X-Factor

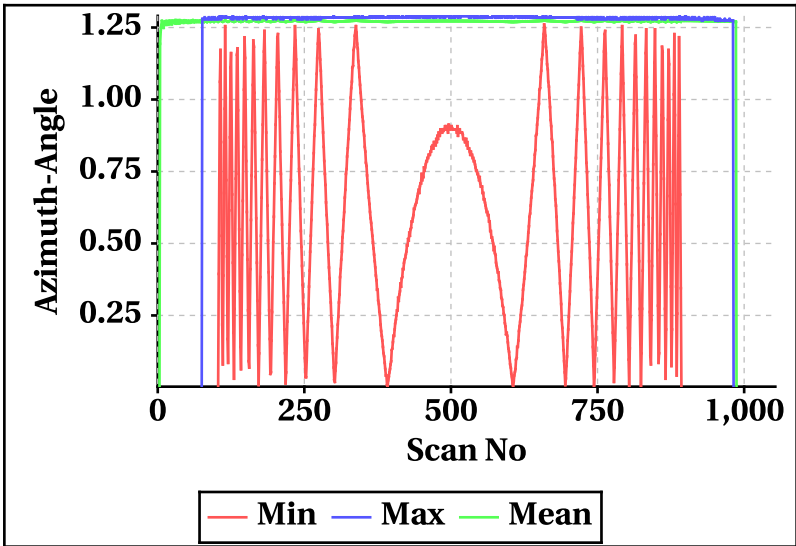
Inner Beam (HH)



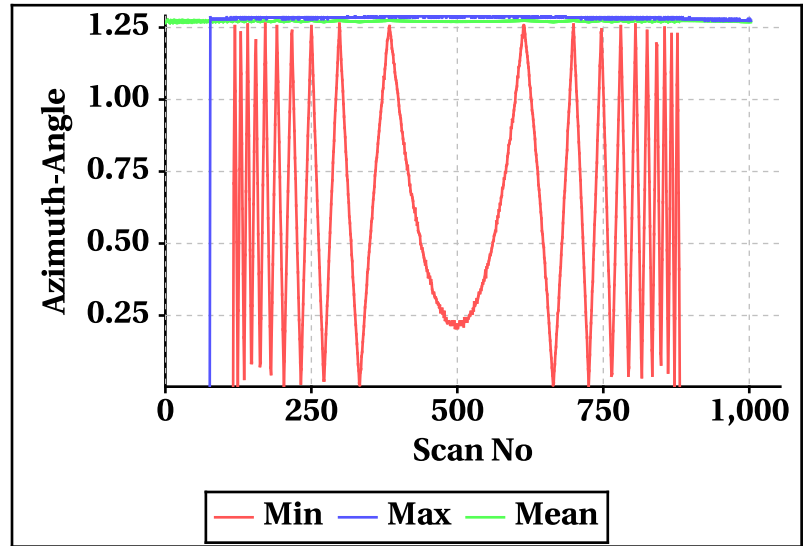
Outer Beam(VV)



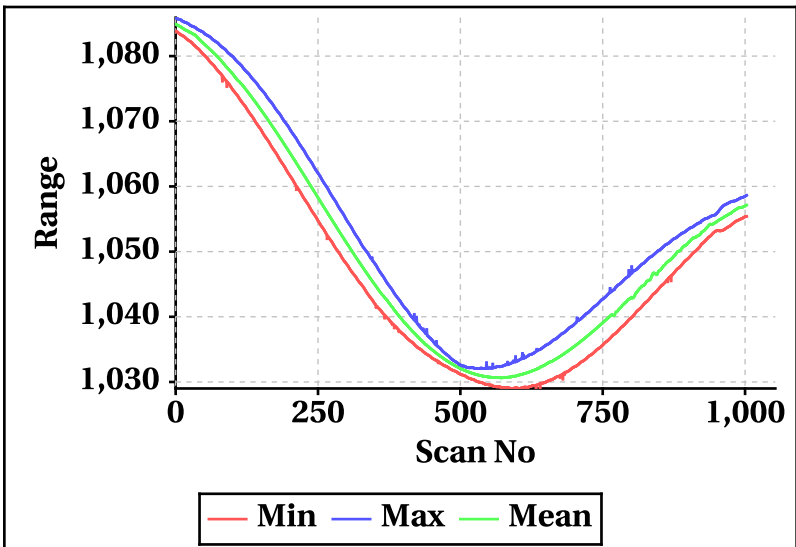
Inner Beam (HH)



