The European Plate Observing System (EPOS)
Thematic communities:
“Thematic Core Services (TCS)”

EPOS Sweden Kick-Off

2023-09-13

EPOS EUROPEANPLATEOBSERVINGSYSTEM www.epos-eu.org

Thematic Core Services → Data Portal

- Seismology
- Near Faults Observatories
- GNSS Data and Products
- Volcano Observations
- Satellite Data
- Geomagnetic Observations
- Anthropogenic Hazard
- Geological Information and Modelling
- Multi-scale Laboratories
- Tsunami

One-stop shop portal that enables any user to access **solid Earth data** in an **integrated way**.

EPOS access policies

EPOS Data Policy sets the guiding principle for the EPOS Data and Service provision

- Open Access
- Licencing
- Quality control
- Liability
- Privacy
- IPR

EPOS Digital Assets Management Policy

- Privacy
- Terms and Conditions
- Cookies
- Asset Provision (provenance, identifier, curation, metadata, quality assurance)
- Asset Access (attribution, acknowledgement, citation, licencing)
- Security (physical security, disaster recovery, authentication, authorization)

FAIR Principles

Findable

- (Meta)data are assigned a globally unique and persistent identifier
- Data are described with rich metadata
- Metadata clearly and explicitly include in the identifier of the data it describes
- (Meta)data are registered or indexed in a searchable resource

Accessible

- (Meta)data are retrievable by their identifier using a standardized protocol
- The protocol is open, free and universal
- The protocol allows for authentication and authorization, as needed
- Metadata are accessible, even when the data are no longer available

Interoperable

- (Meta)data use a formal, accessible, shared and broadly applicable language
- (Meta)data use vocabularies that follow FAIR principles
- (Meta)data include qualified references to other (meta)data

Reusable

- (Meta)data are richly described with a plurality of accurate and relevant attributes
- (Meta)data are released with a clear and accessible data usage licence
- (Meta)data are associated with a detailed provenance
- (Meta)data meet domain-relevant community standards

Research data and services

- Open data (licensing)
- FAIR data
- Standards
  - Metadata (transfer and content)
  - Data (transfer and content)
  - Adopted, adapted and extended international standards (ISO, OGC)
  - Community and industry “standards” (agreed best practices; or from scratch)
- (Linked Data)

} **harmonised services**

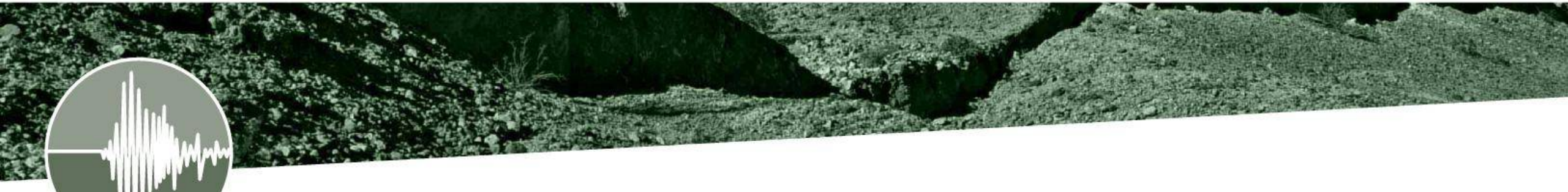
Community portals

Purpose:

- Provision of data and/or services and/or products to the community and others (e.g. to EPOS)
- Interface for experts and power users
- Development and testing
- Community outreach

Origin:

- Organically grown with/in the community (data portal, project portals/legacy, etc.)
  -> interfaced with the EPOS delivery framework
- Developed during EPOS implementation
  -> developed for the EPOS delivery framework



SEISMOLOGY

SEISMOLOGY

Thematic Core Service

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https://www.epos-eu.org/tcs/seismology

SEISMOLOGY

EPOS
EUROPEANPLATEOBSERVINGSYSTEM

https://www.epos-eu.org/tcs/seismology

Seismology TCS

- The EPOS SEISMOLOGY TCS provides **access to seismological and earthquake-related information** through standardized services and APIs, and coordinates the integration of these services on the EPOS Data Portal.

SEISMOLOGY

Services

Community portals:

- ORFEUS (waveform data and related products and services)
- EMSC and AHEAD (earthquake parameters and other seismological products)
- EFEHR (seismic hazard and risk products and services)

Data, Data Products, Software and Services are divided into 3 categories:

- Waveform Services
- Seismological Products
- Earthquake Hazard and Risk Products

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SEARCH

Free text search

Filters

Seismology 64

Seismic waveforms distributed by SED/ETHZ (Swiss Seismological Service at ETH Zurich, Switzerland)
Categories: Waveform and peak-motion servi... > Waveform data > Seismic waveforms distributed ...

Seismic waveforms distributed by UIB-NORSAR (University of Bergen & NORSAR)
Categories: Waveform and peak-motion servi... > Waveform data > Seismic waveforms distributed ...

Seismic waveforms distributed by the ORFEUS Data Center at KNMI
Categories: Waveform and peak-motion servi... > Waveform data > Seismic waveforms distributed ...

Advanced search filters (3 of 6)

2012-01-01 00:00:0 — 2012-01-02 00:00:0

* Network code: UP
* Station code: NOD
Channel code
Location code
Minimum Length

Set to defaults | Apply

Seismic waveforms distributed by the RESIF Data Center, France
Categories: Waveform and peak-motion servi... > Waveform data > Seismic waveforms distributed ...

Results per page: 10 | Page 4 of 7

74.33111 : -6.67969

TABLE

Station metadata distributed by the ORFEUS Data Center at KNMI

Filter: **1304/1304** Rows | Select Columns **8/10** Agency, Network code, S... | Expand all | Page number: 1 | Results per page: 5 | Page 1 of 261 | Total Results: 1304

Agency	Network code	Station code	Site name	Latitude	Longitude	Elevation	Start date
ODC	2M	AIJA	2M-AIJA	41.38439	2.11894	112.2	2017-11-10T00:00:00
ODC	2M	BION	2M-BION	41.38494	2.11999	63.9	2018-06-20T00:00:00
ODC	2M	BIOV	2M-BIOV	41.38495	2.11998	62.5	2018-06-20T00:00:00
ODC	2M	BO01	2M-BO01	43.17	-5.76904	570	2015-09-21T00:00:00
ODC	2M	BO02	2M-BO02	43.173	-5.76233	425	2015-12-11T00:00:00

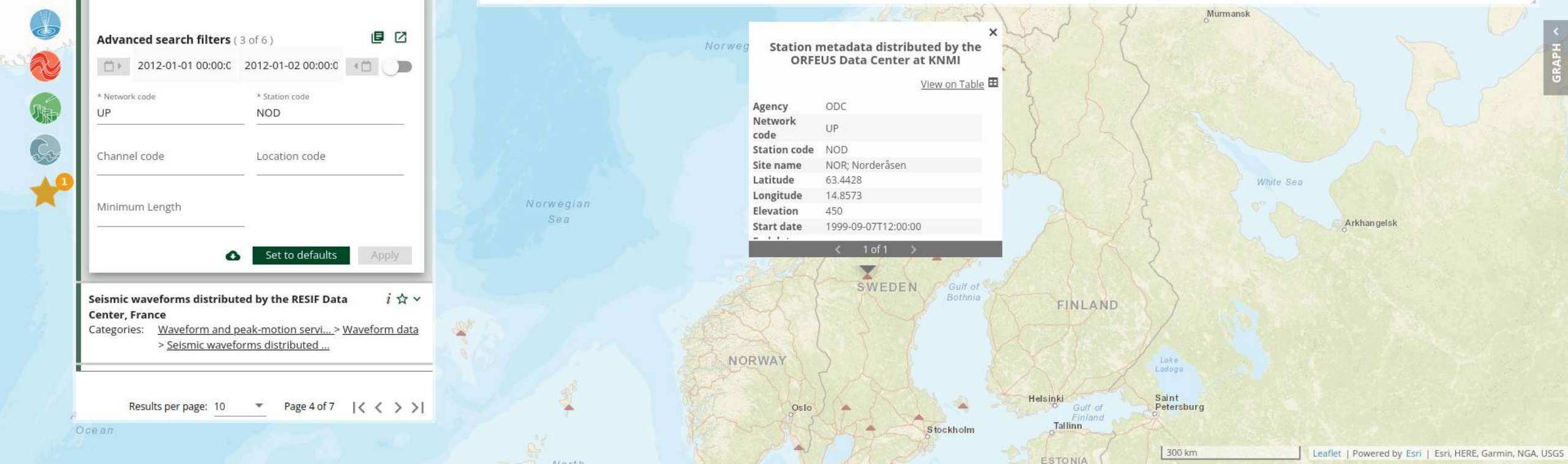
GRAPH

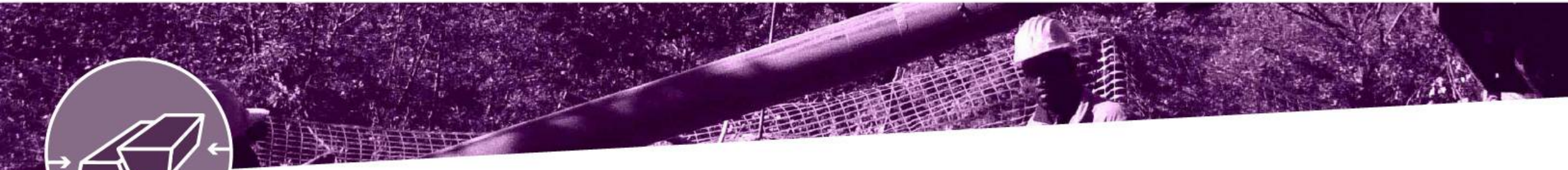
Station metadata distributed by the ORFEUS Data Center at KNMI

View on Table

Agency	ODC
Network code	UP
Station code	NOD
Site name	NOR; Norderåsen
Latitude	63.4428
Longitude	14.8573
Elevation	450
Start date	1999-09-07T12:00:00

1 of 1





NEAR-FAULT OBSERVATORIES

NEAR-FAULT OBSERVATORIES

Thematic Core Service

EPOS EUROPEANPLATEOBSERVINGSYSTEM

https://www.epos-eu.org/tcs/near-fault-observatories

NEAR-FAULT OBSERVATORIES

EPOS EUROPEAN PLATE OBSERVING SYSTEM

https://www.epos-eu.org/tcs/near-fault-observatories

NEAR-FAULT OBSERVATORIES

Near-Fault Observatories TCS

- NFO data is essential to make sense of the **physical and chemical processes that occur along and around active fault zones.**
- Monitoring faults, in real-time and in different locations, in areas prone to generate large earthquakes can **help societies prepare for future seismic events.**
- The NFO community is committed to **foster data sharing and the integration of new scientific products.**

