

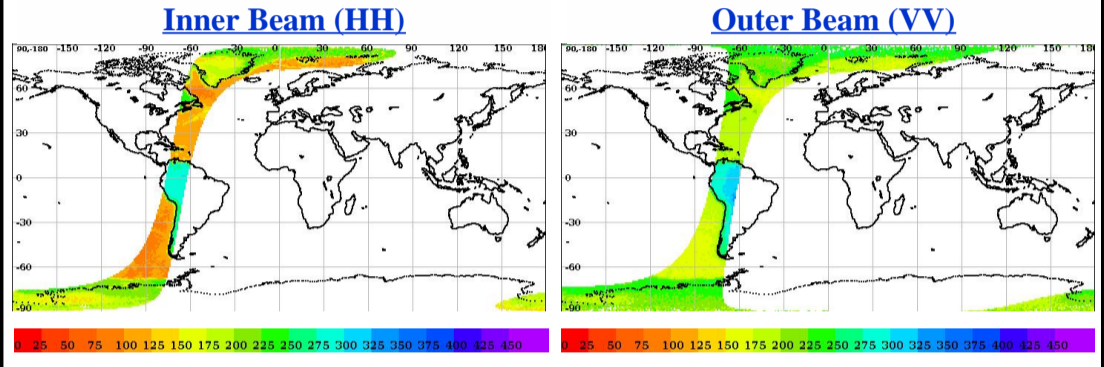
# SCATSAT-1 Scatterometer Level-1B Data Quality Evaluation Report

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<b>Satellite Id</b>	ScatSat-1	<b>Start Orbit</b>	11300	<b>Total Scans</b>	1017
<b>Sensor Name</b>	Scatterometer	<b>End Orbit</b>	11301	<b>No of Inner FootPrints</b>	281
<b>Processor Version</b>	v1.1.3	<b>Rev. Number</b>	11300_11301	<b>No Of Outer FootPrints</b>	282
<b>Half Orbit Direction</b>	NS	<b>Data Production Date</b>	14-11-2018	<b>No. Of Inner Slices</b>	9
<b>Equator Crossing Date</b>	14-11-2018	<b>Equator Crossing Time</b>	13:15:38.000	<b>No Of Outer Slices</b>	15

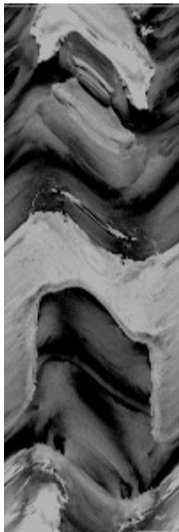
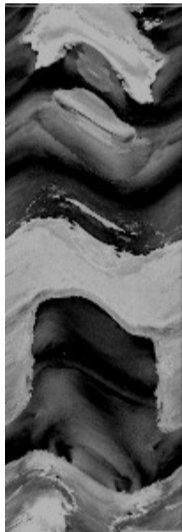
## Brightness Temperature(k) Footprint trace



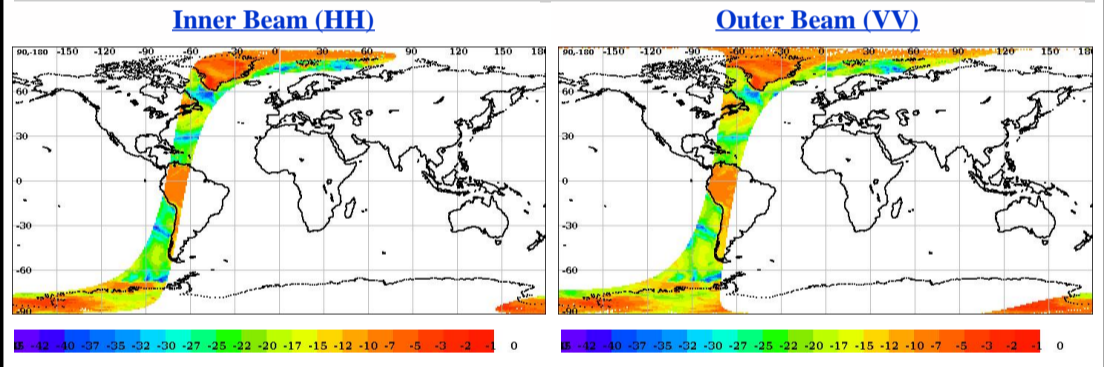
## Image Snapshot for Inner & Outer Beam

Inner (HH)

Outer (VV)



## Sigma0(dB) Footprint trace



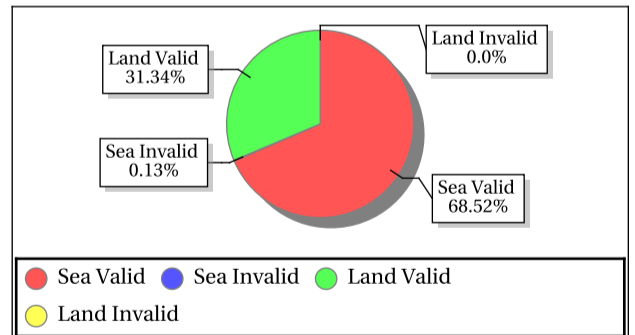
## Invalid and Poor Sigma-0 Quality Flag Statistics for Inner/Outer Slices\*

Sigma-0 Flags	Inner Beam	Outer Beam
<b>Invalid Sigma0(%)</b>	0.13	0.13
Data Not Available From Payload (%)	100.0	99.68684
Slice not within sample array limits (%)	0.00	0.31
C(S+N) - C(N) < 0.1 (%)	0.00	0.00
<b>Poor Sigma0(%)</b>	22.22	13.33
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 (%)	0.013301	0.040449

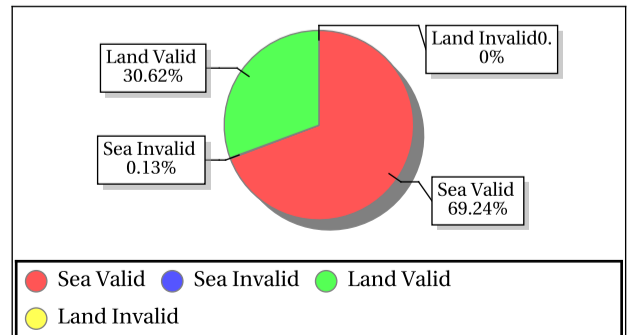
\*DP Format Document

## 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	-6.10	-5.26	-5.75	0.32	150.97	177.46	168.12	9.54
GreenLand_2	77.50	-41.50	Inner	DSC	Fore	-6.14	-5.27	-5.65	0.31	117.06	189.59	159.38	23.63
GreenLand_3	71.55	-42.45	Inner	DSC	Aft	-12.60	-10.25	-11.51	0.65	170.66	203.92	186.77	10.78
GreenLand_3	71.55	-42.45	Inner	DSC	Fore	-12.09	-10.41	-11.46	0.57	165.98	227.54	199.24	15.80
GreenLand_1	74.69	-42.50	Inner	DSC	Aft	-9.58	-7.27	-8.67	0.59	162.50	202.88	176.71	11.86
GreenLand_1	74.69	-42.50	Inner	DSC	Fore	-10.11	-8.93	-9.44	0.37	150.08	213.35	176.92	19.68
Amazon_1	0.00	-67.00	Inner	DSC	Aft	-9.40	-6.93	-8.03	0.56	245.22	326.17	294.92	16.24
Amazon_1	0.00	-67.00	Inner	DSC	Fore	-9.94	-6.68	-7.87	0.77	267.06	350.07	299.67	20.60
GreenLand_2	77.50	-41.50	Outer	DSC	Aft	-5.14	-4.75	-4.98	0.15	201.08	229.86	213.58	10.78
GreenLand_2	77.50	-41.50	Outer	DSC	Fore	-5.71	-4.45	-4.92	0.50	207.45	253.41	222.86	17.93
GreenLand_3	71.55	-42.45	Outer	DSC	Aft	-12.56	-11.22	-11.87	0.37	214.00	239.06	225.54	7.91
GreenLand_3	71.55	-42.45	Outer	DSC	Fore	-12.62	-10.75	-11.93	0.56	207.97	243.04	221.41	10.27
Amazon_3	-6.00	-61.00	Outer	DSC	Fore	-9.98	-9.94	-9.96	0.02	298.95	302.75	300.85	1.90
GreenLand_1	74.69	-42.50	Outer	DSC	Aft	-10.35	-7.83	-9.03	0.76	201.47	241.26	220.79	16.69
GreenLand_1	74.69	-42.50	Outer	DSC	Fore	-10.38	-8.45	-9.22	0.70	193.90	258.19	223.66	19.69
Amazon_2	-3.00	-61.00	Outer	DSC	Aft	-11.36	-8.83	-9.89	0.52	270.85	370.92	316.22	19.80
Amazon_2	-3.00	-61.00	Outer	DSC	Fore	-12.16	-8.63	-10.04	0.60	263.38	365.85	302.27	18.42
Amazon_1	0.00	-67.00	Outer	DSC	Aft	-9.82	-8.06	-8.74	0.44	289.55	383.84	335.88	22.96
Amazon_1	0.00	-67.00	Outer	DSC	Fore	-9.45	-8.04	-8.86	0.34	251.09	313.47	285.34	14.85



## 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	289.52	0.21	1.031	0.12	242.79	0.19	0.731	0.12	0.21	0.12	0.000	0.12	0.39	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>	-34.75	24.26	7.69	0.392	-33.99	25.69	8.31	0.879	-0.57	29.33	19.78	20.427	-4.78	30.32	20.68	37.419

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	232.65	0.20	1.296	0.09	184.65	0.19	1.119	0.09	0.18	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	0.02	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>	-34.97	21.89	5.25	0.000	-33.86	20.92	5.16	0.000	-1.42	22.93	14.07	0.147	1.02	23.97	14.60	1.175

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>	48.82	49.41	49.05	0.000	57.65	58.24	57.97	0.000	Inci.(Inner)	47.10	49.90
<b>Azimuth Diff. (deg)</b>	0.0000	38.31	1.27	2.785	0.0000	299.98	1.27	3.794	Inci.(Outer)	57.30	58.90
<b>Range(Km)</b>	1054.62	1081.34	1065.02	0.000	1235.58	1270.66	1253.45	0.000	Azimuth Diff.	0.60	2.00
<b>X Factor(dbm)</b>	-91.65	-90.06	-90.57	0.000	-94.52	-92.11	-92.26	0.000	Range(Inner)	1025.00	1095.70
<b>Across Distance (Km)</b>	15.89	16.37	16.01	0.000	11.14	35.77	21.05	3.000	Range(Outer)	1210.00	1280.00
<b>Along Distance (Km)</b>	18.81	8516.06	37.05	3.000	18.66	8335.97	36.82	3.000	X-Factor	-100.00	-80.00
									Ac.Distance(Inner)	15.00	20.00
									Ac.Distance(Outer)	15.00	22.00
									Al.Distance(Inner)	15.00	30.00
									Al.Distance(Outer)	10.00	30.00

