Seminar

Publication of Research Data

associated with peer-reviewed research articles

Andreas Hübner
Deutsches GeoForschungsZentrum GFZ

FID GEO
Fachinformationsdienst
Geowissenschaften

DFG Fachinformationsdienste (FID)

- Initiative to complement existing local information infrastructures in research institutions with national services.
- FID GEO Partners:

SUB | NIEDERSACHSISCHE STAATS- UND UNIVERSITÄTSBIBLIOTHEK GÖTTINGEN

GFZ Helmholtz-Zentrum Potsdam

- Website: **fidgeo.de**

Why publish research data?

How to publish?

Licences

GFZ Data Services

Wrap up

Political and funders perspectives

G7 Science and Technology Ministers' Meeting

…promoting increasing access to […] scientific data and publications,…

"…open access is the default setting for research data generated in Horizon 2020."

DFG

…research data should be made available as soon as possible.

G7 Science and Technology Ministers 2016: Tsukuba Communiqué
DFG 2015: Leitlinien zum Umgang mit Forschungsdaten
EU 2016: Guidelines on FAIR Data Management in Horizon 2020

Political and funders perspectives

Code of Conduct "Guidelines for Safeguarding Good Research Practice"
German Science Foundation DFG

- describe results clearly and in full
- making the research data, materials and information on which the results are based, as well as the methods and software used, available and fully explaining the work processes.
- Software is made publicly available along with the source code
- Make available in recognised archives and repositories in accordance with the FAIR principles

DFG 2019: **Guidelines for Safeguarding Good Research Practice**
https://www.dfg.de/en/research_funding/principles_dfg_funding/good_scientific_practice/index.html

https://www.fidgeo.de/en/research-data-in-the-dfg-guidelines-for-safeguarding-good-research-practice/

Publishers

Supporting **data must be made available** to editors and peer reviewers at the time of submission for the purposes of evaluating the manuscript. All manuscripts reporting original research published in Nature journals **must include a data availability statement** …

Earth, space and environmental sciences

From January 2019, where community repositories are available, **we will require data sharing** through such repositories […].
Where such repositories are not available, datasets may be hosted in general data repositories such as Figshare, Dryad or Zenodo.

https://www.nature.com/authors/policies/availability.html
https://www.nature.com/nature-research/editorial-policies/reporting-standards

Publishers

All data used in the analysis **must be available** to any researcher for purposes of reproducing or extending the analysis. Data must be available in the paper, deposited in a community special-purpose repository, accessible via a general-purpose repository such as Dryad, or otherwise openly available.

Climate and Earth and Space Sciences data.

Guidelines on data deposition are provided by the **Coalition on Publishing Data in the Earth and Space Sciences (COPDESS)**, together with a searchable online **Repository Finder**.

https://www.sciencemag.org/authors/science-journals-editorial-policies#data-deposition

Publishers

Copernicus Publications **requests depositing data** that correspond to journal articles in reliable (public) data repositories, assigning digital object identifiers, and properly citing data sets as individual contributions.

Data policy

The output of research is not only journal articles but also data sets, model code, samples, etc. Only the entire network of interconnected information can guarantee integrity, transparency, reuse, and reproducibility of scientific findings. Moreover, all of these resources provide great additional value in their own right. Hence, it is particularly important that data and other information underpinning the research findings are "findable, accessible, interoperable, and reusable" (FAIR) not only for humans but also for machines.

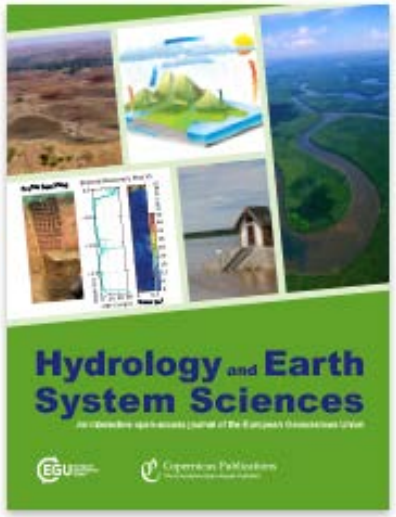
re3data.org
REGISTRY OF RESEARCH DATA REPOSITORIES

Therefore, Copernicus Publications requests depositing data that correspond to journal articles in reliable (public) data repositories, assigning digital object identifiers, and properly citing data sets as individual contributions. Please find your appropriate data repository in the registry for research data repositories: re3data.org. A data citation in a publication resembles a bibliographic citation and needs to be included in the publication's reference list. To foster the accessibility as well as the proper citation of data, Copernicus Publications requires all authors to provide a statement on the availability of underlying data as the last paragraph of each article (see section data availability). In addition, data sets, model code, video supplements, video abstracts, International Geo Sample Numbers, and other digital assets should be linked to the article through DOIs in the assets tab. With Earth System Science Data (ESSD) Copernicus Publications provides a journal dedicated to the publication of data papers, including peer review of data sets. Authors should consider submitting a data paper to ESSD in addition to their research paper in another journal published by Copernicus Publications.

Best practice following the Joint Declaration of Data Citation Principles initiated by FORCE 11:

COPDESS

In addition to promoting these data citation principles, Copernicus Publications is a signatory of the Coalition on Publishing Data in the Earth and Space Sciences (COPDESS) commitment statement and the Enabling FAIR Data Commitment Statement in the Earth, Space, and Environmental Sciences.



https://www.hydrology-and-earth-system-sciences.net/about/data_policy.html

Publishers

Earth science and biodiversity journals can improve support for data publication

"About half (9 out of 20) of the journals from earth sciences in this study don't address data publishing at all."

[...]

"However, in some of the surveyed journals´ texts, ambiguous and inconsistent statements were encountered, making it hard for authors to identify the expectations of the journal on data publishing."

Hübner, A. 2020, Preprint, DOI https://doi.org/10.23689/fidgeo-3818

Scientists and broader perspective

Individual scientist

- Additional publications
- Greater citation rate
- Wider recognition among peers
- Invitations to meetings, collaborations, consultancy

- Creators of data are known from citation and so are contactable for more information
- Citation of data sources adds authority that indicates their quality

Mark J. Costello, Motivating Online Publication of Data https://doi.org/10.1525/bio.2009.59.5.9

Editors, peer reviewers

- Independent verification and qualify-cation of research findings is possible

Scientific community

- Data can be reused for similar and new purposes
- Data can be integrated with other data to create new data resources

Funding agencies

- Better financial return from research investment as a data can be used again

Society

- Better science

Scientists and broader perspective

The citation advantage of linking publications to research data
2020 https://doi.org/10.1371/journal.pone.0230416

A study of the impact of data sharing on article citations using journal policies as a natural experiment
2019 https://doi.org/10.1371/journal.pone.0225883

Sharing Detailed Research Data Is Associated with Increased Citation Rate
2007 https://doi.org/10.1371/journal.pone.0000308

Caution

Rights of other scientist
with Co-authorship, all authors can only jointly decide on the reuse or publication.

Secrecy agreements
In third-party funded projects or by instruction of employer.

Patents
When the research data describe a patentable invention and this invention is to be filed for a patent.

Personalised data
Must be anonymised before publication.

Bild von DavidRockDesign auf Pixabay

Why publish research data?

How to publish?

Licences

GFZ Data Services

Wrap up

These Data...

- Datasets
- Big Data
- Dynamic Data
- Databases
- Documents
- Code/Software
- Models
- Images
- Video
- Audio
- Other Digital Objects

Stall, Shelley, Townsend, Randy, & Robinson, Erin. (2020, April). The Paper and The Data: Publishing and Archiving with Publishers' Journal Preferences for Data (and Software). Zenodo. http://doi.org/10.5281/zenodo.3744660

FAIR data Guiding Principles

To be Findable:

F1. (meta)data are assigned a globally unique and eternally persistent identifier.

F2. data are described with rich metadata.

F3. (meta)data are registered or indexed in a searchable resource.

F4. metadata specify the data identifier.

To be Accessible:

A1 (meta)data are retrievable by their identifier using a standardized communications protocol.

A1.1 the protocol is open, free, and universally implementable.

A1.2 the protocol allows for an authentication and authorization procedure, where necessary.

A2 metadata are accessible, even when the data are no longer available.

To be Interoperable:

I1. (meta)data use a formal, accessible, shared, and broadly applicable language for knowledge representation.

I2. (meta)data use vocabularies that follow FAIR principles.

I3. (meta)data include qualified references to other (meta)data.

To be Re-usable:

R1. meta(data) have a plurality of accurate and relevant attributes.

R1.1. (meta)data are released with a clear and accessible data usage license.

R1.2. (meta)data are associated with their provenance.

R1.3. (meta)data meet domain-relevant community standards.

https://www.force11.org/fairprinciples

https://blogs.tib.eu/wp/tib/wp-content/uploads/sites/3/2017/09/The-FAIR-Data-Principles.pdf

https://www.go-fair.org/fair-principles/

Enabling Findable, Accessible, Interoperable and Reusable Data

in the earth, space, and environmental science

Researchers understand and follow expectations related to data management and metadata of the publication

Publishers set standards and follow best practice related to datasets, metadata, accepted repositories and data citation

Scientific repositories are valued for stewardship, data access, improving peer review and digital product quality

https://eos.org/editors-vox/enabling-findable-accessible-interoperable-and-reusable-data

COMMITMENT STATEMENT

IN THE EARTH, SPACE, AND ENVIRONMENTAL SCIENCES

- Repositories
- Publishers
- Societies, communities, and institutions
- Funding agencies and organizations
- Individual researchers

http://www.copdess.org/enabling-fair-data-project/commitment-to-enabling-fair-data-in-the-earth-space-and-environmental-sciences

COMMITMENT STATEMENT

- Make research outputs FAIR and, whenever possible, open by depositing research outputs (e.g., data, software, physical sample information, etc.) in **trustworthy, community-accepted, FAIR-aligned repositories.**

- **Cite** data, software, physical samples, and other products created or reused for your research in your publications.

