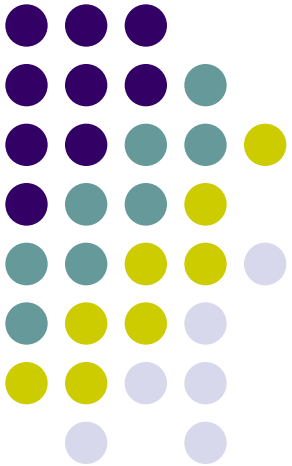
ARCSS eTown Meeting: ARCSS Synthesis

Friday, 7 October 2005



eTown Meeting Participants

- Community Participants (40 as of 10-04-05)
  http://www.arcus.org/ARCSS/ETM/October_05/p_list.html

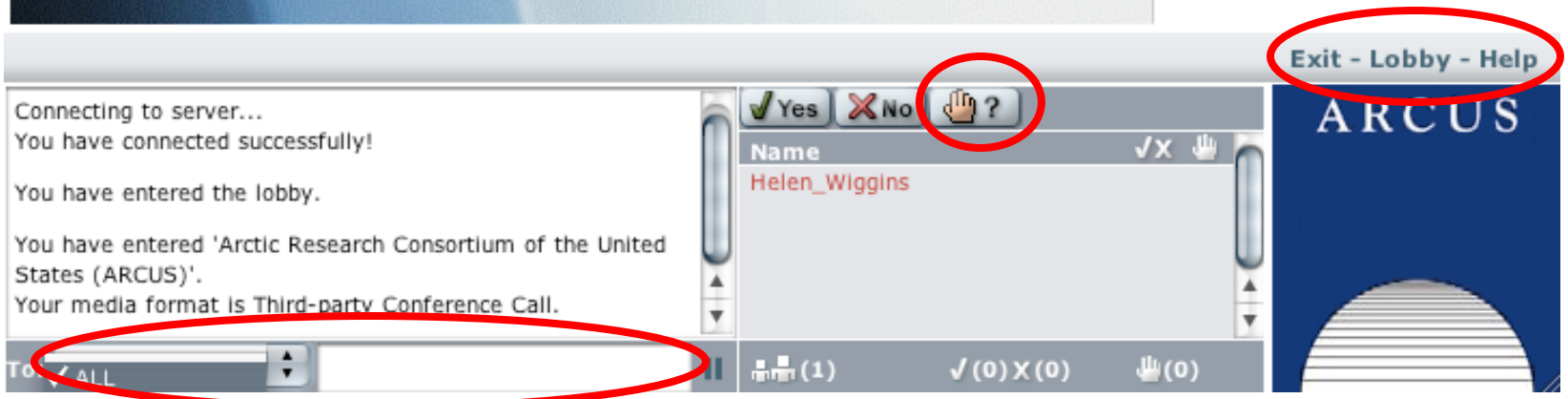
- ARCSS Committee Members
  - Jonathan Overpeck, Chair
  - Jennifer Francis
  - Marika Holland
  - Glen MacDonald
  - Craig Nicolson
  - Don Perovich
  - Mark Serreze
  - Matthew Sturm (Moderator)
  - Charles Vörösmarty
  - John Weatherly

- NSF
  - Neil Swanberg, ARCSS Program Director
  - Janet Intrieri, ARCSS Associate Program Director

- ARCSS Science Management Office staff (ARCUS)

Horizon Wimba Interface

Note:
eTown Meeting presentation, audio, and public chat will be archived



Welcome and Goals

- To discuss past ARCSS scientific synthesis - what has been achieved and how
- To encourage communication and collaboration among and between the ARCSS research community (CoPs, AC, NSF, current research, others)
- To provide input to the ARCSS Committee Meeting next week and ARCSS Program planning over the next several years

eTown Meeting Outline

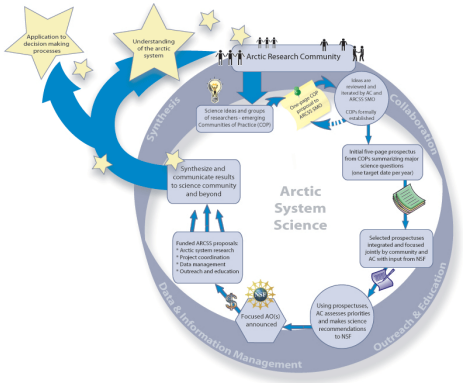
- Background and Context
- Synthesis Announcement of Opportunity (2005)
- Future Synthesis Planning (Including a 2006 Synthesis AO)
- Upcoming Activities
- Summary and Final Thoughts

Background and Context:
ARCSS Goals

- Achieve a system-level understanding of the Arctic based on strong interdisciplinary collaboration
- Overarching science question: *What do changes in the arctic system imply for the future?*
- To address this question, researchers must:
  - Advance from a component understanding to a system understanding of the Arctic
  - Understand the behavior of the Arctic system–past, present and future
  - Understand the role of the Arctic as a component of the global system
  - Include society as an integral part of the arctic system

