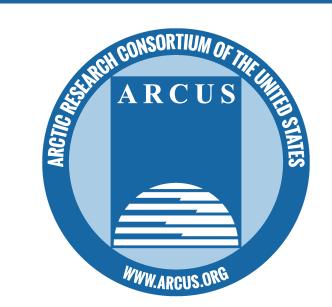


# Dear ARCUS Members, Friends, and Collleagues,



What a year! Over the past year, the ARCUS Board and staff have been working together to complete a series of long and, at times, arduous planning efforts. We've defined new strategic goals for the organization to focus and direct ARCUS endeavors in the years to come. We have developed project and activity plans for our next multi-year cooperative agreement proposal for the National Science Foundation. We have consulted with the Foraker Group to strengthen our development capacity and the ARCUS case for support. We have continued to deliver all our programs and services. We have made important and challenging decisions about the direction of ARCUS leadership to best serve the Arctic research community.

By nature, this kind of planning can be highly introspective. However, with each and every one of the activities described above, a spotlight has consistently shone on what truly makes the Arctic Research Consortium of the U.S. a relevant and vital place—you.

As a nonprofit consortium and membership organization, our work is made possible and strengthened by the involvement of supportive and highly collaborative individual and institutional partners from the wider Arctic research community.

For example, it was institutional members like the University of Alaska Anchorage and community partners such as the Anchorage Museum and Institute of the North who helped us make this year's Anchorage Arctic Research Day such a success—engaging over 100 participants and 33 speakers. It was collaboration with our Alaska Indigenous partners, D.C. area legislators, and federal agencies that allowed us to launch the ARCUS Indigenous Scholars Program this fall in Washington D.C. Partnerships with both Arctic and Antarctic researchers were, as always, the critical component of the 12 PolarTREC teacher expeditions that took place during the last field research season.

Throughout this report, you will see more evidence of what ARCUS has been able to achieve by engaging with our members and partners over the past year. We hope this success will inspire and encourage you to join us in the year to come as we continue our efforts to connect, support, and celebrate the accomplishments of the Arctic research community. With all our hard planning work this year we have a lot to look forward to in the new year. We are certain, however, that none of it will be possible without the participation and support of people just like you. Thank you for being part of our community, and we look forward to continuing to provide high quality support to our members and partners in 2019!

Sincerely,

Audrey Taylor

**Board President, ARCUS** 

Helen Wiggins,

Interim Executive Director, ARCUS



Cover photo credit: Tim Martin (PolarTREC 2009), Courtesy of ARCUS

# Report Content:

Pg 2: New Strategic Goals

Pg 3: ARCUS Board & Staff

Pg 5: ARCUS 2018 Institutional Members

Pg 6: PolarTREC

Pg 9: Arctic in the Classroom, Indigenous Scholars, Sea Ice for Walrus Outlook

Pg 11: ARCUS Community Networking

Pg 12: ARCUS Communication Platforms

Pg 14: Arctic Research Seminars

Pg 15: Research Support Activities

Pg 16: ARCUS Financial Report
Pg 17: Advisory Council, Committees, &
Individual ARCUS Members

# NEW STRATEGIC GOALS

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

**COMMUNICATIONS** - Building upon & 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

# ARCUS BOARD OF DIRECTORS



**Audrey Taylor (President) University of Alaska Anchorage** artaylor@uaa.alaska.edu **Term End: 2019** 



Olivia Lee (Treasurer) **University of Alaska Fairbanks** oalee@alaska.edu **Term End: 2020** 



**Howie Epstein University of Virginia** hee2b@virginia.edu **Term End: 2019** 



Timo Koivurova **University of Lapland** timo.koivurova@ulapland.fi **Term End: 2019** 



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**Charlene Stern** University of Alaska Fairbanks charlenestern@gmail.com **Term End: 2020** 





Carolina Behe **Inuit Circumpolar Council** carolina@iccalaska.org **Term End: 2018** 



Mark Ivey **Sandia National Laboratories** mdivey@sandia.gov **Term End: 2018** 



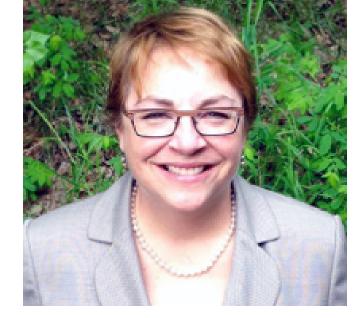
**Maribeth Murray University of Calgary** murraym@ucalgary.ca **Term End: 2018** 



**John Farrell U.S. Arctic Research Commission** jfarrell@arctic.gov **Term End: 2018** 



Diane Hirshberg **University of Alaska Anchorage** dbhirshberg@alaska.edu



**Term End: 2020** 

New members of the ARCUS Board of Directors are elected by ARCUS Institutional Members each year. A call for nominations is announced each fall and elections take place prior to the ARCUS Annual Meeting in December. Self-nominations are welcome.

# ARCUS STAFF



Helen Wiggins
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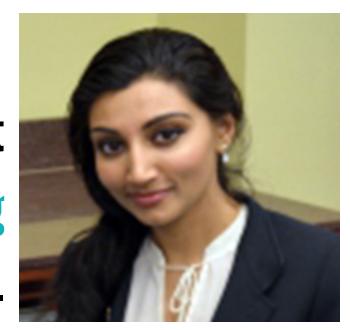


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Executive Administrative Assistant

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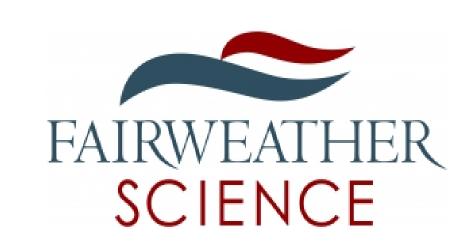


Janet Warburton
Project Manager
warburton@arcus.org
Anchorage, AK



# ARCUS INSTITUTIONAL MEMBERS























































# 2018 POLARTREC TEACHERS & RESEARCHERS EXPLORING & COLLABORATING

A year of collaborations in the polar regions!