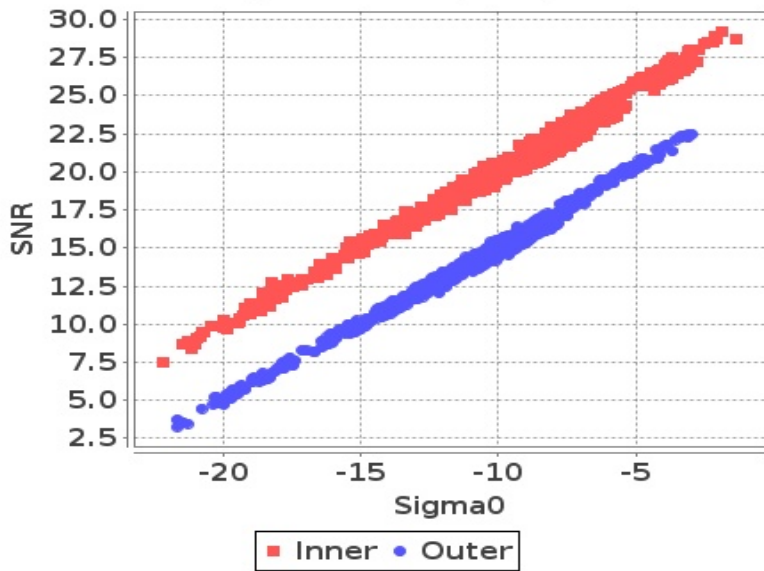
- Normal
- Deviations
- Alarming
- High Errors



## Sigma0 Behaviour (Sigma0 Vs SNR)

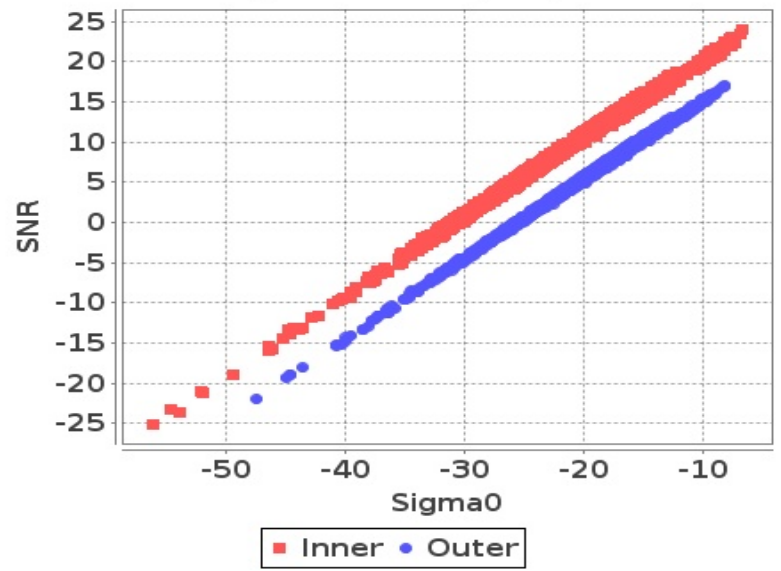
Footprint-Land

Sigma0 Vs SNR (Land)



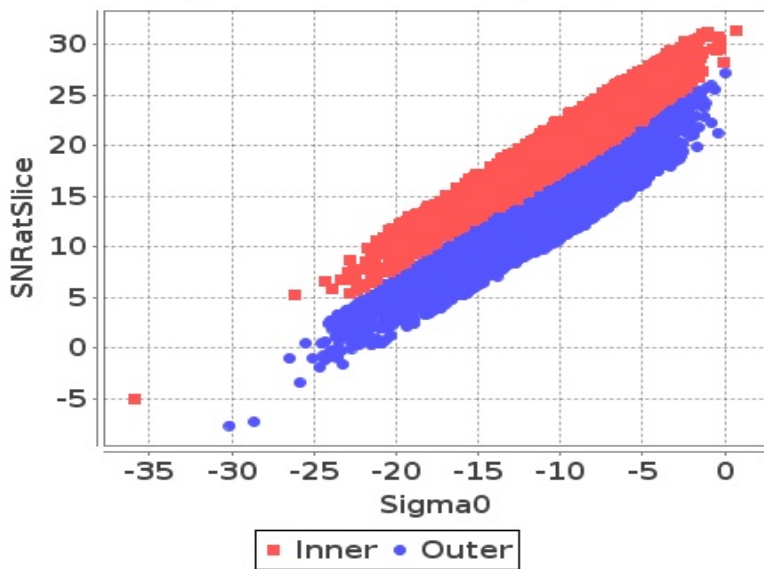
Footprint-Sea

Sigma0 Vs SNR (Sea)



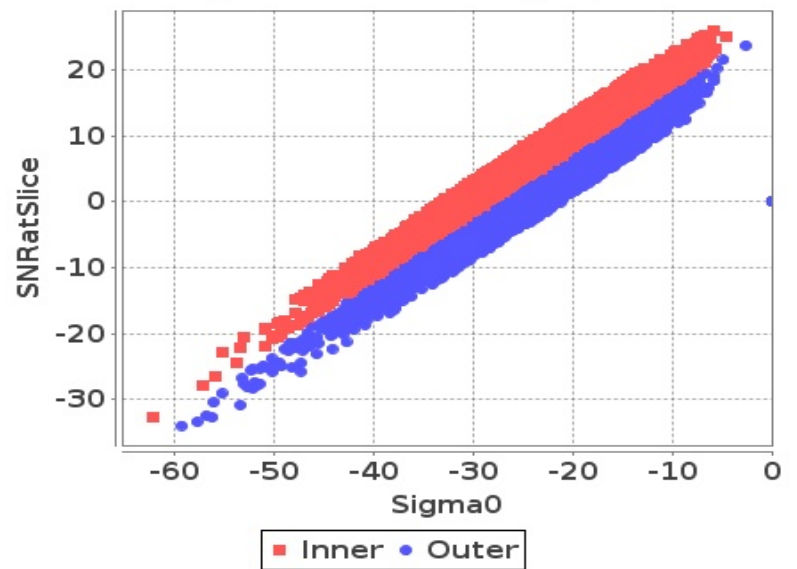
Slice-Land

Sigma0 Vs SNRatSlice (Land)



Slice-Sea

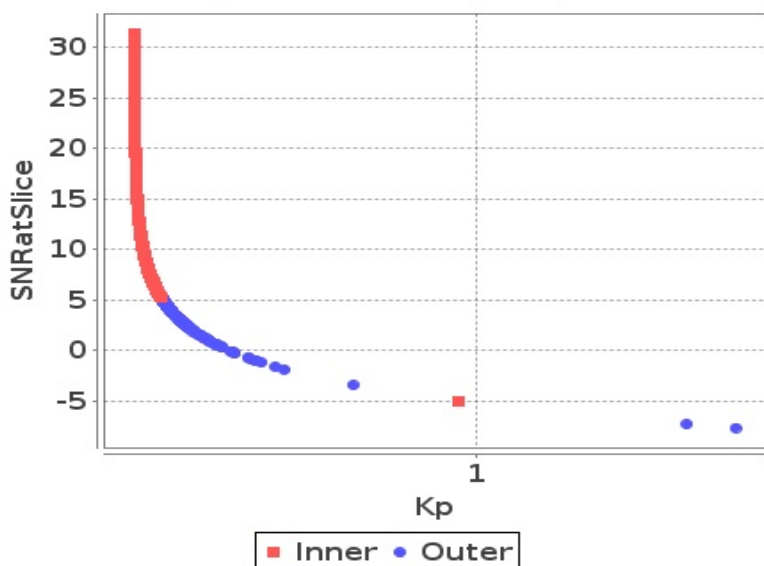
Sigma0 Vs SNRatSlice (Sea)



## Sigma0 Behaviour (Kp Vs SNR)

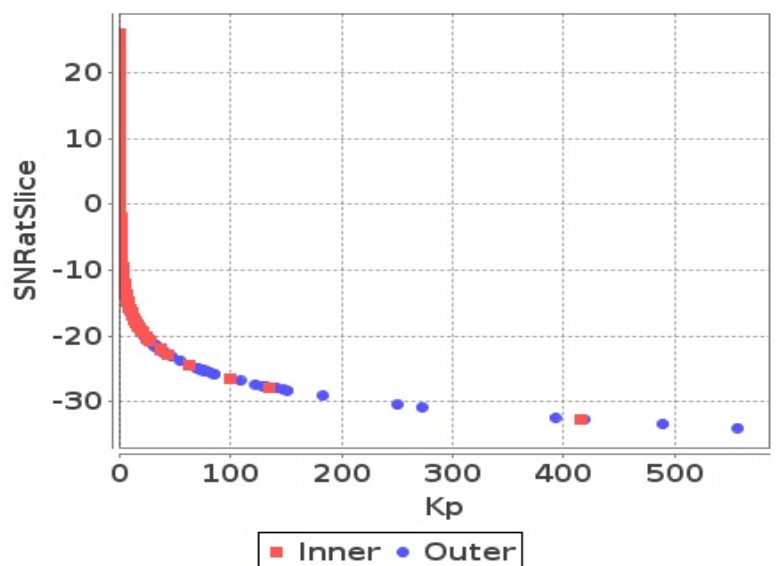
Slice

Kp Vs SNRatSlice (Land)



