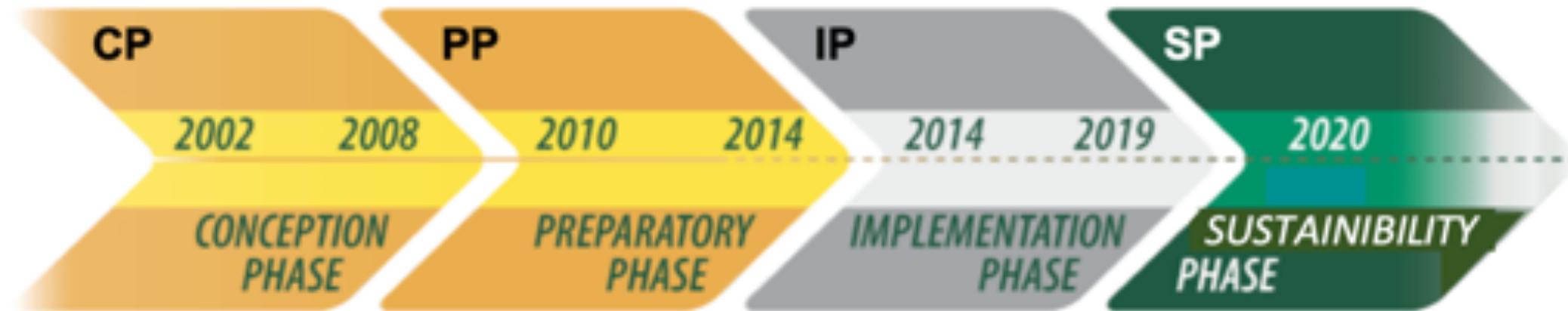




EUROPEAN PLATE OBSERVING SYSTEM

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Anne Socquet &  
Helle Pedersen



- EPOS-ERIC créé nov. 2018 (***General Assembly*** ont eu lieu nov. 2018, fév. 2019, juin 2019 et sep. 2019)
- Les **contrats de services** sont en préparation. Le soutien financier au fonctionnement de ceux-ci sera limité.
- Le portail technique de EPOS sera ouvert 4<sup>ème</sup> trimestre 2020. (Des interactions intenses ont/auront lieu entre les TCS et les ICS pour cette finalisation.)
- Pour la phase **EPOS-SP**, la France (CNRS et BRGM) est **porteuse de 2 WP**.



## Seismology

Seismic waveforms (ORFEUS)  
Seismological products (EMSC)  
Hazard & risk products (EFEHR)  
Computational seismology

→ RESIF participation



## Near fault observatories

NFO multidisciplinary data & products  
Borehole data  
Virtual laboratory & early warning test beds

→ Corinth Rift Laboratory  
(RESIF participates in data distribution)

## GNSS data and products

GNSS primary data & derived products  
Processing and visualization tools

→ RESIF participation

## Satellite data

SAR interferograms  
Integrated satellite products  
On-line processing tools

→ ForM@Ter SAR calculation & Optic

## Volcano observations

Multidisciplinary volcanic data & products  
Hazard products  
TNA to volcano observatories

→ Data and products from French Volc Obs  
RESIF participates in data distribution

## Anthropogenic hazards

Data for AH episodes  
Multi-hazard simulator - multi-risk assessment  
AH data visualisation

→ G-eau-thermie profonde & other French datasets (Lacq, Monteynard)

## Geomagnetic observations

Global and regional geomagnetic models  
Magnetotelluric data

→ ISGI - part of ANO Magnétisme

## Geological information and modeling

Geological multi-scale data  
Integrated geological maps  
Borehole visualization

→ BRGM (maps, borehole data)

## Multi-scale laboratories

Experimental & analogue data  
TNA to experimental & micro-analytical facilities

→ French labs involved (facilities, modeling)

## Geo energy test beds for low carbon energy

Geo energy test beds  
Access to in-situ GETB experiments

→ No validated EPOS services yet,  
no French participation



SEISMOLOGY

**Orfeus**

### ESM - Engineering Strong-Motion database

**ESM info**

- User manual
- Contributing Networks
- Contacts
- Glossary
- History

**Links**

- Strong-Motion Databases

**Tools**

- Processing web-frontend - a web-interface for waveform processing on ESM datasets. It performs real-time cross-sections, Q-filtering, processing and save the resulting waveforms on their personal computer.
- gse2segy.py - python code to convert ESM files to the most popular seismic formats (MSEED, SAC, GSE, SEGY, among others). Requires ObsPy.

