Witness the ARCTIC

Chronicles of the NSF Arctic Science Section | Summer 2020, Volume 24 Number 1

In this Issue

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ARCUS Member Highlight - Kawerak, Inc.

Kawerak, Inc. (https://kawerak.org/about-us/who-we-are/) is a regional consortium of federally recognized tribal governments in the Bering Strait. With programs ranging from education to transportation, and natural resource management to economic development, Kawerak seeks to improve the Region's social, economic, educational, cultural, and political conditions. Kawerak is governed by a Board of Directors that is comprised of the Council Presidents or appointed delegates of the 20 federally recognized tribes, two Elder representatives and the chair of the Norton Sound Health Corporation Board.

KAWERAK, INC.

The Kawerak mission statement (https://kawerak.org/about-us/who-we-are/#Mission) is, "Advancing the capacity of our People and Tribes for the benefit of the region."

Kawerak works hard to meet the needs of the people of the region through strong collaboration and cooperation with all 20 tribes, our regional medical center, and our Elder's wisdom and expert guidance. The scope of service and work is wide but our mission keeps us united and focused on meeting the identified needs and working together to engage in this mission. Kawerak is truly empowered by the unity of our Tribes to serve our people, and we do this through facilitation and partnership. Lastly, we are guided and sustained by our traditions, values, and Native culture, all of which we hold dear and work to keep alive and integrated in all that we do. The Board of Directors decided when our vision, "Our people and tribes are thriving" was accomplished, we would have strong, healthy, proud, caring, unified, pro-active, self-sufficient Native people, leaders and communities who know where we are going and who will take necessary steps to achieve it.

"Our core value is the strength of our traditional culture, Native values, and the unity of our Tribes that empowers us." These are the driving force behind all that Kawerak, Inc. does to accomplish its mission. These values have been our guide since our inception and will continue to guide us in all that we do. Our values, while rooted in history and the ways of our ancestors, are still very much alive and well in us today.

Kawerak, Inc. Divisions and Programs

The Community Services Division and Programs assists member tribes in becoming self-governing, self-sufficient, and long-term family wellness for all region residents with the following programs:

- Tribal Affairs program assists tribal councils in exercising self-governance and provides training and technical assistance, for 18 of the 20 federally-recognized tribes in the Bering Strait region.
- Village Public Safety Officer (VPSO) Program provides community public safety and law enforcement, emergency services, probation and parole, and drug abuse prevention programs in 16 communities.
- Transportation assists member tribes with planning and construction of transportation projects to increase or improve mobility and services within and between communities.

Photo 1. Ribbon cutting over newly paved road in Elim, 2019. Photo courtesy of Davis Hovey.

- Child Advocacy Center operates a child-friendly, culturally respectful place where caring professionals work together in one location, to help children and families cope with sexual abuse, severe physical abuse, and exposure to violence.
- Children and Family Services Program employs Tribal Family Coordinators within participating villages to assist with Indian Child Welfare Act cases and family preservation. Caseworkers located in Nome work with families to receive services in order to provide a healthy environment for their children.

- Wellness Program focus is to restore a culture of wellness within the region through promotion of healthy living and traditional activities, addressing historical trauma through education and community conversations, and supporting cultural programming.

Photo 2. Camp Igaliq brought in Nome St. Lawrence Island Drummers and Dancers for drumming and dancing. Photo courtesy of Kawerak, Inc.

The Cultural and Regional Development Department is responsible for writing and submitting new grants for Kawerak; developing state and federal priorities; managing the long-range process for Kawerak, and regional development. The co-location of cultural programs under the CRD Department allows for more collaboration between programs with a similar focus of cultural revitalization.

- Community Planning and Development provides technical assistance to Bering Strait communities with small business start-up/expansion and economic development planning. Staff provides technical assistance to tribal councils in community planning, economic development, energy planning, grant writing and administration, and e-commerce center support.
- The Eskimo Heritage Program (EHP) was created in 1981. Local Alaska Native fieldworkers were hired in six communities to document and record our Elders. Since the 1980's, the EHP collection has been catalogued, transcribed, and translated. Staff has digitized the entire collection, which will make the collection more accessible for education and public use.

Photo 3. Eskimo Heritage Program-hosted Naniq Craft Days, where instructors taught community members beading, fish skin tanning, qupak stitches, and more. Photo courtesy of Kawerak, Inc.

- Katirvik Cultural Center coordinates traveling exhibits, cares for cultural collections, and hosts activities in the cultural center to preserve, promote and celebrate the cultures of the Bering Strait Region.

Photo 4. Installation at Katirvik Cultural center at grand opening in 2018. Photo courtesy of Kawerak, Inc.

The Education, Employment, and Supportive Services Division (EESS) is designed to provide support and assistance to tribal members who are looking for employment opportunities or who are continuing their education.

- Child Care Services provides financial assistance for childcare to Tribal members who are employed, seeking work, attending training, enrolled in educational programs, or participating in treatment programs. CCS also runs the Uiviilat Child Care Center in Nome and provides technical assistance to home care providers in the region.
- Community Education Program provides basic education services throughout the Bering Strait Region to all adults, Native and non-Native. Services include GED classes, GED testing, English as a second language classes, and tutoring in math, reading, and writing. Staff and facilities are located at the UAF Northwest Campus in Nome.
- Employment and Training Program services include: job search assistance, subsidized work activities, financial assistance for persons who have obtained or are seeking work, and Tribal Employment Rights Ordinance (TERO) advocacy to Bering Strait regional residents and tribal members. Kawerak provides training grants and college scholarships to tribal members. Temporary subsidized work activities are available for youth and adults to provide job skill training. Village-

based training programs are also offered throughout the Bering Strait region as funding permits.

Photo 5. Student in Heavy Equipment training class working on virtual equipment utilized in partnership with NACTEC. Photo courtesy of Kawerak, Inc.

- Vocational Rehabilitation Program provides vocational guidance and services to residents of the Bering Strait region who have disabilities that are barriers to employment. Eligible participants receive specialized training to improve job-related and independent living skills, technological assistance and medical treatment on an individual basis.
- Tribal Welfare provides temporary assistance to income-eligible individuals and families to meet their basic needs and may include: general assistance, burial assistance, emergency, and disaster assistance. Tribal Welfare also oversees the Kawerak Native Employment Work Services (KNEWS) program; clients receive work experience, supervision, job coaching, opportunities to learn new skills, and assistance in writing resumes, job searching, and preparing for job interviews.
- Head Start and Early Head Start Program is a preschool program that promotes social competence and structure among children birth to four years old in the Bering Strait region. Services are provided in Nome and ten0 village sites. Strong parental involvement, health and social services are primary components of Head Start's well-rounded program.

Photo 6. Head Start students examining traditionally made drum. Photo courtesy of Kawerak, Inc.

The Natural Resources Division conducts research projects and provides services that relate to natural resources including land, fish, animal, and birds in the Bering Strait region. Through knowledge and education, they strive to protect tribal members' access to these resources, and assure that future harvests are sustained and promoted.

- Eskimo Walrus Commission (EWC), created in 1978, represents Alaska's coastal walrus hunting communities. EWC works on resource co-management issues. Walrus is a primary resource of food for Alaska Native People and its ivory, bone, and hide are used to produce handcrafts, artwork, and skin boats.
- Social Science Program collaborates with region tribes to document local and traditional knowledge on a variety of topics. The Program also provides recommendations and information regarding policy and management of natural resources based on local research and documentation.
- Land Management Services provides technical assistance to owners and heirs of Native allotment and restricted town site lots. Some of these services include: property sales, title recovery, mortgages, resolving trespass settlements, probating restricted estates, wills, environmental consulting, and more.
- Reindeer Herders Association provides assistance to its twenty-one members for the development of a viable reindeer industry and to enhance the economic base for rural Alaska and to improve the management of the herds.

Photo 7. Reindeer from local herd in winter. Photo courtesy of Danielle Slingsby.

- Subsistence Resources: Advocates on behalf of subsistence users to protect customary and traditional harvest of all resources. Subsistence Resources also provides information on subsistence harvest to tribes, state and federal managers, and supports proposals and projects to improve management of subsistence resources.

Photo 8. Father and son, Okleasik Jr.(right) and Isaac Okleasik III Isaac (left), cutting fish. Photo courtesy of Jolene Okleasik.

- Marine Program advocates for local priorities and proposes actions to minimize negative impacts of increased shipping in the Bering and Chukchi seas via local involvement, outreach to tribes, and engagement at ocean policy forums.
- Environmental Program supports the tribal IGAP programs and acts as a staging area for the regional recycling program, operates a Brownfield grant, and an emergency preparedness grant.

Legal Services

- Legal Services provides a broad range of legal services and training to the tribal councils in areas such as sovereignty, tribal laws, tribal judicial systems, and Indian Child Welfare Act to Kawerak and the tribes.

