Open Data, Data Publiation and Citation

Kirsten Elger

GFZ Data Services,
GFZ German Research Centre for Geosciences, Potsdam

kelger@gfz-potsdam.de

Outline

- Why sharing data?
- Best practice: Data Publications
- Metadata
- GFZ Metadata Editor
- Formats for Data Publications
- Citation and Discovery
- Dynamic Data and DOI Versioning
- PID for physical samples: IGSN

Why sharing data?

Sharing research data…

- encourages **scientific enquiry and** debate
- promotes innovation and **potential new data uses**
- leads to **new collaborations** between data users and data creators
- maximises **transparency** and accountability
- enables **scrutiny** of research findings
- encourages the improvement and **validation** of research methods
- **reduces the cost** of duplicating data collection
- increases the **impact** and **visibility** of research
- provides **credit** to the researcher as a research output in its own right
- provides great resources for education and training

(source: UK Data Archive, http://www.data-archive.ac.uk/create-manage/planning-for-sharing/why-share-data

OPEN ACCESS Freely available online

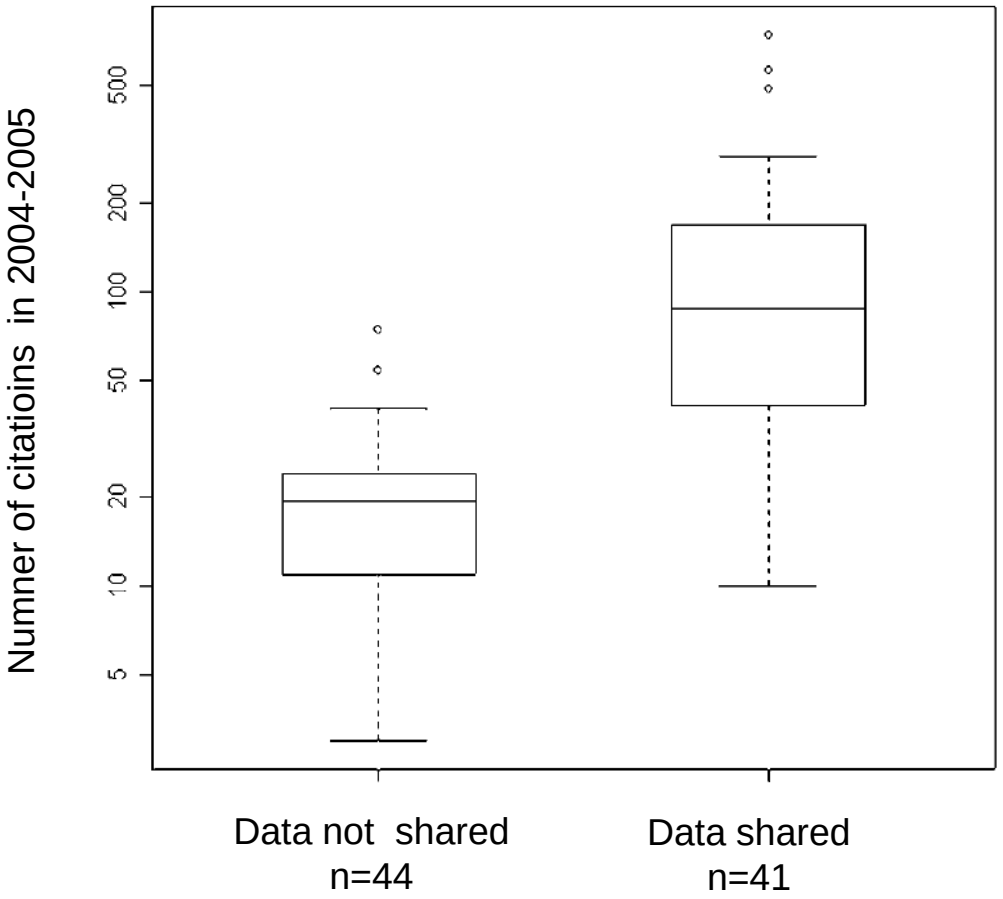
PLoS one

Sharing Detailed Research Data Is Associated with Increased Citation Rate

Heather A. Piwowar*, Roger S. Day, Douglas B. Fridsma

Department of Biomedical Informatics, University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania, United States of America

"We examined the citation history of 85 cancer microarray clinical trial publications with respect to the availability of their data. The 48% of trials with publicly available microarray data received 85% of the aggregate citations. ***Publicly available data was*** *significantly (p = 0.006)* ***associated with a 69% increase in citations, independently of journal impact factor, date of publication, and author country of origin*** *using linear regression."*



doi:10.1371/journal.pone.0000308

Open Research Data – an international request

G8 UK
UNITED KINGDOM 2013

G8 OPEN DATA CHARTER

H2020 Programme

Guidelines on

FAIR Data Management in Horizon 2020

Government of Canada | Gouvernement du Canada

Jobs | Immigration | Travel | Business | Benefits | He

Home → Open Government → About Open Government → G8 Open Data Charter – Canada's Action Plan

G8 Open Data Charter – Canada's Action Plan

National Science Foundation
WHERE DISCOVERIES BEGIN

HOME | Research Areas | Funding | Awards

National Science Foundation (NSF)

About

Home

Open Data at NSF

G7 Science and Technology Ministers' Meeting in Tsukuba, Ibaraki

G7 2016 ISE-SHIMA SUMMIT

DFG Deutsche Forschungsgemeinschaft Handling of Research Data

Tsukuba Communiqué

G7 Science and Technology Ministers' Meeting in Tsukuba, Ibaraki

15-17 May 2016

……and many more

Things to keep in mind when sharing data

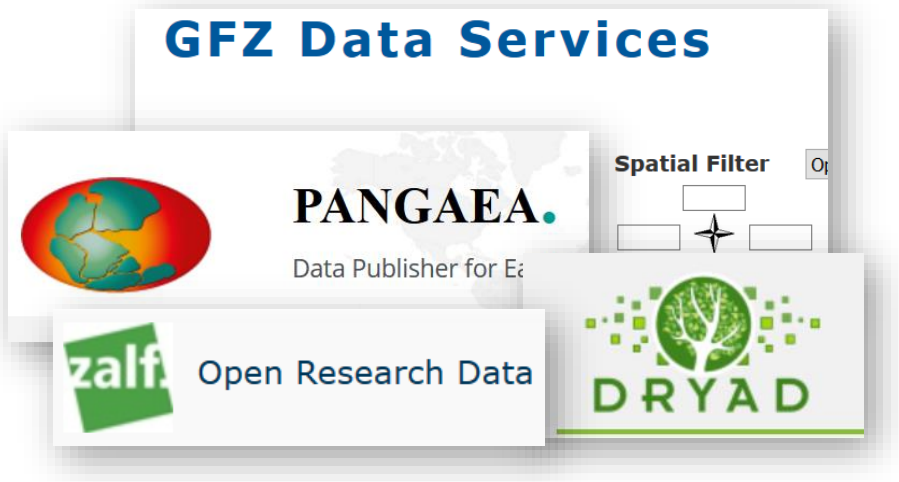
A Painful (but True-to-life) Look at Data Availability and Reuse

https://scholarlykitchen.sspnet.org/2016/11/11/a-painful-but-true-to-life-look-at-data-availability-and-reuse/

Best Practice: Data Publication

Publication of datasets as individual publications (with assigned persistent Identifier; DOI) **through data repositories**

re3data.org
REGISTRY OF RESEARCH DATA REPOSITORIES



Data Repositories:

- permanent archives for research data
- Open Access
- disciplinary, institutional, general
- persistent identifier (ideally DOI)
- re3data.org helps to find repositories

Best Practice: Data Publication

Publication of datasets as individual publications (with assigned persistent Identifier; DOI) **through data repositories**

- **Findable:** integration of standardised metadata in external data portals (e.g. DataCite, EUDAT)
- **Accessible:** persistent data storage and access guaranteed by the publisher (= data repository)
- **Documented:** with metadata for discovery and reuse
- **Citable**: DOI-referenced datasets are citable just as journal articles (→ credit for the researcher)

Coalition on Publishing Data in the Earth and Space Sciences

COPDESS

GOAL

OPEN DATA in the EARTH and SPACE SCIENCES

SITUATION TODAY

1. Scholarly publication is a key high value entry point in making data available, open, discoverable, and usable.
2. Unfortunately, the vast majority of data submitted along with publications are in formats and forms of storage that makes discovery and reuse difficult or impossible.

STATEMENT OF COMMITMENT

42 SIGNATURES (October 2016)

COPDESS

www.copdess.org/statementofcommitment

Coalition on Publishing Data in the Earth and Space Sciences

COPDESS

GOAL

OPEN DATA in the EARTH and SPACE SCIENCES

SITUATION TODAY

1. Scholarly publication is a key high value entry point in making data available, open, discoverable, and usable.
2. Unfortunately, the vast majority of data submitted along with publications are in formats and forms of storage that makes discovery and reuse difficult or impossible.

STATEMENT OF COMMITMENT

- To promote **metadata information and domain standards**, [...], to help **simplify and standardize deposition and reuse.**
- To promote referencing of data sets using the **Joint Declaration of Data Citation Principles,** in which **citations of data sets should be included within reference lists.**
- To include in research papers concise statements indicating where data reside and **clarifying availability.**
- To promote and **implement links to data sets in publications** and corresponding links to journals in data facilities via persistent identifiers.

(January 2015)

New Journal Policies 2016

SPRINGER NATURE

RESEARCH DATA POLICY:

"The journal encourages authors, where possible and applicable, to deposit data that support the findings of their research in a public repository […] Datasets that are assigned digital object identifiers (DOIs) by a data repository may be cited in the reference list."

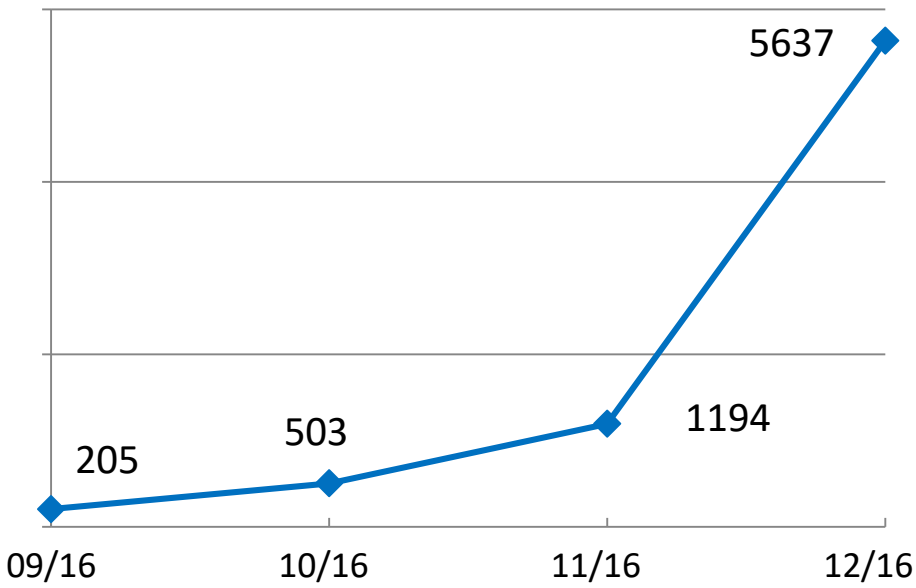
Copernicus Publications recommends depositing data that correspond to journal articles in reliable (public) data repositories, assigning digital object identifiers, and properly citing data sets as individual contributions.

