



Supplementary Material

Table S1. Water temperature at the time of sampling

River	T, °C
Senga	14
Mezha	15
Ivnyashka	13
Mga	13
Koy	12
Ilexa	13
Kovzha	12
Pionerka	12
Vuoksa	11
Lemb	12
Lundozhma	10
Ukhta	11
Cherpayoki	10
Olanga	10

Table S2. Coefficients of determination (R^2) of the main chemical characteristics (< 0.22 μm filtrates) and physiographic characteristics of the research objects.

R^2	pH	æ	HCO_3^-	Cl^-	NO_3^-	SO_4^{2-}	Na	Mg	K	Ca	DOC	Fe
		$\mu\text{S/cm}$	mg/L									
Latitude	0.10	0.08	0.14	0.001	0.35	0.06	0.04	0.06	0.15	0.18	0.20	0.06
Catchment area, km^2	0.03	0.04	0.002	0.11	0.00	0.13	0.001	0.04	0.04	0.005	0.01	0.04
Watercourse length, km	0.004	0.02	0.02	0.02	0.04	0.001	0.01	0.02	0.003	0.03	0.00	0.07
MAP, mm/day	0.006	0.00	0.07	0.01	0.10	0.00	0.03	0.003	0.02	0.02	0.17	0.001
MAAT, °C	0.06	0.04	0.10	0.001	0.24	0.07	0.15	0.02	0.097	0.11	0.05	0.09

**Table S3.** The iron species in the studied waters (%) as calculated by vMINTeq.

River	% of iron species			
Senga	0.02 Fe(OH) ₂ ⁺	99.975/FA ₂ FeOH _(aq)		
Mezha	0.149 Fe(OH) ₂ ⁺	99.84/ FA ₂ FeOH _(aq)		
Ivnyashka	99.985/FA ₂ FeOH _(aq)			
Mga	0.992 Fe(OH) ₂ ⁺	0.032 Fe(OH) _{3 (aq)}	0.044 Fe(OH) ₄ ⁻	98,929/FA ₂ FeOH _(aq)
Koy	99.994/FA ₂ FeOH _(aq)			
Ilexa	1.889 Fe(OH) ₂ ⁺	0.098 Fe(OH) _{3 (aq)}	0.212 Fe(OH) ₄ ⁻	97,8/FA ₂ FeOH _(aq)
Kovzha	0.084 Fe(OH) ₂ ⁺	99.903/FA ₂ FeOH _(aq)		
Pionerka	99.989/FA ₂ FeOH _(aq)			
Vuoksa	99.992/FA ₂ FeOH _(aq)			
Lemb	0.159 Fe(OH) ₂ ⁺	99.826/FA ₂ FeOH _(aq)		
Lun- dozhma	0.115 Fe(OH) ₂ ⁺	99.869/FA ₂ FeOH _(aq)	0.016/FA ₂ Fe ⁺ _(aq)	
Ukhta	0.199 Fe(OH) ₂ ⁺	99.784/ FA ₂ FeOH _(aq)		
Cherpay- oki	2.396 Fe(OH) ₂ ⁺	0.01 Fe(OH) _{3 (aq)}	97.561/FA ₂ FeOH _(aq)	0,029/FA ₂ Fe ⁺ _(aq)
Olanga	0.011 Fe(OH) ₂ ⁺	99.982/FA ₂ FeOH _(aq)		

