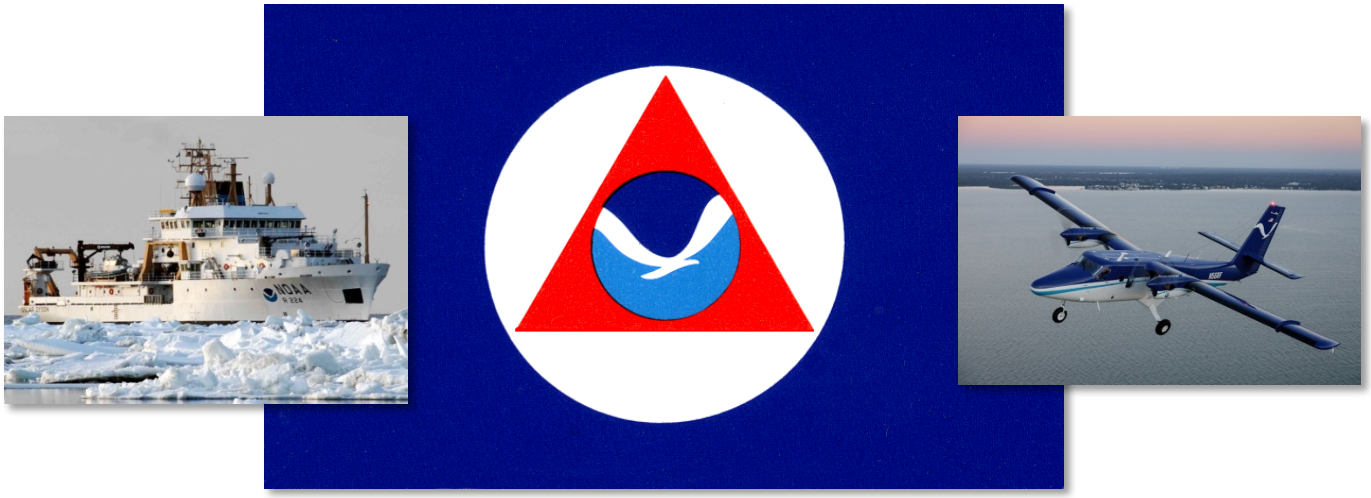
NOAA Vessel Operations in Arctic Waters



RADM David A. Score
Director, NOAA Corps and
Office of Marine and Aviation Operations (OMAO)
July 15, 2015

NOAA's Arctic Vision and Strategy

- NOAA's six strategic goals:
  - Forecast Sea Ice
  - Improve Weather and Water Forecasts and Warnings
  - Strengthen Foundational Science to Understand and Detect Arctic Climate and Ecosystem Changes
  - Improve Stewardship and Management of Ocean and Coastal Resources in the Arctic
  - Advance Resilient and Healthy Arctic Communities and Economies
  - Enhance International and National Partnerships
- These goals align with the National Strategy for the Arctic Region
  - Advance US security interests
  - Pursue responsible Arctic region stewardship
  - Strengthen International cooperation

OMAO's Role in the Arctic

- OMAO supports other NOAA line offices and partners in working toward the successful completion of these strategic goals and National strategy.
- Support for emerging Arctic requirements.
- Support for safe and responsible Arctic access and management.

