



The ENVISAT Atmospheric Chemistry mission (GOMOS, MIPAS and SCIAMACHY) – Instrument status and mission evolution

F. Niro and the ENVISAT Atmospheric Chemistry Team
Serco SpA, ESA/ESRIN, Frascati, Italy (fniro@serco.it)

The ENVISAT ESA's satellite was launched on a polar orbit on March 2002. It carries on-board three atmospheric chemistry instruments: GOMOS, MIPAS and SCIAMACHY [1]. At the present time, although the mission expected lifetime of 5 years has been already exceeded, all the payload modules are in good to excellent status. The only limiting factor is the available fuel that is used for orbit control manoeuvre. Recently a new strategy was proposed [2] that will allow to save fuel and to extend the mission up to 2013. Following this strategy, the altitude of the orbit will be lowered by 17 km starting from end of 2010 and the inclination will be allowed to drift. The new orbit scenario will result in a new repeating cycle with a variation of the Mean Local Solar Time (MLST). This will have an impact on both the in-flight operations, on the science data and on the mission. The simulations carried out for the atmospheric chemistry instruments show that the new orbit strategy will neither have a significant impact in the instrument operations nor on the quality of the science data. Therefore we expect that the atmospheric mission will continue nominally until the end of the platform life time, providing to the scientist a unique dataset of the most important geophysical parameters (e.g., trace gases, clouds, and aerosol) spanning a time interval of about 11 years. The aim of this paper is to review the overall ENVISAT atmospheric mission status for the past, present and future. The evolution of the instrument performances since launch will be analyzed with focus on the life-limited items monitoring. The tuning of the instrument in-flight operations decided to cope with instrument degradation or scientific needs will be described. The lessons learned on how to operate and monitor the instruments will be highlighted. Finally the expected evolution of the instrument performances until the ENVISAT end-of-life will be discussed.

- [1] H. Nett, J. Frerick, T. Paulsen, and G. Levrini, "The atmospheric instruments and their applications: GOMOS, MIPAS and SCIAMACHY", ESA Bulletin (ISSN 0376-4265), No. 106, p. 77 - 87 (2001)
- [2] J. Frerick, B. Duesmann, and M. Canela, "2010 and beyond – The ENVISAT mission extension", Proc. 'Envisat Symposium 2007', Montreux, Switzerland, 23–27 April 2007 (ESA SP-636, July 2007)