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Interactive comment on "A systematic assessment of drought termination in the United Kingdom" *by* S. Parry et al.

Anonymous Referee #1

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General Comments

This manuscript provides insight into a systematic assessment of drought termination for the United Kingdom. The paper is well written and structured and I particularly like the threshold analysis of drought termination. However, I think the authors over generalize their results and are not clear how this article is truly different from other drought termination research. I think after a moderate revision this article should be published in HESS.

Specific Comments

Page 4 Lines 3–10: The authors argue that their manuscript differs from other drought termination studies by not examining drought termination as "an instantaneous point of time". However, the other studies the authors list do not examine the end of drought as

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Discussion paper

an instantaneous point in time as they use drought indices that have lags incorporated in the calculations and some of these studies were conducted at the monthly timescale, which is the same timescale used in the this study. I think the authors should revisit this section and be more specific how their study differs from the previous work, which I think it does by using a threshold level but to some extent any drought index (e.g., PDSI) gives thresholds of drought and leaves the defining of the end and beginning of drought up to the user.

Page6, Lines 18–23: I am not convinced that the parameter values used in this study are the most ideal, in particular the R and T variables. Did the authors do any sort of sensitivity analysis to see how this would impact their results? It seems like an R of 2 instead of 1 would dramatically impact the results. Similarly, what if drought was present then the monthly flow went positive for 2 months or even 3 (i.e., T) but then drought returned the next month. I think there needs to be more thought and description into defining R and T and how that influences the results. Page 6 Line 27: Why did the authors not examine if the data was normally distributed? This seems like a weak reason for determine which analysis to conduct. Page 4 Line 23: Why 52 catchments? Need more detail in what went into selecting these catchments.

Page 10 section 4.4: The authors argue that "longer drought termination duration occurred in groundwater influenced catchments of southern and eastern England". While Figure 3 shows this is true for the 1995–1998 and 2009–2012 events however during the 1970s events it would appear this is not true. I'm not sure that there the two most recent events are enough of a sample to draw firm conclusions on the influence of catchment properties on drought termination and think the authors have over generalized their findings. Similarly, on Page 12 Lines 11–16: I think the authors are over generalizing their results. Wouldn't drought termination vary within individual events due to the sporadic nature of rainfall? How do the authors have confidence it is catchment related? The correlations provided in Table 1 show similar relationships between drought termination (DTD and DTR) with SAAR6190 (ie, rainfall) and elevation. Is it

wetter at higher elevations and thus could it just be rainfall variability rather than catchment properties?

Technical Corrections

Abstract, Line 1: The phrase “drought to storms and flooding” is awkward. I recommend removing “storms”.

Page 15 Lines 3: I think percentages would be better than “nine and eight of the 52 catchments”

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