Geophysical Research Abstracts
Vol. 20, EGU2018-1981, 2018
EGU General Assembly 2018

Web-based tool for scenario-based seismic risk assessment

Pouye Yazdi, Jorge M Gaspar-Escribano, Sandra Martinez-Cuevas, and Nelson A Chavarria-Meneces
Universidad Politécnica de Madrid, ETSI Topografia, Geodesia y Cartografía, Madrid, Spain (pouye.yazdi@upm.es)

Disaster risk managers and decision makers need to evaluate different scenarios to transform research results into informed actions. For instance, emergency planners need to delimitate the areas affected by a given scenario. These include not only damage to buildings, but also the debris shed into open spaces such as sidewalks and roads. We present a web-based tool for seismic risk assessment of user-defined earthquake scenarios. This can help emergency planners and decision makers for seismic risk management.
Three input databases are used for the calculations: a fault database to select earthquake source, a soil condition shapefile to compute site-specific ground motions and a buildings shapefile including building data, as contour geometry, number of stories and vulnerability class.
In the first part of the tool, the user must specify the probability level associated with the seismic scenario: "high probability", "low probability-high impact" or "very low probability-very high impact".
Next, the user inserts earthquake source data interactively. There are two possibilities: to select a maximum magnitude event in a fault source from a predefined fault database or, alternatively, to describe an earthquake rupture with user-defined geometry and style of faulting.
A number of risk-informing variables are calculated internally. These include the ground motion produced by the selected rupture in the target area, the damage distribution per building, the debris produced in the building façade and the debris volume that covers the adjacent open space (sidewalks and roads).
The tool is prepared for an application in the city of Lorca (SE Spain), but can be exported to a different scenario providing the appropriate input databases.
This contribution is part of the MERISUR project (ref. CGL2013-40492-R), National Spanish R+D+I Program for Societal Challenges, Ministry of Economy and Competitiveness