

# Incorporating people in IPY



# Where I'm coming from...

- The US scientific community wants to collaborate with the international community.
- Interdisciplinary research can strengthen each discipline's research
- There are lots of interesting research ideas on the table – learning from each other will strengthen each of our research programs and may yield opportunities to collaborate across projects.

# International IPY themes

- Status
- **Change**
  - Including social change
- **Global Linkages**
  - Interactions & processes
- New Frontiers
- Vantage Point
- **Human Dimension**

# Danish IPY Themes

- Arctic Climate – variability, change & impact
  - Including impacts on ecosystems
  - No mention of human dimension?
- Greenland's Ice Sheet – scientific frontiers
- **Man, Nature and Arctic Societies**

# Danish Theme: Man, Nature & Arctic Societies

- Interactions, Processes & Trends
- Long-term Trends
- Human-environment Interactions
- Global-Local Interaction
- Socio-economic Processes
- Socio-cultural Processes

# Danish Man, Nature & Arctic Societies: Project Themes

- Health, living conditions, well-being & welfare
- Processes of socio-economic change, esp. gender & inter-generational relations
- Migration, settlement structure, social & cultural strategies: a diachronic perspective
- Rapid change, vulnerability, and resilience
- Arctic economies
- Globalization and Glocalization: identity, culture, and competence

# US IPY Themes

- **Large scale environmental change, including human dimensions of change**
- New frontiers (e.g. sea floor)
- Observing polar regions in depth
- **Understanding human-environmental dynamics**
- Creating new connections between science & the public

What does the US program look like?  
(Are there opportunities to collaborate?)

