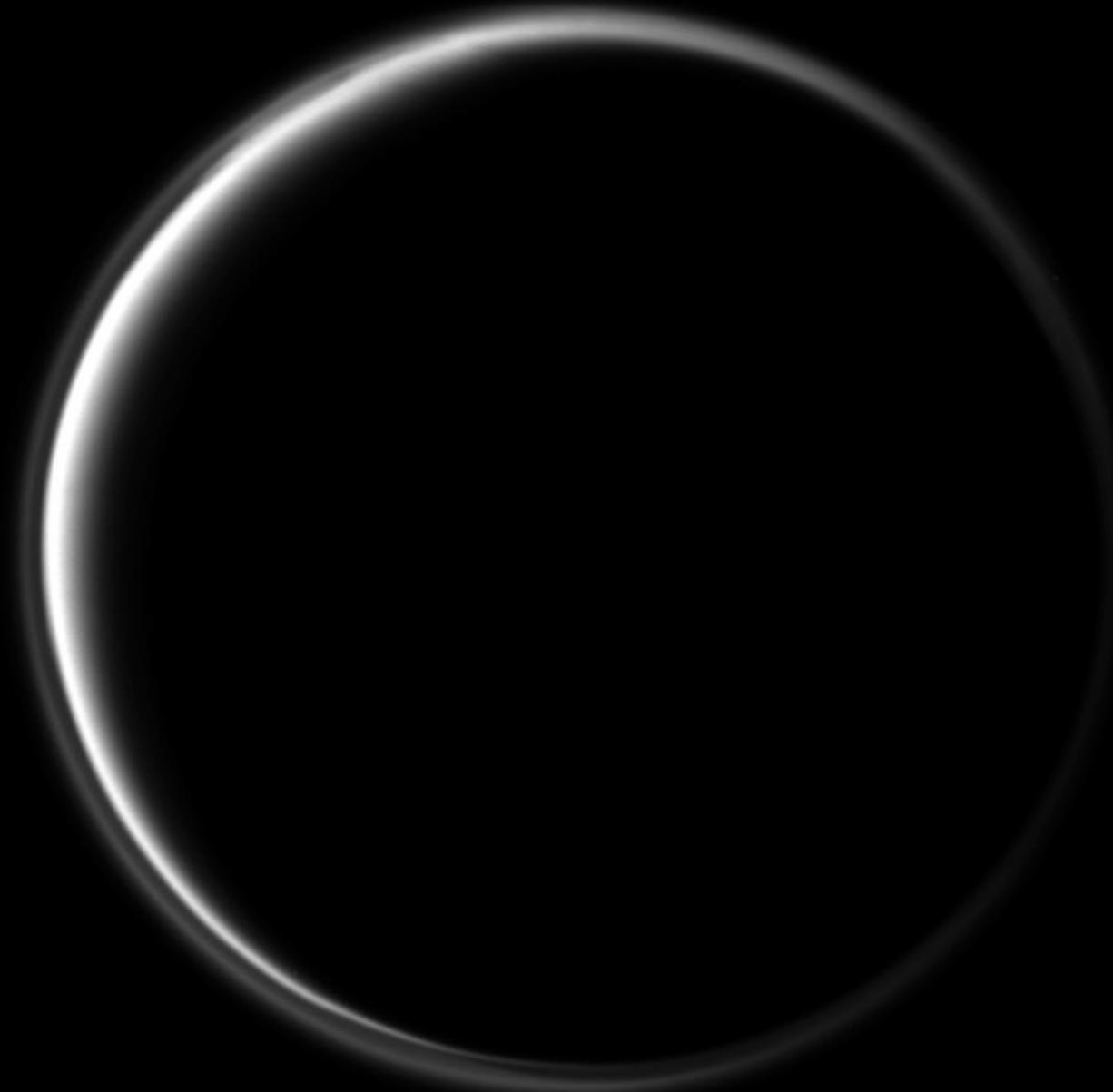


CHARM: Cassini-Huygens Mission to Saturn Sixth Anniversary, Titan and Icy Satellite Highlights

Zibi Turtle, Applied Physics Lab.

Titan Highlights



Cassini Mission Overview

Four-Year Prime Tour + Two-Year Extended Mission (Proposed), July 2004 - July 2010



Titan Encounters

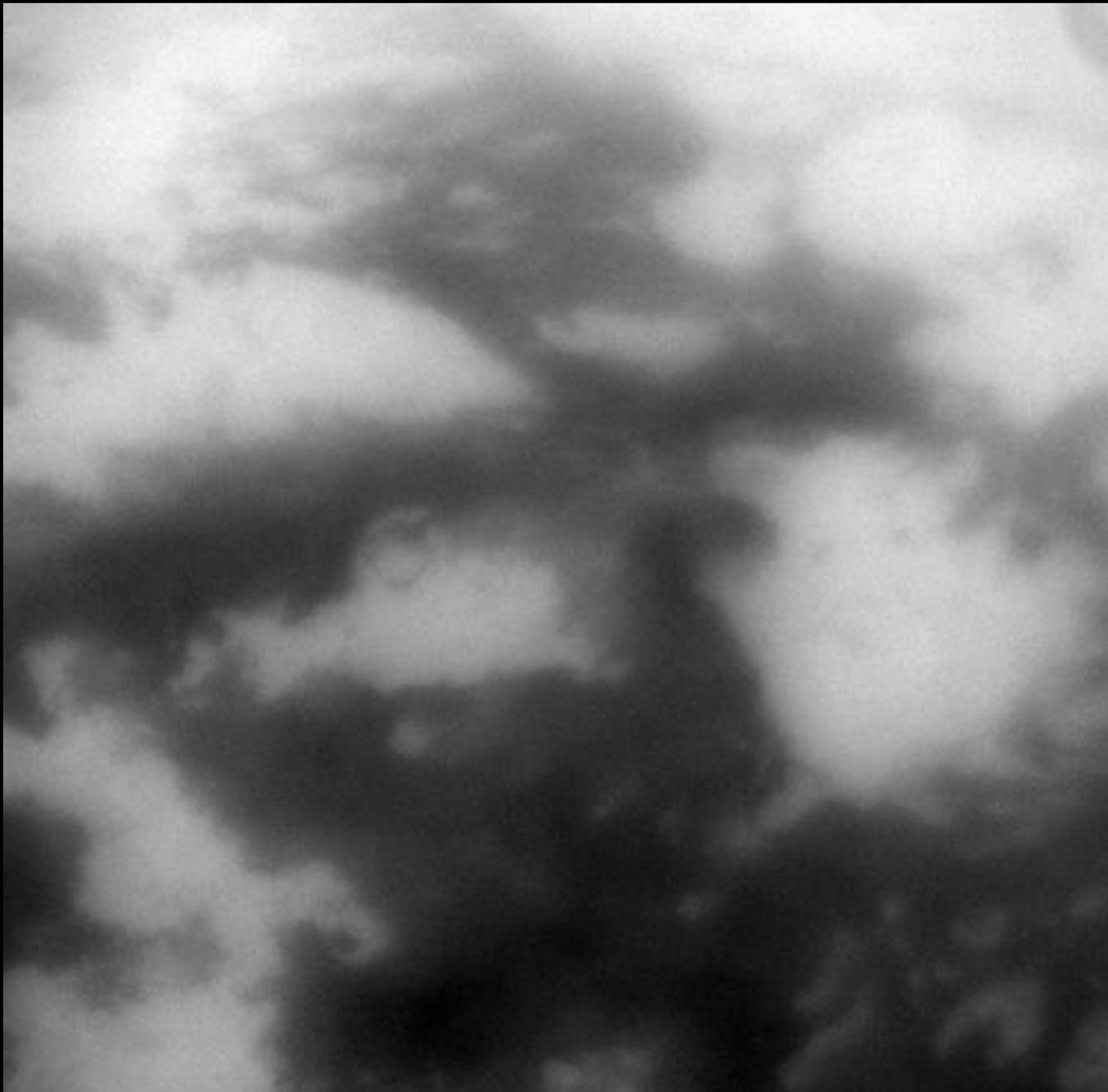
T58, 8 July 2009
T59, 24 July 2009
T60, 9 Aug 2009
T61, 25 Aug 2009
T62, 12 Oct 2009
T63, 12 Dec 2009
T64, 28 Dec 2009
T65, 12 Jan 2010
T66, 28 Jan 2010
T67, 5 April 2010
T68, 20 May 2010
T69, 5 June 2010
T70, 21 June 2010



5 July 2009

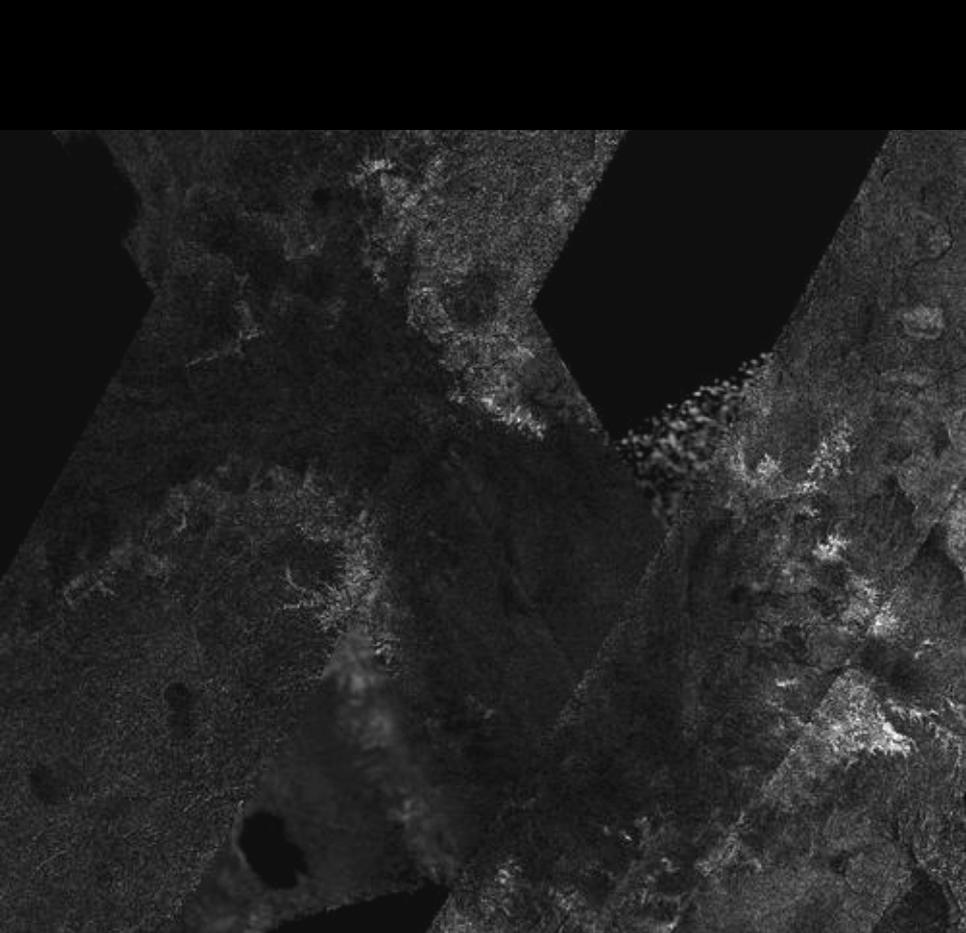
Updated Map of Titan (Feb. 2010)



