

## History of revision (bias recorection) to satellite daily solar exposure data

The daily solar exposures produced raw from the Bureau's satellite data processing have a substantial exposure-dependent bias, as determined from comparisons with surface-based exposure measurements from the Bureau's radiation network. This bias can be modelled as a linear function of exposure, with the model coefficients changing on a time scale of months for a given satellite, and this model can be used to correct the satellite exposures. The surface-based measurements are available only after a delay of several months due to the partially manual nature of their quality control. Thus the near-real-time satellite exposures must be corrected with a temporal extrapolation of the bias model.

The temporal extrapolation of the bias model should be adjusted periodically as new surface-based observations come in, so that the extrapolation is not too far ahead and consequently too much in error. However, several times in recent years the extrapolation was allowed to run too long and the error grew large. In each case the raw exposures were recorrected with a more accurate bias model derived from the surface observations. However, the updates were not necessarily propagated to all of the Bureau distribution channels for the exposure product.

The times that data was revised internally in the Bureau and the data intervals covered by each revision are:

June 2011 revision: 20070401-20101031

March 2013 revision: 20101101-20121018

January 2014 revision: 20130101-20140102

February 2014 revision: 20121019-20121231.

The change in exposure value between before and after the revision will vary linearly with exposure.

The externally available maps and grids for these periods were updated at times different than for the internally available revisions. These updates occurred at:

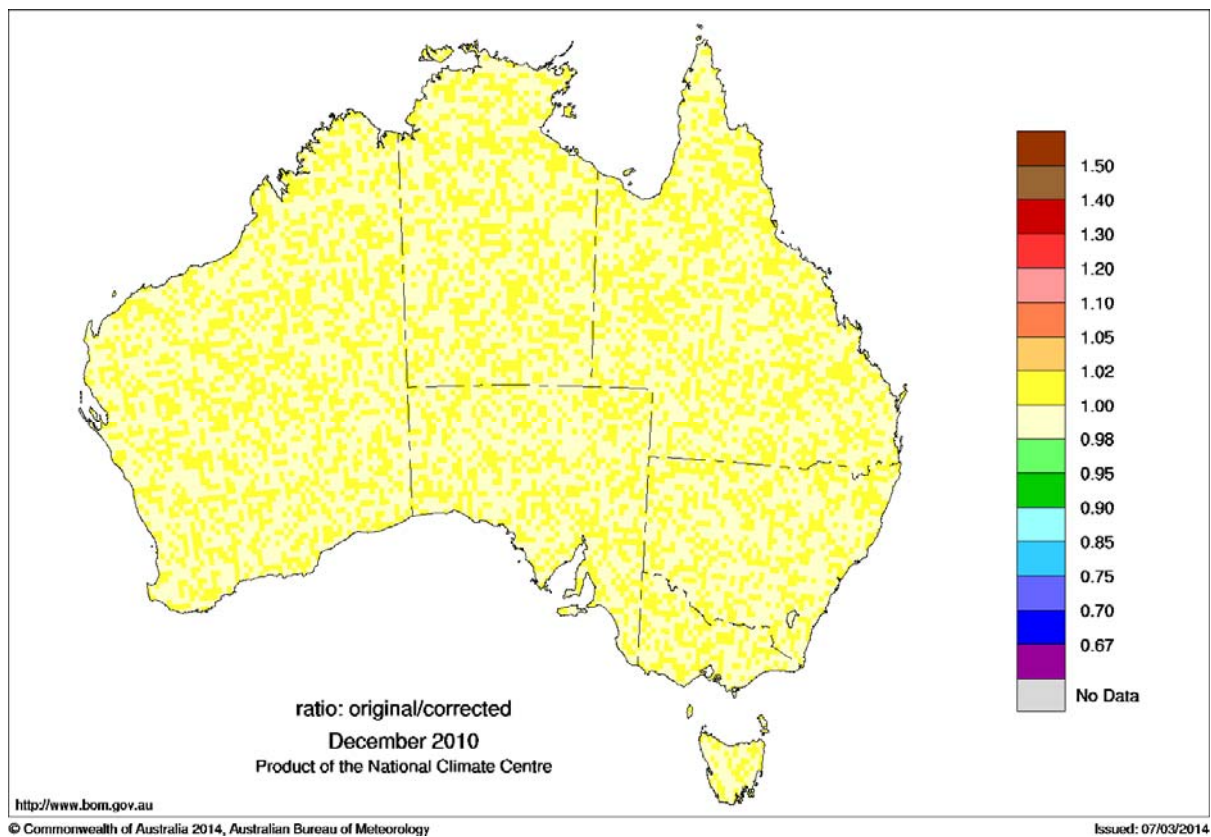
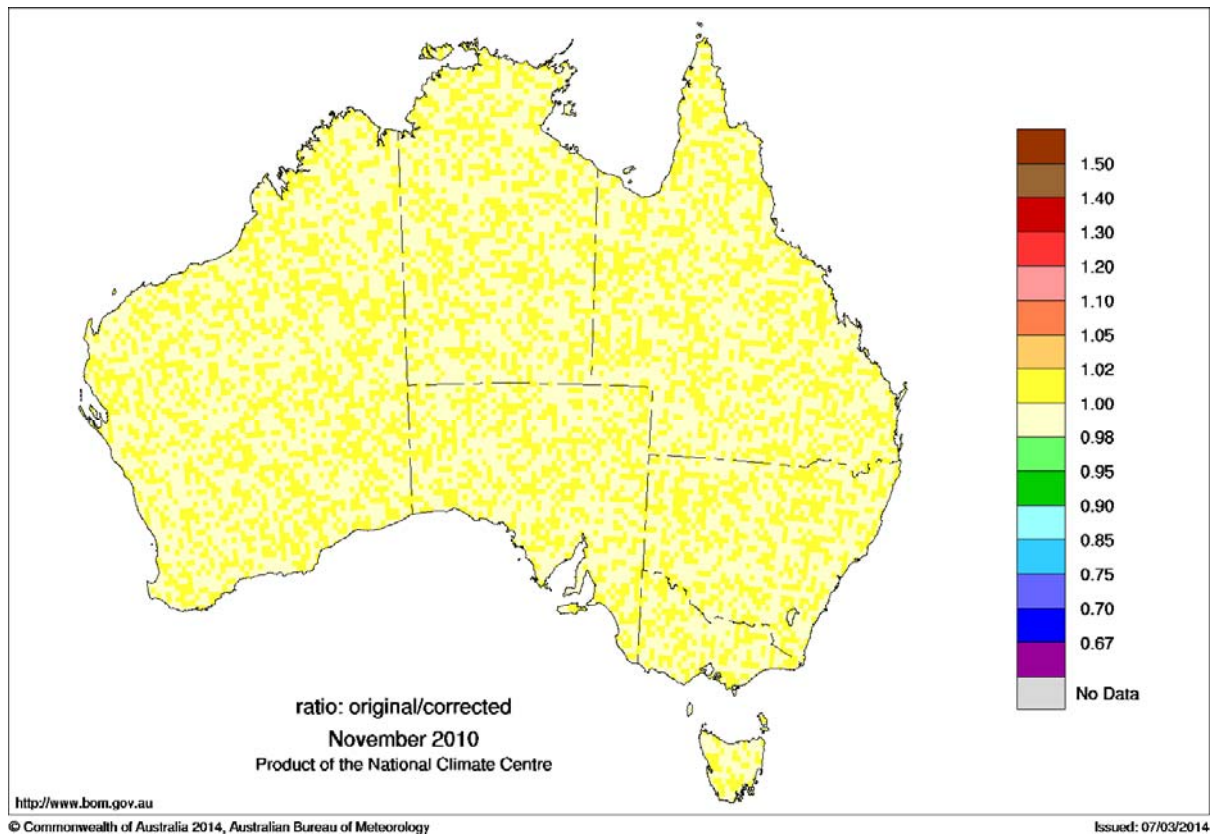
Data from	Data to	External update (UTC)	Revision date
20070401	20101031	8-14 August 2011	June 2011
20101101	20121018	6 February 2014	March 2013
20121019	20121231	6 February 2014 <sup>1</sup>	February 2014
20130101	20131231	9 January 2014	January 2014
20140101	20140102	12 January 2014	January 2014

<sup>1</sup> Data for 20120523 and 20120524 were not updated until 10 March 2014 (UTC).

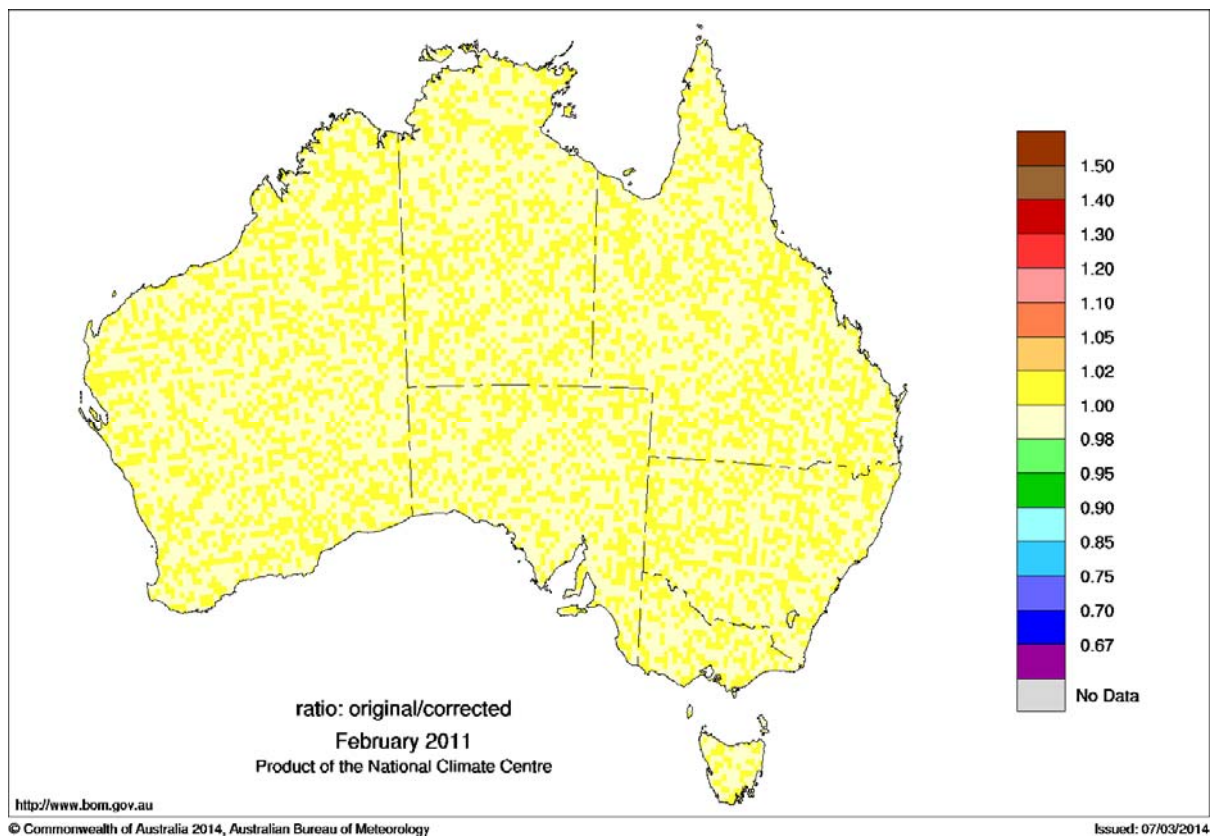
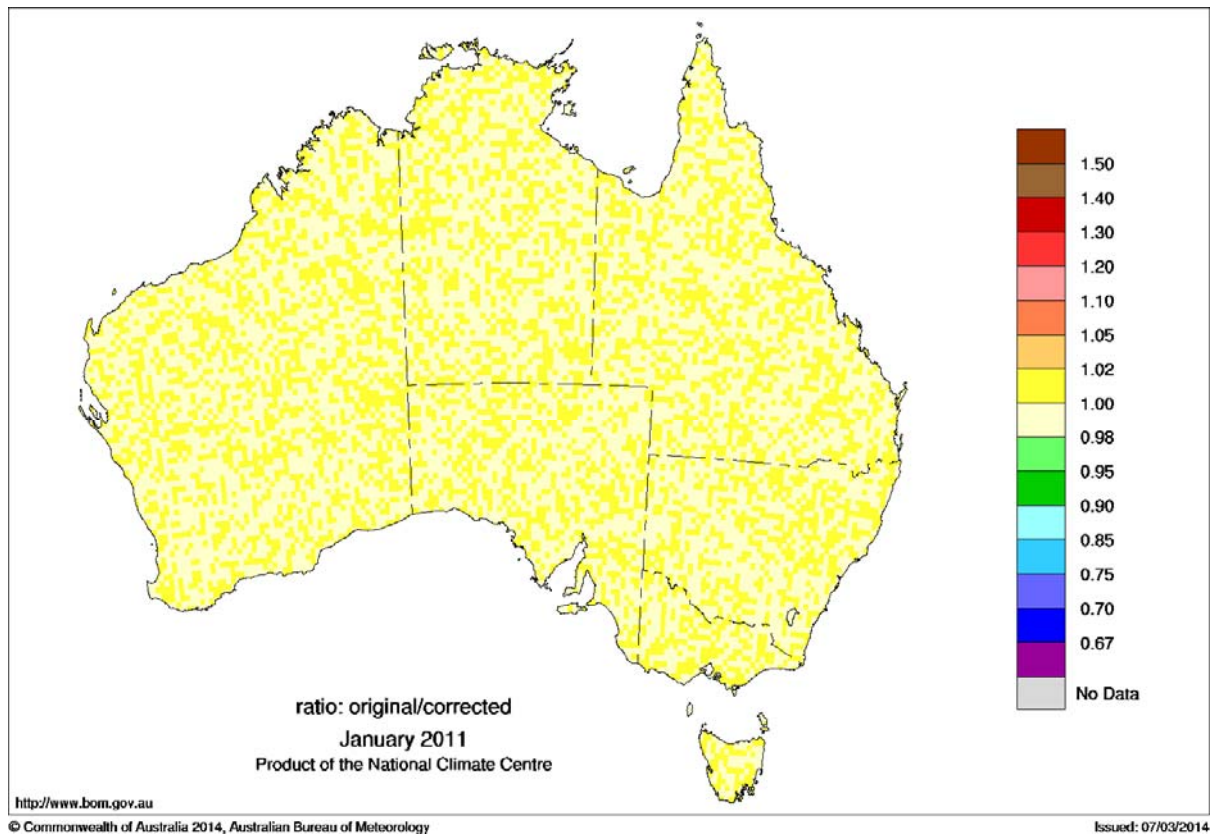
The maps in Attachment A indicate the magnitude of the ratio between the near real-time data and revised data for each month, based on the daily grids.

