

EPOS EUROPEAN PLATE OBSERVING SYSTEM

tectonics

earthquakes

volcanic eruptions

georesources

surface dynamics

Laboratorios multiescala

José Luis Fernández Turiel & the EPOS Multi-scale laboratories Team

Kick-off meeting EPOS-ES – Madrid, 17 de Mayo de 2023

Community: Creating a coherent and well-organized network of solid Earth Science laboratories

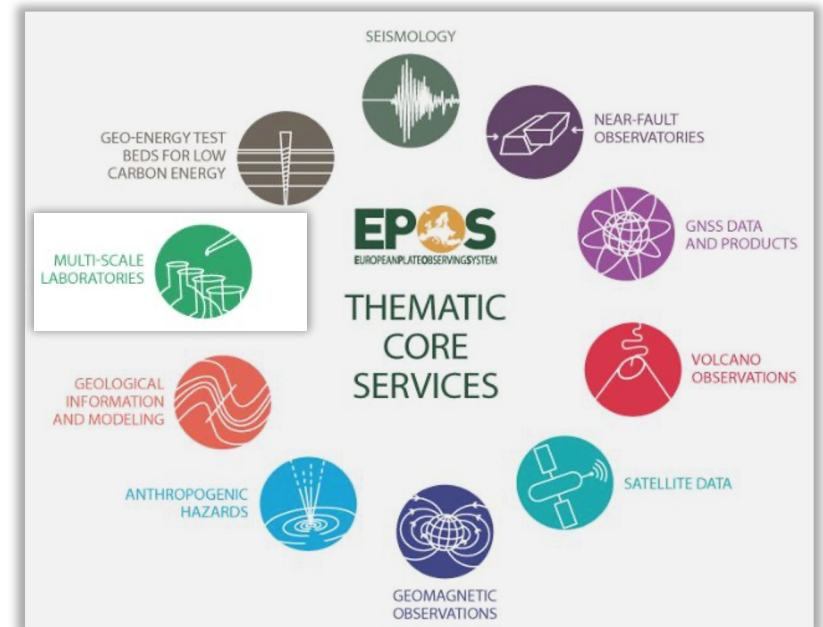
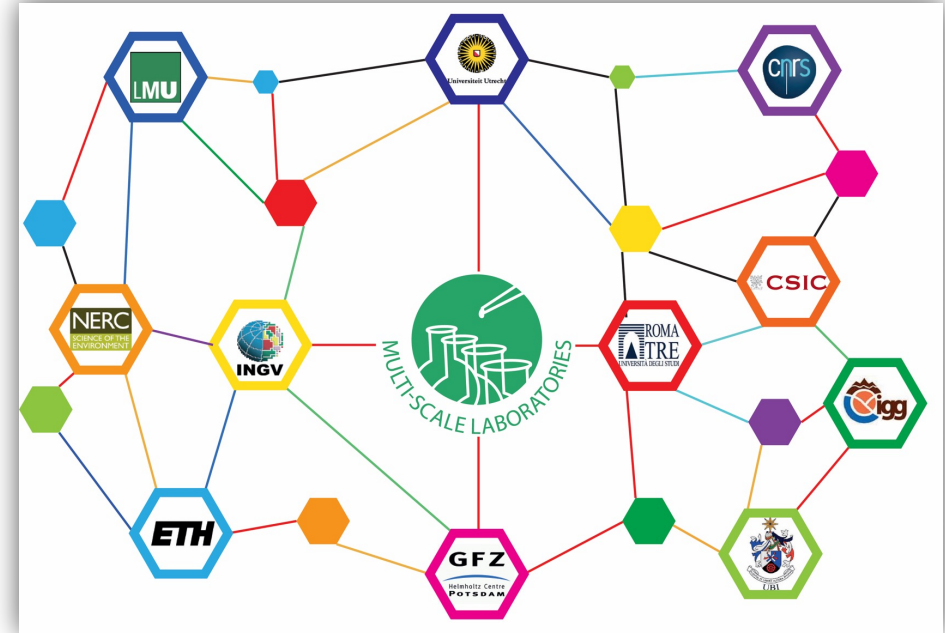
- Consortium of 11 members from 8 countries
- 86 laboratories from 12 countries
 - 21 laboratories from Spain
- 4 subdomains (Analogue Modeling, Analytical & Microscopy, Paleomagnetism, Rock Physics)

