

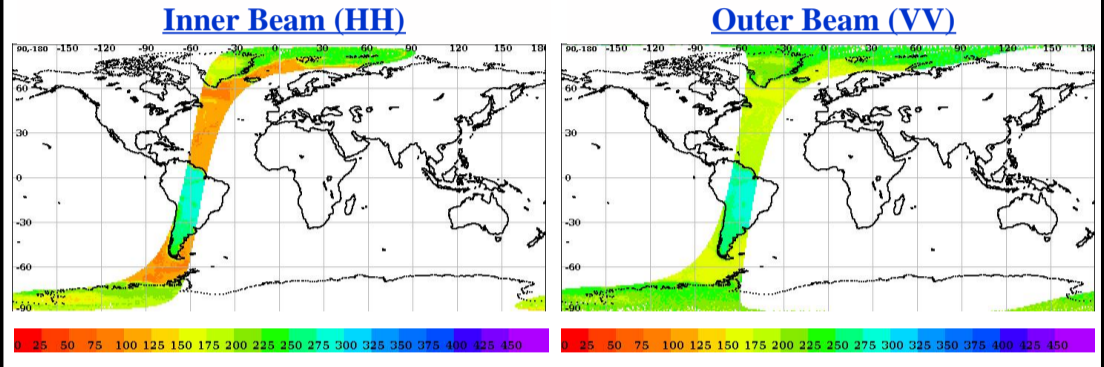
# SCATSAT-1 Scatterometer Level-1B Data Quality Evaluation Report

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<b>Satellite Id</b>	ScatSat-1	<b>Start Orbit</b>	8124	<b>Total Scans</b>	1014
<b>Sensor Name</b>	Scatterometer	<b>End Orbit</b>	8125	<b>No of Inner FootPrints</b>	281
<b>Processor Version</b>	v1.1.3	<b>Rev. Number</b>	08124_08125	<b>No Of Outer FootPrints</b>	282
<b>Half Orbit Direction</b>	NS	<b>Data Production Date</b>	09-04-2018	<b>No. Of Inner Slices</b>	9
<b>Equator Crossing Date</b>	09-04-2018	<b>Equator Crossing Time</b>	12:29:20.000	<b>No Of Outer Slices</b>	15

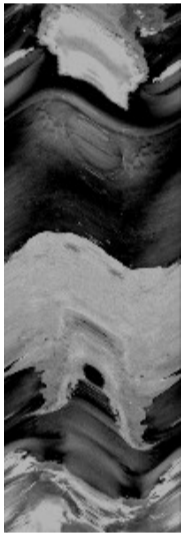
## Brightness Temperature(k) Footprint trace



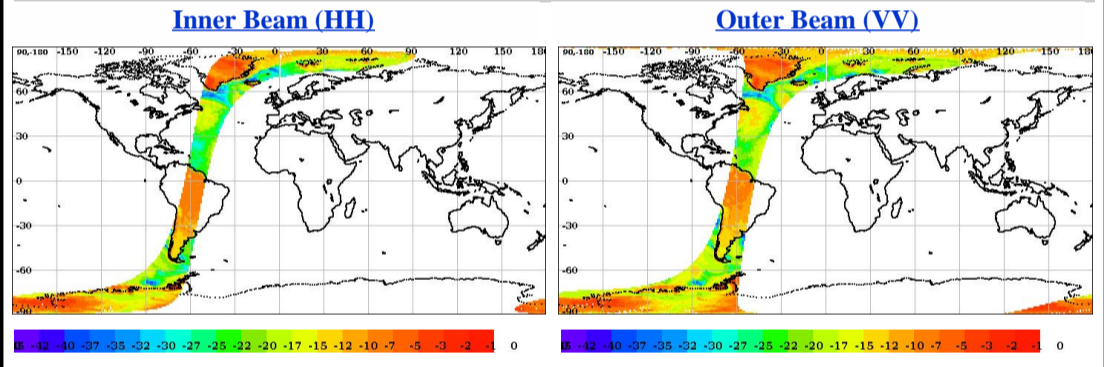
## Image Snapshot for Inner & Outer Beam

Inner (HH)

Outer (VV)



## Sigma0(dB) Footprint trace



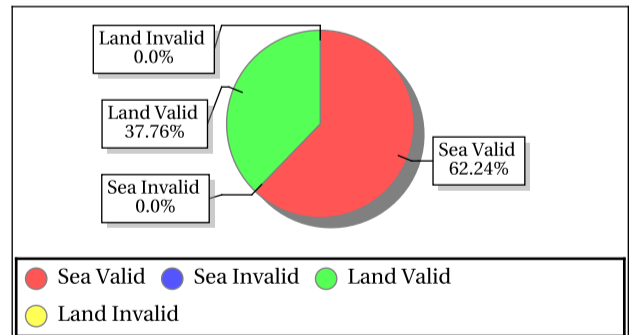
## Invalid and Poor Sigma-0 Quality Flag Statistics for Inner/Outer Slices\*

Sigma-0 Flags	Inner Beam	Outer Beam
Invalid Sigma0(%)	0.00	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(%)	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 (%)	0.007019	0.037759

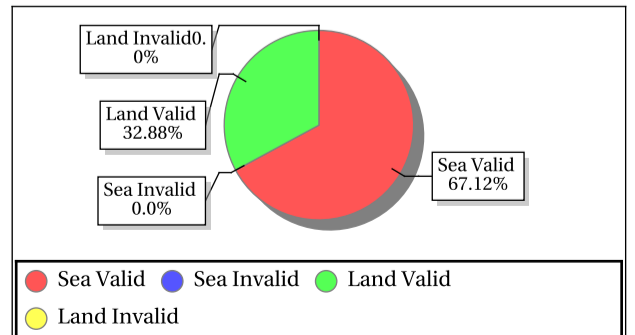
\*DP Format Document

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

### Inner Beam (HH)



### Outer Beam (VV)



## 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	-6.84	-4.78	-5.69	0.64	118.00	168.48	147.01	14.06
GreenLand_2	77.50	-41.50	Inner	DSC	Fore	-6.49	-4.42	-5.50	0.69	125.31	174.40	153.04	14.00
GreenLand_3	71.55	-42.45	Inner	DSC	Aft	-13.41	-9.98	-11.03	0.84	140.07	226.12	186.67	20.24
GreenLand_3	71.55	-42.45	Inner	DSC	Fore	-12.16	-10.07	-11.11	0.51	169.48	207.46	186.32	11.40
Amazon_3	-6.00	-61.00	Inner	DSC	Aft	-9.82	-6.94	-8.06	0.69	253.91	321.54	284.47	17.06
Amazon_3	-6.00	-61.00	Inner	DSC	Fore	-10.09	-7.09	-8.34	0.60	246.42	311.50	280.15	15.46
GreenLand_1	74.69	-42.50	Inner	DSC	Aft	-10.27	-8.03	-9.09	0.57	139.06	196.17	172.09	13.61
GreenLand_1	74.69	-42.50	Inner	DSC	Fore	-10.55	-8.28	-9.54	0.55	138.17	189.47	169.55	12.01
Amazon_2	-3.00	-61.00	Inner	DSC	Aft	-13.61	-7.16	-9.07	1.42	210.99	304.66	259.01	23.48
Amazon_2	-3.00	-61.00	Inner	DSC	Fore	-11.34	-6.57	-8.75	0.92	222.67	305.78	259.85	19.94
GreenLand_2	77.50	-41.50	Outer	DSC	Aft	-5.61	-3.97	-5.01	0.62	171.51	194.46	184.63	8.28
GreenLand_2	77.50	-41.50	Outer	DSC	Fore	-5.76	-5.41	-5.59	0.14	169.14	189.62	178.20	8.53
GreenLand_3	71.55	-42.45	Outer	DSC	Aft	-12.88	-10.60	-11.74	0.61	215.14	255.88	238.58	12.90
GreenLand_3	71.55	-42.45	Outer	DSC	Fore	-12.93	-11.41	-12.14	0.38	207.00	250.90	228.07	13.22
Amazon_3	-6.00	-61.00	Outer	DSC	Aft	-9.92	-8.23	-9.08	0.41	252.53	319.75	280.98	16.01
Amazon_3	-6.00	-61.00	Outer	DSC	Fore	-10.51	-8.64	-9.53	0.47	237.97	305.52	272.80	16.44
GreenLand_1	74.69	-42.50	Outer	DSC	Aft	-10.24	-7.77	-8.87	0.82	194.54	231.59	217.43	12.62
GreenLand_1	74.69	-42.50	Outer	DSC	Fore	-9.94	-7.95	-9.19	0.69	206.02	234.76	218.07	11.16
Amazon_2	-3.00	-61.00	Outer	DSC	Aft	-13.04	-8.43	-10.32	0.97	233.38	326.67	272.25	18.84
Amazon_2	-3.00	-61.00	Outer	DSC	Fore	-11.62	-9.12	-10.17	0.58	224.02	307.89	265.87	15.85



## 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	267.83	0.17	0.554	0.12	217.75	0.15	0.305	0.12	0.24	0.12	0.000	0.12	0.22	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>	-34.41	27.04	8.35	0.579	-33.30	27.09	8.90	0.714	-1.49	32.88	19.85	18.916	-1.05	30.12	20.62	32.612

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	196.38	0.20	1.402	0.09	201.14	0.20	1.328	0.09	0.15	0.09	0.000	0.09	0.14	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>	-34.23	19.89	5.43	0.000	-34.34	20.02	5.51	0.000	-0.31	23.28	14.42	0.168	0.95	24.11	14.78	0.941

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>	48.86	49.44	49.06	0.000	57.67	58.28	57.97	0.000	Inci.(Inner)	47.10	49.90
<b>Azimuth Diff. (deg)</b>	0.0027	42.98	1.27	2.683	0.0000	299.24	1.28	3.575	Inci.(Outer)	57.30	58.90
<b>Range(Km)</b>	1049.23	1074.74	1059.82	0.000	1230.07	1263.23	1243.30	0.000	Azimuth Diff.	0.60	2.00
<b>X Factor(dbm)</b>	-91.70	-90.02	-90.44	0.000	-93.72	-92.06	-92.20	0.000	Range(Inner)	1025.00	1095.70
<b>Across Distance (Km)</b>	15.64	16.23	15.85	0.000	4.46	37.46	21.06	7.000	Range(Outer)	1210.00	1280.00
<b>Along Distance (Km)</b>	18.90	715.39	21.05	3.000	18.66	919.08	21.38	4.000	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

