

# VESPA – 3DVIEW – TOPCAT use case

## T117 Cassini Titan flyby - 16/02/2016

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VESPA: <http://vespa.obspm.fr/>

3Dview: <http://3dview.cdpp.eu/> (8/2/2016: some functionalities are still in dev/test and not present on that version)

Topcat: <http://www.star.bris.ac.uk/~mbt/topcat/>

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Flyby info: <http://saturn.jpl.nasa.gov/mission/flybys/titan20160216/>

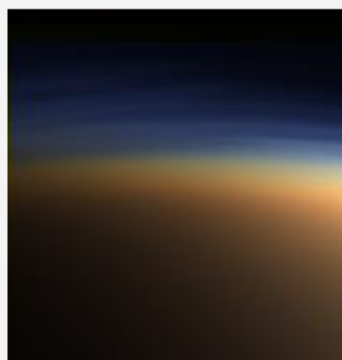
### Titan Flyby T-117: Measuring Titan's Atmosphere

This is Cassini's 118th flyby of Titan and the third of eleven planned for 2016. This encounter will increase the inclination of Cassini's orbit from 16 degrees to 20.6 degrees. The highest priority science is a grazing atmospheric occultation observed by Radio Science Subsystem (RSS), which will profile the thermal structure of the atmosphere, with ingress and egress latitudes of ~7S and ~30N degrees. The occultation is followed by a short-duration high northern-latitude egress-only bistatic scattering with ground track likely crossing small lakes, covering the region from about (80N, 190W) to about (70N, 240W) degrees, and capturing near-grazing scattering angle decreasing from about 80 to 75 degrees.

On approach, the Composite Infrared Spectrometer (CIRS) will view the sub-Saturn hemisphere of Titan, the Visible and Infrared Mapping Spectrometer (VIMS) will do two mapping observations and the Imaging Science Subsystem (ISS) will search for clouds across Titan's Fensal-Aztlan region.

#### Sources:

- *Cassini Science Team. NASA Jet Propulsion Laboratory*
- [Cassini Saturn Tour Dates](#)
- *Cassini Imaging Central Laboratory for Observations (CICLOPS), "Looking Ahead: Rev232: Jan 22 - Feb 7 2016"*



This natural color image shows Titan's upper atmosphere -- an active place where methane molecules are being broken apart by solar ultraviolet light and the byproducts combine to form compounds like ethane and acetylene.

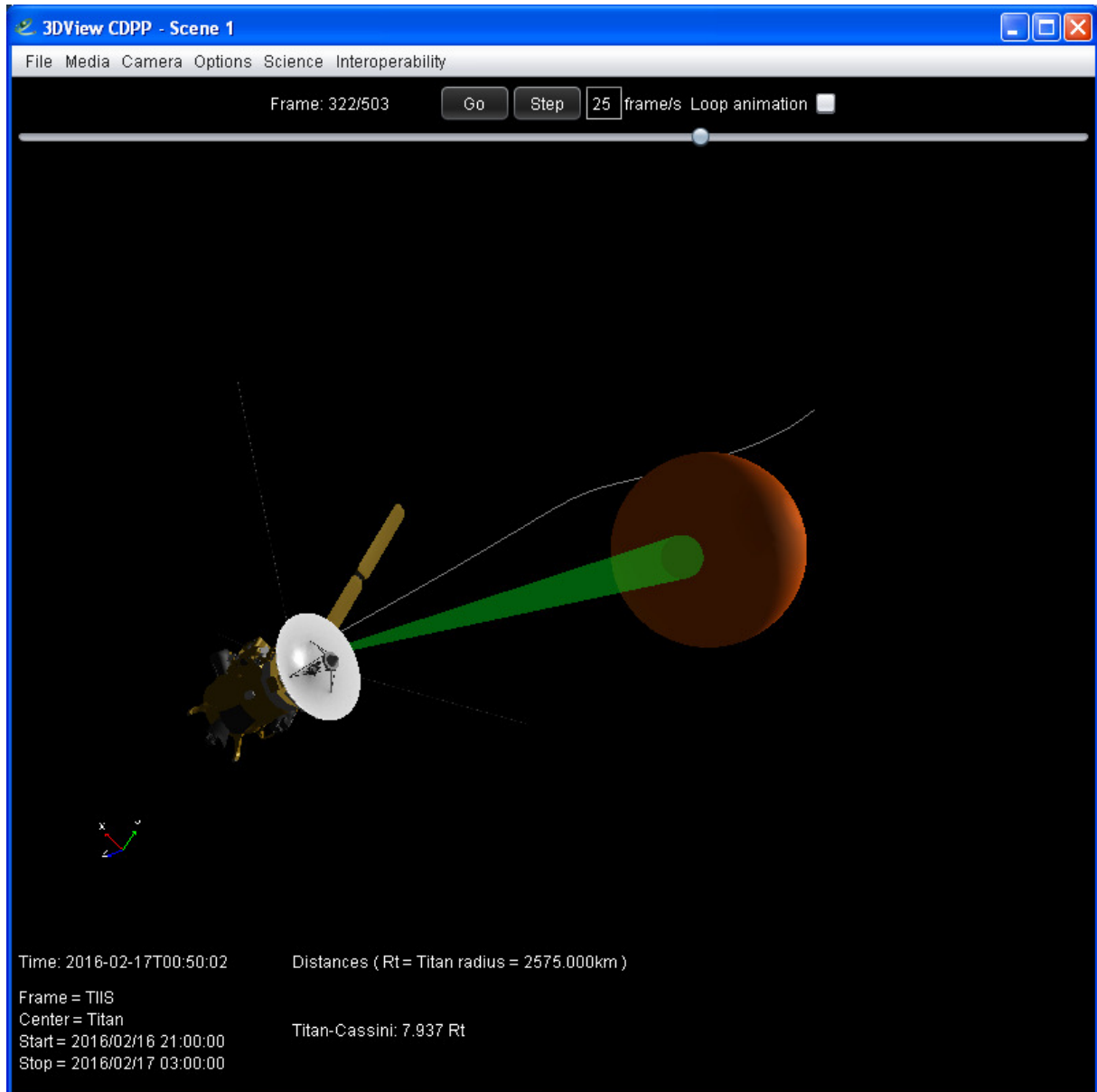
[+ More Titan Information](#)

