



## **Evidence for solar cycle influence on the radiative cooling of the thermosphere**

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The SABER instrument on the TIMED satellite has been making continuous observations from orbit for more than four years (starting in 2002) of the emission attributed to nitric oxide (NO) at 5.3 micrometers. To date, over 2.5 million profiles have been recorded for the atmospheric limb emission extending from 400 km to the Earth's surface. We have analyzed the extant data set and have computed the daily global power (Watts) radiated by NO between 100 and 200 km tangent altitude. The data exhibit large day-to-day variability with the influence of each solar storm event being evident. In addition, there is a definite decrease in the emitted power over the course of the four years. The annual average power decreases by a factor of two from 2002 to 2005. This implies a reduction in the integrated thermospheric infrared cooling rate by a similar amount. The temporal decrease is coincident with the marked decline of activity in the current solar cycle as indicated by the standard solar indexes. These results are the first quantitative measure of the influence of solar activity on the infrared radiative energy budget of the thermosphere.