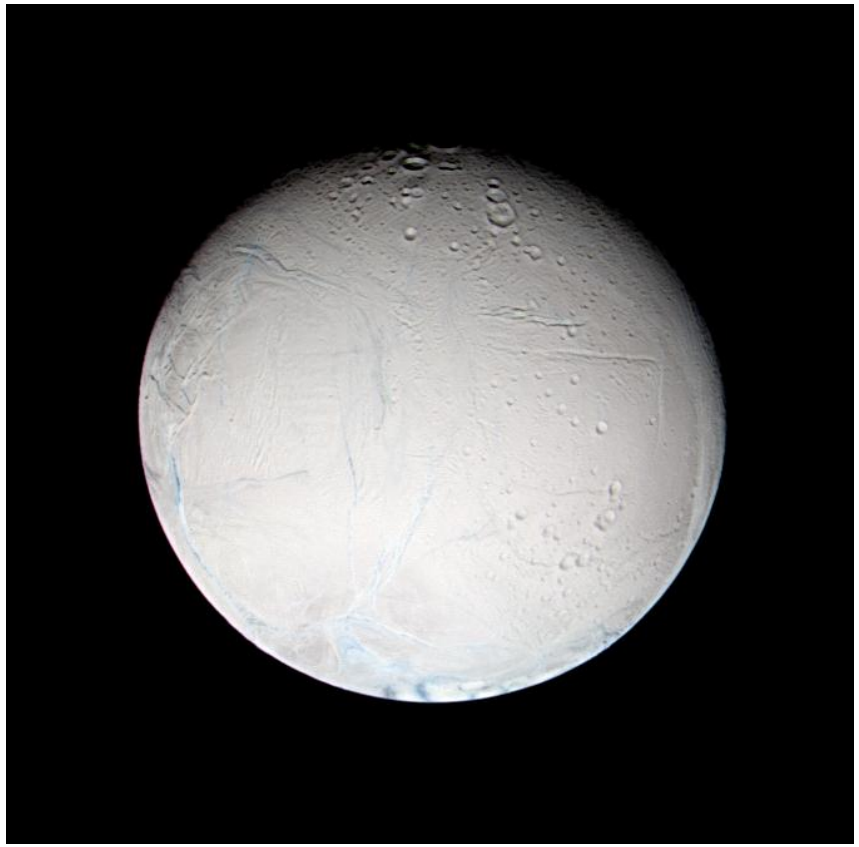
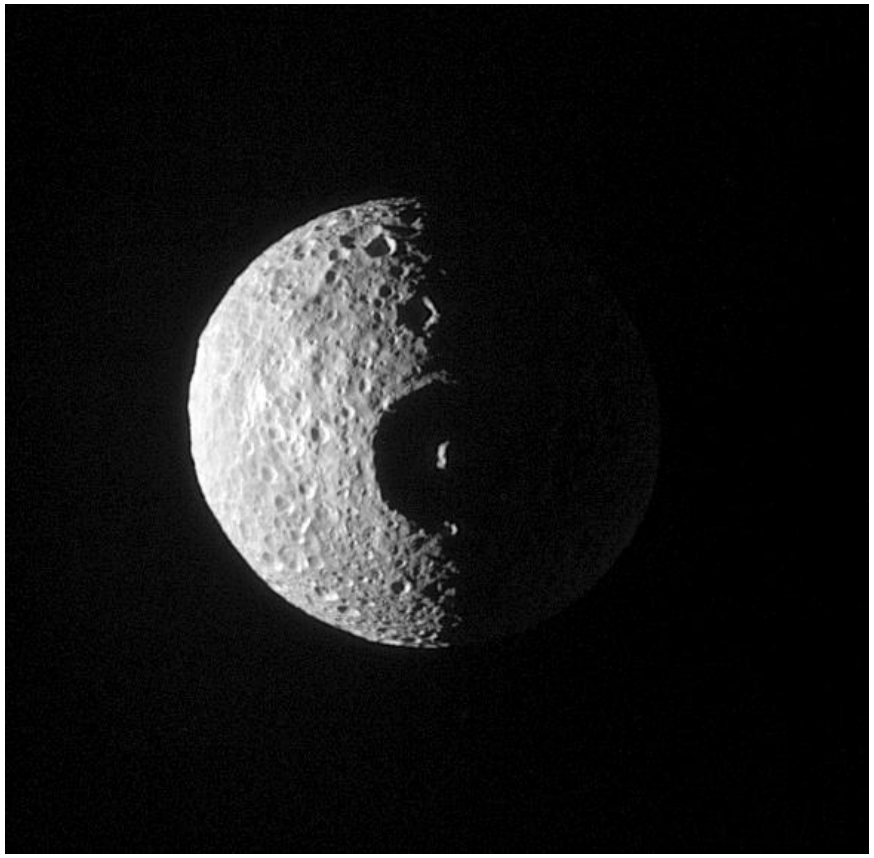
Third Enceladus Targeted flyby S12

Enceladus (011EN) & Mimas (012MI) Preview Overview





Amanda Hendrix, Bonnie Buratti, Rosaly Lopes

8 July 2005

011EN *summary* 012MI

- Closest Approach:
  - 169.4 km (105.3 mi) altitude
  - July 14 2005 19:55:21 SCET (July 14 01:19 PM Pacific time)
  - 8.17 km/s
  - 63.4° phase at C/A (low phase inbound)
  - RWA control
- Data Return:
  - Short downlink outbound (~3 hr) (962 Mb)
  - Final Goldstone downlink (9 hr) (01:30 am -01:30 pm Fri. PDT) (3343 Mb)
- Science Highlights:
  - ORS inbound, outbound
  - Key MAPS measurements
  - UVIS stellar occ at C/A
  - Rhea observations (RADAR too)
  - Epimetheus observation

- Closest Approach:
  - 62,074 km (38,571 mi) altitude
  - Aug 2 2005 04:22:30 SCET (Aug 1 09:46 PM Pacific time)
  - 6.07 km/s
  - 58.4° phase at C/A (low phase inbound)
  - RWA control
- Data Return:
  - Short downlink inbound (~5 hr) (379 Mb)
  - Short downlink outbound (~5.5 hr) (2064 Mb)
  - Final Madrid downlink (9 hr) (2841 Mb)
- Science Highlights:
  - ORS inbound, outbound
  - Best Mimas opportunity in tour
  - Some coverage of terrain not seen by Voyager

Enceladus 011EN Flyby

- 2nd targeted Enceladus flyby
- Lowest flyby yet
  - Trajectory changed to 169 km altitude flyby from planned 1000 km distance
  - Excellent opportunity for MAPS instruments
  - High res observations of southern hemisphere
- Segment also includes
  - Rhea
  - Epimetheus
  - Stellar, solar ring and Saturn occs (UVIS, RSS)
  - Saturn, rings ORS observations

Mimas 012MI Flyby

- Quasi-targeted Mimas flyby - best opportunity
  - No targeted flybys in tour
- Segment also includes
  - Rhea
  - Dione
  - RSS rings, Saturn occultations

011EN Attitude Strategy

Saturn

RHEA

ENCELADUS

occs

Request	Riders	Start (SCET)	Start (Epoch)	Duration	End (SCET)	Primary	Secondary	Comments
SOST rev 11 Segment		2005-193T23:30:00		003T00:00:00	2005-196T23:30:00			
SP_011SA_WAYPTTURN193_PRIME		2005-193T23:30:00		000T00:30:00	2005-194T00:00:00	ISS_NAC to Saturn	POS_X to NSP	22.2 min turn (CTV)
NEW WAYPOINT		**2005-194T00:00:00**		**001T01:10:00**	**2005-195T01:10:00**	**ISS_NAC to Saturn**	**POS_X to NSP**	
CIRS_011RC_SHADLLP001_PRIME	C, M	2005-194T00:00:00		000T04:00:00	2005-194T04:00:00	CIRS_FP1 to Rings	POS_X to NSP	
CIRS_011RA_SHADLLP001_PRIME	C, M	2005-194T04:00:00		000T04:00:00	2005-194T08:00:00	CIRS_FP1 to Rings	POS_X to NSP	
VIMS_011RB_BMOVIE1001_PRIME	C, M	2005-194T08:00:00		000T03:30:00	2005-194T11:30:00	VIMS_IR to L_ANSA_B	POS_X to North_Pole_Dir	
ISS_011OT_RETMDRESA007_PRIME	M	2005-194T11:30:00		000T01:30:00	2005-194T13:00:00	ISS_NAC to Retargetable	POS_X to NSP	
VIMS_011SA_CYLMAP001_PRIME	C, M, R, U	2005-194T13:00:00		000T06:30:00	2005-194T19:30:00	VIMS_IR to Saturn	POS_X to NSP	
SP_011EA_DLTURN194_PRIME	M, R	2005-194T19:30:00		000T00:24:00	2005-194T19:54:00	XBAND to Earth	POS_X to NSP	20.3 min turn (CTV)
SP_011EA_G70METNON194_PRIME	M, R	2005-194T19:54:00		000T04:50:00	2005-195T00:44:00	XBAND to Earth	Rolling	
SP_011RH_WAYPTTURN195_PRIME	M	2005-195T00:44:00		000T00:26:00	2005-195T01:10:00	ISS_NAC to Rhea (0.0,0.0,20.0 deg. o	NEG_Z to NSP	
NEW WAYPOINT		**2005-195T01:10:00**		**000T11:13:00**	**2005-195T12:23:00**	**ISS_NAC to Rhea (0.0,0.0,20.0 de**	**NEG_Z to NSP**	
BEGIN CUSTOM PERIOD		**2005-195T01:10:00**		**000T00:01:00**	**2005-195T01:11:00**			
ISS_011RH_GLOCOL001_PRIME	C, M, U	2005-195T01:10:00		000T00:40:00	2005-195T01:50:00	ISS_NAC to Rhea	NEG_Z to North_Pole_Dir	Pick up at ISS_NAC to Rhea (0.0,0.0,20.0 deg. offset), NEG_Z to NSP; Hand off at ISS_NAC to Rhea, NEG_Z to North_Pole_Dir.
UVIS_011RH_ICYLON002_PRIME	C, M	2005-195T01:50:00		000T00:24:00	2005-195T02:14:00	ISS_NAC to Rhea	NEG_Z to North_Pole_Dir	Pick up at ISS_NAC to Rhea, NEG_Z to North_Pole_Dir; Hand off at ISS_NAC to Rhea, NEG_Z to North_Pole_Dir.
VIMS_011RH_RHEA003_PRIME	C, M, U	2005-195T02:14:00		000T01:46:00	2005-195T04:00:00	ISS_NAC to Rhea	NEG_Z to North_Pole_Dir	Pick up at ISS_NAC to Rhea, NEG_Z to North_Pole_Dir; Hand off at ISS_NAC to Rhea, NEG_Z to North_Pole_Dir.
ISS_011RH_REGGEODB001_PRIME	C, M, U	2005-195T04:00:00		000T00:10:00	2005-195T04:10:00	ISS_NAC to Rhea	NEG_Z to North_Pole_Dir	Pick up at ISS_NAC to Rhea, NEG_Z to North_Pole_Dir; Hand off at ISS_NAC to Rhea, NEG_Z to North_Pole_Dir.
CIRS_011RH_FP3REGION020_PRIME	M, R, U	2005-195T04:10:00		000T01:00:00	2005-195T05:10:00	CIRS_FP3 to Rhea	NEG_Z to North_Pole_Dir	Pick up at ISS_NAC to Rhea, NEG_Z to North_Pole_Dir; Hand off at ISS_NAC to Rhea, NEG_Z to North_Pole_Dir.
VIMS_011RH_RHEA001_PRIME	C, M, R, U	2005-195T05:10:00		000T00:40:00	2005-195T05:50:00	ISS_NAC to Rhea	NEG_Z to North_Pole_Dir	Pick up at ISS_NAC to Rhea, NEG_Z to North_Pole_Dir; Hand off at ISS_NAC to Rhea, NEG_Z to North_Pole_Dir.
ISS_011RH_REGGEODC001_PRIME	C, M, R, U	2005-195T05:50:00		000T00:10:00	2005-195T06:00:00	ISS_NAC to Rhea	NEG_Z to North_Pole_Dir	Pick up at ISS_NAC to Rhea, NEG_Z to North_Pole_Dir; Hand off at ISS_NAC to Rhea, NEG_Z to North_Pole_Dir.
VIMS_011RH_RHEA002_PRIME	C, M, R, U	2005-195T06:00:00		000T01:50:00	2005-195T07:50:00	ISS_NAC to Rhea	NEG_Z to North_Pole_Dir	Pick up at ISS_NAC to Rhea, NEG_Z to North_Pole_Dir; Hand off at ISS_NAC to Rhea, NEG_Z to North_Pole_Dir.
ISS_011RH_REGGEODD001_PRIME	C, M, R, U	2005-195T07:50:00		000T00:10:00	2005-195T08:00:00	ISS_NAC to Rhea	NEG_Z to North_Pole_Dir	Pick up at ISS_NAC to Rhea, NEG_Z to North_Pole_Dir; Hand off at ISS_NAC to Rhea, NEG_Z to North_Pole_Dir.
RADAR_011RH_SCATTRADL001_PRIME	M	2005-195T08:00:00		000T02:00:00	2005-195T10:00:00	NEG_Z to Rhea	POS_X to North_Pole_Dir	Pick up at ISS_NAC to Rhea, NEG_Z to North_Pole_Dir; Hand off at ISS_NAC to Rhea, NEG_Z to North_Pole_Dir.
ISS_011RH_REGMAPE001_PRIME	U	2005-195T10:00:00		000T00:10:00	2005-195T10:10:00	ISS_NAC to Rhea	NEG_Z to North_Pole_Dir	Pick up at ISS_NAC to Rhea, NEG_Z to North_Pole_Dir; Hand off at ISS_NAC to Rhea, NEG_Z to North_Pole_Dir.
CIRS_011RH_FP1DAYNIT020_PRIME	U	2005-195T10:10:00		000T00:15:00	2005-195T10:25:00	CIRS_FP1 to Rhea	NEG_Z to North_Pole_Dir	Pick up at ISS_NAC to Rhea, NEG_Z to North_Pole_Dir; Hand off at ISS_NAC to Rhea, NEG_Z to North_Pole_Dir.
VIMS_011RH_RHEA004_PRIME	C, U	2005-195T10:25:00		000T00:55:00	2005-195T11:20:00	ISS_NAC to Rhea	NEG_Z to North_Pole_Dir	Pick up at ISS_NAC to Rhea, NEG_Z to North_Pole_Dir; Hand off at ISS_NAC to Rhea, NEG_Z to North_Pole_Dir.
ISS_011RH_REGGEODF001_PRIME	C, U	2005-195T11:20:00		000T00:10:00	2005-195T11:30:00	ISS_NAC to Rhea	NEG_Z to North_Pole_Dir	Pick up at ISS_NAC to Rhea, NEG_Z to North_Pole_Dir; Hand off at ISS_NAC to Rhea, NEG_Z to North_Pole_Dir.
CIRS_011RH_FP1GLOBAL020_PRIME	U	2005-195T11:30:00		000T00:20:00	2005-195T11:50:00	CIRS_FP1 to Rhea	NEG_Z to North_Pole_Dir	Pick up at ISS_NAC to Rhea, NEG_Z to North_Pole_Dir; Hand off at ISS_NAC to Rhea (0.0,0.0,20.0 deg. offset), NEG_Z to NSP.
END CUSTOM PERIOD		**2005-195T11:50:00**		**000T00:01:00**	**2005-195T11:51:00**			**new notation for custom periods**
SP_011EN_WAYPTTURN495_PRIME		2005-195T11:50:00		000T00:20:00	2005-195T12:10:00	ISS_NAC to Enceladus (0.0,-70.0,25.	POS_X to 40.0/55.0	1st part of 2part turn to avoid SRU violatons
SP_011EN_WAYPTTURN595_PRIME		2005-195T12:10:00		000T00:13:00	2005-195T12:23:00	ISS_NAC to Enceladus	POS_X to 40.0/55.0	2nd part of 2part turn to avoid SRU violations
NEW WAYPOINT		**2005-195T12:23:00**		**000T07:28:52**	**2005-195T19:51:52**	**ISS_NAC to Enceladus**	**POS_X to 40.0/55.0**	
SP_011NA_DEADTIME195_PRIME		**2005-195T12:23:00**		**000T00:01:22**	**2005-195T12:24:22**	**ISS_NAC to Enceladus**	**POS_X to 40.0/55.0**	
CIRS_011EN_FP3MAP1001_PRIME	C, V	2005-195T12:24:22	GMB_E011_Enceladus-000T07:31:00	000T01:15:00	2005-195T13:39:22	CIRS_FP3 to Enceladus	POS_X to 40.0/55.0	
ISS_011EN_N3CPOL002_PRIME	C, U, V	2005-195T13:39:22	GMB_E011_Enceladus-000T06:16:00	000T00:15:00	2005-195T13:54:22	ISS_NAC to Enceladus	POS_X to 40.0/55.0	
CIRS_011EN_FP3GLOBAL020_PRIME	U, V	2005-195T13:54:22	GMB_E011_Enceladus-000T06:01:00	000T01:00:00	2005-195T14:54:22	CIRS_FP3 to Enceladus	POS_X to 40.0/55.0	
ISS_011EN_N4COLR003_PRIME	C, U, V	2005-195T14:54:22	GMB_E011_Enceladus-000T05:01:00	000T00:15:00	2005-195T15:09:22	ISS_NAC to Enceladus	POS_X to 40.0/55.0	
ISS_011EN_N3CPOL003_PRIME	C, U, V	2005-195T15:09:22	GMB_E011_Enceladus-000T04:46:00	000T00:15:00	2005-195T15:24:22	ISS_NAC to Enceladus	POS_X to 40.0/55.0	
CIRS_011EN_FP3REGION021_PRIME	U, V	2005-195T15:24:22	GMB_E011_Enceladus-000T04:31:00	000T00:50:00	2005-195T16:14:22	CIRS_FP3 to Enceladus	POS_X to 40.0/55.0	
ISS_011EN_N4COLR004_PRIME	C, U, V	2005-195T16:14:22	GMB_E011_Enceladus-000T03:41:00	000T00:10:00	2005-195T16:24:22	ISS_NAC to Enceladus	POS_X to 40.0/55.0	
ISS_011EN_N3CPOL004_PRIME	C, U, V	2005-195T16:24:22	GMB_E011_Enceladus-000T03:31:00	000T00:15:00	2005-195T16:39:22	ISS_NAC to Enceladus	POS_X to 40.0/55.0	
CIRS_011EN_FP3REGION020_PRIME	U, V	2005-195T16:39:22	GMB_E011_Enceladus-000T03:16:00	000T00:55:00	2005-195T17:34:22	CIRS_FP3 to Enceladus	POS_X to 40.0/55.0	
ISS_011EN_NGNPOL001_PRIME	C, U, V	2005-195T17:34:22	GMB_E011_Enceladus-000T02:21:00	000T00:20:00	2005-195T17:54:22	ISS_NAC to Enceladus	POS_X to 40.0/55.0	
ISS_011EN_N3COL001_PRIME	C, U, V	2005-195T17:54:22	GMB_E011_Enceladus-000T02:01:00	000T00:20:00	2005-195T18:14:22	ISS_NAC to Enceladus	POS_X to 40.0/55.0	
CIRS_011EN_FP1GLOBAL020_PRIME	U, V	2005-195T18:14:22	GMB_E011_Enceladus-000T01:41:00	000T00:20:00	2005-195T18:34:22	CIRS_FP1 to Enceladus	POS_X to 40.0/55.0	
ISS_011EN_REGE2002_PRIME	C, M, U, V	2005-195T18:34:22	GMB_E011_Enceladus-000T01:21:00	000T00:20:00	2005-195T18:54:22	ISS_NAC to Enceladus	POS_X to 40.0/55.0	
ISS_011EN_MORPH001_PRIME	C, M, U, V	2005-195T18:54:22	GMB_E011_Enceladus-000T01:01:00	000T00:08:00	2005-195T19:02:22	ISS_NAC to Enceladus	POS_X to 40.0/55.0	
ISS_011EN_N9COL001_PRIME	C, M, U, V	2005-195T19:02:22	GMB_E011_Enceladus-000T00:53:00	000T00:24:00	2005-195T19:26:22	ISS_NAC to Enceladus	POS_X to 40.0/55.0	
ISS_011EN_MORPH002_PRIME	C, M, U	2005-195T19:26:22	GMB_E011_Enceladus-000T00:29:00	000T00:08:00	2005-195T19:34:22	ISS_NAC to Enceladus	POS_X to 40.0/55.0	
SP_011ST_WAYPTTURN695_PRIME	M	2005-195T19:34:22	GMB_E011_Enceladus-000T00:21:00	000T00:17:30	2005-195T19:51:52	UVIS_FUV to 81.283/6.35	NEG_X to 330.0/70.0	
NEW WAYPOINT		**2005-195T19:51:52**		**000T00:34:38**	**2005-195T20:26:30**	**UVIS_FUV to 81.283/6.35**	**NEG_X to 330.0/70.0**	
UVIS_011EN_ICYEXO001_PRIME	C, I, M	2005-195T19:51:52	GMB_E011_Enceladus-000T00:03:30	000T00:06:08	2005-195T19:58:00	UVIS_FUV to 81.283/6.35	NEG_X to 330.0/70.0	
SP_011ST_WAYPTTURN795_PRIME	M	2005-195T19:58:00	GMB_E011_Enceladus+000T00:02:38	000T00:28:30	2005-195T20:26:30	ISS_NAC to Enceladus	POS_X to 40.0/55.0	16.2 min turn (CTV)
NEW WAYPOINT		**2005-195T20:26:30**		**000T07:19:52**	**2005-196T03:46:22**	**ISS_NAC to Enceladus**	**POS_X to 40.0/55.0**	
BEGIN CUSTOM PERIOD		**2005-195T20:40:00**	**GMB_E011_Enceladus+000T00:31:08**	**000T01:00:00**	**2005-195T21:26:30**			
CIRS_011EN_FP1NSSCAN020_PRIME	M, U	2005-195T20:26:30	GMB_E011_Enceladus+000T00:31:08	000T00:52:52	2005-195T21:19:22	CIRS_FP1 to Enceladus	POS_X to 40.0/55.0	Pick up at CIRS_FP1 to Enceladus, POS_X to 40.0/55.0; Hand off at ISS_NAC to Enceladus, POS_X to 125.0/-30.0.
ISS_011EN_NCPOL001_PRIME	C, M, U, V	2005-195T21:19:22	GMB_E011_Enceladus+000T01:24:00	000T00:10:00	2005-195T21:29:22	ISS_NAC to Enceladus	POS_X to 125.0/-30.0	Pick up at ISS_NAC to Enceladus, POS_X to 125.0/-30.0; Hand off at ISS_NAC to Enceladus, POS_X to 125.0/-30.0. "pick up at NAC to Enceladus, POS_X to 125/-30 hand-off at NAC to Enceladus, POS_X to 125/-30"
UVIS_011EN_ICYLON019_PRIME	C, M	2005-195T21:29:22	GMB_E011_Enceladus+000T01:34:00	000T00:20:00	2005-195T21:49:22	ISS_NAC to Enceladus	POS_X to 125.0/-30.0	Pick up at ISS_NAC to Enceladus, POS_X to 125.0/-30.0; Hand off at ISS_NAC to Enceladus, POS_X to 125.0/-30.0.
ISS_011EP_STEREO001_PRIME	C, M, U, V	2005-195T21:49:22	GMB_E011_Enceladus+000T01:54:00	000T00:45:00	2005-195T22:34:22	ISS_NAC to Epimetheus	POS_X to 100.0/-35.0	Pick up at ISS_NAC to Enceladus, POS_X to 125.0/-30.0; Hand off at ISS_NAC to Epimetheus, POS_X to 100.0/-35.0. "pick up at NAC to Enceladus, POS_X to 125/-30 hand-off at NAC to Epimetheus, POS_X to 100/-35"
Saturn periapse 011, r = 3....		2005-195T22:10:58		000T00:00:01	2005-195T22:10:59			
UVIS_011ST_URSIGSGR001_PRIME	C, M	2005-195T22:36:22	GMB_E011_Enceladus+000T02:41:00	000T01:50:00	2005-196T00:26:22	UVIS_FUV to 283.816/-26.297	POS_X to 100.0/-65.0	Pick up at ISS_NAC to Epimetheus, POS_X to 100.0/-35.0; Hand off at UVIS_FUV to 283.816/-26.297. POS_X to 100.0/-65.0.
UVIS_011SU_RINGSAT001_PRIME	M, R, V	2005-196T00:26:22	GMB_E011_Enceladus+000T04:31:00	000T01:37:00	2005-196T02:03:22	ISS_NAC to Sun (-20.0,0.0,0.0 deg. o	POS_X to 100.0/-65.0	Pick up at UVIS_FUV to 283.816/-26.297, POS_X to 100.0/-65.0; Hand off at ISS_NAC to Sun (-20.0,0.0,0.0 deg. offset), POS_X to 100.0/-65.0.
VIMS_011RI_HIPHASE001_PRIME	C, M, R, V	2005-196T02:03:22	GMB_E011_Enceladus+000T06:08:00	000T01:17:00	2005-196T03:20:22	VIMS_IR to L_ANSA_C	NEG_X to NSP	Pick up at ISS_NAC to Sun (-20.0,0.0,0.0 deg. offset), POS_X to 100.0/-65.0; Hand off at ISS_NAC to Enceladus, POS_X to 40.0/55.0. Pick up at UVIS_solar_port to sun, POS_X to 100/-65. Drop off at NAC to Enceladu
END CUSTOM PERIOD		**2005-196T03:20:22**	**GMB_E011_Enceladus+000T07:25:00**	**000T00:01:00**	**2005-196T03:21:22**			
SP_011SA_WAYPTTURN196_PRIME	R	2005-196T03:20:22	GMB_E011_Enceladus+000T07:25:00	000T00:28:00	2005-196T03:49:22	XBAND to Earth	NEG_X to 223.0/28.0	24.6 min turn (CTV)
NEW WAYPOINT		**2005-196T03:46:22**		**000T06:13:38**	**2005-196T10:00:00**	**XBAND to Earth**	**NEG_X to 223.0/28.0**	
RSS_011SA_OCC004_PRIME	R	2005-196T03:46:22	GMB_E011_Enceladus+000T07:51:00	000T00:44:39	2005-196T04:31:01	XBAND to Earth	NEG_X to 223.0/28.0	
RSS_011RI_OCC004_PRIME	R	2005-196T04:31:01	GMB_E011_Enceladus+000T08:35:39	000T02:05:21	2005-196T06:36:22	XBAND to Earth	NEG_X to 223.0/28.0	
SP_011NA_DEADTIME196_PRIME	**R**	**2005-196T06:40:00**		**000T00:10:00**	**2005-196T06:50:00**	**XBAND to Earth**	**NEG_X to 223.0/28.0**	
SP_011EA_M70METNON196_PRIME	R	2005-196T06:50:00		000T02:50:00	2005-196T09:40:00	XBAND to Earth	Rolling	
SP_011SA_WAYPTTURN596_PRIME		2005-196T09:40:00		000T00:20:00	2005-196T10:00:00	ISS_NAC to Saturn	POS_Z to NSP	
NEW WAYPOINT		**2005-196T10:00:00**		**000T14:00:00**	**2005-197T00:00:00**	**ISS_NAC to Saturn**	**POS_Z to NSP**	
CIRS_011SA_NADIROCC002_PRIME		2005-196T10:00:00		000T03:20:00	2005-196T13:20:00	CIRS_FP3 to Saturn	POS_Z to NSP	
VIMS_011SA_LIGHTNING003_PRIME	C	2005-196T13:20:00		000T00:50:00	2005-196T14:10:00	VIMS_IR to Saturn	POS_Z to NSP	
SP_011EA_DLTURN596_PRIME		2005-196T14:10:00		000T00:20:00	2005-196T14:30:00	XBAND to Earth	ISS_NAC to Saturn	
SP_011EA_G70METNON196_PRIME	C, R	2005-196T14:30:00		000T09:00:00	2005-196T23:30:00	XBAND to Earth	Rolling/SRU	This D/L has been modified by CDA to Rock

012MI Attitude Strategy

Rhea, Dione

<-- MIMAS-->

occs, other

Request	Riders	Start (SCET)	Start (Epoch)	Duration	End (SCET)	Primary	Secondary	Comments
Sequence S013, length = 30 ...		2005-212T22:00:00	E012_SEQUENCE_013+000T00:00:00	029T23:43:00	2005-242T21:43:00			
SOST rev 12 Segment		2005-212T22:00:00		002T16:50:00	2005-215T14:50:00			
SP_012EA_S13IVP212_PRIME	M	2005-212T22:00:00	E012_SEQUENCE_013+000T00:00:00	000T00:06:00	2005-212T22:06:00	XBAND to Earth	NEG_X to Sun	
SP_012RH_WAYPTTURN212_PRIME	M	2005-212T22:06:00		000T00:21:30	2005-212T22:27:30	ISS_NAC to Rhea	POS_Z to 200.0/40.0	SP Turn to Waypoint
SP_012RH_WAYPTTURN412_PRIME	M	2005-212T22:27:30		000T00:12:30	2005-212T22:40:00	ISS_NAC to Rhea	POS_Z to NEP	SP Turn to Waypoint
NEW WAYPOINT		**2005-212T22:40:00**		**000T13:42:00**	**2005-213T12:22:00**	**ISS_NAC to Rhea**	**POS_Z to NEP**	
CIRS_012RH_FP3GLOBAL020_PRIME	M, U	2005-212T22:40:00		000T01:50:00	2005-213T00:30:00	CIRS_FP3 to Rhea	POS_Z to NEP	
ISS_012OT_RETMDRESA011_PRIME	M, V	2005-213T00:30:00		000T01:40:00	2005-213T02:10:00	ISS_NAC to Retargetable	POS_Z to NEP	
ISS_012MI_PHOTOM004_PRIME	C, M, U	2005-213T02:10:00		000T00:30:00	2005-213T02:40:00	ISS_NAC to Mimas	POS_Z to NEP	
ISS_012OT_RETMDRESA013_PRIME	M, V	2005-213T02:40:00		000T01:54:00	2005-213T04:34:00	ISS_NAC to Retargetable	POS_Z to NEP	
CIRS_012RH_FP3REGION020_PRIME	M, R, U	2005-213T04:34:00		000T02:08:00	2005-213T06:42:00	CIRS_FP3 to Rhea	POS_Z to NEP	
SP_012EA_DITURN213_PRIME	M, R	2005-213T06:42:00		000T00:22:00	2005-213T07:04:00	XBAND to Earth	NEG_X to NSP	SP Turn to Earth
SP_012EA_M34BWGNON213_PRIME	M, R	2005-213T07:04:00		000T05:00:00	2005-213T12:04:00	XBAND to Earth	Rolling	
SP_012DI_WAYPTTURN213_PRIME	M, R	2005-213T12:04:00		000T00:18:00	2005-213T12:22:00	ISS_NAC to Dione	NEG_X to NSP	SP Turn to Waypoint
NEW WAYPOINT		**2005-213T12:22:00**		**000T09:08:00**	**2005-213T21:30:00**	**ISS_NAC to Dione**	**NEG_X to NSP**	
Begin Custom		**2005-213T12:22:00**		**000T00:01:00**	**2005-213T12:23:00**			
VIMS_012RH_RHEA001_PRIME	C, I, M, U	2005-213T12:40:00		000T01:30:00	2005-213T14:10:00	ISS_NAC to Rhea	NEG_X to NSP	Pick up at ISS_NAC to Dione, NEG_X to NSP; Hand off at ISS_NAC to Rhea, NEG_X to NSP. Pick up at ISS_NAC to Dione, -X to NSP Leave off at ISS_NAC to Rhea, -X to NSP
ISS_012RH_REGGEODC001_PRIME	C, M, U, V	2005-213T14:10:00		000T00:10:00	2005-213T14:20:00	ISS_NAC to Rhea	NEG_X to NSP	Pick up at ISS_NAC to Rhea, NEG_X to NSP; Hand off at ISS_NAC to Rhea, NEG_X to NSP. "direct handoff (leave at ISS_NAC to Rhea, POS_Z to Rhea NP)"
CIRS_012RH_FP1GLOBAL020_PRIME	M, U, V	2005-213T14:20:00		000T01:40:00	2005-213T16:00:00	CIRS_FP1 to Rhea	NEG_X to NSP	Pick up at ISS_NAC to Rhea, NEG_X to NSP; Hand off at ISS_NAC to Dione, NEG_X to NSP.
End Custom		**2005-213T16:00:00**		**000T00:01:00**	**2005-213T16:01:00**			
UVIS_012DI_ICYLON007_PRIME	C, I, M, V	2005-213T16:00:00		000T00:40:00	2005-213T16:40:00	ISS_NAC to Dione	NEG_X to NSP	
VIMS_012RH_RHEA004_PRIME	C, I, M, U	2005-213T16:40:00		000T00:40:00	2005-213T17:20:00	ISS_NAC to Rhea	NEG_X to NSP	
ISS_012DI_PHOTOM010_PRIME	C, M, U, V	2005-213T17:20:00		000T00:35:00	2005-213T17:55:00	ISS_NAC to Dione	NEG_X to NSP	
UVIS_012DI_ICYLON010_PRIME	C, I, M, V	2005-213T17:55:00		000T00:45:00	2005-213T18:40:00	ISS_NAC to Dione	NEG_X to NSP	
VIMS_012RH_RHEA003_PRIME	C, I, M, U	2005-213T18:40:00		000T01:20:00	2005-213T20:00:00	ISS_NAC to Rhea	NEG_X to NSP	
UVIS_012DI_ICYLON012_PRIME	C, I, M, V	2005-213T20:00:00		000T00:25:00	2005-213T20:25:00	ISS_NAC to Dione	NEG_X to NSP	
VIMS_012RH_RHEA005_PRIME	C, I, M, U	2005-213T20:25:00		000T00:40:00	2005-213T21:05:00	ISS_NAC to Rhea	NEG_X to NSP	
SP_012EA_WAYPTTURN213_PRIME	M	2005-213T21:05:00		000T00:25:00	2005-213T21:30:00	XBAND to Earth	POS_X to NSP	SP Turn to Waypoint
NEW WAYPOINT		**2005-213T21:30:00**		**000T23:36:00**	**2005-214T21:06:00**	**XBAND to Earth**	**POS_X to NSP**	
Begin Custom		**2005-213T21:30:00**		**000T00:01:00**	**2005-213T21:31:00**			
CIRS_012MI_FP1FP3MAP666_PRIME	I, M, U	2005-213T21:30:00	E012_Peri_for_Mimas-000T07:51:02	000T00:40:00	2005-213T22:10:00	CIRS_FP3 to Mimas	POS_X to NSP	Pick up at XBAND to Earth, POS_X to NSP; Hand off at ISS_NAC to Mimas, POS_X to NSP.
VIMS_012MI_MIMAS005_PRIME	C, I, M, U	2005-213T22:10:00	E012_Peri_for_Mimas-000T07:11:02	000T00:46:02	2005-213T22:56:02	ISS_NAC to Mimas	POS_X to NSP	Pick up at ISS_NAC to Mimas, POS_X to NSP; Hand off at ISS_NAC to Mimas, POS_X to NSP. Pick up at ISS_NAC to Mimas, +X to NSP Leave off at ISS_NAC to Mimas, +X to NSP
CIRS_012MI_FP3REGION022_PRIME	I, M, U, V	2005-213T22:56:02	E012_Peri_for_Mimas-000T06:25:00	000T00:50:00	2005-213T23:46:02	CIRS_FP3 to Mimas	POS_X to NSP	Pick up at ISS_NAC to Mimas, POS_X to NSP; Hand off at ISS_NAC to Mimas, POS_X to NSP.
VIMS_012MI_MIMAS006_PRIME	C, I, M, U	2005-213T23:46:02	E012_Peri_for_Mimas-000T05:35:00	000T00:45:00	2005-214T00:31:02	ISS_NAC to Mimas	POS_X to NSP	Pick up at ISS_NAC to Mimas, POS_X to NSP; Hand off at ISS_NAC to Mimas, POS_X to NSP. Pick up at ISS_NAC to Mimas, +X to NSP Leave off at ISS_NAC to Mimas, +X to NSP
ISS_012MI_LIMTOP001_PRIME	C, M, U, V	2005-214T00:31:02	E012_Peri_for_Mimas-000T04:50:00	000T00:19:00	2005-214T00:50:02	ISS_NAC to Mimas	POS_X to NSP	Pick up at ISS_NAC to Mimas, POS_X to NSP; Hand off at ISS_NAC to Mimas, POS_X to NSP.
CIRS_012MI_FP3REGION020_PRIME	I, M, U, V	2005-214T00:50:02	E012_Peri_for_Mimas-000T04:31:00	000T00:30:00	2005-214T01:20:02	CIRS_FP3 to Mimas	POS_X to NSP	Pick up at ISS_NAC to Mimas, POS_X to NSP; Hand off at ISS_NAC to Mimas, POS_X to NSP.
ISS_012MI_COLORF004_PRIME	C, M, U, V	2005-214T01:20:02	E012_Peri_for_Mimas-000T04:01:00	000T00:22:00	2005-214T01:42:02	ISS_NAC to Mimas	POS_X to NSP	Pick up at ISS_NAC to Mimas, POS_X to NSP; Hand off at ISS_NAC to Mimas, POS_X to NSP. direct handoff
CIRS_012MI_FP3REGION024_PRIME	I, M, U, V	2005-214T01:42:02	E012_Peri_for_Mimas-000T03:39:00	000T00:29:00	2005-214T02:11:02	CIRS_FP3 to Mimas	POS_X to NSP	Pick up at ISS_NAC to Mimas, POS_X to NSP; Hand off at ISS_NAC to Mimas, POS_X to NSP.
VIMS_012MI_MIMAS001_PRIME	C, I, M, U	2005-214T02:11:02	E012_Peri_for_Mimas-000T03:10:00	000T01:04:00	2005-214T03:15:02	ISS_NAC to Mimas	POS_X to NSP	Pick up at ISS_NAC to Mimas, POS_X to NSP; Hand off at ISS_NAC to Mimas, POS_X to NSP. Pick up at ISS_NAC to Mimas, +X to NSP Leave off at ISS_NAC to Mimas, -X to NEP
CIRS_012MI_FP1MAP023_PRIME	I, M, U, V	2005-214T03:15:02	E012_Peri_for_Mimas-000T02:06:00	000T00:20:00	2005-214T03:35:02	CIRS_FP1 to Mimas	NEG_X to NEP	Pick up at ISS_NAC to Mimas, NEG_X to NEP; Hand off at ISS_NAC to Mimas (0.0,12.0,0.0 deg. offset), NEG_X to NEP.
ISS_012MI_STEREO005_PRIME	C, M, U, V	2005-214T03:35:02	E012_Peri_for_Mimas-000T01:46:00	000T00:16:00	2005-214T03:51:02	ISS_NAC to Mimas (0.0,12.0,0.0 deg. offset)	NEG_X to NEP	Pick up at ISS_NAC to Mimas, NEG_X to NEP; Hand off at ISS_NAC to Mimas, NEG_X to NEP. direct handoff
UVIS_012MI_ICYLON008_PRIME	C, I, M, V	2005-214T03:51:02	E012_Peri_for_Mimas-000T01:30:00	000T00:20:00	2005-214T04:11:02	ISS_NAC to Mimas (0.027,12.0,0.23 deg. offset)	NEG_X to NEP	Pick up at ISS_NAC to Mimas (0.0,12.0,0.0 deg. offset), NEG_X to NEP; Hand off at ISS_NAC to Mimas (0.0,12.0,0.0 deg. offset), NEG_X to NEP.
ISS_012MI_STEREO007_PRIME	C, M, R, U	2005-214T04:11:02	E012_Peri_for_Mimas-000T01:10:00	000T00:57:00	2005-214T05:08:02	ISS_NAC to Mimas (0.0,12.0,0.0 deg. offset)	NEG_X to NEP	Pick up at ISS_NAC to Mimas, NEG_X to NEP; Hand off at ISS_NAC to Mimas, NEG_X to NEP.
CIRS_012MI_FP1REGION021_PRIME	M, R, U, V	2005-214T05:08:02	E012_Peri_for_Mimas-000T00:13:00	000T00:25:00	2005-214T05:33:02	CIRS_FP1 to Mimas (0.0,12.0,0.0 deg. offset)	NEG_X to NEP	Pick up at ISS_NAC to Mimas (0.0,12.0,0.0 deg. offset), NEG_X to NEP; Hand off at ISS_NAC to Mimas (0.0,12.0,0.0 deg. offset), NEG_X to NEP.
Saturn periapse 012, r = 3....		2005-214T05:15:28		000T00:00:01	2005-214T05:15:29			
UVIS_012MI_ICYLON011_PRIME	C, I, M, R, V	2005-214T05:33:02	E012_Peri_for_Mimas+000T00:12:00	000T00:10:00	2005-214T05:43:02	ISS_NAC to Mimas (0.027,12.0,0.258 deg. offset)	NEG_X to NEP	Pick up at ISS_NAC to Mimas (0.0,12.0,0.0 deg. offset), NEG_X to NEP; Hand off at ISS_NAC to Mimas (0.0,12.0,0.0 deg. offset), NEG_X to NEP.
CIRS_012DI_FP1REGION020_PRIME	I, M, R, U, V	2005-214T05:43:02	E012_Peri_for_Mimas+000T00:22:00	000T01:13:58	2005-214T06:57:00	ISS_NAC to Dione	NEG_X to NEP	Pick up at ISS_NAC to Mimas (0.0,12.0,0.0 deg. offset), NEG_X to NEP; Hand off at XBAND to Earth, POS_X to NSP.
End Custom		**2005-214T06:57:00**		**000T00:01:00**	**2005-214T06:58:00**			
SP_012MI_DEADTIME213_PRIME	**M, R**	**2005-214T06:57:00**		**000T00:35:34**	**2005-214T07:32:34**	**XBAND to Earth**	**POS_X to NSP**	
RSS_012RI_OCC003_PRIME	M	2005-214T07:33:38	LMB_E012_RSS_Sat_Occ_Ingr-000T02:04	000T02:01:02	2005-214T09:34:40	XBAND to Earth	POS_X to NSP	
RSS_012SA_OCC003_PRIME	M	2005-214T09:34:40	LMB_E012_RSS_Sat_Occ_Ingr-000T00:01	000T00:35:58	2005-214T10:10:38	XBAND to Earth	POS_X to NSP	
VIMS_012RI_HIPHASE001_PRIME	C, R	2005-214T10:10:38	LMB_E012_RSS_Sat_Occ_Ingr+000T00:3	000T01:30:00	2005-214T11:40:38	VIMS_IR to L_ANSA_D	POS_X to NSP	
RSS_012SA_OCC004_PRIME	R	2005-214T11:40:38	LMB_E012_RSS_Sat_Occ_Ingr+000T02:0	000T00:44:00	2005-214T12:24:38	XBAND to Earth	POS_X to NSP	
RSS_012RI_OCC004_PRIME	R	2005-214T12:24:38	LMB_E012_RSS_Sat_Occ_Ingr+000T02:4	000T02:07:00	2005-214T14:31:38	XBAND to Earth	POS_X to NSP	
SP_012MI_DEADTIME214_PRIME	**R**	**2005-214T14:31:38**	**LMB_E012_RSS_Sat_Occ_Ingr+000T**	**000T00:35:26**	**2005-214T15:07:04**	**XBAND to Earth**	**POS_X to NSP**	
SP_012EA_G70METNON214_PRIME	C, R	2005-214T15:06:00		000T05:30:00	2005-214T20:36:00	XBAND to Earth	Rolling	
SP_012SA_WAYPTTURN214_PRIME		2005-214T20:36:00		000T00:30:00	2005-214T21:06:00	ISS_NAC to Saturn	POS_Z to NSP	SP Turn to Waypoint
NEW WAYPOINT		**2005-214T21:06:00**		**000T18:22:00**	**2005-215T15:28:00**	**ISS_NAC to Saturn**	**POS_Z to NSP**	
ISS_012OT_RETHIEQPL001_PRIME		2005-214T21:06:00		000T00:54:00	2005-214T22:00:00	ISS_NAC to Retargetable	POS_Z to NSP	
CIRS_012SA_NADIROCC003_PRIME		2005-214T22:00:00		000T03:00:00	2005-215T01:00:00	CIRS_FP3 to Saturn	POS_Z to NSP	
ISS_012TE_310W144PH001_PRIME	U	2005-215T01:00:00		000T00:30:00	2005-215T01:30:00	ISS_NAC to Tethys	POS_Z to NSP	
CIRS_012RI_TEMPU05HP001_PRIME	C	2005-215T01:30:00		000T03:50:00	2005-215T05:20:00	CIRS_FP1 to Rings	POS_Z to NSP	
SP_012EA_DITURN215_PRIME		2005-215T05:20:00		000T00:30:00	2005-215T05:50:00	XBAND to Earth	POS_X to NEP	SP Turn to Earth
SP_012EA_M70METOTP215_PRIME	N	2005-215T05:50:00		000T09:00:00	2005-215T14:50:00	XBAND to Earth	POS_X to NEP	

