

# The MEOP data portal

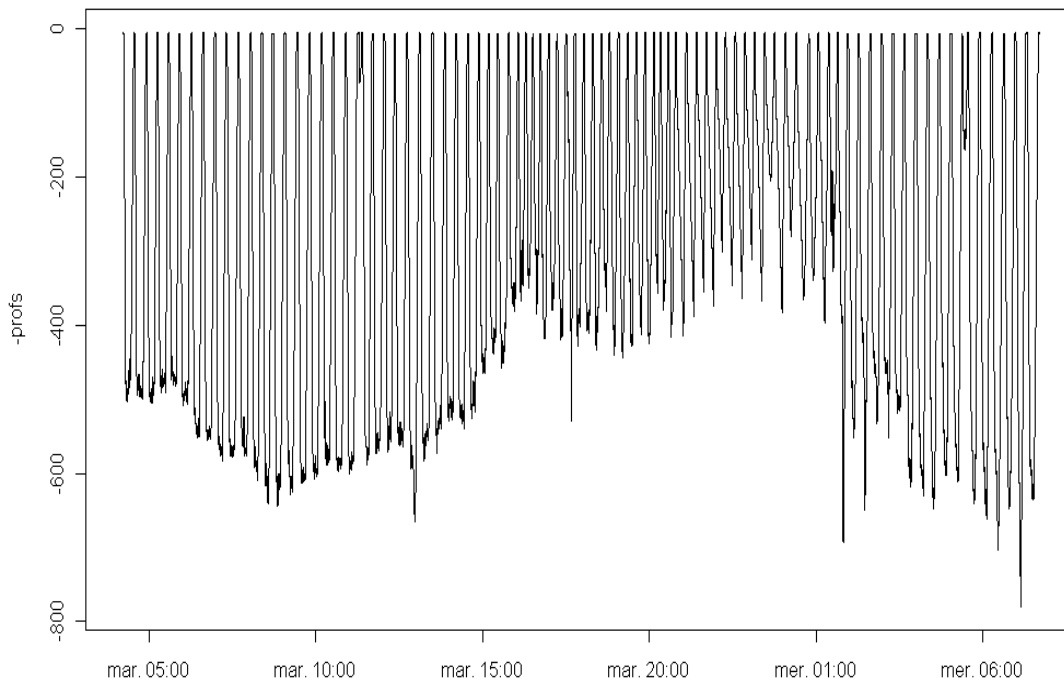
When diving animals help us to observe the oceans



Fabien Roquet<sup>1</sup> and the MEOP consortium

<sup>1</sup> Department of Meteorology of the Stockholm University

# A typical day at sea for an elephant seal



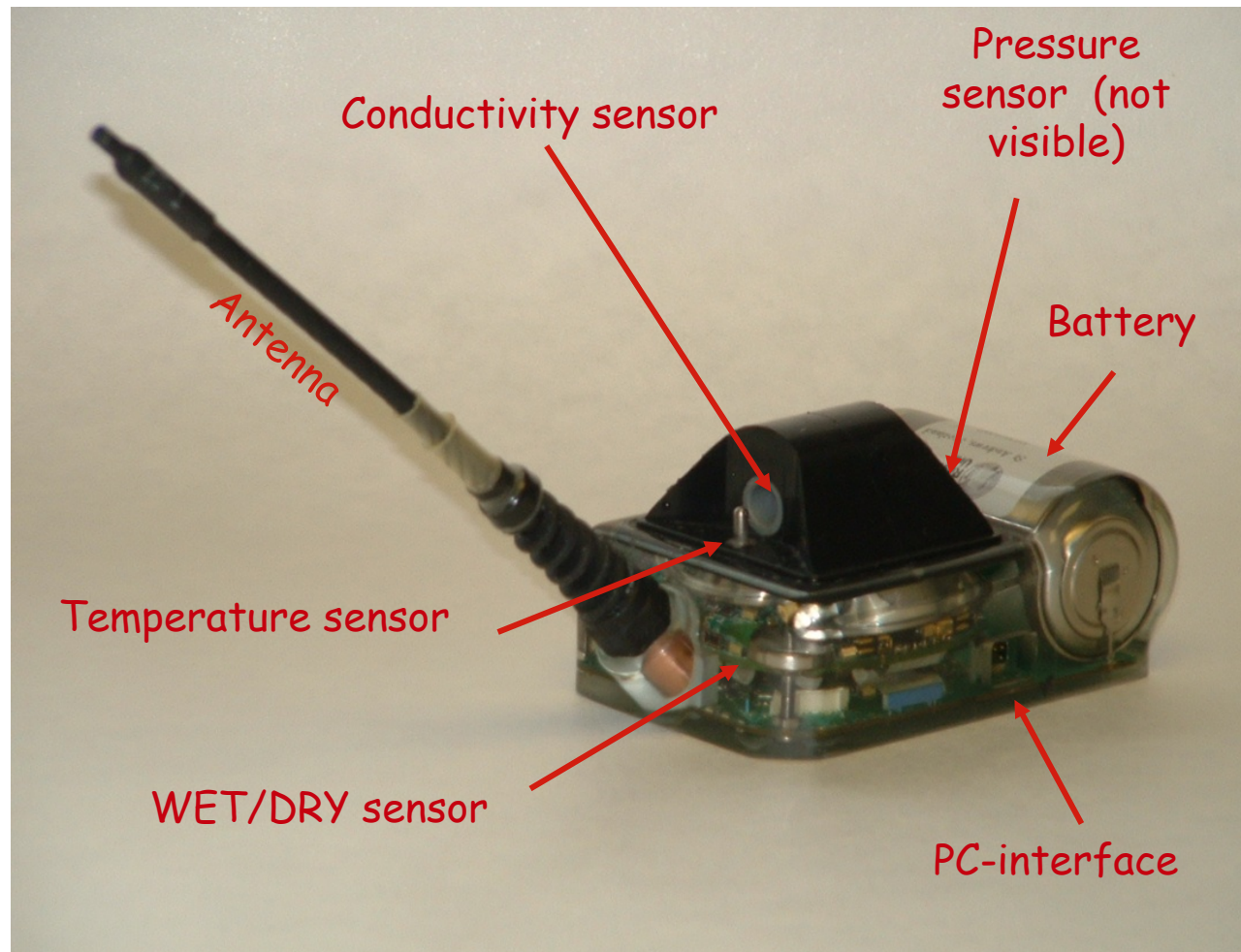
**Mean Diving Depth:**  
450 m (max 2000 m)