Facilities: Developing a Trans-national Access (TNA) program

- Providing access to research facilities

Data: Implementing dedicated FAIR data services

- Establishing data publication chain



> Heterogeneous lab data

EPOS
EUROPEAN PLATE OBSERVING SYSTEM

EPOS 1.0.16

Free text search

Filters

- Multi-scale Laboratories
 - Visible on: Table
 - Status: ●
- Data from magnetic and paleomagnetic measurements *i ☆*
 - Categories: Paleomagnetism
 - Visible on: Table
 - Status: ●
- Data on rock and melt physical properties *i ☆*
 - Categories: Rock and melt physics
 - Visible on: Table
 - Status: ●
- Microscopy and tomography data *i ☆*
 - Categories: Microscopy and tomography
 - Visible on: Table
 - Status: ●
- Search all multi-scale lab data *i ☆*
 - Categories: Cross-discipline laboratory da...
 - Visible on: Table
 - Status: ●

Results per page: 10 Page 1 of 1

EPOS MULTI-SCALE LABORATORIES
EUROPEAN PLATE OBSERVING SYSTEM

Data access Labs Data

276 datasets
86 labs
4 data repositories

Recently added:

- Klinkmüller, M., Schreurs, G., & Rosenau, M. (2016). *GeoMod2008 materials benchmark: The ring shear test dataset*
- Klinkmüller, M., Schreurs, G., & Rosenau, M. (2016). *GeoMod2008 materials benchmark: The axial test dataset*
- Klinkmüller, M., Kemnitz, H., Schreurs, G., & Rosenau, M. (2016). *GeoMod2008 materials benchmark: The SEM image dataset*



> Publishing with community standards

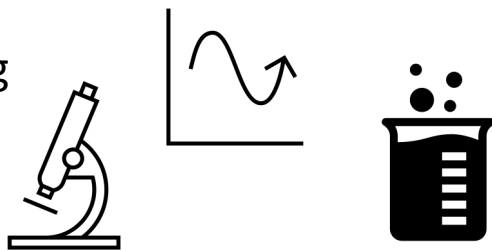
> Traceability - author, lab info

> FAIR data - Findable, Accessible, Interoperable, Reusable

> Heterogeneous lab data

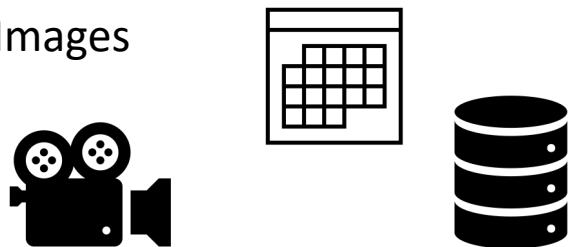
EPOS Multi-scale Laboratories community covers labs from **multiple disciplines**, e.g.:

- Rock physics
- Analogue modelling
- Paleomagnetism
- Geochemistry



Valuable but **heterogeneous** experimental data comes in a variety of formats, e.g.:

- tabular data
- video
- Images



Scientists solving the challenge collaboratively



- Common standard, DataCite 4.x or ISO19115
- Specialized knowledge and granularity in keywords
- Use, publish, and sustainably maintain

> Controlled vocabularies

> Controlled vocabularies

- Analogue modelling of geological processes
- Geochemistry
- Geological age
- Geological setting
- Materials
- Microscopy and tomography
- Paleomagnetism
- Pore fluids
- Rock and melt physics

Keywords ✕

Search... Add

Used in > community tools for support in data description

- └─ materials
 - └─ sedimentary rock
 - └─ limestone
 - └─ marl
 - └─ dolomite
 - └─ conglomerate
 - └─ breccia
 - └─ mudstone
 - └─ sandstone
 - └─ coal
 - └─ evaporite
 - └─ igneous rock - intrusive
 - └─ igneous rock - extrusive
 - └─ metamorphic rock
 - └─ fault rock
 - └─ metasomatic rock
 - └─ meteorite
 - └─ impact rock
 - └─ minerals
 - └─ unconsolidated sediment
 - └─ analogue modelling material
 - └─ synthesized material
- └─ porefluids
- └─ rockphysics
- └─ analogue
- └─ geologicalage
- └─ geologicalsetting
- └─ paleomagnetism
- └─ geochemistry
- └─ microscopy

aries Public

Actions Projects Wiki Security Insights Settings

main 1 branch 0 tags Go to file Add file Code

Isamshuijzen update README to contain full vocabulary names a73fbed on Jan 26 3 commits

vocabularies	add vocabulary version number to filenames	3 months ago
README.md	update README to contain full vocabulary names	3 months ago

README.md

MSL vocabularies

About

This repository is used to store and provide access to the vocabularies used and maintained by the [EPOS Multi-Scale Laboratories \(MSL\) community](#). The vocabularies are used at the [EPOS Multi-Scale Labs data catalogue](#) to improve findability of data publications. We encourage others to use and improve the provided vocabularies within this repository.

