

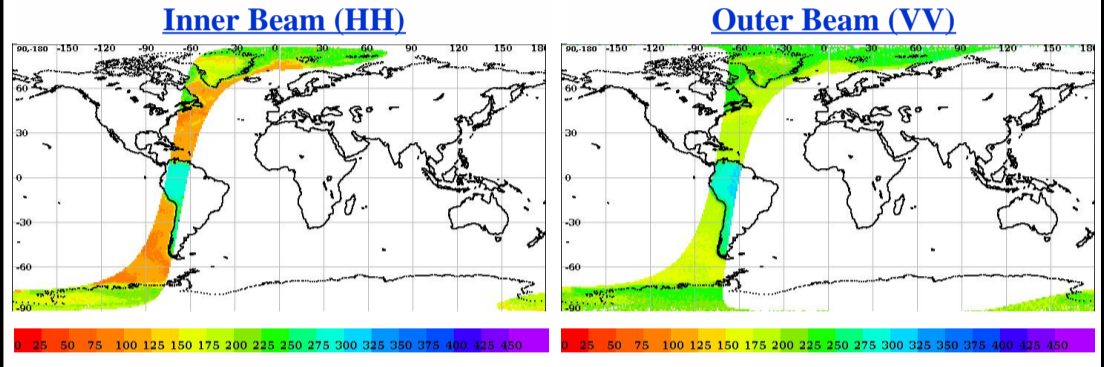
# SCATSAT-1 Scatterometer Level-1B Data Quality Evaluation Report

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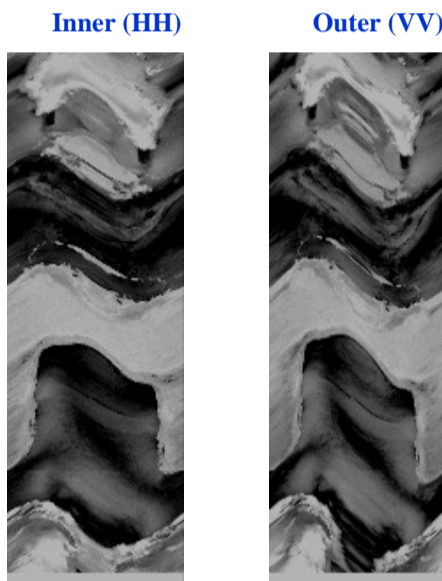
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<b>Satellite Id</b>	ScatSat-1	<b>Start Orbit</b>	13098	<b>Total Scans</b>	1015
<b>Sensor Name</b>	Scatterometer	<b>End Orbit</b>	13099	<b>No of Inner FootPrints</b>	281
<b>Processor Version</b>	v1.1.3	<b>Rev. Number</b>	13098_13099	<b>No Of Outer FootPrints</b>	282
<b>Half Orbit Direction</b>	NS	<b>Data Production Date</b>	18-03-2019	<b>No. Of Inner Slices</b>	9
<b>Equator Crossing Date</b>	18-03-2019	<b>Equator Crossing Time</b>	13:11:29.000	<b>No Of Outer Slices</b>	15

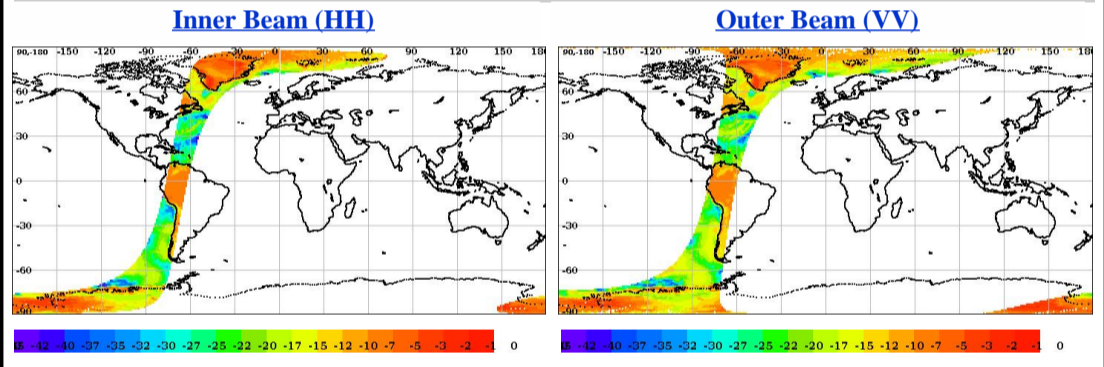
## Brightness Temperature(k) Footprint trace



## Image Snapshot for Inner & Outer Beam



## Sigma0(dB) Footprint trace



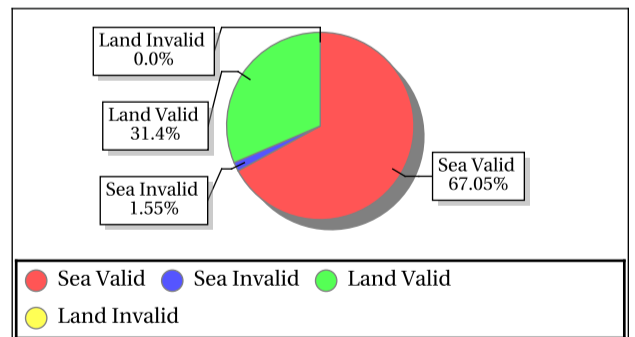
## Invalid and Poor Sigma-0 Quality Flag Statistics for Inner/Outer Slices\*

Sigma-0 Flags	Inner Beam	Outer Beam
Invalid Sigma0(%)	1.55	1.55
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(%)	21.89	13.14
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 (%)	0.022597	0.056363

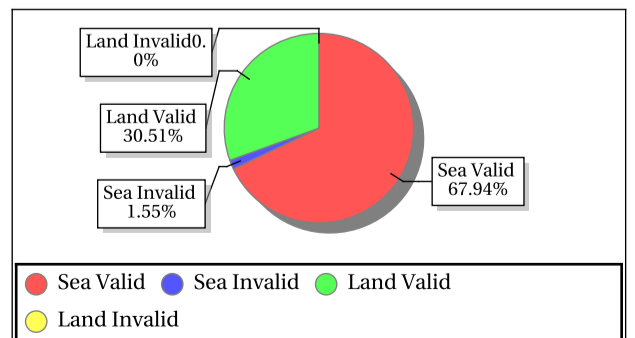
\*DP Format Document

## 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	-5.50	-4.19	-4.79	0.45	136.91	173.95	154.81	14.42
GreenLand_2	77.50	-41.50	Inner	DSC	Fore	-6.58	-4.82	-5.61	0.71	136.05	158.28	150.55	7.88
GreenLand_3	71.55	-42.45	Inner	DSC	Aft	-12.69	-10.38	-11.54	0.60	157.88	225.59	187.06	17.16
GreenLand_3	71.55	-42.45	Inner	DSC	Fore	-12.76	-10.45	-11.72	0.62	175.98	206.88	195.14	9.77
GreenLand_1	74.69	-42.50	Inner	DSC	Aft	-10.90	-8.21	-9.66	0.76	155.73	202.06	171.14	14.33
GreenLand_1	74.69	-42.50	Inner	DSC	Fore	-11.06	-8.55	-9.70	0.80	142.90	205.21	168.26	14.54
Amazon_1	0.00	-67.00	Inner	DSC	Aft	-10.72	-6.23	-7.94	0.90	260.27	325.18	290.63	15.52
Amazon_1	0.00	-67.00	Inner	DSC	Fore	-9.88	-5.53	-7.75	0.95	243.45	326.00	288.97	17.72
GreenLand_2	77.50	-41.50	Outer	DSC	Aft	-5.97	-5.07	-5.61	0.39	189.89	215.32	205.11	10.97
GreenLand_2	77.50	-41.50	Outer	DSC	Fore	-5.94	-5.02	-5.47	0.34	195.70	244.79	212.74	18.92
GreenLand_3	71.55	-42.45	Outer	DSC	Aft	-12.74	-11.34	-11.85	0.43	203.98	252.24	227.54	14.16
GreenLand_3	71.55	-42.45	Outer	DSC	Fore	-13.25	-11.59	-12.53	0.47	203.00	247.38	223.68	12.57
Amazon_3	-6.00	-61.00	Outer	DSC	Aft	-10.13	-9.37	-9.77	0.25	280.60	338.35	303.36	19.72
Amazon_3	-6.00	-61.00	Outer	DSC	Fore	-10.87	-9.05	-10.03	0.46	250.55	332.69	299.08	19.45
GreenLand_1	74.69	-42.50	Outer	DSC	Aft	-9.53	-8.09	-9.01	0.48	214.87	256.52	232.45	13.78
GreenLand_1	74.69	-42.50	Outer	DSC	Fore	-10.79	-8.22	-9.50	0.82	196.67	239.46	221.60	14.79
Amazon_2	-3.00	-61.00	Outer	DSC	Aft	-11.88	-8.53	-10.21	0.62	241.84	340.10	294.33	19.14
Amazon_2	-3.00	-61.00	Outer	DSC	Fore	-12.86	-8.78	-10.44	0.89	247.12	334.71	285.76	16.35
Amazon_1	0.00	-67.00	Outer	DSC	Aft	-9.82	-7.85	-8.89	0.47	284.39	344.08	312.15	16.78
Amazon_1	0.00	-67.00	Outer	DSC	Fore	-10.38	-7.36	-8.82	0.65	251.94	312.61	282.70	13.67



## 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	217.98	0.26	1.637	0.12	251.93	0.23	1.307	0.12	0.31	0.12	0.000	0.12	0.28	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>	-33.52	27.05	7.39	1.028	-34.15	27.12	7.46	1.234	-3.34	28.62	19.77	20.859	-2.82	30.26	20.69	38.176

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	191.47	0.22	1.572	0.09	209.18	0.22	1.554	0.09	0.20	0.09	0.000	0.09	0.15	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>	-34.12	22.67	4.69	0.002	-34.51	20.85	4.02	0.000	-2.22	22.71	14.11	0.067	-0.23	23.79	14.59	1.078

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	49.42	49.06	0.000	57.66	58.27	57.97	0.000	Inci.(Inner)	47.10	49.90
<b>Azimuth Diff. (deg)</b>	0.0000	264.49	1.28	2.883	0.0000	290.49	1.28	3.854	Inci.(Outer)	57.30	58.90
<b>Range(Km)</b>	1054.42	1073.51	1063.45	0.000	1236.22	1262.27	1247.79	0.000	Azimuth Diff.	0.60	2.00
<b>X Factor(dbm)</b>	-91.66	-90.05	-90.55	0.000	-93.65	-92.10	-92.26	0.000	Range(Inner)	1025.00	1095.70
<b>Across Distance (Km)</b>	99999.99	-99999.99	0.00	0.000	99999.99	-99999.99	0.00	0.000	Range(Outer)	1210.00	1280.00
<b>Along Distance (Km)</b>	18.92	9152.28	40.14	6.000	18.66	9347.26	41.17	6.000	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

