



The Global Ocean Observing System
goosocean.org

Reflections on CoP26



**UN CLIMATE
CHANGE
CONFERENCE
UK 2021**

IN PARTNERSHIP WITH ITALY

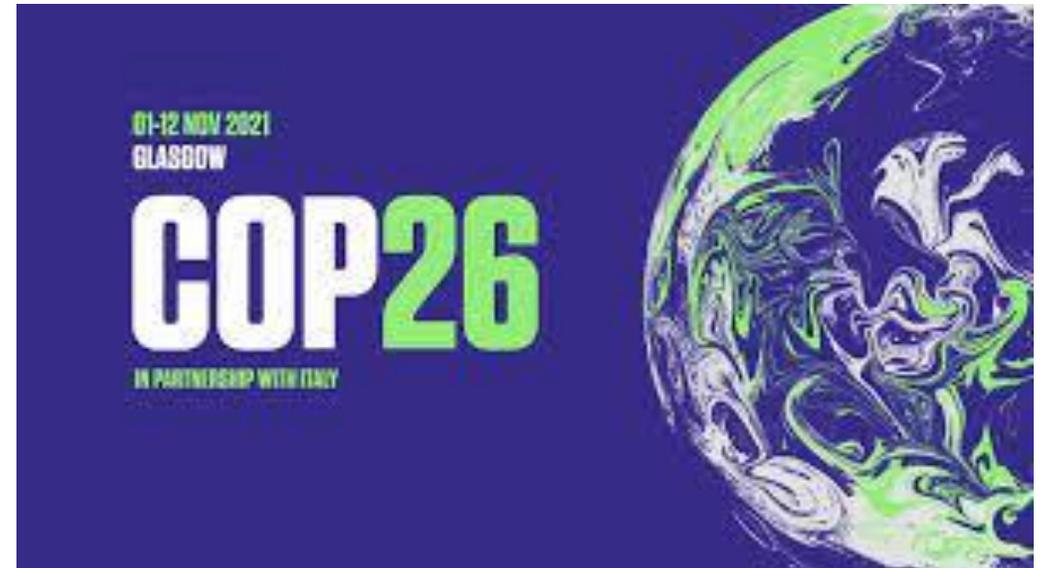
Toste Tanhua, Anya Waite
Co-chairs, GOOS Steering Committee
GOOS SC-10, part 2
Nov 30, 2021



International
Science Council

COP26: Strategic Goals

- Raise awareness that the ocean is critically under-observed
- Create messaging very high-level
- Reach nations, stakeholders and governments
- Pitch GOOS as critical tool for reaching climate targets



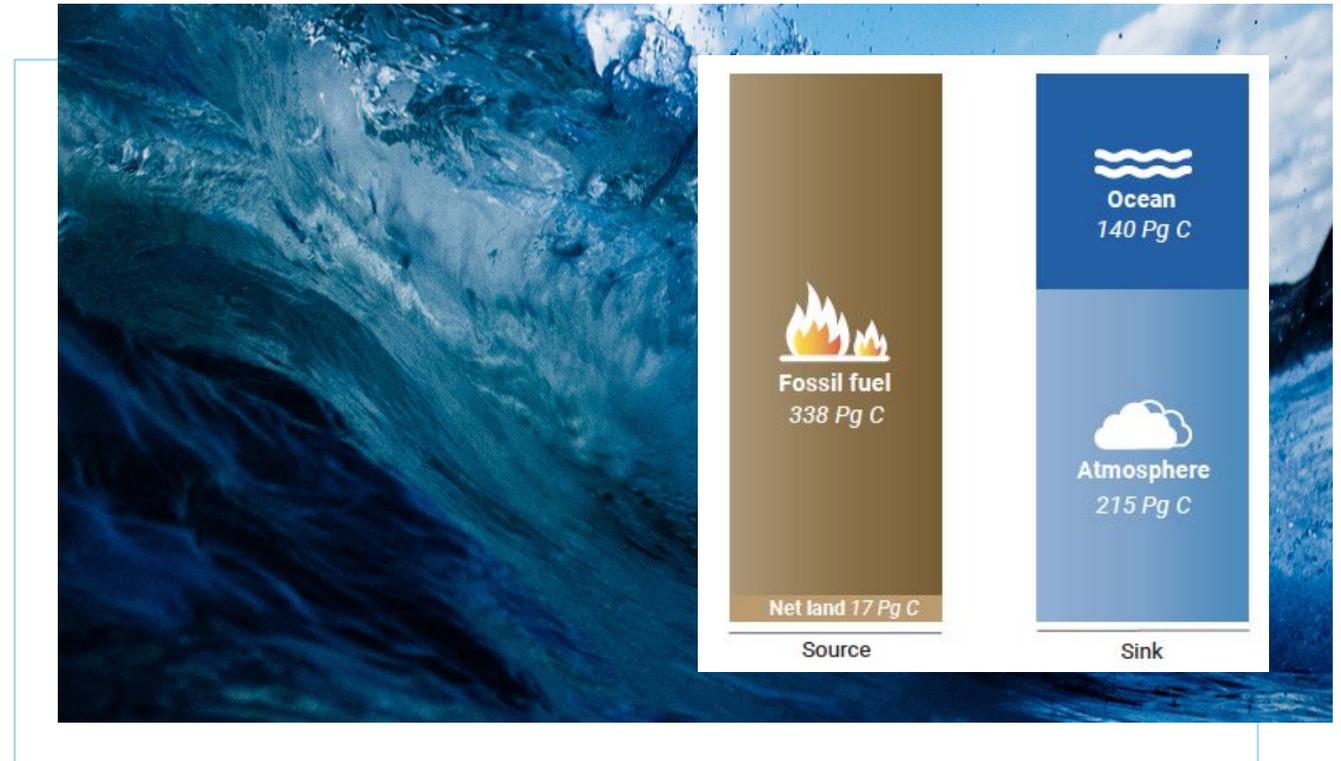
Team: Toste Tanhua, Anya Waite and Catherine Blewett
(joint OFI / GOOS delegation)

