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Orientation: Ocean Observation and Global Change
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PhD project: Atmospheric moisture transport, the bridge between ocean evaporation and hydrological extremes in major tropical river basins

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Summary: The local evaporation and the moisture advected from remote regions are the most important factors to determine the origin of precipitation over a region. Nowadays, the identification of moisture sources and understanding the role of the atmospheric moisture transport as the main factor responsible for meteorological extremes like floods or droughts is considered a challenge. In this work, we aim to identify the main oceanic and terrestrial moisture sources for major tropical river basins and to determine their role on the precipitation, rivers discharge, rivers water levels and drought episodes in these regions; where economic activities greatly depend on water resources. To do it is utilized a Lagrangian particle dispersion model to investigate the atmospheric branch of the hydrological cycle and establish a source & receptor relationship. Several datasets of the ocean and land evaporation, atmospheric moisture fluxes, precipitation, etc. are used for this purpose. The results here obtained will contribute to increasing the understanding of the role of the oceans and continents on the hydrological cycle over the target regions.

