

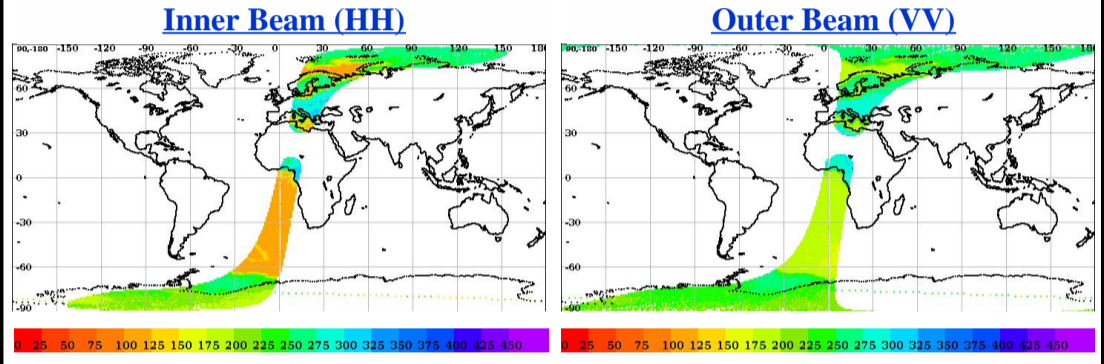
# SCATSAT-1 Scatterometer Level-1B Data Quality Evaluation Report

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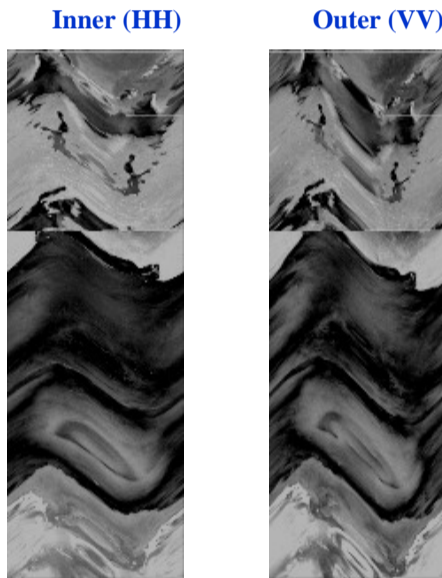
- Half-Orbit Coverage using BT & Sigma-0
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<b>Satellite Id</b>	ScatSat-1	<b>Start Orbit</b>	19272	<b>Total Scans</b>	848
<b>Sensor Name</b>	Scatterometer	<b>End Orbit</b>	19273	<b>No of Inner FootPrints</b>	281
<b>Processor Version</b>	v1.1.4	<b>Rev. Number</b>	19272_19273	<b>No Of Outer FootPrints</b>	282
<b>Half Orbit Direction</b>	NS	<b>Data Production Date</b>	17-05-2020	<b>No. Of Inner Slices</b>	9
<b>Equator Crossing Date</b>	17-05-2020	<b>Equator Crossing Time</b>	07:54:29.000	<b>No Of Outer Slices</b>	15

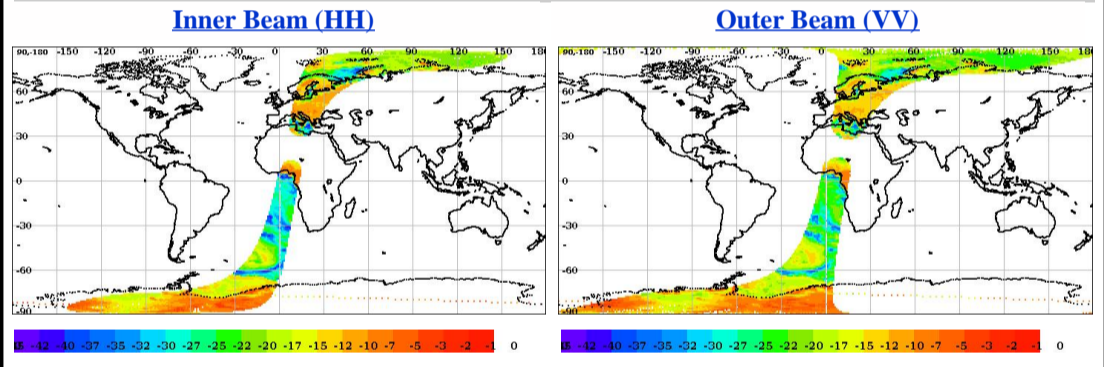
## Brightness Temperature(k) Footprint trace



## Image Snapshot for Inner & Outer Beam



## Sigma0(dB) Footprint trace



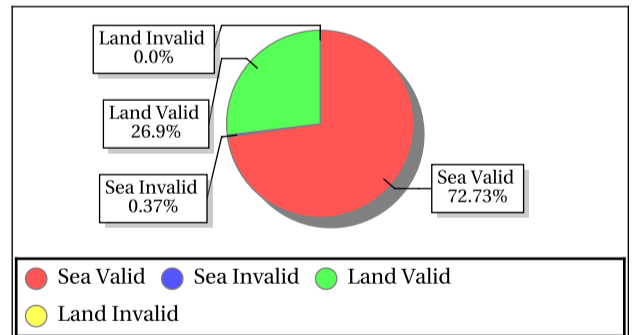
## Invalid and Poor Sigma-0 Quality Flag Statistics for Inner/Outer Slices\*

Sigma-0 Flags	Inner Beam	Outer Beam
<b>Invalid Sigma0(%)</b>	0.38	0.38
Data Not Available From Payload (%)	99.65205	99.59199
Slice not within sample array limits (%)	0.35	0.41
C(S+N) - C(N) < 0.1 (%)	0.00	0.00
<b>Poor Sigma0(%)</b>	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 (%)	0.048895	0.09845

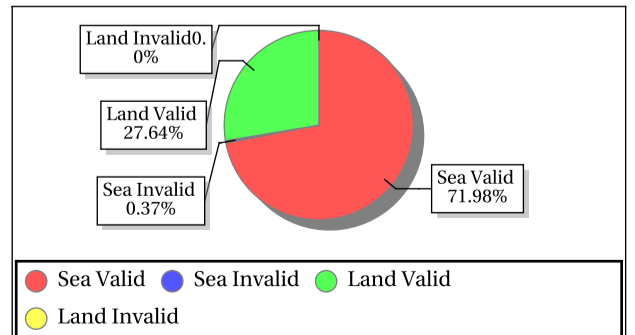
\*DP Format Document

## Sigma-0 Quality Flag Statistics for Inner/Outer Footprints

### Inner Beam (HH)



### Outer Beam (VV)



## 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	306.33	0.38	3.441	0.12	290.35	0.36	3.049	0.12	0.33	0.12	0.000	0.12	0.16	0.12	0.000
<b>Kpa</b>	0.01	0.02	0.01	0.000	0.01	0.03	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	0.04	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	0.02	0.01	0.000	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000
<b>SNR</b>	-35.00	22.42	4.53	0.005	-34.77	22.80	4.52	0.008	-3.84	28.34	18.34	7.751	2.64	29.87	18.76	13.212

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	214.96	0.32	2.775	0.09	223.32	0.31	2.982	0.09	0.22	0.09	0.000	0.09	0.26	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	0.02	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>	-34.63	19.21	2.16	0.000	-34.79	18.28	1.99	0.000	-2.90	22.09	12.45	0.003	-4.06	22.76	13.01	0.009

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	49.47	49.04	0.000	57.35	58.27	57.94	0.000	Inci.(Inner)	47.10	49.90
<b>Azimuth Diff. (deg)</b>	0.0000	222.33	1.28	3.544	0.0000	284.78	1.27	5.085	Inci.(Outer)	57.30	58.90
<b>Range(Km)</b>	1040.58	1082.02	1060.69	0.000	1213.62	1271.03	1243.69	0.000	Azimuth Diff.	0.60	2.00
<b>X Factor(dbm)</b>	-93.53	-89.73	-90.32	0.000	-95.08	-91.77	-92.04	0.000	Range(Inner)	1025.00	1095.70
<b>Across Distance (Km)</b>	15.93	16.49	16.08	0.000	21.03	22.75	21.19	2.000	Range(Outer)	1210.00	1280.00
<b>Along Distance (Km)</b>	18.61	10430.03	79.96	11.000	18.23	10503.46	80.56	11.000	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

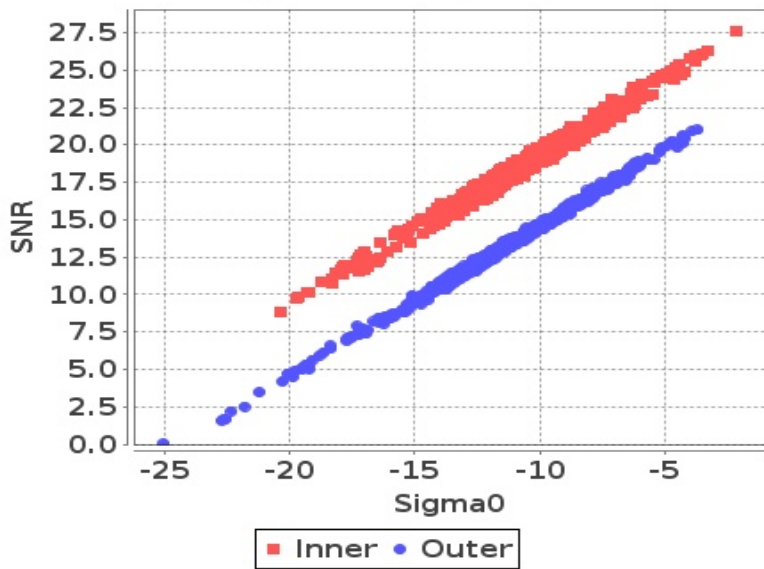
- Normal
- Deviations
- Alarming
- High Errors