Vocabularies

We currently publish the following vocabularies:

- Analogue modelling of geological processes (referred to as "analogue")
- Geochemistry
- Geological age
- Geological setting
- Materials
- Microscopy and tomography (referred to as "microscopy")
- Paleomagnetism
- Pore fluids
- Rock and melt physics (referred to as "rockphysics")

Repository structure

Within the vocabularies folder all vocabularies are published in separate folders per vocabulary. Within the specific vocabulary folders a specific directory per version is published.

Formats

We currently provide 4 formats for publishing the vocabularies:

- Json (.json)
- Excel (.xlsx)
- turtle file (.ttl)
- rdfxml (.xml)

Community vocabularies openly published on GitHub for easy reuse →

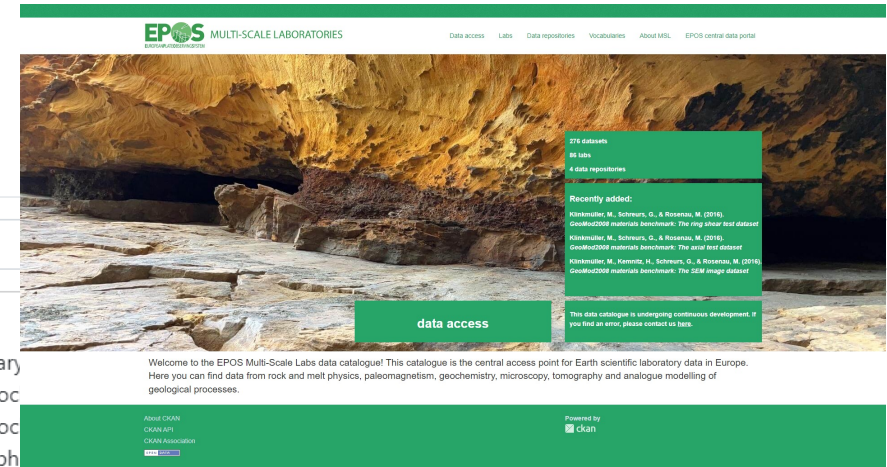
> Community tool - editors

- Scientists need user-friendly tools (i.e., **editors**) to describe their data
- These tools must be built in **close collaboration with the scientific users**
- These editors must allow for easy **integration into multiple repositories** (e.g., GFZ Data Services, YoDa, 4TU Research Data, CSIC)

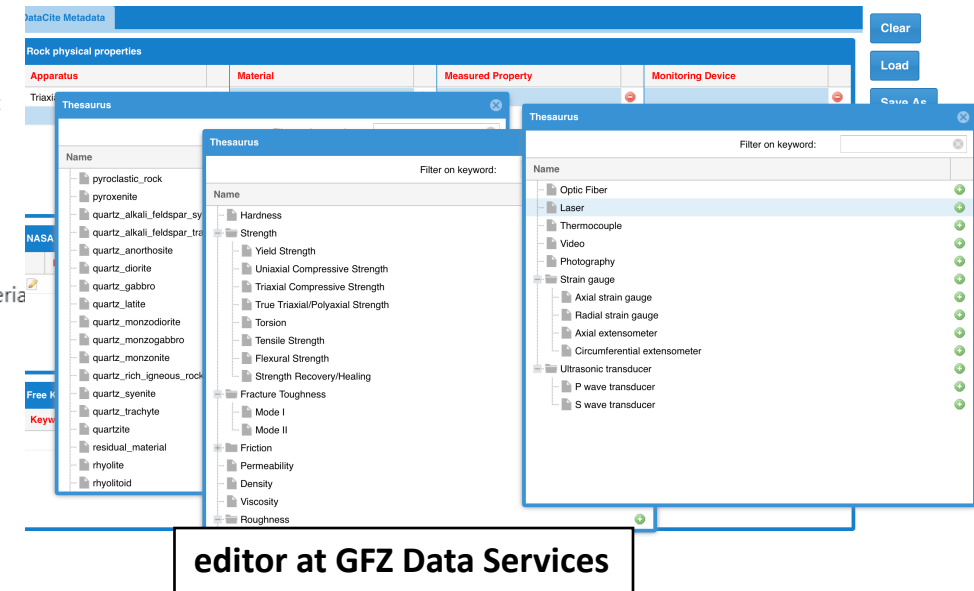
Keywords

Search...

