

Rev 153 SOST Segment

2011-256T07:47:00-258T16:47:00

No targeted flybys

ISS_153EN_PLMMPMR001_PIE – med res and med solar phase angle; good for determining particle sizes of plume particles, “big picture”, variability, and connection to geologic features

ISS_153EN_ENCEL001_PIE (ORS in ridealong; 42,000 km)

ISS_153PL_PALLENE001_PIE

- Best Palene ever (25,000 km)

CIRS_153TE_PACMAN001 (ORS in ridealong; study

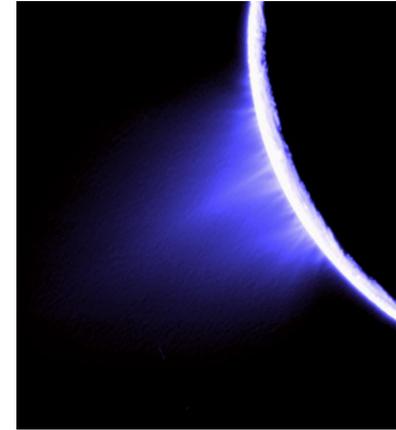
the “pacman”- like structure on Tethys to determine if there is a structure like the one on Mimas which is believed to be related to electron bombardment)

Rev 153 Out of Discipline PIES:

CDA Ring Shadow

UVIS Auroral Footprint on Saturn (modulation by Enceladus)

Also Titan Cloud Monitor Campaign (not a PIE)



Pallene from 36,000 km
on Oct 2010

The Hyperion apoapsis observation: Sept.16, 2011-259T17:28-21:52

ISS_153HY_HYPERION001

UVIS and VIMS in ridealong as well as
INMS

High value observation in XD segment;
companion observation of one on
August 25, 2011 (that one is
better)

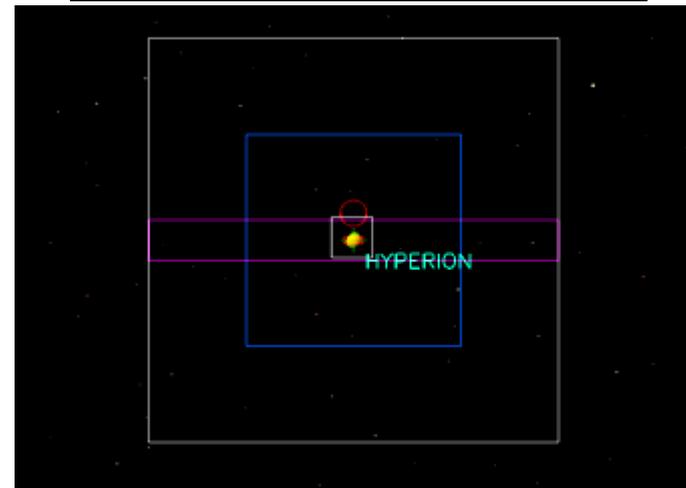


Scientific Goals:

1. To image poorly observed regions for morphological and geophysical studies
2. To understand the dust environment
3. To obtain spectra of additional regions

Geometry:

	Start	Mid	End
Phase (deg)	35	25	20
Size (mrad)	3.6	2.6	2.0
Range (10 ⁶ km)	92	124	160



2011-259T19:40

(not a pointing design – from Digit)

E14: Rev 154

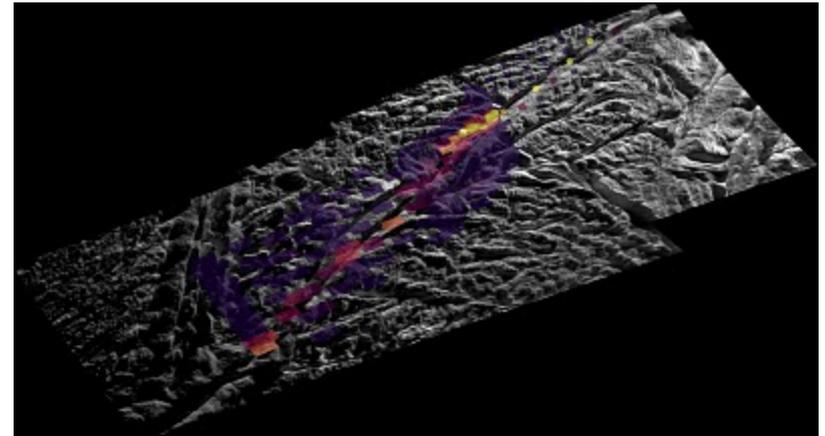
2011-274T13:52:26.19
(1 Oct 2011) 102.7 km