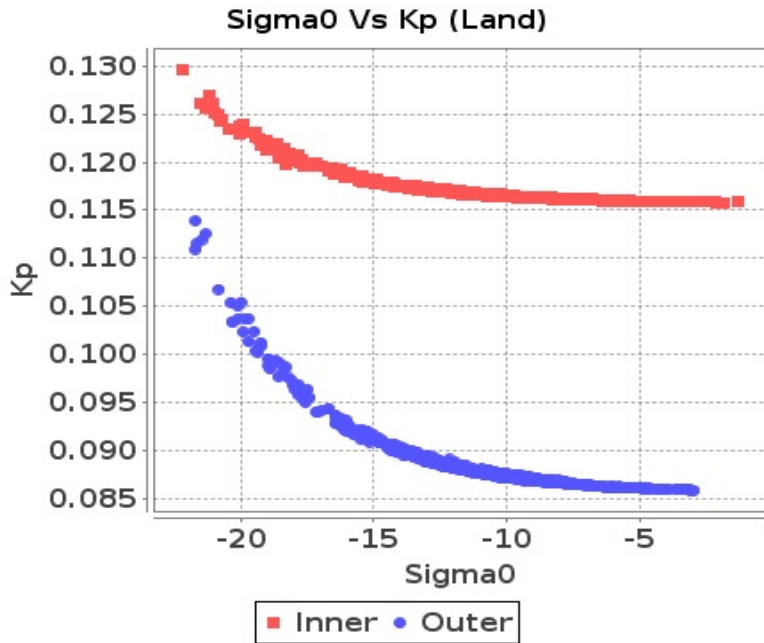
Slice

Kp Vs SNRatSlice (Sea)

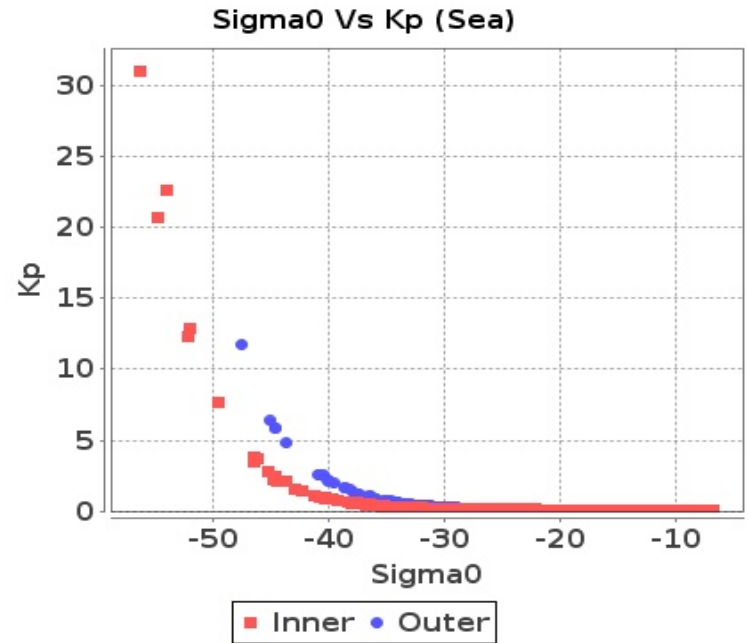


# Sigma0 Behaviour(Sigma0 Vs Kp)

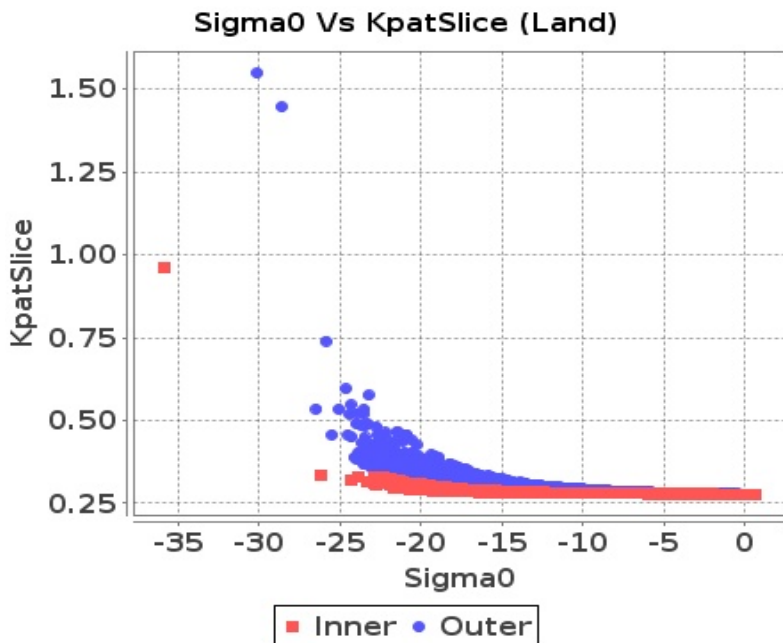
## Footprint-Land



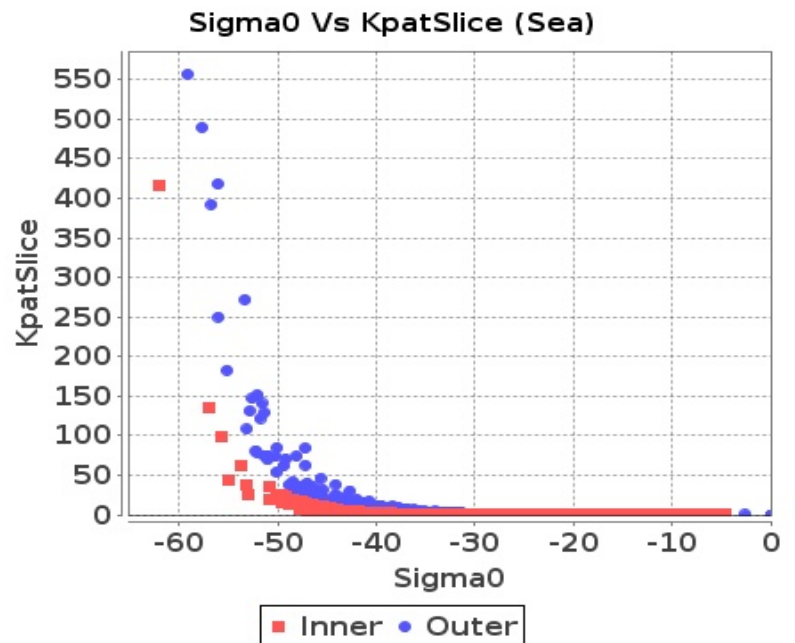
## Footprint-Sea



## Slice-Land



## Slice-Sea

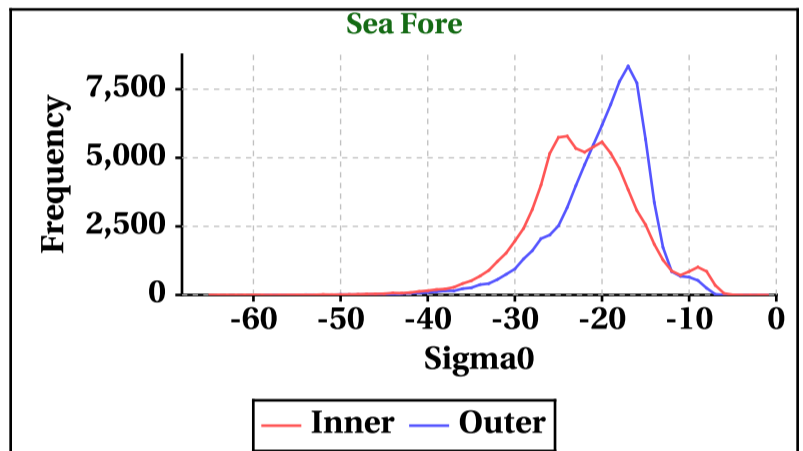
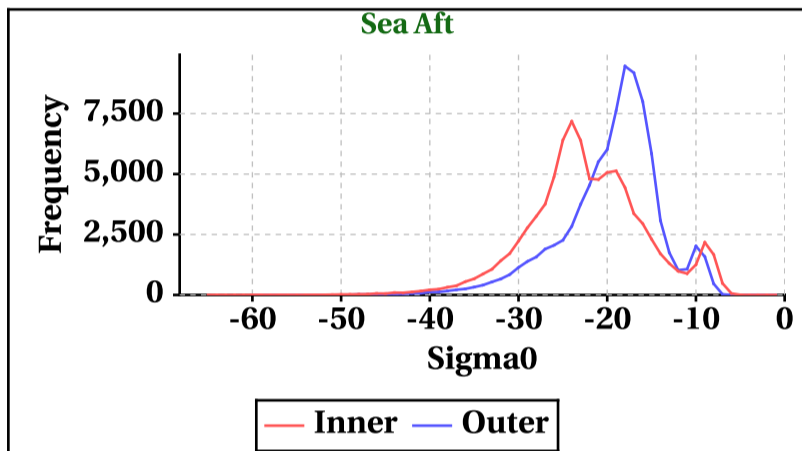
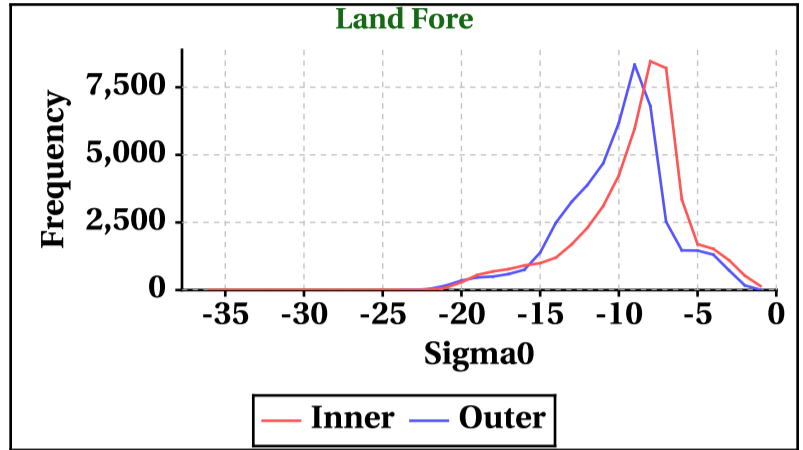
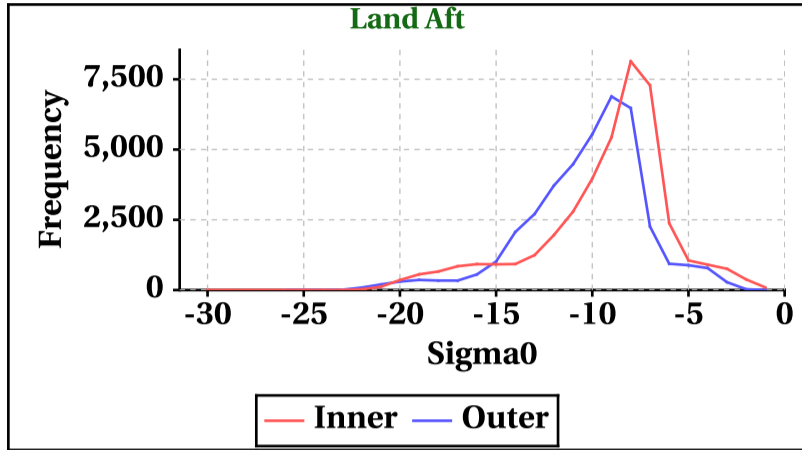


