

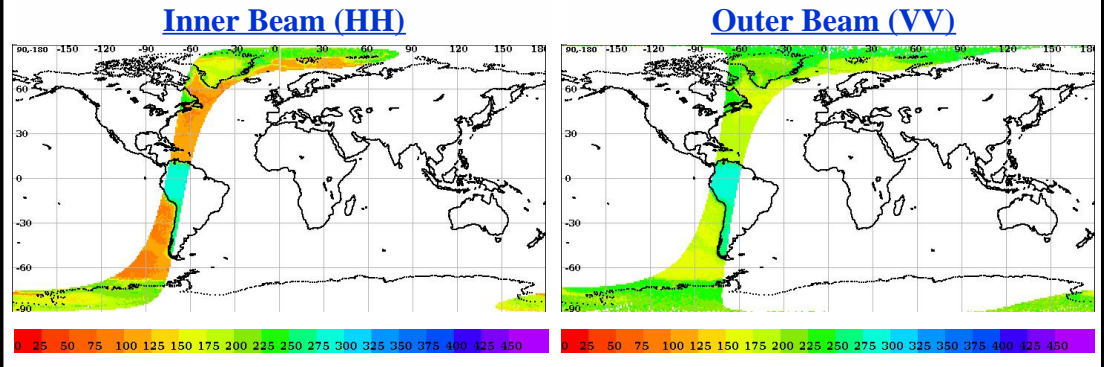
# SCATSAT-1 Scatterometer Level-1B Data Quality Evaluation Report

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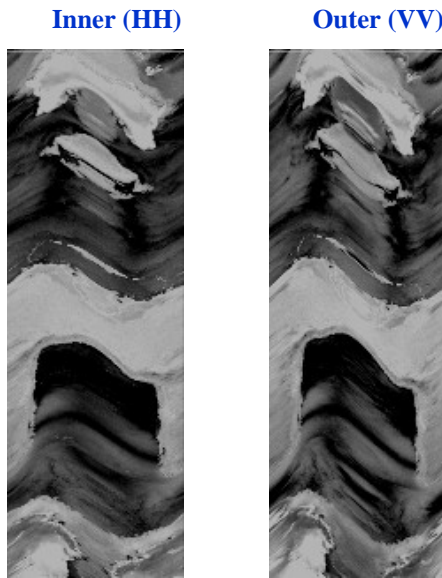
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<b>Satellite Id</b>	ScatSat-1	<b>Start Orbit</b>	11561	<b>Total Scans</b>	1017
<b>Sensor Name</b>	Scatterometer	<b>End Orbit</b>	11562	<b>No of Inner FootPrints</b>	281
<b>Processor Version</b>	v1.1.3	<b>Rev. Number</b>	11561_11562	<b>No Of Outer FootPrints</b>	282
<b>Half Orbit Direction</b>	NS	<b>Data Production Date</b>	02-12-2018	<b>No. Of Inner Slices</b>	9
<b>Equator Crossing Date</b>	02-12-2018	<b>Equator Crossing Time</b>	13:15:10.000	<b>No Of Outer Slices</b>	15

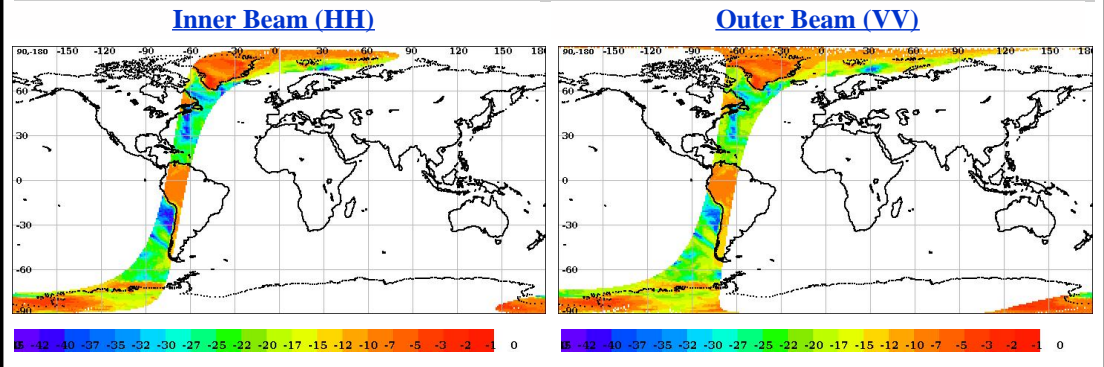
## Brightness Temperature(k) Footprint trace



## Image Snapshot for Inner & Outer Beam



## Sigma0(dB) Footprint trace



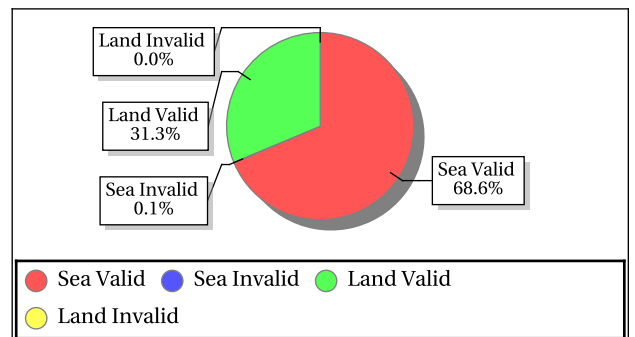
## Invalid and Poor Sigma-0 Quality Flag Statistics for Inner/Outer Slices\*

Sigma-0 Flags	Inner Beam	Outer Beam
Invalid Sigma0(%)	0.10	0.10
Data Not Available From Payload (%)	100.0	100.0
Slice not within sample array limits (%)	0.00	0.00
C(S+N) - C(N) < 0.1 (%)	0.00	0.00
Poor Sigma0(%)	22.23	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 (%)	0.032887	0.069007

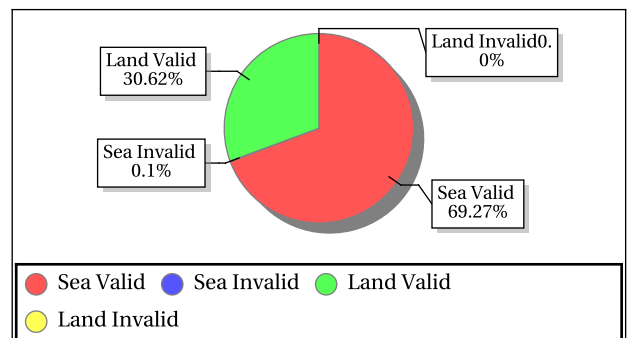
\*DP Format Document

## 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	-6.30	-4.97	-5.43	0.51	154.05	185.96	173.99	12.09
GreenLand_2	77.50	-41.50	Inner	DSC	Fore	-5.75	-4.58	-5.11	0.42	136.37	175.15	159.31	14.95
GreenLand_3	71.55	-42.45	Inner	DSC	Aft	-12.47	-10.75	-11.44	0.51	176.65	202.32	189.11	8.46
GreenLand_3	71.55	-42.45	Inner	DSC	Fore	-12.29	-10.69	-11.62	0.40	171.24	216.67	195.26	12.31
GreenLand_1	74.69	-42.50	Inner	DSC	Aft	-10.87	-7.96	-8.96	0.79	139.73	207.17	176.07	17.16
GreenLand_1	74.69	-42.50	Inner	DSC	Fore	-10.07	-8.08	-9.00	0.55	153.35	194.14	172.32	11.11
Amazon_1	0.00	-67.00	Inner	DSC	Aft	-9.43	-6.54	-8.13	0.67	259.53	328.20	294.53	17.12
Amazon_1	0.00	-67.00	Inner	DSC	Fore	-9.47	-6.95	-8.02	0.69	253.23	323.41	289.02	15.86
GreenLand_2	77.50	-41.50	Outer	DSC	Aft	-5.74	-4.22	-5.06	0.67	190.69	232.15	209.20	15.55
GreenLand_2	77.50	-41.50	Outer	DSC	Fore	-5.52	-4.75	-5.17	0.30	194.68	226.48	215.30	11.16
GreenLand_3	71.55	-42.45	Outer	DSC	Aft	-13.00	-11.06	-11.99	0.54	202.12	243.73	220.54	11.10
GreenLand_3	71.55	-42.45	Outer	DSC	Fore	-12.71	-11.41	-12.11	0.47	201.46	243.77	220.54	12.72
GreenLand_1	74.69	-42.50	Outer	DSC	Aft	-10.39	-7.46	-9.02	0.81	187.20	240.70	214.74	15.43
GreenLand_1	74.69	-42.50	Outer	DSC	Fore	-10.80	-8.49	-9.12	0.67	209.94	246.32	224.73	11.87
Amazon_2	-3.00	-61.00	Outer	DSC	Aft	-11.11	-8.51	-9.64	0.51	248.25	324.08	284.16	13.69
Amazon_2	-3.00	-61.00	Outer	DSC	Fore	-11.19	-8.66	-9.77	0.51	243.74	318.65	283.34	15.03
Amazon_1	0.00	-67.00	Outer	DSC	Aft	-9.94	-7.95	-8.91	0.48	259.01	345.77	292.13	16.65
Amazon_1	0.00	-67.00	Outer	DSC	Fore	-10.64	-7.95	-8.94	0.66	249.15	309.26	279.62	16.78



## 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	297.66	0.38	3.670	0.12	224.10	0.32	2.835	0.12	0.79	0.12	0.000	0.12	0.21	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>	-34.87	25.05	5.51	0.558	-33.64	24.87	5.65	1.133	-8.57	29.11	19.91	23.884	-0.32	30.42	20.85	40.918

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	219.06	0.27	2.397	0.09	227.71	0.27	2.309	0.09	0.18	0.09	0.000	0.09	0.17	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>	-34.71	17.85	3.61	0.000	-34.88	21.75	3.30	0.000	-1.44	22.68	14.24	0.084	-1.25	24.03	14.75	1.062

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>	48.80	49.48	49.05	0.000	57.64	58.28	57.97	0.000	Inci.(Inner)	47.10	49.90
<b>Azimuth Diff. (deg)</b>	0.0000	52.41	1.27	2.791	0.0000	295.91	1.28	3.892	Inci.(Outer)	57.30	58.90
<b>Range(Km)</b>	1046.95	1075.23	1057.60	0.000	1227.70	1263.70	1242.20	0.000	Azimuth Diff.	0.60	2.00
<b>X Factor(dbm)</b>	-91.70	-89.95	-90.44	0.000	-93.72	-92.00	-92.17	0.000	Range(Inner)	1025.00	1095.70
<b>Across Distance (Km)</b>	15.65	16.23	15.82	0.000	10.22	36.78	20.99	5.000	Range(Outer)	1210.00	1280.00
<b>Along Distance (Km)</b>	18.88	8517.92	36.44	2.000	3.77	8303.49	35.93	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

