Synthesis of Arctic System Science Projects

Online Meeting

Tuesday, 17 January 2006
Online Meeting Participants

- SASS Project Members
- ARCSS Committee Members
  - Don Perovich (“Sunlight” project)
  - Mark Serreze (“Heat Budget” and “Modes of Covariability” projects)
  - John Weatherly (“Sunlight” project)
  - Matthew Sturm
- NSF
  - Neil Swanberg, NSF ARCSS Program Director
  - Janet Intrieri, NSF ARCSS Program Associate Director
- ARCSS Science Management Office staff (ARCUS)
Welcome and Goal

- Follow-up with discussion started during Nov 28th SASS online meeting for ideas on methods, modes, and tools for synthesis and integration between SASS projects
SASS Meeting Outline

- Discuss approaches to synthesis and integration
  - During 11/28/05 SASS online meeting, three major approaches to synthesis/integration were identified:
    - Methodological
    - Conceptual
    - Organizational/Structural

- Wrap-Up and Upcoming Activities
Seeking SASS Synthesis

A few questions to foster synthesis among SASS projects

• What are the science goals, objectives, and questions?
• What datasets will be built?
  • List including variables, spatial and temporal coverage
  • Common formats (e.g. spatial grid, temporal resolution)
  • Shared access and links
• What models will be used?
  • Process
  • Physical, biological, geochemical
  • GCM
Methodological Approaches to Integration

- Data Integration
- Others?
Conceptual Approaches to Integration

- Themes or questions that link projects
- Others?
Table 1 A summary of the major positive and negative feedbacks to the climate system from responses of the Arctic to ongoing and projected climate change in the region

<table>
<thead>
<tr>
<th>Positive Feedbacks</th>
<th>Effect on Forcing</th>
<th>Negative Feedbacks</th>
<th>Effect on Forcing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increasing water vapor in the atmosphere</td>
<td>Water vapor as a greenhouse gas</td>
<td>Increasing cloudiness, more deciduous forest from more frequent disturbance, and enhanced aerosols from more frequent fire and more production of dimethylsulfide in the Arctic Ocean</td>
<td>Increase in albedo</td>
</tr>
<tr>
<td>Decreased snow and ice cover, increase in tundra shrubs, expansion of evergreen conifer forest, and soot on snow and ice from more frequent fires</td>
<td>Decrease in albedo</td>
<td>Increased carbon storage by terrestrial plants from enhanced growth and increased uptake of carbon dioxide by marine plants</td>
<td>Carbon dioxide as a greenhouse gas</td>
</tr>
<tr>
<td>Carbon dioxide release from decomposition of soils, more frequent disturbance, and enhanced coastal erosion</td>
<td>Carbon dioxide as a greenhouse gas</td>
<td>Political pressure by arctic residents for decision makers to more effectively control greenhouse gas concentrations</td>
<td>Carbon dioxide as a greenhouse gas</td>
</tr>
<tr>
<td>Methane release from temperature sensitivity of methanogenic microbial processes and thawing of permafrost</td>
<td>Methane as a greenhouse gas</td>
<td>Increasing freshwater inputs to the Arctic Ocean and North Atlantic from melting of sea ice and glaciers, increase in precipitation, and increase in river discharge to the Arctic Ocean</td>
<td>Shut down of the global thermohaline circulation</td>
</tr>
</tbody>
</table>
Organizational/Structural Approaches to Integration

- Lead person(s)?
- Subgroups and Committees?
- Staff support?
- Others?
Wrap-up/Upcoming Activities

- Final Thoughts

- Upcoming Activities
  - Spring SASS Meeting Planning
    (Dates: 28-29 March?)
  - Agenda development (subgroup volunteers?)
  - SASS Webpage development
Thank you!

Powerpoint presentation and audio archive will be available for SASS project members