



# 2020 Annual Report



Dear ARCUS Members, Friends, and Colleagues,

I think it is safe to say that 2020 has been a year like no other! There have been a million and one pressure points and ongoing disruption of the personal and professional lives of every single member of our community. With the end of 2020 now in sight, however, I think the only thing left for us to do is to say thank you!

We are very grateful for the resilience of ARCUS staff who weathered the storms of this year's program cancellations and/or last minute shifts to virtual environments. We are so grateful to the ARCUS Board for making sure we had the nimbleness to allow us to make some of this year's tough choices. We are thankful for the flexibility of our funders and collaborators who worked with us to pull off successful events amidst a rapidly changing situation. Finally, we are so grateful for the steadfast desire of the ARCUS community to continue to work together.

Despite all the challenges, ARCUS has a lot to be proud of this year. We hosted major events, such as the Polar Technology Conference, the first all-hands meeting of the Navigating the New Arctic Investigator Community, and our Annual Meeting. We stepped in to assist a number of our partners as they moved other important community events online, and kept our programs going—albeit in ways that looked quite different than what was originally planned. We welcomed new institutional members like Kawerak, Inc. and the University of Washington into the ARCUS consortium. We also developed new strategic goals and objectives to guide ARCUS activities for the next five years.

If this is what we can do together in the middle of such a turbulent year—look out 2021! Here we come, full of gratitude for the opportunity to work with such a wonderful community.

Sincerely,

David Cairns  
Board President, ARCUS

Helen Wiggins,  
Executive Director, ARCUS

Cover photo credit: Michael League (PolarTREC 2011), Courtesy of ARCUS

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# STRATEGIC GOALS & OBJECTIVES (2020–2025)

## Goal 1: Facilitate and Support Arctic Research Collaboration

- **Objective 1.1:** Provide Resources and Promote Innovative Practices for Collaborative and Interdisciplinary Research
- **Objective 1.2:** Connect and Support the Arctic Research Community Around Shared Topics of Interest
- **Objective 1.3:** Partner with Other Arctic Organizations to Catalyze and Broaden Networking Opportunities
- **Objective 1.4:** Promote Exchange, Collaboration, and Co-Production Between the ARCUS Community with US-Based Arctic Indigenous Community Members

## Goal 2: Enhance the Effectiveness of Arctic Research Communication

- **Objective 2.1:** Increase Information Exchange and Knowledge Sharing Within the ARCUS Community
- **Objective 2.2:** Amplify and Share Arctic-Related Research, Knowledge, and Issues with Diverse Audiences
- **Objective 2.3:** Work with ARCUS Members to Prioritize and Address the Critical Needs of the ARCUS Community
- **Objective 2.4:** Build Awareness of and Cultivate Group Identity Between ARCUS, our Members, and our Partners

## Goal 3: Educate K-16 Students and Formal and Informal Educators about the Arctic, and Engage them in Arctic Research

- **Objective 3.1:** Develop Professional Training Opportunities for Arctic Educators
- **Objective 3.2:** Champion Culturally Responsive Arctic Education and Outreach
- **Objective 3.3:** Foster Arctic Citizen Science and Community-Based Research
- **Objective 3.4:** Encourage Arctic Youth Involvement in Arctic Research Activities and Learning

## Goal 4: Secure Resources to Support the ARCUS Mission

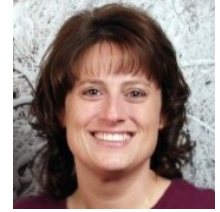
- **Objective 4.1:** Expand and Sustain a Diverse and Inclusive ARCUS Membership
- **Objective 4.2:** Strengthen ARCUS' Organizational Capacity
- **Objective 4.3:** Diversify ARCUS' Funding Sources
- **Objective 4.4:** Grow Reserves to Adapt and Respond to New Opportunities

