DTO-BioFlow
Integration of biodiversity monitoring data into the Digital Twin Ocean

Logo in progress

AURORA

Bringing Deep-Sea Biodiversity Data to Light

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dbio

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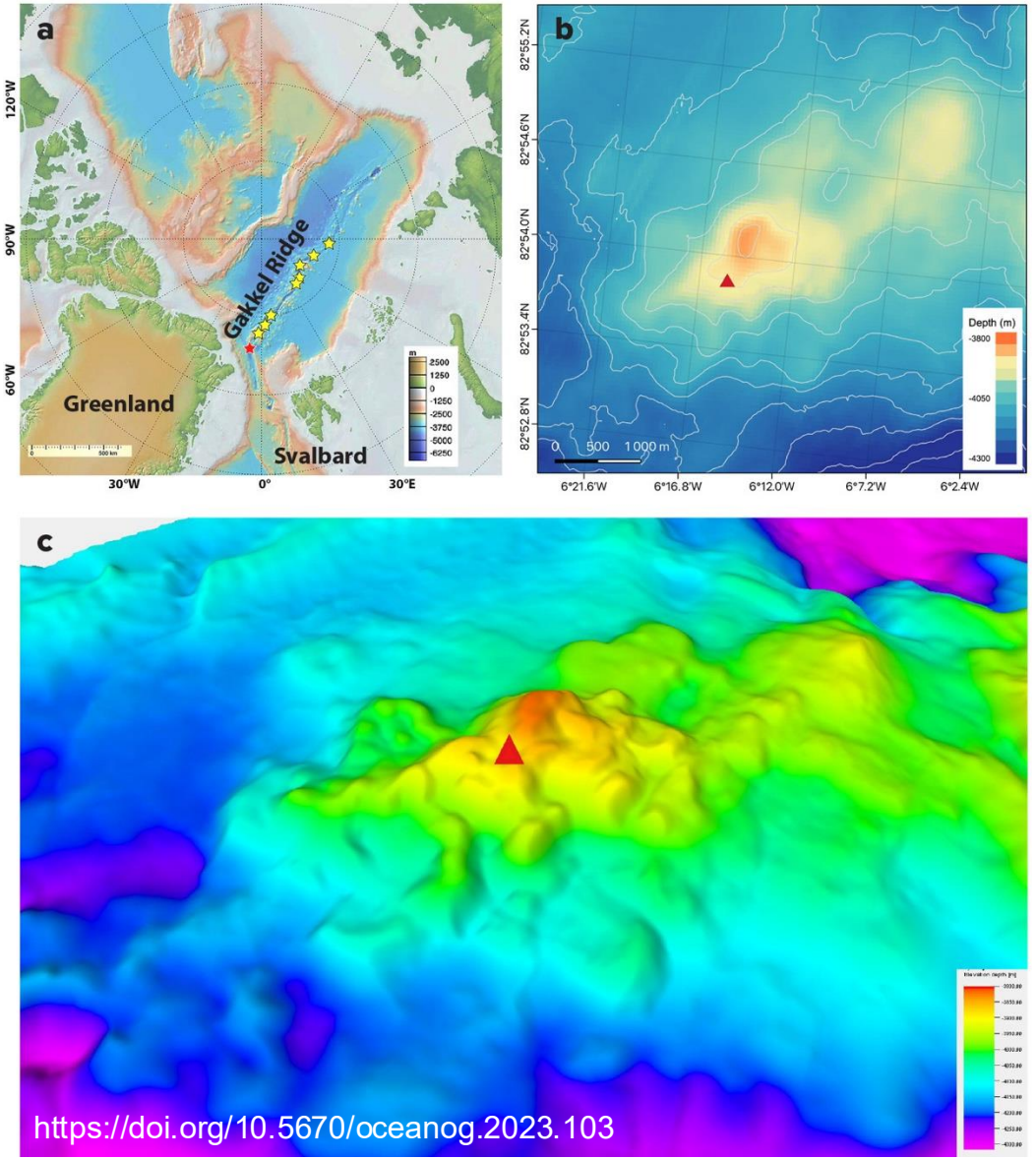
REVOcean

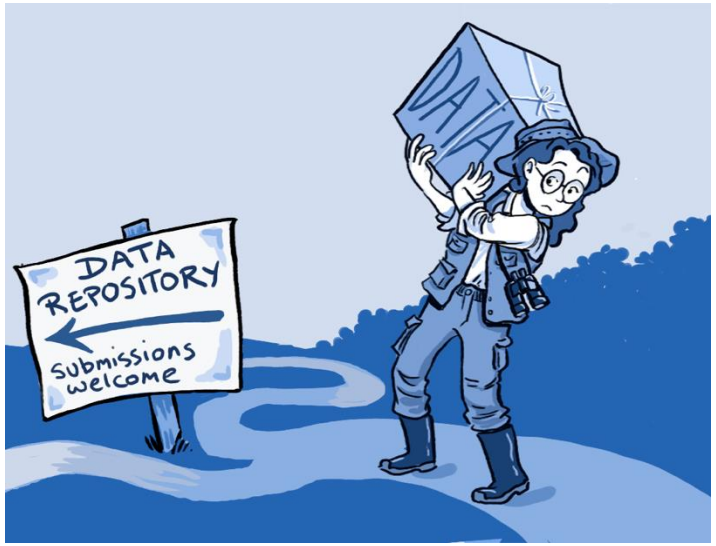
Context

- Only 11% of European marine OBIS records are from deep sea (below 200m); <1% from >3500m.
- Unlock and standardize “sleeping” deep-sea biodiversity data from the Aurora Seamount and hydrothermal vents in the Central Arctic Ocean.
- Data will include benthic megafauna, seafloor characteristicas, substrate types, and environmental data.



