



Supplement of

The role of catchment characteristics, discharge, and active-layer thaw in seasonal stream chemistry across 10 permafrost catchments

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Table S1. Summary results from all GAMs.

Site	Solute	R ²	b	b SE	p-value (Q)	CV Ratio	edf	p-value (sDOY)	sDOY Range	Mean sDOY SE	n
BB	Ca	0.58	-0.31	0.04	0.00	0.12	1.00	0.00	0.21	0.04	43
BB	DOC	0.53	0.12	0.06	0.04	0.15	2.82	0.00	0.23	0.07	42
BB	Mg	0.22	-0.54	0.15	0.00	0.43	1.00	0.11	0.39	0.14	43
BB	SpC	0.88	-0.23	0.03	0.00	0.08	5.64	0.00	0.51	0.11	42
BB	Sulphate	0.78	-0.61	0.07	0.00	0.19	4.78	0.00	0.26	0.05	43
CL	Ca	0.63	-0.36	0.05	0.00	0.22	2.90	0.16	0.16	0.05	34
CL	DOC	0.05	-0.01	0.06	0.89	0.28	1.00	0.06	0.14	0.04	34
CL	Mg	0.66	-0.52	0.07	0.00	0.40	2.62	0.25	0.19	0.06	34
CL	SpC	0.20	-0.14	0.05	0.02	0.12	1.00	0.36	0.38	0.08	24
CL	Sulphate	0.18	-0.17	0.13	0.22	0.51	1.00	0.02	0.05	0.03	34
GC	Ca	0.65	-0.37	0.05	0.00	0.16	3.40	0.01	0.17	0.07	79
GC	DOC	0.62	0.31	0.08	0.00	0.24	7.08	0.00	0.50	0.13	80
GC	Mg	0.39	-0.61	0.09	0.00	0.40	1.00	0.12	0.27	0.09	79
GC	SpC	0.88	-0.30	0.03	0.00	0.09	4.69	0.00	0.41	0.09	75
GC	Sulphate	0.66	-0.49	0.06	0.00	0.18	4.95	0.00	0.14	0.04	79
Km 104	Ca	0.91	-0.10	0.03	0.00	0.12	3.69	0.00	0.93	0.07	28
Km 104	DOC	0.18	-0.04	0.04	0.28	0.06	2.12	0.27	0.19	0.08	28
Km 104	Mg	0.87	-0.10	0.03	0.01	0.17	3.17	0.00	0.97	0.09	28
Km 104	SpC	0.91	-0.08	0.02	0.00	0.08	3.66	0.00	1.78	0.19	26
Km 104	Sulphate	0.45	-0.17	0.14	0.23	0.40	1.00	0.00	0.74	0.06	28
Km 175	Ca	0.93	-0.26	0.03	0.00	0.20	3.82	0.00	0.58	0.04	40
Km 175	DOC	0.13	0.14	0.07	0.06	0.25	1.00	0.10	0.17	0.05	39
Km 175	Mg	0.74	-0.42	0.05	0.00	0.26	2.09	0.01	0.25	0.06	40
Km 175	SpC	0.86	-0.26	0.03	0.00	0.14	2.45	0.00	0.38	0.05	37
Km 175	Sulphate	0.84	-0.41	0.04	0.00	0.20	2.15	0.00	0.37	0.04	40
Km 185	Ca	0.92	-0.17	0.02	0.00	0.12	4.92	0.00	0.74	0.04	35
Km 185	DOC	0.78	0.06	0.02	0.03	0.10	5.88	0.00	0.50	0.04	34
Km 185	Mg	0.90	-0.20	0.03	0.00	0.17	4.30	0.00	0.75	0.05	35
Km 185	SpC	0.93	-0.15	0.02	0.00	0.09	4.78	0.00	0.81	0.05	33
Km 185	Sulphate	0.90	-0.18	0.03	0.00	0.13	4.24	0.00	0.64	0.03	35
Km 44	Ca	0.44	-0.12	0.03	0.00	0.09	1.67	0.01	0.17	0.04	43
Km 44	DOC	0.52	-0.11	0.07	0.09	0.32	3.03	0.00	0.69	0.11	42
Km 44	Mg	0.53	-0.17	0.03	0.00	0.14	2.31	0.00	0.23	0.05	43
Km 44	SpC	0.80	-0.11	0.01	0.00	0.05	2.07	0.00	0.35	0.05	39
Km 44	Sulphate	0.71	-0.24	0.03	0.00	0.13	2.04	0.00	0.23	0.02	43
Km 71	Ca	0.91	-0.33	0.04	0.00	0.25	4.11	0.00	0.59	0.05	35
Km 71	DOC	0.47	0.10	0.17	0.56	0.90	1.00	0.00	1.02	0.10	34
Km 71	Mg	0.88	-0.36	0.04	0.00	0.23	3.29	0.00	0.50	0.04	35
Km 71	SpC	0.39	-0.31	0.10	0.00	0.21	1.00	0.00	0.53	0.05	34

