



STUDY OF ENVIRONMENTAL ARCTIC CHANGE

# Sea Ice Forecasting Synergies & Collaboration with SEARCH

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Chair, SEARCH Science Steering Committee*

- SEARCH Vision & Mission
- 5-year strategy – “Ice-diminished Arctic Ocean” Theme
- Specific linkages: AON, SIO, SIWO
- Opportunities to partner

# What is SEARCH?

- A collaborative scientific program that works with academic and government agency scientists to prioritize, plan, conduct, and synthesize research focused on Arctic environmental change. SEARCH is guided by a Science Steering Committee and several panels and working groups with broad representation of the research community.



# SEARCH Vision

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Scientific investigation of arctic physical and social-ecological systems to help society understand and respond to a rapidly changing Arctic.





# SEARCH Mission

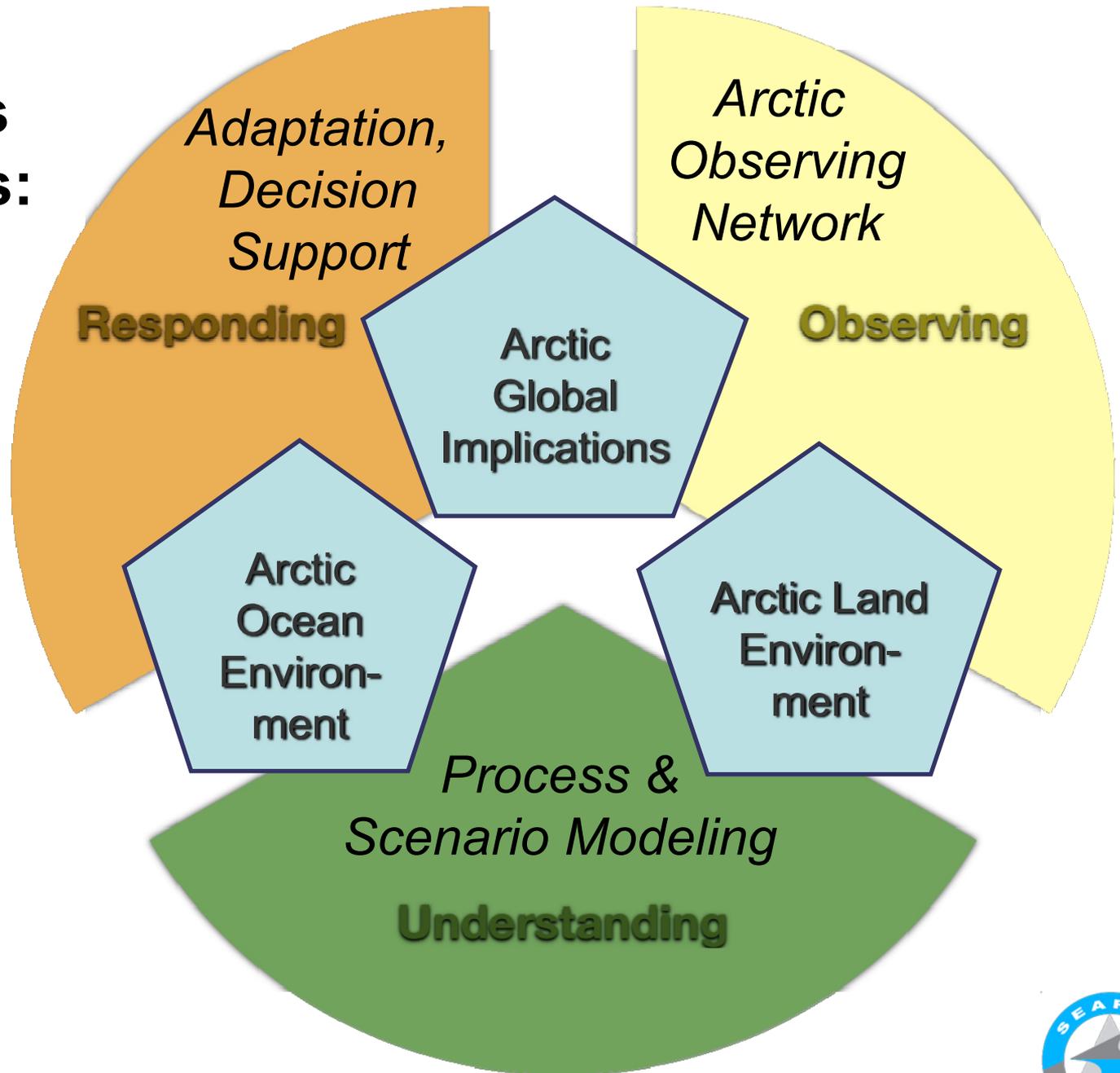
To provide a foundation of arctic science through collaboration with the research community, funding agencies, and other stakeholders.

