

Dear Editor

Thank you for your detailed review. In the 2nd revised version, we carefully followed all your suggestions as explained below.

Table 1

This Table contains a lot of information, but it is not listed in a logical order. Currently, the table seems built up based on watershed size (small to big). It also is difficult to link this information to Figure 1 as the column with "number on the map" is not sorted. I suggest to move the column "number on the map" to the far left (make it the first column) and sort the table according to this numbering (1 to 91). Also: please "number on the map" instead of "nuber on the map". *We re-organized the columns and numbering in this Table and we corrected the typo as noted.*

Figure 1

The legend and the pie chart representation of the sampling points has improved significantly. Also the numbers that correspond with the sampling sites are very useful. However, as both reviewers point out, the river names are hardly visible. I suggest to (1) remove most of the place names (e.g., Nazino, Strezhevoi, Salym) and only list the larger cities (e.g., Tomsk), and (2) highlight the larger rivers (Taz, Nadym, Pur, Ob') by thickening the blue lines as represented on the map and enlarging the river name text. These points apply to both Fig 1 and Fig. 1 continued. *We greatly re-organized the figures following your recommendations: removed small geographical names, enhanced rivers and added lithological information. Note that adding detailed geocryological information would greatly overload these maps, which already present all 4 main geocryological zones (absent, sporadic, discontinuous and continuous permafrost).*

Other points:

- Did you sample the Nadym river? It is not listed in Table 1 but you mention it in the text. No, this river was not sampled. *As we stated in the text, we discussed the available literature data for the Nadym River and compared it to Taz, Pur and Ob, sampled in this study.*

- Figure S5 and S6: can you change the symbols for continuous permafrost (for example to black rectangle with white filling) because now the symbols of continuous and discontinuous permafrost are hard to distinguish from each other. *We corrected the symbols as suggested.*

- Can you add the Figure of lithology and geocryology that you use in your response to author comments to the supplementary information of the manuscript? *We did so in the revised Figure 1. Also, could you refer to this figure somewhere appropriate in the text (for example in line 109, and/or line 132-134)? Following this recommendation, we added explicatory sentences in L 132-134 of section 2.1 (now L 134-136).*

- line 40 (revised ms word-doc): change "were" to "was" - *Fixed*

- line 105: replace "on" with "in" - *Fixed*

- line 150-151: suggest to replace "The position of the permafrost provenances in the WSL" with "Permafrost zonation in the WSL" - *Fixed*

- line 158: replace "sampling during seasons covered full" with "seasonal sampling covered a full" –

Fixed.

- line 166 and 178: write "absorbance" instead of "absorbency" - *Fixed*
- line 202: insert "a" before "different number" – *Fixed.*
- line 210: write "seasons" instead of "season" – *Fixed.*
- line 214: write "into" instead of "on" – *Fixed.*
- line 303: write "three" instead of "3" – *Fixed.*
- line 305: I suggest to write "confirm a strong control of lithology and soil weathering on Ca concentration" – *Fixed.*
- line 307: write "extent" instead of "extend" – *Fixed.*
- line 378: write "studies of the hydrological balance of frozen bogs" – *Fixed.*
- line 406: write "retaining in" or "retained by" – *Fixed.*
- line 434: this is the only time you link to samples using RF-codes, can you make this a bit clearer by also adding the river numbers? – *Fixed, by adding river numbers of the map and Table 1.*
- heading 4.3: I suggest to write "of chemical composition and fluxes of western Siberian rivers under climate change scenarios" – *Fixed.*
- line 581: write "patterns" instead of "pattern" – *Fixed.*
- line 585: replace "are" with "is" – *Fixed.*
- line 595: remove "be" in front of "bring about" – *Fixed.*

- figure caption Fig. 6B: I presume there is a spelling error "BGf@" at soil horizon 10. – *Corrected.*

- Table S2: S2-E is listed before S2-D. - *Corrected.*