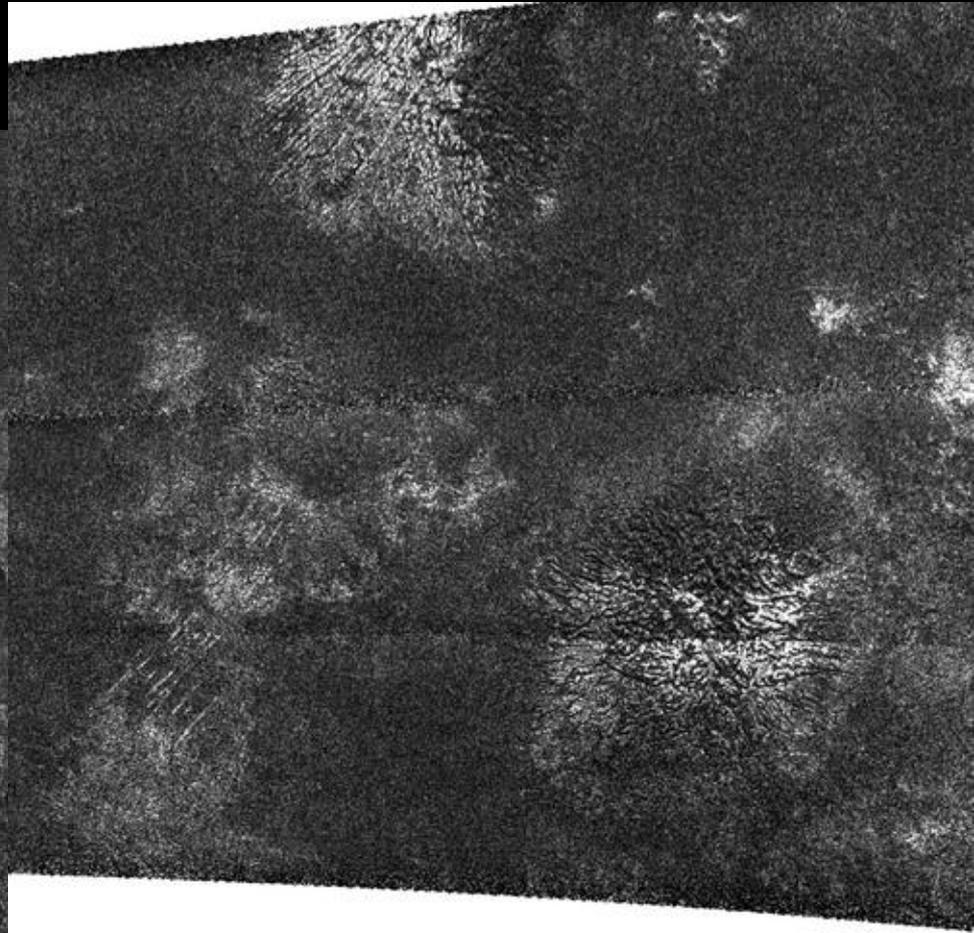


ISS
12 Oct 2009

RADAR observations



Dec 2007 – July 2009

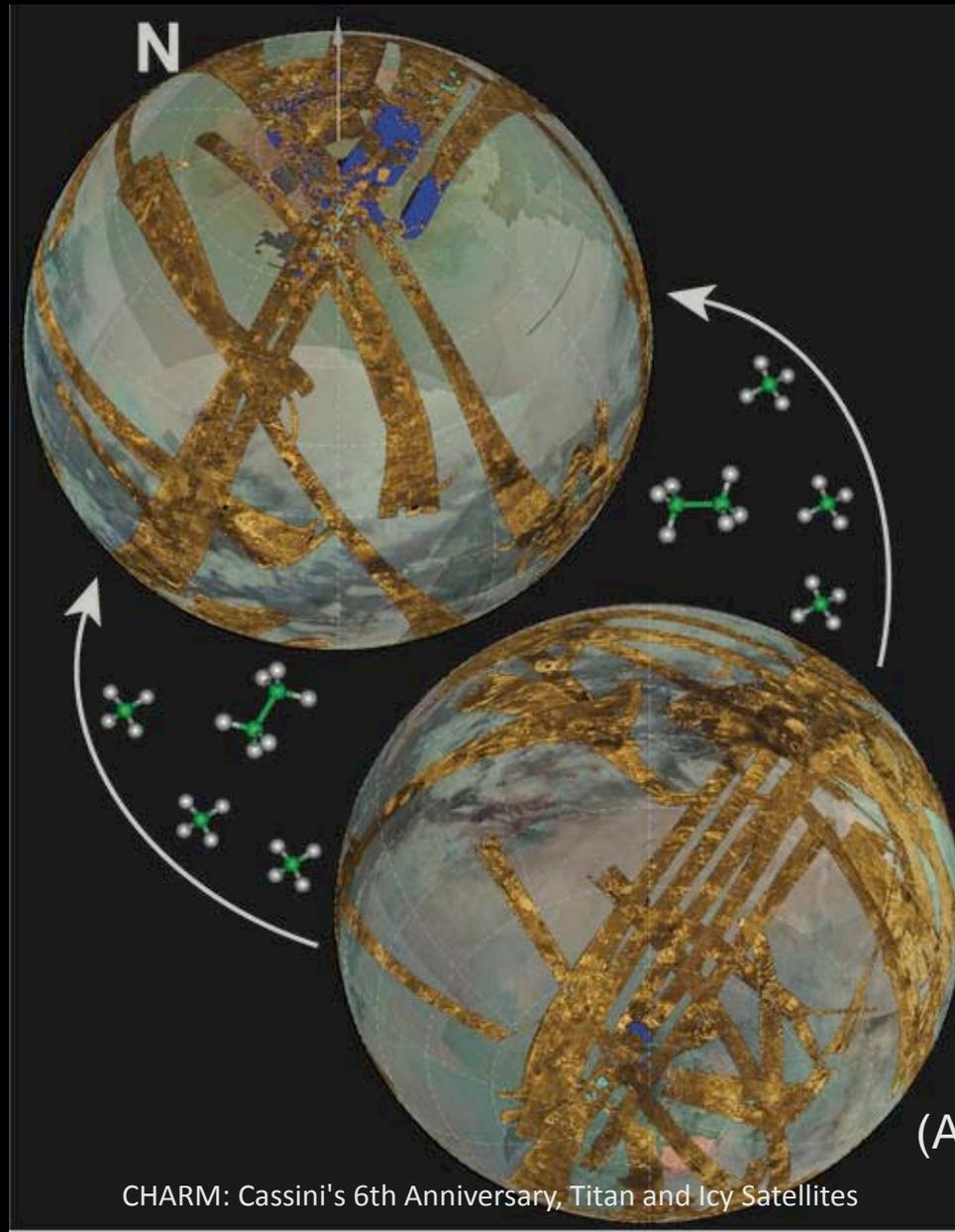


28 December 2009

Specular reflection from Kraken Mare

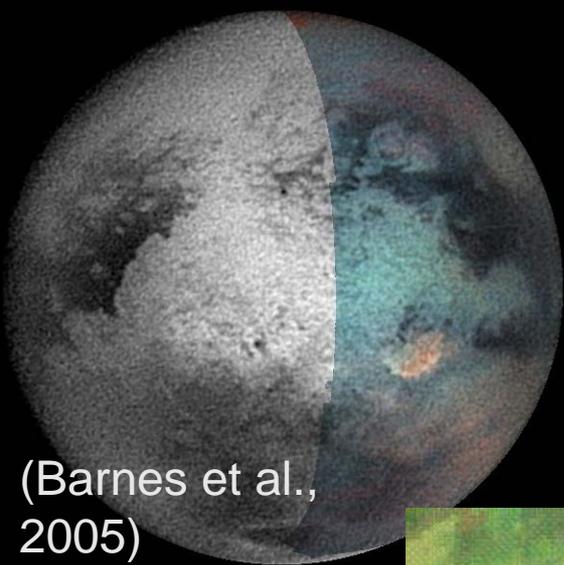


Lake asymmetry between Titan's poles

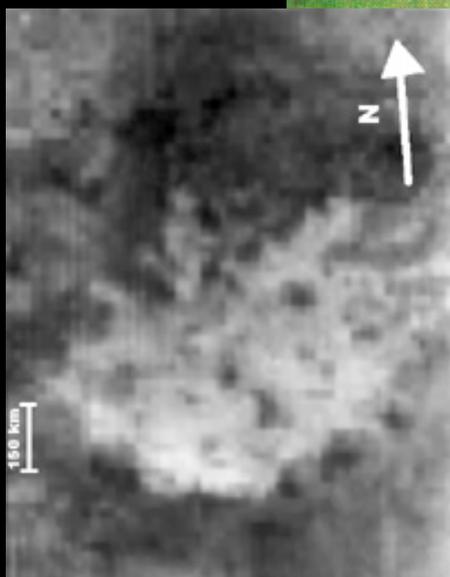
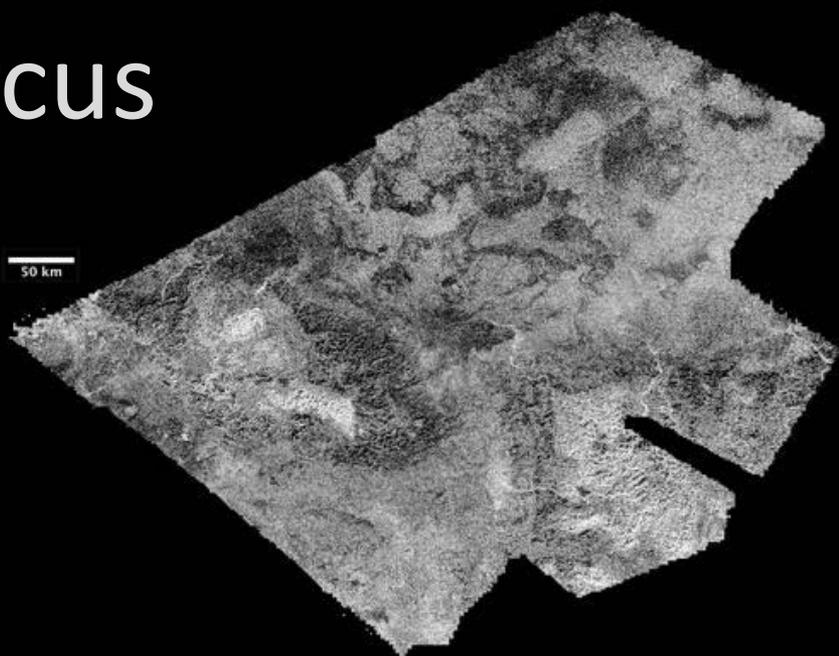


(Aharonson *et al.*, 2009)

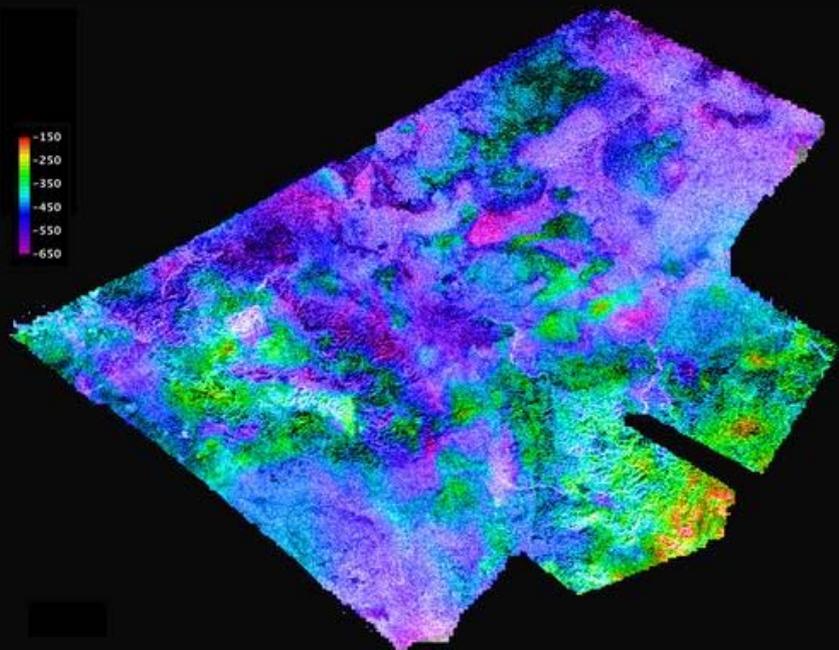
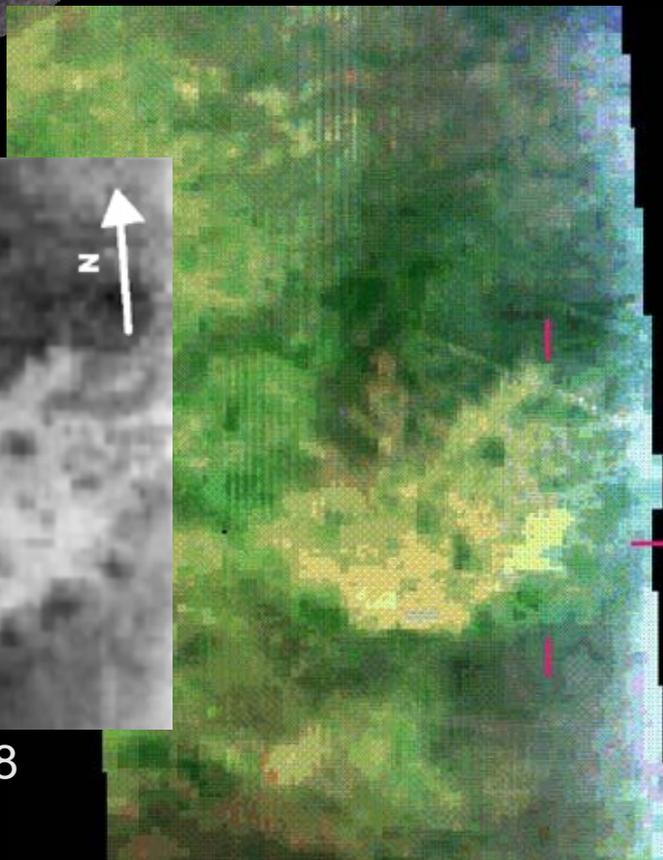
Hotei Arcus



(Barnes et al., 2005)

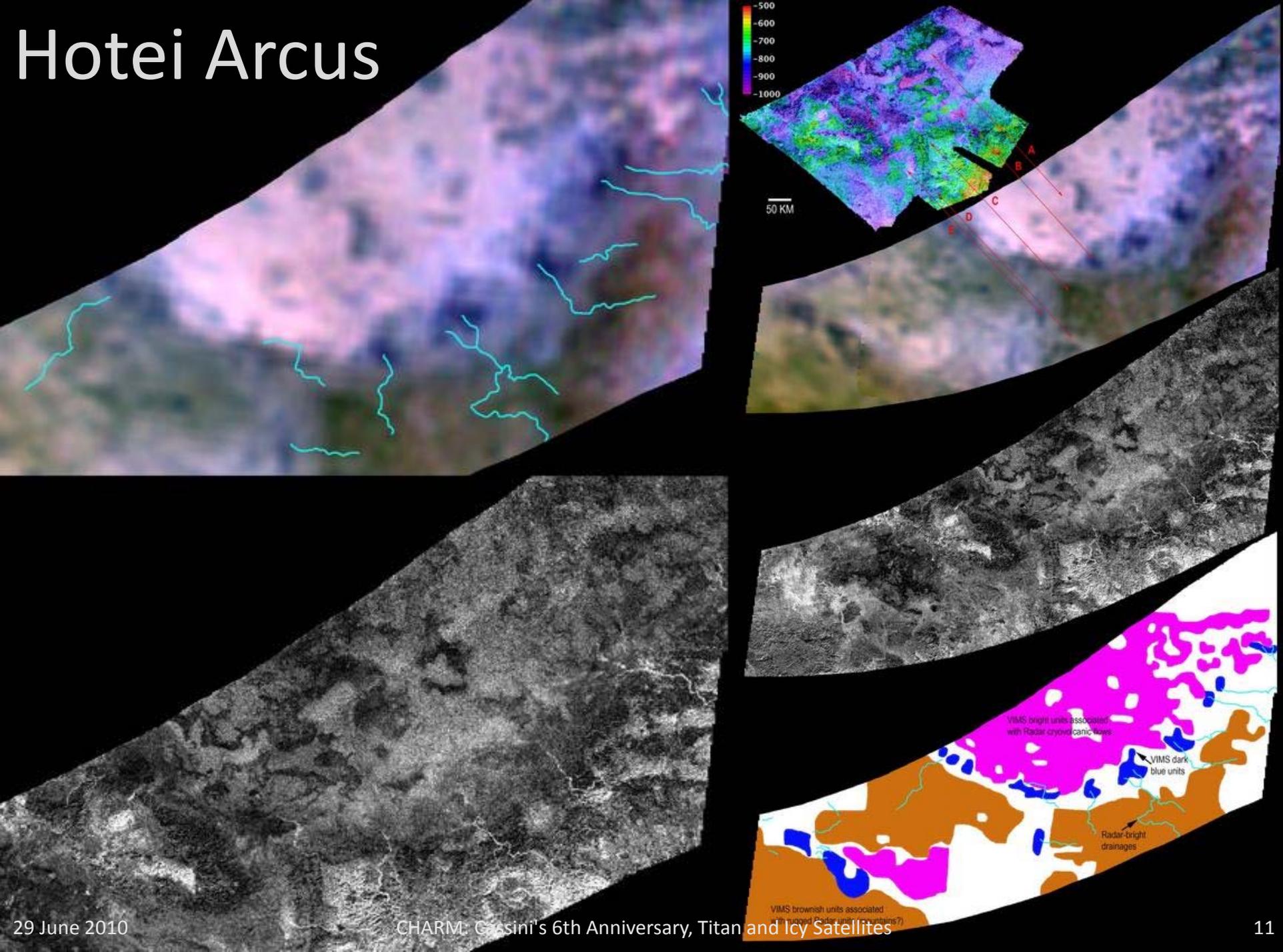


19 Nov 2008

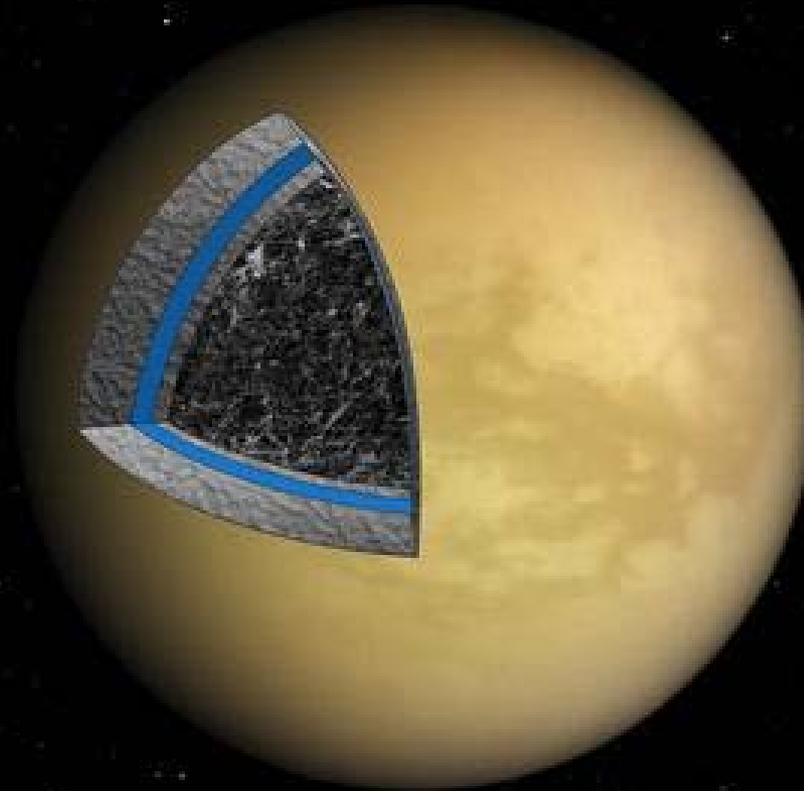


22 Feb and 12 May 2008

Hotei Arcus



Titan's interior structure

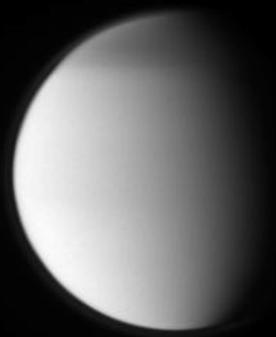


(less *et al.*, 2010)

