

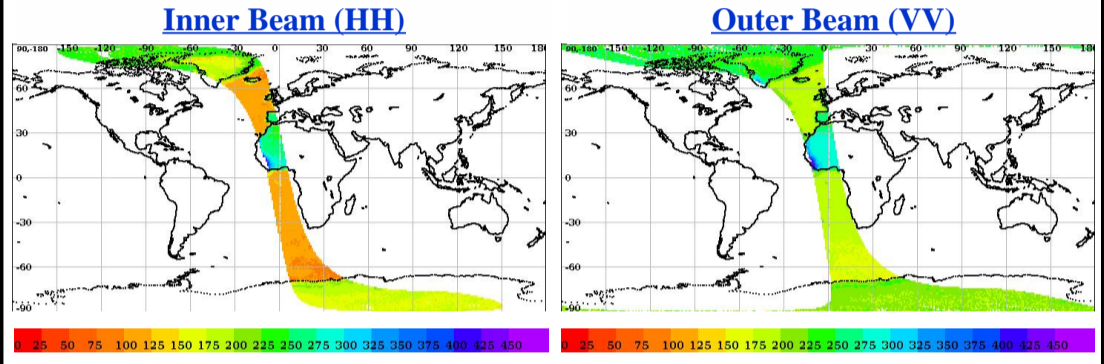
# SCATSAT-1 Scatterometer Level-1B Data Quality Evaluation Report

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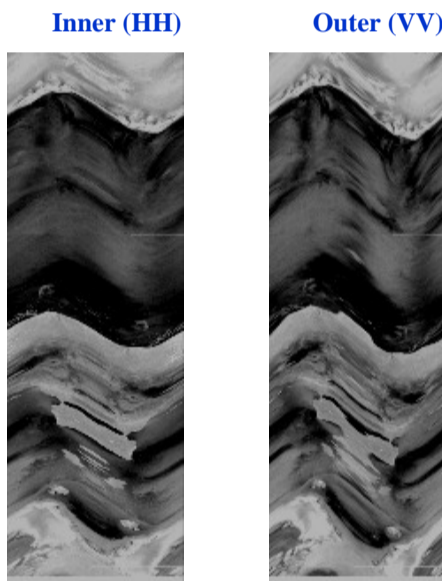
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<b>Satellite Id</b>	ScatSat-1	<b>Start Orbit</b>	12957	<b>Total Scans</b>	1017
<b>Sensor Name</b>	Scatterometer	<b>End Orbit</b>	12958	<b>No of Inner FootPrints</b>	281
<b>Processor Version</b>	v1.1.3	<b>Rev. Number</b>	12957_12958	<b>No Of Outer FootPrints</b>	282
<b>Half Orbit Direction</b>	SN	<b>Data Production Date</b>	09-03-2019	<b>No. Of Inner Slices</b>	9
<b>Equator Crossing Date</b>	08-03-2019	<b>Equator Crossing Time</b>	20:38:48.000	<b>No Of Outer Slices</b>	15

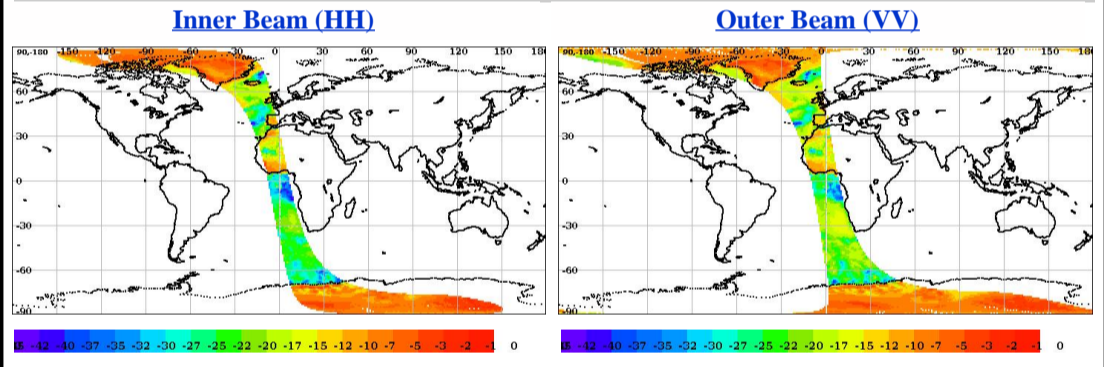
## Brightness Temperature(k) Footprint trace



## Image Snapshot for Inner & Outer Beam



## Sigma0(dB) Footprint trace



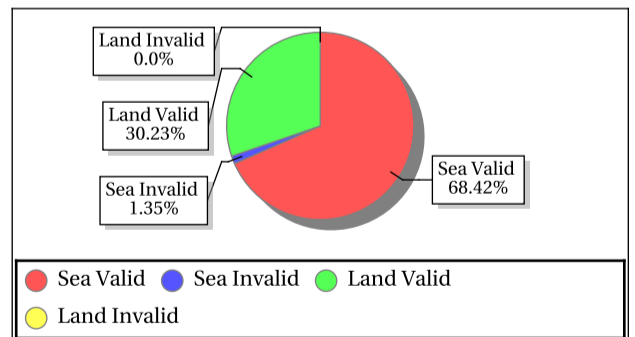
## Invalid and Poor Sigma-0 Quality Flag Statistics for Inner/Outer Slices\*

<b>Sigma-0 Flags</b>	<b>Inner Beam</b>	<b>Outer Beam</b>
<b>Invalid Sigma0(%)</b>	1.23	2.19
<b>Data Not Available From Payload (%)</b>	81.68885	45.92308
<b>Slice not within sample array limits (%)</b>	18.31	54.08
<b>C(S+N) - C(N) &lt; 0.1 (%)</b>	0.00	0.00
<b>Poor Sigma0(%)</b>	22.29	13.22
<b>Noise samples for blending Saturated</b>	1.392479	0.031826
<b>Count samp. for interpol. saturated (%)</b>	0.00	0.00
<b>Sigma0&lt;lower bound (-96dB) (%)</b>	0.0	0.0
<b>Sigma0&gt;upper bound (0 dB) (%)</b>	0.00	0.00
<b>SNR &lt;-65 dB (%)</b>	0.025292	0.058377

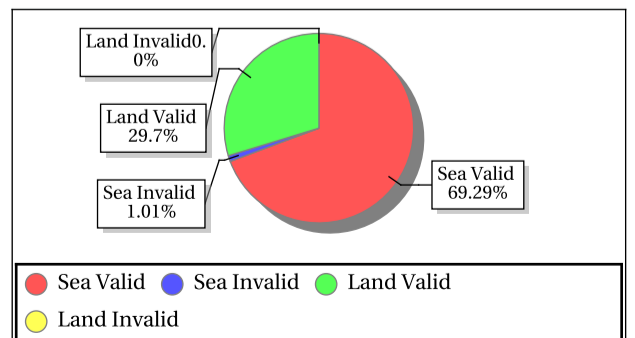
\*DP Format Document

## 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	-5.41	-5.24	-5.32	0.09	155.75	164.64	160.20	4.44
GreenLand_2	77.50	-41.50	Inner	ASC	Fore	-7.14	-5.23	-6.31	0.71	128.33	171.97	147.32	17.49
GreenLand_3	71.55	-42.45	Inner	ASC	Aft	-13.07	-10.36	-11.50	0.70	161.81	226.91	193.99	16.42
GreenLand_3	71.55	-42.45	Inner	ASC	Fore	-12.85	-10.41	-11.32	0.59	172.40	222.59	193.95	13.20
GreenLand_1	74.69	-42.50	Inner	ASC	Aft	-10.39	-8.29	-9.43	0.77	161.83	219.48	184.70	16.11
GreenLand_1	74.69	-42.50	Inner	ASC	Fore	-10.44	-7.74	-9.54	0.84	136.75	193.90	173.76	16.77
ANT_1	-75.00	121.00	Outer	ASC	Aft	-9.44	-7.34	-8.43	0.64	177.35	249.05	206.55	18.21
ANT_1	-75.00	121.00	Outer	DSC	Aft	-9.53	-9.47	-9.50	0.03	192.68	218.85	205.76	13.09
GreenLand_2	77.50	-41.50	Outer	ASC	Aft	-5.77	-4.96	-5.40	0.29	206.02	228.41	215.93	8.07
GreenLand_2	77.50	-41.50	Outer	ASC	Fore	-5.61	-4.20	-4.90	0.70	217.15	219.85	218.50	1.35
GreenLand_3	71.55	-42.45	Outer	ASC	Aft	-13.20	-11.26	-12.21	0.58	222.96	265.81	237.93	13.44
GreenLand_3	71.55	-42.45	Outer	ASC	Fore	-12.64	-10.98	-11.92	0.56	211.66	260.01	239.60	16.50
GreenLand_1	74.69	-42.50	Outer	ASC	Aft	-10.37	-10.17	-10.25	0.08	209.39	242.70	228.61	14.07
GreenLand_1	74.69	-42.50	Outer	ASC	Fore	-8.95	-8.08	-8.60	0.32	215.19	252.47	237.58	12.30



## 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	198.99	0.27	1.711	0.12	223.15	0.24	1.655	0.12	0.60	0.12	0.000	0.12	0.49	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>	-33.12	26.88	6.11	0.481	-33.62	28.31	6.94	2.699	-7.21	29.57	18.61	25.548	-6.12	29.62	18.95	28.028

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	242.06	0.26	2.098	0.09	231.08	0.23	1.795	0.09	10.18	0.09	0.017	0.09	7.42	0.09	0.031
<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>	-34.99	21.59	3.80	0.000	-34.94	21.65	4.71	0.000	-21.35	23.38	13.24	0.438	-19.97	23.41	13.05	0.530

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	49.39	49.03	0.000	57.42	58.18	57.86	0.000	Inci.(Inner)	47.10	49.90
<b>Azimuth Diff. (deg)</b>	0.0000	147.43	1.27	2.776	0.0000	295.18	1.28	3.986	Inci.(Outer)	57.30	58.90
<b>Range(Km)</b>	1017.18	1079.87	1041.21	27.417	1190.63	1268.43	1220.73	41.751	Azimuth Diff.	0.60	2.00
<b>X Factor(dbm)</b>	-91.59	-89.73	-90.30	0.000	-93.34	-91.78	-92.13	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>	18.91	10513.05	62.12	16.000	7.21	10736.99	49.87	9.000	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

