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The CORDEX-Australasia ensemble: evaluation and future projections

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The World Climate Research Programme (WCRP) has an international initiative called the COordinated Regional climate Downscaling EXperiment (CORDEX). The goal of the initiative is to provide regionally downscaled climate projections for most land regions of the globe, as a compliment to the global climate model projections performed within the Coupled Model Intercomparison Projects (CMIP). CORDEX includes data from both dynamical and statistical downscaling. It is anticipated that the CORDEX dataset will provide a link to the impacts and adaptation community through its better resolution and regional focus. Participation in CORDEX is open and any researchers performing climate downscaling are encourage to engage with the initiative. Here I present the current status, evaluation and future projections for the CORDEX-AustralAsia ensemble.

The CORDEX-Australasia ensemble is the largest regional climate projection ensemble ever created for the region. It is a 20-member ensemble made by 6 regional climate models downscaling 11 global climate models. Overall the ensemble produces a good representation of recent climate. Consistent biases within the ensemble include an underestimation of the diurnal temperature range and an underestimation of precipitation across much of southern Australia. Under a high emissions scenario projected temperature changes by the end of the twenty-first century reach ~ 5 K in the interior of Australia with smaller increases found toward the coast. Projected precipitation changes are towards drying, particularly in the most populated areas of the southwest and southeast of the continent. The projected precipitation change is very seasonal with summer projected to see little change leaning toward an increase. These results provide a foundation enabling future studies of regional climate changes, climate change impacts, and adaptation options for Australia.