

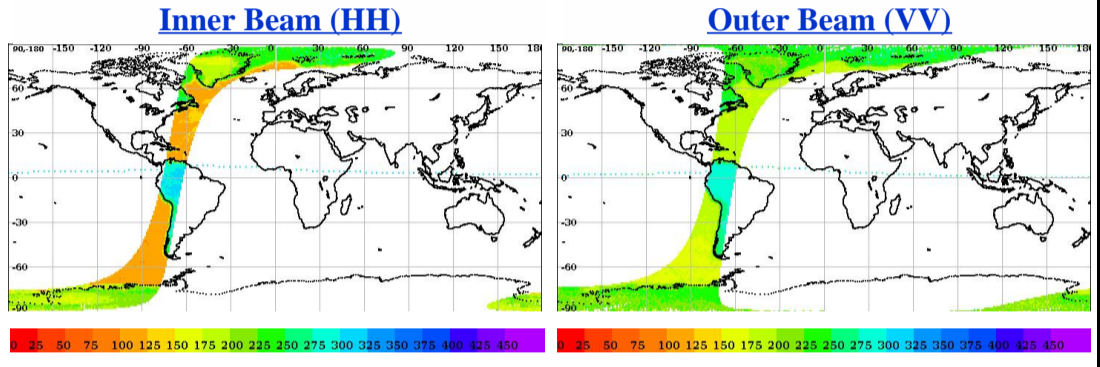
# SCATSAT-1 Scatterometer Level-1B Data Quality Evaluation Report

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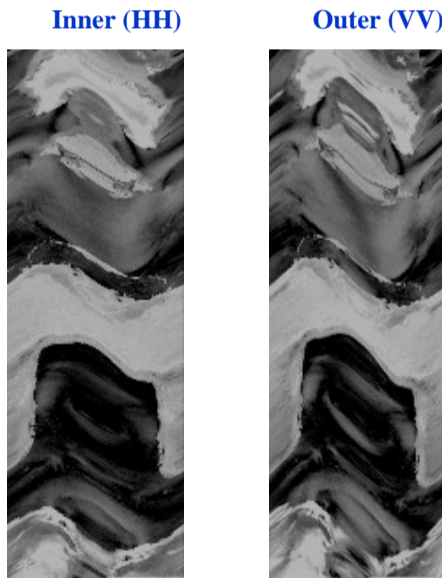
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<b>Satellite Id</b>	ScatSat-1	<b>Start Orbit</b>	18260	<b>Total Scans</b>	1016
<b>Sensor Name</b>	Scatterometer	<b>End Orbit</b>	18261	<b>No of Inner FootPrints</b>	281
<b>Processor Version</b>	v1.1.4	<b>Rev. Number</b>	18260_18261	<b>No Of Outer FootPrints</b>	282
<b>Half Orbit Direction</b>	NS	<b>Data Production Date</b>	08-03-2020	<b>No. Of Inner Slices</b>	9
<b>Equator Crossing Date</b>	08-03-2020	<b>Equator Crossing Time</b>	12:56:03.000	<b>No Of Outer Slices</b>	15

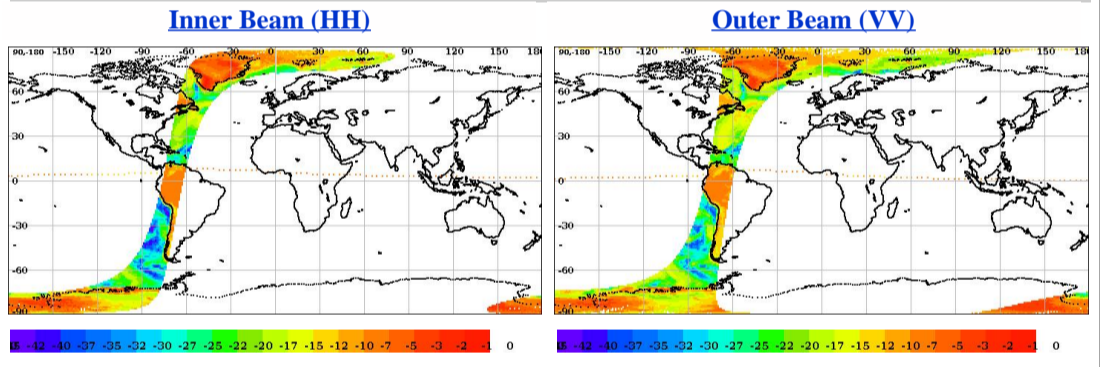
## Brightness Temperature(k) Footprint trace



## Image Snapshot for Inner & Outer Beam



## Sigma0(dB) Footprint trace



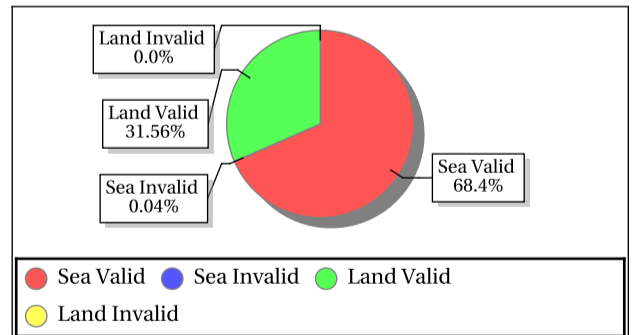
## Invalid and Poor Sigma-0 Quality Flag Statistics for Inner/Outer Slices\*

Sigma-0 Flags	Inner Beam	Outer Beam
Invalid Sigma0(%)	0.04	0.04
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(%)	22.22	13.34
Noise samples for blending Saturated	0.0	0.0
Count samp. for interpol. saturated (%)	0.00	0.00
Sigma0 < lower bound (-96dB) (%)	0.0	0.0
Sigma0 > upper bound (0 dB) (%)	0.00	0.00
SNR < -65 dB (%)	0.035559	0.085665

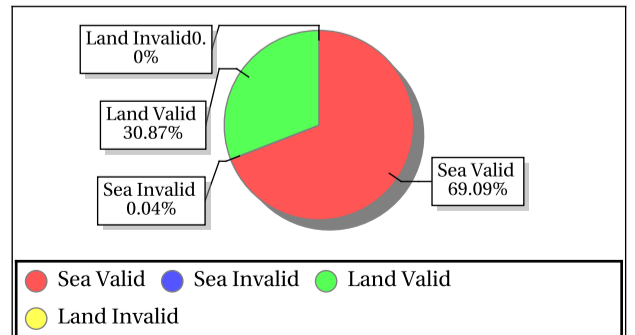
\*DP Format Document

## 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	-5.52	-4.17	-4.82	0.62	150.74	179.60	163.99	11.51
GreenLand_2	77.50	-41.50	Inner	DSC	Fore	-6.07	-5.08	-5.55	0.40	149.81	191.16	171.58	13.62
GreenLand_3	71.55	-42.45	Inner	DSC	Aft	-10.31	-7.95	-9.10	0.64	164.12	214.23	185.14	13.51
GreenLand_3	71.55	-42.45	Inner	DSC	Fore	-10.86	-8.95	-9.62	0.48	144.95	209.61	184.28	18.82
GreenLand_1	74.69	-42.50	Inner	DSC	Aft	-9.59	-7.94	-8.90	0.51	144.41	204.15	180.02	20.24
GreenLand_1	74.69	-42.50	Inner	DSC	Fore	-9.66	-8.20	-8.98	0.47	156.06	203.59	183.50	13.91
Amazon_1	0.00	-67.00	Inner	DSC	Aft	-9.11	-6.49	-7.87	0.69	264.84	333.00	303.31	15.29
Amazon_1	0.00	-67.00	Inner	DSC	Fore	-8.70	-6.38	-7.55	0.57	263.03	351.33	299.80	16.41
GreenLand_2	77.50	-41.50	Outer	DSC	Aft	-5.93	-4.71	-5.32	0.45	208.49	241.82	223.43	11.94
GreenLand_2	77.50	-41.50	Outer	DSC	Fore	-5.63	-5.00	-5.32	0.32	217.58	230.15	223.86	6.29
GreenLand_3	71.55	-42.45	Outer	DSC	Aft	-12.12	-10.14	-10.94	0.56	206.70	245.10	225.94	10.16
GreenLand_3	71.55	-42.45	Outer	DSC	Fore	-11.66	-10.36	-11.20	0.53	205.57	242.19	224.48	10.59
GreenLand_1	74.69	-42.50	Outer	DSC	Aft	-10.03	-7.61	-8.95	0.69	195.58	252.10	227.88	14.88
GreenLand_1	74.69	-42.50	Outer	DSC	Fore	-10.39	-7.58	-9.06	0.82	209.09	252.49	228.69	14.95
Amazon_2	-3.00	-61.00	Outer	DSC	Aft	-10.95	-8.56	-9.74	0.58	254.57	321.19	285.06	13.44
Amazon_2	-3.00	-61.00	Outer	DSC	Fore	-11.02	-8.67	-9.81	0.48	237.62	319.50	282.68	19.63
Amazon_1	0.00	-67.00	Outer	DSC	Aft	-9.73	-7.90	-8.87	0.40	267.77	320.95	293.15	12.66
Amazon_1	0.00	-67.00	Outer	DSC	Fore	-9.87	-7.73	-8.75	0.50	252.35	315.92	286.02	14.19



## 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	303.64	0.41	3.917	0.12	302.91	0.36	3.461	0.12	4.41	0.12	0.005	0.12	0.27	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>	-34.96	26.54	5.21	0.564	-34.95	28.14	5.25	0.671	-16.49	29.07	19.44	15.797	-2.48	30.19	20.34	30.963

Outer Beam (VV)																
	Sea Aft				Sea Fore				Land Aft				Land fore			
	Min	Max	Mean	Bad Occ. (%)	Min	Max	Mean	Bad Occ. (%)	Min	Max	Mean	Bad Occ. (%)	Min	Max	Mean	Bad Occ. (%)
<b>Kp</b>	0.09	231.87	0.32	2.948	0.09	232.42	0.29	2.692	0.09	0.15	0.09	0.000	0.09	0.21	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>	-34.96	22.54	2.96	0.006	-34.96	21.58	2.90	0.000	0.07	22.66	13.70	0.123	-2.84	23.42	14.23	0.674