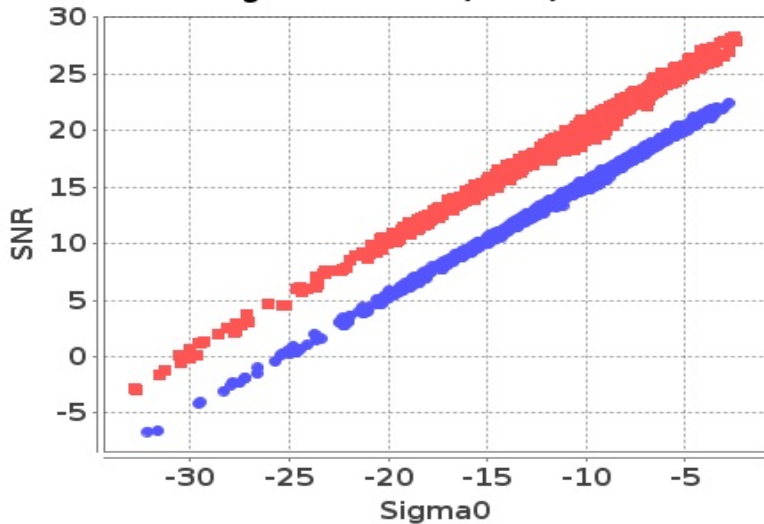
- Normal
- Deviations
- Alarming
- High Errors



## Sigma0 Behaviour (Sigma0 Vs SNR)

Footprint-Land

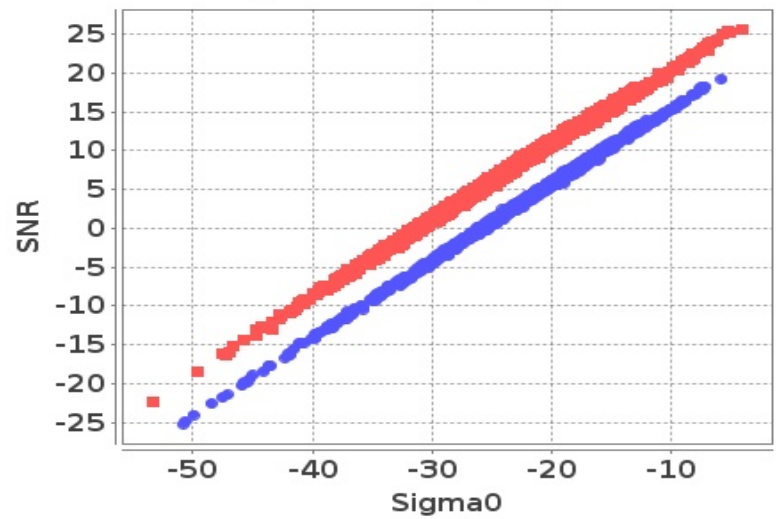
Sigma0 Vs SNR (Land)



■ Inner ● Outer

Footprint-Sea

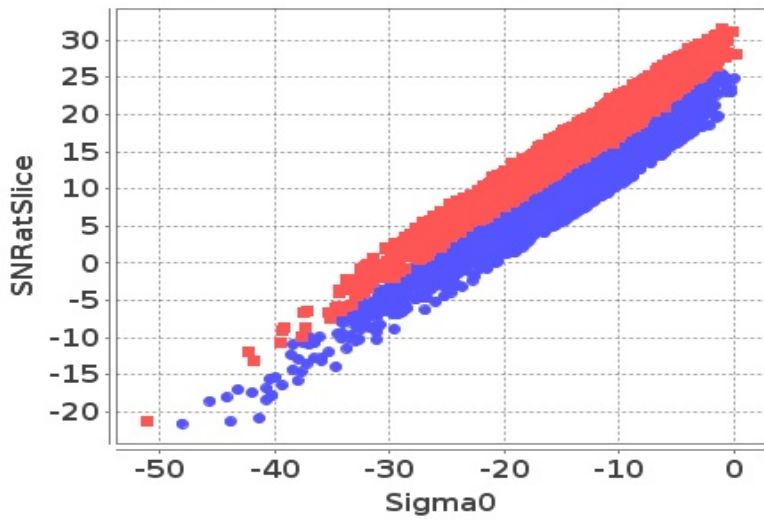
Sigma0 Vs SNR (Sea)



■ Inner ● Outer

Slice-Land

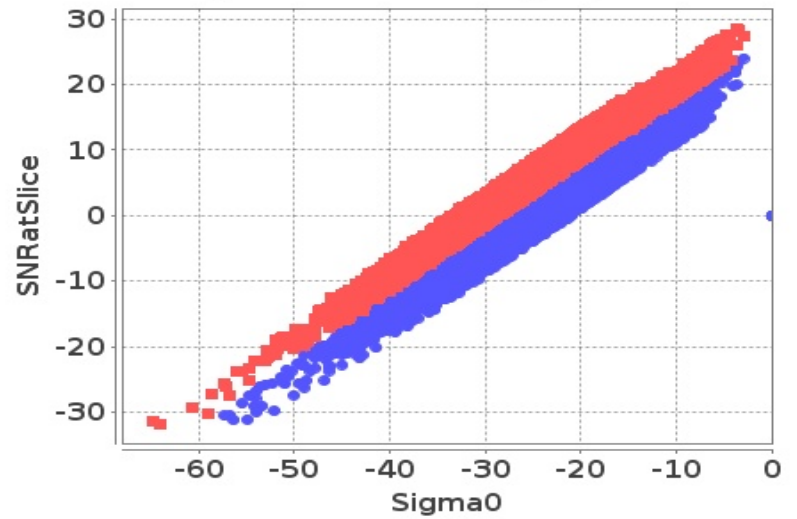
Sigma0 Vs SNRatSlice (Land)



■ Inner ● Outer

Slice-Sea

Sigma0 Vs SNRatSlice (Sea)

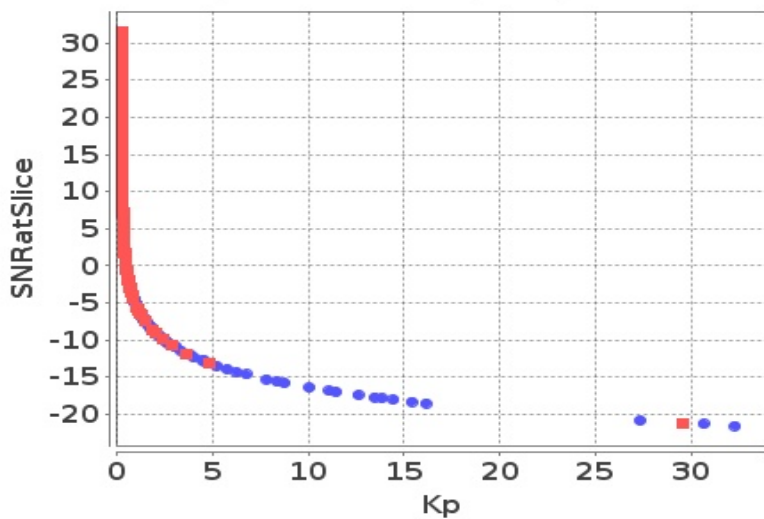


■ Inner ● Outer

## Sigma0 Behaviour (Kp Vs SNR)

Slice

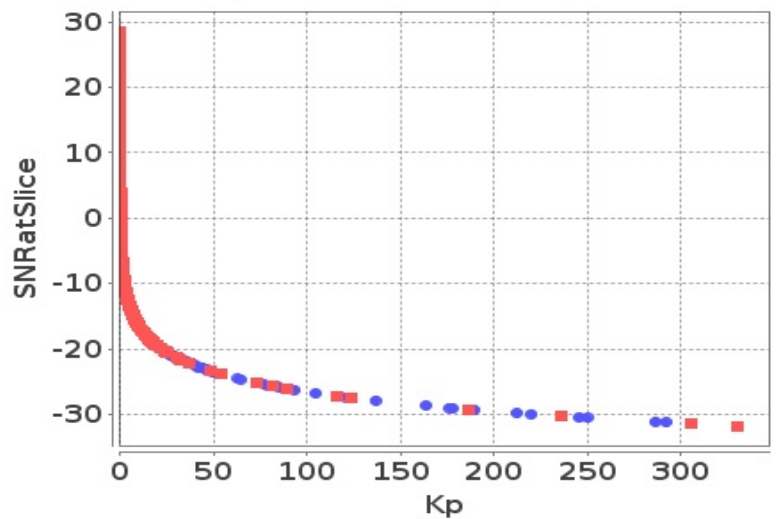
Kp Vs SNRatSlice (Land)



■ Inner ● Outer

Slice

Kp Vs SNRatSlice (Sea)

