Thank you for the useful review. I have revised the paper and include my comments in bold below.

In response to your main comment on resolution I have followed many of suggestions. I have endeavoured to highlight the compromise in resolution against model domain, simulation length, etc.

I have also further addressed issues of uncertainty and limitations particularly with what the model is able to resolve.

The present study reports interesting results and will be a nice addition to the existing literature and discussion of the Pamir/Karakoram anomaly. I especially like the emphasis on the importance of changes in the composition of precipitation (solid vs. liquid), which is still not appreciated enough. However, in my opinion one key point is missing in the paper as a short discussion.

Even with a horizontal spatial resolution in the atmospheric model of 25 km, many important details in the topography of a complex landscape like High Asia will not be resolved. The manuscript correctly begins with "the complex orography is not captured

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in coarse-scale GCMs" (p. 3721), and thus the "simulations are performed at 25 km to capture the complex role of orography" (p. 3722). While this is a valid motivation and approach, approximating the actual weather/climate conditions over mountain glaciers more comprehensively requires atmospheric modeling at the kilometer scale, especially in terms of orographic precipitation patterns. We discussed this from a general viewpoint two years ago (Mölg and Kaser, 2011). For High Asia specifically, modeled precipitation in a 30 km resolution atmospheric model (roughly the same resolution as in the present paper) could be improved with regard to observations if a 10 or 2 km resolution set-up is chosen (Maussion et al., 2011). Other recent studies used 2 km resolution to adequately model the meteorological conditions over a Karakoram glacier (Collier et al., 2013) and precipitation and cloudiness over a Tibetan glacier (Mölg et al., 2012).

Thus, I think the author should state that 25 km is a progress in representing the complex landscape of High Asia, but kilometer-scale resolutions are necessary to model the conditions at high-elevation mountain glaciers in more detail. The latter is obviously not feasible for multi-decadal simulation periods at present. Hence, the approach of Wiltshire here is fine and my comment should not delay publication of the manuscript at all. But since many readers of TC are not experts in atmospheric modeling, a short discussion of the resolution issue (25 km versus a few kilometers) has to be added, to make clear what the set-up chosen can resolve, and what it can't resolve in terms of processes. In this regard it would be helpful if the author adds a figure that shows the area-altitude distribution of glaciers in the Randolph inventory and in the 25 km grid of the model. This would reveal whether the major glaciated elevation zones are captured in the model, and which ones are not captured. Such a simple analysis would also help to better assess some statements in the manuscript, which refer to elevation zones. For example, "the highest and coldest parts of the HKK" on page 3728; Do these parts refer to the real world or the model world? I assume with 25 km resolution some highest parts in the model could still be medium glacier elevations in the real mountains.

Agreed. I have presented model hypsometry in comparison to the GMTED2010 high resolution product. I have not included a figure of the Randolph area-altitude distribution but instead included a figure showing elevation difference between the RCM gridbox and glacier elevation in the GLIMS data. These are discussed in the text with regard to the limitations of this approach.

Some minor comments follow below. I hope my comment and the references are helpful for the final version of this manuscript!

Minor comments:

The water budget issue of the glaciers is repeatedly quoted. Maybe it could be mentioned one time that the distance of a certain area to the glaciers is also critical whether or not this area's water budget is influenced by glaciers or not (discussed in the Kaser et al. paper that the manuscript includes as a reference). The more downstream you go, the more will the run-off variability be controlled by precipitation variability (and not by glacier or snow melt).

Agreed. Included

3724, L 12-14: I don't agree that net LW radiation and the sensible heat flux are the "main" components of the energy-balance. Actually every paper about a local glacier energy balance concludes that the main energy source is net shortwave radiation. But this is a further reason for the air temperature sensitivity of glaciers, because air temperature affects the solid/liquid precipitation fractions (as emphasized here) and thus the surface albedo and net shortwave radiation. I suggest something like ". . . close relationship between air temperature and several important components of the energy-balance; most notably, net shortwave radiation, incoming longwave radiation, and turbulent heat fluxes (e.g., Sicart et al., 2008)."

Agreed. Changed.

3725, last sentence of section 2.1: Could you summarize in two or three sentences how the RCM was evaluated, and why it was found to be good enough for the present study?

Agreed. More evaluation is also included in the paper.

3728, L 10-11: I doubt that latent heat from rain would be a "significant" contribution to the energy balance even in a warming climate. To my knowledge, the only energy balance study for High Asia that included latent heat from precipitation was our recent one (Mölg et al., 2012), which showed this term is negligibly small at the surface. The major effect of more liquid precipitation is certainly on the surface albedo and radiation budget. A secondary effect might concern the subsurface, where more liquid water
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could warm the snowpack after refreezing.

Agreed. Changed.

3736, L 15: I think the final title of the reference is a different one?

Thank you. Changed.

References:
Collier, E., Mölg, T., Maussion, F., Scherer, D., Mayer, C., and Bush, A. B. G.: Highresolution interactive modelling of the mountain glacier-atmosphere interface: an application over the Karakoram, The Cryosphere, 7, 779-795, doi:10.5194/tc-7-779-2013, 2013.
Maussion, F., Scherer, D., Finkelnburg, R., Richters, J., Yang, W., and Yao, T.: WRF simulation of a precipitation event over the Tibetan Plateau, China – an assessment using remote sensing and ground observations, Hydrol. Earth Syst. Sci., 15, 1795-1817, doi:10.5194/hess-15-1795-2011, 2011.
Mölg, T., and G. Kaser (2011), A new approach to resolving climate-cryosphere relations: Downscaling climate dynamics to glacier-scale mass and energy balance without statistical scale linking, J. Geophys. Res., 116, D16101, doi