Tracking Data Publications

DataCite Statistics

Datacentre	DOI Registrations				Metadata			
	Total	This Year	Last 30 Days	Last 7 Days	Searchable	Hidden	Missing	Ratio
TIB.ADLNET - Romania ADL Association	1 193	0	0	0	998	195	0	100%
TIB.AIP - Leibniz-Institut für Astrophysik Potsdam (AIP)	85 288	0	0	0	85 288	0	0	100%
TIB.AMA - AMA Service GmbH	1 893	0	0	0	1 889	4	0	100%
TIB.ASTONE - Institut für Wirtschaftsinformatik, Westfälische Wilhelms-Universität Münster	213	0	0	0	213	0	0	100%
TIB.AWI - Alfred-Wegener-Institut								
TIB.BAFG - Bundesanstalt für Gewässerkunde								
TIB.BAUA-DOI - Bundesanstalt für Arbeitsschutz und Arbeitsmedizin (BAuA)								
TIB.BAW - Bundesanstalt für Wasserbau								
TIB.BEILST - Beilstein-Institut zur Förderung der Chemischen Wissenschaften								
TIB.BIKF - Biodiversity and Climate Research Centre								
TIB.CASIMIR - Stiftung Schloss Friedenstein, Gotha								
TIB.CTT - Cellular Therapy and Transplantation								
TIB.DAGST - Dagstuhl								
TIB.DESY - DESY - Deutsches Elektronen-Synchrotron								

DOI hits for GFZ Datasets of the World Stress Map



What do I need for a data publication/ What is important when I want to share my data?

1. Data
2. Metadata

Metadata and Metadata

1. Structural metadata (disciplinary data description)

Header of sensor data

```
ENVI
description = {
  Create New File Result [Tue Jan 05 17:34:54 2016]}
samples = 70
lines   = 393
bands   = 1
header offset = 0
file type = ENVI Classification
data type = 1
interleave = bsq
sensor type = Unknown
classes = 62
class lookup = {
   0,   0,   0,  20,  75,   0,  40, 105,  10, 113, 160,
 188, 185, 115, 220, 185, 255, 205,  25, 255, 165,  20,
 225,  25,   0, 225,  25,   0, 225,  25,   0, 250, 150,
 250, 150,   0, 250, 150,   0, 230, 120,   0, 230, 120,
  25,  85, 245,  40, 145, 255,  40, 145, 255,  40, 145, 2
  40, 145, 255,  40, 145, 255, 130, 210, 255, 130, 210, 2
 250, 160, 185, 255, 195, 195, 255, 195, 195, 145,  25,
 218, 112, 214, 218, 112, 214, 218, 112, 214,  30,  30, 18
 255, 210,   0, 160, 215,  50, 160, 215,  50, 160, 215,  5
 176, 131, 255, 100,  40, 180, 255, 255,  75, 255, 255,  7
 225, 205, 170, 225, 205, 170, 147, 115,  48, 147, 115,  48
 147, 115,  48,  80,   0, 115,  80,   0, 115, 180, 180, 180
 180, 180, 180,  60,  60,  60}
class names = {
 Not_Classified, calcite_abundant, calcite, calcite.7+muscov
 calcite.8+montmorillonite_Ca.2, calcite.8+montmorillonite_N
 carbonate_Fe_bearing, dolomite, dolomite.5+montmorillonite_
 dolomite.25+calcite.25+mont_Na.5, epidote, chlorite_lowFe,
 chlorite+muscovite, muscovite_lowAl, muscovite_medAl, muscov
 muscovite_Fe-rich, illite, illite_gds4, kaolinite_wxl, kaolinite_pxl,
```

ReadMe

ds_000011593_mn_ReadMe - Editor

Datei Bearbeiten Format Ansicht ?

AVERTISSEMENT / WARNING

Même si des efforts sont déployés pour assurer la qualité des données et des métadonnées, nous ne pouvons garant

Although efforts are made to ensure the quality of the data and metadata, we cannot guarantee that they contain

AUTEUR(S) / AUTHOR(S)

Centre d'études nordiques

RÉSUMÉ / SUMMARY

Les données de ce numéro de Nordica

The datasets in this issue of Nord

CITATION DES DONNÉES / DATA CITAT

CEN 2014. Données environnementa

CEN 2014. Environmental data fr

SITE(S)

Nom / Name

Ellesmere Parks Canada (ELL

DESCRIPTION

SITE: Ellesmere Parks Ca
Profondeurs des / tempéra

MESURE(S) / MEASUREMENT(

TYPE: Température moye

d'Ellesmere au Nunavut, Canada. On y

ere Island, Nunav

Definition of data labels

Metadata of the Data Tables

Sites

	Column Name	Data Type	Description	Validation Text	Unit
1	EXPEDITION	Numeric	expedition number	integer value	#
2	SITE	Numeric	site number	integer value	#
3	NAME	Text	site name or locality	text string of max. 40 characters	#
4	PLATFORM	Text	platform identifier, C=Chikyu, J=Joides, M=Mission Specific, R=Drill Rig	text string of max. 1 character	#
5	LATITUDE_DEG	Integer	decimal degrees of site latitude (latitude of hole 'A')	integer value between 0 and 90	deg.
6	LATITUDE_MIN	Double	decimal minutes of site latitude (latitude of hole 'A')	real value	min.
7	LATITUDE_DIR	Text	direction latitude	text string of max. 1 character	#
8	LONGITUDE_DEG	Integer	decimal degrees of site longitude (longitude of hole 'A')	integer value between 0 and 180	deg.
9	LONGITUDE_MIN	Double	decimal minutes of site longitude	real value	min.
10	LONGITUDE_DIR	Text	direction site longitude	text string of max. 1 character	m
11	DATE_START	Date	date of site start	date in UTC	dd-mmm-yyyy
12	DATE_END	Date	date of site end	date in UTC	dd-mmm-yyyy

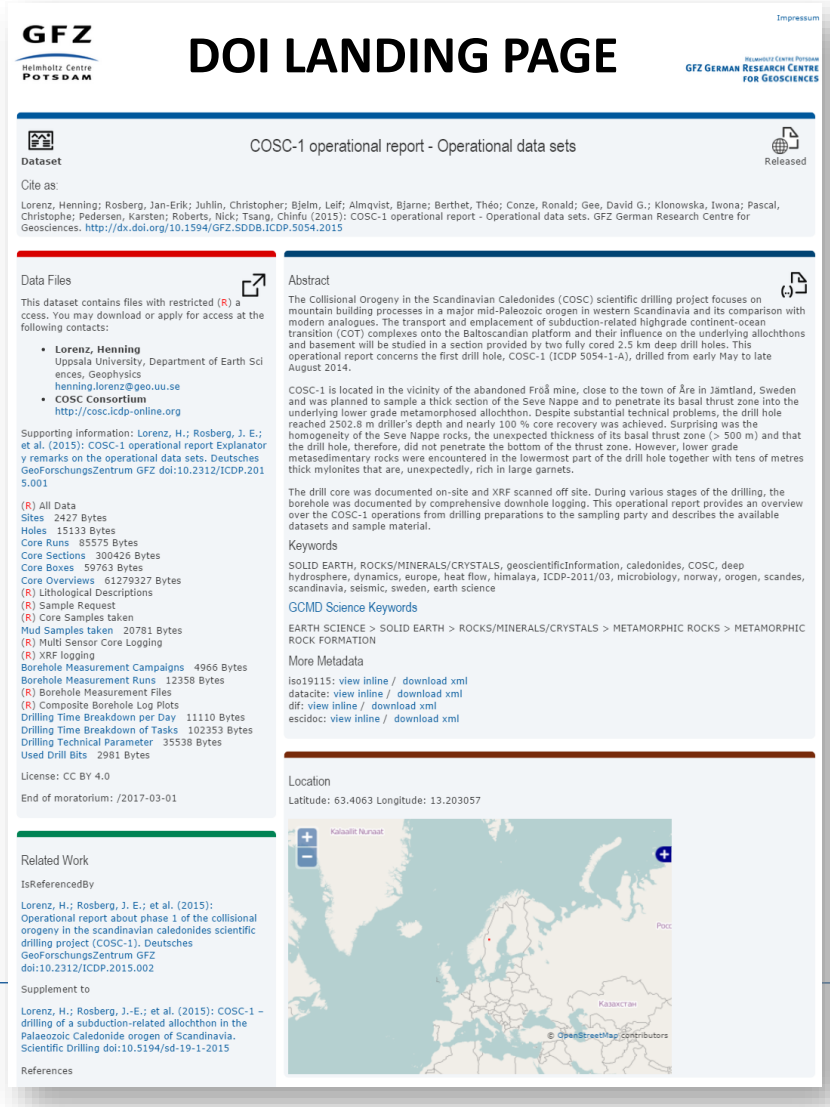
Metadata and Metadata

2. Metadata for data discovery: human readable form

title
citation

download
data files

related
work



Who did **what**, **when** **where** and **why**?