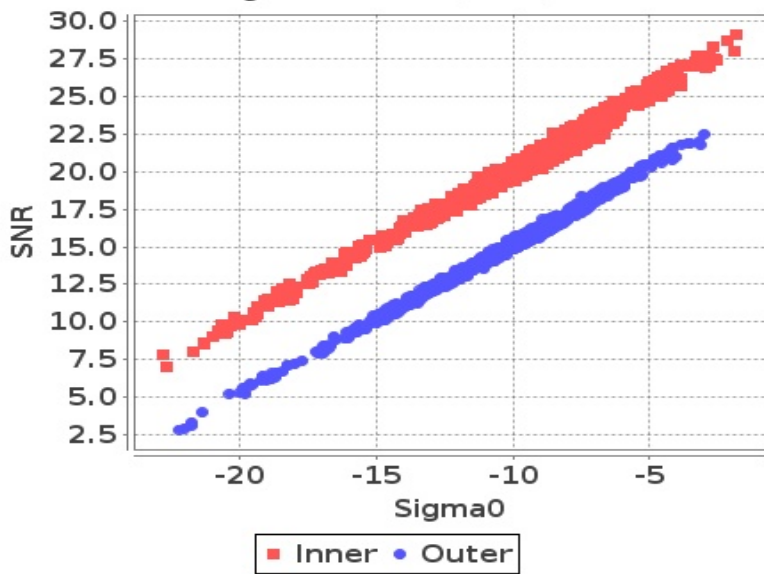
- Normal
- Deviations
- Alarming
- High Errors



## Sigma0 Behaviour (Sigma0 Vs SNR)

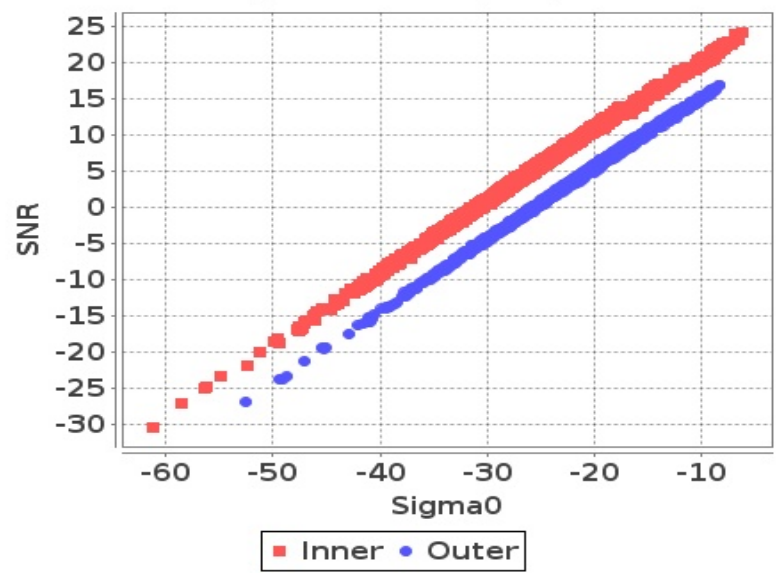
Footprint-Land

Sigma0 Vs SNR (Land)



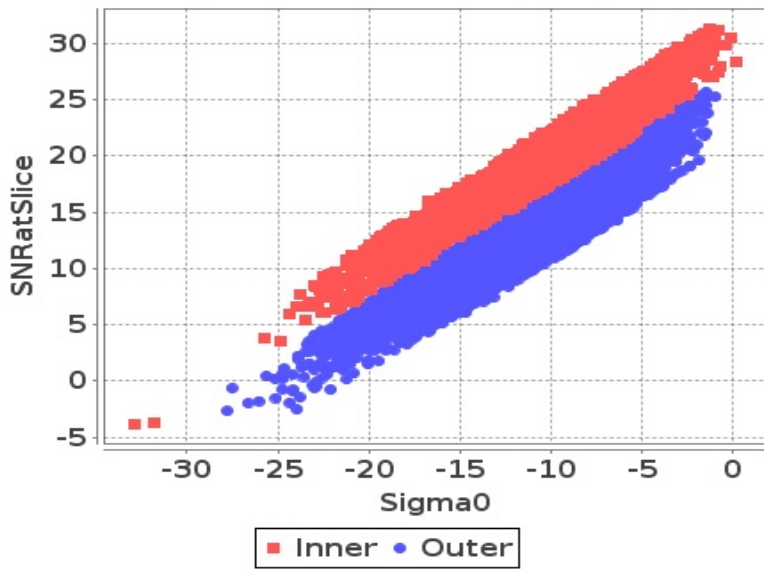
Footprint-Sea

Sigma0 Vs SNR (Sea)



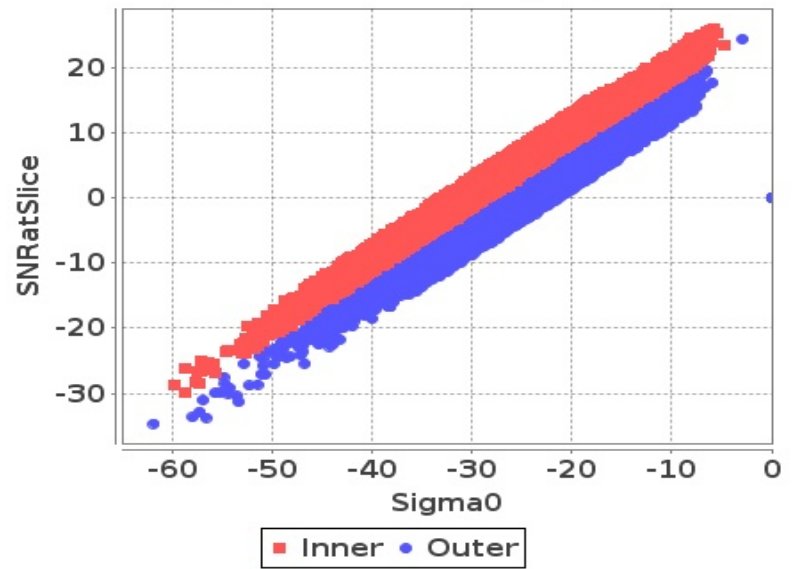
Slice-Land

Sigma0 Vs SNRatSlice (Land)



Slice-Sea

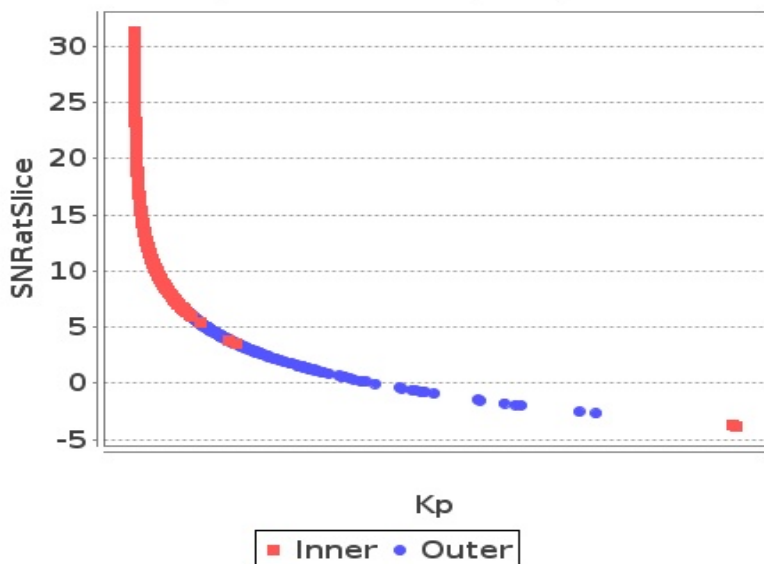
Sigma0 Vs SNRatSlice (Sea)



## Sigma0 Behaviour (Kp Vs SNR)

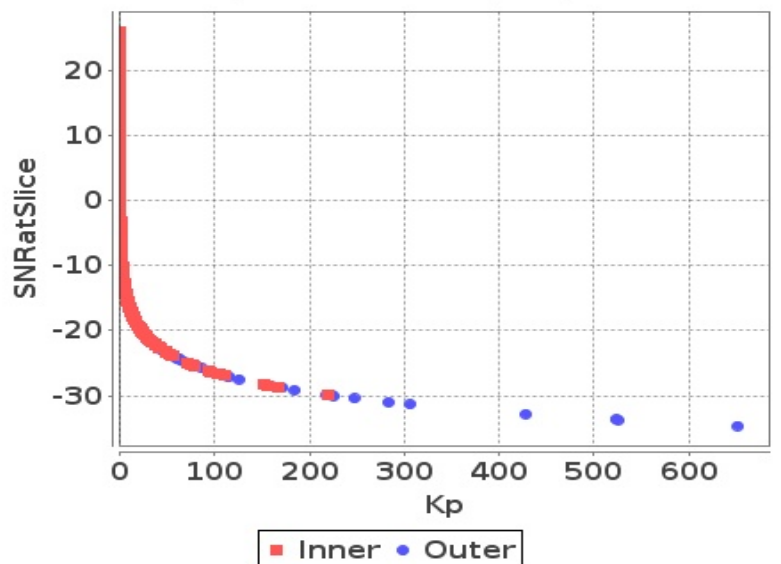
Slice

Kp Vs SNRatSlice (Land)



Slice

Kp Vs SNRatSlice (Sea)