For further information, please see Kawerak, Inc. (https://kawerak.org/about-us/who-we-are/), or contact Danielle Slingsby, Outreach Director for Kawerak, Inc.

SIPN2 News

The Sea Ice Prediction Network–Phase 2 (SIPN2) (https://www.arcus.org/sipn) is a network of US and international members working to advance research on the processes driving sea ice predictability, prediction products, and the communication of findings to interested stakeholders. SIPN2 is funded by NSF-Arctic Sciences Section and the UK Natural Environment Research Council (NERC) (https://nerc.ukri.org/), with several collaborators and partners (https://www.arcus.org/sipn/project-team).

Sea Ice Outlook Reports

The Sea Ice Outlook (SIO) (https://www.arcus.org/sipn/sea-ice-outlook) provides an open process for those interested in Arctic sea ice to share ideas and predictions for Arctic ice extent, sea-ice probability, ice-free date, and other variables. The full 2019 Post-Season SIO Report (https://www.arcus.org/sipn/sea-ice-outlook/2019/post-season) was published in early 2020. The 2020 SIO monthly reports for June (https://www.arcus.org/sipn/sea-ice-outlook/2020/june) and July (https://www.arcus.org/sipn/sea-ice-outlook/2020/julyhttps://www.arcus.org/sipn/sea-ice-outlook/2020/june) are available online. The 2020 SIO August report and an interim post-season report (to be developed at the close of the current melt season) are forthcoming.

A full post-season report, with a more in-depth analysis of the sea ice season and an evaluation of the accuracy of the Outlook predictions, will be published in February 2021.

SIPN2 Webinars

The 2020 SIPN2 webinar series has included two events to date. The first webinar, Understanding Stakeholder Information Needs for Sea-Ice Forecasting, was held on 28 April with focus on stakeholder groups, their information needs, and how information gathered through stakeholder engagement can be of use to the sea-ice forecasting community. The second webinar, Machine Learning—Challenges and Opportunities for Applications in Sea-Ice Prediction, was held on 29 July. This webinar focused on the use of Machine Learning and Artificial Intelligence, on how such approaches can be applied in cryospheric research, as well as related challenges and limitations. A third webinar is planned for fall 2020 to discuss the 2020 melt season and relative performance of the SIO. All past webinars are archived here (https://www.arcus.org/sipn/meetings/webinars), and future webinars are announced via the SIPN2 mailing

list (https://www.arcus.org/sipn/mailing-list).

SIPN2 at AGU

SIPN2 convened a sea-ice community open meeting on 10 December during the 2019 American Geophysical Union (AGU) Fall Meeting in San Francisco to promote knowledge exchange and collaboration among members of the sea-ice research community. This meeting included a brief overview of the 2019 Arctic sea ice/Sea Ice Outlook season, several one-minute project updates from members of the sea-ice research community, and lively discussion among the participants. More information about the meeting is available here (https://www.arcus.org/sipn/meetings/2019/agu).

More Information on SIPN2

More information about SIPN2 is available through the SIPN2 website and through the SIPN mailing list, or by contacting Betsy Turner-Bogren, ARCUS (betsy@arcus.org).

About the Author

Betsy Turner-Bogren is a Project Manager at ARCUS who provides staff support to the SIPN2 project and its team members. She also manages the NSF-supported publications Witness the Arctic and Witness Community Highlights.

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Navigating the New Arctic (NNA) Investigators Meeting

By: Brit Myers, ARCUS Project Manager

The first Navigating the New Arctic (NNA) Investigators Meeting was held virtually 16–17 April 2020. The NNA Investigators meeting was a cooperative effort among the National Science Foundation's (NSF) Office of Polar Programs, the NNA Working group at NSF, the Arctic Research Consortium of the United States (ARCUS), experts on Indigenous and Traditional Knowledge and working with Arctic communities, and NNA project investigators and team members.

Lightning talk videos, project update reports, and summary notes from the meeting are now available and can be found on the NNA Investigators Meeting webpage (https://www.arcus.org/nna/meetings/2020). The brief lightning talk recordings and project update reports were produced by each of the NNA project teams to introduce their research activities to the wider community and to highlight any unique collaboration opportunities that they are interested in exploring.

A formal meeting report is forthcoming and will provide descriptions of the NNA Investigator community, meeting discussion highlights, and insights from NNA project team members on research co-production and convergence.

Navigating the New Arctic (NNA) is an initiative of the US National Science Foundation. Learn more about NNA and NSF's 10 Big Ideas here. (https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505594)

Waking the Bear: Understanding Circumpolar Bear Ceremonialism

By: Andrew Wiget, Professor Emeritus at New Mexico State University and Olga Balalaeva, Independent Scholar.

Overview:

For centuries, Indigenous peoples across Eurasia and North American have maintained harmonious relations with bears with whom they share the world[1], honoring this relationship through ceremonies. A current NSF-funded project Waking the Bear (https://eloka-arctic.org/bears#the-continuing-importance-of-bear-ceremonialism), led by Andrew Wiget with Olga Balalaeva, explores the range of traditional practices. The project website, supported by the Exchange for Local Observations and Knowledge of the Arctic (ELOKA) (https://eloka-arctic.org/about-eloka), describes the bear ceremonies of Siberian people, the Mansi and the Khanty (https://www.britannica.com/topic/Khanty), through narrative, photos, videos, and audio recordings. The content is in both English and Russian.

Bear ceremonialism refers to a range of traditional practices by which Indigenous peoples across Eurasia and North America have maintained relations with bears. These practices include carved or painted images, special bear language, and preserved elements of the bear. While some peoples entirely refuse to hunt bears, among other peoples, the bear is understood to offer himself to men in death. Such a death is followed by an elaborate sending home ceremony, in which the bear is made a guest in the house and celebrated for one or more days before being sent back to his sky-home. Such is the practice among the Indigenous Khanty and Mansi peoples of western Siberia.

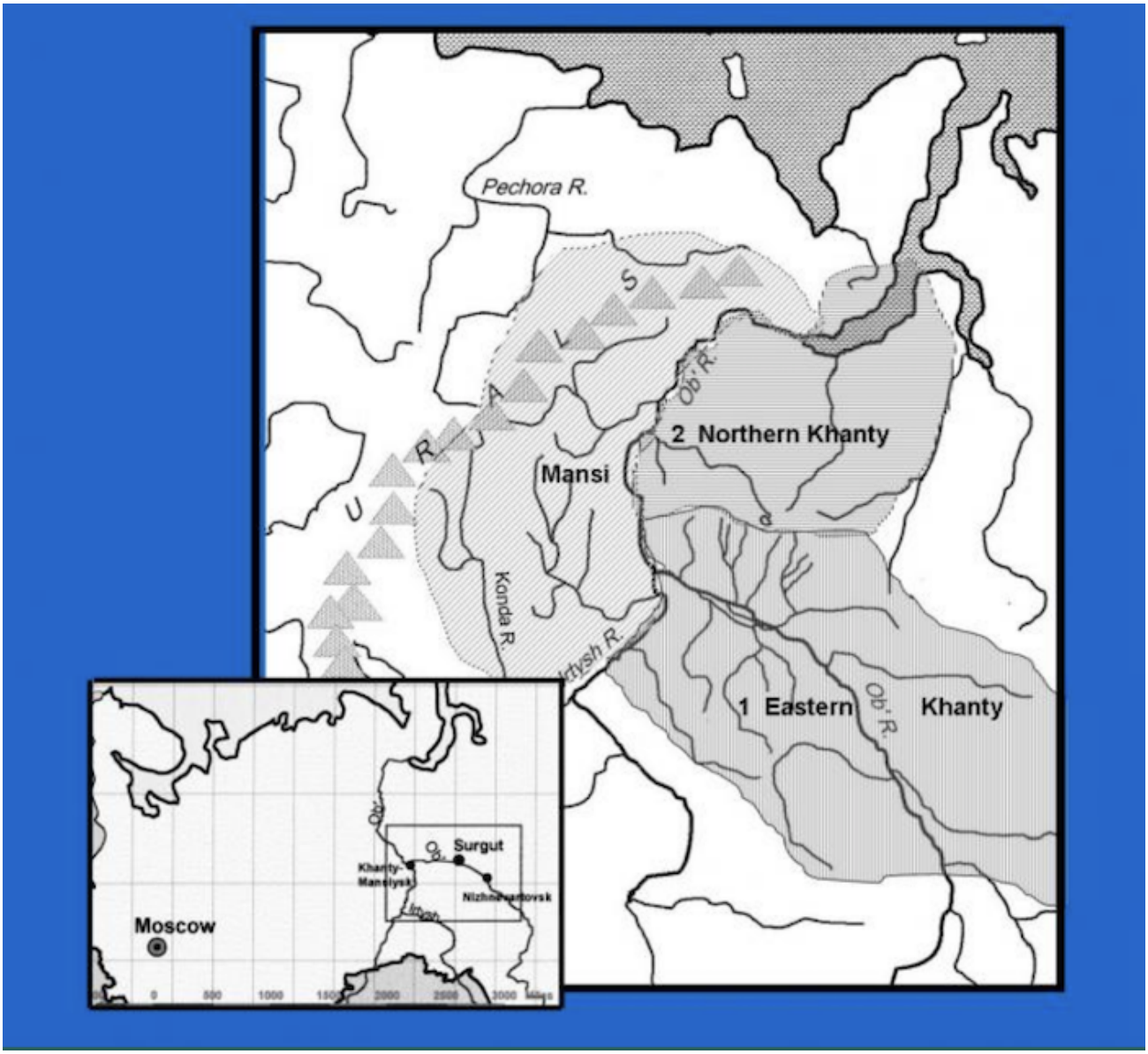


Figure 1. Map of historic Khanty and Mansi territory. Image courtesy of Waking the Bear: Understanding Circumpolar Bear Ceremonialism.

