



# 2019 Annual Report



**Dear ARCUS Members, Friends, and Colleagues,**

The ARCUS 2019 Annual Report provides an opportunity to reflect on the achievements of our organization over the past year. It also puts into relief the tremendous support that we have received from so many of you to make our efforts a success. As you explore the document, we hope you will join us in celebrating the work we are accomplishing together. As you will see, there is much to be proud of and so much to be thankful for!

We are grateful for the ongoing commitment and support made by our members as well as the important work that our volunteer committees and task force teams are doing to ensure that ARCUS stays connected with the Arctic research community and that their interests are being represented in ARCUS' decision-making.

Another major event this year (that we are definitely still celebrating) is our successful proposal to the National Science Foundation for a new three-year cooperative agreement. With this foundational award, ARCUS staff will be able to continue the work we do on a daily basis to build and strengthen ties between the diverse institutions and individuals engaged in Arctic research. It is also going to allow us to work with our community on some new activities that we are very excited to share with you (see page 8 for more info)!

Sincerely,

Audrey Taylor  
Board President, ARCUS

Helen Wiggins,  
Interim Executive Director, ARCUS



Cover photo credit: Keith Smith (PolarTREC 2018), Courtesy of ARCUS

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# ARCUS STRATEGIC GOALS

**NETWORKING** - ARCUS will facilitate networking to create a broader, more inclusive community dedicated to Arctic research.

**COMMUNICATIONS** - Building upon and enhancing existing communication tools & approaches, ARCUS will develop two-way communication opportunities within the Arctic research community, with an emphasis on inclusion of Indigenous Knowledge holders.

**EDUCATION** - ARCUS seeks to educate K-16 students and formal and informal educators about the Arctic, and connect them to the Arctic and its research community.

**RESEARCH COMMUNITY SUPPORT & FACILITATION** - ARCUS will lead in facilitating collaborative efforts within Arctic research and apply expertise in professional support of such collaborations.



*Photo by Regina Brinker (PolarTREC 2014), Courtesy of ARCUS*

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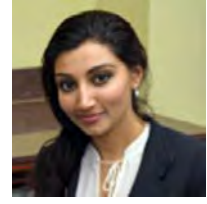
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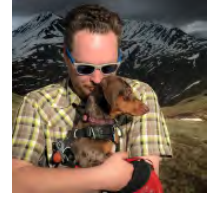
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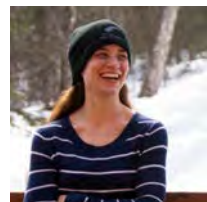
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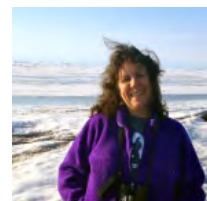
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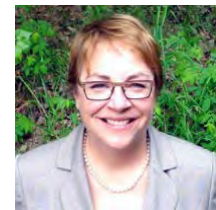
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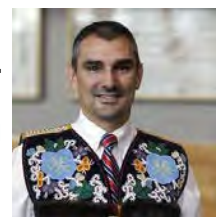
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ARCUS is composed of Institutional Members—including universities, research institutes, government-affiliated organizations, Indigenous groups, and corporations—with interests in Arctic research, along with non-voting individual members. Each institutional member is eligible to appoint one official representative and one designated alternate to the Council of ARCUS Members. The Council of ARCUS Members is a membership forum whose purpose is to share, deliberate on, and disseminate matters related to Arctic research.

# ARCUS PARTNER ORGANIZATIONS

## National Science Foundation Office of Polar Programs

Many ARCUS activities are supported by the National Science Foundation's Office of Polar Programs under Cooperative Agreement No. PLR-1304316 and Cooperative Agreement No. PLR-1928794.

## Association of Polar Early Career Educators (APECS)

ARCUS and APECS have a Memorandum of Understanding that acknowledges the joint commitment of both organizations to the professional development of early career polar researchers. Additionally, APECS serves as a partner in the newly funded Early Career Travel Awards.

