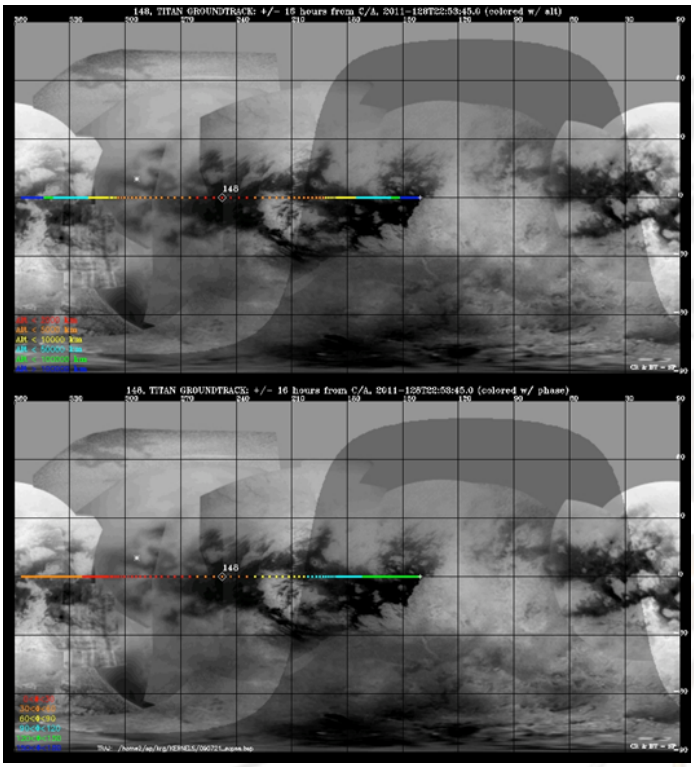
Cassini Solstice Mission Quick-Look Flyby Facts

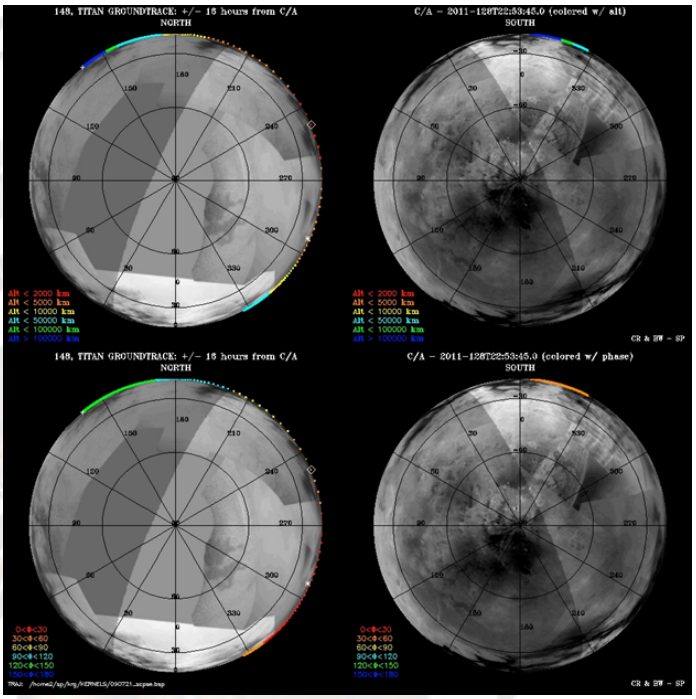
Titan T-76 Encounter (Orbit 148)

The T-76 flyby occurs with local time coverage moving from the dayside to the dusk side.

Cassini Groundtrack: Global Plot



Cassini Groundtrack: Polar Plot



* Start ◇ Closest Approach + End

Quick Facts

Closest Approach at 2011-128T22:53:45
May 8, 2011
Altitude: 1,873 km (~1,164 miles)
Speed: 5.9 km/sec (~13,000 mph)
Closest Approach latitude: 0.0° N

Flyby Setup Maneuver Schedule

Apoapsis maneuver on Thursday,
April 28 UTC 119T00:18:00
Titan approach maneuver on Thursday, May 5
UTC 125T16:17:00

- Closest Approch occurs ~ 2 days before Periapse
- Sixth Titan encounter in the Solstice Mission

Science Highlights

Closest Approach/Unique Observations

VIMS: During this flyby, VIMS is prime at closest approach and will acquire high resolution images of Belet and its limits with the surrounding dune fields. Later during the flyby, the VIMS will stare at Titan to continue its mapping of the cloud coverage in order to detect any seasonal change in the cloud distribution before and after the equinox.

CIRS: On T-76 CIRS will perform both mid and far-infrared limb sounding near 50 degrees N, as part of a campaign to monitor changing chemical abundances and temperatures as the northern hemisphere moves through late spring.

Time Ordered Listing

Event	Time (PDT)	Event	Time (PDT-SCET)
Turn Cameras to Titan	Sun May 8 03:08 AM	UVIS	Sun May 8 08:14 PM-
Deadtime	Sun May 8 03:48 AM	VIMS	Mon May 9 02:14 AM
CIRS	Sun May 8 04:03 AM	CIRS	Mon May 9 07:14 AM
VIMS	Sun May 8 05:04 PM	Deadtime	Mon May 9 03:28 PM
Closest Approach	Sun May 8 05:14 PM	Downlink	Mon May 09 05:53 PM

Science Highlights

Inbound/Outbound Wings

ISS: ISS will ride along with VIMS to acquire high-resolution images at low phase angle as well as regional- and global-scale observations of Titan's trailing/anti-Saturnian hemisphere, including western Belet and Senkyo. ISS will also monitor Titan's haze and clouds over a period of 19+ hours while riding along with UVIS, VIMS and CIRS.

MIMI: The flyby will be an approach with the sun in the INCA FOV until 18 minutes before closest approach. After that, it will be a very nice opportunity for INCA to do ENA imaging of the ion interaction with the exosphere, and CHEMS and LEMMS willbe making good ion and electron measurements of the energetic particle environment throughout the encounter.I NCA should be able to detect any ion acceleration that may be taking place in Titan's wake with the viewing geometry of the approach, and possibly also after closest approach.

UVIS: UVIS will obtain an image cube of Titan's atmosphere at EUV and FUV wavelengths by sweeping its slit across the disk. These cubes provide spectral and spatial information on nitrogen emissions, H emission and absorption, absorption by simple hydrocarbons, and the scattering properties of haze aerosols. This is one of many such cubes gathered over the course of the mission to provide latitude and seasonal coverage of Titan's middle atmosphere and stratosphere.

RPWS: Measure thermal plasmas in Titan's ionosphere and surrounding environment; search for lightning in Titan's atmosphere; investigate the interaction of Titan with Saturn's magnetosphere.

MAG: T-76 is a post-dusk, upstream equatorial flyby at 1862 km altitude, similar to the T-34 flyby. During T-76 MAG will investigate the structure of Titan's induced magnetosphere along the ram direction while being on the dayside, a geometry which is ideal for pressure balance studies. The high altitude of periapsis (above the exobase) however limits the study of diffusion of magnetic field within the ionosphere.