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

U.S. Navy
Arctic Roadmap Update

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Sea Routes

Northern Sea Route
2025: 6 weeks open
41’ controlling draft

Transpolar Route
2025: 2 weeks open
Deep ocean transit

Northwest Passage
2025: intermittently open
33’ controlling draft

Sea route distances:
Distance from the Bering Strait to Rotterdam
Key Missions – Navy in the Arctic

- Ensure U.S. sovereignty
  - Defend the homeland
  - Contribute to maritime domain awareness

- Ensure freedom of the seas

- Support the Coast Guard and other partners
  - Search and Rescue in support of missions led by USCG and as directed in support of international partners
  - Environmental Response
  - Disaster Response/Defense Support of Civil Authorities

In the near to mid-term, the Navy will concentrate on improving operational capabilities, expertise, and capacity, extending reach, and will leverage interagency and international partners to achieve its strategic objectives.
Lack of:

- Aids to Navigation
- Ocean Bottom Surveys for Charts
- Accurate Weather Forecasts & Sea-ice Prediction
- Reliable Satellite Communications
- Fuel and Supply Depots
- Medical Facilities
- Search & Rescue Capabilities & Infrastructure
- Oil Spill Response Capabilities

Limited ice-breaking capabilities
Incomplete charting
Limited SAR assets
Limited Infrastructure
WX & Ice Prediction
Goal: Sustainable, Arctic-capable force recognizing partnerships are the foundation

- **Near-term** (2014-2020)
  - Refine doctrine, operating tactics & procedures
  - Enhance relationships
  - Joint international exercises, science & personnel exchanges

- **Mid-term** (2020-2030)
  - Provide operational support
  - Transition Arctic operations capability to sustained missions
  - Improve capabilities by participating in complex exercises

- **Long-term** (2030 and beyond)
  - Provide trained and equipped personnel and capabilities
  - Increased potential for SAR
  - Focus on maritime security and freedom of navigation
**Highlights:**

- Arctic Maritime Capability Requirements
- Arctic Engagement
- Update Fleet Guidance for Arctic Operations & Training
- ICEX Accelerated to Bi-annual Event
- Science and Technology Plan
- Identify / Evaluate U.S. & International Infrastructure
- Arctic Hull, Propulsion and Engineering Requirements
- International Arctic Region Hydrographic Commission → Charting Plan
Navy’s National Role

Implementation Plan for The National Strategy for the Arctic Region
January 2014

Executive Order 13689
21 Jan 2015
Established Arctic ESC

DOD Lead:
Develop a Framework of Observations and Modeling to Support Forecasting and Prediction of Sea Ice
- Objective: Improve sea ice forecasts and predictions at a variety of spatial and temporal scales

DOD Support: Charting, Models, Maritime Domain Awareness, Observations, etc.

Under Title 10 the Navy is responsible “for safety and effectiveness of all maritime vessels, aircraft, and forces of the armed forces by means of: marine data collection, numerical modeling and forecasting hazardous weather and ocean conditions. As well as the collection and processing of Hydrographic Information.”
Roadmap to Improved Arctic Forecasting Capability

Analyze: Ice edge position and MIZ extent

Predict: Arctic Cap Nowcast/Forecast System (ACNFS)

Predict: 2-Day Ice Edge Outlook
Increase Arctic capabilities by leveraging opportunities for mil-mil and gov-gov collaboration with Arctic partners through:

- **Improved Communication & Relationships** with Arctic Neighbors
- **Increased Cooperative Projects, Trainings, Operations & Exchanges** by Removing Obstacles

*ICEX 2014*
Navy Strategic Partnerships

- Assured Access
- Maritime Domain Awareness (MDA)
- Safety of Maritime Activities
- Search and Rescue (SAR)
- Law Enforcement
- Oil Spill Response
Jeanette Expedition 1879 - 1881

The U.S. Navy has a long history in the Arctic
Earth System Prediction Capability (ESPC)
0 hours ➔ 30 years: Weather, Ocean, Climate, Ice

ESPC: A unifying NATIONAL effort ➔ one “BEST” operational “model”
Enablers

- Improved Sea Ice & Weather Forecasts
  - High-Resolution Arctic System Models
    - Coupled ocean/wave/ice/atmosphere
  - Expanded Forecasts (7 days, 1-3 months, 1 yr, 5-10 yrs)
    - Detailed ice location, thickness, age, movement
- Platform & Sensor Development (buoys, hydrographic sensors, UAV/UUVs)
- Earth System Prediction Capability (ESPC)
- Improved Charting

Improving forecasts and predictions to support Navy operations
Analyze: Ice edge position and MIZ extent

Predict: ESPC Regional Arctic Coupled Model FY 2022

Predict:
2 week sea ice forecast (location, thickness, age & movement) + 30/60/90 day Outlook
International Collaboration
Ensure informed decisions for policy development and naval operations

**TFCC efforts include:**
- Strategic Guidance Development
- Advocacy across DoD
- Investment Strategy
- Inter-agency & International Partnerships