

Indigenous community engagement: addressing changes in Arctic marine environment

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National Marine Fisheries Service

National Oceanic and Atmospheric Administration

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Indigenous engagement is important for NOAA

- Arctic is changing and NOAA mission to adapt
- Increased risk to food security
- Blue economy: research with local communities on commercial and subsistence fisheries; natural resources; coastal resilience
- Weather and water: changes in wx and marine conditions affecting communities
- Innovative partnerships: community partnerships necessary for real time data flow in the region



Alaska Fisheries Science Center

- Alaska EEZ = 1.5 million nm²
- 5 Large Marine Ecosystems
- 60% U.S. seafood
- \$13.8B economic output to U.S.
- Top 2 volume fishing ports in U.S.



Beaufort Sea

Northern Bering Sea/Chukchi

- **Stewardship Healthy Marine Ecosystems**
 - 24+ Research Surveys
 - 250+ fish and crab species
 - 42 marine mammal species
- **Ecosystem Based Fish Management**
- **Conservation of protected species**



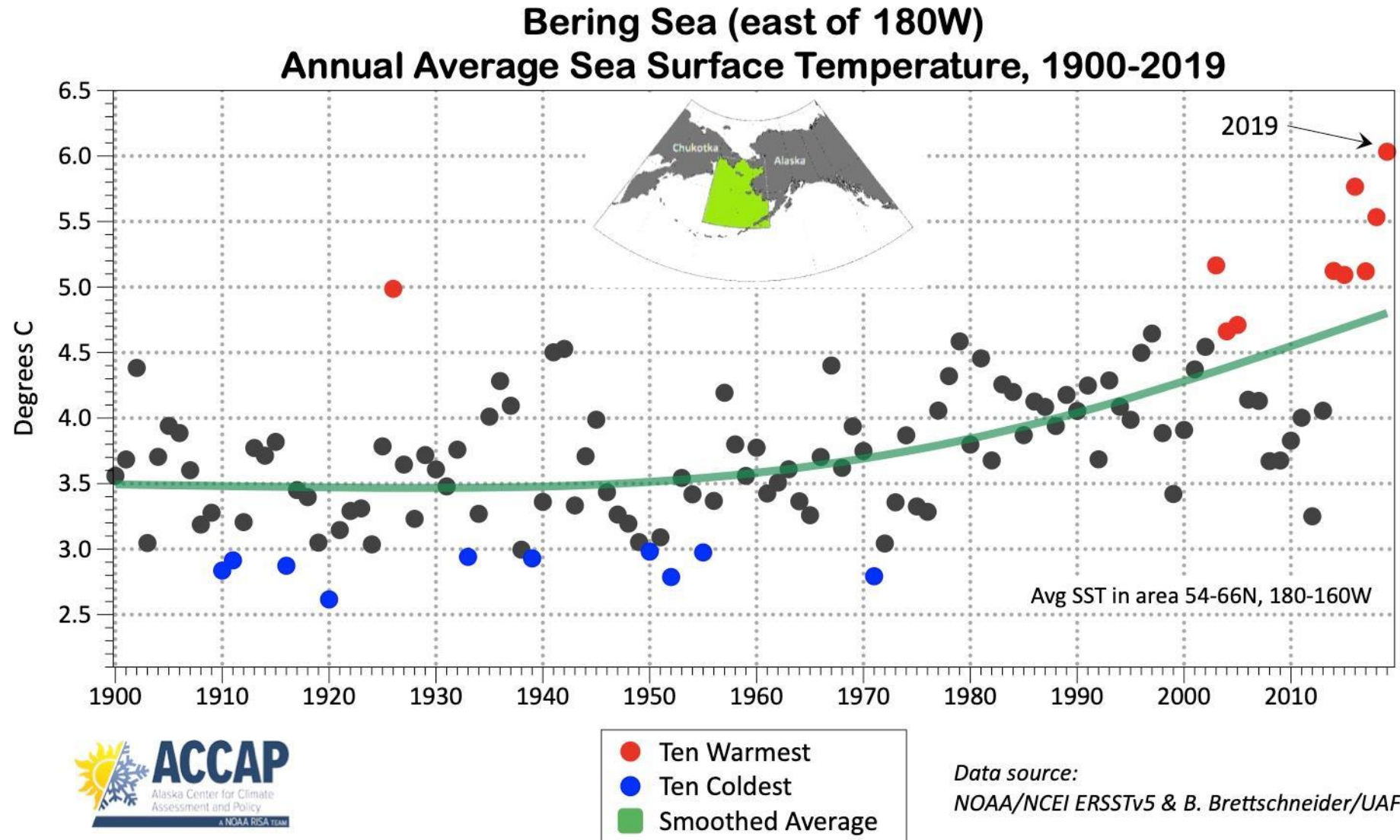
Eastern Bering Sea

Gulf of Alaska

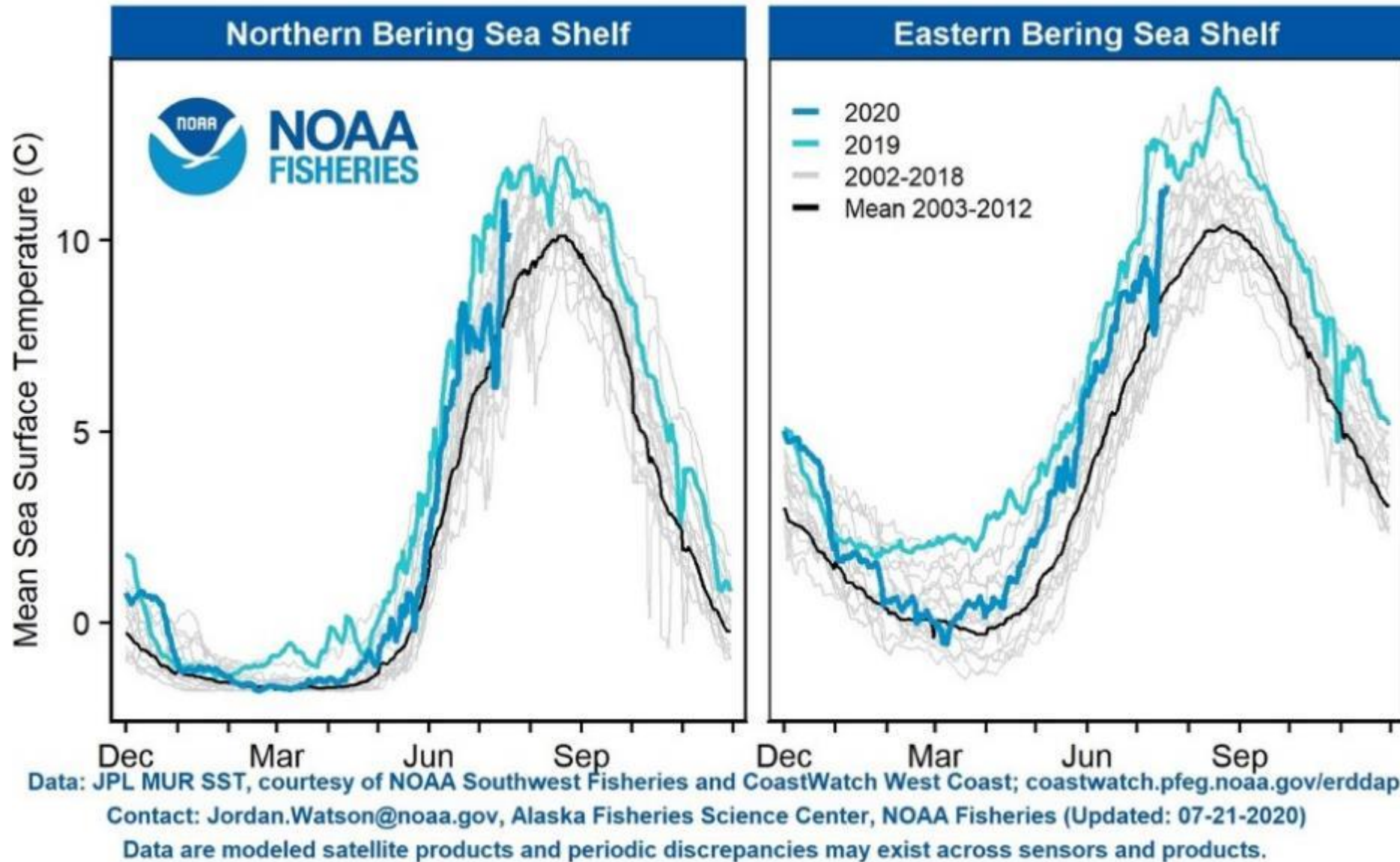


Aleutian Islands

Changes in the Arctic marine environment

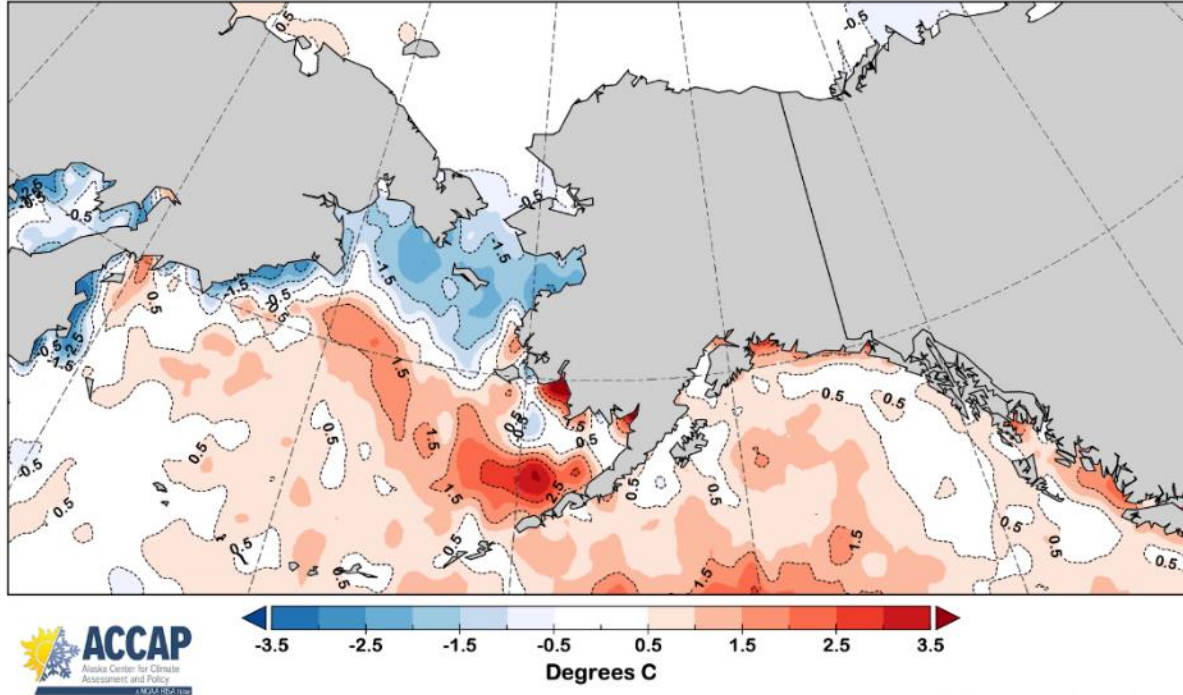


Changes in the Arctic marine environment

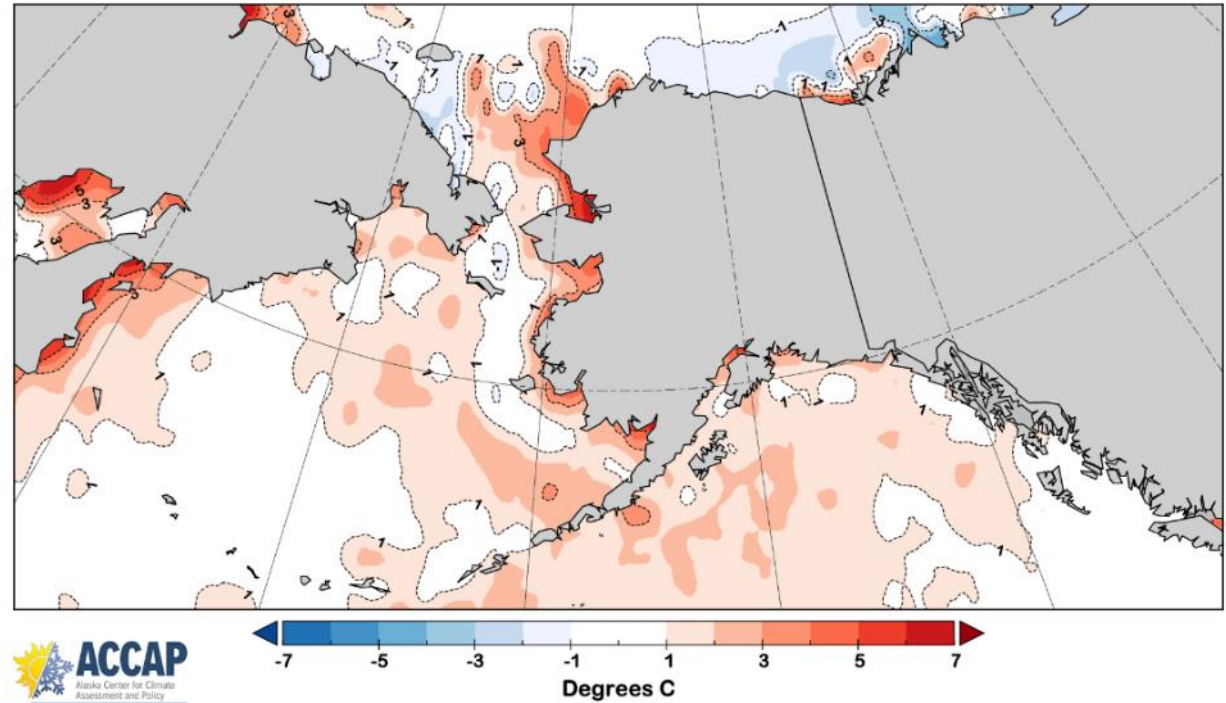


Changes in the Arctic marine environment

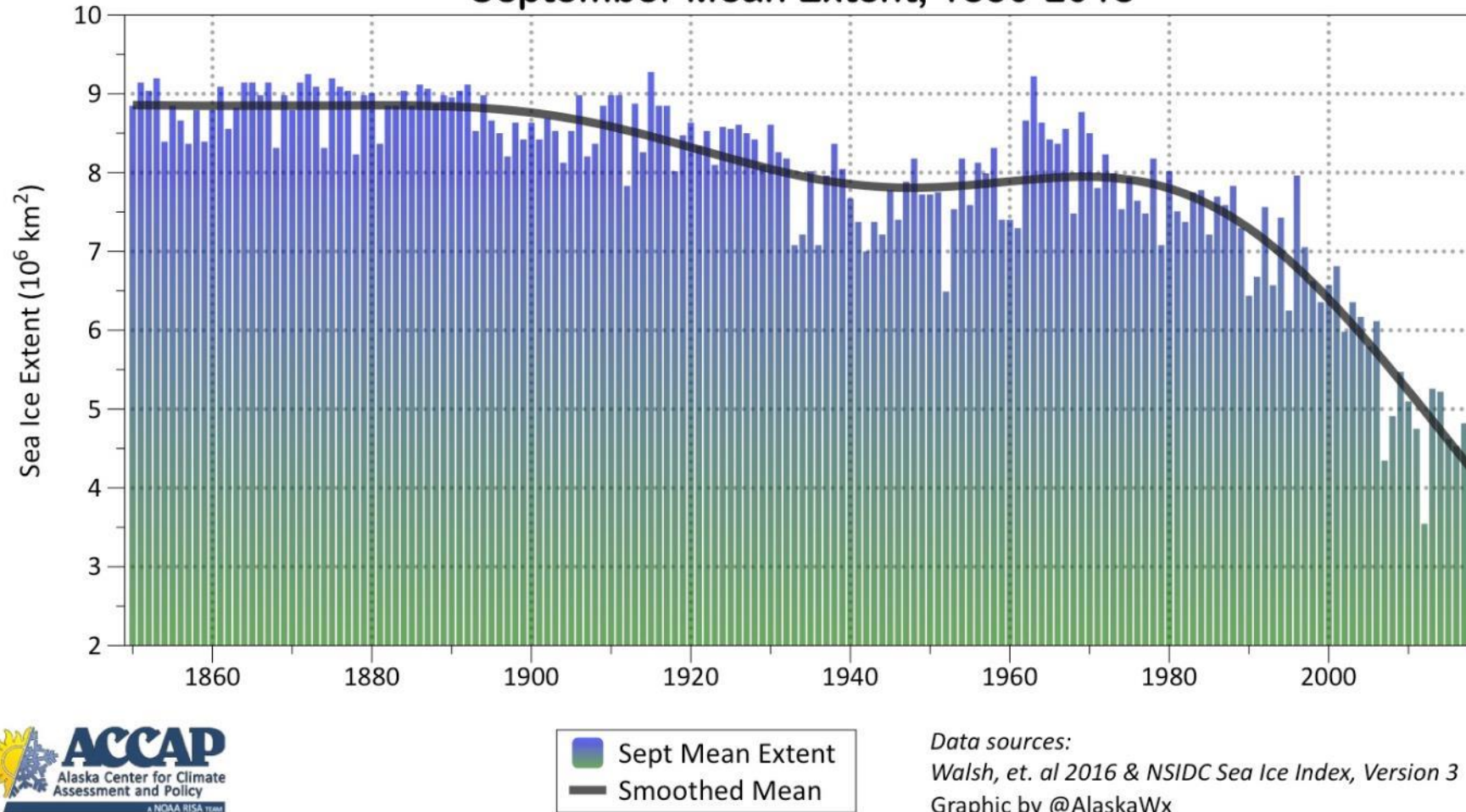
Sea Surface Temperature Departure from Normal
May 15-21, 2020