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>	48.70	49.33	49.01	0.000	57.50	58.13	57.88	0.000	Inci.(Inner)	47.10	49.90
<b>Azimuth Diff. (deg)</b>	0.0029	264.78	1.28	2.705	0.0000	299.02	1.27	3.918	Inci.(Outer)	57.30	58.90
<b>Range(Km)</b>	1033.02	1075.24	1050.91	0.000	1210.05	1262.77	1230.84	0.000	Azimuth Diff.	0.60	2.00
<b>X Factor(dbm)</b>	-91.46	-89.63	-90.16	0.000	-92.84	-91.67	-92.02	0.000	Range(Inner)	1025.00	1095.70
<b>Across Distance (Km)</b>	15.84	16.35	15.96	0.000	20.88	23.00	21.02	2.000	Range(Outer)	1210.00	1280.00
<b>Along Distance (Km)</b>	18.81	677.79	20.99	2.000	18.36	899.65	21.33	2.000	X-Factor	-100.00	-80.00
									Ac.Distance(Inner)	15.00	20.00
									Ac.Distance(Outer)	15.00	22.00
									Al.Distance(Inner)	15.00	30.00
									Al.Distance(Outer)	10.00	30.00

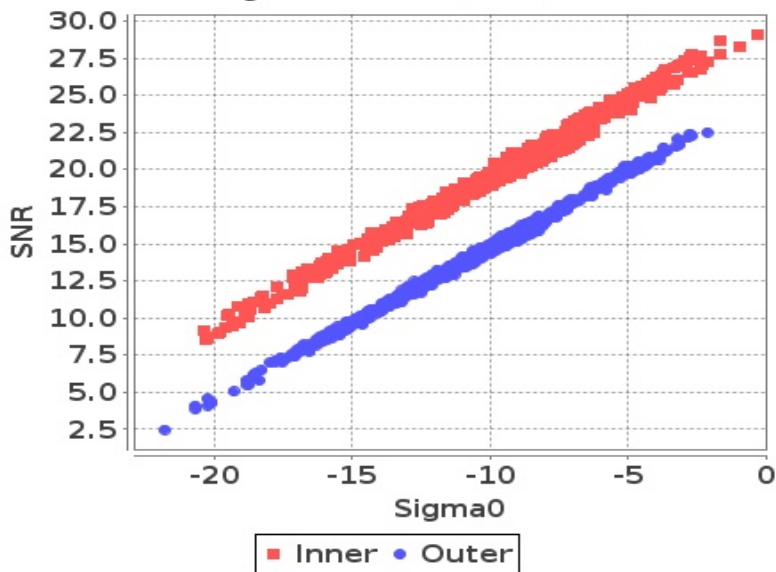
- Normal
- Deviations
- Alarming
- High Errors



## Sigma0 Behaviour (Sigma0 Vs SNR)

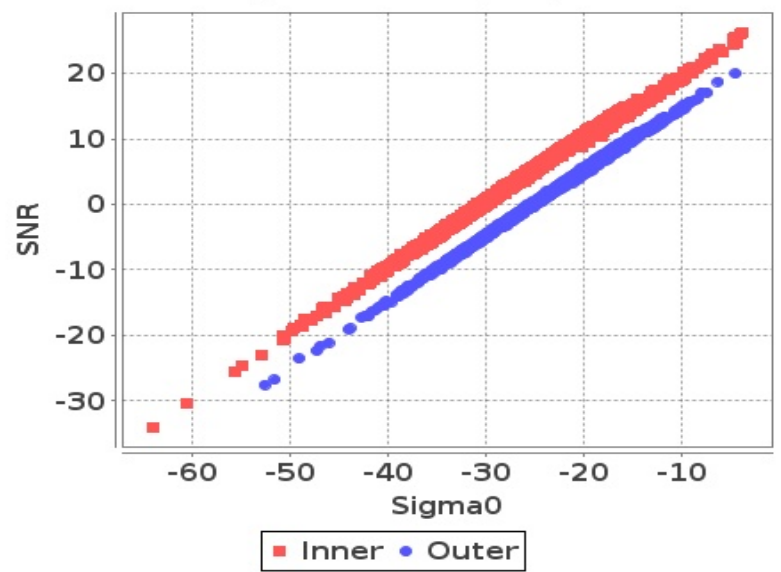
Footprint-Land

Sigma0 Vs SNR (Land)



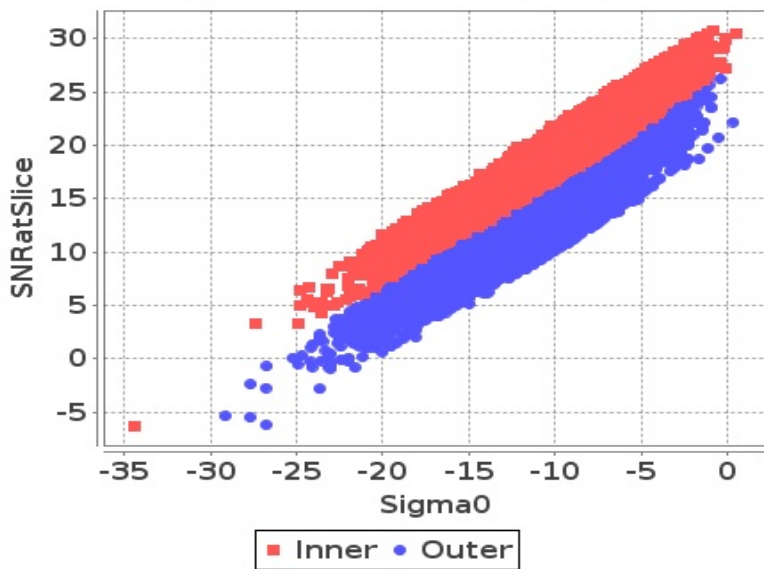
Footprint-Sea

Sigma0 Vs SNR (Sea)



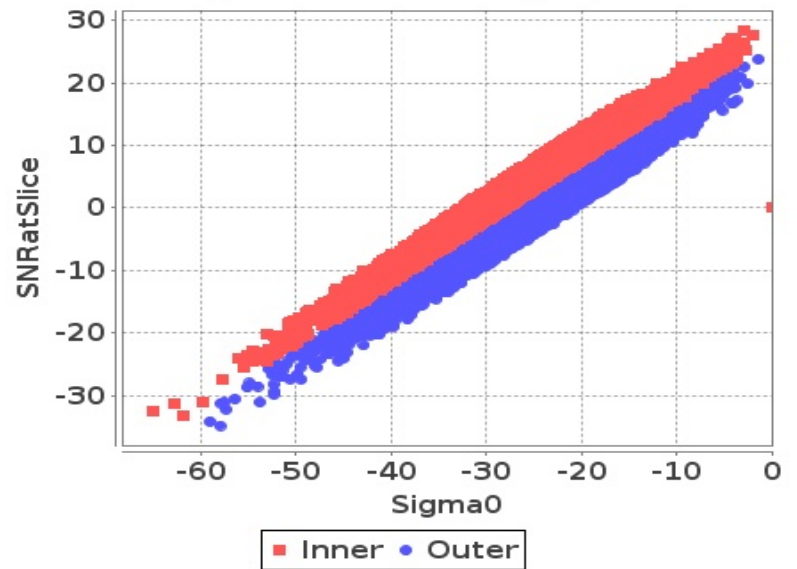
Slice-Land

Sigma0 Vs SNRatSlice (Land)



Slice-Sea

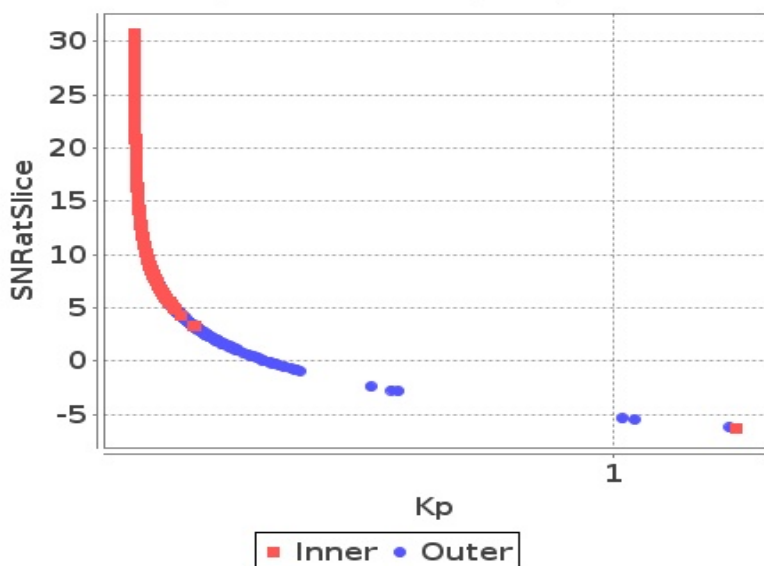
Sigma0 Vs SNRatSlice (Sea)



## Sigma0 Behaviour (Kp Vs SNR)

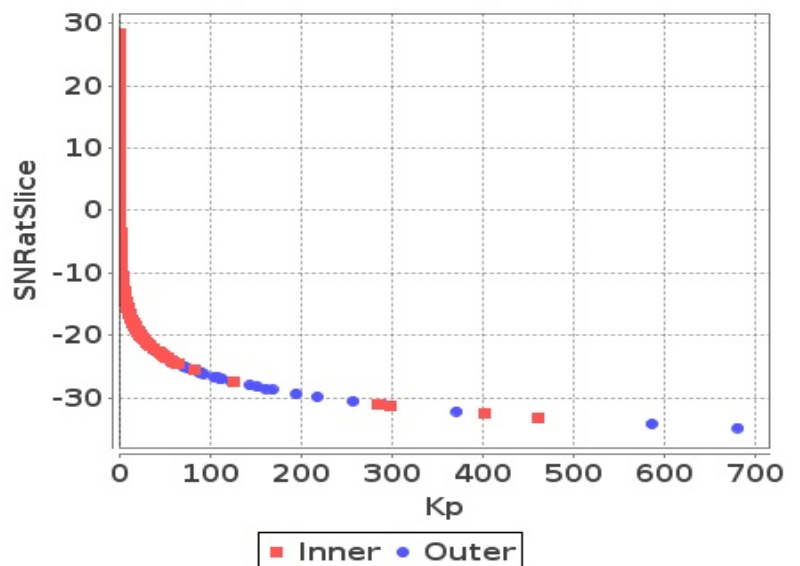
Slice

Kp Vs SNRatSlice (Land)



