



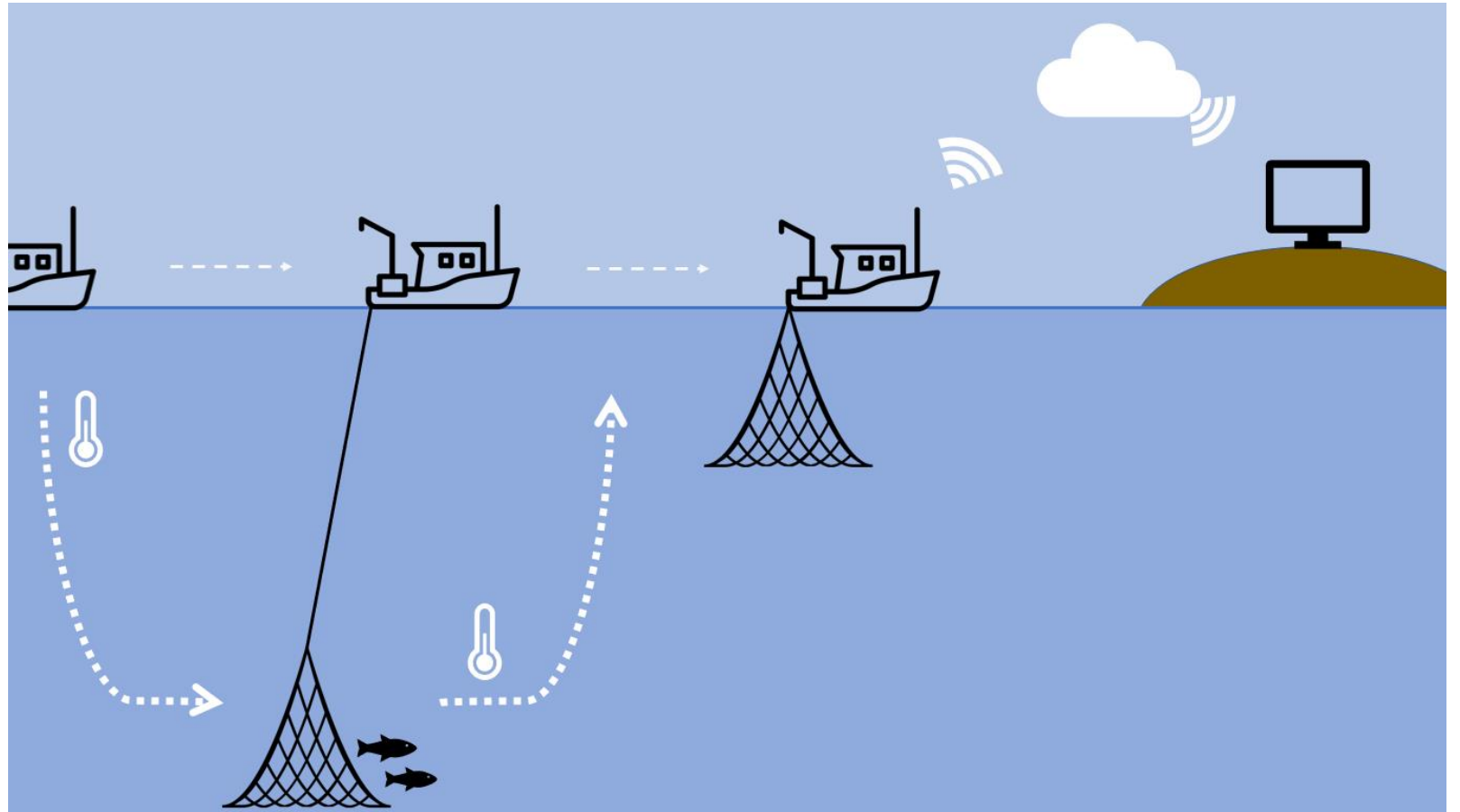
# Concept:

## Sensors on fishing gear

Free ride down and back up water column

Little or no effort on the part of the fishermen

Fishermen fishing for fish, and now data





DTU Aqua, Research Vessel Dana



195,000 DKK (€26,000) / day

Why?