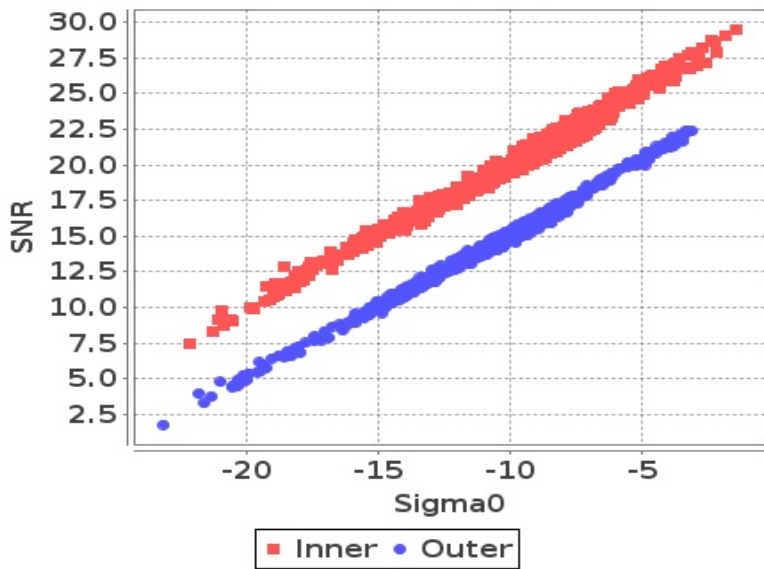
- Normal
- Deviations
- Alarming
- High Errors



## Sigma0 Behaviour (Sigma0 Vs SNR)

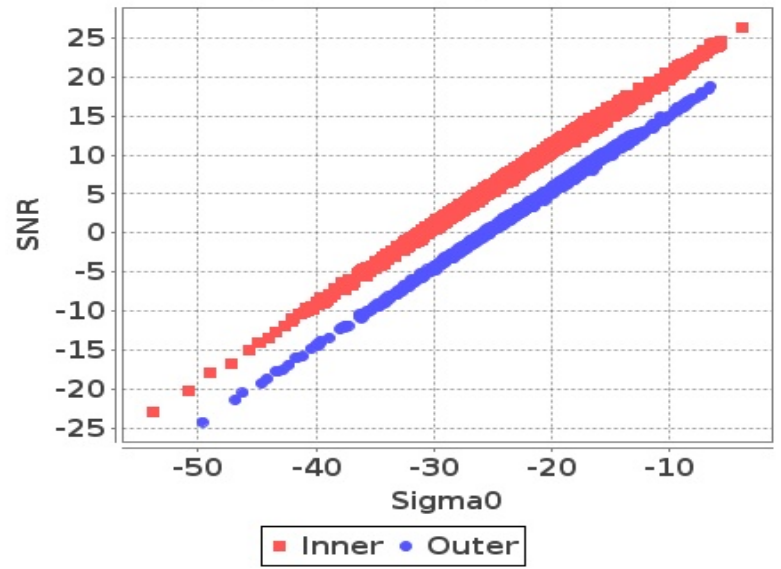
Footprint-Land

Sigma0 Vs SNR (Land)



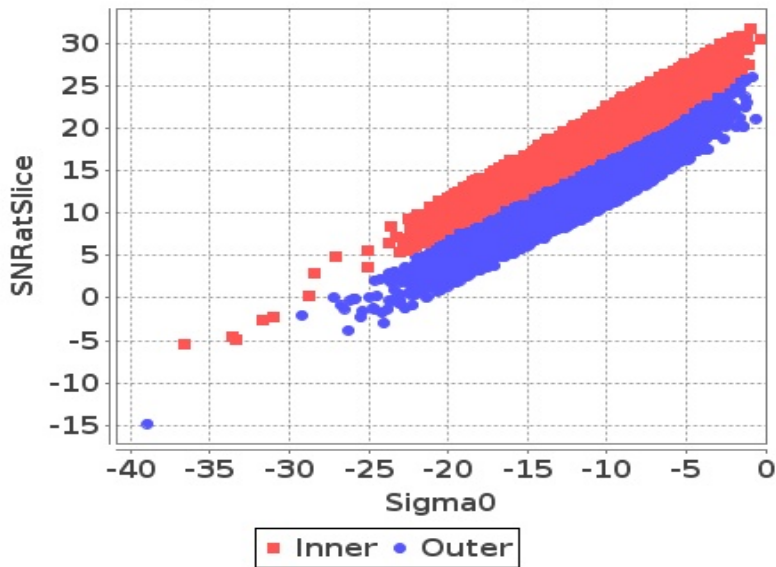
Footprint-Sea

Sigma0 Vs SNR (Sea)



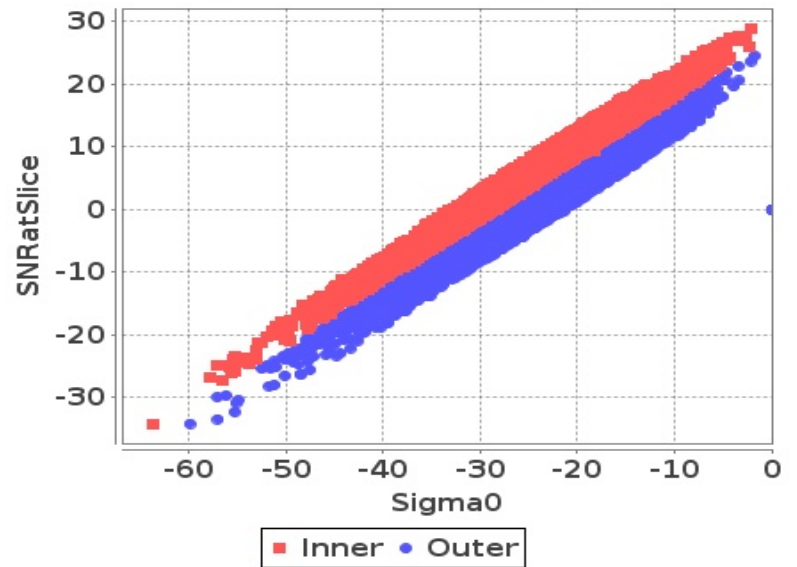
Slice-Land

Sigma0 Vs SNRatSlice (Land)



Slice-Sea

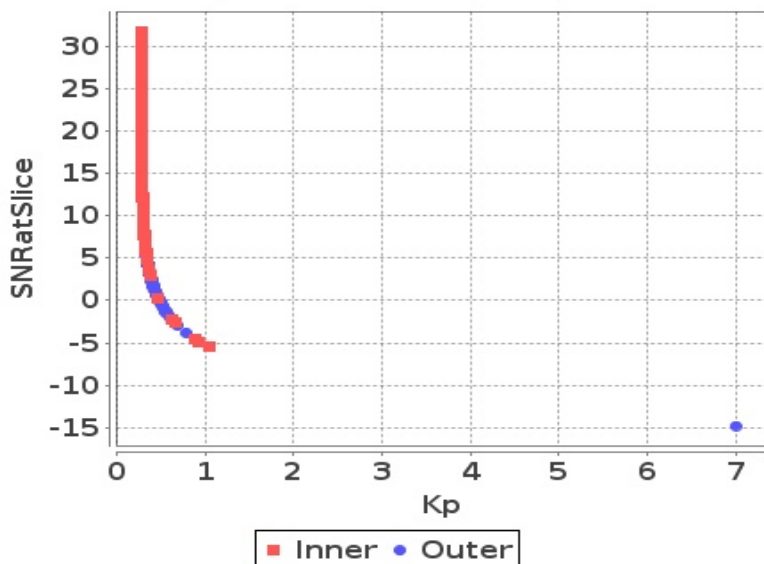
Sigma0 Vs SNRatSlice (Sea)



## Sigma0 Behaviour (Kp Vs SNR)

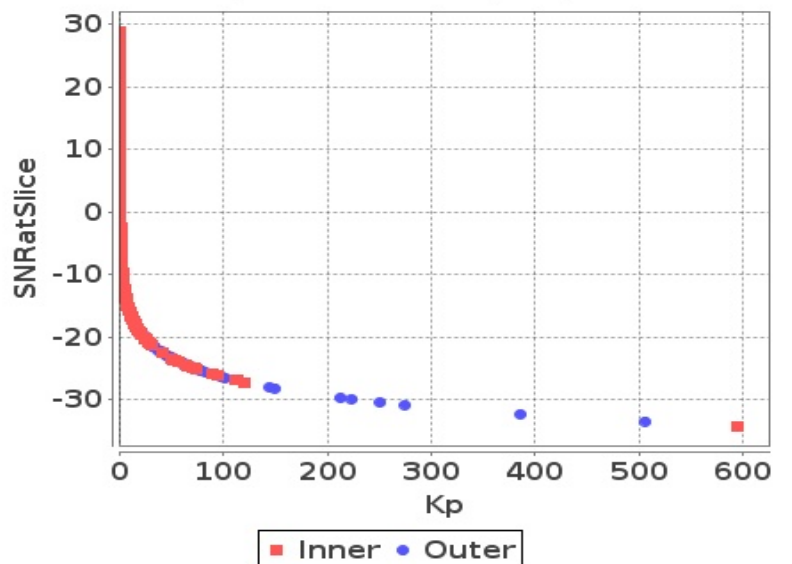
Slice

Kp Vs SNRatSlice (Land)



