Cassini Ultraviolet Imaging Spectrograph
UVIS HSP

Ring Stellar Occultation Atlas

Volume 7: Rev 202 – Rev 245

Version: 1.3
May 31, 2018

Table of Contents

The table lists all occultations in this volume, including the star name, rev number, indication of ingress (I) or egress (E), date of the occultation, duration of the occultation, radial range coverage and elevation angle of the star.

Occultations are presented chronologically in the order they were observed. To keep the file size of this atlas manageable, it is presented in multiple volumes, each one covering a subset of the occultations.

Introduction

Over the course of the Cassini mission, the High Speed Photometer (HSP) of the Ultraviolet Imaging Spectrograph (UVIS) observed 170 occultations of stars by Saturn's rings. Details on the UVIS instrument can be found in Esposito et al. (1998, 2004). Information on the handling of HSP ring occultation data as well as a summary of data calibration and reduction techniques for the first part of the Cassini mission are in Colwell et al. (2010). This document provides a tabular and visual overview of these stellar occultations.

Description of Data Products in the Atlas

The HSP data consist of a time series of measured photon counts. With the exception of observations of some faint stars where the background signal dominates or is a significant contribution, the measured signal is primarily due to starlight transmitted through the rings. The HSP integration times are 1, 2, 4, or 8 msec. The majority of occultations used a 1 msec integration period, with most of the rest at 2 msec. In this atlas the data are binned to 1 second.

The data are shown in two plots: (1) a plot spanning the range of 70,000 km to 150,000 km from Saturn for all occultations to allow direct comparison of signal and coverage on a single distance scale; and (2) a plot that shows the data zoomed to the radial range of coverage of the occultation.

Two additional geometry plots are included for each occultation: (1) the radial ring plane resolution of the occultation (in the frame of Saturn, not accounting for ring particle motion or diffraction); and (2) the value of ϕ, an angle measured in the ring plane in the counterclockwise sense from the outward radial vector at the measurement point to the direction to the star projected into the ring plane. Thus, an observation where the look vector to the star is tangent to the rings has ϕ=90 degrees.

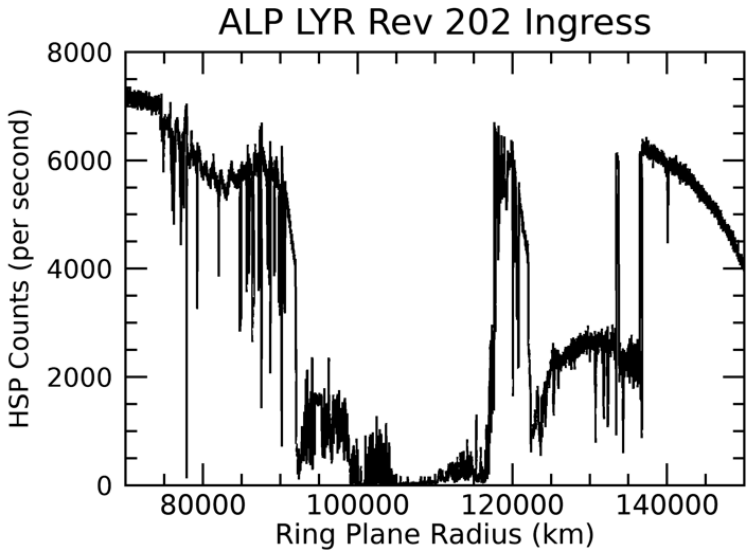
On the page following the data plots, a geometry visualization is shown at a time near the middle of the occultation. The position of the UVIS HSP field of view is labeled on each of these plots. Occultations that cut a chord across the rings, are presented here as separate "Ingress" and "Egress" occultations, referring to the portion of the occultation where the observation point is approaching or receding from Saturn, respectively. Some geometry visualizations are missing and will be included in the next revision of this volume.

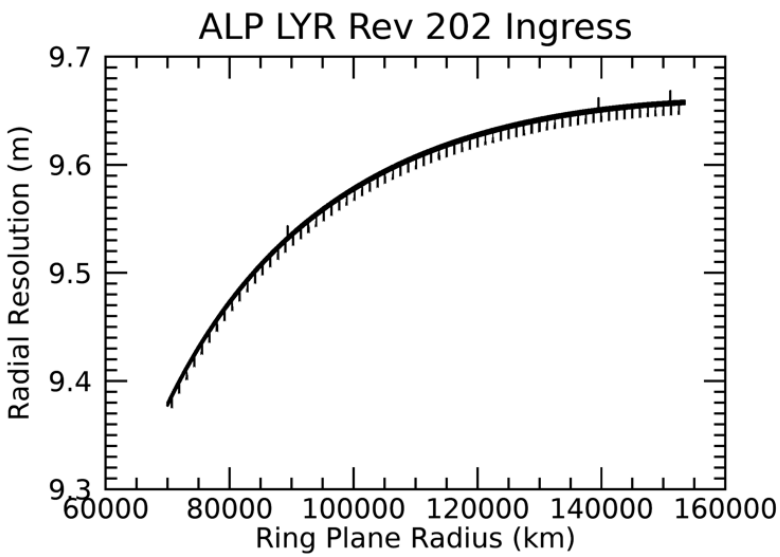
Document assembled by Joshua Colwell, UVIS Co-Investigator, University of Central Florida, with the assistance of Stephanie Eckert Grant, Richard Jerousek, and Tina Notrika, UCF.

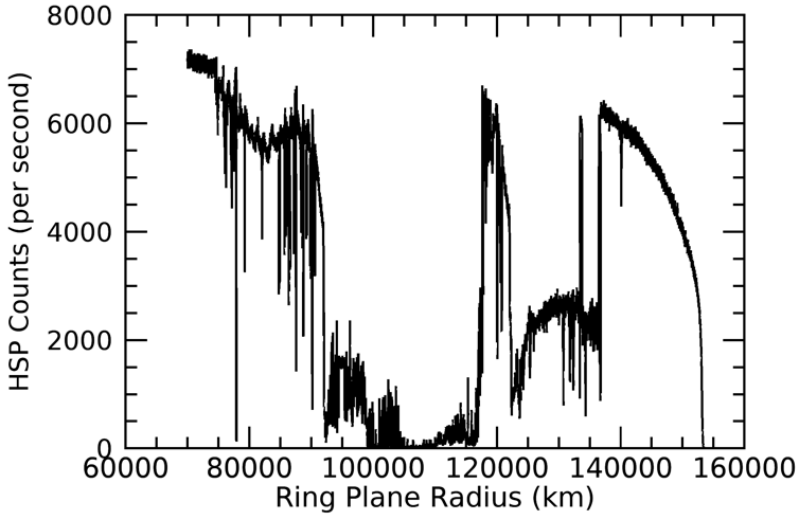
References

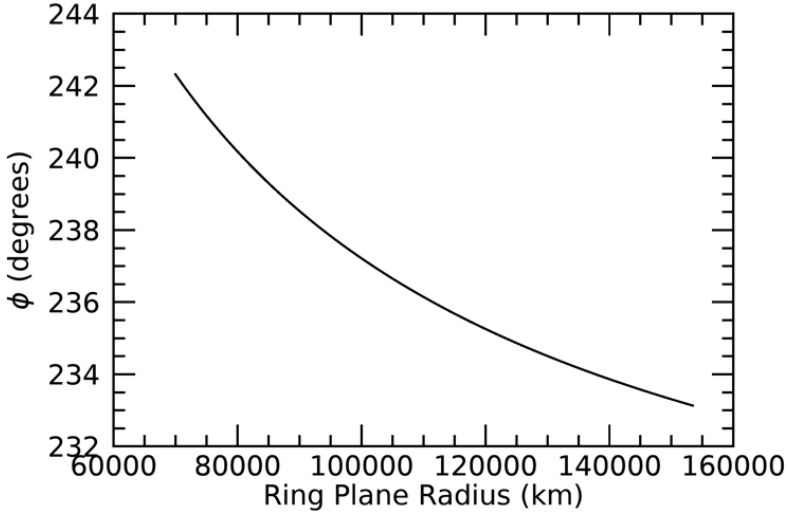
1. Colwell, J. E., L. W. Esposito, D. Pettis, M. Sremčević, R. G. Jerousek, E. T. Bradley 2010. Cassini UVIS Stellar Occultation Observations of Saturn's Rings. *Astron. J.* **140**, 1569-1578, doi:10.1088/0004-6256/140/6/1569.
2. Esposito, L. W., J. E. Colwell, and W. E. McClintock 1998. Cassini UVIS Observations of Saturn's Rings. *Planet. Space Sci.* **46**, 1221-1235.
3. Esposito, L. W., C. A. Barth, J. E. Colwell, G. M. Lawrence, W. E. McClintock, A. I. F. Stewart, H. U. Keller, , A. Korth, H. Lauche, M. Festou, A. L. Lane, C. J. Hansen, J. N. Maki, R. A. West, H. Jahn, R. Reulke, K. Warlich, D. E. Shemansky, and Y. L. Yung 2004. The Cassini Ultraviolet Imaging Spectrograph Investigation. *Space Sci. Rev.* **115**, 299-361.

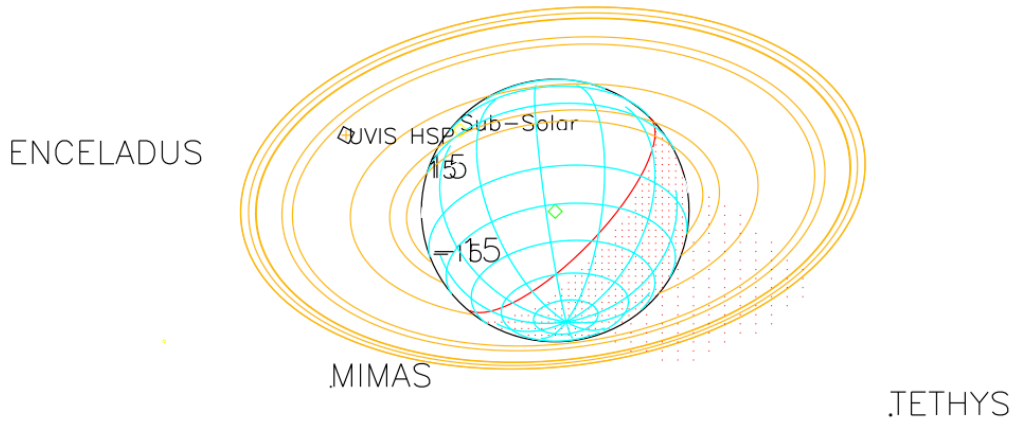
Star		Rev	Ing/Eg	Year/Day	B	ϕ	Radius	Duration (min)
α	LYR	202	E	2014-067	-35.2	30.5- 37.8	76635-145774	120.2
α	LYR	202	I	2014-067	-35.2	233.1-242.3	153445- 69972	145.2
γ	COL	205	E	2014-172	30.9	305.2-338.5	80178- 95872	173.4
γ	COL	205	I	2014-172	30.9	249.0-305.2	144025- 80178	394.8
α	LYR	206	I	2014-198	-35.2	245.4-270.9	147031- 69892	170.2
ζ	PUP	208	E	2014-276	38.6	99.5- 85.9	69361-118240	405.2
ζ	PUP	208	I	2014-275	38.6	232.1-219.0	129519- 73678	456.8
α	VIR	210	I	2014-339	17.3	316.7-299.9	146048- 70692	190.2
α	VIR	211	E	2015-008	17.3	235.2-202.0	105299-125667	118.6
α	VIR	211	I	2015-008	17.3	277.9-235.2	142949-105299	167.1
β	CMA	211	I	2015-020	14.2	224.1-222.1	144301- 82575	471.2
δ	CET	211	E	2015-011	-6.8	258.7-206.3	79735-130625	72.3
δ	CET	211	I	2015-011	-6.8	311.6-258.7	132308- 79735	73.8
γ	PEG	211	E	2015-010	-20.3	114.9-125.9	70726-152023	120.2
κ	ORI	212	I	2015-049	5.2	241.3-276.5	148652- 70932	593.2
ζ	ORI	231	E	2016-030	-2.7	241.2-216.0	90066- 99458	67.3
ζ	ORI	231	I	2016-030	-2.7	293.1-241.2	144503- 90066	180.9
α	VIR	232	E	2016-045	17.3	86.0- 90.9	70190-143844	228.8
γ	ORI	234	I	2016-094	-11.2	311.7-281.3	148659- 71026	116.2
δ	SCO	236	E	2016-153	28.7	222.1-210.4	86468- 88319	68.3
δ	SCO	236	I	2016-153	28.7	275.0-222.1	142854- 86468	431.9
α	SCO	237	E	2016-177	32.2	229.1-190.5	112095-143105	275.2
α	SCO	237	I	2016-177	32.2	267.1-229.1	142067-112095	270
α	SCO	239	I	2016-218	32.2	339.3-346.8	151860- 96875	120.2
α	SCO	241	E	2016-243	32.2	70.7-124.2	70321-152137	184.8
α	SCO	241	I	2016-243	32.2	359.1- 70.7	146494- 70321	210
α	SCO	243	E	2016-267	32.2	74.7-124.1	70264-148897	172.9
σ	SGR	244	E	2016-277	29.1	253.1-226.9	130684-145150	50.3
σ	SGR	244	I	2016-277	29.1	275.7-253.1	141330-130684	42.8
α	SCO	245	E	2016-287	32.2	64.7-127.2	70331-149516	143.7
α	SCO	245	I	2016-287	32.2	1.8- 64.7	151942- 70331	146.4


ALP LYR Rev 202 Ingress
HSP Counts (per second)
Ring Plane Radius (km)
8000
6000
4000
2000
0
80000
100000
120000
140000


ALP LYR Rev 202 Ingress
Radial Resolution (m)
Ring Plane Radius (km)
9.7
9.6
9.5
9.4
9.3
60000
80000
100000
120000
140000
160000


HSP Counts (per second)
Ring Plane Radius (km)
8000
6000
4000
2000
0
60000
80000
100000
120000
140000
160000


ϕ (degrees)
Ring Plane Radius (km)
244
242
240
238
236
234
232
60000
80000
100000
120000
140000
160000

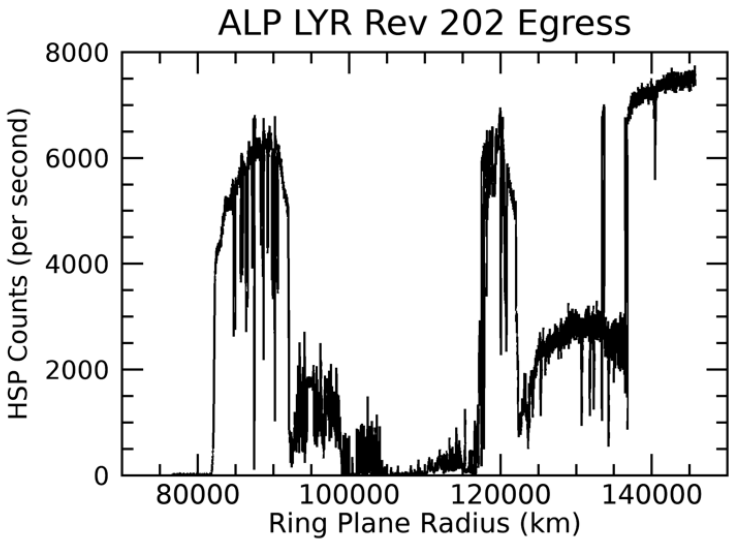


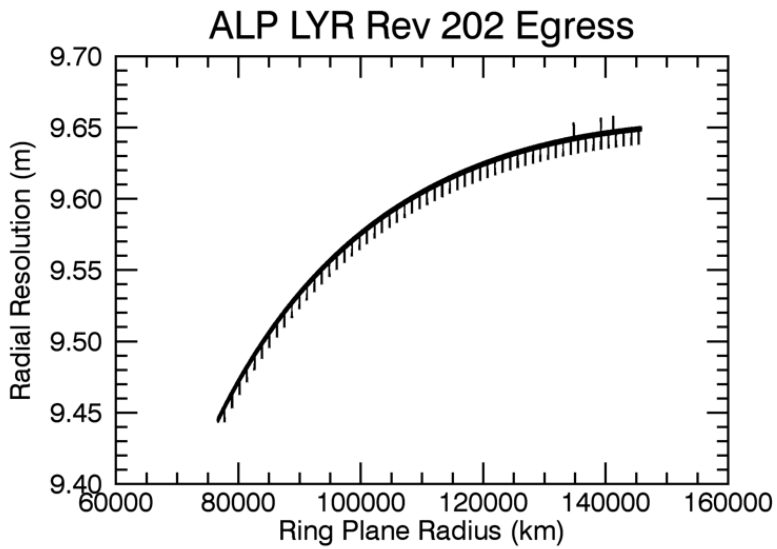
2014-067T04:02:00.000 901418.98 km

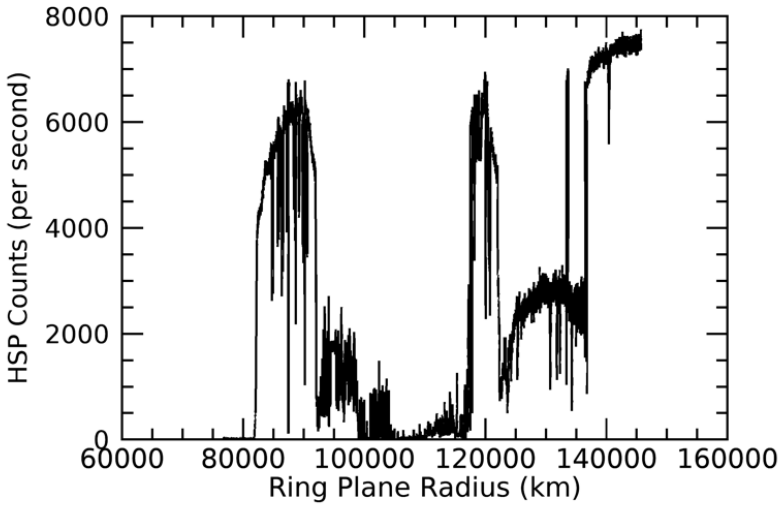
Target RA/dec: 271.56, 36.95

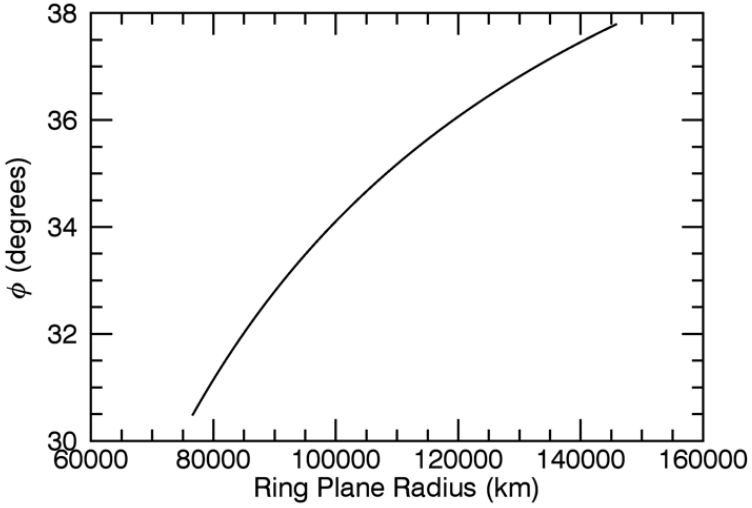
Subsolar lat/lon: 17.69, -7.12

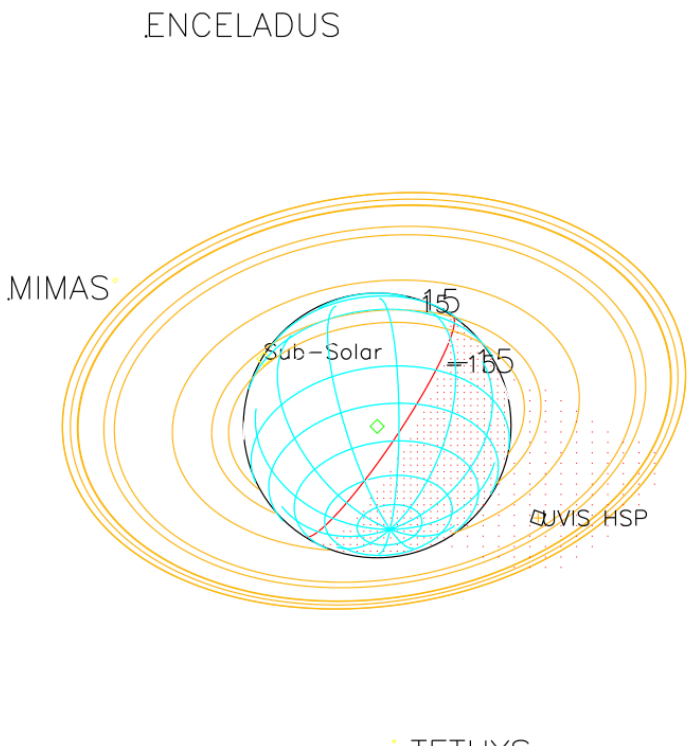
Sub-s/c lat/lon: -27.91, 34.79


ALP LYR Rev 202 Egress
HSP Counts (per second)
Ring Plane Radius (km)
0
2000
4000
6000
8000
80000
100000
120000
140000


ALP LYR Rev 202 Egress
Radial Resolution (m)
Ring Plane Radius (km)
9.40
9.45
9.50
9.55
9.60
9.65
9.70
60000
80000
100000
120000
140000
160000


HSP Counts (per second)
Ring Plane Radius (km)
0
2000
4000
6000
8000
60000
80000
100000
120000
140000
160000


ϕ (degrees)
Ring Plane Radius (km)
30
32
34
36
38
60000
80000
100000
120000
140000
160000

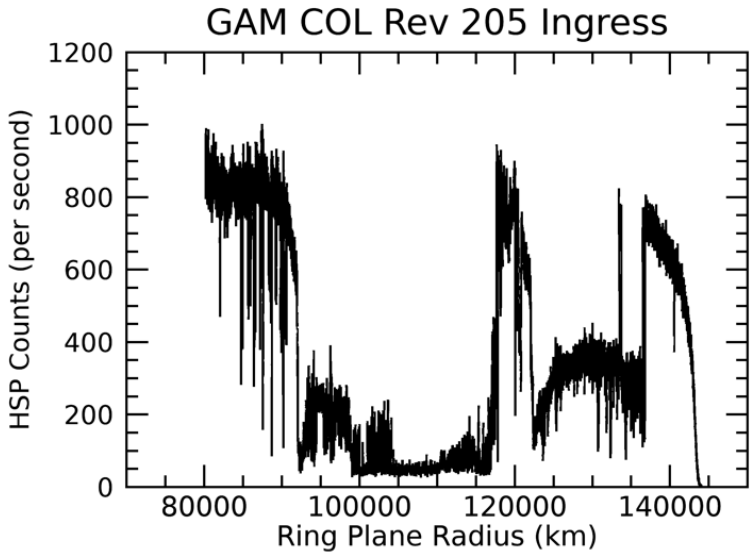


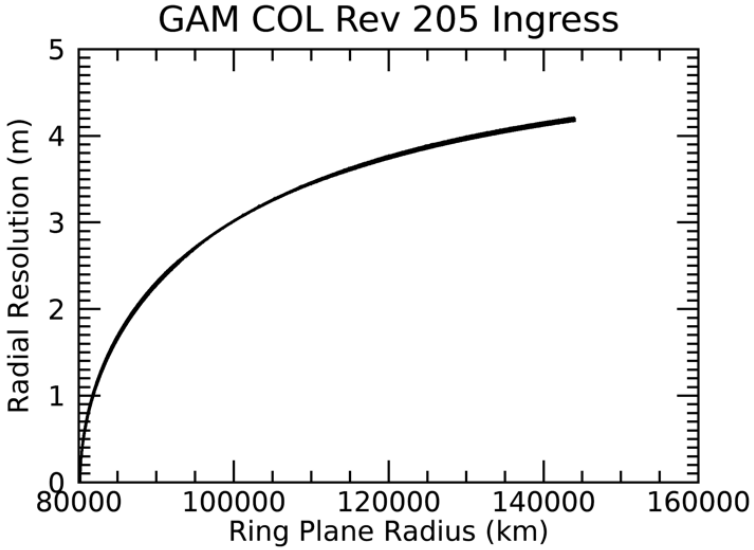
2014-067T10:14:00.000 874564.93 km

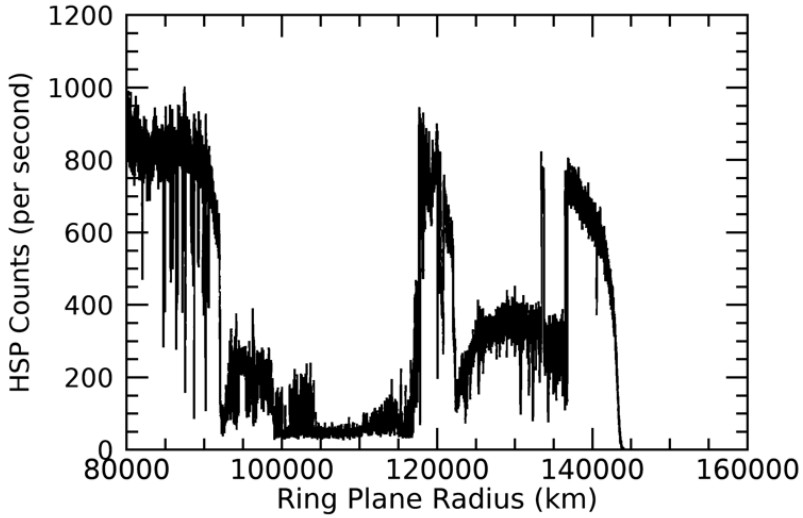
Target RA/dec: 285.32, 41.53

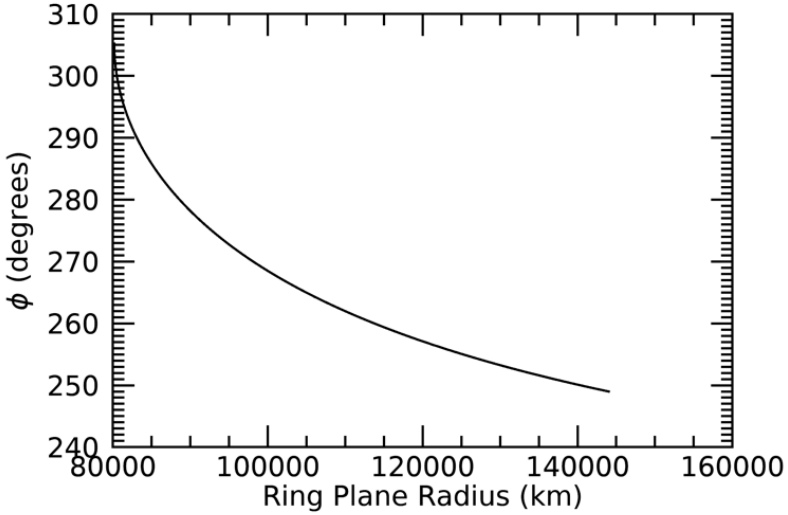
Subsolar lat/lon: 17.69, 143.43

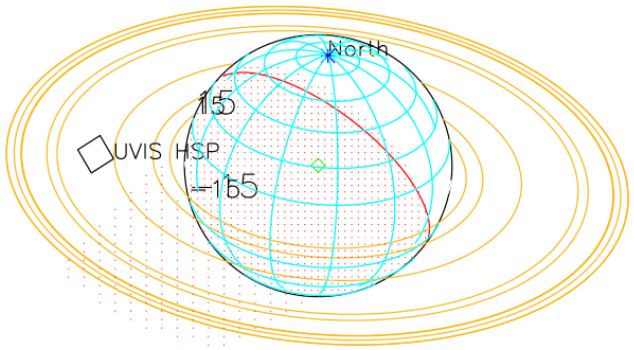
Sub-s/c lat/lon: -33.29, -162.30


GAM COL Rev 205 Ingress
HSP Counts (per second)
Ring Plane Radius (km)
0
200
400
600
800
1000
1200
80000
100000
120000
140000


GAM COL Rev 205 Ingress
Radial Resolution (m)
Ring Plane Radius (km)
0
1
2
3
4
5
80000
100000
120000
140000
160000


HSP Counts (per second)
Ring Plane Radius (km)
0
200
400
600
800
1000
1200
80000
100000
120000
140000
160000


ϕ (degrees)
Ring Plane Radius (km)
240
250
260
270
280
290
300
310
80000
100000
120000
140000
160000



