

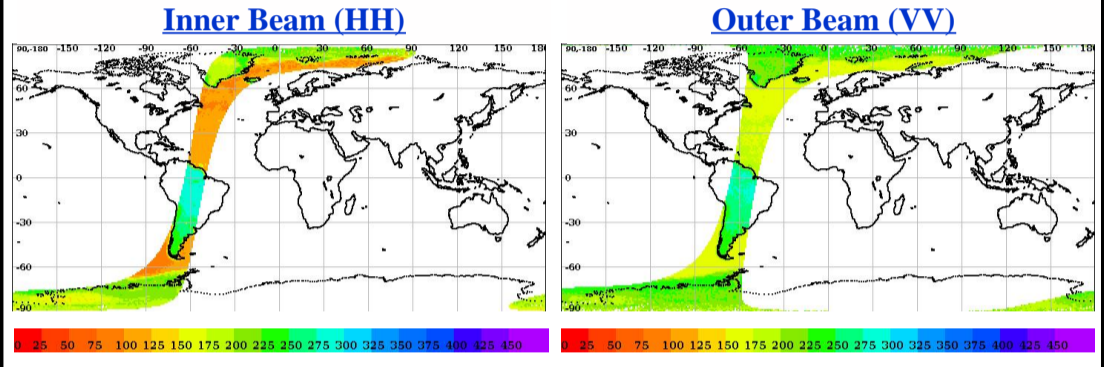
# SCATSAT-1 Scatterometer Level-1B Data Quality Evaluation Report

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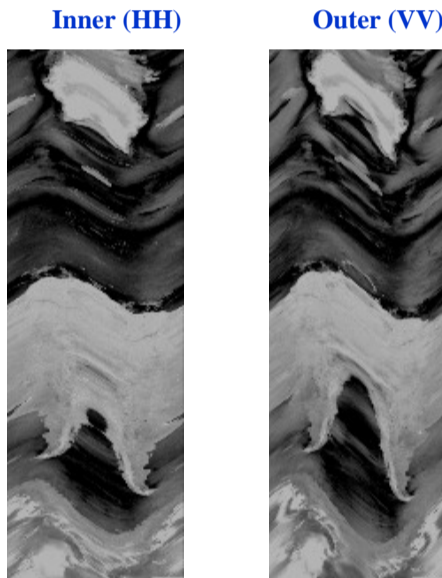
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<b>Satellite Id</b>	ScatSat-1	<b>Start Orbit</b>	15316	<b>Total Scans</b>	1016
<b>Sensor Name</b>	Scatterometer	<b>End Orbit</b>	15317	<b>No of Inner FootPrints</b>	281
<b>Processor Version</b>	v1.1.3	<b>Rev. Number</b>	15316_15317	<b>No Of Outer FootPrints</b>	282
<b>Half Orbit Direction</b>	NS	<b>Data Production Date</b>	18-08-2019	<b>No. Of Inner Slices</b>	9
<b>Equator Crossing Date</b>	18-08-2019	<b>Equator Crossing Time</b>	12:16:32.000	<b>No Of Outer Slices</b>	15

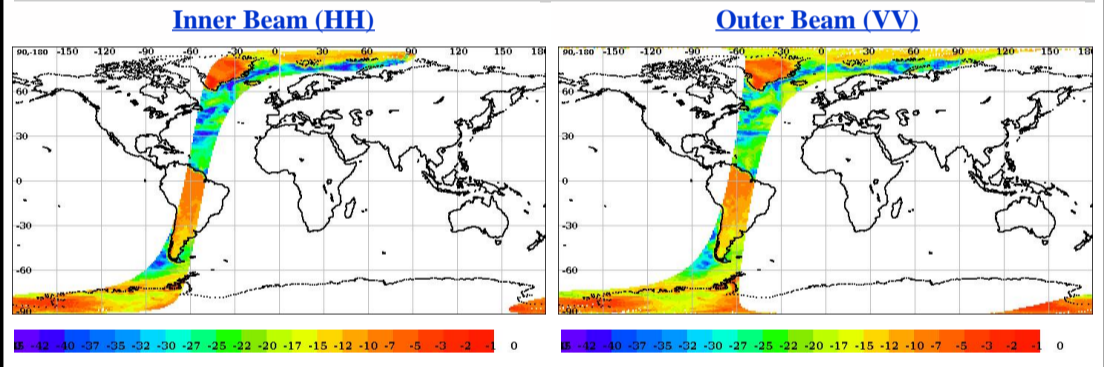
## Brightness Temperature(k) Footprint trace



## Image Snapshot for Inner & Outer Beam



## Sigma0(dB) Footprint trace



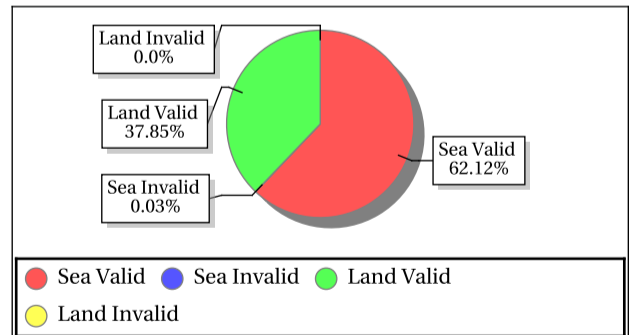
## Invalid and Poor Sigma-0 Quality Flag Statistics for Inner/Outer Slices\*

Sigma-0 Flags	Inner Beam	Outer Beam
Invalid Sigma0(%)	0.03	0.04
Data Not Available From Payload (%)	98.10901	98.6711
Slice not within sample array limits (%)	1.89	1.33
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 (%)	0.049037	0.118596

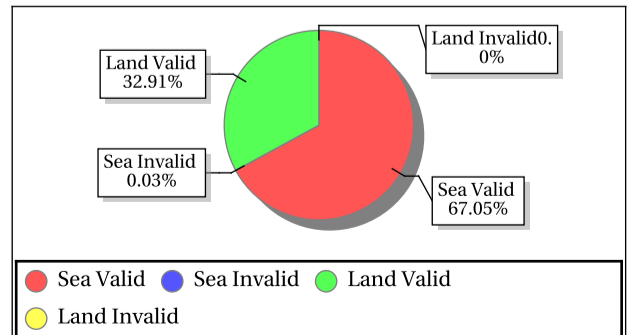
\*DP Format Document

## 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	-5.89	-4.44	-5.23	0.45	133.60	190.09	169.11	16.53
GreenLand_2	77.50	-41.50	Inner	DSC	Fore	-6.23	-4.22	-5.08	0.63	158.44	188.04	170.52	9.44
GreenLand_3	71.55	-42.45	Inner	DSC	Aft	-10.25	-6.55	-8.41	0.91	154.41	211.30	185.57	13.78
GreenLand_3	71.55	-42.45	Inner	DSC	Fore	-9.88	-7.17	-8.24	0.71	167.78	208.01	186.69	12.49
Amazon_3	-6.00	-61.00	Inner	DSC	Aft	-8.77	-6.16	-7.38	0.62	227.34	320.69	287.98	18.34
Amazon_3	-6.00	-61.00	Inner	DSC	Fore	-8.81	-6.46	-7.64	0.61	254.66	322.71	288.79	14.70
GreenLand_1	74.69	-42.50	Inner	DSC	Aft	-9.28	-7.20	-8.44	0.55	161.91	203.18	181.63	12.21
GreenLand_1	74.69	-42.50	Inner	DSC	Fore	-10.10	-6.94	-8.88	0.62	151.31	212.56	182.30	14.81
Amazon_2	-3.00	-61.00	Inner	DSC	Aft	-12.30	-6.22	-8.39	1.43	202.60	325.22	261.44	25.38
Amazon_2	-3.00	-61.00	Inner	DSC	Fore	-11.15	-6.58	-8.33	1.18	209.89	312.46	267.11	25.46
GreenLand_2	77.50	-41.50	Outer	DSC	Aft	-5.60	-4.24	-5.02	0.57	215.61	229.72	222.00	5.84
GreenLand_2	77.50	-41.50	Outer	DSC	Fore	-5.67	-4.44	-5.25	0.44	218.12	232.98	226.38	5.33
GreenLand_3	71.55	-42.45	Outer	DSC	Aft	-12.26	-9.83	-10.78	0.64	192.84	251.02	219.69	16.54
GreenLand_3	71.55	-42.45	Outer	DSC	Fore	-11.30	-9.51	-10.40	0.45	195.44	230.00	214.94	10.41
Amazon_3	-6.00	-61.00	Outer	DSC	Aft	-10.31	-8.26	-8.96	0.49	232.76	309.10	274.68	17.48
Amazon_3	-6.00	-61.00	Outer	DSC	Fore	-9.77	-8.05	-8.88	0.44	238.34	312.95	272.75	17.30
GreenLand_1	74.69	-42.50	Outer	DSC	Aft	-10.15	-8.22	-9.10	0.56	202.65	245.62	230.12	13.45
GreenLand_1	74.69	-42.50	Outer	DSC	Fore	-10.11	-8.16	-9.18	0.65	210.55	252.45	235.09	12.68
Amazon_2	-3.00	-61.00	Outer	DSC	Aft	-12.24	-8.08	-9.74	1.09	216.76	296.24	258.03	20.78
Amazon_2	-3.00	-61.00	Outer	DSC	Fore	-11.44	-8.05	-9.60	0.95	239.58	294.95	264.26	14.34



## 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	304.96	0.54	6.050	0.12	301.76	0.50	4.986	0.12	0.21	0.12	0.000	0.12	0.15	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>	-34.98	23.43	3.20	0.036	-34.93	23.41	3.65	0.043	-0.30	29.89	19.00	12.974	3.24	30.25	19.76	22.730

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	231.01	0.46	5.517	0.09	202.60	0.41	4.452	0.09	0.13	0.09	0.000	0.09	0.12	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	0.02	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>	-34.94	17.15	1.41	0.000	-34.37	16.65	1.60	0.000	1.10	22.36	13.55	0.011	2.01	23.03	13.97	0.229

