Hydrol. Earth Syst. Sci. Discuss.,
https://doi.org/10.5194/hess-2018-327-AC1, 2018

Hydrology and Earth System Sciences
Discussions

Interactive comment on "Challenges to Implementing Bottom-Up Flood Risk Decision Analysis Frameworks: How Strong are Social Networks of Flooding Professionals?" *by* James O. Knighton et al.

James O. Knighton et al.

jok8@cornell.edu

Received and published: 14 September 2018

We thank reviewer 1 for their comments on this research. Please find our responses to specific comments below.

- The paper deals with and interesting and novel aspect in flood risk management research. Due to insights that identification of vulnerability is of utmost relevance for actual flood risk reduction and the fact that vulnerability is very context and spatial depended the paper contributes with a valuable contribution to this research field. Here

Printer-friendly version

Discussion paper

the vulnerability is defined by stakeholders which reveals different understandings and relevance of criteria of flood vulnerability. The overall conclusions are clear and the presentation is well structured. However, some parts of the text are a bit unclear and the methods description needs some revisions. , I suggest the following considerations for improving the manuscript:

- Please explain what type of floods you are dealing with. It is important to differentiate river floods, flash floods etc.

The size of the largest catchment (325 sq. km) is small enough that the stream response typically occurs within 6 hours of the onset of precipitation. Still, the flooding occurs when natural levees are overtopped. I believe this case could be classified as both flash flooding and riverine flooding. Because the risk is primarily related to the flood stage elevation and not a lack of warning time, we will classify this problem as riverine flooding.

We have revised the introduction as follows:

Page 1, Line 26: "Societal vulnerability to riverine flooding is a complex function of physical hydrological processes"

Page 2, Line 3: "Riverine flood risk analysis is inherently difficult due to the infrequency of flooding events"

Page 4, Line 5: "We address this gap with a case study survey of 50 professionals working on riverine flood risk mitigation within Tompkins County, New York USA."

Also, see mention of riverine flooding in revision for item #2.

- Page 1, line 29: please explain imperfect understanding. How can understanding be imperfect?

We have revised this sentence as follows: "...have been exacerbated by uninformed and inaccurate prior beliefs surrounding riverine flood hazards..."

- Page 2, line 10: probably more recent literature is available

We agree. We have also included the following reference which provides detailed definitions of top-down and bottom-up governance.

Serra-Llobet, A., Conrad, E., & Schaefer, K.: Integrated water resource and flood risk management: comparing the US and the EU, E3S Web of Conferences, 7, doi:0.1051/e3sconf/20160720006, 2016.

- Page 2, line 29: please explain how bottom-up analysis benefits decision making. Per se or what is necessary for better dm?

We agree that our point was not clear. We have revised the introduction as follows:

"Flood decision making can be stalled by contentious discussions about the reliability of hazard data (e.g. Is climate change driving changes to local storms? Should climate change be accounted for in mitigation planning?). Bottom up decision making frameworks benefits the process in that uncertain data and potentially controversial methodologies can be evaluated within the context of community risks. For example, climate change driven changes to storm intensity may not increase frequency severe economic losses, and therefore can possibly be disregarded. Such public debates over the "accuracy" of hazard data and risk estimation, of the kind illustrated by recurrent controversies surrounding flood insurance rate maps in the U.S. (Elliott and Rush 2017), reflect a technocratic faith that pegs decision-making to the purported ability of risk analysis to arrive at single true estimates of risk, which models typically do not and cannot provide (Weinkle and Pielke 2017)."

- Page 5, line 23: what is an informal interview. That is not clear to me. Please explain this methodological approach.

We agree. We now provide a reference and a more descriptive title for this technique "semi-structured interviews." We have modified the text as follows:

"We conduct semi-structured interviews (methodology described by Hermanowicz,

Printer-friendly version

Discussion paper

2002) with ten flooding professionals within Tompkins County from January 2017 through August 2017. Each interview was initiated with a series of general questions on the topic of flooding, and shortly thereafter interviewees were encouraged to move the discussion in their own direction of interest. The purpose of these interviews was to develop an exhaustive inventory of themes concerning the challenges faced by professionals engaging in group decision making and ideas about flooding commonly held by flood risk mitigation practitioners."

- Page 8, line 1: only professionals?

We have modified this line as follows: "Surveyed individuals also had the option to write in their own preferred definition."

- Page 9, line 25: why "only"? 48% is not a little number.

We disagree slightly with this comment. The word "only" was included because we anticipated a result closer to 100% because of recency bias. A moderate flood happened throughout the county which was widely reported by local media. We anticipated that individuals engaging with flooding work on a professional level would have taken notice of this event. That only 48% identified snowmelt as a critical mechanism was quite surprising, and importantly points to a disconnection between actual hazards, and those designing mitigation practices.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2018-327, 2018.

Printer-friendly version

Discussion paper