

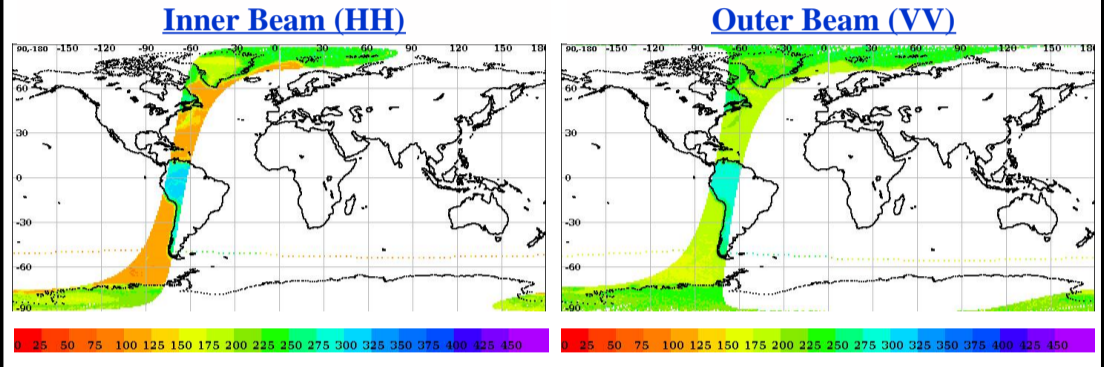
# SCATSAT-1 Scatterometer Level-1B Data Quality Evaluation Report

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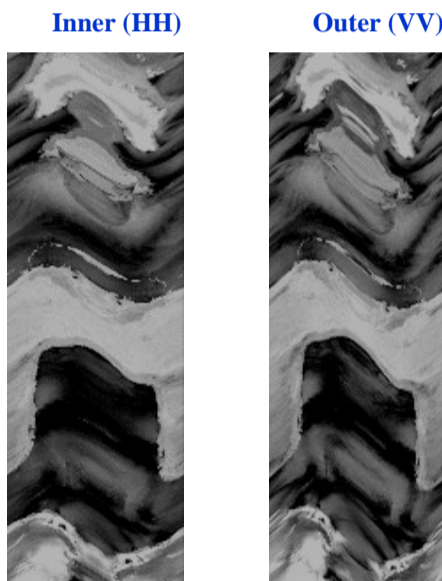
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<b>Satellite Id</b>	ScatSat-1	<b>Start Orbit</b>	18202	<b>Total Scans</b>	1016
<b>Sensor Name</b>	Scatterometer	<b>End Orbit</b>	18203	<b>No Of Inner FootPrints</b>	281
<b>Processor Version</b>	v1.1.4	<b>Rev. Number</b>	18202_18203	<b>No Of Outer FootPrints</b>	282
<b>Half Orbit Direction</b>	NS	<b>Data Production Date</b>	04-03-2020	<b>No. Of Inner Slices</b>	9
<b>Equator Crossing Date</b>	04-03-2020	<b>Equator Crossing Time</b>	12:56:15.000	<b>No Of Outer Slices</b>	15

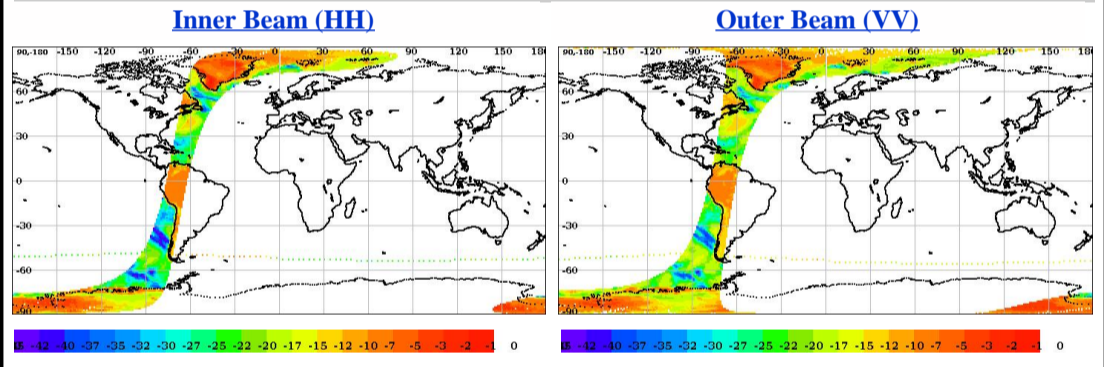
## Brightness Temperature(k) Footprint trace



## Image Snapshot for Inner & Outer Beam



## Sigma0(dB) Footprint trace



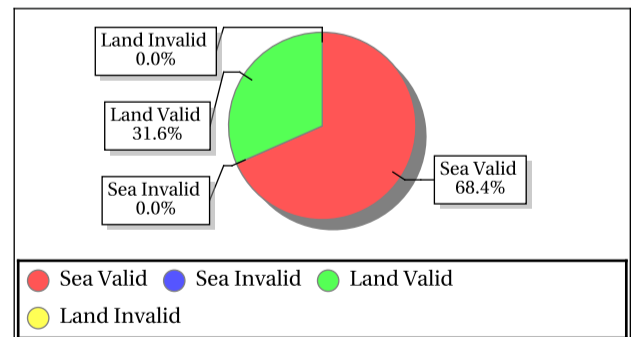
## Invalid and Poor Sigma-0 Quality Flag Statistics for Inner/Outer Slices\*

Sigma-0 Flags	Inner Beam	Outer Beam
Invalid Sigma0(%)	0.00	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(%)	22.23	13.34
Noise samples for blending Saturated	0.0	0.0
Count samp. for interpol. saturated (%)	0.00	0.00
Sigma0 < lower bound (-96dB) (%)	0.0	0.0
Sigma0 > upper bound (0 dB) (%)	0.00	0.00
SNR < -65 dB (%)	0.032218	0.063842

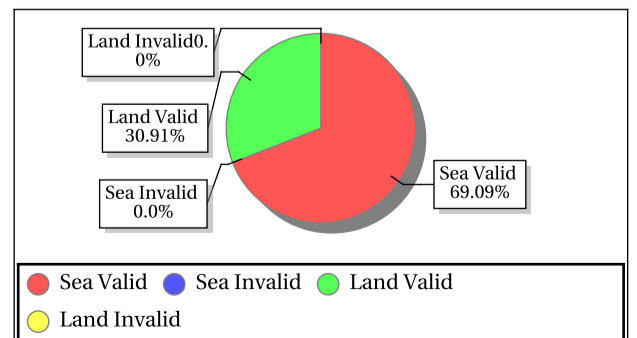
\*DP Format Document

## 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	-5.22	-4.62	-4.92	0.24	156.66	160.58	158.17	1.50
GreenLand_2	77.50	-41.50	Inner	DSC	Fore	-5.66	-4.47	-5.10	0.43	168.05	178.56	173.46	4.96
GreenLand_3	71.55	-42.45	Inner	DSC	Aft	-10.72	-7.75	-9.37	0.79	169.94	212.51	187.08	13.04
GreenLand_3	71.55	-42.45	Inner	DSC	Fore	-11.71	-8.82	-9.82	0.77	164.21	208.43	189.41	15.36
GreenLand_1	74.69	-42.50	Inner	DSC	Aft	-10.47	-8.56	-9.36	0.63	170.69	202.52	182.76	10.58
GreenLand_1	74.69	-42.50	Inner	DSC	Fore	-10.04	-8.39	-9.29	0.50	161.50	195.44	176.80	9.40
Amazon_1	0.00	-67.00	Inner	DSC	Aft	-9.95	-6.32	-7.98	0.70	269.52	337.67	305.57	16.57
Amazon_1	0.00	-67.00	Inner	DSC	Fore	-9.11	-6.28	-7.80	0.62	277.87	343.24	310.05	14.79
GreenLand_2	77.50	-41.50	Outer	DSC	Aft	-5.25	-5.03	-5.17	0.10	207.65	231.55	218.02	10.01
GreenLand_2	77.50	-41.50	Outer	DSC	Fore	-5.05	-4.43	-4.73	0.26	218.44	234.20	224.12	7.15
GreenLand_3	71.55	-42.45	Outer	DSC	Aft	-11.89	-10.19	-10.91	0.55	188.86	240.00	219.62	15.84
GreenLand_3	71.55	-42.45	Outer	DSC	Fore	-11.79	-10.30	-11.01	0.42	202.17	245.80	226.15	13.32
GreenLand_1	74.69	-42.50	Outer	DSC	Aft	-9.58	-7.70	-8.88	0.54	215.35	245.29	233.12	9.38
GreenLand_1	74.69	-42.50	Outer	DSC	Fore	-9.72	-7.33	-8.76	0.68	217.66	247.94	233.82	10.36
Amazon_2	-3.00	-61.00	Outer	DSC	Aft	-11.13	-9.09	-10.05	0.47	244.31	323.47	282.69	16.92
Amazon_2	-3.00	-61.00	Outer	DSC	Fore	-12.19	-9.01	-10.23	0.56	237.30	318.68	281.45	15.36
Amazon_1	0.00	-67.00	Outer	DSC	Aft	-9.72	-8.20	-9.00	0.42	270.88	326.56	294.33	14.52
Amazon_1	0.00	-67.00	Outer	DSC	Fore	-9.52	-8.14	-8.92	0.38	252.84	320.53	285.06	15.28



## 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	279.35	0.34	2.971	0.12	301.61	0.33	2.926	0.12	0.42	0.12	0.000	0.12	0.21	0.12	0.000
<b>Kpa</b>	0.01	0.02	0.01	0.000	0.01	0.02	0.01	0.000	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000
<b>Kpb</b>	0.02	0.02	0.02	0.000	0.02	0.02	0.02	0.000	0.02	0.02	0.02	0.000	0.02	0.02	0.02	0.000
<b>Kpc</b>	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000
<b>SNR</b>	-34.60	26.63	5.69	0.499	-34.93	27.55	5.69	0.611	-5.25	29.18	19.38	15.497	-0.30	30.29	20.30	30.627

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	226.18	0.28	2.514	0.09	205.73	0.26	2.458	0.09	0.22	0.09	0.000	0.09	0.16	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>	-34.85	22.16	3.76	0.002	-34.44	20.99	3.32	0.000	-3.12	23.02	13.60	0.089	-0.41	23.49	14.15	0.662

