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# The Influence of Localized Wind Stress on Eddies in the Caribbean Sea

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The Caribbean Sea is rich in mesoscale eddy activity. The eddies are predominantly anticyclonic, transport Southern Hemisphere waters towards the Gulf of Mexico, and their properties are thought to strengthen hurricanes. These eddies intensify significantly after their formation and are advected through the Yucatan Channel, where they affect the shedding of Loop Current Eddies. Previous studies have indicated that the local trade winds, which give rise to Ekman-driven upwelling along the South-American coast and the Panama-Colombia gyre, affect the life cycle of the anticyclones. Because both the wind and the inflow into the Caribbean Sea are highly variable, the exact influence of the wind-driven processes on the life cycle of the eddies is still unclear. Here, we present a systematic analysis to assess the role of local wind stress on the life cycle of the eddies. To this end, a regional model of the Caribbean Sea is developed, which is forced at the boundaries by output from a high-resolution global ocean model. In this standard configuration, the sea surface height variance and the transport through the basin are consistent with observations. Next, we simplify the boundary conditions and vary the wind stress of the model. The results show that the intensification of the eddies is strongly affected by the Ekman-driven upwelling along the South-American coast, while the number of eddies remains constant under varying wind conditions. In the presentation, details of the underlying mechanisms will be presented.