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Populating the SEISMOFAULTS.EU repository: recent developments in the making of the European Fault-Source Model 2020 (EFSM20)

Roberto Vallone, Roberto Basili, Michele Matteo Cosimo Carafa, Vanja Kastelic, Francesco Emanuele Maesano, Gabriele Tarabusi, and Mara Monica Tiberti

Istituto Nazionale di Geofisica e Vulcanologia (INGV) - Italy

EDSF legacy

The early days...

DISS 1&2 - **2000-2001**
FAUST - **2002**

In the early 2000's, two data products were specifically designed to distribute data about seismogenic faulting in Italy and Europe.

DISS was distributed on CD-ROMs; FAUST was distributed through a homemade web-GIS

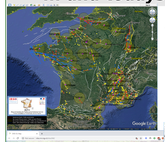
...later

DISS 3.x - **2005-on**

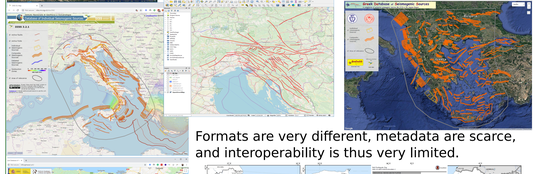
Successive refinements of the seismogenic fault definition. Crustal faults and slabs are mapped on separate layers. DISS and then EDSF are distributed through web-GIS.

EDSF - **2013**

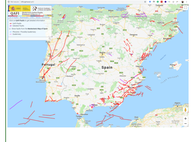
... and todays galaxy of seismogenic fault databases

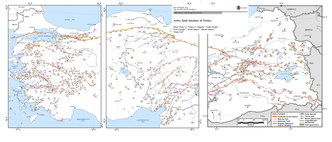


Several initiatives are active today throughout Europe.
Regional seismogenic fault databases, covering most of the Euro-Mediterranean area are published online, on papers, or distributed via GIS files.



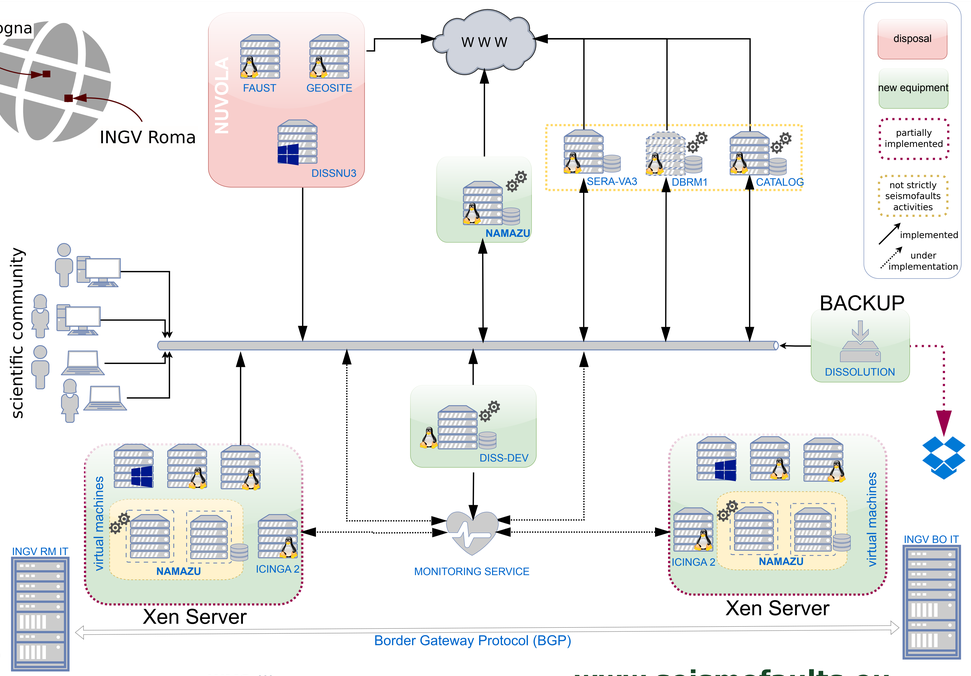
Formats are very different, metadata are scarce, and interoperability is thus very limited.