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>	48.64	49.33	48.99	0.000	57.42	58.18	57.86	0.000	Inci.(Inner)	47.10	49.90
<b>Azimuth Diff. (deg)</b>	0.0027	206.86	1.27	2.592	0.0000	295.42	1.27	3.768	Inci.(Outer)	57.30	58.90
<b>Range(Km)</b>	1029.29	1084.87	1050.12	0.000	1205.07	1274.83	1232.64	7.788	Azimuth Diff.	0.60	2.00
<b>X Factor(dbm)</b>	-92.28	-89.97	-90.57	0.000	-95.05	-92.01	-92.16	0.000	Range(Inner)	1025.00	1095.70
<b>Across Distance (Km)</b>	15.95	16.47	16.13	0.000	21.05	22.82	21.25	2.000	Range(Outer)	1210.00	1280.00
<b>Along Distance (Km)</b>	18.74	1098.82	21.83	2.000	18.37	1445.17	22.42	2.000	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

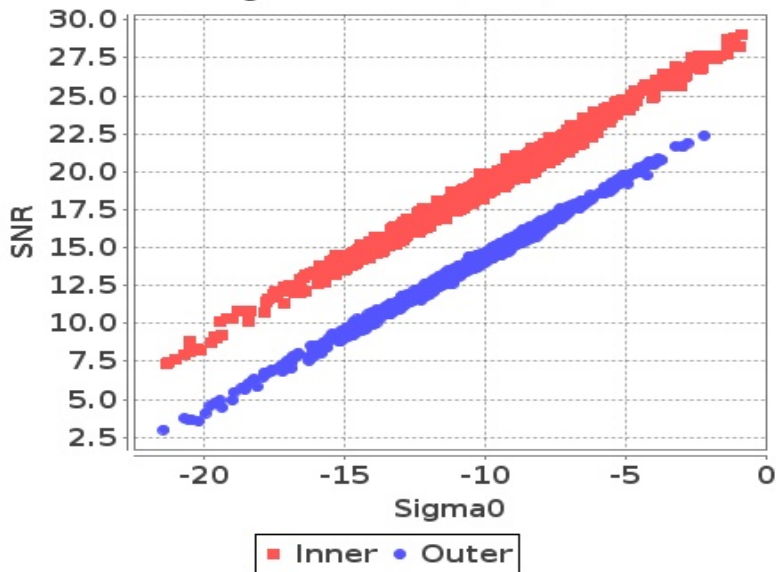
- Normal
- Deviations
- Alarming
- High Errors



## Sigma0 Behaviour (Sigma0 Vs SNR)

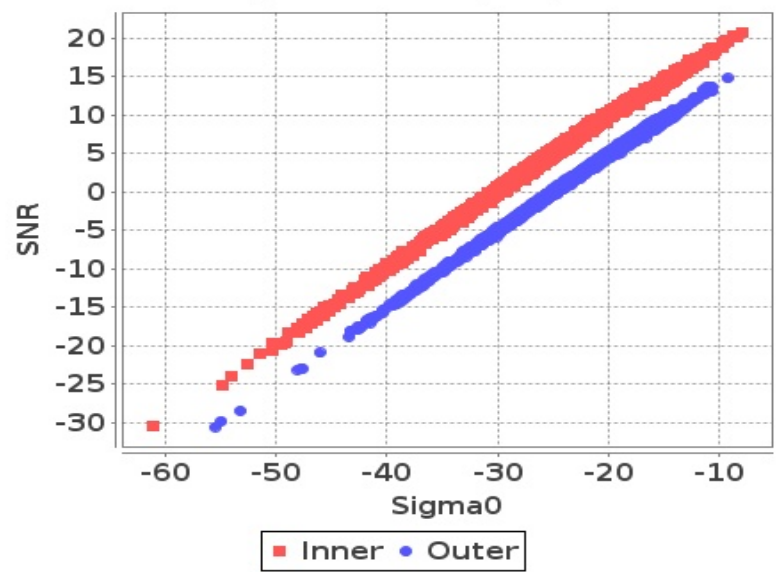
Footprint-Land

Sigma0 Vs SNR (Land)



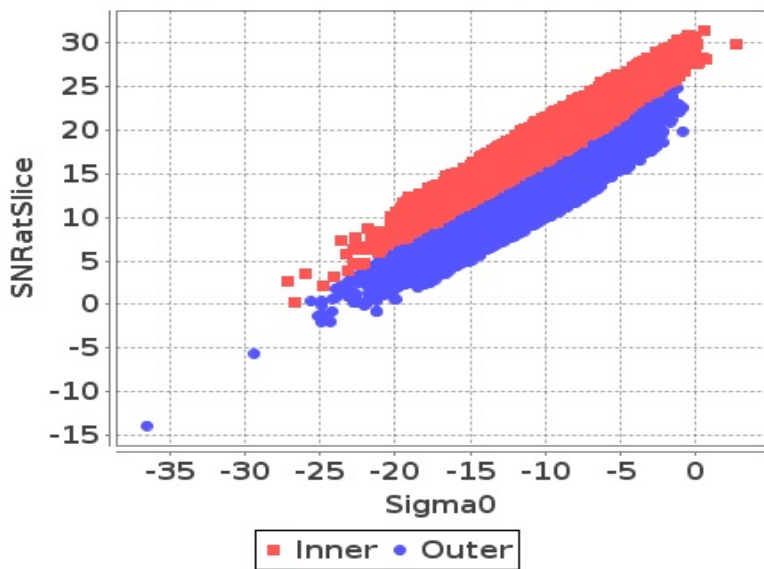
Footprint-Sea

Sigma0 Vs SNR (Sea)



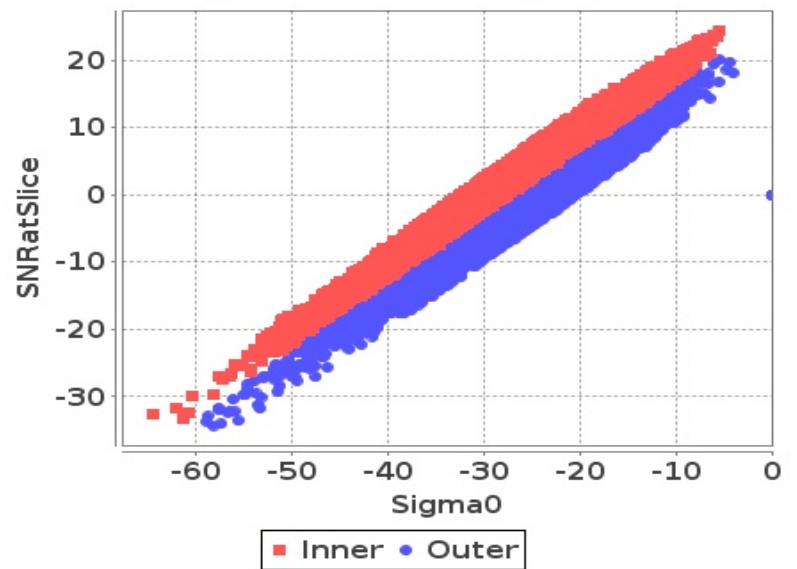
Slice-Land

Sigma0 Vs SNRatSlice (Land)



Slice-Sea

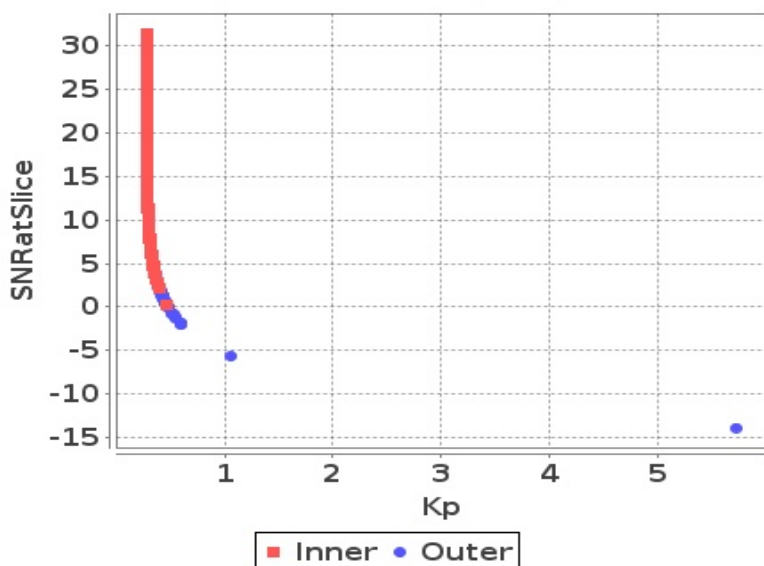
Sigma0 Vs SNRatSlice (Sea)



## Sigma0 Behaviour (Kp Vs SNR)

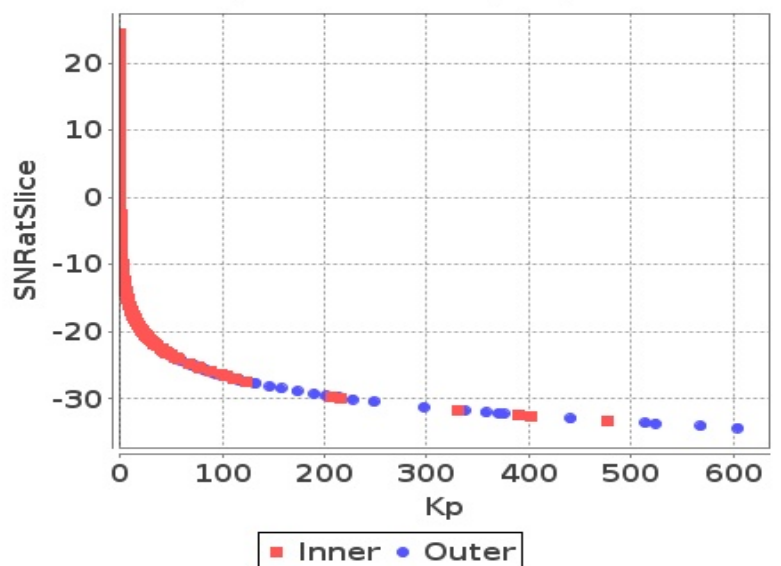
Slice

Kp Vs SNRatSlice (Land)



Slice

Kp Vs SNRatSlice (Sea)

