

Variability in monsoonal-derived run-off from East Borneo during the Holocene and Termination 1

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Abstract

Variability in precipitation and convective activity over the western tropical Pacific have been recently investigated using numerical simulations and speleothem proxy data from Borneo. Today, convection and precipitation over Borneo are sensitive to annual changes in the position of the ITCZ. However, the longterm dynamics of ITCZ oscillations and related rainfall conditions over Borneo still remain uncertain. New multi-proxy paleoclimate records (X-ray fluorescence (XRF) core scanning data, stable isotope and Mg/Ca measurements on surface dwelling foraminifera) from marine sediment SO217-18517 (1° 32.199' S, 117° 33.756' E; water depth 698 m), recovered from the Makassar Strait provide further insights into local hydrographic changes during the last deglacial period. Preliminary results of sea surface $\delta^{18}\text{O}$ values and Mg/Ca-derived temperatures in combination with XRF elemental data, reflecting the amount of riverine input, indicate dry conditions during Heinrich stadial 1. Highest accumulation of terrigenous material occurred during the Bølling-Allerød and the Younger Dryas, suggesting enhanced monsoonal precipitation during these intervals. The freshening of surface waters during the Holocene may be partly due to the influx of fresh water masses, following the opening of the shallow connection with the South China Sea after 9,500 ka. Future work will focus on high-resolution reconstruction of monsoonal variability between Heinrich 1 and the end of the Holocene climate optimum and on potential relations to high-latitude climate change.