



## **Impacts of El Niño and El Niño Modoki on the precipitation in Colombia**

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The influence of the tropical Pacific SST on precipitation in Colombia is examined using 341 stations covering the period 1979-2009. Through a Singular Value Decomposition (SVD) the two main coupled variability modes show SST patterns clearly associated with El Niño (EN) and El Niño Modoki (ENM), respectively, presenting great coupling strength with the corresponding seasonal precipitation modes in Colombia. The results reveal that, mainly in winter and summer, EN and ENM events are associated with a significant rainfall decrease over northern, central, and western Colombia. The opposite effect occurs in some localities during spring, summer, and autumn. The southwestern region of Colombia exhibits an opposite behaviour connected to EN and ENM events during years when both events do not coexist, showing that the seasonal precipitation response is not linear. The Partial Regression Analysis used to quantify separately the influence of the two types of ENSO on seasonal precipitation shows the importance of both types in the reconstruction process. The results obtained in this study establish the base for modeling and forecasting the seasonal precipitation in Colombia using the tropical Pacific SST associated with El Niño and El Niño Modoki.

**Keywords:** Seasonal precipitation, Tropical Pacific SST, El Niño, El Niño Modoki, Singular Value Decomposition, Colombia.

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