Response to Reviewers of bg-2020-472

General response to the Editor

Associate Editor's comments:

Dear Authors,

I thank you for incorporating the very constructive reviewer comments in your second revision. I am pleased to let you know that your manuscript can be published in Biogeosciences, after some technical corrections as follows:

[*Detailed comments were shown below…*]

It has been a great pleasure for me to take part in the review process where you and the reviewers have done excellent jobs in improving the presentation and interpretation of invaluable data obtained from a hard-to-access alpine river system. In particular, I would like to express my sincere thanks to the anonymous reviewer who offered two detailed reports containing very constructive comments, which is rare in this age of "quick reviews", and thereby warranting authors' acknowledgement.

Sincerely,

Ji-Hyung Park

Associate Editor, Biogeosciences

We sincerely thank the editor and reviewers for the considerate and constructive comments on improving this manuscript during the entire review process. We have made substantial corrections to our manuscript this time (details below), and hope our responses have adequately addressed all the comments.

Detailed comments:

- Consistent use of headwater streams and catchments: While you tried to limit the use of headwater streams to small-order streams that could not be identified easily on the coarse-resolution map in Fig. 1, there are still some confusing statements including:

- 1. Title: "an alpine headwater catchment" is Shaliu River, so the phase needs to be rewritten (like "an alpine catchment") to avoid any confusion.

Revised.

- 2. Abstract: "an alpine small stream (the Shaliu River capturing headwaters within its catchment)" can be changed to something like "the Shaliu River, an alpine small river receiving many headwater streams"

Revised.

- 3. Main text (lines 71, 84, 91-92,,,): Please use the terms "river" and "headwater streams" consistently. For instance, the lines 91-92 can be rewritten (The Shaliu River is a small river integrating headwater streams of orders of 1−3). To reflect these changes, you may need to change the Fig. 1 legend that still allocates 1-3 orders to the entire reaches. Please refer again to the reviewer comment.

The terms "river" and "headwater streams" are revised in the main text according to the context, and Figure 1 is revised as follows:

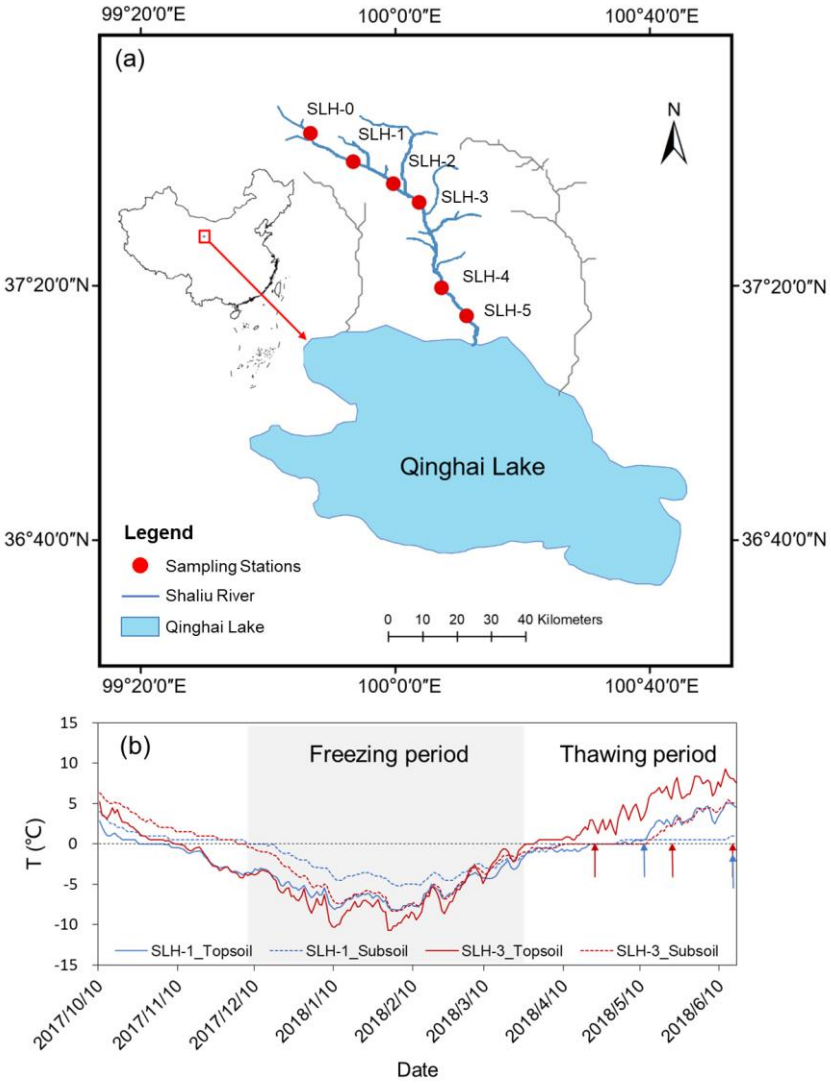

Figure 1. Sampling sites along the Shaliu River (a) and soil temperature (T) at the depth of 10 cm (referred to as topsoil) and 40 cm (subsoil) at SLH-1 and SLH-3 stations (b). The map in panel (a) is processed with ArcGIS 10.0. The blue and red arrows in panel (b) indicate the sampling time for soil solution at SLH-1 and SLH-3 during thawing event, respectively.