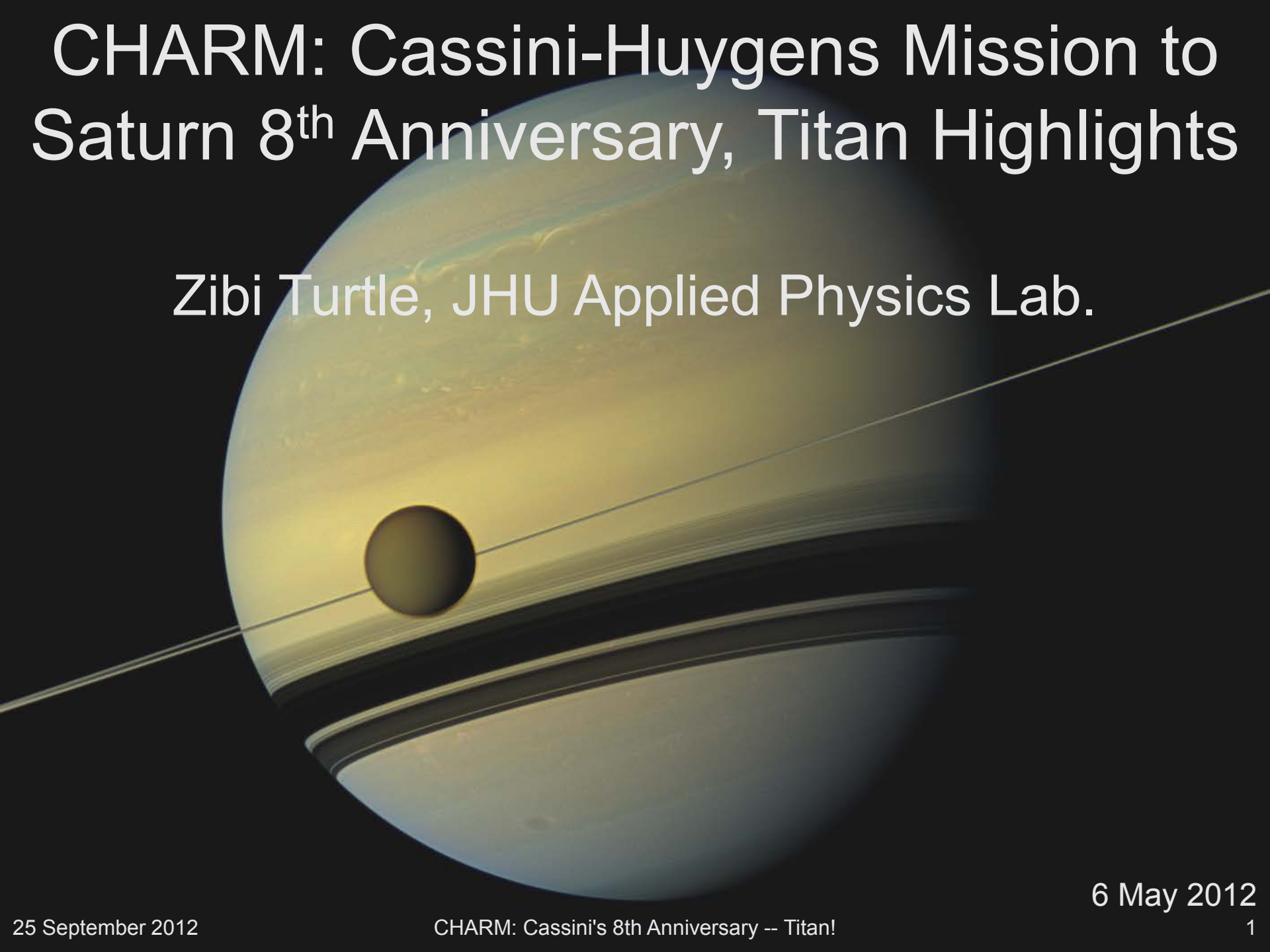
CHARM: Cassini-Huygens Mission to Saturn 8th Anniversary, Titan Highlights

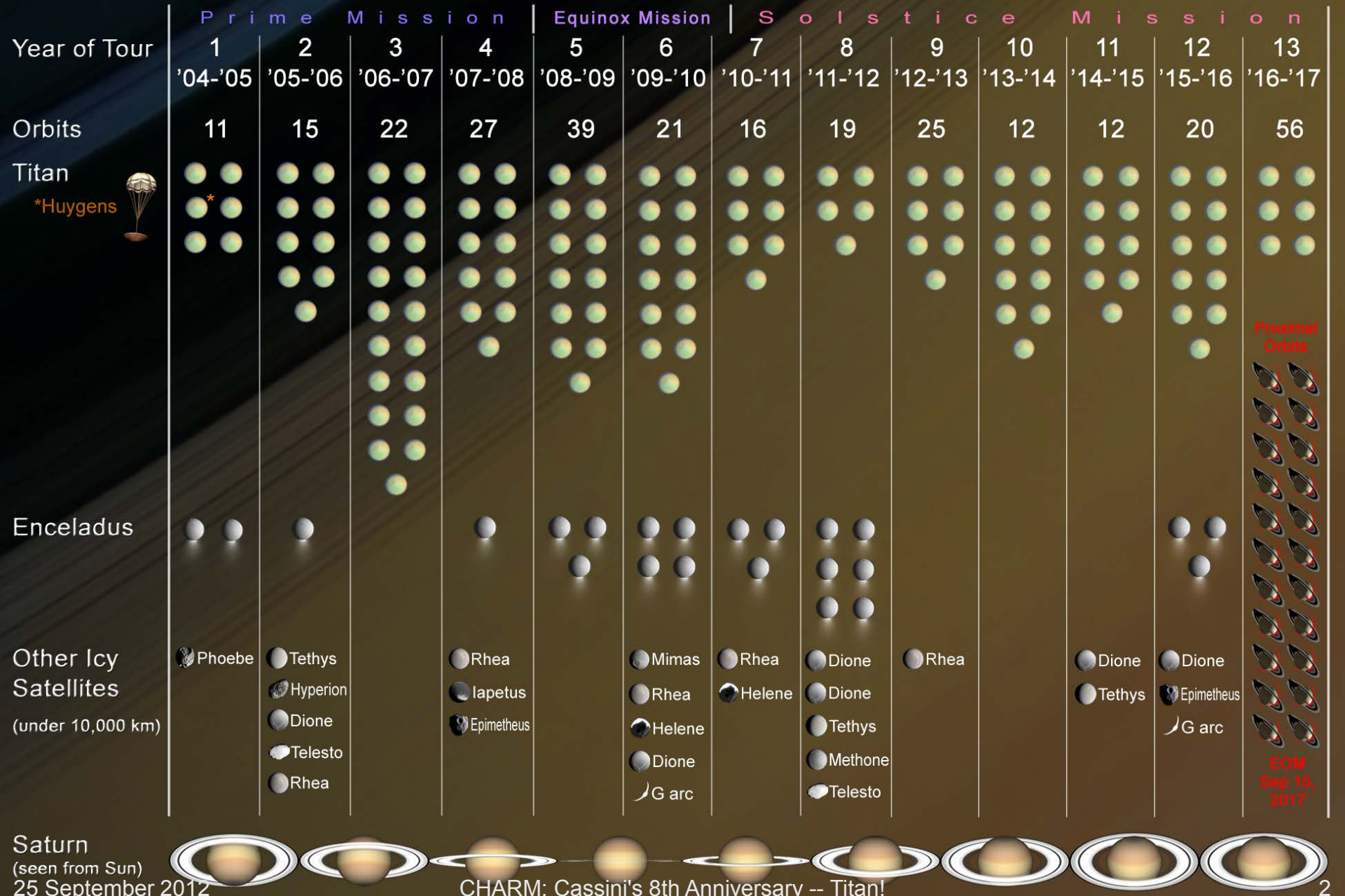


Zibi Turtle, JHU Applied Physics Lab.

