

Interactive comment on “Are Kenya Meteorological Department heavy rainfall advisories useful for forecast-based early action and early preparedness?” by David MacLeod et al.

Anonymous Referee #2

Received and published: 20 July 2020

GENERAL COMMENTS: This short paper gives an insight into how flood warnings are generated at the Kenyan weather service and how their skill evolved over the last 5 years. Despite the relatively small number of cases and some data inhomogeneity, I find the paper useful for practitioners and generally welcome publication of such work. Overall the paper is well written and logically structured. There is, however, substantial room for improvement with respect to data and the evaluation methodology as detailed in the following major and minor comments.

MAJOR COMMENTS:

1.) Evaluation procedure: Classically one would consider hits, false alarms, missed

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events and correct non-events. This would enable the computation of all the classical scores such as Proportion Correct, Heidke Skill Score etc. Your analysis gives a good idea of hits and false alarms but the missed events are only treated with respect to the 7 flood cases from the EM-DAT database. Can you not use CHIRPS to give some idea for missed heavy precip events that you could define to have a certain intensity and spatial reach (as pointed out in Point 2 of Reviewer 1)? After that, all days that remain would be correct negatives. This would allow a more quantitative treatment of skill.

2.) Language: Overall the paper is nicely written and the level of language high. However, some passages are a bit wordy and redundant and I would therefore ask the authors to carefully assess the potential for shortening. Given your overall low levels of statistical significance, I would also be a little more cautious with statements on skill throughout the text.

3.) Abstract: In its current state the abstract does not really explain well what the paper is all about and in what way it is important, new and special. There should be more information on data, method, results and limitations.

4.) Rainfall data: This is always an issue. There are many different products with strengths and weaknesses. Please provide more evidence that CHIRPS is a good one (the best?) to use and possibly repeat exercise with an alternative source of information.

5.) Section 2.2: I think that the approach you are taking is largely well conceived (but note my reservations under Point 1) given all the restrictions at hand but the section as written is quite long and your quantitative metrics are only described and nowhere cast into formulas. I suggest giving this section a clearer structure and a more “recipe like” description of how you compute metrics. If you give names or abbreviations to your metrics, you would not need to repeat the description again in Section 3.

6.) EM-DAT: I find the thresholds of 10 deaths too high and would feel that even one death would justify a weather warning. Given that you have authors from Kenya that

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may have access to government documents, is there no alternative source of information that would give you a list of flood events of smaller magnitude, too? This would much improve your statistics relative to the few events in EM-DAT!!

7.) Population numbers: I agree with Reviewer 1 that a distinction between all population of a county and the fraction likely affected by floods (in particular riverine) would be desirable. However, I can imagine that such fractions are not easily available and feel that the paper would be of value without it. In this case the authors could raise this point more clearly in the text and give at least some orders of magnitude from literature.

MINOR COMMENTS:

1.) Punctuation: There are a lot of places with inconsistent or suboptimal use of commas. Please check carefully throughout the entire manuscript.

2.) L2: remove “a” as in plural

3.) L5-6: What are you trying to say with this sentence. Please reword!

4.) L12: no comma

5.) L19: is it really a “movement”? In L31 it is called a “society”?

6.) L30: IFRC?

7.) Section 1: this gives a nice introduction to the topic but some bits are a little redundant and could be streamlined.

8.) L75-76: avoid repetition of “improve”

9.) L120: remove period after figure 2

10.) L125: better turn this into a proper sentence

11.) L167: this question?

12.) L194: requires?

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- 13.) Table 1: Why don't you merge the first two entrances?
- 14.) L234: fell during . . .
- 15.) L241: "quite a reasonable chance" is very fuzzy, reword!
- 16.) L245-248: What result or figure does this paragraph refer to?
- 17.) Figure 4 could be discussed in a little more detail.
- 18.) Figure 5 I would rather include in the Methods section 2. You can then also discuss there the difference between all people and those affected by a given flood (see above).
- 19.) L255: remove "extreme" as upper bound is already an extreme
- 20.) L286: highest number?
- 21.) L319: on 18th November?
- 22.) L385: I would maybe not use the word "all" here, as it remains a probabilistic problem, where some missed events are unavoidable.
- 23.) L441: double period
- 24.) L443: comma instead of period
- 25.) L456: 2x would
- 26.) L458-59: not a proper sentence
- 27.) Section 4.2.2: Too much detail to my taste. This is a scientific paper and not a government technical document.
- 28.) Figure 2 caption: include that these statistics are done for the cases listed in Table 2.
- 29.) Figure 4 caption: these should be 5kmx5km gridpoints
- 30.) Figure 5 caption: two brackets at end

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31.) Figs.: I would generally not start a caption with a question.

Interactive comment on Nat. Hazards Earth Syst. Discuss., <https://doi.org/10.5194/nhess-2020-122>, 2020.

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