## Eskimo Walrus Commission

The Eskimo Walrus Commission partners with ARCUS to produce the Sea Ice for Walrus Outlook (SIWO). SIWO is a resource for Alaska Native subsistence hunters, coastal communities, and others interested in sea ice and walrus.

## National Weather Service - Alaska Region

The National Weather Service - Alaska Region partners with ARCUS to produce the Sea Ice for Walrus Outlook (SIWO).

## Alaska Native Science & Engineering Program (ANSEP)

ARCUS partners with ANSEP by serving as a host to ANSEP Summer Bridge students (high school graduates) or Fellows (University of Alaska Fairbanks undergraduate students).

## Alaska Natural Resource & Outdoor Education Association (ANROE)

ARCUS and ANROE have a Memorandum of Agreement that establishes a partnership to collaborate on the development and delivery of natural resource education content and resources.

## Interagency Arctic Research Policy Committee (IARPC)

ARCUS administers NSF funding to the Interagency Arctic Research Policy Committee's secretariat. Additionally, ARCUS works with the IARPC secretariat to support community-driven research initiatives emerging from IARPC Collaboration Teams.

## Inuit Circumpolar Council - Alaska (ICC-Alaska)

ICC-Alaska is a co-lead with ARCUS on the Arctic Indigenous Scholars Program, which creates opportunities for Indigenous scholars to educate and inform policy- and decision-makers in Washington, DC. Additionally, ARCUS will detail a staff member part-time to ICC-Alaska to forge stronger partnerships and add capacity at the hosting organization.

## Smithsonian Arctic Studies Center

The Smithsonian Arctic Studies Center provides D.C. host support for the ARCUS Indigenous Scholars Program and hosts full-day visits from the scholars.

## Polar Educators International (PEI)

ARCUS provides in-kind secretariat support for PEI, which is an international professional network for everyone who educates in, for, and about the polar regions.

## Anchorage Museum

The Anchorage Museum and others have partnered with ARCUS to host the Anchorage Arctic Research Summit.



Learn More: <https://www.arcus.org/arcus/partners>



# ARCUS ADVISORY COUNCIL, COMMITTEE VOLUNTEERS, & INDIVIDUAL MEMBERS

## ARCUS ADVISORY COUNCIL

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Brian Rogers Mead Treadwell

## POLARTREC ADVISORY COMMITTEE

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Dieuwertje Kast Alex Eilers

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Beth Spangler Charlene Stern Audrey Taylor

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Lucy Coleman Alicia Gillean Rebecca Harris  
Dieuwertje Kast Tyler Mackey James Madsen  
Cara Pekarcik Anna Schoeffler

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Victoria Herrmann Adrian Gall Allen Pope  
James Hemsath Jasper Hardesty

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Kaare Erickson Craig Fleener Jack Hébert  
Anna Liljedahl Robert Orttung Peter Webley

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Lavi Appel  
Gisele Arruda  
Zeke Baker  
Kristin Beem  
Matthew Birkhold  
Marilyn & Bill Brown  
Elizabeth Boyer  
Mark Buesing  
Howard Burrows  
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# ARCUS COOPERATIVE AGREEMENT



## Building Community in Arctic Research: Communication, Research Support, and Multi-Knowledge System Integration

Over the next three years (2019-2022), an NSF-funded Cooperative Agreement will support the work we do to nurture collaborations across disciplines, sectors, and perspectives; and to broaden participation across the Arctic research enterprise.

ARCUS Cooperative Agreement activities focus on:

- Research community support, including fostering community-driven research initiatives through virtual tools, and support of early-career researchers;
- Networking activities, including network analysis and community-building events for the Arctic research community;
- Collaboration with Indigenous communities and knowledge systems, including integration of Indigenous knowledge with weather and ice predictions, and support for Indigenous scholars of all career levels;
- Arctic research communications and outreach; and
- Support of the Interagency Arctic Research Policy Committee (IARPC).

The added value of these research support functions—effective collaboration management, networking, communications, and outreach—is key to successful interdisciplinary research.

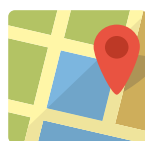
## WHAT KINDS OF ACTIVITIES WILL THE COOPERATIVE AGREEMENT SUPPORT?



