

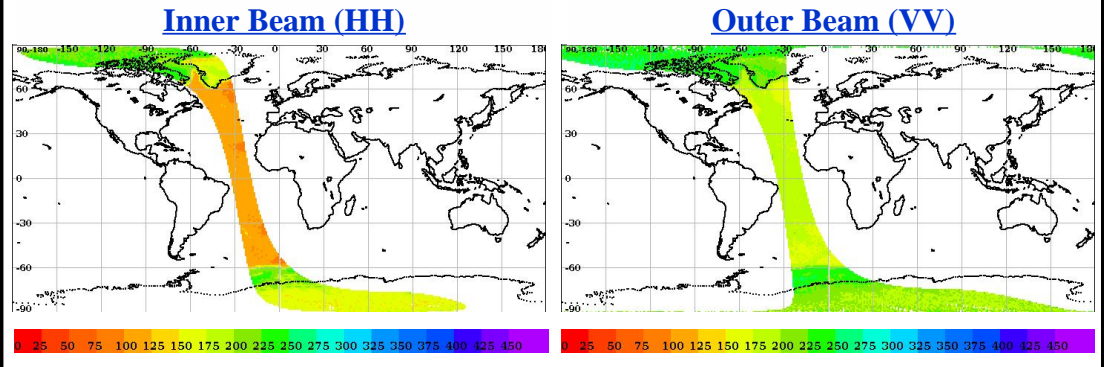
# SCATSAT-1 Scatterometer Level-1B Data Quality Evaluation Report

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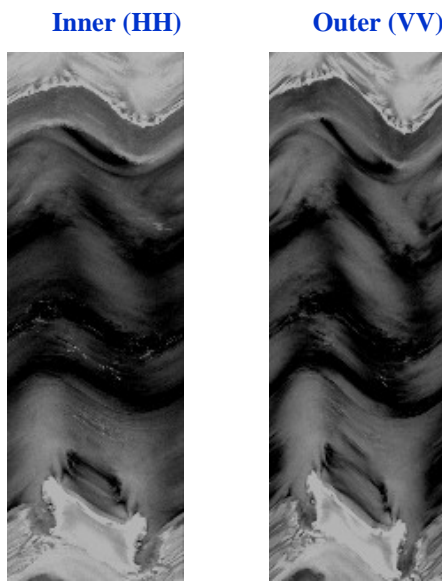
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<b>Satellite Id</b>	ScatSat-1	<b>Start Orbit</b>	11334	<b>Total Scans</b>	1017
<b>Sensor Name</b>	Scatterometer	<b>End Orbit</b>	11335	<b>No of Inner FootPrints</b>	281
<b>Processor Version</b>	v1.1.3	<b>Rev. Number</b>	11334_11335	<b>No Of Outer FootPrints</b>	282
<b>Half Orbit Direction</b>	SN	<b>Data Production Date</b>	16-11-2018	<b>No. Of Inner Slices</b>	9
<b>Equator Crossing Date</b>	16-11-2018	<b>Equator Crossing Time</b>	22:21:49.000	<b>No Of Outer Slices</b>	15

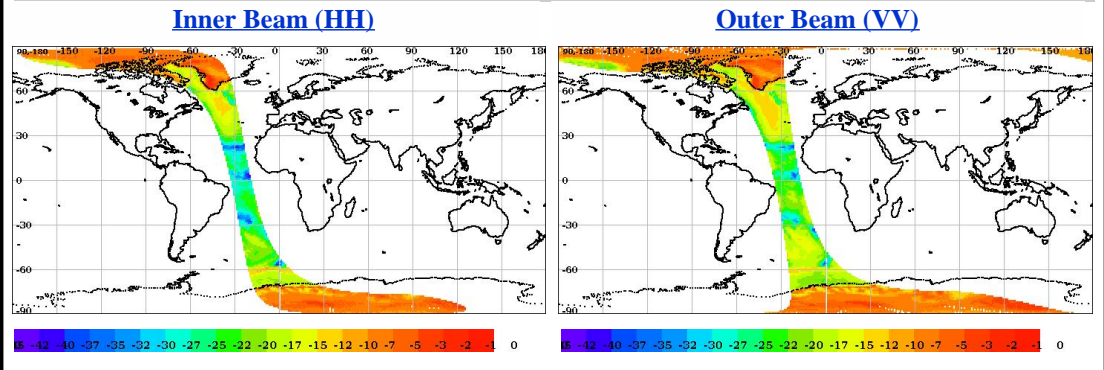
## Brightness Temperature(k) Footprint trace



## Image Snapshot for Inner & Outer Beam



## Sigma0(dB) Footprint trace

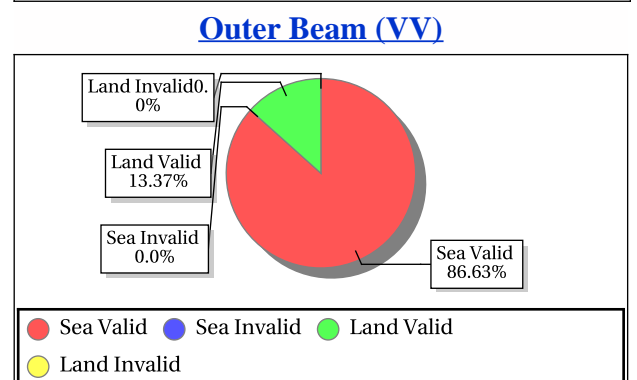
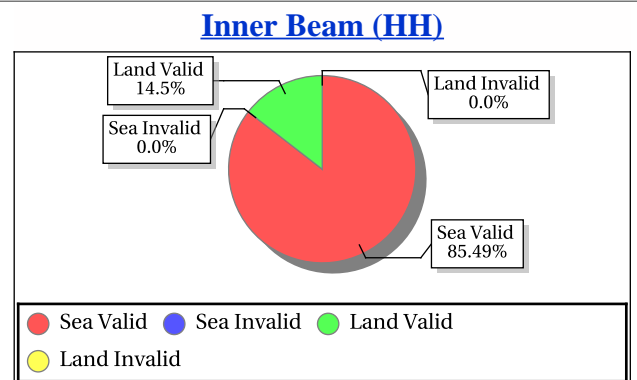


## Invalid and Poor Sigma-0 Quality Flag Statistics for Inner/Outer Slices\*

Sigma-0 Flags	Inner Beam	Outer Beam
<b>Invalid Sigma0(%)</b>	0.02	0.40
Data Not Available From Payload (%)	23.16831	1.228501
Slice not within sample array limits (%)	76.83	98.77
C(S+N) - C(N) < 0.1 (%)	0.00	0.00
<b>Poor Sigma0(%)</b>	22.22	13.34
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 (%)	0.015571	0.050369

\*DP Format Document

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



## 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
GreenLand_2	77.50	-41.50	Inner	ASC	Aft	-6.99	-4.33	-5.94	0.86	123.32	180.66	151.78	19.20
GreenLand_2	77.50	-41.50	Inner	ASC	Fore	-6.14	-4.16	-5.44	0.61	132.46	175.00	160.35	14.72
GreenLand_3	71.55	-42.45	Inner	ASC	Aft	-13.60	-10.09	-11.99	0.80	163.10	218.34	186.93	14.40
GreenLand_3	71.55	-42.45	Inner	ASC	Fore	-13.04	-10.47	-11.21	0.67	169.22	213.07	187.51	12.70
GreenLand_1	74.69	-42.50	Inner	ASC	Aft	-10.83	-8.52	-9.65	0.70	149.94	194.97	176.96	11.32
GreenLand_1	74.69	-42.50	Inner	ASC	Fore	-10.46	-7.98	-9.17	0.67	145.02	199.25	179.47	12.77
GreenLand_2	77.50	-41.50	Outer	ASC	Aft	-5.11	-4.17	-4.72	0.36	199.93	219.70	211.73	7.28
GreenLand_2	77.50	-41.50	Outer	ASC	Fore	-5.67	-5.20	-5.48	0.17	203.15	245.69	220.64	15.54
GreenLand_3	71.55	-42.45	Outer	ASC	Aft	-13.00	-11.57	-12.38	0.40	207.54	240.86	226.05	11.04
GreenLand_3	71.55	-42.45	Outer	ASC	Fore	-12.56	-10.92	-11.74	0.57	195.22	258.99	224.70	20.45
GreenLand_1	74.69	-42.50	Outer	ASC	Aft	-10.75	-8.48	-9.65	0.60	179.75	257.97	218.54	19.40
GreenLand_1	74.69	-42.50	Outer	ASC	Fore	-10.28	-8.00	-9.09	0.73	182.63	264.54	220.69	21.16



## 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	221.70	0.19	0.691	0.12	250.54	0.17	0.631	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	0.01	0.01	0.000	0.01	0.01	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>	-33.59	23.93	7.06	0.342	-34.12	26.12	8.97	3.078	7.11	29.62	21.68	46.456	8.93	30.63	22.52	57.341

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	192.36	0.16	0.673	0.09	231.74	0.16	0.720	0.09	0.12	0.09	0.000	0.09	0.11	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>	-34.14	17.43	4.62	0.000	-34.95	19.91	5.82	0.000	2.65	23.58	16.42	0.695	3.68	23.73	16.77	1.566

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	49.31	49.01	0.000	57.42	58.13	57.83	0.000	Inci.(Inner)	47.10	49.90
<b>Azimuth Diff. (deg)</b>	0.0026	283.00	1.27	2.594	0.0000	287.54	1.27	3.745	Inci.(Outer)	57.30	58.90
<b>Range(Km)</b>	1017.63	1074.47	1040.88	23.086	1192.37	1261.81	1220.66	39.760	Azimuth Diff.	0.60	2.00
<b>X Factor(dbm)</b>	-91.34	-89.74	-90.28	0.000	-92.85	-91.79	-92.12	0.000	Range(Inner)	1025.00	1095.70
<b>Across Distance (Km)</b>	15.56	16.13	15.80	0.000	9.28	37.29	20.98	7.000	Range(Outer)	1210.00	1280.00
<b>Along Distance (Km)</b>	18.82	20.63	19.78	0.000	8.79	36.51	19.70	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