# 12 EXPEDITIONS IN THE ARCTIC & ANTARCTICA





# OUTREACH

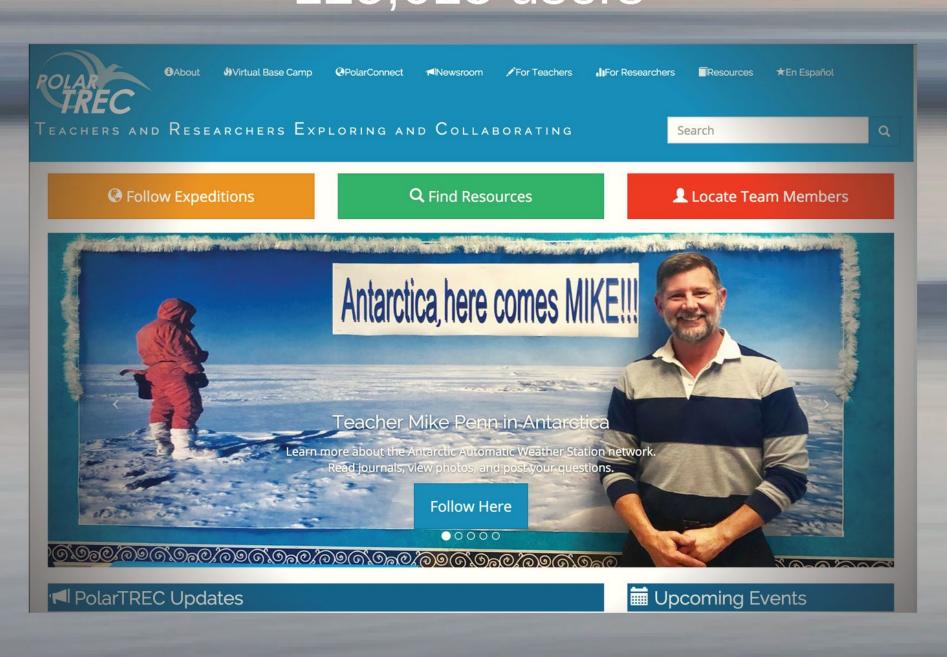
# Connecting with the public

PolarConnect webinars
sharing real science to
audiences around the globe:
3 Arctic, 1 Antarctic
23 states
5 countries

- Phenology and Vegetation
   Change in the Warming Arctic
- Shrubs, Snow and Nitrogen in the Arctic
- Sliding Glaciers
- Antarctic: Chemical Ecology of Shallow Water Marine
   Communities

# Informative & Engaging Website

219,513 page views 125,613 users



**#Journals written by Educators** 

Arctic: 179
Antarctic: 28

#Photos taken by Educators

Arctic: 974 Antarctic: 109

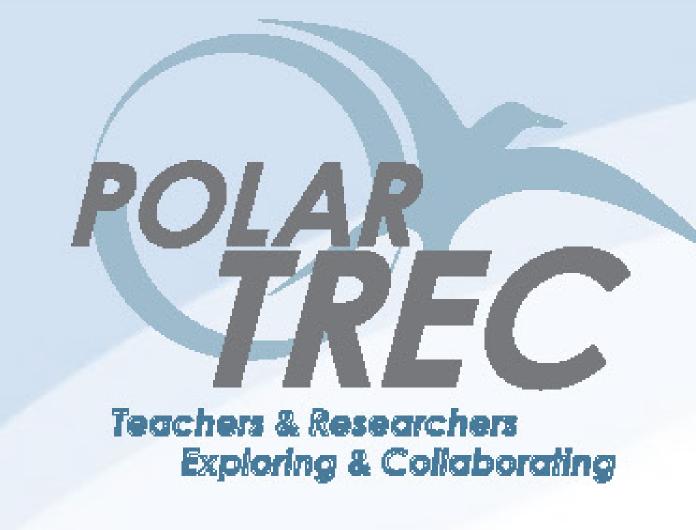
#Youtube videos created by Educators: 39

Become part of the team!

Join us online www.polartrec.com
@polartrec

Funded by the National Science Foundation Award 1754290





# www.polartrec.com

### Follow Expeditions • Teaching Resources • Live Connections

Take your students on a polar science adventure with PolarTREC! Your classroom could be virtually transported to an icebreaker in the Amundsen Sea, a remote **fleld 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 teachers and researchers working in the polar regions by asking questions online and joining *PolarConnect* live events from the fleld.

# Join the 2018-2019 PolarTREC teachers on their ARCTIC expeditions!



Polari REC is funded by the National Science Foundation Division 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.





T: Teacher, School, State

R: Researcher, Institution, State

D: Expedition Dates

L: Expedition Location



# Phenology and Vegetation Change in the Warming Arctic

**T:** Melissa Lau, Piedmont Intermediate, OK **R:** Steve Oberbauer, Miami Interntl. University, FL

**D:** 15 June 2018 to 15 July 2018.

L: Toolik Field Station, Alaska



### Shrubs, Snow and Nitrogen in the Arctic

**T:** Svea Anderson, Agua Caliente Elem., AZ **R:** Donie Bret-Harte, University of Alaska Fairbanks, AK

**D:** 15 July 2018 to 15 August 2018

L: Toolik Field Station, Alaska

### Jellyfish in the Bering Sea

**T:** Joanna Chlerici, Melvin H. Kreps Middle School, NJ

R: Mary Beth Decker, Yale University

**D:** 24 June 2018 to 4 July 2018

L: R/V Sikuliaq, Bering Sea



# Migration and Carry-Over Effects in Arctic Seabirds

**T:** Wendy Pillars, Jordan-Matthews HS, NC. **R:** Alexis Will, National Institute of Polar Research, Japan; Univ. of Alaska, Fairbanks

