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# Update, expansion and magnitude homogenization of the Austrian seismic database for seismic hazard analysis

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One of the most crucial steps when it comes to computing a seismic hazard map is the development of a consistent, complete and homogeneous (in terms of magnitude) earthquake catalogue.
Therefore, we present an extended database schema to update and store the earthquake catalogue for the requirements of a new seismic hazard map of Austria. As a result of this work, we obtained a new database by combining all available databases at our institute (Zentralanstalt für Meteorologie und Geodynamik – ZAMG) as well as the database of the International Seismological Center (ISC), which provides the most exhaustive data collection from local bulletins. The ZAMG database is the result of a combination of several catalogues with historical macroseismic and instrumental earthquake parameters. Thus, timeframes were differentiated for multiple available datasets.
Several challenges were met when unifying all databases such as the identification of common events within the different databases and the development and application of empirical models to convert from the local catalogues of neighboring countries to the Austrian catalogue, which was performed with the OpenQuake software.
Further (statistical) analysis of the resulting database, such as estimating the completeness, computation of maximum possible local magnitudes, estimation of activity rates, etc. were also conducted.