



Area-scale quantitative landslide hazard assessment

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A methodology for a quantitative landslide hazard assessment applicable to the area scale is shown. The approach was designed to fulfil the following requirements: 1) quickness of investigation, in order to apply it to many wide areas to be compared each other; 2) use of as elementary as possible information, in order to satisfy the first requirement (speed) and to ensure validation, replication and continuous updating of the assessments; 3) computation of landslide mobilisation probability within significant timeframes, in order to compare objectively the hazard conditions assessed for different areas and to avoid reference to qualitative attributes of landslides, such as landslide activity or kinematism, to express hazard. The methodology is applied to a portion of a river watershed located in Umbria Region (Central Italy); the idea of multi-temporal analysis set forth by Cardinali et al. (2002), has been here stressed to compute average recurrence times for individual landslides and to forecast their behaviour within reference time periods. An estimate of the intensity of the expected phenomena also provided the basis for the calculation of the landslide damage potential, i.e. the product of hazard and intensity of the phenomenon. The output is given by thematic maps the most that, among the others, show the temporal probability of mobilisation of the landslides (i.e., hazard) and their damaging potential. As an example of the powerful of such an approach, an application to a quantitative landslide risk assessment for an urban settlement in the investigated area is shown; the risk for the human lives deriving from the collapse of a roadway and some houses due to the landslide occurrence, is calculated and the results compared with worldwide accepted thresholds of tolerable risk.