



## **Southern Annular Mode Impacts in South America**

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The Southern Annular Mode (SAM) is the major mode of variability of the extratropical circulation in the Southern Hemisphere. When there is geopotential height negative (positive) anomalies in Antarctica and positive (negative) in middle latitudes the SAM phase is positive (negative) according to some index found in the literature. In order to verify the extratropical cyclones distribution in South Hemisphere and the pattern of the rainfall anomalies in the South America and South Atlantic for different SAM phases seasonal composites of cyclogenesis density and precipitation from 1980 to 1999 were calculated. During the SAM negative phase the cyclogenetic belt around the Antarctic continent is more scattered than for the positive one and displaced to the north. But, the seasonal total of these systems in all South Hemisphere is similar during both phases. For the SAM negative phase there are more frontogenetic conditions in all seasons over Southern Brazil, Uruguay and parts of central and northeast Argentina as well as in a large region over South Atlantic Ocean. This feature has an impact on the seasonal precipitation anomaly patterns observed during the SAM phases. Positive precipitation anomalies are observed during the negative SAM phase and coincide with the frontogenetic regions mentioned above while a reverse signal occurs during the positive one.