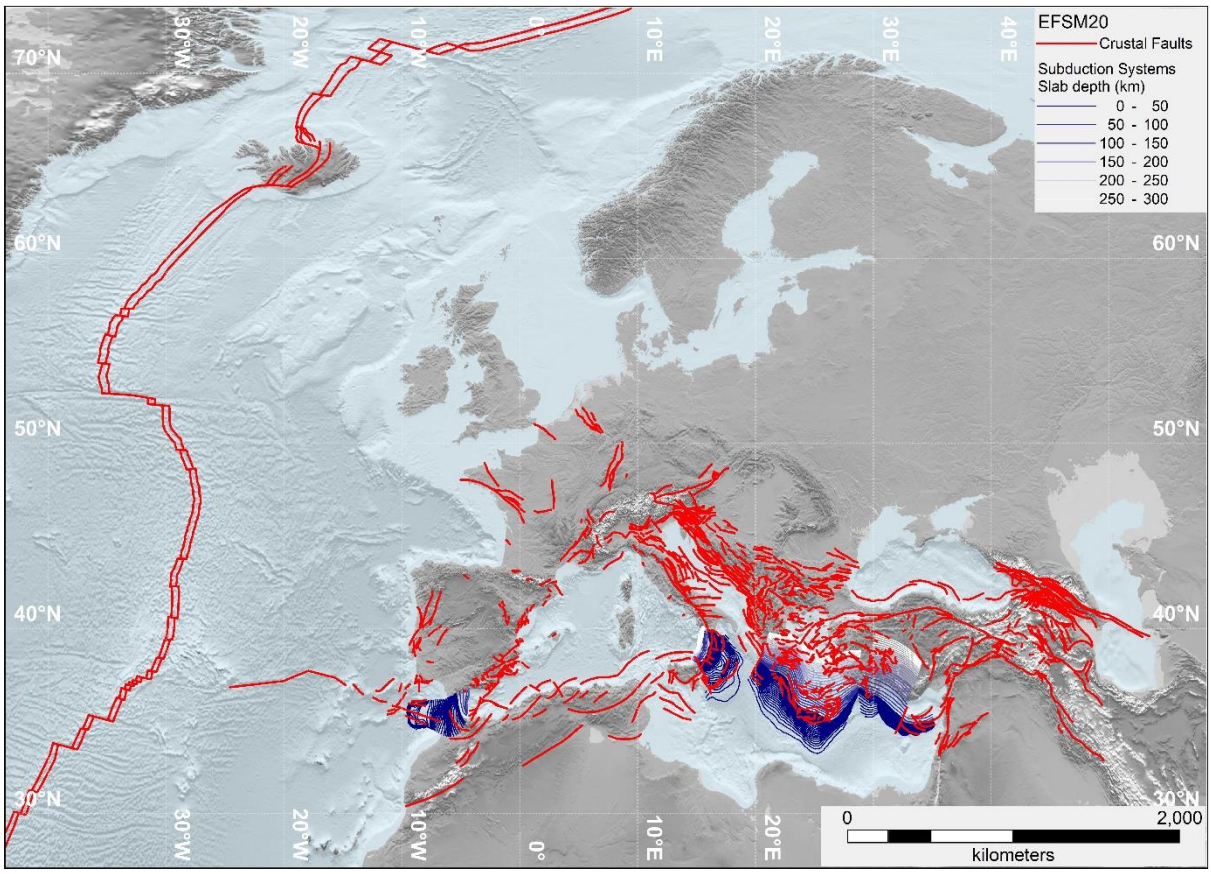
European Fault-Source Model 2020 (EFSM20): online data on fault geometry and activity parameters



https://seismofaults.eu/efsm20

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Abstract

The European Fault-Source Model 2020 (EFSM20) is a product of the EU H2020 Project SERA (WP25-JRA3). It is designed to fulfill the requirements related to active faulting of the 2020 update of the European Seismic Hazard Model (ESHM20) following the probabilistic framework established for the 2013 European Seismic Hazard Model (ESHM13).

