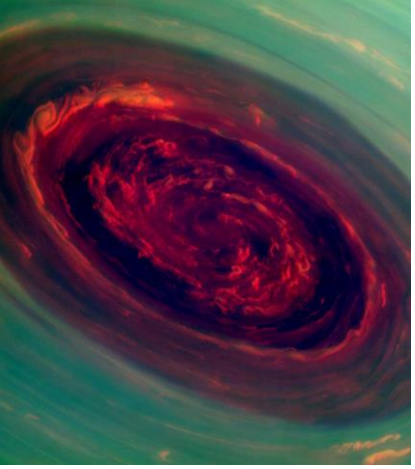
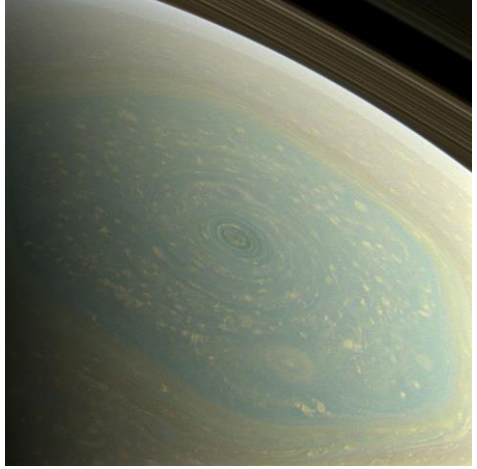
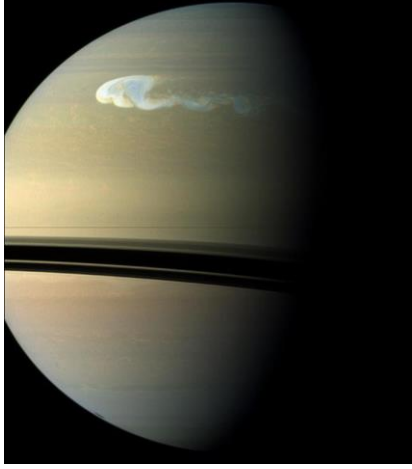


Science Planning & Sequence Team
CASSINI

SATURN TARGET WORKING TEAM

Rev 269_270 Segment Legacy Package

Segment Boundary: April 14, 2017 – April 18, 2017
2017-104T14:55:00> – 2017-108T21:12:00 (SCET)

Integration Began 06/06/2016
Segment Delivered to S99 Sequence 10/26/2017
Lead Integrator was Keven Uchida

Legacy Package Assembled by Keven Uchida

Table of Contents

*** N.A. = Slide present but content not available.**

Segment Overview and Final Products

Segment Summary

- This is a 4-day long F-Ring segment, with apoapse (R_s = 21.4 Saturn radii) situated at the approximate mid-point of the segment.
- The view of Saturn starts from slightly south of the ring plane (sub-S/C lat of –4 deg), then moves to increasingly higher northern latitudes, reaching a sub-S/C latitude of +34 degrees by the end of the segment. Saturn is observed at relatively high phase angles (111 to 154 degrees) throughout the segment.
- ISS performed limb observations, VIMS and CIRS mapping, and UVIS auroral observations near the end of the segment, when the view was the best of Saturn's northern-most latitudes.
- Data volume was oversubscribed by 823 Mbit after initial activity placement. Data volume cuts to activities were made by ORS and MAG, without notable issue/contention, to keep segment to its allocation.
- There were no ORS boresight constraints/issues in this segment.
- The last downlink was reserved as a prime OTM opportunity.

