

INTRODUCTION

Understanding implications of the dramatic and rapid changes in Arctic sea ice requires collaboration across boundaries, including between disciplines, sectors, institutions, and between scientists and decision-makers. Maritime operations including transportation, security, science, and local community use in this highly variable environment will benefit from reliable observations and predictions of Arctic sea ice.

The Arctic Research Consortium of the U.S. (ARCUS) is a non-profit membership organization with more than 40 member institutions. Since 1988, ARCUS has served the Arctic research community by connecting research across boundaries through collaborative partnerships. ARCUS currently leads and/or collaborates on several projects that advance the development and use of Arctic sea ice knowledge for a variety of stakeholders. Here we highlight several projects focused on observations, predictions, and impacts of changes in the Arctic sea ice environment.

SEA ICE FOR WALRUS OUTLOOK - SIWO

Web: <https://www.arcus.org/search-program/siwo>

SIWO is a resource for Alaskan Native subsistence hunters and other interested stakeholders interested in walrus and local sea ice conditions.

- SIWO provides weekly reports, during April-June, of sea ice conditions relevant to subsistence hunters in the northern Bering and southern Chukchi seas.
- Collaboration among scientists, Alaskan Native sea-ice experts, and the Eskimo Walrus Commission is fundamental to this project's success.
- Safe maritime travel is a primary objective of this program.

Broader Interest: Local observations validate sea ice forecasts and observations from the National Weather Service Alaska Sea Ice Program (Figure 1). SIWO resources are valuable to scientists and others navigating the Bering Strait region in spring.

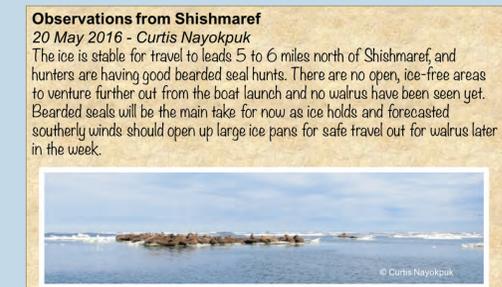


Figure 1. Sea ice for Walrus Outlook local observations are shared among hunters, local communities, weather personnel, and the interested public to promote safe maritime travel.

“ARCUS catalyzes interdisciplinary thinking, acting, and educating, which produces collaborative partnerships.”



STUDY OF ENVIRONMENTAL ARCTIC CHANGE - SEARCH

Web: <https://www.arcus.org/search-program>

SEARCH is a collaborative program that advances research, synthesizes research findings, and broadly communicates results to support informed decision-making.

- One of SEARCH's primary science topics is focused on Arctic sea ice.
- The SEARCH Sea Ice Action Team is leading efforts to advance understanding and awareness of the impacts of Arctic sea-ice loss.
- A series of Arctic Answers addressing the impacts of diminishing sea ice on ecosystems, weather and communities is currently available (Figure 2).

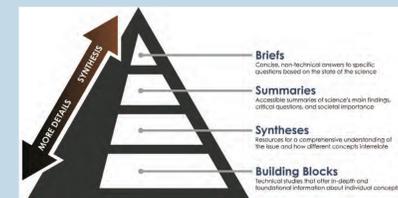


Figure 2. SEARCH answers questions about how diminishing sea ice will impact the Arctic with a tiered approach from concise briefs through technical, in-depth reports.

Broader Interest: Diminishing Arctic sea-ice will have broad impacts on communities, weather, and ecosystems relevant to maritime operations. Arctic Answers provide an access point for this information at a variety of interest levels.

Collaborative Team: SEARCH is supported by a collaborative grant from the National Science Foundation Arctic Sciences Section to the International Arctic Research Center (IARC; PLR-1331100) and ARCUS as the SEARCH Project Office (ARCUS; PLR-1331083), with contributions from the National Aeronautics and Space Administration, the U.S. Geologic Survey, and the U.S. Arctic Research Commission.

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DIRECTORY OF SEA ICE EXPERTS

Web: <https://www.arcus.org/researchers>

The Directory of Sea Ice Experts will form the foundation of a collaborative network of sea ice experts across the Arctic.

- ARCUS has undertaken a pilot project to develop a web-based directory of sea ice experts across institutions, countries, and sectors.
- The goal of the project is to catalyze networking between individual investigators, institutions, funding agencies, and other stakeholders interested in Arctic sea ice.



Broader Interest: The Directory of Sea Ice experts will be a publicly available resource that can provide important contacts and information for all sectors operating in Arctic waters.

Project Support: Funding is provided to ARCUS by the National Science Foundation Office of Polar Programs, Arctic Sciences Section (PLR-1304316).

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SEA ICE PREDICTION NETWORK - SIPN

Web: <https://www.arcus.org/sipn>

SIPN is a collaborative, multi-agency-funded project focused on seasonal Arctic sea ice predictions.

The goals of SIPN include:

- Coordinate and evaluate Arctic sea ice predictions;
- Integrate, assess, and guide observations;
- Synthesize predictions and observations; and
- Disseminate predictions and engage key stakeholders.

SEA ICE OUTLOOK - SIO

Web: <https://www.arcus.org/sipn>

The Sea Ice Outlook-a key activity of SIPN-is an open process to share and synthesize predictions of the September minimum Arctic sea ice extent and other variables (Figure 3). Other SIPN activities include workshops, webinars, and communications across the network.

Broader Interest: Improved predictions of the September minimum sea ice extent aids stakeholders planning Arctic marine operations.

Collaborative Team: Collaborative multi-institution grant funded by the National Science Foundation Arctic Sciences Section; Office of Naval Research, National Oceanographic and Atmospheric Administration, National Aeronautics and Space Administration, and the Department of Energy. ARCUS SIPN activities are supported by National Science Foundation Arctic Sciences Section (PLR-1304484) through 2017. Future support pending.

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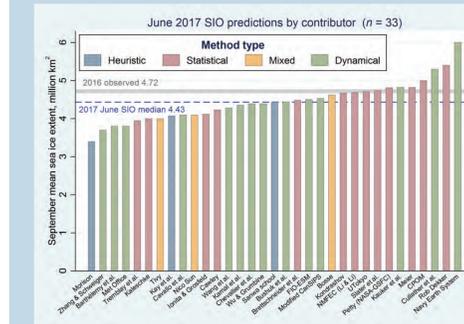


Figure 3. The Sea Ice Outlook provided iterative spring predictions of the September mean sea ice extent derived from dozens of projections provided by contributing sea ice scientists.



CONNECT!

- Become an ARCUS member - We have membership opportunities for everyone - <https://www.arcus.org/arcus/member-information>
- Get the Sea Ice for Walrus Outlook - View all past outlooks on our website, sign up for our mailing list, and follow SIWO on Facebook - <https://www.arcus.org/search-program/siwo>
- Join the Sea Ice Prediction Network - Sign up for the SIPN mailing list or join the network at <http://www.arcus.org/sipn>
- Ask and help answer arctic questions, join the mailing list, or contribute to a working group, with SEARCH - <https://www.arcus.org/search-program>

PROGRAM SUPPORT

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