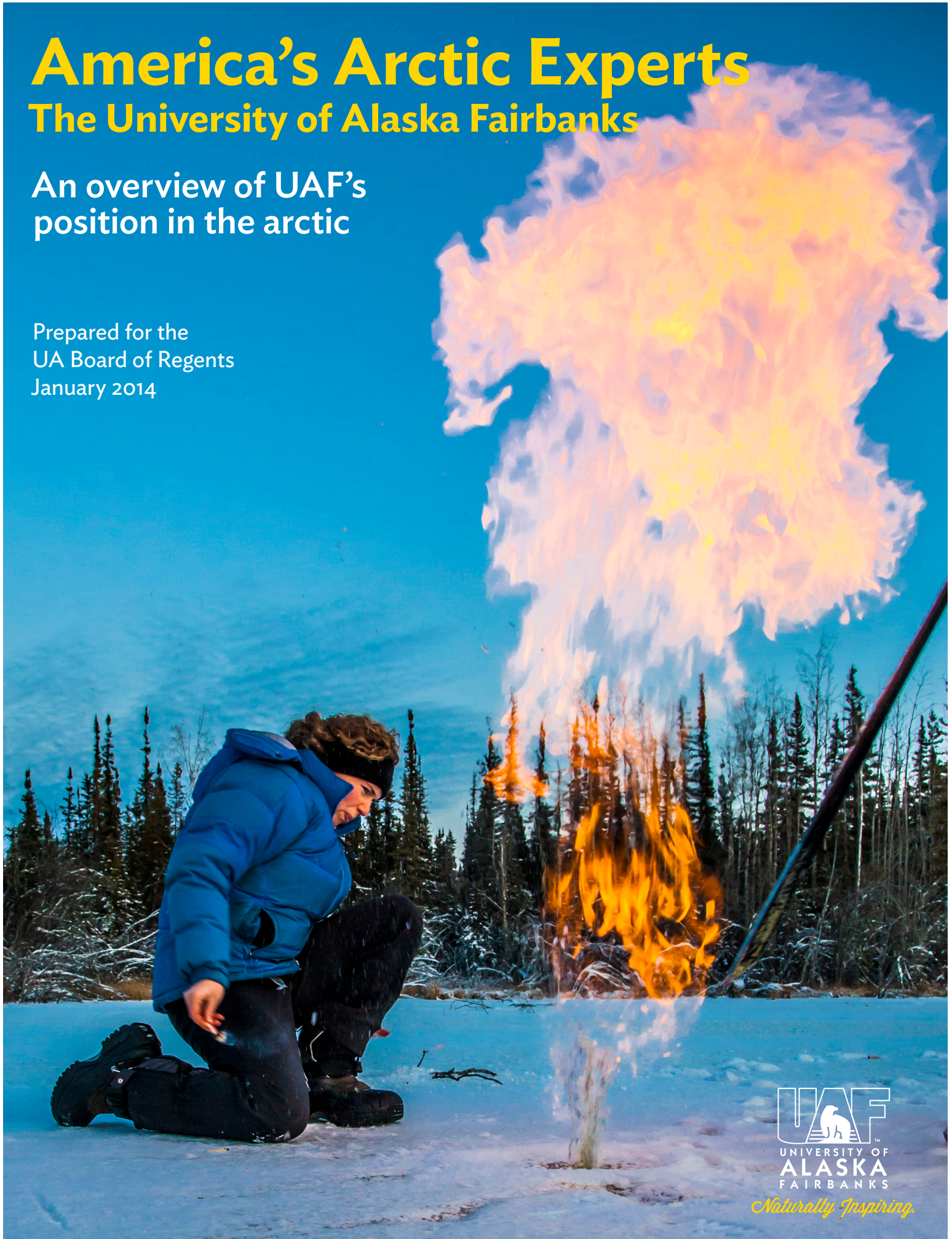


America's Arctic Experts

The University of Alaska Fairbanks

An overview of UAF's
position in the arctic

Prepared for the
UA Board of Regents
January 2014



Naturally Inspiring.



Letter from Chancellor Brian Rogers

The University of Alaska Fairbanks is proud to be America's arctic university. Our institution has been immersed in arctic education, research and policy discussions for decades, and we have breadth and depth of expertise in this area. With rapid climate changes taking place, heightened interest in arctic issues is occurring on national and international levels. There are tremendous opportunities as well as tremendous challenges facing the North. This short report gives an overview of UAF's strengths in this area and some examples of how our expertise might be leveraged by others. We look forward to continuing to work with many others during these changing times in the Arctic.



Why the Arctic matters

Historically, outside interest in the Arctic was largely driven by the curious and adventurous. Some hoped to learn more about the geography and to discover a shorter trade route between Europe and Asia. Today's market moguls see the Arctic as the destination, not a distraction. The rich resources of the high-northern latitudes have been discovered, and northern Alaska, Canada, and Siberia have been developed to extract valuable oil and gas, gold, diamonds, zinc and other minerals. Resource extraction, especially of oil and gas but also minerals, is a mainstay for Alaska.

The USGS reports that 25 percent of undiscovered hydrocarbon resources lie in the Arctic. With the recent environmental changes, commercial national and global interest in the region has intensified dramatically. Concerns about jurisdiction and national security are emerging, and as the climate changes and our research-driven technologies improve, the Arctic's resources will only increase in economic and geopolitical importance.

