

DRAFT Arctic ERMA report for EPPR

## **Arctic Environmental Response Management Application Final Report**

**Lead Organizations:** The United States National Oceanographic and Atmospheric Administration (NOAA) and Canada.

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**Background Information:** The purpose of this project was to improve access to critical information on the location of resources needed to respond to oil spills in the Arctic and to develop electronic response infrastructure for use in the Arctic. This project developed circumpolar environmental pollution response capabilities that are critical to protect the unique ecosystem from oil spills occurring near Arctic shorelines or in the Arctic's high seas. Decreasing ice cover is expected to open new shipping routes through the Arctic. The *Arctic Marine Shipping Assessment (AMSA, 2009 Report* at p. 5) states: "The most significant threat from ships to the Arctic marine environment is the release of oil through accidental or illegal discharge." It is also believed that much of the undiscovered oil and gas resources exist in the Arctic. This project addresses spill concerns by facilitating access to vital information that will be needed by national governments to effectively respond to a spill in the Arctic.

**Project Description and Activities:** Arctic Environmental Response Management Application (Arctic ERMA<sup>®</sup>) was a pilot project under the Arctic Council's EPPR Working Group. The project was officially adopted in 2010 and co-sponsored by the U.S. and Canada. ERMA is an online mapping tool that integrates both static and real-time data, such as Environmental Sensitivity Index maps, ship locations, weather, ocean currents, and more in a centralized format for environmental responders and decision makers. This allows for high-impact and fine-resolution visualization of data for solving complex environmental response and resource issues. As part of the overall ERMA project, baseline datasets have been collected from government sources, private corporations, universities, local entities, and non-governmental organizations (NGO). In 2010, ERMA was named as the U.S. federal government's official common operational picture (COP) ([www.gomex.noaa.gov](http://www.gomex.noaa.gov)) for the BP Gulf of Mexico Oil Spill. Because of the experience gained by working in the Arctic, and the methods developed by implementing a Web site for the public during the Gulf spill, the ERMA development paradigm shifted. Rather than focusing internally on the response community, ERMA became a more holistic tool for all communities to use, including remote, Arctic communities. The computer code and functionality were transferred from the Gulf of Mexico experience to the Arctic site (<https://erma.noaa.gov/arctic/erma.html>) and benefited the EPPR project.

The EPPR project leveraged multiple efforts in which the U.S. National Oceanic and Atmospheric Administration (NOAA) was already engaged. To identify and gather Arctic-specific data, workshops

were conducted in the Anchorage, AK, the Northwest Arctic Borough (NWAB), the North Slope Borough (NSB), and Edmonton, AB, Canada. Workshop participants focused on oil spill scenarios that could affect villages in each region, and developed prioritized datasets needed to support planning, response, and natural resource damage assessment (NRDA) work. The Edmonton Workshop was an important milestone for the EPPR project, and will be discussed in greater detail than the other workshops. For further information on the Arctic ERMA workshops and reports, please refer to the Coastal Response Research Center webpage: <http://crrc.unh.edu/workshops> or refer to Merten *et al.*, 2014.

The goals of the Edmonton (EPPR) meeting were to: bring together data providers and users to improve oil spill preparedness in the Arctic; identify data sources/priorities for Arctic ERMA; and improve joint preparedness and response strategies in the Arctic. All Arctic Nations were invited to send a representative per their EPPR Heads of Delegation. The leads for the Arctic Spatial Data Infrastructure (SDI) working group were also invited. Participants identified relevant information for an Arctic ERMA to provide context for potential oil releases, oil infrastructure and transportation locations, navigation and hazards data, locations of response equipment and infrastructure, habitat and resources information, ice prediction/conditions, aerial reconnaissance data sets and human use/economic data.

