

Responses to Reviewers' Comments/Suggestions

Thanks to the editor and two anonymous reviewers for your time spent on reviewing our manuscript and support for our study! We revised our manuscript following the comments and suggestions provided by reviewers, where appropriate. Below are our point-to-point responses (**AR** for author response) to the comments and suggestions from reviewers and journal staff who make the quality control. I hope our revision this time is satisfactory to all.

(1) Notification to the authors by Polina Shvedko:

The title page of *.pdf. manuscript file must include the full institutional addresses of all authors. However, country name is missing from the affiliations. Please add it for the next revision.

AR: Added as suggested. We also added our zip codes.

(2) Report #1

Accepted as is

AR: Thanks Reviewer 1 for your continued support of our study!

(3) Report #2

The paper focuses on the elevational control of isotopic composition and application in understanding hydrologic processes. The topic is very interesting and valuable and the manuscript is well organized.

AR: Thanks Reviewer 2 for your continued support of our study!

However, there are still several problems that need to be addressed.

AR: We revised our manuscript again following the comments and suggestions provided and we justified where we think a change is not necessary.

Lines 38-39. "catchment-characteristic isotopic value" should explain simply.

AR: Added a phrase to explain the term (see P1, L38-39 in the revised version).

Lines 42-43. "more sensitive to temperature increase" indicates more sensitive to seasonal temperature increase during the baseflow period. It should be revised to remove misunderstanding with temperature increase with climate change

AR: Changed as suggested (P1, L43-44 in the revised version).

Line 50. It is not suitable to use climate change as a key word. Further, climate change should not be emphasized in the manuscript and the use of the word in the main body should be cautious as the topic of the manuscript is indirectly related to the climate change.

AR: Removed as a key word.

Lines 283-290. Annual runoff depth for the gauged catchments is suggested to show the general hydrologic conditions.

AR: The reviewer got a good point. For our purpose, however, flow rate was consistently used in both figures and text in the manuscript. Using flow rate, the rainfall effect on flow in the lower elevation gage (Briceburg) can be clearly seen and easily compared with the high-elevation gages. In particular, the measurement errors at Briceburg can be clearly spotted. Using runoff depth, however, the curves were intertwined, and the above effects were not easily spotted.

Lines 627-630. CCIV is a core value of the manuscript. Details on the calculation are needed. The application of CCIV is an important part for the manuscript. It may be better to put it to the result part and put more attention on the application of CCIV for hydrological processes, like determining the duration and the magnitude of snowmelt events.

AR: We are delighted that Reviewer 2 really likes the CCIV section. Equally, a group of mountain hydrologists were very excited about the modeling of groundwater recharge elevations when we presented our work in a hydroclimate conference in California, USA. To put the CCIV section in the Results, it is assumed that we knew such a characteristic/phenomenon exists *a priori*. As a matter of fact, we were able to demonstrate its usefulness only after we extensively discussed the controlling factors on isotopic composition in streamflow in the first part of the Discussion section. Thus, we argue that it is the best to have it in the Discussion section, together with the modeling of groundwater recharge elevations. Also, we added a sentence to explain how to calculate CCIV (P26, L630-631 in the revised version).

Lines 699-700. “the arithmetic mean isotopic value from samples” may be better. More explanation is needed for lines 703-705.

AR: Two great suggestions here from the reviewer! Arithmetic mean is indeed what we meant (thus added as suggested). The argument about Yosemite Creek was enhanced by adding specific details (see P29, L704-705 in the revised version).

Lines 761-770. It should also be noted that the method assumes that the difference of runoff depth generated at different elevation is ignored.

AR: It was added as a clause in the argument (see P32, L768-769 in the revised version).