



Geomorphological and ecological researches inferring swamp areas inside endorheic catchment basin: The Asso graben-polje case study (south Italy).

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Peoples living inside flat karstic areas frequently deal with both socio-economic and environmental problems related to the superficial waters management. Karst morphologies, such as dolines and water sinks mostly, characterize the plane territory of Salento (southern Italy). Since their first settlements, Salento landscapes had been modified to drain surface waters, discharge floods and reclaim marshlands.

This contribution deals with the Asso graben-polje which is about 200 km² wide and lies in a regional lowered tectonic structure. It is highly vulnerable owing to both flooding and groundwater pollution and the hazard due to the occurrence of sinkholes is impending. The Asso streams is network of natural and artificial channels which was linked to six water sinks about 75 years ago, i. e. during the last extensive hydrographic arrangement to solve flooding and epidemiological problems. At present, the terminal sinks of the Asso fluvial-karst system absolved the functions of: storm water drainage wells, aquifer remediation-related wells and underground injection regulated wastewater disposal systems. So, the water management of the system is an hard task, being the mitigation of the amplitude of flooding events, achieved by means of the increasing of water sinks discharge, in contrast with the safeguard aquifers by pollutant displacements and the need to protect the public health.

In spite of the efforts made till now by Public Bodies, the knowledge related to the speleogenesis and the hydraulic properties of the sinks is disregarded by the current water resource management. The carried out geomorphological researches allow us to distinguish natural, partially modified and human bored water sinks. Some of the natural water sinks can be described us collapse dolines, but a number of them present different origin and development, as karst wells and karst shaft. To each water sink type, specific drainage properties can be assigned.

Even if the depressions prone to be flooded are thought by geologists as hazard zones, they also represent ecologically significant habitats. Moreover, natural vegetation is a good indicator of the local environmental characteristics of the hydrographical system. So, this study also dealt with the definition of the plant communities and the characterization of the habitats related to such communities. Through the sampling and the analysis of the hydrophitic and riparian vegetation, a series of plant communities is been characterized. Such communities responds to the length of the period of flooding, to the typology of substratum and to the form of the river bed section.

In order to make tools useful to the catchment basin management, existing and collected geological and ecological data are in phase of implementation in a Geographical Information System database.