Geophysical Research Abstracts, Vol. 6, 07515, 2004
SRef-ID: 1607-7962/gra/EGU04-A-07515

THE EXPEL CODE FOR PROBABILISTIC SEISMIC HAZARD ANALYSES AND UNCERTAINTIES EVALUATION

J. M. Tévar (1) , B. Benito (1), J. M. Gaspar-Escribano (1) , M. E. Jiménez (1) , M. S. Ramirez (2)

(1) EUIT Topográfica, Universidad Politécnica de Madrid, (Spain), (2) Consejo de Seguridad Nuclear, Madrid, (Spain) (jtevar@euitto.upm.es)

EXPEL is a research project financed by the Spanish Nuclear Security Council (CSN) and the National Enterprise of Radioactive Waste Disposal (ENRESA), aiming at assessing Seismic Hazard at nuclear energy-related sites. In the frame of this project, we have developed the EXPEL code for carrying out Probabilistic Seismic Hazard Analysis (PSHA) and uncertainties evaluation. The code includes a Geographical Information System with different geophysical data in the Iberian Peninsula (tectonic, seismicity, geology, etc.), data bases with strong motion models and the software required for developing the seismic hazard evaluation following different approaches. The logic tree methodology for uncertainties quantification is also integrated in the EXPEL code. PSHA results can be expressed through the mean or median values, together with their dispersions. Deaggregation of seismic hazard results in terms of magnitude M, distance R, and epsilon, and subsequent determination of control earthquakes, is incorporated in the code as well. These results are either linked with a strong motion data bank in order to obtain real accelerograms and response spectra in the same M and R conditions, or either connected with a module for simulation. Finally, the EXPEL code is used for investigating the sensitivity of alternative inputs and methods on the final results of a seismic hazard analysis.