- 4 materials
 - sedimentary
 - igneous rock
 - igneous rock
 - metamorphic
 - fault rock
 - metasomatic rock
 - meteorite
 - impact rock
 - minerals
 - 4 unconsolidated sediment
 - biogenic sediment
 - organic rich sediment
 - carbonate sediment
 - clastic sediment
 - tephra
 - analogue modelling material
 - synthesized material
 - porefluids
 - rockphysics
 - analogue
 - geologicalage
 - geologicalsetting
 - paleomagnetism
 - geochemistry
 - microscopy

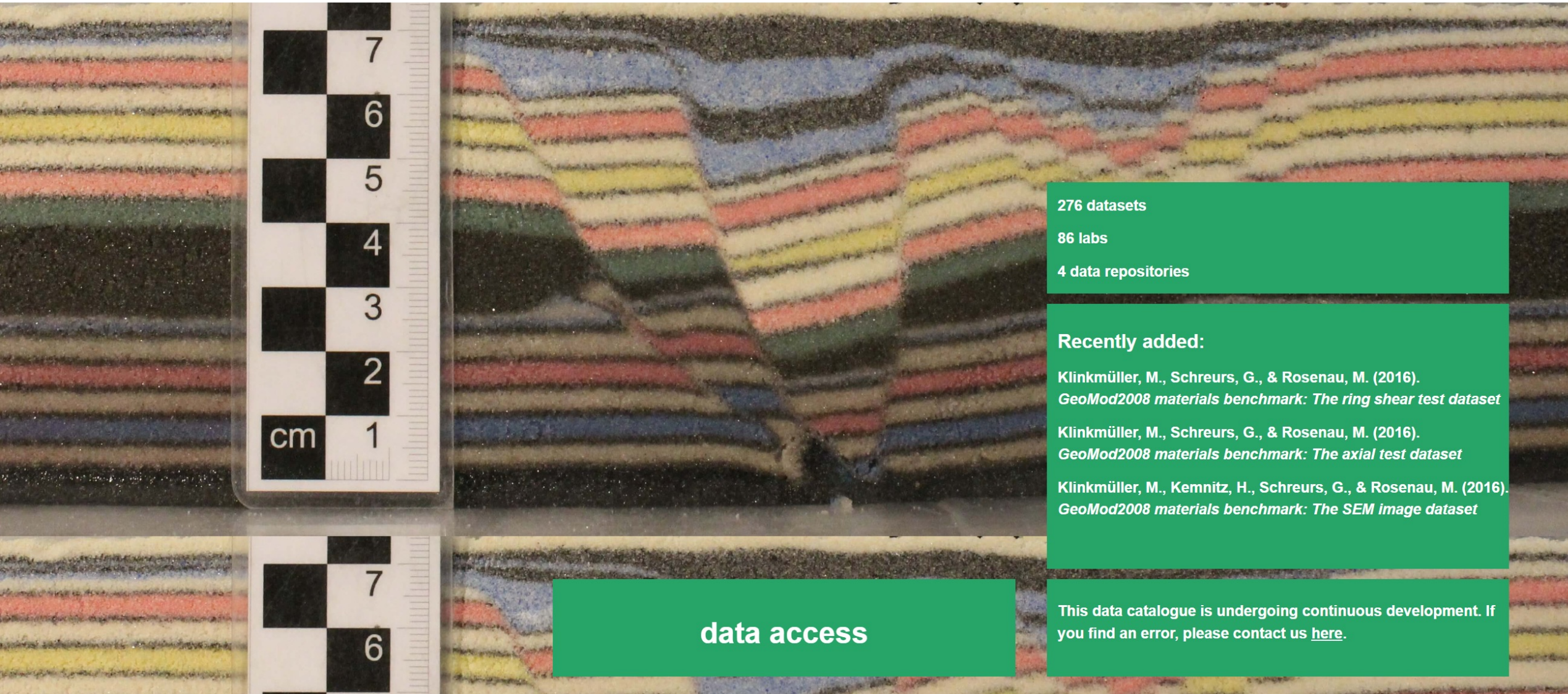


<https://epos-msl.uu.nl/>



editor at GFZ Data Services

> Publishing with community standards



276 datasets

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Klinkmüller, M., Schreurs, G., & Rosenau, M. (2016).
GeoMod2008 materials benchmark: The ring shear test dataset

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GeoMod2008 materials benchmark: The axial test dataset

Klinkmüller, M., Kemnitz, H., Schreurs, G., & Rosenau, M. (2016).
GeoMod2008 materials benchmark: The SEM image dataset

data access

This data catalogue is undergoing continuous development. If you find an error, please contact us [here](#).

ale... 21

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data access

Welcome to the EPOS Multi-Scale Labs data catalogue! This catalogue is the central access point for Earth scientific laboratory data in Europe. Here you can find data from rock and melt physics, paleomagnetism, geochemistry, microscopy, tomography and analogue modelling of geological processes.

