

Facilitating Multi-Disciplinary Research via Integrated Access to the Seismological Data & Product Services of EPOS Seismology

Florian Haslinger & the EPOS Seismology Consortium
ORFEUS: Lars Ottemöller, Carlo Cauzzi, Susana Custodio
EMSC: Rémy Bossu, Alberto Michelini
EFEHR: Fabrice Cotton, Helen Crowley, Laurentiu Danciu
User Representative: Irene Molinari
ESC Observer: Stefano Parolai

*and acknowledging the invaluable contributions of the member institutions and
active individuals of our European seismological service initiatives*

ANNALS OF
GEOPHYSICS

Special Issue

[ABOUT](#) ▾ [EDITORIAL POLICIES](#) ▾ [FOR AUTHORS](#) ▾ [FOR REVIEWER AND ASSOCIATE EDITOR](#) ▾ [ARCHIVES](#)

CURRENT ISSUE

Vol. 65 No. 2 (2022): Special Issue: EPOS a Research Infrastructure in solid Earth: open science and innovation

Guest editors: Massimo Cocco and Paola Montone

Published: 2022-04-29

MOST READ

Towards the new Thematic Core Service Tsunami within the EPOS Research Infrastructure
217

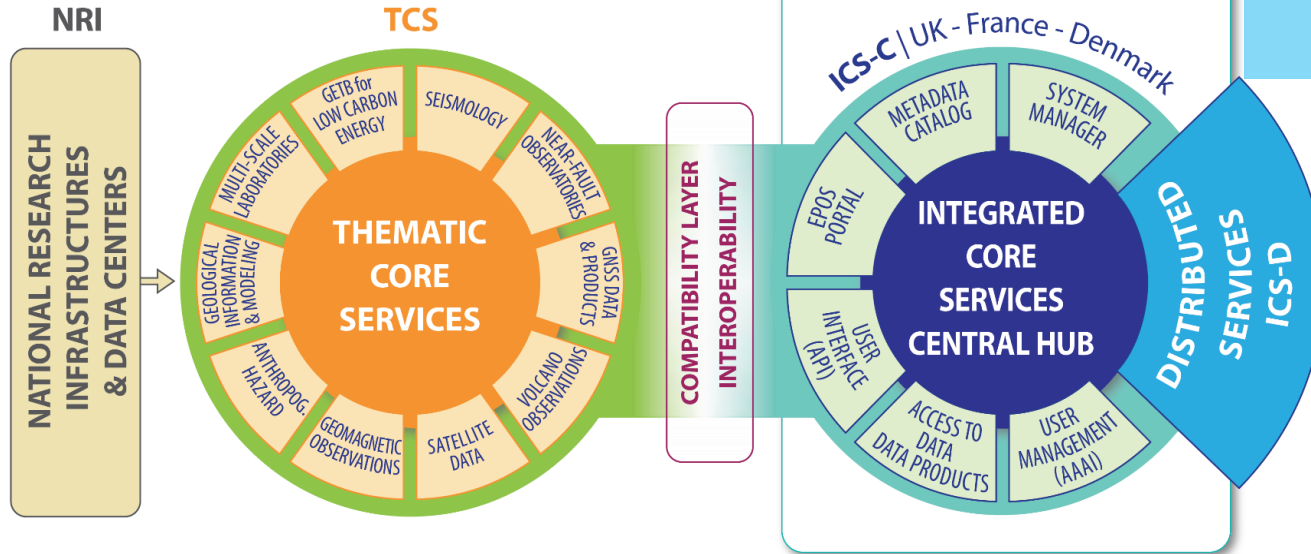
Coordinated and Interoperable Seismological Data and Product Services in Europe: the EPOS Thematic Core Service for Seismology
175

Coordinated and Interoperable Seismological Data and Product Services in Europe: the EPOS Thematic Core Service for Seismology

