

Low-level wind, moisture, and precipitation relationships near the South Pacific Convergence Zone in CMIP5 models

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One theorized control on the position of the South Pacific Convergence Zone (SPCZ) is the amount of low-level inflow from the relatively dry southeastern Pacific basin. Following on the analysis of observed synoptic scale variability in the SPCZ region by Lintner and Neelin (2008), we perform composite analysis on output from 26 models in phase five of the Coupled Model Intercomparison Project (CMIP5). Using low-level zonal wind as a compositing index, we find that many of the models, as well as the model ensemble mean, capture patterns of wind, specific humidity, and precipitation anomalies similar to those calculated for observed fields between strong and weak inflow phases. Despite some of the well-known biases in model simulations in the SPCZ region, our results suggest that current generation models do have some fidelity in simulating synoptic scale relationships between low-level winds, moisture, and precipitation, consistent with observations and simple theoretical understanding of interactions of dry air inflow with deep convection.