To avoid future occurrences, in future the extrapolated bias model will be monitored regularly and updated at approximately six-monthly intervals.

Attachment A

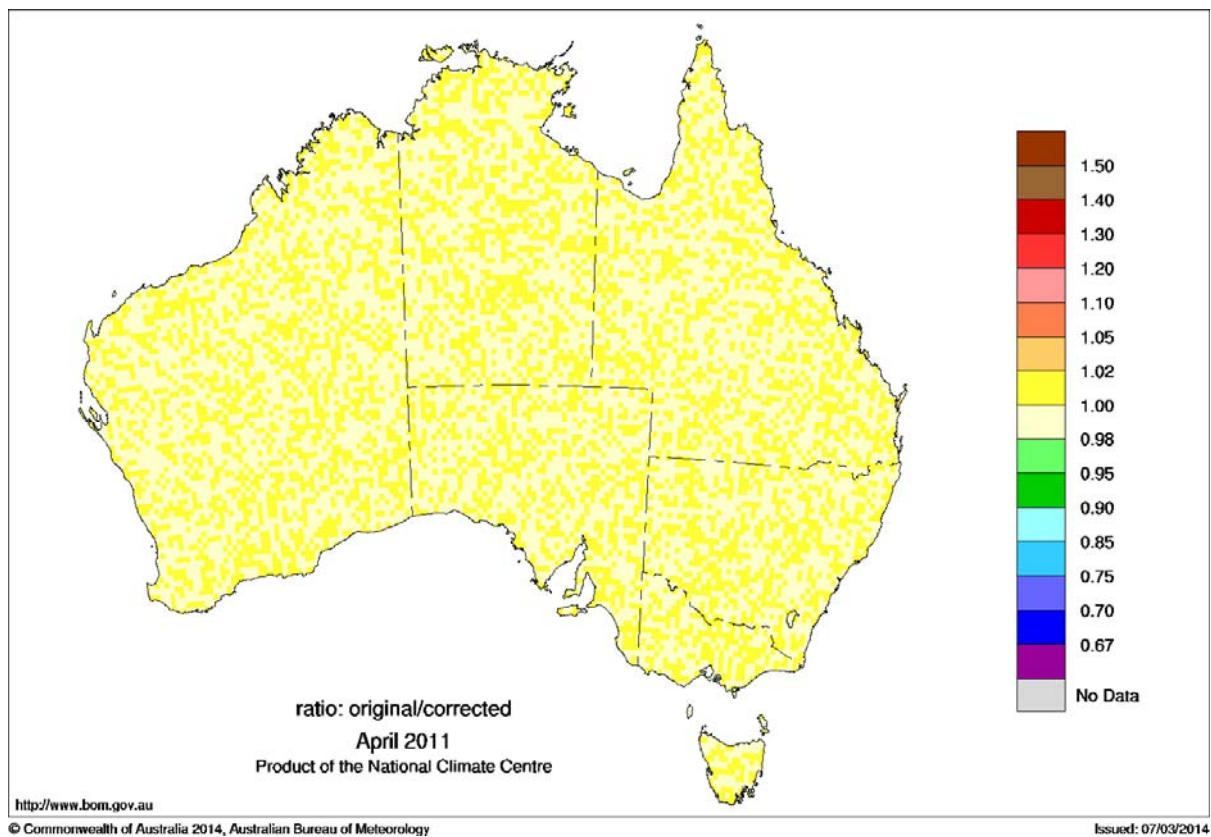
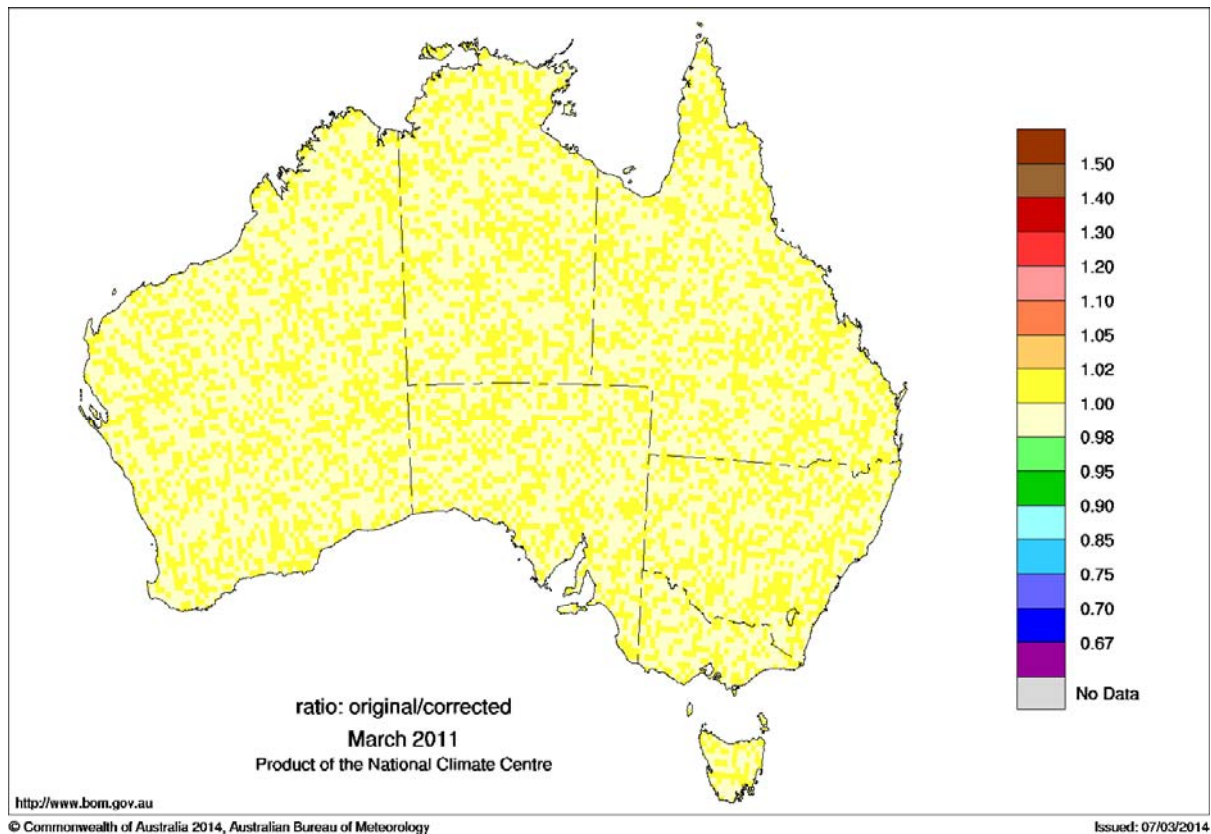


