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Climate change and human lakeside adaptation in the Central Afar Region (Lake Abhe basin, Ethiopia & Djibouti) during the Later Stone Age - Neolithic transition: a multi-scalar and multi-proxy approach

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Throughout the last 20 ka, tropical Africa was the site of significant hydrological changes related to variations in the intensity of the African monsoon. Recent studies conducted in lake and deltaic sedimentary records suggest that gradual long-term monsoon humid oscillations (African Humid Period ~14 – ~6 ka) were punctuated by centennial-scale episodes of hyperaridity (HS1, YD, 8.2 ka, 4.2 ka). These abrupt hydrological changes could have caused drastic transformations in landscape patterns, providing favourable ecosystems, but also produced arid environments that may have restricted human exploitation of the landscape.

The Abhe Lake basin in the Central Afar region (Ethiopia & Djibouti) is the endorheic receptacle of freshwater and terrigenous inputs from the Ethiopian Highlands, and is a hydro-sedimentary system sensitive to hydroclimatic change. Since 2014, in the context of the VAPOR-Afar and PSPCA programs (in Ethiopia and Djibouti respectively), we have intensified scientific investigations over this basin with the objective of exploring the evolution of Holocene hydroclimatic change, its impact on landscapes and on prehistoric human behaviour during one of the most forcible transitions in human history, that from a dominantly hunter-gathering way of life to the food production societies one.

We present the first results of this research that combines paleoclimatological, geomorphological and geoarchaeological studies based on a new set of ¹⁴C datations on two lacustrine cores, on several morpho-sedimentary outcrops and on 8 new archaeological sites spanning the Early to Late Holocene. Our results allow us to: **a**) refine the temporal occurrence and the modalities of the

African Humid Period and of the 8.2 and 4.2 ka hyperarid episodes, coupling paleolake-level reconstitution and lacustrine sediment analysis (paleolimnology, geochemistry); **b**) evaluate the impact of these hydroclimatic oscillations on perilacustrine sedimentary formation processes, especially for pedogenic formations; **c**) and better understand the relationship between environmental change and the development of one of the most important economic and cultural innovations, that of domestication.