

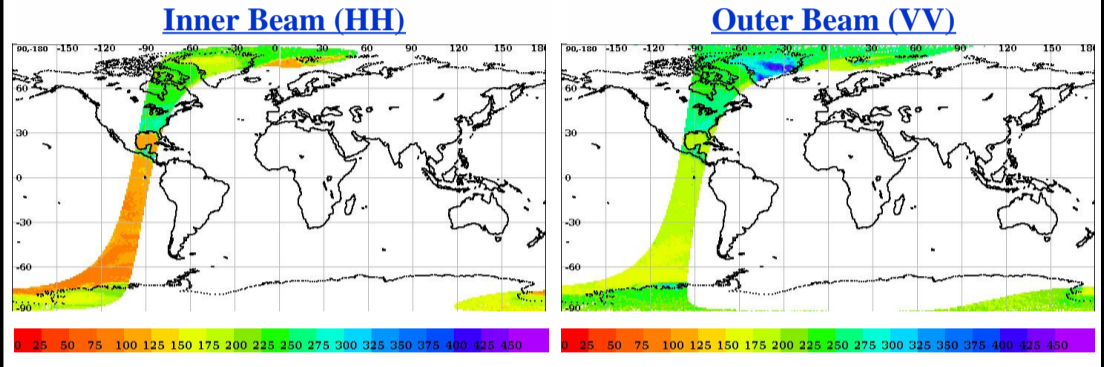
# SCATSAT-1 Scatterometer Level-1B Data Quality Evaluation Report

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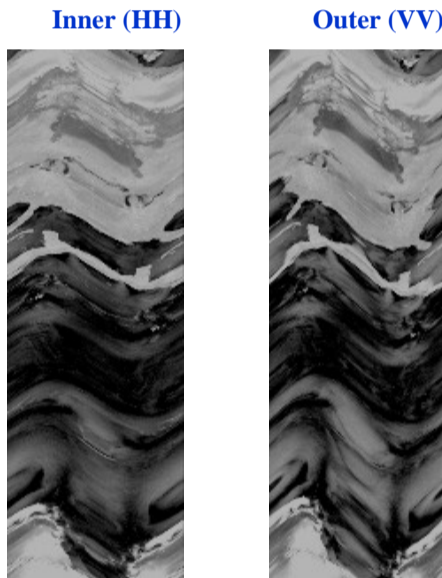
- Half-Orbit Coverage using BT & Sigma-0
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<b>Satellite Id</b>	ScatSat-1	<b>Start Orbit</b>	7357	<b>Total Scans</b>	1015
<b>Sensor Name</b>	Scatterometer	<b>End Orbit</b>	7358	<b>No of Inner FootPrints</b>	281
<b>Processor Version</b>	v1.1.2	<b>Rev. Number</b>	07357_07358	<b>No Of Outer FootPrints</b>	282
<b>Half Orbit Direction</b>	NS	<b>Data Production Date</b>	15-02-2018	<b>No. Of Inner Slices</b>	9
<b>Equator Crossing Date</b>	15-02-2018	<b>Equator Crossing Time</b>	14:58:49.000	<b>No Of Outer Slices</b>	14

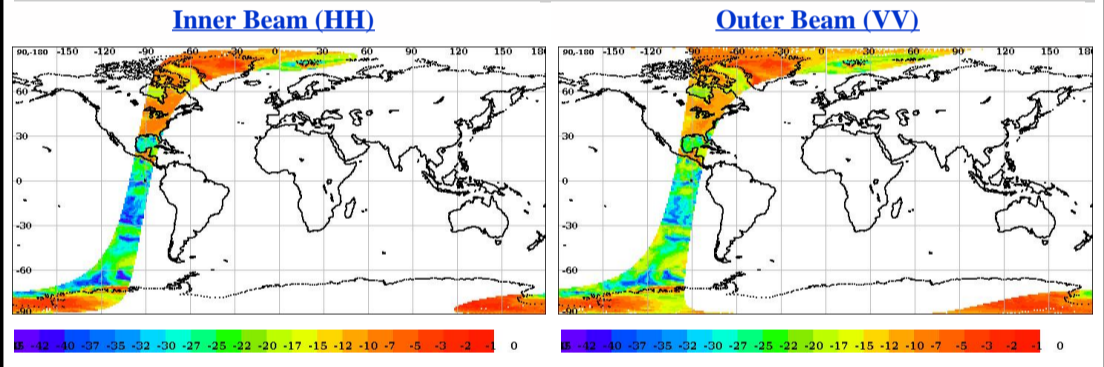
## Brightness Temperature(k) Footprint trace



## Image Snapshot for Inner & Outer Beam



## Sigma0(dB) Footprint trace

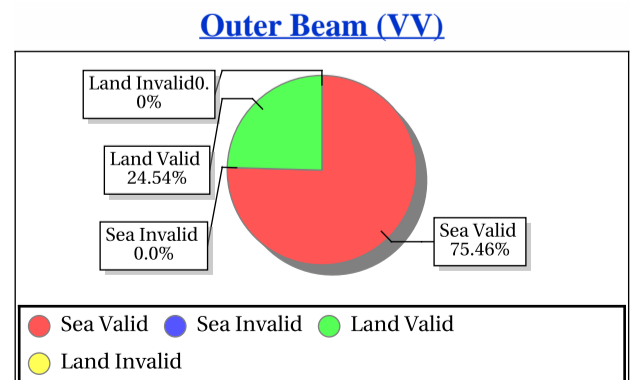
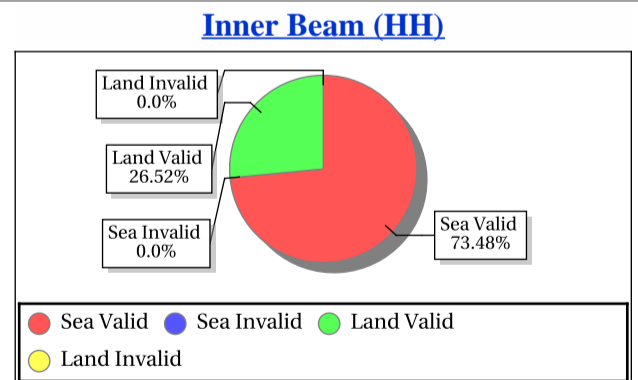


## Invalid and Poor Sigma-0 Quality Flag Statistics for Inner/Outer Slices\*

Sigma-0 Flags	Inner Beam	Outer Beam
Invalid Sigma0(%)	0.00	0.02
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(%)	0.01	0.02
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



## 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	DSC	Aft	-5.07	-4.14	-4.67	0.39	175.58	193.86	184.41	7.48
GreenLand_2	77.50	-41.50	Inner	DSC	Fore	-4.68	-4.24	-4.40	0.17	123.94	197.89	166.98	27.61
GreenLand_3	71.55	-42.45	Inner	DSC	Aft	-12.00	-10.33	-11.08	0.42	174.39	240.24	204.31	15.66
GreenLand_3	71.55	-42.45	Inner	DSC	Fore	-11.51	-9.08	-10.43	0.68	166.18	222.35	200.78	12.55
GreenLand_1	74.69	-42.50	Inner	DSC	Aft	-10.11	-7.35	-8.86	0.87	163.56	224.33	183.65	16.49
GreenLand_1	74.69	-42.50	Inner	DSC	Fore	-9.26	-7.65	-8.34	0.46	150.93	203.85	182.77	13.84
GreenLand_2	77.50	-41.50	Outer	DSC	Aft	-4.92	-4.47	-4.70	0.22	284.03	294.58	289.30	5.28
GreenLand_2	77.50	-41.50	Outer	DSC	Fore	-4.77	-2.92	-3.87	0.75	380.91	447.97	410.80	27.86
GreenLand_3	71.55	-42.45	Outer	DSC	Aft	-11.93	-10.45	-11.09	0.45	218.95	276.60	246.71	17.65
GreenLand_3	71.55	-42.45	Outer	DSC	Fore	-11.52	-10.32	-11.07	0.36	276.63	344.01	302.13	22.47
GreenLand_1	74.69	-42.50	Outer	DSC	Aft	-9.68	-6.86	-8.54	0.83	218.77	272.30	244.34	16.54
GreenLand_1	74.69	-42.50	Outer	DSC	Fore	-8.89	-6.64	-7.61	0.76	394.40	623.15	510.79	69.01



## 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	241.91	0.49	5.400	0.10	253.73	0.41	4.303	0.10	1.11	0.10	0.003	0.10	0.23	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>	-34.57	25.92	2.17	0.657	-34.78	27.36	3.02	0.934	-10.86	30.21	18.84	11.828	-2.13	30.62	20.76	31.256

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	203.19	0.38	4.190	0.08	216.80	0.37	3.945	0.08	0.48	0.09	0.000	0.08	0.20	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>	0.00	0.01	0.00	0.000	0.00	0.01	0.00	0.000	0.00	0.00	0.00	0.000	0.00	0.01	0.00	0.000
<b>SNR</b>	-34.69	19.70	1.18	0.000	-34.97	20.76	1.35	0.000	-7.82	22.56	13.07	0.065	-2.65	23.68	14.46	0.745

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>	48.71	49.49	48.98	0.000	57.46	58.40	57.87	0.000	Inci.(Inner)	47.10	49.90
<b>Azimuth Diff. (deg)</b>	0.0027	6.82	1.27	2.632	0.0000	298.35	1.27	3.840	Inci.(Outer)	57.30	58.90
<b>Range(Km)</b>	1023.48	1099.71	1051.68	11.200	1198.88	1294.17	1234.36	42.649	Azimuth Diff.	0.60	2.00
<b>X Factor(dbm)</b>	-92.37	-89.14	-90.47	0.000	-94.01	-91.53	-92.52	0.000	Range(Inner)	1025.00	1095.70
<b>Across Distance (Km)</b>	16.17	16.76	16.38	0.000	21.43	22.90	21.61	4.000	Range(Outer)	1210.00	1280.00
<b>Along Distance (Km)</b>	18.84	39.83	19.76	1.000	18.63	39.78	19.67	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