Final Sequenced SPASS

Gap 1

Gap 2

Gap 3

Request	Riders	Start (SCET)	Start (Epoch)	Duration	End	Primary	Secondary	Comments
SATURN_269_270 Segment		2017-104T14:55:00		004T06:17:00	2017-108T21:12:00			
SP_269EA_S99IVP098_PRIME		2017-104T14:55:00		000T00:06:00	2017-104T15:01:00	XBAND to Earth	NEG_X to 251.0/67.0	S99 IVP Gap
ENGR_269SC_KPTYBIAS104_PRIME		2017-104T15:01:00		000T01:30:00	2017-104T16:31:00	POS_Z to DELTA_H (0.0,0.0,23.0 deg. offset)	NEG_X to Sun	
SP_269SA_WAYPTTURN104_PRIME		2017-104T16:31:00		000T00:40:00	2017-104T17:11:00	ISS_NAC to Saturn	POS_Z to 187.3/31.9	
NEW WAYPOINT		2017-104T17:11:00		000T17:52:00	2017-105T11:03:00	ISS_NAC to Saturn	POS_Z to 187.3/31.9	
ISS_269SA_LIMBINT001_PRIME	U, V	2017-104T17:11:00		000T03:00:00	2017-104T20:11:00	ISS_NAC to Saturn	POS_Z to 187.3/31.9	
VIMS_269SA_GLOBAL001_PRIME	C	2017-104T20:11:00		000T11:12:00	2017-105T07:23:00	ISS_NAC to Saturn	NEG_X to NSP	
ISS_269SA_LIMBINT002_PRIME	U, V	2017-105T07:23:00		000T03:00:00	2017-105T10:23:00	ISS_NAC to Saturn	POS_Z to 187.3/31.9	
SP_269EA_DLTURN105_PRIME		2017-105T10:23:00		000T00:40:00	2017-105T11:03:00	XBAND to Earth	NEG_X to 300.0/64.0	CDA. NEG_X to 300/64
NEW WAYPOINT		2017-105T11:03:00		000T11:10:00	2017-105T22:13:00	XBAND to Earth	NEG_X to 300.0/64.0	
SP_269EA_YGAP105_PRIME		2017-105T11:03:00		000T01:30:00	2017-105T12:33:00	ISS_NAC to Saturn	NEG_X to 300.0/64.0	
SP_269EA_C34BWGNON105_PRIME	C, R	2017-105T12:33:00		000T09:00:00	2017-105T21:33:00	XBAND to Earth	Rolling	CDA. NEG_X to 300/64.
SP_269SA_WAYPTTURN105_PRIME		2017-105T21:33:00		000T00:40:00	2017-105T22:13:00	ISS_NAC to Saturn	POS_Z to NSP	
NEW WAYPOINT		2017-105T22:13:00		000T12:50:00	2017-106T11:03:00	ISS_NAC to Saturn	POS_Z to NSP	
CIRS_269SA_MIRMAP001_PRIME		2017-105T22:13:00		000T12:10:00	2017-106T10:23:00	CIRS_FP3 to Saturn	POS_Z to NSP	
Apoapse Per = 7.2 d, inc =...		2017-106T04:02:51		000T00:00:01	2017-106T04:02:52			
SP_270EA_DLTURN106_PRIME		2017-106T10:23:00		000T00:40:00	2017-106T11:03:00	XBAND to Earth (0.0,0.0,-14.5 deg. offset)	NEG_Y to Saturn	
NEW WAYPOINT		2017-106T11:03:00		000T11:10:00	2017-106T22:13:00	XBAND to Earth (0.0,0.0,-14.5 deg. offset)	NEG_Y to Saturn	
ENGR_270SC_KPTYBIAS106_PRIME		2017-106T11:03:00		000T01:30:00	2017-106T12:33:00	NEG_Z to DELTA_H (0.0,0.0,-30.0 deg. offset)	NEG_X to Sun	
SP_270EA_C34BWGNON106_PRIME	C	2017-106T12:33:00		000T09:00:00	2017-106T21:33:00	XBAND to Earth (0.0,0.0,-14.5 deg. offset)	NEG_Y to Saturn	MIMI. NEG_Y to Saturn (0,0,-14.5).
SP_270SA_WAYPTTURN106_PRIME		2017-106T21:33:00		000T00:40:00	2017-106T22:13:00	ISS_NAC to Saturn	NEG_X to NSP	
NEW WAYPOINT		2017-106T22:13:00		001T13:59:00	2017-108T12:12:00	ISS_NAC to Saturn	NEG_X to NSP	
ISS_270SA_LIMBINT001_PRIME	U, V	2017-106T22:13:00		000T03:00:00	2017-107T01:13:00	ISS_NAC to Saturn	NEG_X to NSP	
CIRS_270SA_FIRMAP001_PRIME	V	2017-107T01:13:00		000T22:19:00	2017-107T23:32:00	CIRS_FP1 to Saturn	NEG_X to NSP	
UVIS_270SA_AURDSTARE001_PRIME	C, V	2017-107T23:32:00		000T06:00:00	2017-108T05:32:00	UVIS_FUV to Saturn_North_Pole	NEG_X to NSP	Collaborative Rider(s): VIMS
UVIS_270SA_AURDSLEW001_PRIME	C, V	2017-108T05:32:00		000T06:00:00	2017-108T11:32:00	UVIS_FUV to Saturn_North_Pole	NEG_X to NSP	Collaborative Rider(s): VIMS
SP_270EA_DLTURN108_PRIME		2017-108T11:32:00		000T00:40:00	2017-108T12:12:00	XBAND to Earth	NEG_Y to 154.0/-44.2	
NEW WAYPOINT		2017-108T12:12:00		000T09:40:00	2017-108T21:52:00	XBAND to Earth	NEG_Y to 154.0/-44.2	
SP_270EA_C70METOTP108_PRIME	C, N	2017-108T12:12:00		000T09:00:00	2017-108T21:12:00	XBAND to Earth	NEG_Y to 154.0/-44.2	MIMI. NEG_Y to Saturn (0,0,-9.5)

Final Sequenced SMT and Data Volume

DATA VOLUME SUMMARY --- TRANSFER FRAME OVERHEAD INCLUDED (80 BITS PER 8800-BIT FRAME)