# ARCUS STAFF



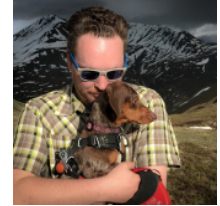
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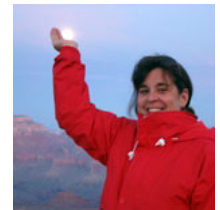
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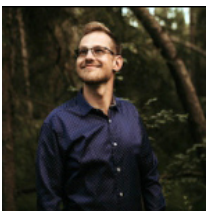
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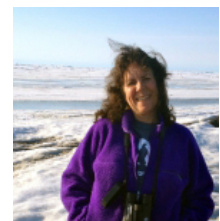
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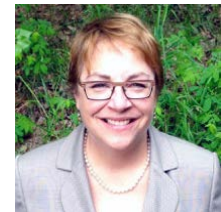
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# ARCUS PARTNER ORGANIZATIONS

## 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>



# COMMITTEE VOLUNTEERS & INDIVIDUAL MEMBERS



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Sarah Crowley	Rebecca Harris	Jeremy May
Jennie DeMarco	Dieuwertje Kast	Kelly McCarthy
Alexis Will	Kimberly Young	Jillian Worssam

Michael Penn  
Wendi Pillars  
Anne Schoeffler  
Robbie Score  
Keith Smith  
Gary Wesche  
Janet Warburton  
Judy Fahnestock

ARCUS is deeply grateful to the many individuals who supported our efforts in 2020 through countless volunteer hours, membership dues contributions, & active participation in ARCUS programs and events!

## INDIGENOUS SCHOLARS COMMITTEE

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Nicole Kanayuraq Theresa Arevgaq John Gay Sheffield  
Inuuteq Stotts Carolina Behe Lisa Sheffield Guy

## EARLY CAREER AWARDS COMMITTEE

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Josephine-Mary Sam Stacey Stoudt Lisa Sheffield Guy  
Helen Wiggins

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Julie Raymond-Yakoubian Helen Wiggins Brit Myers

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# ARCUS COOPERATIVE AGREEMENT



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

A three-year NSF-funded Cooperative Agreement (2019–2022; Award # OPP-1928794) supports 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.

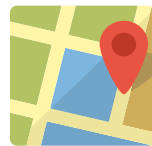
## WHAT KINDS OF ACTIVITIES DOES THE COOPERATIVE AGREEMENT SUPPORT?



Arctic Community Networking



Arctic Indigenous Scholars Program



Early Career Travel Awards



Arctic Citizen Science Virtual Conference



Research Incubation Activities



Communications Tools



Alaska Native Organization Partnerships



Arctic Research Seminar Series



Sea Ice for Walrus Outlook



Arctic Research Day Events

# COMMUNITY CONNECTIONS

## COOPERATIVE AGREEMENT ACTIVITIES (September 2019–August 2020)



### Mailing Lists

- ArcticInfo: 4,871 subscribers, 362 postings, emails opened 336,168 times
- Polar Education List: 1,616 subscribers



### Witness the Arctic Newsletters

- 8,885 subscribers
- 52 articles from 95 contributors
- 22,457 webpage views



### ARCUS Community Meetings & Events

- AGU Community Meeting Rooms - 32 meetings, 651 participants
- Arctic Research Community Reception - 136 participants
- Arctic Research Webinars - 4 seminars with 354 participants from 15 countries and 24 US states
- ARCUS Annual Meeting - 129 attendees & 100% ARCUS Institutional Member participation
- Funders Meet & Greet - 58 attendees with 9 featured funders/organizations



### Website

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

- 197,313 page views and 106,781 unique visitors
- 63% users from US and rest from 202 different countries
- Arctic Calendar with 2,522 events and 25,662 page views
- Publications Directory - 2,013 publications with 976 page views
- Directory of Arctic Researchers with 4,120 Arctic experts

