Paleoenvironmental reconstruction of the central Levantine Corridor during the Pliocene: insights from lacustrine settings

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This study aims to reconstruct the paleoenvironmental and climatic conditions affecting the Levantine corridor during the early Pliocene. For the purpose of this study, a ~20 m continuous core sequence was retrieved out of the ~200 m long, tilted Erk el Ahmar sequence previously dated by cosmogenic isotopes to ~3.5 Ma. The record include intercalating units consisting of sands, silts, and clays that were sampled in high resolution in order to analyze a variety of sedimentological and geochemical proxies of past climate and environmental changes. We present new preliminary, high-resolution sedimentological (laser diffraction granulometry), petrophysical (magnetic susceptibility) and compositional (X-ray fluorescence) data along with accompanying statistical analysis performed with an advanced suite of data-science tools. These results reveal new cycles of environmental change in the area, which appears to be orbitally controlled, and include dramatic changes also indicated by discrete strata of fossil fragments. Moreover, cycles of deposition can also provide hints on the major hydrological controlling mechanisms. This project provides new light into favorable conditions for the subsistence of perennial lake environments in the Levantine Corridor, which in turn may have facilitated faunal migration between Africa and Eurasia.