



# SERA – CEN/TC 250/SC 8 workshop on seismic hazard

*SERA Deliverable 2.13*

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# DELIVERABLE

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## D2.13 Stakeholders workshop M15

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## Summary

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The Joint Research Centre (JRC) of the European Commission organised within the SERA communication activities a workshop on seismic hazard assessment, together with SERA partners and experts from CEN/TC 250/SC 8, which are responsible for the development of Eurocode 8. The objectives of the workshop were to provide first-hand insights into the outputs of SERA, link SERA activities with other scientific efforts in the field, and ensure a widely accepted basis for the development of the new European Seismic Hazard Model. The workshop was attended by about 40 participants, including SERA partners, experts and national delegates in CEN/TC 250/SC 8, researchers, academics and practitioners with experience in seismic hazard assessment. SERA and CEN/TC 250/SC 8 agreed to further strengthen collaboration with the objective of optimizing efforts and results in order to ensure consistency of requirements and outputs, and investigate the means for Eurocode 8 to take profit of the research performed by SERA to advance towards a harmonised European seismic zonation.

# 1 Introduction

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Earthquakes are the precursor of many human and economic losses in Europe and worldwide - recall, for instance, the recent earthquakes in central Italy in August and October 2016 and January 2017. The aim of the Horizon 2020 project SERA (Seismology and Earthquake Engineering Research Infrastructure Alliance for Europe) is to reduce the risk posed by natural and anthropogenic earthquakes, based on innovative research and development projects.

SERA Work Package 2 'Communication, Outreach, Dissemination' enables a profound, consistent and efficient exchange of information in the larger community of stakeholders in the fields of seismology and seismic engineering. Within the SERA project, the European Seismic Hazard Model is being updated and extended. Relevant activities include the definition of engineering output requirements, the updating and extension of the seismogenic source model and the ground motion prediction equation (GMPE) logic tree, and the interface to Eurocode 8 and risk modelling. Therefore, in the framework of the communication activities, the Joint Research Centre (JRC) of the European Commission organised a workshop on seismic hazard assessment, together with SERA project partners and experts from CEN/TC 250/SC 8. CEN/TC 250/SC 8 featuring among the main stakeholders on the topic of the workshop, as it is responsible for EN 1998 'Eurocode 8: Design of structures for earthquake resistance' and is currently working on the next generation of Eurocodes under a standardisation mandate<sup>1</sup>, including the representation of the seismic action.

The workshop intended to facilitate the dialogue between stakeholders. The specific objectives were to provide first-hand insights on the outputs of the SERA project, link SERA activities with other scientific efforts in the field, and ensure a widely accepted basis for the development of the new European Seismic Hazard Model. The collaboration initiated at the workshop will ultimately contribute to bridging the gap between research and standardisation, and to the reduction of seismic risk in Europe.

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<sup>1</sup> M/515 Mandate for amending existing Eurocodes and extending the scope of structural Eurocodes



## 2 Agenda

The workshop lasted a full day and comprised presentations on the latest developments regarding the updating and extension of the European Seismic Hazard Model (ESHM19/20) and seismic risk modelling in Europe, presentations on the developments in Eurocode 8 regarding the representation of the seismic action, as well as the views of national delegates to CEN/TC 250/SC 8 on seismic hazard assessment. The workshop was concluded with a round-table discussion, where the future steps in the collaboration between SERA and CEN/TC 250/SC 8 were agreed. The agenda is shown in Table 1.

Table 1: Workshop agenda

09:00 - 09:30	<b>Introduction</b> Dan Chirondojan, JRC; Georgios Tsionis, JRC; Domenico Giardini, ETH Zurich - SERA Coordinator; Philippe Bisch, SC 8 Chairman
09:30 - 10:10	<b>Engineering requirements defined to date for ESHM19/20</b> Helen Crowley, EUCENTRE
10:10 - 10:50	<b>Summary of European Seismic Hazard Model (ESHM19/20)</b> Laurentiu Danciu, ETH Zurich
10:50 - 11:20	Coffee break
11:20 - 12:00	<b>Latest GMPE developments and potential impact on Eurocode 8</b> Fabrice Cotton, GFZ Potsdam
12:00 - 12:20	<b>Site classification and intensity dependent seismic actions and spectral amplification factors towards a European Seismic Risk Model</b> Kyriazis Pitilakis, Aristotle University of Thessaloniki
12:20 - 13:00	<b>Low and very low seismicity areas</b> Edmund Booth, Consulting Engineer
13:00 - 14:30	Lunch break
14:30 - 15:10	<b>Developments in the representation of the seismic action in Eurocode 8</b> Pierre Labbé, École Spéciale des Travaux Publics - SC 8/PT 1 Team Leader
15:10 - 15:50	<b>German views on seismic hazard assessment</b> Ekkehard Fehling, University of Kassel - German SC 8 delegate
15:50 - 16:20	<b>Swiss views on the impact of seismic hazard assessment on the Swiss seismic zoning map</b> Thomas Wenk, Swiss SC 8 delegate
16:20 - 16:50	Coffee break
16:50 - 17:30	<b>French views on PSHA testing</b> Pierre Labbé, École Spéciale des Travaux Publics - French SC 8 delegate
17:30 - 18:00	<b>Discussion and summary</b> Artur Pinto, JRC; Georgios Tsionis, JRC; Domenico Giardini, ETH Zurich - SERA Coordinator; Philippe Bisch, SC 8 Chairman; Michael Fardis, University of Patras - CEN/TC 250 Vice Chair