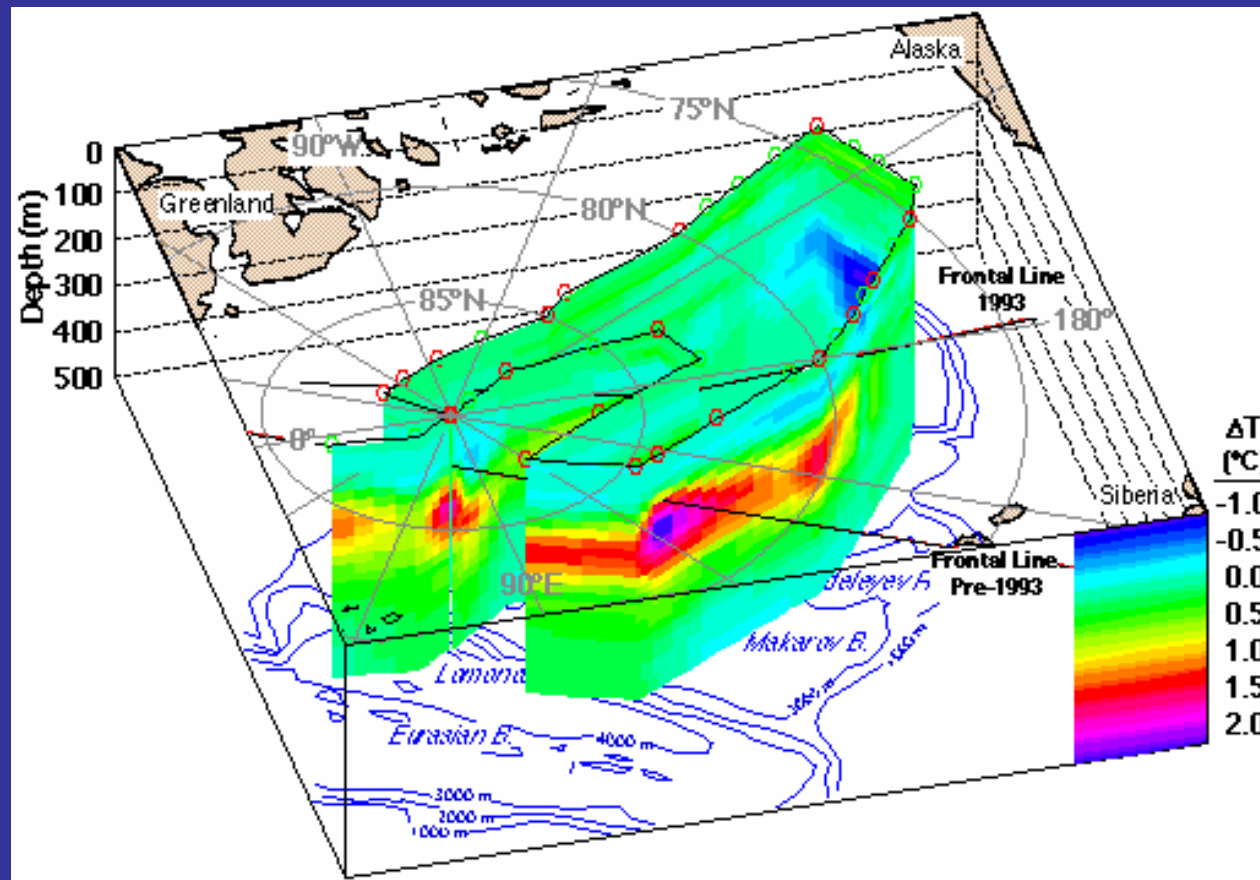


**STUDY OF ENVIRONMENTAL ARCTIC CHANGE**

It started “pretty simply”



# Observations drove the science



Warming Atlantic waters in the Arctic Ocean

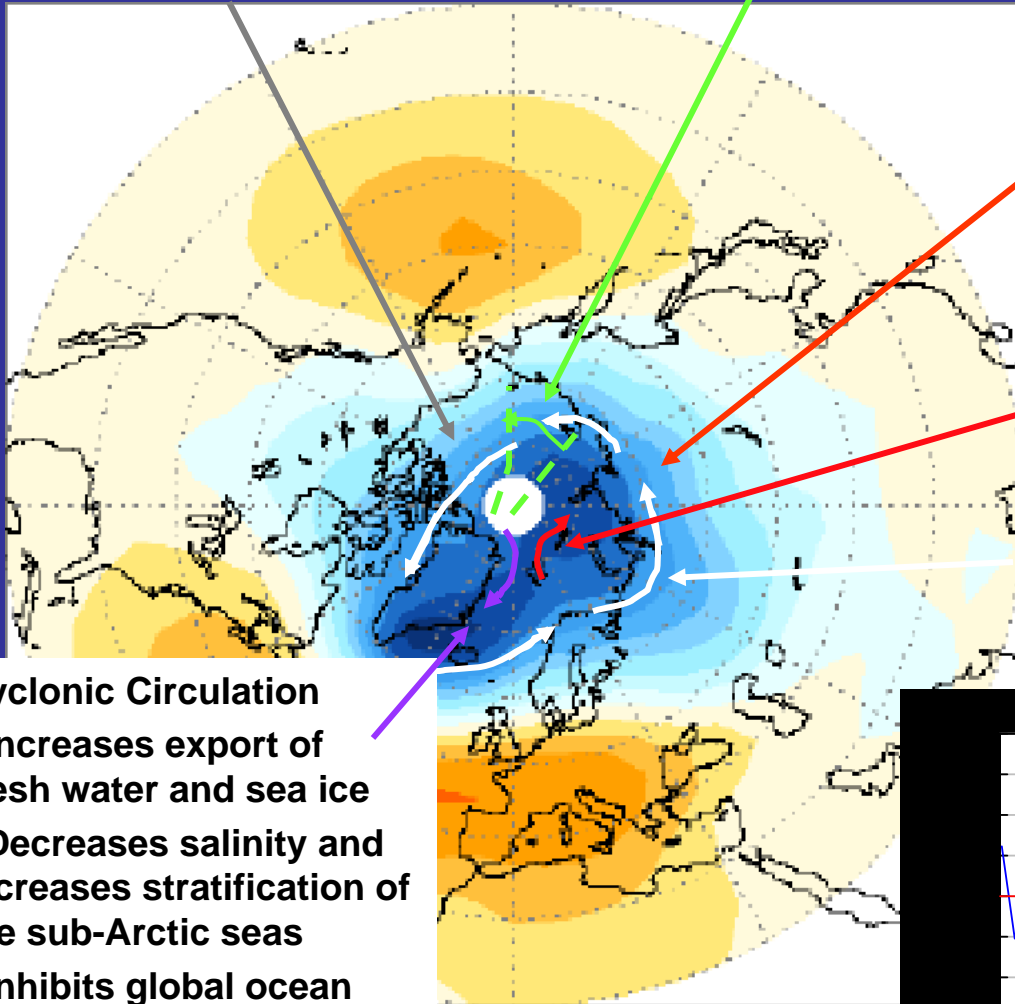
# And there appeared to be an intriguing explanation

