Fishing for Data:
Collaborating to Fill Coastal Observation Gaps

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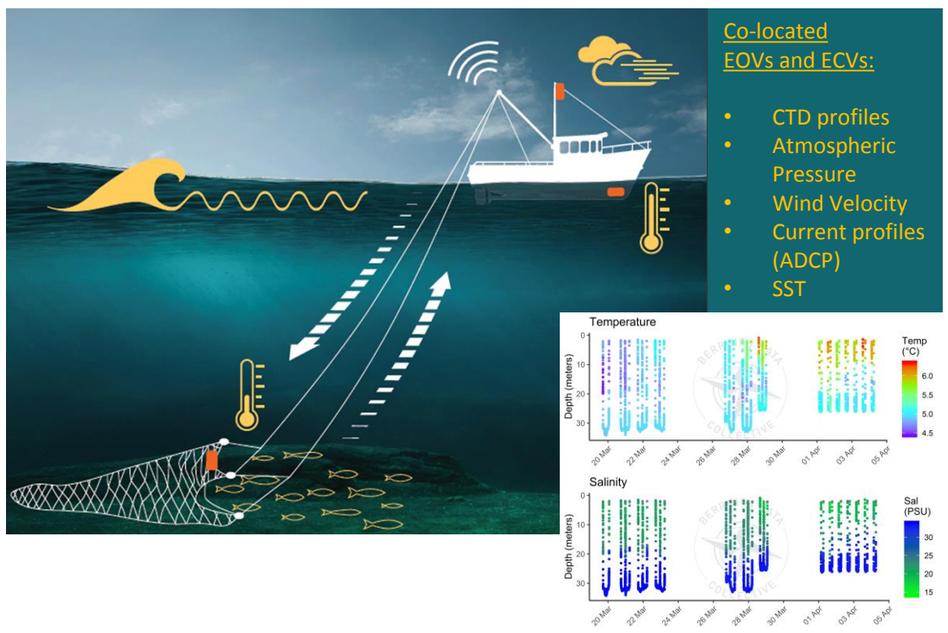
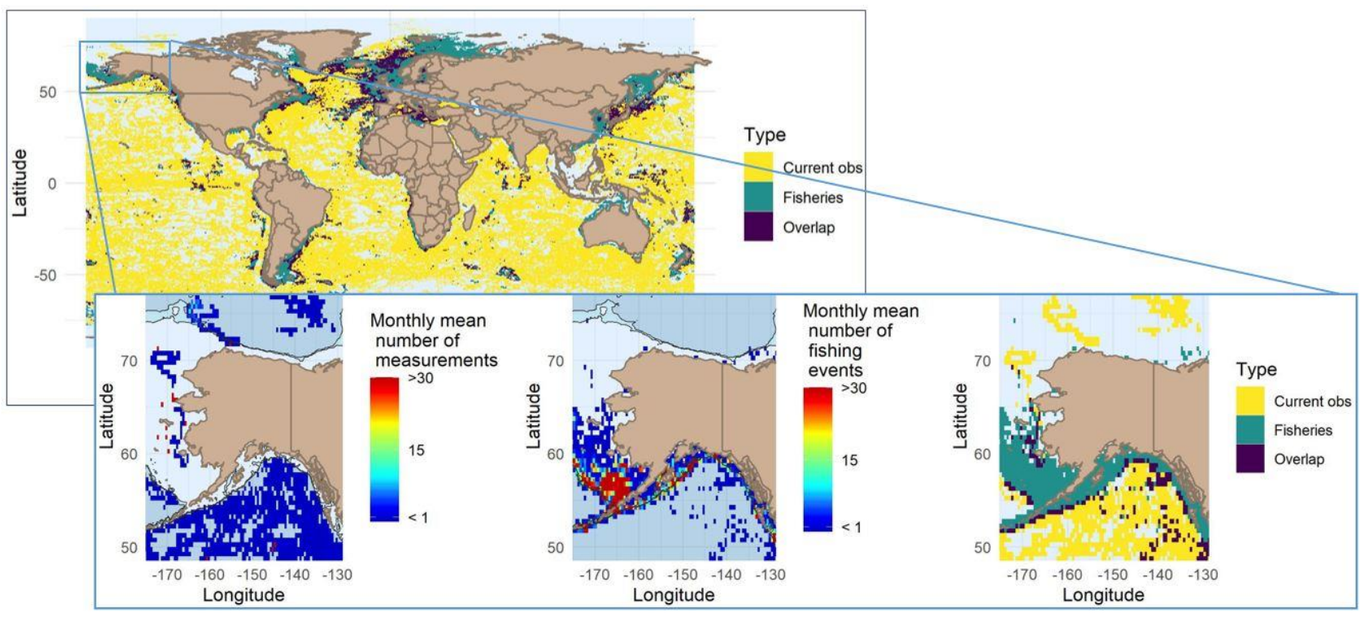
Abstract

