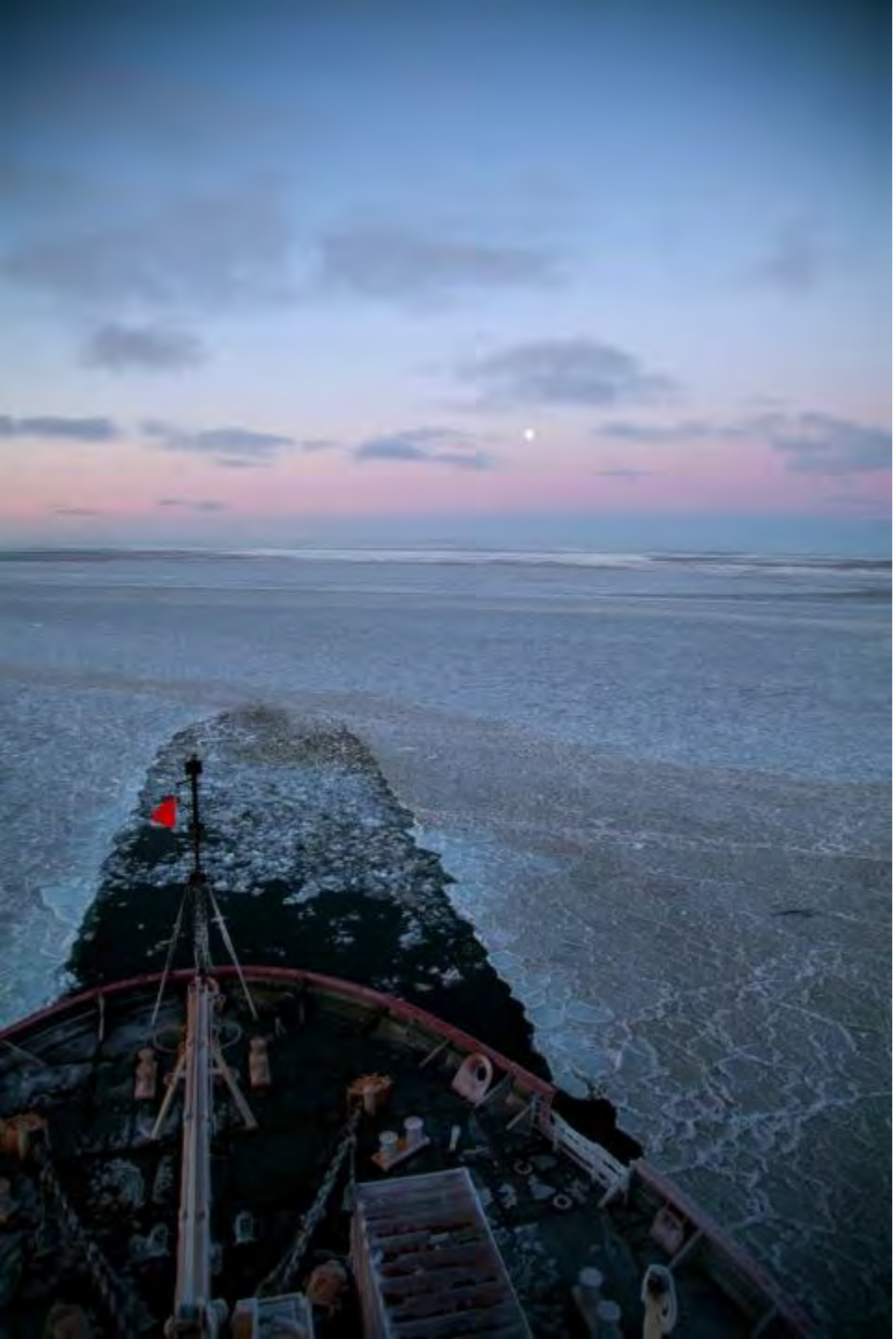
NOAA'S Arctic Program in 2017



NOAA's Arctic Mission

To determine how the Arctic system is changing on time scales of weeks to decades, particularly with respect to the consequences that the loss of sea ice may have on Arctic ecosystems, coastal management, economic development and northern hemisphere severe weather events.

NOAA Arctic Priority #1

Develop sustained Arctic observing and data management capabilities to improve coupled ocean-sea ice-atmosphere monitoring and modeling efforts in order to advance understanding of climate impacts on ecosystems and biological resources.

