

US Arctic Research Commission report to AIACC

John Farrell
Executive Director
11/9/16



Seattle 8/16/16



Credit: US Arctic Research Commission

USARC's duties:

- Develop national Arctic research policy
- Facilitate Arctic research cooperation (w/IARPC)
- Review federal Arctic research programs
- Recommend improvements for data sharing
- Facilitate cooperation w/Alaska & internationally

Commissioners



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Hon. Fran Ulmer

US Arctic Research Commission
Anchorage, Alaska



David Benton

Fisheries Consultant
Juneau, Alaska



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Kotzebue, Alaska



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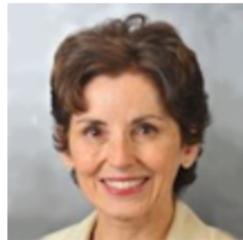
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National Science Foundation
Arlington, Virginia

Edward Itta

USARC Commissioner
1945-2016



Arctic Circle
Oct. 2013
Reykjavik

UNITED STATES ARCTIC RESEARCH COMMISSION



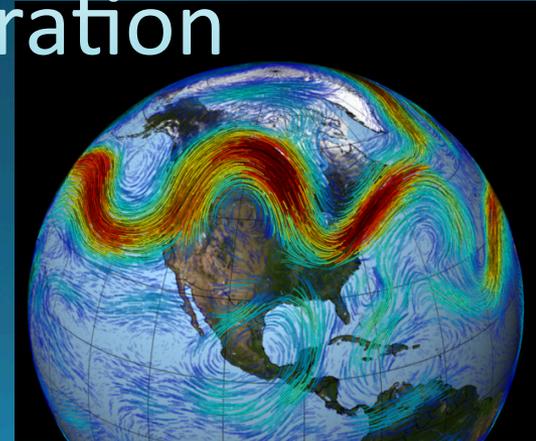
2017-2018 report to be released Dec. 15, 2016

REPORT ON THE **Goals and Objectives** for
Arctic Research 2015–2016

FOR THE US ARCTIC RESEARCH PROGRAM PLAN

6 priority goals for Arctic research

1. Environmental Change
2. Human Health
3. Natural Resources (renewable energy)
4. The “Built Environment”
5. Cultures and Community Resilience
6. International Scientific Cooperation



“Built environment”: Port of Nome



Federal Arctic research policy/process



USARC set goals



IARPC adopts,
creates & executes
research plan



White House:
OMB/OSTP
coordinate &
review budget



“The Commission shall, after submission of the President's annual budget request, review the request and report to Congress on adherence to the Plan.”



Congress:
Authorizes &
Appropriates

ARCTIC RESEARCH PLAN:
FY2013-2017

**New plan, 2017-2021
to be released Dec. 2016**

Executive Office of the President
National Science and Technology Council

6th Symposium on the Impacts of an Ice-Diminishing Arctic on Naval and Maritime Operations



July 14-16, 2015
Naval Heritage Center at the U.S. Navy Memorial
Washington, DC

Co-hosted by the U.S. National Ice Center and the U.S. Arctic Research Commission



Please mark your calendars for the **6th Symposium on the Impacts of an Ice-Diminishing Arctic on Naval and Maritime Operations**, co-hosted by the U.S. National Ice Center (NIC) and the U.S. Arctic Research Commission (USARC), July 14-16, 2015 at the Naval Heritage Center, 701 Pennsylvania Ave., NW, Was

2015 Symposium Information

- [Symposium Home](#)
- [Program and Agenda](#)

Background

- ▶ Co-hosted by the U.S. National Ice Center (NIC) and the U.S. Arctic Research Commission (USARC)
- ▶ A biennial focus on strategic issues in an "ice-free Arctic"
- ▶ Symposia in 2007, 2009, 2011 and 2013 expanded the discussion to include other nations and the impacts on their maritime operations in an "ice-diminishing Arctic" such as commercial transportation, oil and gas exploration and exploitation, fisheries, and oceanographic research. The continuing reduction in Arctic sea ice extent remains a central focus.

7th Symposium, July 18-20, 2017 Washington, DC

ES

NOAA, Navy, USCG, USARC, Canadian Coast Guard, and other U.S. and international government representatives; special invitations to be sent to the Alaska Congressional Delegation and from representatives from other Arctic nations.

