

## ***Interactive comment on “Results of the post flash-flood disaster investigations in the Transylvanian Depression (Romania) during the last decade (2001–2010)” by V. Arghiuş et al.***

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The authors would like to thank to the Anonymous Reviewer #3 for his helpful and useful comments on our manuscript. We will take into account his recommendations. The paper will be improved and re-submitted when we will receive the next review from the Editor.

### I. Specific comments

Comment 1: Page 6202, rows 17-18. “. . .increasing the flash flood risk“. I suggest reformulating this idea: “. . .increasing the flash flood hazard“.

C2405

Answer 1. The idea has been reformulated according with your suggestion.

Comment 2: Page 6204, rows 7-8. I suggest to change the sentence as it follows: “The mean flow velocity ( $V$ ) is computed using the Manning–Strickler empirical formula:“

Answer 2. The text has been modified according with your suggestions.

Comment 3: Page 6204, row 17. I suggest deleting the row 17: “- additional estimations of the flow velocity (video movies) “;

Answer 3. This idea has been deleted according with your recommendation.

Comment 4: Page 6205, rows 13-14 and page 6208, rows 25-26. There is a contradiction between the assertions made in these two places.

Answer 4. The text has been modified according with your first suggestion (i.e. a) “the flash floods are listed first in the natural disaster category, in terms of life losses “).

Comment 5 and 6: Page 6207, rows 5-6 and page 6207, row 17. The references are missing.

Answer 5. The references have been inserted in the text. Thus, the text has been modified as follows: “Streamgauge station data provided by RWNA and investigations from post-event surveys (Fetea et al., 2006, Hydrate Project and our field investigations), combined with hydraulic modeling from another related study (Sangati, 2009),. . .“; The RWNA’s data source will be inserted in the final bibliography.

Answer 6. “Another study (Sangati, 2009) in the Feernic basin confirms the above mentions“.

Comment 7: Page 6207, rows 18-19. “. . . the recorded discharge values at Simonesti streamgauge station show a sudden peak rising, while the simulated hydrograph in the same section follow a milder curve.“ Suggestion: to present both graph on the same figure.

C2406

Answer 7. In this paragraph, we just quoted the assertions made by Sangati, 2009. Although in Sangati's study such of a kind of graph is shown, we have only the data related to the hydrograph provided by RWNA, while the data associated with the simulated hydrograph were not available.

Comment 8: Page 6207, rows 23-24. "Based on flood marks, has been found that the maximum water level ranged from 5.0m (Lupeni village – Feernic event) to ...". Suggestion: I think it would be useful to specify that the maximum water level is considered from the ground level.

Answer 8. Perhaps, the most representative landmark would have been the ground level, because it doesn't change so much its topography during the flash-flood events. In our study (based on flood marks), the maximum water levels in representative surveyed cross sections were measured from the thalweg level. The text has been modified as follows: "Based on flood marks, has been found that the maximum water level (reported to the thalweg level), ranged from 5.0m (Lupeni village – Feernic event) to 4.8m (Târlisua village – Ilisua event) and 4.0m (Uioara de Jos village – Ciunga event)."

Comment 9: Page 6208, row 27. "Why the damages are presented in USD and not in EUR ? "

Answer 9. This approach has been followed in order to simplify the computations regarding to the direct, tangible damages. More specifically, the damages are presented in USD, because we used in this paper the damages estimated in USD (i.e. the national flood damages:2005 USD4.678 billion) from an earlier study made by our team (i.e. Arghius et al., 2011), in order to compare them with the data from the study region (see Page 6208, rows 25-26, ie. "2005 USD69 574 000 as compared to 2005 USD4.678 billion").

Comment 10: Page 6209, rows 25-26. "...extensive deforestation activities in the steeper terrains were carried out". Suggestion: To specify in % how much of the former forested area was cut in order to underline the magnitude of the land use changes.

C2407

Answer 10. "For the study basins, the only possibility to obtain this kind of data is to purchase detailed satellite imagery or aerial views from different time periods and to compare them through GIS techniques. Unfortunately, given the context, this is a cumbersome approach that requires time and money".

Comment 11: Page 6210, row 11: "...to develop a plan for the rapid evacuation of these people...". Comment: The concentration time in the small watersheds is very reduced, and if the event is taking place during the evening or during the night the evacuation is difficult or even impossible.

Answer 11. You're right. Nevertheless, in our national regulations is clearly stated that all local governments and other officials must ensure the continuity in case of meteorological and hydrological warnings. In these situations, based on the severity of rainfall nowcasting warnings provided through Doppler radars, the authorities have a certain period of time to prepare the most appropriate operative emergency measures, enabling shelter of the helpless elderly people.

Comment 12: Page 6210, rows 19-20 – "– a lack of sustainable awareness of the authorities involved in flood risk management ". Suggestion: to reformulate.

Answer 12: The idea has been reformulated according with your suggestions (i.e. "– a lack of sustainable awareness of the administrative authorities involved in operative management of flash-flood risk ").

Comment 13: Page 6210, rows 19-21. "– a lack of sustainable awareness of the authorities involved in flood risk management and of a specific National Strategy for Flash Flood Risk Management". Comment: split the phrase into two distinct issues.

Answer 13. The phrase has been modified as follows:

"–a lack of sustainable awareness of the administrative authorities involved in operative management of flash-flood risk;

– a lack of a specific National Strategy for Flash Flood Risk Management".

C2408

## II. Technical issues:

Comment 1: Page 6202, rows 25 and 21: to move the reference quoted in text immediately after, the definitions in the EM-DAT glossary.

Answer 1: The reference was moved in the suggested place.

Comment 2: Page 6200, row 26: to replace „making” by „raising”.

Answer 2 : The word has been replaced.

Comment 3: Page 6201, rows 1-2: „... emergency management are, by their nature, suitable to cope with the characteristics of flash flood risk...”. The sentence is not very clear. Maybe it would be possible to reformulate it.

Answer 3 : In this phrase, we just quoted, in position, the assertions made by Drobot and Parker, 2007, recited by Marchi et al., 2010.

Comment 4: Page 6202, row 2: „relatively short variety”. May be it would be better: „relatively small variety”.

Answer 4 : Corrected

Comment 5: Page 6202, row 13: „the border depressions”. I propose to be replaced by: „...the depression borders.” or „...the depression limits.”

Answer 5 : As was mentioned on page 6201, rows 23-26 „ The depression is divided in two major units. One of them occupies a very large area in the central part of the region (Transylvanian Plateau) and the other, including the so-called “Peri-Transylvanian depressions and hills”, is located at the border”. Consequently, we have referred in this context to those border depressions so-called „Peri-Transylvanian depressions”.

Comment 6: Page 6209, row 27: „...and have generated large amounts of debris wood which were formed instable dams”. Suggestion: to delete „were”

Answer 6 : „were” was deleted

C2409

Comment 7: Page 6209/6210, rows 28/1: „...another problem is related to the expanded of the constructed areas”. I suggest replacing it by: „...another problem is related to the continuous expansion of the constructed areas”

Answer 7: This extract has been modified according with your recommendation.

Comment 8: Page 6210, row 16: „...there can be spotted:”. I suggest replacing it by: „...the following can be spotted:”.

Answer 8: This idea has been modified according with your recommendation.

Comment 9: Page 6211, rows 26: „...C’evennes...”. To be replaced by: „...Cevennes...”.

Answer 9: „C’evennes” has been replaced by „Cevennes”

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C2410