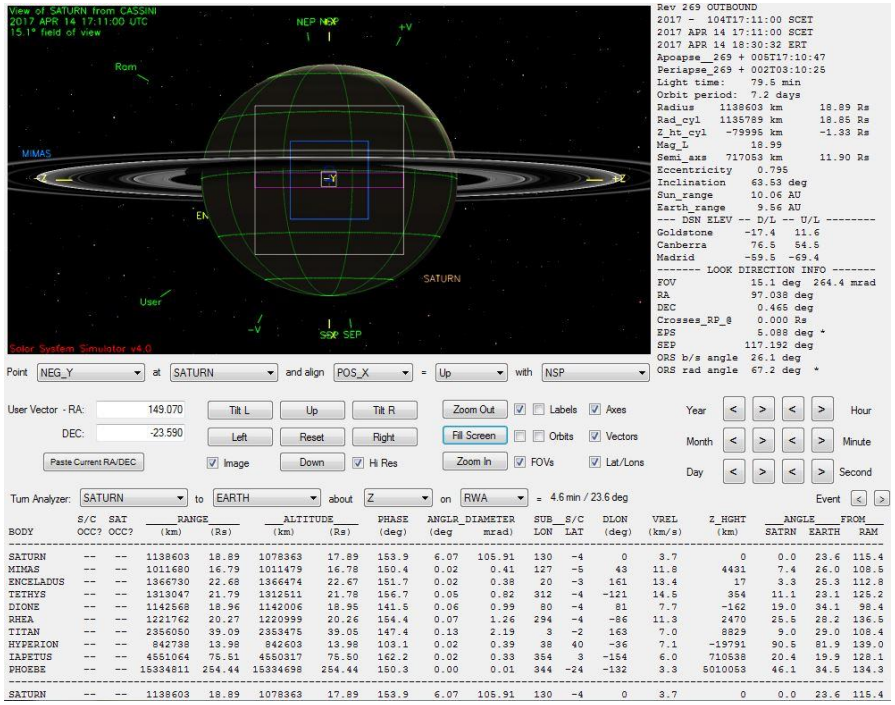
			OBSERVATION_PERIOD							DOWNLINK_PASS						
			P4						P5	RECORDED		PLAYBACK				
DOWNLINK PASS NAME	Start doy hh:mm	End doy hh:mm	START (Mb)	SCI (Mb)	HK+E (Mb)	TOTAL (Mb)	CPACTY (Mb)	MRGN (Mb)	OPNAV (Mb)	SCI (Mb)	ENGR (Mb)	TOTAL (Mb)	CPACTY (Mb)	MARGN (Mb)	NET_MARGN (Mb)	CAROVR (%)	CAROVR (Mb)
SP_269EA_C34BWGNON105_PRIME	105 12:33	105 21:33	0	1491	91	1582	3322	1740	0	192	53	1828	827	-1002	17	0%	1001
SP_270EA_C34BWGNON106_PRIME	106 12:33	106 21:33	1001	343	63	1408	3322	1914	0	192	53	1652	831	-822	17	0%	821
SP_270EA_C70METOTP108_PRIME	108 12:12	108 21:12	821	1967	163	2952	3322	370	0	183	53	3188	3192	4	17	0%	0

DATA VOLUME REPORT --- TRANSFER FRAME OVERHEAD NOT INCLUDED

Event	Start doy hh:mm	End doy hh:mm	CAPS (Mb)	CDA (Mb)	CIRS (Mb)	INMS (Mb)	ISS (Mb)	MAG (Mb)	MIMI (Mb)	RADAR (Mb)	RPWS (Mb)	UVIS (Mb)	VIMS (Mb)	PROBE (Mb)	ENGR (Mb)	TOTAL (Mb)
OBSERVATION_NOR	104 14:55	105 12:33	0.0	40.8	80.6	12.1	400.0	38.5	49.8	0.0	102.0	103.3	650.0	0.0	90.4	1567.6
SP_269EA_C34BWGNON105_PRIME	105 12:33	105 21:33	0.0	17.0	86.4	3.2	0.0	16.0	20.7	0.0	42.4	4.9	0.0	0.0	0.0	190.7
DAILY TOTAL SCIENCE	104 14:55	105 21:33	0.0	57.8	167.0	15.3	400.0	54.5	70.6	0.0	144.5	108.2	650.0	0.0	90.4	
OBSERVATION_NOR	105 21:33	106 12:33	0.0	21.1	175.2	5.4	0.0	26.7	41.0	0.0	70.7	0.0	0.0	0.0	62.7	402.8
SP_270EA_C34BWGNON106_PRIME	106 12:33	106 21:33	0.0	9.3	86.4	3.2	0.0	16.0	27.5	0.0	42.4	4.9	0.0	0.0	0.0	189.9
DAILY TOTAL SCIENCE	105 21:33	106 21:33	0.0	30.4	261.6	8.6	0.0	42.7	68.5	0.0	113.2	4.9	0.0	0.0	62.7	
OBSERVATION_NOR	106 21:33	108 12:12	0.0	40.1	407.8	15.8	200.0	42.4	118.3	0.0	182.2	116.8	826.0	0.0	161.5	2110.9
SP_270EA_C70METOTP108_PRIME	108 12:12	108 21:12	0.0	9.3	86.4	3.2	0.0	8.0	27.5	0.0	42.1	4.9	0.0	0.0	0.0	181.6
DAILY TOTAL SCIENCE	106 21:33	108 21:12	0.0	49.4	494.2	19.1	200.0	50.4	145.8	0.0	224.3	121.8	826.0	0.0	161.5	

