We thank the anonymous referee #2 for the useful comments that helped us improve the manuscript. In the following, the original comments of the reviewer (black) are commented in blue.

The manuscript presents remote sensing epochs of several lateral moraine slopes, and analyses the morphodynamics at each site. It is well-presented, with clear figures and understandable text.

Main Comment:

It would be good to have a slightly longer discussion if possible. Most of the paper focusses on methods, which, although important, does not lend to as significant a contribution to the field. Tieing what the authors analysed and extracted from the data to a broader discussion of morphodynamics and even stresses in slopes (stress paths) would strengthen the paper. The authors can certainly highlight the high resolution (spatial and temporal) of their analysis more, and expand on interpretations. A clearer link between observations and potential geomorphic processes, considering all options, is needed.

The main discussion is included within the results sections, so it is not clear for which aspects a longer discussion is requested. Regarding the relative length of the methods section, we cannot agree with the reviewer as the "results and discussion" section contains about 18 pages in comparison to 7 pages of the methods part. Section 4.5 is discussing all analysed aspects regarding morphodynamics and puts them in the context of the paraglacial adjustment.
Regarding stress paths, this is not part of our study. Geotechnical material properties have not been investigated, and we would like to keep the scope of this work to the long-term morphodynamics observable by means of multitemporal DEMs. The "stress path" suggestion might be valuable for future work though.
The high spatial and temporal resolution of the data used is already highlighted in the introduction (L75 to 79) and the conclusions (L646-651). Moreover, we added a sentence in section 4.5 (L634): "This shows the importance of the analysis of multitemporal DoDs in several glacier forefields in order to properly investigate trends of morphodynamics."
Section 4.3 is showing and discussing the geomorphological processes that were observed on the orthophotos, in the DoDs and during field work, so observations and potential processes are linked.

See attached for further comments.

L27-28: In the European Alps
We continue with the citation of Hambrey:
Hambrey (1994, p.142) wrote that "lateral moraines are among the most impressive features of contemporary glacial mountain environments **[…], especially above and down stream of those glaciers in the Alps, Scandinavia, the Western Cordillera of North America, and elsewhere** […]".

L31: variably consolidated? Some moraines are quite well consolidated. Also, see end of the paragraph - overconsolidation.

Yes, some lateral moraine sections are overconsolidated, whereas the glacigenic sediment in the forefields is in large parts unconsolidated, as described in literature. We deleted "unconsolidated" as it referred only to the moraines in our case.
Moreover, in L32 we added "Curry et al. 2006" and "Chiarle et al. 2007" in the citation.

L83-85: "On the upper border perpendicular to the glacier flow direction, the areas were usually delimited in a way that they include areas still covered by the glacier on the earliest aerial images in the 1950s" →Suggest rephrasing - a bit confusing the way it is currently written.
We rewrote the sentence: "At the upper border, perpendicular to the glacier flow direction, the areas were usually delineated so that they include areas that were still covered by the glacier on the earliest aerial images in the 1950s."

L134: Selected instead of available
That were the datasets which have been available for this study. For some areas, more datasets are generally available (can be bought), but not for all.
We added "for this study".

L167-168: "The mounted camera of the drone was positioned in that way that view direction was orthogonal to the slope surface and for that purpose it was also adapted during the flight. →Did you use terrain-following?
No, we did not use terrain-following. This was not available for the drone we used for this study.

L172: Delete "the"
We deleted "the".

L221: "of" instead of about.
We replaced "about" by "of".

L302: "In a next step, we used two distance grids of subsequent glacier extents to calculate for each pixel the year of deglaciation using a linear interpolation of the respective dates of the glacier extents based on the distance ratio."
What do you define as deglaciation in this case? When the toe of the glacier has receded past the upvalley end of your image window? Or when there is no more ice on the moraine slope within the image window?
We added in L 298: "As mentioned before (section 1), morphodynamics are assumed to dependent amongst others on the time since deglaciation. Deglaciation is understood in this study as the complete melting of the glacier at a particular location, but this does not necessarily include the melt-out of dead ice or ice-cored moraines."
Regarding your comment in section 3.7, deglaciation means the year when the glacier has melted at the location of the single pixel. See L299 "[…] to estimate a value for the time since deglaciation for each raster cell".
Regarding the analysis of the deglaciation of the moraine sections (section 4.5.1), we added in L305: "These interpolated times of deglaciation were also used to define the year of complete deglaciation for each moraine section (youngest year when the foot of the slope was free of glacier ice)."

