

Interactive comment on “Analysis of the risk associated to coastal flooding hazards: A new historical extreme storm surges dataset for Dunkirk, France” by Yasser Hamdi et al.

Anonymous Referee #2

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General Comments

The manuscript nhess-2017-417 presents the reconstruction of the storm surge level in Dunkirk, utilizing data from different sources and dating back to the 16th century. It is a remarkable effort towards reconstructing the storm surge climate in Dunkirk and the detailed literature review provided is of invaluable significance.

The current form of the manuscript requires major revision since the syntax of the language is often problematic. The incoherent structure throughout the text and especially the description of the results, along with the poor quality of the presented results, makes it difficult for the reader to follow. The publication has the potential to be use-

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ful for future studies related with the impact of coastal floods, as soon as a proper justification of some technical approaches is provided.

Specific Comments

As stated above, the description of the data needs to be improved – see also some recommendations at the next section. In section 4.3 the historical surge dataset is presented, but it is not clear whether the hydrodynamic component under study is the storm surge level or the total water level (including the contribution of other hydrodynamic components). Additionally, it is not clear how the storm surge level is estimated when only the meteorological conditions are available from the historical records.

While it is a fair assumption that during a storm event, the water level along neighbouring areas may exhibit a similar level, the local bathymetric features and the man-made structures may alter the local water level. Therefore these data should be considered only as qualitatively accurate and not quantitatively. Should these data be used, a comparison with numerical simulations would decrease the level of uncertainty.

Technical Corrections

The MS should be proofread by a native English speaker for errors in syntax, grammar, spelling and vocabulary.

Informal expressions and language (e.g. “an important surge”, “horrible storm”) are used for the context of a scientific journal, while the terminology is not the most appropriate (e.g. “marine flooding”, “marine submersion”).

The manuscript lacks structure and is very difficult for the reader to follow, as the presentation of the data takes place together with the analysis. It is recommended first to describe the data that will be analyzed; this section should be followed by a short description of the methods and finally a section that presents the results after incorporating all the three types of available data.

Although the POTH method has been described in previous publications, it is recom-

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mended to provide a short summary at the Methods section. This would give a better overview to the reader, regarding the analysis of the data and would enhance the clarity of the paper.

There is an abundance of information (the damage and the fatalities triggered by the storm, the weather description, etc) scattered around the essay that is loosely connected to the main argument. It would be helpful to move this to a supplementary material section; this would tidy up the main points and would make the argument read in a clearer way. For the same reason, measurements obtained from other sites may be omitted too from the main body of the manuscript, since they are not considered at the analysis (e.g. the section from line 206 to 213).

Please provide a map displaying all the places mentioned at the MS.

Section 2 lacks structure, coherence and paragraph unity. The main title of the section as well as the ones of the following paragraphs are misleading and do not correspond to the topic of the paragraphs. Additionally, section 2.2.1 should be renumbered to 2.1.1 as it refers to the tide gauge record and not to the short-term HI.

The quality of the figures, the tables and their captions is poor and should be improved. Fig.6 does not provide any extra information to the reader.

Consider merging Tables 1, 2, 4 preferably presenting only the information related with the storm surge level and the data included in the analysis. All the information with respect to the sources, meteorological conditions etc should be provided in a tabular form at the supplementary material for future reference and for reproducing the analysis of this study.

Minor corrections

Use one type of decimal notation. Sometimes Dunkerque is used instead of Dunkirk. Many missing punctuation marks along the MS (e.g. line 208, 264 and elsewhere).

Line by line review

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Line 17: Abbreviation for HI

Line 21: ... was recovered

Line 74: add "sustain" after "is designed to"

Line 114 and elsewhere: better to use "collect" instead of "gather"

Line 131: provide references for the source of uncertainty

Lines 135-136: probabilistic engineers does not seem correct

Line 140: from tide gauge

Line 146: measurements

Line 150: replace "respecting" with "with respect to"

Line 158 to 160: consider revising the sentences "They may be ... themselves non-independent events"

Line 168: as an extreme event

Line 187: a synoptic reconstruction

Line 200: what is the developed regional model, please provide more information

Line 202 and elsewhere: therefore

Line 210: Provide references or refer to the table

Line 228: the maximum water level

Line 236: are not informed – consider revising

Line 242: phrase "while trying to inventory" is not syntactically correct

Line 245: phrase "we are fairly trustful" is not valid

Lines 252 and 253: consider revising the phrase "Ransom that choice ... in the past"

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Line 285: please provide reference for the 1995 skew surge

Line 293: Generalized Pareto Distribution

Lines 318 to 322: consider revising the phrase "This assessment to 20-25% narrower"

Line 391: nature instead of natures

Line 397: replace "memories" with e.g. "eyewitness statements"

Line 422: remove "below"

Line 435: it is the water level during spring tide that was increased and not the spring tide

Line 477: is it "at last" or "at least"

Line 486: what do you mean by "quantified water levels" ?

Line 494: remove "du"

Line 497: to "a" fixed point

Line 545: capitalize "table"

Line 598: "does not" instead of "don't"

Line 739 and Table 1: Walcheren island

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2017-417>, 2017.