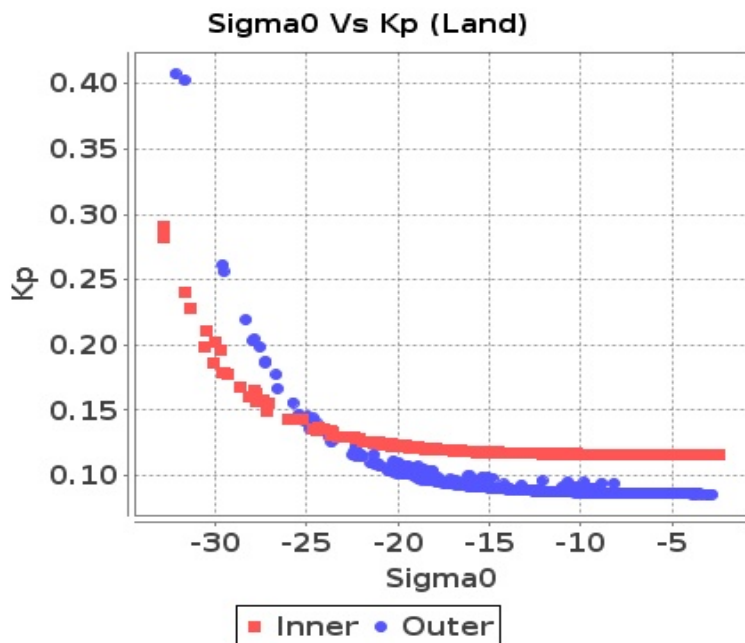


■ Inner ● Outer

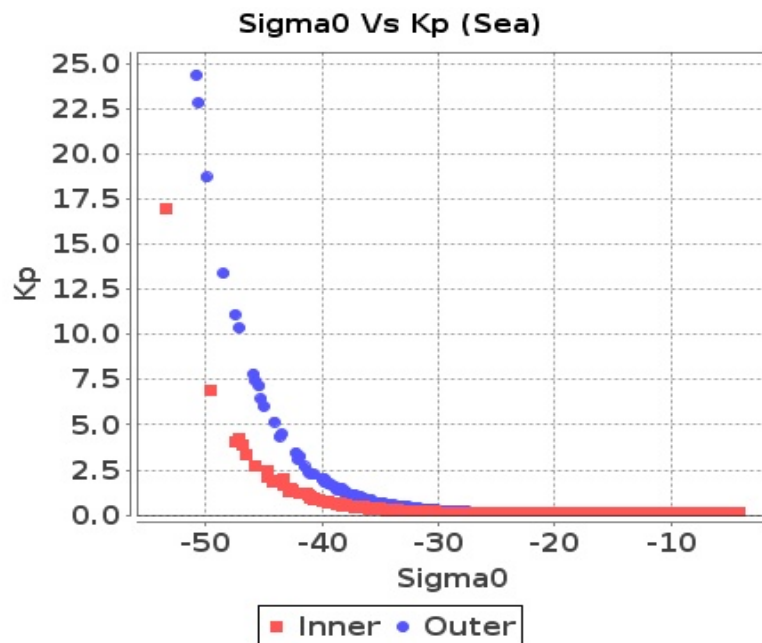


# Sigma0 Behaviour(Sigma0 Vs Kp)

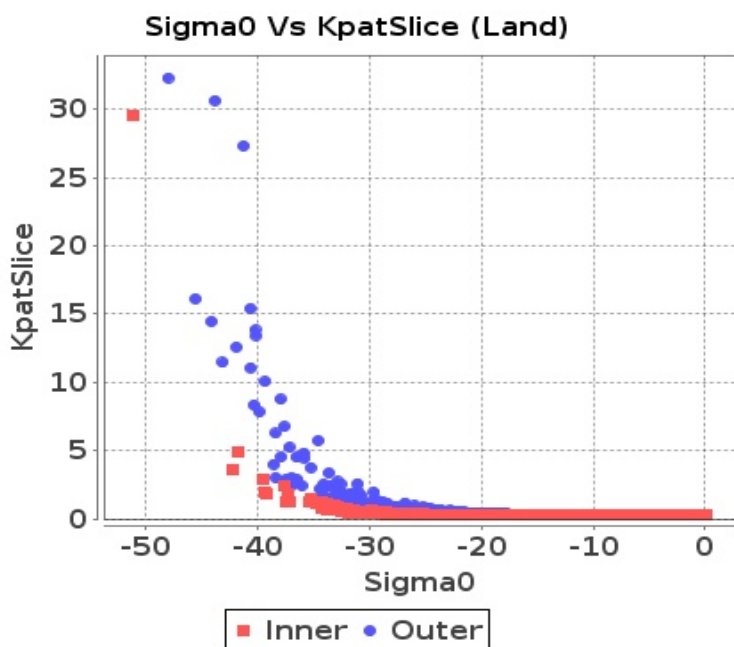
## Footprint-Land



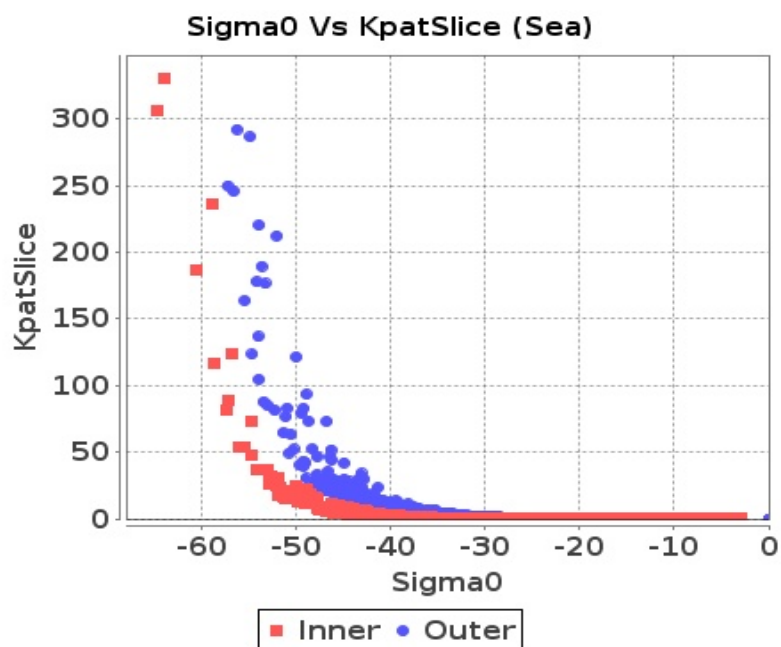
## Footprint-Sea



## Slice-Land



## Slice-Sea

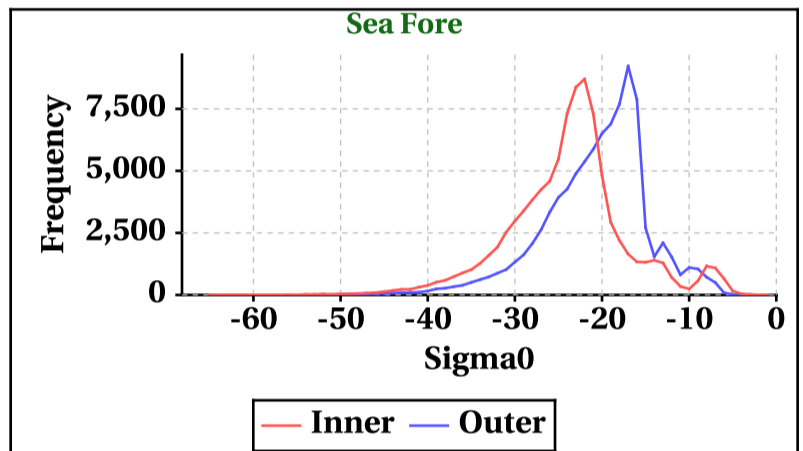
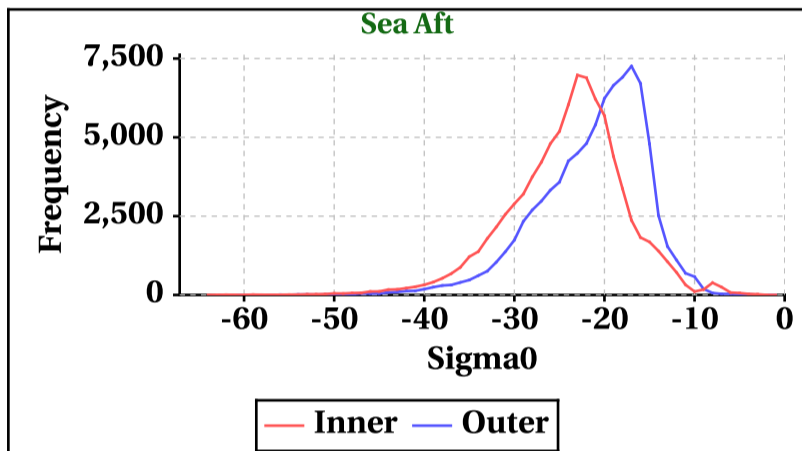
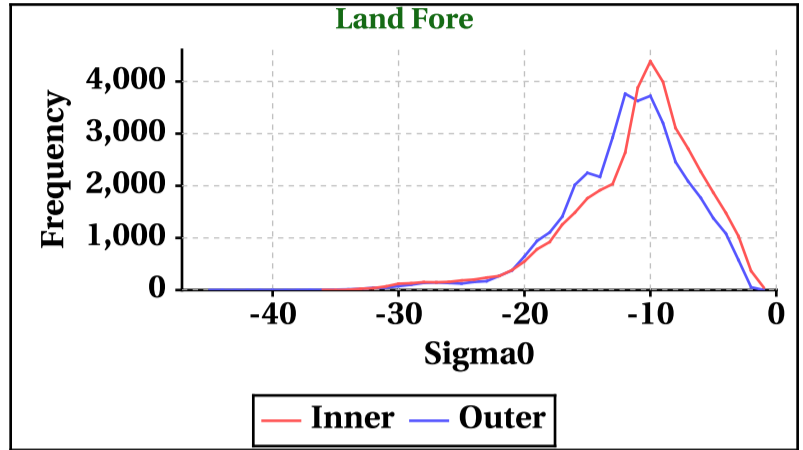
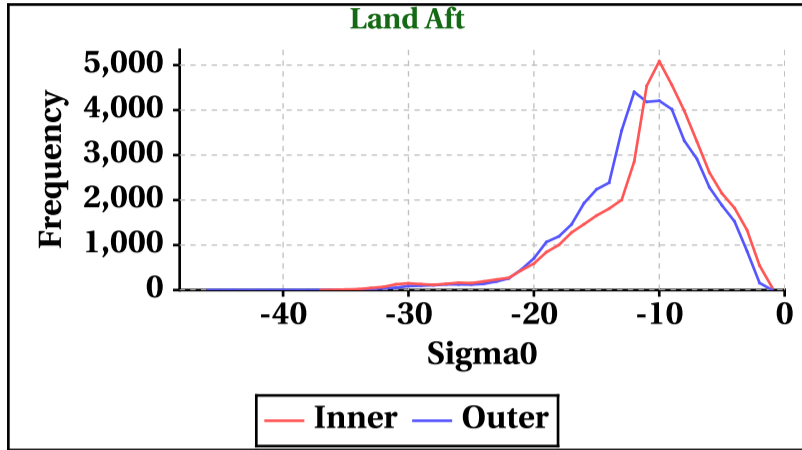


