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Interactive web visualization tools to the results interpretation of a seismic risk study aimed at the emergency levels definition

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Results of a seismic risk assessment study are often applied and interpreted by users unspecialised on the topic or lacking a scientific background. In this context, the availability of tools that help translating essentially scientific contents to broader audiences (such as decision makers or civil defence officials) as well as representing and managing results in a user-friendly fashion, are on indubitable value. On of such tools is the visualization tool VISOR-RISNA, a web tool developed within the RISNA project (financed by the Emergency Agency of Navarre, Spain) for regional seismic risk assessment of Navarre and the subsequent development of emergency plans.

The RISNA study included seismic hazard evaluation, geotechnical characterization of soils, incorporation of site effects to expected ground motions, vulnerability distribution assessment and estimation of expected damage distributions for a 10% probability of exceedance in 50 years. The main goal of RISNA was the identification of higher risk area where focusing detailed, local-scale risk studies in the future and the corresponding urban emergency plans. A geographic information system was used to combine different information layers, generate tables of results and represent maps with partial and final results. The visualization tool VISOR-RISNA is intended to facilitate the interpretation and representation of the collection of results, with the ultimate purpose of defining actuation plans.

A number of criteria for defining actuation priorities are proposed in this work. They are based on combinations of risk parameters resulting from the risk study (such as expected ground motion and damage and exposed population), as determined by risk assessment specialists. Although the values that these parameters take are a result of the risk study, their distribution in several classes depends on the intervals defined by decision takers or civil defense officials. These criteria provide a ranking of municipalities according to the expected actuation level and eventually, to alert levels. In this regard, the visualization tool constitutes an intuitive and useful tool that the end-user of the risk study may use to optimize and guide its application on emergency planning.

The use of this type of tools can be adapted to other scenarios with different boundary conditions (seismicity level, vulnerability distribution) and user profiles (policy makers, stakeholders, students, general public) maintaining the same final goal: to improve the adaptation of the results of a scientific-technical work to the needs of other users with different backgrounds.