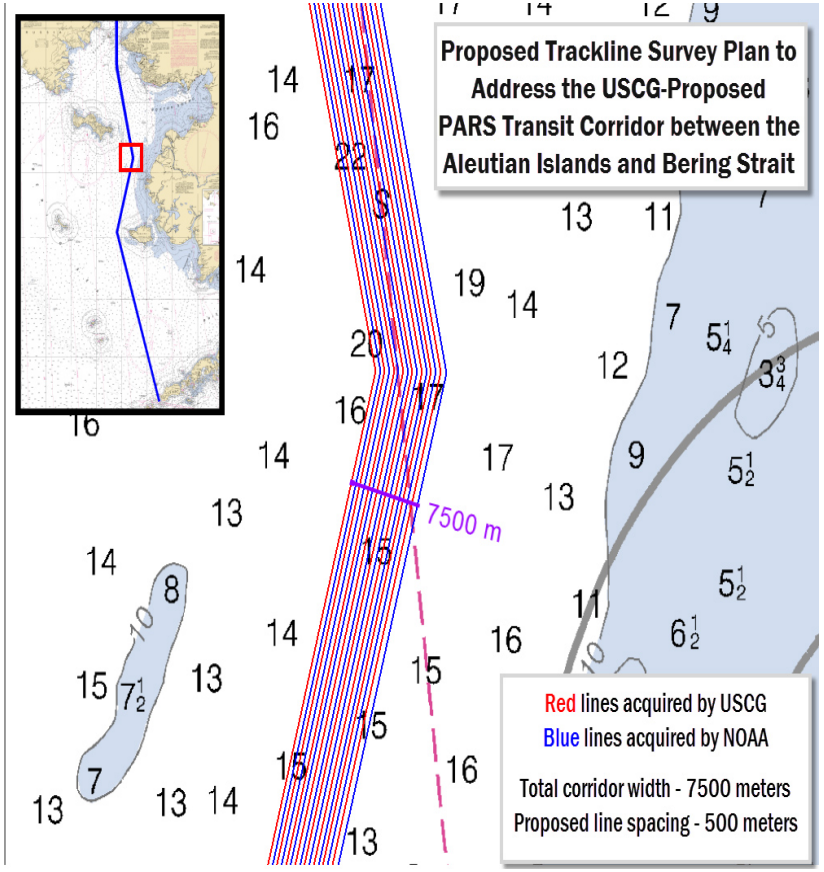
Arctic Boundary as defined by the Arctic Research and Policy Act (ARPA)

All United States and foreign territory north of the Arctic Circle and all United States territory north and west of the boundary formed by the Porcupine, Yukon, and Kuskokwim Rivers; all contiguous seas, including the Arctic Ocean and the Beaufort, Bering and Chukchi Seas; and the Aleutian chain.[1]

Acknowledgement: Funding for this map was provided by the National Science Foundation through the Arctic Research Mapping Application (armap.org) and Contract #0520837 to CH2M HILL for the Interagency Arctic Research Policy Committee (IARPC).
Map author: Allison Gaylord, Nuna Technologies. May 27, 2009.
1. The Aleutian chain boundary is demarcated by the 'Contiguous zone' limit of 24-nautical miles.