# Dynamic Range (Data Histograms)

## Sigma0(db)

Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-37	-36	-64	-65
Max	0	0	0	0

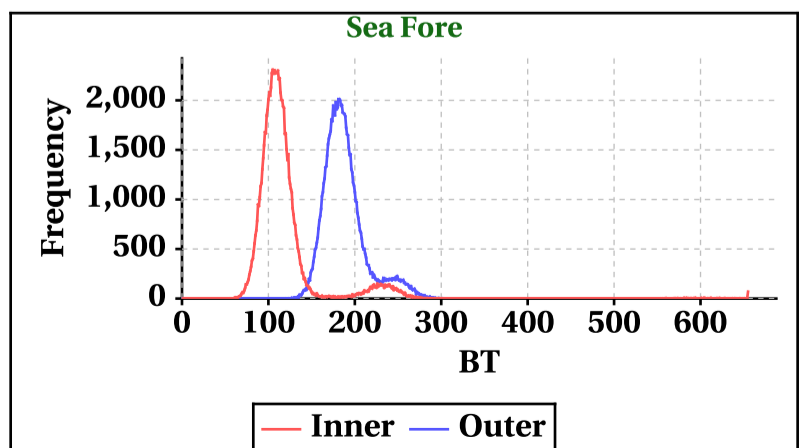
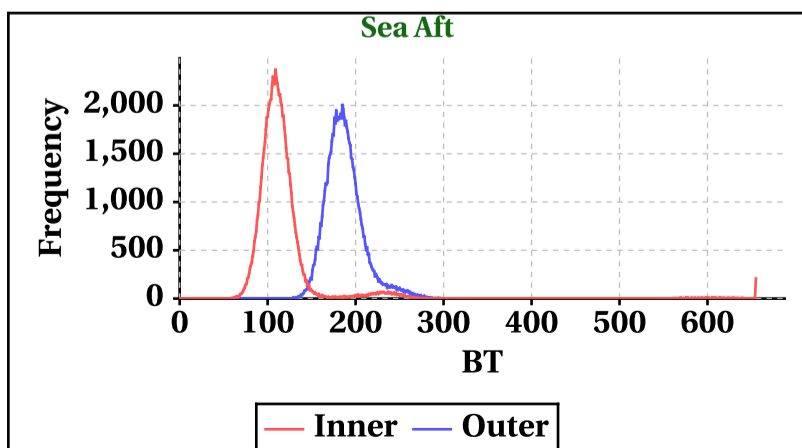
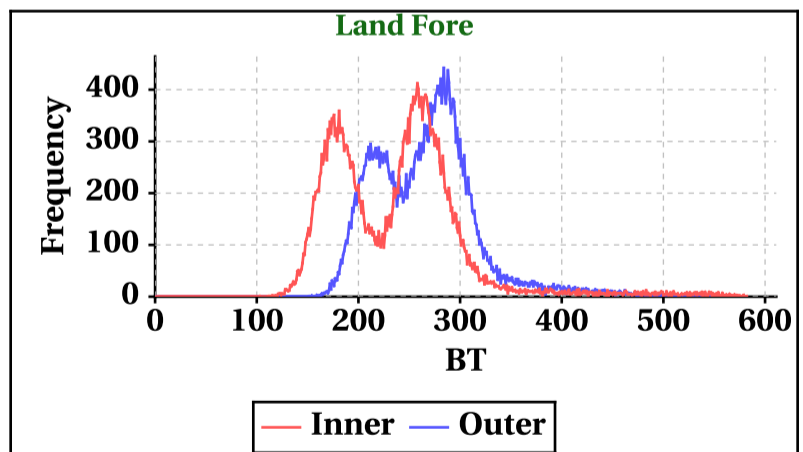
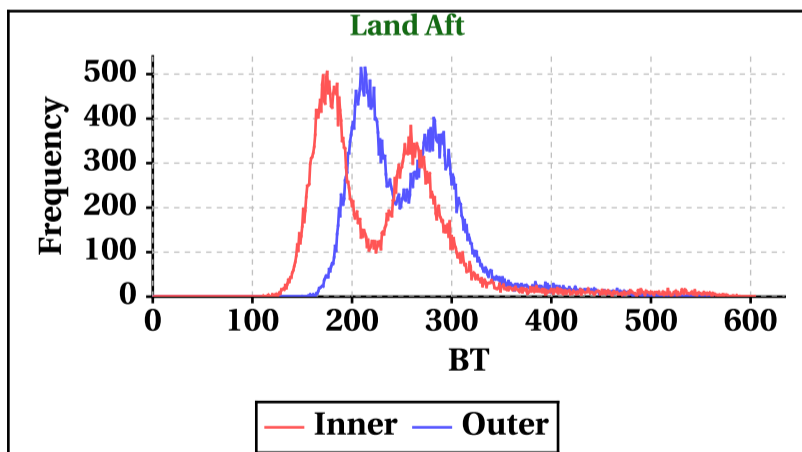
Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-46	-45	-61	-60
Max	0	0	0	0



## Brightness Temperature(K)

Inner Beam(HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	604	582	655	655

Outer Beam(VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	562	566	626	596

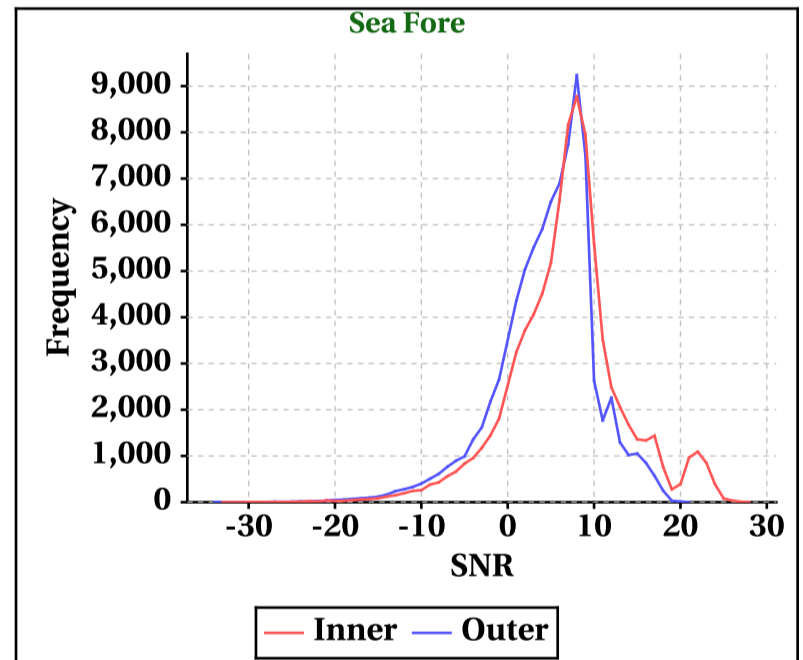
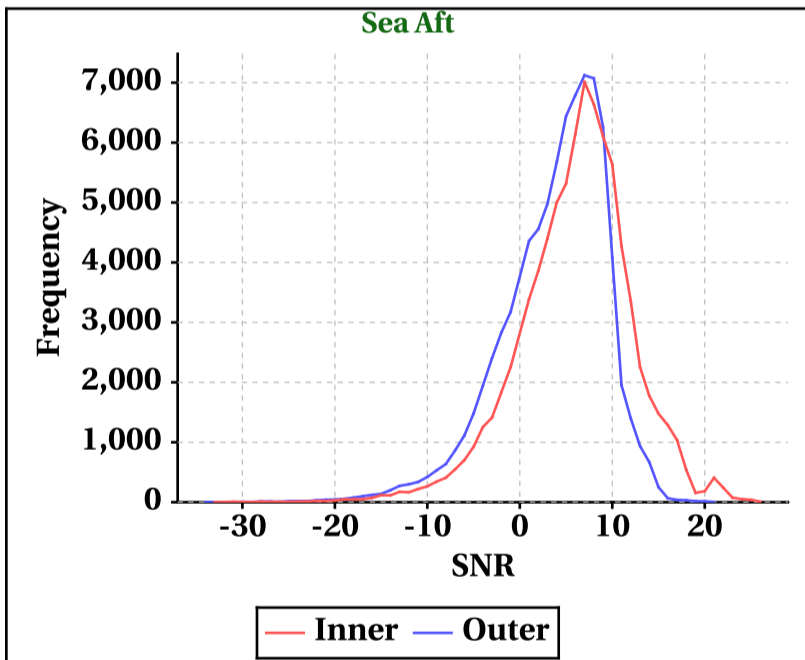
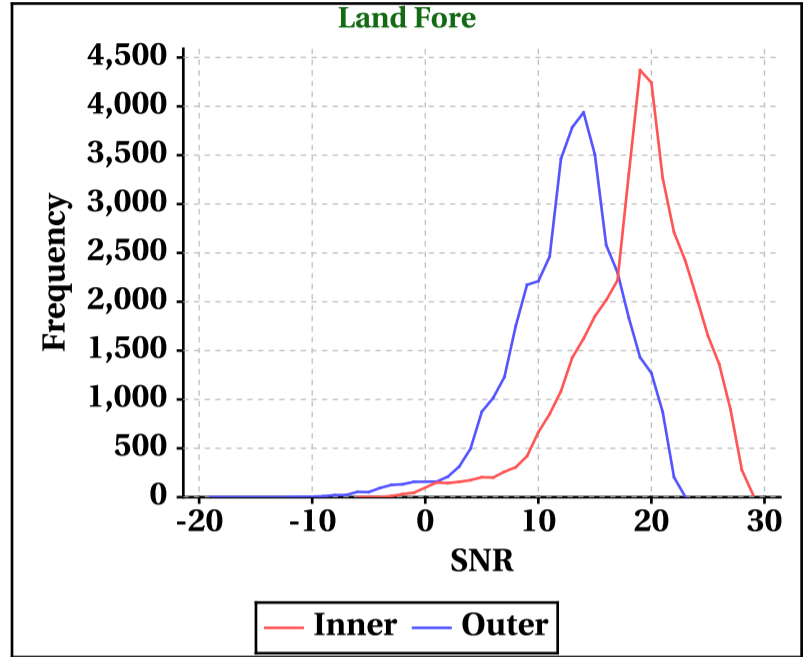
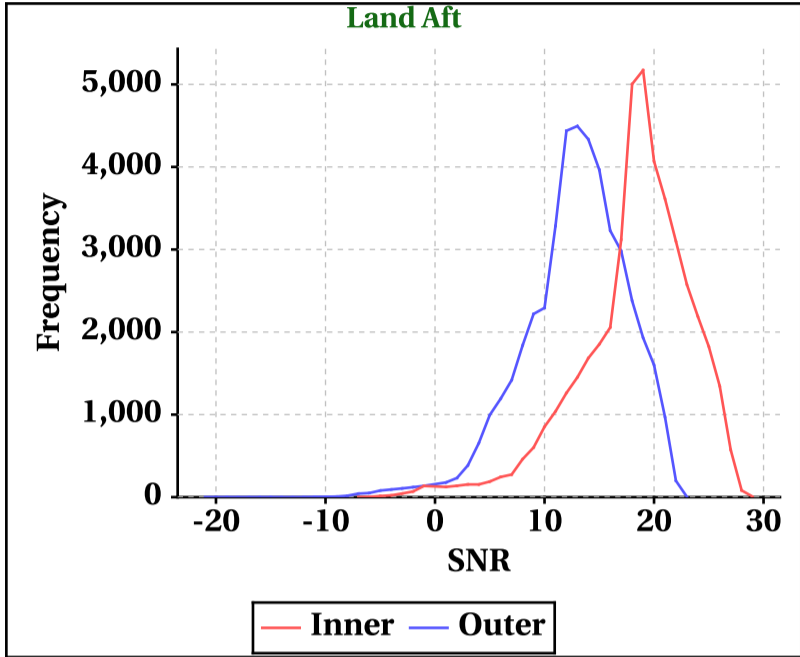