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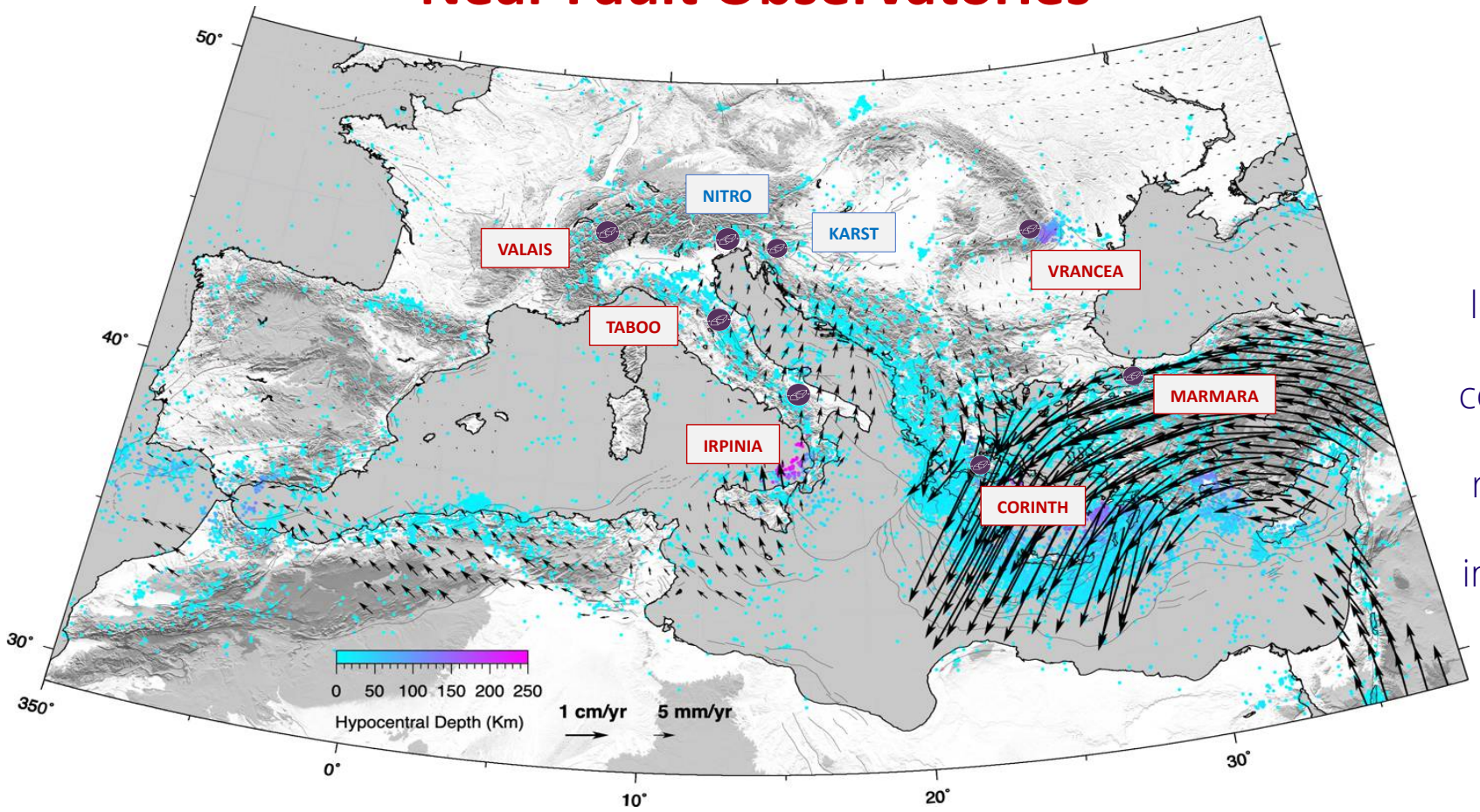
Near Fault Observatories

NEAR-FAULT OBSERVATORIES

To understand the multi-scale, physical/chemical processes responsible for the faulting that earthquakes occur on, we consider phenomena intersecting different research fields.



Modern and multidisciplinary infrastructures located in different tectonic context, collecting near fault raw data at high resolution allowing the generation of innovative scientific products

European NFOs ( ) in the context of the surface velocities of the Euro-Mediterranean (*Serpelloni et al., 2022*) and M>4 earthquakes with depth <250km occurred in 1980-2018 (*ISC bulletin; doi.org/10.31905/D808B830*).

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NEAR-FAULT OBSERVATORIES

Services

2 community portals

- CREW (early warning research and testing platform)
- FRIDGE (data gateway)

Data, Data Products, Software and Services are divided into 3 categories:

- Seismological data
- Geochemical data
- Geophysical data

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EUROPEAN PLATE OBSERVING SYSTEM

Login | Menu

SEARCH

Free text search

Filters

Near Fault Observatories 40

Marmara Seismic Stations

Categories: Seismological Data > Waveform services > Seismic Station Information

Visible on: Map Table

Marmara Seismic Velocity and Acceleration Waveform

Categories: Seismological Data > Waveform data

Marmara Vp/Vs

Categories: Seismological Data > Seismological products > Vp/Vs - velocity ratio

Visible on: Map Graph

Advanced search filters (16 of 16)

Coordinates: 42 39 26 31

2017-01-01 00:00:0 2023-04-01 00:00:0

* Degrees of azimuthal stations distri... 150	* Horizontal distance of the closest st... 70
* Maximum Earhquake Depth 25.0	* Maximum allowed formal horizonta... 300
* Maximum allowed formal vertical er... 200	* Minimum Earthquake Depth 0.4
* Number of P and S couples per eart... 4	* Number of p-waves onset observati... 2
* Number of s-waves onset observati... 3	* P-phase onset Hypoinverse standar... 4

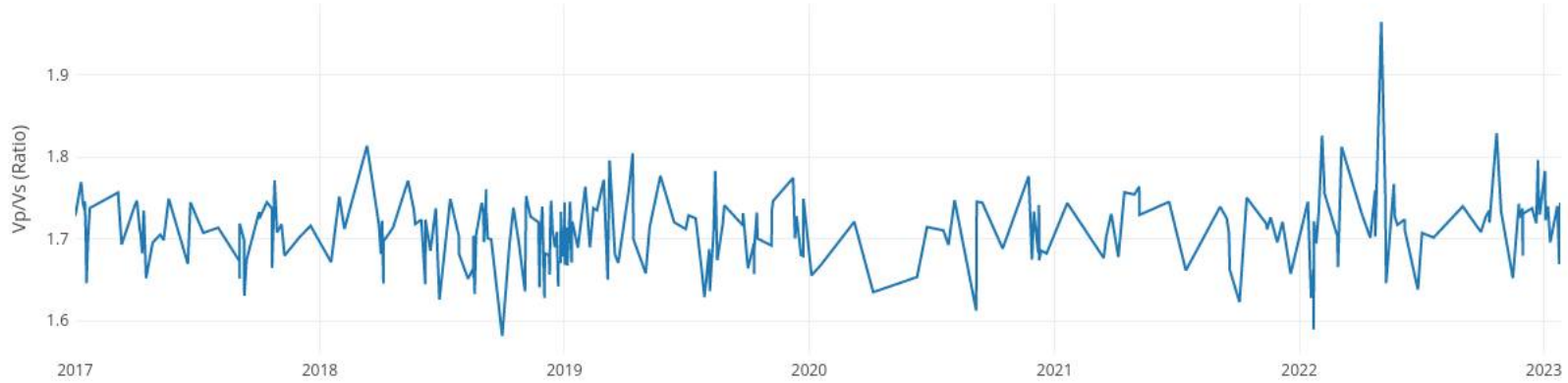
Results per page: 20 Page 2 of 2

46.34693 : 4.96582

TABLE 6

Trace Selector

Y-axes: Stack Overlay



GRAPH 1

Leaflet | Powered by Esri | Esri, HERE, Garmin, NGA, USGS

GNSS DATA AND PRODUCTS

GNSS DATA & PRODUCTS

Thematic Core Service

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https://www.epos-eu.org/tcs/gnss-data-and-products

GNSS DATA AND PRODUCTS

https://www.epos-eu.org/tcs/gnss-data-and-products

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GNSS DATA AND PRODUCTS

GNSS TCS

- The GNSS TCS provides access to a variety of **European and regional geodetic data, metadata, products, and software**, sustained by EUREF, an European organization, and regional GNSS networks

- Data and services (already existing or being implemented) will help **the study of the Earth's surface motion in different timescales**, such as the rapid shaking caused by an earthquake or the slow-paced movement of tectonic plates.

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https://www.epos-eu.org/tcs/gnss-data-and-products

What are the GNSS products?

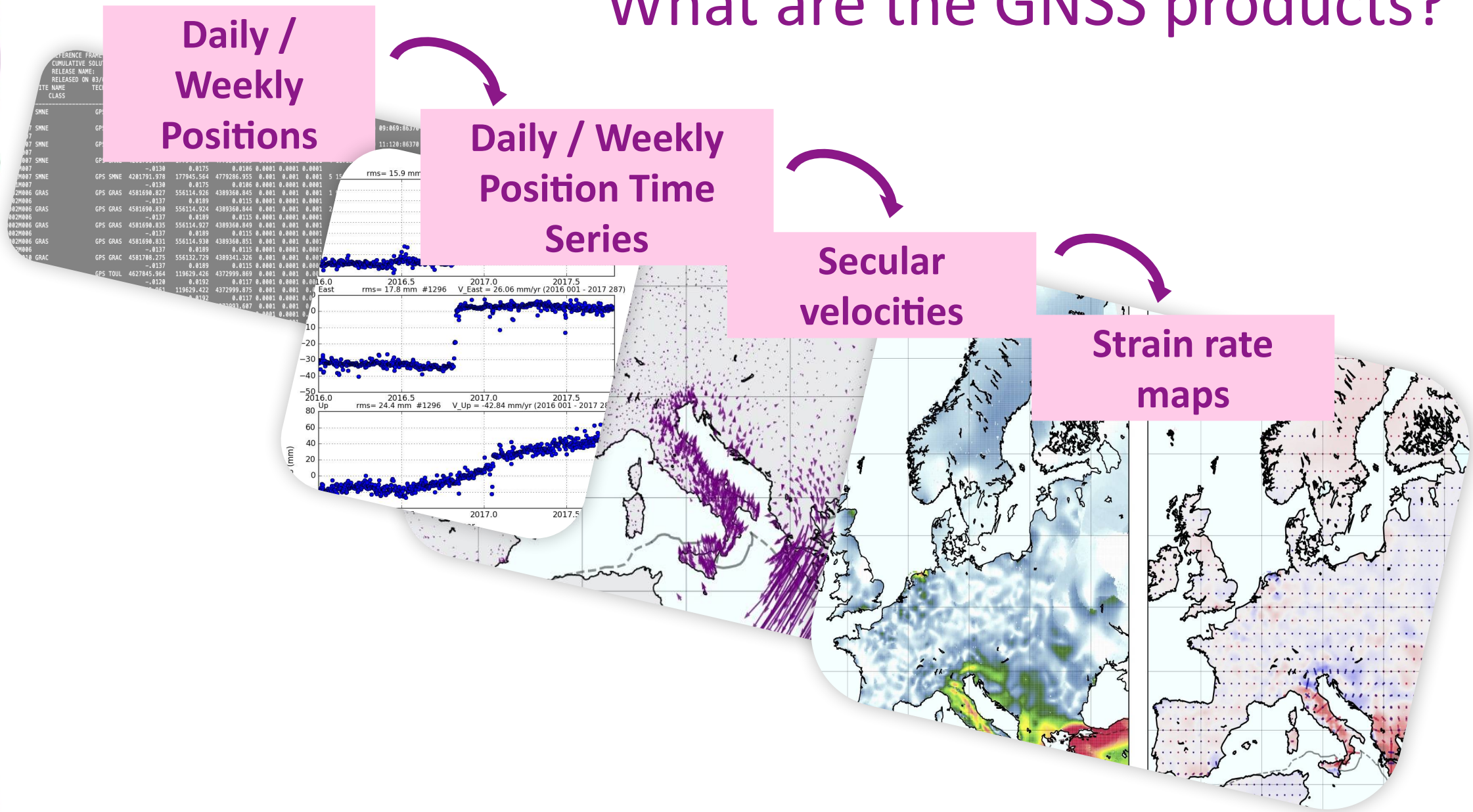
GNSS DATA AND PRODUCTS

Daily / Weekly Positions

Daily / Weekly Position Time Series

Secular velocities

Strain rate maps



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https://www.epos-eu.org/tcs/gnss-data-and-products

