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Central-Romanian dams rating in seismic risk classes using probabilistic hazard assessment approach.

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Main goal of this paper is rating all dams from central part of Romania into seismic risk classes. Risk classes can be used to establish the necessity of detailed assessment of seismic safety of the dams and to establish the priorities of these evaluations. Methodology which is used in this paper offers an easy way to evaluate the most vulnerable hydrotechnical facilities among the multitude of the central-Romanian dams, that are affected by intermediate-depth Vrancea earthquakes and local crustal earthquakes from Fagaras, Campulung, Sinaia and Transylvanian Deppression. The risk is expressed as a product between hazard and vulnerability. In particular, seismic risk in the case of hydrotechnical arrangements is computed as a product between seismic hazard (corresponding to the location of the respective hydrotechnical arrangement) and the seismic vulnerability of the respective arrangement. Various risk factors and weighting points can be used to approximately quantify the Total Risk Factor (TRF) of any dam [Bureau and Ballentine, 2002]. The TRF depends on the dam type, age, size, the downstream risk potential, and the dam vulnerability, which depends on the seismic hazard of the site. The dam structure influence is represented by the sum of capacity, height, and age risk factors. The downstream hazard factor is based on population and property at risk. The vulnerability rating is a function of the site-dependent seismic hazard and observed performance of similar dams, as defined by a predicted damage factor.