## Increase in Polar Vortex

- Increases open water
- Decreases Albedo
- Increases radiative heating & melt
- Freshens upper Beaufort Sea

## Increase in Polar Vortex

- More cyclonic ocean circulation
- Shift in front and Transpolar Drift
- Russian shelf water to Beaufort



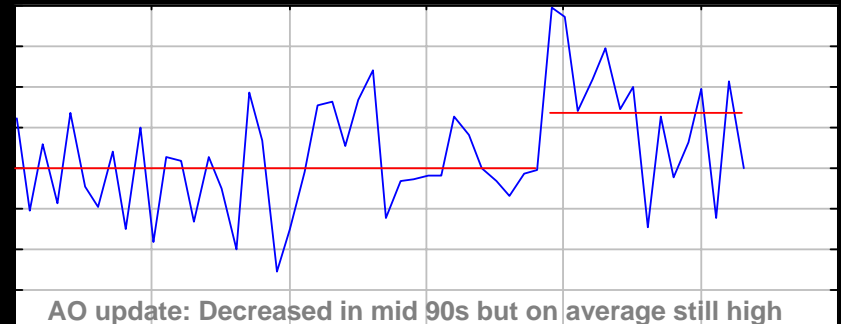
Warm air advection increases SAT, warms permafrost

Warm air over Greenland Sea allows warmer Atlantic Water in Arctic Ocean

Low pressure spins up Polar Vortex, brings warm air to Greenland Sea & Russian Arctic