Background and Context

- Communities of Practice (CoPs)
  - Groups of researchers organized around a set of arctic system science questions
  - Work with the ARCSS Committee, the ARCSS Science Management Office, and the broader research community to develop science questions that align with and advance ARCSS Program goals
- Major ARCSS research activities:
  - SBI
  - Freshwater projects
  - SNACS
  - PARCS synthesis
  - Other



ARCSS Synthesis AO

Synthesis of Arctic System Science (NSF 05-525)

- "Proposals are sought that discover, clarify, and improve our understanding of linkages, interactions, and feedbacks among two or more components of the **arctic system**. Strong proposals will meet all of the following criteria:
  - Incorporate elements from the **existing** arctic data, information, and models
  - Focus on **interdisciplinary**, cross-cutting questions that will lead to a better understanding of how the system components function and interact
  - Demonstrate clear relevance to the **entire arctic system**
  - Include specific plans for deposition of data and products resulting from the project into the ARCSS data and information system before the end of the project"

Discussion

Funded Projects

9 projects funded, 44 total PIs/Co-PIs

[Project titles and PIs listed]

- **Greening of the Arctic - Synthesis and Models to Examine the Effects of Climate, Sea-ice, and Terrain on Circumpolar Vegetation Change**

  Donald (Skip) Walker, Institute of Arctic Biology, University of Alaska Fairbanks

  Howard Epstein, Department of Environmental Sciences, University of Virginia

- **A Heat Budget Analysis of the Arctic Climate System**

  Mark Serreze, National Snow and Ice Data Center, University of Colorado

  Michael Steele, Polar Science Center, University of Washington

- **Synthesis of Arctic System Carbon Cycle Research Through Model-Data Fusion Studies Using Atmospheric Inversion and Process-Based Approaches**

  David McGuire, Institute of Arctic Biology, University of Alaska Fairbanks

  Jerry Melillo, The Ecosystems Center, Marine Biological Laboratory

  Qianlai Zhuang, The Ecosystems Center, Marine Biological Laboratory

  Michael Follows, Department of Earth, Atmospheric, and Planetary Sciences, MIT

Funded Projects (continued)

- **Humans and Hydrology at High Latitudes**

  Richard Lammers, Complex Systems Research Center, University of New Hampshire

  Daniel White, Department of Civil and Environmental Engineering, University of Alaska Fairbanks

- **A Synthesis of Rapid Meltwater and Ice Discharge Changes: Large Forcings from the Ice with Impacts on Global Sea Level and North Atlantic Freshwater Budgets**

  Mark Fahnestock, Institute for the Study of Earth, Oceans, and Space, University of New Hampshire

  Martin Truffer, Geophysical Institute, University of Alaska Fairbanks

  Richard Alley, Department of Geosciences and EMS Environment Institute, Pennsylvania State University

  Jason Box, Department of Geography, Ohio State University

  Sarah Das, Geology and Geophysics Department, Woods Hole Oceanographic Institution

  Ian Joughin, Polar Science Center, University of Washington

Funded Projects (continued)

- **Sunlight and the Arctic Atmosphere-Ice-Ocean System**

  Don Perovich, Cold Regions Research and Engineering Laboratory, Hanover, NH

  Bonnie Light, Polar Science Center, University of Washington

  Hajo Eicken, Geophysical Institute, University of Alaska Fairbanks

- **Heterogeneity and Resilience of Human-Rangifer Systems: A Circumpolar Social-Ecological Synthesis**

  Gary Kofinas, Institute of Arctic Biology and Department of Resources Management, University of Alaska Fairbanks

Funded Projects (continued)

- **Arctic Surface Air Temperatures for the Past 100 Years: Analysis and Reconstruction of an Integrated Data Set for Arctic System Science**

  Ignatius Rigor, Polar Science Center, University of Washington

- **Synthesis of Modes of Ocean-Ice-Atmosphere Covariability in the Arctic System from Multivariate Century-Scale Observations**