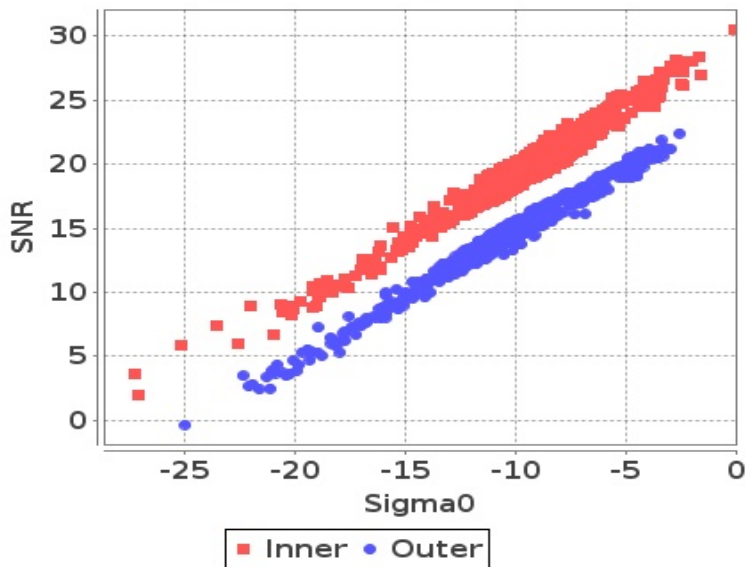
- Normal
- Deviations
- Alarming
- High Errors



## Sigma0 Behaviour (Sigma0 Vs SNR)

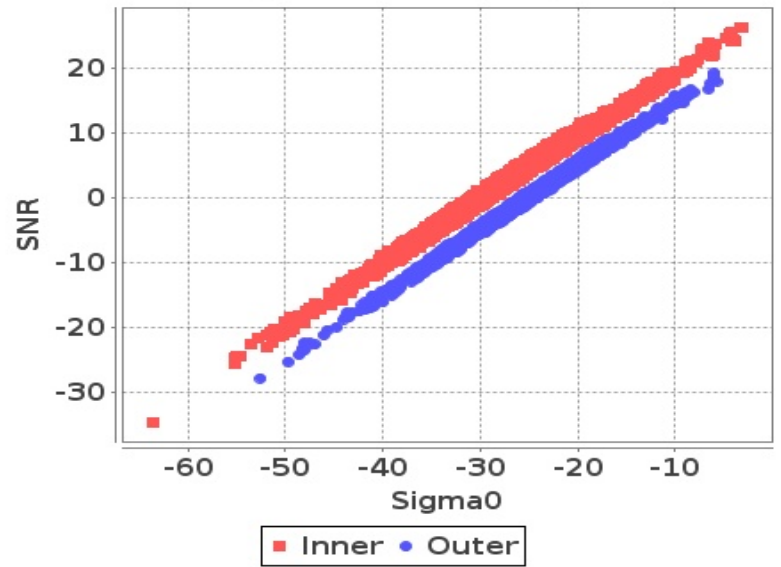
Footprint-Land

Sigma0 Vs SNR (Land)



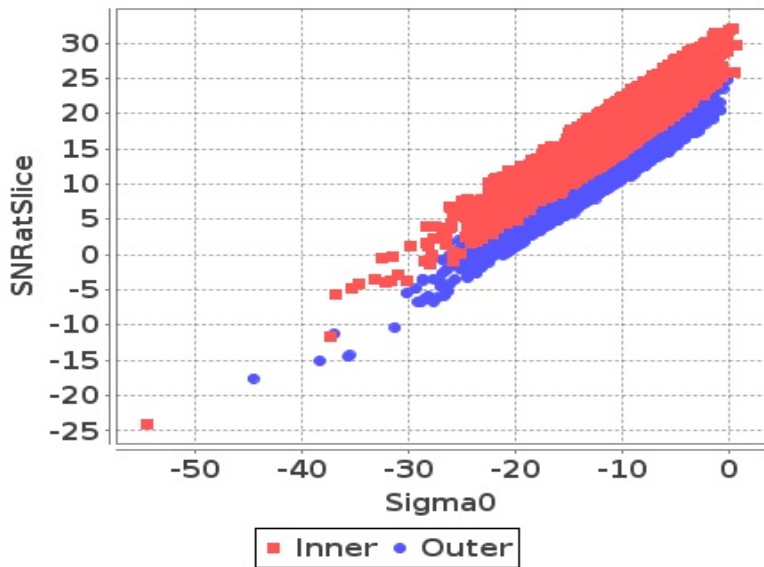
Footprint-Sea

Sigma0 Vs SNR (Sea)



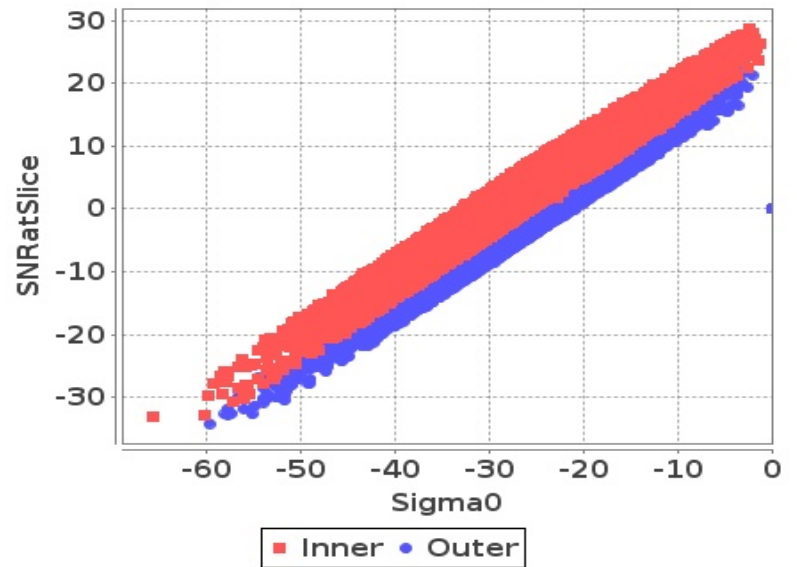
Slice-Land

Sigma0 Vs SNRatSlice (Land)



Slice-Sea

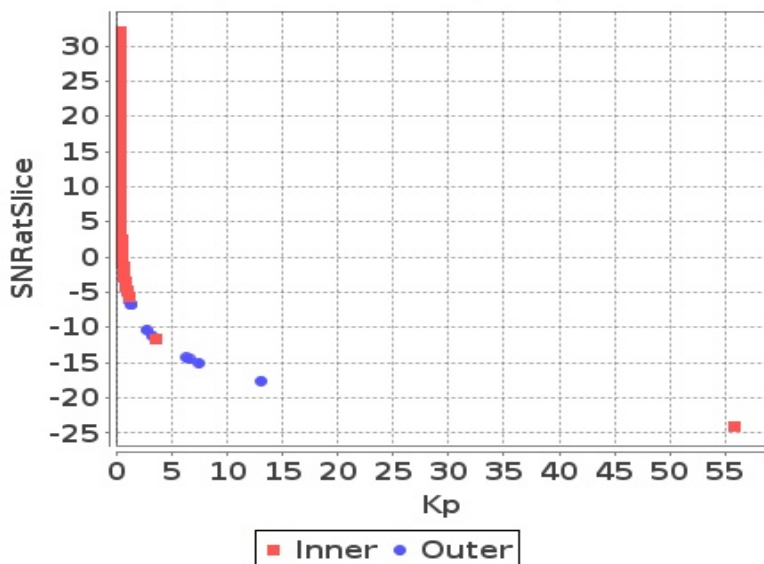
Sigma0 Vs SNRatSlice (Sea)



## Sigma0 Behaviour (Kp Vs SNR)

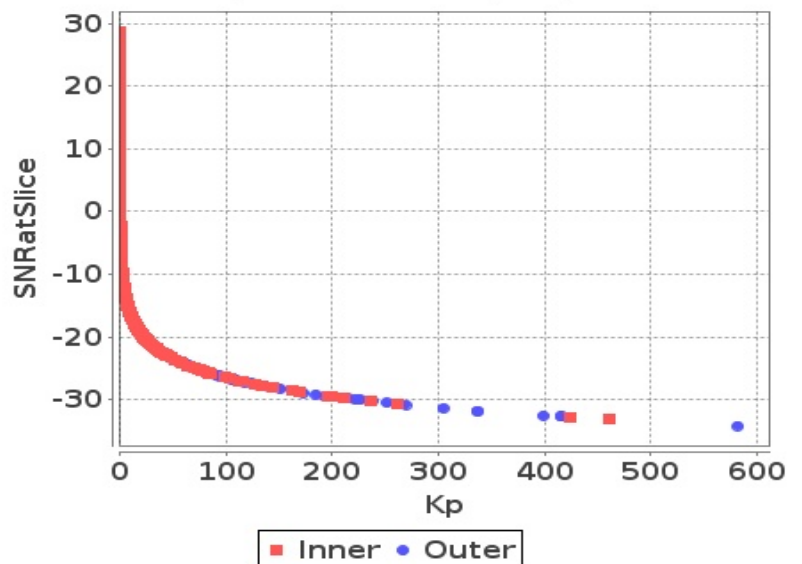
Slice

Kp Vs SNRatSlice (Land)



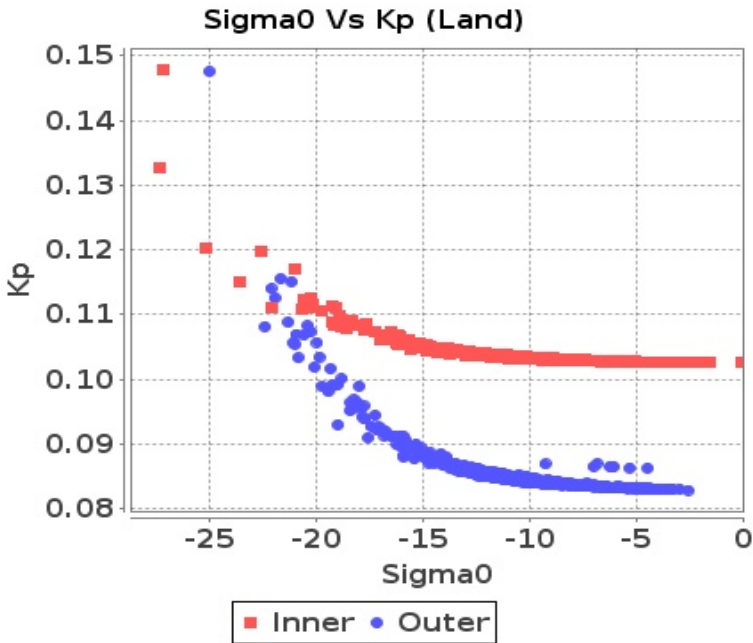
Slice

Kp Vs SNRatSlice (Sea)