**Products**

- ESM strong-motion flat-file 2018 - a parametric table which contains metadata and intensity measures of manually processed waveforms recorded by accelerometers

**ESM release 1.0**

This version of the Engineering Strong Motion database (ESM) has been developed in the framework of the European Project NERA (Network of European Research Infrastructures for Earthquake Risk Assessment and Mitigation), Network Activity 3: Networking acceleration-networks and SM data users. The database is maintained by IRGSE of ORFEUS.

ESM allows users to query earthquake and station information and download earthquake waveforms and response spectra for events with magnitude > 4.0 mainly recorded in the European-Mediterranean and the middle-East regions.

ESM is fully compatible with the European Integrated Data Archive (EIDA), a distributed data centre established to securely archive seismic waveform data and related metadata, based on international seismological standards. ESM also includes: European Strong-Motion Database (EPS) 1995-2002, the Italian Accelerometric Archive (ITACA), the Strong Ground Motion Database of Turkey and the Hellenic Accelerogram Database (HEAS).

[Read more...](#)

**Data search**

Waveforms    Stations    Events

Records compatible with target spectra  
REXXlite

**EPOS**  
within **ORFEUS**

**European Integrated Data Archive EIDA**

ORFEUS is the European Infrastructure for seismic waveform data in EPOS.

EIDA, an initiative within ORFEUS, is a distributed federation of datacenters established to securely archive seismic waveform data and metadata gathered by European research infrastructures and provide transparent access to data for the geosciences research communities. EIDA's [organization and management](#) is handled by the EIDA Management Board. The [EIDA nodes](#) are data centers that collect and archive data from seismic networks deploying broad-band sensors, short period sensors, accelerometers, infrasound sensors, and other geophysical instruments.

Seismic networks that participate in EIDA are listed as [contributing networks](#).

**Important information for ArcLink users:**

Starting from 01 December 2019 ORFEUS EIDA will no longer support ArcLink requests for data access, and ArcLink requests will fail.

Users are encouraged to switch to using [webservices](#) in advance in order to ensure seamless access to EIDA data. Please consult the [examples](#) on how to use the webservices.

To access restricted data (e.g. AlpArray) using webservices please consult the pages on the [EIDA Authentication System \(EAS\)](#) on how to request a token. Both ObsPy and the command line client [tdmspy\\_fetch](#) can be used to access restricted data using the token (see examples of code [here](#)).

**Webinterface**  
Graphical interface for waveform and metadata access.

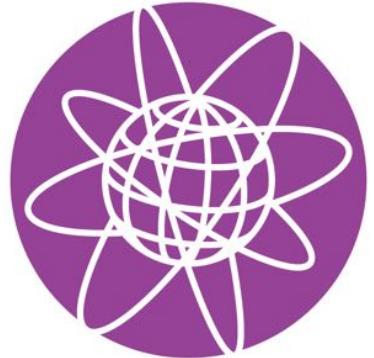
**Webservices**  
APIs for data and metadata access.

