

Continuous Observations of Vertical Profile of H₂O with a Ground-based Millimeter-wave Radiometer in Chile

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Stratospheric water vapor affects ozone chemistry in the stratosphere and mesosphere such as possible delay in the expected recovery of the ozone layer. Therefore, it is important to reveal the current status of the distribution of the stratospheric water vapor and to understand the mechanism of its variation. For these purposes, we started a project to observe the stratospheric water vapor and its isotopes continuously by using a ground-based millimeter-wave radiometer installed at Las Campanas Observatory, Chile (29.0S, 70.7W) in 1999. We had measured H₂O spectra at 203.407 GHz between September and December in 2003, and obtained 460 spectral data averaged over 6 hours. Vertical profiles of H₂O in the stratosphere and mesosphere were retrieved by using the optimal estimation method. For retrieval, temperature and pressure profiles were taken from NCEP Reanalysis Data, and a priori profiles of H₂O were used from MIPAS Reference Atmospheres (2001). We will report details of the observations and retrieval results, and discuss temporal variation of H₂O in the stratosphere and mesosphere as well as intercomparison result with the Odin/SMR data.