

Interactive comment on “Assessment of permafrost distribution maps in the Hindu Kush–Himalayan region using rock glaciers mapped in Google Earth” by M.-O. Schmid et al.

Anonymous Referee #3

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GENERAL COMMENT AND MAJOR CONCERNS

This manuscript provided a new vision or possible method to map the modern permafrost based on rock glacier distribution in such a large mountainous region with very few available dataset. As the authors described, the terminus of some rock glaciers frequently occurs at an elevation similar to the lowermost regional occurrence of permafrost in mountains, but of course, they are not exactly located at the boundary of mountain permafrost distribution. So more detailed dataset and pronounced analysis, and even validation from field data are needed. My major concerns are:

1. Generally, the terminus of some active rock glaciers, but not all, might be one of

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the indicators of the lower limit of mountain permafrost in many regions. So, it is very important not only to map the rock glaciers, but also to identify the active ones from all the mapped rock glaciers. So field investigations are needed to validate rock glaciers or not, and active ones or just relics. Furthermore, not all active rock glaciers (here after as RGs) are distributed in the boundary areas of permafrost occurrence. So it should be recognized for which kinds of RGs are distributed near the lower limits of permafrost. 2. Characteristics of rock glaciers are great different in regions with different periglacial environment, and in debris deposits with different origins. Of which, climate, and climate factors are most important. Even though there are a few weather stations in this vast study-region. But the regional climatic background could be found not only in literatures, but many climate dataset products. So I strongly suggest the authors to validate the reliability of the results of this manuscript through comparing the lower boundary for active RGs with investigated or modelled lower limit of permafrost. 3. RGs in regions under different climatic conditions should be different. It was said that the lower boundary of RGs under some climate conditions are exactly coincided with the lower limit of permafrost, but are lower or higher in other regions. So it is necessary to discuss the relationship between the lower boundary of RGs and the lower limit of permafrost in different climatic conditions. 4. The title of this manuscript is “Assessment of permafrost distribution maps”, but no permafrost map was showed in this manuscript. It must be better if the authors can give a map which was compiled based on the method of this manuscript, even just for a very small region and validate it through investigation or modelling.

Interactive comment on The Cryosphere Discuss., 8, 5293, 2014.

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