**Data Quality**  
Interfaces for data quality visualization.

**Station Book**  
Access to the entire EIDA station inventory.

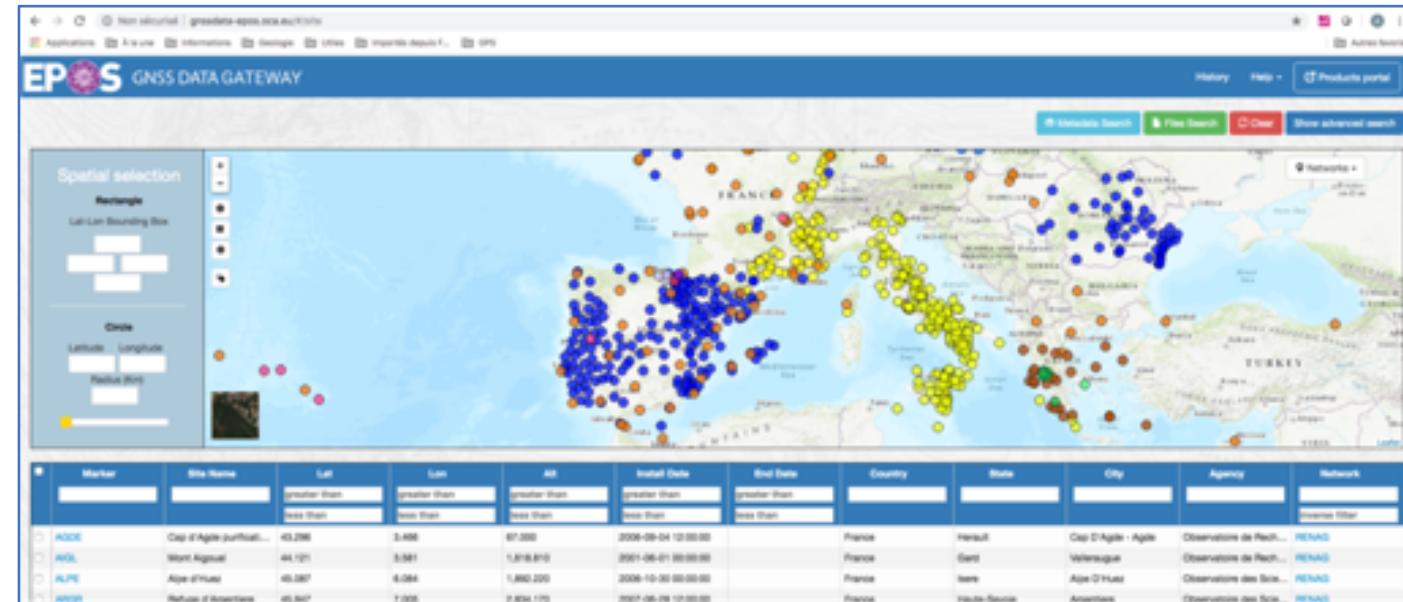
Operational and Closed Stations

Operational Station     Closed Station     EIDA Nodes



GNSS DATA  
AND PRODUCTS

# French Services: 1- EPOS-GNSS Data portal @ OCA <http://gnssdata-epos.oca.eu/>



## Objectives

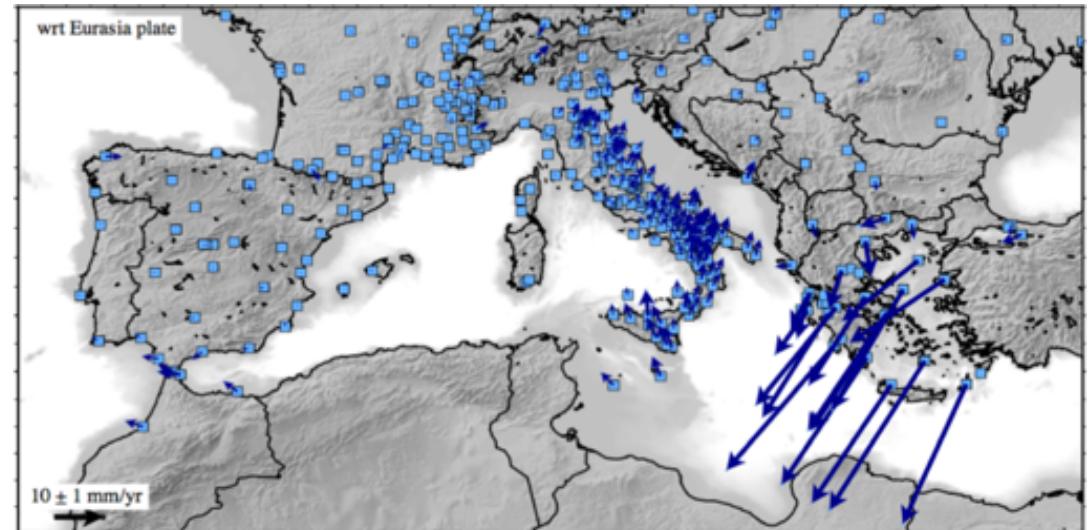
Archive and Distribute **GNSS data** (*Rinex*)

and **GNSS Products** (*Time-Series, Velocity Fields, Strain Rate Maps*)

