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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "How historical information can improve extreme coastal water levels probability prediction: application to the Xynthia event at La Rochelle (France)" *by* T. Bulteau et al.

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We thank E.Bradshaw for her review that led to improving our paper.

Specific comments:

1. P7071 L9 states that "The highest recorded sea-level at high water is 8.01 m Z. H" but is this the actual highest recorded water level (which may have occurred before or after high water) or the highest recorded water level at the time of high water?

Authors' response: The sea-level of 8.01m Z.H. recorded at La Pallice tide gauge on February 28th 2010 is both the actual highest recorded water level and the highest recorded water level at the time of high water. The surge peak indeed occurred at high tide (at 3 am UTC). Although without influence on the results, the manuscript will be modified as follows to clarify this point: "The highest recorded sea-level is 8.01 m Z.H. and it occurred during Xynthia at high water on February 28th 2010."

2. P7072 L27 "we can assume that the relative sea-level rise in the La Rochelle area is equal to the absolute global sea-level rise" – this may be valid in this location, but I think it would be advisable to say something about using regional estimations of sea level rise in other locations.

Authors' response: We agree with the referee and confirm that the assumption is valid at La Rochelle but maybe not elsewhere. A precision will be added in the manuscript: "(. . .) we can assume that the relative sea-level rise in the La Rochelle area is equal to the absolute global sea-level rise. In other locations where this cannot be assumed, regional estimations of sea-level rise should be used instead."

Technical corrections:

1. P7062 L24 "are required for dimensioning coastal defences or within flooding hazard estimations" – It is unclear what is meant by "within flooding hazard estimations". Is it that the knowledge of extreme WL is required within flooding hazard estimations?

Authors' response: Yes, what we meant was that the knowledge of extreme WL is required within flooding hazard estimations, especially in the design of scenarios for further modelling of inundation. We will modify the manuscript as follows: "(. . .) are required for dimensioning coastal defences or for designing WL scenarios useful in flooding hazard estimations."

2. P7063 L27 "the hourly WL" to "the maximum hourly WL"

Authors' response: OK, the manuscript will be modified accordingly.

3. P7072 L20 “old harbour dock is identified” to “old harbour dock are identified”

Authors’ response: OK, the manuscript will be modified accordingly.

4. P7072 L28 “valid on the long range” to “valid over the long term”

Authors’ response: OK, the manuscript will be modified accordingly.

5. P7075 L17 “Thus, end of 2009” to “Thus, at the end of 2009”

Authors’ response: OK, the manuscript will be modified accordingly.

6. P7077 L10 “Kolmogorov–Smirnov” – unsure as to what this refers. There is no reference.

Authors’ response: There is actually a reference. We will modify the manuscript as follows to clarify this point: “(. . .) and Kolmogorov-Smirnov, see e.g. Shorack and Wellner, 2009).”

7. P7078 L9 “before the systematic gaug-ing area” possibly “before the systematic gauging began in the area”

Authors’ response: The spelling of “area” was wrong. We initially meant “era”. We will modify the manuscript accordingly.

8. P7078 L19 “for raising awareness of decision makers” to “for raising awareness among decision makers”

Authors’ response: OK, the manuscript will be modified accordingly.

9. P7081 L13. The reference states the year of publication is 2012 but in the main text it is referred to as Church and White, 2011.

Authors’ response: The correct year of publication is 2011. We will modify the bibliography accordingly.

10. P7086 Figure 1. Perhaps the image could be labelled to indicate which site is La

Pallice harbour.

Authors’ response: OK, Figure 1 will be modified accordingly.

11. P7087 Figure 2. The blue extreme event in 2010 is quite faint on the figure. Perhaps some notation on the figure could indicate that this is the Xynthia event?

Authors’ response: OK, Figure 2 will be modified accordingly.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 2, 7061, 2014.