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A new analysis of the ESO Very Large Telescope (VLT) observations of Titan's at 2 μm.

T. Cours (1), P. Rannou (1), A. Coustenis (2), A. Negrão (3), M. Hirtzig (4), V. Boudon (5)

(1) GSMA, Univ. Reims, FRANCE, (2) LESIA, Observatoire de Meudon, FRANCE, (3)IFSI/INAF, Roma, ITALIE, (4)PSL/Univ. Michigan, Ann Arbor, MI, USA, (5)LPUB, Univ. Dijon, FRANCE

In this presentation, we report a new analysis of ESO Very Large Telescope (VLT) observations of Titan at about 2 μm, in the methane band and window. The VLT data consists in two north-south cuts of Titan's disk with about twenty points in resolution, each point being a spectrum. To analyze this observation, we use the atmospheric properties of Titan recently measured by Huygens, the methane coefficients proposed by Boudon et al. (2006), while the description of the haze layer is from a database derived from the simulations of the Titan Global Climate of the IPSL. We used the radiative transfer model SHDOMPP developed by Evans. This work is hence a significant improvement over the previous analysis by Negrão et al. (2007) In this work, we essentially focus on the distribution of the airborn scatterers (e.g, haze aerosols, clouds, mist). In a first step, we compute the outgoing intensity using the prediction of the GCM database for the haze, and we compare the results with the VLT observations. These comparisons allow us to check the validity of the haze layer provided by the GCM database. In a second step, we modify the haze properties and we include a layer of bright scatterers in the troposphere (liquid droplets as observed by DISR) to improve the fit. This work yields a latitude-altitude map of Titan's haze from the VLT data, and we estimate the impact of the haze and the cloud layer on the surface albedo retrieval.

References : 1) Boudon, V., M. Rey, and M. Loete (2006), J. Quant Spectrosc., 98, 394-404. 2) Negrão, A., Hirtzig, M., Coustenis, A., Gendron, E., Drossart, P., Ran-

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