**D:** 16 July 2018 to 5 August 2018

L: Savoonga, Alaska

### Permafrost and Community

**T:** Allyson Woodard, Oregon Museum of Science and Industry, OR

R: Santosh Panda, University of AK, Fairbanks, AK

**D:** 10 August 2018 to 20 August 2018

L: Villages of Telida and Nikolai, Interior Alaska



### **Sliding Glaciers**

**T:** Lauren Neitzke Adamo, Rutgers, NJ **R:** Neal Iverson, Iawa State University, IA

**D:** 10 August 2018 to 28 August 2018

L: Valais Čanton of Switzerländ\*

\* not identified with a star



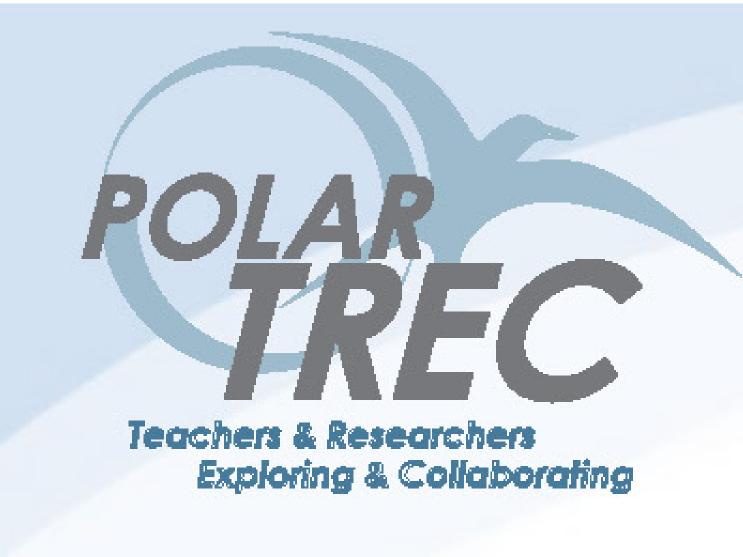
### Winter Respiration in the Arctic

T: Kim Young, Weston High School, MA

**R:** Jennifer Watts, Woods Hole Research Center, MA

**D:** 15 August 2018 to 15 September 2018

L: Various locations in Alaska



# www.polartrec.com

### Follow Expeditions • Teaching Resources • Live Connections

Take your students on a polar science adventure with PolarTREC! Your classroom 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 teachers and researchers working in the polar regions by asking questions online and joining *PolarConnect* live events from the field.

# Join the 2018-2019 PolarTREC teachers on their ANTARCTIC expeditions!



### Chemical Ecology of Shallow-water Marine Communities

T: Keith Smith, Freedom High School, NC R: Chuck Amsler, University of Alabama at Birmingham, AL

**D:** 16 May 2018 to 21 June 2018

L: Palmer Station

T: Teacher, School, State R: Researcher, Institution, State **D**: Expedition Dates

L: Expedition Location



### Weddell Seals: Growing Up on Ice

T: Bridget Ward, Springfield Central High School, MA

R: Heather Liwanag, California Polytechnic State University, CA

**D:** 1 October 2018 to 28 October 2018

L: McMurdo Station



### Antarctic Automatic Weather Stations 2018

T: Mike Penn, Shaler Area School District, PA

R: Carol Costanza, Antarctic Meteorological Research

Center, Wh.

**D:** Winter 2018

L: McMurdo Station



**I:** Michelle Hall, Science Education Solutions, NM

R: Jim Madsen, University of Wisconsin, River Falls, WI

**D:** 1 December 2018 to 30 December 2018

L: South Pole Station

South America

Atlantic Ocean



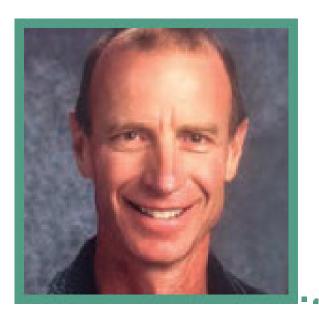
### IceCube and The Askaryan Radio Array 2018

Drake Passage

Palmer, Station

Weddell Sea

South Pole



### Dry Valleys Ecosystem Study

T: Kevin Dickerson, American Fork Junior High School, UT

R: Byron Adams, Brigham Young University, UT

**D:** 27 December 2018 to 7 February 2019.

L: McMurdo Station & Dry Valleys

PolarTREC is funded by the National Science Foundation Division 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.





Pacific Ocean

New Zealand

Ross Sea



McMurdo Station

Indian

8

# 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



# Indigenous Scholars Program

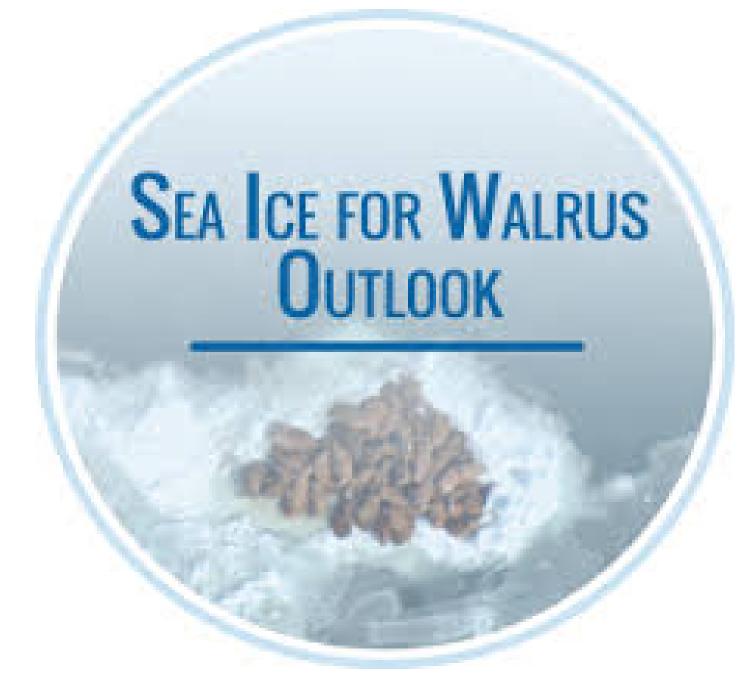
# **Empowering Arctic Indigenous Scholars and Making Connections**

This program creates a space for Indigenous scholars to educate and inform policy- and decision-makers engaged in Arctic issues from the nation's capital, Washington, D.C. 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 D.C., meeting with officials from various agencies, and deliver an open webinar/seminar.

The application period for 2019 scholars is now open!

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

# Sea Ice for Walrus Outlook



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).

More information: www.arcus.org/siwo

Follow us on Facebook: www.facebook.com/seaiceforwalrus



## **LOCAL OBSERVERS:**

Shishmaref: Curtis E. Nayokpuk

Diomede:
Opik Ahkinga

Wales:

Robert Tokeinna, Jr.

**Brevig Mission:** 

**Marcus Barr** 

Nome:

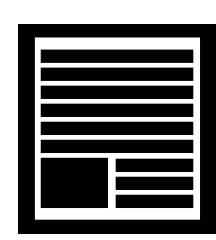
Frank (Boogles) Johnson, II

Gambell:

Clarence Irrigoo, Jr.

