



Probabilistic seismic hazard assessment of the Eastern and Central groups of the Azores - Portugal

João Fontiela (1,3), Mourad Bezzeghoud (1), Philippe Rosset (2), José Borges (1), Francisco Rodrigues (3), and Bento Caldeira (1)

(1) University of Évora, Instituto of Earth Sciences (ICT), Department of Physics, Évora, Portugal (jfontiela@uevora.pt), (2) ICES, International Centre for Earth Simulation, Geneva, Switzerland, (3) Instituto Investigação Tecnologias Agrarias e Ambiente Açores, University of Azores

Azores islands of the Eastern and Central groups are located at the triple junction of the American, Eurasian and Nubian plates inducing a large number of low magnitude earthquakes. Since its settlement in the 15th century, 33 earthquakes with intensity \geq VII have caused severe damage and high death toll. The most severe ones occurred in 1522 at São Miguel Island with a maximum MM intensity of X; in 1614 at Terceira Island (X) in 1757 at São Jorge Island (XI); 1852 at São Miguel Island (VIII); 1926 at Faial Island (Mb 5.3-5.9); in 1980 at Terceira Island (Mw7.1) and in 1998 at Faial Island (Mw6.2).

The analysis of the Probabilistic Seismic Hazard Assessment (PSHA) were carried out using the classical Cornell-McGuire approach using seismogenic zones recently defined by Fontiela et al. (2014). We create a new earthquake catalogue merging local and global datasets with a large time span (1522 – 2016) to calculate recurrence times and maximum magnitudes. In order to reduce the epistemic uncertainties, we test several ground motion prediction equations in agreement with the geological heterogeneities typical of young volcanic islands. Probabilistic seismic hazard maps are proposed for 475 and 975 years returns periods as well as hazard curves and uniform hazard spectra for the main cities.

REFERENCES:

Fontiela, J. et al., 2014. Azores seismogenic zones. *Comunicações Geológicas*, 101(1), pp.351–354.

ACKNOWLEDGMENTS: João Fontiela is supported by grant M3.1.2/F/060/2011 of Regional Science Fund of the Regional Government Azores and this study is co-funded by the European Union through the European fund of Regional Development, framed in COMPETE 2020 (Operational Competitiveness Programme and Internationalization) through the ICT project (UID/GEO/04683/2013) with the reference POCI-01-0145-FEDER-007690.