

Thank you for the chance to review the revised version of this manuscript.

I think the manuscript has improved significantly and most comments from myself and Frank Techel have been taken into consideration. The overall structure of the manuscript makes more sense now, the introduction has been improved a lot and the readability of the text is also improved. I still find quite a lot of typos that I urge the authors to take care of.

My biggest concerns with the first manuscript were the appropriate choice of winter climate indices and the lack of connection between these indices and avalanche activity or other processes disrupting roads.

Winter climate indices:

I think the authors have done a better job now at choosing winter indices and anchoring them in the literature. There are, however, two major concerns I would like you to pay attention to:

1. Elevation bands for avalanche release zones: you state that you talked to local avalanche experts for defining the elevation bands. NVE has a map of avalanche release zones (KAST and Auto-KAST) that I urge you to have a look at. In focus area 2, the mountains rise to an elevation of 1800 m, while you use an elevation band for the release zones of 1000-1300 m. I think it is important that this is precise!
2. Thresholds: I cannot follow how you choose your different thresholds, for example for SWE. You state 100, 200, 300 and 400, but why are you choosing exactly these thresholds. Same goes for rain above 10mm. could you please clarify?!

The zero-crossing results and discussion are the least convincing part of your study. I think the analysis really suffers from not having surface temperatures and – very importantly – humidity. I can agree to your findings that zero-crossings will increase in the future, but will they lead to more icing on the roads? Let's see what the other reviewer thinks about the zero-crossing results, but I would tend to recommend leaving these parts out. However, I understand that you are interested in road disruptions. Technically, ice on the road does not disrupt transport lines.

Connection between indices and avalanche activity:

I think the authors have improved on this section, considering more of the relevant literature. Still, there are too many references to climate change literature and climate reports that merely guess what will happen with future avalanche activity and using that literature to 'proof' that your assumptions are correct is not very convincing.

I am still convinced that comparing past climate indices with past avalanche activity from the Norwegian avalanche activity database would have been the right way to look at this problem, but I understand that this would include a whole new dimension to the study. I think you nicely write in the discussion that there is a lot of uncertainty, and I am happy with that.

Besides the two major scientific concerns, I have a major concern about the overall structure of the paper:

I think the length of the paper, certainly from the large number of figures, makes it difficult to read and understand. I wonder if something could be left out? Maybe only show 1 d change of SWE? Otherwise I am wondering if it is absolutely necessary to show the mean values and trend for each of the indices in a map, but rather focus on past and future change?

The second concern is about the discussion: Please introduce subtitles to the discussion to structure it more clearly and improve readability. I also urge you to divide into discussion and conclusion. Right now, I don't know where the discussion ends and the conclusion starts. But I think that the manuscript would hugely benefit from a clear conclusion!

Finally, check if the abstract length is within the standards of the journal. It seems overly long.

Minor comments:

Page 2, paragraph 5 careful about NPRA database of rapid mass movements. They are also a function of increased use of the database

10 'other landslides' implies that snow avalanches are also landslides

15 you are jumping to conclusions here by stating that blizzards, heavy snowfalls (probably the same?) and so on are climate-induced. What does 'climate-induced' mean in that connection anyway?

15 you state that 'snow avalanches are among the natural hazards that most frequently lead to highway blockages,..'. does this statement count in general or for Troms, if latter, did you check the statistics?

20 what is a 'road outage'?

Page 3, paragraph 10-15 you could include the newest findings of the IPCC SROCC report here

I do not think that Hestnes & Jaedicke (2018) should be cited here. I commented on it before. They are basically just doing some educated guessing which contradicts the IPCC findings. Please remove it also from the discussion

20 Castebrunet et al (2014) shed some light

Page 8, paragraph 10 until here, you have written snow avalanches and slushflow and now you state that the term snow avalanches includes slushflows. This is contradicting and confusing.

Page 9, paragraph 10 this is not fully clear to me. 6 and 8 grid cells of how many were selected?

Page 11, paragraph 10 NVE has a Norway-wide map of avalanche release zones (KAST and AUTO-KAST) which you should check. especially in area 2, the mountains rise to 1800 m in elevation, so maybe the release zone is too low or the elevation band is too narrow? this has implications for Figure 6

page 11, paragraph 15 how did you choose these SWE thresholds?

page 11, paragraph 30 many typos in this paragraph

Figure 6: I don't understand why the fraction of the grid cells (shown by length of colored bars) changes between past, future and far future?

page 12, paragraph 20: I guess you mean y-axis

page 12, paragraph 30: two full stops after 'mild'

4.2 Changes in maximum snowfall vs 4.3 Changes in heavy snowfall events I wonder if these two indices are somewhat redundant?

Discussion: split up in sub sections to improve readability

page 17, paragraph 10 I do not follow your reasoning about added water supply. you are talking about increase in heavy rain, however, water supply from melting is a total different story. I also don't understand why the snow melting period should lengthen? if temperatures increase or it rains onto the snow I would expect a short melting period. what you are maybe trying to say here is, that the snow season will be shortened with earlier snow melting?! your reasoning that we will not have a full snow season does not make sense to me either. the period when we have snow on the ground determines the length of the snow season. it simply might get shorter. more rain on snow can certainly lead to more slush flow activity. when it comes to melting, the intensity is key here, not the length or 'more' melting as you write.

page 17, paragraph 25 I find this section not very convincing. there is a lot of guess work here and I think your approach really suffers from not having information about humidity and surface temperatures. there will be more zero crossings certainly, but will they lead to slippery road conditions?

split discussion and conclusion