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>	48.72	49.39	49.01	0.000	57.51	58.14	57.88	0.000	Inci.(Inner)	47.10	49.90
<b>Azimuth Diff. (deg)</b>	0.0027	264.76	1.28	2.680	0.0000	295.85	1.27	3.870	Inci.(Outer)	57.30	58.90
<b>Range(Km)</b>	1034.41	1074.51	1051.69	0.000	1212.19	1261.86	1231.76	0.000	Azimuth Diff.	0.60	2.00
<b>X Factor(dbm)</b>	-91.77	-89.64	-90.17	0.000	-92.81	-91.68	-92.02	0.000	Range(Inner)	1025.00	1095.70
<b>Across Distance (Km)</b>	15.80	16.36	16.01	0.000	9.48	37.23	21.10	5.000	Range(Outer)	1210.00	1280.00
<b>Along Distance (Km)</b>	18.72	1044.99	21.70	3.000	18.36	1358.56	22.24	4.000	X-Factor	-100.00	-80.00
									Ac.Distance(Inner)	15.00	20.00
									Ac.Distance(Outer)	15.00	22.00
									Al.Distance(Inner)	15.00	30.00
									Al.Distance(Outer)	10.00	30.00

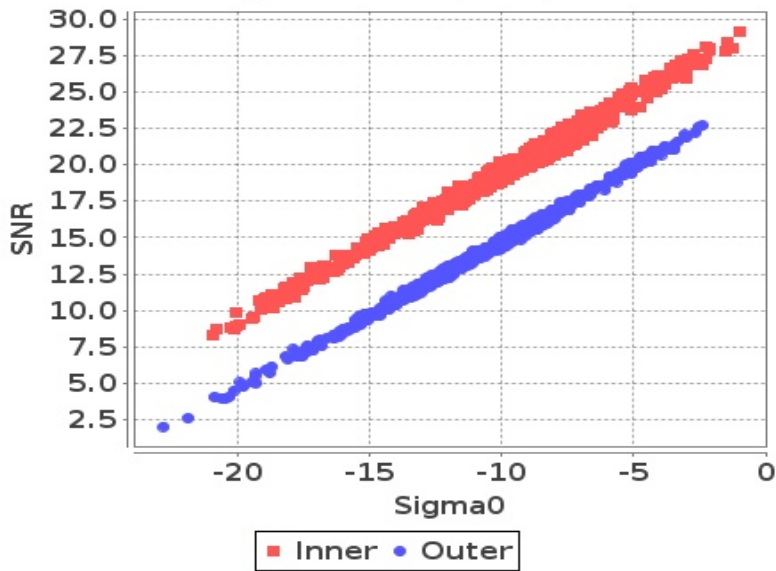
- Normal
- Deviations
- Alarming
- High Errors



## Sigma0 Behaviour (Sigma0 Vs SNR)

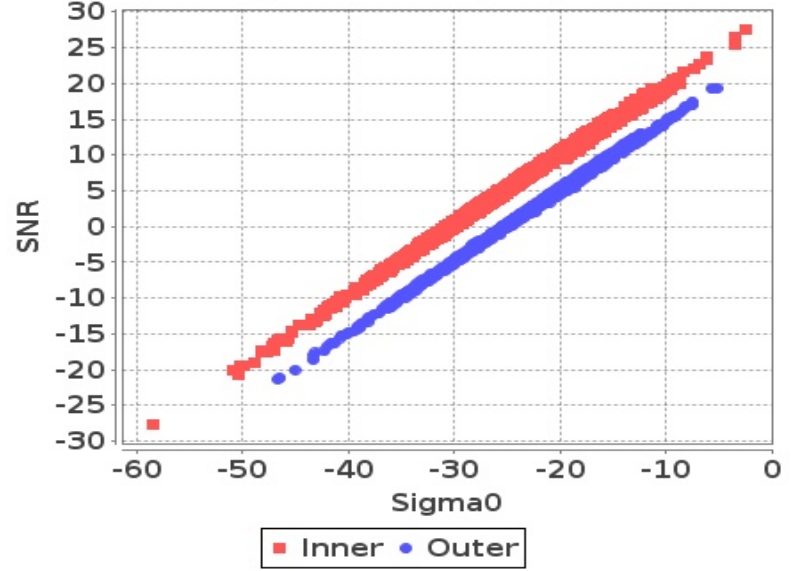
Footprint-Land

Sigma0 Vs SNR (Land)



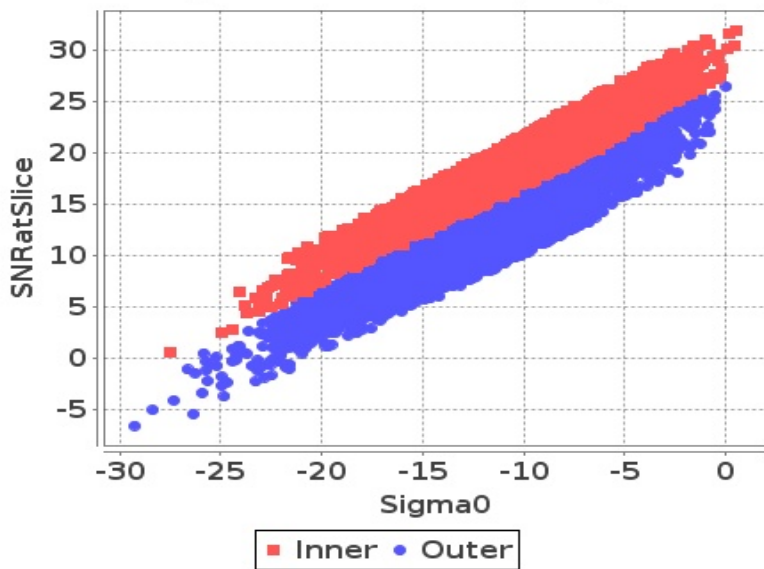
Footprint-Sea

Sigma0 Vs SNR (Sea)



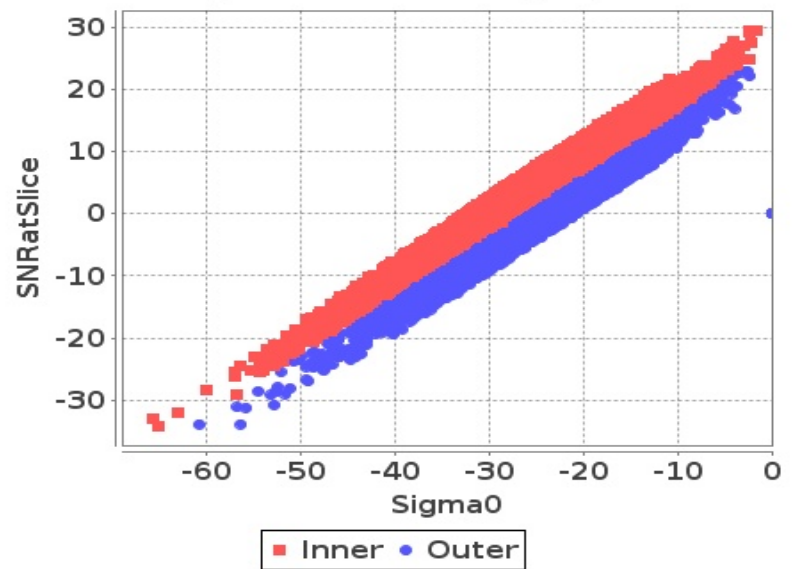
Slice-Land

Sigma0 Vs SNRatSlice (Land)



Slice-Sea

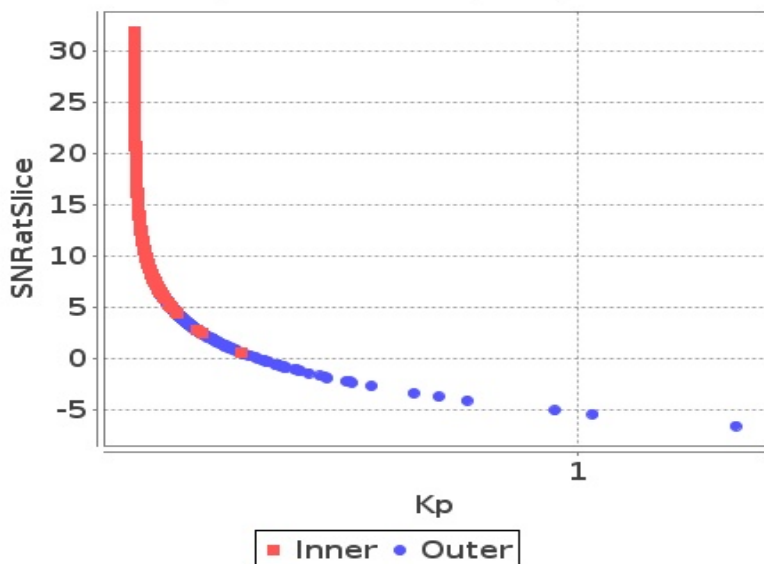
Sigma0 Vs SNRatSlice (Sea)



## Sigma0 Behaviour (Kp Vs SNR)

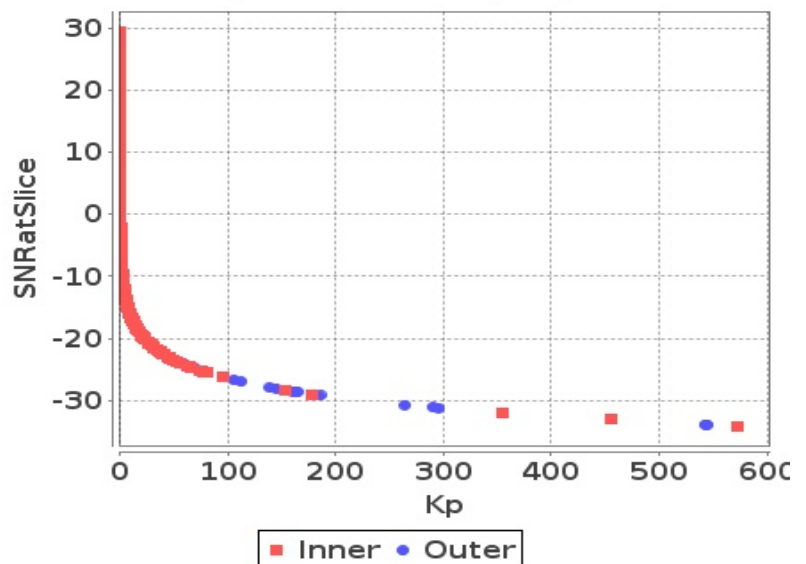
Slice

Kp Vs SNRatSlice (Land)