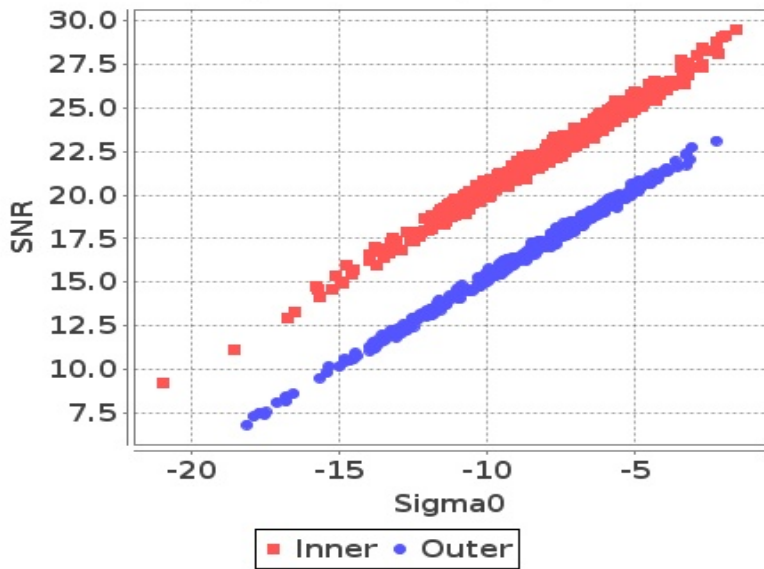
- Normal
- Deviations
- Alarming
- High Errors



## Sigma0 Behaviour (Sigma0 Vs SNR)

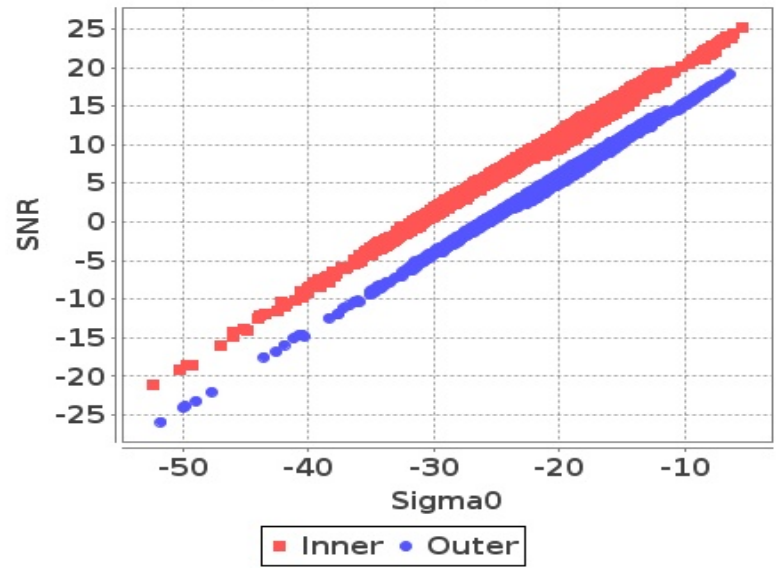
Footprint-Land

Sigma0 Vs SNR (Land)



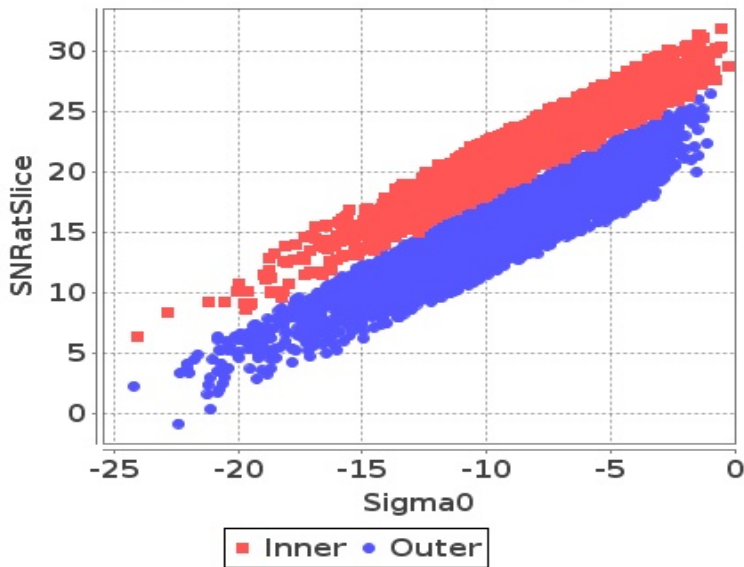
Footprint-Sea

Sigma0 Vs SNR (Sea)



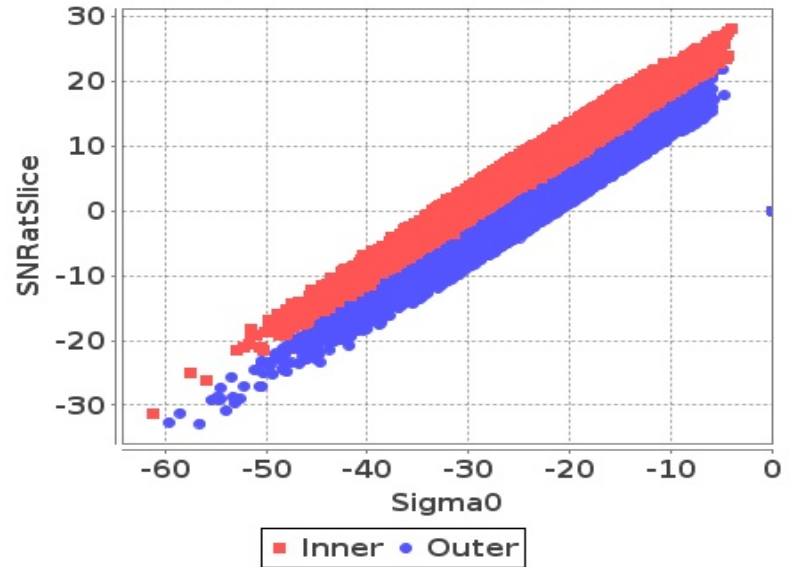
Slice-Land

Sigma0 Vs SNRatSlice (Land)



Slice-Sea

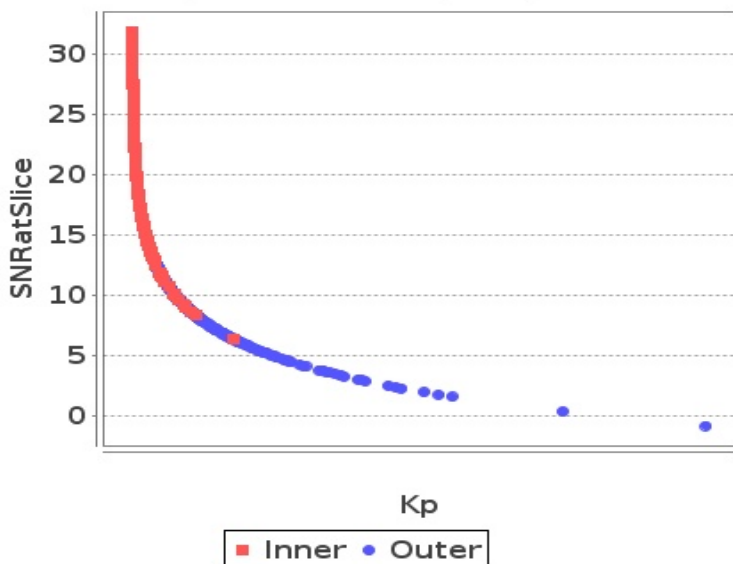
Sigma0 Vs SNRatSlice (Sea)



## Sigma0 Behaviour (Kp Vs SNR)

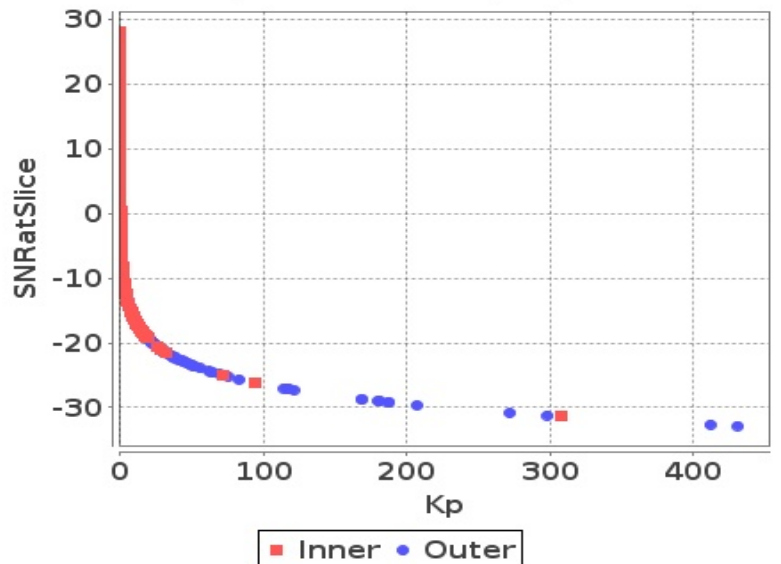
Slice

Kp Vs SNRatSlice (Land)



Slice

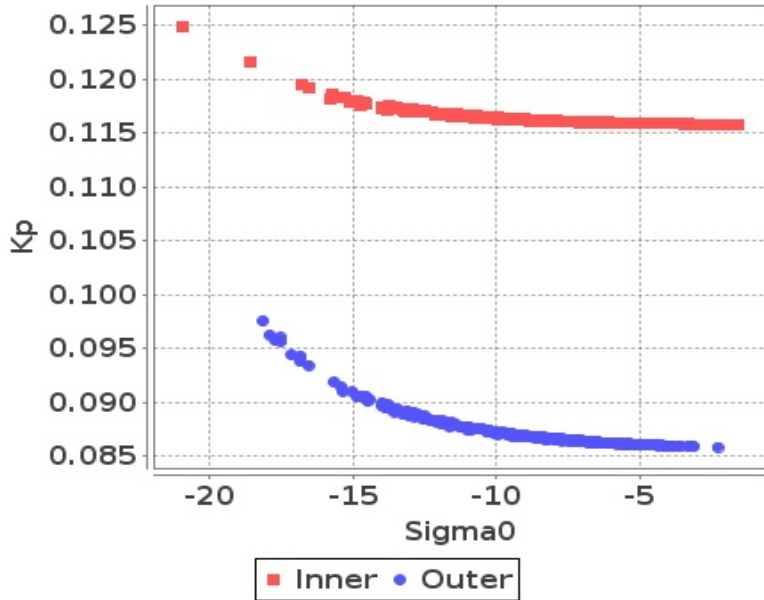
Kp Vs SNRatSlice (Sea)



