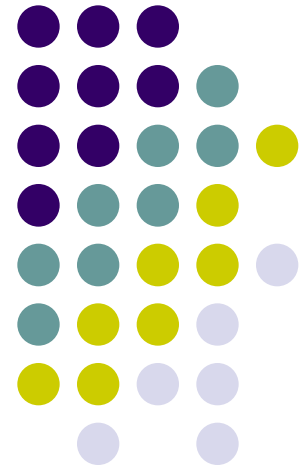


# Synthesis of Arctic System Science Projects *Online Meeting*

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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*

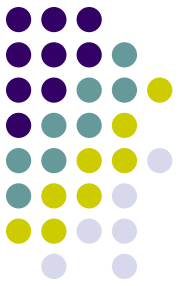
- What are the science goals, objectives, and questions?
- What datasets will be built?
  - List including variables, spatial and temporal coverage
  - Common formats (e.g. spatial grid, temporal resolution)
  - Shared access and links
- What models will be used?
  - Process
  - Physical, biological,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

# Methodological Approaches to Integration

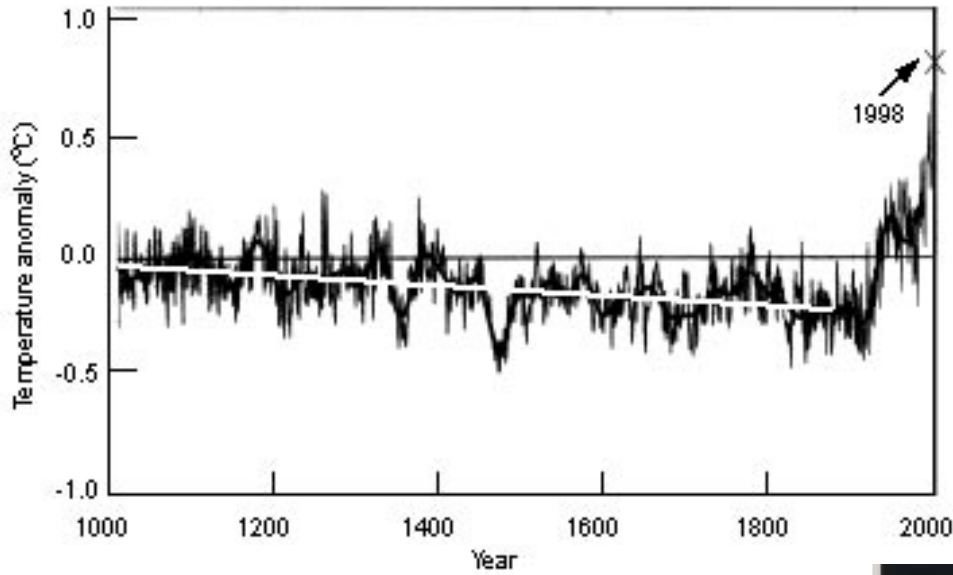


- Data Integration
- Others?

# Conceptual Approaches to Integration



- Themes or questions that link projects
- Others?