GNSS DATA AND PRODUCTS

Services

3 Community Portals

- M3G website (metadata management)
- GNSS Product Portal
- GNSS Data Gateway Portal

Data, Data Products, Software and Services are divided into 2 categories:

- GNSS data
- GNSS data products

EPOS EUROPEAN PLATE OBSERVING SYSTEM

https://www.epos-eu.org/tcs/gnss-data-and-products

SEARCH

Free text search

Filters

GNSS Data and Products 13

EPOS GNSS Velocities from UGA-CNRS
Categories: Products > GNSS Station Velocities

EUREF GNSS Daily Position Time Series from ROB-EUREF
Categories: Products > GNSS Position Time Series
Visible on: Map Graph

Advanced search filters (3 of 3)

1990-01-01 00:00:0 — 2099-12-01 00:00:0

* Coordinates System: xyz

* Four character station identification: SVE6

Set to defaults | Apply

EPOS GNSS Daily Position Time Series from INGV
Categories: Products > GNSS Position Time Series
Visible on: Map Graph

EPOS GNSS Daily Position Time Series from UGA-CNRS
Categories: Products > GNSS Position Time Series
Visible on: Map Graph

EUREF GNSS Velocities from ROB-EUREF
Categories: Products > GNSS Station Velocities

EUREF-EPOS GNSS Velocities from SGO-EPND
Categories: Products > GNSS Station Velocities

Results per page: 20 | Page 1 of 1

Murmansk 64.83025 : -11.11816

TABLE 1

Norwegian Sea
Norwegian Sea
White Sea
Arkhangelsk
SWEDEN
NORWAY
Gulf of Bothnia
LAND
Lake Ladoga
Oslo
Saint Petersburg

Trace Selector

Y-axes: Stack Overlay

GRAPH 1

Z (m): 5.60985775M, 5.6098577M, 5.60985765M
Y (m): 761.4608k, 761.46075k, 761.4607k
X (m): 2.90249785M, 2.9024978M, 2.90249775M
2015 2016 2017 2018 2019 2020 2021 2022

Channel
St Helier
Paris
Stuttgart
Munich
Zurich
Vienna
SLOVAKIA
Bratislava
Budapest
AUSTRIA
SWITZERLAND
HUNGARY
FRANCE
MOLDOVA
UKRAINE
Dnipro
Donetsk
Volgograd
Rostov-on-Don
Odesa

300 km

VOLCANO
OBSERVATIONS

VOLCANO OBSERVATIONS

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https://www.epos-eu.org/tcs/volcano-observations

VOLCANO OBSERVATIONS

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https://www.epos-eu.org/tcs/volcano-observations

VOLCANO OBSERVATIONS

Volcano Observations TCS

The Volcano Observations community integrates the experience of the main European Volcano Observatories and Research Institutions.

Volcano Observations TCS broadens the current **understanding of the physical and chemical processes of volcanoes**.

Society can benefit from the knowledge and tools to **monitor volcanic activity and to assess volcanological hazard**.

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https://www.epos-eu.org/tcs/volcano-observations

VOLCANO OBSERVATIONS

Volcano Observations TCS

The Volcano Observations Thematic Core Service:

- integrates **seismic**, **geodetic**, **electromagnetic**, **geochemical**, and **environmental** data, collected by thousands of operating stations located around **European volcanoes**;
- consolidates **multidisciplinary data**, and
- offers access to a **portfolio of data, products and services** to improve the knowledge of volcanic processes.

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https://www.epos-eu.org/tcs/volcano-observations

VOLCANO OBSERVATIONS

Services

3 Community Portals

- FUTUREVOLC Catalogue of Icelandic Volcanoes
- MEDSUV portal
- EUROVOLC European Catalogue of Volcanoes

Data, Data Products, Software and Services are divided into 7 categories:

- Seismological data
- Geodetic data
- Geochemical data
- Satellite data
- Ground-based remote sensing data
- Volcanological / Petrological data
- Geohazards products

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https://www.epos-eu.org/tcs/volcano-observations

Denmark Strait

65.73063 : -18.94043

SEARCH

Free text search

Filters

Volcano Observations 31

Ground based radar data Iceland
Categories: Ground-based remote sensing
Visible on: Map Table

Ground based visible and thermal/IR camera Iceland
Categories: Ground-based remote sensing
Visible on: Map Table

Lava flow invasion hazard maps
Categories: Geohazards
Visible on: Map Table

Mt Etna Bulk Rock Analysis
Categories: Geochemical data
Visible on: Map Table

Mt Etna Earthquake Parameters (2000-2019)
Categories: Seismic data
Visible on: Map Table

Probabilistic Hazard maps
Categories: Geohazards
Visible on: Map Table

Pyroclastic Density Currents hazard maps
Categories: Geohazards
Visible on: Map Table

S02 probabilistic hazard maps Iceland
Categories: Geohazards
Visible on: Map Table

Seismic stations in Guadeloupe, Martinique and La Réunion islands

Results per page: 20 Page 1 of 2

TABLE

Catalogue of Icelandic volcanic eruptions

id_volcano	id_eruption	alternative_name	longitude	latitude	eruption_scenario	eruption_location	central_volcano_name
HEK	HEK-S		-19.667	63.992	Large	Central volcano	
HEK	HEK-4		-19.667	63.992	Largest known	Central volcano	
HEK	HEK-O		-19.667	63.992	Large	Central volcano	
HEK	HEK-5		-19.667	63.992	Large	Central volcano	
KAT	KAT_2011		-19.117	63.633	Unconfirmed	Central volcano	Katla
KAT	KAT_1999		-19.117	63.633	Unconfirmed	Central volcano	Katla
KAT	KAT_1955		-19.117	63.633	Unconfirmed	Central volcano	Katla
KAT	KAT_1918		-19.117	63.633	Large	Central volcano	Katla
KAT	KAT_1860		-19.117	63.633	Small	Central volcano	Katla
KAT	KAT_1823		-19.117	63.633	Small	Central volcano	Katla

alternative_name	
longitude	-17.333
latitude	64.417
eruption_scenario	Unknown
eruption_location	Central volcano
central_volcano_name	Grímsvötn
central_volcano_type	Caldera
central_volcano_subtype	
area_of_activity	Central volcano
external_water	Glacier
eruption_type	Subglacial
explosive_eruption_type	None
length_of_explosive_phases	None
start_date_year	1938

6 of 28

Westfjords
Sauðárkrókur
Northwestern Region
Western Region
Eastern Region
Egilsstaðir
Borgarnes
Reykjavik
Keflavik
Reykjanes
Selfoss
Southern Region

GRAPH

50 km
Leaflet | Powered by Esri | Esri, HERE, Garmin, NGA, USGS

SATELLITE DATA

SATELLITE DATA

Thematic Core Service

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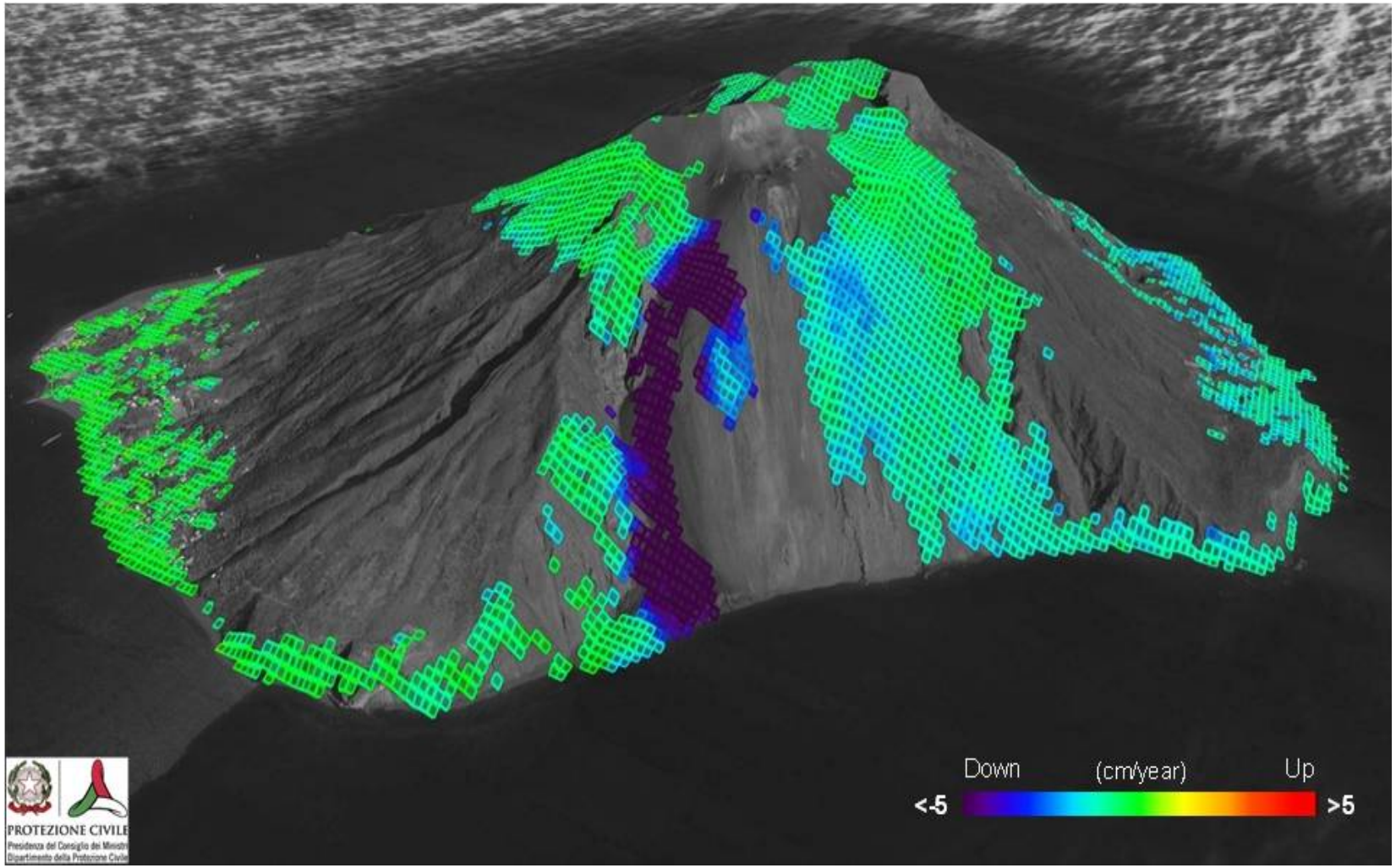
https://www.epos-eu.org/tcs/satellite-data

SATELLITE DATA



https://www.epos-eu.org/tcs/satellite-data

Overview

- Information collected by satellites and processed by ground stations has widened our **understanding of the Earth's dynamics.**
- Satellite data has advanced the **measurements of tectonic processes**, thus improving the ability to monitor and model the Earth's surface deformation and the study of geodynamic processes.