## HOW TO JOIN THE ARCUS COMMUNITY ONLINE:

- 1) Subscribe to [ArcticInfo](http://ArcticInfo) for weekly news from the broader Arctic research community. This is a place to submit your event announcements, job openings, & other news: [www.arcus.org/arctic-info](http://www.arcus.org/arctic-info)
- 2) Subscribe to the [Witness The Arctic](http://Witness The Arctic) newsletter to receive more in-depth articles highlighting Arctic research & education efforts: [www.arcus.org/witness-the-arctic](http://www.arcus.org/witness-the-arctic)
- 3) Subscribe to the [ARCUS Monthly Report](http://ARCUS Monthly Report) to receive a monthly update on ARCUS & ARCUS Member Organization news as well as a digest of job openings, professional development opportunities, and funding opportunities: [www.arcus.org/arcus/member-newsletter](http://www.arcus.org/arcus/member-newsletter).
- 4) Submit your Arctic-related meetings, events, & funding deadlines to the [Arctic Calendar](http://Arctic Calendar): [www.arcus.org/events/arctic-calendar](http://www.arcus.org/events/arctic-calendar)
- 5) Subscribe to the [Polar Education Mailing List](http://Polar Education Mailing List) for education-related news & announcements.: [www.polartrec.com/about/education-list](http://www.polartrec.com/about/education-list)
- 5) Join the [Directory of Arctic Researchers](http://Directory of Arctic Researchers): [www.arcus.org/researchers](http://www.arcus.org/researchers)
- 4) Join us on [Social Media](#):



@ArcticResearch  
@PolarTREC



@ArcticResearchConsortium  
@Polar.TREC  
@SealceForWalrus



Company: ArcticResearch  
Group: Sea Ice Prediction Network

# 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. The three 2020 Arctic Indigenous Scholars below will travel once pandemic safety concerns have been addressed!

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



Naidene Baechler



Kimberly Pikok



Richard B. Slats

# EARLY CAREER CONFERENCE FUNDING AWARDS

This year ARCUS launched an Early Career Conference Funding Award to support the participation of US-based, early career researchers in meetings and events relevant to Arctic research, with a focus on underrepresented minorities (Black, Indigenous, and People of Color; BIPOC).

More information: <https://www.arcus.org/early-career-funding>

## Congratulations To:

Mark England, Hayley Cynar, Allison Cluett, Shima Shams, Raven Mitchell, Adrian Charles, Courtney Collins, Patricia Johnston, Austin Roy, Lucia Gonzalez, Stephen Greenlaw, Joy O'Brien, Emily Fedders, Xueke Li, Ian Baxter, and Ingalise Kindstedt!

# 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

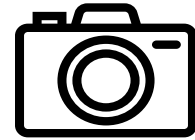
**Diomede:**  
Eeleengayouq Ozenna

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-1928794).



# of Weekly Reports in 2019 (March-May)

12



# of local observations

69



# Alaskan communities engaged

41



# of Facebook Followers

1,344

The 2020 SIWO season began with greater ice extent than observed during the past several years in the region. Many Bering Strait communities were able to harvest sufficient walrus for subsistence. However, some communities also experienced ice conditions that were dangerous for travel.

Walrus resting on ice near Gambell in mid-May. Photo by Clarence Irrigoo, Jr.



# Polar Technology Conference



PTC Organizing Committee :

Satish Chetty - *Beyond 66 Solutions (Co-Chair)*

Karen Frey - *Clark University*

Mark Seefeldt - *University of Colorado Boulder (Co-Chair)*

Michael Prior-Jones - *Cardiff University*

Paul Carpenter - *IRIS PASSCAL Instrument Center*

Kate Ruck - *QED Enterprises, Inc.*

Lisa Sheffield Guy - *Arctic Research Consortium of the US*

Nancy French - *Michigan Technological University (Co-Chair)*

Peter Griffith - *NASA Goddard Space Flight Center (not pictured)*

Wilson Sauthoff - *National Science Foundation (not pictured)*

PTC Funders & Partners :



# of remote attendees

130



# in-person attendees

82



# of plenary presentations

18



# of poster presentations

24

## Conference Themes:

- Science Drivers
- Power Systems
- Instrumentation
- Communications
- Data Access and Sharing
- Overarching and Integrative Technology

The Polar Technology Conference (PTC) is a meeting of experts from industry, academia, government, and the military to share experiences and solve challenges related to applications of technology in the polar regions for advancing science goals. PTC meetings have been held annually from 2005–2016, relying heavily on volunteers to host and organize the event. In 2016, PTC organizers noted that the event had grown to the point of needing significant administration and planning and, in 2019, the Arctic Research Consortium of the US (ARCUS) was tasked by the National Science Foundation's Office of Polar Programs to reinvigorate the conference (Award #OPP-01304316).