011EN Flyby Geometry

Tour Data Generator, Version 20030113, written by John Smith JPL. File Creation Date (YYMMDD.HHMMSS): 50705.155502
DUT = ET - UTC, (sec) = 64.18523, ET Julian Date of Epoch J2000 = 2451545.0

Event Name: 11EN, Targeted_Enceladus, Central Body: Enceladus 050505 Reference Trajectory, Altitude Based on Fixed Body Radius of 253 km

Event Name at Event Time Only	SCET Date (YYYY-DOYTHH:MM:SS.FF) UTC	Hours wrt Event Epoch	Minutes wrt Event Epoch	S/C Range (km)	S/C Altitude (km)	S/C North Latitude (deg)	S/C West Longitude SMEQPM Date (deg)	S/C Inertial Velocity (km/s)	S/C Radial Inertial Velocity (km/s)	S/C Tangential Inertial Velocity (km/s)	Central Body Angular Diameter (mrad)	Phase = Sun-Central_Body-S/C Angle (deg)	Sun-S/C-Central_Body Angle (deg)	S/C Local True Solar Time wrt Central Body (hh:mm)	Sub-solar Latitude wrt Central Body (deg)	Sub-solar West Longitude wrt Central Body SMEQPM Date (deg)
	2005-194T19:55:20.99	-24	-1440	1,087,356.0	1,087,103.0	-17.2	9.5	18.908	-7.861	17.197	0.5	15.5	164.5	10:56	-21.1	-6.4
	2005-194T23:55:20.99	-20	-1200	935,437.9	935,184.9	-17.9	38.9	20.752	-12.943	16.221	0.5	3.5	176.5	11:53	-21.1	37.4
	2005-195T01:55:20.99	-18	-1080	835,586.0	835,333.0	-18.7	53.3	20.877	-14.689	14.835	0.6	6.1	173.8	12:24	-21.1	59.3
	2005-195T03:55:20.99	-16	-960	725,526.4	725,273.4	-20.0	67.5	20.444	-15.766	13.015	0.7	12.9	167.1	12:54	-21.1	81.2
	2005-195T05:55:20.99	-14	-840	610,295.0	610,042.0	-21.8	81.7	19.464	-16.120	10.909	0.8	19.9	160.1	13:25	-21.1	103.1
	2005-195T07:55:20.99	-12	-720	495,156.9	494,903.9	-24.2	96.1	17.980	-15.744	8.684	1.0	26.8	153.2	13:55	-21.1	125.0
	2005-195T09:55:20.99	-10	-600	385,219.6	384,966.6	-27.4	110.9	16.070	-14.690	6.516	1.3	33.3	146.7	14:23	-21.1	146.9
	2005-195T11:55:20.99	-8	-480	284,926.0	284,673.0	-31.6	126.6	13.870	-13.096	4.568	1.8	38.9	141.1	14:48	-21.1	168.8
	2005-195T13:55:20.99	-6	-360	197,330.2	197,077.2	-36.6	143.9	11.596	-11.219	2.936	2.6	43.3	136.7	15:07	-21.1	-169.3
	2005-195T14:55:20.99	-5	-300	158,618.9	158,365.9	-39.4	153.3	10.538	-10.298	2.235	3.2	44.9	135.1	15:13	-21.1	-158.4
	2005-195T15:55:20.99	-4	-240	123,062.0	122,809.0	-42.1	163.5	9.611	-9.478	1.596	4.2	46.0	134.0	15:16	-21.1	-147.4
	2005-195T16:55:20.99	-3	-180	90,175.4	89,922.4	-44.6	174.4	8.885	-8.826	1.021	5.7	46.5	133.4	15:16	-21.1	-136.5
	2005-195T17:55:20.99	-2	-120	59,247.7	58,994.7	-46.7	-174.0	8.413	-8.396	0.539	8.7	46.7	133.3	15:13	-21.1	-125.5
	2005-195T18:55:20.99	-1	-60	29,442.5	29,189.5	-48.2	-161.8	8.202	-8.198	0.243	17.4	46.3	133.7	15:08	-21.1	-114.6
	2005-195T19:25:20.99	-1	-30	14,717.4	14,464.4	-48.9	-155.1	8.172	-8.168	0.266	34.8	45.8	134.2	15:03	-21.1	-109.1
	2005-195T19:40:20.99	0	-15	7,370.9	7,117.9	-49.9	-150.1	8.169	-8.155	0.476	69.6	44.8	135.2	14:54	-21.1	-106.4
	2005-195T19:50:20.99	0	-5	2,493.6	2,240.6	-53.0	-138.1	8.168	-8.051	1.385	205.9	41.4	138.6	14:18	-21.1	-104.6
E2_11EN	2005-195T19:55:20.99	0	0	422.4	169.4	-23.2	-34.6	8.172	-0.129	8.170	1304.2	63.4	116.6	07:23	-21.1	-103.7
	2005-195T20:00:20.99	0	5	2,480.7	2,227.7	42.0	18.6	8.170	8.051	1.390	207.0	127.0	53.0	03:54	-21.1	-102.7
	2005-195T20:10:20.99	0	15	7,359.1	7,106.1	46.1	27.3	8.171	8.158	0.460	69.7	131.3	48.7	03:27	-21.1	-100.9
	2005-195T20:25:20.99	1	30	14,707.1	14,454.1	47.1	31.9	8.168	8.167	0.200	34.9	132.2	47.8	03:19	-21.1	-98.2
	2005-195T20:55:20.99	1	60	29,394.5	29,141.5	47.3	37.9	8.145	8.145	0.034	17.4	132.6	47.4	03:17	-21.1	-92.7
	2005-195T21:55:20.99	2	120	58,386.8	58,133.8	46.6	47.9	7.921	7.909	0.447	8.8	132.1	47.9	03:21	-21.1	-81.8
	2005-195T22:55:20.99	3	180	85,880.9	85,627.9	45.4	56.6	7.349	7.298	0.863	6.0	130.9	49.1	03:30	-21.1	-70.8
	2005-195T23:55:20.99	4	240	110,487.9	110,234.9	44.3	65.1	6.411	6.322	1.065	4.6	129.3	50.7	03:40	-21.1	-59.9
	2005-196T00:55:20.99	5	300	131,151.6	130,898.6	43.4	74.0	5.222	5.142	0.908	3.9	128.0	52.0	03:48	-21.1	-48.9
	2005-196T01:55:20.99	6	360	147,532.0	147,279.0	42.8	83.9	4.002	3.978	0.440	3.5	127.3	52.7	03:52	-21.1	-38.0
	2005-196T03:55:20.99	8	480	169,853.7	169,600.7	41.8	108.3	3.156	2.487	1.942	3.0	129.2	50.8	03:42	-21.1	-16.1
	2005-196T05:55:20.99	10	600	188,536.1	188,283.1	39.3	139.5	5.515	3.129	4.541	2.7	136.6	43.4	03:05	-21.1	5.8
	2005-196T07:55:20.99	12	720	220,811.8	220,558.8	33.3	173.0	8.678	6.159	6.115	2.3	147.0	33.0	02:18	-21.1	27.7
	2005-196T09:55:20.99	14	840	279,581.1	279,328.1	25.5	-157.5	11.769	10.170	5.922	1.8	154.8	25.2	01:48	-21.1	49.6
	2005-196T11:55:20.99	16	960	365,778.2	365,525.2	18.7	-133.4	14.549	13.605	5.154	1.4	156.5	23.5	01:39	-21.1	71.5
	2005-196T13:55:20.99	18	1080	472,767.0	472,514.0	13.9	-113.1	16.898	15.919	5.666	1.1	153.8	26.2	01:45	-21.1	93.3
	2005-196T15:55:20.99	20	1200	592,279.4	592,026.4	10.5	-95.1	18.735	17.095	7.665	0.9	149.0	31.0	02:01	-21.1	115.2
	2005-196T19:55:20.99	24	1440	837,847.4	837,594.4	6.5	-62.4	20.670	16.370	12.620	0.6	137.4	42.5	02:45	-21.1	159.0

Enceladus Image Viewing (at JPL)

- Friday, July 15, 280A
  - Noon - ~2 pm
- Shall we have goodies and invite all Cassini folks?
  - To thank everyone for late trajectory change

Mimas Image Viewing

- Stay tuned for announcements

Enceladus Press Activities

- Telecon to discuss initial results next week?
- Possible press conference?
- ICYFEST in August?

CIRS Icy Observations on Revs. 11 and 12

John Spencer
Southwest Research Institute
Boulder, CO

John Pearl, Marcia Segura

and the CIRS Team

Goddard Spaceflight Center

Greenbelt, MD

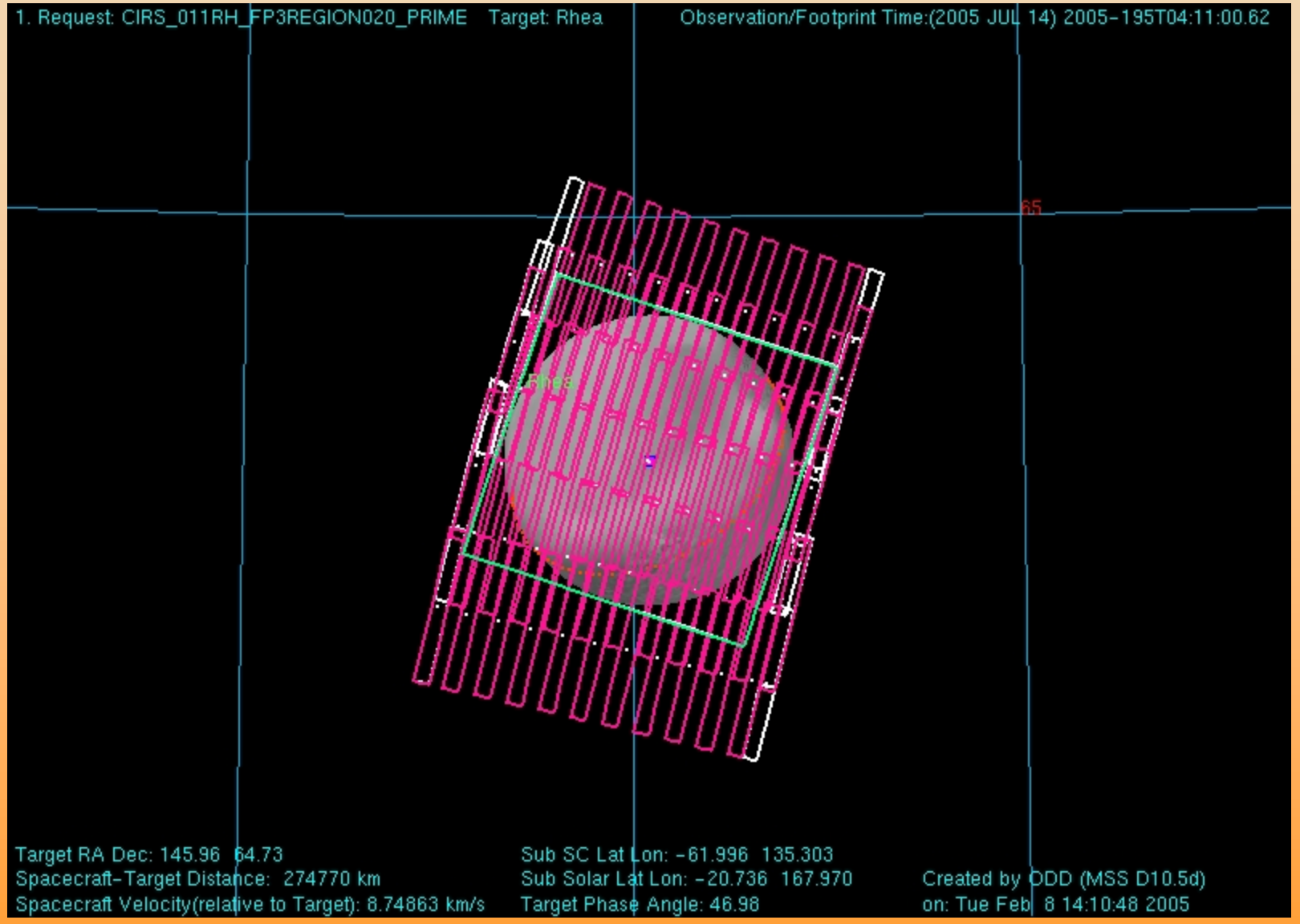
Enceladus Preview Meeting

July 8th 2005

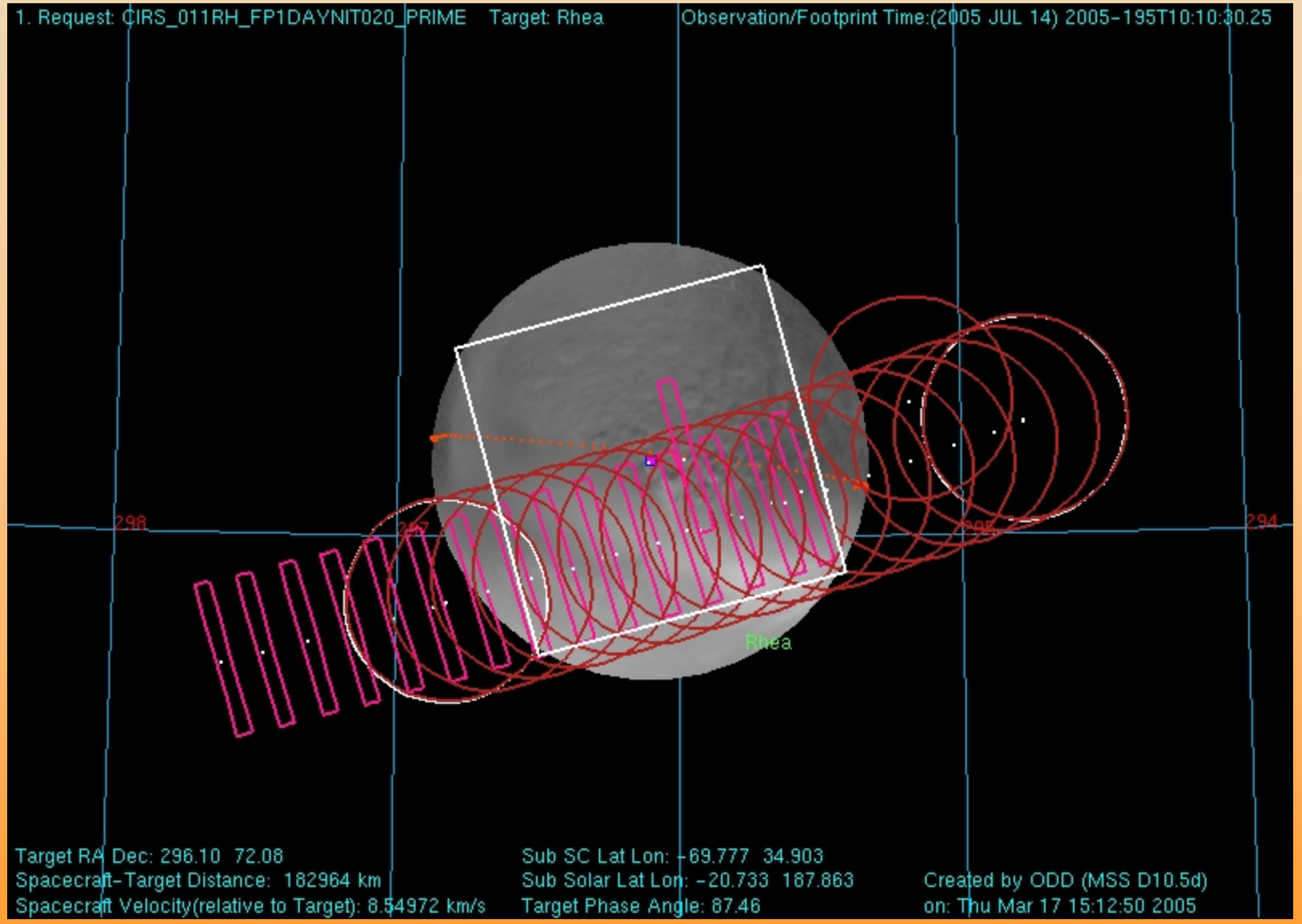
Rev. 11/12 Goals

- Daytime temperature mapping of Rhea
- Daytime and nighttime temperature mapping of Enceladus
  - Look for hot spots
  - Try to get north polar winter temperature: one of the few opportunities during the tour
- Daytime temperature mapping of Mimas
- Opportunistic observations of Dione

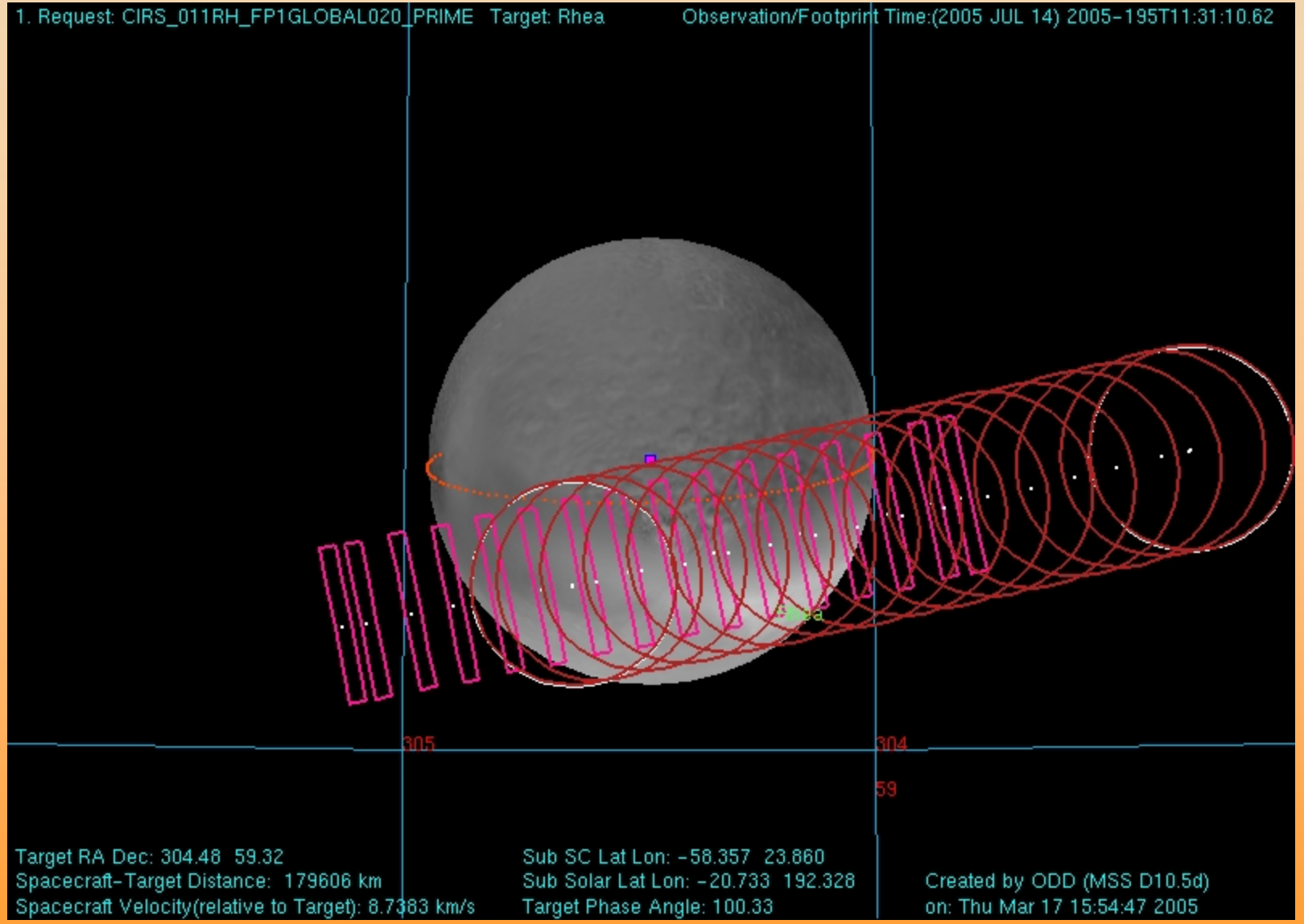
011RH_FP3REGION020



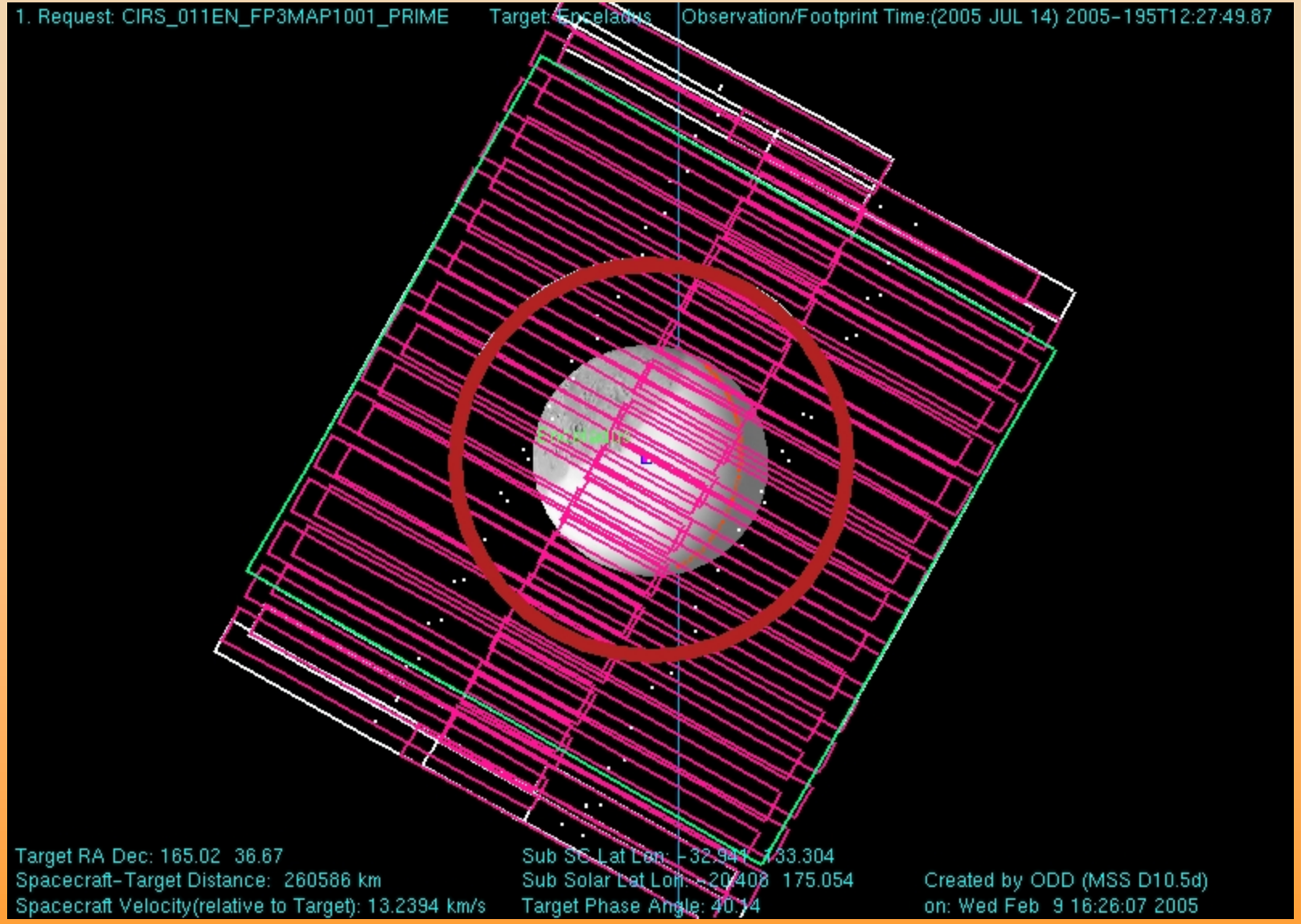
011RH_FP1DAYNIT020



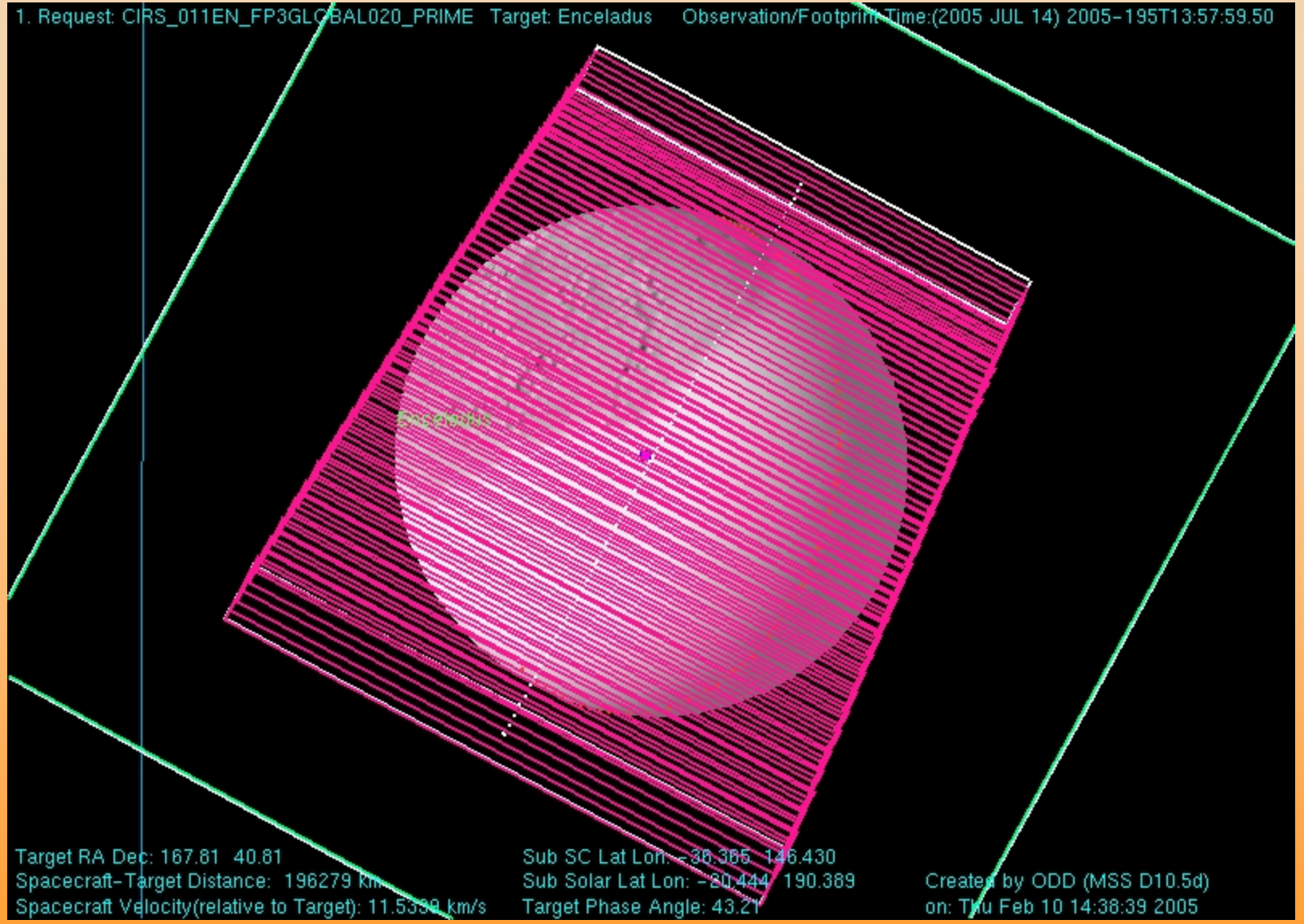
011RH_FP1GLOBAL020



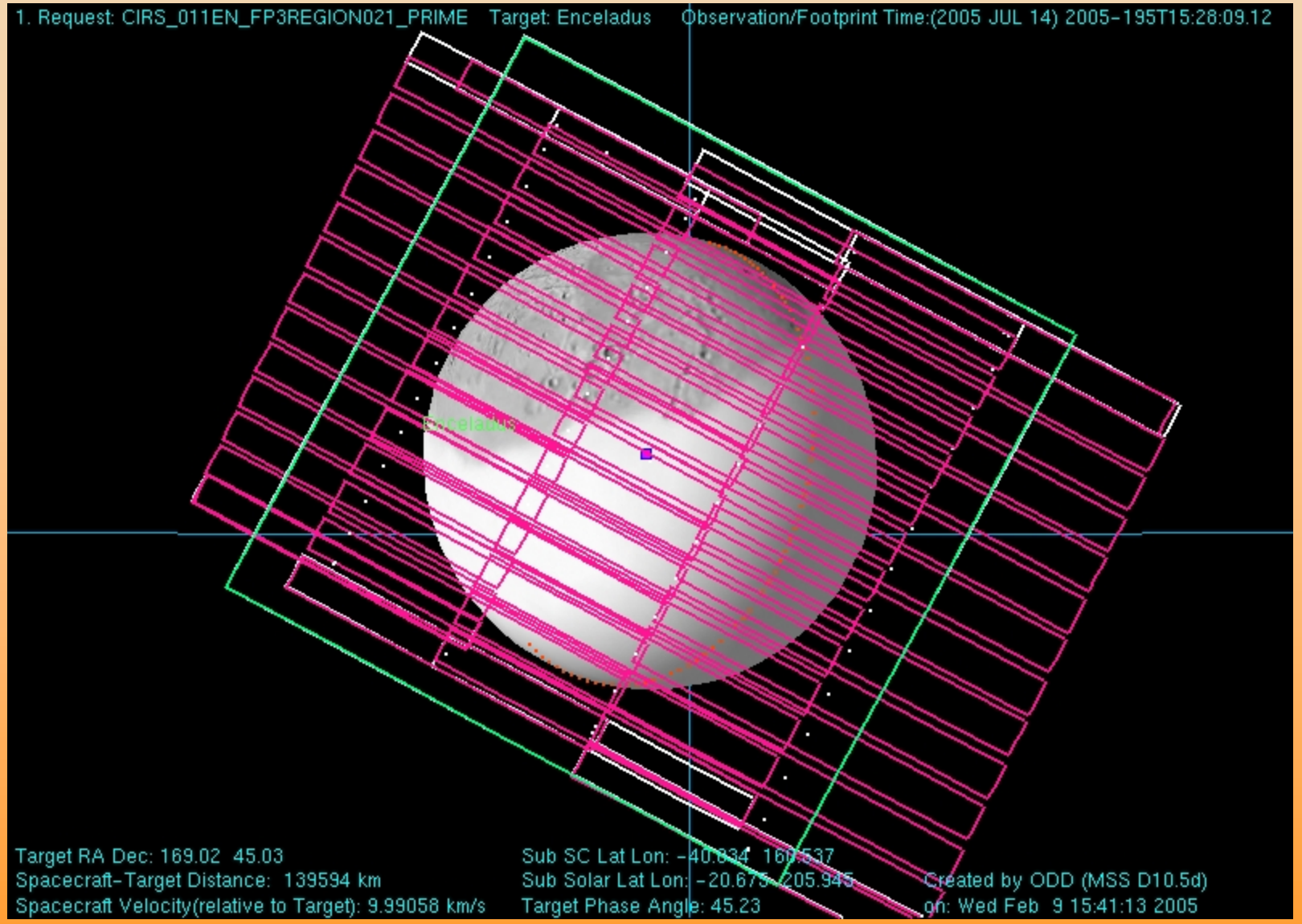
011EN_FP3MAP1001



011EN_FP3GLOBAL020



011EN_FP3REGION021



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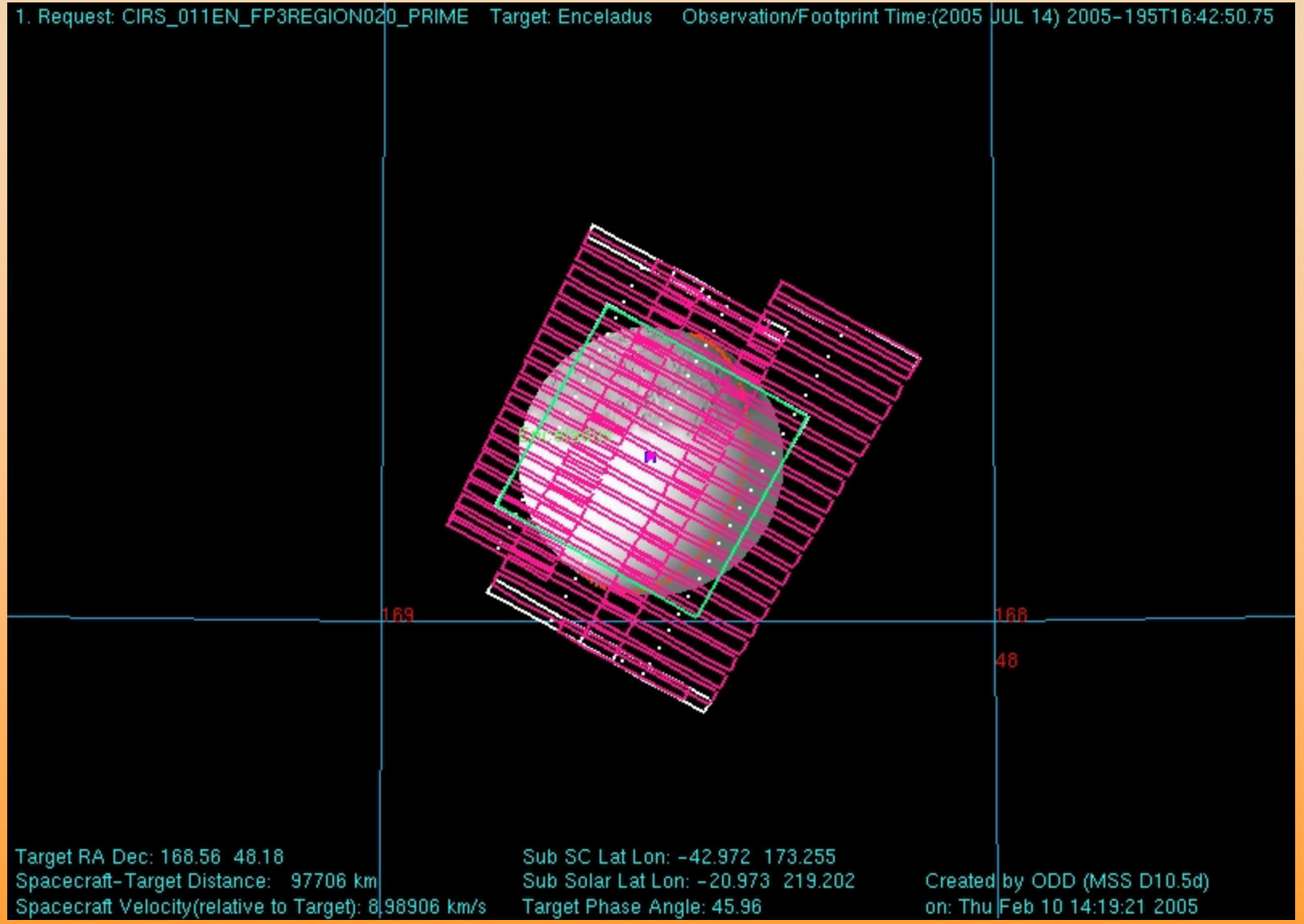