Arctic Community Networking



Arctic Indigenous Scholars Program



Early Career Travel Awards



Arctic Citizen Science Virtual Conference



Staff Support for Research Incubation



Communications Tools



Alaska Native Organization Partnerships



Arctic Research Seminar Series



Sea Ice for Walrus Outlook



Arctic Research Day Events

# 2019 NETWORKING HIGHLIGHTS



2018 ARCUS  
Annual Meeting  
113 participants

2018 Arctic Funders  
Meet & Greet  
35 participants

Research  
Webinars  
245 participants

Anchorage Arctic  
Research Day  
57 participants

2018 AGU Community  
Meeting Rooms  
441 participants  
in 34 meetings

SIPN2 Sea Ice Outlook  
112 predictions  
submitted

Extreme Cold Weather Gear  
Teaching Kits  
kits sent to educators,  
reaching over 9,000  
students and members of  
the public



# ARCTIC INDIGENOUS SCHOLARS PROGRAM

Empowering Arctic Indigenous Scholars and Making Connections

The Arctic Indigenous Scholars Program creates a space for Indigenous scholars to educate and inform policy- and decision-makers engaged in Arctic issues in Washington, DC. The program is led by ARCUS and the Inuit Circumpolar Council (ICC) Alaska, and supported by the National Science Foundation's Arctic Sciences Section. We define a scholar as an expert within their own knowledge system. This includes hunters, fishers, and gatherers; those that process and store food; health aides; and others. Scholars travel to DC to meet with officials from various agencies and present the issues most important to them and their home communities.

More information: <https://www.arcus.org/indigenous-scholars>

## 2019 Indigenous Scholar Meeting Hosts:

U.S. Global Change Research Program

Interagency Arctic Research Policy Committee (IARPC)

Office of Science & Technology Policy (OSTP)

Smithsonian Arctic Studies Center

The Arctic Institute

National Oceanographic & Atmospheric Administration (NOAA)

National Science Foundation (NSF)

Office of Senator Lisa Murkowski

Office of Senator Dan Sullivan

U.S. Department of Education

U.S. Bureau of Indian Education

National Congress of American Indians

National Council for Science & the Environment



Helen Aderman



Beth Leonard



Tonia Osborne



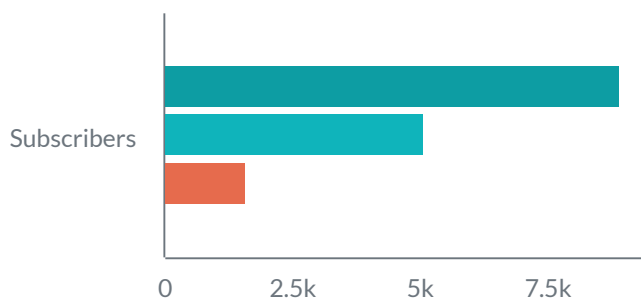
Mark Miklahook

*"We really value the opportunity to meet with the Arctic Indigenous Scholars each year! Thank you for bringing the scholars to Washington and giving us a chance to meet with them face to face."*

- 2019 Program Evaluation Survey Comment

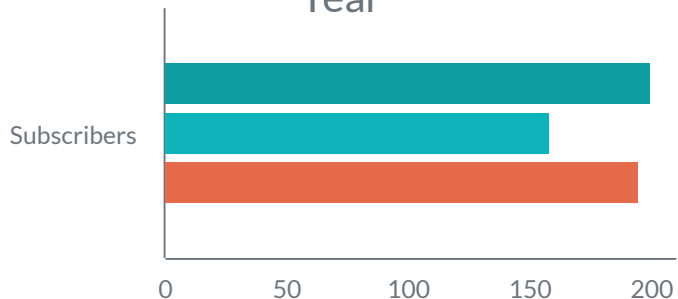
# 2019 COMMUNICATION HIGHLIGHTS

## Mailing List Sizes



■ Witness the Arctic (8,927) 
 ■ ArcticInfo (5,093) 
 ■ Polar Education (1,596)

