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ERRATUM

Erratum to: Evaluation of rainfall and wetland water area variability at Thirlmere Lakes using Landsat time-series data

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The original version of this article "Evaluation of rainfall and wetland water area variability at Thirlmere Lakes using Landsat time-series data" was inadvertently based, in part, on some incorrect rainfall data. The original analysis incorporated data from two meteorological stations, one correct (068166) and one incorrect (009648). This error, using the incorrect station with same name as the study area, "Thirlmere", originated in a previously published report—in Table 1, Page 23 of Russell et al. (2010). Fortunately, our error in also using the incorrect Thirlmere meteorological station was subsequently identified due to a mismatch of coordinate of the two stations in our original paper. Here we report corrections to our analysis by replacing the incorrect rainfall data with the rainfall data from Buxton (Amaroo)—station code (068166), located near the Thirlmere Lakes. In addition, we have updated the boundary of the lakes (NSW Hydrography 2016) consistent with other recent publications (Pells and Pells 2016; Schädler and Kingsford 2016) and have manually filtered out 14 data points with partial cloud cover that coincided with the area of the lake. This has led to modification of results, a part of the discussion and conclusion as well as revision of Figs. 1, 3, 4, 5 and 6 as provided in this erratum.

On page 1782, Column 1, Line 18th from the top, the sentence "*A series of 162 Landsat observations acquired between 1987 and 2014 inclusive were used to calculate changes in TLWA for comparison against rainfall data. This equates to, on average, six determinations of the lake area each year.*" should be replaced with "A series of 148 Landsat observations acquired between 1987 and 2014 (inclusive) were used to calculate changes in TLWA for comparison against rainfall data."

On page 1785, Column 2, 1st Line, the sentence "*A total of 1528 Landsat TM, ETM+ and OLI terrain corrected datasets (L1T) acquired between July 1987 and October 2014 were examined, and finally 162 images with less than 20 % cloud coverage were selected for further analysis.*" should be followed by "The 162 images were further analysed to remove the 14 images that, despite having only 20 % cloud coverage, had the cloud cover or cloud shadow falling within the defined lake boundary. Finally, the 148 images with no cloud coverage over the defined lake area were used for a more reliable analysis."

On page 1785, Column 2, Line 10th from the top, the sentence "*Daily rainfall data used in this study were acquired from the Bureau of Meteorology's Thirlmere Lake monitoring station (BOM 2014), located at latitude 33°30′6″S, longitude 115°38′24″E, and altitude 20 m above mean sea level. The station has been continuously monitoring rainfall since 1964.*" should be replaced with

The online version of the original article can be found under doi:10.1007/s13762-016-1018-z.

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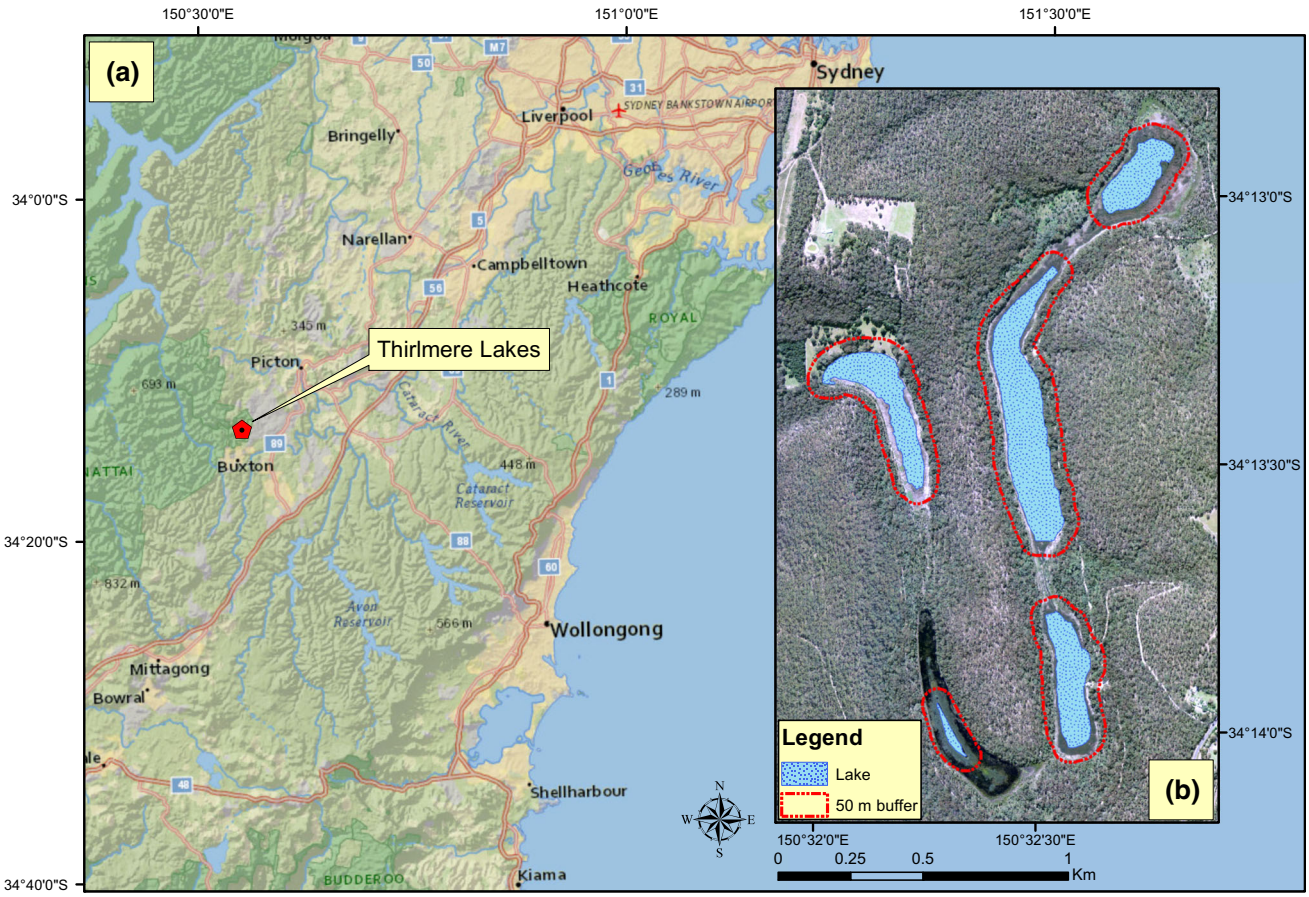