For more detailed information such as the meeting agenda, participants, speakers, presentation abstracts, slides, videos, and other products, please visit the 2020 PTC webpage at: <https://www.arcus.org/logistics/2020-polar-technology>



# 2020 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 aim to 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 2020, 41 groups from around the world contributed to the effort.

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

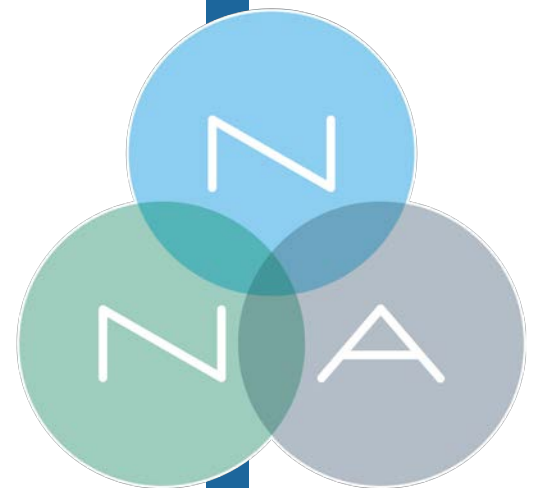


## Navigating the New Arctic (NNA)

Navigating the New Arctic is a National Science Foundation initiative designed to support fundamental convergence research across the social, natural, environmental, engineering, computing, and information sciences.

- ARCUS has provided preliminary community coordination and support for Navigating the New Arctic investigators in advance of the establishment of a dedicated NNA Community Office.
- In 2020, ARCUS worked with the National Science Foundation to host the first all-hands meeting of the NNA Investigator community and to develop an online hub of NNA research projects funded to date.

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



*"..the best designed and smoothest executed virtual meeting I've ever attended"*  
—NNA meeting participant

# EDUCATION HIGHLIGHTS

ARCUS education programming and outreach efforts promote access for students and teachers to Polar research experiences, projects, and professionals.

In 2020, ARCUS staff were active in two key efforts to promote culturally-relevant STEM education for Alaskan Native students.

## Working Group Report on Culturally-Responsive Science Outreach & Engagement

The Working Group on Culturally Responsive Science Outreach & Engagement, co-chaired by ARCUS Education Project Manager Janet Warburton, published their findings from a May 2019 workshop supported by the North Pacific Research Board, Alaska Sea Grant, and ARCUS.

**Report Citation:** *Report of the Working Group on Culturally Responsive Science Outreach and Engagement: A report to the North Pacific Research Board, Alaska Sea Grant, and ARCUS. May 2019. Anchorage, Alaska.*

**More information:**  
[https://www.arcus.org/files/publication/30309/culturally\\_responsive\\_outreach\\_engagement\\_wg\\_final\\_report.pdf](https://www.arcus.org/files/publication/30309/culturally_responsive_outreach_engagement_wg_final_report.pdf)



Photo by Aviaja Egede Lyngø (PolarTREC 2011),  
Courtesy of ARCUS

## Engaging Rural & Alaska Native Undergraduates & Youth in Arctic STEM

Four "Listen & Learn" sessions were held in 2020 to gain insight into the gaps, challenges, opportunities, and successful practices to increase and support the representation of rural and Alaska Native undergraduates and youth in STEM education and career pathways.

ARCUS supported these efforts and continues to work with the Interagency Arctic Research Policy Committee (IARPC) Arctic STEM Education Working Group to use these findings to inform working group activities, including a workshop planned for spring 2021.

**More information:** <https://www.arcus.org/meetings/2020/arctic-youth-stem>



Photo by Monica Nunez (PolarTREC 2019),  
Courtesy of ARCUS



# PolarTREC 2020

## STEM at the Poles!

More information: <https://polartrec.com>

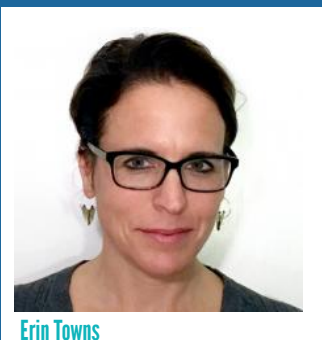
The PolarTREC education program, now in its 13th year, has provided 197 US teachers a unique opportunity to work with scientists in the polar regions. Currently supported through the *STEM at the Poles! Research Experiences for Formal and Informal Educators in the Polar Regions* grant from the National Science Foundation (Award #1918637), this program invigorates polar science education and understanding by bringing educators and polar researchers together through field-based, hands-on, research experiences in both the Arctic and Antarctica.