The message: Linking ocean carbon observation to climate targets

Land-based emissions targets fail to recognize the ocean's carbon absorption:

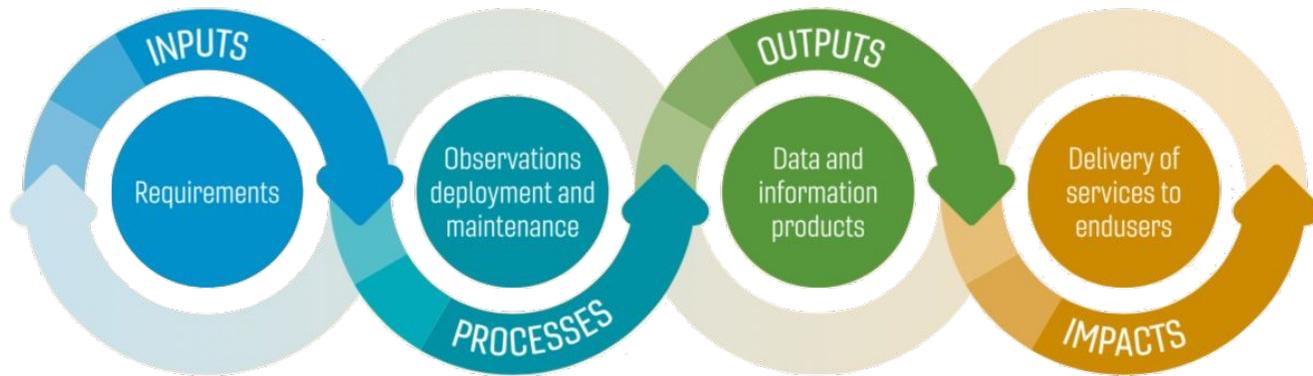
40% fossil fuel emissions ..

.. But will it continue?



