

Late Quaternary highstands at Lake Chilwa, Malawi: Frequency, timing and possible forcing mechanisms in the last 44 ka

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ABSTRACT

The extensive shoreline deposits of Lake Chilwa, southern Malawi, a shallow water body today covering 600 km² of a basin of 7500 km², are investigated for their record of late Quaternary highstands. OSL dating, applied to 36 samples from five sediment cores from the northern and western marginal sand ridges, reveal a highstand record spanning 44 ka. Using two different grouping methods, highstand phases are identified at 43.7–33.3 ka, 26.2–21.0 ka and 17.9–12.0 ka (total error method) or 38.4–35.5 ka, 24.3–22.3 ka, 16.2–15.1 ka and 13.5–12.7 ka (Finite Mixture Model age components) with two further discrete events recorded at 11.01 ± 0.76 ka and 8.52 ± 0.56 ka. Highstands are comparable to the timing of wet phases from other basins in East and southern Africa, demonstrating wet conditions in the region before the LGM, which was dry, and a wet Lateglacial, which commenced earlier in the southern compared to northern hemisphere in East Africa. We find no evidence that wet phases are insolation driven, but analysis of the dataset and GCM modelling experiments suggest that Heinrich events may be associated with enhanced monsoon activity in East Africa in both timing and as a possible causal mechanism.

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