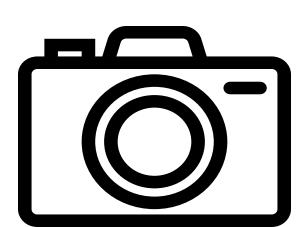
Savoonga:

**Aqef Waghiyi** 



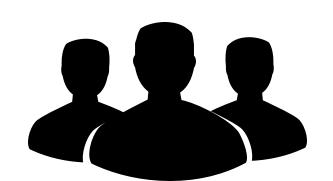
# of Weekly Reports (March-May)

**1**3



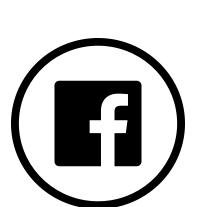
# of local observations

60



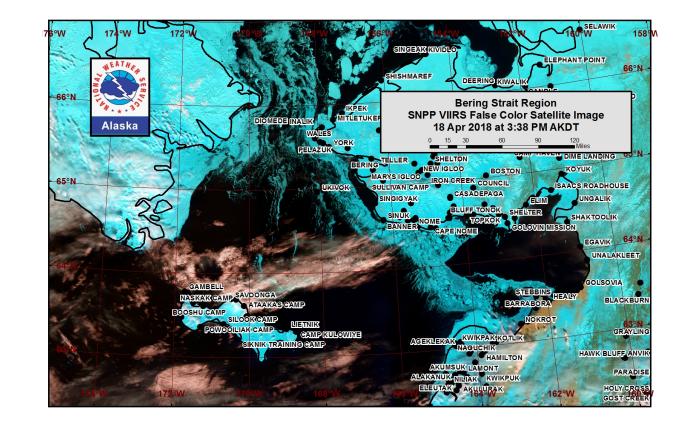
# Alaskan communities engaged

34



# of Facebook Followers

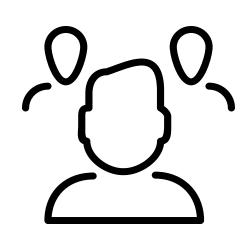
774



The 2018 season began with a recordearly start on March 9th in response to extremely low sea ice in the region. Hunters faced challenging conditions throughout the spring, with low ice and high winds. Walrus were frequently observed—at times even sleeping—in open water.



