Review for Roering et al. “ Bedrock ledges, colluvial wedges, and ridgetop water towers:Characterizing geomorphic and atmospheric controls on the 2023Wrangell landslide to inform landslide assessment in SoutheastAlaska, USA”This study presents an example of a catastrophic shallow landslide in post-glacial terrain insoutheastern Alaska. The authors provide a detailed description of the event and adopt a holisticapproach to investigate the causes of its initiation and runout behavior. The study is motivated bythe frequent occurrence of such events in Alaska and by the existing knowledge gap regarding thetriggering mechanisms of shallow landslides in post-glacial landscapes. Ultimately, the workcontributes valuable insights for improving landslide risk assessment.The findings suggest that a combination of several factors contributed to the unique characteristicsof this event—namely its unusually high H/L and W/L ratios, large affected area, and highentrainment rate. The most significant factor appears to be the geomorphic setting, where a flat togently inclined wetland overlies a steep, poorly dissected hillslope. In addition, the step-benchgeometry of the slope, resulting from contrasting bedrock strengths, likely facilitated theaccumulation of substantial colluvial material that was later remobilized during the landslide.Heavy rainfall, rain-on-snow events, and temperature-induced snowmelt led to oversaturation of thesoil layer, serving as the immediate trigger. The potential influence of windthrow and wood pests onroot reinforcement is briefly discussed; however, due to limited data, no definitive conclusions canbe drawn.The manuscript is well written and presents a clear, logical progression of ideas from start to finish.I have only a few minor comments: the abbreviation MP should be defined upon its firstappearance, and the label NF in Figure 2 should be made consistent with that used in the caption.Regards,

We made the changes requested on Figure 2 and in the text regarding MP.

The paper is very well written and the authors do a great job investigating and describing the details of what happened.

I have a couple of comments that I think should be mentioned in the paper. The wind. You related the wind to mechanical components like tree throw, but I don't think you mention the wind as an effect on the snow melt. See our DOGAMI SP-55 where we discuss the role of winds in snow melting. The combination of high wind and air temperature increase at the same time can significantly contribute to snow melting and melting rate. The wind blows the warm air into the snow which contributes to the snow melt. We talked with Ben Hatchett about this. If you look at your graph, the wind and air temperature seem to

correlate both high in the time right before the landslide initiates. It is always very hard to say what exactly happened, but I think this is worth mentioning. Is there any way to know how much snow was on the ground days before the event? Even if it was neighbors or roads crews guess. This can clearly affect the terrestrial water input (TWI) above the initiation area, but also how much snow was on the benches? The snow on the benches could play a role in the saturation of the colluvium on the benches. Was there snow on the benches which also underwent rapid melt? I bring this up, because of the lack of likelihood of water from the top of the mountain flowing down the anti-dipping beds and benches and thus not a likely source of saturation of the bench colluvium, which leaves rain from antecedent moisture, rain from this event, and snowmelt all three needing to be directly onto the benches.

Again, really nice paper, authors! This will help Alaskans understand and reduce risk to debris flows.

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This is excellent feedback and we addressed the comment by adding a sentence in the introduction as well as an entire paragraph in the discussion section that lays out the potential role of wind in advecting head into snowpacks and facilitating snowmelt. We also addressed the potential means by which colluvial materials on the benches can experience saturation. Many thanks for the helpful reminder and input!