  Martin Miles, Environmental Systems Analysis Research Center, Boulder, CO

  Mark Serreze, National Snow and Ice Data Center, University of Colorado

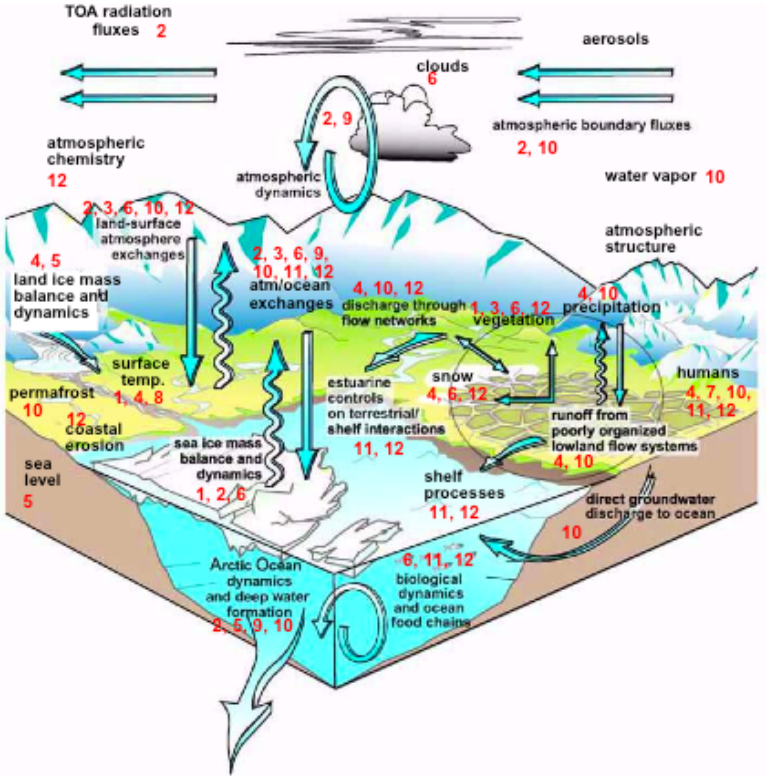
Discussion

Synthesis: What Comes Next? (I)

- Second synthesis Announcement of Opportunity (AO)?
  - Lessons from first synthesis AO
  - Suggestions for improvement/re-focusing?

Synthesis: What Comes Next? (II)

- Back-of-the-envelope look at currently funded ARCSS projects in a system context

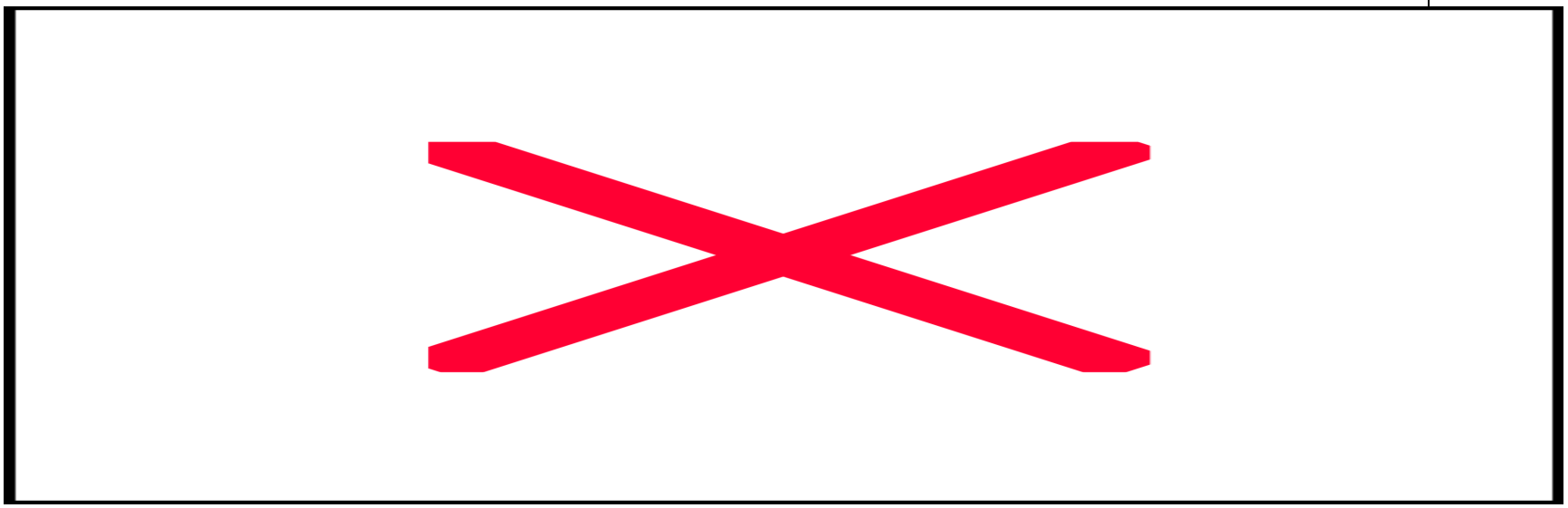


Synthesis: What Comes Next? (III)

- What scientific synthesis is needed next?
- What are the big missing pieces?
- What type(s) of approaches are needed?

Discussion

Upcoming Activities



- ARCSS Committee meeting next week
- Community of Practice (CoP) process ongoing
  - Encourage CoP concept paper submission
  - AC works with CoPs to refine, combine, and develop the ideas that will feed into science recommendations to NSF
- Additional eTown Meetings and WebSeminars (Data, others)
  - Suggestions for eTown Meeting topics?
  - Proposals for WebSeminars?

Summary and Final Thoughts

Thank you!