Luminescence dating investigations of a long lacustrine sedimentary record of palaeoenvironmental change from Chew Bahir, Ethiopia

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Chew Bahir, in southern Ethiopia, is one of the five lacustrine sites in east Africa which form the basis of the Hominin Sites and Paleolakes Drilling Project (HSPDP) of the International Continental Scientific Drilling Programme (ICDP). Each of these HSPDP sites is located close to globally significant fossil hominin sites; Chew Bahir is near Omo Kibish where the earliest known *Homo sapien*s fossils were discovered. Earlier work (e.g. Foerster et al., 2012; Schäbitz et al., 2016) using a series of short (< 50 m) cores collected from Chew Bahir between 2009-2014 as part of the Collaborative Research Centre 806 “Our way to Europe” project and the DFG-funded Chew Bahir Coring Project suggests that the site likely preserves a long, essentially continuous, high-resolution sedimentary record of climatic and environmental change spanning at least the last 500,000 years of human history. For the present study, investigation of two significantly longer parallel overlapping cores (~ 280 m composite depth; Cohen et al., 2016) offers the opportunity to explore hypotheses linking climate/environmental change and human evolution, expansion and cultural/technological innovation.

The ~280 m composite core used in the present study (and the two deep, parallel overlapping cores from which it is derived) has variable lithologies with depth, including clay and silty-clay units, as well as intercalated sand units, offering a range of grain sizes suitable for luminescence dating. The local granitic and gneissic source rocks from which the sediments are derived contribute both quartz and feldspar grains to the Chew Bahir lacustrine record, offering the potential for use of multiple luminescence chronometers at this important site. For each sample collected from the ~280 m composite core for optically stimulated luminescence dating, polymineral fine-grain separates have been prepared, whilst coarse-grain feldspar as well as coarse- and fine-grained quartz separates have also been prepared when possible. This presentation reports the initial findings of these luminescence dating investigations.

Cohen A, et al. (2016), Scientific Drilling 21: 1-16.

Foerster V, et al. (2012), Quaternary International 274: 25-37.

Schäbitz F, et al. (2016), Quaternary International 404 Part B: 179.