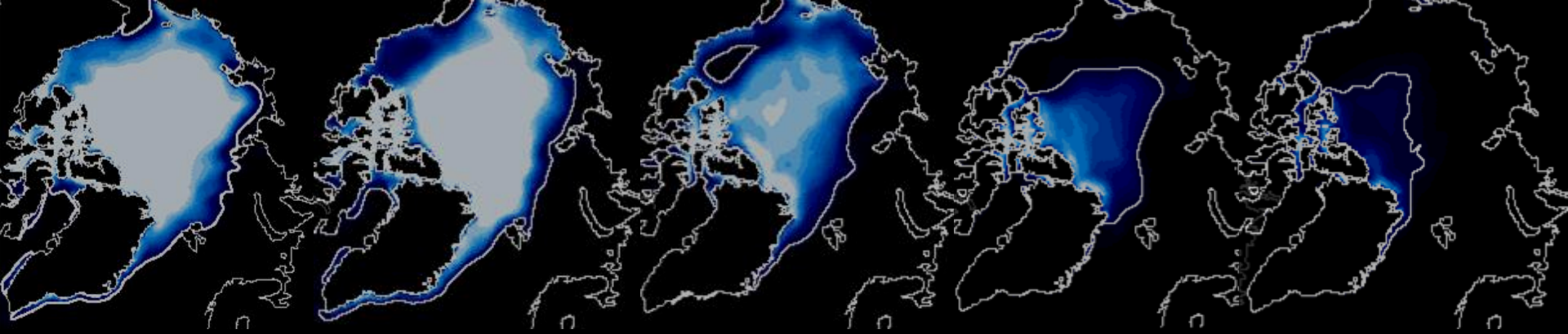

Navigating the New Arctic

CESM Workshop
June 2019

This material is based upon work supported by the National Center for Atmospheric Research, which is a major facility sponsored by the National Science Foundation under Cooperative Agreement No. 1852977.

One of the NSF's 10 Big Ideas

Major Goals:

- Improved understanding of Arctic change and its effects
  - Observation infrastructure
  - Process understanding
  - Modeling interactions among natural, built & social environments
- New research communities for research at intersections of Arctic natural and built environments and social systems
- Research outcomes that inform US national security and economic development needs and enable resilient, sustainable Arctic communities

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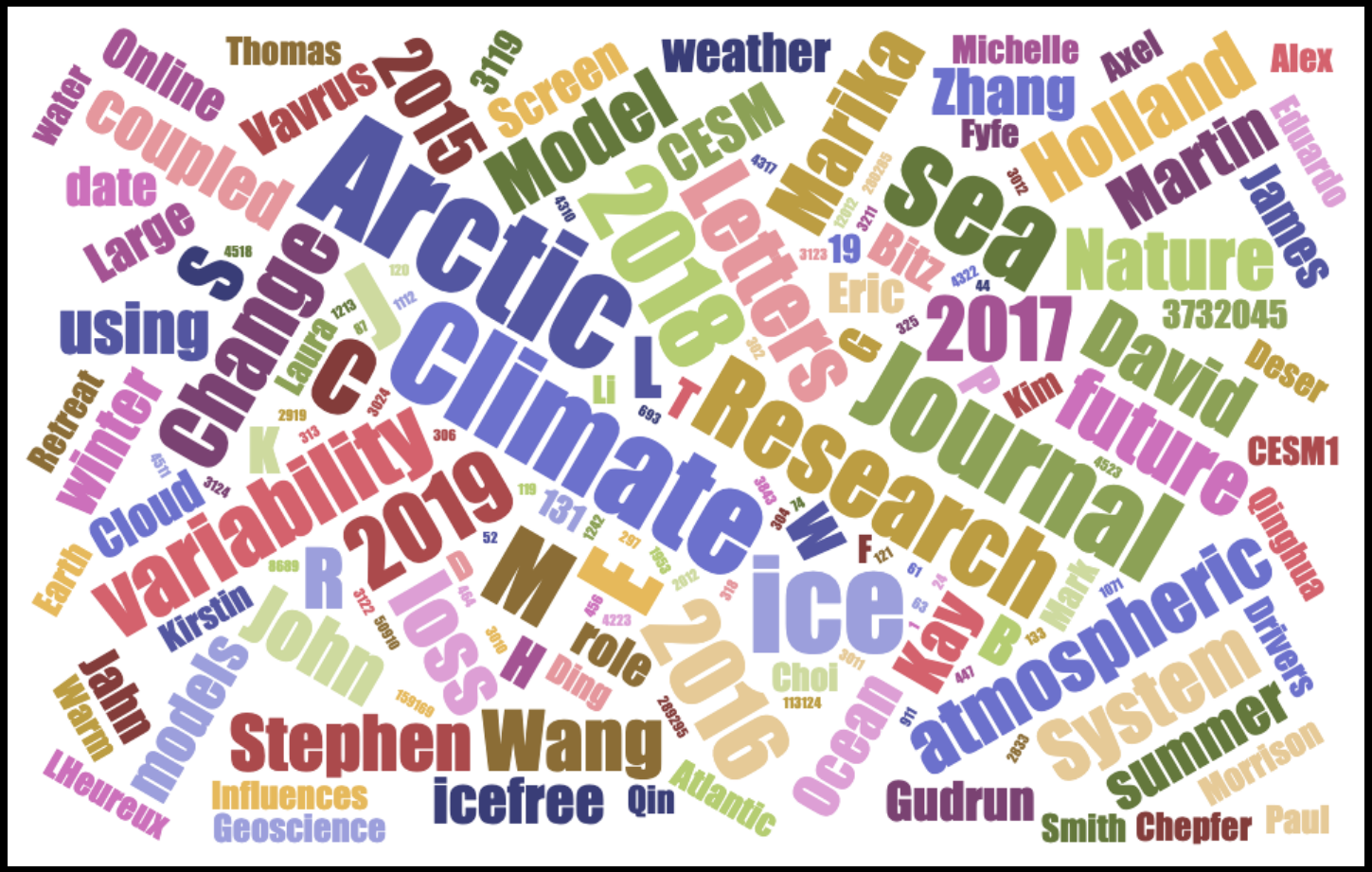
*Where CESM and CESM community can play an important role

