

IMPACTS OF AN ICE-DIMINISHING ARCTIC ON NAVAL AND MARITIME OPERATIONS

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The National Ice Center (NIC) is a U.S. Government agency that brings together the Department of Defense – Navy, Department of Commerce – National Oceanic and Atmospheric Administration (NOAA), and the Department of Homeland Security – U.S. Coast Guard (USCG) to support coastal and marine sea ice operations and research in the Polar Regions. The NIC provides specialized strategic and tactical ice analyses to meet the operational needs of the U.S. government and is the only operational ice service in the world that monitors sea ice in both the Arctic, Antarctic regions as well as in other ice infested waters. NIC utilizes multiple sources of satellite and in-situ observations as well as NWP and ocean-sea ice model output to produce sea ice analyses. Key users of NIC products in the Arctic include the Navy submarine force, National Weather Service, USCG and Canadian Coast Guard icebreakers, Military Sealift Command units used for re-supply missions to Thule Air Base in Greenland, and NOAA research vessels operating in the Bering Sea. Time series of NIC weekly or bi-weekly ice analysis charts as well as daily ice edge routine products supporting user's Arctic operations have captured a significant reduction of sea ice extent cover, particularly in the last two decades, complementing other independent observations and supporting the climate record.

An early recognition of an acceleration of the ice reduction trend and its potential impact on present and future naval operations in the region was highlighted by the 2001 symposium on Naval Operations in an Ice Free Arctic sponsored by the NIC, the Oceanographer and Navigator of the Navy, the Office of Naval Research, the U.S. Arctic Research Commission. In fact, the 100-year historical record from ships and settlements going back to 1900 shows such a decline in Arctic sea ice extent starting about 1950 and falling below pre-1950 minima after about 1975 with an overall continued downward trend in the extent since. The Arctic Climate Impact Assessment document (ACIA) published by the Arctic Council in 2004 and numerous other reports and articles have

since documented significant recent total sea ice extent reductions, both during summer and winter seasons. Furthermore, the percentage of the thicker and older multi-year ice in the winter has been shown to also continue to decrease precipitously. Subsequent symposia in 2007 and 2009 have expanded the focus of the discussion to include the impacts of an ice-diminishing Arctic to non-naval maritime activities such as commercial transportation, energy exploration and exploitation, fisheries, and scientific research. Discussions include state of preparedness and planned response by key agencies under the backdrop of 1) a record Arctic sea ice extent observed in 2007, 2) an updated Arctic Policy of the U.S. government, 3) a record loss of multiyear ice in 2008 and 2009, 4) increase observations as part of the International Polar Year (IPY), 5) the release of the Arctic Marine Shipping Assessment (AMSA) report by the Arctic Council in 2009, and 6) the ongoing debate on the U.S. ratification of the United Nations Convention on the Law of the Sea (UNCLOS). The present status and plans of U.S. agencies to address a changing Arctic Ocean will be addressed. These include key efforts such as the U.S. Coast Guard Arctic Domain Awareness activities, NOAA's new Arctic Vision and Strategy, and the Navy's Arctic Roadmap, which respond directly to the directions set for the nation in the January 2009 National Security/ Homeland Security Presidential Directive NSPD-66/HSPD-25 on Arctic policy.

Bibliography

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