The Arctic Synthesis Collaboratory

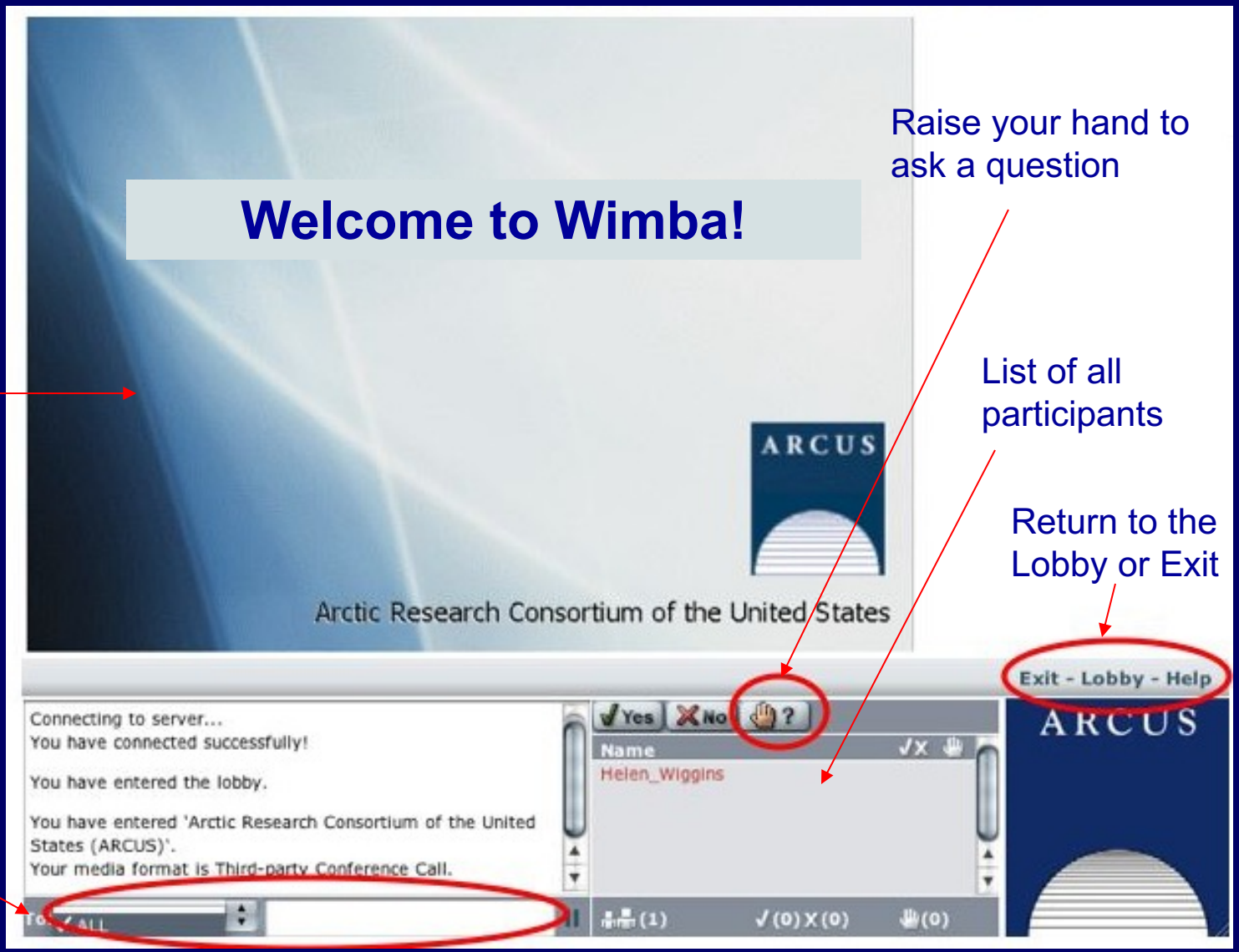
An Integrated Community-based Research Network

