

Interactive comment on “Understanding flood regime changes in Europe: a state of the art assessment” by J. Hall et al.

Anonymous Referee #2

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General comments:

The authors present a review about flood regime changes in Europe. The review includes methods for detection and prediction as well as the results regarding flood regime changes in Europe. For the changes the three driver's: river hydraulics, land use and climate are considered. Based on the review of methods for detection and prediction the authors discuss challenges and opportunities. The paper finishes with a synthesis of approaches and recommendations for future research.

This is a very long and comprehensive article. On one hand, this this gives a rough but almost complete overview about the topic. On the other hand, the paper is missing focus and somewhat tedious to read. From my point of view, the main problem is

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that the authors try to cover simultaneously both a review of methods and a review of results regarding flood regime changes. Especially the long listing of papers about flood changes in Europe is confusing and not giving any clear picture or message about the change signal.

I think the paper can become a good review contribution to the hydrological sciences for HESS. However, it needs major revisions. I see two options: a) either make the paper even a bit longer and try to better summarize quantitatively flood changes in Europe using more figures/tables or b) make two papers from it separately addressing a review of methods and a review of flood regime changes. Considering shorter and more focussed papers, I personally would favour option b) but would not be insistent.

Detailed comments:

1. Page 15538: The significance of change is discussed extensively but how to address the magnitude of change is somewhat neglected.
2. Section 2.2.1: This section contains a huge listing of reported changes. This is hard to read and a general picture of changes cannot be seen. The authors should try to sort this out and summarize the different results using figures and tables.
3. Page 15548: The suggestion to focus on flood-poor and flood-rich periods is interesting. The authors should briefly discuss possible implications for prediction and design here.
4. Pages 15551/52: The general discussion on the term scenario is not constructive here. Better, make definitions in the sense the term “scenario” is used throughout the paper.
5. Page 15553: There is quite a bit of textbook knowledge about river hydraulics. Consider shortening. This applies also to some other sections.
6. Section header 3.3 is same as 3.2. I would assume 3.3 should be extended by “-challenges and opportunities”.

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7. Figure 7: How is the magnitude of the trend calculated here? See also comment #1.

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