



SCIAMACHY Hydroxyl Airglow Emissions in the Mesopause Region

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Atomic oxygen and atomic hydrogen determine significantly the energy budget of the upper mesosphere - lower thermosphere region. Both species can be derived by limb measurements of vibrationally excited OH with the Envisat SCIAMACHY instrument. This instrument covers nearly all vibrational transitions of mesospheric hydroxyl.

The SCIAMACHY OH measurements are analysed by applying a detailed non-local thermodynamic equilibrium model of OH considering the various production and loss mechanisms. Highly excited OH molecules are produced by the reaction of ozone with atomic hydrogen. This reaction is also the single largest heat source between 83 km and 95 km. So spatial and temporal variation of chemical heating can be studied.