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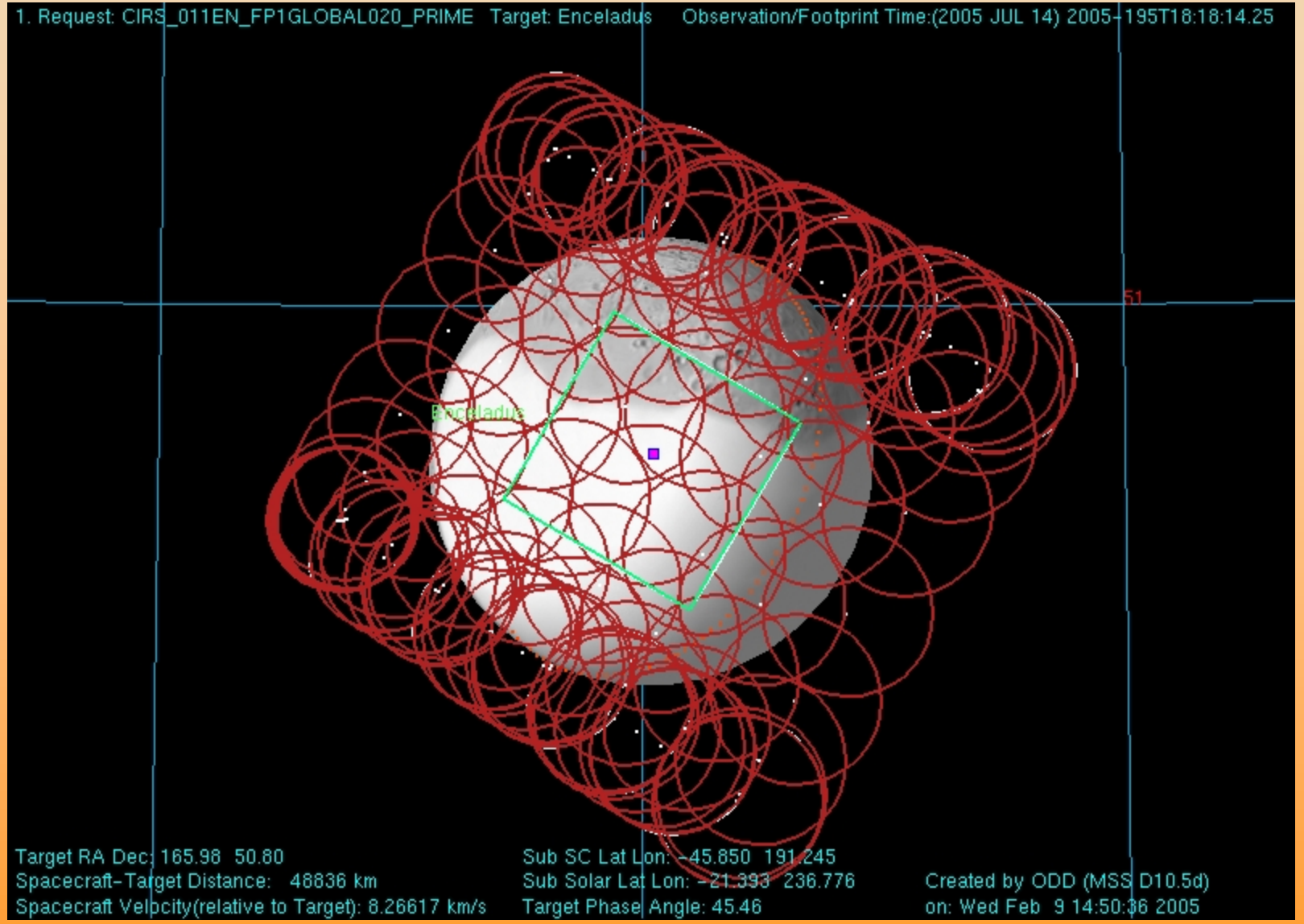
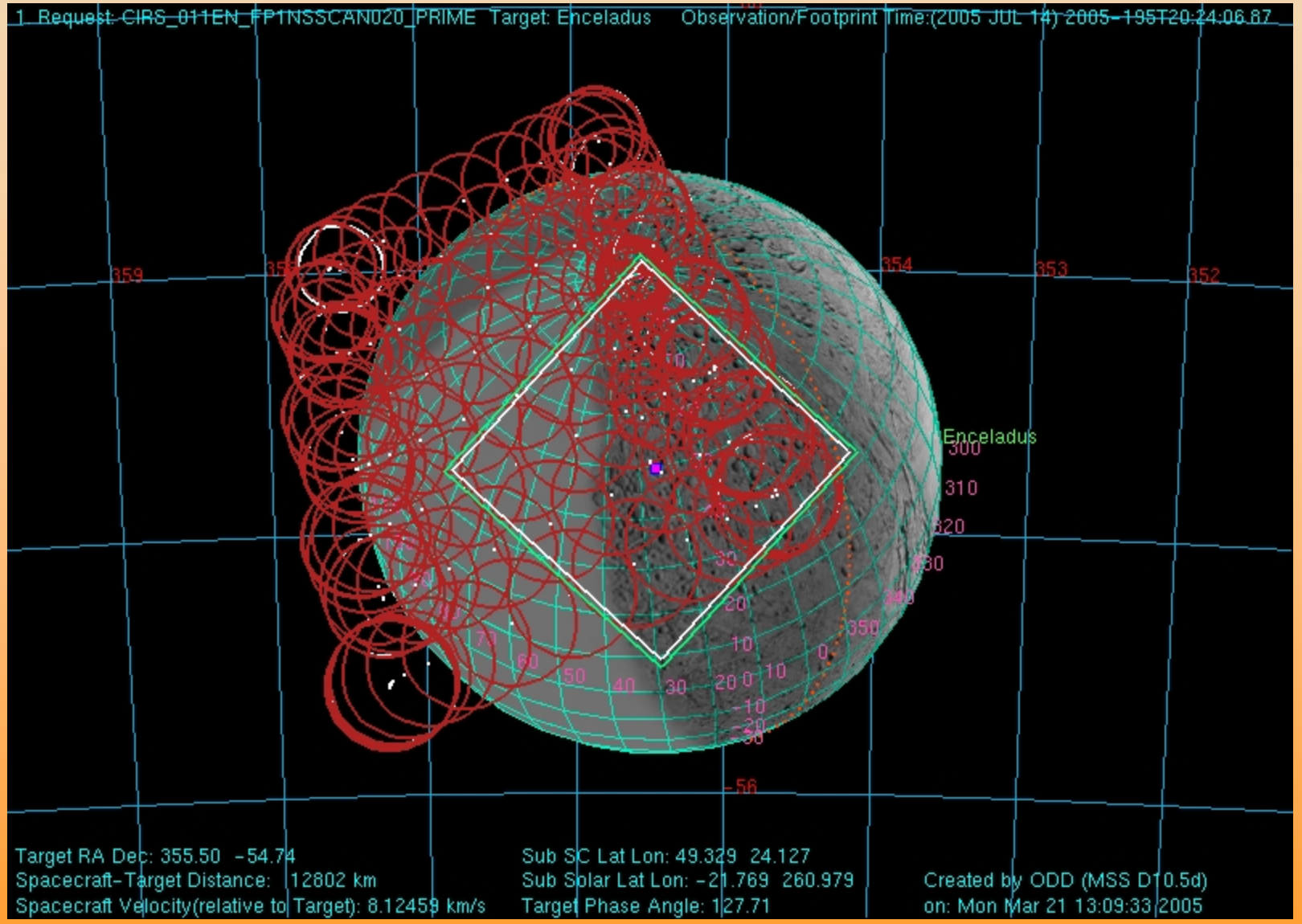
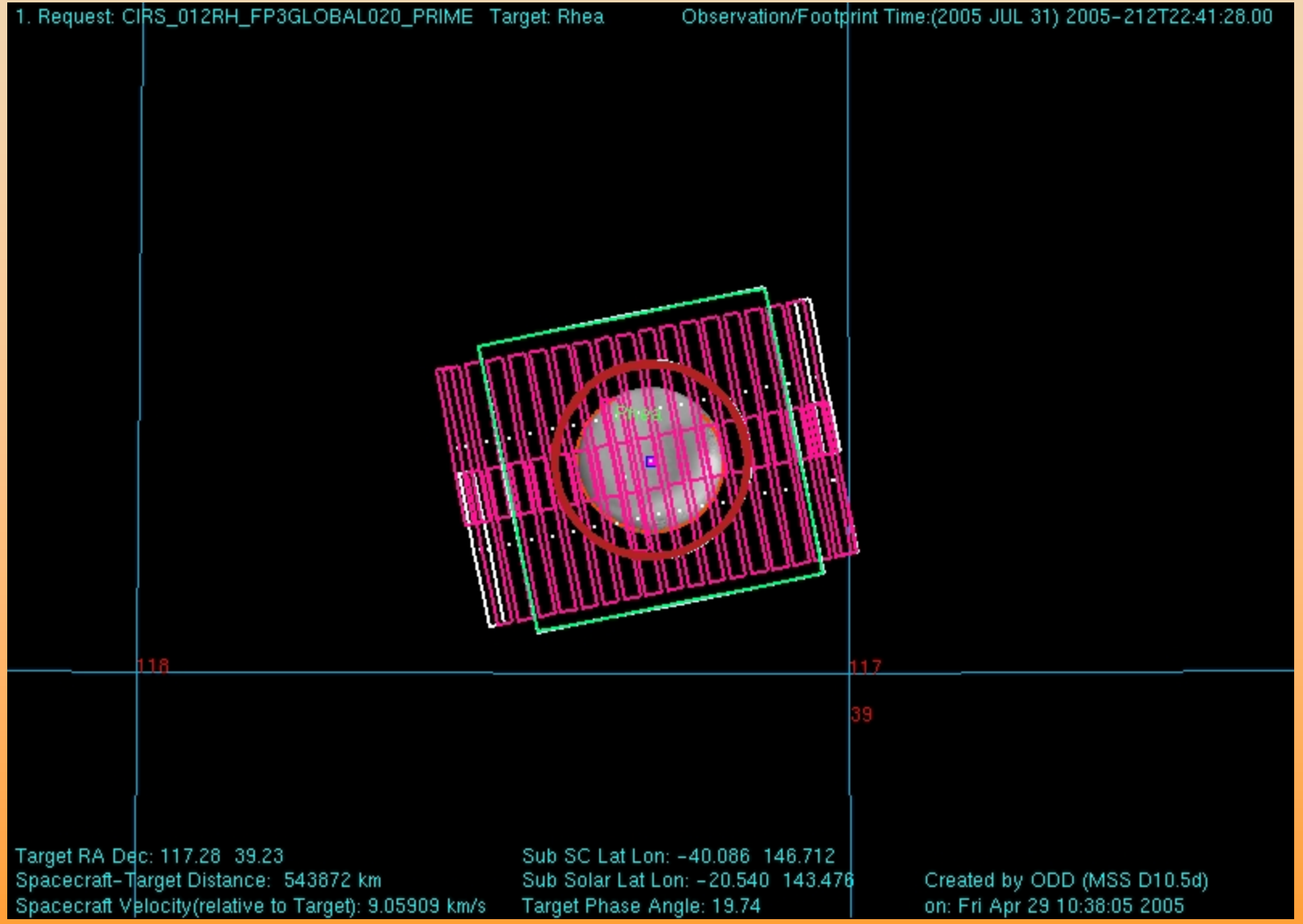


011EN_FP1NSSCAN020



012RH_FP3GLOBAL020



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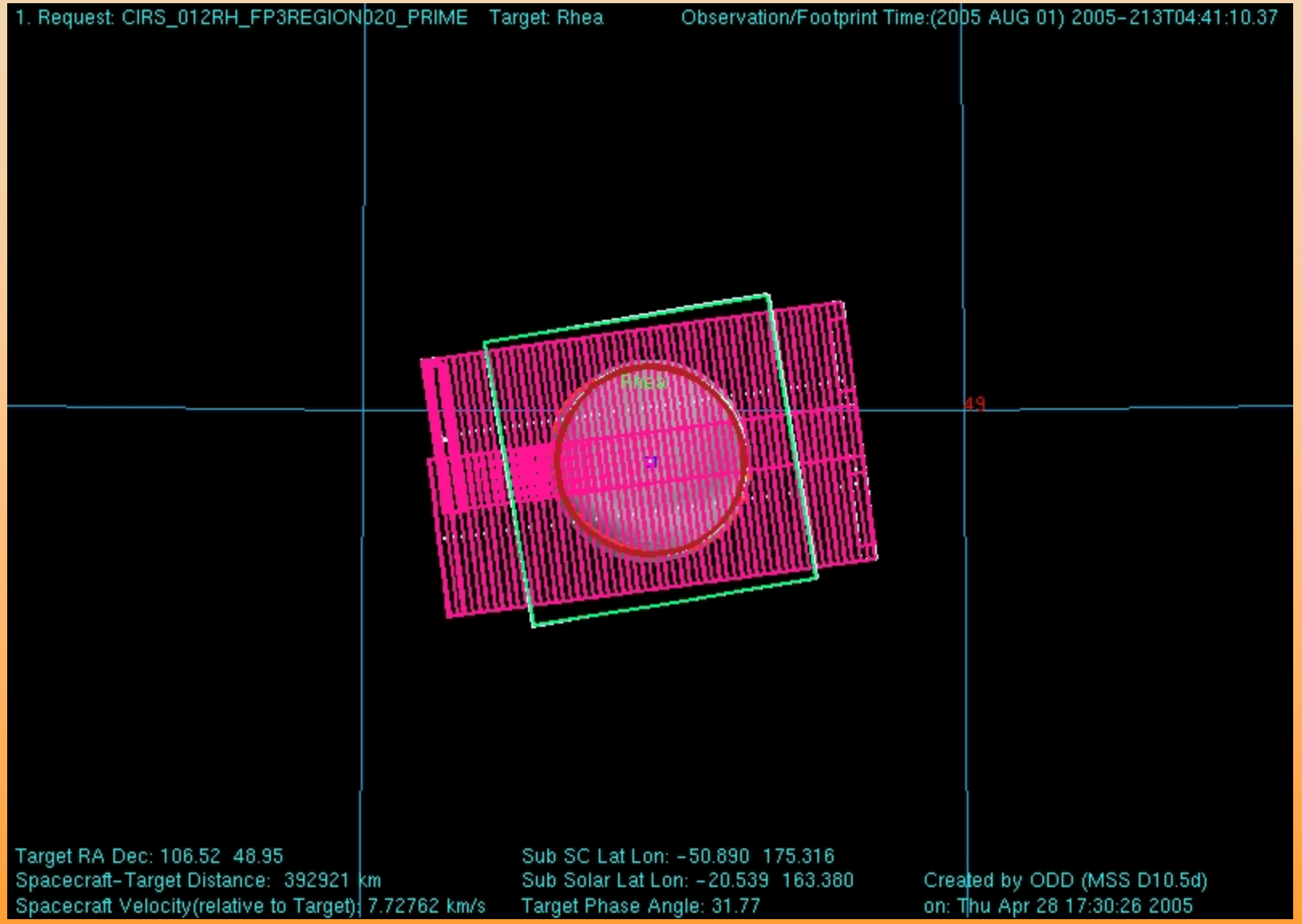
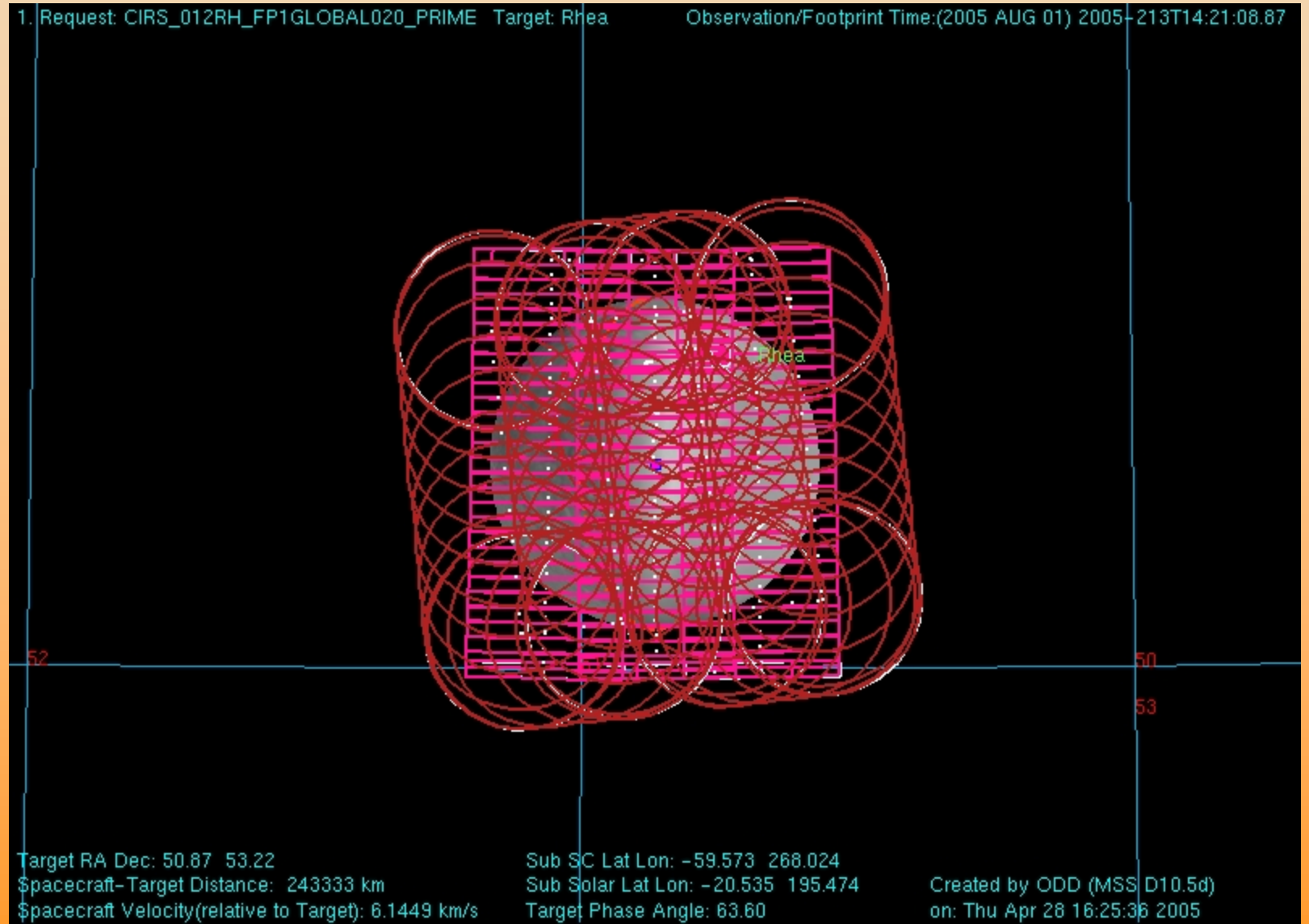
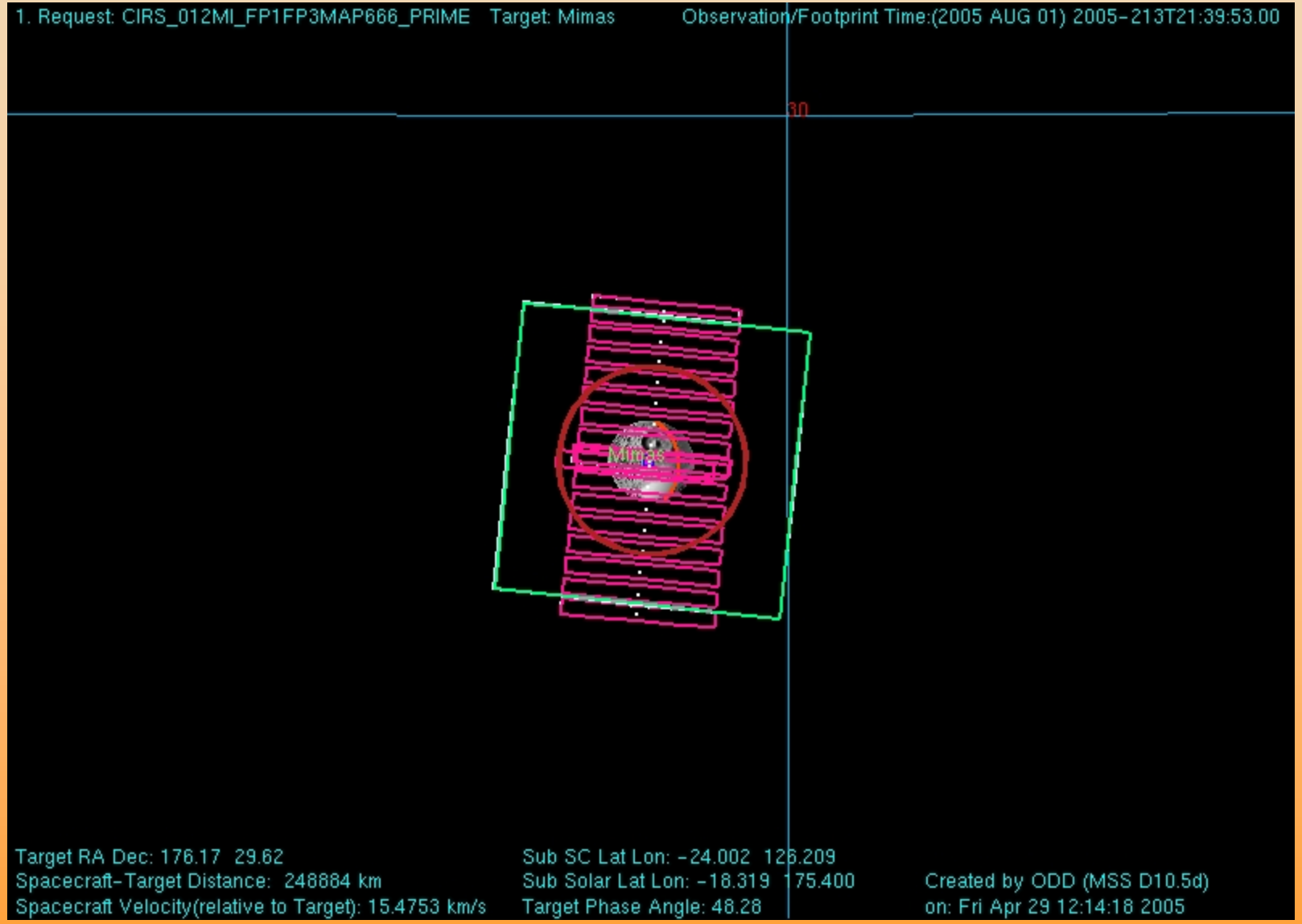


