2015 Workshop: Ionosphere and thermosphere variation

Long title
Storm-time variations in the ionosphere and thermosphere and preconditioning
Conveners
Yongliang Zhang
Larry J. Paxton
Description

Significant disturbances in the ionosphere and thermosphere occur during geomagnetic storms due to intense energy input from the magnetosphere and solar wind. However, for a given solar wind and IMF condition, the response of the thermosphere (temperature, density, composition) and ionosphere (density, temperature, ion species) could be different, depending on preconditioning, solar cycle, season, hemisphere, tidal forcing, etc. We welcome all short presentations that briefly review: our current knowledge; new findings; and future plans (data analysis, modeling and measurement) to further advance our understanding of the globally coupled T-I system. The recent March 17, 2015 intense storm provides a good opportunity to test our understanding of the T-I system.

Agenda

13:30 - 13:42 Olga Verkhoglyadova, B.T. Tsurutani, A. Mannucci, M. Mlynczak, L. Hunt and L. Paxton, Overview of interplanetary conditions and possible consequences for ionosphere-thermosphere during three St. Patrick’s Day storms.

13:42 - 13:54 Shunrong Zhang, Phil Erickson, Anthea Coster, Michael Nicolls, Anja Stromme, Mike Sulzer, Johnathan Makela, John Meriwether, John Noto, Yuichi Otsuka, Chaosong Huang, Gordon Wilson, Yongliang Zhang, Wenbin Wang, and Xinan Yue, Ionosphere and thermosphere disturbances during the March 2015 magnetic storm

13:54 - 14:06 Xinan Yue, W. Schreiner, W. Wang, A. Burns, Y. Zhang, S. Zhang, Ionospheric electron density reanalysis during March 17-18, 2013 storm

14:06-14:18 Chaosong Huang, Storm-time equatorial ionospheric electric fields and their effects on the generation of plasma bubbles

14:18 - 14:30 Marty Mlynczak, Linda Hunt, and the SABER Science Team, Radiative response of the thermosphere to the St. Patrick’s Day 2015 storm

14:30 - 14:42 Yongliang Zhang, and Larry Paxton, Thermospheric composition response to the March 2013 and 2015 storms

14:42 - 14:54 Wenbin Wang, A. Burns, and L. Qian, Thermospheric energetics and dynamics during geomagnetic storms

14:54 - 15:06 Gary S. Bust and Alex Chartier, Improved ionosphere-thermosphere forecasting through data assimilation of neutral composition

15:06 - 15:18 Aaron Ridley, GITM results of mass density, O/N2 ratio, NO and winds during storms

15:18 – 15:30 Jie Zhu and Aaron J. Ridley, Modeling the thermospheric waves driven by penetration electric field

Justification

The proposed session aims to review recent progress and unsolved science questions (e.g. preconditioning) in the global I-T variations and coupling. It also provides a forum for the community (measurement and modeling)to work together on some events. It directly aligned with the CEDAR Strategic Thrusts #1 and #2.

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