Attachment A

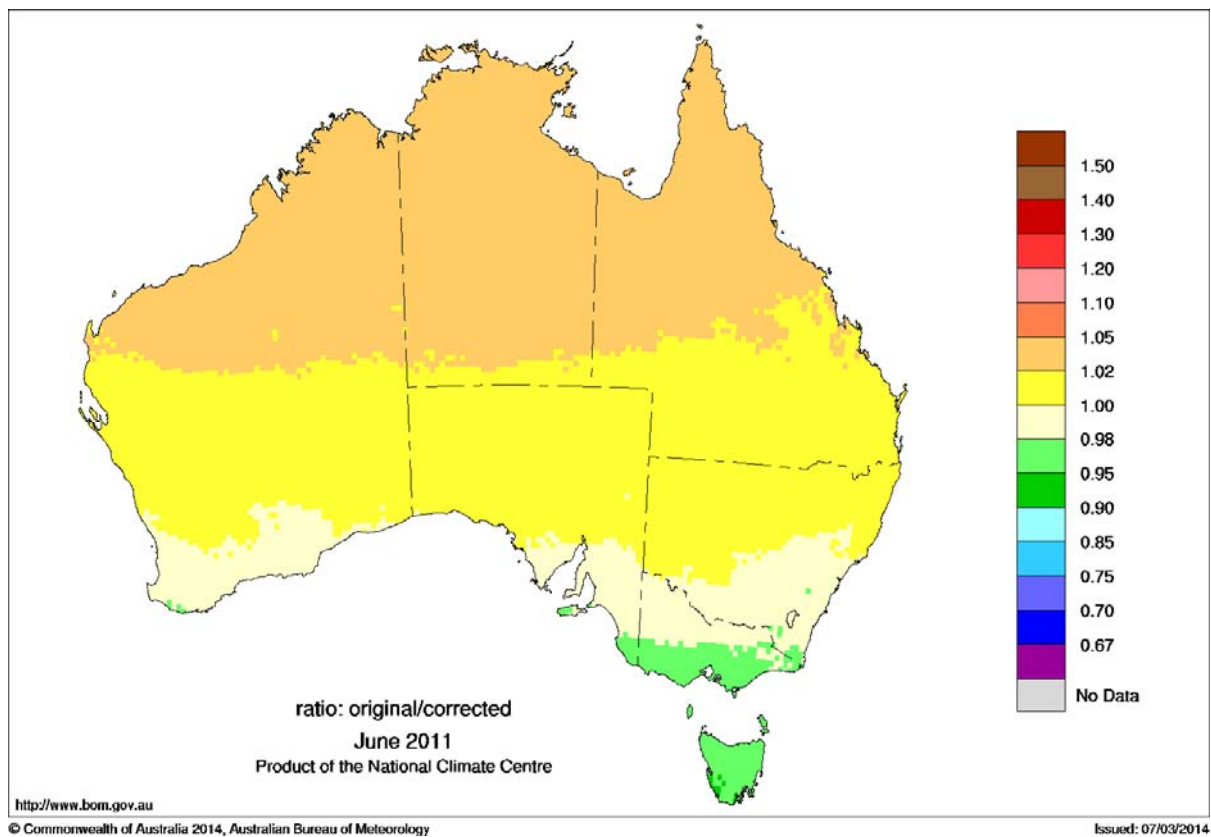
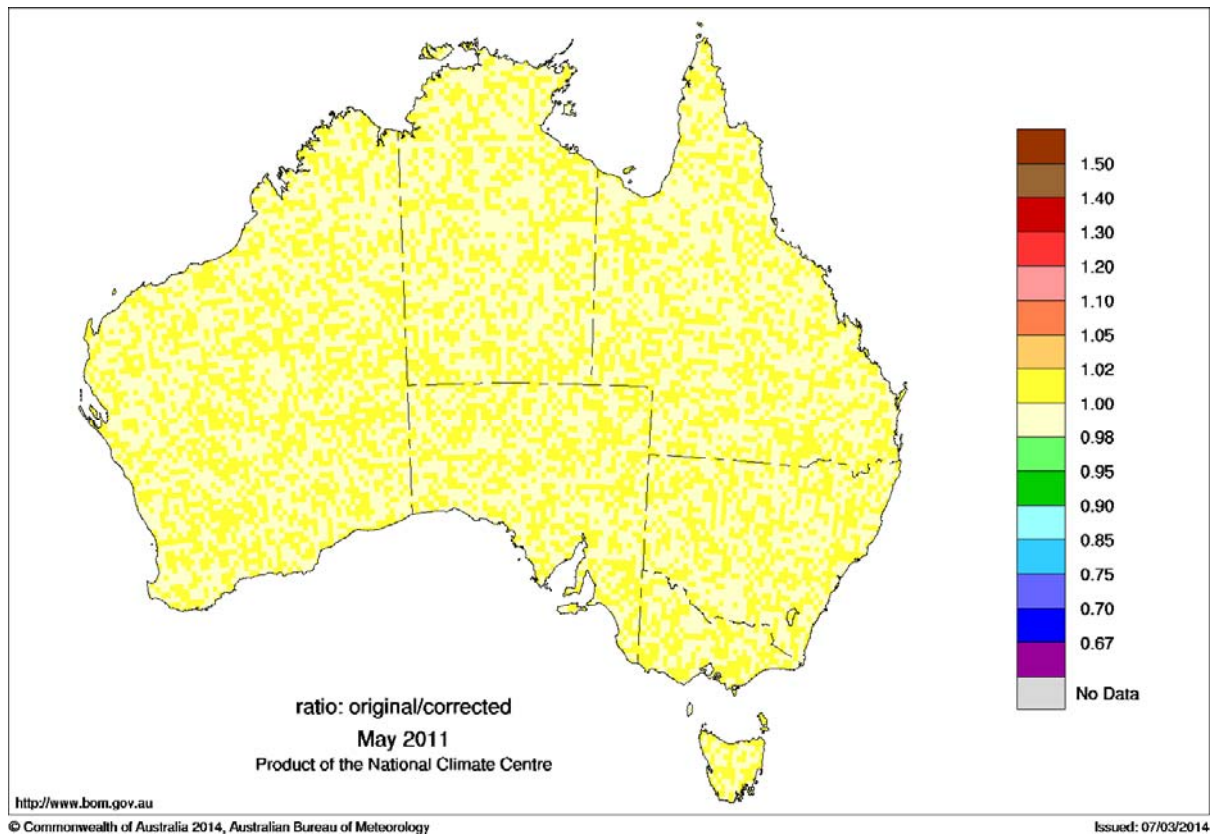




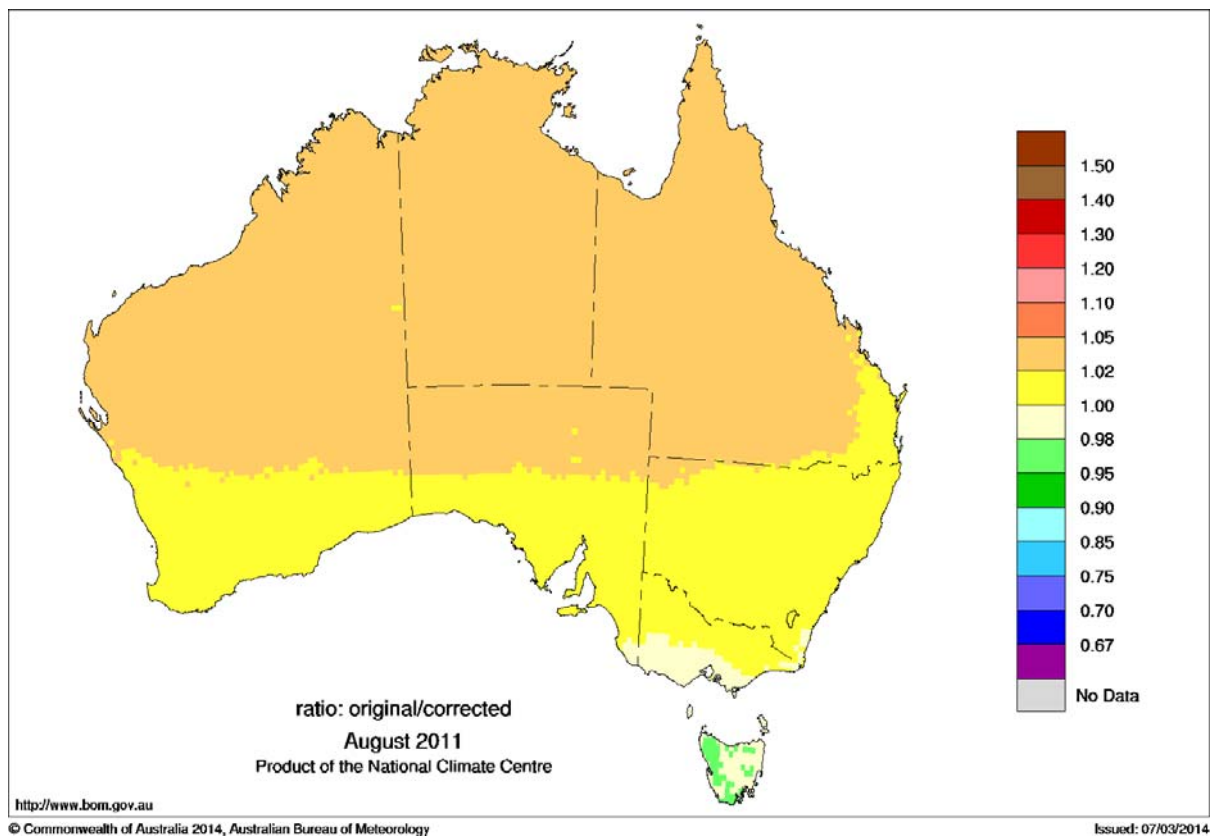
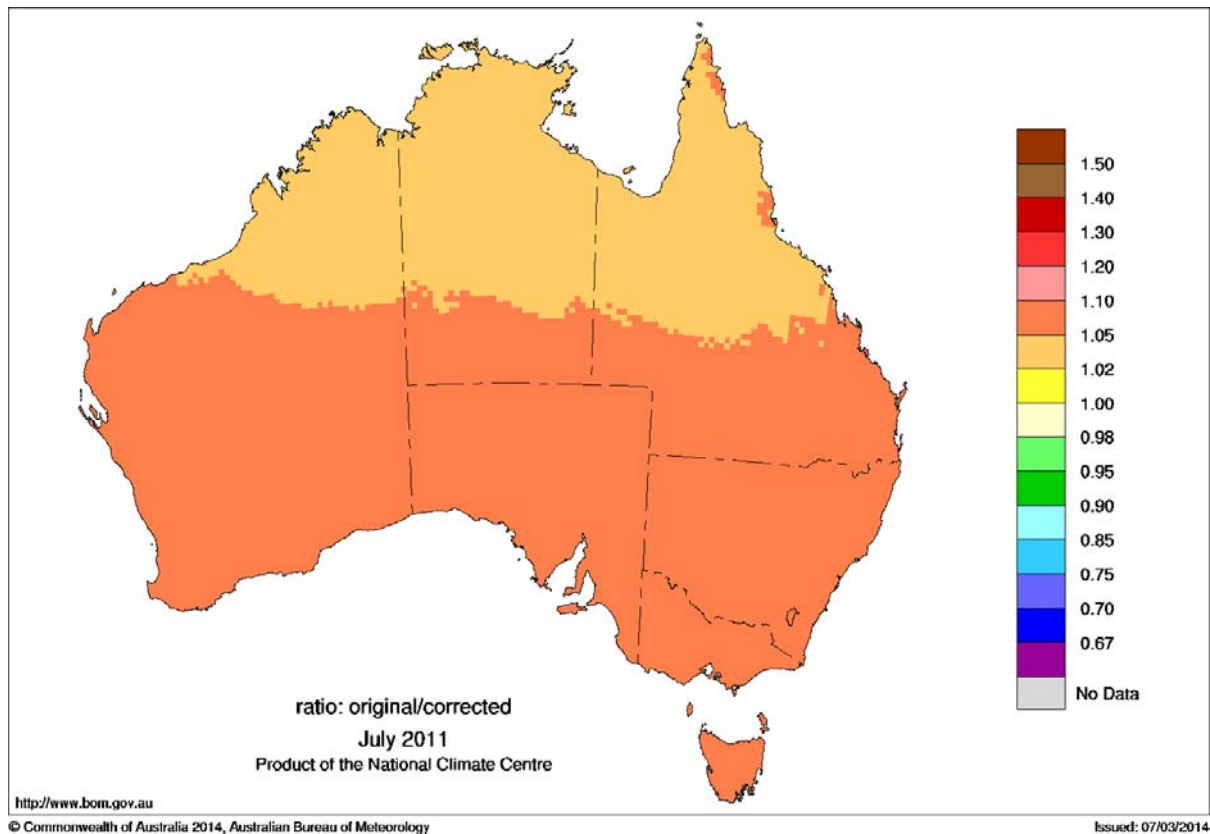
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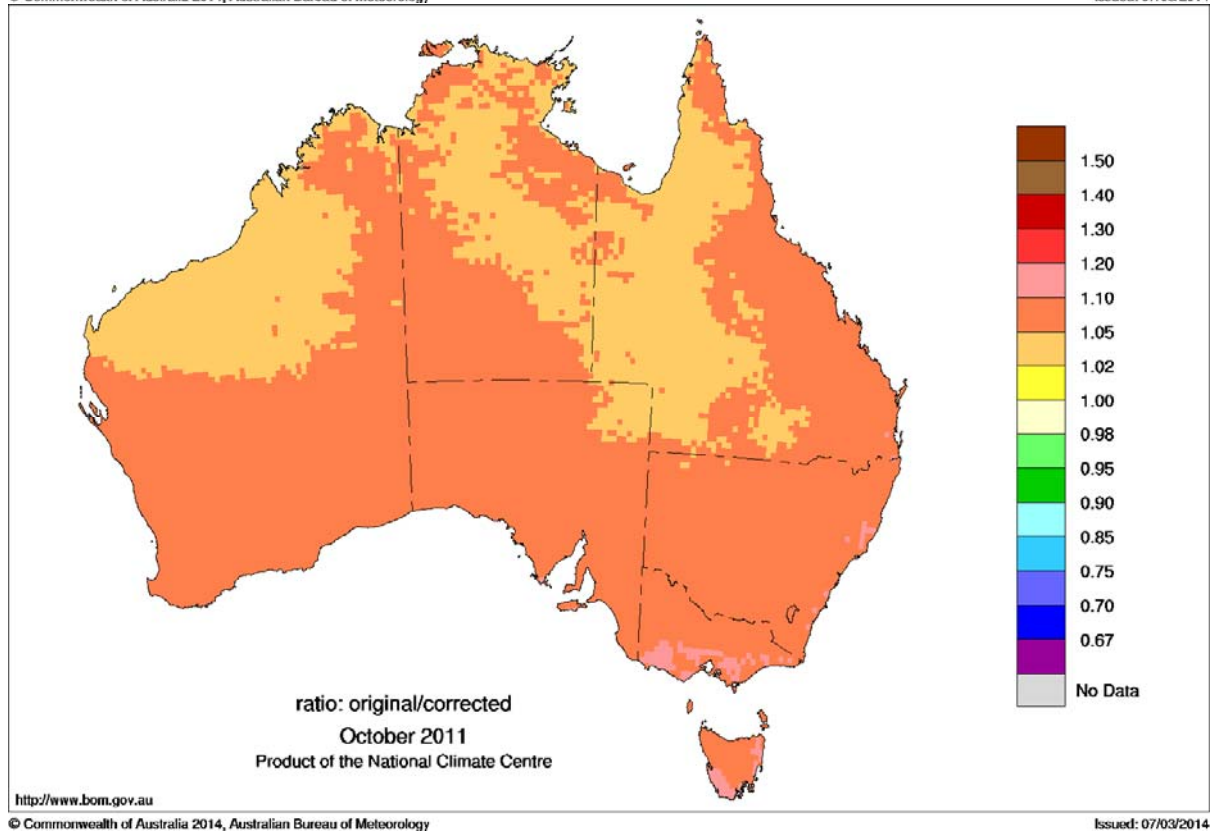
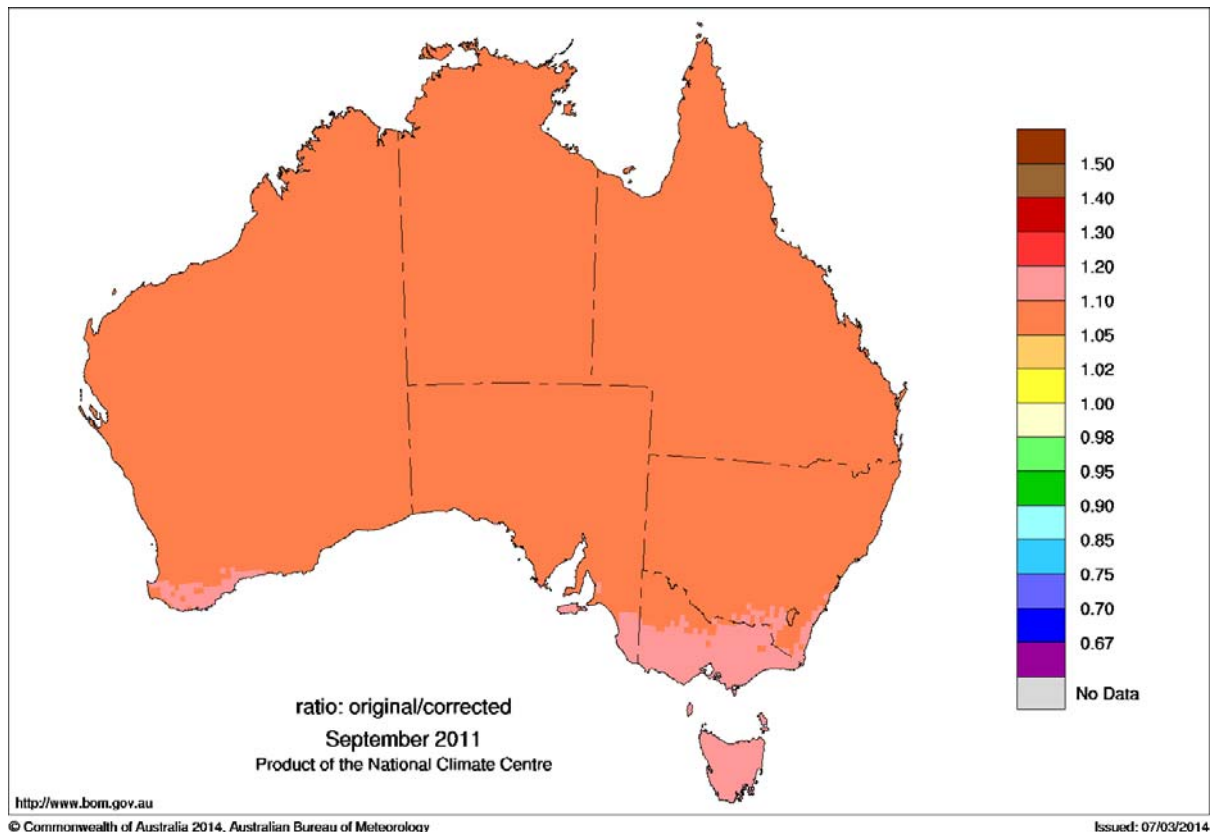