TETHYS

ENCEL

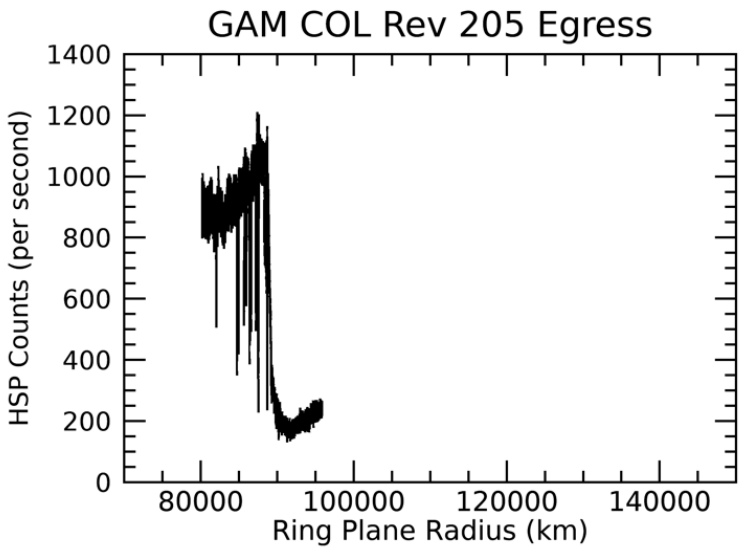
MIMAS

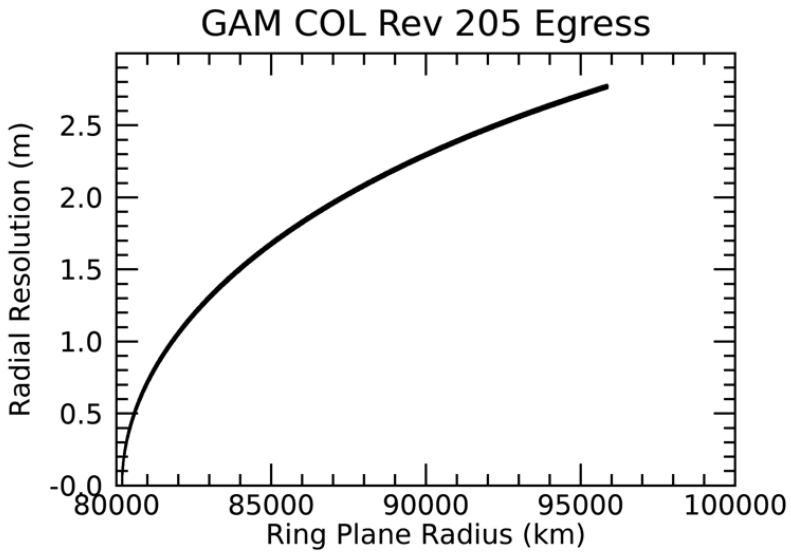
2014-172T16:04:00.000 1955078.6 km

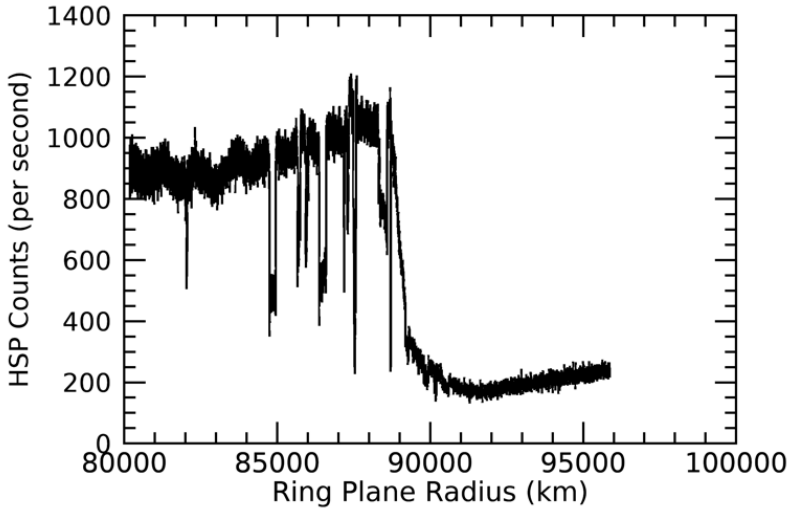
Target RA/dec: 85.79, -35.48

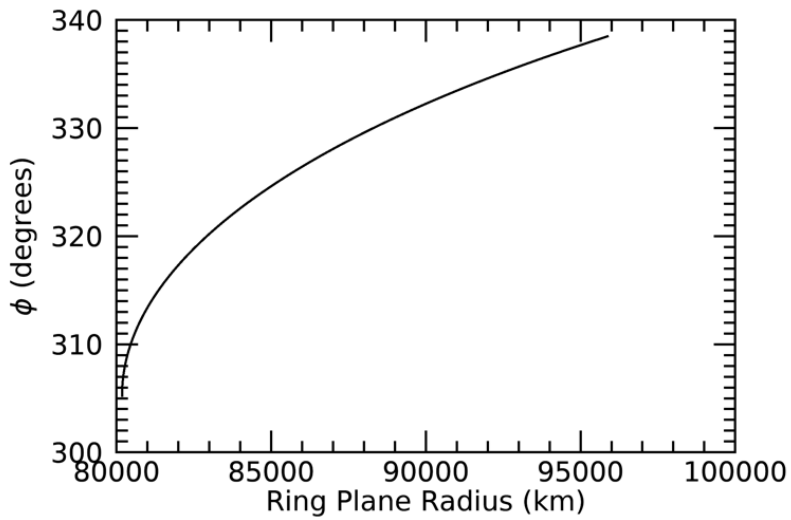
Subsolar lat/lon: 18.45, 136.42

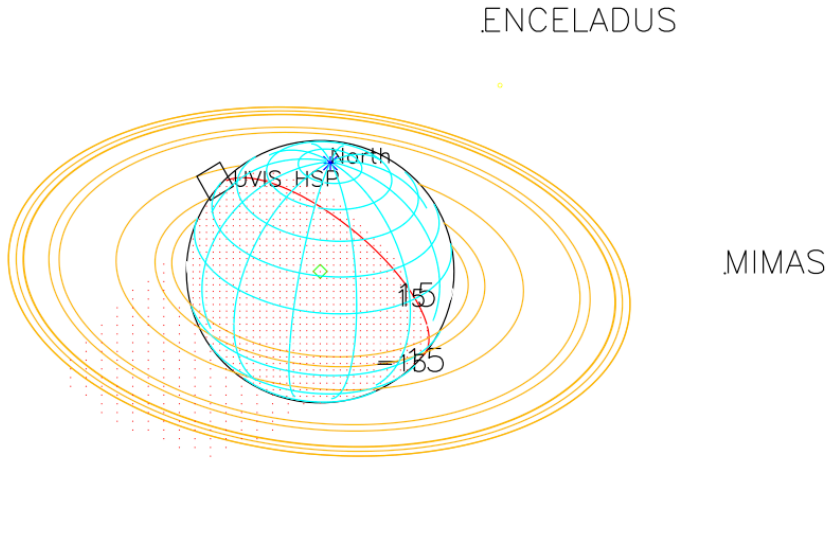
Sub-s/c lat/lon: 26.01, -10.34


GAM COL Rev 205 Egress
HSP Counts (per second)
Ring Plane Radius (km)
0
200
400
600
800
1000
1200
1400
80000
100000
120000
140000


GAM COL Rev 205 Egress
Radial Resolution (m)
Ring Plane Radius (km)
-0.0
0.5
1.0
1.5
2.0
2.5
80000
85000
90000
95000
100000


HSP Counts (per second)
Ring Plane Radius (km)
0
200
400
600
800
1000
1200
1400
80000
85000
90000
95000
100000


ϕ (degrees)
Ring Plane Radius (km)
300
310
320
330
340
80000
85000
90000
95000
100000

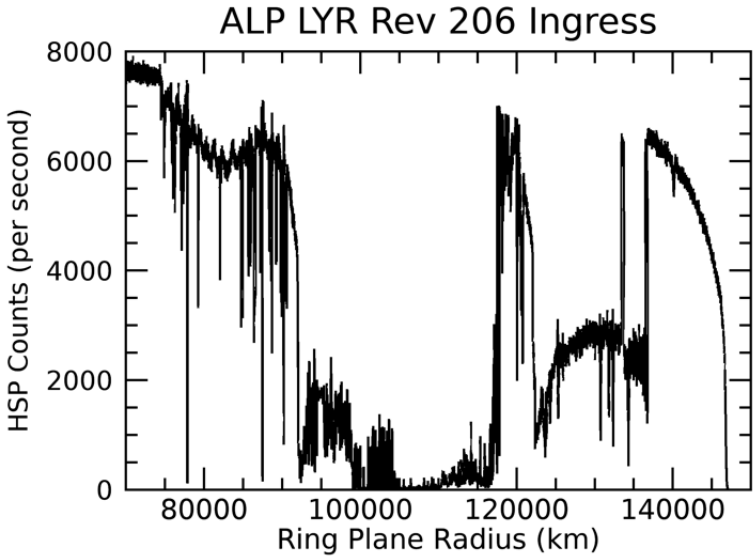


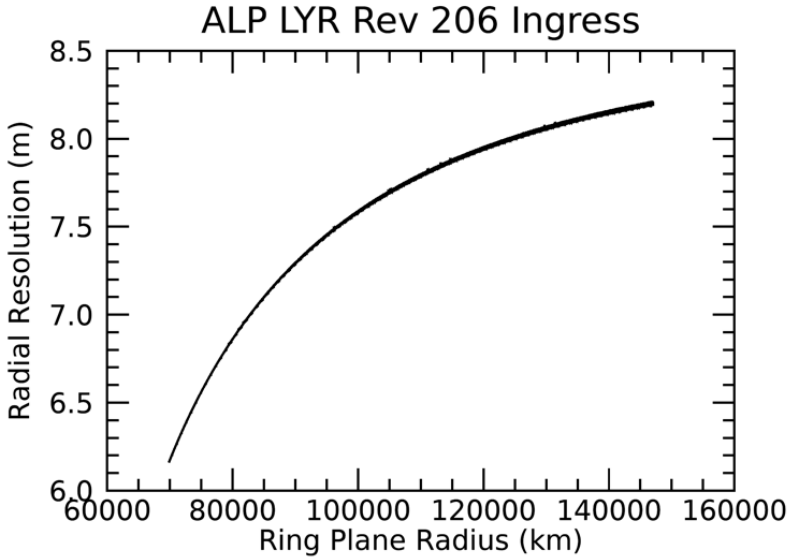
2014−172T20:49:00.000 1994870.3 km

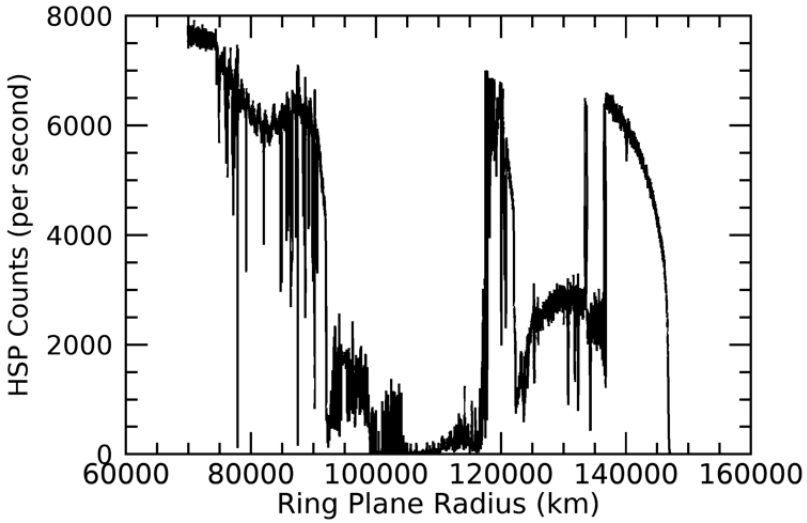
Target RA/dec: 87.72, −36.41

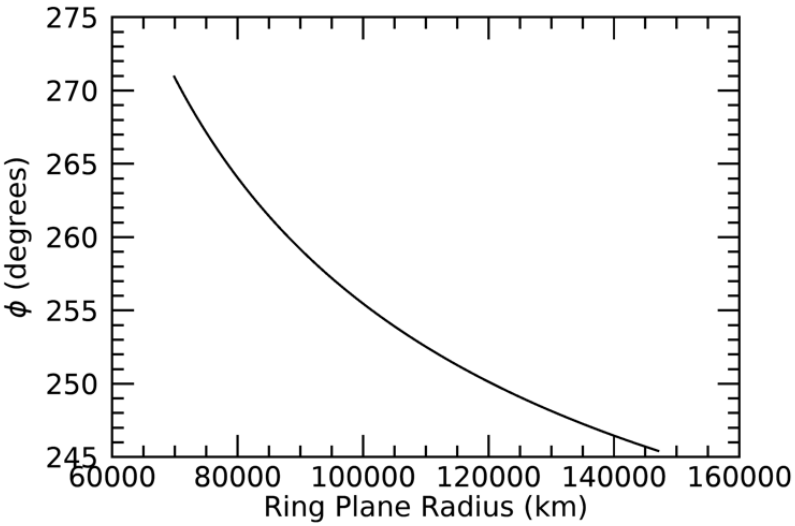
Subsolar lat/lon: 18.45, −24.04

Sub−s/c lat/lon: 26.98, −169.09

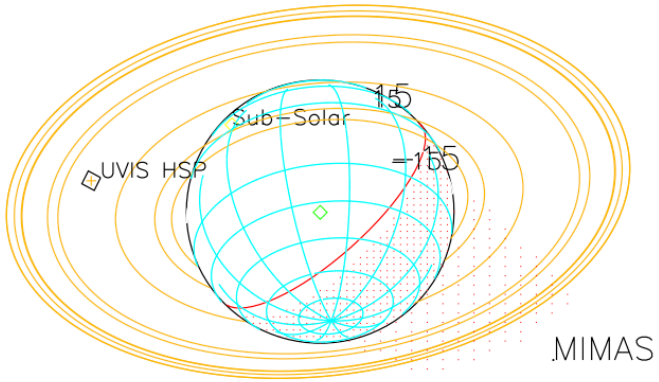

ALP LYR Rev 206 Ingress
HSP Counts (per second)
8000
6000
4000
2000
0
80000
100000
120000
140000
Ring Plane Radius (km)


ALP LYR Rev 206 Ingress
Radial Resolution (m)
8.5
8.0
7.5
7.0
6.5
6.0
60000
80000
100000
120000
140000
160000
Ring Plane Radius (km)


HSP Counts (per second)
8000
6000
4000
2000
0
60000
80000
100000
120000
140000
160000
Ring Plane Radius (km)


ϕ (degrees)
275
270
265
260
255
250
245
60000
80000
100000
120000
140000
160000
Ring Plane Radius (km)

DIONE

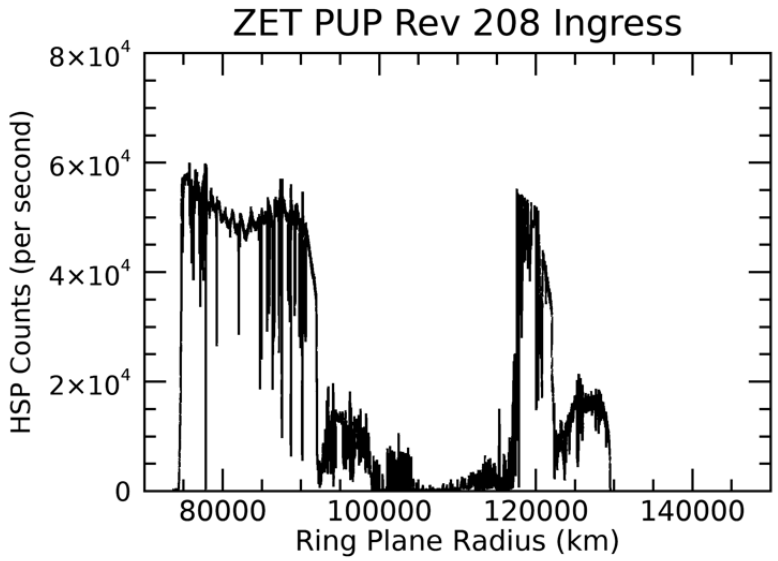


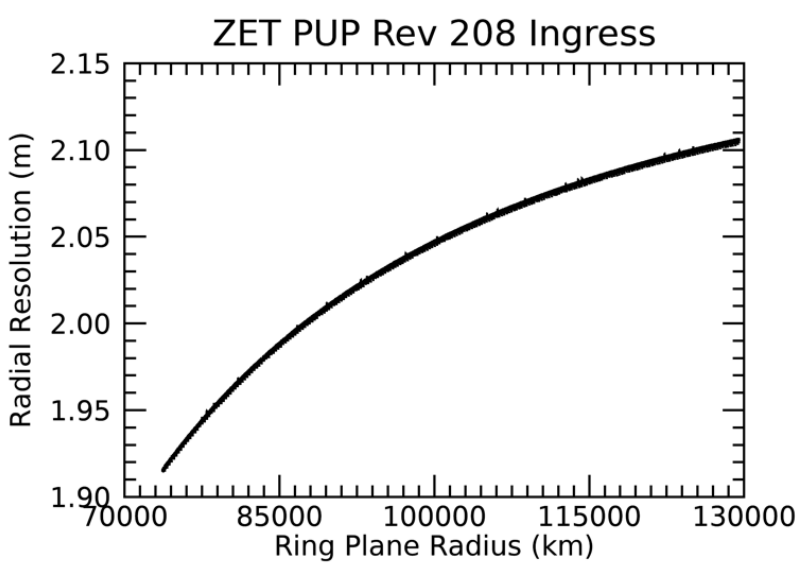
ENC

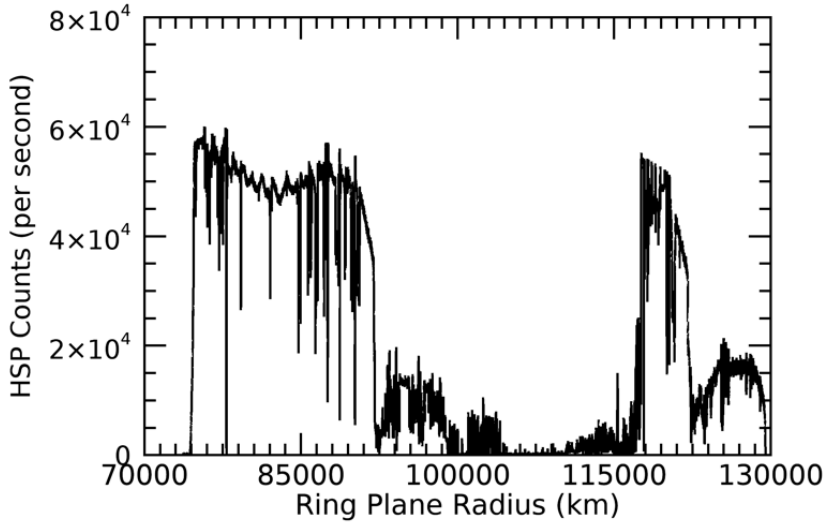
MIMAS

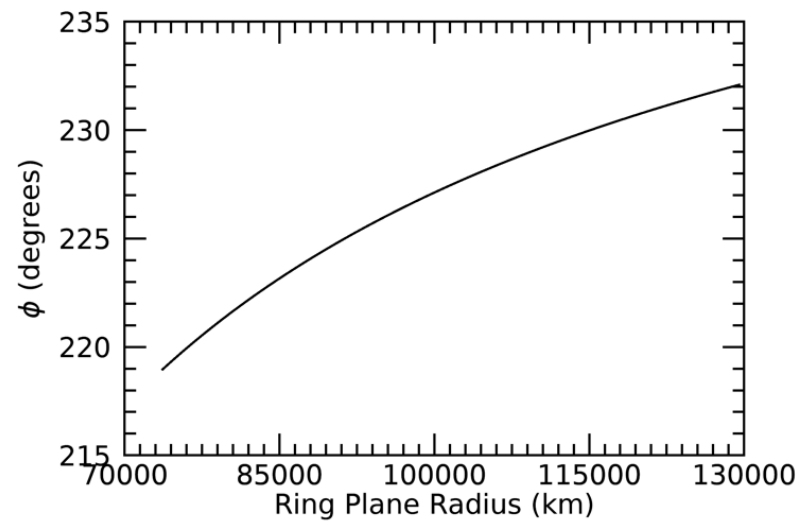
TETHYS

2014−197T22:54:00.000 1034853.9 km
Target RA/dec: 271.92, 38.26
Subsolar lat/lon: 18.62, 156.51
Sub−s/c lat/lon: −29.09, −165.62

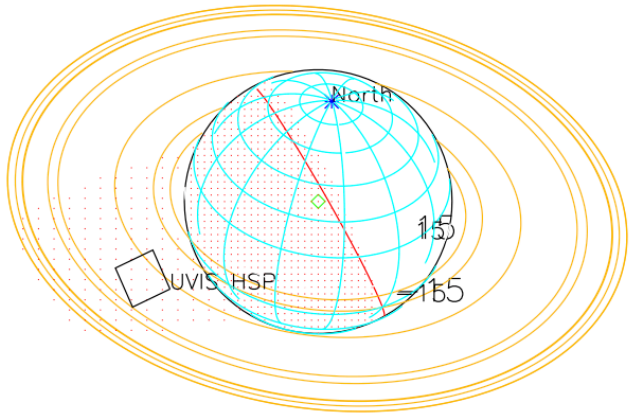

ZET PUP Rev 208 Ingress
HSP Counts (per second)
8×10^4
6×10^4
4×10^4
2×10^4
0
80000
100000
120000
140000
Ring Plane Radius (km)


ZET PUP Rev 208 Ingress
Radial Resolution (m)
2.15
2.10
2.05
2.00
1.95
1.90
70000
85000
100000
115000
130000
Ring Plane Radius (km)


HSP Counts (per second)
8×10^4
6×10^4
4×10^4
2×10^4
0
70000
85000
100000
115000
130000
Ring Plane Radius (km)


ϕ (degrees)
235
230
225
220
215
70000
85000
100000
115000
130000
Ring Plane Radius (km)

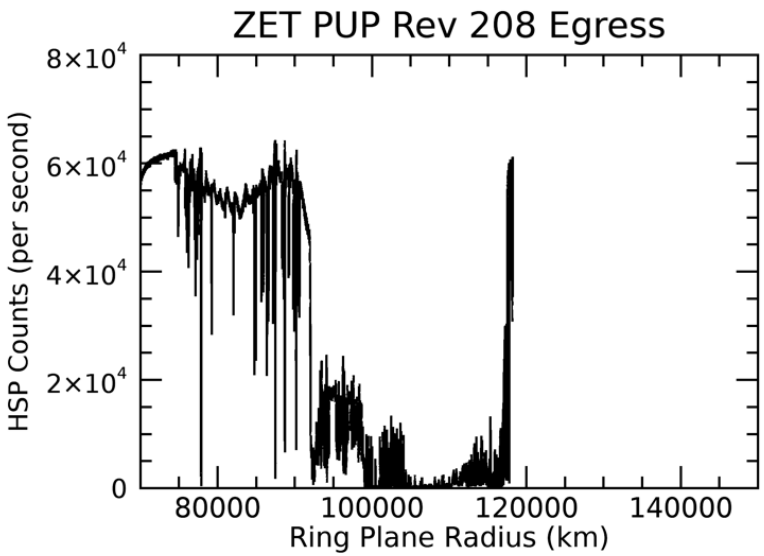
)IONE

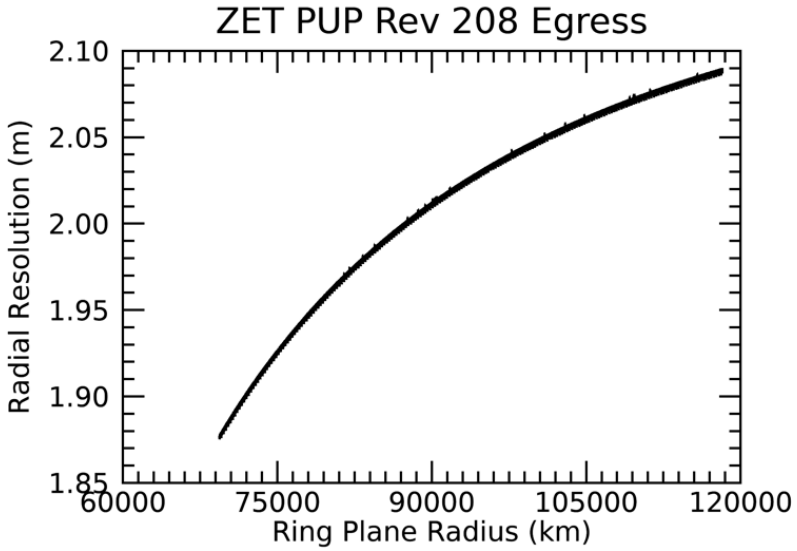


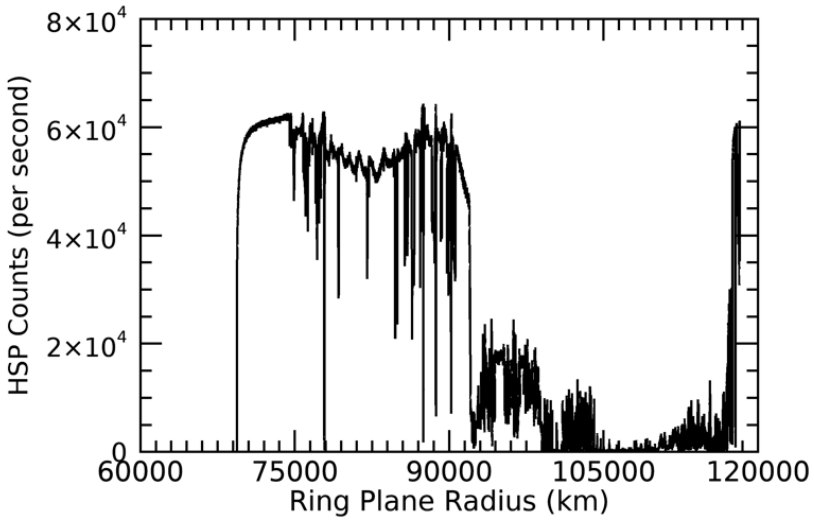
.ENC

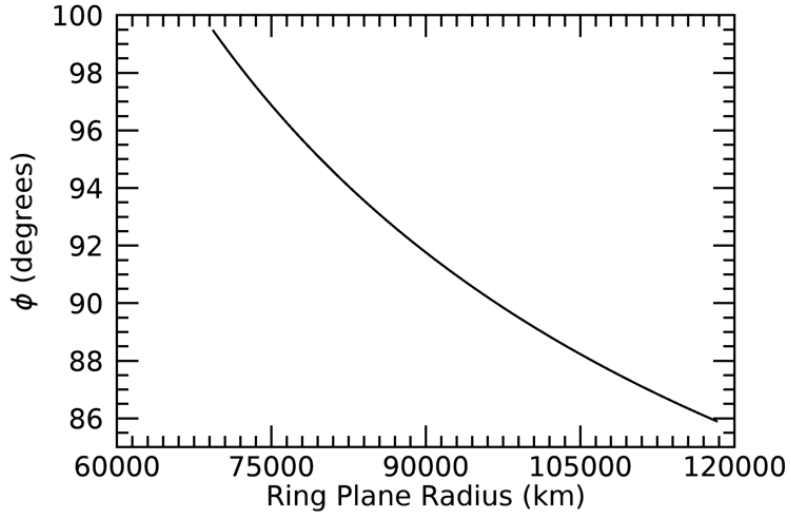
.MIMAS

2014-275T12:03:00.000 3085263.7 km
Target RA/dec: 118.98, -39.40
Subsolar lat/lon: 19.13, -76.29
Sub-s/c lat/lon: 32.37, 164.72

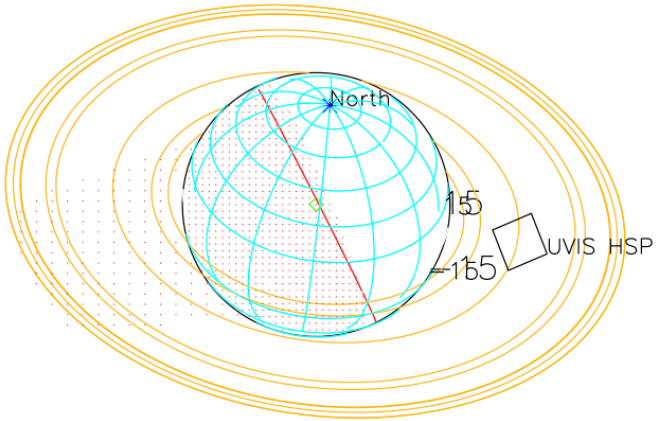

ZET PUP Rev 208 Egress
HSP Counts (per second)
8×10^4
6×10^4
4×10^4
2×10^4
0
80000
100000
120000
140000
Ring Plane Radius (km)


ZET PUP Rev 208 Egress
Radial Resolution (m)
2.10
2.05
2.00
1.95
1.90
1.85
60000
75000
90000
105000
120000
Ring Plane Radius (km)


HSP Counts (per second)
8×10^4
6×10^4
4×10^4
2×10^4
0
60000
75000
90000
105000
120000
Ring Plane Radius (km)


ϕ (degrees)
100
98
96
94
92
90
88
86
60000
75000
90000
105000
120000
Ring Plane Radius (km)

TETHYS

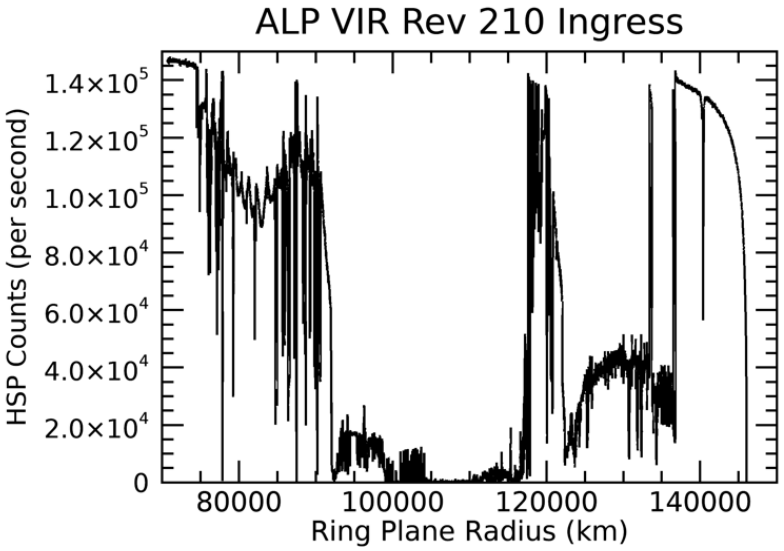


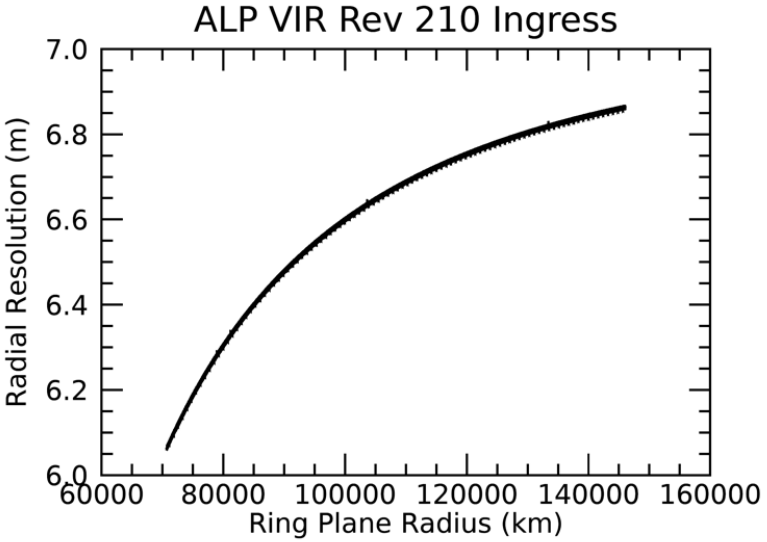
MIMAS

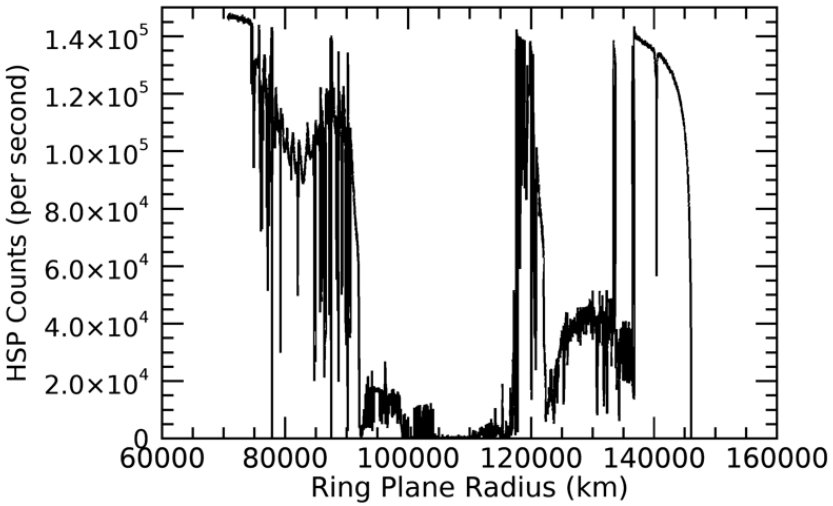
ENCELADUS

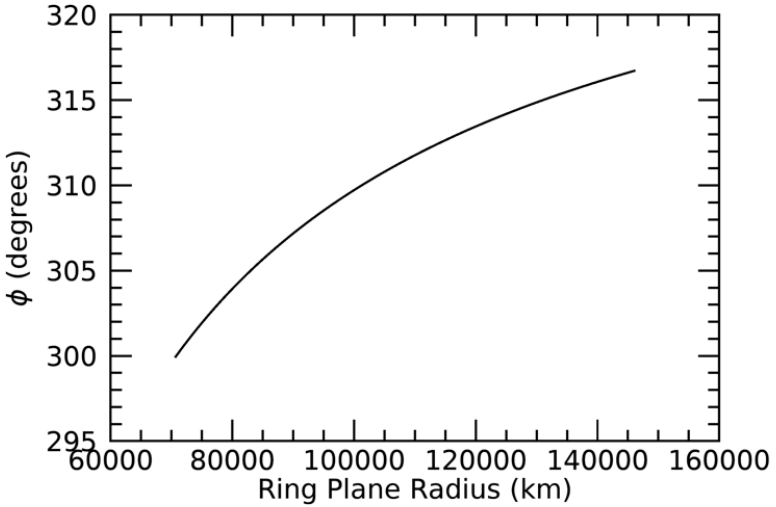
2014−276T10:52:00.000 3136538.3 km
Target RA/dec: 123.08, −39.72
Subsolar lat/lon: 19.13, −127.08
Sub−s/c lat/lon: 33.09, 117.83