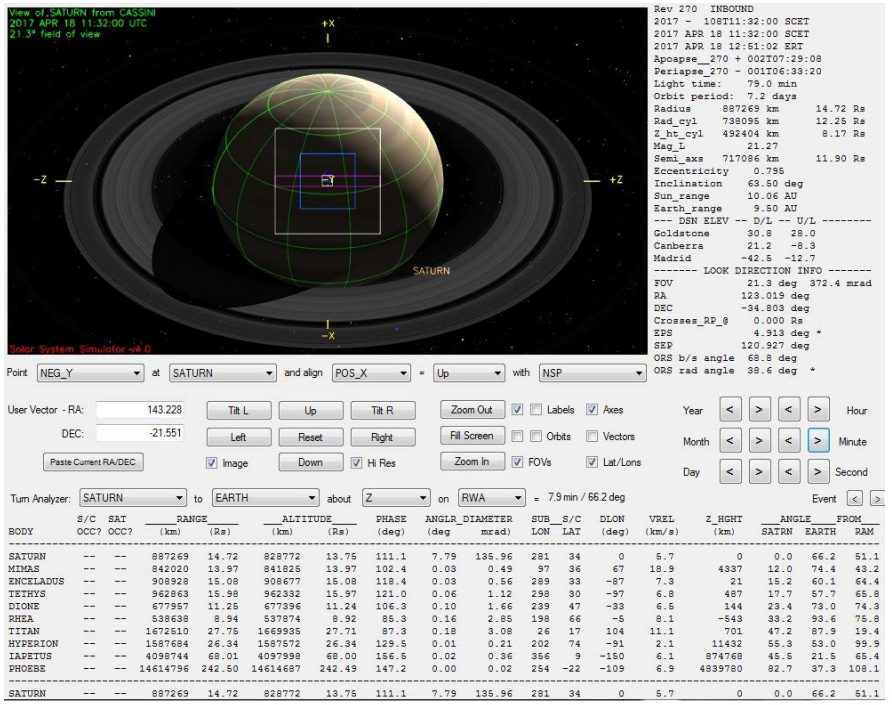
Segment Geometry

Start: 2017-104T17:11:00



BODY	S/C OCC?	SAT OCC?	RANGE (km)	RANGE (Rs)	ALTITUDE (km)	ALTITUDE (Rs)	PHASE (deg)	ANGLR_DIAMETER (deg)	ANGLR_DIAMETER (mrad)	SUB_S/C LON	SUB_S/C LAT	DLON (deg)	VREL (km/s)	Z_HGHT (km)	ANGLE FROM SATURN	ANGLE FROM EARTH	ANGLE FROM RAM
SATURN	--	--	1138603	18.89	1078363	17.89	153.9	6.07	105.91	130	-4	0	3.7	0	0.0	23.6	115.4
MIMAS	--	--	1011680	16.79	1011479	16.78	150.4	0.02	0.41	127	-5	43	11.8	4431	7.4	26.0	108.5
ENCELADUS	--	--	1366730	22.68	1366474	22.67	151.7	0.02	0.38	20	-3	161	13.4	17	3.3	25.3	112.8
TETHYS	--	--	1313047	21.79	1312511	21.78	156.7	0.05	0.82	312	-4	-121	14.5	354	11.1	23.1	125.2
DIONE	--	--	1142568	18.96	1142006	18.95	141.5	0.06	0.99	80	-4	81	7.7	-162	19.0	34.1	98.4
RHEA	--	--	1221762	20.27	1220999	20.26	154.4	0.07	1.26	294	-4	-86	11.3	2470	25.5	28.2	136.5
TITAN	--	--	2356050	39.09	2353475	39.05	147.4	0.13	2.19	3	-2	163	7.0	8829	9.0	29.0	108.4
HYPERION	--	--	842738	13.98	842603	13.98	103.1	0.02	0.39	38	40	-36	7.1	-19791	90.5	81.9	139.0
IAPETUS	--	--	4551064	75.51	4550317	75.50	162.2	0.02	0.33	354	3	-154	6.0	710538	20.4	19.9	128.1
PHOEBE	--	--	15334811	254.44	15334698	254.44	150.3	0.00	0.01	344	-24	-132	3.3	5010053	46.1	34.5	134.3
SATURN	--	--	1138603	18.89	1078363	17.89	153.9	6.07	105.91	130	-4	0	3.7	0	0.0	23.6	115.4

End: 2017-108T11:32:00



BODY	S/C OCC?	SAT OCC?	RANGE (km)	RANGE (Rs)	ALTITUDE (km)	ALTITUDE (Rs)	PHASE (deg)	ANGLR_DIAMETER (deg)	ANGLR_DIAMETER (mrad)	SUB_S/C LON	SUB_S/C LAT	DLON (deg)	VREL (km/s)	Z_HGHT (km)	ANGLE FROM SATURN	ANGLE FROM EARTH	ANGLE FROM RAM
SATURN	--	--	887269	14.72	828772	13.75	111.1	7.79	135.96	281	34	0	5.7	0	0.0	66.2	51.1
MIMAS	--	--	842020	13.97	841825	13.97	102.4	0.03	0.49	97	36	67	18.9	4337	12.0	74.4	43.2
ENCELADUS	--	--	908928	15.08	908677	15.08	118.4	0.03	0.56	289	33	-87	7.3	21	15.2	60.1	64.4
TETHYS	--	--	962863	15.98	962332	15.97	121.0	0.06	1.12	298	30	-97	6.8	487	17.7	57.7	65.8
DIONE	--	--	677957	11.25	677396	11.24	106.3	0.10	1.66	239	47	-33	6.5	144	23.4	73.0	74.3
RHEA	--	--	538638	8.94	537874	8.92	85.3	0.16	2.85	198	66	-5	8.1	-543	33.2	93.6	75.8
TITAN	--	--	1672510	27.75	1669935	27.71	87.3	0.18	3.08	26	17	104	11.1	701	47.2	87.9	19.4
HYPERION	--	--	1587684	26.34	1587572	26.34	129.5	0.01	0.21	202	74	-91	2.1	11432	55.3	53.0	99.9
IAPETUS	--	--	4098744	68.01	4097998	68.00	156.5	0.02	0.36	356	9	-150	6.1	874768	45.5	21.5	65.4
PHOEBE	--	--	14614796	242.50	14614687	242.49	147.2	0.00	0.02	254	-22	-109	6.9	4839780	82.7	37.3	108.1
SATURN	--	--	887269	14.72	828772	13.75	111.1	7.79	135.96	281	34	0	5.7	0	0.0	66.2	51.1