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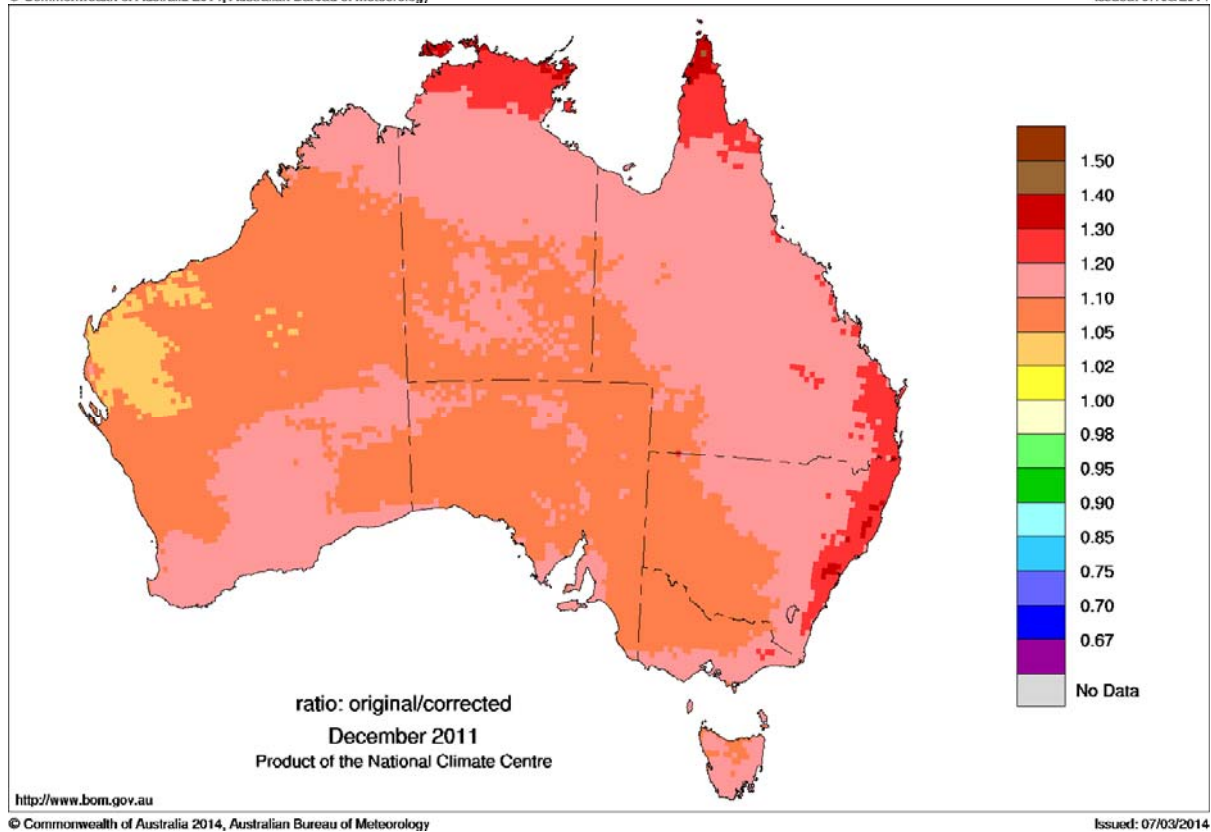
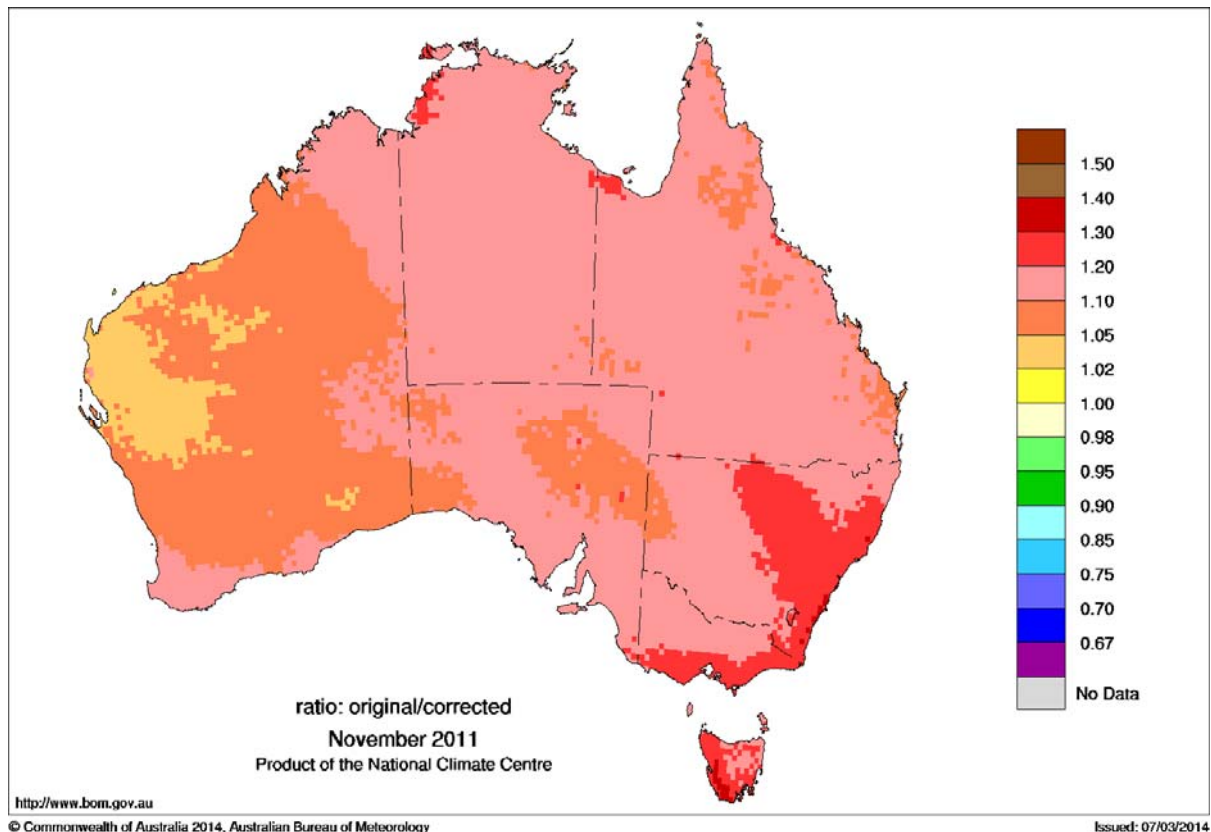