Improved understanding of Arctic change and its effects

- 55 published journal articles citing CESM-LENS with “Arctic” in the title



Improved understanding of Arctic change and its effects

- 55 published journal articles citing CESM-LENS with “Arctic” in the title
  - Sea ice
  - Clouds
  - Atmospheric circulation
  - Internal variability
  - Predictability
  - Midlatitude response
  - Detection/attribution
  - Freshwater system
  - Arctic shipping

One of the NSF's 10 Big Ideas

Major Goals:

- *Research outcomes that inform US national security and economic development needs and enable resilient, sustainable Arctic communities

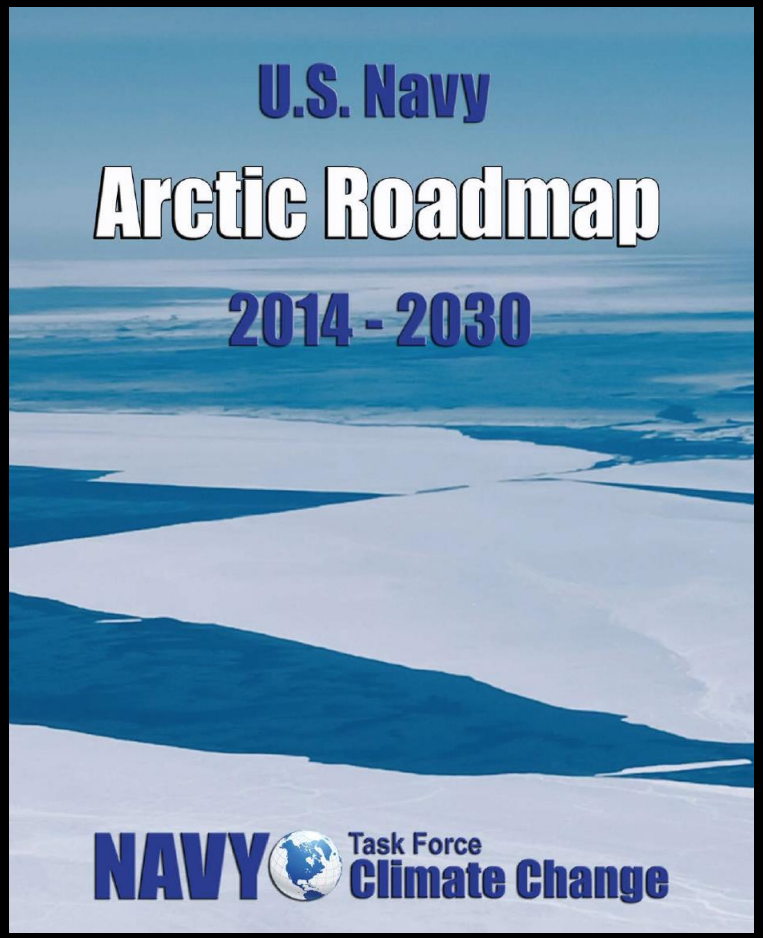
News Release

Secretary Kempthorne Announces Decision to Protect Polar Bears under Endangered Species Act

May 14, 2008

Contact:
Division of Public Affairs
External Affairs
Telephone: 703-358-2220
Website: https://www.fws.gov/external-affairs/public-affairs/

WASHINGTON, D.C. - Secretary of the Interior Dirk Kempthorne today announced that he is accepting the recommendation of U.S. Fish and Wildlife Service Director Dale Hall to list the polar bear as a threatened species under the Endangered Species Act (ESA). The listing is based on the best available science, which shows that loss of sea ice threatens and will likely continue to threaten polar bear habitat. This loss of habitat puts polar bears at risk of becoming endangered in the foreseeable future, the standard established by the ESA for designating a threatened species.



Improved understanding of Arctic change and its effects

- Observation infrastructure
- Process understanding
- Modeling interactions among natural, built & social environments

Changing climate

Credit: Ed Blanchard-Wrigglesworth

Overeem et al., 2011

Impacts on coastal erosion

Built and social environment impacts

Credit: Shishmaref Alaska Erosion & Relocation Coalition

How to use CESM in modeling/informing these interactions?

NSF goal: New research communities for research at intersections of Arctic natural and built environments and social systems

- How do we build on the CESM community to contribute to these efforts? For example, to better understand natural hazards relevant for built environments and local communities.

- Knowledge exchanges
- Workshops
- Sharing of information between local communities, built environment experts, CESM climate scientists
- Others?

How can the CESM project contribute to NSF NNA goals?

- What model developments are needed?
- What community activities would be useful?
- What simulations would be valuable?
- How can we leverage existing and/or ongoing activities and model simulations to contribute to NNA goals
  - For example, model output needs for new large ensemble
  - Cross working group interactions
  - Annual and working group meetings
  - Tutorial activities

Questions?

Photo credit: Marika Holland

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