

Title: A catalog of high-impact windstorms in Switzerland since 1859

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Recommendation: Accept after minor revision

Main Points

1. Paper is well written and covers a topic of major importance for society and for forestry.
2. The catalogue of storms will be of value to many researchers for many years and the authors are to be congratulated for the effort in compiling the data from such a complex set of sources.
3. In some places I found the discussion too cryptic and struggled to understand how the analysis had been carried out. I have expanded on these concerns below in the Specific Points and suggested where additional information could be helpful.
4. I found the use of the word “hazardous” for storms in contrast to “moderate” confusing. Do you define “hazardous” as storms that are either “severe” or “extreme”?
5. There was very little discussion of the fact that most of the source data is “secondary” and not “primary” data. You are basing your catalogue on data derived by other people from different sources such as reports from local officials (who may have actually measured or estimated the amount of damage). Therefore, there is potential for errors to enter the system that cannot ever be checked because the primary data don’t exist. It is inevitable but I think this should be acknowledged. In the end your methodology provides a robust way to deal with the problems caused by such data sources.
6. It is not clear to me what the value of the Decadal-scale Variability (Section 5.4) is to the paper. It appears to be an add-on at the end of the paper and the statistical analysis is not fully presented. I would recommend leaving this section out completely or adding more detail on the analysis undertaken.

Specific Points

1. Page 3822, line 1: What do you mean by “unanticipated”? Unanticipated by whom?
2. Page 3824, line 29: I think you need the Compo et al. (2011) reference here for the global 20CR dataset. We don't get the reference until later.
3. Page 3826, line 16: What do you mean by “total losses”? Total financial loss?
4. Page 3827, line 7: What do you mean by “movables”?
5. Page 3827, line 14: What do you mean by “tempest storms” and how are they different from winter storms. Tempest just means storm. Do you mean “thunderstorms”?
6. Page 3828, line 2: I would prefer this sentence to read “These three sources are used for validation of the previous data discussed in Sections 2.1.1 to 2.1.4.”
7. Page 3828, line 8: Suggest you change “larger damages” to “major damage”.
8. Page 3830, line 17: What do you mean by “field field-means”?
9. Page 3831, line 24: How is duration implicitly included? You could have an intense and short-lived (1 hour) or an intense and long-lived storm (several hours). Please explain better what you mean here.
10. Page 3833, Section 3.2.1, last paragraph: I do not think there is enough information provided to understand how normalization was carried out. More detail please.
11. Page 3835, line 5: Got a little confused here. Does “<-35%” mean a reduction of with a magnitude of more than 35%?
12. Page 3835, line 16: What is “*Klafter*”?
13. Page 3835, lines 18-20: More detailed required on conversion from number of trees to volume. This is too cryptic.
14. Page 3835, line 23-25: After the initial damage there can be additional damage due to bark-beetle attacks, which is why the estimates can be different if they just discuss damaged timber. This possibility is not mentioned.
15. Page 3837, line 1: Suggest you remove “exemplarily”.
16. Page 3837, line 2: What do you mean by the statement “this assures identical distribution”. I cannot understand how you can make this statement.

17. Page 3837, line 5: Suggest you replace “exceeding” with “exceedance”.
18. Page 3837, Section 3.2.7: Are the return periods for the whole of Switzerland?
19. Page 3837, line 23: What is meant by “reflect the societal notion”? Where do you obtain the idea that six *extreme* windstorms reflect the societal notion of memorable storms?
20. Page 3838, line 7-8: How do you deal with the boundaries between classifications? Not every severe storm is one order of magnitude lower in losses than every extreme storm. Are you talking about means here?
21. Page 3839, lines 9-10: “Hence, winter storms tend to be more numerous and more destructive than summer storms as a general rule”. Don’t forget that you believe you underestimate summer storm numbers.
22. Page 3840, line 25: Suggest replacing “well” with “very”.
23. Page 3841, Section 5.1.2: Did the 11 storms you refer to in Gardiner et al. (2010) come from Appendix 1 of that publication or from the online database at <http://www.efiatlantic.efi.int/portal/databases/forestorms/>? If from the database you need to acknowledge it (might be nice anyway to reference as a resource for people). I also think it would be helpful to mark the 11 storms in the catalogue in the Appendix in a similar way to how you marked “multiple storms in 4 days”.
24. Page 3842, line 17: “This is due to topographical and meteorological particularities”. This sounds rather vague and uncertain. Are you saying that actually you don’t know why there are differences?
25. Page 3842, lines 14-21: I am not totally clear what you are trying to say here. Are you trying to say that a storm as identified in Switzerland may not provide very much information about the impact in neighbouring countries?
26. Page 3844, lines 9-11: How do you make this inference? You only had coincidence for half of the top 30 high wind days.
27. Page 3845, line 11: This is an example of the word “hazardous” that seems to only cover “severe” and “extreme” storms and not “moderate” ones. Would prefer to not use “hazardous” and spell out more clearly what type of storms you are referring to.

28. Page 3845, line 16: Why not misses of “severe” storms because you say “although the wind series feature some moderate to severe winter storms”.
29. Page 3845, line 28: Why did you not include all storms to show when CAT DAM and CAT Wind agree?
30. Page 3846, line 1: Why do you mark OBS Zurich as USB in the catalogue when everywhere else in the paper you use OBS Zurich?
31. Page 3846, line 8: Suggest replace “largest” with “most extreme”.
32. Page 3846, line 10: I think it would be better to replace “not shown” with a reference.
33. Page 3846, Section 5.4: I find this section weak. The statistical analysis is not shown and I don’t see how it fits into the rest of the paper in a sensible way. I would recommend leaving out.
34. Page 3847, lines 16-17: Suggest you remove “applied to”.
35. Page 3848, line 3: Suggest you leave out “particularly”.
36. Page 3855, Table 2: I think many of the definitions are vague and should be expanded. Here are some things I was not sure about:
 - a. What are you definitions of “local”, “regional” and “national”.
 - b. Why are “stables” particularly identified? Are they prone to wind damage? Do these indices come from some meteorological guidelines?
 - c. What is meant by “numerous places”?
 - d. Do you really mean “Entire forests”? I have never heard of entire forests being blown down. You always have some surviving stands.
 - e. What does “(eq. 2010)” mean? Equivalent to 2010?
 - f. The numbers in the last row should be between limits, e.g. a moderate storm should be between 10000 and 41000 m³.
 - g. What does the “Usbeck: 500000” refer to at the bottom right?
37. Page 3856, Figure 1a: Can you put some sort of monetary figure or volume of timber on the y-axis and a size in kms on the x-axis?
38. Page 3856, Figure 1b: Van you label y-axis here as well. And the x-axis must be years. Is the Correlation between Return Period and Categories (3 years is division between moderate and severe and 30 years division between severe and

extreme deliberate? Could the dates of the 3 extreme storms be put right against the relevant dots?

39. Page 3859, Figure 4: What does Return Level on the y-axis indicate? Are we really talking moderate (1), severe (2), and extreme (3)?
40. Page 3860, Figure 5a: What do you mean by “adjusted” damage. Adjusted to 2010? X-axis is a log scale and would be better plotted as one, i.e. 10^5 , 10^6 , 10^7 and the units given as m^3 . Bit confusing at the moment. I also presume that this is damage only for Switzerland (that is why indicating these storms in the catalogue would help). I also thought the 1962 storm was on 8 Nov 1962 but maybe I am wrong.