Research Data Policy

of the funding measure *Methods for Removal of Atmospheric Carbon Dioxide* (in short: *CDRterra*) of the German Federal Ministry of Education and Research (BMBF)

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This document is based on and closely aligned with the research data policy of CDRmare [1].

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The central data management of the funding measure *CDRterra* [2] and the data managers of the ten associated consortia declare the following Research Data Policy for all consortia and their partners in accordance with the *CDRterra* steering committee. Please note that this document is not legally binding but reflects the high ambitions of all consortia within *CDRterra* to transparently share and sustainably publish all research output on the (meta-)data basis for international re-use.

Basic rules

In compliance with the Research Data Policy of the research mission *CDRmare* [1] as well as in accordance with the guidelines of the associated institutes in *CDRterra*, all databases and data used will be in agreement to the General Data Protection Regulation (GDPR) (EU) 2016/679 [3], the latest EU law on data protection and privacy for all individuals within the European Union (EU) and the European Economic Area (EEA). Participation of third parties in research studies is generally voluntary and participants can withdraw their consent at any time. All personal data collected in the studies will be anonymised prior to publication.

Newly collected quantitative and qualitative data will be made available sustainably on a long-term basis adhering to the Open Access, Open Science and FAIR Data Principles (Findable – Accessible – Interoperable – Reusable [4]), hence in accordance with the German Research Foundation (DFG) Code of Conduct Guidelines for Safeguarding Good Research Practice [5]. All research data must be handled correctly, completely, unchanged and reliably, and its integrity must be guaranteed at all times.

Each consortium provides a data management plan (DMP) in agreement with the above regulations and in close collaboration with the central data management of *CDRterra*. Quality control of data as well as a workflow for delivery of metadata and data from observation/collection to archiving and publishing will be handled within the respective consortia. The data managers of the consortia will guide this process.

Data responsibilities

The central data management collaborates tightly with the data managers of the consortia which, in turn, have direct contact to the individual scientists. All data managers provide support and advice regarding, e.g. harmonization and standardization, archival, integration, and documentation of data and metadata. They will also provide advice to scientists within their respective consortium on how to make data FAIR.

Data exchange

Within the funding measure period, metadata will be collected and shared by the scientists including links to repositories or contact persons, e.g. via DMPs in the internal *CDRterra* management and documentation portal or via the information system OSIS [6] at GEOMAR, thus enabling data sharing within and between all consortia. Research results must be reproducible through access to metadata and data. Research data as well as shared stakeholder contact data are under no circumstances disclosed or shared outside of *CDRterra*, without consultation and permission of the author or contact person within the funding measure.

Data publication

Beyond the end of the project, data together with standard metadata must be archived and published in suitable, sustainably operated, trustworthy long-term repositories, such as PANGAEA [7], CERA [8], BonaRes [9]

or Zenodo [10]. The deposited data must be published open access no later than two years after data acquisition and may be subject to an embargo for a maximum of two further years. The embargo of data relevant for a pending patent may be further extended for the duration of the patent protection. After expiry of the moratorium period, the data must be made public immediately and actively following the FAIR Data Principles.

Appropriate time limits for data embargoes must be documented in the DMPs. Research data should be published under the CC BY 4.0 license [11], while metadata are generally shared under the CC0 1.0 license [12]. Persistent identifiers such as DOI [13] for data sets, ROR [14] for affiliations and ORCID [15] for authors are promoted by the data managers and used wherever possible.

Data visibility

By means of metadata harvesting, the data of the consortia published in appropriate data repositories will also be findable in data portals such as the NET-ZERO-2050 WEB-ATLAS [16], the Helmholtz DataHub [17] or the Carbon Removal Atlas (under development).

References

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