<https://doi.org/10.4401/ag-8767>

*see that article for
development, history and governance of
EPOS Seismology, EMSC, ORFEUS and EFEHR,
and more stuff not covered in these slides*

National RIs:
The foundation layer



Legal body & core infrastructure:
EPOS ERIC
including
ECO & ICS

Domain workhorses for the implementation & coordination of data & service provisioning:
Thematic Core Services TCS



Waveform Services

Orfeus

Waveform selection & access
 Waveform metrics & Station Information
 Strong Motion parameters
 OBS data integration
 Mobile Pool coordination & integration
 Waveform modeling

Seismological Products



Earthquake Parameter Information
 Macroseismic & Historical Event data
 Seismological Products Platform
 - rupture models / SiteCharTool / MT
 - EventID / F-E-Region / ...

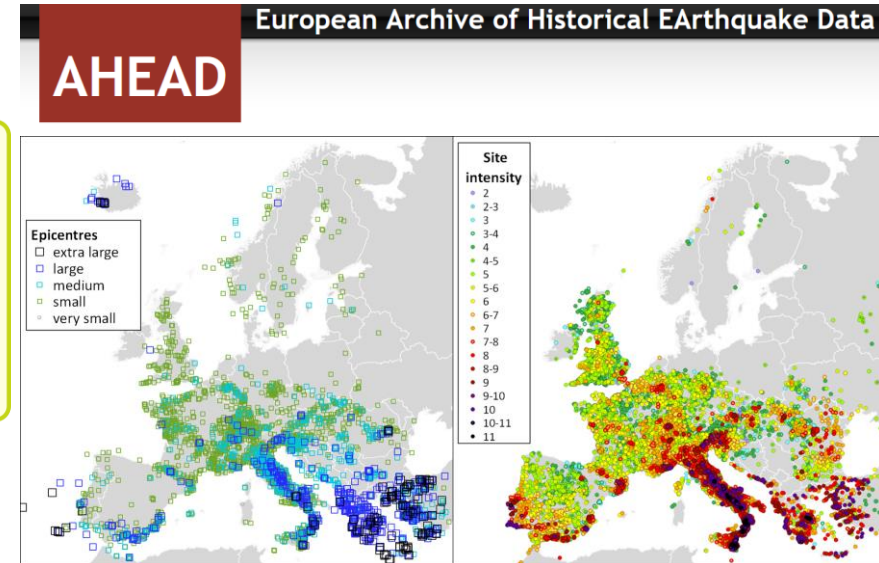
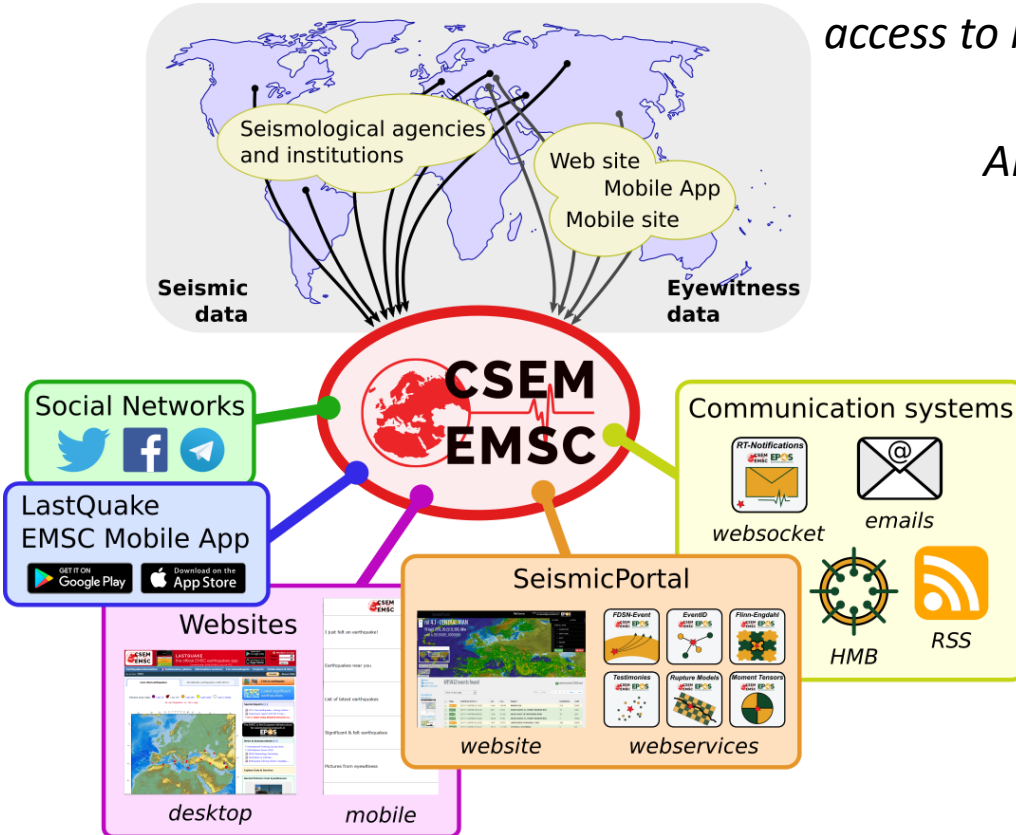
Hazard and Risk Services



