Solar Cycle Dependence of Temperature, Odd-Oxygen, Odd-Hydrogen, and Ozone in the Mesopause Region Observed by SABER


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**Temperature**

**Day**

**Night**

**Atomic Hydrogen**

**Day**

**Night**

**Atomic Oxygen**

**Day**

**Night**

**Ozone**

**Day**

**Night**

**Influence of solar cycle on T**

**Atomic hydrogen varies inversely with strength of solar cycle!**

**Solar cycle evident in day and night atomic oxygen 2002 - 2012**

**Night O$_3$ shows evidence of thermal or tidal influence**

Mesopause region (80-100 km) cooled by ~ 4 K over solar cycle

Inverse relation due to T dependence of odd-H, odd-O rate coefficients

Day [O] appears to have larger solar cycle variability than night

Larger absolute solar cycle change in O$_3$ vmr at night than day

_SABER data are the first consistent set of T, Odd-H, Odd-O, (and energetics) in M/LT over a solar cycle._

_SABER data are essential to the study of the influence of the solar cycle on the dynamics of the atmosphere._

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