The Arctic supports a narrow range of important ecosystems, with limited but critical biodiversity. Culturally and economically important species are relied on by arctic communities and valued by global societies. Alaska's commercial fishery harvest makes up about 60 percent of the U.S. total. Important fisheries, forestry and other biological resources sustain our state and our nation.

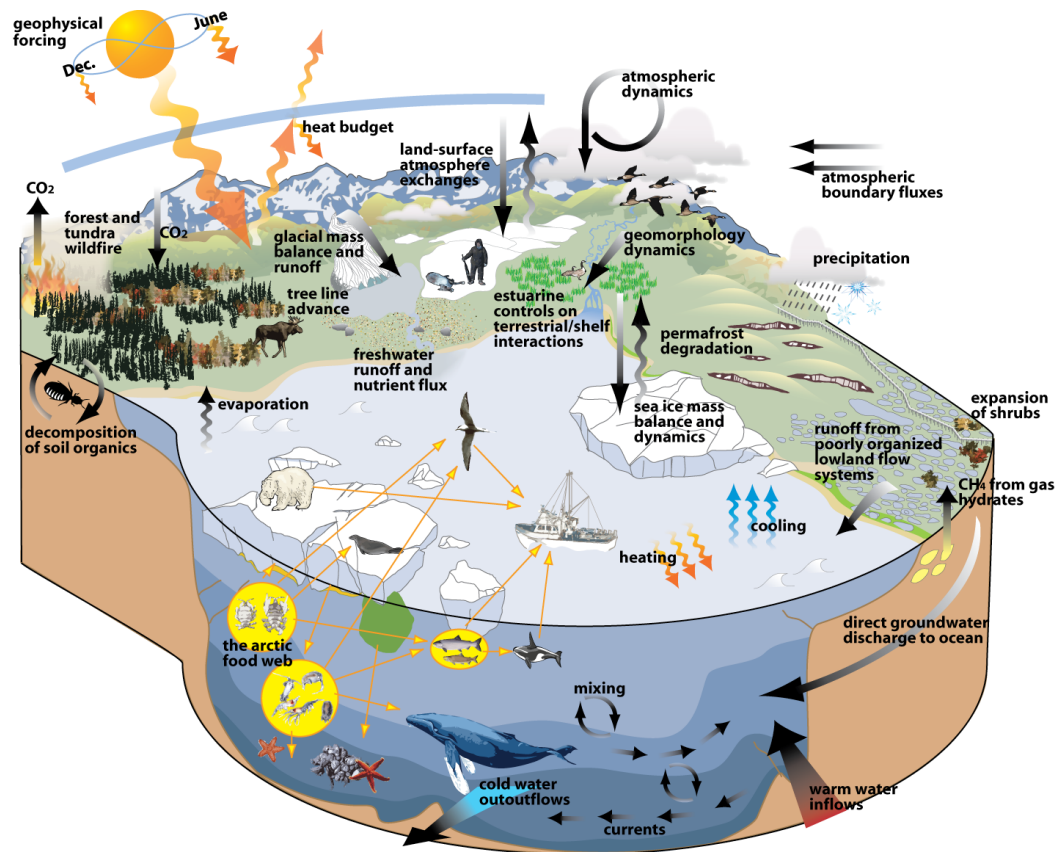
The Arctic helps regulate climate. We must learn more about atmospheric, oceanic and terrestrial processes and their interaction to help us understand and deal with global climate change. Especially in the Arctic, many of these links have feedback effects, greatly magnifying their total impact upon the climate system.

The consequences of climatic warming in high latitudes include longer snow- and ice-free periods, triggering further impacts on climate and weather patterns of the mid-latitudes. There are numerous other arctic processes with potential global consequences. The tremendous reservoirs of methane and other greenhouse gas releases from the Arctic (land and subsea), for example, could exceed the total amount of greenhouse gases in the atmosphere now. In addition, about one-half of global sea level rise in recent years was due to melting glaciers, especially those in the Arctic.

As the North warms, marine shipping, ecotourism and fiber-optic communications cable are increasing access to the Arctic. With them come the challenges of oil spills, contaminants and other consequences of globalization. Further, geopolitics has elevated the Arctic from the historical position of a pantry to a concerned stakeholder, in terms of security and of access to and ownership of resources. Policy decisions for maintaining smooth international relations must be based upon the best available science and research.

Equally importantly, the Arctic has served as a human home and crossroads for 10,000 years. Arctic communities have both adapted over millennia and grown recently as a result of resource development.

Resource extraction, environmental change, geopolitics and cultural heritage are all interwoven into the complex arctic system. Research conducted at the University of Alaska Fairbanks and other institutions has revealed critically important processes and properties that are shaping the evolution of the Arctic and its growing links with the rest of the world.