Specifically, SEARCH:

- Generates and synthesizes research findings and promotes arctic science and scientific discovery across disciplines and among agencies.
- Identifies emerging issues in arctic environmental change.
- Provides information resources to arctic stakeholders, policy-makers, and the public to help them understand and respond to arctic environmental change.
- Coordinates with national and international arctic science programs integral to SEARCH goals.
- Facilitates research activities across local-to-global scales, emphasizing incorporation of stakeholder concerns from the start of the planning process .
- Collaborates with the U.S. arctic environmental change science community in international and global change research initiatives.

# SEARCH

## 5-year goals & objectives: 3 Themes





# SEARCH 5-year goal

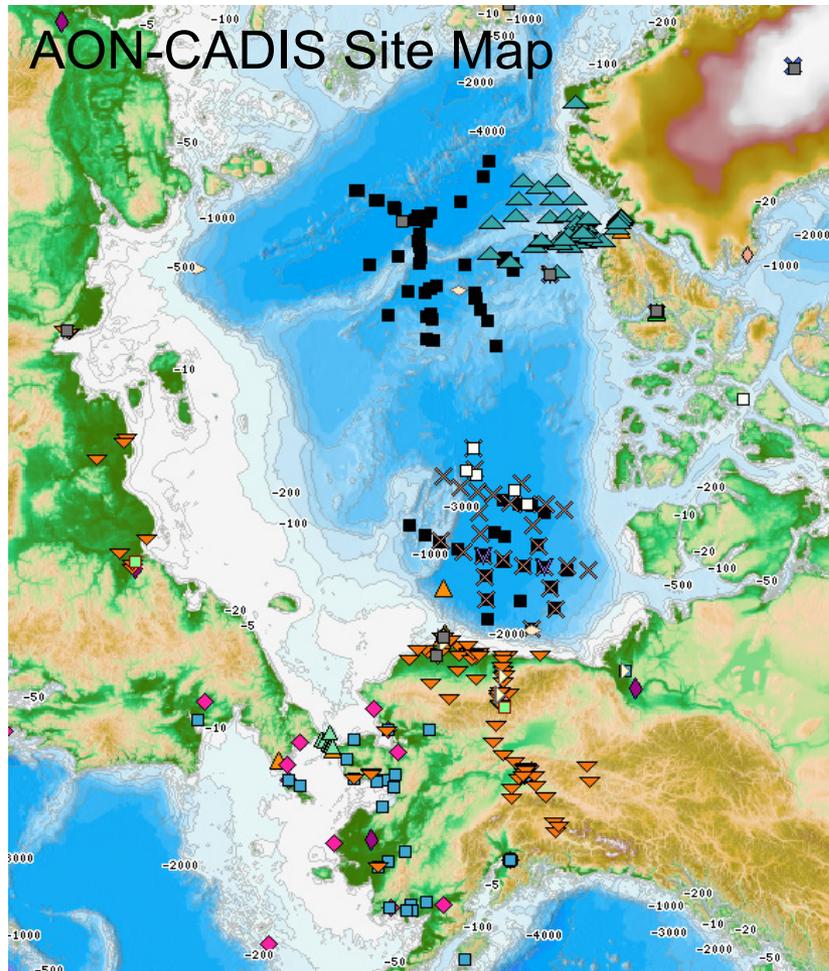
## “Ice-diminished Arctic Ocean” (DRAFT)

### *Predict the Consequences of a Transition Towards a Seasonally Ice-Free Arctic Ocean*

- Apply diverse, new tools to sea ice prediction from daily to decadal timescales
  - Build collaborative partnerships and interagency implementation plans to determine sea-ice predictability, identify trajectories of decadal-scale sea-ice retreat and deploy observing platforms for improved forecasts
  - Synthesize findings from paleo-records, climate model output, indigenous knowledge, complex systems models and other sources
- Develop capability to link sea-ice prediction products to measures of change in marine ecosystems & impacts on Arctic communities
  - Prioritize observation sites for investigating linkages between sea ice, marine ecosystems, and impacts
  - Identify at-risk infrastructures and ecosystem services
  - Develop suitable measures of marine ecosystem change
- Explore the breadth of consequences of a seasonally ice-free Arctic Ocean across human & natural systems
  - Develop cross-disciplinary scenarios to explore trajectories towards a seasonally ice-free Arctic Ocean