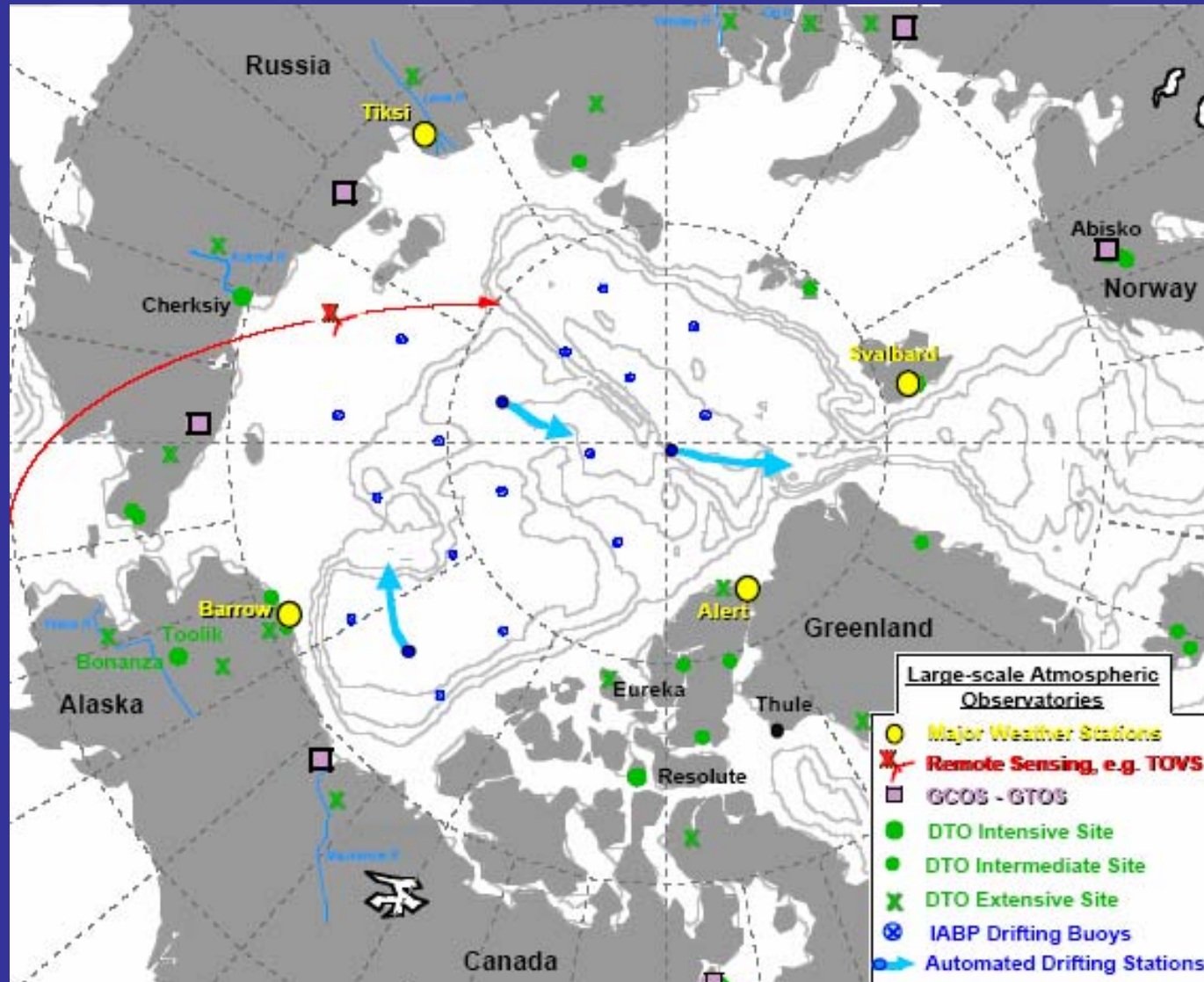
## Cyclonic Circulation

- Increases export of fresh water and sea ice
- Decreases salinity and increases stratification of the sub-Arctic seas
- Inhibits global ocean overturning



AO update: Decreased in mid 90s but on average still high

# But money was a problem...



Meanwhile, it appeared there are two  
converging stories....

- Scientific perspectives
- Native perspectives



Catherine Attla

# Alaska Native perspectives

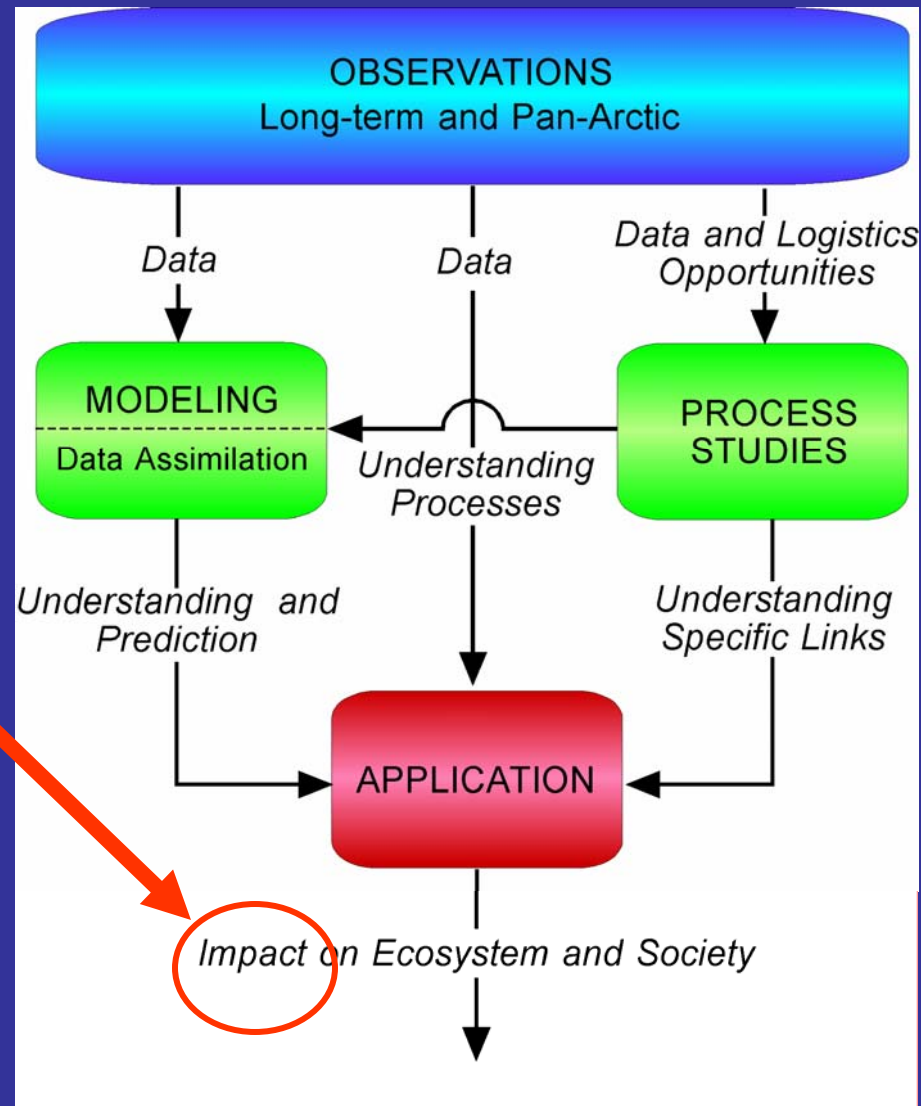


# Converging perspectives and the lack of money drove the science...

- The US National Science Foundation decided that the best way to fund the science was to expand its scope to link the physical science to natural and human systems.