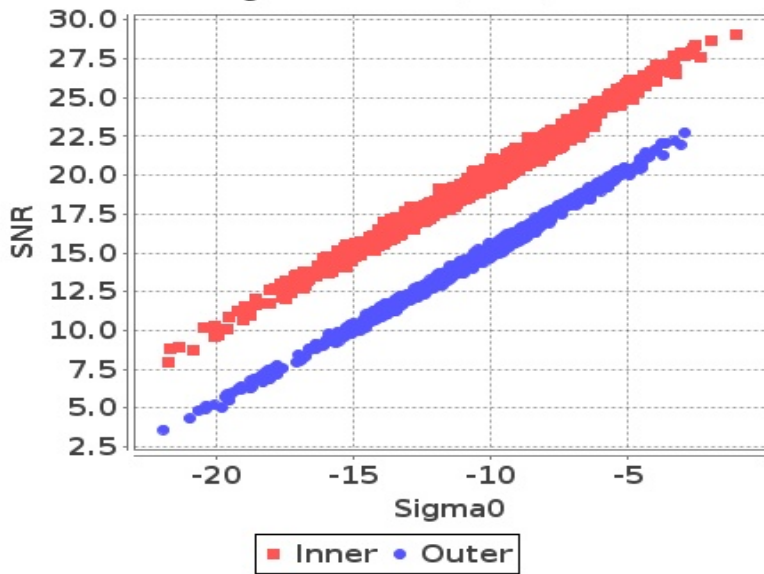
- Normal
- Deviations
- Alarming
- High Errors



## Sigma0 Behaviour (Sigma0 Vs SNR)

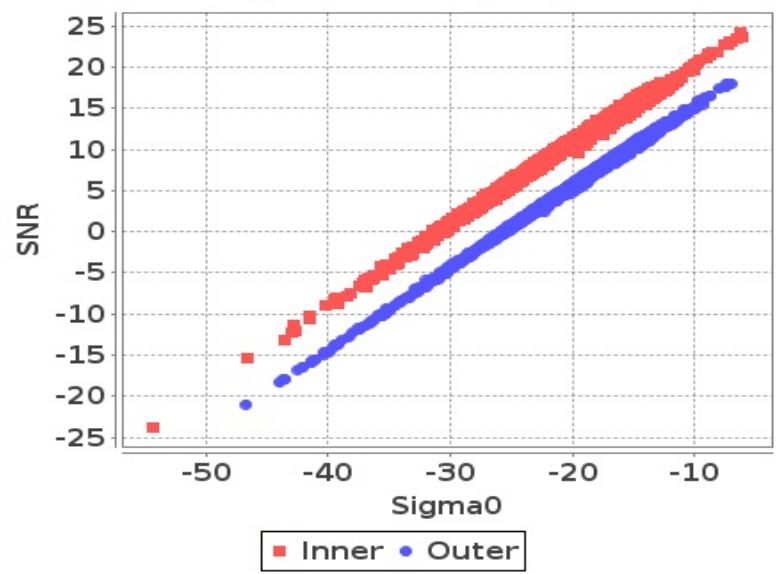
Footprint-Land

Sigma0 Vs SNR (Land)



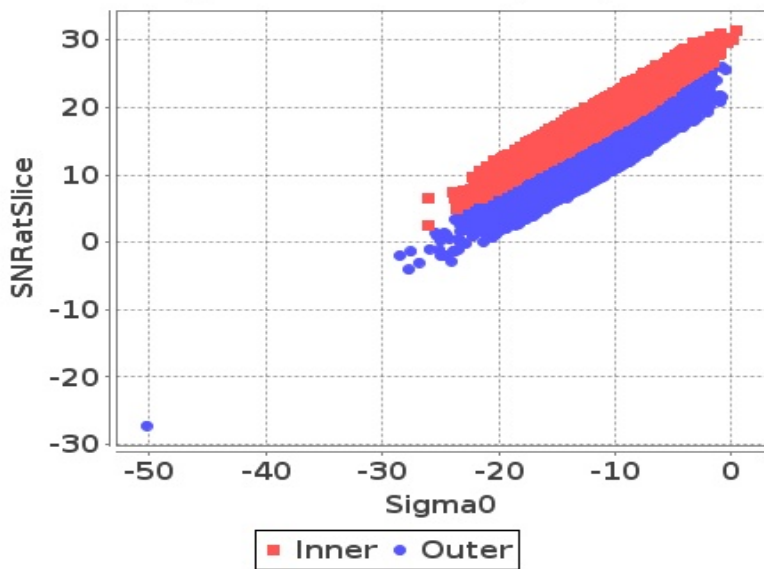
Footprint-Sea

Sigma0 Vs SNR (Sea)



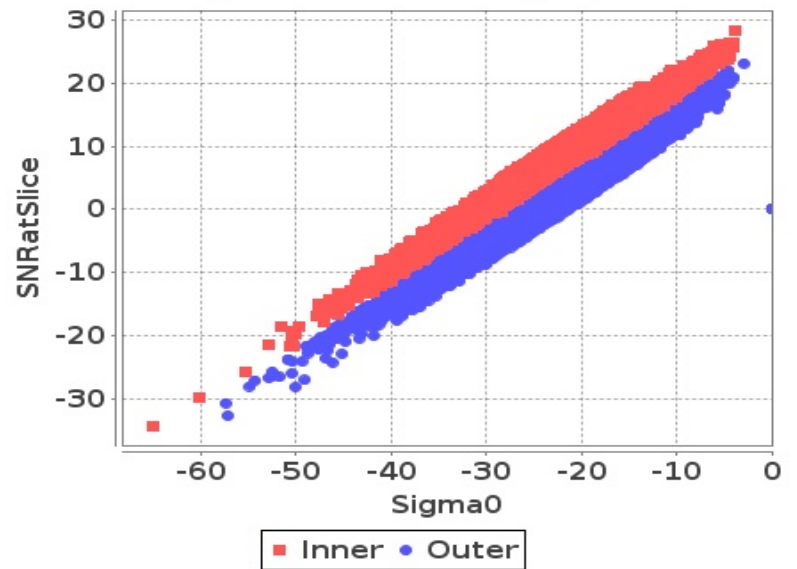
Slice-Land

Sigma0 Vs SNRatSlice (Land)



Slice-Sea

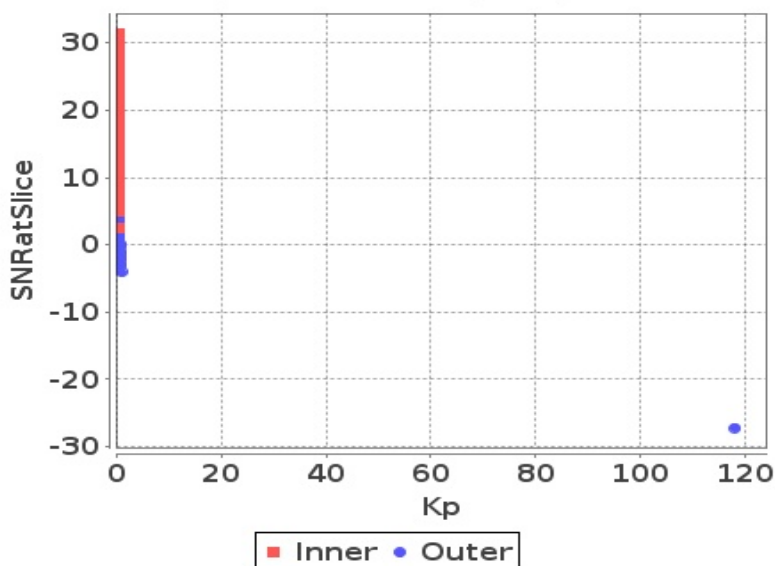
Sigma0 Vs SNRatSlice (Sea)



## Sigma0 Behaviour (Kp Vs SNR)

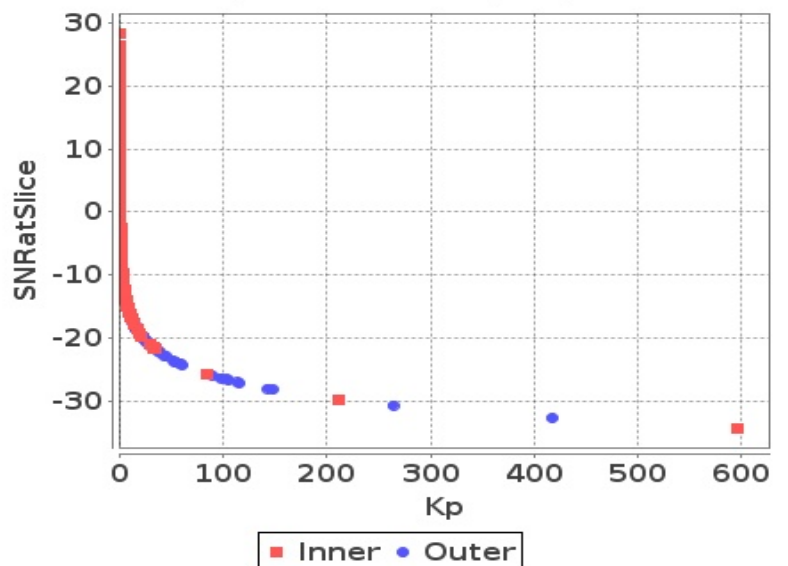
Slice

Kp Vs SNRatSlice (Land)



Slice

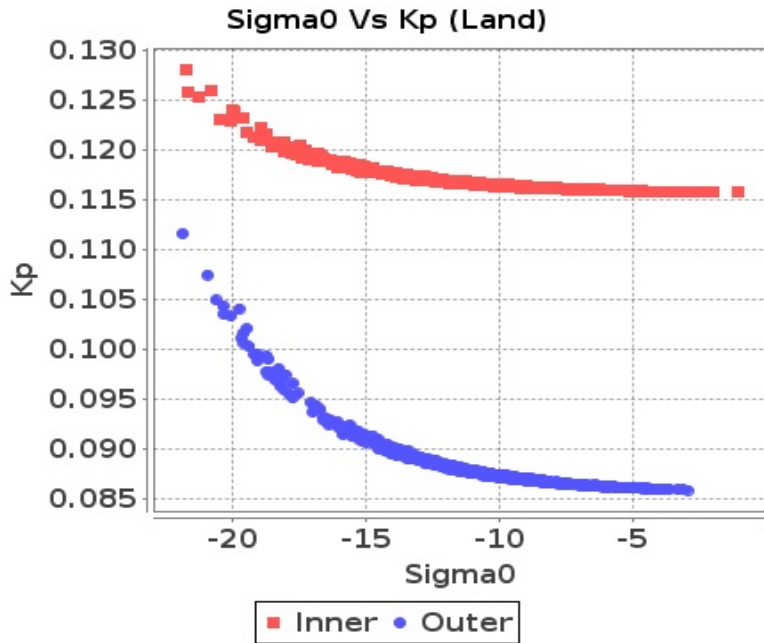
Kp Vs SNRatSlice (Sea)



