



U-Th dating of lacustrine carbonates from Lake Bosumtwi, Ghana

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An important West African palaeo climate archive for the past 1.08 Ma is recorded in sediments that have accumulated in the impact crater Lake Bosumtwi, Ghana. Direct dating of lacustrine sediments to constrain the chronology of such palaeo climate archives is difficult beyond the limits of ^{14}C . We have explored the feasibility of U-Th dating on authigenic carbonate components of the lake sediment cores.

Lake Bosumtwi sediment cores show fine scale laminations, where dark laminae alternate with carbonate-rich lighter laminae. Additionally, in some core sections from shallow-water drill sites, carbonate nodules are found. U-series analyses were conducted on 1-2 mm thick carbonate-rich layers and nodules from various depths of the sediment. A large detrital component in the samples required application of isochron methods for U-series dating. We present our sampling and preparation strategy as well as U-series results. Calculated ages of the four nodule samples analysed in this study are in stratigraphic order and cover an age range between 100 and 400 ka. The results on carbonate layers, however, yield only limited success, and only two of six layers analysed produced U-Th isochron ages. Most carbonate layer samples show significant ^{230}Th excess indicating U mobilisation. Additional elemental analyses on the sediment layers show that non-datable layers are characterised by relatively smaller Ca contents. Furthermore, higher Fe and S concentration of non-datable layers indicate that redox processes might be responsible for U mobilisation and hence ^{230}Th excess.