Slice

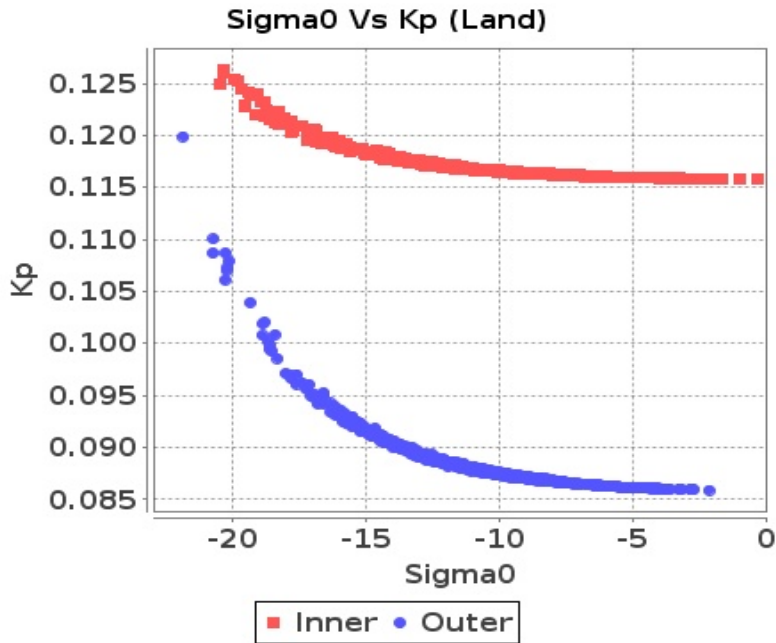
Kp Vs SNRatSlice (Sea)



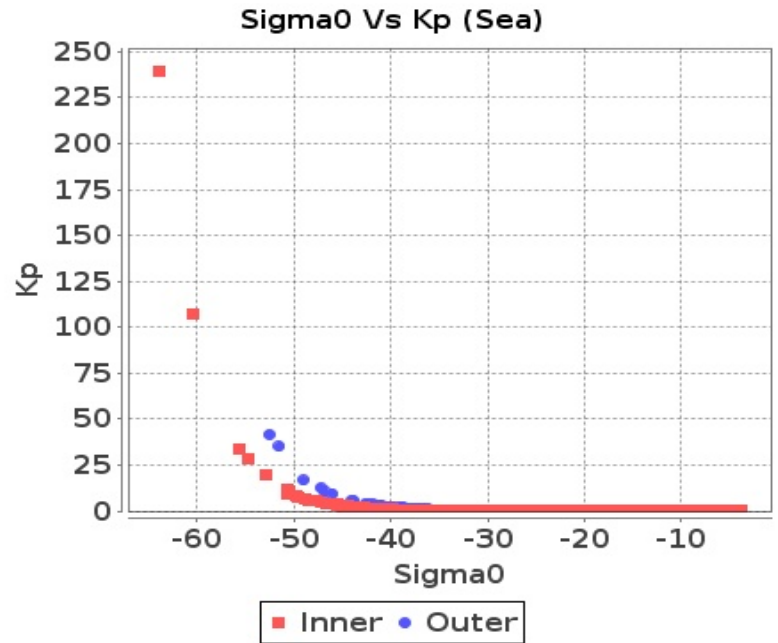


# Sigma0 Behaviour(Sigma0 Vs Kp)

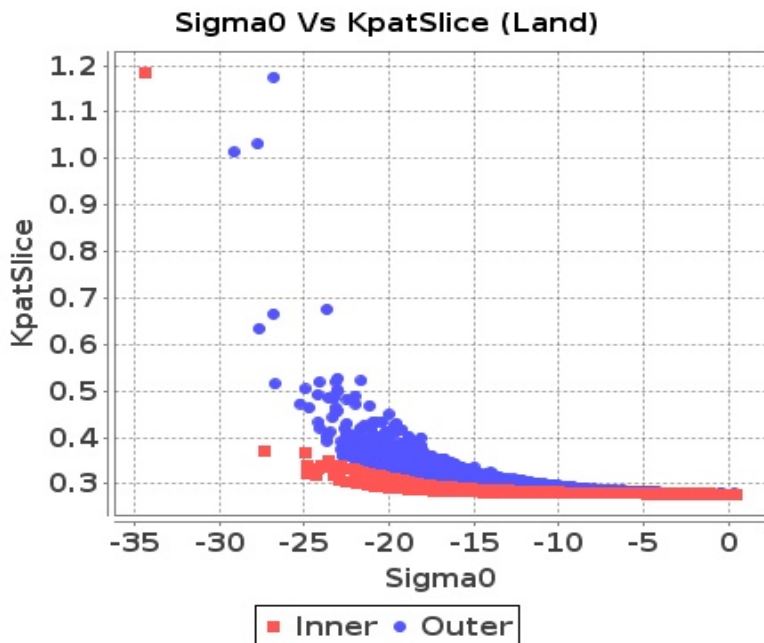
## Footprint-Land



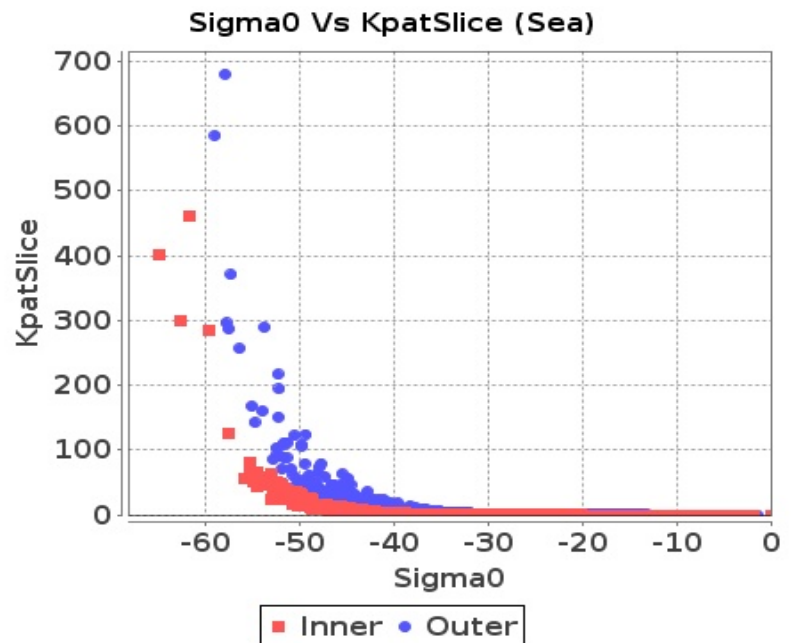
## Footprint-Sea



## Slice-Land



## Slice-Sea

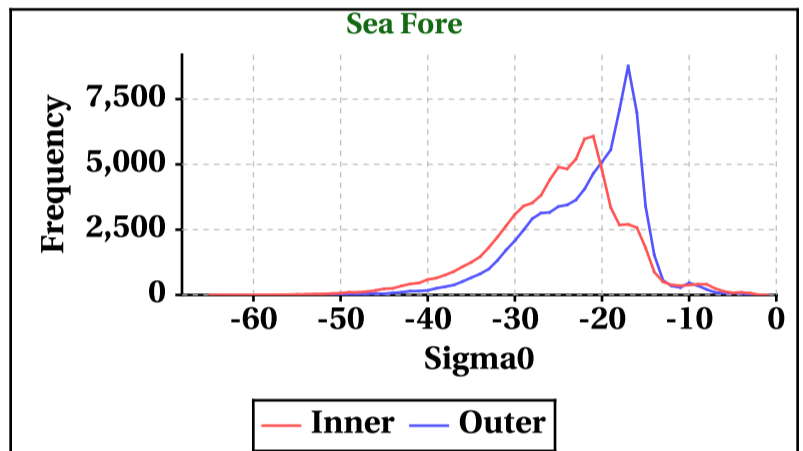
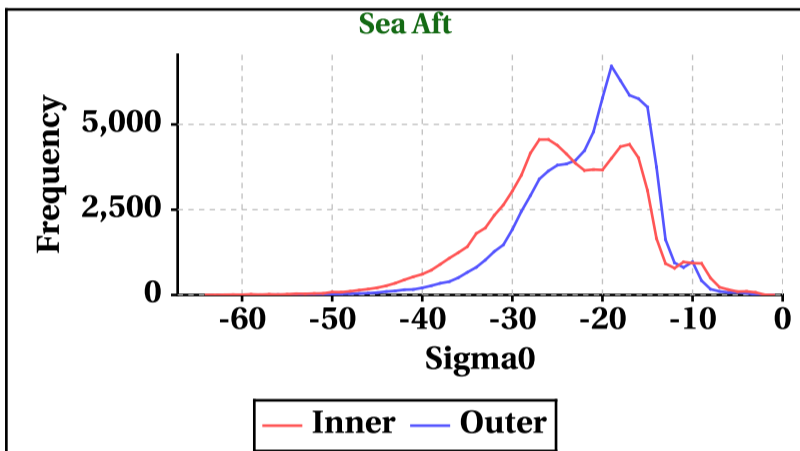
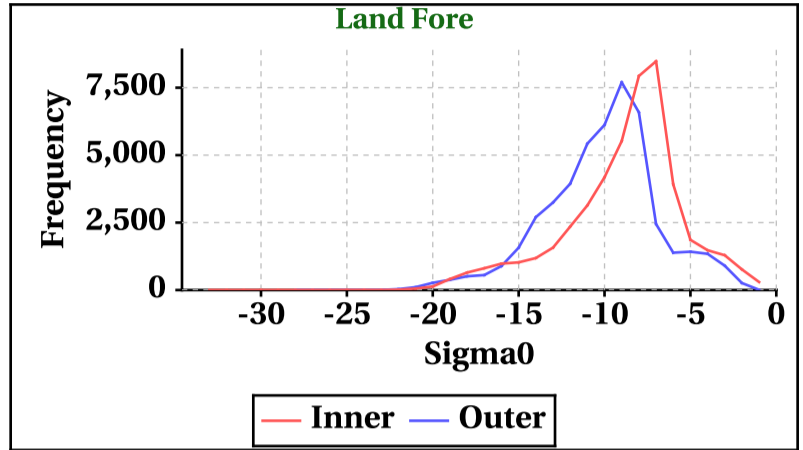
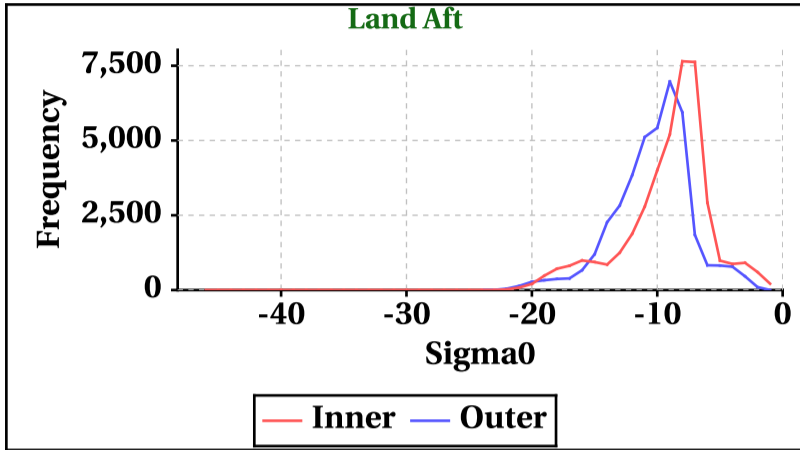