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https://www.epos-eu.org/tcs/satellite-data

Satellite Data TCS

- The **Satellite Data Thematic Core Service** uses satellite data and images collected by satellites orbiting the Earth's surface.
- The Satellite Data TCS **develops, harmonises and integrates these measurements into services and products** that can be exploited by the solid Earth science community.

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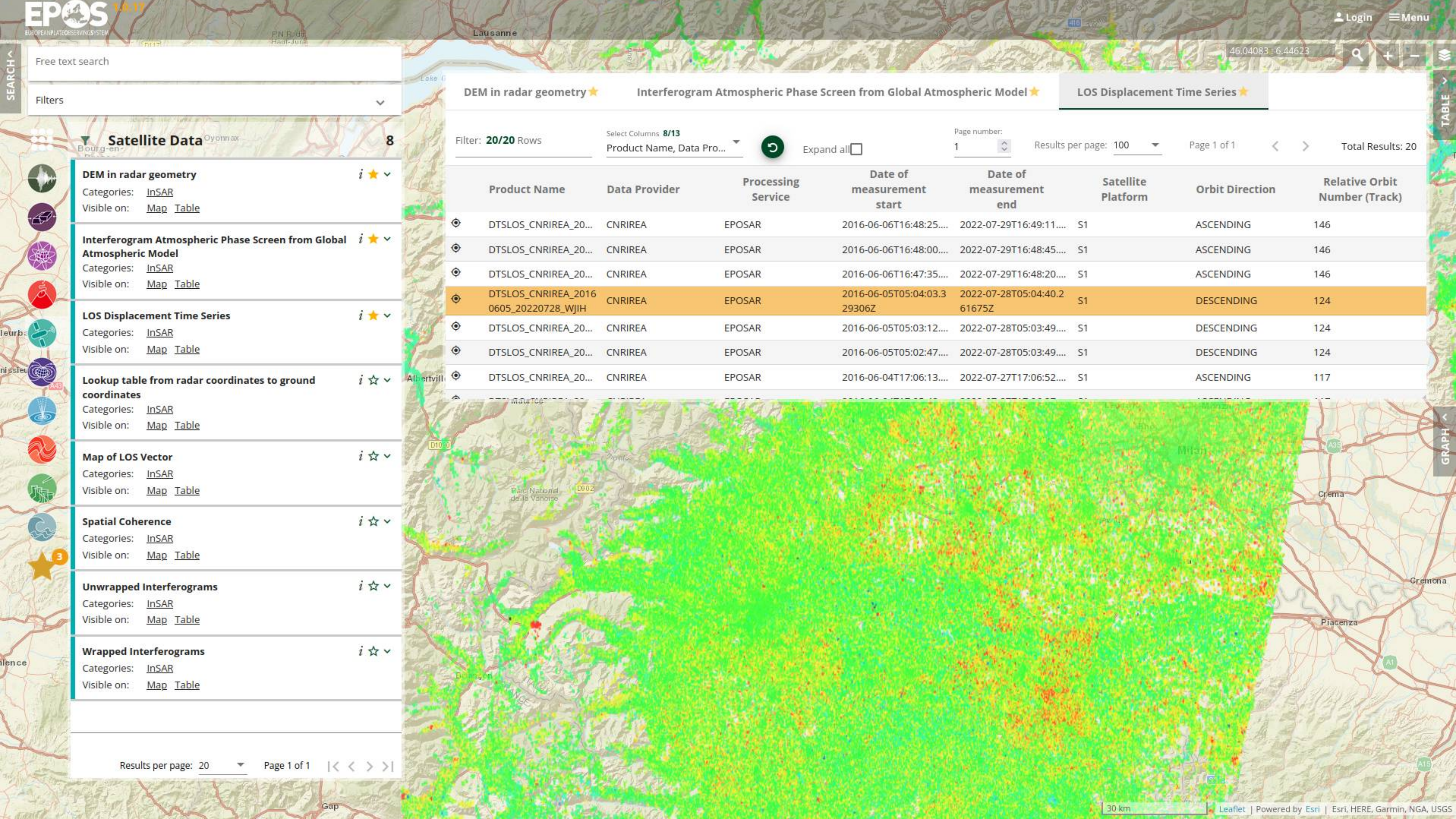
https://www.epos-eu.org/tcs/satellite-data


EPOS
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Filters
Satellite Data 8
DEM in radar geometry
Categories: InSAR
Visible on: Map Table
Interferogram Atmospheric Phase Screen from Global Atmospheric Model
Categories: InSAR
Visible on: Map Table
LOS Displacement Time Series
Categories: InSAR
Visible on: Map Table
Lookup table from radar coordinates to ground coordinates
Categories: InSAR
Visible on: Map Table
Map of LOS Vector
Categories: InSAR
Visible on: Map Table
Spatial Coherence
Categories: InSAR
Visible on: Map Table
Unwrapped Interferograms
Categories: InSAR
Visible on: Map Table
Wrapped Interferograms
Categories: InSAR
Visible on: Map Table
Results per page: 20
Page 1 of 1
DEM in radar geometry
Interferogram Atmospheric Phase Screen from Global Atmospheric Model
LOS Displacement Time Series
Filter: 20/20 Rows
Select Columns 8/13
Product Name, Data Pro...
Expand all
Page number: 1
Results per page: 100
Page 1 of 1
Total Results: 20
Product Name
Data Provider
Processing Service
Date of measurement start
Date of measurement end
Satellite Platform
Orbit Direction
Relative Orbit Number (Track)
DTSLOS_CNRIREA_20... CNRIREA EPOSAR 2016-06-06T16:48:25.... 2022-07-29T16:49:11.... S1 ASCENDING 146
DTSLOS_CNRIREA_20... CNRIREA EPOSAR 2016-06-06T16:48:00.... 2022-07-29T16:48:45.... S1 ASCENDING 146
DTSLOS_CNRIREA_20... CNRIREA EPOSAR 2016-06-06T16:47:35.... 2022-07-29T16:48:20.... S1 ASCENDING 146
DTSLOS_CNRIREA_20160605_20220728_WJIH CNRIREA EPOSAR 2016-06-05T05:04:03.329306Z 2022-07-28T05:04:40.261675Z S1 DESCENDING 124
DTSLOS_CNRIREA_20... CNRIREA EPOSAR 2016-06-05T05:03:12.... 2022-07-28T05:03:49.... S1 DESCENDING 124
DTSLOS_CNRIREA_20... CNRIREA EPOSAR 2016-06-05T05:02:47.... 2022-07-28T05:03:49.... S1 DESCENDING 124
DTSLOS_CNRIREA_20... CNRIREA EPOSAR 2016-06-04T17:06:13.... 2022-07-27T17:06:52.... S1 ASCENDING 117
TABLE
GRAPH
SEARCH
30 km
Leaflet | Powered by Esri | Esri, HERE, Garmin, NGA, USGS

GEOMAGNETIC
OBSERVATIONS

GEOMAGNETIC OBSERVATIONS

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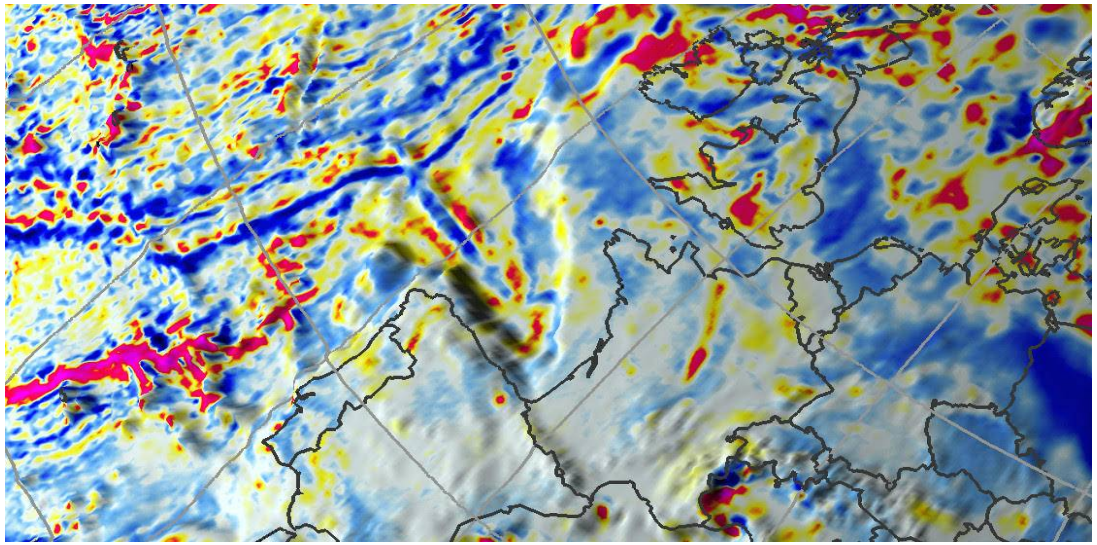
GEOMAGNETIC OBSERVATIONS

World Digital Magnetic Anomaly Map



European Service of Geomagnetic Indices

Magnetotelluric Data and Models

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Geomagnetic Observations TCS

Accurate and integrated geoelectromagnetic data is vital for but not limited to:

- well-functioning of navigation systems
- solid Earth geophysics, including deep Earth studies and exploration
- accuracy of mapping agencies
- space weather services

GEOMAGNETIC OBSERVATIONS

Geomagnetic Observations TCS

With the **modernisation of geoelectromagnetic data archival and distribution** and the **creation of new services for magnetotelluric data and geomagnetic models**, the Geomagnetic Observations TCS aims to consolidate the geomagnetic community and break down barriers to data access and sharing

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GEOMAGNETIC OBSERVATIONS

Services

4 Community Portals

- IMAGE (International Monitor for Auroral Geomagnetic Effects)
- ISGI (International Service of Geomagnetic Indices)
- INTERMAGNET (Wordwide data exchange between magnetic observatories)
- World Data Centre for Geomagnetism (Edinburgh)

Data, Data Products, Software and Services are divided into 4 categories:

- Geomagnetic data
- Geomagnetic models
- Geomagnetic indices and events
- Magnetotelluric models and data

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Login

SEARCH

Free text search

Filters

Geomagnetic Observations 15

Visible on: Map Table
Status:

INTERMAGNET Geomagnetic Observatory Data

Categories: Geomagnetic data
Visible on: Map Graph
Status:

Advanced search filters (4 of 4)

2018-01-01 00:00:0 — 2018-01-02 00:00:0

* Data cadence: Minute

* Observatory IAGA code: ESK

Publication state: adj-or-rep

Set to defaults | Apply

INTERMAGNET Geomagnetic Observatory Station List

Categories: Geomagnetic data
Visible on: Map Table

Results per page: 10 | Page 1 of 2

61.83379 : -5.53316

Apparent resistivity MSC11_d38

Impedance phase

Y-axes: Stack Overlay

Trace Selector

INTERMAGNET Geomagnetic Observatory Data

- F difference (F - S)
- North component
- East component
- Vertical component

17.54k
17.53k
00:00 03:00 06:00 09:00 12:00 15:00 18:00 21:00
Jan 1, 2018

ANTHROPOGENIC HAZARDS

ANTHROPOGENIC HAZARDS

Thematic Core Service

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https://www.epos-eu.org/tcs/anthropogenic-hazards

ANTHROPOGENIC HAZARDS

EPOS EUROPEAN PLATE OBSERVING SYSTEM

https://www.epos-eu.org/tcs/anthropogenic-hazards

ANTHROPOGENIC HAZARDS

- The exploitation of georesources entails **significant risks and changes to the environment.**

- **Human-induced (anthropogenic) hazards** pose threats to people, infrastructure and their surroundings, and involve different domains of the solid Earth sciences.