012RH_FP1GLOBAL020

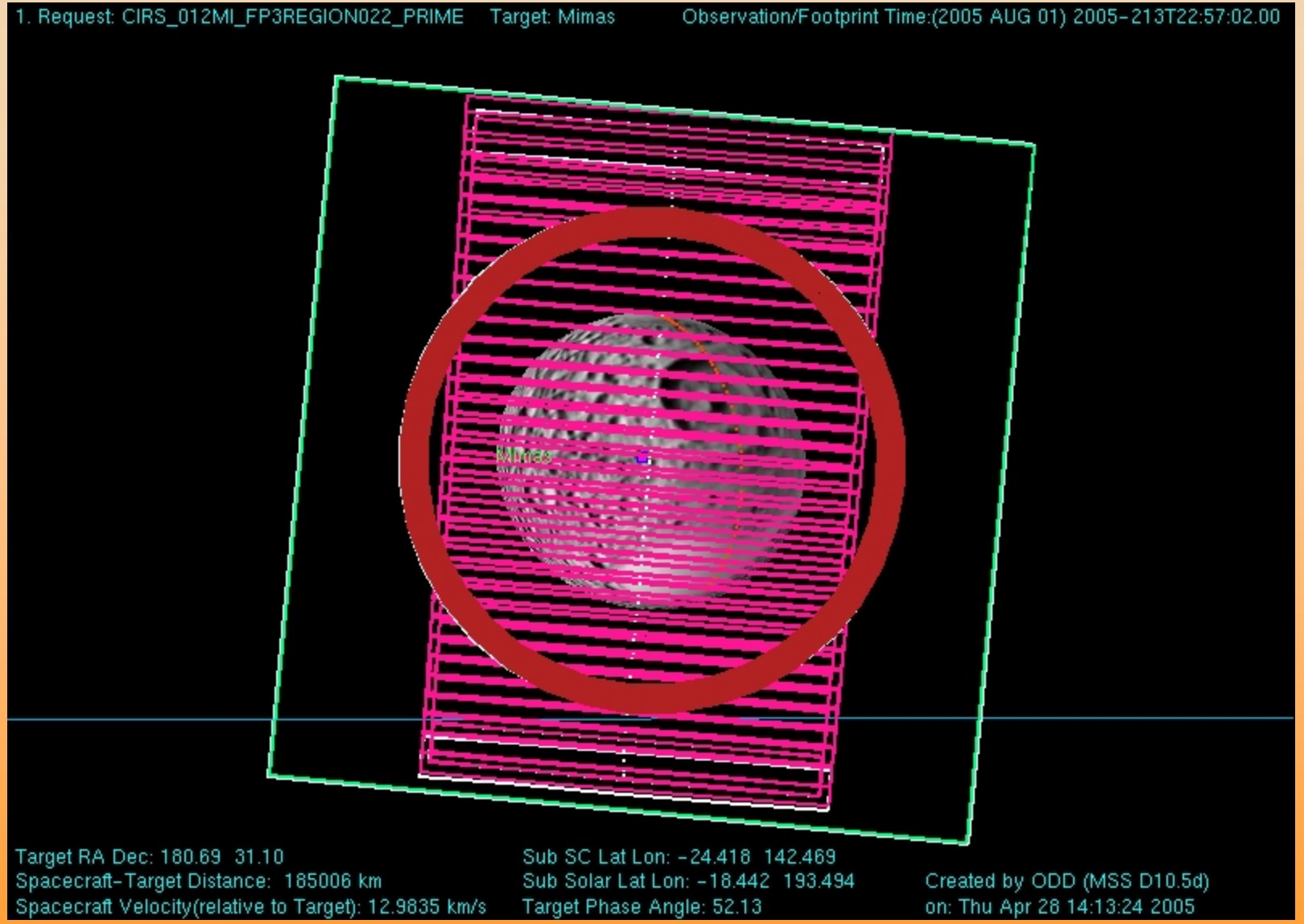
S. polar / morning terminator



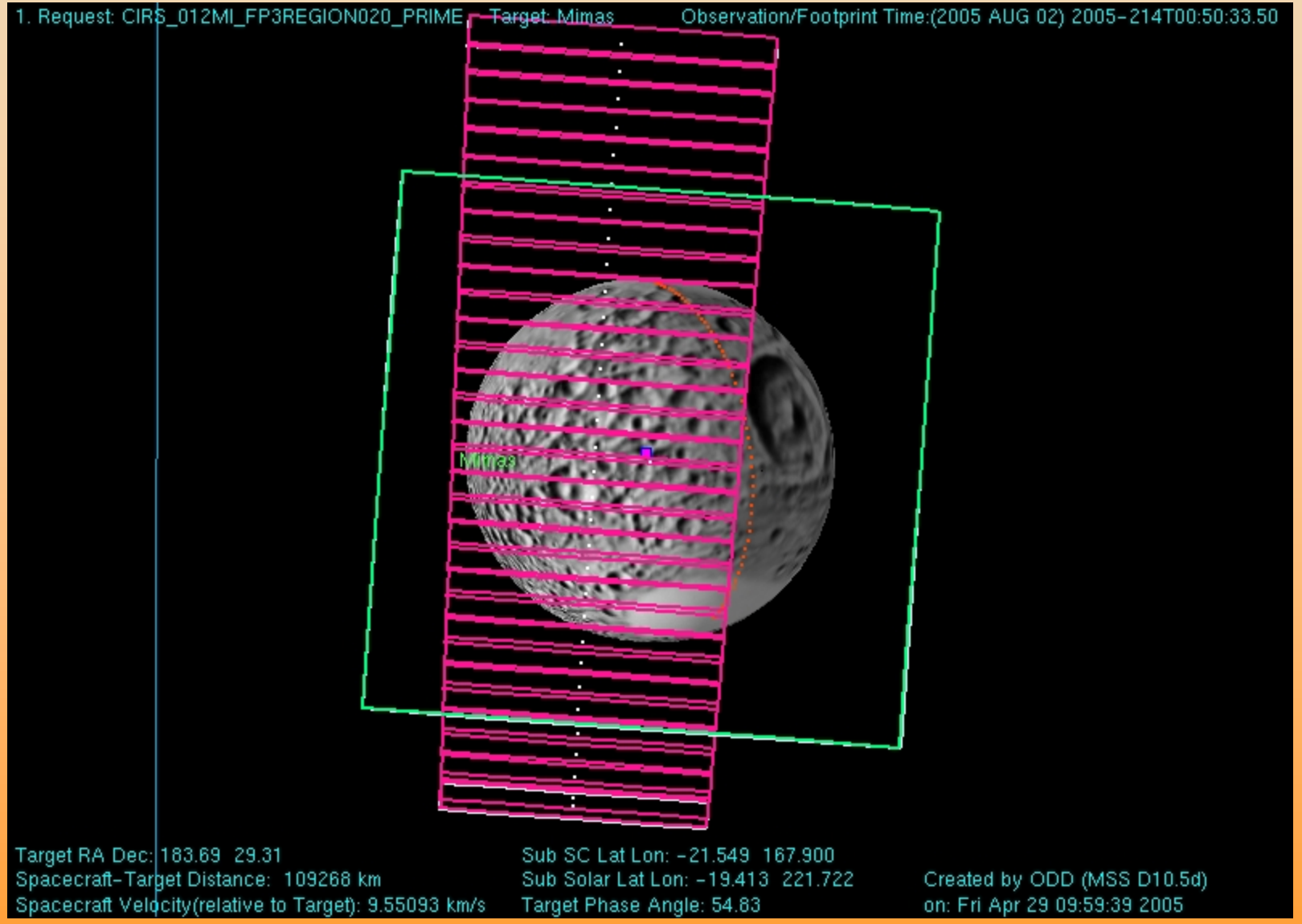
012MI_FP1FP3MAP666



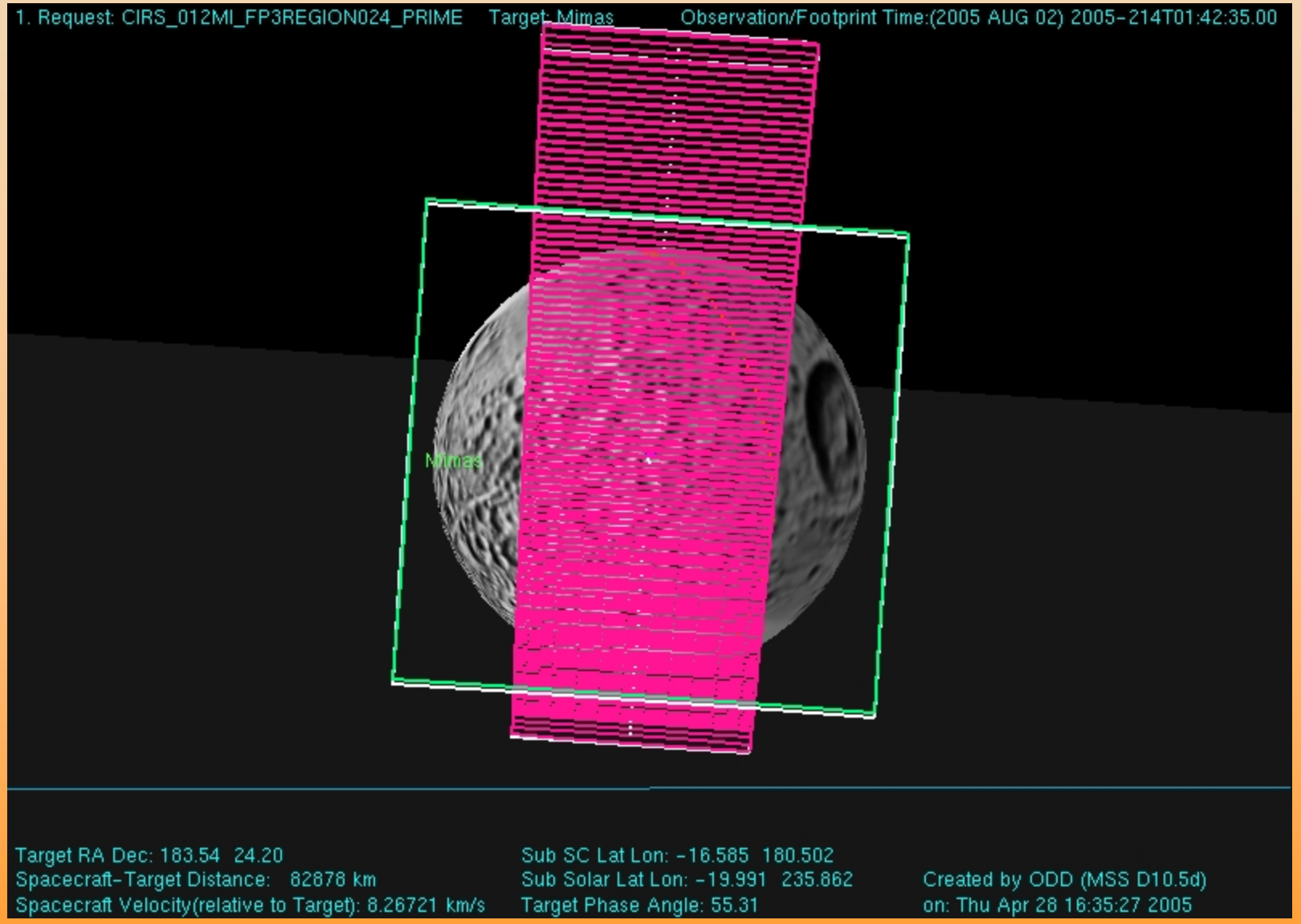
012MI_FP3REGION022



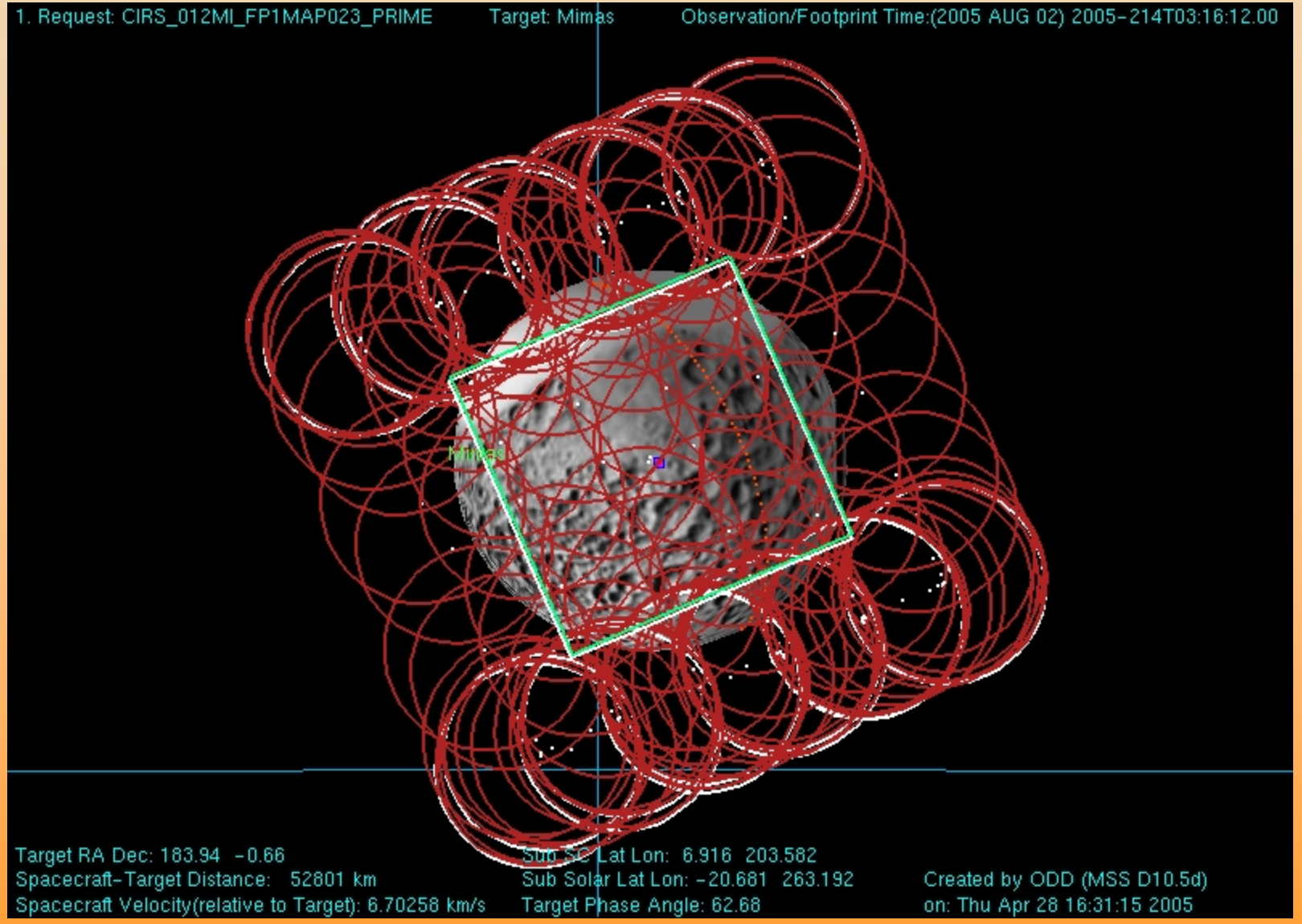
012MI_FP3REGION020



012MI_FP3REGION024



012MI_FP1MAP023



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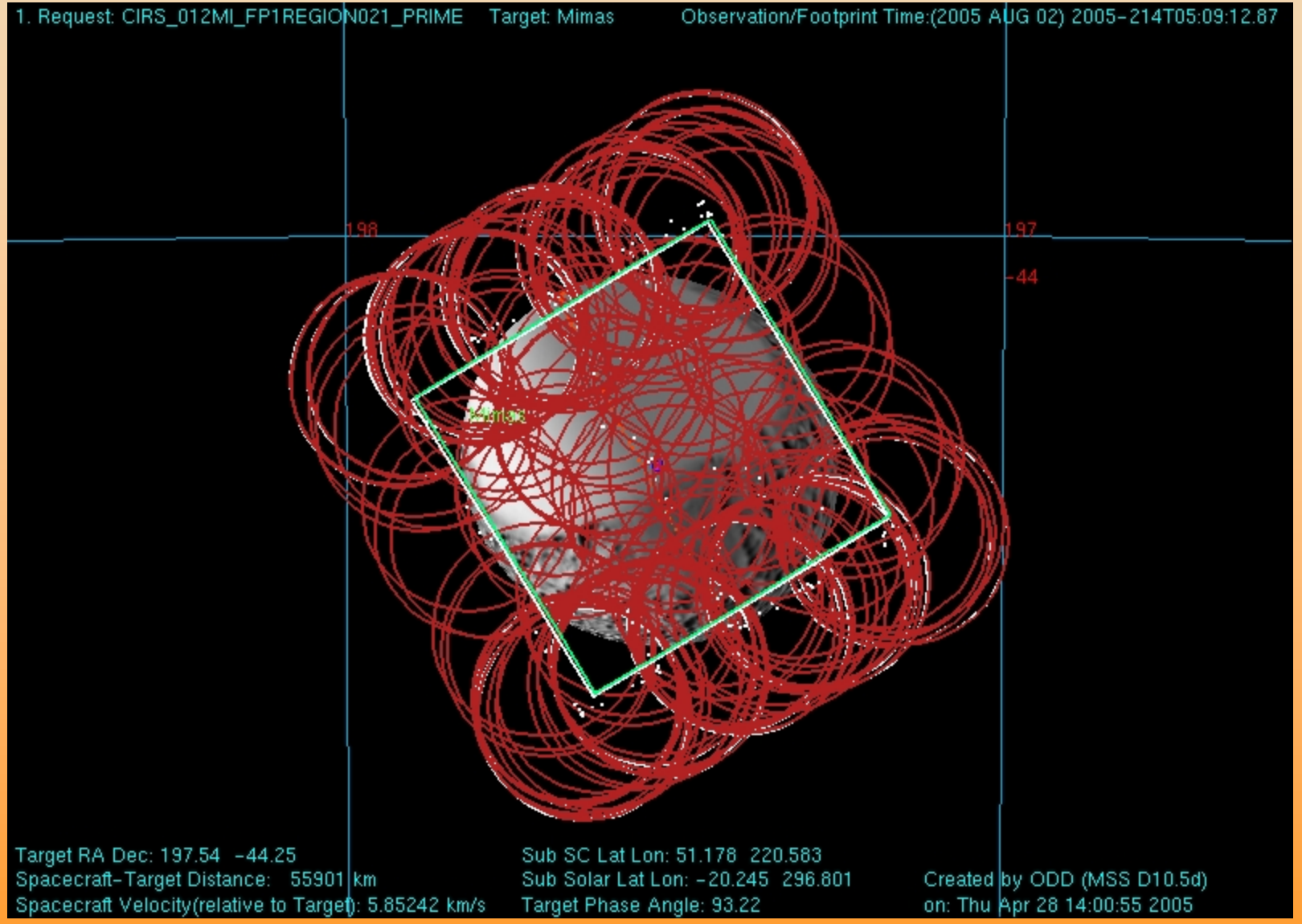

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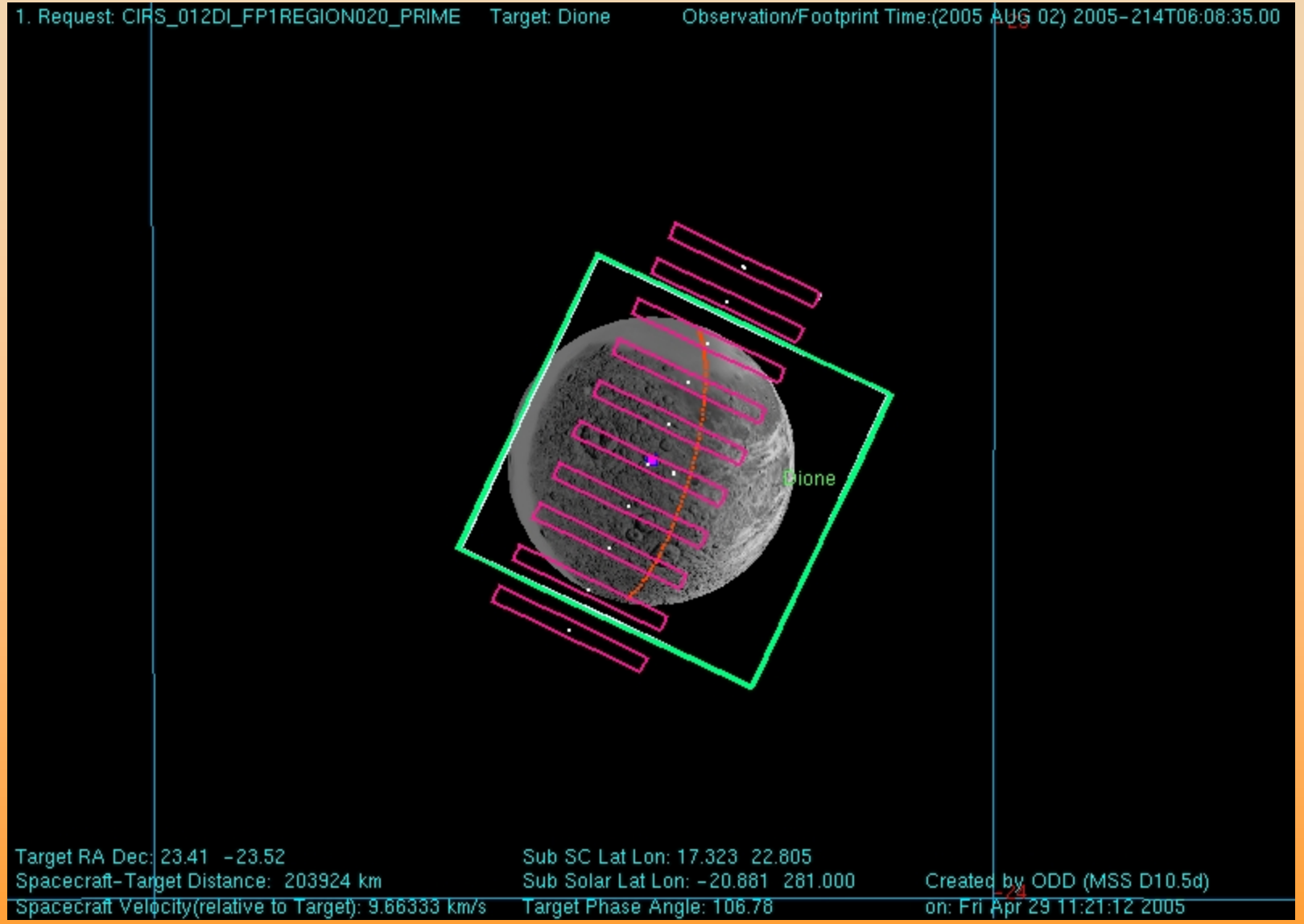


ISS rev 11, 12 observations of

RHEA

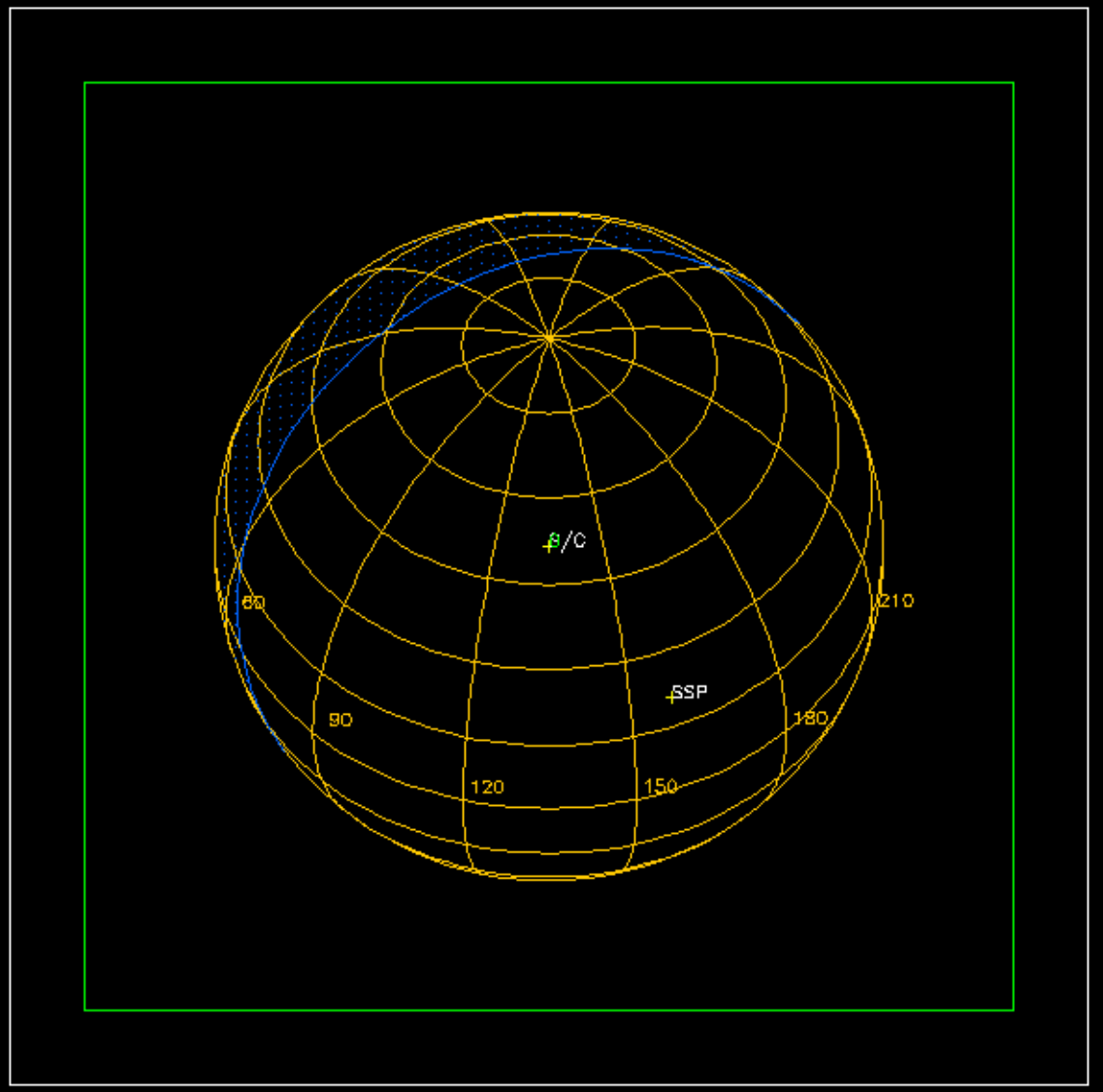
Best high southern latitude coverage of tour

Rev 11:
- leading/anti-Saturn side
- down to 77°S
- 179,000 km min alt.
- ~1.1 km/pxl

Rev 12:
- trailing side
- down to 61°S
- 206,000 km min alt.
- ~1.2 km/pxl

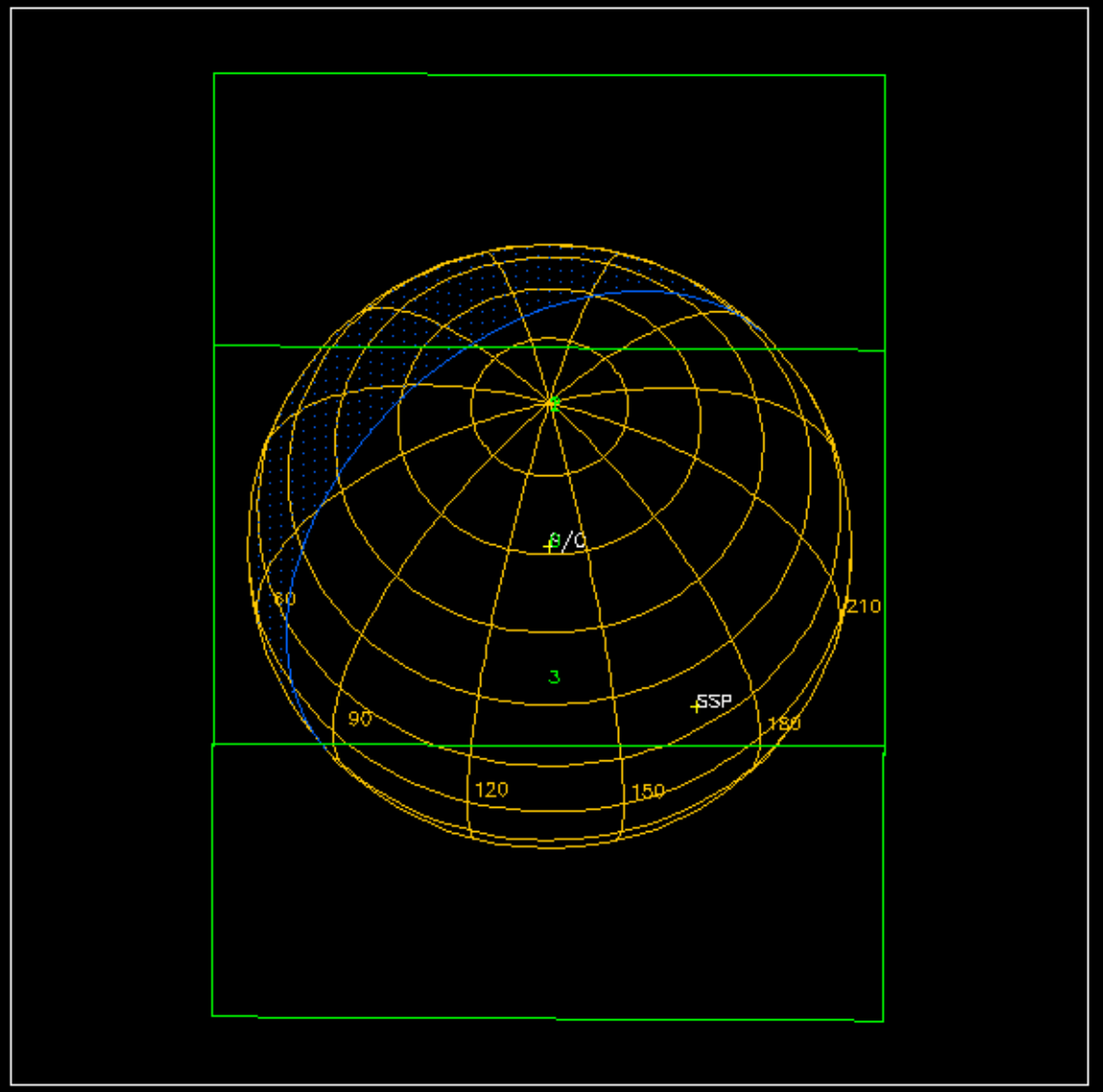
Rhea
rev 11

Range = 339,000 km
NAC resol = 2 km/pxl
Rhea size = 760 pxl
sub-S/C = -52/135
phase = 37 deg



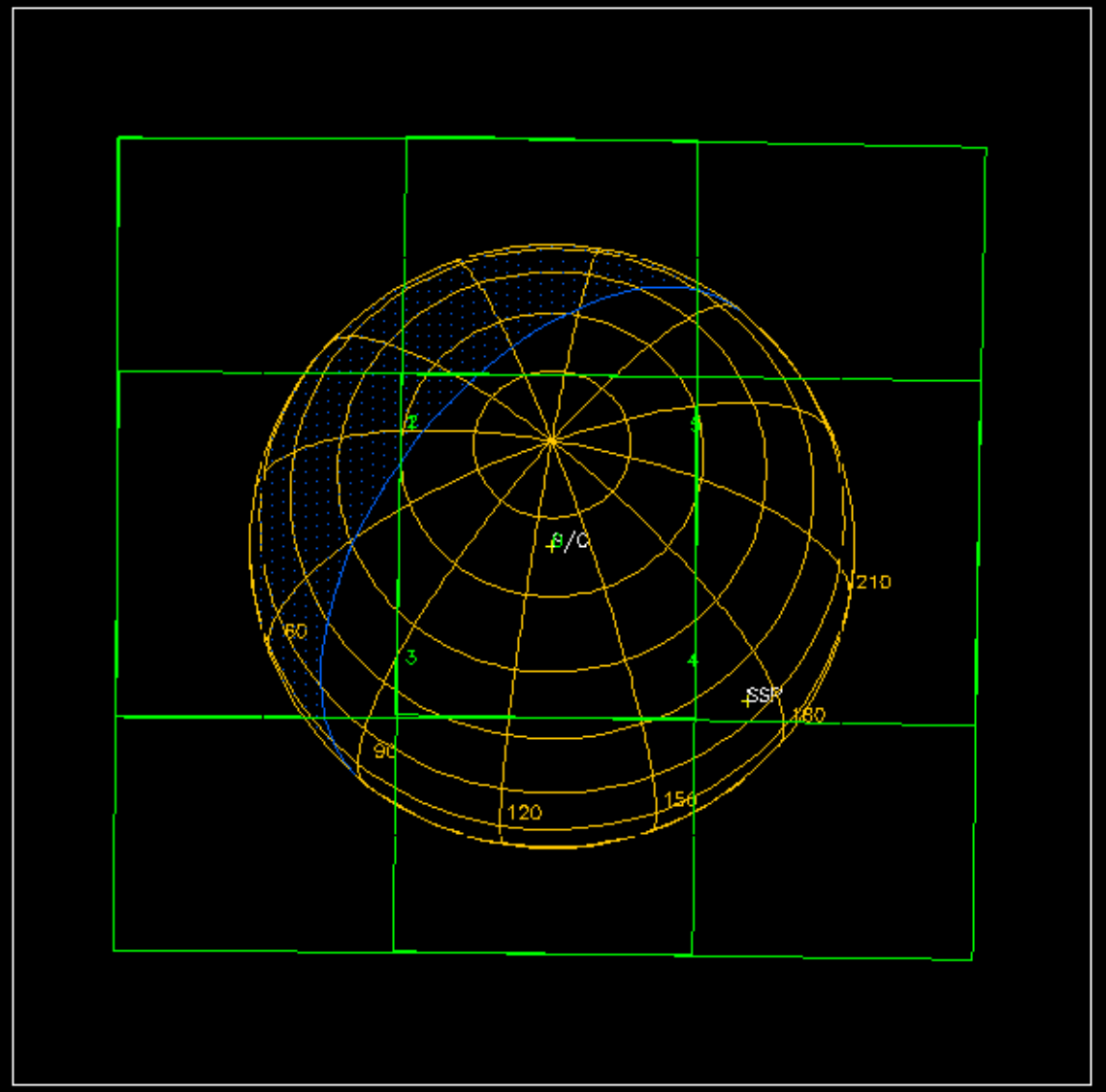
ISS_011RH_REGGEODB

Range = 276,000 km
NAC resol = 1.7 km/pxl
Rhea size = 900 pxl
sub-S/C = -62/135
phase = 47 deg



Start UTC : 2005-195T04:00:15.000, End UTC : 2005-195T04:05:43.750
FOV : ISS NAC

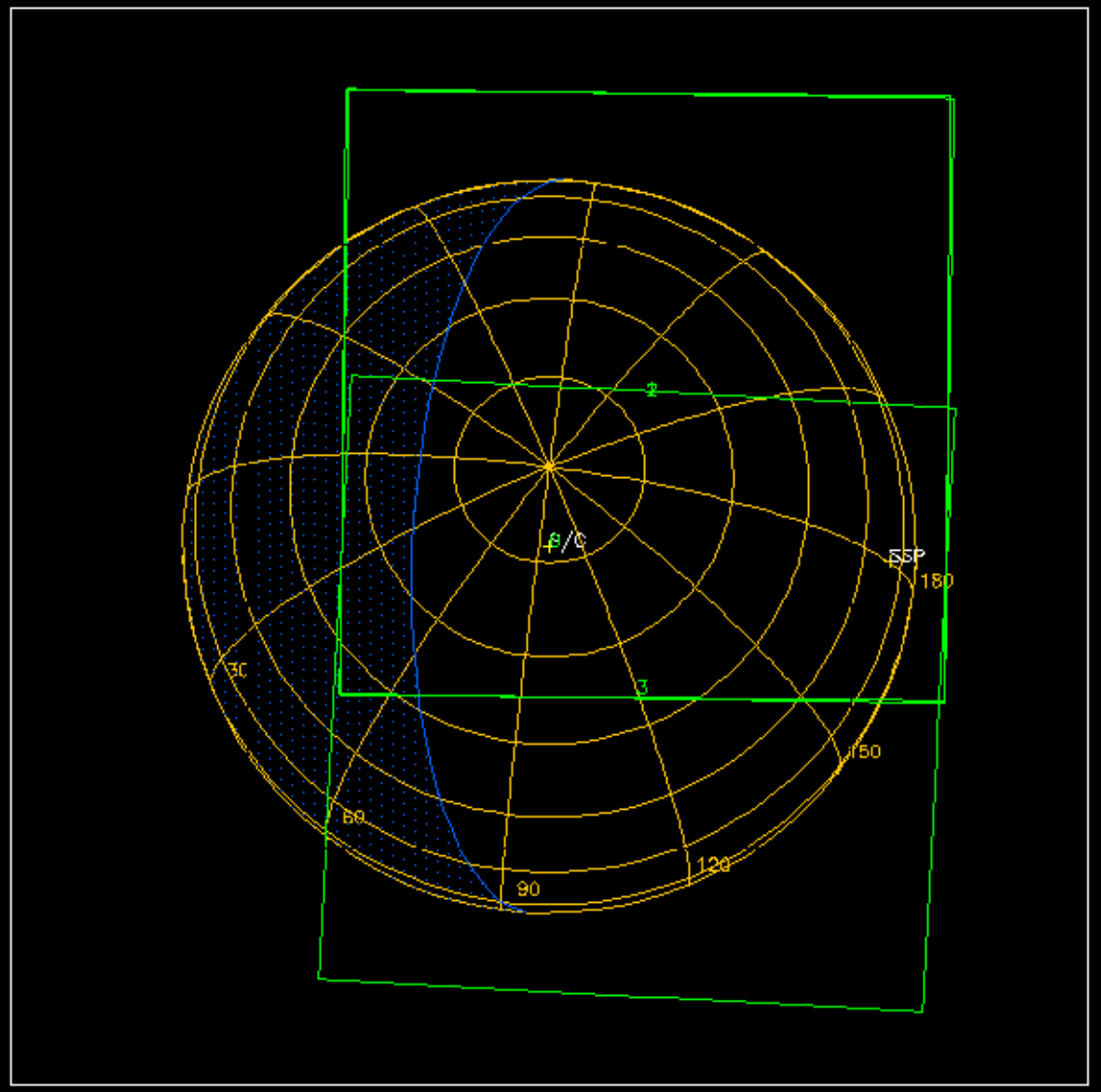
ISS_011RH_REGGEODC



Start UTC : 2005-195T05:50:15.000, End UTC : 2005-195T05:57:13.625
FOV : ISS NAC

Range = 237,000 km
NAC resol = 1.4 km/pxl
Rhea size = 1100 pxl
sub-S/C = -70/129
phase = 56 deg

ISS_011RH_REGGEODD

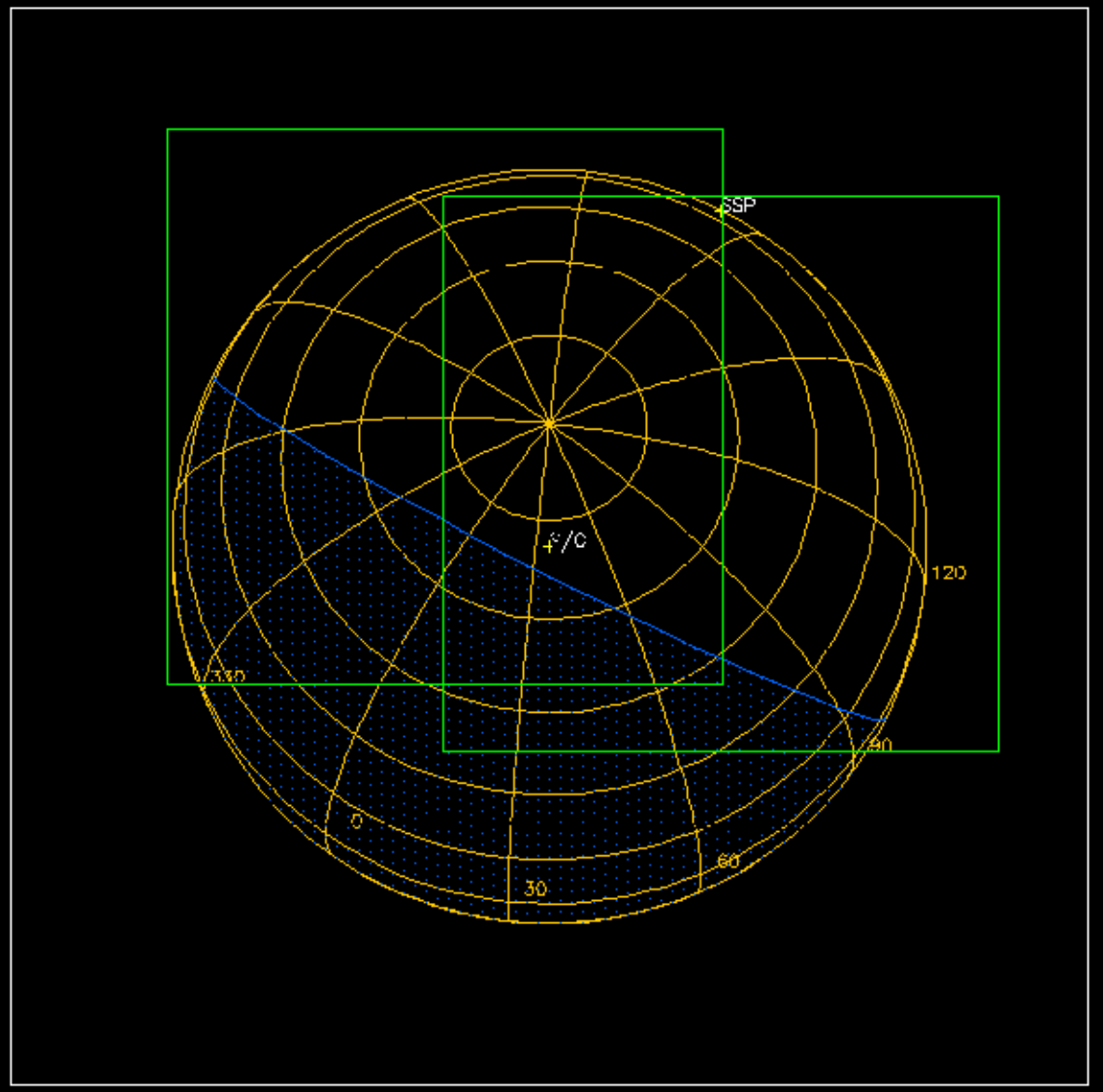


Start UTC : 2005-195T07:50:15.000, End UTC : 2005-195T07:55:47.875
FOV : ISS NAC

Range = 205,000 km
NAC resol = 1.2 km/pxl
Rhea size = 1270 pxl
sub-S/C = -77/95
phase = 69 deg

ISS_011RH_REGMAPE001_PRIME

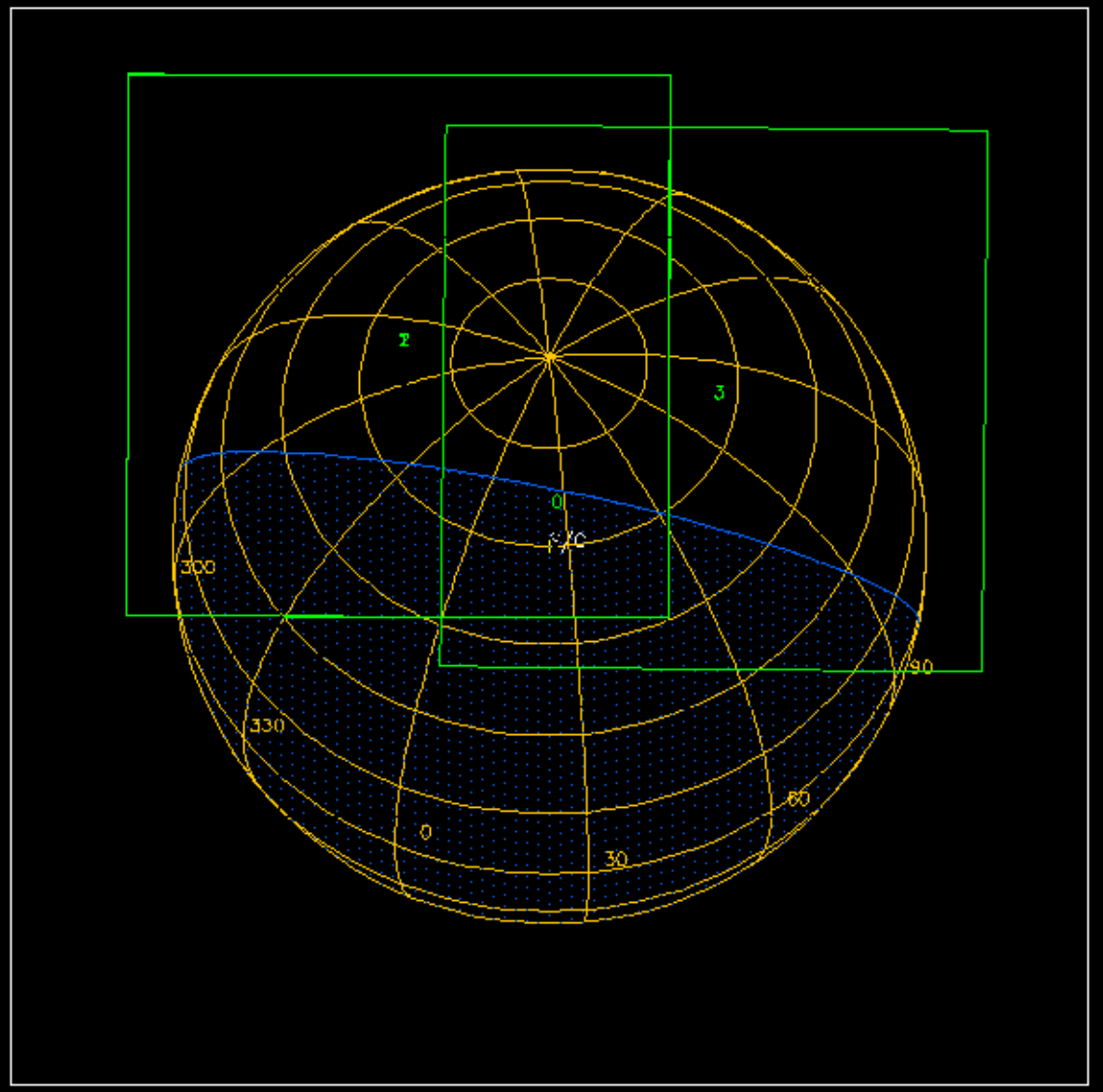
Range = 183,000 km
NAC resol = 1.1 km/pxl
Rhea size = 1390 pxl
sub-S/C = -70/36
phase = 86 deg



Start UTC : 2005-195T10:00:15.000, End UTC : 2005-195T10:05:41.500
FOV : ISS NAC

ISS_011RH_REGGEODF001_PRIME

Range = 178,900 km
NAC resol = 1070 m/pxl
Rhea size = 1430 pxl
sub-S/C = -59/24
phase = 99 deg