L310: So, these are means of means and SDs for DoDs in each time period?

What are the factors contributing to variance?
-dataset source (airphotos vs. drone)
-areal coverage of each image
-anything else (time period is similar for each epoch, 20-30 years)
No, the boxplots show the distributions of the mean values and standard deviations of the DoDs, not means of means. As a summary, the range of these absolute values is mentioned in the text. We clarified that by referring to "these mean values".
The quality of the aerial images and its influence on the model quality is mentioned in L312 and L315. That is the most important influence and differs from survey to survey.
We added in brackets in L312: "The large differences within this type of DoDs can be explained by the different quality of the aerial images **(e.g. flight height, image resolution)"**
We added a sentence in L317: "These lower errors can be explained by the better quality of the drone images in comparison to the aerial images, especially the older ones."
The covered time period has no influence on the quality parameters of the single DoDs, only the quality of the DEMs that were used.

L319: Delete "of"
We deleted "of".

L333: Add "depth"
We added "depth".

L338-339: You could also discuss how the rugosity of the moraine slope decreases over time (i.e, the moraine is much smoother in 2016 vs. 1959).
That is right, the surface in 2016 is smoother than it was in 1959. That might be either due to the different quality of the models (quality in 1959 much worse) or a smoothing over time. The latter is also supported by a comparison of the orthophotos as the OF of 1959 shows an undulated surface (cf. Betz-Nutz 2021, p 208). This is supposedly caused by sediment-covered dead ice which is unevenly distributed.
We added in L368-369: "The higher surface roughness in 1959 in comparison to 2016 is supposedly caused by sediment-covered dead ice patches undulating the surface as well as the lower DEM quality of 1959."

L351: Delete „of"
We deleted "of".

L369: It would be good to differentiate between rapid and slow landslides, as you have the data. Are the landslide movements episodic, or steady?
Also, can you make any comments about landslide deposits on the glacier? Can you see deposits from upvalley landslides?
There were only very few slides we could detect. Those are only detected within one (more precisely the first, L363) period and are not detectable on subsequent DoDs. We interpret this as an indication that the landslides were fast and not active on longer timescales (and at low velocity).
We have not analysed deposits on the glacier in detail. However, on the orthophotos no deposits of bigger landslides are visible. Moreover, we did not detect any bigger landslides coming from the adjacent rock slopes to the moraines.

L386: except for instead of except of
We replaced “of” by “for”

L415: Could you calculate volumes of material moving downslope?
The erosion rates are shown in section 4.4.
We added in L391 “Erosion rates are presented in section 4.4.”
We refrained from calculating erosion volumes as these depend on the size of the respective erosion areas and impede the comparison of the different moraine sections.

L416-417: It would be helpful to indicate glacier flow direction if possible, just to make it more obvious that the glacier flows roughly S to N, and is retreating to the SSW.
We indicated that and adjusted the figure caption accordingly.

L479: erosion rate and L480: they have
We rephrased the sentence.

L488: Why? Did you also try the volume method?
We did not try to estimate the eroded volumes by reconstructing the gully volume, as this is no accurate method to calculate erosion rates, for example because we also expect the crests between the gullies to lower or even break down with time. Moreover, a development of the intensity of the erosion cannot be analysed over different time periods, as only a general estimation over time can be done with that method. Furthermore, not all moraine slopes are gullied and on the other slopes, no volume can be reconstructed with that method.
Finally, it was the aim of this study to use modern methods such as digital photogrammetry and drone images in order to analyse changes over time at a high resolution.