During our 30 years of working among the Indigenous Khanty and Mansi peoples[2], our principal Khanty collaborator was Petr Vassilievich Kurlomkin, the last Bear Festival singer among the Eastern Khanty of the B. Yugan River. When he passed away in 2013, there were no more Bear Festival singers for the whole Yugan Khanty community. While Bear Festival traditions among the Northern Khanty appeared to be thriving, and those of the Northern Mansi were doing well, the situation with among the eastern Khanty had become especially acute. With support from UNESCO's Moscow office, we established a community-based cultural heritage program and initiated a master-apprentice program that realized the first performance of the Bear Ceremony in 25 years among the Yugan Khanty in March 2010, and a second in 2016.

Figure 2. Apprentice Yegor Kinyamin singing at Kinyamino Bear Festival, M. Yugan River, Siberia, March 2016. Photo courtesy of Andrew Wiget.

That work led us to meet with Indigenous Khanty and Mansi experts and involve them in the present project in order to help scientists and the public understand the value of bear ceremonialism among Indigenous peoples of northern Eurasia and North America, and how bears are met as other-than-human persons who have social relations, communication, interests, motivations, memories, and histories. Today, stresses such as commercial hunting, land use policies, and other forces that turn the living world into commodities are eroding this way of thinking. These disruptions come at a time when effective policy-making depends upon understanding and accommodating these different ways of seeing and being in the world.

Figure 3. Hunting skit, N. Khanty. Photo courtesy of Andrew Wiget.

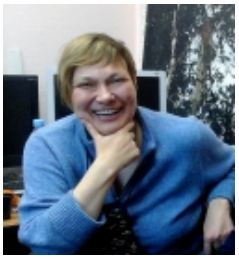
The most public face of our NSF-funded research is a just-opened media-rich website, Waking the Bear: Understanding Circumpolar Bear Ceremonialism (https://eloka-arctic.org/bears). Developed in close collaboration with Indigenous experts, it features extensive media documentation of bear ceremonialism, community history and lifeways, personal and traditional narratives, and for the first time, trilingual bear song texts (Native language, Russian, and English), transcribed and translated from actual bear festival ceremonies, elements of which appear on the page in video. Annotated with references to scholarly resources, it is organized geographically, beginning with the bear ceremonies of the Khanty and Mansi peoples. The site is fully bilingual, even to the captioning of photos and videos, to support access whether the principal shared language is English or Russian. The website is Produced and hosted by ELOKA and designed to be accessible on platforms ranging from laptops to tablets and smartphones.

This work is funded by a grant to New Mexico State University from the National Science Foundation, Award Number 1724508, Office of Polar Programs, under the title, "An Anthropological and Linguistic Investigation of Arctic Ceremonial Traditions," and directed by Andrew Wiget. The NSF team members include Finno-Ugric Studies specialist Olga Balalaeva, Hungarian linguist Marta Csepregi, Northern Khanty experts Tatiana Moldanova and Timofei Moldanov, Northern Mansi expert Svetlana Popova, and Eastern Khanty experts Agrafena Sopochina and Elena Surlomkina.

In the next two years of the project, we aim to have conversations with Native American and First Nations communities, to better understand the ways in which they have learned to manage their relationship to bears in this rapidly changing world (such as The Grizzly Bear Treaty, initiated by the Piikani First Nation in Canada). We hope that the project may assist the formation of an international, multidisciplinary, Indigenous-led forum for dialogue on sharing the world with bears.

About the Authors

Andrew Wiget, Professor Emeritus at New Mexico State University, is a folklorist and ethnographer whose work began with Indian tribes in the Southwest. In 1992, he partnered with Olga Balalaeva to begin joint ethnographic work in Siberia. He can be contacted at andrew.wiget@gmail.com.



Olga Balalaeva, is a specialist in Finno-Ugrian studies. She has been working among the Khanty and Mansi in Western Siberia for the past 30 years. She can be contacted at o.balalaeva@gmail.com.

End Notes

1. Hallowell, A. I., 1926. Bear ceremonialism in the northern hemisphere. American Anthropologist, n.s., 28: 1-175
2. Wiget, A. and O. Balalaeva, 2011. Khanty, People of the Taiga: Surviving the Twentieth Century. Fairbanks: U of Alaska P, 2011.

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The Changing Carbon Cycle of the Arctic Ocean

By: Michael DeGrandpre, University of Montana-Missoula; Wiley Evans, Hakai Institute; Mary-Louise Timmermans, Yale University; Richard Krishfield, Woods Hole Oceanographic Institution; Bill Williams, Institute of Ocean Sciences; and Michael Steele, University of Washington

Anthropogenic emissions have increased atmospheric carbon dioxide (CO_2) from ~290 to 410 ppm over the past 100 years leading to levels that are higher on average than the surface ocean. Because of this disequilibrium, the oceans take up a significant fraction (~25%) of the anthropogenic CO_2, reducing the greenhouse impact of human emissions while simultaneously, in a classic "no free lunch" scenario, being altered by ocean acidification. The Arctic Ocean is unique in that air-sea exchange of CO_2 has been limited in the past because of extensive, perennial ice cover. But recent loss of ice, with seasonal levels as low as 50% ice extent, compared to the beginning of the satellite record (1979), has opened the Arctic Ocean to direct exchange of CO_2 with the atmosphere. Past studies of the Arctic Ocean have found that dissolved CO_2, reported as the partial pressure of CO_2 (pCO_2), is typically lower than atmospheric levels; therefore, loss of sea ice has likely increased the global uptake of atmospheric CO_2. It is hypothesized that this beneficial side-effect could come at the cost of increasing sea surface pCO_2 levels, resulting in reduced air-sea uptake over time, while also accelerating ocean acidification in the region. The response of the carbon cycle to the changing physical conditions of the Arctic Ocean is complex and not readily predicted, however. Sea surface pCO_2 variability in the Arctic Ocean is intertwined with biological production, ice formation, and melting (where CO_2 is concentrated or diluted, respectively), heating and other processes, all of which are no longer in steady state. Sparse long-term data have limited our ability to assess variability of sea surface pCO_2 that is related to these changes.

We have been measuring pCO_2 in the Canada Basin of the Arctic Ocean since 2012 to help address this shortcoming. Cruises have taken place on the Canadian icebreaker, the *CCGS Louis S. St-Laurent* as part of the Beaufort Gyre Observing System and Joint Ocean Ice Study (BGOS/JOIS) programs through Woods Hole Oceanographic Institution (Woods Hole, Massachusetts) and the Institute of Ocean Sciences (Sidney, British Columbia), respectively. These cruises, conducted since 2002 with support from NSF, have focused on the hydrography and biogeochemistry of the western Arctic Ocean. The cruises offer a golden opportunity to help understand the Arctic Ocean carbon cycle by repeatedly visiting one of the Arctic's deep ocean basins, following roughly the same cruise track from year to year (Figure 1). Our role, in addition to deploying CO_2 and pH sensors on moorings and Ice-Tethered Profilers (Islam et al. 2017; DeGrandpre et al. 2019), has been to measure sea surface pCO_2 using an infrared-equilibrator based system connected to the ship's seawater line (Figure 3).