# Sigma0 Behaviour(Sigma0 Vs Kp)

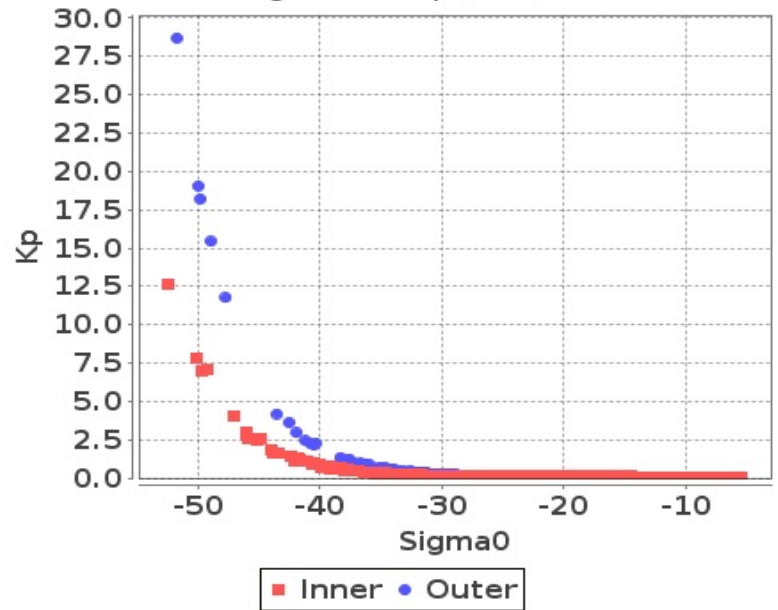
## Footprint-Land

### Sigma0 Vs Kp (Land)



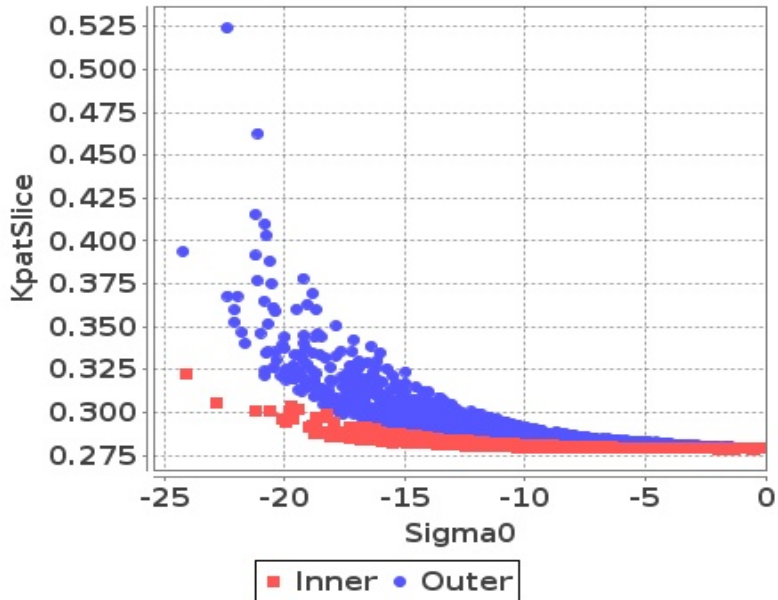
## Footprint-Sea

### Sigma0 Vs Kp (Sea)



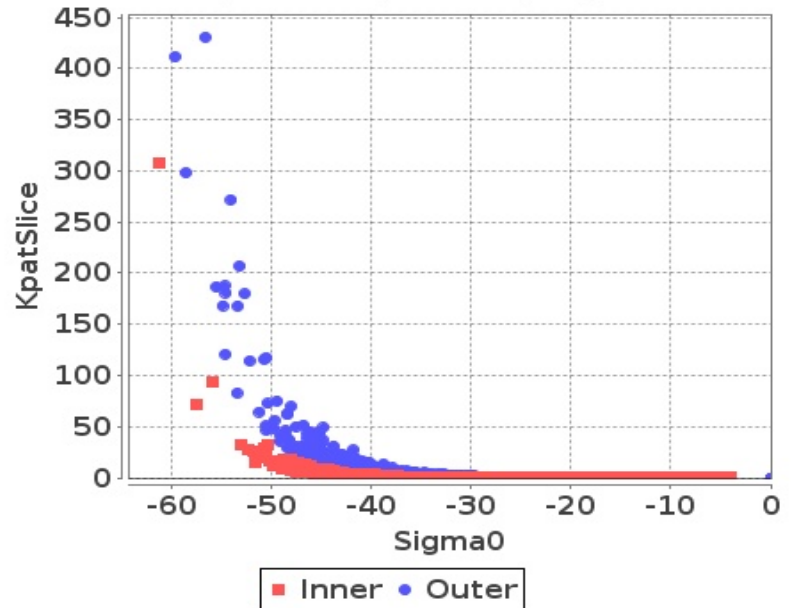
## Slice-Land

### Sigma0 Vs KpatSlice (Land)



## Slice-Sea

### Sigma0 Vs KpatSlice (Sea)



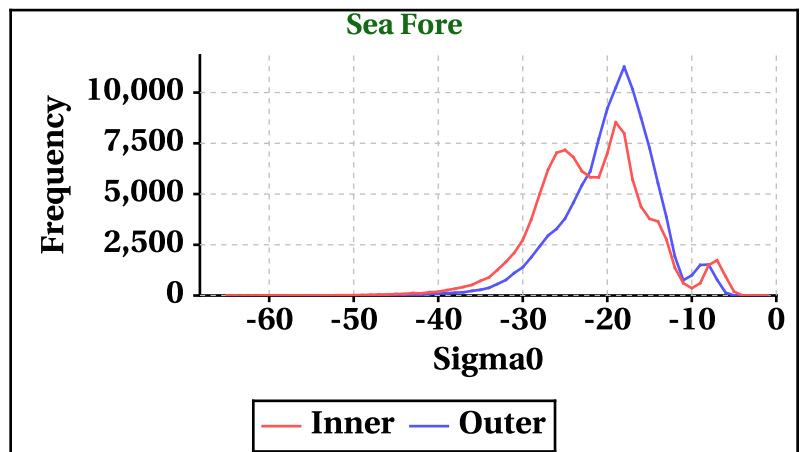
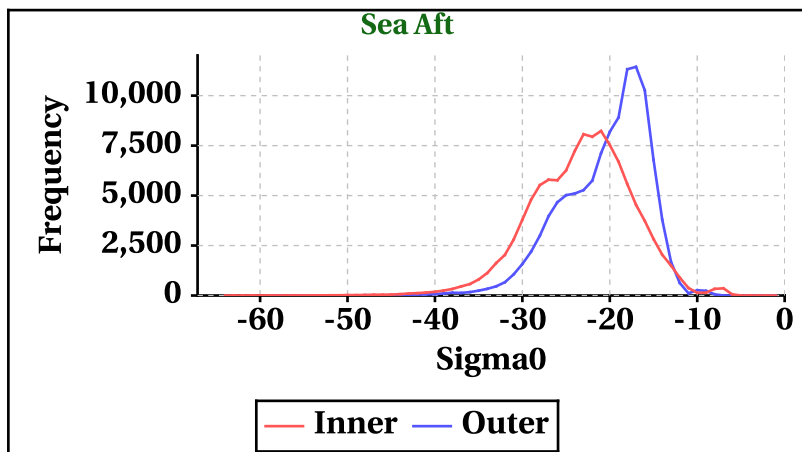
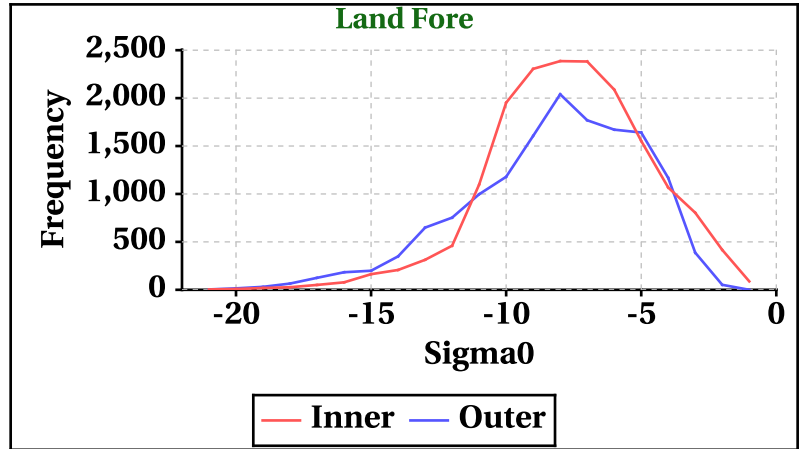
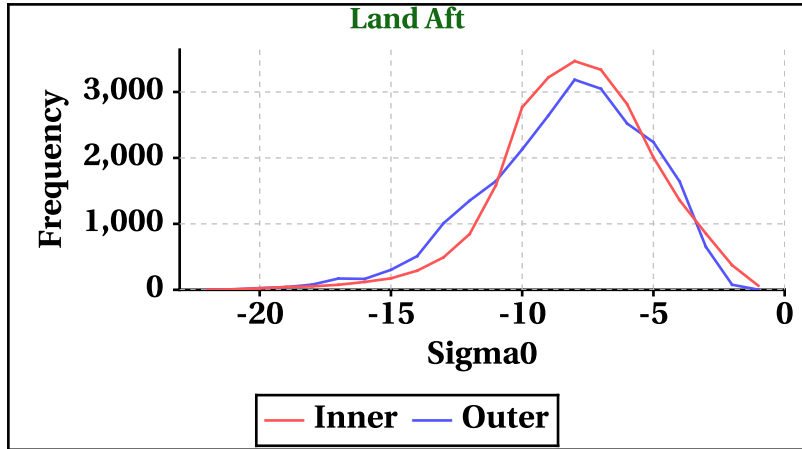