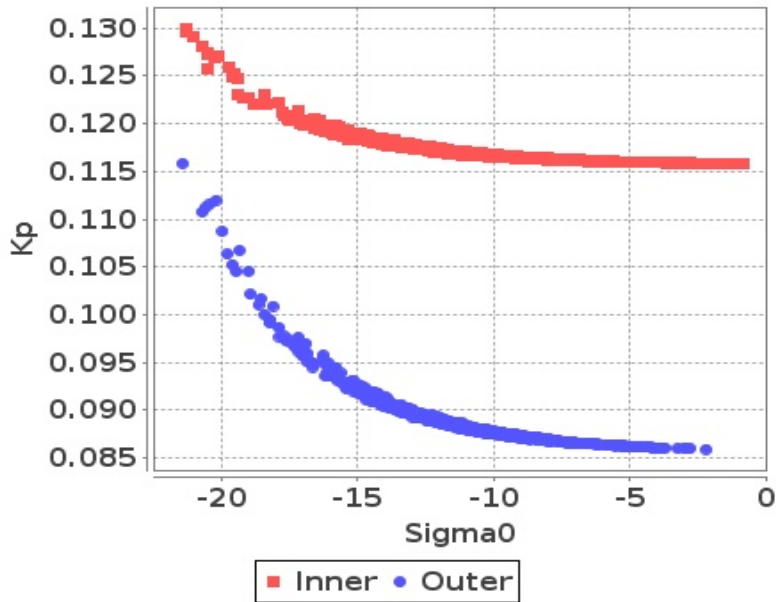




# Sigma0 Behaviour(Sigma0 Vs Kp)

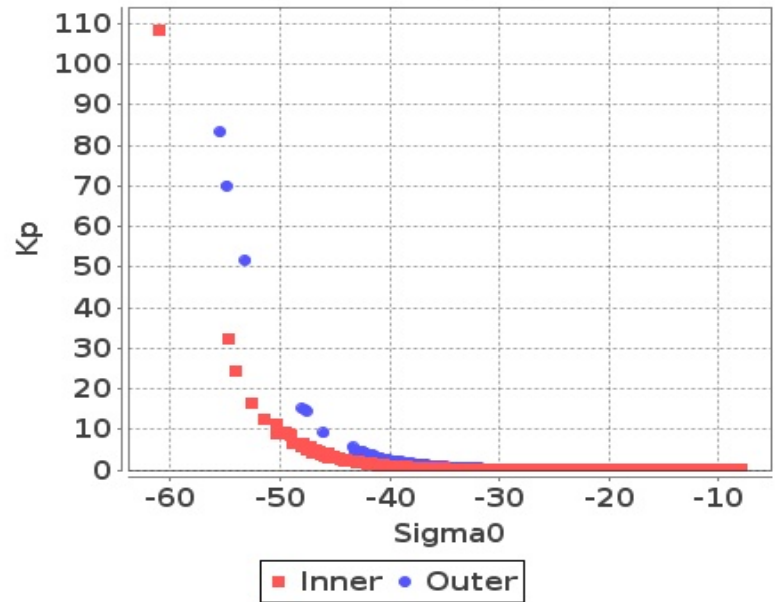
## Footprint-Land

### Sigma0 Vs Kp (Land)



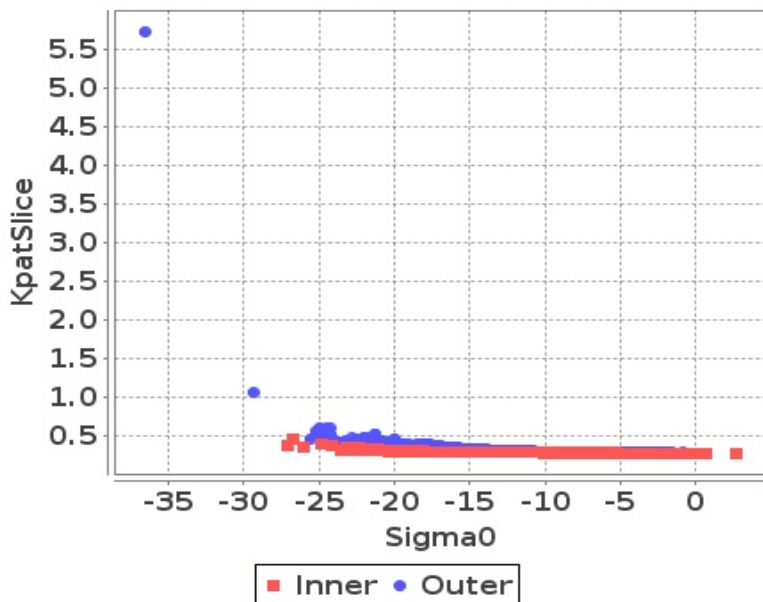
## Footprint-Sea

### Sigma0 Vs Kp (Sea)



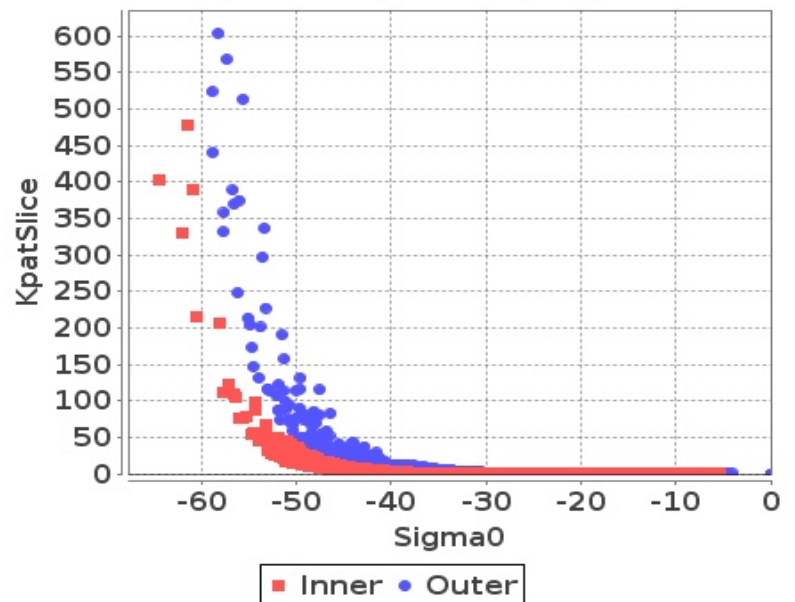
## Slice-Land

### Sigma0 Vs KpatSlice (Land)



## Slice-Sea

### Sigma0 Vs KpatSlice (Sea)

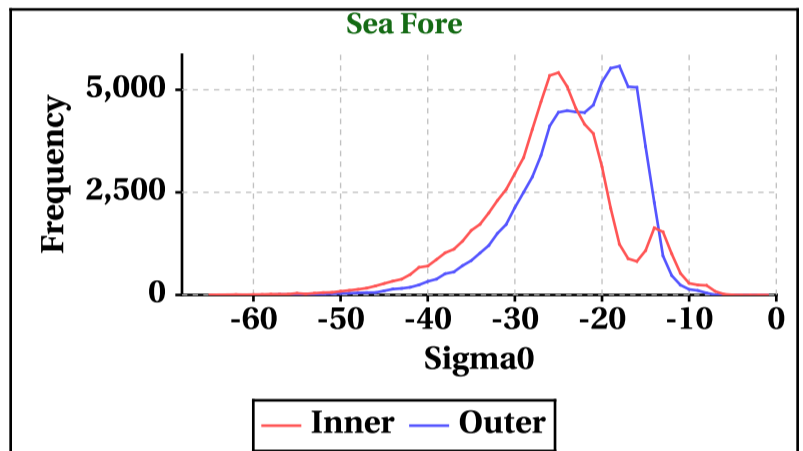
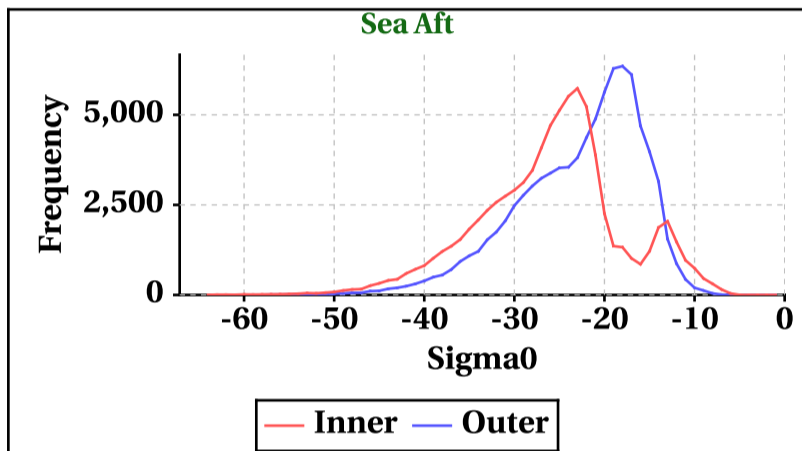
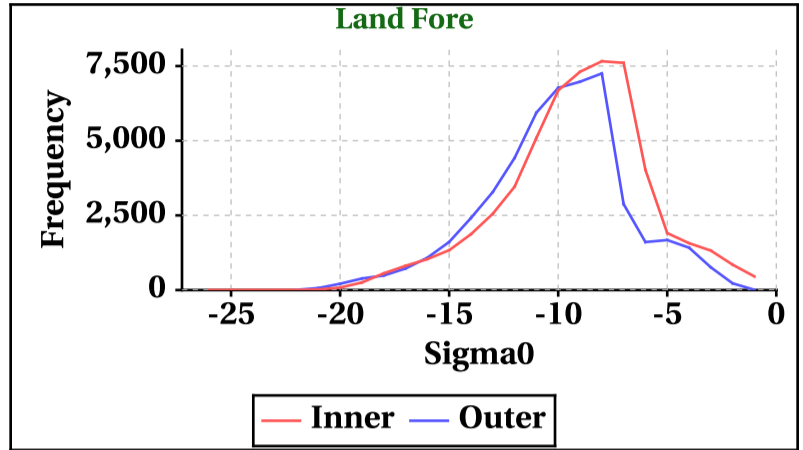
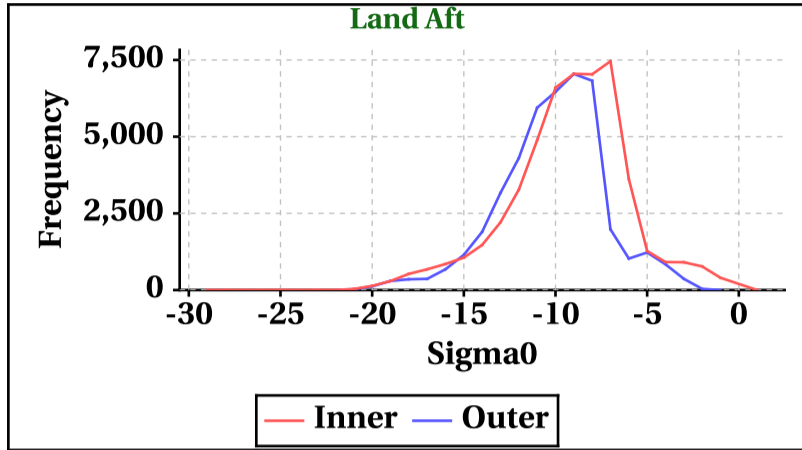


