Second Arctic System Science All-Hands Meeting

Seattle Feb. 20-22, 2002

Welcome and Introduction

Welcome, on behalf of the ARCSS Committee:

- Terry Chapin
- Lloyd Keigwin
- Amanda Lynch
- Bruce Peterson
- John Weatherly
- Glen MacDonald

- Bill Heal
- Larry Hamilton
- Rudy Dichtl
- Jonathan
 Overpeck
- Jack Kruse

Peck's excuse



Jackson Cole Overpeck

Who are "we"?

- Over 500 principal investigators and coinvestigators active in the ARCSS program.
- Residents of the Arctic, including here members of the Alaska Native Science Commission
- 100's more investigators, post-docs, graduate and undergraduate students, including international colleagues
- ARCSS program support professionals: ARCUS, ADCC, JOSS, VECO...
- NSF management and program staff.

Why are we here?

- To further chart the course of ARCSS-funded research
 - Through discussions about:
 - » Key uncertainties related to central ARCSS research questions
 - » **ARCSS** initiatives
- With the goal of addressing key uncertainties in ARCSS initiatives.

Where have we come from?

- National concern in mid-1980s about effects of global climate change on the arctic system
- Identification of important research questions
- Major research initiatives
- Evolving national concerns and feedback of science.

Where are we going?

- Build on ongoing science planning within ARCSS
- Identify key uncertainties and readiness for research related to ARCSS central research questions.

A brief overview of the central ARCSS research questions

"Arctic Climate"

How will the climate of the Arctic change over the next 10 to 100 years?

"Biogeochemical and Hydrologic Feedbacks"

How will changes in arctic biogeochemical and hydrological cycles, and their feedbacks affect arctic and global systems?

"Arctic ecosystems and human societies"

How will future climate change interact with human activities to affect the sustainability of natural ecosystems and human societies?

"Detecting Change"

Are the predicted changes in the Arctic system detectable?

The ARCSS central questions in shorthand:

- Arctic Climate
- Biogeochemical & Hydrologic
 Feedbacks
- Arctic Ecosystems & Societies
- Detecting Change

How are we charting the course of ARCSS?

- Ongoing development of initiatives
- Building on
 - Ocean-Atmosphere-Ice Interactions (OAII) &
 - Land-Atmosphere-Ice Interactions (LAII)
 - All-Hands joint meetings in Salt Lake
- Bringing in new ideas: Post-Salt Lake online forums
- Seattle All-hands Meeting
- Post-Seattle work

Seattle All-Hands Meeting

- Central ARCSS questions: Plenary discussion of key uncertainties and readiness for research
- 4 working groups
 - Modes of variability in the arctic system
 - Pan-Arctic, community-wide hydrological analysis and monitoring program
 - Nearshore and coastal processes
 - Biophysical feedbacks and transitions in the arctic regional system

Post-Seattle

 Help develop funding
 Develop science plans, implementation plans, announcements of opportunity
 Do the research!

 Structure the ARCSS program to meet scientific needs

ARCSS Components

Major discoveries, key uncertainties, readiness for research, priorities for integrative research



ARCSS Jargon

- PARCS Paleoenvironments of the Arctic System
- OAII Ocean-Atmosphere-Ice Interactions
- LAII Land-Atmosphere-Ice Interactions
- HARC Human Dimensions of the Arctic
- SEARCH Study of Environmental Change
- CHAMP Pan-Arctic, community-wide hydrological analysis and monitoring program
- SHEBA Surface Heat Budget of the Arctic
- SBI Shelf-Basins Interactions
- ATLAS Arctic Transitions in the Land-Atmosphere System
- RAISE Russian-American Initiative on Shelf-Land Environments in the Arctic
- ITEX International Tundra Experiment



"Budding" Initiatives

 Nearshore and Coastal Processes
 Biophysical Feedbacks and Transitions in the Arctic Regional System

Key Uncertainties Plenary Discussion

Key uncertainties concerning:

- Arctic Climate
- Biogeochemical & Hydrologic Feedbacks
- Arctic Ecosystems & Societies
- Detecting Change

Discussion questions:

- What are the key uncertainties?
- What is the impact of this uncertainty on our understanding of the Arctic system?
- What is our level of confidence in the above assessment?
- What is our level of readiness to deal with this uncertainty?
- Should this focus area be addressed in a new or existing initiative, by one or a combination of ARCSS components, or by some other means?

Thematic Working Groups

Thematic working groups

- Modes of variability in the arctic system (SEARCH)
- Pan-Arctic, community-wide hydrological analysis and monitoring program (CHAMP)
- Nearshore and coastal processes initiative
- Biophysical feedbacks and transitions in the arctic regional system

All-hands thematic working groups

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Modes of Variability

CHAMP

Nearshore & coastal processes

Biophysical feedbacks & transitions

ARCSS Central Questions

	Arctic	Biogeochemical	
ctic	ecosystems	& Hydrologic	Detecting
mate	& societies	Feedbacks	Change

Goal: address ARCSS key uncertainties within ARCSS initiatives