6 May 2012

Cassini Mission Overview

Four-Year Prime Tour, Equinox Mission, and Solstice Mission (Proposed), May 2004 - September 2017



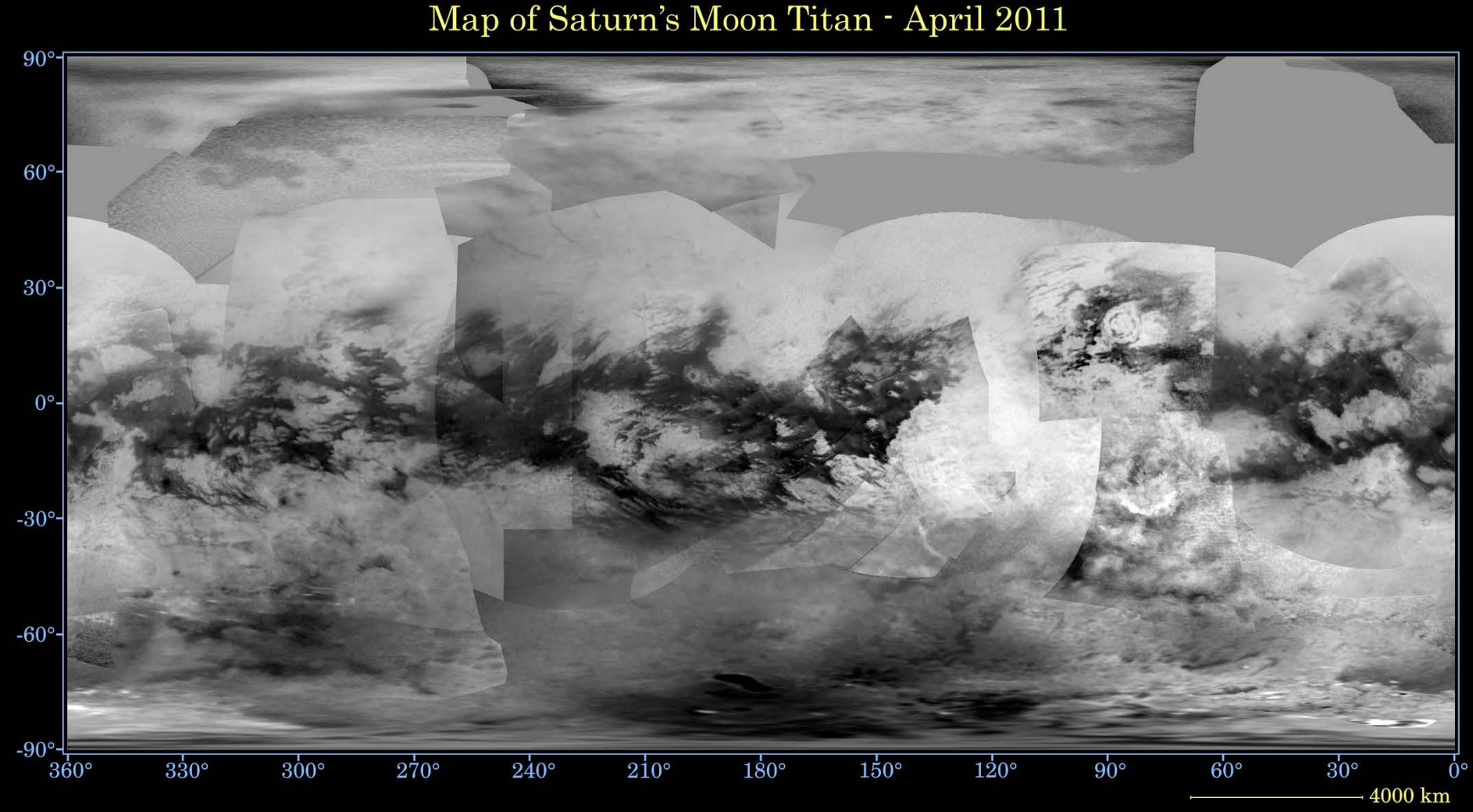
Titan Encounters:

T78, 12 Sept 2011
T79, 13 Dec 2011
T80, 2 Jan 2012
T81, 30 Jan 2012
T82, 19 Feb 2012
T83, 22 May 2012