### 3 Participants

The workshop was attended by about 40 participants (see Table 2 and Figure 1) from 12 countries across Europe, namely Austria, Cyprus, Denmark, France, Germany, Greece, Italy, Portugal, Slovenia, Spain, Switzerland, and the United Kingdom. The participants were representatives of SERA partners involved in WP 25 'Updating and extending the European Seismic Hazard Model' and WP 26 'Risk Modelling framework for Europe', experts and national delegates in CEN/TC 250/SC 8, as well as researchers, academics and practitioners with experience in the field of seismic hazard assessment.

Table 2: List of participants

<b>Surname Name</b>	<b>Affiliation</b>	<b>Country</b>
Agosti Andrea	Joint Research Centre	ITALY
Athanasopoulou Adamantia	Joint Research Centre	ITALY
Bisch Philippe	Egis Industries	FRANCE
Booth Edmund	Edmund Booth Consulting Engineer	UNITED KINGDOM
Carvalho Eduardo	Gapres SA	PORTUGAL
Chrysostomou Christis	Cyprus University of Technology	CYPRUS
Caverzan Alessio	Joint Research Centre	ITALY
Correia António	Laboratório Nacional de Engenharia Civil	PORTUGAL
Cotton Fabrice	GFZ	GERMANY
Crowley Helen	EUCENTRE	ITALY
D'Amico Maria	Istituto Nazionale di Geofisica e Vulcanologia	ITALY
Danciu Laurentiu	Swiss Seismological Service - ETH Zurich	SWITZERLAND
Dimova Silvia	Joint Research Centre	ITALY
Dolsek Matjaz	University of Ljubljana	SLOVENIA
Dos Santos Gervasio Helena	Joint Research Centre	ITALY
Fajfar Peter	University of Ljubljana	SLOVENIA
Fardis Michail	University of Patras	GREECE
Fehling Ekkehard	University of Kassel	GERMANY
Fonseca Joao	Universidade da Beira Interior	PORTUGAL
Gaspar Escribano Jorge Miguel	Universidad Politécnica de Madrid	SPAIN
Giardini Domenico	ETH Zurich	SWITZERLAND
Labbé Pierre	Ecole Spéciale des Travaux Publics	FRANCE
Lanzano Giovanni	Istituto Nazionale di Geofisica e Vulcanologia	ITALY
Lignos Dimitrios	EPFL	SWITZERLAND
Medeot Renzo	Austrian Standards Institute	AUSTRIA
Negro Paolo	Joint Research Centre	ITALY
Pecker Alain	ENPC	FRANCE

Pinto Artur	Joint Research Centre	ITALY
Pitilakis Kyriazis	Aristotle University of Thessaloniki	GREECE
Poljansek Martin	Joint Research Centre	ITALY
Saberi Mogens	NIRAS	DENMARK
Schlueter Franz-Hermann	SMP Ingenieure im Bauwesen GmbH	GERMANY
Solomos George	Joint Research Centre	ITALY
Sousa Luisa	Joint Research Centre	ITALY
Tsionis Georgios	Joint Research Centre	ITALY
Varum Humberto	University of Porto	PORTUGAL
Weatherill Graeme	GeoForschungsZentrum	GERMANY
Wenk Thomas	Wenk	SWITZERLAND



Figure 1: Group photo of the workshop participants

## 4 Conclusions

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SERA and CEN/TC 250/SC 8 agreed to further strengthen collaboration with the objective of optimizing efforts and results in order to ensure consistency of requirements and outputs, and investigate the means for Eurocode 8 to take profit of the research performed within the SERA project to advance towards a harmonised European seismic zonation. This will be achieved by:

1. Nominating contact persons from both sides who will act as liaison between the two groups and will attend relevant meetings.
2. Continuing the technical discussion and providing for mutual participation in relevant meetings organized by SERA and by CEN/TC 250/SC 8.
3. Drafting a technical report on the issue of derivation of the seismic hazard, which could support advancement towards a harmonised European seismic zonation and be considered as the basis for an eventual Informative Annex in the new version of Eurocode 8, provided that such zonation is accepted by CEN members.

## Contact

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Project lead	ETH Zürich
Project coordinator	Prof. Dr. Domenico Giardini
Project manager	Dr. Kauzar Saleh
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