

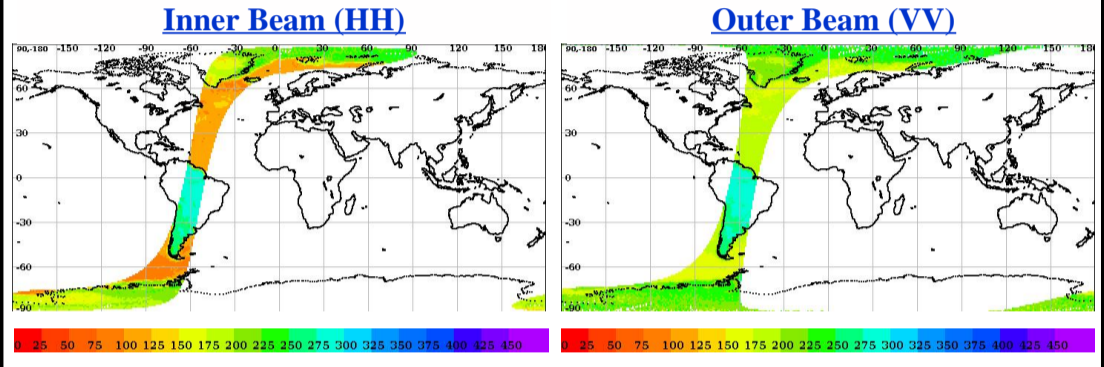
# SCATSAT-1 Scatterometer Level-1B Data Quality Evaluation Report

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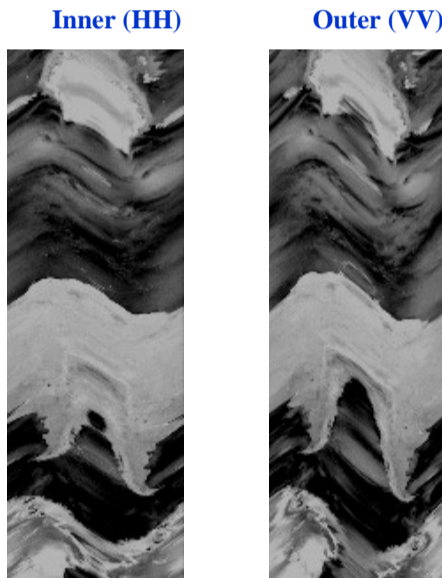
- Half-Orbit Coverage using BT & Sigma-0
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<b>Satellite Id</b>	ScatSat-1	<b>Start Orbit</b>	6703	<b>Total Scans</b>	1016
<b>Sensor Name</b>	Scatterometer	<b>End Orbit</b>	6704	<b>No of Inner FootPrints</b>	281
<b>Processor Version</b>	v1.1.2	<b>Rev. Number</b>	06703_06704	<b>No Of Outer FootPrints</b>	282
<b>Half Orbit Direction</b>	NS	<b>Data Production Date</b>	01-01-2018	<b>No. Of Inner Slices</b>	9
<b>Equator Crossing Date</b>	01-01-2018	<b>Equator Crossing Time</b>	12:30:15.000	<b>No Of Outer Slices</b>	14

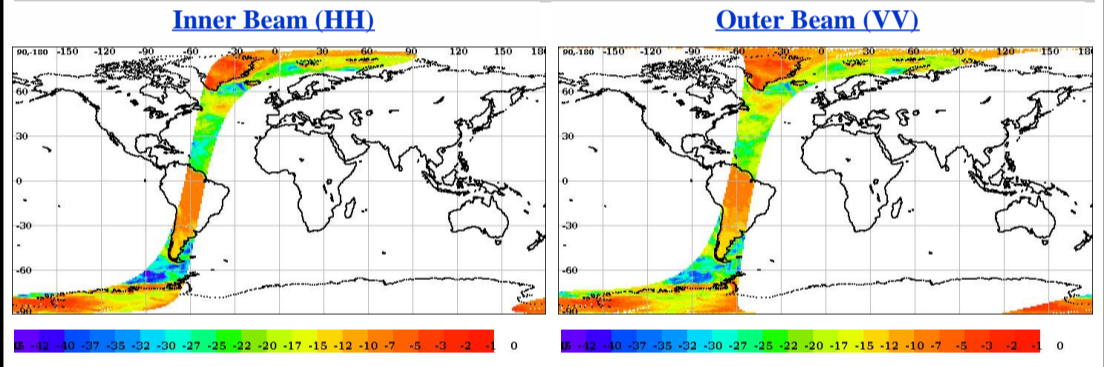
## Brightness Temperature(k) Footprint trace



## Image Snapshot for Inner & Outer Beam



## Sigma0(dB) Footprint trace



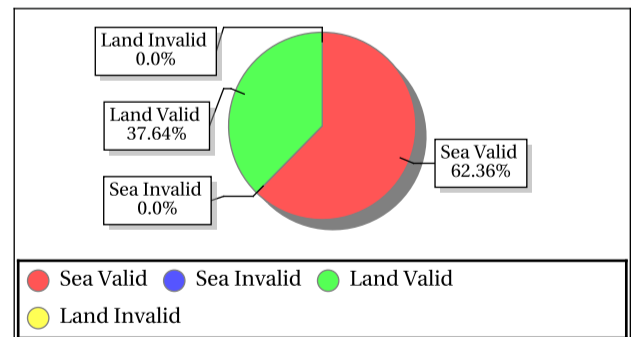
## Invalid and Poor Sigma-0 Quality Flag Statistics for Inner/Outer Slices\*

Sigma-0 Flags	Inner Beam	Outer Beam
Invalid Sigma0(%)	0.00	0.00
Data Not Available From Payload (%)	0.0	0.0
Slice not within sample array limits (%)	0.00	0.00
C(S+N) - C(N) < 0.1 (%)	0.00	0.00
Poor Sigma0(%)	0.01	0.01
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 (%)	100.0	100.0

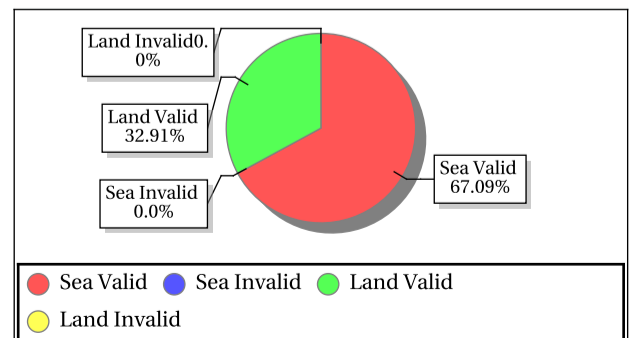
\*DP Format Document

## 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	-5.76	-4.28	-5.12	0.43	144.00	176.16	158.61	8.38
GreenLand_2	77.50	-41.50	Inner	DSC	Fore	-6.23	-4.18	-5.17	0.61	128.11	185.41	158.81	16.77
GreenLand_3	71.55	-42.45	Inner	DSC	Aft	-11.44	-9.13	-10.49	0.63	168.19	223.36	188.08	13.45
GreenLand_3	71.55	-42.45	Inner	DSC	Fore	-11.84	-10.03	-10.96	0.53	162.56	204.85	187.02	10.53
Amazon_3	-6.00	-61.00	Inner	DSC	Aft	-9.46	-6.95	-7.86	0.48	247.91	336.64	291.93	16.57
Amazon_3	-6.00	-61.00	Inner	DSC	Fore	-9.35	-7.12	-8.12	0.52	255.14	339.45	287.88	20.62
GreenLand_1	74.69	-42.50	Inner	DSC	Aft	-10.08	-7.72	-8.86	0.57	147.74	207.57	178.85	16.93
GreenLand_1	74.69	-42.50	Inner	DSC	Fore	-10.13	-7.65	-8.94	0.64	142.95	208.33	171.39	16.19
Amazon_2	-3.00	-61.00	Inner	DSC	Aft	-11.62	-6.25	-8.21	1.02	220.38	320.28	265.40	23.23
Amazon_2	-3.00	-61.00	Inner	DSC	Fore	-10.51	-6.44	-8.04	0.99	231.80	310.28	269.61	19.72
GreenLand_2	77.50	-41.50	Outer	DSC	Aft	-5.39	-4.20	-4.76	0.47	184.64	214.72	196.36	12.36
GreenLand_2	77.50	-41.50	Outer	DSC	Fore	-5.90	-4.70	-5.06	0.49	181.57	215.93	201.09	14.13
GreenLand_3	71.55	-42.45	Outer	DSC	Aft	-11.59	-9.86	-10.87	0.50	186.96	249.94	224.42	17.49
GreenLand_3	71.55	-42.45	Outer	DSC	Fore	-12.82	-11.15	-11.83	0.50	187.57	244.24	219.21	16.55
Amazon_3	-6.00	-61.00	Outer	DSC	Aft	-9.94	-8.03	-8.94	0.43	235.41	312.71	274.69	18.23
Amazon_3	-6.00	-61.00	Outer	DSC	Fore	-10.12	-8.34	-9.25	0.43	248.79	317.75	285.53	18.52
GreenLand_1	74.69	-42.50	Outer	DSC	Aft	-9.76	-7.99	-8.69	0.53	181.42	237.66	210.91	16.58
GreenLand_1	74.69	-42.50	Outer	DSC	Fore	-9.73	-7.74	-8.59	0.59	180.71	243.97	213.08	18.10
Amazon_2	-3.00	-61.00	Outer	DSC	Aft	-10.72	-8.39	-9.48	0.63	241.81	304.07	273.82	15.89
Amazon_2	-3.00	-61.00	Outer	DSC	Fore	-10.97	-8.06	-9.41	0.74	241.98	316.80	275.48	17.86



## 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>	0.10	254.19	0.31	2.488	0.10	266.11	0.24	1.809	0.10	0.22	0.10	0.000	0.10	0.16	0.10	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	0.02	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>	-34.78	23.25	5.57	0.086	-34.81	25.41	6.72	0.706	-1.83	27.58	18.97	11.357	1.30	29.26	20.42	30.307

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>	0.08	197.82	0.27	2.476	0.08	203.65	0.25	2.188	0.08	0.17	0.09	0.000	0.08	0.12	0.08	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>	0.00	0.01	0.00	0.000	0.00	0.01	0.00	0.000	0.00	0.00	0.00	0.000	0.00	0.00	0.00	0.000
<b>SNR</b>	-34.58	17.48	3.71	0.000	-34.70	18.67	4.07	0.000	-1.30	22.73	14.18	0.023	1.84	23.53	14.96	0.774