T84, 6 June 2012
T85, 24 July 2012
T86, 26 Sept 2012

9 August 2011

ISS map of Titan

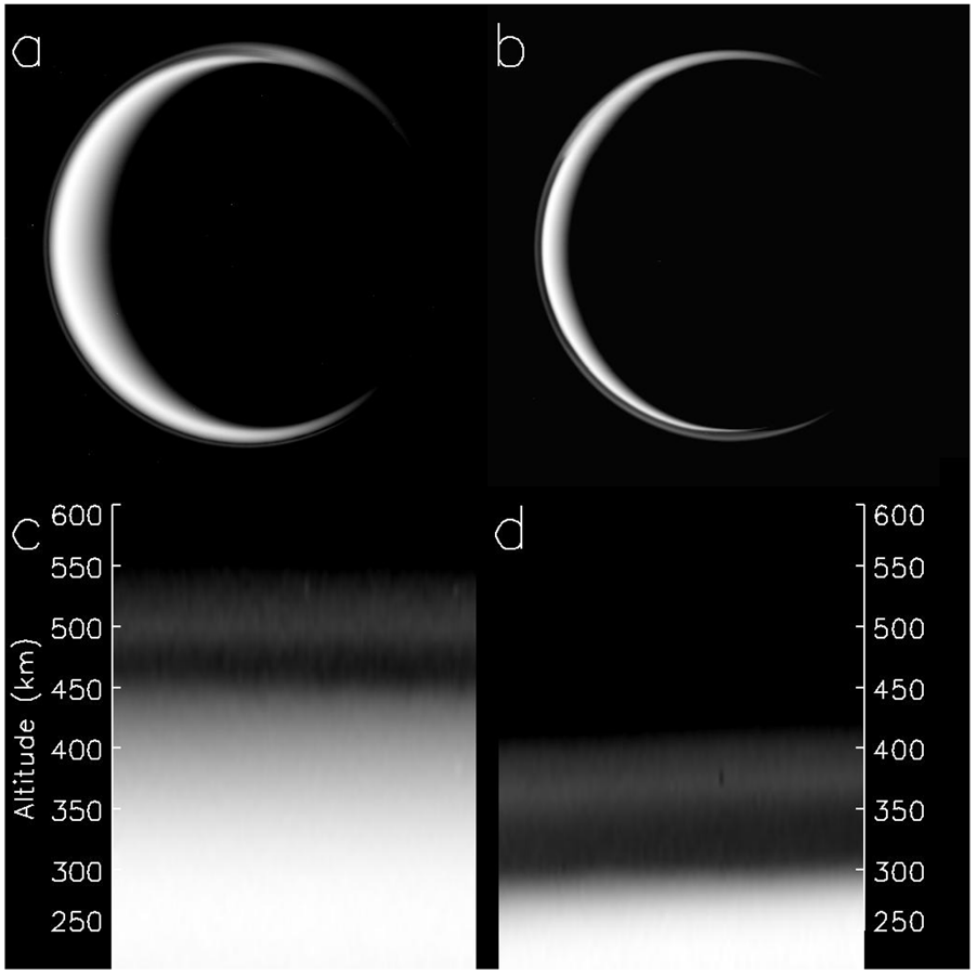


Seasonal changes

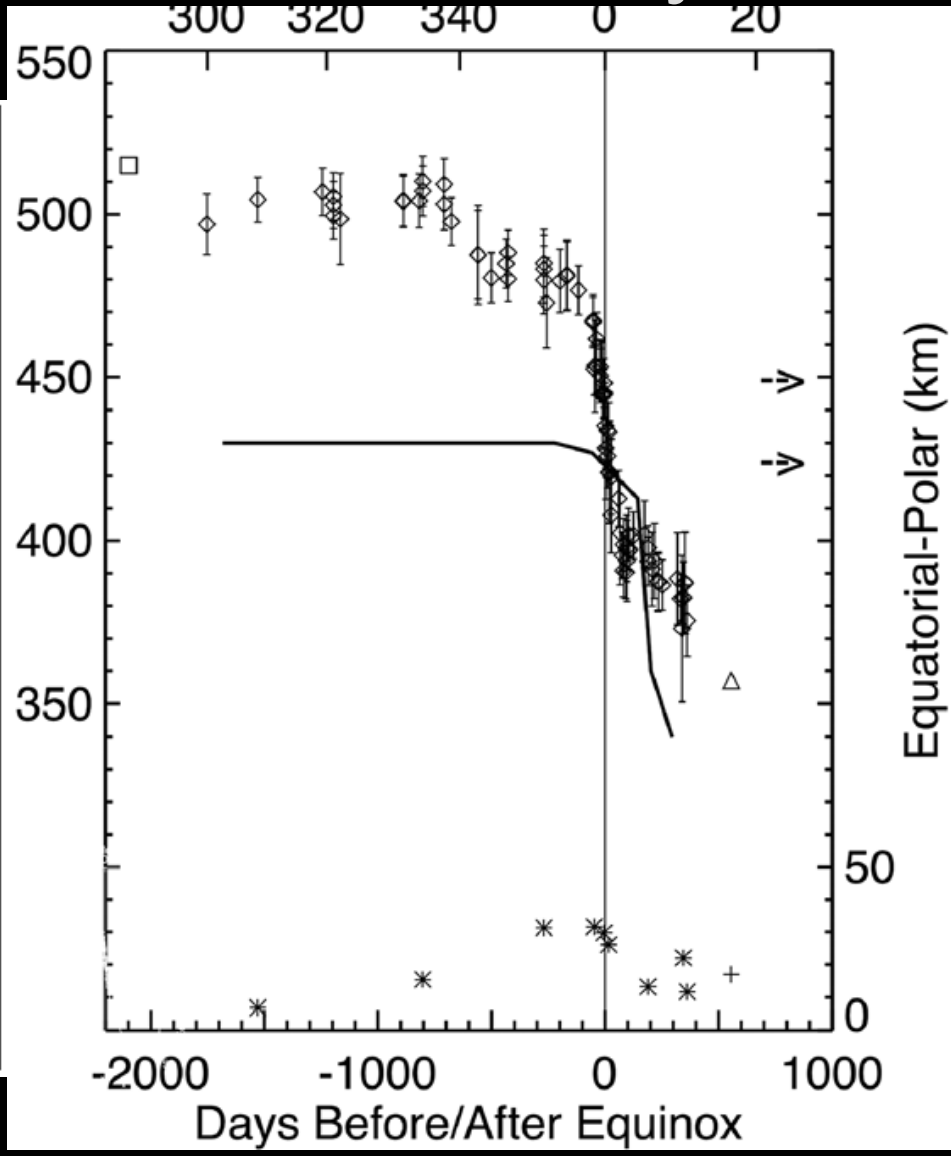
- Voyager 1, Nov. 1980 ≈ March 29
- Voyager 2, Aug. 1981 ≈ April 8
- Cassini SOI, 2 July 2004 ≈ mid-January
- 11 August 2009 ≈ Northern vernal equinox
- 27 Sept. 2010 ≈ early April; low-latitude storm
- 25 Sept. 2012 ≈ late April
- May 2017 ≈ Northern summer solstice

