* **Title:**
  + It is better to write “Impacts of glacier retreat…” rather than “The impact…”, since the latter suggests a final definitive answer which this is not.
* **Introduction:**
  + Overall, good structure!
  + Line 22: make sure to balance your descriptions of the Mustang and Melamchi disasters. Currently, you only name Mustang, and then proceed with Melamchi for which you give details such as its trigger and number of casualties. Make sure to describe both hazards similarly.
  + The explanation on transport-limited and supply-limited systems goes a bit back and forth. I propose you rewrite as follows: first explain both types of systems and then give examples of both. When giving examples make sure to be “inclusive”, you now point out a few specific examples but there are more examples of sediment sources, sediment production mechanisms, etc. Since you do a conceptual model study it would be best to stay general here. Have a look at section 2.2.1 in my book chapter from last year – you can probably copy-past from here and rewrite a bit. Also you find a few extra references here – for example Zimmermann et al. (1997) illustrate how sediment availability affects debris-flow magnitude-frequency (Zimmermann, M., Mani, P., & Romang, H. (1997). Magnitude-frequency aspects of alpine debris flows. Eclogae Geologicae Helvetiae, 90(3), 415–420.)
  + When describing the potential effects of climate change on debris-flow hazards, it would be good to echo the work of Stoffel et al. (2024) who nicely illustrate how climate change may affect transport-limited and supply-limited catchments differently.
  + The paragraph in lines 88-90 is a bit lost now – best to integrate this paragraph with the transport-limited and supply-limited explanation.
  + The research questions are well-phrased. Consider making 4 bullet points to make them stand out clearer.
* **Study site:**
  + It reads much better is you structure the descriptions of the Mustang and Langtang areas in the same way, and make sure to describe the same things. For example, you give an area for Langtang, but not for Mustang. You specify vegetation type for Langtang (bamboo) but not for Mustang. Overall, this is an easy fix but very helpful to the reader.
* **Data and methods:**
  + The model description is missing a number of important details, which can be solved by first reviewing in a bit more detail the model as presented in Bennett et al. and Hirschberg et al.
    - Critical discharge is a very important parameter to which the model is highly sensitive, but you do not mention it nor give the value you used. It controls how often debris flows occur, and this should be explained, together with some outlook on how a higher critical discharge could affect debris flow activity but would not affect overall results.
    - A key aspect of your modelling approach is that you assume a conceptual catchment, of X km3 (please give the value somewhere), and model its dynamics across the elevation ranges of Mustang and Langtang. For readers to understand your results this should be clearly explained, and the assumptions on which the conceptual catchments are designed should be outlined.
    - In multiple paragraphs you discuss the hillslope and channel storage buckets. However, in your model you basically only work with 1 bucket containing sediment availability. It would be clearer if you present it as such.
    - Lines 161-163 and 180-180 are the same.
    - At the end of the intro of section 3.1, before you move to “Incorporation of glacial processes to the hydrological model”, it is important to help the reader with the structure. Add a sentence like: “Below, we first detail how we incorporate glacial processes in the hydrological model, and then explain how we….”.
    - You state that the melt factor for snow is 0.08 mm per degree as calibrated for Illgraben by Hirschberg et al., and later you refer to some works in Himalaya. However, it is not clear what melt factor you use in your model and why.
    - The description of the sediment availability scenarios needs some more framing. Explain that you use transport-limited and supply-limited scenarios to capture a range of different catchments, independent of the exact sediment sources and supply mechanisms in the catchments. Here you could refer to your updated introduction where you acknowledge a wide range of potential sediment sources. Similarly, when moving to the supply-limited scenarios make sure to provide the necessary context: e.g., you use two end-members, being a constant daily supply and a winter input pulse. For the pulsed winter input refer to a number of studies showing that sediment production is generally higher in winter for multiple potential reasons, and not only link it to free-thaw.
    - Section 3.2 repeats, in a bit more detail, the introduction to section 3. Integrate both parts of text to avoid repetition.
    - Line 234: “We use hourly resolution ERA5 and ERA5-Land reanalysis data…” Did you use both?
    - In general, a table with model input values would be very helpful.
    - Table 2 you can either omit and shorten substantially.
    - Figure 3: The vegetation does not follow the elevation line, which looks strange. Do you have the illustrator file? Then you, or I, can fix it which is probably faster then going back to Ton.
* **Results:**
  + Fig. 4 needs its own section 4.1, where you illustrate how the different hydrological and sediment components combine into debris flow and sediment export. This is an important bridge to the interpretation of the following figures.
  + Is there a way to report discharge in m3 as well as mm/month? That would be very informative.
  + You seem to still struggle with what to present and how in the results. What could work is to use the key figures to structure the results, with a section for each figure.
  + I still think that a figure combining the M-F curves for different scenarios would be very informative.
* **Discussion:**
  + You phrased excellent research questions so use these to structure the discussion:
    - 5.1: effects of climate regime on debris flow activity.
    - 5.2: Effects of glacier retreat and mountain greening.
    - 5.3: Effects of sediment supply (including answer to RQ4).
    - 5.4: Model limitations and future outlook.