### Titan Flyby at a Glance

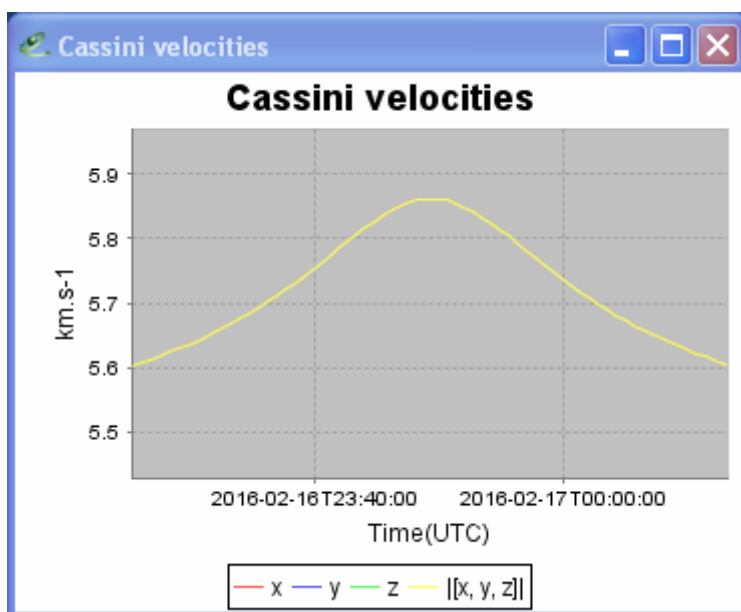
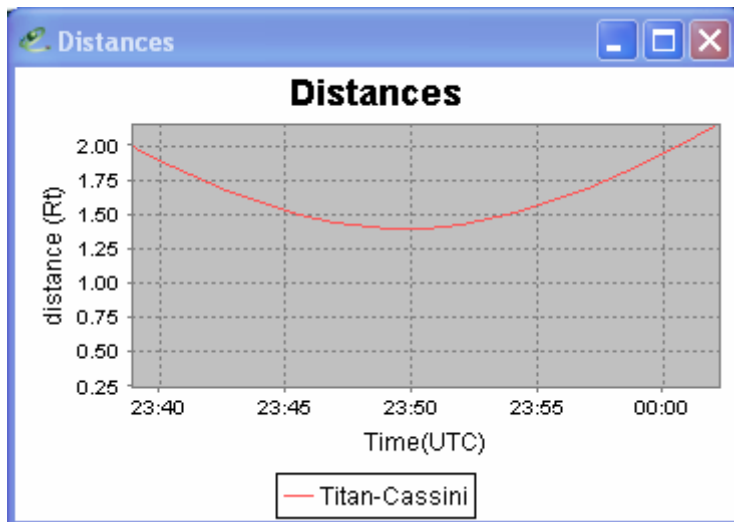
<b>Date</b>	Feb. 16, 2016
<b>Altitude</b>	633 miles (1,018 km)
<b>Speed (rel. to Titan)</b>	20,132 mph (5.9 km/sec)
<b>Details</b>	
	<a href="#">+ Flyby FAQ</a>
	<a href="#">+ Titan Image Gallery</a>
	<a href="#">+ Browse or Search the Latest Raw Images</a>
	<a href="#">+ Saturn's Moons</a>