SEISMOFAULTS.EU IT infrastructure

The current platform is implemented with a main server and a test-server. New equipment was recently purchased and its configuration is currently in progress.
The ongoing IT infrastructure shall provide the implementation of two twin servers in mirroring that will be hosted in two separate INGV establishments located in two different Italian regions. Border Gateway Protocol (BGP) will be implemented in order to offer network stability and to guarantee reliability of websites and web services. If the main infrastrucuture (located in Rome) becomes unreachable for any reason, the secondary one (located in Bologna) will go online transparently for the end users. Furthermore, multiple backup solutions are already implemented. They include both an in-host periodical snapshot procedure performed by the Xen Center system and several custom scripts that periodically make a compressed copy of data in a NAS and secondly in a Dropbox cloud storage account. A specifically devoted server monitors the entire infrastructure.



NAMAZU is the name given to the main server dedicated to seismofaults.eu DB and OGC web services publication (WMS, WFS, CSW). Its workload is going to be distributed over several virtual machines with a more specialized configuration.

www.seismofaults.eu

SEISMOFAULTS.EU web services related to the European Database of Seismogenic Faults are validated and ready to be distributed through the EPOS ICS GUI (under development) together with several different services provided by the EPOS scientific community. Through the DCAT-AP extension implemented in the framework of EPOS IP (EPOS-DCAT-AP), the services provided are described and "ingested" taking into account the relevant metadata (Organisation, Persons, Facilities, Publication, Software, Services, Project, Equipment, and Web Services).

EPOS-DCAT-AP

F A I R

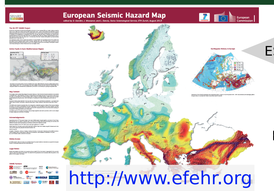
Findable - EDSF's discoverability is guaranteed by the publication of detailed metadata (following **INSPIRE** recommendations); a **DOI** is assigned to it. Last but not least: EDSF is part of the **EPOS** framework.

Accessible - EDSF is publicly available with no restrictions. It can be downloaded in several widely-used formats and accessed through **OGC** standard protocols.

Interoperable - EDSF Interoperability is guaranteed through its publication with **OGC** standard protocols (**WMS**, **WFS**) and other formats (**GML**, **KML**)

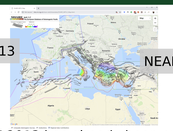
Reusable - EDSF is released under the terms of the CC BY-SA 4.0 license.

Towards EFSM20 and beyond

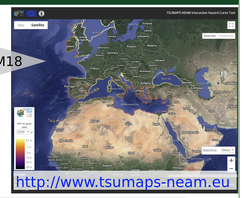


http://www.efehr.org

ESHM13



NEAMTHM18



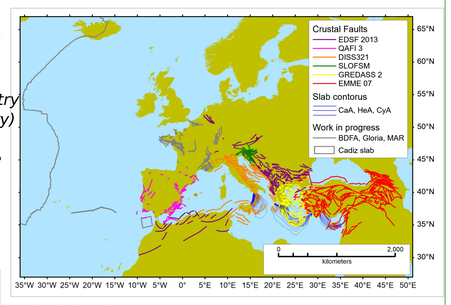
http://www.tsumaps-neam.eu

EDSF 2013 has already been one of the basic input datasets for large-scale seismic hazard and tsunami hazard assessments

EFSM20: harmonizing seismogenic faults across different data sources

Crustal faults

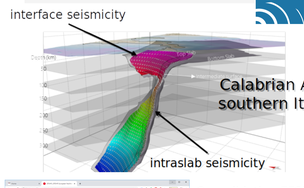
- Collate different datasets
- Identify minimum set of parameters to be used with OpenQuake (OQ)
- Homogenize level of detail in fault geometry and reconstruct 3D geometry (OQ simple vs complex fault geometry)
- Identify and manage duplicates
- Harmonize data in overlapping zone
- Calculate derived parameters: e.g., seismic moment rate, maximum magnitude, magnitude frequency distribution
- Determine on-fault vs off-fault seismicity



https://platform.openquake.org

Subduction zones

- Identify subduction interface upper and lower boundaries
- Construct 3D intraslab lattice
- Perform interface/intraslab seismicity separation
- Identify minimum set of parameters to be used with OQ
- Calculate derived parameters: e.g., seismic moment rate, maximum magnitude, magnitude



http://www.efehr.org

Consolidating EFSM20 into SEISMOFAULTS.EU
- Mint DOI with DataCite.org
- Compile metadata EPOS-DCAT-AP
- Compile DMP for long-term preservation
- Produce OGC webservices (WFS, WMS)
- Append EFSM20 to the list of data provisions of the EPOS TCS-ICS user interface
- Integrate with the EFEHR platform for access to hazard and risk products and document the new ESHM20
- Integrate with Virtual Access for Engineering Seismology

http://sera-va3.rm.ingv.it

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