DIONE

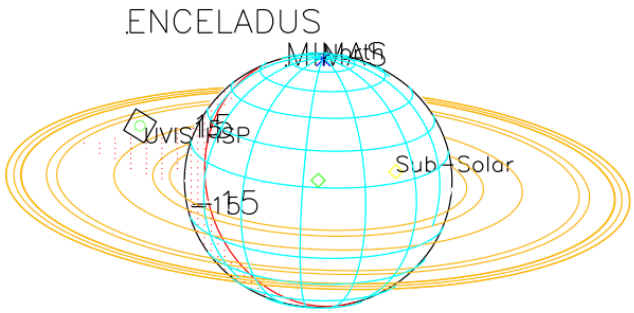

ALP VIR Rev 210 Ingress
HSP Counts (per second)
1.4×10^5
1.2×10^5
1.0×10^5
8.0×10^4
6.0×10^4
4.0×10^4
2.0×10^4
0
80000
100000
120000
140000
Ring Plane Radius (km)


ALP VIR Rev 210 Ingress
Radial Resolution (m)
7.0
6.8
6.6
6.4
6.2
6.0
60000
80000
100000
120000
140000
160000
Ring Plane Radius (km)


HSP Counts (per second)
1.4×10^5
1.2×10^5
1.0×10^5
8.0×10^4
6.0×10^4
4.0×10^4
2.0×10^4
0
60000
80000
100000
120000
140000
160000
Ring Plane Radius (km)


ϕ (degrees)
320
315
310
305
300
295
60000
80000
100000
120000
140000
160000
Ring Plane Radius (km)

TETHYS

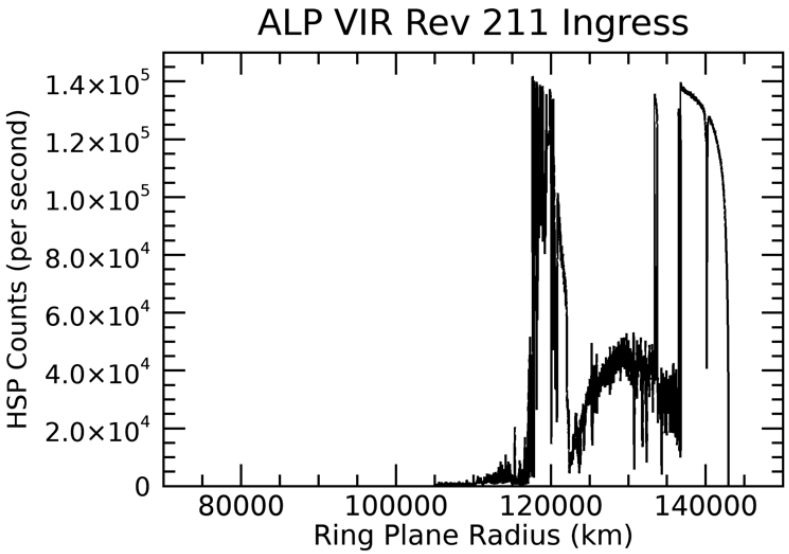


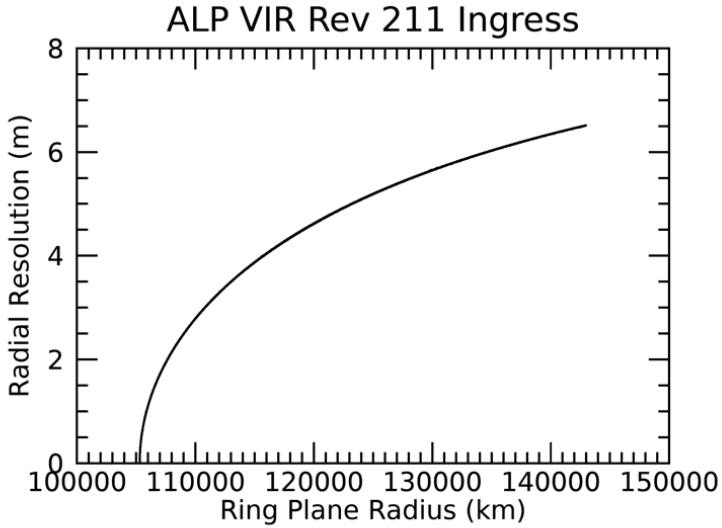
2014-339T06:09:00.000 1778351.4 km

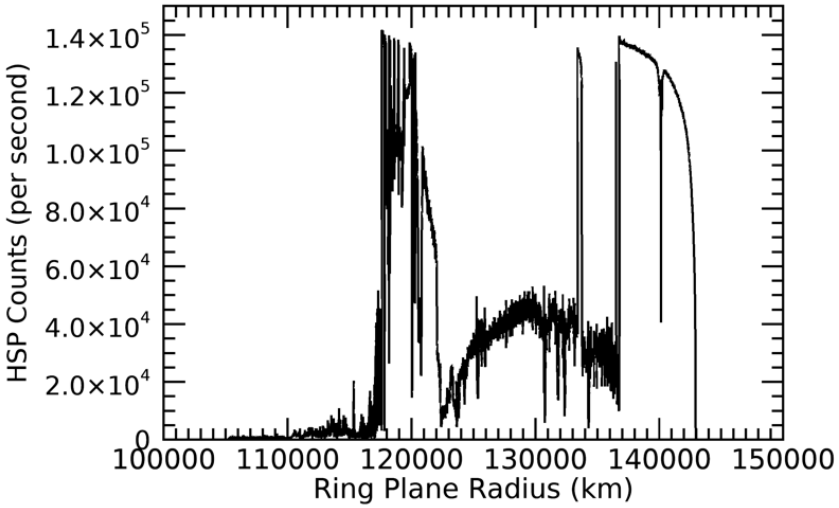
Target RA/dec: 198.66, -11.93

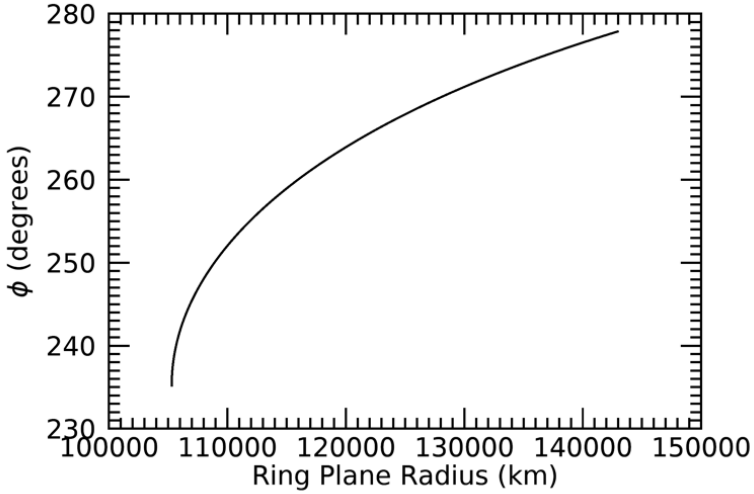
Subsolar lat/lon: 19.52, 74.26

Sub-s/c lat/lon: 14.83, 37.23


ALP VIR Rev 211 Ingress
HSP Counts (per second)
1.4×10^5
1.2×10^5
1.0×10^5
8.0×10^4
6.0×10^4
4.0×10^4
2.0×10^4
0
80000
100000
120000
140000
Ring Plane Radius (km)

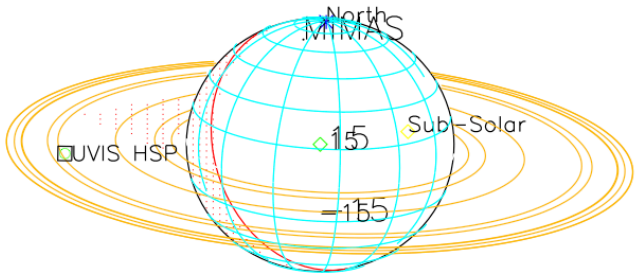

ALP VIR Rev 211 Ingress
Radial Resolution (m)
8
6
4
2
0
100000
110000
120000
130000
140000
150000
Ring Plane Radius (km)


HSP Counts (per second)
1.4×10^5
1.2×10^5
1.0×10^5
8.0×10^4
6.0×10^4
4.0×10^4
2.0×10^4
0
100000
110000
120000
130000
140000
150000
Ring Plane Radius (km)


ϕ (degrees)
280
270
260
250
240
230
100000
110000
120000
130000
140000
150000
Ring Plane Radius (km)

PHOEBE

TETHYS



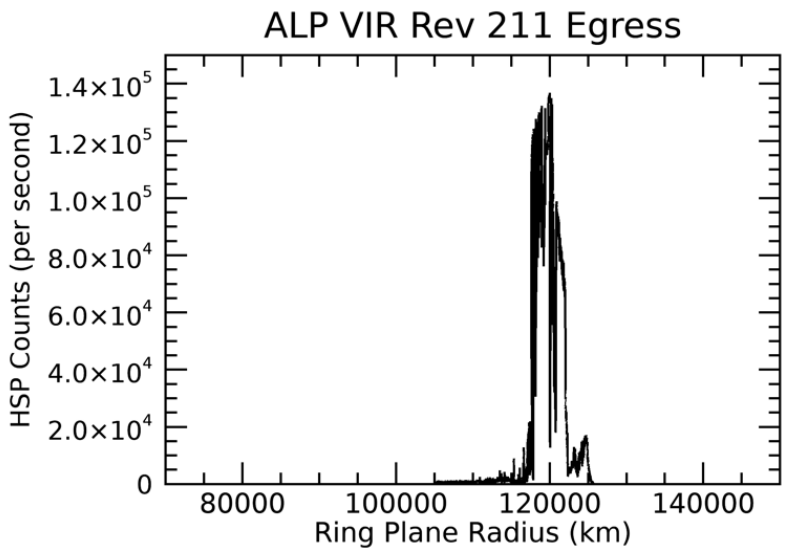
ENCELAD

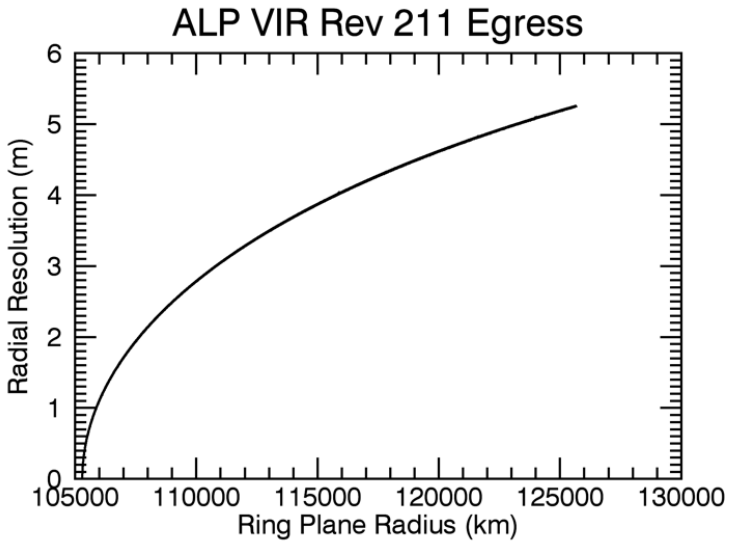
2015-008T03:57:00.000 1031732.7 km

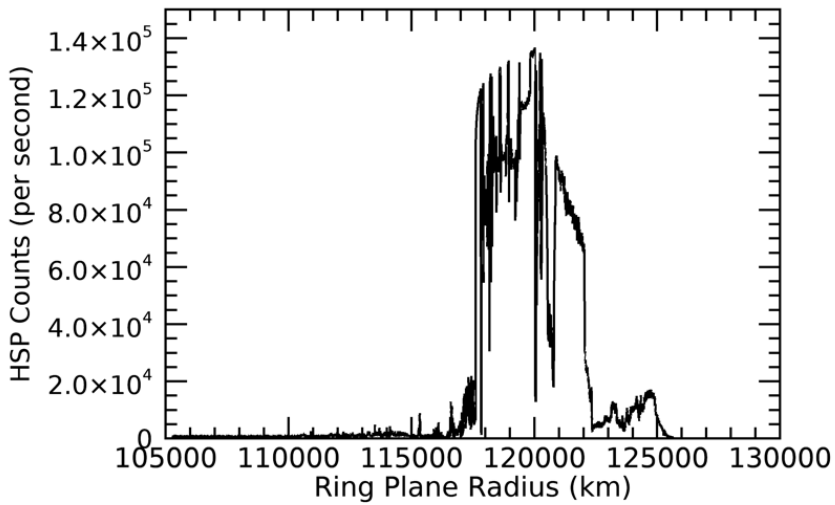
Target RA/dec: 194.81, -11.01

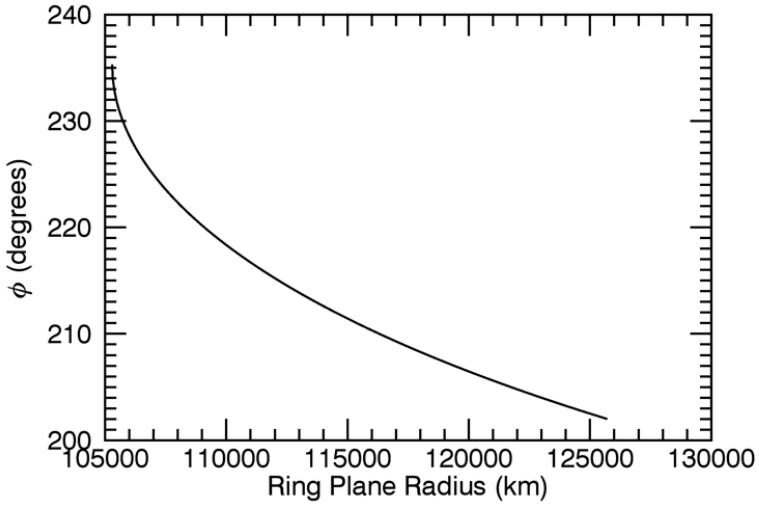
Subsolar lat/lon: 19.72, -57.33

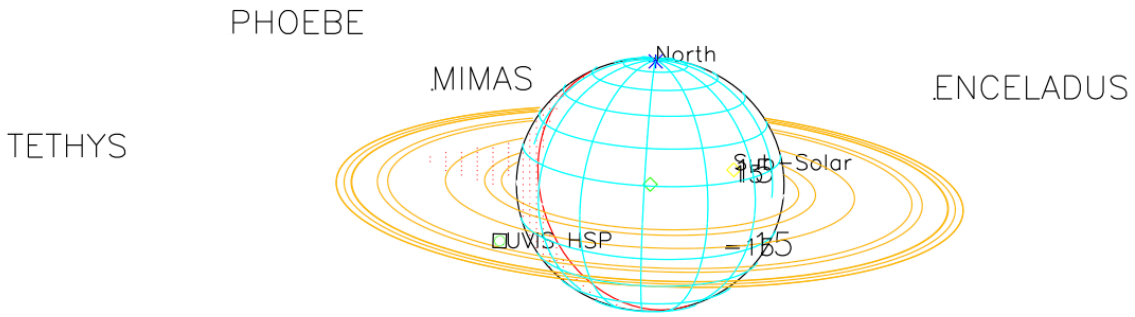
Sub-s/c lat/lon: 13.96, -99.37


ALP VIR Rev 211 Egress
HSP Counts (per second)
1.4×10^5
1.2×10^5
1.0×10^5
8.0×10^4
6.0×10^4
4.0×10^4
2.0×10^4
0
80000
100000
120000
140000
Ring Plane Radius (km)


ALP VIR Rev 211 Egress
Radial Resolution (m)
6
5
4
3
2
1
0
105000
110000
115000
120000
125000
130000
Ring Plane Radius (km)


HSP Counts (per second)
1.4×10^5
1.2×10^5
1.0×10^5
8.0×10^4
6.0×10^4
4.0×10^4
2.0×10^4
0
105000
110000
115000
120000
125000
130000
Ring Plane Radius (km)


ϕ (degrees)
240
230
220
210
200
105000
110000
115000
120000
125000
130000
Ring Plane Radius (km)

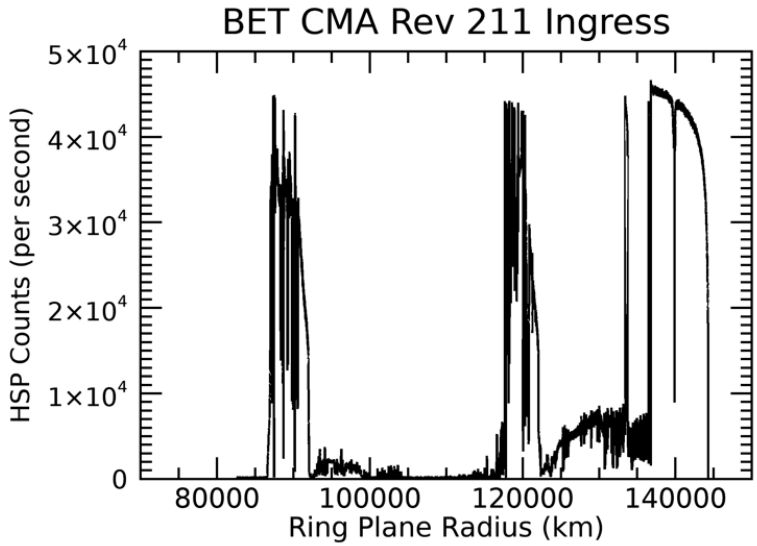


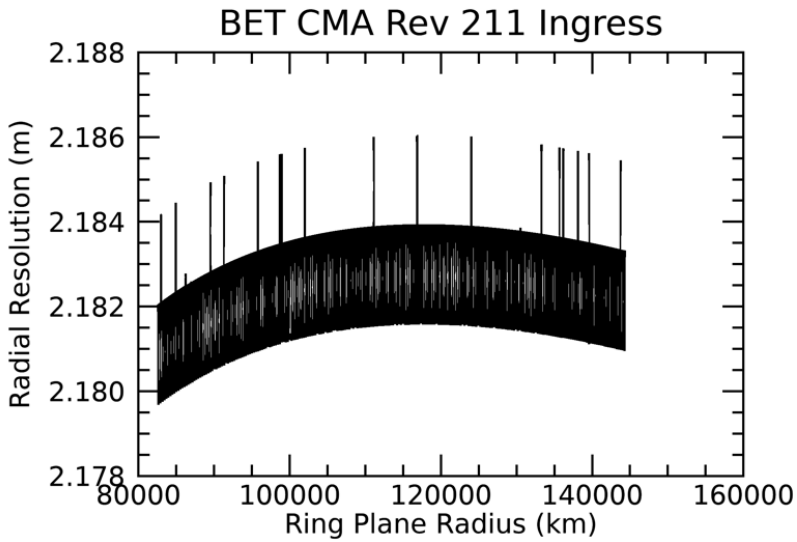
2015-008T06:20:00.000 990054.34 km

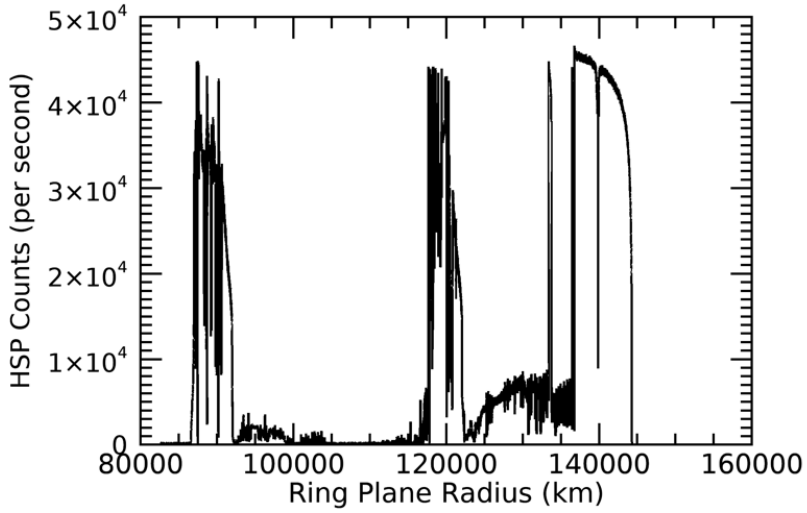
Target RA/dec: 197.30, -9.78

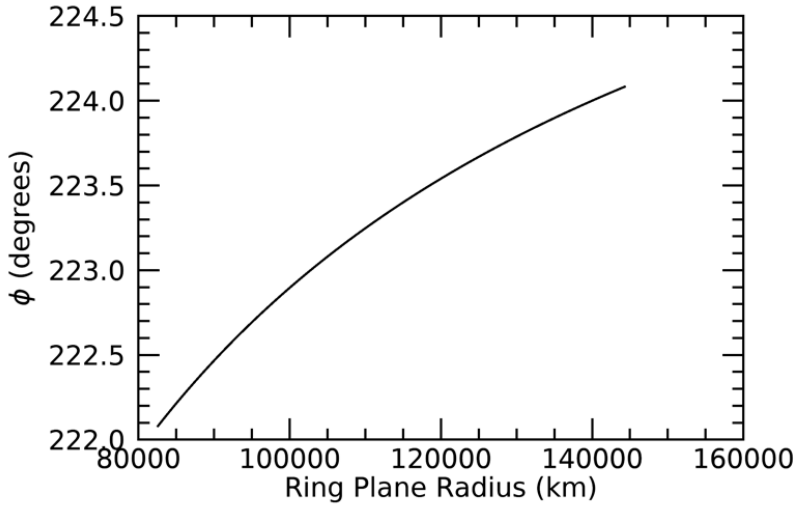
Subsolar lat/lon: 19.72, -137.84

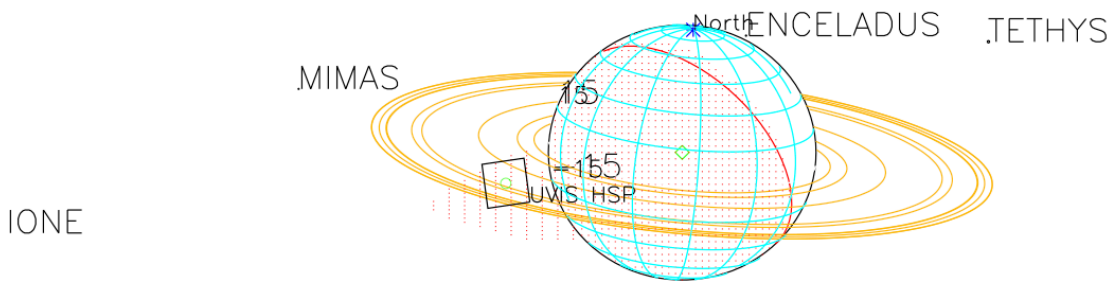
Sub-s/c lat/lon: 13.03, -177.27


BET CMA Rev 211 Ingress
HSP Counts (per second)
5×10^4
4×10^4
3×10^4
2×10^4
1×10^4
0
80000
100000
120000
140000
Ring Plane Radius (km)


BET CMA Rev 211 Ingress
Radial Resolution (m)
2.188
2.186
2.184
2.182
2.180
2.178
80000
100000
120000
140000
160000
Ring Plane Radius (km)


HSP Counts (per second)
5×10^4
4×10^4
3×10^4
2×10^4
1×10^4
0
80000
100000
120000
140000
160000
Ring Plane Radius (km)


ϕ (degrees)
224.5
224.0
223.5
223.0
222.5
222.0
80000
100000
120000
140000
160000
Ring Plane Radius (km)

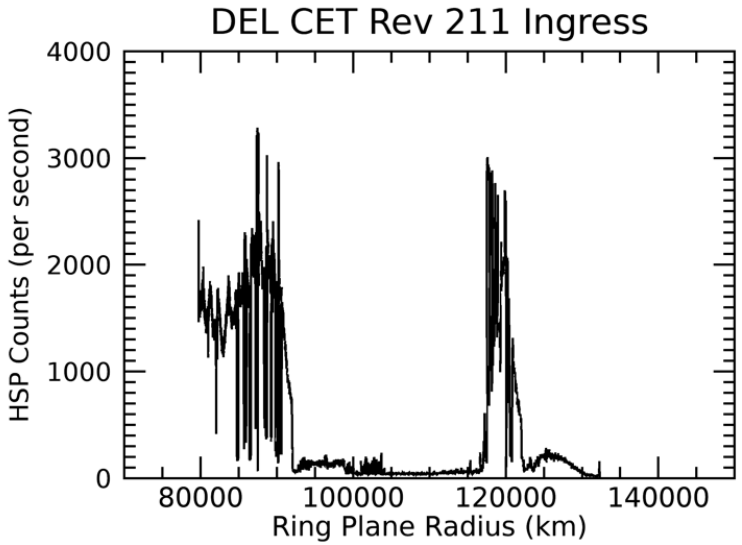


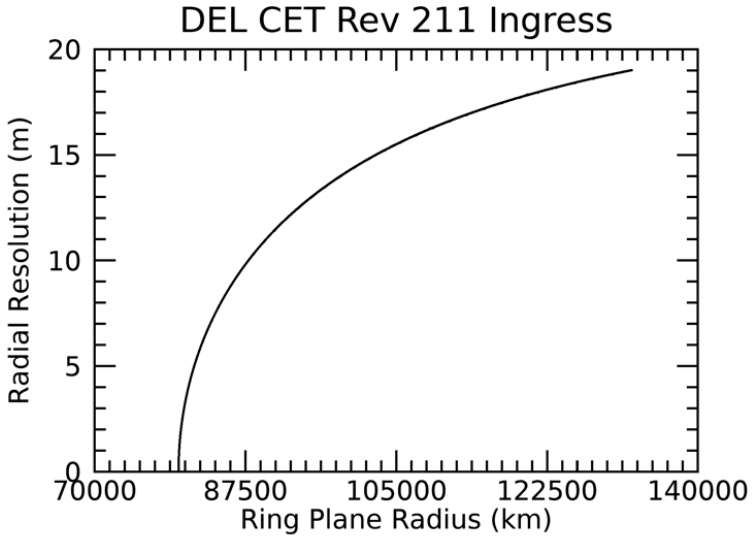
2015-020T07:44:00.000 3181139.2 km

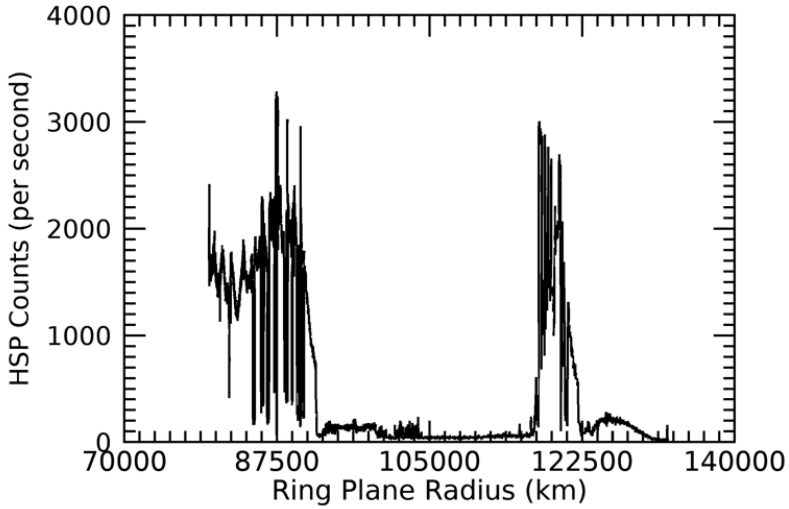
Target RA/dec: 94.17, -17.72

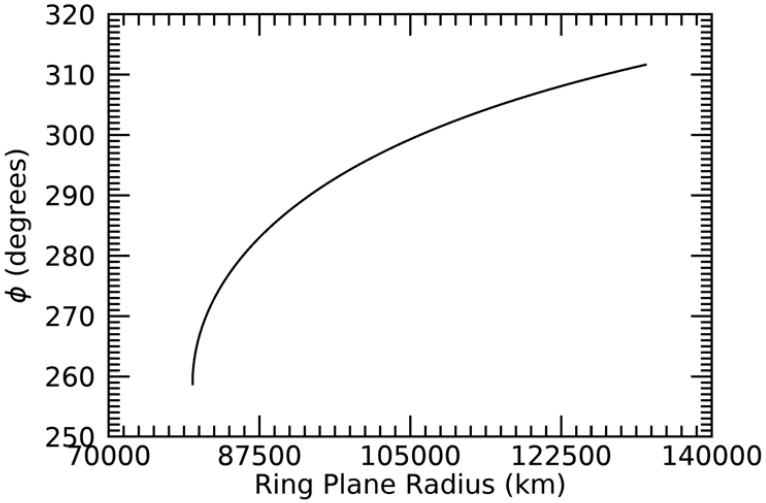
Subsolar lat/lon: 19.79, 165.80

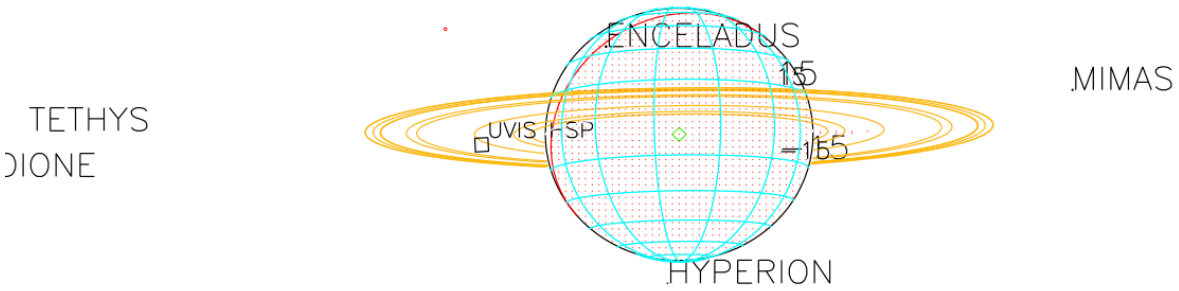
Sub-s/c lat/lon: 11.35, 21.97


DEL CET Rev 211 Ingress
HSP Counts (per second)
Ring Plane Radius (km)
0
1000
2000
3000
4000
80000
100000
120000
140000


