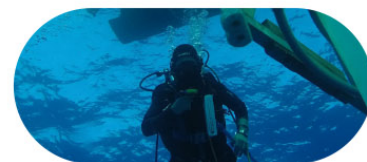


# Ocean-based Negative Emission Technologies



<b>Deliverable Title</b>	<b>D8.3 Periodic report on available data</b>
Lead	GEOMAR   Helmholtz Center for Ocean Research Kiel
Related Work Package	WP 8: Data management
Related Task	Related to tasks 8.1 and 8.2
Author(s)	Lisa Paglialonga, Dr. Carsten Schirnick
Prieto Dissemination Level	Public
Due Submission Date	31. December 2021
Actual Submission	20. December 2021
Project Number	869357
Start Date of Project	01. July 2020
Duration	60 months
<b>Abstract:</b> This document is the first of three periodic reports on available data.	



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During the project's period GEOMAR's Ocean Science Information System (OSIS) – a central information and research data sharing system – and the institutional repository OceanRep (<https://oceanrep.geomar.de>) are actively used by OceanNETs' project partners.

OSIS serves as a centrally versioned repository for the generated research data, as an information and exchange platform, and for the management and traceability of the data to be delivered and already available. The system is used within the project to capture and share data and metadata information in the context of the project's field campaigns, experiments or numerical modellings (see figure 1) prior to general publication. Currently, data and metadata information of 3 experiments, 22 numerical modelling experiments and 2 cruises is shared within OSIS in the context "OceanNETs". For 4 (peer-reviewed) articles in scientific journals and 15 reports a total of 1 data publication have been published and 4 data sets are available for internal use. External interested parties have the possibility to identify and contact the respective scientists directly already during the project period due to metadata's public visibility of already submitted research data. During the moratorium period of the project, current research data will be deposited here. Access is restricted for download by the members of the OceanNETs project. Unrestricted access will be granted upon regular publication or on request.

Context: OceanNETs

### OSIS Ocean Science Information System for Expeditions, Numeric Models, Experiments...

[View Terms of Use](#)

#### My Deliverables

Expedition	Name	Flag	Due

#### Latest links

Type	Description	Linked to
DSHIP	DSHIP Sensor data available at GEOMAR	Leg: AL568
URL	Map with cruise track	Leg: AL568
Open Data Repository	Data archived in PANGAEA	Leg: M168
Open Data Repository	DNA sequences are available in BOLD	Leg: SO239
Internal Data Repository	Data available in BOLD	Leg: SO239
Open Data Repository	Data archived in PANGAEA	Leg: POS519
DSHIP	DSHIP Sensor data available at GEOMAR	Leg: AL567
Open Data Repository	Data archived in PANGAEA	Leg: SO267
Open Data Repository	Data archived in PANGAEA	Leg: SO102/1+2
URL	Map with cruise track	Leg: AL567

#### Files in OceanNETs

File Title	Uploaded	Creator
0_ONETs_Milestone_11_supportive_information.pdf for Dissolution Experiments	2021/08/04	Suitner, Niels
3_ONETs_Milestone_11_data_set_Dissolved_Silica.xlsx for Dissolution Experiments	2021/08/04	Suitner, Niels
2_ONETs_Milestone_11_data_set_Total_Alkalinity.xlsx for Dissolution Experiments	2021/08/04	Suitner, Niels

Expeditions

#### Expeditions in OceanNETs

Label	Departure - Return	Chief-Scientist
AL576	2022/07/16 - 2022/07/25	Riebesell, Ulf
AL572	2022/05/03 - 2022/05/11	Riebesell, Ulf

Models

#### Models in OceanNETs

Label	Updated	Responsible Person
NorESM-T4.4-3	2021/03/08	Schwinger, Jörg
NorESM-T4.4-2	2021/03/08	Schwinger, Jörg
NorESM-T4.6-1	2021/01/22	Muri, Helene

Experiments

#### Experiments in OceanNETs

Experiment	Updated	Responsible Person
KOSMOS 2021 Gran Canaria	2021/05/27	Haunost, Mathias
KOSMOS 2022 Bergen	2021/01/14	Haunost, Mathias
Dissolution Experiments	2021/01/12	Suitner, Niels