- Include a **data availability statement** in your publication to make it clear where the data (and other research outputs as is possible) that supports the paper can be accessed along with any other access information.

http://www.copdess.org/enabling-fair-data-project/commitment-to-enabling-fair-data-in-the-earth-space-and-environmental-sciences

Funded by DFG

FAIR tools

Top 10 FAIR Data & Software Things Geoscience

https://librarycarpentry.org/Top-10-FAIR//2018/12/01/geoscience/

- for geoscientists
- lots of examples and exercises

FAIR self assessment tool

https://ardc.edu.au/resources/working-with-data/fair-data/fair-self-assessment-tool/

FAIR-Aware

https://www.fairsfair.eu/fair-aware

Repositories

Repository = (online accessible) database for the recording and publication of research data, texts and other digital objects[1]

Institutional Repository

- members of the institution
- many disciplines

Deposit Once
Repository for Research Data and Publications

Refubium

Domain-specific Repository

- Researchers worldwide
- discipline-specific

GFZ Data Services

PANGAEA.
Data Publisher for Earth & Environmental Science

- Domain-specific metadata, for example „location“
- Connected to domain-specific data portals
- Better quality-control
- extra services, e.g. integration of IGSN

Generic Repository

- Researchers worldwide
- all disciplines

zenodo

figshare

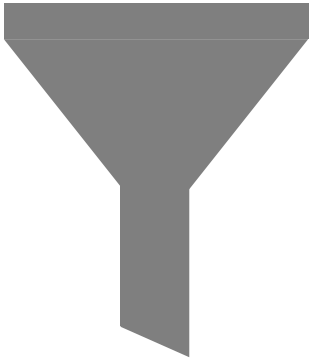
Mendeley

[1] Einstieg ins Forschungsdatenmanagement in den Geowissens

Repositories

re3data.org
REGISTRY OF RESEARCH DATA REPOSITORIES

More than
2500 data repositories



https://repositoryfinder.datacite.org/search?open=true&pid=true&subject=34

Data repositories in the **earth and space sciences domain** that

- support open access
- provide persistent identifiers (DOI)
- accept data for deposit

222 data repositories

Data Description

Ensuring that data is „independently understandable“ is crucial.

Bild von silviarita auf Pixabay

Data Description

Impressum

GFZ DATA SERVICES
GEOSCIENCES DATA PUBLISHER

Dataset

3D-URG: 3D gravity constrained structural model of the Upper Rhine Graben

Released

Cite as:

Copy citation to clipboard

Freymark, Jessica; Bott, Judith; Scheck-Wenderoth, Magdalena; Bär, Kristian; Stiller, Manfred; Fritsche, Johann-Gerhard; Kracht, Matthias; Gomez Dacal, Maria Laura (2020): 3D-URG: 3D gravity constrained structural model of the Upper Rhine Graben. GFZ Data Services. https://doi.org/10.5880/GFZ.4.5.2020.004

Files

Download data (zip, 37.3 MB)
Data description

License: CC BY 4.0

Dataset Description

Supplement to

Freymark, Jessica; Sippel, Judith; Scheck-Wenderoth, Magdalena; Bär, Kristian; Stiller, Manfred; Fritsche, Johann-Gerhard; et al. (2017): The deep thermal field of the Upper Rhine Graben. Tectonophysics. 10.1016/j.tecto.2016.11.013

Related Work

Derived from

Amante, C., & Eakins, B. W. (2009). *ETOPO1 Global Relief Model converted to PanMap layer format* [Data set]. PANGAEA - Data Publisher for Earth & Environmental Science. https://doi.org/10.1594/PANGAEA.769615

Arndt, D., Bär, K., Fritsche, J.-G., Sass, I., & Hoppe, A. (2011). 3D structural model of the Federal State of Hesse (Germany) for geopotential evaluation. *Zeitschrift Der Deutschen Gesellschaft Für Geowissenschaften*, *162*(4), 353–369. https://

Abstract

We provide a set of grid files that collectively allow recreating a 3D geological model which cover the Upper Rhine Graben and its adjacent tectonic domains, such as portions of the Swiss Alps, th Molasse Basin, the Black Forest and Vosges Mountains, the Rhenish Massif and the Lower Rhine Graben publication is a complement to the publication of Freymark et al. (2017).

Accordingly, the provided structural model consists of (i) 14 sedimentary and volcanic units; (i talline crust composed of seven upper crustal units and a lower crustal unit; and (iii) two lithosp ric mantle units. The files provided here include information on the regional variation of these geological nits in terms of their depth and thickness, both attributes being allocated to regularly spaced grid nodes with horizontal spacing of 1 km.

The model has originally been developed to obtain a basis for numerical simulations of heat transport, to calculate the lithospheric-scale conductive thermal field and assess the related geothermal potentials, in particular for the Upper Rhine Graben (a region especially well-suited for geothermal energy exploitation). Since such simulations require the subsurface variation of physical rock properties to be defined, the 3D model differentiates units of contrasting materials, i.e. rock types. On that account, a large number of geological and geophysical data have been analysed (see Related Work) and we shortly describe here how they have been integrated into a consistent 3D model (Methods). For further information on the data usage and the characteristics of the units (e.g., lithology, density, thermal properties), the reader is referred to the original article (Freymark et al., 2017). The contents and structure of the grid files provided herewith are described in the Technical Info section.

Additional Information

We acknowledge Landesamt für Geologie, Rohstoffe und Bergbau (LGRB; Baden-Wuerttemberg) for kindly allocating the digital datasets of the GeORG model and the geological 3D model of Baden-Wuerttemberg.

Methods

The presented 3D structural model is the result of an extensive data integration process. In a first step, we visualized and collectively analysed geological maps, smaller-scale 3D structural models, depth and thickness maps, drilled formation tops and interpreted seismic horizons (See Related Works) using the software Petrel (©Schlumberger). After identifying the main lithological units to be differentiated by the intended 3D model and correcting for inconsistencies between the layers, the scattered information on the top surface elevation of the units was interpolated to obtain regular grids with a horizontal element spacing of 1 km (Convergent Interpolation algorithm of Petrel). More details about the original datasets (e.g., their regional extents, sources etc.) used to model the topology of the structural horizons are listed in the Supplementary Material 1 of Freymark et al. (2017).

In order to mitigate insufficient coverage of the region with deep seismic profiles revealing the internal

Description

Link to journal article

Abstract

Data Description

Peer-reviewed articles with the description of datasets, data collections, data infrastructures, etc.

No Inter-pretation!

Slide source: Kirsten Elger

Contents lists available at ScienceDirect

Tectonophysics

journal homepage: www.elsevier.com/locate/tecto

Properties of granular analogue model materials: A community wide survey

M. Klinkmüller [a], G. Schreurs [a,1], M. Rosenau [b], H. Kemnitz [b]

[a] Institute of Geological Sciences, University of Bern, Baltzerstrasse 1 +3, CH-3012 Bern, Switzerland
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sented as grain size distribution curves, in which particle grain size is plotted against cumulative weight percentage (Fig. 2).

The original sieve data have been published open access and are available in Klinkmüller et al. (2016b).

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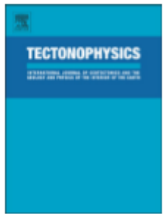

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Heilbronner, R., Keulen, N., 2006. Grain size and grain shape analysis of fault rocks. Tectonophysics 427, 199–216.

Hubbert, M.K., 1951. Mechanical basis for certain familiar geologic structures. Geol. Soc. Am. Bull. 62, 1259–1273.

Klinkmüller, M., Schreurs, G., Rosenau, M., 2016a. GeoMod2008 materials benchmark: The ring shear test data set. GFZ Data Services. http://dx.doi.org/10.5880/GFZ.4.1.2016.002.

Klinkmüller, M., Schreurs, G., Rosenau, M., 2016b. GeoMod2008 materials benchmark: The sieve data set. GFZ Data Services. http://dx.doi.org/10.5880/GFZ.4.1.2016.003.

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3. Data access via DOI

GFZ Helmholtz Centre Potsdam

Impressum

GFZ German Research Centre for Geosciences

Dataset

GeoMod2008 materials benchmark: The sieve dataset

Released

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Klinkmüller, Matthias; Schreurs, Guido; Rosenau, Matthias (2016): GeoMod2008 materials benchmark: The sieve dataset. GFZ Data Services. http://doi.org/10.5880/GFZ.4.1.2016.003

Data Files

SieveDataOverview.pdf 218020 Bytes
Sieve-data.zip 735235 Bytes
Explanations for the Sieve dataset.pdf 536692 Bytes

License: CC BY 4.0

Related Work

Supplement to

Klinkmüller, M., Schreurs, G., Rosenau, M., & Kemnitz, H. (2016). Properties of granular analogue model materials: A community wide survey. Tectonophysics. doi:10.1016/j.tecto.2016.01.017

Find More Research Data

http://bib.telegrafenberg.de/finden/datenbanken/forschungsdaten/

Abstract

This dataset provides sieve data (grain size distributions) on natural and artificial granular materials used for experimental simulation by the analogue geodynamic modelling community (21 sands and glass beads). The material samples have been collected community-wide and analysed at GFZ Potsdam in the framework of the GeoMod2008 conference benchmark initiative. The context of data collection, details of the material samples and measuring techniques as well as interpretation and discussion of results can be found in Klinkmüller et al. (2016) to which this dataset is supplement material.