MAPS (INMS) prime to study the composition, density, and variability of plumes; with E17 and E18 provides good coverage of S. polar regions; ORS FOV drag

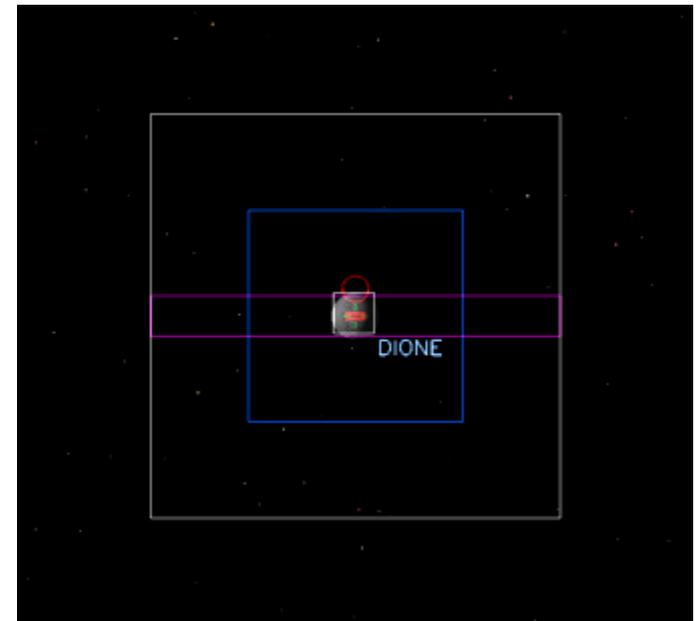
Other highlights: During lit approach, ORS will be observing, and during the dark exit, CIRS will be prime with ORS ridealong.

Dione will be observed before and after the Enceladus flyby (100-200 k km)

During caboose segment, a Lagrangian moon search for Titan and Enceladus.



Baghdad Sulcus – location of ground track



Dione after C/A

E15: Rev 154

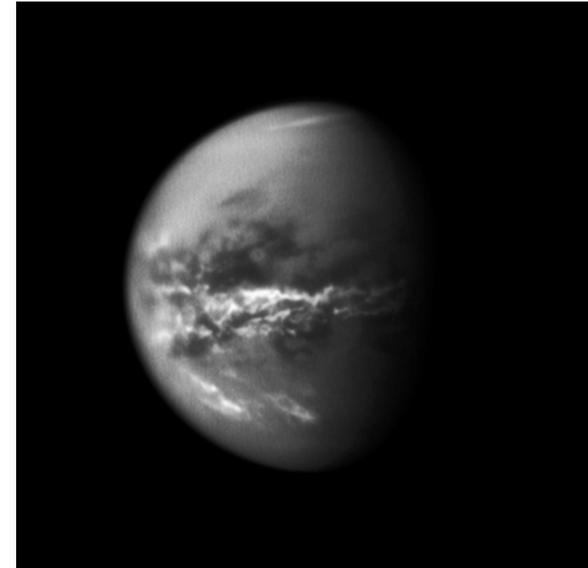
2011-292T09:22:11.57
(19 Oct 2011) 1234.8 km

This flyby starts with a Titan cloud monitoring campaign, a plume observation at high solar phase and high spatial resolution.