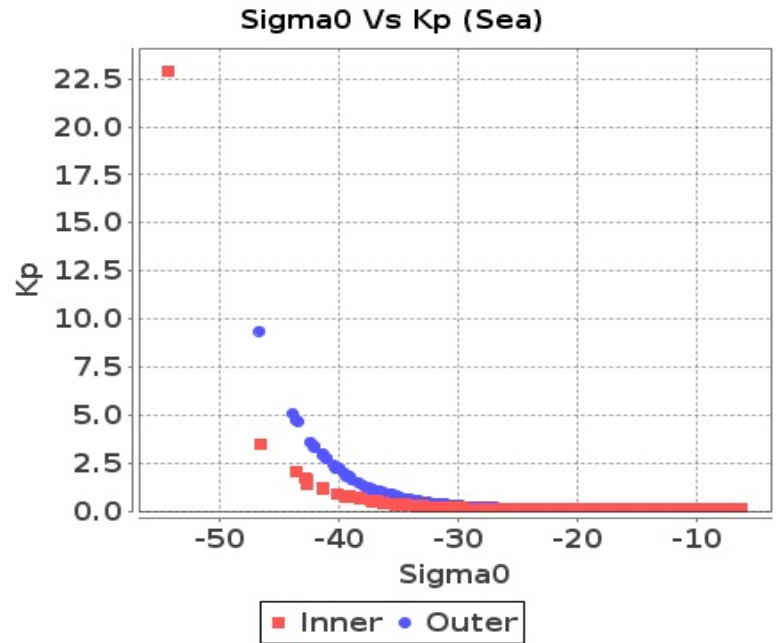


# Sigma0 Behaviour(Sigma0 Vs Kp)

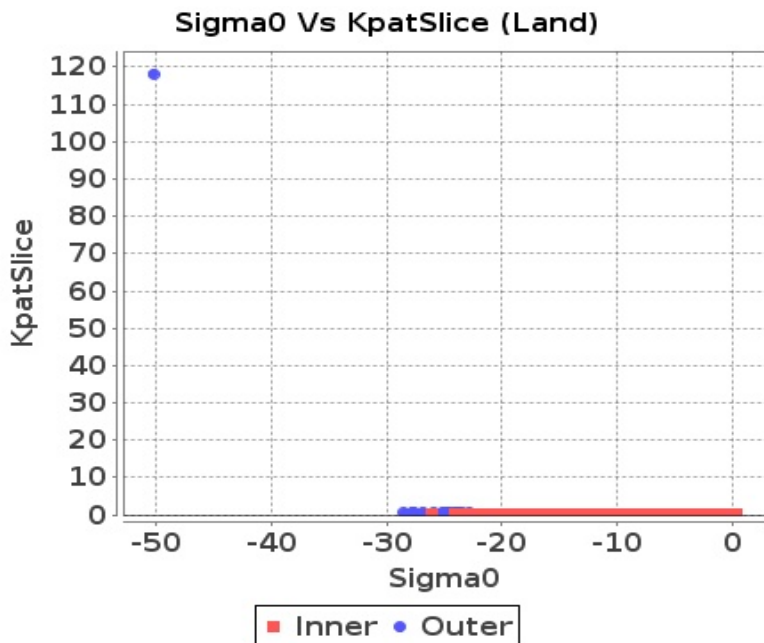
## Footprint-Land



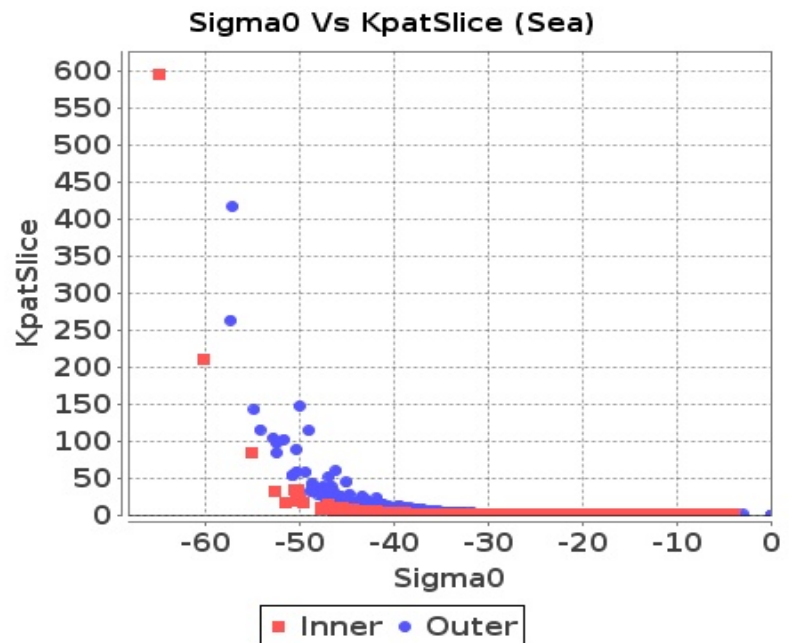
## Footprint-Sea



## Slice-Land



## Slice-Sea

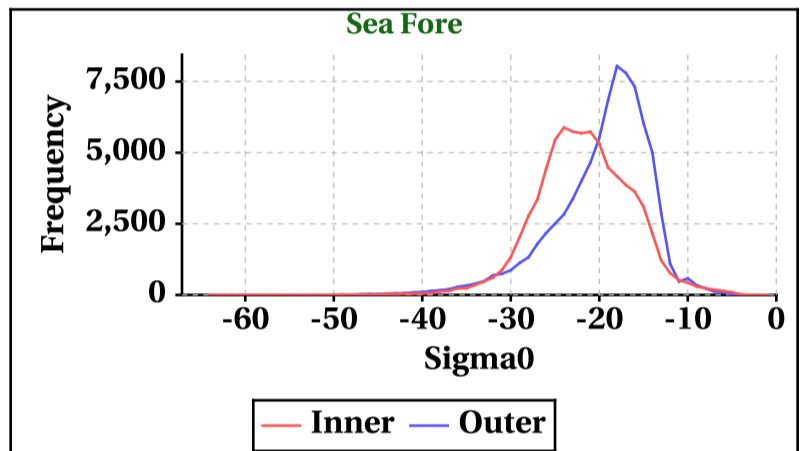
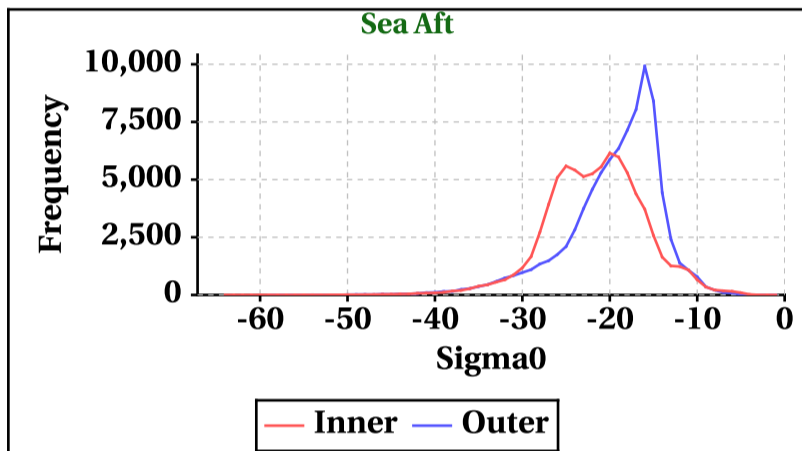
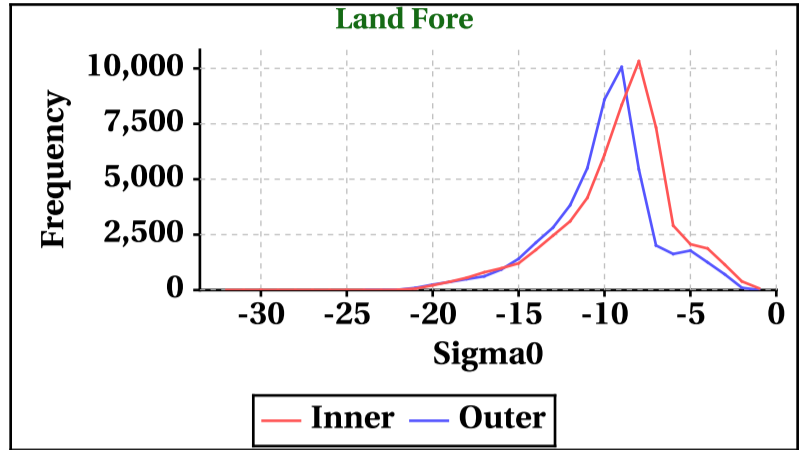
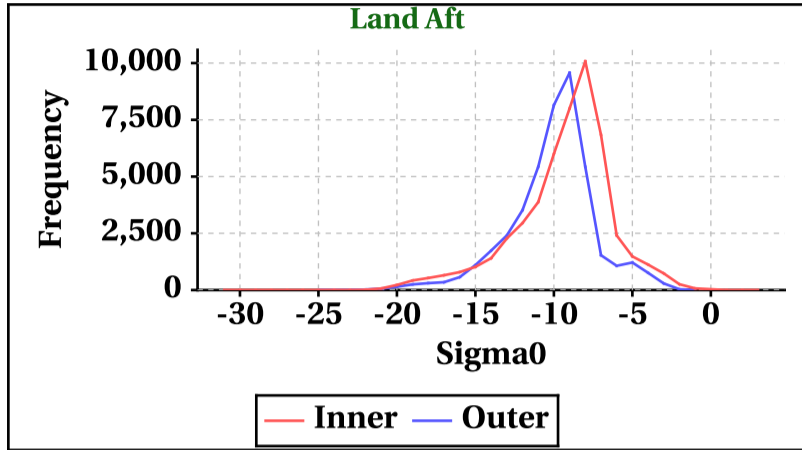


