

TEMPORAL VARIATIONS OF ATOMIC OXYGEN IN THE UPPER MESOSPHERE FROM SABER

ANNE K. SMITH ¹, Daniel R. Marsh ¹, Martin G. Mlynczak ², Jeffrey C. Mast ³

¹ National Center for Atmospheric Research, Boulder, CO USA. email: aksmith@ucar.edu

² NASA Langley Research Center, Hampton VA USA

³ SSAI, Hampton VA USA

One of the derived products from the Sounding of the Atmosphere using Broadband Emission Radiometry (SABER) instrument on the Thermosphere-Ionosphere-Mesosphere Energetics and Dynamics (TIMED) satellite is atomic oxygen in the upper mesosphere. Atomic oxygen can be determined during both day and night using two different techniques that both rely on ozone chemistry. We present variability of atomic oxygen on timescales from diurnal to interannual. Atomic oxygen shows strong variability in response to transport by the diurnal tide and the seasonal global mean circulation. Interannual variability is affected by variations in tidal amplitude, by the highly variable dynamics in the middle atmosphere during northern winter, and by the changing solar activity over the TIMED observation period (now more than seven years).

mesosphere, oxygen, tides

Anne K. Smith, Atmospheric Chemistry Division, NCAR, Boulder CO 80307 USA, tel. 1-303-497-1876, email aksmith@ucar.edu