## Sigma0 Behaviour (Sigma0 Vs SNR)

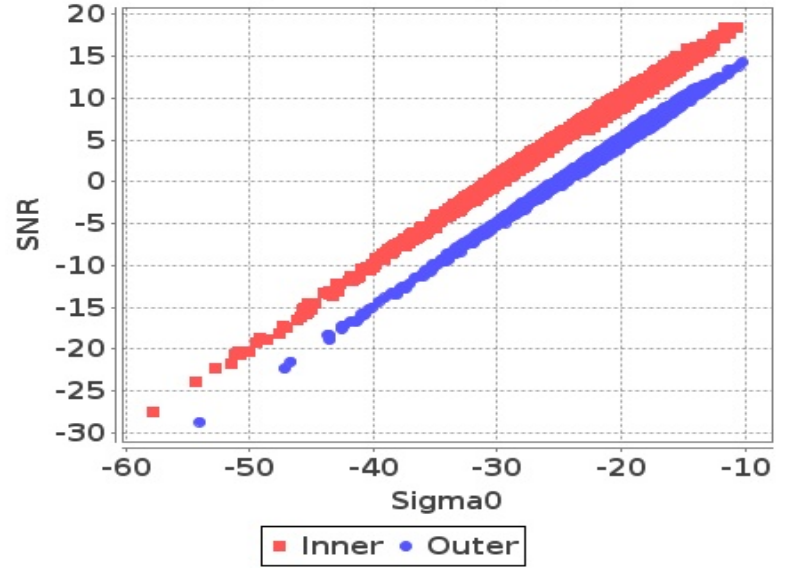
Footprint-Land

Sigma0 Vs SNR (Land)



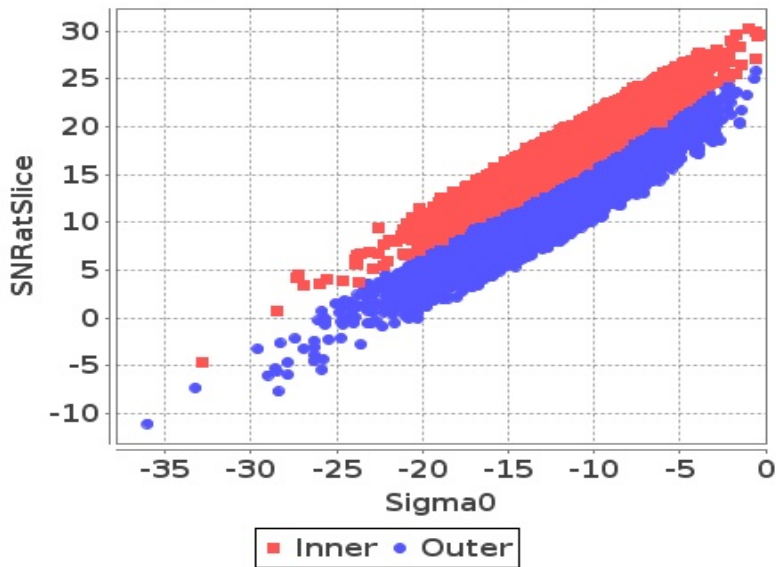
Footprint-Sea

Sigma0 Vs SNR (Sea)



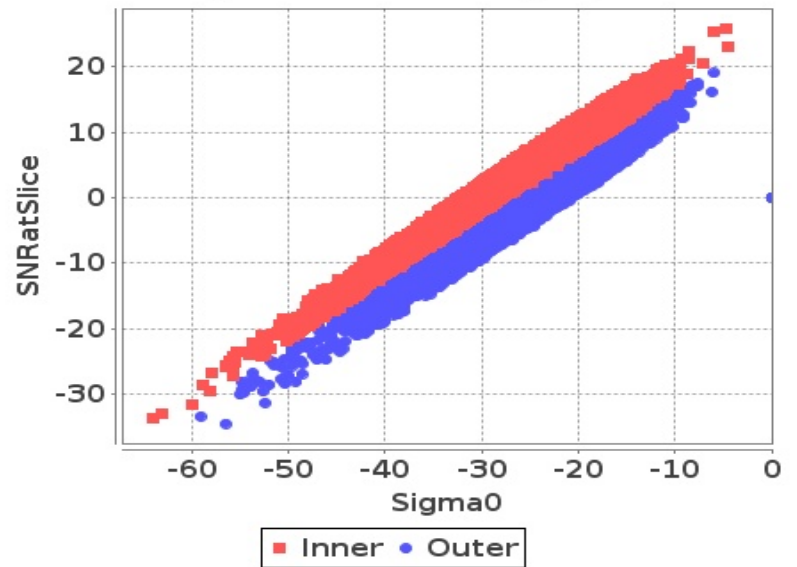
Slice-Land

Sigma0 Vs SNRatSlice (Land)



Slice-Sea

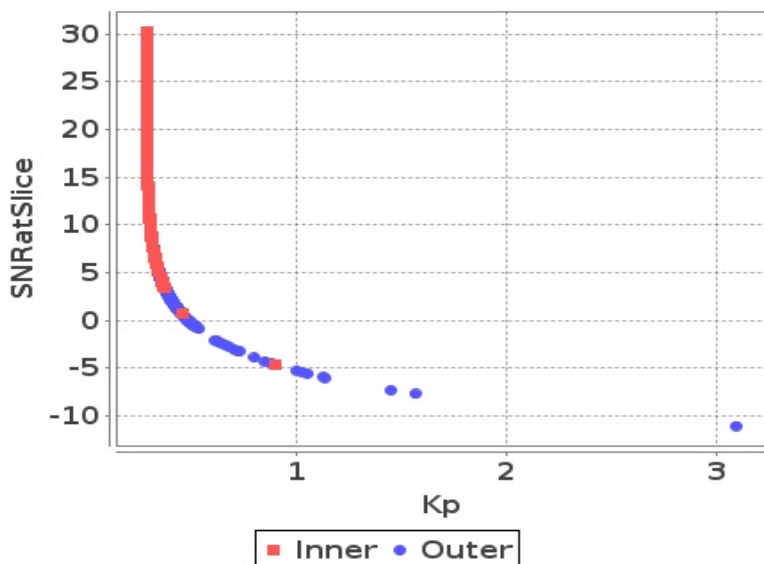
Sigma0 Vs SNRatSlice (Sea)



## Sigma0 Behaviour (Kp Vs SNR)

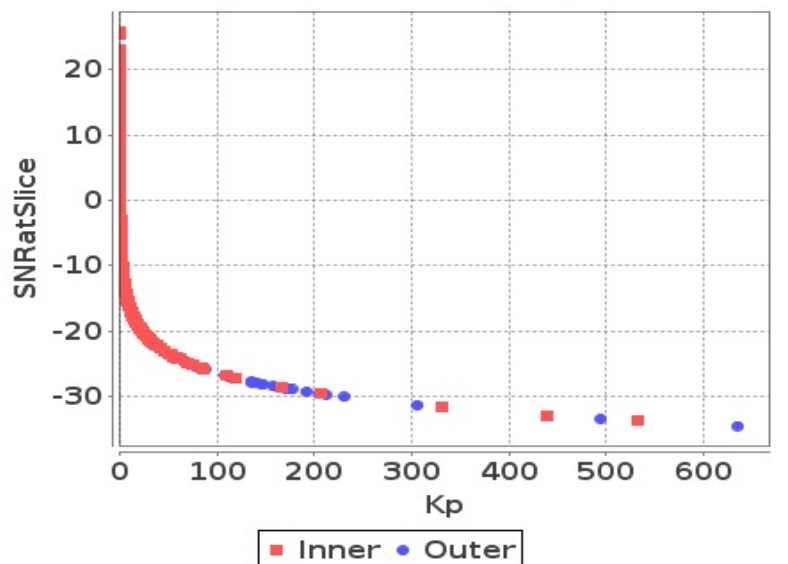
Slice

Kp Vs SNRatSlice (Land)



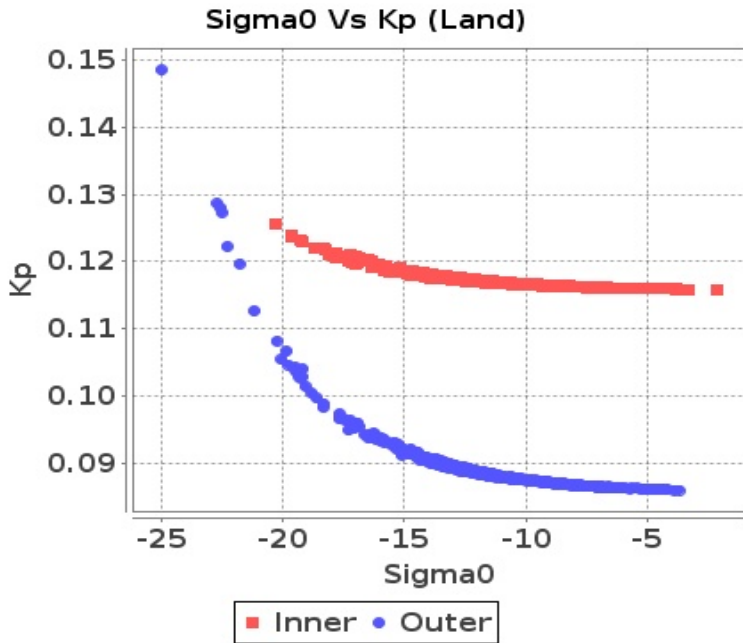
Slice

Kp Vs SNRatSlice (Sea)

