



Effects of Atlantic warm pool variability over climate of South America tropical transition zone

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Colombia is located in the northwestern corner of South America in a climatically complex region due to the influence processes modulators of climate both the Pacific and Atlantic region, becoming in a transition zone between phenomena of northern and southern hemisphere. Variations in the climatic conditions of this region, especially rainfall, have been attributed to the influence of the El Niño Southern Oscillation (ENSO), but little is known about the interaction within Atlantic Ocean and specifically Caribbean Sea with the environmental conditions of this region. In this work We studied the influence of the Atlantic Warm Pool (AWP) on the Colombian Caribbean (CC) climate using data of Sea Surface Temperature (SST) between 1900 - 2014 from ERSST V4, compared with in situ data SIMAC (National System for Coral Reef Monitoring in Colombia - INVEMAR), rainfall between 1953-2013 of meteorological stations located at main airports in the Colombian Caribbean zone, administered by IDEAM, and winds data between 2003 – 2014 from WindSat sensor. The parameters analyzed showed spatial differences throughout the study area. SST anomalies, representing the variability of the AWP, showed to be associated with Multidecadal Atlantic Oscillation (AMO) and with the index of sea surface temperature of the North-tropical Atlantic (NTA), the variations was on 3 to 5 years on the ENSO scale and of approximately 11 years possibly related to solar cycles. Rainfall anomalies in the central and northern CC respond to changes in SST, while in the south zone these are not fully engage and show a high relationship with the ENSO. Finally, the winds also respond to changes in SST and showed a signal approximately 90 days possibly related to the Madden-Julian Oscillation, whose intensity depends on the CC region being analyzed. The results confirm that region is a transition zone in which operate several forcing, the variability of climate conditions is difficult to attribute only one, as ENSO, since the role of the AWP in the climate of this region and especially in the central part proves to be decisive, probably due to changes in moisture and heat flows transferred to the atmosphere.