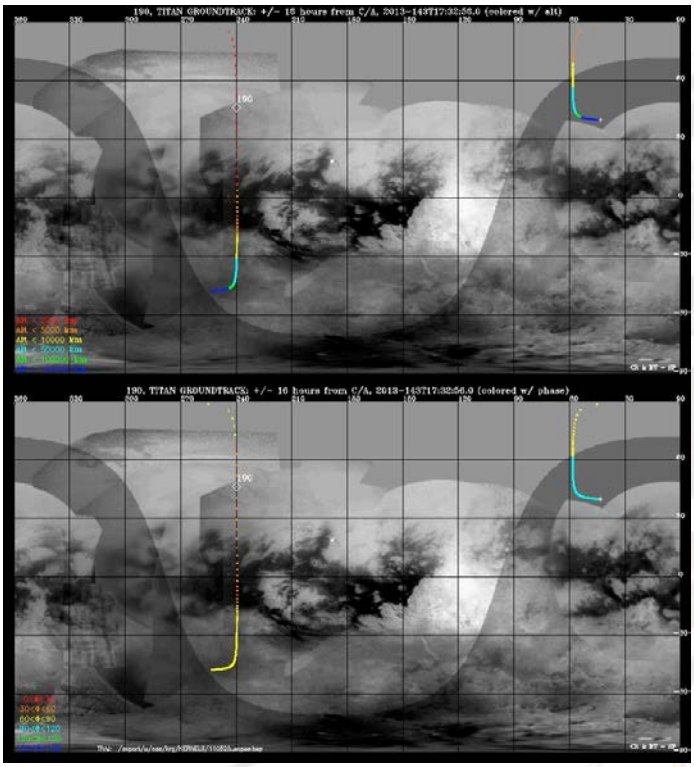
# Cassini Solstice Mission Quick-Look Flyby Facts

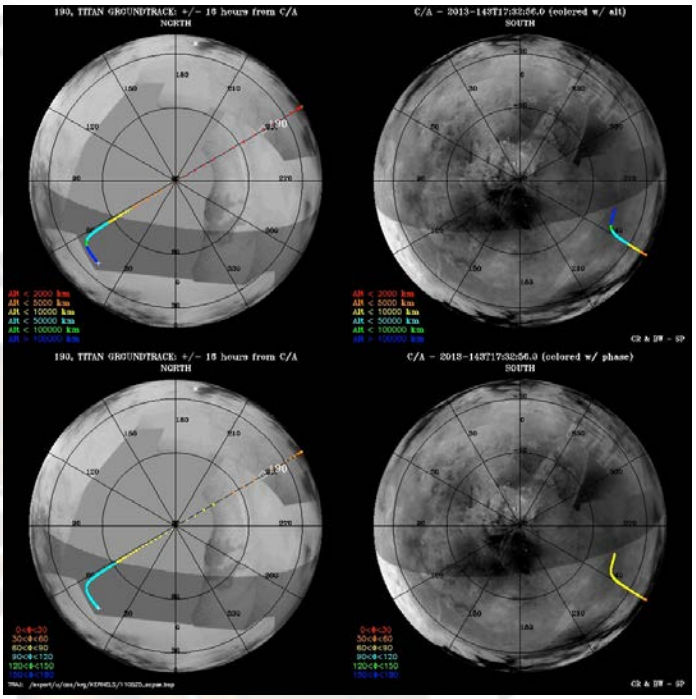
# Titan T-91 Encounter (Orbit 190)

The T-91 flyby occurs with local time coverage moving from the nightside to the dayside

## Cassini Groundtrack: Global Plot



## Cassini Groundtrack: Polar Plot



* Start ◇ Closest Approach + End

## Quick Facts

Closest Approach at 2013-143T17:32:55
May 23, 2013
Altitude: 969.8 km (~603 miles)
Speed: 5.9 km/sec (~13,000 mph)
Closest Approach latitude: 46.2° N

Flyby Setup Maneuver Schedule:
Titan approach maneuver on Sunday, May 19 UTC 139T06:46:00
Closest Approach occurs ~ 3 days after Periapse

21st Titan encounter in the Solstice Mission

## Science Highlights

### Closest Approach/Unique Observations

RADAR: The RADAR observations just prior to closest approach are labelled as SAR, but some of time will be used to perform altimetry over Ligeia Mare, the only altimetry over a lake in the XXM. This is of considerable importance - the altimetry data is RADAR's most sensitive and unambiguous data type for wave detection and the T-61 data on Ontario were lost. The SAR portion is used to go over northern lakes observed in T-16/T-19 for change detection, and will provide stereo of lakes with T-92 SAR.

## Time Ordered Listing

| Event | Time (PDT) | Event | Time (PDT) |
|---|---|---|---|
| Turn Cameras to Titan | Wed May 22 7:00 PM | ISS | Thu May 23 4:46 PM |
| Deadtime | Wed May 22 7:40 PM | CIRS | Thu May 23 7:46 PM |
| CIRS | Wed May 22 7:55 PM | Deadtime | Fri May 24 8:50 AM |
| RADAR | Thu May 23 4:46 AM | Downlink | Fri May 24 9:45 AM |
| Flyby | Thu May 23 10:46 AM | ISS | Fri May 24 9:25 PM |

## Science Highlights
### Inbound/Outbound Wings

RADAR: altimetry for global shape along 120 East meridian down to the equator. Inbound and outbound to closest approach, RADAR conducts scatterometry/radiometry, HiSAR and altimetry observations.

CIRS: CIRS focuses on continued temporal coverage of gas and temperature distributions in the stratosphere.

ISS: ISS rides along with CIRS' observations to image Titan's surface and atmosphere, including high northern (inbound) and mid-southern (outbound) latitudes as Titan approaches northern summer. Outbound, : ISS will acquire global-scale mosaics of Titan's mid-southern latitudes on the trailing hemisphere, which have only been imaged at lower resolution. ISS will monitor Titan to track clouds and the evolution thereof for an extra day after the Titan encounter.

VIMS On the inbound, VIMS will look for specular reflection at 65 N latitudes and 150 W longitudes. Outbound, VIMS will be monitoring the cloud activity as it rides along with ISS and CIRS.

MAG: T-91 is another high inclination (990 km) low altitude flyby in the noon sector of Saturn's magnetosphere. With closest approach in the dayside, Cassini will be able to study the diffusion of the external magnetic field at low altitudes and low solar zenith angles. A comparison with flybys T-83-T-90 will be very useful.