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Intensity attenuation in the Pannonian Basin

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Ground motion prediction equations play a key role in seismic hazard assessment. Earthquake hazard has to be expressed in macroseismic intensities in case of seismic risk estimations where a direct relation to the damage associated with ground shaking is needed. It can be also necessary for shake map generation where the map is used for prompt notification to the public, disaster management officers and insurance companies.
Although only few instrumental strong motion data are recorded in the Pannonian Basin, there are numerous historical reports of past earthquakes since the 1763 Komárom earthquake. Knowing the intensity attenuation and comparing them with relations of other areas - where instrumental strong motion data also exist - can help us to choose from the existing instrumental ground motion prediction equations.
The aim of this work is to determine an intensity attenuation formula for the inner part of the Pannonian Basin, which can be further used to find an adaptable ground motion prediction equation for the area.
The crust below the Pannonian Basin is thin and warm and it is overlain by thick sediments. Thus the attenuation of seismic waves here is different from the attenuation in the Alp-Carpathian mountain belt. Therefore we have collected intensity data only from the inner part of the Pannonian Basin and defined the boundaries of the studied area by the crust thickness of 30 km (Windhoffer et al., 2005).
90 earthquakes from 1763 until 2014 have sufficient number of macroseismic data. Magnitude of the events varies from 3.0 to 6.6. We have used individual intensity points to eliminate the subjectivity of drawing isoseismals, the number of available intensity data is more than 3000.
Careful quality control has been made on the dataset. The different types of magnitudes of the used earthquake catalogue have been converted to local and momentum magnitudes using relations determined for the Pannonian Basin. We applied the attenuation formula by Sorensen et al. (2009) using a least-squares regression method. This expression is comparable with the common type of strong-motion attenuation equations (e.g., Joyner and Boore, 1993).

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