EFSM20 has two main categories of seismogenic sources: crustal faults and subduction systems. Crustal faults are meant to provide the hazard model with seismicity rates in various tectonic contexts, including onshore and offshore active plate margins and plate interiors. Subduction systems are intended to provide the hazard model with slab interface and intraslab seismicity rates. The model covers an area encompassing a buffer of 300 km around all target European countries (except for Overseas Countries and Territories, OTCs) and a maximum 300 km depth for slabs. It extends beyond this area to include the main tectonic plate boundaries as much as possible.

Data access

Access to the dataset is granted through OGC web services (WFS and WMS) and the download of GIS files in the following formats: GeoJSON, ESRI Shapefiles, and MapInfo tables.

These datasets are available for download and via OGC WFS (https://seismofaults.eu/efsm20data)

File name	Description
EFSM20_CF_TOP	Trace of the fault plane upper edge. Polylines.
EFSM20_CF_BOT	Trace of the fault plane lower edge. Polylines.
EFSM20_CF_MID	Trace of the fault plane middle line. Polylines.
EFSM20_CF_PLD	Vertical projection of the inclined fault planes (in the local dip direction along strike) onto the ground surface. Polygons.
EFSM20_CFDepths	Depth isolines (contours) of the fault planes, including top and bottom. Polylines.
EFSM20_SlabDepths	Depth isolines (contours) that represent the geometry of the top surface of the slab. Polylines.
EFSM20_SI_Parameters	Subduction Interface (SI) parameters. Polygons encompassing the SI area in map view.
EFSM20_SI_Discretization	Subduction Interface (SI) discretized in areas spanning 1 km depth. Polygons encompassing each area in map view.
EFSM20_SI_Realizations	Subduction Interface (SI) model realizations considering uncertainties. Polygons encompassing each area of the different realizations in map view.
EFSM20_IS_Lattice	Intraslab (IS) model constituted by equally-spaced nodes sampling the crustal part of the slab volume. Points.

These datasets are available via OGC WMS only (https://seismofaults.eu/efsm20data)

File name	Description
EFSM20_CFDepths	Color-coded depth isolines of the fault planes, including the top and bottom. The spacing interval is 0.5 km.
EFSM20_CF_FaultTypes	Color-coded fault types: normal, reverse, right-lateral, left-lateral.
EFSM20_CF_SlipRates	Color-coded slip rates. Log-linear separation scale. Four different layers represent the minimum, maximum, arithmetic mean (default), and geometric mean.
EFSM20_CF_MaxMagnitude	Color-coded maximum magnitude. Five different layers represent the average (default), and the 2nd, 5th, 95th, and 98th percentiles.
EFSM20_CF_MomentRates	Color-coded moment rates. Log scale. Four different layers represent the minimum, maximum, arithmetic mean (default), and geometric mean.
EFSM20_SlabDepths	Color-coded depth isolines of the top surface of the slab. The spacing interval is 1 km between 0-40 km and 10 km between 40-300 km.

Disclaimer

The European Fault-Source Model 2020 (EFSM20) was designed to serve as input to the European Seismic Hazard Model 2020. For these reasons and its intrinsic nature, EFSM20 cannot be guaranteed to be complete, accurate, and updated in any part necessary for its use in different contexts or applications. Although we made every possible effort to supply the best available information, no warranty, expressed or implied, is provided regarding the accuracy and reliability of the data supplied in EFSM20. Users are invited to consider the inherent epistemic uncertainty of such a database in earthquake-related hazard analyses (PSHA, PTHA, PFDHA). We recall that EFSM20 was designed for analyses at the scale of a continent (the Euro-Mediterranean region) and that it is thus necessary to add local and site-specific investigations when using EFSM20 data for studies at more local scales. Users are also cautioned to carefully consider the nature of EFSM20 content before using it for decisions concerning personal or public safety or concerning business involving substantial financial or operational consequences.

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