



Recent Results on Titan's Surface from the Cassini Orbiter and Huygens Probe

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Spectra and images of the surface of Titan continue to be acquired by the Cassini Radar and Cassini VIMS (Visible and Infrared Mapping Spectrometer) aboard the NASA Cassini Orbiter. Images and spectra were also acquired by DISR (Descent Imager/Spectral Radiometer) aboard the ESA Huygens Probe during its descent to the surface in January 2005. Radar, unhampered by the atmosphere, acquires synthetic aperture images down to about 300 m and will cover about 0.2 of the surface during the nominal mission. VIMS acquires spectral images from 0.35 to 5.1 microns and can see clearly to the surface through several atmospheric windows in the near IR with a best resolution of 1-to-2 km. The RADAR and VIMS images reveal a surface rich in geological diversity: including evidence for volcanic, fluvial, lacustrine, eolian, and tectonic processes. The Radar images reveal vast regions pervaded by radar-dark longitudinal sand dunes. Correlation of the Radar and DISR images reveal the landing site to be about 40 km south of a region laced by these long, dark, longitudinal dunes; they are seen in both Radar and DISR SLI (side-looking) images. DISR images of regions near the landing site show brighter, higher terrains with stubby and higher-order drainage systems that border darker, lower-lying plains scoured by flow. Surface images show rounded gravels in a dry river bed. Six new photogrammetric models using DISR stereo pairs reveal extremely rugged topography for the drainages in the bright terrain with slopes as high as 30 degrees. This suggests relatively rapid erosion by flows in the river beds resulting in the deeply incised valleys. The relief across the 5x5 km region so far mapped is of order 200 meters