Arctic Collaboratory Planning Committee & ARCSS Committee

eTown Meeting

5 December 2007

Wimba Interface



Slides will be shown here

Raise your hand to ask a question

List of all participants

Return to the Lobby or Exit

"Chat" with one person or the entire group

Slides, audio, and group chat will be archived

Welcome & Introductions

- Community Participants (27 as of 4 December 2007)
  http://www.arcus.org/ARCSS/etm/december_07/p_list.html
- Planning Committee Members
  (* Also ARCSS Committee Member)
  - Charles Vörösmarty*
  - Larry Hinzman
  - John Weatherly
  - Maribeth Murray*
    - *Planning Group members unable to attend: [Marika Holland*, A. David McGuire, Josh Schimel]*
- Additional ARCSS Committee (AC) Members
  - Jennifer Francis
  - Mark Serreze
  - Mike Steele
- ARCSS Science Management Office (ARCUS) staff

New Demands on Arctic Science

- US Policy on Climate Change
- Security Challenges
- Infrastructure at Risk
- Sea Level Rise
- International Cooperation
- Economic Interests
- Public Need for Accurate Information

The Boston Globe

Intelligence chief OK's global warming study

National security may be affected by climate change

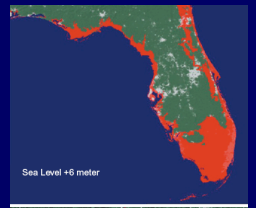
By Mark Mazzetti
NEW YORK TIMES NEWS SERVICE

WASHINGTON — Stepping in the middle of a partisan debate Capitol Hill, the nation's top intelligence official has endorsed a comprehensive study by spy agencies about the impact of global warming on national security.

In a letter written last week to ligence estimate, saying that intelligence resources were too precious to be used to study the impact of climate change.

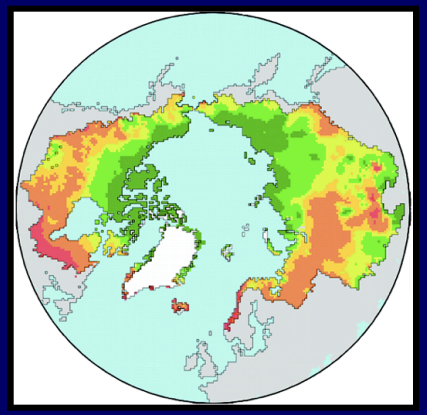
"Let other federal agencies, as more than a dozen already do, cover the 'bugs and bunnies.' But let our spies be spies," Representative Peter Hoekstra of Michigan, the ranking Republican on the House Intelligence Committee, wrote Thursday in a Wall Street Journal op-ed article.

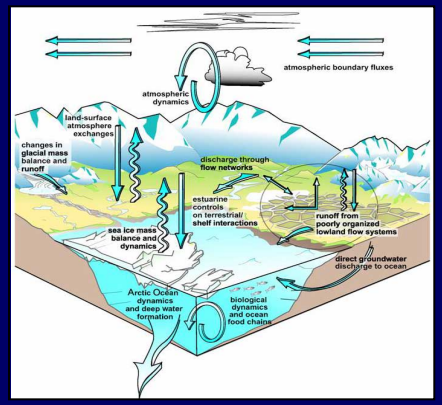
But intelligence officials have already recognized the impor-



