

Reviewer 2, 21 Jul 2026

This review is divided into three sections, namely, general comments, specific comments and technical comments.

General Comments:

This manuscript reconstructs the occurrence of strong winds in Poland during the 17th century based on historical documentary sources. As strong winds are among the most destructive natural hazards in Poland and are projected to increase in frequency and intensity under future climate change, studies on pre-modern wind events are both valuable and timely. However, compared with the previous publication (Przybylak et al., 2025), the present manuscript shows only limited novelty. Apart from extending the study period to the 17th century, the research framework, methodology, and overall content remain largely unchanged. In addition, several methodological issues require clarification. Therefore, I recommend major revision before the manuscript can be considered for publication.

Reply. Thank you for these comments and the generally positive estimate of our work. It should be noted that maintaining the same methodology and the presentation of the results are intentional, as only such an approach allows for a reliable extension of the data series on strong winds in Poland and for a valid comparison with results from earlier periods. What is innovative about the 17th century, however, is the use not only of sporadic information derived from documentary evidence but also of long-term series of daily weather observations—data that did not exist prior to the 17th century.

Specific Comments

1. Extraction and use of historical documentary sources

①The manuscript introduces several types of historical sources, including handwritten and unpublished sources, published sources, and *Diary*. As noted in the manuscript, data quality and characteristics vary significantly across document types. It remains unclear whether different research questions use distinct source subsets, or if a formal data fusion process was implemented during extraction. The data processing workflow should be described more explicitly.

Reply. Thank you for this suggestion. We added the following information to the text:

However, when a lower-quality source contained useful information on wind strength or its effects—information not found in the highest-quality, most reliable source—that information was also included, and the source was added to the list.

Lines 183–184 state that "we primarily used the last category of sources for the analysis, as it provided the most valuable and reliable information." Does this imply that only the third category of sources was used, while others were discarded? That causes considerable confusion regarding the role of the other data sources.

Reply. Thank you for this comment. Of course not; all sources were used for classifying strong winds into different categories. See the reply to the first part of your question, where we present the text which we added to the main body of the paper. We hope it will be clearer now.

②In practice, the manuscript employs different datasets for different analyses (e.g., long-term reconstruction versus case studies). A schematic research framework illustrating the relationships among data sources, research questions, and analytical methods would greatly improve the clarity of the paper.

Reply. Thank you for these comments. We largely do not share the doubts raised by the reviewer. We believe that the information in the article is presented quite clearly. Data with irregular temporal resolution from various sources have been distinguished from daily-resolution data using the colours blue and orange, respectively. We adopted this approach so that the reader could see the significant impact of daily data availability on the results regarding the frequency of strong winds. The availability of daily weather data enabled separate analyses that allow, among other things, an assessment of the extent to which the occurrence of strong winds is underestimated when relying solely on the most commonly available sources, which are characterised by irregularity. For greater clarity, according to the suggestion of the Reviewer, we added the following passage:

We used all available source data about the occurrence of strong winds to analyse results spanning the entire century, whereas daily-resolution data enabled us to conduct more detailed analyses covering 14 years in the second half of the 17th century.

1. Methodology

The classification of strong winds into five categories based on historical documentary evidence is one of the most innovative aspects of the manuscript. However, the connection between this historical classification and modern meteorological terminology requires further clarification. Line 316 state that "many of them in historical time were undetectable." The manuscript should clarify how historical terminologies are systematically connected to contemporary meteorological standards. For instance, are weather terms such as "gales," "storms," and "squalls" (as shown in Figures 15 and 16) classified using the same criteria in both historical contexts and modern observations?

Reply. Thank you for these comments. In the "Methods" section, we precisely outlined the process used to classify strong wind events into the "gale" or "storm" categories for both the historical (lines 262-263) and contemporary (lines 308-309) periods; the Beaufort scale serves as the common link in both instances. In Poland—and Central Europe more broadly—winds classified as Beaufort force 8 or 9 (gales) cause relatively minor damage to tree stands, orchards, and buildings, whereas winds at Beaufort force 10–12 (storms) result in significantly greater damage. The wind speeds corresponding to specific Beaufort scale categories have long been established. These speed values were applied to the contemporary data, for which precise wind speed measurements are available. Regarding the historical data, a description of strong wind unaccompanied by damage was classified as the lowest category of strong wind; minor damage (as described above) was attributed to gales, while major or catastrophic damage was attributed to storms. Squalls, on the other hand, were easily identified in both the historical and present

periods when information about strong winds was associated with thunderstorms, downpours, lightning, or hail.