# Dynamic Range (Data Histograms)

## Sigma0(db)

Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-30	-36	-65	-65
Max	0	0	0	0

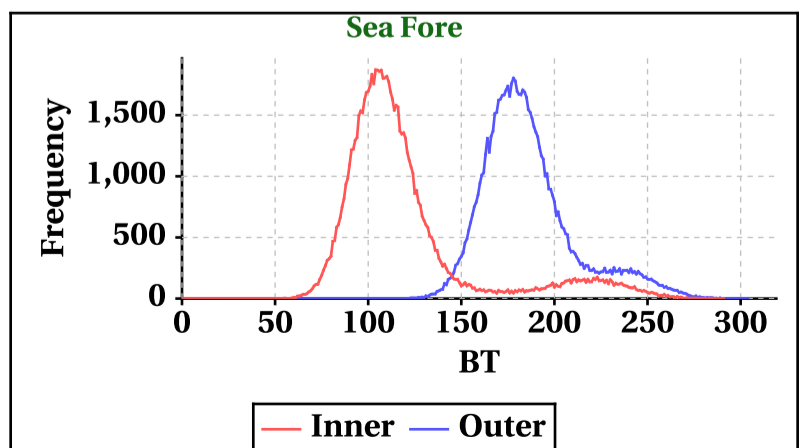
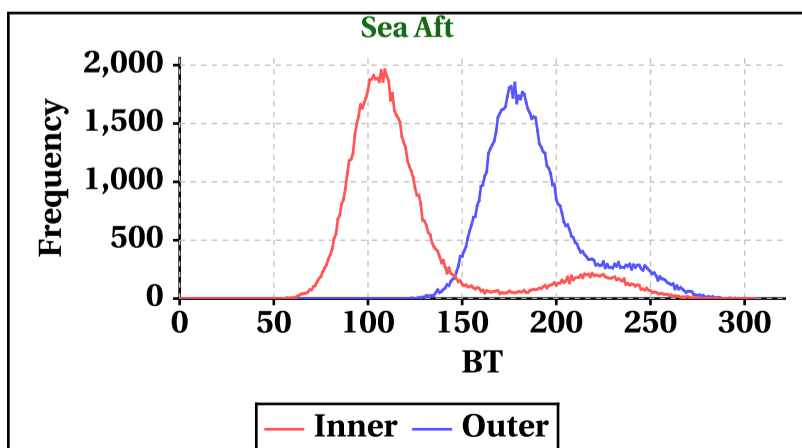
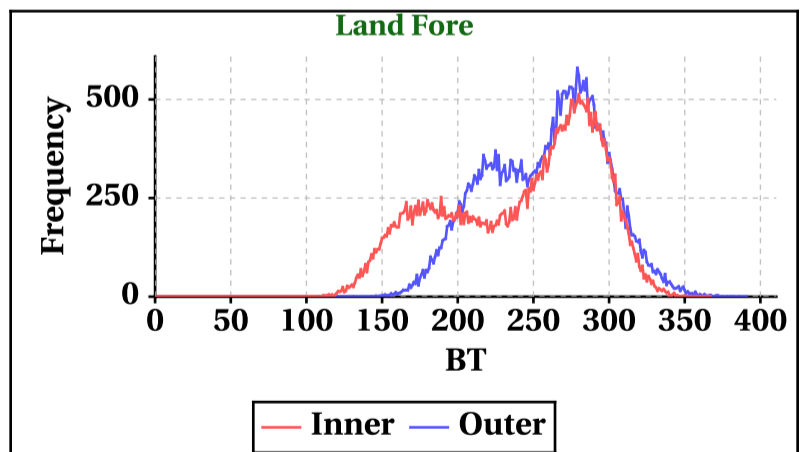
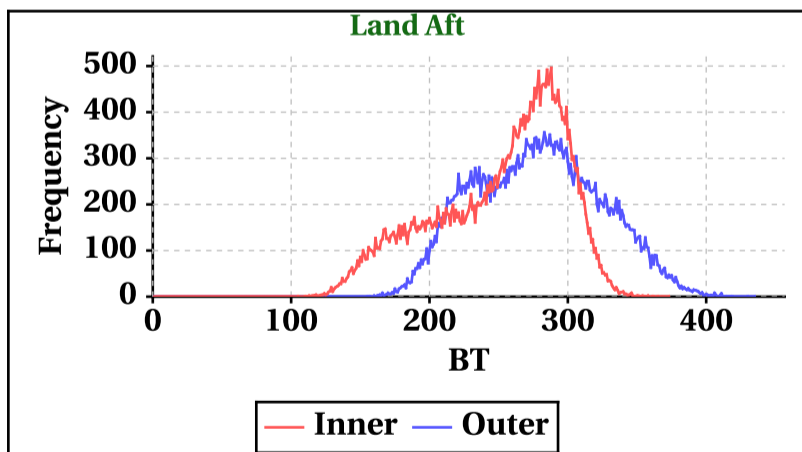
Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-26	-24	-60	-59
Max	0	0	0	0



## Brightness Temperature(K)

Inner Beam(HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	373	367	306	291

Outer Beam(VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	435	391	305	304

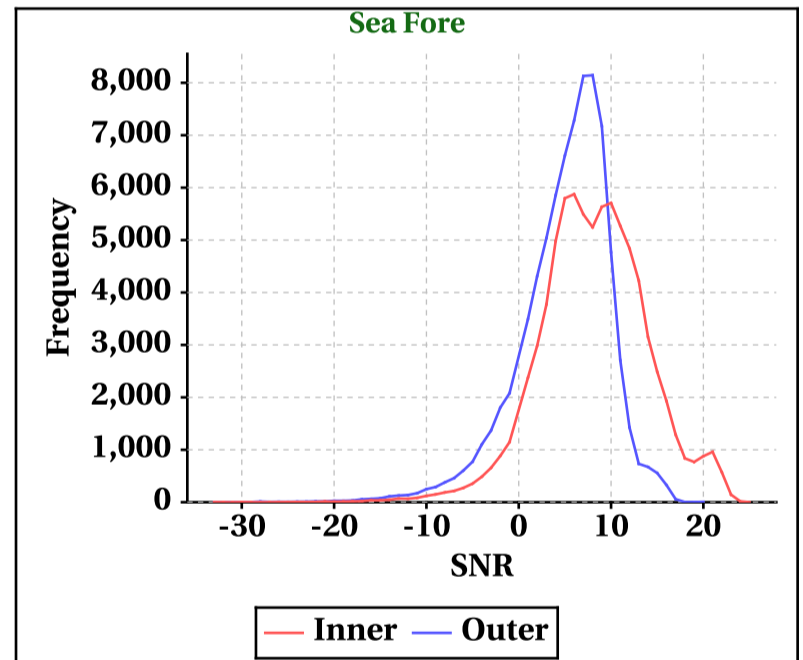
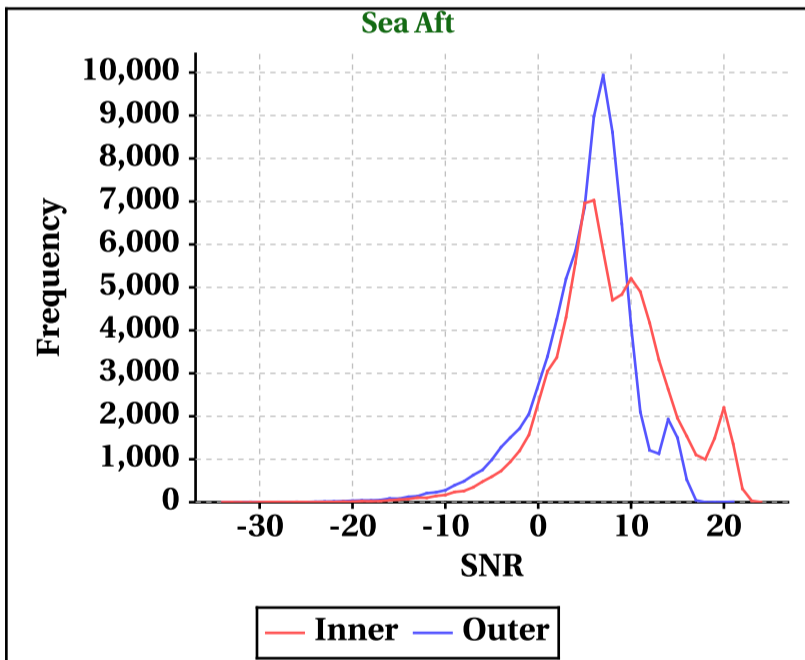
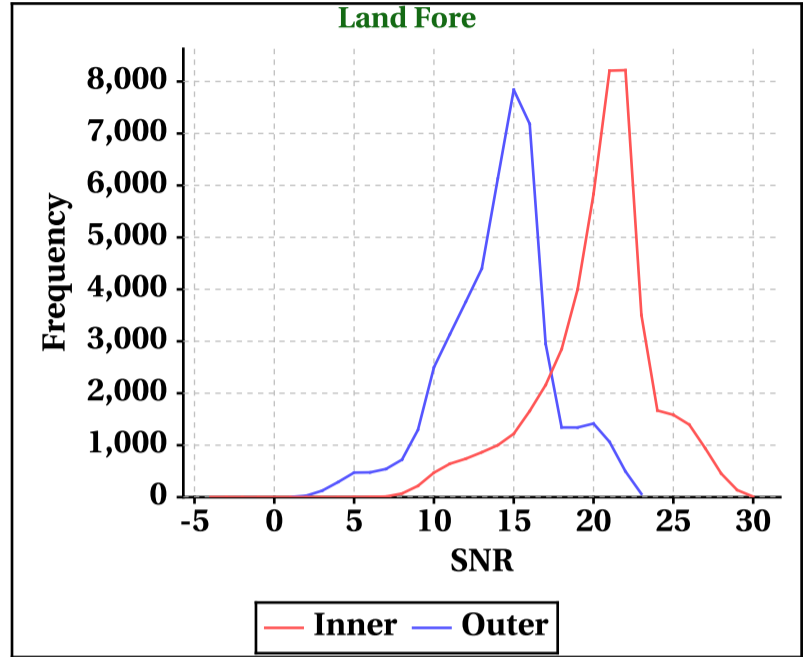
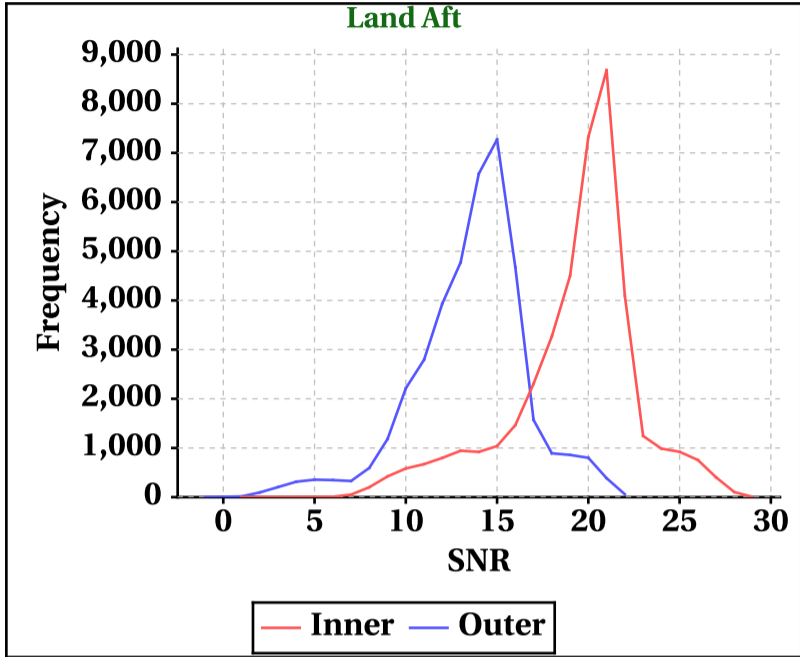