	Saturn Range	Phase Angle	Sub-S/C Lat.
Segment Start	18.89	153.9	-4
Apoapse	21.35	139.0	9
Segment End	14.72	111.1	34

Solar Geometry – ORS Boresight Concerns

No ORS Boresight Solar Constraints on Science Pointing

Daily Science Highlights (1 of 2)

14 Apr 2017 (DOY 104): S99 sequence began on this day with the Saturn_269_270 segment (14-21 Rs). Saturn_269_270 was an apoapse segment in F-ring phase, however, at any earlier time in the Cassini mission the distances involved are in effect periapsis-like, allowing for relatively high resolution imaging of Saturn's disk. The MAPS instruments continued their surveys throughout this segment; CDA looking at dust, INMS measuring the atmospheric and ionospheric thermal structure of Saturn, and MAG and RPWS performing magnetospheric measurements.

The first of the ORS observations was a limb integration (269SA_LIMBINT001) led by ISS (2017-104T17:11:00). It was the first of three such LIMBINTS (each 3 hrs in duration), spaced throughout this segment to observe the bright limb of Saturn over a range of aspects. This LIMBINT observed a very narrow bright limb (at phase angle 154 deg, and from a sub-s/c latitude of -4 degrees). UVIS and VIMS rode along on this and the two other LIMBINTS in this segment, supplementing visible with UV and mid-IR imaging. Later in the day (104T20:11:00) VIMS took the lead (with CIRS riding), over one complete rotation (11h12m) of Saturn, to obtain a global mosaic map (269SA_GLOBAL001). The global map was comprised of eight 2*4 mosaics of the entire globe, oriented with two N/S-oriented columns and four E-W-oriented rows.

15 Apr 2017 (DOY 105): Immediately following the VIMS global map, ISS once again took the lead to perform the second of its three limb integration/stare observations (269SA_LIMBINT002; 105T07:23). The phase angle was now 148 deg, and Saturn displayed a wider bright-limb than in the first LIMBINT.

The accumulated science/engineering data was then downlinked to a Canberra 34m station. During this DL, and the two following DLs in this segment as well, UVIS conducted its interplanetary hydrogen survey (IPHSURVEY) and CIRS its deep space calibration (DSCAL).

Immediately following the downlink (2017-105T22:13) CIRS went solo, performing ~12 hours of mid-infrared mapping (269SA_MIRMAP001) of Saturn's northern hemisphere, to determine upper troposphere and tropopause temperatures (with spatial resolution of about two degrees of latitude and longitude).

Continued on Next Page

Daily Science Highlights (2 of 2)

Continued

16 Apr 2017 (DOY 106): The CIRS MIRMAP continued well into DOY 106 and during apoapse (106T04:02:51, r = 21.332 Rs). It was the sole activity in this observation period.

Following the Canberra downlink was the third of ISS' limb integrations (270SA_LIMBINT001; 106T22:13:00), performed at the lowest phase angle (111 degrees) and from the highest sub-SC latitude (34 degrees) of the LIMBINTs in this segment.

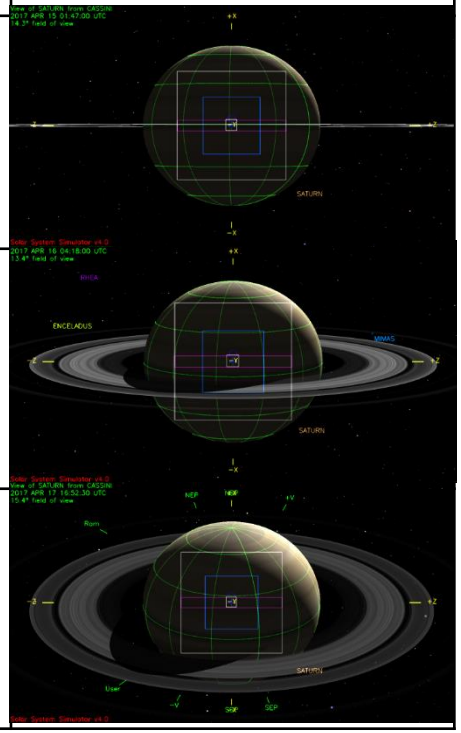
17 Apr 2017 (DOY 107): Early on DOY 107 (107T01:13) CIRS took the lead with Far-IR mapping of Saturn's northern hemisphere, again to measure upper troposphere and tropopause temperatures. It was the longest activity of this segment, with duration of 22h19m – two complete rotations of Saturn. VIMS rode along, taking images about once every hour.

DOY 107 ended with UVIS led daytime auroral observations (107T23:32:00), comprised of two requests of equal duration (6 hrs), first an auroral daytime stare (270SA_AURDSTARE001) and then an auroral daytime slew (270SA_AURDSLEW001). In the DSTARE, UVIS performed fixed pointings, toward the illuminated northern auroral oval, to support VIMS imaging for the entire time. CIRS rode and VIMS rode collaboratively.