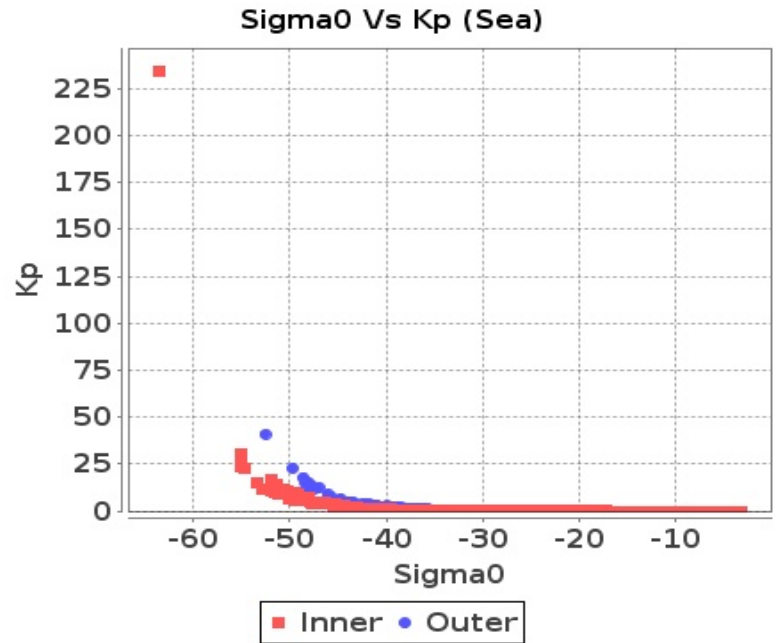


# Sigma0 Behaviour(Sigma0 Vs Kp)

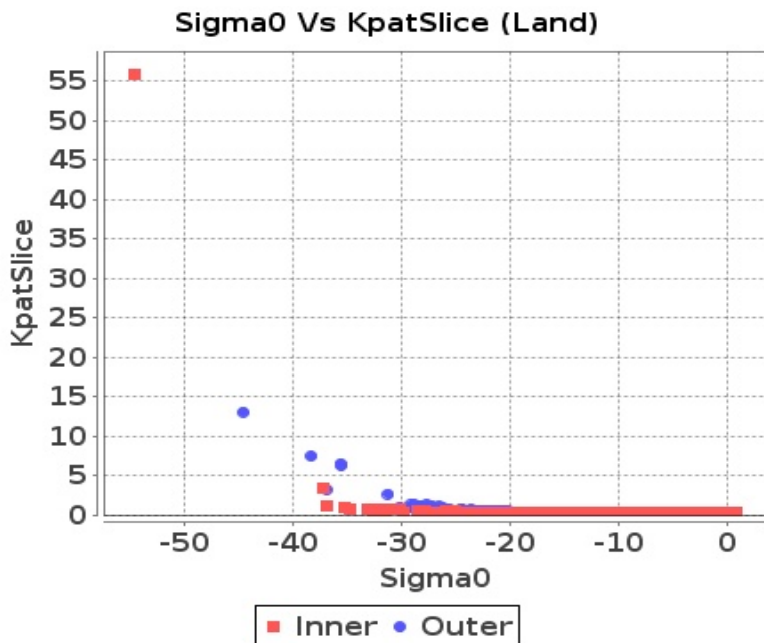
## Footprint-Land



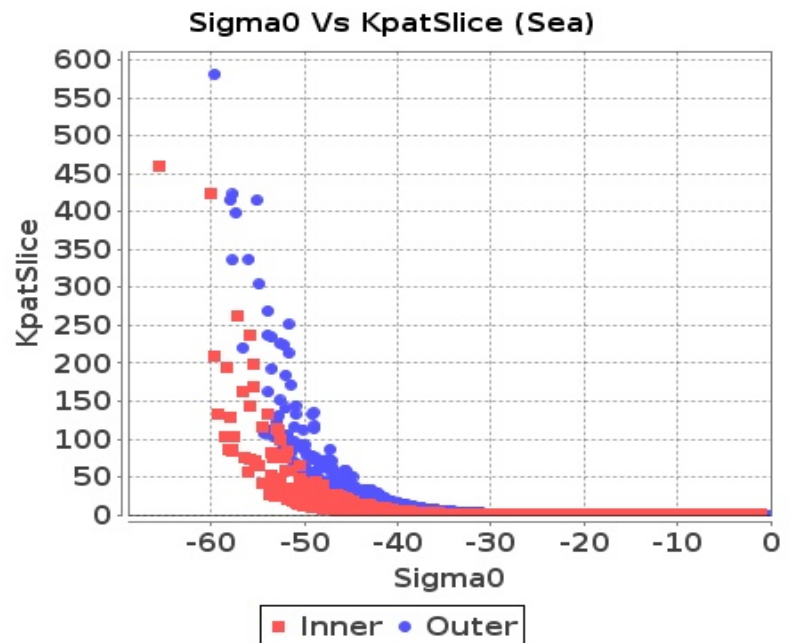
## Footprint-Sea



## Slice-Land



## Slice-Sea



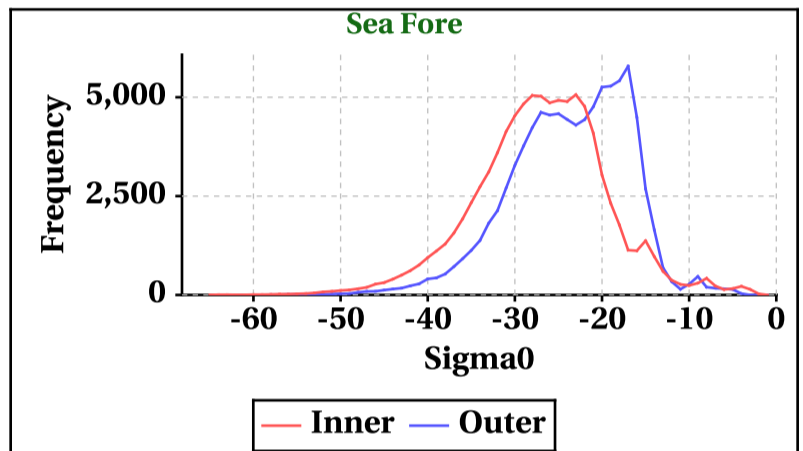
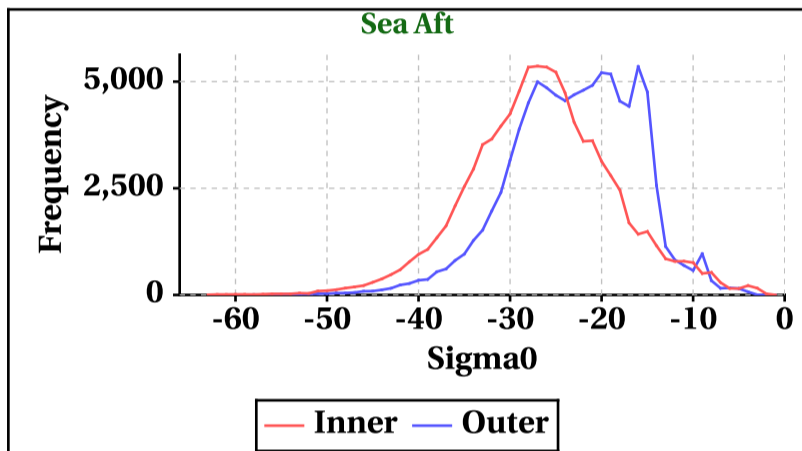
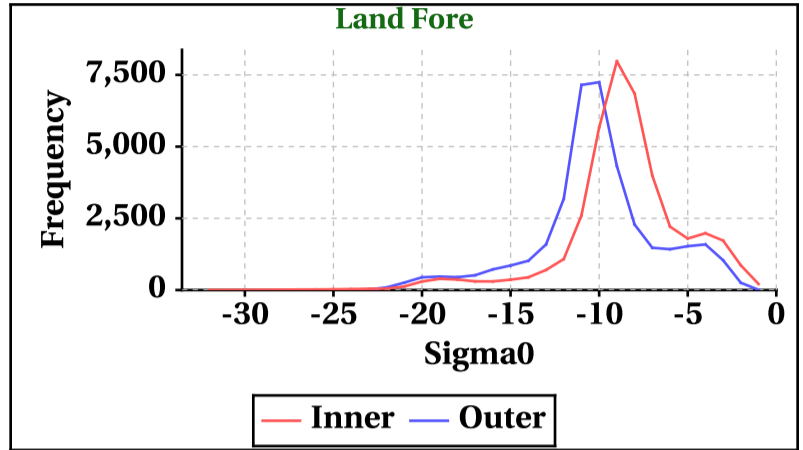
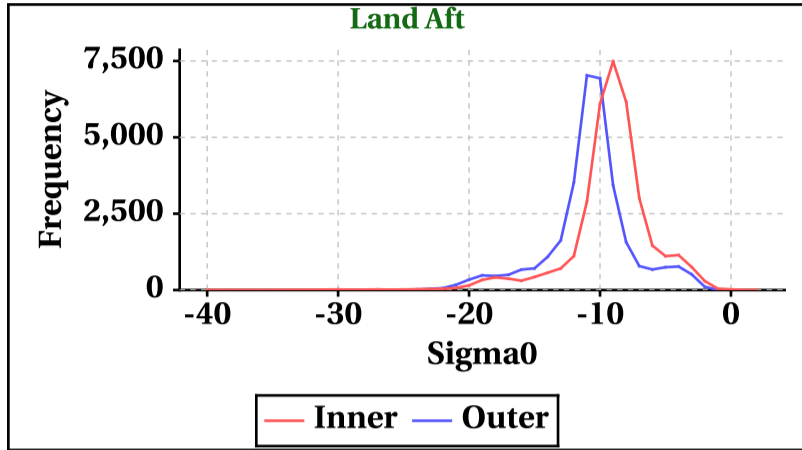


