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Capturing epistemic uncertainties in a low seismicity area: the Probabilistic Seismic Hazard Assessment of Germany (Version 2015)

Gottfried Gruenthal (1), Fabrice Cotton (1,2), Dietrich Stromeyer (1), Christian Bosse (1), and Dino Bindi (1)

(1) Helmholtz Centre Potsdam, German Research Center for Geosciences (GFZ), Potsdam, Germany, (2) Institute of Earth and Environmental Science, University of Potsdam, Potsdam, Germany

A new version of the probabilistic seismic hazard assessment of Germany is presented, It will serve as the basis for seismic load parameters of the updated National Application Document of the Eurocode 8 (EC8). The challenge with respect to this new approach was the comprehensive employment of epistemic and aleatory uncertainties in all models and parameters. The new approach is based on currently available data, improved constrained models and state-of-the-art methodical approaches. The innovations concern. e.g., (1) updated and extended seismicity data, (2) usage of a range of seismic source zone (SSZ) concepts (different areal SSZ models, a fault based model and different zoneless models), (3) capturing of uncertainties of seismicity rates in relation to probability density functions of maximum magnitudes, (4) consideration of epistemic uncertainties according to state-of-the-art fitting rules for seismicity rate estimations, (5) improved addressing of parameters like focal depths and tectonic regimes in superzones, (6) selection and development of GMPEs taking into account tectonic properties of Germany, the needs of hazard computations and recently developed ground-motion databases (7) GMPE's testing and weighting according to available regional seismological data.. The results of the new PSHA will be presented as uniform hazard spectra (UHS) for any site within Germany, hazard maps for spectral response accelerations, peak ground accelerations, macroseismic intensities, and deaggregations - all for the hazard levels of 10%, 5% and 2% exceedance probability within 50 years. Moreover, the UHS were fitted according to the parameters of the spectral shape of the EC8. These parameters will be shown as well.