

GEOMAR Helmholtz Centre for Ocean Research Kiel

Submission to the 18th meeting of the Research Dialogue (SBSTA 64)

Views from Parties and relevant organizations on possible themes for the eighteenth meeting of the research dialogue, to be held in conjunction with SBSTA 64

With this submission, GEOMAR Helmholtz Centre for Ocean Research Kiel, Germany, responds to the invitation to Parties to submit views on possible themes for the eighteenth meeting of the Research Dialogue to be held in conjunction with SBSTA 64.

GEOMAR is one of the world's leading institutions in marine research. GEOMAR investigates the global ocean from the seafloor to the atmosphere, covering a unique spectrum of physical, chemical, biological and geological processes in the ocean. With our research and our commitment to transfer of knowledge and technology, we contribute significantly to preserving the function of the ocean and safeguarding it for future generations.

We welcome the Dialogue as an opportunity for interactions between science and policy, providing the best available science for negotiations, and look forward to further supporting the process.

For the Research Dialogue at SB64, we recommend to include updates from the Global Climate Observing System (GCOS), the Intergovernmental Panel on Climate Change (IPCC), the World Climate Research Programme (WCRP) and the World Meteorological Organization (WMO), highlighting their leading capacities and highly relevant information for UNFCCC negotiations.

This should ideally be complemented by a brief up-to-date overview of greenhouse-gas emissions and reduction gaps with respect to countries Nationally Determined Contributions (NDCs) to set the scene for the Dialogue.

As central themes, we propose the following aspects:

1. Long-term operation of key (ocean) observation infrastructure

In the ocean, monitoring data helps us understand processes related to climate in connection with marine biodiversity and food security. Global and regional observing infrastructures and other important time series initiatives must be secured centrally and supported systematically.

The new European Union Ocean Observation Initiative [OceanEye](#) launched in 2025 can be considered as an example for renewed engagement in a changing geopolitical context and its connections for example to the Global Ocean Observing System (GOOS) and the Partnership for Observation of the Global Ocean (POGO) be discussed.

As a recent development in ocean observation worth recognising, biodiversity monitoring is increasingly connected to oceanographic information. Relevant time series will help to assess ecosystem change and detect regime shifts and early warning signals.

Standardisation of data, metadata and methods enhances comparability and facilitates integration into modelling tools that will inform governance and climate adaptation.

2. Artificial intelligence for integrated observation and data analysis

For a holistic perspective in observation, networked approaches and artificial intelligence support the cross-disciplinary integration of data, including for digital twins. This will be useful and of great interest to both scientific and regulatory monitoring.

Participants of the Dialogue can be informed about latest technical developments and discuss ways to harness these innovations to support their monitoring and reporting requirements, as well as opportunities to implement relevant infrastructure globally as a basis for sustainable and equitable data access.

3. Reliable and transparent frameworks to implement and monitor approaches for marine carbon dioxide removal

Many countries start to include ocean-related approaches in their Nationally Determined Contributions (NDCs). If marine carbon dioxide removal (mCDR) is to be considered as a potential climate mitigation option, it needs to be integrated early into marine spatial planning. This needs to be supported by scientifically robust, transparent and long-term Monitoring, Reporting and Verification (MRV), addressing both carbon removal effectiveness as well as environmental impacts.

We suggest an update on latest findings and a discussion on future research directions guided by a precautionary approach that can support existing environmental monitoring programs and thereby enhance awareness of changes in the environment.

Relevant policy documents in this context:

Muri, H., Sulpis, O., Argüello, G., Baker, C. A., Böettcher, M., García-Ibáñez, M. I., Kuliński, K., Landolfi, A., Landschützer, P., McGovern, E., Ninčević Gladan, Ž., Oschlies, A., Yfantis, E. A. (2025) Monitoring, Reporting and Verification for Marine Carbon Dioxide Removal. Muñiz Piniella, A., Rodriguez Perez, A., Kellett, P., Alexander, B., Bayo Ruiz, F., Heymans, J. J. [Eds.] Future Science Brief N°. 13 of the European Marine Board, Ostend, Belgium. ISSN: 2593-5232, ISBN: 9789464206388. DOI: <https://doi.org/10.5281/zenodo.17435116>

Knowledge Summary 2025 of the Research Mission Marine Carbon Sinks in Decarbonisation Pathways (CDRmare) of the German Marine Research Alliance: Carbon dioxide removal: What are the opportunities of ocean-based methods? And how do we explore them? Link: https://cdrmare.de/wp-content/uploads/2025/05/cdrmare_ks_all250206.pdf

Contact

Maike Nicolai
GEOMAR Helmholtz-Zentrum für Ozeanforschung Kiel
Knowledge Transfer
mnicolai@geomar.de
www.geomar.de