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SABER observations of mesospheric ozone at 9.6 um and from the singlet oxygen airglow

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Absorption of solar ultraviolet radiation by ozone is the primary radiative drive in the terrestrial mesosphere. The SABER experiment on the NASA TIMED satellite provides ozone from measurements of infrared emission from ozone itself at 9.6 um and from measurements of the singlet molecular oxygen airglow at 1.27 um. Both the ozone and oxygen emissions occur far from local thermodynamic equilibrium (LTE) in the mesosphere and complex radiative and kinetic models are required in the radiance inversion process in order to obtain accurate ozone abundances. These measurements provide the most comprehensive dataset (exceeding 5 years in length) of ozone in the mesosphere. We compare the ozone profiles derived from both techniques (daytime only) and examine the diurnal variation of ozone from the 9.6 um measurements. We also examine elements of the energy budget of the mesosphere that are readily derived from the singlet oxygen airglow. These data are in the SABER version 1.07 data that will be publicly available early in 2007.