



Climatology of subtropical cyclones on the mid-west of the South Atlantic simulated by HadGEM2-ES

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Subtropical cyclones are hybrid systems with tropical and extratropical characteristics and they are associated with intense near surface winds and heavy precipitation over the sea. On the South Atlantic Ocean, the climatology of the subtropical cyclones indicate that the austral summer and fall are the main stations of occurrence of these systems which preferential formation eastward of southeastern coast of Brazil. From the previous results, a classification algorithm of the subtropical cyclones was constructed aiming to increase the speed of the classification, since previously they were classified subjectively. The algorithm uses Cyclone Phase Space (CPS) parameters, the parameters of symmetry (B), thermal wind at low (VTL) and upper (VTU) levels. Starting from the CPS parameters the algorithm evaluates the thresholds of each parameter and then classifies the cyclone as subtropical or not. Using this algorithm, the present work evaluated how the global model HadGEM2-ES of CMIP5 simulates subtropical cyclones on the center-western of the South Atlantic Ocean in the present (1979-2009) and future (2070-2090 - RCP8.5) climate. Preliminary results show that HadGEM2-ES simulates both the observed annual cycle and the spatial distribution (cyclogenetic density) of subtropical cyclones in the present climate. Future projections of RCP8.5 indicate a decrease in the frequency of subtropical cyclones, with a consequent decrease of the cyclogenetic density near the southeastern coast of Brazil. Other changes in climatology of subtropical cyclones in the future climate will also be presented.

Keywords: Subtropical cyclones, HadGEM2-ES, South Atlantic Ocean, climatology