DEL CET Rev 211 Ingress
Radial Resolution (m)
Ring Plane Radius (km)
0
5
10
15
20
70000
87500
105000
122500
140000


HSP Counts (per second)
Ring Plane Radius (km)
0
1000
2000
3000
4000
70000
87500
105000
122500
140000


ϕ (degrees)
Ring Plane Radius (km)
250
260
270
280
290
300
310
320
70000
87500
105000
122500
140000

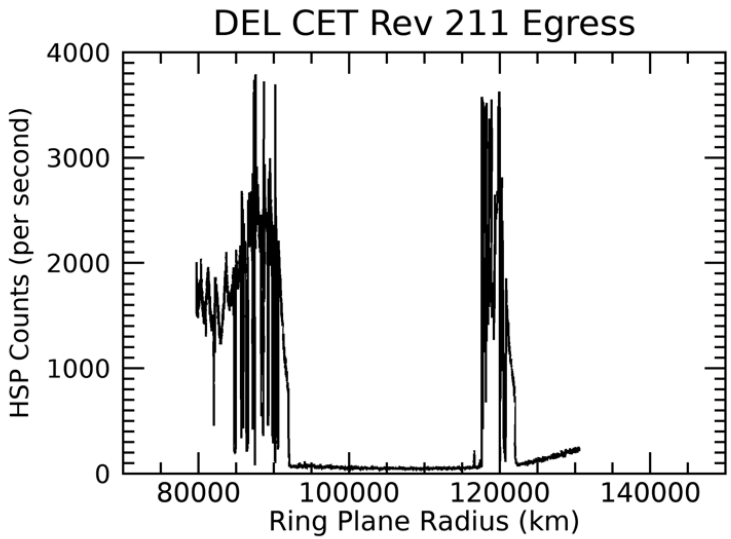


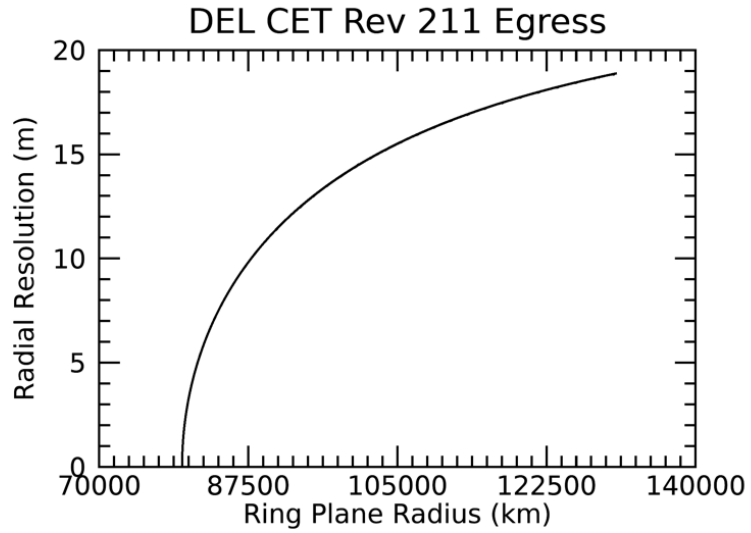
2015-011T04:46:00.000 977342.49 km

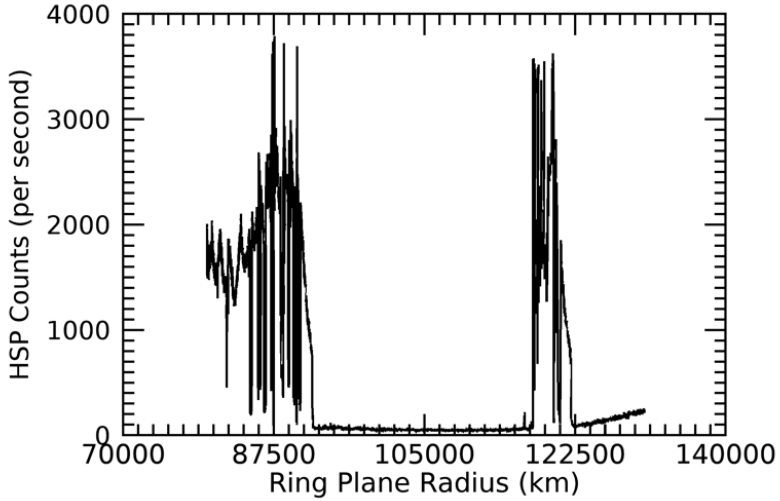
Target RA/dec: 34.66, 0.59

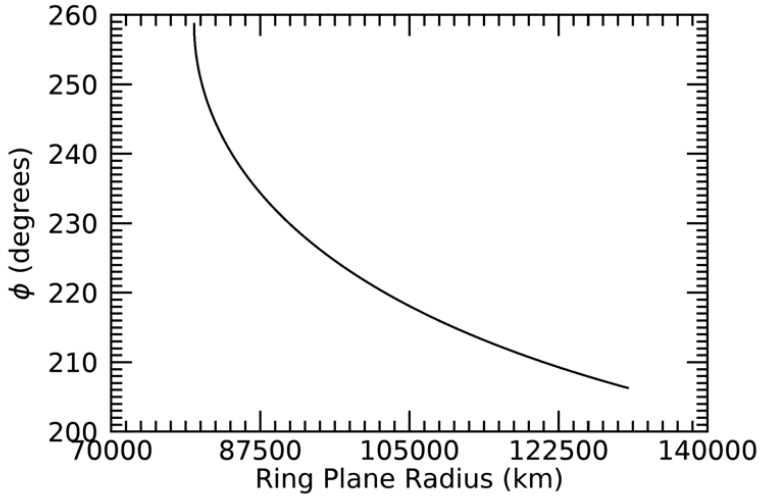
Subsolar lat/lon: 19.74, 2.80

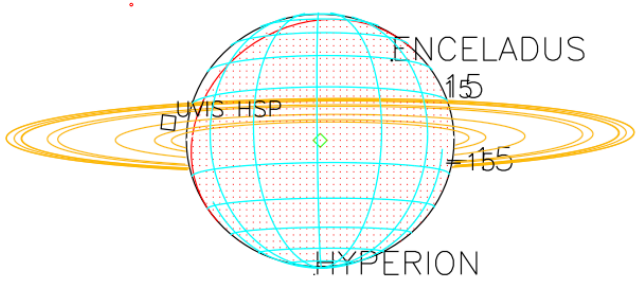
Sub-s/c lat/lon: -5.79, 161.17


DEL CET Rev 211 Egress
HSP Counts (per second)
Ring Plane Radius (km)
0
1000
2000
3000
4000
80000
100000
120000
140000


DEL CET Rev 211 Egress
Radial Resolution (m)
Ring Plane Radius (km)
0
5
10
15
20
70000
87500
105000
122500
140000


HSP Counts (per second)
Ring Plane Radius (km)
0
1000
2000
3000
4000
70000
87500
105000
122500
140000


ϕ (degrees)
Ring Plane Radius (km)
200
210
220
230
240
250
260
70000
87500
105000
122500
140000



TETHYS

NE

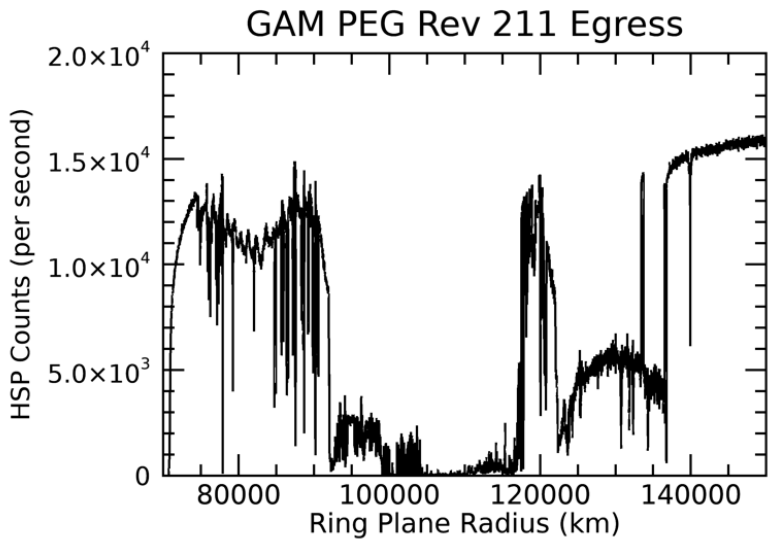
MIMAS

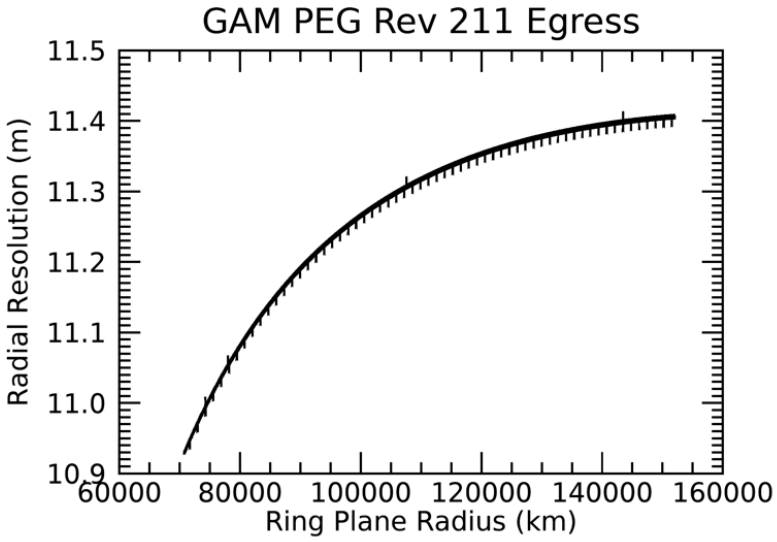
2015-011T05:59:00.000 998740.71 km

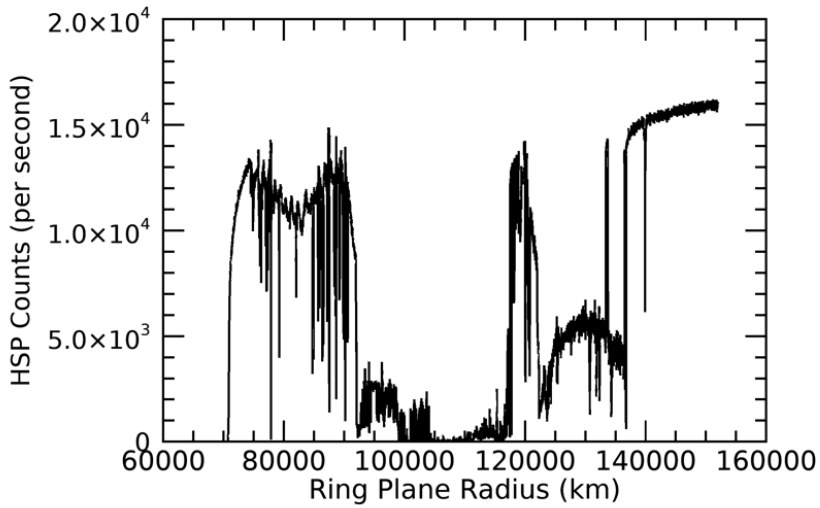
Target RA/dec: 35.95, -0.11

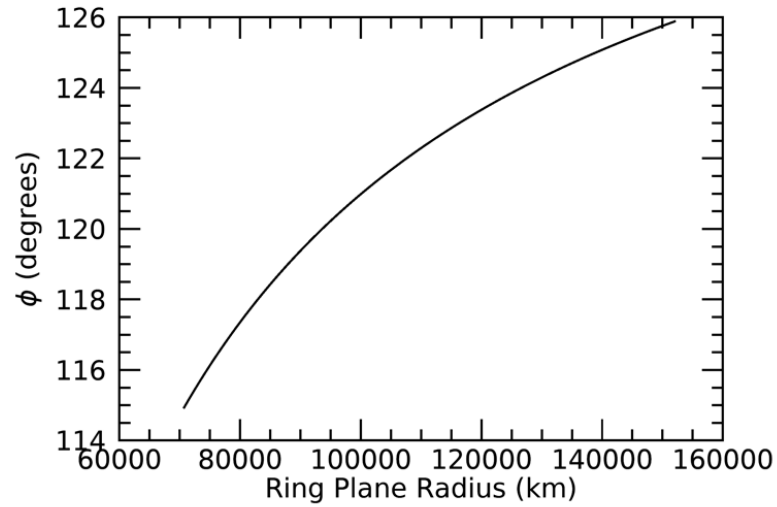
Subsolar lat/lon: 19.74, -38.30

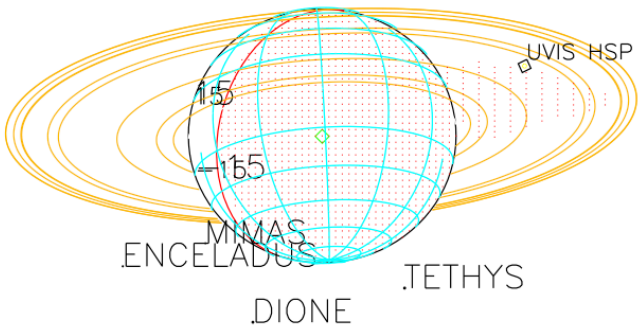
Sub-s/c lat/lon: -5.22, 121.37


GAM PEG Rev 211 Egress
HSP Counts (per second)
2.0×10^4
1.5×10^4
1.0×10^4
5.0×10^3
0
80000
100000
120000
140000
Ring Plane Radius (km)


GAM PEG Rev 211 Egress
Radial Resolution (m)
11.5
11.4
11.3
11.2
11.1
11.0
10.9
60000
80000
100000
120000
140000
160000
Ring Plane Radius (km)


HSP Counts (per second)
2.0×10^4
1.5×10^4
1.0×10^4
5.0×10^3
0
60000
80000
100000
120000
140000
160000
Ring Plane Radius (km)


ϕ (degrees)
126
124
122
120
118
116
114
60000
80000
100000
120000
140000
160000
Ring Plane Radius (km)



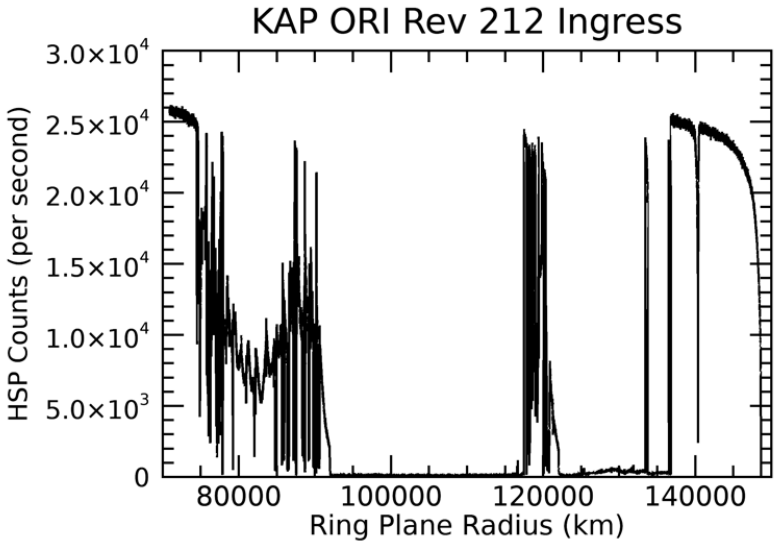
HYPERION

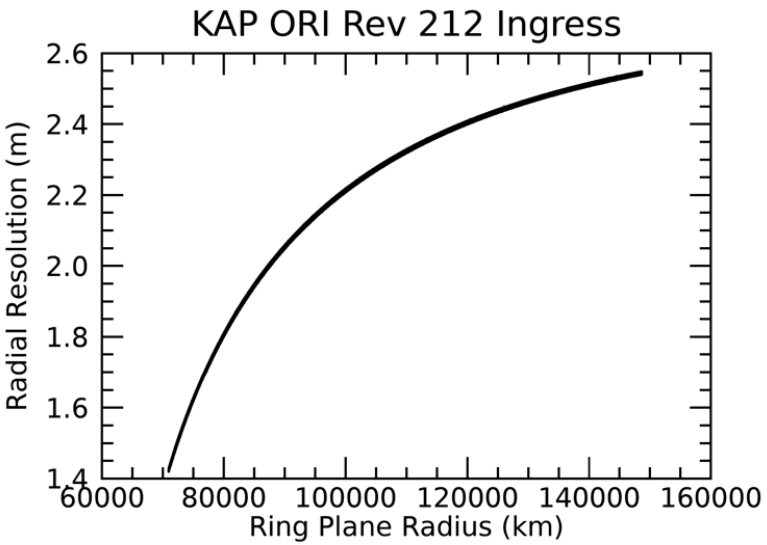
2015-010T13:19:00.000 704120.03 km

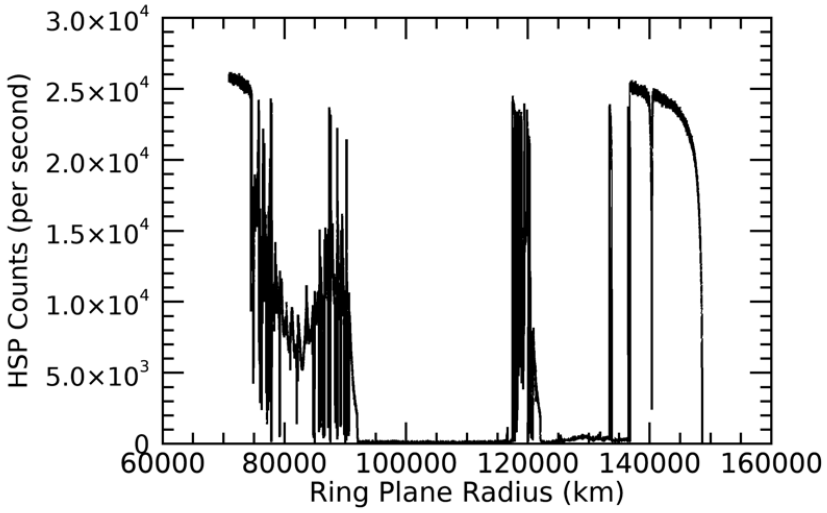
Target RA/dec: 10.97, 12.84

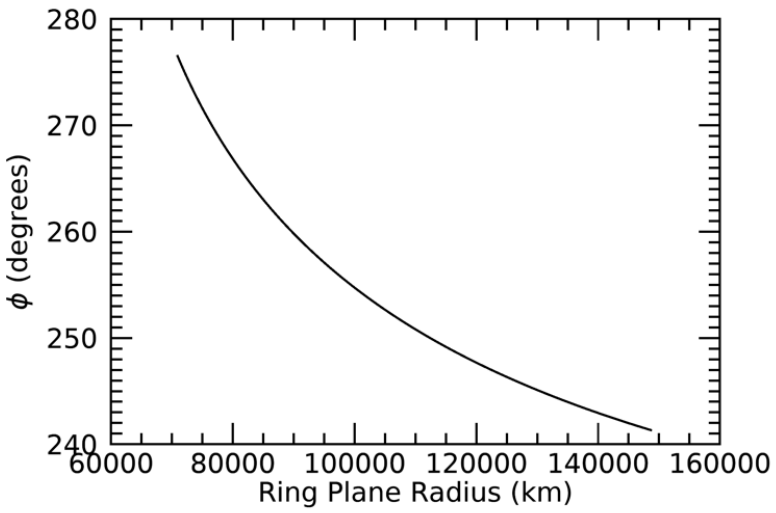
Subsolar lat/lon: 19.73, 164.72

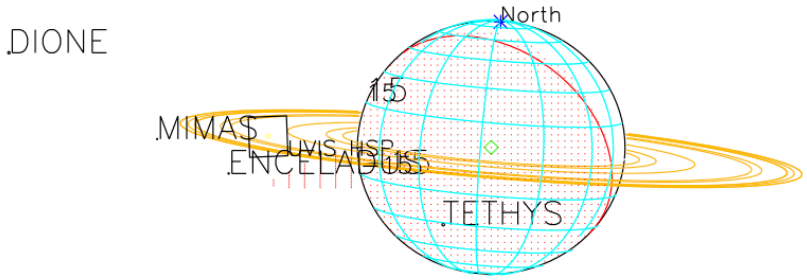
Sub-s/c lat/lon: -15.41, -61.44


KAP ORI Rev 212 Ingress
HSP Counts (per second)
3.0×10^4
2.5×10^4
2.0×10^4
1.5×10^4
1.0×10^4
5.0×10^3
0
80000
100000
120000
140000
Ring Plane Radius (km)


KAP ORI Rev 212 Ingress
Radial Resolution (m)
2.6
2.4
2.2
2.0
1.8
1.6
1.4
60000
80000
100000
120000
140000
160000
Ring Plane Radius (km)


HSP Counts (per second)
3.0×10^4
2.5×10^4
2.0×10^4
1.5×10^4
1.0×10^4
5.0×10^3
0
60000
80000
100000
120000
140000
160000
Ring Plane Radius (km)


ϕ (degrees)
280
270
260
250
240
60000
80000
100000
120000
140000
160000
Ring Plane Radius (km)

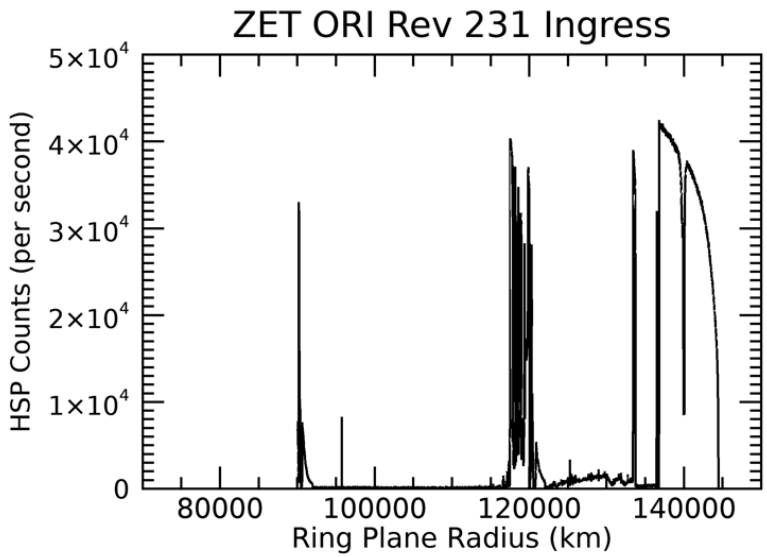


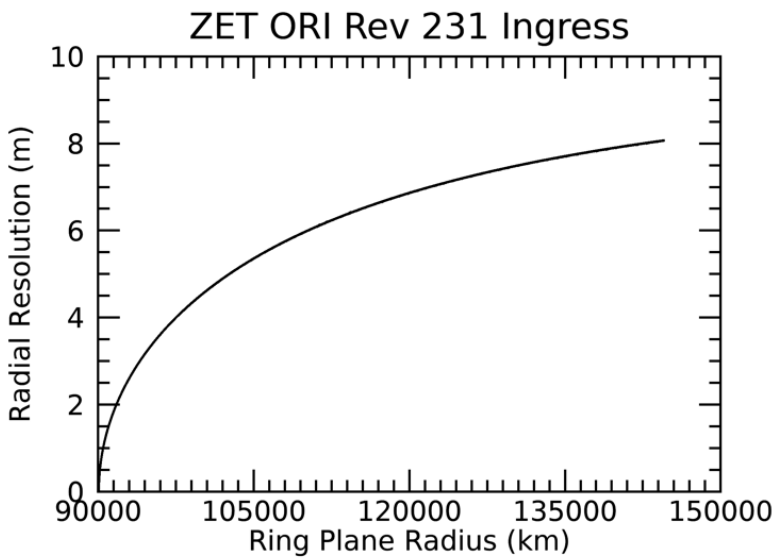
2015-049T16:11:00.000 2869495.5 km

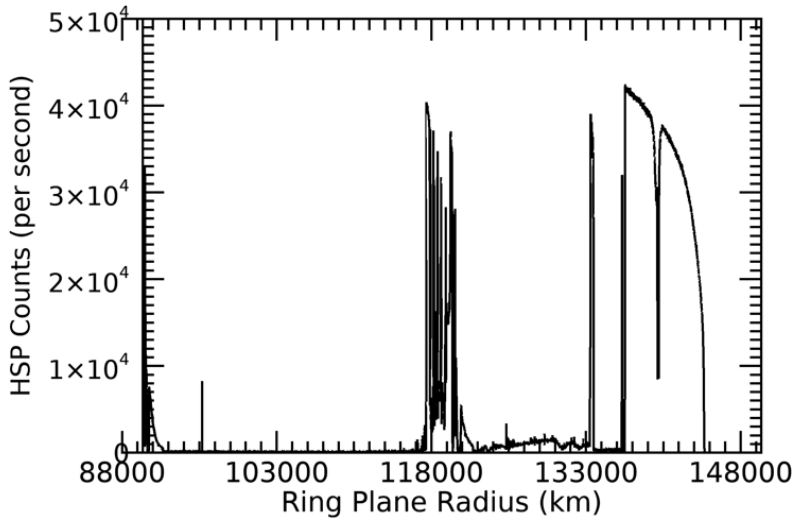
Target RA/dec: 84.90, -9.77

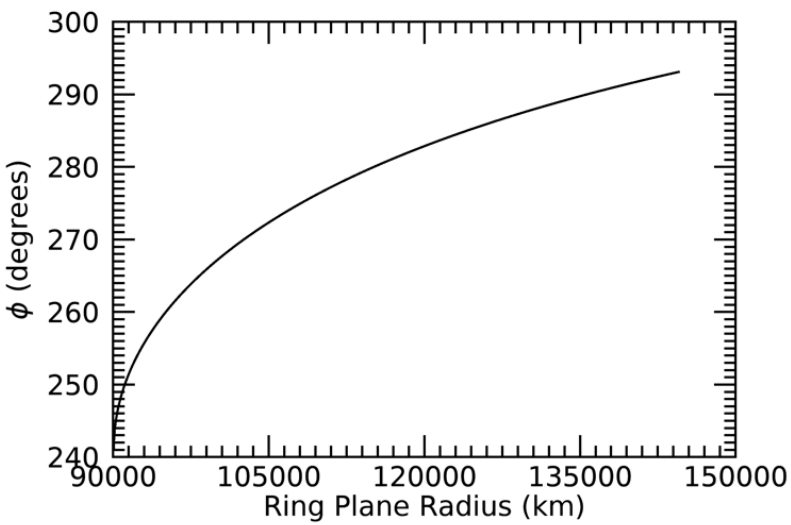
Subsolar lat/lon: 19.95, 128.26

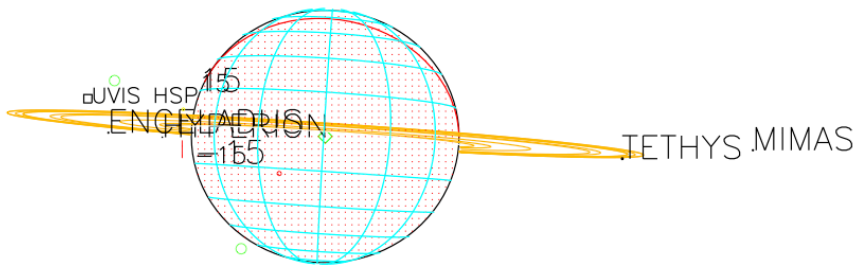
Sub-s/c lat/lon: 4.19, -24.93


ZET ORI Rev 231 Ingress
HSP Counts (per second)
5×10^4
4×10^4
3×10^4
2×10^4
1×10^4
0
80000
100000
120000
140000
Ring Plane Radius (km)


ZET ORI Rev 231 Ingress
Radial Resolution (m)
10
8
6
4
2
0
90000
105000
120000
135000
150000
Ring Plane Radius (km)


HSP Counts (per second)
5×10^4
4×10^4
3×10^4
2×10^4
1×10^4
0
88000
103000
118000
133000
148000
Ring Plane Radius (km)


