

NOAA in the Arctic

Craig McLean

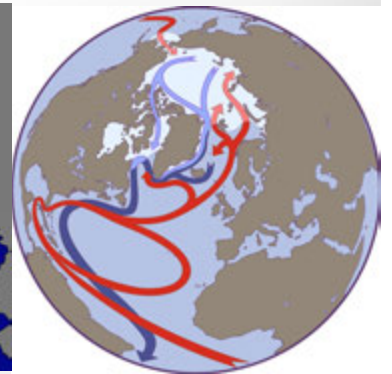
Ocean Exploration and Research Advisory Board Meeting

January 20-21, 2016



NOAA's Arctic Vision

- NOAA envisions an Arctic where:
 - Conservation, management, and use are based on sound science, and support healthy, productive, and resilient communities and ecosystems;
 - The global implications of Arctic change are better understood and predicted.



Major Drivers For NOAA's Work In The Arctic Region

- Energy Development
- Transportation & Economic Development
- Climate Impacts

Prioritization Criteria:

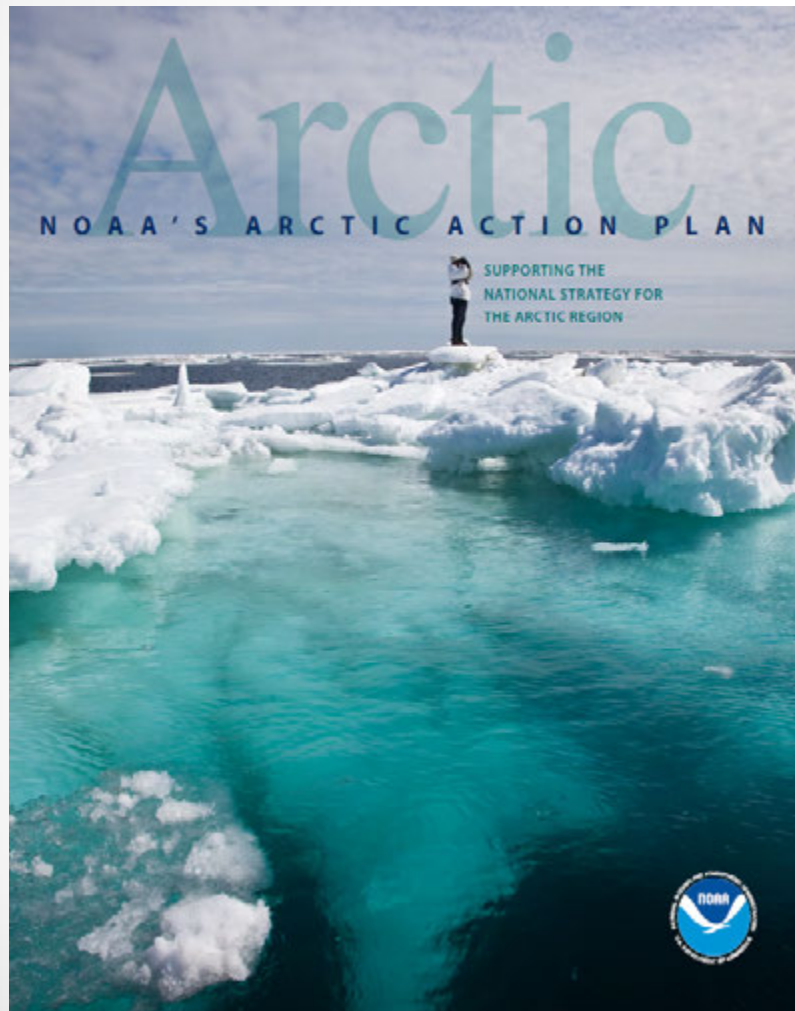
- Addresses critically emerging issues.
- Has National relevance.
- Supports the US Chairmanship of the Arctic Council.
- Aligns with NOAA's mission.
- Consistent with NOAA's priorities and DOC Strategic Plan.
- Leverages partnerships & cross NOAA Line Office expertise & assets.

