Paleoenvironmental implications in the dried lake sediments (Amik Lake, Southern Turkey)

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The Amik Basin in the Eastern Mediterranean region has been continuously inhabited since 6000 – 7000 BC. The study focuses on the sedimentary record of the Amik Lake located in the central part of the basin. Our objective is to constrain major paleo-environmental changes in the area over the last 4000 years and to unravel possible human impacts on the sedimentation. A diverse array of complementary methods was applied on the 6 m long record. Mineralogical (XRD), and geochemical (XRF) analyses were performed. The age of the record is constrained combining radionuclide and radiocarbon dating. A high sedimentation rate of 0.12 cm/yr was inferred at the studied site.

The 4000 years (since ~1800 BC) long record shows that significant fluctuations of the lake level and the riverine system inflow into the Amik Lake occurred. The Late Bronze lowstand led to punctual dryings of the lake at the end of the Bronze/Iron Age transition. At that time, the rivers yielded a large terrigenous input linked to strong soil erosion related mainly to deforestation and exploitation of mineral resources. During the Roman and later periods, upland soils were partly depleted and the riverine system completely transformed by channelization (anthropic) that led to a marshification of the Amik Basin [1]. Chemical and mineralogical composition of sediments is quite diversified reflecting the significant geological variation of drainage basins. Periods with strong aggradation linked to major increase in erosion were identified and characterized by high amount of Cr, Ni and Zr. Levels relatively rich in fluorite, richterite, enstatite, hornblende and chrysotile are a result of the erosion of the ophiolitic rocks from the surrounding Amanos Mountains. These levels are interpreted as periods of relatively high physical erosion, while more humid periods led to more intensive weathering. Consequently, the dominance of kaolinite, muscovite/illite and talc indicates a climate with contrasting seasons. During the most recent period a marked increase in terrigenous minerals associated with a rise in dolomite indicates ungoing erosion as well as the drying-out of the lake.

[1] T.J. Wilkinson, L. Rayne, *Water History*, **2**, 115-144 (2010).