

# Fishing Gear as a Data Collection Platform



BOOS Annual  
Meeting  
Rostock, DE

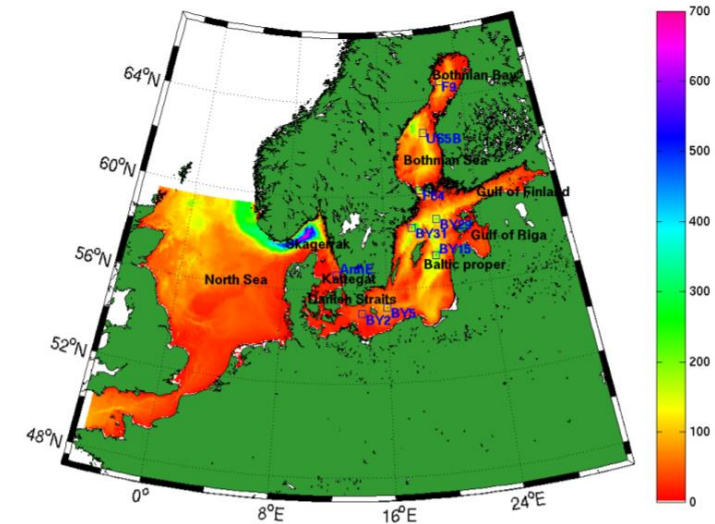
12-06-2019  
Cooper Van Vranken

# Background & Inspiration: What oceanography brings to fisheries

Background: commercial fishing, fisheries science, and engineering



Future of fisheries science: linking stock and ecosystem health to ocean conditions



## Today: What fisheries can contribute to oceanography



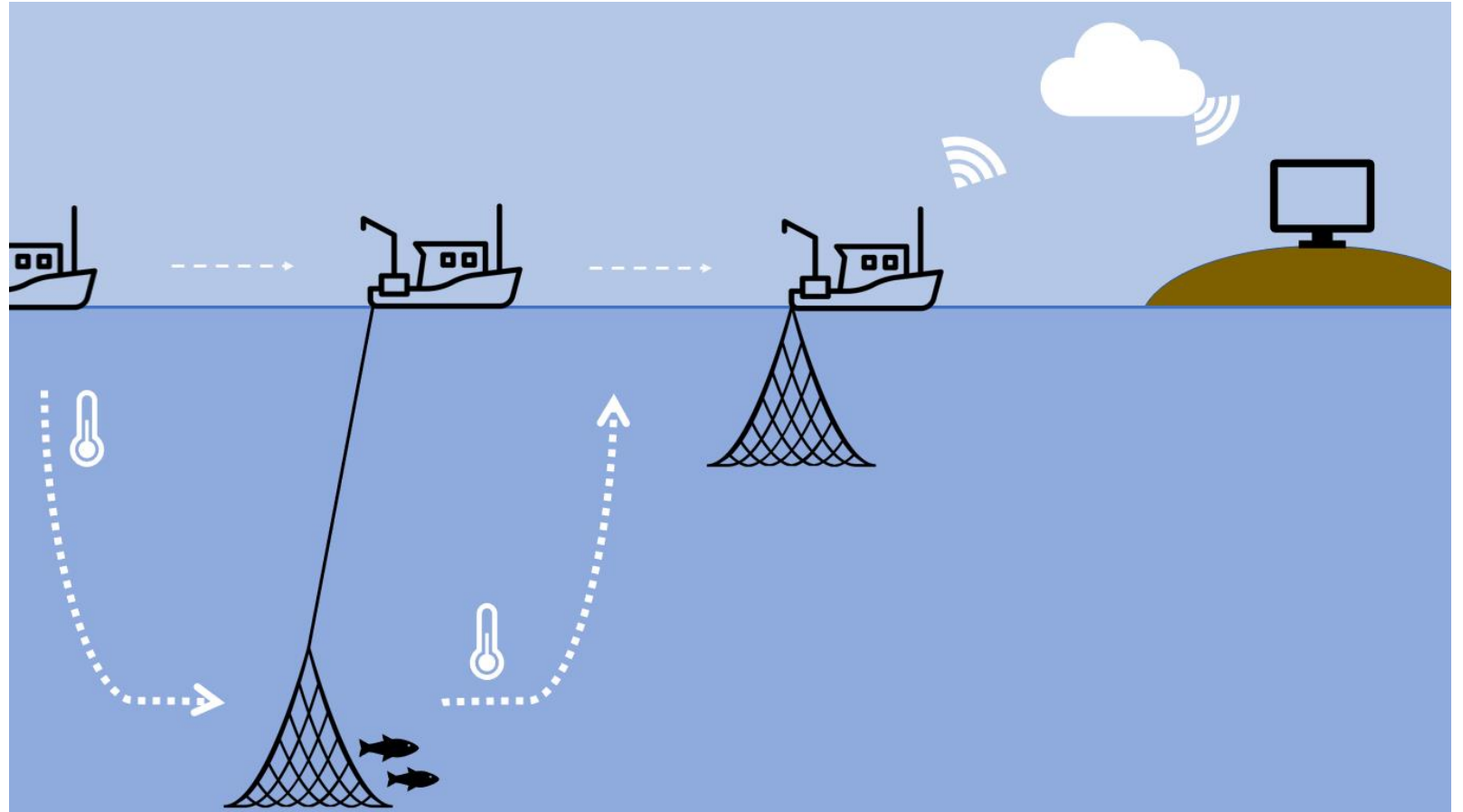
## Concept:

## Sensors on fishing gear

Sensors go along for the ride:  
down and back up water  
column

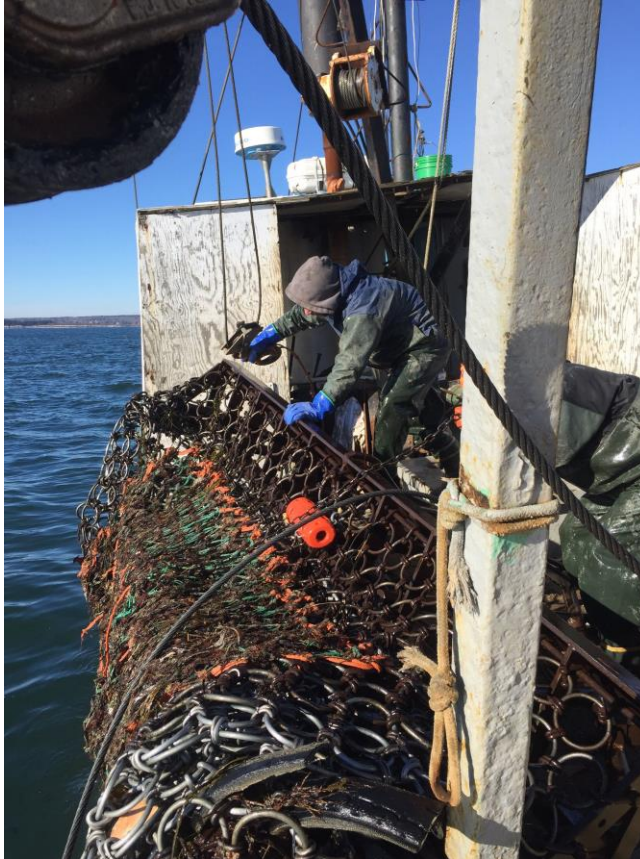
Little or no effort on the part  
of the fishermen