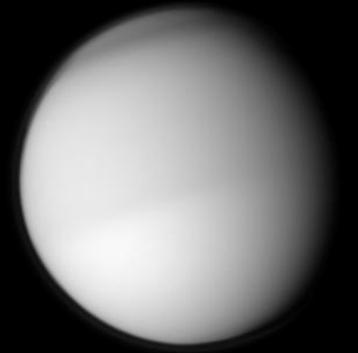
Closest Titan flyby

- T70, 21 June 2010
- 880 km altitude!
- Typically lowest flybys are ~950-970 km altitude -> 5000+ hrs of work by the Cassini team to assess spacecraft safety and determine the best orientation for passage through the atmosphere
- Closer is better for magnetometer measurements
- Below Titan's ionosphere -> more sensitive to any magnetic signature originating from within Titan

Watching for Seasonal Changes



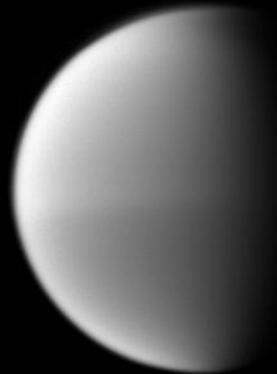
13 August 2009



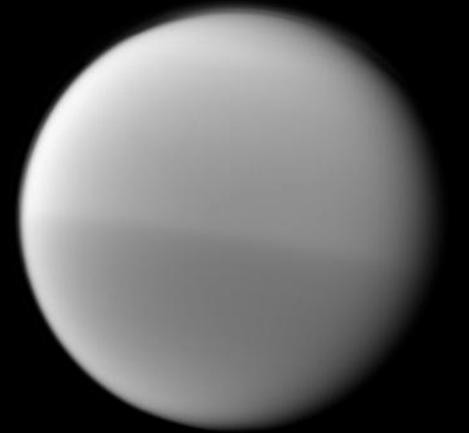
22 March 2010



25 August 2009

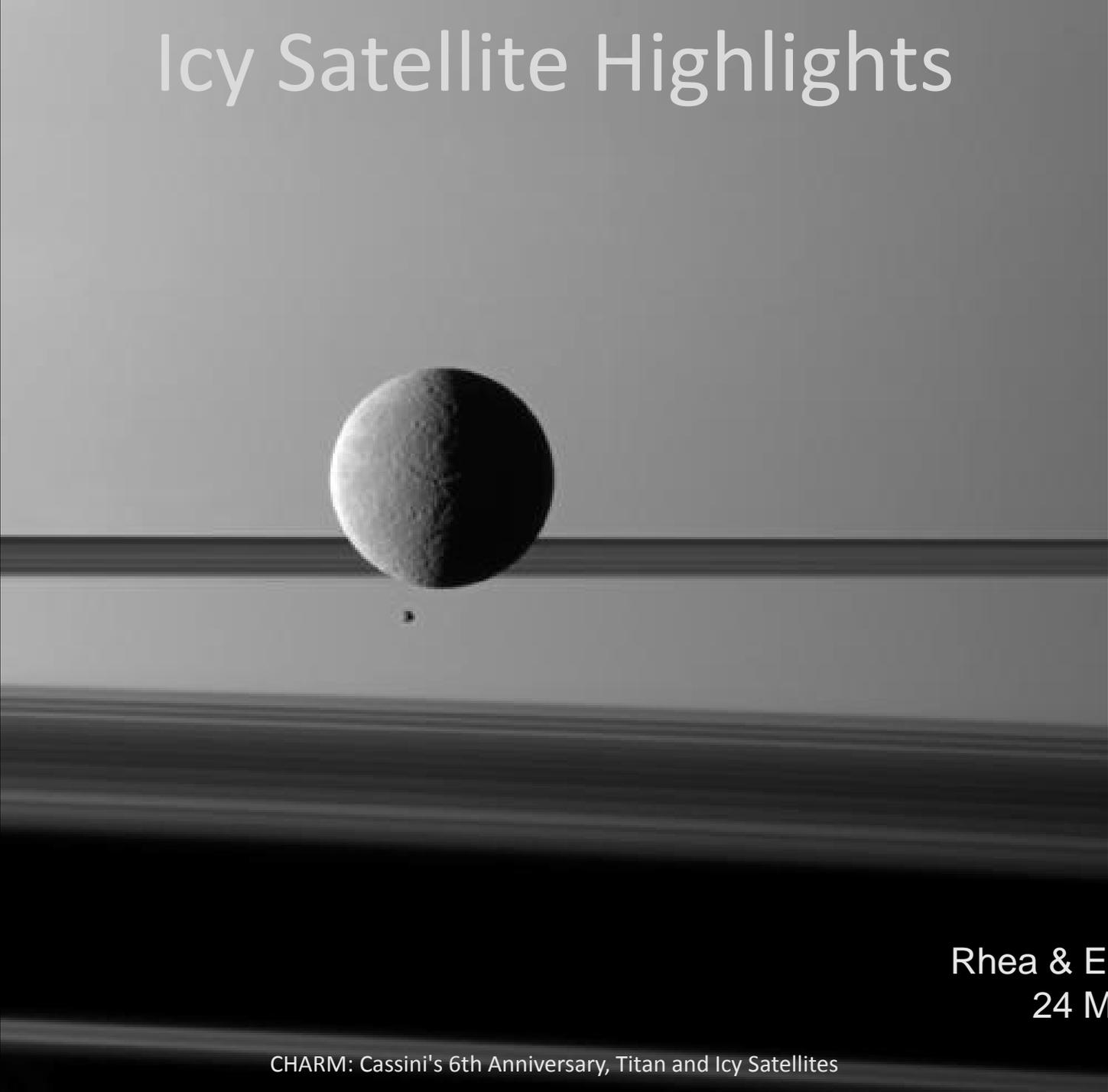


16 October 2009



16 Feb 2010

Icy Satellite Highlights



Rhea & Epimetheus
24 March 2010

Cassini Mission Overview

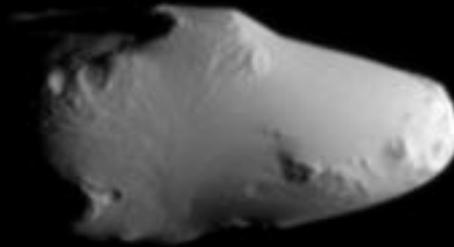
Four-Year Prime Tour + Two-Year Extended Mission (Proposed), July 2004 - July 2010



