

The authors are immensely grateful for the invaluable review, corrections and suggestions given by the reviewer.

Reviewer comment	Author response
<p>The results and discussion needs lots of work. It will be good to describe the spatiotemporal dynamics of MEP E and T in detail for 2003-2013 period and connect them with local and regional hydroclimatic fluctuations. Possible challenges can be expanded using uncertainty of the input dataset. What can we learn from these MEP products? What is the new knowledge this dataset can inform us that we do not know right now? What types of future studies this MEP dataset can generate for our scientific community?</p>	<p>The authors will include a section in the updated manuscript on the spatiotemporal dynamics of the MEP E and T for the study period however an attempt to connect them to regional hydroclimatic data was not feasible due to lack of E and T data locally and regionally. The updated discussion section will include new knowledge from the MEP and possible future studies/direction from the MEP studies.</p>
<p>Figure 3 caption is inadequate (Mean maps of which product??? MEP?). Presenting the mean annual ET is not enough to claim the conclusion. I think maps of standard deviation, ET map of max ET (the year of Maximum at study area scale) and min ET map (the year of Minimum ET at study area scale) are required</p>	<p>The Figure 3 caption errors will be corrected and updated while minimum and maximum ET year will also be included.</p>
<p>Figure numbering got messed up. Figure 3 was labeled twice. As a result, it was difficult to follow the manuscript.</p>	<p>The figures will be renumbered and corrected.</p>
<p>Line 111: What is the source of vegetation fraction (Not provided/explained?)?</p>	<p>The FPAR is used as a surrogate for the vegetation fraction (Los et al., 2000). This was provided in line 292. However, this will be incorporated earlier in the manuscript.</p>
<p>Figure 1: Did you use rainfall, humidity, and temperature from one station? If multiple stations, then how did you distribute/interpolate across the entire content? How much is the spatial variability of precipitation across Australia?</p>	<p>The MEP does not use or require rainfall data in its modelling but uses humidity and temperature. In this study, the SILO data product described and developed by Jeffrey et al. (2001) was used and cited in lines 185 and 186. This will be expanded in the updated manuscript.</p>
<p>Please add a discussion regarding the propagation of the uncertainty or errors in the input dataset to your MEP product. I believe the vegetative fraction and soil moisture have quite a bit of uncertainty.</p>	<p>A discussion on the uncertainty propagation by the input datasets will be included in the updated manuscript.</p>

<p>What is the extent of footprint for eddy covariance tower estimates? How this extent compare to the pixel size of the MEP product? Please add this discussion somewhere.</p>	<p>A brief on the footprint of the EC tower data will be included in the updated manuscript, however, a lack of individual EC site footprint data on the FLUXNET over Australian sites will limit this discussion.</p>
<p>Line 236-238: I don't see any ET reduction between 2003 and 2008 in figure 3. How this is consistent with Jung et al., (2010) Line 309: NSE is not reported in this manuscript. Table 2 does not show any NSE.</p>	<p>According to Jung et al. (2010), there was a decline in the ET over Australia between 1998 – 2008, this is evidenced in our Figure 3 which shows lower ET between 2003 – 2009, followed by a sharp increase in 2010 after the drought broke over Australia. The authors are of the opinion that this is consistent with the observation by Jung et al. (2010).</p> <p>The NSE between the MEP, AWRA-L and MOD16 are reported in the Table 2, with MOD16 to MEP as -0.05, AWRA-L to MEP as 0.51 and AWRA-L to MOD16 as 0.25.</p>

Jeffrey, S. J., Carter, J. O., Moodie, K. B., and Beswick, A. R.: Using spatial interpolation to construct a comprehensive archive of Australian climate data, *Environ Modell Softw*, 16, 309-330, [http://dx.doi.org/10.1016/S1364-8152\(01\)00008-1](http://dx.doi.org/10.1016/S1364-8152(01)00008-1), 2001.

Jung, M., Reichstein, M., Ciais, P., Seneviratne, S. I., Sheffield, J., Goulden, M. L., Bonan, G., Cescatti, A., Chen, J. Q., de Jeu, R., Dolman, A. J., Eugster, W., Gerten, D., Gianelle, D., Gobron, N., Heinke, J., Kimball, J., Law, B. E., Montagnani, L., Mu, Q. Z., Mueller, B., Oleson, K., Papale, D., Richardson, A. D., Rouspard, O., Running, S., Tomelleri, E., Viovy, N., Weber, U., Williams, C., Wood, E., Zaehle, S., and Zhang, K.: Recent decline in the global land evapotranspiration trend due to limited moisture supply, *Nature*, 467, 951-954, 10.1038/nature09396, 2010.

Los, S. O., Pollack, N. H., Parris, M. T., Collatz, G. J., Tucker, C. J., Sellers, P. J., Malmström, C. M., DeFries, R. S., Bounoua, L., and Dazlich, D. A.: A global 9-yr biophysical land surface dataset from NOAA AVHRR data, *Journal of Hydrometeorology*, 1, 183-199, 2000.