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Quaternary history of the White Nile

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The White Nile only joined the Blue Nile ∼0.3 Ma ago. It provides much of the low water discharge to the Nile. Without this contribution, in very dry years the Nile would dry up during the winter months. Owing to its very gentle flood gradient of 1: 100,000, the White Nile has an unusually complete alluvial record. High White Nile flood levels dated by OSL are synchronous with sapropel units S8, S7, S6, S5 and S1 in the East Mediterranean, which have astronomical ages of 217, 195, 172, 124 and 8 ka, respectively. Blue Nile palaeochannels that flow into the former White Nile complete the flood record, and coincide with sapropel units S4, S3 and S2, with respective ages of 102, 81 and 55 ka. The two most recent phases of very high White Nile flow were marked by widespread flooding across the lower White Nile valley during the last interglacial and the terminal Pleistocene – the latter coinciding with the abrupt return of the summer monsoon at 14.5 ka and the synchronous onset of humid conditions across the Sahara and East Africa, which ended suddenly at 5 ka, when desiccation set in. This humid phase was not uniformly wet; nor was the late Holocene uniformly dry. High White Nile flood levels have calibrated radiocarbon ages of 14.7-13.1, 9.7-9.0, 7.9-7.6, 6.3 and 3.2-2.8 ka obtained on freshwater gastropod shells. It was during these times that the White Nile valley was occupied successively by Mesolithic, Neolithic and Meroitic societies. West of the lower White Nile shallow ponds fed by local runoff supported an abundant gastropod fauna between 9.9 and 7.6 ka, with peak wetness at 9.0-8.4 ka, coeval with Mesolithic barbed bone harpoon sites east of the lower White Nile. The drier intervals recorded in the White Nile valley appear to coincide with times of polar cooling and more widespread tropical aridity.