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South Atlantic Convergence Zone as Rossby Wave Source During Strong El Niño

Hugo Braga and Tercio Ambrizzi

University of São Paulo, Institute of Astronomy, Geophysics and Atmospheric Sciences, Department of Atmospheric Sciences

The South Atlantic Convergence Zone (SACZ), which extends from the Amazon to the southwestern South Atlantic, is one of the major precipitation systems in South America and has an important socioeconomic impact for Brazil. This study suggests the possibility of SACZ to act as a Rossby wave source using numerical simulations from a simple baroclinic model under strong El Niño basic state. Sixteen days after the perturbation, it is possible to observe wave propagation inside the subtropical latitudes of the northern hemisphere. The simulation is performed during the strong El Niño in 2015/16 austral summer, which has a intense westerly zonal flow and stationary wavenumbers 6-10 in the equatorial Atlantic region. The Rossby wave starts in the southeast Brazil, crosses the Atlantic Ocean and, embedded in the subtropical jet of the north hemisphere, extends to the subtropical latitudes over the African and Asian continents. According to the present analyses, SACZ may sometimes act as interhemispheric Rossby wave source, enabling a connection between South America and subtropical latitudes in north hemisphere over 16 days, providing there is westerly flow that allows wave propagation over the equatorial Atlantic Ocean.