ϕ (degrees)
300
290
280
270
260
250
240
90000
105000
120000
135000
150000
Ring Plane Radius (km)

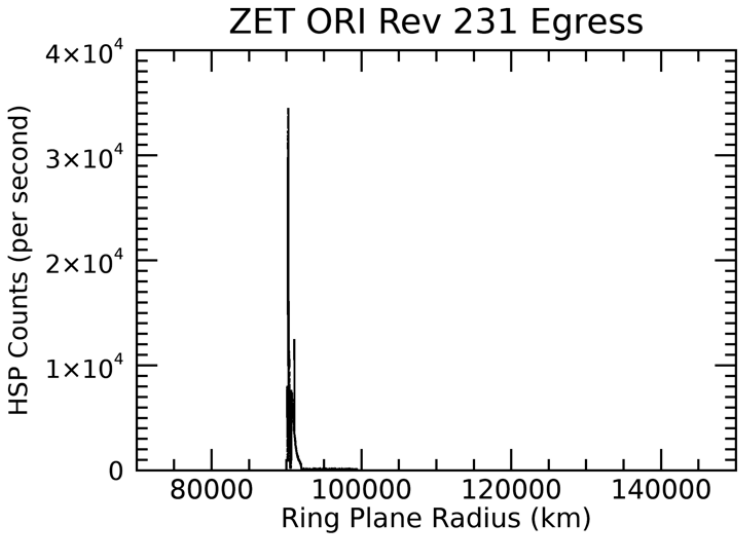


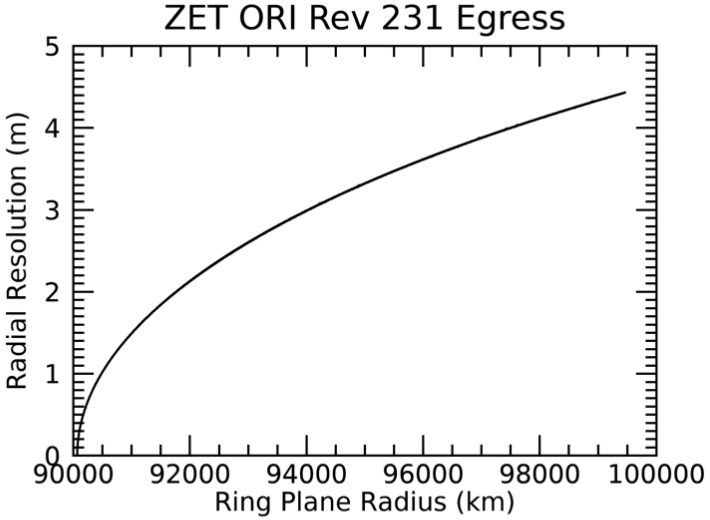
2016-030T20:20:00.000 594940.39 km

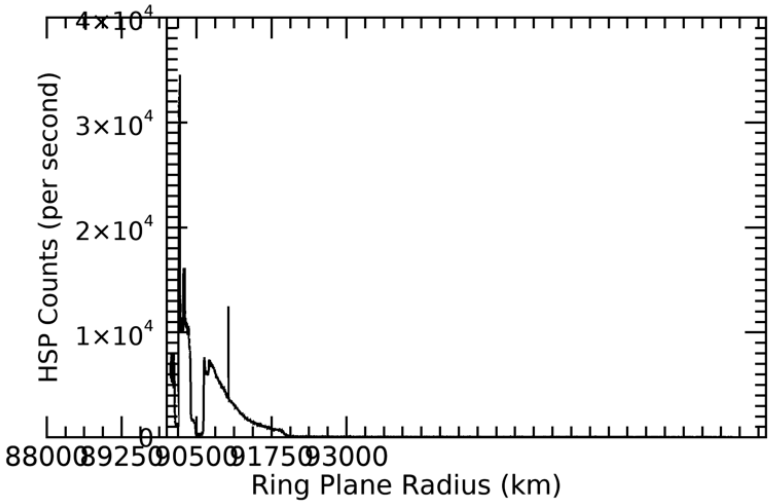
Target RA/dec: 74.95, -3.54

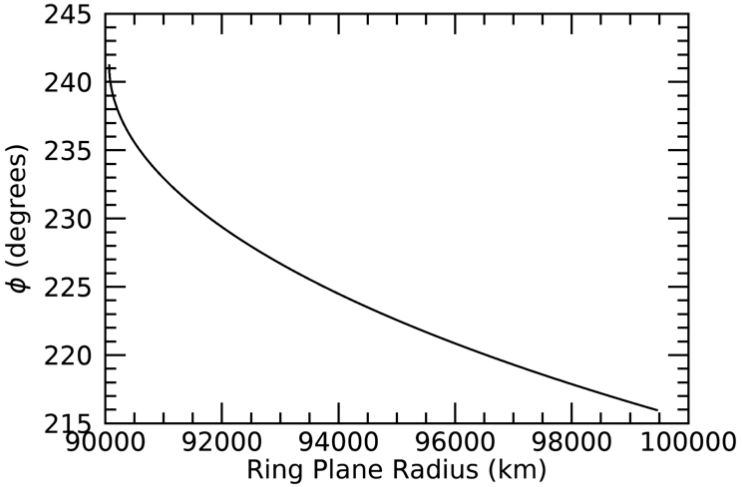
Subsolar lat/lon: 21.49, -95.23

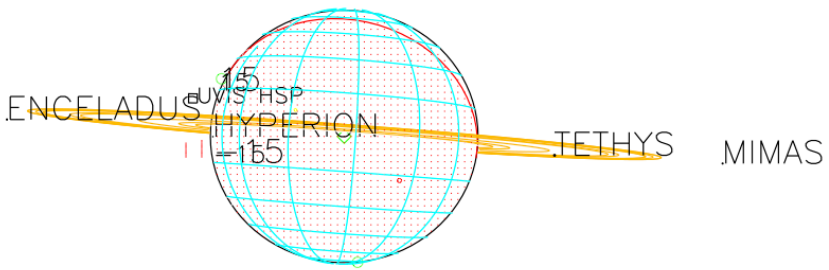
Sub-s/c lat/lon: -1.49, 90.68


ZET ORI Rev 231 Egress
HSP Counts (per second)
4×10^4
3×10^4
2×10^4
1×10^4
0
80000
100000
120000
140000
Ring Plane Radius (km)


ZET ORI Rev 231 Egress
Radial Resolution (m)
5
4
3
2
1
0
90000
92000
94000
96000
98000
100000
Ring Plane Radius (km)


HSP Counts (per second)
4×10^4
3×10^4
2×10^4
1×10^4
0
88000
89250
90500
91750
93000
Ring Plane Radius (km)


ϕ (degrees)
245
240
235
230
225
220
215
90000
92000
94000
96000
98000
100000
Ring Plane Radius (km)

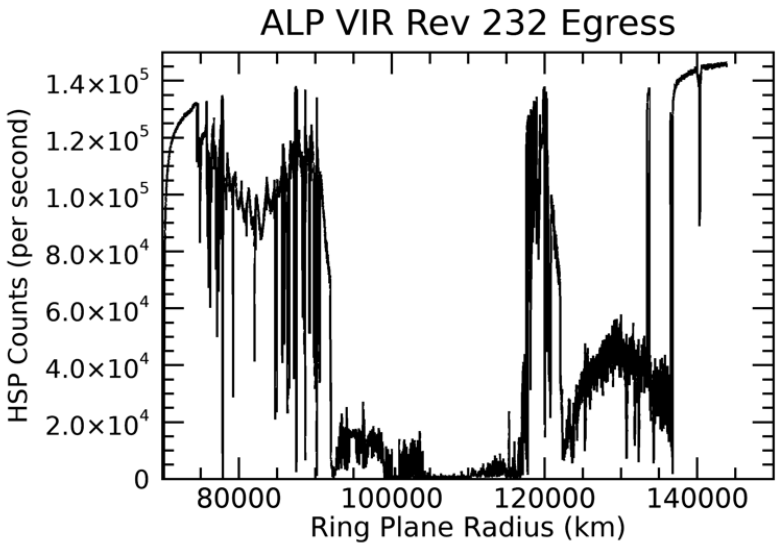


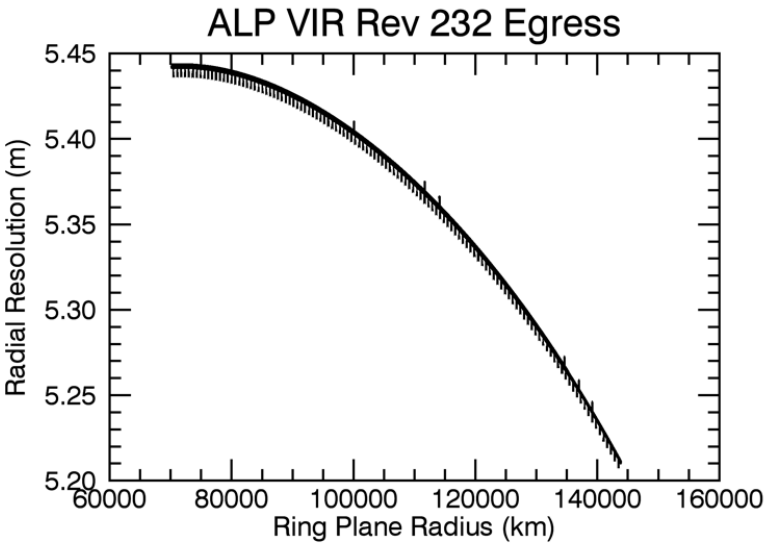
2016-030T22:24:00.000 649192.93 km

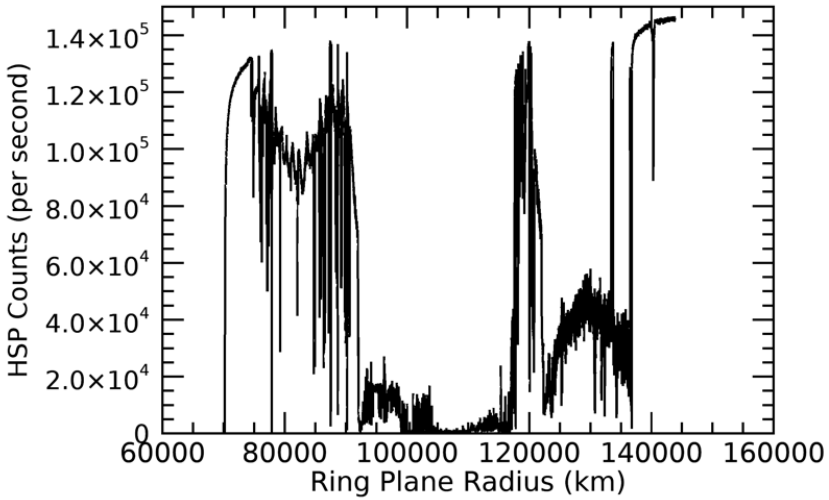
Target RA/dec: 79.17, -3.40

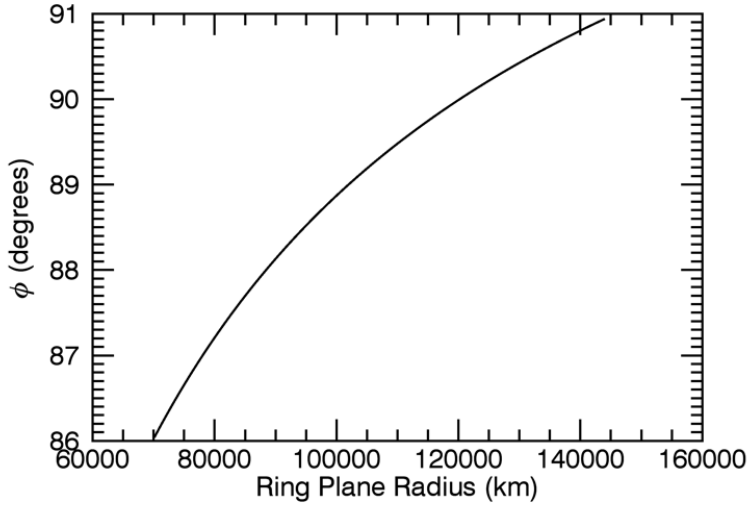
Subsolar lat/lon: 21.49, -165.05

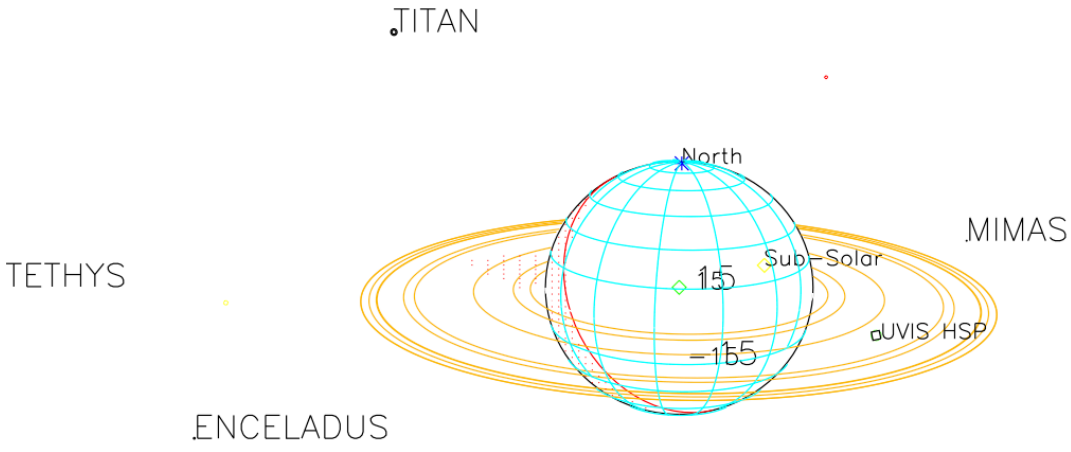
Sub-s/c lat/lon: -1.37, 25.08


ALP VIR Rev 232 Egress
HSP Counts (per second)
1.4×10^5
1.2×10^5
1.0×10^5
8.0×10^4
6.0×10^4
4.0×10^4
2.0×10^4
0
80000
100000
120000
140000
Ring Plane Radius (km)


ALP VIR Rev 232 Egress
Radial Resolution (m)
5.45
5.40
5.35
5.30
5.25
5.20
60000
80000
100000
120000
140000
160000
Ring Plane Radius (km)


HSP Counts (per second)
1.4×10^5
1.2×10^5
1.0×10^5
8.0×10^4
6.0×10^4
4.0×10^4
2.0×10^4
0
60000
80000
100000
120000
140000
160000
Ring Plane Radius (km)


ϕ (degrees)
91
90
89
88
87
86
60000
80000
100000
120000
140000
160000
Ring Plane Radius (km)

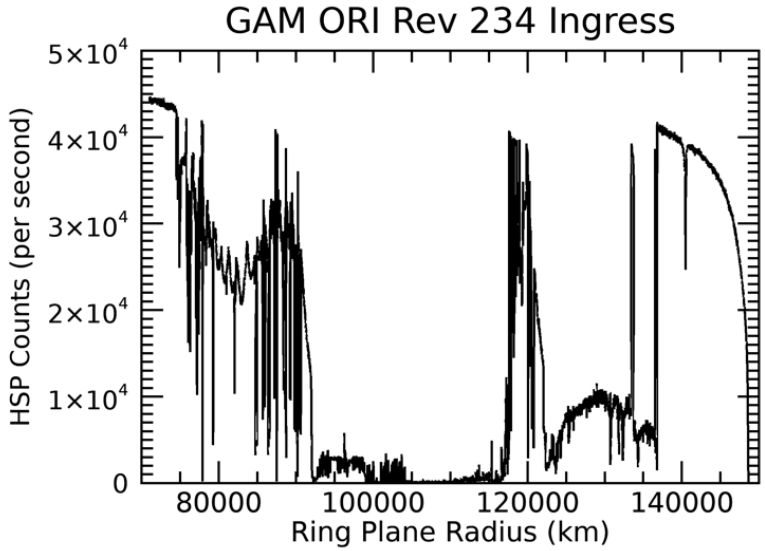


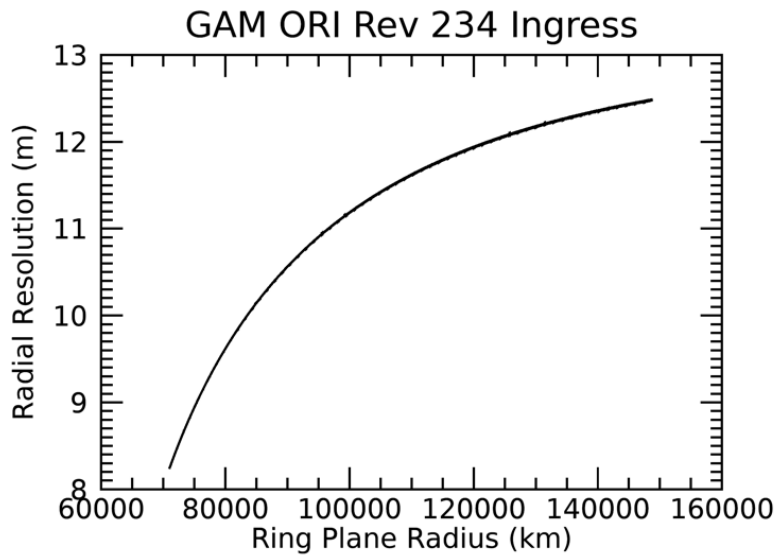
2016-045T11:15:00.000 595533.11 km

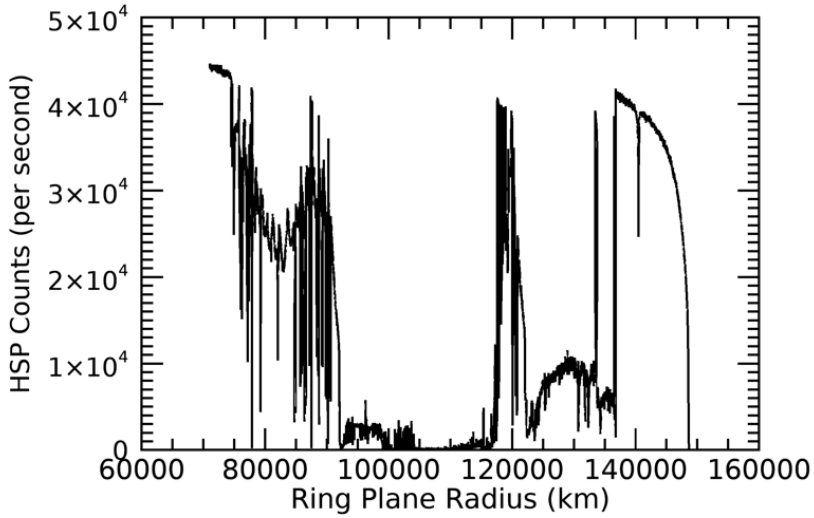
Target RA/dec: 209.97, -9.29

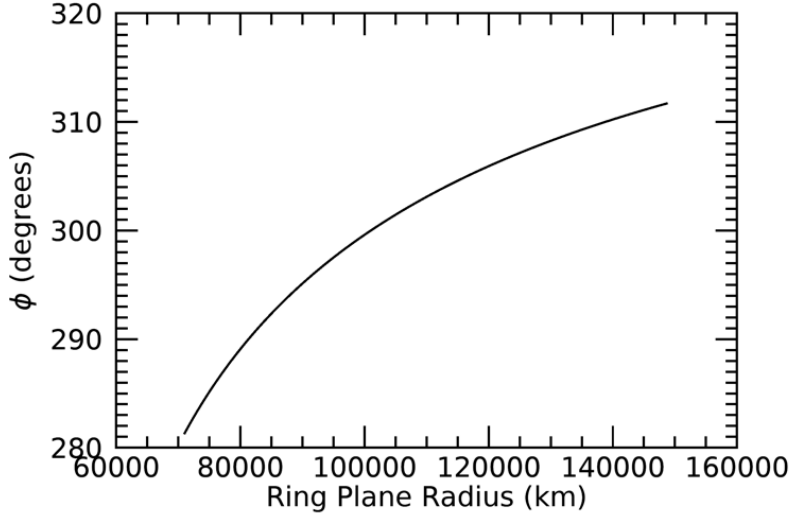
Subsolar lat/lon: 21.53, -69.79

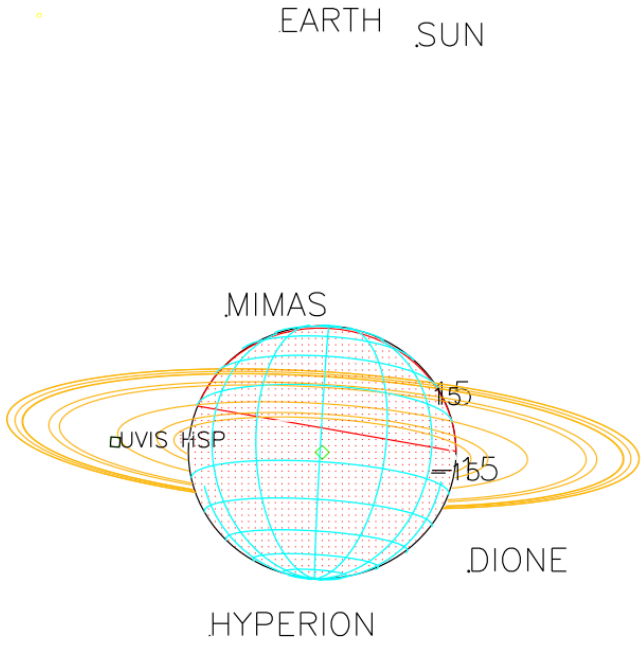
Sub-s/c lat/lon: 13.07, -109.55


GAM ORI Rev 234 Ingress
HSP Counts (per second)
5×10^4
4×10^4
3×10^4
2×10^4
1×10^4
0
80000
100000
120000
140000
Ring Plane Radius (km)

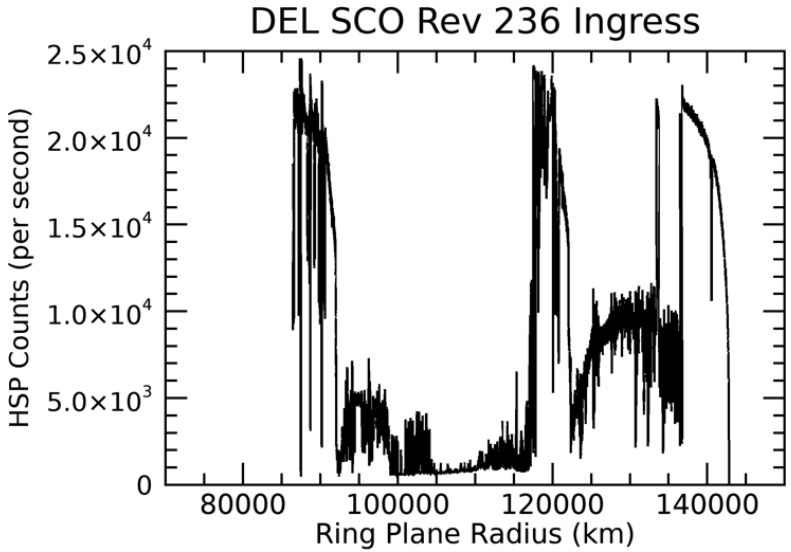

GAM ORI Rev 234 Ingress
Radial Resolution (m)
13
12
11
10
9
8
60000
80000
100000
120000
140000
160000
Ring Plane Radius (km)

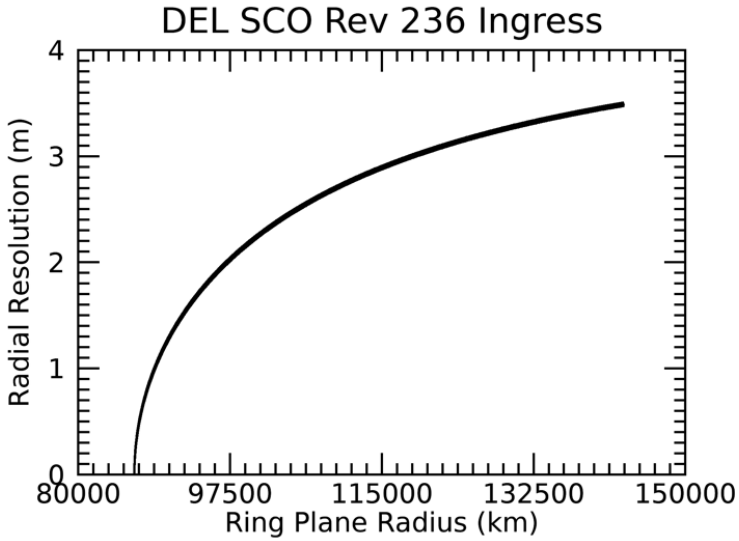

HSP Counts (per second)
5×10^4
4×10^4
3×10^4
2×10^4
1×10^4
0
60000
80000
100000
120000
140000
160000
Ring Plane Radius (km)

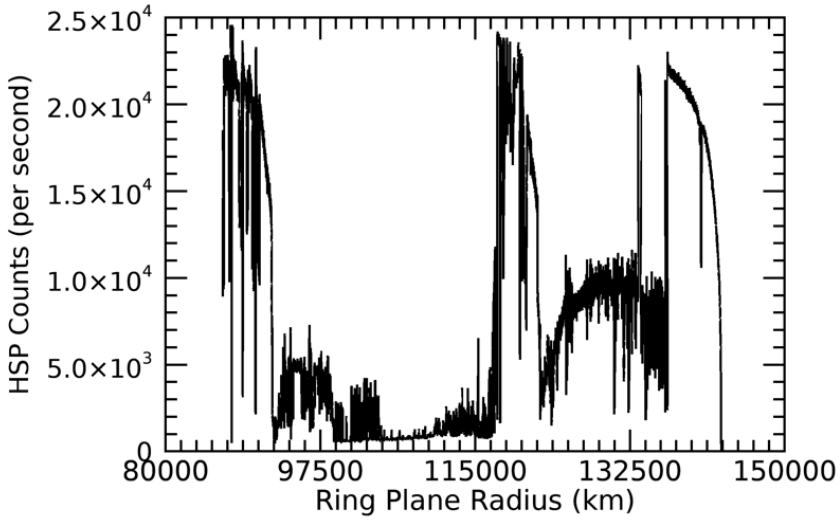

ϕ (degrees)
320
310
300
290
280
60000
80000
100000
120000
140000
160000
Ring Plane Radius (km)

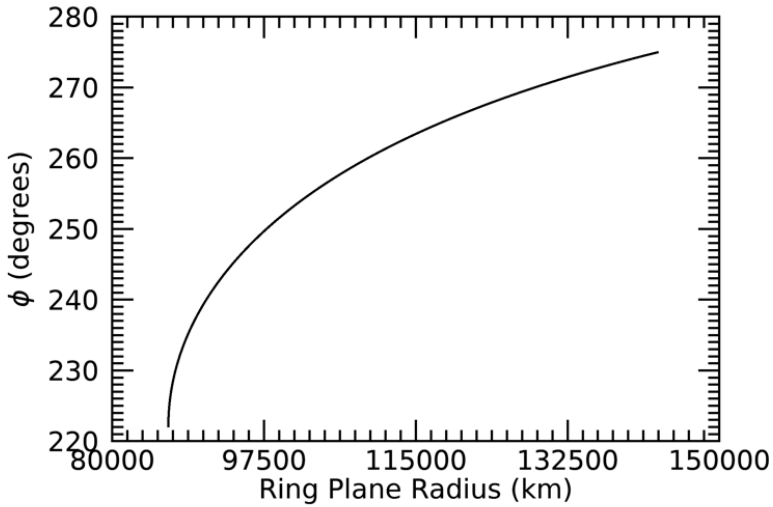


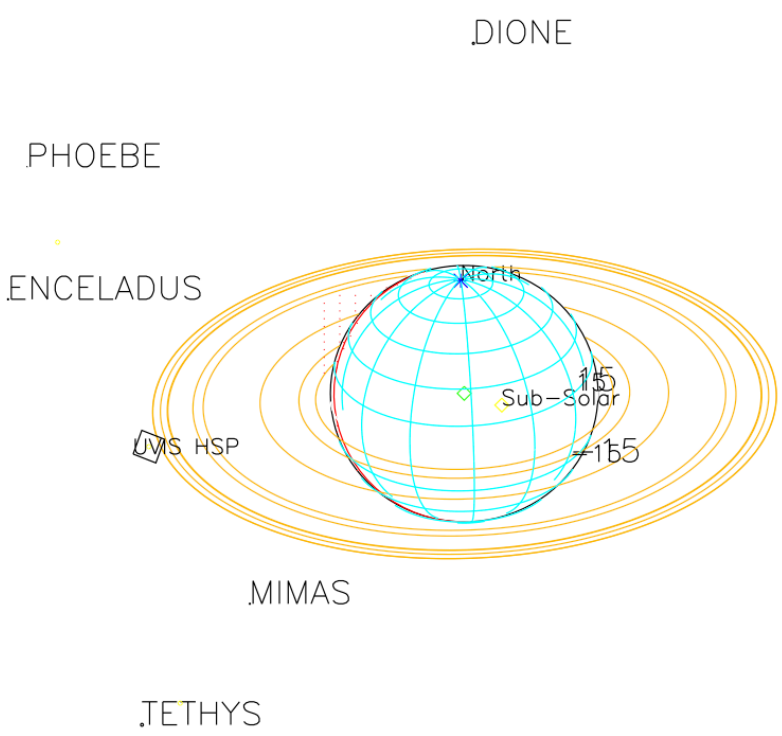
2016−094T17:01:00.000 683246.29 km
Target RA/dec: 73.44, 6.04
Subsolar lat/lon: 21.68, −31.86
Sub−s/c lat/lon: −9.51, 151.01


DEL SCO Rev 236 Ingress
HSP Counts (per second)
2.5×10^4
2.0×10^4
1.5×10^4
1.0×10^4
5.0×10^3
0
80000
100000
120000
140000
Ring Plane Radius (km)