# Dynamic Range (Data Histograms)

## Sigma0(db)

Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-31	-32	-64	-64
Max	3	0	0	0

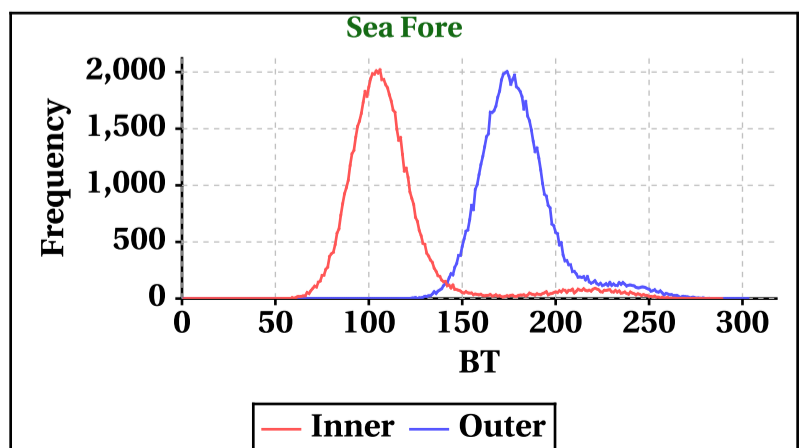
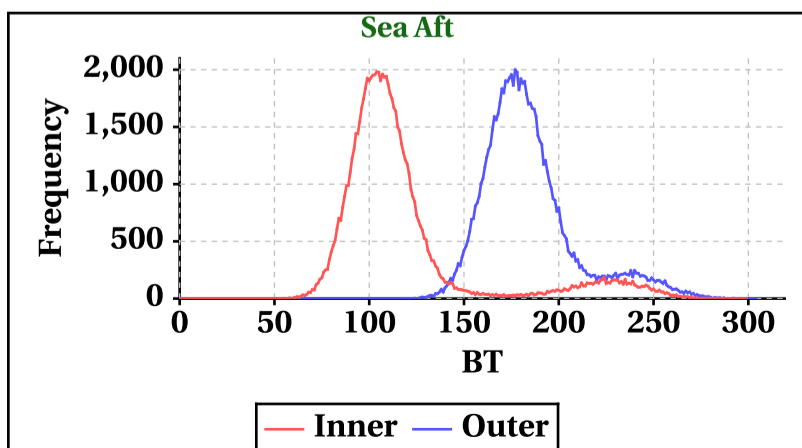
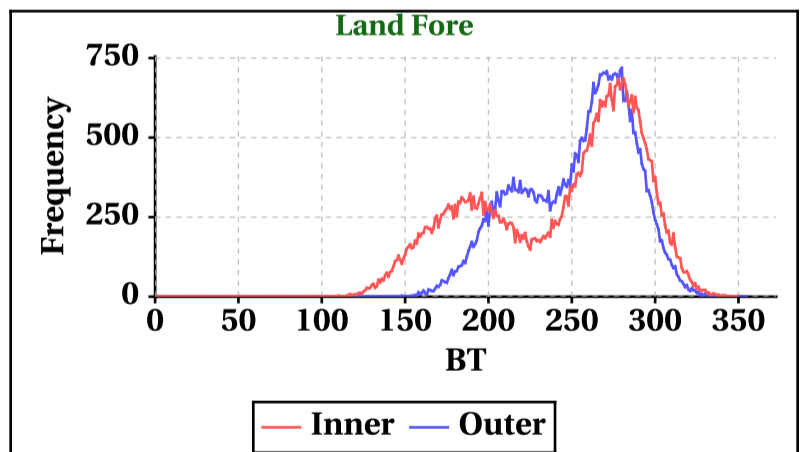
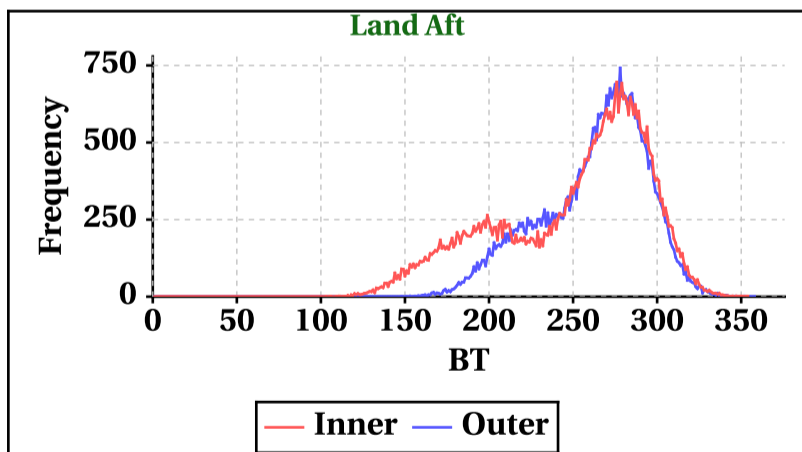
Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-25	-24	-59	-59
Max	0	0	0	0



## Brightness Temperature(K)

Inner Beam(HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	354	349	299	289

Outer Beam(VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	358	355	304	303

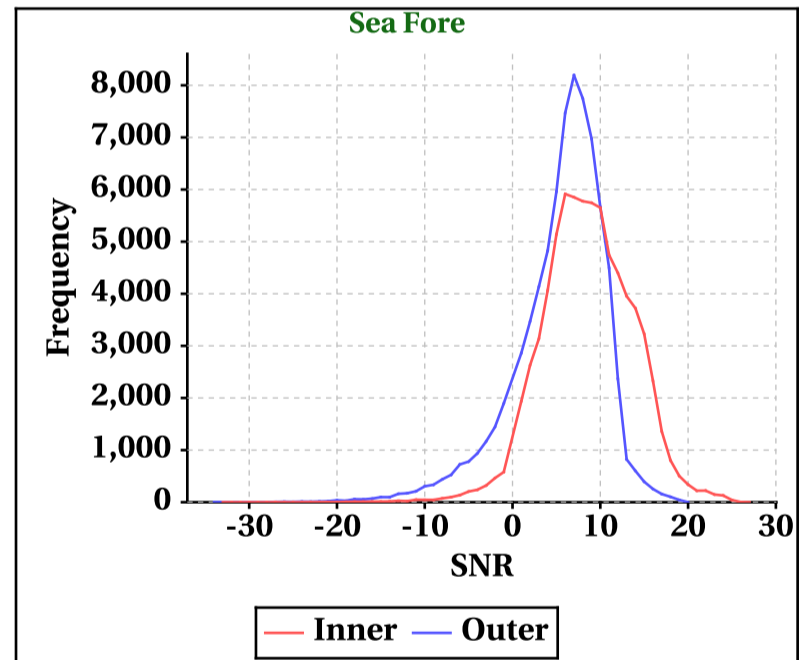
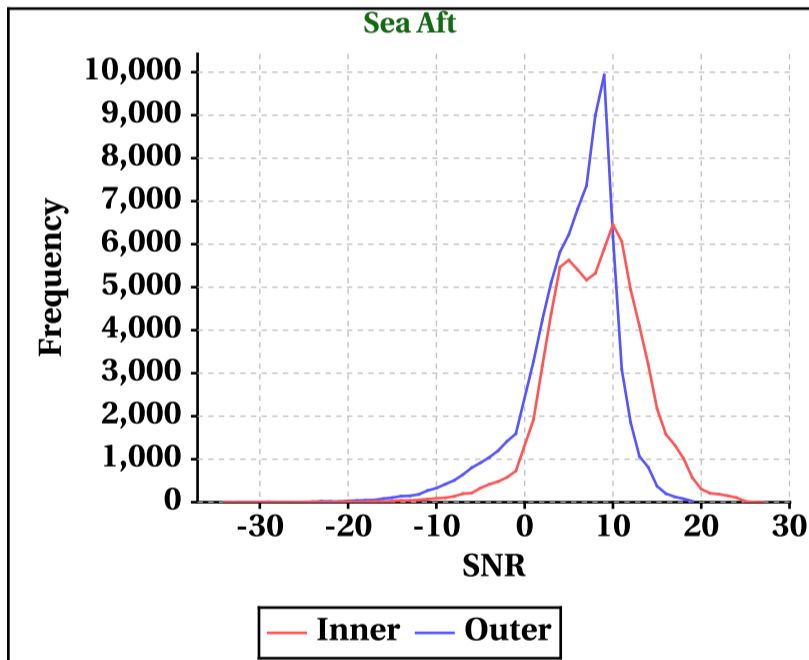
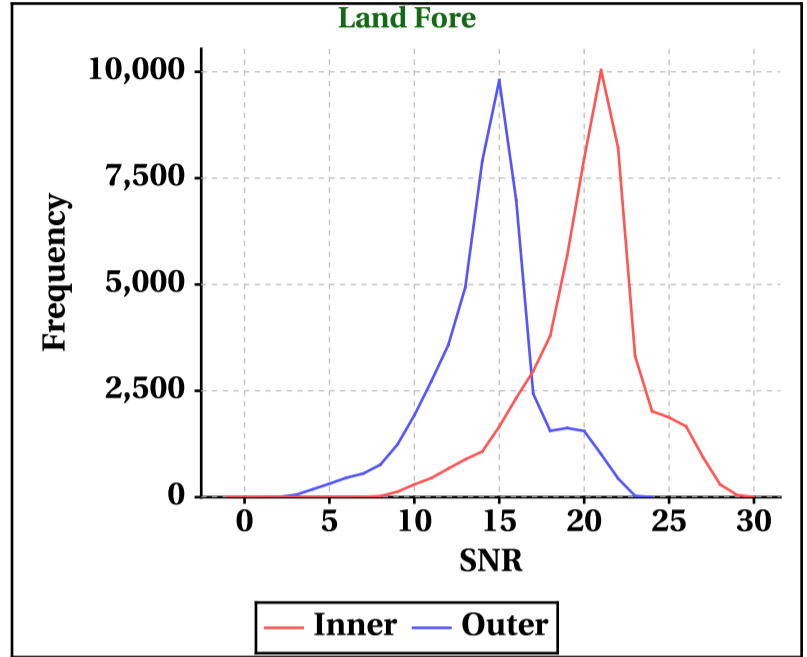
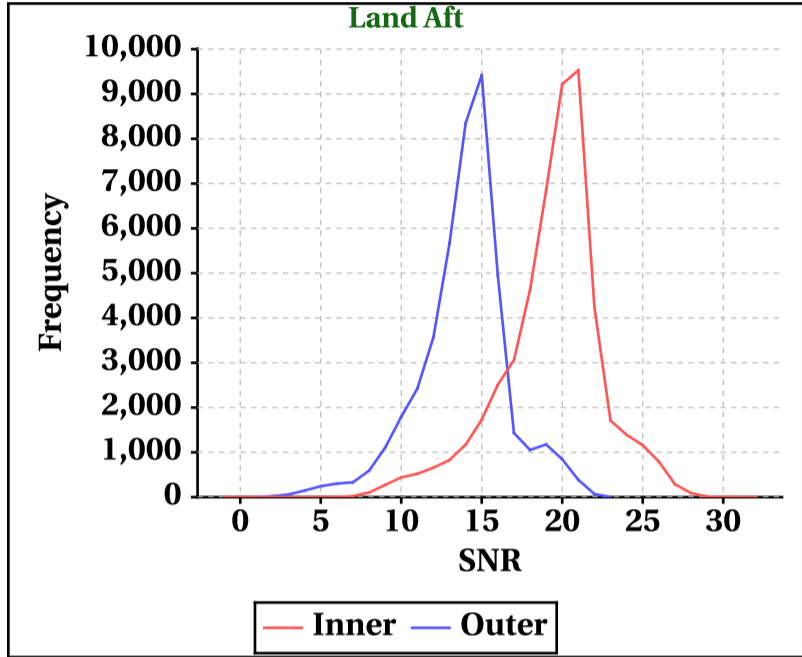