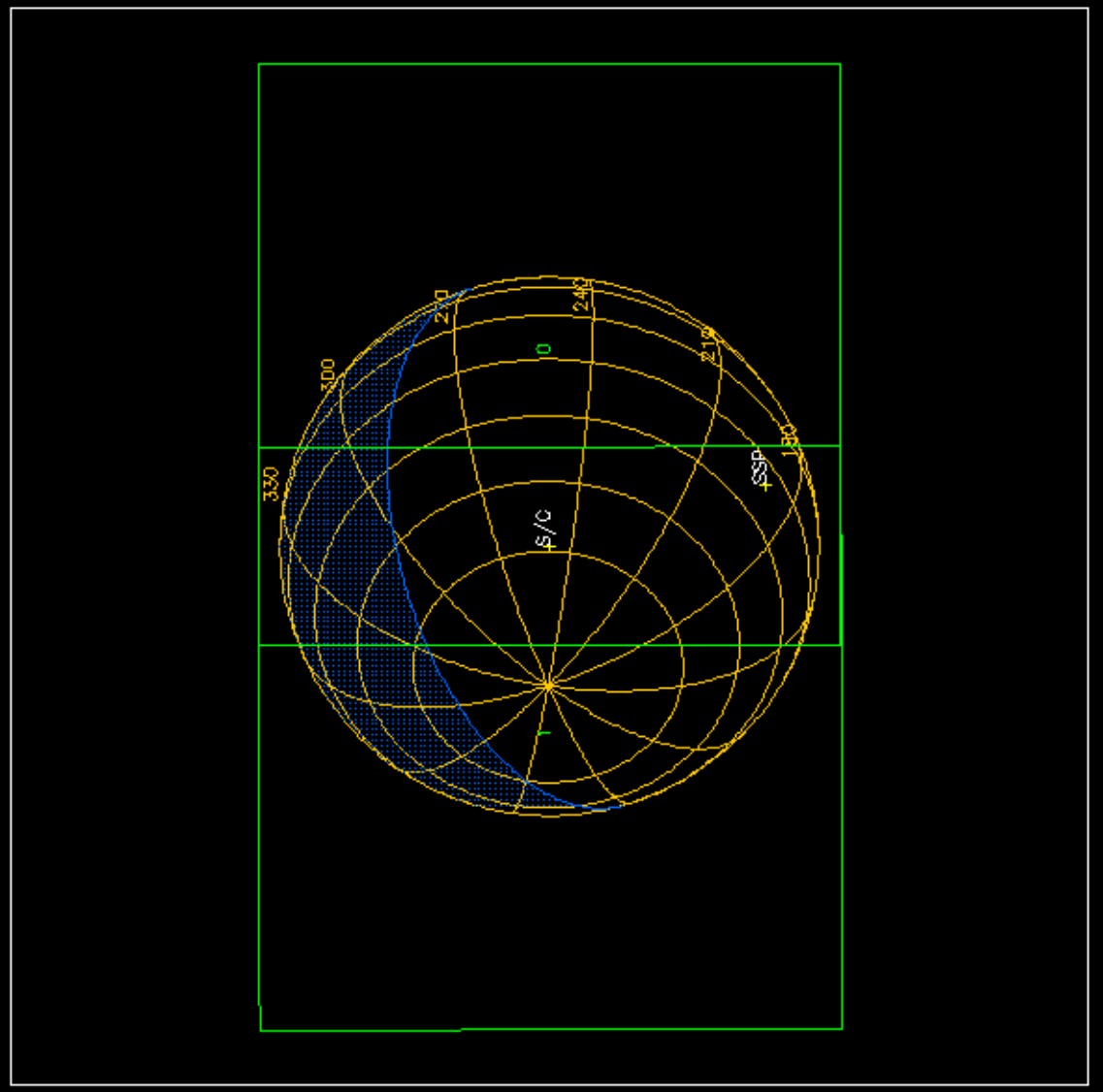


Start UTC : 2005-195T11:20:15.000, End UTC : 2005-195T11:25:39.625
FOV : ISS NAC

Rhea
rev 12

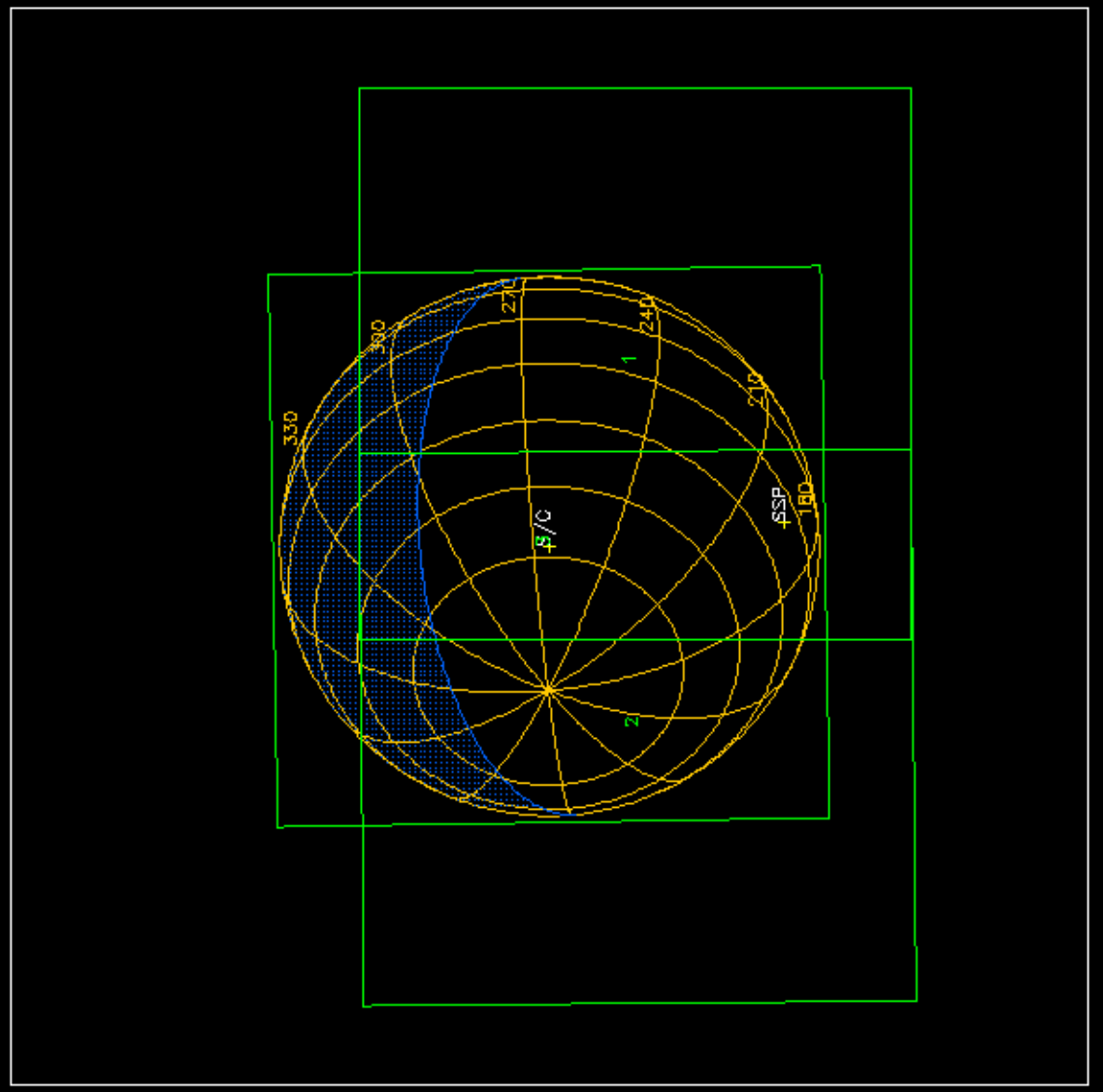
ISS_012RH_RHEA001_VIMS

Range = 258,000 km
NAC resol. = 1.5 km/pxl
sub-S/C = -61/250
phase = 57 deg



ISS_012RH_REGGEODC001_PRIME

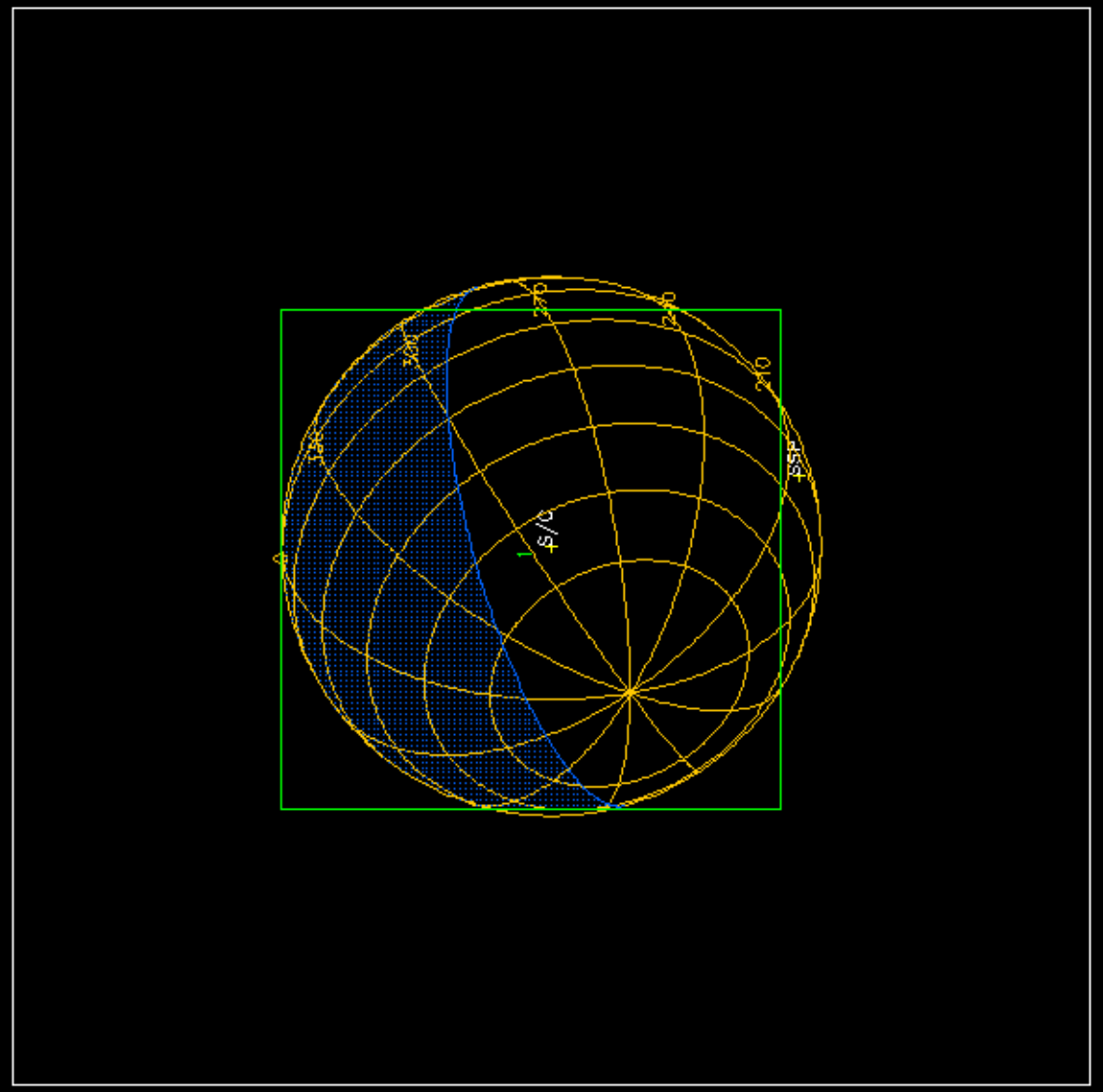
Range = 244,000 km
NAC resol. = 1.5 km/pxl
sub-S/C = -60/267
phase = 63 deg



Start UTC : 2005-213T14:10:58.120, End UTC : 2005-213T14:19:42.000
FOV : ISS NAC

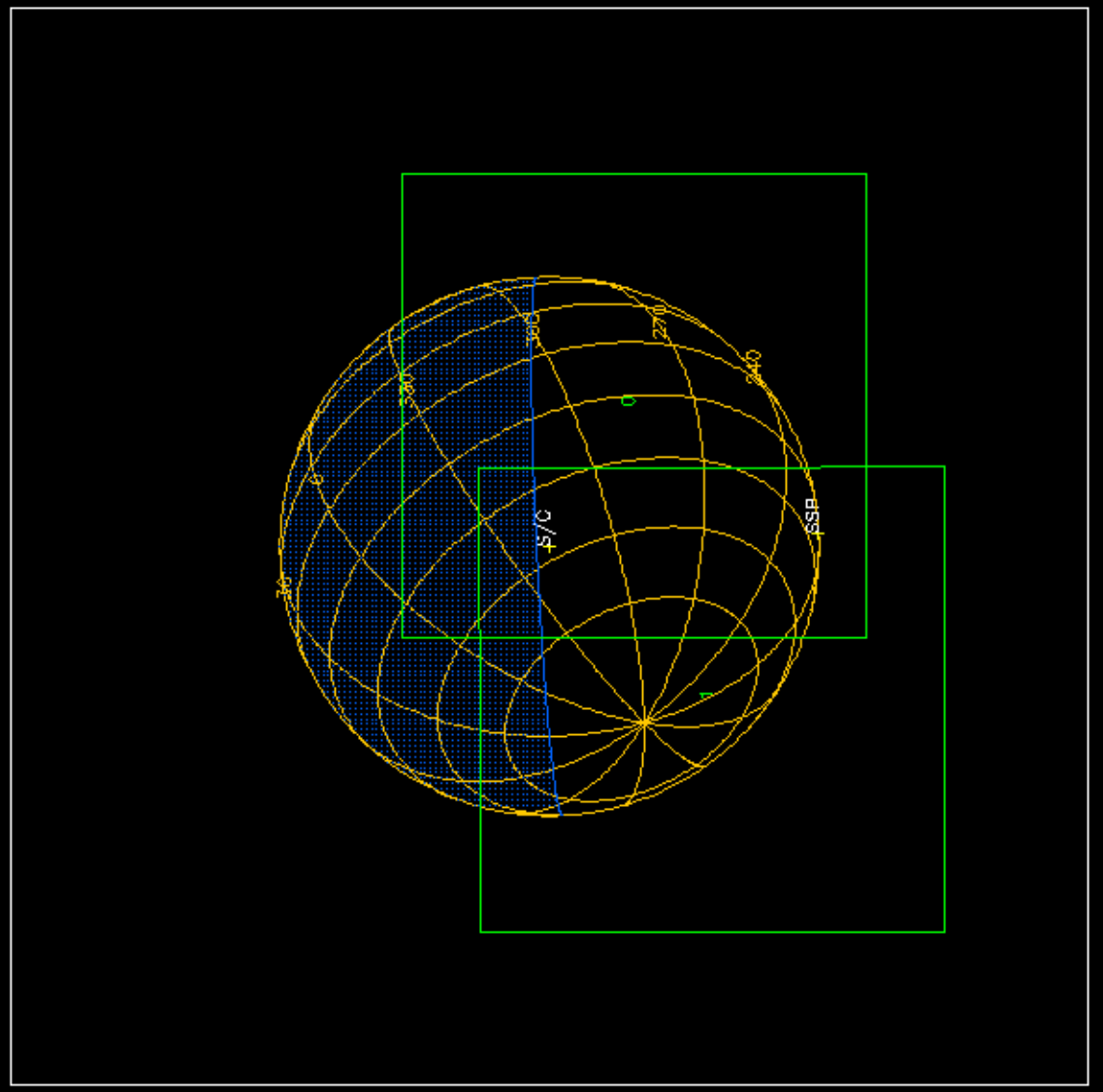
ISS_012RH_RHEA004_VIMS

Range = 220,000 km
NAC resol. = 1.3 km/pxl
sub-S/C = -53/298
phase = 76 deg



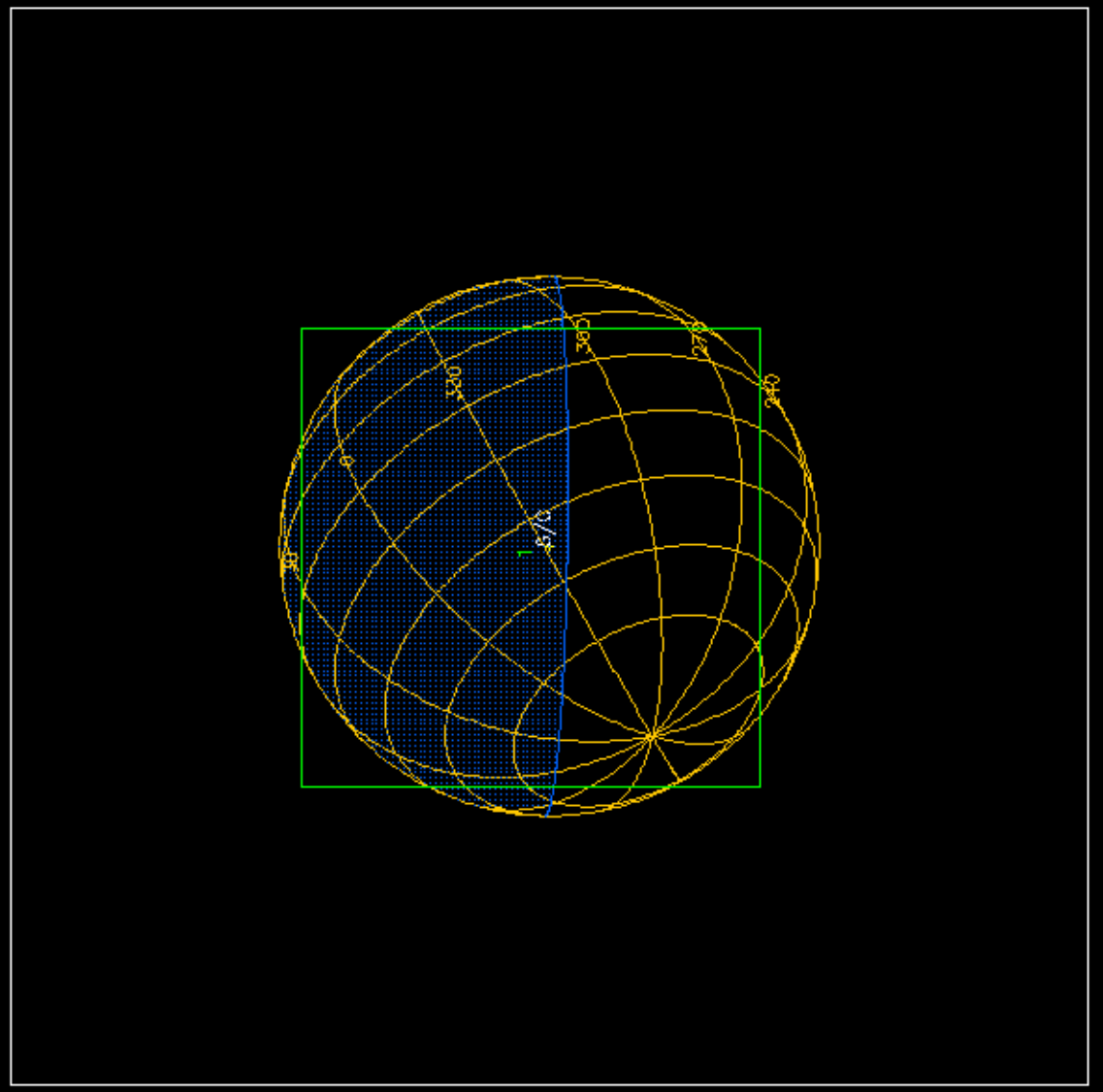
ISS_012RH_RHEA003_VIMS

Range = 206,500 km
NAC resol. = 1.24 km/pxl
sub-S/C = -42/325
phase = 91 deg

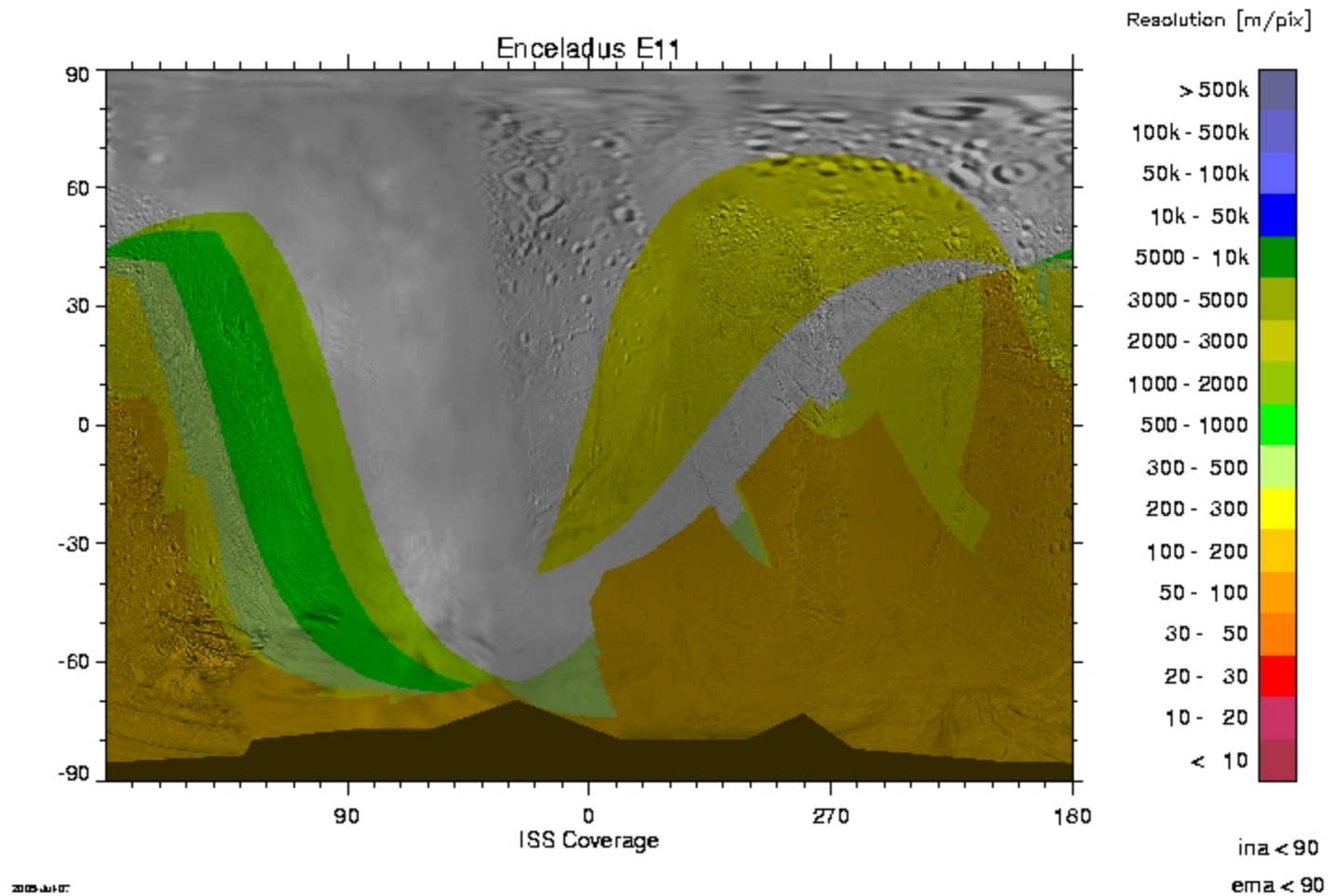


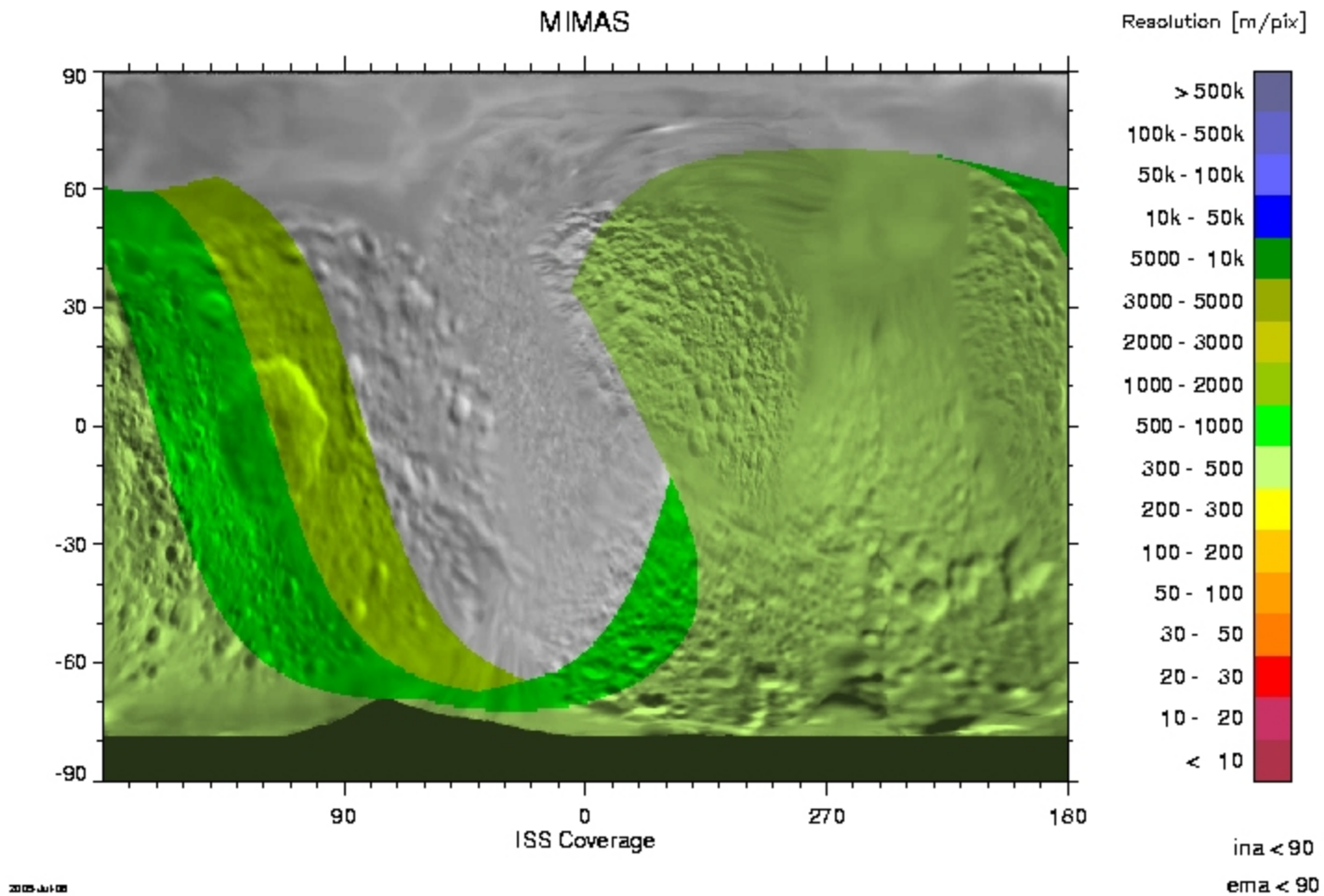
ISS_012RH_RHEA005_VIMS

Range = 205,700 km
NAC resol. = 1.23 km/pxl
sub-S/C = -36/334
phase = 98 deg



Start UTC : 2005 AUG 01 20:49:20.000, End UTC : 2005 AUG 01 20:49:20.000
FOV : ISS NAC


Enceladus E11
90
60
30
0
-30
-60
-90
90
0
270
180
ISS Coverage
Resolution [m/pix]
> 500k
100k - 500k
50k - 100k
10k - 50k
5000 - 10k
3000 - 5000
2000 - 3000
1000 - 2000
500 - 1000
300 - 500
200 - 300
100 - 200
50 - 100
30 - 50
20 - 30
10 - 20
< 10
ina < 90
ema < 90

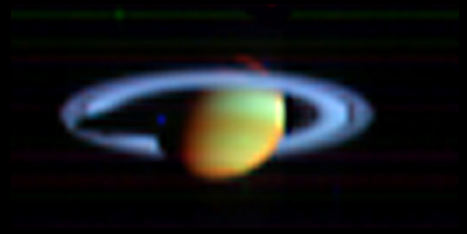

MIMAS
90
60
30
0
-30
-60
-90
90
0
270
180
ISS Coverage
Resolution [m/pix]
> 500k
100k - 500k
50k - 100k
10k - 50k
5000 - 10k
3000 - 5000
2000 - 3000
1000 - 2000
500 - 1000
300 - 500
200 - 300
100 - 200
50 - 100
30 - 50
20 - 30
10 - 20
< 10
ina < 90
ema < 90

Cassini

VIMS

S12 Enceladus

Roger N. Clark
VIMS Team
July 7, 2005



VIMS

Visual and Infrared Mapping Spectrometer

- 0.35 to 5.2 microns in 352 wavelengths
- IFOV: 0.5 x 0.5 mrad (standard)
- High resolution IR: 0.5 x 0.25 mrad
- High resolution VIS: 0.17 x 0.17 mrad
- Images up to 64 x 64 pixels square.

VIMS Enceladus Science

Identification of minerals and other materials on the surface.

Mapping the abundance, and grain sizes of surficial materials.

Grain-Size Mapping

Reflectance from 0.35 to 5.2 microns

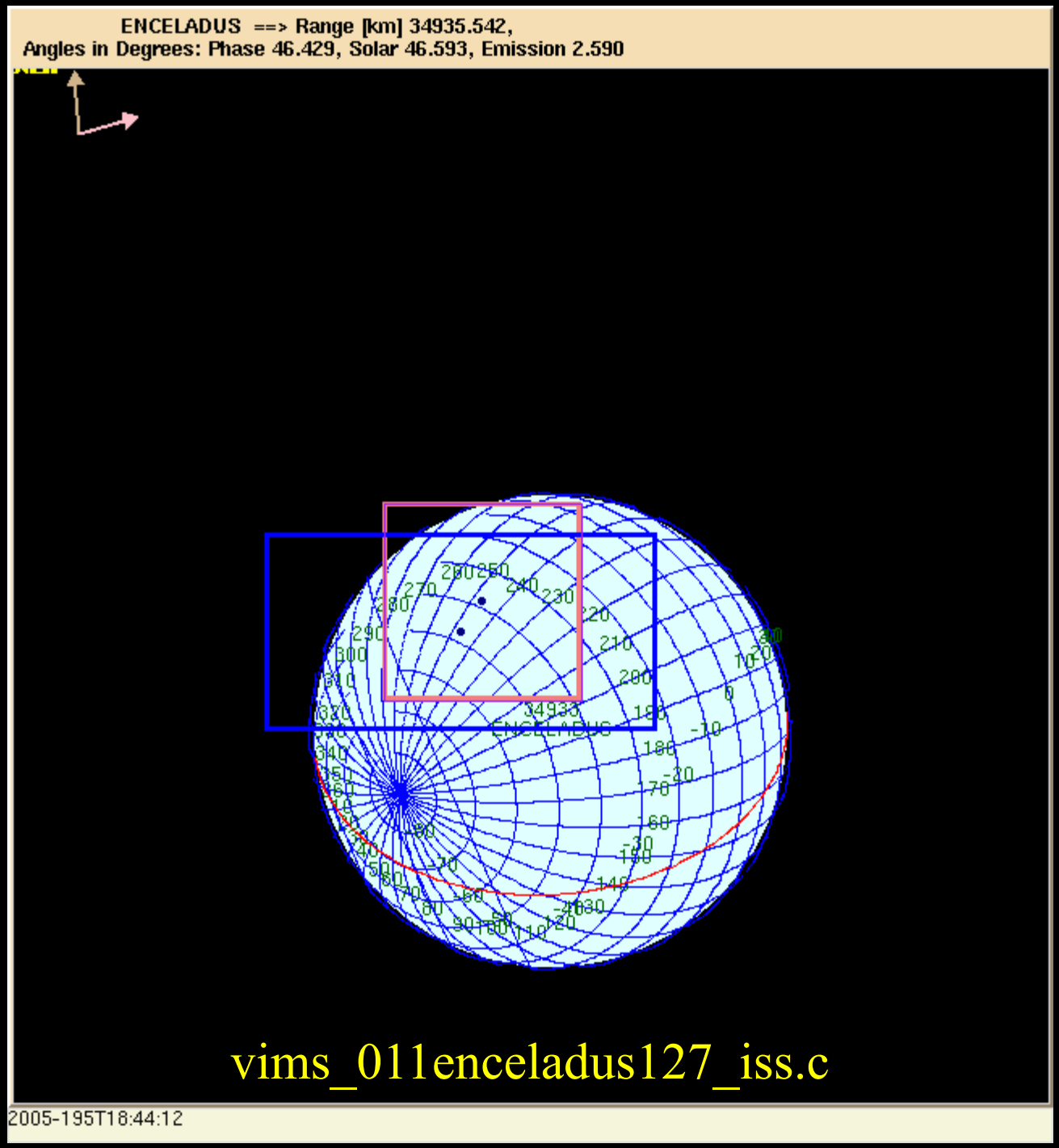
Phase function

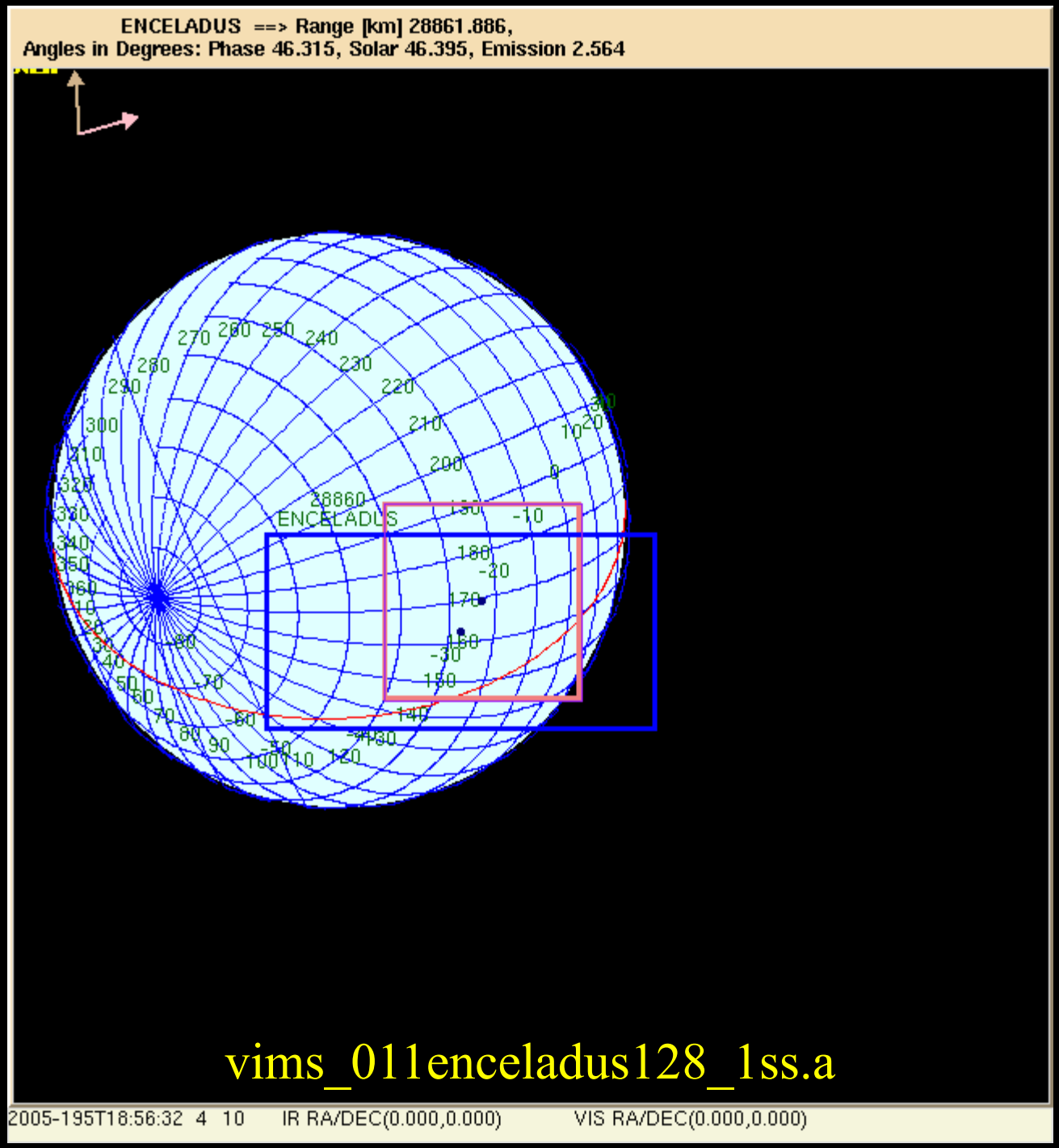
surface microstructure

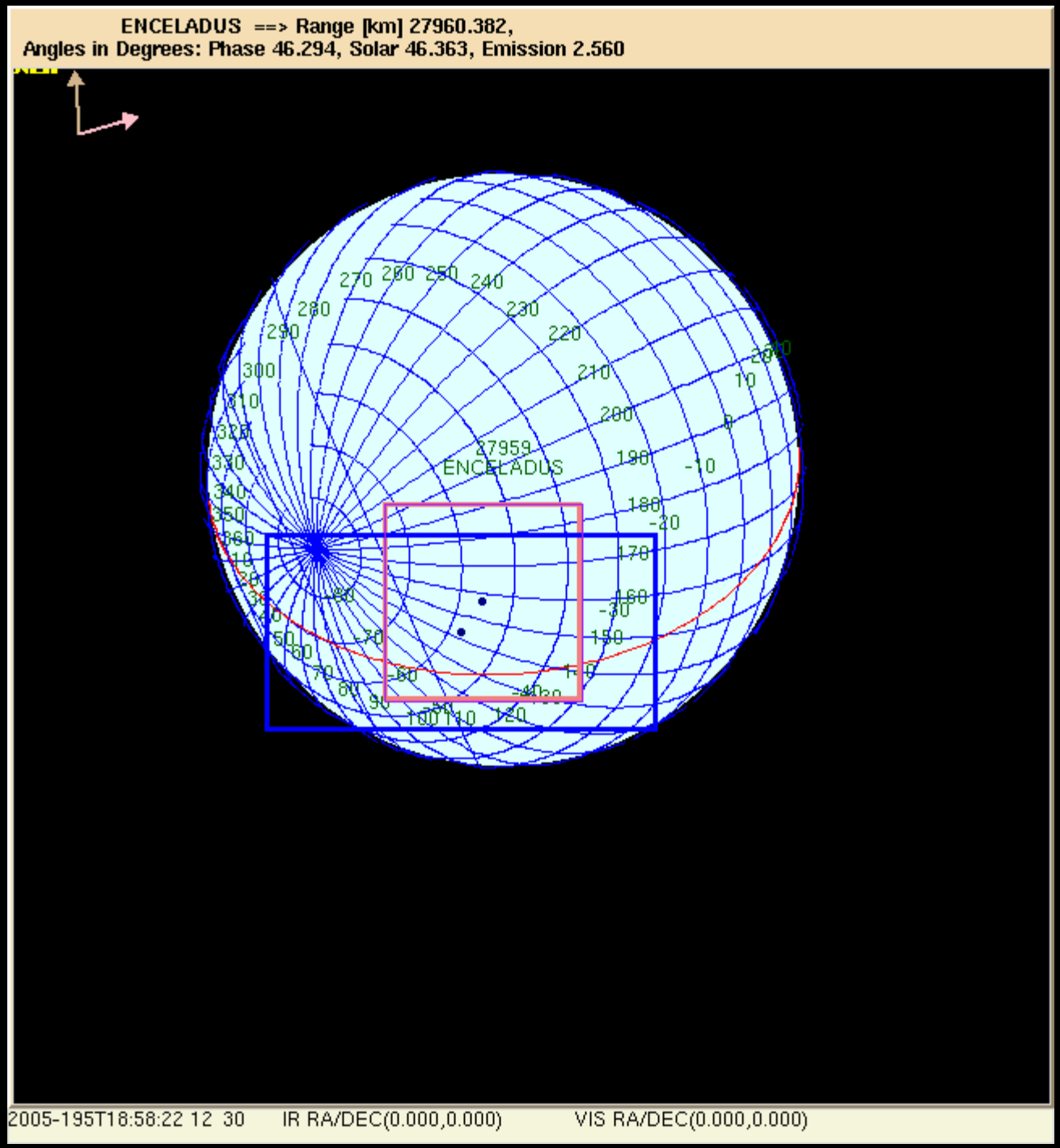
Bond albedo

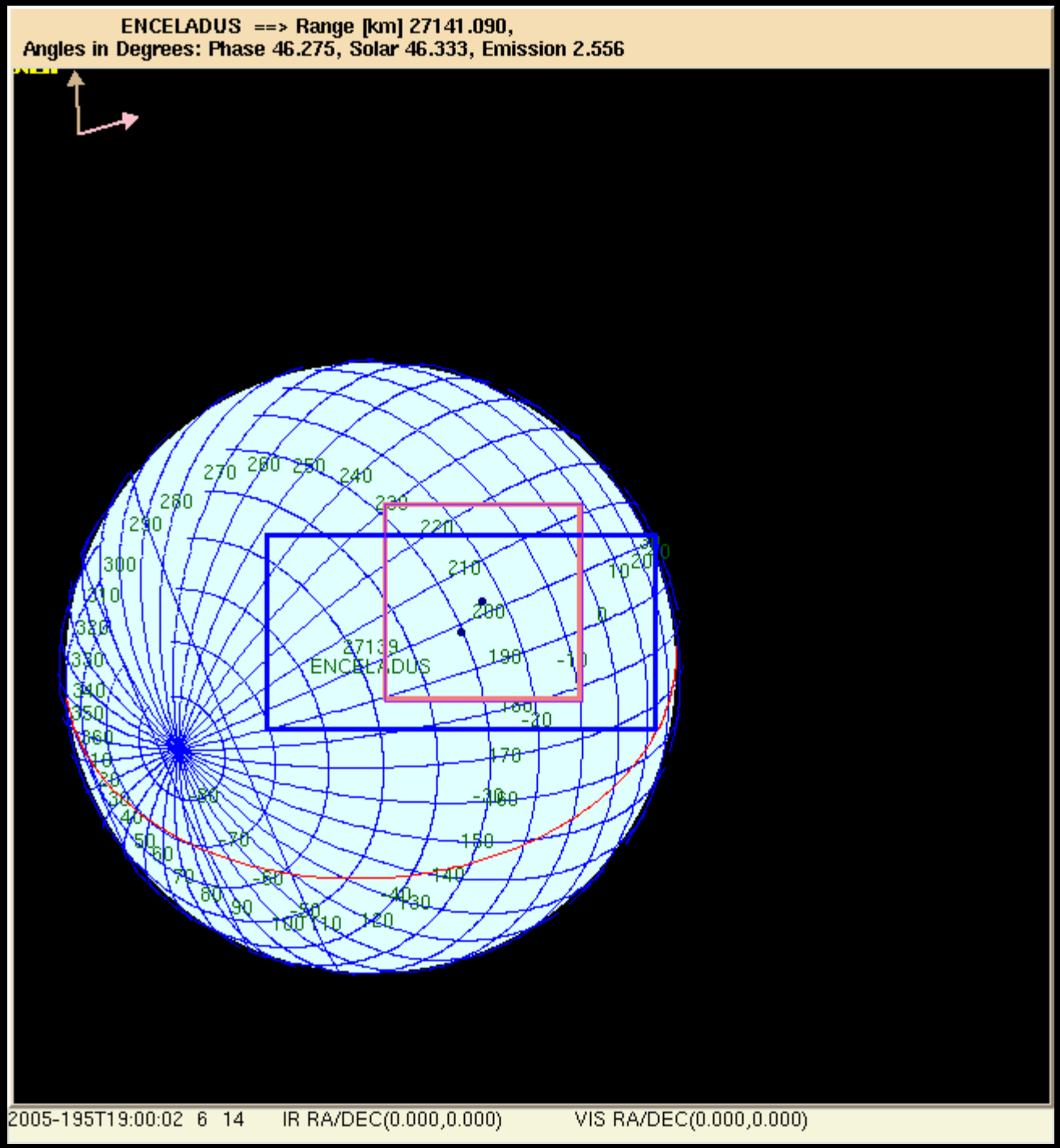
Temperatures > 120K

vims_011enceladus125_1ss.c


ENCELADUS ==> Range [km] 34935.542,
Angles in Degrees: Phase 46.429, Solar 46.593, Emission 2.590
vims_011enceladus127_iss.c
2005-195T18:44:12