Seismic Hazard Models
 Seismogenic Faults
 Ground Shaking Models
 Geotechnical Engineering Information
 Strong Motion records in buildings
 Earthquake Risk Services

EMSC: rebuilding website; improving services & access to near-real time information

AHEAD: improving of historical (macroseismic) data holdings and access services



ORFEUS services at a glance

- Coordinated access to more than 16,000 seismic stations (SM, BB, SP – temp. & perm. networks)

- European Integrated Data Archive (EIDA) and associated services

orfeus-eu.org/data/eida/

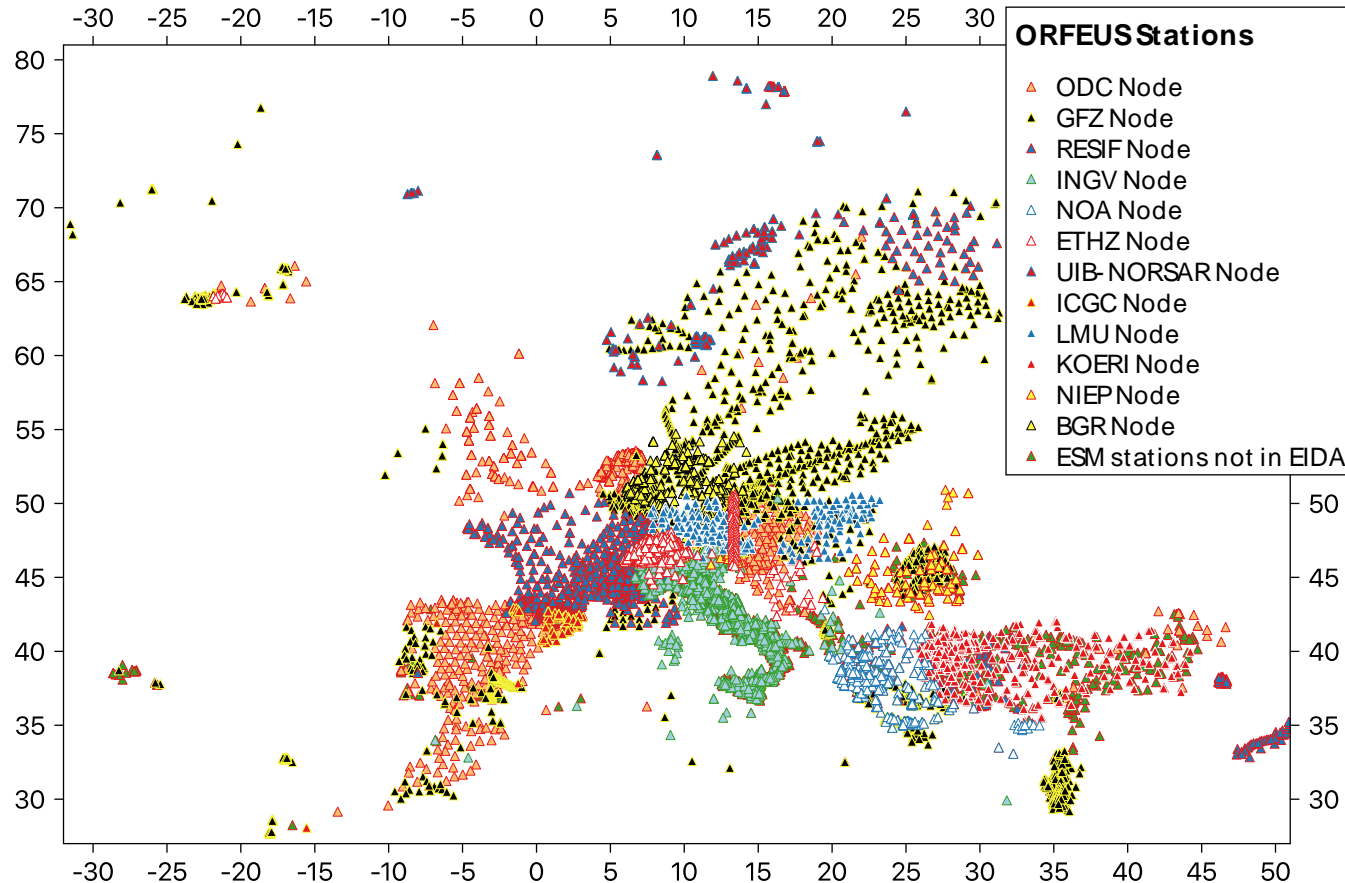
- Strong-motion services (ESM, RRSN)