## Added Value:

- At European scale
- High and homogeneous quality standard
- Unique portal (visibility)
- democratise /extend the use of GNSS data

## 2- Genesis and qualification of EPOS-GNSS products @ OSUG



Même avant la rentrée en opération des Integrated Core Services, EPOS a un impact :

- De nombreux **nouveaux jeux de données deviennent disponibles** et intègrent un système de distribution ouvert, comme par exemple :
  - *Seismology* → augmentation forte de données dans EIDA (données portugaises; données des hautes latitudes; ...)
  - *Volcanolo observations* → beaucoup de données italiennes étaient, avant, fermées
  - *Anthropogenic hazard* → premier assemblage opérationnel de ce type de données en Europe
- Des **services sont réunis et améliorés** au sein d'EPOS :
  - services associés à l'aléa sismique
  - services associés à la caractérisation de sites
  - produits GNSS
  - *Near fault observatories*
- De **nouveaux services sont développés** comme les données InSar prétraitées
- **Amélioration globale et homogénéisation partielle (domaine dépendant) de toutes les pratiques de gestion des données**



... introducing EPOS

EPOS is a **long-term plan for the integration**  
of research infrastructures for solid Earth Science in Europe

<https://www.epos-ip.org/>

EPOS integrates the  
**existing (and future)**  
advanced European  
facilities into  
**a single, distributed,  
sustainable infrastructure**  
taking full advantage  
of new **e-science opportunities**



# ... summing up EPOS



**National Research Infrastructures** ensure the **competences and resources** for collecting and analysing data and for maintaining national observation systems.

TCS are responsible for **integrating data, metadata and services** from various infrastructures for each discipline.

ICS provide a **new interface** that, by adopting data access policies aligned to **Open Science principles**, provides data and products in a **FAIR\*** form for users.

Promote **scientific and technological innovation** for successfully **addressing global major challenges in Earth sciences**.

\**Findable, Accessible, Interoperable, and Re-usable*

# EPOS-ICS GUI (Graphical User Interface)

<http://ics-c.epos-ip.org/>

- ⇒ Discover and harvest available Data, Data Products, Software and Services (DDSS)
- ⇒ Keypoints : standardized data and metadata, direct links for access and download

The screenshot displays the EPOS-ICS Graphical User Interface. At the top, there is a browser-style header with tabs and a search bar. Below this is a purple navigation bar with the EPOS-ICS logo and user login information. The main content area features a map of Europe with numerous green circular markers indicating data points. To the left of the map is a sidebar with various search and filter options, including:

- Advanced search
- Results (2,182):
  - (2) Geophysical Event Observations (2)
  - (1) Images (1)
  - (1) Metadata Integration (1)
  - (1) New energy (1)
  - (1) Seismology (1)
  - (1) Other (1)
  - (1) Stations with IRIS/EMSC data
  - (1) Get IRIS/EMSC search parameters
  - (1) Get IRIS/EMSC
  - (1) Products (1)
  - (1) Keypoints (1)
  - (1) Get Station search results (1)
  - (1) Get Station search results (1)
- Selected Items (0)

Below the sidebar, there is a detailed view of a specific data entry for "Stations with IRIS/EMSC data". The details are as follows:

Name	Stations with IRIS/EMSC data
Description	Returns IRIS Station objects containing IRIS/EMSC data that match the given IRIS parameters.
Spatial Coverage	Show on map  Center on map
Temporal Coverage	2000-01-01T11:00:00/00:00
Digital Object Identifier	Unspecified
Service Provider	Géosciences Observatoire