ENCELADUS ==> Range [km] 28861.886,
Angles in Degrees: Phase 46.315, Solar 46.395, Emission 2.564
ENCELADUS
28860
vims_011enceladus128_1ss.a
2005-195T18:56:32 4 10 IR RA/DEC(0.000,0.000) VIS RA/DEC(0.000,0.000)


ENCELADUS ==> Range [km] 27960.382,
Angles in Degrees: Phase 46.294, Solar 46.363, Emission 2.560
27959
ENCELADUS
2005-195T18:58:22 12 30
IR RA/DEC(0.000,0.000)
VIS RA/DEC(0.000,0.000)


ENCELADUS ==> Range [km] 27141.090,
Angles in Degrees: Phase 46.275, Solar 46.333, Emission 2.556
27139
ENCELADUS
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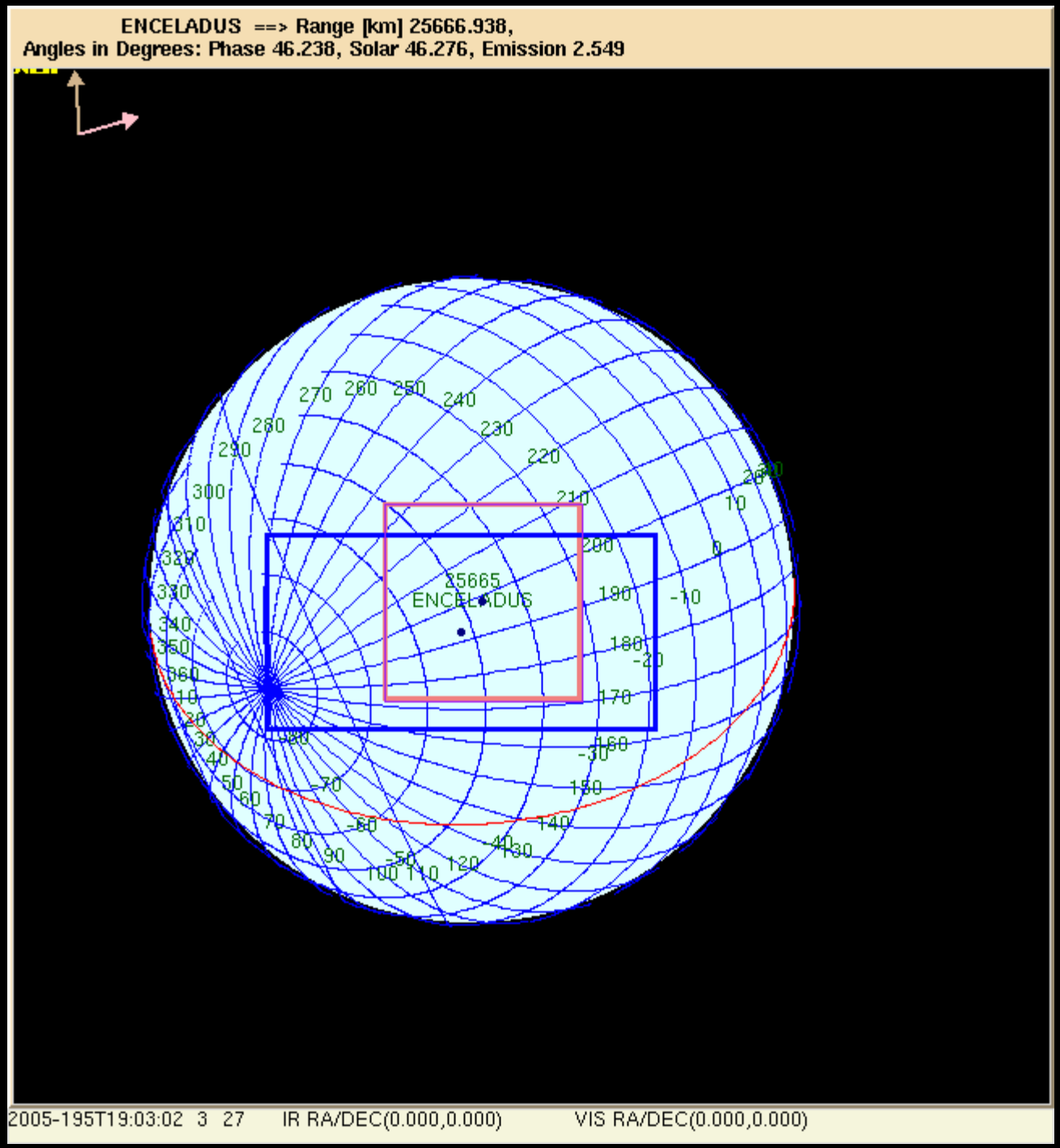
ENCELADUS ==> Range [km] 25666.938,
Angles in Degrees: Phase 46.238, Solar 46.276, Emission 2.549
25665
ENCELADUS
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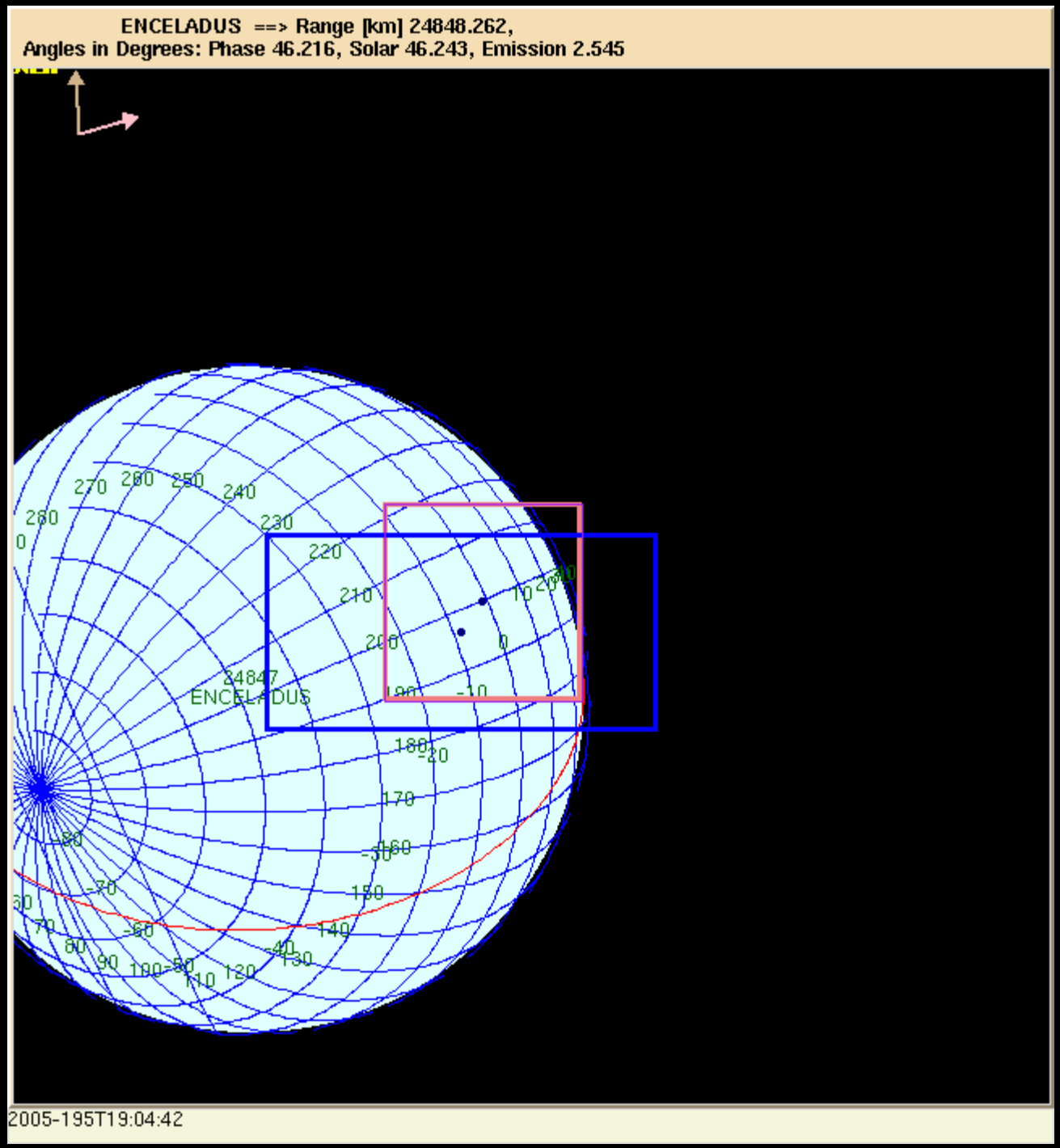
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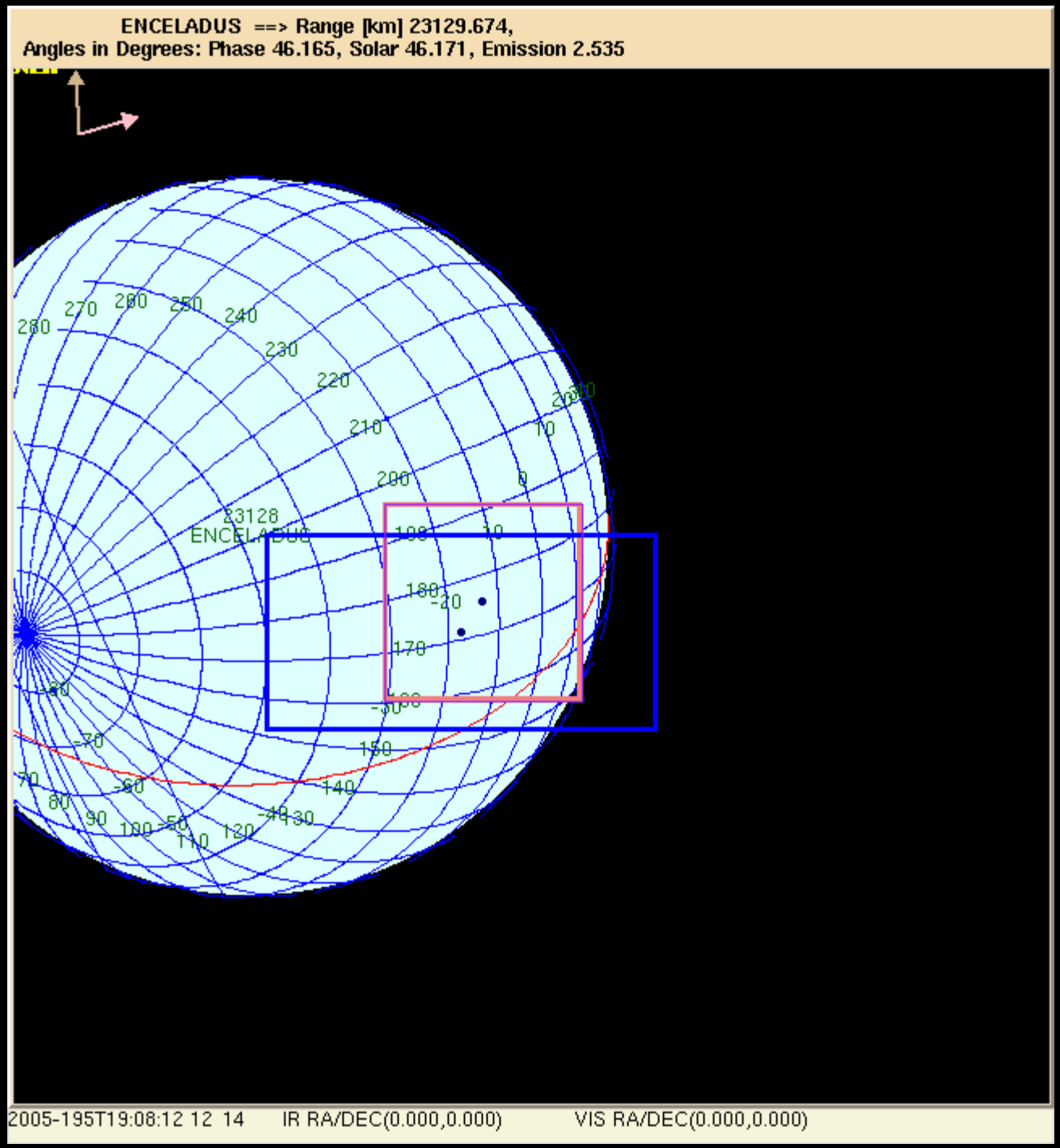
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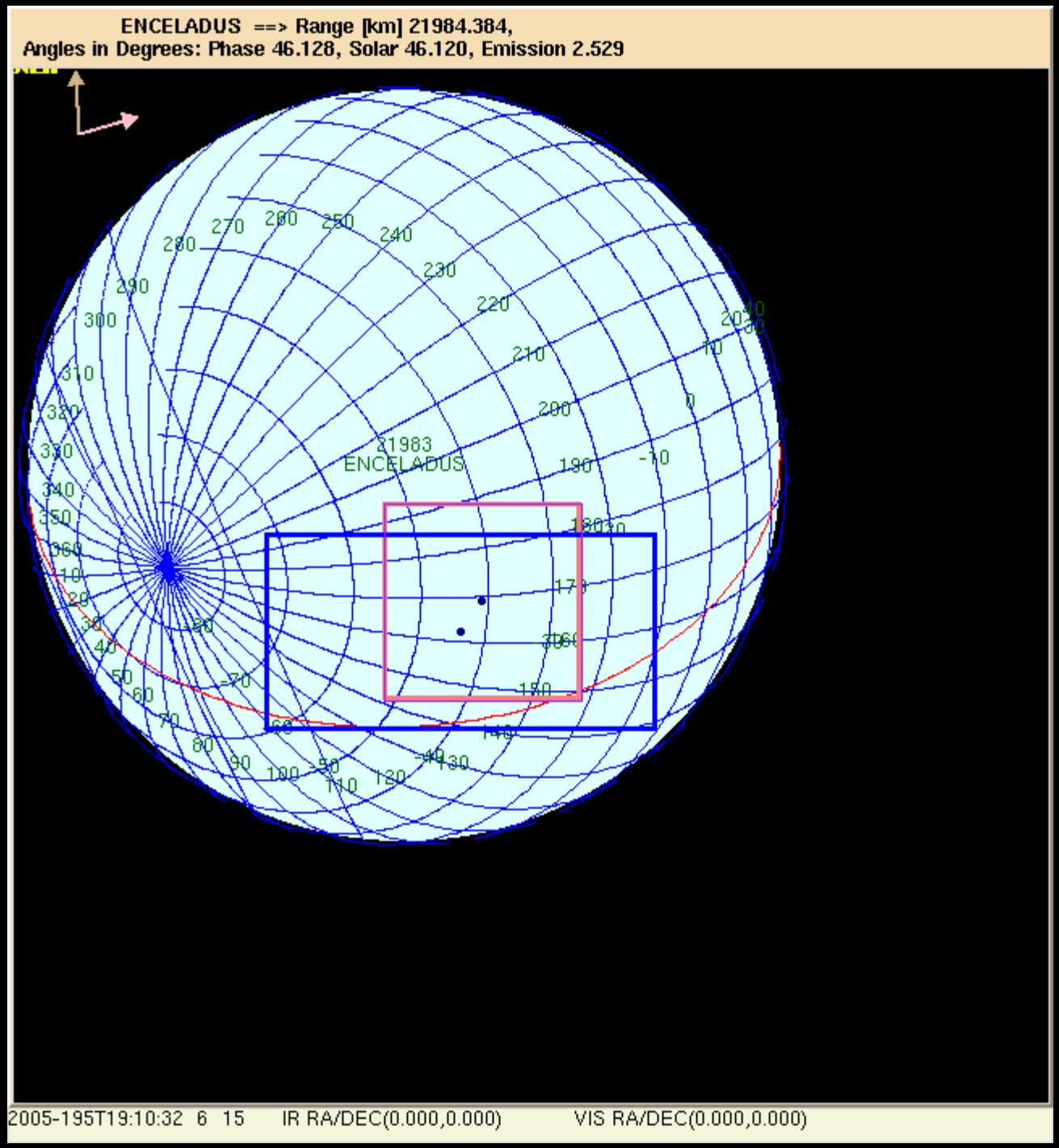
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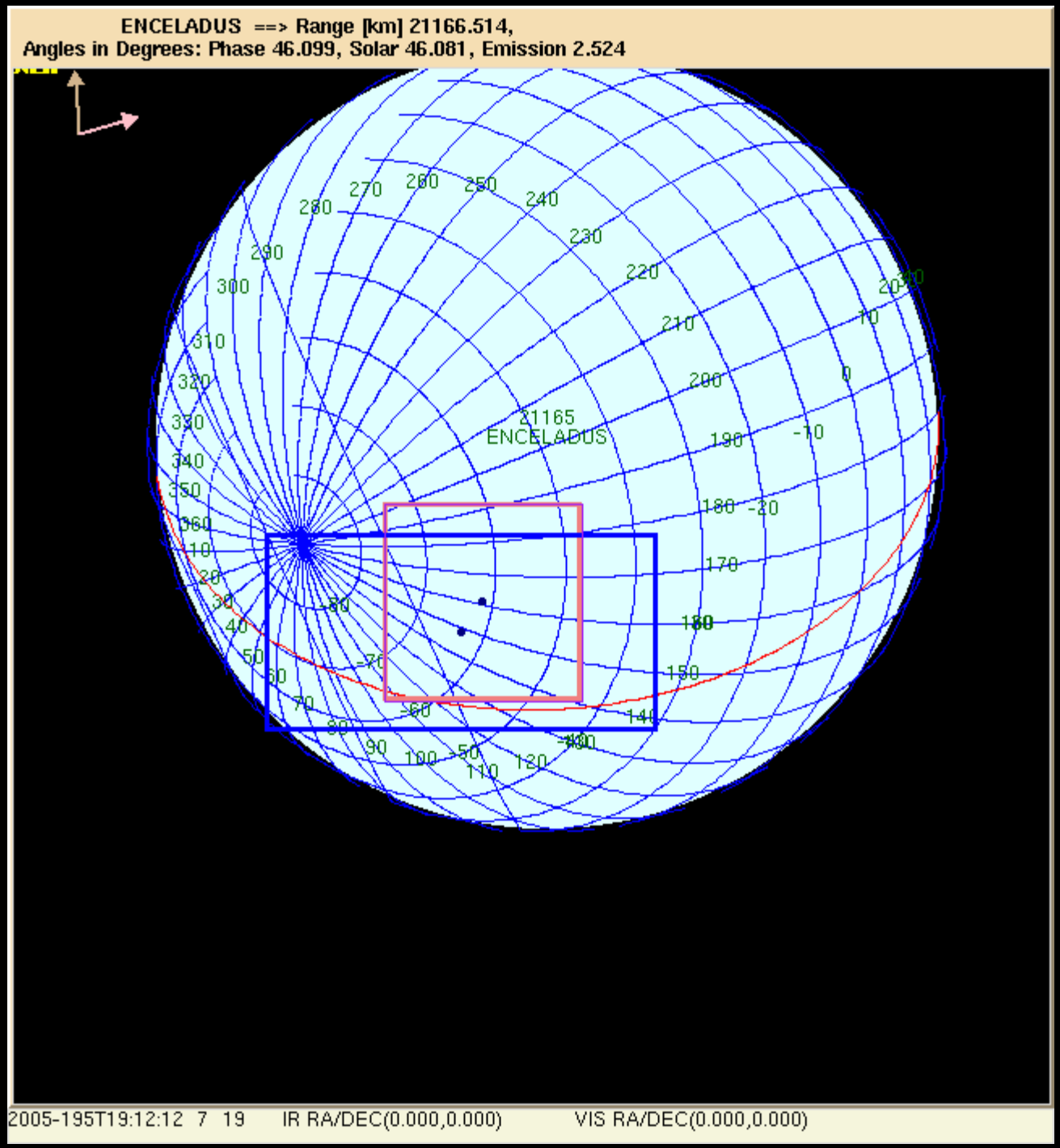
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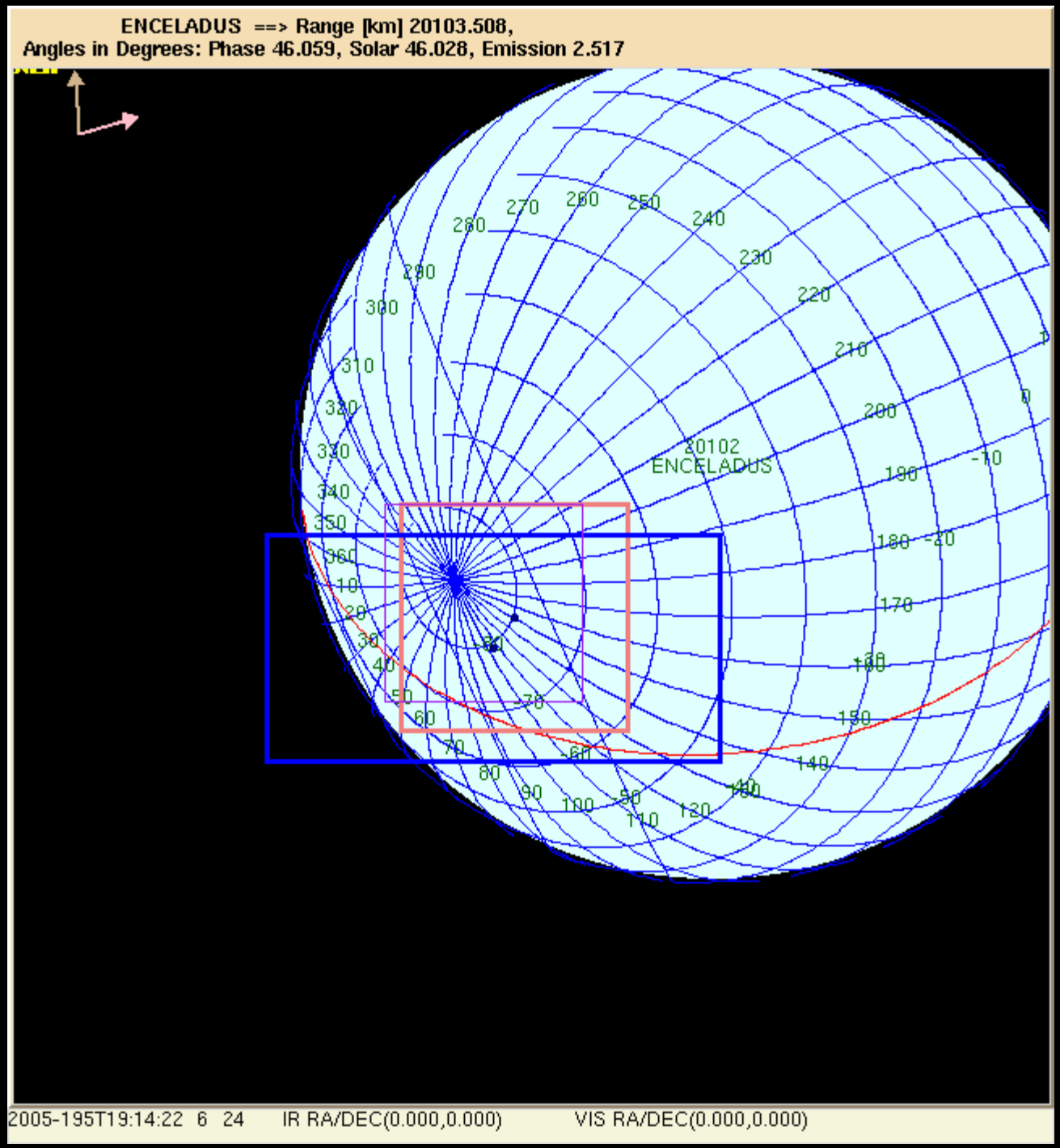
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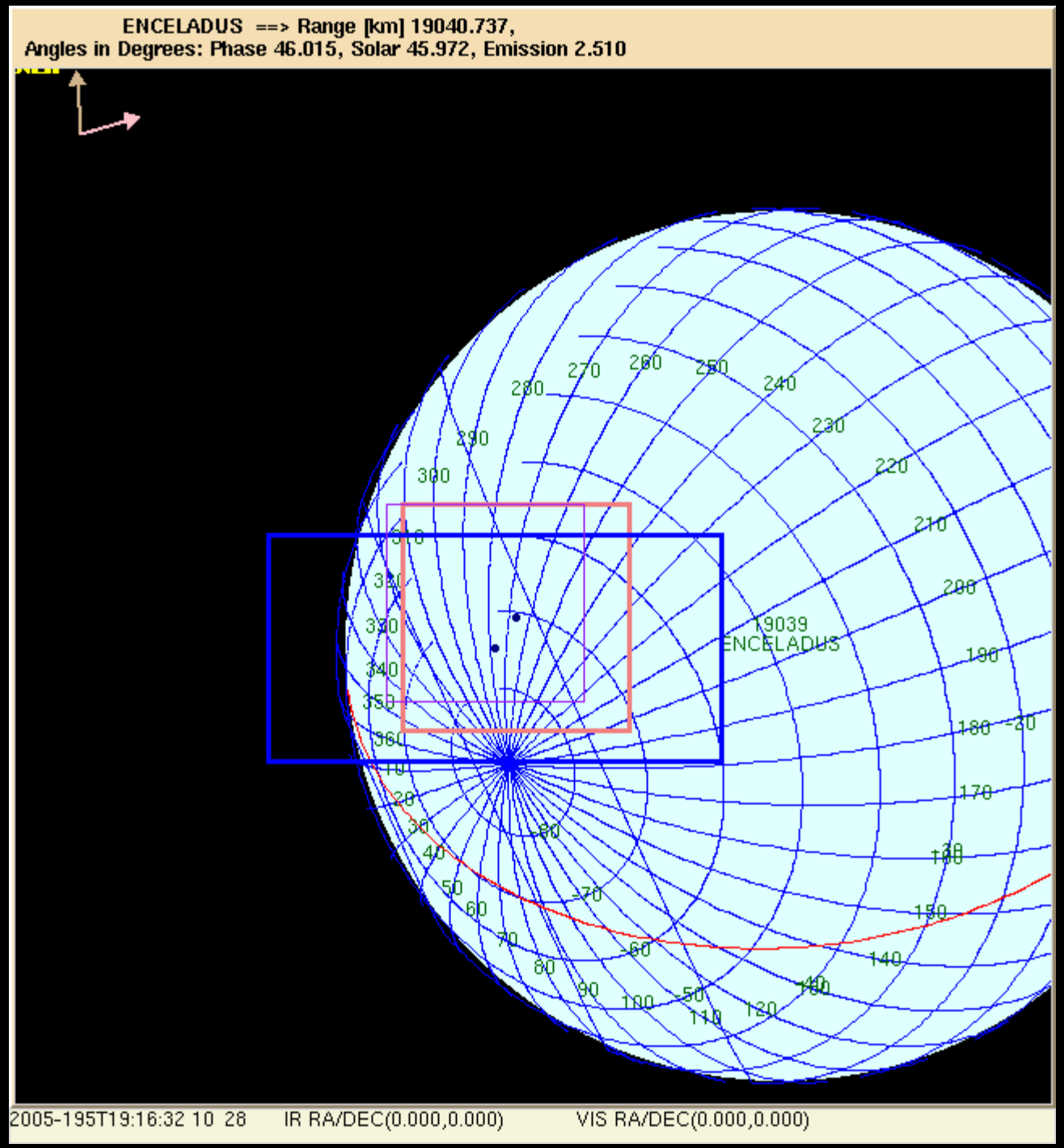
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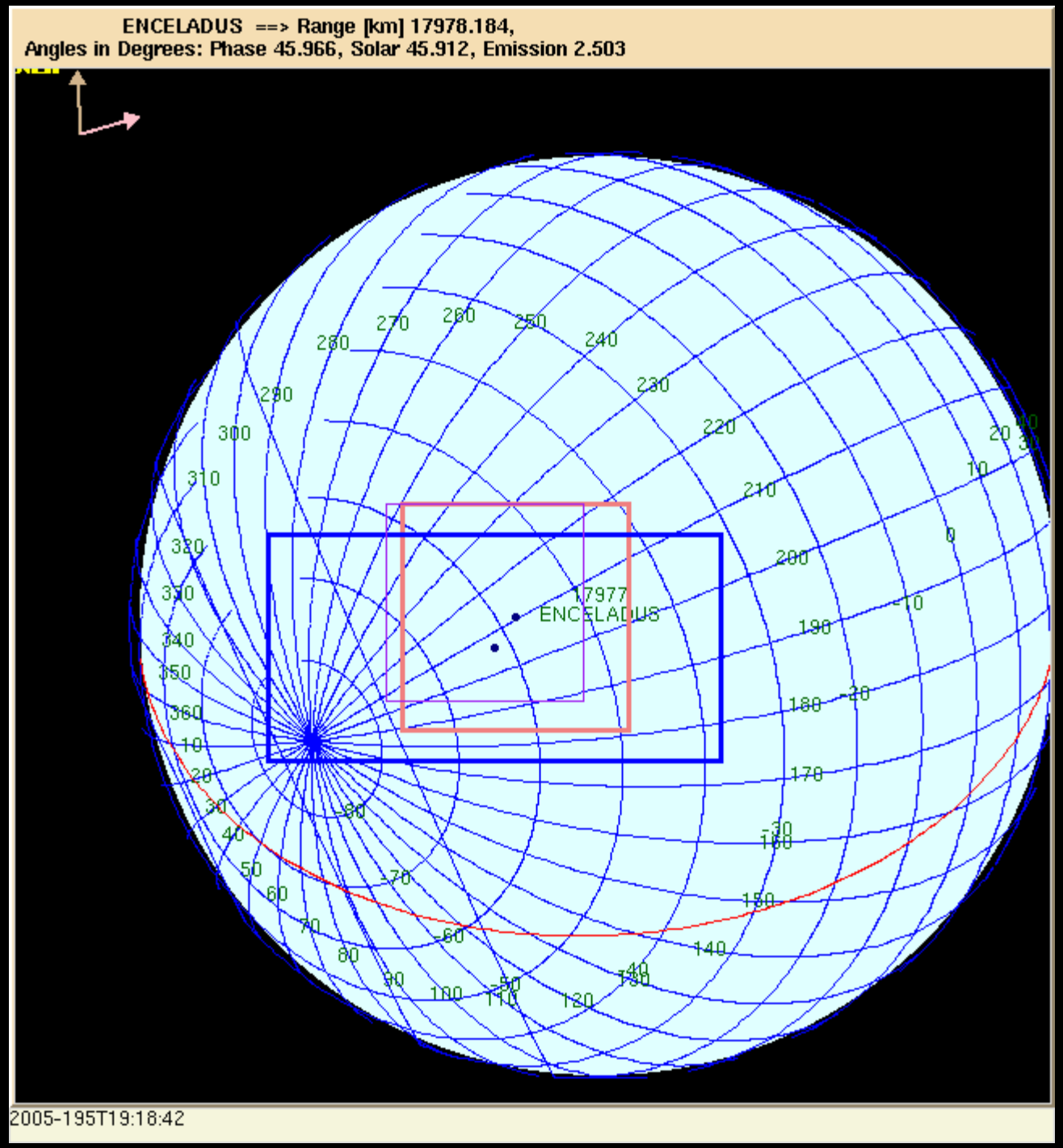
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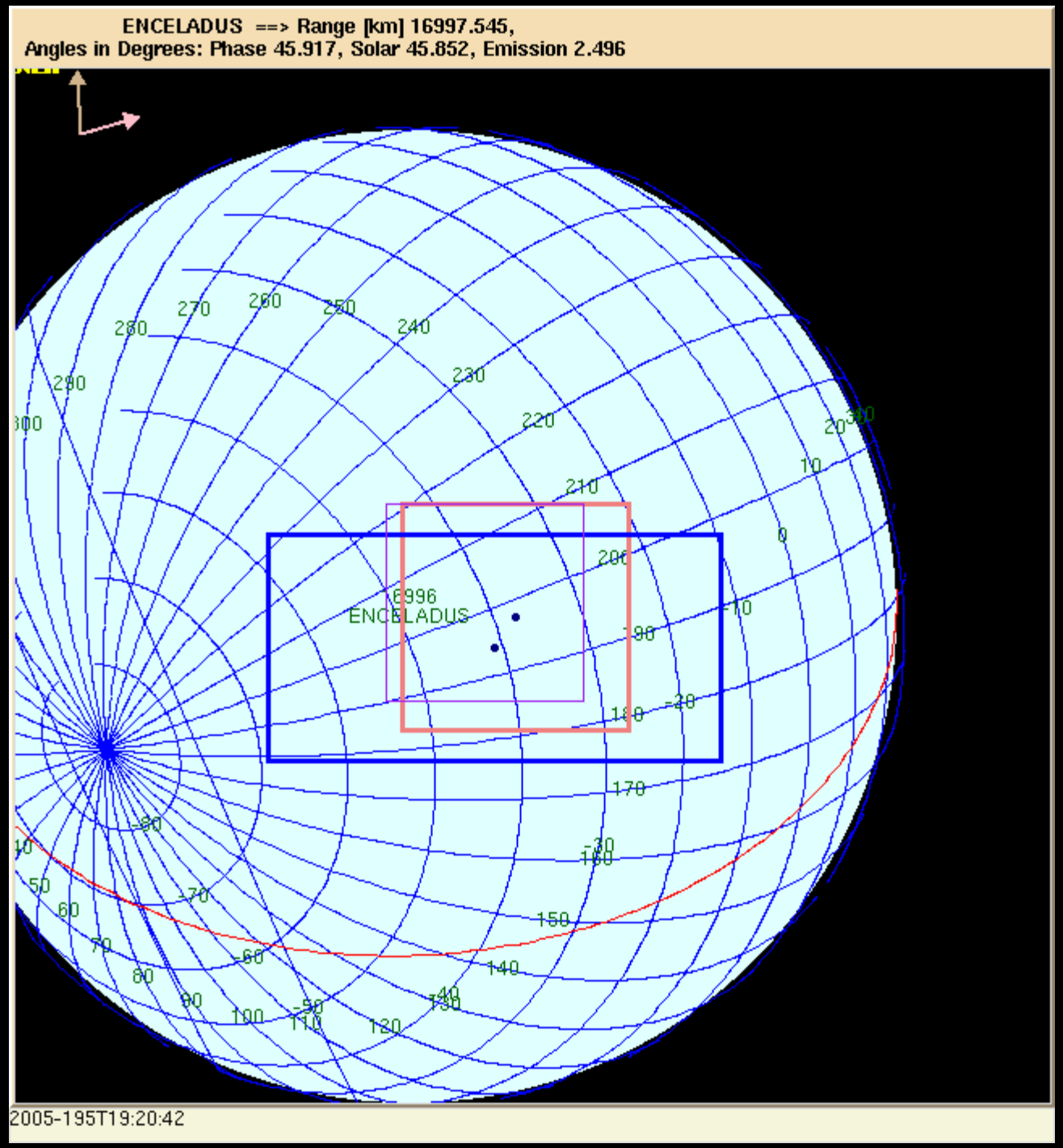
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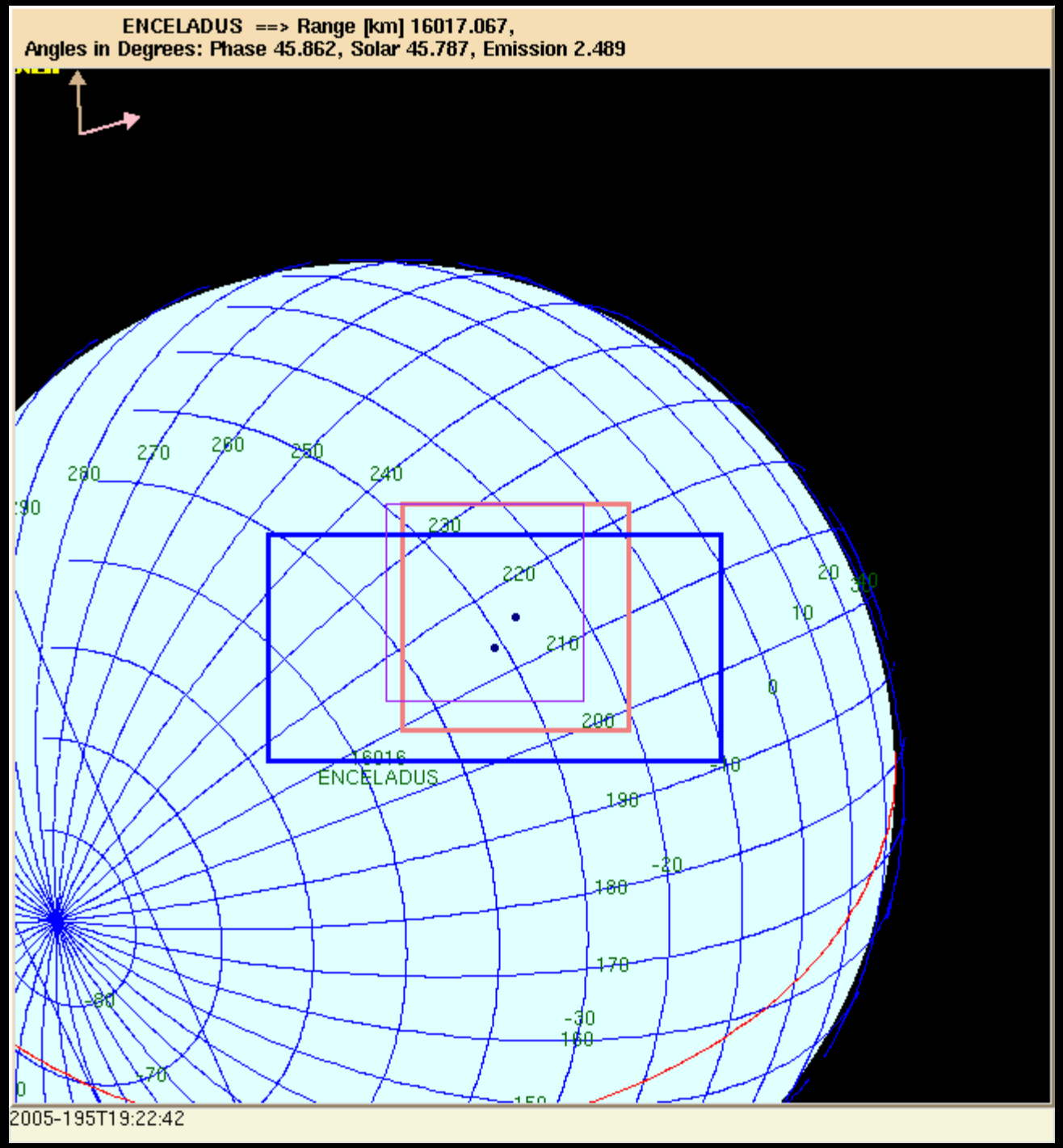
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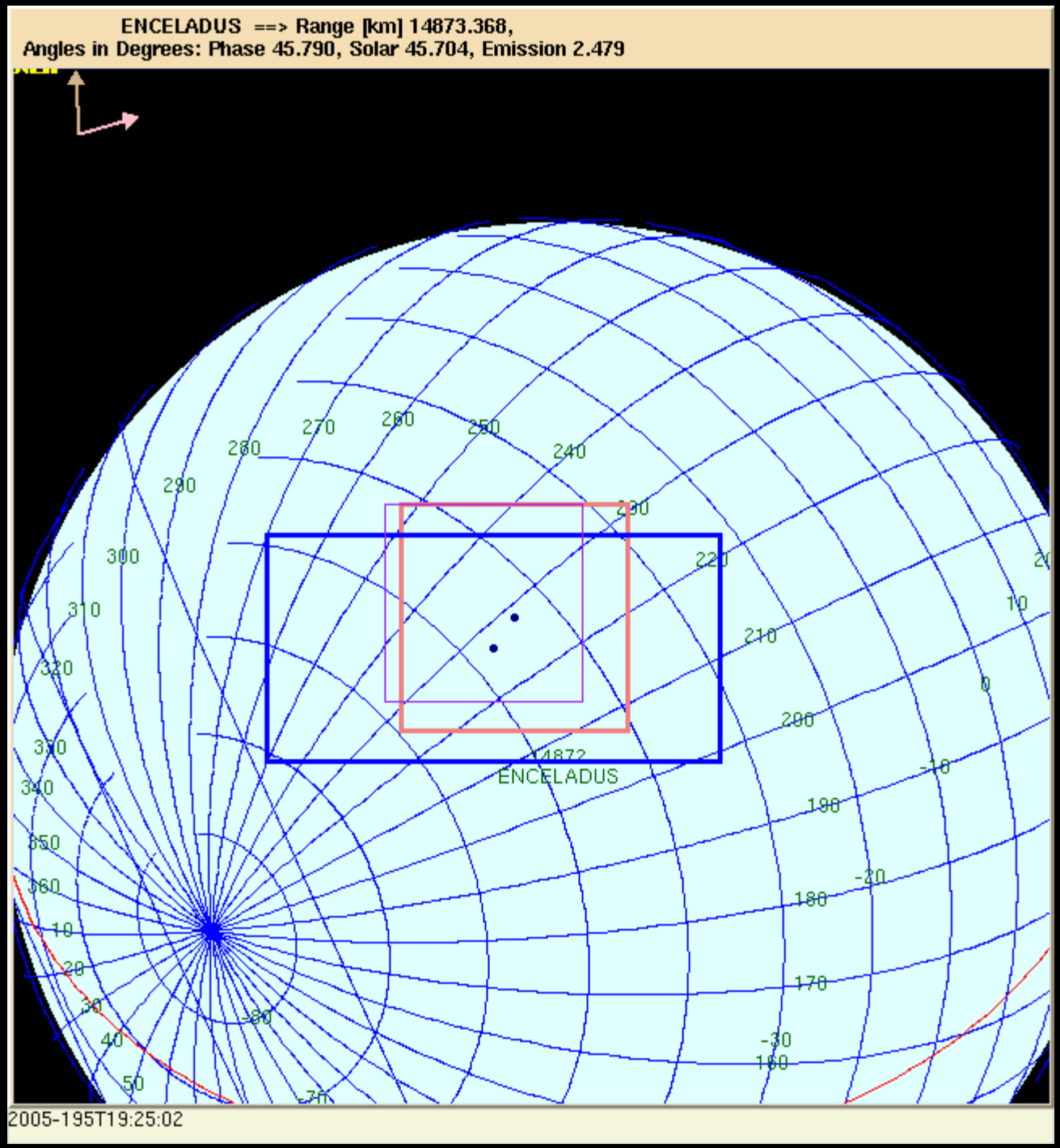
270
260
250
240
230
220
210
200
190
180
170
160
150
20
10
0
-10
-20
-30
-70
-80
ENCELADUS
2005-195T19:22:42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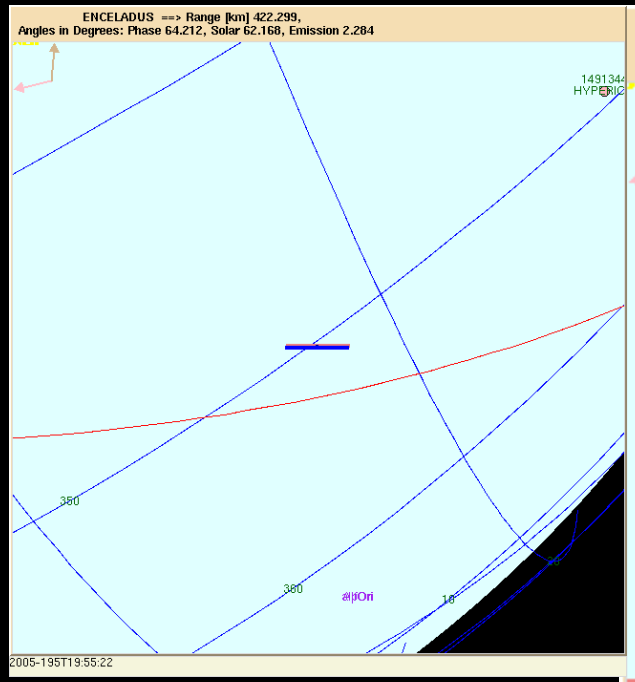
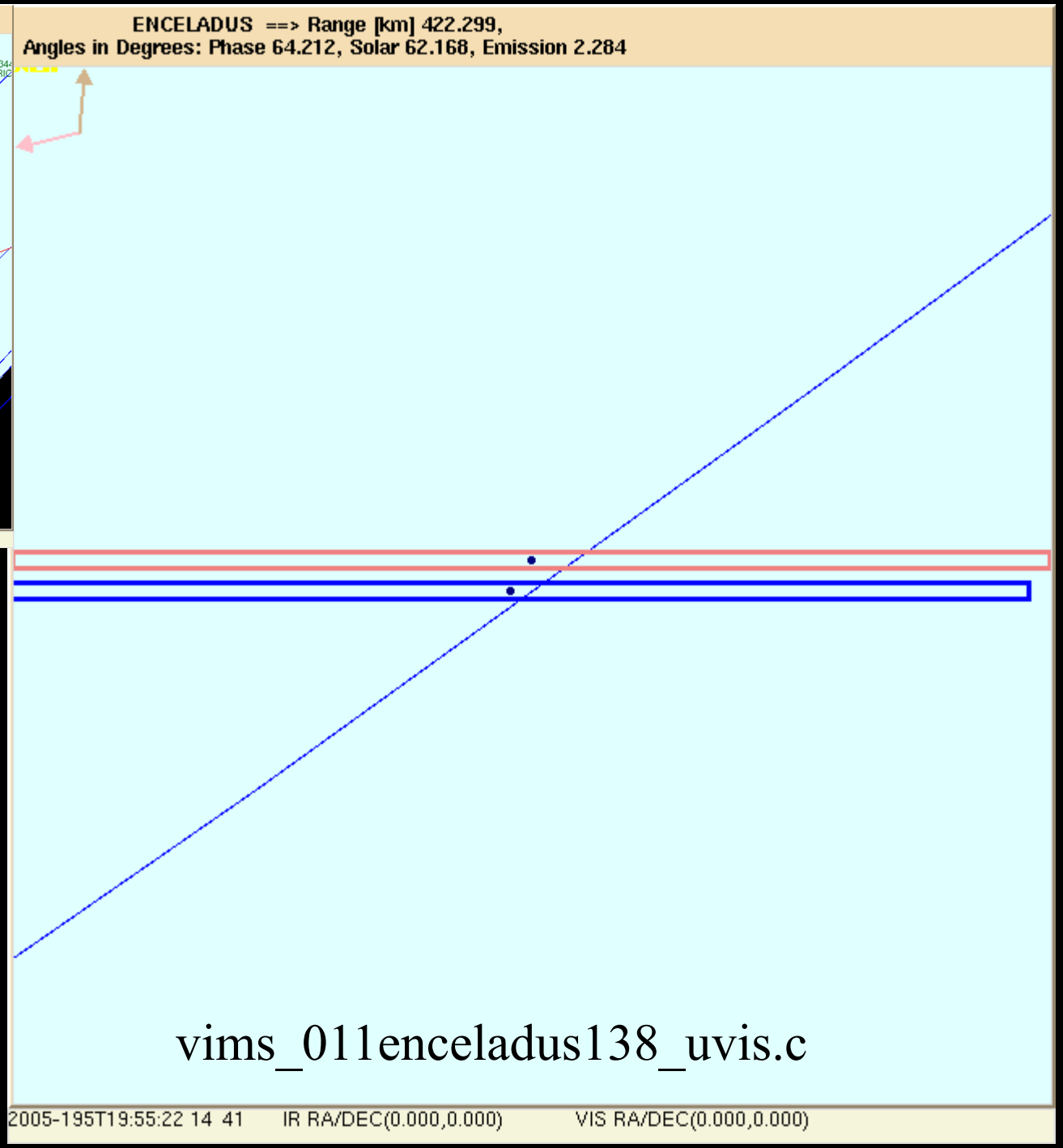