# Arctic Observing Network (AON)

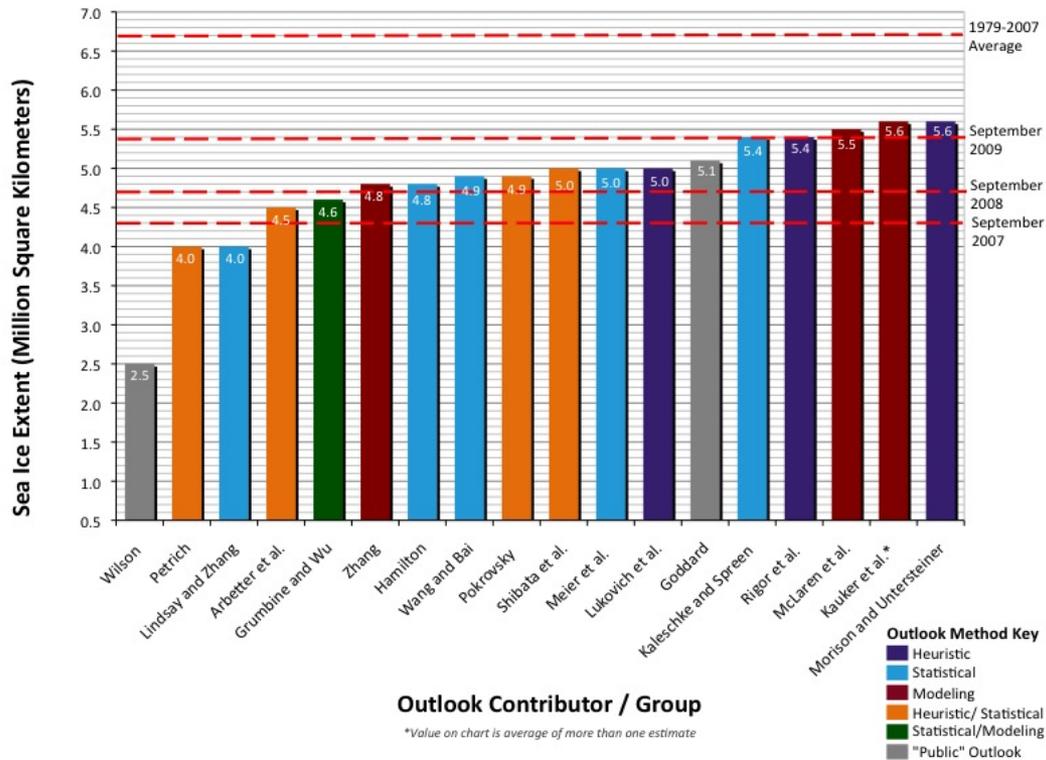


- Roughly 40 NSF-supported AON projects
- Data dissemination and archival at Coop Arctic Data & Information Service [www.aoncadis.org](http://www.aoncadis.org)
- State of AON:
  - Scientific community, federal/state/local agencies, stakeholders and general public all with a vision for an Arctic observing system
  - Action toward improved networking & coordination getting underway



# SEARCH Arctic Sea Ice Outlook

September 2010 Sea Ice Outlook: August Report



- International effort (led by SEARCH & DAMOCLES programs) to anticipate, track & evaluate Arctic seasonal ice evolution starting in the summer of 2008 with contributions by more than 20 international expert groups
- Regional outlook: Regional ice development important to stakeholders & decision-makers

- [www.arcus.org/search/seaiceoutlook](http://www.arcus.org/search/seaiceoutlook)



# Sea Ice for Walrus Outlook (SIWO):

[www.arcus.org/search/siwo](http://www.arcus.org/search/siwo)



**STUDY OF ENVIRONMENTAL ARCTIC CHANGE**

**Sea Ice for Walrus Outlook (SIWO)**

Printer Friendly/Low-Bandwidth Version

**Past SIWO Reports**

Friday, 30 April 2010 - Sea Ice for Walrus Outlook [Go]

**Latest News:** The latest weekly SIWO report (23 April 2010) is now available - see below!

**Overview**

The Sea Ice for Walrus Outlook (SIWO), an activity of the SEARCH Sea Ice Outlook, is a resource for Alaska Native subsistence hunters, coastal communities, and others interested in sea ice and walrus.

The SIWO is updated weekly with information on sea ice conditions relevant to walrus in the Northern Bering Sea and southern Chukchi Sea regions of Alaska. SIWO updates will be released every Friday through late June.

The SIWO webpage includes: (1) An assessment of current ice conditions relevant to distribution and access of walrus, (2) a 10-day outlook of wind conditions, (3) up-to-date satellite imagery for the Bering Strait and St. Lawrence Island, which are two regions of interest to coastal communities engaging in the walrus hunt, (4) written observations of ice development from Alaska Native hunters, sea-ice experts, or NOAA or university researchers, (5) additional data and resources on ice conditions, and (6) additional comments provided by local experts and other contributors.