Fishermen fishing for fish,  
and now data



# Collecting a wide range of sample data

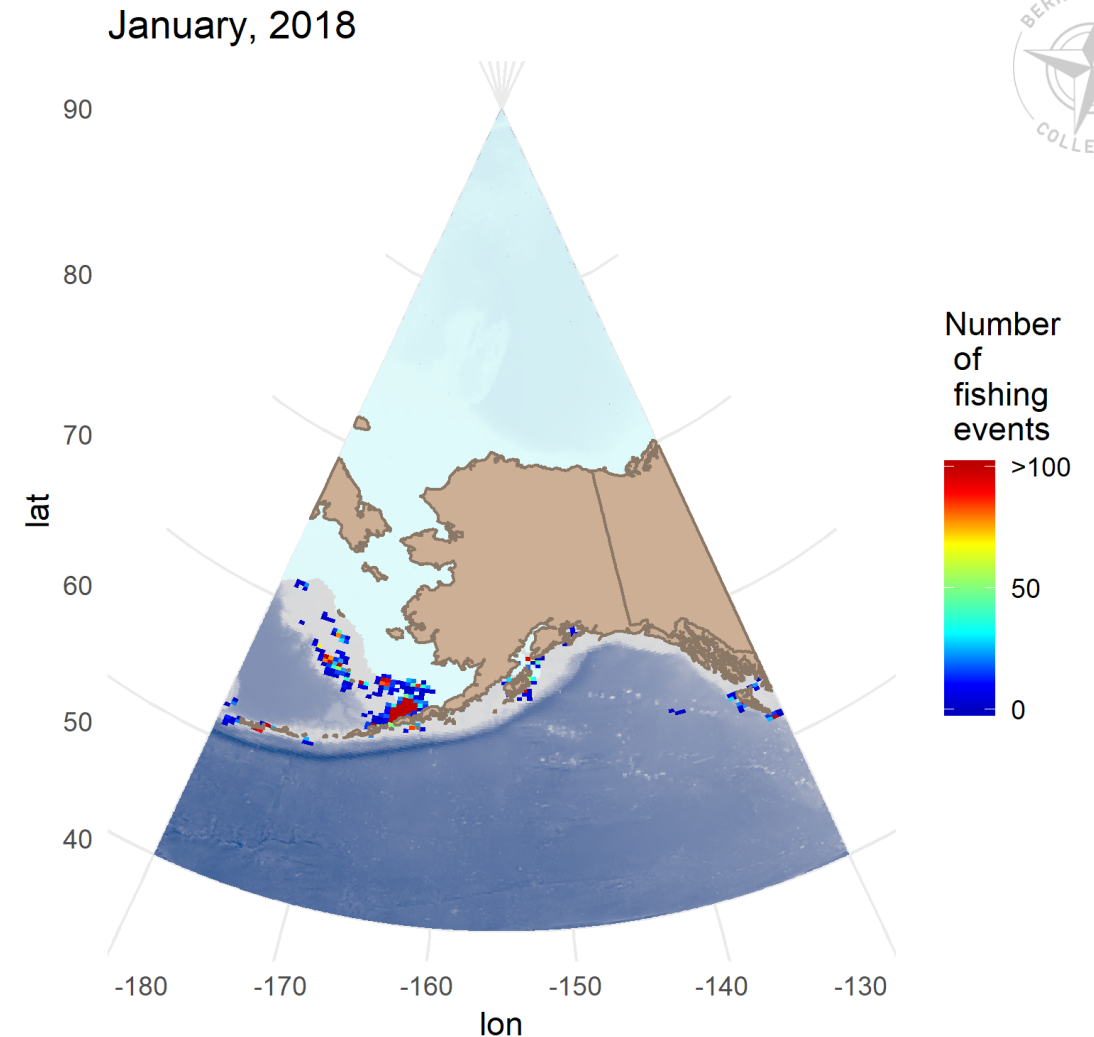
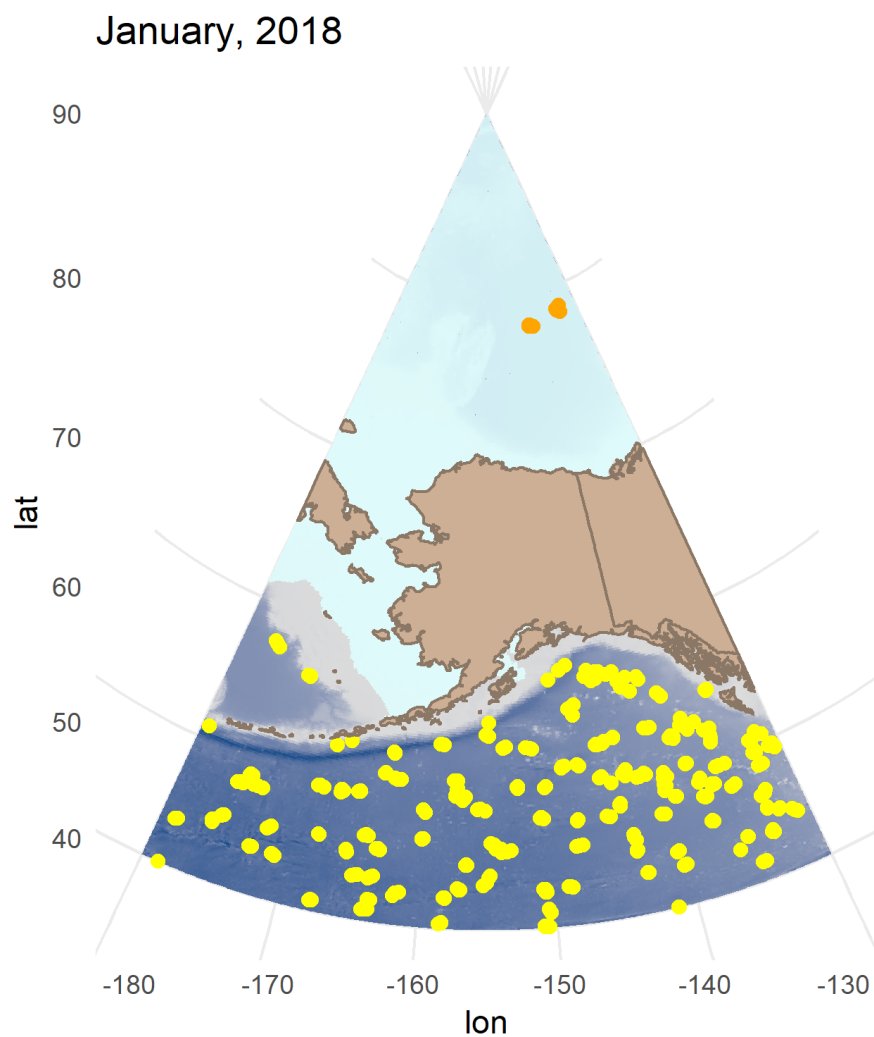