# Dynamic Range (Data Histograms)

## Sigma0(db)

Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-22	-21	-64	-65
Max	0	0	0	0

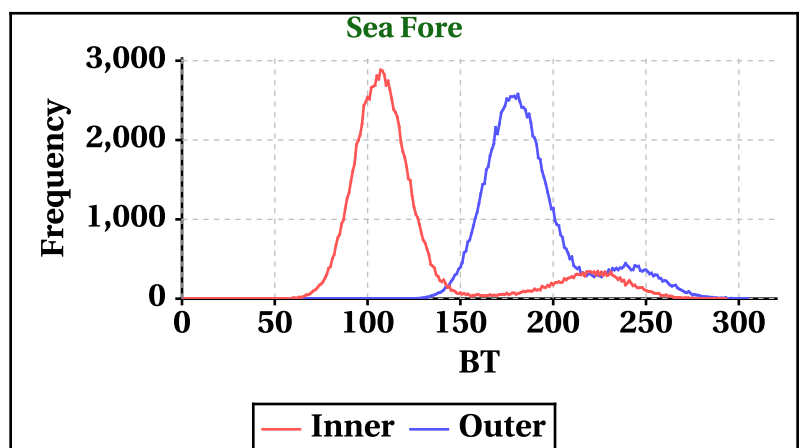
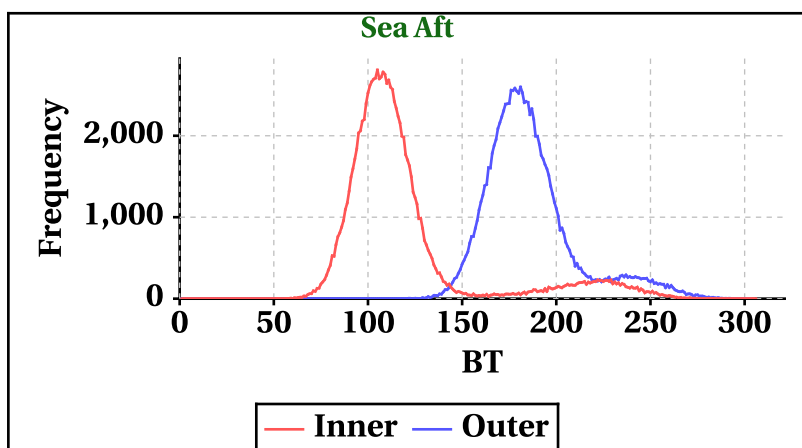
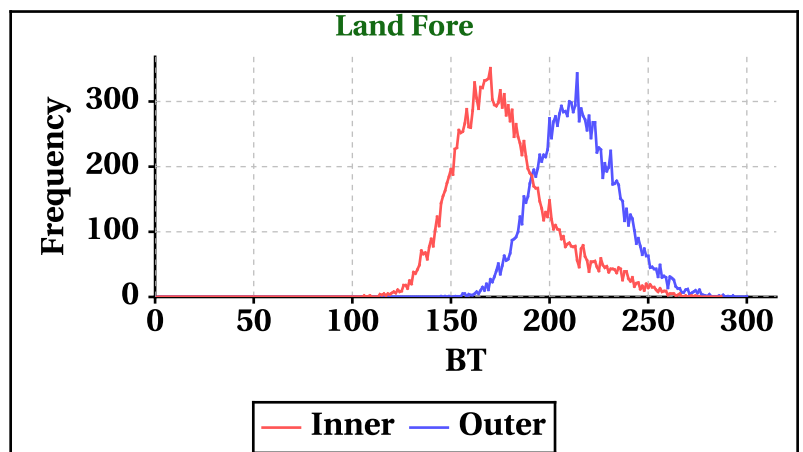
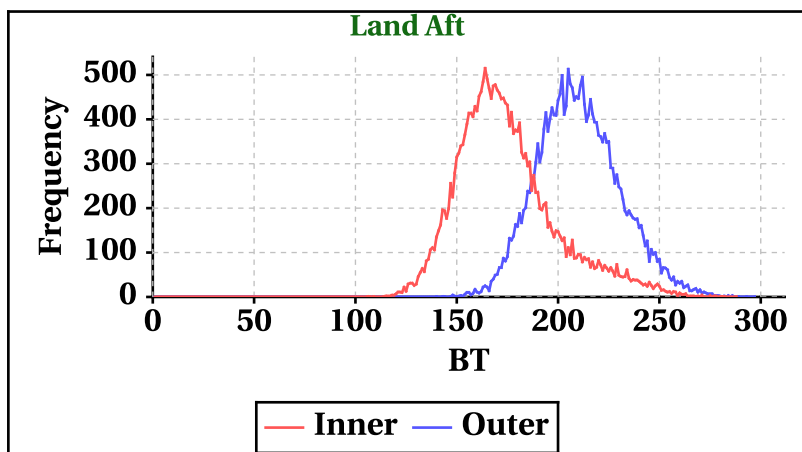
Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-22	-21	-59	-60
Max	0	0	0	0



## Brightness Temperature(K)

Inner Beam(HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	288	287	306	293

Outer Beam(VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	297	300	303	305

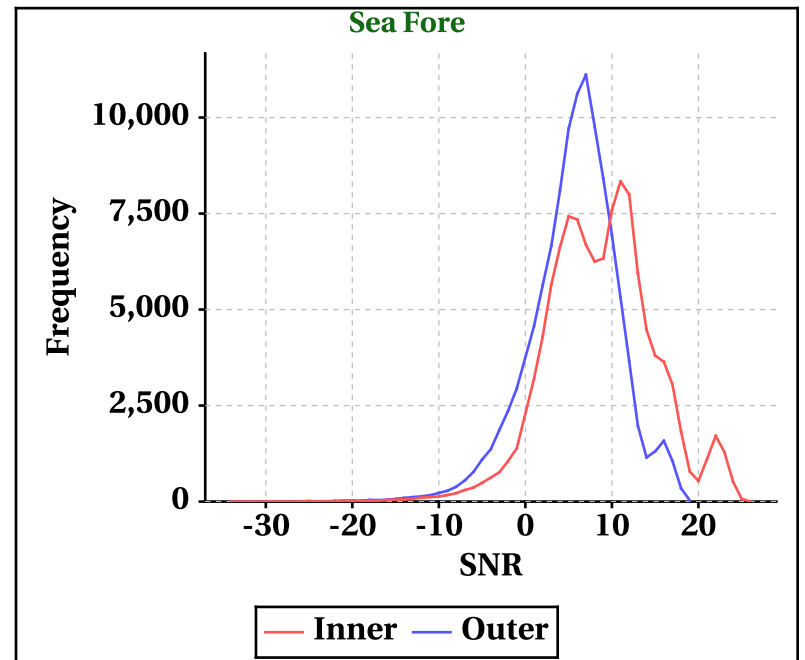
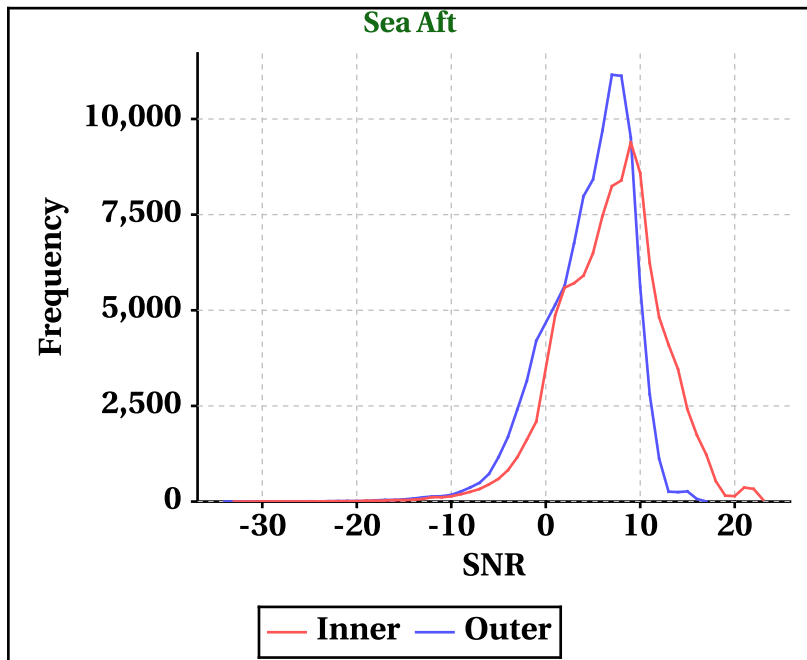
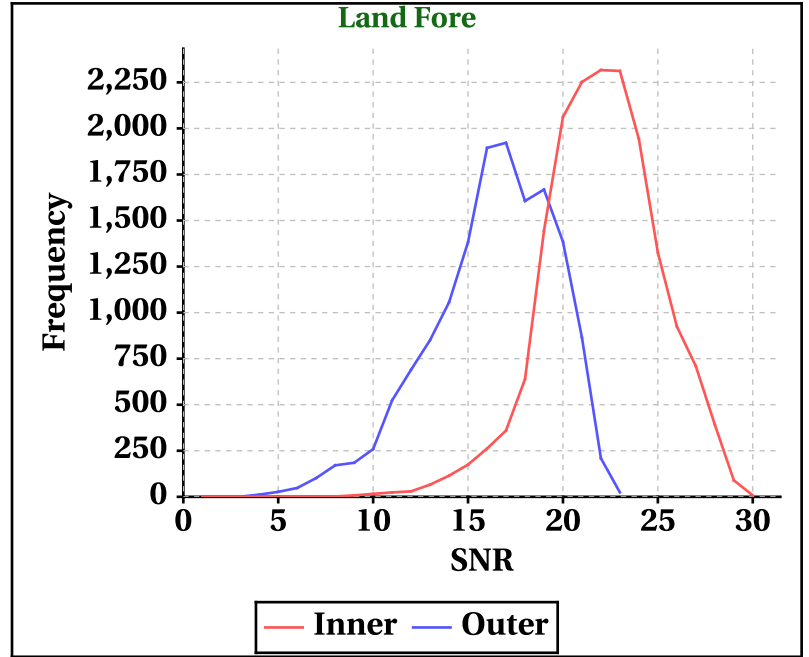
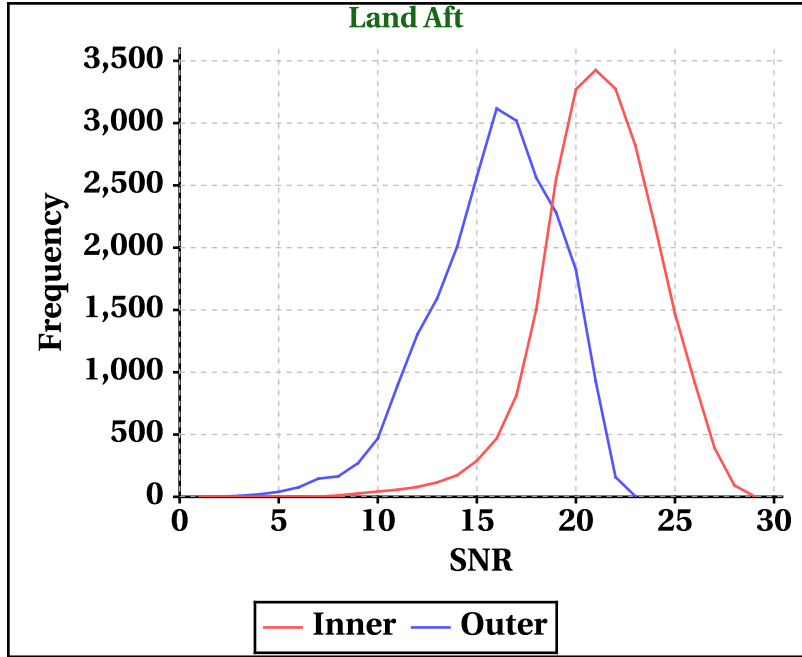