# Dynamic Range (Data Histograms)

## SNR(dBm)

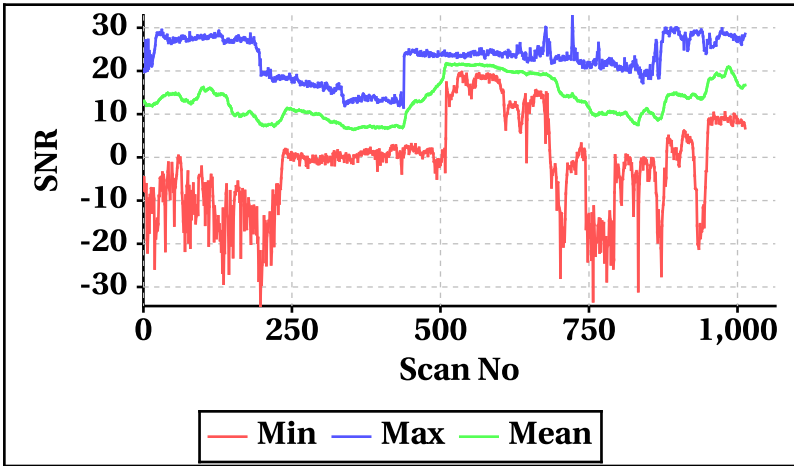
Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-1	-1	-34	-33
Max	32	30	27	27

Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	-34	-34
Max	23	24	19	20

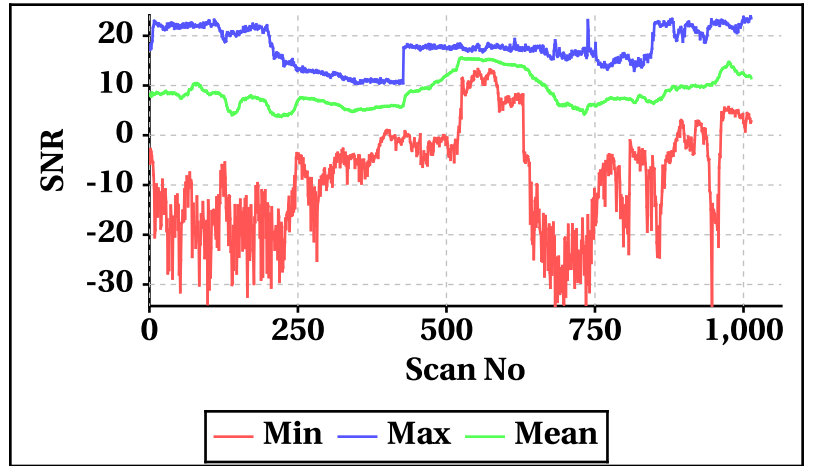


## Orbit-wise behaviour of SNR

**Inner Beam (HH)**

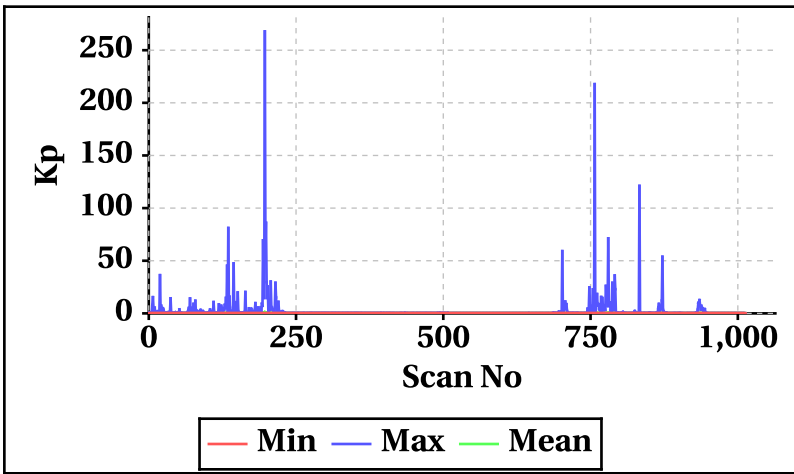


**Outer Beam(VV)**

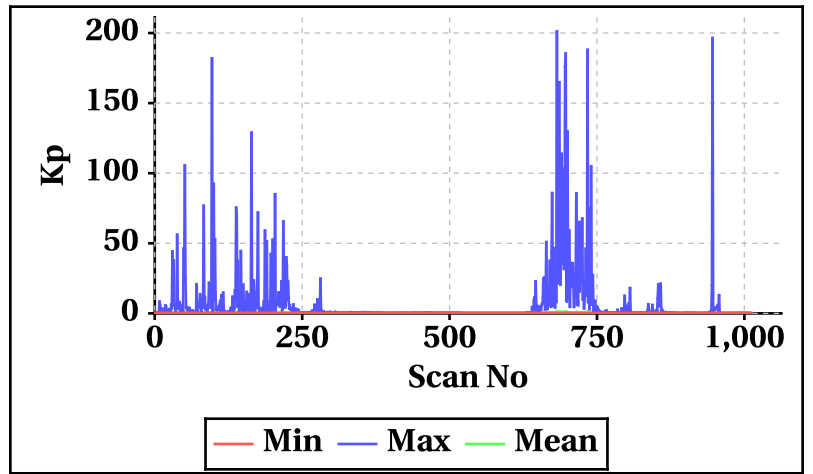


## Orbit-wise behaviour of Kp,Kpa,Kpb,Kpc

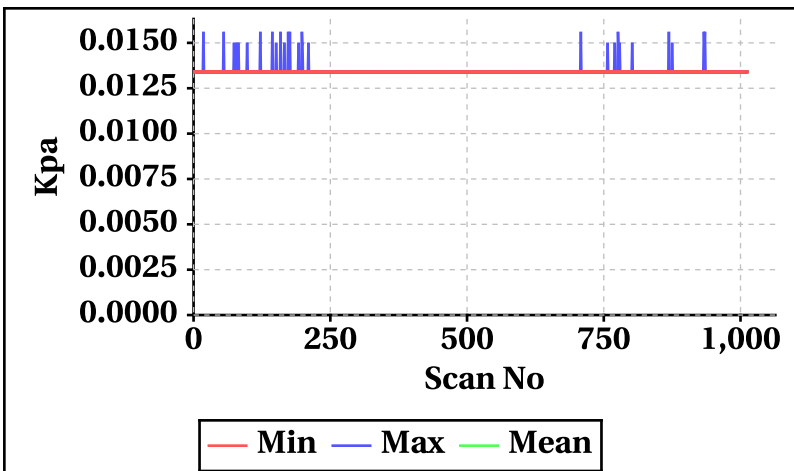
**Inner Beam(HH)**



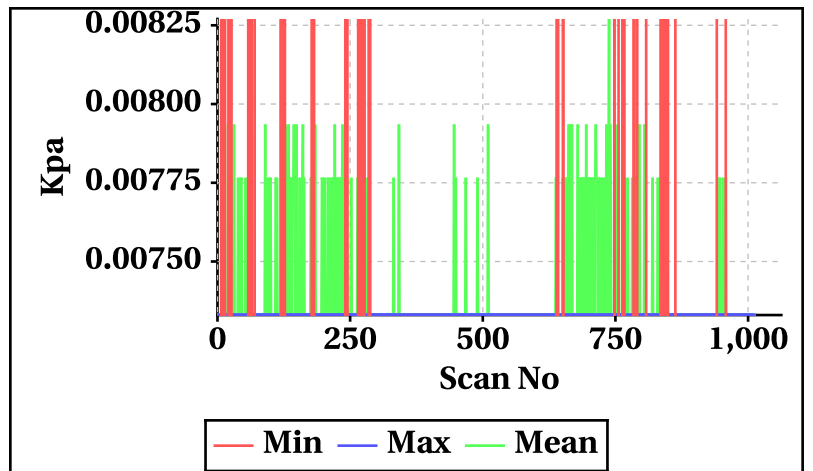
**Outer Beam(VV)**



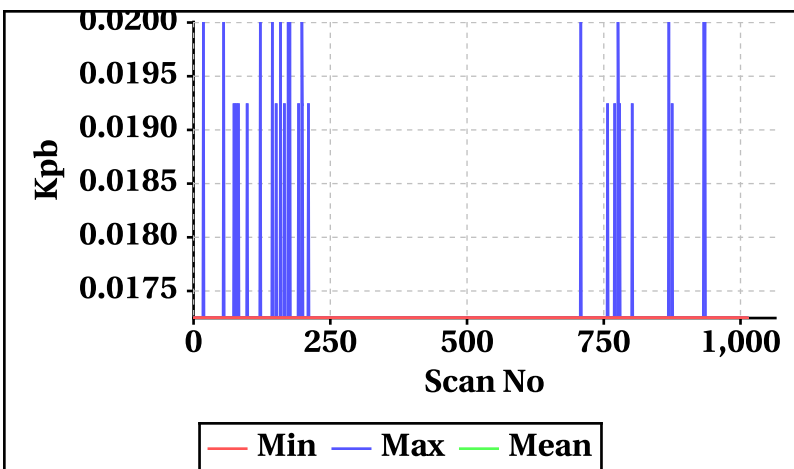
**Inner Beam(HH)**



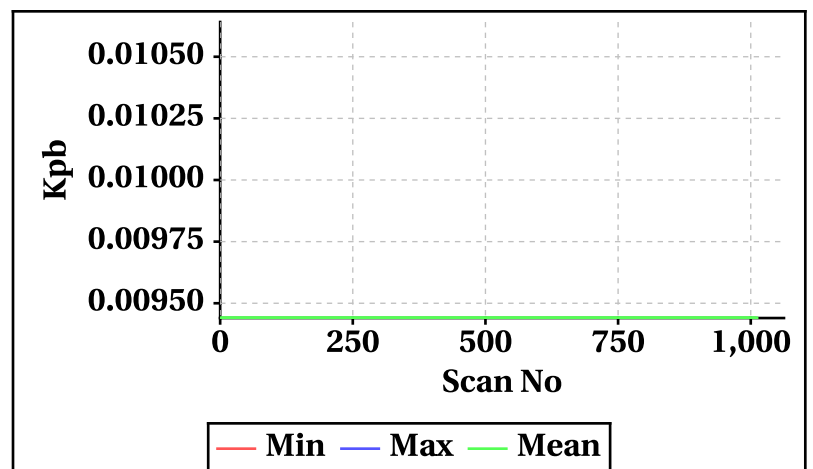
**Outer Beam(VV)**



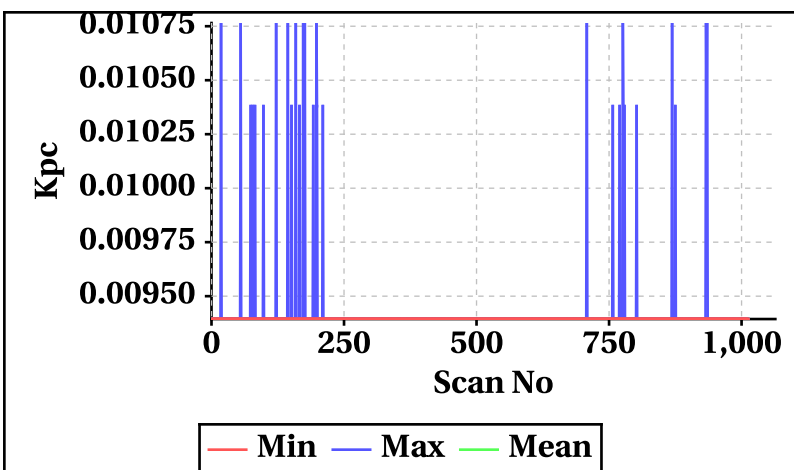
**Inner Beam(HH)**



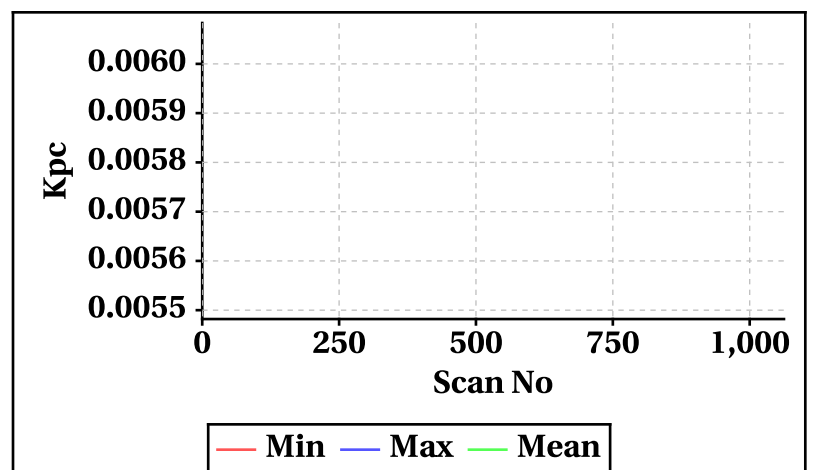
**Outer Beam(VV)**



**Inner Beam(HH)**



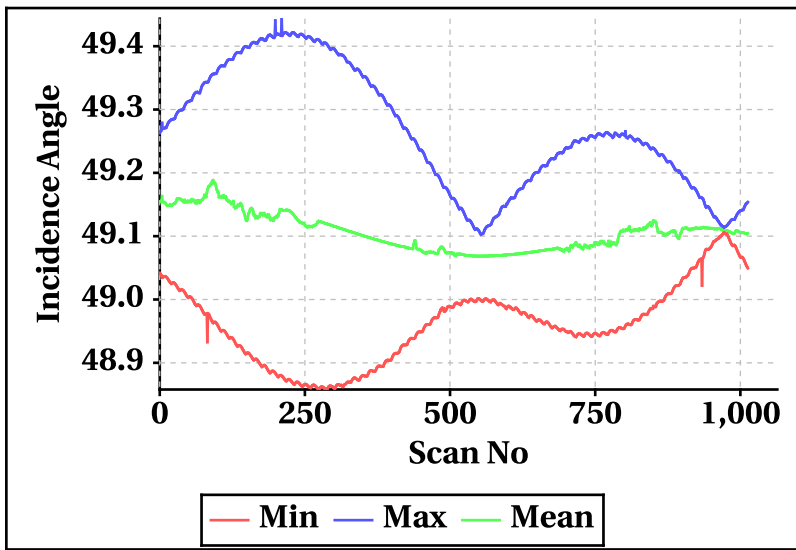
**Outer Beam(VV)**



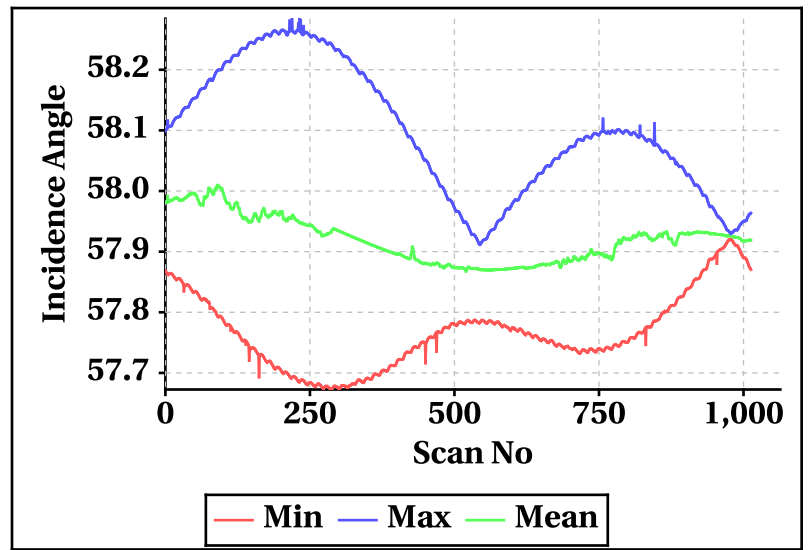


# Orbit-wise behaviour of Incidence, Azimuth, Range, X-Factor

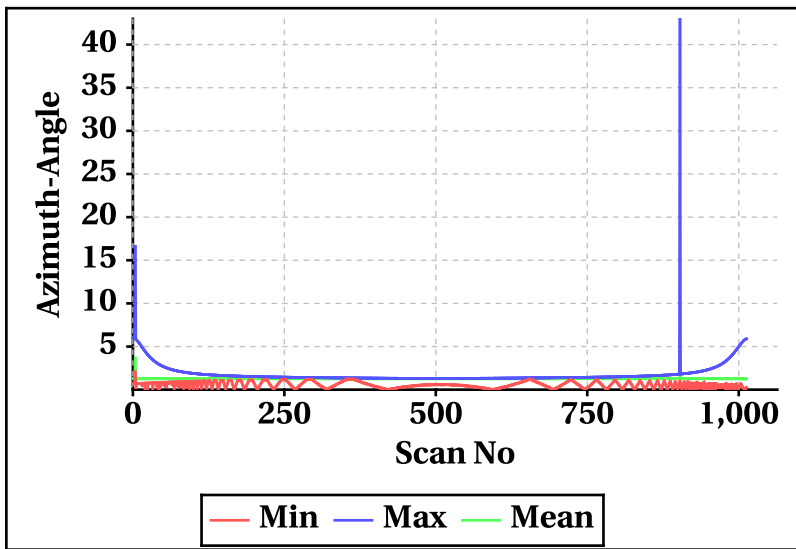
**Inner Beam (HH)**



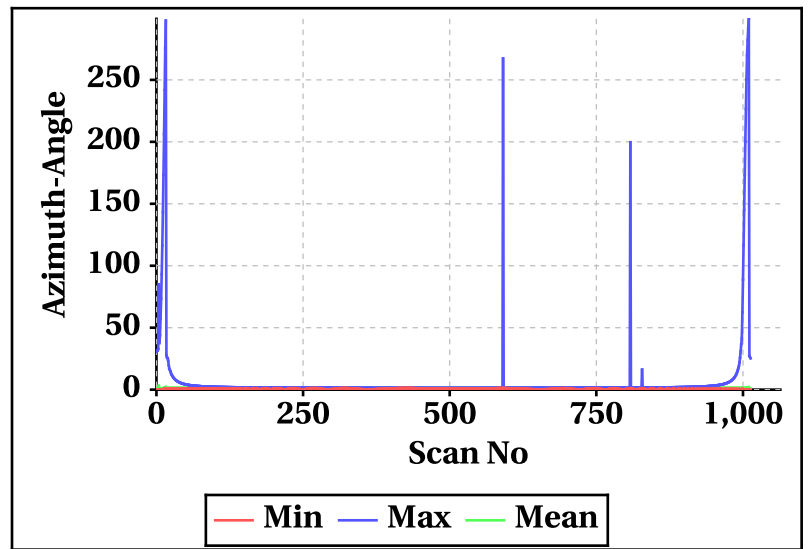