Working with fishermen in the Kattegat, Skagerrak, North Sea, Iceland, Gulf of Maine, and Bering Sea



**nke**  
INSTRUMENTATION

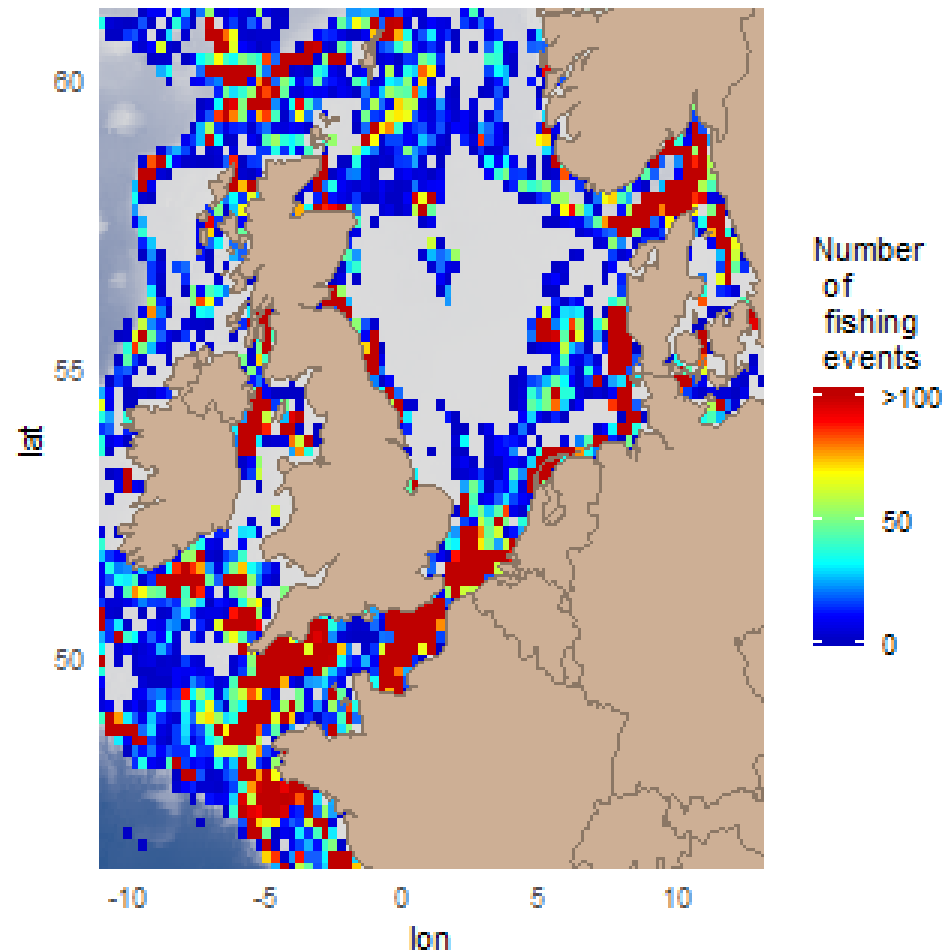
Real-time transmission and database this month

