



Monitoring Titan's atmospheric dynamical activity during the last decade

M Hirtzig(1,2), S Rodriguez(3), S le Mouélic(1), C Sotin(1), A Coustenis(2), P Drossart(2), M Combes(2), E Gendron(2), O Lai(4)

(1) LPG, Université de Nantes, France, (2) LESIA, Observatoire de Paris-Meudon, France, (3) AIM, Centre de Saclay, DAPNIA/Sap, Gif/Yvette France, (4) CFHT, Hawaii, USA

Titan's clouds and short-term atmospheric phenomena are particularly puzzling. Hints as to the presence of clouds on Titan have been found in spectra dating back to 1995 [Griffith et al., 1998], while their first direct detections from ground-based or HST observations can be found in images from 1999 and on [Gibbard et al., 1999; Roe et al., 2002; Hirtzig et al., 2005]. Since then and until now, with the recent input from Cassini, many different features have been reported, in particular the huge meteorological system hovering above Titan's south pole, mid-latitude clouds and probable ethane clouds in the North. The physical processes behind the general picture are still difficult to comprehend since the whole picture of Titan's weather is very complicated and since different means of observation (spectroscopy, imaging) are used. The data interpretation is also still at an early stage since various teams use different models with varying parameters to analyze what they observe.

Therefore, we will only present here an overview of all the clouds observations between 1996 and 2007 [Hirtzig et al. in prep], with indications on the location, altitude, etc. The set of all these observations, published throughout about 20 different papers, allows us to build a precise chronology of Titan's atmospheric changes (including the North-South Asymmetry). We will also briefly mention some of the current theories regarding the clouds nature.

The knowledge of the weather timeline is thus a crucial constraint on the modeling and description of the methane cycle.