# Dynamic Range (Data Histograms)

## Sigma0(db)

Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-46	-33	-64	-65
Max	0	0	0	0

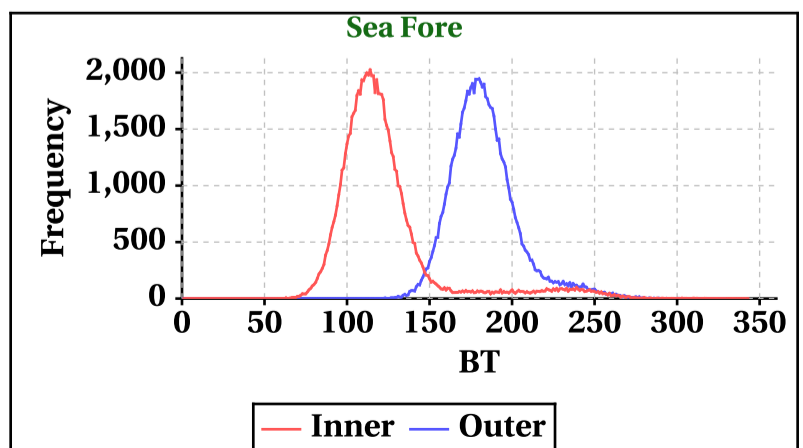
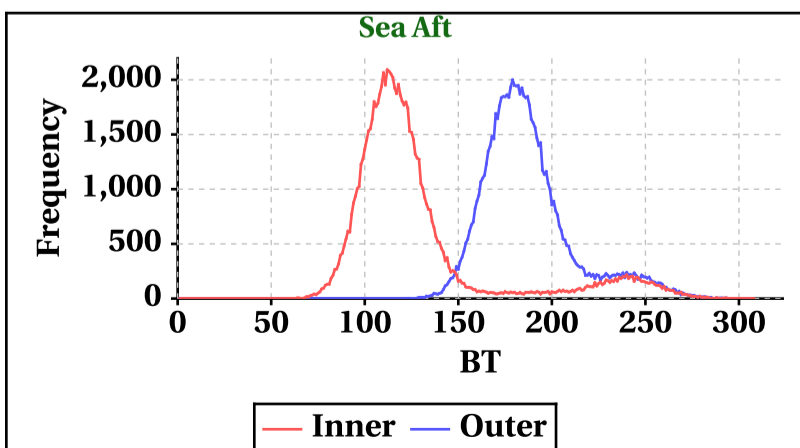
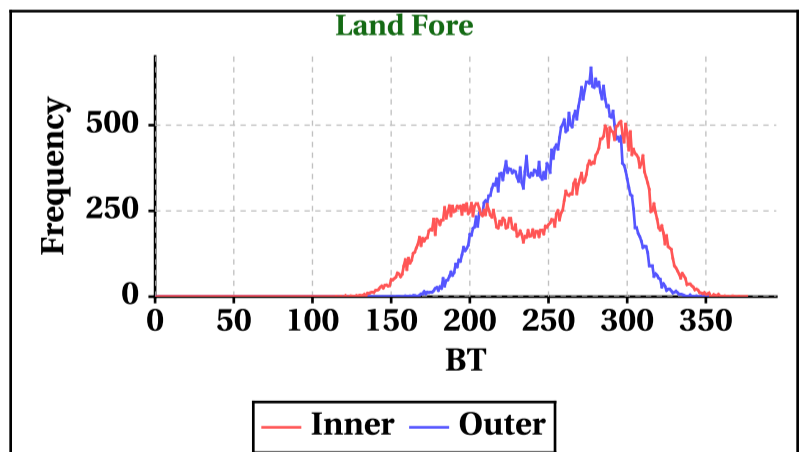
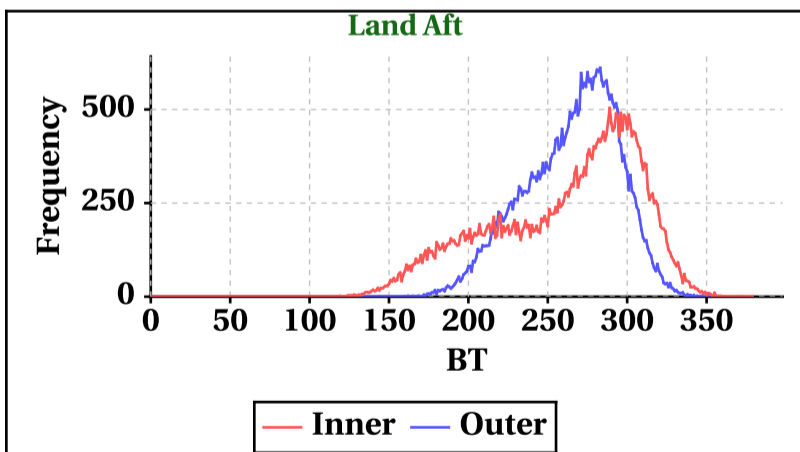
Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-24	-28	-59	-60
Max	0	0	0	0



## Brightness Temperature(K)

Inner Beam(HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	379	376	308	343

Outer Beam(VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	352	356	306	329

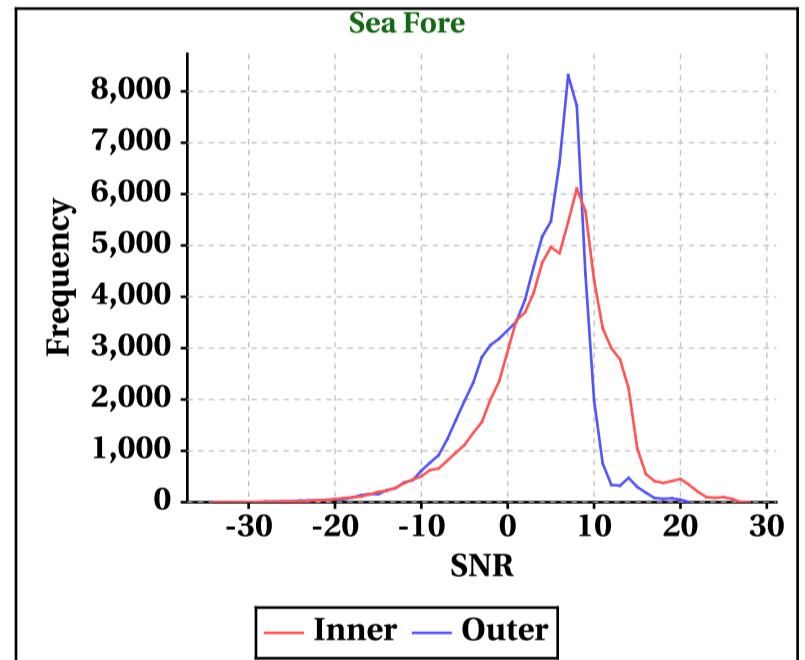
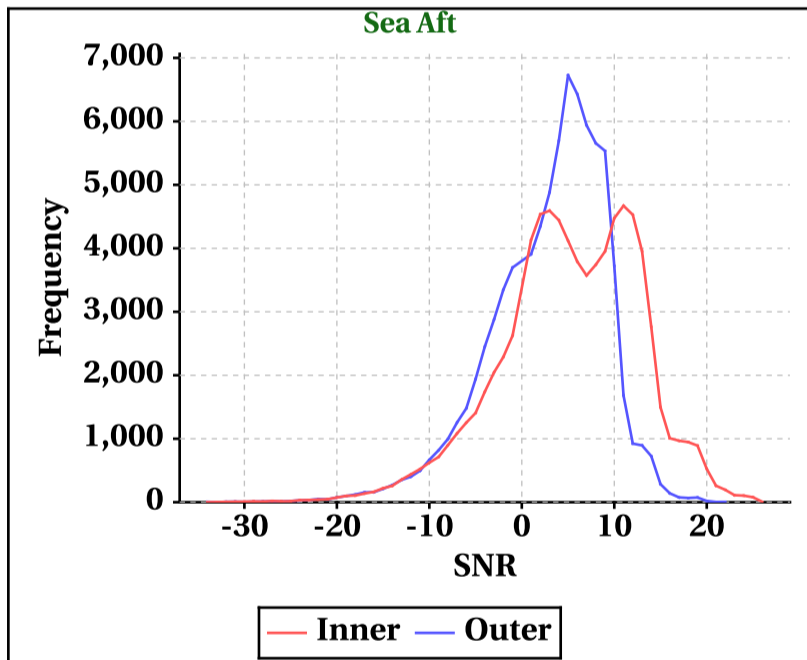
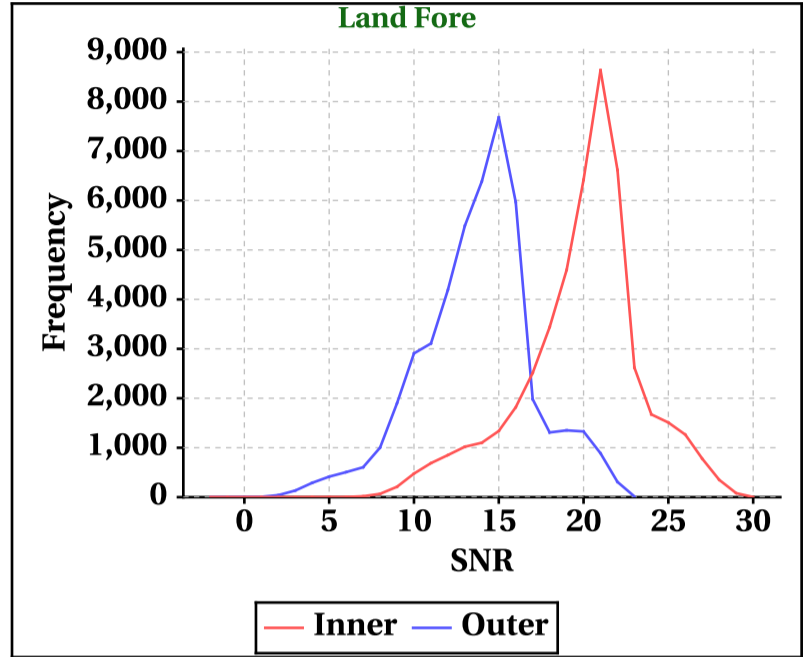
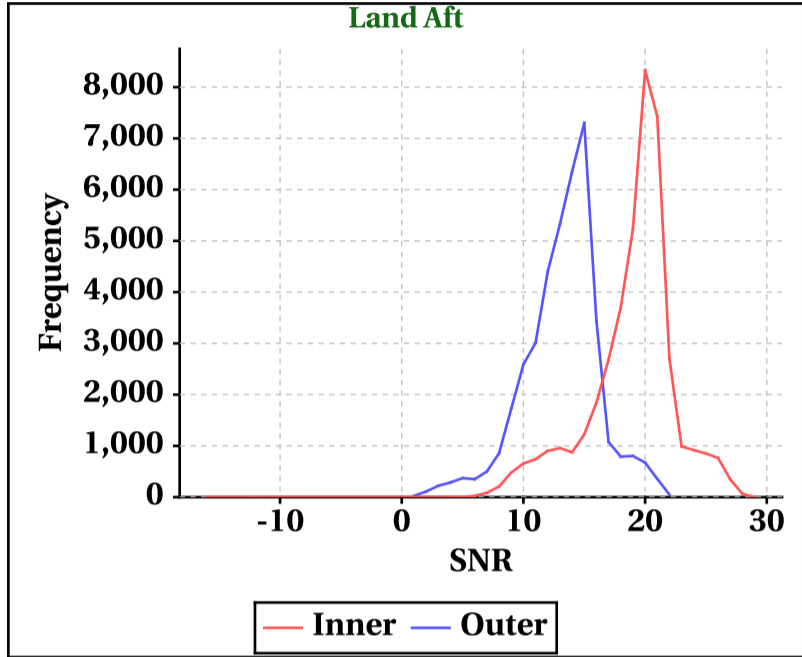


