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Identification of Tropical Cyclones' Critical Positions Associated with Extreme Precipitation Events in Central America

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Tropical cyclones are one of the most important causes of disasters in Central America. Using historical (1970–2010) tracks of cyclones in the Caribbean and Pacific basin, we identify critical path locations where these low-pressure systems cause the highest number of floods in a set of 88 precipitation stations in the region. Results show that tropical cyclones from the Caribbean and Pacific basin produce a large number of indirect impacts on the Pacific slope of the Central American isthmus. Although the direct impact of a tropical cyclone usually results in devastation in the affected region, the indirect effects are more common and sometimes equally severe. In fact, the storm does not need to be an intense hurricane to cause considerable impacts and damage. The location of even a lower intensity storm in critical positions of the oceanic basin can result in destructive indirect impacts in Central America. The identification of critical positions can be used for emergency agencies in the region to issue alerts of possible flooding and catastrophic events.