Hydrol. Earth Syst. Sci. Discuss.,
https://doi.org/10.5194/hess-2017-368-RC1, 2017

Hydrology and Earth System Sciences
Discussions

Interactive comment on "Participatory flood vulnerability assessment: a multi-criteria approach" *by* Mariana Madruga de Brito et al.

Anonymous Referee #1

Received and published: 31 August 2017

This well-written paper outlines a process for employing a multi-attribute index assessing flood vulnerability. Of particular concern is the participatory approach to constructing this index, allowing for several stakeholders and experts to take part in the construction, essentially when weighting the attributes in terms of their relative importance. The weighting is done using the AHP and ANP approaches, which are popular approaches especially in works employing decision analysis, but sometimes questioned within the decision analysis community itself. Having that said, I wish that the authors addressed other weight elicitation methods within the process outlined in this paper, for an overview see, e.g., the paper M. Riabacke, M. Danielson, L. Ekenberg, "State-of-the-Art Prescriptive Criteria Weight Elicitation," Advances in Decision Sciences, Volume 2012 (2012), Article ID 276584.

For instance, the AHP might restrict the index to fewer attributes than desired due to the requirement for many pairwise comparisons which is avoided in other rank based approaches such as rank-ordered centroid weights or cardinal ranking approaches.

*H. K. Alfares, S. O. Duffuaa, "Assigning cardinal weights in multi-criteria decision making based on ordinal ranking," Journal of Multi-Criteria Decision Analysis, Volume 15, Issue 5-6 , 2008. *M. Danielson, L.ÂăEkenberg, "The CAR Method for Using Preference Strength in Multi-criteria Decision Making," Group Decision and Negotiation, Volume 25, IssueÂă4, 2016.

Further, the text on value functions is a bit hard to penetrate how the value functions were constructed in the participatory process. The selection of only two membership classes for instance (low vulnerability, high vulnerability), was that made by the focus group or designed by the authors on beforehand and why is this sufficient for the model presented?

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2017-368, 2017.