# Dynamic Range (Data Histograms)

## SNR(dBm)

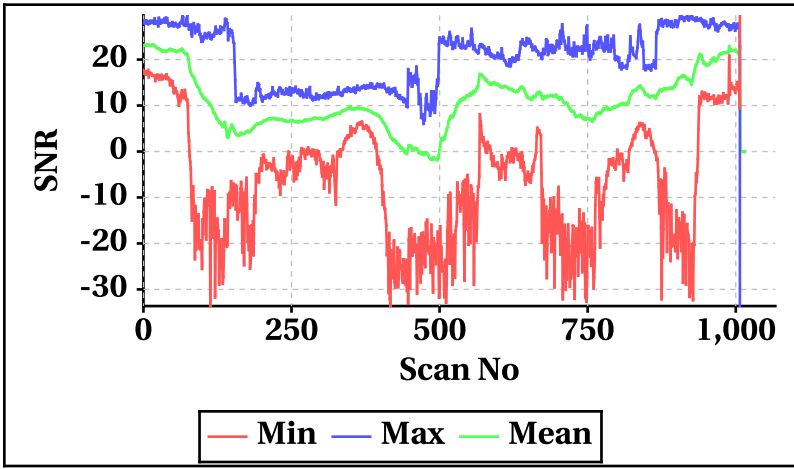
Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-7	-6	-33	-33
Max	29	29	26	28

Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-21	-19	-34	-34
Max	23	23	21	21

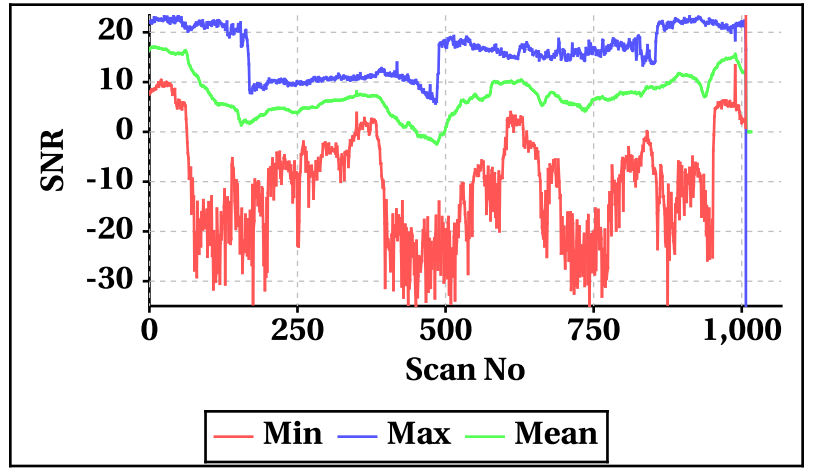


## Orbit-wise behaviour of SNR

Inner Beam (HH)

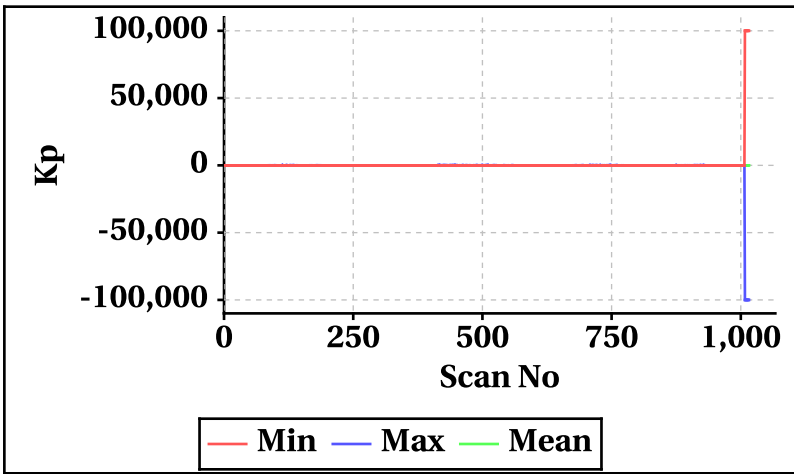


Outer Beam(VV)

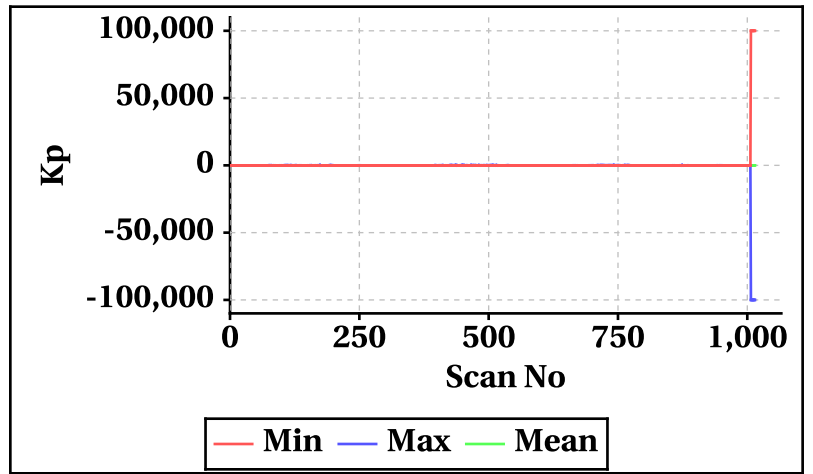


## Orbit-wise behaviour of Kp,Kpa,Kpb,Kpc

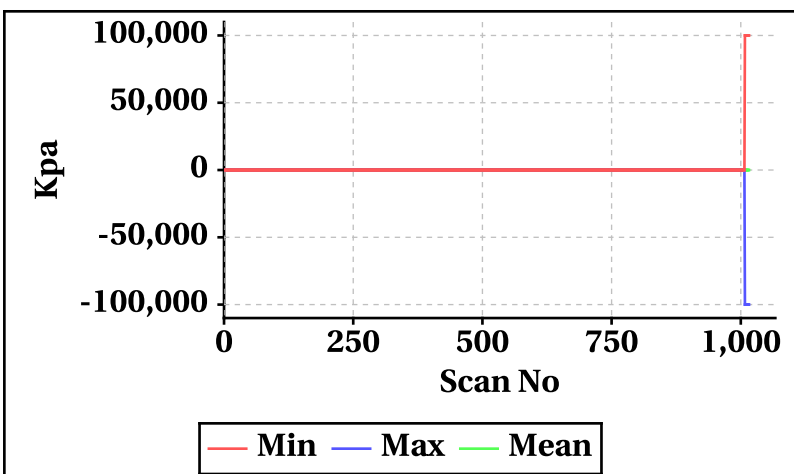
Inner Beam(HH)



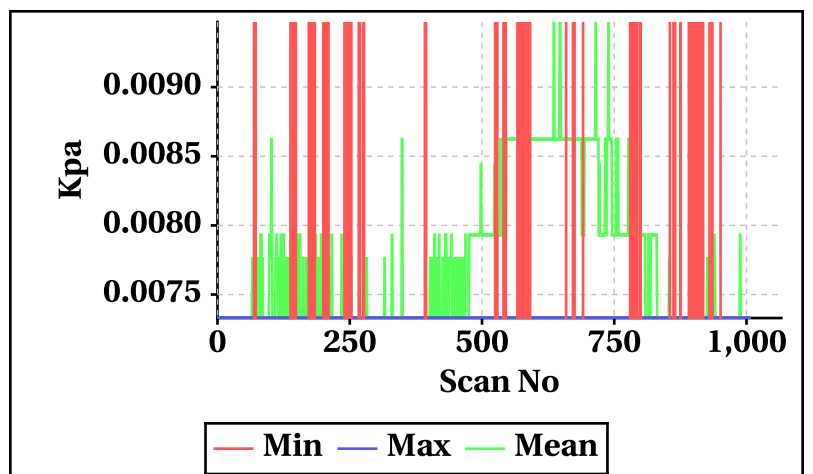
Outer Beam(VV)



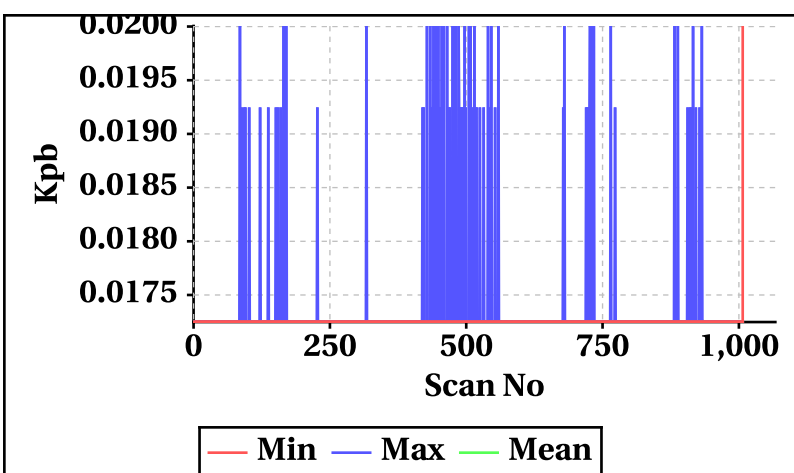
Inner Beam(HH)