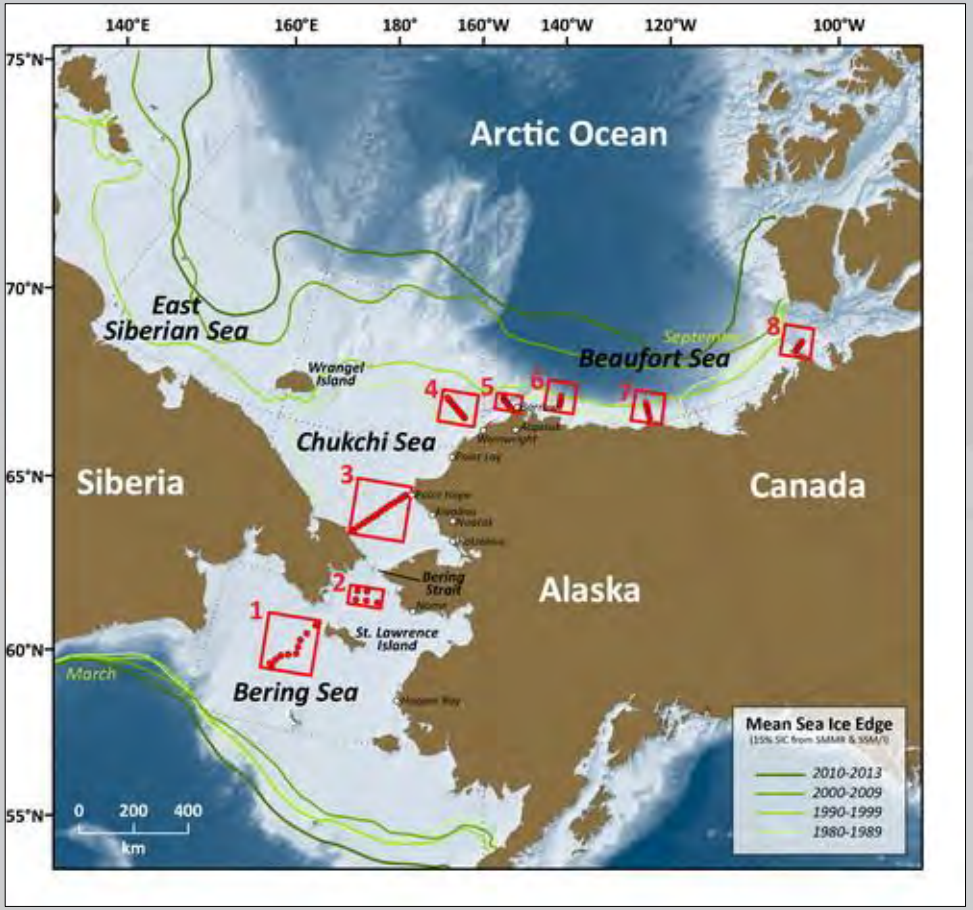
NOAA Arctic Priority #2

Enhance the scientific framework and capabilities forming the foundation for navigation services and spill response, to support increased ship traffic and commercial development across the Arctic Basin.

Arctic Research Program LOE 1

Distributed Biological Observatory (DBO)

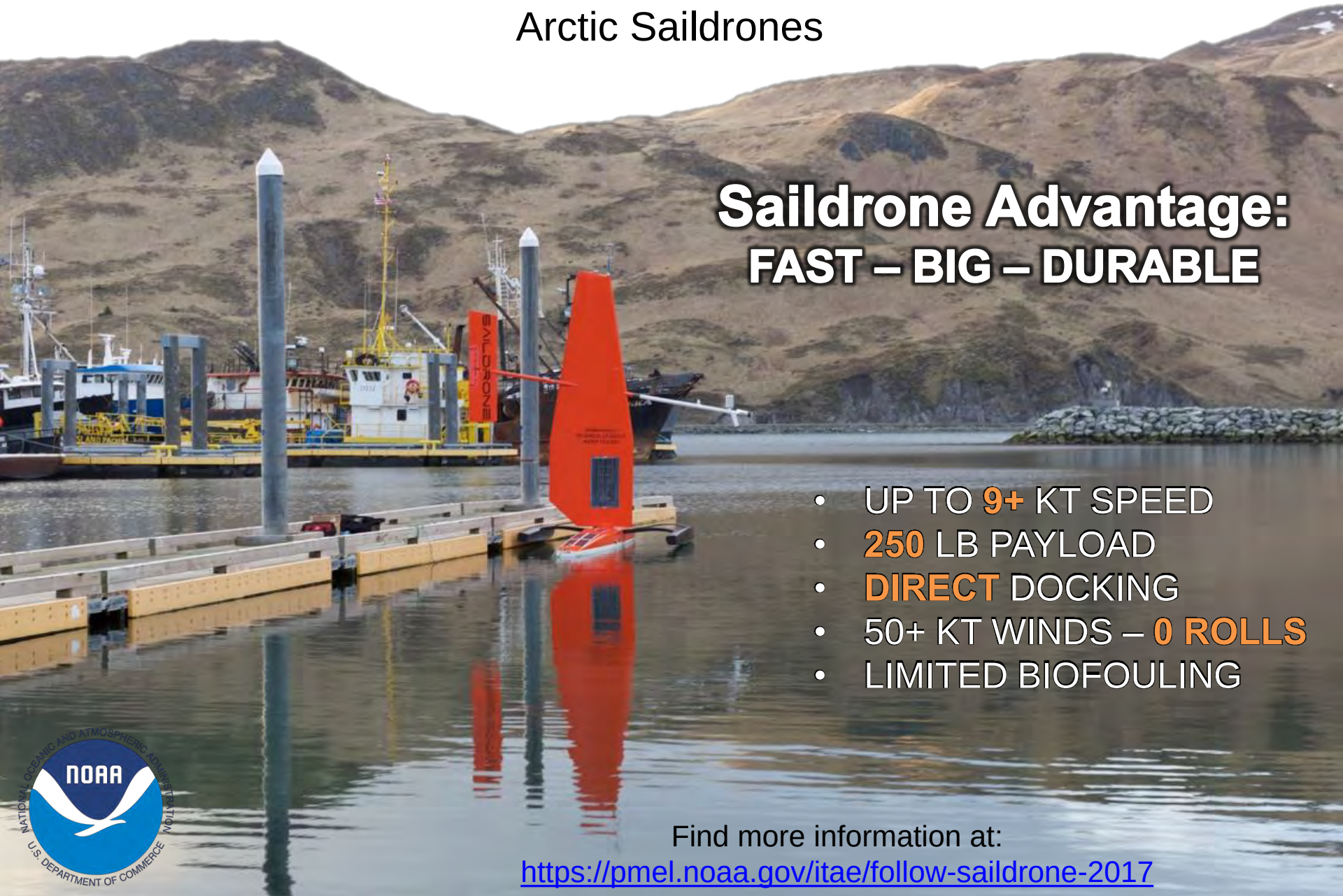
http://www.arctic.noaa.gov/dbo



- DBO regions are centered on "**hotspots**" located along a latitudinal gradient
- The DBO serves as a **change detection array**, *via* standardized sampling of biophysical processes
- Building **links** to coastal ecosystem health *via* Community Observations