**Mean Diving Duration:**  
21 mn (max 90 min)

**Mean Surface Interval: 3 mn**

**60 dives per day**

# CTD-Satellite Relay Data Logger



Lifetime:  
~ 11 months

Resolution:  
17-20 depths  
4 profiles/day

Accuracy:  
T = 5mK  
S = <0.05  
P = 2dbar



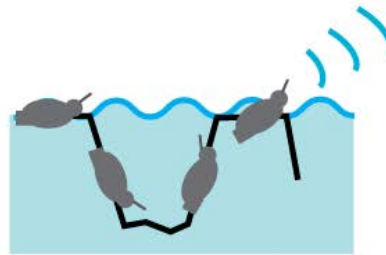
Sea Mammal  
Research  
Unit

Boehme et al. (2009)

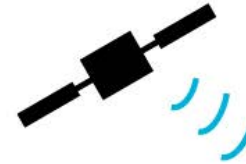
Deployment on land



CTD Profiling  
Data compression



ARGOS transmission  
Geo-localization

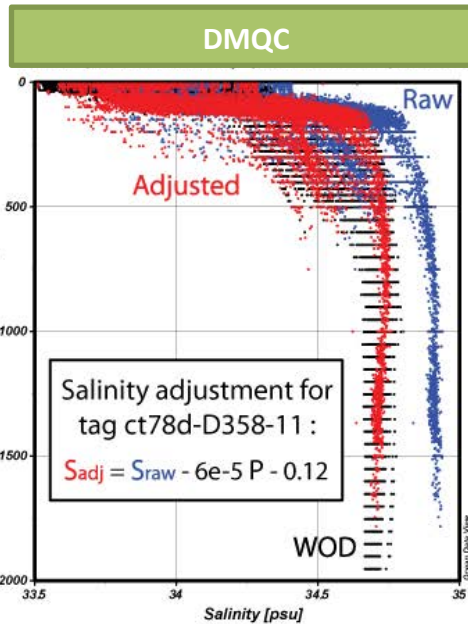


Reception  
in CLS Argos,  
Toulouse



Post-processing  
of CTD data

Data extraction  
Storage at SMRU  
Distribution to GTS



Distribution  
to ocean  
data centers

Data portal:  
meop.net

**Accuracy after calibration:  
better than 0.03°C and 0.05 psu**



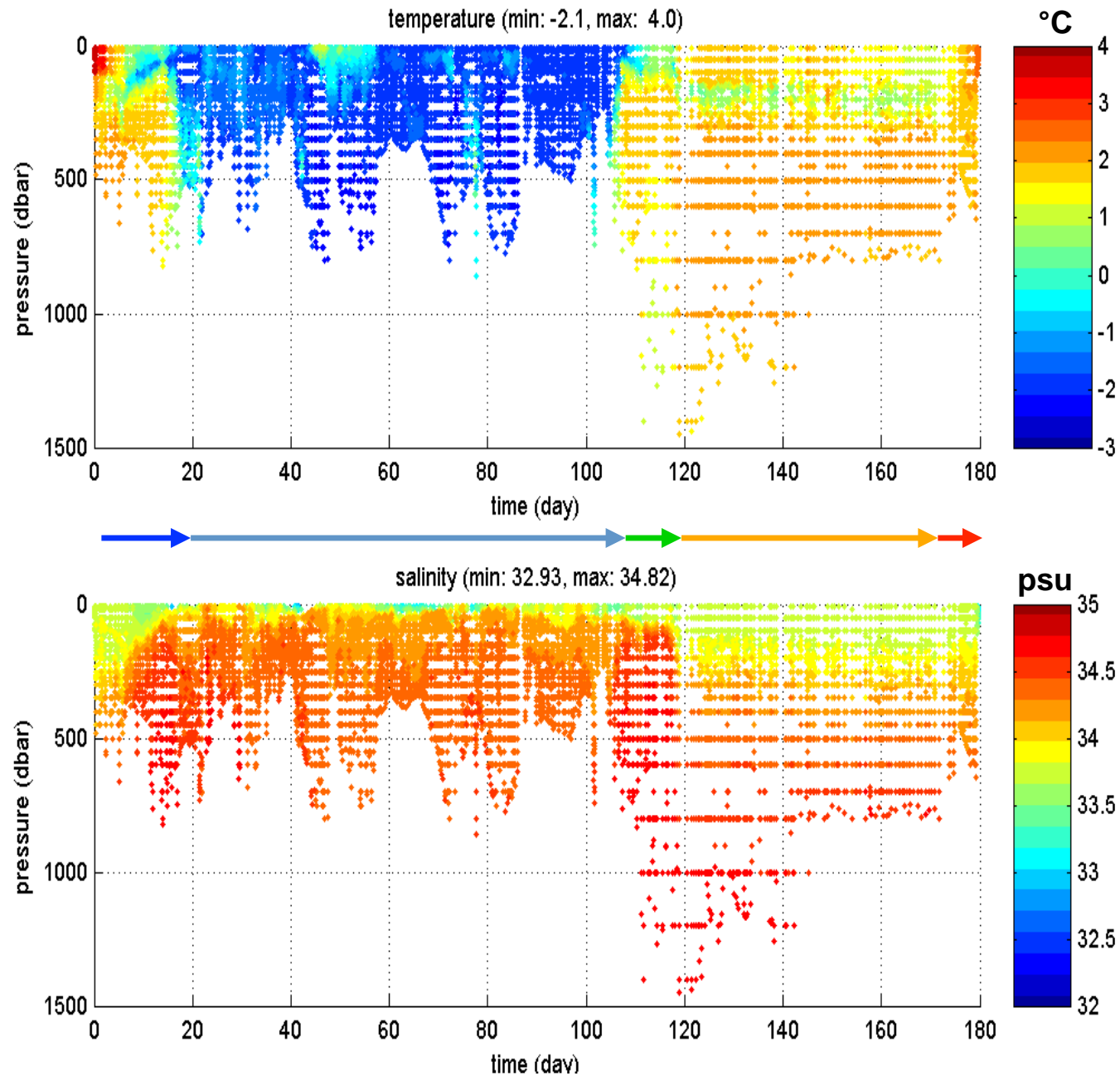
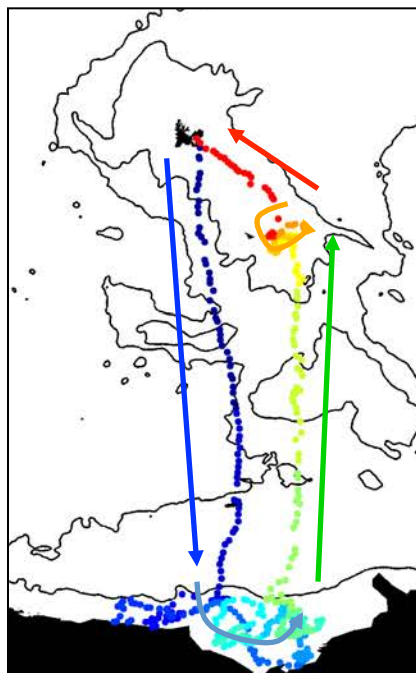
## Kerguelen Islands

