

# NorEMSO - The Norwegian node for the European Multidisciplinary Seafloor and water column Observatory

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# EMSO PP - European Multidisciplinary Seafloor Observatory

European network of fixed-point deep-sea observatories addressed to Marine Ecosystems, Climate Change and Geo-hazards long-term monitoring and inter-disciplinary studies



# EMSO ERIC – Regional facilities

## Geosciences

Seismicity  
Gas hydrate stability  
Seabed fluid flow  
Submarine landslides  
Submarine volcanism  
Geo hazard early warning

## Biogeochemistry

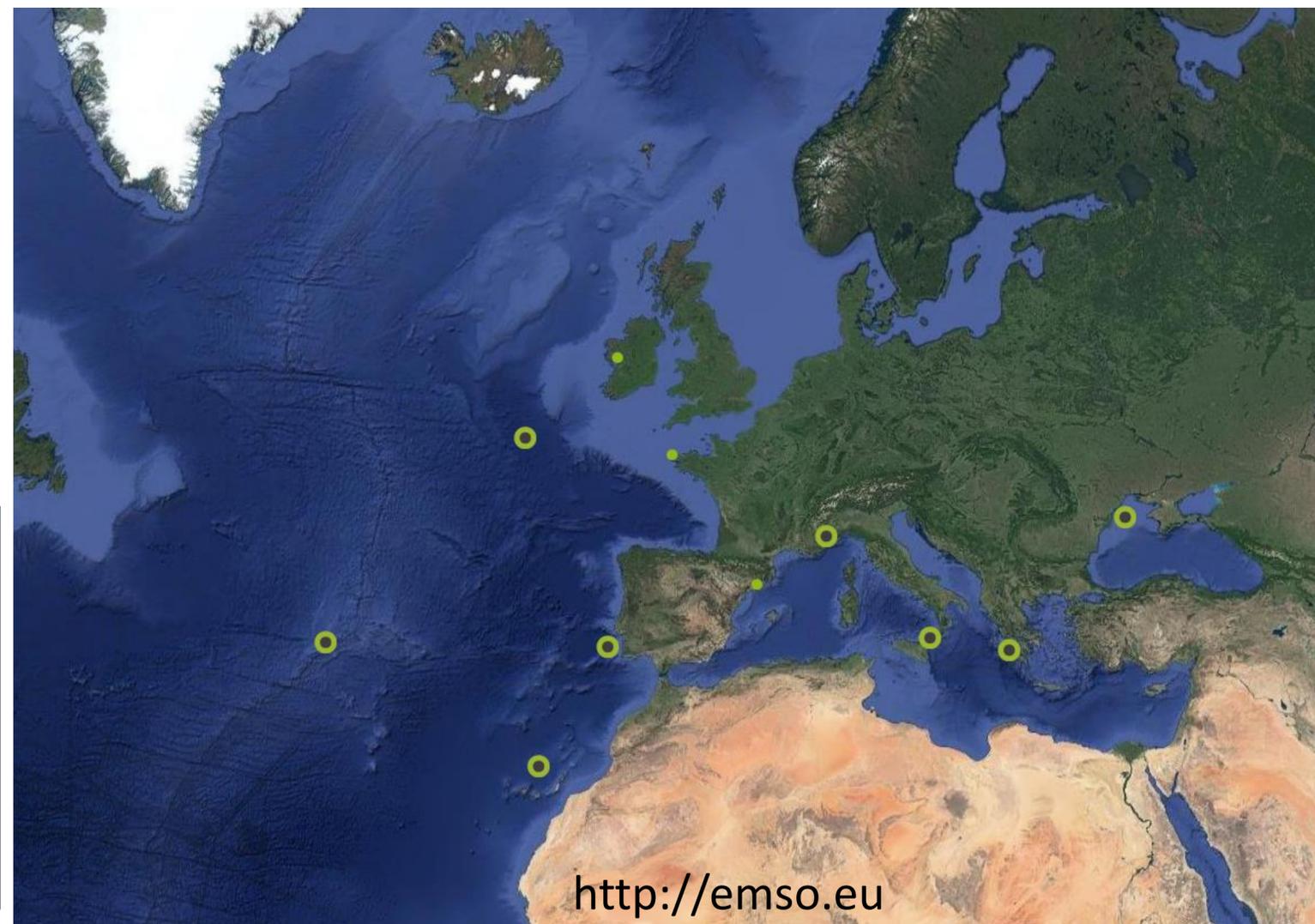
Ocean acidification & solubility pump  
Biological pump  
Hypoxia  
Deep-ocean biogeochemical fluxes  
Continental shelf pump

