

# 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?

Liyang 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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