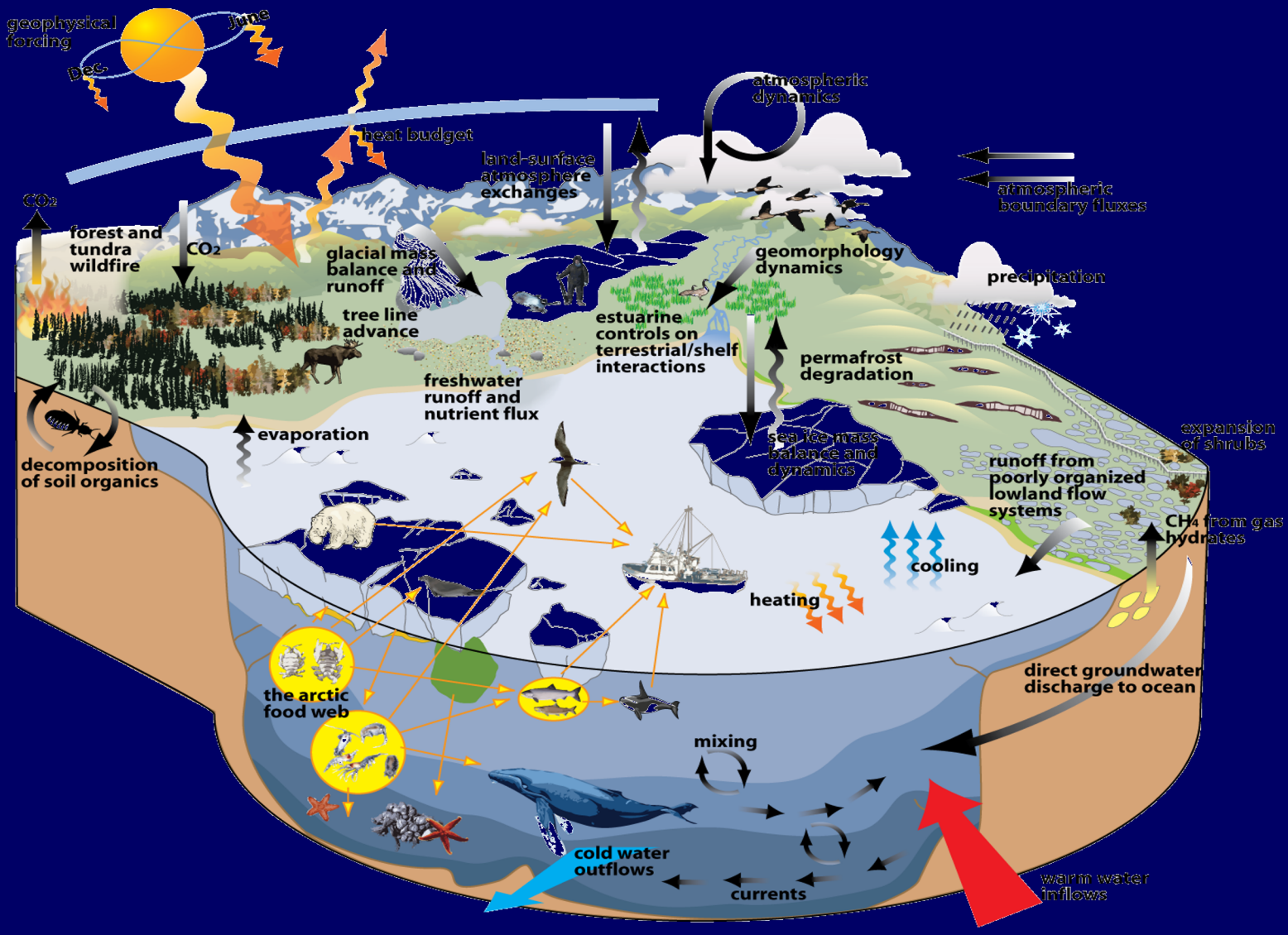
ARCSS Move Toward Synthesis

- Improve understanding of the Arctic System, its role in the larger Earth system, and its response to change
- Identify innovations in S&T and community engagement that advance system science
- Engage decision-makers and the public on the importance of these issues