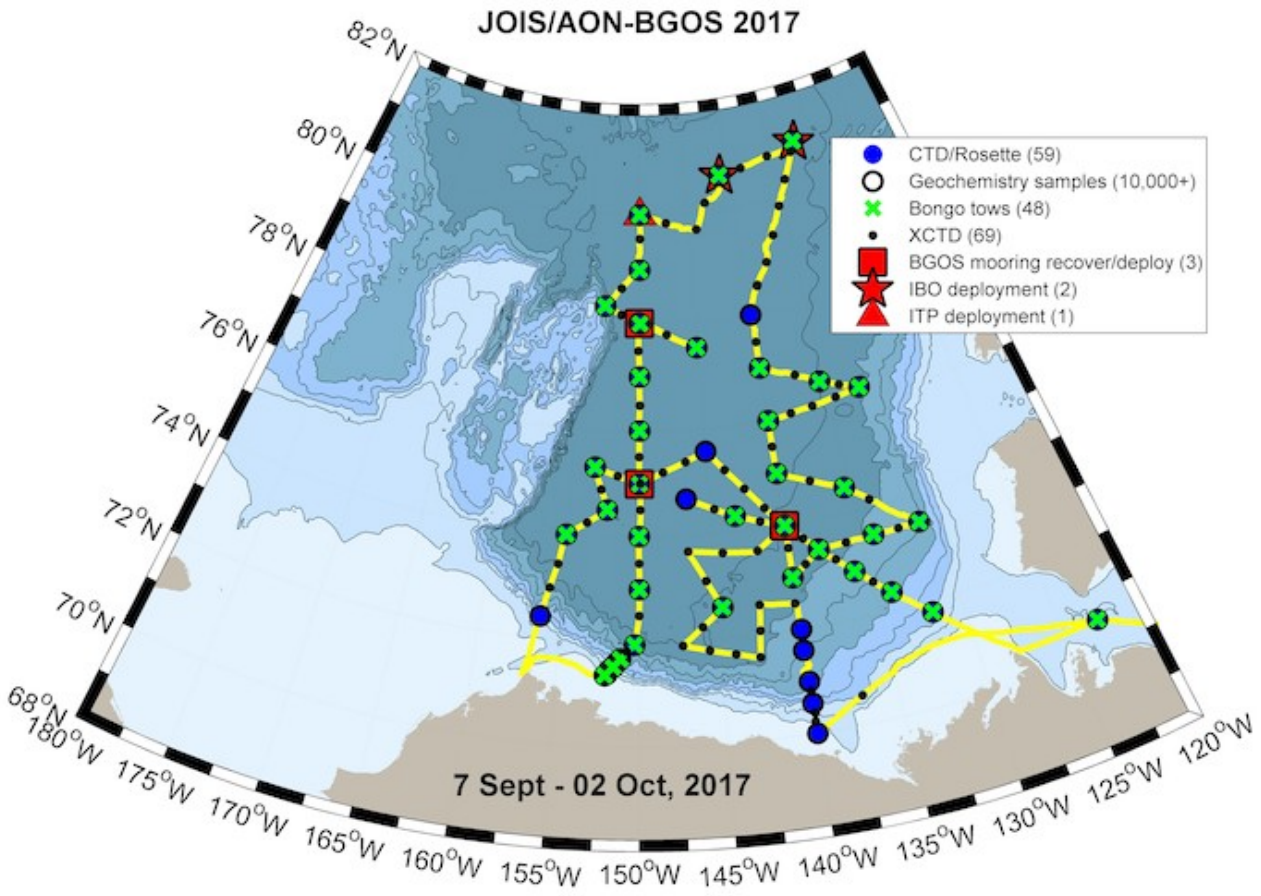

Figure 1: The Beaufort Gyre Observing System and Joint Ocean Ice Study cruise track (left) in the Beaufort Sea and Canada Basin north of Alaska and Nunavut. Figure courtesy of Michael DeGrandpre.

Figure 2. The cruise took place on the icebreaker, CCGS Louis S. St-Laurent in 2017. Sea surface partial pressure of carbon dioxide has been measured on the ship since 2012 using an automated, underway system (see Figure 3). Photo courtesy of Gary Morgan (CCGS).

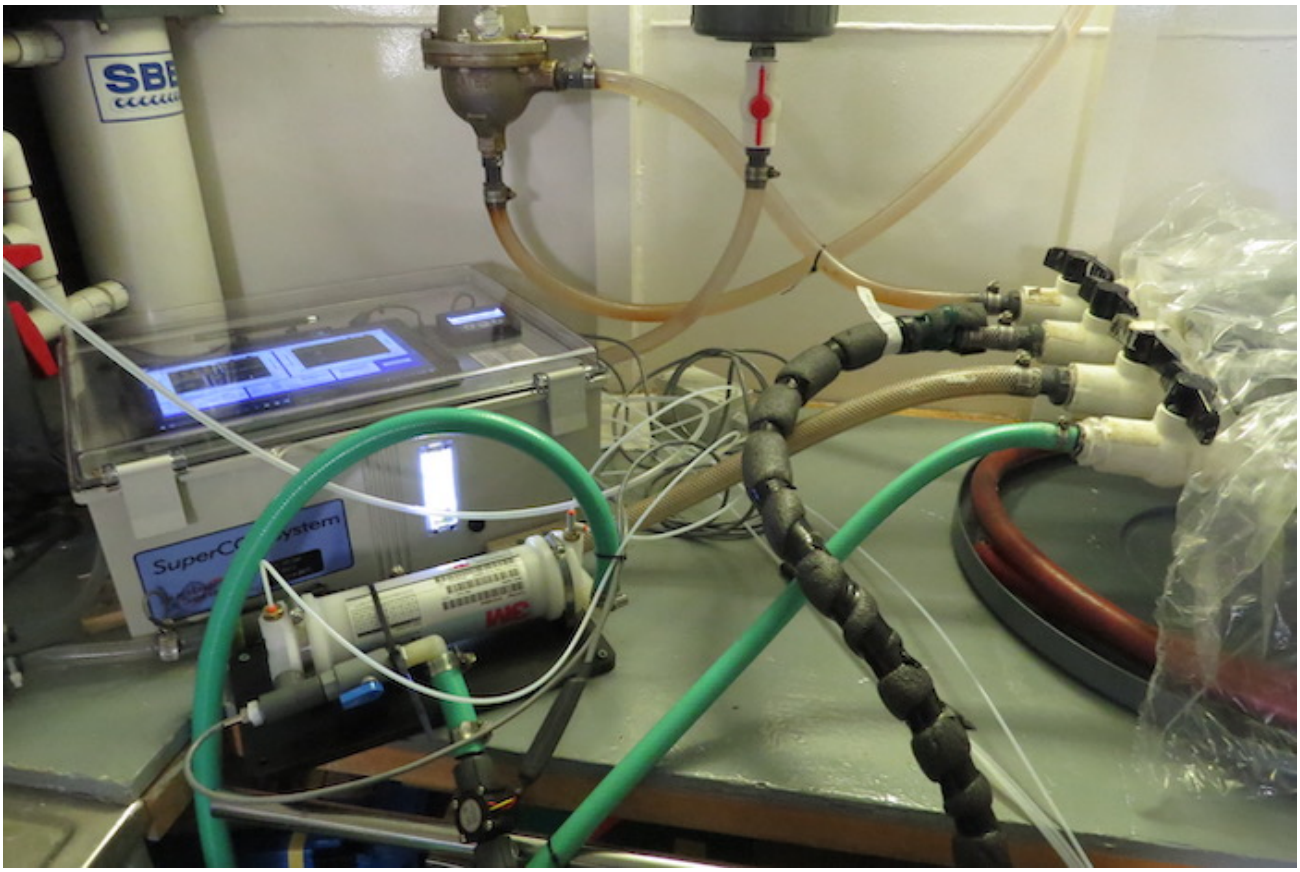

Figure 3: The automated underway sea surface partial pressure of carbon dioxide; system (SUPER- carbon dioxide partial pressure Sunburst Sensors) in the CCGS Louis S. St-Laurent. An infrared analyzer contained in the white box (center left) is used to analyze air equilibrated with seawater in a gas exchanger (left, white cylinder attached to the green hose). Seawater is taken from the ship's seawater line (green hose at right). Photo courtesy of Michael DeGrandpre.

The data that we have collected, spanning 2012 to 2017, show that sea surface pCO_2 in the Canada Basin is significantly higher during years when ice cover is low (DeGrandpre et al. 2020). Based on simple model estimates, the higher levels are driven by uptake of atmospheric CO_2 and heating with only a small counteracting offset from biological production. These processes vary significantly from year to year due to variable periods of open water and winds that regulate gas exchange rates and, to some extent, mixed layer depths. This interannual variability hides any net increase in sea surface pCO_2 that could occur from year to year. However, our data combined with historical data in the same region shows that pCO_2 in the Canada Basin has increased at twice the rate of atmospheric CO_2 (Ouyang et al. 2020). Based on these observations, we can expect that while the Arctic Ocean has been a significant sink for atmospheric CO_2 (up to ~10% of the annual global uptake, Yasunaka et al. 2018), this will diminish in the coming years if ice loss continues. Although ocean acidification was not a focus of this analysis, the loss of ice has rapidly accelerated its pace, which could have important ecological consequences for marine organisms. The NSF Arctic Observing Network program is supporting continuation of our project through 2023 making it possible to observe these expected changes in the Arctic Ocean carbon cycle in the coming years.