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	49.31	49.03	0.000	57.61	58.18	57.92	0.000	Inci.(Inner)	47.10	49.90
<b>Azimuth Diff. (deg)</b>	0.0027	6.11	1.27	2.572	0.0000	293.21	1.27	3.714	Inci.(Outer)	57.30	58.90
<b>Range(Km)</b>	1030.22	1073.60	1046.53	0.000	1208.50	1262.36	1231.20	7.513	Azimuth Diff.	0.60	2.00
<b>X Factor(dbm)</b>	-92.19	-89.21	-90.45	0.000	-93.67	-91.61	-92.47	0.000	Range(Inner)	1025.00	1095.70
<b>Across Distance (Km)</b>	15.60	16.22	15.84	0.000	20.49	52.54	21.17	6.000	Range(Outer)	1210.00	1280.00
<b>Along Distance (Km)</b>	0.31	39.41	19.76	2.000	18.37	39.14	19.71	4.000	X-Factor	-100.00	-80.00
									Ac.Distance(Inner)	15.00	20.00
									Ac.Distance(Outer)	15.00	22.00
									Al.Distance(Inner)	15.00	30.00
									Al.Distance(Outer)	10.00	30.00

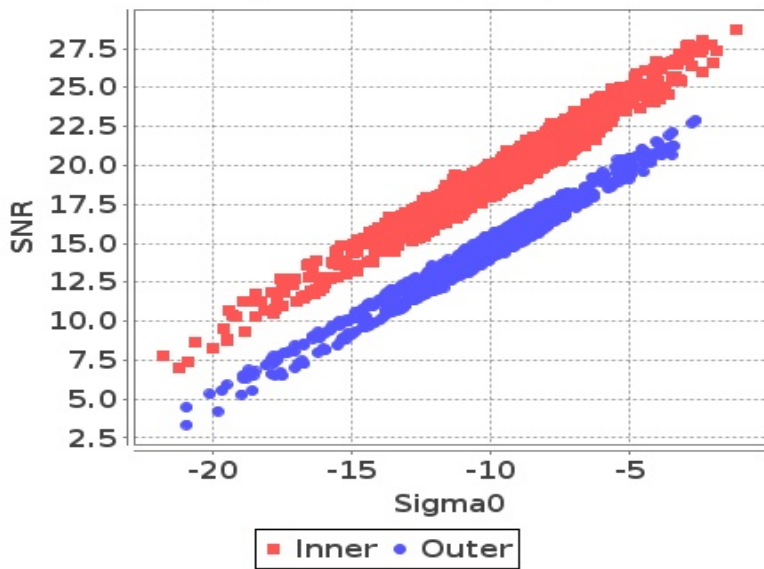
- Normal
- Deviations
- Alarming
- High Errors



## Sigma0 Behaviour (Sigma0 Vs SNR)

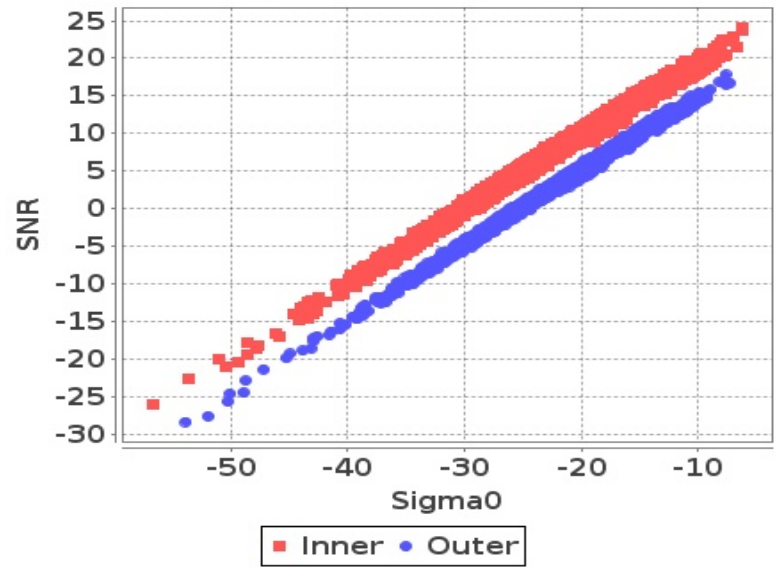
Footprint-Land

Sigma0 Vs SNR (Land)



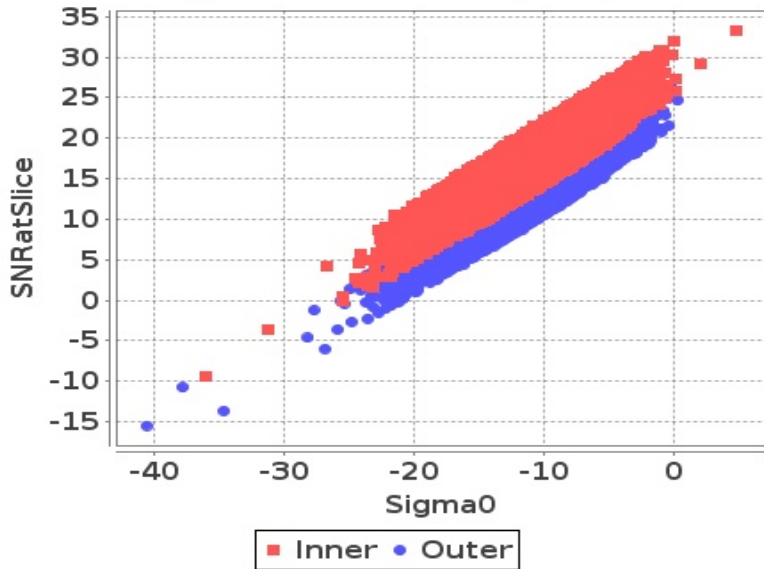
Footprint-Sea

Sigma0 Vs SNR (Sea)



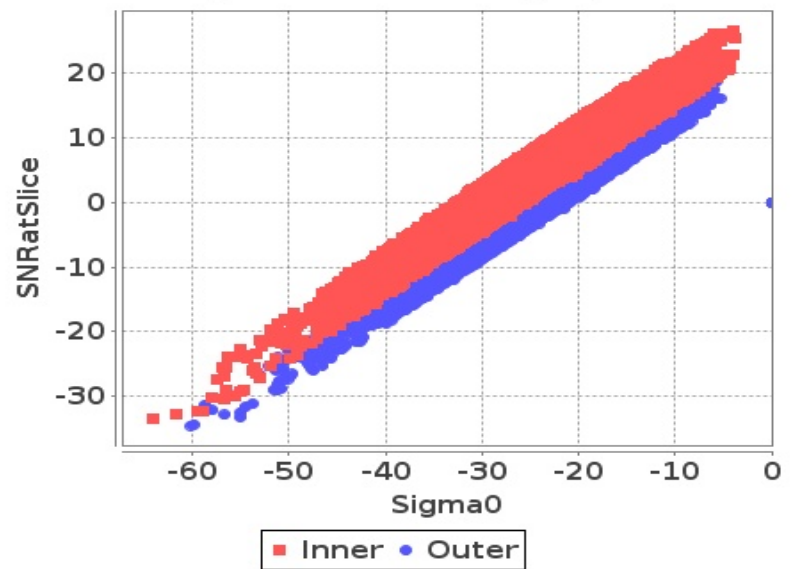
Slice-Land

Sigma0 Vs SNRatSlice (Land)



Slice-Sea

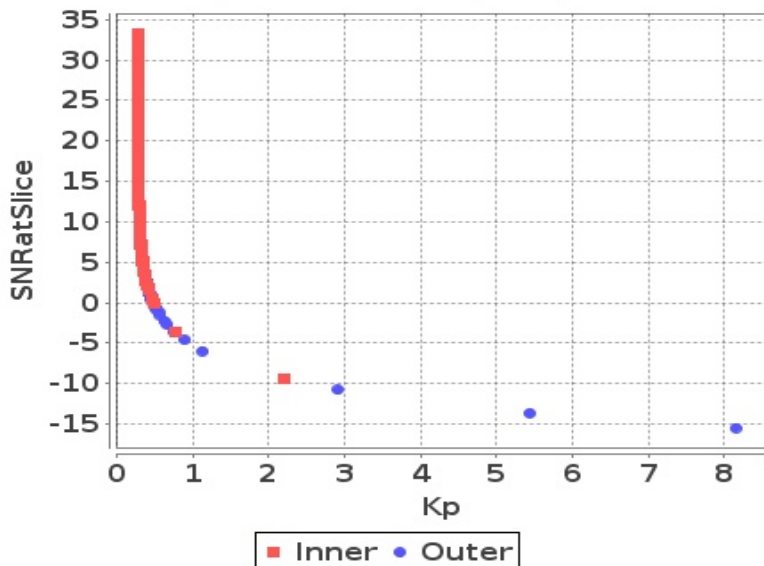
Sigma0 Vs SNRatSlice (Sea)



## Sigma0 Behaviour (Kp Vs SNR)

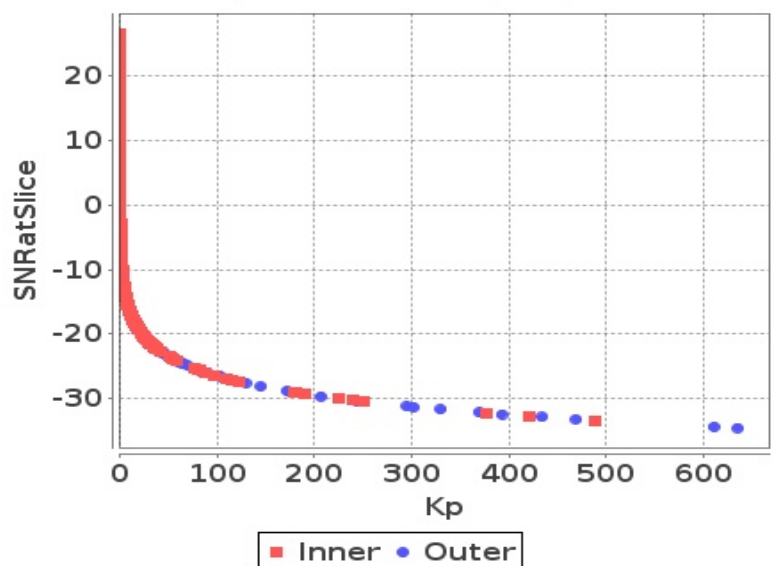
Slice

Kp Vs SNRatSlice (Land)