description/
abstract

Keywords

spatial
coverage

Metadata and Metadata

2. Metadata for data discovery: machine-readable form

title
citation

download
data files

related
work

Standardised metadata:
machine to machine communication

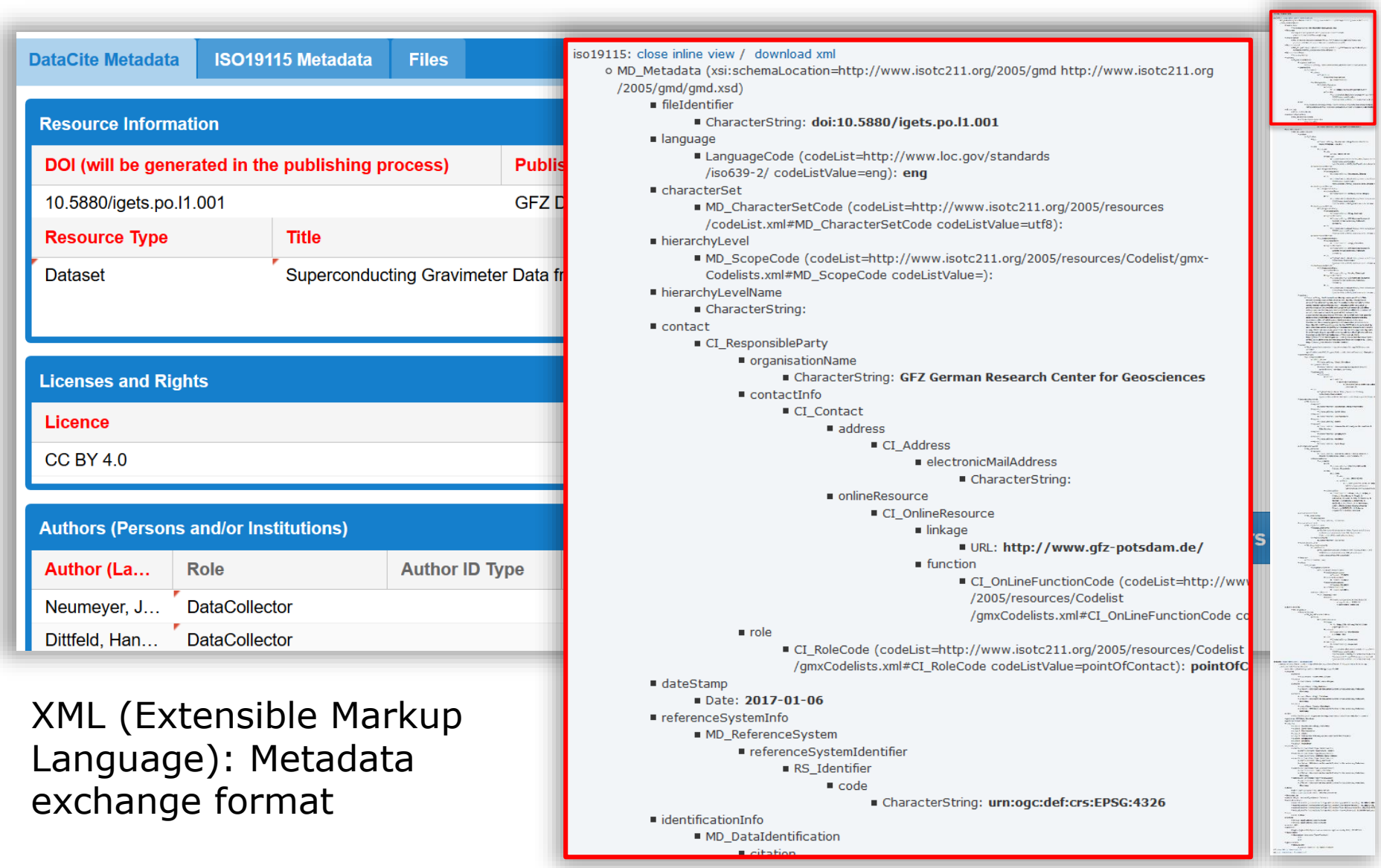
XML
(Extensible Markup Language)
Metadata exchange format

Replay: What do I need for a data publication?

1. Research data
2. Structural/ contextual metadata for data documentation and re-use
3. Metadata for data discovery (standardised, readable for for humans and for machines)

→ **Digital object identifier (DOI)**

Challenges for Metadata Generation : Translation between Scientists and Computers



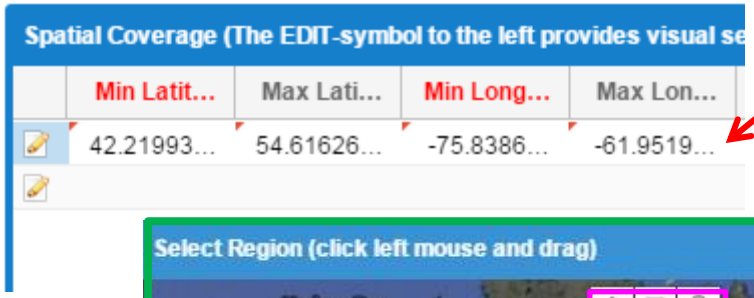
XML (Extensible Markup Language): Metadata exchange format

GFZ Metadata Editor

DataCite Metadata Schema 3.1 (→ 4.0): mandatory + recommended for discovery fields, optional as appropriate

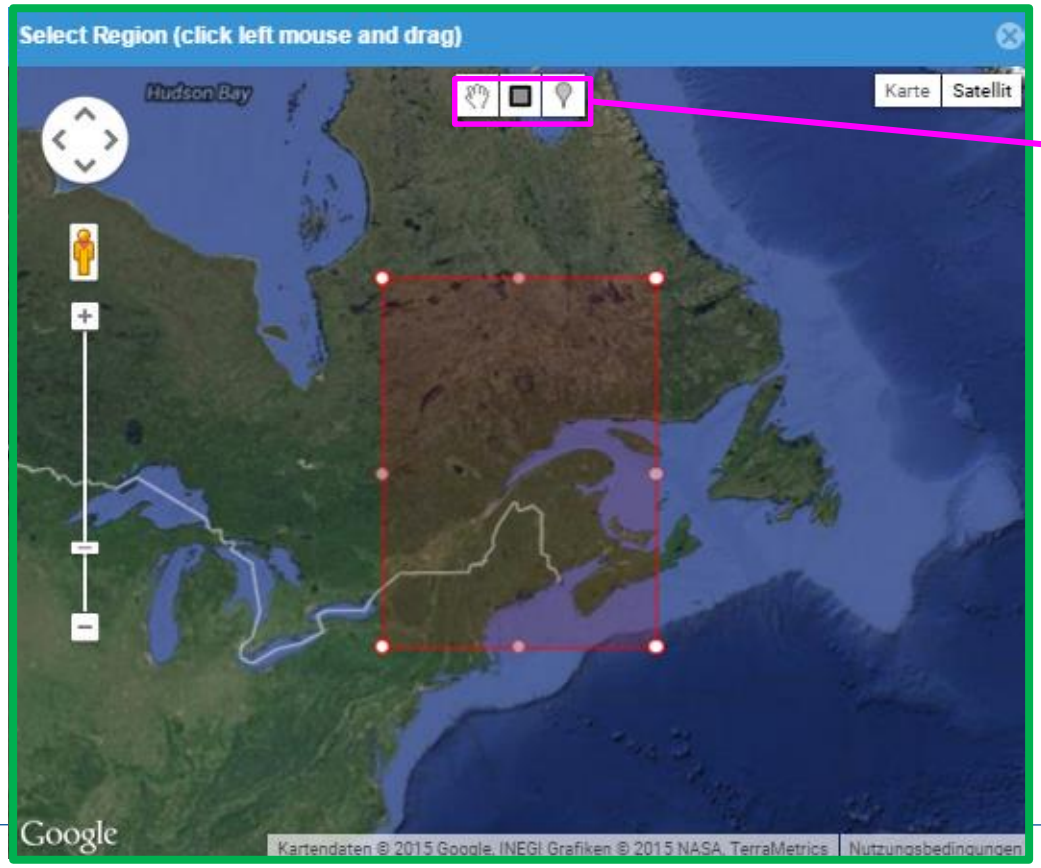
- **Ressource Information**: DOI, publisher, title, version, publication year, language, ressource type (dataset, text, software,…)
- **Licences and rights**: CC and Open Source Software licence
- **People/Institutions involved:** authors (creators), point of contact, contributors
- Description (abstract, methods, other)
- **Keywords**: thesaurus and free keywords (NASA GCMD Science Keywords)
- **Spatial and temporal domain** (interactive map)

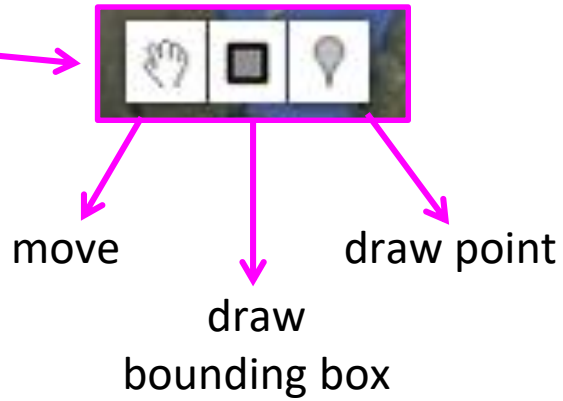
Spatial Domain – visual control via map



Enter coordinates manually (decimal degree with at least 4 decimal digits, DD.dddd)

or **Select from map**





Manual changes of coordinates are immediately displayed in the bounding box and vice versa

GFZ Metadata Editor

DataCite Metadata Schema 3.1 (→ 4.0): mandatory + recommended for discovery fields, optional as appropriate

- **Ressource Information**: DOI, publisher, title, version, publication year, language, ressource type (dataset, text, software,…)
- **Licences and rights**: CC and Open Source Software licence
- **People/Institutions involved:** authors (creators), point of contact, contributors
- Description (abstract, methods, other)
- **Keywords**: thesaurus and free keywords (NASA GCMD Science Keywords)
- **Spatial and temporal domain** (interactive map)
- **Dates**: created, embargoed until, valid….

