



Unraveling South American spatial precipitation patterns, intensity and variability through a multi-proxy approach for the past 2 kyr

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South America hydrological cycle is highly dependent on the water vapor transport advected from tropical-equatorial Atlantic, Southern Pacific as well as the polar advections. While the Pacific contribution in the continental water budget is basically restricted to the western Andes region, the Atlantic Ocean and others mechanism – as advection in Amazonas basin – play a great role in modulating precipitation over the continent. Besides, modes of climatic variability, such as ENSO, have an important role in pluviosity distribution patterns and respectively intensity, influencing the availability of water resources from mountainous regions, vital to ecosystems and to economy and human wellbeing. Intense droughts and floods observed continentally during the modern epoch have pointed to the need of better understanding the regional climate related issue. Recent paleoclimate advances, especially the creation of high-standard regional proxy record databases, allow describing the South American climate from a new perspective. Here we present an effort of the South American PAGES 2k paleo-community LOTRED-SA to build a South America hydrology robust and unique multiproxy database. We present a spatial and temporal approach of the South American hydro-climate reconstruction based on more than 360 available databases in an attempt

to unravel their changes and impacts. Following a multi-proxy approach, we expect to better describe duration and location of wet and dryer climate regimes at most important climate spatial domains, and modes patterns on South America, during each period; as well as their predominant variability base on high resolution records (tree rings, speleothems, lake, marine and ice cores). we combine here the use of different proxy records and spatial-temporal approach, owing to consolidate interpretations of the hydrological cycles in South America.