552 profiles

6 months of data

2-3 profiles /day

20 datapoints /profiles



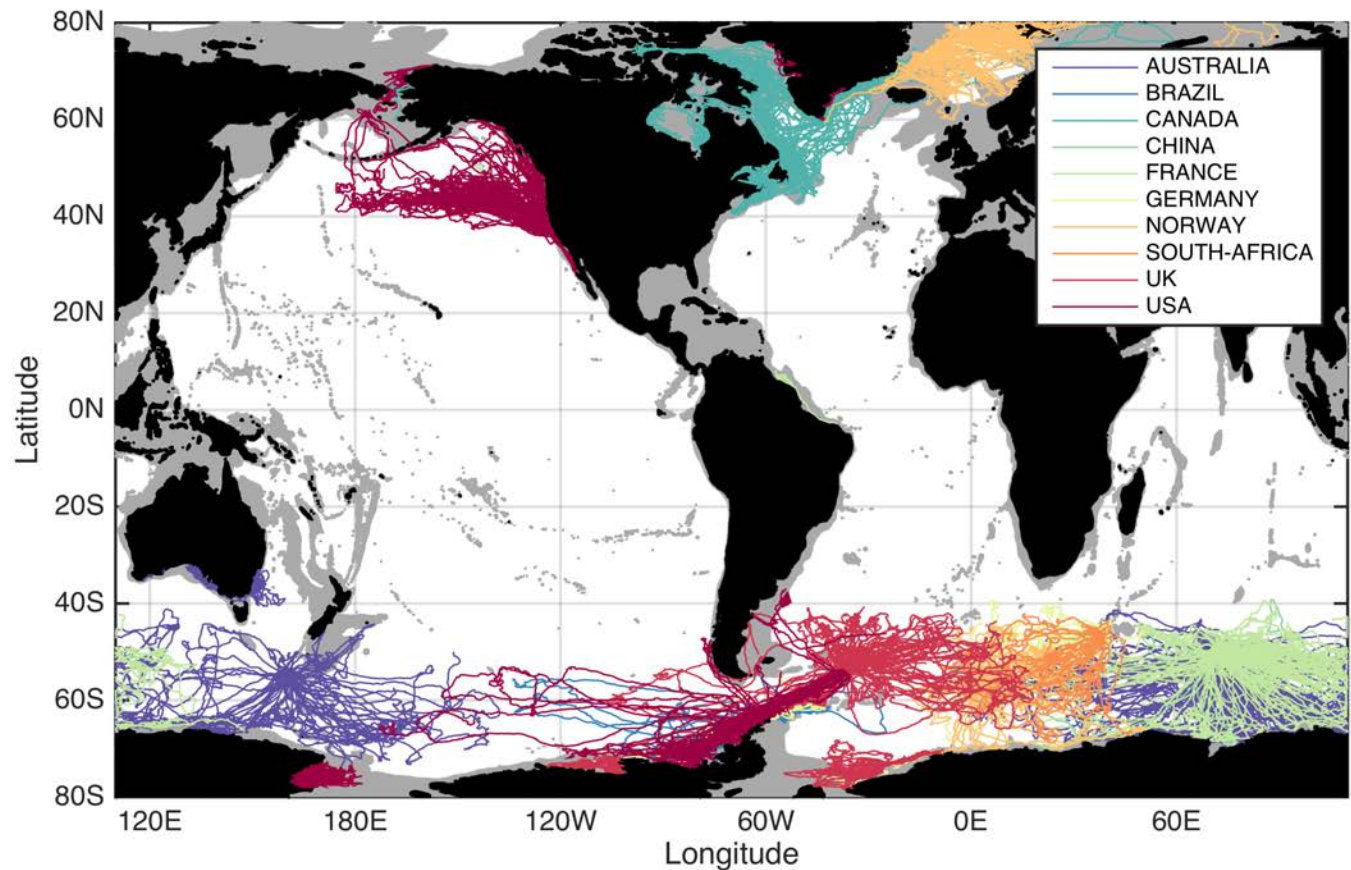
# MEOP-CTD database

MEOP-CTD dataset : 517429 profiles, 171 deployments, 1197 tags

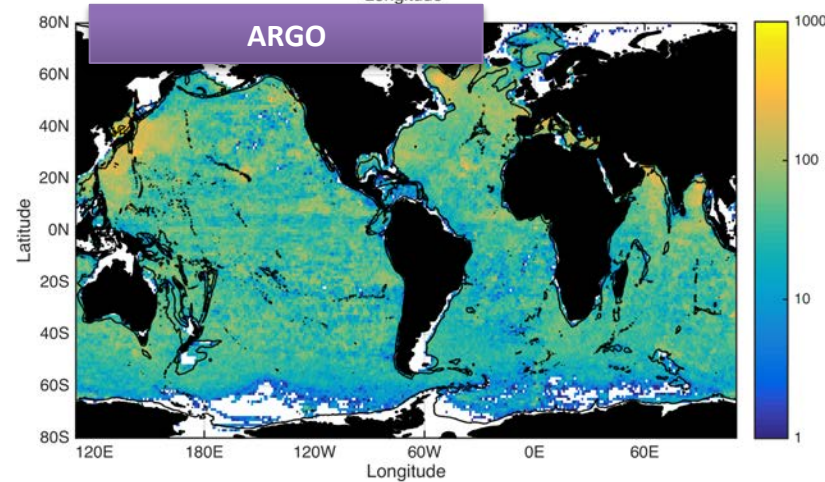
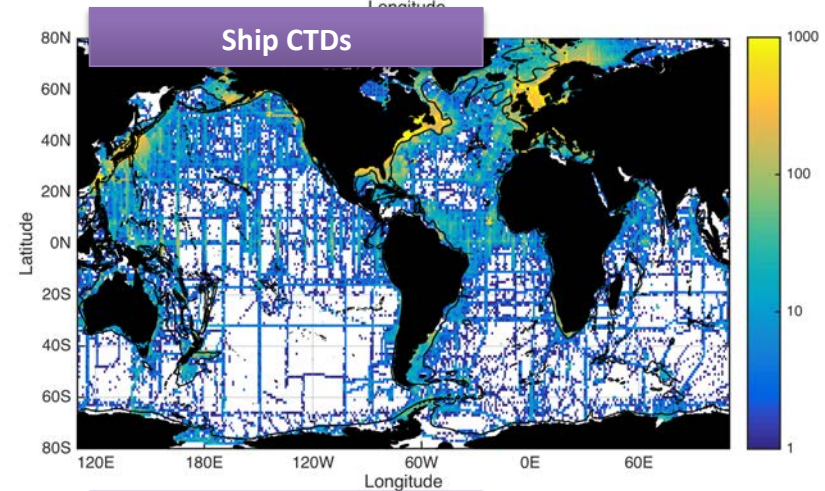
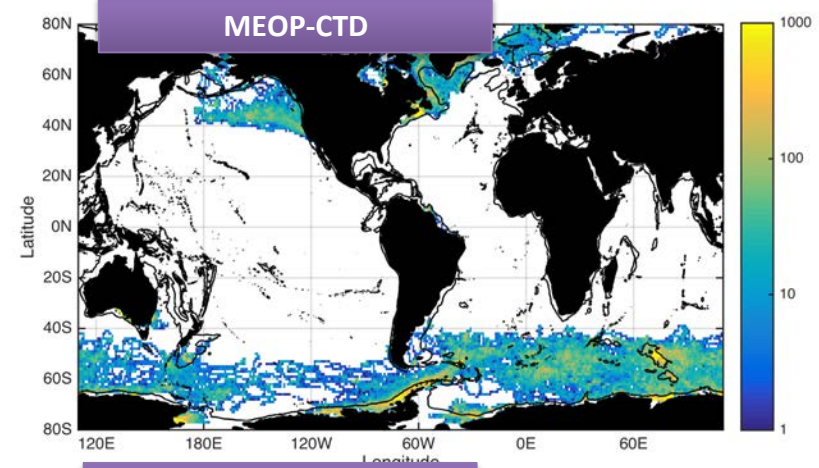
