

NEWS

Diminishing Sea Ice in the Arctic Presents Challenges and Opportunities

PAGES 270–271

With ice diminishing in the Arctic—and with a nearly ice-free summer Arctic Ocean predicted by 2050 if not sooner—the dramatic and fast-paced changes in the region present significant challenges as well as opportunities, according to experts and politicians at the 5th Symposium on the Impacts of an Ice-Diminishing Arctic on Naval and Marine Operations, held in Washington, D. C., on 16–18 July. Among the challenges addressed at the symposium—which was hosted by the U.S. National Ice Center and the U.S. Arctic Research Commission—are preparing for dramatic environmental changes; balancing environmental protection with energy production, mineral extraction, and other industrial uses; meeting an increasing need for scientific research to better understand the region; and dealing with an increasing amount of northern maritime traffic.

U.S. Senator Lisa Murkowski (R-Alaska) said that an increase in maritime traffic in the Arctic over the past decade requires enhanced capabilities to respond to shipping needs. Noting that maritime transits in the Northern Sea Route, for instance, have gone from none in 2007 to 46 in 2012, Murkowski said there is “great potential” for an Arctic transshipment facility along the Aleutian Chain. “Whether a hub is developed or not, however, the level of maritime traffic is likely to increase, and we are woefully behind in our infrastructure needs, from navigational aids to deep water ports and search and rescue capabilities,” she said.

Murkowski stated that due to economic constraints, the federal government should be “more creative” in addressing those needs and more flexible in how and with whom it partners. She pointed to efforts to map the Arctic by the U.S. National Oceanic and Atmospheric Administration (NOAA), which issued an updated Arctic Nautical Charting Plan in February. However, Murkowski said that “the time frame for completion [of the charting] is decades away. Are there ways to partner with the Navy or commercial shipping interests to share data along the most traveled corridors?”

Alaska’s other senator, Mark Begich (D), said that there have been some significant recent efforts focusing on the Arctic. He specifically highlighted the release of the Obama administration’s National Strategy for the Arctic Region on 10 May; the U.S. Coast Guard’s Arctic strategy issued on 21 May, which directly supports the national strategy; a 5-year Arctic research plan issued by the

U.S. Interagency Arctic Research Policy Committee on 1 February; and the legally binding Agreement on Cooperation on Marine Oil Pollution Preparedness and Response in the Arctic, which was signed in May by states that are members of the Arctic Council, an inter-governmental forum for Arctic governments and peoples.

However, Begich also called for a number of measures, including increased investment in scientific research in the Arctic. On 11 February, Begich introduced to the Senate the Arctic Research, Monitoring, and Observing Act of 2013 (Senate Bill 272), which proposes to establish a permanent program for scientific activities in the region. Another bill he introduced (Senate Bill 270) would establish, within the U.S. Department of State, the position of ambassador at large for Arctic affairs. Begich said the bill “would put the U.S. on equal diplomatic footing” with most other nations before the Arctic Council and other bodies and help exercise U.S. leadership in Arctic policy.

He also called for more resources for the U.S. Coast Guard to meet an expanded role in a more ice-free Arctic, pushed for the administration to move quickly in examining the need for a new polar class icebreaker to join the country’s two existing icebreakers, asked for additional funding for NOAA and the U.S. Department of the Interior for Arctic-related research, and urged a better coordinated and streamlined permitting process—including for oil and gas development—while also

ensuring that permitting agencies are fully funded to carry out their responsibilities.

Finally, Begich called for the United States to accede to the United Nations Convention on the Law of the Sea (UNCLOS), which, he pointed out, allows nations to claim the seabed and its petroleum and mineral resources beyond a 200-mile limit if they demonstrate a natural extension of their continental shelf. “Other Arctic nations already are mobilizing to take full advantage of their resources. But until we ratify the Law of the Sea, we don’t have a seat at the table,” he said. “Ratification means we can move toward the national comprehensive energy policy we so desperately need, creating greater economic and national security. Failure to act with the fast-changing Arctic could leave billions of dollars and thousands of jobs on the table.”

“There are a couple of members [of the Senate] who truly believe that [UNCLOS] will take away the country’s sovereignty. I think they are misguided on this,” Begich told *Eos*. “They don’t understand that every day we wait, we lose capacity to manage our own sovereignty up there.” Begich said he is hopeful that as new senators are elected, the treaty could find a critical mass of supporters.