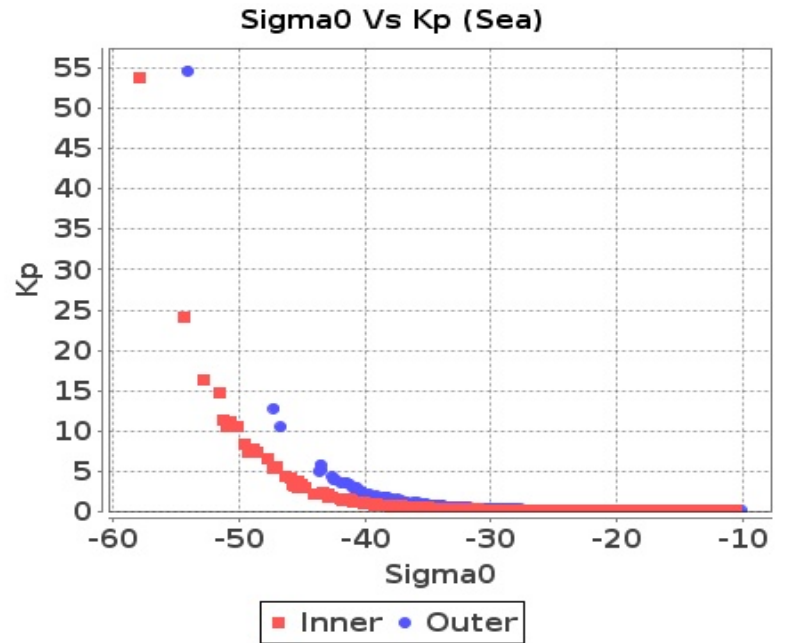


# Sigma0 Behaviour(Sigma0 Vs Kp)

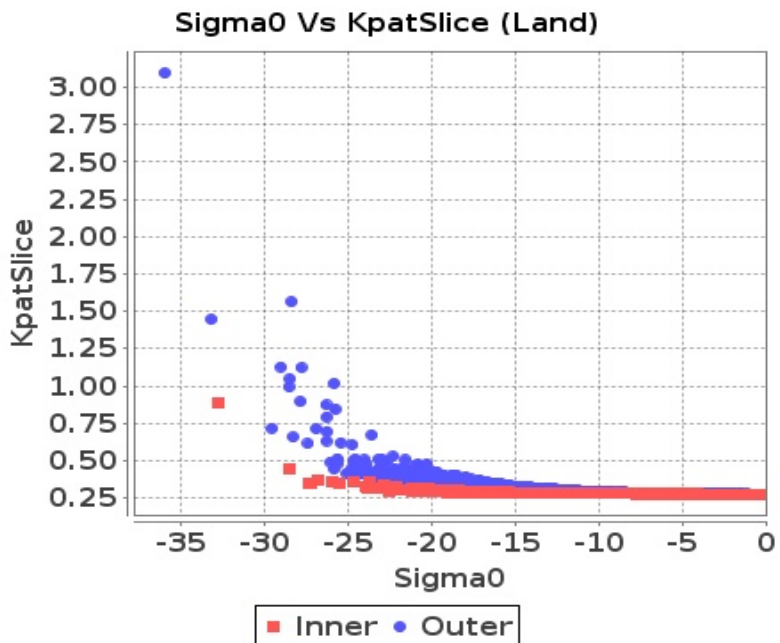
## Footprint-Land



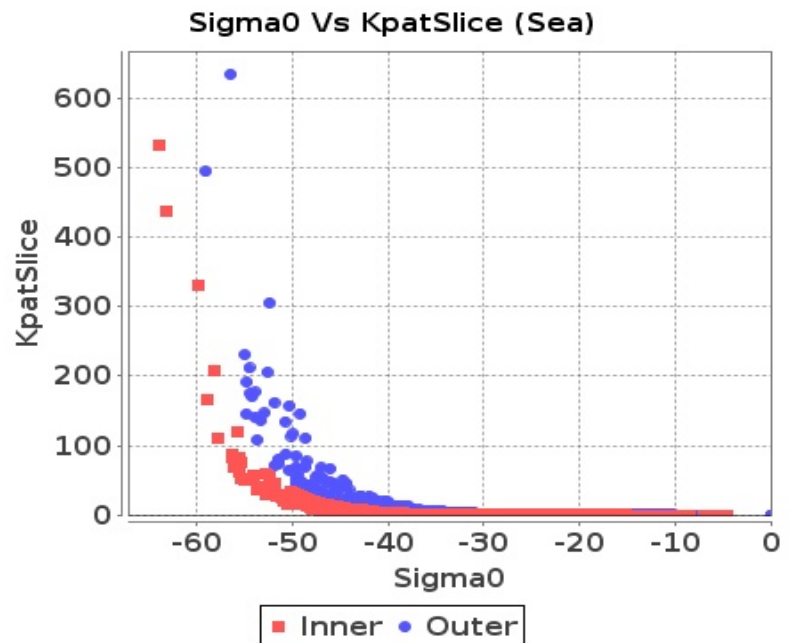
## Footprint-Sea



## Slice-Land



## Slice-Sea



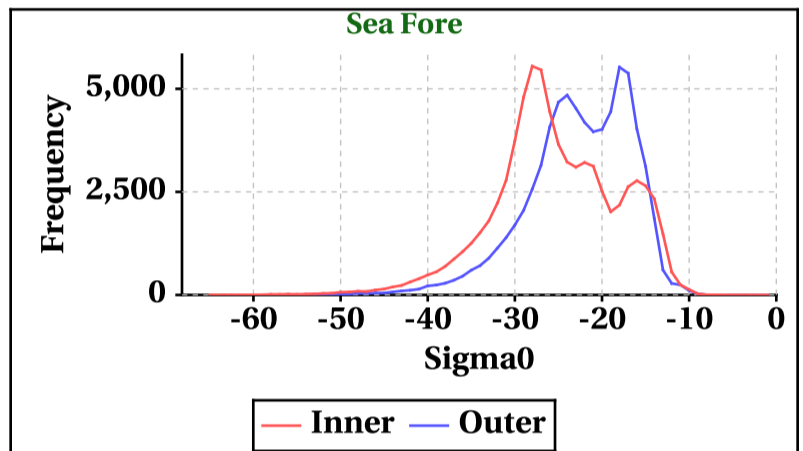
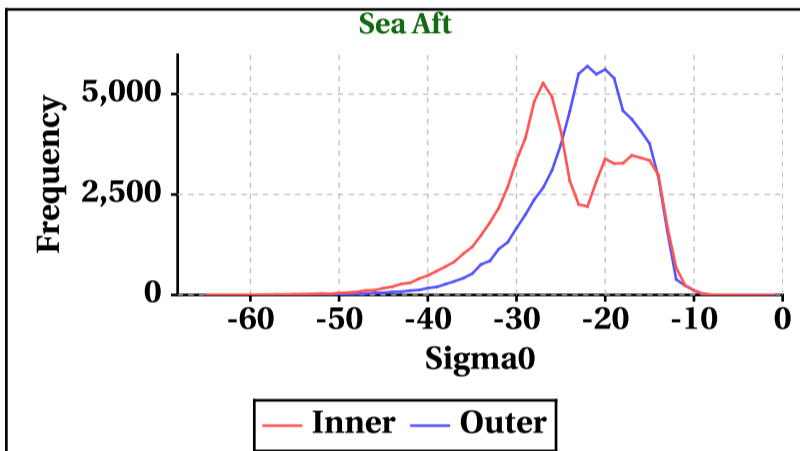
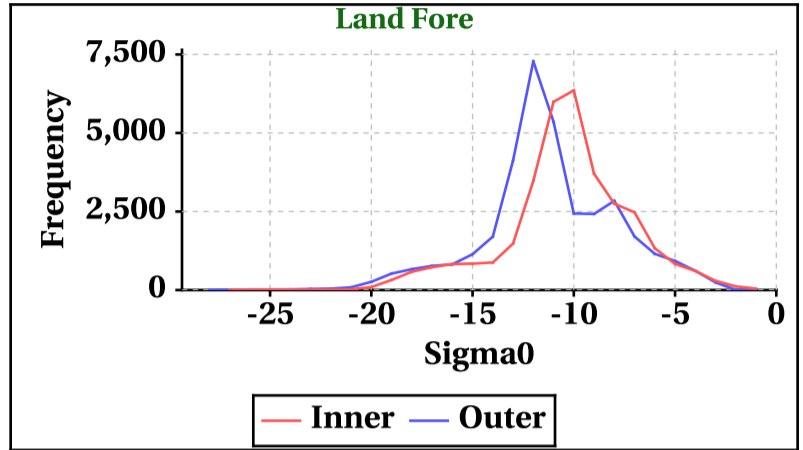
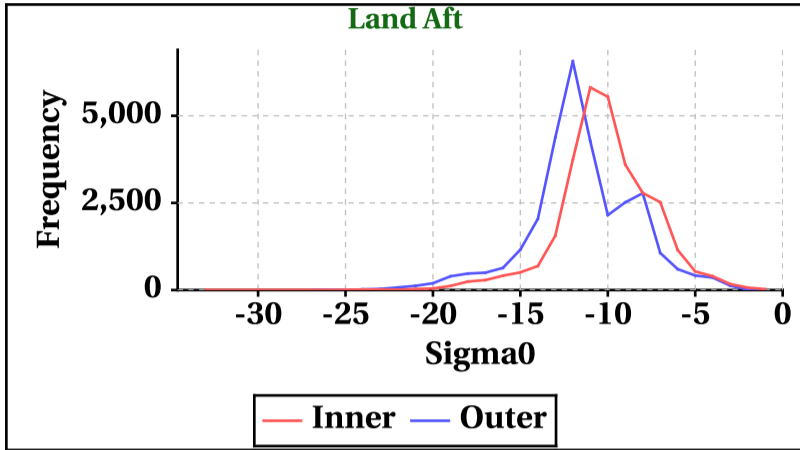


