



GOME-2 optical degradation as seen in level 2 data time series (2007 – 2010; BrO, NO₂, HCHO, H₂O, and O₃)

Sebastian Dikty (1), Andreas Richter (1), Mark Weber (1), Stefan Noël (1), Folkard Wittrock (1), Heinrich Bovensmann (1), Rosemary Munro (2), Rüdiger Lang (2), and John P. Burrows (1)

(1) University of Bremen, Institute for Environmental Physics, Bremen, Germany (dikty@iup.physik.uni-bremen.de), (2) Eumetsat, Darmstadt, Germany

The aim of this paper is to discuss the effects that the optical degradation of the GOME-2 instrument (onboard MetOp-A) has on level 2 data products. Here, we focus on the scientific data products retrieved at the Institute of Environmental Physics at the University of Bremen. In particular, the following trace gas species have been examined: BrO, NO₂, HCHO, H₂O, and O₃. In addition to the vertical columns, we also studied time series of the standard deviation (RMS, measure of precision) and the retrieval residuals (ChiSquare, measure of accuracy). We limited our investigation to unpolluted areas with little natural variability in the data (Sahara desert, Pacific Ocean, and a combined Greenland/Antarctica box). Results show that especially weak absorbers in the UV like BrO and HCHO are most affected by the loss of throughput in the instrument. In addition, we study the period during the second throughput test in September 2009, when for decontamination purposes the sensors were heated to a maximum of 305 K.