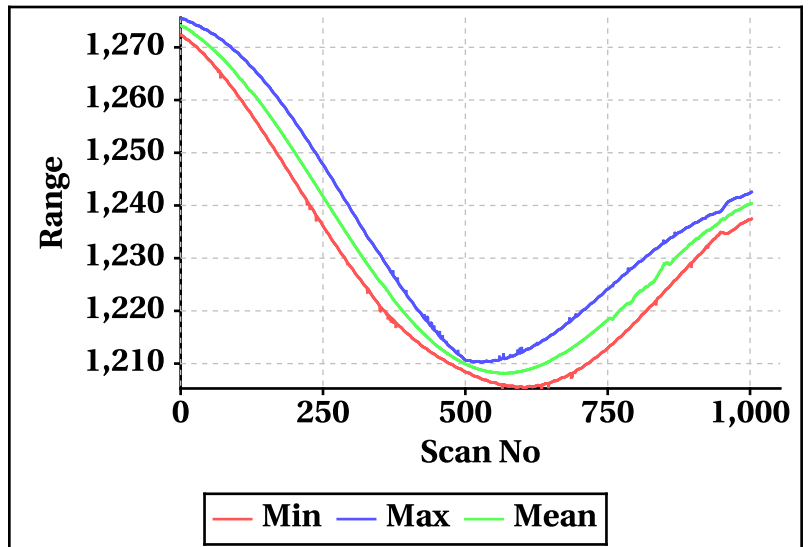
Outer Beam(VV)



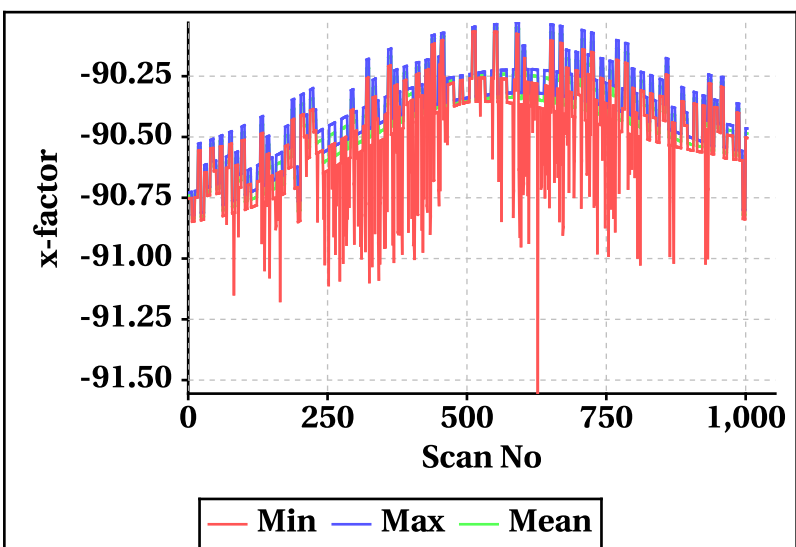
Inner Beam (HH)



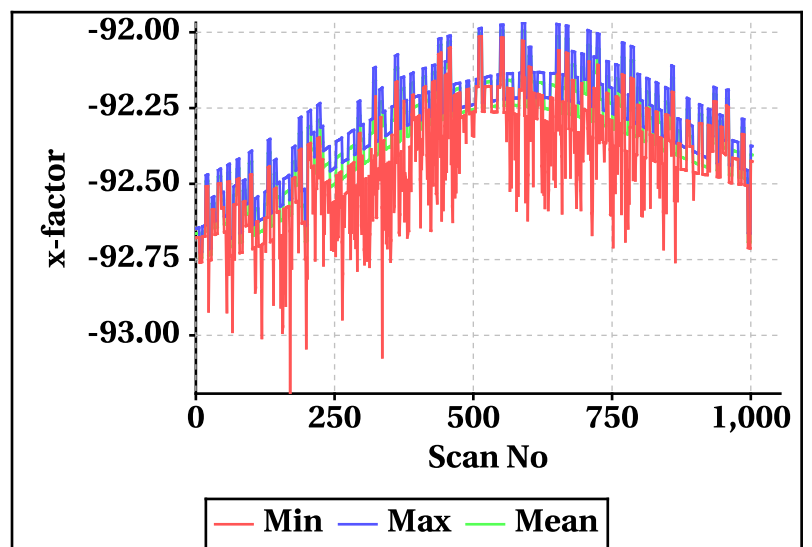
Outer Beam(VV)