Fig. 1 **a** Location of the study area. **b** Satellite view of the Thirlmere Lakes and surrounding vegetation (sensor: Worldview-2) (date of acquisition: 01/04/2010)

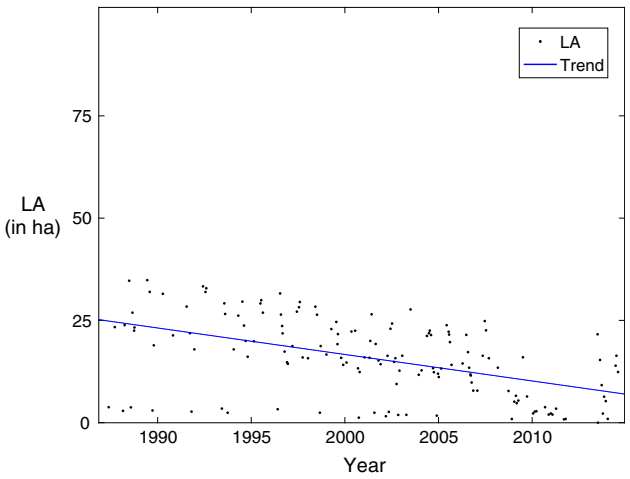

Fig. 3 Plot showing a decreasing linear trend of LA between 1987 and October 2014

"Daily rainfall data used in this study were acquired from the Bureau of Meteorology's Thirlmere Lake monitoring station, Buxton (Amaroo) (BOM 2016), located at latitude 34°14′24″S, longitude 150°31'12" E, and altitude 420 m above mean sea level. The station has been continuously monitoring rainfall since 1967."

On page 1786, Column 2, 1st Line, the subtitle *"Normalised water index (NDWI)"* should be replaced with "Normalised difference water index (NDWI)".

On page 1786, Column 2, Line 6th from top, the sentence "*The robustness of the NDWI technique to only detect the LA was enhanced by selecting a buffer area mask of 50 m around the widest possible lake boundary (shown in dotted red in Fig. 1).*" should be replaced with "The robustness of the NDWI technique to focus on LA was enhanced by selecting a buffer area mask of 50 m around the lake area boundary specified in NSW Hydrography (2016) (shown by dotted red in the revised Fig. 1 of this erratum)."

On page 1787, Column 1, Line 20th from top, the sentence "*The average monthly lake water area (LA_{MA}) was computed from LA.*" should be replaced with "The average monthly lake water area (LA_{MA}) was computed from the moving average of LA.

On page 1787, Column 2, Line 3rd from top, the sentence "*A total of 162 Landsat TM, ETM+ and OLI datasets were used over a period of 28 years to detect surface water*

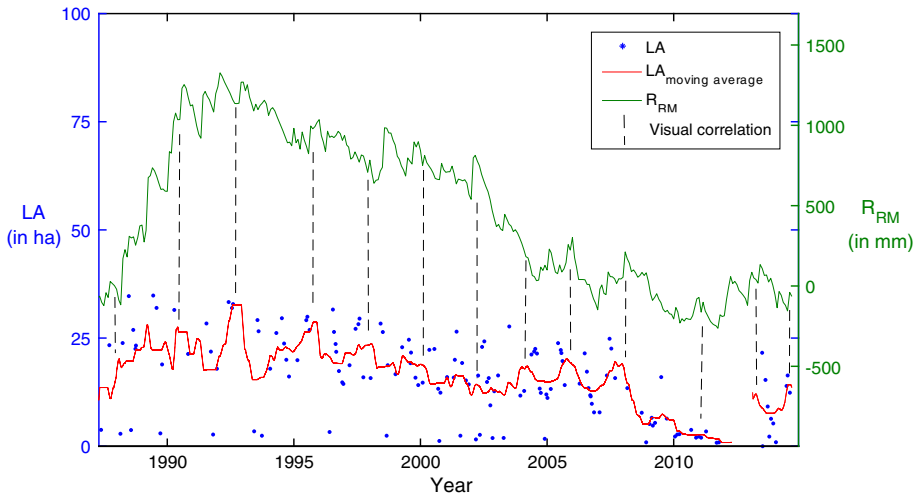

Fig. 4 Comparison of LA and R_{RM} and a moving average of LA (shown in *red*) between 1987 and October 2014