Small Satellites



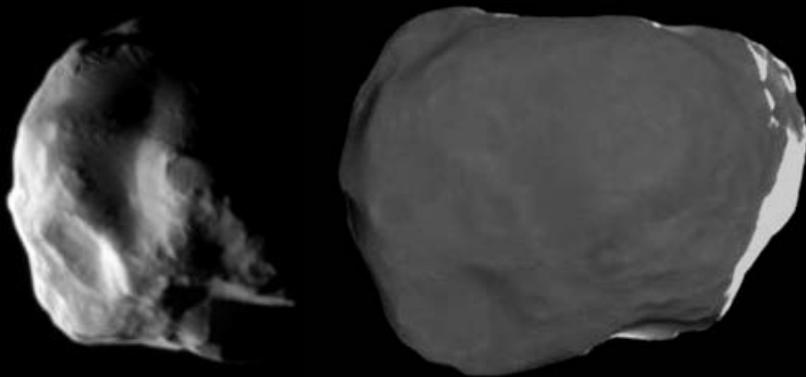
Prometheus
27 January 2010



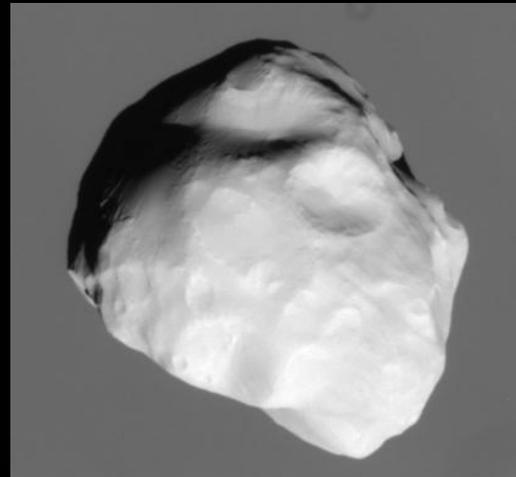
Calypso
13 February 2010



Janus
26 July 2009

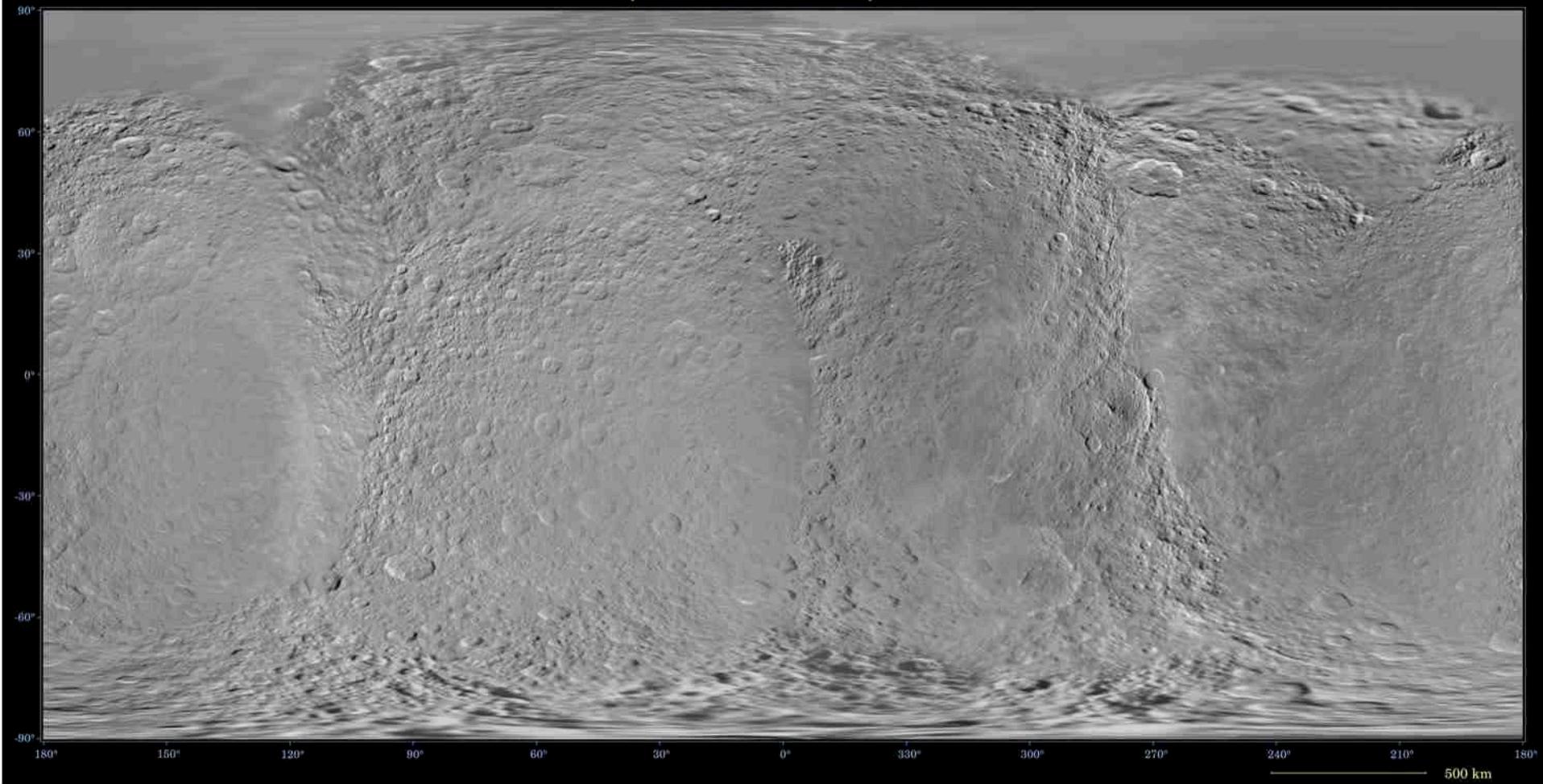


Helene Flyby, 3 March 2010

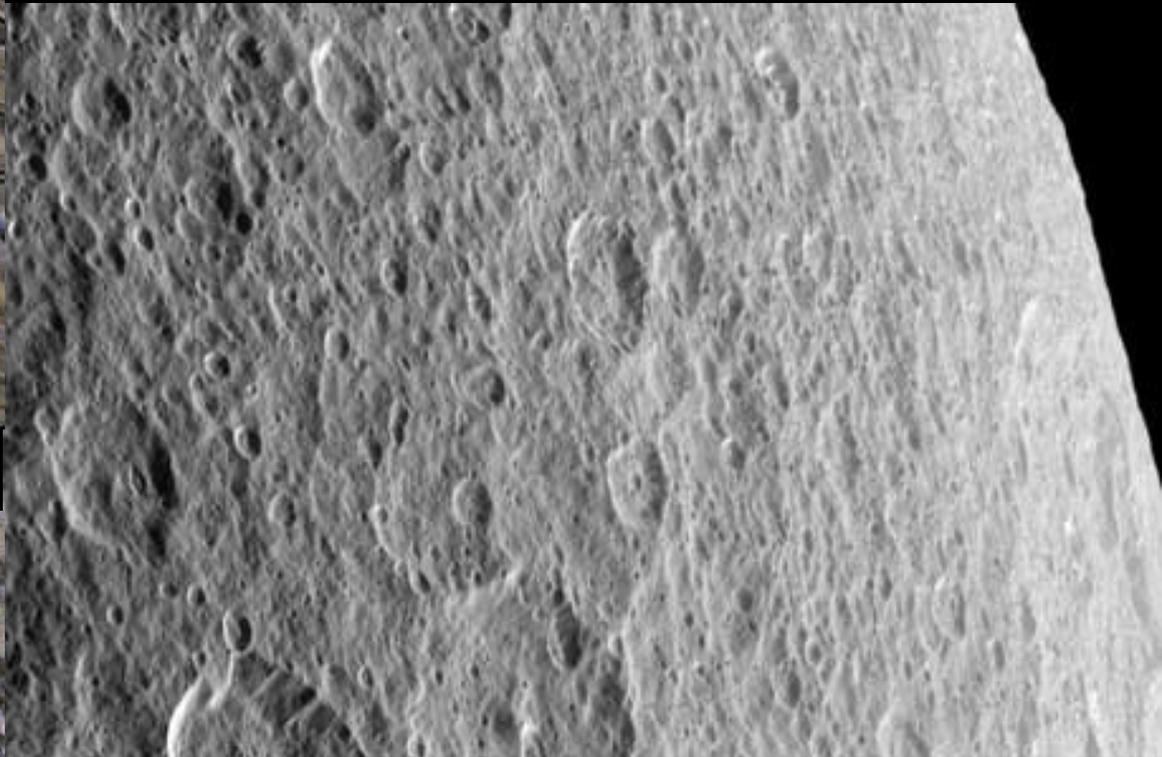
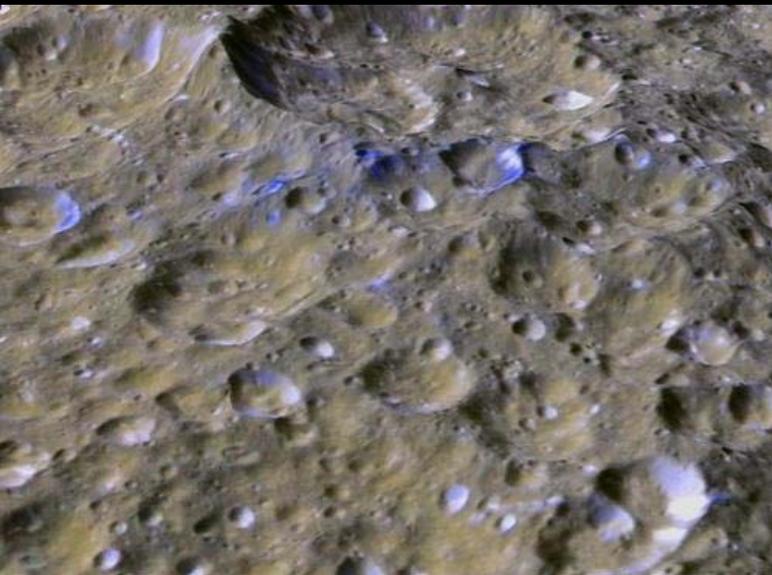
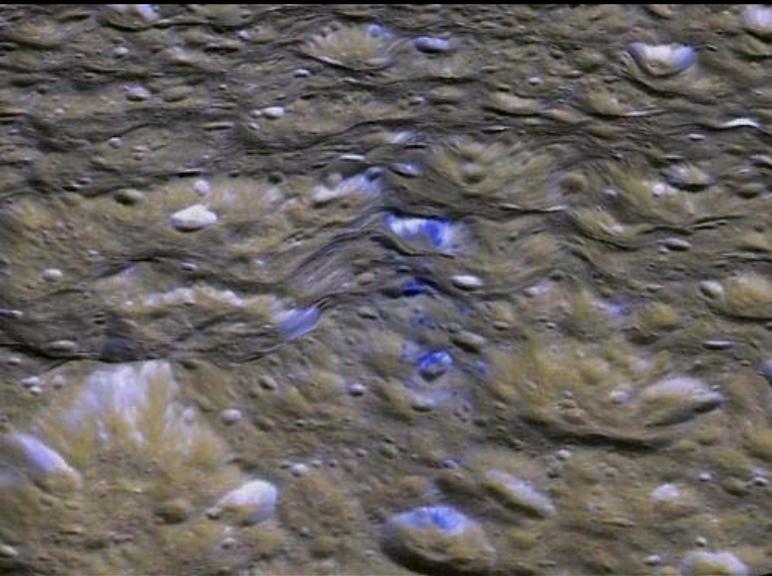


Rhea

Map of Saturn's Moon Rhea - February 2010

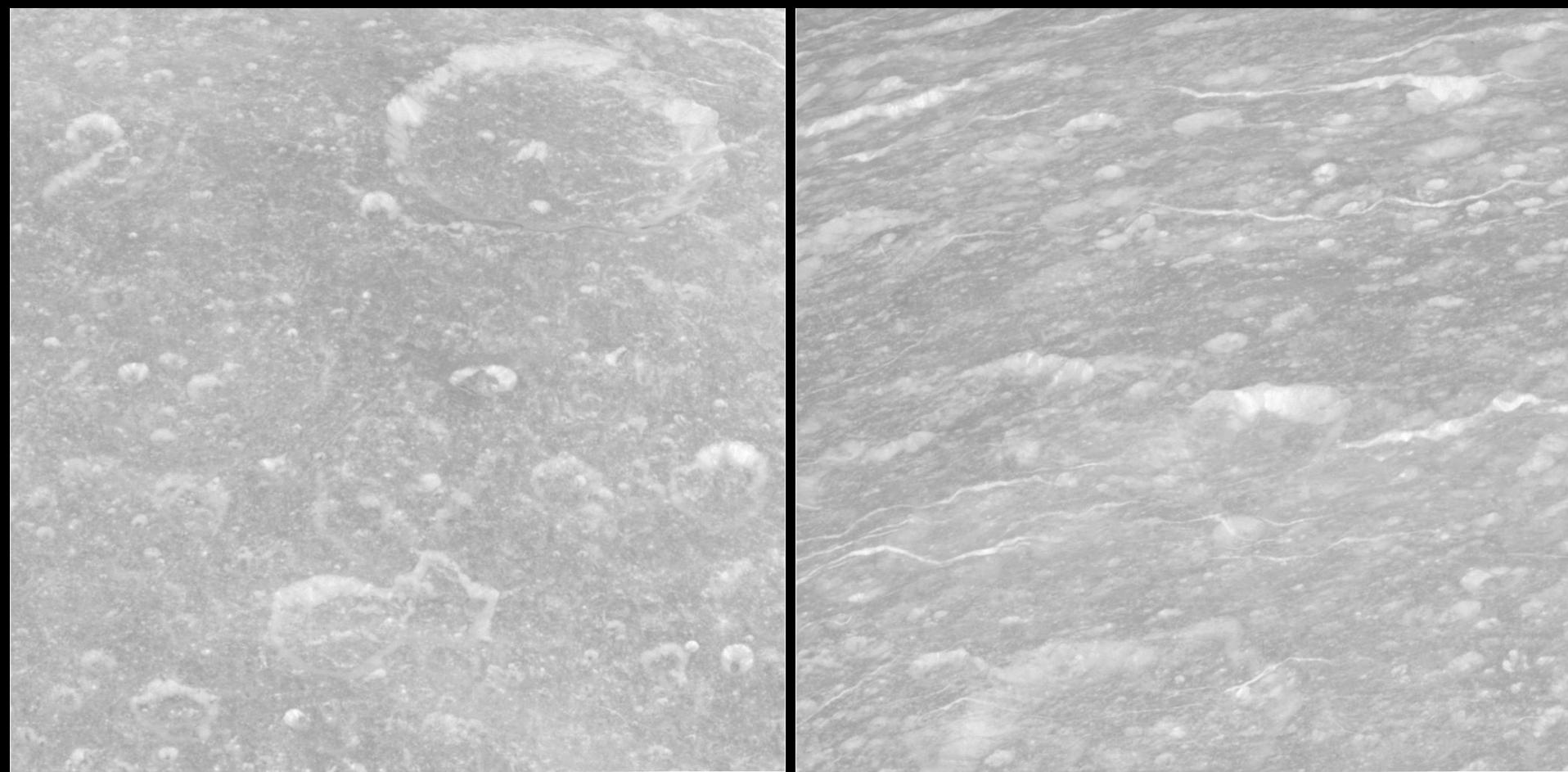


Rhea



13 October 2009

Rhea Flyby, 2 March 2010



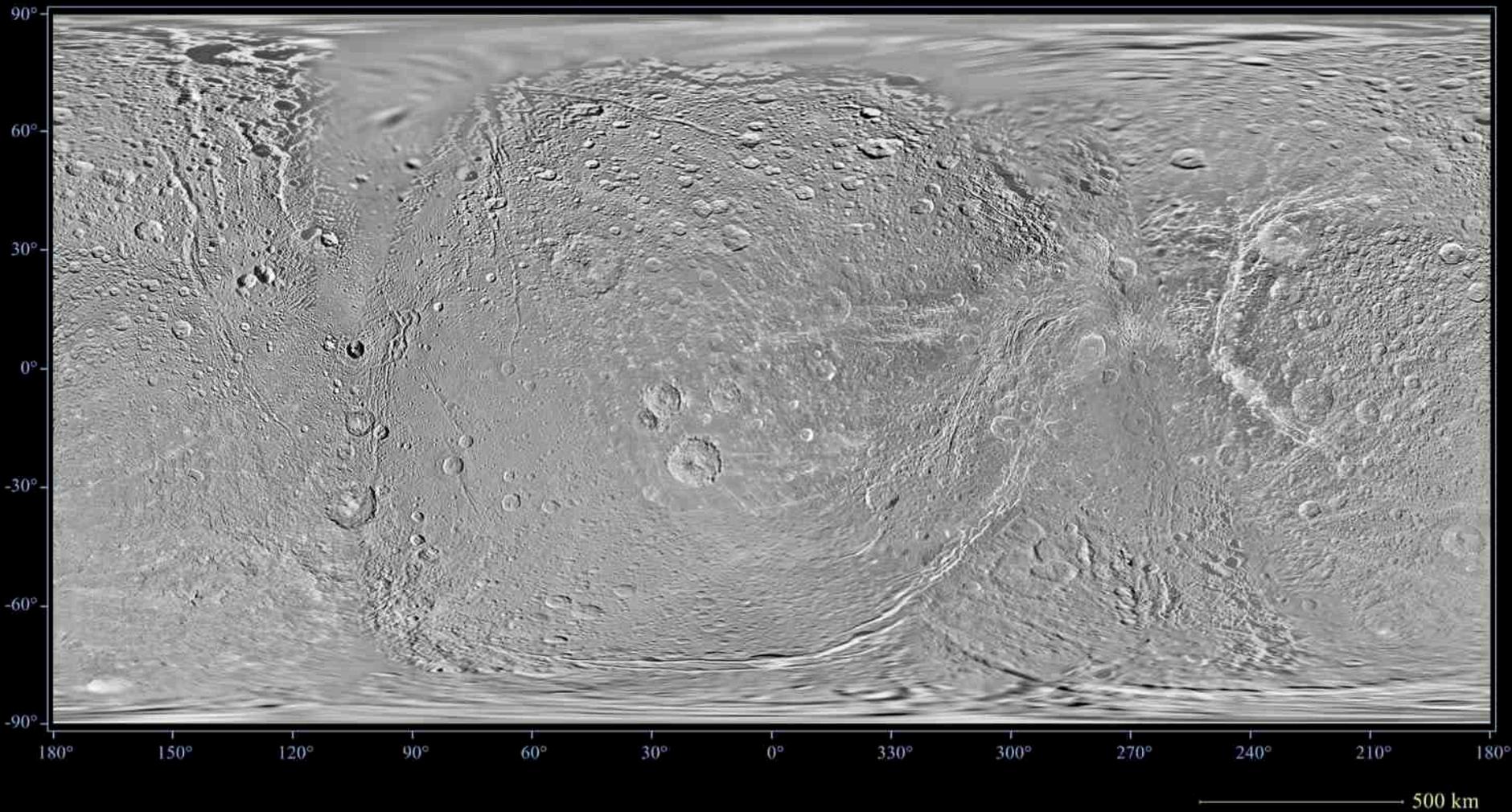
Iapetus



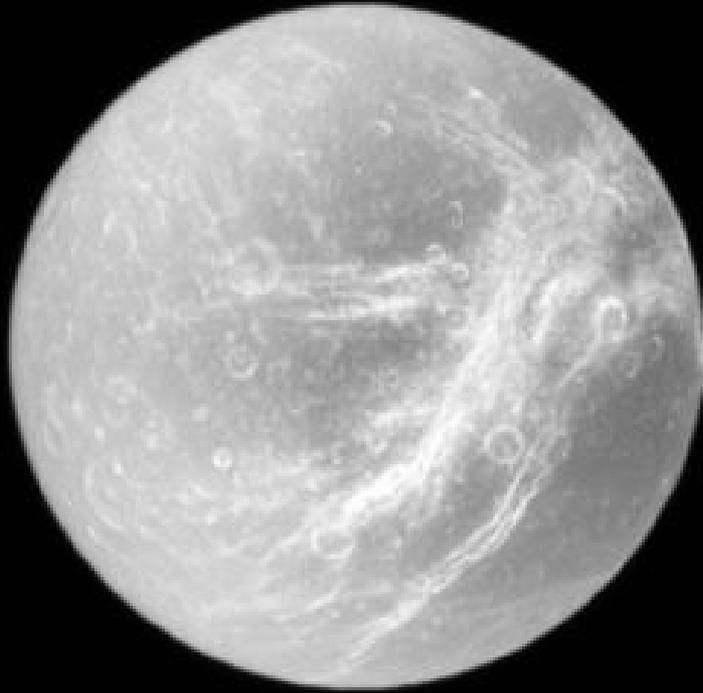
(Spencer and Denk, 2010)

Dione

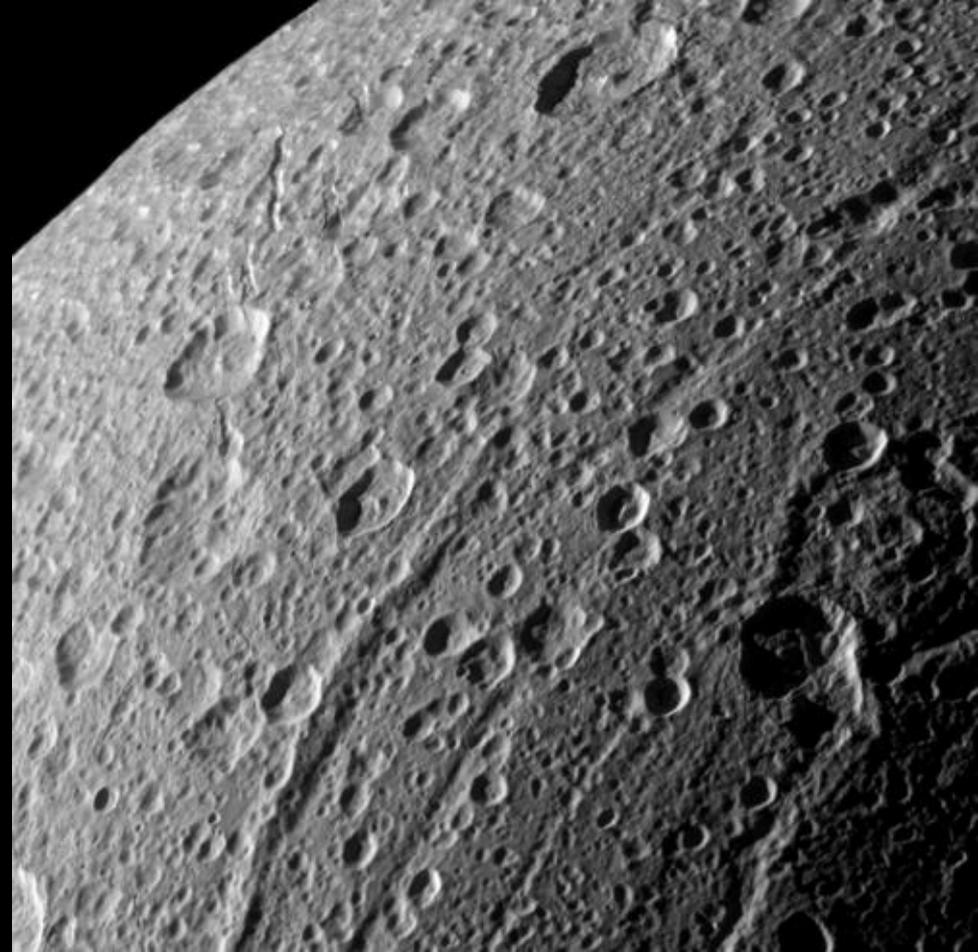
Map of Saturn's Moon Dione - February 2010