Why universities matter

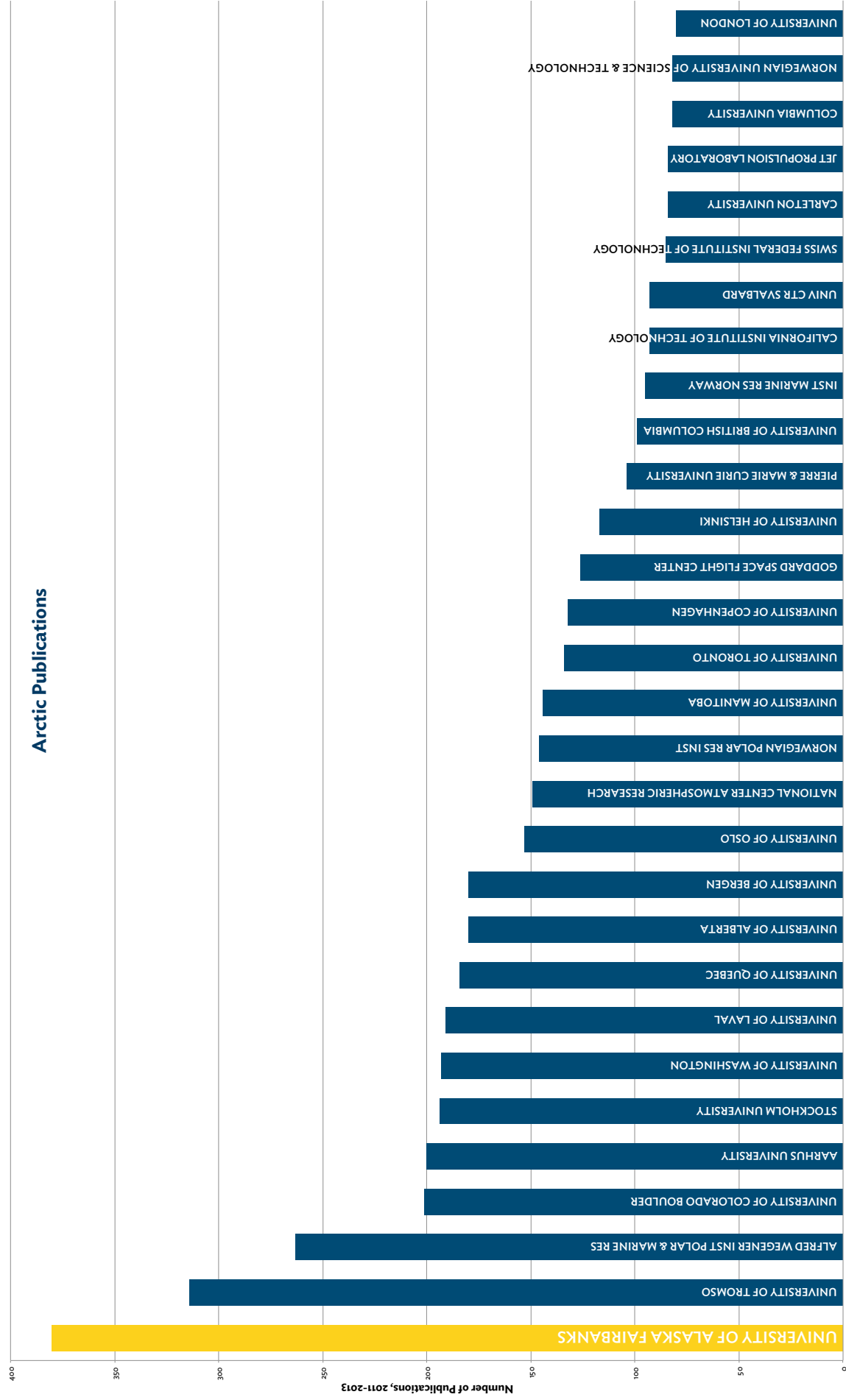
Like the Arctic, universities sit at a crossroads, one where experts, students and the public meet to understand the past, study the present and prepare for the future.

- Research — for policy makers, industries, government
- Education — preparing students to work and lead
- Conferences and public outreach — for researchers, policy makers, economic development groups and civic organizations, and the general public

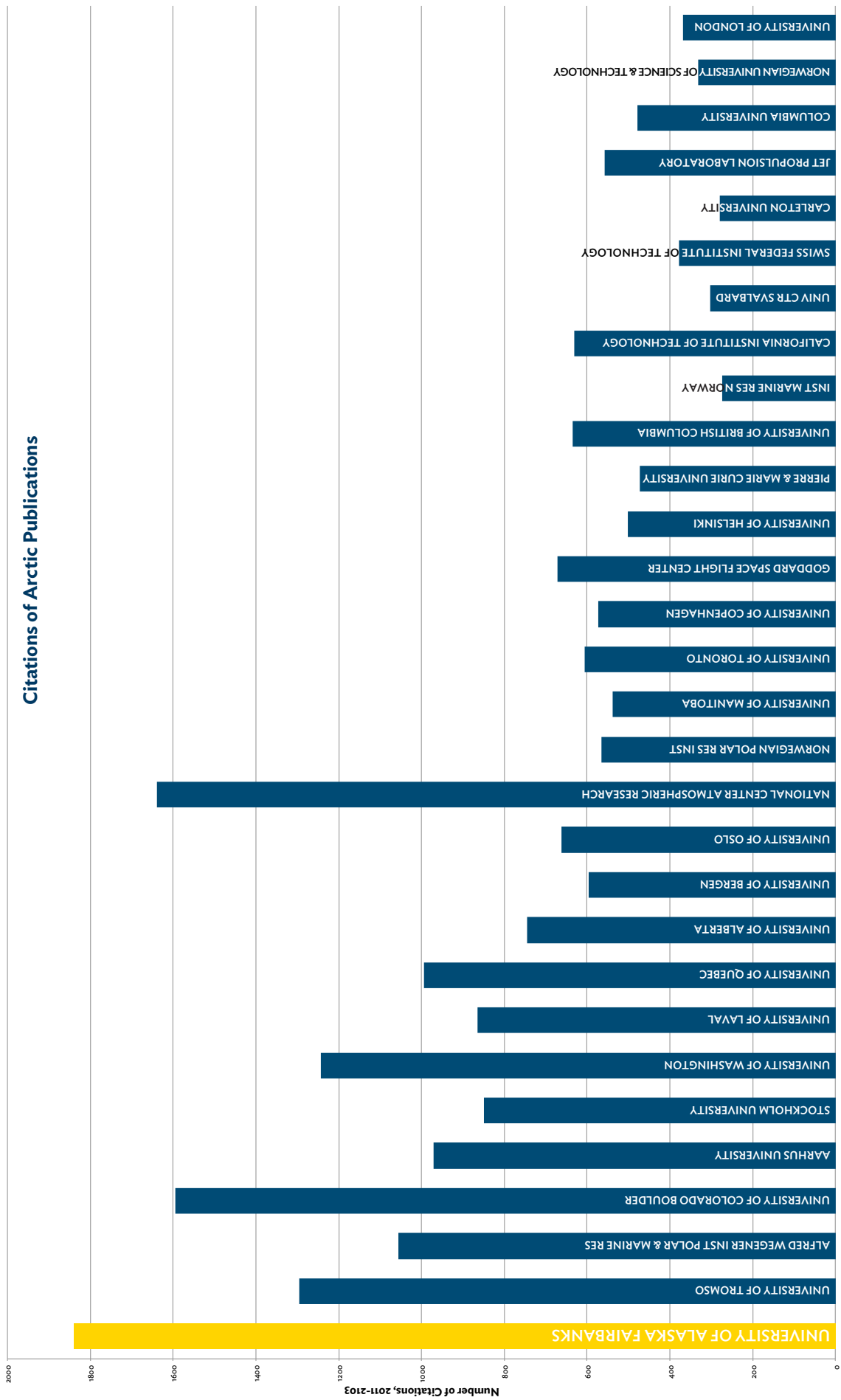
UAF: The leading university in arctic research