- Research on anthropogenic hazards requires an **interdisciplinary approach.**

EPOS EUROPEANPLATEOBSERVINGSYSTEM

https://www.epos-eu.org/tcs/anthropogenic-hazards

Anthropogenic Hazards TCS

The Anthropogenic Hazards Thematic Core Service:

- coordinates the integration and access to **facilities, datasets and scientific products** on anthropogenic hazards;
- provides **open data, software, and processing capacity** on the **EPISODES platform** to foster research and training on induced seismicity and hazards related to the exploration and exploitation of georesources.

https://www.epos-eu.org/tcs/anthropogenic-hazards

ANTHROPOGENIC HAZARDS

Services

Community Portal

- EPISODES Platform

Data, Data Products, Software and Services

- Anthropogenic services
- Anthropogenic episodes

EPOS EUROPEAN PLATE OBSERVING SYSTEM

https://www.epos-eu.org/tcs/anthropogenic-hazards

SEARCH

Free text search

Filters

Anthropogenic Hazards 39

Categories: Episodes > Reservoir impoundment
Visible on: Map Table

Episode LGCD: regional seismicity and ground motion associating underground hard rock mining - dataset
Categories: Episodes > Underground mining
Visible on: Map Table

Episode LUBOCINO: Shale Gas - dataset
Categories: Episodes > Unconventional hydrocarbon ext...
Visible on: Map Table

Episode MONTEYNARD: water reservoir - dataset
Categories: Episodes > Reservoir impoundment
Visible on: Map Table

Episode NORTHWICH: underground salt extraction cavities - dataset
Categories: Episodes > Underground mining
Visible on: Map Table

Episode OKLAHOMA: conventional and unconventional hydrocarbon extraction and wastewater injection - dataset
Categories: Episodes > Conventional hydrocarbon extra...
Episodes > Wastewater injection
Episodes > Unconventional hydrocarbon ext...
Visible on: Map Table

Episode PREESALL MINE: underground salt extraction cavities - dataset
Categories: Episodes > Underground mining
Visible on: Map Table

Episode PREESE HALL: Shale Gas - dataset
Categories: Episodes > Unconventional hydrocarbon ext...
Visible on: Map Table

Results per page: 20 Page 1 of 2

GDANKA: underground coal mining - dataset | Episode COOPER BASIN: geothermal energy production - dataset | Episode COTTON VALLEY: hydraulic fracturing - da

TABLE

Filter: 1/1 Rows | Select Columns 7/7: Episode name, Filename,... | Expand all | Page number: 1 | Results per page: 5 | Page 1 of 1 | Total Results: 1

Episode name	Filename	Download	Datatype	Start	End	longitude , latitude
BOGDANKA: undergroun...	BOGDANKA_Catalog.mat	BOGDANKA_Catalog.mat	Catalog	2018-09-24 02:20:03.003	2020-12-30 12:51:18.003	23.01795,51.33645

GRAPH

Episode LUBOCINO: Shale Gas - dataset

View on Table

Episode name	LUBOCINO: shale gas
Filename	GDF_LUBOCINO_well_position.mat
Download	GDF_LUBOCINO_well_position.mat
Datatype	Well Position
Start	2011-06-20 12:00:00.003
End	2014-04-02 12:00:00.003

1 of 1

GEOLOGICAL INFORMATION AND MODELING

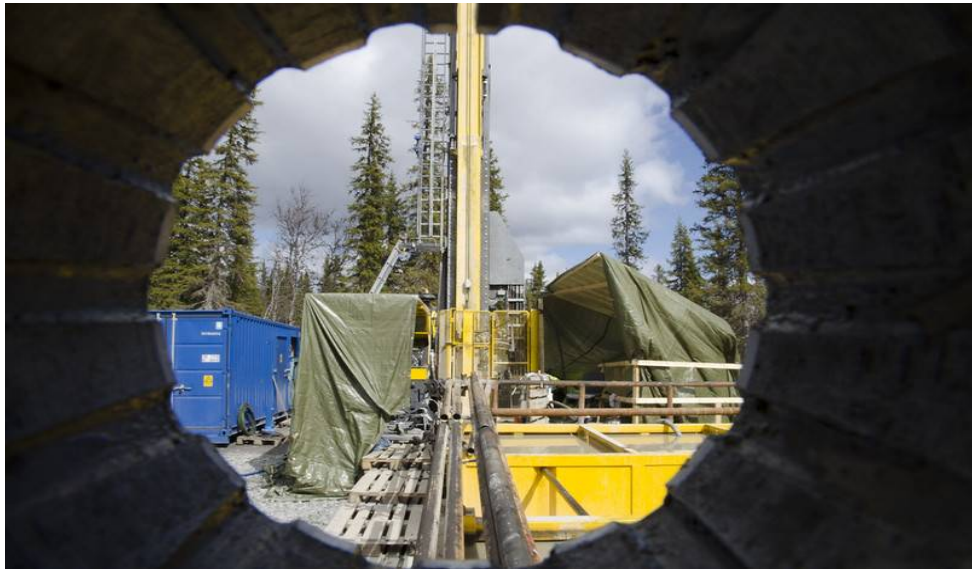
GEOLOGICAL INFORMATION AND MODELING

Thematic Core Service

EPOS EUROPEANPLATEOBSERVINGSYSTEM

https://www.epos-eu.org/tcs/geological-information-and-modeling

GEOLOGICAL INFORMATION AND MODELING



https://www.epos-eu.org/tcs/geological-information-and-modeling

GEOLOGICAL INFORMATION AND MODELING

- The ever-evolving field of geology is one of the main pillars to fully **comprehend the mechanisms and dynamics of the solid Earth.**

- **A comprehensive understanding of the Earth's composition and its geological processes** is needed to ensure the sustainability of georesources and of the environment.

EPOS EUROPEAN PLATE OBSERVING SYSTEM

https://www.epos-eu.org/tcs/geological-information-and-modeling

Geological Information and Modeling TCS

GEOLOGICAL INFORMATION AND MODELING

TCS GIM

- develops and consolidates information and data infrastructures for data produced by the geological international community;
- provides virtual access to geological data, maps, and models;
- allows users to retrieve consolidated information produced by research facilities, and share and publish their data and content on the EPOS' ICS platform.

EPOS EUROPEANPLATEOBSERVINGSYSTEM

https://www.epos-eu.org/tcs/geological-information-and-modeling

GEOLOGICAL INFORMATION AND MODELING

Services

2 Community Portals

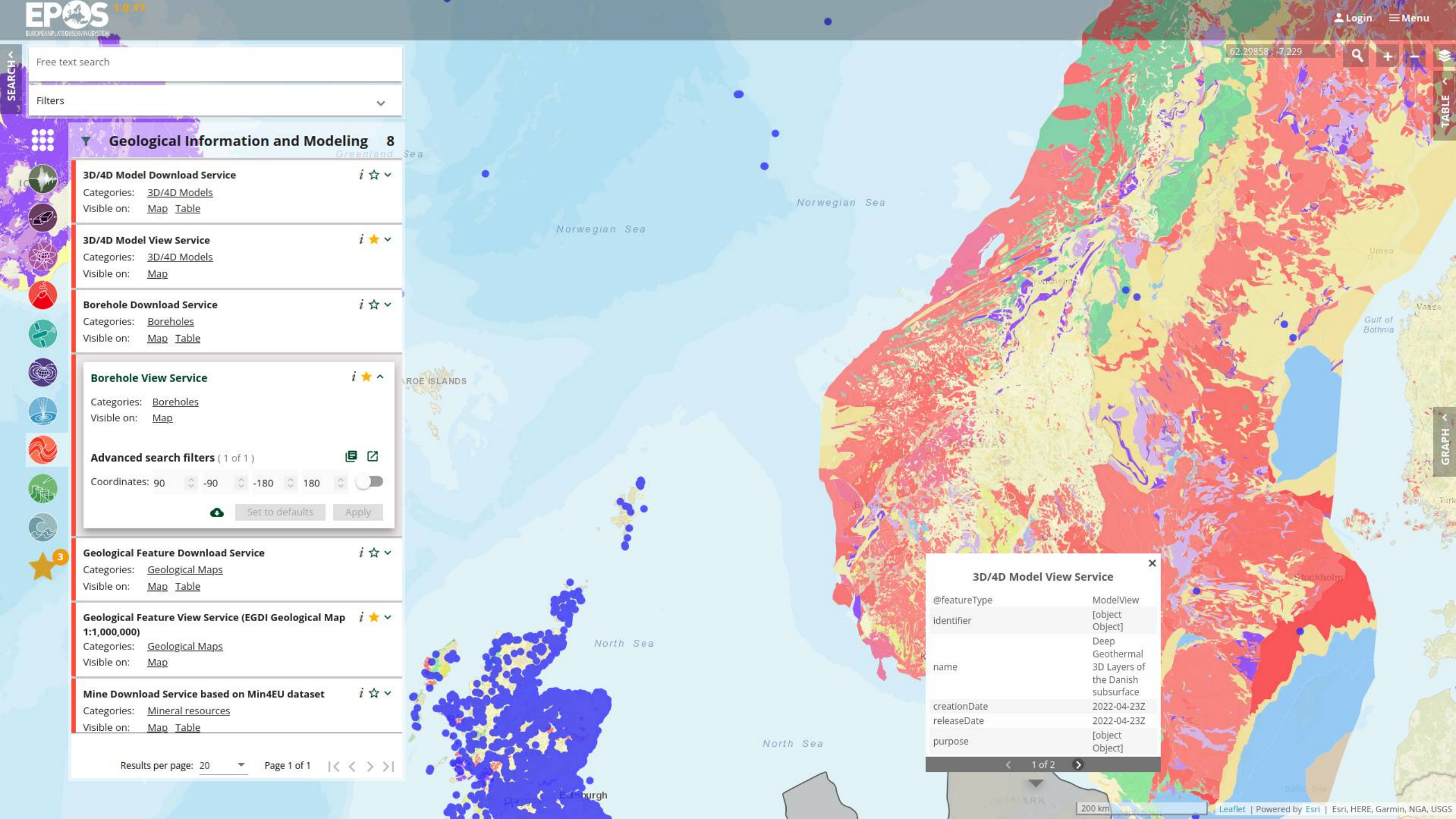
- One Geology
- EGDI (European Geological Data Infrastructure)

