



**HAL**  
open science

## **RESORCE (Reference database for seismic ground motion in Europe)**

Paola Traversa, Sinan Akkar, Gabriele Ameri, Fabrice Cotton, John Douglas, Laurent Frobert, Stéphanie Godey, Bruno Hernandez, Lucia Luzi, M. Abdullah Sandikkaya

► **To cite this version:**

Paola Traversa, Sinan Akkar, Gabriele Ameri, Fabrice Cotton, John Douglas, et al.. RESORCE (Reference database for seismic ground motion in Europe). Second European Conference on Earthquake Engineering and Seismology (2ECEES) : a joint event of the 15th European Conference on Earthquake engineering & 34th General Assembly of the European Seismological Commission, Aug 2014, Istanbul, Turkey. hal-00979527

**HAL Id: hal-00979527**

**<https://brgm.hal.science/hal-00979527v1>**

Submitted on 16 Apr 2014

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



## RESORCE (REFERENCE DATABASE FOR SEISMIC GROUND-MOTION IN EUROPE)

Paola TRAVERSA<sup>1</sup>, Sinan AKKAR<sup>2</sup>, Gabriele AMERI<sup>3</sup>, Fabrice COTTON<sup>4</sup>,  
John DOUGLAS<sup>5</sup>, Laurent FROBERT<sup>6</sup>, Stéphanie GODEY<sup>7</sup>, Bruno HERNANDEZ<sup>8</sup>,  
Lucia LUZI<sup>9</sup> and Abdullah SANDIKKAYA<sup>10</sup>

With the aim of improving seismic ground-motion models in Europe and reducing associated uncertainties, the compilation of a high-quality database of seismic-motion recordings and associated metadata is of primary importance.

SIGMA research and development project, devoted to the improvement of seismic hazard estimates, methods and data for France and nearby regions, has been funding the implementation of RESORCE (Reference databaSe fOR seismic ground-motion in Europe, Akkar et al., 2014). RESORCE is planned as an up-to-date, high-quality, homogeneous, seismic-motion database, integrated at the pan-European scale and containing only validated data. The primary aims of RESORCE are the development and testing of ground-motion models used in engineering seismology, as well as earthquake engineering applications. The starting point of RESORCE is the European subset of the SHARE (2010) database, a collection of records and metadata taken from previously compiled databases. From this starting point, an effort of data and metadata homogenization, updating and improvement has been carried out during the last three years.

The collection of both, data and metadata, as well as the data processing have been carried out by a team from the Middle East Technical University led by Sinan Akkar. The content of RESORCE is reviewed by the members of the RESORCE Scientific Board.

An internet portal, accessible at the address: [www.resorce-portal.eu](http://www.resorce-portal.eu) and allowing for interactive metadata-driven data searches, is developed by EMSC (Euro Mediterranean Seismological Centre). The data will be published according to the rules (licensing, acknowledge, liability) established by data-providers.

The current version of RESORCE includes 5640 multi-component and uniformly-processed accelerograms from 1713 events and 1481 strong motion stations across Europe and Middle East. The moment magnitude range covered by RESORCE-2013 is  $2.8 \leq M_w \leq 7.8$ . The source-to-site distances are given in terms of common point- and extended-source distance measures. The completeness of the database can be still improved by integrating recent earthquake data that have not yet been included.

<sup>1</sup> Seismologist, EDF-CEIDRE-TEGG, Aix en Provence (France), [paola.traversa@edf.fr](mailto:paola.traversa@edf.fr)

<sup>2</sup> Professor, Kandilli Observatory and Earthquake Research Institute, Istanbul (Turkey), [sinan.akkarak@boun.edu.tr](mailto:sinan.akkarak@boun.edu.tr)

<sup>3</sup> Seismologist, Fugro-Geoter International, Auriol (France), [gabriele.ameri@geoter.fr](mailto:gabriele.ameri@geoter.fr)

<sup>4</sup> Professor, ISTERre-Joseph Fourier University, Grenoble (France), [fabrice.cotton@ujf-grenoble.fr](mailto:fabrice.cotton@ujf-grenoble.fr)

<sup>5</sup> Seismologist, BRGM, Orléans (France), [j.douglas@brgm.fr](mailto:j.douglas@brgm.fr)

<sup>6</sup> Software Engineer, EMSC, Bruyères-le-Chatel (France), [frobert@emsc-csem.org](mailto:frobert@emsc-csem.org)

<sup>7</sup> Seismologist, EMSC, Bruyères-le-Chatel (France), [godey@emsc-csem.org](mailto:godey@emsc-csem.org)

<sup>8</sup> Seismologist, CEA/DASE/LDG/RSG, Bruyères-le-Chatel (France), [Bruno.Hernandez@cea.fr](mailto:Bruno.Hernandez@cea.fr)

<sup>9</sup> Seismologist, INGV-Milan section, Milan (Italy), [lucia.luzi@mi.ingv.it](mailto:lucia.luzi@mi.ingv.it)

<sup>10</sup> PhD student, METU, Ankara (Turkey), [askaya@metu.edu.tr](mailto:askaya@metu.edu.tr)

In order to ensure the traceability of the database, a versioning system has been set up. After validation by the Scientific Board, each RESORCE version is frozen and kept accessible from the web portal. It is simple to choose which RESORCE version the end-user wants to access. In the future this system will allow going back to any published RESORCE version and retrieving the data used to develop a given ground-motion model, for example.

Exchanges and collaborations with related EC-funded projects, particularly EPOS and NERA projects, are ongoing. These activities seek to guarantee the long-term sustainability of RESORCE.

## **REFERENCES**

Akkar S., M.A. Sandıkkaya, M. Şenyurt, A. Azari Sisi, B.Ö Ay, P. Traversa, J. Douglas, F. Cotton, L. Luzi, B. Hernandez and S. Godey (2014) “Reference Database for Seismic Ground-Motion in Europe (RESORCE)”, *Bulletin of Earthquake Engineering*, vol. 12, n. 1, pp. 311-339.