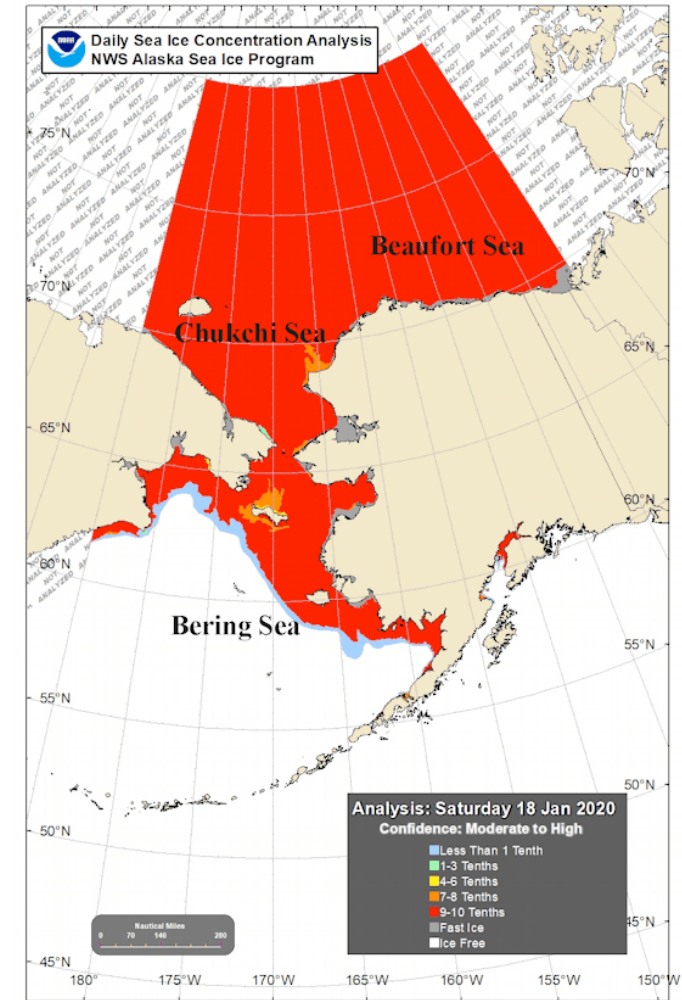
Sea Surface Temperature Departure from Normal
July 10-16, 2020



Arctic Sea Ice September Mean Extent, 1850-2018

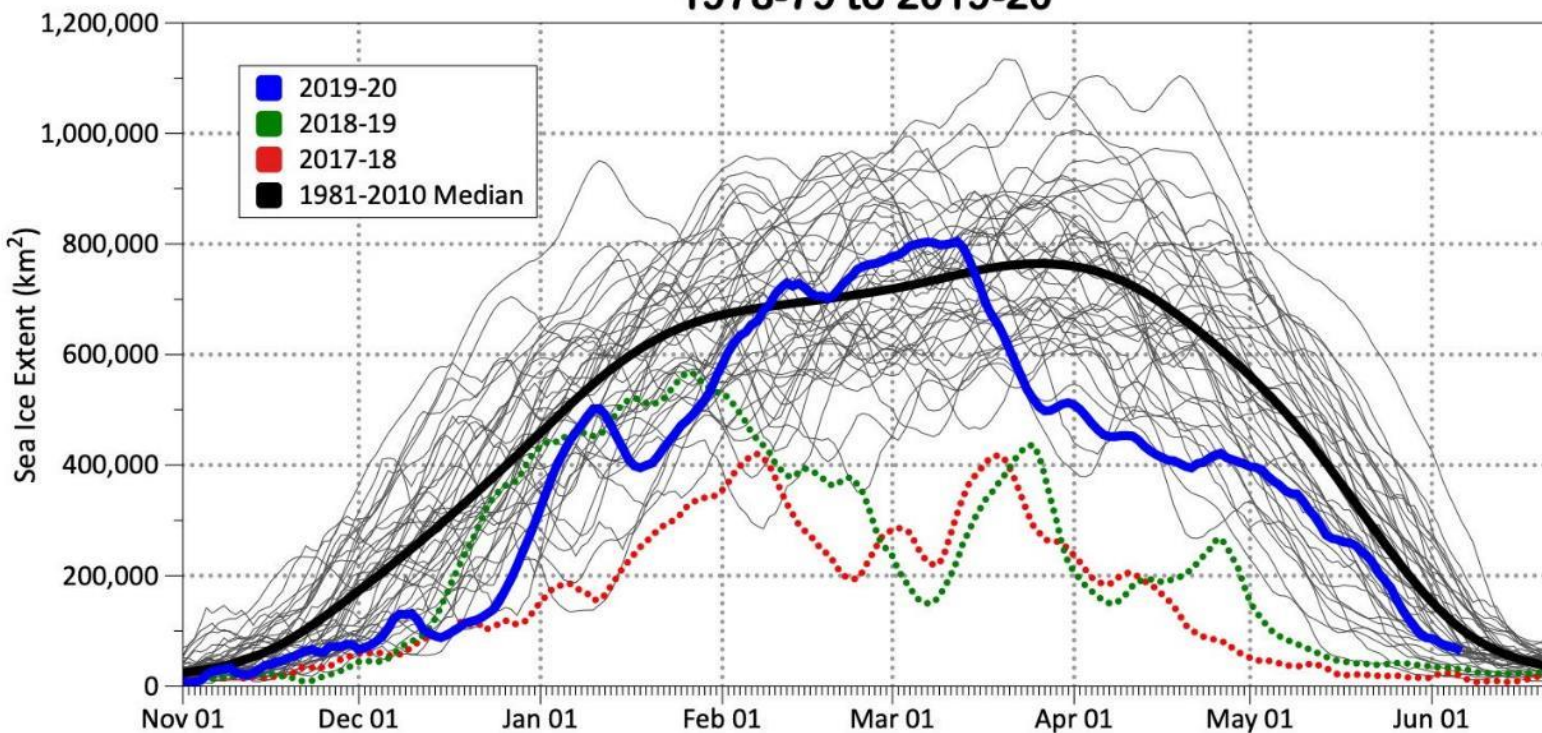


Data sources:
Walsh, et. al 2016 & NSIDC Sea Ice Index, Version 3
Graphic by @AlaskaWx

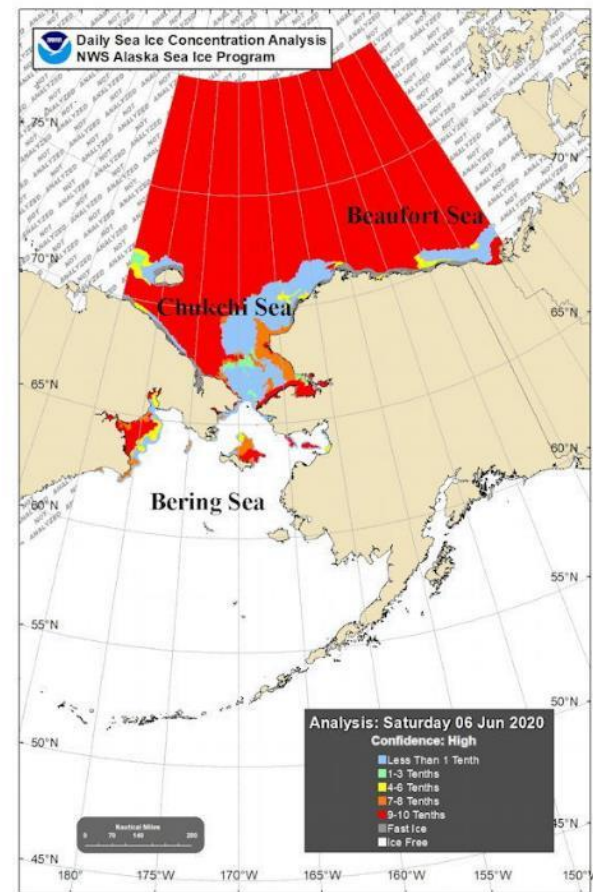


Changes in the Arctic marine environment

**Bering Sea Daily Ice Extent
1978-79 to 2019-20**

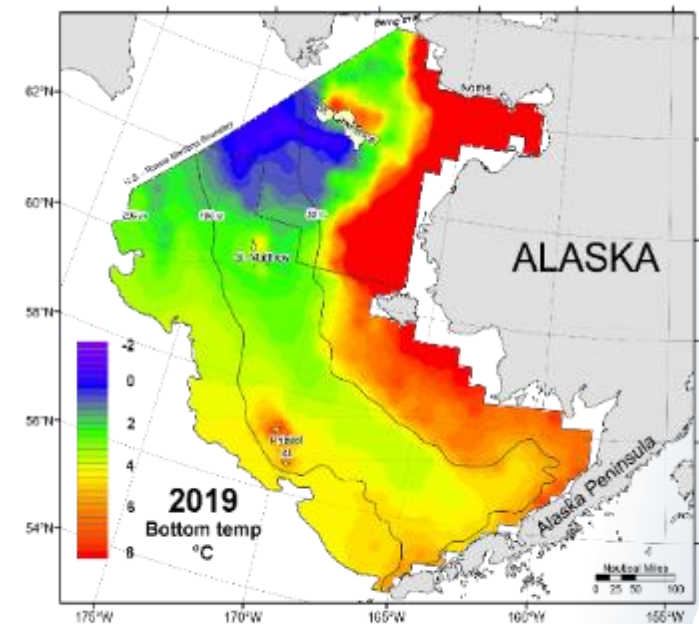
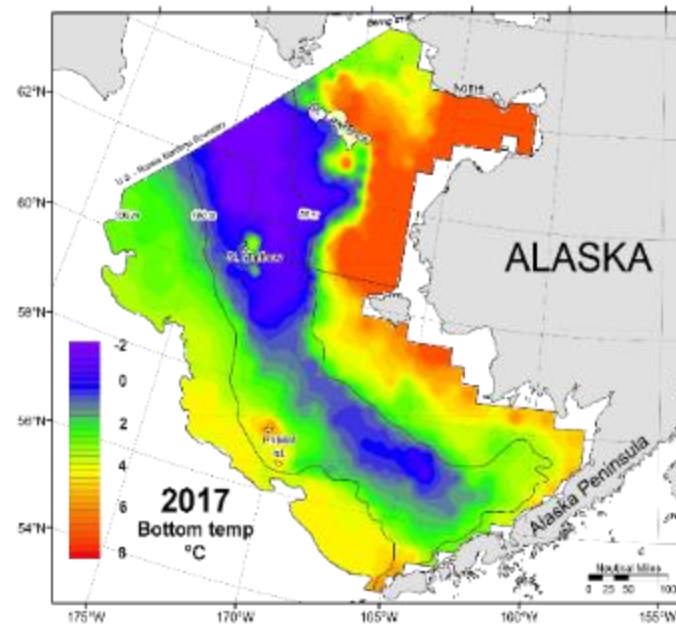
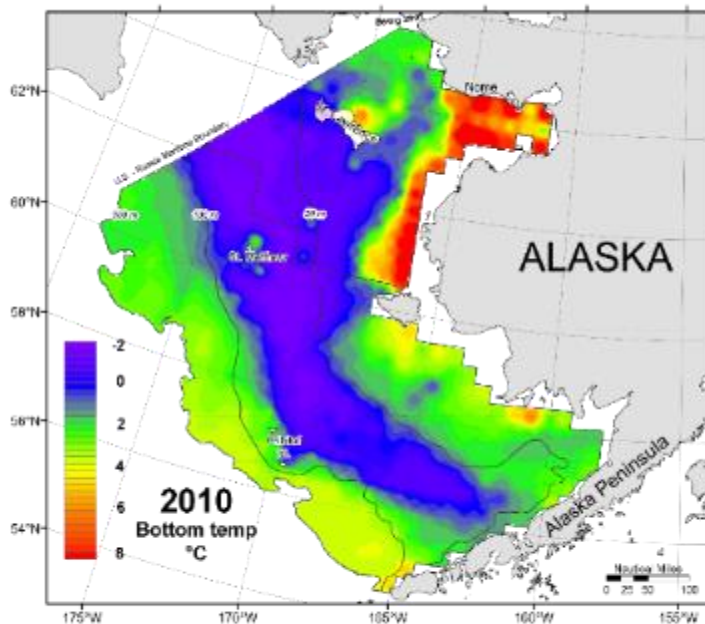