The thousands of fishing vessels sailing our seas every day offer a tremendous opportunity to collaboratively collect a range of co-located EOVs and ECVs. When compared with other ships of opportunity, fishing has the unique capability to collect water column profiles with sensors mounted on the fishing gears which are already performing descents and ascents in the water column. Using past vessel traffic data, deployments can be targeted to fill specific gaps in conventional observing networks.

Different fishing techniques present different data collection opportunities and require specialized data handling and QC. Oceanographic data is also useful for the fishing industry and fisheries science. It is therefore of utmost important to balance the needs of all stakeholders with FAIR data management to maximize the value, impact, and scalability of this collaborative approach to ocean observation.





Coastal and Shelf-Sea Data Gaps

Due to the success of the Argo program providing sustained observation in the open ocean, there are **gaps in in situ subsurface ocean observation** coverage in **shelf and coastal regions**. Complex bathymetry, coastlines and frontal mixing zones complicate autonomous ocean observation platform operation - but concentrate fish and therefore fishing.

Comparing today's operational subsurface observation networks with the distribution of fishing activities suitable for sensor integration shows that **fishing occurs precisely where observations today are lacking** in shelf a coastal regions. This pattern is repeated, with few exceptions, around the world (Van Vranken et al., 2020).

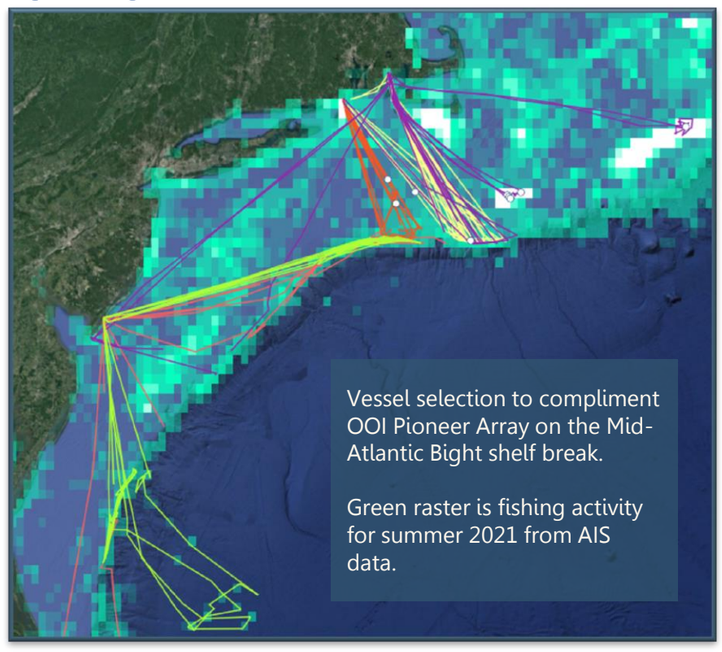
Instrumenting the Diversity of Fishing Vessels

Fishing gears provide a ride down and back up during normal fishing operations. IoT sensors measure water column profiles. As the net surfaces, data is transmitted in real time to our database and then onto data users, all without getting in the way of fishing operations.

The same instrumentation used by the SOOP program on cargo ships can be installed on fishing vessels in order to provide couple surface met data streams. A growing assortment of both sensor and onboard systems means that we can outfit most types of fishing vessels to collect an increasing number of EOVs. Past vessel traffic data can be used to evaluate the data collection potential and select the proper vessel(s) for given data requirements.