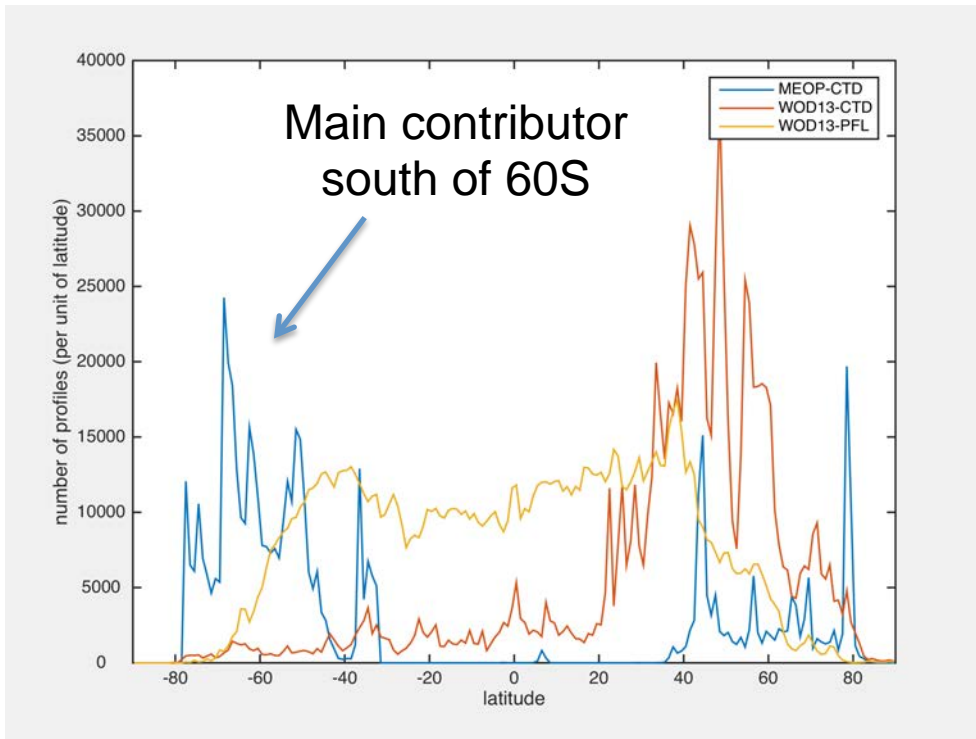
Database is used:

- to investigate the behaviour and well-being of marine animals.
- to deliver data to study the ocean itself.

World map showing the distribution of CTD profiles (i.e. vertical profiles of temperature and salinity) collected since 2004 currently available in the MEOP-CTD database.