Data, Data Products, Software and Services are divided into 4 categories:

- Boreholes
- Geological Maps
- Mineral Resources Occurrences
- 3D Model Metadata

EPOS EUROPEANPLATEOBSERVINGSYSTEM

https://www.epos-eu.org/tcs/geological-information-and-modeling


EPOS 1.0.77
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Geological Information and Modeling 8
3D/4D Model Download Service
Categories: 3D/4D Models
Visible on: Map Table
3D/4D Model View Service
Categories: 3D/4D Models
Visible on: Map
Borehole Download Service
Categories: Boreholes
Visible on: Map Table
Borehole View Service
Categories: Boreholes
Visible on: Map
Advanced search filters (1 of 1)
Coordinates: 90 -90 -180 180
Set to defaults
Apply
Geological Feature Download Service
Categories: Geological Maps
Visible on: Map Table
Geological Feature View Service (EGDI Geological Map 1:1,000,000)
Categories: Geological Maps
Visible on: Map
Mine Download Service based on Min4EU dataset
Categories: Mineral resources
Visible on: Map Table
Results per page: 20
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62.29858 ; -7.229
TABLE
GRAPH
Greenland Sea
Norwegian Sea
Norwegian Sea
FAROE ISLANDS
North Sea
North Sea
Edinburgh
Umea
Gulf of Bothnia
Stockholm
3D/4D Model View Service
@featureType ModelView
identifier [object Object]
name Deep Geothermal 3D Layers of the Danish subsurface
creationDate 2022-04-23Z
releaseDate 2022-04-23Z
purpose [object Object]
1 of 2
200 km
Leaflet | Powered by Esri | Esri, HERE, Garmin, NGA, USGS

MULTI-SCALE LABORATORIES

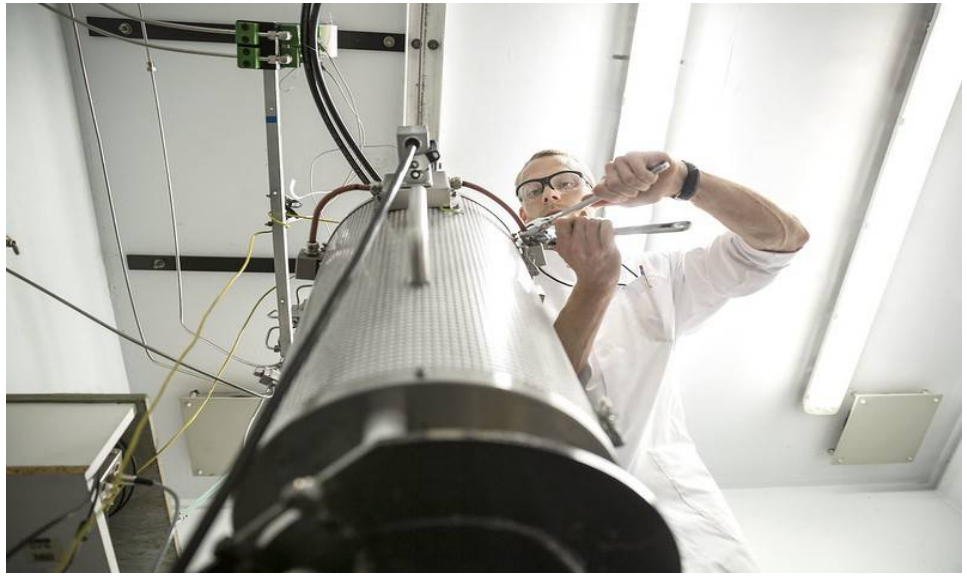
MULTI-SCALE LABORATORIES

Thematic Core Service

EPOS EUROPEANPLATEOBSERVINGSYSTEM

https://www.epos-eu.org/tcs/multi-scale-laboratories

MULTI-SCALE LABORATORIES



EPOS EUROPEAN PLATE OBSERVING SYSTEM

https://www.epos-eu.org/tcs/multi-scale-laboratories

TCS Multi-scale Laboratories: connecting innovative experimental research

MULTI-SCALE LABORATORIES

Core challenges

- Harmonize heterogeneous landscape of scattered world-class laboratories and establish a strong collaborative network
- Disseminate heterogeneous 'long tail' FAIR experimental lab data
- Harmonize and disseminate potentially homogeneous data (e.g., geochemistry, geo-energy)
- Offer an efficient TNA program

TCS Characteristics

- Extended EPOS paradigm: finding and publishing
- multidisciplinary data
- Connecting the long tail of science
- Central role for FAIR RDM from the very start

https://www.epos-eu.org/tcs/multi-scale-laboratories

EPOS EUROPEANPLATEOBSERVINGSYSTEM

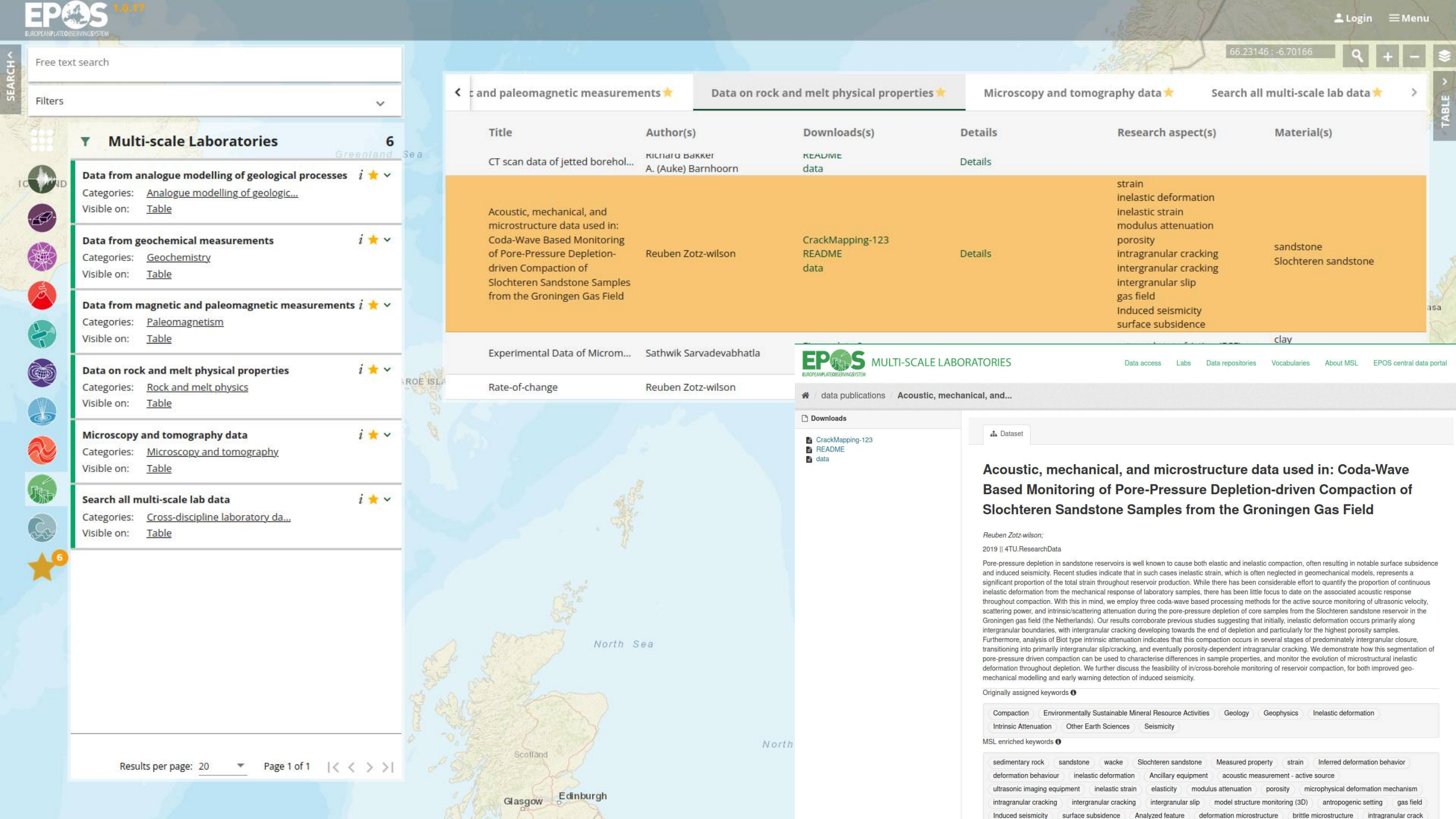
MULTI-SCALE LABORATORIES

Services

Data, Data Products, Software and Services are divided into 3 categories:

- MSL Catalogue (data sets)
- GFZ Data Services (metadata editor, publication)
- Transnational access brokering service

