

DESCENT FROM THE POLAR MESOSPHERE FOLLOWING MID WINTER STRATOSPHERIC SUDDEN WARMINGS, OBSERVED IN ODIN/SMR WATER VAPOR AND TEMPERATURE

YVAN J. ORSOLINI (1), Joachim Urban (2), Donal P. Murtagh (2)

(1) Norwegian Institute for Air Research, Kjeller, Norway, orsolini@nilu.no

(2) Department of Radio and Space Science, Chalmers University of Technology, Göteborg, Sweden

Using newly analysed mesospheric water vapor and temperature observations from the SMR microwave instrument aboard the Odin research satellite, we present evidence for an anomalously strong descent of dry mesospheric air from the lower mesosphere into the upper stratosphere in the late winter of 2004, and of 2006. In both cases, the descent follows the recovery of the upper stratospheric polar vortex from a mid-winter stratospheric sudden warming. It is also accompanied by the rapid formation of an anomalously warm polar mesospheric layer, i.e. an elevated stratopause, near 75km, and its slower descent to pre-warming level (near 1 hPa) over 1.5-2 months. These two winters stand out in the record of Odin/SMR observations spanning the period July 2001 to June 2008.

Upper stratosphere- Lower Mesosphere, Stratospheric sudden warmings

Yvan J. ORSOLINI, Norwegian Institute for Air Research, Kjeller, Norway,
orsolini@nilu.no, tel : 47-63898183