# Holes in current subsurface observation programs: Shelf seas

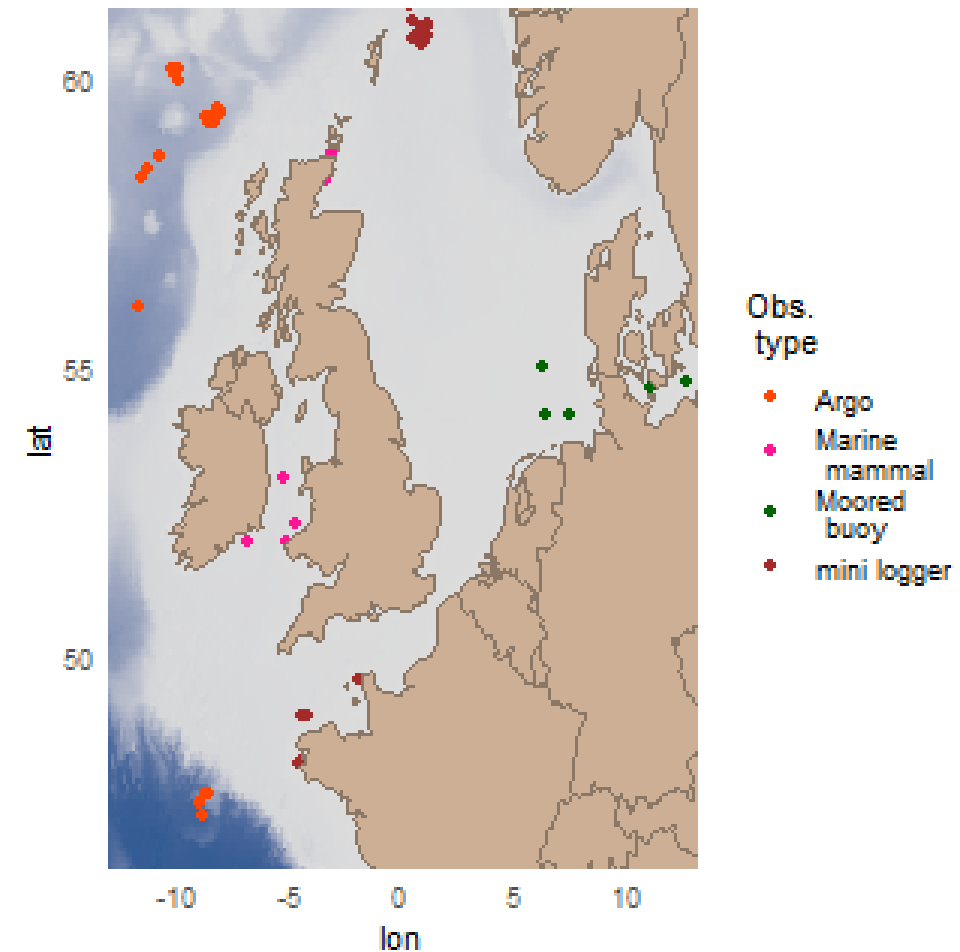


# Shelf seas are where the majority of maritime activity takes place, and conditions change more rapidly than in the deep ocean

Trawling activity for January 2018

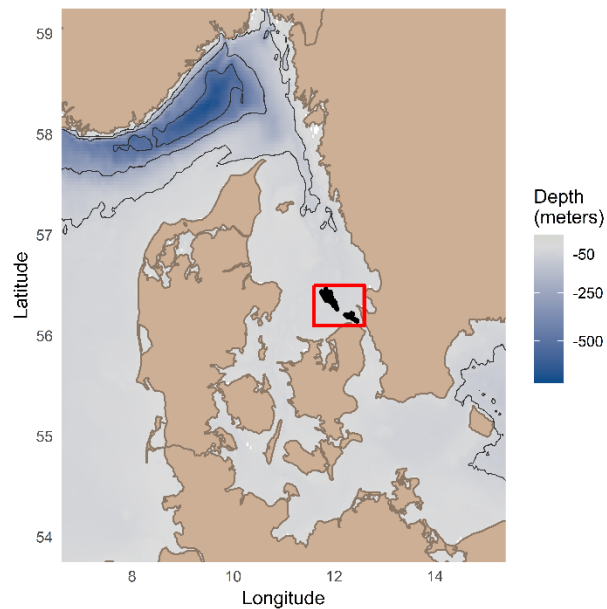
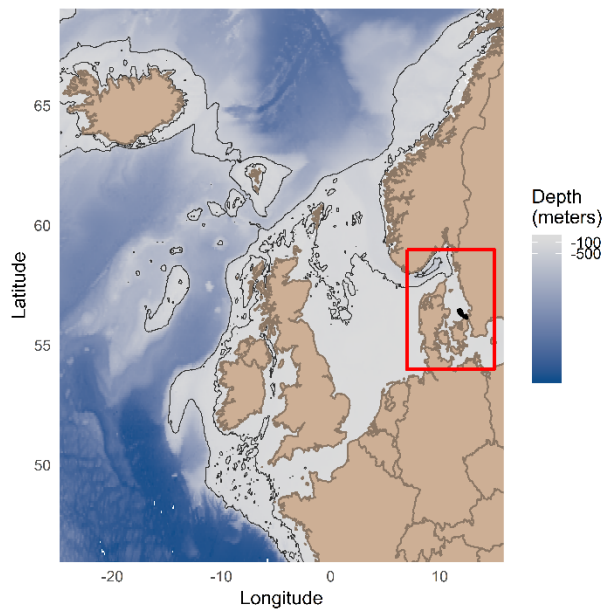