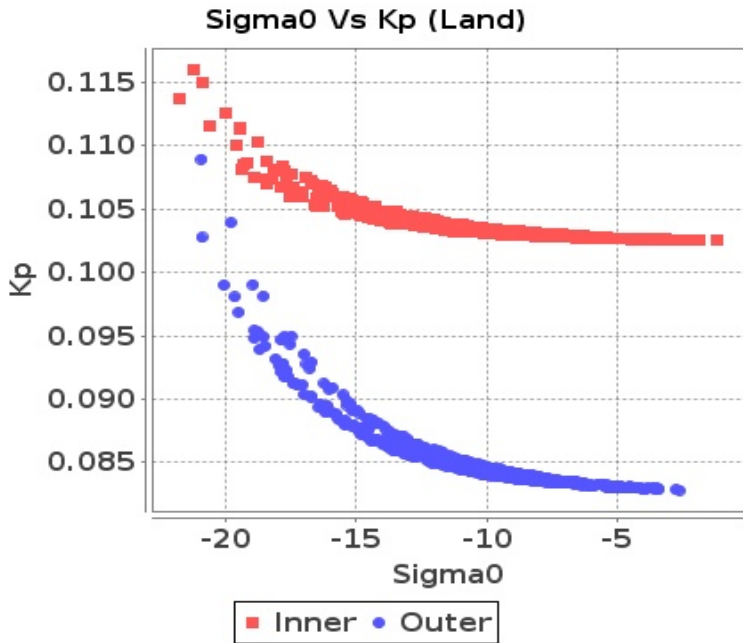
Slice

Kp Vs SNRatSlice (Sea)

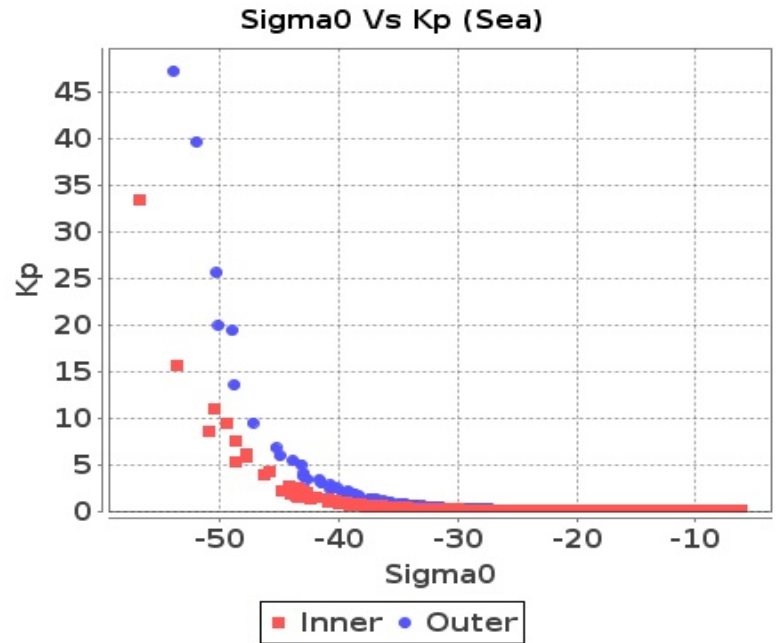


# Sigma0 Behaviour(Sigma0 Vs Kp)

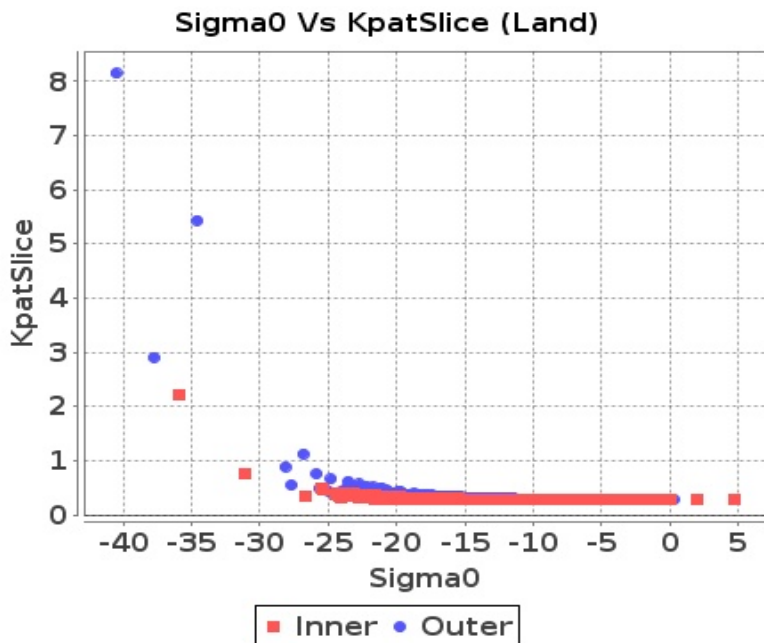
## Footprint-Land



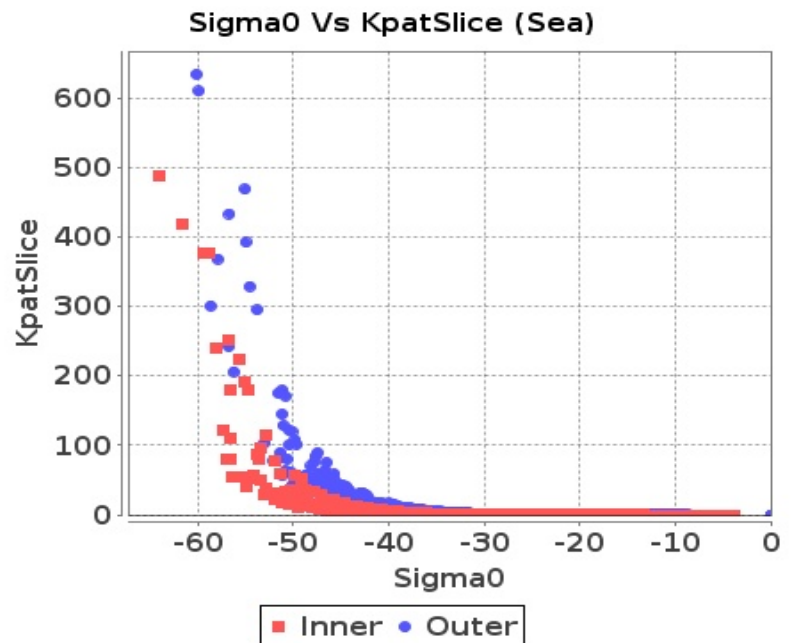
## Footprint-Sea



## Slice-Land



## Slice-Sea

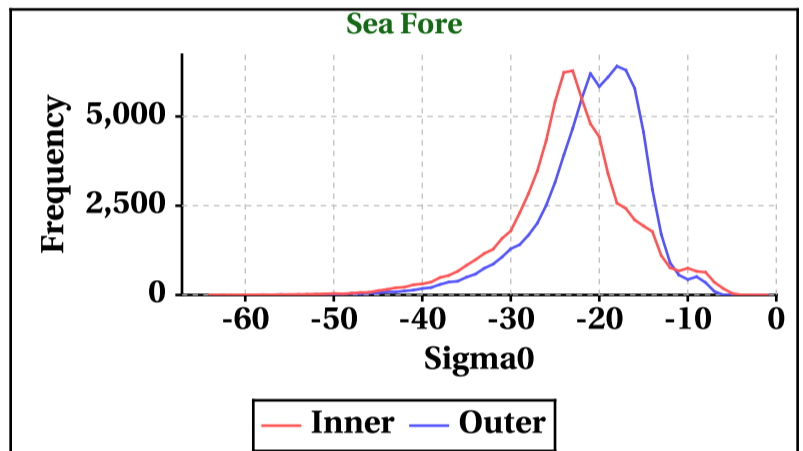
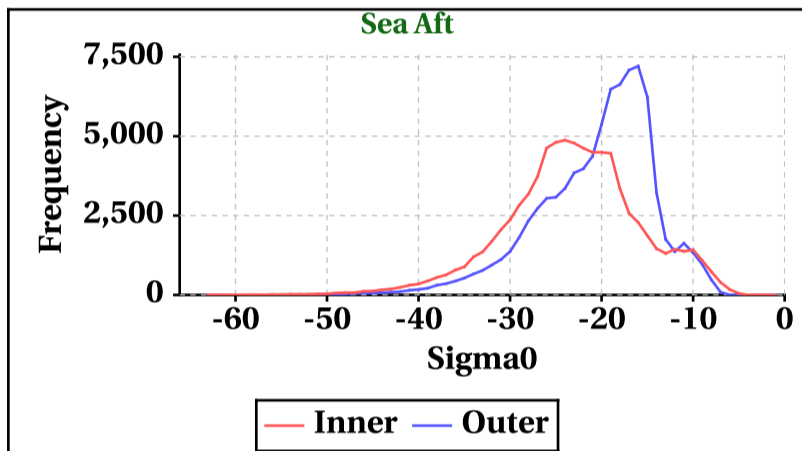
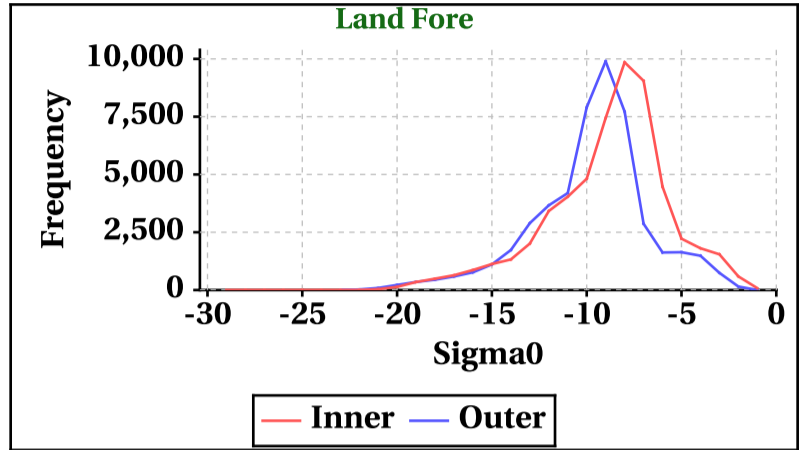
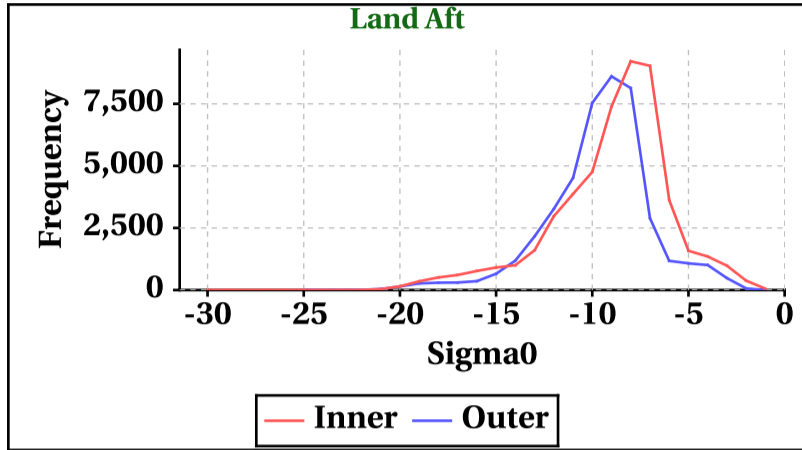


