Interactive comment on "Multi-scale spatialization of snow water equivalent (SWE) according to their spatial structures in eastern Canada" *by* Noumonvi Yawu Sena et al.

Anonymous Referee #3

Received and published: 3 March 2021

SWE survey stations are usually scarcely distributed and the SWE data doesn't necessary represent well larger region when spatially interpolated. This manuscript attempts to do spatial SWE interpolation with taking into account geographical and physical factors. In my opinion this goal is important and it could result with a better method to retrieve SWE maps. However, there are some major issues with the manuscript.

The spelling and grammar should be checked with a professional since there are obvious issues. For example, the second sentence in the abstract is repeated.

In addition, the structure of the manuscript is not coherent. Especially the Results-chapter (chapter 3) is hard to follow. In my opinion the chapter should be rethought

maybe by summarizing the results in a table rather than as text. The figures 4-8 contain lots of similar looking scatterplots. Is this really necessary? The key parameters could be in a single table without the plots.

Better maps (remaking Fig. 1 and 10) would improve the manuscript significantly. Since the manuscript deals with the spatial distribution of the snow surveys it would make sense to have a map of their locations. Even a geographic map of the target area would make following the discussion a lot easier since the text relies much on toponyms.

-Figure 1 should explain A-G in a) and colors in b) in the caption

-Chapter 2.2 Snow data, where are the stations located? Since the spatial distribution of stations is important there should be a map.

-Chapter 2.3.1 the metavariables U1-U4 are not explained. Are they same as latitude, longitude, altitude and distance to ocean? Or latitude and longitude, relief, and distance from the ocean?

-Chapter 2.4 the metavariables U1LZ,U2LZ,U3LZ,U4LZ,U5LZ,U6LZ are not explained. Are they same as slope, aspect, distance to rivers, solar radiation, curvature,and vegetation height?

-In chapter 3.1.1 and 3.1.2 the presentation of the results is hard to follow. Two tables would summarize the results better.

-Figures 4-8: is it really necessary to present multiple scatterplots for all zones? I think these results could be better summarized as a table.

-Figure 10: A-G should be explained in the caption

-The discussion in chapter 3.2 relies heavily on toponyms that the reader can't associate with the target region at all because the figures 1 and 10 are inadequate in this respect.

C3