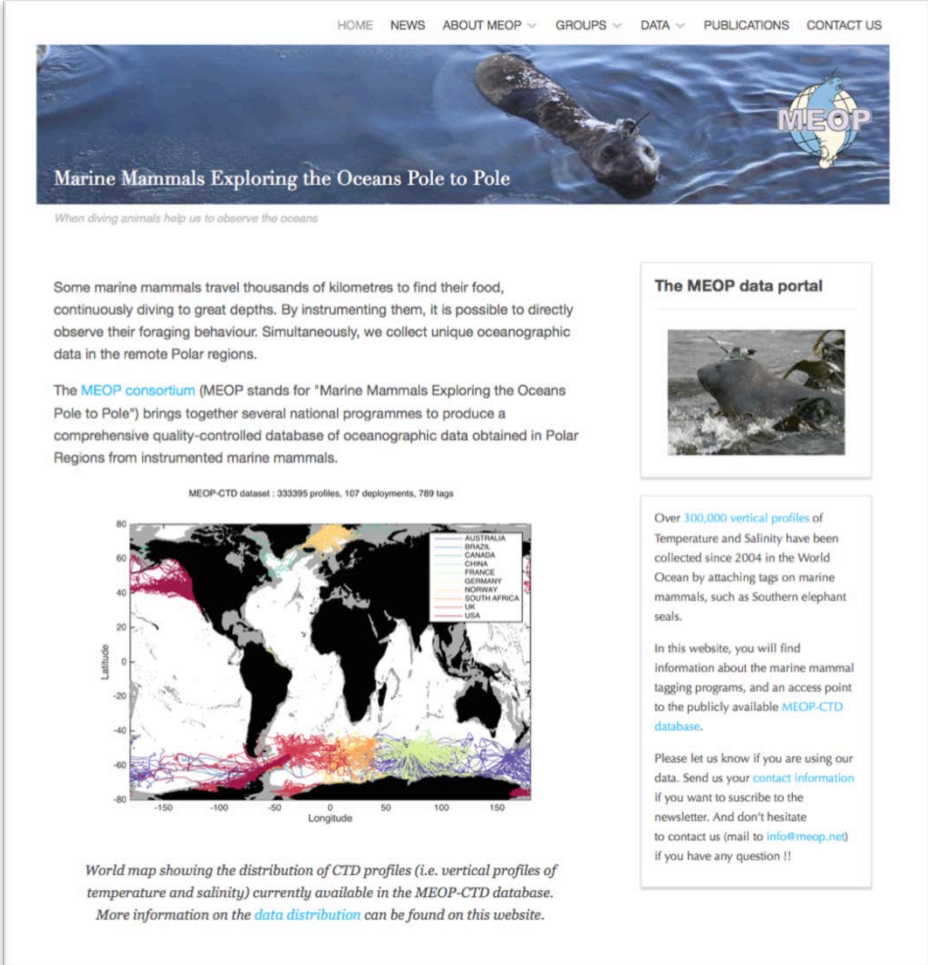
# Great complementarity with other sources of data





# MEOP data portal: meop.net

- MEOP: Marine Mammals Exploring the Oceans Pole to Pole
- The MEOP data portal launched in June 2015: ***meop.net***
- Data available in:
  - netCDF (Argo-type)
  - ODV ASCII (original levels)
  - ODV ASCII (interpolated)
- Contact: [info@meop.net](mailto:info@meop.net)



HOME NEWS ABOUT MEOP GROUPS DATA PUBLICATIONS CONTACT US

Marine Mammals Exploring the Oceans Pole to Pole

When diving animals help us to observe the oceans

Some marine mammals travel thousands of kilometres to find their food, continuously diving to great depths. By instrumenting them, it is possible to directly observe their foraging behaviour. Simultaneously, we collect unique oceanographic data in the remote Polar regions.

The [MEOP consortium](#) (MEOP stands for "Marine Mammals Exploring the Oceans Pole to Pole") brings together several national programmes to produce a comprehensive quality-controlled database of oceanographic data obtained in Polar Regions from instrumented marine mammals.

MEOP-CTD dataset : 333395 profiles, 107 deployments, 789 tags

World map showing the distribution of CTD profiles (i.e. vertical profiles of temperature and salinity) currently available in the MEOP-CTD database. More information on the [data distribution](#) can be found on this website.

**The MEOP data portal**

Over **300,000 vertical profiles** of Temperature and Salinity have been collected since 2004 in the World Ocean by attaching tags to marine mammals, such as Southern elephant seals.

In this website, you will find information about the marine mammal tagging programs, and an access point to the publicly available [MEOP-CTD database](#).

Please let us know if you are using our data. Send us your [contact information](#) if you want to subscribe to the newsletter. And don't hesitate to contact us (mail to [info@meop.net](mailto:info@meop.net)) if you have any question !!



# List of users (non exhaustive)

Availability of the MEOP-CTD database in data centres :

- Coriolis CORA
- BODC
- NODC World Ocean Database
- IMOS

Other notable users:

- Referenced in the INSU marine databases
- SOSE (Southern Ocean State Estimate)
- Ocean Data View
- OBIS Data Manager at IOC-UNESCO
- Southern Ocean Observing System

# More than just physics

- Tags deliver behavioural and biological data!
  - Dive profiles (from pressure data)
  - Prey catch events and fat condition (from accelerometry)
  - Detailed tracking (GPS Fastloc)
- Tagging studies are driven by biological questions
  - Habitat preference
  - Competition (other species, fisheries)
  - Impact of renewable energies
  - Conservation
- Other sensors and many designs:
  - Fluorometer
  - Oxygen
  - Light



# New EuroGOOS Task Team

- Help to consolidate international data infrastructure and delivery within EuroGOOS.
- Provide advice on oceanographic animal-borne sensor data
  - Calibration, DMQC, meta data
  - Tagging procedures
  - Scientific support
- Link into EU structures (e.g. EMODnet, Copernicus)
- Link to other groups :
  - MEOP consortium
  - Animal Tracking Network in US
  - Arctic Regional Ocean Observing System
- Support of national proposals as they are part of bigger picture (seals cross boundaries).