# Dynamic Range (Data Histograms)

## SNR(dBm)

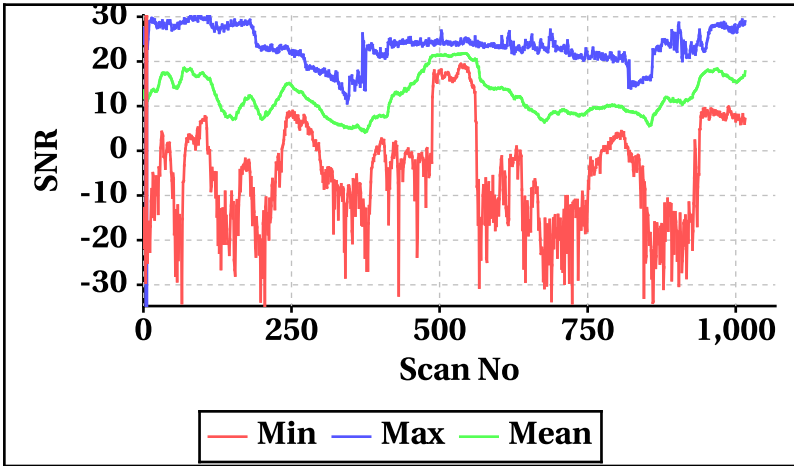
Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	-4	-34	-33
Max	29	30	24	25

Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-1	0	-34	-33
Max	22	23	21	20

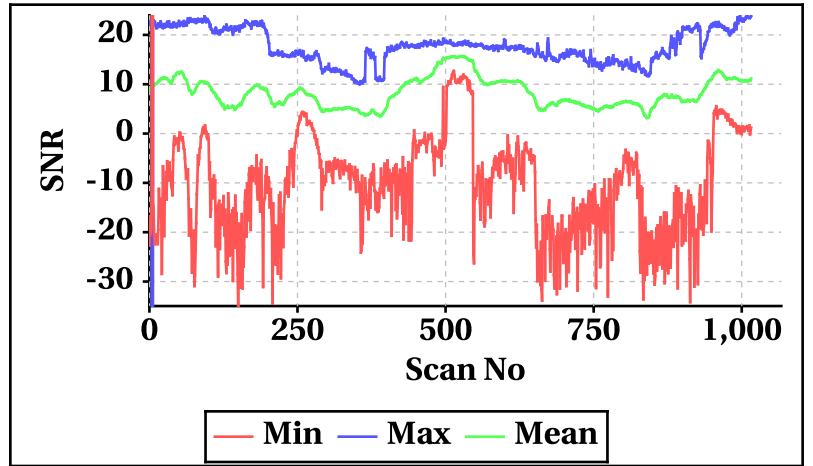


## Orbit-wise behaviour of SNR

Inner Beam (HH)

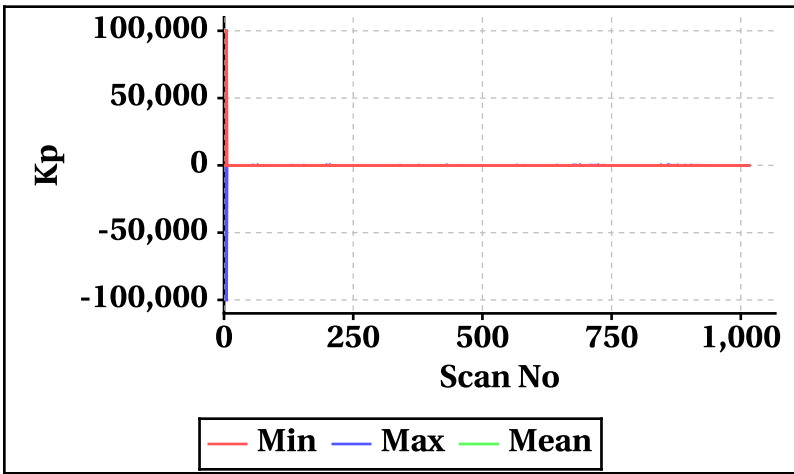


Outer Beam(VV)

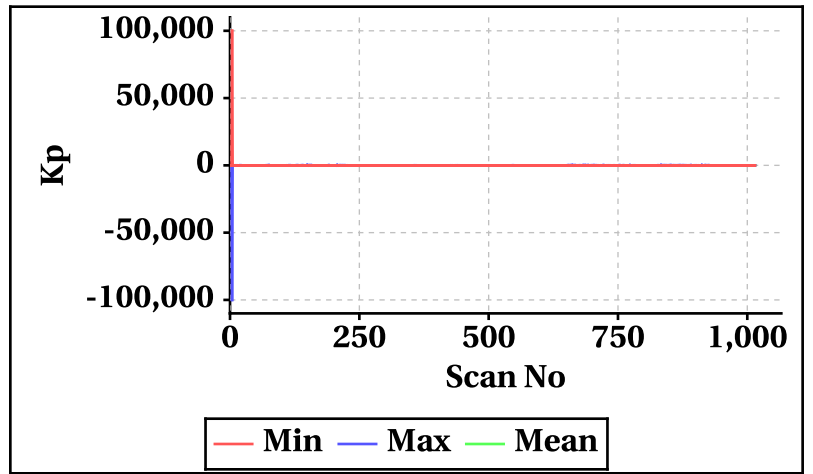


## Orbit-wise behaviour of Kp,Kpa,Kpb,Kpc

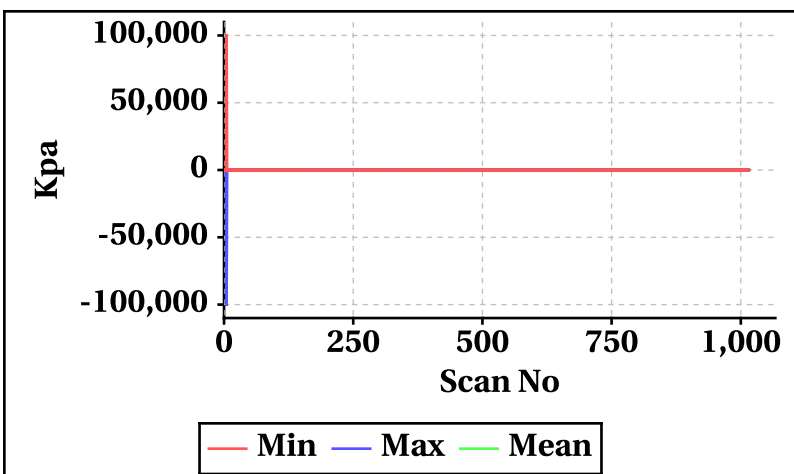
Inner Beam(HH)



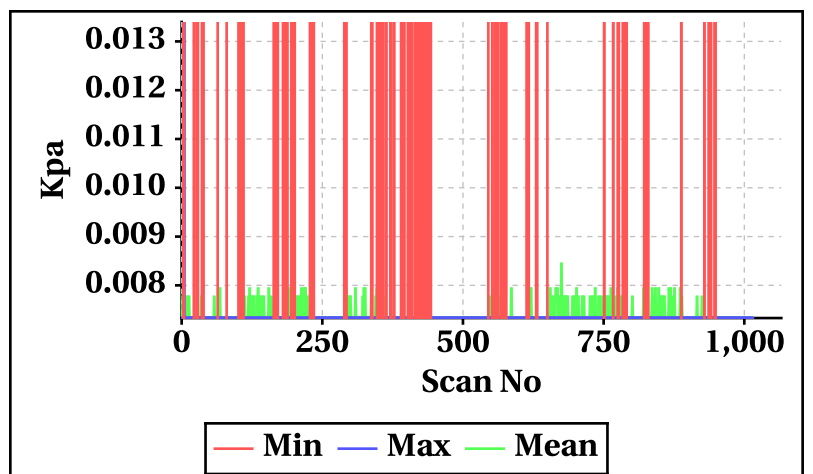
Outer Beam(VV)



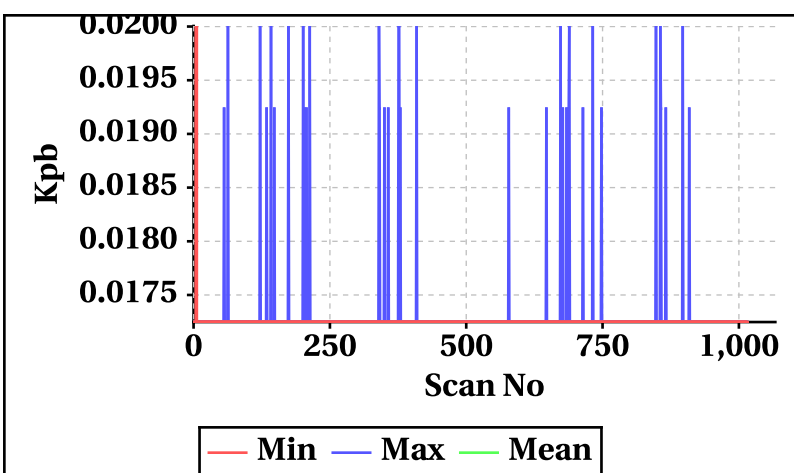
Inner Beam(HH)