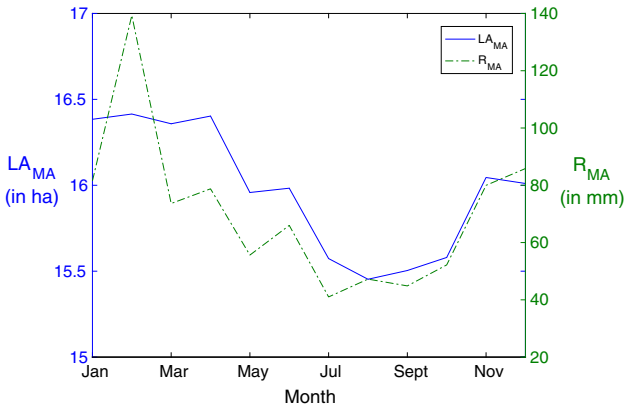

Fig. 5 Monthly variation of LA_{MA} (in *blue*) and R_{MA} (in *green*) between 1987 and October 2014

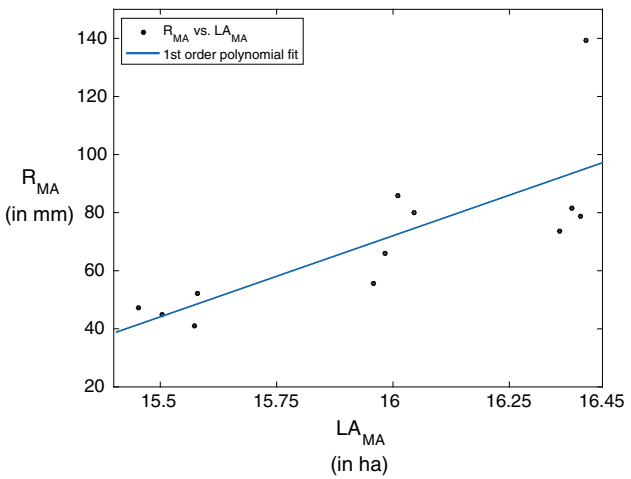

Fig. 6 Regression plot between average monthly rainfall R_{MA} and average monthly lake area LA_{MA}. The first order polynomial fit has an R-square of 0.60

using NDWI." should be replaced with "A total of 148 Landsat TM, ETM+ and OLI datasets were used over a period of 28 years to detect surface water using NDWI."

On page 1788, Column 2, Line 13th from top, the sentence "*The increasing moving average of lake area calculated through NDWI is apparent in a partial recovery of lake area, and at least one point (29 March 2014) when the lakes were full or close to full.*" should be replaced with "The increasing moving average of lake area calculated through NDWI is apparent in a partial recovery of lake area, and at least one point (3 July 2014) when the lakes were full or close to full."

On page 1789, Column 1, Line 5th from top, the sentence "*The variation of* LA_{MA} *and* R_{MA} *(Fig. 5) indicates a seasonal relationship with minimum for both in summer (December to February) and maximum during winter (June to August).*" should be replaced with "The variation of LA_{MA} and R_{MA} (revised Fig. 5 of this erratum) indicates a seasonal relationship with maximum for both in summer (December to February) and minimum during winter (June to August)."

On page 1789, Column 1, Line 9th from top, the sentence "*Regression analysis between* LA_{MA} *and* R_{MA} *over 28 years produced a first order polynomial dependence with R-square of 0.8442 as shown in Fig. 6, with increasing scatter for low lake area.*" should be replaced with "Regression analysis between LA_{MA} and R_{MA} over 28 years produced a first order polynomial dependence with R-square of 0.60 as shown in the revised Fig. 6 of this erratum, with increasing scatter for low lake area. An outlier to this relationship was the month of February (the point towards the top-right corner), when it appears that on average, more significant changes in rainfall residual mass occurred. The R-square on 11 months of the year, without February, was 0.73."

On page 1789, Column 1, Line 12th from top, the sentence "*Based on this strong relationship, average monthly rainfall could be a good predictor of average monthly lake area. However, the months of smaller lake area in Fig. 6* also attributes to *early summer season, when hydrological processes other than rainfall (e.g. evaporation, seepage) are dominant to reduce the lake area*." should be replaced with "Based on this relationship, average monthly rainfall appears to be a major influence on average monthly lake area. However, there appears to be anomaly during the month of February when hydrological processes other than rainfall (e.g. evaporation, seepage) appear to be significant influences on lake area."

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