Reply to Editor Comments

EC #1: L. 36/37: Provide a reference for the statement.

> We added Richardson and Reynolds (2000) and Rounce et al. (2016) as references to our statement.

EC #2: L 48ff: You may also cite King et al. (2019) here as they specifically show that lake-terminating glaciers have higher mass loss in comparison to land terminating ones which has important implications for this study.

> We thank the editor for this suggestion and added the following statement in LL50f: "Parts of this meltwater have been trapped in glacial lakes that have expanded by approximately 14% between 1990 and 2015 (Nie et al., 2017). King et al. (2019) found that Himalayan glaciers terminating in lakes had higher rates of mass loss since the 1970s than those not in direct contact to a glacial lake."

EC #3: L. 89: Please add the correct citation for the RGI 6.0 (RGI Consortium, 2017. Randolph Glacier Inventory (RGI) – A dataset of global glacier outlines: version 6.0, Technical Report., Boulder, Colorado, USA.)

> Thank you, we changed the citation accordingly.

EC #4: L. 90f and Fig. 1, Fig. 10: Please provide more details about the subdivision. It would be good to have consistency amongst the publications to allow comparisons. Did you use existing accepted subdivisions (e.g. as defined by Bolch et al. (2019) for the Hindukush-Himalayan Assessment report) or defined you own? The Nyainqentanglha region does not include the Eastern Nyainqentanglha. Adjust the name.

> We use the subdivision established by Veh et al. (2020). To provide more detail on our study area subdivision, we rephrased the text passage L89ff as followed: "Following the outlines of glacier regions in High Mountain Asia used in the Randolph Glacier Inventory version 6.0 (RGI Consortium, 2017) and those defined by Brun et al. (2017), Veh et al. (2020) subdivided our study area into seven mountain ranges: the Hindu Kush, the Karakoram, the Western Himalaya, the Central Himalaya, the Eastern Himalaya, the Nyainqentanglha, and the Hengduan Shan."

EC #5: L. 122f: There are more publications addressing the changes of the glacial lake in the Himalaya and beyond, e.g. Wang et al. (2020) or Chen et al. (2021). Do the they come to similar findings than the study by Nie et al. (2017)?

> In essence, most multi-temporal lake inventories show enhanced growth in the Southern part of the Himalayas (Central Himalayas, Eastern Himalayas, and Nyainqentanglha). For an instructive comparison of previous work, we wish to refer the Editor to Supplementary Table 1 in Wang et al. (2020), listing 34 lake inventories in our study region. They note that "it is difficult to evaluate any discrepancies comprehensively because different extents of glacial lake distribution were examined and inconsistent thresholds of minimum lake area were used." We now rephrased the sentence starting in L123 to reflect the recent findings of Chen et al.

(2021) but wish to also maintain the findings of Nie et al. (2017), though we are aware of potential discrepancies with other studies largely because of a different methodological setup. “In the past decades, lake areas have grown largest in the Central Himalayas (+23% in 1990-2015; Nie et al., 2017) and Nyainqentanglha Mountains but lowest in the northwestern Himalayas (Chen et al., 2021; Nie et al., 2017), and many studies have emphasised the role of growing lakes on GLOF susceptibility (e.g. GAPHAZ, 2017; Prakash and Nagarajan, 2017; Rounce et al., 2016).”

EC #6: L163: Provide the information about how you extracted the moraine-dammed lakes.

We rephrased this text passage LL162ff for better clarification: “First, we used the ICIMOD database of 25,614 lakes manually mapped from Landsat imagery acquired in 2005 ± two years (Maharjan et al., 2018), from which we extracted 7,284 lakes dammed by moraines (classes m(l), m(e), and m(o) in Maharjan et al., 2018).”

EC #7: L. 410: You may want to consider that lake-terminating lakes have more negative mass balances and higher retreat rates than land terminating ones (King et al. 2019). Hence, the lakes are also growing faster.

We thank the author for this suggestion and included the finding from King et al. (2019) in the paragraph starting from L409. “Most moraine-dammed lakes in the HKKHN, however, are fed by glaciers with negative mass balances that likely help to elevate GLOF potential through increased meltwater input and glacier-tongue calving rates (Emmer, 2017; Richardson and Reynolds, 2000). This is also supported by the findings of King et al. (2019), which imply that higher rates of mass loss of lake-terminating glaciers since the 1970s might have also led to increased meltwater input into lakes adjacent to their termini. More than 70% of all lakes that burst out in the past four decades were in contact to their parent glaciers (Veh et al., 2019).”

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