Dear Chris,

Thank you for your proofread and valuable comments. Here we address how we revise the manuscript corresponding to your specific comments. The comments are in black words, followed by our responses in red words.
Moreover, to improve the manuscript, it was edited in English by Redmond Physical Sciences. The English edited manuscript was made English-ready for publication in this journal without altering the scientific content.

Kind regards,

Kenshiro Arie.

Your comments

Line 24: might be better as "These VSGs lack [or lacked] a positive annual mass balance gradient..."

Response

We change it.

Line 27: might be better as "Moreover, compared to other glaciers worldwide..."

Response

We change it.

Line 30: might be better as "...as determined by their density..."

Response

We change it.

Line 32: might be better as "Recently, however, smaller and more accurate surveying instruments..."

Response

We change it.

Line 50: delete comma after "glaciological"

Response

We change it.

Line 51: In the new sentence, make it clear "throughout" what? The mass balance year or...?

Response

We change as “Based on the mass balance, they argued that the entire glacier area was an accumulation area in 2012-2015, but an ablation area in 2015-2016.”

Line 78: might be clearer as "observed during December 2010, and in January, February and March 2011, by the..."

Response

We change as “For meteorological data, we refer to that from a nearby station on Mt. Hakubadake (2,932 m), run by the Research Center for Mountain Environment of Shinshu University. Here, the maximum daily windspeeds for the months of December 2010 through March 2011 are 23.5, 34.9, 23.3, and 25.9 m s-1 respectively with wind directions are mainly west and northwest.”

Line 82: might be clearer as "The average March snowdepth during 1996-2018 at..." [and then edit the rest of the sentence accordingly]

Response

We change as “Moreover, the average March snow depth at Murododaira (~2,450 m; Fig. 1), located at the west side of the mountain ridge, was about 6.8 m during 1996–2018 (Iida et al., 2018).”

Line 95: "These glaciers are located within the base of the troughs and surrounded..."

Response

We change this sentence as “Each glacier sits at the base of a trough just east of a mountain ridge, surrounded by steep bedrock, meaning that snow avalanches and snowdrifts can greatly contribute to the accumulation of the entire glacier.”

Line 107: "Images were acquired on 9 Oct... [etc.]"

Response

We change it.

Line 166: "The accumulation and ablation are calculated by one integrates..." - this does not make sense grammatically.

Response

We change as “The accumulation depth is calculated by dividing the relative volume change during winter by the entire glacier area. For ablation, we instead use that during summer.”

Line 201: delete "that"

Response

We change it.

Section 4.4: suggest you use either m/a or m a-1 (with the -1 superscript). Check journal preference/convention and the rest of the manuscript.

Response

We use only m a^{-1} as in Mathematical notation and terminology of TC.

Line 319: change to "(see section 4.5)."

Response

We change it.

Line 369: I think this should be "too much snow" but what do you mean by "too much". Please clarify or re-write the sentence.

Response

We change as “Therefore, steep bedrock walls surrounding the VSGs in the northern Japanese Alps cause avalanches that supply more snow to the trough bottom than glaciers in the Urals.”

Line 370: see previous point.

Response

We change as “In addition, strong north-westerly wind during winter in the northern Japanese Alps supply much snow to the east part of the mountain ridge due to snowdrift.”

Line 442: "VSGs in Japan lack a positive annual mass..."

Response

We change it.

Line 447: "probably due to a warm mid-latitude climate with very heavy snowfall, supplemented by avalanches and snowdrift..."

Response

We change as “probably due to being in a warm mid-latitude climate with very heavy snowfall, supplemented by avalanches and snowdrift”

Line 451: "if the amount of snow in Japan were to decrease due to climate change..." - this is an intriguing and potentially important scenario but you give no indication as to how likely it is and what climate projections indicate. Can you cite any work suggesting this is likely or possible (or unlikely) for the interested reader? This may help increase the impact of your conclusions.

Response

We add “as predicted by climate models (Kawase et al., 2020)”, however, this had already been shown in the discussion 5.2.