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Dynamic climatology of subtropical cyclones over the South Atlantic Ocean

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Subtropical cyclones, that present features of both extratropical and tropical cyclones, are being studied extensively over the North Atlantic and Pacific basins. The climatological and dynamical characteristics of such systems over the South Atlantic basin has recently received greater attention, mainly due to the occurrence tropical transition episodes (in March 2004 and March 2010, for example). The aim of this study is to obtain a climatology of subtropical cyclones over the South Atlantic Ocean, from 1948 to 2010, using the NCEP reanalysis 1. The systems will be tracked using the low level relative vorticity field, and classified according to its tridimensional structure through the Cyclone Phase Space (CPS) algorithm. In a preliminary tracking for the years of 2008 and 2009, 32 cyclones were identified developing near the coast of South America with a distinct low level warm core persisting for more than 36 hours. Among these 32 systems, four different classes were identified: systems that started with a subtropical structure, that developed a warm core later in its life cycle, seccluded systems, and tropical transitions. Expanding this analysis to the whole set will provide a climatology for each class, and it will be possible to understand the influence of large scale low frequency oscillations (El Niño-Southern Oscillation, Atlantic Multidecadal Oscillation and the Southern Annular Mode) in such cyclones. Composition analyses will help to understand the dynamic mechanisms and environments associated to each class.