# Dynamic Range (Data Histograms)

## SNR(dBm)

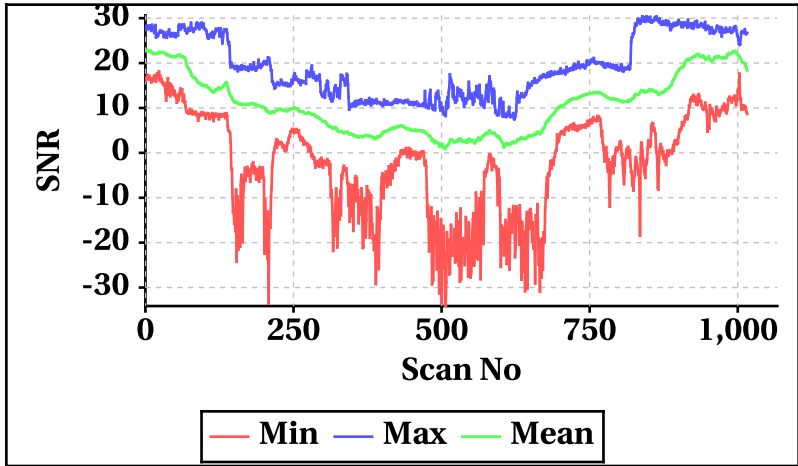
Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	-33	-34
Max	29	30	23	26

Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	-34	-34
Max	23	23	17	19

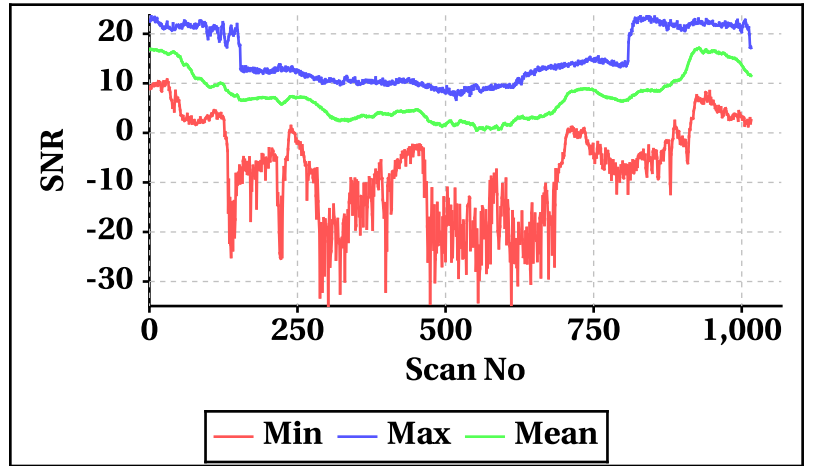


## Orbit-wise behaviour of SNR

**Inner Beam (HH)**

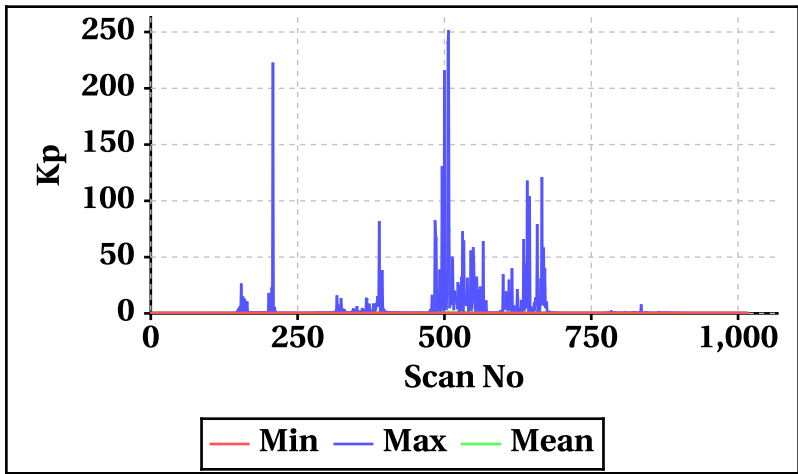


**Outer Beam(VV)**

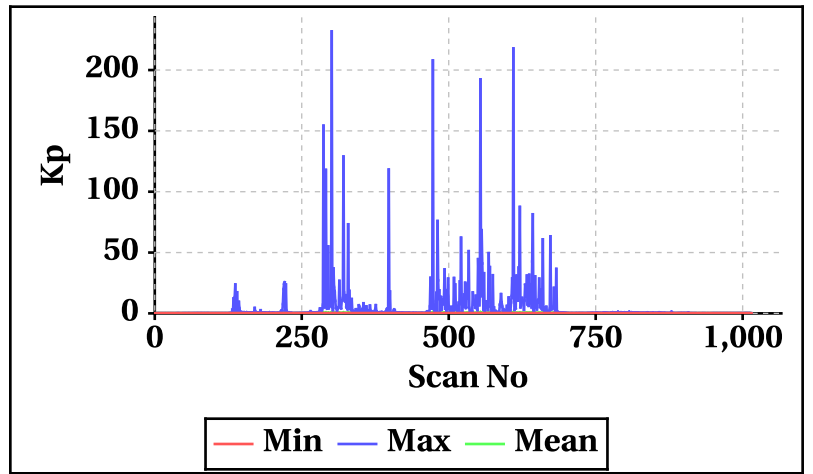


## Orbit-wise behaviour of Kp,Kpa,Kpb,Kpc

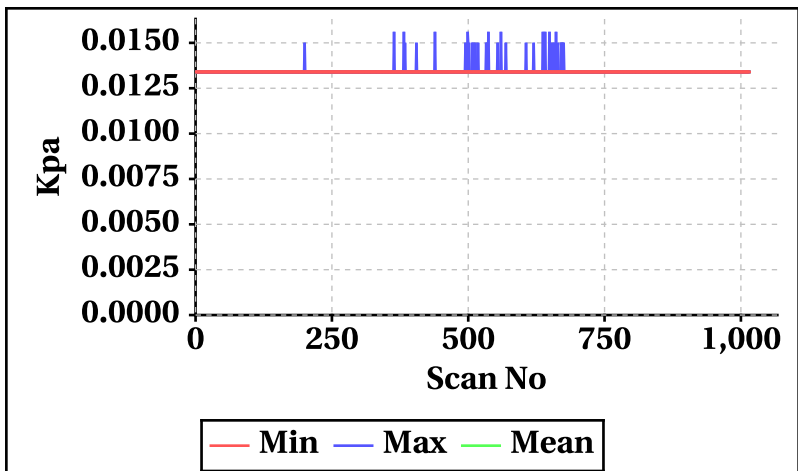
**Inner Beam(HH)**



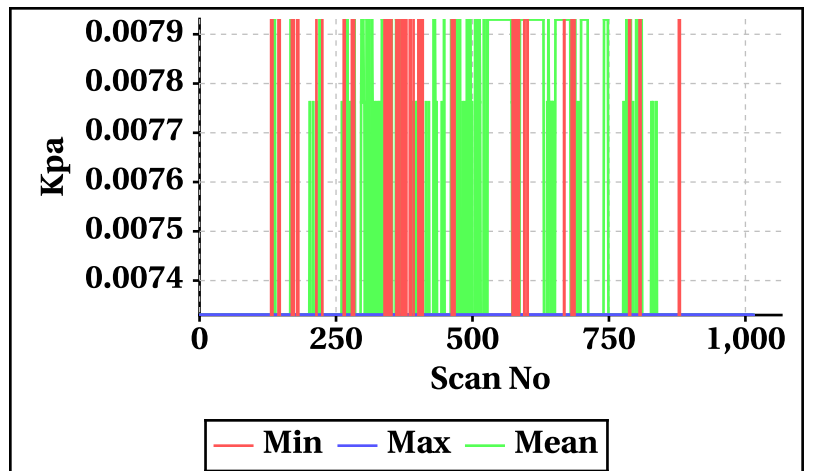
**Outer Beam(VV)**



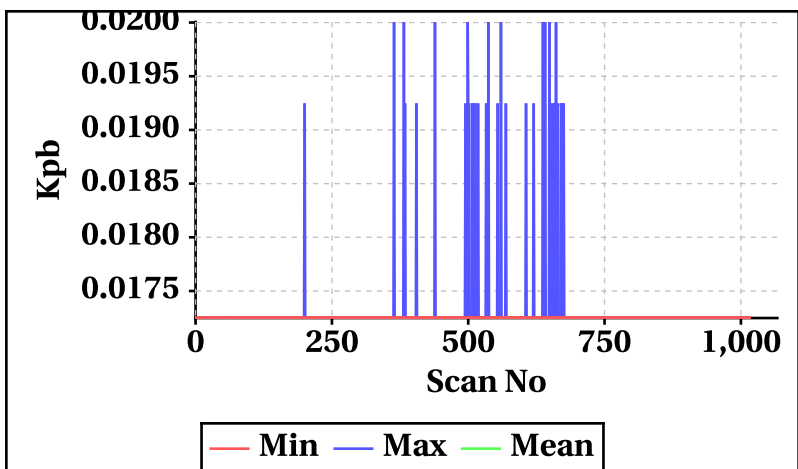
**Inner Beam(HH)**



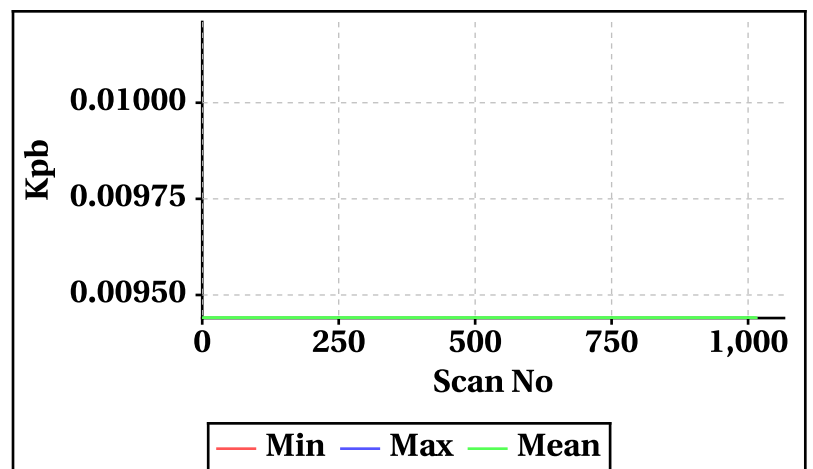
**Outer Beam(VV)**



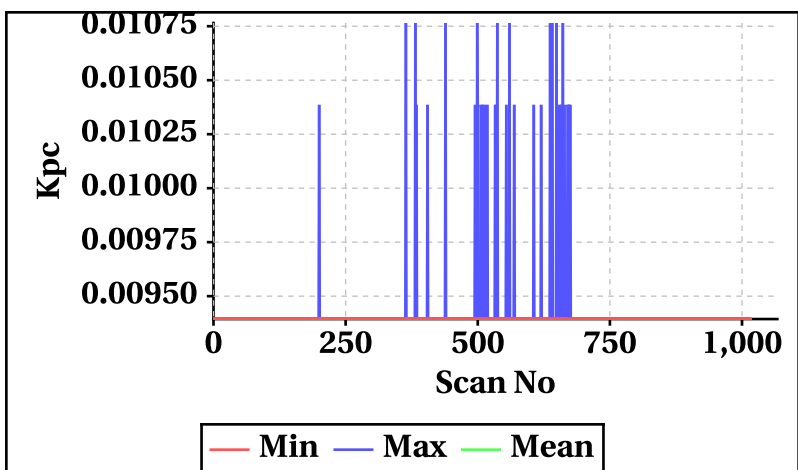
**Inner Beam(HH)**



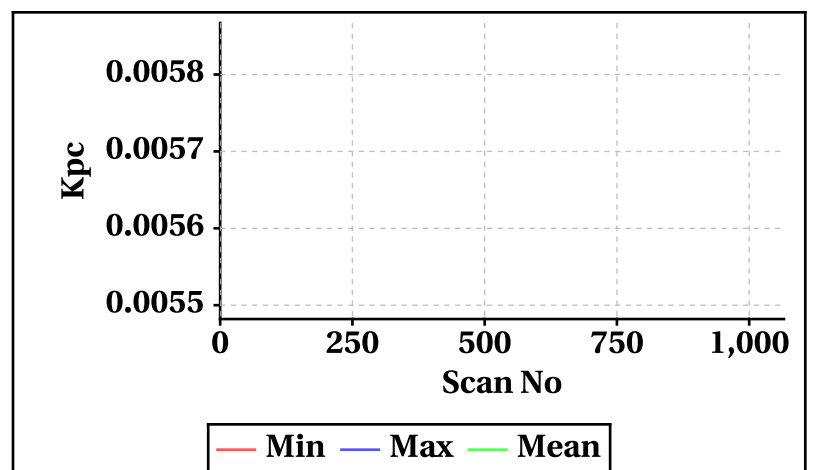
**Outer Beam(VV)**



**Inner Beam(HH)**



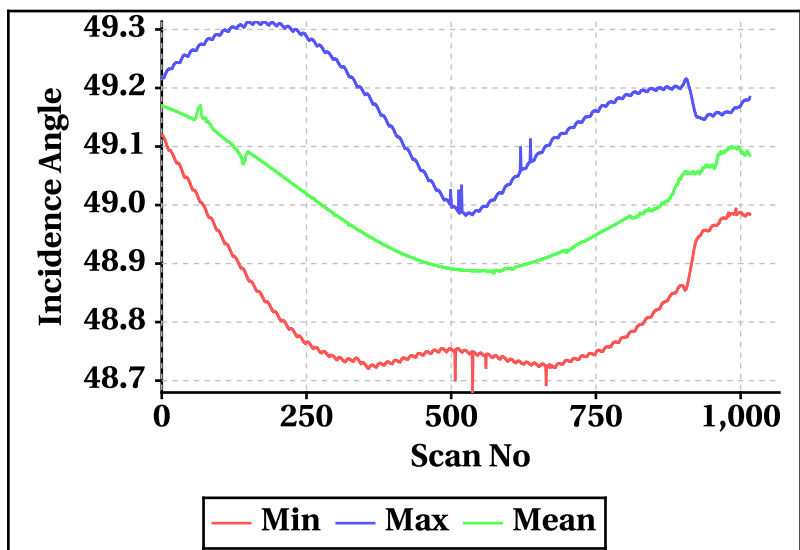
**Outer Beam(VV)**



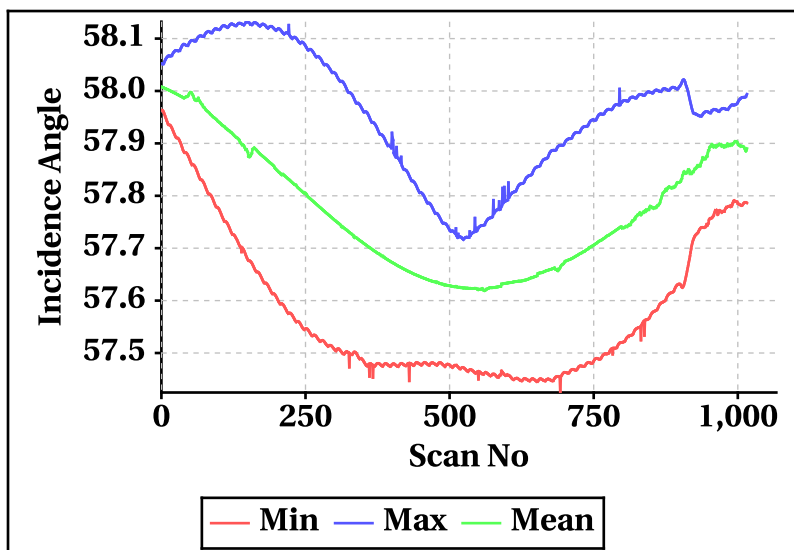


Orbit-wise behaviour of Incidence, Azimuth, Range, X-Factor

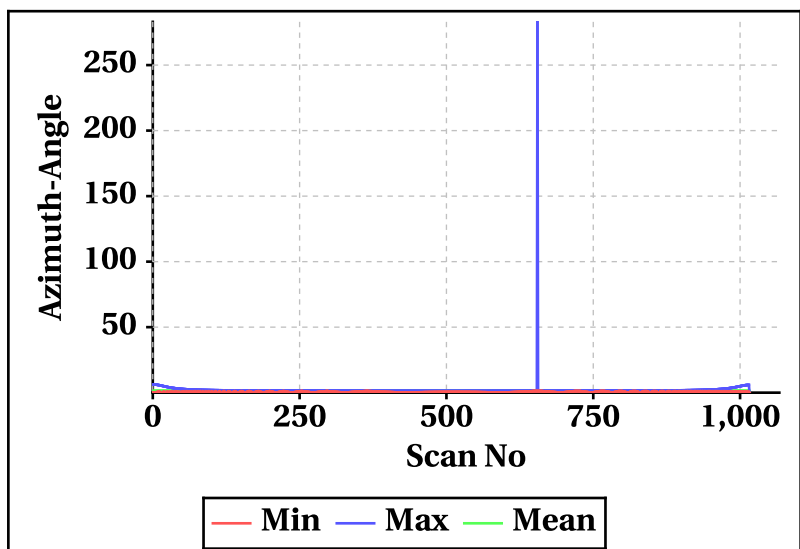
Inner Beam (HH)



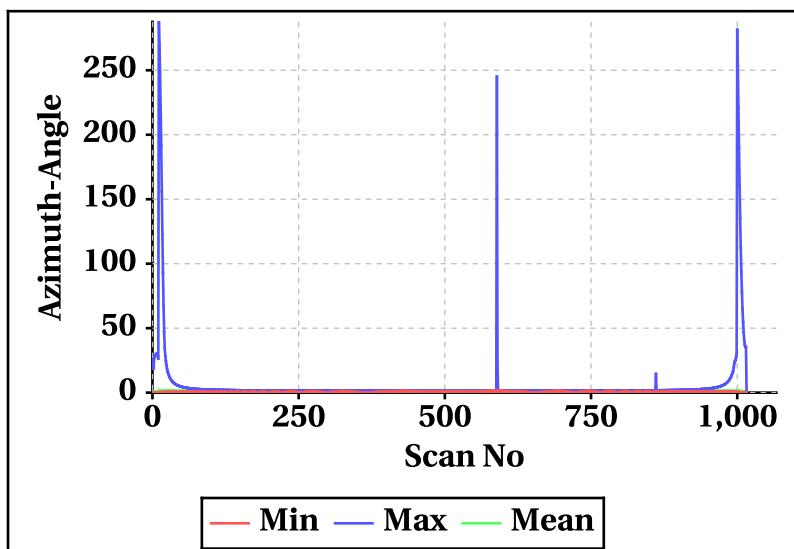
Outer Beam(VV)