UAF is the world leader in arctic research, in terms of publications and citations of those publications. Publications are a commonly used indicator of research productivity, as well as being the primary means of communicating research findings to the scientific community.

As the two following charts show, UAF led all other single institutions (universities, research institutes and government laboratories) in the number of publications. UAF also leads all single institutions in citations to its publications, with more than 1,800 in the past three years. UAF not only publishes more arctic research than other institutions, but that research is used by other scientists to inform their work.



Source: *Web of Science* (Thompson Reuters), search word “Arctic,” science and social sciences indexes, 2011–2013, all languages and publication types



Source: *Web of Science* (Thompson Reuters), search word “Arctic,” science and social sciences indexes, 2011–2013, all languages and publication types

Leading the research

UAF is a world leader in research on, in and about the Arctic. UAF's scientists and students delve deeply into a vast array of issues and fields that directly affect the North and that indirectly but substantially affect the rest of the world. More than 40 research centers are involved in basic and applied research. What follows are overviews of just six of them.

International Arctic Research Center

The International Arctic Research Center fosters Arctic research to help the nation and the international community understand, prepare for and adapt to the pan-Arctic impacts of climate change. Prediction of Arctic change to enable sound planning necessitates system-scale understanding. Preparing society to be able to adapt to environmental changes in the Arctic requires sophisticated process studies, rigorous numerical analyses, and development and validation of reliable models. The IARC team works as collaborators and partners across disciplines and across borders toward an understanding of the Arctic as an integrated whole. In addition to its core research scientists, IARC has seven specialized research centers:

- **Scenarios Network for Alaska & Arctic Planning (SNAP)** explores possible futures based on the best scientific knowledge and data available to help people plan in a changing climate;
- **Geographic Information Network of Alaska (GINA)** organizes and shares its diverse Alaska geospatial data and its technological capabilities;
- **Cooperative Institute for Alaska Research (CIFAR)** conducts ecosystem and environmental research related to Alaska and its associated Arctic regions;
- **Center for Global Change and Arctic System Research (CGC)** develops, coordinates, and implements interdisciplinary research and education related to the role of the Arctic and sub-Arctic in the Earth system;
- **Alaska Climate Science Center (AK CSC)** works to provide scientific information, tools, and techniques that parties interested in land, water, wildlife and cultural resources can use to anticipate, monitor and adapt to climate change;
- **Alaska Fire Science Consortium (AFSC)** works to strengthen the link between fire science research and on-the-ground application;
- **Alaska Center for Climate Assessment & Policy (ACCAP)** works to inform realistic community plans and climate adaptation strategies using the most scientifically accurate, reliable and up-to-date information.



Participants of the IARC-led multinational Arctic expedition aboard the Russian icebreaker *Kapitan Dranitsyn*, including a science party and a summer school cohort of graduate students from all around the world. Photo courtesy of the NABOS project.

Geophysical Institute

The U.S. Congress established the Geophysical Institute just after the end of World War II for research in the subarctic. Over time, the GI expanded to cover multiple disciplines associated with natural hazards in the subarctic, developing seven research groups:

1. **Volcanology** — More than 50 active volcanos in Alaska, two of which are active at any time
2. **Seismology** — Alaska has about 35,000 earthquakes a year, including three of the 10 largest ever recorded.
3. **Snow, ice and permafrost** — Alaska has more permafrost than twice the landmass of Texas and has more than 100,000 glaciers.
4. **Tectonics and sedimentation** — Studies the Earth's structure and geological history. Graduates from this program are highly sought after by oil companies.
5. **Atmospheric science** — Extremely cold weather winter in the Interior creates complex weather situations, and polar vortex circulates in aerosols from great distances.
6. **Remote sensing** — Alaska's complexity, diversity and vast size requires observations using aircraft, unmanned aircraft and satellites.
7. **Space physics and aeronomy** — The subarctic is an excellent location to study the aurora.