# Dynamic Range (Data Histograms)

## Sigma0(db)

Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-33	-27	-65	-65
Max	0	0	0	0

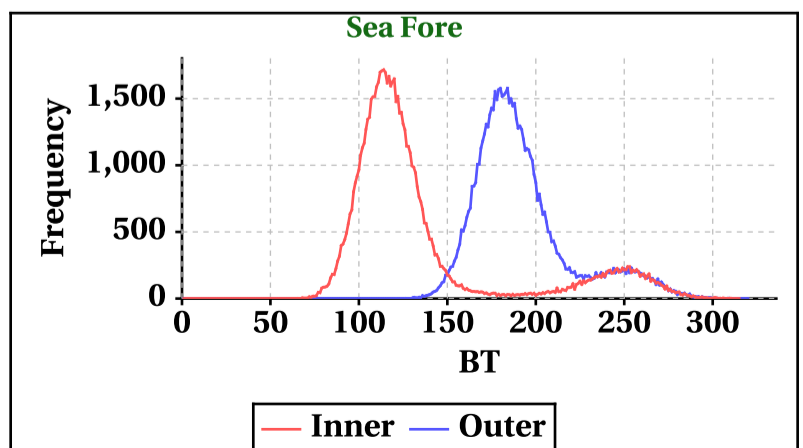
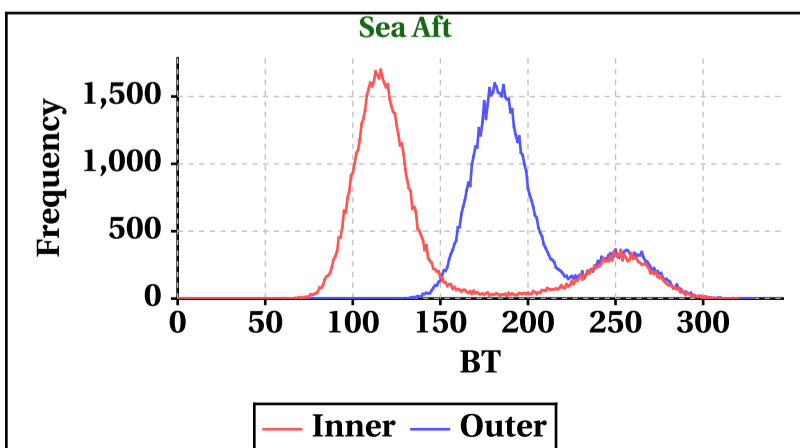
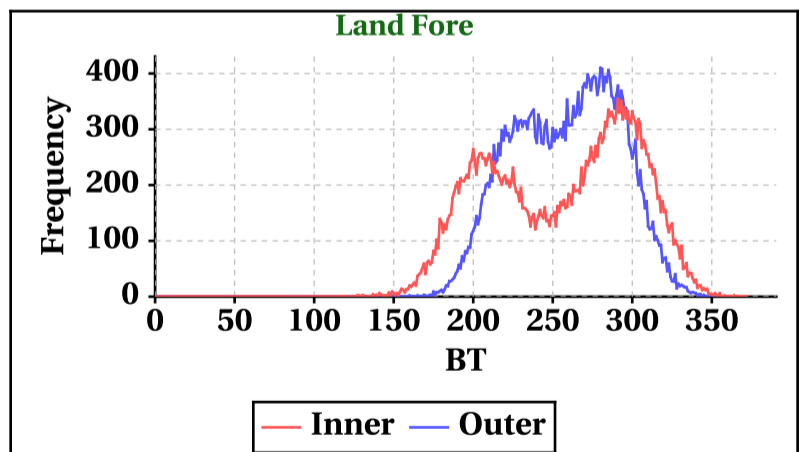
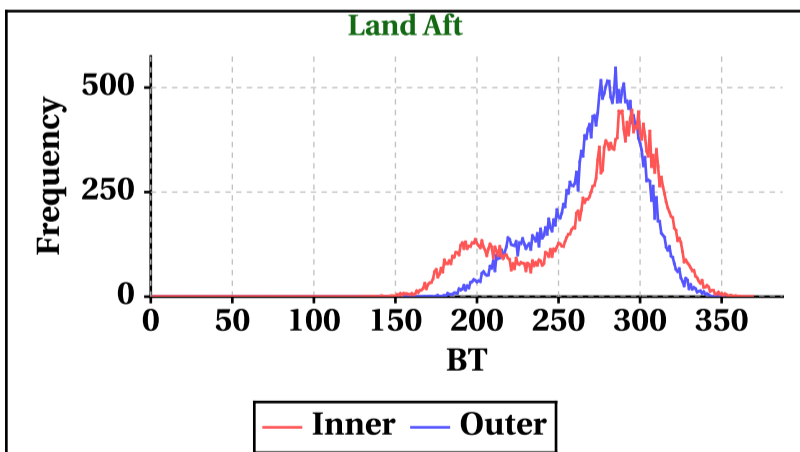
Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-27	-28	-59	-59
Max	0	0	0	0



## Brightness Temperature(K)

Inner Beam(HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	369	372	320	315

Outer Beam(VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	356	360	329	320

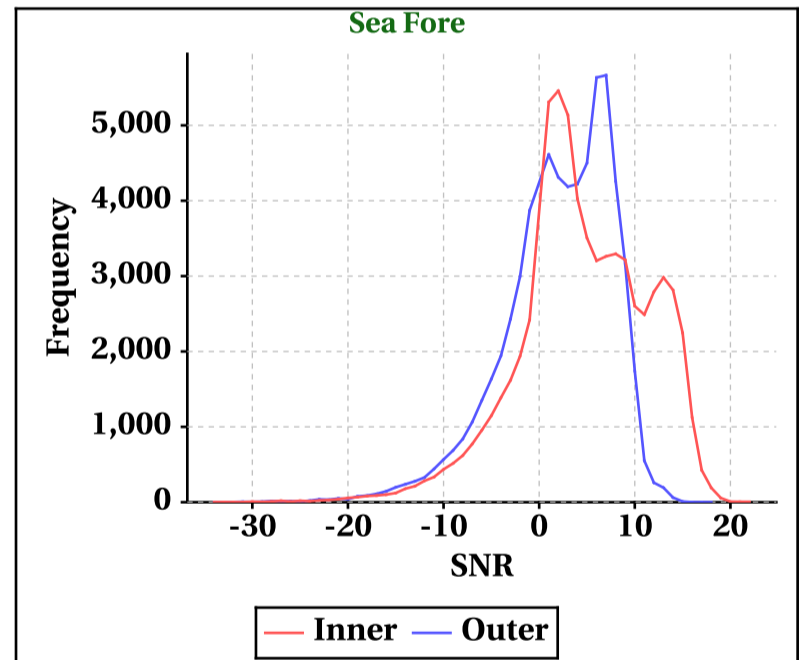
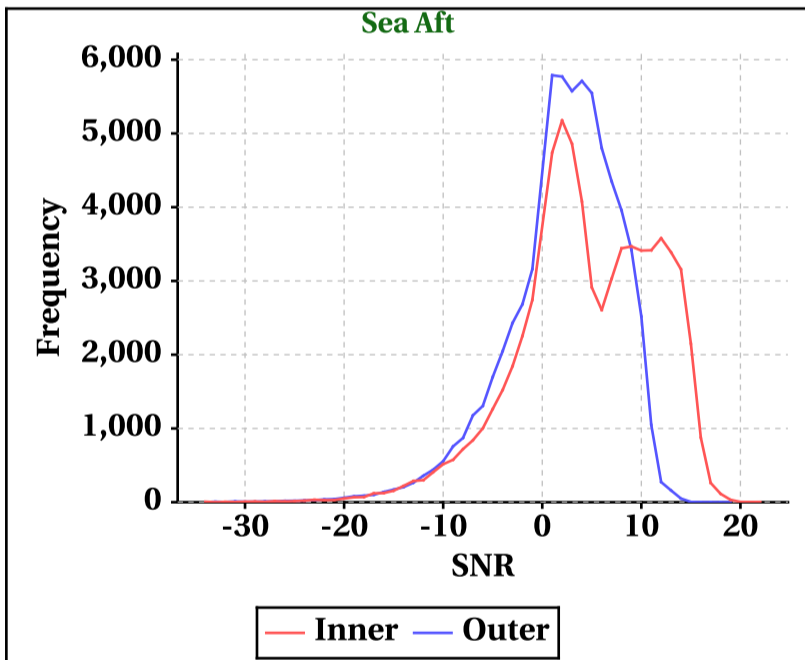
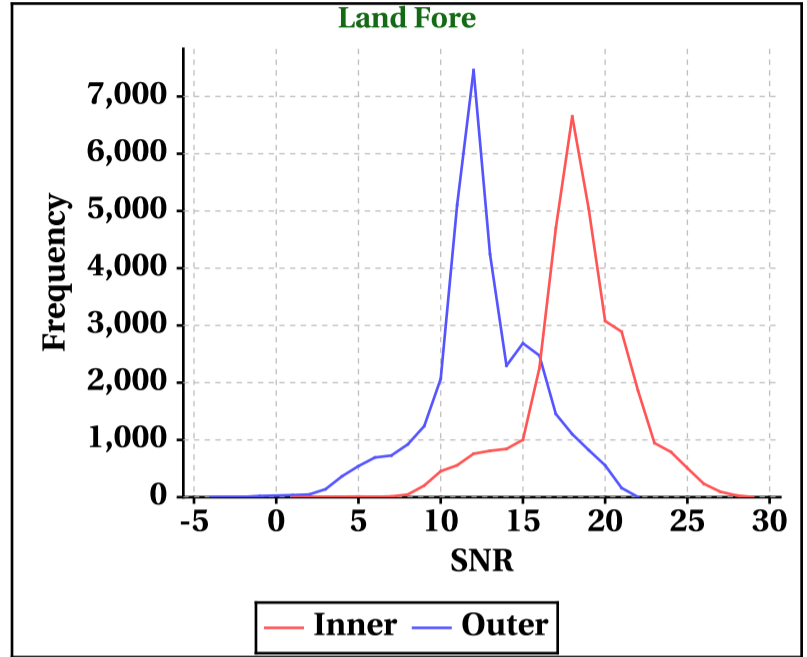
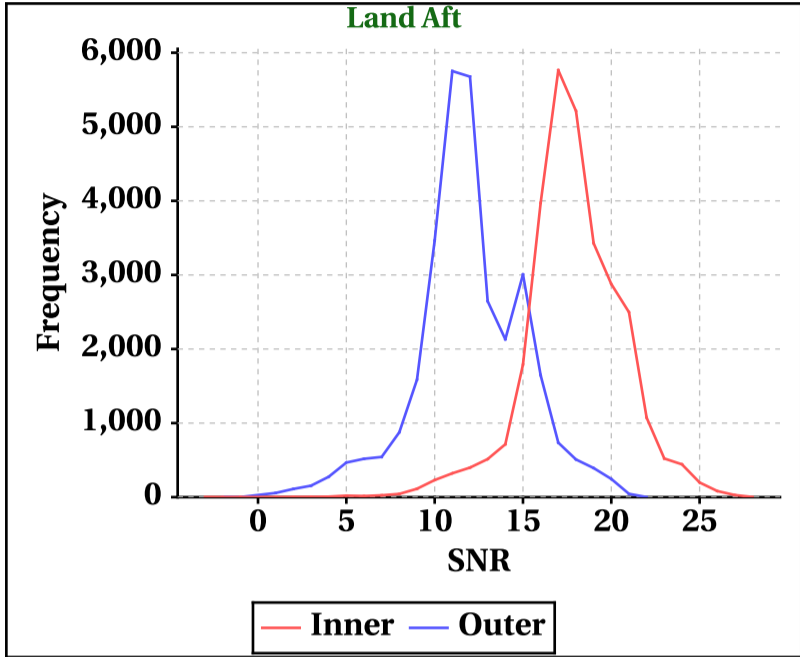