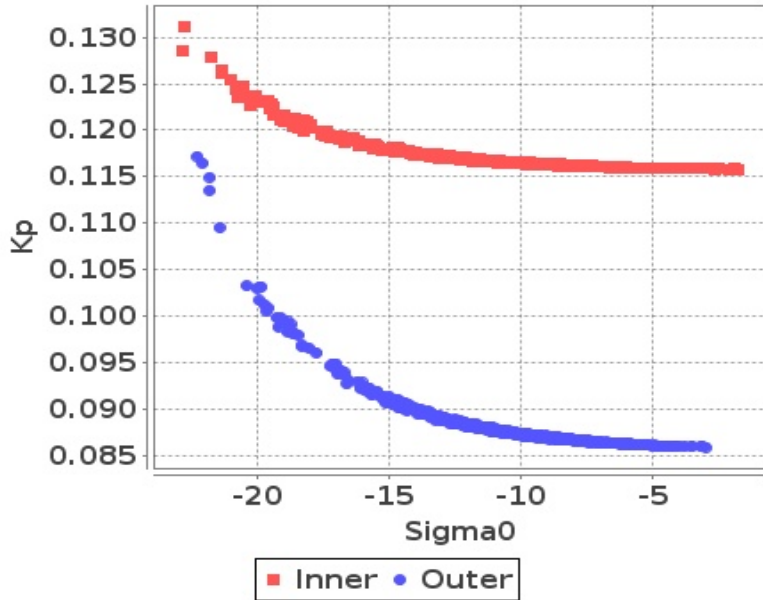




# Sigma0 Behaviour(Sigma0 Vs Kp)

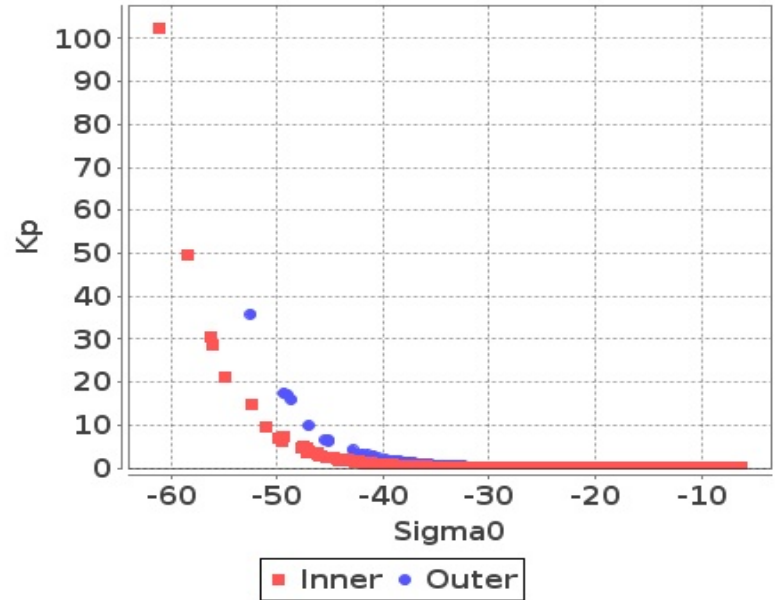
## Footprint-Land

### Sigma0 Vs Kp (Land)



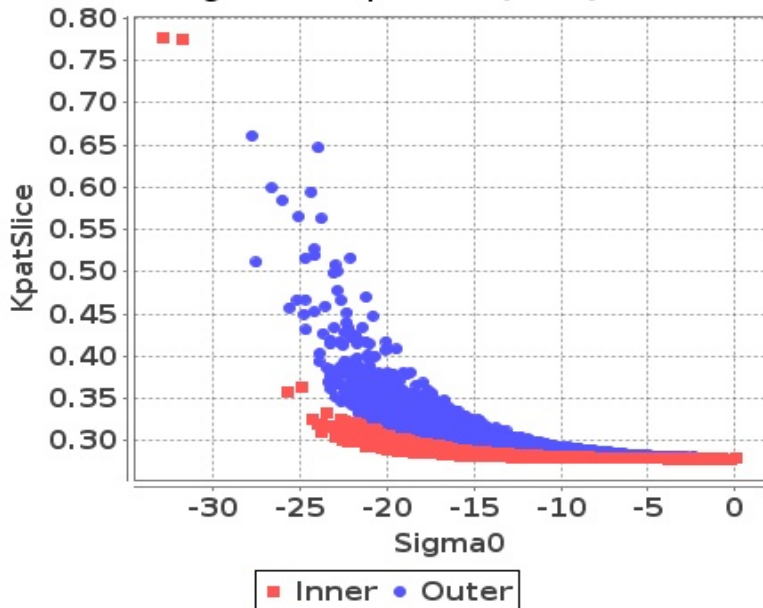
## Footprint-Sea

### Sigma0 Vs Kp (Sea)



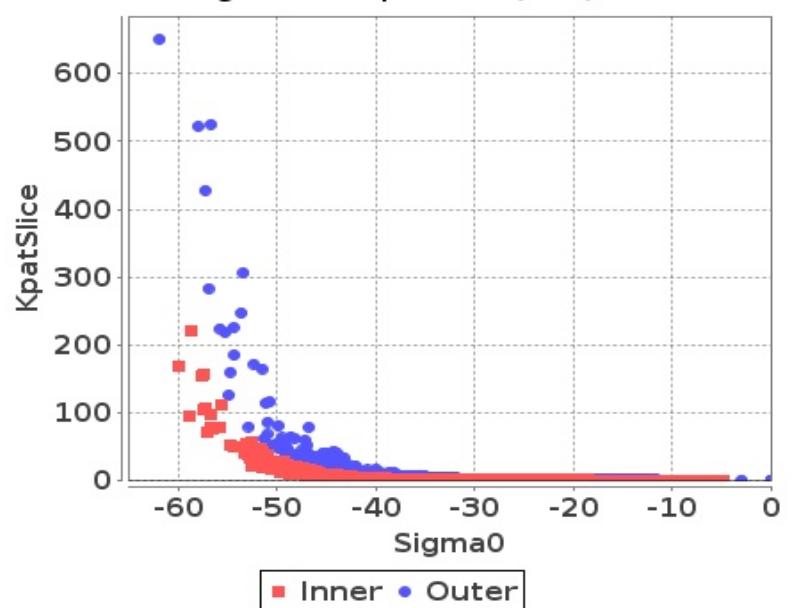
## Slice-Land

### Sigma0 Vs KpatSlice (Land)



## Slice-Sea

### Sigma0 Vs KpatSlice (Sea)

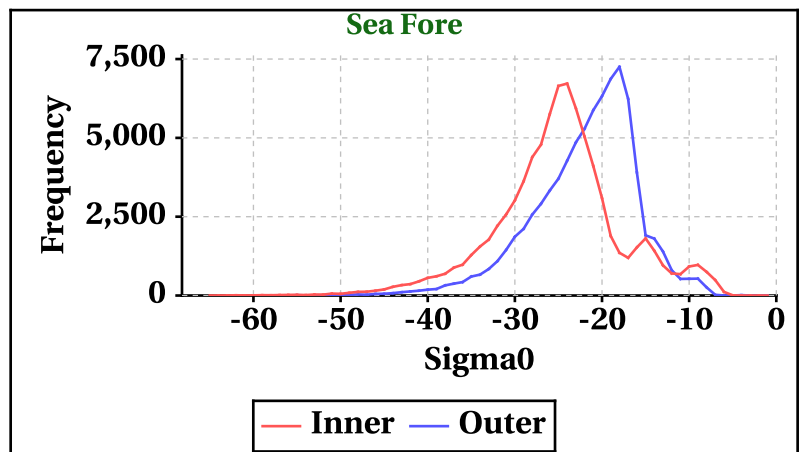
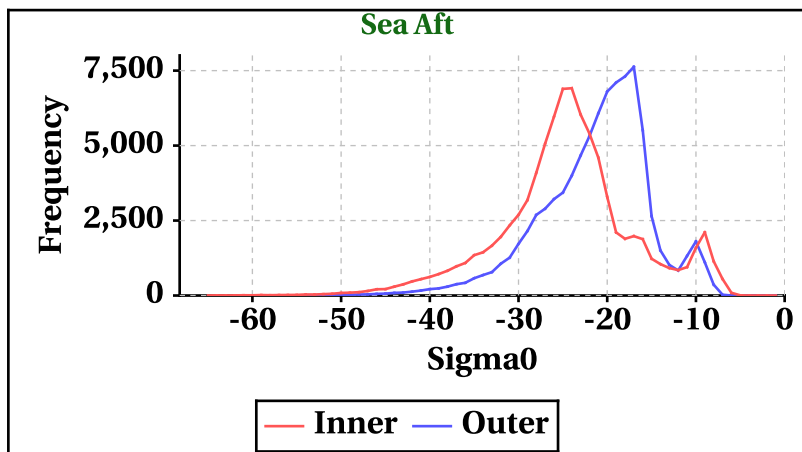
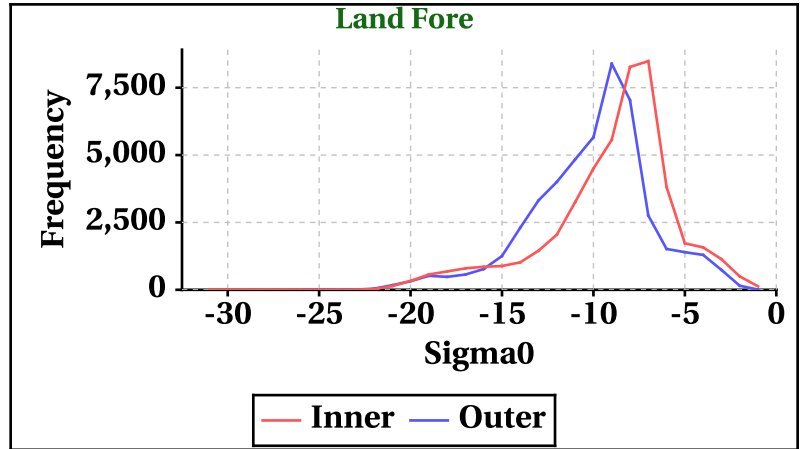
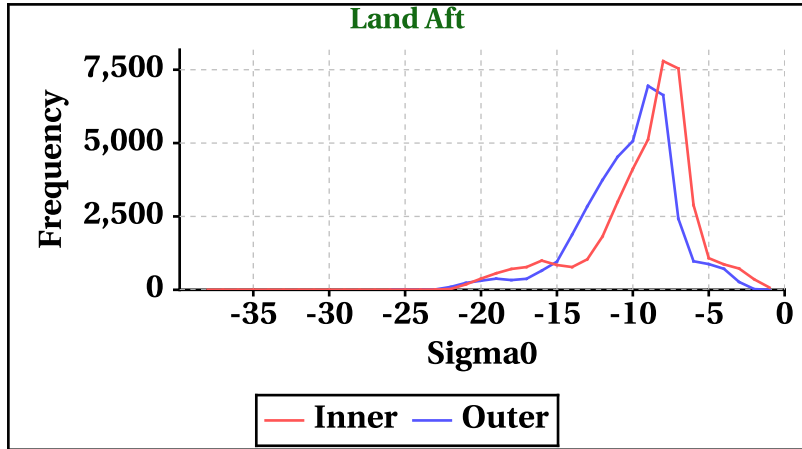