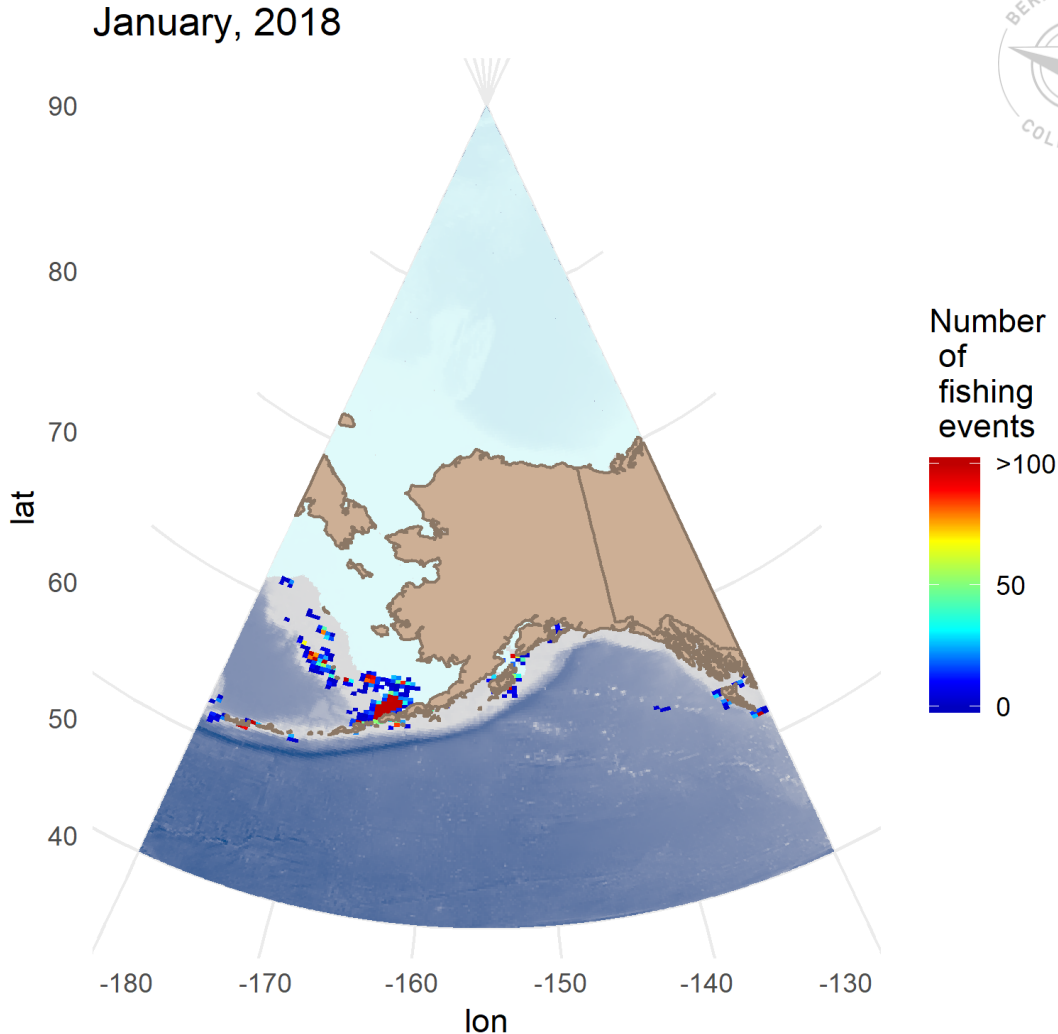
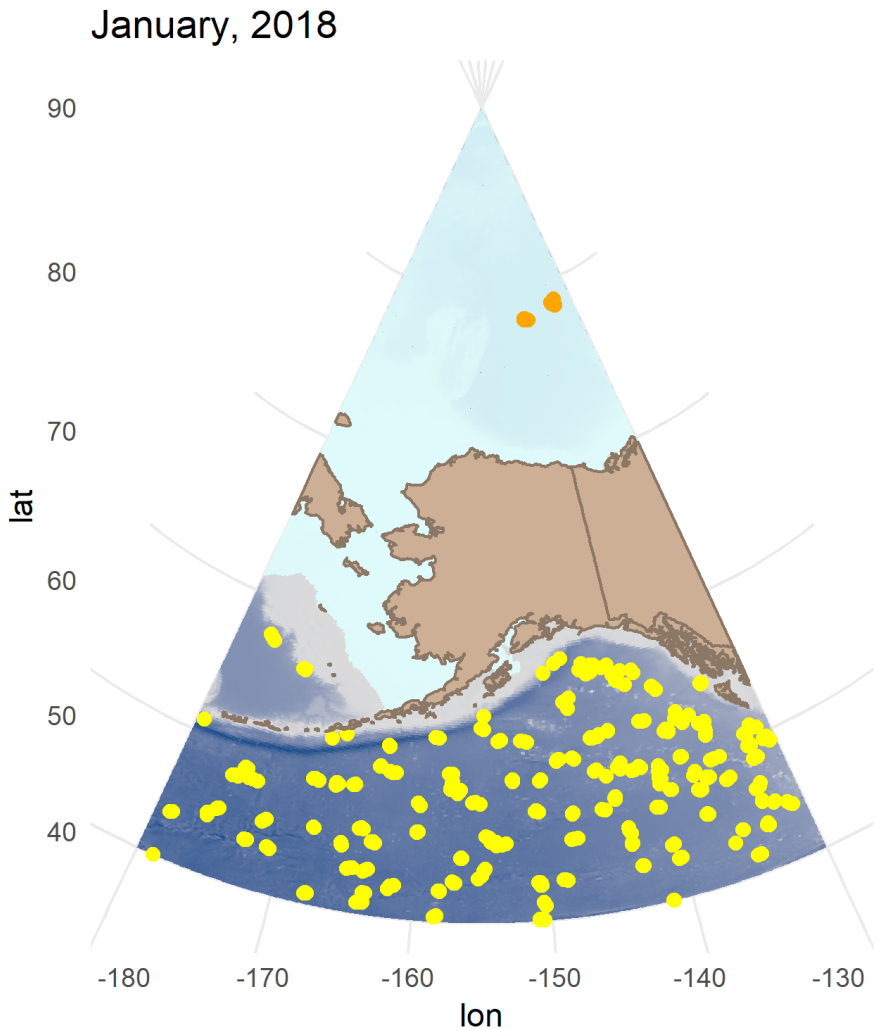
Ocean data is expensive..

