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Lake Kumphawapi, NE Thailand – a sensitive archive for tracking Holocene paleo-monsoon shifts

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Lake Kumphawapi is a large (32 km2), shallow (< 4m) freshwater lake located on the northern part of the Khorat Plateau of northeast Thailand ($17^0 11'$N, $103^0 02'$E; 170 m above sea level). Prior to damming, the lake was fringed by a large wetland. Today, the extensive floating herbaceous swamp vegetation forms numerous small islands and islets.

Multiple sediment sequences have been collected in different parts of the lake in recent years. Multi-proxy analyses of these allow the reconstruction of changes in lake status, groundwater fluctuations, and catchment run-off during the Holocene. Our study suggests a stronger summer monsoon between c. 9800 and 7000 cal yr BP, and a shift towards lower effective moisture around 7000 cal yr BP, which led to a greatly reduced lake size by c. 6500 cal yr BP. The driest interval in Kumphawapi's history occurred between c. 5200 and 3200 cal yr BP, when peat extended over large parts of the basin. Around 3200 cal yr BP moisture availability seems to have increased again. The observed lake level rise after 1600 cal yr BP could have been caused by higher effective moisture, although increased human influence in the catchment cannot be ruled out. The new data set from northeast Thailand adds important paleoclimatic information for an understudied region of Southeast Asia and helps to clarify Holocene monsoon variability and ITCZ movement in greater detail.