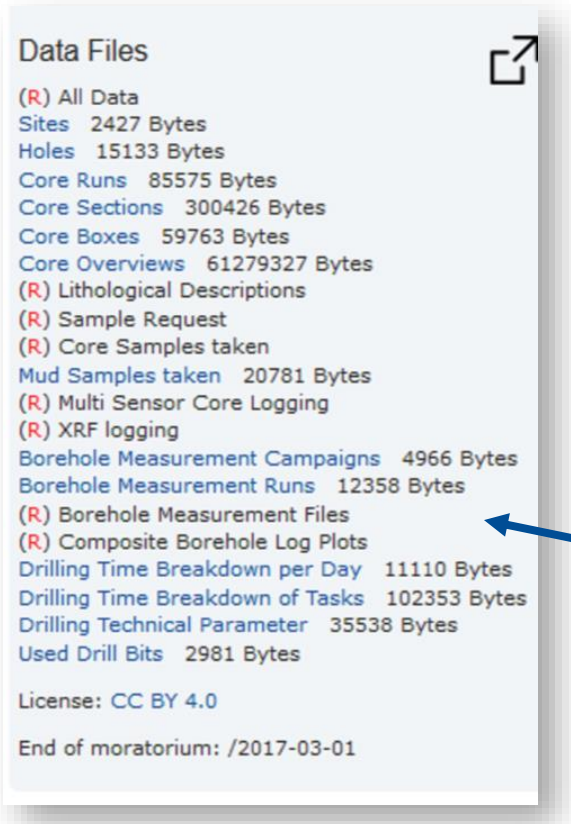
Embargo period

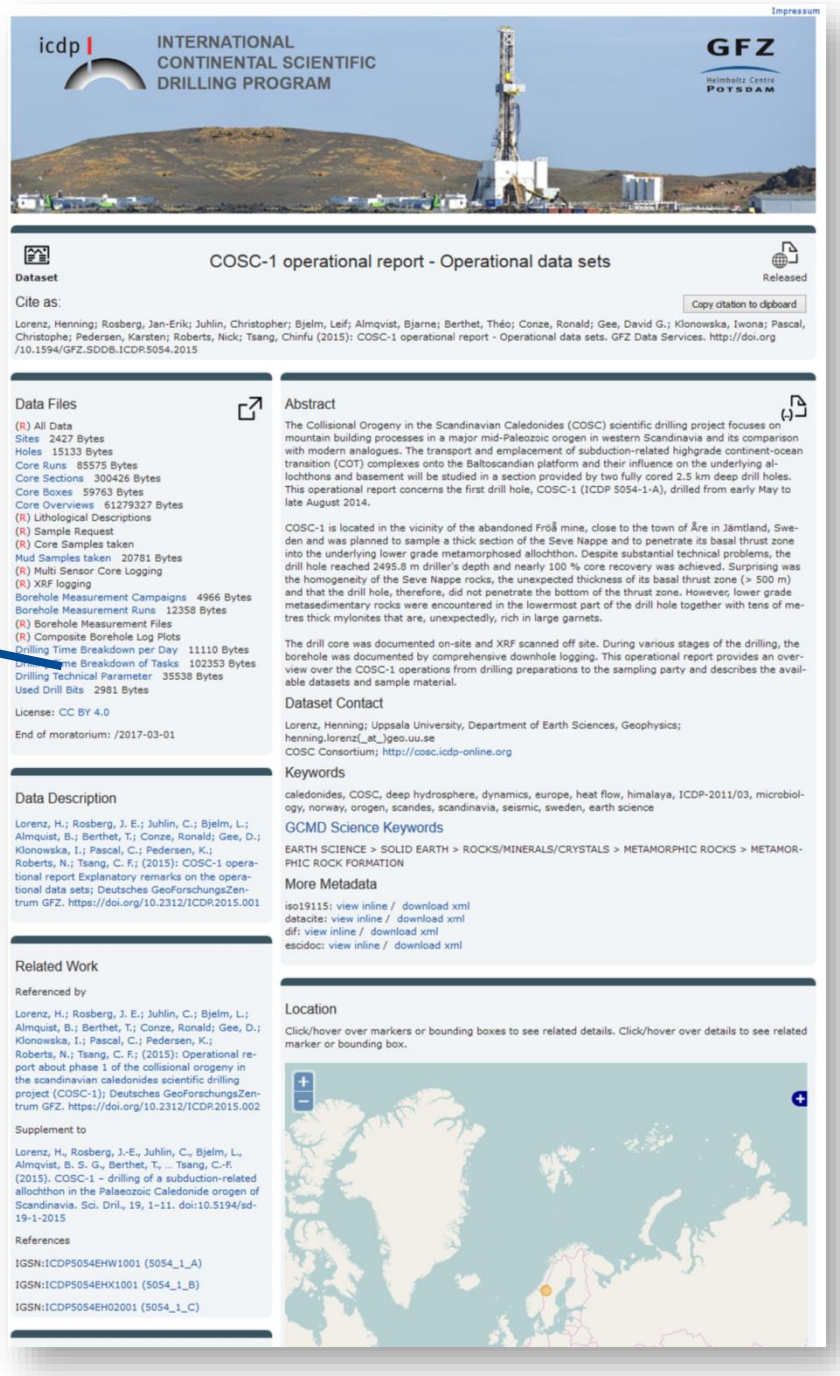
(R) Restricted

….until:

Embargo Period:

- Data discovery and citation possible
- Data access restricted during
- Free data access after





GFZ Metadata Editor

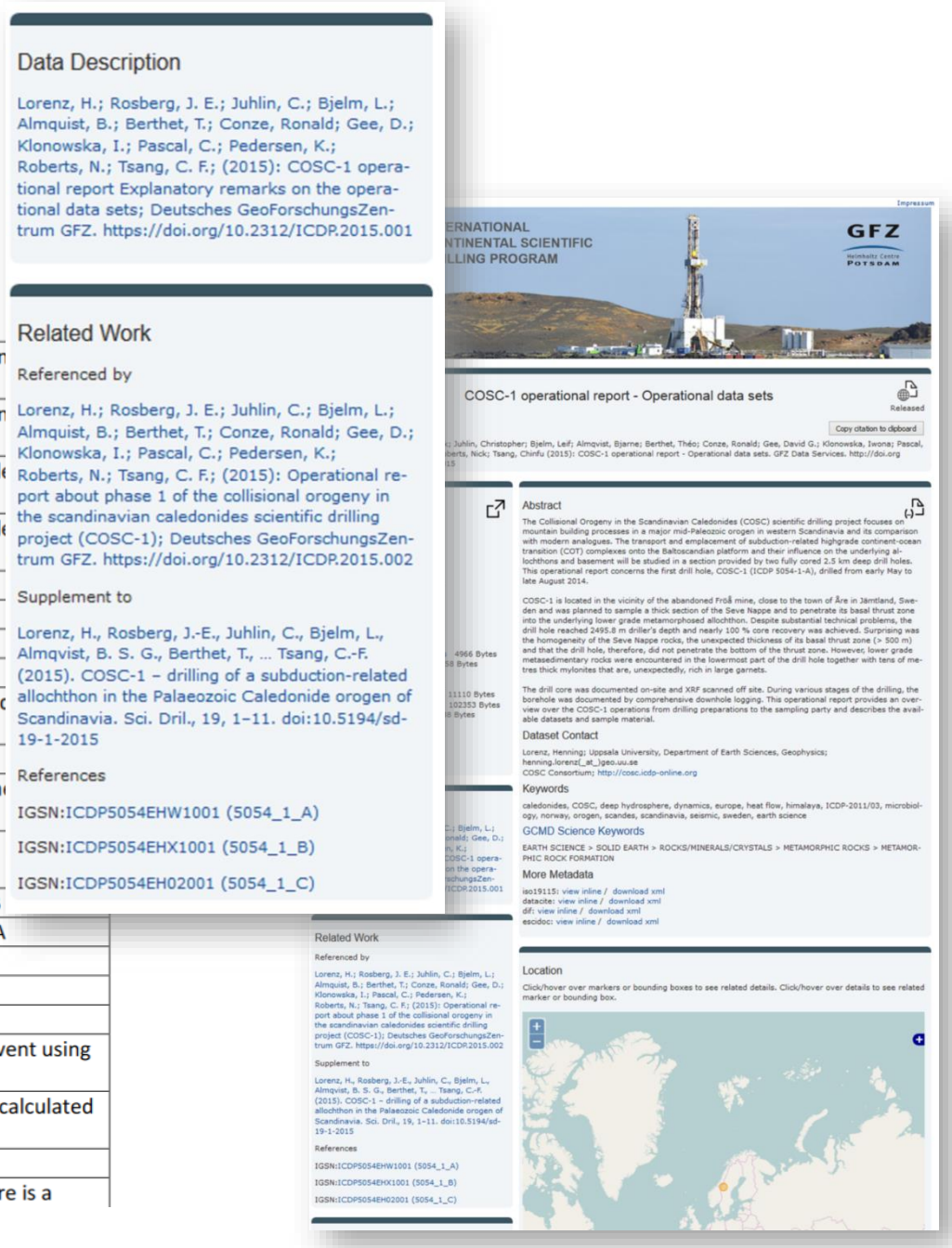
DataCite Metadata Schema 3.1 (→ 4.0): mandatory + recommended for discovery fields, optional as appropriate

- **Ressource Information**: DOI, publisher, title, version, publication year, language, ressource type (dataset, text, software,…)
- **Licences and rights**: CC and Open Source Software licence
- **People/Institutions involved:** authors (creators), point of contact, contributors
- Description (abstract, methods, other)
- **Keywords**: thesaurus and free keywords (NASA GCMD Science Keywords)
- **Spatial and temporal domain** (interactive map)
- **Dates**: created, embargoed until, valid….
- **Related references**: links to papers, datasets, samples

Cross-references

DataCite relatedIdentifier

IsCitedBy	indicates that B includes A in a citation (recommen discovery).
Cites	indicates that A includes B in a citation (recommen discovery).
IsSupplementTo	indicates that A is a supplement to B (recommende discovery).
IsSupplementedBy	indicates that B is a supplement to A (recommende discovery).
IsContinuedBy	indicates A is continued by the work B
Continues	indicates A is a continuation of the work B
HasMetadata	indicates resource A has additional metadata B
IsMetadataFor	indicates additional metadata A for a resource B
IsNewVersionOf	indicates A is a new edition of B, where the new ed been modified or updated
IsPreviousVersionOf	indicates A is a previous edition of B
IsPartOf	indicates A is a portion of B; may be used for elem series (recommended for discovery).
HasPart	indicates A includes the part B (recommended for discovery).
IsReferencedBy	indicates A is used as a source of information by B
References	indicates B is used as a source of information for A
IsDocumentedBy	indicates B is documentation about/ explaining A
Documents	indicates A is documentation about/B
IsCompiledBy	indicates B is used to compile or create A
Compiles	indicates B is the result of a compile or creation event using A
IsVariantFormOf	indicates A is a variant or different form of B, e.g. calculated or calibrated form or different packaging
IsOriginalFormOf	indicates A is the original form of B
IsIdenticalTo	indicates that A is identical to B, for use when there is a



Data Description

Lorenz, H.; Rosberg, J. E.; Juhlin, C.; Bjelm, L.; Almquist, B.; Berthet, T.; Conze, Ronald; Gee, D.; Klonowska, I.; Pascal, C.; Pedersen, K.; Roberts, N.; Tsang, C. F.; (2015): COSC-1 operational report Explanatory remarks on the operational data sets; Deutsches GeoForschungsZentrum GFZ. https://doi.org/10.2312/ICDP.2015.001

Related Work

Referenced by

Lorenz, H.; Rosberg, J. E.; Juhlin, C.; Bjelm, L.; Almquist, B.; Berthet, T.; Conze, Ronald; Gee, D.; Klonowska, I.; Pascal, C.; Pedersen, K.; Roberts, N.; Tsang, C. F.; (2015): Operational report about phase 1 of the collisional orogeny in the scandinavian caledonides scientific drilling project (COSC-1); Deutsches GeoForschungsZentrum GFZ. https://doi.org/10.2312/ICDP.2015.002