Linking ocean carbon observation to climate targets

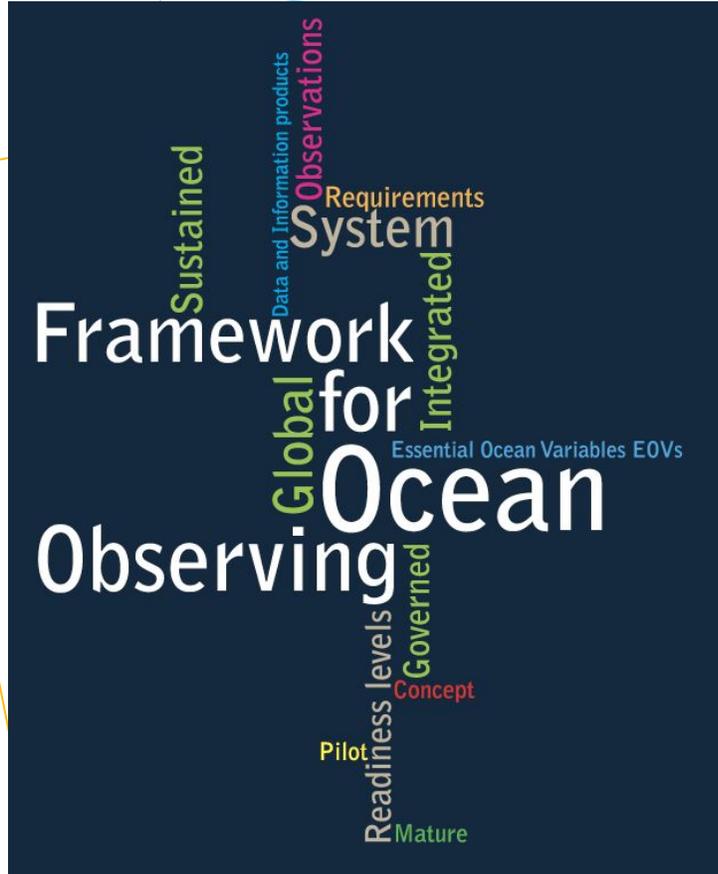
The Global Ocean Observing System (GOOS) coordinates a long-term, sustained ocean observing system



Linking ocean carbon observation to climate targets



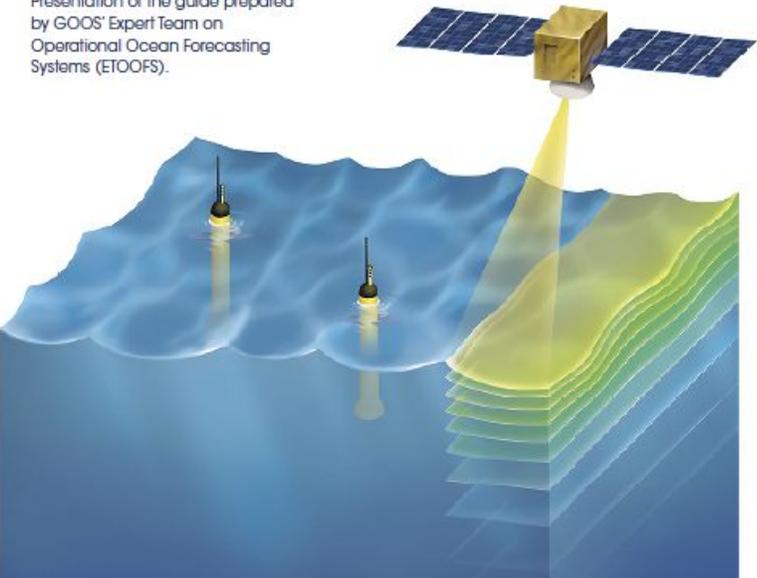
The global community is mature and ready to act



Linking ocean carbon observation to climate targets

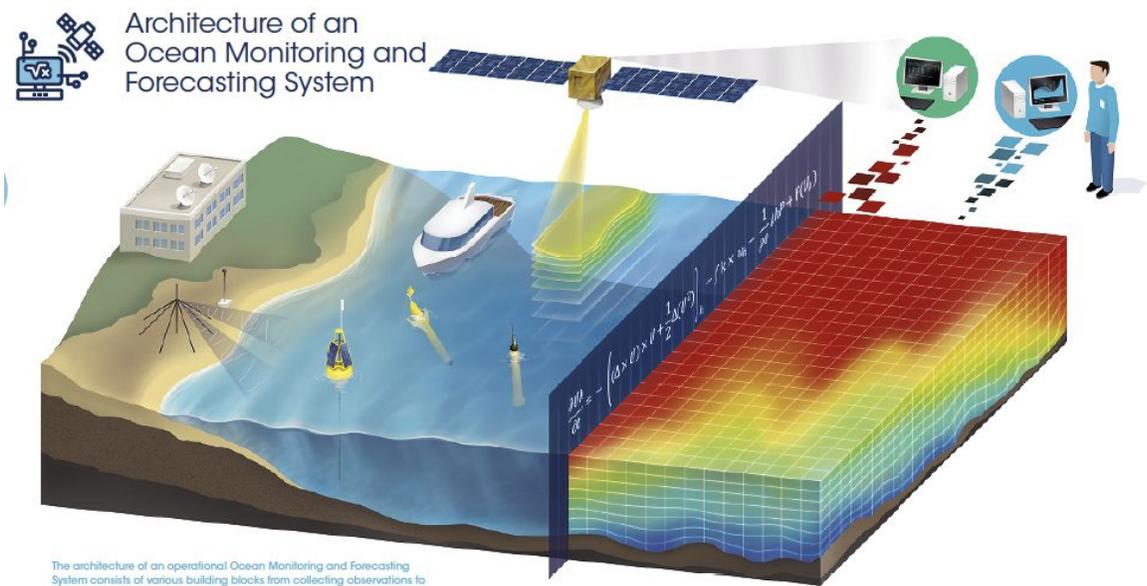
Implementing Operational Ocean Monitoring and Forecasting Systems