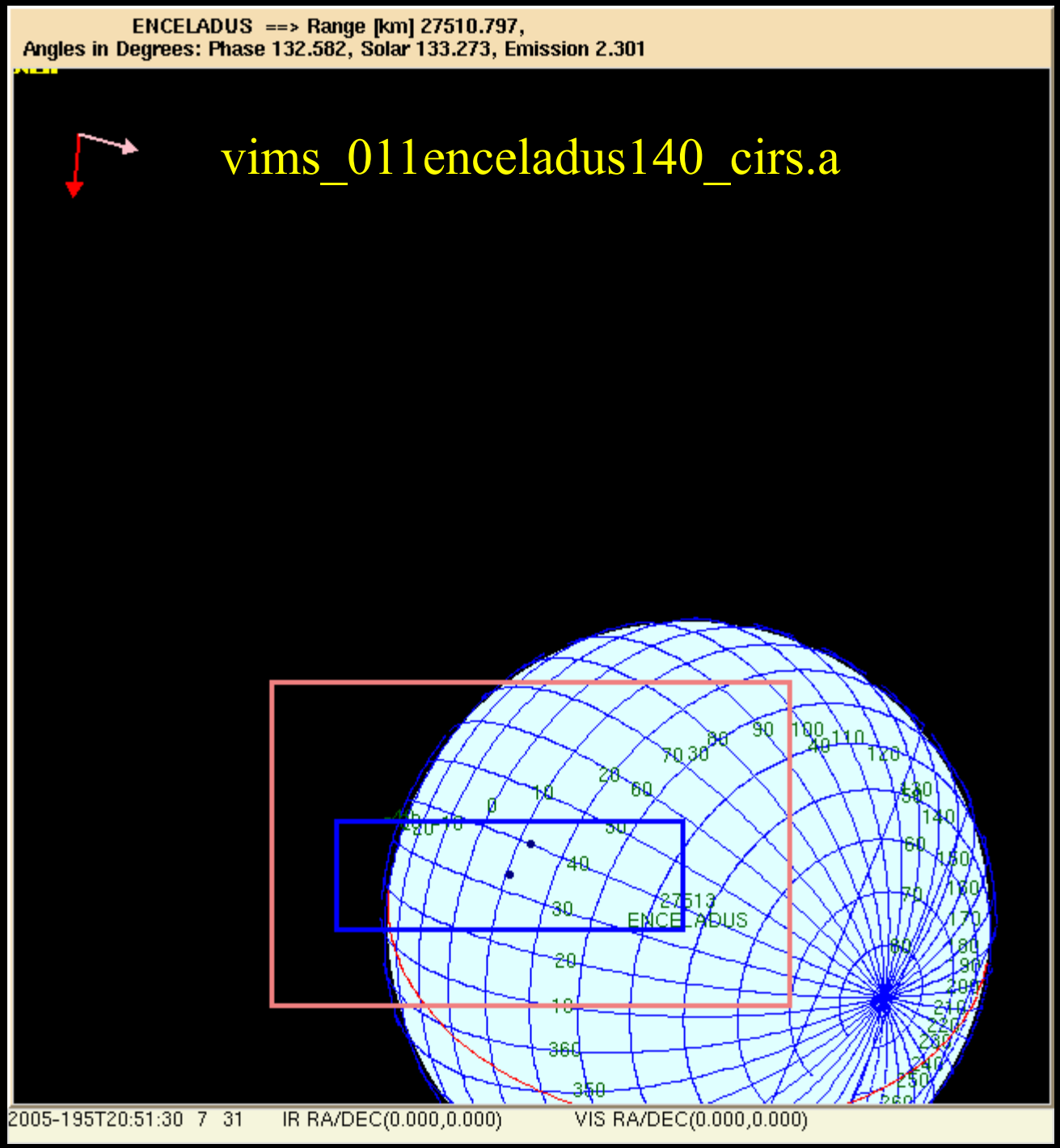
Around closest approach, VIMS does profiles.

Above: ~25x larger field of view.

~210 meter resolution!



Outbound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vims_011enceladus140_cirs.a
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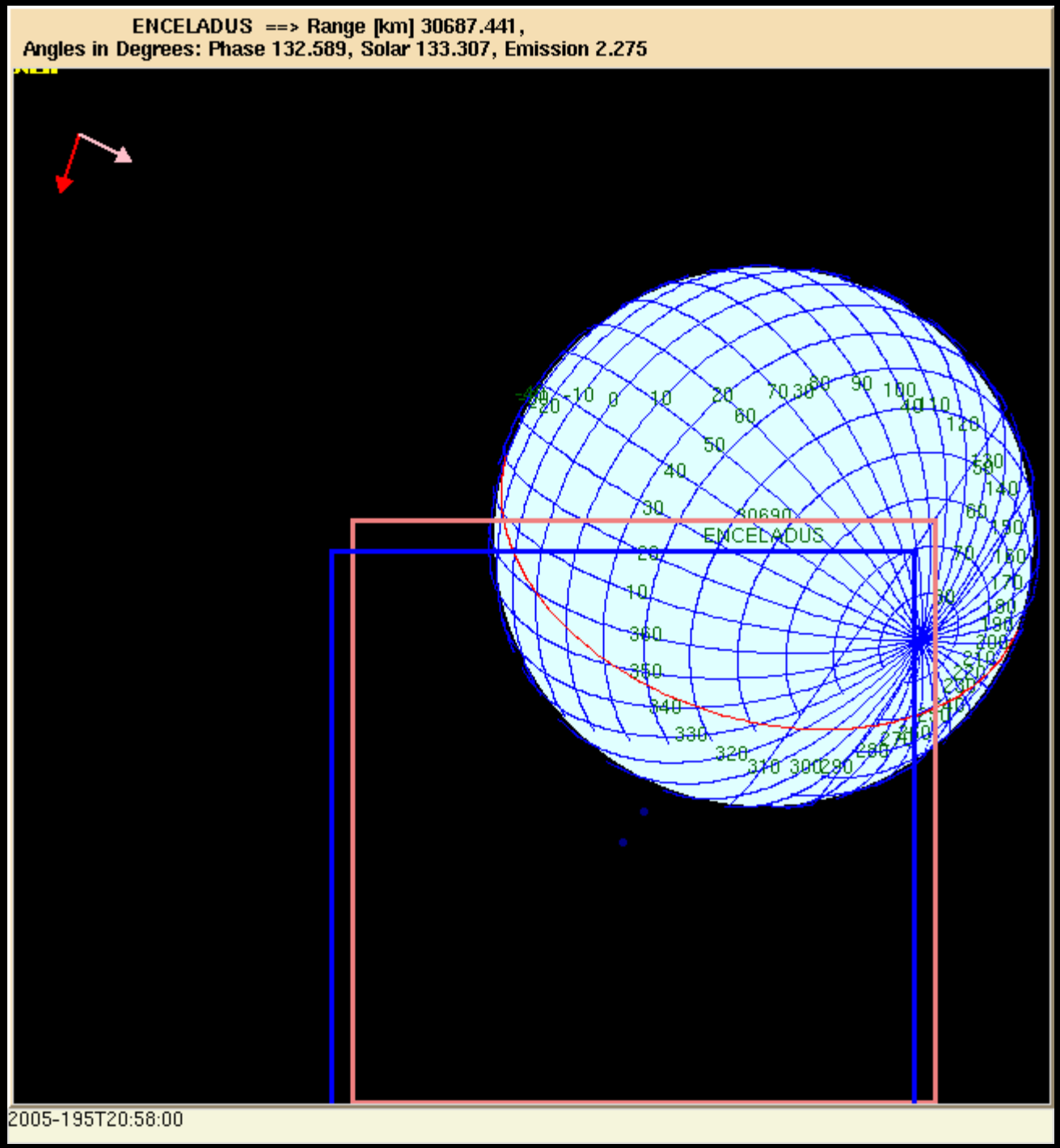
2005-195T20:51:30 7 31
IR RA/DEC(0.000,0.000)
VIS RA/DEC(0.000,0.000)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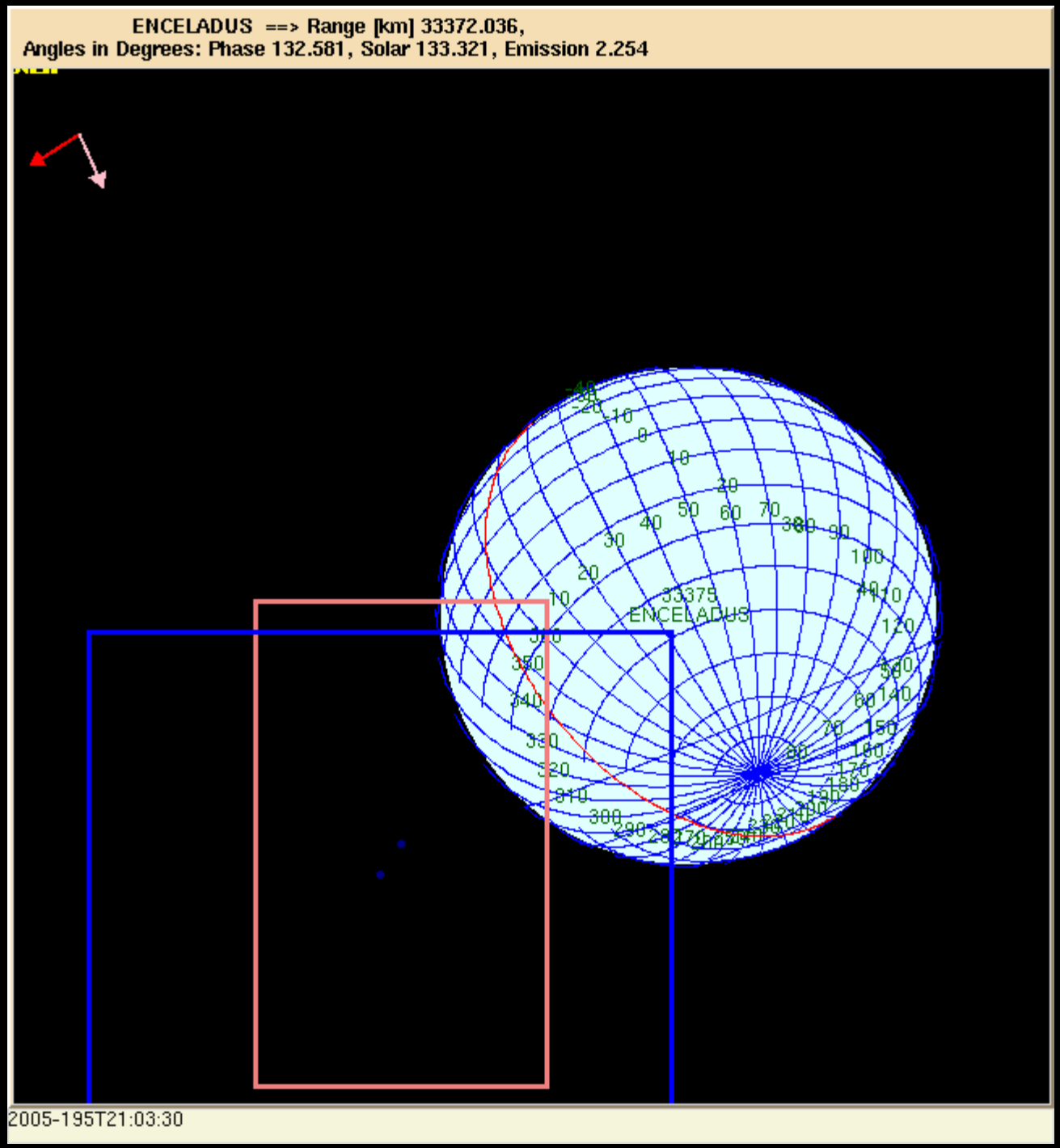
2005-195T20:58:00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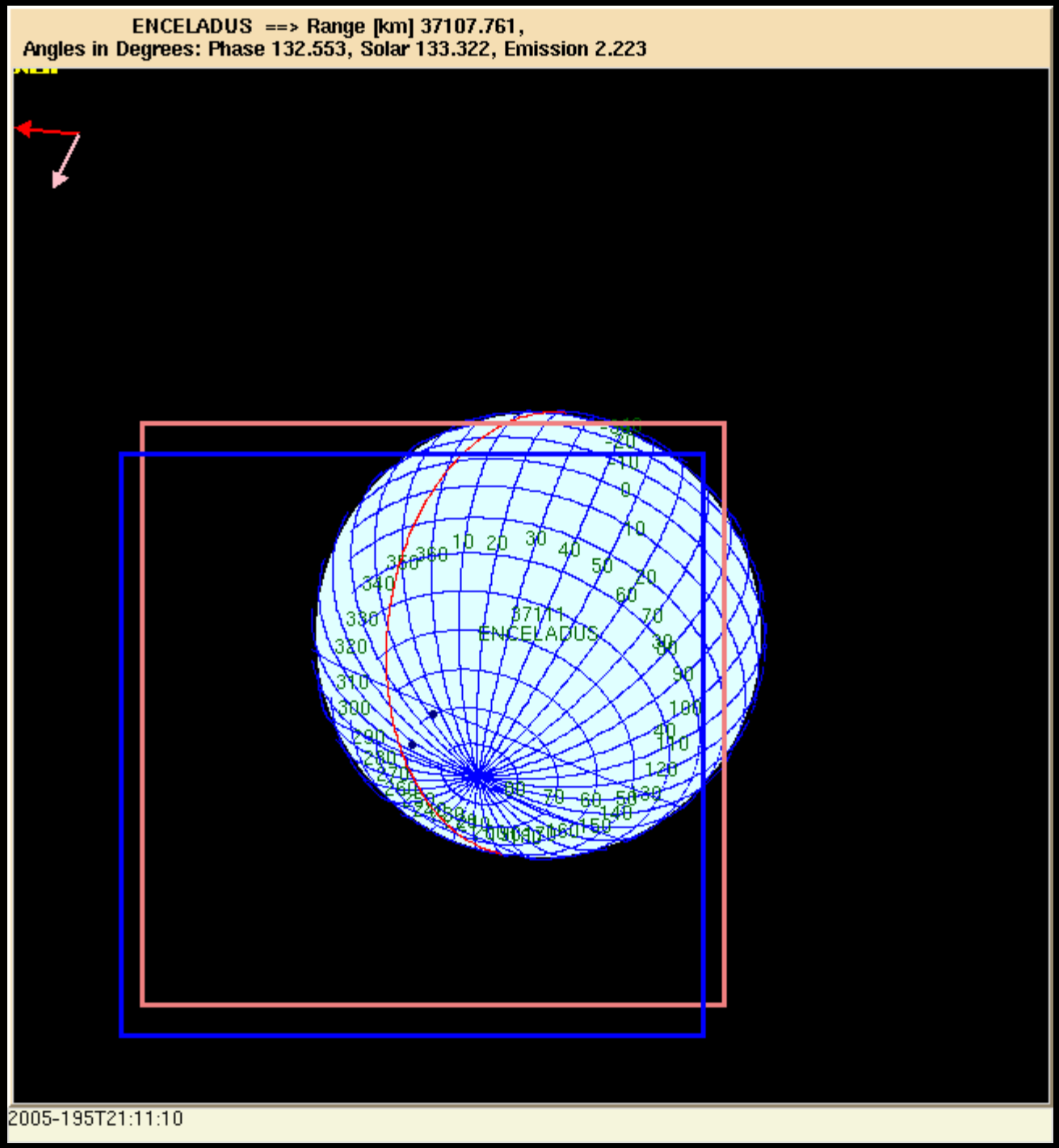
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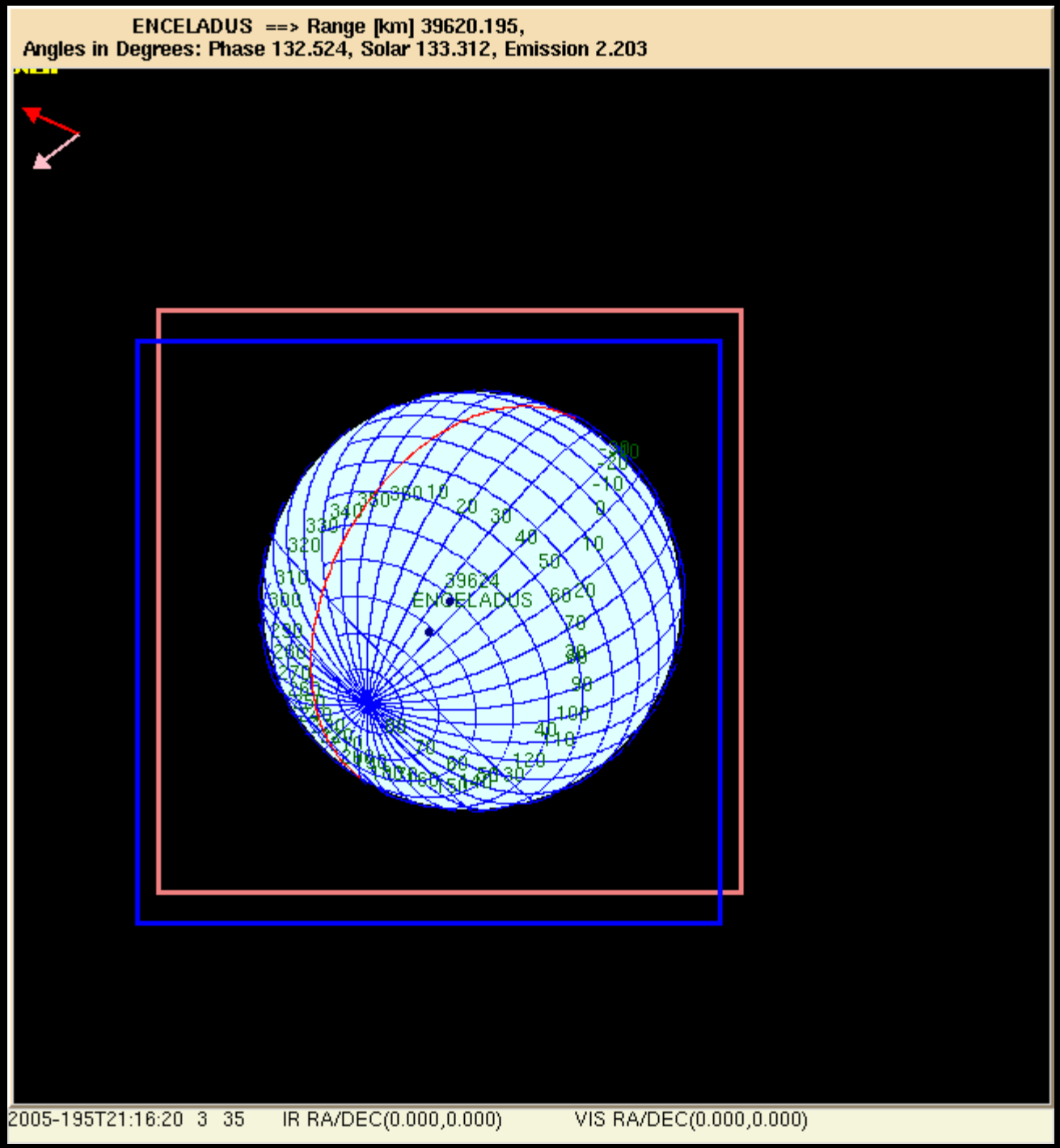
ENCELADUS
2005-195T21:11:10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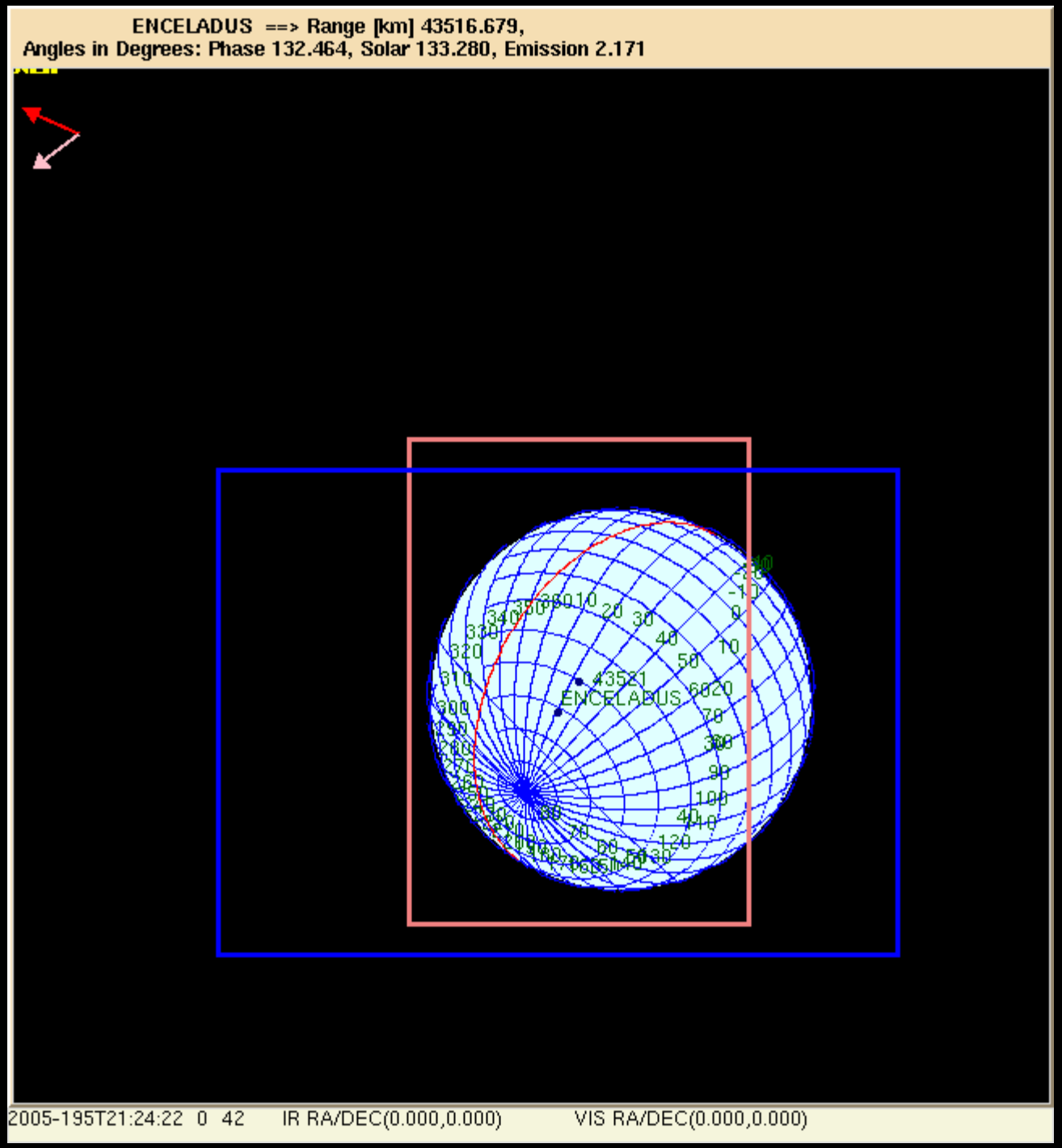
ISS
prime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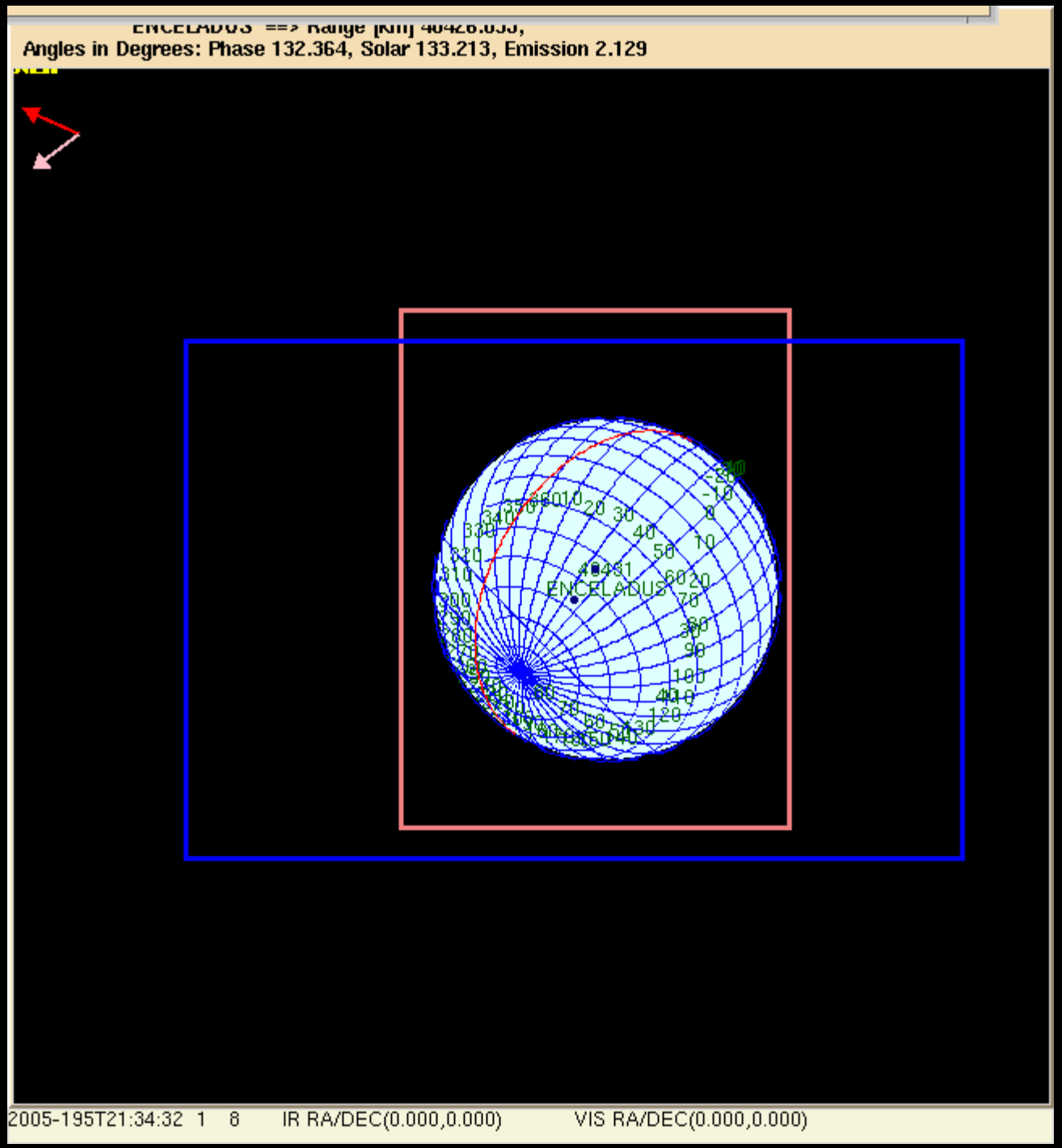
UVIS
prime