# Dynamic Range (Data Histograms)

## SNR(dBm)

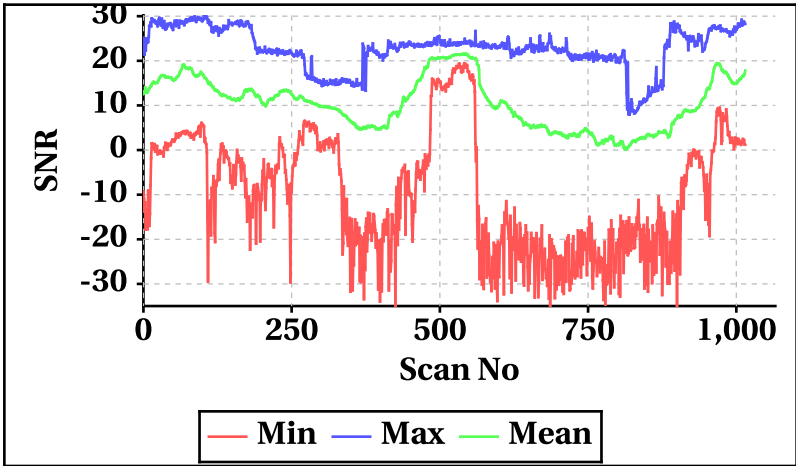
Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-16	-2	-34	-34
Max	29	30	26	28

Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	-2	-34	-34
Max	22	23	22	21

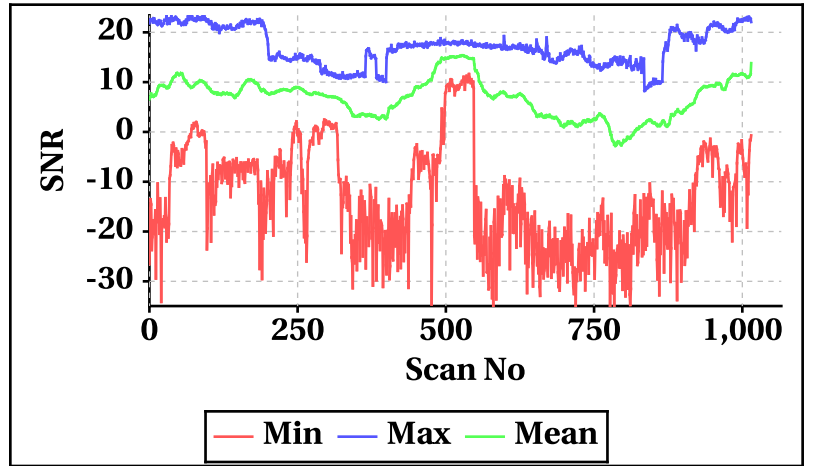


## Orbit-wise behaviour of SNR

**Inner Beam (HH)**

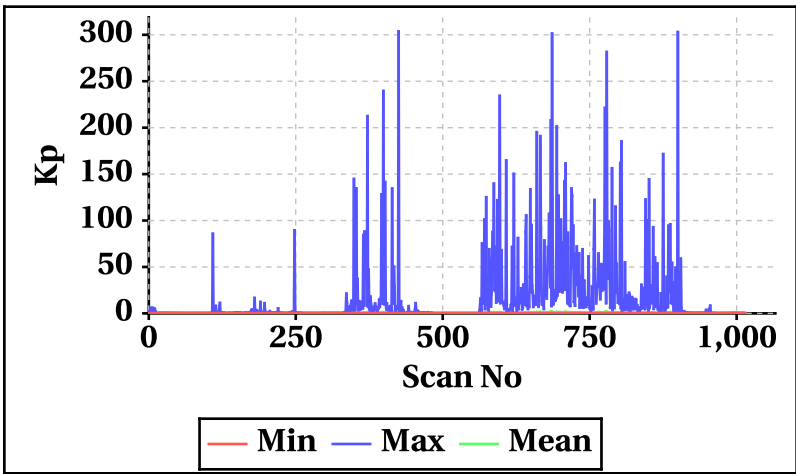


**Outer Beam (VV)**

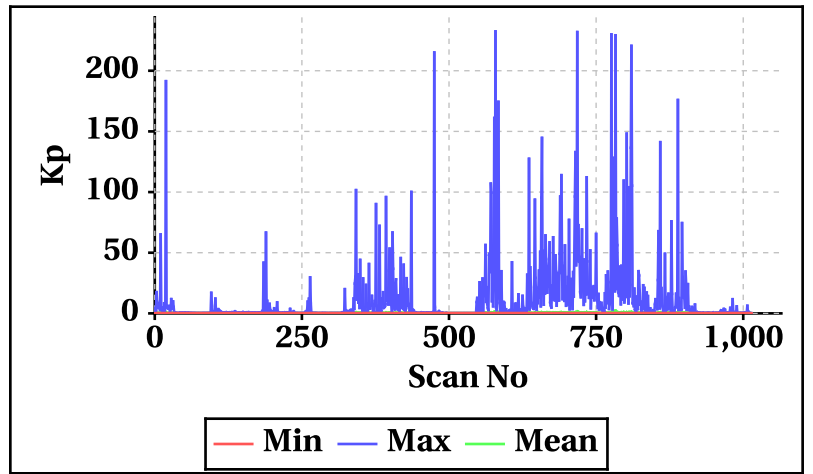


## Orbit-wise behaviour of Kp, Kpa, Kpb, Kpc

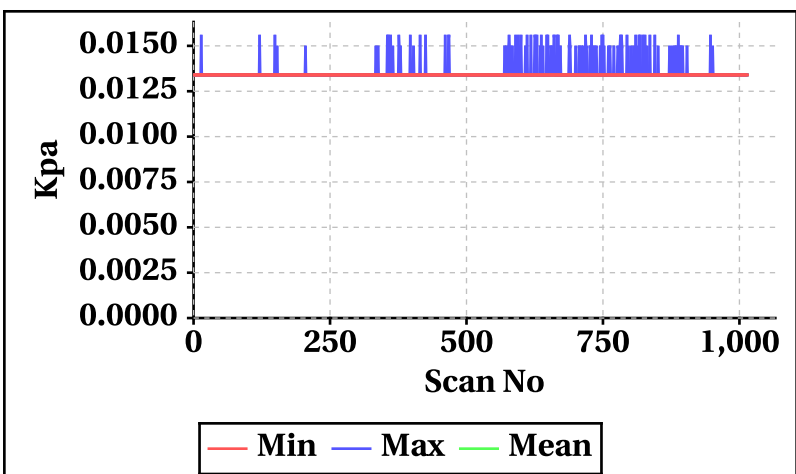
**Inner Beam (HH)**



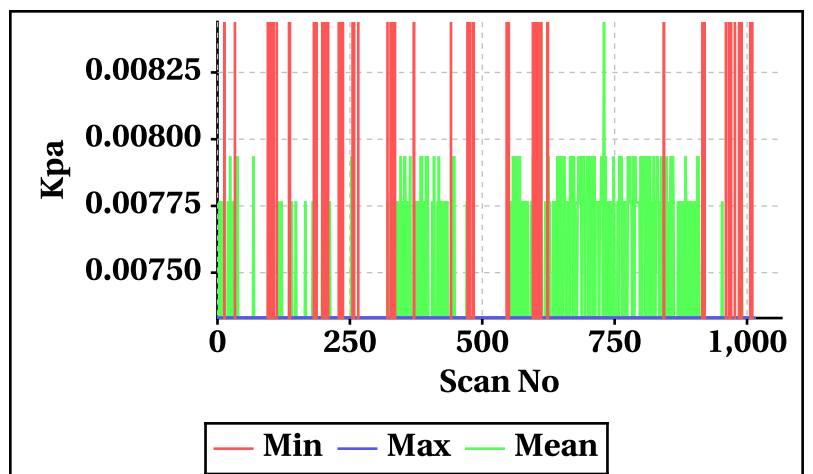
**Outer Beam (VV)**



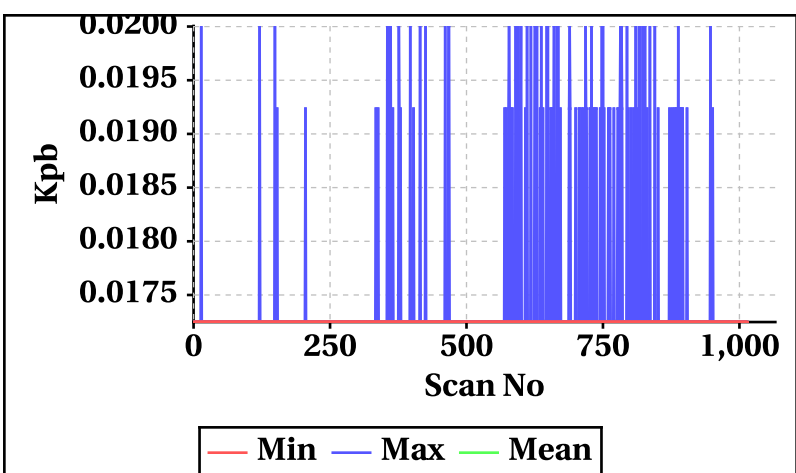
**Inner Beam (HH)**



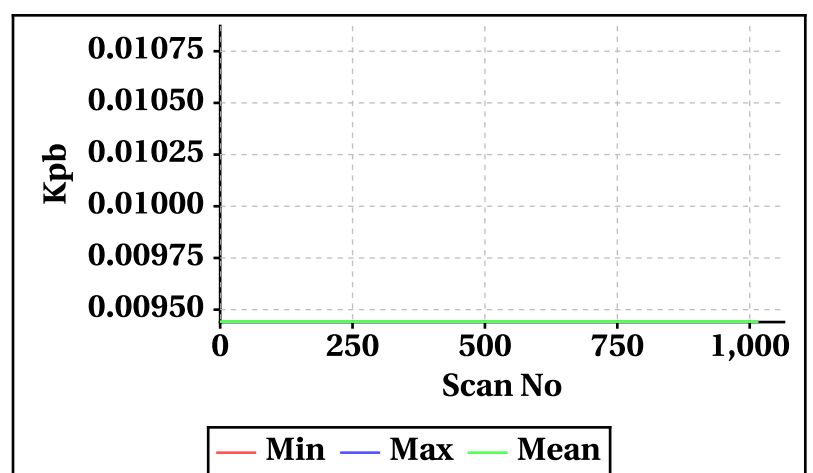
**Outer Beam (VV)**



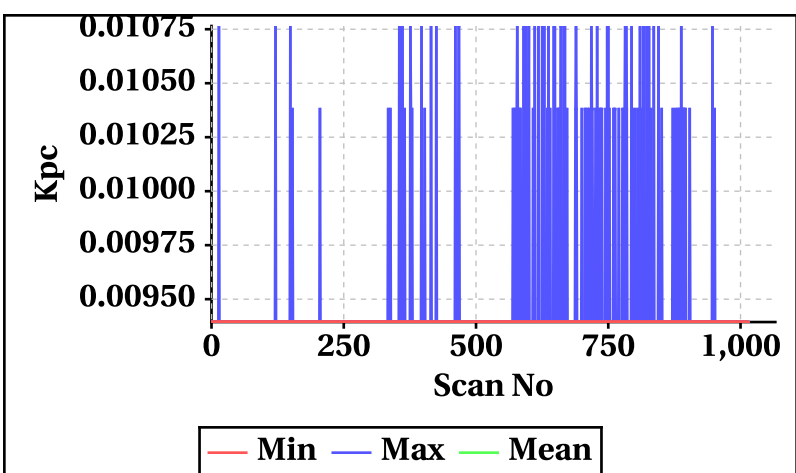
**Inner Beam (HH)**



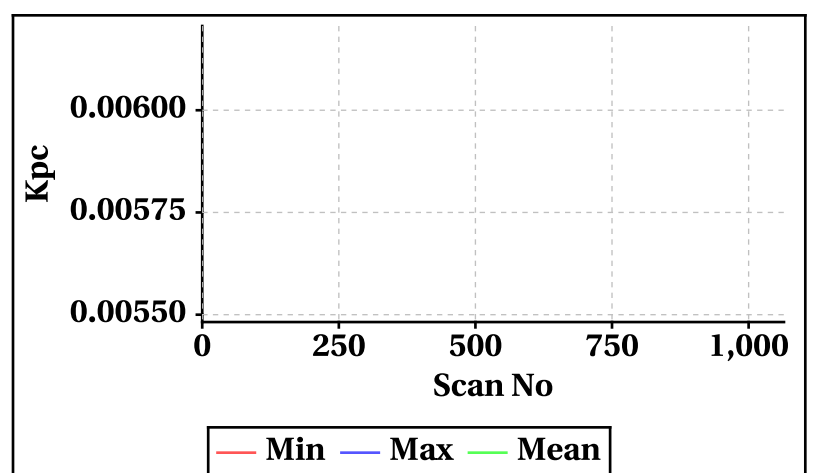
**Outer Beam (VV)**



**Inner Beam (HH)**



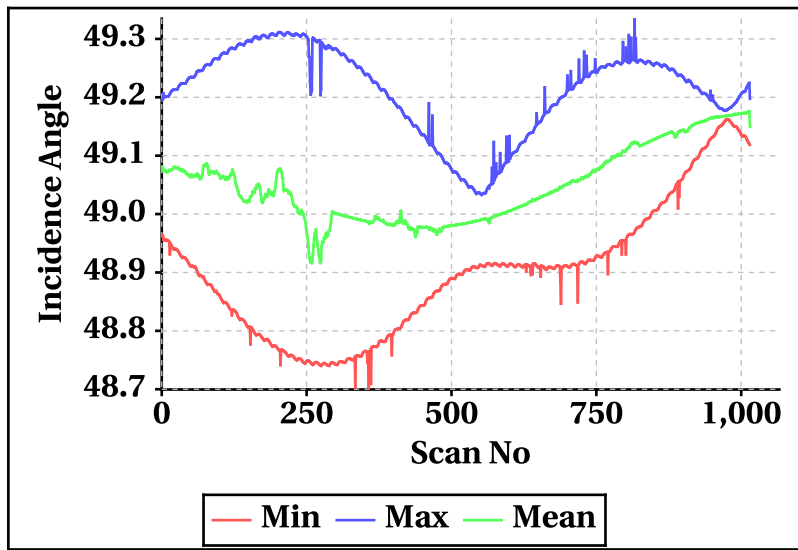
**Outer Beam (VV)**



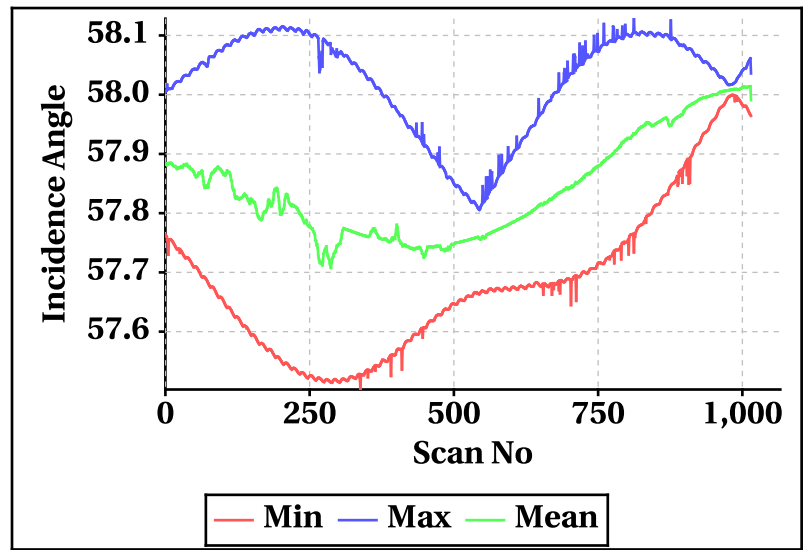


Orbit-wise behaviour of Incidence, Azimuth, Range, X-Factor

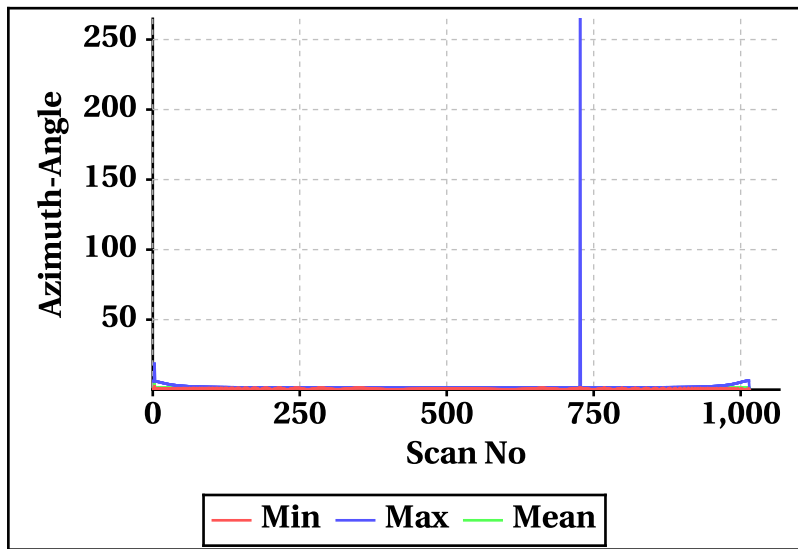
Inner Beam (HH)



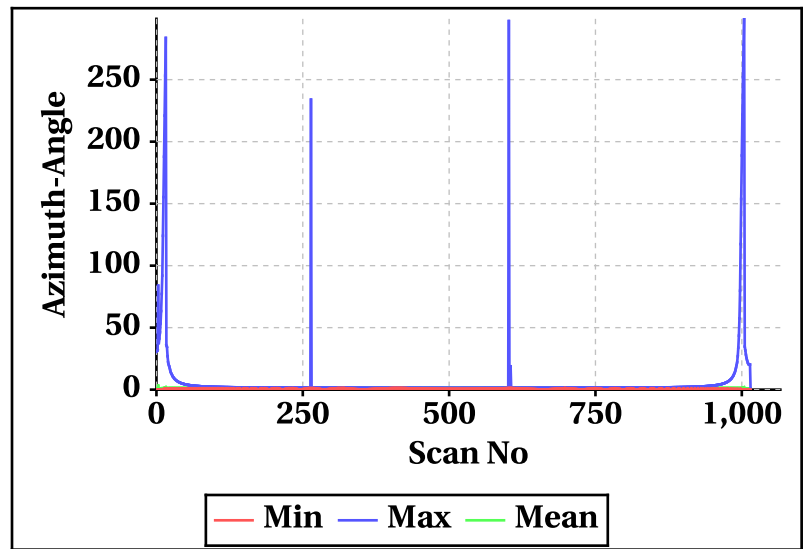
Outer Beam(VV)