Argo float, \$200 (€176) / 10 day profile



Cost effective data collection: key to long term monitoring

# Holes in current subsurface observation programs: Shelf seas

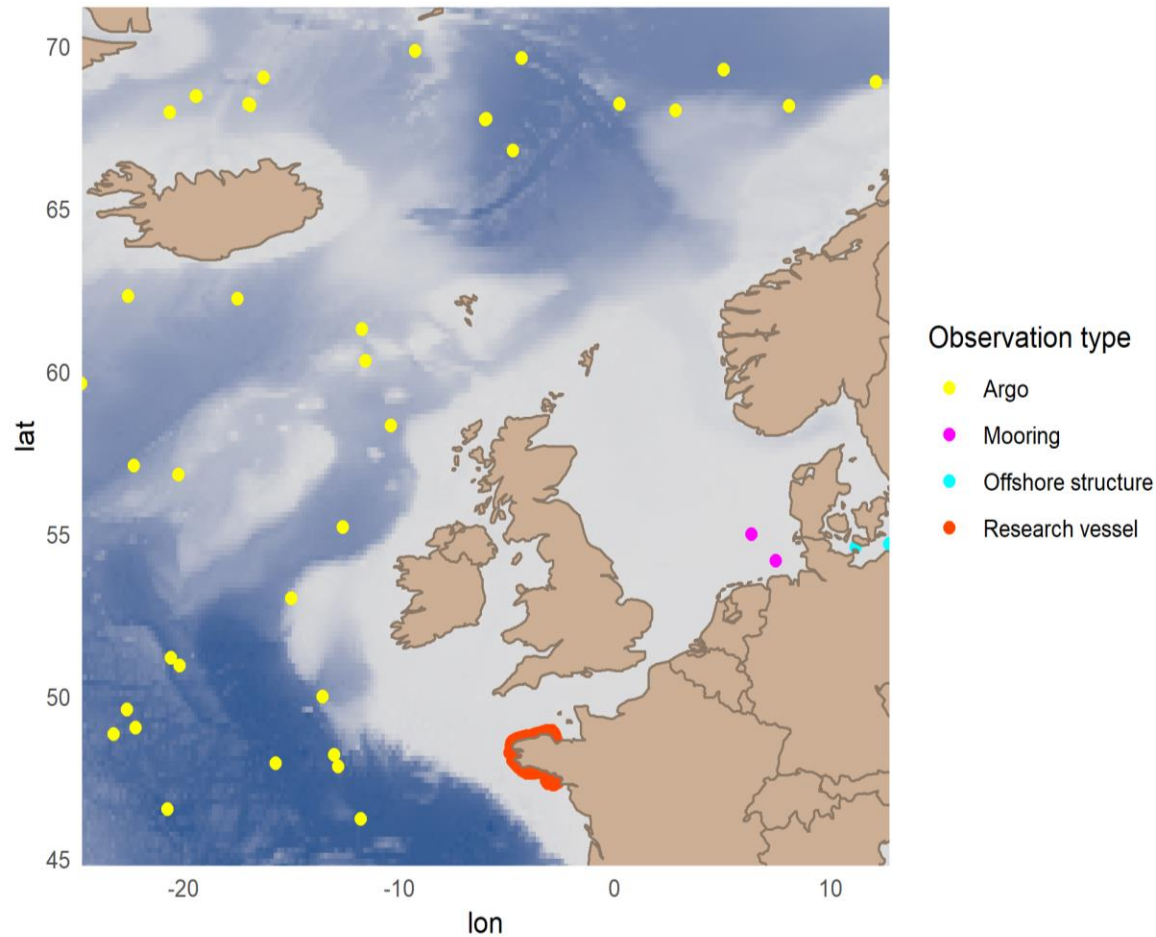


Not only are there more trawling points, they are where the Argo profiles are not.

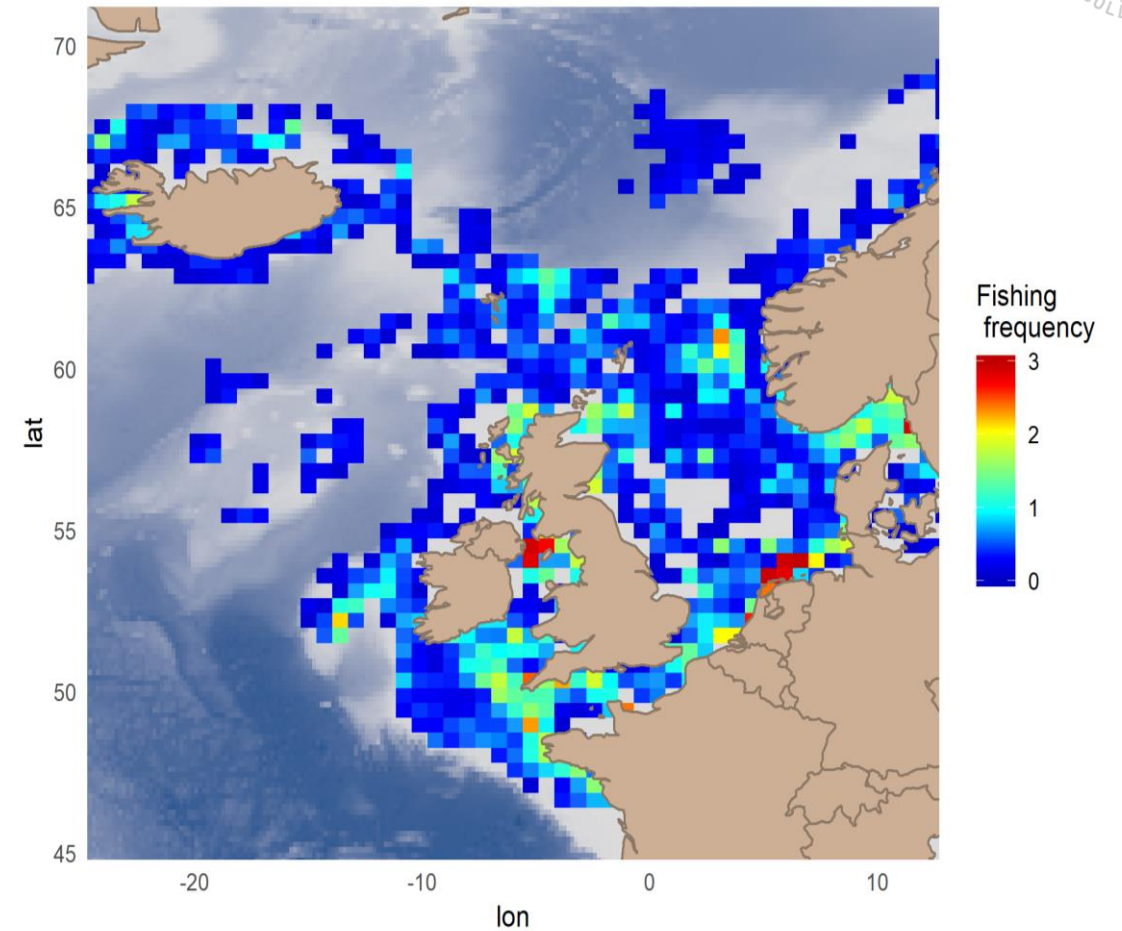
# Shelf seas are where the majority of maritime activity takes place, and conditions change more rapidly than in the deep ocean