Slice

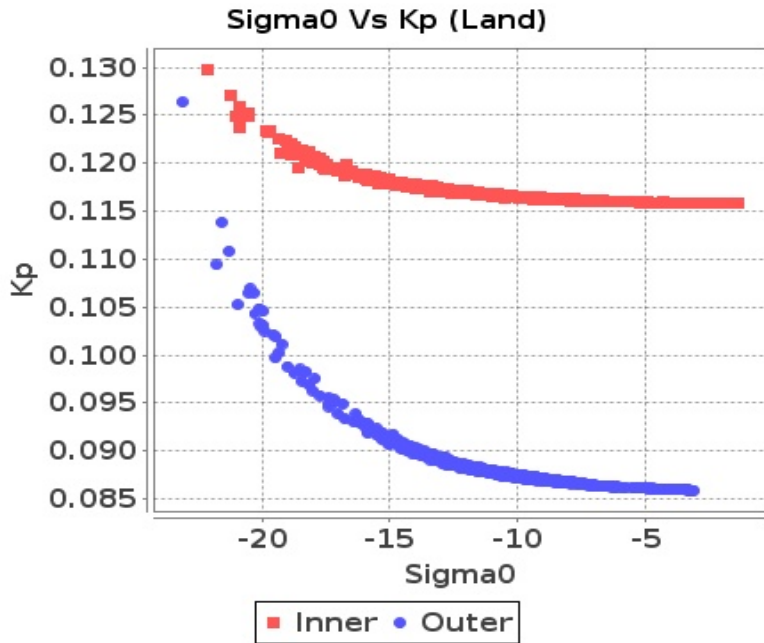
Kp Vs SNRatSlice (Sea)



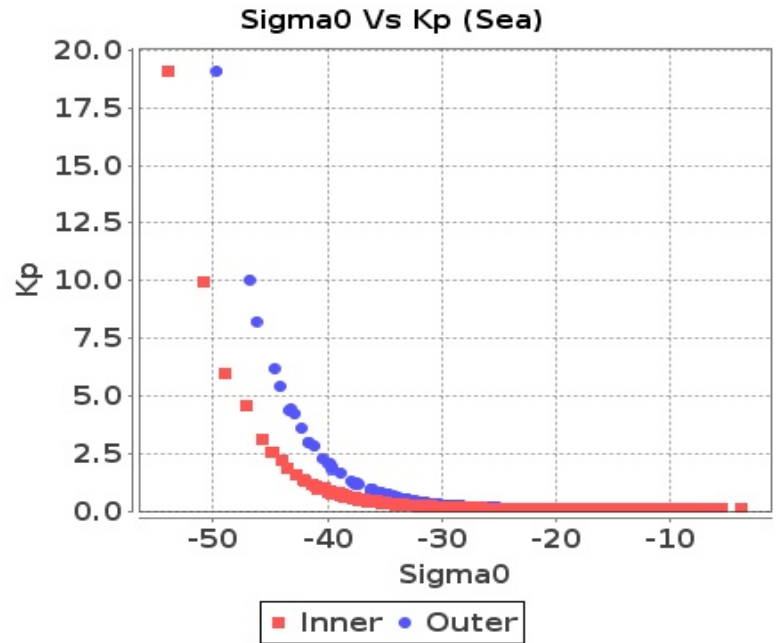


# Sigma0 Behaviour(Sigma0 Vs Kp)

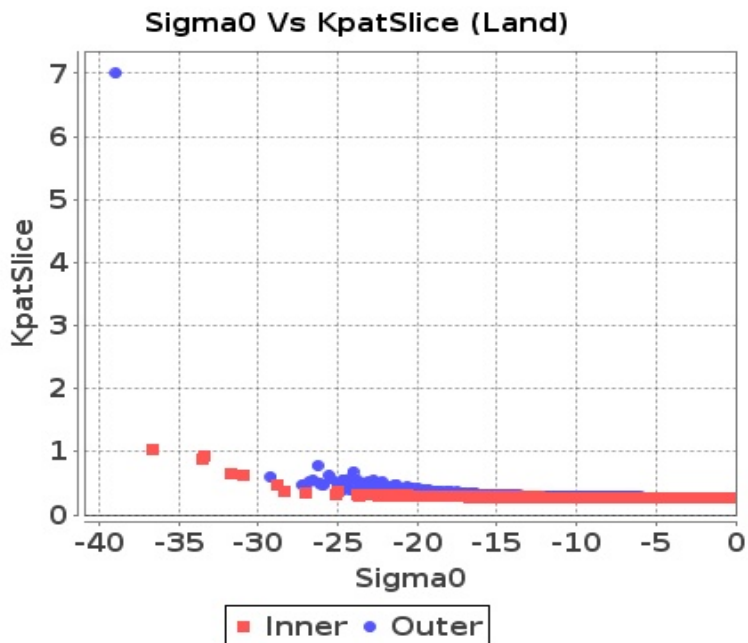
## Footprint-Land



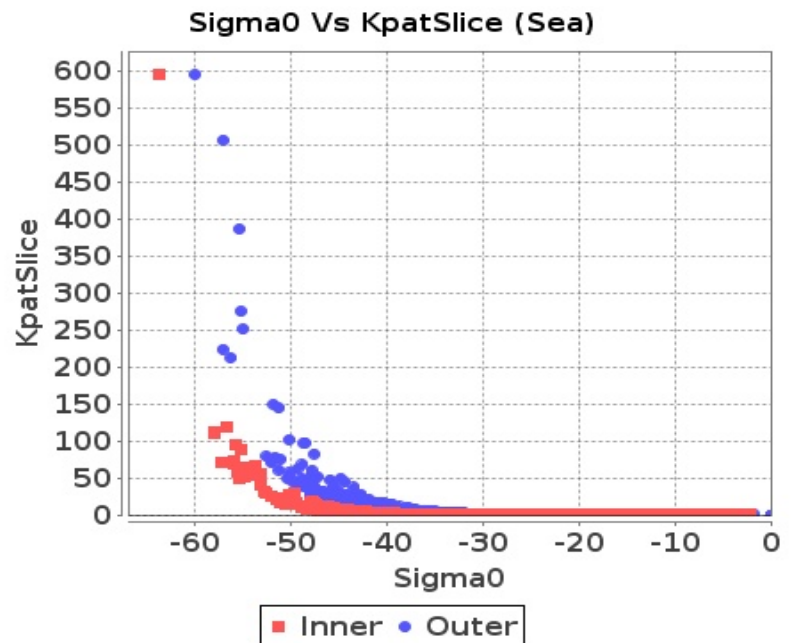
## Footprint-Sea



## Slice-Land



## Slice-Sea

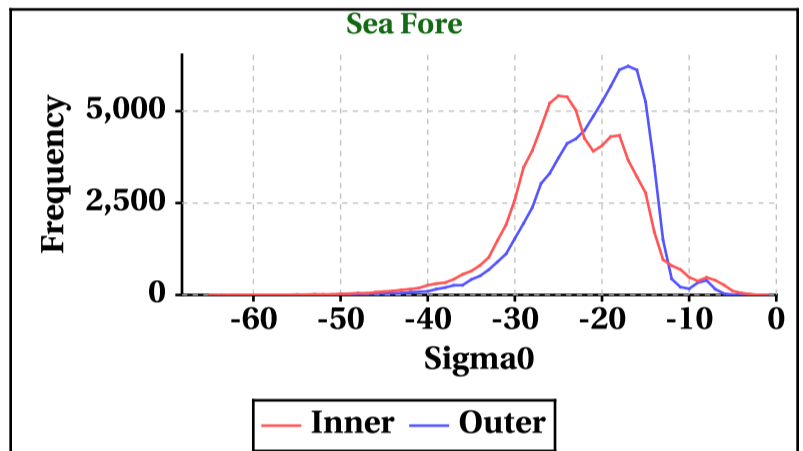
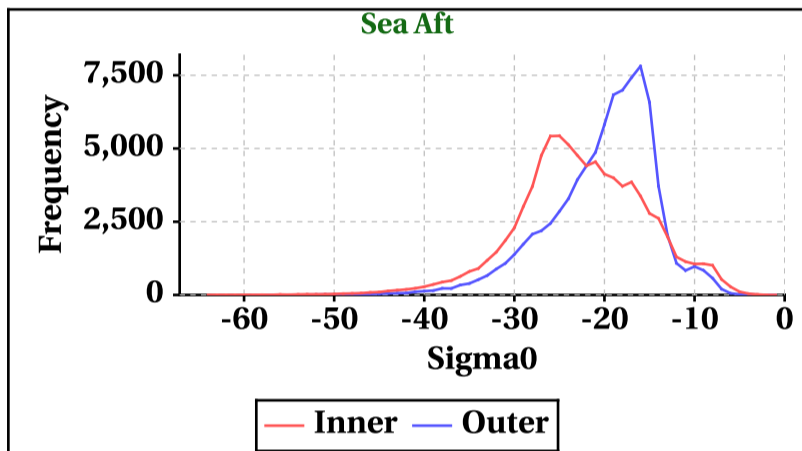
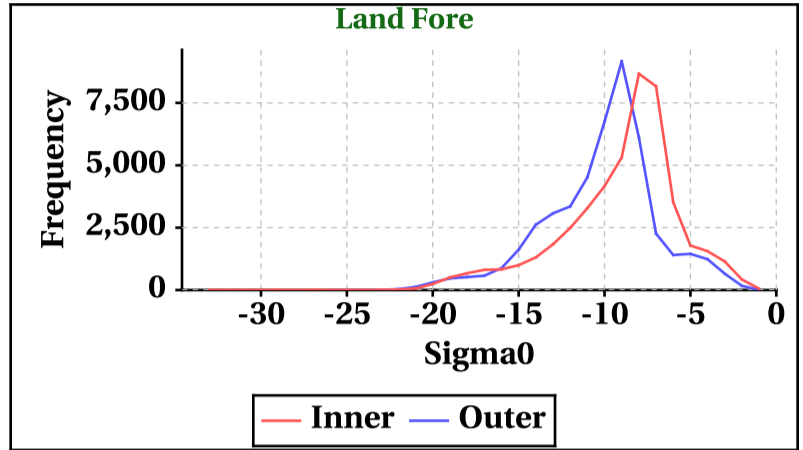
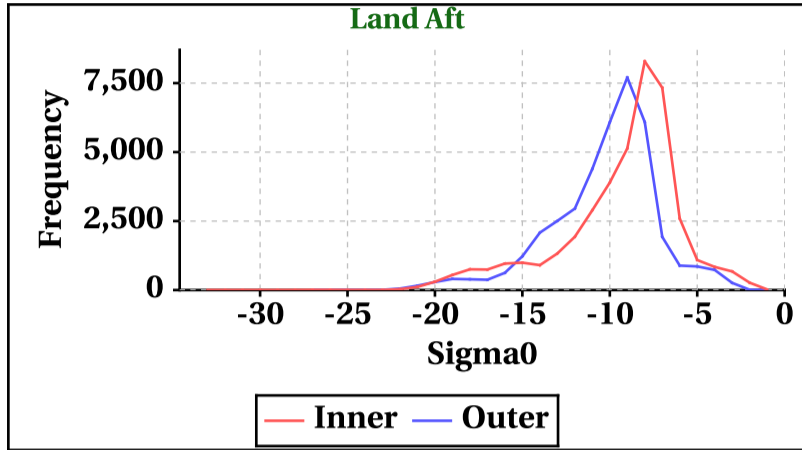