Seasonal changes: altitude of Titan's detached haze layer

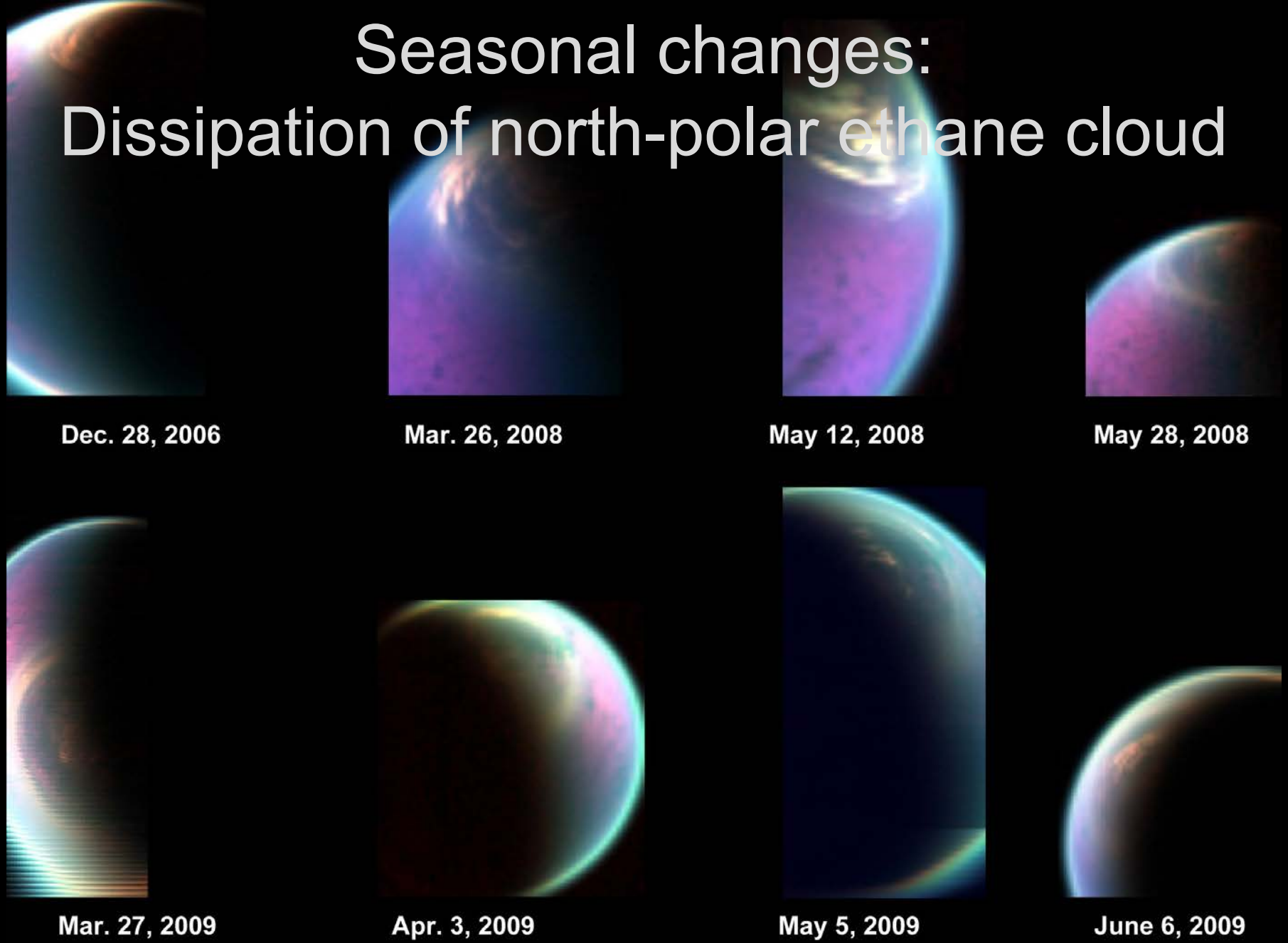
3 May 2006 2 April 2010



West *et al.*, 2011

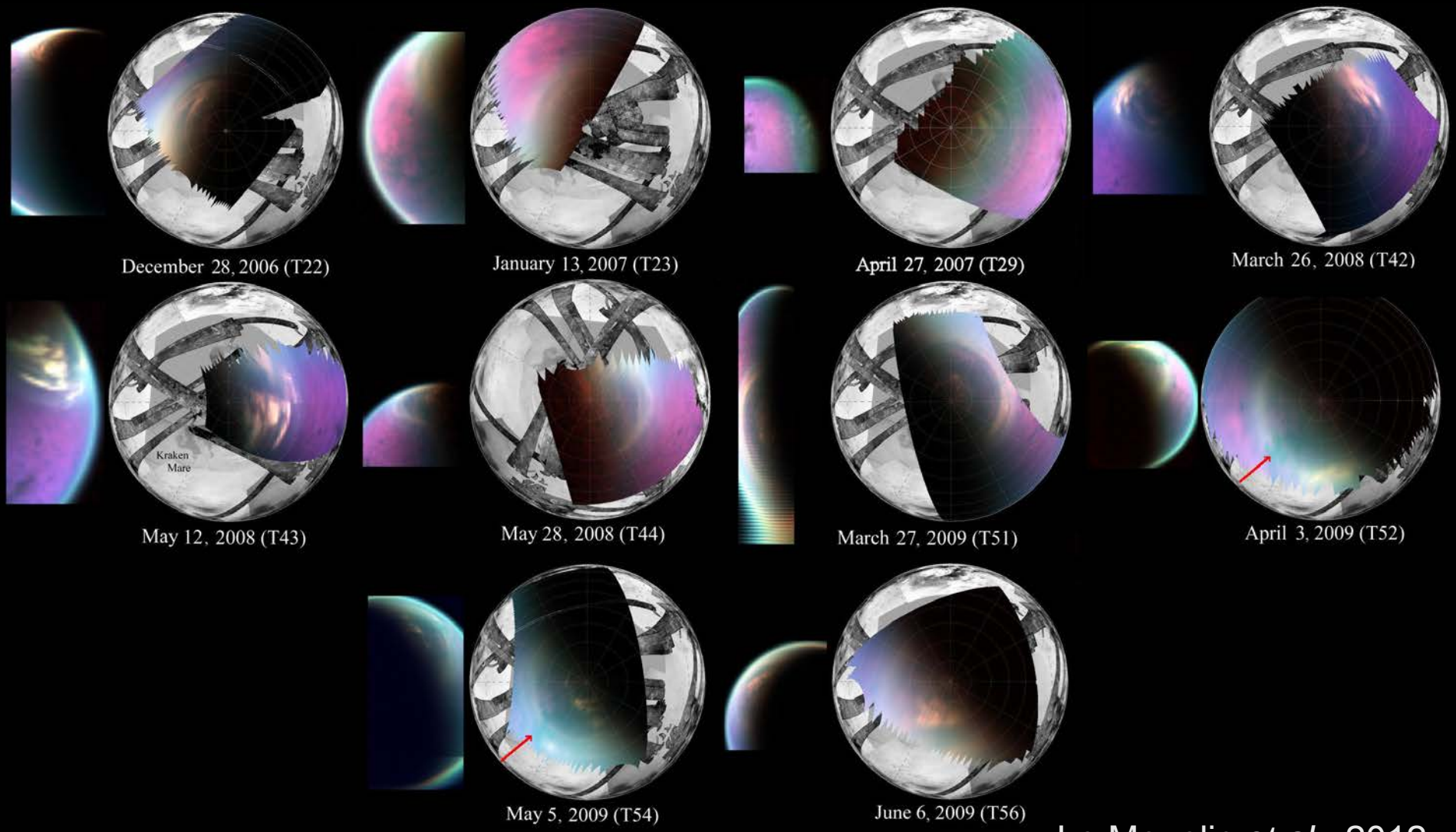


Seasonal changes: Dissipation of north-polar ethane cloud



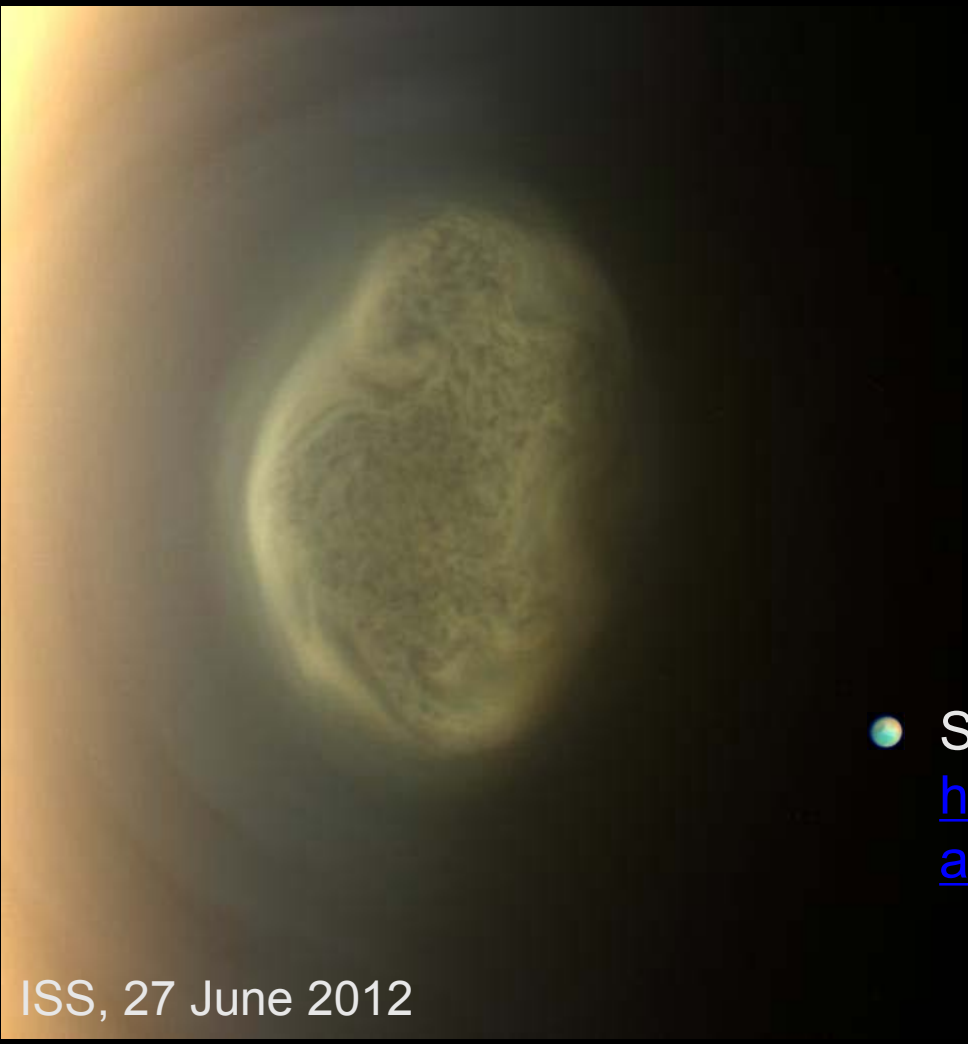
Le Mouelic *et al.*, 2012

Seasonal changes: Dissipation of north-polar ethane cloud

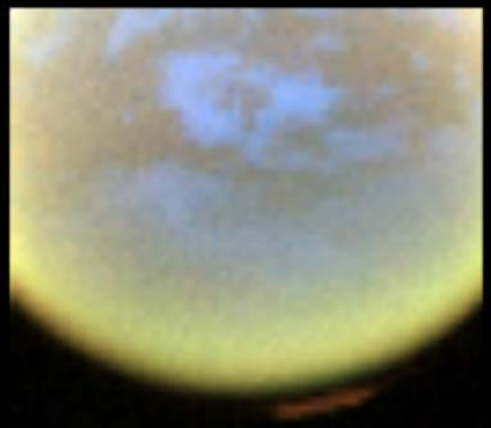


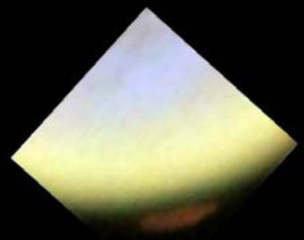
Le Mouelic *et al.*, 2012

Seasonal changes: Development of south-polar vortex and hood of high-altitude haze