Figure 1: OceanNETs in the Ocean Science Information System (OSIS)

The OceanNETs data management team will work more intensively on the use of the OSISs' so-called "deliverable notification" during the remaining project period. These are information stored in OSIS, about when which data for which parameters are to be expected from which responsible person. This functionality is completed by regularly sent reminders when the specified deadlines are exceeded, which prompt the responsible persons to at least give feedback to the data management. Overall, this further improves the visibility and availability of research data as well as traceability. Currently, 32 deliverable notifications for parameter data sets on the mesocosm experiment in Gran Canary 2021 are already provided in OSIS.

In OceanRep, the publication list of all project phases is editorially managed. The system allows access to publications and linked datasets. The publication list of OceanNETs which is generated within OceanRep is also embedded into OceanNETs internal Website (see figure 2) and serves as a reference for the public website.

The screenshot shows the 'Internal Website' of OceanNETs. The navigation bar includes links for HOME, DOCUMENTS, EU REQUIREMENTS, DELIVERABLES, NETS-WIKI, PUBLICATIONS, DATA, CONTACTS, and MEMBERS. The main content area is titled 'Publications' and features a search bar and a list of items. The list is divided into two sections: 'Articles in a Scientific Journal - peer-reviewed' and 'Reports - other reports'. Each entry includes the author(s), year, title, journal name, volume, issue, page numbers, and a DOI link. Some entries also include a 'Data' icon, indicating a link to published datasets.

**Articles in a Scientific Journal - peer-reviewed**

- Tivig, M., Keller, D. P. and Oschlies, A. (2021) *Riverine nitrogen supply to the global ocean and its limited impact on global marine primary production: a feedback study using an Earth System Model*. Biogeosciences (BG), 18 . pp. 5327-5350. DOI [10.5194/bg-18-5327-2021](https://doi.org/10.5194/bg-18-5327-2021).
- Lezaun, J. (2021) *Hugging the Shore: Tackling Marine Carbon Dioxide Removal as a Local Governance Problem*. Frontiers in Climate, 3 . Art.Nr. 684063. DOI [10.3389/fclim.2021.684063](https://doi.org/10.3389/fclim.2021.684063).
- Keller, D. P., Brent, K., Bach, L. T. and Rickels, W. (2021) *Editorial: The Role of Ocean-Based Negative Emission Technologies for Climate Mitigation*. Frontiers in Climate, 3 . Art.Nr. 743816. DOI [10.3389/fclim.2021.743816](https://doi.org/10.3389/fclim.2021.743816).
- Renforth, P. and Campbell, J. S. (2021) *The role of soils in the regulation of ocean acidification*. Philosophical Transactions of the Royal Society B: Biological Sciences, 376 (1834). Art.Nr. 20200174. DOI [10.1098/rstb.2020.0174](https://doi.org/10.1098/rstb.2020.0174).

**Reports - other reports**

- Proelß, A. and Steenkamp, R. (2021) *Report on attribution of private conduct to States in relation to oceanbased NETS under the international law of the sea*. OceanNets Deliverable, D2.7 . OceanNETs, Kiel, Germany, 25 pp. DOI [10.3289/oceannets\\_d2.7](https://doi.org/10.3289/oceannets_d2.7).
- Lezaun, J. (2021) *Summary report on deliberative workshop with stakeholders on mesocosm research in the Canary Islands*. OceanNets Deliverable, D7.1 . OceanNETs, Kiel, Germany, 6 pp. DOI [10.3289/oceannets\\_d7.1](https://doi.org/10.3289/oceannets_d7.1).
- Taucher, J. and Schartau, M. (2021) *Report on parameterizing seasonal response patterns in primary- and net community production to ocean alkalization*. OceanNets Deliverable, D5.2 . OceanNETs, Kiel, Germany, 17 pp. DOI [10.3289/oceannets\\_d5.2](https://doi.org/10.3289/oceannets_d5.2).

Figure 2: List of OceanNETs Publications with links to published datasets.