### Subsurface data profiles for July 2018



### Trawling activity for July



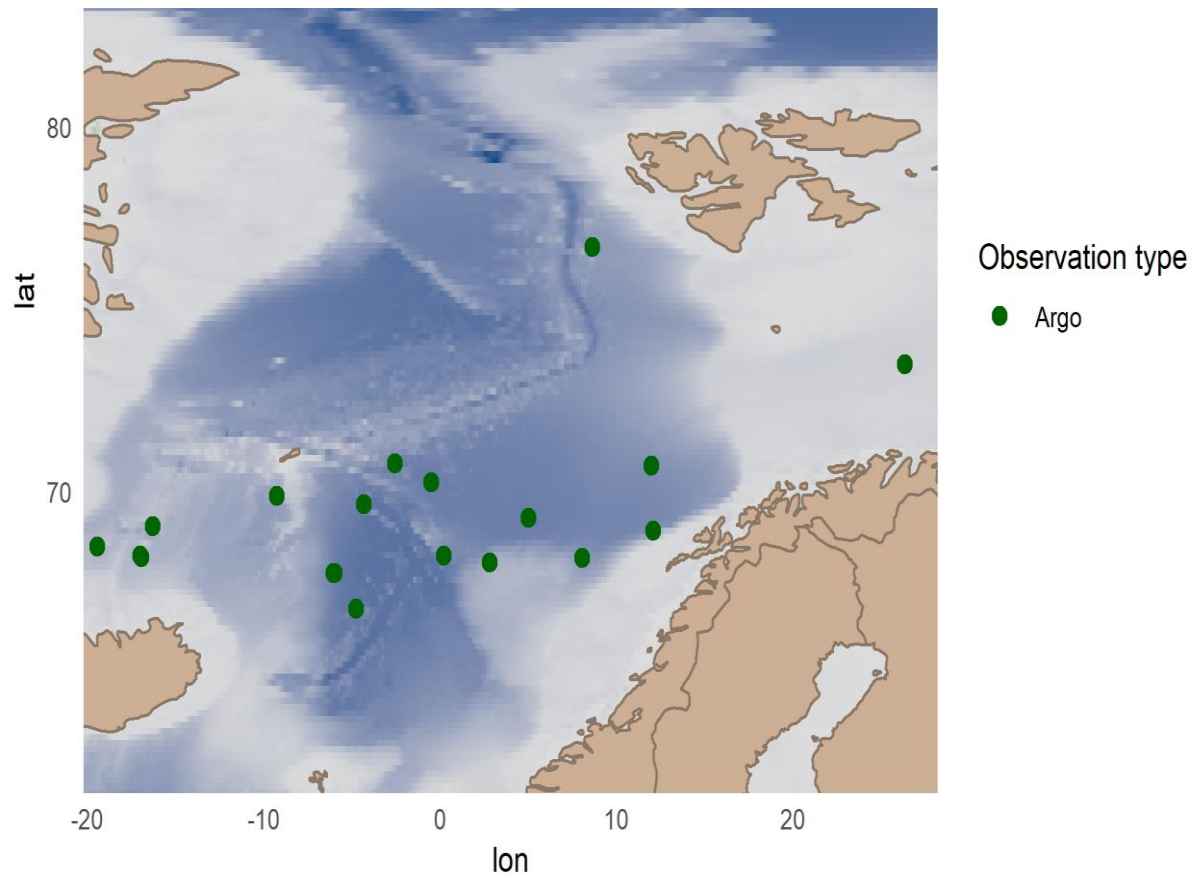
Data is needed the most is where it is the scarcest...



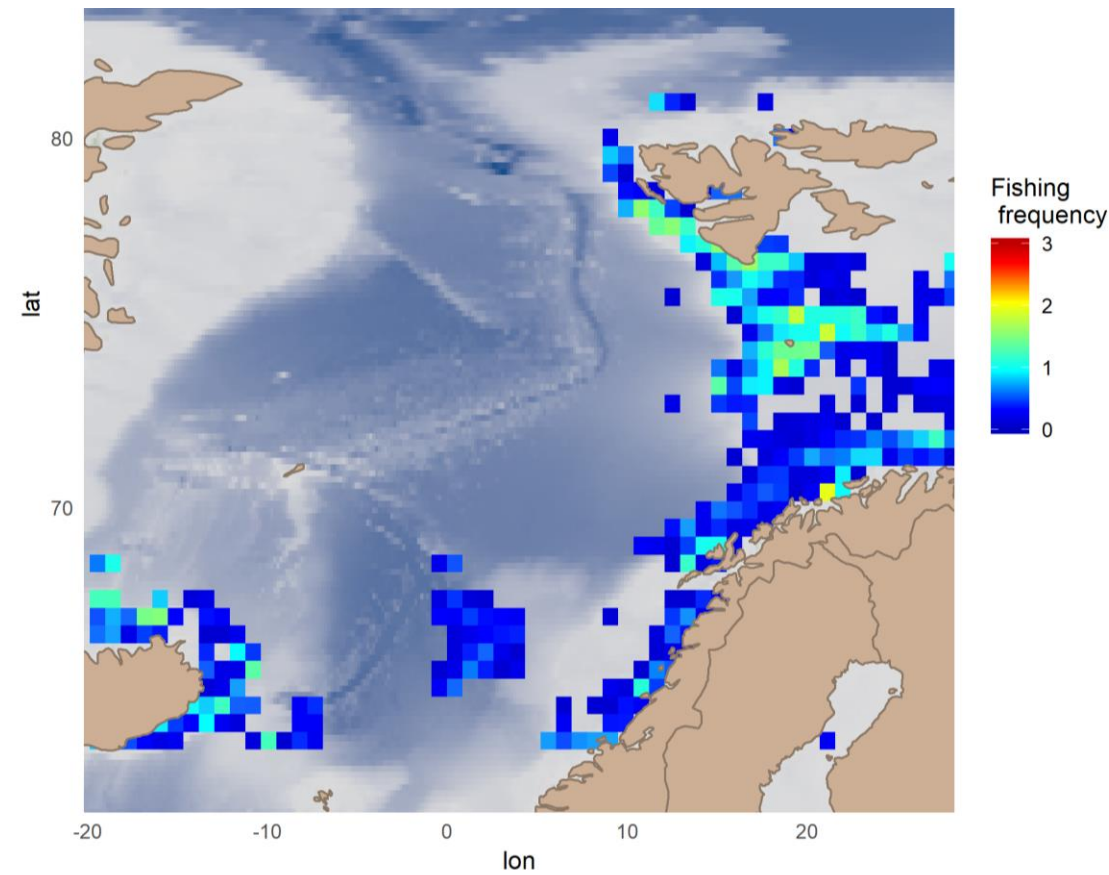
# In the arctic there is an even greater need for data: Climate change hot spot