Inner Beam (HH)



Outer Beam(VV)



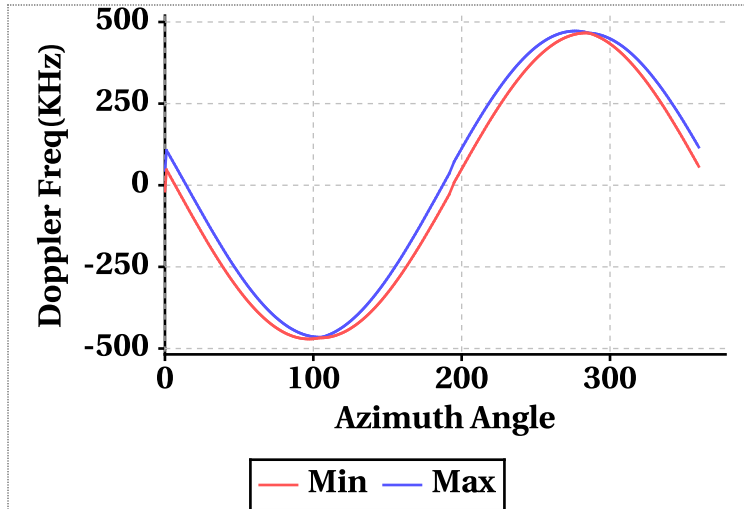


# Doppler Frequency Variation

Doppler Frequency(KHz) variation statistics Over the half Orbit

	Inner Beam (HH)	Outer Beam (VV)
Min	-470.84	-526.92
Max	472.20	528.14

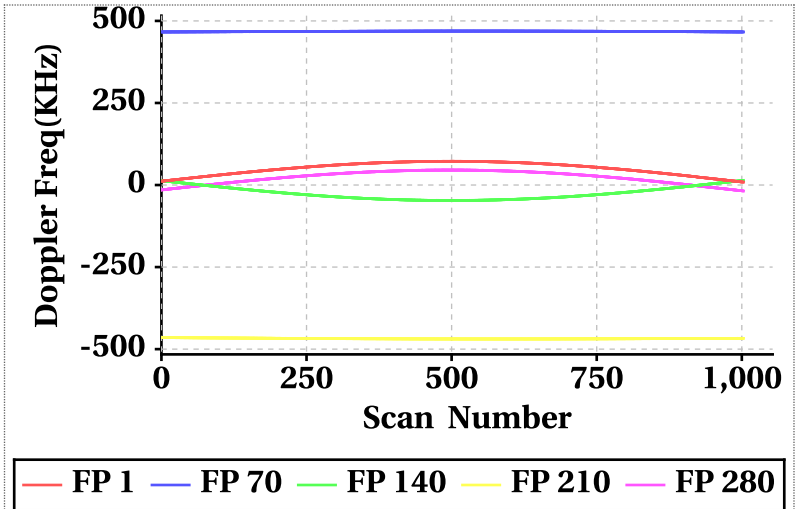
Footprint wise Doppler frequency variation Inner Beam (HH)