Slice

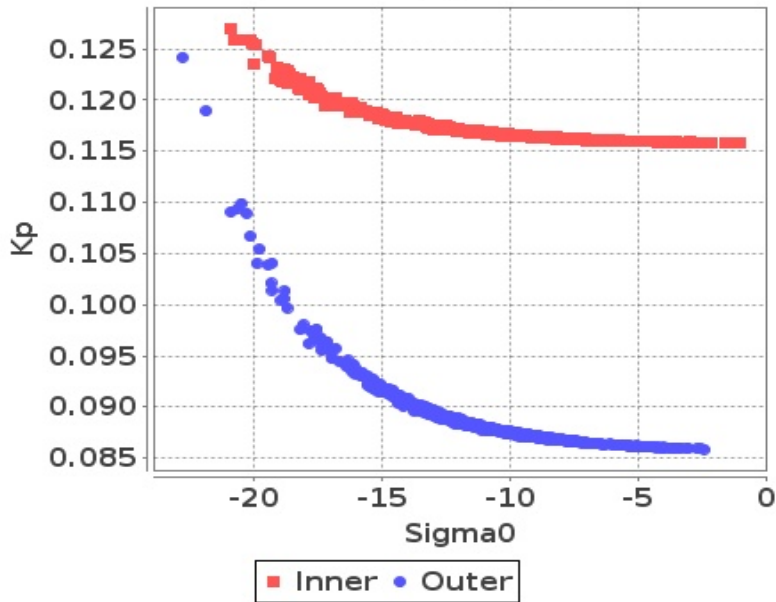
Kp Vs SNRatSlice (Sea)



# Sigma0 Behaviour(Sigma0 Vs Kp)

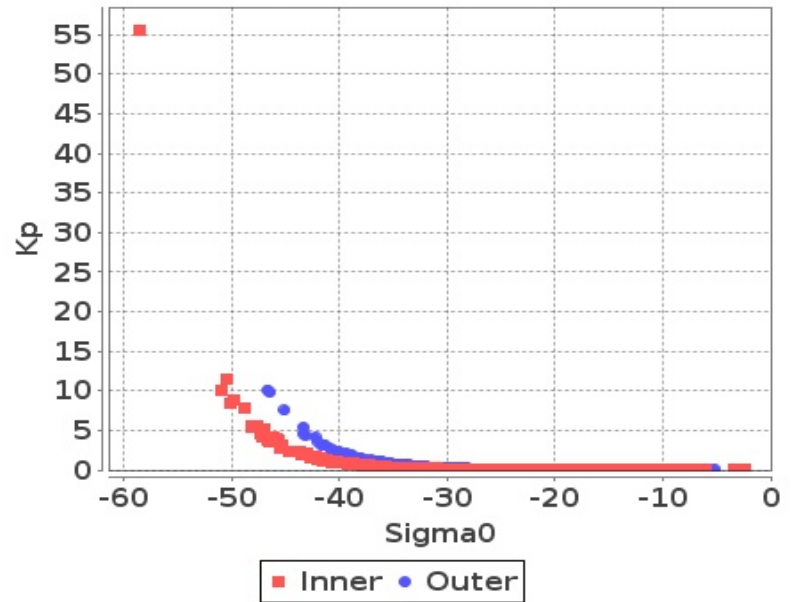
## Footprint-Land

### Sigma0 Vs Kp (Land)



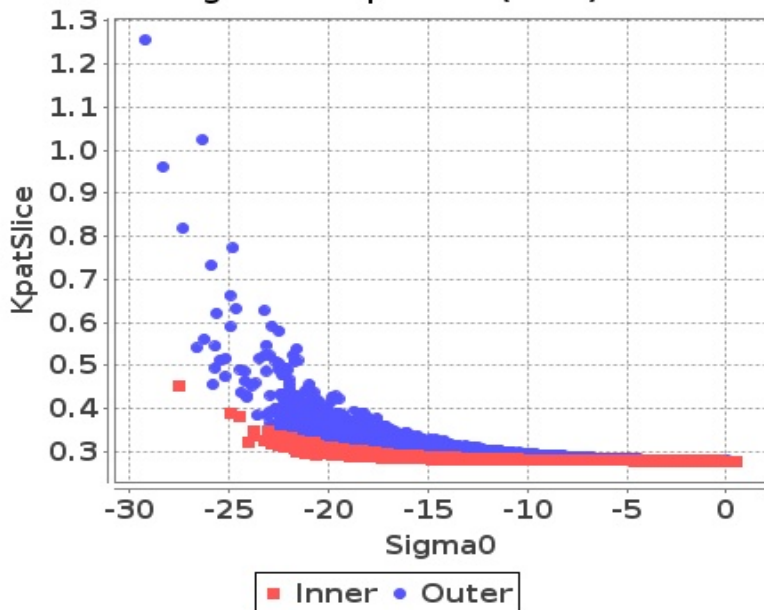
## Footprint-Sea

### Sigma0 Vs Kp (Sea)



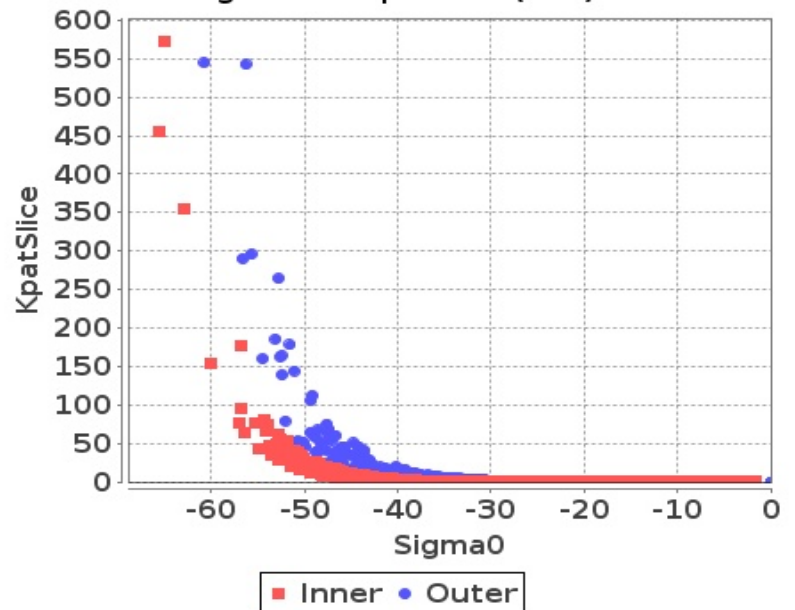
## Slice-Land

### Sigma0 Vs KpatSlice (Land)



## Slice-Sea

### Sigma0 Vs KpatSlice (Sea)

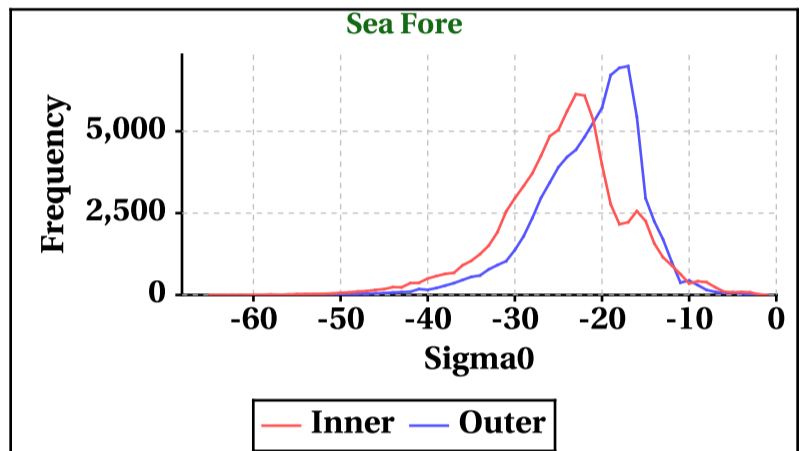
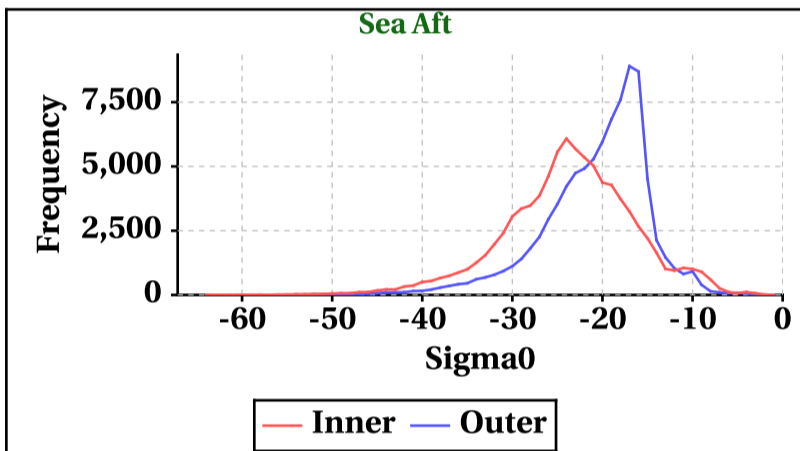
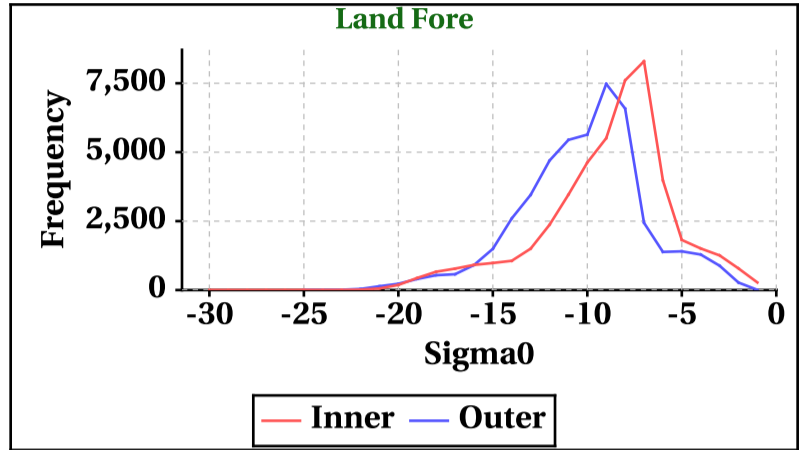
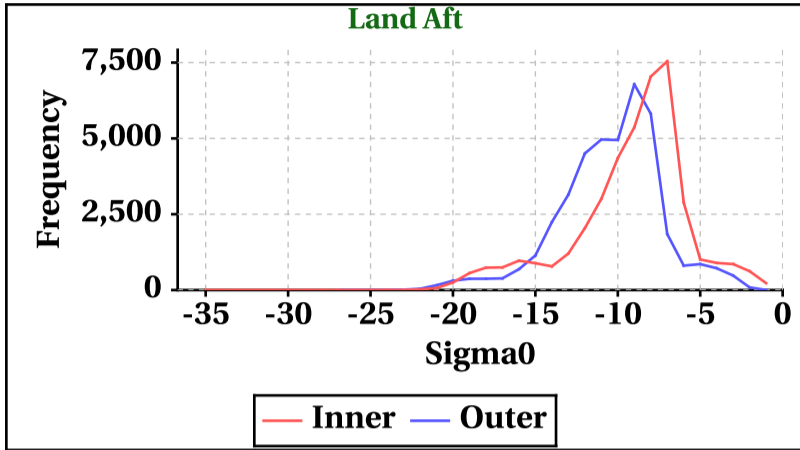


