



THE EUROPEAN FACILITY FOR EARTHQUAKE HAZARD AND RISK – CURRENT STATUS AND ITS FUTURE

Jochen WÖSSNER¹, Florian HASLINGER², Philipp KÄSTLI³, Laurentiu DANCIU⁴, and Domenico GIARDINI⁵

Free and open remote access to seismic hazard and risk products is a key element to widely promote state-of-the-art products. The European Facility for Earthquake Hazard and Risk (EFEHR) is designed as the sustainable community resource supporting these goals. The EFEHR online platform (www.efehr.org) is hosted at ETH Zurich and provides access to data, models, tools and expertise relevant for the assessment of seismic hazard and risk in Europe. The platform is evolving to one of the three major infrastructures, similar to EMSC and ORFEUS, offering service provision for relevant scientific communities as well as for the generally interested parties, stakeholders and decision makers.

EFEHR uses the latest open-source web-technologies to serve its products via the online-portal, the interactive interface to display and download data. The web-presentation also features tutorials and background information on the products that are served. This platform relies on web-service technology that enables to retrieve data from a database of all pre-computed products. With this technology, it is in principle possible to interconnect with databases hosted at EMSC and ORFEUS, and thus to either that data on the EFEHR-platform or vice-versa. For sophisticated users, the web-service technology, however, offers remote access to all the databases and direct data download using high-level programming languages without navigating the portal.

The 2013 European Seismic Hazard Model, generated within the four year EC-funded project “Seismic Hazard Harmonization in Europe (SHARE)” is the first completed probabilistic seismic hazard assessment (PSHA) made accessible via the online platform. Input data, e.g. the earthquake catalogue and the fault sources used, details about the earthquake source model and extensive documentation are found within short navigation paths. The model results reside in a database which currently stores more than 500 pre-computed seismic hazard maps, as well as more than 120,000 hazard curves and uniform hazard spectra at a spacing of 10km across on-land Europe and Turkey. Uncertainty estimates are provided for all results. The pure amount of data of this one project highlights the necessity of a sustainable resource at the European scale to ensure reproducibility and transparency of a PSHA.

Until the end of the NERA project we will continue to update the EFEHR platform with additional data & tools. These will mainly cover seismic risk related aspects, as soon as they are available from other NERA workpackages or from related projects (NERIES, Syner-G, GEM). In parallel, we aim to set up a scientific governance structure for EFEHR that is well embedded in the European scientific community - by setting up a *Seismic Hazard Working Group* within the ESC structure, and a *Seismic Risk Working Group* within EAEE. These working groups will review the scientific content of EFEHR regularly, whereby the current setup of having joint meetings of the two

¹ Swiss Seismological Service, ETH Zurich, Zurich, Switzerland, j.woessner@sed.ethz.ch

² Swiss Seismological Service, ETH Zurich, Zurich, Switzerland, f.haslinger@sed.ethz.ch

³ Swiss Seismological Service, ETH Zurich, Zurich, Switzerland, p.kastli@sed.ethz.ch

⁴ Swiss Seismological Service, ETH Zurich, Zurich, Switzerland, l.danciu@sed.ethz.ch

⁵ ETH Zurich, Zurich, Switzerland, d.giardini@sed.ethz.ch

associations every 4 years offers a natural opportunity for an extended combined review and discussion.

EFEHR is currently identified as the core of the ‘Seismic Hazard and Risk’ service pillar in the seismological core service structure of EPOS, and will be fully integrated in the EPOS structure as currently developed. EFEHR is the declared European regional center for the Global Earthquake Model (GEM) and will continue to host and/or provide access to relevant GEM data and tools.