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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "The value of integrating information from multiple hazards for flood risk management" *by* J. T. Castillo-Rodríguez et al.

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The paper "The value of integrating information from multiple hazards for flood risk management," by J.T. Castillo-Rodriquez, I. Escuder Bueno, L. Altarejos-Garcia, and A. Serrano-Lombillo outlines a valuable approach for evaluating and managing flood risks in urban areas. This approach will be valuable and pertinent for many urban areas. The methodology is thorough because it allows flood risks to be evaluated from three different sources (pluvial flooding, river flooding and flooding from dam failure). The methodology is also flexible in that it can be used to evaluate flooding for a range of conditions including a baseline case, a structurally modified case where an upstream dam may be incorporated into the study, and an enhanced cased where structural mod-

ifications are in place but extra measures are taken to inform and educate the public. Flexibility in the methodology is also provided related to the initiating events. Rainfall in the urban and river catchment areas can be considered as either independent or dependent. The versatility in the proposed methodology increases it's value considerably. The paper very clearly describes the proposed methodology and includes a simple and well defined example that illustrates how the methodology can be used.

The following specific comments are provided:

1. The value of integrating information from multiple hazards for flood risk management 2. Abstract, page 3306, line 12 – Please define SUFRI 3. Introduction, page 3307, line 4 – consider changing "in terms of loss of life as" to "in terms of loss of life, such as" 4. Risk definition and components, page 3309, line 24 – change "probability includes also exposure" to "probability also includes exposure". 5. Risk definition and components, page 3310, lines 22 – 24 – sentence reads "In general, risk cannot be entirely eliminated since structural measures handle the consequences of a specific severe event, typically called design event." It seems more correct to say structural measures are designed to reduce the potential consequences of a specific severe event. Would also change last part of sentence to read ". . . called a design event." 6. Risk definition and components, page 3310, line 27 – would change "cannot be prevented" to "cannot be absolutely prevented". 7. Risk definition and components, page 3311, lines 7 – 8, would change "depending on whether they provide or not" to "depending on whether or not they provide". 8. Risk definition and components, page 3312, line 1 – 2 – Change sentence to read "In addition, the use of risk models and F-N curves allows the main variables to be identified and to reduce uncertainty in the analysis." 9. Risk definition and components, page 3312, line 4 – change "and improve" to "and to improve". 10. Risk definition and components, page 3312, line 6 – change "There exist" to "There exists". 11. Phase VI: risk calculation, page 3318, lines 19 – 20 – change "The event tree allows to estimate conditional probabilities and consequences. . ." to "The event tree allows conditional probabilities and consequences to be estimated. . ." 12. Phase

IX: risk evaluation, page 3320, line 5 – change “to determine whether societal” to “a determination as to whether”. 13. Demography, page 3323, line 9 – change “working reason” to “working populations”. 14. Loads, page 3325 line 4 – change “20 km far” to “20 km” 15. Situation with non-structural measures of public education and warning, page 3330, lines 12 – 13 read “. . . fatality rates associated with this situation are established at level 10 from the classification. . .”. It would be helpful to explain what this category means or implies. 16. Situation with non-structural measures of public education and warning, page 3330, lines 20 – Should “Therefore, reduction of potential economic damages. . .” be changed to “In addition, reduction of potential economic damages. . .”? 17. Conclusions and further research lines, page 3334, line 20 – change “this plan before start operating the dam” to this plan before operation of the dam is initiated” 18. Table 6, page 3344 – the night factor used to calculate the Time category probability values appears to be incorrect. Instead of 0.369 it should be 0.396. This will allow the total of the day night probabilities to sum to 1.0. 19. Table 10, – “slippage” should be changed to “sliding” throughout; “three uplift laws” and “six uplift laws” are referenced in FM2 and FM3. It is not clear what these are – clarification would help. 20. Table 10, FM2, 2nd line – consider changing “not included on the basin (baffle blocks)” to “not included in the overflow section”; line 4 – change “a degradation surface” to “degradation of the surface”. 21. Table 10, FM5, 1st line – change “erosion of the” to “and involves erosion of the”; line 2 – change by upwards erosion or concrete continuous degradation.” to “by headcutting or continuous concrete degradation.” 22. Table 10, FM6, line 2 – change “until uncovering the downstream toe” to “until the downstream toe is uncovered”.

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