# Dynamic Range (Data Histograms)

## Sigma0(db)

Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-33	-33	-64	-65
Max	0	0	0	0

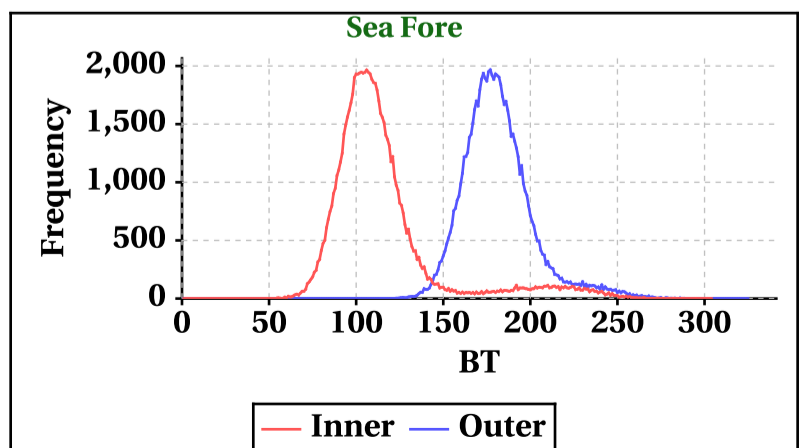
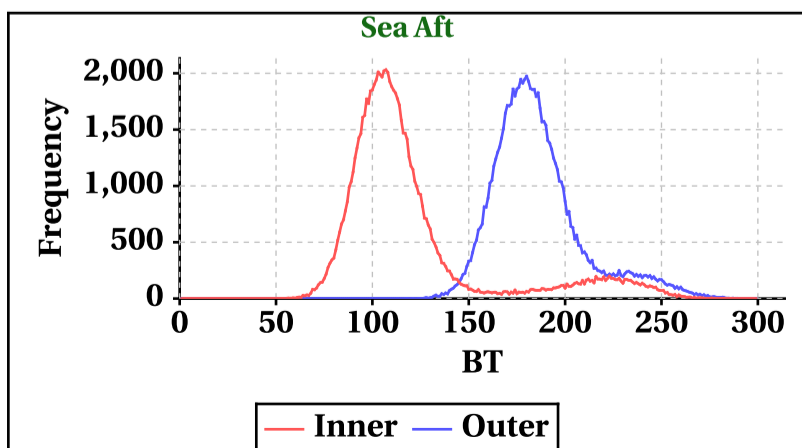
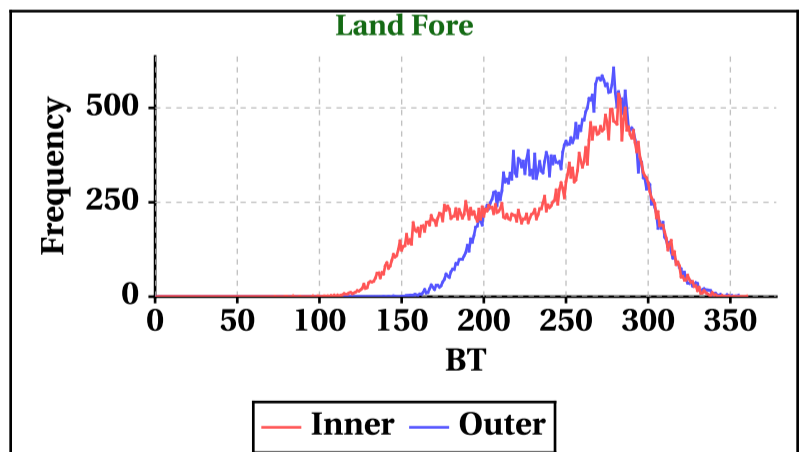
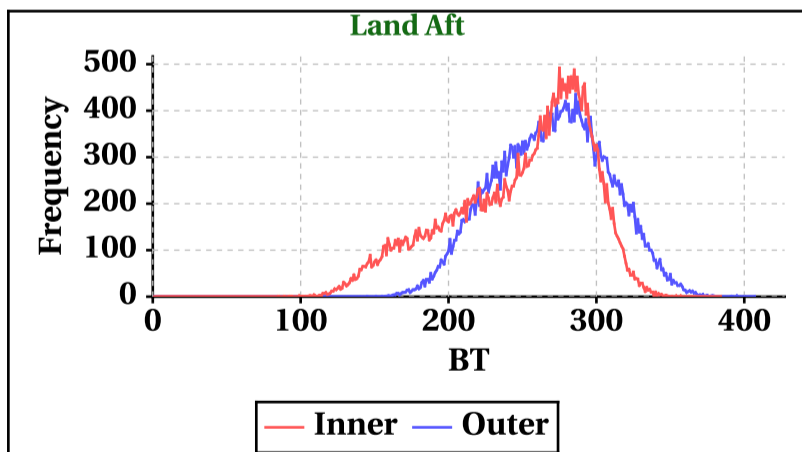
Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-27	-26	-59	-60
Max	0	0	0	0



## Brightness Temperature(K)

Inner Beam(HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	384	360	299	304

Outer Beam(VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	407	355	299	325

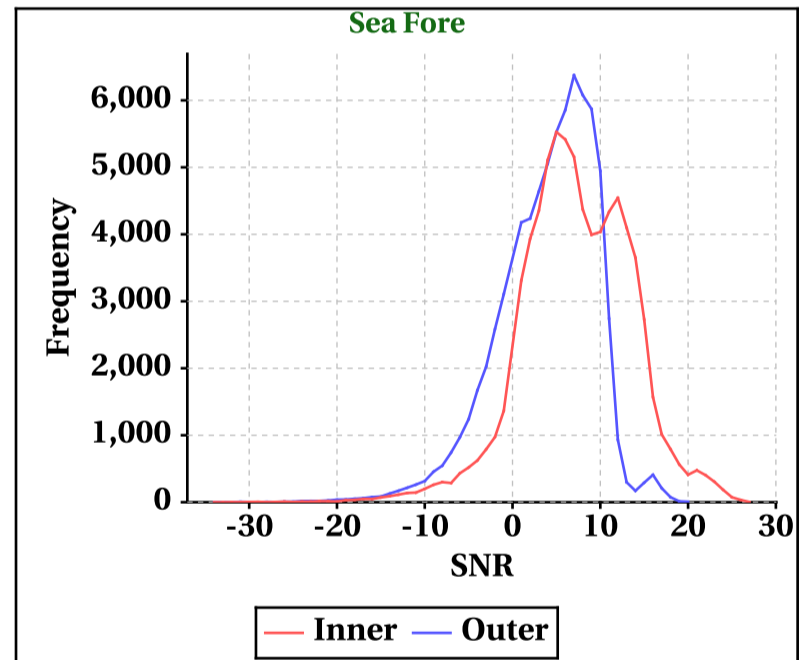
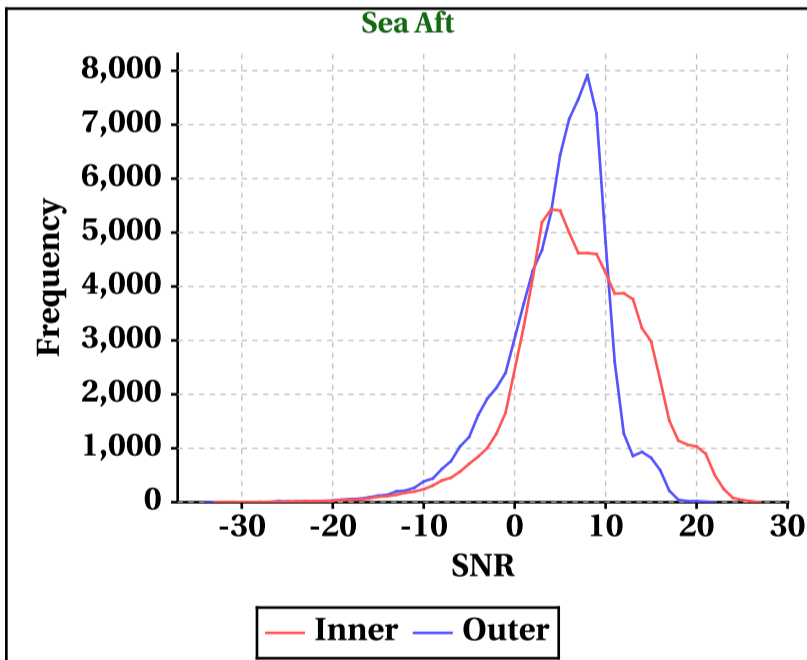
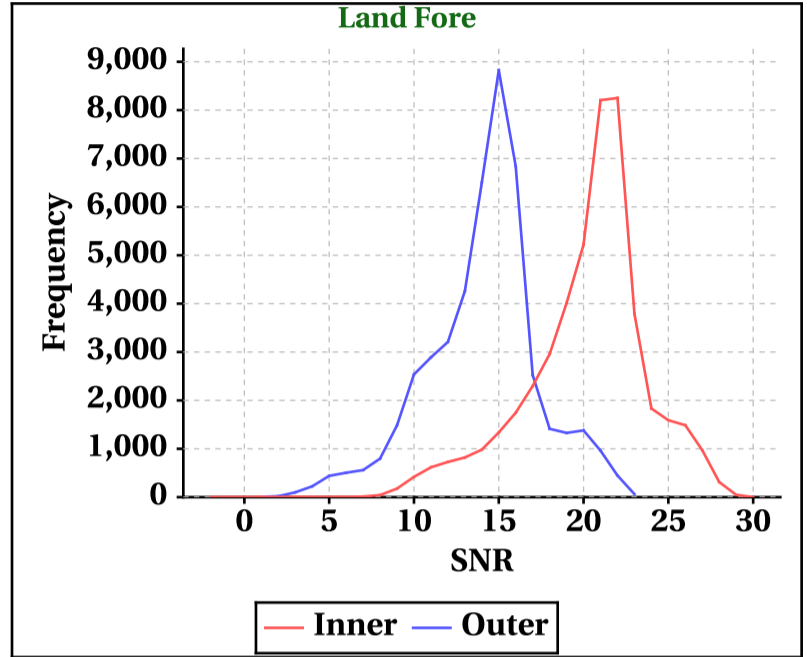
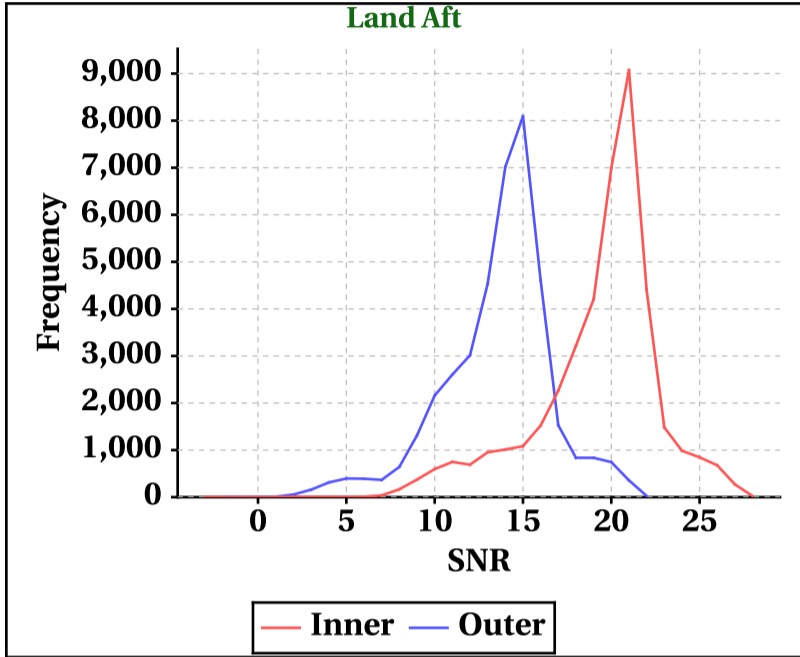


