



Global Observations of stratospheric Trace Gases with the Odin Sub-Millimetre Radiometer: Requirements on Spectroscopy.

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The Sub-Millimeter Radiometre (SMR) on board the Odin satellite, launched in February 2001, employs 4 tunable single-sideband Schottky diode heterodyne receivers in the 486-581 GHz spectral range and a 1 m telescope for passive observations of thermal emission originating from the Earth limb. Spectra are recorded using two high resolution auto-correlator spectrometers. Atmospheric measurements are performed in a time sharing mode with astronomical observations.

In the aeronomy mode, various target bands are dedicated to observations of trace constituents relevant to stratospheric/mesospheric chemistry and dynamics such as O₃, ClO, N₂O, HNO₃, H₂O, CO, and isotopes of H₂O and O₃. Profile information is retrieved from spectral measurements of a limb scan by inverting the radiative transfer equation for a non-scattering atmosphere using a retrieval algorithm based on the so-called *Optimal Estimation Method*.

The quality of the retrieved profiles (level-2 product) depends critically on the accuracy of the spectroscopic data used in the forward model of the retrieval system. We present results of a sensitivity study identifying the most critical spectroscopic parameters and discuss present and future needs of the Odin data analysis.

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