Even in the deep ocean, Argos cannot operate with ice



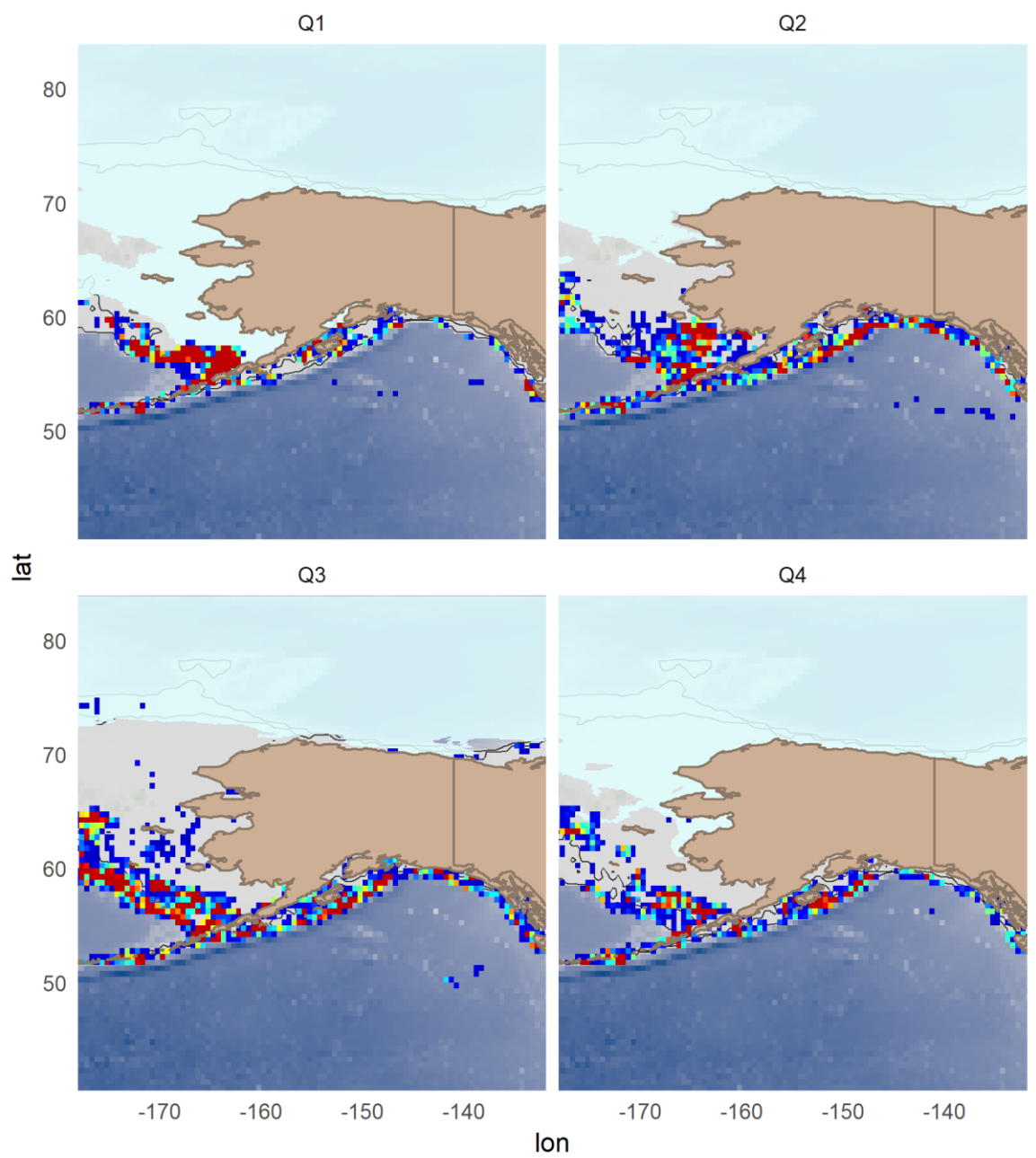
Fishermen like to fish the edge of the ice



Sea ice processes in the North Atlantic are a primary driver of global ocean circulation

# Arctic, sea ice: some vessel based fishing follows ice

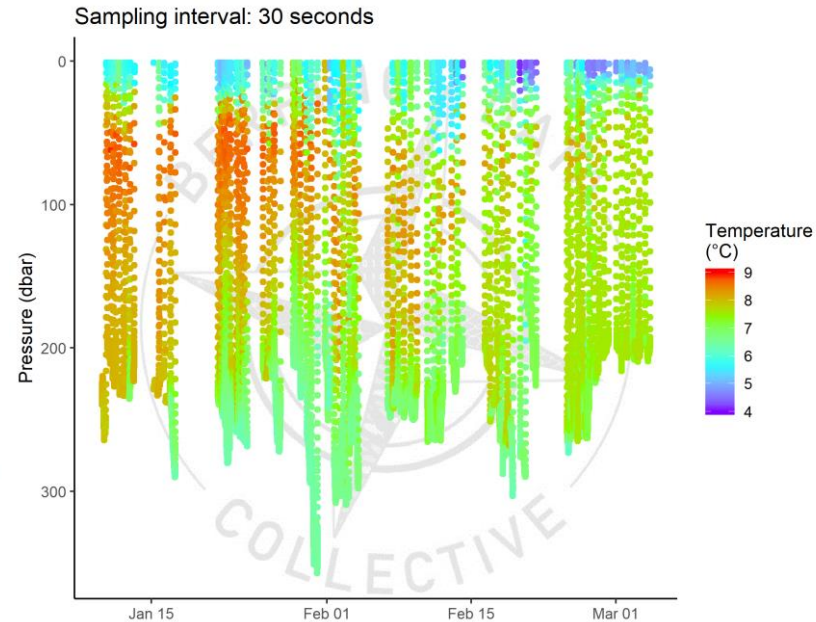
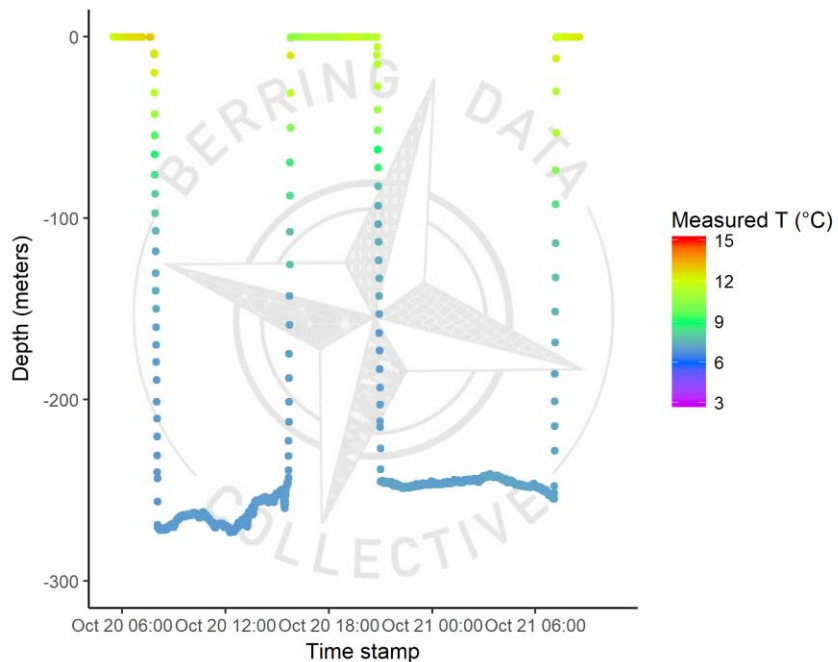
ALASKA, 2018