Dione

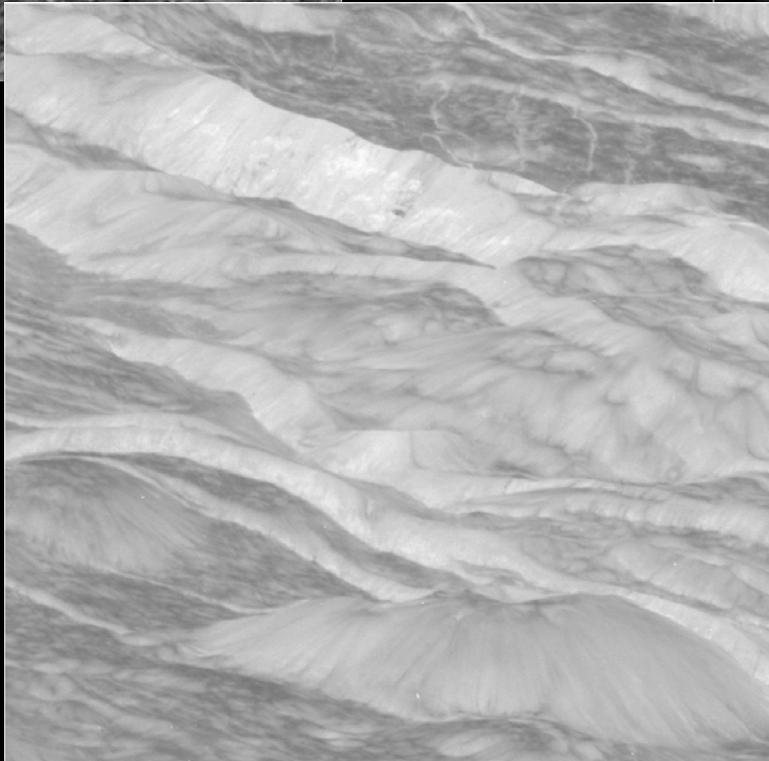
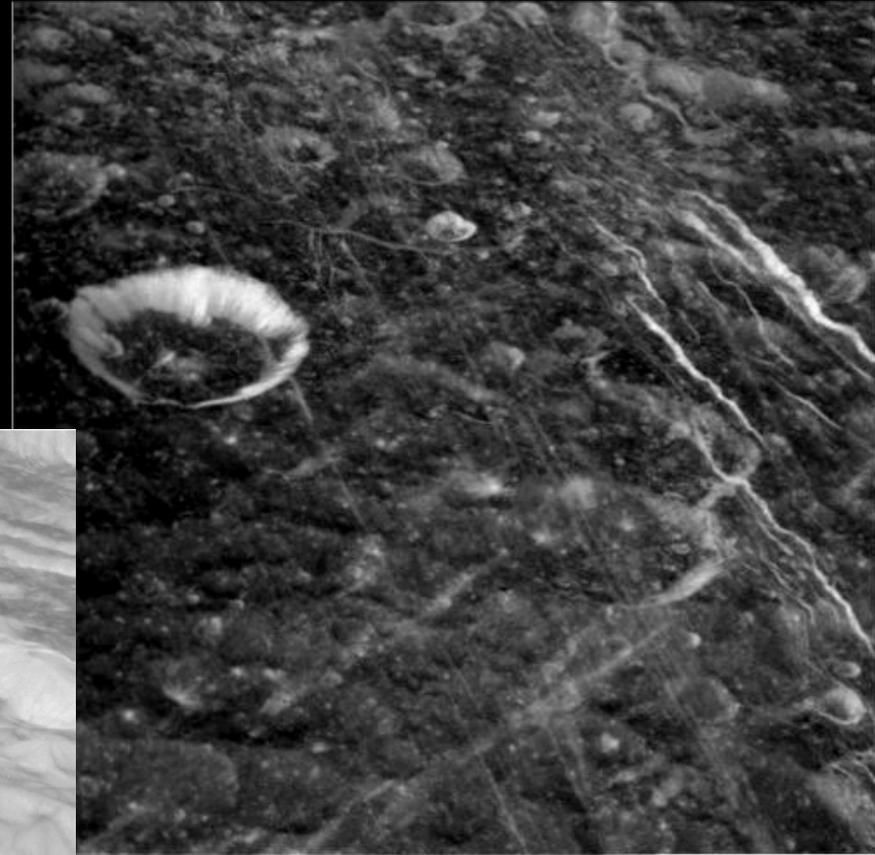