# Dynamic Range (Data Histograms)

## Sigma0(db)

Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-38	-31	-65	-65
Max	0	0	0	0

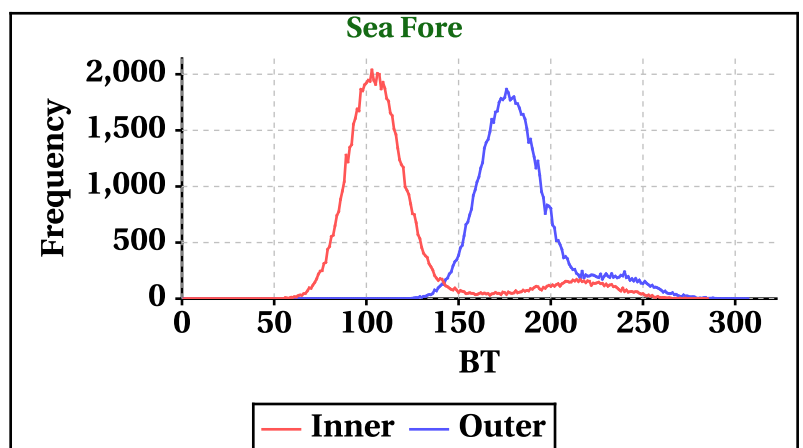
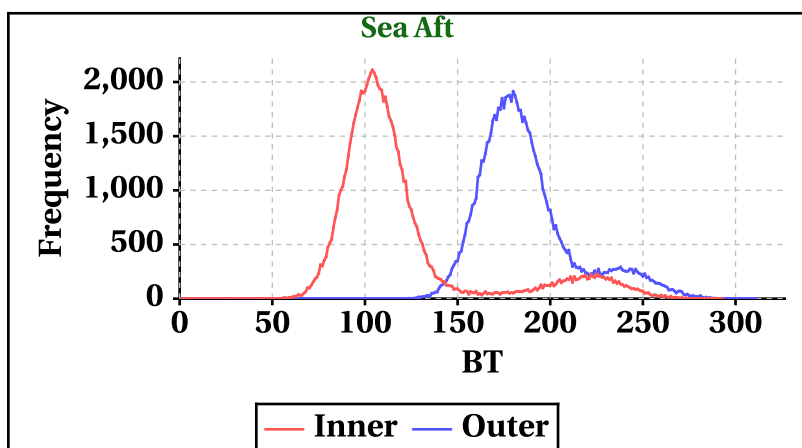
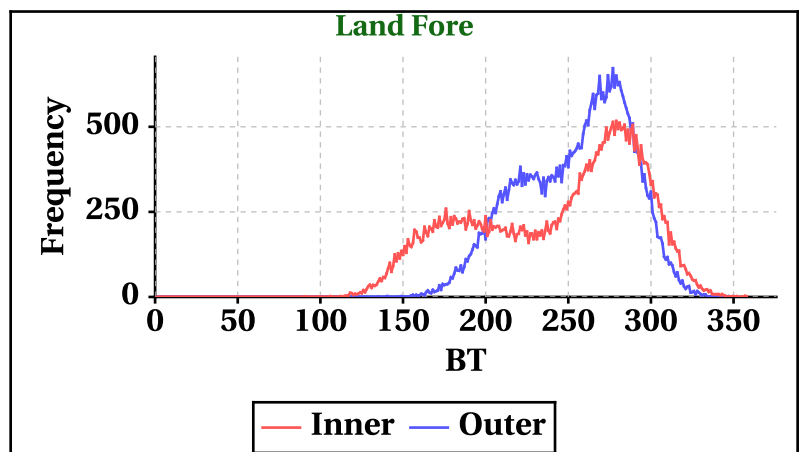
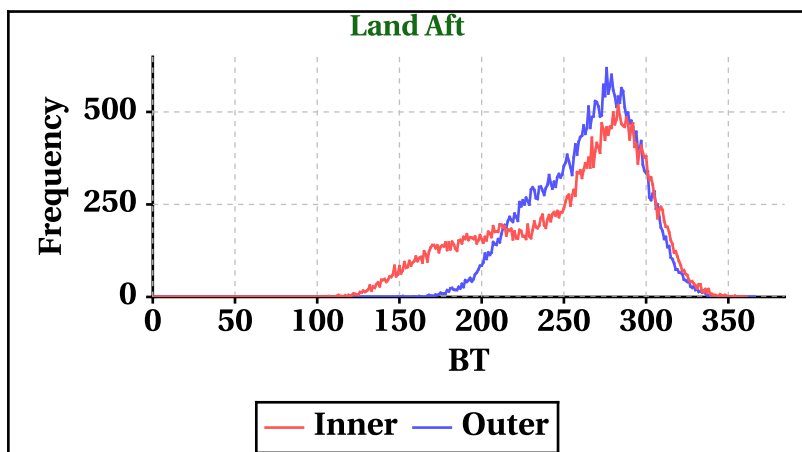
Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-26	-26	-60	-60
Max	0	0	0	0



## Brightness Temperature(K)

Inner Beam(HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	361	358	293	285

Outer Beam(VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	366	349	311	307

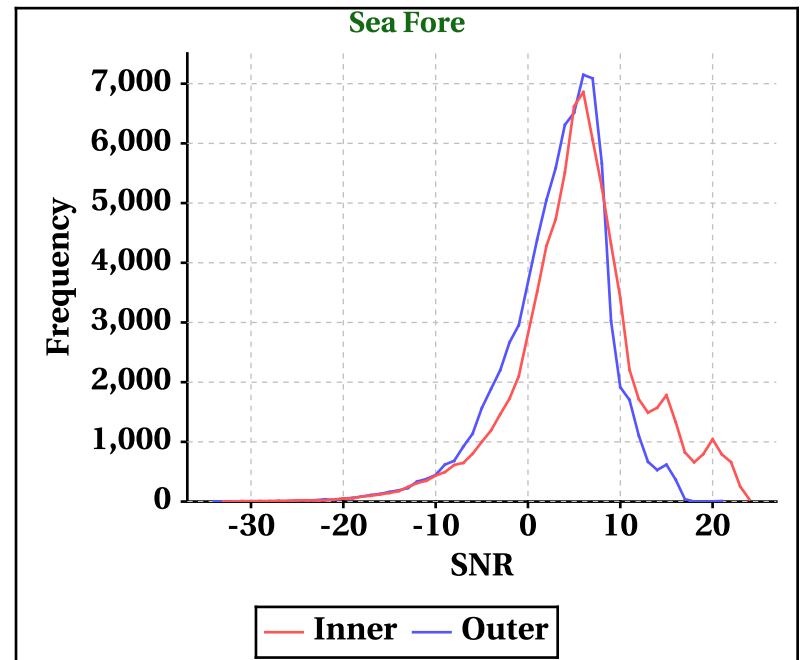
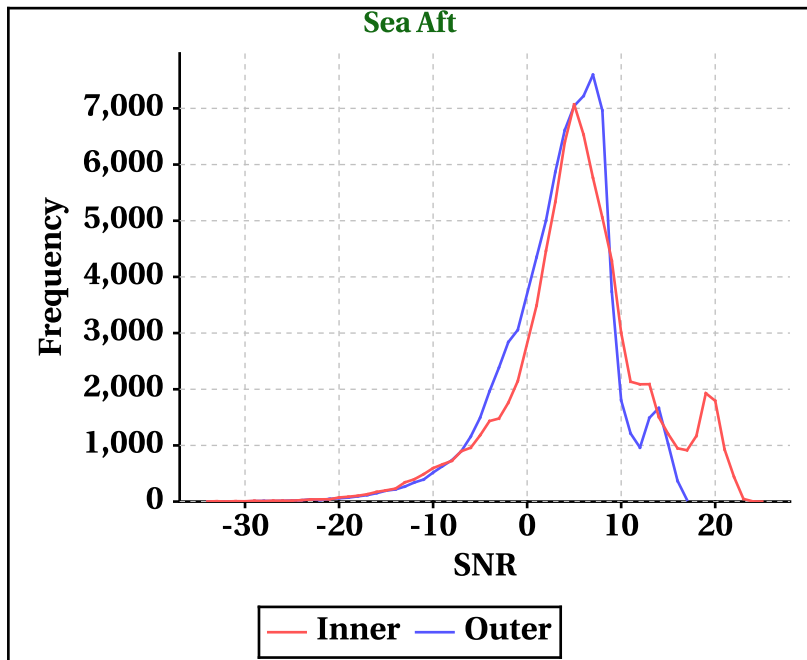
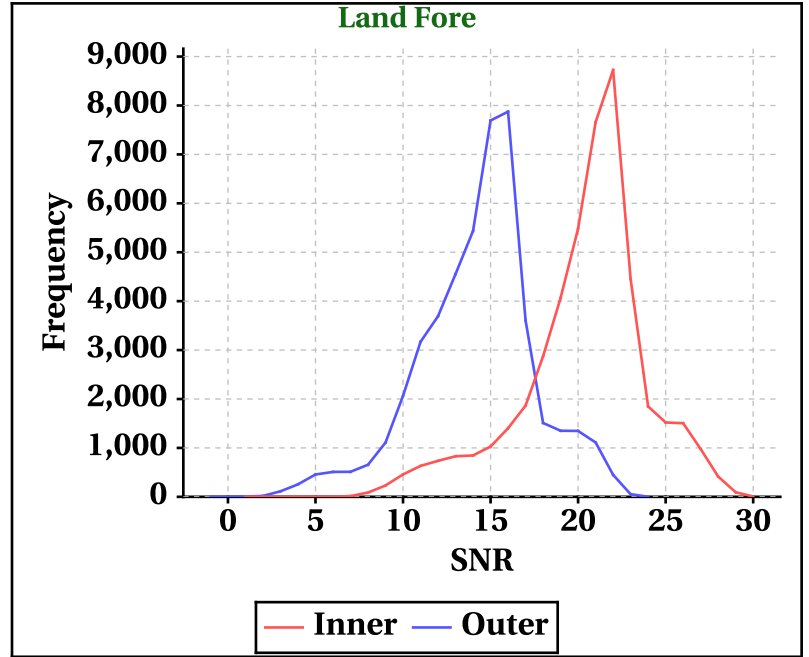
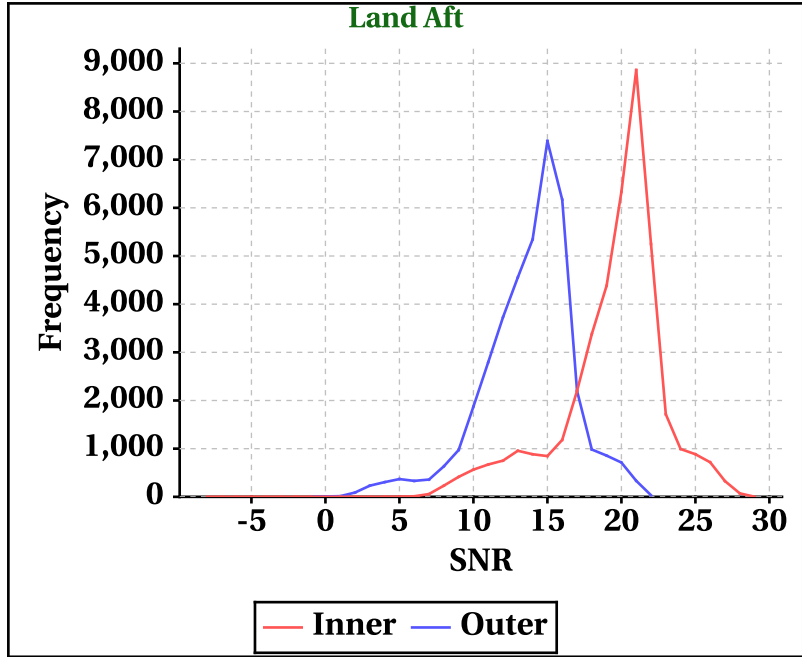