# Dynamic Range (Data Histograms)

## Sigma0(db)

Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-35	-30	-64	-65
Max	0	0	0	0

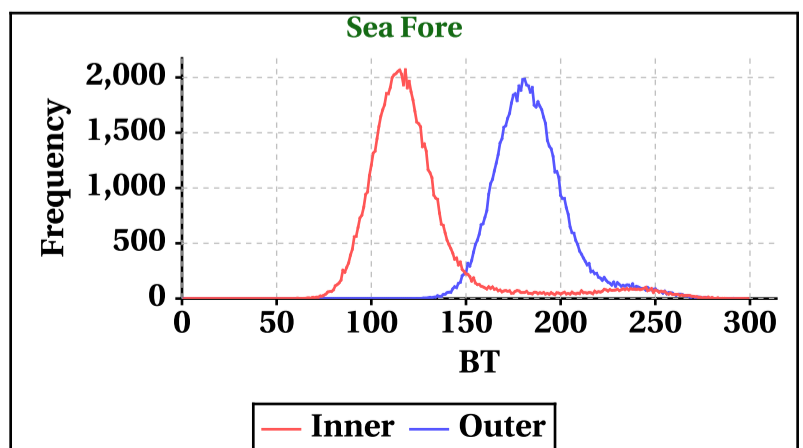
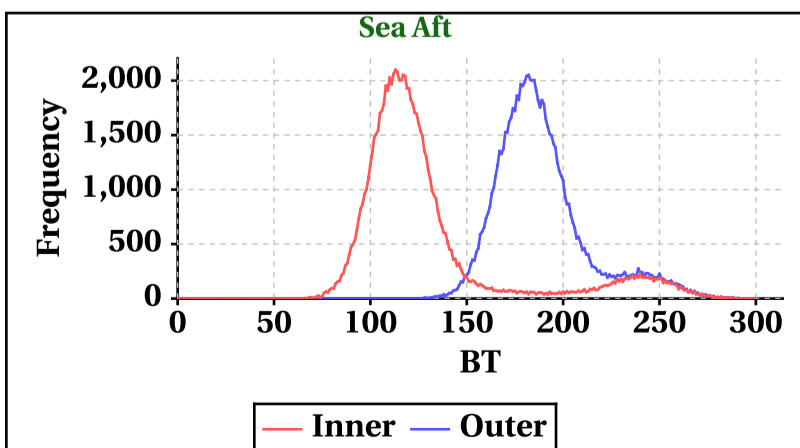
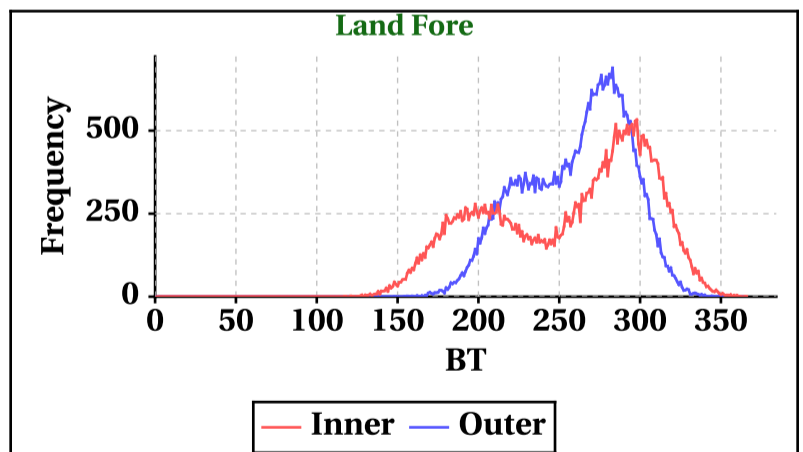
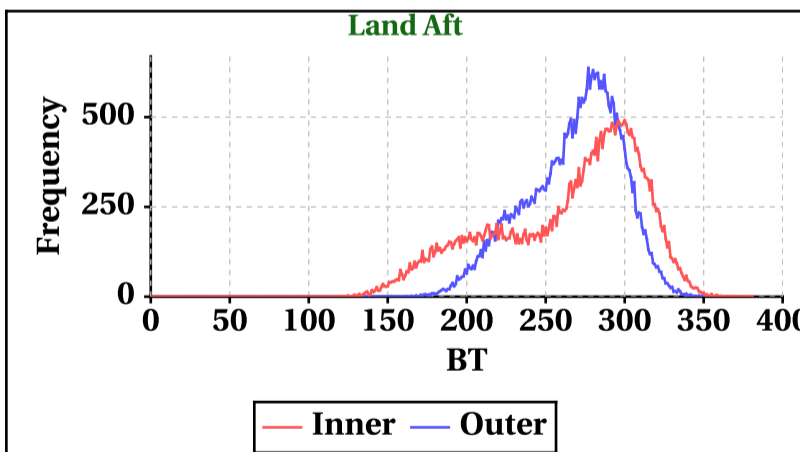
Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-27	-25	-59	-59
Max	0	0	0	0



## Brightness Temperature(K)

Inner Beam(HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	381	366	299	299

Outer Beam(VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	361	364	296	296

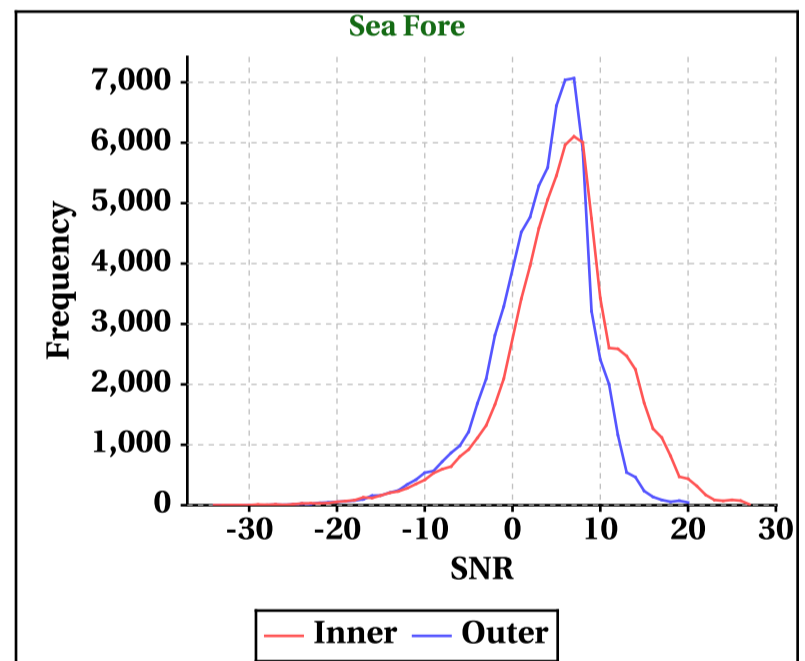
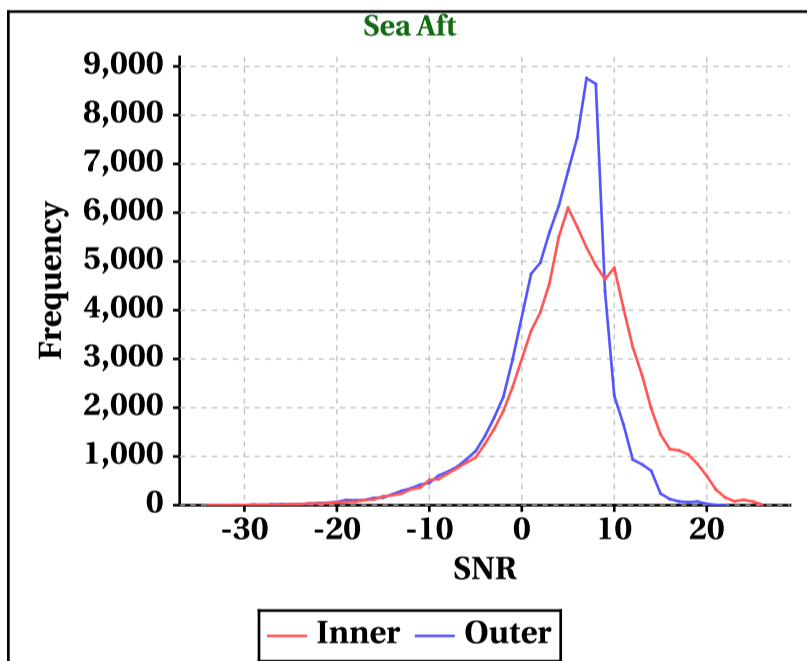
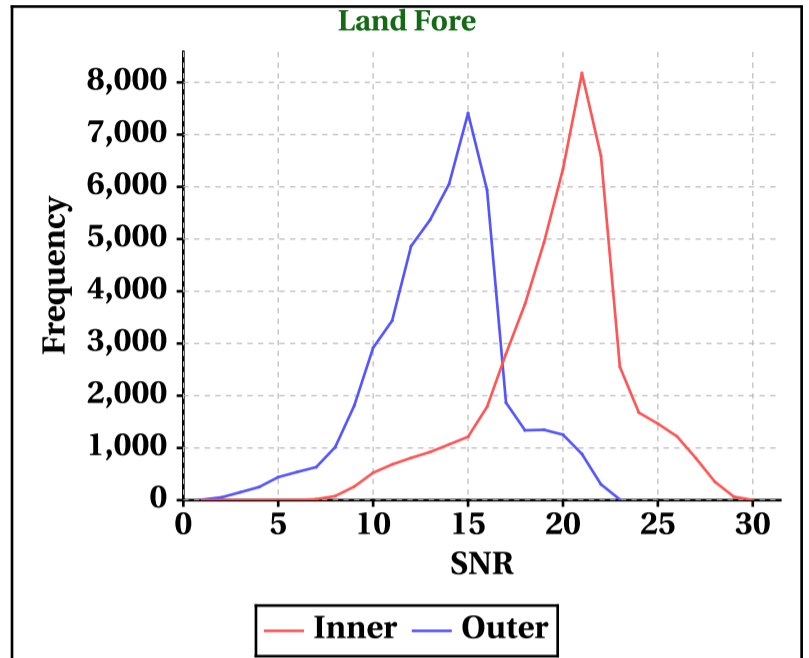
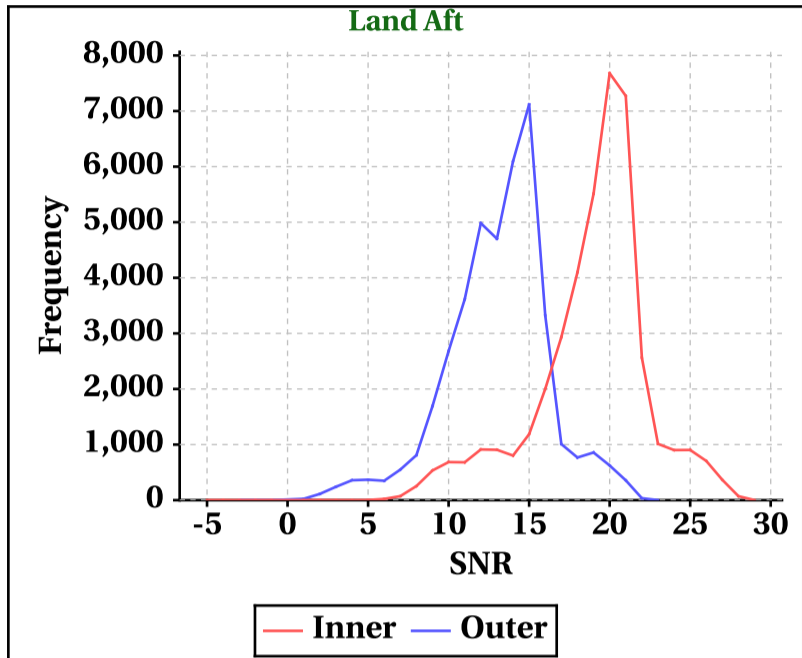


