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Discussions

Interactive comment on "What are the key drivers of regional differences in the water balance on the Tibetan Plateau?" *by* S. Biskop et al.

Anonymous Referee #1

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General comments:

Under the background of global warming, the water cycle and its components over the Tibetan Plateau (TP) are experiencing an accelerated changing rate. This paper focused on the key drivers of regional differences in the water balance of four closed basins on the TP. The most important conclusion from J2000g is that precipitation is found to be the principal factor controlling the water balance in the four studied basins while the glacier runoff may play a minor role. This research will benefit the understanding of hydrological processes over the TP. The whole paper is well organized with sufficient methodological details provided. The statistical analysis of the data is sound. However, some substantial revision work could be done to improve the paper. For author's reference, some specific comments are listed below.

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Specific comments:

1. The results are very sensitive to the initial inputs of precipitation. The most uncertainty of this study exists in the meteorological inputs of HAR10. I'm confused about the overestimation of precipitation and underestimation of lake surface temperature. As shown by Maussion et al. (2014;2015), HAR data has been validated and published. Why there exists such overestimation or underestimation? Furthermore, for inputs besides precipitation and lake surface temperature, some validation works with in-situ observation need to be done. Indeed, there are some in-situ measurements from CMA(China Meteorological Administration) or CAS(Chinese Academy of Sciences) over the TP.

2. It's not proper to use a fixed precipitation-scaling factor for the whole study period. Is it possible to tell the scientific community what are the main water vapour sources of increasing precipitation in Nam Co. Is it mainly from the plateau itself or surrounding regions?

3. As shown by section 5.2, there are many uncertainties about this study. Therefore, what we get should be a variation range rather than some specific values listed in Table 4.

4. Some in-situ measurements may help to reduce the uncertainties. To my knowledge, there is a comprehensive station in the Nam Co basin constructed by CAS. Some hydrological and meteorological observations can be achieved to make some validation work for your model outputs.

Technical corrections:

1. The paper only focused on four typical closed basins. The title should be specific. It's better to be replaced by 'What are the key drivers of regional differences in the water balance of four lakes on the Tibetan Plateau?'

2. The contents of section 4.1 should be deleted to make the paper concise.

HESSD

12, C1486–C1488, 2015

3. P4274, L1, ‘Cuo et al., 2014’ should be corrected as ‘Lan et al., 2014’. Similar correction should be done at P4297, L15. P4291, L1, ‘Li, B. et al. (2014)’ should be replaced by ‘Li et al. (2014)’.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 12, 4271, 2015.