

The background of the slide is a dark, high-contrast photograph of an oceanographic instrument, likely a moored buoy or CTD, being lowered from a ship's deck. The instrument is a complex metal cage filled with various sensors and cables. A person wearing a bright yellow raincoat is visible in the lower right corner, partially obscured by the instrument's structure. The overall scene is dimly lit, emphasizing the technical nature of the work.

# ICOS

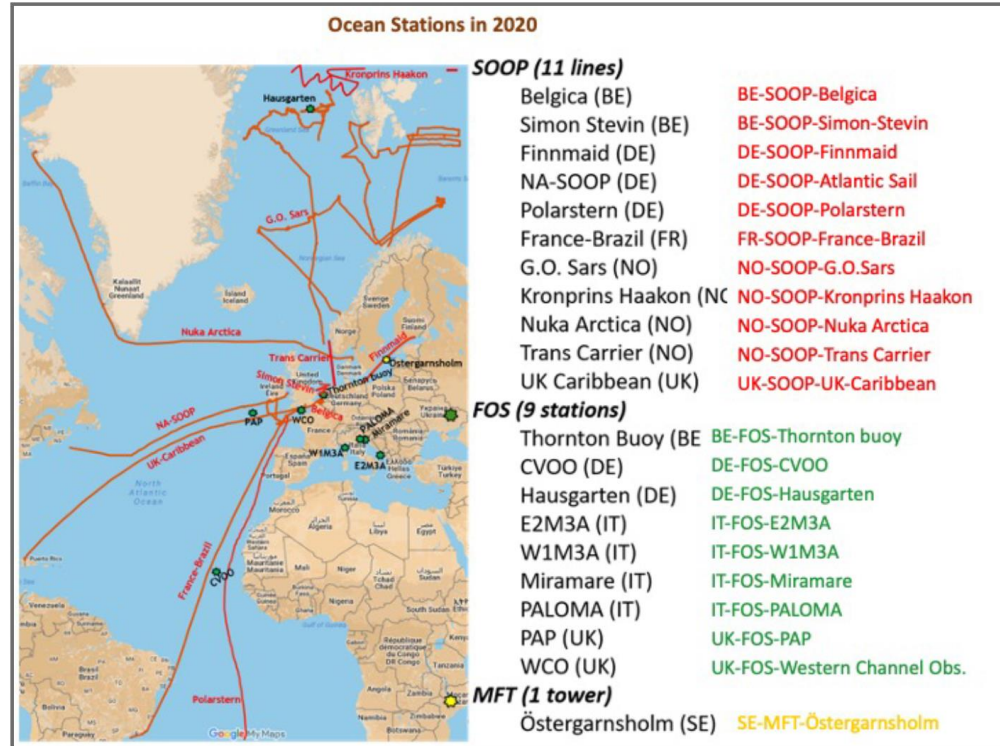
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INTEGRATED  
CARBON  
OBSERVATION  
SYSTEM

## OCEAN THEMATIC CENTRE CURRENT STATUS AND FUTURE PLANS OCTOBER 2020

Norwegian ICOS meeting

# Ocean Thematic Centre

'Helping the Ocean observing element of [@ICOS RI](#) deliver the data we need to quantify the oceans role in planetary C cycling'



# OTC Funding

Station contributions (increasing by 1 new country with 2 stations next year as Spain join)

Norwegian Govt: Current funding ends in August 2021, Phase 2 secured to end 2024

UK Govt: Ends Spring 2023

## The services we offer for ICOS stations



# OTC Workstreams

- 1) Leadership and Mgt (Richard Sanders + Erik Sandquist, NORCE, Andrew Watson and Jess Thorn, )
- 2) Labelling (Ingunn Skjelvan, NORCE)
- 3) Training and Station Support (Tobias Steinhoff, NORCE)
- 4) Data (Benjamin Pfeil, UiB)
- 5) Technology (Socratis Loucaides, NOC).

## The services we offer for ICOS stations



# 2020 Highlights

- Initiated IOCOS, published global estimates of uptake and regional studies in N Atlantic and N Sea
- Labelled 2 stations and evaluated saildrone as platform for calibrating membrane sensor stations
- Intercalibration postponed, Gas bottle scheme, membrane station support scheme and station ringarounds launched
- Quince V1 to stations, NRT data
- Fieldwork cancelled, lots of sensors being written up (pH, DIC,  $p\text{CO}_2$  on multiple platforms – AUVs, landers, ROVs, ASVs, CTDs, ships). Formally adopted new calibration technology for membrane stations as key target

# 2021 Plans

- Major Focus on IOCOS, opinion piece in Nature, JPI Oceans meeting focussed on describing unified observing system costs and operation, COP engagement
- Work with Belgium, Sweden, Italian stations, and welcome Spain into network
- Run  $p\text{CO}_2$  intercomparison, ship first calibration gases, pay for membrane sensors
- Work with Spanish Data, Extend NRT
- Design and seek funding for calibration rig

# IOCOS

- The Ocean takes up about 25% of the C we emit to the atmosphere, a service worth around 0.25 Tn \$/ yr.
- It is not constant and in the recent past has changed substantially,
- Were it to do so again we might need to reduce emissions faster/ burn less fossil fuel or devise and implement new geoengineering schemes all of which would cost real money
- The costs will be lower the sooner we detect change, we have a proven capacity to deliver the early warning system needed
- However it is currently not operational, 75% of ocean observations are funded in research rather than operational mode – a step change in funding is required
- We propose the construction of a fully operational Ocean Carbon Observing System as part of the 'digital ocean' and invite the community to join us in creating a blueprint for this vision.
- The ROI of building such a system is estimated to be 50-100 fold.
- Further details at @OTCCO2