Global observations of water isotopologues in stratosphere and mesosphere by the Odin Sub-Millimetre Radiometer

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Water vapour plays an important role for dynamics and chemistry of the middle atmosphere.

The Sub-Millimetre Radiometer (SMR) on board the Odin satellite, launched in February 2001, performs limb observations of several thermal emission lines of water vapour in the 486-581GHz spectral range. Two bands around 489 GHz are used to study water isotopologues on the basis of four observation days per month. Vertical profiles of H2O-16, H2O-18, and HDO are retrieved between roughly 20 and 70km in the stratosphere and mesosphere. H2O-17 is retrieved in roughly the same altitude range from measurements of a band near 551GHz.

The Odin data span now a period of roughly 8-years, providing information on the variability of depletion/enrichment of the observed isotopologues in stratosphere and mesosphere. The presentation will describe observational data and scientific results obtained so far with the global Odin water isotopologue measurements.

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