

Development of a prototype algorithm for the operational retrieval of height-resolved products from GOME

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ABSTRACT

GOME (Global Ozone Monitoring Experiment) was launched on April 21st 1995 aboard the second European Remote Sensing Satellite (ERS-2). The GOME Data Processor (GDP), designed and implemented by the German Remote Sensing Data Center (DFD), is now fully operational. Level 1 earthshine/solar spectra and level 2 total ozone columns are the main data products. So far, level 1-2 processing has concentrated on total column retrieval using differential absorption fitting.

Recently, scientific studies of test cases have demonstrated the feasibility of ozone profile retrieval from GOME spectra. The step from off-line case studies to routine product generation on a global basis requires a new algorithm based in part on the scientific work. This paper presents a blueprint for an operational prototype algorithm that will perform this task.

The retrieval strategy is to generate a preliminary ozone profile based on UV data below 300 nm generated typically every 12 seconds, then to use this result as a priori input data for selected profile retrievals from spectra generated every 1.5 seconds in GOME channels 2 and 3. Long readout data will generate only stratospheric profiles above 20 km; tropospheric ozone information is retrieved from the short readout spectra.

Optimal estimation is the preferred fitting technique. We discuss the composition of the state vector of retrieved parameters, the generation and usage of diagnostic variables, the integration of a suitable radiative transfer forward model, and the proposed contents of the level 2 ozone profile product. A basic treatment of clouds in this algorithm is also included.

I apologise for any inconvenience

Regards

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