Footnote: FA is for Fulvic Acid

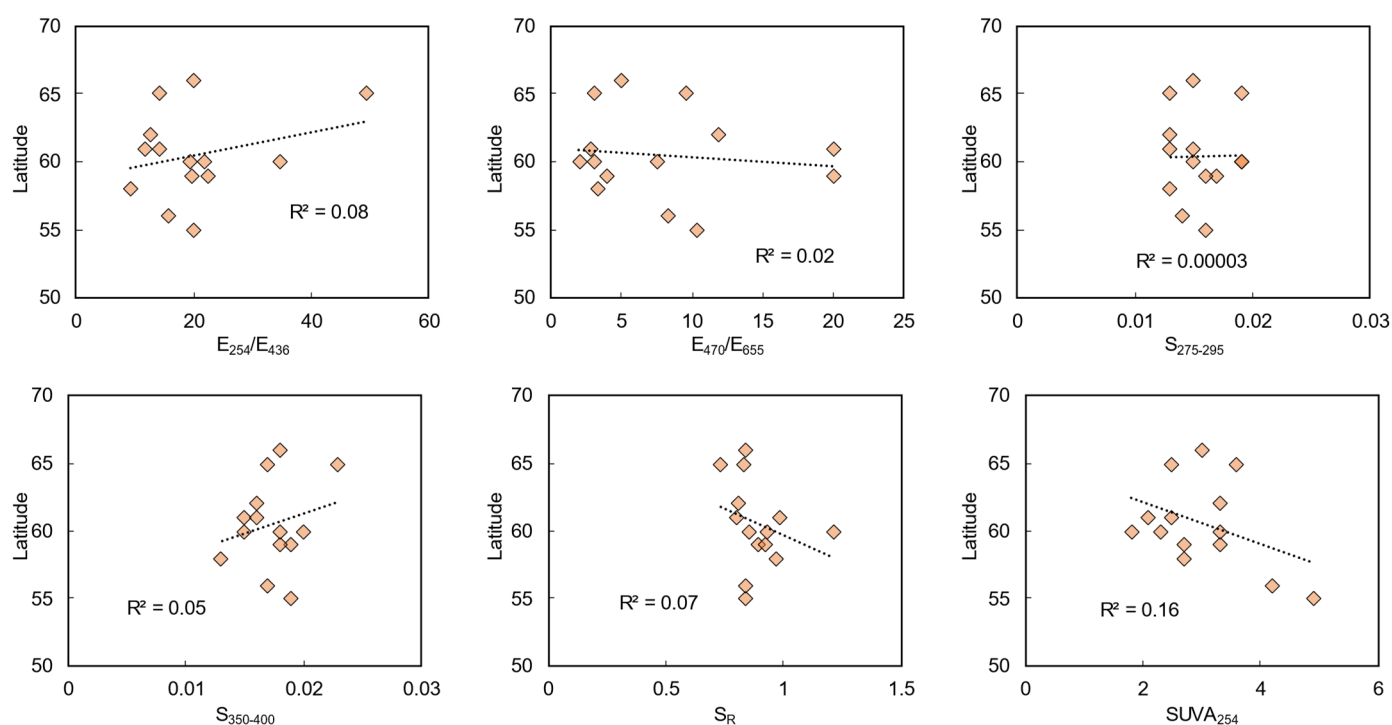


Figure S1. No correlations of main optical characteristics with latitude of sample points.