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About the Authors

Mike DeGrandpre is a professor in the Department of Chemistry and Biochemistry at the University of Montana. His interests are focused on the development and application of autonomous sensors for studying the carbon cycle in ocean and freshwater ecosystems. He is a relative newcomer to Arctic research having only been studying the Arctic for the past nine years.

Wiley Evans is a research scientist at the Hakai Institute in British Columbia, Canada. His research focuses on net exchanges of carbon dioxide between surface waters and the atmosphere, manifestations of ocean and estuarine acidification, and the drivers of variability in marine carbonate chemistry.

Mary-Louise Timmermans is the Damon Wells Professor of Earth and Planetary Sciences at Yale University. She is a physical oceanographer who explores the relationship between Arctic Ocean circulation and climate, and a Co-PI of the NSF Arctic Observing Network program, the Beaufort Gyre Observing System.

Rick Krishfield is a Senior Research Specialist in the Department of Physical Oceanography at the Woods Hole Oceanographic Institution. His research interests include polar oceanography and biogeochemistry; air-ice-ocean interactions; under-ice submesoscale coherent vortices; and ice floe dynamics, kinematics, and thermodynamics.

Bill Williams is a research scientist and physical oceanographer at the Institute of Ocean Sciences who has led multidisciplinary programs in the Beaufort Sea. He is the principal investigator of the Canada Basin JOIS program and chief scientist aboard the *Louis S. St-Laurent* during the BGOS/JOIS cruises. Among his interests are the study of shelf-break processes.

Mike Steele is a Senior Principal Oceanographer in the Applied Physics Laboratory at the University of Washington. He is interested in the large-scale circulation of sea ice and water in the Arctic Ocean. He uses observations collected by in situ sensors and by satellites, as well as numerical model simulations to investigate time and space variations in sea ice and ocean properties.

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2020 PolarTREC Expeditions Postponed

By: Janet Warburton, Education Project Manager, Arctic Research Consortium of the US (ARCUS); and Judy Fahnestock, PolarTREC Project Coordinator, ARCUS

COVID-19 has had far-reaching impacts, and in April 2020 the decision was made to postpone the deployment of all the 2020 PolarTREC educators to both the Arctic and Antarctica until 2021. Despite the postponed deployments, ARCUS staff have continued working with all the teams with the intent on keeping the cohort engaged, expanding their outreach, and preparing for future deployments. In late March and April, ARCUS staff quickly adapted a face-to-face program orientation to an online version that was delivered over a two-week period. Subsequently, we have hosted a few science talks and we are preparing for additional science and educator virtual presentations in the upcoming months.

In the meantime, we have been highlighting past expeditions on the website and sharing newly created resources from the 2019–2020 program participants. These resources include STEM Experience Reports, photos from the expeditions, videos, and lesson plans that integrate Next Generation Science Standards (NGSS), the Polar Literacy Principals, and data related to the expedition research. Access to these resources is free here (https://www.polartrec.com/resources). The ARCUS team is also posting current events and opportunities on the website, the listserves, and social media platforms.

About the Authors

Janet Warburton is a Project Manager for the PolarTREC program at the Arctic Research Consortium of the United States (ARCUS). Ms. Warburton has managed the education programs at ARCUS since 2000 and in that time has helped over 180 teachers on research expeditions to the Arctic and Antarctic. Ms. Warburton has lived and worked across the state of Alaska and now lives in Anchorage, Alaska.

Judy Fahnestock joined ARCUS in 2008 and is a Project Coordinator for the PolarTREC program. She holds an MSc in entomology from the University of Maryland, and natural resource degrees from the University of Massachusetts and Paul Smith's College.

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Panchanathan Sworn in as 15th Director of NSF

By: Terri Edillon, Communication Specialist, NSF Office of Polar Programs

Sethuraman Panchanathan was sworn in as the 15th Director of the National Science Foundation (NSF) on 18 June 2020. Panchanathan was nominated to this position by President Donald Trump in 2019 and subsequently unanimously confirmed by the US Senate on 18 June 2020. He succeeds France A. Córdova, whose six-year term ended in March 2020. Dr. Kelvin K. Droegemeier was Acting Director at NSF during the interim.

Dr. Panchanathan, known as "Panch", has been a leader in science, engineering, and education for more than three decades. He has a distinguished career in both higher education and government, where he has advocated for knowledge enterprise development—advancing research, innovation, strategic partnerships, entrepreneurship, global development, and economic growth.

Panchanathan previously served as the Executive Vice President of the Arizona State University Knowledge Enterprise, where he was also Chief Research and Innovation Officer. He is also the founder and director of the Center for Cognitive Ubiquitous Computing at ASU (https://health.asu.edu/center-cognitive-ubiquitous-computing). Under his leadership, ASU increased research performance five-fold, earning recognition as the fastest-growing and most innovative research university in the US.

Prior to joining NSF, Panchanathan served on the National Science Board as the chair of the Committee on Strategy and member of the External Engagement and National S&E Policy committees. Additionally, he served on the National Advisory Council on Innovation and Entrepreneurship. He was chair of the Council on Research of the Association of Public and Land-grant Universities and co-chair of the Extreme Innovation Taskforce of the Global Federation of Competitiveness Councils. Arizona Governor Doug Ducey appointed Panchanathan as Senior Advisor for Science and Technology in 2018. He was the editor-in-chief of the IEEE Multimedia Magazine (https://www.ieee.org/membership-catalog/productdetail/showProductDetailPage.html?product=PER325-ELE) and is also an editor/associate editor of several international journals.

Panchanathan's scientific contributions have advanced the areas of human-centered multimedia computing, haptic user interfaces, person-centered tools, and ubiquitous computing technologies for enhancing the

quality of life for individuals with disabilities; machine learning for multimedia applications; medical image processing; and media processor designs. He has published more than 485 papers in refereed journals and conference proceedings, and has mentored more than 150 graduate students, postdocs, research engineers and research scientists, many of whom now occupy leading positions in academia and industry.

For his scientific contributions, Panchanathan has received numerous awards, such as Distinguished Alumnus Awards from several universities, and the Governor's Innovator of the Year for Academia Award for his development of information technology centric assistive and rehabilitative environments to assist blind and visually impaired individuals.

Panchanathan is a fellow of the National Academy of Inventors, where he also served as Vice President for Membership and Strategic Initiatives. He is also a fellow of the American Association for the Advancement of Science, the Canadian Academy of Engineering, the Institute of Electrical and Electronics Engineers, and the Society of Optical Engineering.

For further information on Dr. Panchanathan, please see:
"An optimist takes the helm at the National Science Foundation" (https://www.sciencemag.org/news/2020/07/optimist-takes-helm-national-science-foundation), and
The NSF Science Matters, Leader of AI breakthroughs, champion of innovation and inclusivity (https://beta.nsf.gov/science-matters/leader-ai-breakthroughs-champion-innovation-and-inclusivity).

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NSF's Office of Polar Programs News Update

By: Roberto Delgado, Program Director, Arctic Observing Network Section for Arctic

Update on Arctic Fieldwork for 2020 and Upcoming Office Hours

The primary goals of NSF's Office of Polar Programs remain the health and safety of our program participants and preventing the introduction of COVID-19 to communities or research stations in the Arctic. NSF encourages all researchers to consider postponing Arctic fieldwork. Researchers should work with their managing program officer if considering fieldwork and make alternative arrangements to accomplish the scope of awarded work. Anyone traveling to the field must follow all applicable US federal, national, regional, local, and tribal requirements.

On 5 August 2020, 10:00–11:00 a.m. AKDT / 2:00–3:00 p.m. EDT, the NSF Office of Polar Programs (OPP) will convene a program manager chat about COVID-19 impacts (https://www.nsf.gov/news/special_reports/coronavirus/) to NSF operations. Specifically, the Section for Arctic Sciences (ARC) will offer a virtual office hour to share information with the Arctic research community regarding NSF's current operations. These office hours will also allow the community to ask questions, share concerns, and offer suggestions on how ARC can do more to address the impact of COVID-19 on researchers.

All are welcome to attend this webinar. Register here (https://iarpc.zoom.us/meeting/register/tZYlfuyprTwoE9fyB5hb9rIuWdXkhjtTRr-_).