26 December 2009



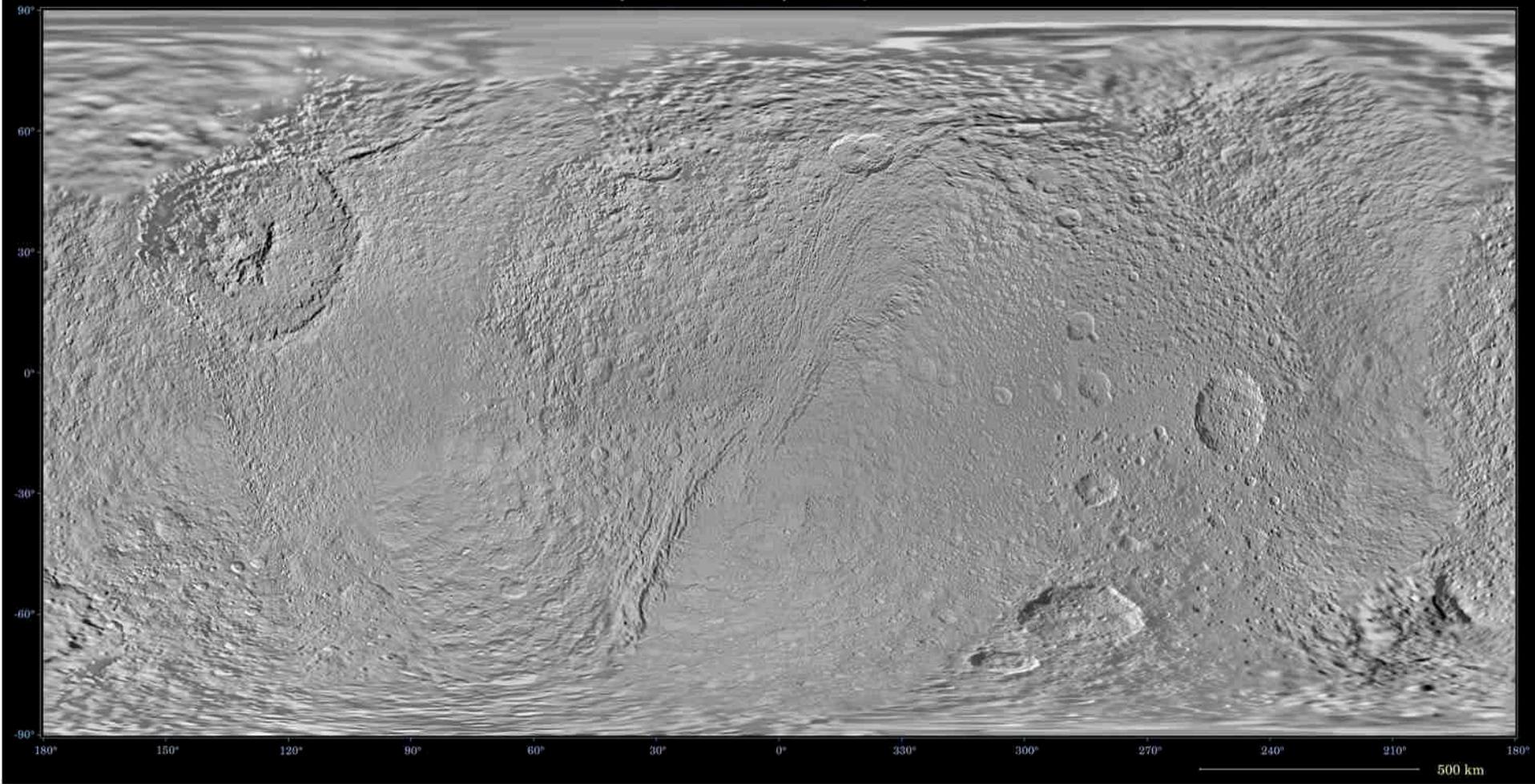
27 January 2010

Dione Flyby, 7 April 2010



Tethys

Map of Saturn's Moon Tethys - February 2010



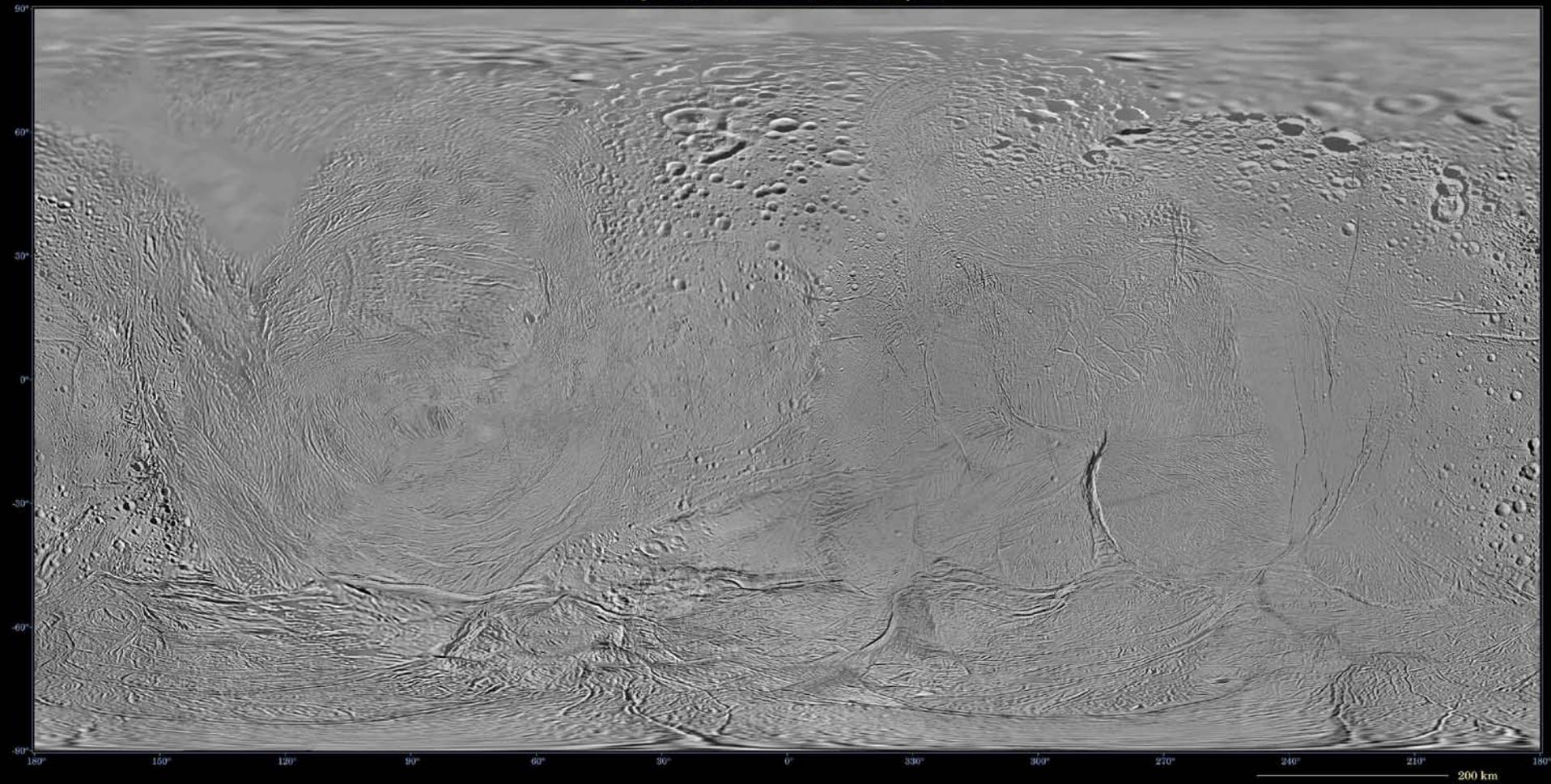
Tethys



14 February 2010

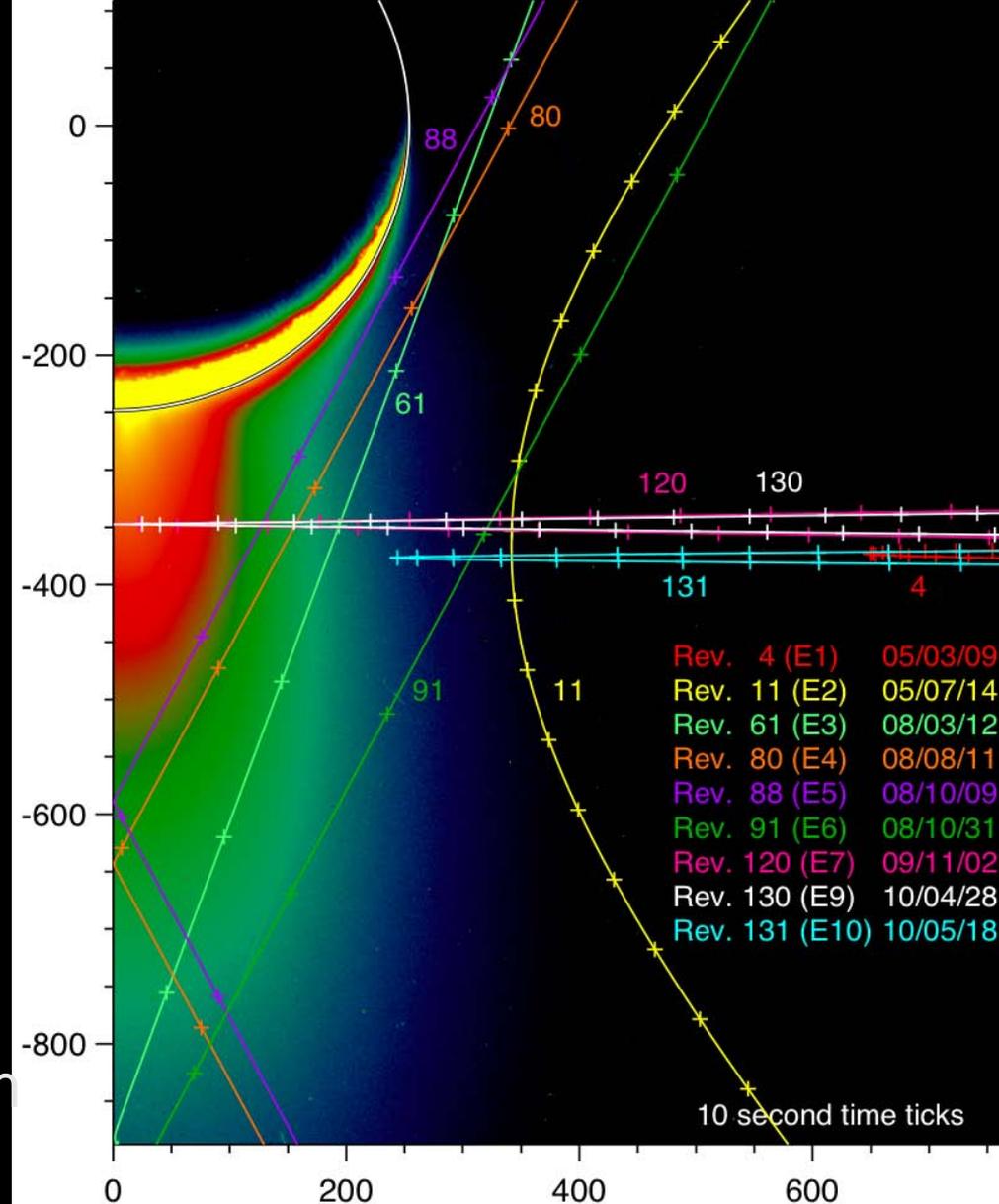
Enceladus

Map of Saturn's Moon Enceladus - February 2010

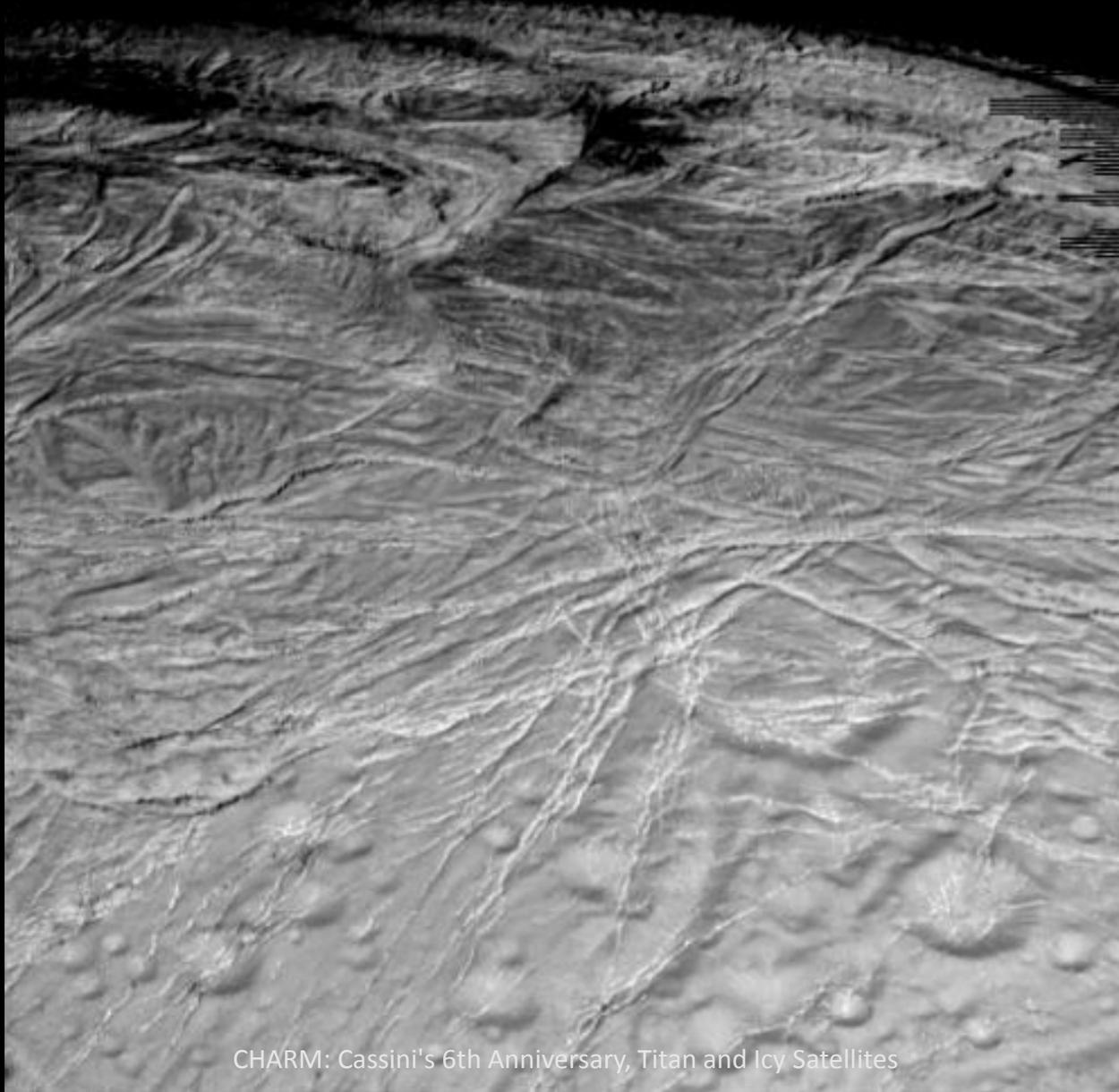


Enceladus Encounters

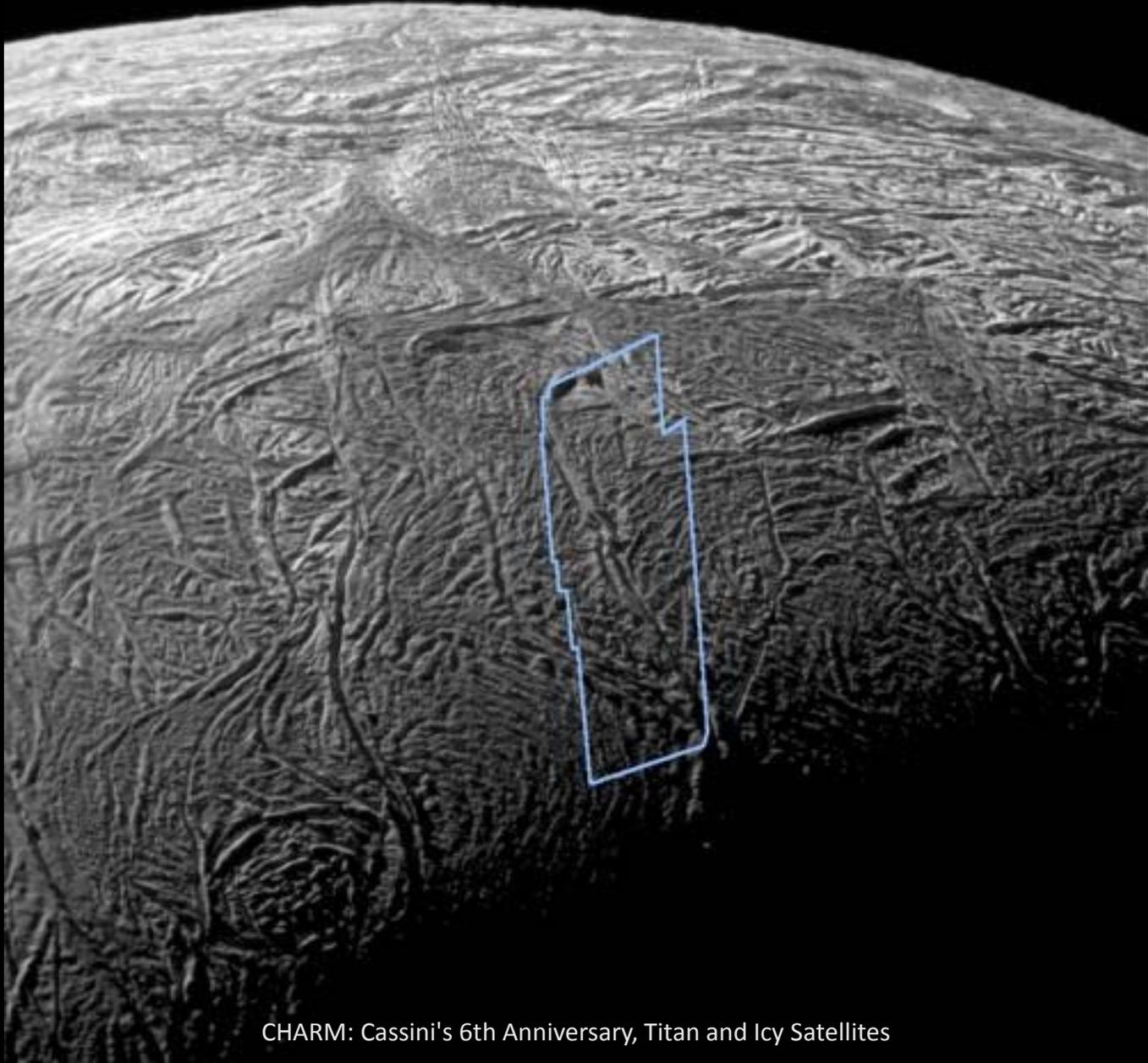
- 17 Feb 2005 1176 km
- 9 March 2005 504 km
- 14 July 2005 172 km
- 12 March 2008 52 km
- 11 August 2008 50 km
- 9 October 2008 25 km
- 31 October 2008 197 km
- 2 November 2009 99 km
- 21 November 2009 1603 km
- 28 April 2010 99 km
- 18 May 2010 198 km