The resulting research data products will be published in thematically suitable, trustworthy long-term archives (World Data Center, WDC) e.g. PANGAEA and at the same time made citable by assigning

DOIs. OceanNETs data from disciplines that do not fit to a specific repository (like for e.g. PANGAEA) is made openly accessible via the GEOMAR's website where data is uniquely identifiable and citable thru handle assignment (PID) and will be accessible for download and data-centric services where applicable (e.g. gridded data via OPeNDAP, WMS, WCS). Following the handle link leads to a landing page with links to the download (see figure 3), OPeNDAP and web map services (see figure 4). The datasets related to journal articles (in discussion and peer-reviewed) are interlinked in OceanRep for findability (see figure 5).

The screenshot shows the OceanRep landing page for the dataset `hdl:20.500.12085/59977a36-e8e7-4348-a4e8-2b13f3913590`. The page includes a search bar at the top, a navigation menu with options like 'Handle ID', 'Related Publication', 'OceanRep', 'THREDDS', and 'ISO XML', and the GEOMAR logo. The main content area features a 'Dataset' section with a 'Handle for this dataset' link, a 'Please cite this dataset as:' section with a citation for Twigg, Miriam, Keller, David P., and Oschlies, Andreas (2021), and a 'Related to (Open Access):' section with a link to a related article. Below this is a 'Data' section with a table listing data files and their last update dates.

Name	Last
COMPILED_CODE	2021-10
INPUT_DATA	2021-10
MODEL_OUTPUT	2021-10
SCRIPTS_FOR_COMPILATION	2021-10
UPDATE_FOR_UVIC_MTIwig2020	2021-10
59977a36-e8e7-4348-a4e8-2b13f3913590.metadata.xml	2021-10

Figure 3: Example landing page with links to OceanNETs data download

The screenshot shows the THREDDS Data Server access page for the dataset `data.100.100.19/A_aggfor.nc`. The page provides various access methods and metadata. The 'Access:' section lists several methods: OPeNDAP, HTTPServer, WCS, WMS, NetcdfSubset, NCML, UDDC, and ISO. The 'Documentation:' section includes links to related publications. The 'Keywords:' section lists 'nitrogen', 'marine primary production', and 'life in the ocean'. The 'Dates:' section shows the last modified date as '2021-10-13T12:45:37.074Z (modified)'. The 'Projects:' section lists 'COMFORT', 'SFB754', 'OceanNETs', and 'Opendap'. The 'Creators:' section is empty.

Figure 4: Access opportunities of an OceanNETs data set (OPeNDAP, WMS etc.)

The screenshot displays the OceanRep website interface. At the top left is the GEOMAR logo (Helmholtz-Zentrum für Ozeanforschung Kiel) and at the top right is the OceanRep logo. A navigation bar contains the text 'EN'. The main content area is divided into a left sidebar and a main article section. The sidebar includes a search bar, a list of navigation links (OceanRep Startseite, Kontakt, etc.), and a 'NEUZUGÄNGE' section. The main article section features the title 'Riverine nitrogen supply to the global ocean and its limited impact on global marine primary production: a feedback study using an Earth System Model.' by Tivig, Miriam, Keller, David P., and Oschlies, Andreas. Below the title, there are two supplementary data items, each with a 'Text' label, a file name, a Creative Commons license, and download links. A 'Tools' dropdown menu is visible on the right side of the article section. The 'Abstract' section at the bottom begins with the text: 'A common notion is that negative feedbacks stabilize the natural marine nitrogen inventory. Recent modeling studies have shown, however, some potential for localized positive feedbacks leading to substantial nitrogen losses in regions where'.

Figure 5: Interlinkage of an OceanNETS supplementary dataset to the journal article in OceanRep

Original data generated via interviews, workshops and surveys that contain sensitive information are not openly accessible. Data which contain sensitive information like secure or personal data, will be anonymised (survey) or pseudonymised (interviews, workshops) and stored in secured folders on server of the institutions conducting the research for 10 years and will be deleted afterwards. No data will be shared with third parties or published except in the form of anonymised or pseudonymised research data and results. This includes data sharing with researchers of other OceanNETS' work packages and tasks or with OceanNETS' consortium partners. However, the deliverables generated from those studies are openly accessible as reports via OceanRep and the project's website.