18 Apr 2017 (DOY 108): The auroral DSTARE was immediately followed by the auroral daytime SLEW (AURDSLEW001; 108T05:32) where UVIS performed repeated slews for the entire period across illuminated north polar auroral zone. As with the previous auroral observation, CIRS rode and VIMS rode collaboratively.

Segment Integration Planning

Timeline Gaps and Suggested Observations

Gap	Start	End	Duration	Phase angle (range)	Rs range	Sub-S/C Lat.	Snapshot (mid-gap)
1	2017-104T17:11:00 *Suggested Activities:* *ISS Limb Observation: 03h00m* *VIMS Global Map 11h12m* *ISS Limb Observation: 03h00m*	2017-105T10:23:00	000T17:12:00	153.9 – 146.1	18.89 – 20.74	-4 to +3	
2	2017-105T22:13:00 *Suggested Activities:* *CIRS Map: 12h10m*	2017-106T10:23:00	000T12:10:00	141.3 – 136.5	21.29 – 21.28	+7 to +12	
3	2017-106T23:13:00 *Suggested Activities:* *ISS Limb Observation: 02h00m* *CIRS Mapping or Compsit 23h19m* *UVIS Auroral Day stare: 06h00m* *UVIS Auroral Day slew: 06h00m*	2017-108T11:32:00	**001**T13:19:00	131.3 – 111.1	20.63 – 14.72	+16 to +34	

RPX:	105T02:32
Apoapse:	106T04:03

Initial SMT and Data Volume (1/2)

Beginning of Integration:

SMT Report

DATA VOLUME SUMMARY --- TRANSFER FRAME OVERHEAD INCLUDED (80 BITS PER 8800-BIT FRAME)

			OBSERVATION_PERIOD							DOWNLINK_PASS							
			P4						P5	RECORDED		PLAYBACK					
DOWNLINK PASS NAME	Start doy hh:mm	End doy hh:mm	START (Mb)	SCI (Mb)	HK+E (Mb)	TOTAL (Mb)	CPACTY (Mb)	MRGN (Mb)	OPNAV (Mb)	SCI (Mb)	ENGR (Mb)	TOTAL (Mb)	CPACTY (Mb)	MARGN (Mb)	NET_MARGN (Mb)	(%)	CAROVR (Mb)
SP_269EA_C34BWGNON105_PRIME	105 12:33	105 21:33	0	419	91	510	3322	2812	0	196	53	759	827	67	1645	34%	0
SP_270EA_C34BWGNON106_PRIME	106 12:33	106 21:33	0	173	63	237	3322	3086	0	196	53	486	831	345	1577	39%	0
SP_270EA_C70METOTP108_PRIME	108 12:12	108 21:12	0	1221	163	1385	3322	1938	0	523	53	1960	3192	1232	1232	39%	0

SMT Report (Team Summary)

DATA VOLUME REPORT --- TRANSFER FRAME OVERHEAD NOT INCLUDED

Event	Start doy hh:mm	End doy hh:mm	CAPS (Mb)	CDA (Mb)	CIRS (Mb)	INMS (Mb)	ISS (Mb)	MAG (Mb)	MIMI (Mb)	RADAR (Mb)	RPWS (Mb)	UVIS (Mb)	VIMS (Mb)	PROBE (Mb)	ENGR (Mb)	TOTAL (Mb)
OBSERVATION_NOR	104 14:55	105 12:33	0.0	40.8	0.0	0.0	0.0	38.5	35.6	0.0	300.0	0.0	0.0	0.0	90.4	505.3
SP_269EA_C34BWGNON105_PRIME	105 12:33	105 21:33	0.0	17.0	86.4	0.0	0.0	16.0	27.5	0.0	42.4	4.9	0.0	0.0	0.0	194.3
DAILY TOTAL SCIENCE	104 14:55	105 21:33	0.0	57.8	86.4	0.0	0.0	54.5	63.1	0.0	342.5	4.9	0.0	0.0	90.4	
OBSERVATION_NOR	105 21:33	106 12:33	0.0	28.3	0.0	0.0	0.0	26.7	45.9	0.0	70.7	0.0	0.0	0.0	62.7	234.3
SP_270EA_C34BWGNON106_PRIME	106 12:33	106 21:33	0.0	17.0	86.4	0.0	0.0	16.0	27.5	0.0	42.4	4.9	0.0	0.0	0.0	194.3
DAILY TOTAL SCIENCE	105 21:33	106 21:33	0.0	45.3	86.4	0.0	0.0	42.7	73.4	0.0	113.2	4.9	0.0	0.0	62.7	
OBSERVATION_NOR	106 21:33	108 12:12	0.0	72.9	0.0	0.0	0.0	68.7	118.3	0.0	950.2	0.0	0.0	0.0	161.5	1371.7
SP_270EA_C70METOTP108_PRIME	108 12:12	108 21:12	0.0	17.0	86.4	0.0	0.0	16.0	27.5	0.0	366.1	4.9	0.0	0.0	0.0	518.0
DAILY TOTAL SCIENCE	106 21:33	108 21:12	0.0	89.9	86.4	0.0	0.0	84.7	145.8	0.0	1316.3	4.9	0.0	0.0	161.5	