Data source: NSIDC Sea Ice Index, Version 3
Updated June 06, 2020



Implications for food security

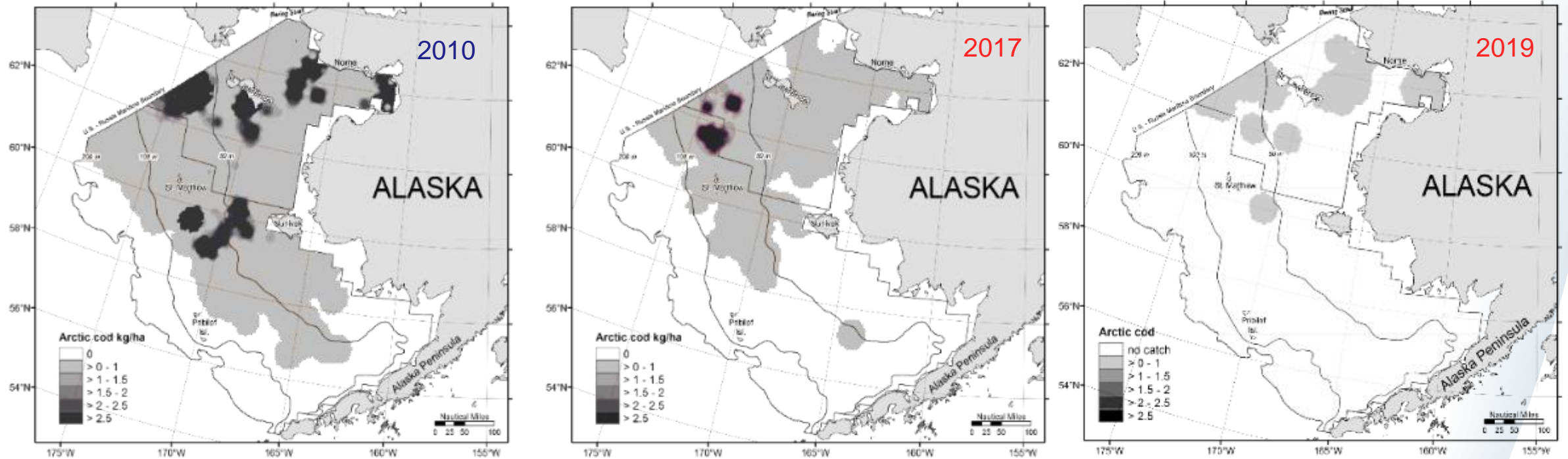
Eastern Bering Sea Seafloor (Bottom) Temperature



Implications for food security



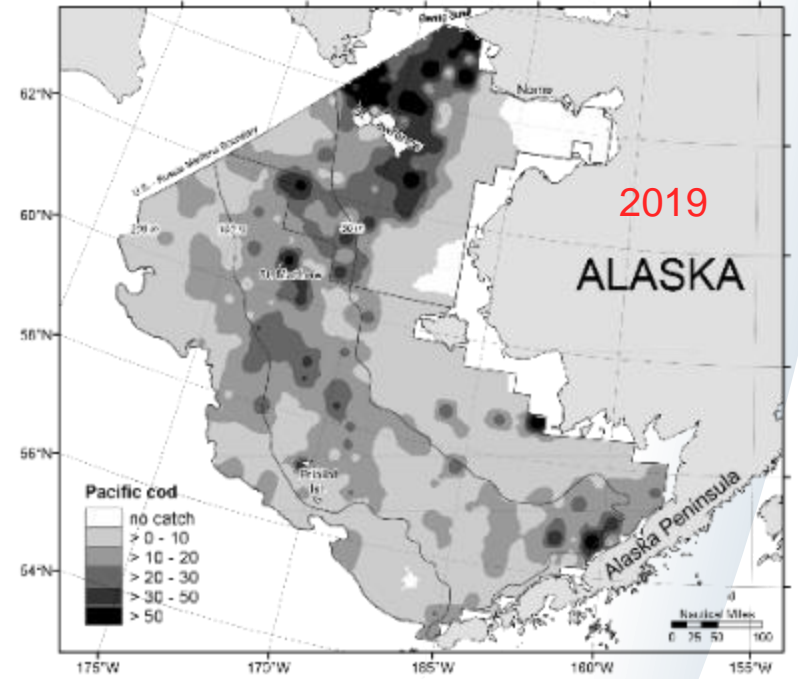
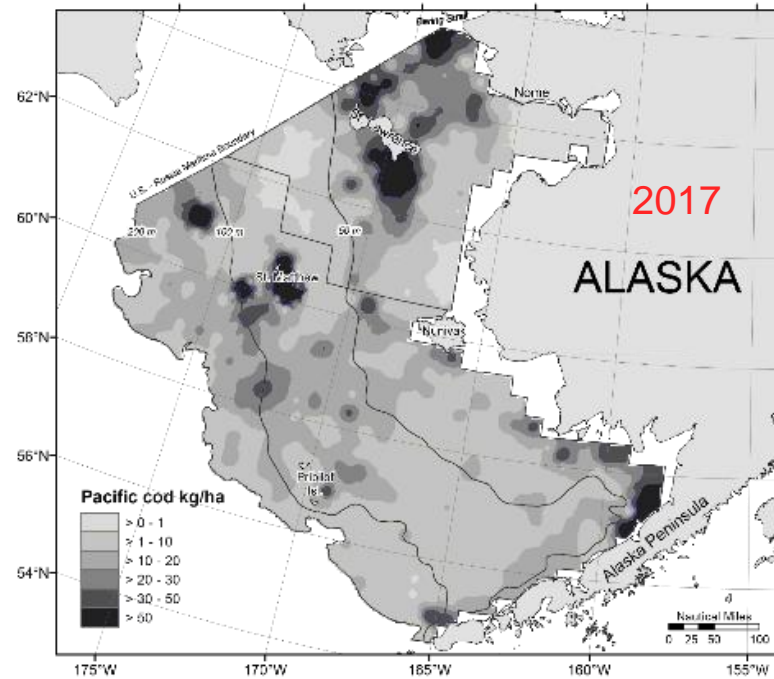
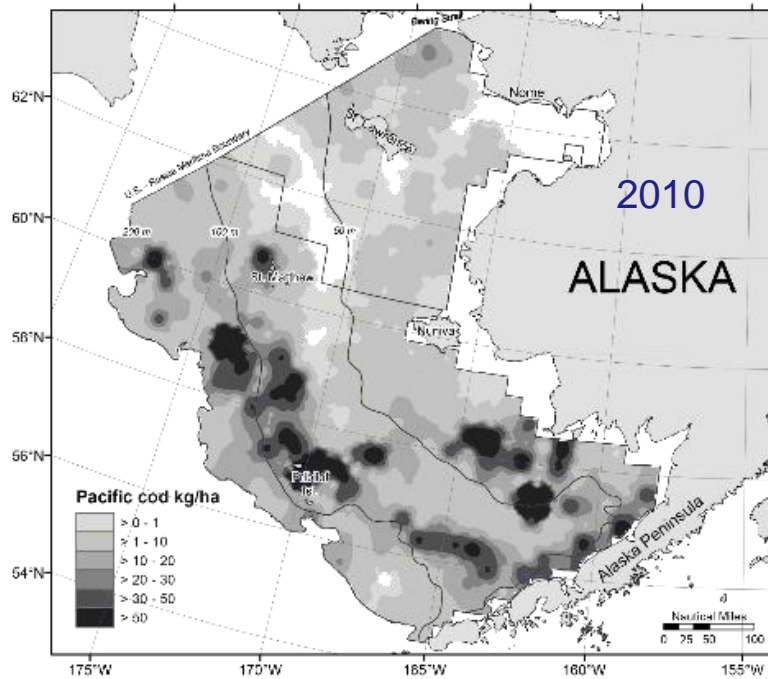
Changes in Distribution-Arctic Cod