Arctic Research Program LOE 2

Arctic Saildrones



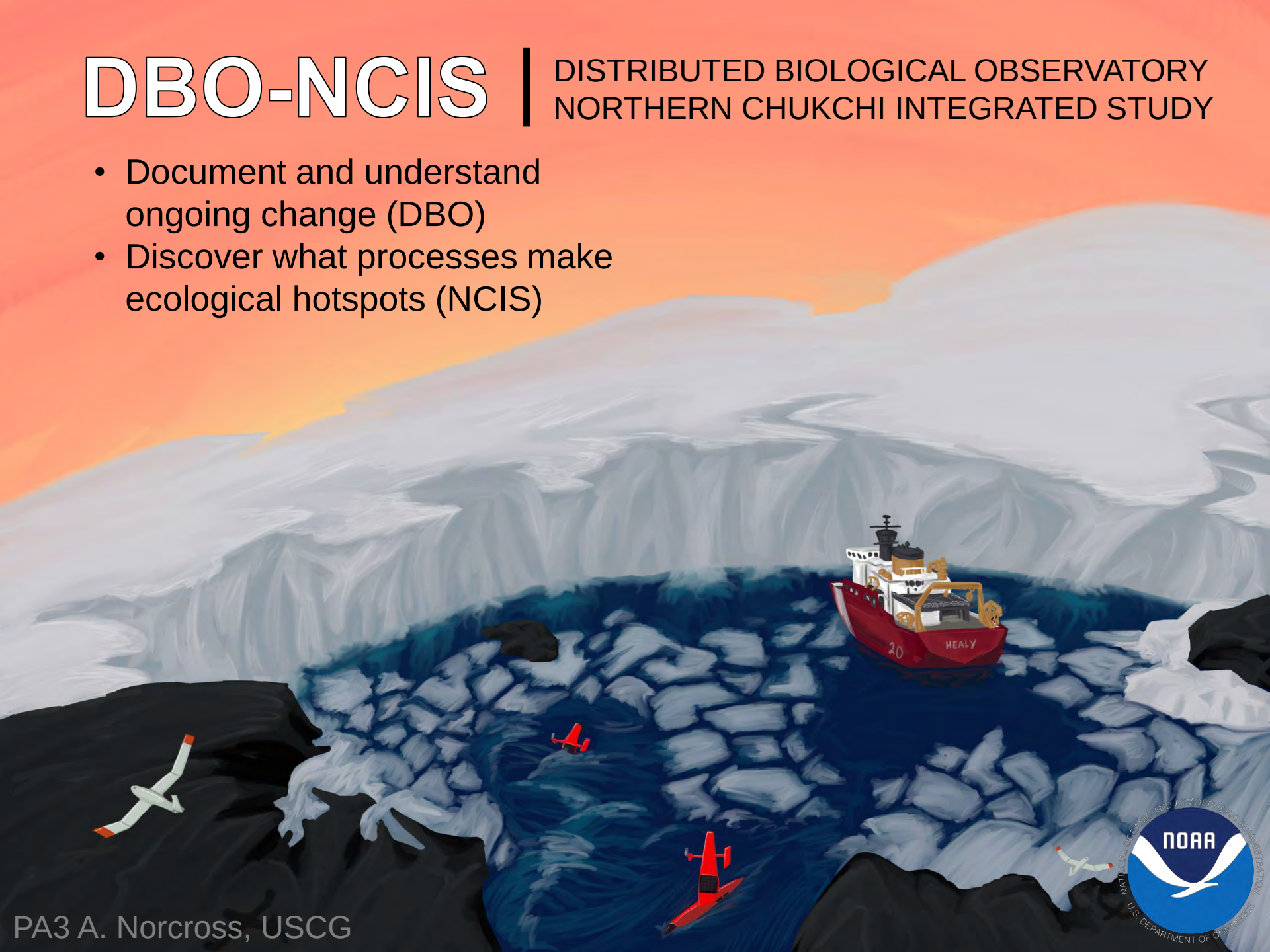
Saildrone Advantage:
FAST – BIG – DURABLE