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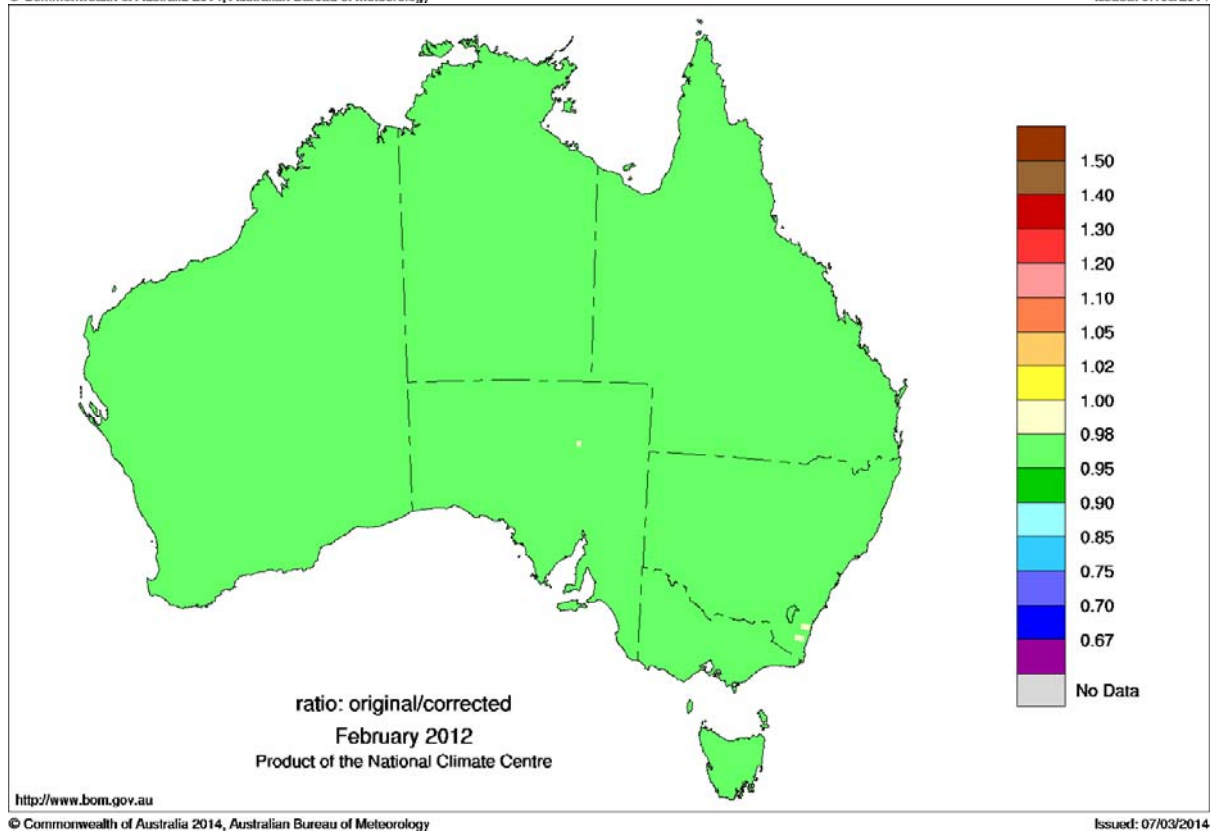
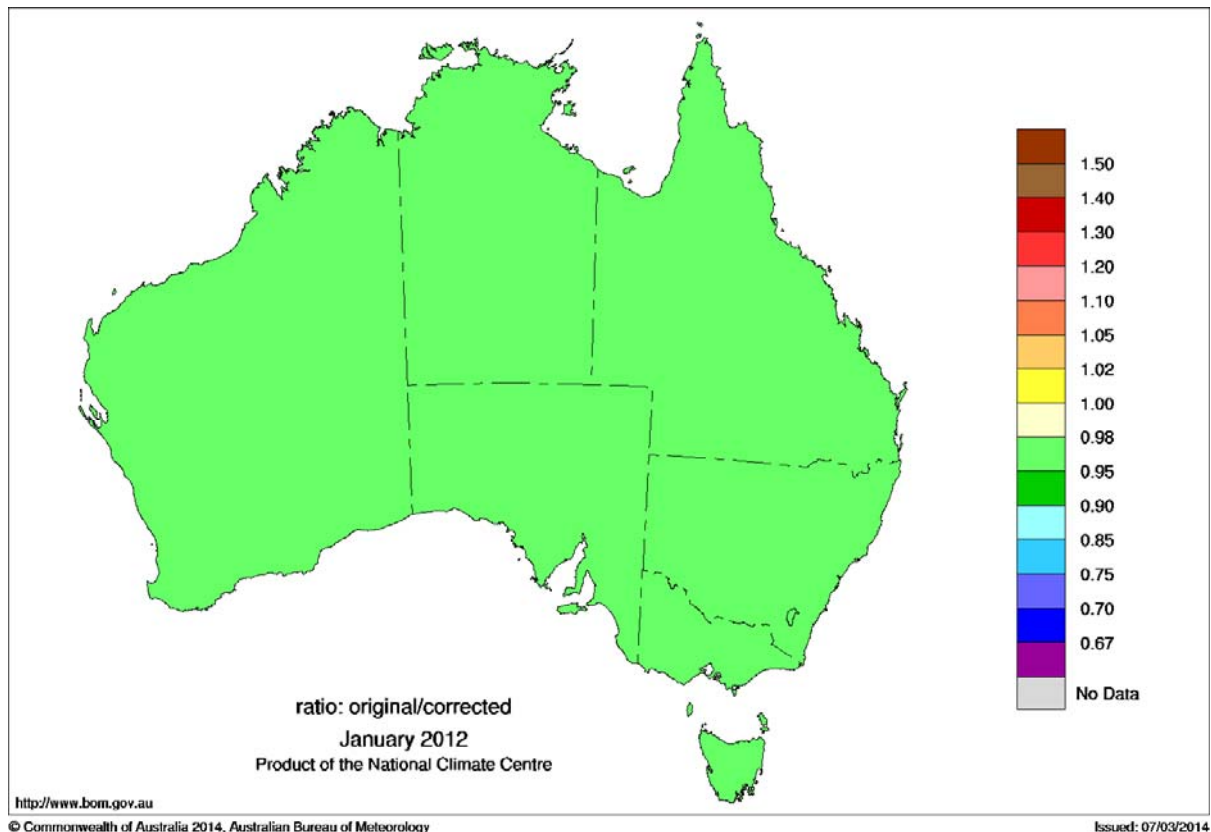


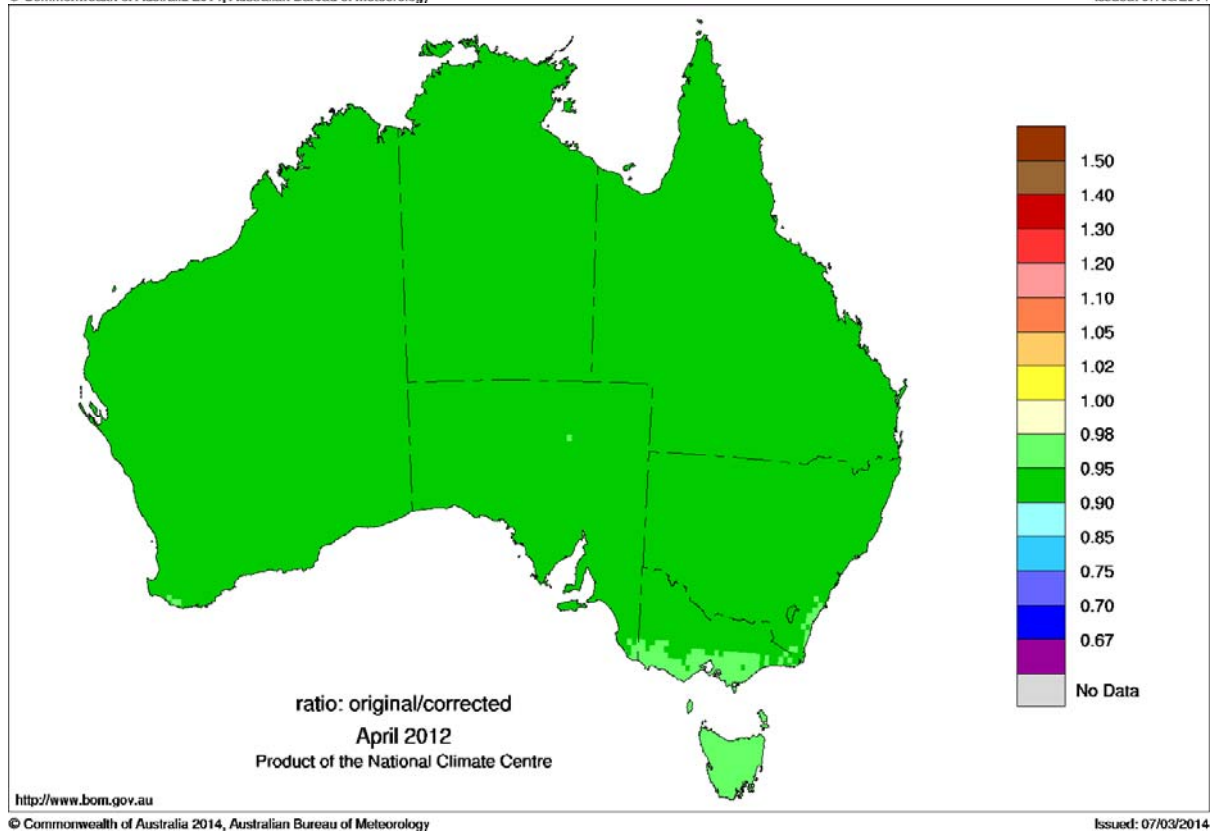
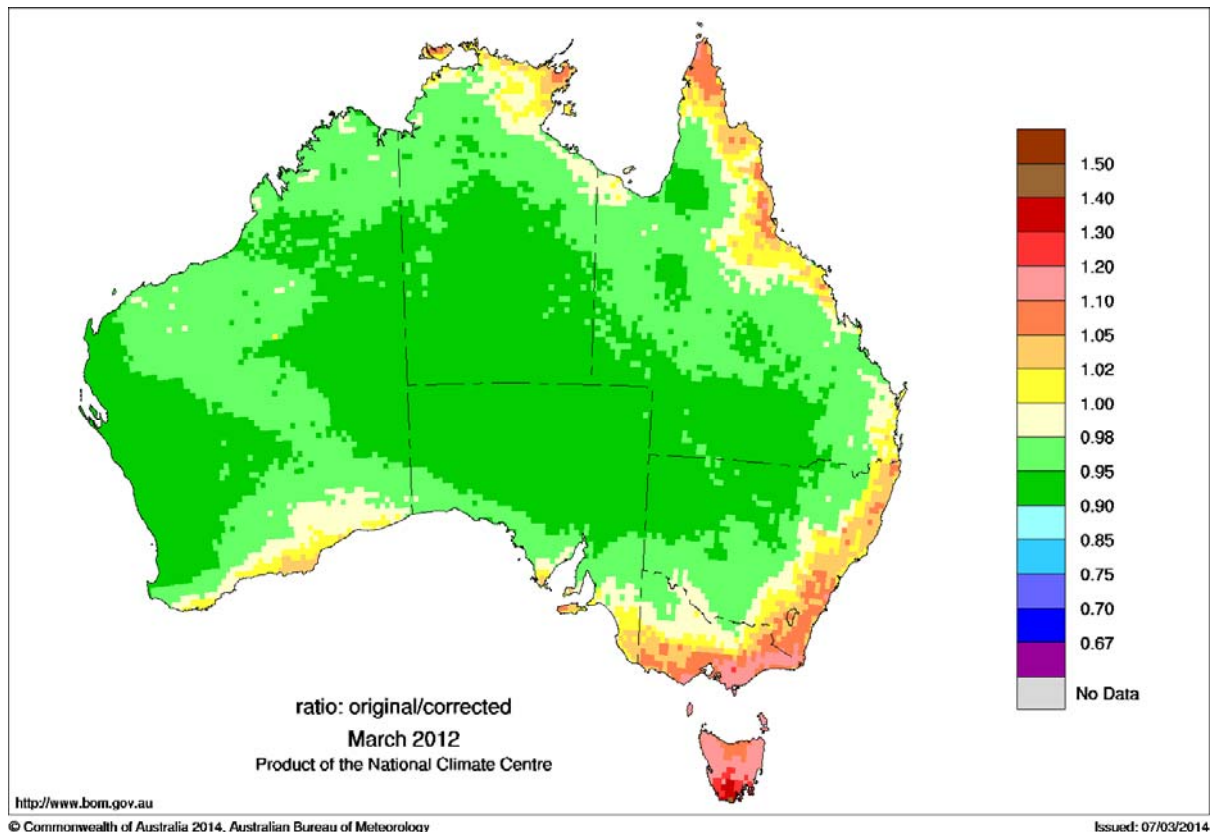