L520: Perhaps mention here again that year of deglaciation is interpolated. Also, see comment about how you define deglaciation above. The definition is important for considering the stress path the slope material takes to failure/erosion.
We added a comment in L508: “(interpolation method for years of deglaciation see section 3.7)”.
Regarding the second part of the section (referring to Fig. 11), from L522 on, “an analysis based on all grid cells” implies that we mean the year of deglaciation for each single grid cell (as described in L298-305, section 3.7, cross reference already given in L523).
The time of deglaciation is important for understanding the geomorphic processes on the slopes. However, we do not consider the stress paths, since this was not the focus of the present work (no geotechnical measurements etc.). We like to stay focused on the detection and quantification of surface changes based on multitemporal elevation models. The “stress path” suggestion might be valuable for future work though.

L532: Why is this section so active?
We cannot explain that fully, however, different possible reasons are given in the paper (mainly in section 4.3.2): recently deglaciated, steep slopes, headward retreat (enough material available), maybe also the still melting dead ice.

L532: Also, consider showing the maximum height of the ice on each moraine slope, if possible.

The maximum ice thickness could in fact be estimated based on the LIA ice extent, but given the length and scope of the present manuscript, we refrain from adding this analysis.

L539: This is not necessarily true. It looks as though erosion rate increases and then decreases through time. Consider testing if this trend is significant.
We described in L525-529 the course of the height difference, in the same way as you write. However, what we would expect is higher erosion rates in the classes with less years since deglaciation. That cannot be supported by the data.
We rewrote in L539: "A comparison of the results of the analysis for the investigated moraine sections (Fig. 10) and the grid cells in the glacier forefields (Fig. 11) shows that in the former lower erosion rates are measured on moraine sections that were deglaciated at earlier points in time, whereas in the latter a consistent decrease of height differences with more years since deglaciation cannot be observed."

L555: Were there any slopes >70deg?
There were only very few single cells >70°, and so these were excluded.
We added in L550: […] 60-70° (single cells with more than 70° were excluded).

L576: Have there been any glacier readvances since LIA? Worth noting for individual cases.
We know there have been smaller readvances in some areas. During these readvances only the glacier tongue was pushed forward, and the glaciers did not cover substantial parts of the slopes again. So, a significant influence on the slope morphodynamics is not assumed. Moreover, we never detected readvances that lasted from one observation period to the next (they were of comparably short duration and we only know that from data which is not presented here) and for some study areas, we do not know anything about readvances as the temporal resolution is either not high enough or there weren't any.

L601: What about (pre-glacial) mountain relief? Mountain slopes generally increase upvalley and toward peaks. Which other factors could explain the slope angle/distance from LIA maximum trend?
We only looked at LIA lateral moraine slopes. The pre-glacial mountain relief can have a certain influence on the distribution of the ice masses of the glacier and with that on the form of the moraine slopes, as explained in L599-601 ("[…], unless certain conditions of the relief, such as larger bedrock outcrops, lead to a congestion of the ice masses also near the LIA maximum (which can be observed e.g. in the Langtauferer forefield)"). As the glaciers' ice thickness (influenced by the relief) explains the slope angles of the moraines very well, we assume that other potentially contributing factors only have minor influence.

L636-637: What about other complicating factors such as glacial readvances, faulting, variable uplift rates, vegetation, etc.?
Regarding the glacial readvances, see the answer above.
Faulting or uplift rates do not seem to be relevant issues for the morphodynamics on lateral moraines as we suppose that the study areas are lifted as a whole. In our DoDs covering the glacier forefields, we could not detect any deviations in altitude that could not be explained by geomorphic processes or that were systematic.
The factor vegetation can have an influence on the stabilization of moraine slopes. We added a sentence in L638: "A stabilizing effect of vegetation growth due to biogeomorphic

interactions is assumed, but the vegetation succession depends on the altitude a.s.l., moisture availability etc. (Betz-Nutz, 2021; Schumann et al., 2016; Eichel et al., 2016).“