A minor revision is still needed.

Thank you for the interesting, improved manuscript about **Storm damage beyond wind speed – Impacts of wind characteristics and other meteorological factors on tree fall along railway lines.**

It is valuable to do case studies and develop methodologies. We need these very much. It is important to develop new models that can be tested in other countries and other cases.

I do, however, have some concerns that I wish to share next (regarding the track changes version):

The paper is interesting as such. **It has 45 research papers cited** from the field of **forestry/biology/ecology. It has 16 papers from the field of meteorology and some of them are climatological** as well. There are statistical references, data references and some engineering references. Considering the meteorological world, I find the references not to be in balance with the weather and climate impact research already conducted. Thus, I aim to highlight what I believe is still important to improve:

Minor revisions:

The lines 324-325 could be clarified, it would help some readers.

- What does it mean that the study investigates **long-term** and large-scale storm damage modelling? Especially what is long-term in this context?

I find the discussion part still not ready.

Lines 350-352 state that there is not much research on various meteorological parameters on forest damage. The statement is biased and that could be because the citations are mainly from the field of forestry, ecology and biology. A more careful wording would help the reader to understand where the gaps are.

Please:

- indicate the gaps within forest research concerning impact assessments of meteorological conditions,
- give a bit more credit to the meteorological community for their work related to impacts on forests.

Within the climate impact and weather impact research community, it is trivial to combine several parameters and look for the reasons for the impacts of extreme phenomena, they do in with the past climate and then assess the future.

In the discussion section, you could aim to clarify and focus the discussion on the most important topics and also still add some relevant literature. Here are some examples that you could also cite:

- Line 419. Venäläinen et al. 2020 discusses the compound risks, wind and snow loading. Drought among other things is also essential. **Climate change induces multiple risks to boreal forests and forestry in Finland: A literature review** https://onlinelibrary.wiley.com/doi/full/10.1111/gcb.15183
- Lines 428-429. Lehtonen et al. 2019 **Projected decrease in wintertime bearing capacity on different forest and soil types in Finland under a warming climate** https://hess.copernicus.org/articles/23/1611/2019/
- Lines 335-339: a reference to the paper Valta et. al. 2019 https://doi.org/10.5194/asr-16-31-2019. Valta et al. 2019 presented a method to assess tree fall risk with forest damage/tree loss data, wind

direction data and wind strength. It also discussed the soil issues. It discussed how important it is to communicate the risk in an understandable way.

- The review report on storms and storm impacts in the past and future may also help you Gregow et al. 2020 https://helda.helsinki.fi/server/api/core/bitstreams/57cd106d-d6d9-495c-973a-af4e6f3ce222/content

In the discussion section, it would be better to write if there are research gaps within the field of forest management and forestry, and what specifically this paper aims to solve:

- It is true that within the disciplines there is a lack of cross-disciplinary understanding, applicability of datasets, development of impact models and indicators that are replicable and exploitable in a wider region. That would be worth discussing. Why do we need national investigations? Why are they not always applicable to other regions but still are worth conducting?

The paper could point out how rather sophisticated research has been done within the meteorological community and what was already done for the rail infrastructure. E.g., there is a lot of research on investigations into storm tracks, dynamical impact modelling with weather models with storm cases, within the field of attribution research regarding impact of climate change on storms and their impact on society.

Maybe also this classification paper would worth to know EGUsphere - Classification of North Atlantic and European extratropical cyclones using multiple measures of intensity (copernicus.org).

Maybe you could highlight the following in some sophisticated way: **is it so that the meteorological research conducted is not easy to employ within the discipline of biology, ecology and forestry due to the difference in scale, operational data flow, measurements?** And, that there is not enough impact data available to improve the impact models and you need to consider carefully how to combine the relevant parameters and this is what you aimed to do now to have consistency with the rail risks and future studies?

Also, **one issue is that researchers may not have open access journals to read in all disciplines**, thus we keep on working in silos. For instance, here the aim is to specifically help the traffic sector, and the tailoring of the research is conducted based on that request but still you need to understand ecology, forest and forest management, geography and soils, rail management, seasons, climate and meteorological datasets and then it is already complex.

Please discuss more about the needed elements:

- Especially lines 345-354 read, as if there was not much research done within that field yet. In Germany there is a start with development of tools too and there is a will to develop safety. Lines 357-364 explain the status, and how this research conducted now brings new results to the field. You could emphasize this a bit more.
- Maybe you could skip lines 374-376 and concentrate what it is that you specifically found as new and applicable in Germany.
- Lines 399-401 should be merged to be part of some other chapter and not separate as they are now.
- Lines 547-549 are not finalized yet, please do cross-check.

Good progress:

- Additions on lines 515-519 and 595-598 are very good.