- UP TO **9+** KT SPEED
- **250** LB PAYLOAD
- **DIRECT** DOCKING
- 50+ KT WINDS – **0 ROLLS**
- LIMITED BIOFOULING

Find more information at:
https://pmel.noaa.gov/itae/follow-saildrone-2017

DBO-NCIS | DISTRIBUTED BIOLOGICAL OBSERVATORY NORTHERN CHUKCHI INTEGRATED STUDY

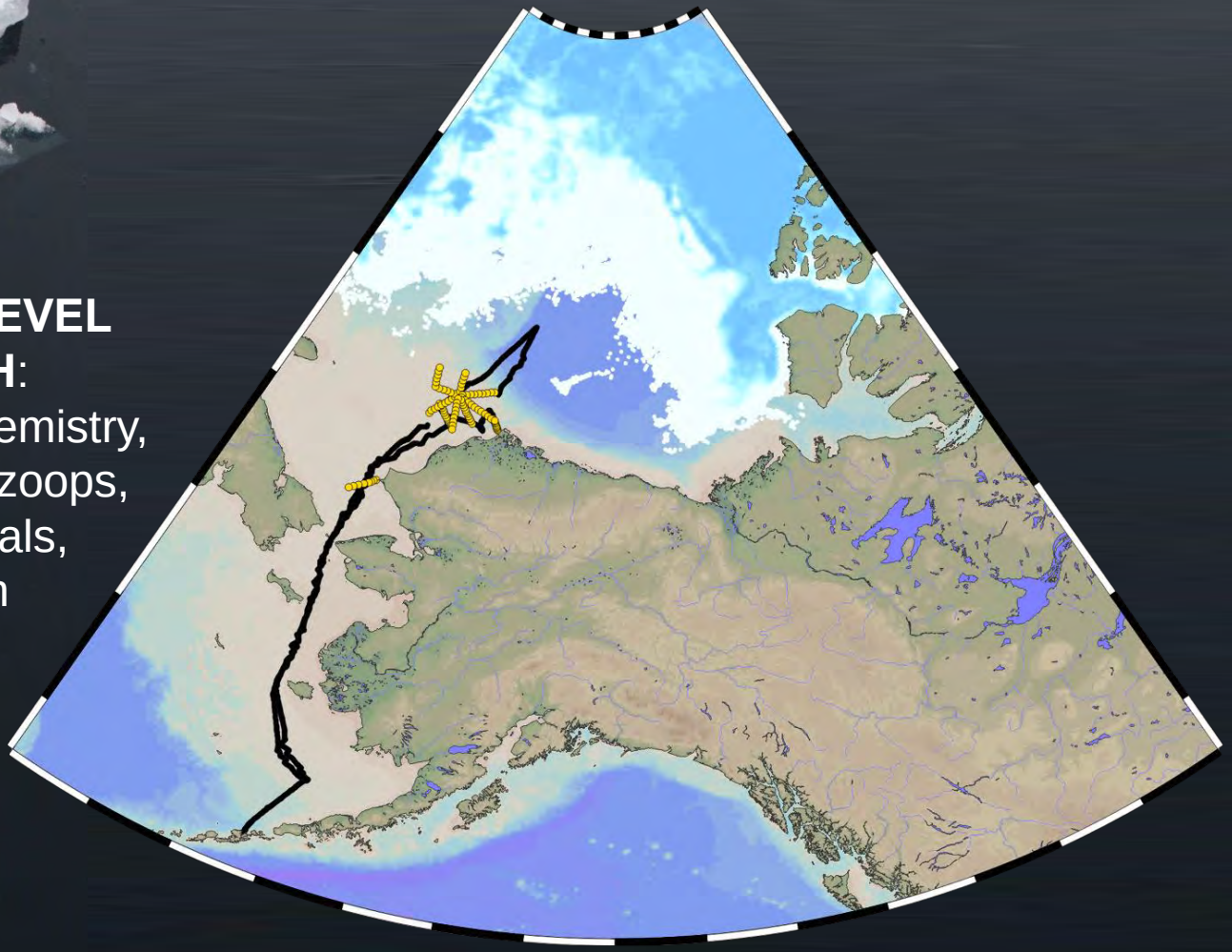
- Document and understand ongoing change (DBO)
- Discover what processes make ecological hotspots (NCIS)



PA3 A. Norcross, USCG

2017 DBO-NCIS

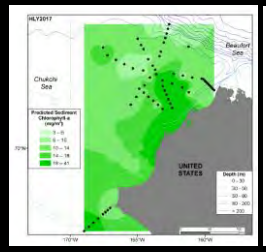
SYSTEM-LEVEL RESEARCH:
Physics, chemistry, sediments, zoops, fish, mammals, & birds, with ships & Saildrones



OAP ARCTIC PROGRAM ITAE SAILDRONE

Climate change could have substantial impacts on ecosystem services.

Sediment Chl



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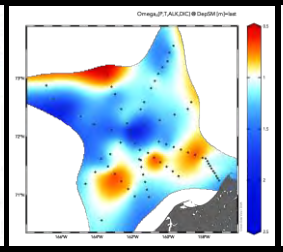
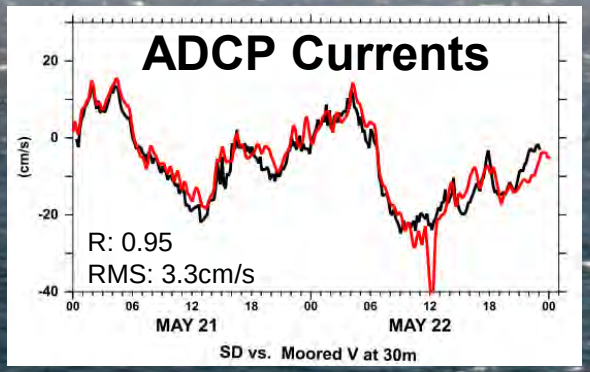


Shearwater density

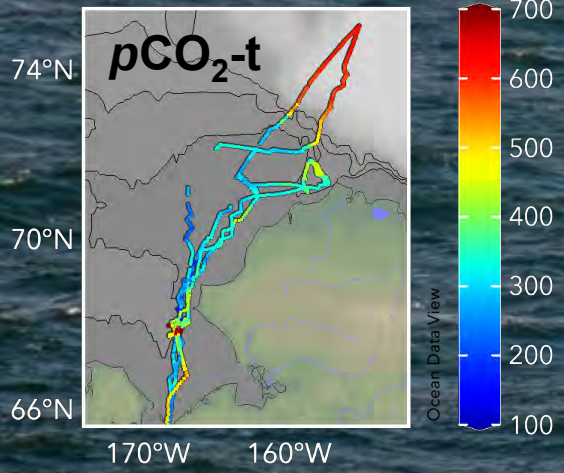
South of Hanna Shoal, productivity is high and food is abundant– but so are elements of change, like more frequent upwelling and intensified acidification (as we observed in 2017).