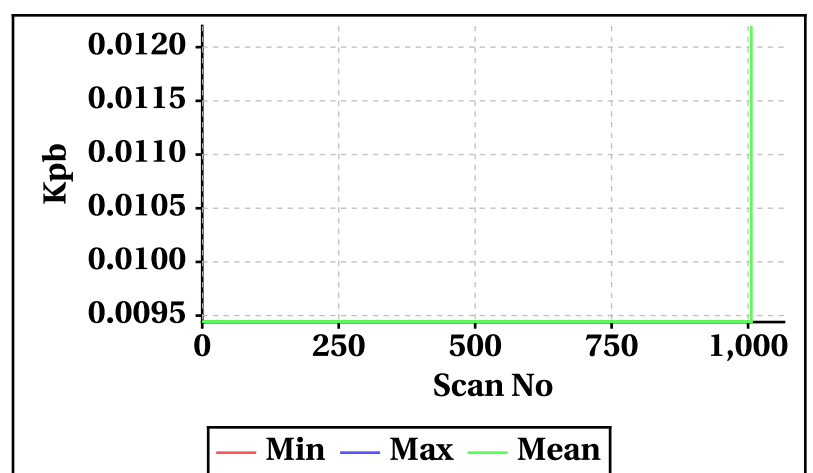
Outer Beam(VV)



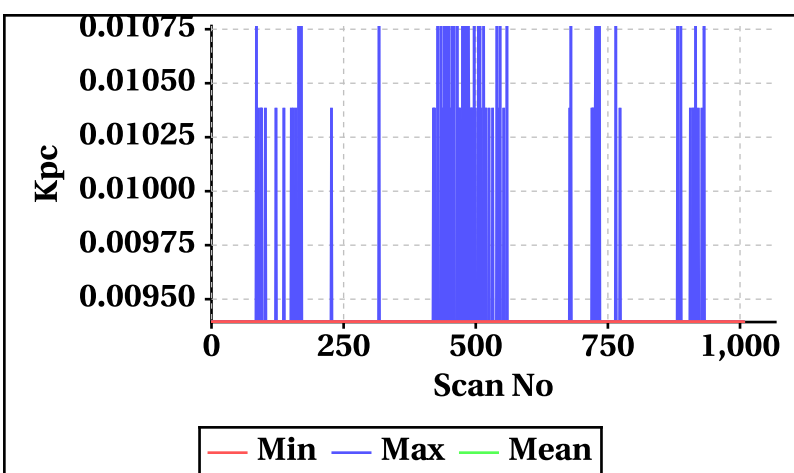
Inner Beam(HH)



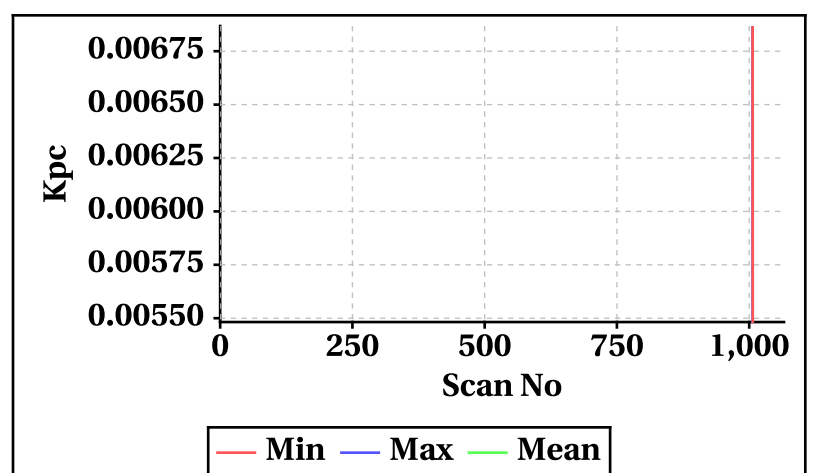
Outer Beam(VV)



Inner Beam(HH)



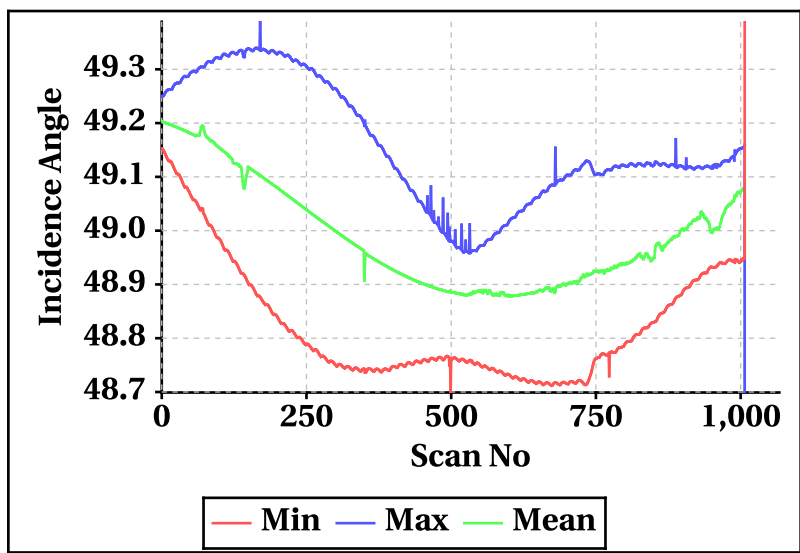
Outer Beam(VV)



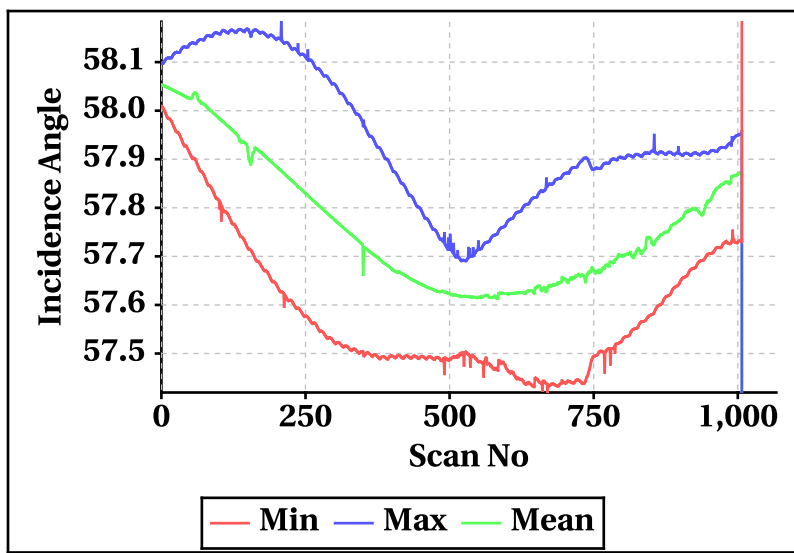


Orbit-wise behaviour of Incidence,Azimuth,Range,X-Factor

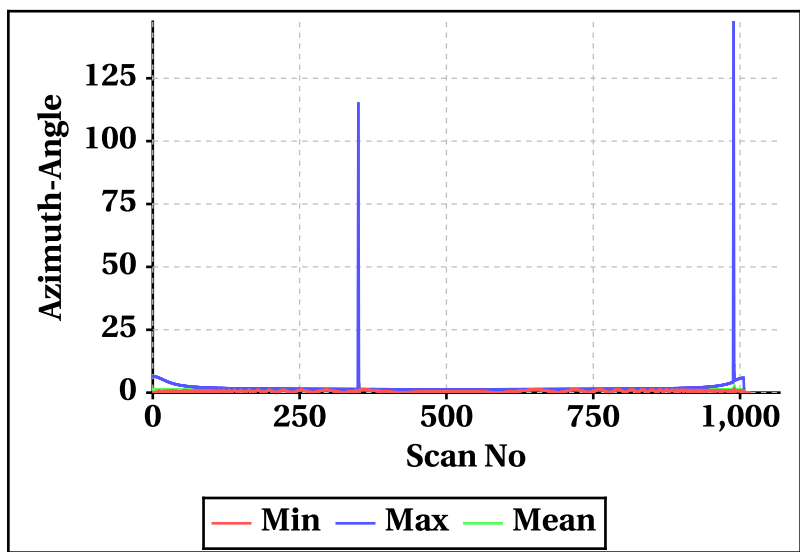
Inner Beam (HH)