An overview of all files of the data set is given in the table SieveDataOverview.

Methods

The data presented here are derived by sieving using a RETSCH Vibratory Sieve Shaker AS 200 basic at GFZ Potsdam's analogue laboratory for tectonic modelling. Mesh sizes used were 630, 400, 355, 224, 125, and 63 micrometer. 1 kg of each sample material has been sieved for 4 hours at maximum Amplitude (3 mm). Laboratory conditions were air conditioned during all the measurements (Temperature: 23°C, Humidity: 45%).

The resulting sieve analysis data are presented as fractions of 1 kg.

Dataset Contact

Rosenau, Matthias; GFZ German Research Centre for Geosciences, Potsdam, Germany; rosen(_at_)gfz-potsdam.de; http://www.gfz-potsdam.de/en/section/lithosphere-dynamics/infrastructure/geodynamics/tectonic-modeling-lab/

Keywords

analogue materials, granular materials, bulk solids, analog models, sandbox, benchmark, Geomod, EPOS, experiment, properties of materials, geological process, materials science

GCMD Science Keywords

EARTH SCIENCE SERVICES > MODELS > PHYSICAL/LABORATORY MODELS
EARTH SCIENCE > SOLID EARTH > TECTONICS

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EARTH SCIENCE > SOLID EARTH > TECTONICS

Link to paper

2. Dataset DOI in the References

Slide source: Kirsten Elger

Peer review

Access the data and/or software used in the research.

Validate that the data supports the science and the visualizations.

Confirm that the data and/or software citations exist.

Bild von John Salzarulo

Funded by DFG

Software

The software, code, workflow, model that is integral to your research.

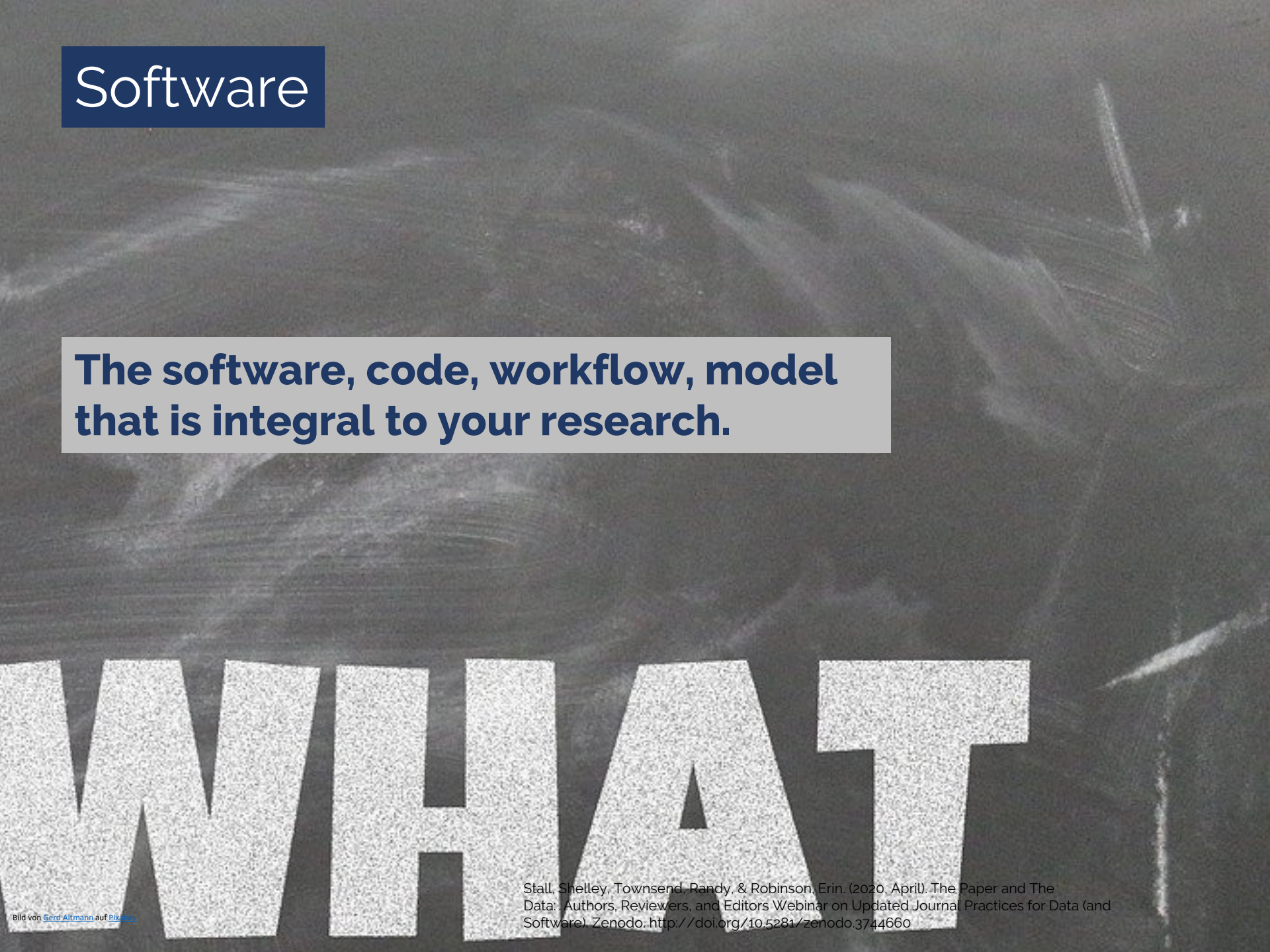

Bild von Gerd Altmann auf Pixabay

Stall, Shelley, Townsend, Randy, & Robinson, Erin. (2020, April). The Paper and The Data: Authors, Reviewers, and Editors Webinar on Updated Journal Practices for Data (and Software). Zenodo. http://doi.org/10.5281/zenodo.3744660

EGU
@EuroGeosciences

"The point of sharing codes is to find mistakes, fix them, and make a software library better. Together."

On the @EGU_Seismo #EGUblogs this week @MTsekhmistrenko ponders the... challenges... of sharing #code in #seismology.

Read more: egu.eu/5JK8RO/

Tweet übersetzen

https://blogs.egu.eu/divisions/sm/2020/08/25/git-or-perish/

Software

Availability Statement

- State **where the version of your software used for your research is preserved**
- Optionally: Include the GitHub URL or other development platform URL (Note: GitHub is not a preservation resource)

Citation

- Include in the References Section of your paper the citation to **where your software is preserved**. For GitHub users, there is an integrated connection to Zenodo

Methodology

- Describe how your software works as it pertains to your research

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Citation methods

- Cite the software itself via **software domain repository** (e.g. Computational Infrastructure for Geodynamics (CGI), Hydroshare),
- Cite the **software journal** (e.g. JOSS) where the software is described **AND the repository where it is preserved**,
- Cite the **general repository supporting software preservation** that provides registration services for a digital object identifier (e.g. Zenodo).

Citation Checklist for Authors (Version 0.9.0)
Zenodo. https://doi.org/10.5281/zenodo.3479198

Stall, Shelley, Townsend, Randy, & Robinson, Erin. (2020, April). The Paper and The Data: Authors, Reviewers, and Editors Webinar on Updated Journal Practices for Data (and Software). Zenodo. http://doi.org/10.5281/zenodo.3744660

