

**Anonymous Referee #1,
04 Jul 2026**

This is a carefully written and detailed analysis of wind frequency and strength in 17th century Poland, and area and time for which few studies and limited data exist. The authors are experts in the field, having worked through several centuries of data recovery and analysis and, having presented work in this area before. The reasons as to why only wind data has been analysed are sound. I have no particular comments on the analysis and methods itself.

Reply. Thank you very much for your good opinion of our work.

My two main points are broader.

1. I have some concerns about this study being presented as one for the 17th century, when only 35 years of data are used and, those with gaps. As the authors rightly note, the 17th century is climatically unusual thus, making any claims for the 17th century as a whole based on data post 1656 is problematic. The second half of the 17th century was the peak of the Maunder Minimum, a unique and extreme phenomenon which presents its own special circumstances and not necessarily reflective of the earlier 1600s conditions. Perhaps this is an issue of ()blue bars), rather than the study itself. i.e. could the authors consider 'later 17th century' or, 'during the 17th century', rather than stating that their conclusions are 'for the 17th century'?

Reply. We believe there has been a misunderstanding in this part of the review. Our study undoubtedly utilises all available data—referred to as "documentary evidence"—pertaining to the 17th century, as illustrated in Fig. 2 (blue bars). However, the reviewer was likely influenced by the greater number of sources and their nature (specifically, their daily resolution) available for the second half of the century compared to the first (see Fig. 2, orange bars). As the reviewer mentioned, we used daily-resolution source data covering a 36-year period. However, for the comparative analysis with present wind conditions, we utilized only those years with complete annual coverage (data for 6 years from Gdańsk—1672–74 and 1691–93—and for 8 years from northeastern Poland: 1656–1663). The even distribution of 17th-century source data on the occurrence of strong winds—comparable in volume to the data for the 16th century and the second half of the 15th century (Przybylak et al. 2025)—enables characterisation of this meteorological element across the entire 17th century. Therefore, we believe that we have made no error in this regard. We hope that this explanation will be accepted by the reviewer.

2. Comparison with a modern dataset of only 15-years – a difference between a climatically colder era and a modern Anthropogenic warmer era in order to characterise the winds. I would need more justification for this and a clearer understanding of how winds classifications for the 17th century were derived, given the lack of modern recording conventions. This is mentioned but I still need convincing.

Reply. Thank you for this comment. We certainly agree with the reviewer's opinion that a comparative analysis of the occurrence of strong winds in historical and contemporary periods is neither easy nor straightforward. One reason for this is undoubtedly the vastly greater capacity to identify such winds today compared to the past. Therefore, to mitigate this error, we utilized documentary evidence with daily resolution in this article, achieving significantly better results. Regarding the daily data, we also compare wind conditions across 14 years (the historical period) and 15 years (the contemporary period)—a comparison that is fully reliable. It must also be noted—as the reviewer is surely aware—that wind data, even for the contemporary period, are not entirely reliable across the majority of available instrumental time series. Therefore, for the purposes of this article, we selected a 15-year period; the data for Poland from this timeframe are the most reliable, accurate, and homogeneous qualities essential to climatological studies.

The methodology used to classify strong winds for the historical period—and to assess their impact on the natural and anthropogenic environments—is explained in detail in the database accompanying this article and, to a limited extent, in our previous article (Przybylak et al. 2025), which is cited in the manuscript. For ease of reference, the rules for conducting the classification are provided below (after Database, <https://repod.icm.edu.pl/dataset.xhtml?persistentId=doi:10.18150/ESPWII>):

Type of strong wind

(consistent with T3-T5 and T1 in Brázdil et al. 2004, Table 6.1):

- 1 Fresh and strong breeze (5-7 Beaufort scale) - Small trees in leaf begin to sway, Larger tree branches moving, whistling in wires
- 2 Gale (8-9 BS) - Whole trees moving, resistance felt walking against wind, twigs breaking off trees, generally impedes progress, slight structural damage occurs, slate blows off roofs (E1 in Brázdil et al. 2004, Table 6.2),
- 3 Storm (BS 10 and more) - seldom experienced on land, trees broken or uprooted, "considerable structural damage" (E2, as above)
4. Squall (i.e. gusty wind during a thunderstorm)
5. Tornadoes

Extent of damage

(after Brázdil et al. 2004, Table 6.2, modified):

E0 - damage not mentioned, E1 - damage of lesser extent, damaged roofs, broken branches, E2 - areally extensive damage, destroyed houses, wind damage in forests, vessels destroyed or sunk, damage/destruction by storm floods

Character of damage

(after Brázdil et al. 2004, Table 6.3 (modified):

DO - casualties (lost lives), DL - wind damage in forests DP - small damage on buildings, DB - considerable damaged or destroyed buildings, DS - uprooted fruit trees, damage on hop-gardens and vineyards, DU - damage on field crops, garden and orchard harvest, DV -

considerable damage/destruction of vessels (including sunk) DJ - other damage (e.g. upturned carriages, vessels, injured persons, small damage on property), DF - considerable damage/destruction by storm flood or inland flood; N/A - information not available

" **Intensity category of tornadoes:**

1 - weak (F0-F1, 64-180 km/h), light and moderate damage: F0: Some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; sign boards damaged; F1: Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads.) ,

2 - strong (F2, 181–253 km/h), considerable damage: Roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; light-object missiles generated; cars lifted off the ground,

3 - severe (F3 and higher, from 254 km/h), severe damage: Roofs and some walls torn off well-constructed houses; trains overturned; most trees in the forest uprooted; heavy cars lifted off the ground and thrown."

For clarity, we added the following sentence to the main body of the text at the end of section 2.3.1.:

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>.

Cited literature:

Brázdil, R., Dobrovolný, P., Štekl, J., Kotyza, O., Valášek, H., Jež, J.: History of weather and climate in the Czech Lands VI: Strong winds, Masaryk University, Brno, 2004.

Przybylak, R., Arażny, A., Filipiak, J., Oliński, P., Wszyński, P., Szwała, A.: Strong wind occurrence in Poland from the 13th to 16th centuries based on documentary evidence, *Clim. Past*, 21, 1501–1519, <https://doi.org/10.5194/cp-21-1501-2025>, 2025.

One final pedantic point, page 1, lines 41-2 note that strong winds are among the most significant natural disasters. This seems a particularly European perspective. Are tropical cyclones/typhoons included in this? If not, where is the point of differentiation?

Reply. Thank you for this comment. We rephrased this sentence to:

Available global statistics indicate that storms with strong winds are among the most damaging natural hazards worldwide, causing substantial economic losses and numerous human fatalities (WMO, 2021).

Are tropical cyclones/typhoons included in this? **Yes.**

Dear Reviewer,

Thank you very much for your useful suggestions and comments, which have significantly improved the quality of our paper.