



Relationship of Polar Mesospheric Summer Echoes and Ozone in middle and upper atmosphere

Teferi Demissie (1), Patrick Espy (1), and Keisuke Hosokawa (2)

(1) Norwegian University of Science and Technology (NTNU), Physics, Trondheim, Norway , (2) Department of Communication Engineering and Informatics, University of Electro-Communications 1-5-1, Tokyo, JAPAN

The spatial and temporal variability of Ozone mixing ratio in the mesosphere region is one of the phenomena that is not completely understood and properly simulated by middle and upper atmospheric models thus far. We examine the relationship of Ozone in the upper atmosphere with the water vapor redistributed from the polar mesosphere clouds (PMCs) using the polar mesospheric summer echoes (PMSE) as a proxy data. Ground based measurements of Ozone mixing ratio at Troll station (72oS, 2oE) in Antarctica and PMSE extracted from near range measurements of the Super Dual Aural Radar network (SuperDARN) Sanae radar are used to understand the relationship of PMSE and Ozone in the mesosphere. The covariance of the frequency occurrence of PMSE at nearest gate and Ozone mixing ratio will be presented, and the variation of Ozone with the changes in PMSE and temperature will be discussed.