	CAPS (Mb)	CDA (Mb)	CIRS (Mb)	INMS (Mb)	ISS (Mb)	MAG (Mb)	MIMI (Mb)	RADAR (Mb)	RPWS (Mb)	UVIS (Mb)	VIMS (Mb)	PROBE (Mb)
TOTAL RECORDED (OPNAV data not included)	0.0	192.9	259.2	0.0	0.0	181.9	282.4	0.0	1772.0	14.8	0.0	0.0

Initial SMT and Data Volume (2/2)

Beginning of Integration (*Continued*):

SMT Report (MAPS Rates)

AVERAGE DATA RATE REPORT (calculated over observation periods and downlink passes)

Event	Start doy hh:mm	End doy hh:mm	CAPS (bps)	CDA (bps)	INMS (bps)	MAG (bps)	MIMI (bps)	RPWS (bps)	UVIS (bps)
SP_269NA_OBSERV104_NA	104 14:55	105 12:33	0.0	524.0	0.0	494.0	457.1	3852.4	0.0
SP_269EA_C34BWGNON105_PRIME	105 12:33	105 21:33	0.0	524.0	0.0	494.0	850.0	1310.0	152.5
SP_269NA_OBSERV105_NA	105 21:33	106 12:33	0.0	524.0	0.0	494.0	850.0	1310.0	0.0
SP_270EA_C34BWGNON106_PRIME	106 12:33	106 21:33	0.0	524.0	0.0	494.0	850.0	1310.0	152.5
SP_270NA_OBSERV106_NA	106 21:33	108 12:12	0.0	524.0	0.0	494.0	850.0	6829.2	0.0
SP_270EA_C70METOTP108_PRIME	108 12:12	108 21:12	0.0	524.0	0.0	494.0	850.0	11300.1	152.5

Reference

Team	Nominal MAPS Data Rate, bps	Minimum MAPS Data Rate, bps
CAPS	1000	700
CDA	524	262
INMS	100	100
MAG	494	247
MIMI	850	600
RPWS	1310	900
UVIS	152.5 (downlinks)	74 (downlinks)
Total, bps	4431 (dl) 4278 (obs)	2883 (dl) 2809 (obs)
Total, Mb/hour	15.95 (dl) 15.4 (obs)	10.38 (dl) 10.1 (obs)

Waypoint Selection

Good Waypoints

OBS_NAME	START	END	POS_X_2_NSP	POS_X_2_NEP	NEG_X_2_NSP	NEG_X_2_NEP	POS_Z_2_NSP	POS_Z_2_NEP	NEG_Z_2_NSP	NEG_Z_2_NEP	NEG_X_2_SUN
SP_269NA_OBSERV104_NA	2017-104T14:55:00	2017-105T12:33:00	**BAD**	**BAD**	OK	OK	OK	OK	**BAD**	**BAD**	OK
SP_269NA_OBSERV105_NA	2017-105T21:33:00	2017-106T12:33:00	**BAD**	**BAD**	OK	OK	OK	OK	**BAD**	**BAD**	OK
SP_270NA_OBSERV106_NA	2017-106T21:33:00	2017-108T12:12:00	**BAD**	**BAD**	OK	OK	OK	OK	**BAD**	**BAD**	OK

RBOT - Friendly

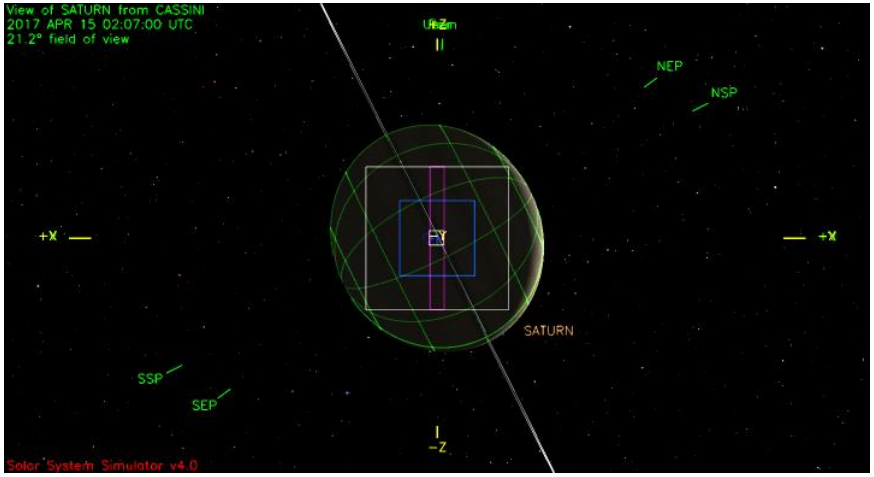
OBSERVATION PERIOD	START	END	POS_X	NEG_X	POS_Z	NEG_Z
SP_269NA_OBSERV104_NA	2017-104T14:55:00	2017-105T12:33:00	187.3/ 31.9	187.3/ 31.9	187.3/ 31.9	------
SP_269NA_OBSERV105_NA	2017-105T21:33:00	2017-106T12:33:00	187.3/ 31.9	187.3/ 31.9	187.3/ 31.9	------
SP_270NA_OBSERV106_NA	2017-106T21:33:00	2017-108T12:12:00	187.3/ 32.0	187.3/ 32.0	187.3/ 32.0	------

