

Earth Syst. Sci. Data Discuss., author comment AC2
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Reply on RC3

Arial J. Shogren et al.

Author comment on "Multi-year, spatially extensive, watershed-scale synoptic stream chemistry and water quality conditions for six permafrost-underlain Arctic watersheds" by Arial J. Shogren et al., Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2021-155-AC2>, 2021

Shogren et al. represent a valuable dataset consisting of water chemistry across six watersheds in northern Alaska. The authors have already addressed all previous reviewer's concerns.

We thank the reviewer for their careful consideration.

Here, I have only one comment regarding the measurement of "the spatial stability" for your consideration: As shown in Eq.3, Spearman's rho was used to assess the correlation between rg_x and rg_y , and gg_x is the rank correlation of sub-catchments? Is this correct? Moreover, the significance test should be given for Figure 9.

Though we are not sure which variable gg_x refers to here, we realize that the lack of detail was confusing. We have amended the text as follows: Where rg_x is the rank of subcatchments at the time of synoptic sampling, rg_y is the rank of the long-term flow weighted concentrations, while σ_{rg_x} and σ_{rg_y} represent the standard deviations of the rank variables.

Further, we have added indication of r_s significance in a revised Figure 9, as suggested.