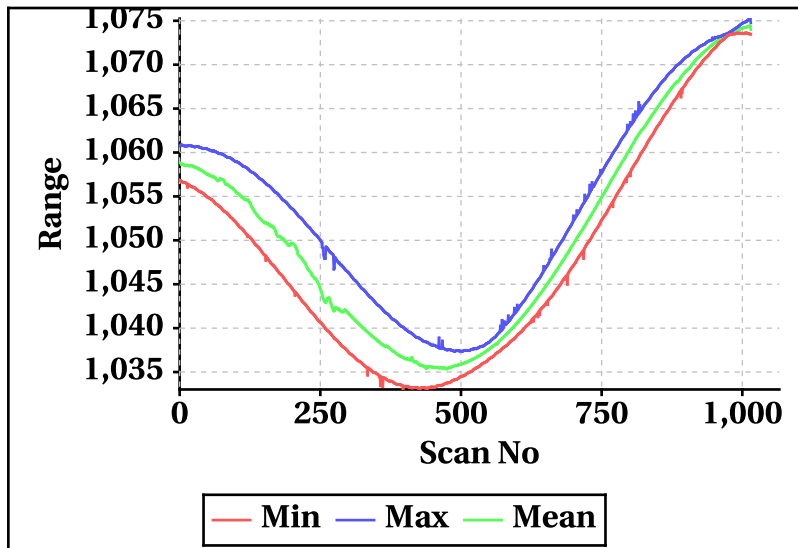
Inner Beam (HH)



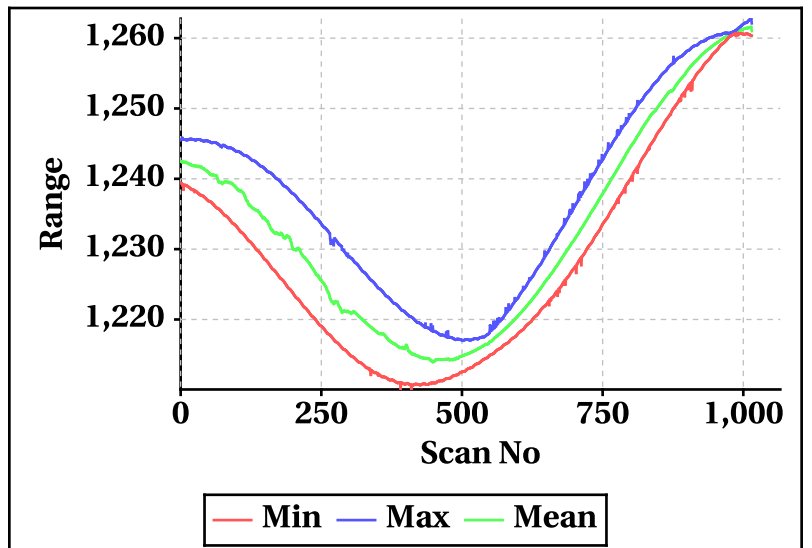
Outer Beam(VV)



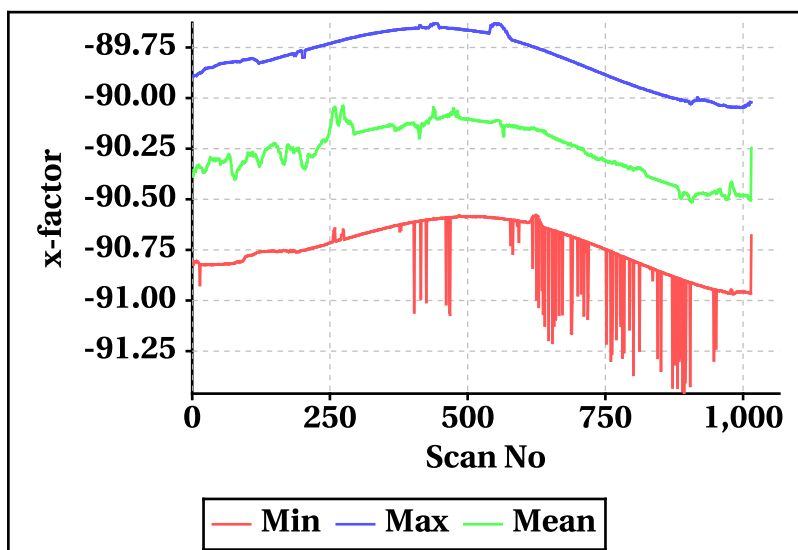
Inner Beam (HH)



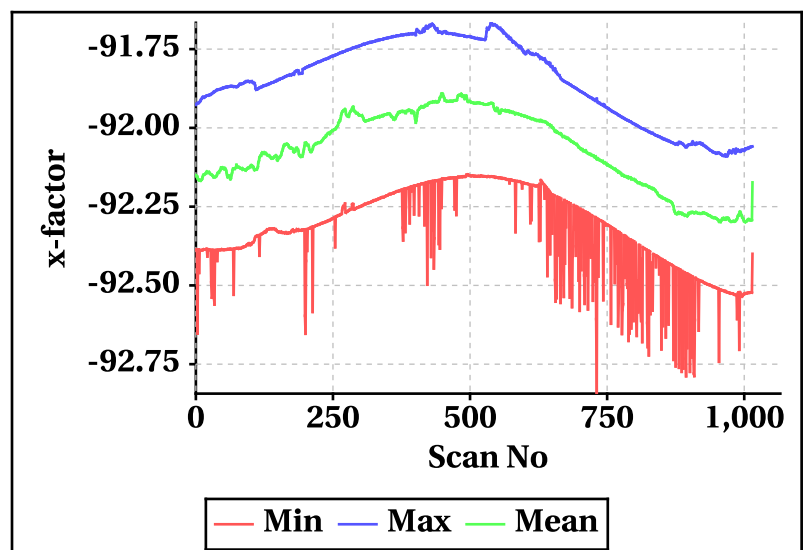
Outer Beam(VV)



Inner Beam (HH)



Outer Beam(VV)

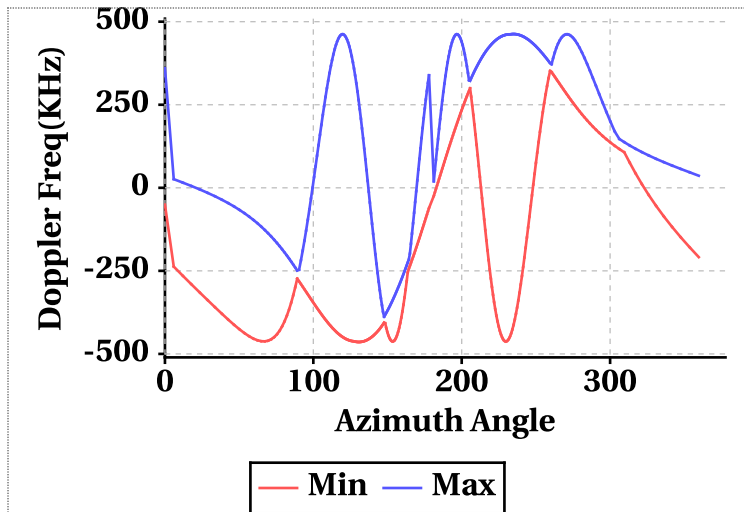


# Doppler Frequency Variation

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

	Inner Beam (HH)	Outer Beam (VV)
<b>Min</b>	-464.10	-519.94
<b>Max</b>	462.74	518.72

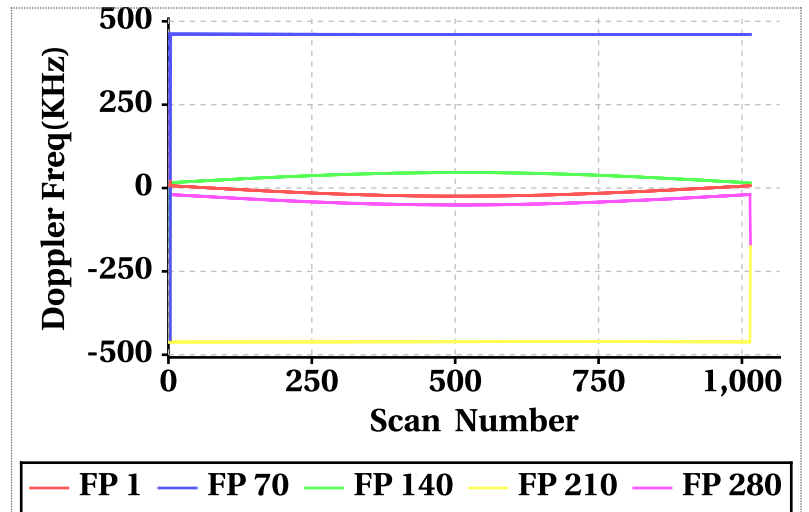
**Footprint wise Doppler frequency variation Inner Beam (HH)**



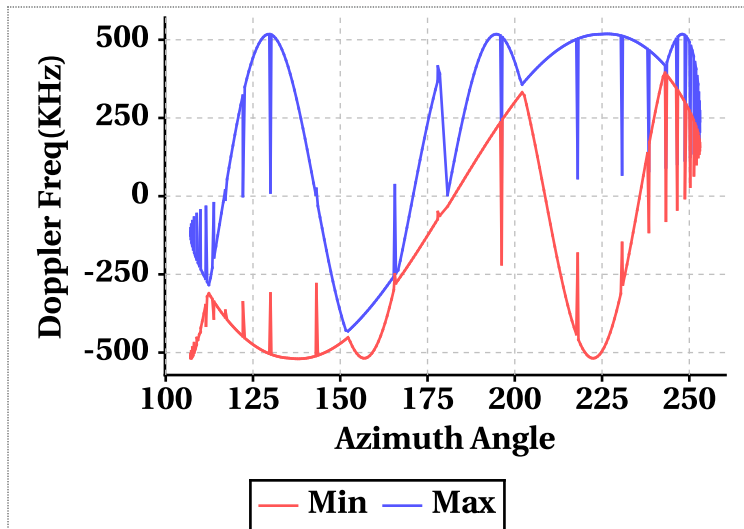
**Doppler Frequency(KHz) variation**

Doppler_FP	Inner Beam (HH)			Outer Beam (VV)		
	Min	Max	Mean	Min	Max	Mean
Doppler_1	-24.38	19.62	-12.85	-32.82	3.92	-19.94
Doppler_70	-454.42	461.84	460.13	-512.26	517.48	515.41
Doppler_140	-179.22	46.56	35.06	-217.58	46.48	33.55
Doppler_210	-461.72	378.56	-459.98	-517.66	413.52	-515.90
Doppler_280	-175.16	359.88	-39.03	-201.60	414.60	-37.77