## Subscriber Growth from Previous Year



■ Witness the Arctic (200) 
 ■ ArcticInfo (158) 
 ■ Polar Education (195)



- 9 issues
- 47 articles
- 77 contributors

## ARCUS Website



- 175,898 page views
- 90,889 unique users
- 10,000+ files
- 21,710 photos



# ArcticInfos Sent:  
**323**

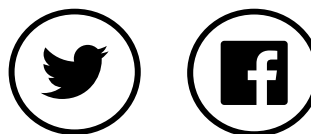
## Arctic Calendar



- 272 events added
- 34,238 views



- 4,093 entries
- entries from 41 countries
- 33,184 webpage views



## # Social Media Followers:

- 3,345 Twitter
- 1,876 Facebook

# Sea Ice for Walrus Outlook



The Sea Ice for Walrus Outlook (SIWO) is a resource for Alaska Native subsistence hunters, coastal communities, and others interested in sea ice and walrus. The SIWO provides weekly reports each spring with information on weather and sea ice conditions relevant to walrus in the northern Bering Sea and southern Chukchi Sea regions of Alaska.



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

Follow us on Facebook:  
[www.facebook.com/seaiceforwalrus](https://www.facebook.com/seaiceforwalrus)

## LOCAL OBSERVERS:

**Shishmaref:**  
Curtis E. Nayokpuk

**Wales:**  
Robert Tokeinna, Jr.

**Brevig Mission:**  
Marcus Barr

**Nome:**  
Frank (Boogles) Johnson, II

**Gambell:**  
Clarence Irrigoo, Jr.

**Savoonga:**  
Aqef Waghiyi

SIWO is managed by ARCUS and produced in partnership with the National Weather Service, Eskimo Walrus Commission, University of Alaska Fairbanks, and local observers. Support for SIWO is provided by the National Science Foundation's Arctic Sciences Section (PLR-1304316 & PLR-1928794).



# of Weekly Reports in 2019 (March-May)

12



# of local observations

60



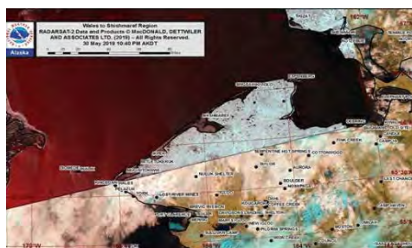
# Alaskan communities engaged

34



# of Facebook Followers

1,083



Bering Sea conditions were the warmest they have ever been in 2019 and SIWO served as an important resource for both the researchers and communities monitoring the unprecedented low sea ice conditions and its impact on walrus and subsistence.



# 2019 EDUCATION HIGHLIGHTS

Through signature education programs like PolarTREC and The Arctic in the Classroom, ARCUS programming provides unprecedented access for students and teachers to Polar research experiences, projects, and professionals.

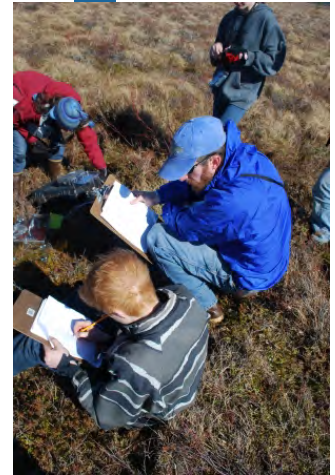
## The Arctic In The Classroom: Partnering Scientists, Educators, & Communities to Improve Arctic Education

The Arctic in the Classroom (TAC) project brings together the best practices in facilitating successful citizen science projects and community-based monitoring to support the collaboration of students, teachers, and researchers in Arctic communities. Funding for TAC is provided by community service payments from federal court settlements.