- ▶ The 2015 symposium program will be influenced by relevant Arctic-related events since the 2013 symposium, including:
 - ▶ 2015's peak winter Arctic sea ice extent

- [The U.S. National Ice Center \(NIC\)](#)
- [The U.S. Arctic Research Commission \(USARC\)](#)

Additional information:
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ARCTIC UPDATE



THE US ARCTIC RESEARCH COMMISSION DAILY EMAIL NEWSLETTER

February 15, 2013

Today's Events

The House is expected to complete consideration federal pay legislation and consider a resolution condemning North Korea for testing a nuclear device. The Senate is not in session.

Media



Murkowski Urges Secretary of State Kerry to Maintain American Leadership, Momentum in Arctic. Senator Lisa Murkowski reached out to new Secretary of State John Kerry, asking him to prioritize America's Arctic engagement as his predecessor did, with Murkowski becoming the [first U.S. Senator to participate](#) in the Arctic Parliamentarians' conference in 2011 with former Secretary of State Clinton - making a high-profile national commitment to Arctic issues. In a letter to the Department of State, Senator Murkowski call upon expanded U.S. leadership in a region currently at a crossroads - with Arctic waters opening and international policies being created. [Alaska Business Monthly](#)

Aberdeen Scientists Trawl Arctic Seabed for Antibiotics as World Faces 'Apocalypse.' The desperate search for new life-saving [antibiotics](#) has reached new lows, as scientists dredge the Arctic and Antarctic seabed to try to find new medications. Dame Sally Davies, England's [chief medical](#) officer, recently warned that the world is facing an "apocalyptic scenario" as we are fast running out of antibiotics. The over-use and reliance on antibiotics has meant that many diseases are now resistant to them. [International Business Times](#)

Arctic Ice Loss Causing Big Changes.

Last year's record loss of Arctic sea ice is already causing big changes for plants and animals that scientists are just starting to understand, according to newly published research. "It takes only one season to change how a deepsea system functions," said Antje Boetius, who was the head scientist aboard a German research vessel that sailed through the High Arctic last summer. That voyage of the Polar-stern, owned by



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newsletter

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USARC...in summary

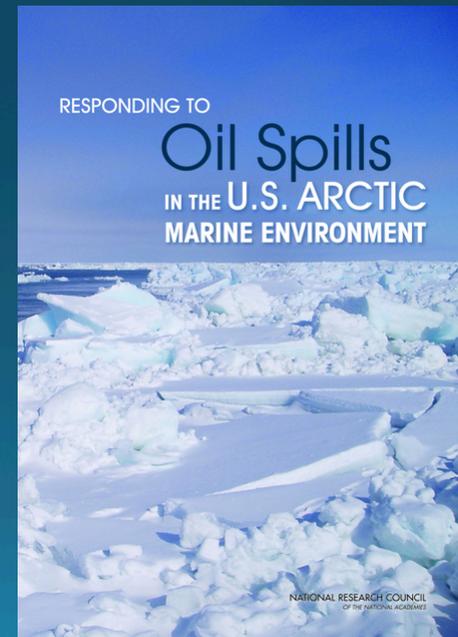
- Independent agency, small but nimble
- Empowered to advise POTUS & Congress
- “Honest broker”
- Commissioners...Arctic advocates
- Create opportunities for collaboration
- Find and nurture champions
- Communicate and engage broadly
- “Connected”

Arctic policy & coordination chronology

- Arctic Research & Policy Act (1984, amended 1990)
—created U.S. Arctic Research Commission and Interagency Arctic Research Policy Commission
- (8-nation) Arctic Council (1996)
- NSPD-66 / HSPD-25: Arctic Region Policy (Jan 2009)
- National Ocean Council (July 2010)
- Arctic Search & Rescue Agreement (Jan 2013)
- Interagency Report on Arctic Management (Mar 2013)
- Nat'l Strategy for the Arctic Region (May 2013)
- Nat'l Strategy Implementation Plan (Jan 2014)
- Nat'l Strategy Implementation Report (Jan 2015)
- EO on Enhancing Coordination of National Efforts in the Arctic (Jan 2015). Created Arctic Executive Steer. Comm.