## Marine ecology

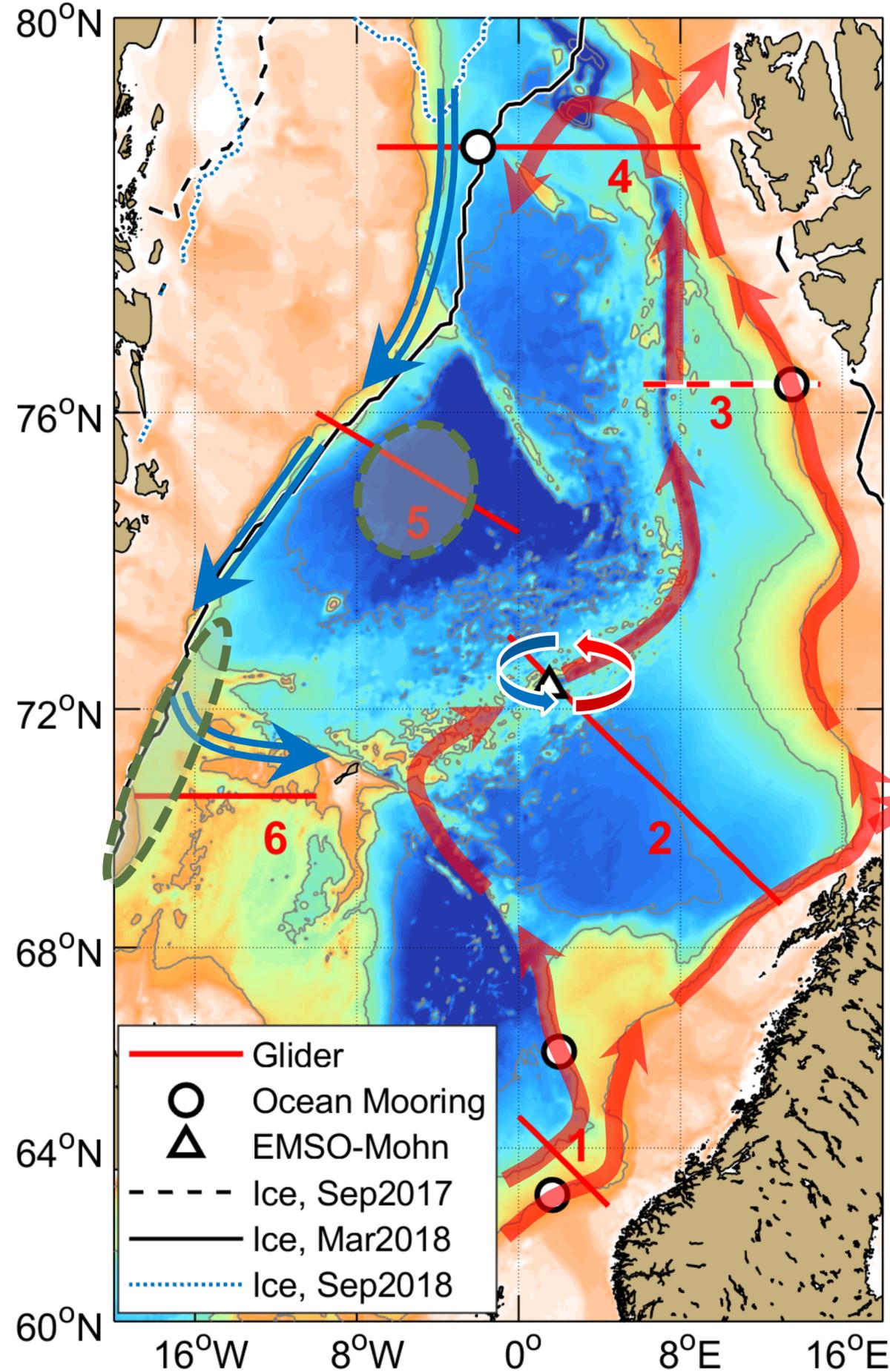
Climate forcing of ecosystems  
Molecules to microbes  
Fisheries  
Marine noise  
Deep biosphere  
Chemosynthetic ecology