The opening plenary session included a description and demonstration of Arctic ERMA. Breakout groups of six to eight people discussed the data needs and tools for using ERMA in a specific scenario: a search, rescue, and salvage incident; a search, rescue, and pollution incident; a fire and spill incident; and a fishing vessel/tanker collision. Each scenario is important for the EPPR delegation to consider in its implementation of the *Framework Plan for Cooperation on Prevention of Oil Pollution from Petroleum and Maritime Activities in the Marine Areas of the Arctic*. Thirty-six people attended the workshop, including representatives from various branches of the Joint Secretariat (an organization providing technical and administrative support to some of the co-management bodies of the Inuvialuit Settlement Region of Canada), NOAA's Office of Response and Restoration (OR&R), industry, Canadian federal agencies (Ice Service, Environment Canada, Department of Fisheries and Oceans, Transport Canada), and NGOs.

Each breakout group created a spreadsheet of information needs related to their scenario, with categories of biological populations, habitats, infrastructure, navigation and communication, response and logistics, physical/chemical conditions, and human dimensions. The priority for having these data available was ranked (high/medium/low). If the data existed, their current location, point of contact (POC) and extent (local, national, international) were noted. Data gaps were also identified and prioritized for each scenario.

Within the framework of the workshop scenarios, common conclusions regarding the use of ERMA included: the need for data sharing agreements to insure accessibility during emergencies, especially for sensitive information, and getting ERMA into the Cloud infrastructure to minimize bandwidth. Recommended additional features for ERMA included: a chat function, embedded videos, environmental data POCs; translation into Arctic Council Nations' and Permanent Participant languages; and geo-referencing response assets. As a result of the Edmonton/EPPR workshop, Canada and the U.S. have continued to work together to populate and further develop Arctic ERMA.

**Outcomes:**

The final deliverable is the online mapping site: <https://erma.noaa.gov/arctic/erma.html>. Arctic ERMA can also be accessed from the Arctic Council/EPPR website: <http://www.arctic-council.org/eppr>. Other outcomes of this project include the following:

These efforts benefited the Arctic Council's EPPR project to provide a web-mapping platform to improve access to critical information on the location of resources needed to respond to oil spills in the Arctic, and to develop electronic response infrastructure for use in the Arctic. A combined mapping platform also enhances the U.S. and Canadian cooperation for preparedness and response activities. Both delegations used ERMA in drills of mutual aid in 2013 and 2014. Arctic ERMA was also used in several other U.S. Arctic drills including the USCG's Arctic Shield Technical Evaluations 2013 and 2014 to improve data sharing, interoperability, and data management. The tool is available for data sharing among Arctic Nations.

Throughout the project, data sharing has occurred among Canada and Norway through the EPPR working group process. Several other Arctic Council activities have been linked with the Arctic ERMA project. Arctic ERMA includes the Arctic Maritime and Aviation Transportation Initiative (AMATII) database as well as the shipping and incident data from the AMSA 2009 Report. The Arctic ERMA project team has also shared data among ERMA, Arctic Portal, and the SDI.

Additionally, in all of the Arctic ERMA workshops, including the EPPR workshop, the need for an Internet-independent version of ERMA was high-lighted. With the help of the Bureau of Safety and Environmental Enforcement (BSEE), NOAA developed Stand-Alone ERMA for the Arctic and remote areas during the timeframe of the project (2013-2014).

**Future:** Although EPPR has finished this project, Arctic ERMA will continue to work with the SDI and other Arctic Council Working Groups to incorporate relevant data. It is intended that Arctic ERMA will be used to support drills planned as part of the *Framework Plan for Cooperation on Prevention of Oil Pollution from Petroleum and Maritime Activities in the Marine Areas of the Arctic*.

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**Further Reference:** For more information about the workshops and Stand-Alone ERMA, please see:

Amy A. Merten, Zachary Winters-Staszak, and Nancy E. Kinner (2014) Incorporating Traditional Knowledge and Subsistence Mapping into the Arctic Environmental Response Management Application. International Oil Spill Conference Proceedings: May 2014, Vol. 2014, No. 1, pp. 1512-1523.

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