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Sinkhole susceptibility evaluation in Apulia, southern Italy

Carmela Vennari[1], Mauro Rossi[2], Luca Pisano[3], Veronica Zumpano[3], and Mario Parise[3,4]
[1]CNR IRPI, Rende (CS), Italy (carmela.vennari@irpi.cnr.it)
[2]CNR IRPI, Perugia , Italy
[3]CNR IRPI, Bari Italy
[4]Department of Earth and Environmental Sciences, University Aldo Moro, Bari, Italy

In some regions in Italy sinkholes are frequent and pose a serious threat to structures and infrastructures. Apulia region is largely affected by sinkholes of both natural and anthropogenic origin, due to the karst nature of large portions of the regional territory and to high diffusion of artificial cavities.

For this reasons, susceptibility, hazard and risk posed by sinkholes must be estimated in order to gain more insights into their spatial and temporal distribution, and to apply appropriate risk management and to take proper mitigation strategies.

In order to estimate the susceptibility to sinkholes in Apulia, the ensemble statistical modelling proposed by Rossi et al. (2010) and later refined by Rossi & Reichenbach (2016) is used. This allows assessing susceptibility using differentiated statistical approaches, quantifying accurately the modelling performances, and evaluating the associated uncertainty. In order to obtain accurate and reliable results thematic layers related to the sinkholes occurrence were carefully evauated and selected. This contribution shows the preliminary results of the analyses to evaluate the susceptibility to natural sinkholes, which used as training dependent (i.e. grouping) set, data extracted from the regional inventory of natural caves, edited by the Apulian Speleological Federation (www.catasto.fspuglia.it), and as validation set the natural sinkholes occurred in Apulia, collected in the chronological catalogue of sinkholes in Italy (Parise & Vennari, 2013, 2017). Appropriate thematic layers, were selected heuristically on the base of the knowledge on the triggering mechanisms and the nature of the phenomenon gained previously in the study area.

Resulting regional-scale susceptibility map will be appropriately validated. The methodological procedure will be applied to the evaluation of susceptibility for anthropogenic sinkholes as well.

References

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