## Physical oceanography

Ocean warming  
Deep-ocean circulation  
Benthic and water column interactions  
Marine forecasting



# The Norwegian node for the European Multidisciplinary Seafloor and water column Observatory



- 60 millions nok from INFRASTRUKTUR call
- Establish and expand a unified national monitoring of water bodies
- Contribute to the European deep-sea observation network
- Monitor sea circulation and acidification, physical processes in the water column from the surface to the great depths, as well as the ecosystem and water masses at the newly discovered hydrothermal site on the Mohn Ridge

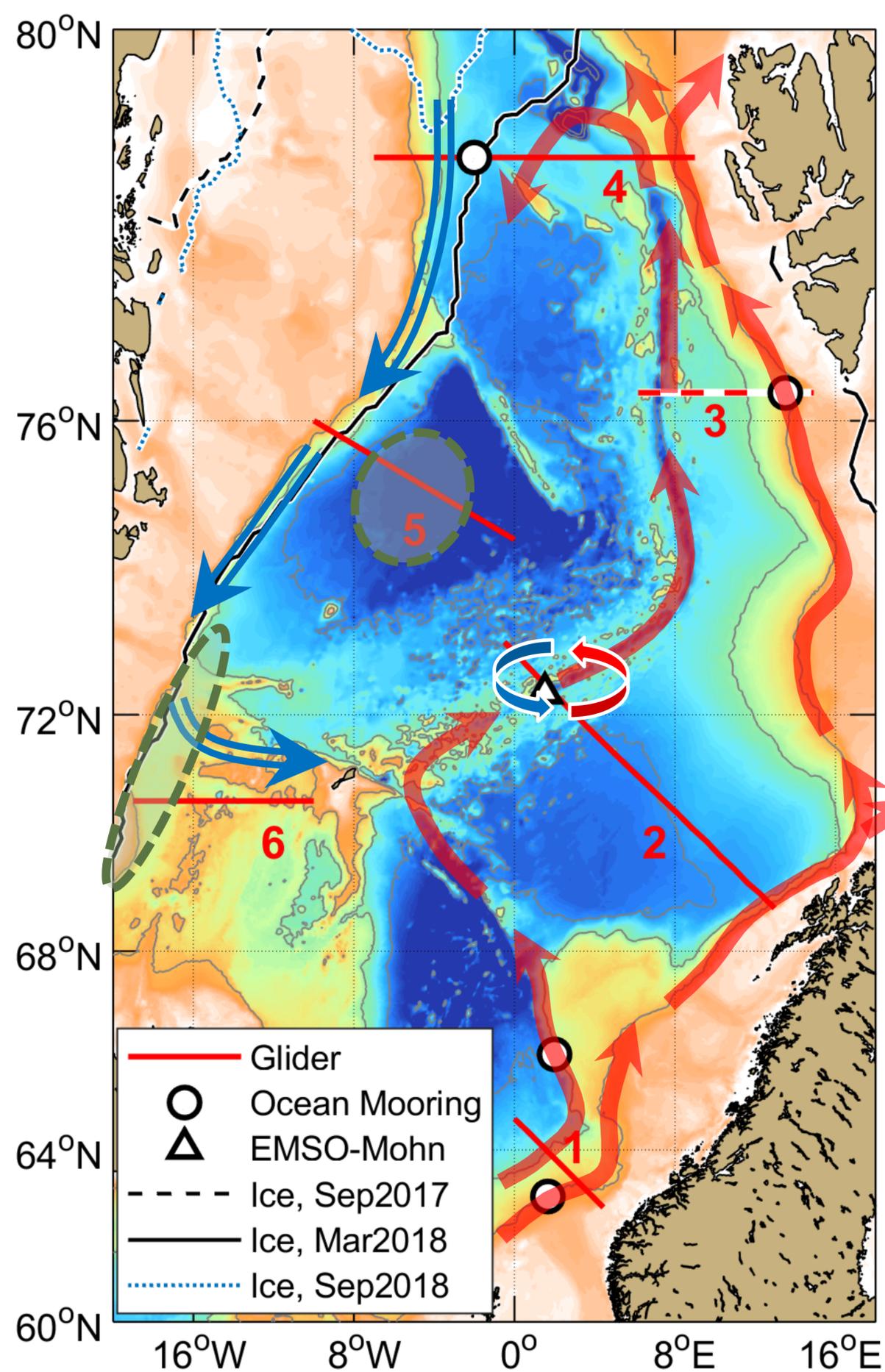
# The Norwegian node for the European Multidisciplinary Seafloor and water column Observatory