New Arctic Research Support and Logistics Services Contract

The National Science Foundation (NSF) has awarded Battelle Memorial Institute the Arctic Research Support and Logistics Services contract. On this ten-year, $260 million contract, Battelle and its partners will provide infrastructure and logistics support to academic researchers conducting NSF-funded studies in Alaska, Greenland, Canada, and other Arctic areas. Battelle has assembled a highly skilled team, including three subcontractors with roles on the previous contract. Polar Field Services will provide logistics, operations, facilities, and other support. Ukpeaġvik Iñupiat Corporation (UIC) Science, an Alaska Native village corporation, is uniquely qualified to provide operational support on the North Slope of Alaska, support local hiring, and assisting researchers in working effectively with North Slope communities. The

University of Colorado School of Medicine will provide medical risk management and telemedicine support to researchers and staff working in the field. The Battelle team also includes the expertise of specialty performers. Stantec will apply its Arctic architectural and engineering experience to design and construct needed facilities. The San Diego Supercomputer Center will apply its advanced computation and data integration expertise to support the development of an operations and data gateway that captures information needed by the researchers, the NSF, and stakeholders.

New Staff Join Section for Arctic Sciences

Dr. Colene Haffke has joined OPP's Section for Arctic Sciences and will be working alongside Dr. Marc Stieglitz as Program Director for Arctic Natural Sciences. Dr. Haffke earned her PhD from the University of California, Irvine, in Earth System Science in 2015. She then joined the Office of Polar Programs as a Science Assistant helping OPP with their proposal review and management processes. At the end of her two-year term at NSF, Colene transitioned to the position of Deputy Program Manager and Senior Support Scientist at NASA Headquarters in the Cryospheric Sciences Program in a contract position. In that capacity, she helped manage research awards to study land and sea ice in the Arctic and Antarctica, including research awards supporting NASA's Operation Ice Bridge and ICESat-2 missions. Her duties included managing existing awards, organizing peer review for new award selections, representing Cryospheric Sciences within NASA Headquarters and at external meetings, supervising high school and college interns, and providing guidance on Earth System Science research.
Dr. Erica Hill, from the University of Alaska Southeast, has joined OPP’s Section for Arctic Sciences as the Program Director for the Arctic Social Sciences Program. Dr. Hill earned her PhD in 1999 from the Department of Anthropology, University of New Mexico. She is an archaeologist who has worked on projects throughout the U.S., in Mexico, Peru, and for the last fifteen years, in Alaska. Her work integrates archaeology, biology, environmental sciences, and geography in both Alaska and Chukotka to reconstruct human-animal relations in the past, looking at the intersection of human settlement and marine mammal migration. In addition, she was selected as a 2016-2017 Fulbright-NSF Arctic Scholar to the University of Iceland, where she studied the Viking settlement period, and how humans adjusted to a previously uninhabited landscape.

For Further Information, please see:

- NSF Information Regarding COVID-19 (https://www.nsf.gov/news/special_reports/coronavirus/)
- OPP Science Support and Operational Changes in Response to the COVID-19 Pandemic (https://www.nsf.gov/news/news_summ.jsp?cntn_id=300302&org=OPP)
- Arctic Research Opportunities (NSF 16-595) (https://www.nsf.gov/pubs/2016/nsf16595/nsf16595.pdf) Proposals Accepted ANYTIME
- Developing New Research Collaborations Between Evolutionary Biologists and LTER Scientists

(NSF 20-038) (https://www.nsf.gov/pubs/2020/nsf20038/nsf20038.jsp) Proposals accepted before 1 April 2021

2020 APECS Online Conference Marks Sixth Year of Successful Support of Polar Research Community

By: Jan-Lukas Menzel, Stellenbosch University, South Africa; Carolynn Harris, Dartmouth College, New Hampshire; and Gabriela Roldan, Gateway Antarctica, University of Canterbury in New Zealand

The Association of Polar Early Career Scientists (APECS) (https://www.apecs.is/) is a fast-growing international and interdisciplinary organization for early career researchers (ECRs) working in the polar regions and the wider cryosphere. We have more than 3500+ members representing 73 countries, and 28 National Committees. Our goal is to provide community and high-quality professional development, resources, and opportunities to our members. Everyone with an interest in the cryosphere is invited to join; our members include undergraduate and graduate students, postdoctoral researchers, early faculty members, young professionals, and educators. APECS was founded during the International Polar Year of 2007–2009; in over a decade we have established strategic partnerships with the international polar community and created numerous innovative ways to share research across disciplinary boundaries to reach a wide international audience.

Since 2014, APECS has organized an annual Online International Conference (https://www.apecs.is/news/apecs-news/3855-apecs-international-online-conference-2020.html) to showcase the research of polar ECR and alpine scientists, educators, and communicators. This is an inclusive academic and educational event and there is no abstract submission fee or attendance costs. In 2020, the theme for the 6th Annual Conference was, "Opening Doors: Collaboration Across Knowledge Systems."The conference, convened on 19 May 2020, promoted collaboration and knowledge exchange between multidisciplinary ECRs, science communicators, educators, and local community members in polar and alpine regions. We encouraged collaborative presentations that paired multiple knowledge systems to better understand present and future challenges to polar and alpine regions.

2018 APECS World Summit

The 2020 Conference comprised five sessions, with three keynote addresses and 50 presentations that occurred around the clock, which allowed people in every time zone to attend a live session. The conference was attended live by over 400 people from 46 countries. The keynote speakers inspired ECRs with their addresses; Dr. Jose Xavier emphasized on the need and power of linking scientific research with education and policy making; Dr. Renuka Badhe explored career paths outside academia; and Mia Otokiak highlighted the importance of incorporating traditional knowledge into decision-making. The conference presentations also showcased the importance of engaging the general public in decision-making, and how collaborative approaches are paramount for building consensus in polar matters. A memorable moment was the final presentation by Louise Owen, a visual artist who took the audience on a virtual tour of her painting studio to illustrate the impact that arts can have on society and how it can assist to change perspectives on difficult topics.

The success of the Online Conference is owed to the work of dedicated and enthusiastic volunteers and presenters. The APECS Online Conference Organizing Committee, composed by members of the APECS Council and Executive Committee, worked for over eight months to plan this event and were joined by 80 community members who volunteered their time to chair sessions, provide technical support to presenters, and judge presentations. This event also provided the opportunity for ECR career development, including training in the organization and delivery of an international conference using digital platforms.

Since its inception, the APECS Online Conference has grown in the number of volunteers, speakers, and

public attending the event, as well as in the quality and multifaceted topics of the presentations. The conference's growing success is reflected in the support received from polar organizations to award prizes intended to support ECRs in future professional development. We continue to fine-tune our program to meet the needs and interests of the wider polar and alpine science community. For instance, in 2015 we introduced a 5-minute flash presentation in addition to traditional oral presentations. In the future, we hope to enhance the networking and community-building that occurs in an in-person conference by exploring the extent of the communication platform, such as supporting parallel discussions to the conference, breakout chat rooms, and others.

Please visit the APECS webpage (https://www.apecs.is/) to stay up to date with polar and alpine educational and professional news and events. We invite you to join APECS and be part of this international and multidisciplinary community of polar and alpine early career scientists.

The entire 6th Annual APECS Online International Conference was recorded and is available on the APECS Vimeo Channel (https://vimeo.com/432693779).
A list of abstracts from the 6th APECS International Conference is available here (https://www.apecs.is/events).

About the Authors

Jan-Lukas Menzel (mailto:janukas@bizkaia.eu) is a marine biogeochemist working as a postdoctoral researcher at Stellenbosch University in South Africa. Jan-Lukas has worked from polar to tropical oceans and is specialized in marine biogeochemical cycles. He is an APECS International Council member, the General Secretary of the Spanish Association of Researchers in South Africa, and chair of the 6th APECS International Online Conference Organizing Committee.

Gabriela Roldan (mailto:antarcticidentity@gmail.com) is a social scientist working as a specialist researcher at Gateway Antarctica, University of Canterbury in New Zealand. Gabriela's research interests include Antarctic governance, geopolitics, and polar tourism. She is a dedicated polar educator, developing education programs for schools in her native Argentina and New Zealand. Gabriela has been involved with the APECS leadership since 2016, and represents the association in the Scientific Committee on Antarctic Research's Capacity Building, Education and Training Committee (SCAR CBET). Every summer, Gabriela works as a tour guide in Antarctica.

Carolynn Harris (mailto:carolynn.m.harris@gmail.com) is a PhD student at Dartmouth College in the USA, where she studies geobiology. Carolynn has studied polar regions since 2011 and has contributed to field research in the Arctic and Antarctica. Carolynn is a Vice President of APECS and an Outreach Coordinator for the MOSAiC Expedition—a year-long expedition in the Central Arctic Ocean to study linked climate systems.

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OAR Strategic Plan 2020–2026 Aims to Deliver NOAA's Future

Excerpted from NOAA's OAR Strategy 2020–2026 Plan Document

The Office of Oceanic and Atmospheric Research (OAR) provides the research foundation for understanding the complex systems that support the planet. Working in partnership with other organizational units of the National Oceanic and Atmospheric Administration (NOAA), a bureau of the Department of Commerce, OAR enables better forecasts, earlier warnings for natural disasters, and greater understanding of the Earth system.

