



Estimation of earthquake risk curves of physical building damage

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In this study, a new approach to quantify seismic risks is presented. Here, the earthquake risk curves for the number of buildings with a defined physical damage state are estimated for South Africa. Therein, we define the physical damage states according to the current European macro-seismic intensity scale (EMS-98). The advantage of such kind of risk curve is that its plausibility can be checked more easily than for other types. The earthquake risk curve for physical building damage can be compared with historical damage and their corresponding empirical return periods. The number of damaged buildings from historical events is generally explored and documented in more detail than the corresponding monetary losses. The latter are also influenced by different economic conditions, such as inflation and price hikes. Further on, the monetary risk curve can be derived from the developed risk curve of physical building damage. The earthquake risk curve can also be used for the validation of underlying sub-models such as the hazard and vulnerability modules.