# Dynamic Range (Data Histograms)

## SNR(dBm)

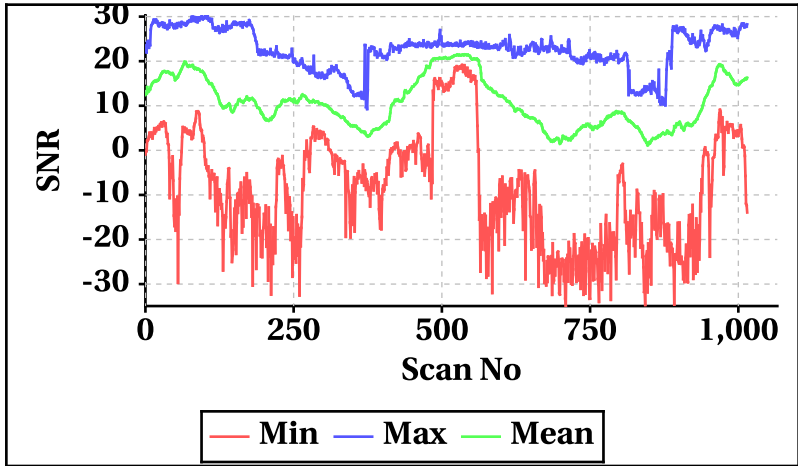
Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-5	0	-34	-34
Max	29	30	26	27

Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-3	0	-34	-34
Max	23	23	22	20

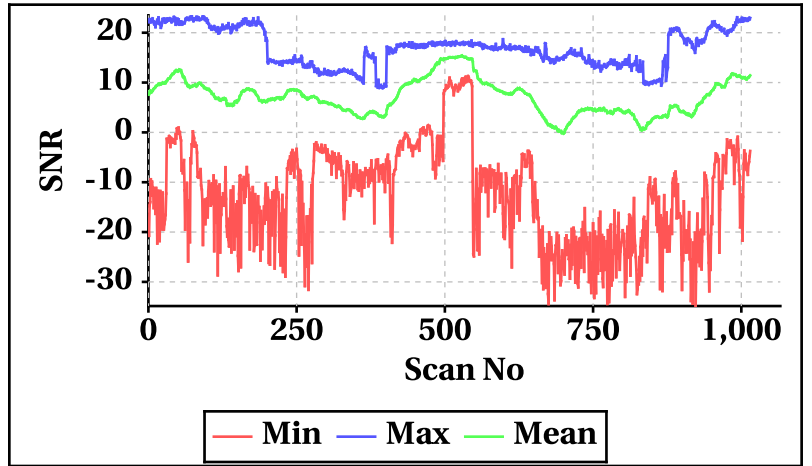


## Orbit-wise behaviour of SNR

Inner Beam (HH)

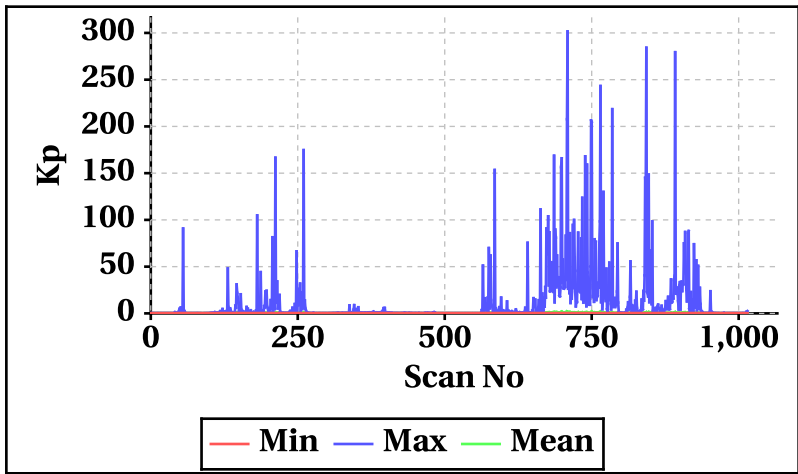


Outer Beam(VV)

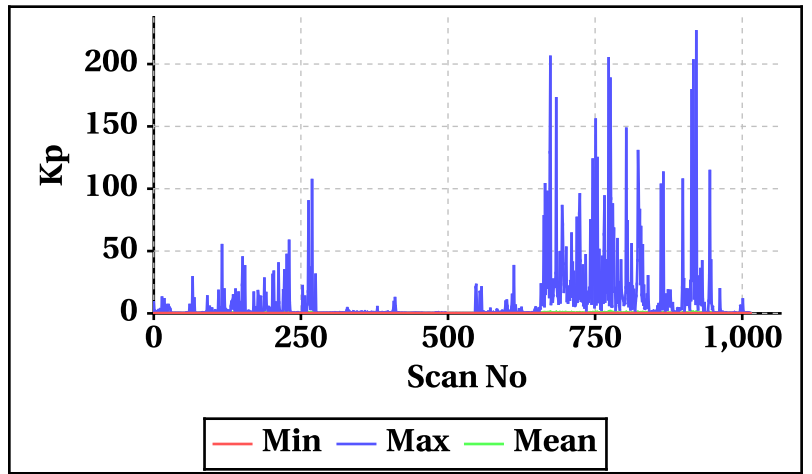


## Orbit-wise behaviour of Kp,Kpa,Kpb,Kpc

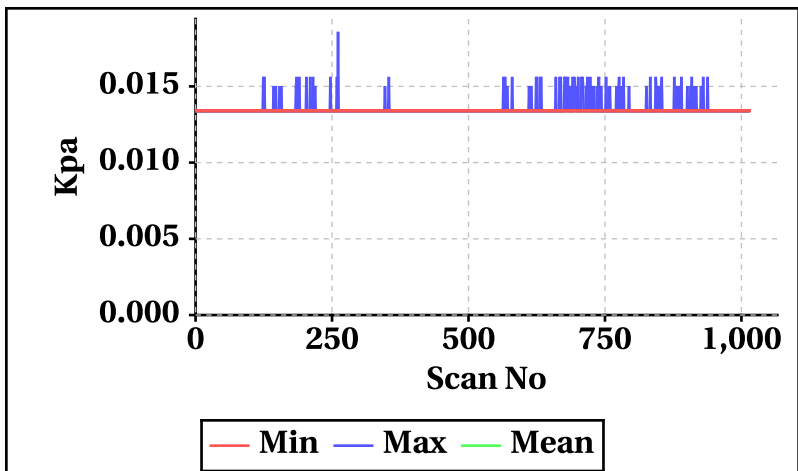
Inner Beam(HH)



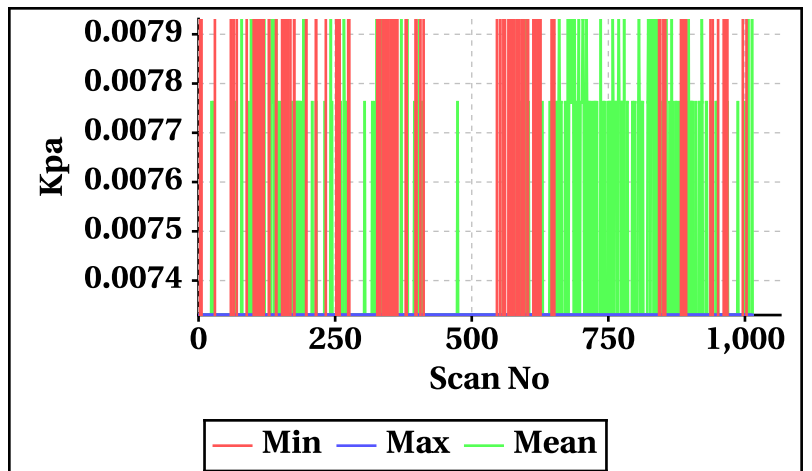
Outer Beam(VV)



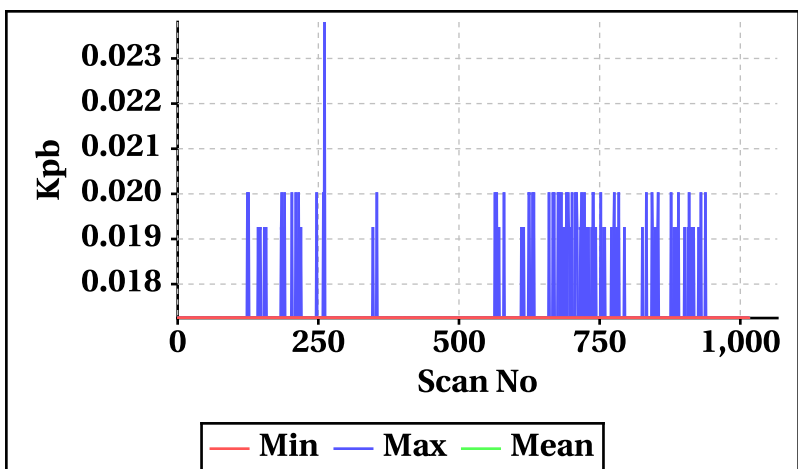
Inner Beam(HH)