In response to OAR's changing operating landscape and the specific factors influencing the environmental science community, OAR has developed five strategies that will help deliver NOAA's future. These strategies support the delivery of OAR's goals and objectives, as well as the advancement of NOAA's four science and technology focus areas: unmanned systems, artificial intelligence, omics, and cloud computing. Established to position OAR for future success, the following five strategies will enable the continued delivery of world-class science and the fulfillment of NOAA's mission.

1. Deliver world-class science together

OAR will operate as an integrated, connected, and aligned organization with a shared vision to deliver world-class products. Leadership will prioritize mission-driven research agendas to drive the delivery of NOAA's future. Recognizing that OAR cannot succeed alone, OAR will collaborate with other NOAA Line Offices, government, academia, nonprofit, industry, and international partners.

2. Develop the next-generation workforce

OAR will grow the leaders of tomorrow. With a focus on diversity and inclusion, OAR will broaden its talent pool to reflect multidisciplinary skill sets. OAR will develop leadership and management skill sets across the workforce to prepare for succession planning and the demands of the future.

3. Prioritize mission-relevant research

OAR will continue to contribute to fulfilling NOAA's vision of resilient ecosystems, communities, and economies. OAR will anticipate future scientific and operational needs, while delivering on current

expectations. To strengthen and scale the relationship between OAR and the other NOAA Line Offices, OAR will leverage communication and process improvement experts, social scientists, and other relevant subject matter experts.

4. Strengthen internal and external collaboration

OAR will leverage the breadth of expertise across OAR, NOAA Line Offices, and external domestic and international communities to improve mission effectiveness. OAR will identify and improve processes and structures that facilitate stronger and more consistent collaboration across the organization, expanding the use of existing tools and forums. OAR will establish a standard approach for partnerships to maximize the value of each relationship, promote a unified message, and accelerate shared objectives.

5. Leverage new technology and advance computing capability

OAR will engage the external community to maintain awareness of new technology and explore innovative ways to acquire and use it. OAR will work across NOAA to develop a requirements-based approach to computing, accelerating its adoption and investing in its infrastructure to advance environmental modeling and achieve next-generation research.

For further details, including goals and objectives of the plan, download the OAR Strategic Plan 2020–2026 (https://research.noaa.gov/Portals/0/Files/OAR%20Strategy%202020-2026.pdf).

For more information about OAR, please visit NOAA Research (https://research.noaa.gov/).

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AGU Strategic Plan for 2020

Excerpted from the AGU Strategic Plan Document

This 2020 strategic plan sets the direction for the American Geophysical Union (AGU) (https://www.agu.org/) and will frame the work of the board, council, staff, and members in the coming years. The plan was developed by members through the leadership of the board and council and approved in 2020. AGU's strategic plan includes a definition, mission, vision, core values, and three strategic goals. The AGU staff, board, council, and broader community will work together to develop an implementation plan over the coming year.

Strategic Goals

Catalyze discovery and solutions to scientific and societal challenges

Discovery science will remain central to AGU's mission while we move more decisively into the realm of solution-based science that addresses emerging global issues. To meet this goal, we will build on our traditional strengths in convening, vetting, and sharing science. We will use our time-tested affiliation models and organizational frameworks to support and reward both discovery and solution-based science. In addition, we will leverage collaborations between the Earth and space science community and a diverse range of groups to move our science from "usable" to "used."

Promote and exemplify an inclusive scientific culture

An inclusive scientific culture is essential for addressing the scientific and societal challenges that face our planet and humanity. Welcoming the participation of underrepresented groups is not just an issue of ethics—it produces better research. In the next decade, AGU will continue to support and exemplify a scientific culture where individuals from all backgrounds are equitably included. We will assure that diversity, inclusion, equity, ethics, and cultural awareness are sewn into the fabric of all our activities.

Partner broadly with other organizations and sectors to address scientific and societal challenges

The scientific and societal challenges facing our planet, humanity, and the environment cannot be addressed solely by the scientific community. Connecting and partnering broadly is essential to achieving our vision of a thriving, sustainable, and equitable future. In the coming decade, we aim to make our partnerships broader, more collaborative, sustainable, and consequential. Toward this end, we commit to cultivating a culture of trust in evidence-based science, to co-creating knowledge with communities that use that knowledge, and to helping AGU members effectively address societal challenges through solution-based science, science policy, communication, and outreach.

For further details, please download the 2020 AGU Strategic Plan (https://news.agu.org/files/2020/05/Final_AGU_Strategic_Plan_2020_Final.pdf)

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ARCUS Highlights

By Helen Wiggins, Executive Director, ARCUS

As we all settle into the "new abnormal" of the COVID-19 world, ARCUS staff, Board, members, and collaborators have been working hard to advance Arctic research and education. As Dave Cairns, ARCUS Board President (https://www.arcus.org/witness-the-arctic/2020/1/article/30959) wrote, our role at ARCUS is fundamentally about community. We've been putting into practice our skills and long-term experience with (virtual) community-building in many ways. Here are a few highlights:

Polar Technology Conference (PTC) – The PTC was held in March (our last event held in-person this year) and was live-streamed. The goal of the PTC was to link experts in polar science and technology development to address problems unique to the polar region. Meeting products, including abstracts, recorded presentations, and posters are available on the conference webpage (https://www.arcus.org/logistics/2020-polar-technology).

Navigating the New Arctic (NNA) Investigators Virtual Meeting – The first Navigating the New Arctic (NNA) Investigators Meeting was held virtually in April. The goals of the meeting were to accelerate the rate of dissemination of ideas among researchers, build an intellectual research core to address NNA challenges, and enable enhanced research collaborations. Meeting resources, including lighting talk videos from the NNA projects and meeting notes, are available on the meeting webpage (https://www.arcus.org/nna/meetings/2020).

Sea Ice Prediction Network – SIPN2 activities (https://www.arcus.org/sipn) have continued uninterrupted; we are in the midst of the 2020 season of the Sea Ice Outlook, which provides an open process for the research community to share sea ice predictions and ideas. We have just released the July Outlook report (https://www.arcus.org/sipn/sea-ice-outlook/2020/july), and are planning upcoming webinars (https://www.arcus.org/sipn/meetings/webinars/july-2020).

PolarTREC – Teachers will not be going into the field this year, but other work is ongoing, including publishing a rich collection of new polar learning resources (https://www.polartrec.com/resources/search) on topics from Weddell seal pups to the impact of increasing ocean temperatures on marine life.

Engaging Rural and Alaska Native Undergraduates & Youth in Arctic STEM
Several "Listen and Learn" sessions (https://www.arcus.org/meetings/2020/arctic-youth-stem) earlier this

year were held to discuss the gaps, challenges, and opportunities to support the representation of rural and Alaska Native youth, undergraduates, and/or graduates in STEM education and career pathways. Additional input to these topics will be gathered via virtual means or through an in-person workshop in 2021.

Sea Ice for Walrus Outlook (SIWO): SIWO provides weekly reports (https://www.arcus.org/siwo) with weather and wind forecasts, ice conditions, and expert local observations for Alaska Native subsistence hunters, coastal communities, and others interested in sea ice and walrus. The 2020 season wrapped up in June, with participation from observers in seven villages: Shishmaref, Wales, Nome, Brevig Mission/Port Clarence, Gambell, Savoonga, and Diomede.

In addition to the above, we've also been holding our Arctic Research Seminars (https://www.arcus.org/research-seminar-series/archive) (and we are always looking for new speakers and topics!); the Arctic Indigenous Scholar program (https://www.arcus.org/indigenous-scholars/2020); gearing up for the AGU Fall Meeting (where we'll offer virtual meeting support for Arctic research and education groups—more announced soon); planning for a virtual citizen science conference for 2021; finishing up a process to update ARCUS' strategic goals and objectives, and a lot more.

You can find updates on all our activities through the ARCUS website (https://www.arcus.org/) or by contacting me at helen@arcus.org. You can join the ARCUS community by becoming an individual or organizational member here (https://www.arcus.org/arcus/member-information). Follow and engage with us on twitter: @ArcticResearch.