### Current projects include:

- Landscape Change in the Tundra: Citizen-Science Driven Arctic Observations
- The Ice in My Backyard: Place-based Science Curriculum and Sea Ice Field Trip
- Arctic Systems and Seasons: Braiding Culture, Art, STEM, and Community through Year-round Arctic Citizen Science
- The Savoonga School Land Steward Program
- Savoonga Murre Monitoring

More information: <https://www.arcus.org/tac/projects>

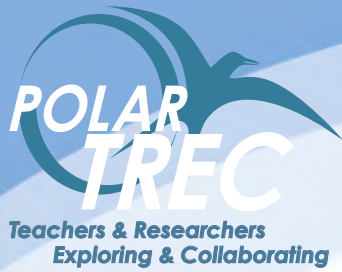


## Culturally Responsive Outreach to Indigenous Alaska K-12 Students

A new working group was formed in 2019 to assist marine researchers in improving the cultural responsiveness of the outreach activities they plan and implement in Alaska communities. With support from the North Pacific Research Board, the group convened May 2019 in Anchorage, AK to review and adapt guidance about culturally responsive instructional strategies.



More information: <https://www.arcus.org/tac/2019-workshop>

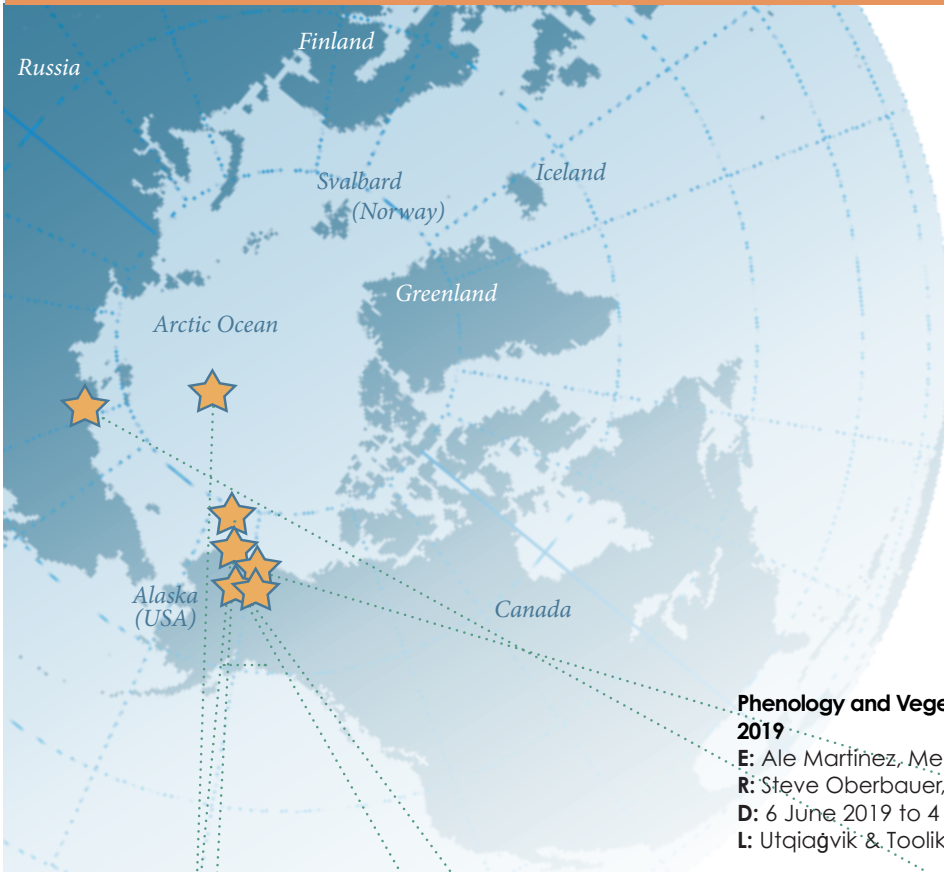


# STEM at the Poles! [www.polartrec.com](http://www.polartrec.com)

Follow Expeditions • View Resources • Live Connections

**STEM at the Poles** takes audiences on a polar science adventures through PolarTREC! YOU could be virtually transported to an icebreaker in the Amundsen Sea, a remote field camp in Alaska, or an archipelago of islands in the high Arctic. Experience the excitement of the polar regions by reading journals, looking at pictures, watching videos, and interacting with educators and researchers working in the polar regions by asking questions online and joining PolarConnect live events from the field.

Join the 2019-2020 PolarTREC educators on their ARCTIC expeditions!