Beginning to look at working with indigenous ice hunters

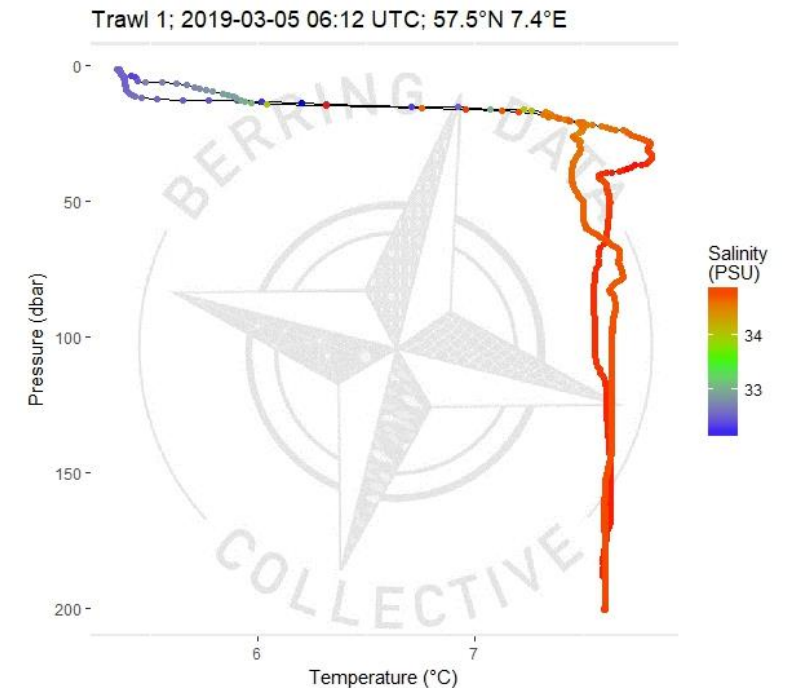
# The down and up profiles setting and hauling the gear for oceanographic modeling

## Summer/fall stratified water column

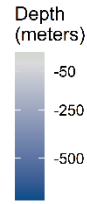
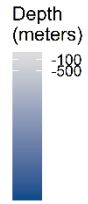


