

Supplementary Material

Hydrological and hydrochemical drought responses across ten solutes in a pre-alpine headwater catchment

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Summary. This supplementary material complements the manuscript of Winter et al. (2026). It includes a table (Table S2)
20 average solute concentrations in discharge, precipitation, soil water and groundwater of the Erlenbach catchment, a Figure
(S1) depicting the hydro-meteorological conditions in the catchment, and another Figure (S2) depicting solute concentrations
in the discharge and their differences between drought, normal and recovery conditions.

30 **Table S2. Median values and their interquartile ranges (grey) for solute concentrations in the stream discharge and precipitation during the summer drought in 2018, the subsequent recovery and during normal summer conditions (July-August, 2017, 2019 and 2020). Groundwater samples from Knapp et al. (2020) and Kiewiet et al. (2019) were taken from two pumping wells located upstream in the catchment at one to three sampling times, providing an estimate of potential groundwater concentrations that are, however, not necessarily representative of the entire catchment. Similarly, soil water samples (N= 41-102) from Knapp et al (2020) and Kiewiet et al. (2019) were taken at the adjacent**

35 **Studibach catchment, giving a good estimate but not being entirely representative for the Erlenbach catchment.**

Solute [µg L ⁻¹]	Discharge		Precipitation		Discharge		Precipitation		Discharge		Precipitation		Groundwater	Soil water		
	Drought period				Recovery				Normal summer periods				From literature			
Ca	58 022	2 685	44 455	1 980	53 506	1 850	50 057	13 553	[56 458-60 123]	[2 456-3 444]	[38 412-49 545]	[1 822-2 168]	[47 575-57 309]	[1 329-2 791]	[46 648-53 880]	[3 461-31 007]
Mg	3 929	147	2 904	104	3 525	88	1 767	13 588	[3 766-4 098]	[131-194]	[2 405-3 353]	[97-119]	[3 025-3 850]	[68-138]	[1 503-2 013]	[3 885-20 429]
SO₄	26 866	419	18 981	211	10 998	198	4 944	892	[23 708-31 409]	[176-672]	[16 058-25 483]	[128-425]	[8 123-13 373]	[80-600]	[3 557-6 531]	[428-1865]
NO₃	1 561	559	699	323	688	465	1 672	84	[1 468-1 717]	[367-1 471]	[328-841]	[221-760]	[469-899]	[197-1 019]	[514-1 840]	[9.5-565]
Cl	496	48	283	39	259	42	891	739	[476-566]	[25-121]	[190-419]	[18-224]	[186-322]	[16-96]	[768-961]	[447-1319]
K	977	113	789	30	830	110	1 197	527	[951-1 016]	[60-254]	[665-912]	[23-48]	[695-937]	[51-219]	[1 101-1 210]	[273-879]
Cr	0.04	0.02	0.07	0.01	0.05	0.02	0.13	0.47	[0.03-0.06]	[0.00-0.55]	[0.03-0.13]	[0.00-0.11]	[0.03-0.17]	[0.00-0.10]	[0.13-0.14]	[0.02-1.04]
Fe	1.45	1.48	4.16	1.04	3.95	1.65	1.21	18	[0.87-3.55]	[0.00-8.92]	[1.13-29.0]	[0.23-2.39]	[1.28-63]	[0.00-14]	[0.61-2.07]	[6.6-109]
Sr	404	8.8	293	5.71	331	5.97	556	99	[375-423]	[7.23-12.50]	[240-338]	[5.37-6.94]	[270-366]	[3.58-13]	[551-560]	[0.77-297]
Mn	0.1	0.19	0.22	0.06	0.25	0.26	0.42	12	[0.05-1.90]	[0.03-3.99]	[0.03-4.36]	[0.00-0.79]	[0.07-7.06]	[0.04-5.79]	[0.25-1.8]	[4.0-64]