What has AESC accomplished?

- Help shape & reconcile priorities
- Promote coordinated implementation & evaluation
- Improve coherence of engagement with the State of Alaska and Alaska Native communities
- Support U.S. Chairmanship of the Arctic Council



USCG...positive developments

- USCG established 8-nation Arctic Coastguard Forum
- DHS is supporting *Healy* missions
- DHS supports Arctic Domain Awareness Center (\$17M)
- USCGA's "Center for Arctic Strategy and Policy"

US Commitments (GLACIER)

- Icebreakers
- Safe Marine Operations & Transportation
- Scientific Monitoring & Observing
- Advancing Climate Resilience
- Clean Energy Solutions
- New Climate Data & Tools
- Enhancing Collaboration



1st White House Arctic Science Ministerial

September 28, 2016

25 Countries





SUPPORTING ARCTIC SCIENCE

A SUMMARY OF THE WHITE HOUSE ARCTIC SCIENCE MINISTERIAL MEETING

SEPTEMBER 28, 2016 – WASHINGTON, DC

MATERIALS DEVELOPED BY THE ARCTIC EXECUTIVE STEERING COMMITTEE AND PARTICIPANTS IN THE ARCTIC SCIENCE MINISTERIAL, HOSTED BY THE WHITE HOUSE OFFICE OF SCIENCE AND TECHNOLOGY POLICY, WERE COMPILED AND EDITED BY THE US ARCTIC RESEARCH COMMISSION





2-pagers of each nation's Arctic research



United States of America

Points of Contact

- Arctic Executive Steering Committee (AESC: <http://arctic.gov/aesc>)
- Interagency Arctic Research Policy Committee (IARPC: <http://iarpccollaborations.org>)
- US Arctic Research Commission (USARC: <http://arctic.gov>)

Arctic Research Policy and Goals

US policy is to "enhance scientific monitoring and research into local, regional, and global environmental issues"; "involve the Arctic's indigenous communities"; and promote "international scientific collaboration" (National Security Presidential Directive 66: Arctic Region Policy). This policy is implemented by the interagency Arctic Executive Steering Committee (AESC), the

Interagency Arctic Research Policy Committee (IARPC), and the US Arctic Research Commission (USARC). US Arctic research policy is designed to increase understanding of the Arctic through scientific research and indigenous knowledge in support of science-informed decision-making.

Arctic Research Funders

National Aeronautics and Space Administration. NASA's Earth Science Program is a comprehensive, global approach to Earth System Science. For the Arctic, NASA's research, observations, and modeling focus on understanding Arctic systems as well as the Arctic's role in the global system, and include the study of Arctic oceans, atmosphere, ice, permafrost, carbon, and ecosystems. Through this Earth System Science approach, NASA's work contributes to a better understanding of Arctic change, impacts, and resilience.

National Science Foundation. The National Science Foundation (NSF) Arctic Sciences Section supports research to better understand physical, biological, geological, chemical, social and cultural processes in the Arctic, and the interactions and connections of oceanic, terrestrial, atmospheric, biological, social, cultural, and economic systems.

National Oceanic and Atmospheric Administration. The National Oceanic and Atmospheric Administration (NOAA) supports research to: (1) forecast sea ice; (2) strengthen foundational science to understand and detect climate and ecosystem changes; (3) improve weather and water forecasts and warnings; (4) enhance national and international partnerships; (5) improve stewardship and management of ocean and coastal resources; and (6) advance resilient and healthy communities and economies.

Department of the Interior, through its many Bureaus, conducts scientific research to inform the Nation's resource management policies and improve the stewardship of the Arctic region through focused work on marine, wetlands, terrestrial, and freshwater ecosystems, ground and surface water resources, and mineral and energy resources.

Department of Energy. The Department of Energy (DOE) Office of Science advances climate change research to provide knowledge of effects of greenhouse gas emissions on Earth's climate and biosphere. In the Arctic, DOE supports modeling and prediction, including the Regional Arctic System Model; atmospheric system research, including Atmospheric Radiation Measurement facilities on the North Slope of Alaska; and the Next Generation Ecosystem Experiment-Arctic (NGEE - see below).