Supplement to

Lorenz, H., Rosberg, J.-E., Juhlin, C., Bjelm, L., Almqvist, B. S. G., Berthet, T., ... Tsang, C.-F. (2015). COSC-1 – drilling of a subduction-related allochthon in the Palaeozoic Caledonide orogen of Scandinavia. Sci. Dril., 19, 1–11. doi:10.5194/sd-19-1-2015

References

IGSN:ICDP5054EHW1001 (5054_1_A)

IGSN:ICDP5054EHX1001 (5054_1_B)

IGSN:ICDP5054EH02001 (5054_1_C)

COSC-1 operational report - Operational data sets

Abstract

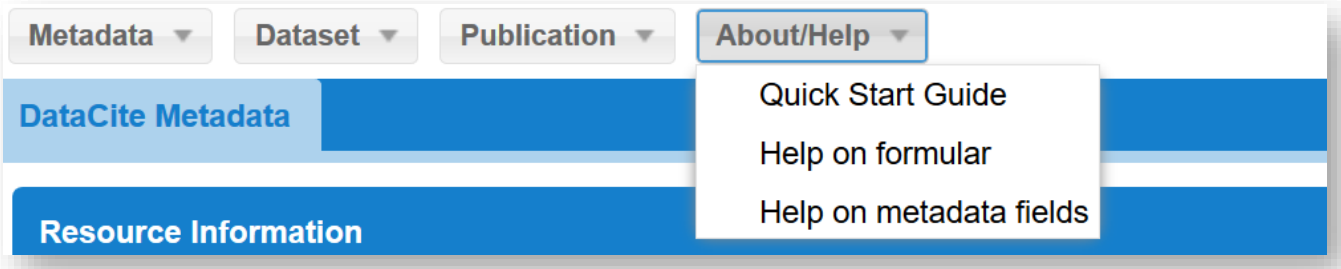
Dataset Contact

Keywords

GCMD Science Keywords

More Metadata

Location



Quick Start Guide for publishing data through GFZ Data Services

1. Please describe your data via the GFZ Metadata Editor (http://pmd.gfz-potsdam.de/panmetaworks/metaedit/).

Documentation

GFZ Metadata Editor

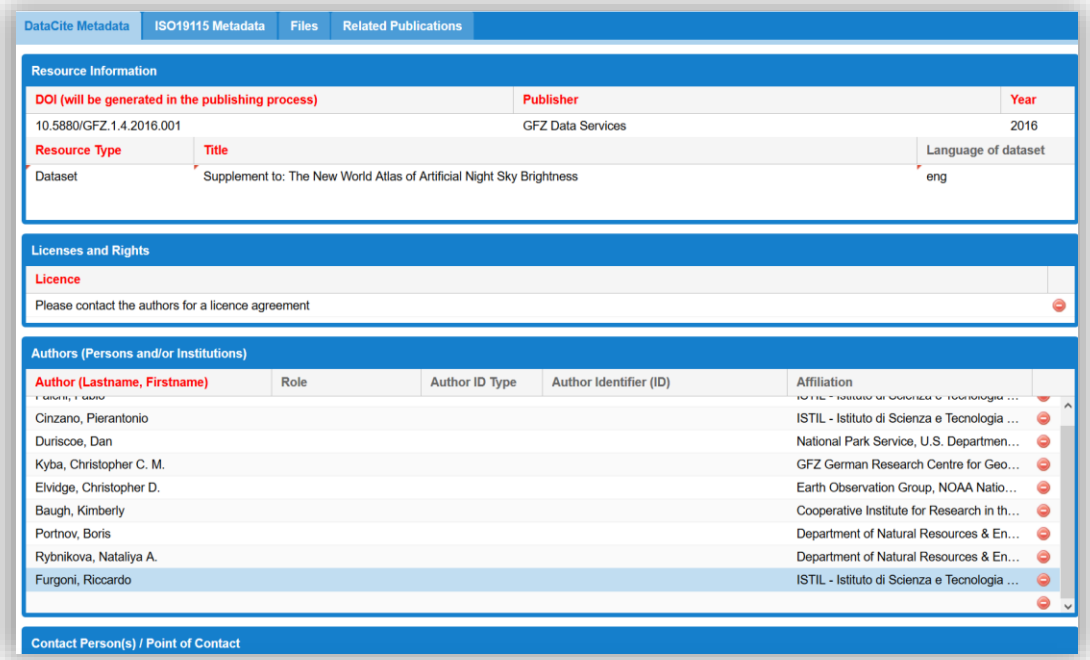
How to navigate through the form

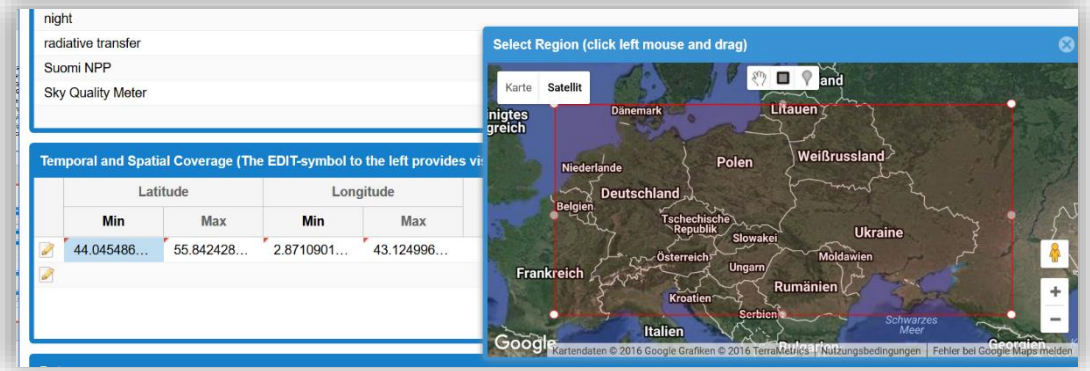
Explanation for Metadata Fields used by GFZ Data Services

(modified after DataCite Metadata Schema for the Publication and Citation of Research Data, Version 3.1 October 2014, doi:10.5438/0010)

For comments and questions please contact Kirsten Elger (kelger@gfz-potsdam.de)

GFZ Metadata Editor





Output:
Standardised XML files:
Datacite, ISO 19115,
NASA GCMD DIF,
Dublin Core Standards

DataCite
FIND, ACCESS, AND REUSE DATA

GFZ Data Services
Metadata Catalogue

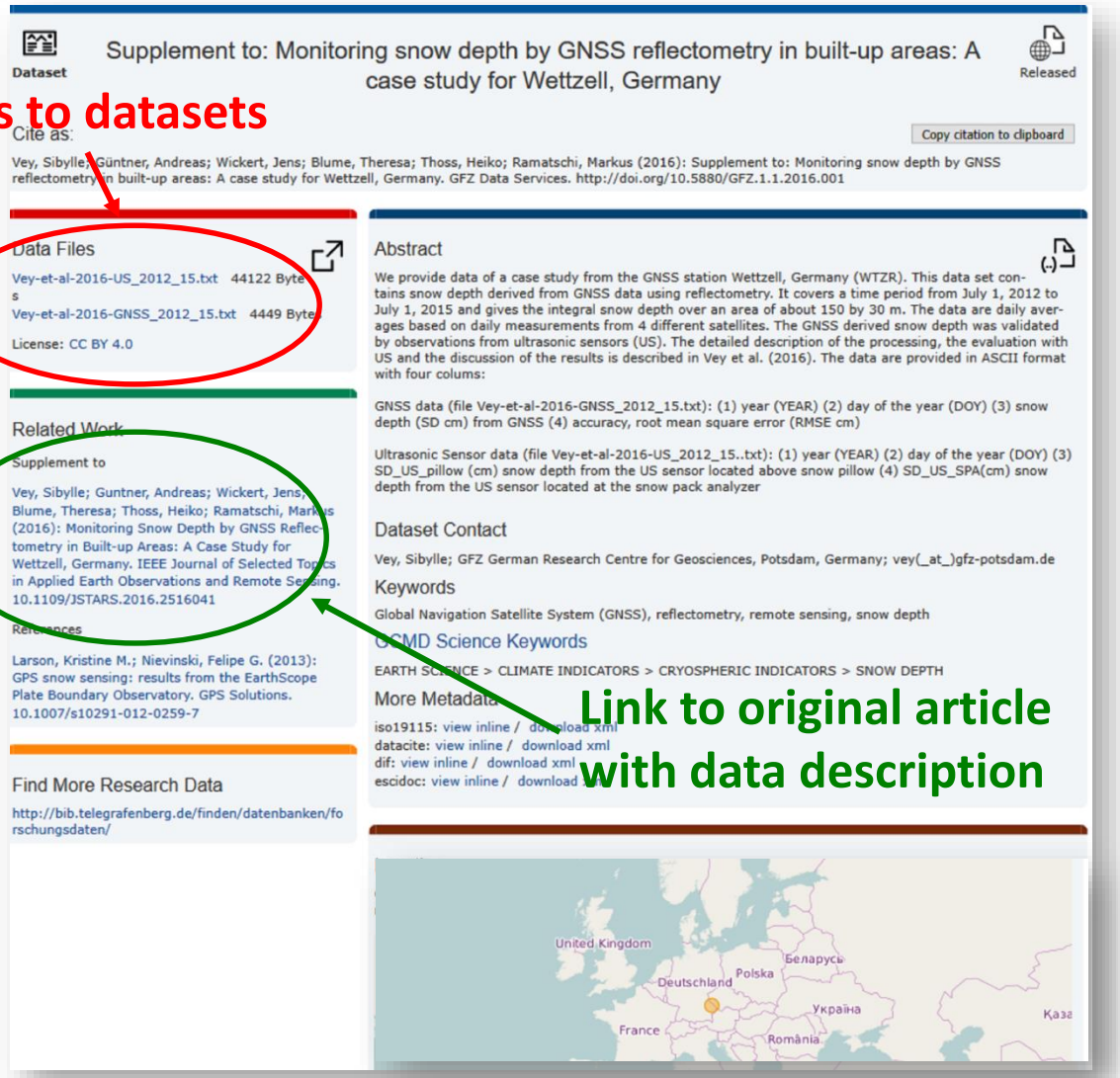
EPOS, B2FIND.
ENVRIplus, D-GEO

Access via: http://dataservices.gfz-potsdam.de/portal/about.html „Publishing step by step“

Formats for data publication (and their description)

1. Data publication as „supplementary material“ to journal articles (data description in the article, additional README or explanatory file with the dataset if required)
2. Data publication together with an article in a Data Journal
3. Standalone data publication with Data Report or “README”

Exampe 1: Data Supplements



We recommend…

- to publish **data supplements in open access data repositories**
- synchronous to the publication of the scientific article with **cross-references between the article and the dataset**

Example 2: Data Journals

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

Example 3: GFZ Data Reports

2011: first Data Report published as a new series of the traditional Scientific Technical Report series of GFZ (persistently online accessible and citable with DOI)

GFZ Data Reports:

- Flexible format – “enhanced data description“
- standardised templates for each discipline
- internal review by domain experts
- Project-specific design if required

Citing a dataset

“A data citation in a publication should resemble a bibliographic citation and be located in the publication's reference list.” (COPERNICUS Data Policy)

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
[b] Helmholtz-Zentrum Potsdam, GFZ Deutsches GeoForschungsZentrum, Telegrafenberg, D-14473 Potsdam, German

sented as grain size distribution curves, in which particle grai
plotted against cumulative weight percentage (Fig. 2).