Data repositories

- 4TU_ResearchData
View datasets
- Digital.CSIC
View datasets
- gfz-potsdam
View datasets
- yoda-repository
View datasets

<https://epos-msl.uu.nl/>

Spain

21 labs found for "Spain"

Order by: Name Ascending

Archeomagnetism Laboratory (CENIEH Burgos, Spain)

Archeomagnetism Laboratory (CENIEH Burgos, Spain) The Geochronology Laboratories at the CENIEH include a common facility for general geological sample preparation and mineral...

Andalchron (CSIC-IACT, Spain)

Andalchron (CSIC-IACT, Spain) Andalchron is a platform of advanced analytical services in petrology, geochemistry, and geochronology including: • The advanced petrological,...

GEOMODELS-Lab - GEOMODELS Analogue Modelling Laboratory (Geomodels Research I...

GEOMODELS-Lab - GEOMODELS Analogue Modelling Laboratory (Geomodels Research Institute, Universitat de Barcelona, Spain) The analogue modelling laboratory of the Geomodels...

Geochronology and Isotope Geochemistry Facility-SGIker (Universidad del Pais ...

IBERCRON-SGIker-Geochronology and Isotope Geochemistry Research Facility of the University of the Basque Country UPV/EHU, Spain...

Geochronology and Isotope Geochemistry (Universidad Complutense de Madrid (UC...

Geochronology and Isotope Geochemistry (Universidad Complutense de Madrid (UCM), Spain) The Geochronology and Isotope Geochemistry Service is a research support laboratory in the...

IBERSIMS-SHRIMP Laboratory (Centro de Instrumentación Científica, Universidad...

The IBERSIMS Laboratory (CIC-UGR) hosts a Sensitive High Resolution Ion Microprobe (SHRIMP), a Scanning Electron Microscope and a facility for sample preparation. The laboratory...

> Discovering data - EPOS MSL Community (Labs and Metadata) Portal

> Discovering data - EPOS MSL Community (Labs and Metadata) Portal

Downloads

- 2020-002_Wang-et-al_data-description
- 2020-002_Wang-et-al_data

Dataset

Fluid-Induced Fault Slip Experiments in the Laboratory on Critically Stressed Saw-Cut Sandstone Samples with High Permeability

Wang, Lei; Rybacki, Erik; Bonniye, Audrey; Bohnhoff, Marco; Dresen, Georg;

mechanisms governing fluid-induced seismicity at field-scale fluid injection projects, we conducted fluid-induced fault slip experiments on critically stressed saw-cut sandstone samples with high permeability using different fluid pressurization rates. The data are available as supplementary material to Wang et al. (2020; <https://doi.org/10.1029/2019GL086627>).

Experiments were conducted at room temperature using a servo-hydraulic tri-axial deformation apparatus (MTS) equipped with a pore pressure system and a Rock Deformation Laboratory, GFZ. To investigate the correlation between fault slip and fluid pressure, we applied two experiments (hereafter tests "SC1" and "SC2", respectively). "TestSC1" refers to the fluid-induced fault slip experiment performed at fluid pressurization rate of 0.5 MPa/min while "TestSC2" indicates the fluid-induced fault slip experiment performed at fluid pressurization rate of 0.5 MPa/min. T for both experiments are similar. In addition, to simultaneously record acoustic emission (AE) events induced by artificial fault slip (PZTs, resonance frequency ~1 MHz) contained in brass cases were directly mounted to the surface of samples. AE waveforms were amplified first by 40 dB using preamplifiers equipped with 100-KHz high-pass filters (sampling rate of 10 MHz with 16-bit amplitude resolution). Each experiment lasted for about 4 hours. Throughout the experiment, AE and hydraulic data (measured by Quixip pump) were all synchronously monitored with a sampling rate of 10 Hz. The raw data were recorded with a sampling rate of 10 MHz. All results shown are recorded as a function of experimental time.

The data are provided as separated ASCII-Format (.txt). 2020-002_Wang-et-al_TestSC1.zip and 2020-002_Wang-et-al_TestSC2.zip are composed of two files, as described below in Table 1. The first column represents time in second and the subsequent columns are indicated by the file name. The second row indicates the unit for each column data. The raw data was processed with MATLAB. The processed data include the moving average method, statistical regression and our developed MATLAB-based codes.