# Dynamic Range (Data Histograms)

## SNR(dBm)

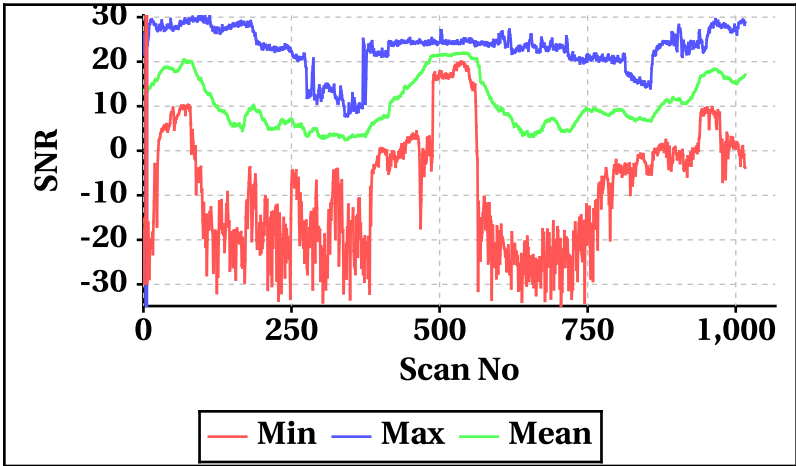
Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-8	0	-34	-33
Max	29	30	25	24

Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-1	-1	-34	-34
Max	22	24	17	21

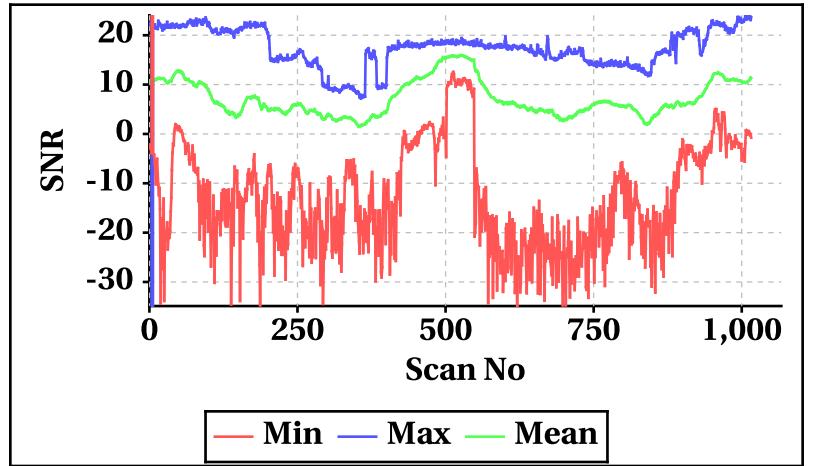


## Orbit-wise behaviour of SNR

Inner Beam (HH)

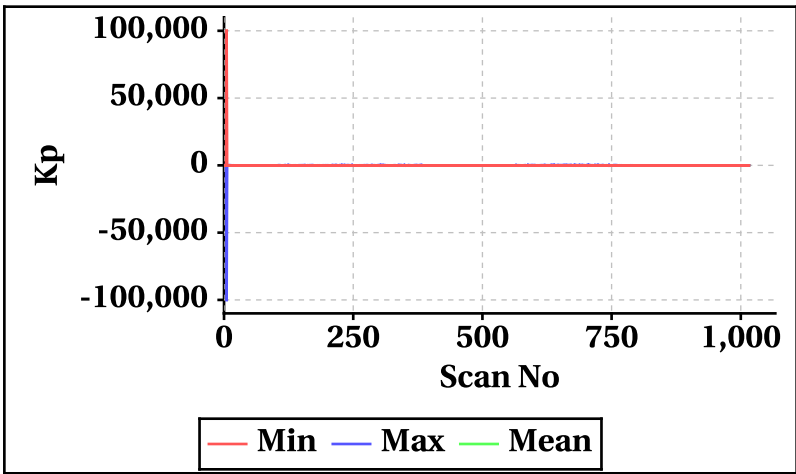


Outer Beam(VV)

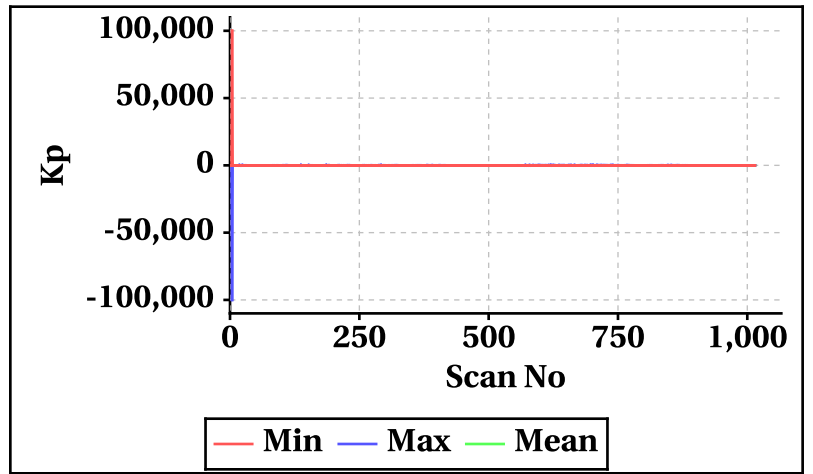


## Orbit-wise behaviour of Kp,Kpa,Kpb,Kpc

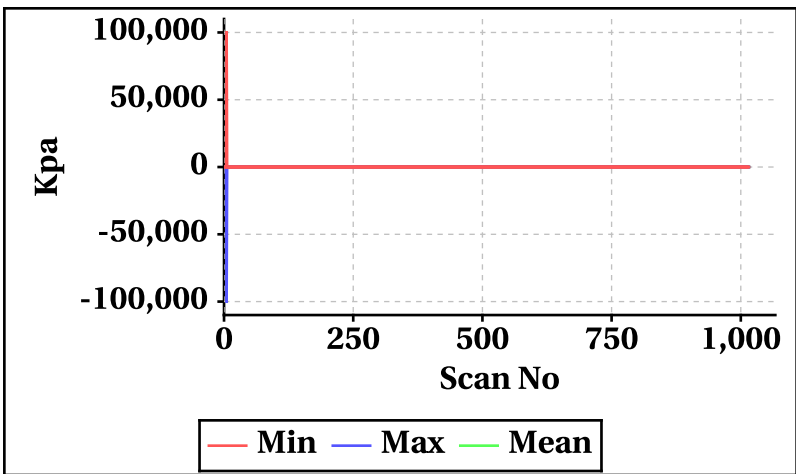
Inner Beam(HH)



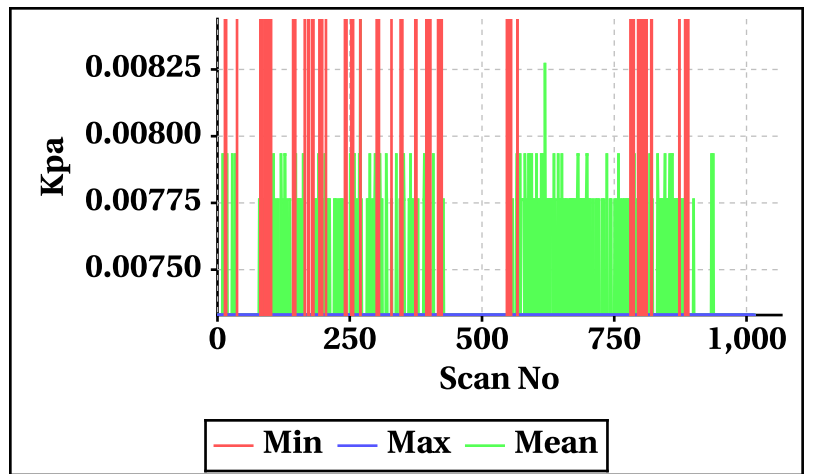
Outer Beam(VV)



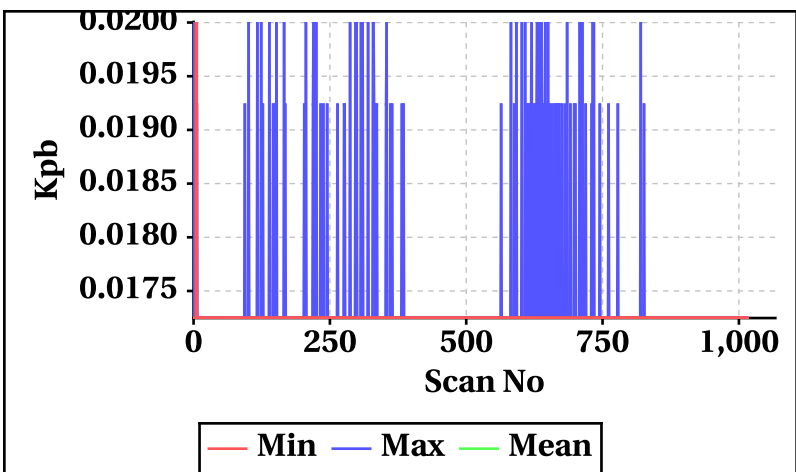
Inner Beam(HH)