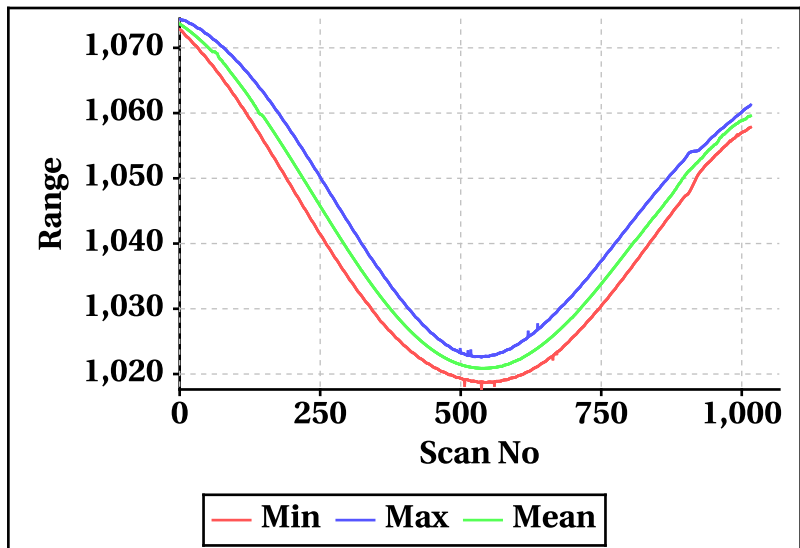
Inner Beam (HH)



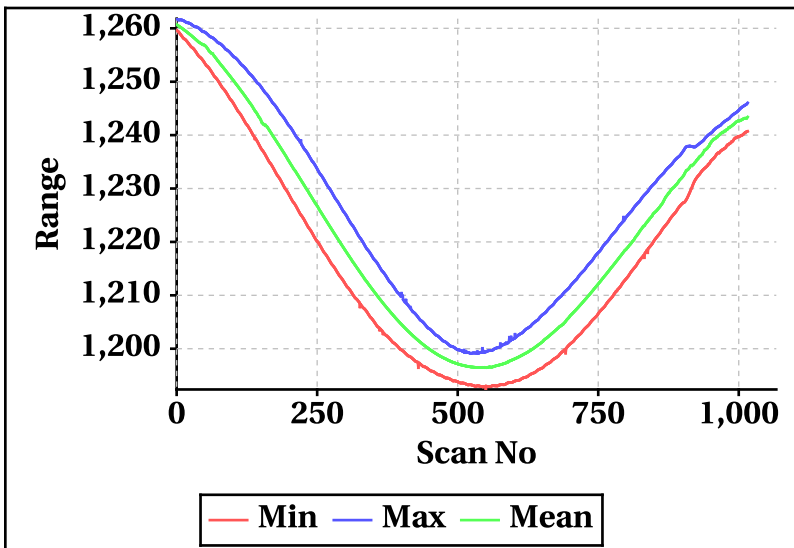
Outer Beam(VV)



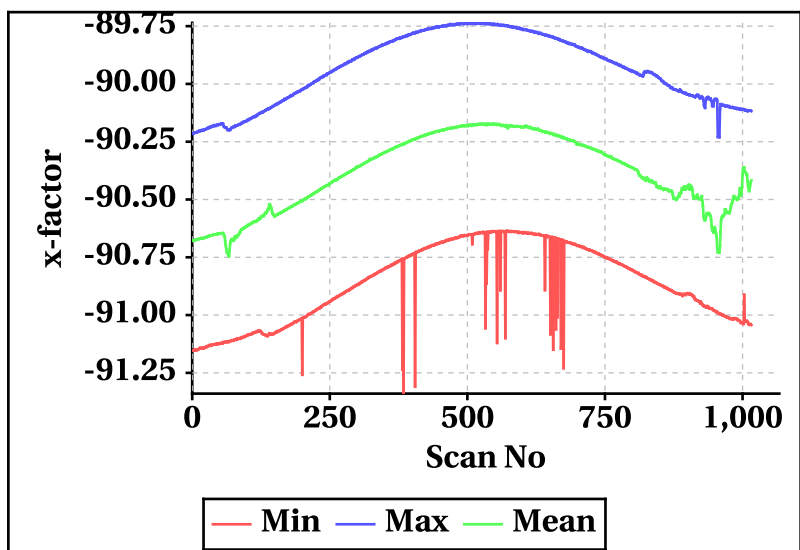
Inner Beam (HH)



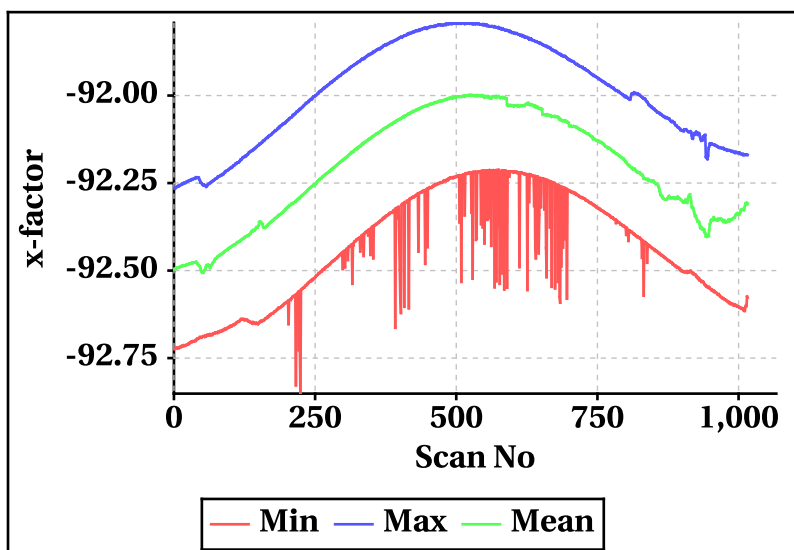
Outer Beam(VV)



Inner Beam (HH)



Outer Beam(VV)

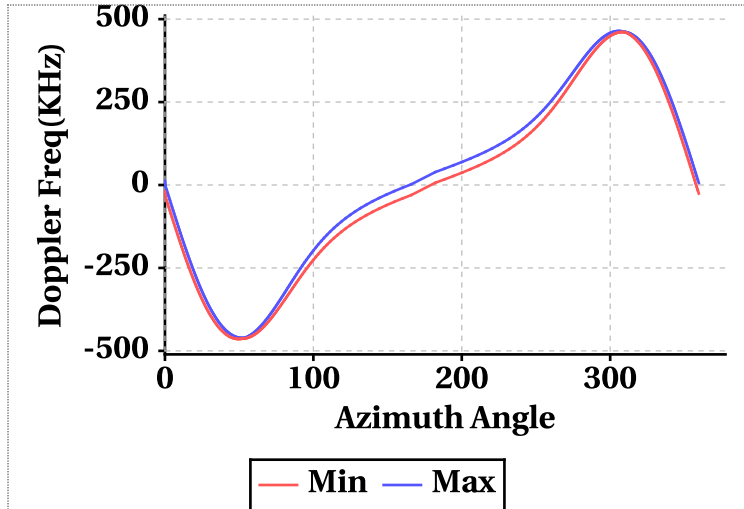


# Doppler Frequency Variation

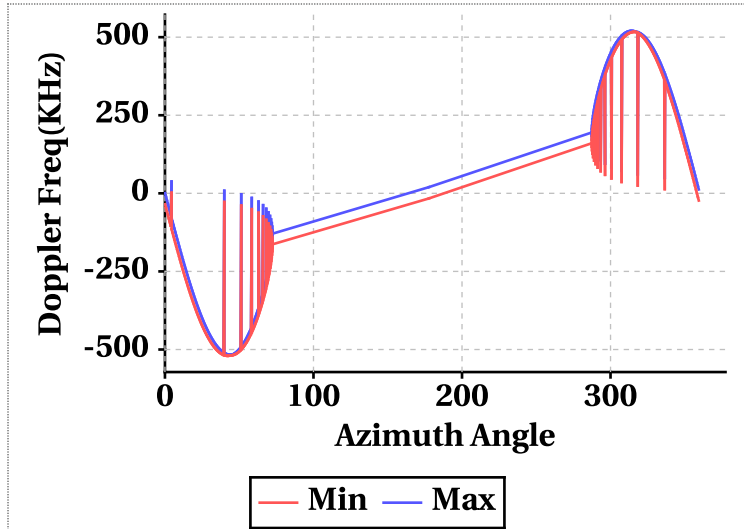
Doppler Frequency(KHz) variation statistics Over the half Orbit

	Inner Beam (HH)	Outer Beam (VV)
Min	-464.16	-520.16
Max	464.04	520.04

Footprint wise Doppler frequency variation Inner Beam (HH)



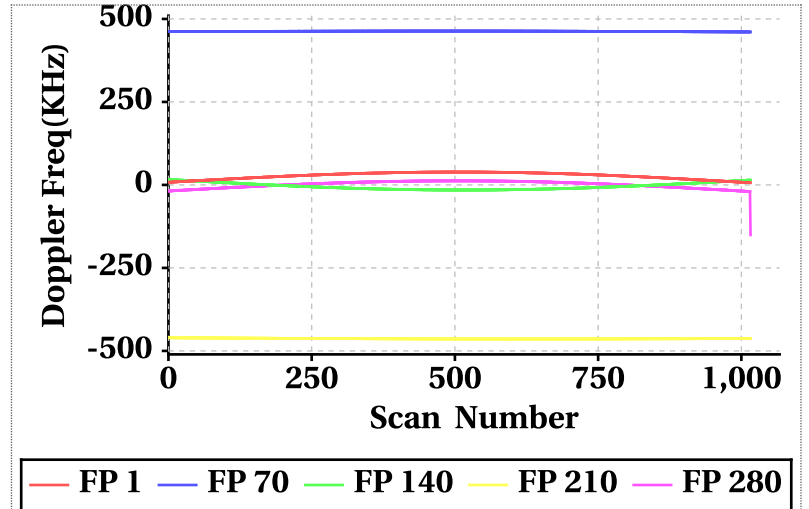
Footprint wise Doppler frequency variation Outer Beam (VV)