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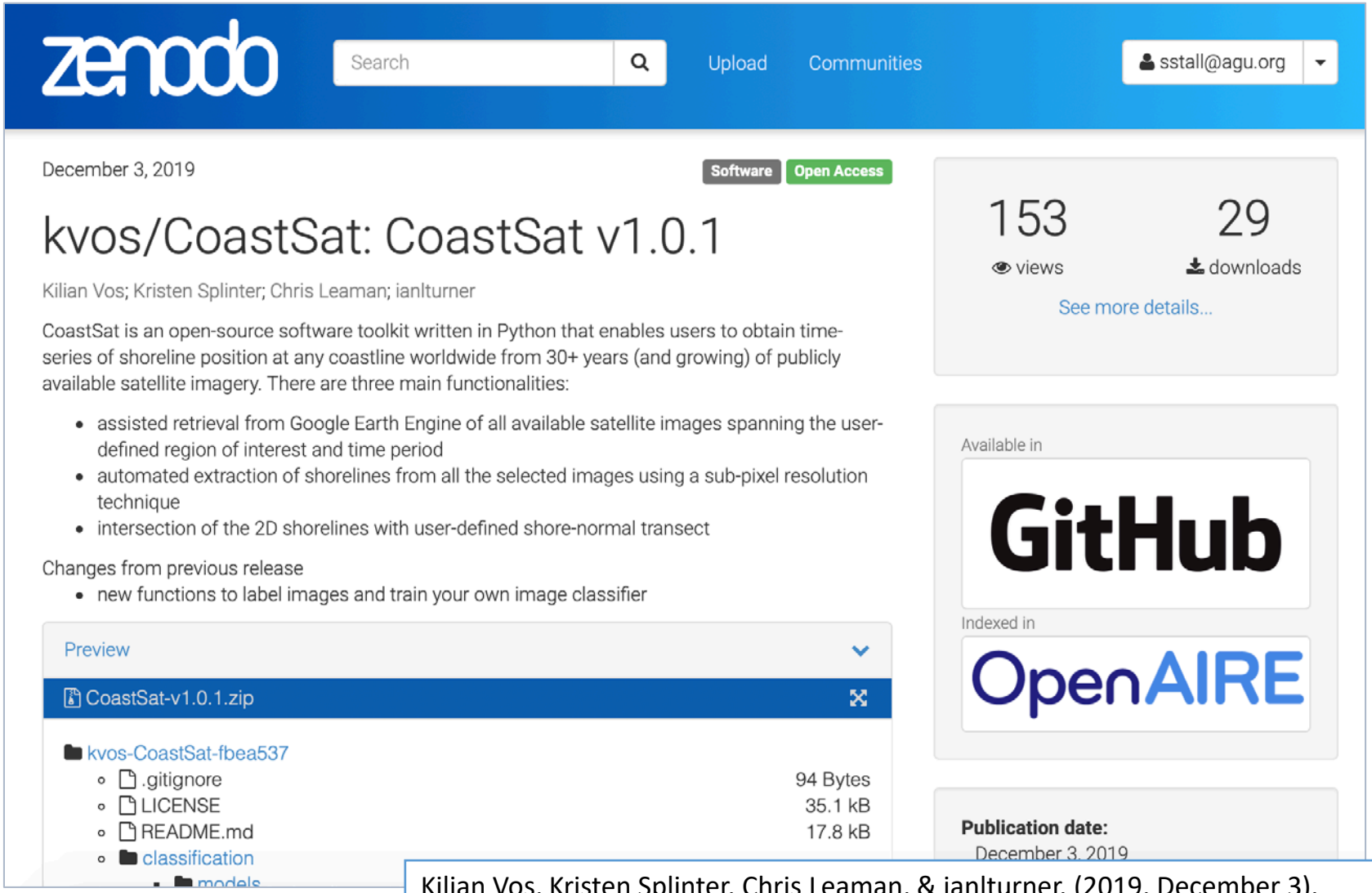

Kilian Vos, Kristen Splinter, Chris Leaman, & ianlturner. (2019, December 3). kvos/CoastSat: CoastSat v1.0.1 (Version v1.0.1). Zenodo. http://doi.org/10.5281/zenodo.3560436

Avoid these incorrect citations resources…

- **GitHub**
- **SourceForge**
- **BitBucket**
- **GitLab**
- **Personal/Institution Page**

Stall, Shelley, Townsend, Randy, & Robinson, Erin. (2020, April). The Paper and The Data: Authors, Reviewers, and Editors Webinar on Updated Journal Practices for Data (and Software). Zenodo. http://doi.org/10.5281/zenodo.3744660

Methods for Preserving Software from Collaborative Development Tools (GitHub, BitBucket, and GitLab) in General-Purpose Repositories (1 of 3)

If you work in a collaborative code development environment like GitHub or BitBucket,

please understand that these are not sites that support preservation of your code nor citation.

According to their policies, GitHub could remove content from your account and thus are **not considered adequate** for preservation of your code as needed by researchers when publishing. It is also possible for you as the owner to remove your own project. You will need to take additional steps in order to preserve your software and make it citable within your publication:

Methods for Preserving Software from Collaborative Development Tools (GitHub, BitBucket, and GitLab) in General-Purpose Repositories (2 of 3)

GitHub – GitHub is integrated with Zenodo and provides a way to register a DOI for your software. Once you have completed the deposit with Zenodo, double-check your citation and make any needed updates to authors or other information.
https://guides.github.com/activities/citable-code/

BitBucket, GitLab, SourceForge – These tools do not currently have a partnership with a persistent identifier registry service. If you are using these tools, the recommendation is that you make an archive file (tar file) of the version used for your research. Place these files in a general repository in order to preserve your work and place a proper citation in your paper.

Methods for Preserving Software from Collaborative Development Tools (GitHub, BitBucket, and GitLab) in General-Purpose Repositories (3 of 3)

If you, the author, are interested in sharing the GitHub repository in your paper, the information should be provided in the Open Research section of your paper. This is not a preserved copy of the software nor considered a citation and is not adequate to comply with AGU'S software citation requirements without a proper DOI.

The statement template would be: The software used for this research is preserved on [here – give DOI link] and developed openly on [give GitHub link].

Examples of General Repositories: Zenodo, Dryad, Figshare or your institutional repository that has a DOI registration service and provides a recommended citation.

Benefits of Citing your software

- A **persistent copy** of your software that supports your research – can not be confused with other versions/copies
- Increased **discoverability**, awareness of your work
- Trackable citation method that gives you (and your co-authors) **credit** as the creator

Why publish research data?

How to publish?

Licences

GFZ Data Services

Wrap up

Re-use

- Every user of your published data should exactly know what is allowed to do with your data.

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Copyright

- Machine-generated and unprocessed raw data are not protected by copyright.
- For most other data you should assume that data is protected by intellectual property rights.

Translated from: Gutachten zu den rechtlichen Rahmenbedingungen des Forschungsdatenmanagements (2018)
https://tu-dresden.de/gsw/jura/igewem/jfbimd13/ressourcen/dateien/publikationen/DataJus_Zusammenfassung_Gutachten_12-07-18.pdf

Copyright

- Machine-generated and unprocessed raw data are not protected by copyright.
- For most other data you should assume that data is protected by intellectual property rights.

- Public domain

- All rights reserved

- Some rights reserved

Open licences

- No rights reserved

creative commons

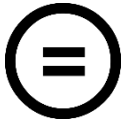
Public Domain (PD): no known copyright restrictions

No rights reserved (0): No Rights Reserved

Attribution (BY): You must give credit to author(s) or licencesor

Non-Commercial (NC): reuse not for commercial purposes

Share Alike (SA): share only with an identical licence



No Derivatives (ND): work must not be changed.