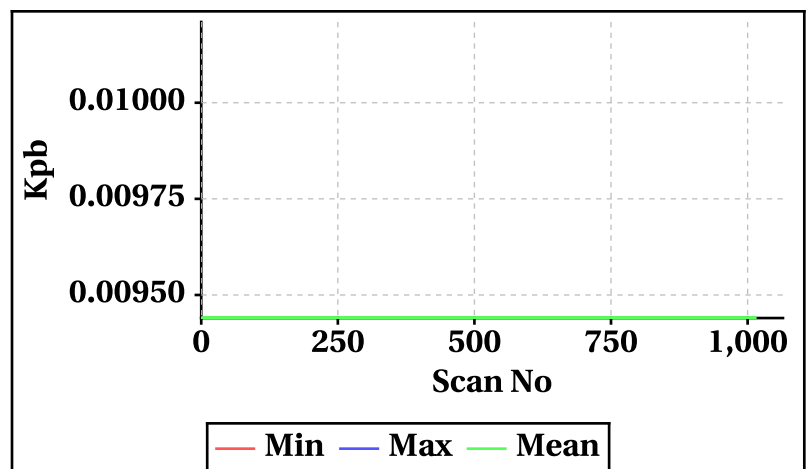
Outer Beam(VV)



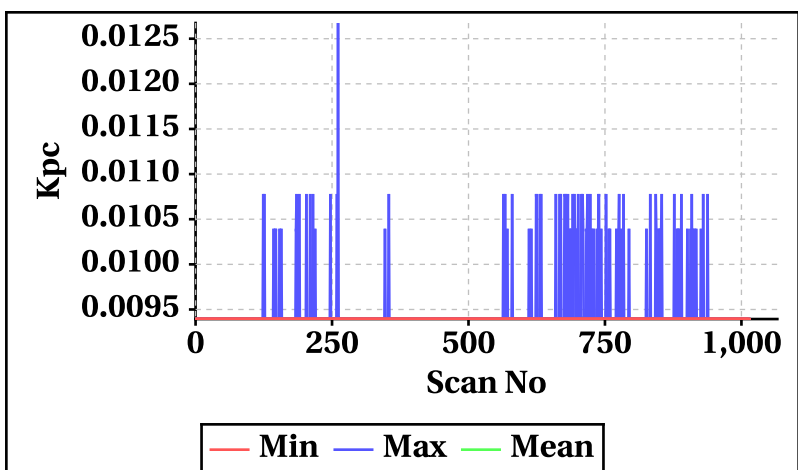
Inner Beam(HH)



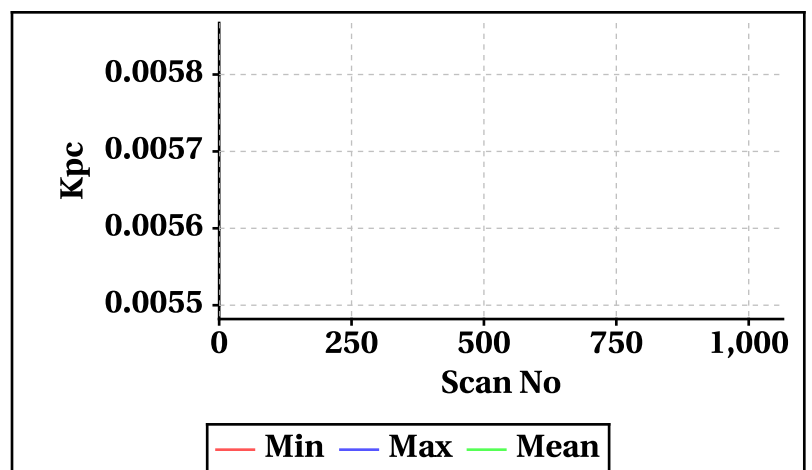
Outer Beam(VV)



Inner Beam(HH)



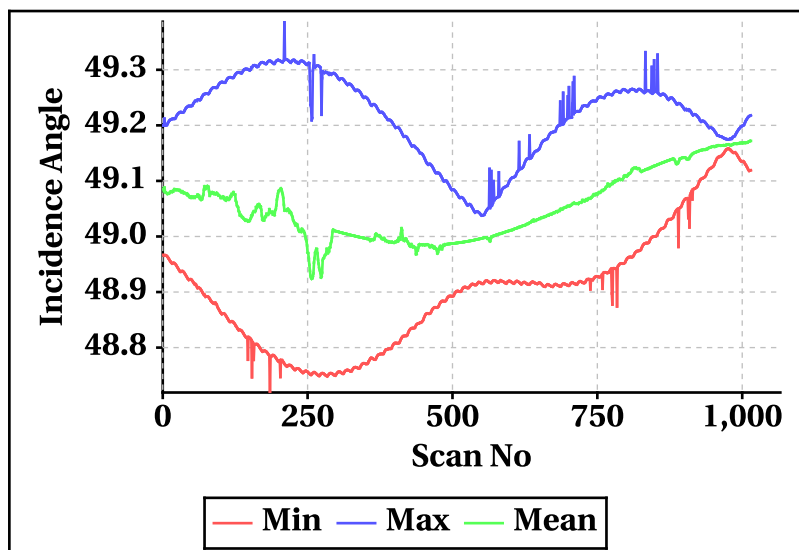
Outer Beam(VV)



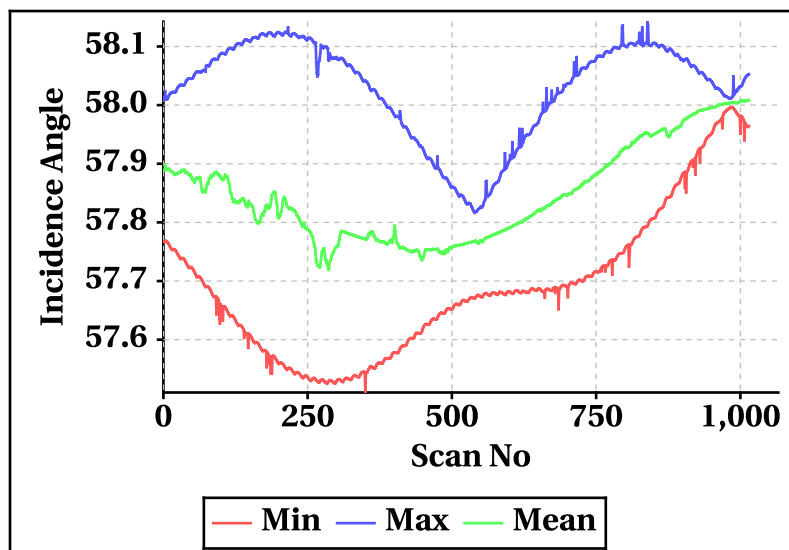


Orbit-wise behaviour of Incidence, Azimuth, Range, X-Factor

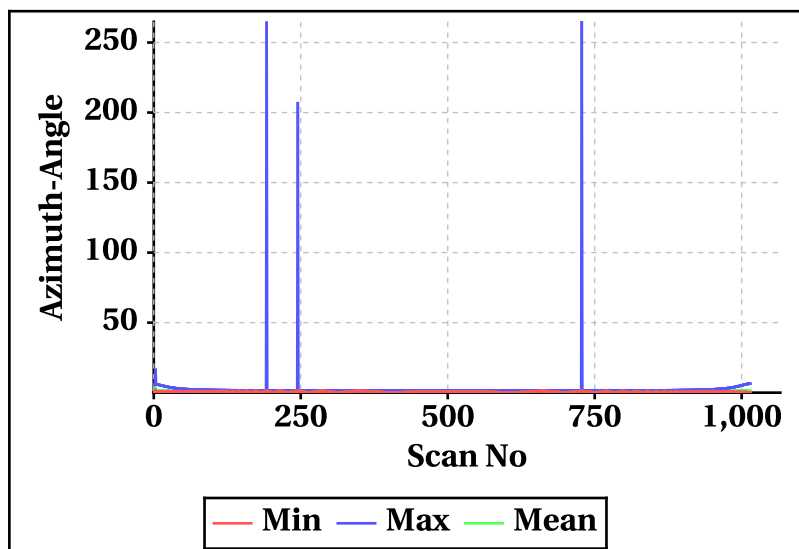
Inner Beam (HH)



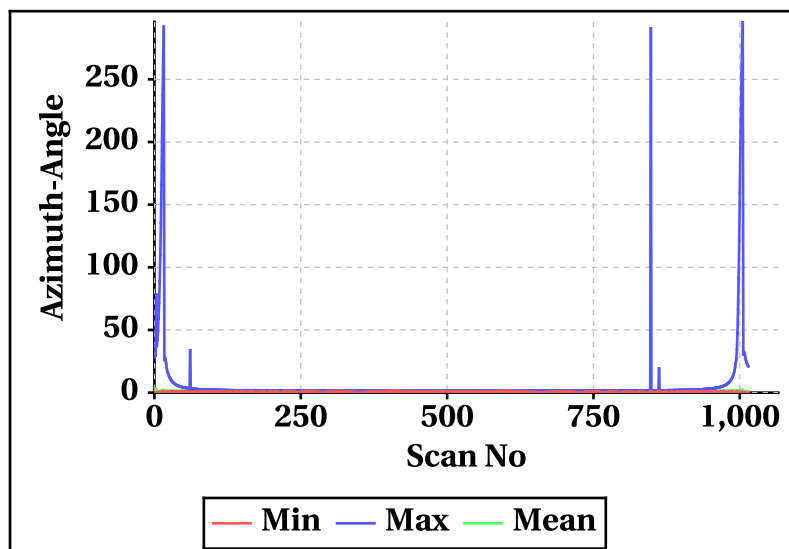
Outer Beam(VV)