orfeus-eu.org/data/strong/

- Mobile pools coordination

orfeus-eu.org/data/mobile/

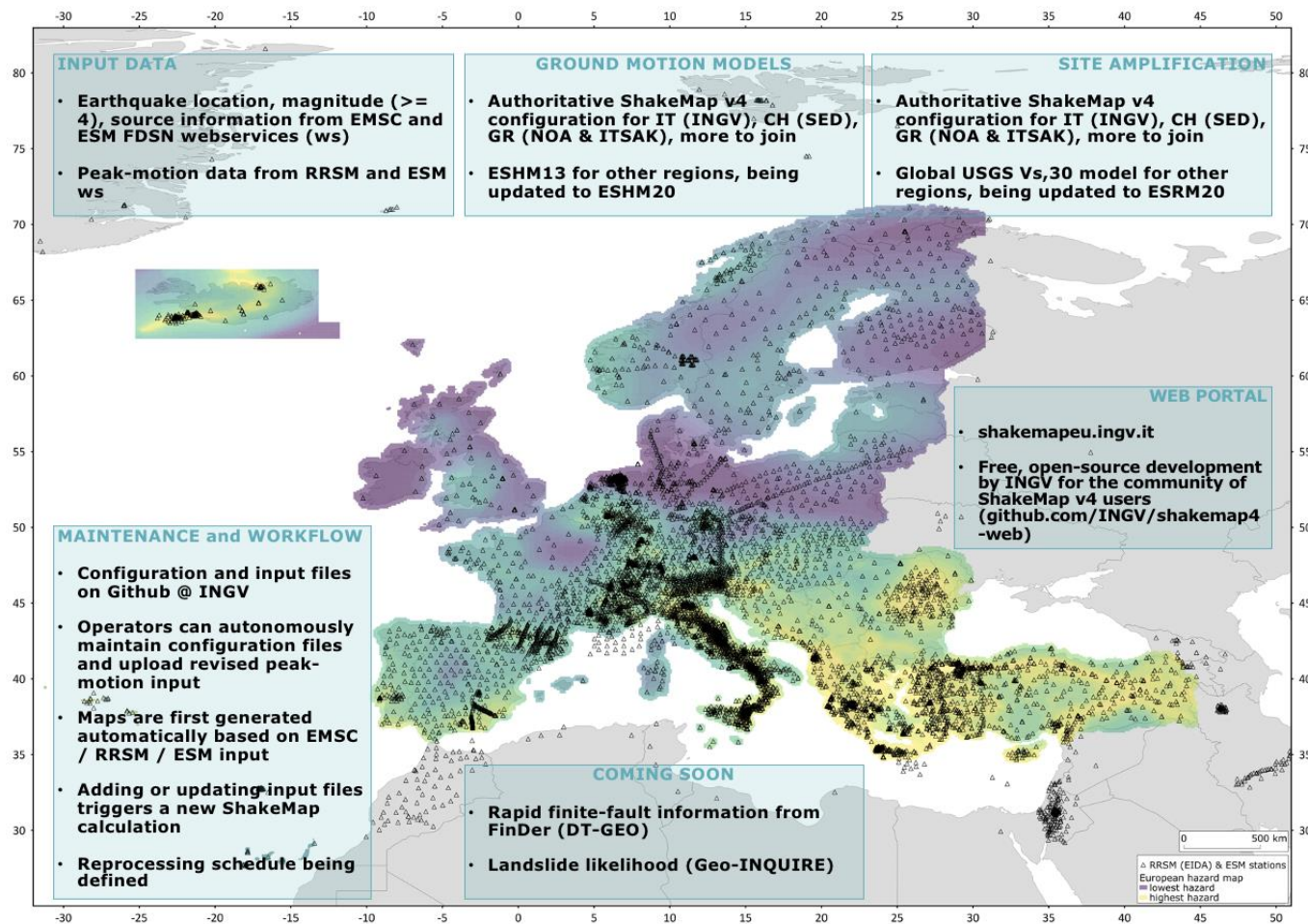
- Community services like workshops, training, grants



Towards ShakeMap harmonisation in Europe

A collaborative framework that:

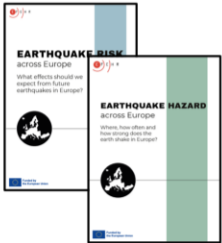
- optimally exploits the potential of European strong-motion webservices, besides FDSN event /station/datasetselect
- provides a single source for ShakeMaps at the European scale that builds on EIDA & SM and modern future-proof community software and tools
- delivers ShakeMaps for regions where there is no local capability yet & serves as a backup to local authoritative ShakeMap implementations



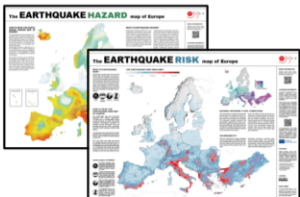
Explainer video



Flyers



Posters



Press release

Incl. maps & figures to download



Fact sheets



Technical report

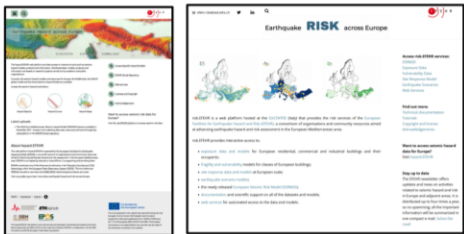


Already available on the EFEHR GitLab Repository: <https://gitlab.seismo.ethz.ch/efeher>

Website



Web platforms





Hazard Spectra



Hazard Curves



Hazard Maps

Latest uploads:

- The 2020 Euro-Mediterranean Seismic Hazard Model (ESHM20) became available in December 2021. Access to all underlying data sets, resources and tools through [this](#) web platform or the EHEHR GitLab repository.