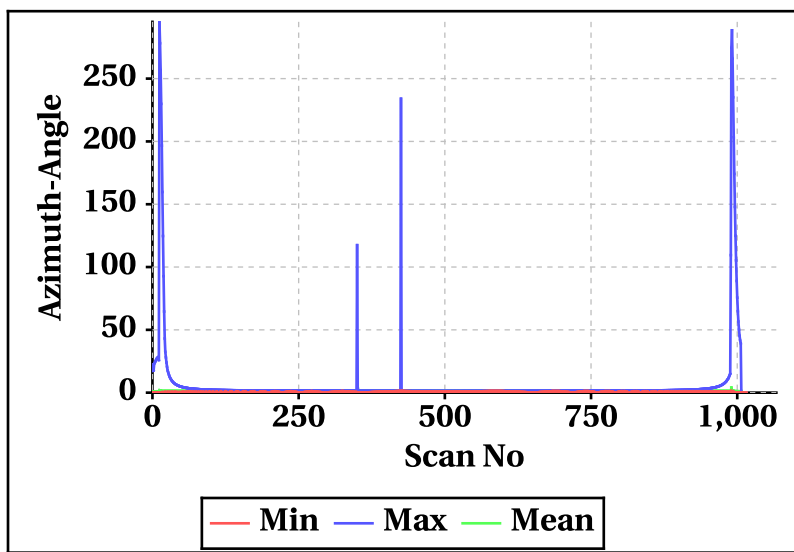
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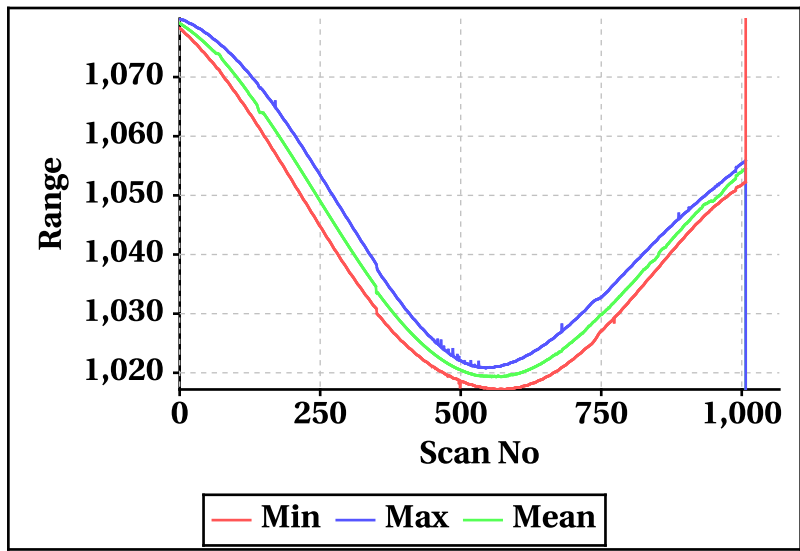
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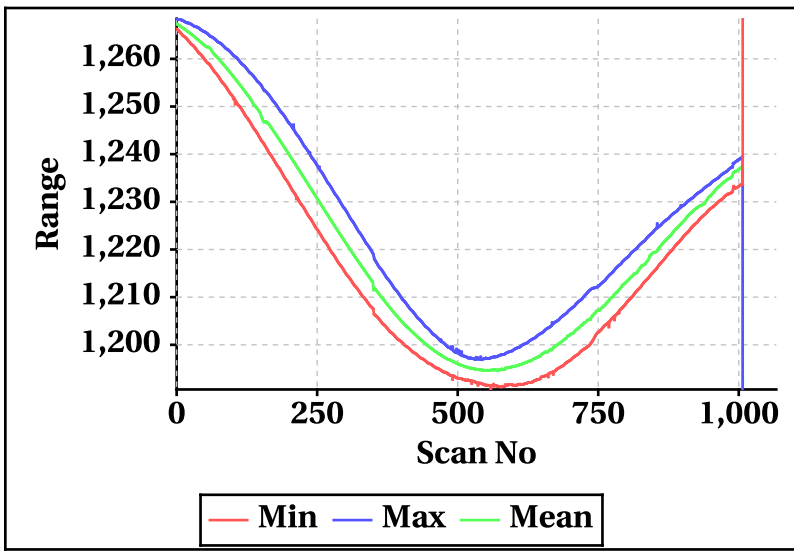
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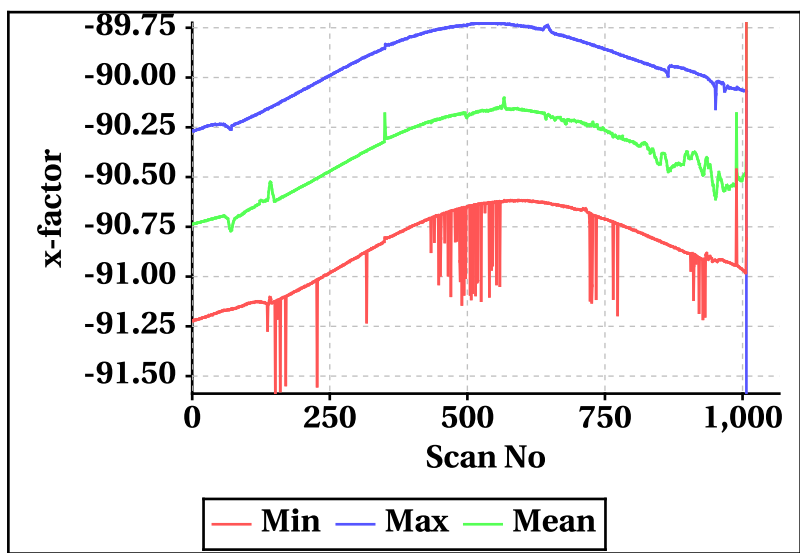
Inner Beam (HH)



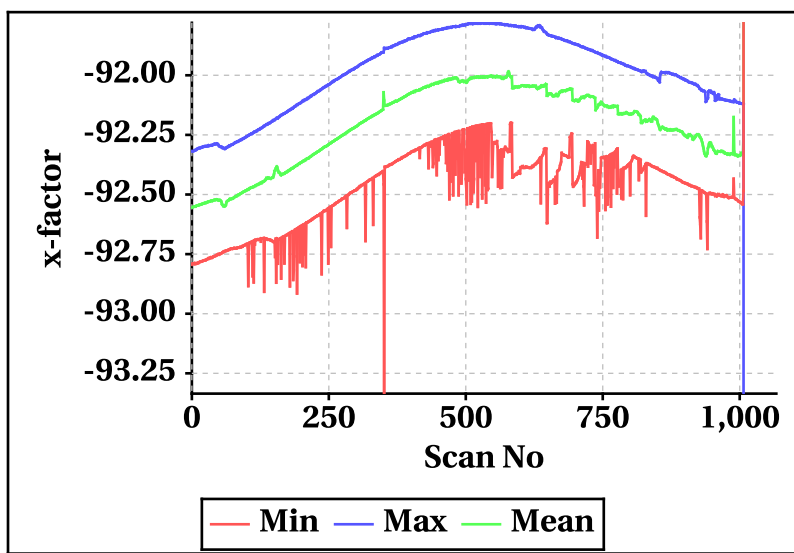
Outer Beam(VV)



Inner Beam (HH)



Outer Beam(VV)

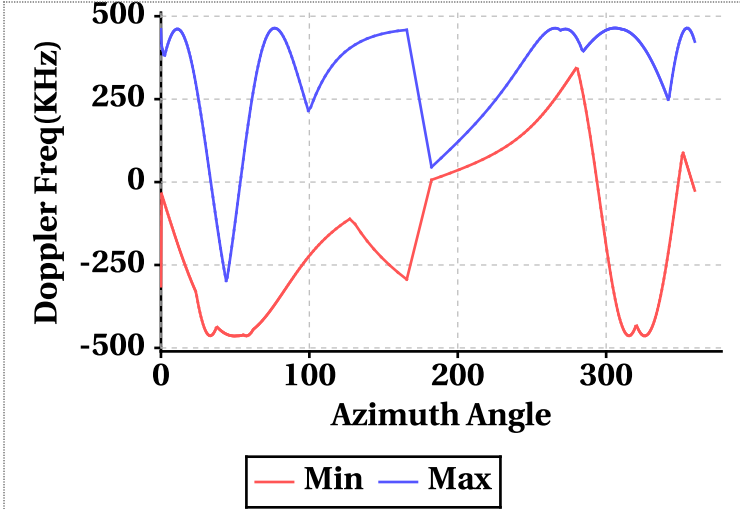


# Doppler Frequency Variation

Doppler Frequency(KHz) variation statistics Over the half Orbit

	Inner Beam (HH)	Outer Beam (VV)
Min	-464.02	-520.04
Max	464.30	520.28

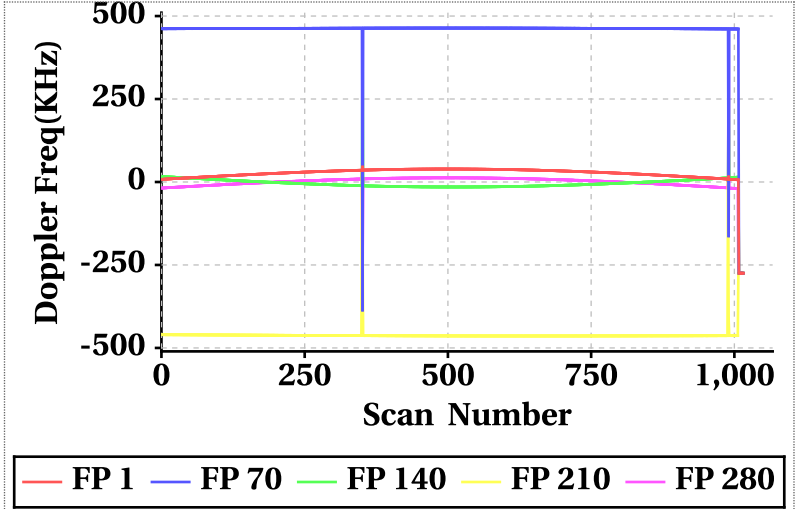
Footprint wise Doppler frequency variation Inner Beam (HH)



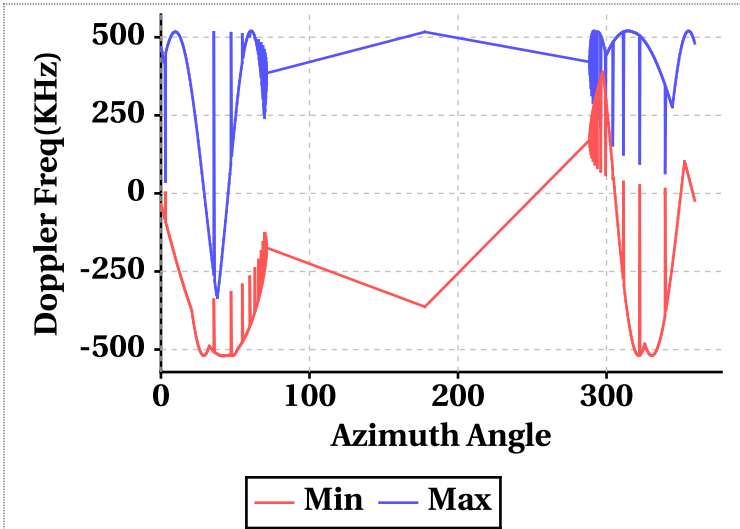
Doppler Frequency(KHz) variation

Doppler_FP	Inner Beam (HH)			Outer Beam (VV)		
	Min	Max	Mean	Min	Max	Mean
Doppler_1	-274.72	45.22	24.92	-312.32	38.06	22.26
Doppler_70	-386.10	463.80	454.88	-424.28	519.96	509.86
Doppler_140	-274.72	433.82	-5.68	-312.32	480.44	-12.21
Doppler_210	-463.98	30.50	-459.72	-519.86	34.16	-515.26
Doppler_280	-313.96	460.54	-1.37	-363.00	516.96	4.20

