

Overview of the Atmospheric Chemistry Validation of Envisat

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Three atmospheric-chemistry sensors form part of the ENVISAT payload that has been placed into orbit in March 2002.

This paper presents the ENVISAT mission status and data policy, and reviews the end-to-end performance of the GOMOS, MIPAS and SCIAMACHY observation systems and will discuss the validation aspects of these instruments.

In particular, for each instrument, the review addresses mission planning, in-orbit performance, calibration, data processor algorithms and configuration, reprocessing strategy, and product quality control assessment.

An important part of the quality assessment is the Geophysical Validation. At the ACVT Validation workshop held in Frascati, Italy, from 3-7 May 2004, scientists and engineers presented analyses of the exhaustive series of tests that have been run on each of ENVISAT atmospheric chemistry sensors since the spacecraft was launched in March 2002. On the basis of workshop results it was decided that most of the data products provided by the ENVISAT atmospheric chemistry instruments are ready for operational delivery.

Although the main validation phase for the atmospheric instruments of ENVISAT will be completed soon, ongoing validation products will continue throughout the lifetime of the ENVISAT mission. The long-term validation phase will:

- Provide assurance of data quality and accuracy for applications such as climate change research
- Investigate the fully representative range of geophysical conditions
- Investigate the fully representative range of seasonal cycles
- Perform long term monitoring for instrumental drifts and other artifacts
- Validate new products.

This paper will also discuss the general status of the validation activities for GOMOS, MIPAS and SCIAMACHY. The main and long-term geophysical validation program

will be presented. The flight and ground-segment planning, configuration and performance characterization will be discussed. The evolution of each of the observation systems has been distinct during the mission history: the GOMOS instrument operation has undergone an important change, and its processing chain is subject of two upgrades. For MIPAS intervention on one of the on-board subsystems has proven necessary, and an important data processing improvement cycle has been completed through reconfiguration of the processing chain. SCIAMACHY operations have required only minor interventions, and the presentation will focus on the processing chain evolution.