TESTİNG AND SCORİNG PROBABİLİSTİC SEİSMİC HAZARD ESTİMATES

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A key aspect of hazard assessment is the coexistence of alternative computational schemes (in terms of basic assumptions, management of available information, etc.) each plausible and internally consistent but resulting in quite different outcomes. To this multiplicity of solutions one must add te high sensitivity of some of these procedures to information characterized by high or not well defined uncertainty (e.g., geometry of seismogenic sources in the Cornell-McGuire approach or the shape of smoothing kernels to be sued in the frame of soothed seismicity approaches). The use of logic-tree approaches to manage this kind of uncertainty ("epistemic" following some Authors) only displaces the problem from the "ex-ante" choice of one computational model to the "ex-ante" choice of the likelihood values to be attributed to each model element. In general, defining the level of likelihood associated to each model or combination of models is of paramount importance whatever is the approach considered to choose or merge the available approaches. A straightforward way to achieve this result is by following quantitative procedures to evaluate the actual performances of each model (considered as a whole) in comparison with observations ("ex-post" testing). At least two possible approaches can be followed on purpose. The first one is based on the use of macroseismic data relative to a number of sites to test, in a retrospective way, hazard estimates provided by the different computational schemes. A second approach is based on the use of accelerometric observations to test hazard estimates. A joint use of both approaches is here proposed to evaluate ("ex-post") reliability of the different approaches (testing) and likelihood associated to the considered computational schemes (scoring). Furthermore, it is proposed the use of these likelihood estimates to provide "comprehensive" hazard maps based on a bayesian combination of outcomes provided by the considered approaches and scored on the basis of the respective likelihood evaluations.

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