Implications for food security

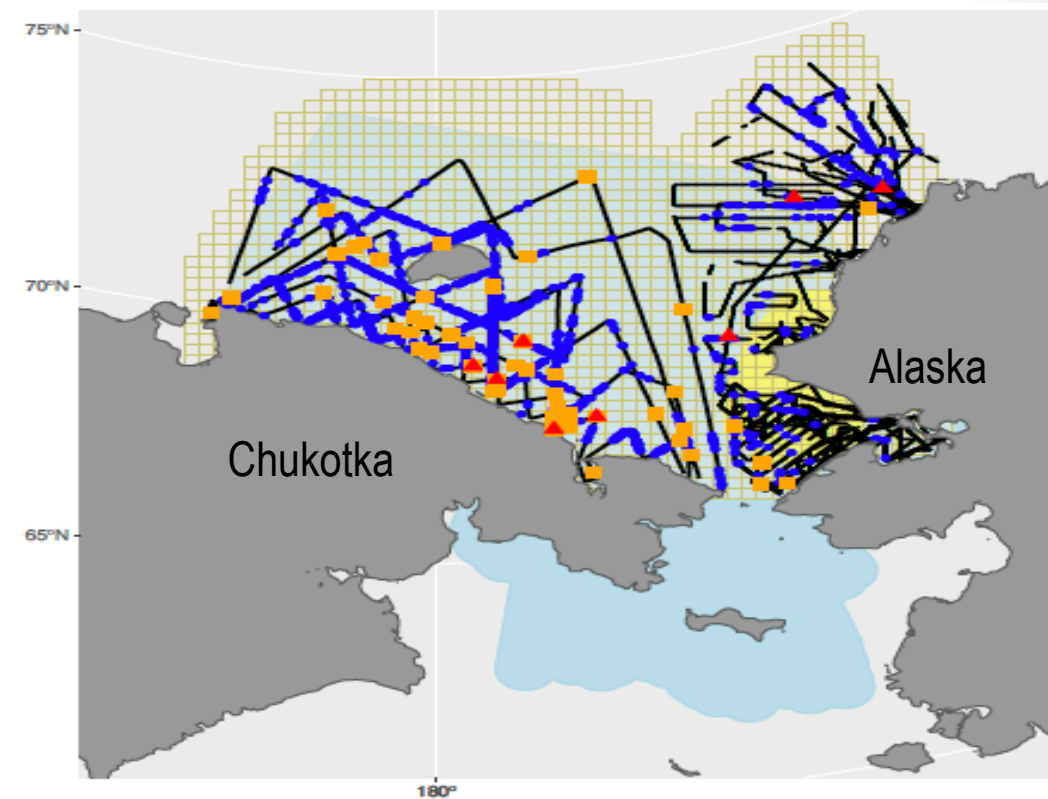
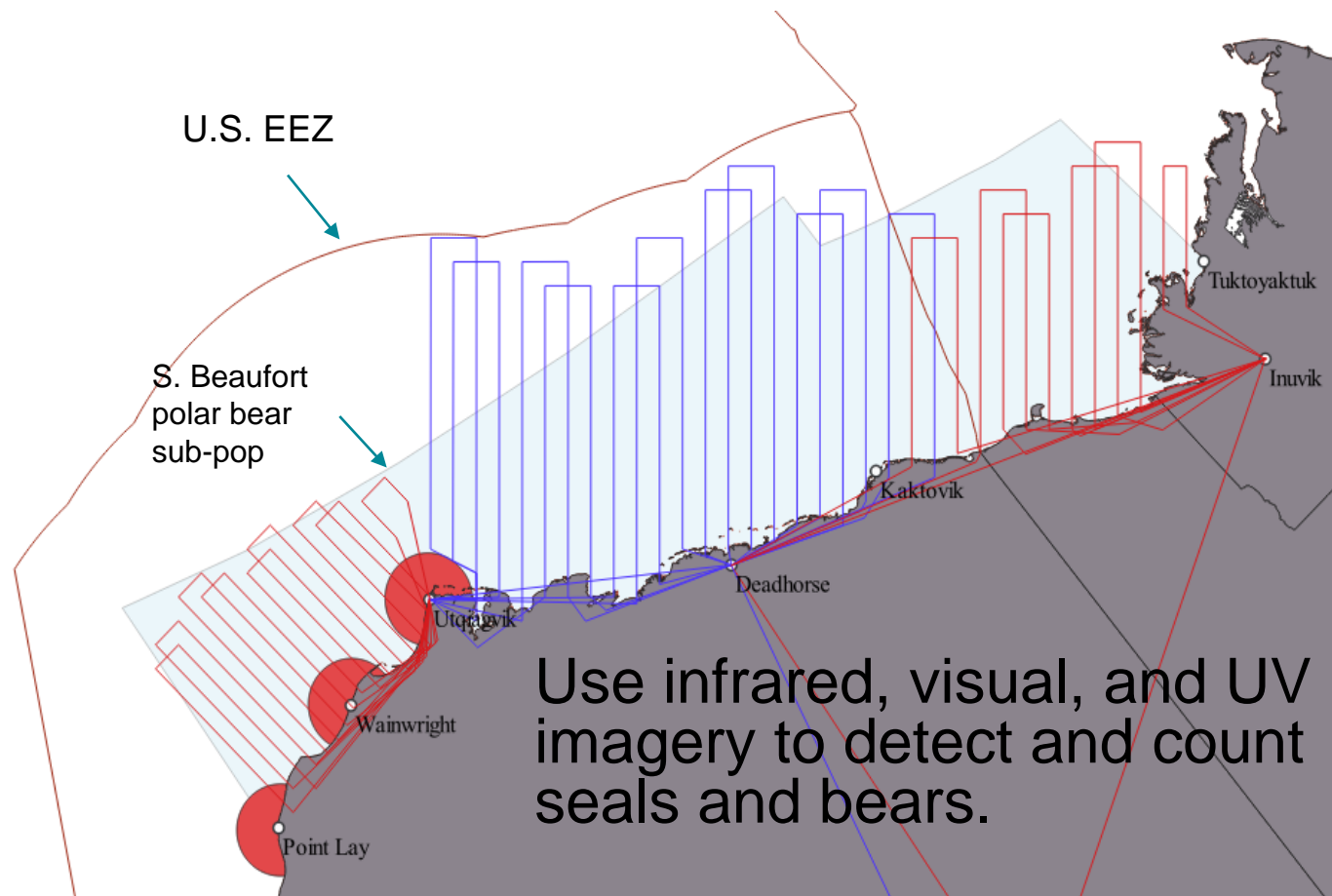


Changes in Distribution-Pacific Cod



Implications for community engagement

Aerial Survey for Ice Seals and Polar Bears in the Beaufort Sea

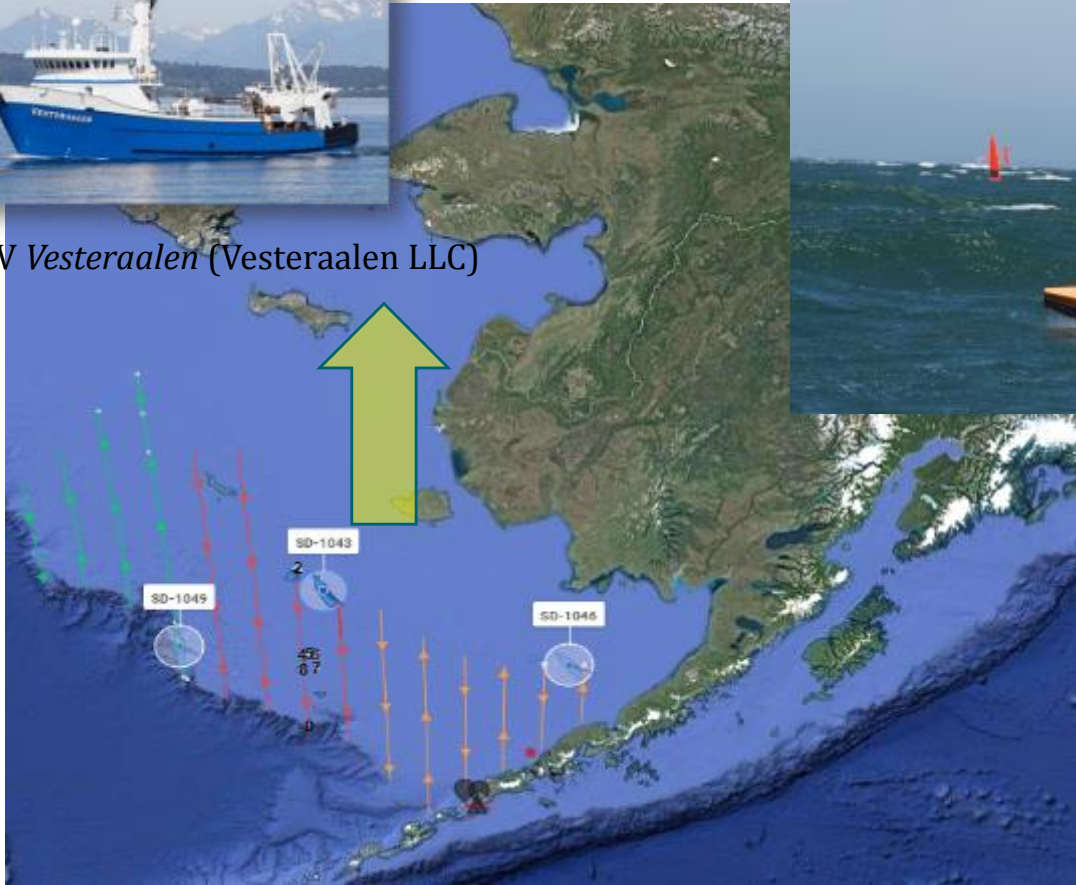


Implications for community engagement

Southeastern Bering Sea Surveys



F/V Vesteraalen (Vesteraalen LLC)