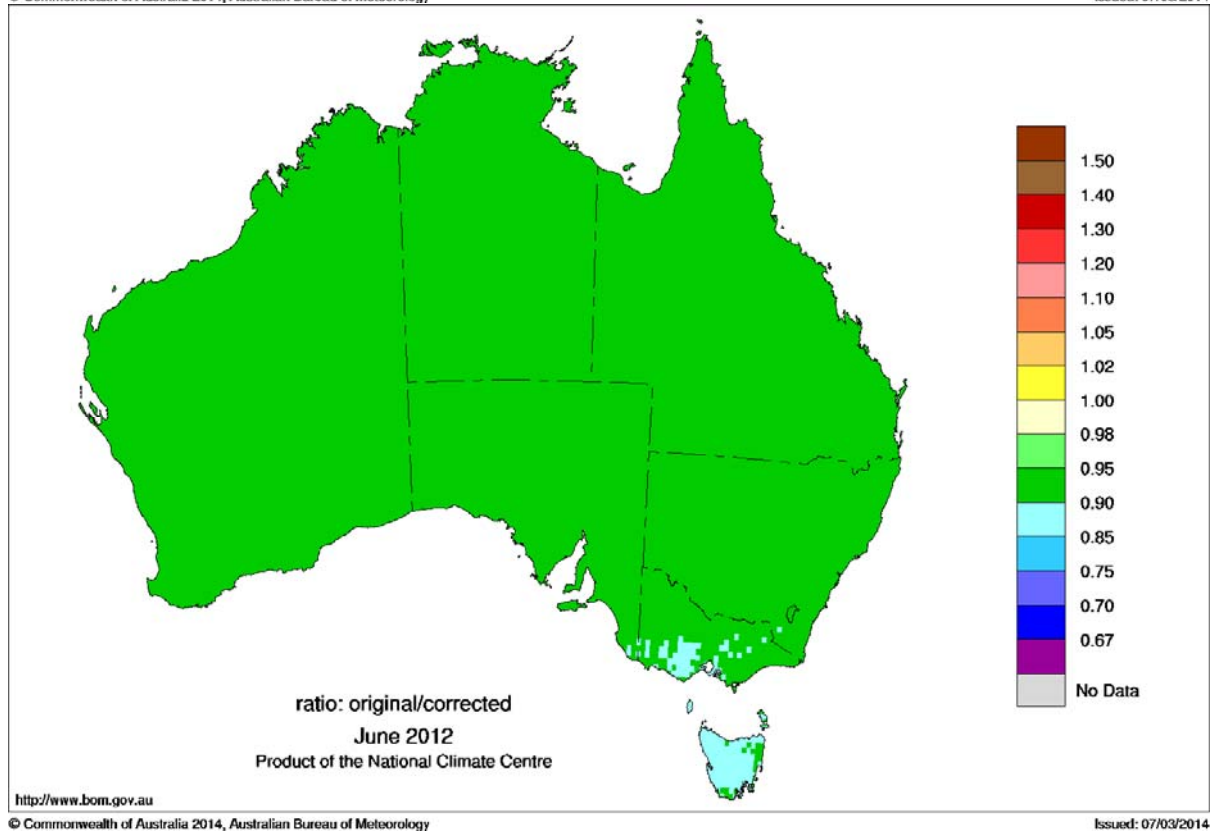
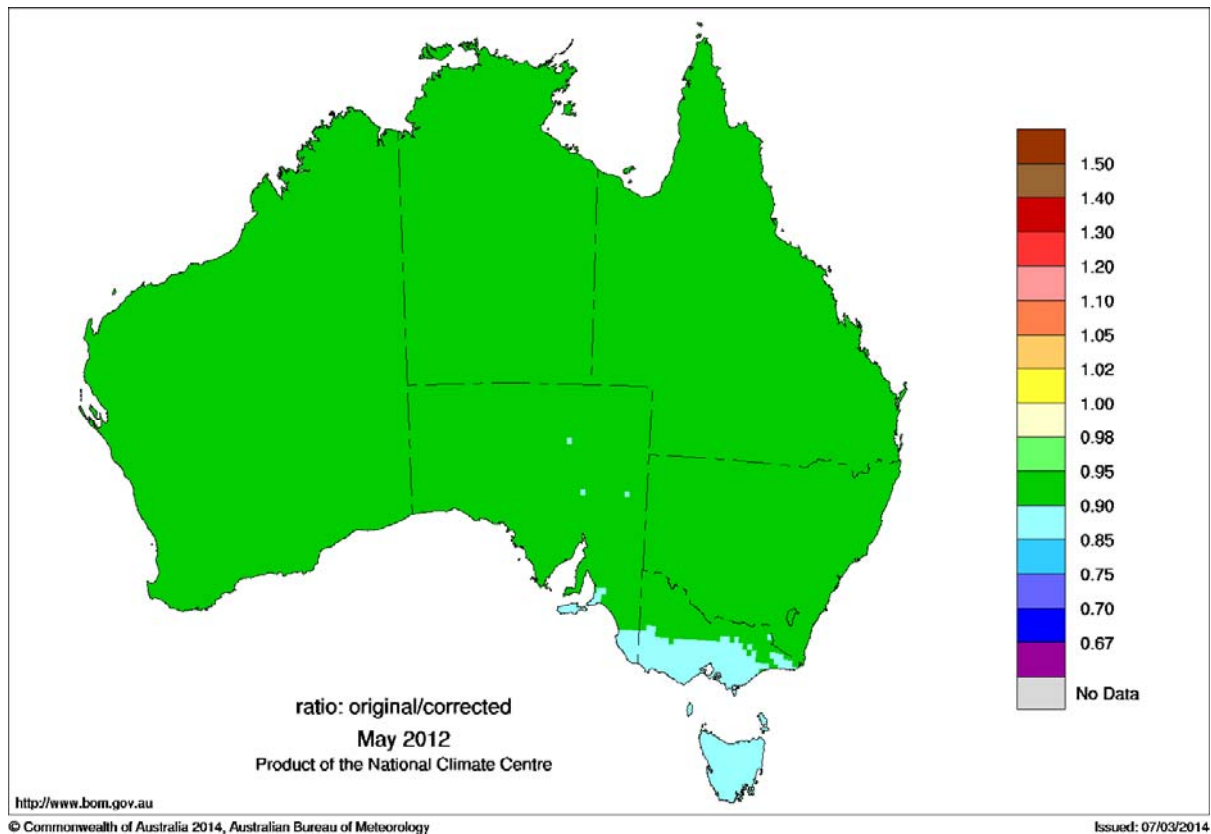


