

Titan's Surface Albedo from Ground Based Near-Infrared Spectra and the Influence of Modeling Parameters

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Titan has been observed with the Fourier Transform Spectrometer (FTS) at the Canada France Hawaii Telescope (CFHT), the Infrared Spectrometer And Array Camera (ISAAC) at the ESO Very Large Telescope (VLT) and the NACO adaptive optics system, also at the VLT. These observations were performed from 1991 to 2005 and between 0.8 and 2.5 microns. This dataset allowed us to explore five methane windows at 0.94, 1.08, 1.28, 1.58 and 2 microns at different longitudes and resolutions. The effect of the methane absorption coefficients in the modeling and its influence on the retrieval of surface albedo was investigated by performing a comparative study of the methane absorption coefficients currently available from different sources. The obtained surface albedo shows to be very dependent on the coefficients used, with obvious consequences to the analysis of Titan's surface composition. Also, the NACO observations, taken two days after Huygens landing, allowed us to retrieve the surface albedo of the Huygens landing site as well as of surrounding dark and bright areas. These results were then compared with the spectra of possible constituents of Titan's surface.