### 3Dview scene

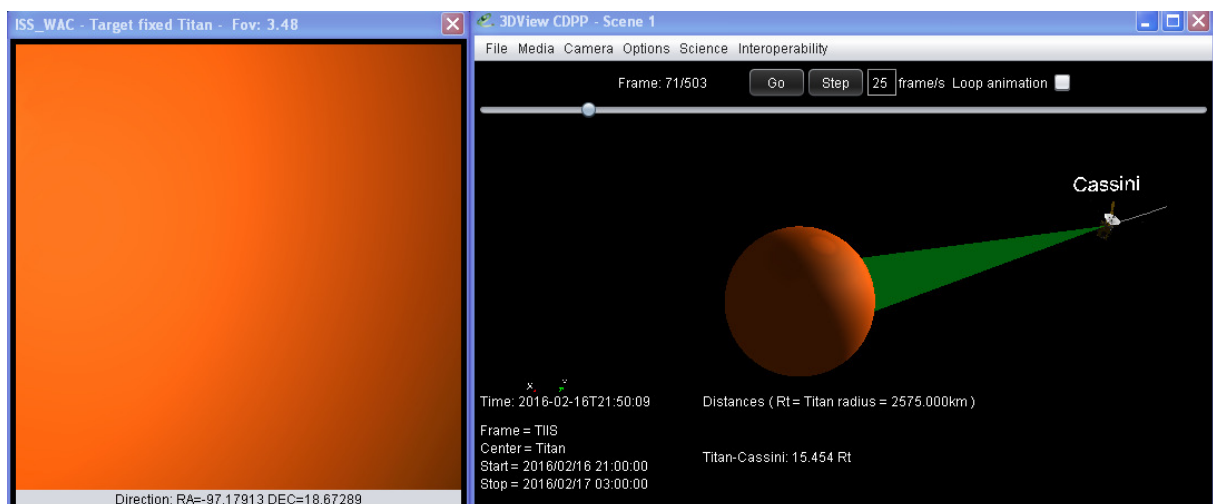
Center on Titan; reference frame is TIIS  
~3h before/after flyby



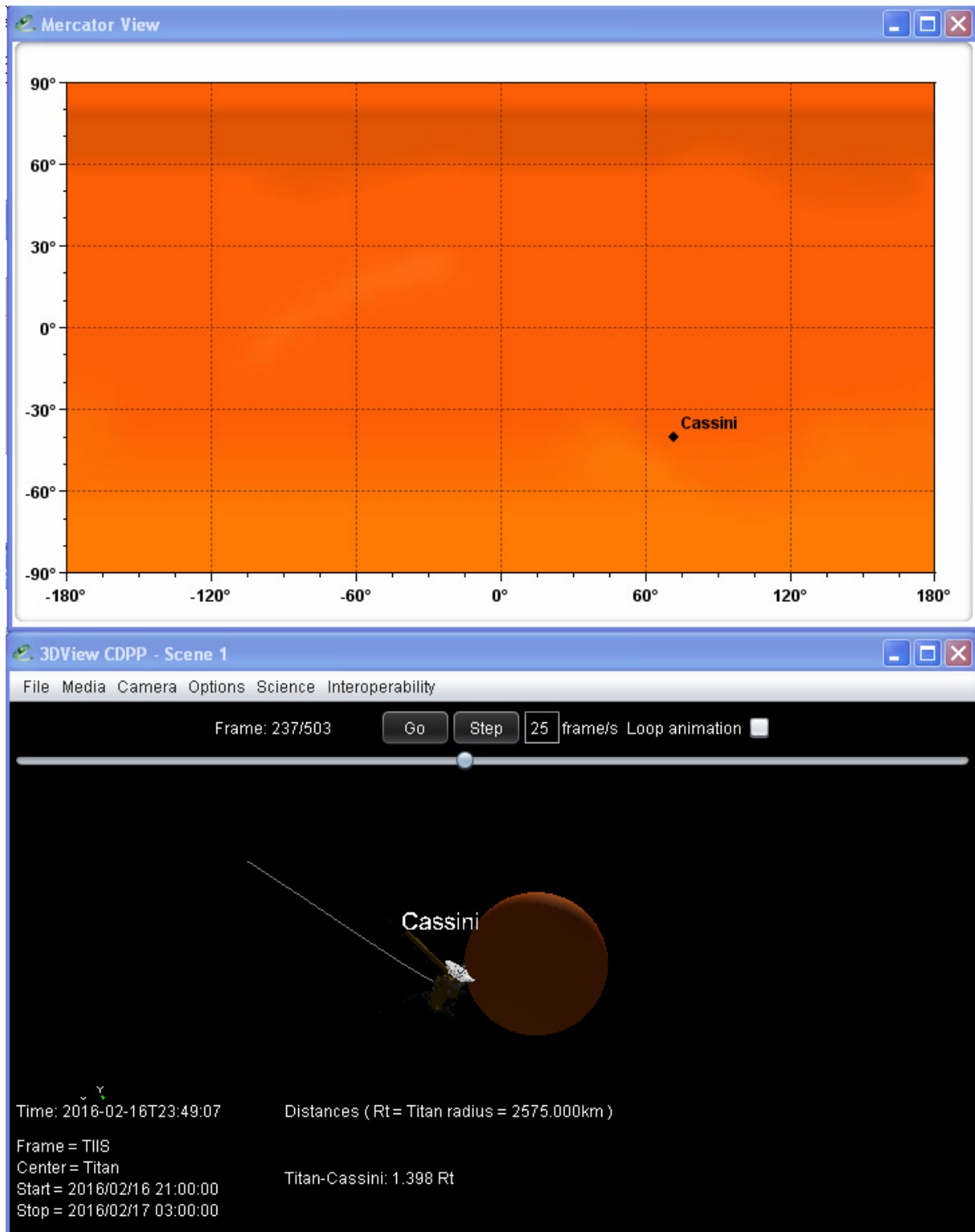
Distances / velocities are consistent with JPL information