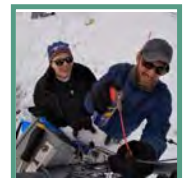
PolarTREC is funded by the National Science Foundation Office of Polar Programs and managed by the Arctic Research Consortium of the United States. For more information, visit us online or e-mail [info@polartrec.com](mailto:info@polartrec.com).



**E:** Educator, School or Organization, State  
**R:** Researcher, Institution, State  
**D:** Expedition Dates  
**L:** Expedition Location

### Phenology and Vegetation in the Warming Arctic 2019

**E:** Ale Martínez, Memorial Junior High, TX  
**R:** Steve Oberbauer, Florida International Univ., FL  
**D:** 6 June 2019 to 4 July 2019  
**L:** Utqiagvik & Toolik Field Station, Alaska, USA



### Fire and Carbon in Siberian Forests

**E:** Amanda Ruland, Saratoga Elem. School, WY  
**R:** Jennie DeMarco, Western Colorado Univ., CO  
**D:** 14 June 2019 to 14 July 2019  
**L:** Cherskii & Yakutsk, Russia



### Northern Chukchi integrated Study

**E:** Piper Bartlett-Browne, St. Thomas Aquinas High School, NH  
**R:** Lee Cooper, University of Maryland, MD  
**D:** 29 July 2019 to 24 August 2019  
**L:** USCGC Healy, Northern Chukchi Sea



### MOSAIC

**E:** Katie Gavenus, Center for Alaskan Coastal Studies, AK  
**R:** Anne Gold, University of Colorado, CO  
**D:** 18 September 2019 to 24 October 2019  
**L:** Ship-based, Arctic Ocean



### UTEP Arctic Change and Education

**E:** Monica Nuñez  
**R:** Craig Tweedie, Univ. Texas - El Paso  
**D:** 13 July 2019 to 17 August 2019  
**L:** Utqiagvik, Alaska, USA



### Carbon in the Arctic

**E:** David Walker, LASA High School, TX  
**R:** Rose Cory, University of Michigan, MI  
**D:** 2 June 2019 to 29 June 2019  
**L:** Toolik Field Station, Alaska, USA



### Shrubs Snow and Nitrogen in the Arctic 2019

**E:** Kate Steeper, Lennox Academy, CA  
**R:** Donie Bret-Harte, University of Alaska, AK  
**D:** 25 July 2019 to 17 August 2019  
**L:** Toolik Field Station, Alaska, USA







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**Join the 2019-2020 PolarTREC educators on their ANTARCTIC expeditions!**

*PolarTREC is funded by the National Science Foundation Office of Polar Programs and managed by the Arctic Research Consortium of the United States. For more information, visit us online or e-mail [info@polartrec.com](mailto:info@polartrec.com).*



**E:** Educator, School or Organization, State  
**R:** Researcher, Institution, State  
**D:** Expedition Dates  
**L:** Expedition Location



**IceCube and The Askaryan Radio Array 2019**  
**E:** Jocelyn Argueta, Long Beach, CA  
**R:** Jim Madsen, University of Wisconsin, WI  
**D:** 3 weeks, December 2019 to January 2020  
**L:** South Pole Station



**Thwaites Offshore Research**  
**E:** Sarah Släck, JHS 223 - The Montauk School, NY  
**R:** Frank Nitsche, Lamont Doherty Envir. Observ., NY  
**D:** 7-8 weeks, mid-January to mid-March 2020  
**L:** Ship-based, Amundsen Sea



