



Untangling the causes a decadal-scale drought: a case study in southeast Australia.

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Prolonged droughts on the order of multiple years to a decade have recently afflicted many parts of highly populated regions around the globe, for example, the southwest United States and southeast Australia. However, the causes of these droughts remain unclear. A significant contribution from natural decadal-scale climate variability is likely, but there is also conflicting evidence of any contribution from anthropogenic climate change.

This work aims to untangle the causes of a 13-year drought in southeast Australia spanning 1997–2009. A suite of historical and control simulations from fully coupled GCMs contained in the CMIP5 archive are employed, and the potential contributions of random climate variability, SST forcing and anthropogenic forcing to the drought are examined.

It is likely that random, decadal-scale variability played a significant role in producing the prolonged rainfall deficits across southeast Australia. These were reinforced by several years with El Niño-like conditions, which commonly induce drought in the region, and a lack of La Niña conditions, which are more likely to bring rain. Evidence of contribution of anthropogenic forcing to the drought is limited