# Dynamic Range (Data Histograms)

## Sigma0(db)

Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-29	-26	-64	-65
Max	1	0	0	0

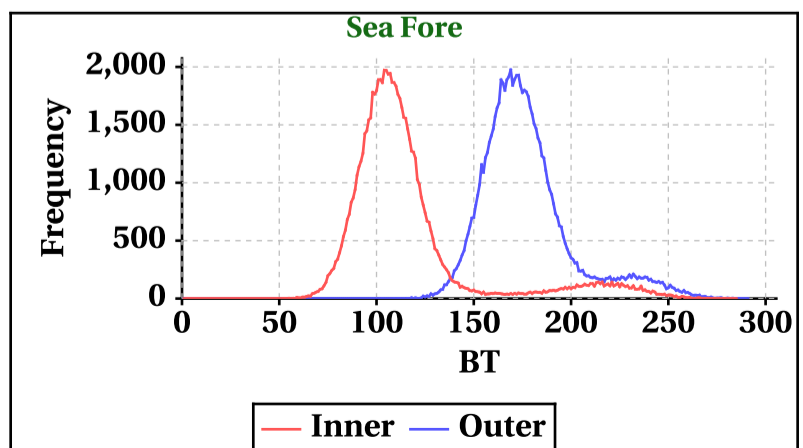
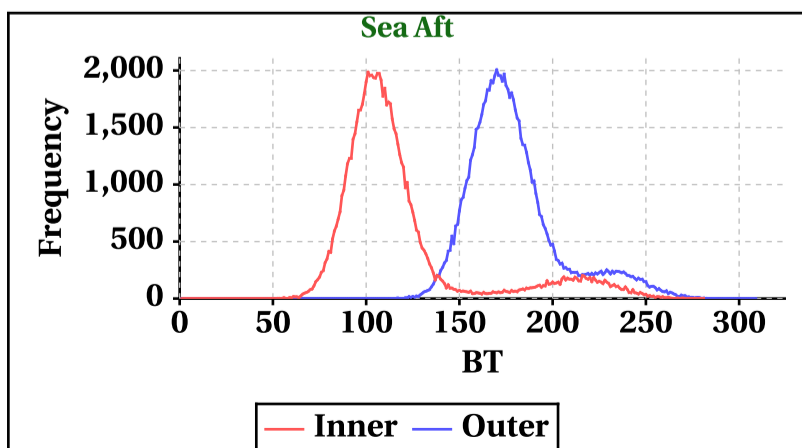
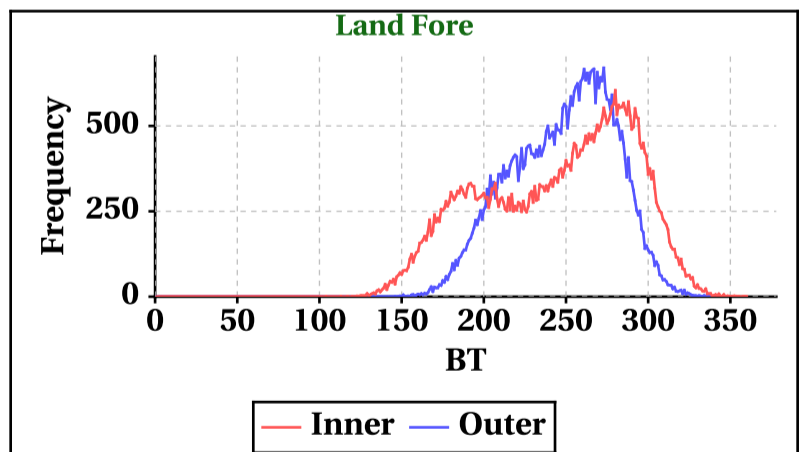
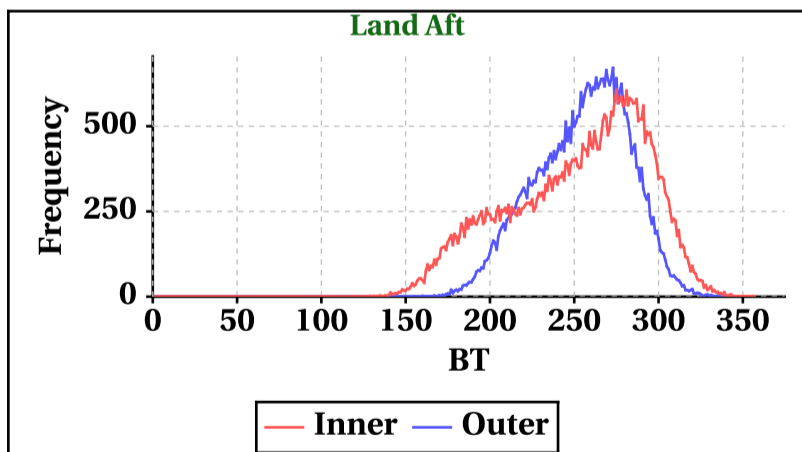
Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-22	-22	-59	-59
Max	0	0	0	0



## Brightness Temperature(K)

Inner Beam(HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	357	360	281	285

Outer Beam(VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	346	346	309	291

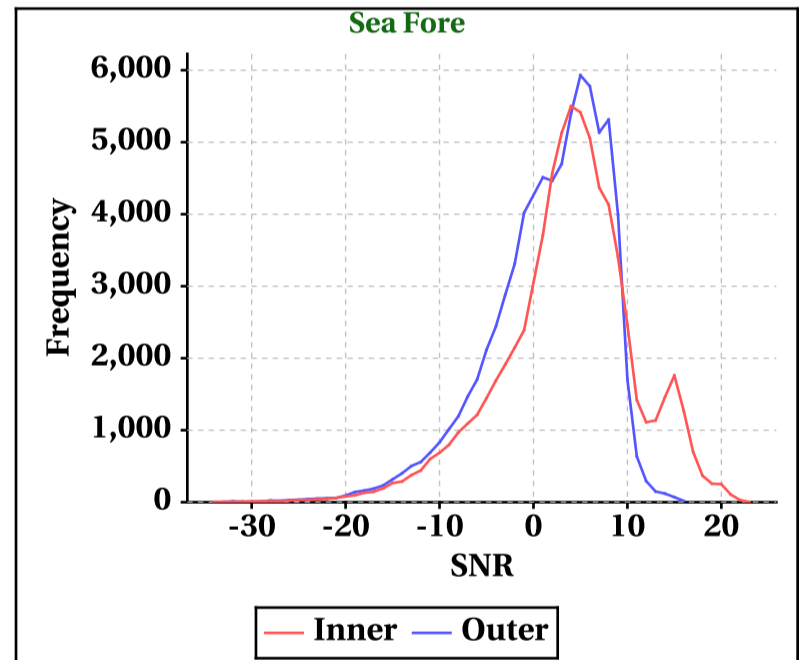
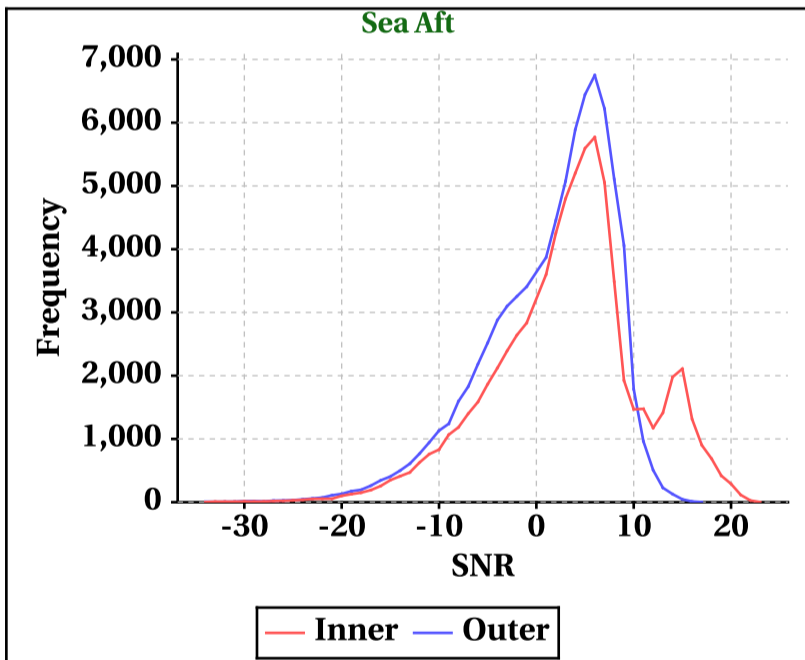
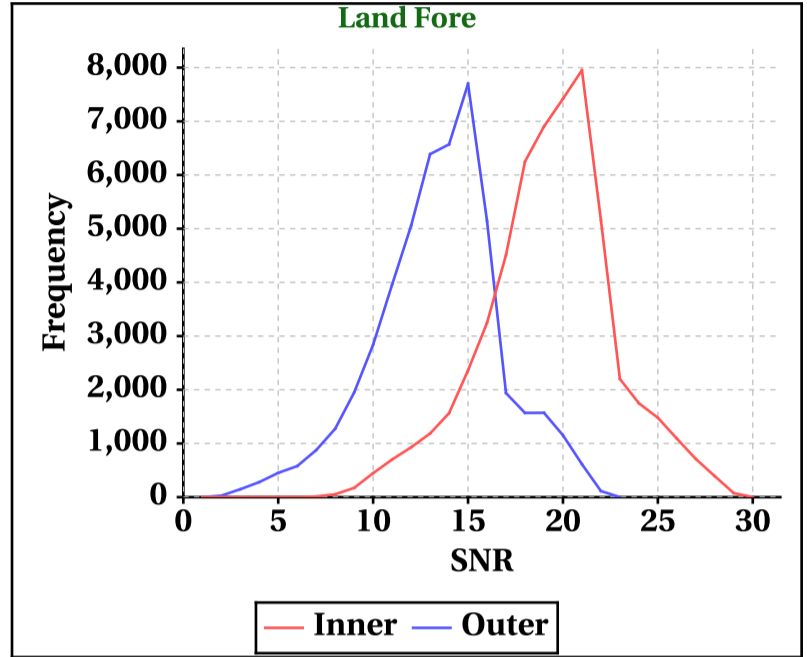
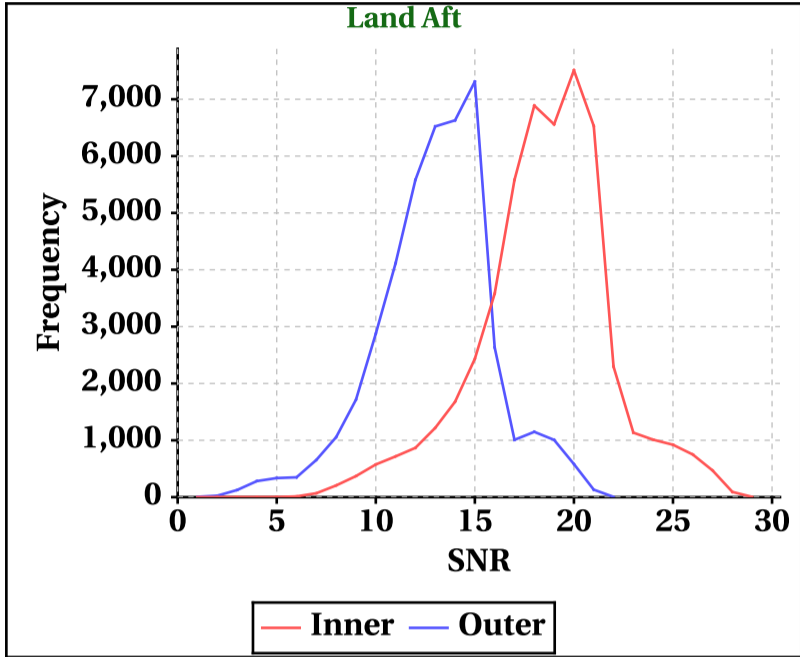