Many government agencies jointly operate with GI on programs for monitoring hazards examining data.

1. **Alaska Volcano Observatory** — U.S. Geological Survey, Alaska Division of Geological and Geophysical Surveys
2. **Alaska Earthquake Center** — USGS, Alaska DGGS
3. **Alaska Satellite Facility** — 11 of 14 orbits from polar satellites pass over the GI; NASA has multiple satellite dishes to downlink, process and distribute data
4. **Poker Flat Research Range** — Largest sounding rocket range in the world, and the only one owned by a university. NASA and the Department of Defense launch rockets to study the aurora.
5. **Alaska Center for Unmanned Aircraft System Integration** — This new center recently won a Federal Aviation Administration award to create a test range for unmanned aircraft to help them establish policy and test applications for unmanned aircraft.



A faint glow of northern lights appears in the eastern sky beyond the newly installed 11-antenna, operated by UAF's Alaska Satellite Facility. The dish will gather data from spacecraft about land surface, biosphere, atmosphere, oceans and outer space. It's one of several strategically placed antennas that can capture data from polar-orbiting satellites several times per day.

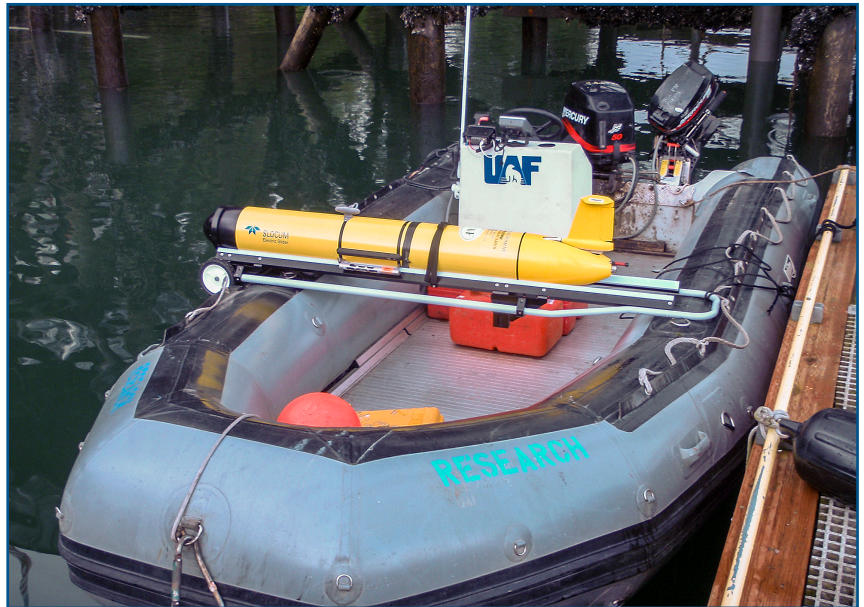
- 6. Wilson Infrasound Observatory** — Multiple DOD agencies sponsor the GI to build, deploy and operate infrasound sensors (below human range) for Nuclear Test Ban Treaty compliance.
- 7. Arctic Region Supercomputing Center** — Established by DOD but now owned and operated by UAF. Provides high-performance computation and data storage in the Arctic.

Throughout the years the combination of research and operations has allowed the GI to develop and transition models, sensors and algorithms into government and industry including models to track the clouds of ash from volcanoes, aerosols from Russia and China, air quality in the Interior and many more. The GI has developed and deployed a wide range of sensors to study volcanoes, earthquakes, infrasound, aurora and small sensors for unmanned aircraft and small satellites. The GI has multiple partnerships with industry wanting data from polar satellites and opportunities to fly unmanned aircraft.

School of Fisheries and Ocean Sciences

The School of Fisheries and Ocean Sciences has been engaged in cutting-edge arctic marine and freshwater science along the coastlines of Alaska since the 1960s. At any given time, SFOS is involved in or leading more than 300 externally funded research grants, most of those with ties to Alaska and the Arctic.

- a. Research leadership.** SFOS faculty are recognized nationally and internationally for their excellence in Arctic research. Over the last decade, SFOS faculty have served as U.S. delegates on Arctic Council committees and on the marine working group of the U.N.-sponsored, humanitarian Inter-Agency Standing Committee, coordinating arctic research on a pan-Arctic scale. SFOS faculty lead multi-institutional national research efforts such as the Bering Sea Ecosystem Studies, the Transboundary Fish Trade Study, the Russian-American Long-Term Census of the Arctic and the Arctic Ice Study.
- b. Marine resources.** SFOS researchers are assessing the Bering, Chukchi, Beaufort Seas and the Canadian Basin, crucial to developing plans for marine living resources as well as preparing for oil and gas in Alaska's arctic waters. SFOS studies the ecology of subsistence species such as salmon, arctic char, ice seals, walrus and bowhead whales, and develops new techniques to detect oil-related stress in endangered bird species like eiders. These studies are critical to develop scenarios in the context of climate change and ocean acidification. These efforts are entirely maintained through external financial support from many funding sources, including industry and the federal government.
- c. Operational oceanography.** SFOS helps gather real-time oceanographic data used by decision makers. Hourly surface current regimes for the Chukchi and Beaufort Sea are available through remotely powered high frequency radar stations, and underwater gliders can provide regional information on ocean physics and biological patterns from algae to whales. Such information is critical in case of oil spills or emergencies, and for planning and conducting research.