For more explanation, see also our reply to Reviewer 1, which includes comments quite similar to yours. As we mentioned there, we added for clarity the following sentence to the text:

More details on the classification of strong winds in the historical period and their consequences are available in the database headers:

<https://repod.icm.edu.pl/dataset.xhtml?persistentId=doi:10.18150/ESPWII>.

1. Discussion and Conclusions

The Discussion section covers a wide range of points but lacks sufficient depth and focus. Key aspects—such as the broader climatic context, the underlying causes of regional disparities, and validation from neighboring countries—require stronger supporting evidence and more rigorous comparative analysis.

Reply. Thank you for these suggestions. They are excellent, and we would certainly conduct analyses of this kind if data from the 17th century were available for other countries. Unfortunately, there are no analyses as comprehensive and multifaceted as the one we present—with the exception of the Czech lands—, yet comparisons remain difficult due to varying source availability and the fact that the two countries differ significantly in geography and terrain relief, despite being neighbours. In our paper, we mentioned these difficulties clearly in lines 595-598:

“As already noted by Przybylak et al. (2025), knowledge of strong winds in Europe in the pre-instrumental period is very limited, particularly regarding works that comprehensively analyse this issue. For this reason, it is not easy to reliably compare the results presented here with those from other parts of Europe.”

The lack of such data for the historical period in many parts of Europe likely stems from the fact that constructing a database similar to ours requires immense effort and patience, including close collaboration with historians. For a variety of reasons, air temperature and precipitation are the elements most frequently reconstructed, and consequently, the databases covering them are more extensive. In conclusion, in our assessment, we compared our results, taking into account the availability of reconstructed information on the occurrence of strong winds and their impacts.

Technical comments

① Given the strong conceptual and methodological overlap with Przybylak et al. (2025), both the Introduction and Discussion sections must explicitly highlight the unique scientific value and necessity of focusing specifically on the 17th century.

Reply. Thank you for this comment. But according to us, we underlined this reason, among others, in lines 60-69. In addition, we must underline that our studies and the accompanying databases are highly detailed and comprehensive. It would hardly be reasonable to cover multiple centuries—especially given the ever-increasing volume of data—within a single

article; such an analysis would inevitably be superficial rather than in-depth. It would certainly have to take on a completely different character.

②It is unclear whether *Diary* are included in the handwritten and unpublished sources, or whether they constitute an independent source category.

Reply. Thank you for this comment. These are published sources, and details are provided in the database; for clarity, we also added the reference to the main body of the paper.

③It is unclear how the numbers of strong-wind events reported in Table 3 were calculated.

Reply. Thank you for this comment. Please read the explanation placed under Table 3. There is a method given for summing cases across months, seasons, and years. Simple summing of cases is not allowed because, in some cases, we have only information about the season (for example, that strong wind occurred in autumn), but we do not know which month. It means that such a case was added to autumn, but not to any month belonging to autumn.

④The relationship between the database and the *Diary* is not sufficiently clear. Does the database include diary records, or are these two independent datasets? The manuscript should clarify the composition of the database.

Reply. Thank you for this comment. It is obvious that all the data is in the database; this is also easy to verify. If that were not the case, we would certainly have pointed it out to the reader.

⑤The Abstract should be revised to better highlight the novelty of the study and summarize its major findings.

Reply. Thank you for these suggestions. In lines 25-36 of the abstract, we summarise the major findings. On the other hand, the novelty of the study has been emphasised somewhat more strongly. We rephrase the existing sentence as follows: *For the first time, this study utilises continuous daily weather records spanning 14 years*, which we have placed in a different part of the abstract.

⑥The manuscript contains two methodological sections ("Area, Data and Methods" and "Method"). Although these sections serve different purposes, organizing the methodology into two separate sections is uncommon in journal articles.

Reply. This remark of the Reviewer is inconsistent with the facts.

Line 102 - 2. Area, data and methods

Line 104 - 2.1. Area

Line 129 - 2.2. Sources and data

Line 253 – 2.3. Methods

As it is seen in line 102, there is the name of the section, and in the following three lines (104, 129, and 253), the names of the three sub-sections. Such division in scientific papers is rather common. and acceptable.

Dear Reviewer,

Thank you very much for all your constructive comments and suggestions, which definitely helped us to improve our article.