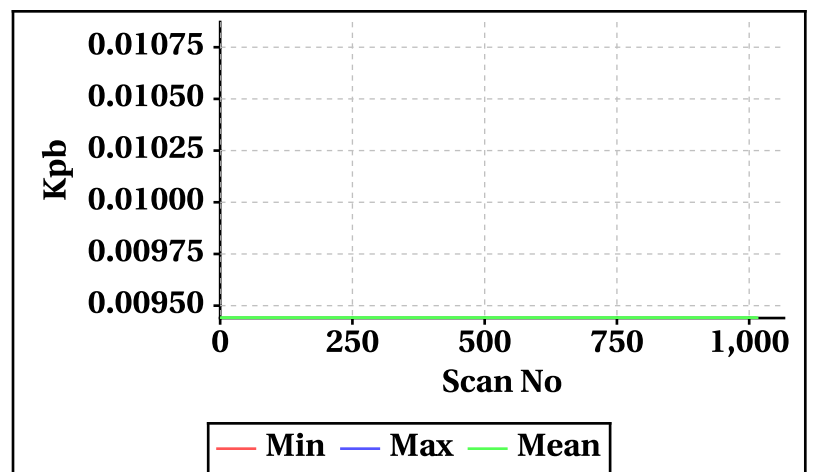
Outer Beam(VV)



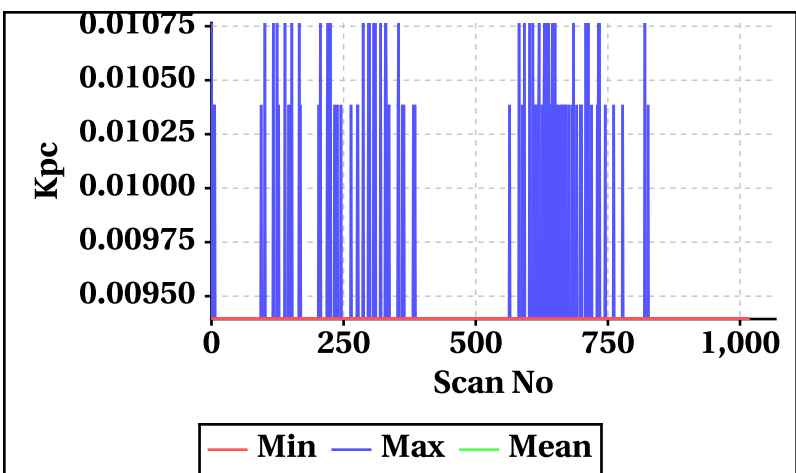
Inner Beam(HH)



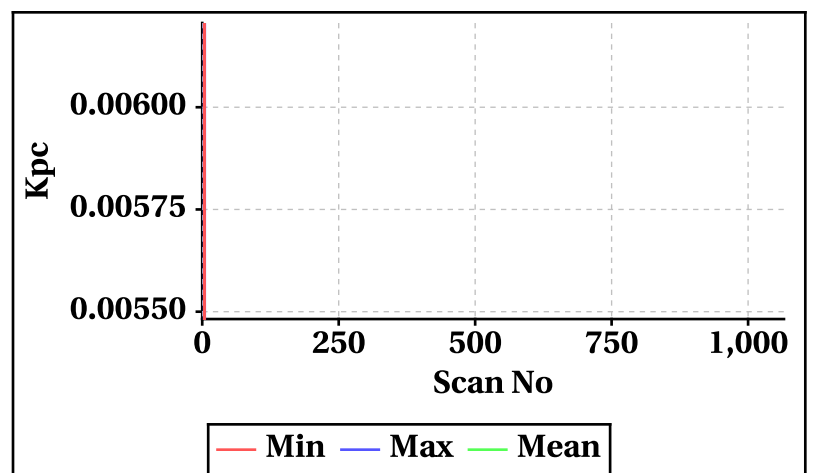
Outer Beam(VV)



Inner Beam(HH)



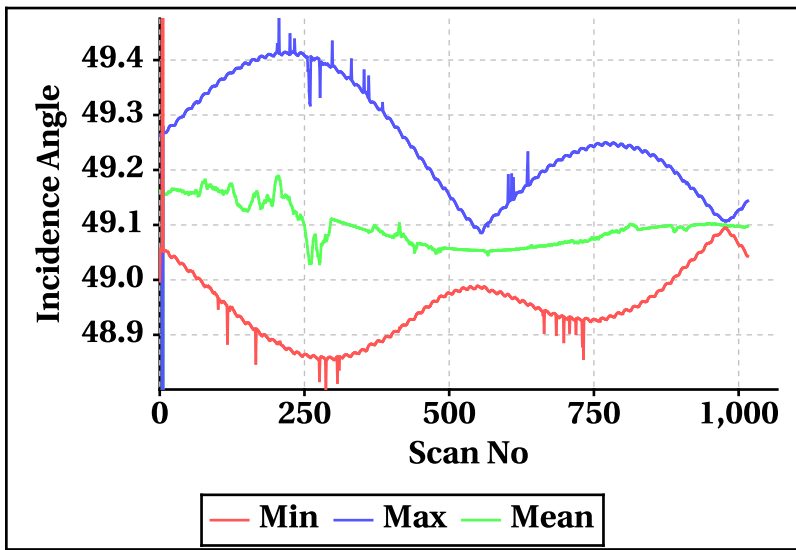
Outer Beam(VV)



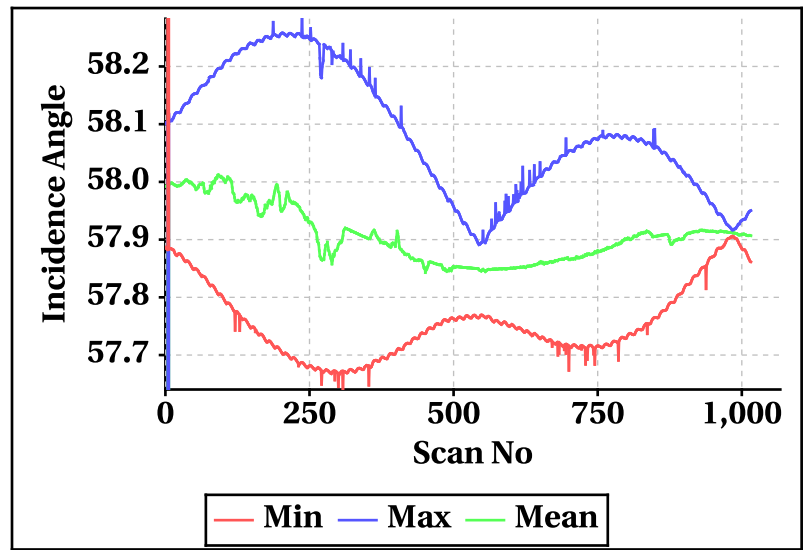


Orbit-wise behaviour of Incidence, Azimuth, Range, X-Factor

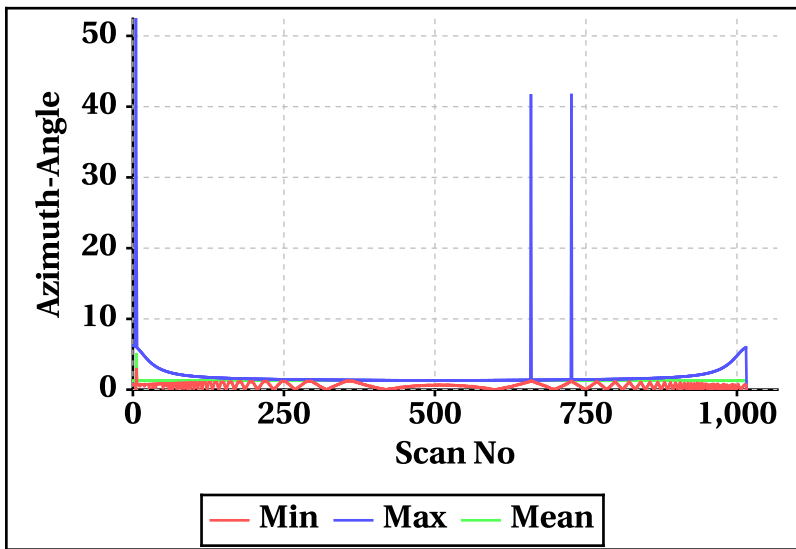
Inner Beam (HH)



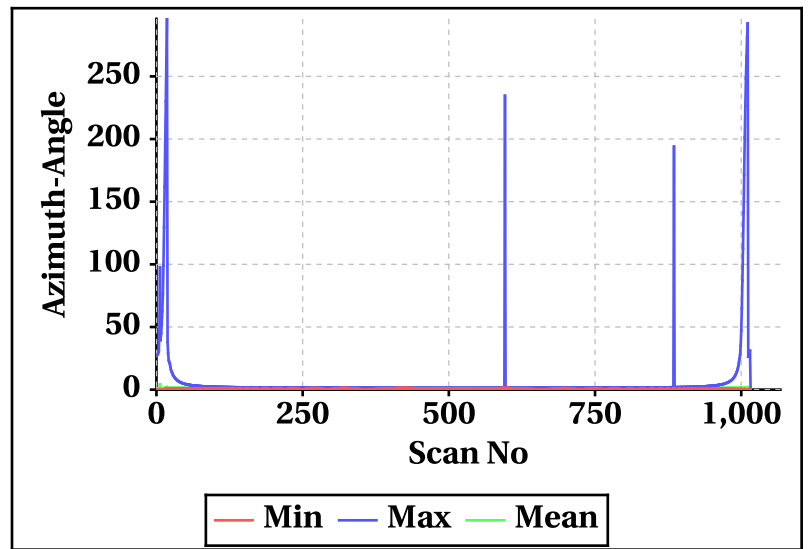
Outer Beam(VV)



