

Interactive comment on “Action-based flood forecasting for triggering humanitarian action” by E. Coughlan de Perez et al.

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COMMENT: This article illustrates a very interesting example of use of a prototype global forecasting system for taking flood preventive actions, in areas where no alternative flood warning is available. The topic is certainly of high interest, considering that the forecasting system used has global coverage and could be potentially be applied in other regions lacking flood preparedness. The authors are faced with trying to best use the limited amount of ground data available in the region, and devised a clever approach making use of news, media reports, (few) discharge time series, and the output of a global forecasting model. The research issue is well contextualized, methods are rather simple but clear and results are adequately discussed.

RESPONSE: We thank the reviewer for these comments.

C1

COMMENT: As a general comment, I'm surprised not to see some more detail and analysis on the recent event of November 2015 (mentioned on P4, L27 and P14, L21), given that the authors stress the scarcity of data and the limited sample of floods in the observation period. The current work is based on a relatively small sample of data, making the noise of uncertainty often larger than the actual signal. Hence, an additional event would certainly benefit the analysis.

RESPONSE: This event is currently being studied by the operational team, both in terms of the flooding and the impact of the actions that were triggered. Because all of these results are not yet available or analysed, we have not gone into detail of the event, but we agree it should be mentioned. We have added the following: “while the impacts are still being analyzed, the region reported flooding after the trigger had been reached in one of the project areas.”

COMMENT: Further comments All figures should be cited in the text. This is now not the case for Fig. 1 and 2. Please add a reference.

RESPONSE: Thank you for noticing this; it has now been corrected.

COMMENT: P7, L14: Flooding is a measure of hazard, not of impact, hence it is independent of exposure and vulnerability. Unless the authors here mean flood risk. Please check.

RESPONSE: Agreed – we have changed this to read “flood risk”.

COMMENT: P8, L1: The clustering algorithm needs a supporting reference.

RESPONSE: Excellent point. We will include the following reference on K-means, as well as a reference to a paper that is currently in preparation: Kaufman, Leonard, and Peter J. Rousseeuw. 1990. Finding Groups in Data; An Introduction to Cluster Analysis. John Wiley & Sons. Hürriyetoglu, A. et al. In prep. [A Tool]: Finding and Labeling Relevant Information in Tweet Collections.

COMMENT: P8, L5: Not clear how the text in the footnote 2 relates to the flood location.

C2

Please clarify.

RESPONSE: We have clarified as follows: “To obtain geographical information, we filtered the sentences for any “marker” terms that are often used when the writer specifies a location, and within this subset we looked for mentions of district and sub-county names.”

COMMENT: P8, L11-12: Are these 85-15% obtained by crossing GloFAS forecasts with news report? It's not clear from the text. The text in page 9 ultimately describes figure 3 and 4 (though with no reference to the two figures). In my opinion this should go to Sect. 4, while Sect. 3 should only include the methodological approach, that is the theory underpinning the FAR, reliability diagram, block bootstrap.

RESPONSE: To answer the question about GloFAS, we have added the following clarifying language: “With these results from the algorithm, we validated the result manually for the districts of our interest by reading the articles. For 85% of the events we had found an actual flood event described in the text, meaning that the flood event was automatically detected for the correct month/ year in the correct location(s). Conversely, 15% were false positives, meaning the text was describing a non-flood event.”

We prefer to keep the explanation of the newspaper methodology in section 3, as it explains the methods used to obtain the results. We feel it would make the results section more difficult to read if it were placed in section 4.

COMMENT: P10, L10: reading through the text it appears that the 95% threshold was chosen after matching the GloFAS data with media reports, rather than an initial qualitative selection.

RESPONSE: Indeed, the GloFAS data was compared to disaster records both from disaster management agencies and media reports. However, the actual selection of 95 rather than 93 or 97, for example, was qualitative.

COMMENT: P13, L21: I suggest rephrasing this, as it currently suggest that the 95%

C3

is a general threshold valid for any location. In reality this depends on different factors, not only on the local exposure and vulnerability, but certainly also on the shape of the hydrograph and in turn on the upstream area. This is a consequence of using percentiles in place of extreme value statistics, which are more commonly used for such analyses.

RESPONSE: Thank you for noticing this – we have corrected this and it now reads as follows: “Assuming that a specific extreme value of forecasted discharge is a valid proxy for a “danger level” in an area with limited data records, the GloFAS model can be used to trigger timely humanitarian action in advance of an extreme event.”

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