2017 Workshop: CEDAR GEM Modeling Challenge

Long title
CEDAR-GEM Modeling Challenge
Conveners
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Description

This year, we will first report preliminary outcomes of ionosphere model validation studies carried out through "International Forum for Space Weather Capabilities Assessment". The goals of this community-wide forum include addressing challenges in model-data comparisons and evaluating the current state of space environment predictive capabilities. Focused topics of the forum include main projects of the CEDAR-GEM Modeling Challenge: - Auroral precipitation and high latitude ionosphere electrodynamics - Neutral Density and Orbit Determination at LEO - Global & Regional TEC - NmF2/foF2 and hmF2 - Scintillation

We will focus on validation of TEC, NmF2/foF2, hmF2, and scintillation during the 2013 March storm event. Short presentations on the topics and introduction to the international forum will be followed by discussion.

We will discuss data collection, preparation of the data for model-data comparison, future plans, and action items.

Agenda

Topics for discussions and tentative agenda:
Introduction to "International Forum for Space Weather Modeling Capabilities Assessment": Ja Soon Shim (GSFC/CCMC)
Ionosphere Working Team Report of the iCCMC-LWS meeting held in April, 2017: Ludger Scherliess (USU)
Validation of modeled ionospheric properties during geomagnetic storms:

- Global & Regional TEC: Ludger Scherliess (USU)
- NmF2/foF2, hmF2, and TEC: Ioanna Tsagouri (NOA)
- Scintillation: Endawoke Yizengaw (to be presented by Cesar Valladares) (BC)
GPS TEC measurements: Anthea Coster (MIT)
Wind measurements and season dependent high-latiude ion-neutral coupling (data, models, and validation): Douglas Drob and Manbharat Dhadly (NRL)
Discussion:
- Data collection
- Preparation of the data for model-data comparison
- Future plans and action items

Justification

Ionosphere/thermosphere and geospace research is increasingly relying on numerical simulations. In recognition that model validation is a challenging research task, the CEDAR and GEM communities initiated community wide model validation activities: GEM GGCM (in 2008) and CEDAR Electrodynamics Thermosphere Ionosphere (in 2009) Model Validation Challenges. The CEDAR-GEM Model Validation Challenge, built upon the GEM GGCM and CEDAR ETI Challenges, was initiated during the previous Joint GEM-CEDAR Workshop in 2011. The CEDAR-GEM Challenge is focusing on physical parameters, spatial domains and aspects of model validation of interest to both communities.

This workshop will address the CEDAR Strategic Thrust #5 as the workshop will facilitate collaboration among modelers, data providers and research communities in order to address the differences between various modeling approaches, to track model improvements over time, and to provide feedback for further model improvement.

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