# EU community (MEOP+)

## Greenland

- Greenland Institute of Natural Resources (Heide-Jørgensen, Rosing Asvid)
- Aarhus (Teilmann)

## UK

- SMRU (Boehme, Fedak, McConnell)
- Aberdeen (Thompson)

## France

- La Rochelle (Vincent)
- CEBC-CNRS (Guinet)

## Norway

- Norwegian Polar Institute (Kovacs, Lydersen)
- Bergen (Haug)

## Sweden

- Stockholm (Roquet)

## Estonia

- Jussi

## Denmark

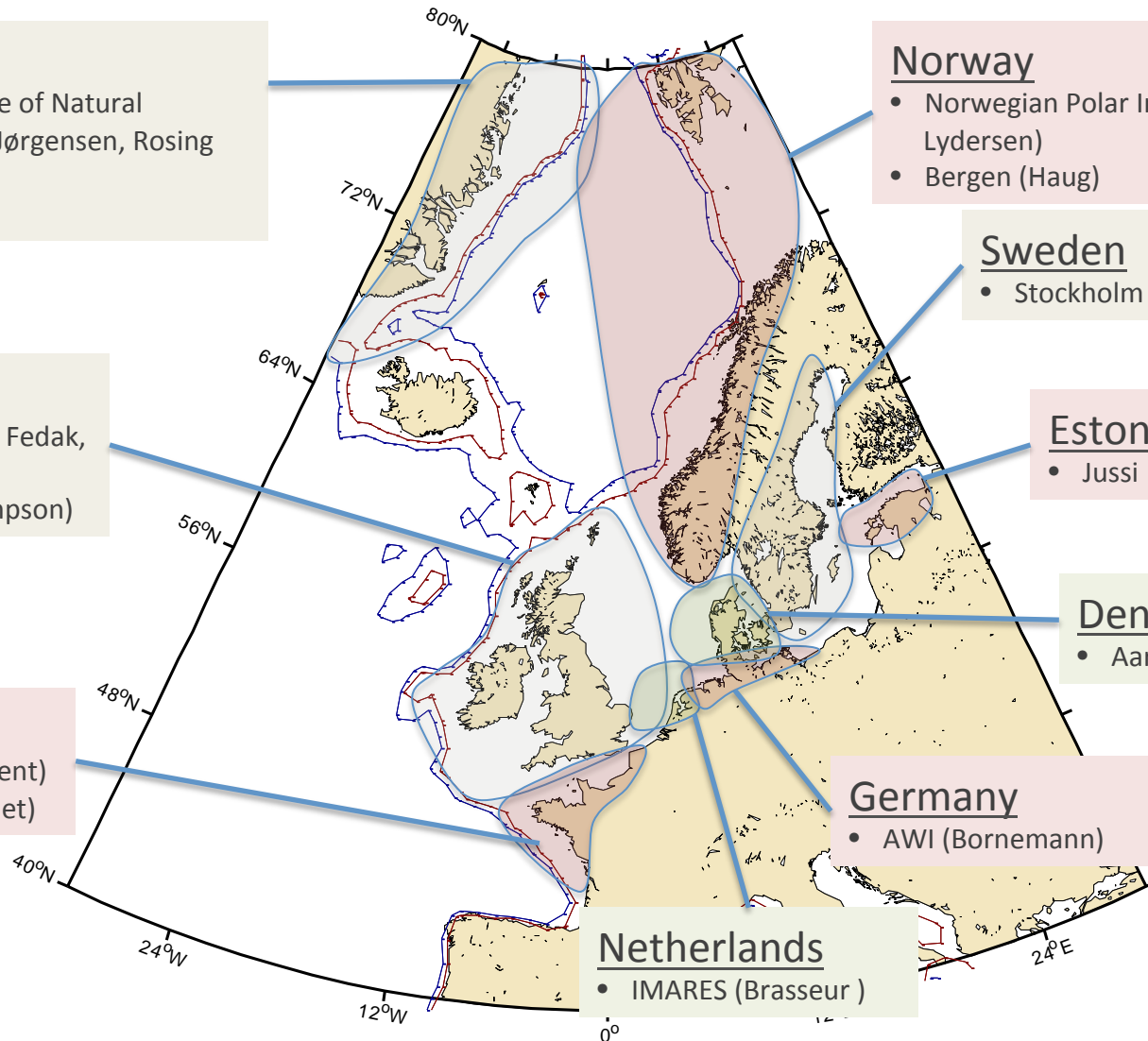
- Aarhus (Teilmann)

## Germany

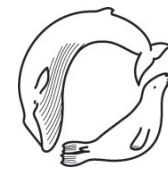
- AWI (Bornemann)

## Netherlands

- IMARES (Brasseur)