Km 71	Sulphate	0.86	-0.36	0.04	0.00	0.19	3.20	0.00	0.46	0.05	35
Km 99	Ca	0.91	-0.30	0.03	0.00	0.14	3.42	0.00	0.61	0.06	47
Km 99	DOC	0.41	0.13	0.05	0.01	0.11	2.28	0.02	0.33	0.08	45
Km 99	Mg	0.83	-0.35	0.04	0.00	0.20	2.47	0.00	0.52	0.07	47
Km 99	SpC	0.94	-0.29	0.02	0.00	0.11	5.30	0.00	0.59	0.09	41
Km 99	Sulphate	0.77	-0.47	0.06	0.00	0.20	1.91	0.00	0.47	0.06	47
WCO	Ca	0.50	-0.29	0.04	0.00	0.23	2.62	0.05	0.13	0.05	92
WCO	DOC	0.73	0.20	0.06	0.00	0.52	7.18	0.00	0.52	0.10	92
WCO	Mg	0.73	-0.41	0.03	0.00	0.34	2.61	0.00	0.19	0.04	92
WCO	SpC	0.68	-0.18	0.03	0.00	0.13	4.22	0.00	0.18	0.05	69
WCO	Sulphate	0.74	-0.31	0.03	0.00	0.29	4.24	0.00	0.12	0.04	92