# Dynamic Range (Data Histograms)

## Sigma0(db)

Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-40	-32	-63	-65
Max	2	0	0	0

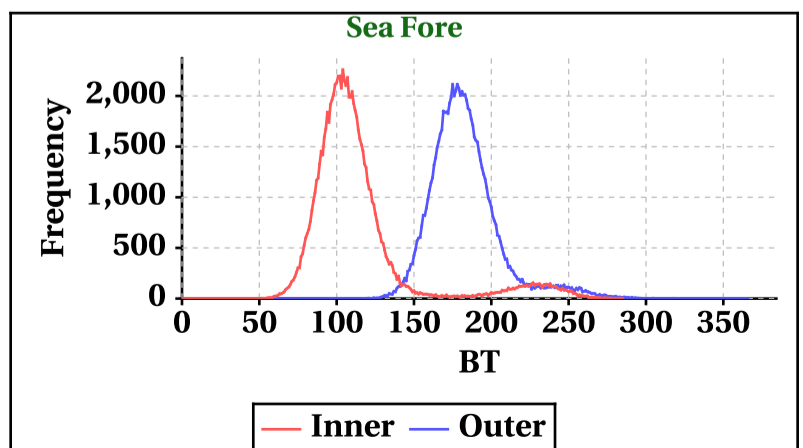
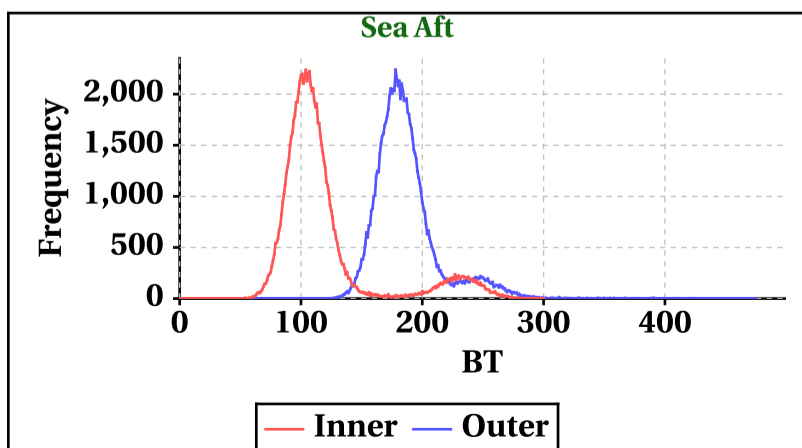
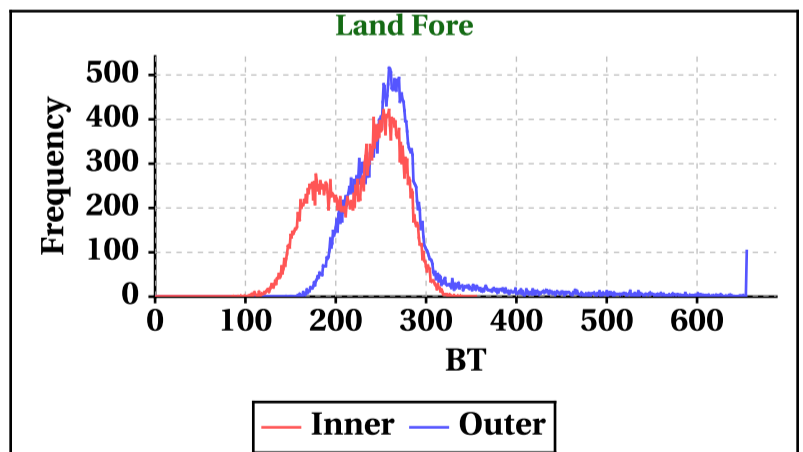
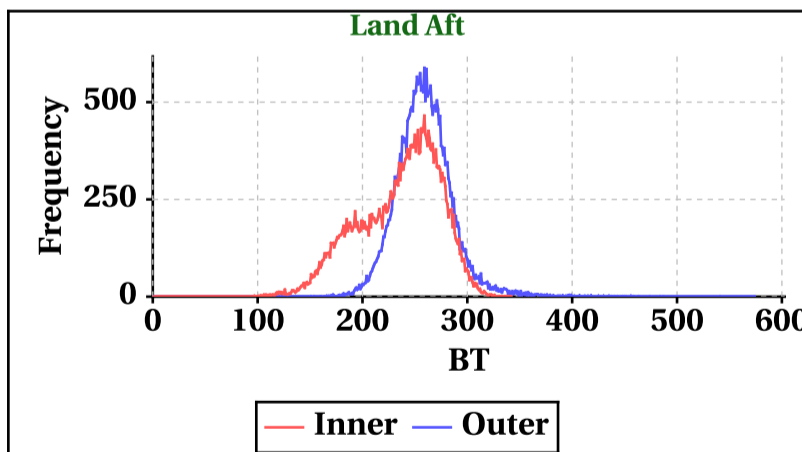
Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-32	-28	-58	-60
Max	0	0	0	0



## Brightness Temperature(K)

Inner Beam(HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	342	355	300	285

Outer Beam(VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	574	655	475	366

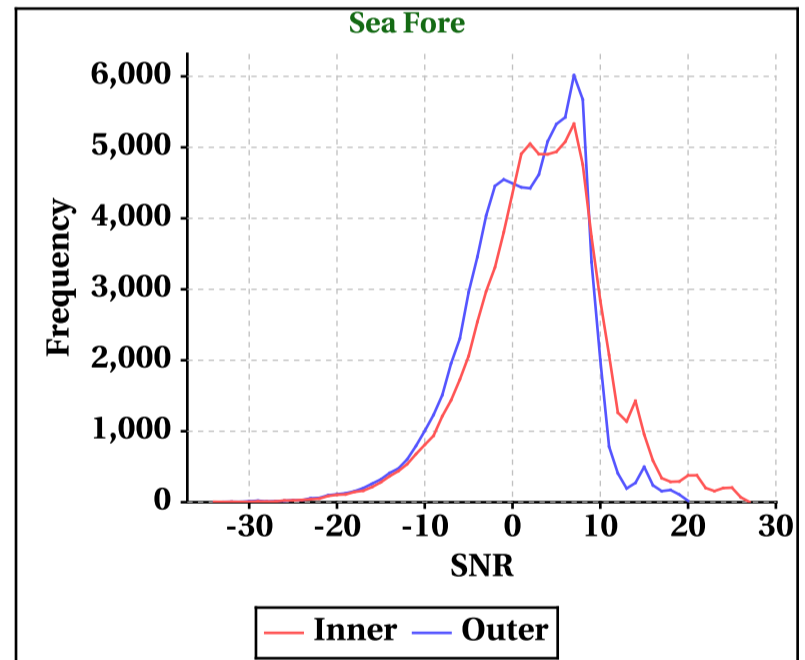
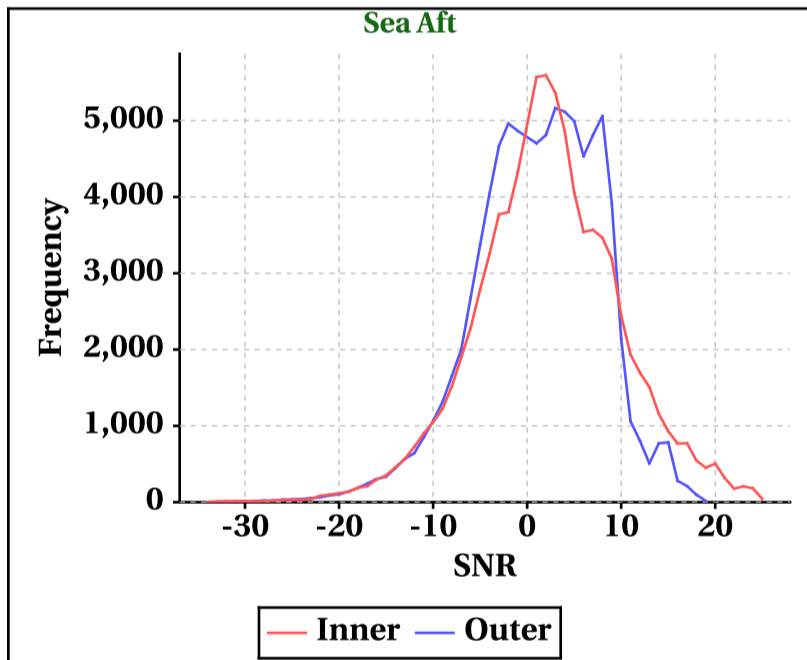
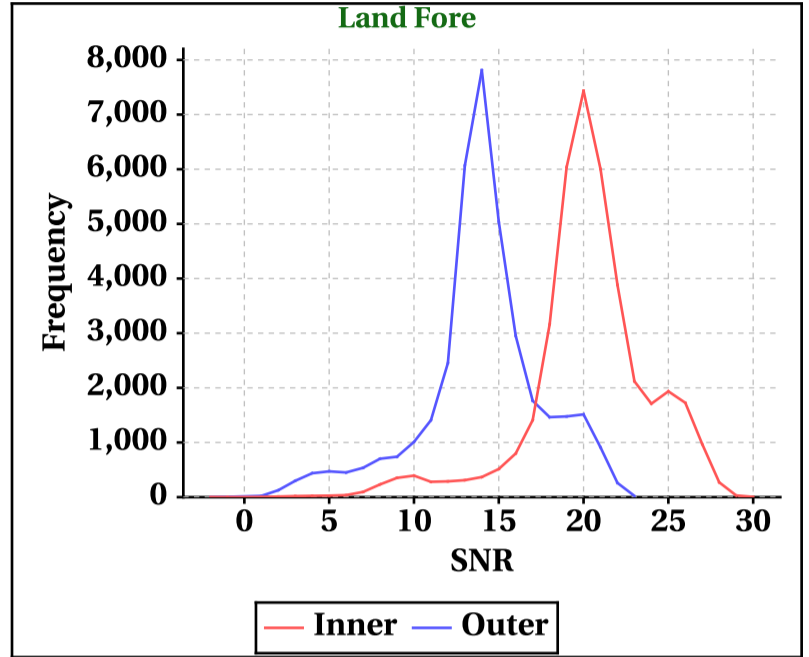
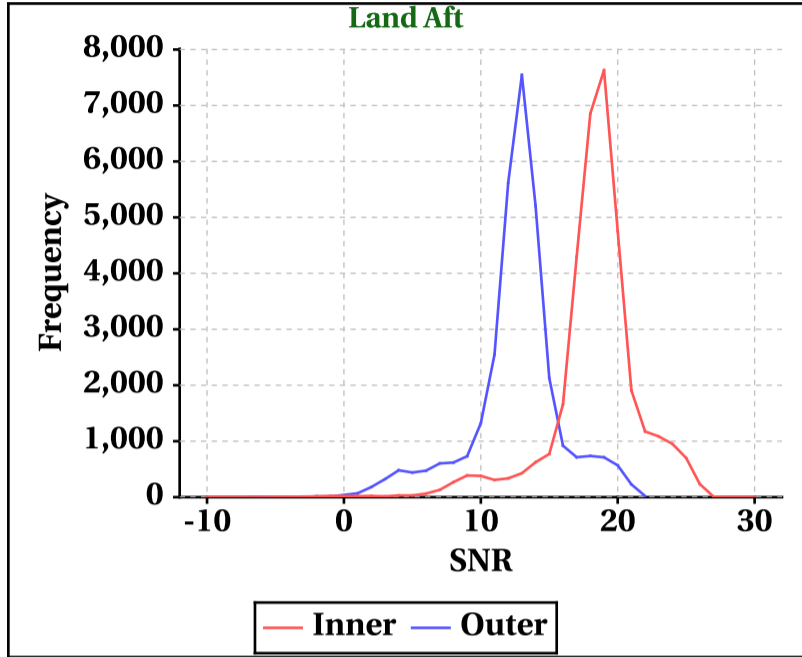


