

A comparison of mesospheric ozone profiles measured by MIPAS and SABER

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The MIPAS instrument onboard ESA's Envisat satellite (launched in March 2002) and the SABER instrument onboard NASA's TIMED satellite (launched in December 2001) provide measurements of the kinetic temperature and a large number of atmospheric species including ozone during day and night.

Both instruments measure trace gas emissions from the Earth's limb. MIPAS is a Michelson interferometer covering the 4.2-14.7 μm spectral region. It works in several modes of observation including the standard mode (6–68 km), and several upper atmosphere modes (up to 170 km). Here, we compare ozone profiles measured in the stratosphere and mesosphere. Ozone abundance is retrieved from 9.6 μm and 14.6 μm emissions with a non-LTE retrieval scheme jointly developed by IAA and IMK. This data is available so far for July 2002 and June 2003.

SABER is a broadband emission radiometer covering 1.27-17 μm in ten broadband spectral channels. In its nominal mode, SABER covers altitudes from 0-250 km with a vertical resolution of about 2 km. Ozone is derived from the O₂(1D) 1.27 μm emissions during day and from O₃ 9.6 μm emissions during day and night.

Individual measurement profiles as well as statistical mean values are compared between the two instruments. The characteristics of ozone altitude profiles are studied and discussed.