Presentation of the guide prepared by GOOS' Expert Team on Operational Ocean Forecasting Systems (ETOOFS).



The illustration shows a satellite in orbit emitting a yellow beam of light towards the ocean surface. Below the surface, several buoys are visible. A 3D cutaway of the ocean shows horizontal layers of different colors (green, yellow, blue) representing different depths or carbon concentrations.

Architecture of an Ocean Monitoring and Forecasting System



The diagram illustrates the architecture of an ocean monitoring and forecasting system. It features a satellite in orbit, a coastal building, a boat, and several buoys. A large 3D grid represents the ocean's state, with a color gradient from blue to red. A person is shown interacting with a computer terminal. The system is divided into three phases: Pre-processing phase, Initialisation, and Forward integration and post-processing.

The architecture of an operational Ocean Monitoring and Forecasting System consists of various building blocks from collecting observations to modeling and forecasting the ocean state.

Pre-processing phase Initialisation Forward integration and post-processing

Community is well prepared to design sustained carbon observations

THE OCEAN IS MISSING!



Add the ocean to solve for net zero!

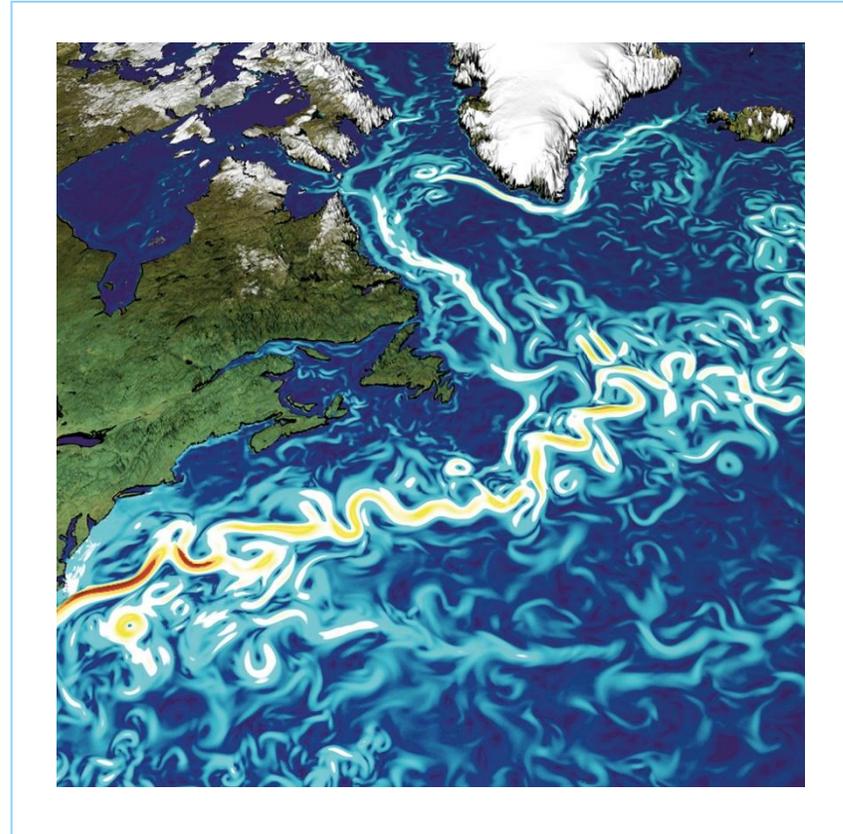
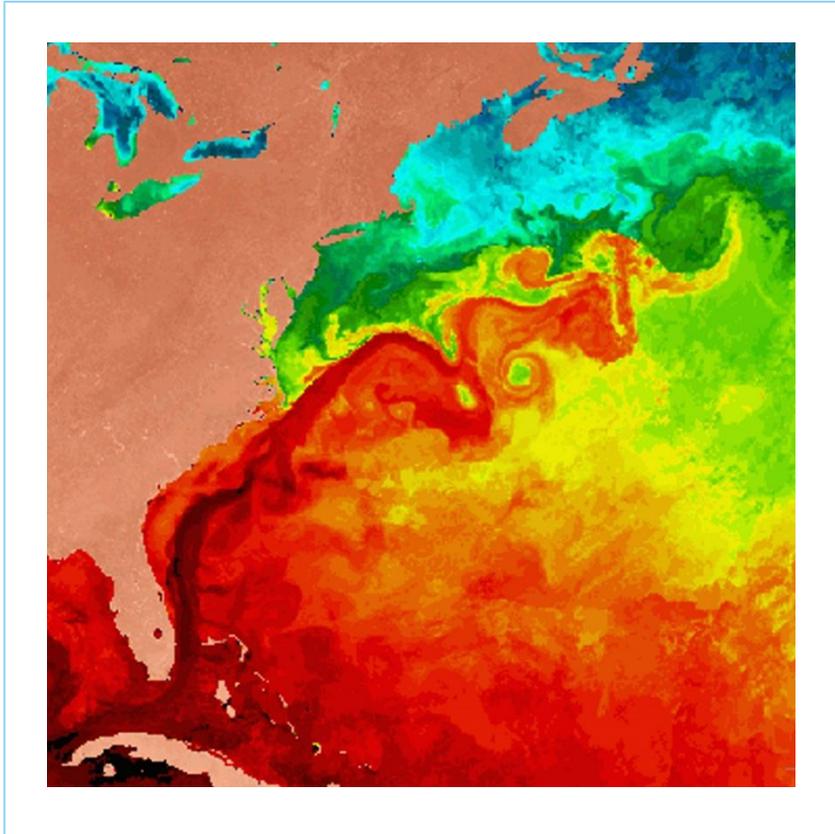
THE OCEAN IS MISSING!



