Nat. Hazards Earth Syst. Sci. Discuss., 2, C2947–C2949, 2015
www.nat-hazards-earth-syst-sci-discuss.net/2/C2947/2015/

Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Long-term variability of storm surge frequency in the Venice Lagoon: an update thanks to eighteenth century sea level observations" *by* F. Raicich

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Received and published: 3 January 2015

This is a nice piece of work showing the importance of data rescue when trying to get insight into natural hazards occurring in the past.

The author presents sea level observations at Venice an Chioggia dating back to the period 1751-1792 and assess their quality. Despite limitations linked to the absence of vertical references, the observations have enough quality to be compared with modern data and enable detecting some differences in terms of frequency and intensity of storm surge events.

The paper reads well, it is easy to follow and well structured. The description of the data set corresponding to the XVIII century is very detailed. The author, while acknowledging the logical limitations of the data set, manages to take advantage of it in a clever way. The methods used to analyse the data seem appropriate. I do have some remarks/questions, though.

7467 and 7468. All this historical part is very attractive. I think it would be worth including a picture showing the manuscripts (if there is a limited number of Figures I think that the paper can perfectly done without Figure 5). How was the digitization done? Did the author do it himself? This is a very time consuming task, I think it deserves a more detailed description.

Figure 2. Why does the author choose those two periods in particular? Why is he only showing data for Chioggia? How could we get a glimpse on how the elimination of erroneous data is done in Venice?

7471, 20-30. Discussion on the inverse barometer effect: From the data presented I cannot really say whether the data proves that the sea level data have good or bad quality. In principle, I would expect similar correlation coefficients and similar inverse barometer regression coefficients. But I do not know whether they are comparable or not. This could be sorted out if the author included a confidence interval for the regression coefficients. Otherwise, in my opinion all this discussion does not add anything really relevant to the paper.

7472, 11. I would start a new paragraph with "It is possible to compare old and modern daily sea level ranges". It is independent from the previous discussion on the inverse barometer effect.

7473, 14. You mean "19th-20th century observations" instead of "20th century observations" (you mention the 1873-1882 period).

7477, 4-7. It would be nice to know if the author has some clue about where to find this

information. Is it realistic to expect that Tamanza and Vianelli took care of the vertical references?

Figure 3. I have the same concern that Dr. Woodworth. What has happened with the extreme event in 1792? Why does it not appear in the Figure?

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 2, 7465, 2014.