



Building a Community Surface Dynamics Modeling System

Strategy of Meeting and Charge to Participants

Key Questions to be Answered by Working Groups

- What cool and compelling science are we trying to accomplish with this initiative?
 - Provide examples of models helping to plan field studies, models helping to interpret data, and models helping to answer how various Earth surface features interact.
 - Define what value will be added by spending money on this initiative
- What specific administrative structure will most effectively help us obtain our objectives?
- What software architecture will most effectively help us obtain our objectives?
- What will the CSDMS center do, how will it be organized, and how should it be funded?

Key Questions to be Answered by Working Groups

- What mechanisms do we create to entrain more of the community?
- What should our relationship be with GEON, CHRONOS, CIG, and....?
 - GEON is.... a five-year multi-institutional NSF Information Technology Research project. It is a “scientist-centered cyberinfrastructure, relieving scientists of onerous data management tasks.”
 - “To provide scientists with data integration mechanisms, as well as computational resources and integrated software for analysis, modeling, and visualization” (from the GEON website: <http://www.geongrid.org/about.html>).
 - CHRONOS is.... part of the National Science Foundation's Geoinformatics which is the Earth science branch of the *Cyberinfrastructure Initiative*.
 - It is a “network system to assemble, integrate and distribute data relevant to earth history. The goal of **CHRONOS** is to create a new investigative environment for interdisciplinary Earth history research” (from the CHRONOS website: http://www.chronos.org/downloads/CHRONOS_projDesc.pdf).
 - CIG (Computational Infrastructure for Geodynamics) is....”a core group (~5-7) of dedicated software architects and engineers who will develop toolkits that ease model development and foster the interchange of ideas and algorithms” (from the CIG website).

Marching Orders for Working Groups

- **Breakout Group I**

1. Identify the scientific working groups required for CSDMS (including geochemists, bio/eco, and other communities)
 1. Define effective means of encouraging and coordinating community involvement in CSDMS
 2. Refine the organization and function of working groups
 2. Develop a strategy for interfacing with end-user groups (agencies, companies; environmental, military, hydrocarbon applications)
 3. Develop education and knowledge transfer plans for the CSDMS program
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1. **Define High Priority CSDMS Experiments**
 1. applications to global warming, biogeochemistry/ecosystem dynamics, predictability of the coupled system in different environments
 2. contributions to the NRC science imperatives (see Executive summary CSDMS document).
 3. near term applications vs longer term applications

Marching Orders for Working Groups

- **Breakout Group II**

1. Determine initial standards and protocols for CSDMS software
 2. Provide an initial set of techniques for linking CSDMS modules across transport environments and time scales
 3. Determine standards for data and user interfaces
 4. Decide on a timetable and deliverables for the first five years of CSDMS operation
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5. Define CSDMS Test Protocols
 1. how do we test modules and larger module combinations?
 2. how do we test for model sensitivity to various forcings, e.g. to climate (polar versus tropics)?
 3. how do we test for the physical basis for low or high sensitivity to energy forcing such as climate?

Marching Orders for Working Groups

- **Breakout Group III**

1. Determine the infrastructure required to develop the CSDMS in the areas of:
 1. Human resources
 2. Computational resources
 3. Funding resources
 2. Identify a national center and an initial set of node institutions
 3. Refine the management structure outlined in the Science Plan
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4. Review and approve the key scientific challenges in Executive Summary of the Science Plan
 5. Define the science issues related to scales, fluxes, & thresholds

In Summary....

- At the end of this workshop we would like a document that:
 - Defines cool scientific problems that can only be solved if CSDMS is created
 - Establishes a CSDMS management plan
 - Establishes the CSDMS software architecture
 - Defines requirements for a physical center, including nature of servers and software engineers
 - Establishes a realistic five-year funding plan

An Example: SCEC2

(From SCEC2 Proposal)

- The SCEC2 matrix of activities.
 - Disciplinary committees will coordinate data-gathering activities and prepare annual budgets for the Board of Directors.
 - Scientific planning will be the responsibility of the Planning Committee.
 - Interfaces to SCEC partners will include scientific liaison and the CEO Program.
 - Focus groups will organize project-oriented interdisciplinary research.
- Requested funding: \$25M from NSF and USGS in the ratio 2:1