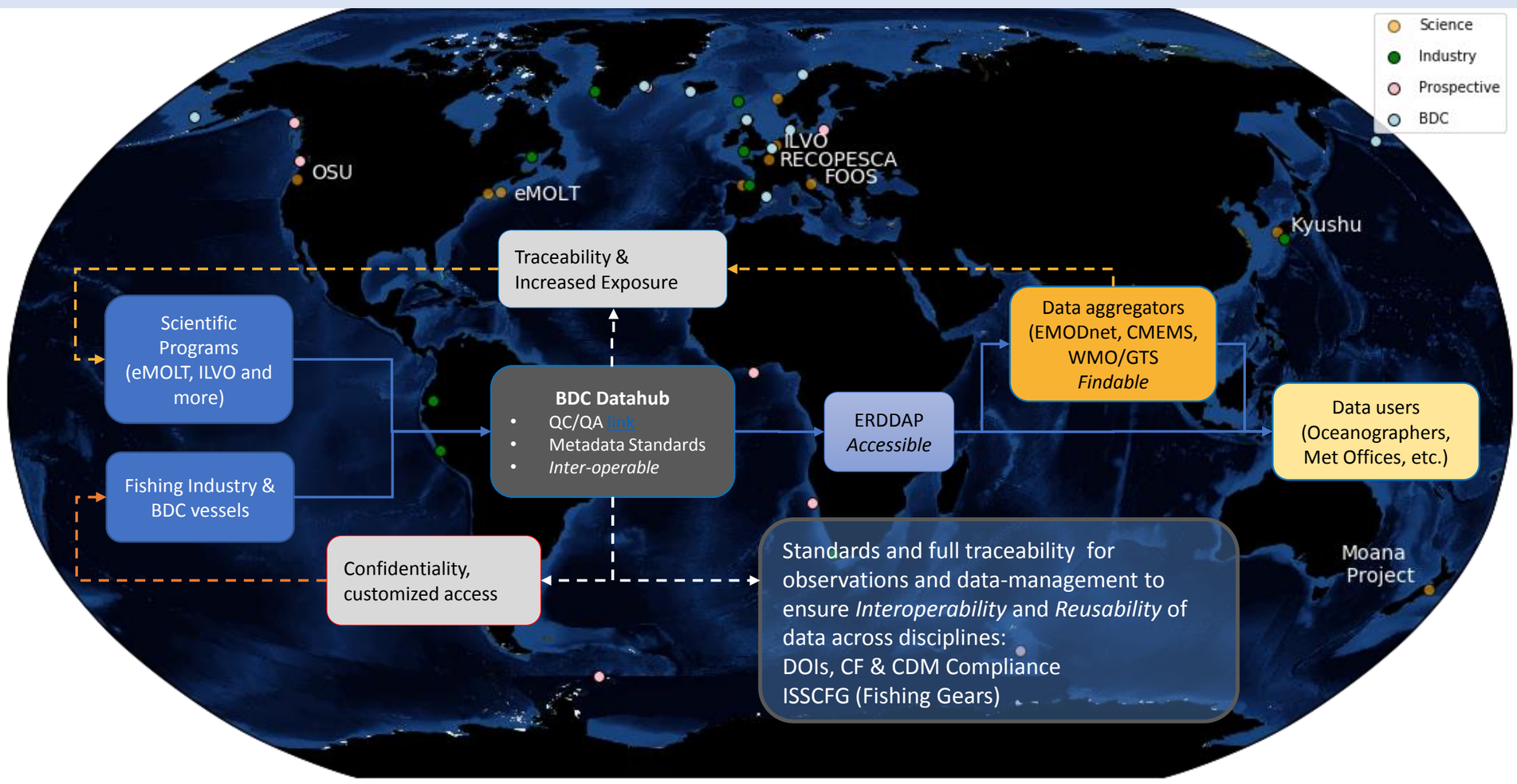
Data are shown in real-time on the EMODnet Physics map, where you can find vessels using fixed gear and mobile gear.

For Targeted Data Collection Complimenting Existing Observation Networks



Bringing the Global Community Together with F.A.I.R Data Management

By hosting a **centralized, standardized, and FAIR data management system** we are increasing the value and impact of this collaborative approach to ocean observation, both for data users and for data fishers. Our goals are to realize the tremendous interdisciplinary benefits of fishing for data by providing the technical architecture to **ensure traceability and usability** around the world. There is an **emerging network of both science and industry lead programs**. We are facilitating the creation of new programs, and working to maximize the value and impact of these data by **ensuring interoperability** for fishing industry, oceanographic, fisheries science, and other data users.



Van Vranken, C. H., Vastenhoud, B. M. J., Manning, J. P., Plet-Hansen, K. S., Jakoboski, J., Gorringe, P., & Martinelli, M. (2020). Fishing gear as a data collection platform: Opportunities to fill spatial and temporal gaps in operational sub-surface observation networks. Frontiers in Marine Science, 7, 864. https://doi.org/10.3389/fmars.2020.485512