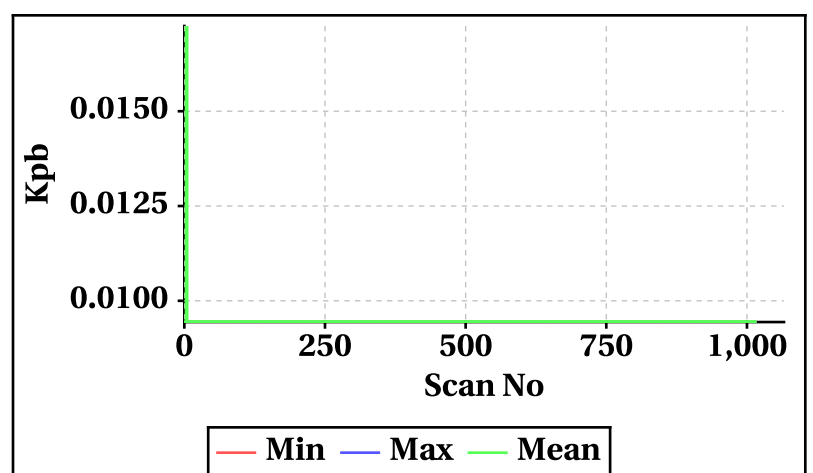
Outer Beam(VV)



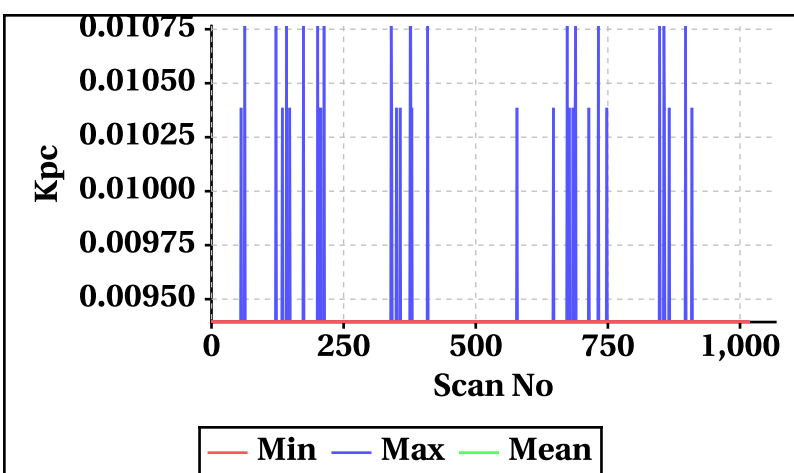
Inner Beam(HH)



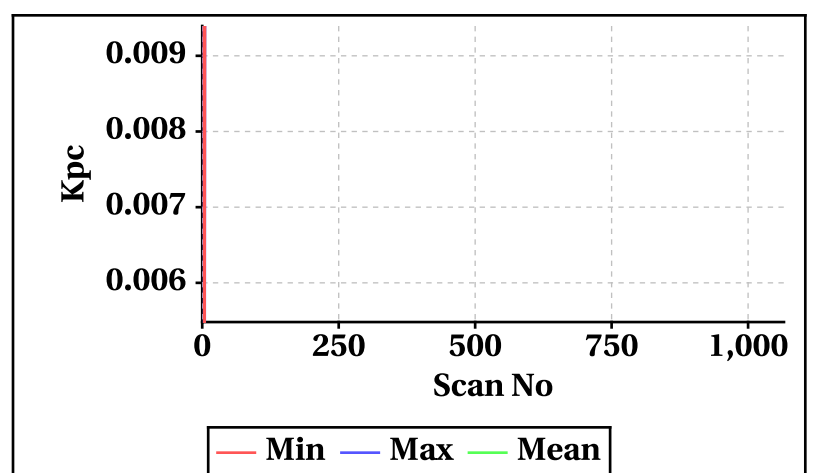
Outer Beam(VV)



Inner Beam(HH)



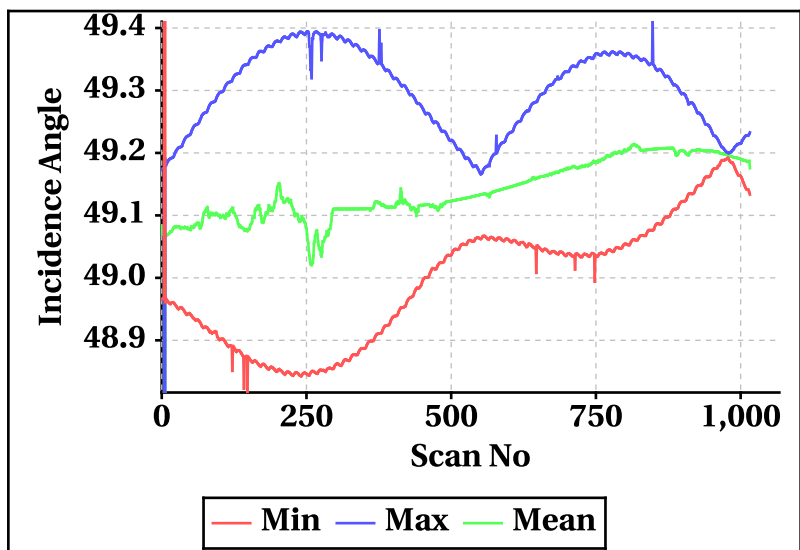
Outer Beam(VV)



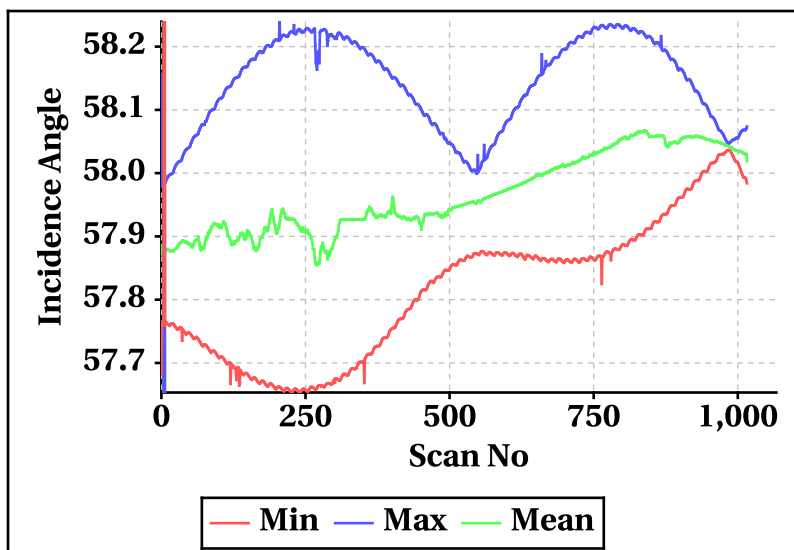


Orbit-wise behaviour of Incidence, Azimuth, Range, X-Factor

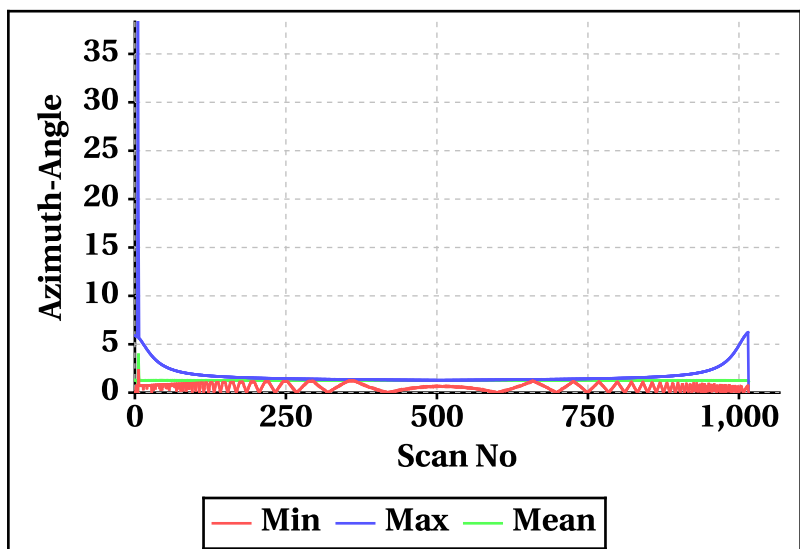
Inner Beam (HH)



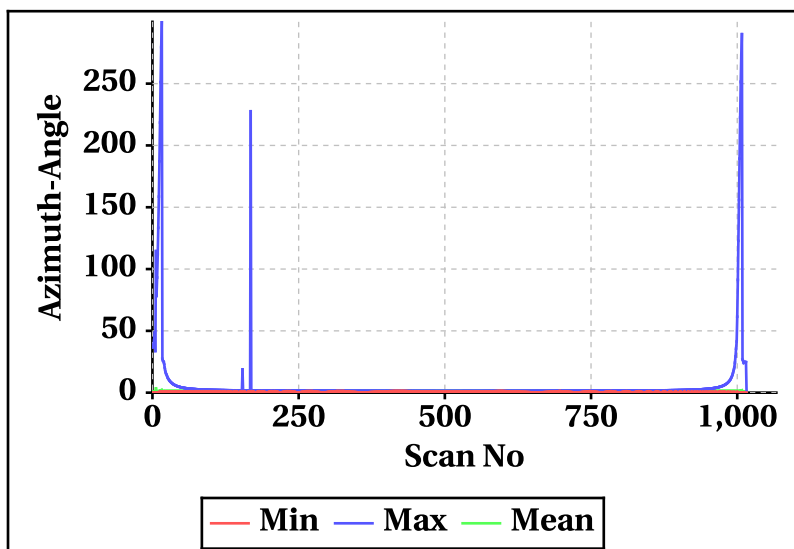
Outer Beam(VV)