COMMUNITY NETWORKING



Anchorage Arctic Research Day

100 participants

Arctic Marine Science
Symposium Arctic Research
Planning Night
32 participants

Arctic Research Seminar Series 428 participants

Women's Perspectives on Polar Research Events

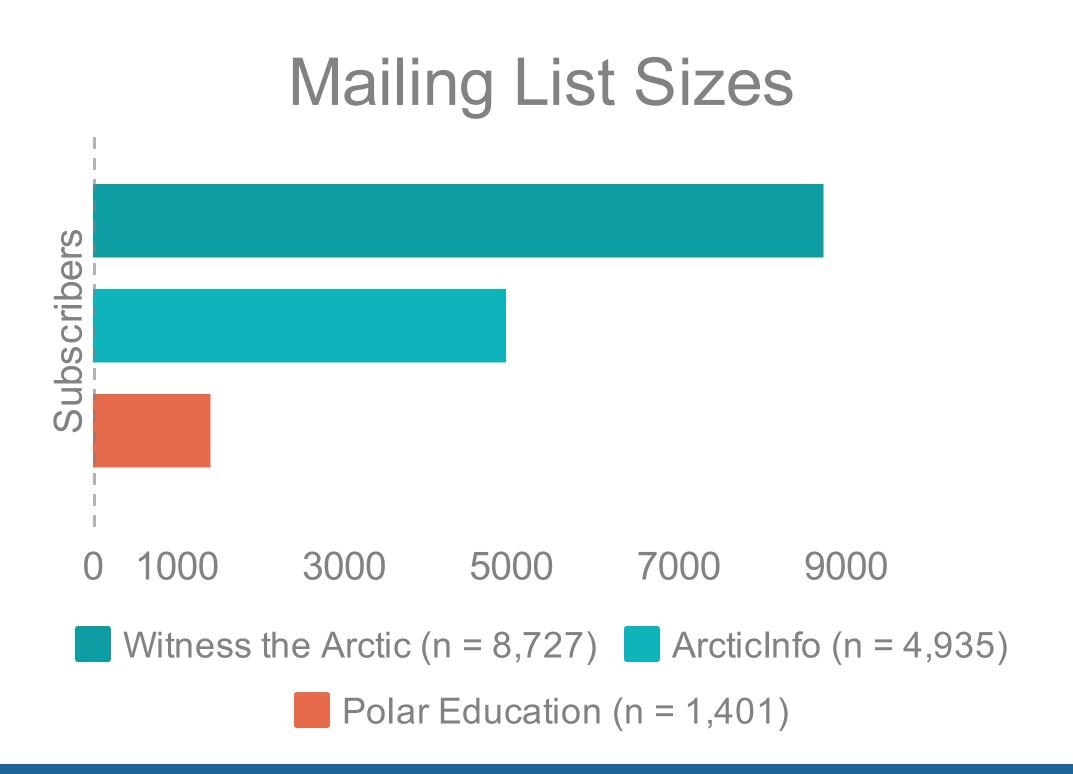
244 participants

AGU Community
Meeting Rooms
(Dec 2017)
440 participants in
29 meetings

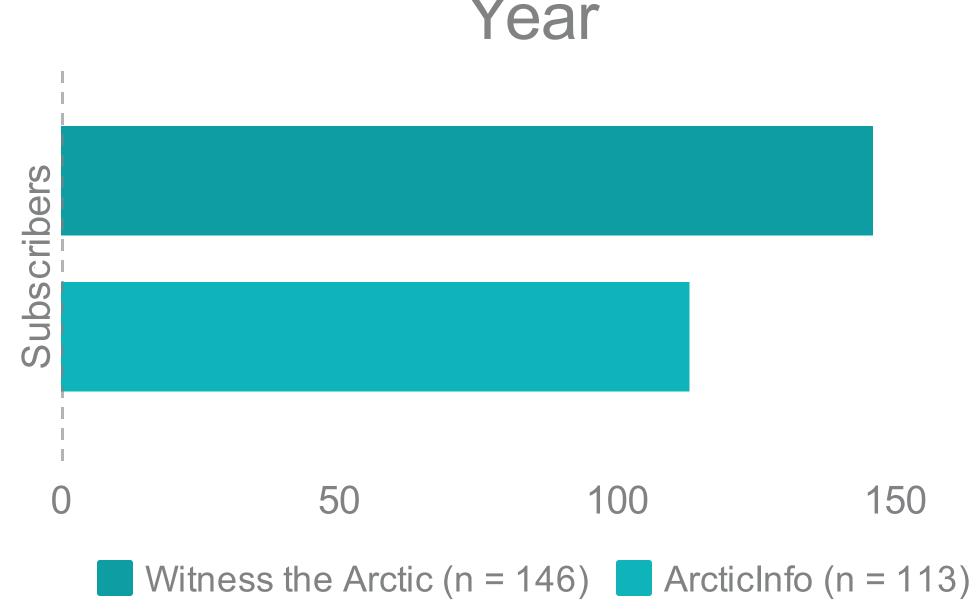
POLAR2018
Networking Reception
250+ participants



