**Biogeosciences
Discussions**

Interactive comment on "Numerical study of surface energy partitioning on the Tibetan Plateau: comparative analysis of two biosphere models" *by* J. Hong and J. Kim

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Thank you very much for constructive comments on our manuscript. We, authors believe that sharing your constructive comments improve this manuscript a lot. As you have suggested, we have revised the manuscript by incorporating all of the comments provided by the referee #1. Below is the authors' response to the reviewers (blue colored sentences).

Reviewer #1's comments:
This manuscript is a well-written, clear, and concise manuscript describing the

surface energy partitioning on the Tibetan Plateau through comparative analysis of two biosphere models constrained by the in-situ observation data. The topic is generally suitable for BG. Described analytical evidence may be rare in this region and noteworthy for the BG scientists to assess surface energy partitioning estimation or understand the land-atmosphere interaction processes on the region.

SPECIFIC COMMENTS: For accurate modeling of SEB including seasonal march of the summer monsoon and the soil hydrology over the plateau, what kind of approaches should be done in future, especially relating ^{18}O stable isotope observation and estimation of damping depth in the soil surface layer ?

REPLY: First, we have one unpublished result on the estimation of damping depth. Using the soil temperature profile measurements, our unpublished study clearly showed seasonal variation because of dramatic changes in soil water content. That is, damping depth is not constant with time on the Plateau. However, the damping depth is fixed in the model in case of a model to use a force-restore method like SiB2. Unfortunately, we do not have long-term data sets, hindering us from assessing more detail. So we recommend to measure soil temperature profiles with a few temperature probes within 10 cm depth on a long-term basis and to analyze a long-term soil temperature profile data.

We think that another issue on ^{18}O observation is a flux partitioning problem. Soil evaporation significantly contributes to surface energy and water partitioning on the Tibetan Plateau but the information on ^{18}O used in our analysis has coarse temporal resolution. Therefore, we need more frequent stable isotope observations (I know that this is not easy on the Tibetan Plateau but this area is pretty important in regional and global climate). We can also apply an analytical approach to do the flux partitioning only using a single level eddy-covariance measurement.

Thank you very much.

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