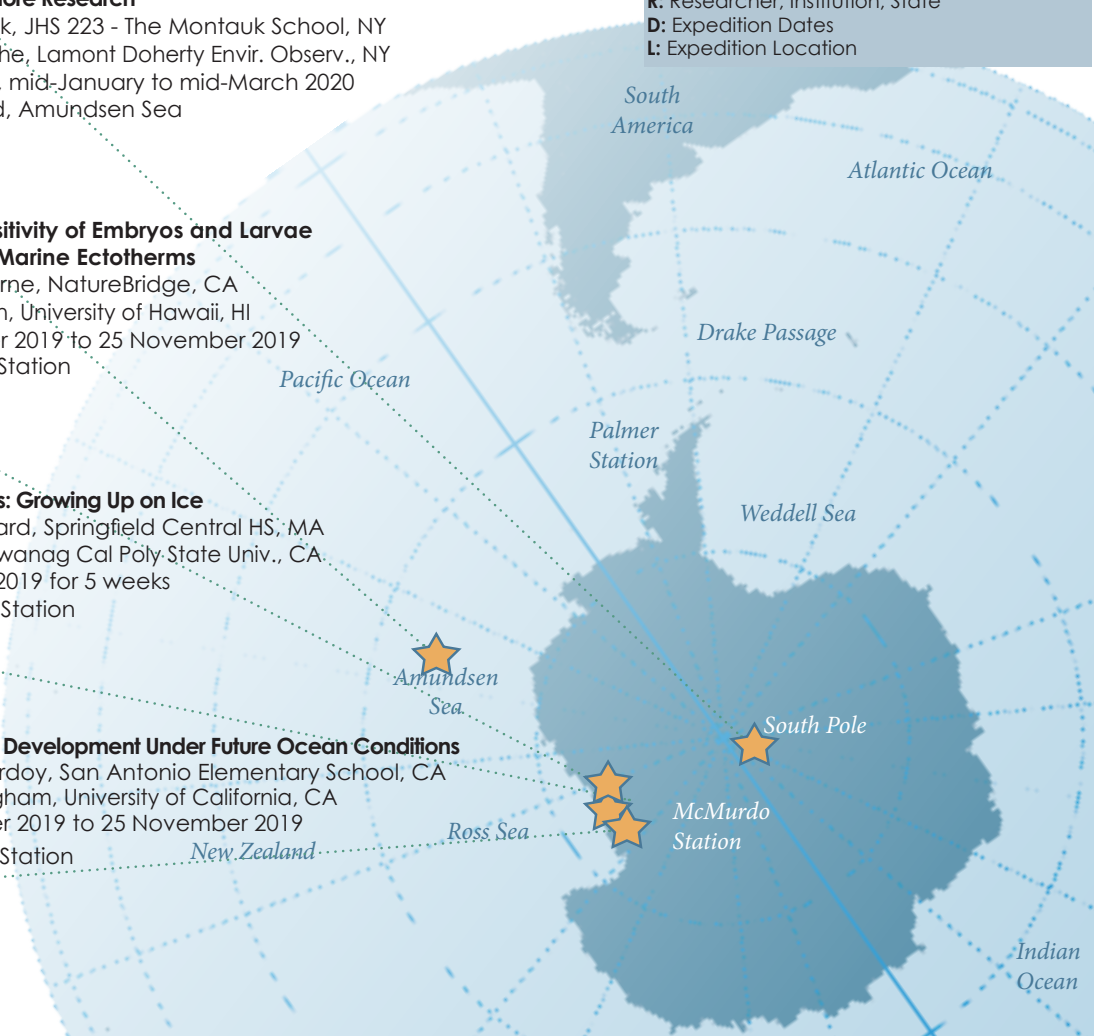
**Thermal Sensitivity of Embryos and Larvae of Antarctic Marine Ectotherms**  
**E:** Amy Osborne, NatureBridge, CA  
**R:** Amy Moran, University of Hawaii, HI  
**D:** 14 October 2019 to 25 November 2019  
**L:** McMurdo Station



**Weddell Seals: Growing Up on Ice**  
**E:** Bridget Ward, Springfield Central HS., MA  
**R:** Heather Liwanag Cal Poly State Univ., CA  
**D:** October 2019 for 5 weeks  
**L:** McMurdo Station



**Antarctic Fish Development Under Future Ocean Conditions**  
**E:** Denise Hardoy, San Antonio Elementary School, CA  
**R:** Anne Todgham, University of California, CA  
**D:** 14 October 2019 to 25 November 2019  
**L:** McMurdo Station



# 2019 RESEARCH SUPPORT HIGHLIGHTS

ARCUS regularly serves an important facilitation role for collaborative research endeavors seeking to engage participants across institutions, sectors, disciplines, cultures, geographic locations, and/or career levels.