MSL enriched keywords

- sedimentary rock
- Measured property
- strain
- Apparatus
- deformation testing
- compression testing
- triaxial compression apparatus
- shear testing
- conventional triaxial apparatus: saw-cut
- pore fluid pressure
- acoustic emission (AE)
- permeability
- antropogenic setting

MSL enriched subdomains

- rock and melt physics
- analogue modelling of geologic processes

Source: <http://dx.doi.org/doi/10.5880/GFZ.4.2.2020.002>

DOI: 10.5880/GFZ.4.2.2020.002

License: CC BY 4.0

Authors: Wang, Lei; 0000-0001-6784-4572

EPOS MULTI-SCALE LABORATORIES

Data access Labs Data repositories Vocabularies About MSL EPOS central data portal

data publications

Search filters... Search data publications...

18 data publications found Order by: Relevance

Filters

- MSL enriched keywords
- Originally assigned keywords
- Material (18)
 - analogue modelling material
 - fault rock (3)
 - igneous rock - extrusive
 - igneous rock - intrusive
 - impact rock
 - metamorphic rock
 - metasomatic rock
 - meteorite
 - minerals (8)
 - sedimentary rock (18)
 - breccia
 - coal
 - conglomerate
 - dolomite
 - evaporite (3)
 - limestone (1)
 - marl
 - mudstone (1)
 - sandstone (18)
 - synthesized material
 - unconsolidated sediment (5)
- Geological age (5)
- Pore fluid (3)
- Geological setting (16)
- Analogue modelling of geological processes (18)
 - Geochemistry (6)
 - Microscopy and tomography (7)
 - Paleomagnetism
 - Rock and melt physics (18)
 - Research Institute (3)
 - Data repository (18)

Stress, strain, velocity and attenuation data of shale, limestone and sandstone samples brought to failure
Auke Barnhoorn; J. (Jeroen) Verheij; M. (Marcel) Frehner; A. (Alimzhan) Zhubayev; M.E. (Maartje) Houben; (2018)
The dataset contains the data that is published in the Geophysics paper: Experimental identification of the transition from elasticity to inelasticity from ultrasonic...

Unprocessed Accelerometer Data from Fraeylemaborg, Slochteren, during 22.05.2019 Westerwijdterd Earthquake of ML3.4
Insan Engin Bai; E. (Eleni) Smyrou; (2019)
Unprocessed (raw) data from SHM (Structural Health Monitoring) network at Fraeylemaborg in Slochteren, Netherlands. The data is produced by Hanzte University of Applied Sciences,...

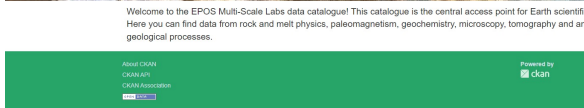
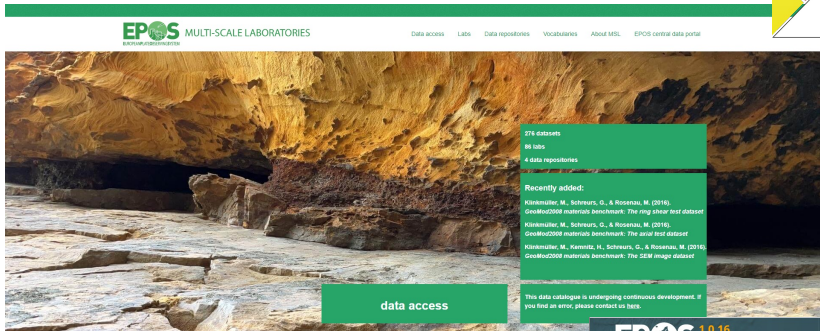
Unprocessed Accelerometer and Tiltmeter Data from Fraeylemaborg, Slochteren, during 08.08.2018 Appingedam Earthquake of ML1.9
Insan Engin Bai; E. (Eleni) Smyrou; D. (Dimitris) Dais; (2019)
Unprocessed (raw) acceleration and low-frequency tilt data from SHM (Structural Health Monitoring) network at Fraeylemaborg in Slochteren, Netherlands. The data is produced by...

Acoustic, mechanical, and microstructure data used in: Coda-Wave Based Monitoring of Pore-Pressure Depletion-driven Compaction of Slochteren Sandstone Samples from the Groningen Gas Field
Reuben Zotz-wilson; (2019)
Pore-pressure depletion in sandstone reservoirs is well known to cause both elastic and inelastic compaction, often resulting in notable surface subsidence and induced...

Low frequency dataset for tight sandstones and carbonates
Hui Li; (2021)
Dataset includes Vp/Vs ratio and extensional attenuation of a tight sandstone and a carbonate samples, which are measured by using forced-oscillation technique in the seismic...