# COMMUNICATION PLATFORMS







# PRODUCTION & USAGE STATS:

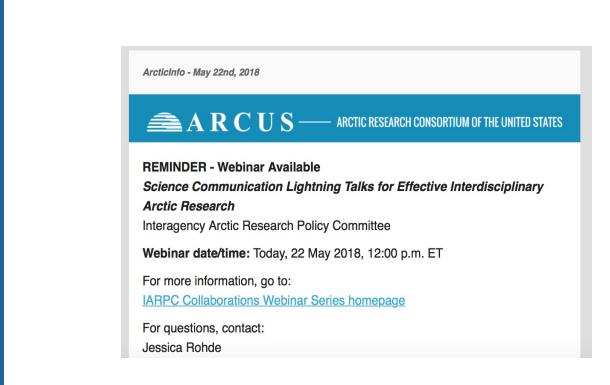


- 2 bi-annual issues
- 9 community highlights
- 44 articles
- 80 contributors

# ARCUS Website

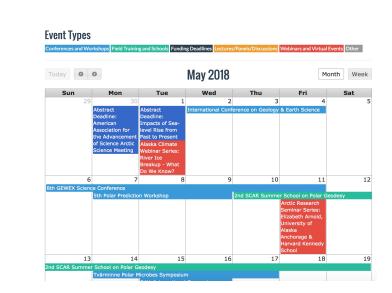


- 159,814 page views
- 68,983 unique users
- 10,000+ files
- 20,453 photos



# ArcticInfos Sent: 316

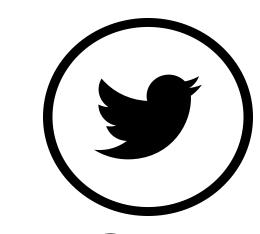
# Arctic Calendar

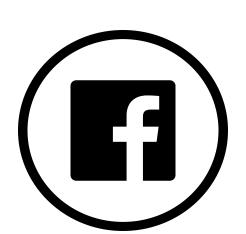


- Holds 1,816 events
- 24,476 views



- 4,081 entries
- entries from 41 countries
- **13,101** webpage views



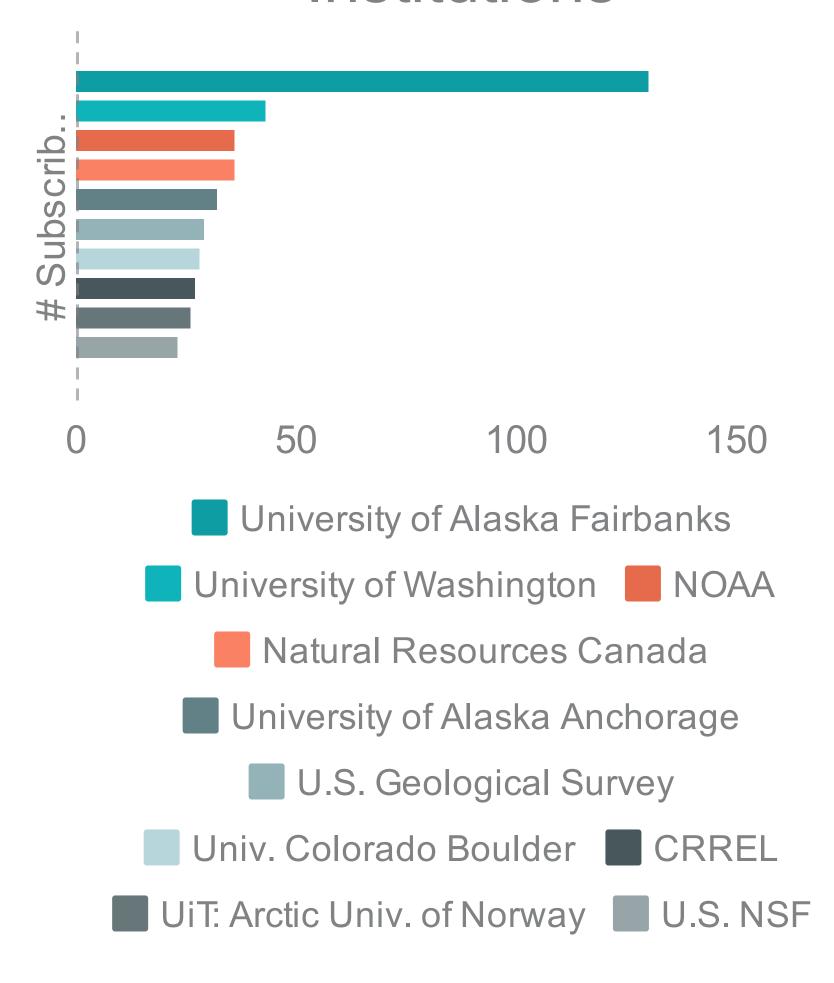


# Social Media Followers:

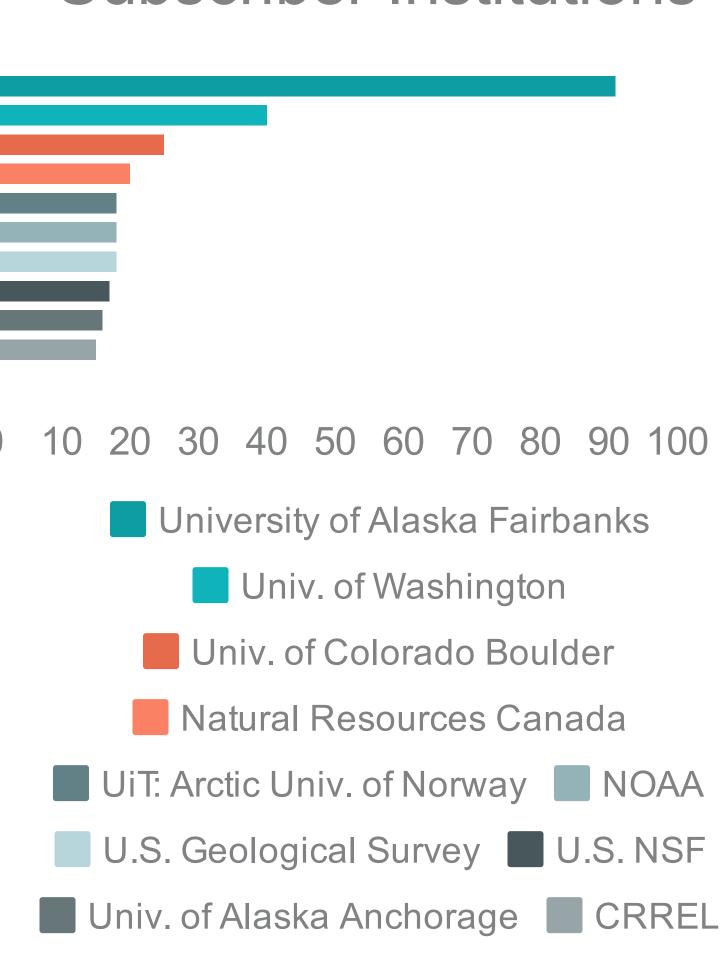
- 2,915 Twitter
- 1,541 Facebook

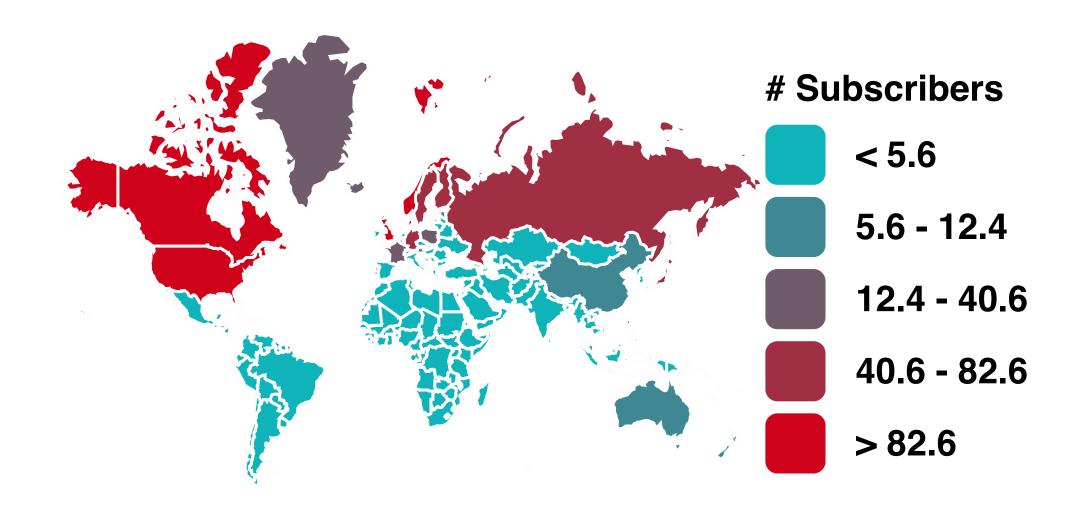
# WITNESS THE ARCTIC & ARCTICINFO

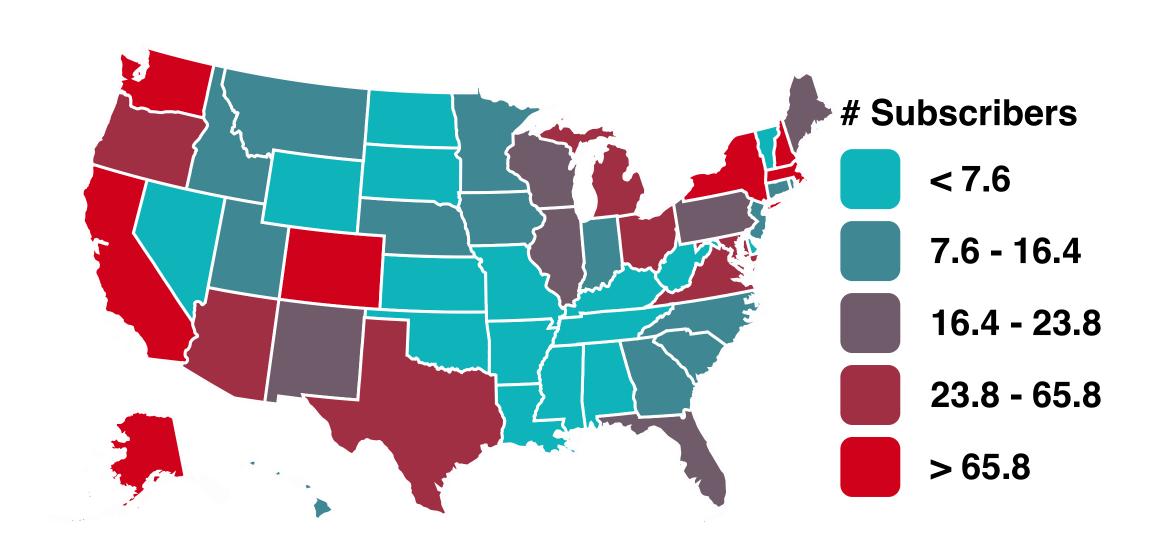
Witness the Arctic Top 10
Known Subscriber
Institutions