# Dynamic Range (Data Histograms)

## SNR(dBm)

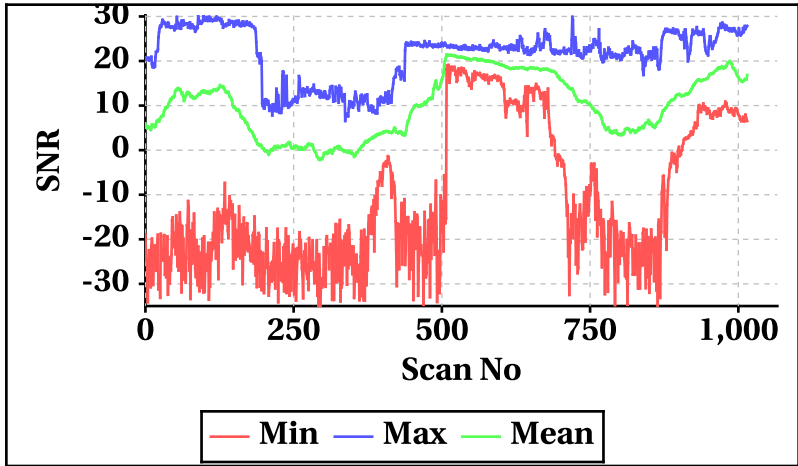
Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	-34	-34
Max	29	30	23	23

Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	-34	-34
Max	22	23	17	16

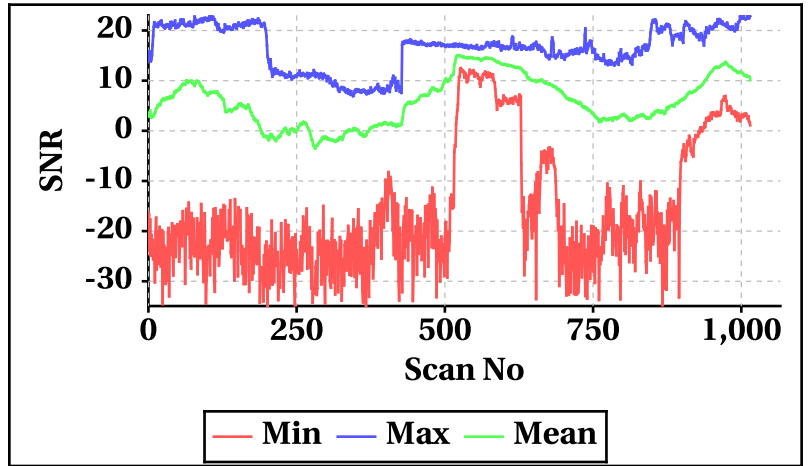


## Orbit-wise behaviour of SNR

**Inner Beam (HH)**

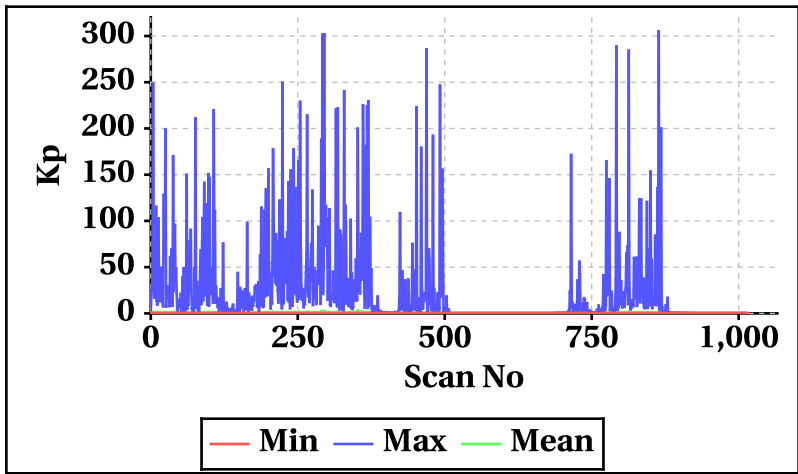


**Outer Beam(VV)**

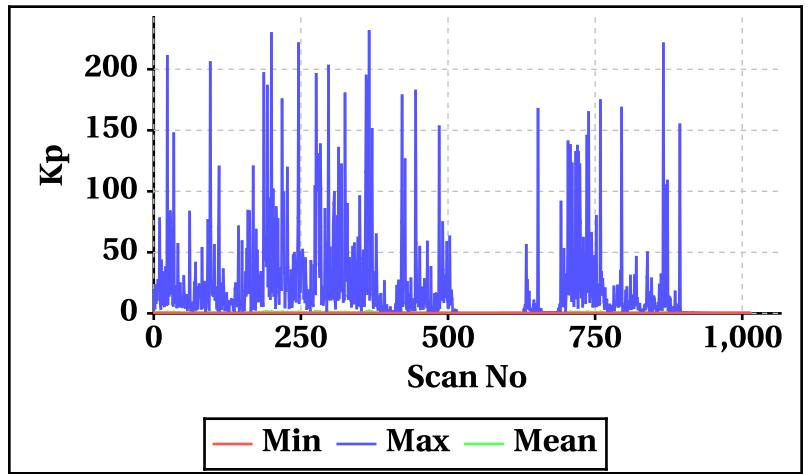


## Orbit-wise behaviour of Kp,Kpa,Kpb,Kpc

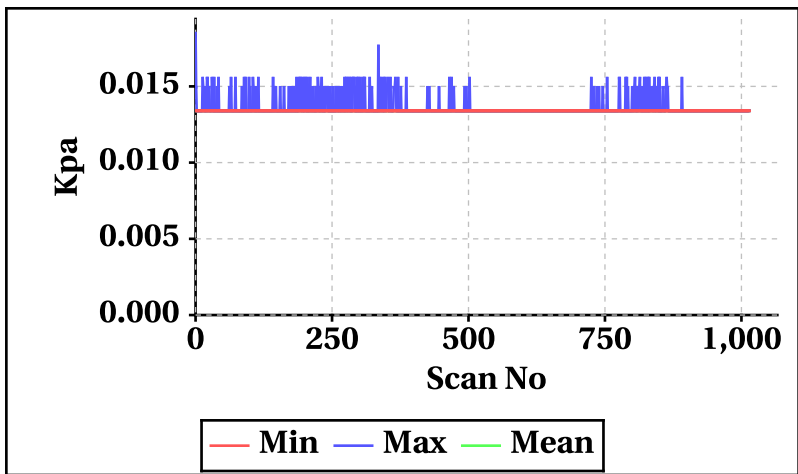
**Inner Beam(HH)**



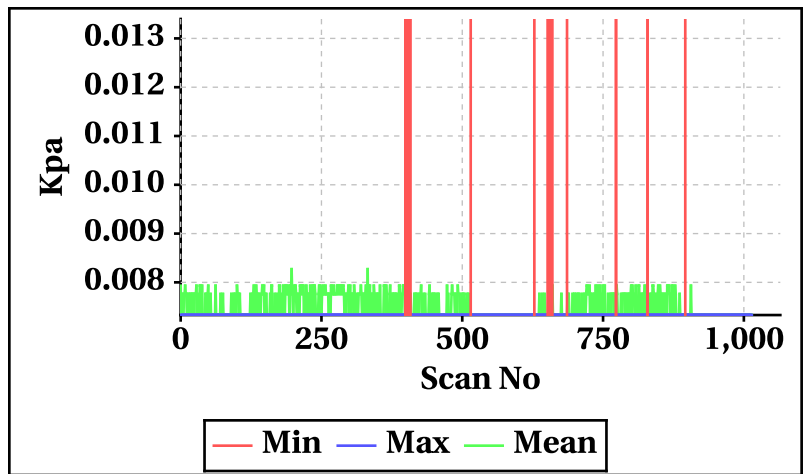
**Outer Beam(VV)**



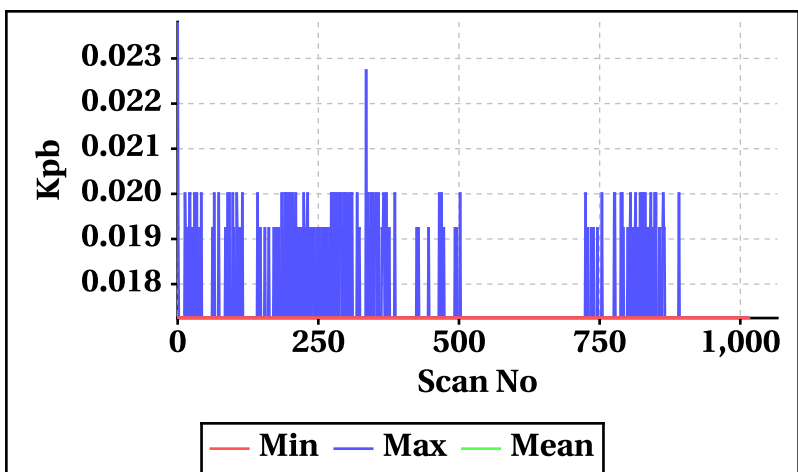
**Inner Beam(HH)**



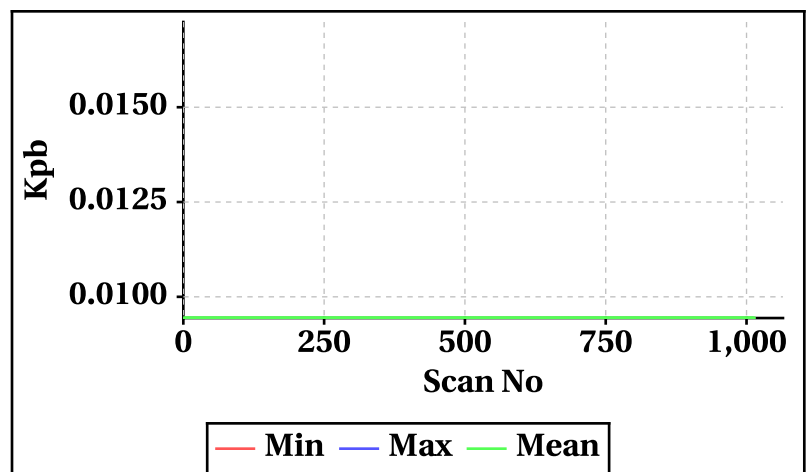
**Outer Beam(VV)**



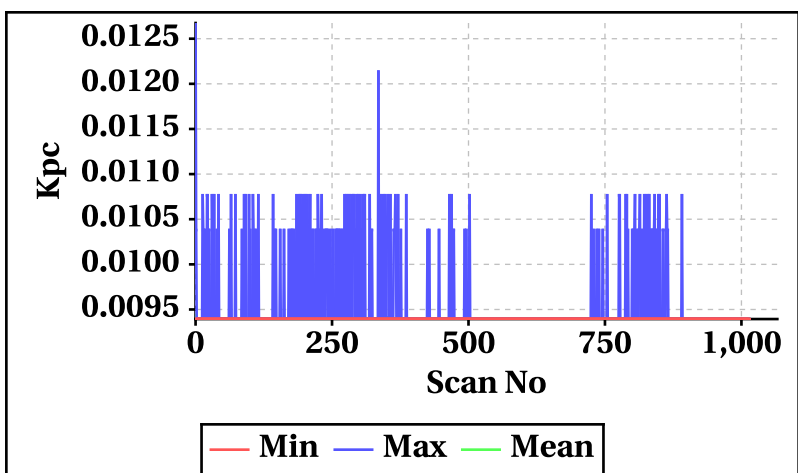
**Inner Beam(HH)**



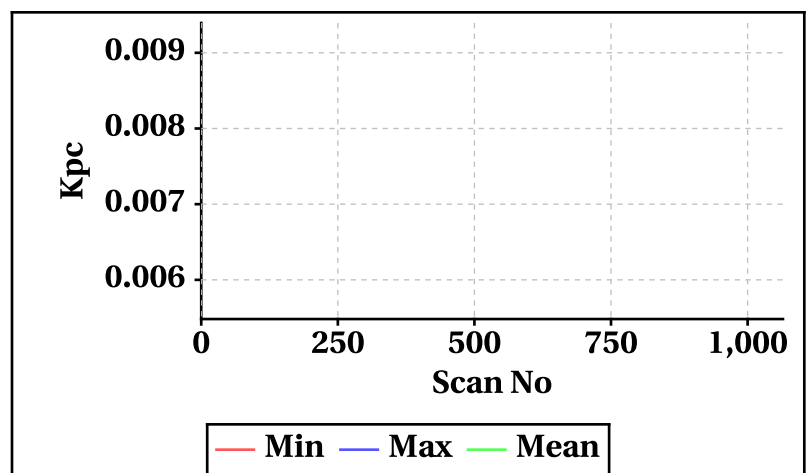
**Outer Beam(VV)**



**Inner Beam(HH)**



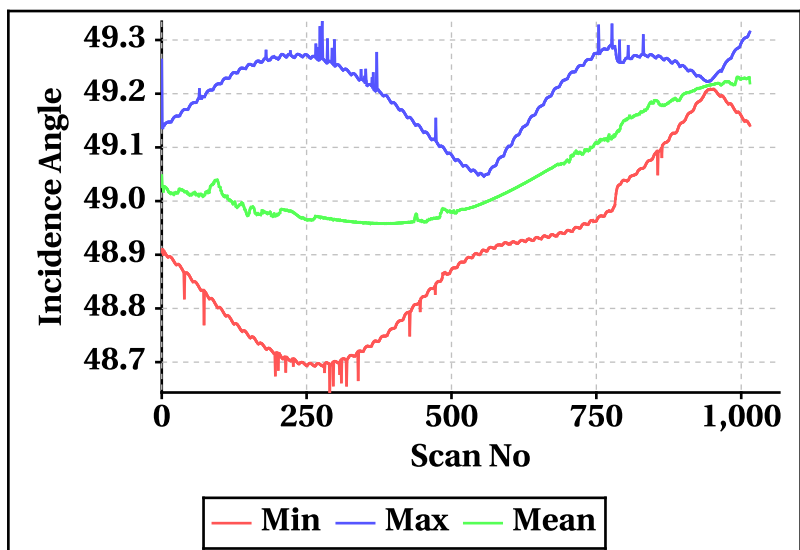
**Outer Beam(VV)**



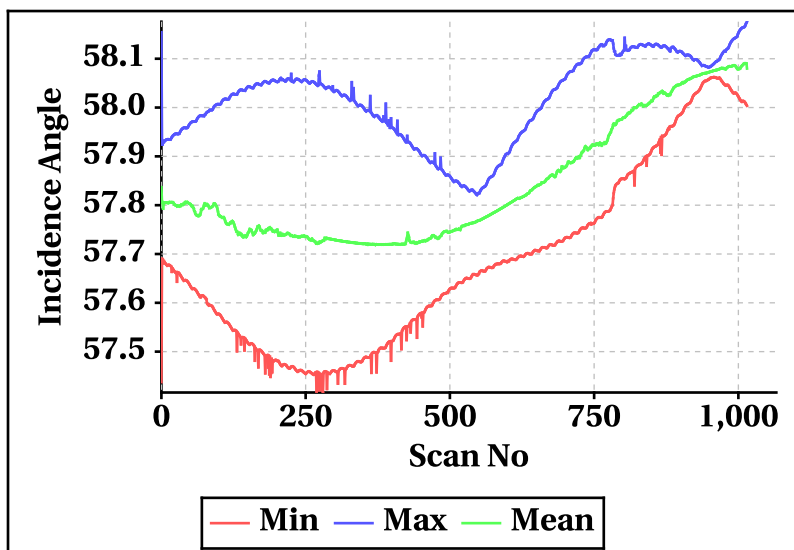


Orbit-wise behaviour of Incidence, Azimuth, Range, X-Factor

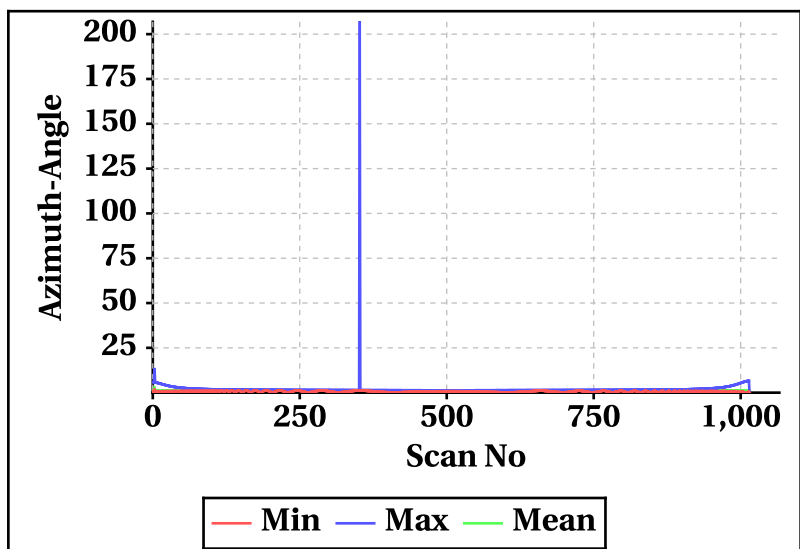
Inner Beam (HH)



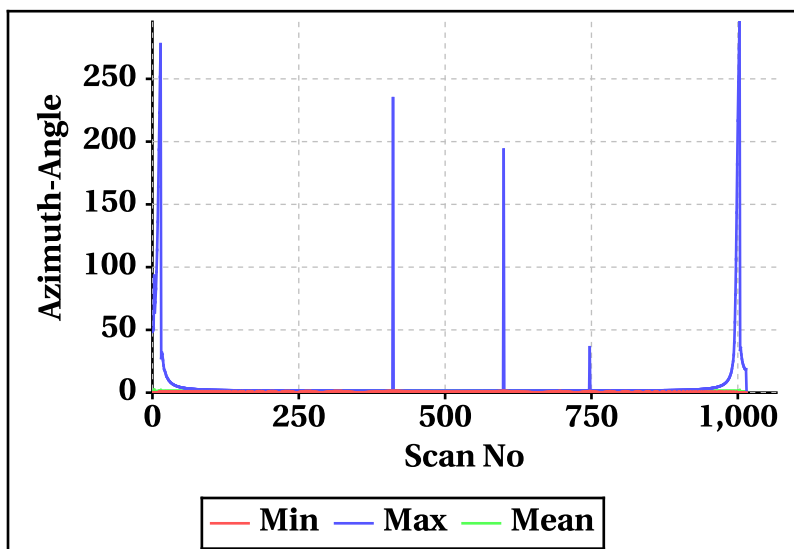
Outer Beam(VV)