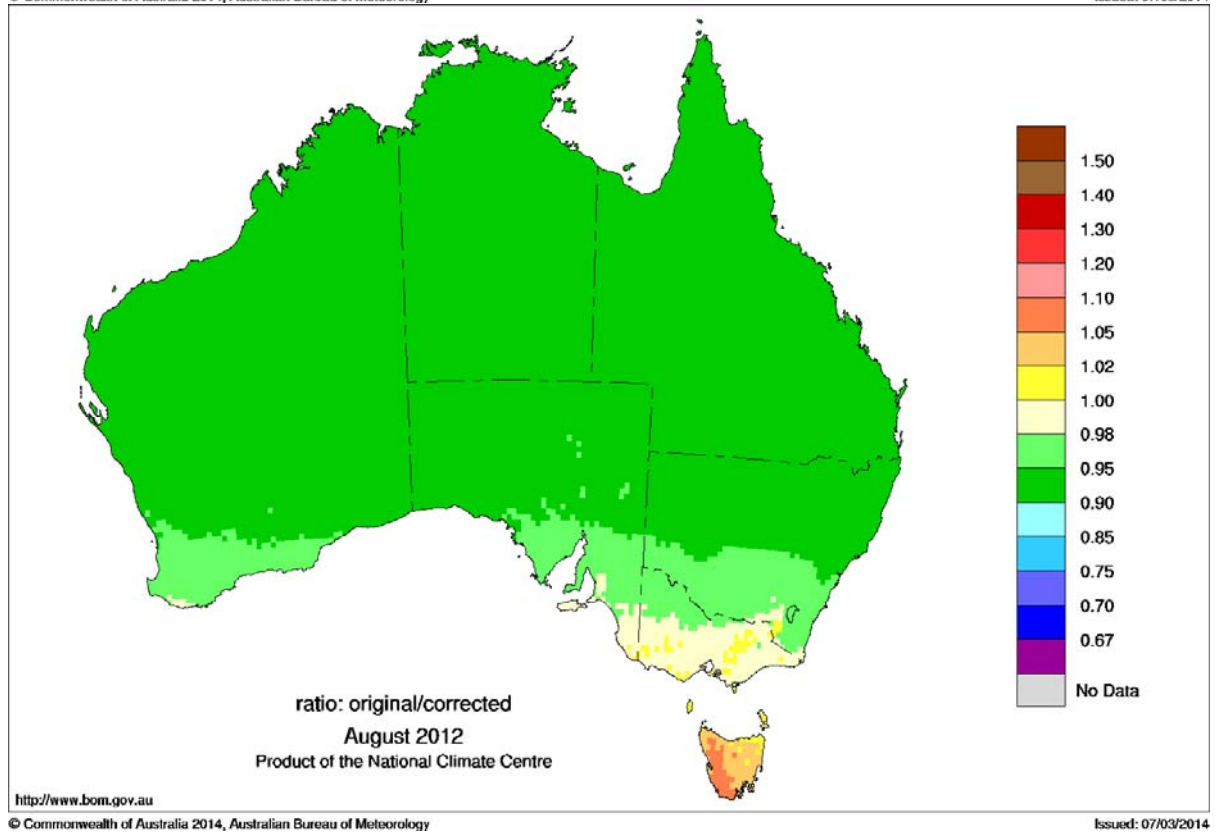
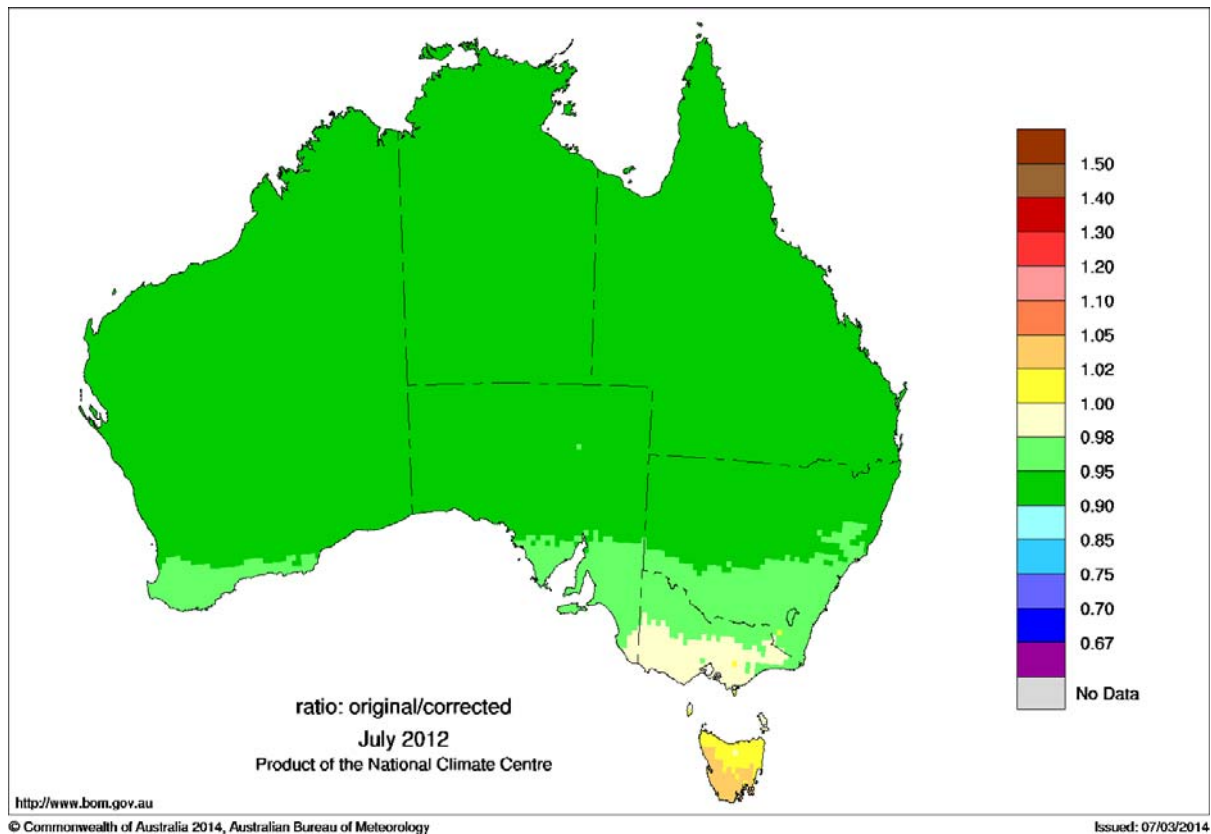


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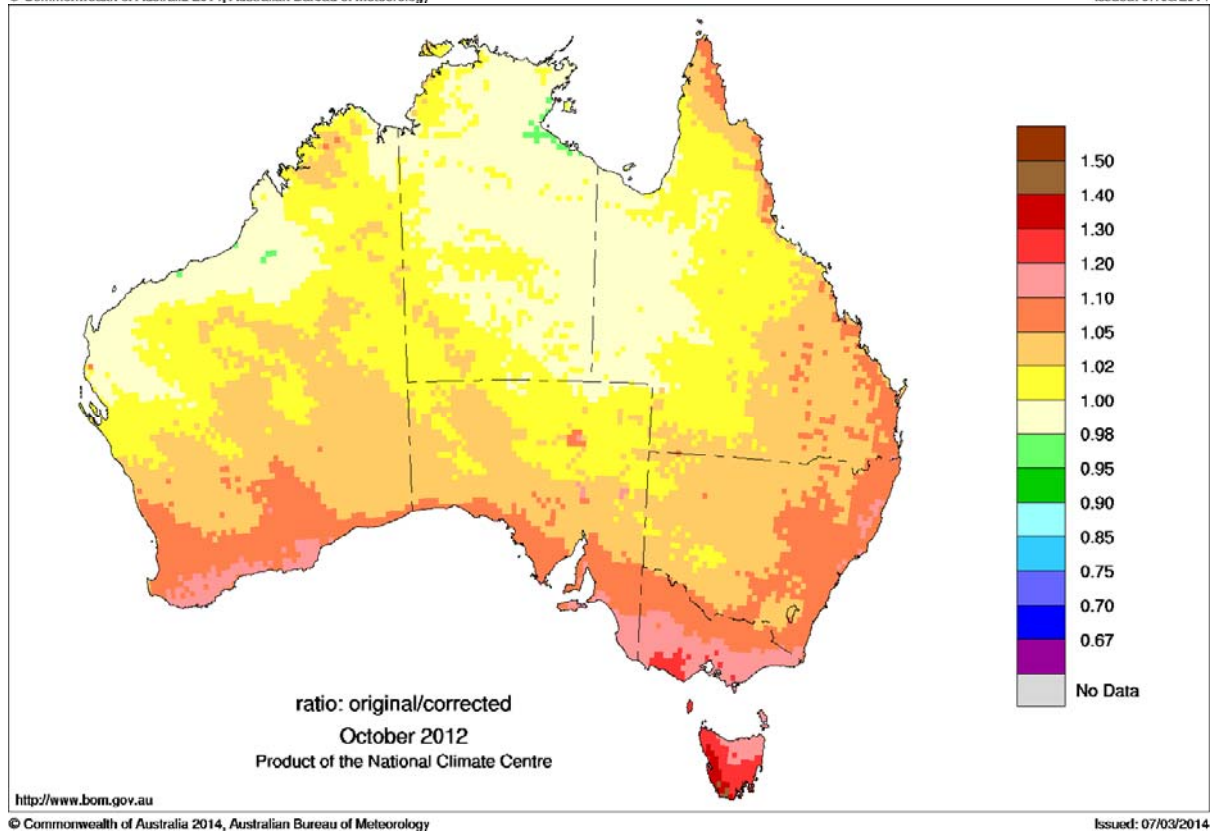
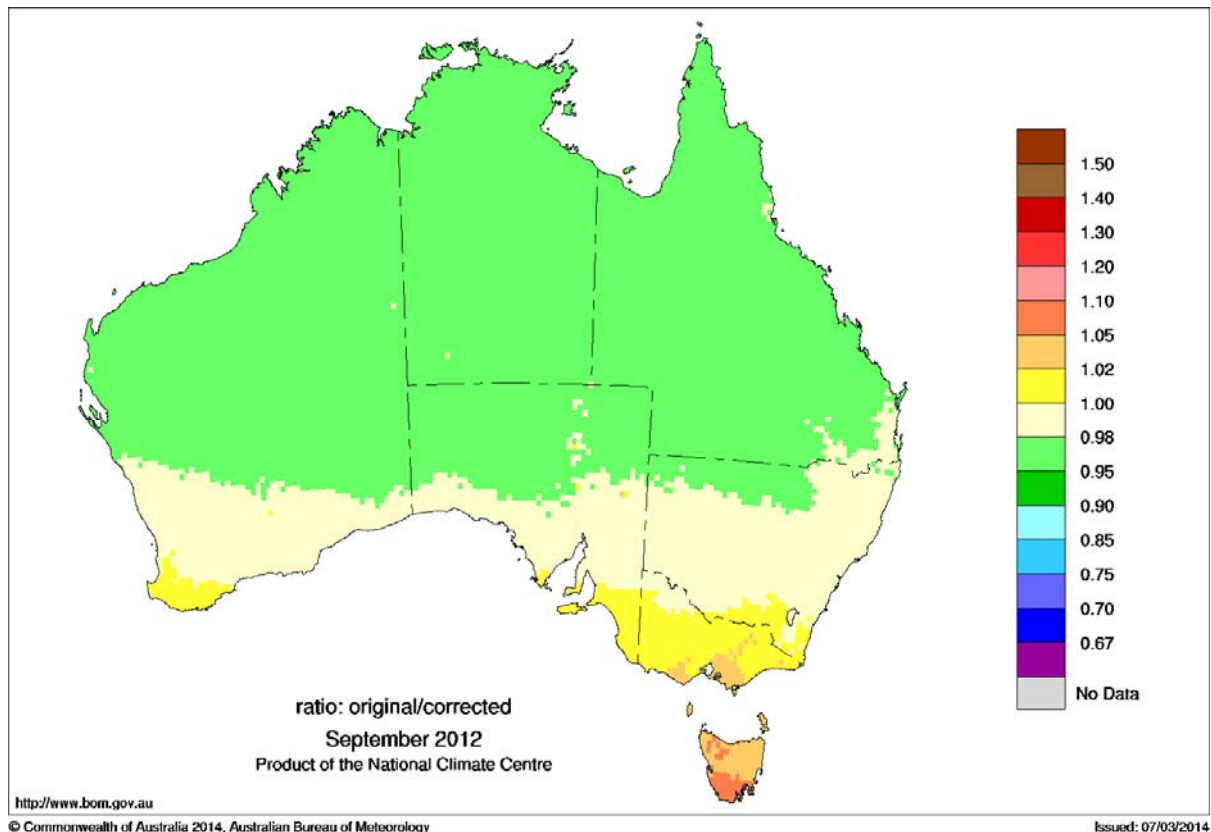