2015 Arctic Survey Missions

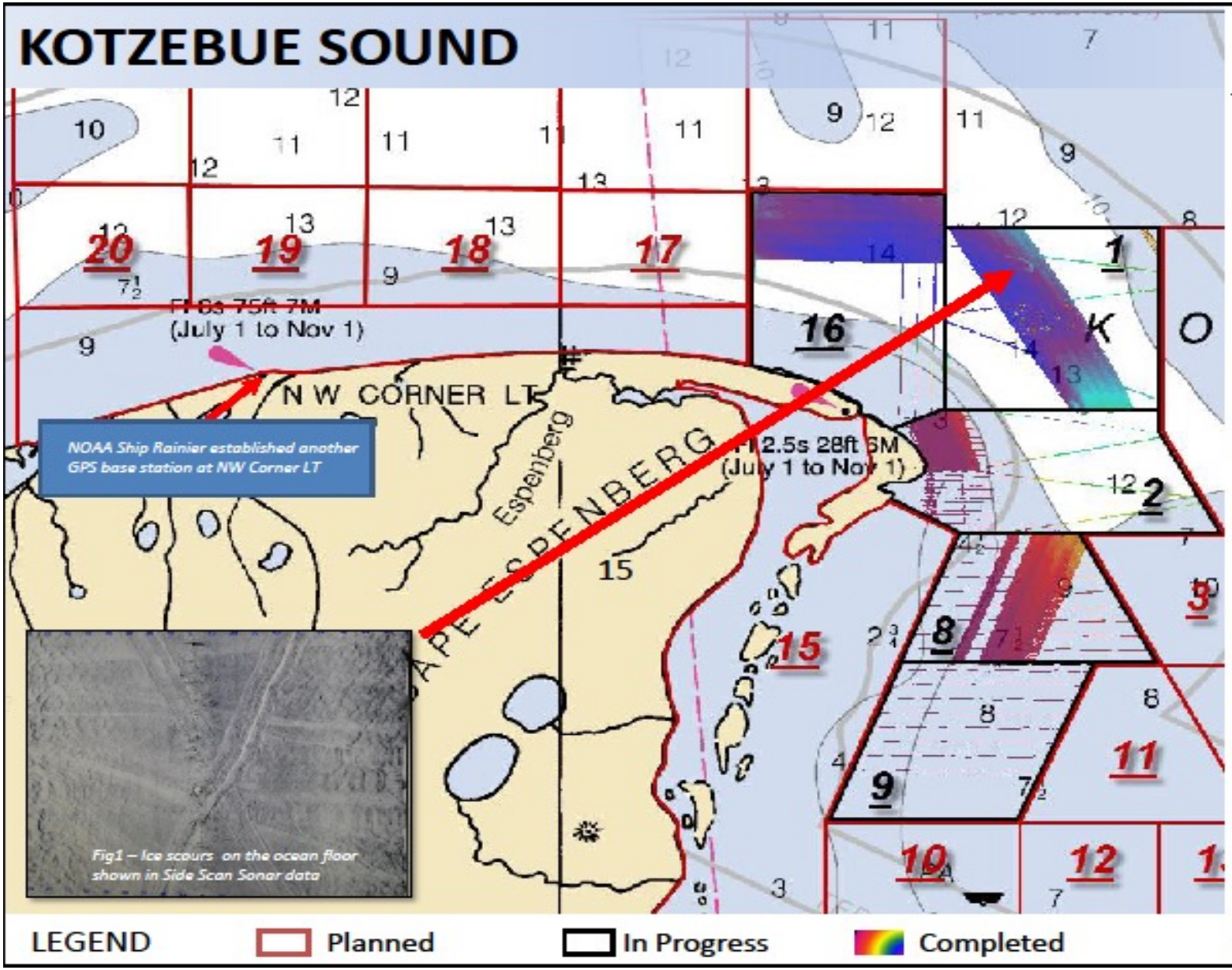
- NOAA Ships *Rainier* and *Fairweather*
- 257 combined Days at Sea planned
- The NOAA-led Arctic Marine Corridor project will work with the Coast Guard to asses the safety of a potential Arctic shipping route from Unimak Island, the largest of the Aleutian Islands, through the Bering Strait to the Chukchi Sea, as proposed in the USCG Port Access Route Study for the region.



NOAA Ship *Rainier*

- Survey of Kotzebue Sound & Vicinity, AK
  - Supporting a new large scale nautical chart with modern full bottom coverage bathymetry.
  - Plan to survey approximately 376 square NM
- Survey Point Hope, AK, to evaluate a potential shoal area discovered using commercial satellite imagery

KOTZEBUE SOUND



2015 Arctic Expedition
Kotzebue – Nome – Point Hope

NOAA SURVEY PROGRESS MAP

HIGHLIGHTS
June 25 –July 11

- Multibeam Survey data collected from June 25 – July 11
- Surveys continue to documented numerous ice scours (Fig1)
- No hazards to navigation found

LEGEND Planned In Progress Completed

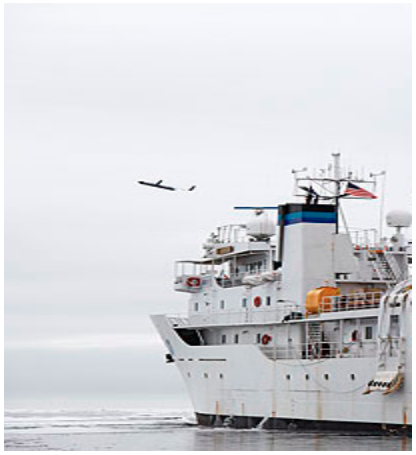
NOAA

NOAA Ship *Fairweather*

- Survey Point Barrow to Port Clarence
  - Survey will support New Arctic Large Scale Chart
  - Survey approximately 531 square NM
  - Port Clarence is a key Bering Strait location that is of potential interest as an Arctic deep-water port.