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

References

Heilbronner, R., Keulen, N., 2006. Grain size and grain shape an
Tectonophysics 427, 199–216.
Hubbert, M.K., 1951. Mechanical basis for certain familiar geologic
Am. Bull. 62, 1259–1273.
Klinkmüller, M., Schreurs, G., Rosenau, M., 2016a. GeoMod2008 m
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.
Klinkmüller, M., Kemnitz, H., Schreurs, G., Rosenau, M., 2016c. GeoMod2008 materials
benchmark: The SEM image data set. GFZ Data Services. http://dx.doi.org/10.5880/
GFZ.4.1.2016.004.

3. Data access via DOI

GFZ Helmholtz Centre Potsdam — Impressum — GFZ German Research Centre for Geosciences

Dataset

GeoMod2008 materials benchmark: The sieve dataset

Released

Cite as:

Copy citation to clipboard

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

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.

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

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/

Find More Research Data

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

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

Link to paper

the References

HELMHOLTZ GEMEINSCHAFT

GFZ Helmholtz Centre Potsdam

GFZ Data Services

About/Contact | Impressum

Helmholtz Centre Potsdam GFZ German Research Centre for Geosciences

Search the Research Data Repository of GFZ Data Services below and read here how to publish data.

Search
(press ESC to close suggestions)

elge

Andersen, Per Helge (1) - author
Elgered, Gunnar (1) - author
Elger, Kirsten (10) - contributor

46.07323062

Current Selection (Link)

geo:[46.07323062540835,0.87890625 TO 58...

Datacenters

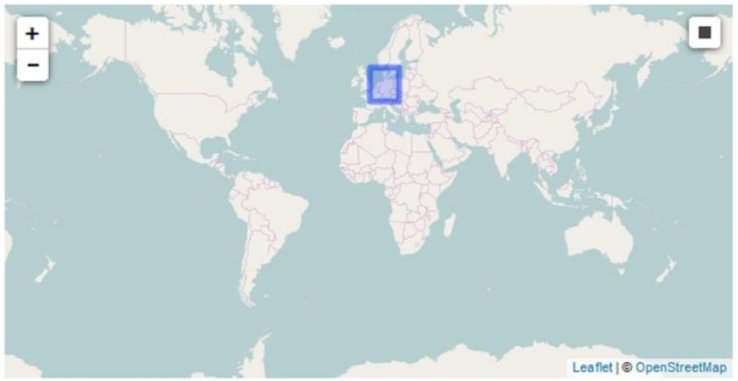
EnMAP
GEOFON Seismic Networks
GFZ German Research Centre for Geosciences
GIPP Geophysical Instrument Pool Potsdam
ICGEM International Centre for Global Earth M...
IGETS International Geodynamics and Earth Ti...
PIK Potsdam Institute for Climate Impact Rese...
SDDB Scientific Drilling Database
SFB806 and CRC806-Database
TERENO
WDS World Stress Map

Top Categories

agriculture
atmosphere
biosphere
climate indicators
data analysis and visualization
data management/data handling
human dimensions
land surface
models
paleoclimate
solid earth
spectral/engineering
terrestrial hydrosphere

Top Sub-Categories

agricultural plant science
atmospheric phenomena
atmospheric pressure
atmospheric radiation
atmospheric temperature
atmospheric water vapor
atmospheric winds
atmospheric/ocean indicators
data search and retrieval
deep drilling
erosion/sedimentation
geochemistry



Found 275 datasets.

National Network of Seismic Stations of Slovakia

Authors: ESI SAS (Earth Science Institute of the Slovak Academy of Sciences)
Abstract: The Earth Sciences Institute of the Slovak Academy of Sciences (ESI SAS) operates the National Network of Seismic Stations (NNSS) and analyzes instrumental and macroseismic data from earthquakes. The main purpose of the instrumental network is the continuous monitoring of the seismicity of Slovakia more

Superconducting Gravimeter Data from Potsdam - Level 1

Authors: Neumeyer, Jürgen; Dittfeld, Hans-Jürgen; Pflug, Hartmut et al.
Abstract: An International Geodynamics and Earth Tide Service (IGETS) was established in 2015 by the International Association of Geodesy IAG. IGETS continues the activities of the Global Geodynamics Project (GGP) between 1997 and 2015 to provide support to geodetic and geophysical research activities using more

Stress Map of the Mediterranean and Central Europe 2016

Authors: Heidbach, Oliver; Custodio, Susana; Kingdon, Andrew et al.
Abstract: The Stress Map of the Mediterranean and Central Europe 2016 displays 5011 A-C quality stress data records of the upper 40 km of the Earth's crust from the WSM database release 2016 (Heidbach et al, 2016, http://doi.org/10.5880/WSM.2016.001). Focal mechanism solutions determined as being potentially more

Metadata Catalogue

- spatial search via map
- filter + facetted search
- basic information (title, authors, abstract
- link to the DOI landing page

http://dataservices.gfz-potsdam.de

Project-specific DOI Landing Pages/ Datacentres

Datacenters

- EnMAP
- GEOFON Seismic Events
- GEOFON Seismic Networks
- GFZ German Research Centre for Geosciences
- GIPP Geophysical Instrument Pool Potsdam
- ICGEM International Centre for Global Earth M...
- IGETS International Geodynamics and Earth Ti...
- ISDC Information System and Data Center
- PIK Potsdam Institute for Climate Impact Rese...
- SDDB Scientific Drilling Database
- SFB806 and CRC806-Database
- TERENO
- TR32DB Transregio 32 Database
- WDS World Stress Map

Dynamic data and DOI Versioning

A special note regarding citation of dynamic datasets:

For datasets that are continuously and rapidly updated, there are special challenges both in citation and preservation. For citation, three approaches are possible:

a) **Cite a specific slice** (the set of updates to the dataset made during a particular period of time or to a particular area of the dataset);

b) **Cite a specific snap - shot** (a copy of the entire dataset made at a specific time);

c) **Cite the continuously updated dataset**, **but add an Access Date and Time** to the citation.

Note that a **"slice" and "snap - shot" are versions of the dataset and require unique identifiers**. The third option is controversial, because it necessarily means that following the citation does not result in observation of the resource as cited.

DataCite Metadata Scheme V 4.0

DOI for Seismic Networks: GEOFON

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

Example for dynamic data

GFZ Helmholtz-Zentrum Potsdam

GEOFON Program

Mission | Earthquake Info | Waveform Access | Software | Contribute | Contact | Home

The GE Seismic Network

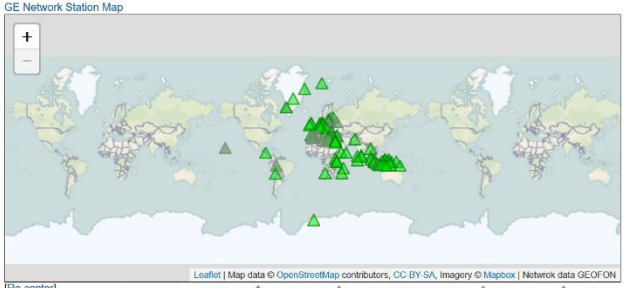
Network code: GE
Restricted: No
Network KML file:
Seismic metadata: fdsnws-station
Institution(s): GFZ, partners
Creator(s): GEOFON Data Centre
Description*: GEOFON Program, GFZ Potsdam, Germany
Type: Permanent
Archived at: GFZ
Time Range: 1993–
Identifier: doi:10.14470/TR560404 (Citation information)
DataCite metadata: HTML | JSON | XML

Abstract: GEOFON (GEOForschungsNetz) is the global seismological broad-band network operated by the German GeoForschungsZentrum (GFZ). The GEOFON seismic network came into being in 1993 as one of the three pillars of the GEOFON program dedicated to Ernst von Rebeur-Paschwitz, propoaer of a global earthquake monitoring system, who recorded the first teleseismic seismogram in Potsdam in 1889. The program and its seismic network were created to provide high quality broad-band data for scientific use and foster common standards in the seismological community. The network has evolved towards real-time data acquisition and distribution while keeping the high quality broad-band data in focus. Today the network plays a leading role in global real-time seismology providing valuable data for almost all fundamental and applied global/regional seismological research projects at GFZ and the wider seismological community. The GEOFON network is operated jointly with more than 50 international partners and in 2014 consists of about 80 active stations on all continents, but concentrated in Europe and the Mediterranean region as well as in the Indian Ocean. Station operation is mostly performed by local partners with GFZ guidance and logistic support, allowing the global network to be well-advanced technically while still extremely cost-effective. All stations are equipped with broad-band sensors (generally STS-2) that allow resolution of the complete seismic spectrum from small high-frequency local earthquakes to the largest global earthquakes. Data from all stations are freely redistributed in real-time for earthquake monitoring and tsunami warning centers immediately after acquisition at the GEOFON data centre via wired or satellite links. Archived data is also available. GEOFON is part of the Modular Earth Science Infrastructure (MESI) housed at GFZ.

* Description is taken from seismic metadata, and may not match the preferred title for citations.

For instructions on retrieving waveform data and metadata (including instrument responses) for this and other seismic networks, see here.

GE Network Station Map



[Re-center]

Legend: Current stations: open access; restricted. Former stations: open access; restricted.

Extended Network Information for network GE

Show/hide additional network information.

