

# Interactive comment on “Brief Communication: Drought Likelihood for East Africa” by Hui Yang and Chris Huntingford

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Please see below for corrected Figure 1c. We will reply to the full set of reviewers' comments soon.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2017-169>, 2017.

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We are grateful for the received reviews. We recognise they are very critical, but we will try and answer the points over the next couple of weeks.

The purpose of this immediate response is that the reviewers' questioning of appropriateness of smoothing in our original panel 1c has revealed a factual error. We want to correct that as fast as possible, and alert anyone down-loading the current discussion version.

Below are the normalised GCM estimates of mean August-to-October (ASO) rainfall, for different 31-year periods and for 37 GCMs. This is for same study region (black rectangle, original Figure 1a). A normal distribution was fitted, which “by eye” performs reasonably well for 1861–1891 and 2001–2031. However in the histogram for later periods, a skewness appears. The tail on the right-hand side becomes longer and higher. This is caused by some very high predicted future rainfall values (i.e. > 100 mm month<sup>-1</sup>). Due to the symmetry implicit in the normal distribution, this artificially enhances the estimated probability of drought occurrence. That is, the fitted normal distributions have left-hand lower tails that are too large and too high, when compared to GCM estimates.

If instead we calculate the probability of drought occurrence using directly the normalised GCMs values – so from the histogram itself – we get a revised plot (right-hand plot, below). This implies a decreasing future risk of severe drought, based on the ASO 2016 rainfall threshold for our East Africa region.

In any revised document, we will not use fitted curves, and instead present the histograms directly.

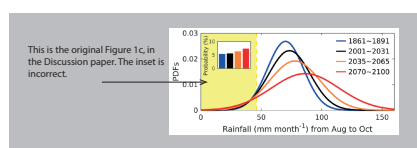
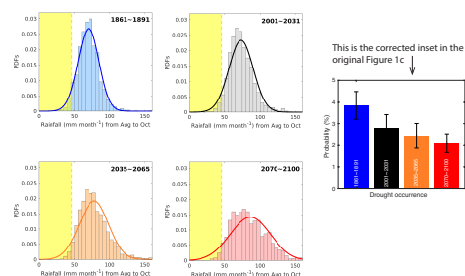


Fig. 1.

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