Science Needs in the Arctic Region

NOAA acting administrator Kathryn Sullivan said the rapid pace of change in the Arctic brings a sense of urgency. She pointed to some recent developments: Last year, the benchmark of 400 parts per million of carbon dioxide in the atmosphere was reached at six NOAA Arctic observatories, last summer saw the second historic low for summer sea ice in the past 5 years, and the minimum extent of multiyear sea ice has diminished by 50% in area and by 75% in volume compared to 1970s climatology.

Sullivan called for “critical environmental intelligence” in the Arctic. “One of the biggest



(Left) U.S. National Oceanic and Atmospheric Administration acting administrator Kathryn Sullivan. (right) Vice Admiral Peter Neffenger, deputy commandant for operations for the U.S. Coast Guard.

challenges facing all of us in our Arctic endeavors is the sparseness of environmental observations in this immense region, be they observations of sea ice; of weather variables; of water levels and currents; shorelines; physical, oceanographic, atmospheric, and chemical variables; or of living marine resources."

She said that whatever technologies and platforms are used, "it is clear that meeting the emerging critical environmental intelligence needs in the rapidly changing Arctic will require denser observations, sustained observations, and higher temporal and spatial resolution for many measurements." She said those measurements "are essential to everyone with interests in the Arctic, be those interests economic, environmental, social, or political, be they national, tribal, or commercial."

Sullivan said that scientists are only beginning to understand the ecosystem-wide effects of many of the changes taking place in the Arctic. "Until we have that greater understanding, it is prudent to take a precautionary stance, especially in the face of actions that might trigger changes that are irreversible or could affect huge areas or last for decades to centuries." She added that NOAA currently is involved in 15 ecosystem research projects throughout the Pacific Arctic—including surveys of fisheries and marine mammal populations, oceanographic process studies, and the collection of long time series to detect change—to improve scientific understanding of Arctic ecosystems.

At a 17 July press briefing held as part of the conference, Sullivan elaborated on some scientific needs, stating that NOAA's Arctic strategy includes acquiring reliable and authoritative observations and science that provide a clearer view on a range of issues,

from future conditions that will affect maritime commerce to intricate connections between sea ice and fisheries and other ecosystem functions. "It also includes the analysis, modeling, and synthesis needed to transform this richer environmental observation and understanding basis into the timely actionable and reliable information that is critical environmental intelligence," she said.

At the briefing, Sullivan responded to Senator Murkowski's concerns about the need to increase the pace of nautical mapping. "The challenge really just is the absolutely daunting scale of the Arctic," she said, noting that the U.S. exclusive economic zone in the Arctic spans 426,000 square miles, and even the area with the most critical navigation needs spans about 40,000 square miles. "Mapping is woefully small compared to meeting that scale of a challenge," Sullivan said, agreeing with Murkowski and pointing out that NOAA maps about 500 square miles per year.

Arctic Council Themes

With the United States set to assume the rotating chairmanship of the Arctic Council in 2015 for a 2-year period, following Canada's current chairmanship, efforts are already under way to determine key themes. During its leadership, which began on 15 May, Canada has pledged to "put Northerners first," with themes of its chairmanship including "development for the people of the North," with a focus on responsible Arctic resource development, safe Arctic shipping, and sustainable circumpolar communities.

Julia Gourley, a senior U.S. Arctic official within the U.S. Department of State and the U.S. representative to the Arctic Council, told

Eos that the development of themes on which the United States will focus is still in the early stages and that no themes have been decided. "We want to be ready to go on Day 1, and we are also grappling with how we will do the chairmanship effectively in times of [budget] sequestration," she said. "In general, we want the council to tackle new areas it hasn't tackled yet." She noted that two possible themes could involve issues of water as well as a system-wide Arctic domain awareness, the latter of which would encompass understanding the whole picture of what is happening in the region.

Vice Admiral Peter Neffenger, deputy commandant for operations for the U.S. Coast Guard, said that the Department of State is "working in conjunction with Canada because there is a very strong interest in ensuring that there is continuity" moving forward from the Canadian and earlier Swedish chairmanships. "There is a real desire among the Arctic Council nations to not have a 'ping pong' effect as you move from one chair to the next but to do some coordinated strategic planning for a period of time." Neffenger said some themes could include cooperation among the nations and the implementation of the oil pollution preparedness and response agreement and an earlier search and rescue agreement.

Begich told *Eos* that he is eager for the administration to move forward in developing an Arctic Council agenda, noting, "We will drive some discussion through our [Senate Committee on Commerce, Science, and Transportation] subcommittee on oceans to force an early discussion of the agenda."

—RANDY SHOWSTACK, Staff Writer