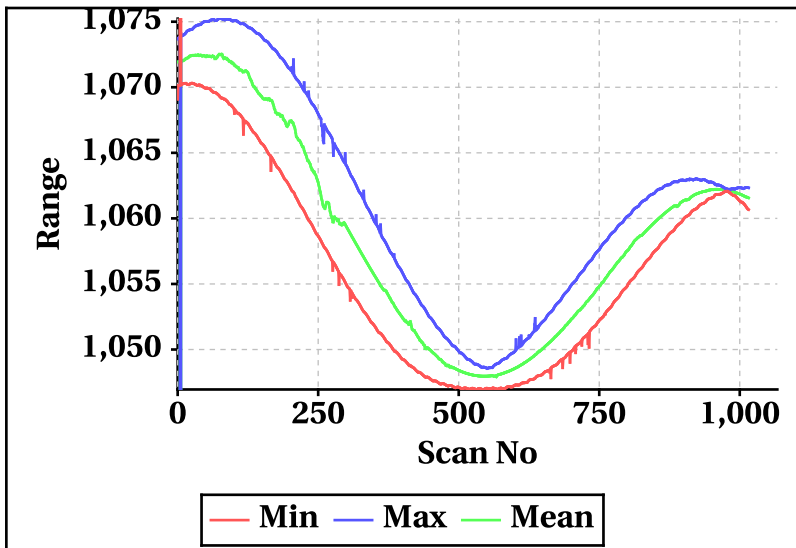
Inner Beam (HH)



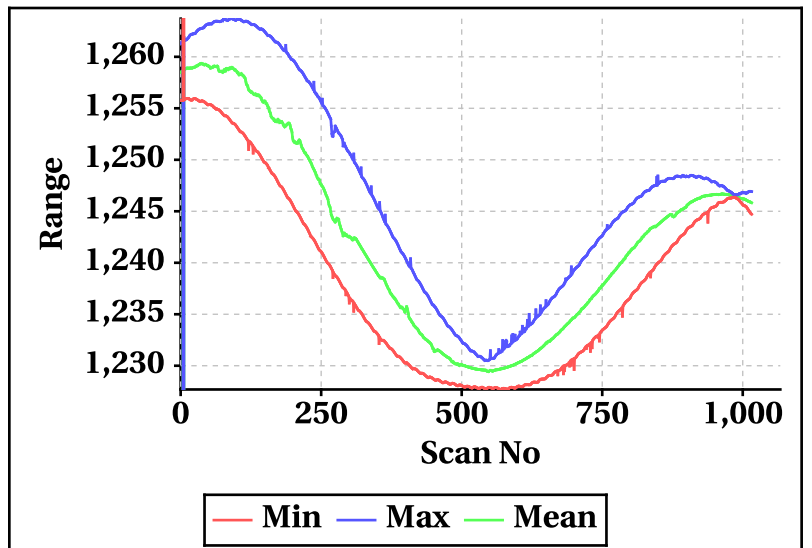
Outer Beam(VV)



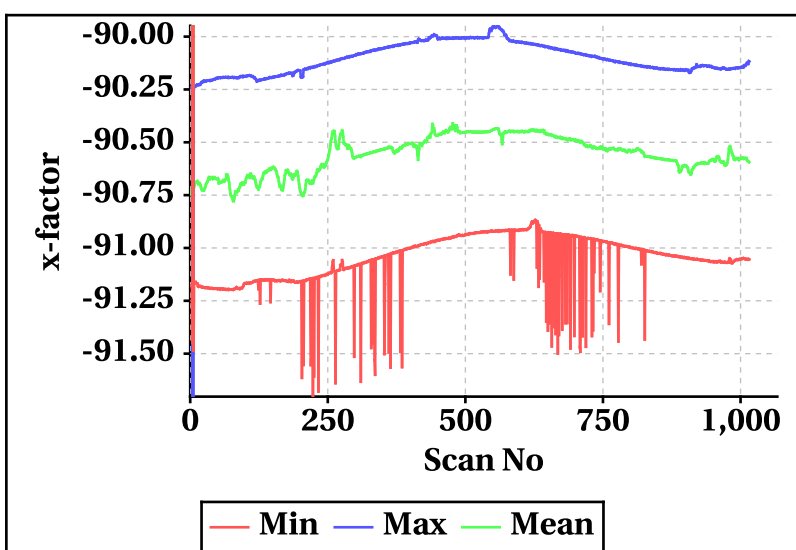
Inner Beam (HH)



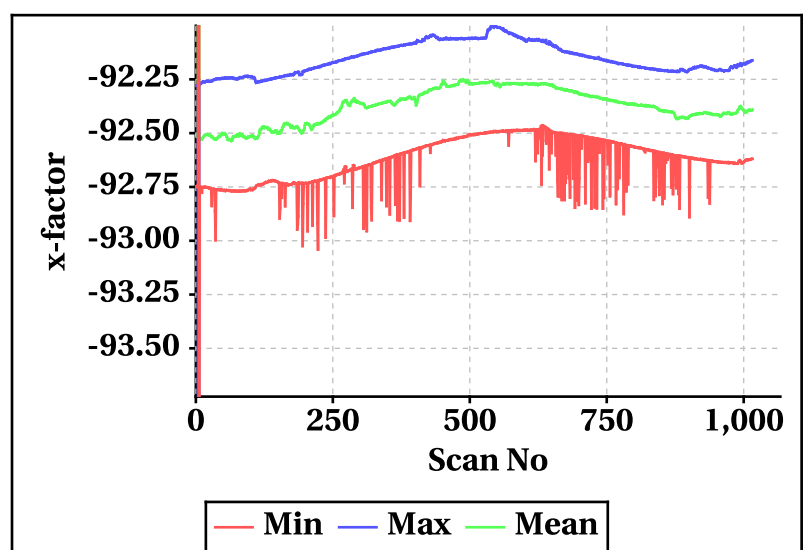
Outer Beam(VV)



Inner Beam (HH)



Outer Beam(VV)

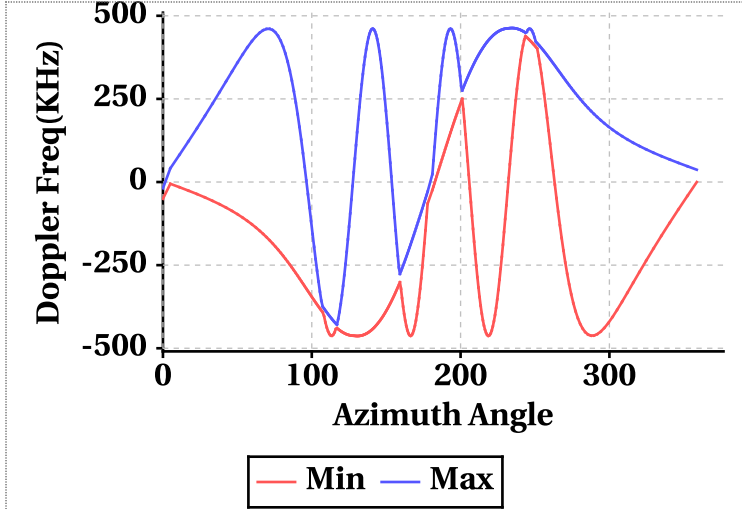


# Doppler Frequency Variation

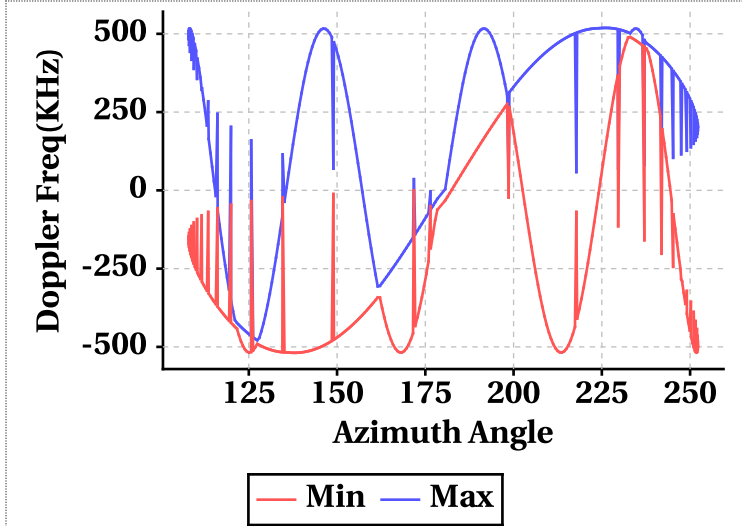
**Doppler Frequency(KHz) variation statistics Over the half Orbit**

	Inner Beam (HH)	Outer Beam (VV)
<b>Min</b>	-463.06	-518.90
<b>Max</b>	463.04	518.90

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



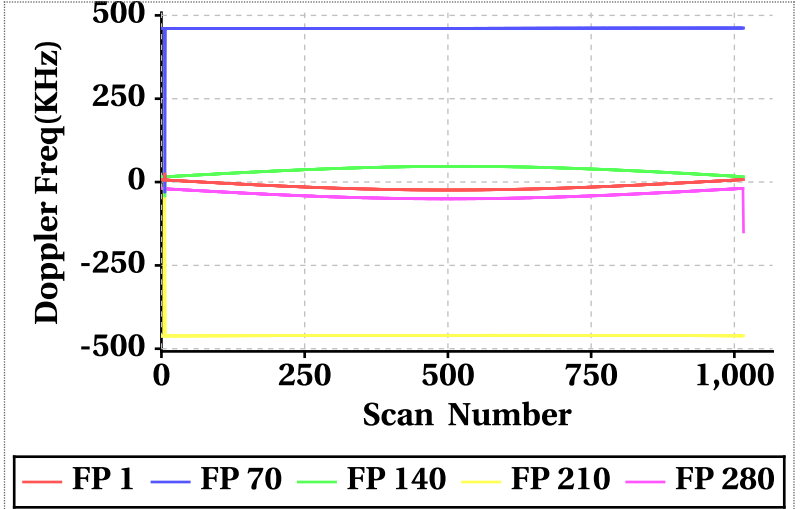
**Footprint wise Doppler frequency variation Outer Beam (VV)**



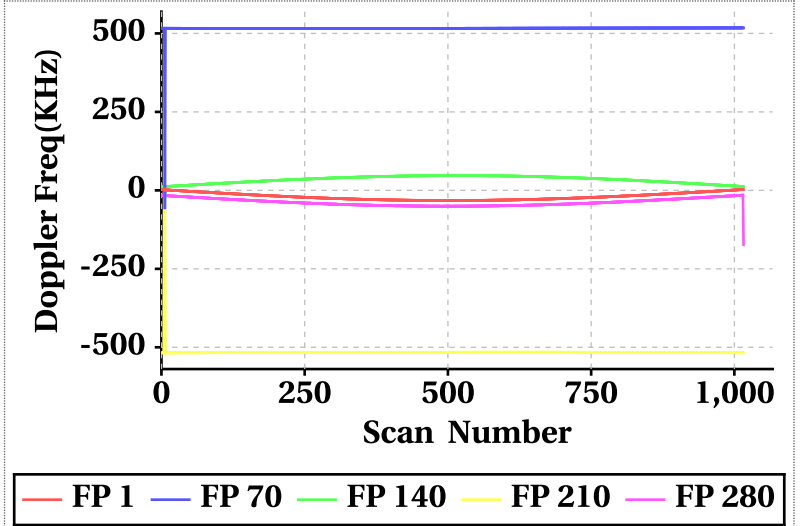
**Doppler Frequency(KHz) variation**

Doppler_FP	Inner Beam (HH)			Outer Beam (VV)		
	Min	Max	Mean	Min	Max	Mean
Doppler_1	-23.86	23.86	-12.49	-32.36	3.92	-19.63
Doppler_70	-29.38	461.98	460.63	-55.68	517.58	515.87
Doppler_140	-41.28	47.22	35.57	-22.94	47.10	34.09
Doppler_210	-461.74	1.34	-459.56	-517.56	1.76	-515.48
Doppler_280	-149.70	1.24	-39.01	-173.12	1.66	-37.84