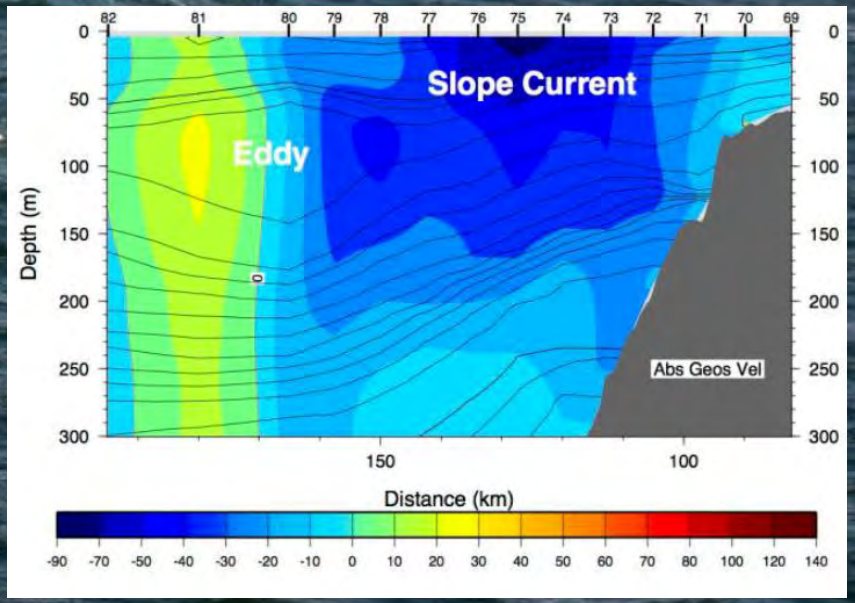
Will this cause the hotspot to change or shift?

How can Saildrones help?



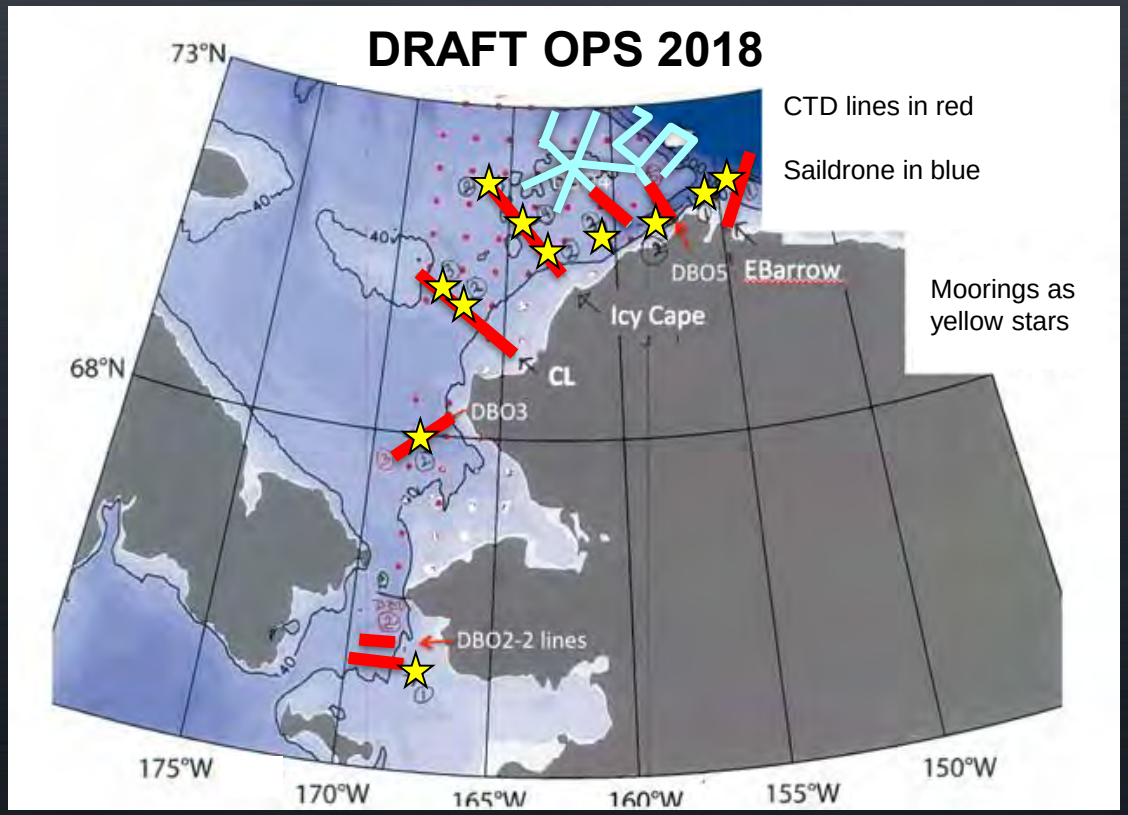
- NEW IN 2017: Proven ADCP and pCO2
- Extend grid
- Explore under-sampled territory
- Validate model bounds and extremes





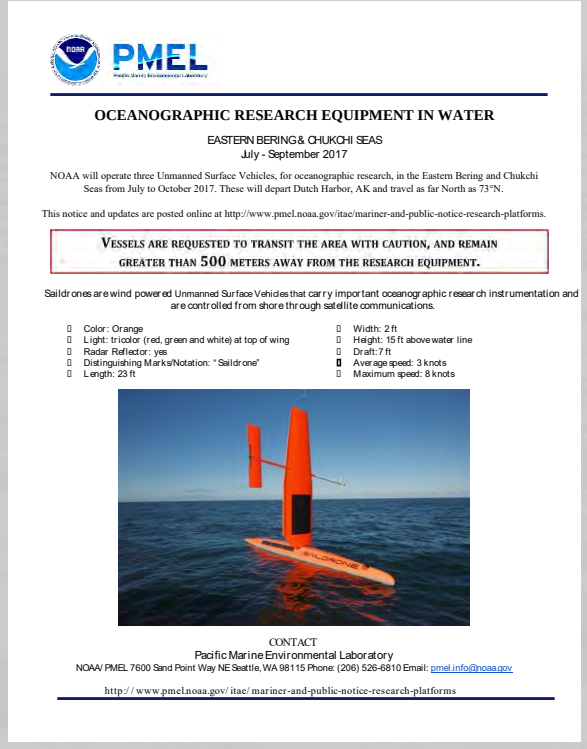
2018 DBO-NCIS

SYSTEM-LEVEL RESEARCH: Physics, chemistry, sediments, zoops, fish, mammals, & birds, with ships & Saildrones **+Moorings**



