

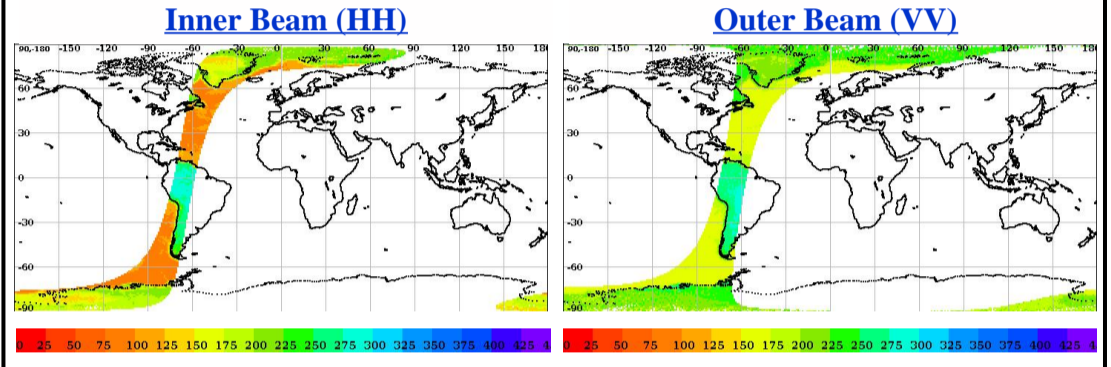
# SCATSAT-1 Scatterometer Level-1B Data Quality Evaluation Report

## Table of Contents

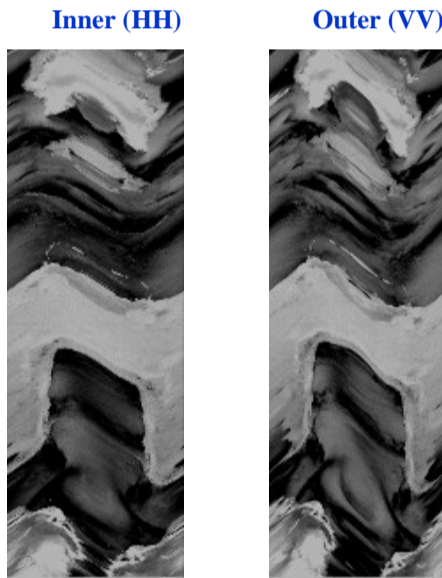
- Half-Orbit Coverage using BT & Sigma-0
- Invariant Site Sigma-0 Statistics (if Available)
- Half-Orbit Data Statistics
- Half Orbit wise - Dynamic Parameter (Sigma-0, Kp, SNR) Behaviour
- Dynamic Range (Data Histogram)
- Half Orbit Wise Behaviour - Static Parameters
- Doppler Variation (Across/Along Track for HH/VV Beam)
- LIB Parameter as a function of Latitude
- Half Orbit OAT Behaviour

<b>Satellite Id</b>	ScatSat-1	<b>Start Orbit</b>	2398	<b>Total Scans</b>	1017
<b>Sensor Name</b>	Scatterometer	<b>End Orbit</b>	2399	<b>No of Inner FootPrints</b>	281
<b>Processor Version</b>	1.1.1	<b>Rev. Number</b>	02398_02399	<b>No Of Outer FootPrints</b>	282
<b>Half Orbit Direction</b>	NS	<b>Data Production Date</b>	10-03-2017	<b>No. Of Inner Slices</b>	9
<b>Equator Crossing Date</b>	10-03-2017	<b>Equator Crossing Time</b>	13:22:10.000	<b>No Of Outer Slices</b>	15

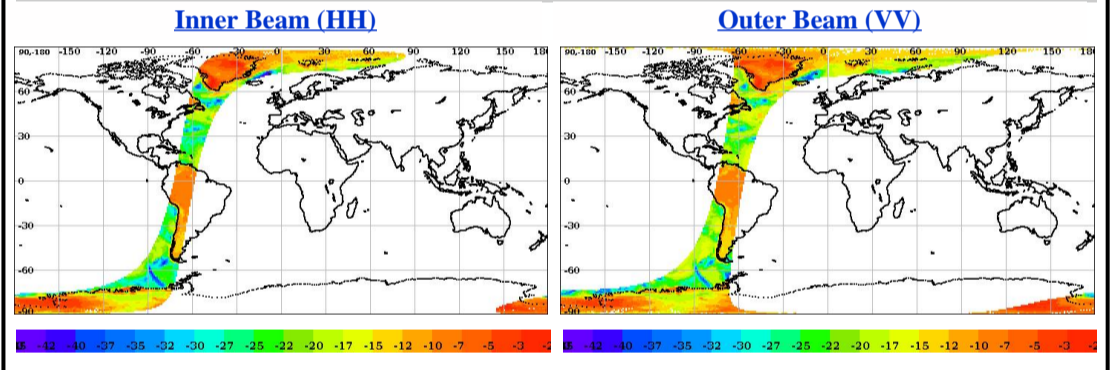
## Brightness Temperature(k) Footprint trace



## Image Snapshot for Inner & Outer Beam



## Sigma0(dB) Footprint trace



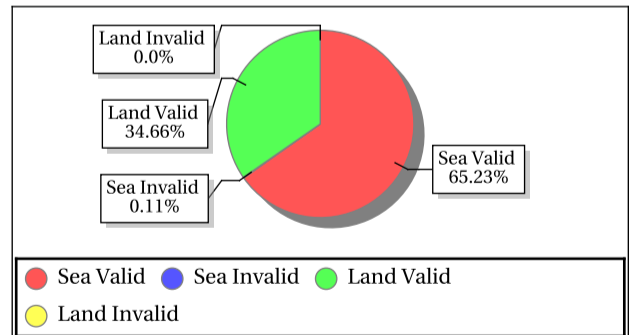
## Invalid and Poor Sigma-0 Quality Flag Statistics for Inner/Outer Slices\*

Sigma-0 Flags	Inner Beam	Outer Beam
Invalid Sigma0(%)	0.11	0.11
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(%)	0.00	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

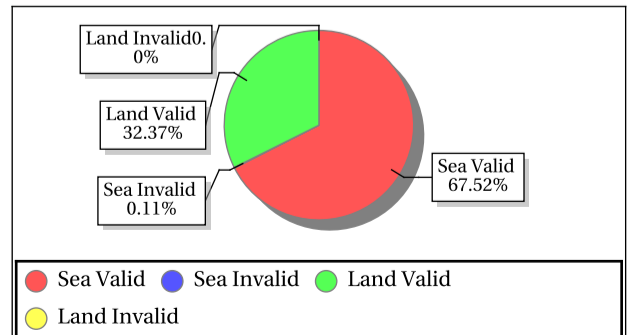
\*DP Format Document

## 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	ASC	Aft	-5.03	-3.94	-4.60	0.40	125.25	183.39	155.09	20.89
GreenLand_2	77.50	-41.50	Inner	ASC	Fore	-5.35	-4.32	-4.79	0.36	128.06	184.00	155.19	21.05
GreenLand_3	71.55	-42.45	Inner	ASC	Aft	-11.47	-8.62	-10.16	0.64	134.12	208.03	181.57	17.24
GreenLand_3	71.55	-42.45	Inner	ASC	Fore	-11.12	-8.36	-9.84	0.73	150.89	192.97	177.17	13.59
Amazon_3	-6.00	-61.00	Inner	ASC	Aft	-9.50	-7.12	-8.40	0.51	253.72	330.13	283.99	16.10
Amazon_3	-6.00	-61.00	Inner	ASC	Fore	-9.14	-6.96	-7.93	0.53	250.79	330.86	281.83	17.23
GreenLand_1	74.69	-42.50	Inner	ASC	Aft	-10.37	-7.86	-8.87	0.67	125.83	187.05	157.42	16.73
GreenLand_1	74.69	-42.50	Inner	ASC	Fore	-9.56	-7.67	-8.59	0.54	152.46	182.92	164.68	9.80
Amazon_2	-3.00	-61.00	Inner	ASC	Aft	-11.40	-7.24	-9.41	0.98	199.39	312.49	253.94	21.27
Amazon_2	-3.00	-61.00	Inner	ASC	Fore	-11.51	-7.01	-8.62	1.21	187.00	299.17	256.49	24.10
Amazon_1	0.00	-67.00	Inner	ASC	Aft	-10.02	-6.44	-8.08	0.64	246.71	309.58	281.77	13.87
Amazon_1	0.00	-67.00	Inner	ASC	Fore	-9.20	-6.15	-7.50	0.62	243.70	327.14	278.11	21.21
GreenLand_2	77.50	-41.50	Outer	ASC	Aft	-5.32	-4.38	-4.78	0.40	182.60	236.95	208.54	22.26
GreenLand_2	77.50	-41.50	Outer	ASC	Fore	-5.07	-4.31	-4.74	0.29	203.07	216.25	207.50	5.23
GreenLand_3	71.55	-42.45	Outer	ASC	Aft	-11.74	-10.13	-10.93	0.56	184.36	238.18	212.17	16.62
GreenLand_3	71.55	-42.45	Outer	ASC	Fore	-11.71	-9.28	-10.66	0.68	199.39	240.45	215.93	12.42
Amazon_3	-6.00	-61.00	Outer	ASC	Aft	-10.05	-8.43	-9.41	0.41	251.71	334.25	291.22	20.06
Amazon_3	-6.00	-61.00	Outer	ASC	Fore	-10.19	-8.13	-9.09	0.46	228.27	302.98	273.12	16.74
GreenLand_1	74.69	-42.50	Outer	ASC	Aft	-9.23	-7.90	-8.44	0.45	204.17	231.41	219.01	8.23
GreenLand_1	74.69	-42.50	Outer	ASC	Fore	-9.31	-7.06	-7.98	0.62	198.44	241.15	222.93	14.45
Amazon_2	-3.00	-61.00	Outer	ASC	Aft	-11.70	-8.85	-10.07	0.76	245.08	313.94	270.98	16.13
Amazon_2	-3.00	-61.00	Outer	ASC	Fore	-13.38	-8.57	-9.91	0.88	215.56	301.37	259.38	18.58
Amazon_1	0.00	-67.00	Outer	ASC	Aft	-9.55	-7.49	-8.67	0.49	245.25	323.11	285.18	19.72



<b>Site Name</b>	<b>Center Lat</b>	<b>Center Lon</b>	<b>Beam</b>	<b>Node</b>	<b>ScanDir</b>	<b>Sigma0 Min</b>	<b>Sigma0 Max</b>	<b>Sigma0 Mean</b>	<b>Sigma0 Std</b>	<b>BT Min</b>	<b>BT Max</b>	<b>BT Mean</b>	<b>BT Std</b>
Amazon_1	0.00	-67.00	Outer	ASC	Fore	-9.39	-7.38	-8.43	0.47	231.28	306.38	269.46	14.94

