



## **Relationship between El Niño and the hydrological cycle of tropical regions in different climatic contexts**

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It has been shown that El Niño events contribute to discharge the warm pool excess of energy out of the tropical Pacific. In different climates in which the climatological Walker and Hadley circulations are modified—as it is likely to be the case in the future, the heat accumulation in the tropical Pacific will certainly be altered, which might have an effect on the El Niño amplitude and/or frequency and thereby on the role of ENSO on the global energetics. Here we study the ENSO signatures on energy transports, from the mid Holocene to the pre-industrial climate, related to the mean state changes. Long stable simulations of 6ka BP, 4ka BP and the pre-industrial era are analyzed, as well as a transient simulation from 6ka BP to 2ka BP. We discuss the whole tropical hydrological cycle and energetics in the different climates. Comparing heat fluxes and transports during El Niño years and neutral years, our objective is to track the key mechanisms driving the ENSO variability across the different climates and to further understand the linkages between climate variability and climate mean state.