HYDROGRAPHIC SERVICES REVIEW PANEL

A federal advisory committee, advising the NOAA administrator

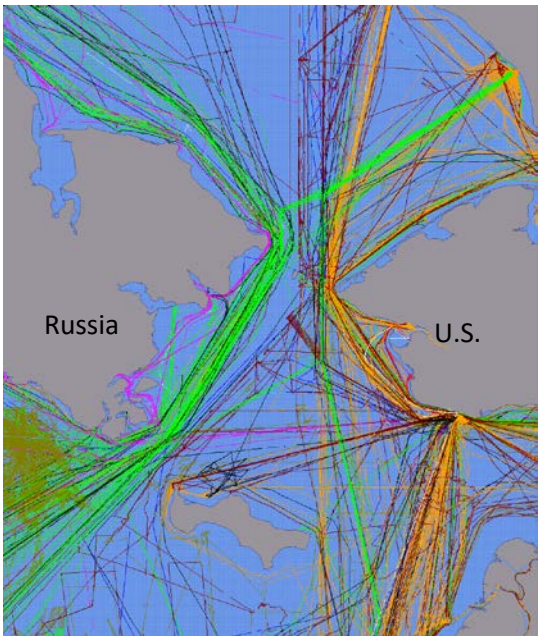
Expanding NOAA's Navigational Services in the Arctic

The Arctic is the world's new maritime frontier. Arctic waters provide shorter and more fuel-efficient shipping routes and present a significant opportunity to grow our nation's Blue Economy through increased trade and improved access to raw materials. While the benefits of this new maritime frontier are substantial, expanded maritime activity must be approached cautiously and in alignment with our international partners. We must preserve the pristine environment and rich cultural heritage that define the Arctic by requiring maritime operations be conducted safely and environmentally sound manner.

NOAA's National Ocean Service's (NOS) products and services play a critical role in our nation's development of this emerging maritime frontier. However, the unique geography, harsh environment, and remoteness of this region call for a new approach to traditional methods to provide NOAA services. The opportunity exists for NOS to leverage new technologies to deliver innovative product and service solutions. The challenges, needs, and proposed solutions are summarized below.

CHALLENGES IN THE ARCTIC

- **Limited infrastructure and communications in the region** complicate the execution of NOAA's traditional missions.
- **Remote coastal communities** with few resources are challenged to bring in vital commerce through small shallow harbors, face eroding shorelines, and are increasingly susceptible to storm surge.
- **The vastness, remoteness, seasonal ice, and weather conditions** force shorter survey seasons and present unique mobilization and cost challenges for NOAA and NOAA's contract partners.
- **Oil spill response has limited effectiveness in Arctic conditions**. Emphasis must be placed on prevention of marine casualties in order to protect the sensitive and fragile Arctic marine environment.
- **Safety and environmental issues are seasonal and dynamic.** These include but are not limited to the presence of ice, marine mammals, and indigenous subsistence hunters.



Maritime traffic in the Bering Strait with AIS detected by the Marine Exchange of Alaska's AIS network, 2018.

CRITICAL NEEDS: NOAA SERVICES IN ARCTIC WATERS

- A robust geospatial and oceanographic infrastructure to support nautical charting, accurate positioning services, and water levels along the coasts of the Chukchi and Beaufort Seas. This includes addressing gaps in geodetic coverage, tides and currents, hydrographic surveys, and shoreline mapping – the foundational data building blocks for providing accurate nautical charts.

- Installation and operation of sensors to obtain real-time information on water levels, currents, ice, and weather, and development of hydrodynamic forecast models that collectively provide information that aid safe maritime operations.
- Installation and operation of Continuously Operating Reference Stations (CORS) to support surveying, mapping, and modeling.
- Utilization of emerging electronic technologies including but not limited to Automatic Identification System (AIS) to communicate environmental and safety information to mariners.

Russian oil tanker SIMUSHIR being escorted through *Bering Sea ice by the U.S. Coast Guard icebreaker HEALY.*

- Implementation of the Alaska Geospatial Council Coastal Strategy to provide nearshore bathymetry and shoreline surveys to mitigate coastal erosion and flooding threatening coastal communities.
- Prioritization of hydrographic and shoreline surveys for higher resolution navigational charts based on historical vessel tracks and planned future development to support Alaska's Blue Economy.
- Use of emerging electronic navigation (eNav) technologies to transmit environmental and updated chart information to mariners.

RECOMMENDATIONS FOR NOAA ACTION

- Evaluate new technologies for the acquisition of geospatial data as well as the delivery of products and services to remote regions of the Arctic.
- Evaluate areas of the Arctic where tidal and geospatial needs require Physical Oceanographic Real Time System (PORTS ®) sensors and Continuously Operating Reference Stations (CORS) be installed to provide foundational data for charting as well as additional information to mariners that enhance maritime safety and environmental protection.
- Partner with the Coast Guard, other agencies, and involved parties to expand the dissemination of NOAA environmental and safety information to vessels via AIS transmitters and other emerging communications technologies the Coast Guard has available or is developing.
- Develop a dynamic electronic "Coast Pilot" for Arctic waters to more effectively provide relevant and current information to mariners navigating Arctic waters.
- Prioritize NOAA and NOAA contracted hydrographic and shoreline surveys for the production of accurate, updated navigational charts through review of historical vessel tracking information on vessels transiting Arctic waters obtained from AIS monitoring systems.

In October 2003, Secretary of Commerce Don Evans established the HSRP as directed by the Hydrographic Services Improvement Act of 2002, Public Law 107-372. Panel members, appointed by the NOAA Administrator, include a diverse field of experts.

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