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

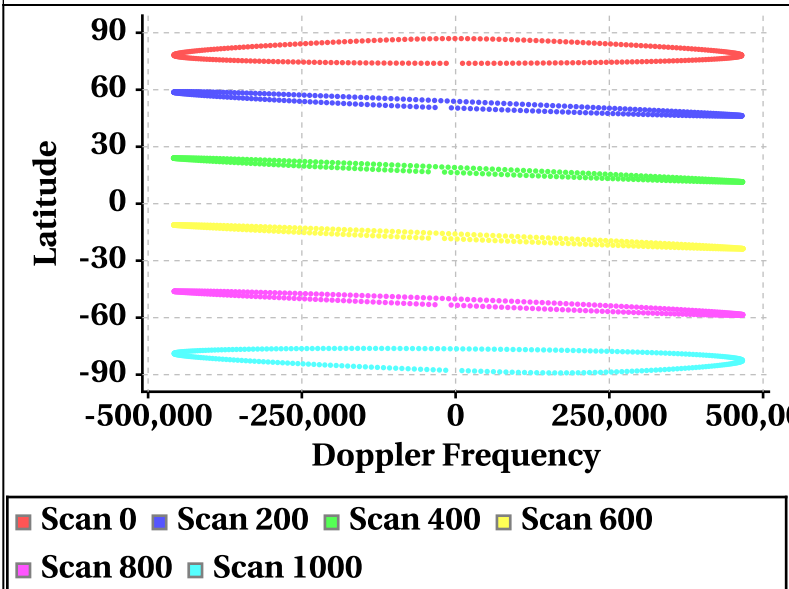


**Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Outer Beam (VV)**

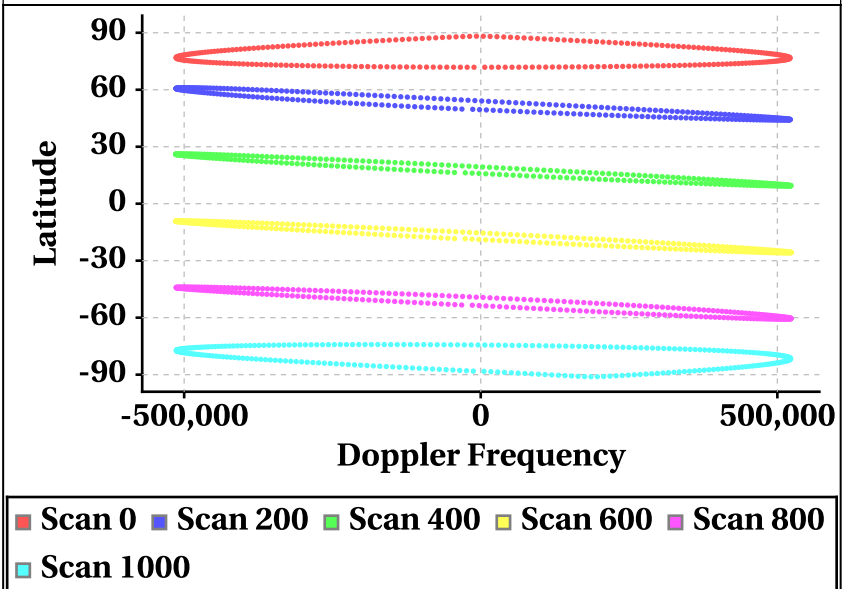


# Latitude Vs Doppler Frequency

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



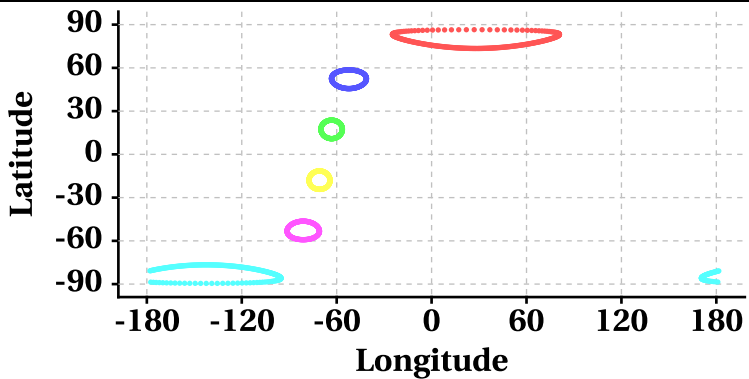
**Doppler Frequency at Scan Interval of 200 [Outer Beam(VV)]**



# Parameter as a function of Latitude

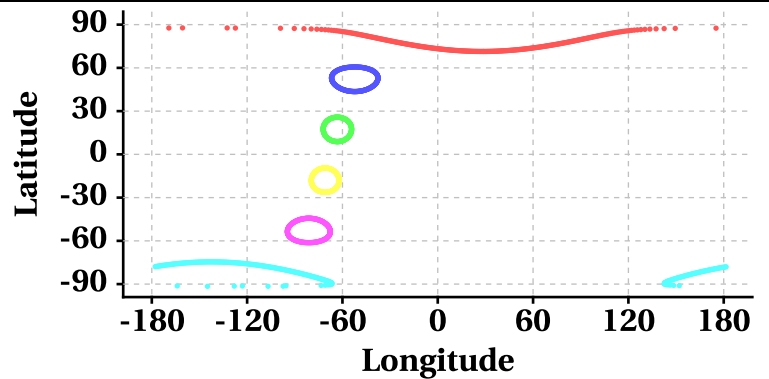
## Latitude Vs Longitude

Scan Trace [Inner Beam(HH)]



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

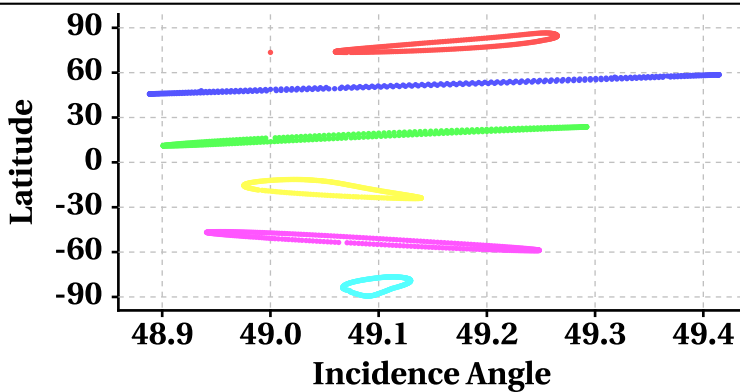
Scan Trace [Outer Beam (VV)]



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

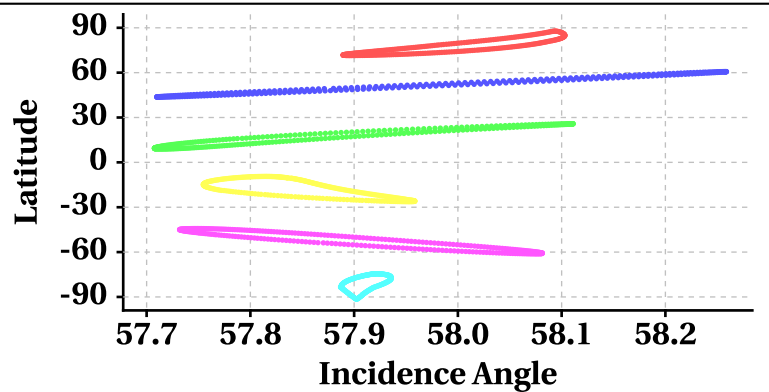
## Latitude Vs Incidence Angle

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



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

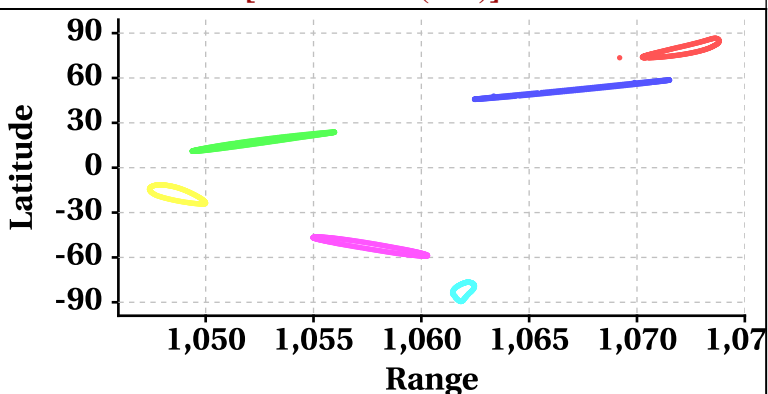
Incidence Angle at Scan Interval of 200 [Outer Beam (VV)]



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

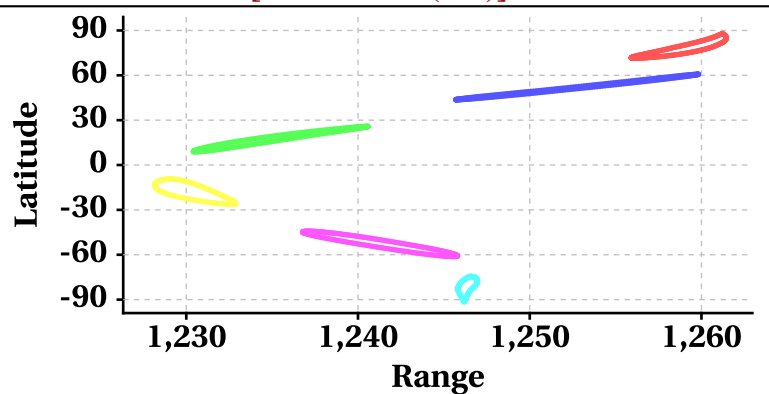
## Latitude Vs Range

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