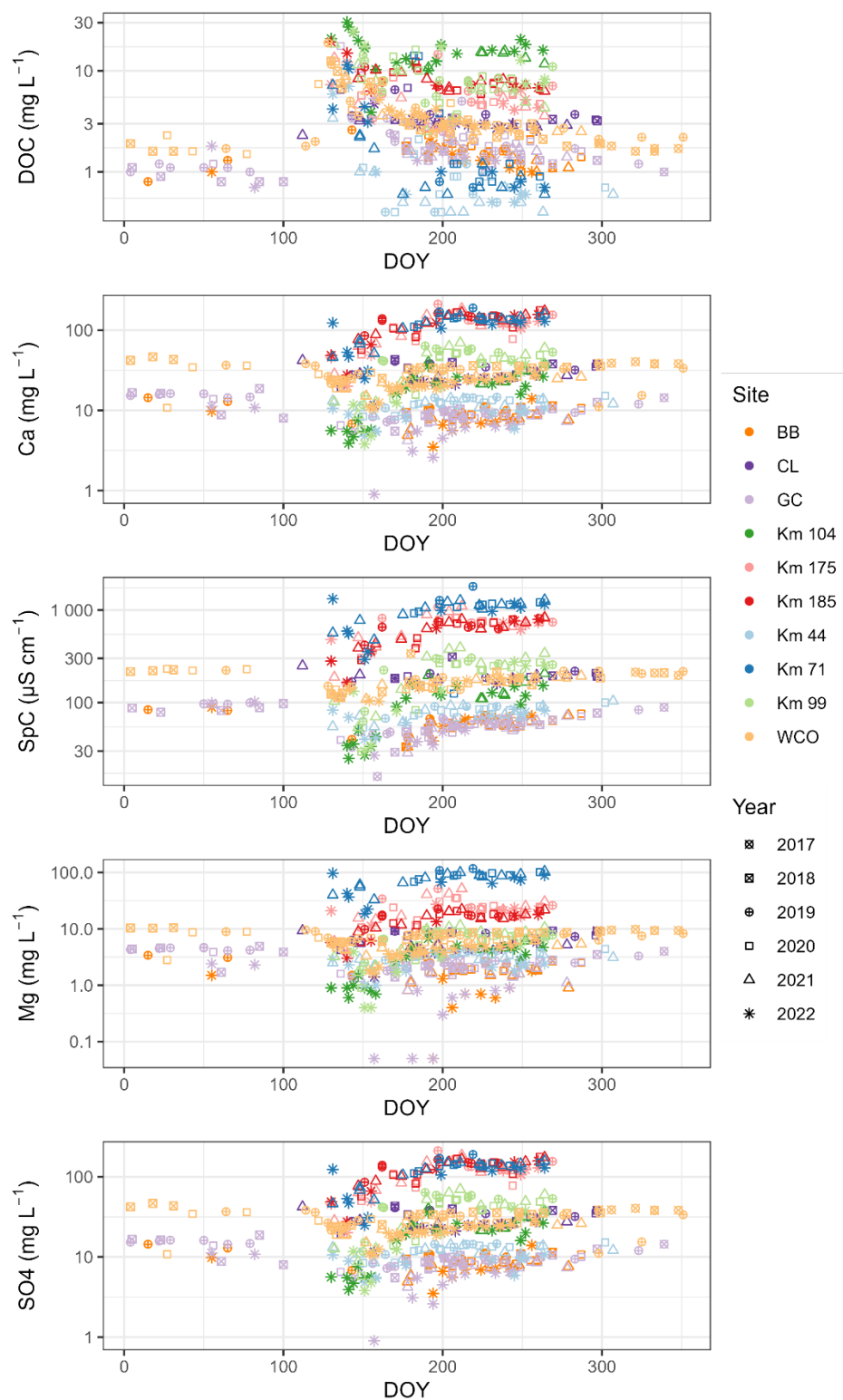


Figure S1. Solute concentrations plotted against day of year (DOY). Shapes represent the year the sample was taken. Only samples with associated discharge value were included in the plot. Y-axes were logged for easier interpretation.