Good Downlinks

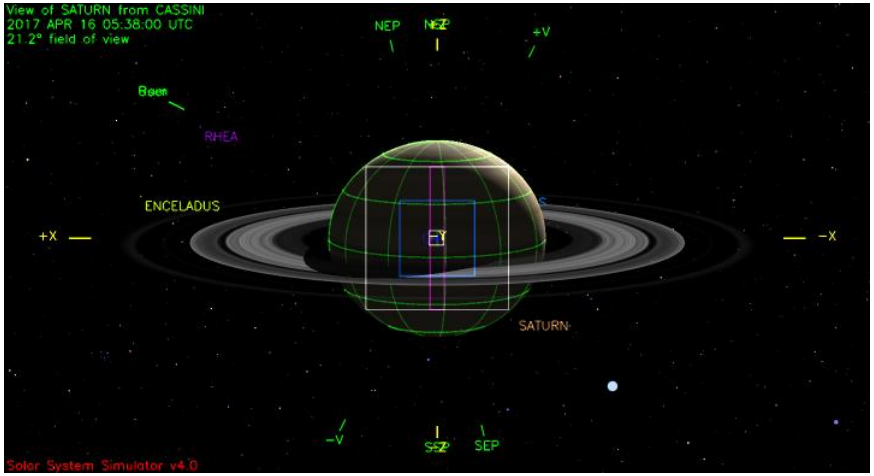
DOWNLINK	START	END	POS_X_2_NSP	POS_X_2_NEP	NEG_X_2_NSP	NEG_X_2_NEP	POS_Y_2_NSP	POS_Y_2_NEP	NEG_Y_2_NSP	NEG_Y_2_NEP	ROLL_FLAG
SP_269EA_C34BWGNON105_PRIME	2017-105T12:33:00	2017-105T21:33:00	OK	OK	OK	OK	**BAD**	**BAD**	OK	OK	OK
SP_270EA_C34BWGNON106_PRIME	2017-106T12:33:00	2017-106T21:33:00	OK	OK	OK	OK	**BAD**	**BAD**	OK	OK	OK
SP_270EA_C70METOTP108_PRIME	2017-108T12:12:00	2017-108T21:12:00	OK	OK	**BAD**	**BAD**	**BAD**	**BAD**	OK	OK	0

Waypoints Chosen (1 of 2)

Waypoint 1 (2017-104T17:11:00 – 105T11:03:00): ISS_NAC to Saturn, POS_Z to 187.3/31.9



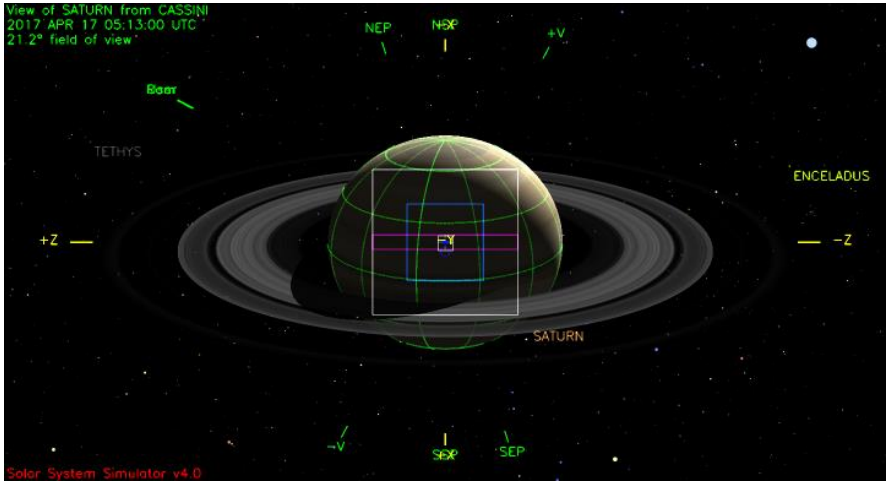
Waypoint 2 (2017-105T23:13:00 – 106:11:03:00): ISS_NAC to Saturn, POS_Z to NSP



Waypoints Chosen (2 of 2)

Continued

Waypoint 3 (2017-106T22:13:00 – 108:12:12:00): ISS_NAC to Saturn, NEG_X to NSP



Notes and Liens

- Pointing:
  - CIRS heating (>1.6) during rolling downlinks
    - SP_269EA_C34BWGNON105_PRIME (Start time: 2017-105T12:33:00); Max 1.6059, Final 1.0262
  - No SID issues and specially identified quiescent periods.
- No DV issues/SMT warnings
- DSN:
  - No ap_downlink warnings
  - **Level 3** request for SP_269EA_C34BWGNON105_PRIME pass.
    - Requested by SCO for AACS to update the safe table default in a narrow time window.
- Resource checker:
  - 2017-108T12:12:00 (SP_270EA_C70METOTP108_PRIME). Manually verify identical inertial pointing, the backup OTM may exist in the next segment/sequence.
    - Confirmed that both OTP and OTB have NEG_Y to 154.0/-44.2)
- No slow or unique opmodes.
  - RSSKRWAF use for RSS OCC ORT (2017-105T12:33:00)
- Hydrazine:
  - N/A
- Special Activities:
  - RSS OCC ORT (2017-105T12:33:00)
- Liens to be worked in SIP
  - None