## Evolution of winter water column

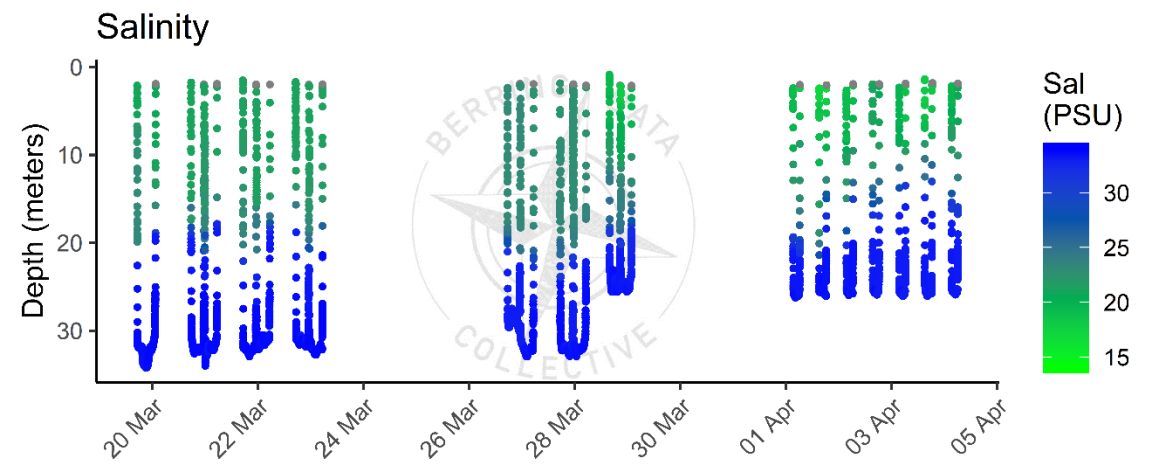
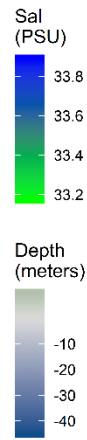
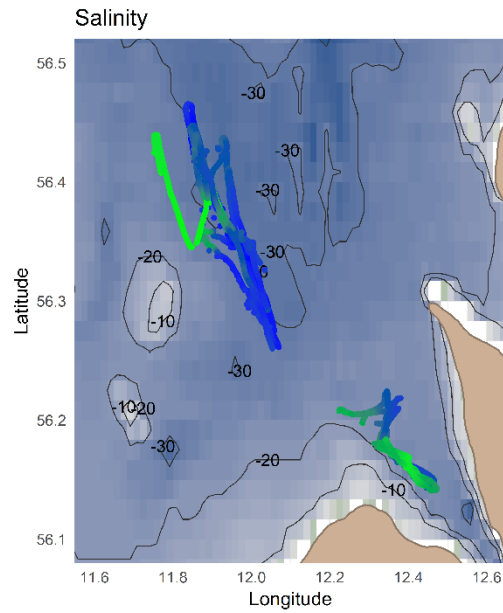
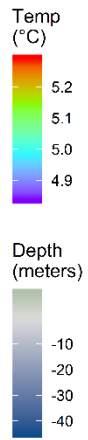
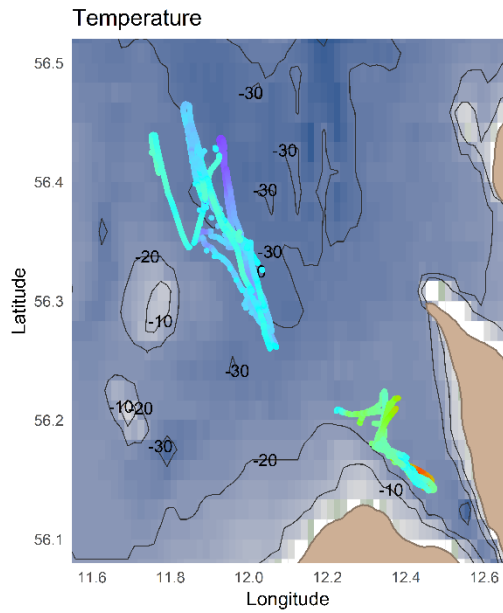
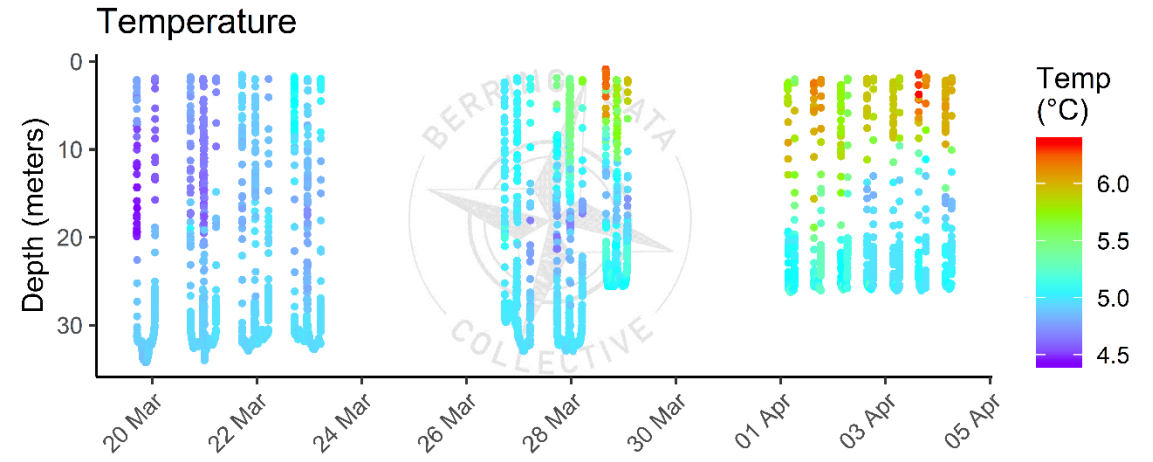
## Temperature and Salinity profiles







