Why do Geodetic Data need DOIs?
First ideas of the GGOS DOI Working Group

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IUGG

Global Geodetic Observing System

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Introducing DOI

DOI = **D**igital **O**bject **I**dentifier

A globally unique and permanent identifier for digital objects (-> Link)

With metadata (machine readable, international standards)

Persistent = long term data access guaranteed by the publisher

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2000 **First DOI for online articles** (implemented by Crossref)

2004 **First DOIs for data minted** (DKRZ, GFZ, Pangaea)

2007 **Foundation of DataCite** (DOI registration agency for data, software and „grey“ literature)

2020 **>250 Mio DOIs worldwide 18,645,118 DataCite DOIs** minted (4 May 2020)

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Benefits of (Dataset) DOIs

DOI-referenced datasets…

- are **directly accessible** via the DOI link (https://doi.org/10.prefix/suffix);
- link to the exact data used for research results → reproducible research results;
- machine-readable DOI metadata is exchangeable → **data discovery via catalogues;** DataCite EPOS Google Dataset Search
- are citable in scholarly literature → **tracking → credit for researchers and institutions.**

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Data Citation in Articles


Hydrology and Earth System Sciences https://doi.org/10.5194/hess-21-3167-2017

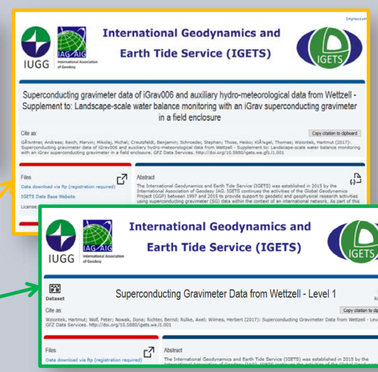
An interactive open-access journal of the European Geosciences Union

Landscape-scale water balance monitoring with an iGrav superconducting gravimeter in a field enclosure

Andreas Güntner[1,4], Marvin Reich[1], Michal Mikolaj[1], Benjamin Creutzfeldt[2], Stephan Schroeder[1], and Hartmut Wziontek[3]

Günther, A., Reich, M., Mikolaj, M., Creutzfeldt, B., Schroeder, S., Thoss, H., Klügel, T., and Wziontek, H.: Superconducting gravimeter data of iGrav006 and auxiliary hydro-meteorological data from Wettzell – Supplement to: Landscape-scale water balance monitoring with an iGrav superconducting gravimeter in a field enclosure, https://doi.org/10.5880/igets.we.gfz.l1.001, 2017.

Wziontek, H., Wolf, P., Nowak, I., Richter, B., Rülke, A., and Wilmes, H.: Superconducting gravimeter data from Wettzell – Level 1, https://doi.org/10.5880/igets.we.l1.001, 2017.



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GGOS Working Group on DOIs for Geodetic Datasets

GGOS DOI WG (21 members)

Yehuda Bock, Nacho Romero, Pierre Fridez, David Phillips, Yusuke Yokota, Carine Bruyninx, Daniela Thaller, Glenda Coetzer, Detlef Angermann, Mirko Reguzzoni, Laurent Soudarin, Roelf Botha, Christian Schwatke, Carey Noll, Sylvain Bonvalot, Elmas Sinem Ince, Daniela Carrion, Vicente Navarro, Kirsten Elger (chair), Jim Riley, Mathis Bloßfeld

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Tasks:

1. the need to identify what the **community needs** from consistent usage of DOIs for data in terms of being able to **discover** data, permanently **cite** data, and **acknowledge** the data providers;
2. the need to formulate a **strategy for assigning DOIs** to data in the face of the opportunities and risks for doing this; and
3. the need to **identify our goals** for implementing DOIs for geodetic datasets such as having a **consistent method for data citation** across all IAG Services, to **support data providers**, and to provide quantitative support detailing the use of geodetic datasets and other resources.

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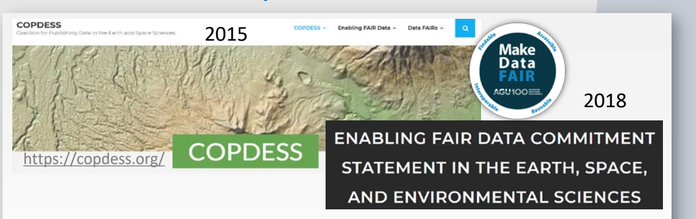
Recent Agreements Between Publishers, Repositories and Funders



- **Data availability statement** required for articles
- **Citation of data in reference lists** allowed by journals
- Recommendation to use **domain repositories**
- **No data supplements** anymore (→ data publication via repositories)

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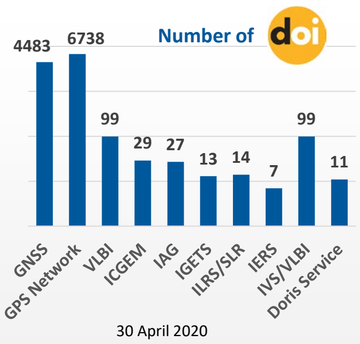
DataCite Search for IAG-related Terms



- DOIs for **GNSS** data: many troposphere products, GNSS stations, networks
- **GPS networks**: mostly UNAVCO, campaign data (static), but also some dynamic cGPS networks (IPOC, RING, GFZ)
- **ICGEM**: static and dynamic models
- **IGETS**: growing time series
- **Σ = many supplements to papers, but also observatory data, static and dynamic data**

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Ongoing WG discussion:

- **Identification of data products and DOI minting strategies for geodetic data:** static, dynamic, observational data, reprocessing products, networks, satellite data, ….
- Discussion on **data licences**
- **Granulariy of DOIs** (for stations? Networks? Ongoing time series?)
- **Discovery Metadata standards**: DataCite, ISO19115?
- **Community metadata standards** IGS Station Logs, GeodesyML, more?
- **Data formats**: mostly community standards (RINEX, ICGEM/ISG formats, etc.).
- Learning from other communities (**DOI for seismic networks**).

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"…if you are planning to make your data available you should put a license on it"

"Open data and content can be freely used, modified, and shared by anyone for any purpose"

http://opendefinition.org/guide/data/

Creative Commons Licences

international, machine-readable, simple to use.

CC BY · CC BY NC · PUBLIC DOMAIN

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Learning from other communities

Why Seismic Networks Need Digital Object Identifiers http://doi.org/10.1029/2015EO036971

We hope that assigning seismic data networks a universal and easily cited digital identity will help bring data providers the recognition they deserve.

182 DOIs for seismic networks (May 2020)
Standardised metadata: FDSN Recommendations for seismic network DOIs (https://doi.org/10.7914/d11596)

FDSN **DOI for Seismic Networks**

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