ARCUS received 164 applications from educators applying to the 2020 PolarTREC program from around the United States. Each application was reviewed and ranked by a volunteer selection committee and finalists were then matched with 11 polar research expeditions.

Due to the global COVID-19 pandemic, however, ARCUS made the difficult decision to postpone deployment of all PolarTREC educators to both the Arctic and Antarctica until 2021. While the educators wait for travel restrictions to lift, they have been practicing their technical skills and learning more about their upcoming research projects.

In the meantime, educators from the 2019 PolarTREC cohort have also been finishing up program requirements and sharing their products—lesson plans, videos, experience reports, and other resources—to the PolarTREC website: [www.polartrec.com](http://www.polartrec.com).

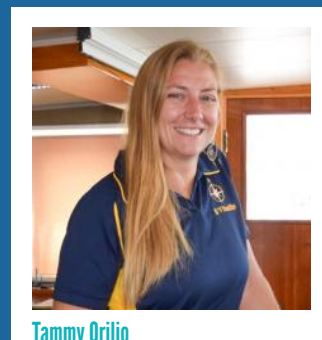
### 2020 PolarTREC Cohort



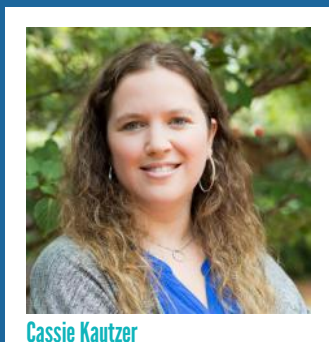
Erin Towns



Jon Pazol



Tammy Orilio



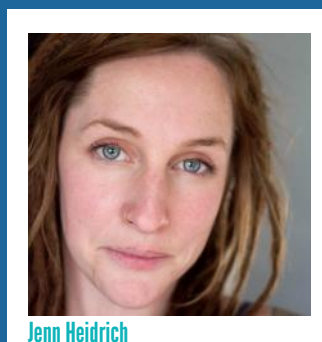
