Sedimentation changes in a complete Holocene lacustrine record in the Sahara: varve thickness, seasonality and event layers – Problems of identification, interpretation and chronology.

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Lake Yoa (19.03° N, 20.31° E, 380 m a.s.l.) is a groundwater-fed lake in the hyperarid eastern Sahara halfway between the Tibesti Mountains and the Ennedi plateau. Kröpelin et al. (2008) revealed that the bottom sediments contain a unique archive of climatic and environmental change in the Earth’s major desert. The 7.5m sediment record of OUNIK03/04 which covers 6,100 years has been extended to a maximum drill depth of 15.7 m during a 2010 coring campaign within the framework of the Collaborative Research Center (CRC) 806 “Our Way to Europe - Culture-Environment Interaction and Human Mobility in the Late Quaternary”. The long core (Co1240) contains the first complete terrestrial record of climate variations from the onset of the early Holocene humid period to the present. Sediments mainly consist of fine to very fine laminae in millimeter to sub-millimeter range and bedded layers up to 2 cm. They expose shifts in thickness but also changes in clastic and geochemical composition. These differences and the occurrence of a few event layers in the lower part implicate significant changes during lake basin evolution as well as problems in varve counting. Here we present our interpretation of varve formation in Lake Yoa and an initial varve chronology in combination with 14C-ages including an overview on applied methods and their usefulness with the Co1240 record.