

## **A 2 kyr Record of Eastern Tropical Pacific Paleohydrology using Multiple Biomarker Hydrogen Isotope Records from Coastal Lakes on Isabela Island, Galápagos**

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Tropical hydroclimate records from the pre-industrial era are important for understanding the mechanisms of global climate change. Yet continuous records with centennial resolution are rare, and available rainfall proxies are largely qualitative. We use hydrogen isotope measurements of taraxerol from *Rhizophora* mangroves, dinosterol from dinoflagellate phytoplankton, and  $nC_{24}$  alkanol derived from cyanobacteria glycolipids to develop a 2,000-year quantitative reconstruction of lake water  $\delta D$  values and salinity from Poza del Diablo, a brackish coastal lake on Isabela Island in the Galápagos. Additional  $\delta D$  values of dinosterol and taraxerol from two nearby saline lakes are used to confirm that the observed changes were driven by regional hydroclimate variations and not local lake-specific or geomorphological changes. The combined changes in lake water  $\delta D$  values and salinity help to differentiate between changes in the El Niño-Southern Oscillation (ENSO) from those caused by changes in the position of the intertropical convergence zone (ITCZ). Together the data suggest that ENSO drove hydrologic changes from approximately 0 – 1200 AD, after which a southward migration of the ITCZ brought increased precipitation and some of the wettest conditions of the past 2 kyr. The Isabela Island lake records offer an improved insight on tropical Pacific climate changes from a low elevation site in a region of key climatic importance and illustrate the potential for quantitative paleohydrologic reconstructions using multiple biomarker hydrogen isotope records.