Specific Hazard Models

The EFDiR web-platform provides access to interactive tools such as seismic hazard models, products and information. Distributed data, models, products and information are based on research projects carried out by academic and public organisations. The seismic hazard models are described at the regional and national level.



Europe

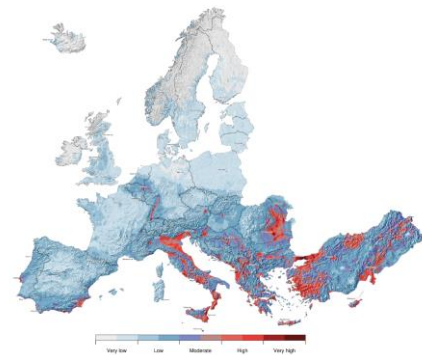
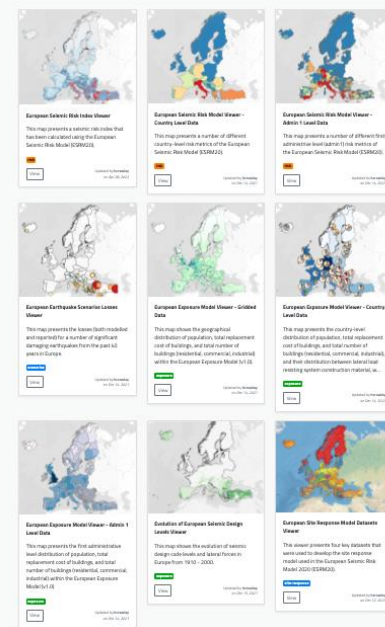


Middle East



National

hazard.efehr.org



risk.efehr.org



Updated web services to provide access to the newly released European Seismic Hazard and Risk Models

- New web services to access the Risk data and results, updated web services to access the hazard data, submodels and results.
- GitLab repositories, making use of the GitLab API to distribute the main input files, earthquake catalogues, active faults, site amplification, source models, exposure datasets, input files for OpenQuake
- Documentation and Reports

Challenges

... one of many:

How does a **European Research Infrastructure** deal with (near) real time data and products that may have strong links to **national disaster management** and response?

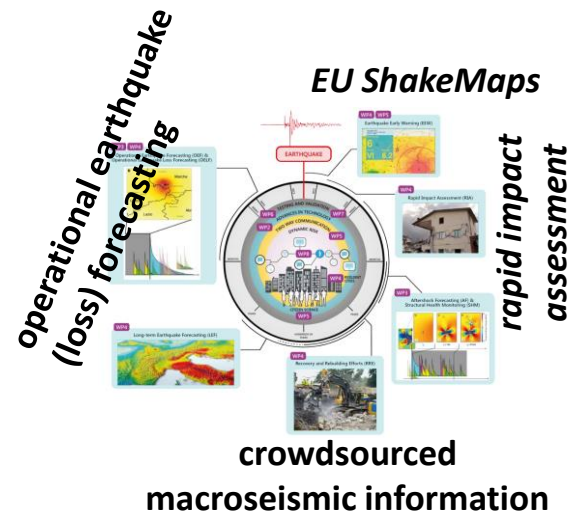
- dissemination and accessibility
: immediately open to everybody?
- authoritativeness
: conflict with national entities?
- governance
: who decides on content and appearance

... and some more:

licensing, PID assignments and resolution, new (large) data, technological change & adaptation, ...



**Real-time earthquake
rIisk reduction
for a ReSilient
Europe**



***New HorizonEurope projects that will further help to address issues & challenges
– for EPOS Seismology and beyond – starting October 2022***



***Geosphere INfrastructures for Questions
into Integrated Research***

provide and enhance access to existing (EPOS) services;
add new data, features;
develop ‘research test beds’ for real-time services

A Digital Twin for GEOphysical Extremes

build new service prototypes and pilot implementations
(validating workflows) as part of a ‘digital twin’ of the Earth;
contribute to the development of distributed computational
services of EPOS: ICS-D

