Comment on tc-2020-376
Anonymous Referee #1

Referee comment on "High-resolution inventory to capture glacier disintegration in the Austrian Silvretta" by Andrea Fischer et al., The Cryosphere Discuss., https://doi.org/10.5194/tc-2020-376-RC1, 2021

This is well written and interesting paper that describes glacier disintegration in a region in Austria based on an extensive data set of DEMs and orthophotos. The glaciers in question are all rather small (a few km² or smaller) and some have disintegrated into partly or fully debris-covered patches. The authors point out the need for a scientific discussion about the proper aim and suitable methodology for monitoring small, totally debris-covered cryogenic geomorphological structures that are remnants of recently active glaciers. At some spatial scale and degree of debris-cover, monitoring of such remnants might not be within the proper scope of glacier monitoring as such but should be considered as a task for monitoring and studies of rock glaciers and permafrost. Setting a hard threshold in terms of the size of very small glaciers for including them in glacier inventories and considering then glacier monitoring is, however, not straightforward.

Comments:

p. 14, l. 246: The authors use the area at the first point in time A(t_1) to compute the area-averaged specific mass balance b_geo. I would have thought that the average of the areas at the beginning and end of the period (A(t_1)+A(t_2))/2 would be more suitable? This would be consistent with the description on p. 92 in the IACS glossary of glacier mass balance (Cogley et al., 2011).

Minor and editorial comments:
The superscipted power of 2 in "km²" is missing in the pdf I am reading (many places). The "-" hyphen in negative numbers and number ranges should be changed to en-dash or a minus sign ("--" in LaTeX), for example "2002-2004" should be "2002--2004"

p. 12, l. 197: "between 1000 to-2000 m" --> "between 1000 to 2000 m"

p. 15, l. 269: "lower than" --> "lower in magnitude than"

p. 19, l. 305: "... if there is any ice left." --> "... whether there is any ice left."
p. 20, l. 315: "Without keeping them in inventories, we lose track of these transient states." --> "We lose track of these transient states by dropping these glaciers from the inventories."

p. 24: "The annual change rates of area and volume change indicate ..." --> "The annual rates of change of area and volume indicate ..."

p. 26: "The glacier inventory data in https://doi.org/10.1594/PANGAEA.844988" --> "The glacier inventory data are available at https://doi.org/10.1594/PANGAEA.844988"