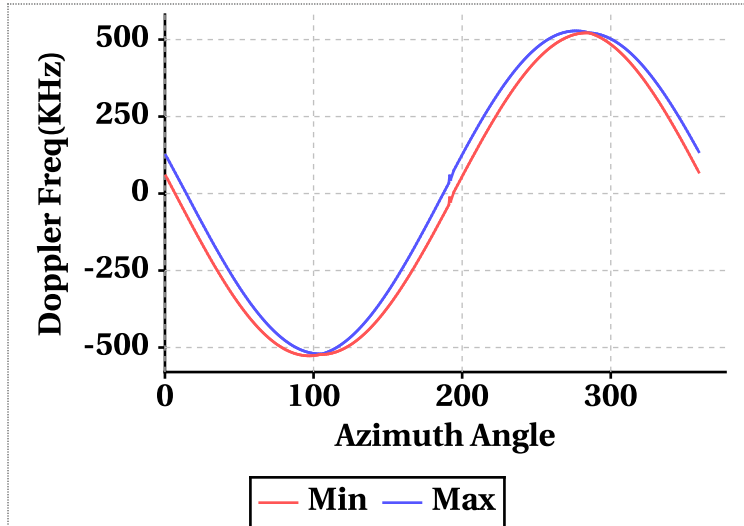
Doppler Frequency(KHz) variation

Doppler_FP	Inner Beam (HH)			Outer Beam (VV)		
	Min	Max	Mean	Min	Max	Mean
Doppler_1	8.82	72.28	49.77	4.88	75.56	50.46
Doppler_70	466.36	469.08	467.99	521.56	525.22	523.82
Doppler_140	-47.18	14.06	-25.13	-59.48	9.36	-34.71
Doppler_210	-469.12	-464.90	-467.88	-524.40	-520.50	-523.26
Doppler_280	-18.20	45.60	23.04	-13.74	57.34	32.18

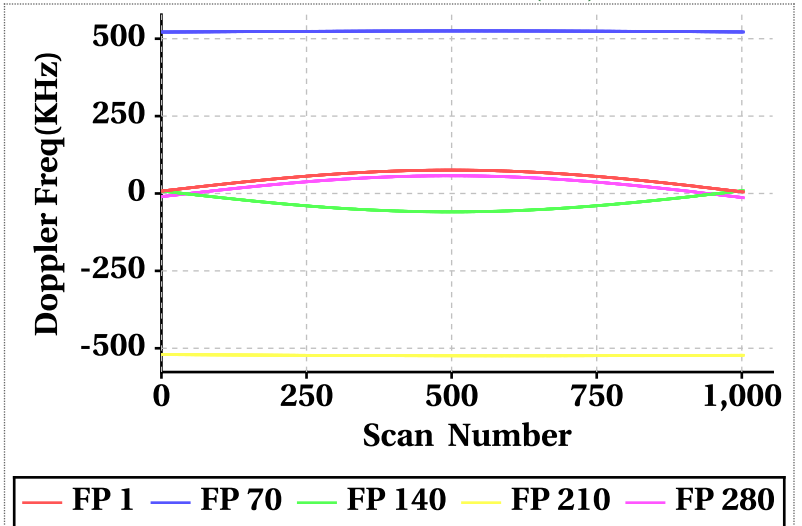
Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Inner Beam (HH)



Footprint wise Doppler frequency variation Outer Beam (VV)

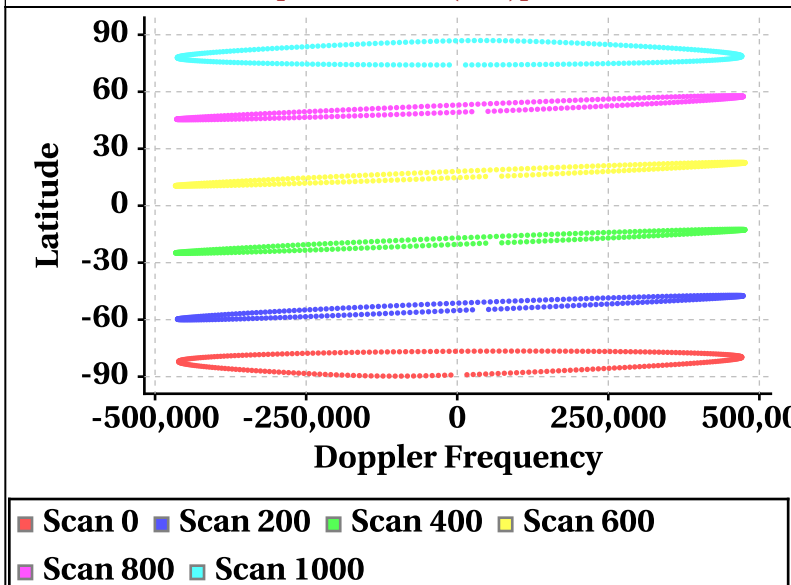


Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Outer Beam (VV)