EPOS EUROPEAN PLATE OBSERVING SYSTEM


EPOS 1.0.17
EUROPEAN PLATE OBSERVING SYSTEM
Login
Menu
SEARCH
Free text search
Filters
66.23146 : -6.70166
Multi-scale Laboratories 6
Data from analogue modelling of geological processes
Categories: Analogue modelling of geologic...
Visible on: Table
Data from geochemical measurements
Categories: Geochemistry
Visible on: Table
Data from magnetic and paleomagnetic measurements
Categories: Paleomagnetism
Visible on: Table
Data on rock and melt physical properties
Categories: Rock and melt physics
Visible on: Table
Microscopy and tomography data
Categories: Microscopy and tomography
Visible on: Table
Search all multi-scale lab data
Categories: Cross-discipline laboratory da...
Visible on: Table
Results per page: 20
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Greenland Sea
North Sea
Scotland
Glasgow
Edinburgh
t and paleomagnetic measurements
Data on rock and melt physical properties
Microscopy and tomography data
Search all multi-scale lab data
TABLE
Title
Author(s)
Downloads(s)
Details
Research aspect(s)
Material(s)
CT scan data of jetted borehol...
Richard Bakker
A. (Auke) Barnhoorn
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data
Details
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
CrackMapping-123
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data
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strain
inelastic deformation
inelastic strain
modulus attenuation
porosity
intragranular cracking
intergranular cracking
intergranular slip
gas field
Induced seismicity
surface subsidence
sandstone
Slochteren sandstone
Experimental Data of Microm...
Sathwik Sarvadevabhatla
clay
Rate-of-change
Reuben Zotz-wilson
EPOS MULTI-SCALE LABORATORIES
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Labs
Data repositories
Vocabularies
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EPOS central data portal
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Acoustic, mechanical, and...
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README
data
Dataset
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 || 4TU.ResearchData
Pore-pressure depletion in sandstone reservoirs is well known to cause both elastic and inelastic compaction, often resulting in notable surface subsidence and induced seismicity. Recent studies indicate that in such cases inelastic strain, which is often neglected in geomechanical models, represents a significant proportion of the total strain throughout reservoir production. While there has been considerable effort to quantify the proportion of continuous inelastic deformation from the mechanical response of laboratory samples, there has been little focus to date on the associated acoustic response throughout compaction. With this in mind, we employ three coda-wave based processing methods for the active source monitoring of ultrasonic velocity, scattering power, and intrinsic/scattering attenuation during the pore-pressure depletion of core samples from the Slochteren sandstone reservoir in the Groningen gas field (the Netherlands). Our results corroborate previous studies suggesting that initially, inelastic deformation occurs primarily along intergranular boundaries, with intergranular cracking developing towards the end of depletion and particularly for the highest porosity samples. Furthermore, analysis of Biot type intrinsic attenuation indicates that this compaction occurs in several stages of predominately intergranular closure, transitioning into primarily intergranular slip/cracking, and eventually porosity-dependent intragranular cracking. We demonstrate how this segmentation of pore-pressure driven compaction can be used to characterise differences in sample properties, and monitor the evolution of microstructural inelastic deformation throughout depletion. We further discuss the feasibility of in/cross-borehole monitoring of reservoir compaction, for both improved geo-mechanical modelling and early warning detection of induced seismicity.
Originally assigned keywords
Compaction
Environmentally Sustainable Mineral Resource Activities
Geology
Geophysics
Inelastic deformation
Intrinsic Attenuation
Other Earth Sciences
Seismicity
MSL enriched keywords
sedimentary rock
sandstone
wacke
Slochteren sandstone
Measured property
strain
Inferred deformation behavior
deformation behaviour
inelastic deformation
Ancillary equipment
acoustic measurement - active source
ultrasonic imaging equipment
inelastic strain
elasticity
modulus attenuation
porosity
microphysical deformation mechanism
intragranular cracking
intergranular cracking
intergranular slip
model structure monitoring (3D)
antropogenic setting
gas field
Induced seismicity
surface subsidence
Analyzed feature
deformation microstructure
brittle microstructure
intragranular crack

TSUNAMI

TSUNAMI

candidate Thematic Core Service

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https://www.epos-eu.org/tcs/tsunami

Services

Data, Data Products, Software and Services are divided into 4 categories:

- Support to Tsunami Service Providers
- Tsunami Data
- Numerical Models
- Hazard and Risk Products

SEARCH

Free text search

Filters

Tsunami 21

NEAM Tsunami Hazard Map ARP 2475 yr (OGC WMS)
Categories: Hazard and Risk Products > North-eastern Atlantic, Medite...
Visible on: Map
Status: ✓

NEAM Tsunami Hazard Map ARP 475 yr (OGC WMS)
Categories: Hazard and Risk Products > North-eastern Atlantic, Medite...
Visible on: Map
Status: ✓

NEAM Tsunami Hazard Map ARP 4975 yr (OGC WMS)
Categories: Hazard and Risk Products > North-eastern Atlantic, Medite...
Visible on: Map
Status: ✓

NEAM Tsunami Hazard Map ARP 975 yr (OGC WMS)
Categories: Hazard and Risk Products > North-eastern Atlantic, Medite...
Visible on: Map
Status: ✓

NEAM Tsunami Hazard Map ARP 9975 yr (OGC WMS)
Categories: Hazard and Risk Products > North-eastern Atlantic, Medite...
Visible on: Map
Status: ✓

NEAM Tsunami Hazard Model 2018 full dataset (OGC WFS)
Categories: Hazard and Risk Products > North-eastern Atlantic, Medite...
Visible on: Map Table
Status: ✓

Results per page: 20 Page 1 of 2

NEAM Tsunami Hazard Model 2018 full dataset (OGC WFS)

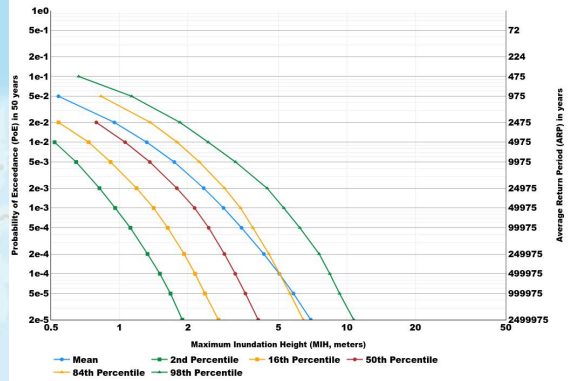
View on Table

poi	nea14846
region	North-eastern Atlantic
lon	-8.083
lat	71.159
depth	-44.8
hc_link	https://hazardcurves.tsunamidata.org/nea14846

1 of 2

Download CSV

Hazard Curve at: lon -8.083, lat 71.159, North East Atlantic
POI id: nea14846



The NEAM Tsunami Hazard Model 2018 (NEAMTHM18)

NEAMTHM18 The NEAM Tsunami Hazard Model 2018 (NEAMTHM18; https://doi.or
is a time-independent probabilistic hazard model for tsunamis generated by earthq
coastlines of the North-eastern Atlantic, the Mediterranean, and connected Seas (N

The hazard results are provided as the Probability of Exceedance (PoE) in 50 years
tsunami intensity. The PoEs are regularly distributed between 1 and 2E-5, and the i
accordingly.

The metric used for the tsunami intensity is the Maximum Inundation Height (MIH,
local amplification factors (AF) to the offshore results obtained at 2,336 Points of I
North-eastern Atlantic (1,092 POIs), the Mediterranean Sea (1,107 POIs), and the Bl
spacing of ~20 km and an average depth of ~50 m.

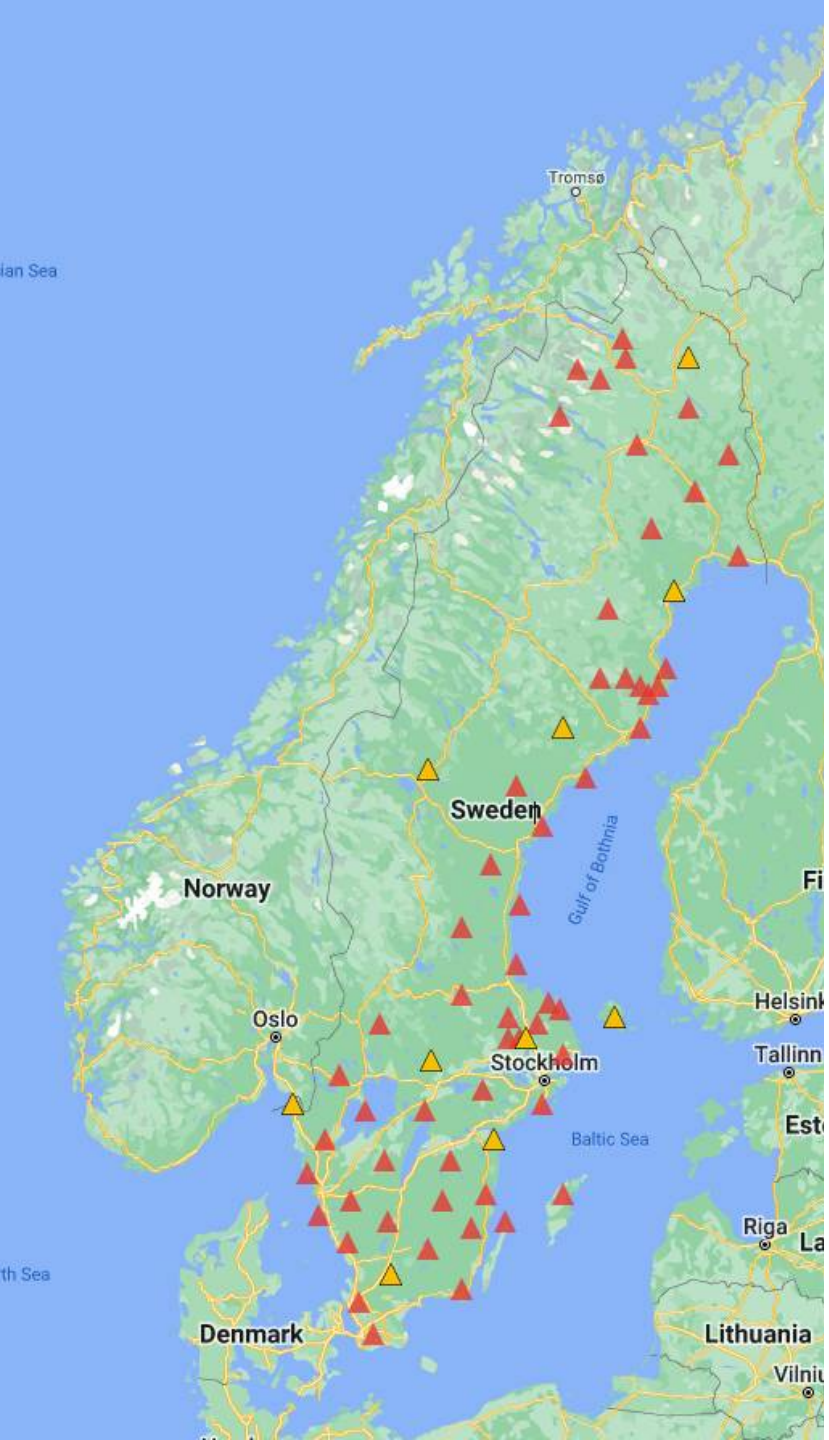
We provide the mean hazard curve and five percentiles of the model epistemic unc
50th, 84th, and 98th percentiles. The documentation of the model can be found at
/documentation/ and at https://www.frontiersin.org/articles/10.3389/feart.2020.6
the framework of the European Project TSUMAPS-NEAM (http://www.tsumaps-nea
of the European Civil Protection and Humanitarian Aid Operations (grant no. ECHO

GRAPH

EPOS Sweden is active in and contributes to five TCSs:

- TCS Seismology
- TCS GNSS Data and Products
- TCS Geomagnetic Observations
- TCS Anthropogenic Hazards
- TCS Geological Information and Modelling

