



## **Analysis of VIMS image cubes : clues on Titan's geology**

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The Visual and Infrared Mapping Spectrometer (VIMS) onboard the Cassini spacecraft acquired image cubes of Titan during the two first flybys. Titan's surface can be seen in seven infrared windows between the methane absorption bands. More than 200 image cubes have been obtained including a mosaic of six cubes with a spatial resolution of 30 km/pixel, 2 cubes and a mosaic of the Huygens landing site with a spatial resolution of 7 km/pixel, and four cubes near closest approach with spatial resolutions ranging from 5 km/pixel to 2 km/pixel. The wavelengths where VIMS has the greatest signal-to-noise ratio while minimizing the effects of scattering by the atmospheric haze are between 2.01  $\mu\text{m}$  and 2.03  $\mu\text{m}$ . The surface is composed of bright and dark areas. In the bright area, the highest resolution image cubes reveal a feature that looks like a dome with two elongate wings extending westwards. This feature may resemble volcanic edifices with lobate flows. Such features could be places where methane (or other volatiles) is removed from the interior and flows at the surface. The dark area displays albedo variations that could be interpreted by slope changes defining a set of ridges and grooves elongated in the E-W direction.

The VIMS data obtained at the Huygens landing site will be compared with the data acquired by the instruments onboard Huygens which will provide ground truth for our instrument. A circular feature that may be an impact crater is revealed. However the number of impact craters is small. This lack of impact craters suggests that Titan's surface is young and that processes such as those described above have occurred widely.