Sharing and Archiving Research Data

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Outline

- Open Data imperative
- How to share data
- Data repositories
- Credit for data

Open Data

- Research data are assets
- Increasingly recognized and valued research output
- Valuable to others, in research as well as industry
- Critical for reproducibility
- Mandates to open access publicly funded data
- Anyone free to use, reuse, and redistribute

Why Sharing Data

- Get credit for your work
- Share it with *your future self*
- Enable reproducibility and repurposing of your data
- Increase visibility of your work
- Access to data (and software) seen positively in peer-review
- Because you are required to do so
- Because "research data is not mine"

`https://www.linkedin.com/pulse/repeat-me-research-data-mine-wainer-lusoli`

How to Share Data

- It is challenging to share data well
- Making data usable by others in other contexts is difficult
- Follow existing principles and guidelines
- Share your data using a high-quality repository

FAIR Principles

- Findable
  - Persistently identified, described, indexed
- Accessible
  - Retrievable by identifier, open protocol, accessible metadata
- Interoperable
  - Represented using formal, accessible, shared FAIR vocabulary
- Re-usable
  - Meet community standards, include provenance, license

https://www.force11.org/group/fairgroup/fairprinciples

Five Star Data

*	Publish your data on the web, open license, any format
**	Publish your data as structured data
***	Publish your data in a non-proprietary open format
****	Use identifiers to refer to your data, e.g. units, parameters
*****	Link your data to other data, to provide context

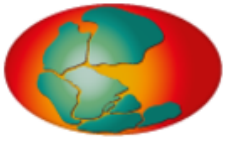
http://5stardata.info/en/

Data Identification

- Persistent identification of data is important
- Idea is similar to identification of articles
- Provides an unambiguous reference to data
- Used to link or refer to data, e.g. in text
- Data are increasingly identified by DOI
  - e.g. 10.1594/PANGAEA.787617
- DataCite is the global provider of DOIs for research data

Data Citation

- Always cite data used in research
- Citing data is often very easy
- Similar to citing literature
- Data repositories often support citation export
- Exports in standard formats, supported by tools



PANGAEA.

Data Publisher for Earth & Environmental Science

Citation:

Nürnberg, Dirk; Müller, A; Schneider, Ralph R (2000): Paleo-sea surface temperature calculations in the equatorial east Atlantic. *PANGAEA*, https://doi.org/10.1594/PANGAEA.787617,

Supplement to: Nürnberg, D et al. (2000): Paleo-sea surface temperature calculations in the equatorial east Atlantik from Mg/Ca ratios in planktic foraminifera: A comparison to sea surface temperature estimates from U37K', oxygen isotopes, and foraminiferal transfer function. *Paleoceanography*, **15(1)**, 124-134, https://doi.org/10.1029/1999PA000370

Always quote above citation when using data! You can download the citation in several formats below.

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Data Repositories

- re3data.org knows of 1920 research data repositories
- Covers major subjects and many special domains
- Quality varies widely
- Good quality data repository may meet many principles
- Support for data identification, citation, curation, standardization
- About 150 repositories are DSA or WDS certified

Submit Data

Welcome to PANGAEA® Data Publisher

Our services are generally open for archiving, publishing, and re-usage of data. The World Data Center PANGAEA is member of the ICSU World Data System.

ALL TOPICS

Search for measurement type, author name, project, taxa,...

TOPICS

MAP

- OCEANS (95222)
- LITHOSPHERE (37822)
- BIOLOGICAL CLASSIFICATION (28459)
- ATMOSPHERE (23920)
- PALEONTOLOGY (22461)
- ECOLOGY (13419)
- BIOSPHERE (6284)
- LAND SURFACE (5420)
- CHEMISTRY (3456)
- GEOPHYSICS (2636)

Latest News

2017-05-24
SAD NEWS

On the 27th of April our colleague Mathias Weinrebe unexpectedly deceased. Since several years Mathias has given IT support in the fields of hydroacoustics and terminologies. We lost a respected co-worker and friend. The PANGAEA Team

2017-05-08
RE:PUBLICA 2017

PANGAEA presents on the re:publica 2017 conference in Berlin to the broad public: How is data gathered, archived for publication, and reused by other scientists? We are looking forward to meeting you on this conference as part of the sub:marine track!

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Featured Data

Kim, J-H; Buscail, R; Fanget, A-S et al. (2017): (Table 1) SPM samples and sites along the Rhône Rive

PANGAEA

- Open-access data publisher for earth and environmental science
- Archives, publishes, and distributes geo-referenced research data
- Can be used by any researcher to use, archive, publish data
- Published data are freely available
- Data and metadata canonicalized in relational database
- Data published in standard formats, accessed with standard protocols
- Data are identified and citable, using DataCite DOIs
- Data retrieval supported by full-text faceted search
- Cross-linking between data and articles
- Access to data warehouse
- Data undergo editorial process
- Ensures high usability of published data

Other Repositories

- re3data.org knows of 64 repositories in oceanography, e.g.
  - Data Portal German Marine Research
  - Marine Geoscience Data System
  - World Data Service for Oceanography
- Generic data repositories (not just data)
  - figshare
  - zenodo
  - ResearchGate

Credit

- Perhaps primary motivation to publish data
- Credit not as “advanced” as for articles, no d-index
- Article about the data used as workaround
- Demanded co-authorship on articles that use data
- Claim contributions to your ORCID record

Take aways

- Open Data more and more the norm
- Mandated but useful also to yourself
- However, sharing data well is challenging
- Good quality repositories take care of details