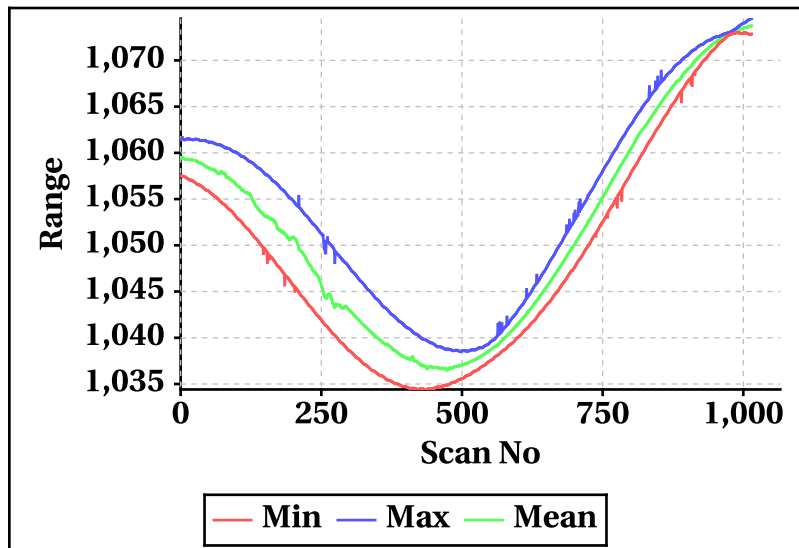
Inner Beam (HH)



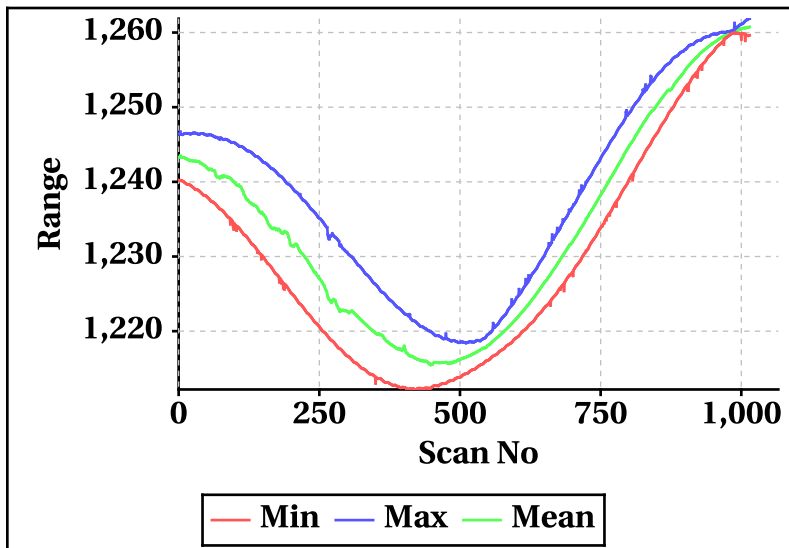
Outer Beam(VV)



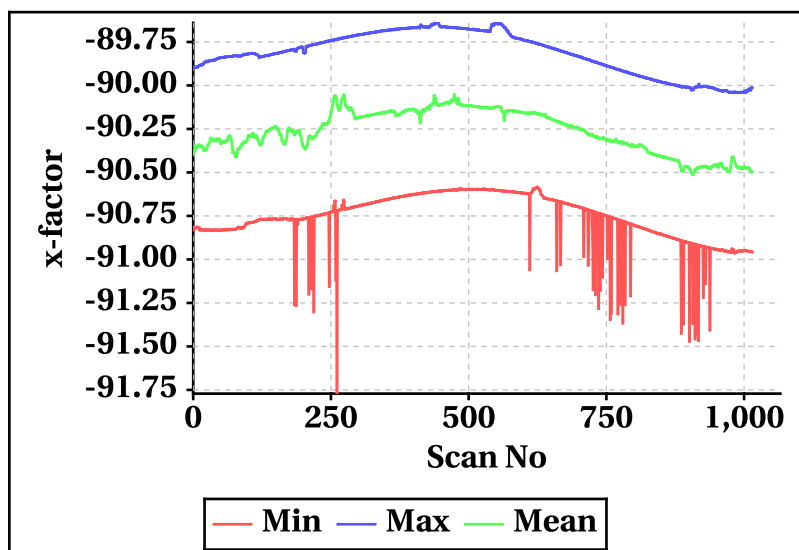
Inner Beam (HH)



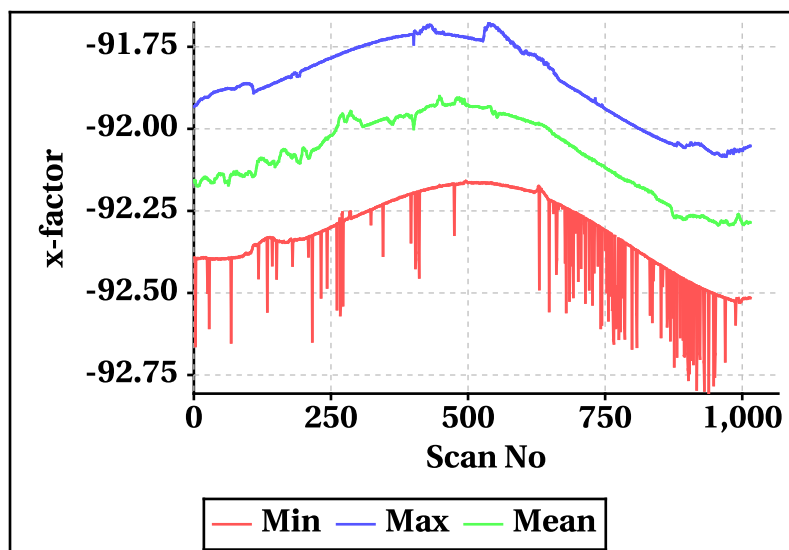
Outer Beam(VV)



Inner Beam (HH)



Outer Beam(VV)

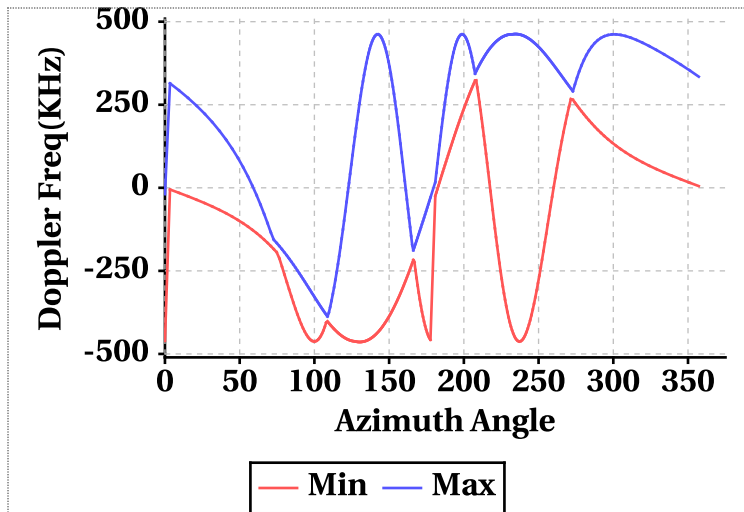


# Doppler Frequency Variation

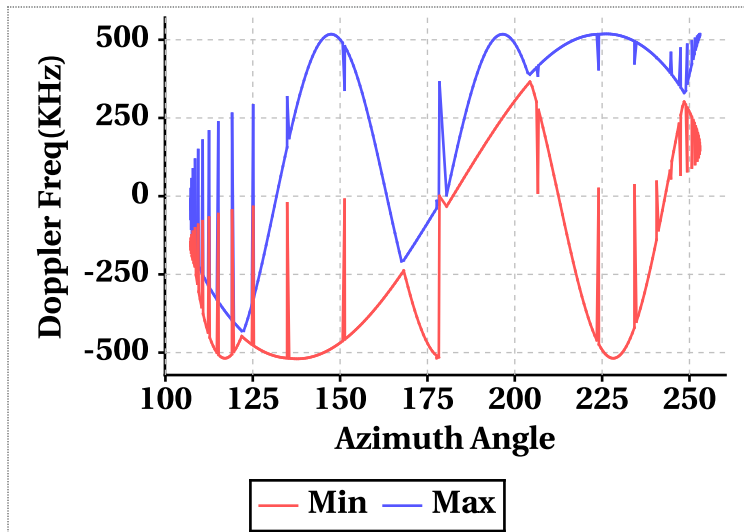
**Doppler Frequency(KHz) variation statistics Over the half Orbit**

	Inner Beam (HH)	Outer Beam (VV)
<b>Min</b>	-464.04	-519.88
<b>Max</b>	462.72	518.70

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



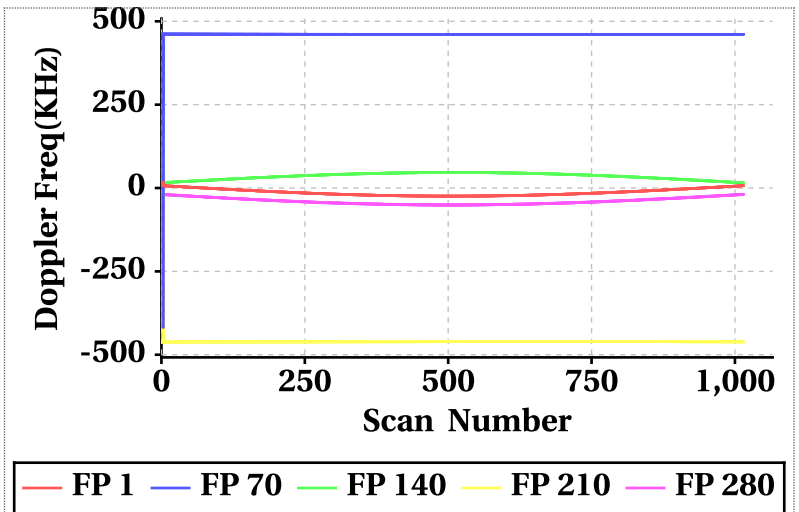
**Footprint wise Doppler frequency variation Outer Beam (VV)**



