Multiple-site estimations in probabilistic seismic hazard assessment

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We analyze specific features of multiple-site probabilistic seismic hazard assessment (PSHA), i.e. annual rate of ground motion level exceedance in at least one site of several sites of interest located within in an area or along a linear extended object. The relation between the multiple-scale hazard estimations and strong ground-motion records obtained during the 2008 Wenchuan (China) Mw 7.9 earthquake is discussed. The ground-motion records may be considered as an example of ground motion exceeding the design level estimated using the classical point-wise PSHA. We showed that the multiple-site hazard (MSH) assessment, when being performed for standard return period 475 years, provide reasonable estimations of the ground motions that may occur during the earthquake, parameters of which are close to maximum possible events accepted in PSHA for the region. Thus the MSH may be useful in estimation of maximum considered earthquake ground motion for the considered territory taking into account its extent.