



## **Trends and variability of the South American hydrological cycle for the last 2000 years**

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The South American continent encloses two of the largest global river basins: The Amazon basin and the La Plata basin. Its hydrological cycle is highly dependent on the water vapour transport advected from tropical-equatorial Atlantic as well as the polar advections. The Pacific Ocean contribution in the continental water budget is largely restricted to the western Andes region. Nevertheless, moderate-to-intense ENSO periods strongly affect more than half of the South American hydrology, influencing the availability of water resources from mountainous regions that are vital to ecosystems and the human economy and 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. However, large areas of tropical South America are still underrepresented in those databases. Here we present an effort of the South American PAGES 2k paleo-community LOTRED-SA to fill this gap. The group aims at producing a South American hydro-climate reconstruction from 267 proxy records (mostly tree rings, ice cores, pollen, instrumental precipitation and river flow) and 14 high resolved speleothems data covering the common era. For this study we plan to reanalyse new and existing tree ring and pollen data with respect to instrumental climate data. The well calibrated tree-ring index will be compared to an independently developed hydro-climate reconstruction for the last 2K based on speleothem records (Khodri et al., in prep) using coherence and singular spectral analyses to depict the temporal evolution of the dominant cyclicities the time series. For the more recent period, we will also use long-term instrumental data of precipitation, river flow and air temperature.