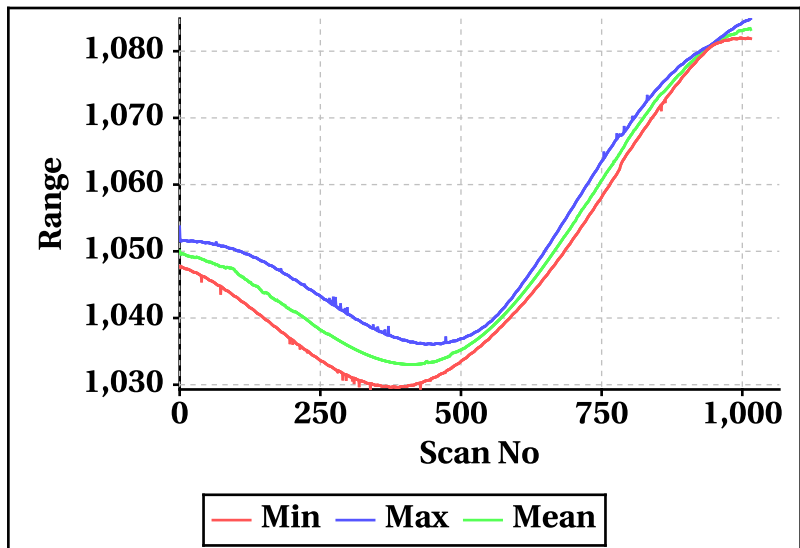
Inner Beam (HH)



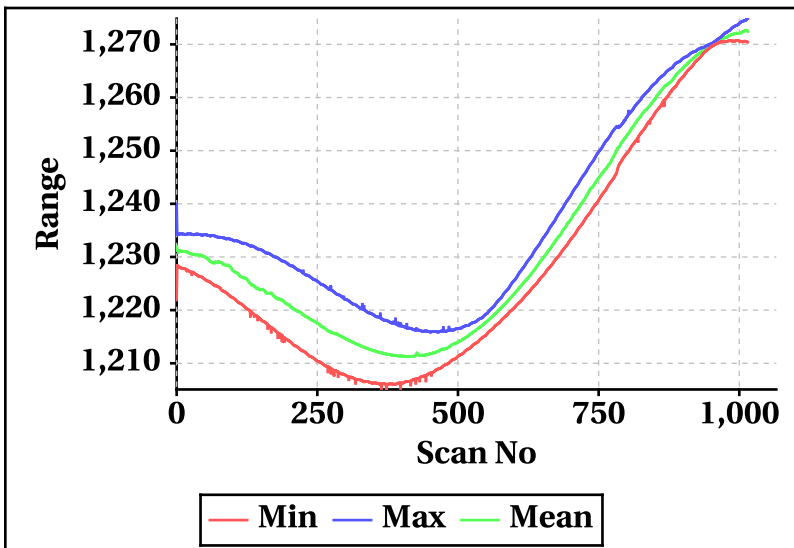
Outer Beam(VV)



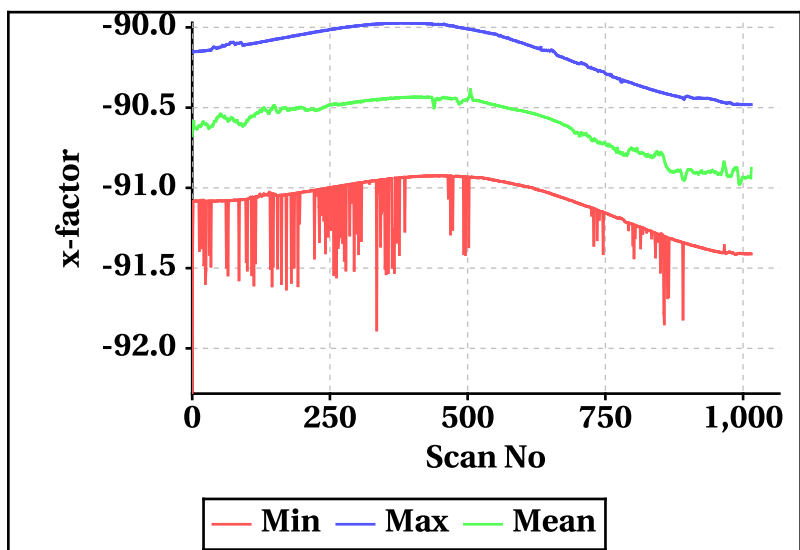
Inner Beam (HH)



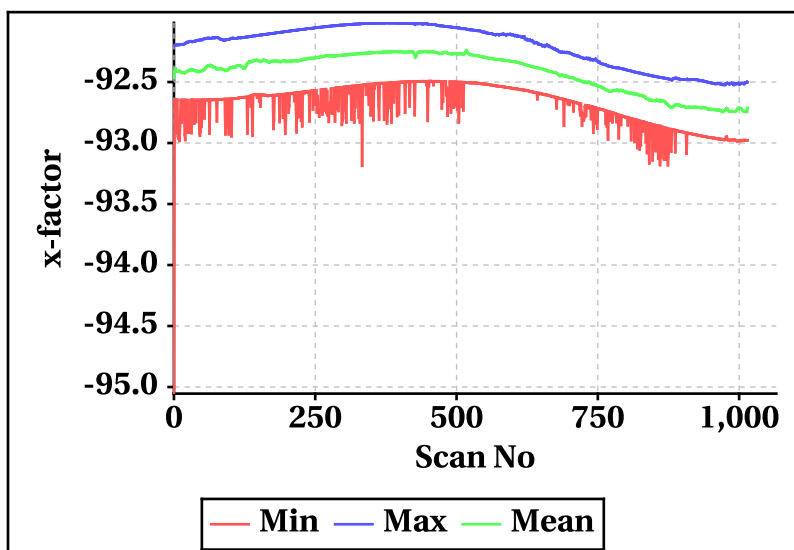
Outer Beam(VV)



Inner Beam (HH)



Outer Beam(VV)

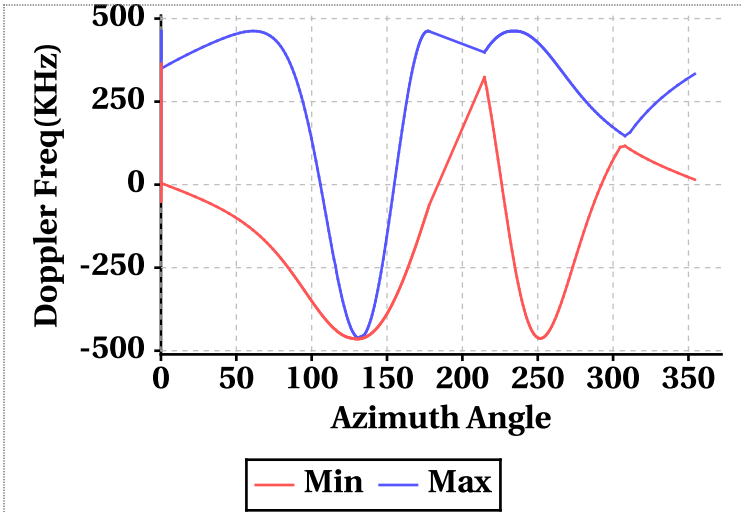


# Doppler Frequency Variation

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

	Inner Beam (HH)	Outer Beam (VV)
<b>Min</b>	-464.66	-520.46
<b>Max</b>	462.40	518.42

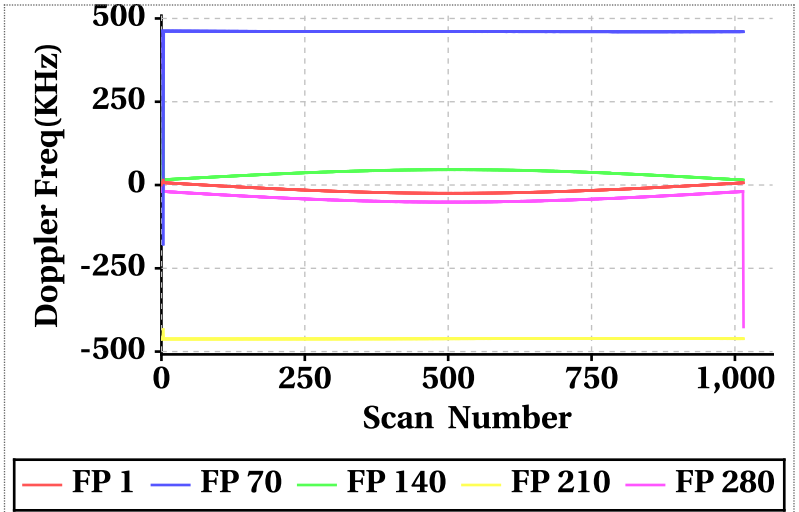
**Footprint wise Doppler frequency variation Inner Beam (HH)**



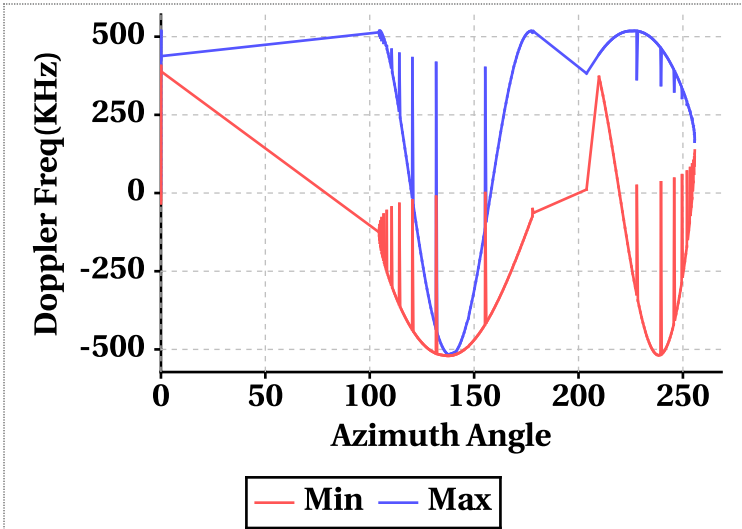
**Doppler Frequency(KHz) variation**

Doppler_FP	Inner Beam (HH)			Outer Beam (VV)		
	Min	Max	Mean	Min	Max	Mean
Doppler_1	-24.84	14.62	-13.19	-426.10	3.38	-20.65
Doppler_70	-177.54	462.22	460.07	-186.78	517.92	515.45
Doppler_140	15.06	333.30	35.18	11.20	382.64	33.80
Doppler_210	-462.16	-434.10	-461.45	-518.14	-490.88	-517.45
Doppler_280	-426.10	459.54	-39.53	-479.52	513.46	-38.25

