



## **Ionosphere-Thermosphere Coupling and Energy Partitioning During Two HSS Events**

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We analyze external driving of the ionosphere-thermosphere (IT) system during two CIR-HSS events, on 29 April – 4 May 2011 and on 8-12 May 2012. By studying similar CIR-HSS events in the same phase of a solar cycle and the same season we aim to understand differences and similarities in the magnetosphere-IT coupling caused by external driving and other factors (pre-conditioning or driving from below). We focus on understanding energy and momentum transfer (with solar wind coupling functions, Joule heating, nitric oxide (NO) infrared cooling radiation and energetic particle precipitation) and corresponding energy partitioning in the IT system. We utilize observations from DMSP, POES/MEPED and TIMED/SABER. We use the Global Ionosphere-Thermosphere Model (GITM, Ridley et al., 2006) with different driving inputs to understand the IT response. We outline a physics-based approach for forecasting moderate to intense storms in the Earth's upper atmosphere caused by solar wind disturbances.

Ridley, A. J., Y. Deng, and G. Toth (2006), The global ionosphere-thermosphere model, *Journal of Atmospheric and Solar-Terrestrial Physics*, 68(8), 839-864, doi:10.1016/j.jastp.2006.01.008.