Major Drivers For NOAA's Work In The Arctic Region

- Enhancing Coordination of National Efforts in the Arctic (January 2015)
 - White House Arctic Executive Steering Committee
 - Gaps and Overlap Report
 - GLACIER Conference (August 2015; Anchorage, AK)
- Arctic Council Chairmanship



NOAA's Arctic Action Plan



- Building out from NOAA's Arctic Vision and Strategy (released 2011)
- Provides greater detail on activities from 2014-2015 (taken from AOPs)
- Currently being updated for 2016-2017

NOAA and the National Strategy for the Arctic Region

National Strategy for the Arctic Region — lines of effort —	NOAA's Arctic Vision & Strategy — strategic goals —
<ul style="list-style-type: none">• Advance U.S. security interests	<ul style="list-style-type: none">• Forecast sea ice
	<ul style="list-style-type: none">• Improve weather and water forecasts and warnings
<ul style="list-style-type: none">• Pursue responsible Arctic region stewardship	<ul style="list-style-type: none">• Strengthen foundational science to understand and detect Arctic climate and ecosystems changes
	<ul style="list-style-type: none">• Improve stewardship and management of ocean and coastal resources in the Arctic
	<ul style="list-style-type: none">• Advance resilient and healthy Arctic communities and economies
<ul style="list-style-type: none">• Strengthen international cooperation	<ul style="list-style-type: none">• Enhance international and national partnerships

National Strategy Line of Effort 1:

ADVANCE U.S. SECURITY INTERESTS

- Improve weather and sea ice observations, forecasts, and warnings.



NOAA Ship *Oscar Dyson* maneuvers through sea ice in the Bering Sea. Photo: J. Jansen, NOAA.

National Strategy Line of Effort 2:

PURSUE RESPONSIBLE ARCTIC REGION STEWARDSHIP

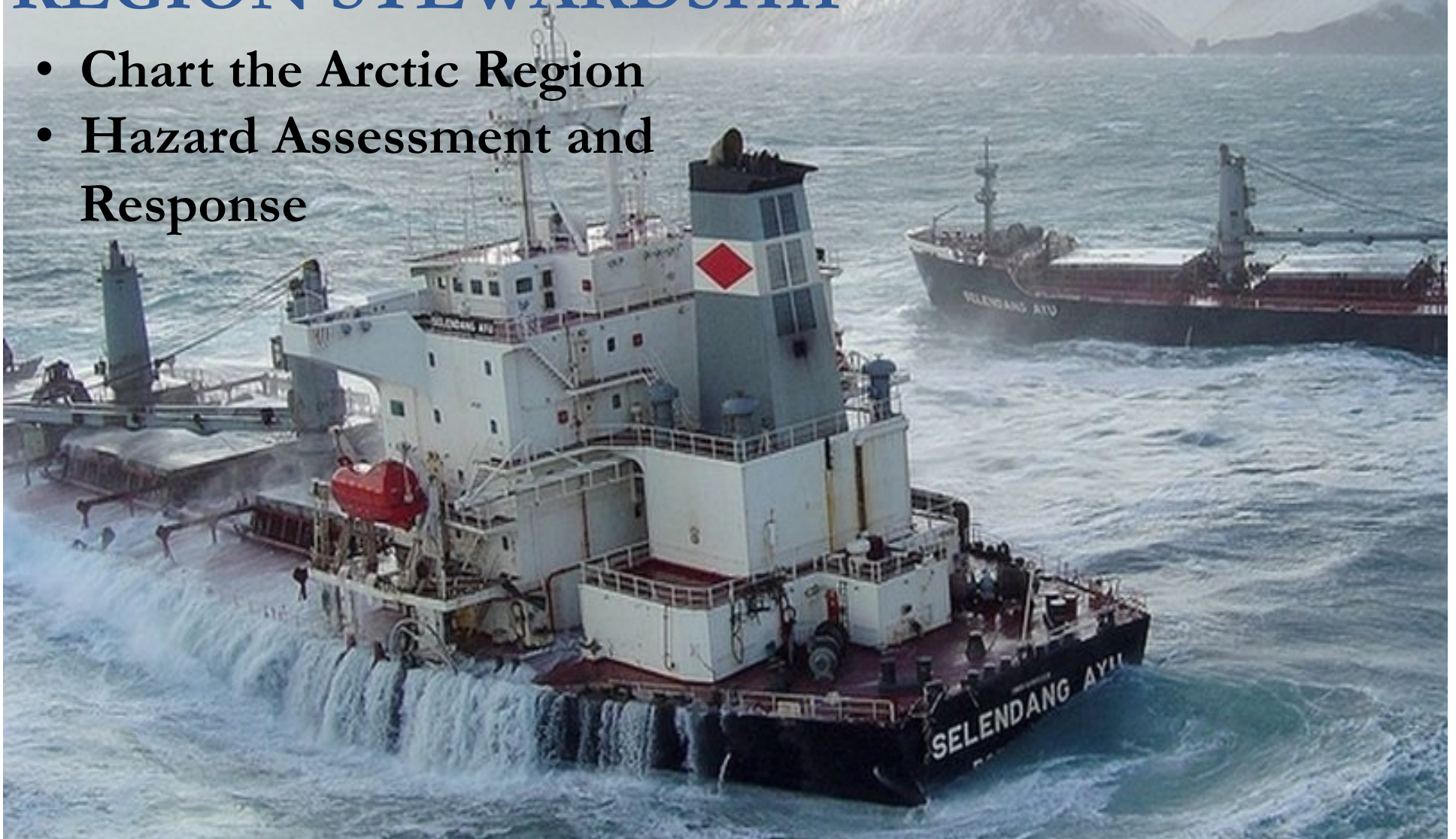
- Improve understanding of climate impacts on biological resources, human health, and natural habitats.

