

Interactive comment on “Climate change increases the probability of heavy rains like those of storm Desmond in the UK – an event attribution study in near-real time” by van Oldenborgh et al.

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Thank you for the positive review. With hindsight, we should have taken a day more to clean up the text and make sure all figure references were correct, even after inserting an extra figure at the beginning.

1. Page 13198. Row 25 and onwards. *I would perhaps suggest a little bit plainer language when outlining the research questions.*

We have reformulated these sentences.

2. Page 13199. Row 27. *The sentence starting with ‘In the limit ...’ is a bit con-*

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fusing, would it not suffice to say: If the trends approximate each other, then they are completely due to anthropogenic climate change.

Thank you for the suggestion. This formulation is not entirely correct, we can only make the reverse statement: 'If the trend is completely due to anthropogenic forcings the changes in return time will be the same for all methods.'

3. Page 13199 Row 28. *The sentence starting with 'In the UK in winter ...' perhaps just say 'In the UK winter ...', further do you mean 'assumption' rather than 'approximation' here?*

Removed the second 'in'. No, we meant approximation. There are effects of natural variability (solar, volcanic) but we know that these are small compared to the anthropogenically forced trend, so to first order approximation we neglect them.

4. Page 13200 Row 7. *The sentence starting with 'This implies ...'. Perhaps replace the section '... the 24 h period from midnight to midnight 5 December ...' with '... the 24 hr period starting from midnight on the 4th of December ...'*

Thank you, implemented.

5. Page 13201 Row 15. *Do you mean Fig 3 rather than Fig 2 on this line?*

Yes, we added a new figure at the last stages of writing and did not adjust all references correctly. These have been fixed.

6. Page 13201 Row 27. *Please refer to relevant figure.*

See above.

7. Figure 4. *The text I think talk to Figure 4 (row 27-onwards) talks to results of both 1 and 2-day totals. The figure has a title that says '2-day ave rainfall' (guessing ave is short for average), the figure text says '2-day precipitation amount', and the*

y-axis says mm/day. In the text results are discussing a total of 132mm, but the y-axis only extend to 100 mm/day. If this is 1 day total, the text refers to 77 mm and a 95% CI of 4-13 in current climate. In the graph and event of 77mm seems to be associated with greater return periods. Please revise so that manuscript information in figure and text are consistent.

The caption was not clear, it is indeed the 2-day average precipitation, not 2-day summed precipitation. This has been corrected in the caption.

8. Page 13204 Row 20. *Figure 6 rather than Figure 5?*

See above.

9. Page 13206 Row 14. *Perhaps insert 'driven' after 'thermodynamic'.*

Done.

10. Page 13206 Row 21. *Not keen on the word 'impactful' but up to you ('damaging' or 'destructive' perhaps?).*

We used 'After a climate event with large impacts, ...'.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 12, 13197, 2015.

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