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Atmospheric Applications on GRID with a Focus on GOMOS and MIPAS Comparison and Validation with ECMWF

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The GRID provides an efficient, and highly collaborative tool to faster process and interpret large amounts of Earth observation data. The GRID combines storage and computing elements, which are located in different geographic locations and combines them to a single access point. As such GRID is, amongst other interfaces, the perfect environment to sophisticatedly treat scientific results coming from a variety of atmospheric instruments. Due to e.g. geographically dislocated research groups, data and processing resources, single instrument applications are often lacking proper comparison or even validation mechanisms with similar instruments or equivalent data products.

At ESA the current functionality in GRID for atmospheric science purposes provides access to sounding data via the integrated BEAT libraries (Basic Envisat & ERS-2 Atmospheric Toolbox). Similar to BEAM (Basic ERS & Envisat (A)ATSR and Meris Toolbox) and BEST (Basic Envisat SAR Toolbox), the development of this toolbox was initiated by ESA and implemented by European companies. BEAT gives not only access to data, furthermore it provides high level ingestion routines to make the intercomparison of e.g. the trace gas ozone or the atmospheric temperature possible.

In this work we focus on an exploitation and comparison of GOMOS (Global Ozone Monitoring by Occultation of Stars) and MIPAS (Michelson Interferometer for Passive Atmospheric Sounding) ozone and temperature data as well as a comparison with corresponding ECMWF (European Centre for Medium-Range Weather Forecast) analysis data. In the case of GOMOS, profiles are taken from the official ESA product and are as well generated by YAGOP (Yet Another GOMOS Processor) a processor running on GRID. For the YAGOP ozone processing we take GOMOS transmission data

and feed an optimal estimation routine by incorporating *a-priori* data. For MIPAS we selected data, which were reprocessed by the GeoFit/MTR algorithm.

The reprocessing campaign and comparison include all available datasets from the beginning of the Envisat mission in 2002 up to now. The long-term availability and the higher data quality due to retrieval algorithm advancements, make now an analysis of ozone and temperature trends based on GOMOS and MIPAS profiles available.