

## ***Interactive comment on “Seasonal thermal regime and climatic trends in lakes of Tibetan Highlands” by Georgiy Kirillin et al.***

**Anonymous Referee #2**

Received and published: 13 January 2017

This is a nicely written paper analyzing the climatic trends of 2 large lakes of the Tibetan highlands based on a combination of measurements and modeling. The modeled lake surface temperatures are compared to measured temperature in a first step (satellites and in situ measurements), and the climatic trends of the lake surface temperature in response to atmospheric trends are analyzed in a second step. The lake surface temperature is found to change only marginally, and the reason is attributed to counteracting effects of increasing air temperatures and decreasing radiation. I recommend minor revisions along the following points:

1- Though sound, the conclusion about the counteracting effects of increasing air temperature and decreasing radiation is a bit hypothetical in the present form. It would strengthen the conclusion if the authors quantified the expected effect of the decreasing radiation on the lake temperature, and the expected effect of the warming air tem-

C1

perature on the heat budget component and to compare them.

2- a brief description of the Flake model would be beneficial to a smooth reading, since some detailed aspects of the physics included or not in the model are discussed in the model performance section. Also in the discussion of the model performance, the judgment words (appreciably better, etc. . .) could be backed up by basic statistics.

Minor comments: P1L21 and elsewhere: dampened should be damped

P1L22: I would recommend specifying “the modeled mean lake temperatures did not change”.

P4L12: what is the time resolution of the bulk temperature? “All sensors . . . recorded the same temperatures”: are you referring to diurnal averages?

P5L11: is there a mismatch in the figure? There seems to be more open water points than what the figure shows.

P8L28: it could be nice to add a small note on the trend in the satellite measurements as comparison (since there are several decades available).

P9L30: please provide some details about these bulk algorithms.

P11L26: Is the mixed layer thickness not an output of the model? If so, can the evolution in time of the modelled mixed layer thickness confirm the argument?

---

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., doi:10.5194/hess-2016-632, 2016.