https://creativecommons.org/

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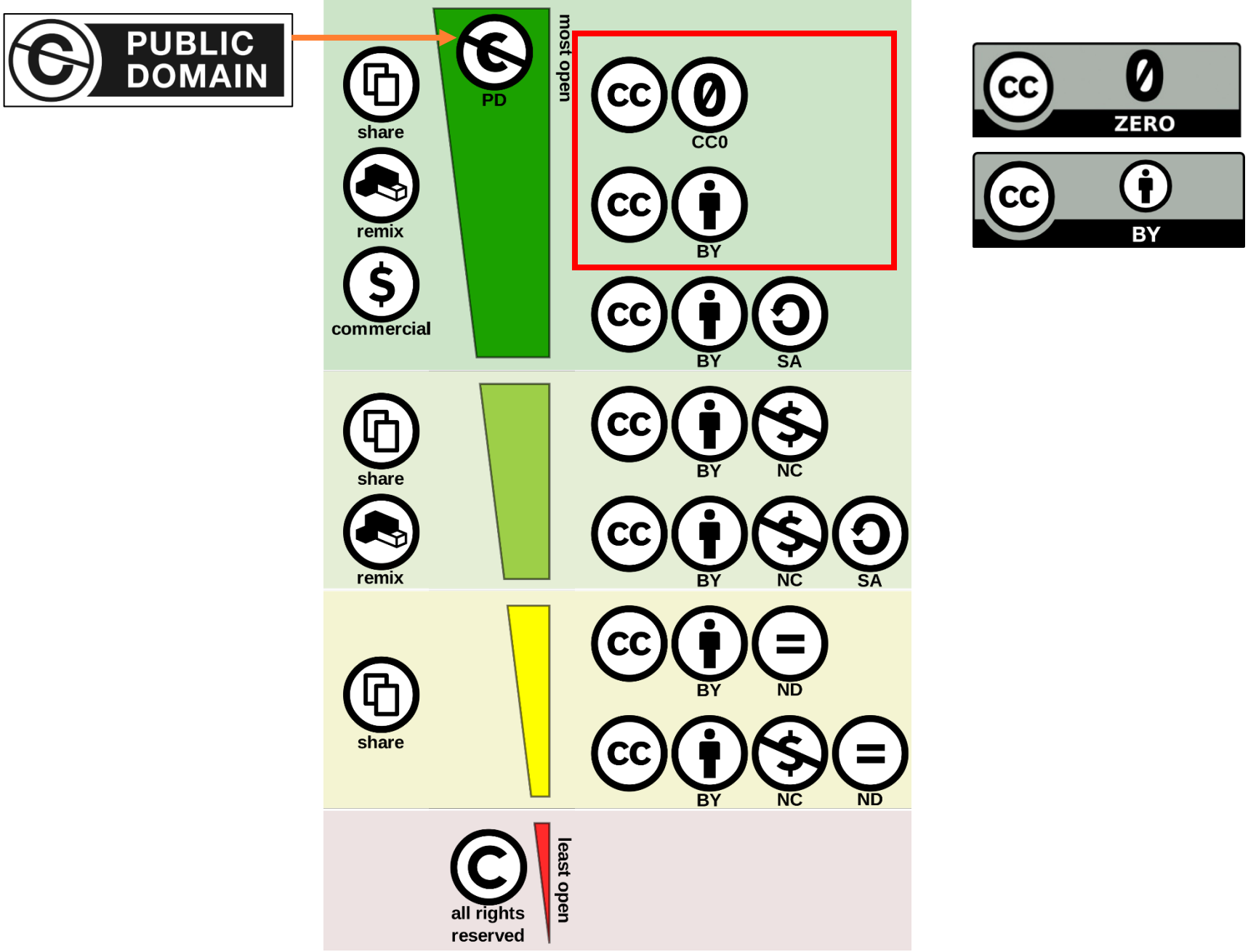
PUBLIC DOMAIN
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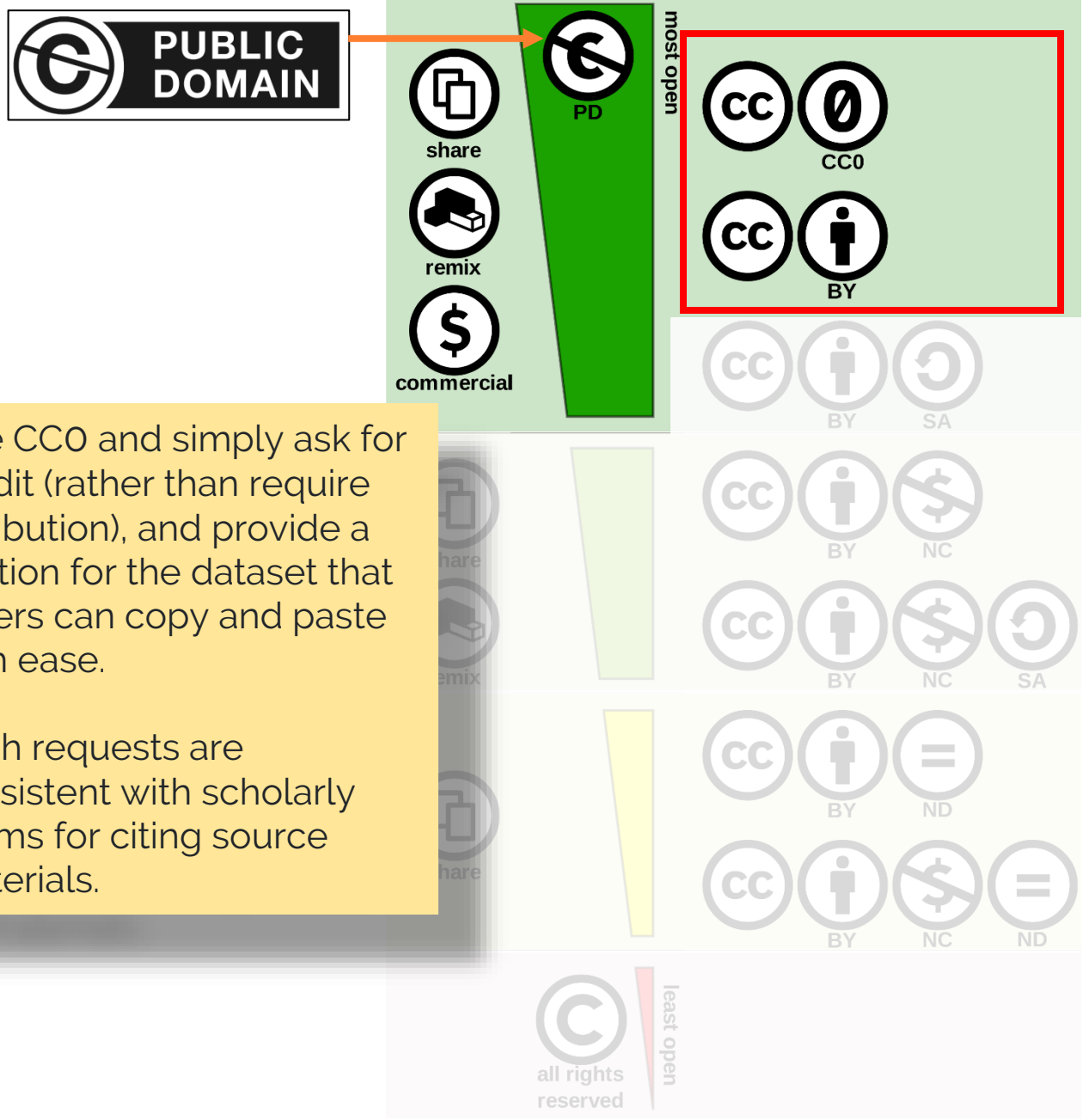
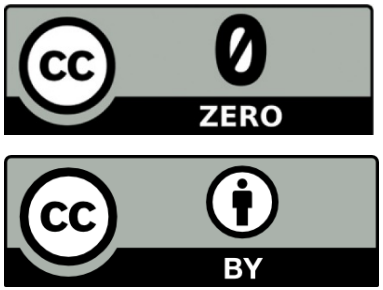
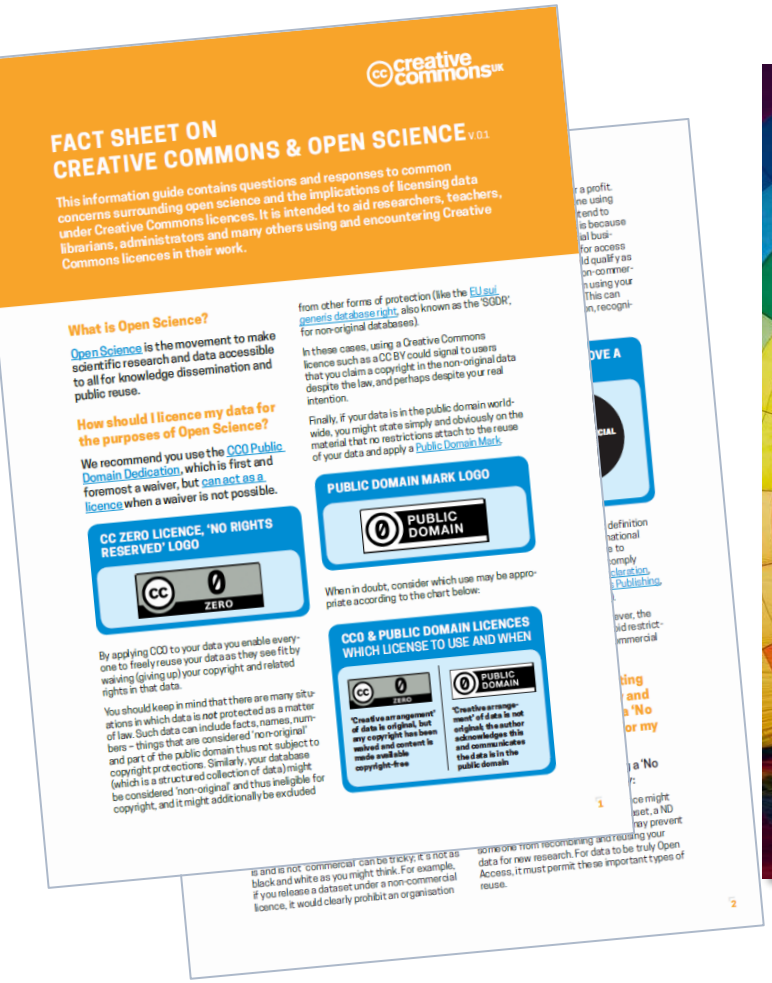


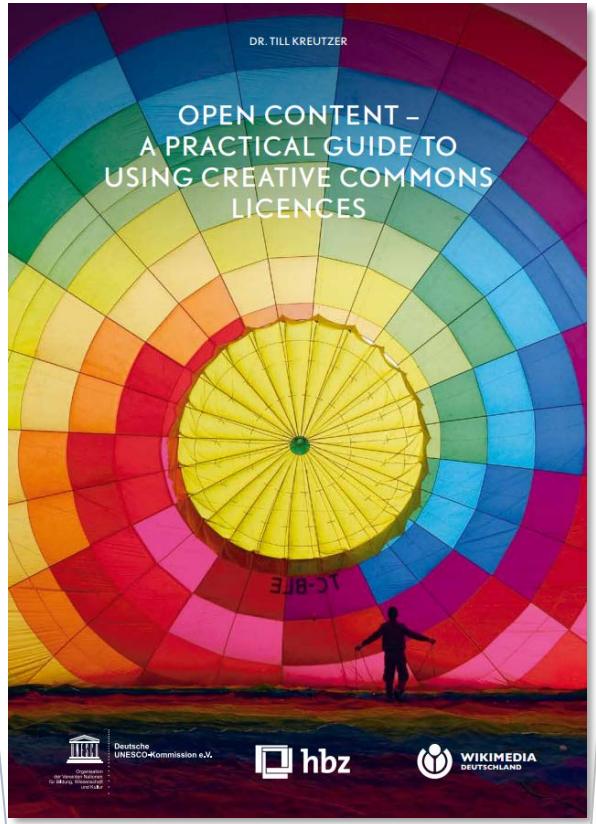


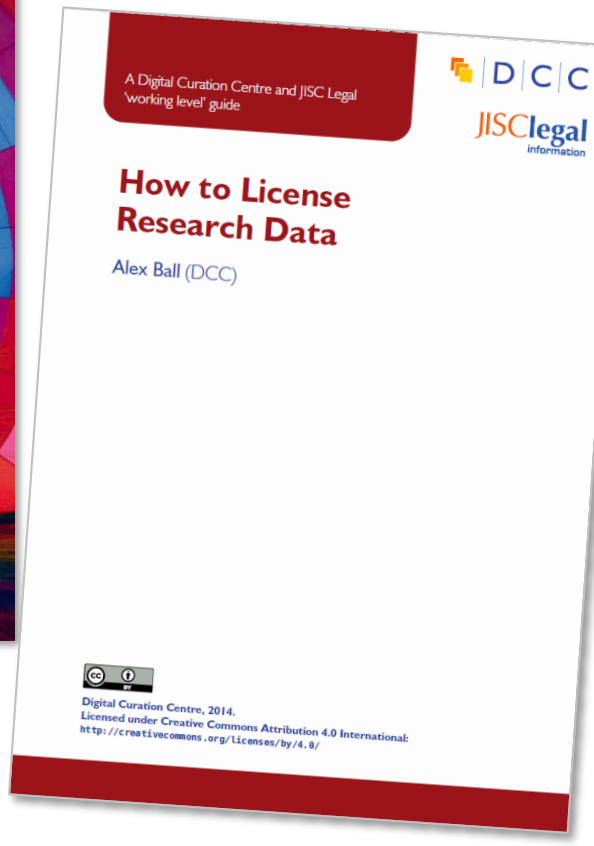
Use CC0 and simply ask for credit (rather than require attribution), and provide a citation for the dataset that others can copy and paste with ease.

