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Interactive comment on "Future hot-spots for hydro-hazards in Great Britain: a probabilistic assessment" *by* Lila Collet et al.

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Thanks you for your positive and constructive feedbacks on our work. Find below the answer to each of your comments:

Specific Comments:

Comment 1: Page 2 – examples of uncertainty sources Answer to comment 1: We agree with this comment, the uncertainty sources we mentioned are indeed not exhaustive, we nuanced the sentence accordingly ("partly due to. . .").

Comment 2: Page 2 – meteorological and hydrological droughts Answer to comment 2: Yes, both of them show these increases, this was clarified in the text ("for both").

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Comment 3: Page 4 – snowmelt influence Answer to comment 3: These studies were done in England and Wales, where snowmelt has very little influence, so these authors didn't account for this variable. However the text was modified to reflect the study area of these publications.

Comment 4: Page 11 – the island size influence Answer to comment 4: We see your point. To be clearer: the fact that Great Britain is a relatively small island (compared to Australia for example) implies that space is limited and hence catchments are small, compared to some continental (or large islands like Australia) catchments, and thus river length are short as well as flood duration. This was changed in the text ("relatively small island").

Comment 5: Page 11 – the soil influence Answer to comment 5: Thanks for this interesting question. In a previous paper (accepted in Water Resources Research, to be published soon), we did a regional analysis in Scotland to see which catchment characteristics might influence changes in mean peak flow magnitude (50th percentile in this study). We did not use soil types directly (because it is not part of the catchment characteristics commonly used by flood management consultancies) but rather, the base flow index derived using the Hydrology of Soil Types classification (BFIHOST), the Standard percentage runoff from the Hydrology of Soil Types classification (SPRHOST), and the proportion of the time that catchment soils are wet (PROPWET), among others. These three characteristics were found to be part of the ones that constrain the spatial distribution of changes in peak flow magnitude the most. Soil types might also have an influence on flood and drought duration. However we did not perform a regional analysis for this study, since it would be out of scope for this paper, which is already very dense and long. But we added a line on this in the discussion, along with the answer to comment 8 on the potential impact of urbanization.

Comment 6: Page 14 – color scale Answer to comment 6: We used on purpose contrasted colors for each season. However, we changed the color scale of the autumn months to highlight the differences between summer and autumn.

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Comment 7: Page 15 – extreme spatial variability in mean day of year Answer to comment 7: We need to be cautious in the interpretation of some mean day of year values, particularly for the ones associated to a low seasonality (below 0.6). The example you point out (just like all the values for drought events in Figure 9) is typically of a drought event which mean day of year value (in April) is associated to a low seasonality (below 0.4), and hence is not representative. So for the time of year of drought events, only mean day of year values associated to a medium to high seasonality should be considered, and when looking at these (such as in the 90th percentile in Figure 8), we can see a higher spatial coherence, with drought events in late summer and autumn. What is interesting in this analysis is that the change in seasonality and mean day of year from the baseline to the 2080s: a trend for drought events to become more concentrated in autumn, rather than events spread out though the year.

Comment 8: Page 16 – potential impacts of urbanization Answer to comment 8: We agree with you, urbanization has impacts on drought and flood risks, and have included a sentence within the paper in the discussion to clarify this with a reference which has explored this. However, similarly to the soil influence aspect, this study has not analysed this specifically.

Technical Corrections:

We agreed with these corrections and changed the text accordingly, apart from the “2080s” typography (the native English-speakers of the team use this wording). We also decided to remove the first and last sentences of the abstract which were repetitive to the introduction and did not highlight very much to our work contributions. However, page 5 and 20: we can’t see the typographical error associated with “50th”, and page 20 the citation is indeed from 2012 (and not 2002), and was appropriately cited in the text and reference.

Please also note the supplement to this comment:
https://www.hydrol-earth-syst-sci-discuss.net/hess-2018-274/hess-2018-274-AC2-

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supplement.pdf

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