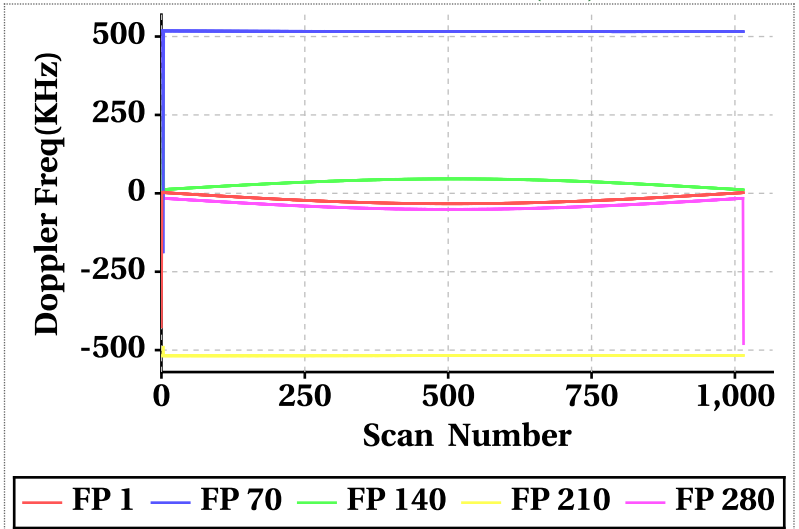
**Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Inner Beam (HH)**



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

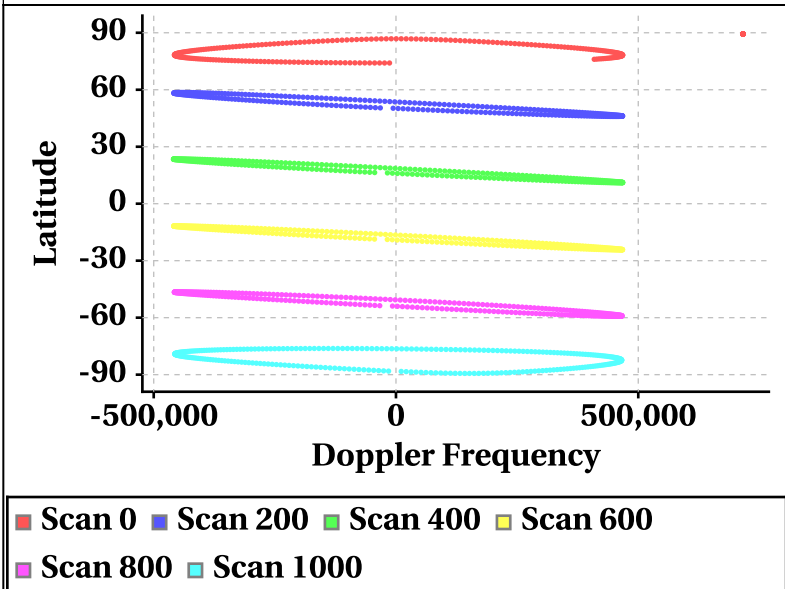


**Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Outer Beam (VV)**

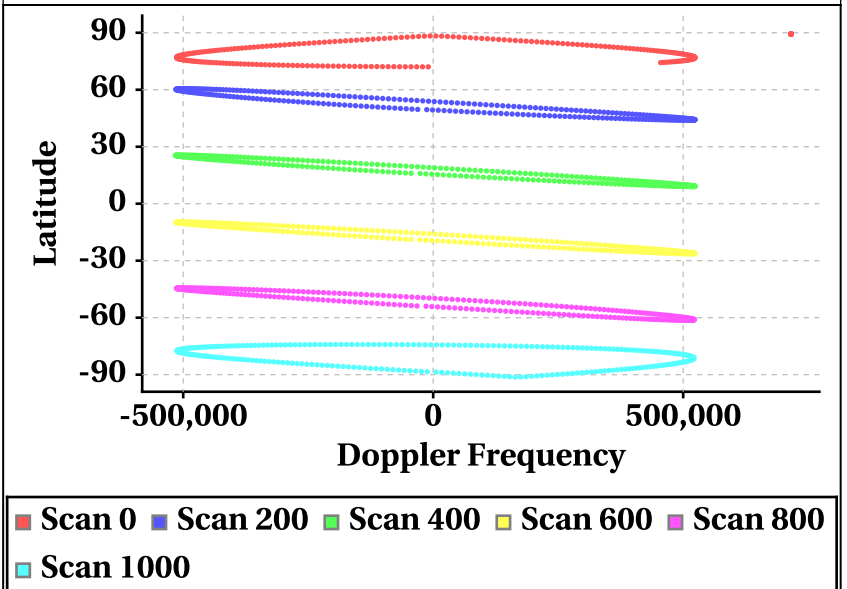


# Latitude Vs Doppler Frequency

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



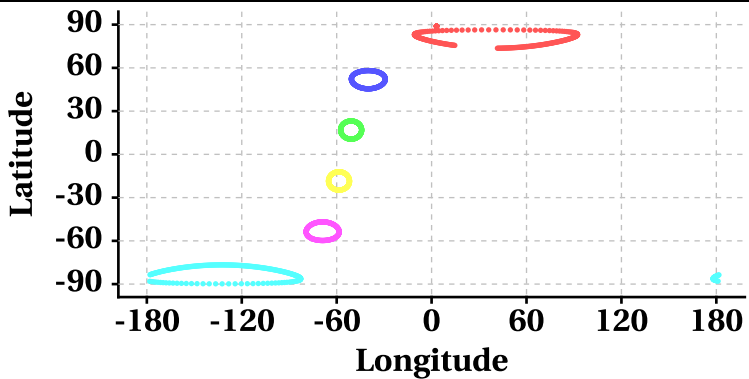
**Doppler Frequency at Scan Interval of 200 [Outer Beam(VV)]**



# Parameter as a function of Latitude

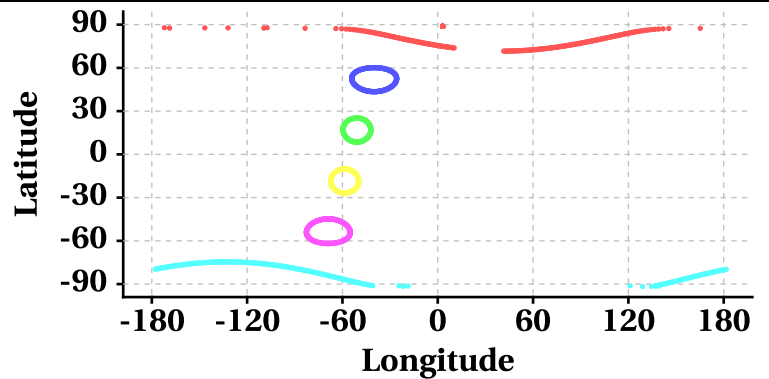
## Latitude Vs Longitude

Scan Trace [Inner Beam(HH)]



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

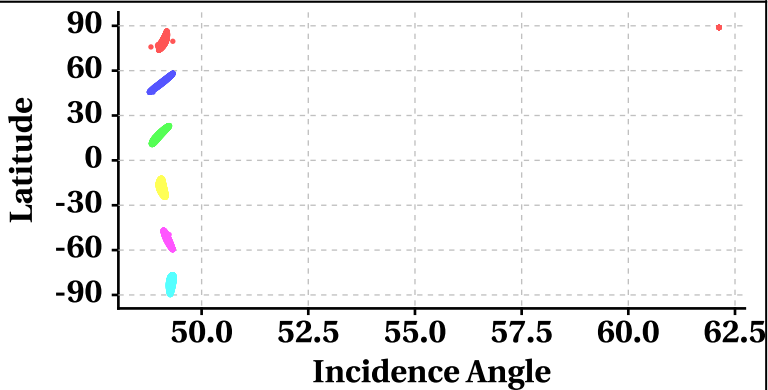
Scan Trace [Outer Beam (VV)]



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

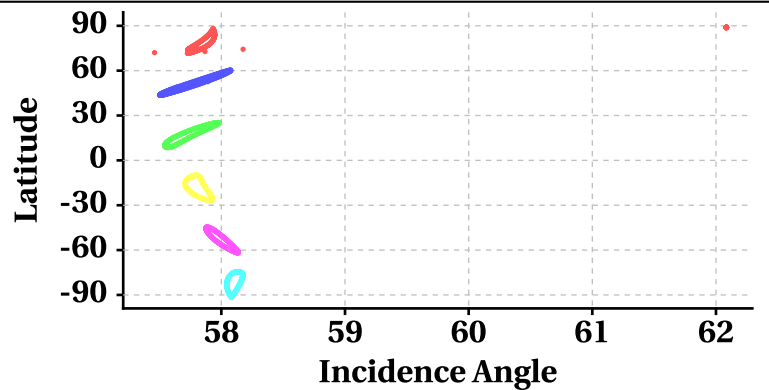
## Latitude Vs Incidence Angle

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



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

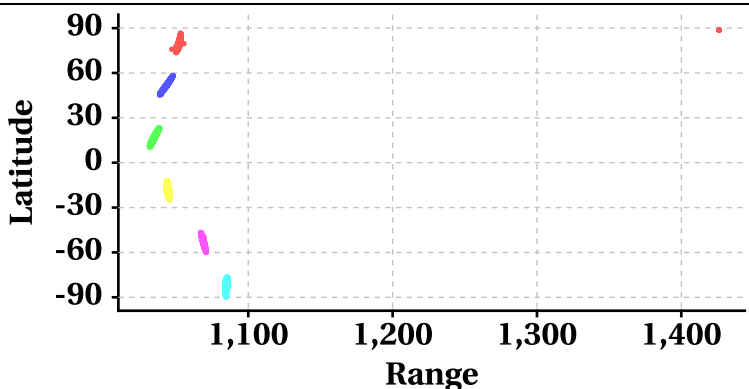
Incidence Angle at Scan Interval of 200 [Outer Beam (VV)]



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

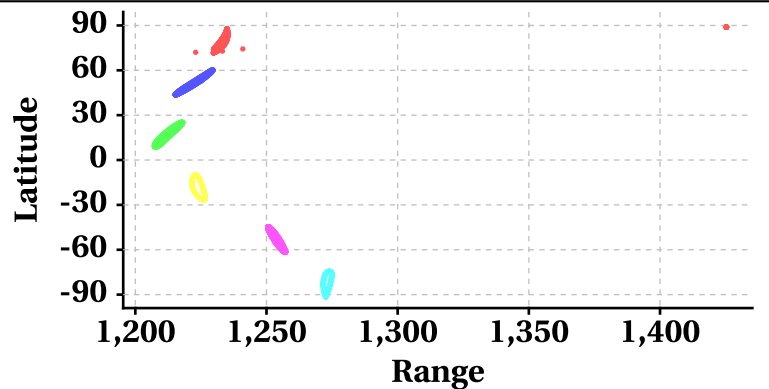
## Latitude Vs Range

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