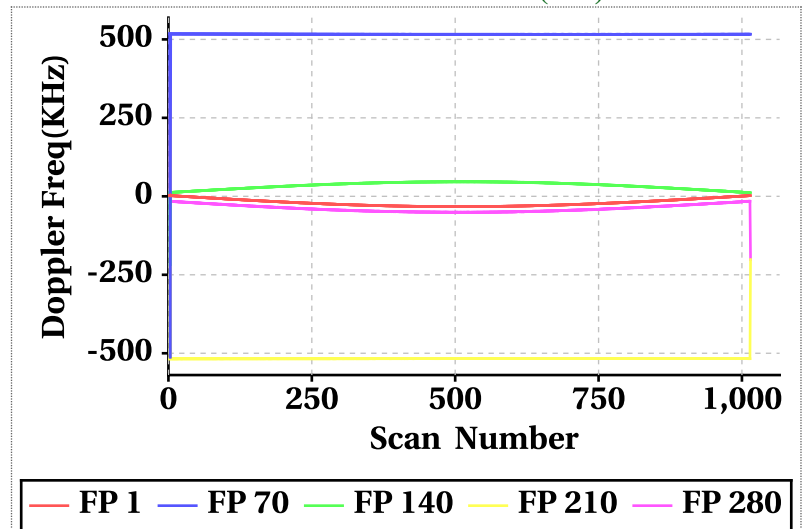
**Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Inner Beam (HH)**



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

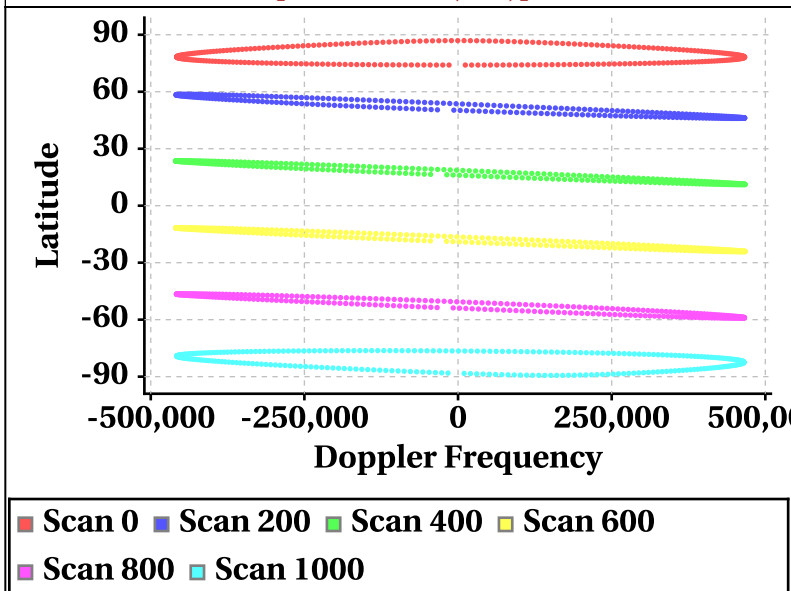


**Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Outer Beam (VV)**

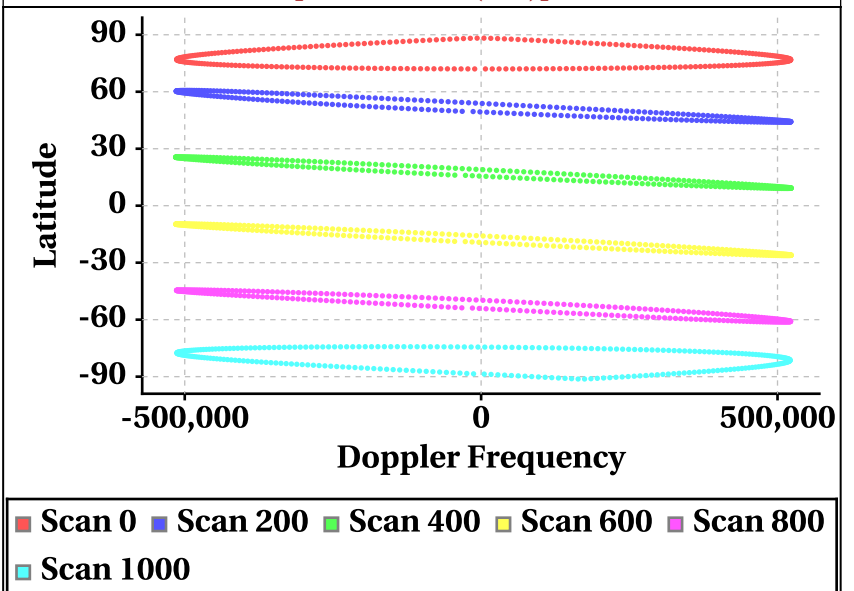


# Latitude Vs Doppler Frequency

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



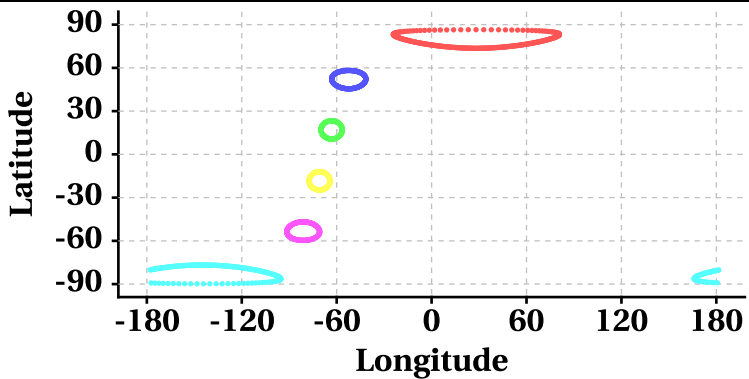
**Doppler Frequency at Scan Interval of 200 [Outer Beam(VV)]**



# Parameter as a function of Latitude

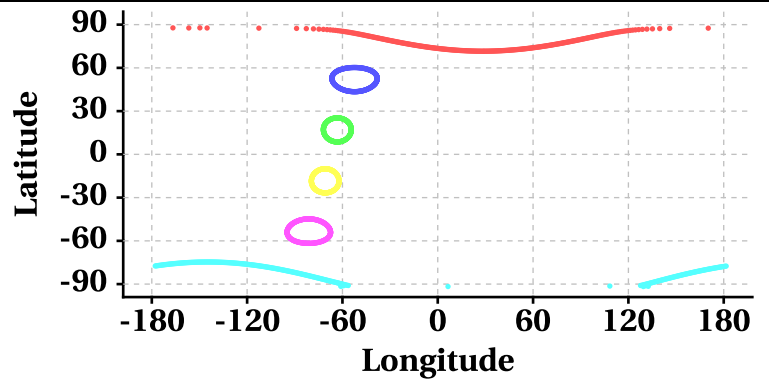
## Latitude Vs Longitude

Scan Trace [Inner Beam(HH)]



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

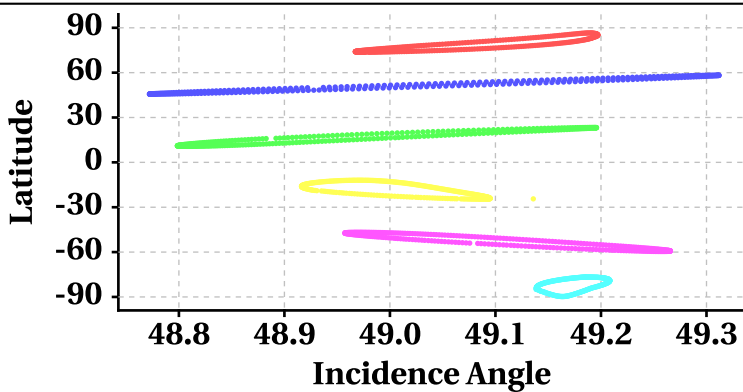
Scan Trace [Outer Beam (VV)]



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

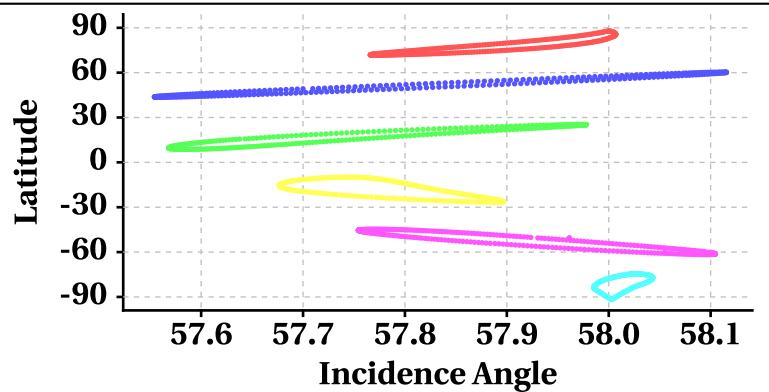
## Latitude Vs Incidence Angle

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



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

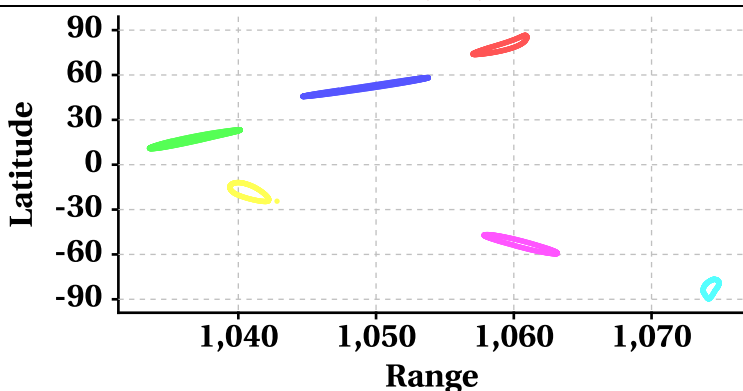
Incidence Angle at Scan Interval of 200 [Outer Beam (VV)]



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

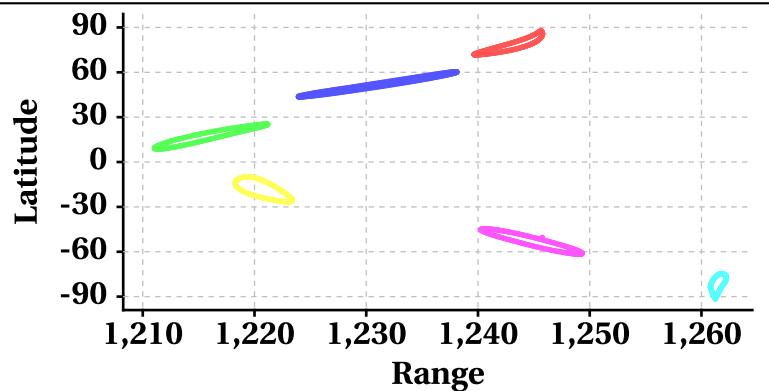
## Latitude Vs Range

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