Angles in Degrees: Phase 132.364, Solar 133.213, Emission 2.129
ENCELADUS
2005-195T21:34:32 1 8 IR RA/DEC(0.000,0.000) VIS RA/DEC(0.000,0.000)

Cassini

VIMS

S12 Enceladus

Roger N. Clark
VIMS Team
July 7, 2005

11EN-E2 RPWS Preview

W. Kurth

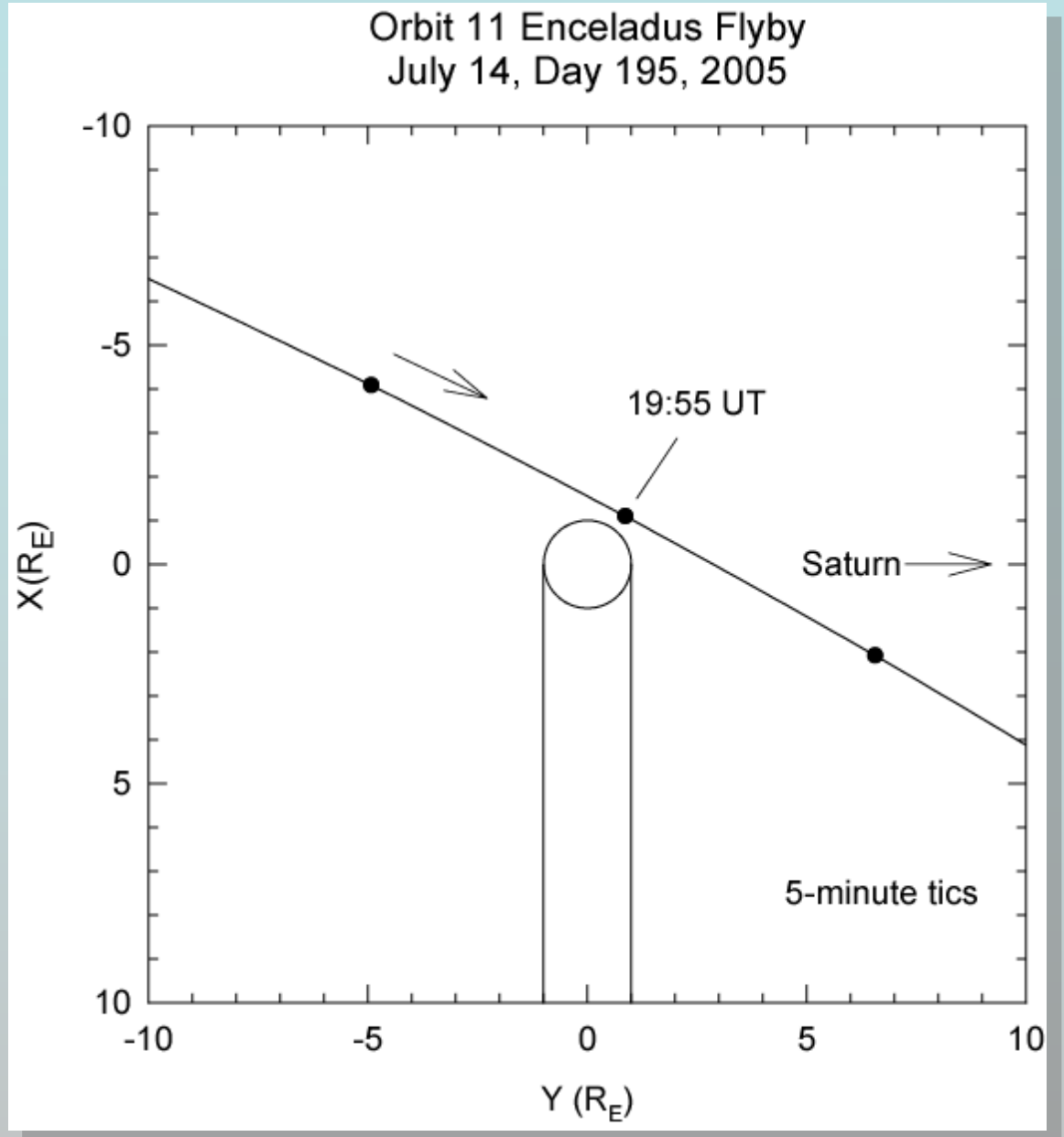
8 July 2005

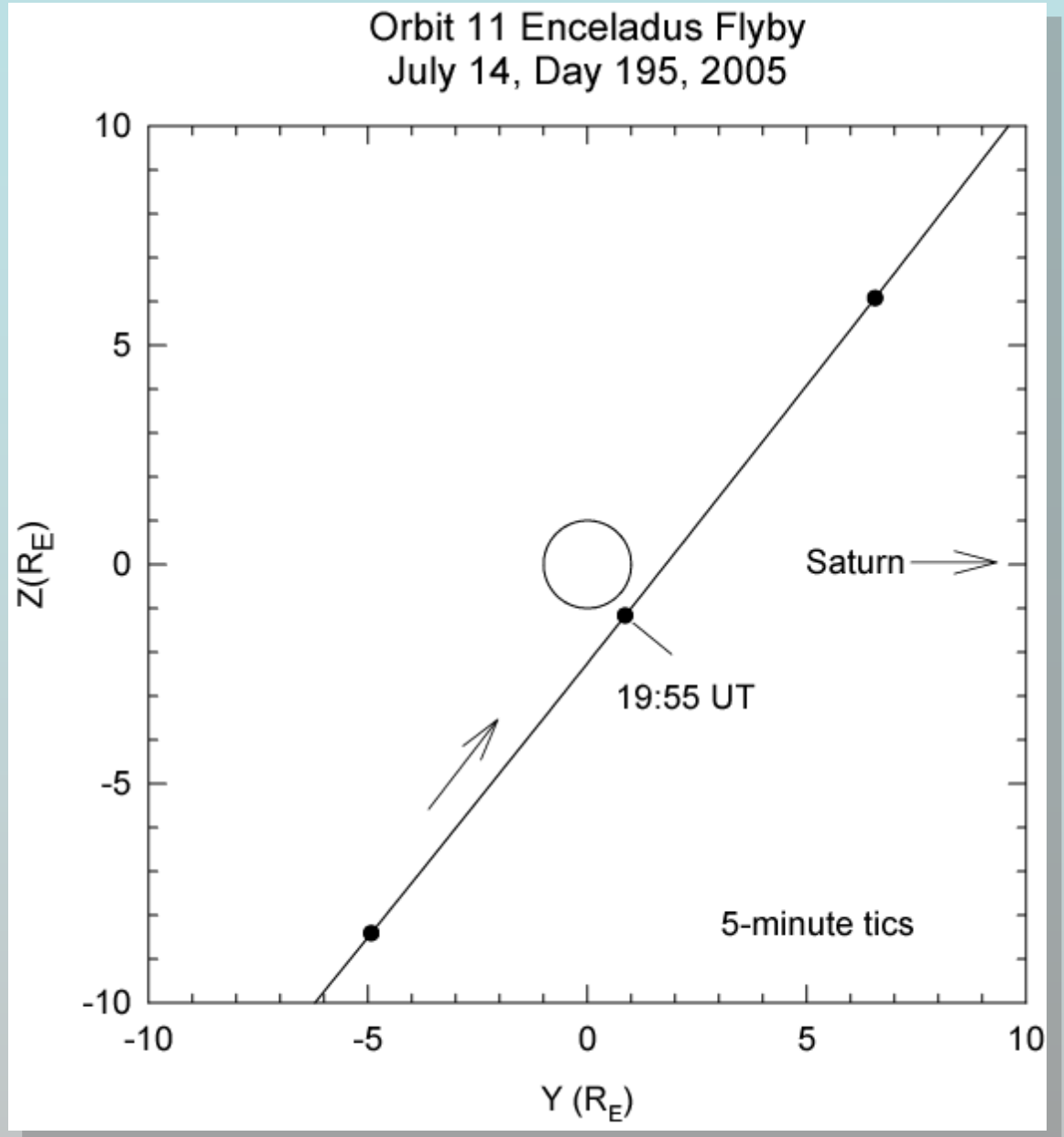
RPWS Icy Satellite Objectives

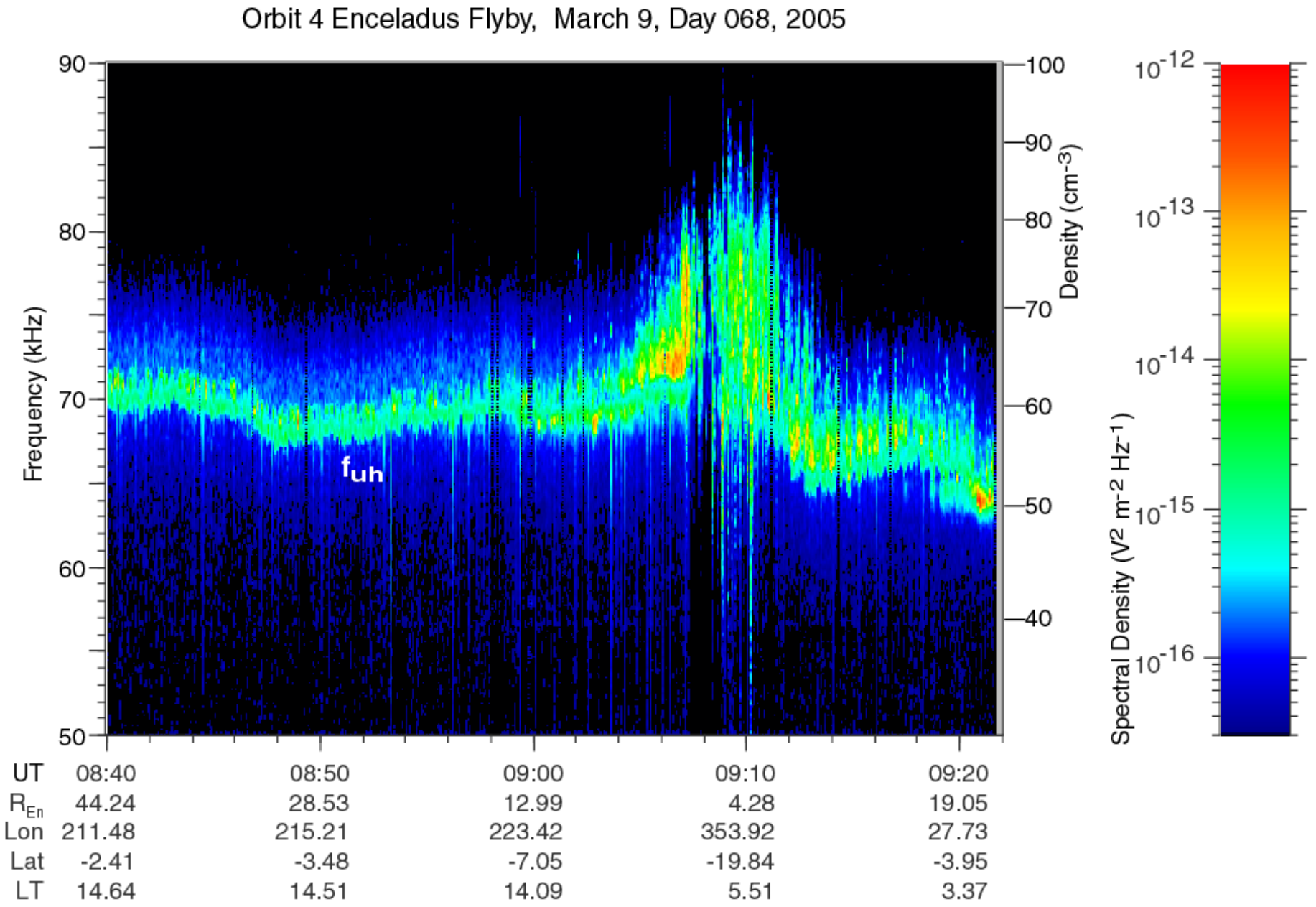
- Establish the spectrum and types of plasma waves associated with gaseous emissions from … the icy satellites.
- Determine the electron density in the magnetosphere of Saturn, near the icy moons…
- Determine the spatial distribution of micron-sized dust particles through out the Saturnian system.
- Measure the mass distribution of the impacting particles from pulse height analyses of the impact waveforms.

Orbit 11 Enceladus Opportunities for RPWS

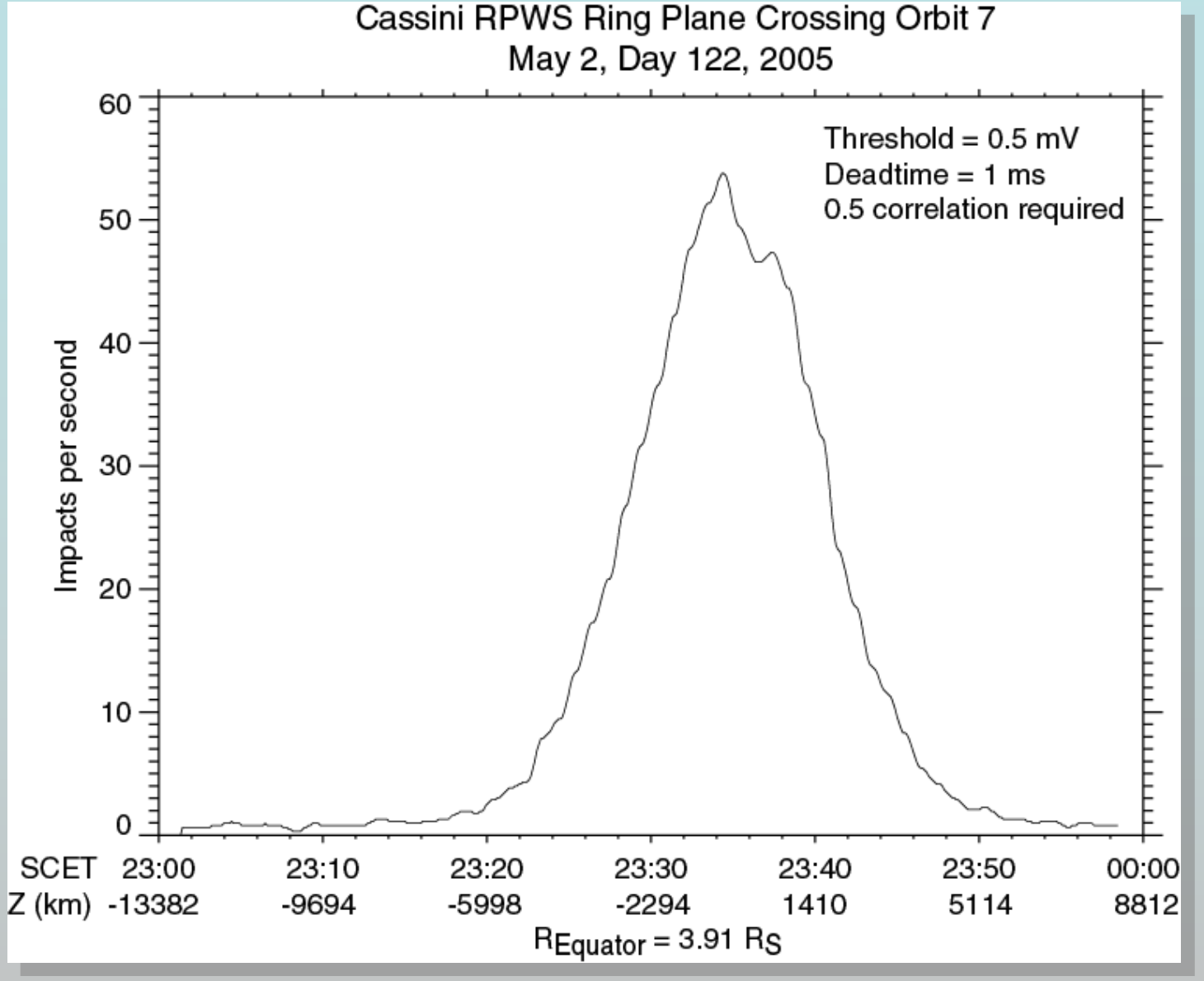
- Close flyby will allow RPWS to measure the local plasma density; Orbit 4 observations suggested a local source near Enceladus, hence, we expect to see a much stronger effect during the Orbit 11 flyby.
- RPWS should be sensitive to any dust in the vicinity of Enceladus and will complement CDA/HRD observations.

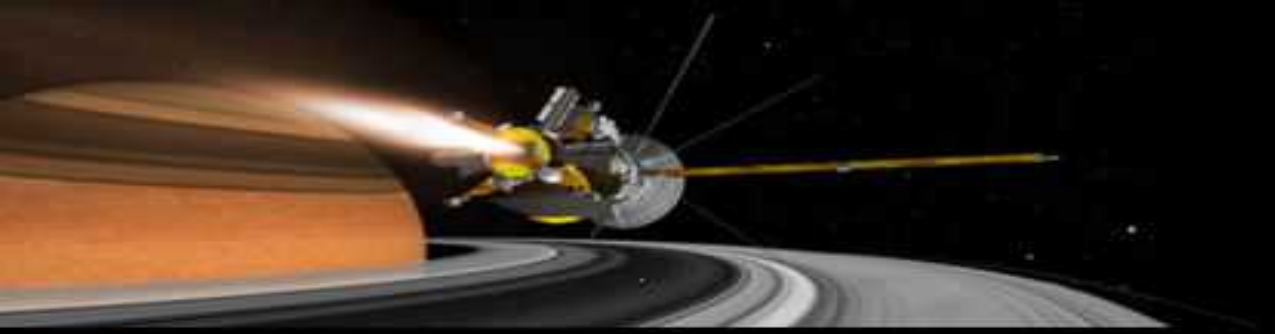

Orbit 11 Enceladus Flyby
July 14, Day 195, 2005
-10
-5
0
5
10
X(R_E)
19:55 UT
Saturn
5-minute tics
-10
-5
0
5
10
Y (R_E)


Orbit 11 Enceladus Flyby
July 14, Day 195, 2005
10
5
0
-5
-10
Z(R_E)
-10
-5
0
5
10
Y (R_E)
Saturn
19:55 UT
5-minute tics


Orbit 4 Enceladus Flyby, March 9, Day 068, 2005
Frequency (kHz)
90
80
70
60
50
f_{uh}
Density (cm^{-3})
100
90
80
70
60
50
40
Spectral Density (V^2 m^{-2} Hz^{-1})
10^{-12}
10^{-13}
10^{-14}
10^{-15}
10^{-16}
UT 08:40 08:50 09:00 09:10 09:20
R_{En} 44.24 28.53 12.99 4.28 19.05
Lon 211.48 215.21 223.42 353.92 27.73
Lat -2.41 -3.48 -7.05 -19.84 -3.95
LT 14.64 14.51 14.09 5.51 3.37

E-ring crossing near the orbit of Enceladus (R = 3.91 R_S)





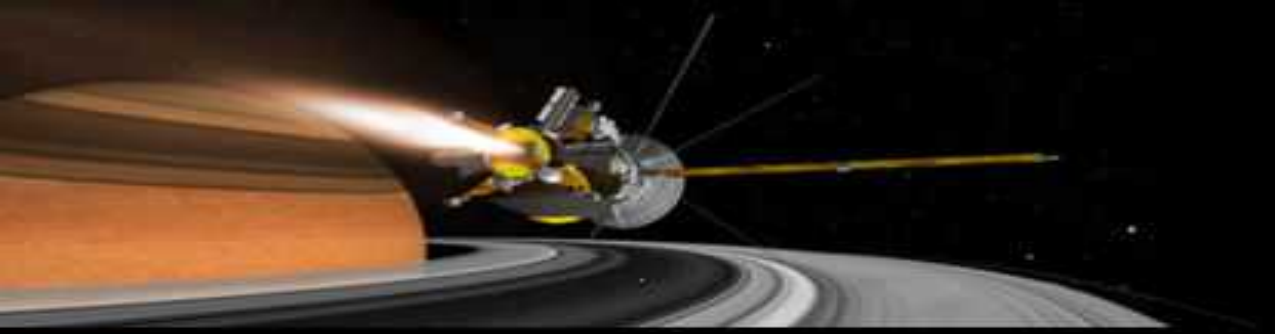
cosmic dust analyser

Max-Planck-Institut für Kernphysik

CDA @ Enceladus 11: Science overview

Sascha Kempf

MPI für Kernphysik, Heidelberg, Germany



cosmic dust analyser

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CDA @ Enceladus 11: Science overview

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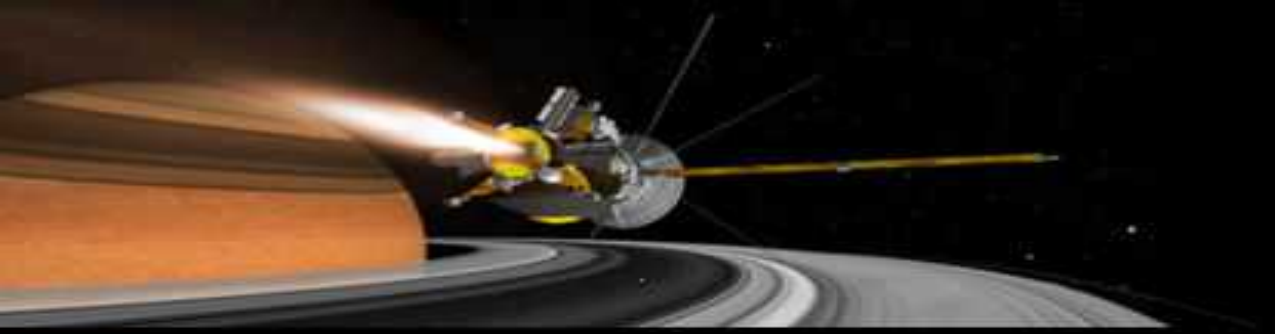
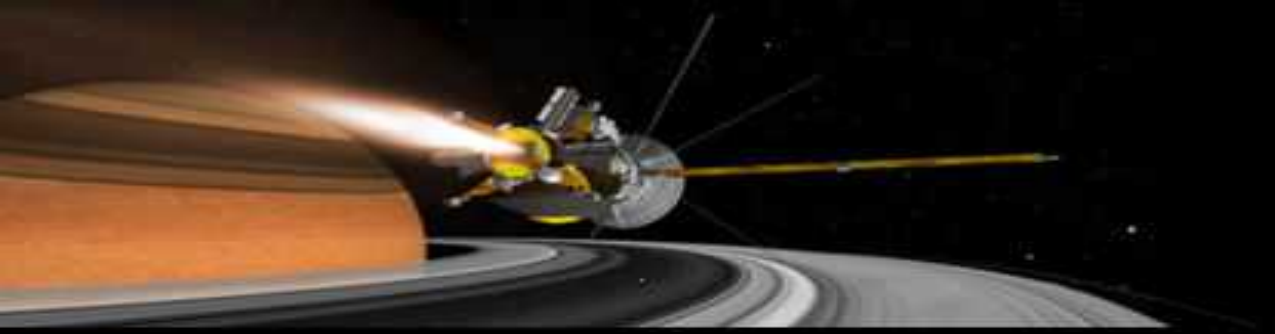


Scientific Background

- Enceladus is thought to be the main source of the E ring
  - ring particles produced by impact ejection:
    - micrometeoroids striking moon surface produce ejecta dust particles
    - some ejecta particles escape from moon's gravity and replenish the ring (Horanyi et al., 1992)
    - mass distribution of fresh dust differs significantly from ring particle mass distribution

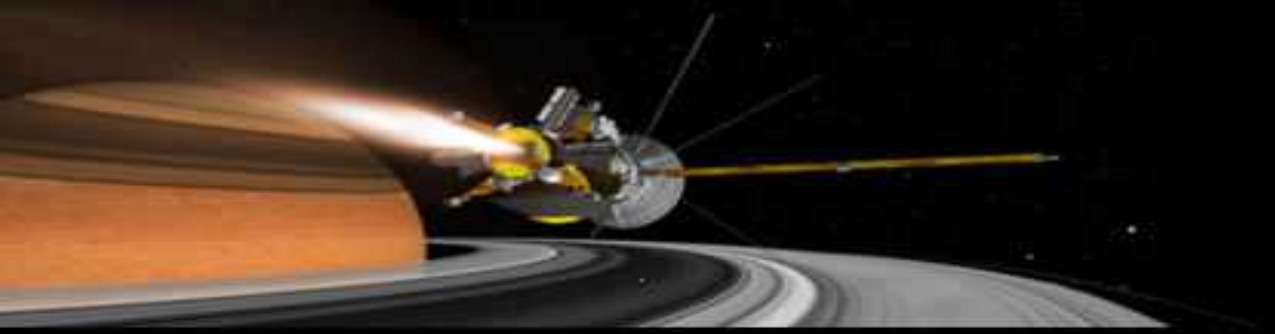


cosmic dust analyser

Max-Planck-Institut für Kernphysik

Objectives

- determine dust production rate of Enceladus
- determine mass distribution of fresh dust
- constrain source of primary meteoroid flux:
  - E ring itself
  - interplanetary particles
  - other
- elemental characterisation of Enceladus' surface

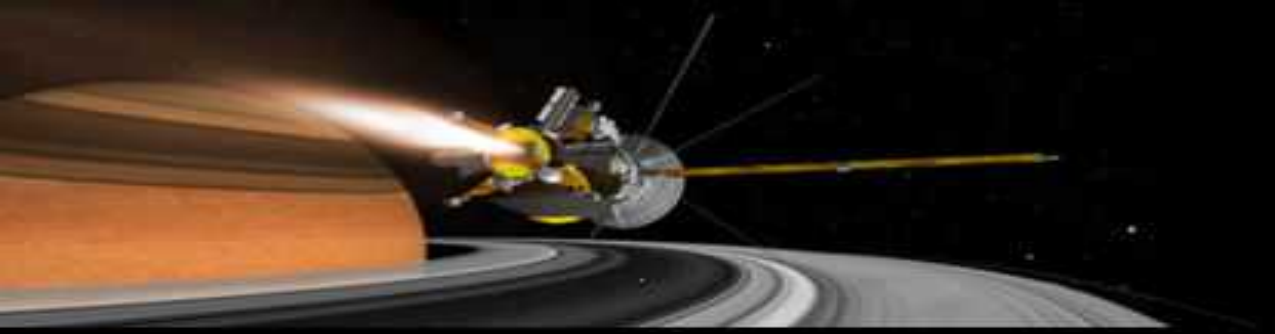


cosmic dust analyser

Max-Planck-Institut für Kernphysik

Main idea

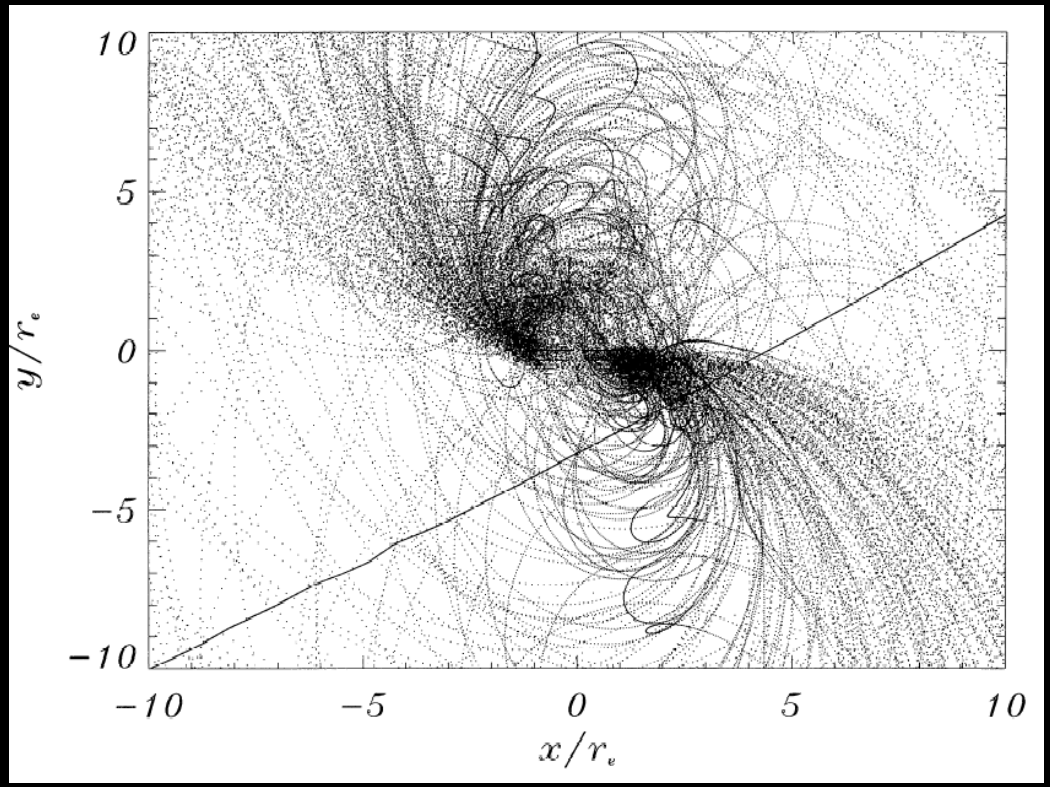
- most of the freshly produced dust remains gravitationally bound, i.e. is captured inside Enceladus' Hill sphere
- dust flux inside Hill sphere will be enhanced
- mass distribution measured inside Hill sphere is initial mass distribution of the ring

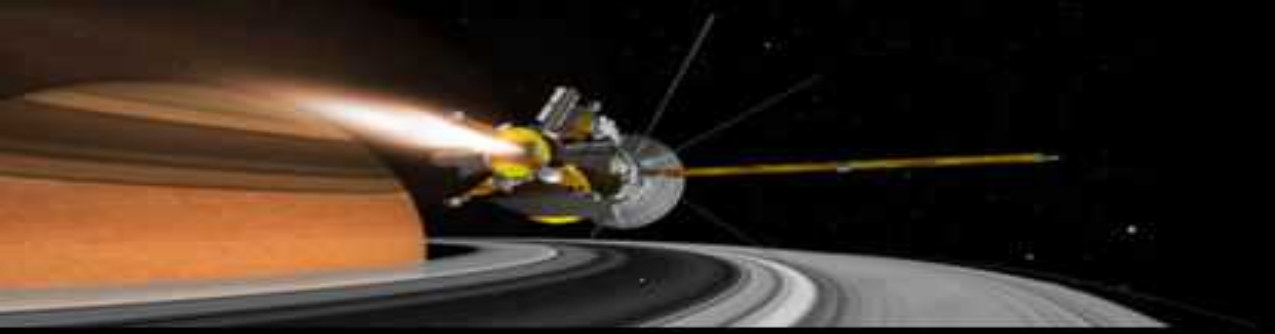


Spatial distribution of fresh dust

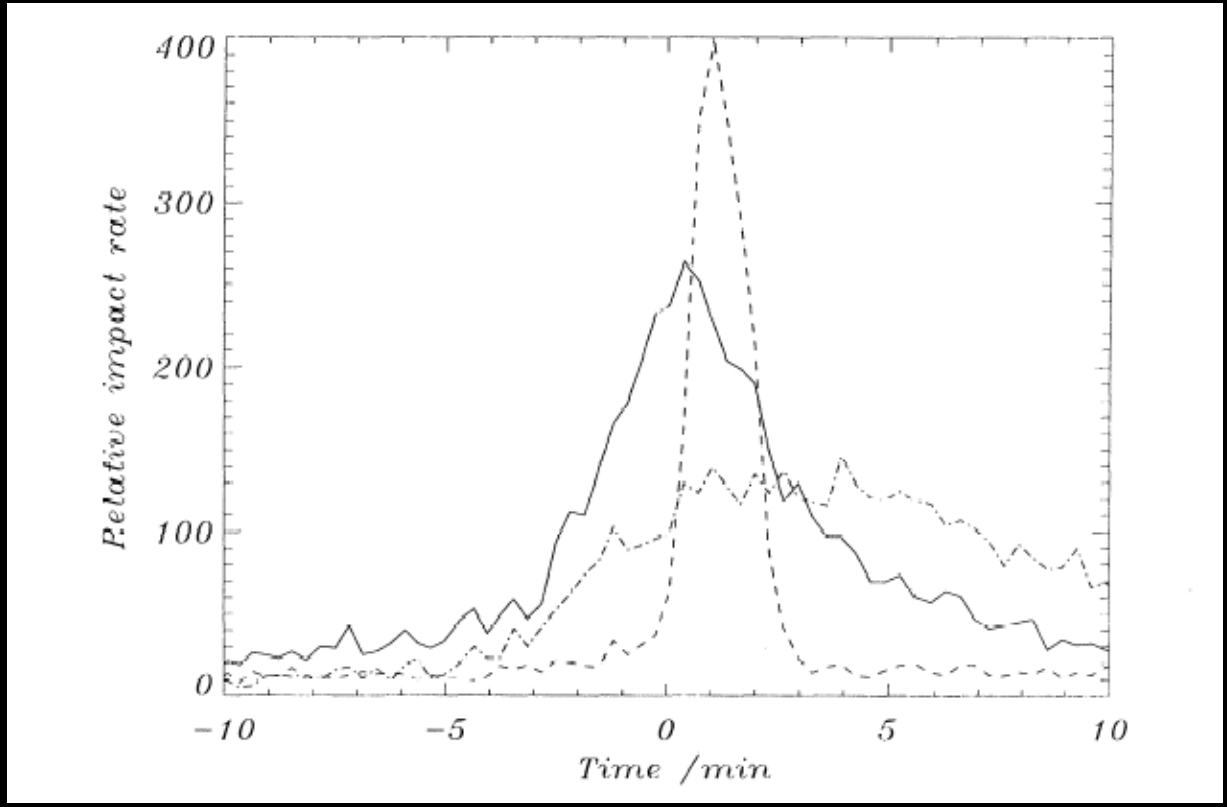
Spahn et al., JGR, 1999

- particles are released preferably into Saturn/ anti-Saturn direction
- peak rate after Enceladus c/a



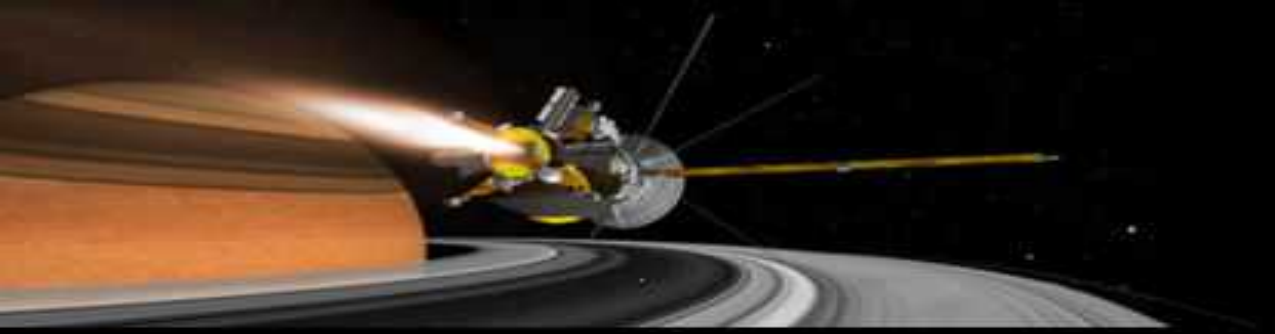


Determination of impactor source



Spahn et al., JGR, 1999

- rate as function of time constrains impactor source:
  - solid: isotropic
  - broken: E ring
  - dashed-dot: interplanetary



Observation strategy

- CDA High Rate Detector (HRD) is sensitive to particles bigger than typical E ring grains (>2μm):
  - E ring background does not contribute to HRD impact rate
  - allows reliable determination of production rate and mass distribution of big ejecta particles
- CDA Dust Analyser (DA) is sensitive to much smaller grains (>0.1 μm) but will be in saturation:
  - impossible to determine production rate of smaller grains
  - determination of mass distribution and composition of medium-sized ejecta grains