Communication of Operations

- PMEL Operations & Ship Schedules PMEL, NOAA & JISAO Communications teams
- US Coast Guard Notice to Mariners reporting system
- Arctic Icebreaker Coordinating Committee
- Alaska Eskimo Whaling Commission
- Eskimo Walrus Commission
- Arctic Waterways Safety Commission
- National Weather Service
- US National Ice Center
- Alaska Contact List Borough and tribal leaders, industry reps, and research community
- Alaska Sea Grant MAP Agents Gateway to local communities
- DOI Regional Landscape Conservation Cooperatives Gateway to Alaska coastal resilience community
- Inter-agency Arctic Research Policy Committee Gateway to US research and policy community
- US Arctic Observing Network Gateway to US Arctic Research Commission
- Pacific Arctic Group Gateway to international research community



PMEL

OCEANOGRAPHIC RESEARCH EQUIPMENT IN WATER

EASTERN BERING& CHUKCHI SEAS
July - September 2017

NOAA will operate three Unmanned Surface Vehicles, for oceanographic research, in the Eastern Bering and Chukchi Seas from July to October 2017. These will depart Dutch Harbor, AK and travel as far North as 73°N.

This notice and updates are posted online at http://www.pmel.noaa.gov/itae/mariner-and-public-notice-research-platforms.

VESSELS ARE REQUESTED TO TRANSIT THE AREA WITH CAUTION, AND REMAIN GREATER THAN 500 METERS AWAY FROM THE RESEARCH EQUIPMENT.

Saildrones are wind powered Unmanned Surface Vehicles that carry important oceanographic research instrumentation and are controlled from shore through satellite communications.

- Color: Orange
- Light: tricolor (red, green and white) at top of wing
- Radar Reflector: yes
- Distinguishing Marks/Notation: " Saildrone"
- Length: 23 ft
- Width: 2 ft
- Height: 15 ft above water line
- Draft: 7 ft
- Average speed: 3 knots
- Maximum speed: 8 knots

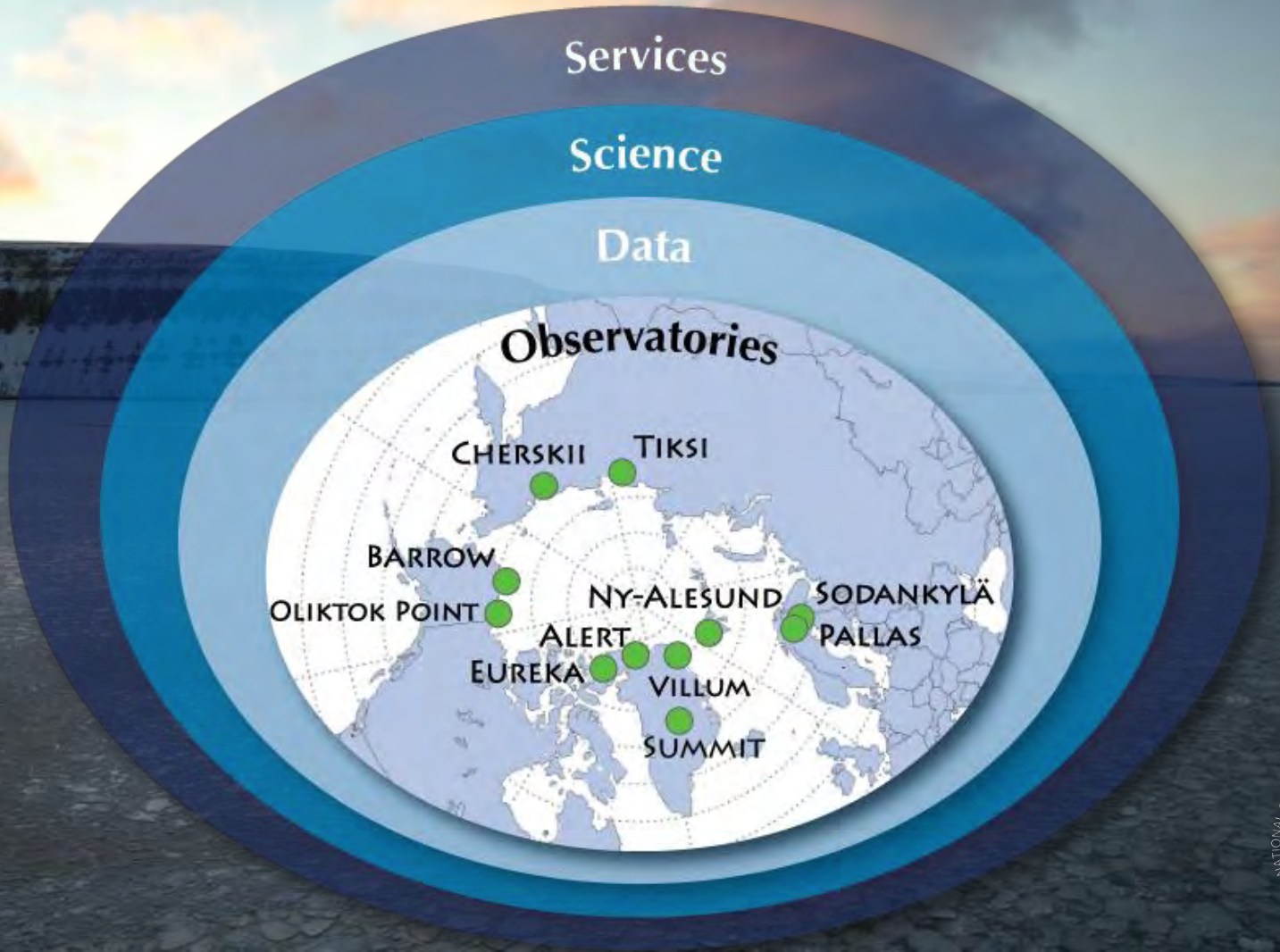
CONTACT
Pacific Marine Environmental Laboratory
NOAA/ PMEL 7600 Sand Point Way NE Seattle, WA 98115 Phone: (206) 526-6810 Email: pmel.info@noaa.gov

