

## **Response to Reviewer #2**

We sincerely appreciate the time and effort you devoted to reviewing our work. Your insightful comments and constructive suggestions have been invaluable in enhancing the quality of our study. We have incorporated the comments and recommended suggestions. Please refer to the section below, marked in blue, for a detailed response to the reviewers' comments and concerns, with page numbers corresponding to the revised manuscript.

### **General Comment:**

Overall: I'm always pleased to see additional information on tornadoes around the world. In the last 30 years, awareness has grown as to how widespread their occurrence is.

**Reply:** We thank to reviewer for reviewing and providing comments and suggestions. We provide point-by-point responses below.

### **Specific Comments**

1. In the list of recently developed tornado databases, there is an additional one that should be included covering much of the former Soviet Union. Chernokulsky et al. (2020). Chernokulsky, A., and Coauthors, 2020: Tornadoes in Northern Eurasia: From the Middle Age to the Information Era. Mon. Wea. Rev., 148, 3081–3110, <https://doi.org/10.1175/MWR-D-19-0251.1>

#### **Reply:**

Thank you for the reference. We added in Line 19.

2. The inclusion of some metadata about the quality of the report is critical. It dates back to the origin of the European Severe Weather Database. Any additional information, particularly about the quality of witnesses, would be helpful. The difference between the opinions of, say, the study's authors upon seeing a tornado live compared to a child would be useful to know about.

#### **Reply:**

We changed the sentence:

“An eyewitness who reported observing rotating winds and/or a column of air was included in the 'probable' category, while an eyewitness who reported hearing thunder and observing hail was placed in the 'possible' category.”

Into

*“An eyewitness testimony that reported observing rotating winds and/or a column of air directly was included in the 'probable' category, while an eyewitness testimony that reported hearing thunder and observing hail directly was placed in the 'possible' category.”*

The terms *testimony* and *directly* indicate that the eyewitness personally experienced the tornado event. In most reports, the eyewitness was an individual directly affected by the tornado, such as a resident of the impacted area during the event.

3. The discussion that changes in frequency are likely due to non-meteorological factors is useful to include. Given the apparent relatively rare occurrence of tornadoes in Indonesia, it is unlikely that the attribution to meteorological changes will ever occur. Even in the United States, with more than 1000 tornadoes per year, it is difficult to pull out the non-meteorological effects.

**Reply:**

We acknowledge that changes in frequency of tornado are likely due to non-meteorological factors. Thus, we added the limitation of this study in the discussion.

We add the subsection 4.1 Limitation in section 4 Discussion.

4. I don't see much of a need to develop a new damage scale. The sample size superimposed on the relatively rare nature of the events makes it hard to have much confidence in meaningful information. If it is possible to find relatively similar construction practices in other countries, it might be possible to get a significant sample, but I doubt it. Even in the United States, there are serious problems with ratings of tornadoes, e.g., Lyza et al. (2025) Lyza, A. W., H. E. Brooks, and M. J. Krocak, 2025: Where Have the EF5s Gone? A Closer Look at the “Drought” of the Most Violent Tornadoes in the United States. Bull. Amer. Meteor. Soc., <https://doi.org/10.1175/BAMS-D-24-0066.1>, in press.

**Reply:**

We acknowledge the challenges of developing a new damage scale in Indonesia due to the rarity of tornadoes and the small sample size. Even in the United States, rating uncertainties persist (e.g., Lyza et al., 2025). However, an Indonesia-specific scale is crucial because local construction practices, building materials, and structural vulnerabilities differ from those in countries where existing scales were developed. Despite the limited data available, a tailored scale would enhance rating accuracy, support disaster preparedness, and establish a consistent framework for future climatological and comparative studies. Therefore we include in the discussion of this study for giving future suggestions for Indonesian government.