Subsurface data profiles for January

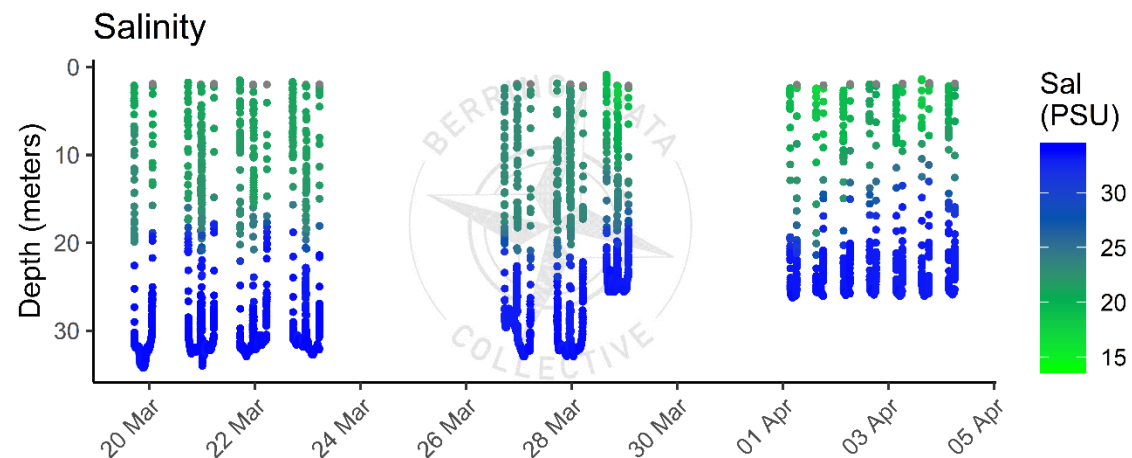
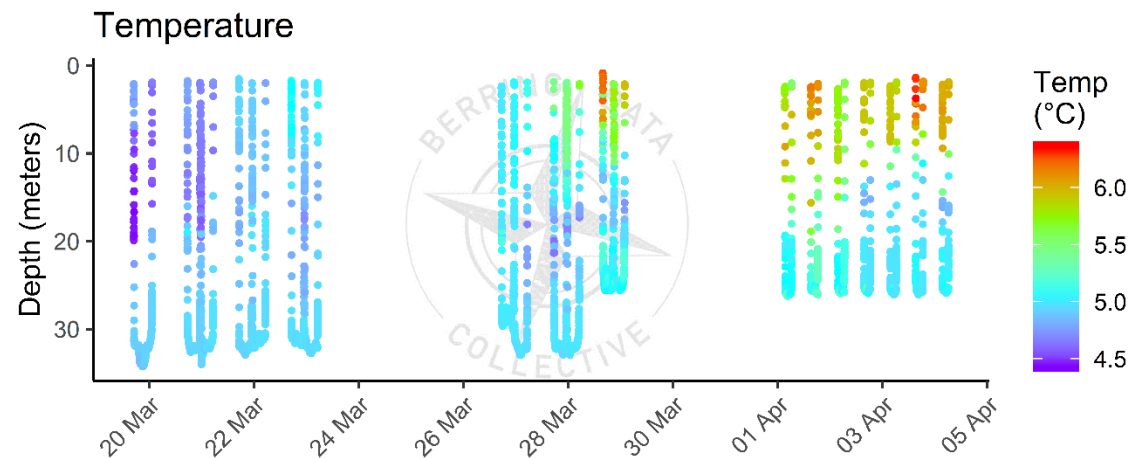
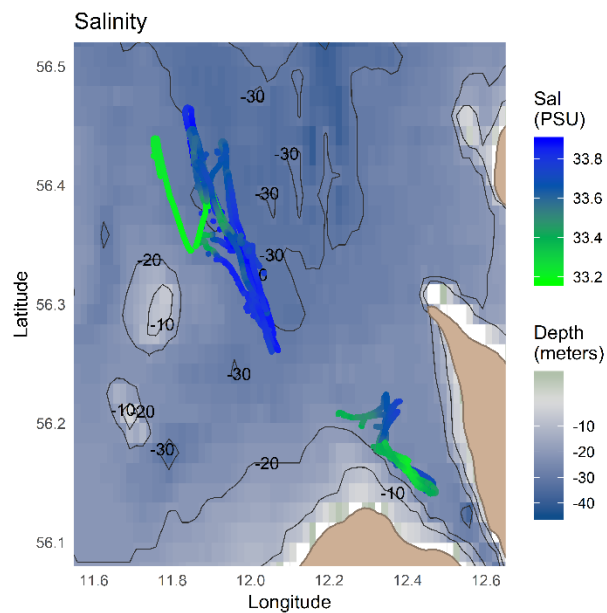
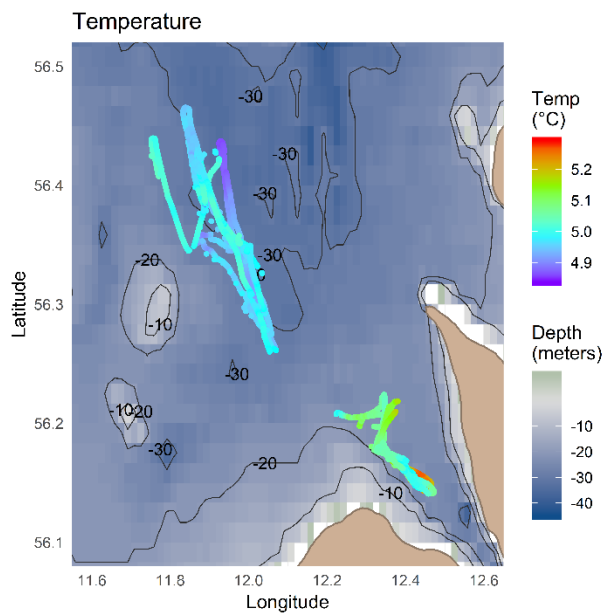


