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Near surface geophysics techniques and geomorphological approach to reconstruct the hazard cave map in historical and urban areas

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Abstract. This work, carried out with an integrated methodological approach, focuses on the use of near surface geophysics techniques, such as ground penetrating radar and electrical resistivity tomography (ERT), and geomorphological analysis, in order to reconstruct the cave distribution and geometry in a urban context and, in particular, in historical centres. The interaction during recent centuries between human activity (caves excavation, birth and growth of an urban area) and the characters of the natural environment were the reasons of a progressive increase in hazard and vulnerability levels of several sites. The reconstruction of a detailed cave map distribution is the first step to define the anthropic and geomorphological hazard in urban areas, fundamental basis for planning and assessing the risk.

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