NOAA Ship *Fairweather*

- Field Evaluation of an Unmanned Aircraft System (UAS) for Studying Cetacean Distribution, Density, and Habitat Use in the Arctic
  - Joint Navy/NOAA project
  - Flying UAS beyond line of sight
  - Study the use of UAS (Scaneagle) to identify species, density and location of Cetacean
  - Assess the effectiveness of using UAS to perform marine mammal surveys/ assessments in the Arctic



NOAA Ship *Ronald H. Brown*

- Bio-effects assessment and spill response preparation in the Chukchi Sea
  - survey to evaluate the potential fate and effects of pollutants by sampling ambient waters, sediment, and benthos from locations that are in the footprint of proposed oil and gas development activities in the Chukchi Sea region
  - Improve NOAA's Office of Response and Restoration response and assessment preparedness through testing of tools and methods that might be deployed in the event of a spill incident in Arctic waters

NOAA Ship *Ronald H. Brown*

- Ecosystems and Fisheries-Oceanography Coordinated Investigations(EcoFOCI) Arctic cruise
  - Improved baseline observations and understanding of Arctic climate and ecosystems reduces the uncertainty in assessing and predicting impacts caused by a changing Arctic
  - EcoFOCI Meets DOC's and NOAA's National Arctic responsibilities, and Executive Order 13580 to "ensure the sharing and integrity of scientific and environmental information and cultural and traditional knowledge among agencies to support the permit evaluation process of onshore and offshore energy development projects in Alaska".

NOAA Ship *Oscar Dyson*

- EcoFOCI spring/fall mooring cruise
  - The purpose of this cruise is to recover and deploy subsurface and surface oceanographic moorings, and conduct hydrographic and plankton sampling on the continental shelf of the western Gulf of Alaska and eastern Bering Sea.
  - Data set collected aboard guides stock assessments for the most economically-important fisheries in the U.S.
  - In addition, this project services the only long-term mooring array in the Arctic.

NOAA Ship *Oscar Dyson*

- BASIS/FOCI Southeastern Bering Sea (October 2015)
  - This Southeastern Bering Sea Project is a joint Ecosystem Monitoring and Assessment (EMA) Program and Fisheries Oceanographic Coordinated Investigations (FOCI) Program research project to examine factors affecting recruitment processes of ground fish (walleye Pollock and Pacific cod) in the southeastern Bering Sea

Unmanned Systems

- 2015 Arctic Shield Technology Demonstration
  - Joint project between USCG, NASA, and NOAA
  - Conducting assessment of Puma AE
    - Automatic net capture, next evolution of recovery systems
    - Upgraded camera system
- NOAA Ship *Fairweather* UAS Field Evaluation project work is part of a larger NOAA Fisheries project Comparing Manned and Unmanned Aerial Systems in the Arctic
  - Comparing manned vs. unmanned observations
  - UAS have the potential to continue to safely provide a long term dataset in a changing Arctic with considerably lower risk to personnel and likely lower cost than manned aerial surveys

Unmanned Systems

- NOAA Ships *Rainier* and *Fairweather* providing platforms of opportunity for NOAA-Navy collaboration.
  - Navy personnel augmenting aboard to provide support unmanned systems deployment/recovery, meteorological observation and forecasting, oceanographic observation, and hydrographic data acquisition and processing.
- NOAA Ship *Fairweather* will assist the Naval Oceanographic Office and the Office of Naval Research with deployment of UAS, oceanographic profiling gliders, and profiling floats during their arctic deployment.
  - The data acquired from these unmanned systems will be used for development of sea floor to upper atmosphere oceanographic/ meteorological models and contribute to improved Arctic forecasting.

Thank You