## 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	191.65	0.18	0.889	0.10	263.59	0.19	0.844	0.10	0.24	0.10	0.000	0.10	0.13	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>	-33.56	26.21	7.18	0.250	-34.94	28.00	6.97	0.337	-2.51	29.50	19.29	14.004	3.57	29.88	20.00	24.537

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	167.18	0.18	1.223	0.08	193.55	0.20	1.477	0.08	0.14	0.08	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	0.00	0.00	0.000	0.00	0.00	0.00	0.000	0.00	0.00	0.00	0.000	0.00	0.00	0.00	0.000
<b>SNR</b>	-33.98	19.89	4.84	0.000	-34.62	20.22	4.27	0.000	-0.01	23.23	14.13	0.367	1.55	23.90	14.48	0.937

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 (VV)				Outer Beam (VV)				Parameter Specifications		
	Min	Max	Mean	Bad Occ. (%)	Min	Max	Mean	Bad Occ. (%)	Parameter	Min	Max
<b>Incidence Angle (deg)</b>	48.73	49.45	48.98	0.000	57.56	58.41	57.92	0.000	Inci.(Inner)	47.10	49.90
<b>Azimuth Diff. (deg)</b>	0.0026	1.82	1.08	0.191	0.0027	1.99	1.08	0.157	Inci.(Outer)	57.30	58.90
<b>Range(Km)</b>	1034.08	1095.88	1055.68	0.406	1213.66	1290.61	1241.37	13.987	Azimuth Diff.	0.60	2.00
<b>X Factor(dbm)</b>	-91.36	-90.05	-90.17	0.000	-93.19	-92.06	-92.16	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>	18.99	39.68	19.74	1.000	18.69	39.61	19.64	1.000	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

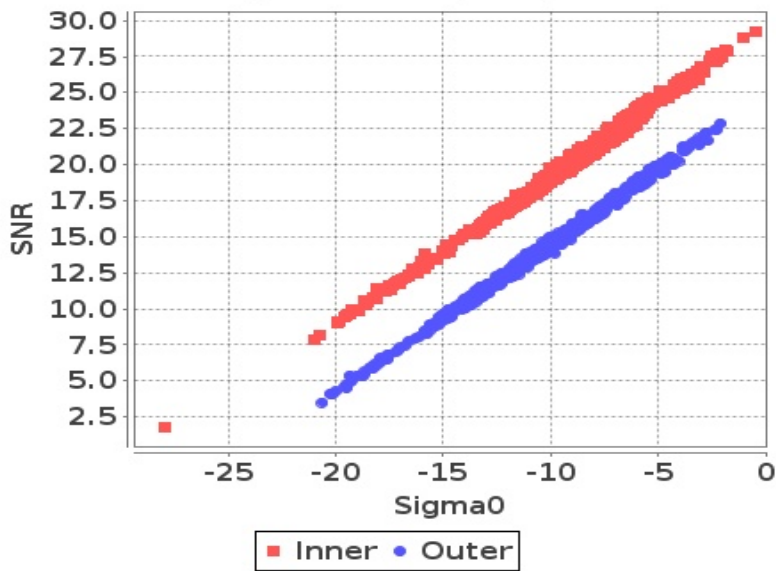
- Normal
- Deviations
- Alarming
- High Errors



## Sigma0 Behaviour (Sigma0 Vs SNR)

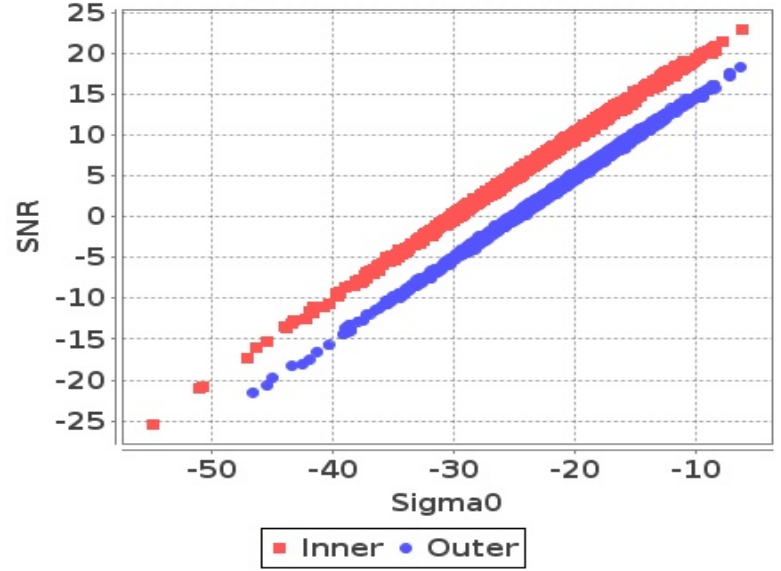
Footprint-Land

Sigma0 Vs SNR (Land)



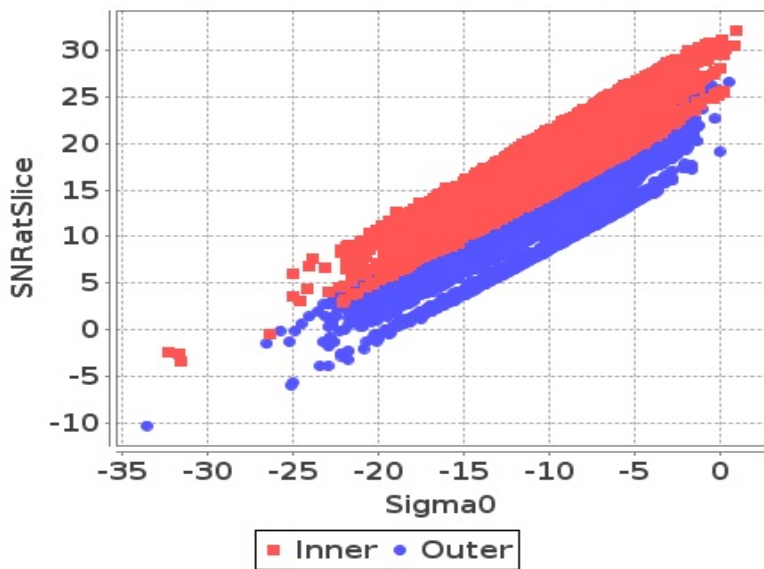
Footprint-Sea

Sigma0 Vs SNR (Sea)



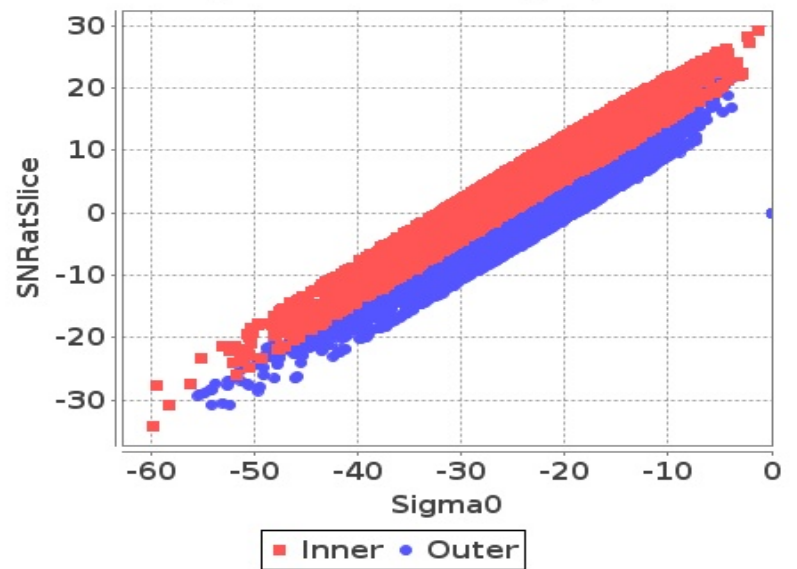
Slice-Land

Sigma0 Vs SNRatSlice (Land)



Slice-Sea

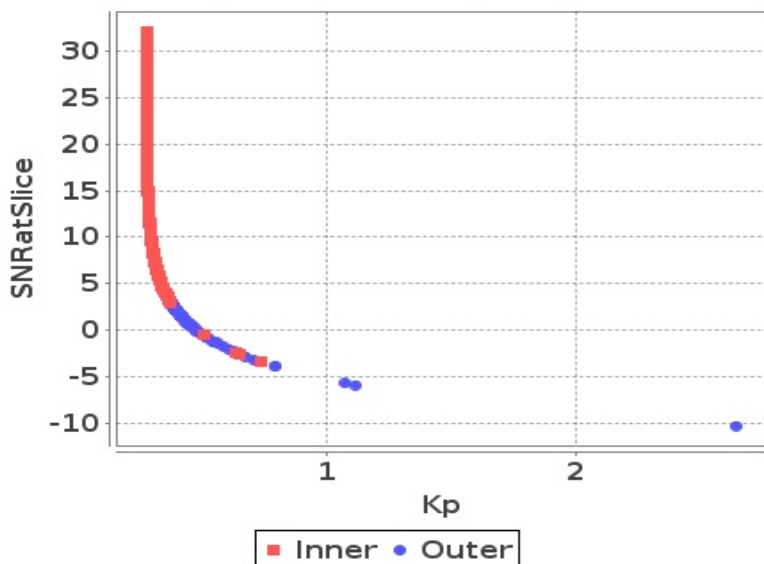
Sigma0 Vs SNRatSlice (Sea)



## Sigma0 Behaviour (Kp Vs SNR)

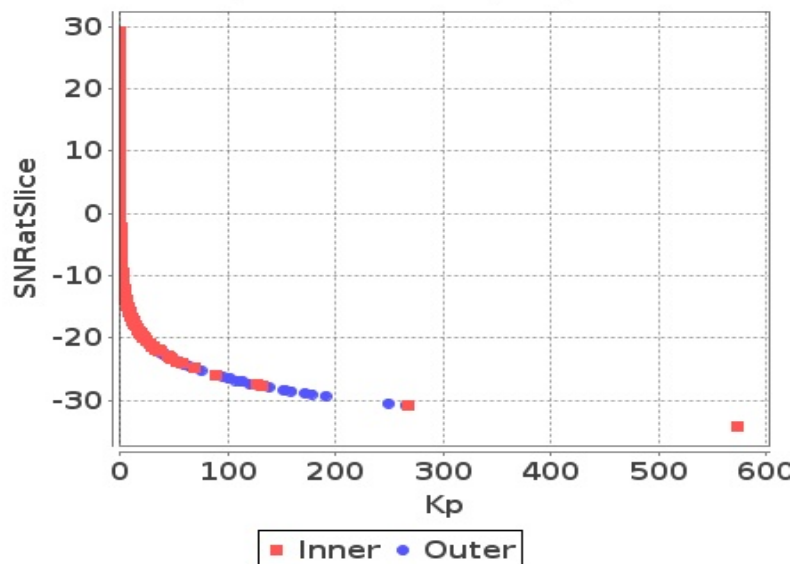
Slice

Kp Vs SNRatSlice (Land)