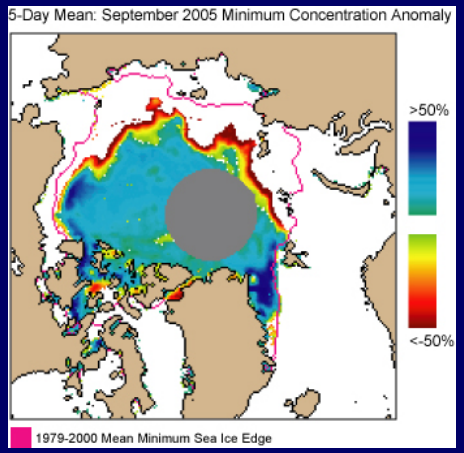




Arctic System Complexity

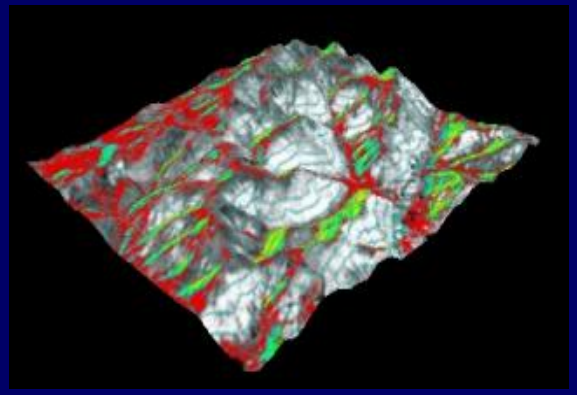


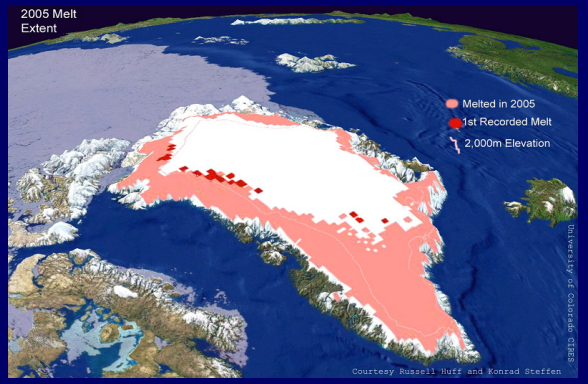
Complex Information Streams



Change detection

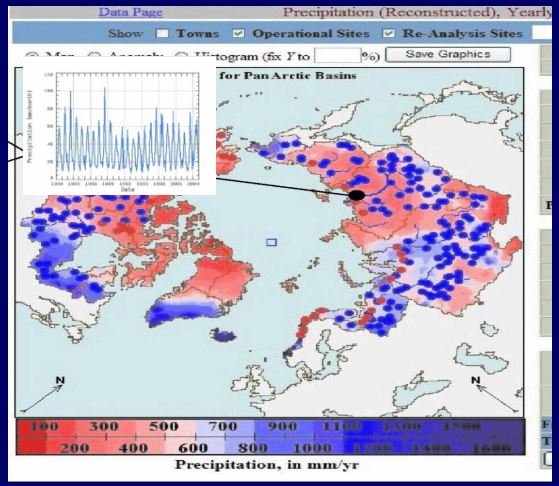
Computationally intensive landscape models



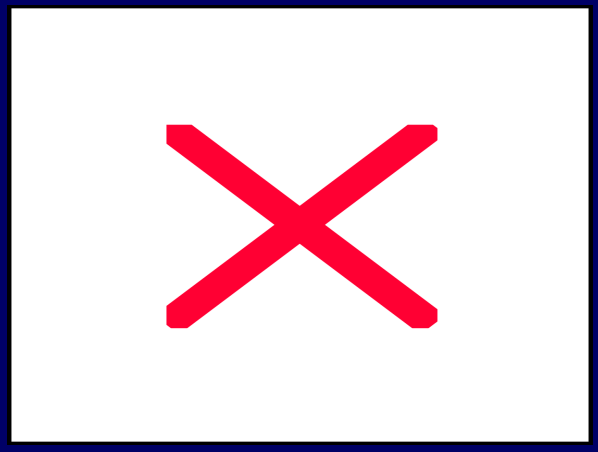


Science-driven sensor & technology development

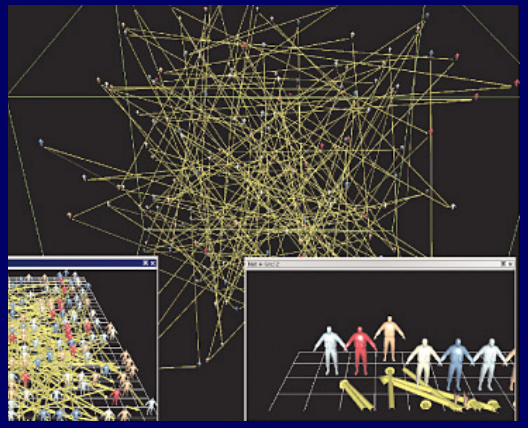
Observation networks



High resolution Earth System simulations



Agent-based models



Discussions on Arctic System Data, Modeling, and Synthesis

1996 ARCSS All-Hands Workshop
1996 ARCSS Synthesis, Integration, Modeling Studies (SIMS)
2003 ARCSS Data Working Group Report
2005 ARCSS Committee recommendations for a revised data management structure
2006 1st ARCSS eTown Meeting (March)
2006 Fall AGU Town Meeting (Dec)
2007 2nd ARCSS eTown Meeting (March)
2007 ARCSS Synthesis Workshop: Data Discovery & Modeling
2007 Further planning & community engagement
2008 ARCSS *Arctic Synthesis Collaboratory* Workshop

Concurrent with developing SEARCH, IPY, AON initiatives

Arctic Synthesis Collaboratory

- Consensus recommendation that has emerged from the community is development of an **Arctic Synthesis Collaboratory**
  - Formalized during the *ARCSS Data Discovery and Modeling Workshop* (April 2007, Seattle)