# Dynamic Range (Data Histograms)

## SNR(dBm)

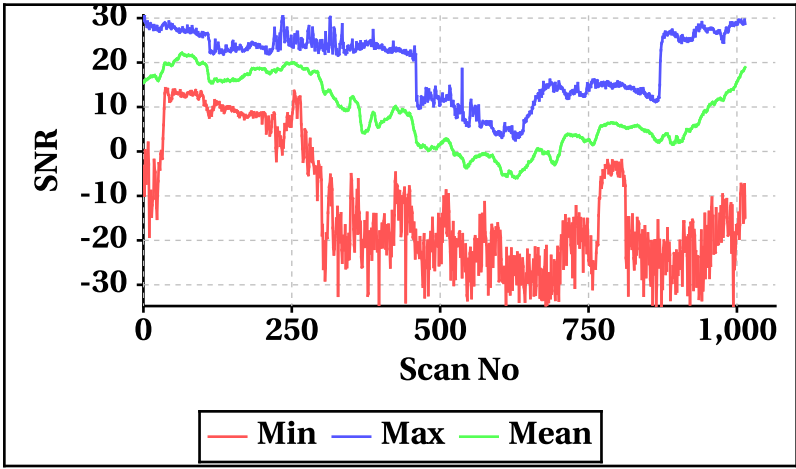
Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-10	-2	-34	-34
Max	30	30	25	27

Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-7	-2	-34	-34
Max	22	23	19	20