Such requests are consistent with scholarly norms for citing source materials.

10.5281/zenodo.840651







Creative Commons UK. (2017). Fact Sheet on Creative Commons & Open Science. Zenodo. 10.5281/zenodo.840651
https://irights.info/wp-content/uploads/2014/11/Open_Content_A_Practical_Guide_to_Using_Open_Content_Licences_web.pdf
http://www.dcc.ac.uk/sites/default/files/documents/publications/reports/guides/How_To_License_Research_Data.pdf

Licencing of software

https://www.software.ac.uk/resources/guides/adopting-open-source-licence

https://www.gnu.org/licenses/license-list.en.html

https://choosealicense.com/about/ and references on that page

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Why publish research data?

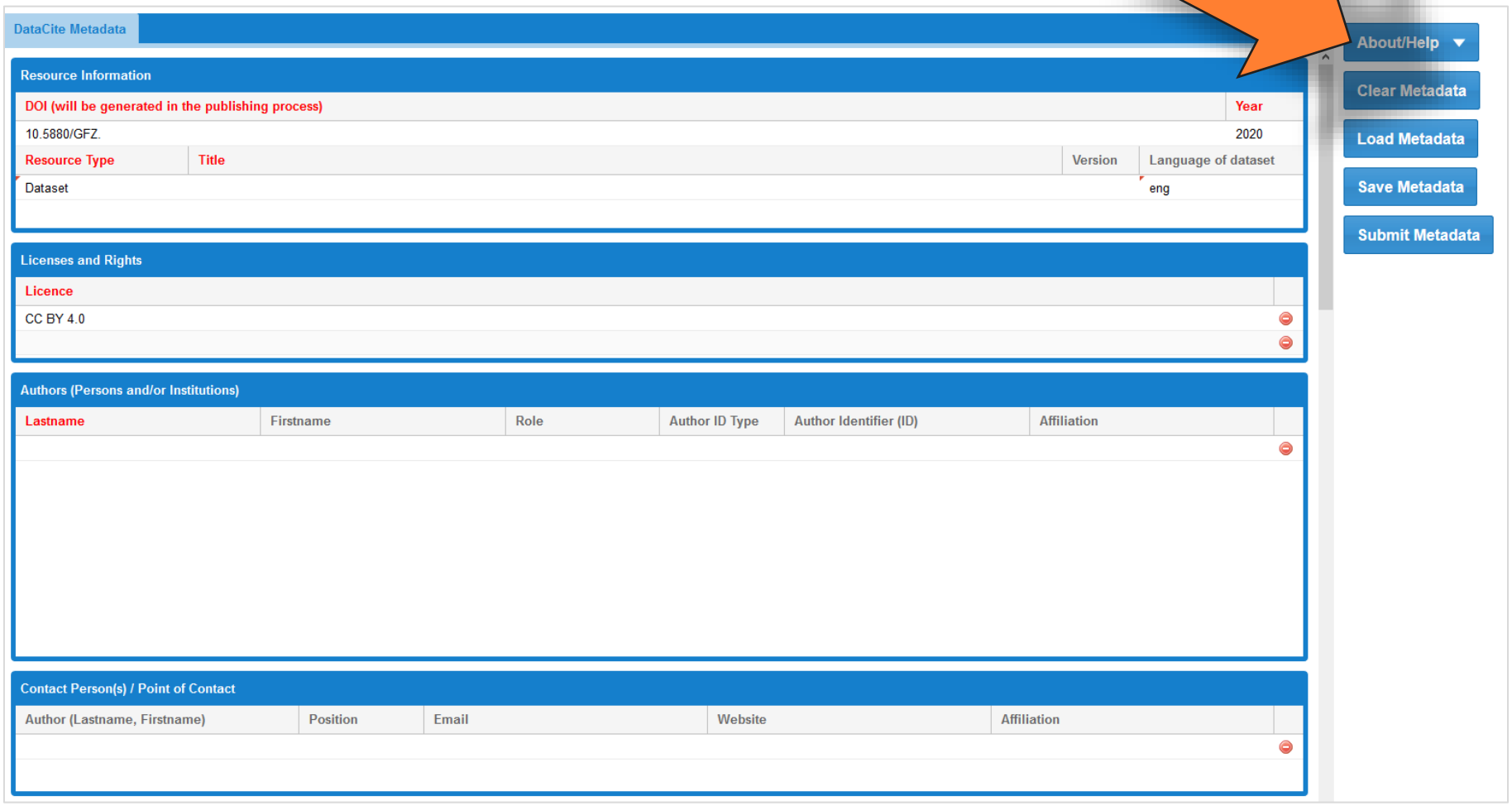
How to publish?

Licences

GFZ Data Services

Wrap up

Metadata-Editor



http://pmd.gfz-potsdam.de/panmetaworks/metaedit/

Metadata-Editor

1. ORCID
2. Contributors
3. Related work
4. Embargo

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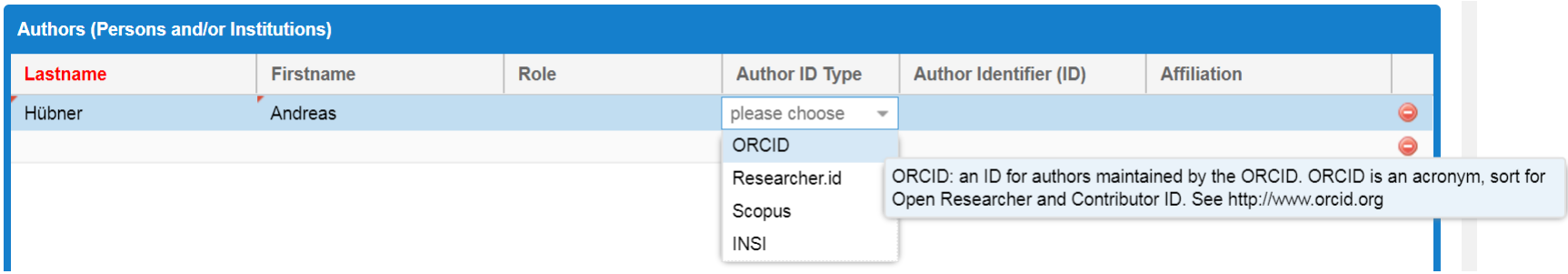
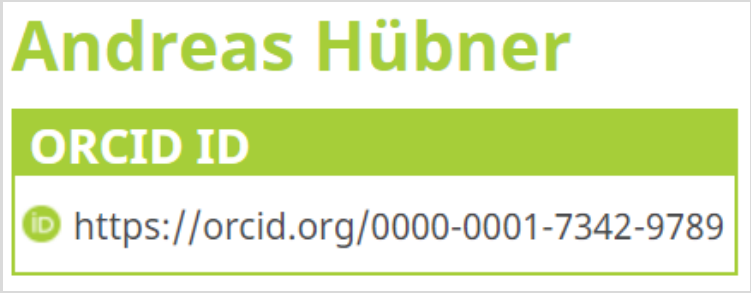
ORCID


Authors (Persons and/or Institutions)
Lastname
Firstname
Role
Author ID Type
Author Identifier (ID)
Affiliation
Hübner
Andreas
please choose
ORCID
Researcher.id
Scopus
INSI
ORCID: an ID for authors maintained by the ORCID. ORCID is an acronym, sort for Open Researcher and Contributor ID. See http://www.orcid.org