# Dynamic Range (Data Histograms)

## Sigma0(db)

Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-30	-29	-63	-64
Max	0	0	0	0

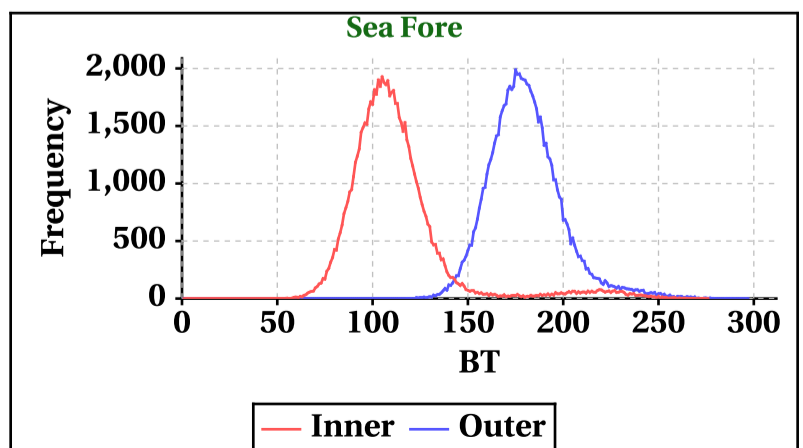
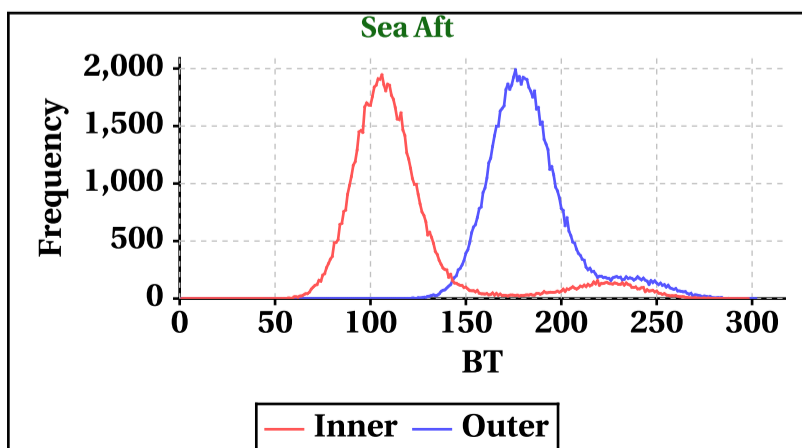
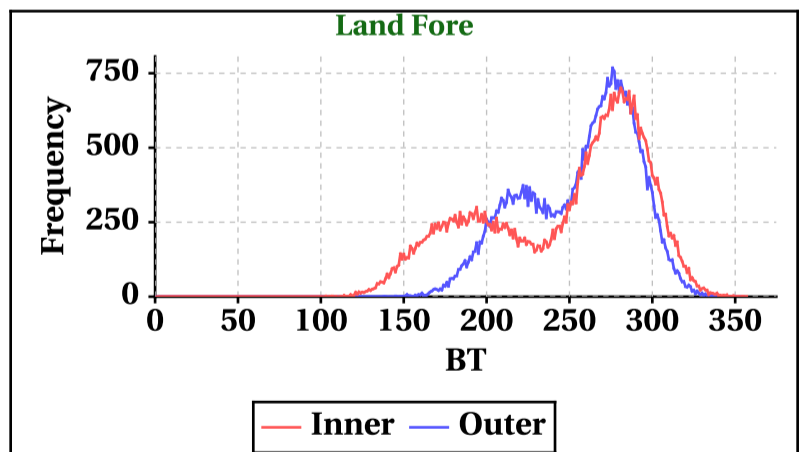
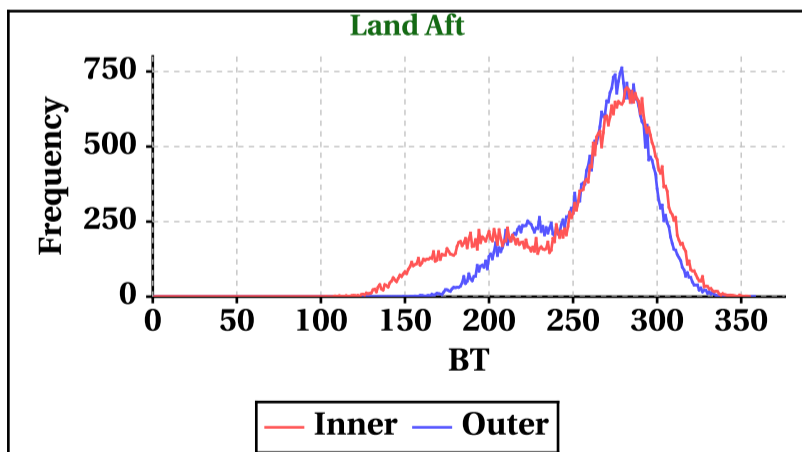
Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-25	-23	-59	-60
Max	0	0	0	0



## Brightness Temperature(K)

Inner Beam(HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	355	357	298	276

Outer Beam(VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	358	355	302	297

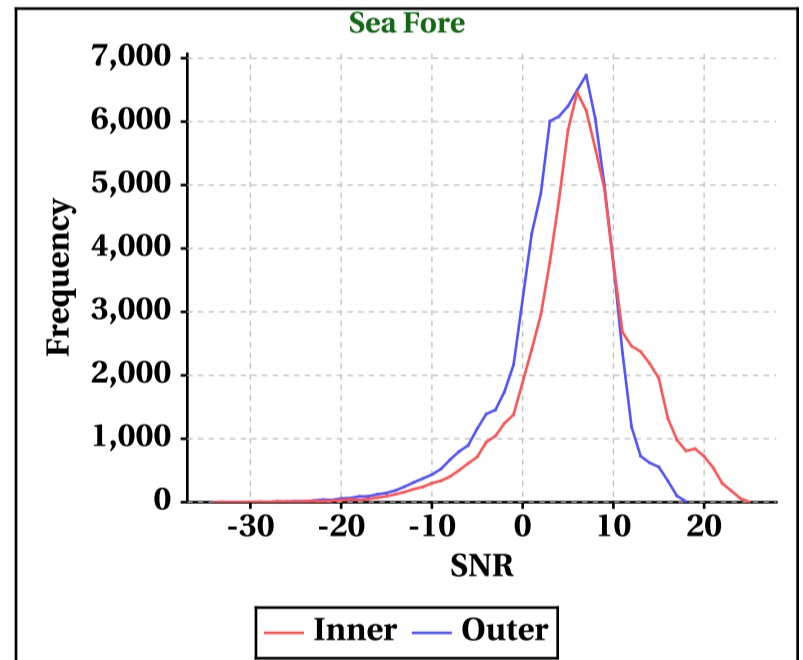
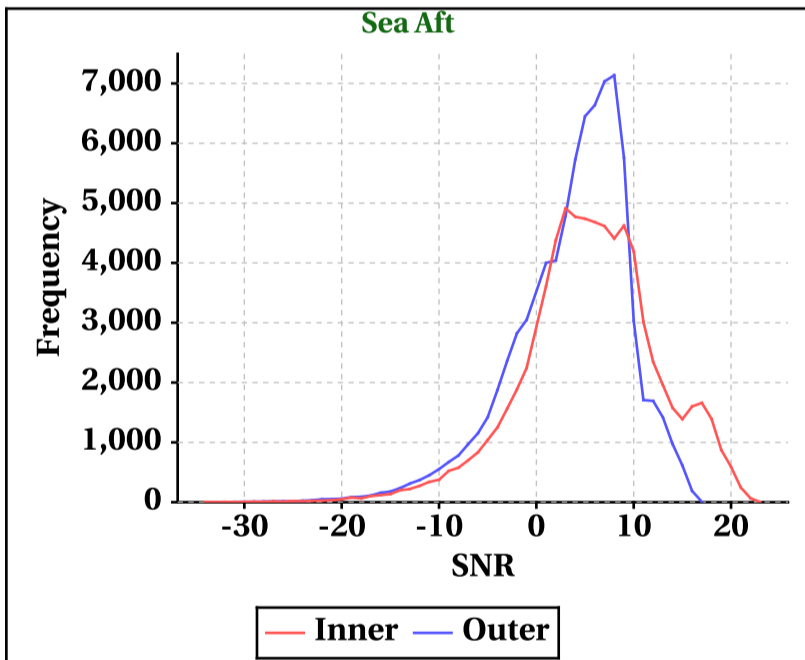
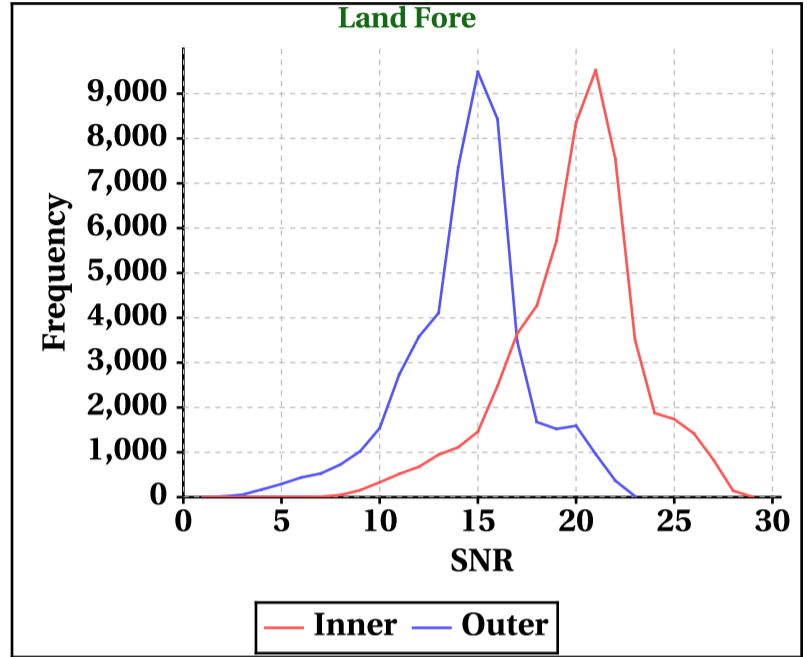
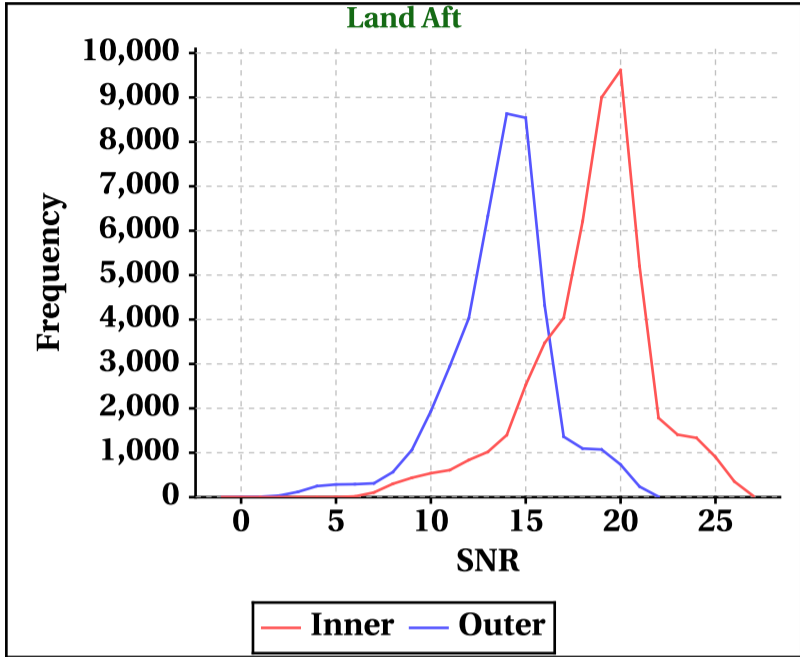