Autonomous underwater vehicle glider ready to be deployed. Photo courtesy of Peter Winsor, associate professor of marine science, SFOS.

- d. **Sikuliaq.** The new, ice-capable Research Vessel *Sikuliaq* will begin science missions in the latter part of 2014. It is operated by SFOS, funded by the National Science Foundation, and based in Seward, Alaska. It provides unprecedented research platform for scientists around the world for conducting science in ice-covered waters.
- e. **Educating the next generation of scientists and decision makers.** Undergraduate and graduate students can study a breadth of topics on arctic issues — from oceanography to marine mammals. School academic programs will play a strong role in the UArctic over the next five years.



R/V *Sikuliaq* breaking its first ice in Marinette, Wisc., December 2013. Photo courtesy of the Institute of Marine Science.

Alaska Native Language Center, Alaska Native Language Program and Applied Linguistics

The Alaska Native Language Center is internationally known as the major center in the U.S. for the study of Eskimo and northern Athabaskan languages. The center strives to raise public awareness of the rapid loss of languages worldwide, particularly in the North. Of Alaska's twenty Native languages, only Central Yup'ik is still spoken by children as their first language, and only about half the Yup'ik population speaks the Native language.

ANLC researchers have developed an archival collection of more than 15,000 items, comprising virtually everything written in or about Alaska Native languages, with copies of most of the earliest linguistic documentation. Housed in UAF's Rasmuson Library, the archive is available to Alaskans and to language scholars worldwide. With much of the collection digitized and available online, public use is increasing.

ANLC publishes its research in story collections, dictionaries, grammars and research papers, and many primary reference and teaching materials are distributed by the center. UAF offers courses in Alaska Native languages, leading to certificates and degrees that help qualify individuals to teach the languages. Staff members provide materials for bilingual teachers as well as other language workers and language learners throughout the state, help social scientists and others whose work involves Native languages, and provide consulting and training services to teachers, school districts and state agencies involved in bilingual education. The UAF applied linguistics program is partnering with the Lower Kuskokwim and Lower Yukon School Districts to create



Athabaskan elder Eliza Jones, from the village of Koyukuk (right), and her daughter Susan Paskvan, Native language coordinator for the Yukon-Koyukuk School District, teach an elementary school lesson in the Koyukon Athabaskan language. They also co-teach for the UAF Alaska Native Language Program. Photo courtesy of the Alaska Native Heritage Center.

materials for Yup'ik-medium schools, provide training through degree programs for teachers and aides, implement lesson plans and evaluate their impact on student learning outcomes, and develop local leadership and control in language programming.

Researchers also strive to make language learning materials widely available to the public. For example, the Tanacross Learner's Dictionary is available as an app, and the CD *Inupiaq Phrases and Conversations* is also being developed as an app. The new edition of the *Indigenous Peoples and Languages of Alaska* map includes Native names for villages and major geographic features. The second edition of the Yup'ik Eskimo dictionary is a heavily used resource for that language, and the North Slope Inupiaq dictionary will soon be published by UA Press. Researchers, authors, news outlets, and members of the public frequently contact ANLC for information on Native languages and linguistics in general. Faculty make public presentations in a variety of venues, including schools, adult classes, and statewide, national and international conferences.

Institute of Arctic Biology

Institute of Arctic Biology scientists, students and staff — along with state, national and international collaborators — conduct research in wildlife, climate change, ecology and ecosystems, physiology, genetics, biomedicine, human health and evolutionary biology. IAB supports research facilities and programs including:

- **Toolik Field Station.** TFS is a world-renowned, year-round arctic climate change research station in the northern foothills of the Brooks Range. Much of what is known about arctic terrestrial and aquatic ecosystems has emerged from long-term TFS research projects. In 2012, TFS supported 394 scientists from 109 institutions. TFS partnerships and collaborations include the National Ecological Observatory Network; the Arctic Long-Term Ecological Research program; the International Tundra Experiment; the Scandinavian Information Retrieval Network; and the International Network for Terrestrial Research and Monitoring in the Arctic.



Toolik Field Station.

- **Center for Alaska Native Health Research.** CANHR scientists investigate weight, nutrition and health in Alaska Native peoples from genetic, dietary and cultural-behavioral perspectives in collaboration with tribal groups and health care agencies to frame research questions, develop methodologies and procedures, and to interpret and apply data to prevention and treatment.

- **Bonanza Creek Long-Term Ecological Research program.** Scientists document the major controls over forest dynamics, biogeochemistry and their interactions in the face of a changing climate and changing disturbance regimes to improve understanding of the long-term consequences for Alaska's boreal forest.
- **Alaska Cooperative Fish and Wildlife Research Unit.** Part of a nationwide cooperative program that includes the U.S. Geological Survey, Alaska Department of Fish and Game, U.S. Fish and Wildlife Service and the Wildlife Management Institute. USGS-salaried scientists hold regular faculty appointments, conduct applied research in natural resources, provide graduate student education and training, and offer technical assistance to cooperators.

