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Technical Note: Continuity of MIPAS-ENVISAT operational ozone data quality from full- to reduced-spectral-resolution operation mode

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Abstract. MIPAS (Michelson Interferometer for Passive Atmospheric Sounding) is operating on the ENVIRONMENTAL SATellite (ENVISAT) since March 2002. After two years of nearly continuous limb scanning measurements, at the end of March 2004, the instrument was stopped due to problems with the mirror drive of the interferometer. Operations with reduced maximum path difference, corresponding to both a reduced-spectral-resolution and a shorter measurement time, were resumed on January 2005. In order to exploit the reduction in measurement time, the measurement scenario was changed adopting a finer vertical limb scanning. The change of spectral resolution and of measurement scenario entailed an update of the data processing strategy. The aim of this paper is the assessment of the differences in the quality of the MIPAS ozone data acquired before and after the stop of the operations. Two sets of MIPAS ozone profiles acquired in 2003–2004 (full-resolution measurements) and in 2005–2006 (reduced-resolution measurements) are compared with collocated ozone profiles obtained by GOMOS (Global Ozone Monitoring by Occultation of Stars), itself also onboard ENVISAT. The continuity of the GOMOS data quality allows to assess a possible discontinuity of the MIPAS performances. The relative bias and precision of MIPAS ozone profiles with respect to the GOMOS ones have been compared for the measurements acquired before and after the stop of the MIPAS operations. The results of the comparison show that, in general, the quality of the MIPAS ozone profiles retrieved from reduced-resolution measurements is comparable or better than that obtained from the full-resolution dataset. The only significant change in MIPAS performances is observed at pressures around 2 hPa, where the relative bias of the instruments increases by a factor of 2 from the 2003–2004 to 2005–2006 measurements.

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