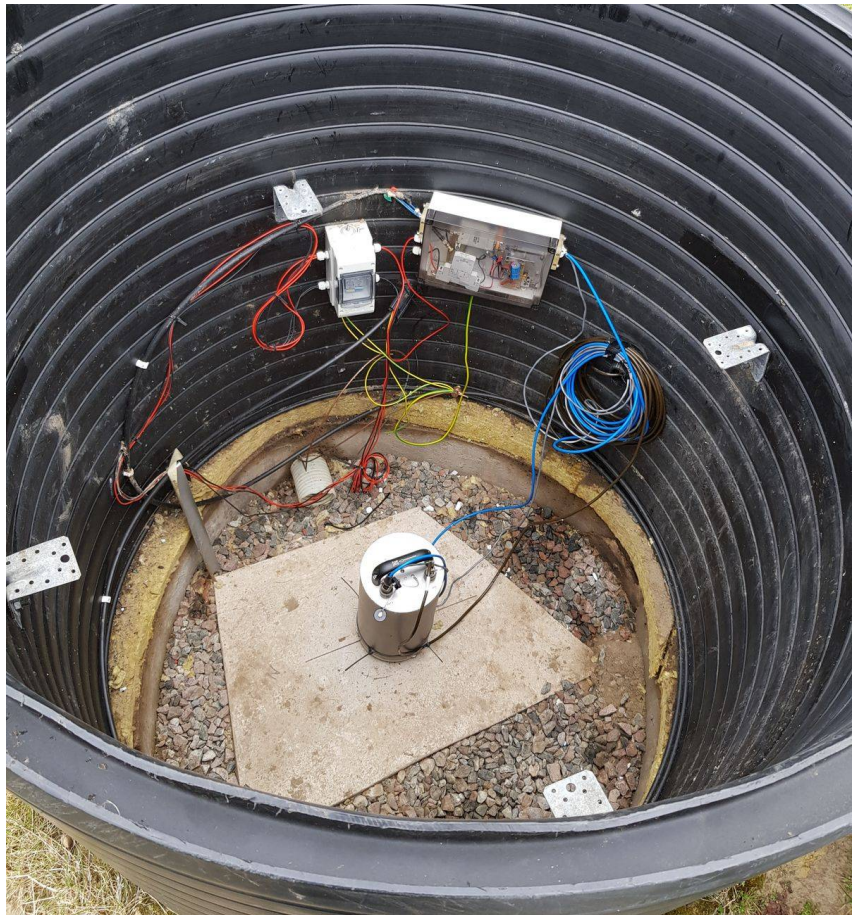
EPOS-SE
EUROPEANPLATEOBSERVINGSYSTEM SWEDEN



TCS Seismology

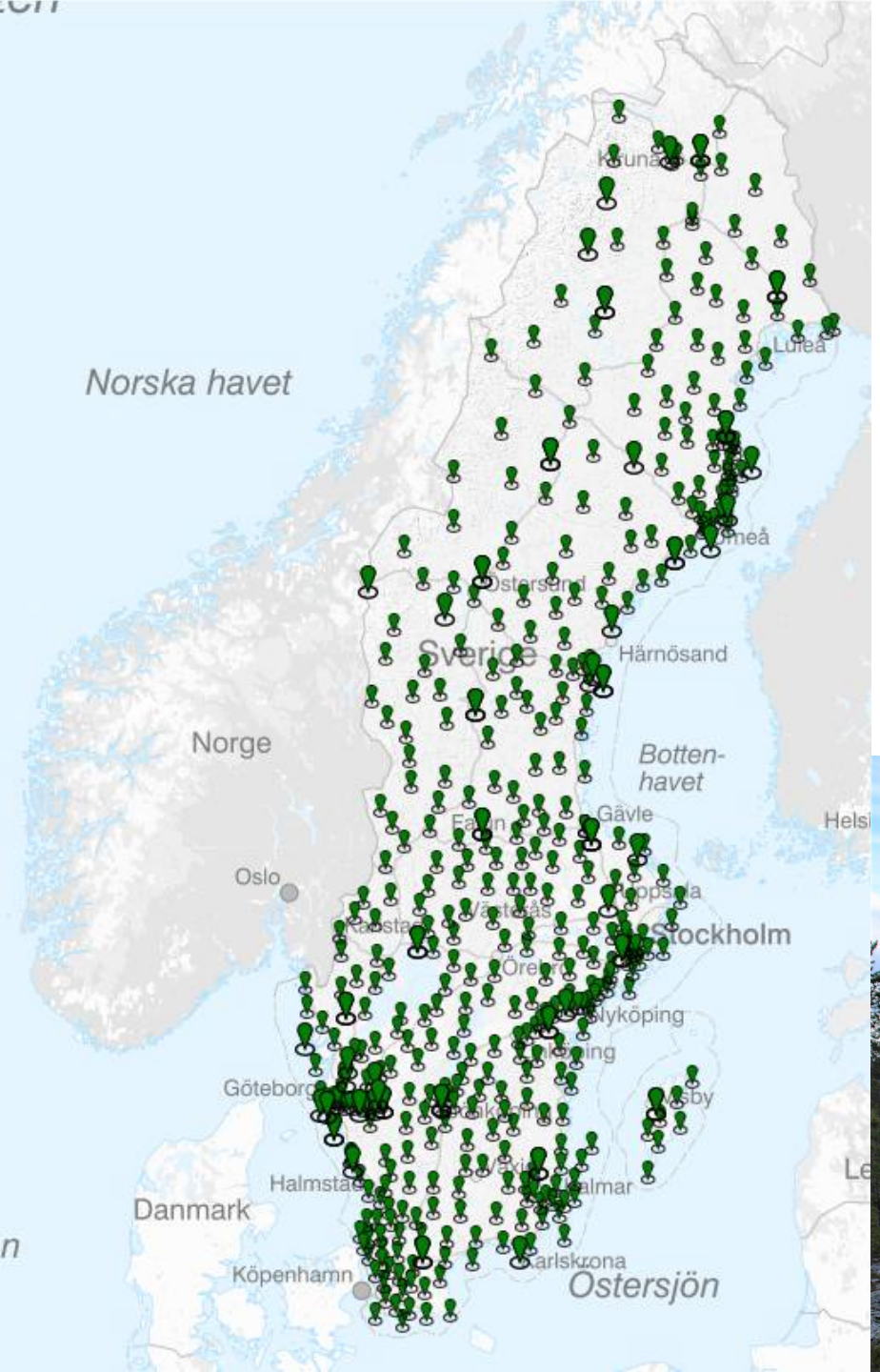
Uppsala University

- The Swedish National Seismic Network (SNSN)
- 68 permanent seismic stations



- Presently delivers data from a subset of stations and aims at delivering data from all stations after necessary infrastructure upgrades

EPOS-SE
EUROPEANPLATEOBSERVINGSYSTEM SWEDEN



TCS GNSS Data and Products

Lantmäteriet

(The Swedish Mapping, Cadastral and Land Registration Authority)

- SWEPOS national GNSS network,
- ~500 stations
- Keys sites already provided to EPOS
- Responsible for the EPOS Strain Rate Product

EPOS-SE
EUROPEANPLATEOBSERVINGSYSTEM SWEDEN

TCS Geomagnetic Observations

Luleå University of Technology

- TCS leader
- Responsible for setting up and operating the EMTDAMO service
  (European Service of Magnetotelluric Data and Models)
- Compilation of data from legacy and present surveys

EPOS-SE
EUROPEANPLATEOBSERVINGSYSTEM SWEDEN

TCS Anthropogenic Hazards

Luleå University of Technology

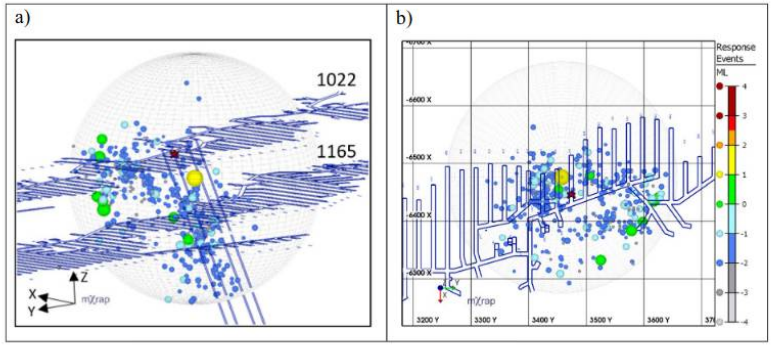
- Responsible for the TCS's "projects & partnership": collaborations, new partners, technical requirements
- Data from Swedish mines

J Seismol
https://doi.org/10.1007/s10950-022-10108-6

ORIGINAL ARTICLE

On the applicability of the RETAS model for forecasting aftershock probability in underground mines (Kiirunavaara Mine, Sweden)

Dragomir Gospodinov · Savka Dineva · Christina Dahnér-Lindkvist



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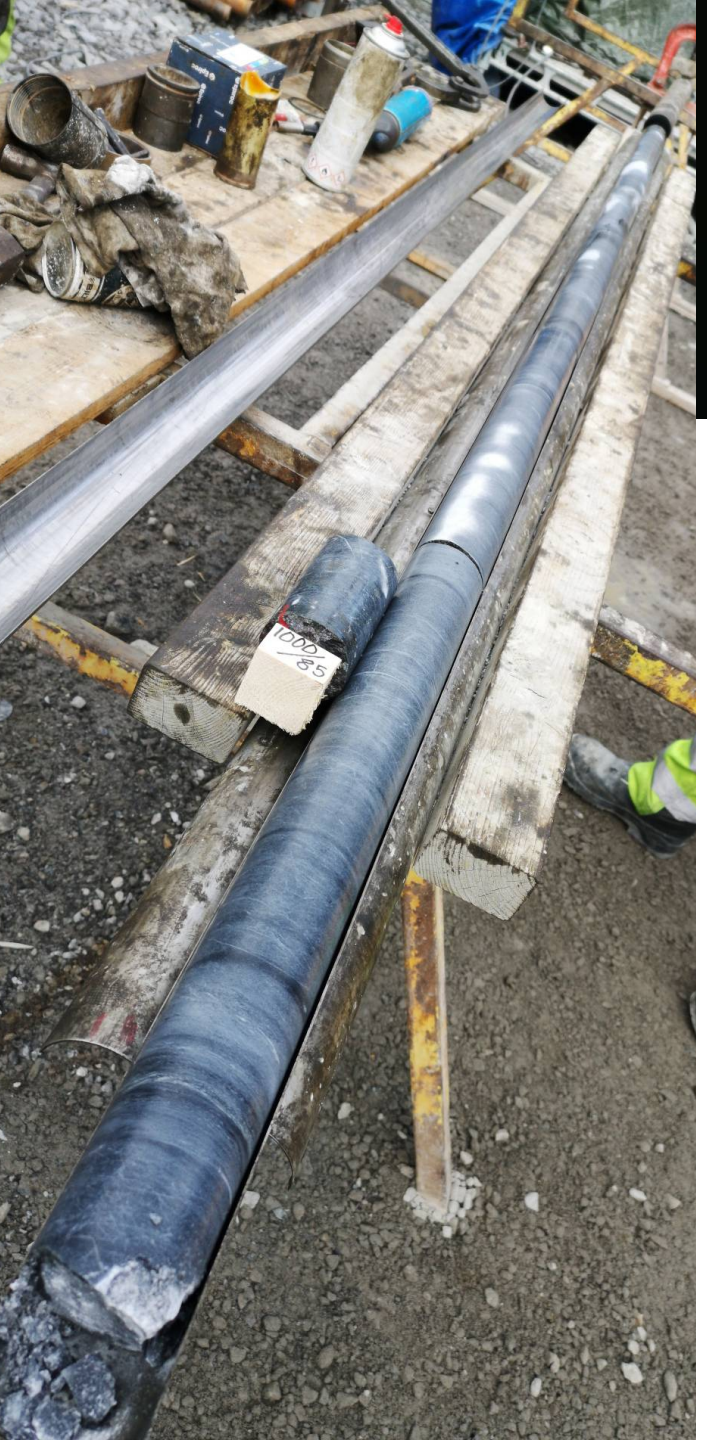

TCS Geological Information and Modelling

Uppsala University

- Scientific drilling data provision
- Scientific drilling perspective for borehole service design
- Compilation of legacy and new scientific drilling project assets

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