

Review of the paper “What if the 25th October 2011 event that stroke Cinque Terre (Liguria) had happened in Genova, Italy? Flooding scenarios, hazard mapping and damages estimation. submitted to NHESS by

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General Comments

The article deals with an interesting exercise to analyse the potential impacts of a big flood event in Genoa. This flood event has been created putting the rainfall field of an event recorded on October in a near region, on the main catchment of Genoa stroke by another catastrophic flood event recorded some weeks after, on November. It is a very complete work: starting from the hydrometeorological chain to model the event, it ends with a methodology to estimate the damages. Consequently, although it refers to a specific region, the proposed methodology will be useful to be reproduced in other regions.

Abstract:

The abstract should be rewritten. In its present form it seems more an Introduction than an abstract. Parts of the abstract could be moved to the Introduction. After a very short introduction (one or two sentences) the abstract should be focused on the objective of the paper, cases study and methodology and results.

Section 1:

Some parts of the Introduction should be moved to the methodology: P.4 Lines 15-23, P.5 Lines 1-8.

It will be useful to have a better understanding of both events and the reason that justifies the exercise, to include some explanation about the October event that affected Cinqueterre in comparison with the November event that affected Genoa (maximum cumulated rainfall and hourly intensity, damages, relative discharge,...)

Section 2:

Please, tell the main features of the Magra basin

Section 3:

Please, indicate where the Passerella Firpo level gauge is (Bisagno creek? Magra basin?). Could you illustrate the example explained in page 13 with a figure?

Conclusions and Discussion

They constitute a good synthesis and promote a reflection for the authorities of Genoa

Specific comments

P.2, Line 10: Separate the words “approach combines”

P.3. Line 2: There are some parenthesis and “O” that should be deleted.

P.3. Line 3: To define flash floods, I think it would be better to use other references, like www.nws.noaa.gov; Gaume and Borga, 2008 or Borga et al., 2008.

- Gaume, E., Borga, M., 2008. Post-flood field investigations in upland catchments after major flash floods: proposal of a methodology and illustrations. *J. Flood Risk Manag.* 1, 175–189.

- Borga, M., Gaume, E., Creutin, J.D., Marchi, L., 2008. Surveying flash flood response: gauging the ungauged extremes. *Hydrol. Process.* 22 (18), 3883–3885.
- P.3. Line 20: Put a point between “authorities” and “Rebora”
- P.3. Line 22: Put a point between “question” and “in fact”
- P.4. Line 9: Put a point between “data” and “Buzzi”
- P.4. Line 11: Put a point between “genesis” and “in addition” and a comma after this.
- P.4. Line 19: Add “it” is downscaled
- P.4. Line 21: Put a point between “experiment” and “in fact”
- P.4. Line 22: “allows accounting”
- P.5. Line 2: “...large scale”
- P.5. Line 21: Genova is also in Liguria. Then, it is better to write only (Liguria, Italy) after “Genova”.
- P.7. Line 20: Substitute “here” by “where”
- P.8. Lines 13-18: DV? RS? AF?
- P.8. Line 3. Please indicate for which hourly interval this precipitation was recorded. Which was the duration of the total event? When the precipitation event is moved to the Genoa catchment, is the time distribution the same?
- P.8. Line 11 and P.9. Lines 6-10. If the RainFARM product is a downscaling product, why is necessary to aggregate the radar data and disaggregate it posteriorly?
- P.9. Line 1: RVs?
- P.9. Line 9: “Continuum”
- P.10. Line 7: “hazards. It allows easily updating”
- P.10. Line 18: EO?
- P.12. Line 7: “2005; Freire, 2010)”
- P.12. Line 10: Delete the initial letters of the authors’ name.
- P.13. Line 3: Please, include a reference for the HAZUS-MH database.
- P.14. Line 16: Please, use the super index format for the square meters.
- P.15. Line 5: Please, delete the initials ML.
- P.15. Lines 8-10: It seems that the verb lacks
- P.15. Line 15: Delete the word “where” in the parenthesis.
- P.15. Line 20: Replace $0 < h < 0.2$ by $h < 0.2$; replace $h \geq 0.2$ m and $h < 0.5$ m by $0.5 > h \geq 0.2$ m. Is there any reference for these thresholds? Please, define h (I suppose it is the water level in the inundated street)
- P.16. Line 1: Replace $h > 0$ m and $h < 0.2$ m by $h < 0.2$ m; Replace $h > 0.2$ m 1 and $h < 0.5$ m by $0.2 < h < 0.5$ m.
- P.16. Line 20: Replace yrs. by y.
- P.16. Line 22-P.17. Lines 1-3: Please, indicate in which gauge stations and regions the different peak flows were recorded. The 7th October event is not necessary “well-known for the reader. Please add a parenthesis with some information about it that justifies its importance.
- P.17. Line 8: “ as they are reported...”
- P.17. Line 21: Telemac-2D is a part of the Telemac-Mascaret?
- P.17. Line 22: Replace Telecam by Telemac
- P.17. Line 22: Replace the comma before “in” by a dot.
- P.18. Line 6: Replace the comma before “for” by a dot.
- P.18. Line 10: Replace the comma before “some” by a dot
- P.19. Lines 9-24: The paragraph is indented.
- P.19. Lines 16-18: The meaning of the sentence “some information...estimation” is not clear. Please, rewrite it.
- P.20. Line 11: Substitute Mln € by M€ I suppose that these quantities refer to the simulated event, but, please, remind it to the reader. Do the same change in p. 23.
- P.21. Line 6: I suppose that the extension of the inundated area does not change due to the orography, but it will be better to add a comment to justify it.
- P.22. Line 7: It will be better to say “the hypothetical rainfall event...” or something similar.
- P.22. Line 21: UTC in capital letters
- P.22. Line 22: Replace persons by people.

P.24. Lines 9-10. Remove this reference to the cartogis, or cite it correctly.

References

P.25. Line 13. It is Diezma not Diesma.

I would suggest you to include the papers from Fiori et al 2014 (Atmospheric Research) and Hally et al 2015 (NHESS) in the references

Figure 1: Please, show where the city of Genova is and the position of the radar.