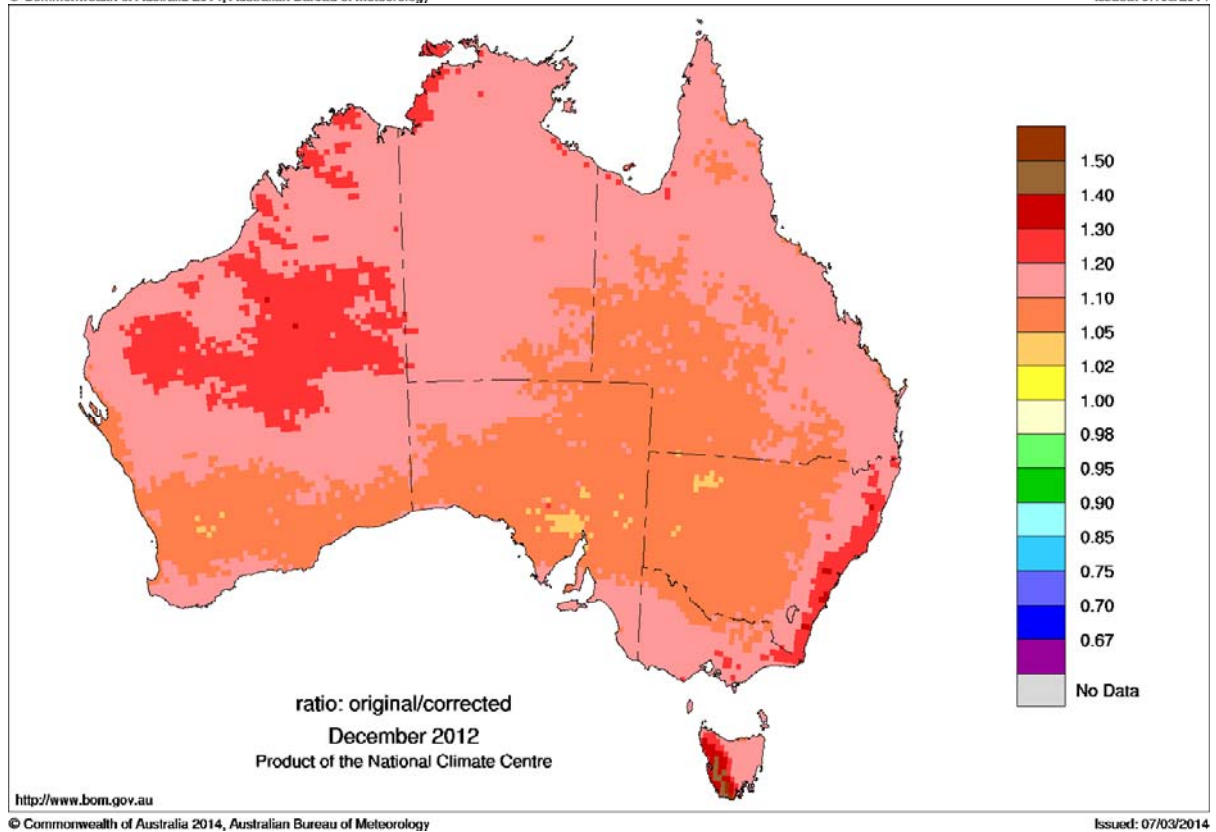
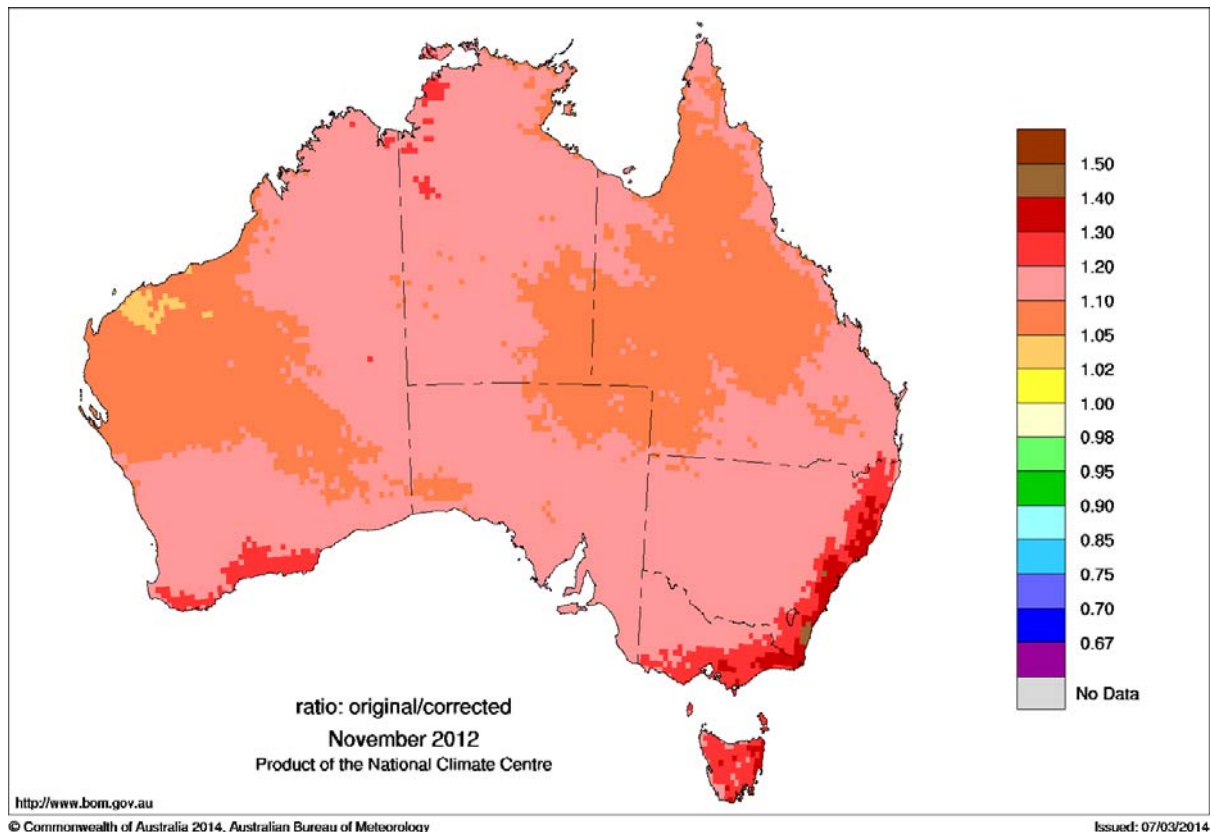


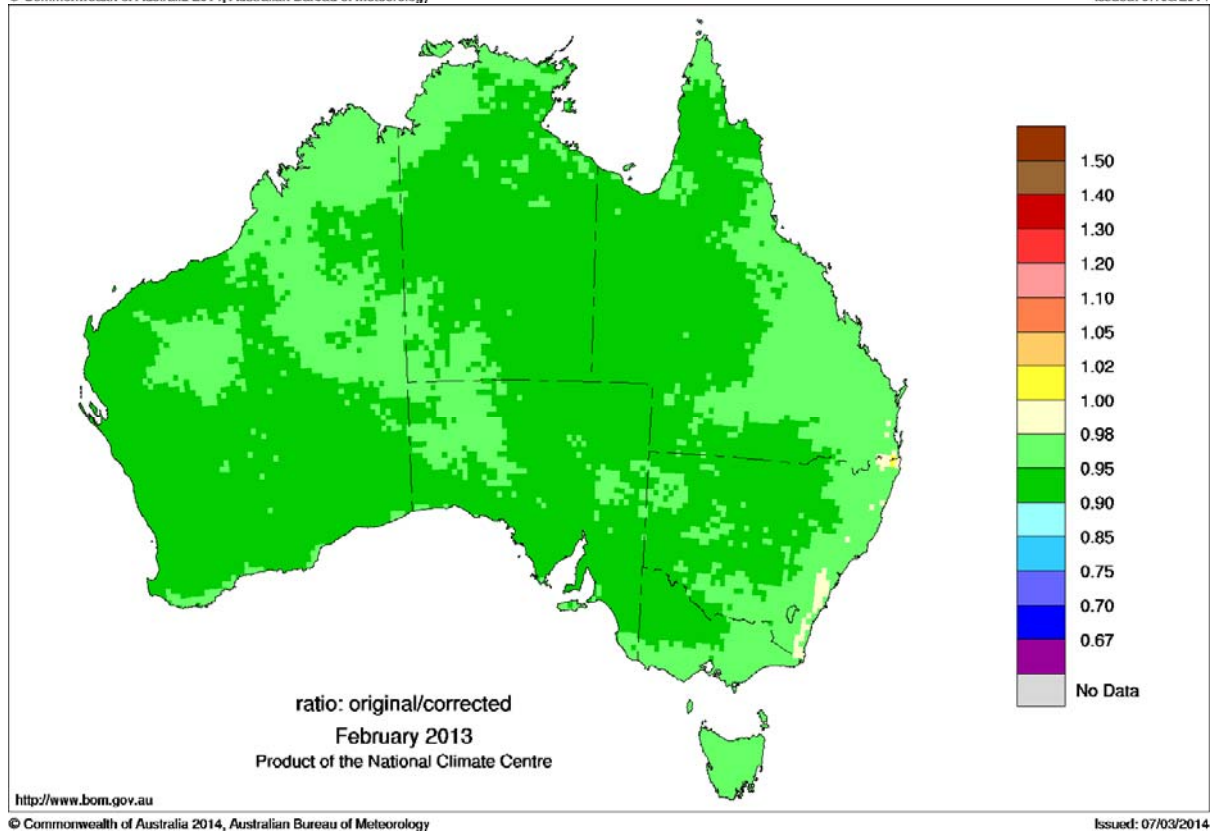
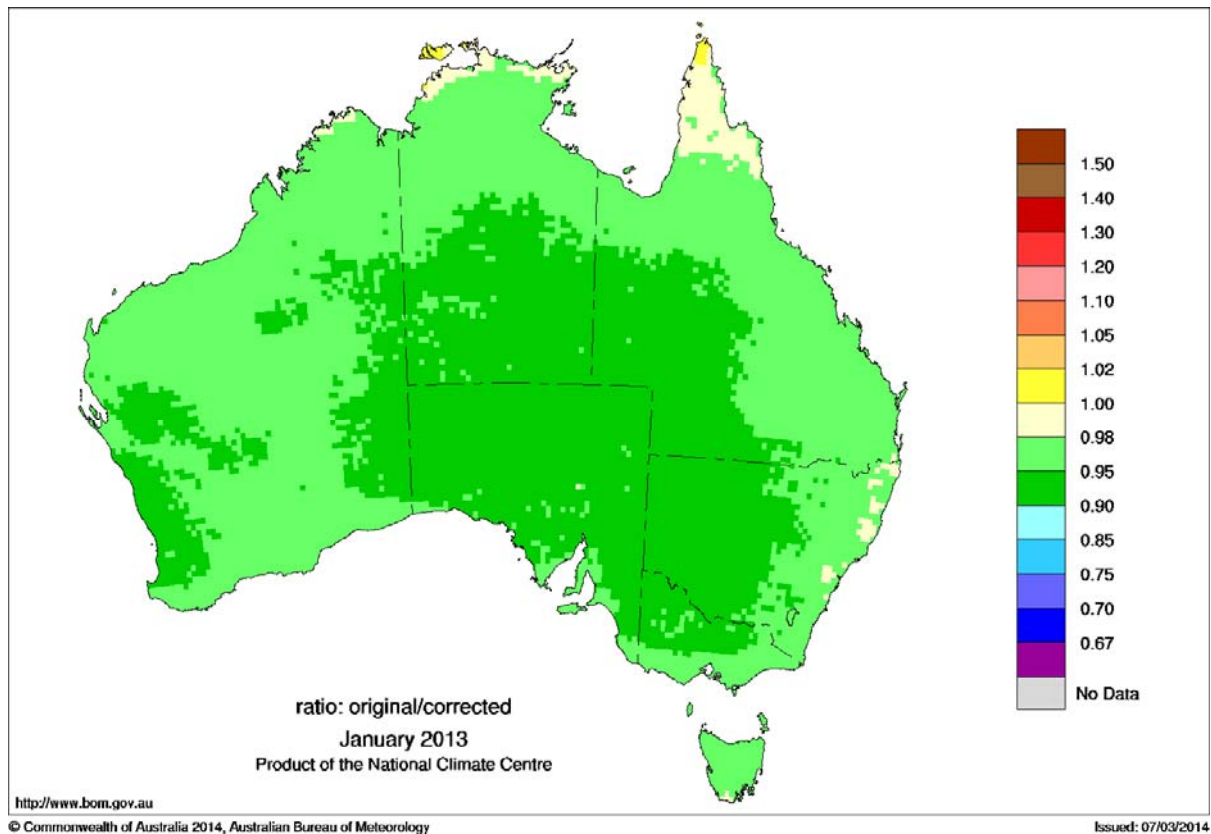












Attachment A