F/V Sea Storm (Arctic Storm LLC)



F/V Alaska Knight (US Seafoods)



F/V

(B&N)



Implications for community engagement

Integrated Ocean & Coastal Mapping

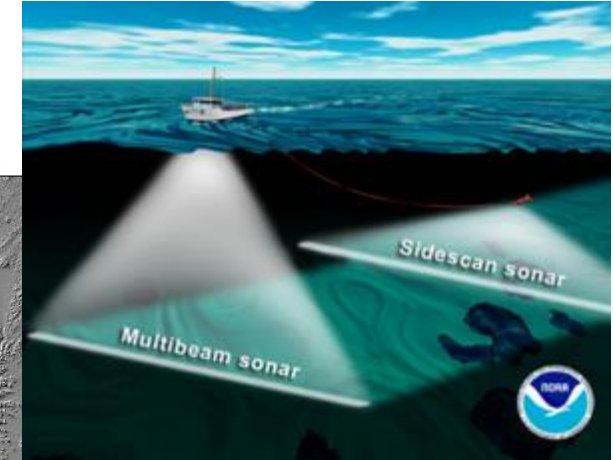
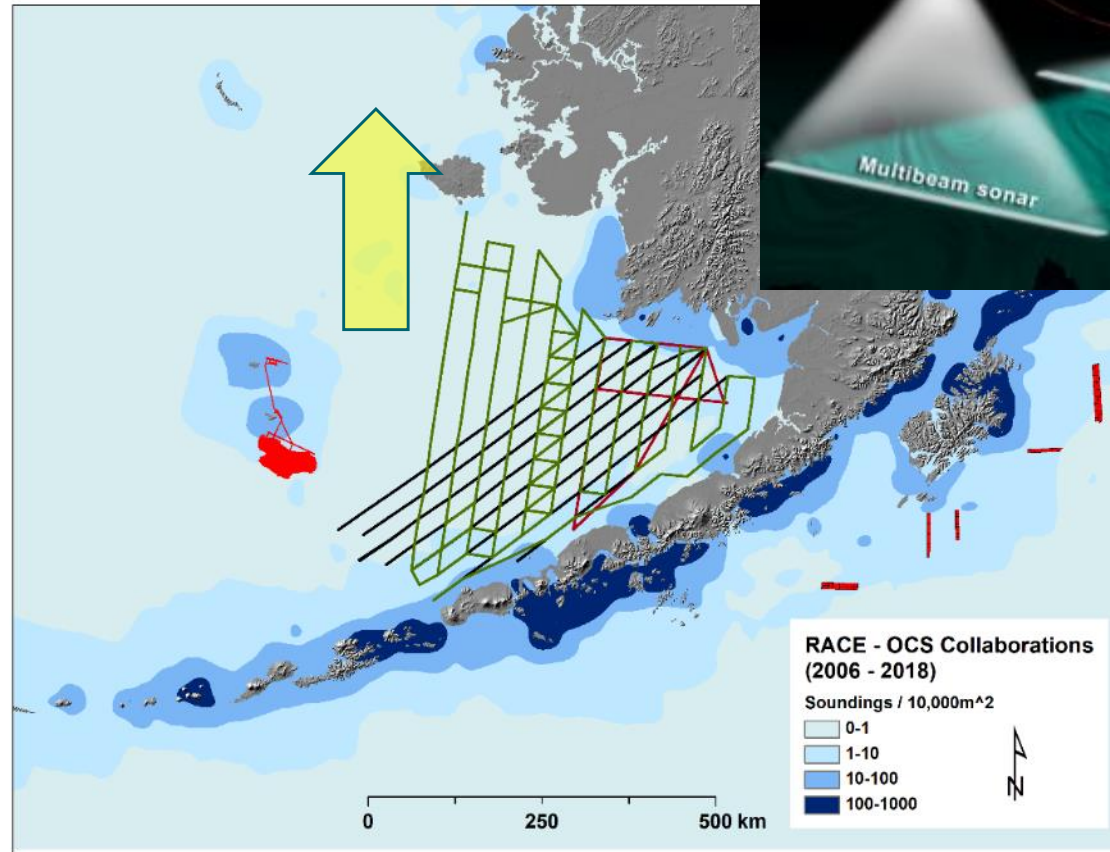
National Marine Fisheries
Service – Office of Coast
Services Collaborations
2006-2018

NMFS Research

- EFH spatial distribution modeling
- Develop new mapping technology
- Survey-trawl catchability
- Untrawlable habitat mapping

OCS Nautical Charting

- Updates for areas with old or non-existent data
- Backscatter acquisition & processing SOPs



Government Research Challenge

- Communities need a conduit to multiple government research entities working in AK
- Government research agencies cannot efficiently interact individually with each tribe/community

Solution?

- provide a one-government approach for efficient and effective communication, coordination, and collaboration



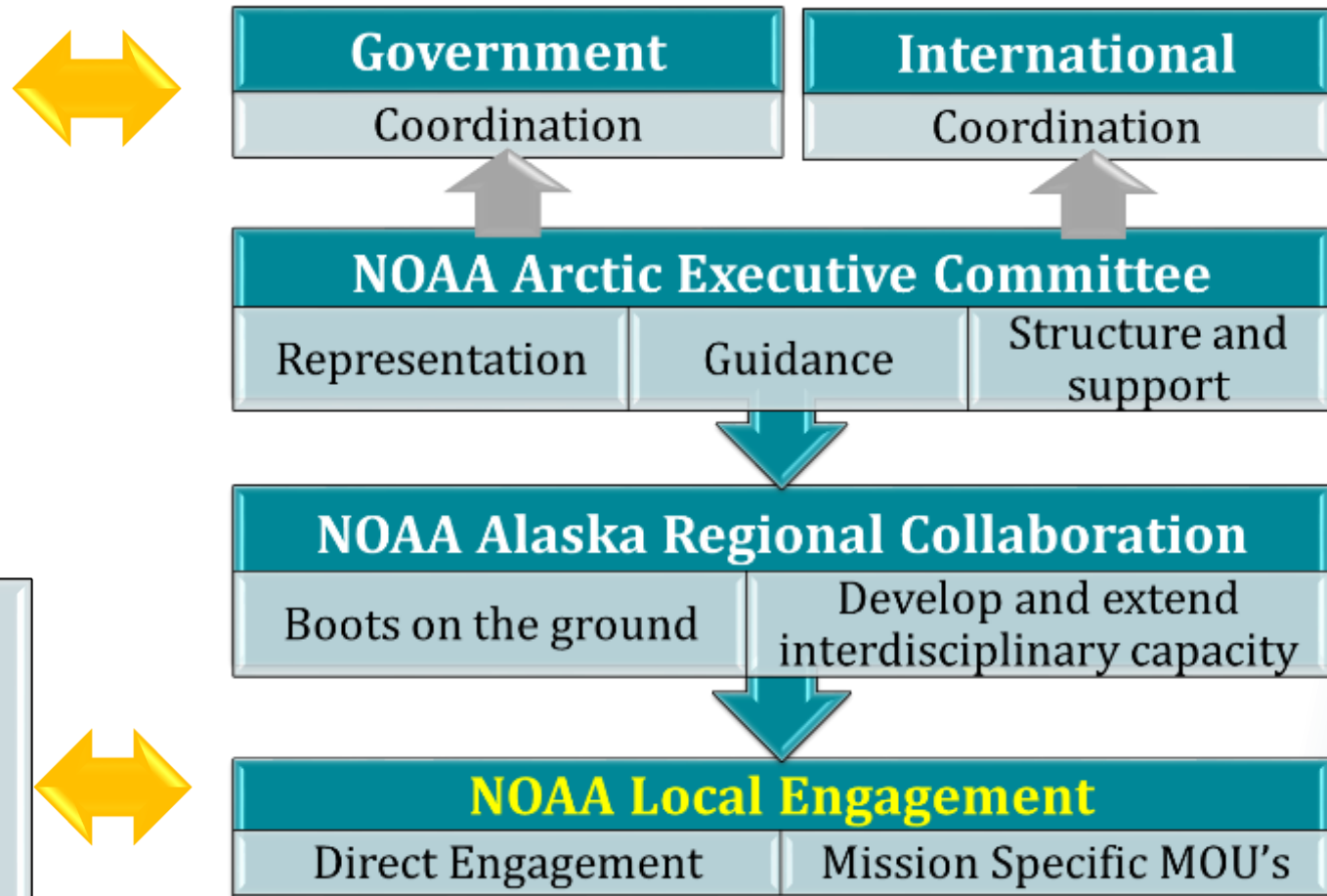
NOAA Arctic Indigenous engagement framework

Indigenous orgs

- meetings
- general info sharing across agencies
- when are research ships going to be in the region?


Indigenous orgs

- develop research questions for bowhead (and other species)
- develop research questions on marine ecosystem




NOAA Indigenous engagement examples

- NWS: coastal flood warning




Understanding Hazards and Impacts



- What is your community's most significant hazard to public safety, infrastructure, operations, planning, and preparedness?