http://www.pmel.noaa.gov/itae/mariner-and-public-notice-research-platforms

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NOAA
U.S. DEPARTMENT OF COMMERCE

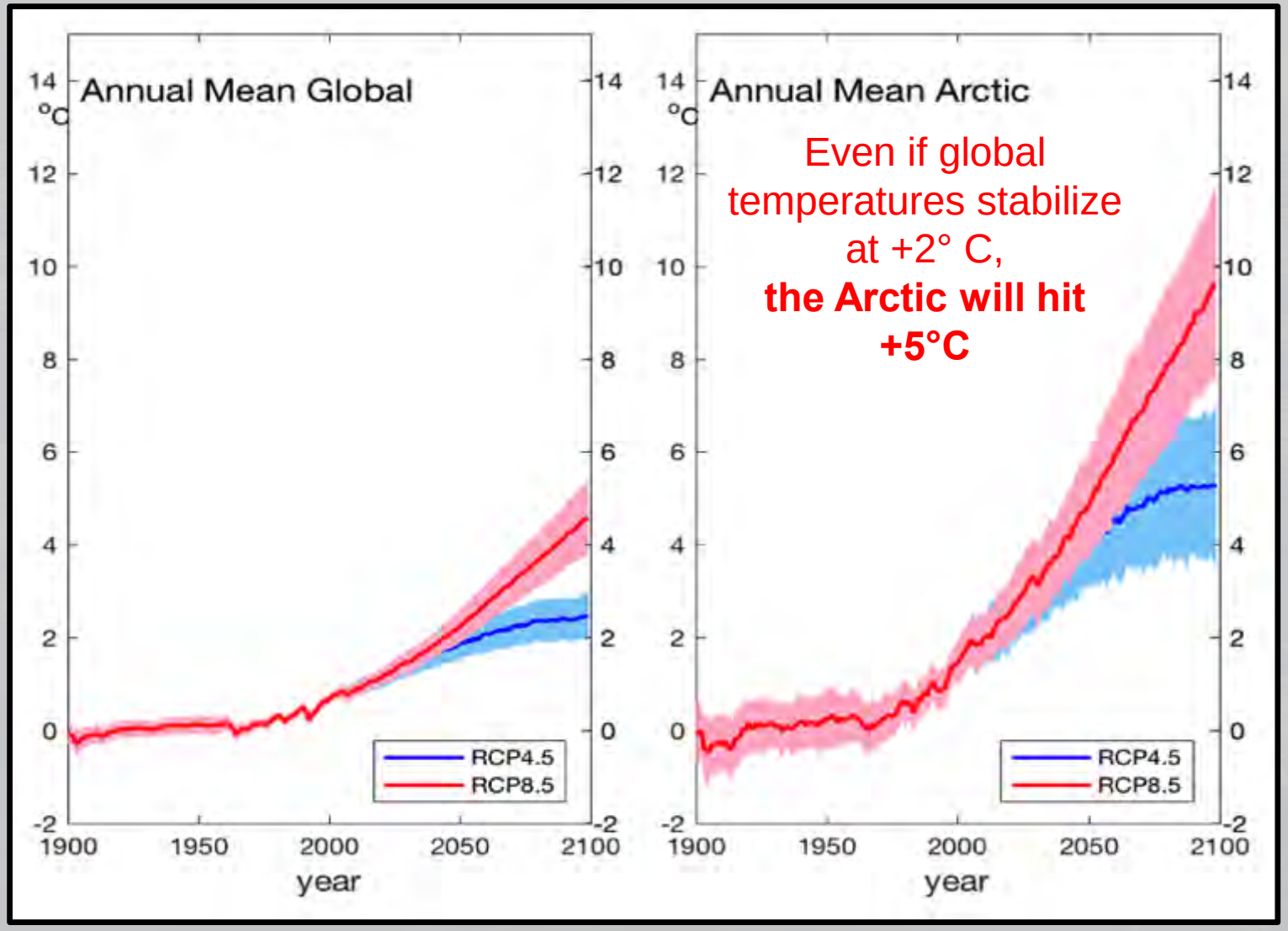
Arctic Research Program LOE 3

International Arctic Systems for Observing the Atmosphere (IASOA)