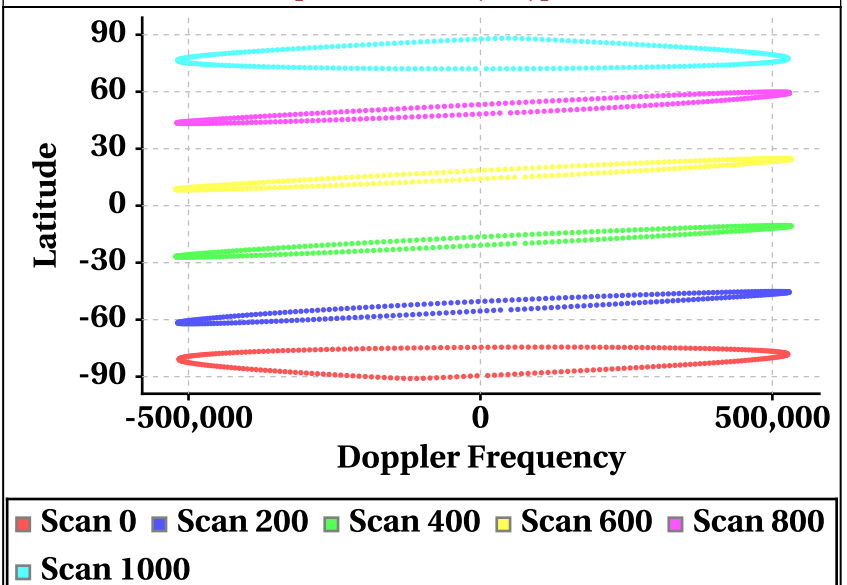


# Latitude Vs Doppler Frequency

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



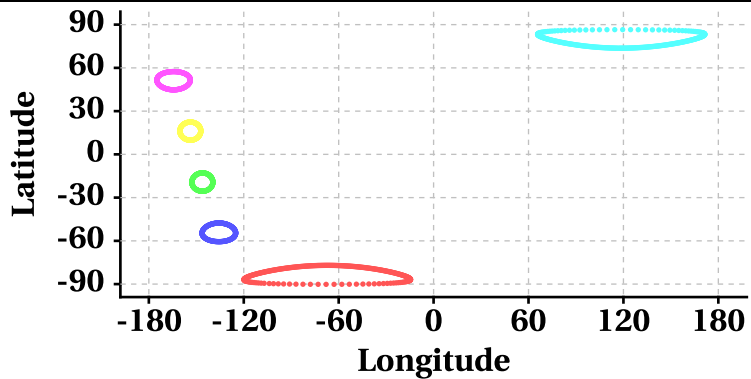
Doppler Frequency at Scan Interval of 200 [Outer Beam(VV)]



# Parameter as a function of Latitude

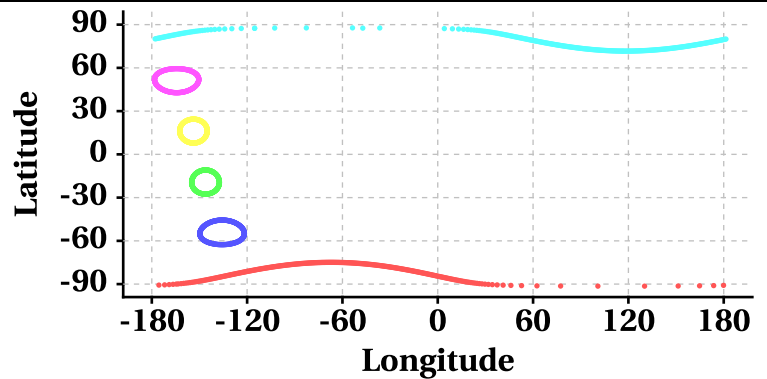
## Latitude Vs Longitude

Scan Trace [Inner Beam(HH)]



