



Inter-annual variability of precipitation over Southern Mexico and Central America and its relationship to Sea Surface Temperature from RegCM4 CORDEX projections

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An ensemble of future climate projections performed with the regional climate model RegCM4 is used to study the present and future relationship between inter-annual variability of precipitation over Southern Mexico and Central America (SMECAM) and the sea surface temperature anomalies of the surrounding oceans.

Opposite-sign SST anomalies between Tropical North Atlantic (TNA) and Tropical Northeastern Pacific (TNP) represent an important modulator of the inter-annual variability of precipitation over the SMECAM region, and in fact is the main modulating factor in 21st century projections. This Atlantic-Pacific SST dipole pattern controls the strength of the CLLJ, which in turn modulates the level of humidity transported westward from SMECAM region. By the end of the 21st century, a greater warming of the TNP compared to the TNA, generates stronger wind fluxes from the TNA to the TNP through the Caribbean Low Level Jet, and induces a change in inter-annual variability of precipitation towards a much greater occurrence of very dry conditions over the SMECAM region.