Thermospheric neutral density response to solar forcing

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A new solar EUV energy deposition scheme has been implemented in the NCAR Thermosphere-Ionosphere-Electrodynamics General Circulation Model (TIEGCM). It provides an accurate and efficient method to calculate thermosphere neutral density variation driven by absorption of solar EUV radiation. In this study, both a solar proxy model (EUVAC) and TIMED/SEE measurements were used as solar input to the TIEGCM to calculate thermospheric neutral density. The model results were compared with satellite drag derived densities to evaluate the performance of proxy solar input and measured solar input in the model. In addition, thermospheric neutral density calculated by TIEGCM and MSIS00 were compared with satellite drag measurements to compare the capability of theoretical and empirical models for quantification of thermospheric neutral density.