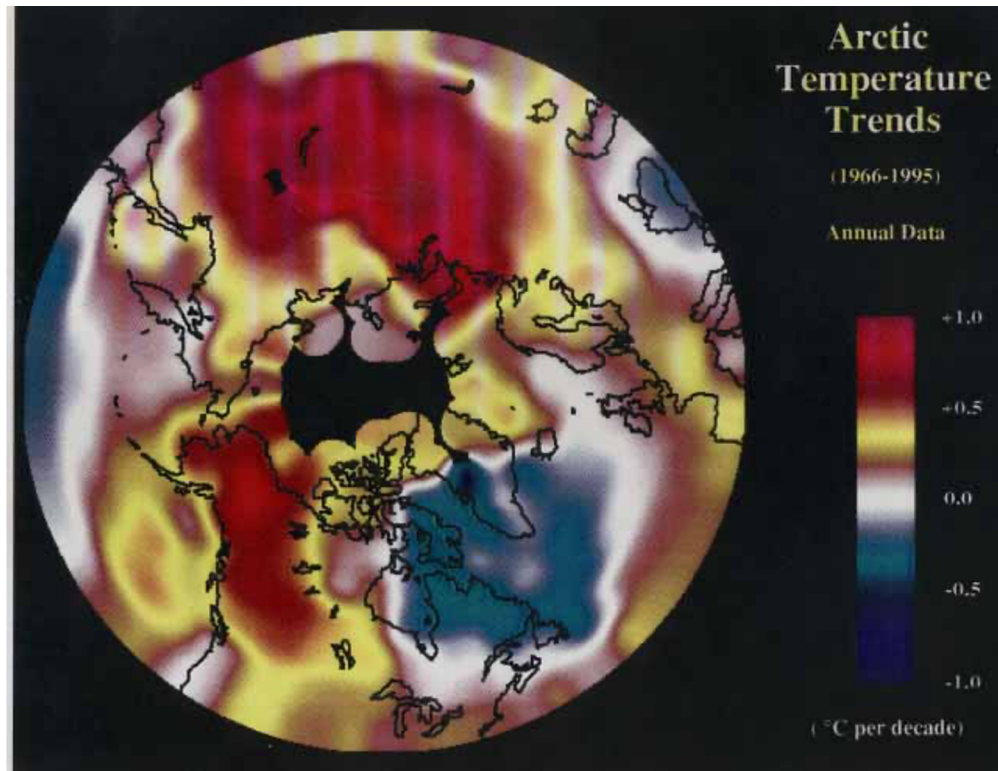


**Global to  
arctic**

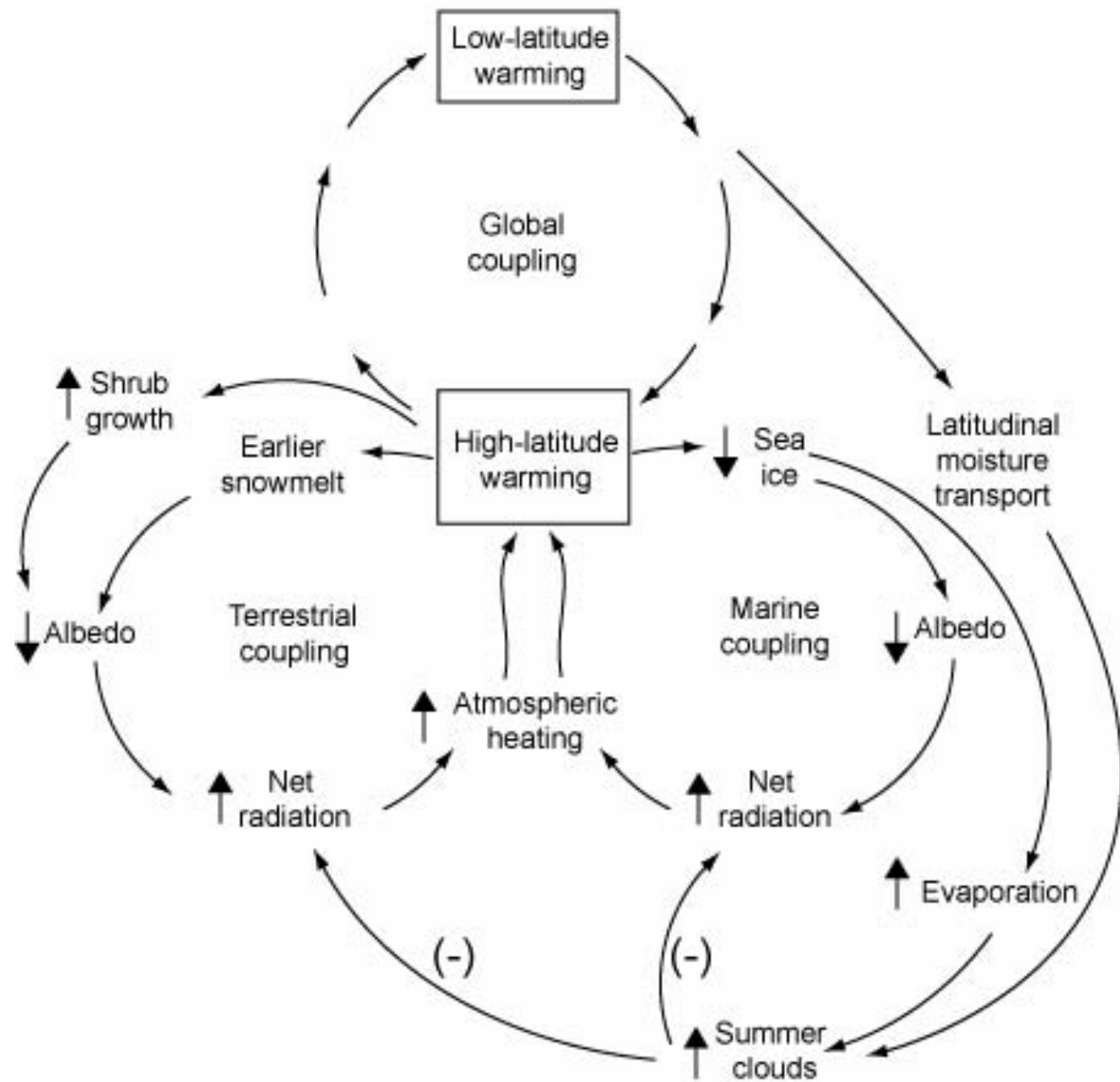
Mann et al.