ORCID

ORCID
Connecting Research and Researchers

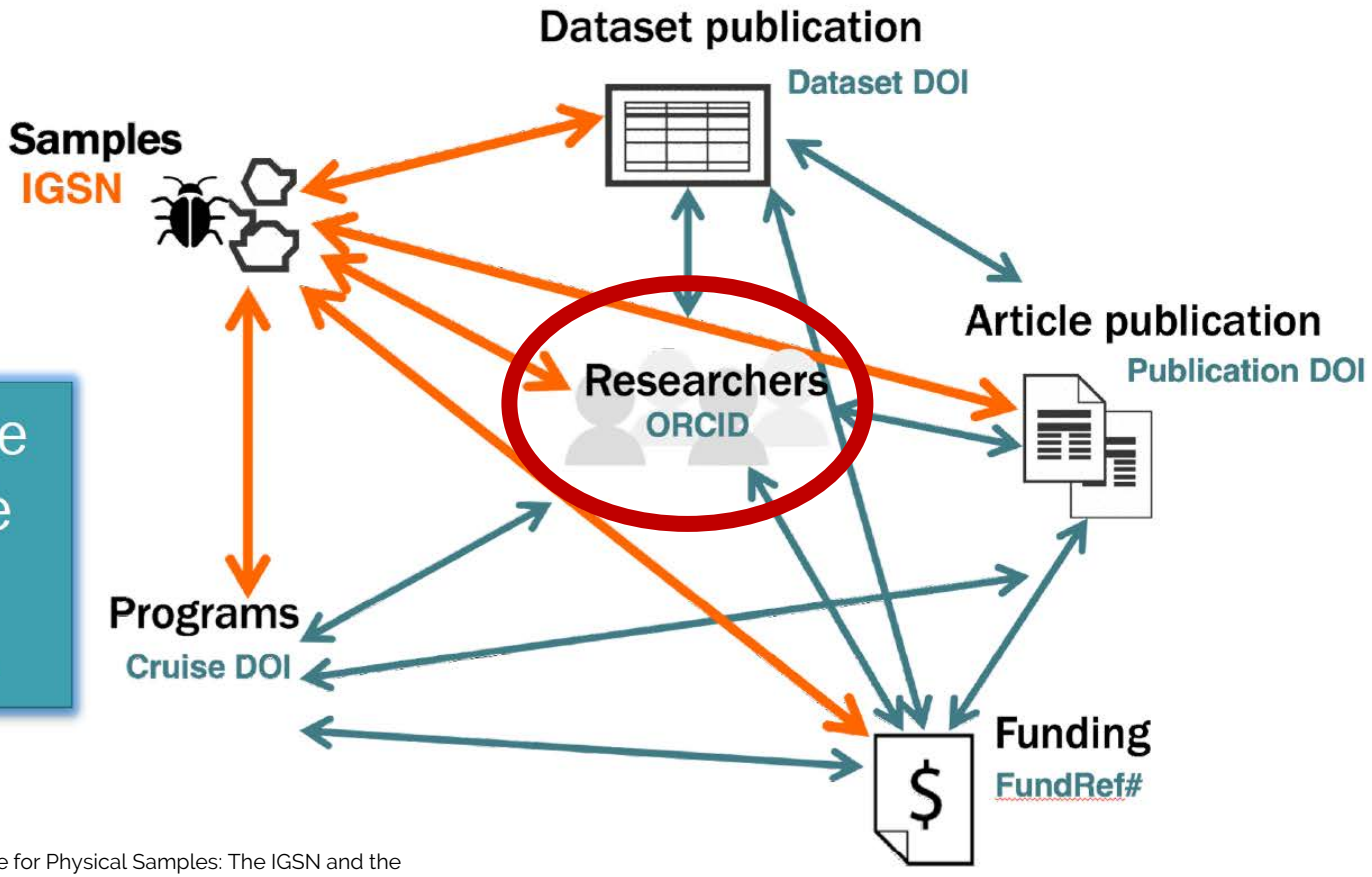
https://orcid.org
http://www.orcid-de.org/



- The **Open Researcher and Contributor ID** distinguishes you from every other researcher.
- ORCID connects all your research outputs to your person.
- Use “Auto-update” (for Crossref, Datacite, etc.) http://bit.ly/ORCID_Trust

ORCID

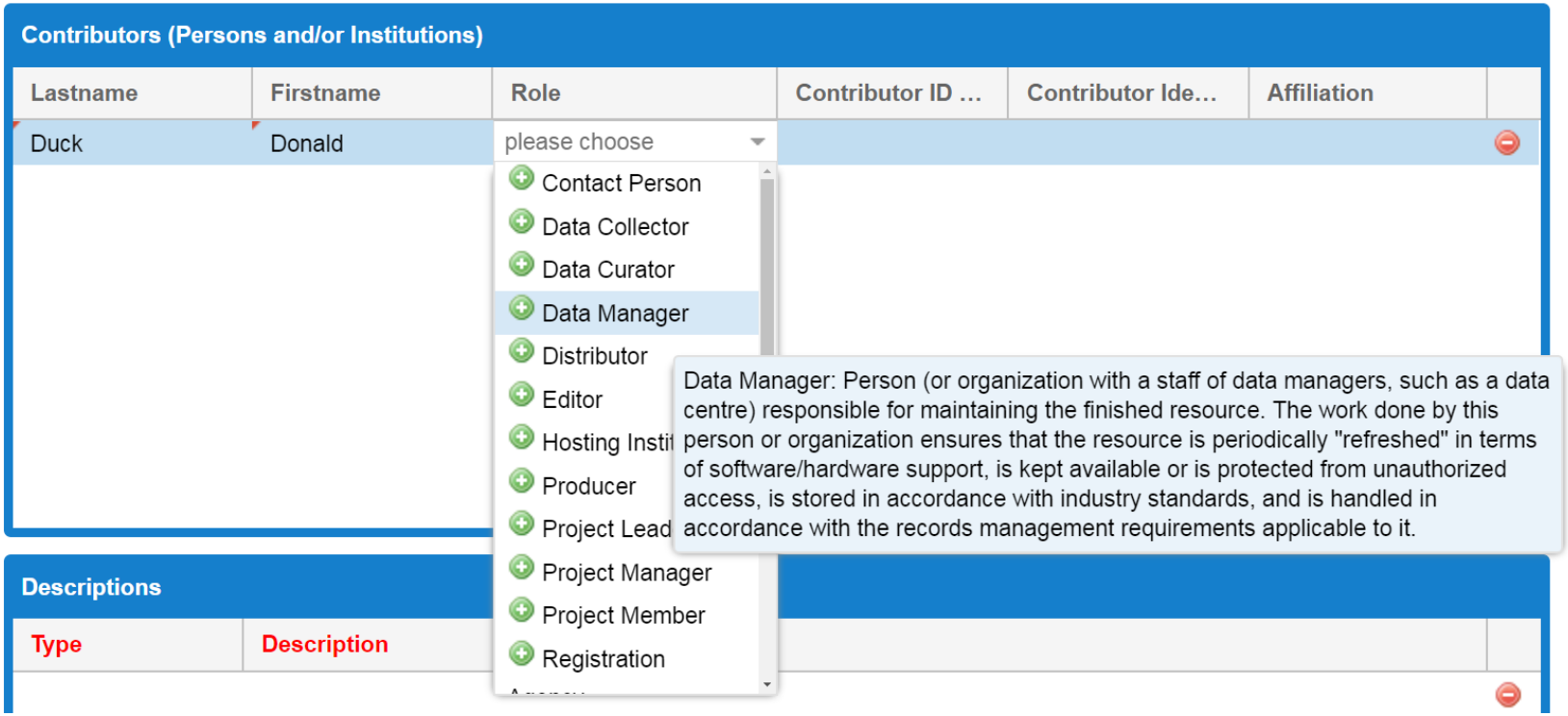
Identifiers are the foundation of the FAIR Research Data Ecosystem.



Lehnert et al., 2020, Digital Data Infrastructure for Physical Samples: The IGSN and the Internet of Samples, GeoUtrecht2020 virtual conference

Contributors

With “contributor” you have the possibility to acknowledge additional persons or institutions related to the dataset but which you would normally not mention as authors. These are not named in the citation, but always related with the dataset and searchable as all the other metadata fields.



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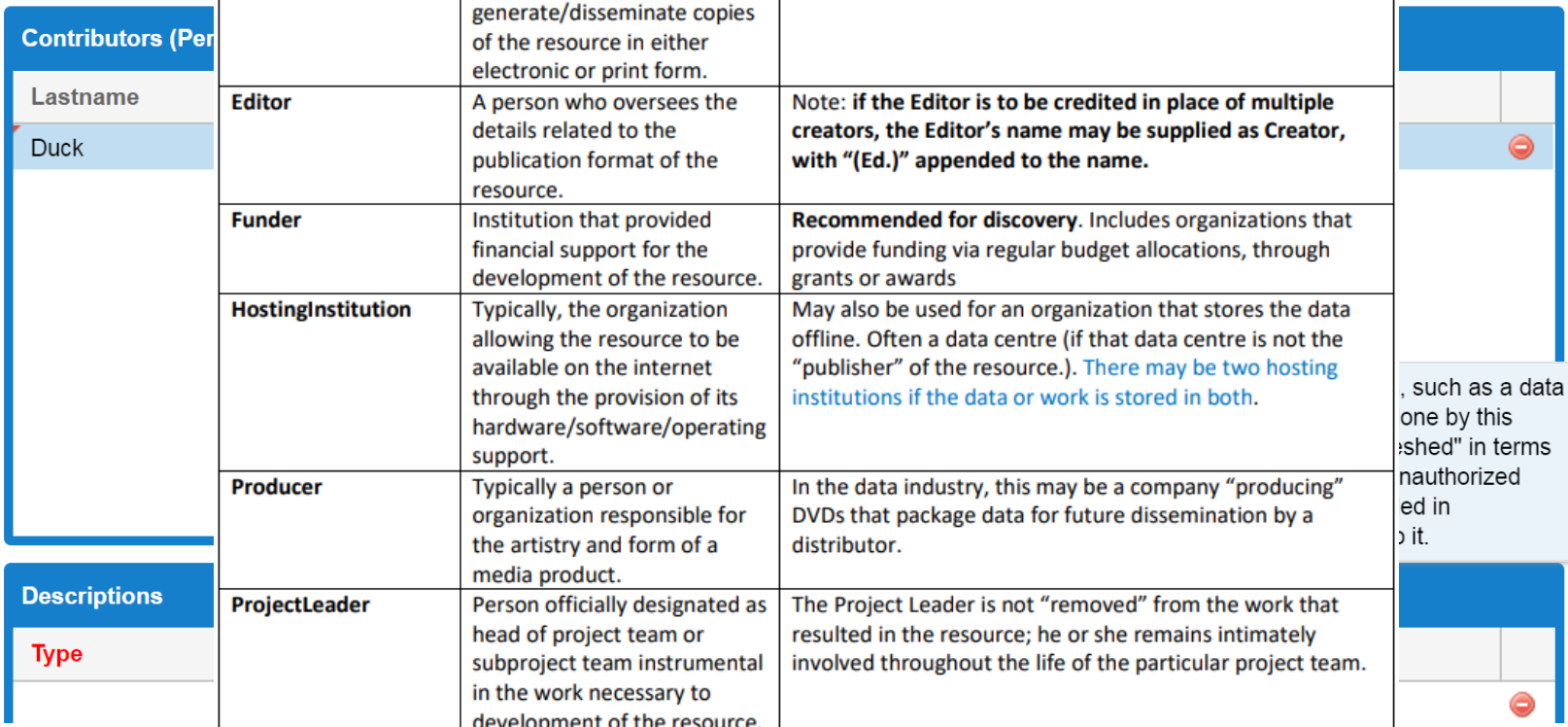