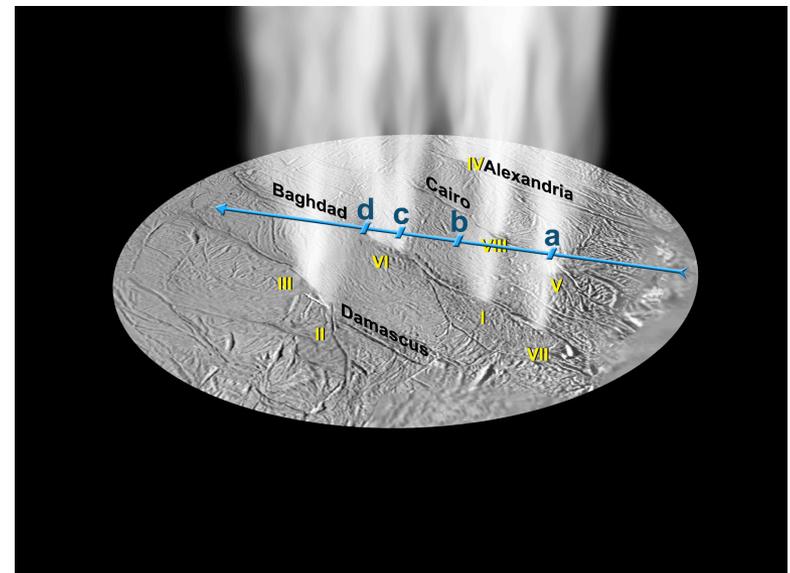
The main goal of this flyby is to obtain a double UVIS occultation by Enceladus of two stars in Orion's Belt, epsilon Ori and zeta Ori, as they pass behind the plume of Enceladus. This observation will yield vertical structure in the plume, measure variability, and pin down collimation of gas in the jets.

During the lit approach, ISS will be observing with ORS ridealong

During the exit, during which Enceladus will be in eclipse, CIRS will be observing to map thermal emissions and their variability.



Clouds and rain on Titan



Schematic drawing of occ

E16: Rev 154

2011-310T04:58:53.21

(6 Nov 2011)

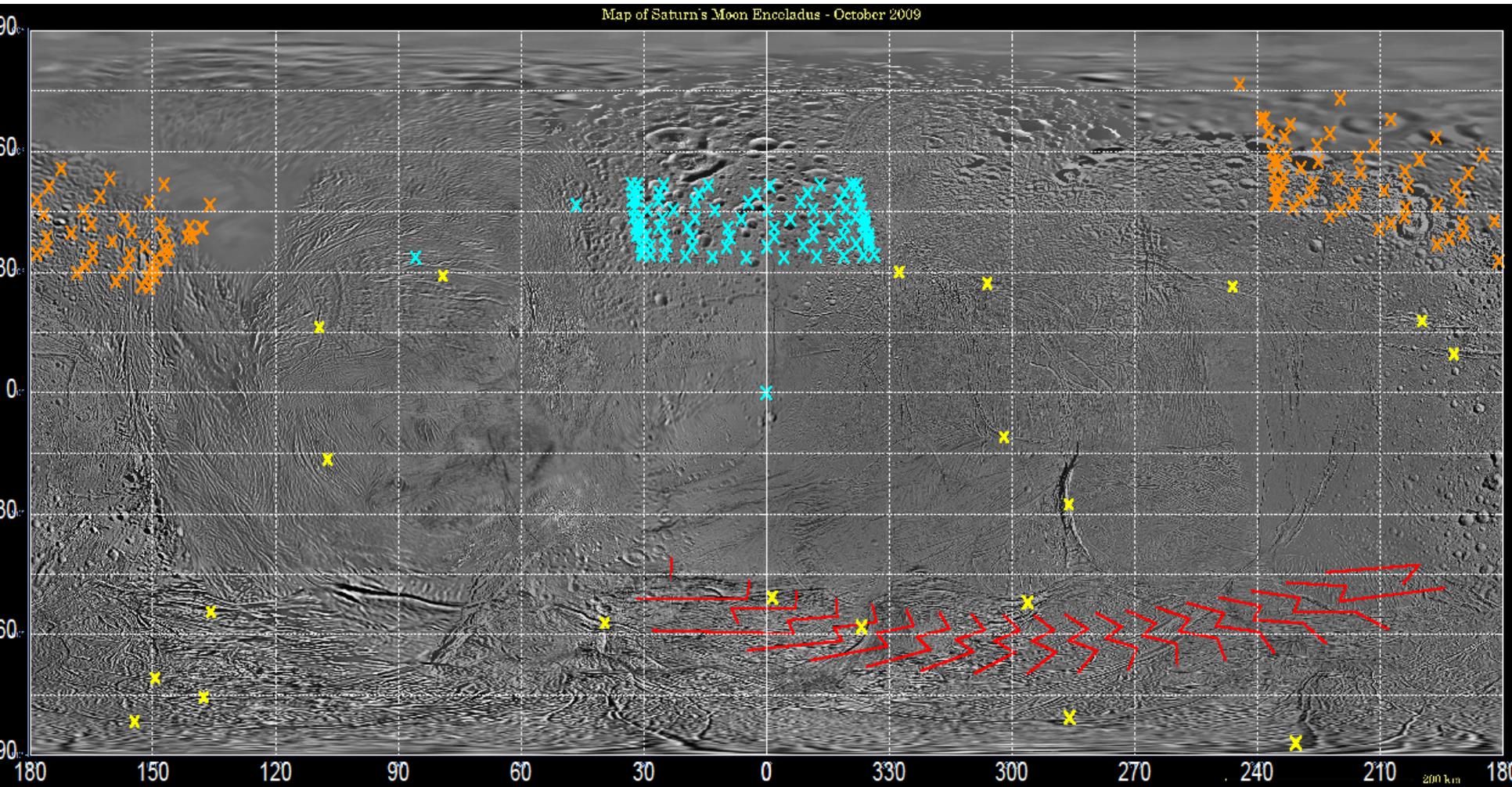
499.5 km (on thrusters)

