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A White Nile megalake during the last interglacial period

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The eastern Sahara Desert of Africa is one of the most climatically sensitive areas on Earth, varying from lake-studded savannah woodland to hyperarid desert over the course of a glacial-interglacial cycle. In currently semiarid Sudan there is widespread evidence that a very large freshwater lake once filled the White Nile River valley (Barrows et al., 2014). Here we present the first quantitative estimate for the dimensions of the lake and a direct age for the emplacement of its shoreline. Using a profile dating approach with the cosmogenic nuclide ^{10}Be, we estimate an exposure age of 109 $\pm$ 8 ka for this megalake, indicating that it probably formed during the last interglacial period. This age is supported by optically stimulated luminescence dating of Blue Nile paleochannels associated with the lake. Using a high-resolution digital elevation model, we estimate that the lake was more than 45,000 km^2 in area, making it comparable to the largest freshwater lakes on Earth today. We attribute the lake's existence to seasonal flood pulses as a result of local damming of the White Nile by a more southern position of the Blue Nile and greatly increased precipitation associated with an enhanced monsoon.

References

Barrows, T.T., Williams, M.A.J., Mills, S.C., Duller, G.A.T., Fifield, L.K., Haberlah, D., Tims, S.G., Williams, F.M., 2014. A White Nile megalake during the last interglacial period. Geology. 10.1130/g35238.1