



## Precipitation Associated with Cyclogenetic Hotspot Regions in the Extratropical Southern Hemisphere: CORDEX-CORE Projections

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Projections of the precipitation associated with cyclones in the main cyclogenetic regions of the Extratropical Southern Hemisphere domains (Africa - AFR, Australia - AUS and South America - SAM) are here analyzed during the winter season (JJA). The projections were obtained with the Regional Climate Model version 4 (RegCM4) nested in three global climate models (GCMs) from the Coupled Model Intercomparison Project phase 5 (CMIP5) under the Representative Concentration Pathway 8.5. RegCM4 simulations were executed with horizontal grid spacing of 25 km and for the period 1979-2100. As reference period, we consider the interval 1995-2014 and as future climate, the period 2080-2099. Cyclones are identified using an algorithm based on the neighbor nearest approach applied to 6 hourly mean sea level pressure (SLP) fields. In SAM and AUS domains, two hotspot regions for cyclogenesis are selected while for AFR only one is considered. First, in each hotspot region, the cyclogenesis are identified and, then, the mean precipitation from the previous day ( $day_{-1}$ ) to the day after ( $day_{+1}$ ) of these processes is calculated. A general negative trend in the cyclone's frequency is projected for the period 2080-2099. However, for the same period, it is projected an increase of precipitation intensity for AFR domain, mainly near the southwestern coast of the continent. In AUS the increase is observed between southeastern Australia and New Zealand, and over north New Zealand. For SAM there is an expansion of the area with a maximum precipitation intensity close to southern Brazil and Uruguay and to the east of 60°W near 40°S. Summarizing, the precipitation associated with individual cyclones will increase on average in the future (for example 30% in the SAM domain), being the storms less frequent but more intense.