ISS, 27 June 2012



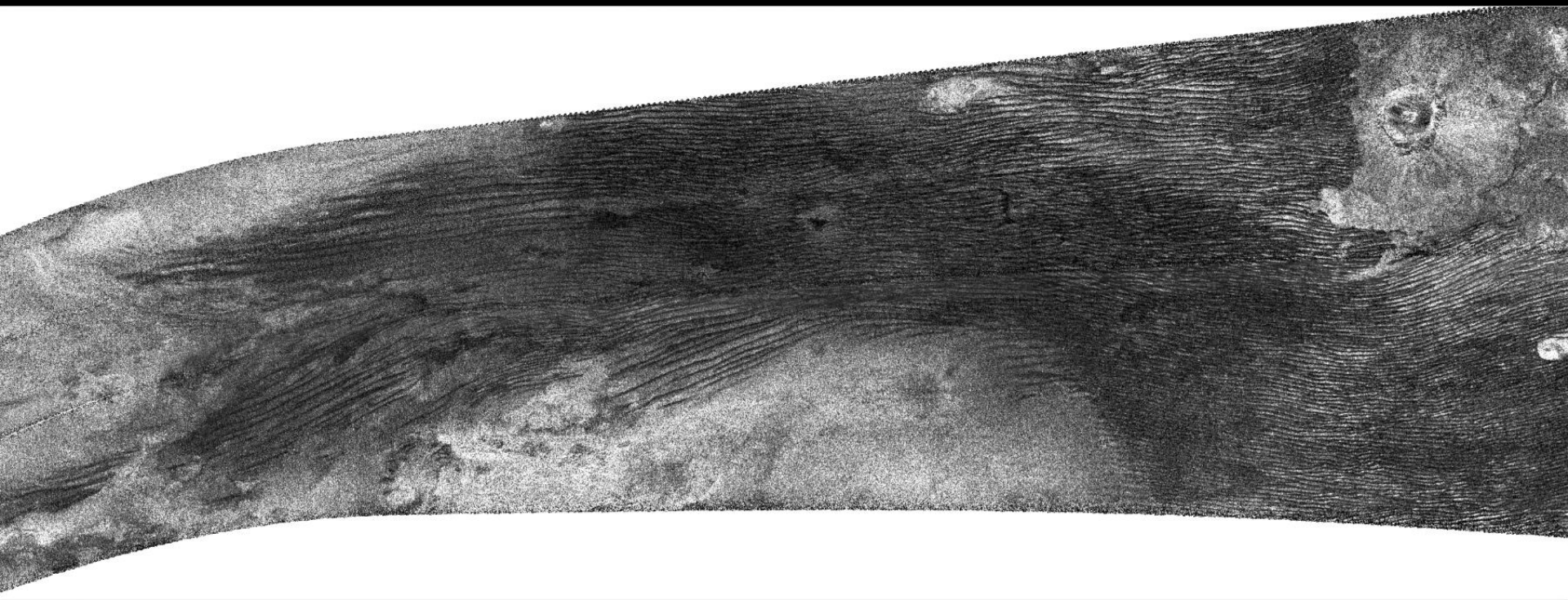


T83 T84

VIMS, 22 May and 7 June 2012

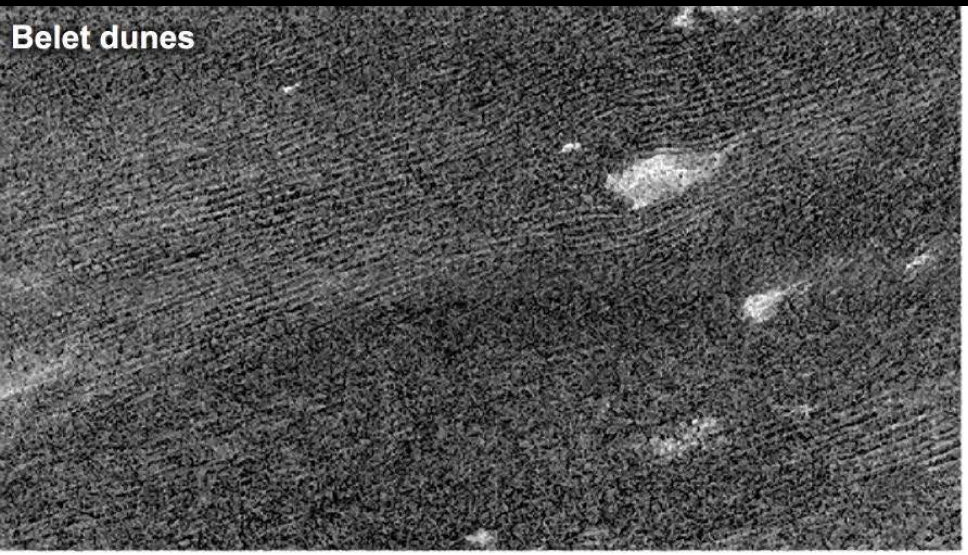
- Short video of polar vortex rotation @ http://saturn.jpl.nasa.gov/video/videodetails/?videoID=247

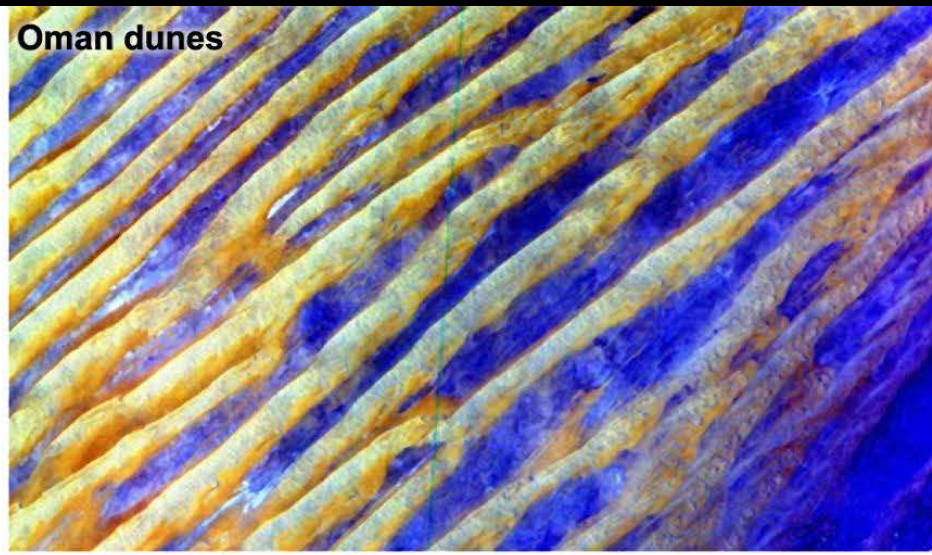
Dunes, Ksa Crater, and northwest Xanadu

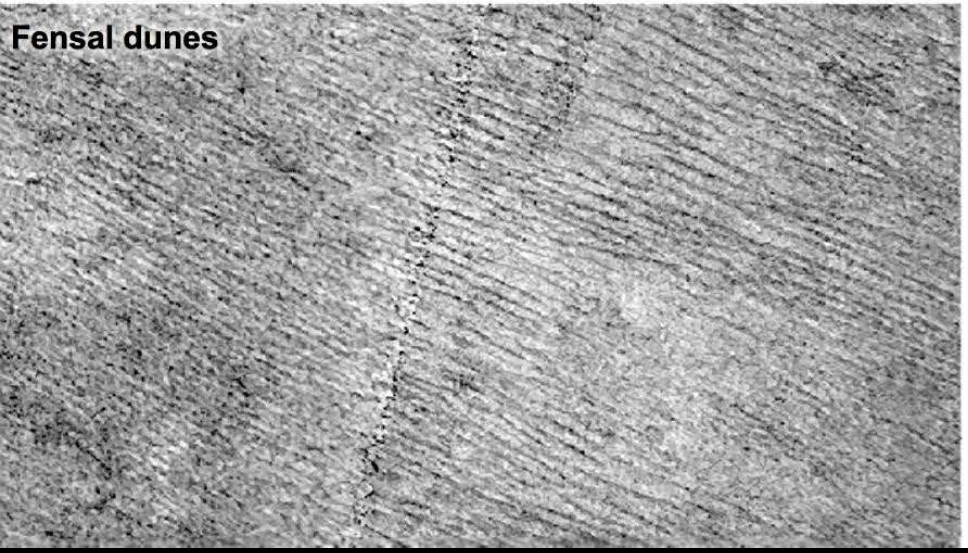


T77, 21 June 2011

Dunes exhibit variations with latitude and altitude (Le Gall *et al.*, *Icarus*, 2012)