Fish prefer the variable benthic features that prevent Argo operation

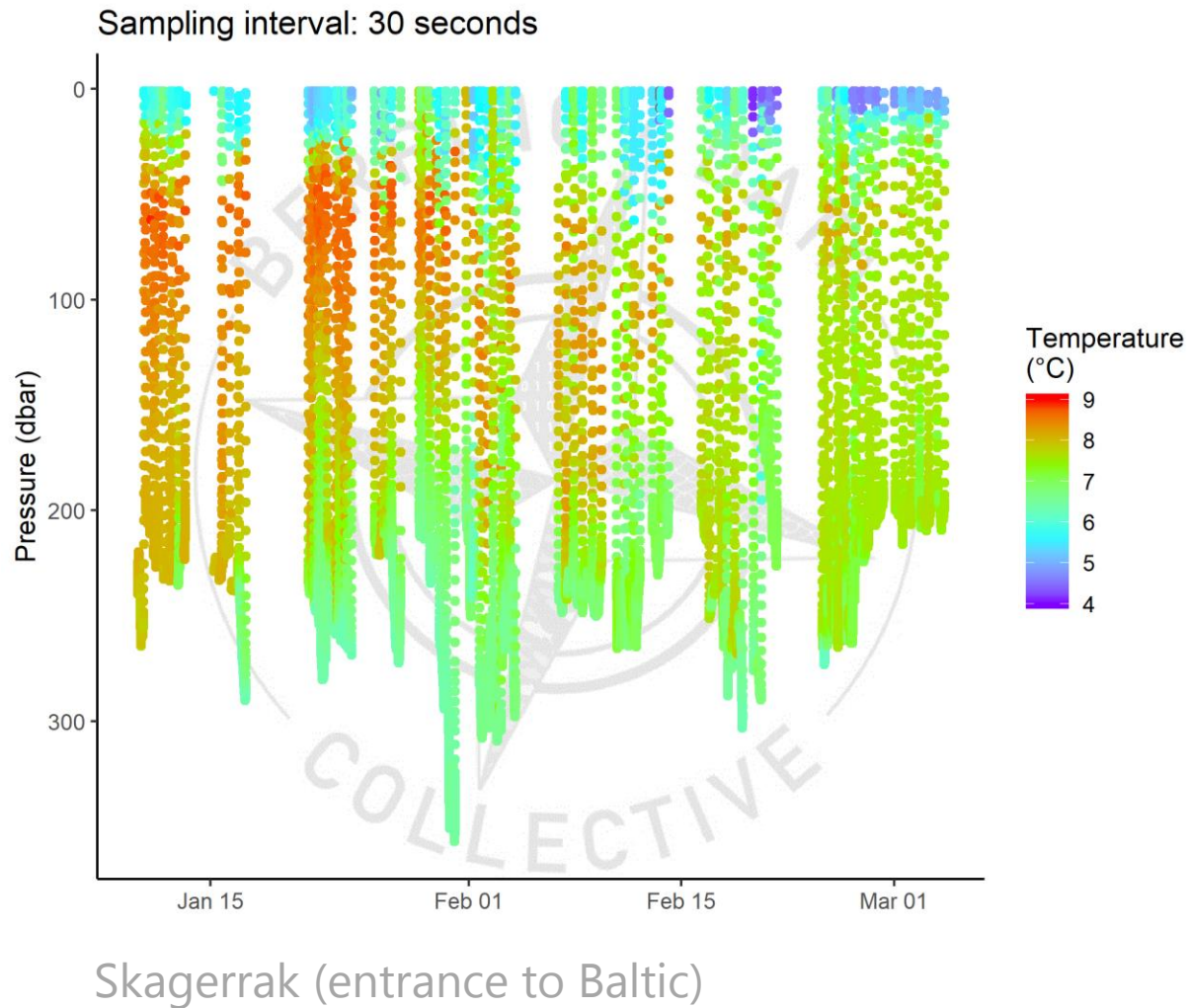




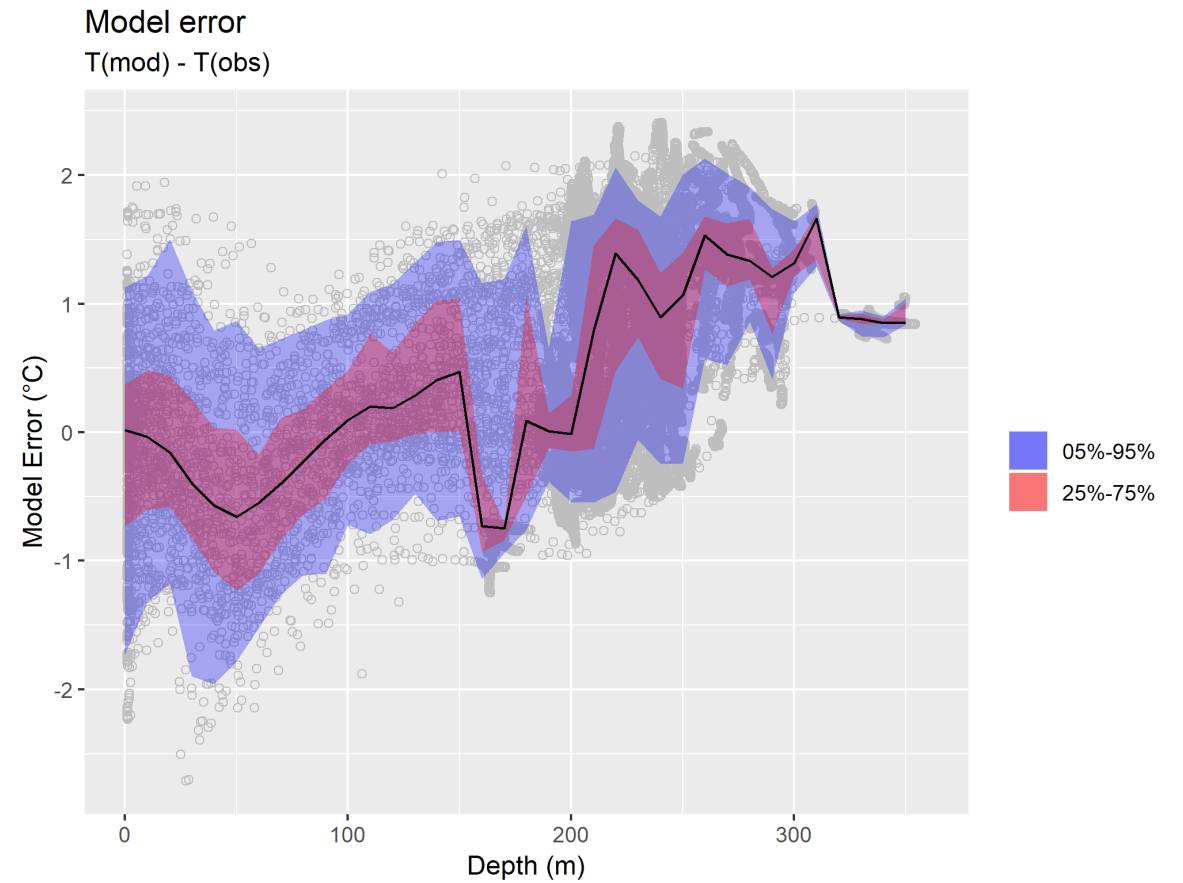
# CTD data from Kattegat



## Relatively consistent spatial and temporal sampling:



## Comparison to AMM7 model



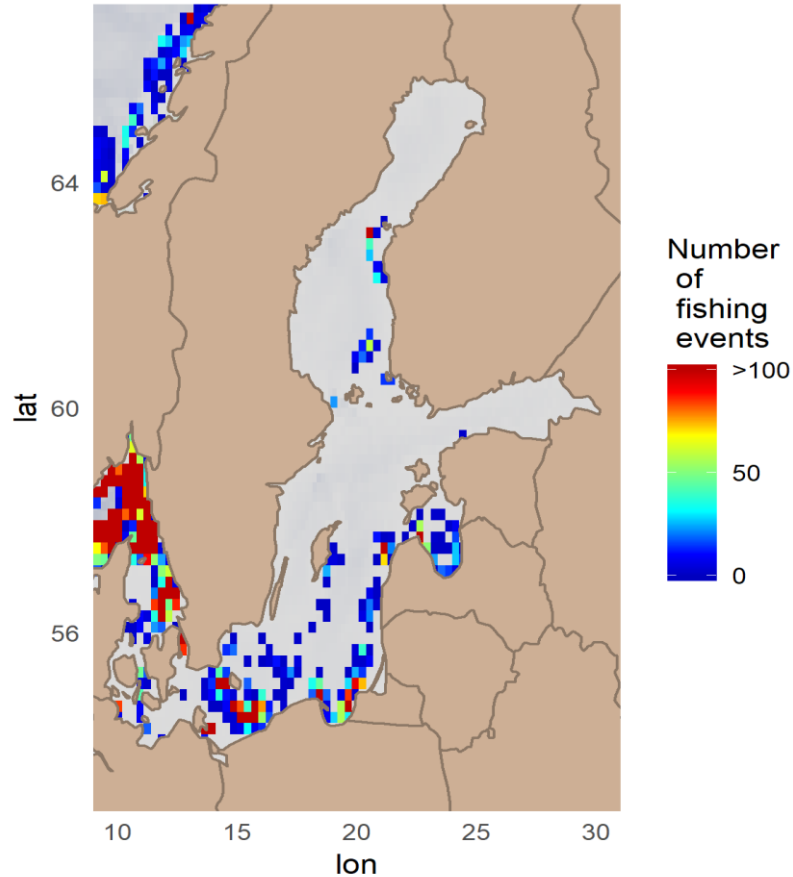
Nine other DK vessels and 30+ SWE & NOR in same fishery