# Dynamic Range (Data Histograms)

## SNR(dBm)

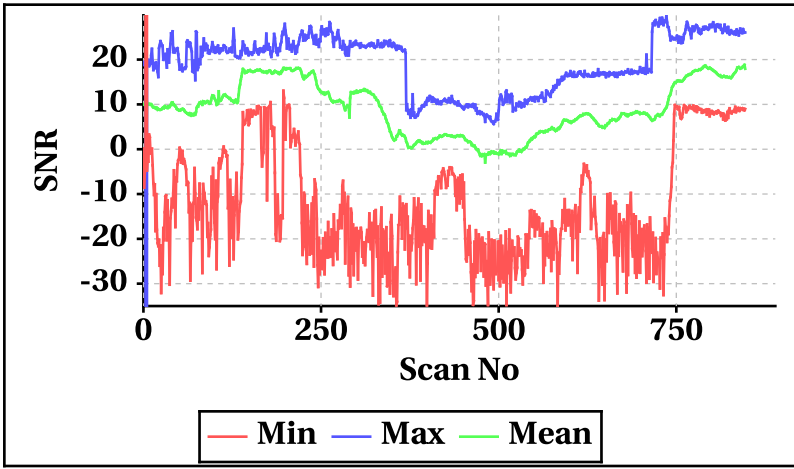
Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-3	0	-34	-34
Max	28	29	22	22

Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-2	-4	-34	-34
Max	22	22	19	18

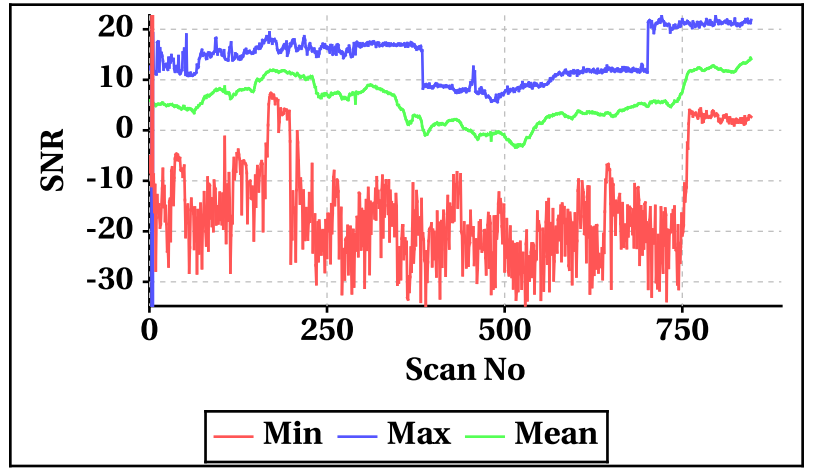


## Orbit-wise behaviour of SNR

Inner Beam (HH)

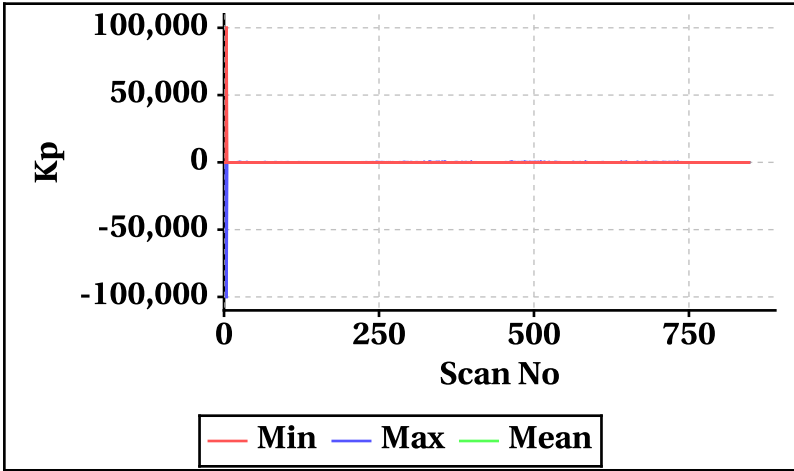


Outer Beam(VV)

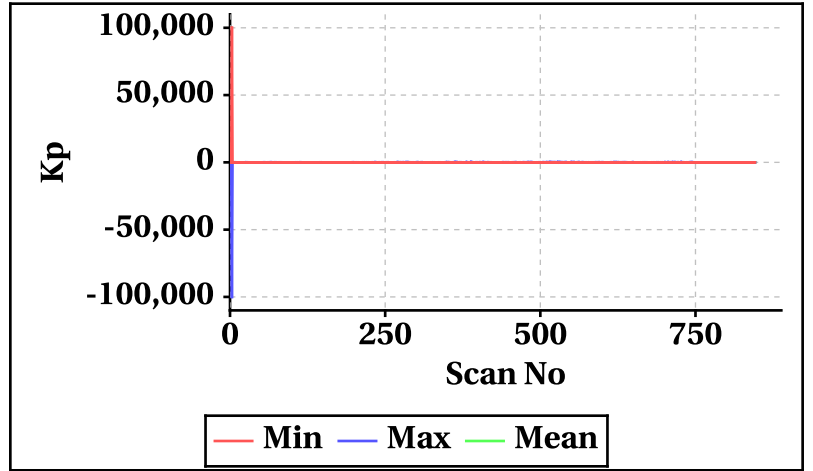


## Orbit-wise behaviour of Kp,Kpa,Kpb,Kpc

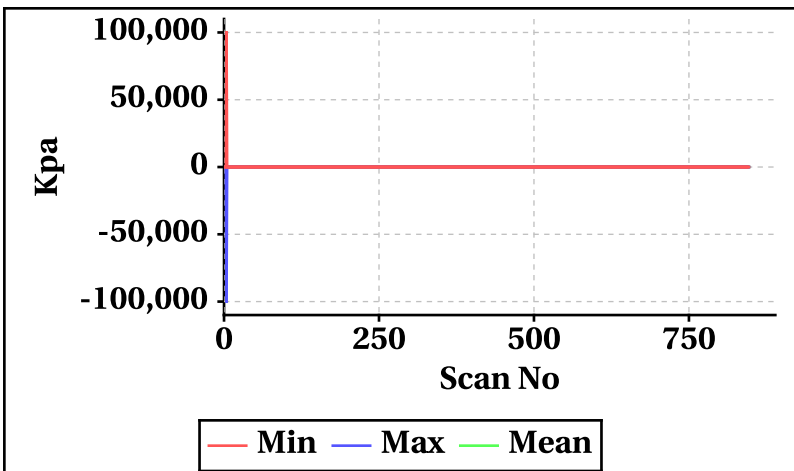
Inner Beam(HH)



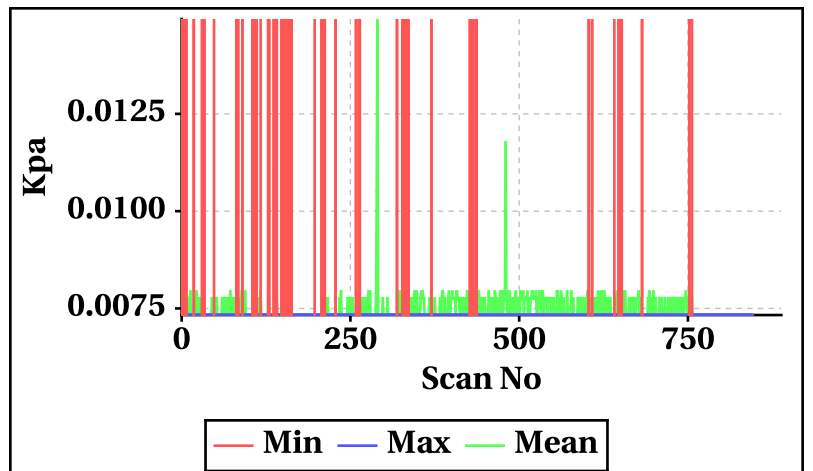
Outer Beam(VV)



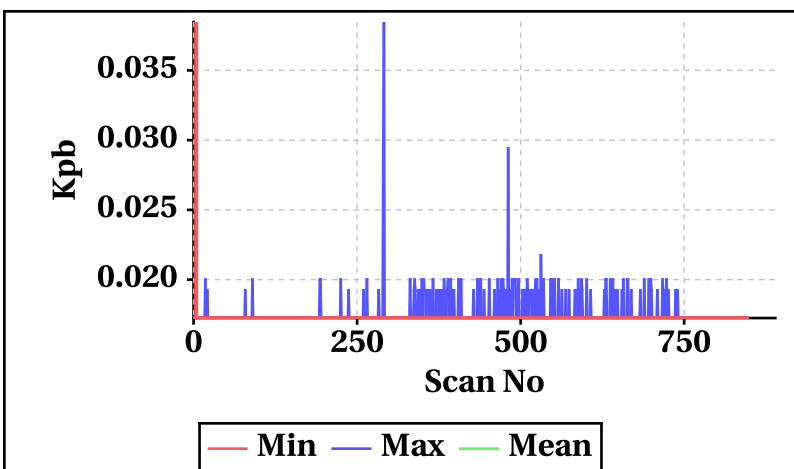
Inner Beam(HH)



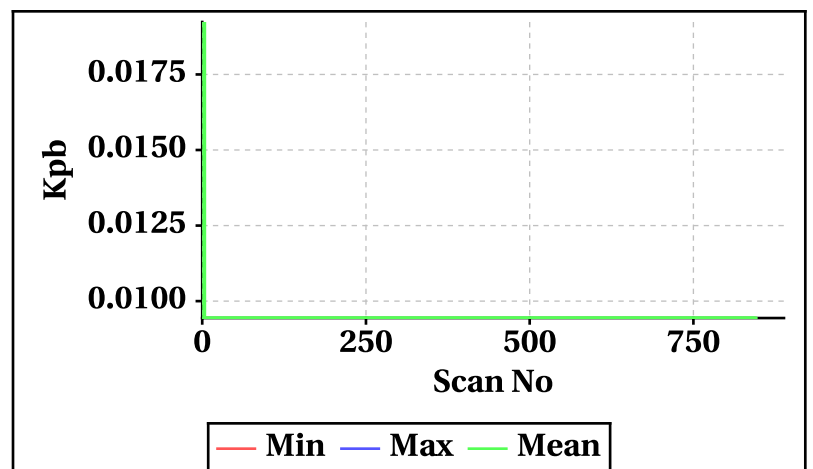
Outer Beam(VV)