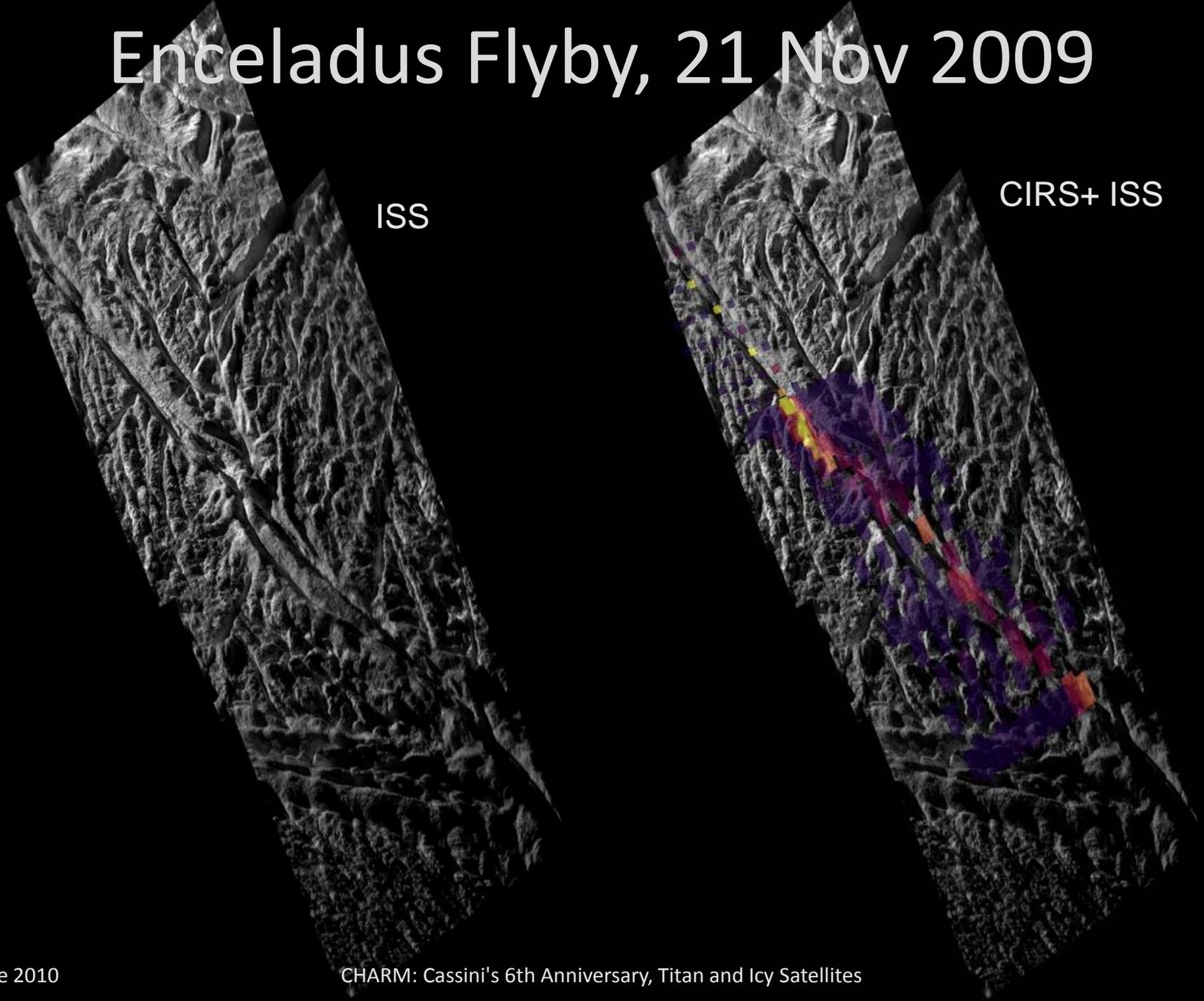
Enceladus Flyby, 2 Nov 2009



Enceladus Flyby, 21 Nov 2009



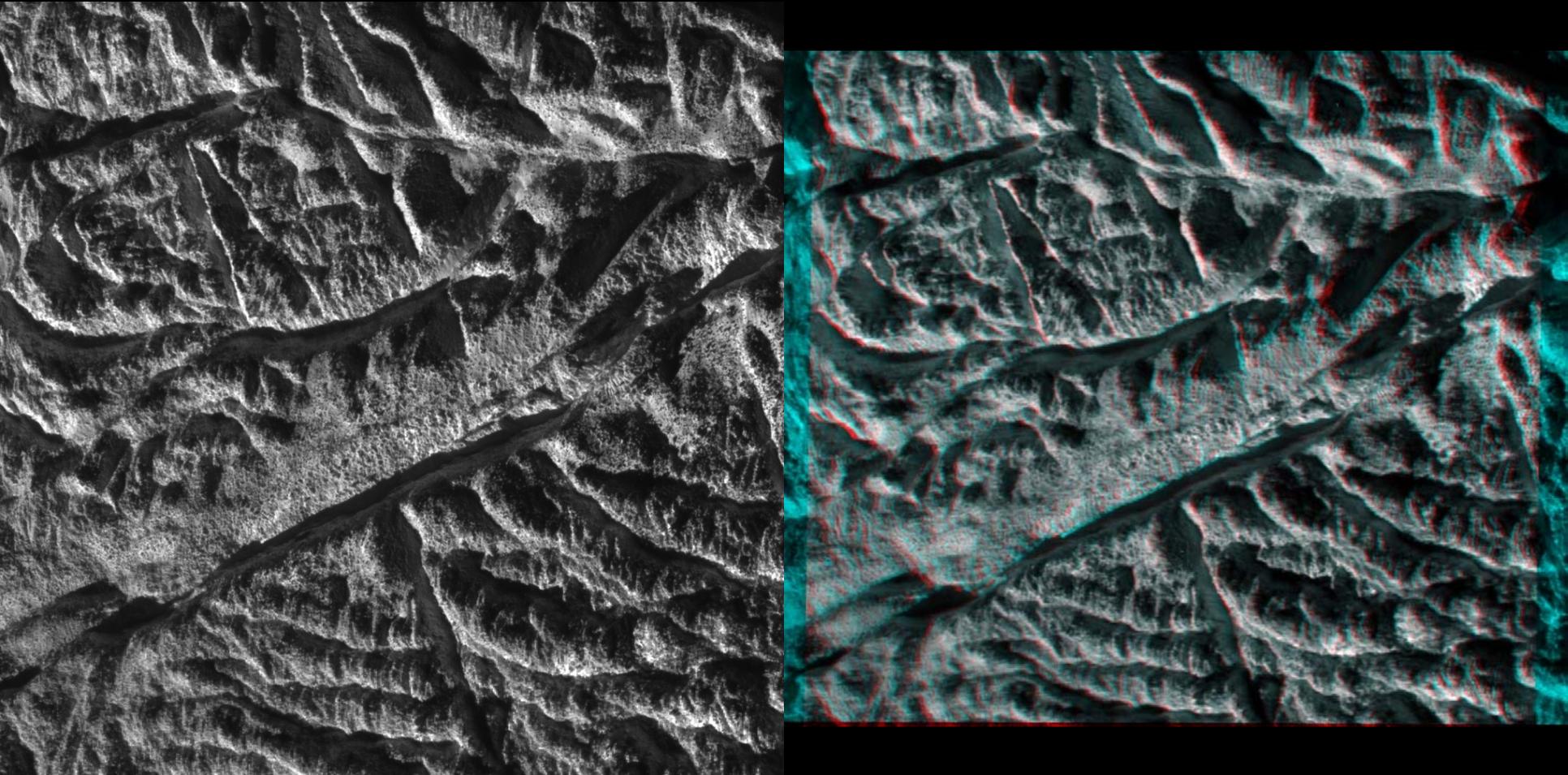
Enceladus Flyby, 21 Nov 2009



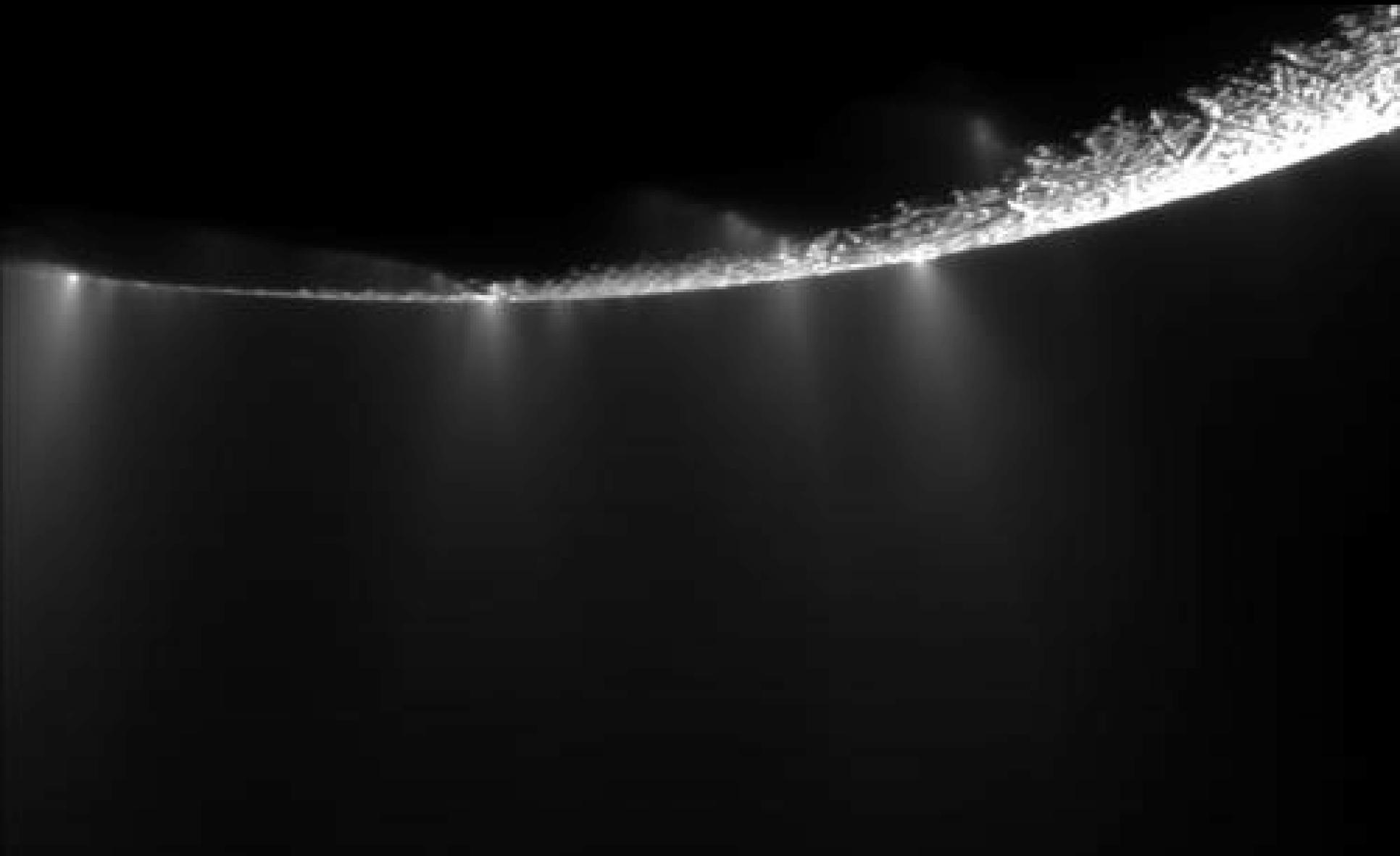
ISS

CIRS+ ISS

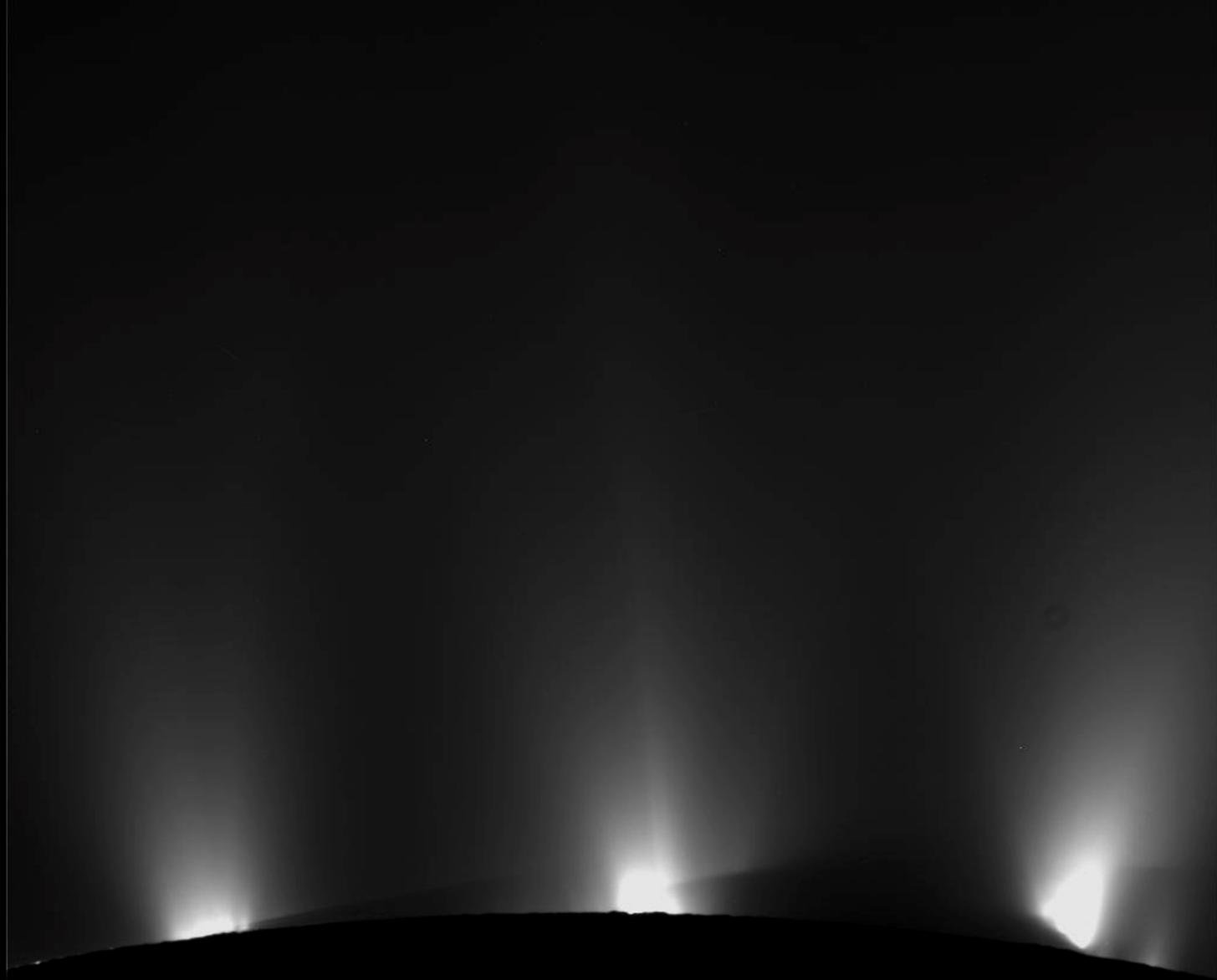
Enceladus Flyby, 21 Nov 2009



Enceladus Flyby, 21 Nov 2009

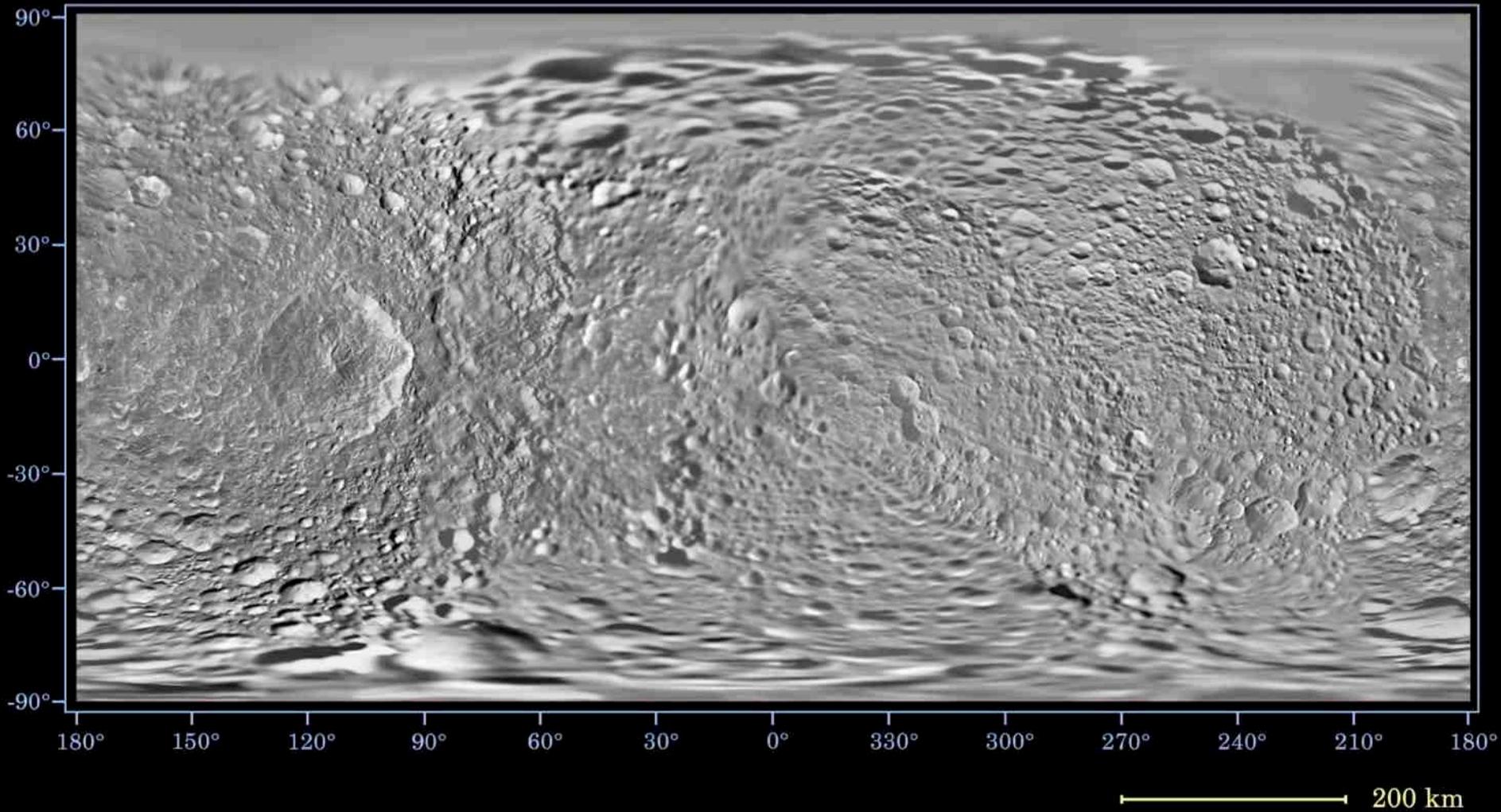


Enceladus Flyby, 18 May 2010

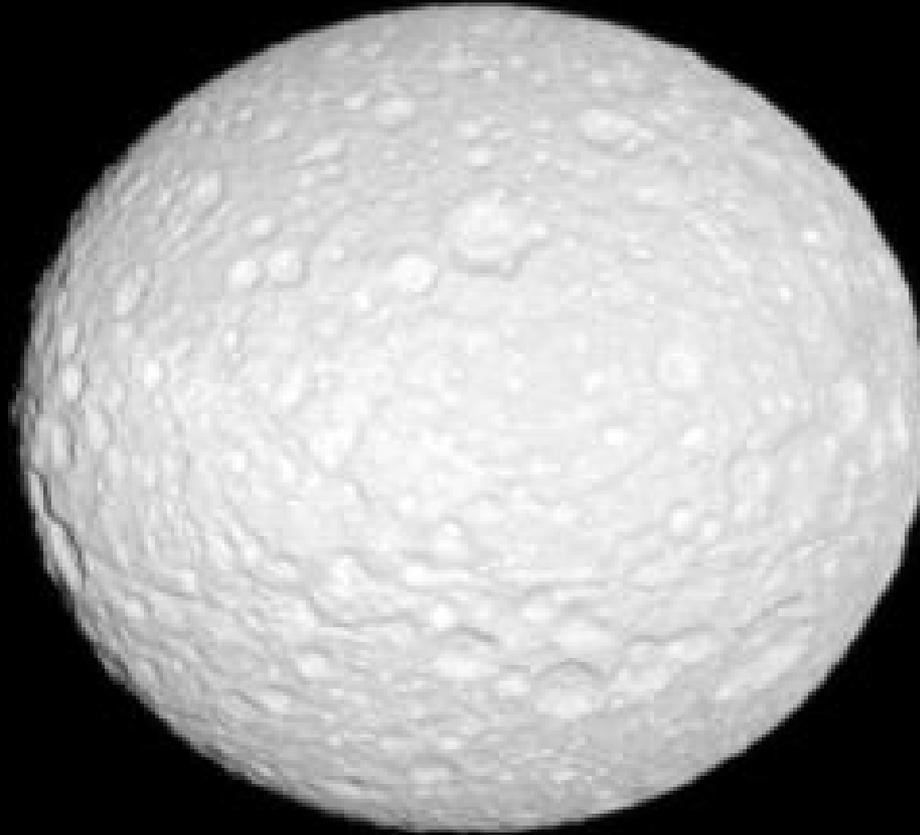


Mimas

Map of Saturn's Moon Mimas - February 2010



Mimas

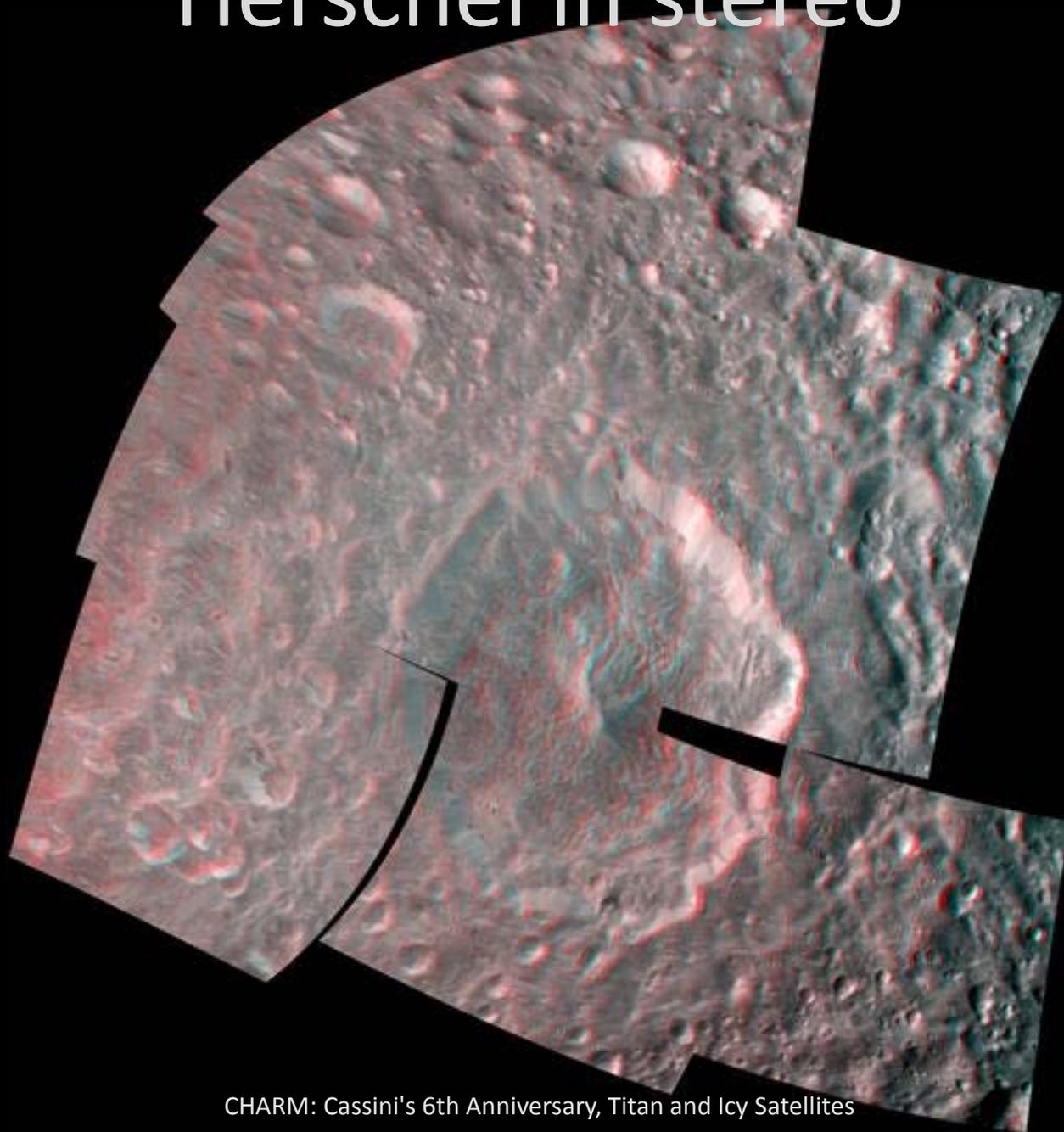


14 October 2009

Mimas Distant Flyby, 13 Feb 2010

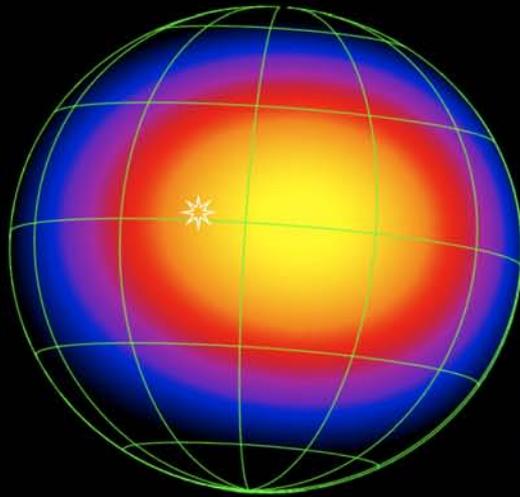


