2016 Workshop: Community Input for new NASA missions

Long title
Decadal Survey ITM Missions — How to Best Engage the CEDAR/GEM Community
CEDAR-GEM
Conveners
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Description

In the recent NRC Decadal Survey, a variety of critical science topics relating to CEDAR science goals were discussed, and two new satellite mission concepts were developed to address some of these:

Geospace Dynamics Constellation (GDC): a multi-spacecraft mission to study the pathways by which solar wind and lower atmospheric forcing drive the tightly coupled ionosphere-thermosphere system, on a global scale, for the first time. GDC is a major (strategic) Living With a Star mission to study both ITM and Magnetosphere-Ionosphere coupling and Dynamical Neutral Atmosphere-Ionosphere Coupling (DYNAMIC), which is a strategic new Solar Terrestrial Probe initiative. DYNAMIC would focus on lower atmosphere forcing of the ionosphere-thermosphere system.

Both of these missions represent a new beginning for space based research, using proven multi-point and global-scale measurements that would be funded by NASA but represent watershed opportunities for the CEDAR community in terms of support of ground-based observations, data analysis, modeling, theory, students, etc. Given that these are both large-scale strategic NASA missions, it is critical to develop community input on the best ideas for their ultimate implementation.

This session represents an opportunity for community members to discuss the motivation and expectations of these exciting new missions and their “game

changing” science return. We urge everyone to come with their ideas and to help make these missions a reality.

This session will serve to discuss recent (post-decadal survey) scientific findings relevant to these missions, and to stimulate discussion in the community about the breadth and depth of the science return from the missions. In addition, discussions of how these missions might integrate with future CEDAR science plans, and NSF ground-based observations over the next decade would be desirable.

The opportunity for community input begins now in anticipation of the opening of funding wedges in the NASA budget as Solar Probe Plus and the Solar Orbiter Collaboration near their launches. Strong community interest in and input towards the implementations of future strategic ITM missions is needed to galvanize these directions within the NASA science agenda.

Agenda

1. Introduction from NASA HQ Discussing the Path Forward (10 minutes) — Talaat via Skype or Speaker Phone

2. Decadal Survey Atmosphere-Ionosphere-Magnetosphere Interactions (AIMI) Panel — Science Questions (15 minutes) — Forbes

3. What are the most outstanding inputs for drivers and/or validation required for coupled ITM models? (15 minutes) — Lu

4. What are the most outstanding inputs for drivers and/or validation required for the coupled Ionosphere-Magnetosphere models? (15 minutes) — Wiltberger

5. Overview of GDC (15 minutes) — Pfaff (AIMI panel “champion”)

6. Overview of DYNAMIC (15 minutes) — Paxton (AIMI panel “champion”)

7. Global-scale/multipoint studies — Perspective on Energy Pathways (15 minutes) — Semeter

8. Further Perspectives on Atmosphere Ionosphere Magnetosphere Coupling (20 minutes) — various

Justification

This workshop it to develop community support for the DYNAMIC and GDC missions. These missions are currently in the 2012 Decadal Survey and he NASA Roadmap. In addition these missions map to CEDAR and GEM science objectives. The Decadal Survey indicated a possible configuration that could address the science objectives of the mission. The challenge is to update the description of these missions (already 5 years old) and define a path forward that addresses current scientific challenges.

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