# Dynamic Range (Data Histograms)

## SNR(dBm)

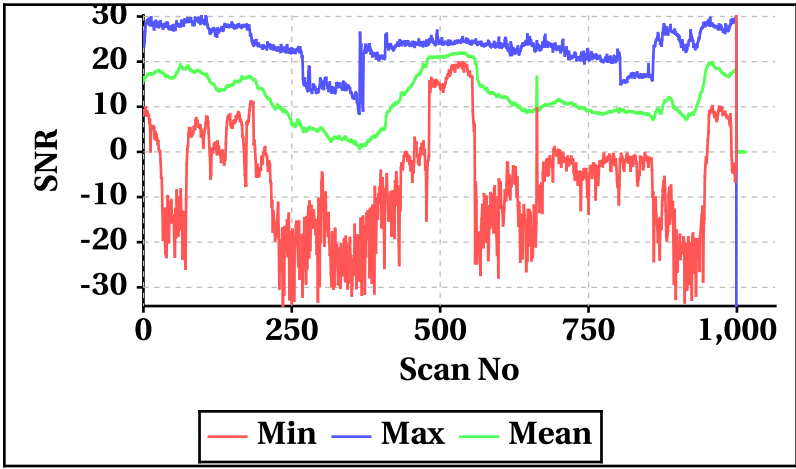
Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-3	-2	-33	-34
Max	28	30	27	27

Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-2	0	-34	-34
Max	22	23	22	20

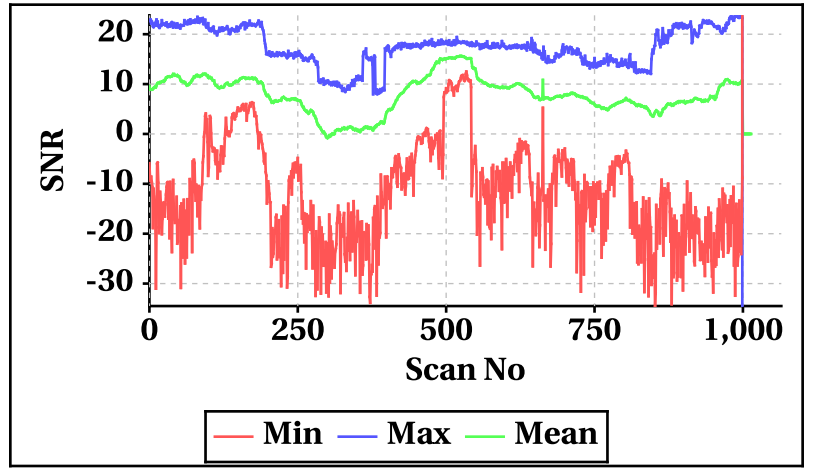


## Orbit-wise behaviour of SNR

Inner Beam (HH)

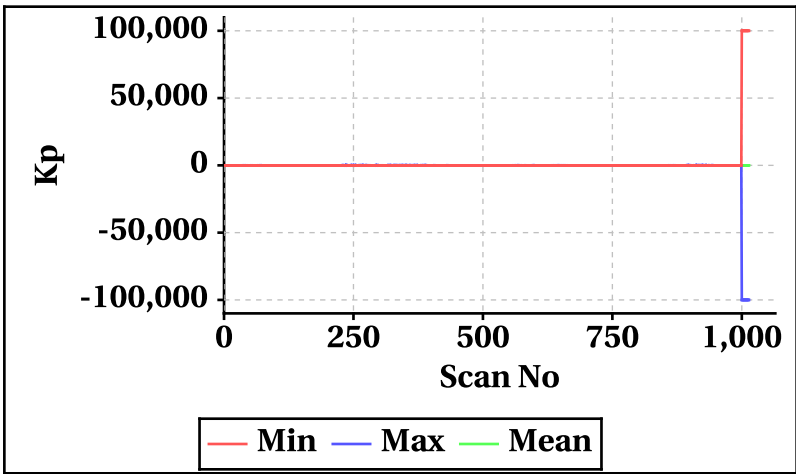


Outer Beam(VV)

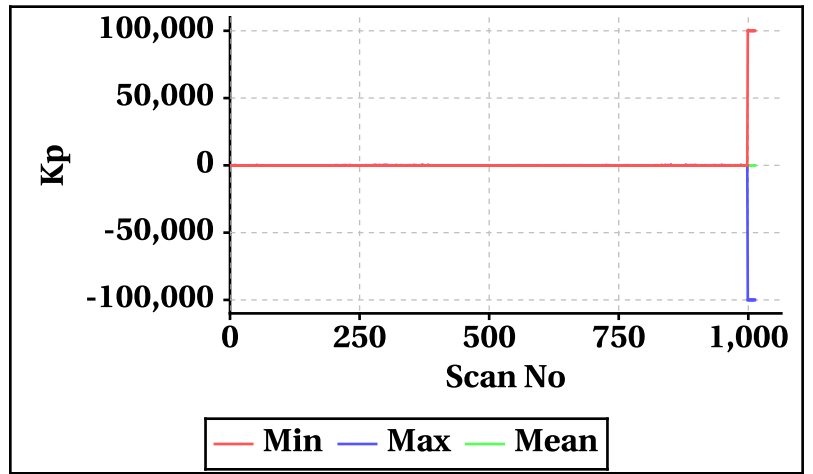


## Orbit-wise behaviour of Kp,Kpa,Kpb,Kpc

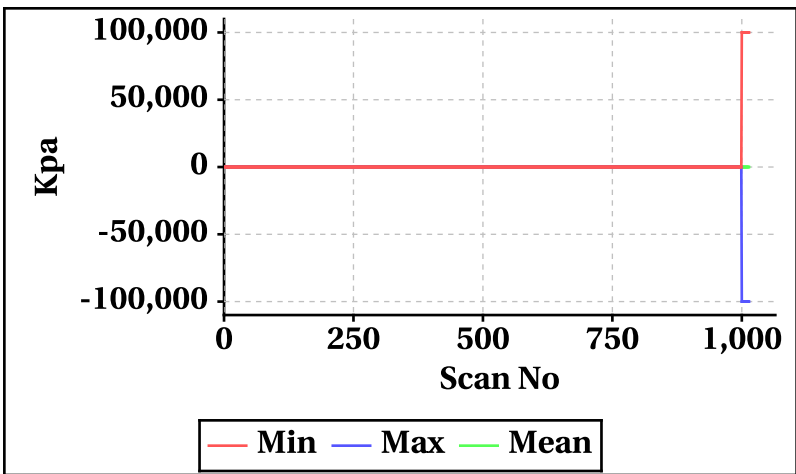
Inner Beam(HH)



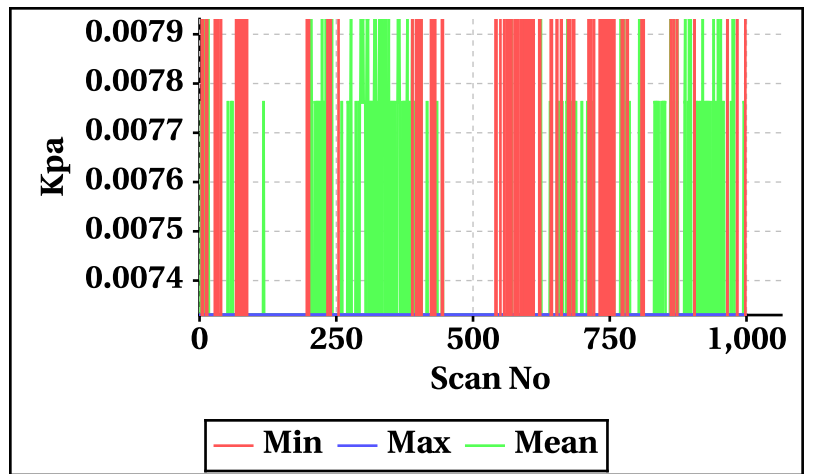
Outer Beam(VV)



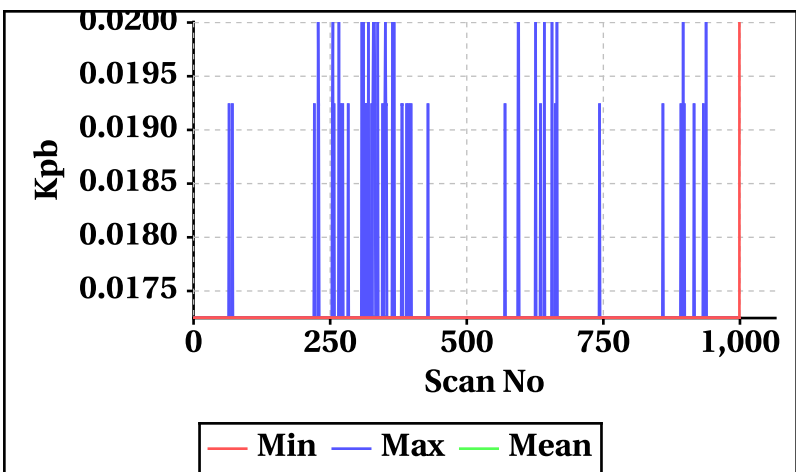
Inner Beam(HH)