Slice

Kp Vs SNRatSlice (Sea)

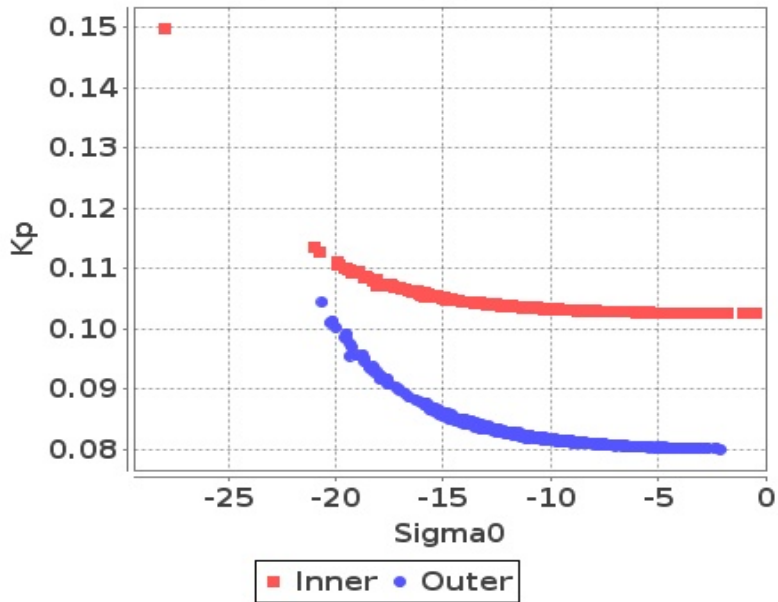




# Sigma0 Behaviour(Sigma0 Vs Kp)

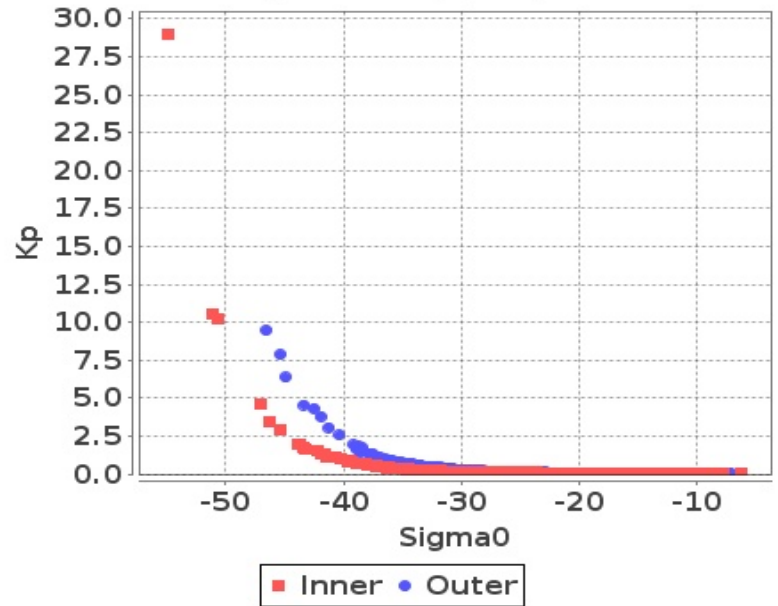
## Footprint-Land

### Sigma0 Vs Kp (Land)



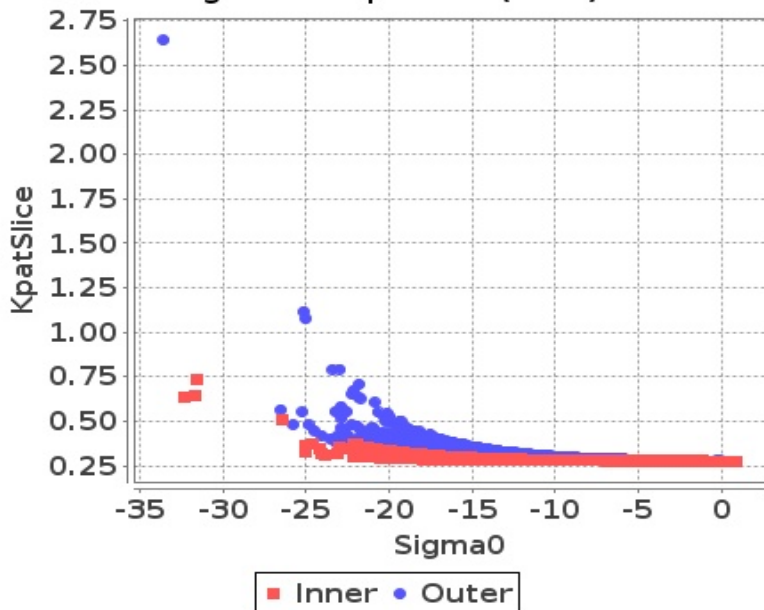
## Footprint-Sea

### Sigma0 Vs Kp (Sea)



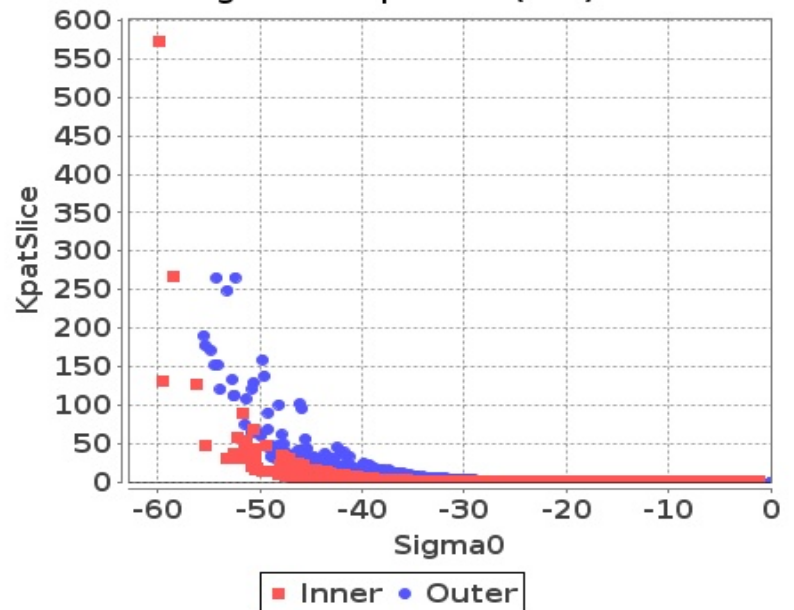
## Slice-Land

### Sigma0 Vs KpatSlice (Land)



## Slice-Sea

### Sigma0 Vs KpatSlice (Sea)

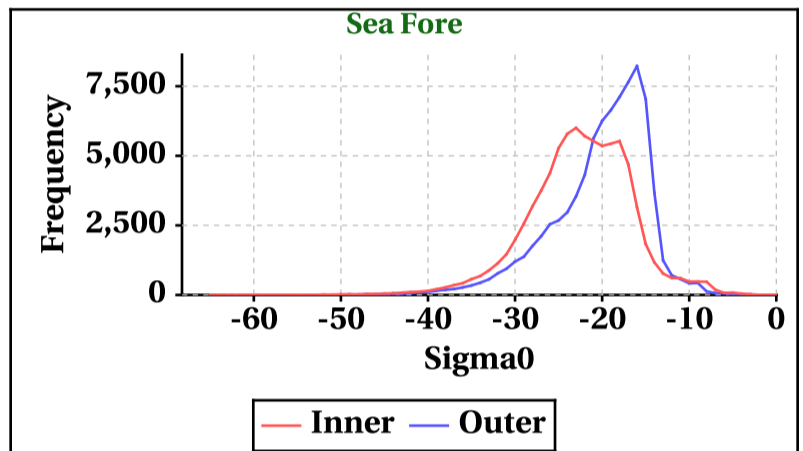
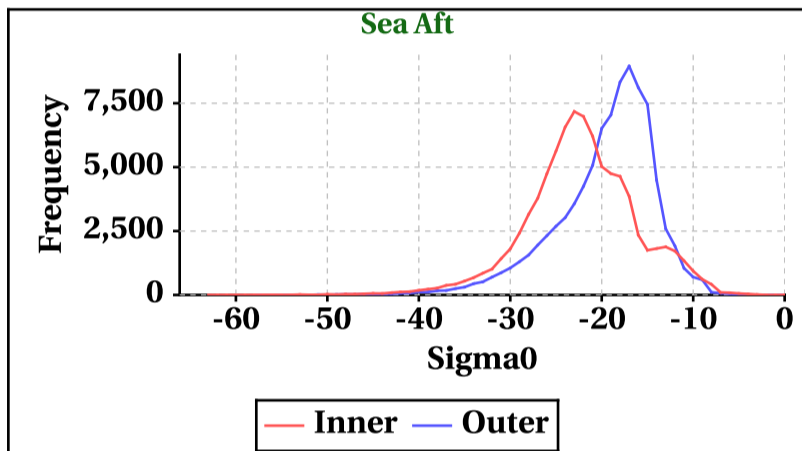
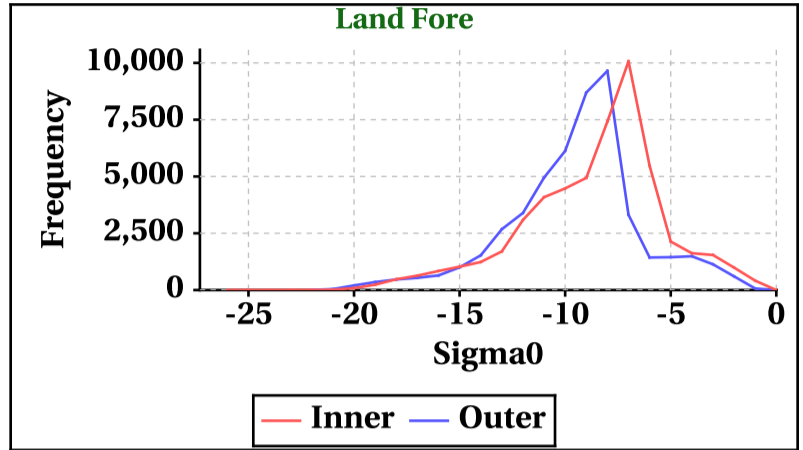
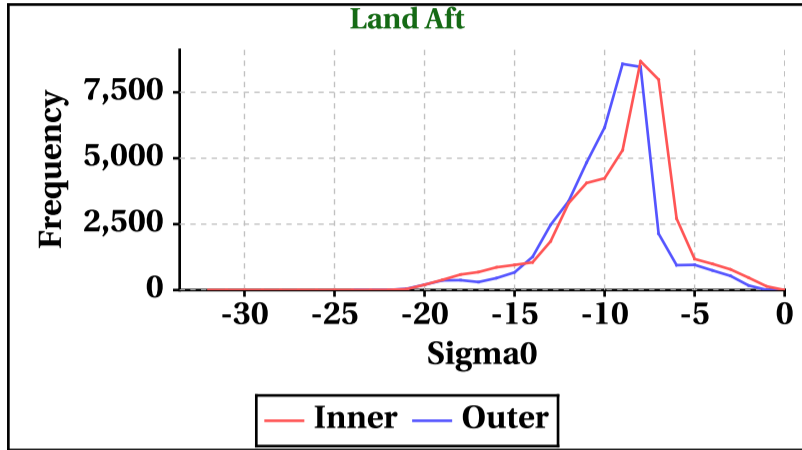


