

Extreme precipitation events over Southern Mexico and the eastern Tropical Pacific

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Mexico is characterized by a variety of climates, from extreme desert conditions in the Northwest region to tropical jungle in the Southern states (between 15 and 18 N). These latter regions that receive more than 1500 mm annual average of accumulated precipitation are thought to be affected by the convection associated with the Inter-tropical Convergence Zone and by easterly waves. Our study seems to indicate that there are other phenomena that lead to extreme precipitation in the region. We identified several cases of extreme precipitation, most of them in the 99th percentile for several stations in the region. In particular, we have initially analyzed and simulated with WRF 3 cases observed during 2008. The analysis of the gridded data suggests that several of these extreme precipitation events over southern Mexico in the rainy season (from May to October) are the result of interactions of tropical phenomena such as the Madden-Julian oscillation and Mixed-Rossby gravity waves. These appear to be responsible for the modulation and variability of precipitation not only in the Pacific coast of Mexico, but also in all Central America.