Recent highlights by IAB scientists:

- IAB scientists created an ecosystem model showing how climate warming and increased fire make carbon storage in boreal forests in Interior Alaska particularly vulnerable.
- A traditional foods-based fisheries-to-schools program connects K–12 schools with independently or Native-owned and -operated fish businesses. The program aims to increase food security and improve dietary quality in Alaska communities while also strengthening local and regional fish markets.
- Results from a 10-year data analysis reveals declining arctic sea ice and warming temperatures are resulting in changes to vegetation in arctic coastal areas, with some areas greening, some browning.
- Genetic research showed that climate change threatens genetic diversity and the future of the world's caribou. Although Alaska's herds are currently faring better than Canada's, they face challenges.

Institute of Northern Engineering

Research at the Institute of Northern Engineering spans the engineering disciplines, offering expertise and practical solutions for energy production and hydrology as well as infrastructure, mining and petroleum development. INE has five formal centers:

- Alaska Center for Energy and Power
- Alaska University Transportation Center
- Mineral Industry Research Laboratory
- Petroleum Development Laboratory
- Water and Environmental Research Center

INE's applied research and development increases the competitiveness of Alaska's businesses and industries. Federal and state agencies and private businesses go to INE to meet their basic and applied engineering research needs for cold, remote or isolated environments; INE researchers are increasingly being drawn into global-scale projects such as mining and energy distribution.



Research Assistant Professor Anna Liljedahl sets up a weather station near Jarvis Glacier, about 35 miles south of Delta Junction.

Two examples of applied research conducted in INE include a project for improving flood forecasting methods for Alaska communities and the Pilgrim Hot Springs geothermal research and development project.

Hydrologic research is vital for designing and maintaining infrastructure in remote and often understudied regions. A Jarvis Creek project conducted by the Water and Environmental Research Center investigates the relationship between glaciers, frozen ground, groundwater and river hydrology, and how the area's water cycle affects infrastructure in surrounding communities. The goal of the study is to refine flooding forecasts for communities and road infrastructure located in flood-prone areas.

Pilgrim Hot Springs, near Nome, is the hottest water resource in the state not directly associated with a volcanic system. The Alaska Center for Energy and Power and its private and government partners have determined that this resource could sustain approximately 2 MW of power generation. The power could be used locally or delivered to Nome or a nearby mining operation via a transmission line. Additional research will determine if the springs are capable of producing 2–5 MW of additional power. The project could help turn a geothermal resource into a power-producing reality in a region where economic development is starved for power.



Researchers at the Pilgrim Hot Springs project near Nome. Photo courtesy of the Alaska Center for Energy and Power.

Arctic education

UAF is home to a tremendous range of arctic research and to more than 430 Arctic-related courses. It is also home to more than 10,000 students. Many of them become part of UAF's research endeavors, including fieldwork, lab investigations and data analysis. The Undergraduate Research and Scholarly Activity program helps students identify activities they can turn into formal research, creative or scholarly projects. Projects can be focused on a range of subjects, including art, math and remote sensing. Graduate students are also heavily involved in projects across the research spectrum. UArctic (formerly the University of the Arctic) offers opportunities to undergraduates and graduates with its thematic networks, each one of which focuses on a specific field, e.g., permafrost, northern food security, extractive industries, and coastal and marine issues.

“Not only is UAF the most northern university in America, it also has many programs and degrees that no other university offers. For example, UAF has degrees specific to arctic development and research that are second to none. Its backyard doubles as a research haven for most science degrees offered; within a short distance you can find arctic tundra, snow-capped mountains, rivers and interesting geological sites. There is no other university that has access to this kind of terrain, making UAF stand out in comparison to other schools. UAF is also one of the few universities in America that is a Land, Sea and Space Grant institution. There are no other institutions that can compete with the quality and diversity that UAF has to offer. In my opinion, UAF is the world's arctic university.”
— Brent Carey, UAF civil engineering major

Convening experts to inform and influence the future Arctic

Academic exploration and sharing knowledge are at the core of higher education. Universities throughout the world engage in rigorous debate, inviting discussion on existing paradigms, new ideas and emerging issues that affect the global community. UAF has emerged as a leader in the global discussion regarding the Arctic, exploring issues related to physical, economic, social and political change that pose both challenges and opportunities.

Combining internationally recognized expertise in the Arctic, leveraging existing international networks, and embracing the long-standing role of universities as an honest broker, UAF serves Alaska, the U.S., arctic communities, and the world by facilitating, coordinating and informing the ever increasing discussions about the changing Arctic. Two such examples of UAF's capacity to convene experts to address Arctic-related issues are:

