

Earth Surf. Dynam. Discuss., referee comment RC1  
<https://doi.org/10.5194/esurf-2022-43-RC1>, 2022  
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## Comment on esurf-2022-43

Anonymous Referee #1

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Referee comment on "Patterns and rates of soil movement and shallow failures across several small watersheds on the Seward Peninsula, Alaska" by Joanmarie Del Vecchio et al., Earth Surf. Dynam. Discuss., <https://doi.org/10.5194/esurf-2022-43-RC1>, 2022

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This manuscript is in a good shape. It goes over the measurements of soil motion and failure in a permafrost environment and looks for potential explanations (slope, precipitation, permafrost, ...).

However, here is a list of comments I would like to see addressed:

l.74: "topography model" -> "digital elevation model (DEM)"

l.78: add latitude?

l.114-124: how long were the GNSS observations at each marker corner?

Figure 2: You should write that the outline color of the sub-panel is related to the color of the area on panel (a). It took me while to realize. Is there no precise location for (f) to be shown by an arrow? I thought it was indicating the green box first. "The translation of a group of shrubs downslope is demonstrated with their position outlined in yellow" it is hard to see the yellow color, maybe we just say thin/thick lines? Is there also two groups of shrubs (two outlines)? If so it should be mentioned. Also are the UAS survey covering the entirety of the panel (a)? If not you should show the coverage, otherwise we can think there were no failure in some areas while it is only because there is no observation over these areas.

l.157-170: Your area is small, why not process the data at a higher resolution? Where there no available Sentinel-1 observations with a westerly looks to observe the Teller 47

hillslope?

l.159: "11-day intervals" Aren't the Sentinel-1 images acquired every 12-days?

l.246: "negative interannual vertical movements (inflation)". Usually negative vertical motion mean subsidence, I would change the text to "upwards interannual vertical movements".

Figure 3, caption: "(a) Map of displacement vectors..." for what time period?

l.274-275: Isn't "mid-August" acceleration for 2018 similar to 2019 acceleration (beginning of august for one month)? If so why use "conversely"?

Figure 4: Would it be possible to change "day of year" to an approximate date instead? It would make it more easy to compare with the text (where you mention "day of year" only once).

l.293-294: Can you explain what "unconditionally unstable", "conditionally stable", and "unconditionally stable" mean?

l.451: "Thermokarst" this word is only used here in your text. You should say more about it or remove it.

Figure 9: You mention trend over the last century often like "Both (a) and (b) appear cyclic over the past century." You should show the data and trends then.