### ISS WAC FOV on ingress



Mercator map at closest approach (CA)  
Approach seems ok with JPL info on ingress/egress latitudes



## Request on VESPA

Target name = Titan

Constraints on Lon/Lat in the region of the CA

Location -

Spatial Frame Type

Longitude min  $\geq$   Longitude max  $\leq$

Latitude min  $\geq$   Latitude max  $\leq$

## Results

### Vertical Profiles in Titan Middle Atmosphere

Results : 10

[DISPLAY RESULTS](#) [DISPLAY VOTABLE](#) [SAMP VOTABLE](#) [ADVANCED QUERY FORM](#)

► Description :

Credits: Creator: S. Vinatier | Contributors: VOPDC

## Results in service titan

Full Text

Show  entries Search:  Show / hide columns

dataproduct_type	target_name	time_min (d)	time_max (d)	access_url
profile	Titan	2012-02-18T12:00:00	2012-02-18T12:00:00	<a href="#">46S_57E_Ls31_profq_C2H6.txt</a>
profile	Titan	2012-02-18T12:00:00	2012-02-18T12:00:00	<a href="#">46S_57E_Ls31_profq_C4H2.txt</a>
profile	Titan	2012-02-18T12:00:00	2012-02-18T12:00:00	<a href="#">46S_57E_Ls31_profq_CO2.txt</a>
profile	Titan	2012-02-18T12:00:00	2012-02-18T12:00:00	<a href="#">46S_57E_Ls31_profq_C2H4.txt</a>
profile	Titan	2012-02-18T12:00:00	2012-02-18T12:00:00	<a href="#">46S_57E_Ls31_profq_CH3C2H.txt</a>
profile	Titan	2012-02-18T12:00:00	2012-02-18T12:00:00	<a href="#">46S_57E_Ls31_profq_C2H2.txt</a>
profile	Titan	2012-02-18T12:00:00	2012-02-18T12:00:00	<a href="#">46S_57E_Ls31_profq_C3H8.txt</a>
profile	Titan	2012-02-18T12:00:00	2012-02-18T12:00:00	<a href="#">46S_57E_Ls31_profq_HCN.txt</a>
profile	Titan	2012-02-18T12:00:00	2012-02-18T12:00:00	<a href="#">46S_57E_Ls31_profq_HC3N.txt</a>
profile	Titan	2012-02-18T12:00:00	2012-02-18T12:00:00	<a href="#">46S_57E_Ls31_proft.txt</a>

Showing 1 to 10 of 10 entries First Previous 1 Next Last

Open Topcat and SAMP the last file (temperature profile)

# TOPCAT plot

