

Regional climate model projections of Australia's future weather systems

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Abstract: Extratropical lows and their associated cold fronts cause the majority of cool season rainfall in southern Australia, and can be associated with hazards including strong winds, flooding, large waves and coastal erosion. This presentation will evaluate the ability of the newest generation of regionally-downscaled climate models to represent the observed characteristics of extratropical lows and their associated fronts, including identifying differences between different regional modelling approaches. It will also provide updated projections of changes in the frequency and characteristics of extratropical lows and fronts over the 21st century. The results show strong model agreement in projections of a decline in the frequency of low pressure systems near southern Australia in a warmer world, consistent with previous generations of climate models. In contrast there is considerable uncertainty around northern Australia, in part related to differences between regional models. This highlights the benefits of incorporating all available regional model datasets when assessing climate projections, to better capture uncertainty around the range of plausible futures.

Keywords: *Regional climate models, rainfall, low pressure systems, cold fronts*