# Dynamic Range (Data Histograms)

## SNR(dBm)

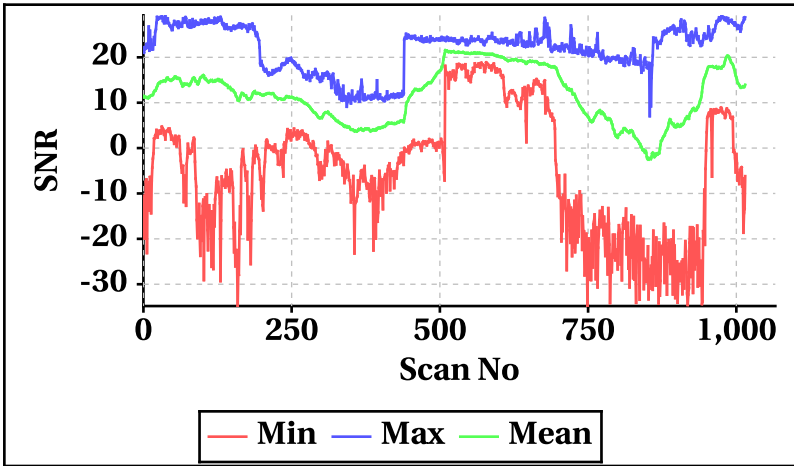
Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-1	0	-34	-34
Max	27	29	23	25

Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-1	0	-34	-34
Max	22	23	17	18

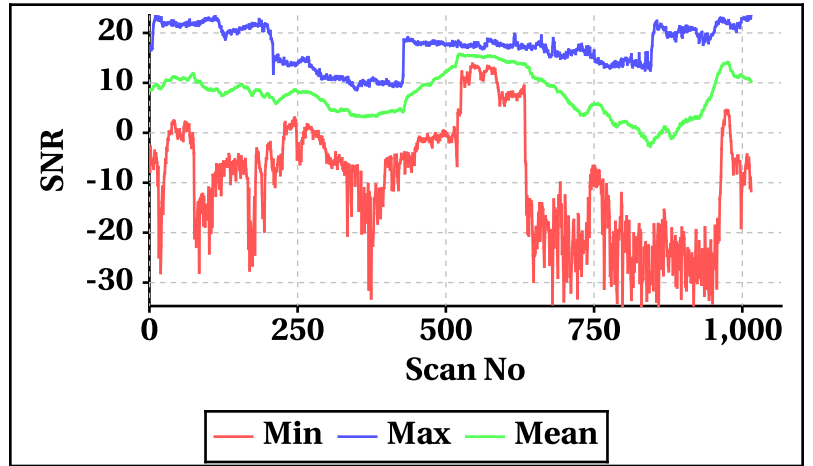


## Orbit-wise behaviour of SNR

Inner Beam (HH)

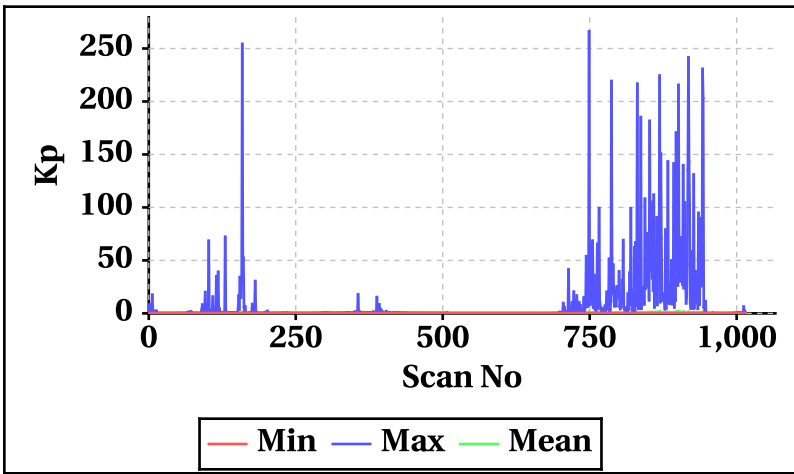


Outer Beam(VV)

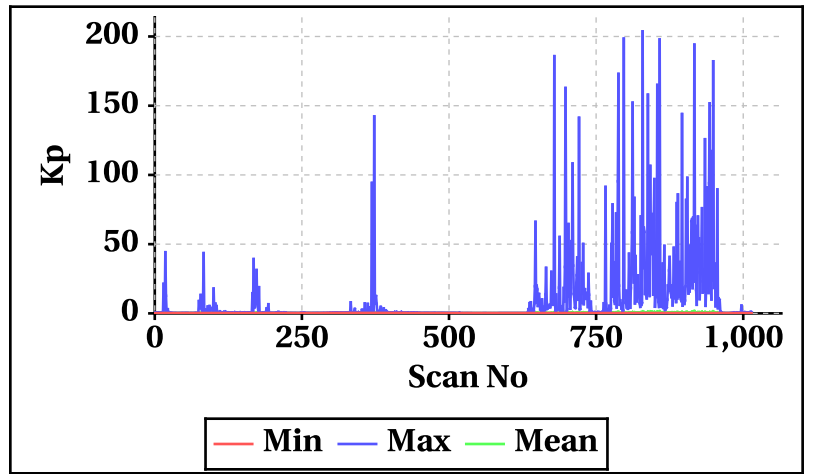


## Orbit-wise behaviour of Kp,Kpa,Kpb,Kpc

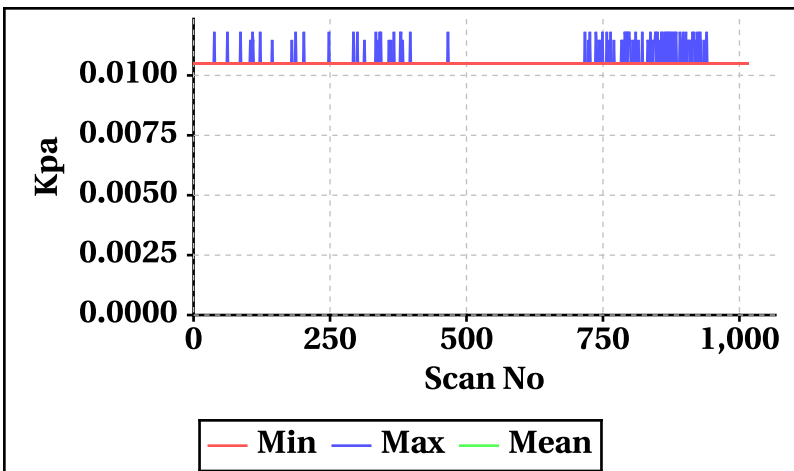
Inner Beam(HH)



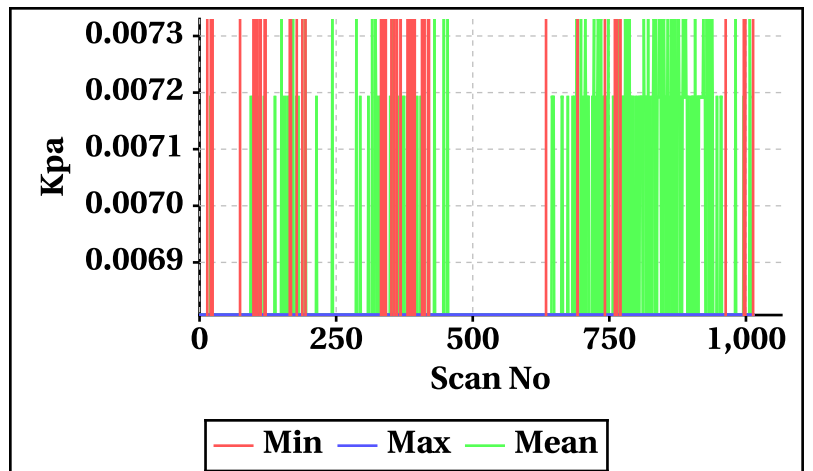
Outer Beam(VV)



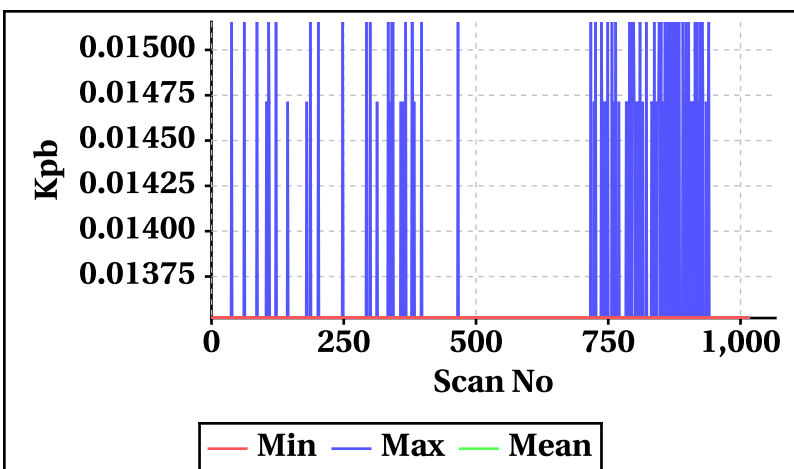
Inner Beam(HH)



