Author Response to Reviewer #2.

The comments by Reviewer #2 are in black. The author's responses are in blue. The changes suggested to the revised manuscript are in green in bold.

Anonymous Referee #2

Referee comment on "High-resolution inventory and classification of retrogressive thaw slumps in West Siberia" by Nina Nesterova et al Earth Syst. Sci. Data Discuss. [preprint], https://doi.org/10.5194/essd-2025-164, 2025.

Second Review #2

I am pleased with the revisions made to the manuscript, which have further improved its clarity and quality. I thank the authors for carefully considering the comments and suggestions provided in the previous round. The manuscript is now scientifically sound and ready for publication after some minor modifications.

We would like to thank the reviewer for finding the time for the second review!

- Figure 1: The white line, which seems to represent the boundary of the study area, is not explicitly explained in the legend. Please clarify its meaning, and also adjust the placement of the scale bar text, as it currently overlaps with the white line and reduces readability.

Thank you for pointing this out. We have adjusted the map: moved features, so that they do not overlap, added study area to the legend. Moreover, we updated a reference from the dataset (Nitze et al., 2024) to the recently published data paper (Nitze et al., 2025). We also updated a list of references since one was found missed.

- Figure 14: The chord diagrams are very well presented; however, I did not find any information in the Methodology section about the software or package used to create them. Please add this detail for clarity and reproducibility.

Thank you for noticing. The chord diagrams were indeed plotted not in Python. We plotted it in R and added this information to the text:

2 Methodology

Our approach includes four main steps: (1) visual identification of RTS and manual RTS point collection, (2) classification and parameter attribution, (3) iterative correction loop, and (4) final accuracy assessment (Fig. 2). Manual RTS point collection, classification, and correction were performed in QGIS software version 3.14. Accuracy analysis, plotting, and statistical calculations were performed using Python version 3.12.7. **Chord diagrams were plotted in R, using RStudio 2024.12.0+467.** The resulting points were analysed for clustering using Ripley's K function. Ripley's K function determines whether spatial points have a random, dispersed, or cluster distribution over a certain distance or scale (Dixon, 2001).

- One category of processes responsible for the occurrence of retrogressive thaw slumps is nivation. As this term can be somewhat ambiguous, I suggest that the authors clarify it by explicitly referring to the contribution of persistent snow cover.

We clarified that in the text:

The influence of concurrent (happening in parallel to RTS development) processes on RTS development is described in Nesterova et al. (2024). For each mapped RTS, we noted the possible presence of 5 concurrent processes: lateral thermo-erosion, coastal thermo-erosion, ice wedge erosion, nivation, and thermokarst subsidence. Lateral thermo-erosion was identified by the rugged outline of the RTS and visible traces of erosive channels (Fig. 8a). The Coastal thermo-erosion classifier includes not only the sea coast erosion but also river and lakeshore erosion. It was determined by a sharp dark outline of the RTS base along the coastline of a waterbody and the absence of sediment accumulation in the water (Fig. 8a). We have noted ice wedge erosion when an RTS headwall had a jagged outline resembling the adjacent polygonal surface of undisturbed tundra (Fig. 8b). **Nivation in the context of this study is considered as persistent snow cover.** It was detected as white patches of snowpacks that stayed over the summer within RTS (Fig. 8a). Thermokarst subsidence appears as small thermokarst ponds filled with water. It is noticeable as black patches within the RTS outline (Fig. 8b).

Thank you again for the reviews!