Bowhead whales move through sea ice in the Beaufort Sea. Photo: A. Brower, NOAA.

National Strategy Line of Effort 2:

PURSUE RESPONSIBLE ARCTIC REGION STEWARDSHIP

- Chart the Arctic Region
- Hazard Assessment and Response



National Strategy Line of Effort 3:

STRENGTHEN INTER-AGENCY & INTERNATIONAL COOPERATION

- National Partnerships
- IARPC, ACCER, NSSI, NPRB, LCCs, AOOS, IAWG
- International Partnerships
- Intergovernmental and operational (Distributed Biological Observatory, RUSALCA)
- Arctic Council



NOAA's Arctic Targeted Areas

identified in NOAA Arctic Retreat, Seattle, January 2015

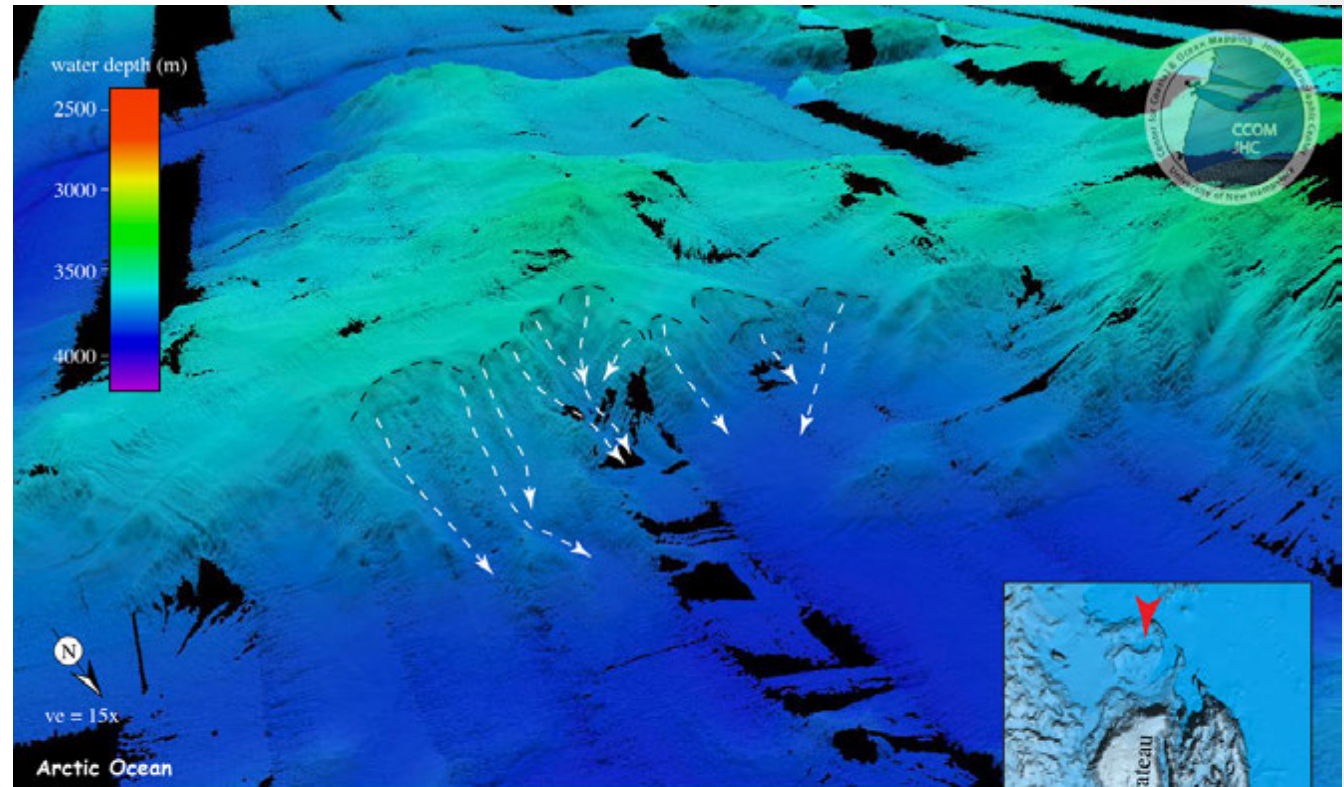
- Improve weather and sea ice observations, forecasts, and warnings.
- Improve understanding of climate impacts on biological resources, human health, and natural habitats.
- Improve navigation services.