# Dynamic Range (Data Histograms)

## Sigma0(db)

Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-32	-26	-63	-65
Max	0	0	0	0

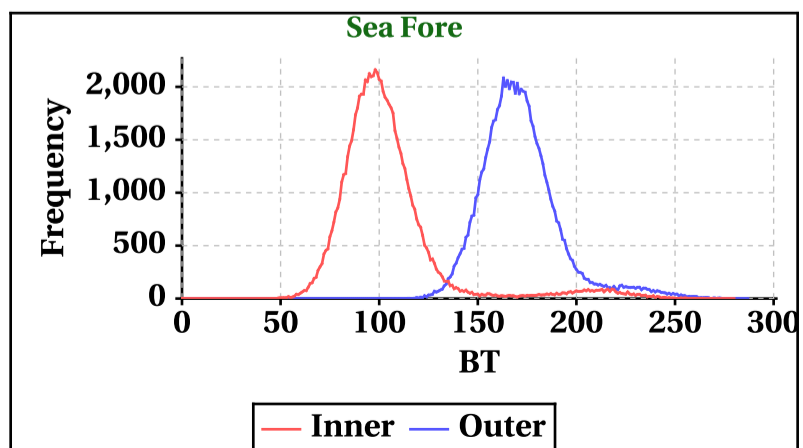
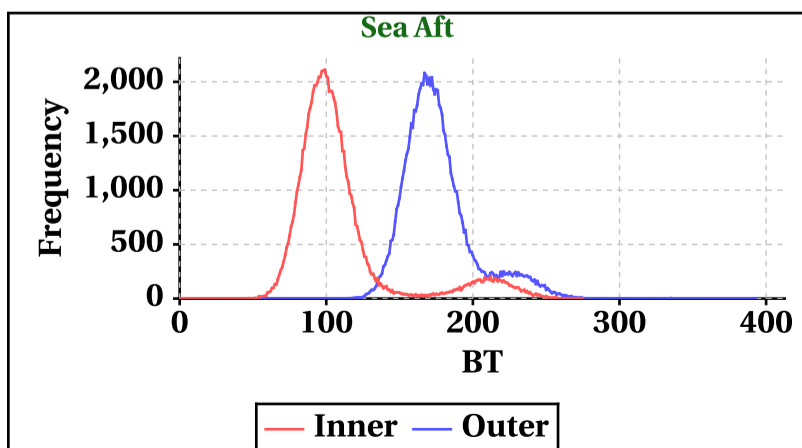
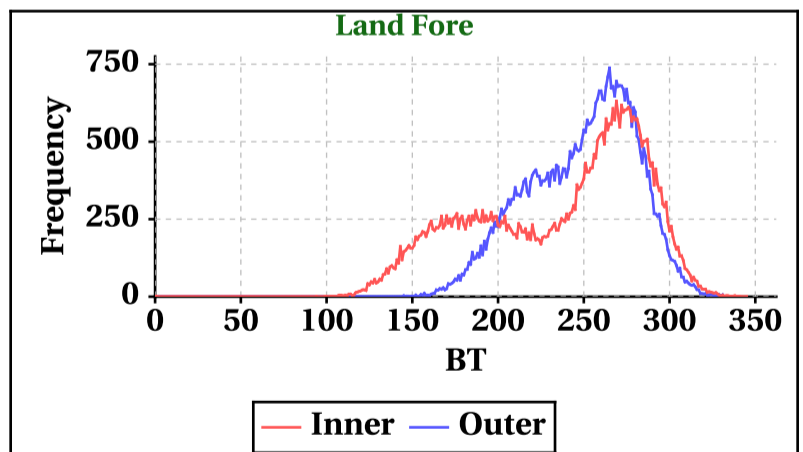
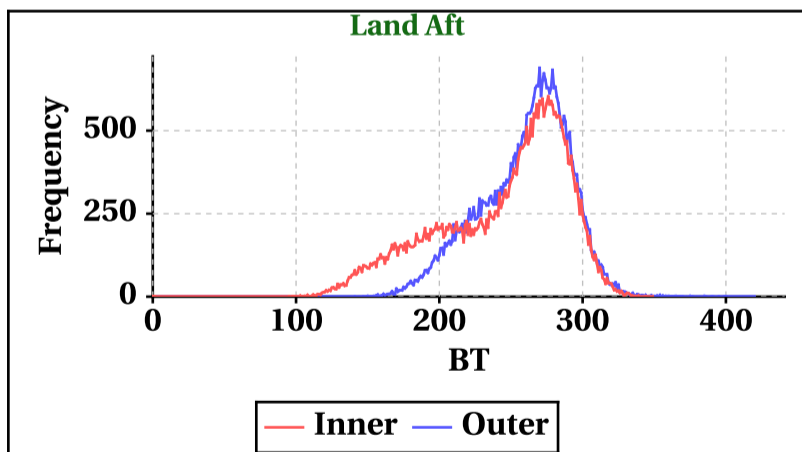
Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-24	-22	-58	-59
Max	0	0	0	0



## Brightness Temperature(K)

Inner Beam(HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	349	345	275	280

Outer Beam(VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	420	340	393	287

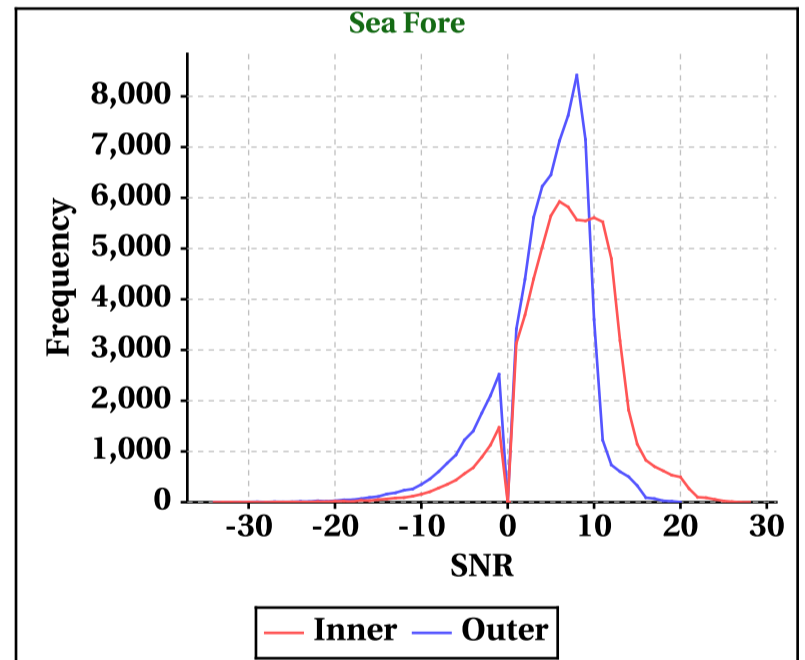
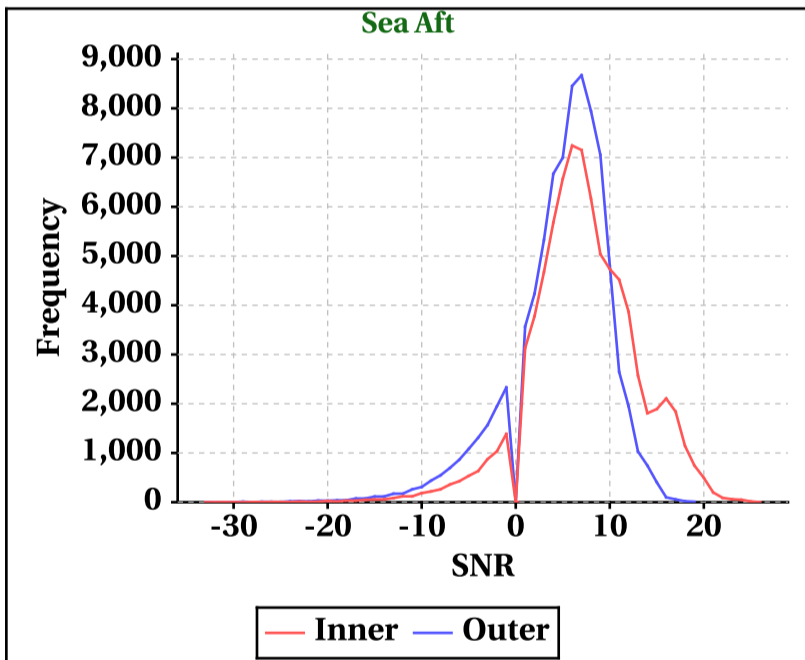
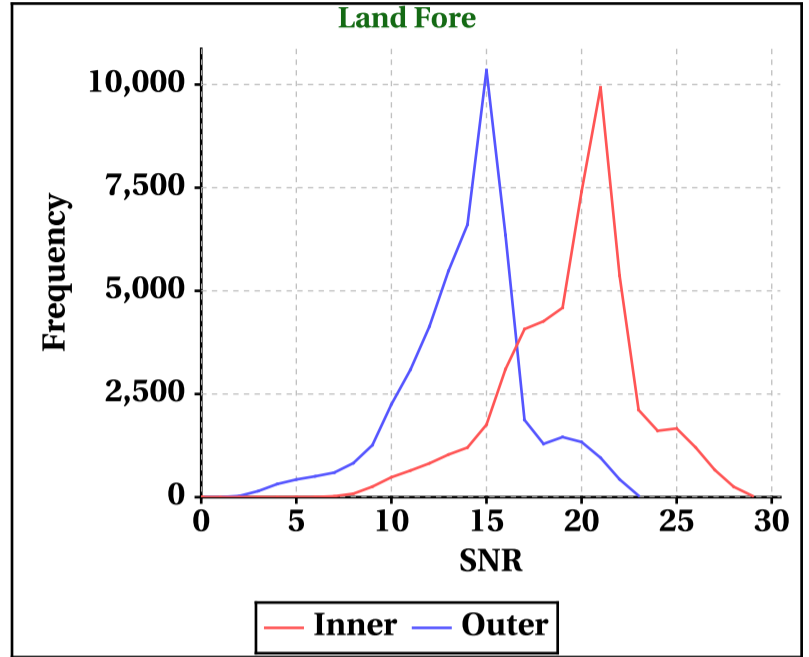
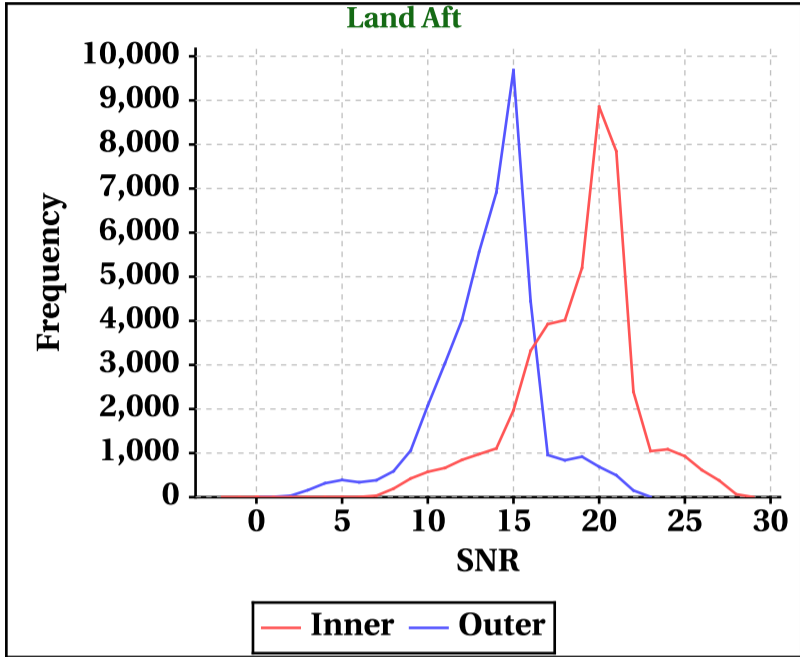


