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Discussions

Interactive comment on "Communicating Complex Forecasts for Enhanced Early Warning in Nepal" *by* Mirianna Budimir et al.

Anonymous Referee #2

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General Comments

The article 'Communication Complex Forecast for Enhanced Early Warning in Nepal' provides a comprehensive overview of existing Early Warning Systems for extreme rain and related flooding events in Nepal. The article is an interesting publication that not only describes currently applied decision making routines, but also aims towards recommendations for future developments. The authors conducted a survey amongst various stakeholder groups to gain a better understanding about the workflow and possible obstacles in respect to the efficiency of early warning. A special focus of the publication is laid upon extending the time window for early warning by using modern forecast and observation routines as well as on the communication of complex data and forecast results. The authors also highlight the problem of communicating uncer-

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Discussion paper

tainty and how scientific uncertainty is perceived by decision makers as well as within the public.

The article is well written and the argumentation is easy to follow. While reading, the large number of abbreviations is distracting but maybe not avoidable due to the equally large number of stakeholders and actors in the field of EWS in Nepal.

Specific Comments

[line 12 to 23] Within the abstract, I would recommend to highlight the fact, that the article deals with early warning systems in respect to extreme rain and flooding earlier than at the end of its last sentence. Since Nepal has to face a multitude of natural hazards such as earthquakes, landslides and others, this would help to grasp the focus of the article early on.

[line 30 to 44] I highly appreciate the integration of a multitude of perspectives and approaches within the introduction of the theme, e.g. the fact, that early warning should be "adaptable for individuals with varying perceptions of risk". Nevertheless, the integration of an industry perspective towards early warning would help to better understand the different requirements for effective early warning (What do stakeholders from industry and/or agriculture expect from an early warning system might be different from what a family expects).

[line 46 to 50] Within the literature review a reverence to SDG 13 (https://sustainabledevelopment.un.org/sdg13) can also help to understand the political background and integration.

[line 63 and 64] The authors mention four elements and three cross-cutting issues that are taken and derived from the quoted UNISDR initiative. What might be missing in this list is capacity building within the public domain. The authors occasionally mention that extended education within the realm of Earth systems science can play an important role in increasing the efficiency of early warning systems, nevertheless it seems that

the authors do not see education efforts at the core of their analysis. If this is intentional, e.g. because the authors want to focus their analysis on the decision making routine within the administrative bodies responsible for early warnings, this should be stated clearly as early as possible.

[line 81] Please review the way sources and publications are cited.

[line 93] Parallel to the concept of “end-mile”, I have heard the term “last mile” – maybe it can help to understand this paragraph, if this concept is mentioned here, too.

[line 189 to 195] Climate change is also increasingly challenging traditional knowledge (also known as indigenous knowledge). In Nepal, I presume, indigenous knowledge still plays a significant role in decision making, e.g. in agriculture and other aspects of social life. If climate change alters traditional knowledge, this will have effects on early warning as well. In addition, holders of traditional knowledge (community elders, etc.) might experience a loss of credibility. This might influence the distribution of early warning information on a local level, too. While I am convinced that this effect is a crucial one for communication, the article is focused on the decision making process rather than on the dissemination of early warning to the public. Therefore, this article might not be the place to discuss the influences of climate change on traditional knowledge holders and their credibility but should mention this problem.

[line 196 to 198] A reference to Fig.1 could help to understand the geographical setting.

[Line 211 to 220] The last paragraph of 3.0 and the first paragraph of 3.1. should be merged. 211 to 213 are a good introduction to the paragraph, that starts in line 215.

[line 219 and 220] The abbreviations used in the text are not used in Fig.2. This might lead to misunderstandings.

[line 226] The authors mention Fig. 6 here. Maybe the figures can be re-ordered so that Fig 6 can become Fig 3 (and all others have to change respectively)? This would allow a continuous numbering within the text.

[paragraph 4] The research methodology is described quite poorly. It does not become clear, what exactly has been done to better understand the decision making routines. How were the interviews conducted and documented? How were the interviews analyzed? What are key parameters used to analyze the interviews? The authors do focus on socio-economic parameters of the responders - thus the readers are provided with good background information. The way a qualitative analysis was conducted still seems not clear to the reader. In chapter 5, a descriptive analysis of the interviews is provided and the following chapters are built upon the findings described here.

[line 690 to 694] I am curious, if there are similar studies about the efficiency of SMS in early warning from other places of the world? Maybe there are case-studies from the Indonesian Tsunami Early Warning System or the Japanese, US or Turkey Earthquake warning system?

[line 719 to 727] I was wondering, if there is a causal effect on the two observations. Are there significant differences in the demographic composition between central and western regions? If so, this might be an explanation for the observations as well as a starting point to adjust early warning accordingly for the two regions and beyond.

[765 to 775] The content of the end of the first paragraph within 6.1.2.1 and the next paragraph seems to be doubled. Please check, if this can be formulated differently.

[line 760 and 793 and 822] All three paragraphs are numbered 6.1.2.1

[line 823] “Producers and users” are mentioned – but who are they? Please describe the two groups. Are they producers of agricultural goods e.g. farmers and their customers?

[line 862] There is a blank missing in “onthe” .

[line 870 to 873] This is crucial information that should be mentioned earlier. The lack of resources (only four people for flood forecast) is an important fact – maybe other resources are sparse, too?

[line 920] Are there words missing in this sentence? (“. . . experiences in, the use . . .”)

technical corrections required

[line 760 and 793 and 822] All three paragraphs are numbered 6.1.2.1

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