Ocean Exploration in the Arctic

Establishing a Foundation

Over 400,000 square kilometers of high resolution bathymetry have been collected as part of the US ECS mapping effort

This information is essential for defining ecosystems and habitats that are facing unprecedented changes



Landslide scars north of Chukchi Plateau

Ocean Exploration in the Arctic

Expeditions

Since 2002 OER has supported several interdisciplinary expeditions in the Arctic

The 2016 Chukchi Borderlands Expedition Combines three OER grants to explore and characterize the seafloor, pelagic, and microbial communities with USCG Healy and ROV Global Explorer



Ocean Exploration in the Arctic

Expeditions

In 2014 OER supported an expedition to the Arctic where the WHOI Nereid under the ice hybrid ROV was used to map and document the unique ecosystems found beneath the ice.

The Nereid also discovered previously unknown hydrothermal vents and associated biological communities



Ocean Exploration in the Arctic

Observations

In 2014 OER joined forces with IOOS, BOEM, and Shell Oil to establish a marine biological observing station on the continental shelf in the Chukchi Sea in Alaska. The station will integrate existing observations ranging from satellite observations to DNA sampling and fill data gaps with new observations



Ocean Exploration in the Arctic

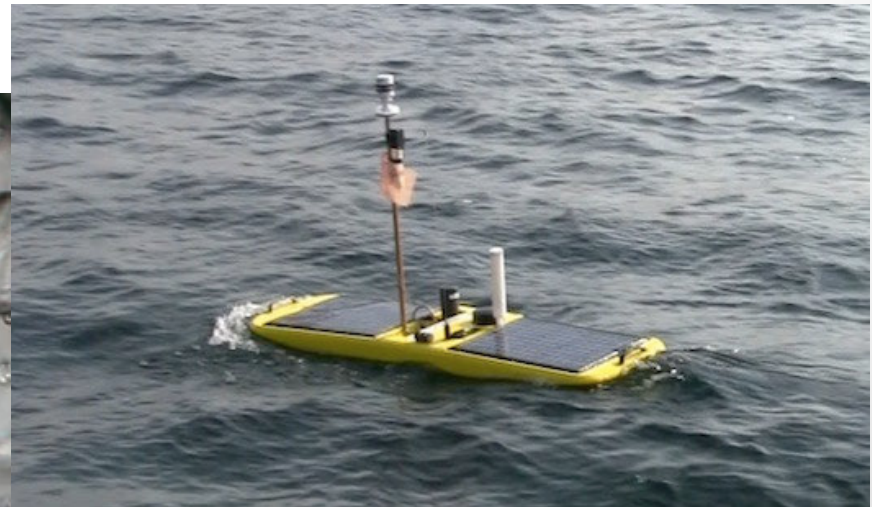
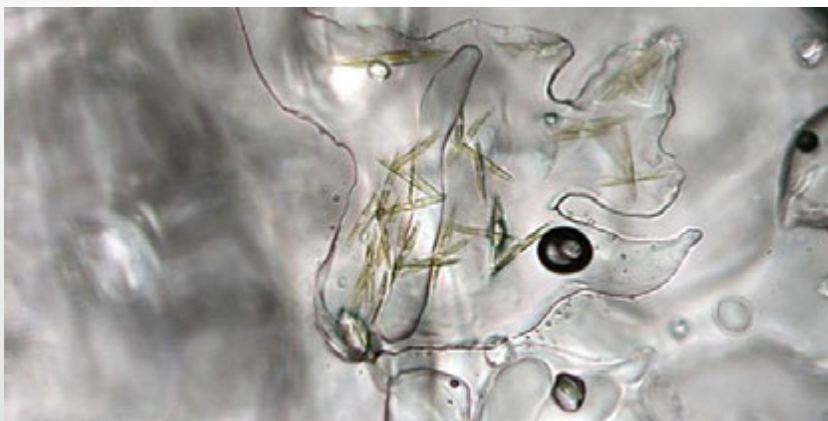
Additional OER Investments