# Original Search Strategy



# Meanwhile, the approach to human dimensions has evolved

- From a paradigm of “impacts” to a paradigm of “interactions”
- “Responding to change” is not only a matter of responding to impacts, it is a much more complex pattern of responses over time to anticipated, observed, experienced, and learned changes in the Arctic system

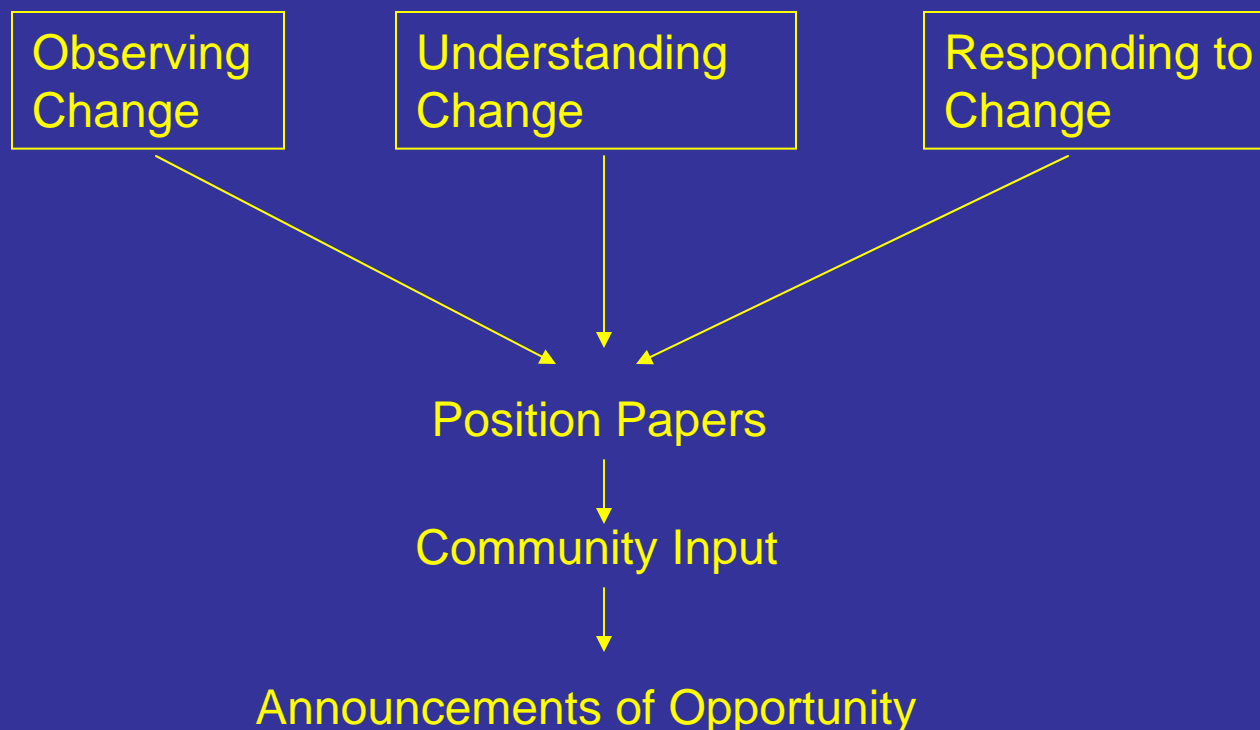
# But SEARCH is still in the incubator...

- So the National Science Foundation has linked SEARCH with its plans for IPY



# We are in the same place you are

- Turning themes into viable projects



# Three “clusters of related changes”

- Subsistence harvests
- Fisheries
- Marine transportation

# Potentially a broad range of human dimensions research within these areas:

- Identification of clusters of related-changes in the physical, biological, and human systems
- Identification of the most relevant predictions and near-real time observations
- Compilations of historical data
- Understanding changes over long time periods
- Designing and implementing observation systems
- Interpretation of modeling results in the context of local knowledge

I'm looking forward to where we  
can go together in IPY...

