

Interactive comment on “Spatial patterns in glacier area and elevation changes from 1962 to 2006 in the monsoon-influenced eastern Himalaya” by A. Racoviteanu et al.

D. Loibl

d.loibl@geo.rwth-aachen.de

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Dear colleagues,

I just stumbled upon this very interesting contribution and would like to concisely give some ideas, since I widely agree with the reviewers' comments. We conducted a quite similar study for the eastern Nyainqêntanglha Range at the eastern syntaxis of the Himalayas, approximately 600 km east from your study area (Loibl et al., 2014). Even though the investigated timespan differs (LIA maximum - 1999), I think a comparison of the trends evident in the data sets and the interpretations regarding the forcing mechanisms would be highly valuable. For example, you speculate that the location of your

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study area in the monsoon-influenced area may be leading to lower sensitivity toward climate change. In contrast, our results indicate increasing sensitivity with increasing monsoonal influence (cf. also Loibl and Lehmkühl, 2014). This also seems to be in accordance with large-scale studies (e.g., Gardelle et al., 2013; Neckel et al., 2014 and references therein) and local ground measurements (e.g., Zhou et al., 1991; Zheng et al. 1999). I am also not sure, whether it is correct to assign your study area and the eastern Nyainqêntanglha (falsely called 'Hengduan' by Gardelle et al., 2013, in my opinion) to the "same climatic zone" (cf. 3966L5), because there are noticeable differences in precipitation (cf. Maussion et al., 2014). Nevertheless, the conclusions drawn regarding the influence of topographic factors are widely similar.

Further, I have only some remarks regarding your figures:

Fig. 3: Coarse resolution of climate data – why not use the freely available HAR data?
Fig. 4a: I suggest a different grouping/logarithmic scaling to make this more figure more informative. Fig. 4b: Isn't it km? Fig. 5: Labeling of axis? Fig. 7: We used similar diagrams in Loibl et al. (2014) but used symbols for clean and debris-covered the other way (i.e., triangle for debris-covered, circle for clean). Maybe similar usage would be beneficial? Fig. 10: Many glaciers show thickening at glacier termini, which I found very interesting I would like more ideas on this phenomena in the discussion.

I'm looking forward to the final version of your manuscript.

Kind regards,

David Loibl

References

Loibl, D., Lehmkühl, F., Grießinger, J., 2014. Reconstructing glacier retreat since the Little Ice Age in SE Tibet by glacier mapping and equilibrium line altitude calculation. *Geomorphology* 214, 22–39. doi:10.1016/j.geomorph.2014.03.018

Loibl, D.M., Lehmkühl, F., 2014. Glaciers and equilibrium line altitudes of C1815

the eastern Nyainqêntanglha Range, SE Tibet. *Journal of Maps* 0, 1–14. doi:10.1080/17445647.2014.933451

Maussion, F., Scherer, D., Mölg, T., Collier, E., Curio, J., Finkelburg, R., 2014. Precipitation seasonality and variability over the Tibetan Plateau as resolved by the High Asia Reanalysis. *Journal of Climate* 27, 1910–1927. doi:10.1175/JCLI-D-13-00282.1

Neckel, N., Kropáček, J., Bolch, T., Hochschild, V., 2014. Glacier mass changes on the Tibetan Plateau 2003–2009 derived from ICESat laser altimetry measurements. *Environ. Res. Lett.* 9, 014009. doi:10.1088/1748-9326/9/1/014009

Zheng, B., Zhao, X., Li, T., Wang, C., 1999. Features and Fluctuation of the Melang Glacier in the Mainri Mountain. *Journal of Glaciology and Geocryology* 21, 145–150.

Zhou, S.Z., Chen, F.H., Pan, B.T., Cao, J.X., Li, J.J., Derbyshire, E., 1991. Environmental change during the Holocene in western China on a millennial timescale. *The Holocene* 1, 151–156.

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