Geophysical Research Abstracts
Vol. 16, EGU2014-10827-1, 2014
EGU General Assembly 2014

Impact of the stratospheric warming 2012/2013 on the upper mesosphere

Michael Bittner, Kuechelbacher Lisa, Schmidt Carsten, and Wuest Sabine

German Aerospace Center, DLR Oberpfaffenhofen, DFD-ATM, 82234 Wessling, Germany (michael.bittner@dlr.de, +49-(0)8153-281373)

Impact of the stratospheric warming 2012 / 2013 on the upper mesosphere

The effects of stratospheric warming events are not restricted to the stratosphere only. There is also considerable impact on the mesosphere.
Remote-sensing data derived by satellite and ground-based instruments are analysed in order to dynamically characterize the stratospheric warming event which took place during winter 2012/2013.
The temporal and spatial structure of planetary waves with zonal wave number 1 to 3 is studied from strato- to mesospheric heights using global ozone and temperature data from METOP-GOME-2 and TIMED-SABER, respectively. Ground-based infrared airglow spectrometer measurements (GRIPS) of OH rotational temperature in the mesopause region derived at European mid-latitude NDMC stations complete the data set.
Planetary wave amplitudes show characteristic warming pulses whereby planetary wave with zonal wave number 3 significantly changes period and phase speed. The changing planetary wave regime obviously affects gravity wave propagation up to the mesosphere. Indication for varying mesopause airglow layer height is found.