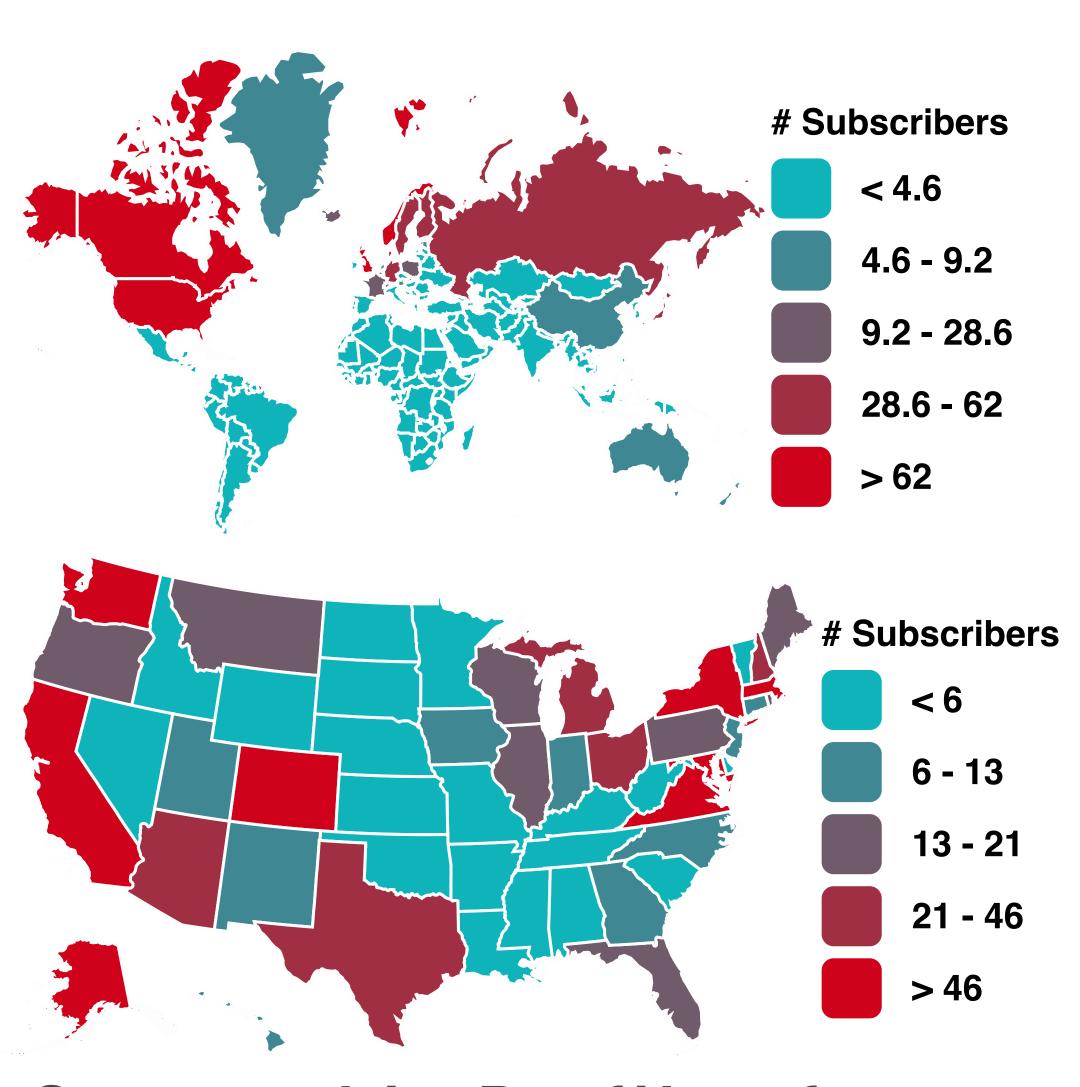
# ArcticInfo Top 10 Known Subscriber Institutions







Geographic Profile of Witness the Arctic Known Subscribers (35% of 8,727)



Geographic Profile of ArcticInfo Known Subscribers (31% of 4,935)

# 2017-2018 SEMINAR SERIES:



















- Sandra Starkweather, NOAA & U.S. AON: "The U.S. Arctic Observing Network Mobilizing Interagency Observing Actions in an Era of Rapid Change"
- Betsy Baker, North Pacific Research Board: "Marine Research in the North Pacific: The Changing Landscape for Fisheries, Ecosystems, and Funding in Alaskan Waters"
- Peter Pulsifer, National Snow & Ice Data Center: "Arctic Observations, Data and Society: Using Science and Mediation to Enhance Information Flow for Sustainability"
- Courtney Carothers (University of Alaska Fairbanks) & Laura Zanotti (Purdue University): "In a Climate of Change: Co-producing Knowledge and Community-Researcher Relationships in the Leadership and Strength Project in Utquiagvik, Alaska"
- Roberto Delgado & Andrea Horvath Marques, National Institute of Mental Health: "Promoting Research on Mental Health, Resilience, and Wellbeing in the Arctic"
- Marlene Laruelle, George Washington University: "Russia's Arctic Ambitions. Domestic Factors and Foreign Policy Strategies"
- Matthew Jull, University of Virginia: "Arctic Design Group. Mediating Environments"
- Nong Hong, Institute for China-America Studies: "Examining the Implications of China's Arctic Policy White Paper"
- **Elizabeth Arnold, University of Alaska Anchorage:** "The Face of Climate Change in the Arctic: The Media's Role in Public Disengagement"

# RESEARCH SUPPORT ACTIVITIES

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' roles in SIPN2 (funded by NSF) include 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 2018, 39 groups contributed to the effort!

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.