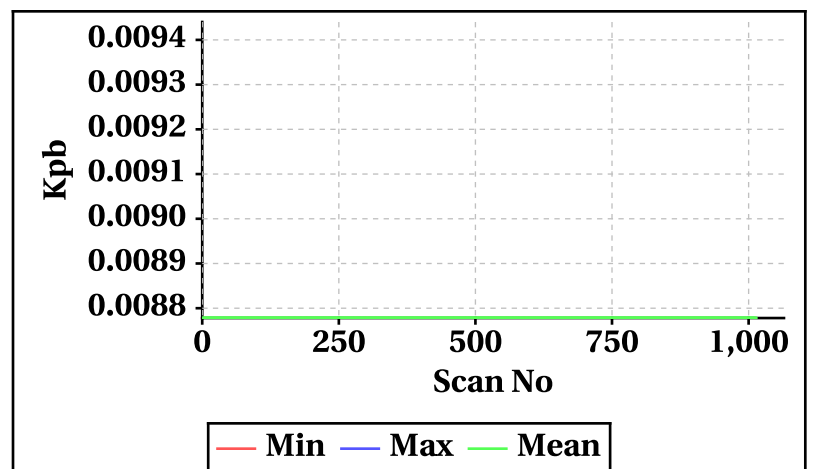
Outer Beam(VV)



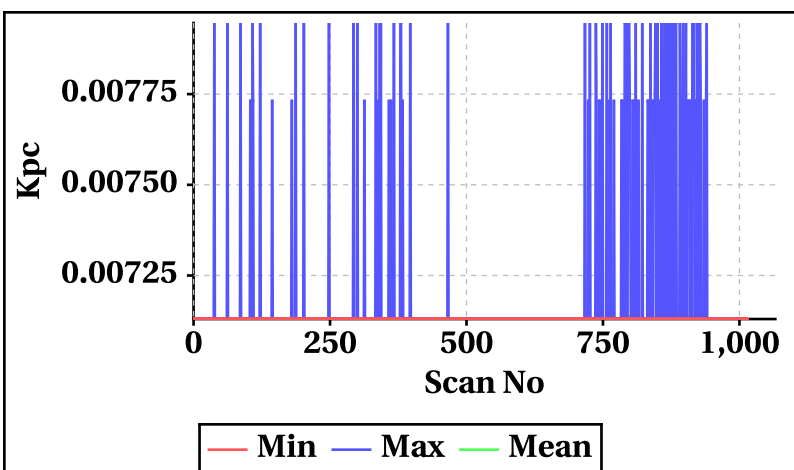
Inner Beam(HH)



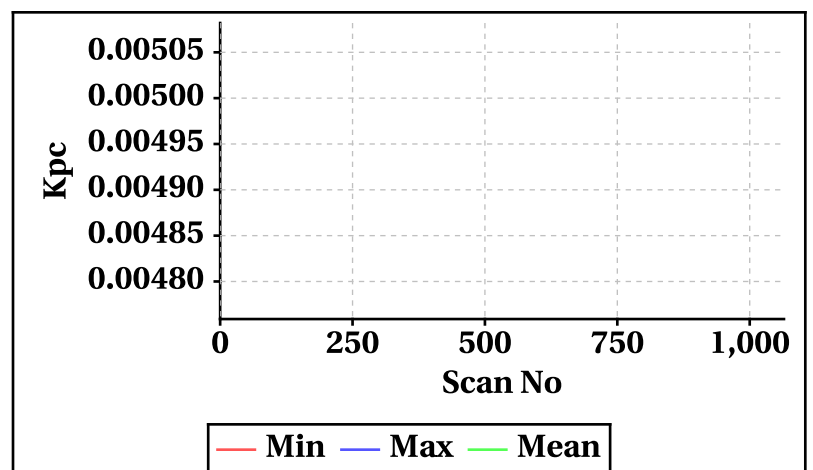
Outer Beam(VV)



Inner Beam(HH)



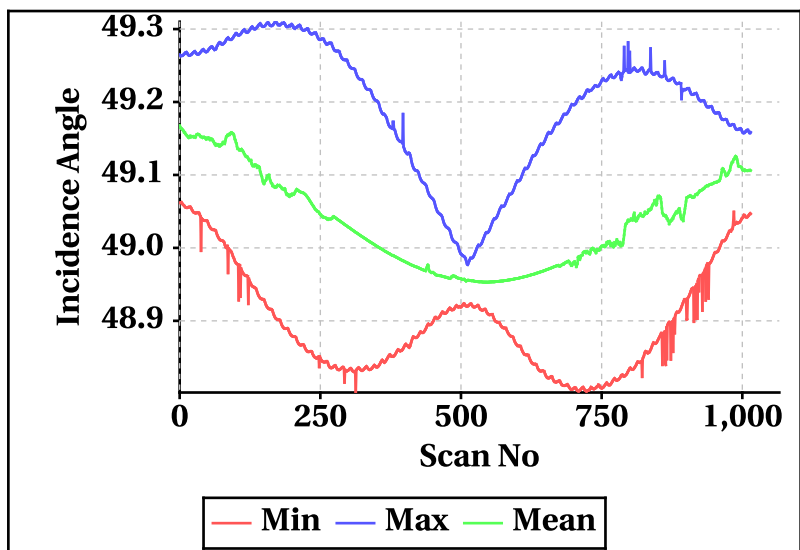
Outer Beam(VV)



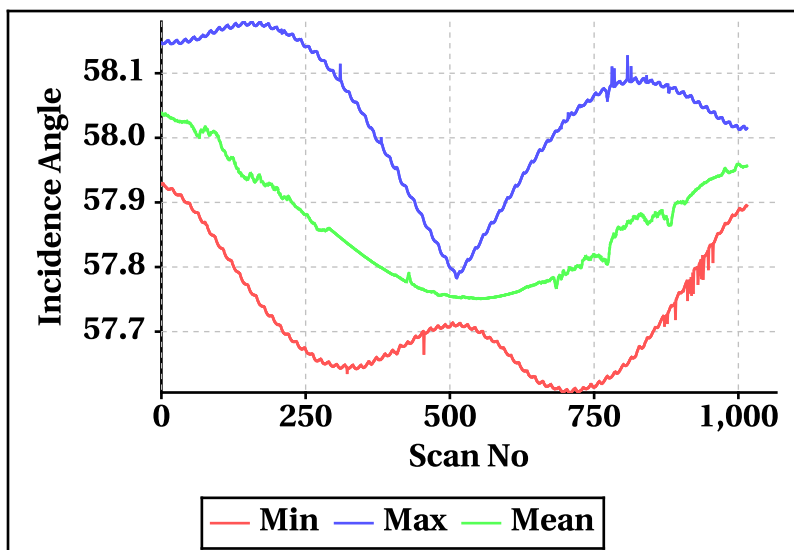


Orbit-wise behaviour of Incidence, Azimuth, Range, X-Factor

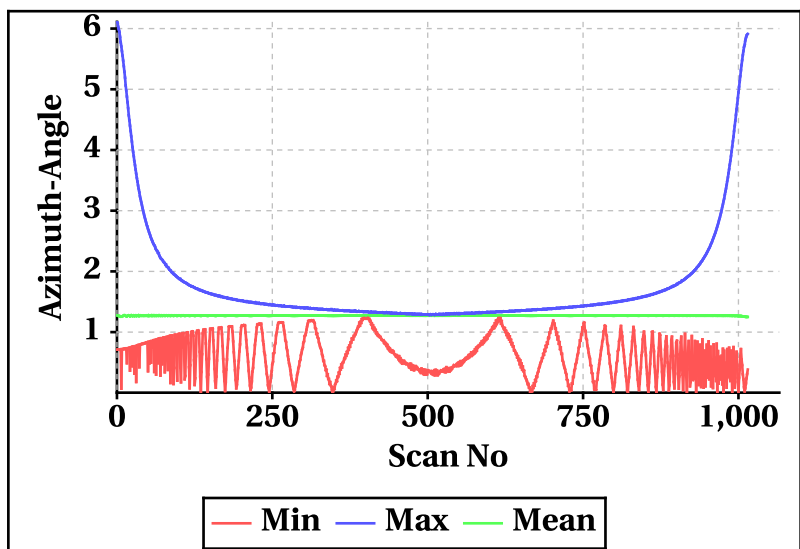
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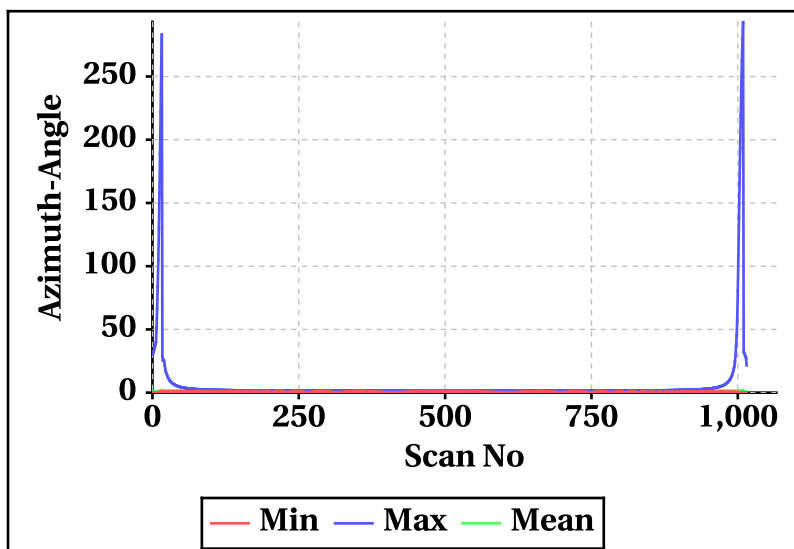
Outer Beam(VV)