**Polar  
amplification**

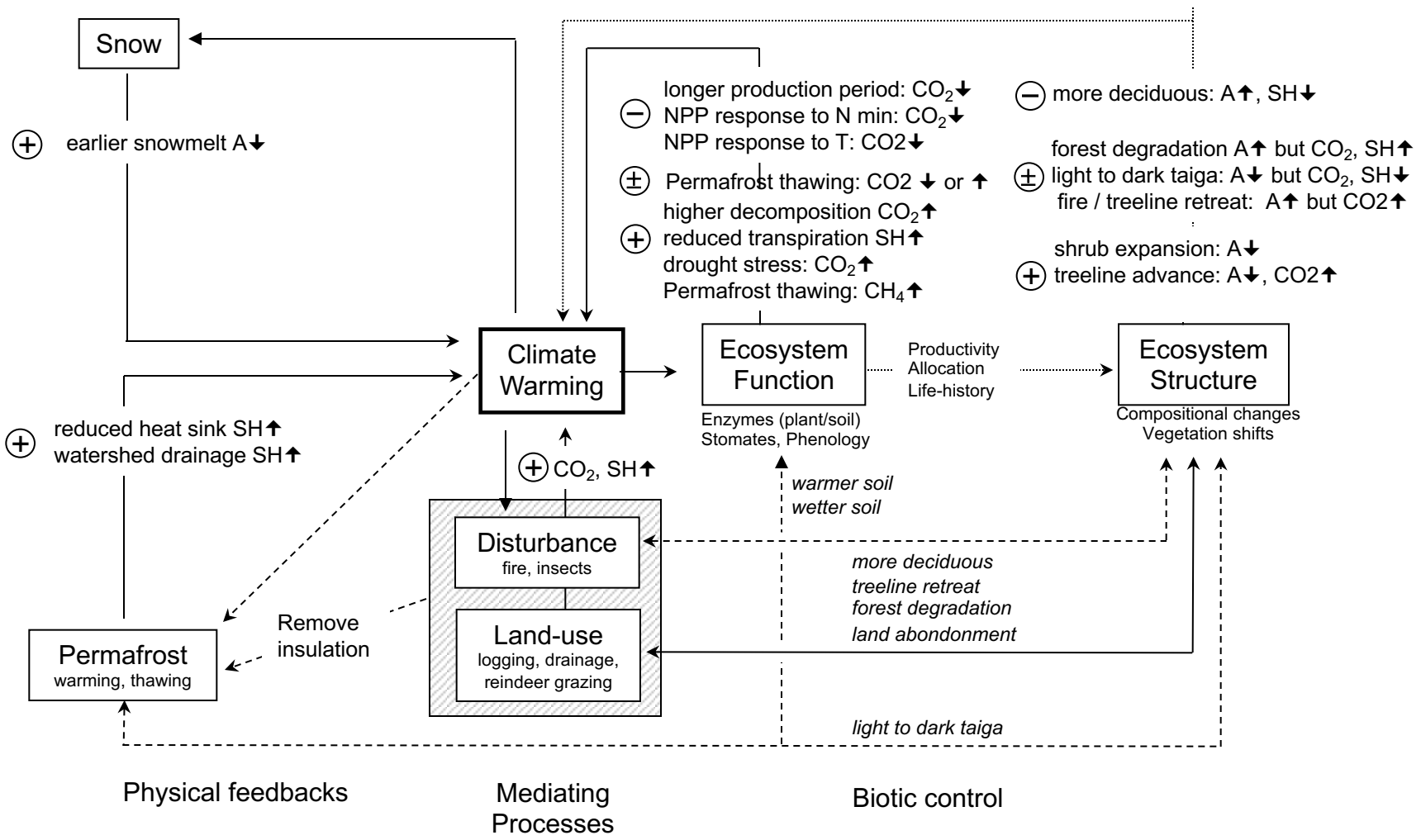
Chapman and Walsh





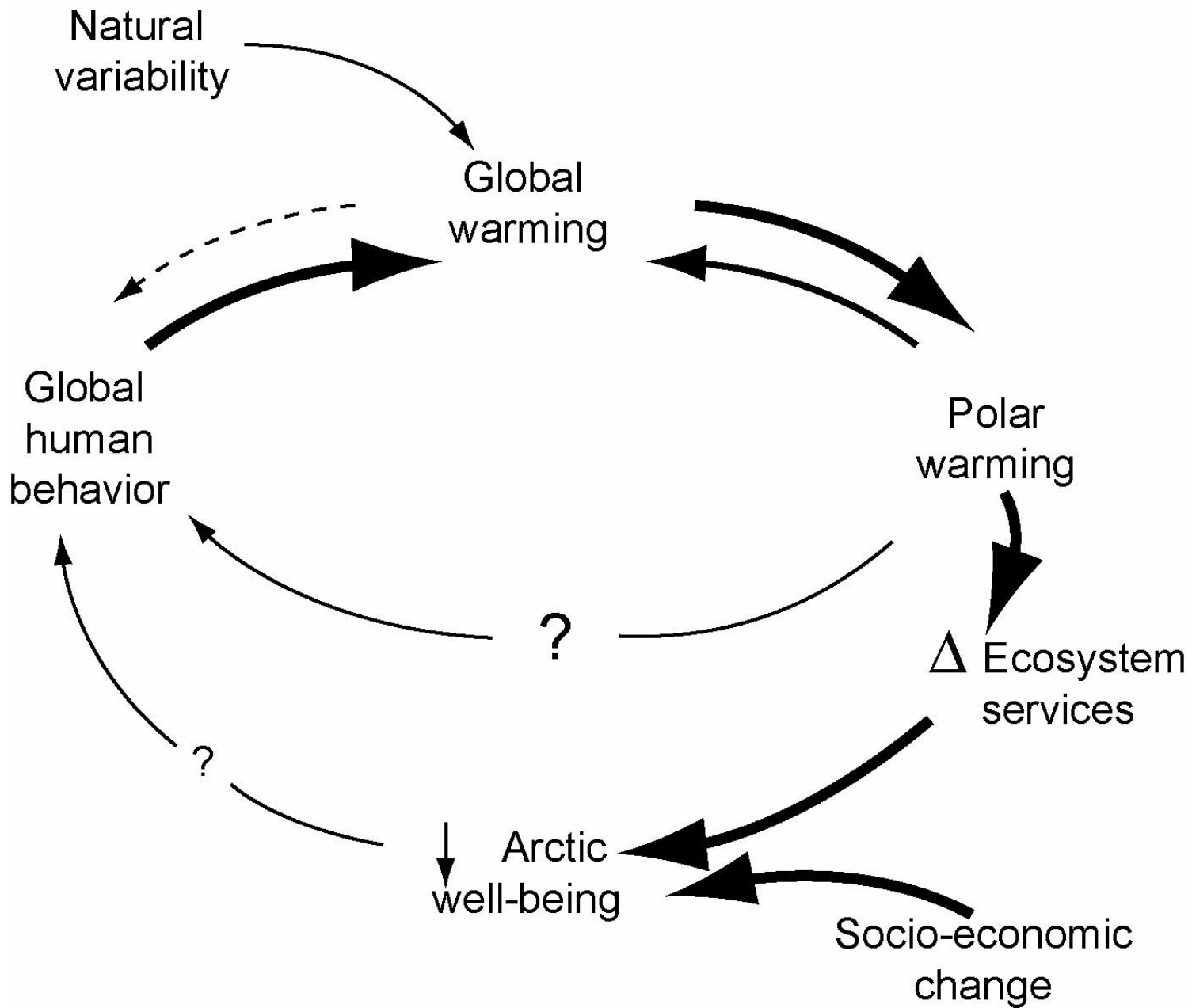


Response time	Effect	Feature	Direction of change
→ Seconds to months	⊖ Negative feedback	SH = sensible heat flux	↑ = becomes more
- - - Months to years	⊕ Ambiguous	A = Albedo	↓ = becomes less
⋯ years to decades	⊕ Positive feedback	CO <sub>2</sub> , CH <sub>4</sub> = Emission of CO <sub>2</sub> or CH <sub>4</sub>	

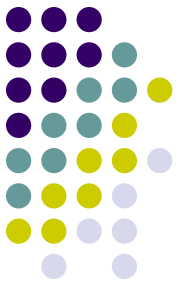


**Table 1** A summary of the major positive and negative feedbacks to the climate system from responses of the Arctic to ongoing and projected climate change in the region

Positive Feedbacks	Effect on Forcing	Negative Feedbacks	Effect on Forcing
Increasing water vapor in the atmosphere	Water vapor as a greenhouse gas	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	Increase in albedo
Decreased snow and ice cover, increase in tundra shrubs, expansion of evergreen conifer forest, and soot on snow and ice from more frequent fires	Decrease in albedo	Increased carbon storage by terrestrial plants from enhanced growth and increased uptake of carbon dioxide by marine plants	Carbon dioxide as a greenhouse gas
Carbon dioxide release from decomposition of soils, more frequent disturbance, and enhanced coastal erosion	Carbon dioxide as a greenhouse gas	Political pressure by arctic residents for decision makers to more effectively control greenhouse gas concentrations	Carbon dioxide as a greenhouse gas
Methane release from temperature sensitivity of methanogenic microbial processes and thawing of permafrost	Methane as a greenhouse gas	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	Shut down of the global thermohaline circulation

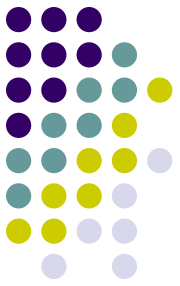


# Organizational/Structural Approaches to Integration



- 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