The network of NorEMSO in the Nordic Seas has three main components:

**Glider** sections (red): (1) Svinøy, (2) Gimsøy and (3) South Cape West, (4) Fram Strait, (5) Greenland Sea and (6) Iceland Sea

**Moored** observation systems (circles): Svinøy, Station M, South Cape, and Fram Strait

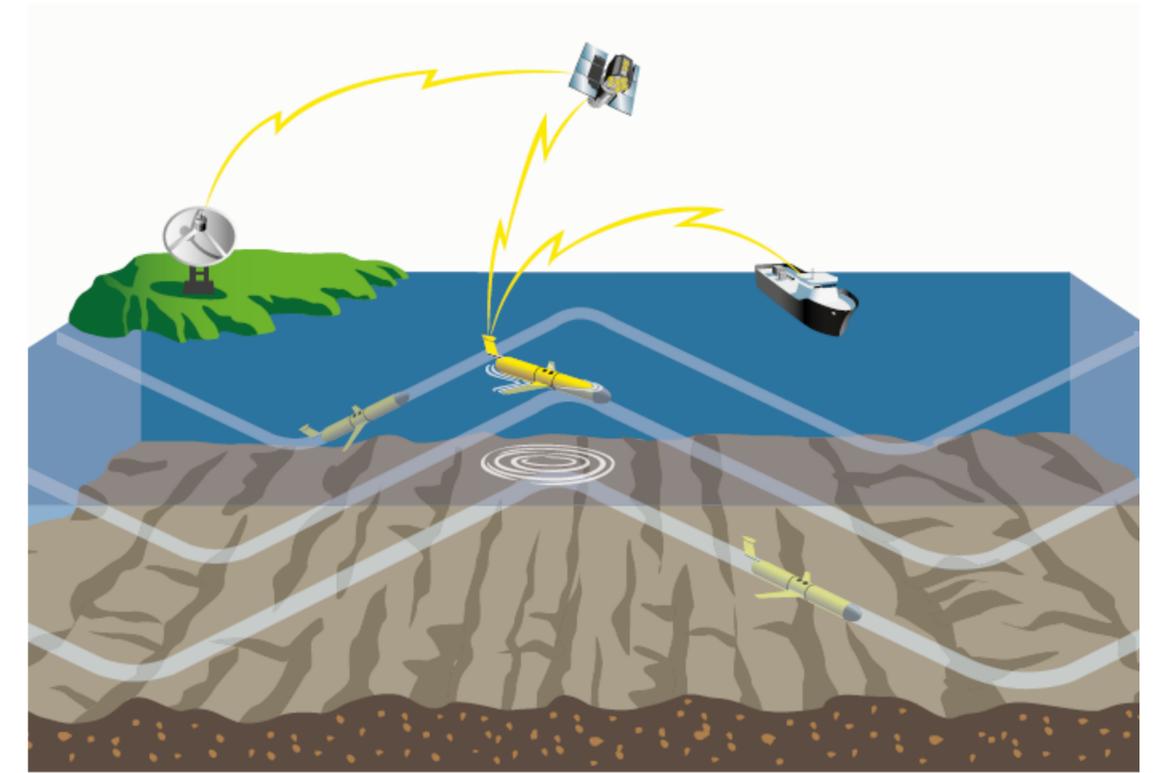
The **EMSO Mohn** observatory over the Mohn Ridge (triangle)