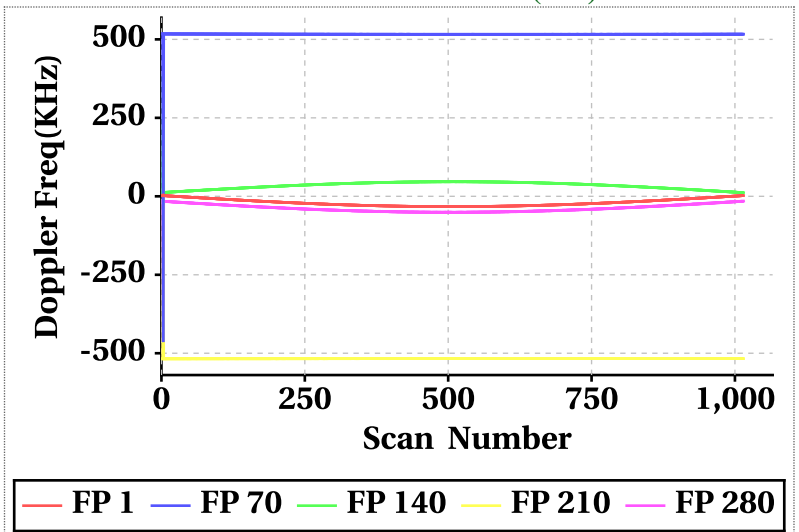
**Doppler Frequency(KHz) variation**

Doppler_FP	Inner Beam (HH)			Outer Beam (VV)		
	Min	Max	Mean	Min	Max	Mean
Doppler_1	-24.34	17.18	-12.85	-32.78	3.56	-19.94
Doppler_70	-416.94	461.78	460.16	-460.18	517.42	515.45
Doppler_140	15.40	353.34	35.64	11.50	385.56	34.21
Doppler_210	-461.76	125.74	-460.45	-517.70	156.26	-516.41
Doppler_280	-460.66	-19.12	-39.71	-517.32	-15.46	-38.54

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

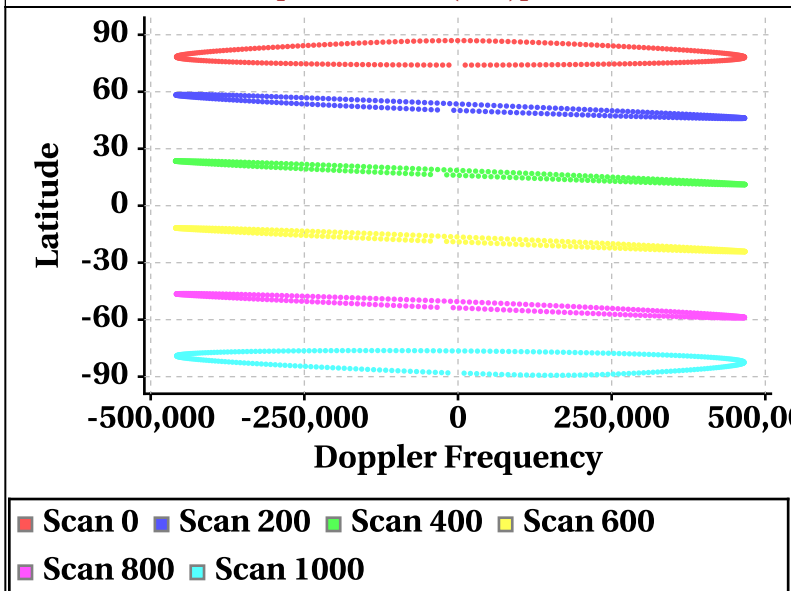


**Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Outer Beam (VV)**

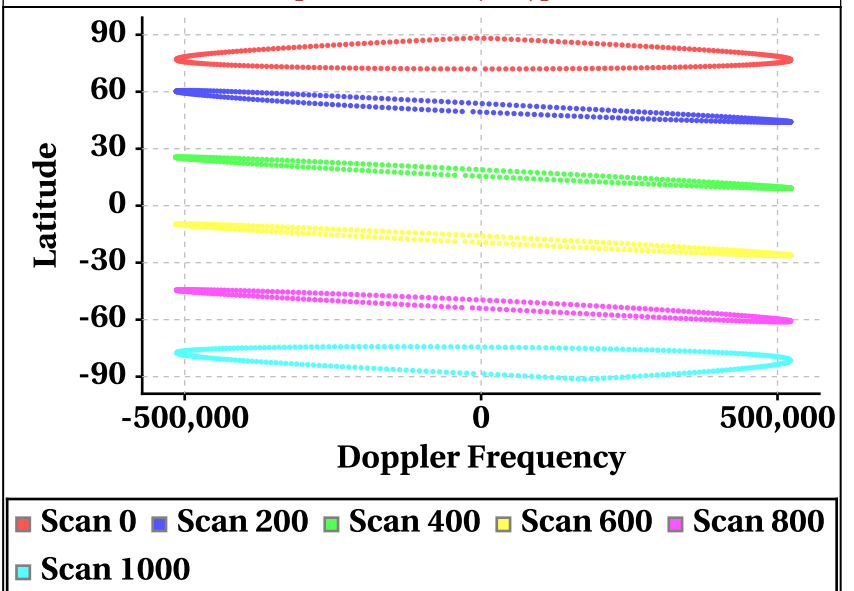


# Latitude Vs Doppler Frequency

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



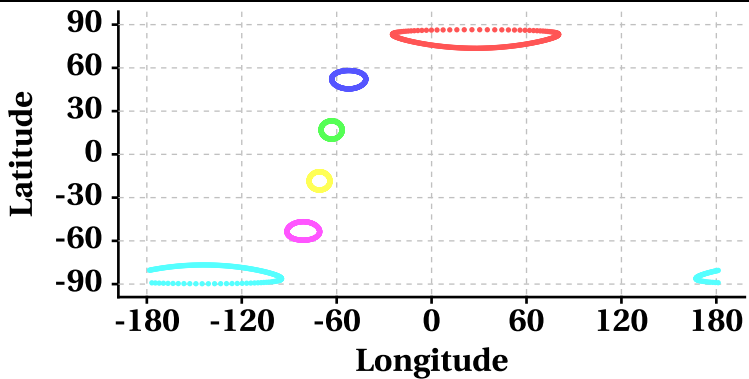
**Doppler Frequency at Scan Interval of 200 [Outer Beam(VV)]**



# Parameter as a function of Latitude

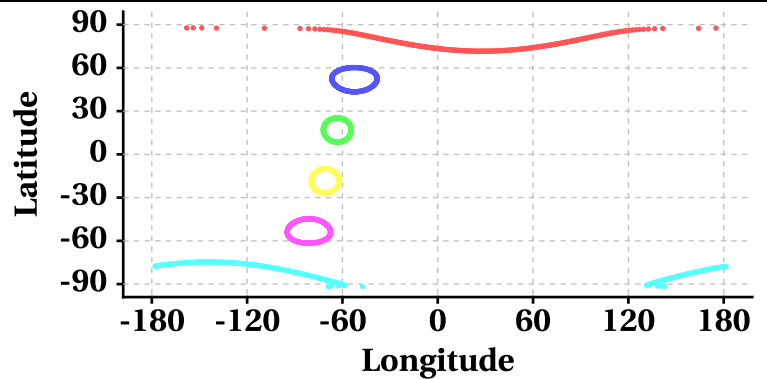
## Latitude Vs Longitude

Scan Trace [Inner Beam(HH)]



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

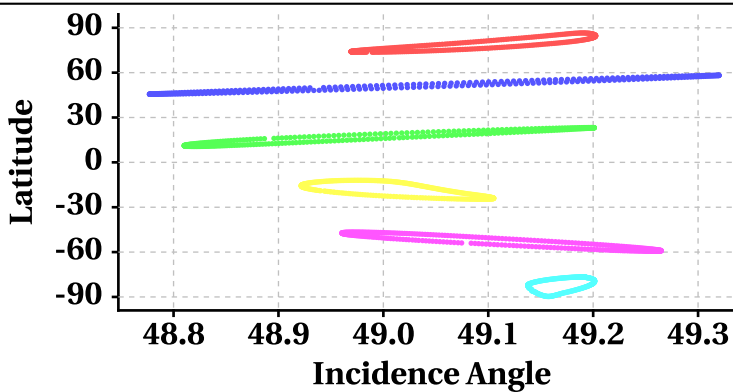
Scan Trace [Outer Beam (VV)]



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

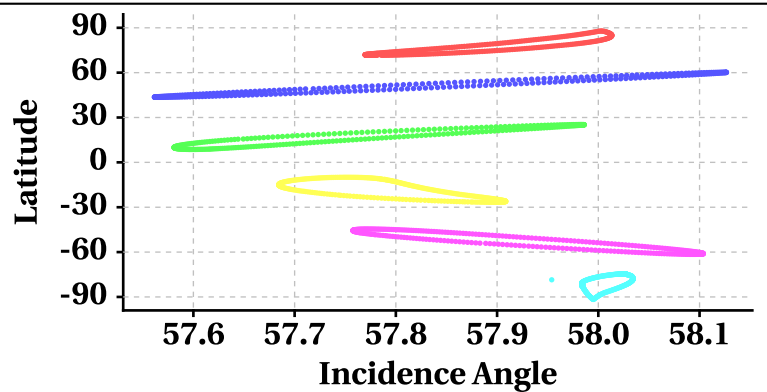
## Latitude Vs Incidence Angle

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



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

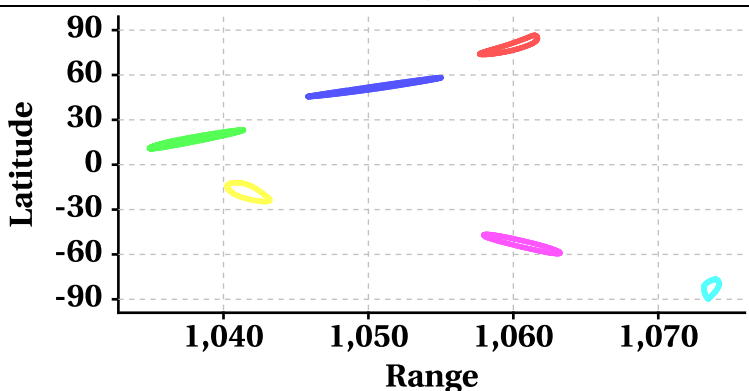
Incidence Angle at Scan Interval of 200 [Outer Beam (VV)]



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

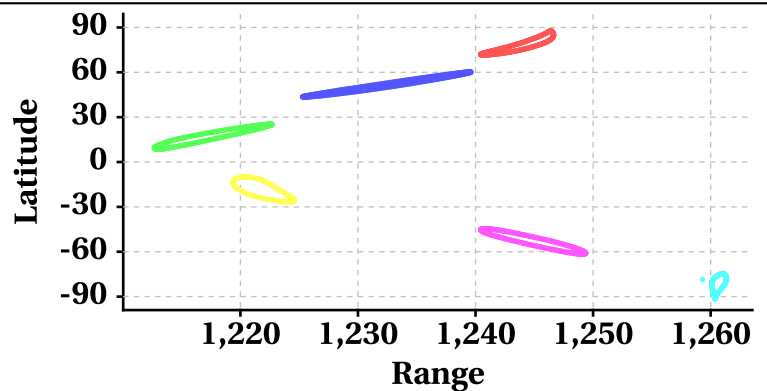
## Latitude Vs Range

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



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

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



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



# Variation in Orbit and Attitude Parameters