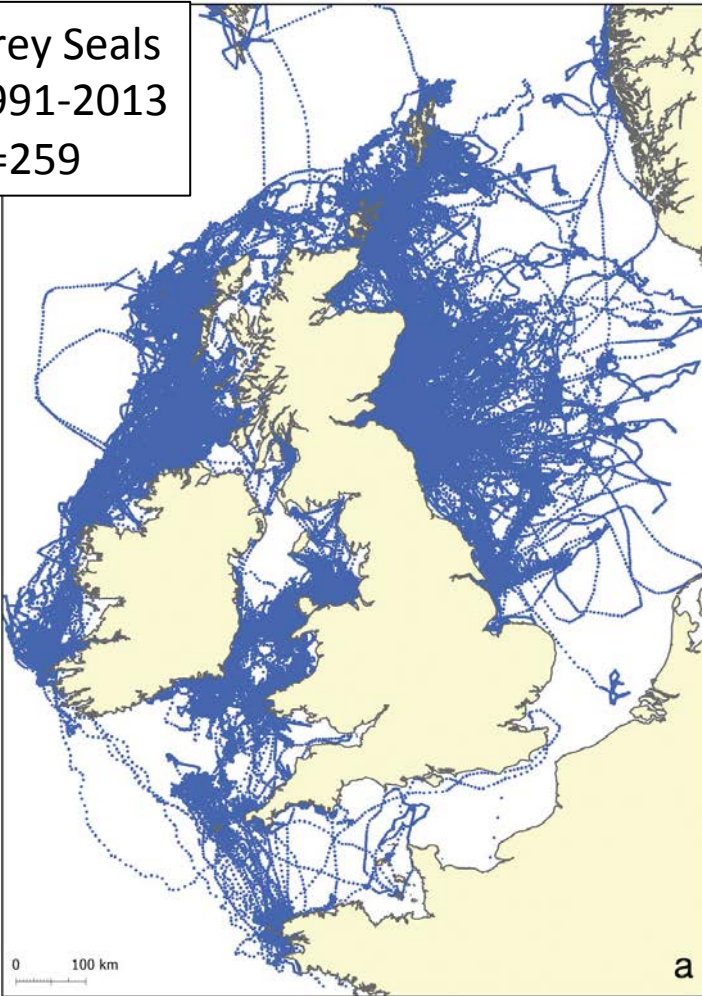


# EU shelf seals (UK)

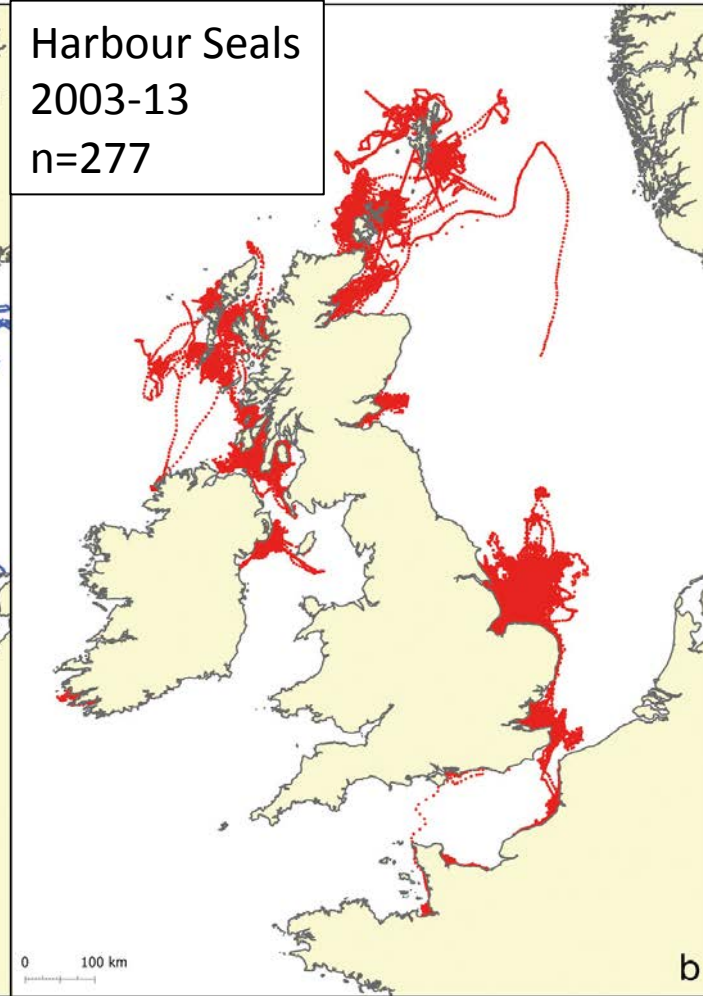


Sea Mammal  
Research  
Unit

Grey Seals  
1991-2013  
n=259



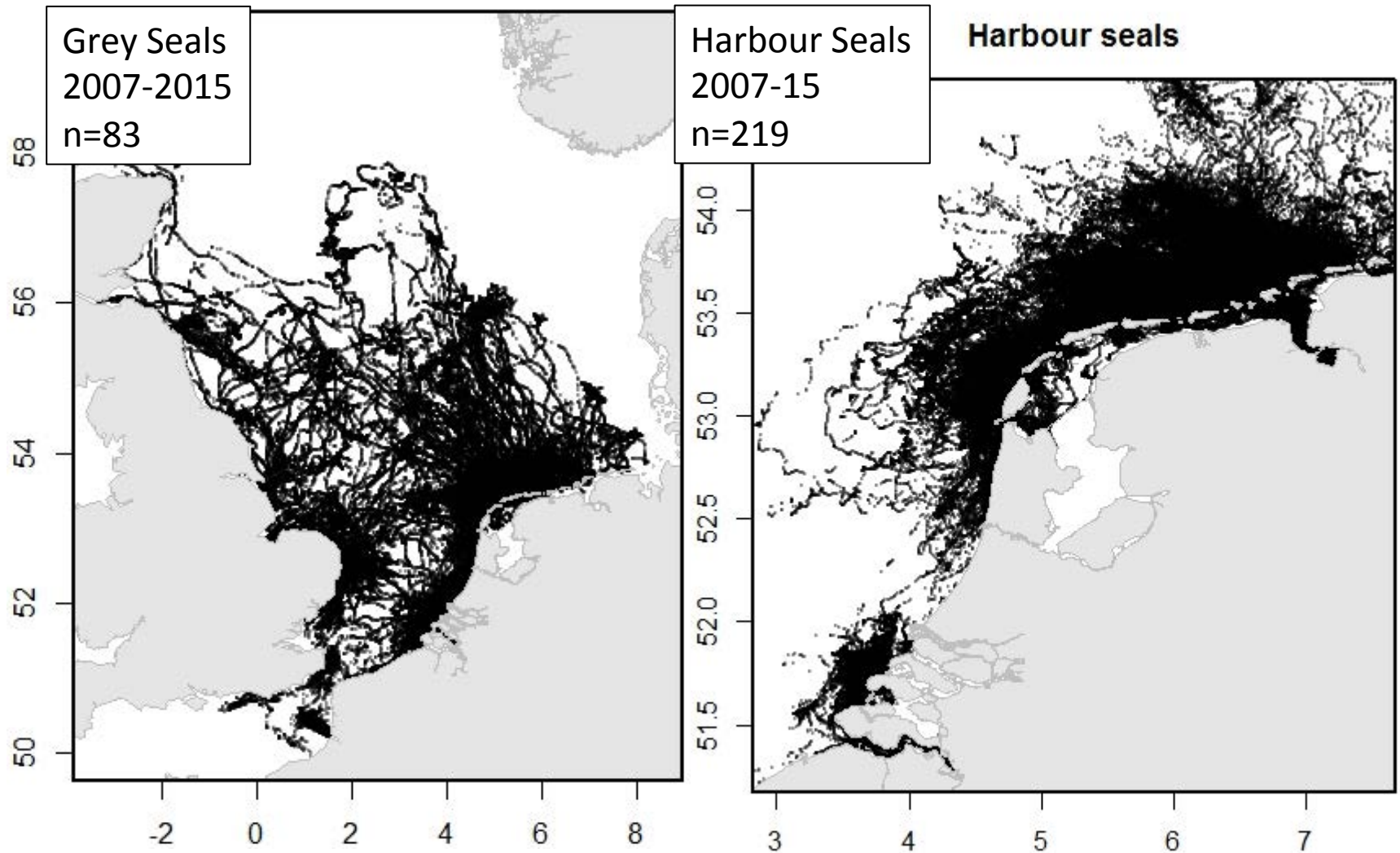
Harbour Seals  
2003-13  
n=277



Jones et al. (2015)

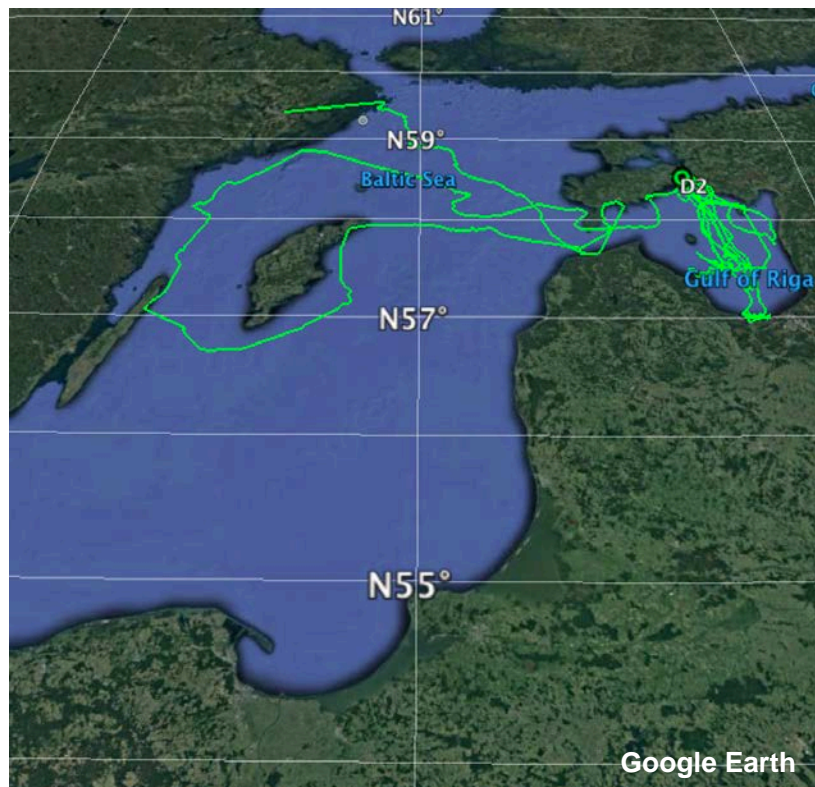
# EU shelf seals (Netherlands)

Sophie Brasseur & Geert Aarts

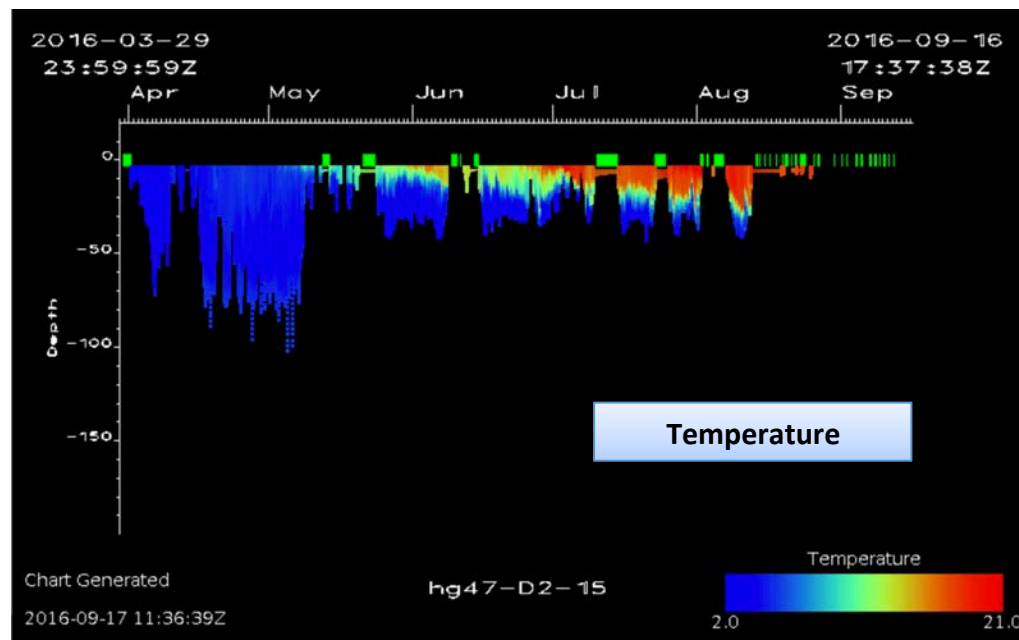




# EU shelf seals (Baltic)



Recent pilot deployment of CTD/  
GSM tags on grey seals in the Baltic





**MEOP**

[meop.net](http://meop.net)

The logo for MEOP (Mammal Ears on Planet) features a stylized blue mouse with its mouth open, appearing to be on top of a globe. The globe is white with blue grid lines. The text 'MEOP' is written in large, bold, white letters with a blue outline, positioned across the middle of the globe. Below the globe, the website address 'meop.net' is written in a smaller, white, sans-serif font.