

Interactive comment on “Evaluation of coastal vulnerability to flooding: comparison of two different methodologies adopted by the Emilia-Romagna Region (Italy)” by L. Perini et al.

Anonymous Referee #4

Received and published: 3 September 2015

In my view this paper is very interesting. It presents a comparison of two methodologies adopted by the Emilia-Romagna Region, northern Italy, to evaluate coastal vulnerability and to produce hazard and risk maps for coastal floods, in the framework of the EU Floods Directive. The Emilia-Romagna Region is one of most developed coastal areas in the Mediterranean. The results of the methodologies employed were qualitatively contrasted against an in-depth knowledge of the coastal territory which has been developed by the leading end-user (SGSS) in the region.

General comments

C1608

1. Although English is not my mother tongue, I found several inconsistencies in the use of English. I strongly suggest a revision of the English by a native speaker.
2. I suggest improving the quality of the figures. Sometimes the texts/colours are difficult to read (figures 4 and 5)
3. From my point of view the abstract is not the place to mention the particular use of software. Instead of mentioning the tool “Cost-Distance of ARGIS” it would be better to describe what was done with this tool.

Particular comments

In order for the paper to be accepted, the author is encouraged to take into account the following comments:

1. In the Introduction section it would be convenient to include a general comparison with previous works, together with a discussion of the limitations and applicability of the methodologies presented in this paper. It can be used as the base for the discussion of the work presented by Escudero et al. (2012).
2. As the journal has a broad readership many of whom are not experts in ARGIS, more details of the calculation procedures done with the module “Cost-Distance” should be included in the explanations
3. The authors make a review of flood hydrodynamic models, which do not contribute to work, given that they did not use any of them. These parts of the paper can be summarized.
4. It is not clear in the paper how the authors transferred to the flooding maps the zone identified by experts. Surely there are flood water marks recorded in some buildings.
5. The authors employed the formulations presented by Holaman (1986) and improved by Komar (1998) in order to evaluate the runup. In my experience the formulation presented by Stockdom et al. (2006) is more reliable, any reason for choosing the

C1609

former?

6. An explanation or reference is needed on how the wave period was chosen.

7. A comparison between the calculated and measured flooding of the March 2010 storm should be presented. In fact satellite photos can be used.

8. The effect of sea level rise is not considered in the analysis, why?

References

Escudero, M., Mendoza, E., Silva, R., Posada, G., & Arganis, M. (2012). Characterization of risks in coastal zones: a review. *CLEAN–Soil, Air, Water*, 40(9), 894-905.

Stockdon, H. F., Holman, R. A., Howd, P. A., Jr., S., & H., A. 2006. Empirical parameterization of setup, swash, and runup. *Coastal Engineering*(53), 573-588.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 3, 4315, 2015.