

Interactive comment on “Forecast-based financing: an approach for catalyzing humanitarian action based on extreme weather and climate forecasts” by E. Coughlan de Perez et al.

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We would like to thank the reviewer for the thoughtful comments and suggestions on this manuscript. Our replies to specific suggestions are below.

COMMENT: The paper proposes a framework for the evaluation of forecast based preventive measures for disaster mitigation under consideration of economic aspects. The costs and expected benefits of such preventive measures are assessed and in this way guidance is provided for decision making. The focus of the paper is on the

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introduction of the conceptual framework. The case of flooding in England and Wales is used to demonstrate its application. Pilot studies from Togo and Uganda are outlined which will be used to provide further insight into the feasibility of setting up standard operation procedures for effective flood disaster risk mitigation.

Reading the paper is rewarding and provides new insight to a topic which has not received much attention in research yet, but is, without doubt, of relevance for efficient disaster risk reduction. The paper is well structured and very well written. The main contribution of the paper is the conceptual outline of the forecast based financing mechanisms which are coupled to risk based operation procedures. I very much like the approach to strengthen the link of forecast information to preventive action. However, I see several aspects which need to be addressed to make the paper stronger of which the major ones are the following: AUTHOR RESPONSE: We thank the reviewer for this comment, and agree that the paper is of relevance to disaster risk reduction. We hope it will spark further discussion in the field.

COMMENT: 1. Unfortunately Figure 1 which is central for the understanding of the concept within the demonstration case of flooding in England and Wales is not represented correctly in the manuscript. Hence, the explanations given in the text are not fully comprehensible. Anyway, I recommend enriching the text with some concrete examples of potential measures (conveniently taken from Figure 1). Otherwise the paper remains a rather theoretical tract which leaves many questions open of how to practically implement and operate the system proposed

AUTHOR RESPONSE: Good idea; see changes to text below.

CHANGES TO MANUSCRIPT: [Section 3.1 Matching forecasts with actions] For example, people are not able to build drainage canals based on a short-term forecast, but could create teams to clear existing drainage canals based on a seasonal forecast. In comparison, flood response drills could be carried out within a few hours or days

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of the forecasted disaster (Figure 1) & For example, it would not make sense to evacuate based on a low probability forecast, but perhaps flood response drills would be appropriate as they can withstand “acting in vain” (Figure 1).

COMMENT: 2. This is also important as there are many regional differences and event dependent particularities to be expected in operational applications. Many factors that are involved in your scheme will vary strongly among events and regions: e. g. forecast uncertainty as a function of forecast lead-time, detection of flood hazard and warning lead-time and hence the portfolio of feasible actions. The sensitivities of these variations to the outcomes of your system should be evaluated in order to get some feeling for the robustness of the approach

AUTHOR RESPONSE: This is a very good point, and we have added text to acknowledge this. Carrying out a sensitivity analysis to each of these factors is beyond the scope of this paper, which is focused on describing the system itself. However, we are in the process of doing such an analysis, and these results will be forthcoming in 2015.

CHANGES TO MANUSCRIPT: [Section 6 Discussion] Most of the variables considered here, from action options to forecast skill, vary sharply between regions, and therefore forecast-based financing systems must be designed for a specific hazard at a specific geographical scale. Standard Operating Procedures developed in one area are unlikely to have value if applied indiscriminately elsewhere. Further research should study the effect of varying each of these parameters, and the resulting differences in forecast-based financing potential across regions and hazards.

COMMENT: 3. The pilots from Togo and Uganda provide a vision of how you think standard operation procedures for system application in Africa could be derived using for instance ‘serious games’. I understand that you still don’t have more concrete

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results to report. It could be interesting to contrast these application cases to the introductory example taken from England and Wales. Also here, a discussion about the sensitivity of event dependent variations would be of interest.

AUTHOR RESPONSE: See text additions below.

CHANGES TO MANUSCRIPT: [Section 4 Pilot Applications] In comparison with the flood alert system from England and Wales that is described above, the actions developed for Standard Operating Procedures in Uganda and Togo are likely to be somewhat different. In particular, the UK alert system focused on surface water flooding, while riverine flooding and water logging are likely to be of greater interest in Uganda and Togo. For the latter, longer lead-times can be expected for forecasts, although the forecasting skill might not be optimal for lack of observational data. This will likely allow for actions that target the spread of water-borne disease, for example, which are less of a problem in the UK. In addition, there are differences in forecast skill between the UK and equatorial Africa; the latter has less data available, but potentially larger skill at the seasonal level due to teleconnections with the El Nino Southern Oscillation.

COMMENT: 4. The example cited from cigarette industry does not fit very well into the flow of your paper. I recommend replacing it with another more convenient example from disaster risk reduction AUTHOR RESPONSE: Agreed; this has been removed from the manuscript.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 2, 3193, 2014.

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