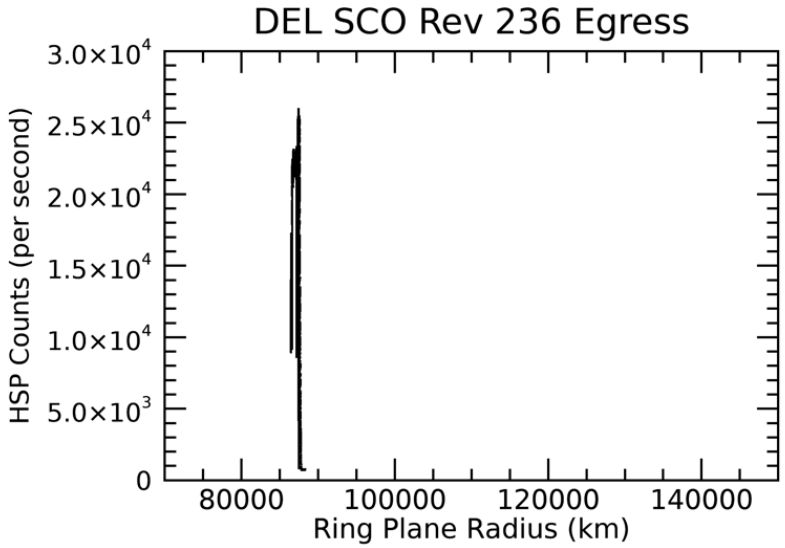

DEL SCO Rev 236 Ingress
Radial Resolution (m)
4
3
2
1
0
80000
97500
115000
132500
150000
Ring Plane Radius (km)

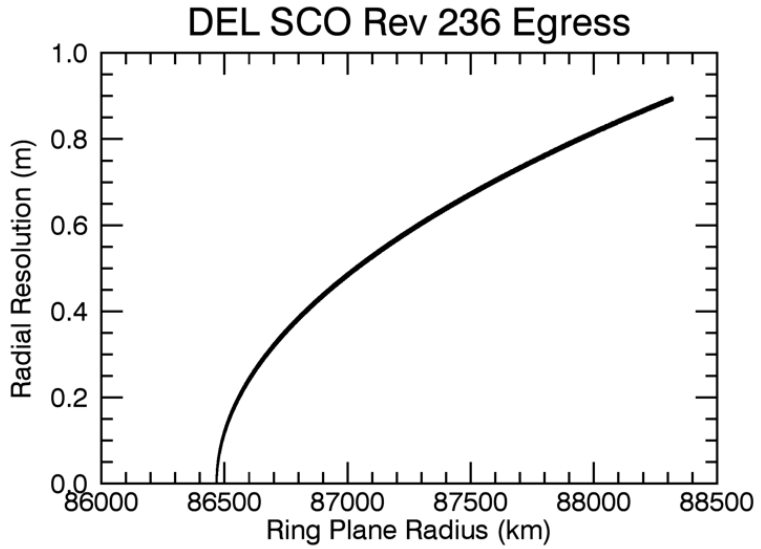

HSP Counts (per second)
2.5×10^4
2.0×10^4
1.5×10^4
1.0×10^4
5.0×10^3
0
80000
97500
115000
132500
150000
Ring Plane Radius (km)

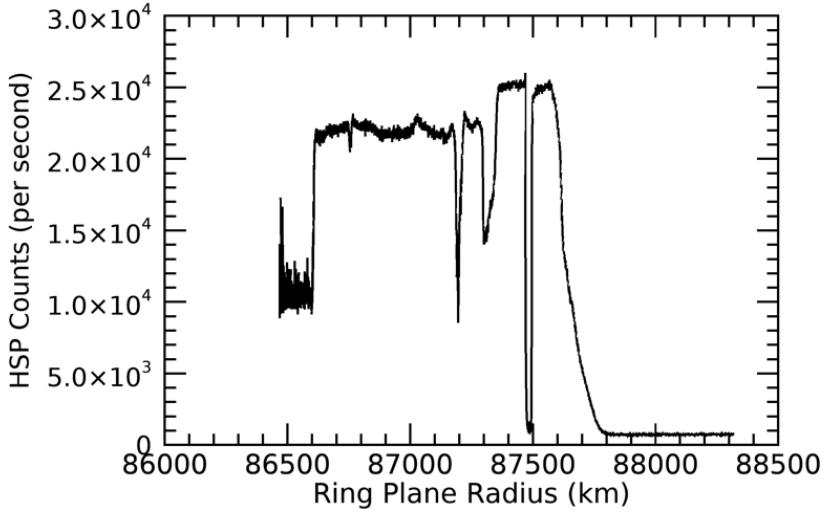

ϕ (degrees)
280
270
260
250
240
230
220
80000
97500
115000
132500
150000
Ring Plane Radius (km)

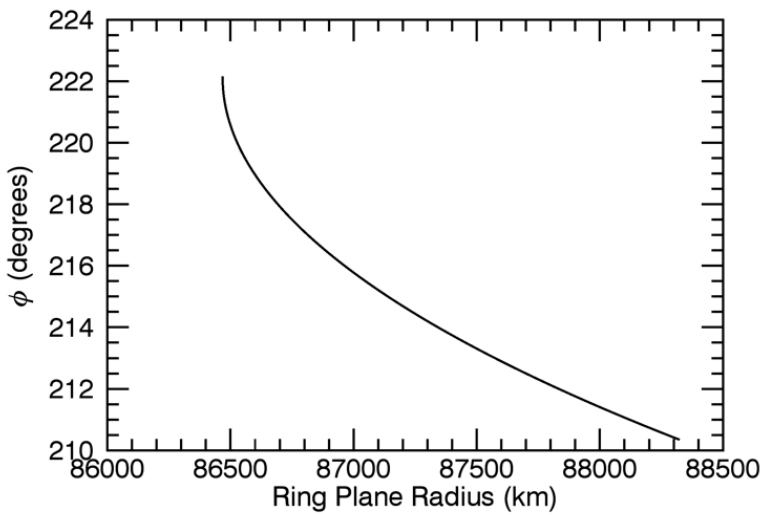


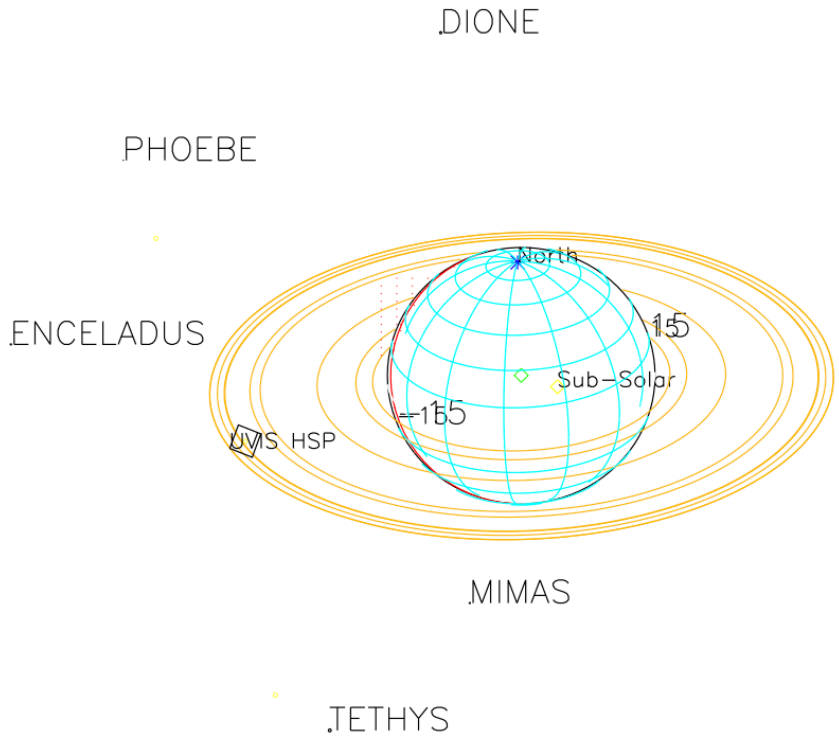
2016-153T12:34:00.000 1812297.6 km
Target RA/dec: 235.23, -21.97
Subsolar lat/lon: 21.84, 163.65
Sub-s/c lat/lon: 23.71, 146.57


DEL SCO Rev 236 Egress
HSP Counts (per second)
3.0×10^4
2.5×10^4
2.0×10^4
1.5×10^4
1.0×10^4
5.0×10^3
0
80000
100000
120000
140000
Ring Plane Radius (km)


DEL SCO Rev 236 Egress
Radial Resolution (m)
1.0
0.8
0.6
0.4
0.2
0.0
86000
86500
87000
87500
88000
88500
Ring Plane Radius (km)


HSP Counts (per second)
3.0×10^4
2.5×10^4
2.0×10^4
1.5×10^4
1.0×10^4
5.0×10^3
0
86000
86500
87000
87500
88000
88500
Ring Plane Radius (km)


φ (degrees)
224
222
220
218
216
214
212
210
86000
86500
87000
87500
88000
88500
Ring Plane Radius (km)

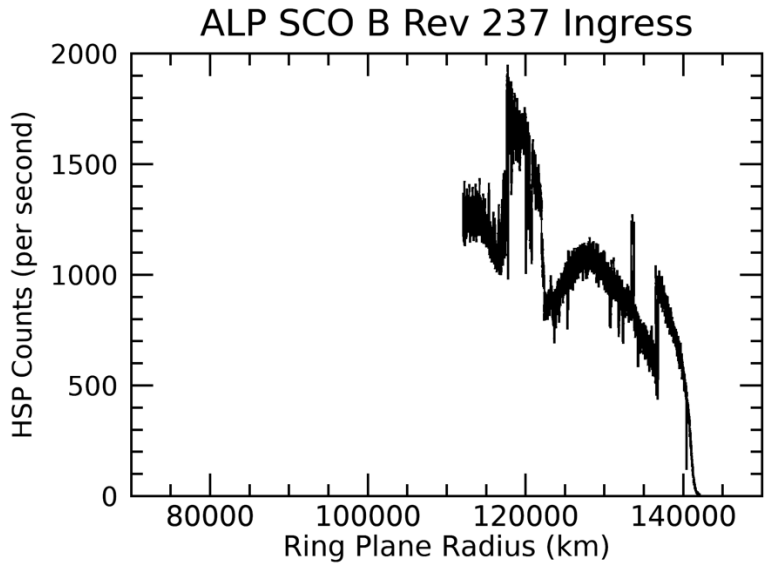


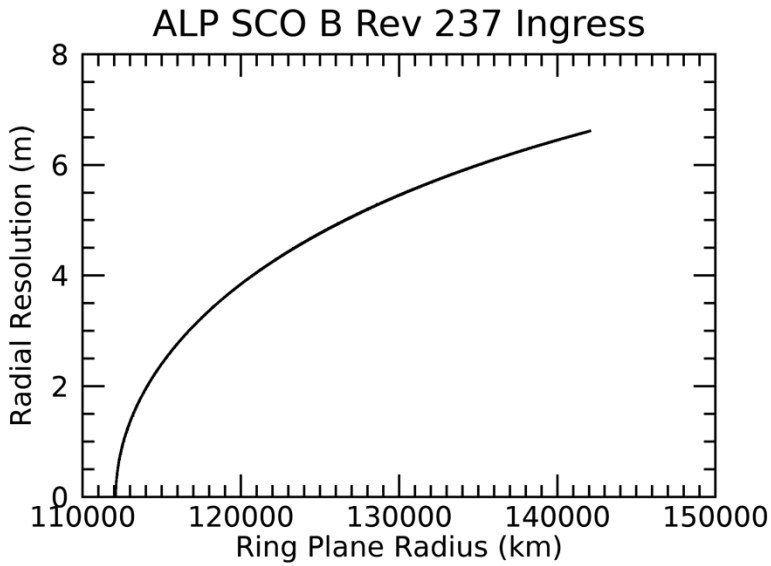
2016-153T14:00:00.000 1795323.6 km

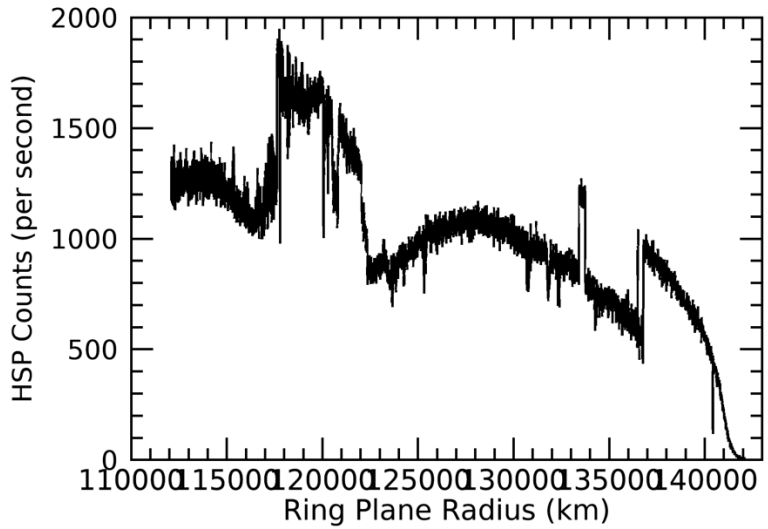
Target RA/dec: 235.79, -21.77

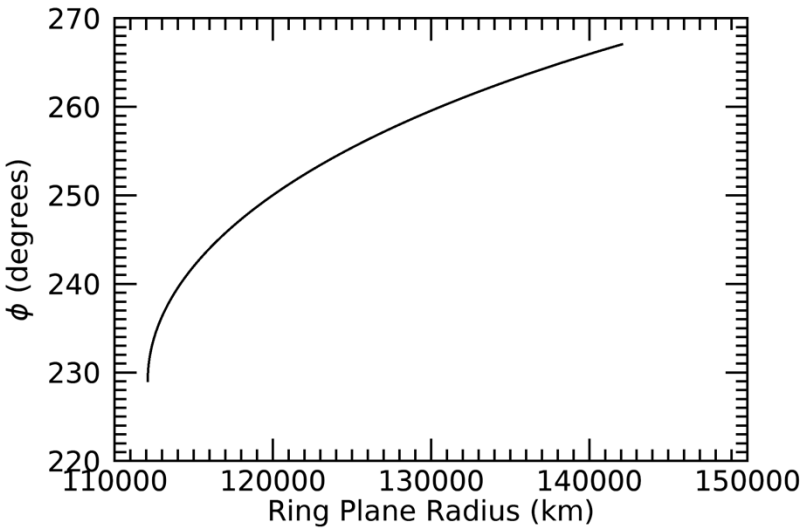
Subsolar lat/lon: 21.84, 115.23

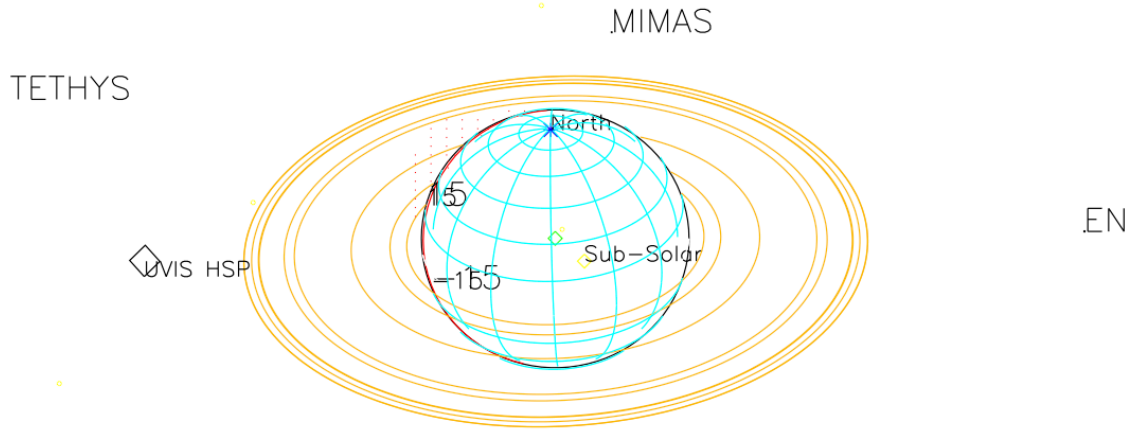
Sub-s/c lat/lon: 23.53, 98.73


ALP SCO B Rev 237 Ingress
HSP Counts (per second)
2000
1500
1000
500
0
80000
100000
120000
140000
Ring Plane Radius (km)


ALP SCO B Rev 237 Ingress
Radial Resolution (m)
8
6
4
2
0
110000
120000
130000
140000
150000
Ring Plane Radius (km)


HSP Counts (per second)
2000
1500
1000
500
0
110000
115000
120000
125000
130000
135000
140000
Ring Plane Radius (km)


ϕ (degrees)
270
260
250
240
230
220
110000
120000
130000
140000
150000
Ring Plane Radius (km)

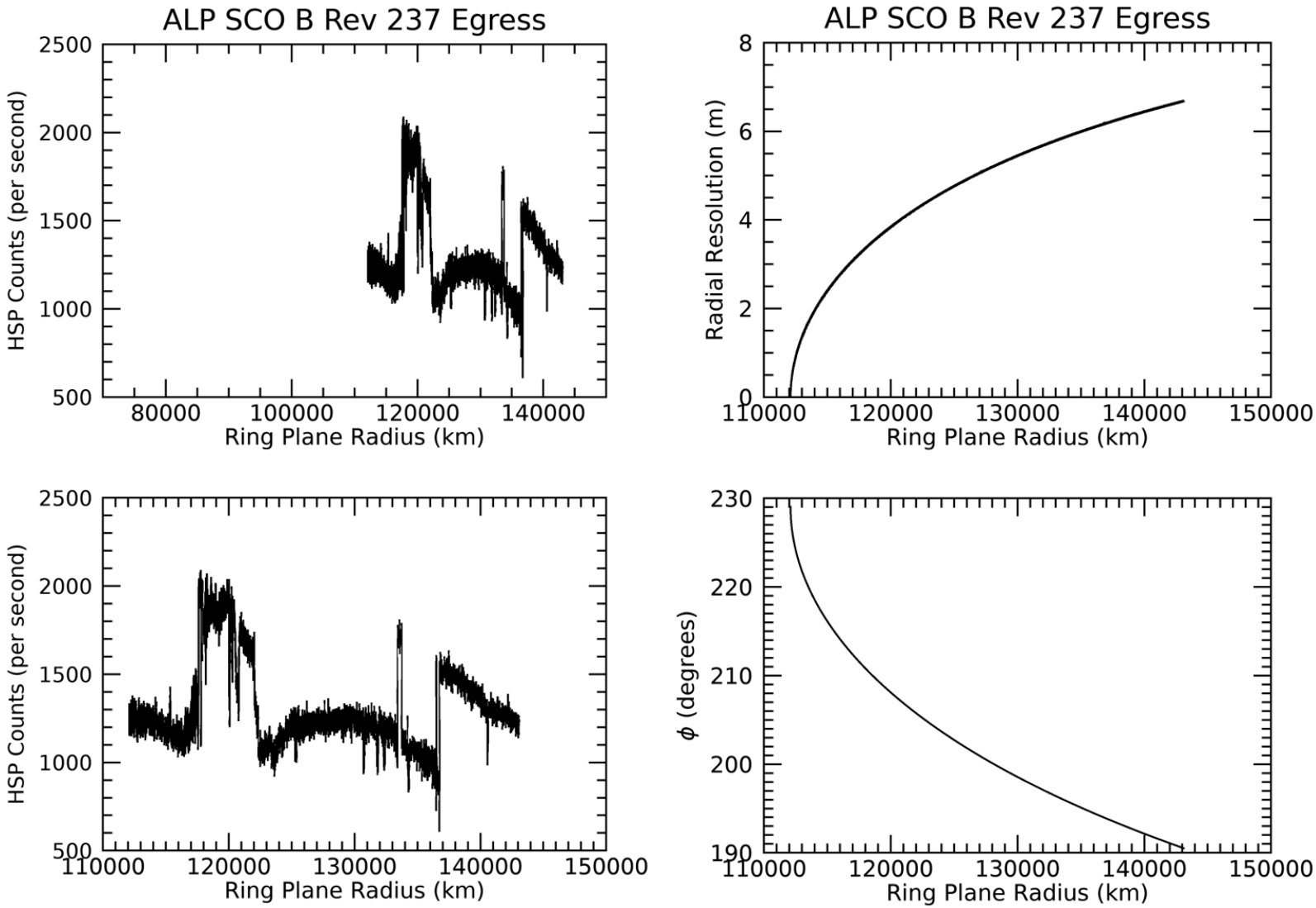


2016-177T14:39:00.000 1581070.3 km

Target RA/dec: 239.84, -26.25

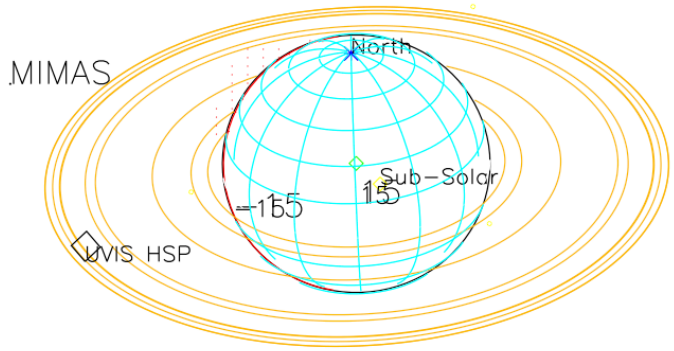
Subsolar lat/lon: 21.90, 75.01

Sub-s/c lat/lon: 27.42, 62.19


ALP SCO B Rev 237 Egress
HSP Counts (per second)
Ring Plane Radius (km)
ALP SCO B Rev 237 Egress
Radial Resolution (m)
Ring Plane Radius (km)
HSP Counts (per second)
Ring Plane Radius (km)
ϕ (degrees)
Ring Plane Radius (km)

ENCELADUS

MIMAS



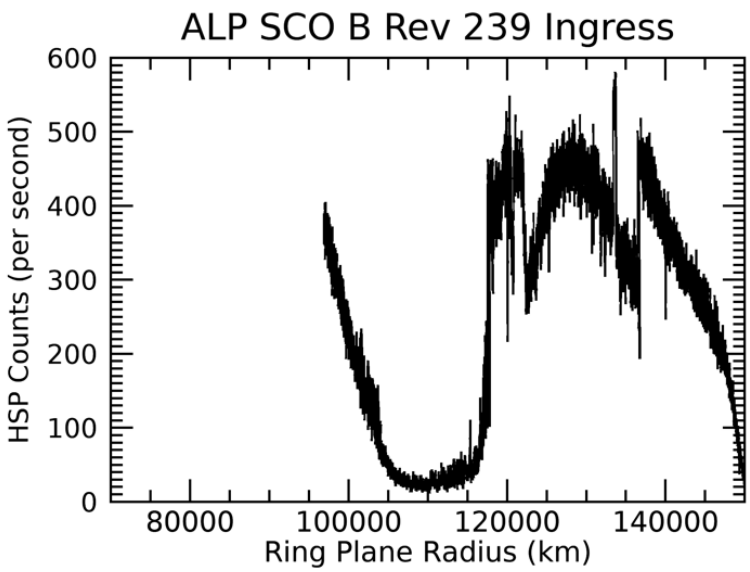
TETHYS

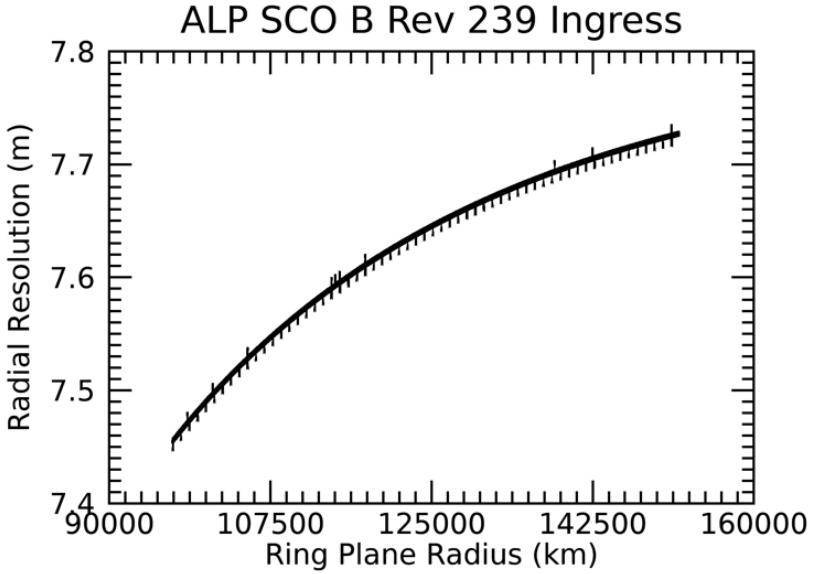
2016-177T19:12:00.000 1531423.5 km

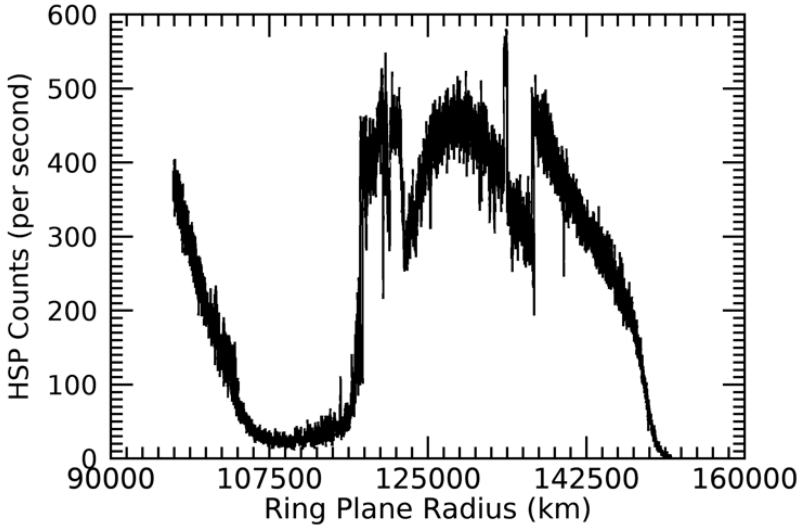
Target RA/dec: 242.21, -25.16

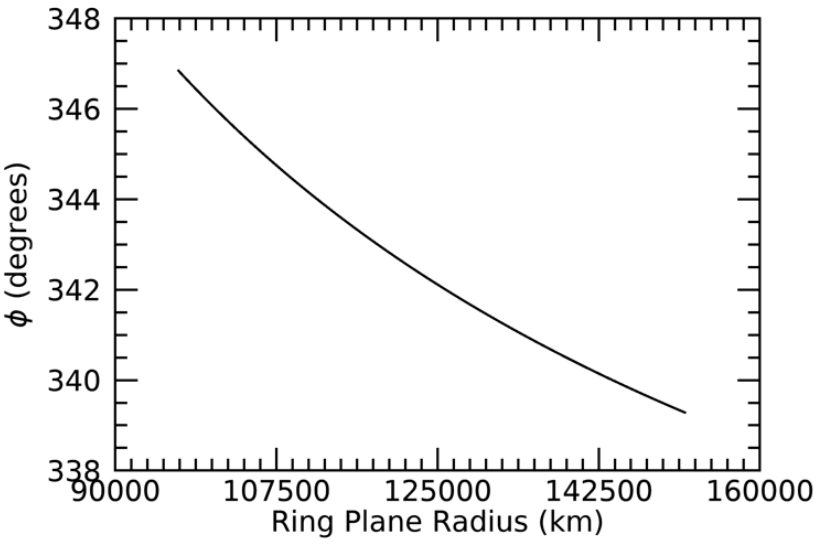
Subsolar lat/lon: 21.90, -78.69

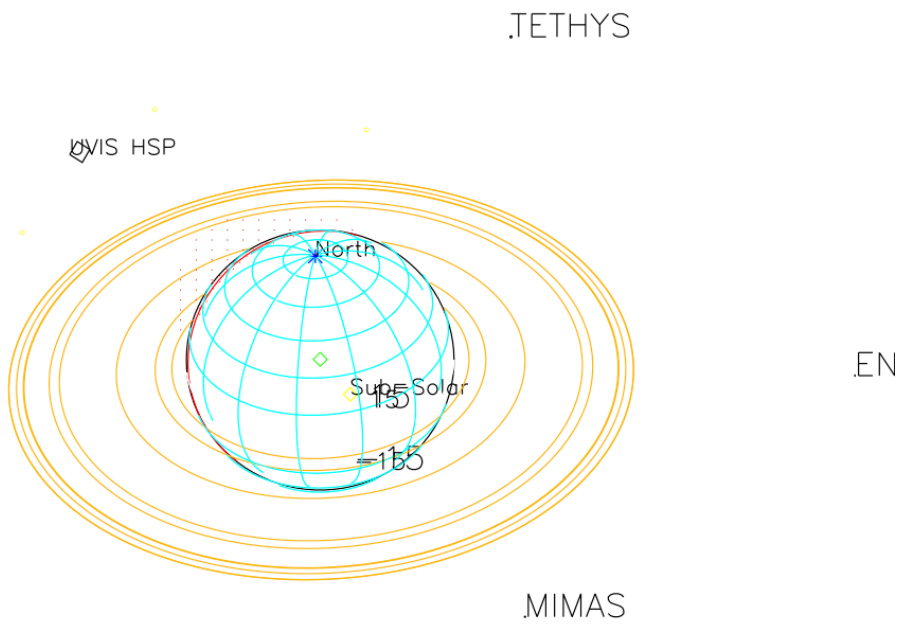
Sub-s/c lat/lon: 26.35, -89.07


ALP SCO B Rev 239 Ingress
HSP Counts (per second)
Ring Plane Radius (km)
0
100
200
300
400
500
600
80000
100000
120000
140000


ALP SCO B Rev 239 Ingress
Radial Resolution (m)
Ring Plane Radius (km)
7.4
7.5
7.6
7.7
7.8
90000
107500
125000
142500
160000


HSP Counts (per second)
Ring Plane Radius (km)
0
100
200
300
400
500
600
90000
107500
125000
142500
160000


ϕ (degrees)
Ring Plane Radius (km)
338
340
342
344
346
348
90000
107500
125000
142500
160000