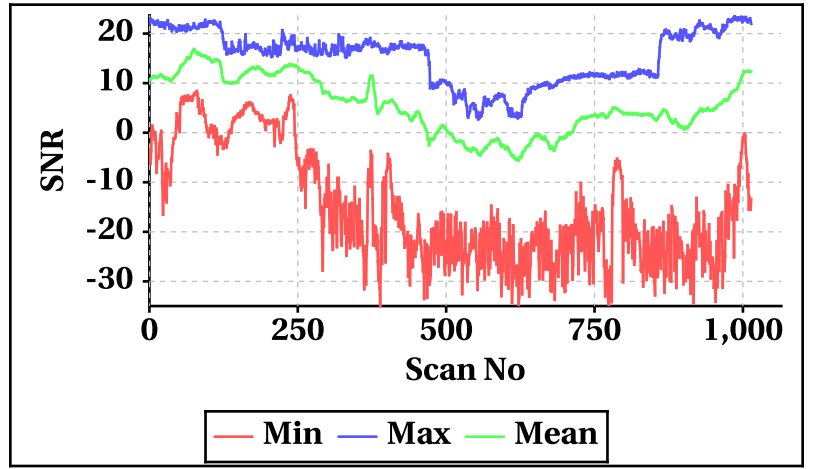


## Orbit-wise behaviour of SNR

**Inner Beam (HH)**

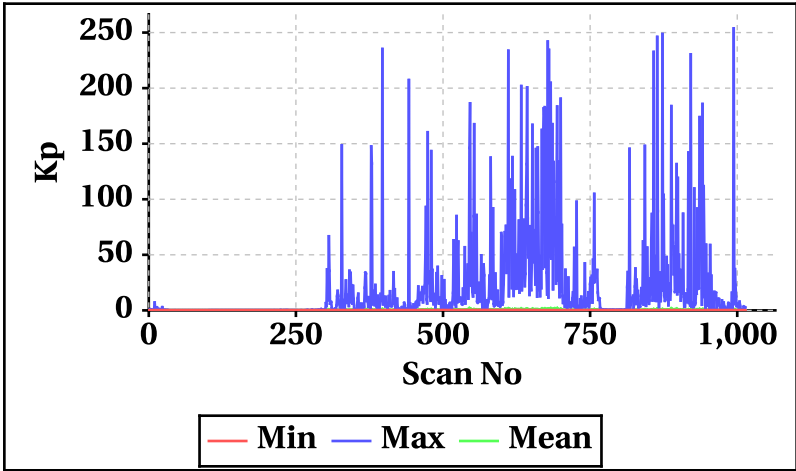


**Outer Beam(VV)**

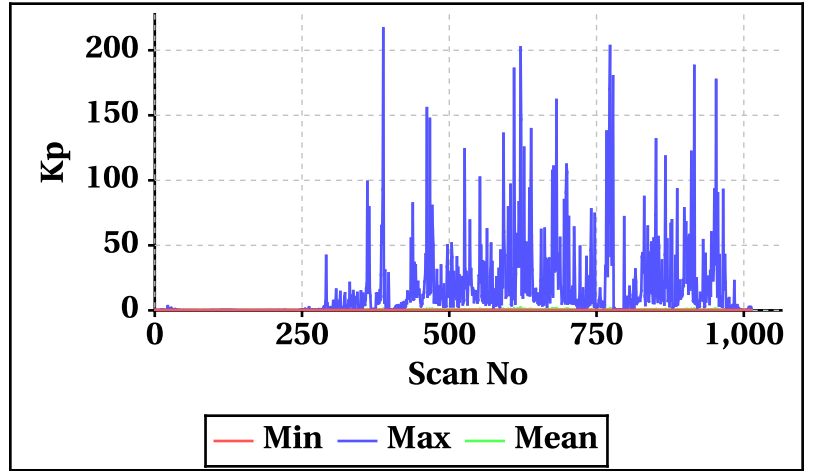


## Orbit-wise behaviour of Kp,Kpa,Kpb,Kpc

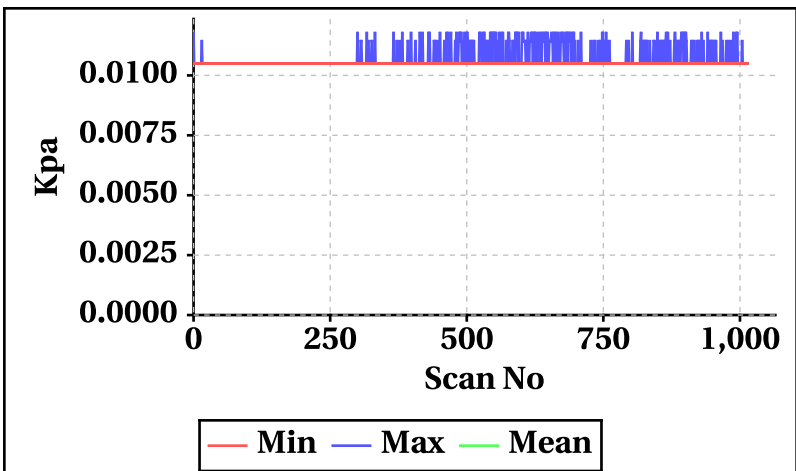
**Inner Beam(HH)**



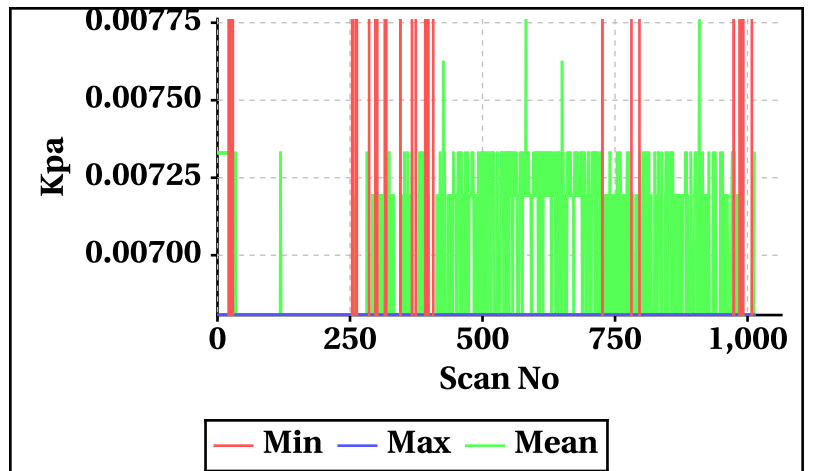
**Outer Beam(VV)**



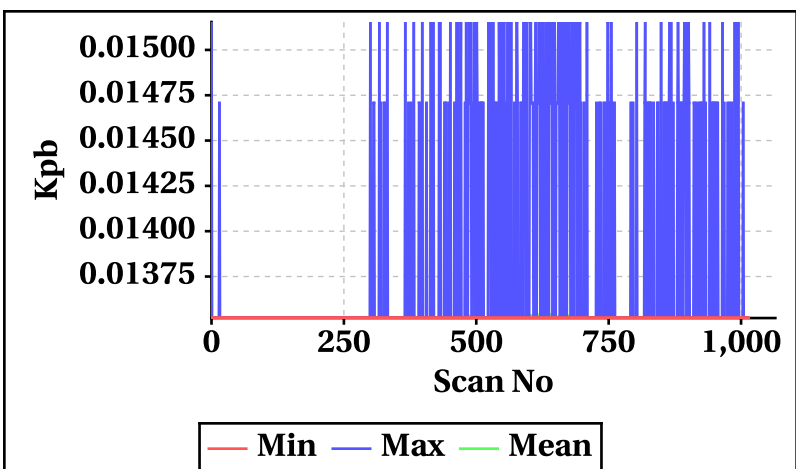
**Inner Beam(HH)**



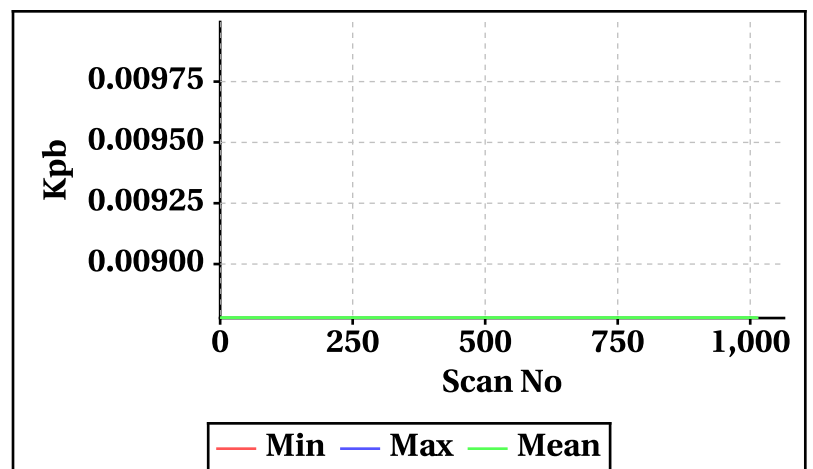
**Outer Beam(VV)**



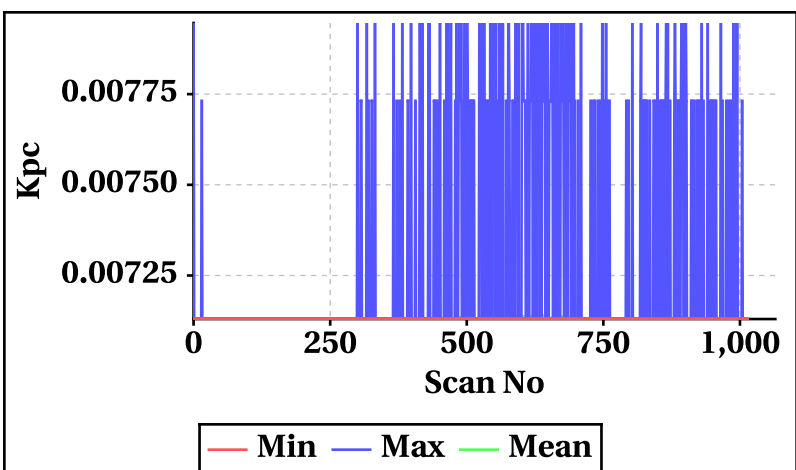
**Inner Beam(HH)**



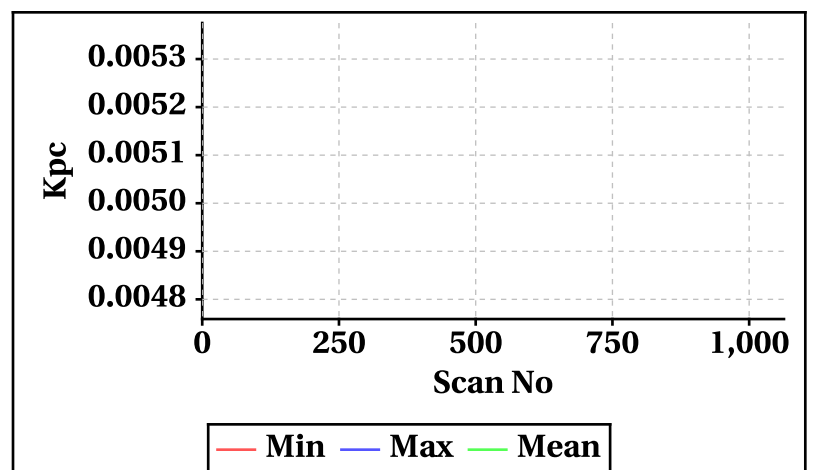
**Outer Beam(VV)**



**Inner Beam(HH)**



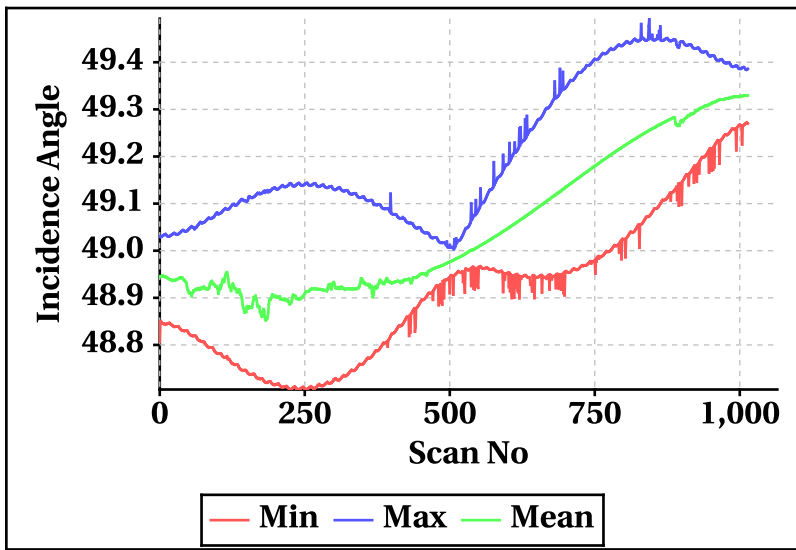
**Outer Beam(VV)**



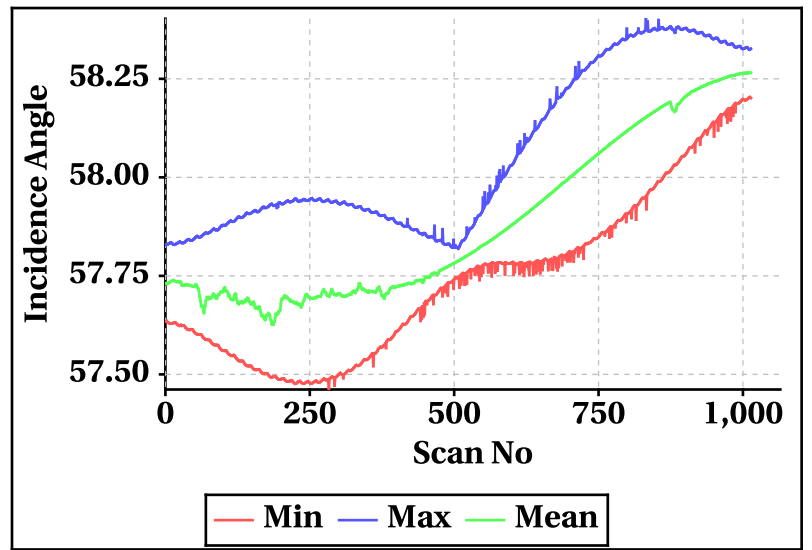


# Orbit-wise behaviour of Incidence, Azimuth, Range, X-Factor

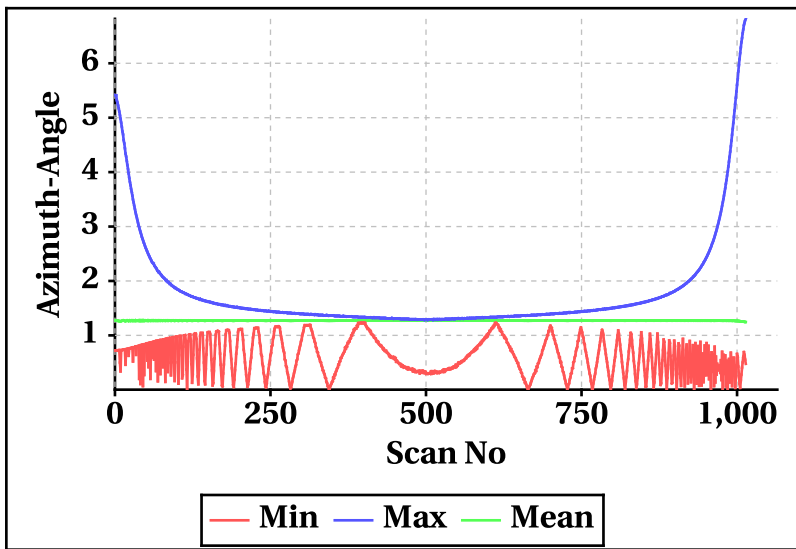
**Inner Beam (HH)**



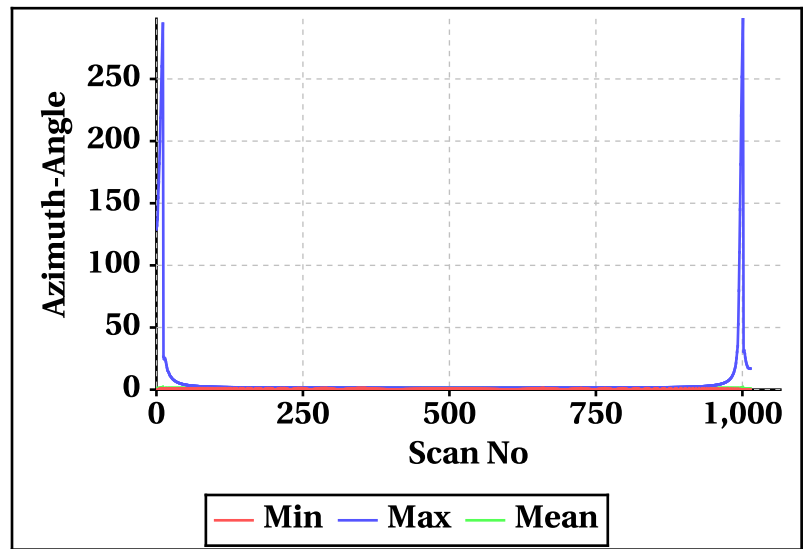
**Outer Beam(VV)**



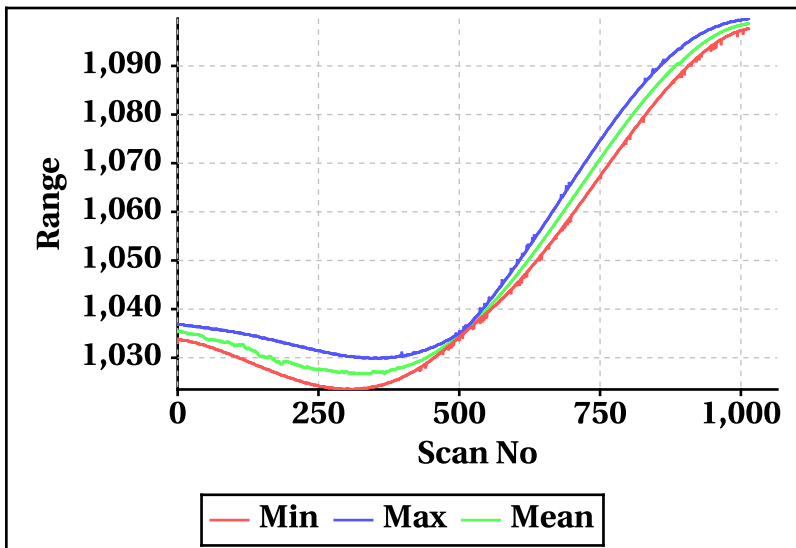
