



Comparison of OH and O₂ rotational temperatures with SABER and SCIAMACHY temperatures in the context of the first NDMC measurement campaign

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The Network for the Detection of Mesopause Change (NDMC) is a global program with the mission to promote international cooperation among research groups investigating the mesopause region (80-100km). From September 01 to October 31, 2009, the first global NDMC measurement campaign has been conducted. The main objective of this campaign was to investigate hemispheric asymmetries and planetary wave activities in the mesopause region. The intensity and temperature were derived from OH and O₂ emissions using optical instruments such as spectrometers and photometers.

Mesopause temperatures obtained from satellite observations with the Sounding of the Atmosphere using Broadband Emission Radiometry (SABER) instrument on board the TIMED satellite and from satellite observations with the SCanning Imaging Absorption spectroMeter for the Atmospheric CHartograpY (SCIAMACHY) instrument on board the ENVISAT satellite are compared with the rotational temperatures obtained during the NDMC campaign by ground-based airglow spectrometers.

This campaign dataset provides an excellent opportunity for the intercomparison of rotational temperatures obtained with a large ensemble of ground based airglow instruments at different locations with satellite based measurements. Data for intercomparison are chosen following equal miss time and miss distance criteria for every instrument location. Airglow-equivalent temperatures are derived from the satellite temperature profiles by applying an appropriate weighting function.

The differences at each location between temperatures from SABER, SCIAMACHY and corresponding ground based NDMC instruments are presented.