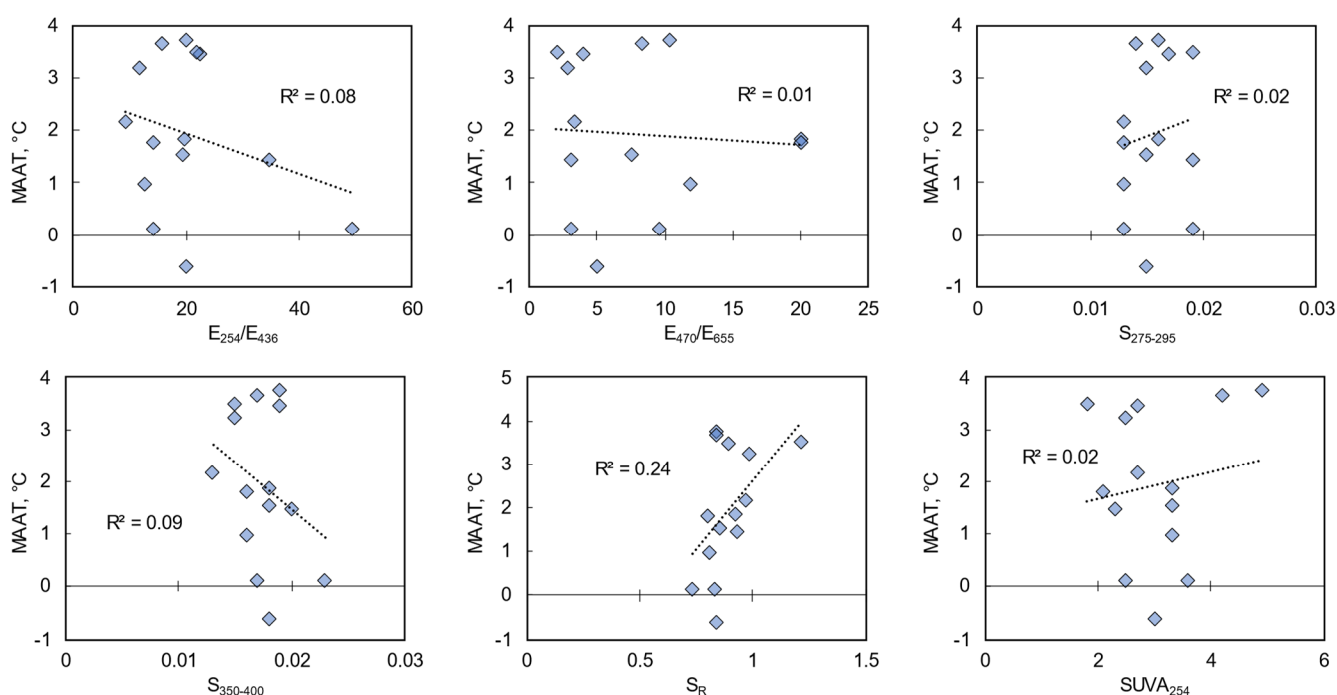


Figure S2. Lack of correlations between main optical characteristics with mean annual air temperature (MAAT, °C) of sample points.

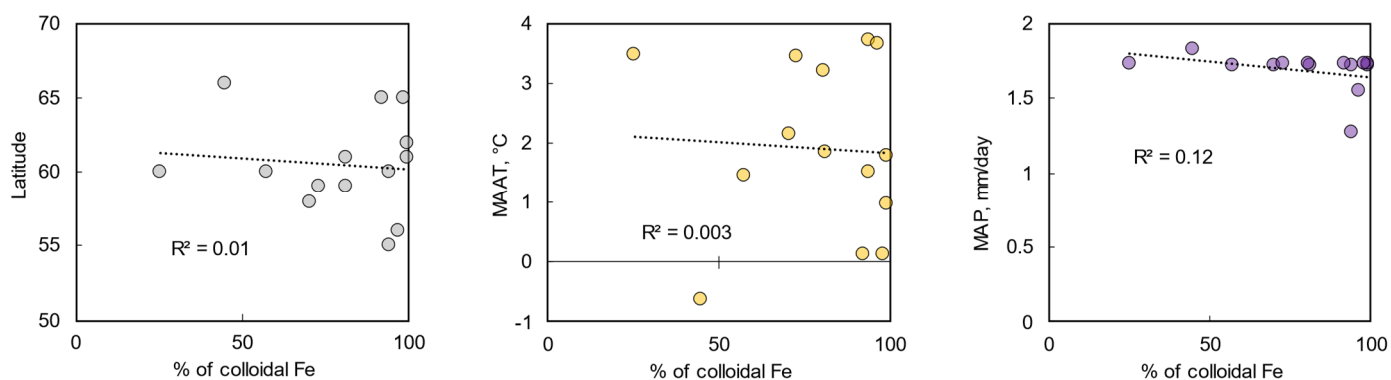


Figure S3. Lack of correlations between the percentage of colloidal Fe and latitude, mean annual air temperature (MAAT, °C) and mean annual precipitation (MAP, mm/day) of samples river watersheds.

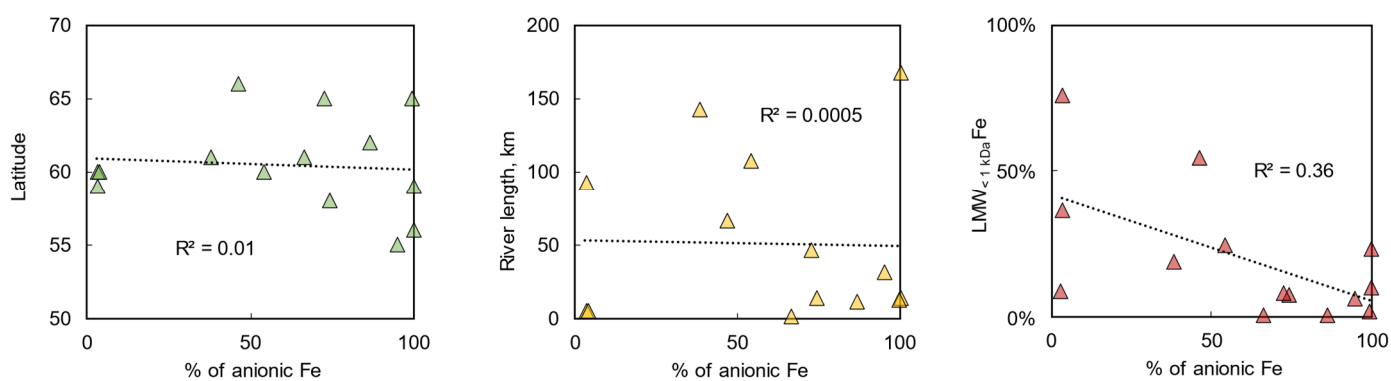


Figure S4. Lack of correlations between the percentage of anionic Fe and latitude, river length (km) and % of LMW_{<1 kDa} Fe.