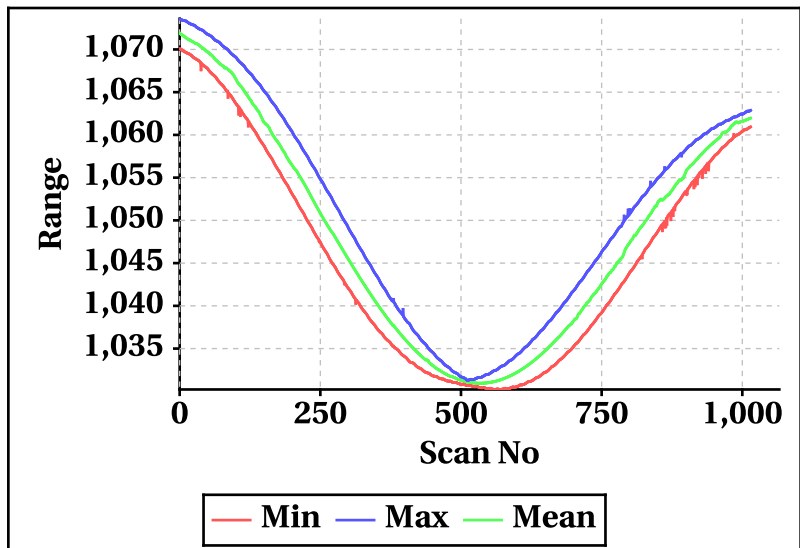
Inner Beam (HH)



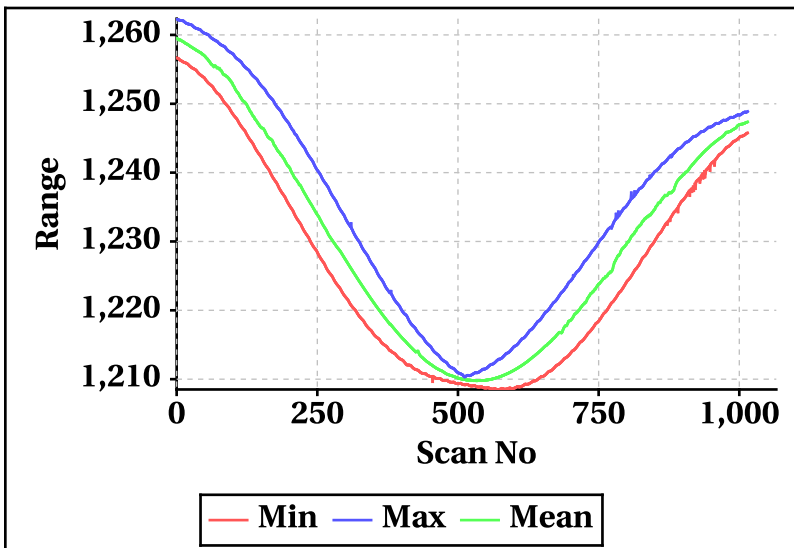
Outer Beam(VV)



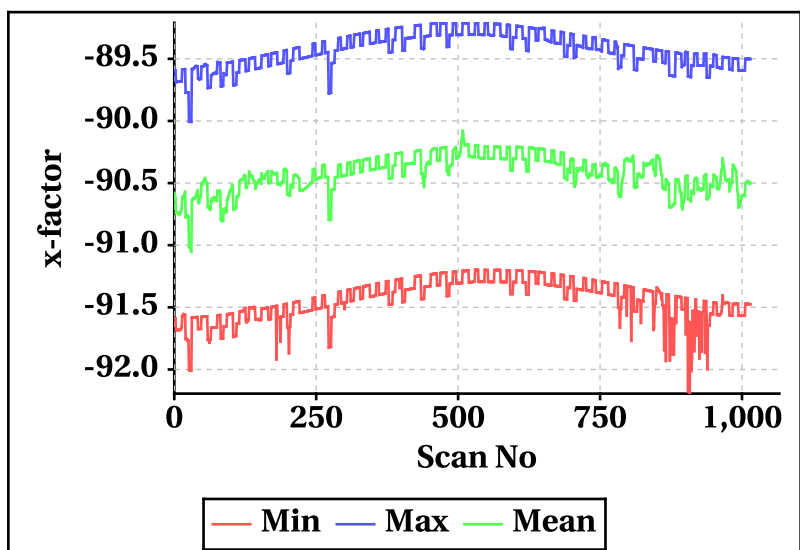
Inner Beam (HH)



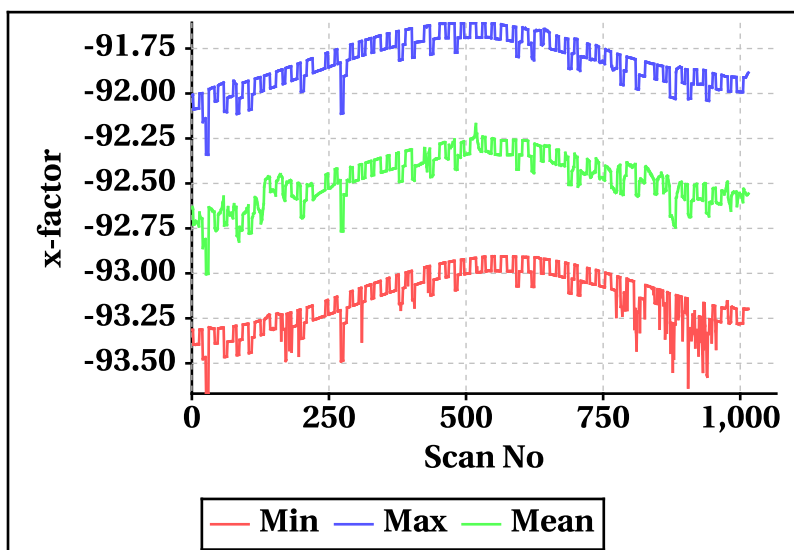
Outer Beam(VV)



Inner Beam (HH)



Outer Beam(VV)

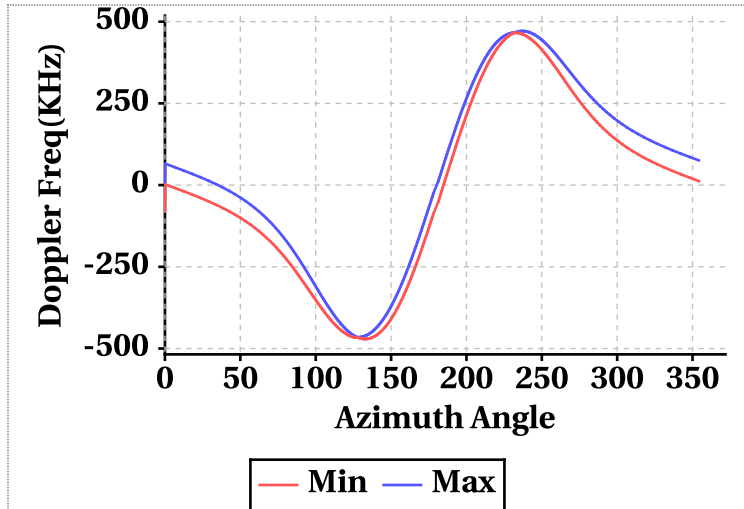


# Doppler Frequency Variation

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

	Inner Beam (HH)	Outer Beam (VV)
<b>Min</b>	-470.86	-527.72
<b>Max</b>	471.26	528.10

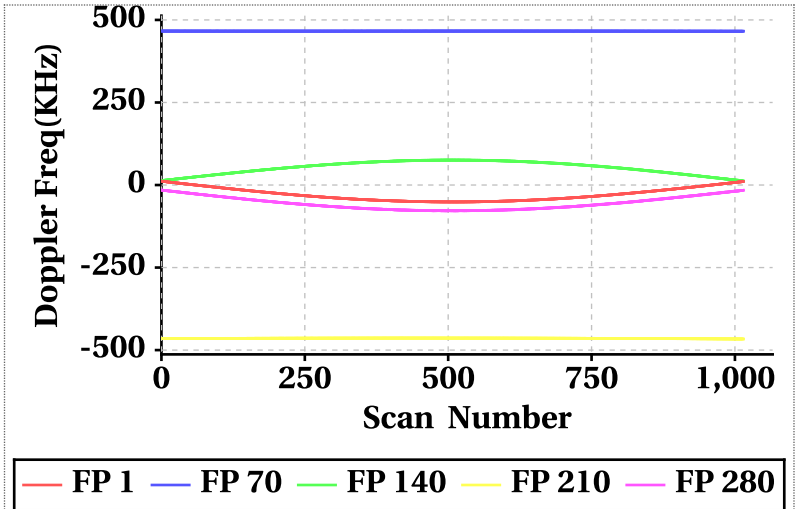
**Footprint wise Doppler frequency variation Inner Beam (HH)**



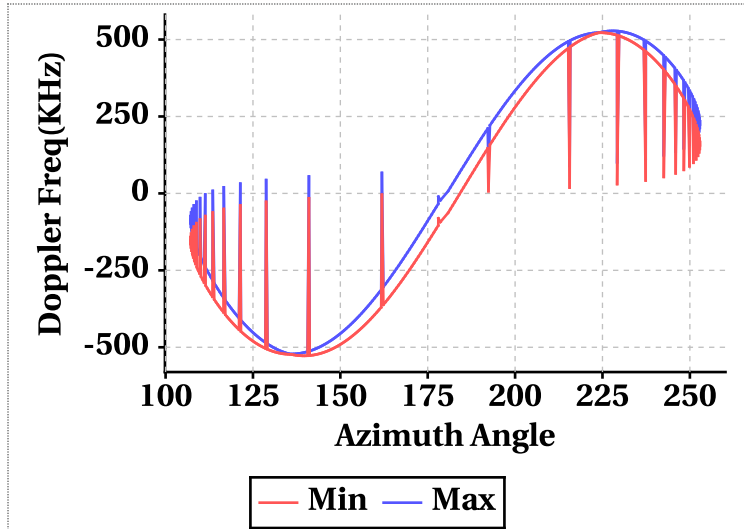
**Doppler Frequency(KHz) variation**

Doppler_FP	Inner Beam (HH)			Outer Beam (VV)		
	Min	Max	Mean	Min	Max	Mean
Doppler_1	-51.26	11.62	-28.56	-62.64	7.80	-37.19
Doppler_70	465.86	466.32	466.15	521.62	522.38	521.85
Doppler_140	12.24	75.56	52.61	7.34	78.18	52.46
Doppler_210	-466.36	-463.58	-464.37	-522.76	-520.66	-521.23
Doppler_280	-78.10	-15.34	-55.23	-81.14	-10.78	-55.46

