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Improved gridded analysis of daily rainfall for Australia

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Abstract:

The Bureau of Meteorology is committed to improving the services it provides to the Australian community and industry, including enhancing its public products. The Bureau of Meteorology published the Australian Gridded Climate Data set (AGCD version 2) in September 2020 as its operational national, real-time monthly gridded rainfall dataset, replacing the previous monthly gridded rainfall analysis, known as the Australian Water Availability Project (AWAP). AGCD version 2 incorporates enhanced analysis and scientific methods, as well as state of the art geostatistical computer modelling. That work continued and is now bringing into operations a new high resolution gridded analysis of daily rainfall. This work documents the new set of daily rainfall climate analyses for Australia. The analyses are updated in real-time and extends back in history to the beginning of the 20th century. The implementation of the new analysis scheme has seen an increase in spatial resolution of daily rainfall analyses from ~5×5 km grids to ~1×1 km grids, a substantial reduction in interpolation errors and bias, and a new capacity for inclusion of third-party data. When applied to a number of reference events, the analyses show an improved representation of daily rainfall extremes, which have previously tended to be heavily smoothed in the AWAP data. Furthermore, testing has indicated the method is appropriate for an extension to other climate variables such as temperature and vapour pressure, which will happen in the next year.