- A **collaboratory** is a network-based facility and organizational entity that:
  - Spans distance
  - Supports rich and recurring human interaction oriented to a common research area
  - Fosters contact between researchers who are both known and unknown to each other
  - Provides access to data sources and tools required to accomplish research tasks

(Adapted from Science of Collaboratories, University of Michigan)

Arctic Synthesis Collaboratory

Integrated Collaboratory Components:

1. Collaborative "Meeting Grounds"
2. Data and Modeling CI Support Services
3. Education, Outreach, and Policy
4. Scientist Professional Development

Functions could be established virtually as a distributed set of activities and/or take advantage of existing facilities

Component 1: Community Network and Synthesis "Meeting Grounds"

People working together—virtually and in person—across organizational, disciplinary, and geographic boundaries to solve complex problems

- Enables transformative science and discovery
- Fosters new research initiatives
- Develops policy-relevant information and resources
- Taps existing facilities *plus* CI-enabled virtual meeting places

Component 2: Data & Modeling CI Support Services

CI/IT resources and tools supports Collaboratory activities

- Enables integration of data and models across multiple sources, scales, disciplines, and formats
- Fuels *Collaboratory* team activities
- Creates a comprehensive venue for data discovery, integration, analysis, and visualization
- Provides a "testbed" for creating successful distributed research networks

Component 3: Education, Outreach, and Policy

Arctic Virtual Outreach Center (AVOC) synthesizes information to increase public understanding - CI-enabled

- Provides decision-makers with timely and policy-relevant information about the Arctic
- Develops audience-appropriate resources—graphics, virtual news-conferencing, K-12 lesson plans and educational resources—to increase public understanding of arctic science

Component 4: Scientist Professional Development

Training, mentoring, advancement, and broadening of the workforce

- Trains and mentor scientists—at all career levels—in interdisciplinary and synthesis skills
- Advances community knowledge with state-of-the-art tools and methods
- Provides professional development through network-enabled courses, exchange programs, short courses, etc.

Science-Driven Collaboratory

- Arctic research community serves as a "testbed" for Collaboratory and cyberinfrastructure innovations
  - **Science-driven and CI-powered**
- The *Collaboratory* will provide the framework for a new mode of science needed to address BIG science questions. Some examples:
  - How will arctic change influence global **Ecosystem Distribution, Biota, and Services**?
  - How is the **Greenland Ice Sheet** changing and why?
  - What is driving the ongoing **Sea Ice Retreat**?
  - How will arctic change impact **Food Security**?
  - What are the risks to arctic and global **Coastal Infrastructure** now and in the future?

Next Steps and Implementation
Short Term

- Relevant Announcements of Opportunity
  - Recent AOs
    - *NSF Cyber-Enabled Discovery and Innovation (CDI)*
    - *NSF Sustainable Digital Data Preservation and Access Network Partners (DataNet)*
  - Actions being taken by community
    - Collaboratory Committee responded to CDI AO with a Letter of Intent to lay foundation for Collaboratory
    - Others?
  - Other groups are encouraged to respond to relevant AOs - we encourage communication and collaboration between groups developing proposals
- eTown Meeting and AGU Town Meeting
- Potential Spring 2008 Implementation Workshop (Workshop prospectus in development)

Next Steps and Implementation
Longer-Term

- Co-develop, w/CI & IT research network experts and arctic research community, the structure, tools, phasing, management of the *Collaboratory*
- Strategic phasing of *Collaboratory* implementation
- Continued community input and community-wide participation

Discussion

- What Collaboratory components or activities are the highest priority?
- Are there scientific, policy, or education and outreach needs that the current conceptualization of the Collaboratory would not meet? Is something missing?
- What are the critical considerations or barriers that must be overcome for successful Collaboratory Implementation?
- What kinds of activities will ensure community-wide input and participation?
- Other thoughts, ideas, suggestions?

Thank You!

- eTown Meeting archive will be available through the eTM webpage: http://www.arcus.org/arcss/etm/december_07/index.html
- AGU Town Hall Meeting scheduled for Monday, 10 December at 7:30 p.m. PST (Moscone Center West, Room 3004)
- Upcoming Collaboratory activities will be announced via the ARCSS Listserve