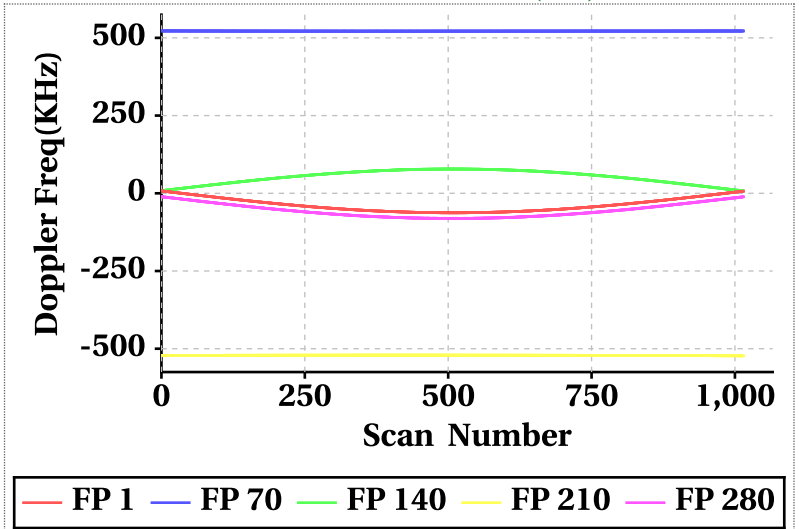
**Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Inner Beam (HH)**



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

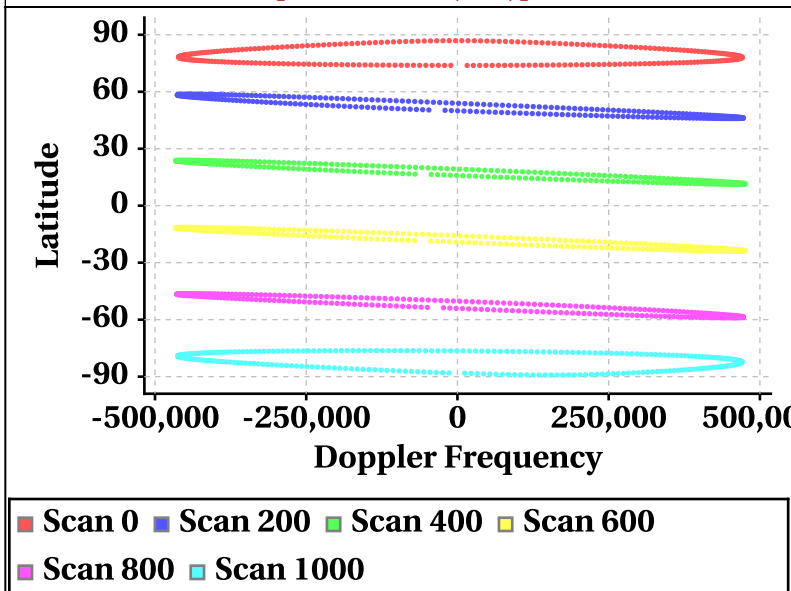


**Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Outer Beam (VV)**

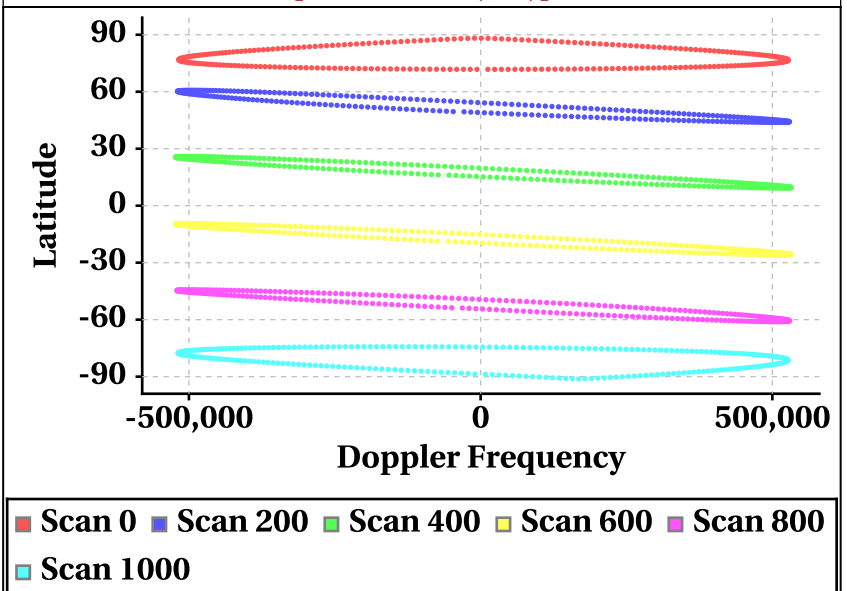


# Latitude Vs Doppler Frequency

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



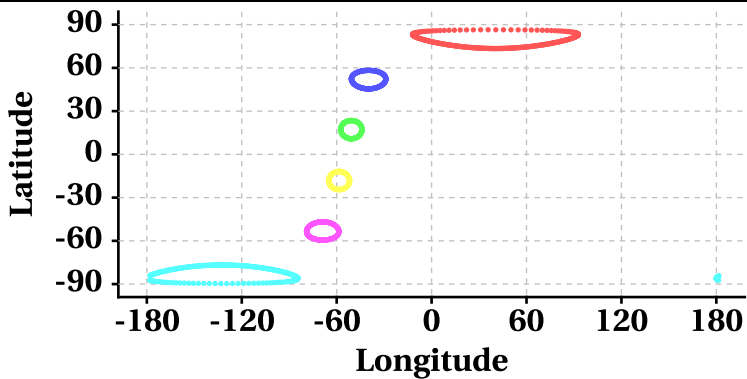
**Doppler Frequency at Scan Interval of 200 [Outer Beam(VV)]**



# Parameter as a function of Latitude

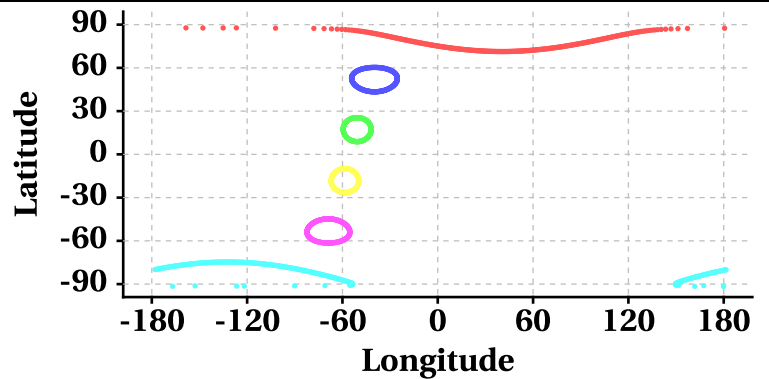
## Latitude Vs Longitude

Scan Trace [Inner Beam(HH)]



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

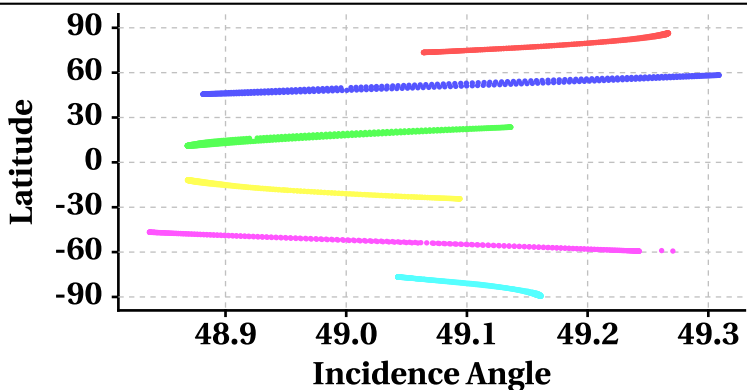
Scan Trace [Outer Beam (VV)]



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

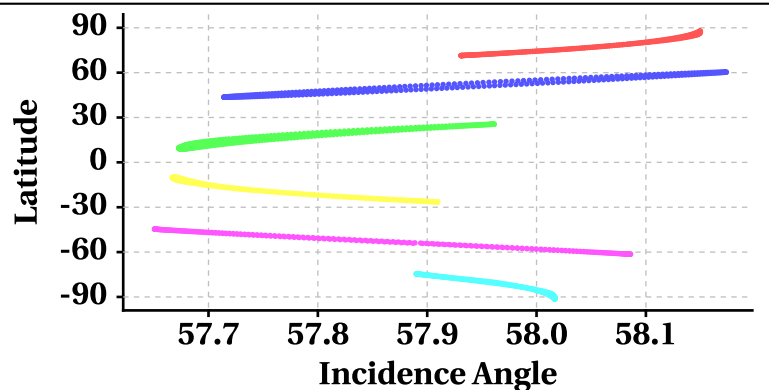
## Latitude Vs Incidence Angle

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



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

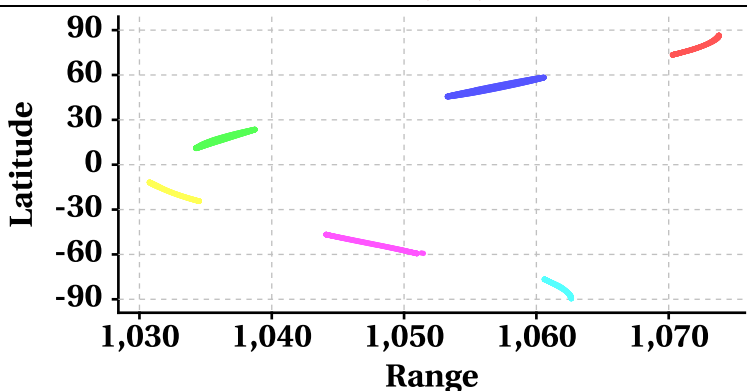
Incidence Angle at Scan Interval of 200 [Outer Beam (VV)]



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

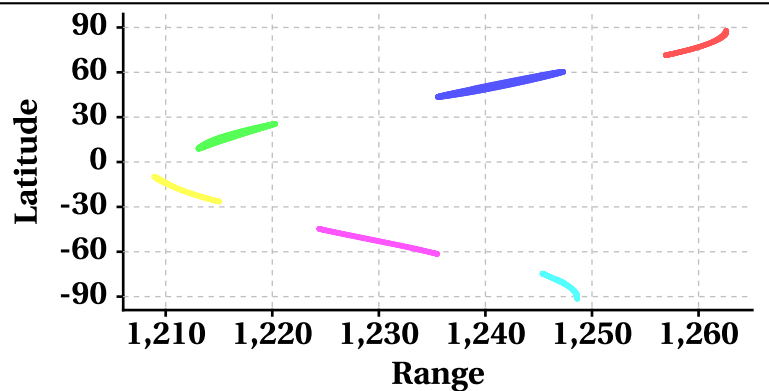
## Latitude Vs Range

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