Hazards



September 2005
Coastal Flooding




Erosion

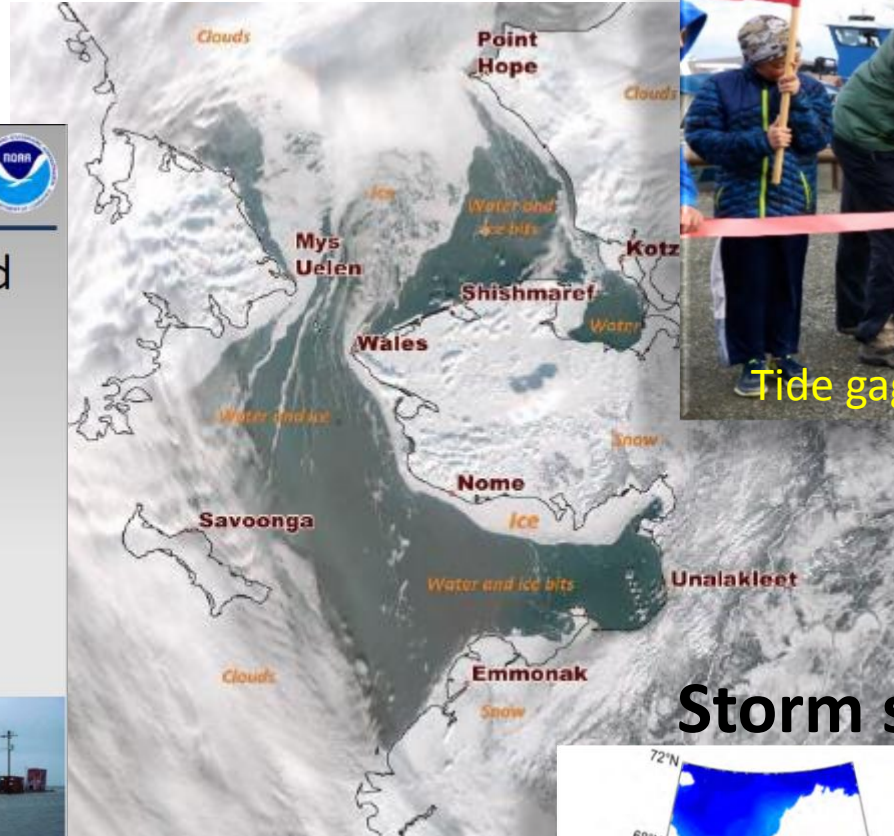
Impacts



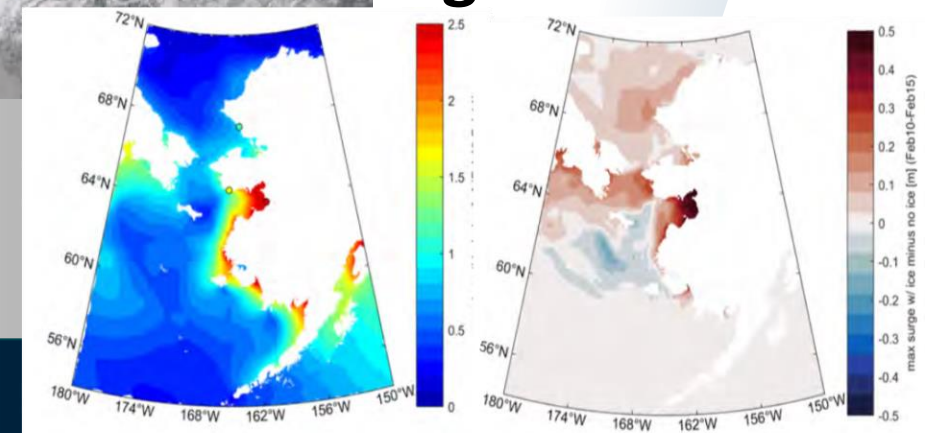
Fresh H2O supply compromised



September 2005
Fuel tanks flooded or at risk from erosion



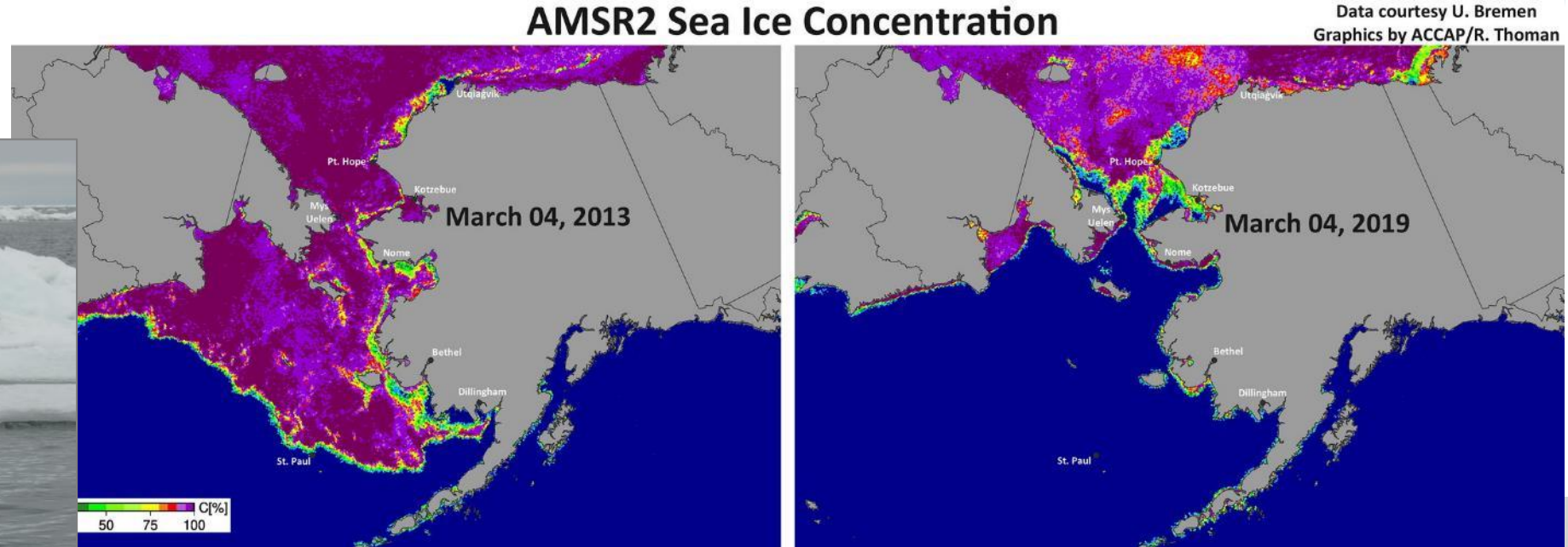
Storm surge event



Images courtesy of Edward Plumb, NWS

NOAA Indigenous engagement examples

- NMFS: ice seals



Images courtesy of Peter Boveng, NMFS

NOAA Indigenous engagement examples

- NMFS: ice seals

- Avoidance of conflicts with hunters:

- 30 mile buffer zones around spring whaling communities
- Survey altitude 1000 feet
- Daily distribution of flight plans