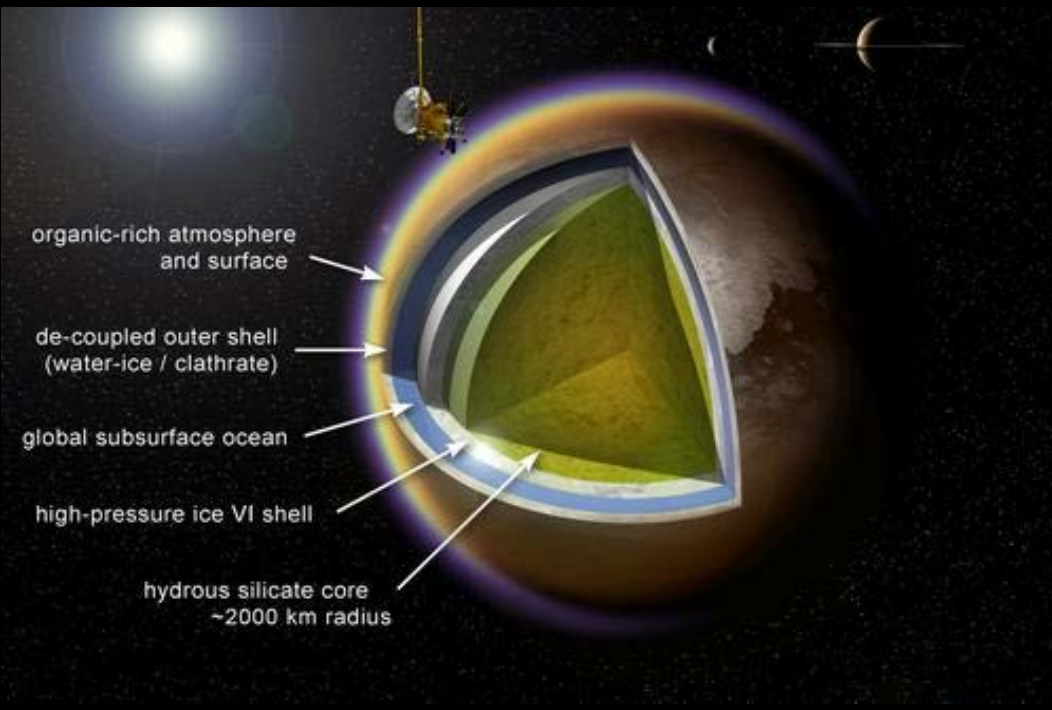


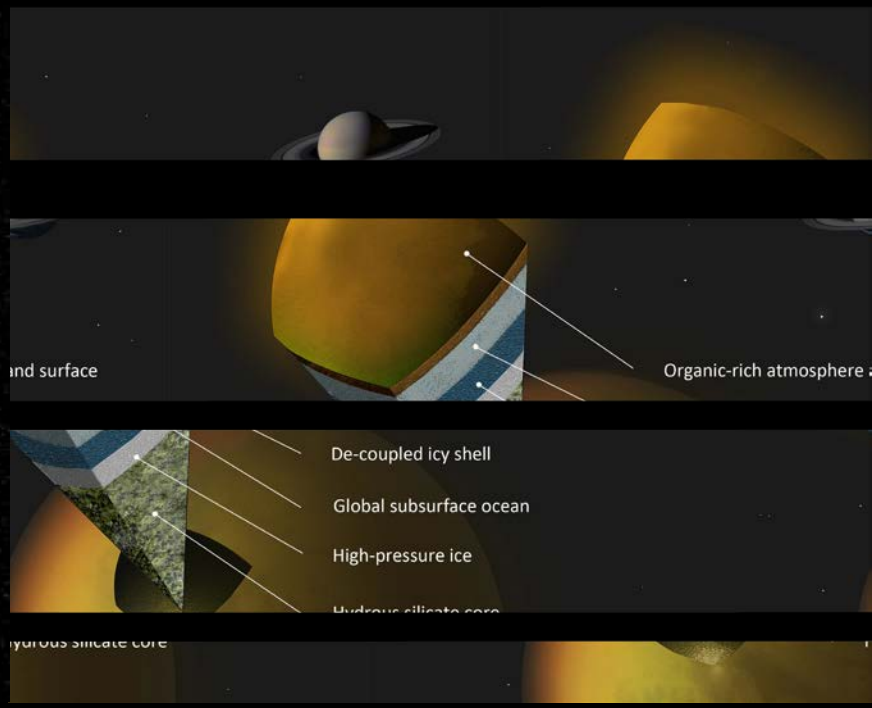


Lakes and methane supply

- Comparison of Ontario Lacus with Earth's Etosha salt pan (Cornet *et al.*, 2012)
- Low-latitude oases near Shangri-La? (Griffith *et al.*, 2012)
- Methane age <1 Gyr (CIRS data: Nixon *et al.*, 2012; Cassini INMS, & Huygens GCMS data: Mandt *et al.*, 2012)

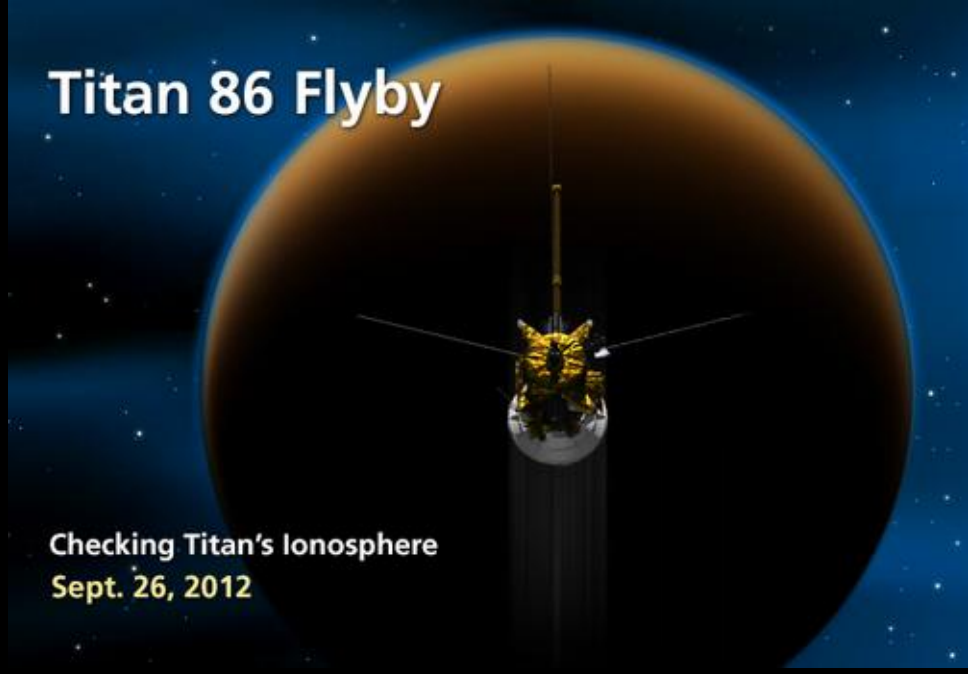
Shape and internal structure





- Moment of inertia and 10-m tides consistent with differentiated interior and internal global ocean (Fortes, *PSS*, 2012; Iess *et al.*, *Science* 2012)
- (Animated illustration of tides @ http://saturn.jpl.nasa.gov/video/videodetails/?videoID=246)
- Extra global flattening due to Titan's weather and carbon cycle? (Choukroun and Sotin, *GRL,* 2012)