Herschel in stereo

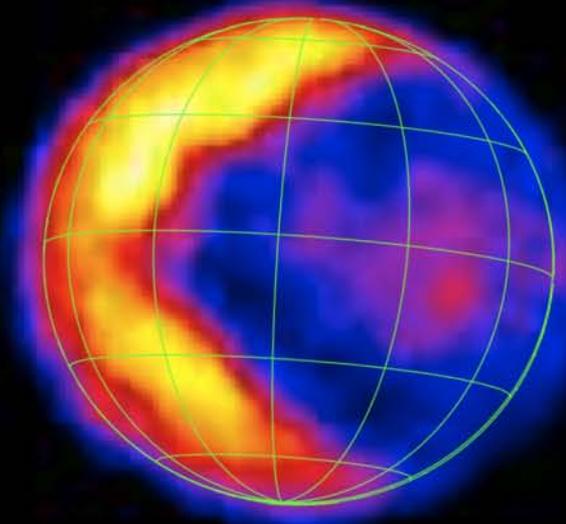


Mysterious Temperatures on Mimas

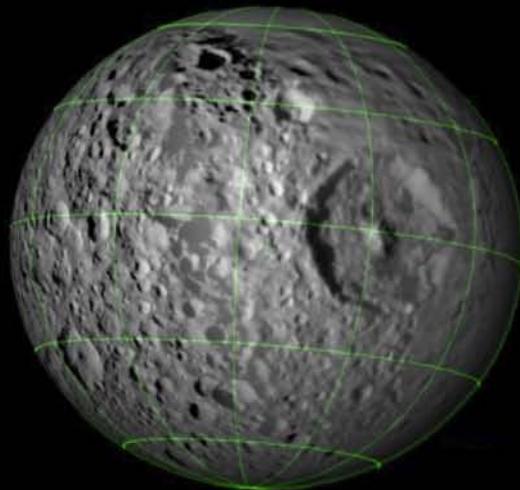
Expected Temperatures



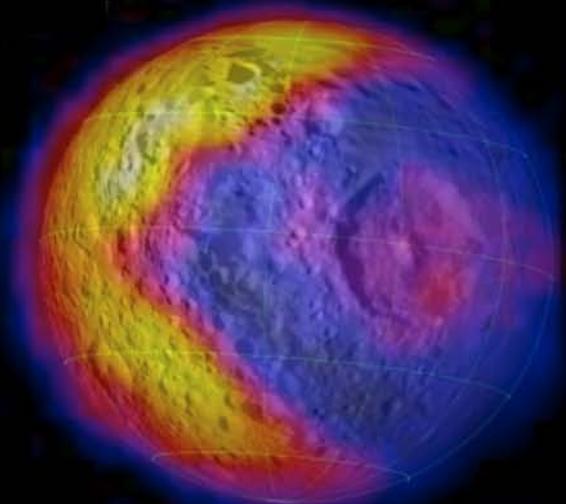
Actual Temperatures



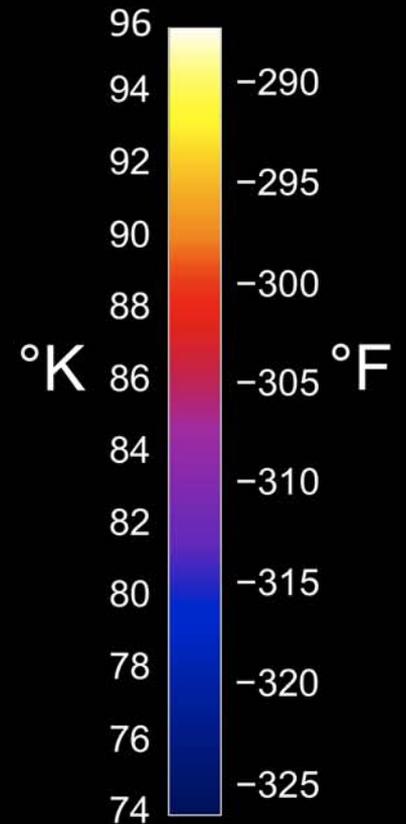
Visible-Light Map



Combined Map

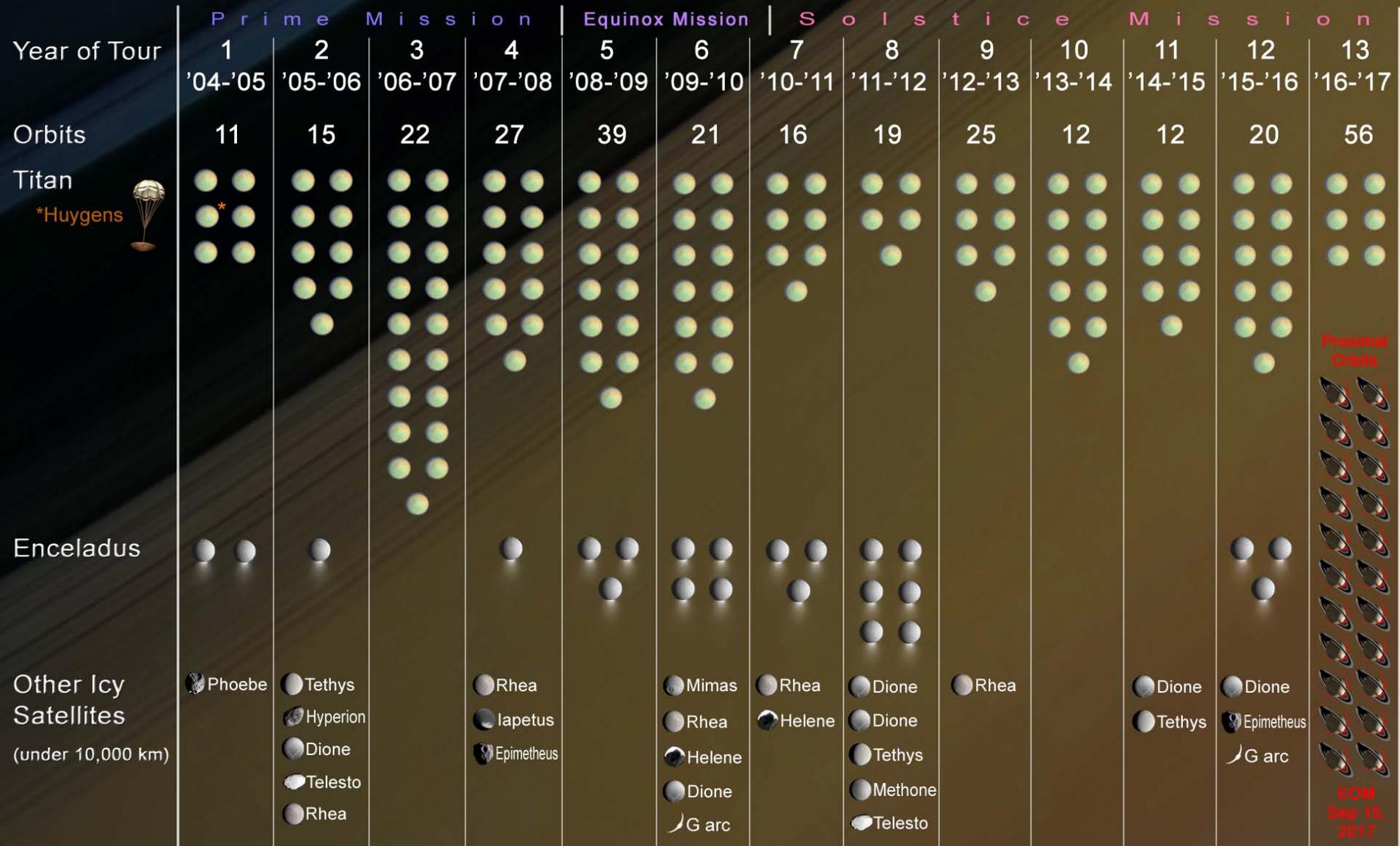


Surface Temperature



Cassini Mission Overview

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



Proximal Orbits

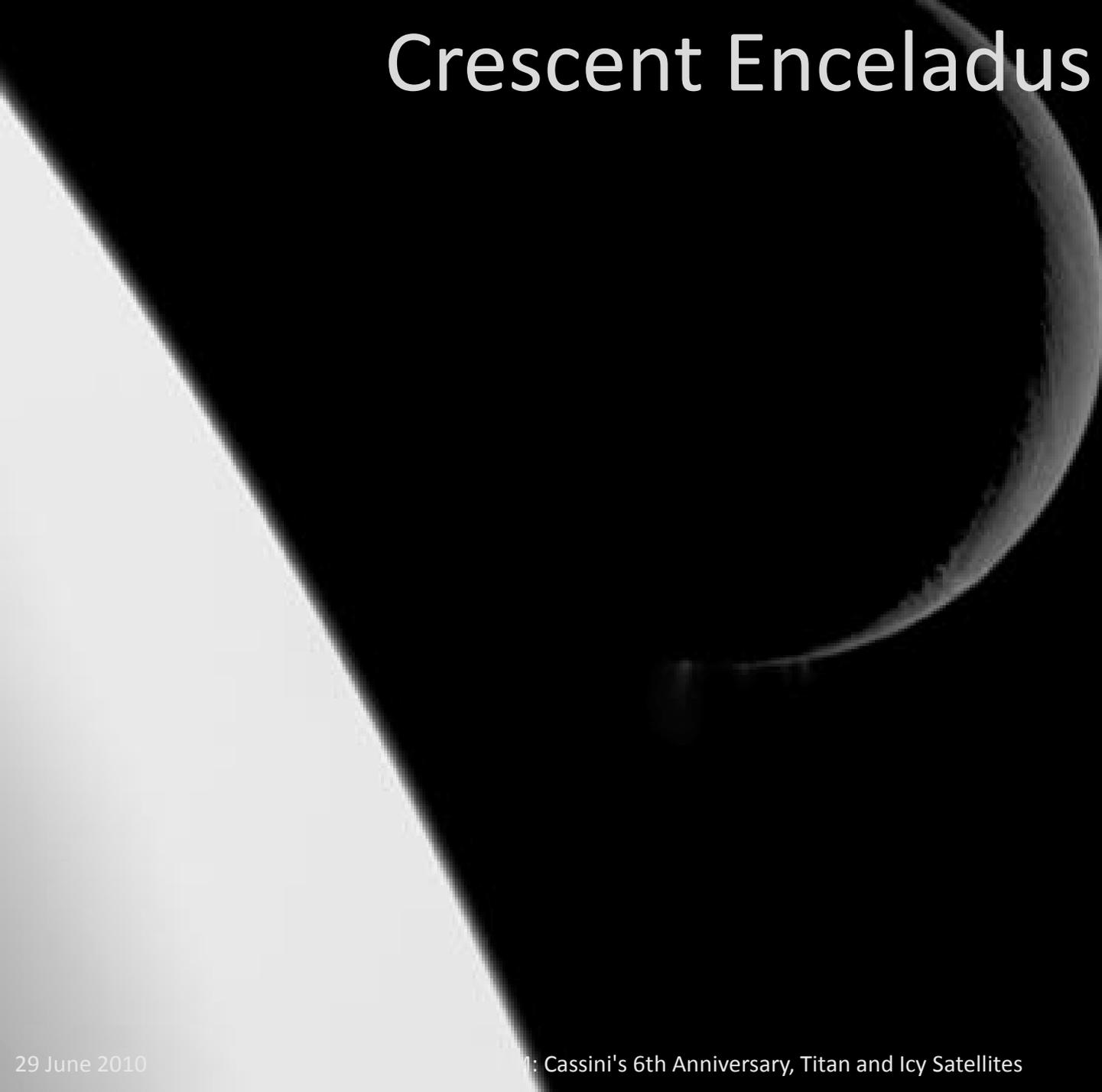
EOM
Sep 15,
2017

Saturn
(seen from Sun)
29 June 2010



CHARM: Cassini's 6th Anniversary, Titan and Icy Satellites

Crescent Enceladus



21 November 2009