

Hydrol. Earth Syst. Sci. Discuss., referee comment RC2  
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## **Comment on hess-2021-497**

Anonymous Referee #2

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Referee comment on "Impact of cry wolf effects on social preparedness and the efficiency of flood early warning systems" by Yohei Sawada et al., Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2021-497-RC2>, 2021

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This paper presents an advanced modelling approach to studying the relationship between society and natural extremes. The authors developed an older model by Giron Lopez et al. (2017) by adding the "cry wolf effect" phenomenon. I find this a stimulating extension.

As mathematical modelling is not my field of expertise, I cannot assess the modelling section (which is the core of the paper). Therefore, my review is more focused on the context and overall results.

The paper is well-written and readable. However, some aspects should be explained better (see below). I also pose several questions for the discussion.

Questions and comments:

Title: Please consider changing the title to more reflect the paper's topic. E.g. "Possibilities of mathematical modelling in socio-meteorology: flood prediction etc." or "Mathematical modelling of the cry wolf effect".

Line 68: You mention that some studies claim that the cry wolf effect does not exist. How do your results affect this debate? Why do you think some authors have found the cry wolf effect problematic? Please discuss these questions.

Lines 78-80: I agree with this sentence. However, it would be nice to give a practical recommendation – what does your research imply? How should we consider the social aspects?

Line 139: You mention that the "trust in flood warnings" is based on the accuracy of warnings. Are there any other possibilities how to increase public trust? E.g. by social activities, education etc.? I understand that the mathematical model must be simple, but please discuss this.

Lines 163-164: Please define the terms "social collective memory" and "social collective trust".

Line 239: Why did you set  $\gamma = 0.5$ ? Why exactly 0.5? What does it mean?

Line 257: Please explain the terms "green society" and "technological society".

Tables 2, 3, 4, 5, 6: Please explain how you got the values of the parameters. Are these values based on empirical knowledge or literature review? Or are they just selected arbitrarily? What do these values mean?

Figure 1: Why do you show precisely the time range you show? Is it a random selection? What does mean the height of the colour bars? Is it the flood intensity or damage level? Would you please add a description of the y-axis?

Discussion and conclusion: According to your findings, it is possible to give a practical recommendation to FEWS strategy? I.e. do you suggest issuing fewer warnings (to reduce the cry wolf effect but risk the damages of flooding) or more warnings (to be safer but risk the cry wolf effect)? Please discuss.

Discussion and conclusion: Please also discuss your findings in the context of papers on the cry wolf effect you mentioned in the Introduction section.

Final remarks: Your paper is based on the modelling approach only. Would you please suggest how it would be possible to validate your findings on real data?