

Many thanks for the reviews. My responses are below printed in blue.

- **RC1:** ['Comment on hess-2022-232'](#), Anonymous Referee #1, 14 Jul 2022

This review article discusses three hypotheses regarding the increases in flood hazards, analyzing under which conditions each one of them is relevant for flood hazards. The article is clear, concise, well-structured, and fits well within the scope of the HESS journal. The article supports the discussion on previous studies of the author as well as independent studies. Additionally, the document is useful from a management and a scientific standpoint, in the sense that it uses a language that is simple enough to be read by the general public but, at the same time, provides references to more technical documents. In my opinion, the paper can be accepted after two minor technical corrections.

- Paragraph 370: There is an inconsistency with the parenthesis.
- Paragraph 500: There is an inconsistency with the citation. (“19xx unesco”)

**Citation:** <https://doi.org/10.5194/hess-2022-232-RC1>

Many thanks for the assessment. I have corrected the inconsistencies on lines 370 and 500.

- **RC2:** ['Referee's comment on hess-2022-232'](#), Anonymous Referee #2, 20 Jul 2022

The paper illustrates evidence about hypotheses on causes of river flood hazard changes, as presented at the EGU Alfred Wegener Medal talk in May 2022. It is a review of what has been found in past studies, many European ones from Prof. Blöschl's group but not only, on the effects of land use change, river training, and climate change on floods. The paper is very well written and surely of interest to the readership of HESS. As for the Medal presentation, I appreciated the effort made by Prof. Blöschl to present the subject in a very accessible way. Also non-hydrologists can fully understand its content and, even more importantly, students will benefit from this "low entrance-high exit" description of the subject.

I believe that the paper does not need improvement and could be published as is. The only minor suggestion I can give is to try to better explain Figure 9 (bottom graphic) in the caption. It is not clear, to me, what the reference line (horizontal line at 1) is for return periods greater than 1. It is not the current situation (2015) nor the "pristine" one (1800). I cannot easily grasp what it is, so I cannot make a good suggestion for a change in the text of the caption.

**Citation:** <https://doi.org/10.5194/hess-2022-232-RC2>

Many thanks for the assessment. I have now improved the description of Figure 9 in the caption.

- **RC3:** ['Comment on hess-2022-232'](#), Anonymous Referee #3, 21 Jul 2022

This is an excellent paper, and together with the author's previous Dalton Medal lecture paper (Bloeschl, 2022), is a must-read for all graduate students taking up research in hydrology. The paper is presented in almost jargon-free language that is easy to follow. Importantly it provides a conceptual framework for the study of flood change. Even though the material presented is the outcome of the author's research over many decades in Europe, there are still gaps in understand or interpretation for subsequent research to uncover.

The paper is really complete and I do not have much to add or ask the author to clarify or expand. The paper can be published as it is, and I am confident it will be a high impact paper, worthy of the Wegener Medal.

If at all I have any quibbles, I have two, very minor ones.

Firstly, the material is presented in a somewhat matter of fact manner (the title too is somewhat low key), and I would not have minded at all if the style is a bit more lofty. I strongly feel that the insights brought out in the paper must penetrate into the consciousness of most hydrologists to overcome the rather simplistic treatment we get to see in the literature and in popular media.

Secondly, much of the insight the author has brought out in the paper is based on his extensive work in Europe. How general are these? Do they apply to some other continent, such as Australia or Africa, or for that matter the Amazon? Are the differences significant, meaning totally different, or just in the degree to which they are valid? The paper may benefit from taking a higher level look at how climate, land surface (and humans) come together, and how they impact the transition land use to infrastructure to climate change impacts.

I have no other comments and would like to recommend that the paper be accepted subject to minor comments, so that we get to see the paper published soon.

**Citation:** <https://doi.org/10.5194/hess-2022-232-RC3>

Many thanks for the assessment.

Regarding the first comment, an alternative, more lofty style would certainly be appealing to some readers, but I believe this would be a different paper. Perhaps there is room for a similar, but more conceptual, review to be written in the future.

The second comment concerns the generality of the findings, and in particular whether they are valid beyond Europe. I appreciate the suggestion. In essence, the effect of land use and hydraulic structures on floods depends less on the region than the effect of climate.

I am now addressing this question in the conclusions of the article.