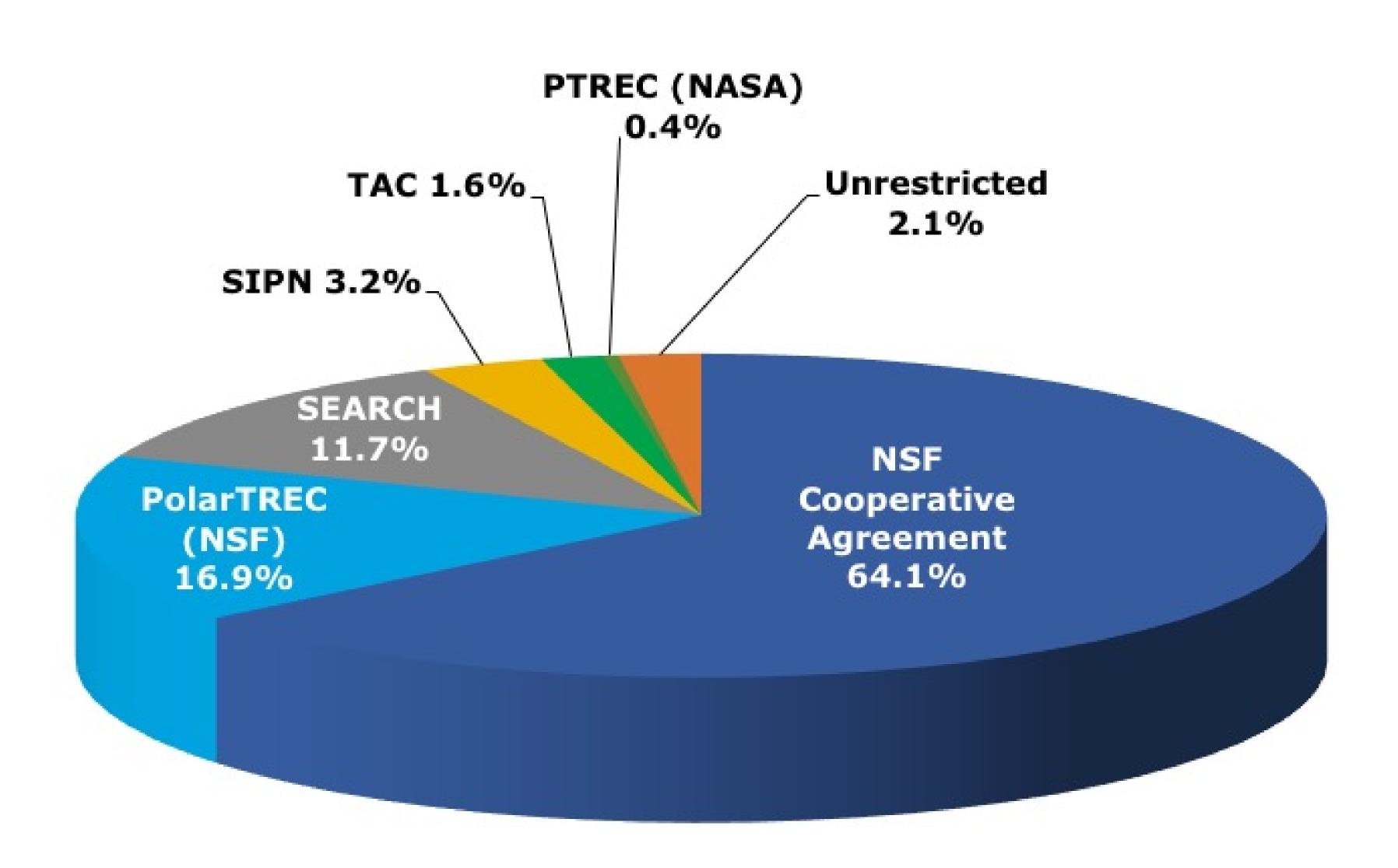
- Two current SEARCH activities include development of "Arctic Answers", which are 1-2 science briefs that answer policy-relevant questions, and planning for the 2019 conference, "Arctic Futures 2050: Science & Policy Dialogues".
- ARCUS' role in SEARCH, funded by NSF, includes meeting planning and logistics, project management, communications, and outreach.

More information: https://www.searcharcticscience.org



# FINANCIAL REPORT

# FY 2018 Revenue by Source (October 2017 – September 2018)



## FY18 Revenue by Source (in dollars)

Cooperative Agreement (NSF)	\$ 1	1,122,382	
PolarTREC (NSF)	\$	295,362	
SEARCH (NSF)	\$	205,649	
Sea Ice Prediction Network (SIPN) (NSF)	\$	55,393	
The Arctic in the Classroom (TAC) (Community Service Payments)	\$	28,193	
PolarTREC (NASA)	\$	7,024	
ARCUS Unrestricted Funds (membership dues donations, and an AK Community Foundation Grant)	s, \$	37.222	
	\$ 1	1,751,224	

# ARCUS ADVISORY COUNCIL, COMMITTEE VOLUNTEERS, & INDIVIDUAL MEMBERS

# ARCUS ADVISORY COUNCIL

Vera Alexander Tom Barry Mark Brzezinski Brian Rogers Mead Treadwell

# POLARTREC TEACHER SELECTION COMMITTEE

Sarah Bartholow
Lucy Coleman
Alex Eilers
Brandon Gillette
Neil Herrmann
Dieuwertje Kast
Marguerite Mauritz
Stephanie Mills
Cara Pekarcik
Dominique Richardson
Robbie Score
Gary Wesche

# MEMBERSHIP & DEVELOPMENT COMMITTEE

Diane Hirshberg Howie Epstein Pips Veazey Allen Pope Sheyna Wisdom Kaare Erickson Adrian Gall Carolina Behe Dave Cairns Timo Koivurova

# INDIGENOUS SCHOLARS SELECTION COMMITTEES

Percy Ballot
Carolina Behe
Alicia Bell-Sheeter
Raychelle Daniel
Dalee Sambo Dorough
Gay Sheffield
Rosemary Ahtuangaruak
Craig Fleener
Theresa John
Inuuteq Stotts

# 2018 ARCUS INDIVIDUAL MEMBERS

Vera Alexander Lavi Appel Carolina Behe Regina Brinker Mark Buesing **David Cairns** Michael Corgan Jim Costopulos Pat Danahey Janin Criag Dorman Howard Epstein John Farrell Ayumi Fujisaki-Manome Adrian Gall Mary Gibbons Joyanne Hamilton Matt Heavner Diane Hirshberg

Marlys House

Mark Ivey Christopher Ivins David Jones Randy Kee Gunnar Knapp Timo Koivurova Marleigh Lang Pierre Leblanc Olivia Lee Julie Lina Lorene Lynn Michelle Mack Tom Mallard Karl Newyear Robert Ortung James Powell Kimberly Rand Robert Rich Brian Rogers

Wlodek Rybicki Robert Seitz **Kevin Smith** Yvette Spitz Charlene Stern Audrey Taylor Lenore Teevan Sarah Thunberg Mark Tomassoni Lily Toruteva Maria Tzortziou Stephen Vavrus Susan Wilson Sheyna Wisdom Ming Xiao Leonid Yurgonov Laura Zanotti

# EDUCATION COMMITTEE

David Carlson
Jana Harcharek
Ute Kaden
James Madsen
Michael Retelle
Audrey Taylor