Cassie Kautzer



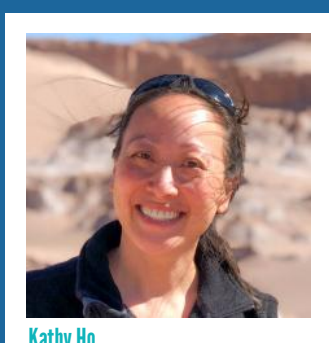
Sarah Johnson



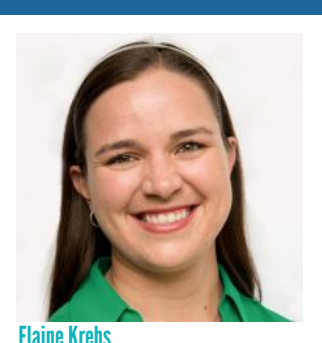
Bill Henske



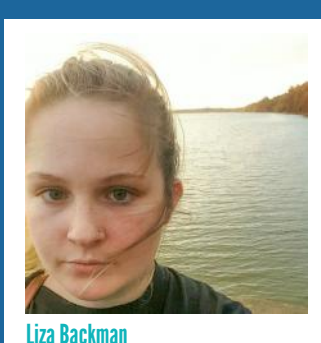
Jenn Heidrich



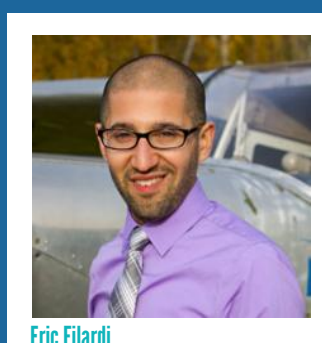
Kathy Ho



Elaine Krebs



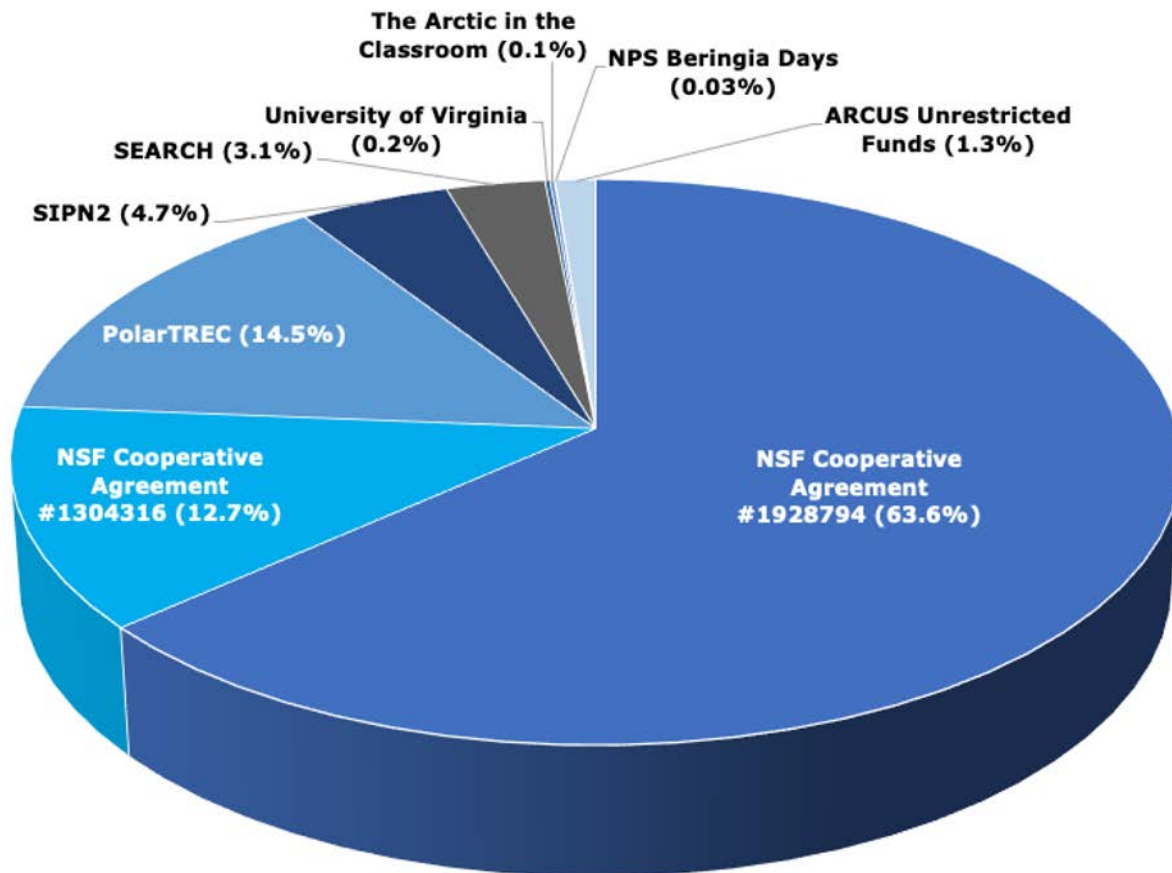
Liza Backman



Eric Filardi

# 2020 FINANCIAL REPORT

## Fiscal Year 2020 Revenue by Source (October 2019 – September 2020)



### FY20 Revenue by Source (in dollars)

NSF Cooperative Agreement #1928794 (63.6%)	\$ 1,182,187
NSF Cooperative Agreement #1304316 (12.7%)	\$ 236,295
PolarTREC (14.5%)	\$ 268,798
Sea Ice Prediction Network (SIPN2) (4.7%)	\$ 86,817
Study of Environmental Arctic Change (SEARCH) (3.1%)	\$ 56,914
University of Virginia (Bridging Art & Science Workshop) (0.2%)	\$ 2,836
The Arctic in the Classroom (Community Service Payments) (0.1%)	\$ 2,466
NPS Beringia Days 2022 Conference (0.03%)	\$ 485
ARCUS Unrestricted Funds (membership dues, donations) (1.3 %)	\$ 23,225
	\$ 1,860,023



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