Creator(s): GEOFON Data Centre
Title: GEOFON Seismic Network
Publisher: Deutsches GeoForschungsZentrum GFZ
Network DOI: doi:10.14470/TR560404
Citation example: GEOFON Data Centre (1993): GEOFON Seismic Network. Deutsches GeoForschungsZentrum GFZ. Other/Seismic Network. doi:10.14470/TR560404.
Related Reference(s): 1. Hanka, W.; Kind, R.. The GEOFON Program. Annals of Geophysics v. 37, n. 5, Nov. 1994. ISSN 2037-416X. doi:10.4401/ag-4196
[+]

Network Station List for Network Code GE

<< return to network list

#	Code	Station description	Begin	End	Loc	Channels
1	APE	NOA/GEOFON Station Apeiranthos,Naxos, Greece	2000-200	2008-122	--	BHE BHN BHZ HHE HHN HHZ LHE LHN LHZ SHE SHN SHZ VHE VHN VHZ
			2008-123	--	--	BHE BHN BHZ HHE HHN HHZ LHE LHN LHZ SHE SHN SHZ VHE VHN VHZ
2	APEZ	GEOFON Station Moni Apezanon, Greece	2000-099	2004-337	--	BHE BHN BHZ HHE HHN HHZ LHE LHN LHZ SHE SHN SHZ VHE VHN VHZ
3	ARPR	GEOFON/MedNet/KOERI Station Arapgir, Turkey	2014-023	--	--	BHE BHN BHZ BLE BLN BLZ LHE LHN LHZ LLE LLN LLZ SHE SHN SHZ SLE SLN SLZ VHE VHN VHZ

Evans, P. L., et al. (2015), Why seismic networks need digital object identifiers, *Eos, 96,* doi:10.1029/2015EO036971.

Old version („faulty“ data)

Dataset

EIGEN-6S4 A time-variable satellite-only gravity field model to d/o 300 based on

Released

Cite as:

Förste, Christ
EIGEN-6S4 A
Toulouse. GF

Data Files

ICGEM Model
ICGEM Calcul

Download Mo

License: CC B

Data Desc

Foerste C., Bi
O., Lemoine J
H. and Richar
time-variable
d/o 300 based on LAGEOS, GRACE and GOCE data
from the collaboration of GFZ Potsdam and GRGS

GFZ Helmholtz Centre Potsdam

Impressum

GFZ Data Services

Helmholtz Centre Potsdam
GFZ German Research Centre for Geosciences

Dear user,

Thank you for your interest in gravity field model EIGEN-6S4. The authors decided to restrict the access to this dataset in favour of a newly published version that contains improved modelling of the time variable part, in particular C20. The old model is available upon request, please contact Kirsten Elger, Franz Barthelmes and Christoph Förste to discuss details.

The improved model is available here:

Förste, Christoph; Bruinsma, Sean; Abrikosov, Oleh; Rudenko, Sergej; Lemoine, Jean-Michel; Marty, Jean-Charles; Neumayer, Karl Hans; Biancale, Richard (2016): EIGEN-6S4 A time-variable satellite-only gravity field model to d/o 300 based on LAGEOS, GRACE and GOCE data from the collaboration of GFZ Potsdam and GRGS Toulouse. V. 2.0. GFZ Data Services. http://doi.org/10.5880/icgem.2016.008

With kind regards

We recommend to use the updated version of this dataset (Förste et al. 2016, http://doi.org/10.5880/icgem.2016.008). that contains an improved modelling of the time variable part, in particular for C20.

itional Information

Data:
EOS (deg. 2 - 30): 1985 - 2014
CE RL03 GRGS (deg. 2 - 130): 12 years 200208 - 201407
E-SGG data, processed by the direct approach (Pail et al. 2011, Bruinsma et al. 2014, to degree and
300) incl. the gravity gradient components Txx, Tyy, Tzz and Txz out of the following time spans: 837
out of the nominal mission time span 20091101 - 20120801 and 422 days out of the lower orbit phase
en 20120801 - 20131020. The GOCE polar gaps were stabilized by the Spherical Cap Regularization
ler and Pail 2005) using an internal LAGEOS/GRACE solution to degree/order 130 + zero coefficients to
e/order 300

ameters

Related Work

Previous Version of

Förste, C., Bruinsma, S., Abrikosov, O., Rudenko, S., Lemoine, J.-M., Marty, J.-C., … Biancale, R. (2016). EIGEN-6S4 A time-variable satellite-only gravity field model to d/o 300 based on LAGEOS, GRACE and GOCE data from the collaboration of GFZ Potsdam and GRGS Toulouse (Version 2.0) [Data set]. GFZ Data Services. https://doi.org/10.5880/icgem.2016.008

http://doi.org/10.5880/icgem.2016.004

New version (updated data)

Dataset

EIGEN-6S4 A time-variable satellite-only gravity field model to d/o 300 based on LAGEOS, GRACE and GOCE data from the collaboration of GFZ Potsdam and GRGS Toulouse

Released

Cite as:

Copy citation to clipboard

Förste, Christoph; Bruinsma, Sean; Abrikosov, Oleh; Rudenko, Sergiy; Lemoine, Jean-Michel; Marty, Jean-Charles; Neumayer, Karl Hans; Biancale, Richard (2016): EIGEN-6S4 A time-variable satellite-only gravity field model to d/o 300 based on LAGEOS, GRACE and GOCE data from the collaboration of GFZ Potsdam and GRGS Toulouse. V. 2.0. GFZ Data Services. http://doi.org/10.5880/icgem.2016.008

Data Files

ICGEM Model Viisualisation
ICGEM Calculation Service

Download Model Data: EIGEN-6S4v2.zip 8651697 Bytes

License: CC BY 4.0

Abstract

EIGEN-6S4 (Version 2) is a satellite-only global gravity field model from the combination of LAGEOS, GRACE and GOCE data. All spherical harmonic coefficients up to degree/order 80 are time variable. Their time variable parameters consist of drifts as well as annual and semi-annual variations per year. The time series of the time variable spherical harmonic coefficients are based on the LAGEOS-1/2 solution (1985 to 2003) and the GRACE-LAGEOS monthly gravity fields RL03-v2 (August 2002 to July 2014) from GRGS/Toulouse (Bruinsma et al. 2009).

The herein included GRACE/LAGEOS data were combined with all GOCE data which have been processed via the direct numerical approach (Pail et al. 2011). The polar gap instabilty has been overcome using the Speri-

Version History:
This data set is an updated version of Foerste et al. (2016, http://doi.org/10.5880/icgem.2016.004) Compared to the first version, EIGEN-6S4v2 contains an improved modelling of the time variable part, in particular for C20.

d/o 300 based on LAGEOS, GRACE and GOCE data from the collaboration of GFZ Potsdam and GRGS Toulouse, Geophysical Research Abstracts Vol. 17,

Input Data:
- LAGEOS (deg. 2 - 30): 1985 - 2014
- GRACE RL03 GRGS (deg. 2 - 130): 12 years 200208 - 201407
CE-SGG data, processed by the direct approach (Pail et al. 2011, Bruinsma et al. 2014, to degree and 300) incl. the gravity gradient components Txx, Tyy, Tzz and Txz out of the following time spans: 837 out of the nominal mission time span 20091101 - 20120801 and 422 days out of the lower orbit phase een 20120801 - 20131020. The GOCE polar gaps were stabilized by the Spherical Cap Regularization zler and Pail 2005) using an internal LAGEOS/GRACE solution to degree/order 130 + zero coefficients to ee/order 300

ameters

at	icgem2.0
uct_type	gravity_field
elname	EIGEN-6S4v2
_gravity_constant	0.3986004415E+15
us	0.6378136460E+07

Related Work

New Version of

Förste, C., Bruinsma, S., Rudenko, S., Abrikosov, O., Lemoine, J.-M., Marty, J.-C., ... Biancale, R. (2016). EIGEN-6S4 A time-variable satellite-only gravity field model to d/o 300 based on LAGEOS, GRACE and GOCE data from the collaboration of GFZ Potsdam and GRGS Toulouse [Data set]. GFZ Data Services. https://doi.org/10.5880/icgem.2016.004

http://doi.org/10.5880/icgem.2016.008

GFZ Helmholtz-Zentrum Potsdam

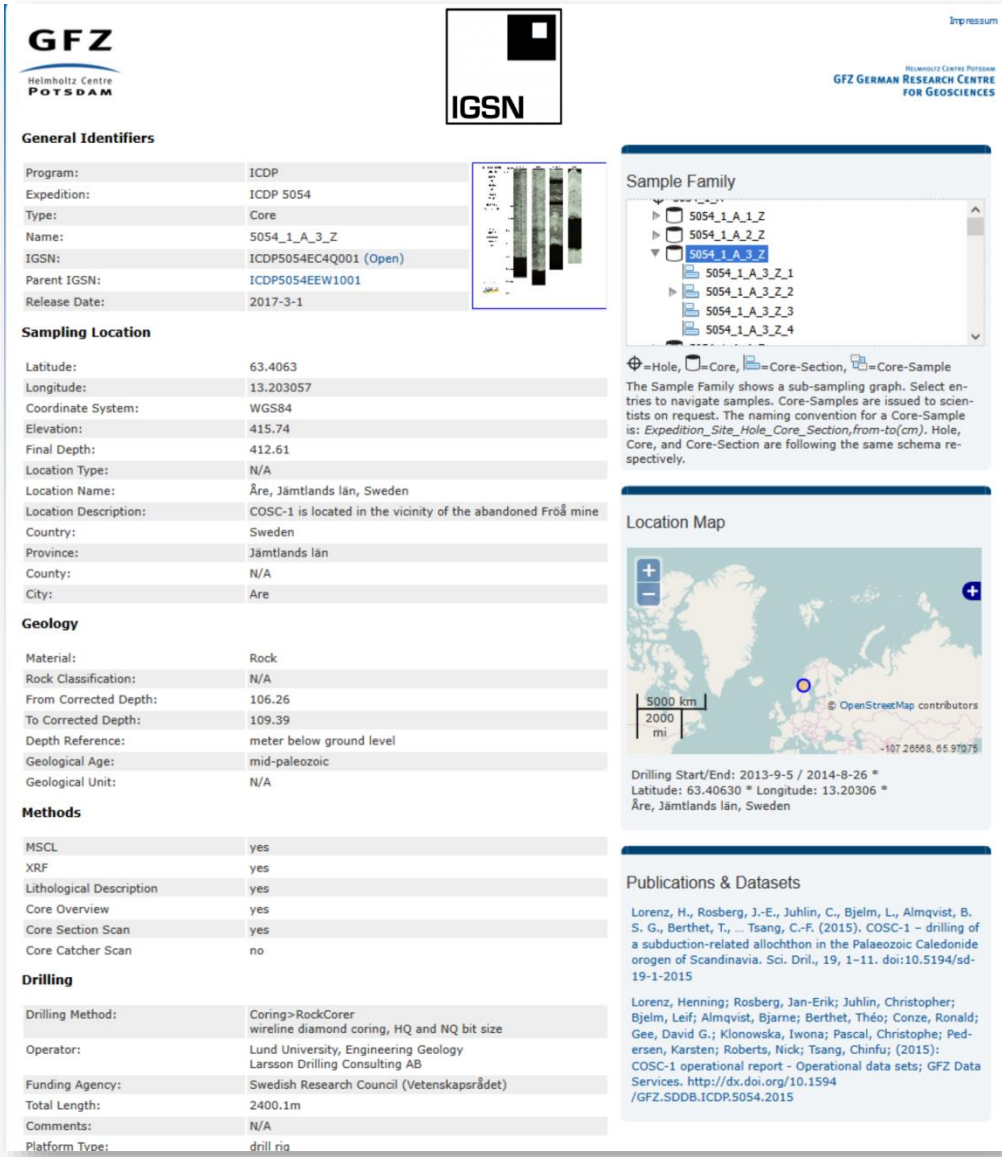
HELMHOLTZ GEMEINSCHAFT

And what about physical samples?