**Inner Beam (HH)**



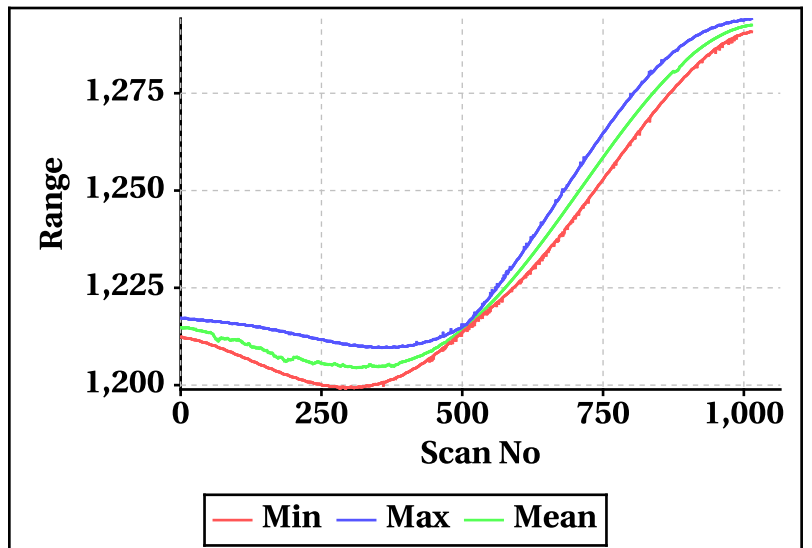
**Outer Beam(VV)**



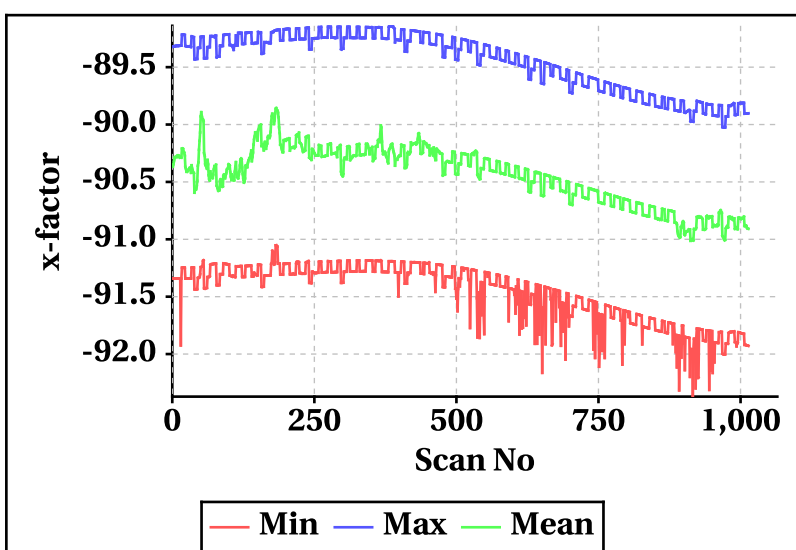
**Inner Beam (HH)**



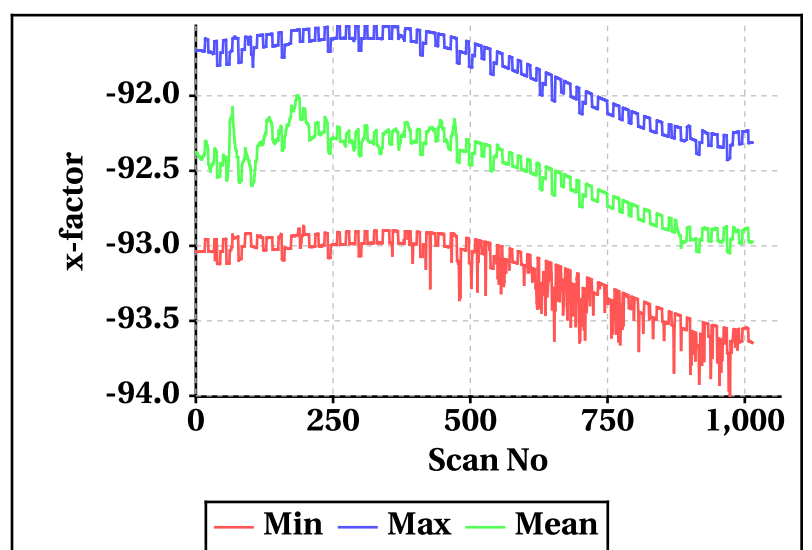
**Outer Beam(VV)**



**Inner Beam (HH)**



**Outer Beam(VV)**

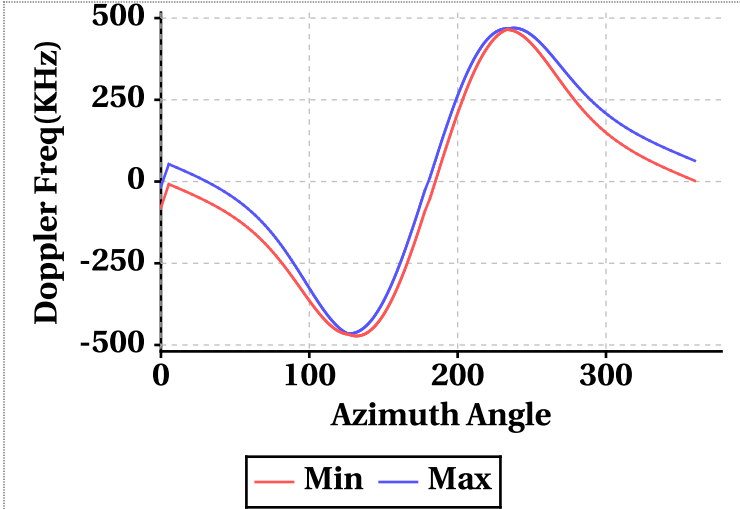


# Doppler Frequency Variation

Doppler Frequency(KHz) variation statistics Over the half Orbit

	Inner Beam (HH)	Outer Beam (VV)
Min	-472.44	-529.10
Max	469.50	526.54

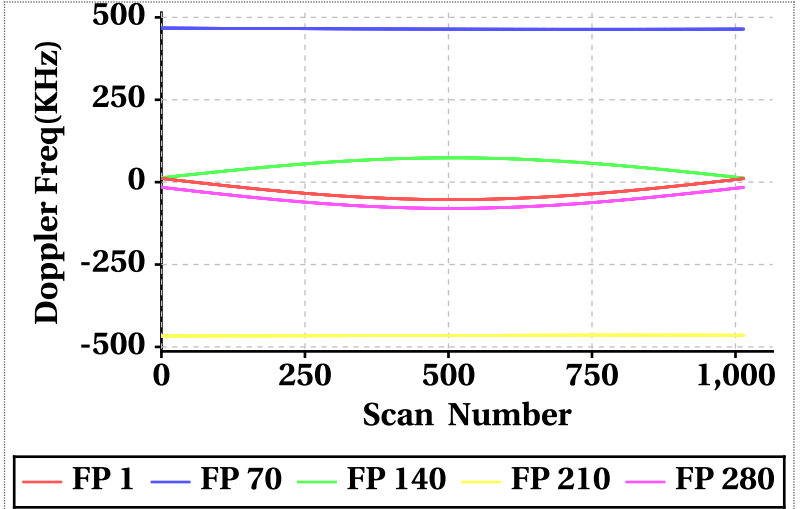
Footprint wise Doppler frequency variation Inner Beam (HH)



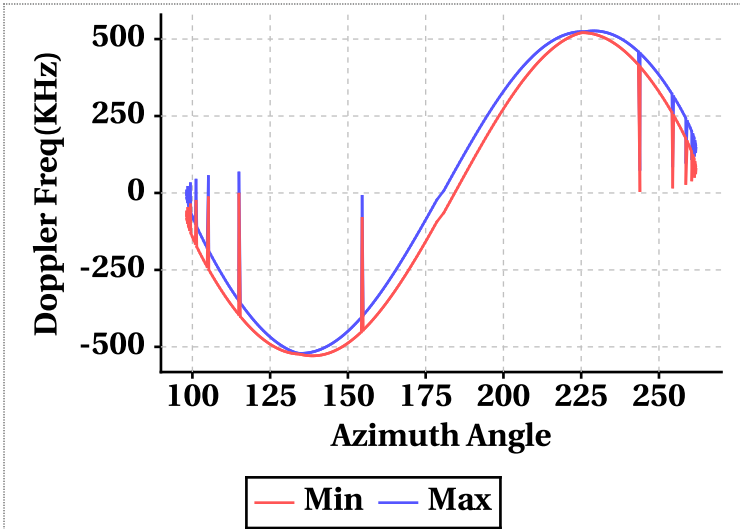
Doppler Frequency(KHz) variation

Doppler_FP	Inner Beam (HH)			Outer Beam (VV)		
	Min	Max	Mean	Min	Max	Mean
Doppler_1	-52.98	11.42	-29.66	-64.16	7.62	-38.17
Doppler_70	463.92	467.64	464.96	519.54	523.92	520.77
Doppler_140	12.54	73.86	51.58	7.64	76.66	51.55
Doppler_210	-466.82	-464.20	-465.31	-523.44	-520.70	-522.03
Doppler_280	-79.72	-15.56	-56.33	-82.54	-10.98	-56.45