**Outer Beam(VV)**



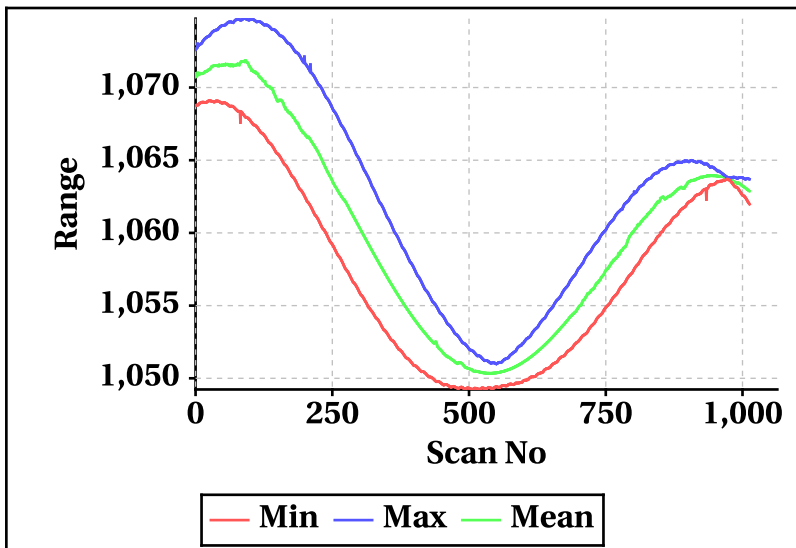
**Inner Beam (HH)**



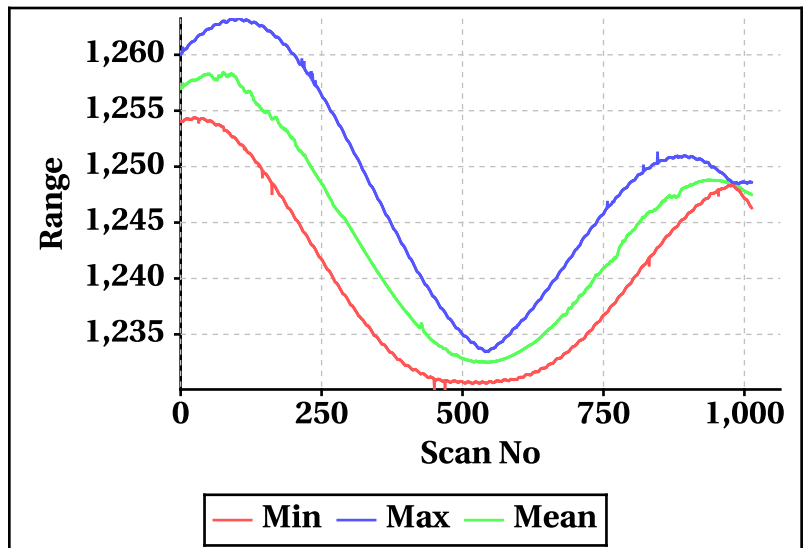
**Outer Beam(VV)**



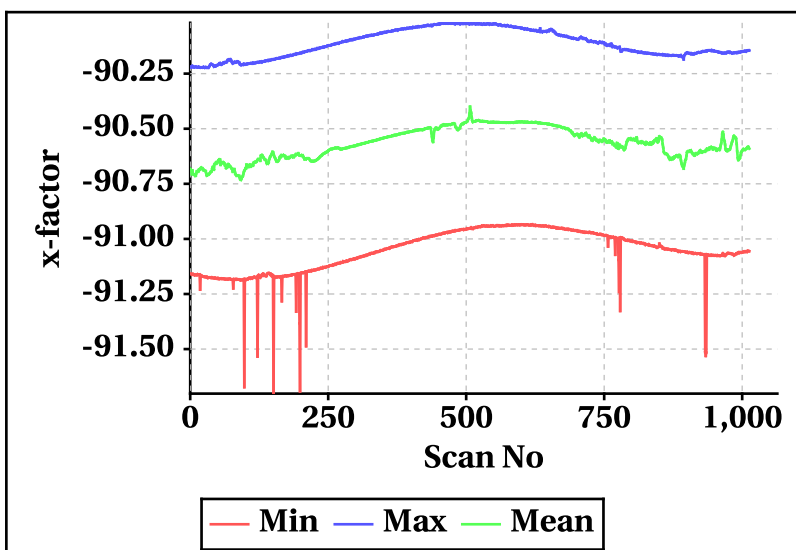
**Inner Beam (HH)**



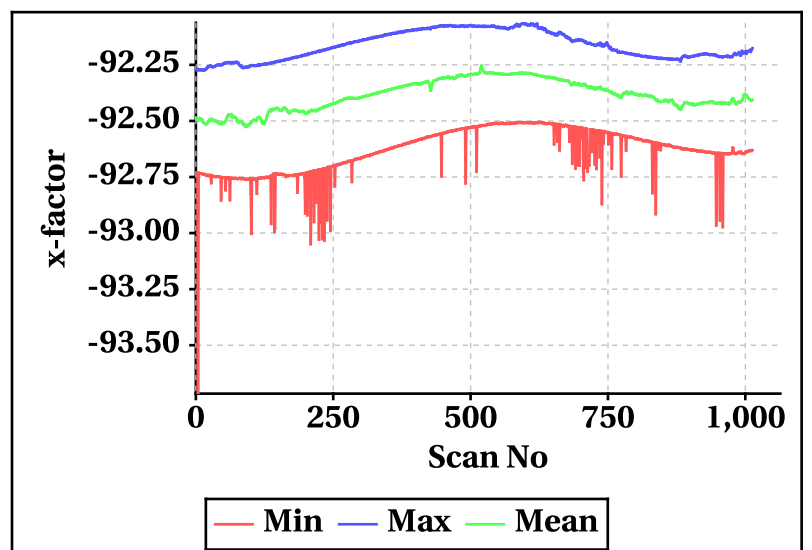
**Outer Beam(VV)**



**Inner Beam (HH)**



**Outer Beam(VV)**

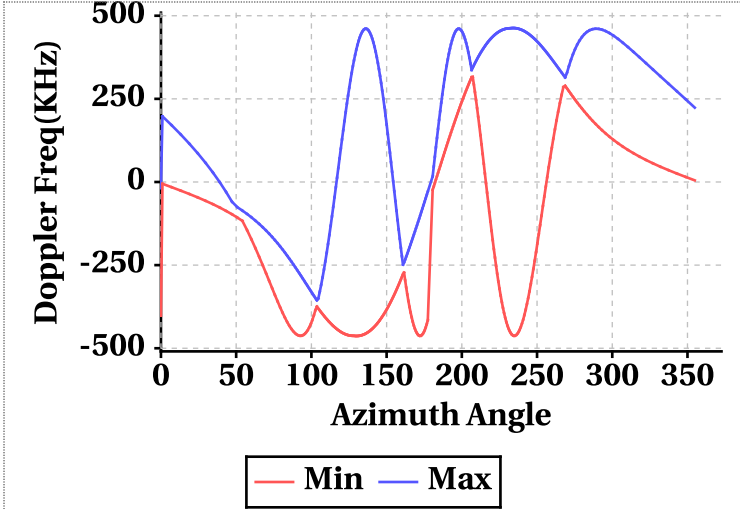


# Doppler Frequency Variation

Doppler Frequency(KHz) variation statistics Over the half Orbit

	Inner Beam (HH)	Outer Beam (VV)
Min	-463.10	-518.90
Max	462.90	518.76

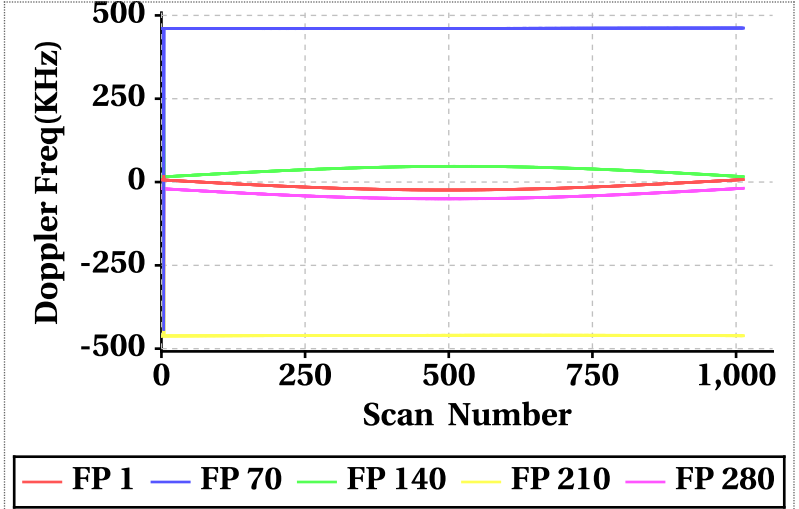
Footprint wise Doppler frequency variation Inner Beam (HH)



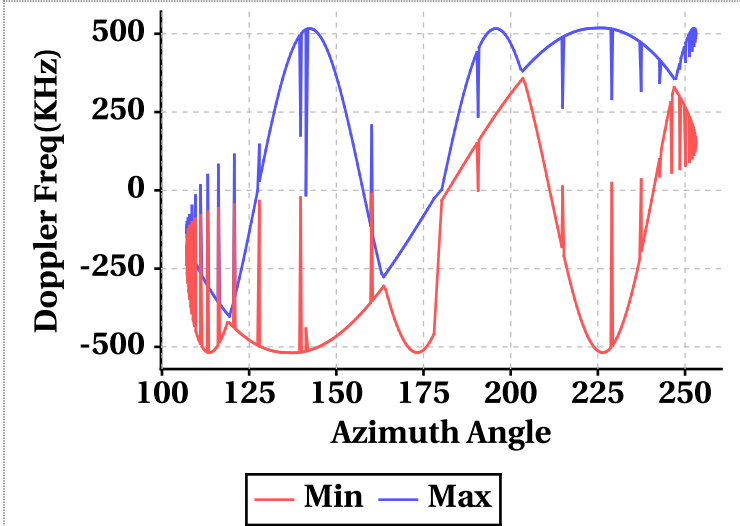
Doppler Frequency(KHz) variation

Doppler_FP	Inner Beam (HH)			Outer Beam (VV)		
	Min	Max	Mean	Min	Max	Mean
Doppler_1	-23.90	16.92	-12.60	-32.40	2.86	-19.73
Doppler_70	-442.22	462.04	460.13	-490.38	517.62	515.35
Doppler_140	15.14	248.68	35.88	11.32	264.86	34.40
Doppler_210	-461.94	306.04	-459.66	-517.76	355.32	-515.59
Doppler_280	-402.10	-18.68	-39.37	-442.04	-15.12	-38.22