# Dynamic Range (Data Histograms)

## SNR(dBm)

Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-2	0	-33	-34
Max	29	29	26	28

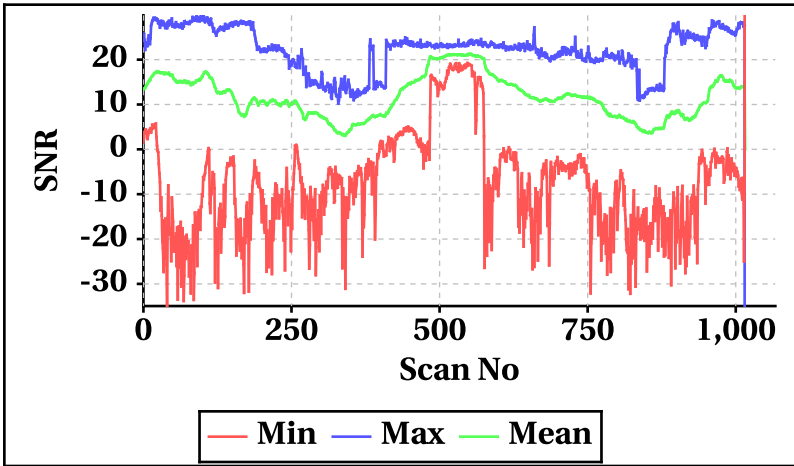
Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	-33	-34
Max	23	23	19	20



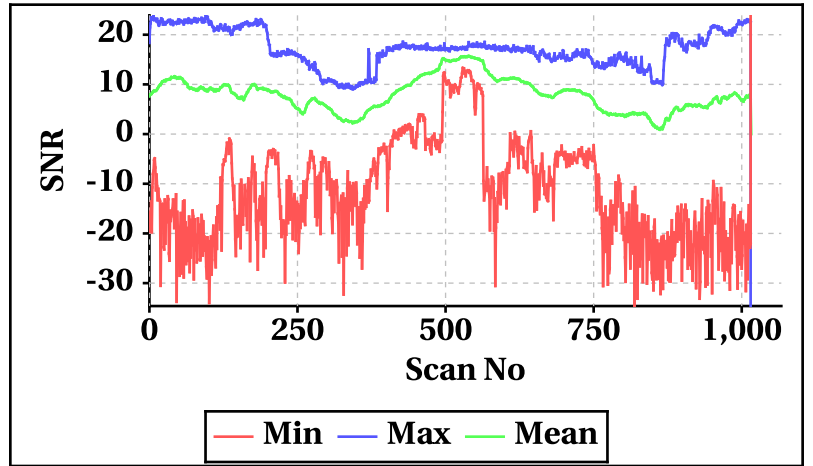


## Orbit-wise behaviour of SNR

Inner Beam (HH)

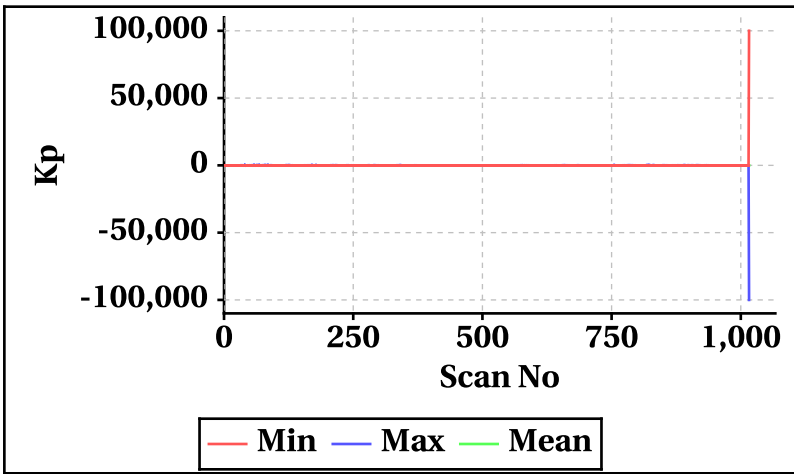


Outer Beam(VV)

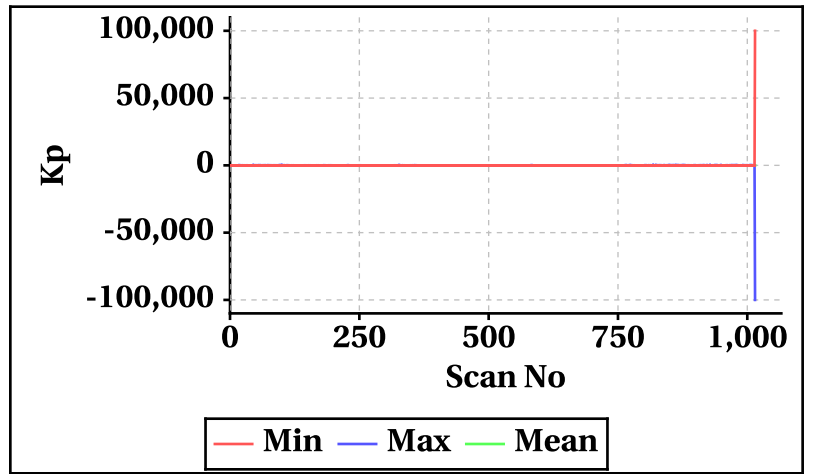


## Orbit-wise behaviour of Kp,Kpa,Kpb,Kpc

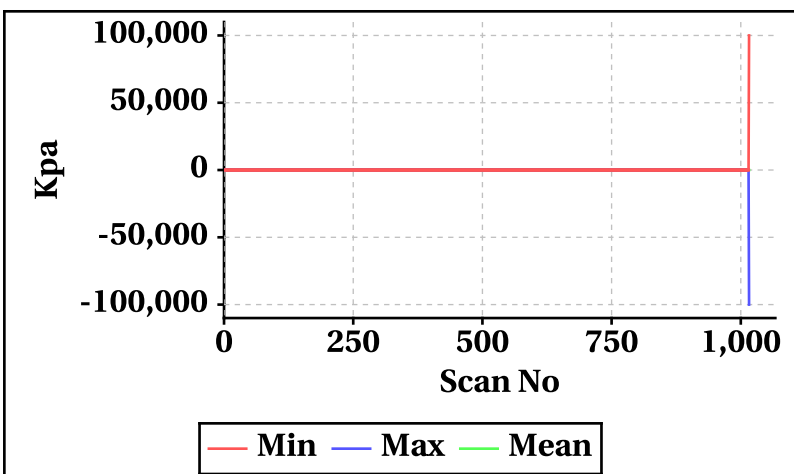
Inner Beam(HH)



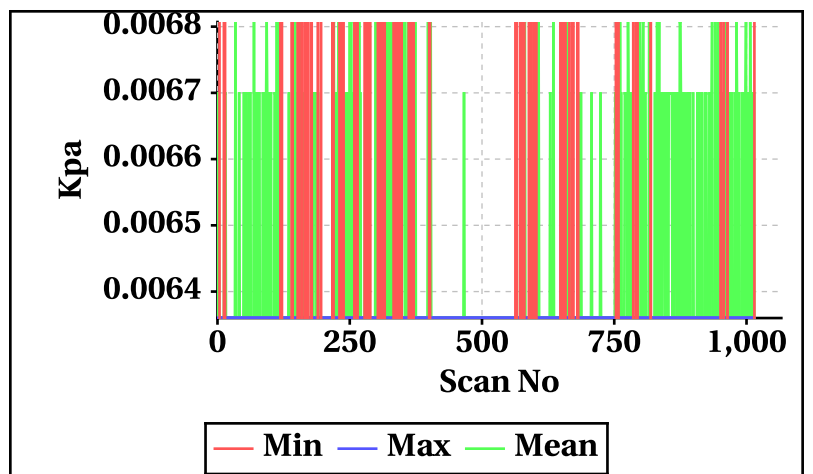
Outer Beam(VV)