- **Mapping Arctic Marine Microbes**

OER grant-funded expedition to discover and characterize the diversity of microbes associated with Arctic sea ice and seafloor habitats

- **Ecosystem and Carbon Wave Glider Survey**

Technology demonstration with USGC's Arctic Shield aboard the Healy to develop low-cost data collection platforms



NOAA'S (\$115 M) Investment in the Arctic

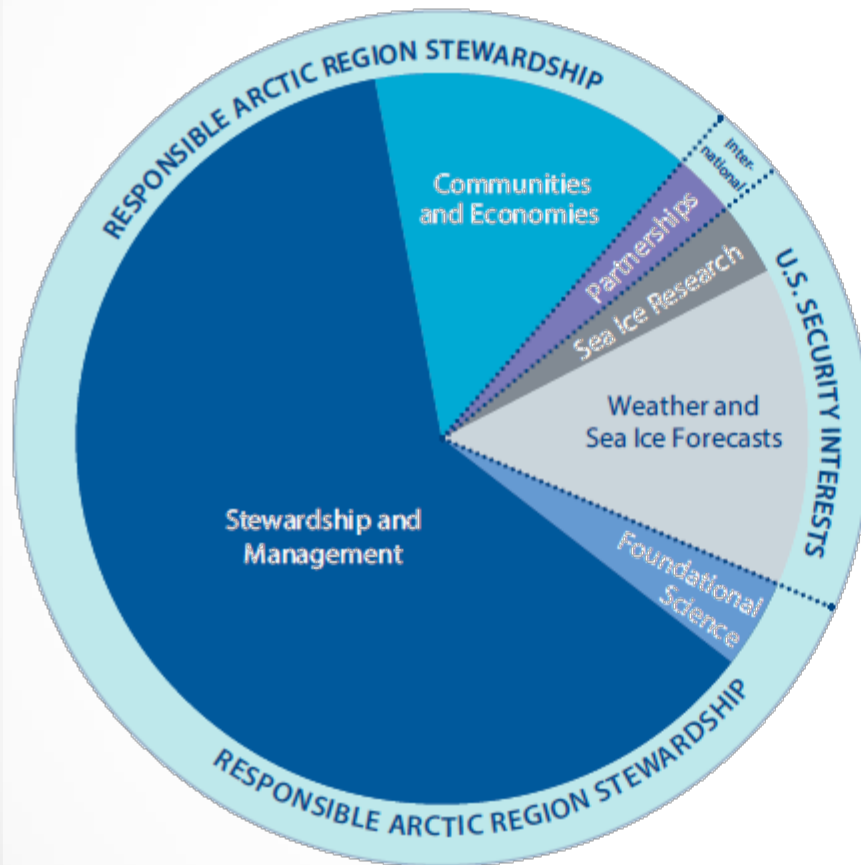


Figure 2. NOAA 2013 Arctic funding by NOAA Arctic goal and National Strategy line of effort.

- National Strategy for the Arctic Region lines of effort
- Sea ice research (3.3%)
- Weather and sea ice forecasts (14.0%)
- Foundational science (4.0%)
- Stewardship and management (61.6%)
- Communities and economies (14.3%)
- Partnerships (2.8%)

Questions?

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