Integration across Nordic Seas  
Exchanges, transformations

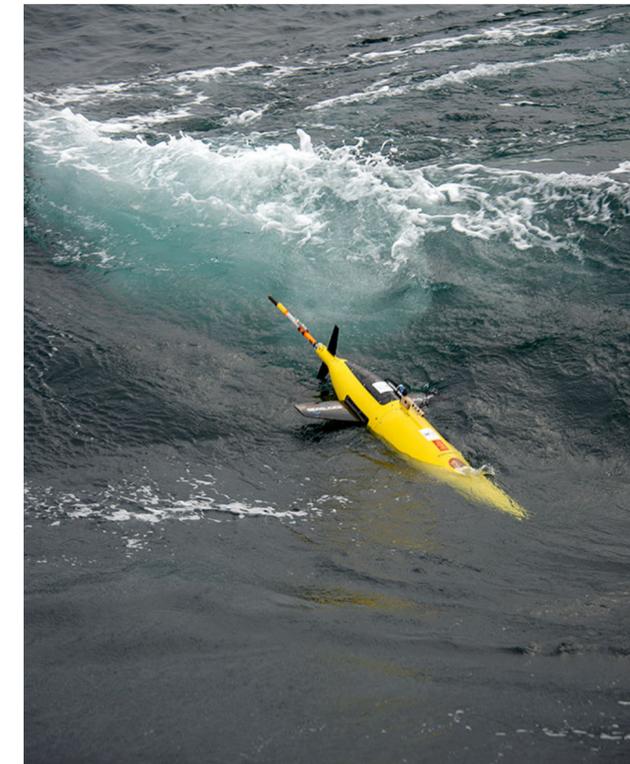
# Ocean Gliders

- sustainable, fine resolution observations even in severe weather conditions
- upper 1000 m, 4-6 h cycle, 20-25 km/day horizontal speed, 4-12 mon. deployments
- Impact ocean modeling and forecasts

