Geophysical Research Abstracts
Vol. 17, EGU2015-8289-1, 2015
EGU General Assembly 2015

The response of the TIMED/SABER O_2 nightglow to solar radiation

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The TIMED/SABER O_2 nightglow observations between January 2002 and June 2014 are used to study the response of O_2 emission to the solar radiation. both the O_2 nightglow emission rate and intensity are found to be positively correlated to the solar radiation. The O_2 nightglow emission rate/intensity and F10.7 solar flux index can be expressed by a linear relation very well. The response of the O_2 global mean nightglow emission rate to the solar radiation is enhanced with increasing altitude from about 80km, reaches its peak around 92 km and then decreases with increasing altitude. The response of the O_2 nightglow intensity to F10.7 index changes with latitude with three peaks around 40S/N and the equator. The response of the O_2 global mean nightglow intensity to the solar radiation is about 27 kR/100 sfu, corresponding to 24.1%/100 sfu.