Australian Government
Bureau of Meteorology

Head Office Melbourne
Bureau of Meteorology
GPO Box 1289 Melbourne VIC 3001 Australia

In reply please quote

DIR 15 0869

September 3, 2015

Dr Jennifer Marohasy
Noosa Climate Modelling Laboratory
PO Box 692
Noosa Heads, Queensland 4567

Dear Dr Marohasy,

I refer to your letter of the 9th August regarding temperature trends at Rutherglen and Deniliquin. The Director of Meteorology has forwarded your letter for my response.

At the outset I wish to emphasise that both the Director of Meteorology and I have complete confidence in the integrity our employees. Further, the ACORN-SAT dataset to which your letter refers has been subject to multiple independent peer reviews. These reviews have affirmed that the analyses and adjustments undertaken by the Bureau through its employees reflect good practice. The 2011 review by an international panel ranked the Bureau's procedures and data analysis as amongst the best in the world.

In relation to the matters in your letter, I must advise that your characterisation of our homogenisation methodology as being intended to make the temperature trends at Rutherglen more consistent with neighbouring sites is not correct. Rather, the Bureau uses the spatial correlation between neighbouring sites to detect and adjust for artificial discontinuities in individual temperature records. The adjustment methodology does not force consistency in trends across neighbouring sites, although the application of the methodology often does result in trends across neighbouring sites being more consistent. A description of the methodology can be found in the technical report at: http://cawcr.gov.au/publications/technicalreports/CTR_049.pdf .

Your assertion that we failed to point out that the Wagga, Deniliquin and Kerang series, plotted in the Rutherglen factsheet, represent homogenised time series is also incorrect. That fact sheet clearly states that these are adjusted records and are shown for comparison.

In relation to the Deniliquin record, the analysis you provided suggests that there is a continuous temperature time series for Wilkinson Street in Deniliquin, which shows a cooling trend for this location

since 1910. This is not the case. The temperature record for Deniliquin is comprised of multiple individual site records. The site of the Deniliquin observations moved from the town centre to a CSIRO facility outside the town in August 1971. In September 1984, the site moved to the airport. A simple concatenation of these site records into a single temperature record for the general location produces an apparent but artificial cooling trend. The apparent cooling is actually related to the shifts in the observing site and is not climate related. The 1971 site move is associated with a 1.0 °C drop in mean annual minimum temperature, reflecting the fact that the new site was climatologically cooler than the old site. This is illustrated in the data from the Falkiner Memorial site in your letter.

In June 2015, the ACORN-SAT Technical Advisory Forum made a number of recommendations for improving the ACORN-SAT dataset (see http://www.bom.gov.au/climate/change/acorn-sat/documents/2015_TAF_report.pdf) and our current program of work is focussed is on addressing those recommendations. If you have ongoing or additional scientific concerns then I recommend that you submit these concerns and supporting analyses to independent scientific peer review in a reputable journal.

Yours sincerely

Louise Minty

Dr Louise Minty
Acting Deputy Director, Environment and Research Division