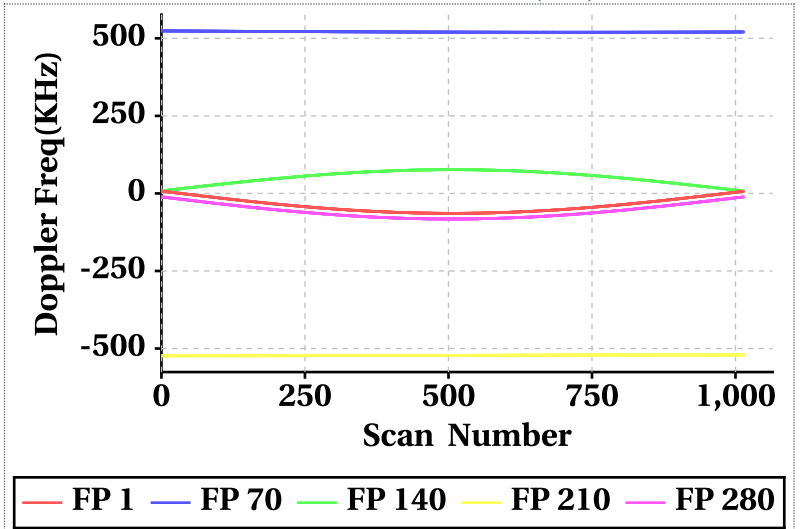
Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Inner Beam (HH)



Footprint wise Doppler frequency variation Outer Beam (VV)

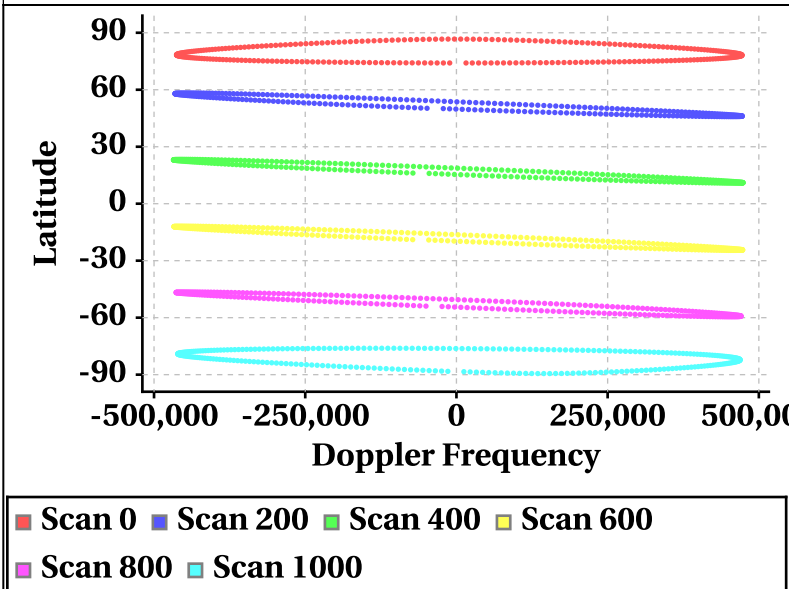


Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Outer Beam (VV)

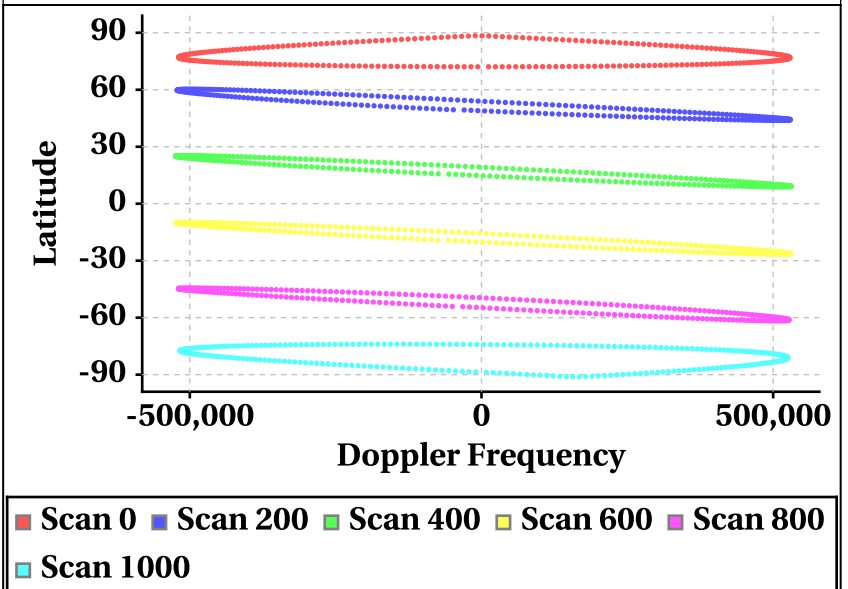


# Latitude Vs Doppler Frequency

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



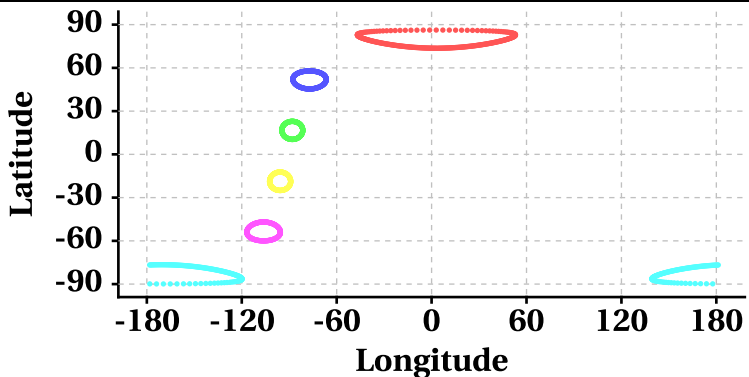
Doppler Frequency at Scan Interval of 200 [Outer Beam(VV)]



# Parameter as a function of Latitude

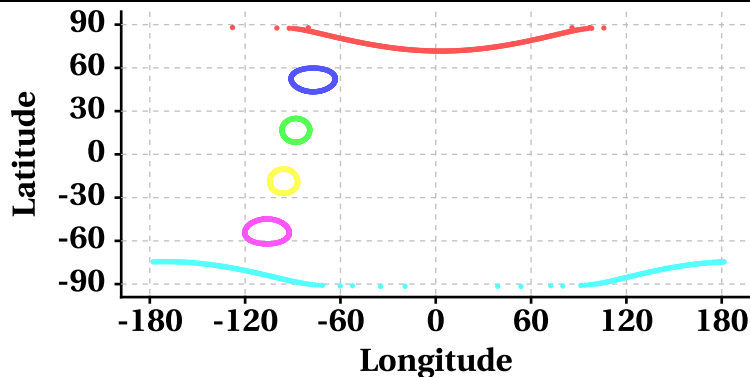
## Latitude Vs Longitude

Scan Trace [Inner Beam(HH)]



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

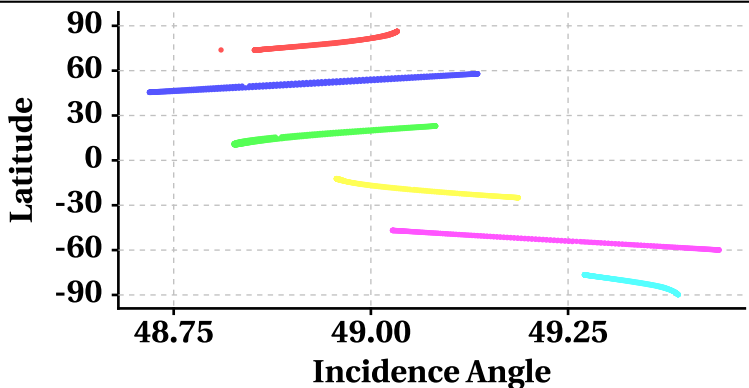
Scan Trace [Outer Beam (VV)]



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

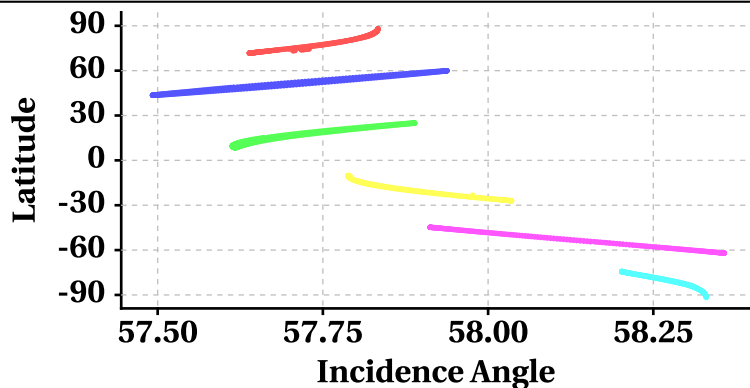
## Latitude Vs Incidence Angle

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



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

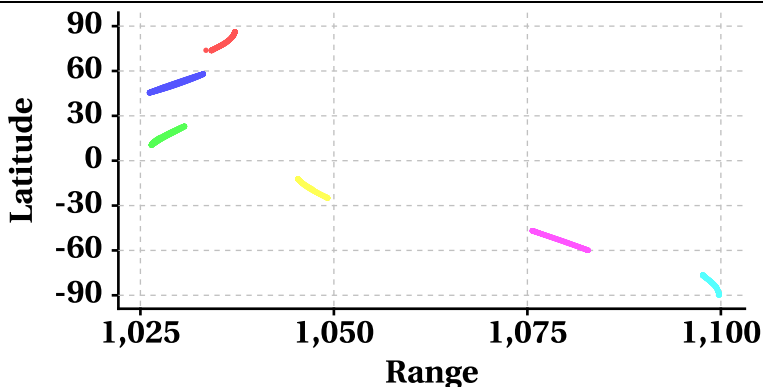
Incidence Angle at Scan Interval of 200 [Outer Beam (VV)]



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

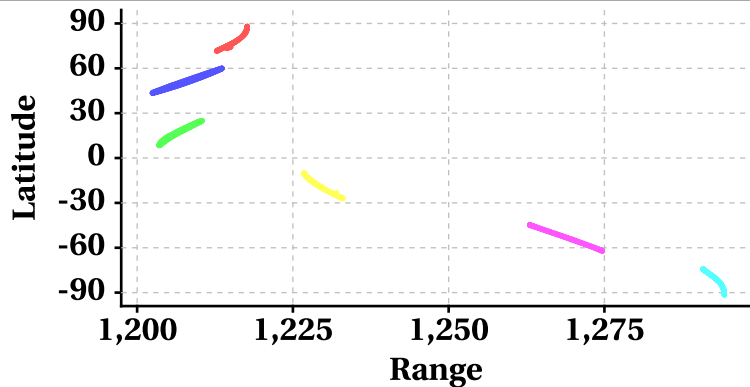
## Latitude Vs Range

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