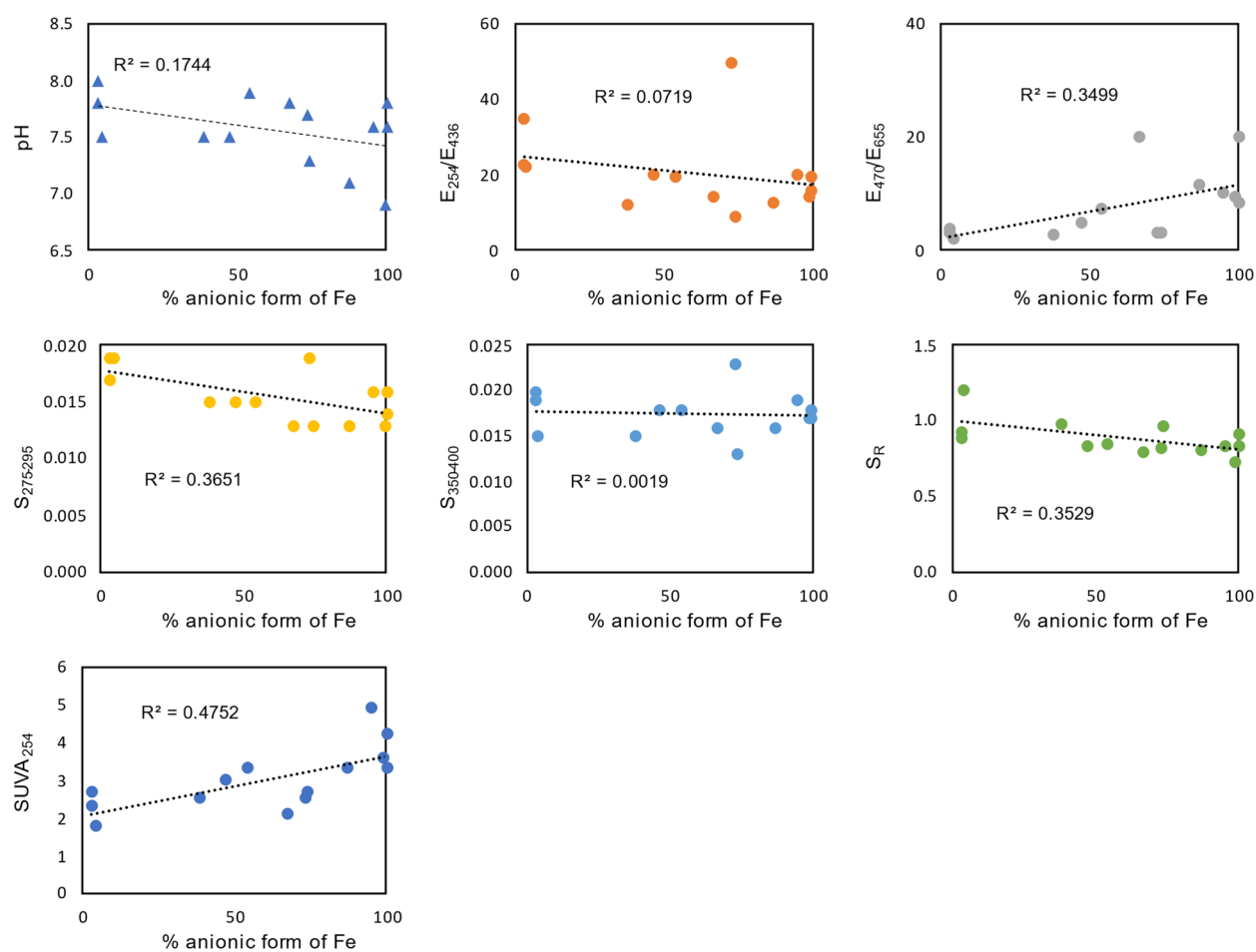


Figure S5. Lack of correlations between the percentage of anionic Fe vs pH and most optical characteristics.