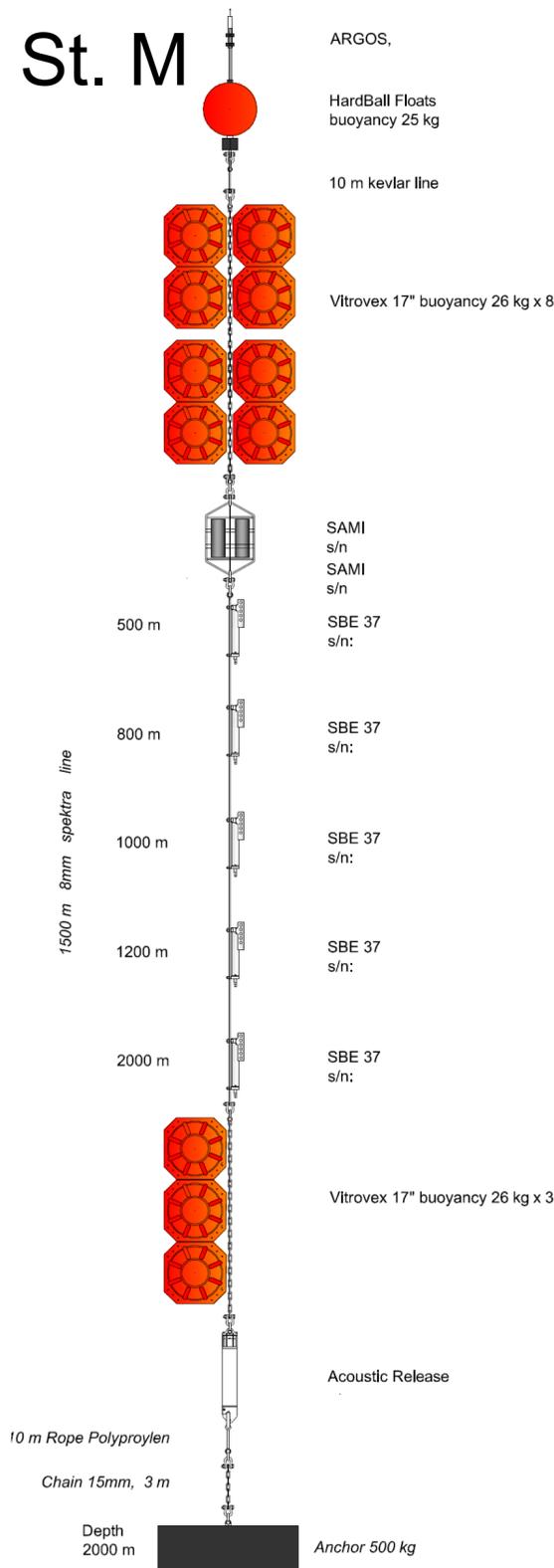


## Norwegian National Facility for Ocean Gliders

- <http://norgliders.gfi.uib.no>
- As of today, 5 Kongsberg Seagliders, 2 TDW Slocums
- Piloting tool & **Glider Portal** developed at GFI
- A **Glider Lab** and 24/7 operation team of pilots
- Near real-time data delivery
- NorEMSO will expand on the glider facility by
- 5 new deep gliders
- a national team of pilots, by training and integrating technicians from partner institutions

