Geoscientific
Model Development
Discussions

Interactive comment on "Representation of climate extreme indices in the coupled atmosphere-land surface model ACCESS1.3b" *by* R. Lorenz et al.

R. Lorenz et al.

r.lorenz@unsw.edu.au

Received and published: 11 February 2014

1. Section 2.1.1: We shortened this section and point readers to the relevant references where more information can be found.

2. ET evaluation dataset: We agree that it is useful to use a second dataset here. We included the LandFluxEVAL dataset for evaluation of Evapotranspiration/Latent Heat Flux to reduce the observational uncertainty in this variable. The result is similar, CABLE overestimates evapotranspiration almost globally. Since LandFluxEVAL provides a merged dataset using a range of data we included the Correlation Figure 13b (now 13c) using LandFluxEVAL instead of GLEAM (see

C2547

Fig. 1 this document).

3. Clouds: Franklin et al. (2013) provided a detailed evaluation of ACCESS1.3 using the satellite simulator package Cloud Feedback Model Intercomparison Project Observation Simulator Package (COSP). The differences between ACCESS1.3 and ACCESS1.3b are very small and relate to minor changes in the land surface model. The output we obtained from ACCESS1.3b cannot be directly compared to satellite data because observation time, view from above and retrieval filtering have to be taken into account (Stubenrauch et al. 2013). This has been done in Franklin et al. (2013) by using COSP. Hence, we think it is better to rely on the results from Franklin et al. (2013) instead of undertaking a potentially misleading quick comparison. However, we have taken the comments by the reviewer into account in the discussion and have added a reference.

4. We agree that it is useful to learn more about how the errors in land surface schemes and atmospheric variables propagate through calculations to affect extreme climates. We did a CABLE offline simulation with the same set-up to look into these issues and to compare online and offline results in terms of extremes. However, we think this analysis exceeds the scope of this paper and we decided to present these results separately.

References

Franklin, C.N. et al., 2013. Evaluation of clouds in ACCESS using the satellite simulator package COSP: Global, seasonal, and regional cloud properties. Journal of Geophysical Research: Atmospheres, 118(2), pp.732–748

Stubenrauch, C.J. et al., 2013. Assessment of Global Cloud Datasets from Satellites: Project and Database Initiated by the GEWEX Radiation Panel. Bulletin of the Ameri-

Interactive comment on Geosci. Model Dev. Discuss., 6, 6343, 2013.
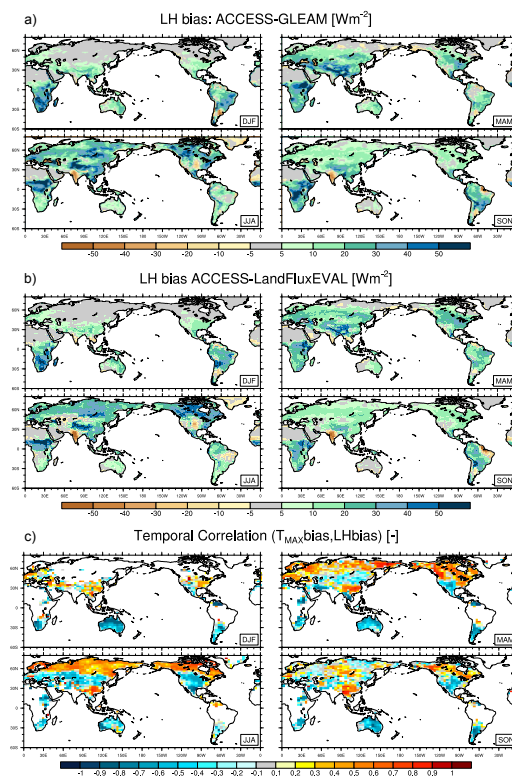
Fig. 1. Biases between ACCESS1.3b and GLEAM data (a) respectively LandFluxEVAL (b) for latent heat flux and correlations for biases between ACCESS1.3b and observations in TMAX and LH (c) in all seasons.