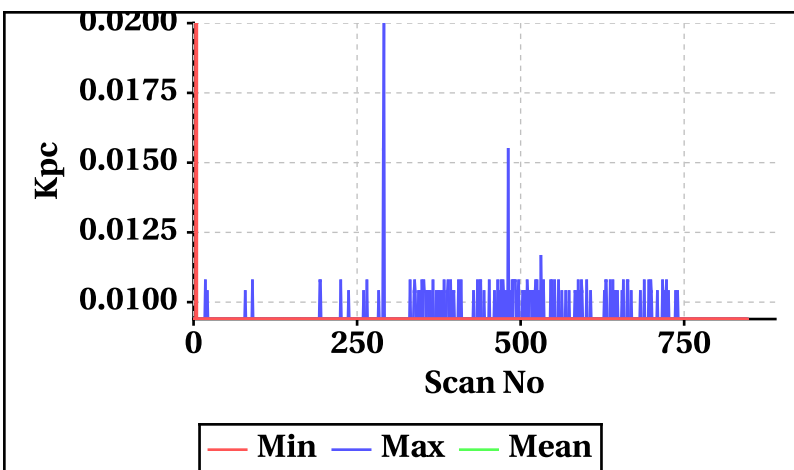
Inner Beam(HH)



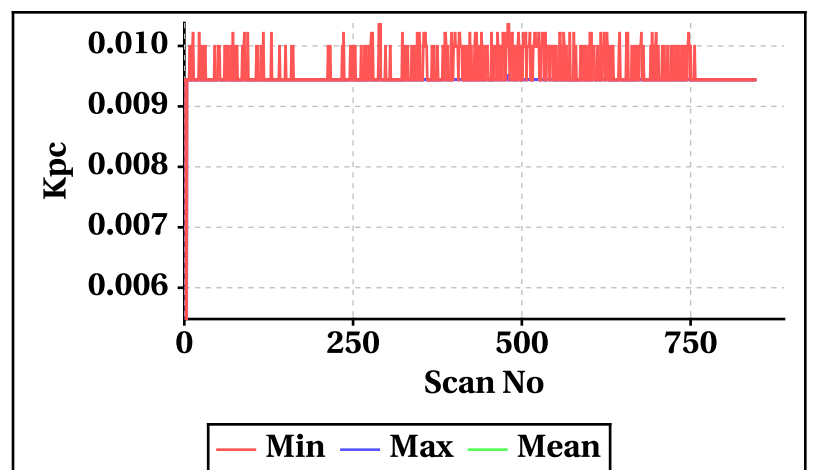
Outer Beam(VV)



Inner Beam(HH)

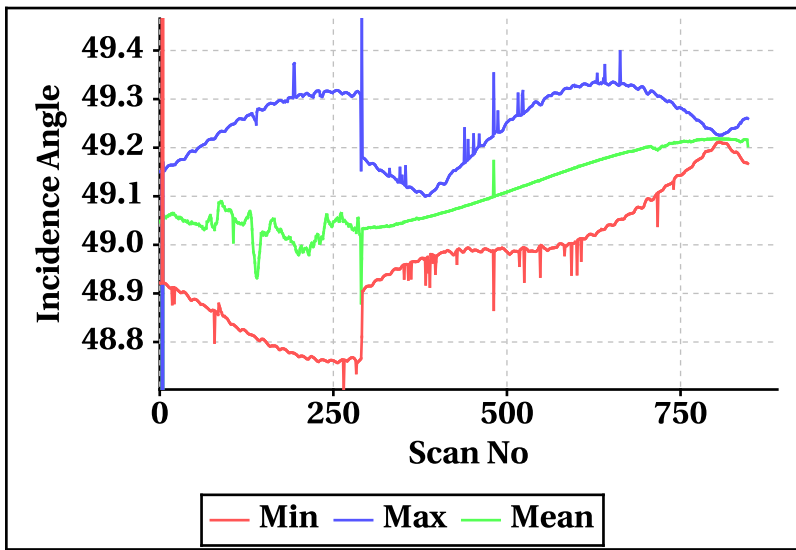


Outer Beam(VV)

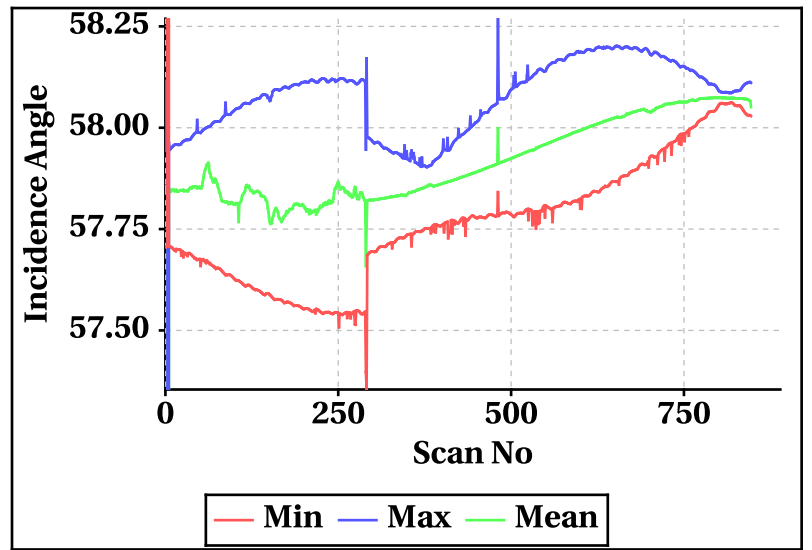


Orbit-wise behaviour of Incidence,Azimuth,Range,X-Factor

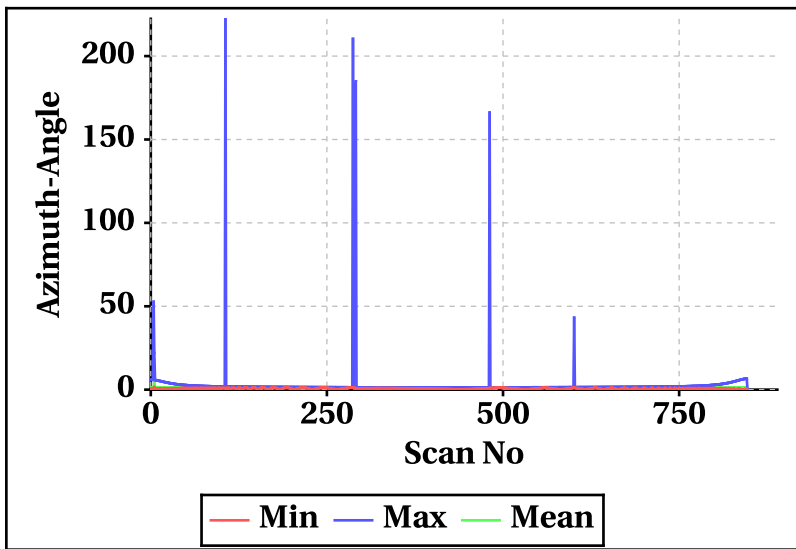
Inner Beam (HH)



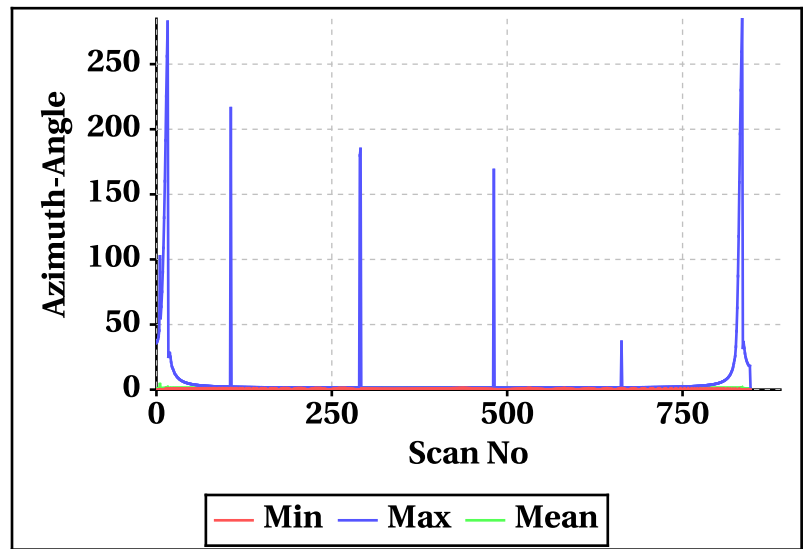
Outer Beam(VV)



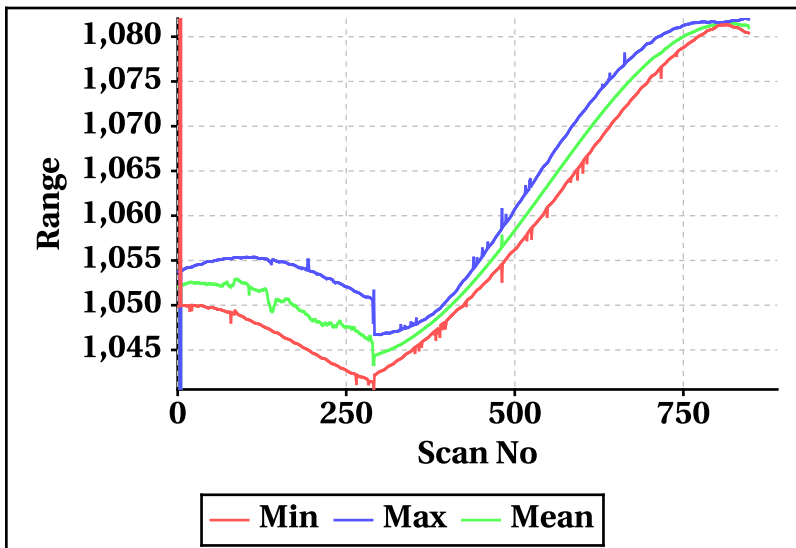
Inner Beam (HH)