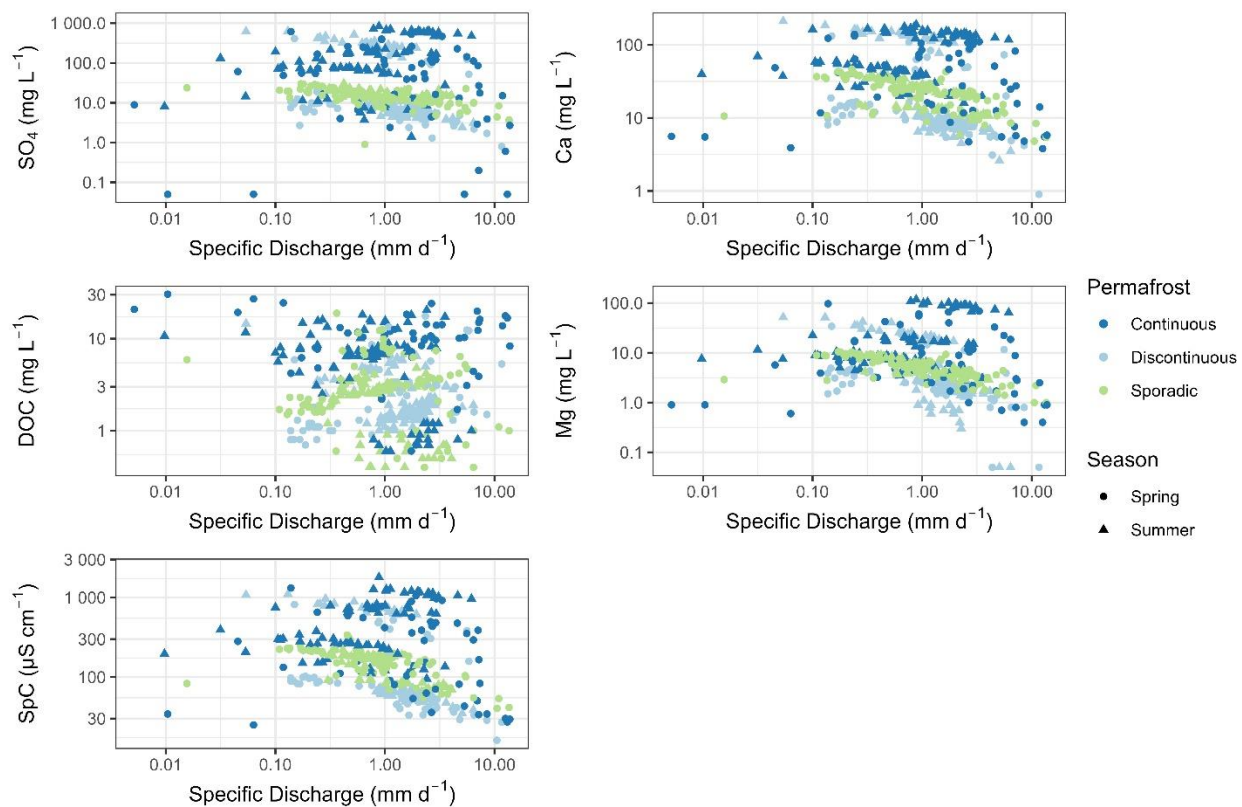


Figure S2. Solute concentrations plotted against flow for all sites. Winter samples were lumped in with spring. Colours represent permafrost extent.

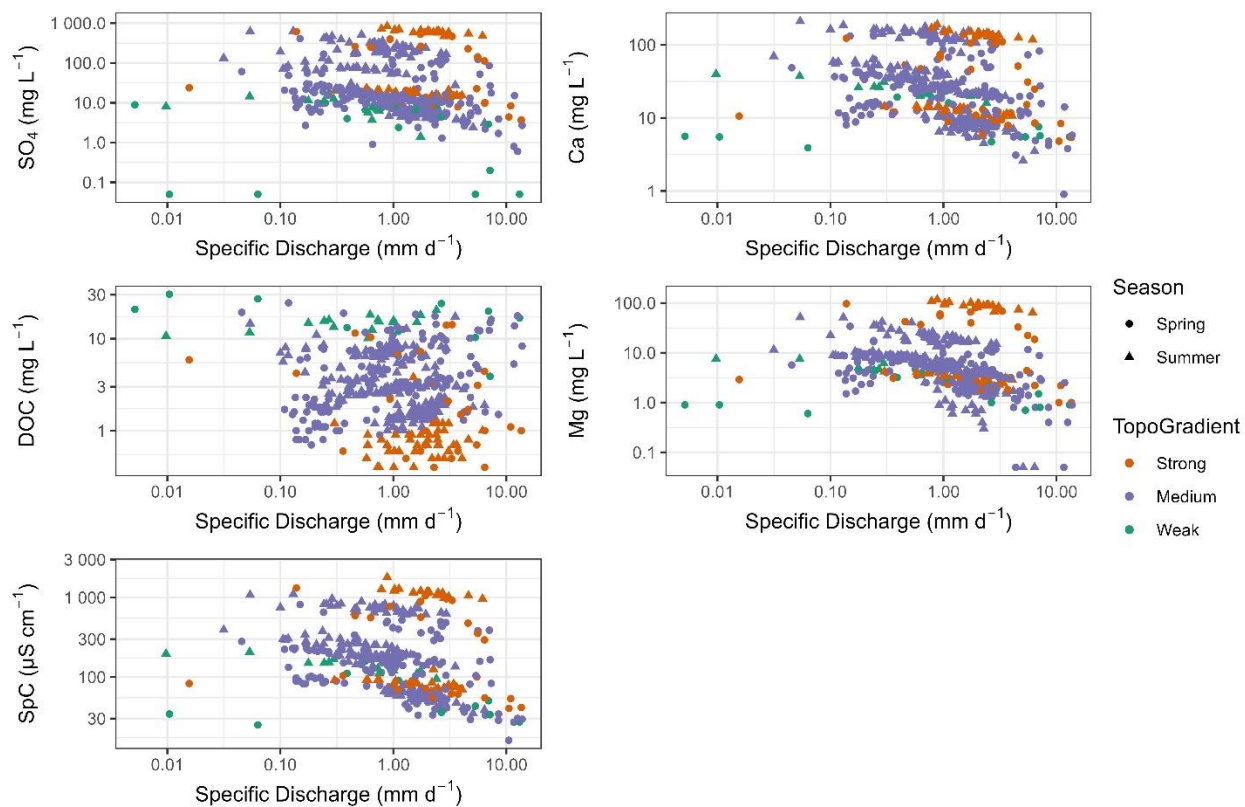


Figure S3. Solute concentrations plotted against flow for all sites. Winter samples were lumped in with spring. Colours represent topographical gradients.