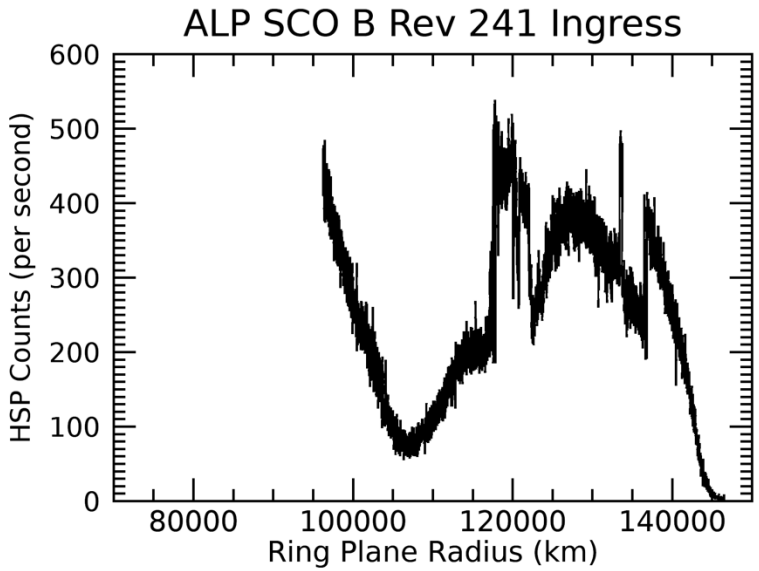


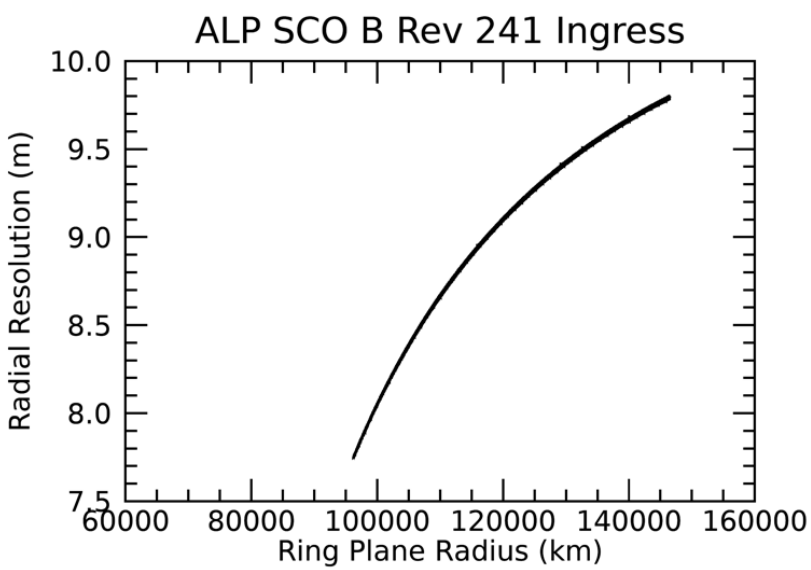
2016-218T16:59:00.000 1081595.9 km

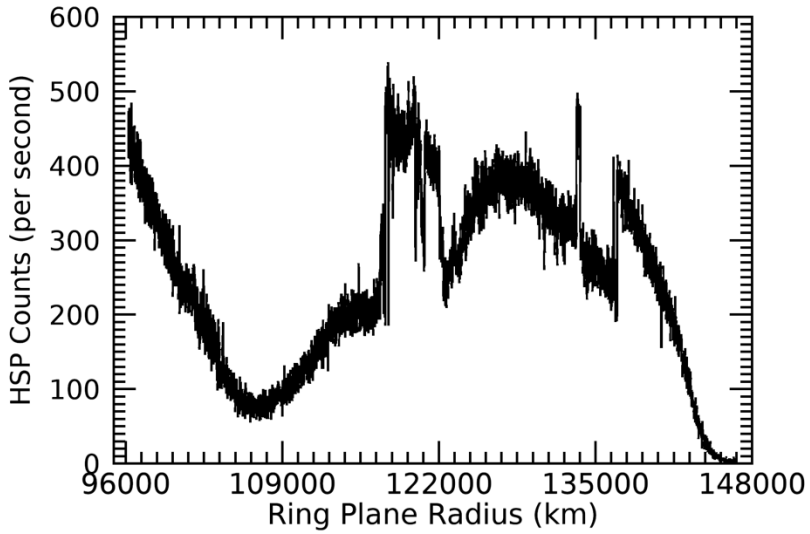
Target RA/dec: 240.94, -31.35

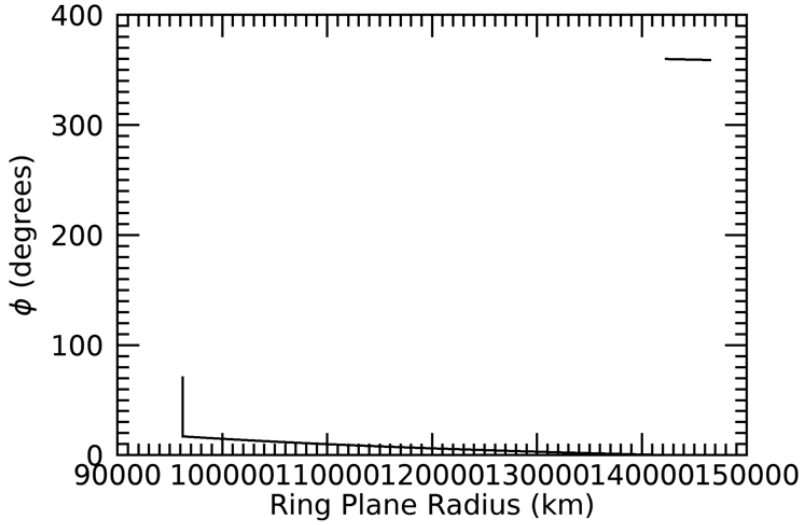
Subsolar lat/lon: 21.99, -125.00

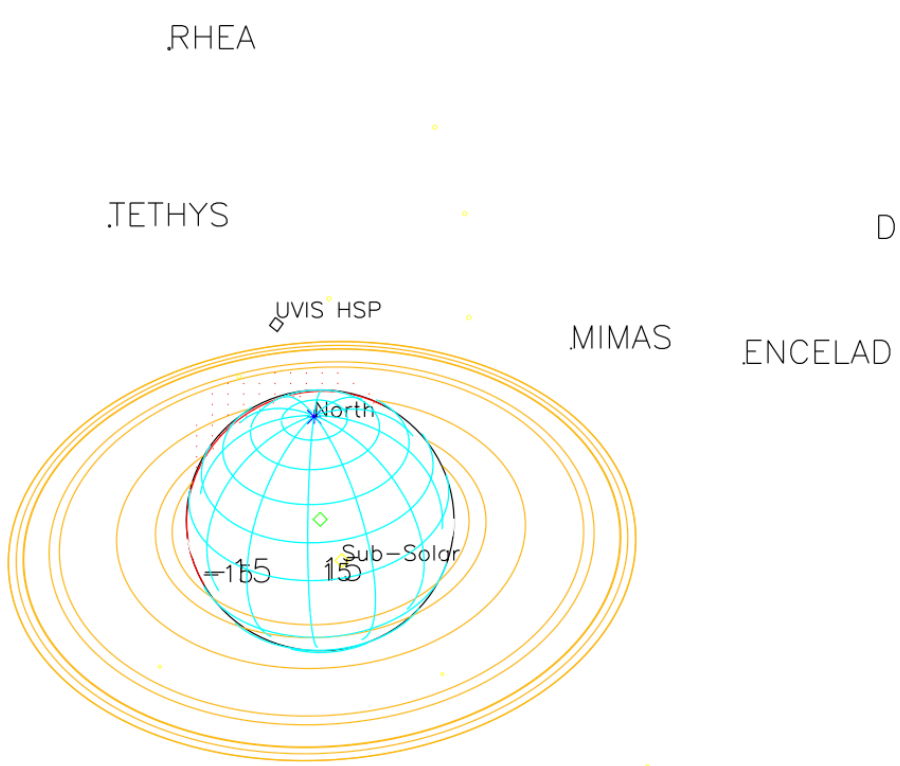
Sub-s/c lat/lon: 32.14, -137.74


ALP SCO B Rev 241 Ingress
HSP Counts (per second)
Ring Plane Radius (km)
0
100
200
300
400
500
600
80000
100000
120000
140000


ALP SCO B Rev 241 Ingress
Radial Resolution (m)
Ring Plane Radius (km)
7.5
8.0
8.5
9.0
9.5
10.0
60000
80000
100000
120000
140000
160000


HSP Counts (per second)
Ring Plane Radius (km)
0
100
200
300
400
500
600
96000
109000
122000
135000
148000


ϕ (degrees)
Ring Plane Radius (km)
0
100
200
300
400
90000
100000
110000
120000
130000
140000
150000

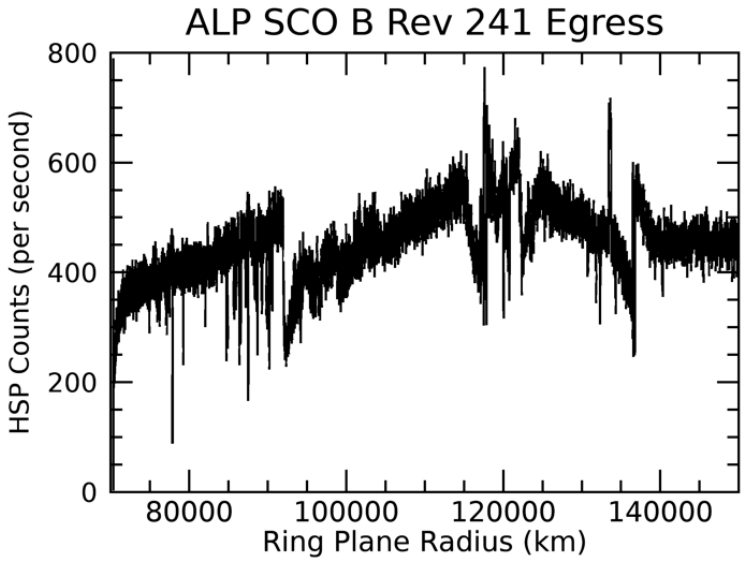


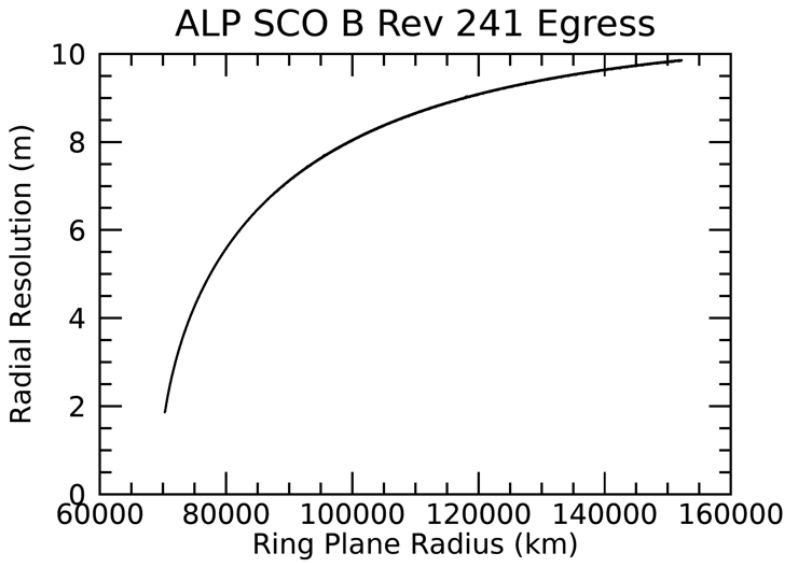
2016-243T12:16:00.000 715368.84 km

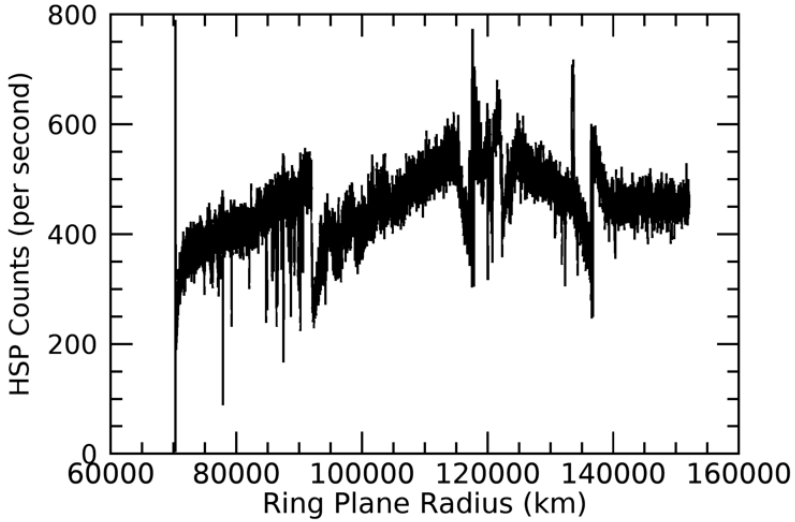
Target RA/dec: 245.64, -33.19

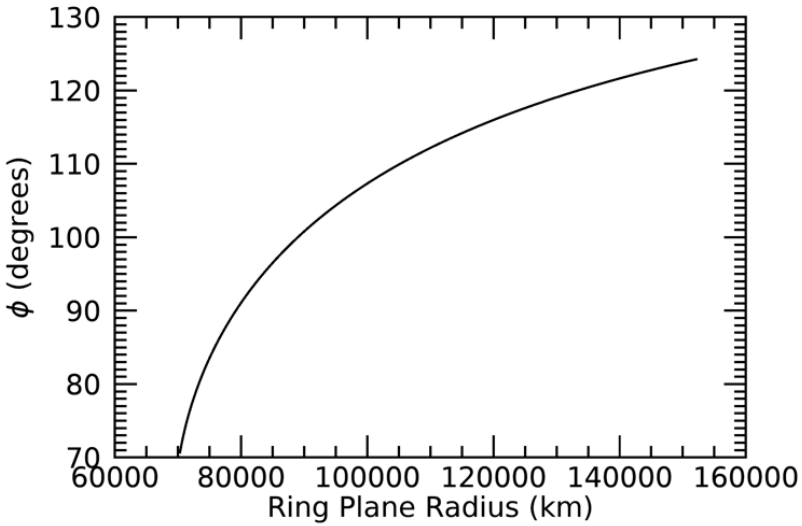
Subsolar lat/lon: 22.03, -74.68

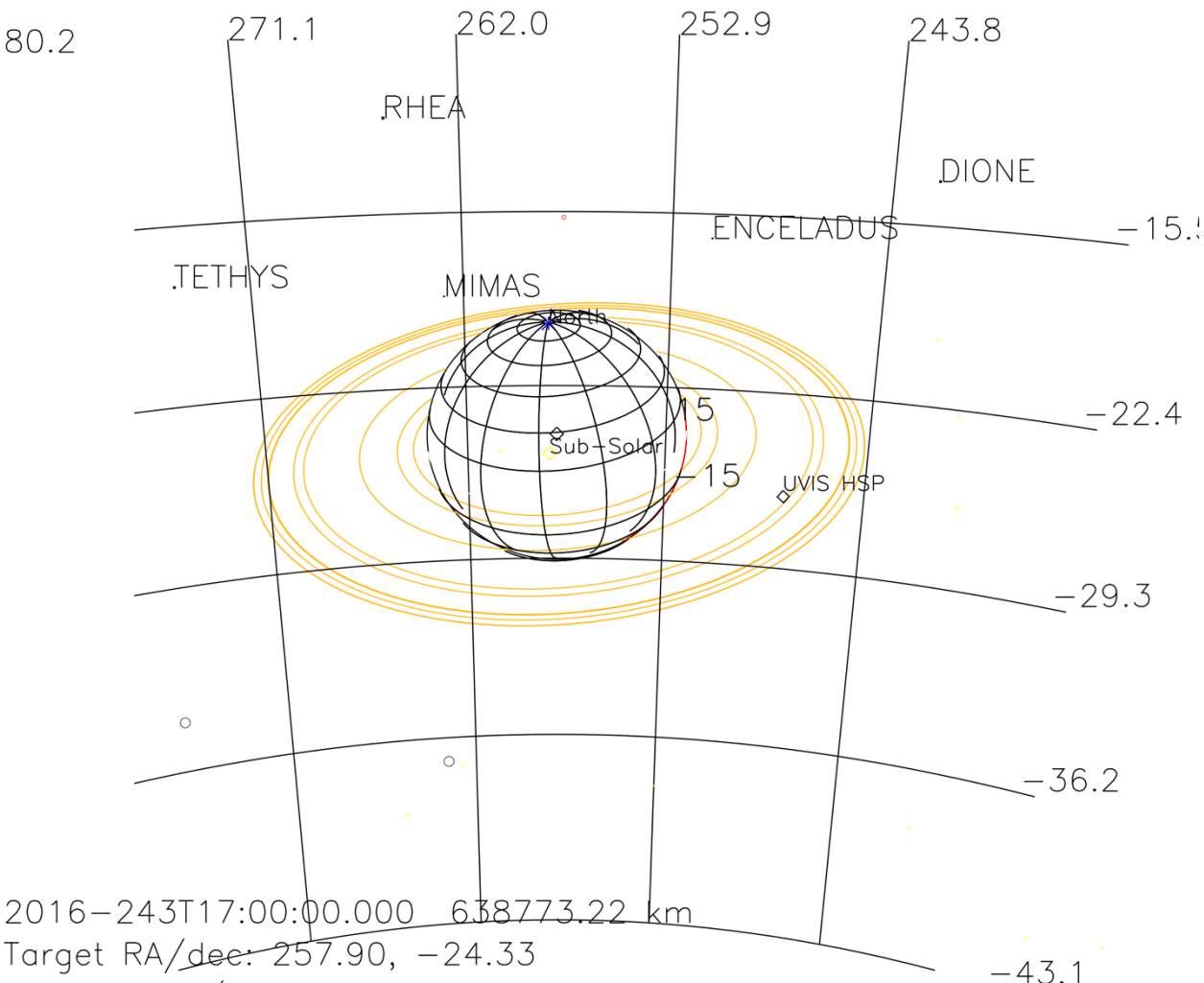
Sub-s/c lat/lon: 33.81, -83.07


ALP SCO B Rev 241 Egress
HSP Counts (per second)
Ring Plane Radius (km)
0
200
400
600
800
80000
100000
120000
140000

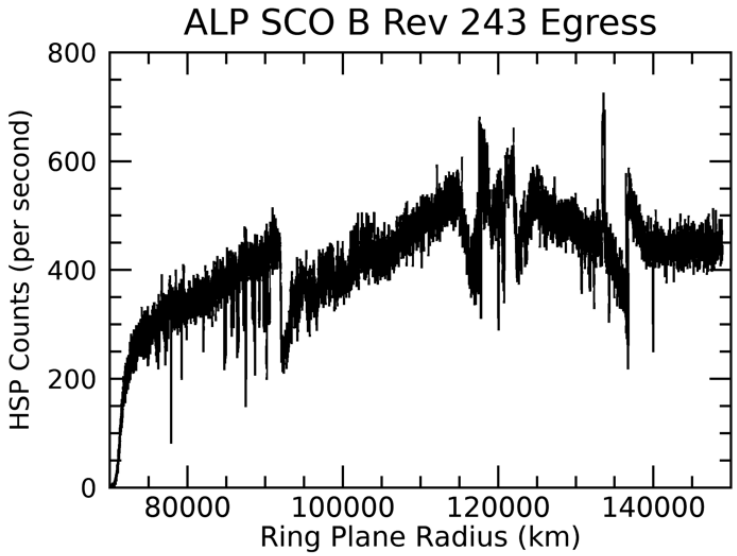

ALP SCO B Rev 241 Egress
Radial Resolution (m)
Ring Plane Radius (km)
0
2
4
6
8
10
60000
80000
100000
120000
140000
160000

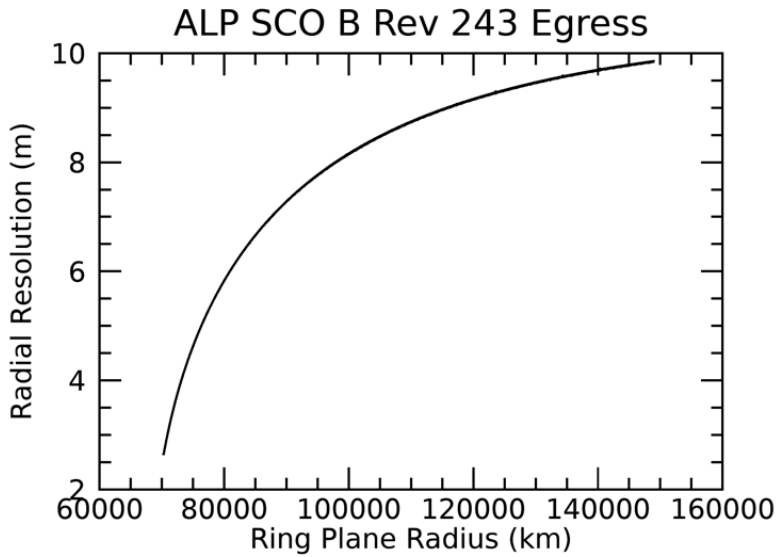

HSP Counts (per second)
Ring Plane Radius (km)
0
200
400
600
800
60000
80000
100000
120000
140000
160000

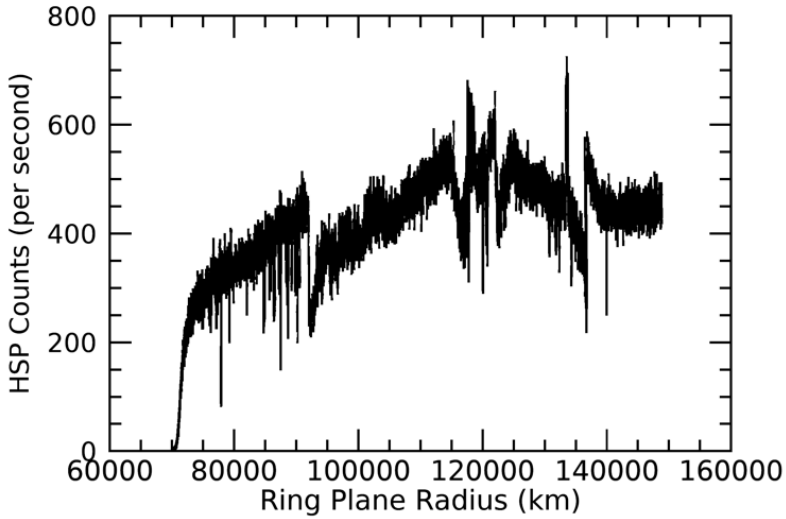

ϕ (degrees)
Ring Plane Radius (km)
70
80
90
100
110
120
130
60000
80000
100000
120000
140000
160000

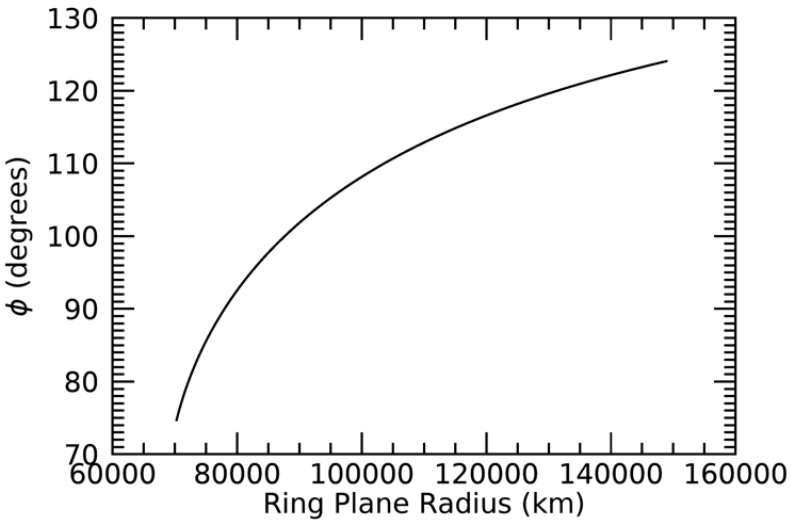


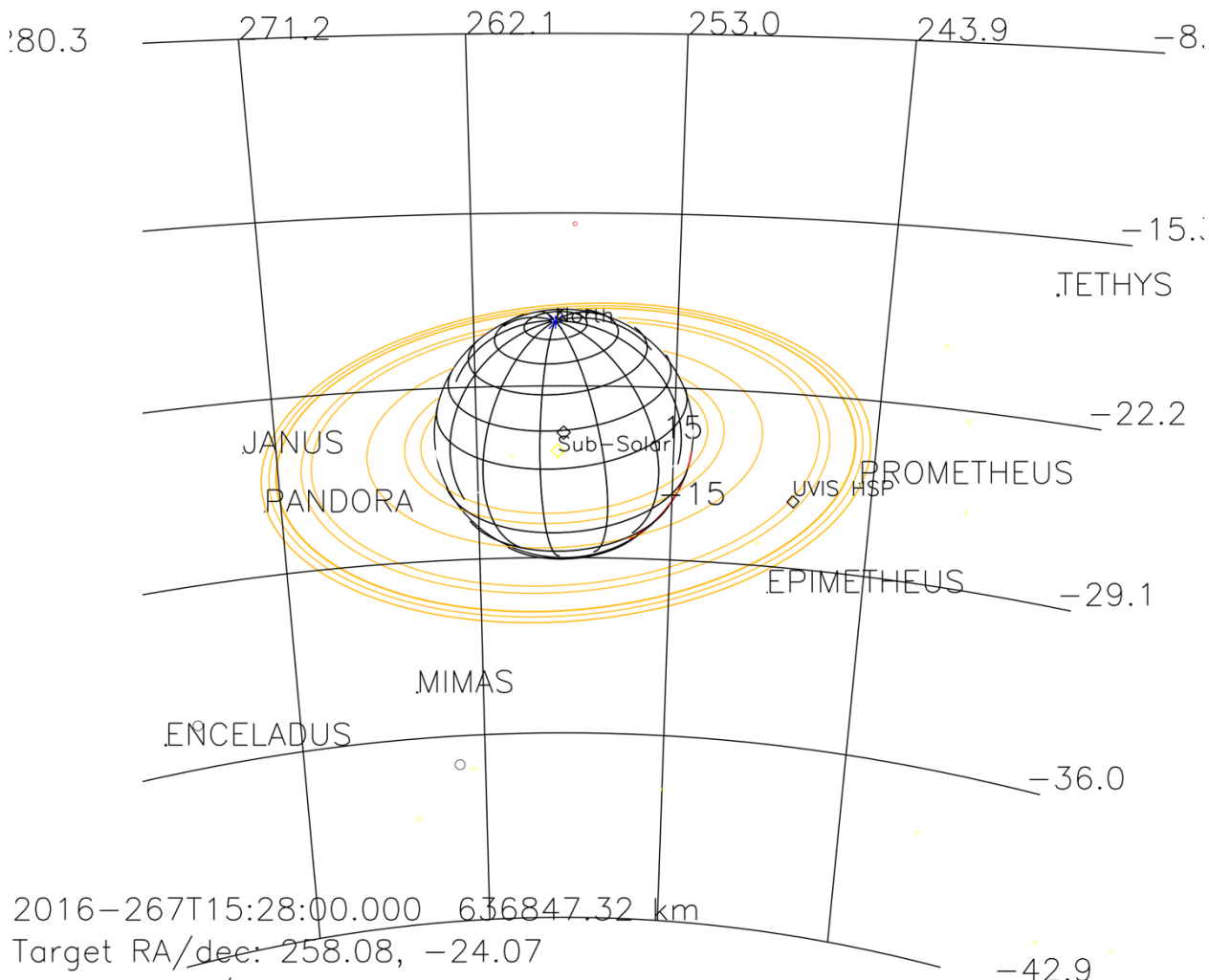
2016−243T17:00:00.000 638773.22 km
Target RA/dec: 257.90, −24.33
Subsolar lat/lon: 22.04, 125.42
Sub−s/c lat/lon: 25.03, 129.23


ALP SCO B Rev 243 Egress
HSP Counts (per second)
0
200
400
600
800
80000
100000
120000
140000
Ring Plane Radius (km)

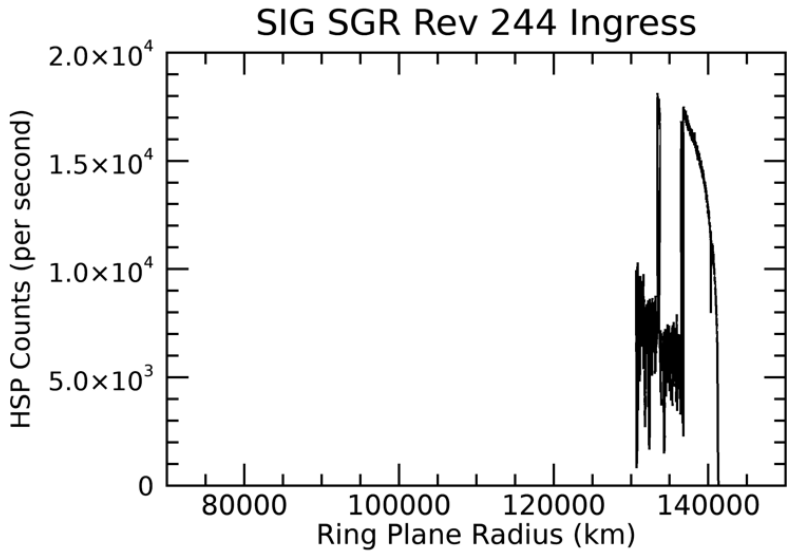

ALP SCO B Rev 243 Egress
Radial Resolution (m)
2
4
6
8
10
60000
80000
100000
120000
140000
160000
Ring Plane Radius (km)

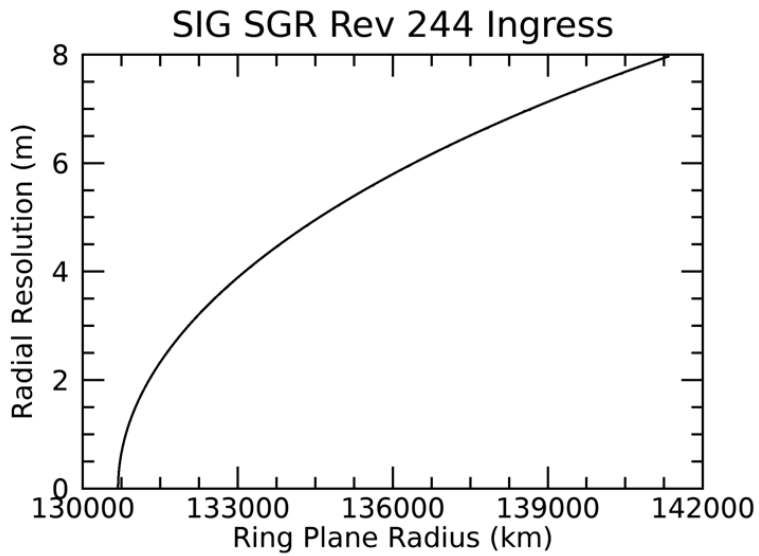

HSP Counts (per second)
0
200
400
600
800
60000
80000
100000
120000
140000
160000
Ring Plane Radius (km)

