# 2015 Workshop: CEDAR GEM Modeling Challenge

Long title
CEDAR-GEM Modeling Challenge
CEDAR-GEM
Conveners
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Description

The CEDAR- GEM Modeling Challenge, focuses on various scientific and operational aspects of the performance of magnetosphere and ionosphere-thermosphere models and addresses challenges of model data comparisons and metrics studies. This year, we will discuss

1. Modeling neutral density/satellite drag during storms
   • Metrics selection relevant to drag study
   i. Point vs averaged density
   • Possible sources of data at different altitudes
   • How to Improve density prediction?
   i. Capturing small scale structures during storms
   ii. Prediction of geomagnetic indices
   iii. Alternative geomagnetic indices
   • How to Improve physics-based model neutral density at high altitude?
   • Definitive orbits vs derived neutral density from orbit determination for model-data comparison?
2. Status of regional TEC study
   • Data preparation for model-data comparison

Agenda

- Tim Fuller-Rowell, CIRES/NOAA
- Mariangel Fedrizzi, CIRES/NOAA

- Eric Sutton, AFRL
- Marcin Pilinski, ASTRA/U CO
- Aaron Ridley, U MI
- Cheryl Huang, AFRL

Justification

Atmospheric drag is the largest source of uncertainty in determining and predicting the drag force on satellites. Therefore, accurate modeling atmospheric density, which is greatly affected by the energy input from the solar wind via Joule heating and particle precipitation, is critical to increase accuracy in orbit prediction. This workshop will address ionosphere-thermosphere-magnetosphere (ITM) coupling to better understand relationship between IT dynamics and energy input from the magnetosphere that is relevant to one of scientific goals of the Decadal Survey for Solar and Space Physics. This workshop will also 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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