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Asian summer monsoon variability during the last two millennia

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The Southeast Asian mainland is located in the central path of the Asian summer monsoon, a region where paleoclimatic data are still sparse. Here we report a new detailed reconstruction of monsoon variability during the past 2000 years from a multi-proxy sediment record (TOC, C/N, δ13C, δ15N, Si, K, Ti elemental data, biogenic silica and fossil plant remains) from Lake Pa Kho in northeast Thailand. We infer a stronger summer monsoon between BC 200 – AD 400 and AD 800 – 1350, a weaker summer monsoon AD 400 – 800, and fluctuating moisture availability AD 1350 – 1550. Increased run-off after AD 1750 can be linked to agricultural intensification in the region. Placed in a wider context our high-resolution data set contributes important information regarding abrupt shifts in hydroclimatic conditions, spatial patterns of monsoon variability, and variations in the position of the ITCZ across SE Asia during the last two millennia. These paleoclimatic shifts may have contributed to the rise and fall of Iron Age and Khmer societies.