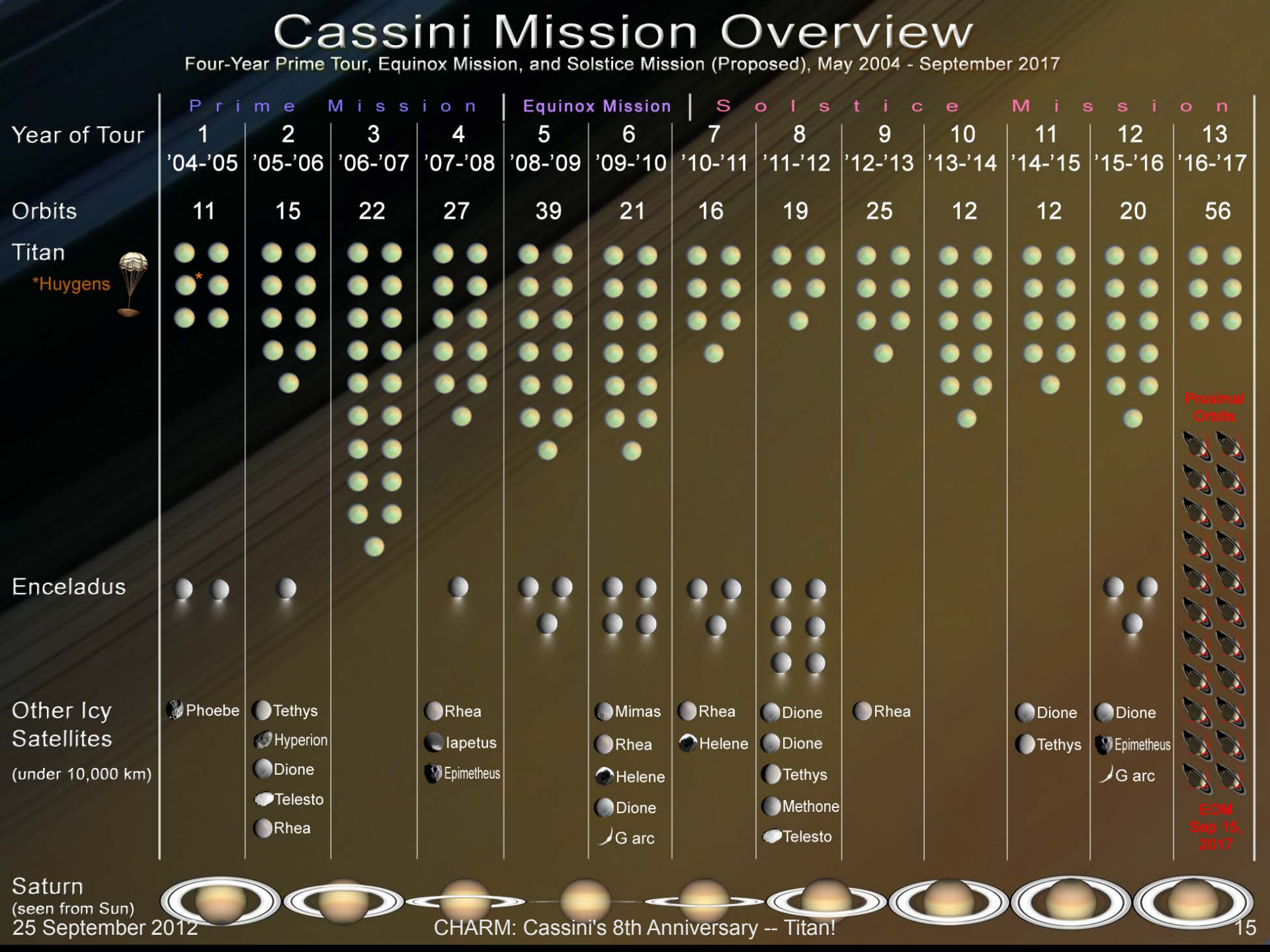
T86
26 Sept. 2011

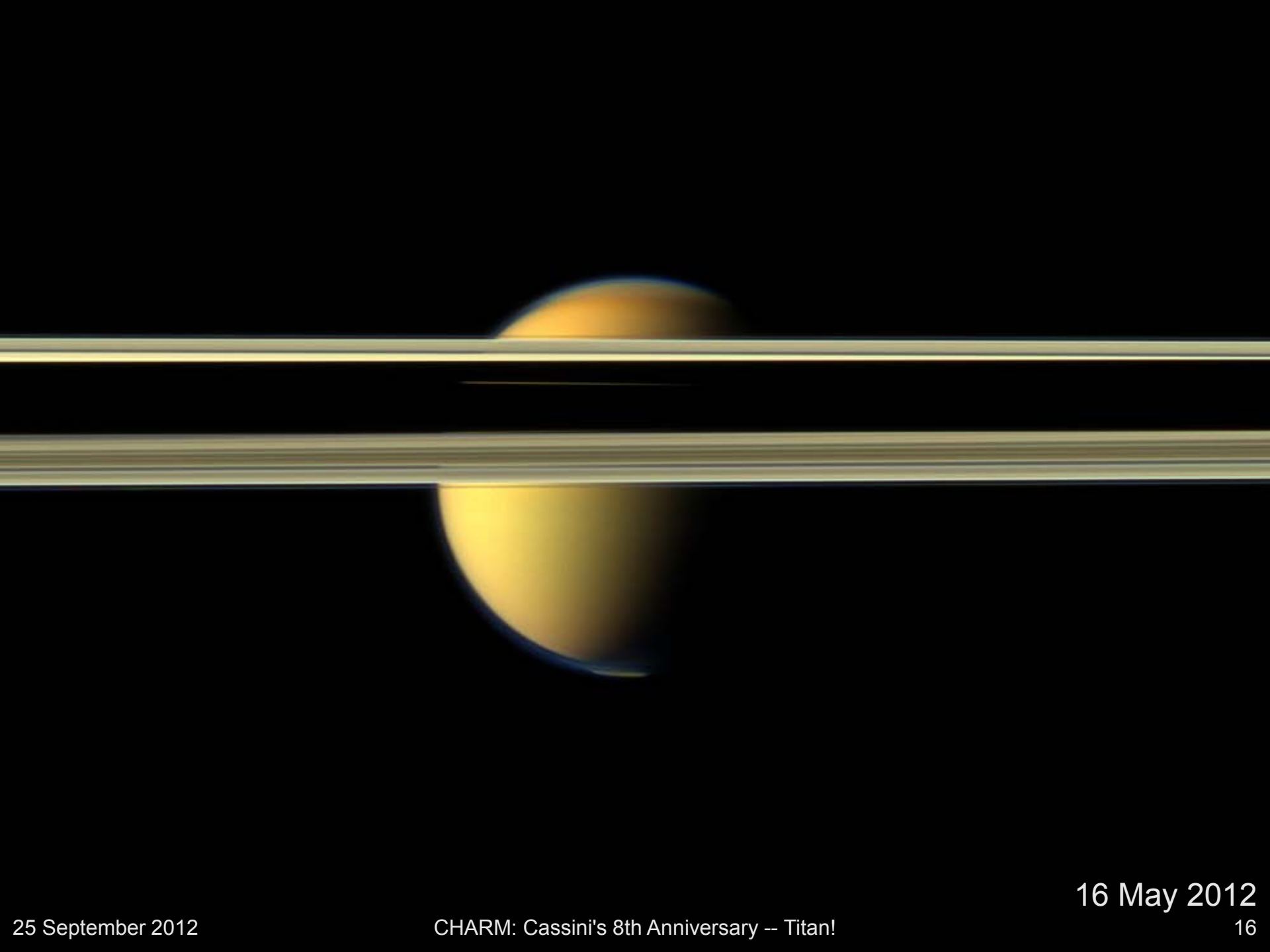


- C/A altitude = 956 km
- INMS profile through ionosphere
- RADAR SAR imaging of southwest Ligeia Mare
- ISS, UVIS, CIRS observations including coverage of Adiri and the region where extensive surface changes were observed in the fall of 2010
- ISS cloud-tracking for an extra day after the encounter

Cassini Mission Overview

Four-Year Prime Tour, Equinox Mission, and Solstice Mission (Proposed), May 2004 - September 2017





16 May 2012