

## ***Interactive comment on “From meteorological to hydrological drought using standardised indicators” by L. J. Barker et al.***

### **Anonymous Referee #2**

Received and published: 6 January 2016

Title: From meteorological to hydrological drought using standardised indicators

Summary: This study analyzes the historical drought characteristics in the UK using SPI and SSI with the overarching goal of evaluating the performance of those indicators for improving the understanding of drought hazard and using those indicators for a potential drought monitoring and early warning system in the UK. This topic is well within the scope of the journal HESS. The study is technically sound, the manuscript is well organized and the methods are adequately explained. I do however think a few major issues need to be resolved before this manuscript would be suitable for publication. Mainly, I think the authors should show the performance of SPI and SSI during at least a few known historical drought events and they also need to make sure to not over generalize the findings. Please see my comments below.

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(1) The authors discuss in much details how the drought characteristics vary among the indicators and spatially, and the lag between the SPI and SSI, however I think it would be most useful to see how that information regarding the two indicators could have been useful for identifying drought onset and recovery during known drought events.

(2) In some cases, I think the authors have generalized the results too much and their claims are not substantiated by the results. For example: Page 12839, Lines 1-4. This comment about maximum duration being larger in the case of cluster 4 than cluster 1 seems to be only true for SPI-1, in the case of SPI-6 it seems to be about equal for both clusters and in the case of SPI-18 the maximum duration seems to be greater for cluster 1. Similarly, the next few sentences about the differences in the maximum severity only seem to be true (I am comparing medians here) in the case of SPI-18. This comment applies for the lines 19-22 on page 12845. Also see my comment #4.

(3) Speaking of the drought characteristics I think that the authors should specify the connection between the findings on the differences in median/maximum severity/duration with the drought related decision-making process. In other words please discuss how it would be helpful for a decision-maker(s) to know the differences between the above mentioned drought characteristics indicated by SPI and SSI. (This could be done by addressing my comment #1 too)

(4) Page 12843: Lines 3-4: Again, I think, this is an example of generalizing the results too much. This sentence seems to be true for total number of events (number of events increase with increasing SARR) but it seems to me that after a certain threshold SAAR, median/maximum duration/severity stay about the same.

Minor comments:

(1) Page 12843: Lines 6-7: “The strong. . .”. I am a bit confused here. I know you are referring to the column 3 in the Fig. 2 but given the relationship is not strong in case of clusters 3 and 4 (column 2) isn’t “All catchments” (column 3) simply reflecting the relationship over clusters 1 and 2? Is it really fair to say that a strong significant

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relationship exists for all catchments?

(2) The authors discuss the differences in the spatial variability of drought characteristics (lines 28-29 on page 12839) however it is hard for me (and perhaps for the other readers) to really get that from figures 3 and 5. I suggest including coefficient of variation in those figures (or a separate table) to highlight the differences in the spatial variability.

(3) Page: 12840 line 18: Do you mean to say “given the duration of SPI-n”?

(4) Please specify somewhere how you calculated SAAR.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 12, 12827, 2015.

**HESD**

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