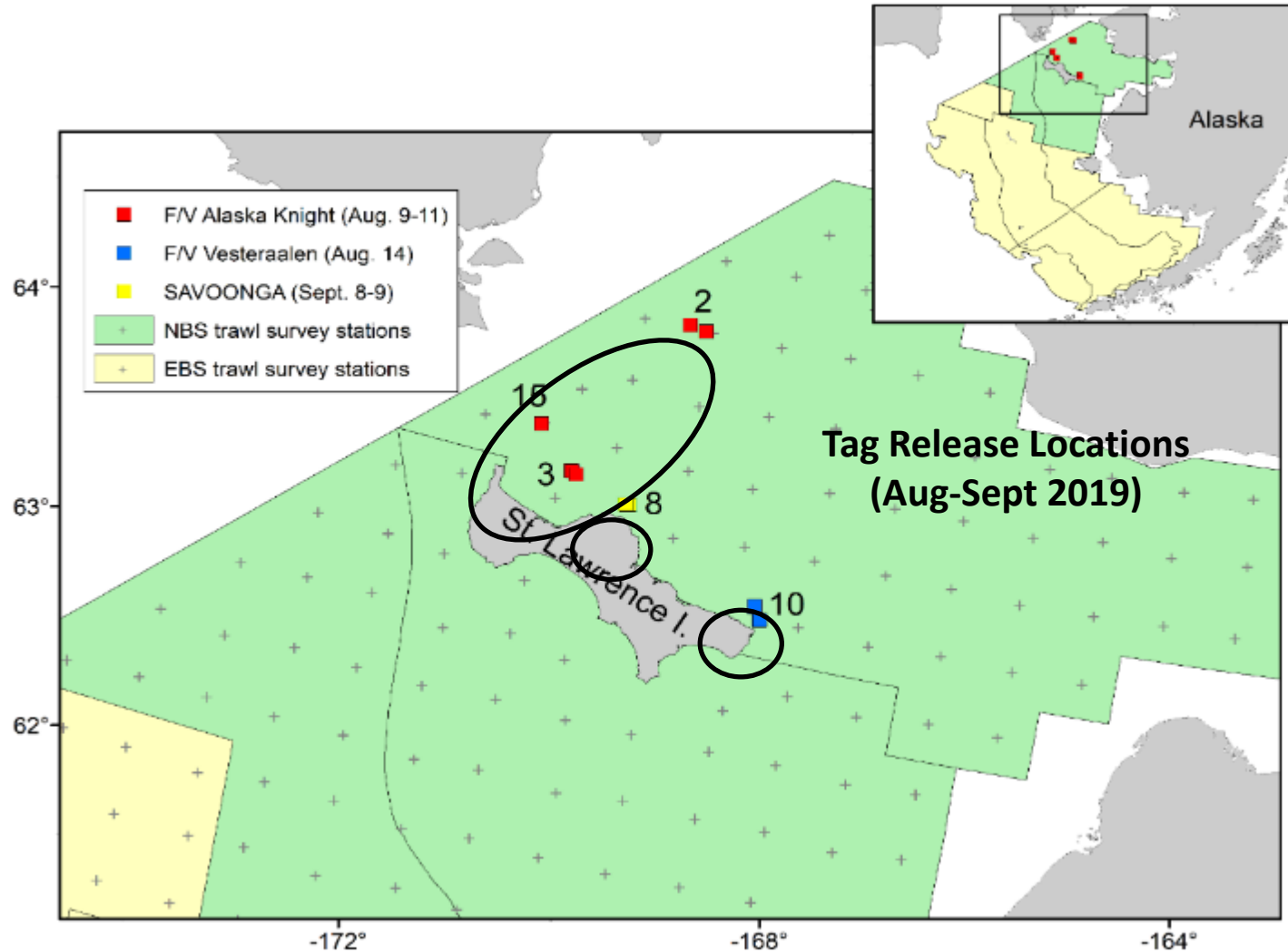


Images courtesy of Peter Boveng, NMFS

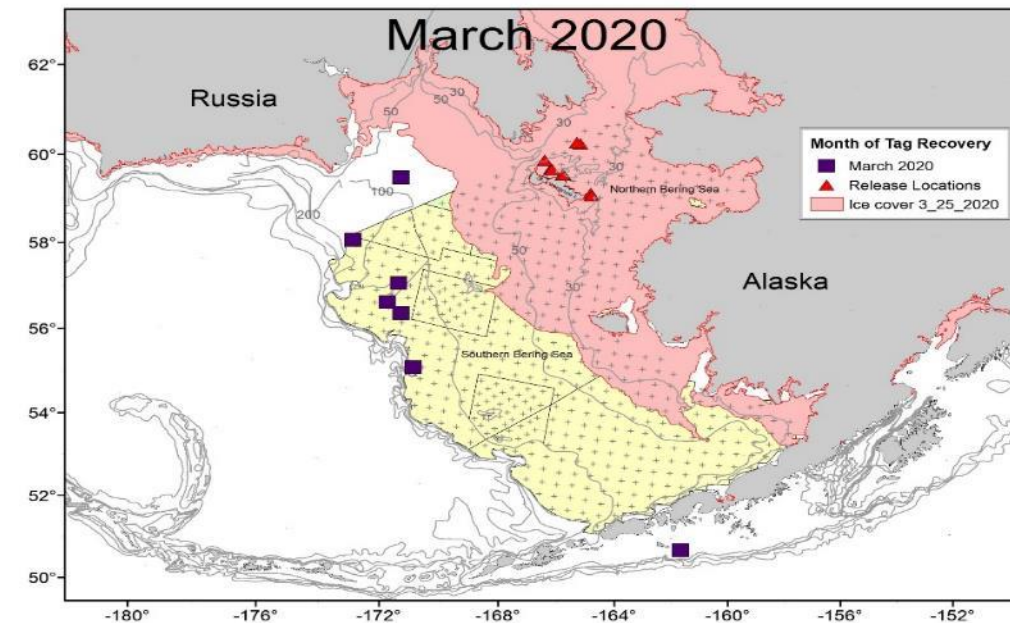
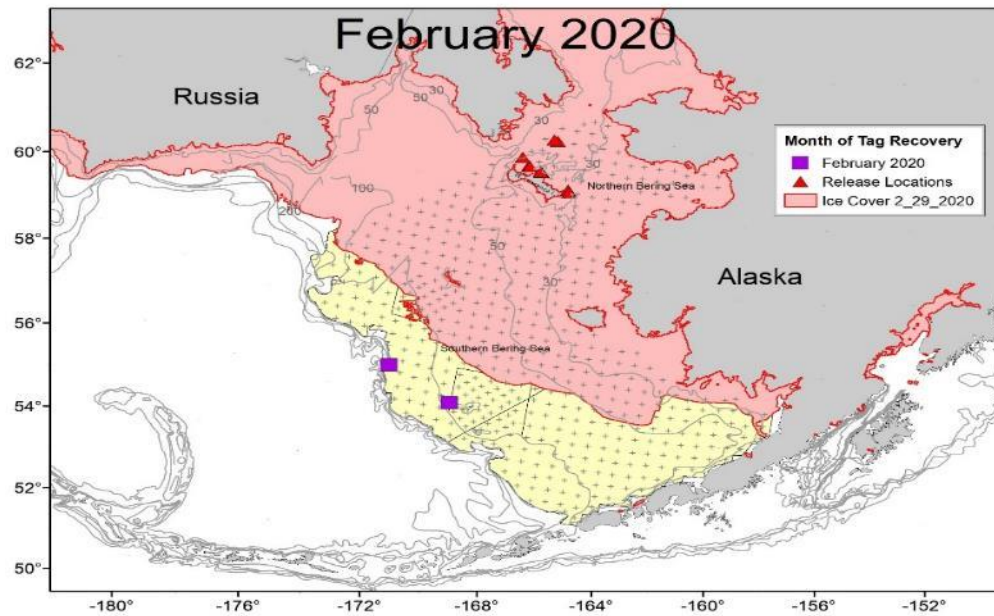
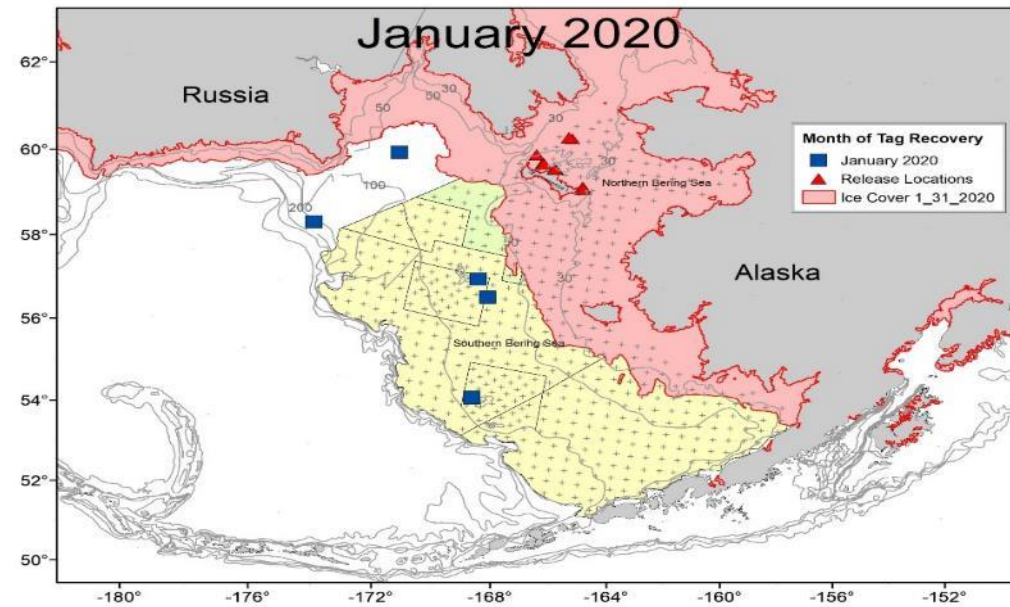
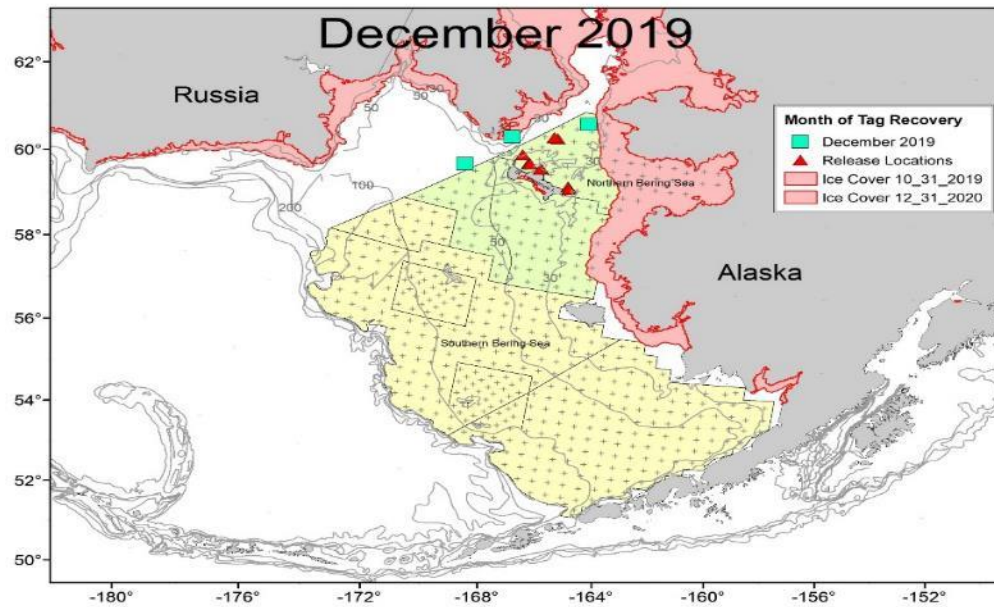
NOAA Indigenous engagement examples

2019/2020 Northern Bering Sea Pacific Cod Tagging

Collaborative Study between AFSC, NSEDC, & Native Village of Savoonga Fishermen



Collaborative Study between AFSC, NSEDC, & Native Village of Savoonga Fishermen



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Thank You!

