The global distribution of mesospheric ozone and temperature as measured with OSIRIS

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The OSIRIS instrument on the Odin satellite includes both a spectrograph that measures the wavelength range 280 – 810 nm and an imager section that measures the oxygen infrared atmospheric band airglow emission at 1.27 microns. The spectrograph provides high signal-to-noise observations of the oxygen A-band spectrum that are suitable for the determination of temperature in the emission region during both the day and night. The imager measurements can be tomographically inverted to derive both the vertical emission profile and its distribution along the satellite track. As these airglow emissions are a proxy for the corresponding ozone content the global maps of the emission distribution at individual altitudes and the temperature maps provide a clear description of vertical coupling in the mesosphere. The nighttime temperature maps provide an indication of heating due to auroral precipitation while the high latitude summer temperature maps provide information that is important for the study of PMC's. In this paper we present examples of the global maps that are generated from a single day of observations. The highly structured emission maps suggests that the mesopause region may be much more dynamic on a global scale than has been observed to date.