Geophysical Research Abstracts,
Vol. 11, EGU2009-1452, 2009
EGU General Assembly 2009

First observations of BrONO2: confirmation of stratospheric bromine chemistry

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Bromine nitrate (BrONO2) in the stratosphere has been observed for the first time through mid-infrared high-resolution spectra measured by the Michelson Interferometer for Passive Atmospheric Sounding (MIPAS) aboard the European Envisat satellite. Altitude profiles of BrONO2 volume mixing ratios have been determined globally for day and nighttime conditions confirming the predicted diurnal variation. Maximum volume mixing ratios observed globally during night are with 20 to 25 pptv in agreement with estimates of total inorganic stratospheric bromine. Comparisons with photochemical equilibrium model calculations show in general a good agreement, however, with some larger differences at higher latitudes. In this paper we will show an overview of BrONO2 observations combining the MIPAS measurements periods of 2002-2004 (high spectral resolution) with those of 2005-2008 (low spectral resolution).