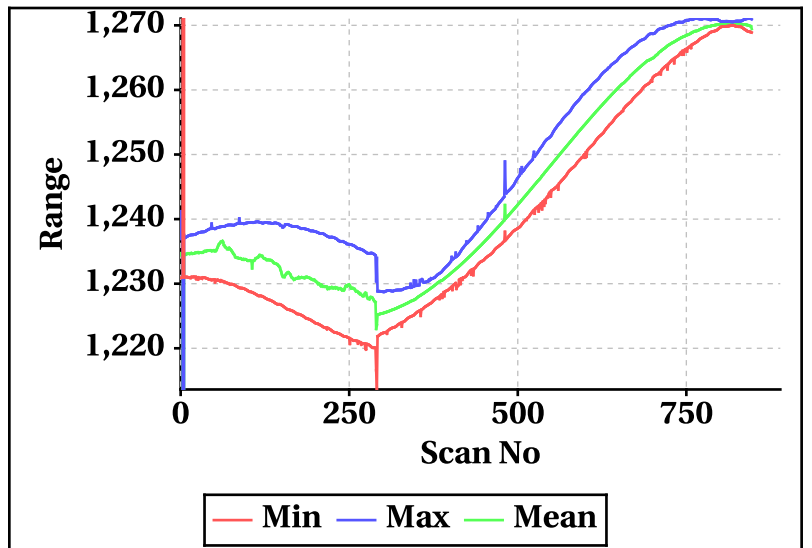
Outer Beam(VV)



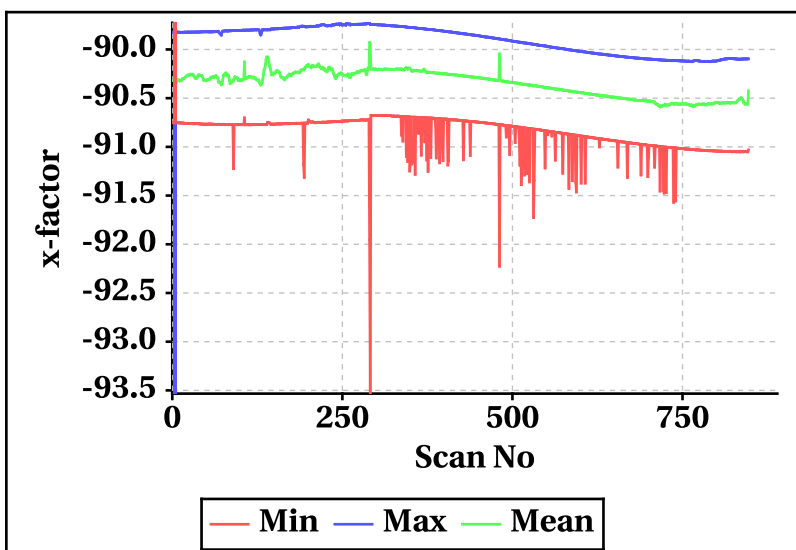
Inner Beam (HH)



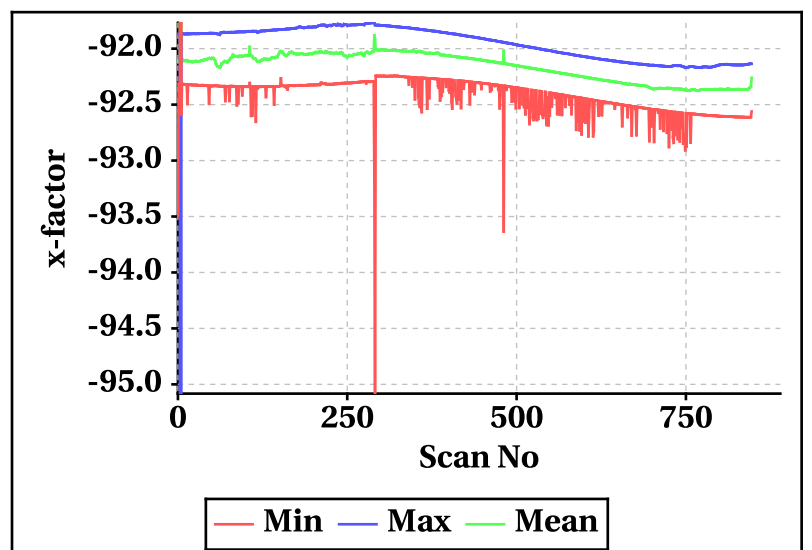
Outer Beam(VV)



Inner Beam (HH)



Outer Beam(VV)



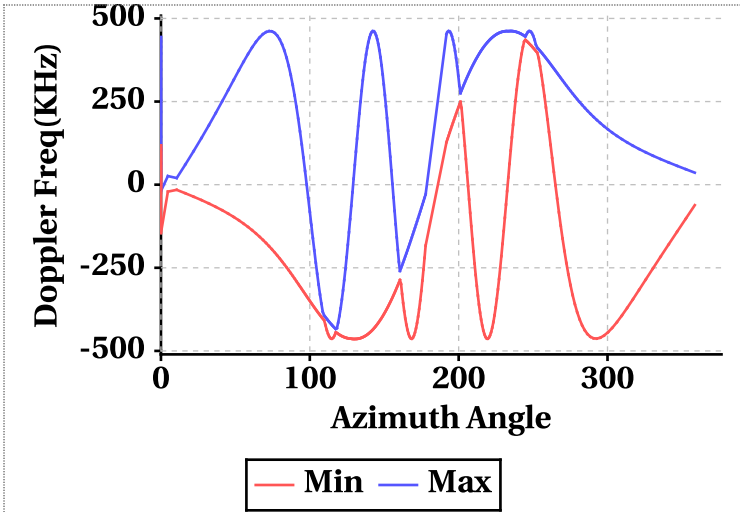


# Doppler Frequency Variation

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

	Inner Beam (HH)	Outer Beam (VV)
<b>Min</b>	-464.08	-519.84
<b>Max</b>	462.02	518.00

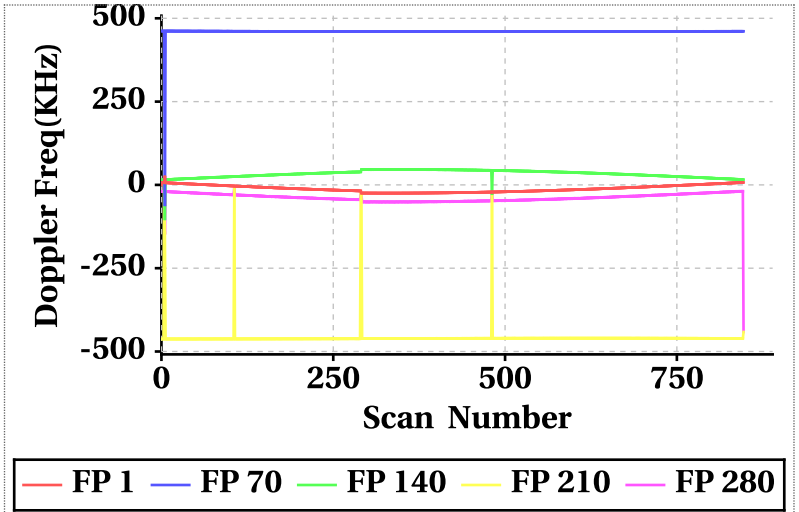
**Footprint wise Doppler frequency variation Inner Beam (HH)**



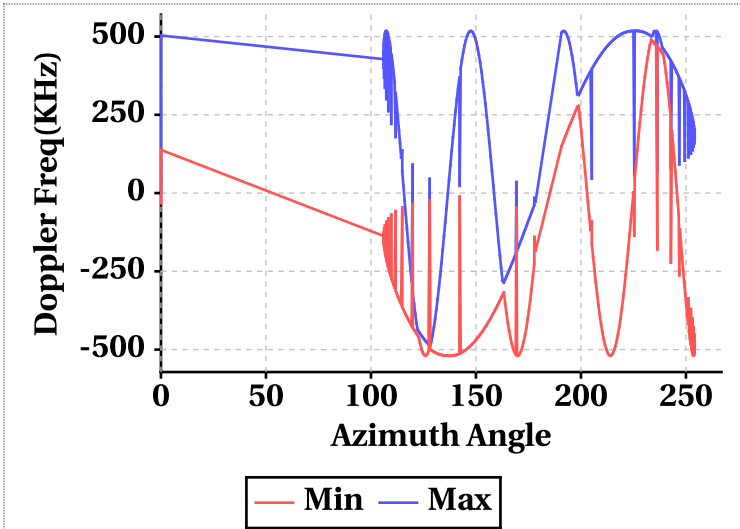
**Doppler Frequency(KHz) variation**

Doppler_FP	Inner Beam (HH)			Outer Beam (VV)		
	Min	Max	Mean	Min	Max	Mean
Doppler_1	-24.74	23.86	-11.31	-441.46	4.08	-18.70
Doppler_70	-59.76	461.70	460.01	-89.38	517.42	515.30
Doppler_140	-101.86	46.38	33.23	-91.48	46.36	31.59
Doppler_210	-462.44	1.52	-457.93	-518.38	1.94	-513.51
Doppler_280	-441.46	1.44	-38.21	-493.08	1.86	-36.84

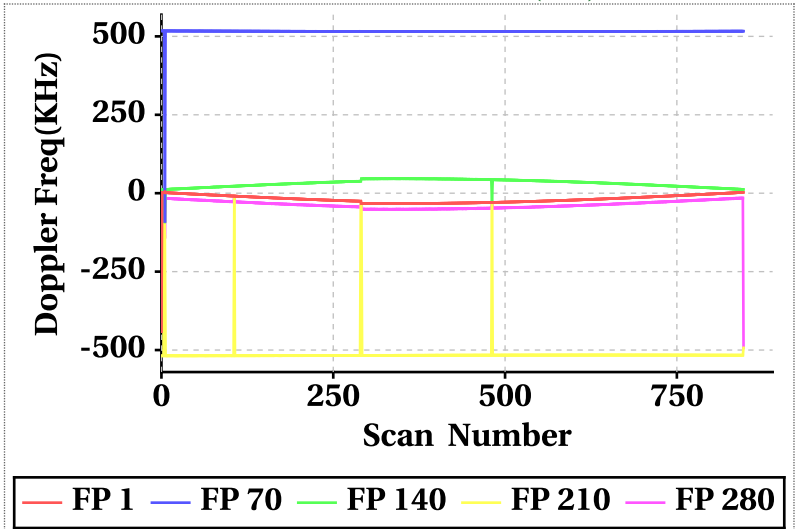
**Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Inner Beam (HH)**