Friction data of simulated fault gouges derived from the Groningen gas field
Hunfeld, Luuk; Niemeijer, André; Spiers, Christopher; (2017-12)
We investigated the frictional properties of simulated fault gouges derived from the main lithologies present in the seismogenic Groningen gas field (NE Netherlands), employing...

> Discovering data - EPOS Portal



<https://epos-msl.uu.nl/>



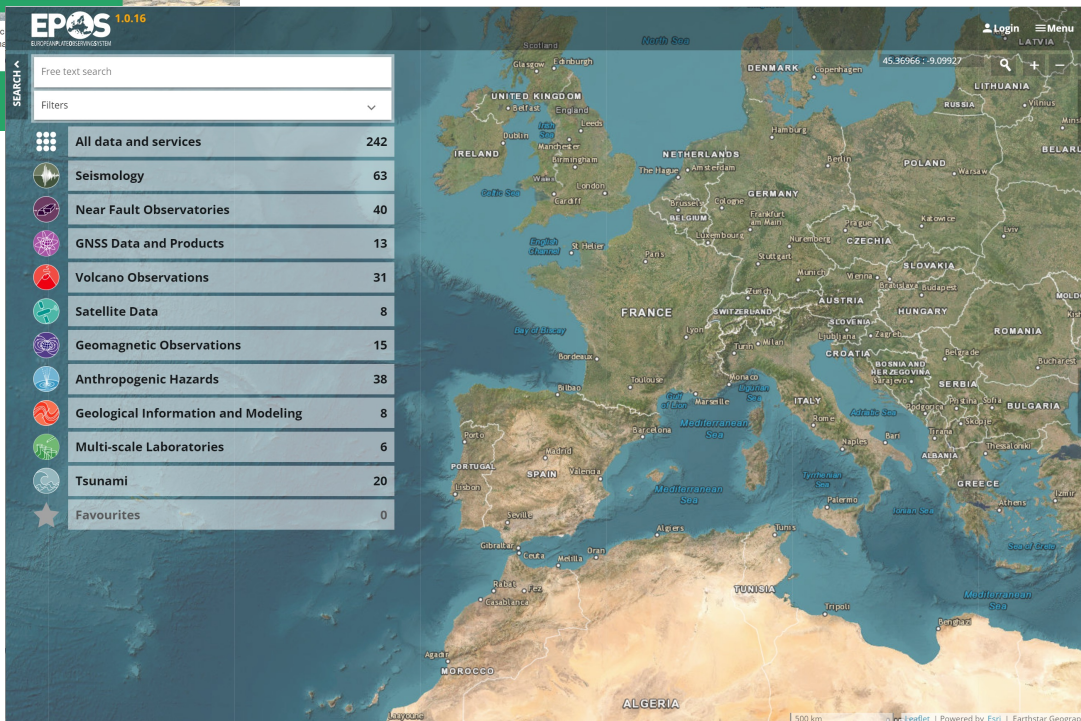
87
Data and Service Providers

>800
Terabytes of Integrated Data

242
Data Services

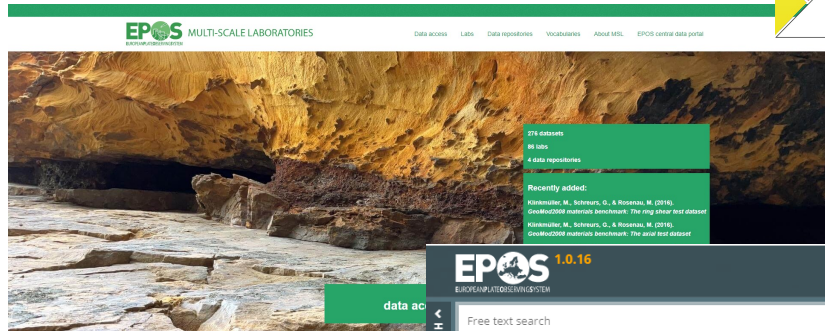
>12000
Unique Visitors

www.epos-eu.org/dataportal

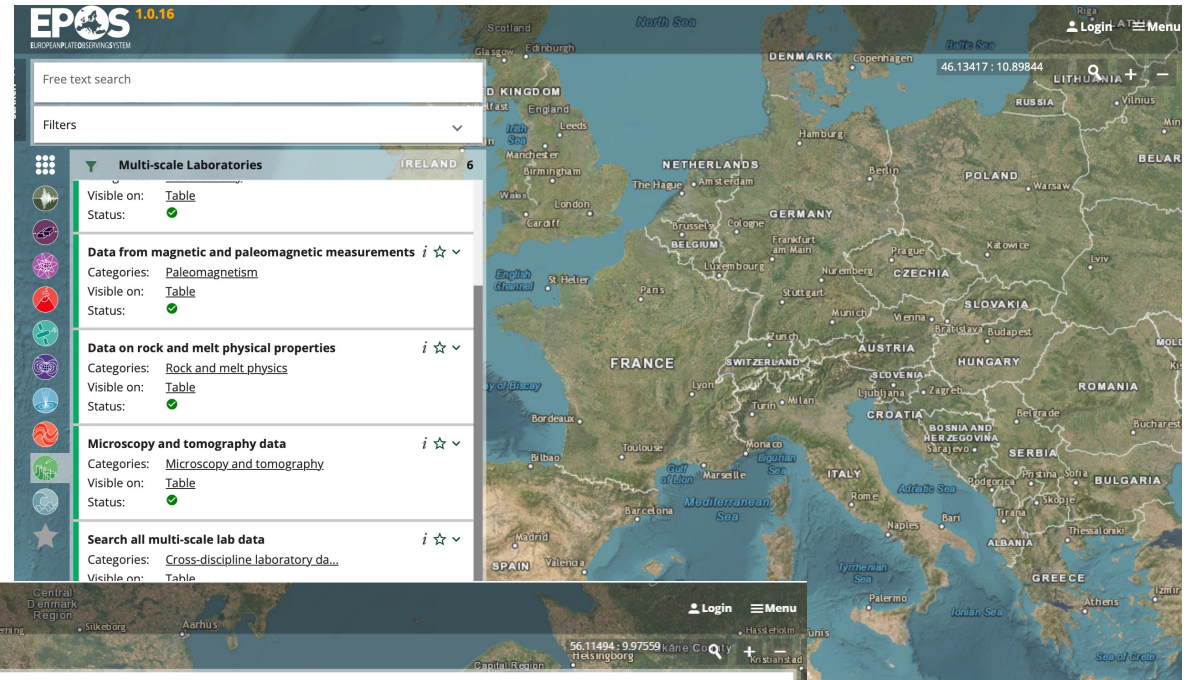


<https://www.ics-c.epos-eu.org/>

> Discovering data - EPOS Portal



<https://epos-msl.uu.nl/>



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Free text search

Filters

Multi-scale Laboratories 6

Categories: [Rock and melt physics](#)

Visible on: [Table](#)

Status: ✔

Advanced search filters (2 of 5)

Results returned (number): 250

Search all (wildcards permitted): sandstone

Search author: _____

Search laboratory: _____

Search title: _____

[Set to defaults](#) [Apply](#)

Categories: [Microscopy and tomography](#)

Visible on: [Table](#)

Status: ✔

Categories: [Cross-discipline laboratory data](#)

Visible on: [Table](#)

Status: ✔

Results per page: 10 Page 1 of 1

Title	Author(s)	Downloads(s)	Details	Research aspect(s)	Material(s)