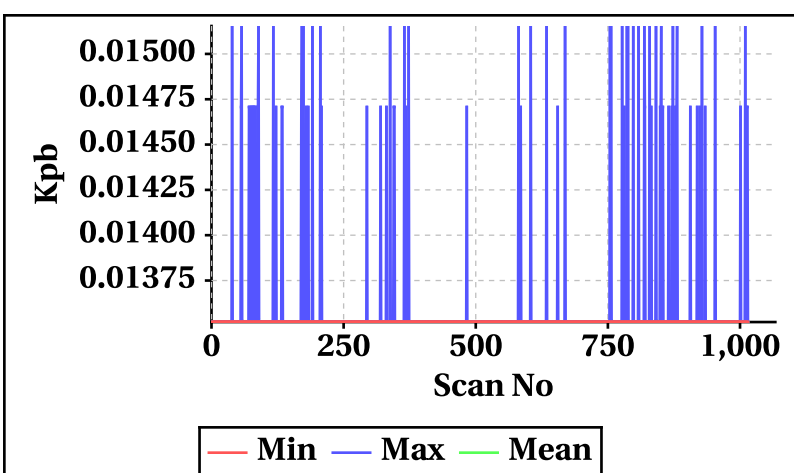
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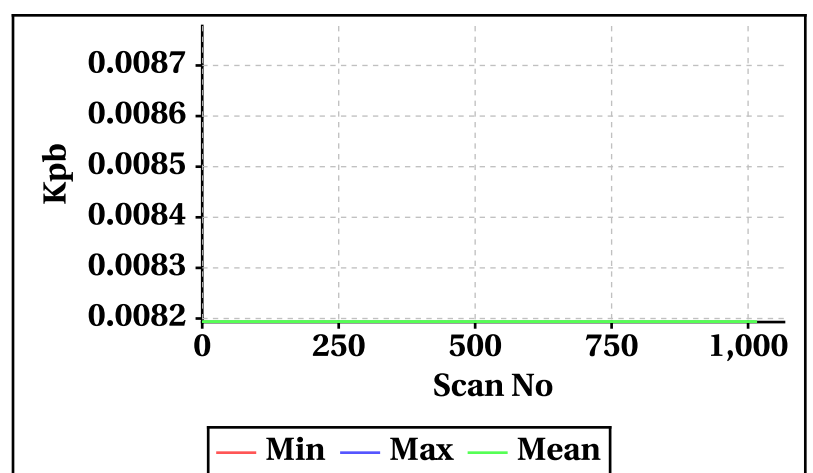
Outer Beam(VV)



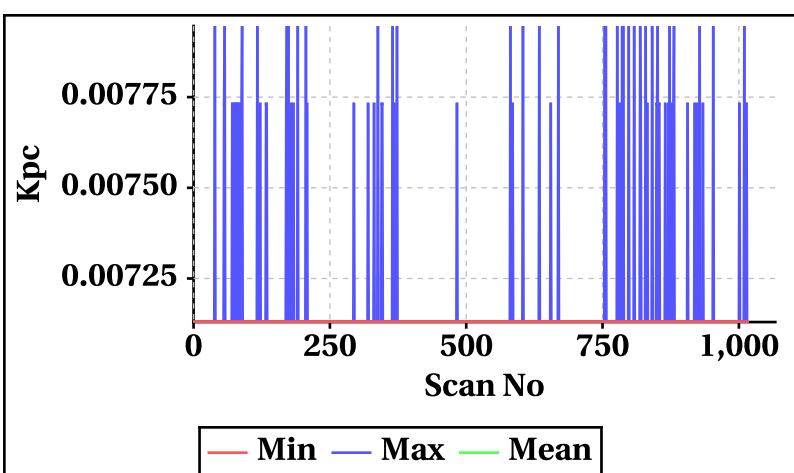
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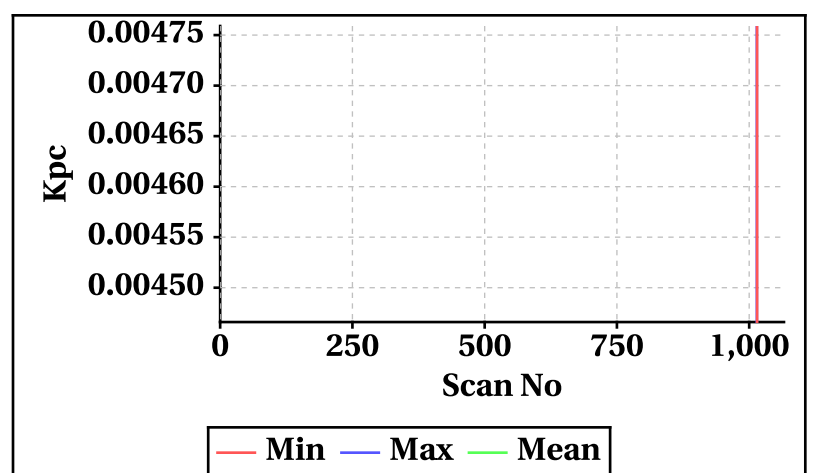
Outer Beam(VV)



Inner Beam(HH)

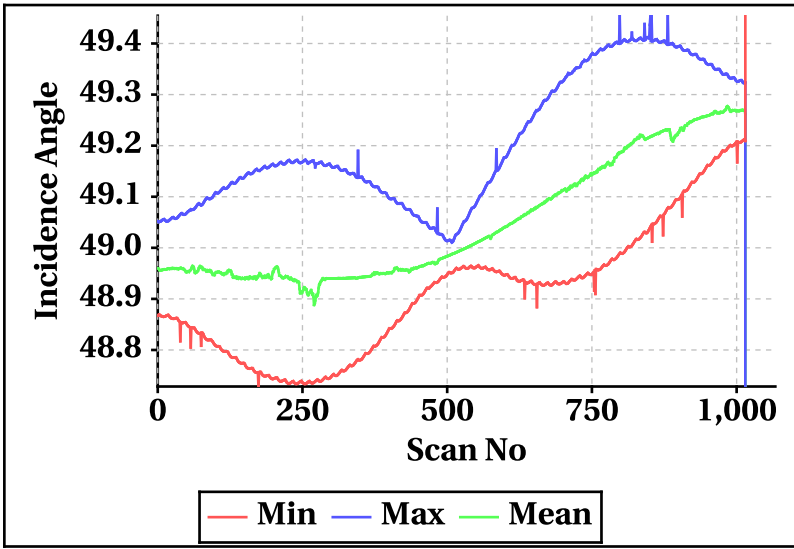


Outer Beam(VV)

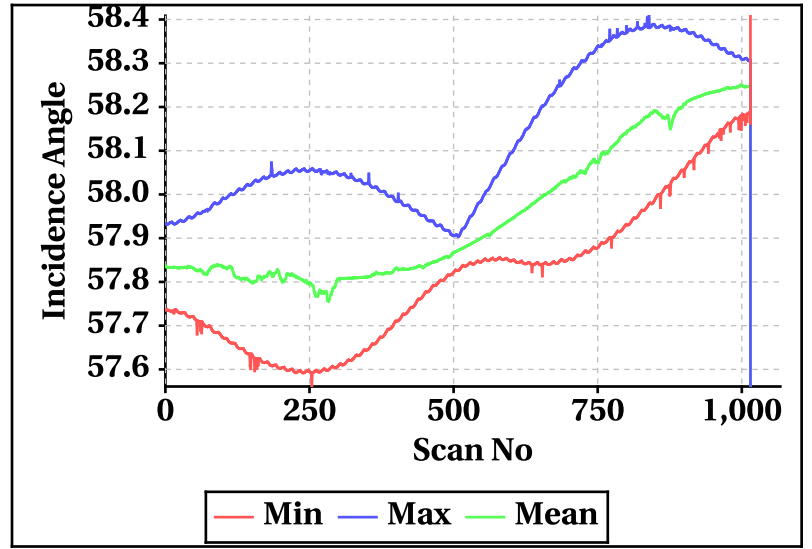


Orbt-wise behaviour of Incidence, Azimuth, Range, X-Factor

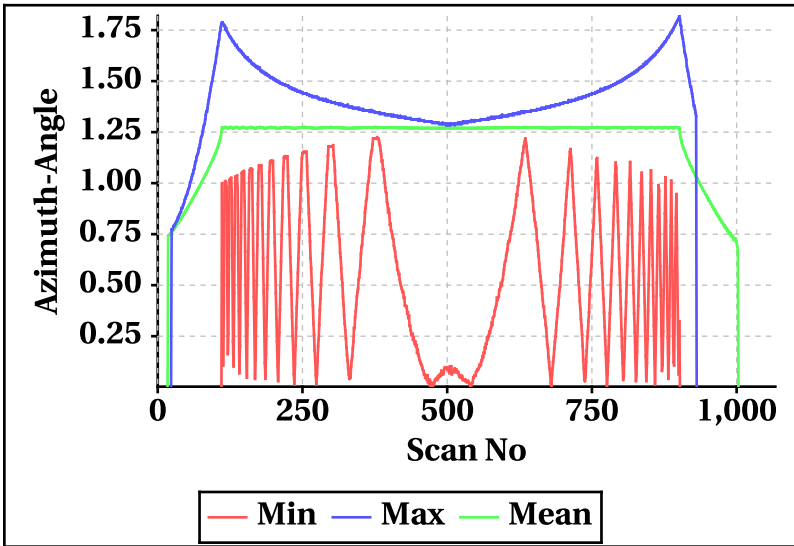
Inner Beam (HH)



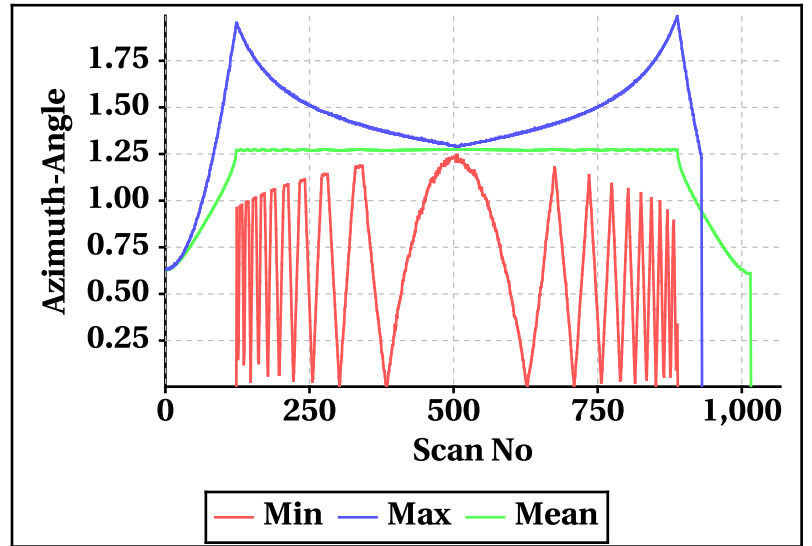
Outer Beam(VV)