## Sea Ice Prediction Network - Phase 2 (SIPN2)

SIPN2 activities will improve Arctic sea ice forecasts using a multi-disciplinary approach that includes modeling, new products, data analysis, and scientific networks.

- ARCUS' role in SIPN2 (funded by NSF) includes strategic planning, project management, networking, and outreach & communications.
- A key activity of SIPN is the Sea Ice Outlook, with reports in June, July, and August containing a variety of perspectives on Arctic sea ice—from observations of current conditions, to advanced numerical models, to qualitative perspectives from citizen scientists. In 2019, 42 groups contributed to the effort—a record number!

More information: <https://www.arcus.org/sipn>



## Study of Environmental Arctic Change (SEARCH)

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

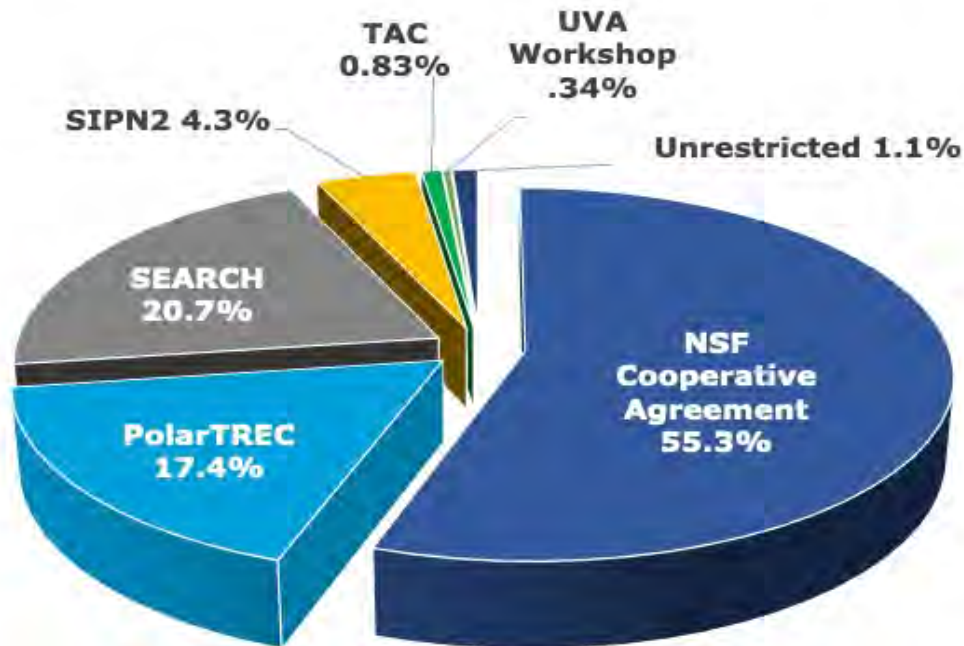
- ARCUS' role in SEARCH, funded by NSF, includes meeting planning and logistics, project management, communications, and outreach.
- A major 2019 activity of the SEARCH program was the *Arctic Futures 2050* Conference, with 393 scientists, Indigenous participants, policy makers, and others gathered to envision the information that will be needed to inform Arctic policy in the coming decades.

More information: <https://www.searcharcticsscience.org>



# 2019 FINANCIAL REPORT

## Fiscal Year 2019 Revenue by Source (October 2018 - September 2019)



### FY19 Revenue by Source (in dollars)

Cooperative Agreement (NSF)	\$ 1,357,126
PolarTREC (NSF & NASA)	\$ 426,488
SEARCH (NSF, NOAA, NASA, BOEM, DOE, Moore Foundation, Pew)	\$ 507,244
Sea Ice Prediction Network (SIPN2) (NSF)	\$ 106,085
TAC: The Arctic in the Classroom (Community Service Payments)	\$ 20,450
University of Virginia (Bridging Art & Science Workshop)	\$ 8,459
ARCUS Unrestricted Funds (membership dues, donations, other)	\$ 26,501
	<u>\$ 2,452,353</u>



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