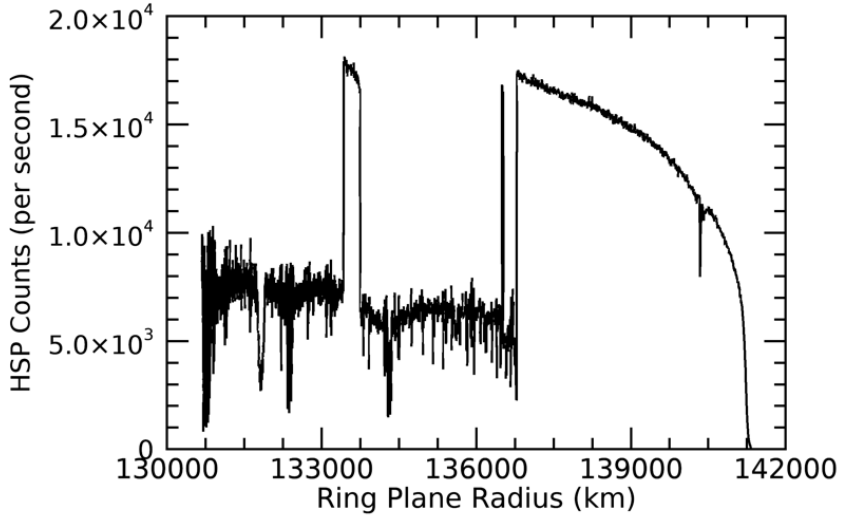

ϕ (degrees)
70
80
90
100
110
120
130
60000
80000
100000
120000
140000
160000
Ring Plane Radius (km)

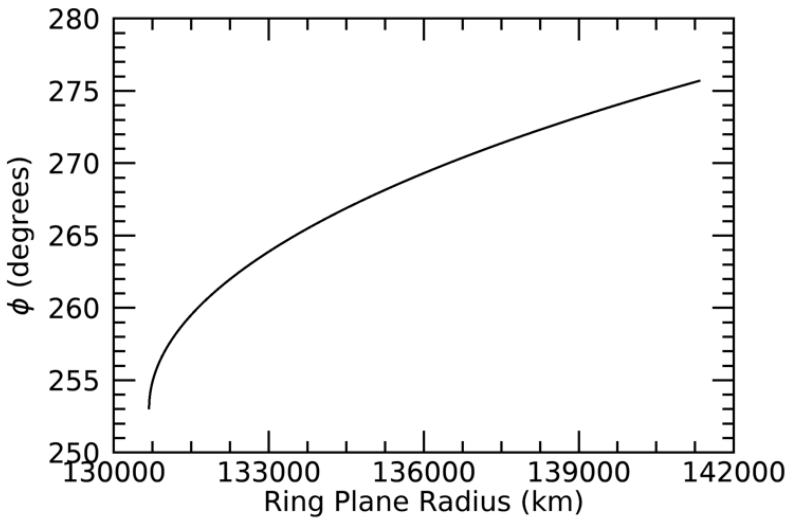


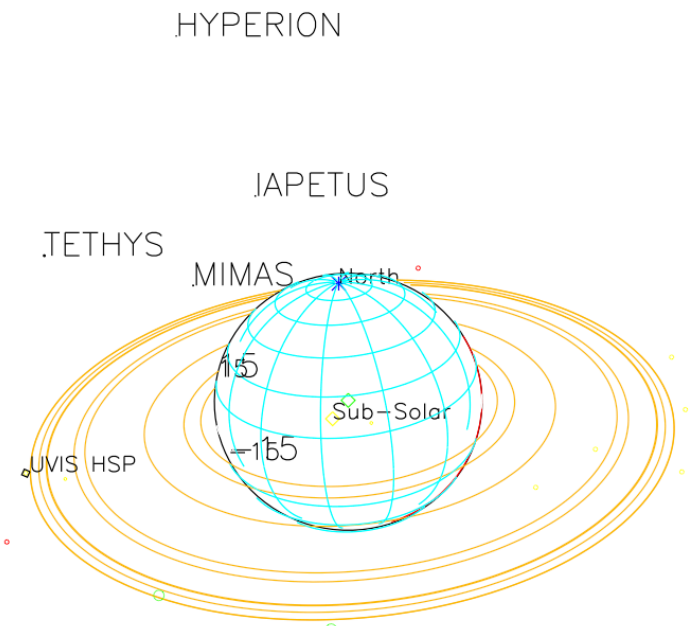
2016-267T15:28:00.000 636847.32 km
Target RA/dec: 258.08, -24.07
Subsolar lat/lon: 22.08, 158.97
Sub-s/c lat/lon: 24.79, 162.15


SIG SGR Rev 244 Ingress
HSP Counts (per second)
2.0×10^4
1.5×10^4
1.0×10^4
5.0×10^3
0
80000
100000
120000
140000
Ring Plane Radius (km)


SIG SGR Rev 244 Ingress
Radial Resolution (m)
8
6
4
2
0
130000
133000
136000
139000
142000
Ring Plane Radius (km)


HSP Counts (per second)
2.0×10^4
1.5×10^4
1.0×10^4
5.0×10^3
0
130000
133000
136000
139000
142000
Ring Plane Radius (km)


ϕ (degrees)
280
275
270
265
260
255
250
130000
133000
136000
139000
142000
Ring Plane Radius (km)

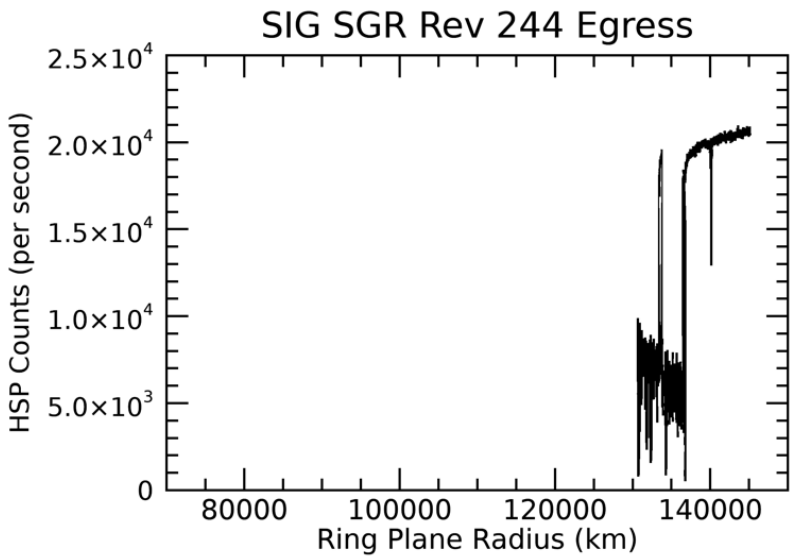


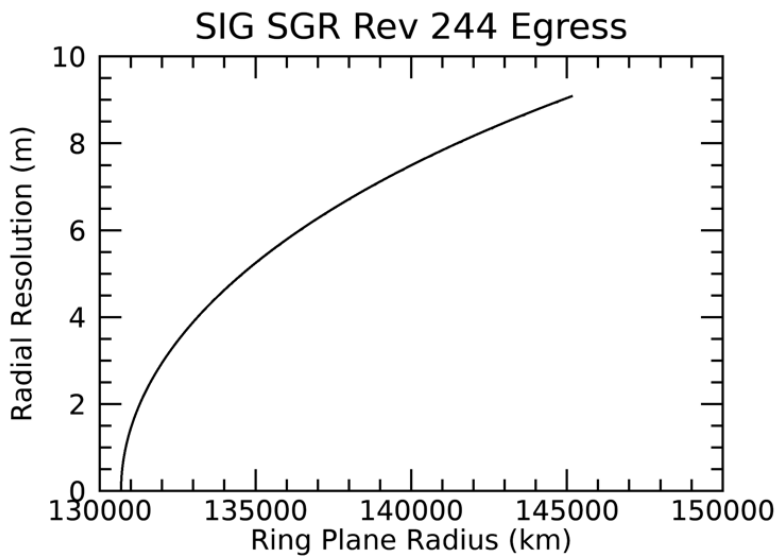
2016-277T16:13:00.000 415893.32 km

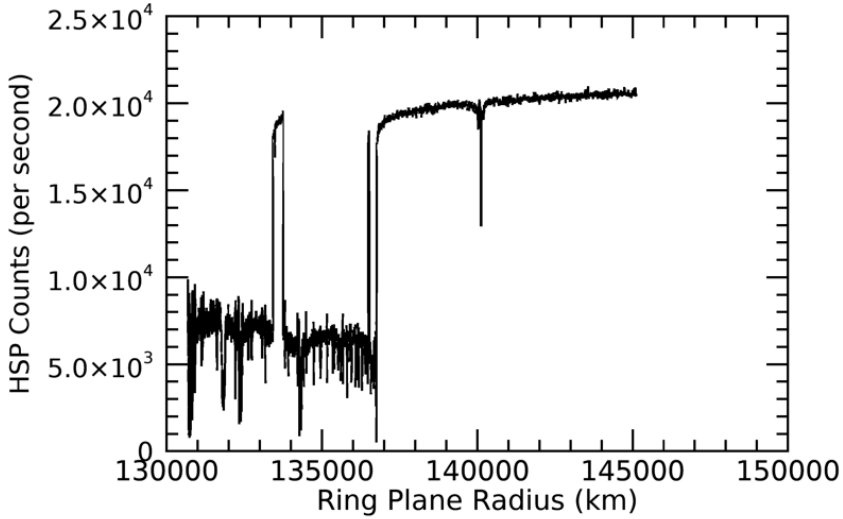
Target RA/dec: 262.10, -23.65

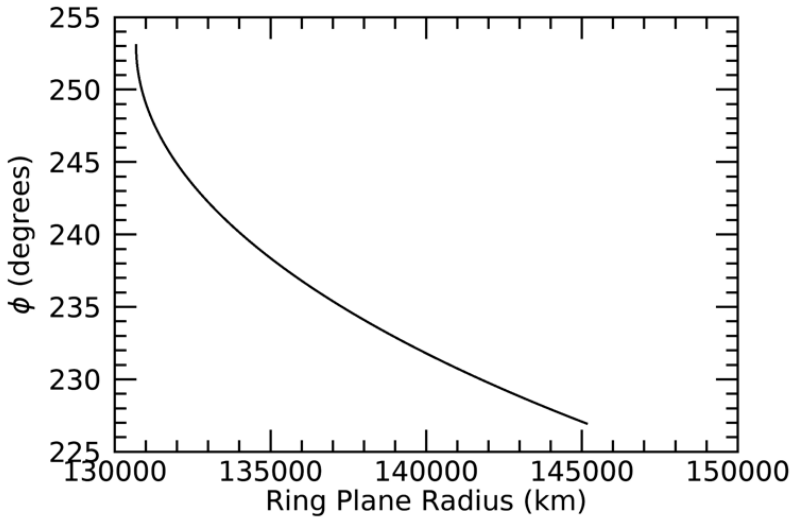
Subsolar lat/lon: 22.09, -53.97

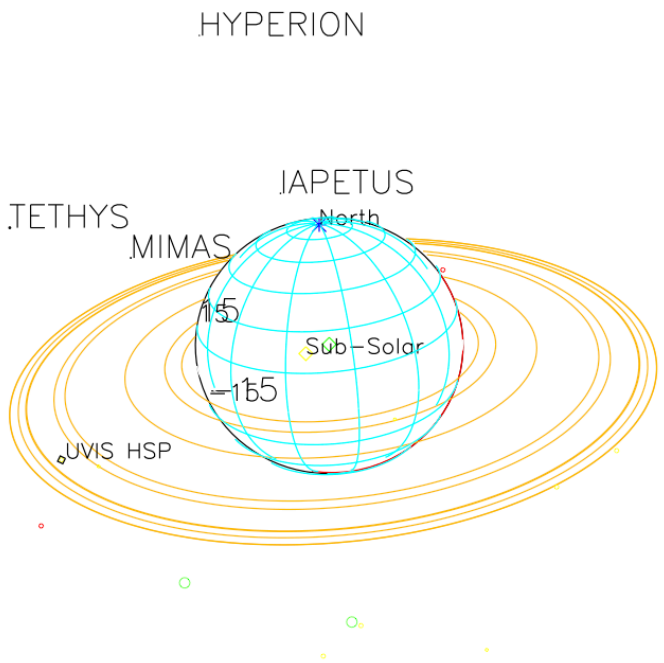
Sub-s/c lat/lon: 24.35, -47.00


SIG SGR Rev 244 Egress
HSP Counts (per second)
2.5×10^4
2.0×10^4
1.5×10^4
1.0×10^4
5.0×10^3
0
80000
100000
120000
140000
Ring Plane Radius (km)


SIG SGR Rev 244 Egress
Radial Resolution (m)
10
8
6
4
2
0
130000
135000
140000
145000
150000
Ring Plane Radius (km)


HSP Counts (per second)
2.5×10^4
2.0×10^4
1.5×10^4
1.0×10^4
5.0×10^3
0
130000
135000
140000
145000
150000
Ring Plane Radius (km)


ϕ (degrees)
255
250
245
240
235
230
225
130000
135000
140000
145000
150000
Ring Plane Radius (km)

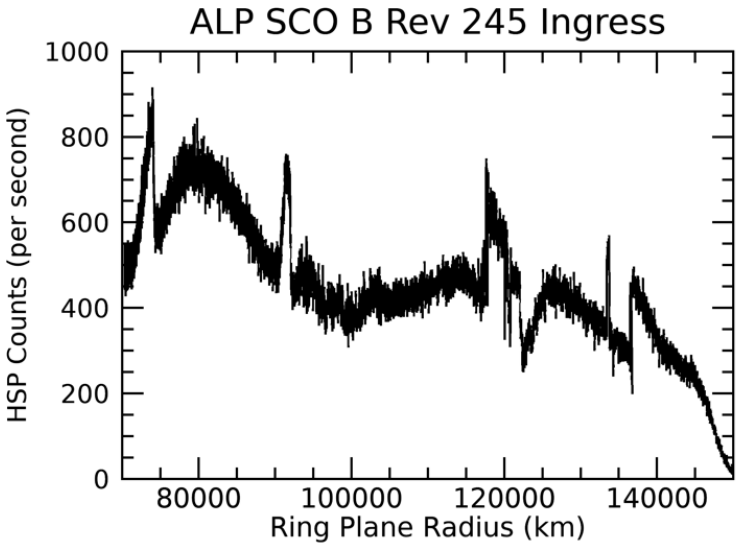


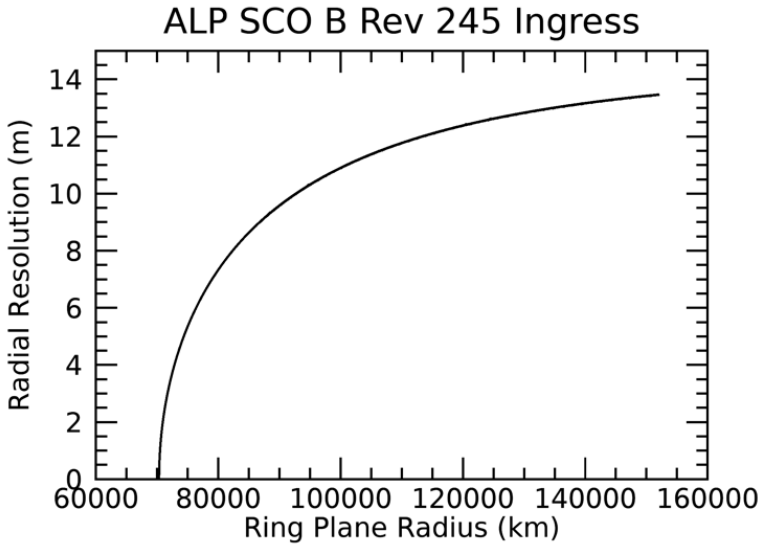
2016-277T16:59:00.000 403948.78 km

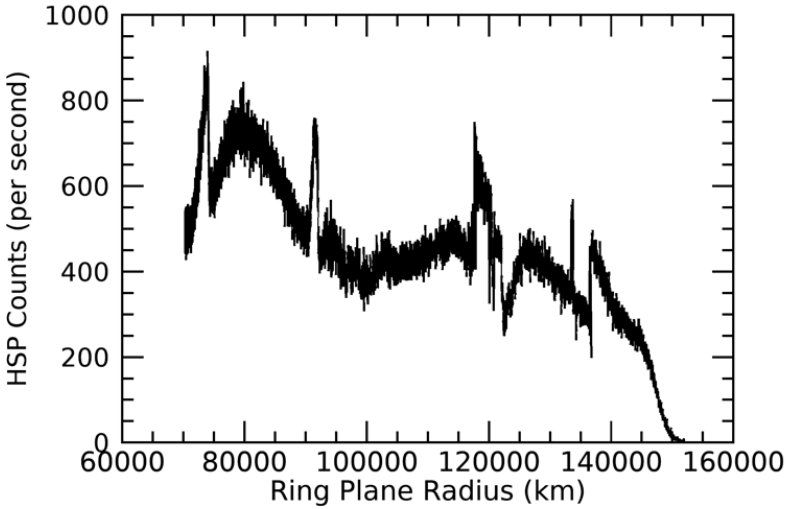
Target RA/dec: 265.16, -20.45

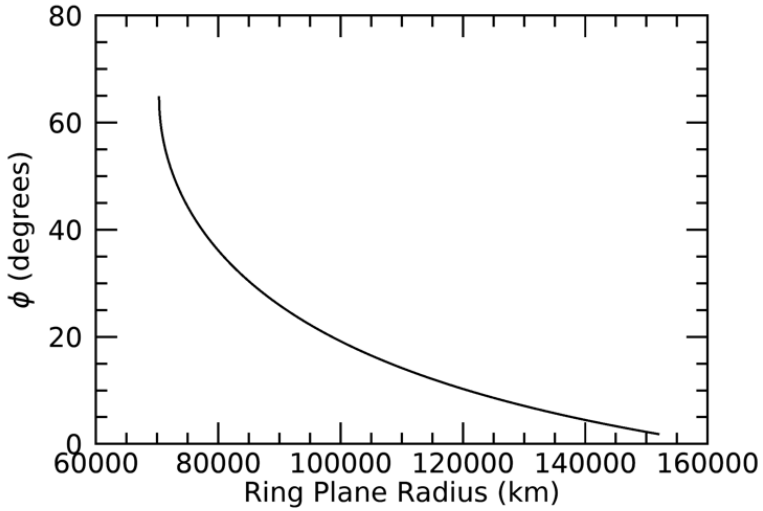
Subsolar lat/lon: 22.09, -79.87

Sub-s/c lat/lon: 21.31, -70.05


ALP SCO B Rev 245 Ingress
HSP Counts (per second)
Ring Plane Radius (km)
0
200
400
600
800
1000
80000
100000
120000
140000


ALP SCO B Rev 245 Ingress
Radial Resolution (m)
Ring Plane Radius (km)
0
2
4
6
8
10
12
14
60000
80000
100000
120000
140000
160000

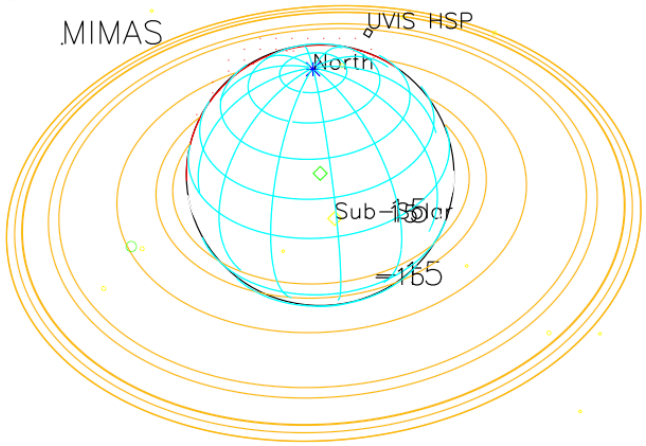

HSP Counts (per second)
Ring Plane Radius (km)
0
200
400
600
800
1000
60000
80000
100000
120000
140000
160000


ϕ (degrees)
Ring Plane Radius (km)
0
20
40
60
80
60000
80000
100000
120000
140000
160000

TITAN

TETHYS

MIMAS



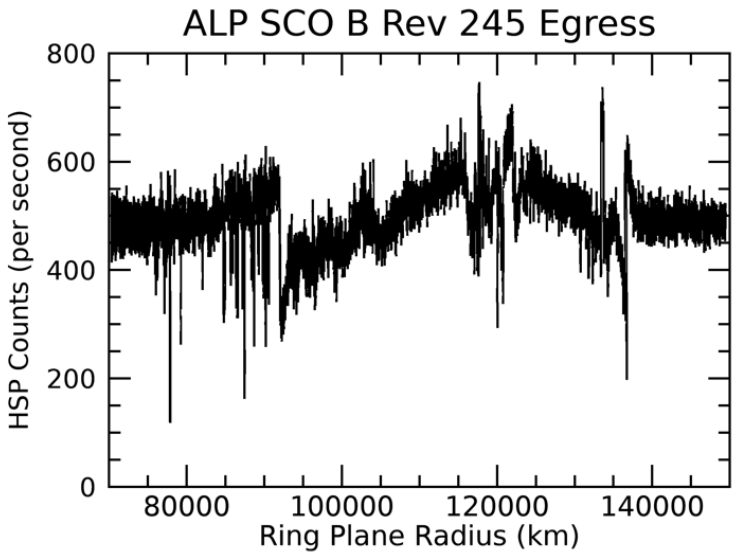
EN

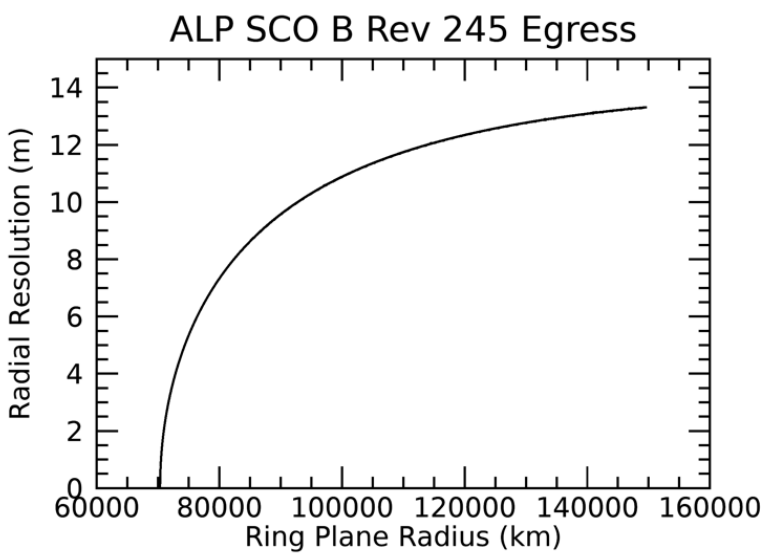
2016-287T02:53:00.000 467237.54 km

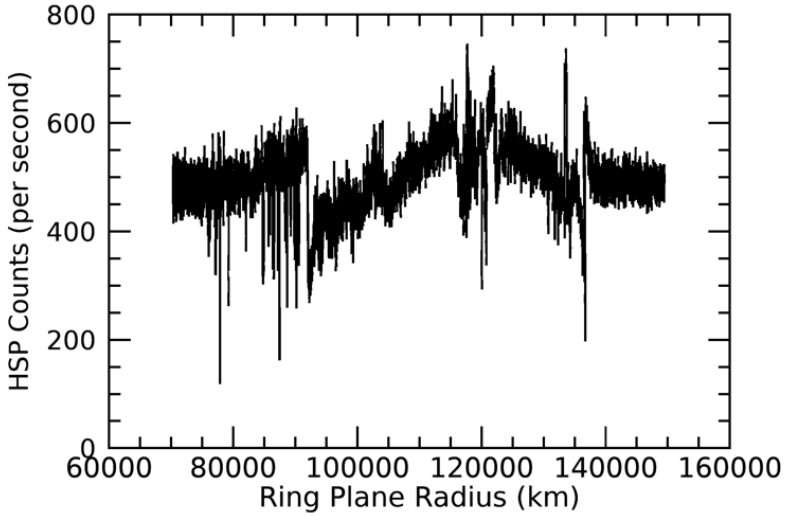
Target RA/dec: 250.35, -33.94

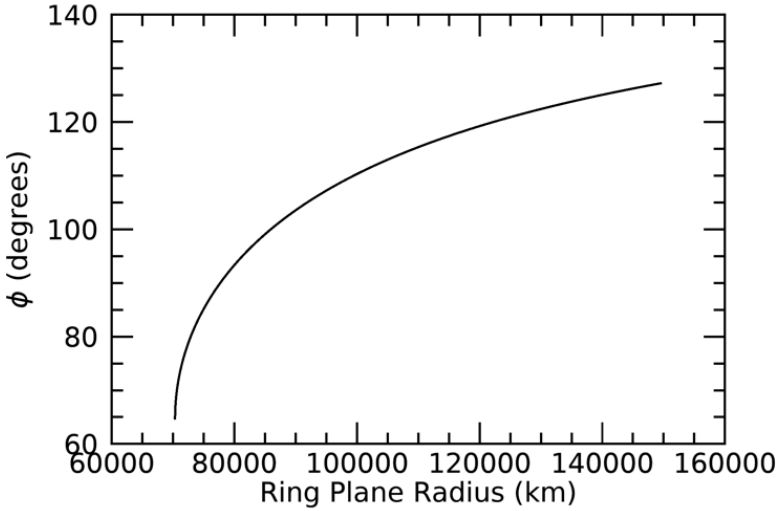
Subsolar lat/lon: 22.11, -151.15

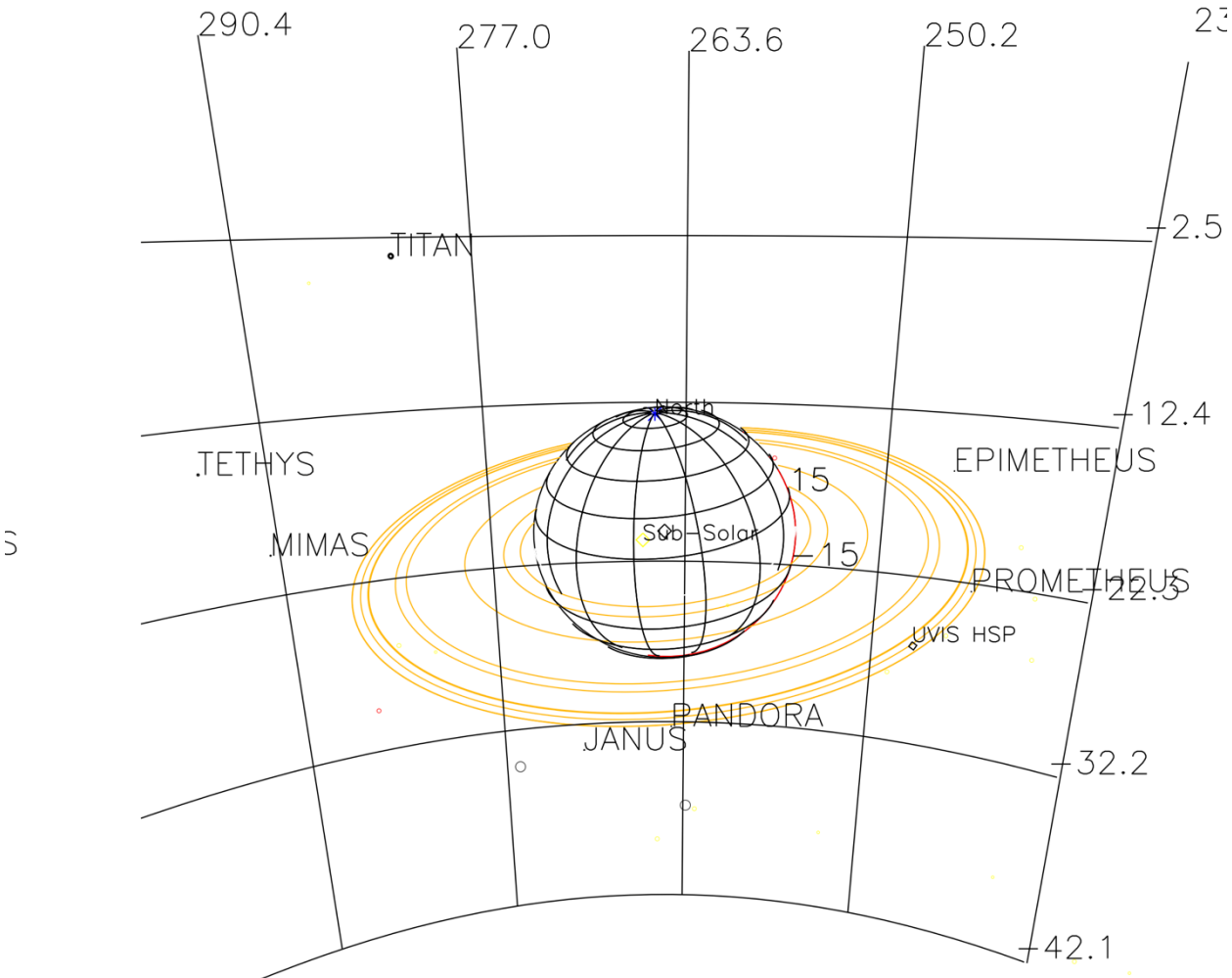
Sub-s/c lat/lon: 34.50, -155.90


ALP SCO B Rev 245 Egress
HSP Counts (per second)
Ring Plane Radius (km)
0
200
400
600
800
80000
100000
120000
140000


ALP SCO B Rev 245 Egress
Radial Resolution (m)
Ring Plane Radius (km)
0
2
4
6
8
10
12
14
60000
80000
100000
120000
140000
160000


HSP Counts (per second)
Ring Plane Radius (km)
0
200
400
600
800
60000
80000
100000
120000
140000
160000


ϕ (degrees)
Ring Plane Radius (km)
60
80
100
120
140
60000
80000
100000
120000
140000
160000



2016-287T06:15:00.000 406665.29 km
Target RA/dec: 265.03, -20.41
Subsolar lat/lon: 22.11, 95.12
Sub-s/c lat/lon: 21.28, 104.48