Strategy for a New Dimension (SAND) of CEDAR

- Overarching Problem Statement:
  What are the geospace impacts on Earth's habitability and sustainability of technology-reliant societies?

"Man must rise above the Earth – to the top of the atmosphere and beyond – for only thus will he fully understand the world in which he lives." Socrates

- Themes
  - Climate Change with the geospace system (mutual interaction)
    - Space climate
    - Geospace effects on climate
  - Complexity in the geospace system
    - Nonlinear, complex system (e.g. space weather, extreme events)
  - Follow the energy
    - Propagation, Transformation, Manifestation

SAND Fundamental Processes

- Forcing, Response and Feedback
  - Processes responsible for the primary forcing, primary response on geospace and the subsequent feedback within geospace and to the atmosphere-space system
- Plasma-Neutral Interactions
  - Processes related to the exchange of energy, mass and momentum between the plasma and the neutral gas of geospace (i.e. plasma drag, plasma chemistry, charge distributions, electrodynamics, plasma instabilities, neutral acceleration, neutral energization)
- Cross-Scale Coupling
  - Processes of one spatial/temporal scale couple to other spatial / temporal scales (i.e., gravity wave – tidal wave interactions, wave-mean flow interactions, small scale Joule and particle heating to global thermal distribution, mean flow to instability processes)
- Preconditioning
  - Processes that modify the state of the system leading to a different response (QBO cycle, solar cycle, solar rotation, day/night cycle, geomagnetic cycles) or either processes only occur when certain conditions are met (ESF, strat warming…)

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THANK YOU!!

- Barbara Emery
- Julie Cross
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Next Year's Workshop

25th Annual CEDAR Workshop

University of Colorado

Boulder, Colorado

June 21-25, 2010

See you all there!