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Hydrologic and hydrogeologic characterization of karst lakes around Conversano (Apulia, ITALY), for estimating a right water balance.

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The land around Conversano (Apulia, Italy) is characterised by a medium quote karst (100 – 250 m on a.s.l.), interesting limestones and dolomitic limestones of Upper Cretaceous age and showing a continuous succession of dolinas and sinkholes; in the course of the millennia, the bottom of these karst depressions has been filled with eluvium that had caused the closing of karst conducts enhancing the formation of little lakes during rainy periods.

Nowadays, this phenomenon is testified by ten little lakes characterising the studied area and representing, until to some decades ago, the only water resource available for the different uses of local people, who built the typical bell-shaped wells to collect water volumes satisfying local needs during dry season.

Currently, this lakes have not much importance as water supplies but have acquired a new fundamental role: they represents an “habitat” with a great naturalistic value that is still able to support the ecological functionality and the wet environments with self-vegetation.

Because the authors of this paper attribute a great importance to the social and economic value of this surface water resources, they have effected hydrological and hydrogeological studies with the aim to fully estimate the problems related to environmental contest.

For this purpose, the hydrogeologic data of historical series relative to Conversano

land have been collected and compared to these one of the last year (2005-2006); successively, a water balance has been evaluated to quantify the distribution of water volumes yearly interacting between surface water bodies and underlying carbonatic groundwater. The evaluation of a good water balance have highlighted the need to carefully consider all parameters concurring to a right definition of water balance for a karst environment, where pedological features, climatic conditions and anthropic modifications on surrounding environment makes an union with a delicate equilibrium. Particularly, on the base on most recent pedological map and field survey, a revaluation of available water capacity, estimated 40 mm about, has been effected.

The effected studies have highlighted the opportunity to submit the lakes and their neighbourhood to environmental protection rules. Currently, these measures include the institution of protected areas, constituted around perimeters of lakes, but they also should must be extended to larger areas, e.g. at basin scale: in this manner, it will possible to effect a constant monitoring of involved land and of local anthropic activities, representing real polluting sources both for surface water resources and especially for underlying carbonatic groundwater.