

The Cryosphere Discuss., referee comment RC1
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Comment on tc-2021-306

Adrien Gilbert (Referee)

Referee comment on "Brief communication: An approximately 50 Mm³ ice-rock avalanche on 22 March 2021 in the Sedongpu valley, southeastern Tibetan Plateau" by Chuanxi Zhao et al., The Cryosphere Discuss., <https://doi.org/10.5194/tc-2021-306-RC1>, 2021

This paper reports and describes a massive ice-rock avalanche that occurred in the Sedongpu valley in March 2021. The authors show that the detachment originates from a ridge at high elevation where previous events were already documented (Kääb et al., 2021). They show that the initial detachment is of about 50 Mm³ and that it produced a mass flow of unprecedented energy as untouched hills were overridden by the avalanche. The event has important implication as it dams an important river where hydro-power infrastructures and villages can be damaged by potential outburst floods. This event is really similar to the "Chamoli event" (Shugar et al., 2021) which received a lot of media attention recently and could be linked to climate change as suggested by the authors.

The authors use a complete and valuable dataset to describe the event for a rigorous assessment of its timing, size and intensity. I think the paper should be published as a brief communication after some minor revisions.

General Comments

- To improve the discussion about the possible link with climate change I would add on figure 3 (d,e,f) the dates of all the documented events of the catchment (see Kääb et al. (2021) section 3.6). Can be a vertical straight line when an event occurred.
- Figure 3a and 3c should be replaced by figure S4 which is much better to understand the setup. Figure 3c is really unreadable.
- In figure 3b, could you provide the whole DEM difference (do not cut at the catchment edge) ?
- Be careful to provide high resolution figure in the final version.

My other comments and corrections are embedded in the attached PDF.

Please also note the supplement to this comment:

<https://tc.copernicus.org/preprints/tc-2021-306/tc-2021-306-RC1-supplement.pdf>