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Precipitation biases over southern Africa: examining the role of the Angola Low.

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One of the main features controlling precipitation over southern Africa during the wet season is the Angola Low (AL) pressure system that appears as a heat low during October and November and as a tropical low during the climatological mean of December, January and February. The literature provides evidence that wet biases over southern Africa in the Coupled Model Intercomparison Project Phase 5 ensemble (CMIP5) are associated with a strongly simulated AL. In the current work, we examine the degree to which this observation holds for the CORDEX-Africa (Coordinated Regional Climate Downscaling Experiment - Africa) ensemble, using evaluation experiments forced with ERA-Interim at a spatial resolution of 0.44° . The analysis is performed using daily values for months October to March for the period 1990-2008. We characterize the precipitation bias over southern Africa using 10 satellite and gridded precipitation products. For the identification of the AL we use potential temperature at 850 hPa, specific humidity at 850 hPa and relative vorticity at 850 and 500 hPa. Our results highlight the fact that process-based evaluation of climate simulations are key in understanding structural model deficiencies.