



The Grave del Pompiere sinkhole (Apulia, southern Italy): an example of re-activation of water sink within a high vulnerable karst area.

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The occurrences of sinkholes are a hazard to many forms of construction and human activity. A number of damages associated with sinkholes can be found throughout the literature. However, while most engineers and geologists have experience of some of the ground engineering hazards created by single cavities, the range of the potential hazards as well as the implication about hydrogeological and geological prevention and protection are not always appreciated. Knowledge of the mechanism of formation of this subtle geohazard is therefore necessary to planners and decision makers for performing the most appropriate and suitable programs of karst land use and development. In Apulia region, due to the widespread presence of carbonate rocks, surface and underground landforms were extensively involved in karst processes. In the last ten years, the region has been repeatedly affected by several sinkhole events, some of which have damaged or destroyed roads and buildings. The evolutions of other episodes of land subsidence have threatened some human structures. On 3 January 2005, in the surrounding of Grumo Appula village, a karst sinkhole has occurred. The Nucleo SAF of the Bari Fire Brigade has performed the first exploration being the sinkhole located in the vicinity of a railway. The cavity has been called "Grave del Pompiere". Geological and speleological surveys have been performed. The sinkhole is related to a cave, like a dome in shape, arranged along a fault zone. The sedimentological features of the underground deposits allow us to reconstruct a detailed history of the cavity evolution. On the speleological point of view, the "Grave del Pompiere" can be defined as a collapse in a fault zone. Taking into account the hydrological features of the Grumo Appula area, the cavity represents an example of water sink re-activation. The territory appears to be particularly interested by this type of karst forms and the asso-

ciated environmental evolution. It must be considered as a high vulnerable area. As a consequence, the human activities and constructions can be exposed to subtle natural hazard. A good understanding of the mechanisms of re-activation of the water sinks is therefore very important in the process of risk mitigation.