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

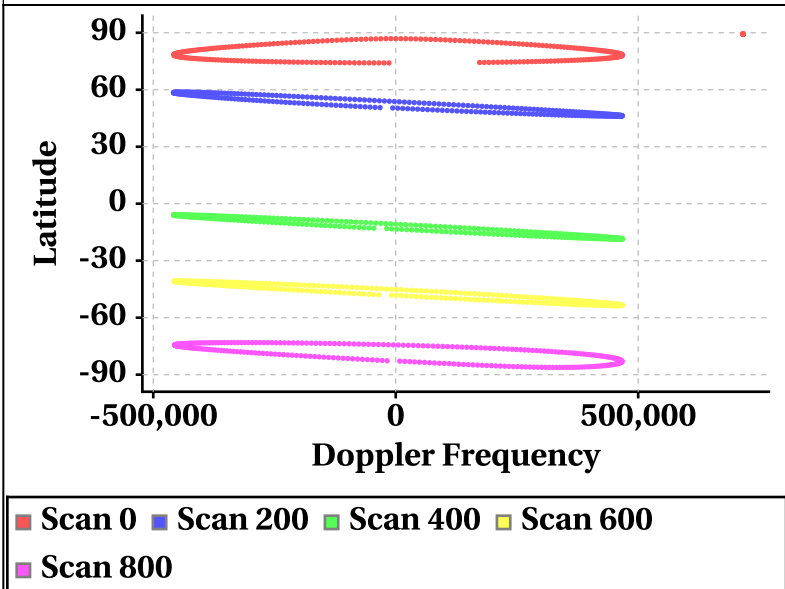


**Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Outer Beam (VV)**

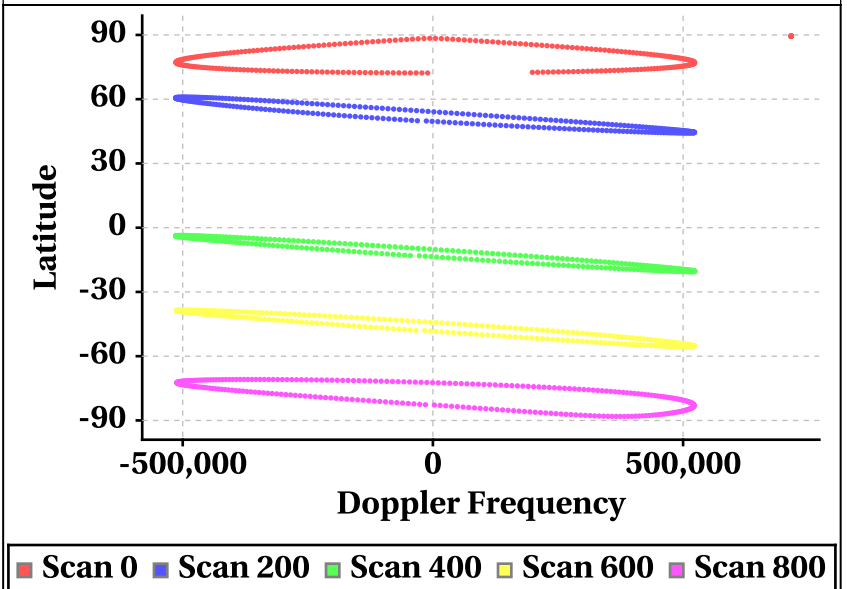


# Latitude Vs Doppler Frequency

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



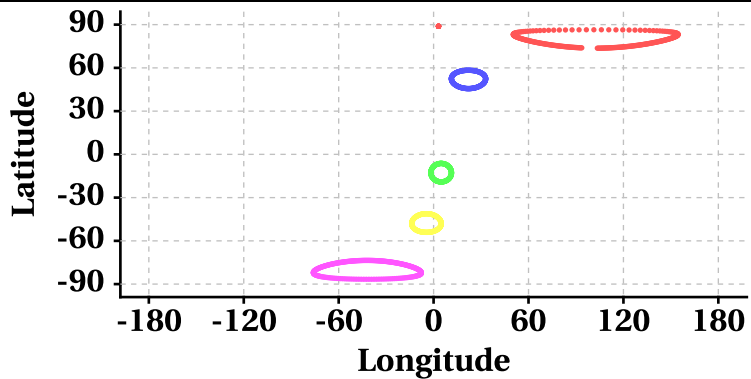
**Doppler Frequency at Scan Interval of 200 [Outer Beam(VV)]**



# Parameter as a function of Latitude

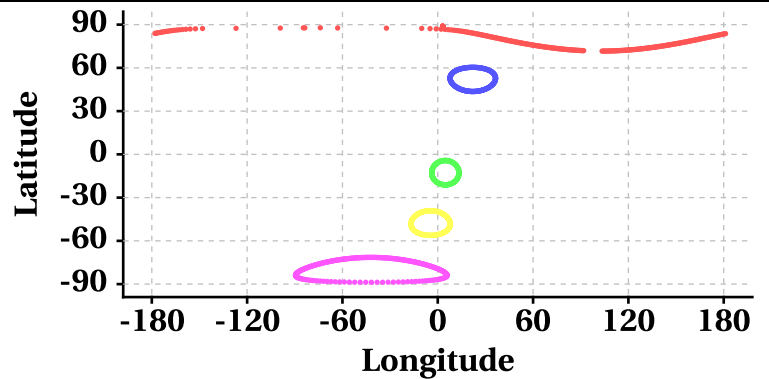
## Latitude Vs Longitude

Scan Trace [Inner Beam(HH)]



Scan 0 Scan 200 Scan 400 Scan 600  
Scan 800

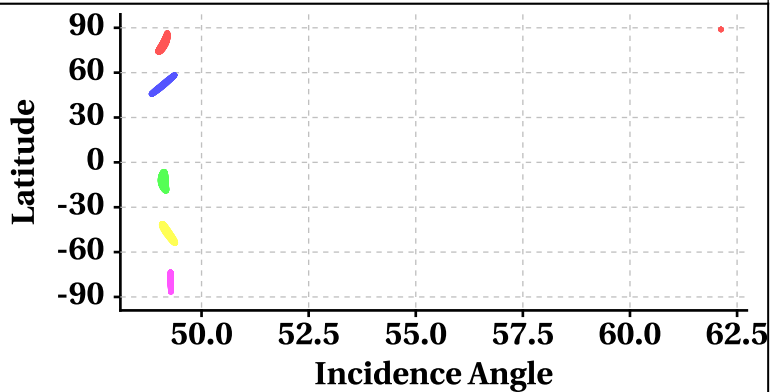
Scan Trace [Outer Beam (VV)]



Scan 0 Scan 200 Scan 400 Scan 600  
Scan 800

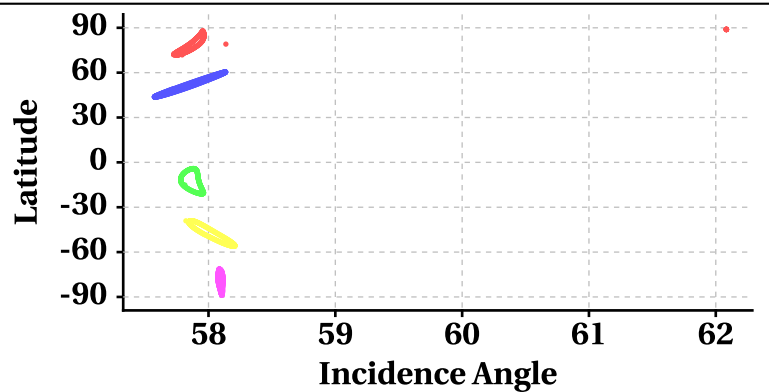
## Latitude Vs Incidence Angle

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



Scan 0 Scan 200 Scan 400 Scan 600  
Scan 800

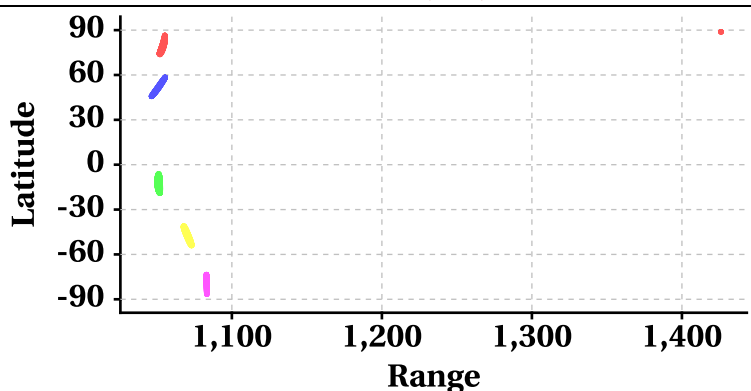
Incidence Angle at Scan Interval of 200 [Outer Beam (VV)]



Scan 0 Scan 200 Scan 400 Scan 600  
Scan 800

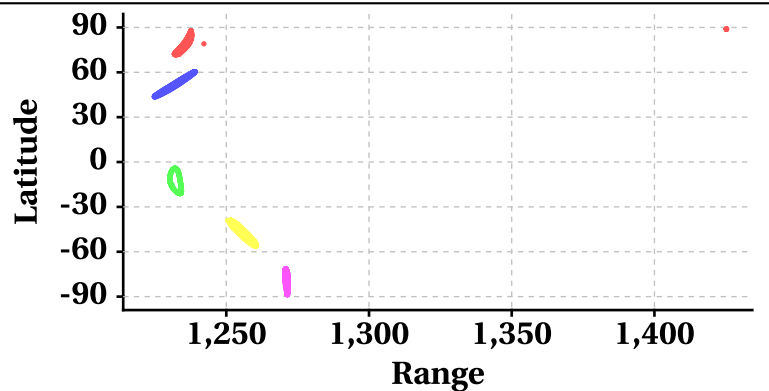
## Latitude Vs Range

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



Scan 0 Scan 200 Scan 400 Scan 600  
Scan 800

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



Scan 0 Scan 200 Scan 400 Scan 600  
Scan 800



# Variation in Orbit and Attitude Parameters