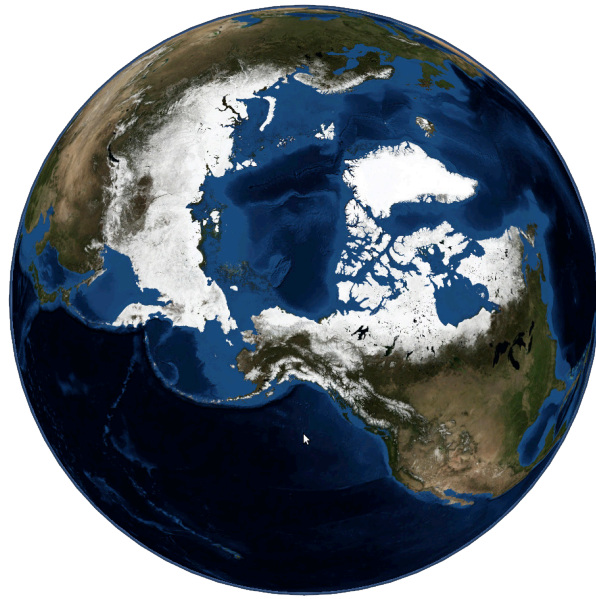
1. **UArctic** An important forum that UAF helps to drive is the UArctic, a network of over 150 universities and organizations that are invested and actively engaged in arctic research and academic programs and that brings significant capacity and shared expertise to arctic issues. UAF leaders fulfill important roles in this organization: chair of the governing board, vice president of finance, dean of the graduate program, co-director of the policy institute, and council member. UAF plays an active role in leading several UArctic institutes and thematic networks, a structure used to organize education and research collaborations. The UArctic's Institute for Applied Circumpolar Policy convenes experts from many fields of study, industry, NGO's, and diplomats to explore issues impacting Northern communities and interested nation-states and has published widely used reports on such timely issues as Arctic marine shipping, health and social welfare in the Arctic, US-European cooperation in the Arctic, and Arctic cooperation. In addition, UArctic provides important undergraduate and graduate student research opportunities through student exchanges and field school programs.
2. **Polar security and domain awareness**
 - A.) The Center for the Study of Security, Hazards, Response and Preparedness brings together academic instructors, scientific researchers and professional practitioners in an effort dedicated to serving first responders. The fusion of disciplines and approaches will provide responders, planners and policymakers with immediately practical innovations that build operational capabilities and domain awareness across Alaska and the region. C-SSHRP is working on a number of significant initiatives, including the development of the Arctic Domain Security Orientation for US NORTHCOM and JTF Alaska. The center will host the 2014 arctic collaborative workshop and tabletop exercise with the eight arctic nations.
 - B.) The University of Alaska is the arctic partner in the U.S. Department of Homeland Security-supported Center for Island, Maritime, and Extreme Environment Security. CIMES is dedicated to improving DHS operational capabilities to perform disaster response, environmental protection, search and rescue, and border security missions in the Arctic. The UAF contribution is devoted to applied research, which generates innovative technologies to better predict sea ice behavior, ocean currents and navigation hazards in the Arctic. The practical consequence of this research approach is to integrate the data from these new technologies to produce a simple, user-defined, common operating picture for first responders that is reliable, durable, accurate, rapid and cost-effective. By improving arctic capabilities, CIMES facilitates the development and stewardship of arctic resources, as well as the safety of arctic navigation, as sea ice recedes in response to global climate change.

UAF's research centers	Established
Advanced Instrument Laboratory (AIL)	2000
Agricultural and Forestry Experiment Station (AFES)	1931
Alaska Center for Climate Assessment & Policy	2006
Alaska Center for Energy and Power	2008
Alaska Climate Science Center (AK CSC)	2011
Alaska Earthquake Information Center	1986
Alaska Native Language Center	1972
Alaska EPSCoR	2000
Alaska Quaternary Center	1993
Alaska Satellite Facility	1991
Alaska Sea Grant	1970
Alaska University Transportation Center (AUTC)	2006
Alaska Volcano Observatory (AVO)	1988
Large Animal Research Station	1979
Arctic Region Super Computing Center	1993
Bonanza Creek Long Term Ecological Research	1987
Center for Alaska Native Health Research	2001
Center for Global Change	1990
Cooperative Institute for Alaska Research (CIFAR)	2008
National Center for Island, Maritime, and Extreme Environment Security - CIMES	2008
Geographic Information Network of Alaska (GINA)	2001
Geophysical Institute	1946
Georgeson Botanical Garden	1989
IDeA Network of Biomedical Research Excellence (INBRE)	1960
Institute of Arctic Biology	1963
Institute of Marine Science	1960
Institute of Northern Engineering	1981
International Arctic Research Center (IARC)	1999
Kasitsna Bay Laboratory	1957
Mineral Industry Research Laboratory (MIRL)	1963
Natural Resources and Agricultural Sciences	1935
Office of Intellectual Property and Commercialization (OIPC)	2011
Petroleum Development Laboratory	1984
Poker Flat Research Range	1968
Pollock Conservation Cooperative Research Center	2000
Scenarios Network for Alaska and Arctic Planning	2007
Alaska Climate Research Center	1992
Coastal Marine Institute (CMI)	1978
College of Natural Science & Mathematics Division of Research (CDR)	2001
Toolik Lake Field Station	1975
University of Alaska Museum of the North	1929
Water and Environmental Research Center (WERC)	1965

North to the future

Alaska is on the cusp of a new gold rush, but the riches aren't only gold, they aren't only in the ground and they aren't only in Alaska. The riches spill across borders, as do the risks of getting them. Arctic nations are already asserting claims of sovereignty, many of them contested. Even where national domains are established, access to resources, the effects of extracting or using them, and the results of human activity will invariably involve more than one nation, and sometimes several cultural and political groups.

When it purchased Alaska in 1867, the United States became an arctic nation. It is paramount the U.S. maintain an active role in promoting its interests in this rapidly changing region. The University of Alaska Fairbanks is the country's leading academic and research institution on arctic issues. It is uniquely positioned to help the U.S. develop the knowledge and applications necessary to protect and promote the economic, social and environmental well-being of Alaska and the North.



Front cover: Research associate professor Katey Walter Anthony ignites trapped methane from under the ice in a pond on the Fairbanks campus. Anthony is working with graduate students and other researchers to document the effects of large amounts of the greenhouse gas being released into the atmosphere each year. Back cover: Professor Andy Seitz, second from left, is joined by undergraduate and graduate students on a fisheries research project on the Yukon River near Eagle.

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