



NorTropical Warm Pool variability and its effects on the climate of Colombia

Constanza Ricaurte Villota, Deisy Romero-Rodriguez, and Oswaldo Coca-Domínguez

Instituto de Investigaciones marinas y Costeras - INVEMAR, Programa de Geociencias Marinas y Costeras, Santa Marta, Colombia (oswaldo.coca@invemar.org.co)

Much has been said about the effects of El Niño Southern Oscillation (ENSO) on oceanographic and climatic conditions in Colombia, but little is known about the influence of the Atlantic Warm Pool (AWP), which includes the gulf of Mexico, the Caribbean and the western tropical North Atlantic. The AWP has been identified by some authors as an area that influences the Earth's climate, associated with anomalous summer rainfall and hurricane activity in the Atlantic.

The aim of this study was to understand the variation in the AWP and its effects on the climate of Colombia. An annual average of sea surface temperature (SST) was obtained from the composition of monthly images of the Spectroradiometer Moderate Resolution Imaging Spectroradiometer (MODIS), with resolution of 4 km, for one area that comprises the marine territory of Colombia, Panama, Costa Rica both the Pacific and the Caribbean, and parts of the Caribbean coast of Nicaragua, for the period between 2007 and 2013. The results suggest that warm pool is not restricted to the Caribbean, but it also covers a strip Pacific bordering Central America and the northern part of the Colombian coast, so it should be called the Nor-Tropical Warm pool (NTWP). Within the NTWP higher SST correspond to a marine area extending about 1 degree north and south of Central and out of the Colombian Caribbean coast. The NTWP also showed large interannual variability, with the years 2008 and 2009 with lower SST in average, while 2010, 2011 and 2013 years with warmer conditions, matching with greater precipitation. It was also noted that during warmer conditions (high amplitude NTWP) the cold tongue from the south Pacific has less penetration on Colombian coast. Finally, the results suggest a strong influence of NTWP in climatic conditions in Colombia.