



Water level drop in Ohrid and Prespa Lakes (Balkan Peninsula): a contribution to knowledge of the karst hydrogeology from caving explorations

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Lakes Ohrid and Prespa are located in the Balkans, at the boundaries among three countries (Macedonia, Albania and Greece): both belonging to the watershed of the river Crn Drim, flowing into the Adriatic Sea, they have underground connections, and therefore must be considered as a unique system. Due to its biodiversity, Lake Ohrid was declared a World Cultural and Heritage Site in 1980 by UNESCO. Lake Prespa has an irregular shape, and is separated, in the Greek territory, into Macro and Micro Prespa lakes by the narrow sandy isthmus Gladno Polje. The Prespa Lakes do not have surface outflow and are connected with Lake Ohrid (water level at 155 m below that one of Lake Prespa) by underground karst conduits. The intervening ridge between the lakes (Galichica and Suva Gora Mountains) is made up of Upper Triassic - Lower Jurassic deeply karstified massive limestones. In the last decades, the lakes are experiencing strong changes, probably in part related to anthropogenic impacts. Recent hydrological studies, based upon long-term hydro-meteorological data series from Macedonia, have demonstrated that the water level decrease in Lake Prespa is extremely alarming: from 1985 to 1995, in fact, the water level has dropped by more than 5 meters. The situation has become so severe that several activities have started, including, in 1996, the Lake Ohrid Conservation Project, financed by World Bank. Recently, environmental tracer tests (stable isotopes and hydrochemistry) carried out in Macedonia and Albania have confirmed the hypothesis firstly formulated by Cvijic in 1906 about the underground connection between the lakes. The results of artificial

tracer experiments showed a very complex groundwater circulation system in the karst massifs, with presence of differently developed karst conduits at small-scale distances. Hydrological and hydrogeological watersheds are very difficult to be exactly defined, due to karst nature of the landscape, and presence of high peak mountain chains (over 2000 m a.s.l.). Further investigations are therefore necessary to better quantify the connection between Prespa Lake and Ohrid Lake. In this sense, exploring the karst caves in the area may provide useful insights toward a better comprehension of the underground karst networks. Aimed at this goal, a first survey has been carried out in the Albanian territory surrounding Prespa Lake: the main ponors, dolines and other karst features in the area have been explored and surveyed. So far, several caves have been found, some of them being several tens of meters deep. The explorations are still in progress, and hopefully will add further knowledge to the very complex hydrological and hydrogeological system of the Prespa and Ohrid lakes.