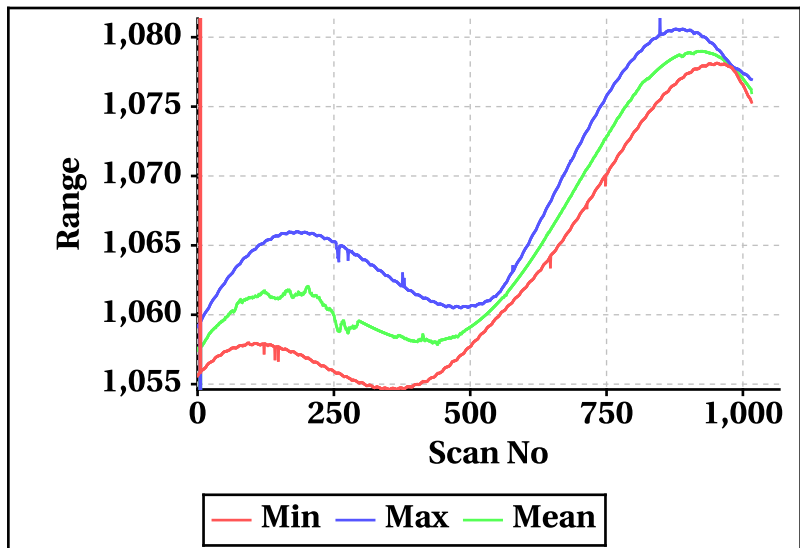
Inner Beam (HH)



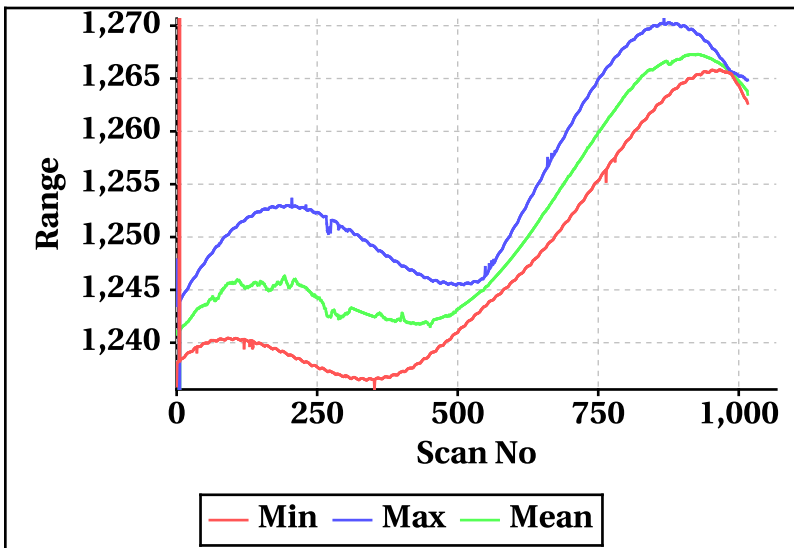
Outer Beam(VV)



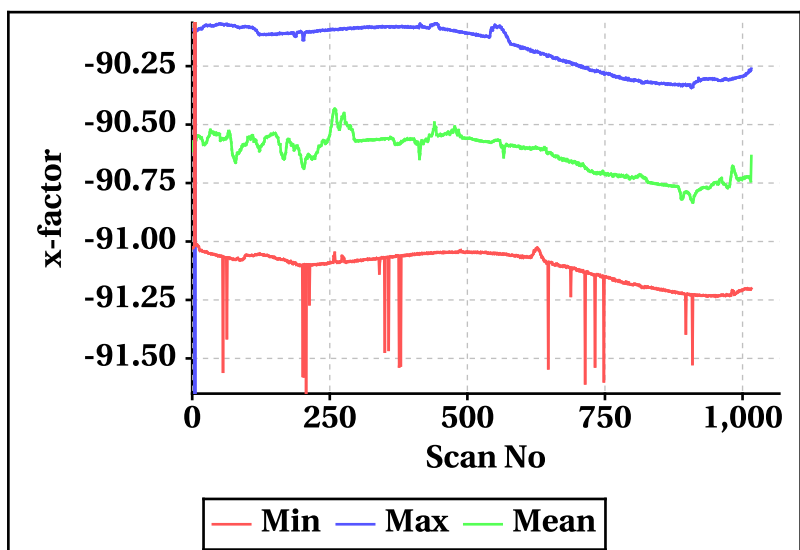
Inner Beam (HH)



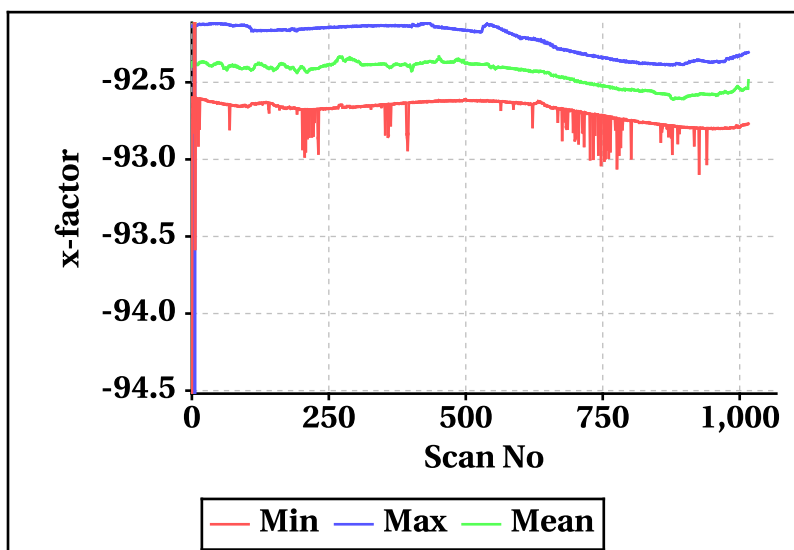
Outer Beam(VV)



Inner Beam (HH)



Outer Beam(VV)

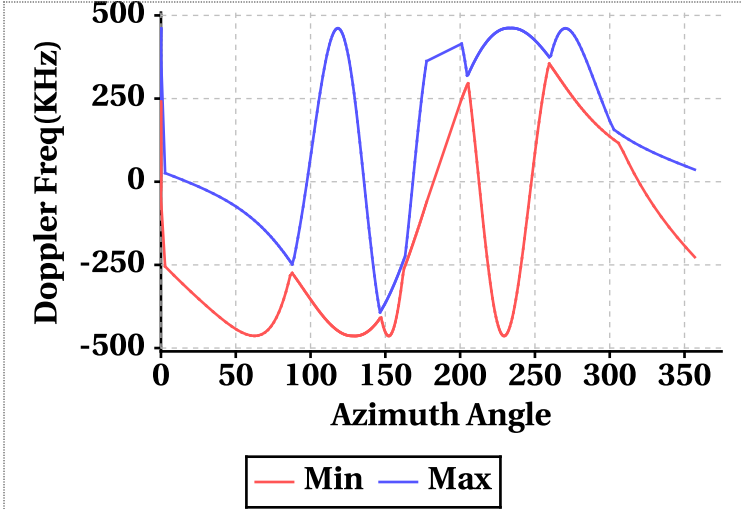


# Doppler Frequency Variation

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

	Inner Beam (HH)	Outer Beam (VV)
<b>Min</b>	-463.72	-519.38
<b>Max</b>	461.98	517.76

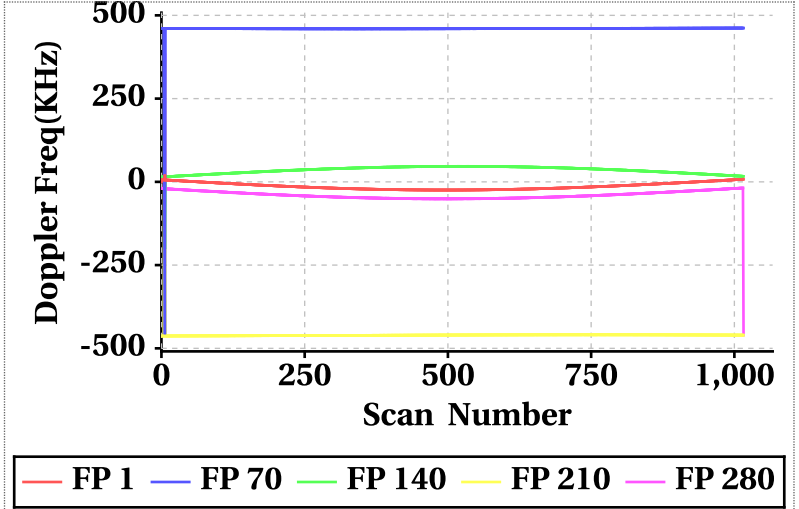
**Footprint wise Doppler frequency variation Inner Beam (HH)**



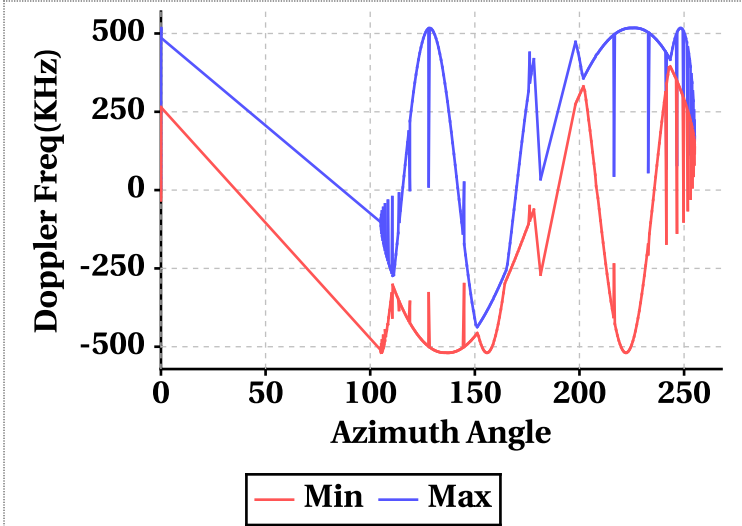
**Doppler Frequency(KHz) variation**

Doppler_FP	Inner Beam (HH)			Outer Beam (VV)		
	Min	Max	Mean	Min	Max	Mean
Doppler_1	-24.58	18.42	-12.98	-460.28	3.04	-20.52
Doppler_70	-453.80	461.88	459.04	-511.66	517.34	514.20
Doppler_140	-197.66	46.58	35.03	-237.74	46.52	33.55
Doppler_210	-462.88	360.40	-459.28	-518.72	392.46	-515.10
Doppler_280	-460.28	381.68	-39.38	-516.24	438.08	-38.16

