

Interactive  
Comment

## ***Interactive comment on “Combined fluvial and pluvial urban flood hazard analysis: method development and application to Can Tho City, Mekong Delta, Vietnam” by H. Apel et al.***

### **Anonymous Referee #1**

Received and published: 19 November 2015

This reviewer has read the paper with interest. It is a well-organized, informative text on an applied topic. In my view, its contribution is more a Development than a Research in the usual R+D setting. Above all, I think it is a Case Study. A better title would include the term "Case Study", instead of "Method development and application".

I believe that "Method development" is too high a description for the combination of the two hazards in the short paragraph 3.3 "Combine hazard analysis". The link between the two hazards is very simple -this is not bad at all. It consists of applying the basics of the theory of probability to two independent events. This paragraph is readable and clear, but in my view does not warrant referring to it as a method.

[Full Screen / Esc](#)

[Printer-friendly Version](#)

[Interactive Discussion](#)

[Discussion Paper](#)



My main objections and doubts regard the 2D hydraulic modeling. The model used in the paper implies largely simplifying the shallow water equations. It should be discussed to what extent the simplifications affect important properties of flood routing, such as probably times of peak and water depths, and the impact of this on the results. Please, provide evidence on this point. Secondly, in the case of a pluvial input, the reader is just informed that the model is the same, but I cannot figure out how a 2D hydraulic model formulated in terms of discharges and depths (when dealing with fluvial inputs) can cope with data expressed as rainfall volumes and intensities. Please, develop on this.

Furthermore, the notation in equations (1)-(2) is poor, since there are sub-index for both space (x,y) and time (t) and super-index for "cell indices" that the reader doesn't know if are referring to space or time. Please clarify.

This reviewer would be thankful if the principles behind the inundation maps based on satellite images are given. How are depths determined?

In figure 5, I see much disagreement between observations and model results. The concept of "plausibility" and "plausibility check" should be clarified. What are the criteria to consider the results of this figure as plausible?

Figure 1 should be improved. I am afraid the depicted basin is not the "whole Mekong basin". The river network is not clear.

Figures 11, 12 and 13 are very small. I would prefer to have larger figures, although less in number (less probabilities of non-exceedance).

---

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 3, 4967, 2015.

[Full Screen / Esc](#)[Printer-friendly Version](#)[Interactive Discussion](#)[Discussion Paper](#)