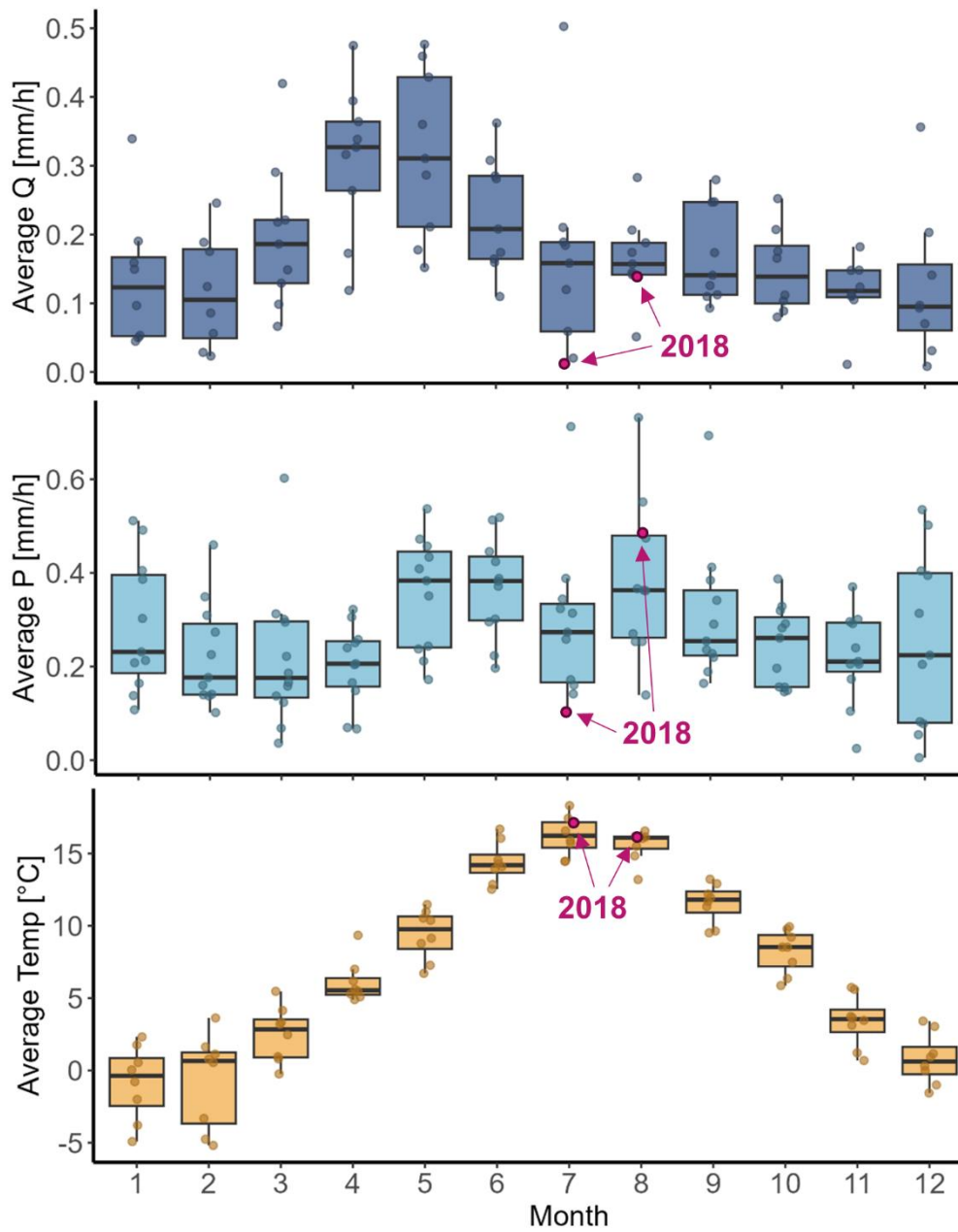
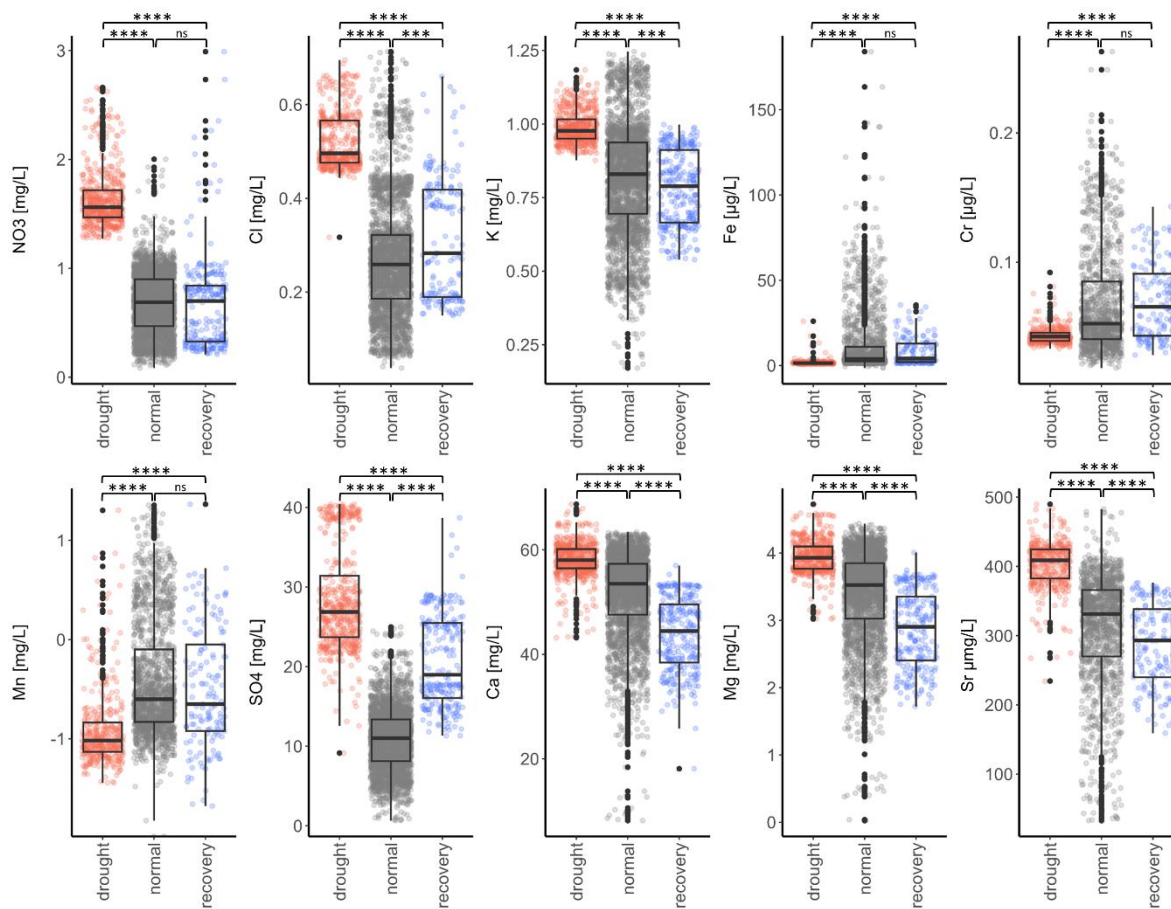


Figure S1. Average Hydro-meteorological conditions in the Erlenbach catchment (2012-2020).



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Figure S2. Solute concentrations compared between drought, recovery and normal conditions: Significant differences were tested using the Kruskal-Wallis test with Bonferroni Post-Hoc correction and a significance level of 0.05.