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Abstract

**The Onset of Dynamic Aurora and THEMIS:
Understanding a Polar Phenomena**

Laura M. Peticolas¹, J. W. Bonnell¹, M. Bester¹, D. G. Sibeck², E. F. Donovan³, S. B. Mende¹, H. U. Frey¹, J. P. McFadden¹, D. E. Larson¹, C. T. Russell⁴, and V. Angelopoulos⁴

1. Space Sciences Laboratory, University of California, Berkeley, California
2. Goddard Space Flight Center, Maryland
3. University of Calgary, Canada
4. Institute of Geophysics and Planetary Physics, University of California, Los Angeles, California

NASA's Time History and Macroscale Interactions during Substorms (THEMIS) mission launched five satellites, or probes, in 2007 to study the sudden change in the global auroral oval from a relatively motionless and uniform oval to a dynamically changing, filamentary and expanding oval. This sudden change is known as "substorm onset" because it begins a pattern in the aurora known as a substorm. The "sub" in substorm illuminates that it is often part of a bigger energy process known as a magnetic storm. The auroral ovals are rings of light off-center from the north and south magnetic poles. Aurora is a well-known polar phenomenon that demonstrates another way that the energy from the Sun is connected to Earth and the space around Earth.

We will present several talks about the different aspects of the THEMIS mission and then open the floor for discussion with the THEMIS team. We will address the overall goal of the mission. We will speak about the careful consideration of the five satellite orbits in order to obtain a time history of events in Earth's magnetosphere as well as the THEMIS operations in general. There are many instruments on the THEMIS satellites to measure magnetic fields, electric fields, and plasma, which we will discuss. THEMIS has over 20 ground-based observatories measuring magnetic fields and imaging the aurora from horizon-to-horizon. We will discuss this ground-based component to the mission. As part of this component, we have magnetometers located in schools around the northern states in the U.S., including Alaska. We will discuss the impacts of this education program. And we will share a couple of the latest science results from THEMIS.