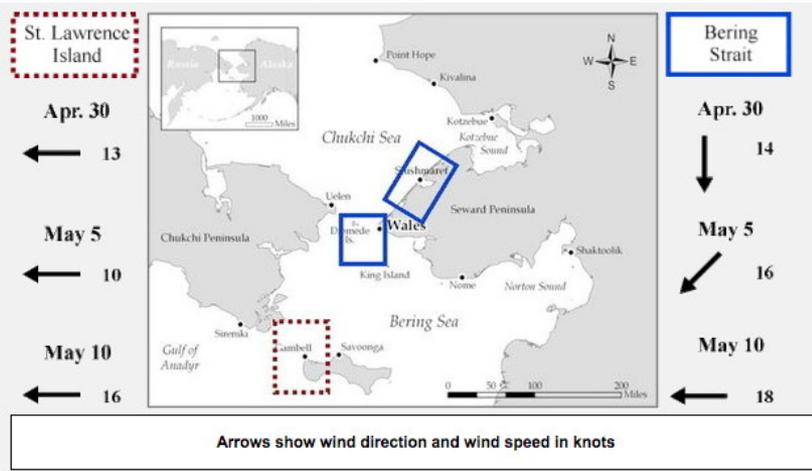
If you are a local hunter, expert, or a scientist with observations on either the development of sea ice or any other aspect of walrus and sea ice, please send your comments to Helen Wiggins at the Sea Ice Outlook Central Office at ARCUS; your comments will be posted to this page.

This collaboration includes weather and ice forecasters, climate scientists and sea-ice researchers at NOAA, the National Weather Service, and the University of Alaska who are teaming up with Alaska Native sea-ice experts and the Eskimo Walrus Commission. Key contacts are:

Kristina Creek, Ronnie Owens, Helen Wiggins - Sea Ice Outlook Central Office, ARCUS  
 Vera Kingeekuk Metcalf - Eskimo Walrus Commission  
 Hajo Eicken - University of Alaska Fairbanks  
 Gary Hufford, Don Moore - National Weather Service  
 Jim Overland, Nancy Soreide, Tracey Nakamura, Nick Bond - National Oceanic and Atmospheric Administration



Photo by Maggie Prevenas - PolarTREC/ARCUS



**Remote Sensing Data**



- Archive of Recent Satellite Images Showing More Detail**
- [St. Lawrence Island](#)
  - [Bering Strait](#)

The links above take you to a user-friendly archive, through the Geographic Information Network of Alaska (GINA) website, which contains all the available high resolution satellite images for the two regions.

**Additional Information on Ice Conditions**



- FZAK80 Sea Ice Advisory
- Sea Ice Analysis
- Five Day Sea Ice Forecast
- Sea Surface Temperatures Analysis
- East Bering Sea (NIC)

# Potential collaboration with SEARCH

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- Create a **forum and testbed** to explore, compare, validate and synthesize different observation approaches
  - Evolve Sea Ice Outlook & Sea Ice for Walrus Outlook
- Partner with **local experts** – Expand model of cooperative observers by building on AON community-based observations?
- Link **observations to understanding of and responses to change**: SEARCH Panels & Working Groups guide AON assets and link to other agencies – US Arctic Obs Integration Mtg, panel activities, etc.
- Synthesize **paleo-data and present-day findings**: Workshop and other synthesis activities
- **International coordination** – Arctic Observing Summit



# AON Design & Implementation (ADI) Task Force

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- **Evaluate** status of AON relative to science questions
- **Aid design & adaptation** of AON components through rigorous, quantitative approaches
- **Synthesize** information from current AON & design studies to guide optimization and implementation
- **Coordinate** between national & international efforts
- Membership: 14 experts representing Arctic (8) and lower-latitude (6) perspectives
- Workshops & proof-of-concept studies, report in 2012
- Resources and status information available at:  
**<http://www.arcus.org/search/aon/>**



# Understanding Arctic Change (UAC) Task Force

- Establish a long-term vision & provide scientific framework for modern effort of understanding the arctic system
- Collaboration between SEARCH & ARCSS programs
- Identify key unknowns & key science questions for understanding arctic system change
- Identify the next steps in synthesis activities, methodologies, mechanisms, and approaches to address the identified key science questions
- Co-chaired by Josh Schimel & John Walsh, 18 members
- Workshop & white paper, to be concluded in 2011
- Information available at:

**<http://www.arcus.org/search/understanding/>**