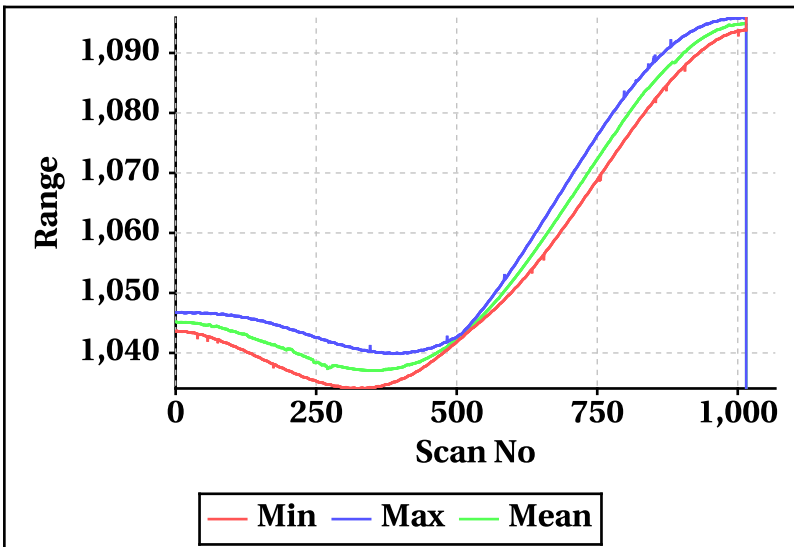
Inner Beam (HH)



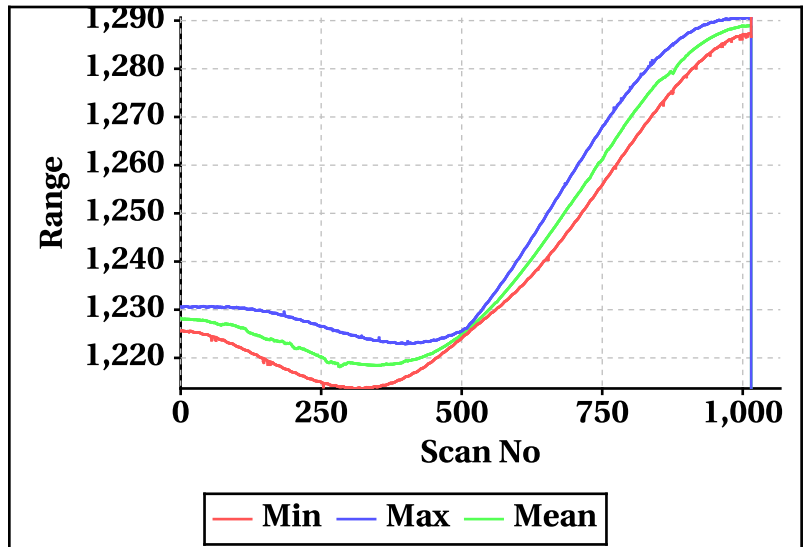
Outer Beam(VV)



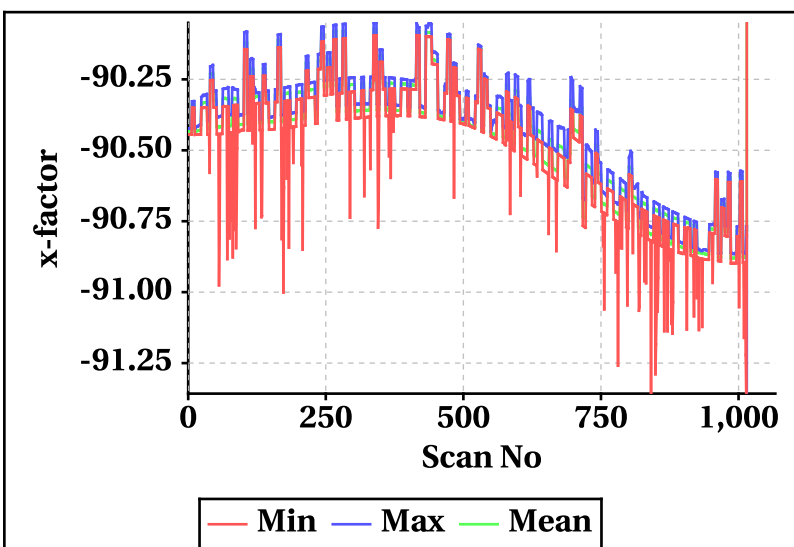
Inner Beam (HH)



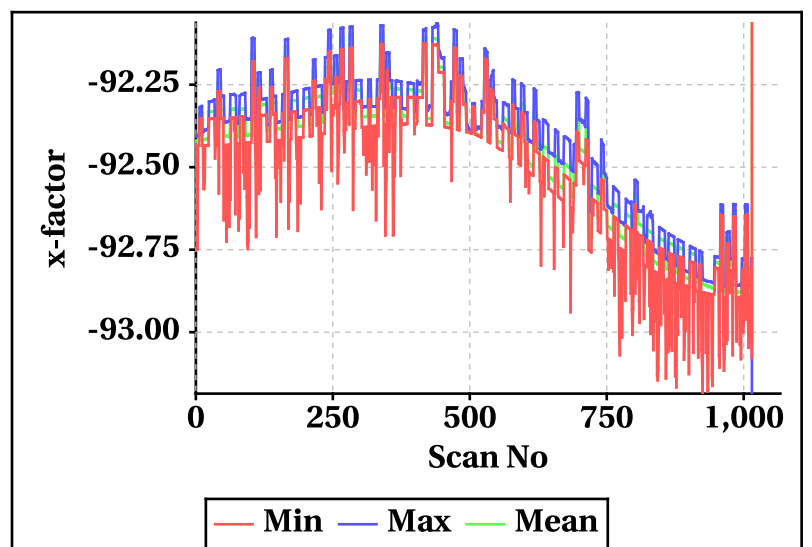
Outer Beam(VV)



Inner Beam (HH)



Outer Beam(VV)

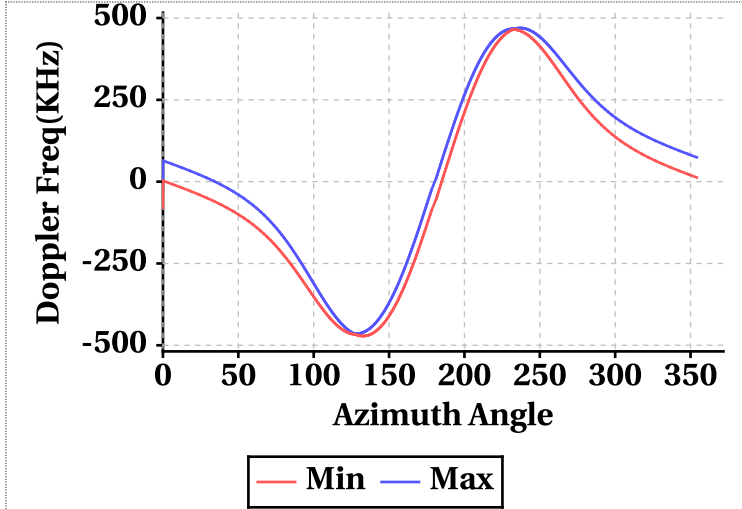


# Doppler Frequency Variation

Doppler Frequency(KHz) variation statistics Over the half Orbit

	Inner Beam (HH)	Outer Beam (VV)
Min	-471.64	-528.28
Max	469.30	526.24

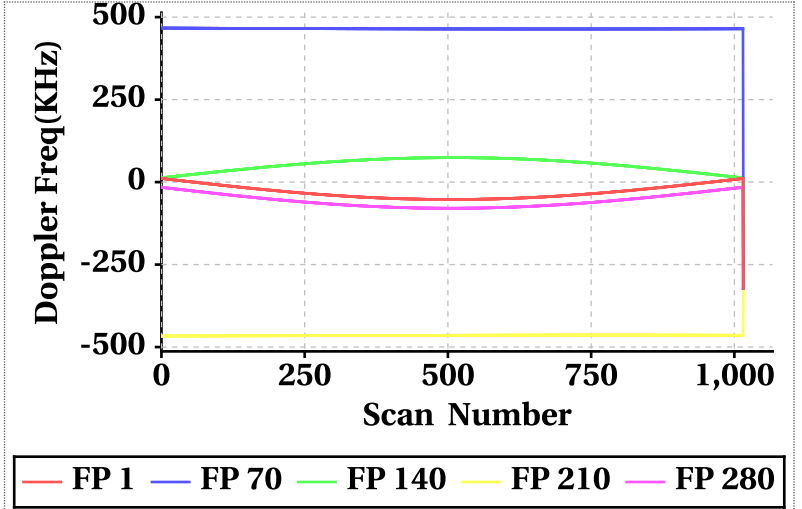
Footprint wise Doppler frequency variation Inner Beam (HH)



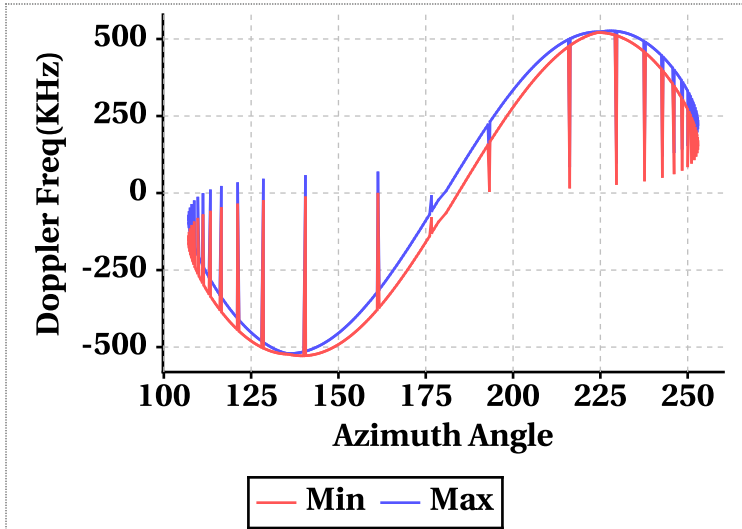
Doppler Frequency(KHz) variation

Doppler_FP	Inner Beam (HH)			Outer Beam (VV)		
	Min	Max	Mean	Min	Max	Mean
Doppler_1	-322.62	11.20	-29.82	-356.86	7.38	-38.38
Doppler_70	-322.62	466.86	463.98	-356.86	523.10	519.63
Doppler_140	-322.62	74.26	51.45	-356.86	77.00	51.38
Doppler_210	-466.42	-322.62	-464.55	-522.96	-356.86	-521.22
Doppler_280	-322.62	-15.70	-56.74	-356.86	-11.10	-56.96