Project Objectives

- Develop a unified data ingestion platform.
- Publish a deep-sea biodiversity dataset as a first step to regular EMODnet Biology contributions.
- Train laboratory members in digital biodiversity data management.
- Raise institutional awareness about unlocking “sleeping” marine biodiversity data.

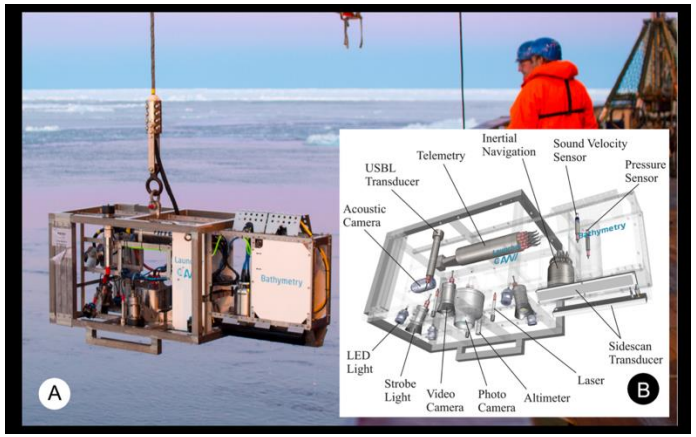


Roche, D. G. *et al*. Troubleshooting Public Data Archiving: Suggestions to Increase Participation. *PLoS Biol*. **12**, e1001779 (2014).

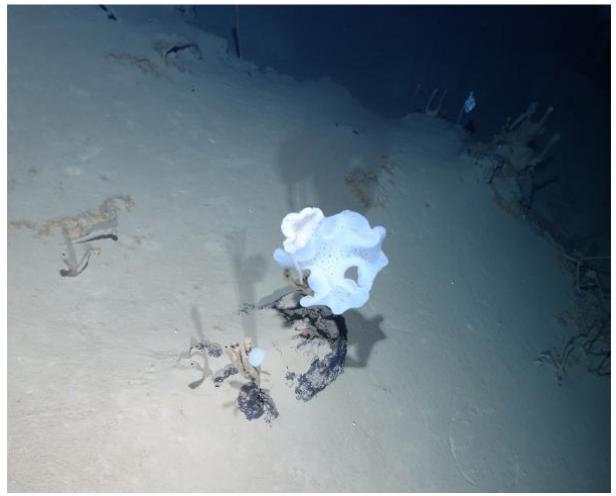
[1]https://www.marineimaging.com/miw/documents/MIW17/presentations/public/MIW17_Slides_AutunPurser.pd
[2]https://doi.pangaea.de/10.1594/PANGAEA.943364f

Dataset & Challenges

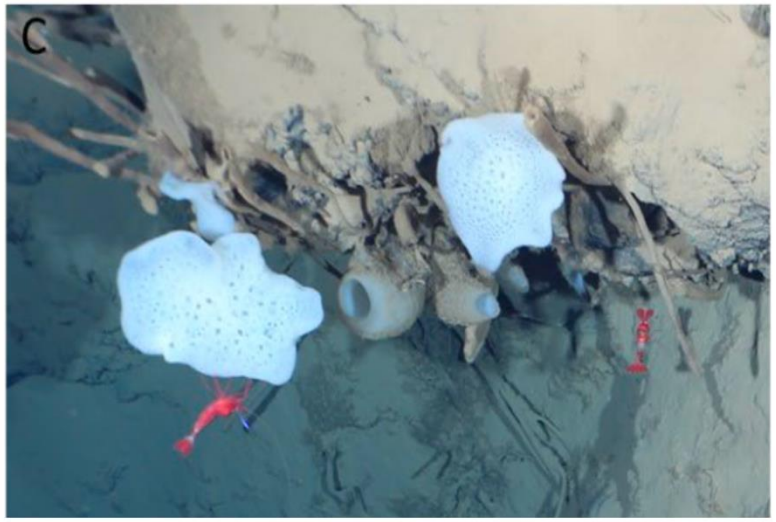
- Data are archived in non-standardized spreadsheets, stored on external drives.
- Data are not standardized (e.g., Darwin Core), limiting interoperability.
- Not publicly accessible
- Lack of workflows for validation, integration, and documentation.



OFOBS - Ocean Floor Observation and Bathymetry System [1]



Example of benthic communities observed during OFOBS dives on the Aurora seamount[2]



Deep-water shrimp *Bythocaris* sp is one of the more abundant species inhabiting the clusters of sponges[2]

Data ingestion platform

Data Management System

- User-friendly Shiny app for data ingestion, processing, and management.
- Automated pipelines for:
  - Standardization (Darwin Core, WoRMS, Marine Regions, BODC NERC Vocabulary)
  - Validation (e.g., error correction, duplicate removal)
  - Integration (e.g., merging datasets, updating, referencing)
  - Metadata entry form
- Quality Control: Reports
- Support data submission