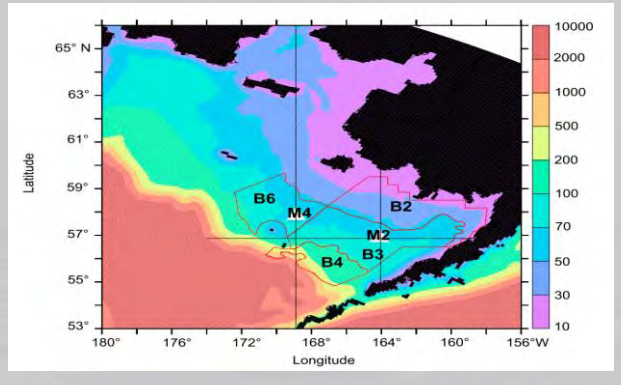
Arctic Research Program LOE 4

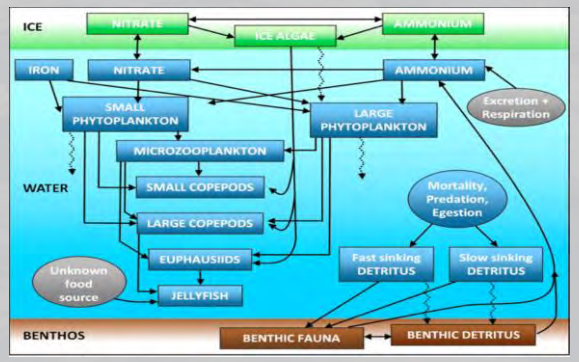
Support expanded modeling of climate, sea ice, and ecosystems

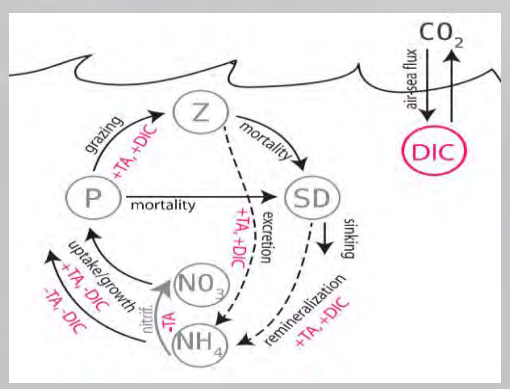


Arctic Research Program LOE 4

Support expanded modeling of climate, sea ice, and ecosystems







Regional OA Model

Arctic Research Program LOE 5

U.S. Arctic Observing Network (AON)

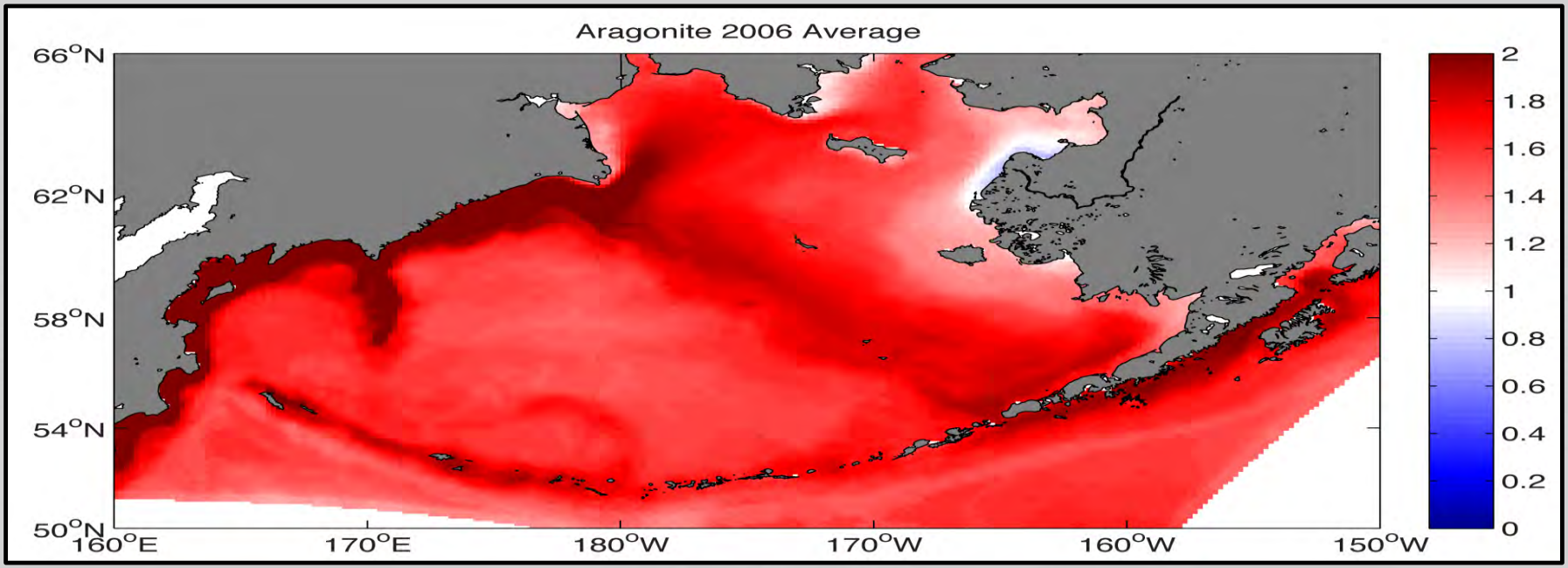
Establish and support a task-driven US AON to mobilize U.S. contributions towards **integrated and well-defined observing networks** that enable access to high quality data, expertise and information in support of **scientific understanding, local needs, and agency operations**.

- Improve observational products for terrestrial snow cover;
- Improve cyberinfrastructure for synthesizing and applying ship tracking data (AIS) towards regional decision making;
- **Improve observing capacity for sea ice forecasting and navigation products;**
- **Improve biogeochemistry products for fisheries management.**

Arctic Research Program LOE 5

U.S. Arctic Observing Network (AON)

Establish and support a task-driven US AON to mobilize U.S. contributions towards **integrated and well-defined observing networks** that enable access to high quality data, expertise and information in support of **scientific understanding, local needs, and agency operations**.



– **Improve biogeochemistry products for fisheries management.**

NOAA'S Arctic Program in 2017