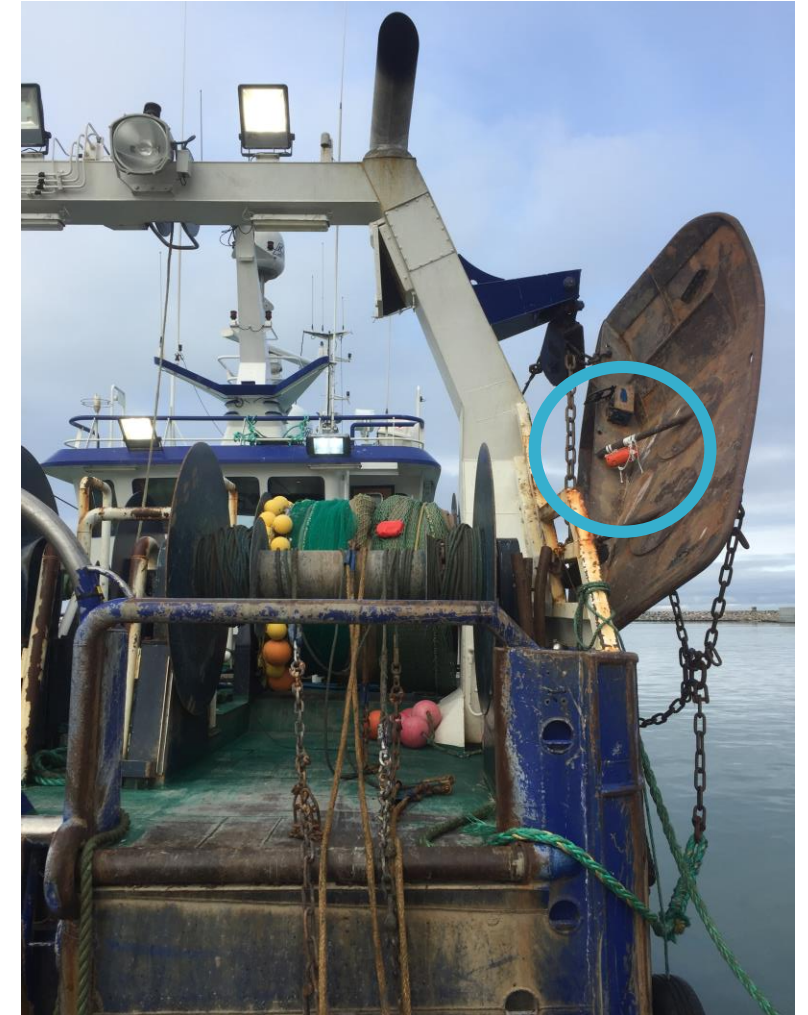
Frequent samples in consistent areas

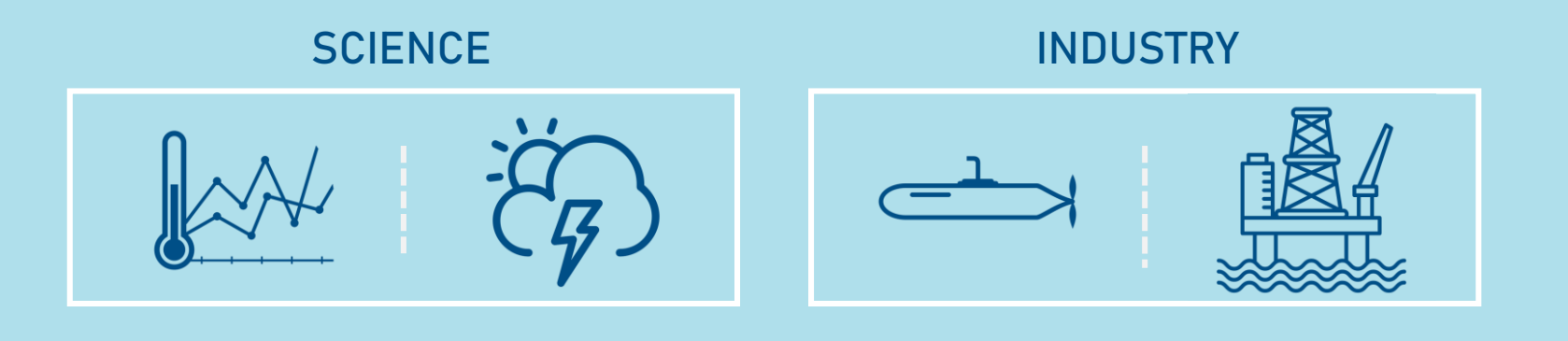


# Our approach:

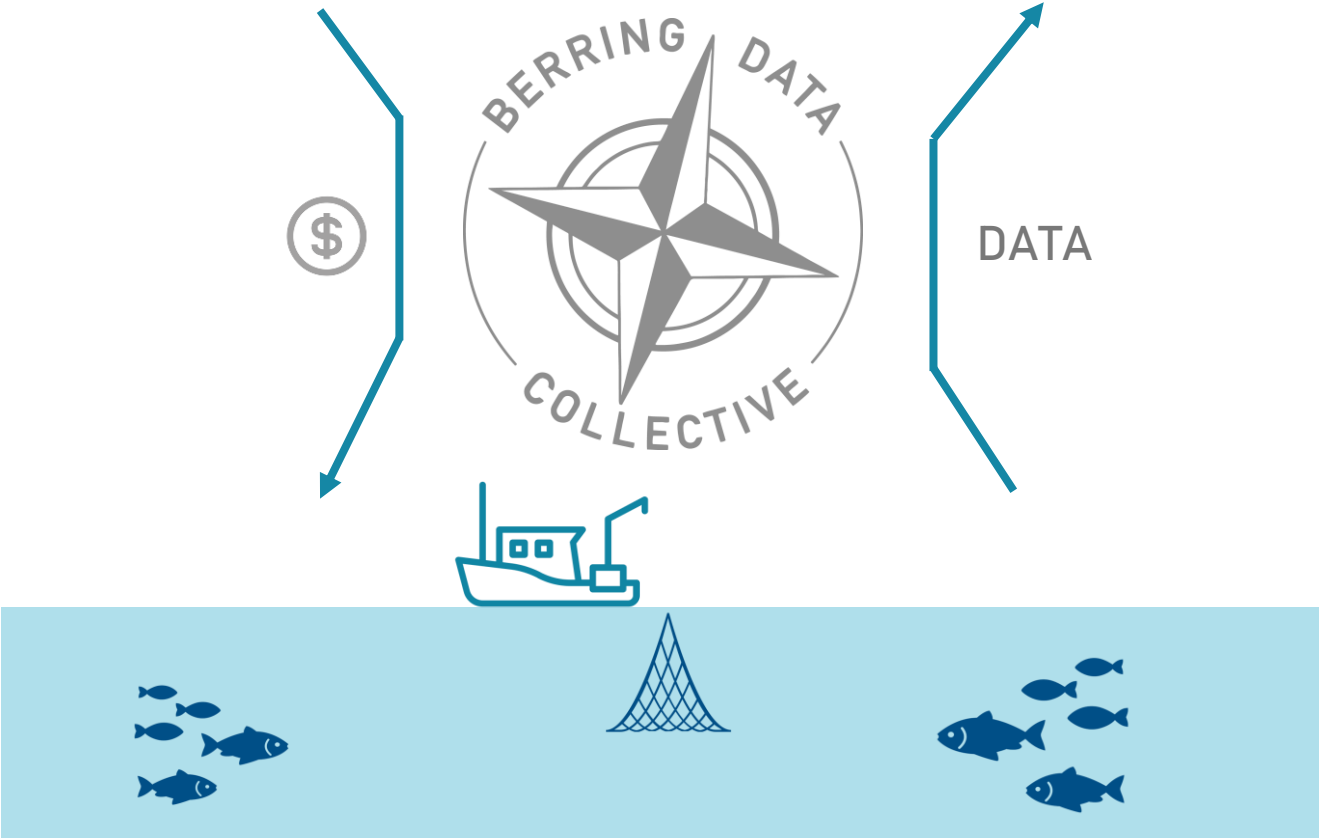


Working with fishermen in the Kattegat, Skagerrak, North Sea, Iceland, Gulf of Maine, and Bering Sea





Fishermen will be able to make money catching both fish and data



Interested potential data users:  
DMI (Danish Met)  
DHI  
Niels Bohr Institute  
Danish Navy  
Icelandic Met Office  
UK Met Office



# Fishermen getting paid to collect data? Flipping the current paradigm.

Fishermen are collecting data on their own terms, and driving forward the necessary science

Ecosystem Based Fisheries Management: Improving both the environmental and economic sustainability of fisheries



Thanks!



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