DataCurator	Person tasked with reviewing, enhancing, cleaning, or standardizing metadata and the associated data submitted for storage, use, and maintenance within a data center or repository	While the "DataManager" is concerned with digital maintenance, the DataCurators' role encompasses quality assurance focused on content and metadata. This includes checking whether the submitted dataset is complete, with all files and components as described by submitter, whether the metadata is standardized to appropriate systems and schema, whether specialized metadata is needed to add value and ensure access across disciplines, and determining how the metadata might map to search engines, database products, and automated feeds.
DataManager	Person (or organization with a staff of data managers, such as a data centre) responsible for maintaining the finished resource.	The work done by this person or organization ensures that the resource is periodically "refreshed" in terms of software/hardware support, is kept available or is protected from unauthorized access, is stored in accordance with industry standards, and is handled in accordance with the records management requirements applicable to it.
Distributor	Institution tasked with responsibility to generate/disseminate copies of the resource in either electronic or print form.	Works stored in more than one archive/repository may credit each as a distributor.
Editor	A person who oversees the details related to the publication format of the resource.	Note: **if the Editor is to be credited in place of multiple creators, the Editor's name may be supplied as Creator, with "(Ed.)" appended to the name.**
Funder	Institution that provided financial support for the development of the resource.	**Recommended for discovery**. Includes organizations that provide funding via regular budget allocations, through grants or awards
HostingInstitution	Typically, the organization allowing the resource to be available on the internet through the provision of its hardware/software/operating support.	May also be used for an organization that stores the data offline. Often a data centre (if that data centre is not the "publisher" of the resource.). There may be two hosting institutions if the data or work is stored in both.
Producer	Typically a person or organization responsible for the artistry and form of a media product.	In the data industry, this may be a company "producing" DVDs that package data for future dissemination by a distributor.
ProjectLeader	Person officially designated as head of project team or subproject team instrumental in the work necessary to development of the resource.	The Project Leader is not "removed" from the work that resulted in the resource; he or she remains intimately involved throughout the life of the particular project team.
ProjectManager	Person officially designated as manager of a project. Project may consist of one or many project teams and sub-teams.	The manager of a project normally has more administrative responsibility than actual work involvement.

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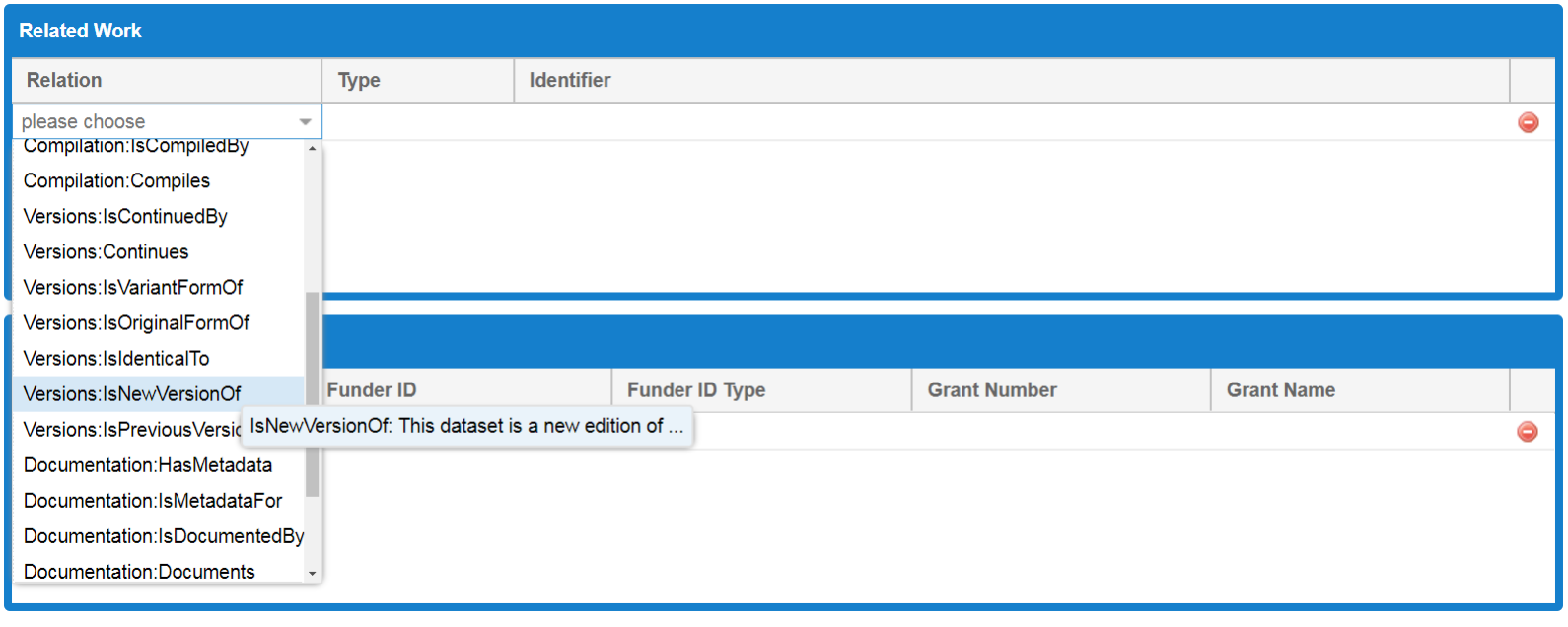
Related Work



Related Work		
Relation	**IsCitedBy**	indicates that B includes A in a citation (recommended for discovery).
Relation	**Cites**	indicates that A includes B in a citation (recommended for discovery).
Relation	**IsSupplementTo**	indicates that A is a supplement to B (recommended for discovery).
Relation	**IsSupplementedBy**	indicates that B is a supplement to A (recommended for discovery).
Relation	**IsContinuedBy**	indicates A is continued by the work B
Relation	**Continues**	indicates A is a continuation of the work B
Relation	**HasMetadata**	indicates resource A has additional metadata B
Relation	**IsMetadataFor**	indicates additional metadata A for a resource B
Relation	**IsNewVersionOf**	indicates A is a new edition of B, where the new edition has been modified or updated
Relation	**IsPreviousVersionOf**	indicates A is a previous edition of B
Relation	**IsPartOf**	indicates A is a portion of B; may be used for elements of a series (recommended for discovery).
Relation	**HasPart**	indicates A includes the part B (recommended for discovery).
Relation	**IsReferencedBy**	indicates A is used as a source of information by B
Relation	**References**	indicates B is used as a source of information for A
Relation	**IsDocumentedBy**	indicates B is documentation about/ explaining A
Relation	**Documents**	indicates A is documentation about/B
Relation	**IsCompiledBy**	indicates B is used to compile or create A
Relation	**Compiles**	indicates B is the result of a compile or creation event using A
Relation	**IsVariantFormOf**	indicates A is a variant or different form of B, e.g. calculated or calibrated form or different packaging
Relation	**IsOriginalFormOf**	indicates A is the original form of B
Relation	**IsIdenticalTo**	indicates that A is identical to B, for use when there is a need to register two separate instances of the same resource
Relation	**IsReviewedBy**	indicates that A is reviewed by B
Relation	**Reviews**	indicates that A is a review of B
Relation	**IsDerivedFrom**	indicates B is a source upon which A is based
Relation	**IsSourceOf**	indicates A is a source upon which B is based

Embargo

Dates

	Date from	Date to
Created	YYYY-MM-DD	
Embargo until		YYYY-MM-DD
Valid	YYYY-MM-DD	YYYY-MM-DD

The date the resource is made publicly available. Use this field to indicate the end of an embargo period.

Why publish research data?

How to publish?

Licences

GFZ Data Services

Wrap up

Key messages

- Publish your data
- Use a domain repository
- Provide rich metadata
- Use an „open as possible“ licence

huebner@gfz-potsdam.de

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