Earth Syst. Sci. Data Discuss., author comment AC2
https://doi.org/10.5194/essd-2021-155-AC2, 2021
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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 rgx and rgy, and ggx 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 ggx 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_{rgx} and σ_{rgy} represent the standard deviations of the rank variables.

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