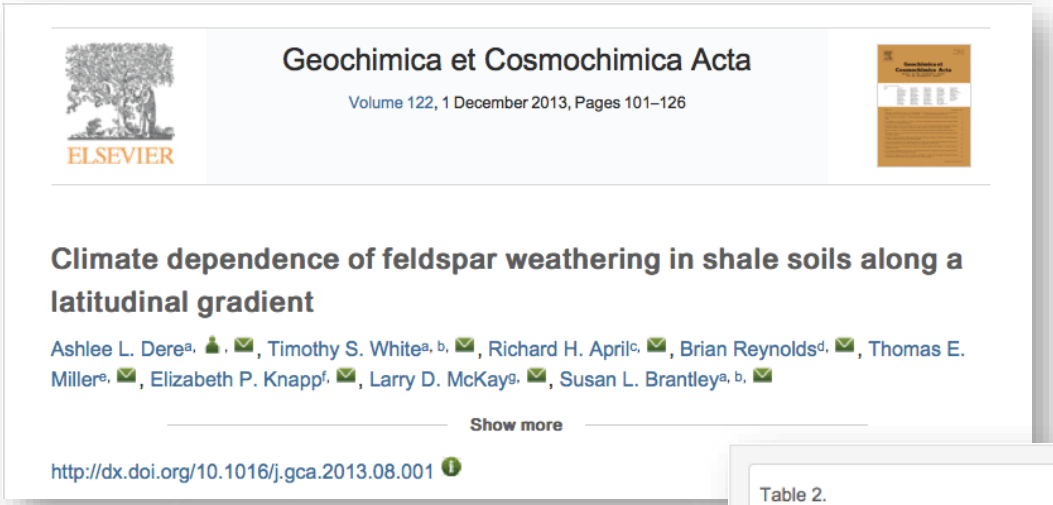
What is the IGSN?
International Geo Sample Number

- Globally unique identifier for physical samples and materials
- Central registration based on the Handle system
- QR Code on the sample

- Sample description online via IGSN Landing Pages/ IGSN Link http://igsn.org/ICDP5054EX2Z501
- IGSN citation in papers possible



IGSN: Linking Samples, Data & Publications



Geochimica et Cosmochimica Acta

Volume 122, 1 December 2013, Pages 101–126

Climate dependence of feldspar weathering in shale soils along a latitudinal gradient

Ashlee L. Dere[a], Timothy S. White[a, b], Richard H. April[c], Brian Reynolds[d], Thomas E. Miller[e], Elizabeth P. Knapp[f], Larry D. McKay[g], Susan L. Brantley[a, b]

Show more

http://dx.doi.org/10.1016/j.gca.2013.08.001

IGSN: SSH000STR

IGSN: SSH000STR
Sample Name: ald-10-01
Other Name(s):
Sample Type: Individual Sample
Parent IGSN: Not Provided

Description	
Material:	Rock
Classification:	Not Provided
Field Name:	shale
Description:	rock outcrop sample
Age (min):	Not Provided
Age (max):	Not Provided
Collection Method:	rock hammer
Collection Method Description:	Not Provided
Size:	Not Provided
Geological Age:	Not Provided
Geological Unit:	Not Provided
Comment:	Not Provided
Purpose:	CZO Shale Transect
Geolocation	
Latitude:	52.470683
Longitude:	-3.69255
Elevation:	323.088
Nav Type:	Not Provided
Physiographic Feature:	stream bed
Name Of Physiographic Feature:	Not Provided
Location Description:	Plynlimon forest, Wales, shale Severn stream bed
Locality:	Not Provided
Locality Description:	Not Provided
Country:	United Kingdom

Sample profile at IGSN metadata store

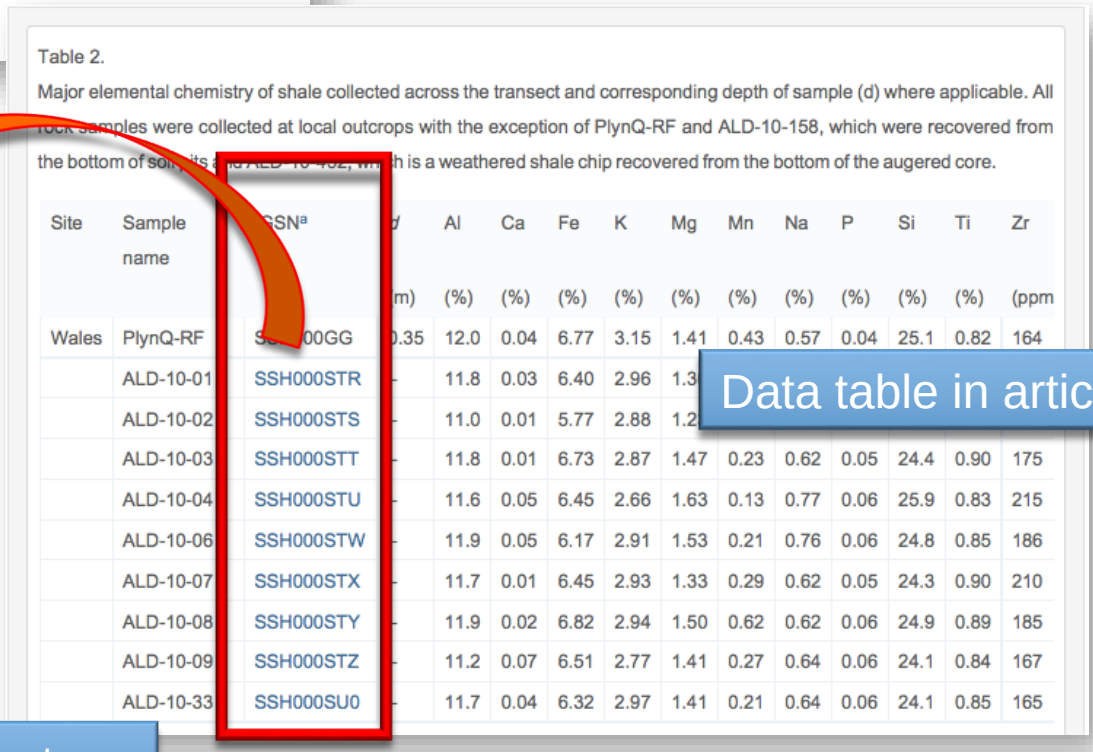


Table 2.

Major elemental chemistry of shale collected across the transect and corresponding depth of sample (d) where applicable. All rock samples were collected at local outcrops with the exception of PlynQ-RF and ALD-10-158, which were recovered from the bottom of soil pits and ALD-10-432, which is a weathered shale chip recovered from the bottom of the augered core.

Site	Sample name	IGSN[a]	d (m)	Al (%)	Ca (%)	Fe (%)	K (%)	Mg (%)	Mn (%)	Na (%)	P (%)	Si (%)	Ti (%)	Zr (ppm
Wales	PlynQ-RF	SS[illegible]00GG	0.35	12.0	0.04	6.77	3.15	1.41	0.43	0.57	0.04	25.1	0.82	164
	ALD-10-01	SSH000STR	-	11.8	0.03	6.40	2.96	1.3						
	ALD-10-02	SSH000STS	-	11.0	0.01	5.77	2.88	1.2						
	ALD-10-03	SSH000STT	-	11.8	0.01	6.73	2.87	1.47	0.23	0.62	0.05	24.4	0.90	175
	ALD-10-04	SSH000STU	-	11.6	0.05	6.45	2.66	1.63	0.13	0.77	0.06	25.9	0.83	215
	ALD-10-06	SSH000STW	-	11.9	0.05	6.17	2.91	1.53	0.21	0.76	0.06	24.8	0.85	186
	ALD-10-07	SSH000STX	-	11.7	0.01	6.45	2.93	1.33	0.29	0.62	0.05	24.3	0.90	210
	ALD-10-08	SSH000STY	-	11.9	0.02	6.82	2.94	1.50	0.62	0.62	0.06	24.9	0.89	185
	ALD-10-09	SSH000STZ	-	11.2	0.07	6.51	2.77	1.41	0.27	0.64	0.06	24.1	0.84	167
	ALD-10-33	SSH000SU0	-	11.7	0.04	6.32	2.97	1.41	0.21	0.64	0.06	24.1	0.85	165

Data table in article

GFZ Helmholtz-Zentrum Potsdam

Credit: K. Lehnert, Lamont, IEDA

HELMHOLTZ GEMEINSCHAFT

NanoSIMS results from olivine-hosted melt embayments: Magma ascent rate during explosive basaltic eruptions

Alexander S. Lloyd[a], Philipp Ruprecht[a, 1], Erik H. Hauri[b, 2], William Rose[c, 3], Helge M. Gonnermann[d, 4], Terry Plank[a, 5]

http://doi.org/10.1016/j.jvolgeores.2014.06.002

3. Methods

3.1. Sample preparation

During sample preparation, special care was taken to consider the size of each pyroclast and the effect on post-eruptive cooling. Samples were divided into three sizes: volcanic ash (particles with a diameter < 2 mm); lapilli (diameter between 2 mm and 64 mm); and volcanic bombs (clasts with a diameter > 64 mm). The ash sample (VF-132 - IGSN: ASL000001) was sieved without crushing, and loose olivine grains were selected from 250-500 μm and from 500-1000 μm size fractions. The lapilli sample (VF-129 - IGSN: ASL000002) was collected as a mix of ash and lapilli ranging in size from 30 mm to less than 0.1 mm. Only pyroclasts greater than 20 mm in diameter were selected; and of this set, the five largest lapilli were chosen. The bomb sample (VF-137B - IGSN: ASL000003) was selected from a diverse collection for its uniform spherical shape and relatively large size (60-mm diameter). The bomb was cut so that the material sampled for olivine-hosted embayments was derived from the inner 20 × 20 × 20 mm^3 of the bomb. The vesiculation in these pyroclasts was relatively uniform between clast types and ranged from 40% to 55% (estimated by bubble size distribution techniques, Gray A.L., pers comm, 2012); groundmass color was observed to be consistent among all the samples.

Questions?

Comments?

Thank you for you attention!