Department of Defense. In the Department of Defense, research to better understand and predict the physical environment of the Arctic Ocean at a variety of time and space scales via new technologies and integrated models is supported by the Office of Naval Research. The US Army Corps of Engineers Cold Regions Research and Engineering Laboratory also provides scientific and engineering support.

Department of Health and Human Services. In the Department of Health and Human Services, the National Institutes of Health and the Centers for Disease Control and Prevention support research to improve human health in the Arctic.

Major Arctic Research Initiatives

SEARCH. The Study of Environmental Arctic Change (SEARCH) improves understanding, prediction and consequences of the changing cryosphere.

Operation IceBridge. NASA's Operation IceBridge uses detailed airborne remote sensing measurements to produce yearly, multi-instrument, 3D views of Arctic (and Antarctic) ice sheets, ice shelves and sea ice, until lidar satellite measurements resume.

OMG. NASA's Oceans Melting Greenland experiment observes changing water temperatures, elevation, gravity and bathymetry on Greenland's continental shelf to understand how warm ocean waters are melting Greenland ice.

ABOVE. NASA's Arctic Boreal Vulnerability Experiment will improve ecosystem models using surface-, aircraft-, and satellite-based observations to increase understanding of the vulnerability and resilience of Arctic and boreal ecosystems and society to environmental change.

NGEE. The goal of the DOE NGEE project is to improve climate model predictions through advanced understanding of coupled processes in Arctic terrestrial ecosystems.

RUSALCA. The Russian-American Long-term Census of the Arctic (RUSALCA)—a partnership among NOAA, the Russian Academy of Sciences and Roshydromet—focuses on gathering long-term observations for understanding the causes and consequences of the reduction in sea ice cover in the northern Bering Sea and the Chukchi Sea in the Arctic Ocean.



(ABOVE) RV Sikuligo, operated by the University of Alaska Fairbanks, during ice trials in April 2015 in the Bering Sea. Photo by Roger Topp

(RIGHT) Aurora borealis above Toolik Field Station, Alaska. Photo by Justin Johnson

Arctic Research Infrastructure

VESSELS

The USA has three vessels capable of supporting a wide range of Arctic research activities: marine geology and geophysics; physical and biological oceanography; marine ecology and ecosystems; sea ice geophysics; atmospheric science. Plans for a new heavy icebreaker are in progress.

- R/V *Sikuligo* is a new global class, ice-capable research vessel operated by the University of Alaska Fairbanks with support from NSF.
- The US Coast Guard operates the USCGC *Healy*, a medium icebreaker, and the USCGC *Polar Star*, a heavy icebreaker.

FIELD STATIONS

- Toolik Field Station (TFS) on the North Slope of Alaska is operated by the University of Alaska Fairbanks with support from NSF. TFS hosts a wide range of biological and physical sciences research, and is also the location of the NSF Arctic Long-term Ecological Research (LTER) site.
- Summit Station, atop the Greenland Ice Sheet, is managed by NSF in cooperation with the Government of Greenland. The station supports meteorology, atmospheric chemistry, glaciology and astrophysics research, and long-term observations. NOAA operates Arctic atmosphere monitoring observatories at Summit Station and Barrow, Alaska.

SATELLITES

The USA operates many polar-orbiting satellites, and shares satellite missions with other countries, to remotely sense the Arctic environment and for other research purposes. Chief among the instruments and missions are:

- MODIS (Moderate Resolution Imaging Spectroradiometer on the NASA Terra and Aqua satellites)
- ICESat-2 (Ice, Cloud, and Land Elevation Satellite-2; NASA, scheduled for launch in 2018)
- VIIRS (Visible Infrared Imaging Radiometer Suite on the Suomi NPP satellite; NASA, NOAA & DOD)
- SSMIS (Special Sensor Microwave Imager/Sounder on the DMSP satellite; DOD & NOAA)
- Landsat-8 (USGS, NASA)
- GRACE (Gravity Recovery and Climate Experiment, NASA with Germany)
- NISAR (NASA-ISRO Synthetic Aperture Radar; NASA with India, scheduled for launch in 2021)