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

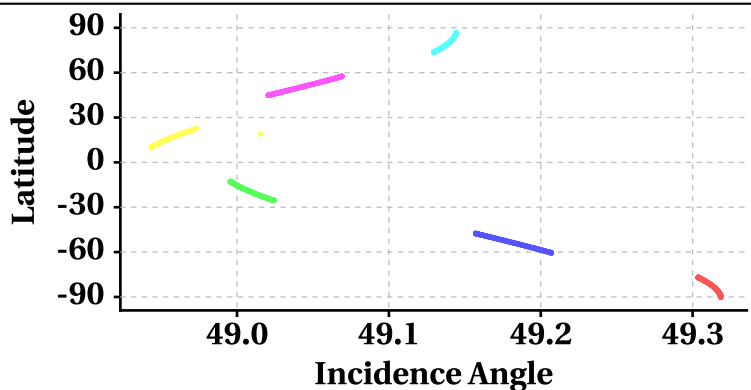
Scan Trace [Outer Beam (VV)]



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

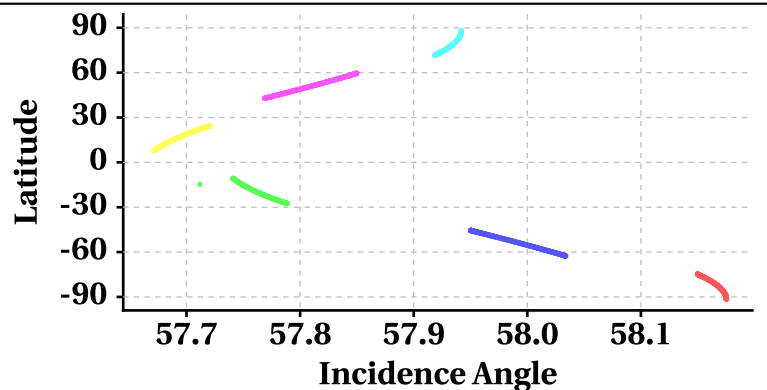
## Latitude Vs Incidence Angle

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



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

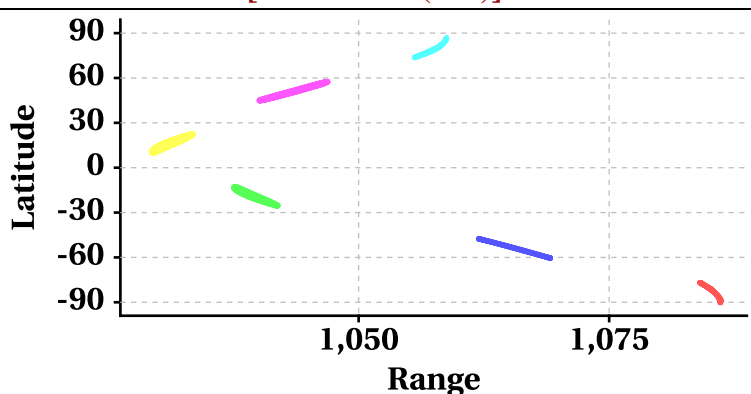
Incidence Angle at Scan Interval of 200 [Outer Beam (VV)]



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

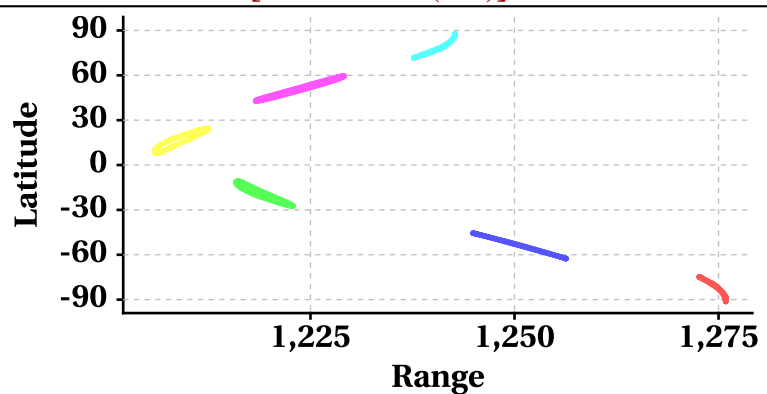
## Latitude Vs Range

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

