AOGS 2005

Near-infrared Adaptive Optics observations of Titan in conjunction with Huygens' landing

MATHIEU HIRTZIG[1], ATHENA COUSTENIS[1], ERIC GENDRON[1], PIERRE DROSSART[1], ALBERTO NEGRÃO[1,2], MICHEL COMBES[1], PASCAL RANNOU[2], MARKUS HARTUNG[3], ERIC EMSELLEM[4], ARLETTE PECONTAL-ROUSSET[4], TOM HERBST[5], JEAN-PIERRE LEBRETON[6]and OLIVIER WITASSE[6]

[1]*LESIA, Observatoire de Paris-Meudon, France*
[2]*Service d'Aéronomie, Univ. de Versailles, France*
[3]*ESO, Garching, Germany*
[4]*CRAL, Observatoire de Lyon, France*
[5]*Max-Planck Institute for Astronomy, Heidelberg, Germany*
[6]*ESA/ESTEC*

On the 14th January 2005, Huygens landed on Titan. During one week, many Earthbased observatories looked at Saturn's biggest satellite to gather a large collection of data in order to compare them with the recent Cassini / Huygens' mission findings. Our team achieved two successful runs on two instruments: NAOS/CONICA (NACO) at the VLT (ESO, Cerro Paranal, Chile; 15th and 16th January) and NAOMI/OASIS at the WHT (La Palma, Canaries; 10th, 19th and 22nd January). We used several different modes available for NACO: (a) narrow-band filter imaging, gathering some information around 1.3 and 2.0 micron, as we have done for years [1], (b) spectroscopy around 2 micron with a resolving power of 1400, (c) SDI imaging, probing the core and wings of the 1.6 micron methane window, and (d) Fabry-Pérot Imaging (FPI), used like a collection of 2-nm wide filters to scan the 2.0 micron window. The OASIS instrument is an Integral Field Spectrometer that we have already used in 2000[2]. It returns about 1100 spectra regularly distributed over the whole field of view, in the 0.8-1.0 micron range. We will describe here the latest conclusions drawn from these 2005 runs, with respect to the results from previous runs, and from the Cassini/Huygens mission. First we will show the latest surface maps [3], as well as new hints regarding the chemical composition of the surface components. Then we will describe the situation of the last atmospheric phenomena observed on Titan [4], i.e. the North-South Asymmetry that continues to increase 5 years after the beginning of its reversal in the infra-red, and the cloud feature detected since 2001 above the South Pole.

References

[1] Gendron et al. (2004), Astronomy & Astrophysics, 417, L21-L24.
[2] Hirtzig et al. (2005a), Planetary and Space Science, in press.
[3] Coustenis et al. (2005), Icarus, in press.
[4] Hirtzig et al. (2005b), in preparation.