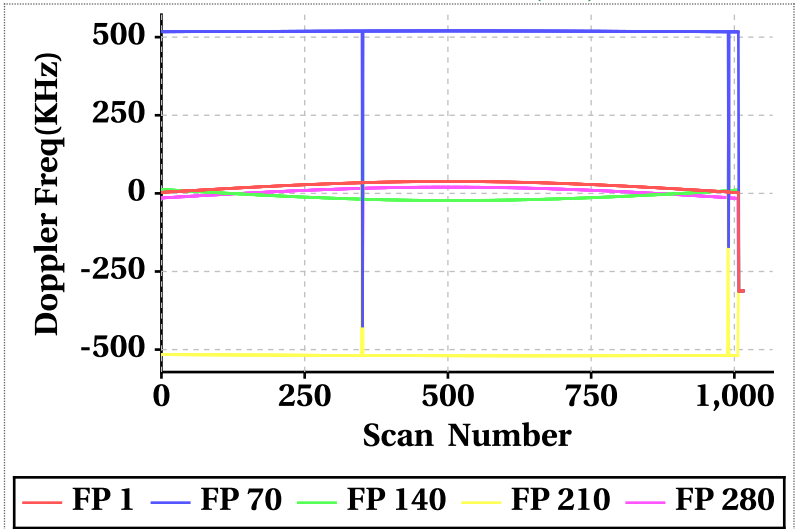
Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Inner Beam (HH)



Footprint wise Doppler frequency variation Outer Beam (VV)

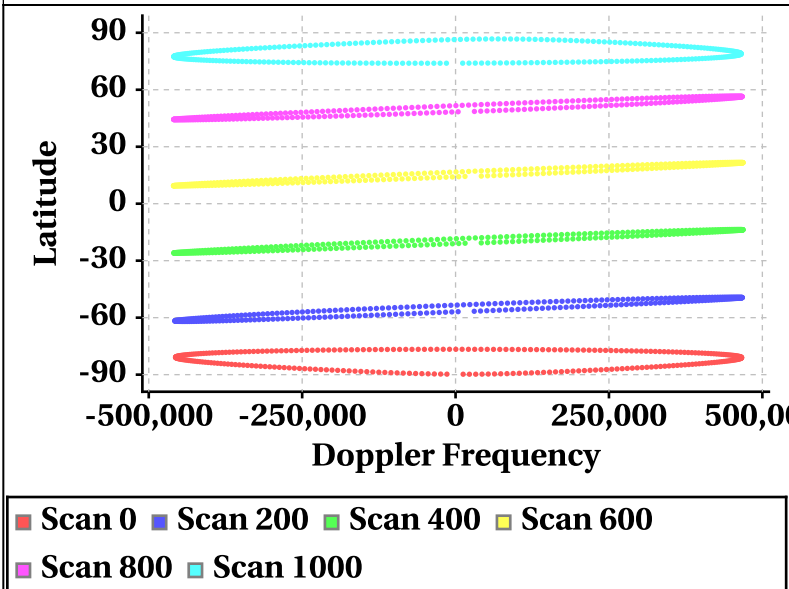


Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Outer Beam (VV)

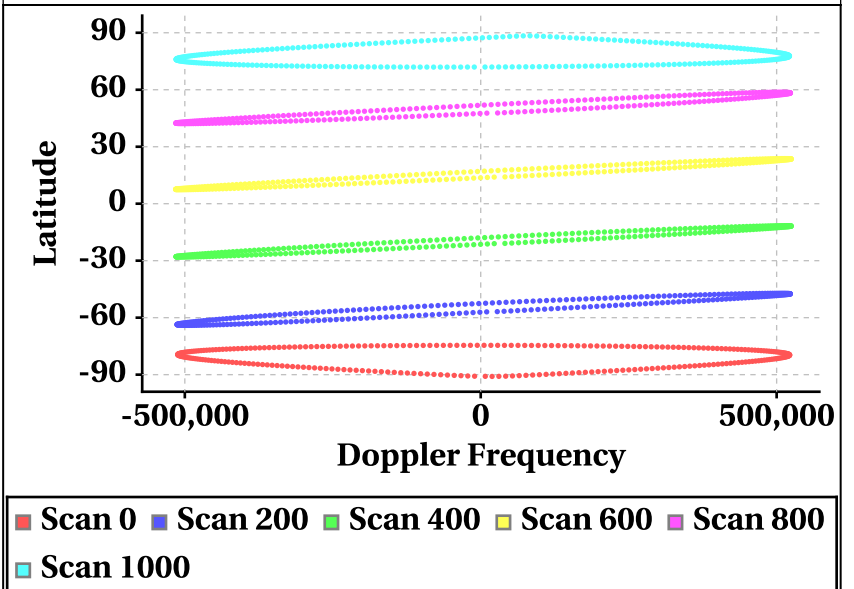


# Latitude Vs Doppler Frequency

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



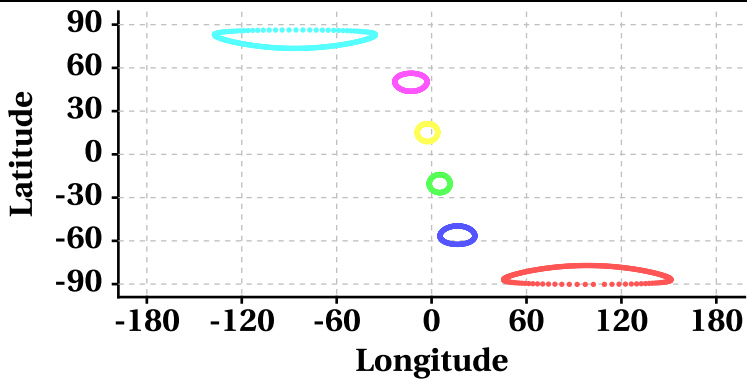
Doppler Frequency at Scan Interval of 200 [Outer Beam(VV)]



# Parameter as a function of Latitude

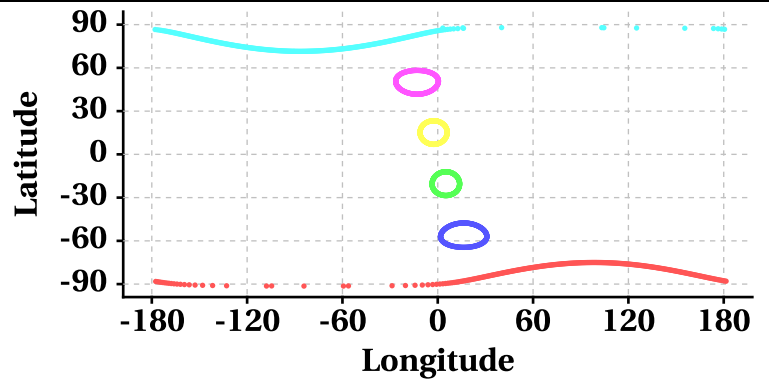
## Latitude Vs Longitude

Scan Trace [Inner Beam(HH)]



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

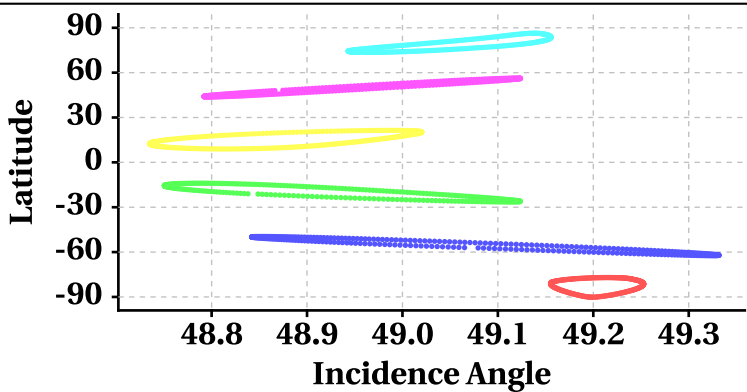
Scan Trace [Outer Beam (VV)]



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

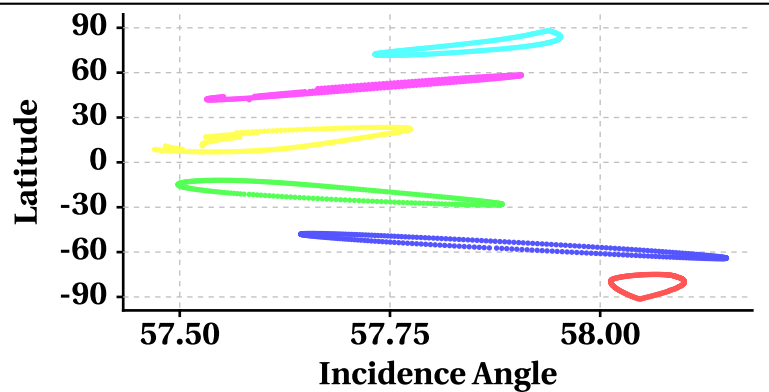
## Latitude Vs Incidence Angle

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



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

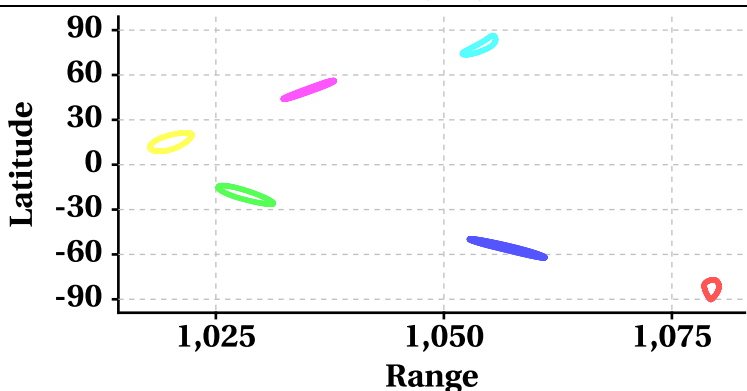
Incidence Angle at Scan Interval of 200 [Outer Beam (VV)]



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

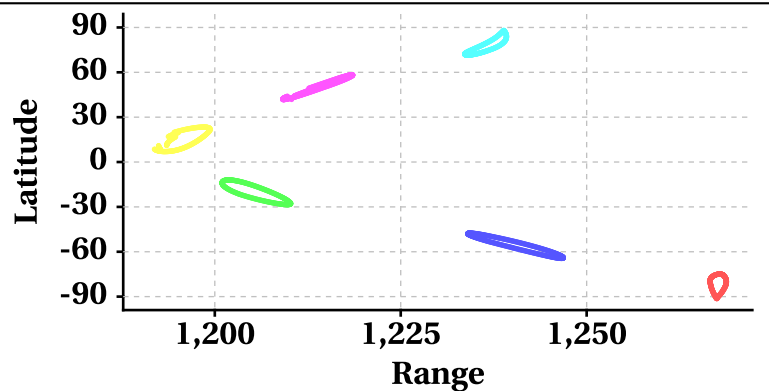
## Latitude Vs Range

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

