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# Holocene evolution of the lake Afourgagh environment (Middle-atlas mountains,Morocco) from the sediment study

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The lake Afourgagh (6 ha), located in the Middle-Atlas mountains (Morocco), showed a strong decrease of its water level during the last twenty years (6 metres between 1987 and 1996) (Flower *et al*., 1989, Baali, 1998), inducing consequences on the local population life. The lake catchment (49 $km^2$), mainly made of Triasic silts and Liasic dolomites (about 63% of the surface), is located in a karstic environment. Karst and the local tectonics induced the formation of closed depressions where groundwater crops out (Baali, 1998). This recent decrease of the water level allows to observe and study the most recent (Holocene) lake deposits.

The lacustrine records consists of interbedded pluri-decimetric white layers of charophytes tufas containing, sometimes, a lot of well preserved encrustated stems and gyrogonites (showing the strong authigenic production), pluri-centimetric dark layers (with samples containing a lot of organic components) and silty-clayey detrital layers. The tufas are mainly made of calcite and aragonite that can account for up to 81% of the bulk. Aragonite high content shows that the water was probably rich in sulfate and magnesium. The sediments present variable amounts of gyrogonites and oogonium of characeae, ostracods and molluscs. The study of these organisms give us a lot of clues about the recent evolution of the lake: water level fluctuations, water chemistry,

hydrology, climate...

The study of the geometry of the deposits coupled to the study of the different facies make possible to reconstruct the lake evolution during the Holocene and to discern the natural and anthropic factors responsible of the recent hydrological variations.