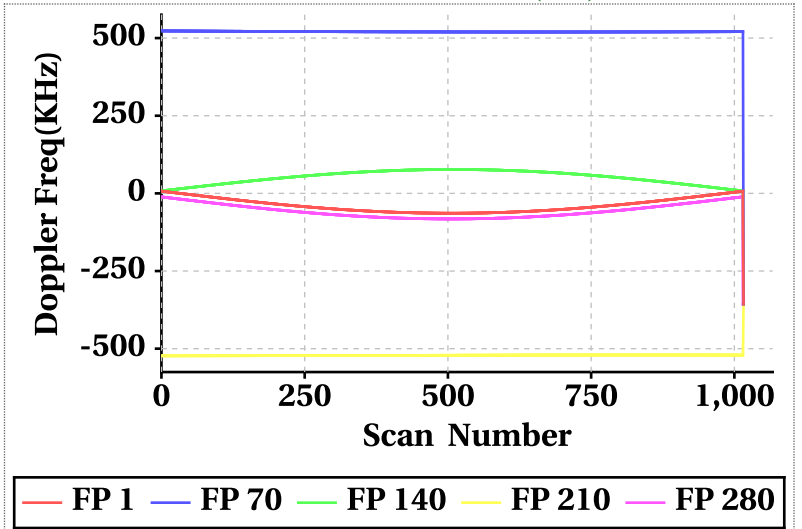
Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Inner Beam (HH)



Footprint wise Doppler frequency variation Outer Beam (VV)

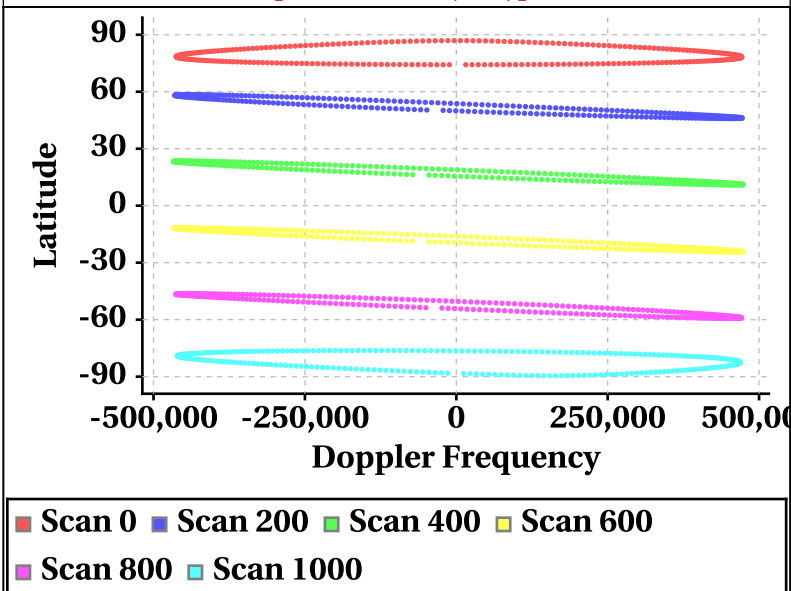


Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Outer Beam (VV)

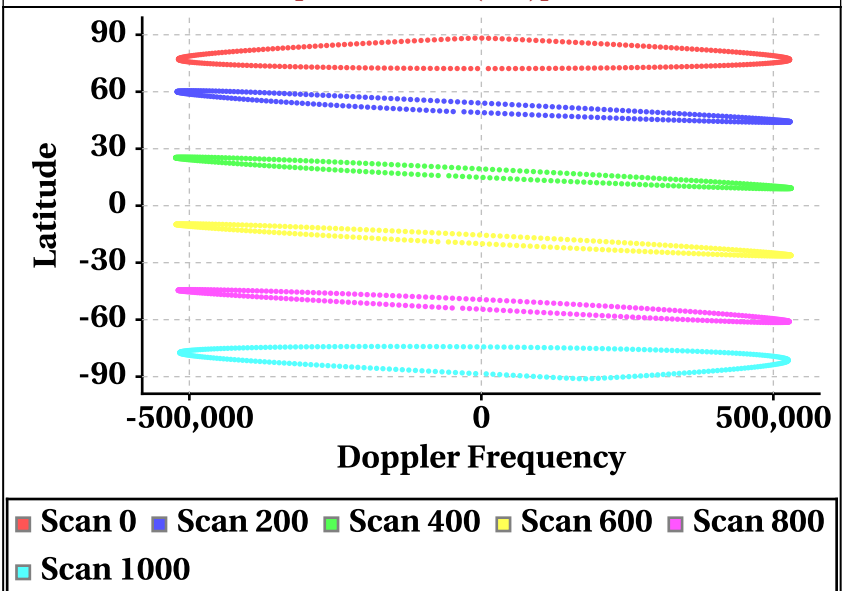


# Latitude Vs Doppler Frequency

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



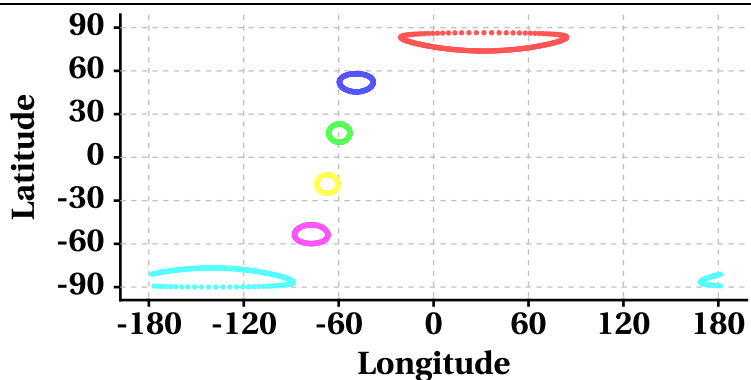
Doppler Frequency at Scan Interval of 200 [Outer Beam(VV)]



# Parameter as a function of Latitude

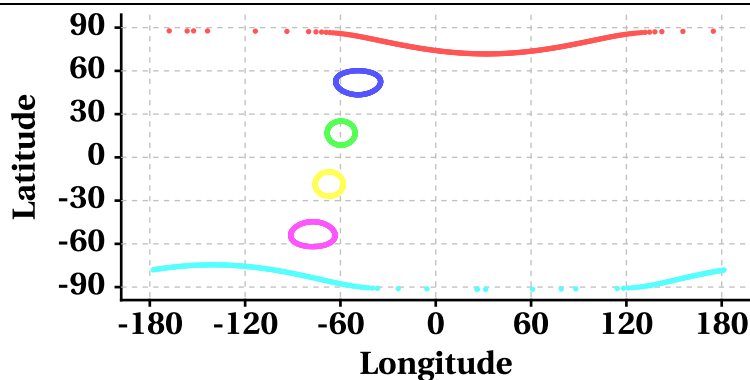
## Latitude Vs Longitude

Scan Trace [Inner Beam(HH)]



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

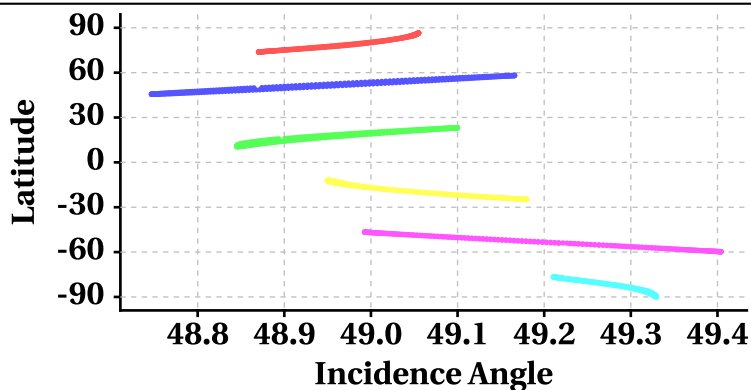
Scan Trace [Outer Beam (VV)]



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

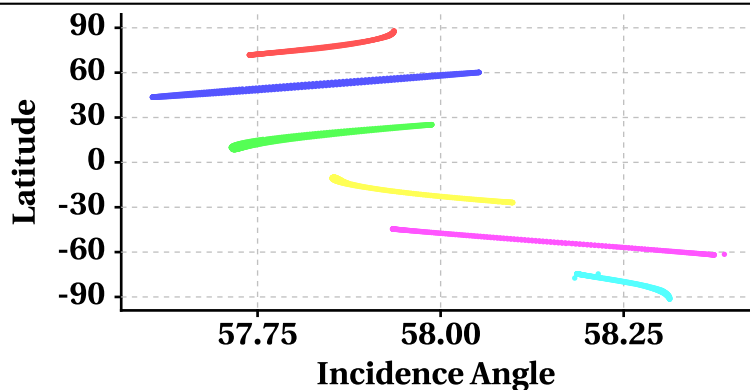
## Latitude Vs Incidence Angle

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



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

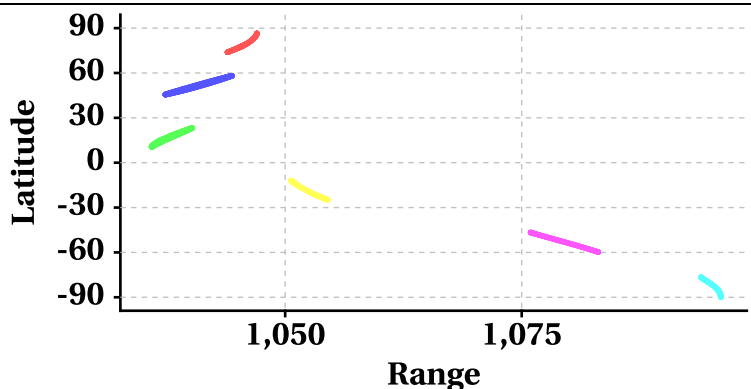
Incidence Angle at Scan Interval of 200 [Outer Beam (VV)]



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

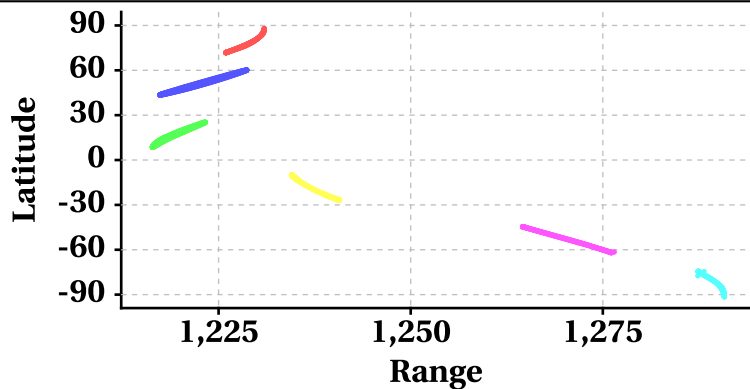
## Latitude Vs Range

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