Welcome New and Renewing ARCUS Member Organizations

(Since September 2019)

- ABR, Inc. (http://www.abrinc.com/)
- Arizona State University (https://www.asu.edu/)
- Cold Climate Housing Research Center (https://www.arcus.org/witness-the-arctic/2020/1/www.cchrc.org)
- Kawerak, Inc. (https://kawerak.org/)
- Norwegian Polar Institute (https://kawerak.org/)
- Russian State Hydrometeorological University (http://www.rshu.ru/eng/);
- Rutgers University (https://www.rutgers.edu/)
- Sitka Sound Science Center (https://sitkascience.org/)
- Smithsonian Arctic Studies Center (https://naturalhistory.si.edu/research/anthropology/programs/arctic-studies-center)
- The Fletcher School of Law & Diplomacy (Tufts University) (https://fletcher.tufts.edu/)
- The George Washington University (https://www.gwu.edu/)
- University of Northern British Columbia (https://www.unbc.ca/)
- Woods Hole Oceanographic Institution (https://www.whoi.edu/)

Welcome New and Renewing ARCUS Individual Members

(Since September 2019)

Levi Appel, Elizabeth Boyer, Howard Burrows, David Cairns, Guangqing Chi, Jim Costopulos, Peppi Croft, Carolin Curtis, Craig Dorman, Helena Edelson, Howard Epstein, Kaare Erickson, Celso Ferreira, Craig Fleener, Ayumi Fujisaki-Manome, Adrian Gall, Mary Gibbons, Karen Grosskreutz, Liu Hailong, Joyanne Hamilton, Jasper Hardesty, Matt Heavner, Victoria Herrmann, Karl Heummrich, Diane Hirshberg, Robert Holister, Larry Hurst, Suresh Immaneni, Mark Ivey, Christopher Ivins, Randy Kee, Madison Kluge, Timo Koivurova, Millie Lambert, Lorene Lynn, Gisele M.Arruda, Bruce Main, Ann McElvein, Tyler Miesse, Ryan Naylor, Karl Newyear, Daniel Otto, Prasad Padalkar, Kimberly Rand, Julie Raymond-Yakoubian, Cheryl Rosa, Savanna Schaffer, Jennifer Schmidt, Asma Shethwala Yu, Temenuzhka Spasova, Yvette Spitz, Talor Stone, Evelyn Strombom, Audrey Taylor, Steven Vavrus, Pips Veazey, Danielle Verna, Austen Whitney, Juliana Wilczynski, Erik Wilkman, MIng Xiao, Nadya Yanakieva, Leonid Yurganov, Laura Zanotti, and Jason Zottola.

A Note from the Board President

The role of ARCUS in Arctic research is about community. My introduction to Arctic research happened in the early 2000's when I started a research project in northern Sweden that sought to understand the role of reindeer in structuring the treeline north of the Arctic Circle in Fennoscandia. I approached that work in the only way that I knew at the time—alone or with the help of one or two close colleagues. I quickly was introduced to ArcticInfo (https://www.arcus.org/arctic-info), the listserve curated by ARCUS, that serves as the lifeblood of communication among the Arctic research community. It was like being thrown in a river after having been wading in some lazy tributary. There was so much activity in the Arctic! People were talking about common issues! People were gathering at meetings! All of this sounds elementary to those of us who have spent long parts of our careers benefiting from the Arctic research community, but for me it was eye-opening. I came from a background where I attended disciplinary conferences and even there, my work was only of interest to a small subset of people. More distressing within my own discipline was that much of the work that was conducted by my colleagues, while interesting, really didn't inform my own work. The Arctic research community was different because people knew each other, talked to each other, and read each other's work. Arctic researchers actually looked at the Arctic as a system and understood that the complex interactions within it influenced their own area of study.

ARCUS performs a critical role in this community. Our goal is to facilitate the kind of communication that drew me into the Arctic Research Community more than twenty years ago. ArcticInfo is still providing that linkage among us. Witness the Arctic (https://www.arcus.org/witness-the-arctic) and Witness Community Highlights (https://www.arcus.org/witness-the-arctic/community-highlights) focus on work done at specific centers of Arctic research. PolarTREC (https://www.polartrec.com/) introduces Arctic science to teachers and potential future Arctic scholars. ARCUS is a premier organizer of meetings (both in-person and virtual) among our community. ARCUS has grown with our community over the past twenty years, but at its core, it is still about people and creating an environment where knowledge can be shared, innovation can be celebrated, and traditions maintained. I'm proud to be the President of the ARCUS Board of Directors and I am looking forward to giving back to an organization that has meant so much to me (and I hope many of you!) throughout my career.

David Cairns
President, ARCUS Board of Directors

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Meet the Board - Pips Veazey

Pips Veazey was elected to fill a vacated position on the Board of Directors in December 2018 and her term expires in 2020.

Pips Veazey serves as the Principal Investigator and Project Director of the Alaska NSF Established Program to Stimulate Competitive Research, Fire and Ice: Navigating Variability in Boreal Wildfire Regimes and Subarctic Coastal Ecosystems. Funded by the National Science Foundation and the State of Alaska, Fire and Ice is a statewide project involving dozens of researchers, staff, and students examining short-term ecological change in critical Alaskan ecosystems. She is the lead and co-creator of Vis Space, a high-resolution visual environment designed to promote conversations about complex problems, develop creative solutions, and enhance team development, and also works at the Alaska Center for Energy and Power as the Deputy Director of Strategic Development.

She currently serves on two boards that represent her primary research interests: Arctic science and team research. In addition to being an ARCUS board member, she is the secretary and a founding board member of the International Network of the Science of Team Science (INSciTS). Defining the competencies for team science leadership and management was a focal point for her dissertation and she continues to work with large interdisciplinary research teams around the country to help them maximize their effectiveness by developing collaboration plans and facilitating discussions around teamwork.

Her formal education includes a BA in Psychology from Bates College in Maine, an MS in Oceanography from the University of Alaska Fairbanks (UAF) and an interdisciplinary doctorate in Team Science Leadership, also from UAF. She loves sailing, has traveled extensively doing research on Antarctic sea ice, worked as a driller for the Greenland Ice Sheet Project, and fished commercially on a halibut schooner in the Bering Sea.

Supporting the critical work that ARCUS does with the Arctic research community has been a highlight of the last two years. We have an opportunity to work in a truly interdependent manner across the Arctic and collaborate with one another to find a vision for life that is sustainable and informed by people of the Arctic and our research communities. ARCUS is a key player in this quest and has the expertise and vision to bring people together to develop a shared understanding of our collective future.

Meet the Board - Cheryl Rosa

Cheryl Rosa is was elected to fill a vacated position on the Board of Directors in February 2020 and her term expires in 2020.

Dr. Cheryl Rosa is Deputy Director and Anchorage-based Alaska Director of the United States Arctic Research Commission (USARC) (https://www.arctic.gov/), an independent federal agency of presidential appointees that advises the White House and Congress on Arctic research matters, and works with executive branch agencies to establish and execute a national Arctic research plan. The Commission also facilitates cooperation with local and state governments and recommends means for developing international scientific cooperation in the Arctic.

Dr. Rosa is trained as a Wildlife Veterinarian and Wildlife Biologist and has worked with subsistence communities on the North Slope and in the Russian Far East on a wide range of studies involving wildlife health and zoonotic disease, marine mammal stranding response, subsistence food safety, and oil spill/offshore discharge research. She serves on numerous federal and non-federal boards and steering committees and has served as a member of the International Whaling Commission's Scientific Committee (https://iwc.int/scmain).

Presently, she is involved in running USARC's Alaska Rural Water and Sanitation Working Group (https://www.arctic.gov/water-san/index.html), the Arctic Renewable Energy Working Group.

She received a PhD in Biology from the University of Alaska Fairbanks, a Doctorate in Veterinary Medicine from Tufts University, and a BS in Animal Science and a BS in Zoology from the University of Massachusetts Amherst.

Dr. Rosa's interest in serving on the ARCUS Board relates to her involvement in several of the the organization's mission goals: networking, communications, education, and research community support and facilitation of Arctic research. In 2018, Dr. Rosa co-authored the updated version of NSF's Principles for Conducting Research in the Arctic (https://www.nsf.gov/geo/opp/arctic/conduct.jsp). Through her work and experience at the US Arctic Research Commission (USARC), specifically via the USARC working groups (https://www.arctic.gov/working_groups.html), she has brought researchers, program managers, community members, and other stakeholders together to network, plan, communicate, and work towards common goals. She hopes her experience in creating these efficiencies and links will be a "value added" to ARCUS.

Published by the Arctic Research Consortium of the United States • 3535 College Road - Suite 101 • Fairbanks, AK 99709 • info@arcus.org

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ARCUS is a nonprofit organization consisting of institutions organized and operated for educational, professional, or scientific purposes. Established by its member institutions in 1988 with the primary mission of strengthening arctic research, ARCUS activities are funded through member dues and contracts and grants with federal and private entities.

Witness the Arctic is published periodically by ARCUS. Any opinions, findings, conclusions, or recommendations expressed in this publication do not necessarily reflect the views of NSF.

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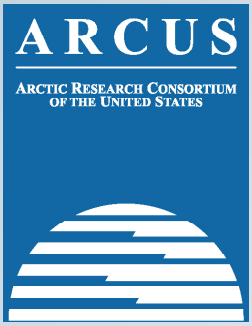

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