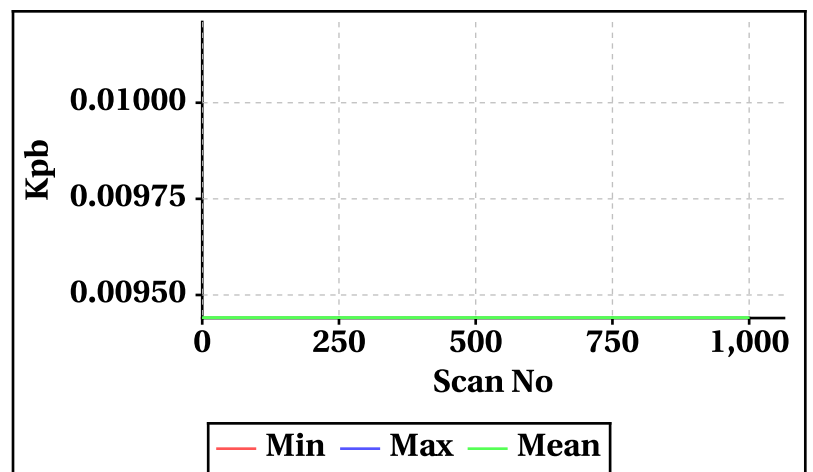
Outer Beam(VV)



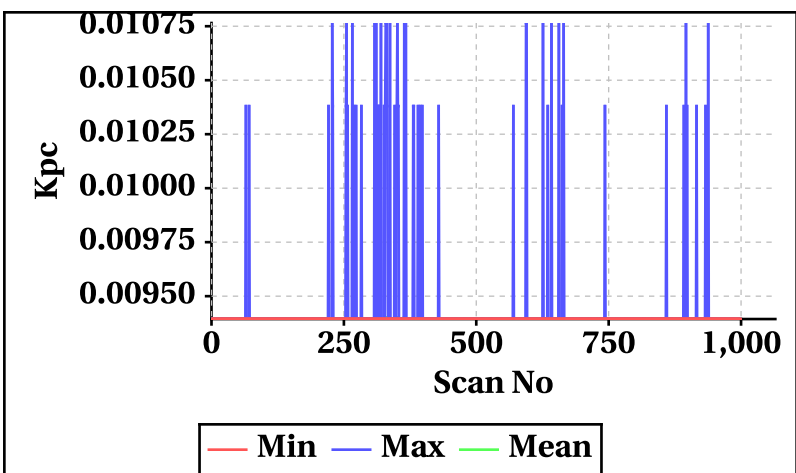
Inner Beam(HH)



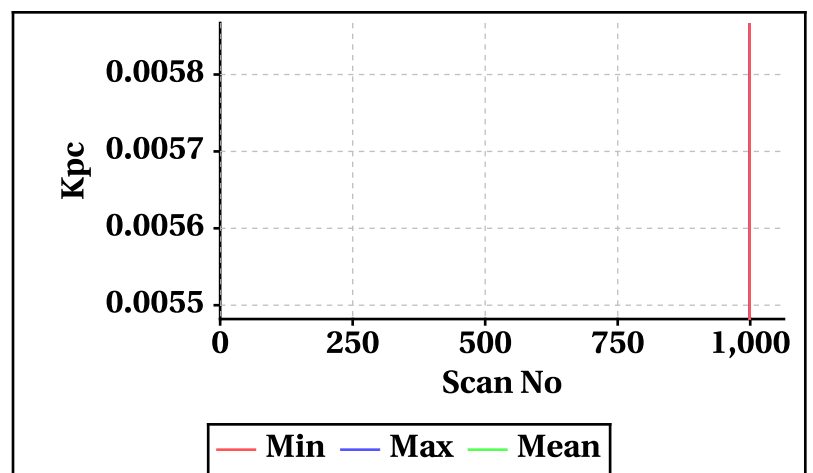
Outer Beam(VV)



Inner Beam(HH)



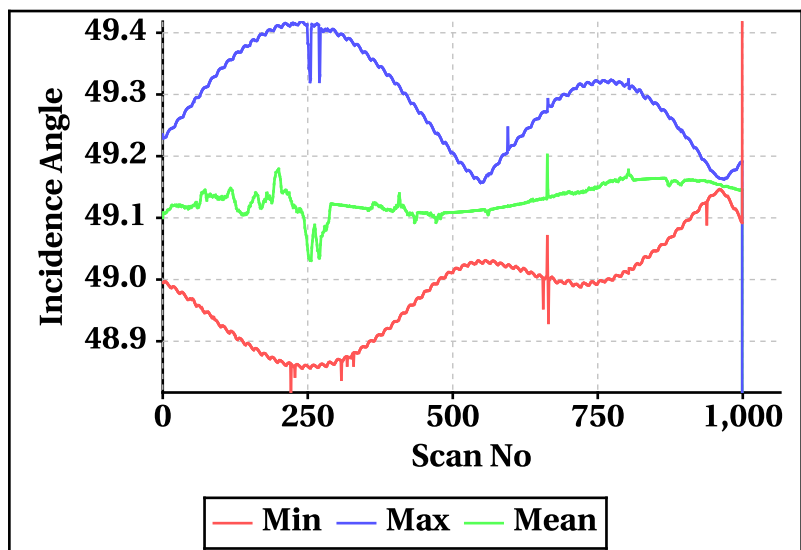
Outer Beam(VV)



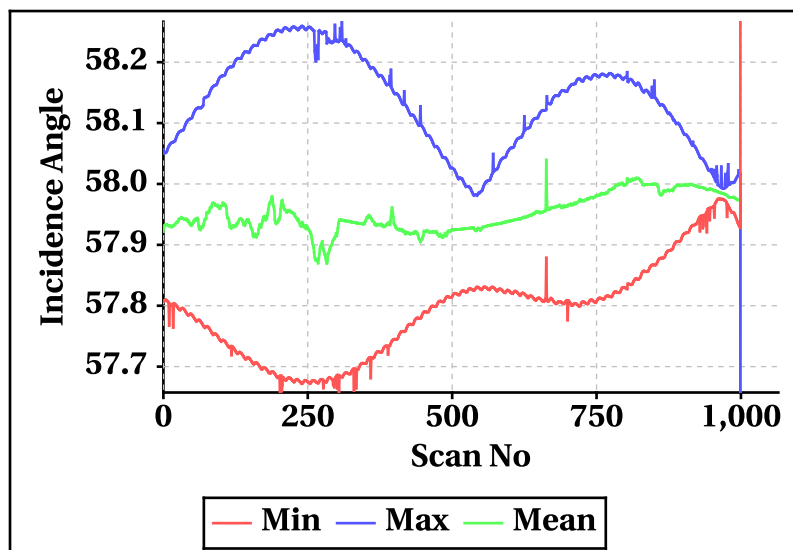


Orbit-wise behaviour of Incidence, Azimuth, Range, X-Factor

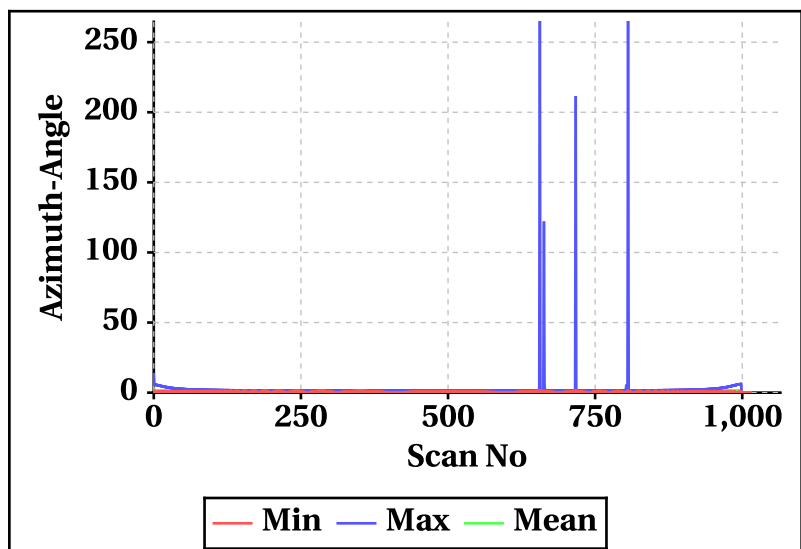
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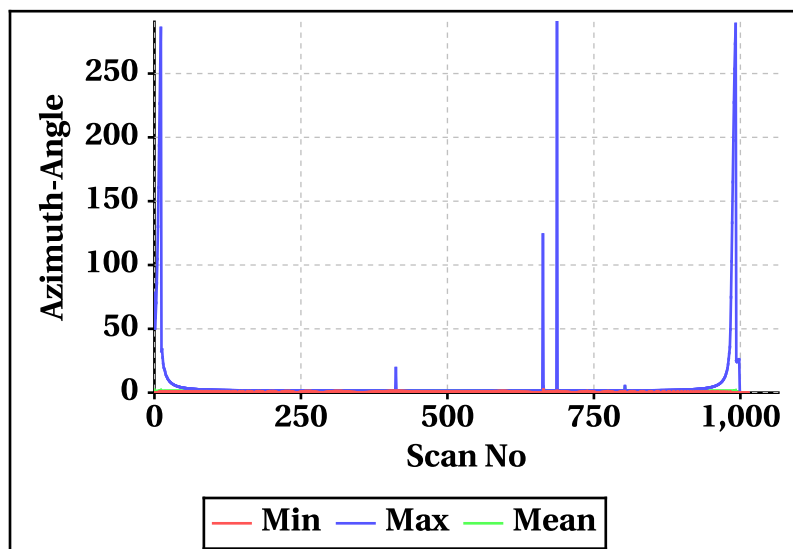
Outer Beam(VV)