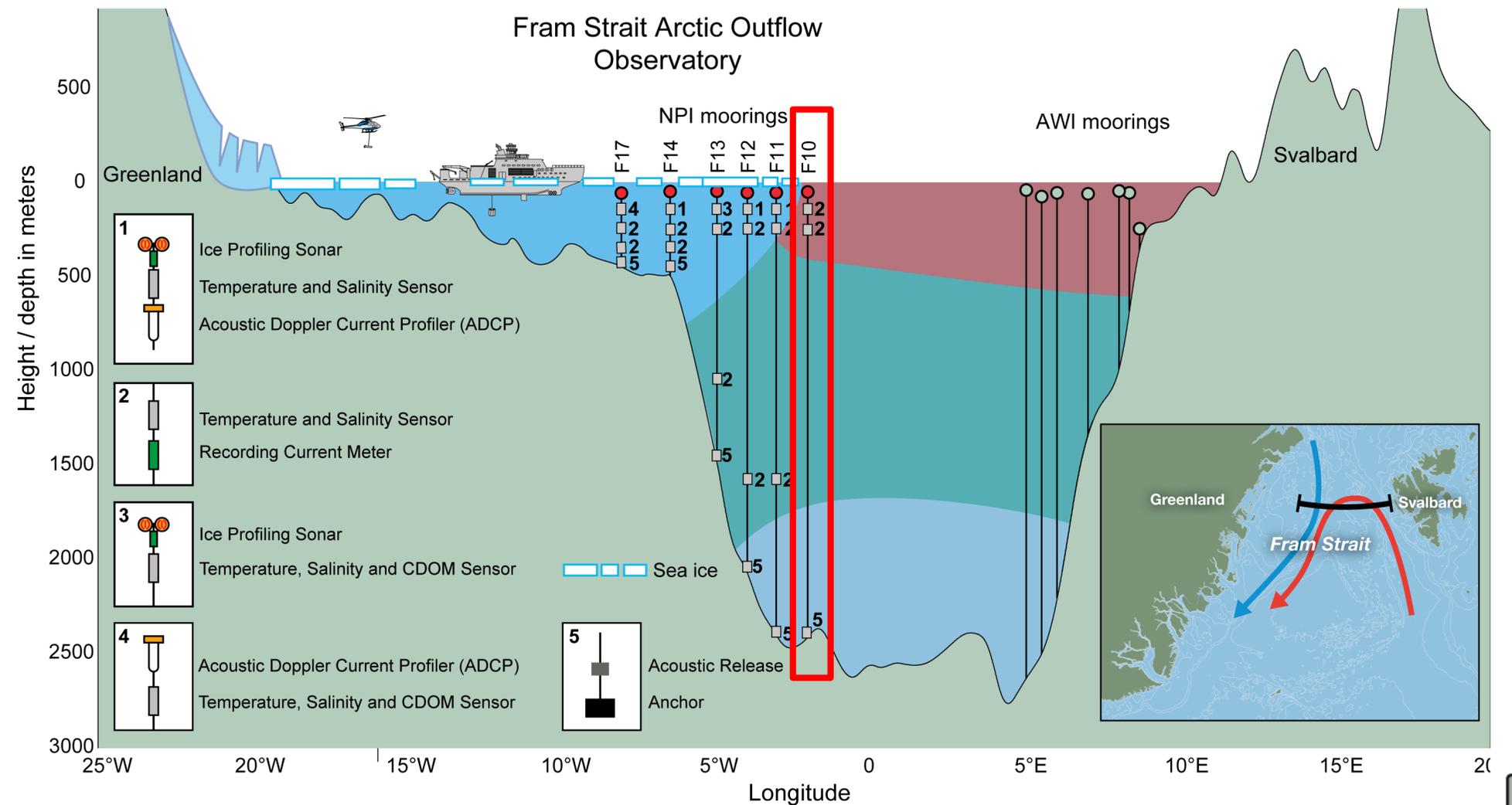


# Moorings



## Continuation of long-term observations

Station M (only subsurface); Svinøy; Fram Strait

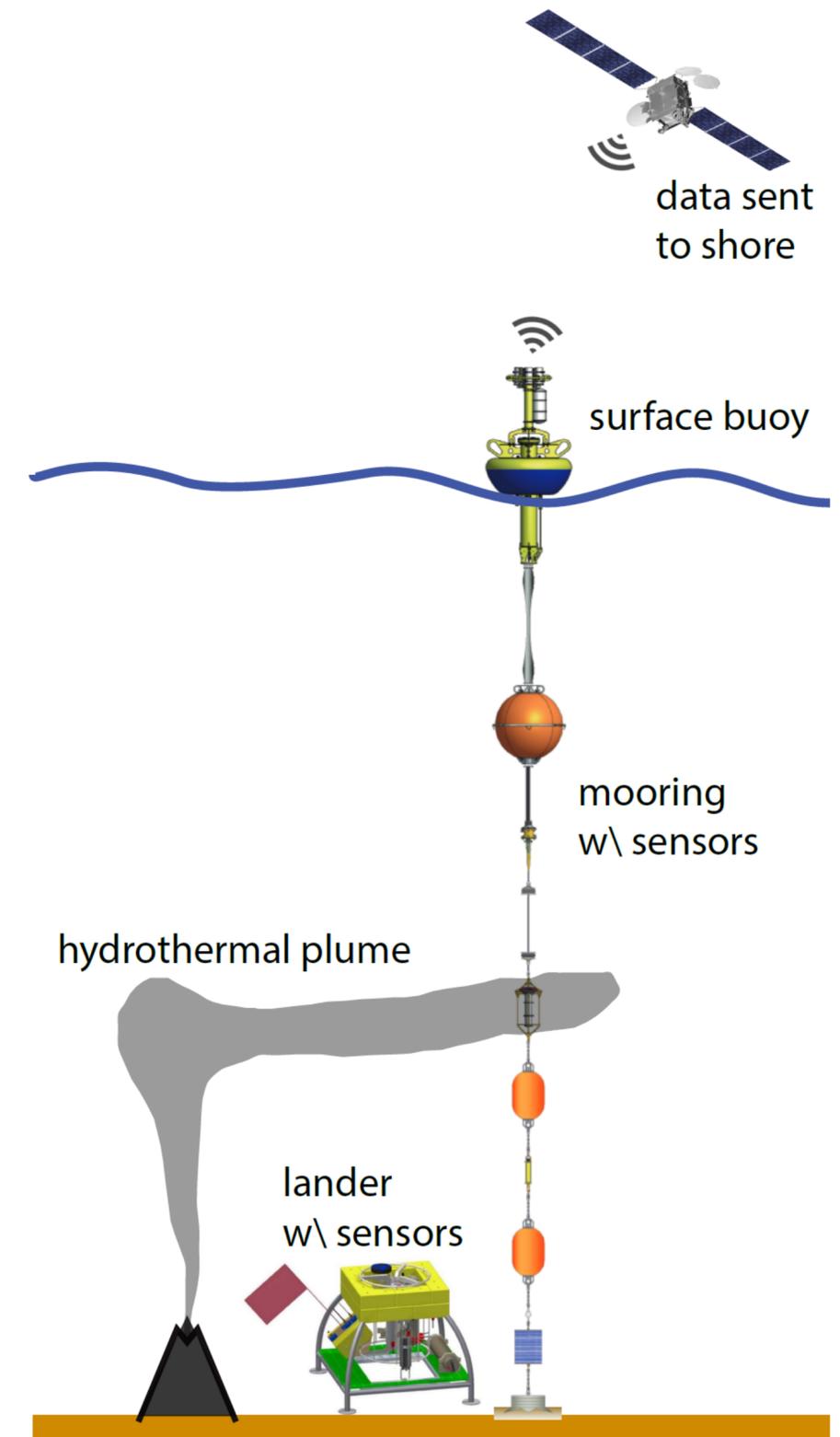


Courtesy of Norwegian Polar Institute



# EMSO - Mohn

- At a hydrothermal vent site on Mohn Ridge, co-located with a glider section
- A fixed-point seabed-based compact and wireless observatory with a multidisciplinary approach – from geophysics and physical oceanography to ecology and microbiology
- Sensors include an Acoustic Doppler Current Profiler, a pressure gauge, a temperature probe, a conductivity sensor, a turbidity meter, an optode, and a hydrophone
- Acoustic modems enable wireless communications
- Data Processing Unit for on board data reduction



# Data management

- Open Research Data Pilot ; FAIR data management principles
- free and open access to all metadata and data (NRT and delayed mode)  
CC BY 4.0 and NLOD (Norsk lisens for offentlige data)
- Data will be delivered and made available through the Norwegian Marine Data Centre (NMDC) and international portals such as CMEMS, EMODnet, Coriolis, SeaDataNet/SeaDataCloud, SEANOE
- The data management of NorEMSO will function as a regional node and use existing competence and data infrastructure at UiB (Bjerknes Climate Data Centre) and archives of the Norwegian Marine data Centre hosted by the Institute of Marine Research