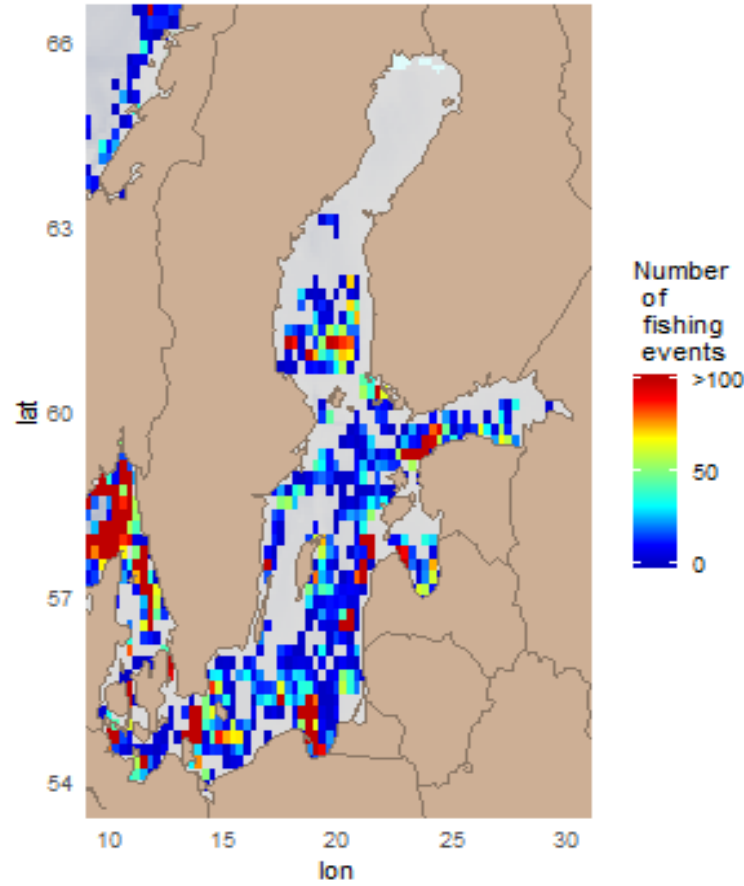
# Baltic: high seasonal fluctuations in fishing activities



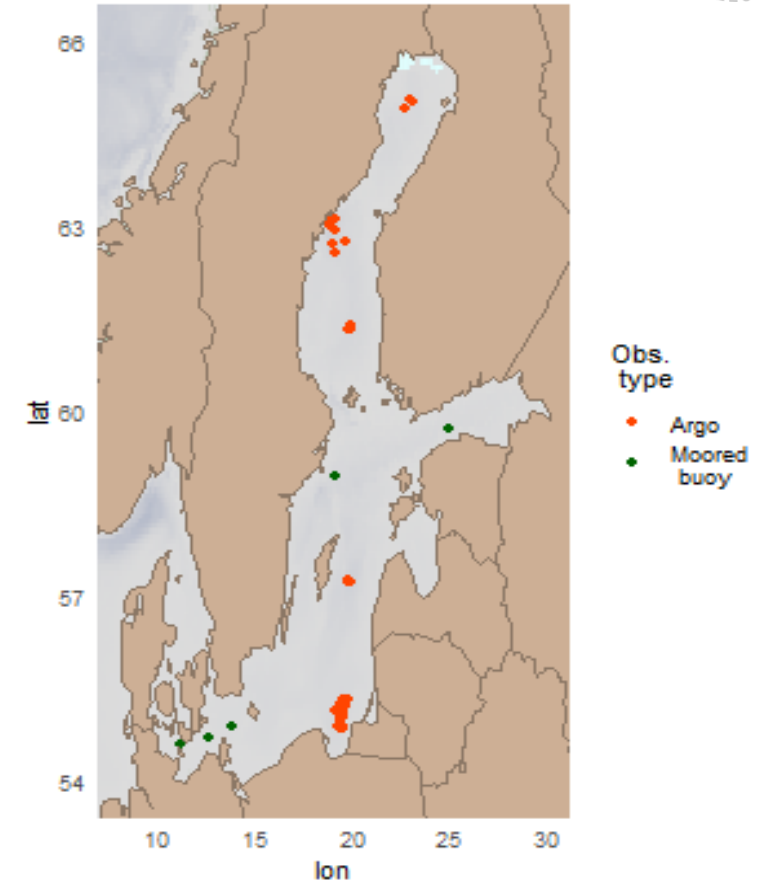
July 2018 Fishing activity



January 2018 Fishing activity



Subsurface data profiles,  
January 2018



More consistent in southern Baltic and DK waters. Useful for monitoring?

Annual cost of a  
fishing vessel  
collecting data ~  
One day of R/V  
costs

DTU Aqua, Research Vessel Dana



195,000 DKK (€26,000) / day

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



Cost-effective data collection: a path  
to long-term monitoring  
sustainability.

Could supplement, but not replace  
research vessel cruises

**Thanks!**



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