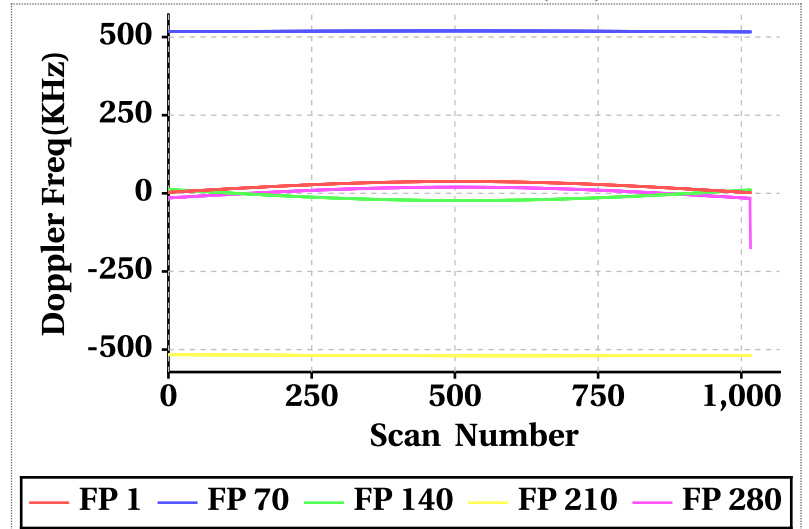
Doppler Frequency(KHz) variation

Doppler_FP	Inner Beam (HH)			Outer Beam (VV)		
	Min	Max	Mean	Min	Max	Mean
Doppler_1	6.54	38.80	27.35	1.96	37.82	25.03
Doppler_70	460.82	463.52	462.66	516.58	519.72	518.65
Doppler_140	-15.36	16.46	-4.12	-23.10	12.46	-10.46
Doppler_210	-464.10	-460.40	-463.06	-519.96	-516.38	-518.92
Doppler_280	-150.76	12.44	0.77	-174.02	19.82	6.76

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

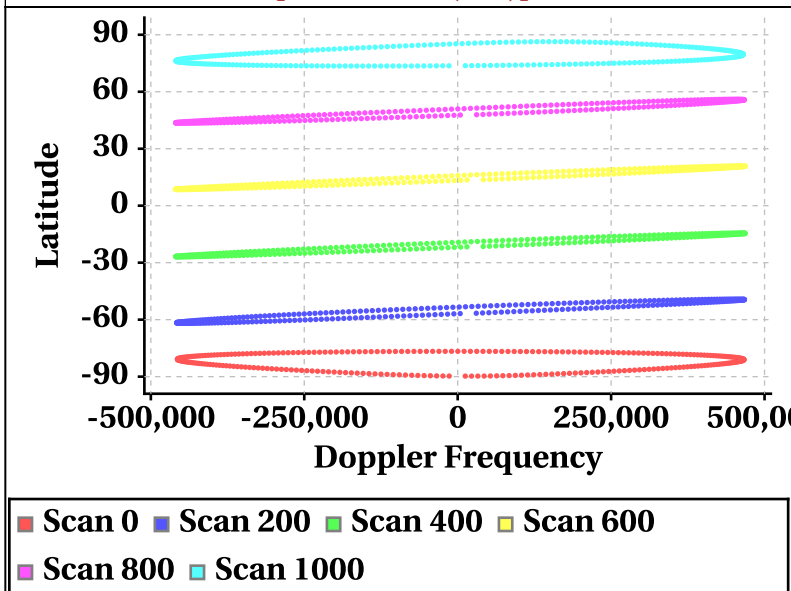


Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Outer Beam (VV)

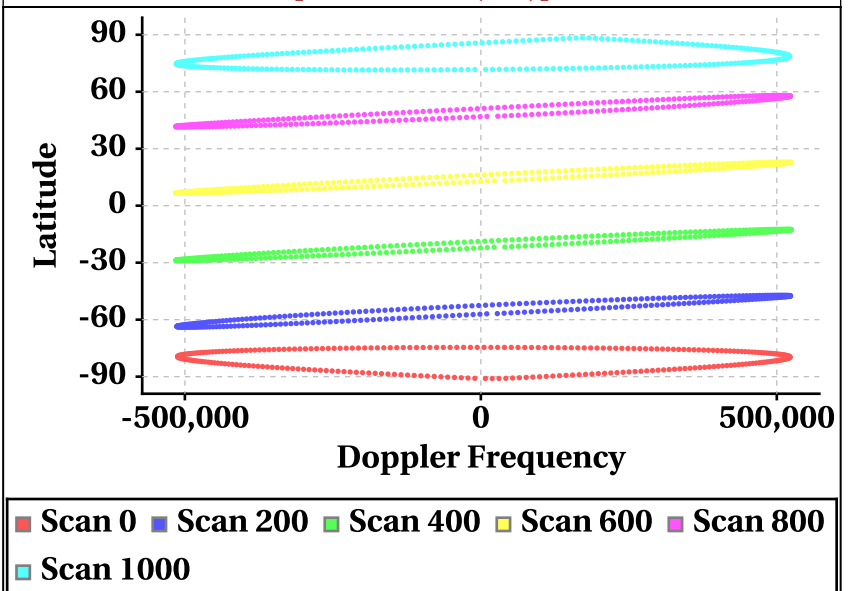


# Latitude Vs Doppler Frequency

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



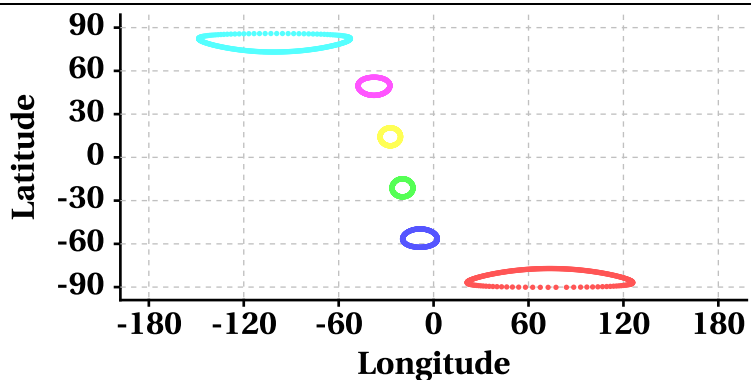
Doppler Frequency at Scan Interval of 200 [Outer Beam(VV)]



# Parameter as a function of Latitude

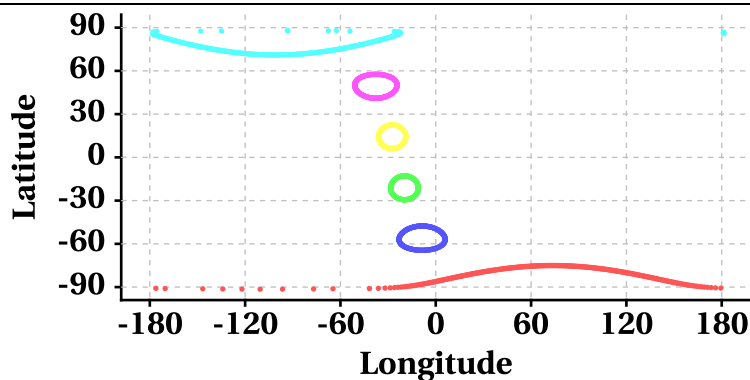
## Latitude Vs Longitude

Scan Trace [Inner Beam(HH)]



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

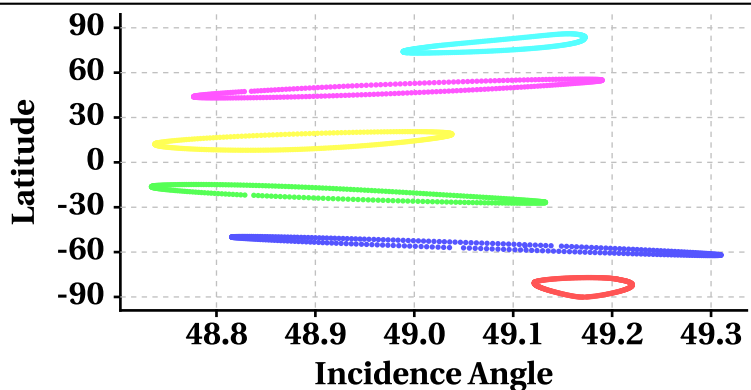
Scan Trace [Outer Beam (VV)]



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

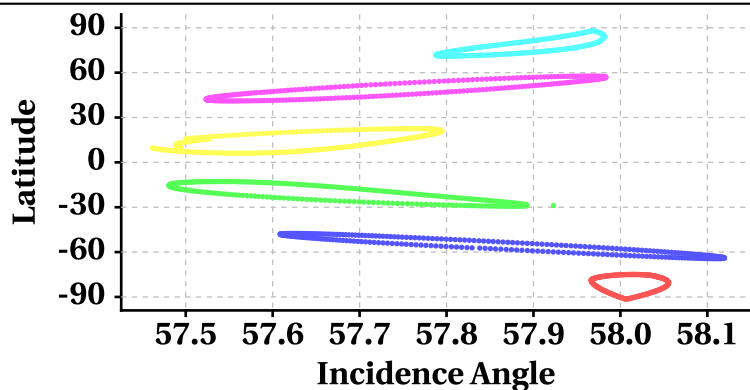
## Latitude Vs Incidence Angle

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



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

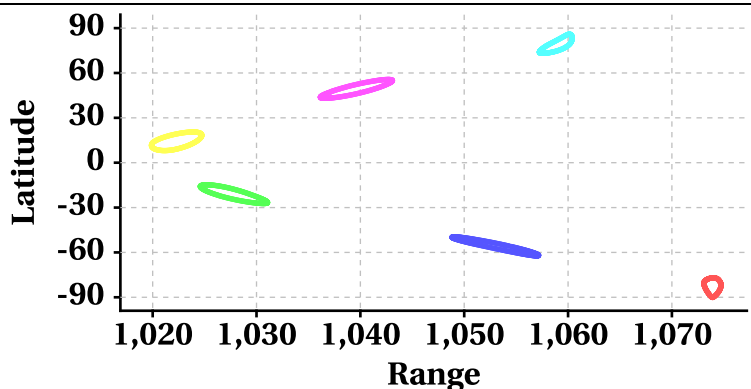
Incidence Angle at Scan Interval of 200 [Outer Beam (VV)]



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

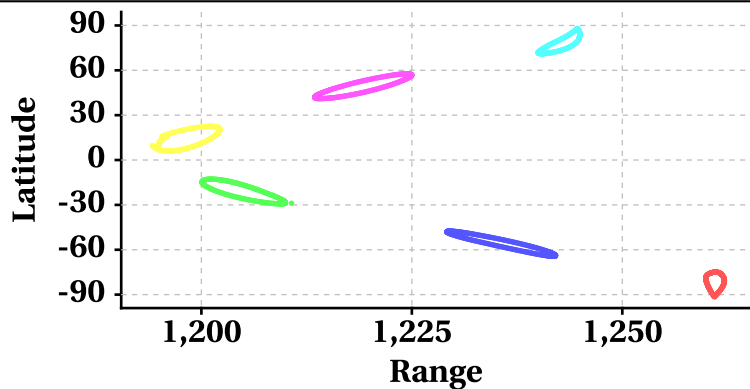
## Latitude Vs Range

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