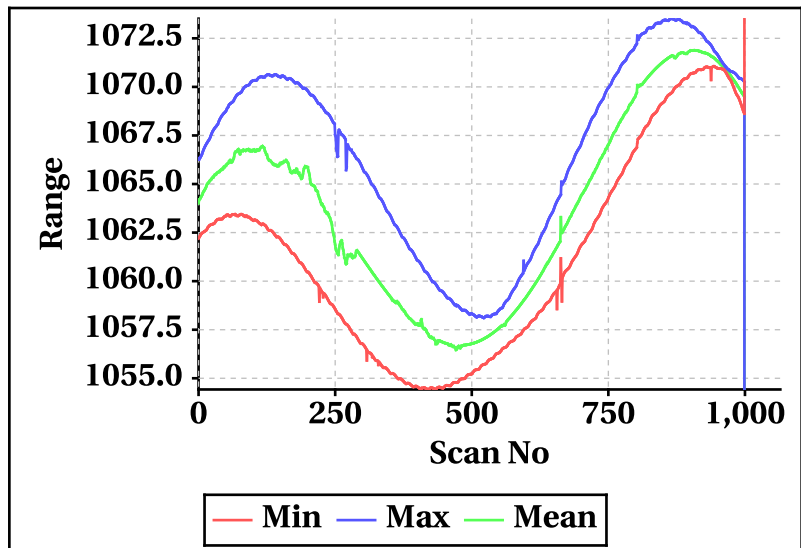
Inner Beam (HH)



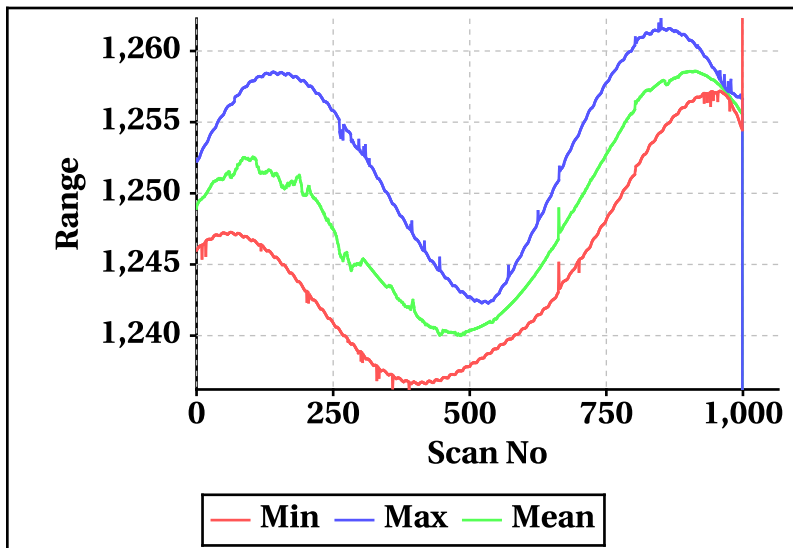
Outer Beam(VV)



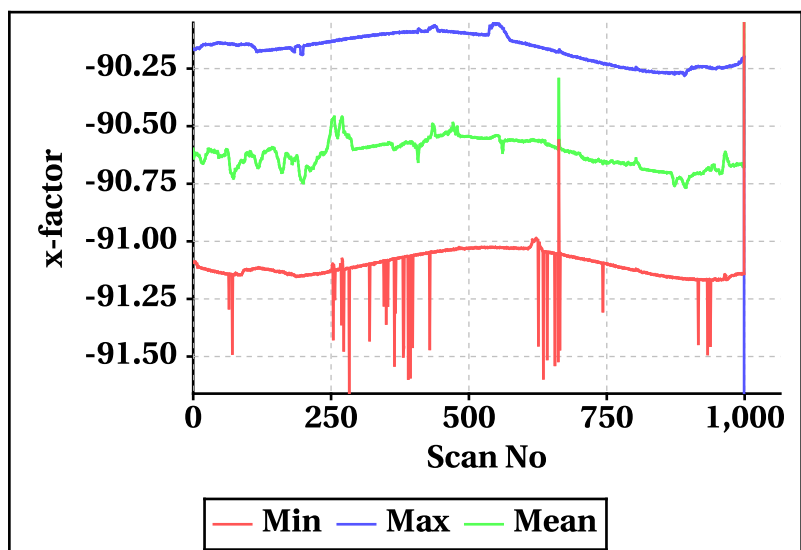
Inner Beam (HH)



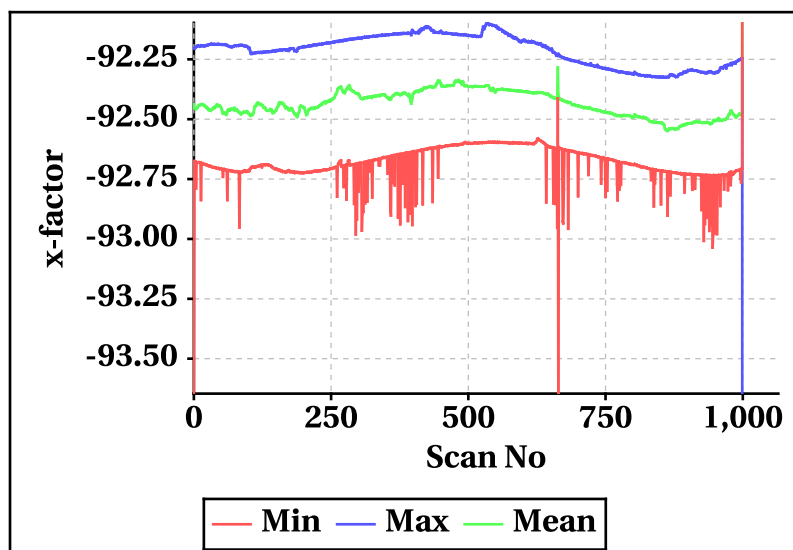
Outer Beam(VV)



Inner Beam (HH)



Outer Beam(VV)

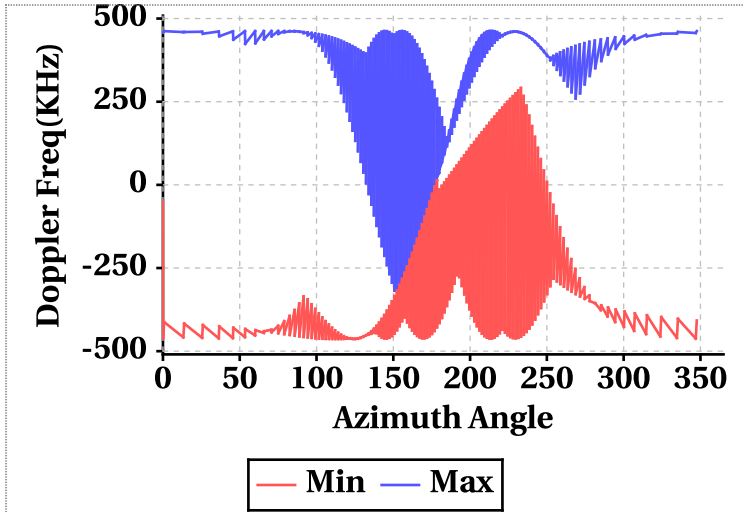


# Doppler Frequency Variation

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

	Inner Beam (HH)	Outer Beam (VV)
<b>Min</b>	-463.30	-519.00
<b>Max</b>	462.40	518.24

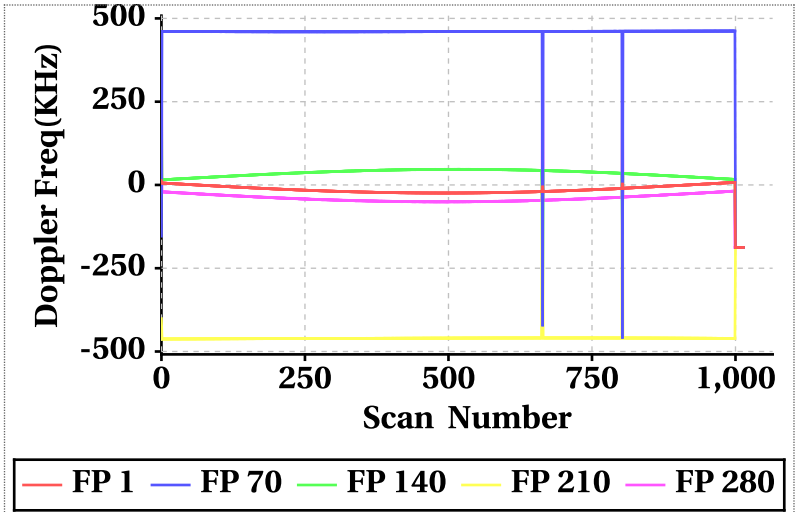
**Footprint wise Doppler frequency variation Inner Beam (HH)**



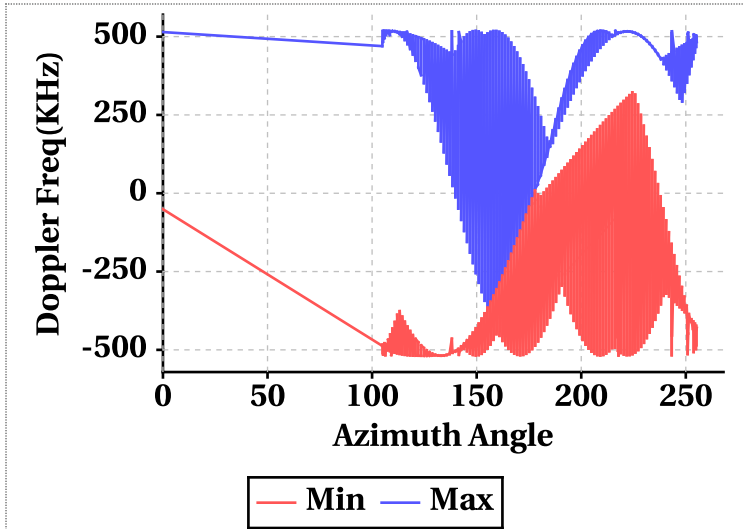
**Doppler Frequency(KHz) variation**

Doppler_FP	Inner Beam (HH)			Outer Beam (VV)		
	Min	Max	Mean	Min	Max	Mean
Doppler_1	-187.50	13.18	-15.43	-215.38	2.92	-22.87
Doppler_70	-457.70	462.02	448.69	-515.02	517.54	502.49
Doppler_140	-373.60	293.82	31.88	-429.88	339.46	29.98
Doppler_210	-462.44	403.54	-454.52	-518.26	442.96	-509.91
Doppler_280	-187.50	457.62	-40.32	-215.38	514.48	-39.44

