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A 90 ka reconstruction of the surface hydrology in the Panama Basin: implications for abrupt climate changes during the last glacial period

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In order to understand the role of the tropical Pacific on climatic fluctuations, we have studied a marine sediment core retrieved in the Eastern Equatorial Pacific (EEP). The sedimentation rate of the MD02-2529 higher than 10 cm.ka^{-1} allowed us to reconstruct the EEP surface hydrology for the last 90 ka BP at centennial timescale. Sea Surface Temperatures (SST) and Salinities (SSS) were estimated by combining paleotemperature proxies (alkenones and Mg/Ca ratio measured on the surface-dwelling foraminifer *Globigerinoides ruber*) and oxygen isotopes analysis performed on *G. ruber*. Millennial scale fluctuations of about 0.5 to 1 permil recorded in $\delta^{18}O_{G.ruber}$ indicate that the EEP experienced rapid climatic changes during the last glacial period. Long-term SST variations of 2 to 3˚C are mainly driven by summer insolation. The estimation of local $\delta^{18}O_{seawater}$ exhibits fluctuations of 0.5 to 1 permil at millennial timescale, reflecting variations of SSS of about 2 to 4 psu. Our regional SSS reconstruction reveals that the rapid fluctuations of the EEP hydrology were mainly driven by the Central American monsoon activity and its related InterTropical Convergence Zone (ITCZ) latitudinal position. This feature is found to be in close relationship with other tropical records, and ultimately with Greenland temperatures. Both SST and SSS fluctuations suggest that the ENSO-like analogy could not be applied to EEP surface hydrology, neither at precessional nor at millennial timescales. The rapid ITCZ latitudinal shifts may be the key for an interoceanic teleconnection across Panama isthmus that, in turn, could have played a significant role on the North Atlantic salt budget.