

Variability of temperature and cooling rates in the mesosphere and lower thermosphere

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We have analyzed the variability (solar cycle and linear trends) of temperature, carbon dioxide, and CO₂ 15 μm and NO 5.3 μm cooling rates in the mesosphere and lower thermosphere (MLT) as observed by SABER and ACE in the last 10-14 years. Particular emphasis is paid to the region between 110 km and 130 km, where temperature and CO₂ vmr are not retrieved but the measurements of the CO₂ 15 μm and 4.3 μm and NO 5.3 μm emissions contain information on the CO₂ concentration and temperature. The possibility of disentangling the solar variability from possible secular changes will be analyzed. In addition, in order to understand the variability of the MLT region, a comparison of the measured changes in those quantities with those computed by NCAR's Whole Atmosphere Community Climate Model will be presented.