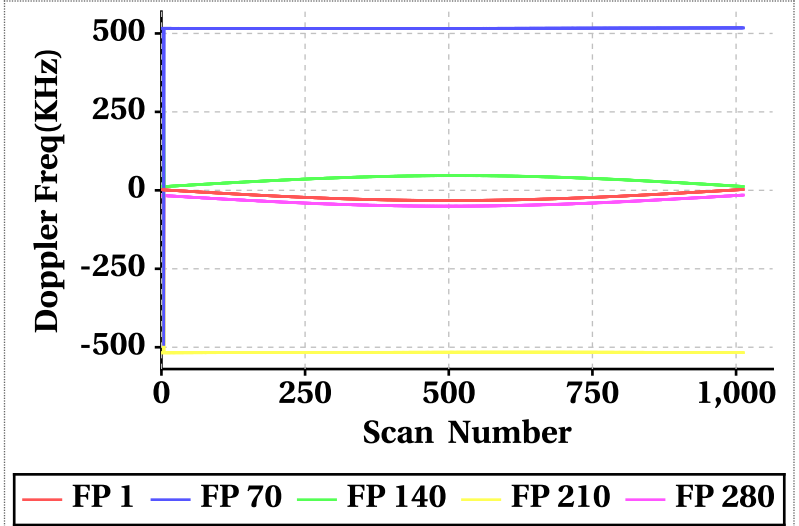
Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Inner Beam (HH)



Footprint wise Doppler frequency variation Outer Beam (VV)

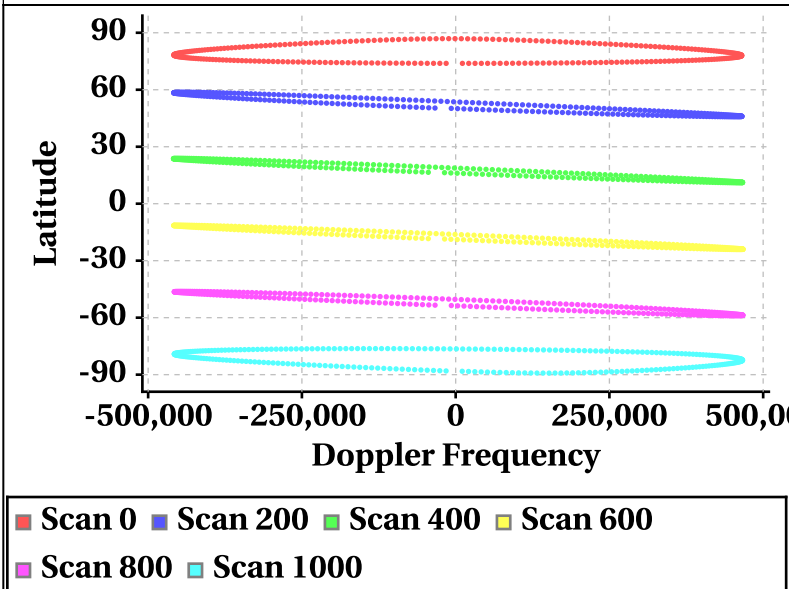


Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Outer Beam (VV)

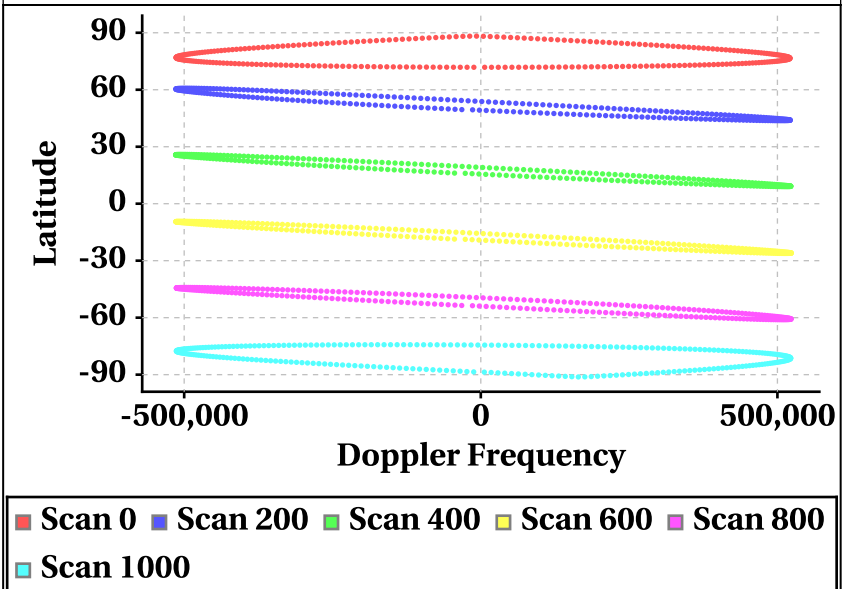


# Latitude Vs Doppler Frequency

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



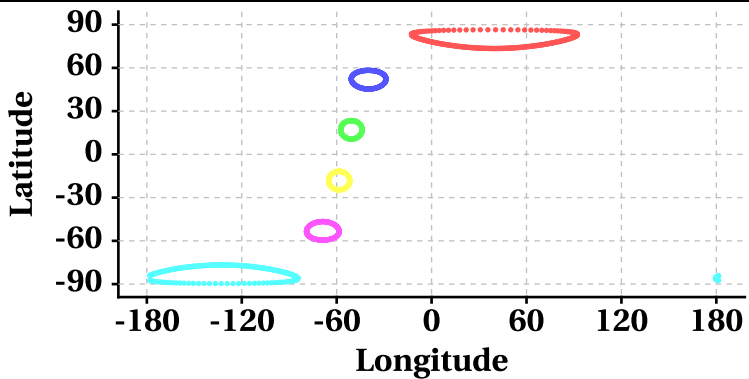
Doppler Frequency at Scan Interval of 200 [Outer Beam(VV)]



# Parameter as a function of Latitude

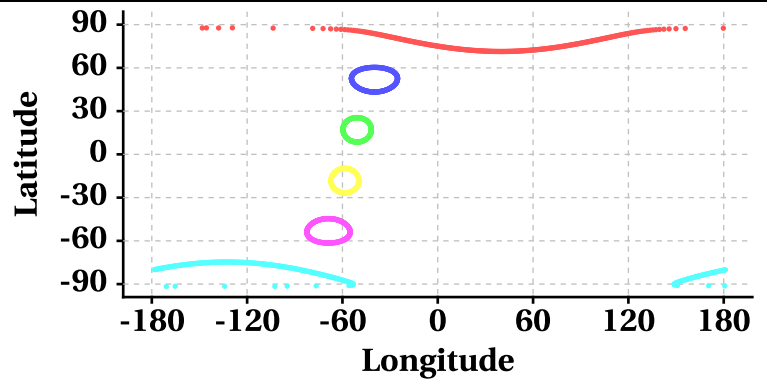
## Latitude Vs Longitude

Scan Trace [Inner Beam(HH)]



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

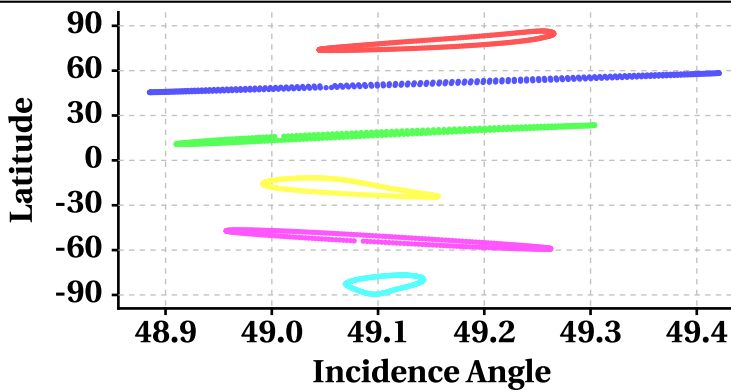
Scan Trace [Outer Beam (VV)]



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

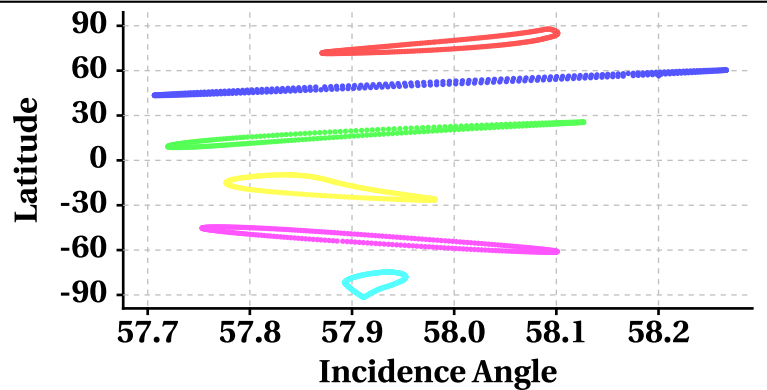
## Latitude Vs Incidence Angle

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



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

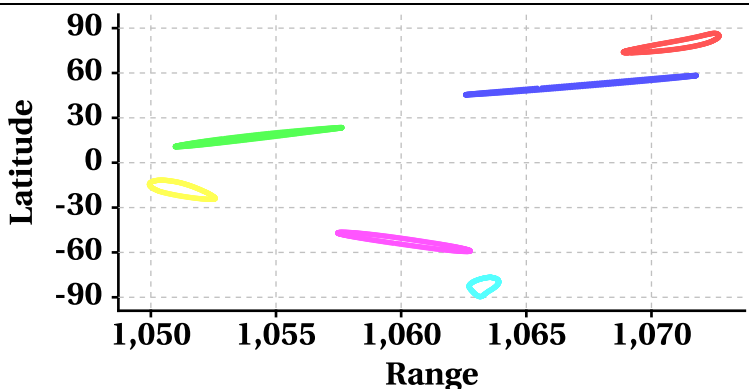
Incidence Angle at Scan Interval of 200 [Outer Beam (VV)]



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

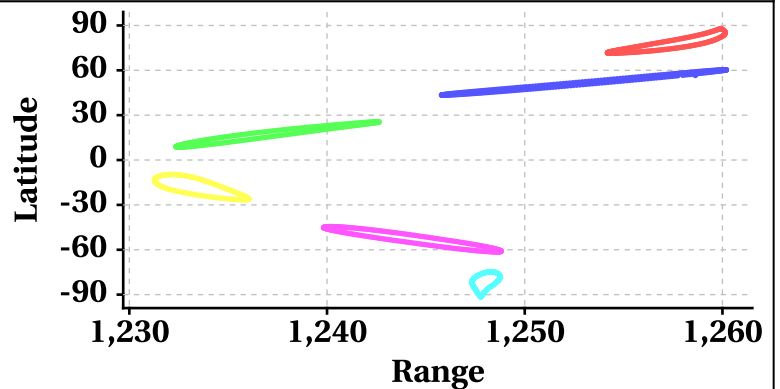
## Latitude Vs Range

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