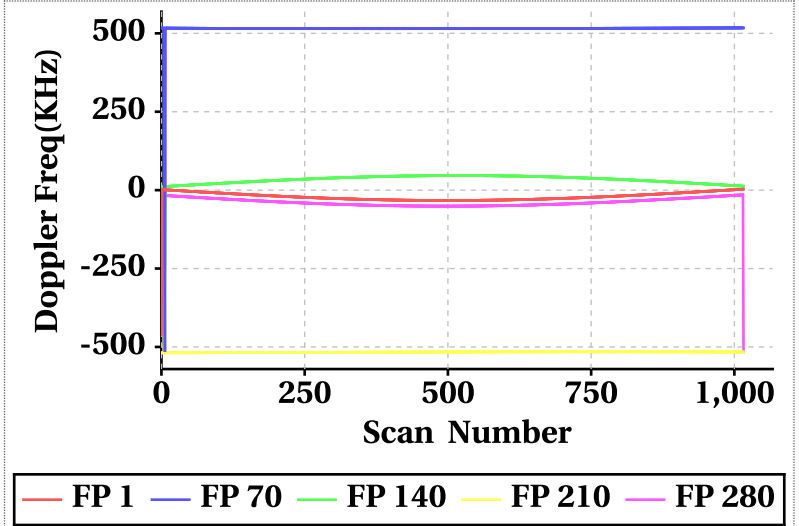
**Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Inner Beam (HH)**



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

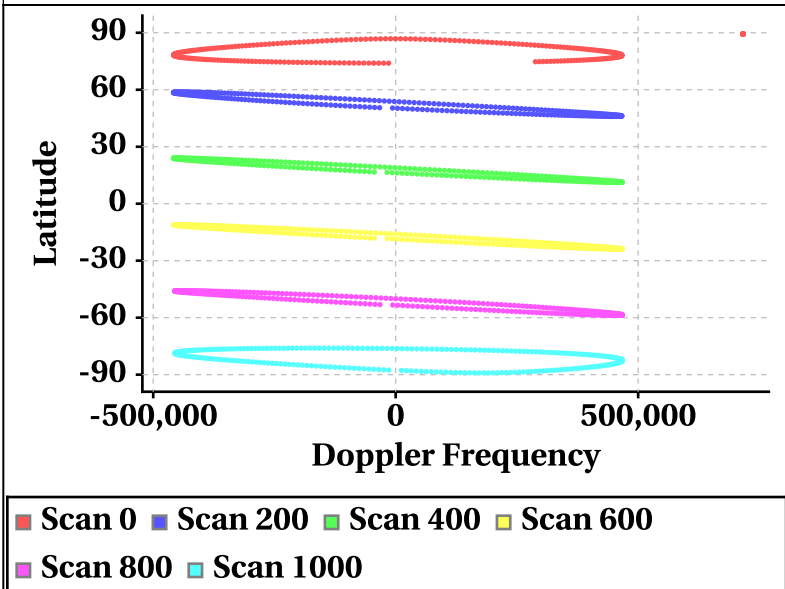


**Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Outer Beam (VV)**

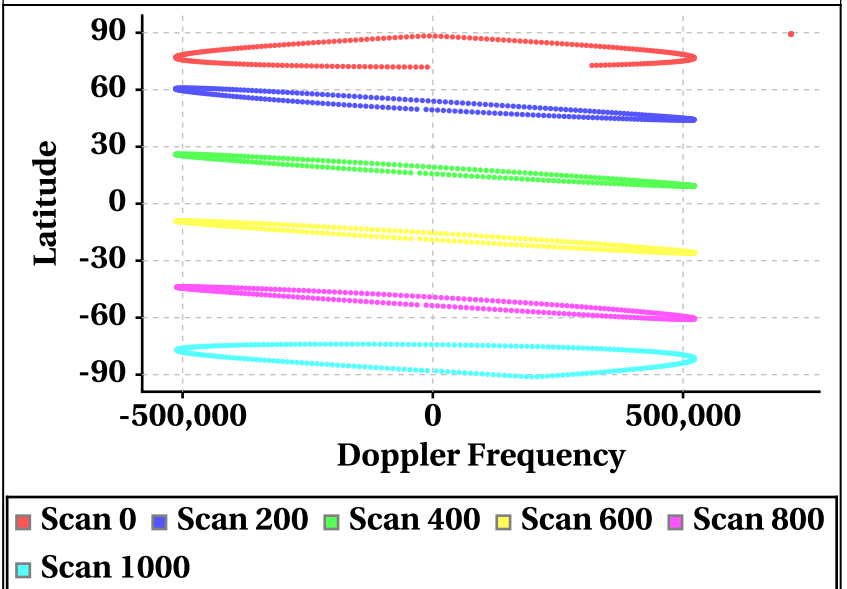


# Latitude Vs Doppler Frequency

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



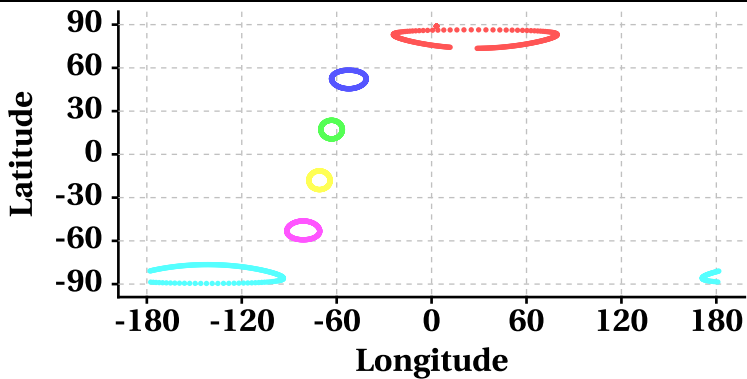
**Doppler Frequency at Scan Interval of 200 [Outer Beam(VV)]**



# Parameter as a function of Latitude

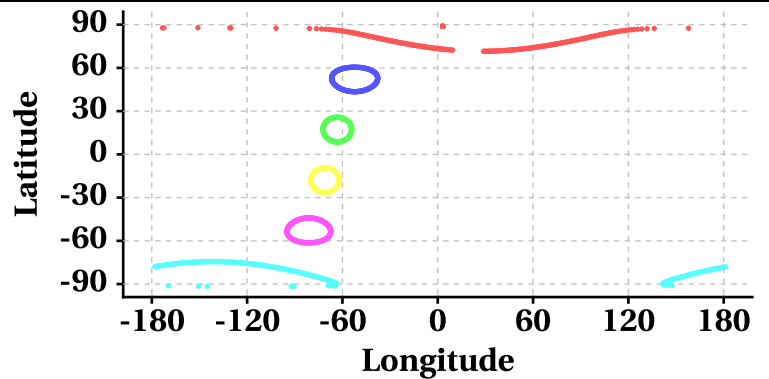
## Latitude Vs Longitude

Scan Trace [Inner Beam(HH)]



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

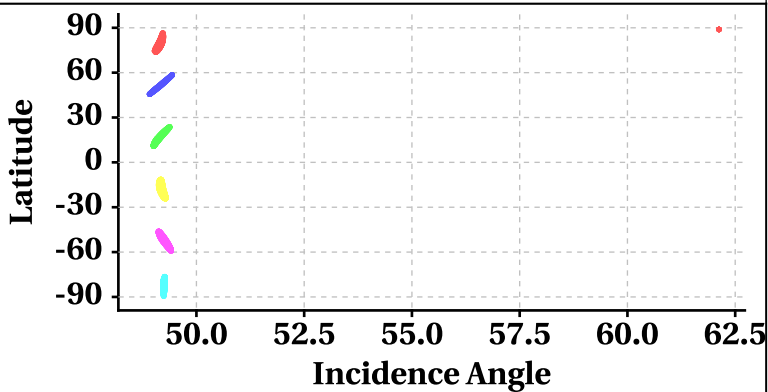
Scan Trace [Outer Beam (VV)]



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

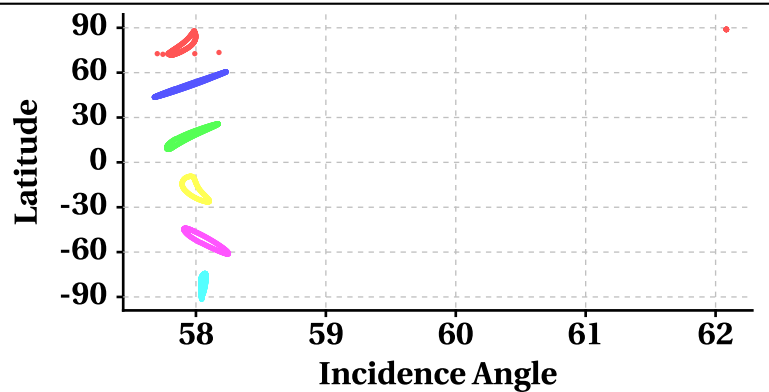
## Latitude Vs Incidence Angle

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



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

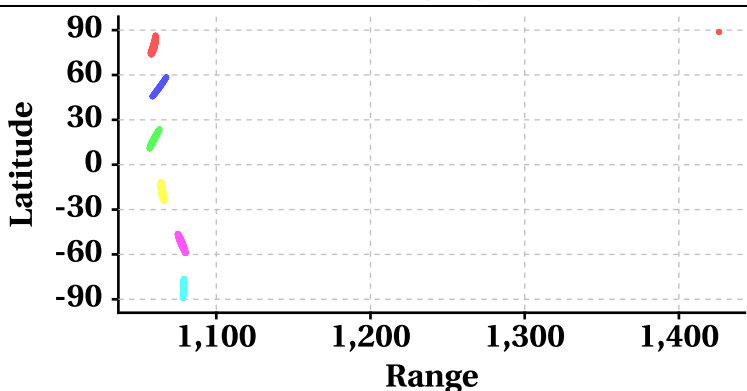
Incidence Angle at Scan Interval of 200 [Outer Beam (VV)]



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

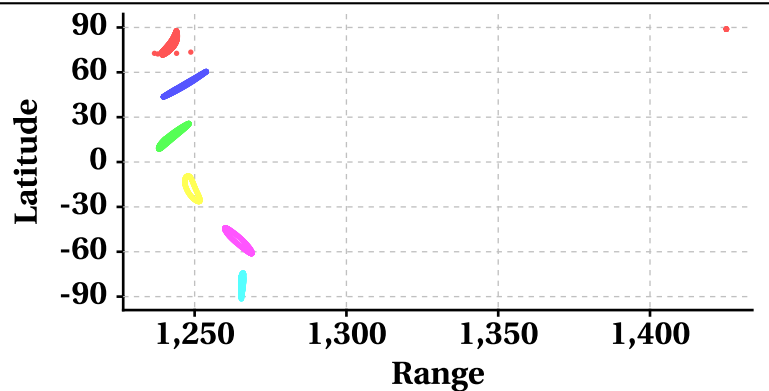
## Latitude Vs Range

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

