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# Criteria for selecting and adjusting ground-motion models for specific target regions: Application to Central Europe and rock sites.

F. Cotton (1), F. Scherbaum (2), J. Bommer (3), H. Bungum (4)

(1) LGIT, Université Joseph Fourier, BP 53, F-38041, Grenoble, France, (2) Inst. Geowissenschaften, Universität Potsdam, P.O. Box 601553, D-14415, Potsdam, Germany, (3) Dept. Civil & Environmental Engineering, Imperial College London, SW7 2AZ, UK, (4) NORSAR/ICG, P.O. Box 53, 2027 Kjeller, Norway

A vital component of any seismic hazard analysis is a model for predicting the expected distribution of ground motions at a site due to possible earthquake scenarios. The limited nature of the datasets from which such models are derived gives rise to epistemic uncertainty in both the median estimates and the associated aleatory variability of these predictive equations. In order to capture this epistemic uncertainty in a seismic hazard analysis, more than one ground-motion prediction equation must be used, and the tool that is currently employed to combine multiple models is the logic tree. Candidate ground-motion models for a logic tree should be selected in order to obtain the smallest possible suite of equations that can capture the expected range of possible ground motions in the target region. This is achieved by starting from a comprehensive list of available equations and then applying criteria for rejecting those considered inappropriate in terms of quality, derivation or applicability. Once the final list of candidate models is established, adjustments must be applied to achieve parameter compatibility. Additional adjustments can also be applied to remove the effect of systematic differences between host and target regions. These procedures are applied to select and adjust ground-motion models for the analysis of seismic hazard at rock sites in West Central Europe. This region is chosen for illustrative purposes particularly because it highlights the issue of using ground-motion models derived from small magnitude earthquakes in the analysis of hazard due to much larger events. Some of the pitfalls of extrapolating ground-motion models from small to large magnitude earthquakes in low seismicity regions are discussed and illustrated for the selected

target region.