2018 Workshop: Thermospheric Expansion Instrumentation

Long title
Space Weather Observation Network II: Thermospheric Expansion
Conveners
William Bristow
Aaron Ridley
Josh Semeter
Jonathan Makela
Jeff Thayer
Shasha Zou
Description

This workshop will be a forum for the CEDAR community to put forward its ideas regarding the instrumentation that is required to enable prediction of thermospheric expansion.

During the session, we will be taking notes here

The community will be asked to address five questions:

1) What are the goals of predicting thermospheric expansion?

Eric Sutton (Overview Talk)

2) What gaps in understanding must be filled to enable predictive simulations?

Liying Qian (Overview Talk)

Jeff Thayer (MI Coupling and Joule Heating)

3) What modeling advances are needed for prediction?

Aaron Ridley (Overview - Energy from Above)

Hanli Liu (Overview - Whole Atmosphere Perspective)

4) What observations are necessary to provide the basis for understanding and modeling?

Tomoko (Data Assimilation Overview)

5) What instrumentation is necessary to provide those observations?

Mark Conde (Overview)

Brian Harding (FPIs)

Dave Fritz - Enabling technologies (CubeSats)

Justification

Earth’s outer atmosphere expands and contracts in response to variable space weather conditions, critically affecting satellite orbits. Understanding and predicting thermospheric expansion in response to events in space is a CEDAR grand challenge. It is a direct result of “Space-Atmosphere Coupling” which is discussed in section 2.3 of the CEDAR strategic plan. Further developing benchmarks for atmospheric expansion is goal 1.5 of the OSTP Space Weather Action Plan.

Developing observation and instrumentation strategies for Geospace Systems Studies is a CEDAR strategic thrust.

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