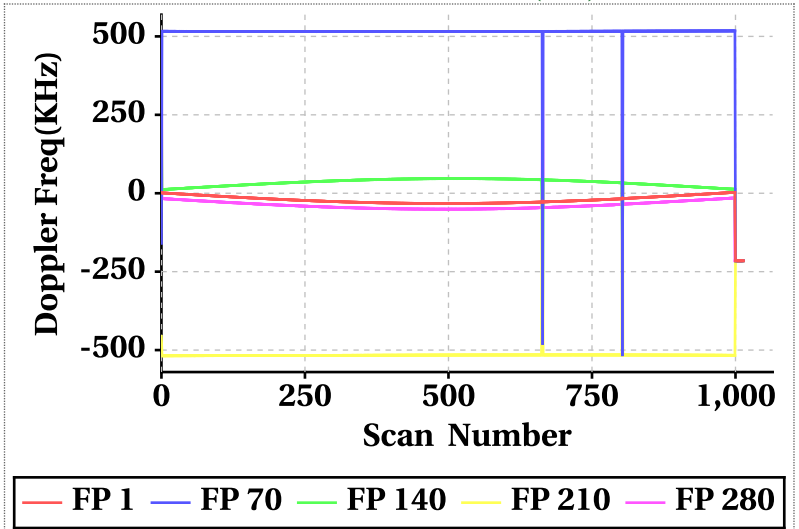
**Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Inner Beam (HH)**



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

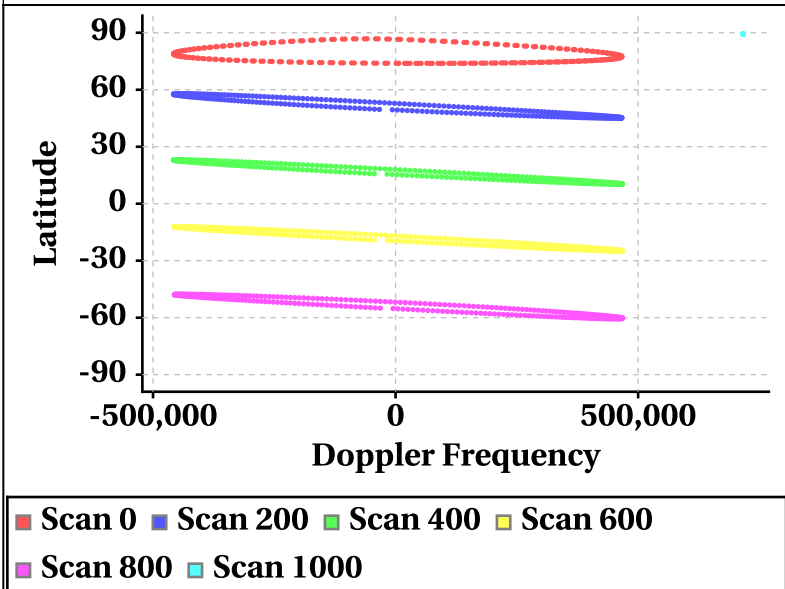


**Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Outer Beam (VV)**

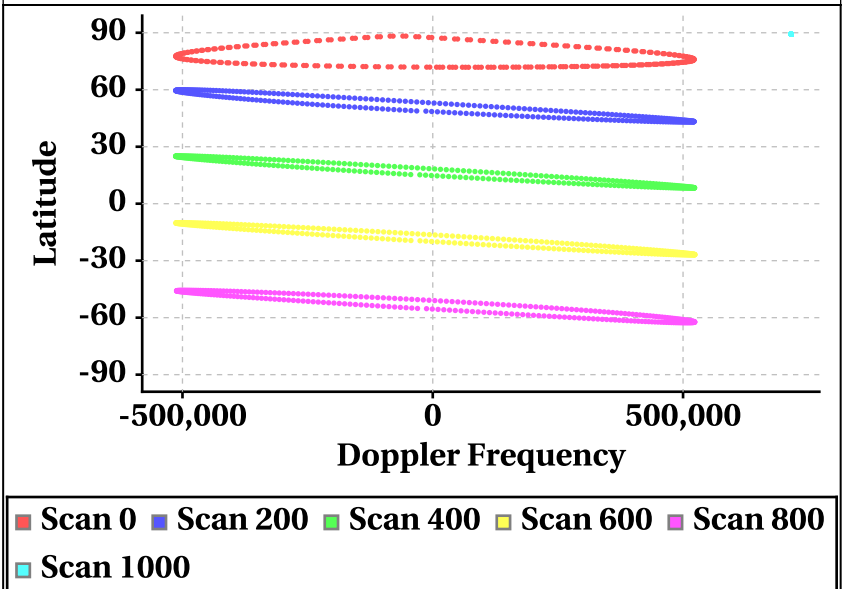


# Latitude Vs Doppler Frequency

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



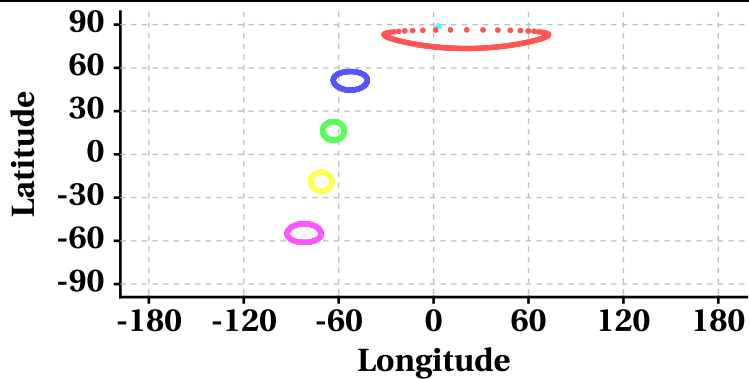
**Doppler Frequency at Scan Interval of 200 [Outer Beam(VV)]**



# Parameter as a function of Latitude

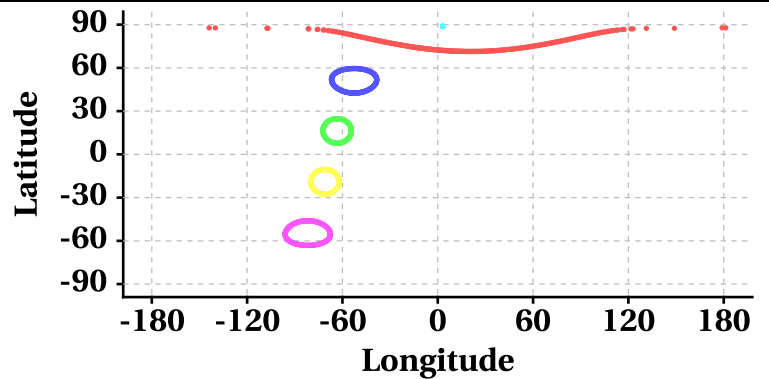
## Latitude Vs Longitude

Scan Trace [Inner Beam(HH)]



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

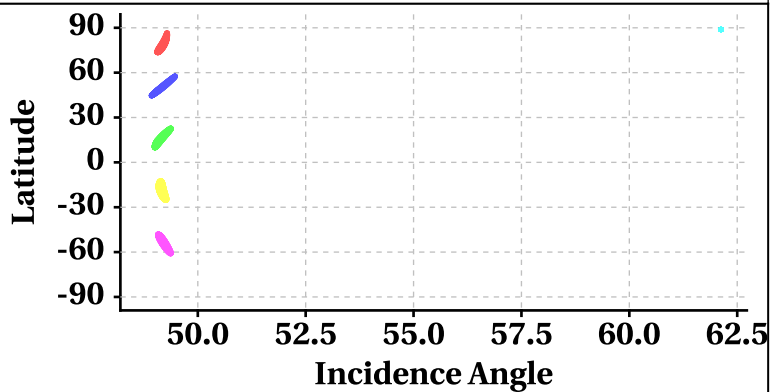
Scan Trace [Outer Beam (VV)]



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

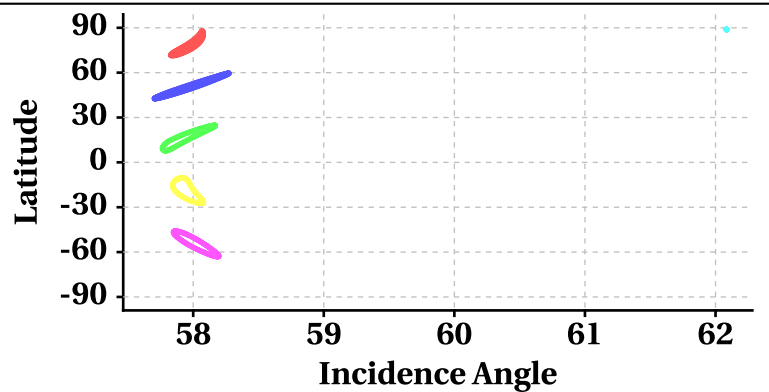
## Latitude Vs Incidence Angle

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



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

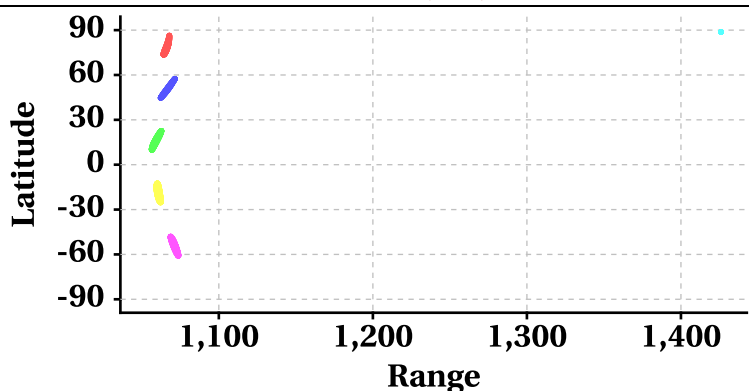
Incidence Angle at Scan Interval of 200 [Outer Beam (VV)]



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

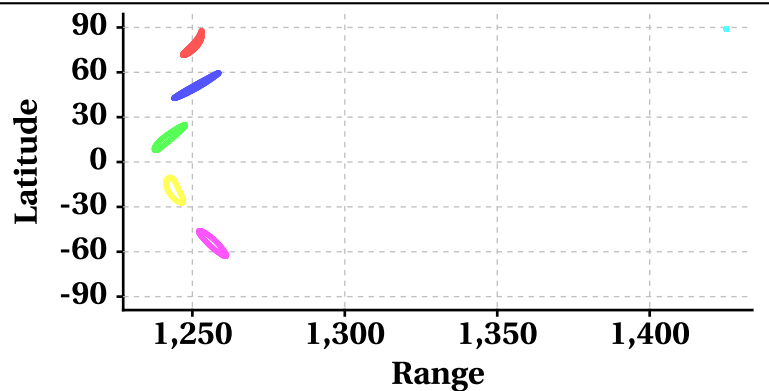
## Latitude Vs Range

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