Stress, strain, velocity and att...	M. (Marcel) Frehner A. (Alimzhan) Zhubayev M.E. (Maartje) Houben	summary_results_Geophysics...	Details	modulus attenuation inelastic deformation	shale sandstone
Core photographs of the Rotli...	Visser, Clemens A. Bokhorst, Karel	Data description data	Details	strain surface subsidence gas field strain poroelastic deformation ductile deformation strain partitioning porosity	Slochteren sandstone sandstone
Intergranular clay films contr...	Pijenburg, Ronald Verberne, Berend Antonie Hangx, Suzanne Spiers, Christopher James	Pijenburg-et-al_2019_data-d...	Details	inelastic deformation intragranular cracking intergranular slip time-dependent mechanism Induced seismicity gas field surface subsidence	sandstone clay Slochteren sandstone
Acoustic, mechanical, and mic...	Reuben Zotz-wilson	CrackMapping-123 README data	Details	strain inelastic deformation inelastic strain modulus attenuation porosity intragranular cracking intergranular cracking intergranular slip gas field Induced seismicity surface subsidence	sandstone Slochteren sandstone
Fluid-Induced Fault Slip Experi...	Wang, Lei Kwiatk, Grzegorz Rybacki, Erik Bonnelye, Audrey Bohnhoff, Marco Dresen, Georg	2020-002_Wang-et-al_data-de...	Details	strain pore fluid pressure acoustic emission (AE) permeability Induced seismicity	sandstone

<https://www.ics-c.epos-eu.org/>



¡ Gracias !