AN EXEMPLAR

North Atlantic Carbon Observatory

(NACO)



Linking ocean carbon observation to climate targets

Example:

Ocean innovation in CDR urgently needs an ocean baseline



Actions :

- 4 formal presentations including:
 - Earth Information Day (IOC)
 - UK Fragile Oceans workshop
 - IUCN – including oceans in Global Stocktake
- Panel discussions
- Meetings with colleagues and policy makers (incl. UK, US, Canada, Norway, Portugal).
- Informal presentations, included brief comments at an invitation-only meeting on the capitalist transition to a low-carbon future with international private investors, several Canadian Ministers, and HRH Prince Charles.



Outcomes:

- Raised global awareness of the ocean's role in absorbing carbon in the climate system.
- Ocean under-observation as a critical gap potentially crippling our efforts to reach global climate targets.
- As a solution, to focus international attention on an action at the scale of an “ocean space station”.
- Ocean Carbon Observatory

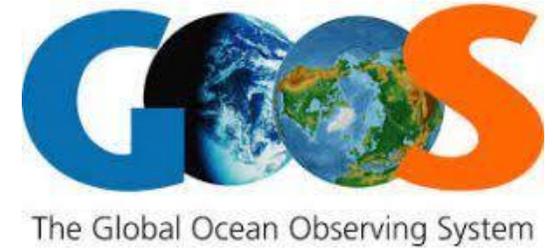


We engineered a **step-change in the awareness of GOOS** and understanding of the oceans' role in climate change and the critical need for ocean observation.

Follow-on Action:

Opportunities now exist to further the Ocean Carbon Observatory internationally through the Ocean Panel (formerly HLP), as well as through the G7.

Further discussions and workshops with the scientific community will focus attention and action on the technical aspects of the Ocean Carbon Observatory.



HIGH LEVEL PANEL *for*
**A SUSTAINABLE
OCEAN ECONOMY**



The Ocean Essential Climate Variables (ECVs)

Ocean

Physical

- [Ocean surface heat flux](#)
- [Sea ice](#)
- [Sea level](#)
- [Sea state](#)
- [Sea surface currents](#)
- [Sea surface salinity](#)
- [Sea surface stress](#)
- [Sea surface temperature](#)
- [Subsurface currents](#)
- [Subsurface salinity](#)
- [Subsurface temperature](#)

Biogeochemical

- [Inorganic carbon](#)
- [Nitrous oxide](#)
- [Nutrients](#)
- [Ocean colour](#)
- [Oxygen](#)
- [Transient tracers](#)

Biological/ecosystems

- [Marine habitats](#)
- [Plankton](#)