Unique Radar SAR flyby with two goals: to compare an object with known composition to Titan SAR data, and to provide the first close SAR passage of an icy satellite.

Other highlights: Plume observation on approach and CIRS scan to monitor variability of plumes and heat on Enceladus; ISS observations on exit. UVIS is prime on a Dione stare observation after closest approach (exosphere search). Finally, there will be an ISS Lagrangian satellite search at Enceladus and Rhea

Titan SAR image





**Footprints for 3 SAR observational periods proposed by Radar for E16.
Limits on hydrazine usage precluded doing the orange scans**

Engineering and Traceability Details

Segment	Traceability Code	Designer	Pointing Sensitivities
Rev 153	Pallene: IN2e EN: 1N1a Plumes: IC1a Tethys: IN2b	C. Mitchell (plumes) T. Ansty (ISS EN) A. Verbiscer (CIRS)	Plume designs sensitive to secondary
Hyperion	IN2d	T. Denk	None known
154EN (E14)	EN: 1N1a Plumes: IC1a Dione: IN2c	T. Roatsch (Dione) C. Mitchell (plumes) G. Fletcher (INMS)	Plumes (see above); INMS very sensitive to keep ORS on body
155EN (E15)	EN: 1N1a Plumes: IC1a	C. Mitchell (plumes) A. Jouchoux (CIRS) T. Ansty (ISS EN) A. Verbiscer (CIRS)	Plumes; UVIS occ extremely sensitive
156EN (E16)	EN: 1N1a Plumes: IC1a Dione: IN2c	Y. Anderson (Radar) A. Jouchoux (CIRS)	Plumes; Radar SAR extremely sensitive

Note: Lagrangians no code; emails: av4n@virginia.edu (Verbiscer); tma22@cornell.edu (Ansty); Tilmann.Denk@gmx.de; alain.jouchoux@lasp.colorado.edu; gletcher@swri.edu; Yanhua.z.anderson@jpl.nasa.gov; thomas.roatsch@dlr.de; colin@ciclops.org (Mitchell)