

## Article

# Supplementary Materials: Dissolved Organic Matter (DOM) in a Warm-Temperate Forested Watershed—A Possibility of Ultraviolet Absorbance as an Indicator of DOM

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**Table S1.** Soil chemical properties of the YMS.\*

Horizon	Depth cm	pH(H <sub>2</sub> O)	pH(KCl)	C g kg <sup>-1</sup>	N g kg <sup>-1</sup>	C/N	CEC cmol(+) kg <sup>-1</sup>	Ca cmol(+) kg <sup>-1</sup>	Mg cmol(+) kg <sup>-1</sup>	K cmol(+) kg <sup>-1</sup>	Na cmol(+) kg <sup>-1</sup>	Base Satur. %
A1	0-3	4.49	3.48	27.5	1.76	15.6	13.35	2.46	0.55	0.21	0.40	27.2
AB	3-24	4.74	3.65	10.5	0.66	15.9	8.05	0.36	0.13	0.10	0.09	8.4
BC	24-63	5.17	3.91	1.6	0.10	15.3	5.28	1.36	0.28	0.19	0.13	37.2
C	63-83	5.23	3.92	4.2	0.29	14.6	6.51	2.10	0.46	0.06	0.09	41.6

\* Soil samples were collected from the same location as the soil-percolating water samples.

**Table S2.** Soil physical properties of the YMS.\*

Horizon	C. Sand 2–0.2mm	F. Sand 0.2–0.02mm	Silt 0.02–0.002mm	Clay 0.002mm>	Soil texture
A1	45	33	13	9	SL
AB	47	32	9	12	SL
BC	66	26	5	3	LS
C	63	29	6	3	LS

\* Soil samples were collected from the same location as the soil-percolating water samples.

**Table S3.** Total precipitation, average water temperature, and average water chemical constituents for all sample types at the YMS from July 2002 to March 2004.

Sample type	Precipitation mm	WT °C	pH	EC mS m <sup>-1</sup>	DOC mgC L <sup>-1</sup>	DON mgN L <sup>-1</sup>	DOC /DON	T-N mg N L <sup>-1</sup>	UV <sub>254</sub> cm <sup>-1</sup>	SUVA <sub>254</sub> L mg C <sup>-1</sup> m <sup>-1</sup>	Si mg L <sup>-1</sup>	N
Rv	2431		4.86	1.21	1.16	0.09	21.1	0.41	0.019	2.53		41 (27)
Rr	2243		4.74	1.55	1.31	0.05	19.5	0.28	0.012	1.07		41 (29)
Rd	2319		4.83	1.29	1.83	0.10	21.1	0.43	0.018	1.35		40 (29)
TF	1681		5.41	2.28	5.69	0.21	27.6	0.81	0.150	2.72		42 (40)
SF			5.77	2.42	13.64	0.44	31.1	0.59	0.416	3.16		45 (35)
O leachate			4.51	7.98	31.00	1.36	26.8	4.97	1.198	3.94		36 (34)
So10			4.63	4.52	16.74	0.61	30.5	2.30	0.519	3.09		26 (20)
So30			4.92	4.26	14.25	0.47	28.3	2.47	0.374	2.73		21 (17)
So70			5.23	6.11	22.88	0.98	37.2	2.48	0.716	3.11		33 (22)
SPa		14.7	7.15	7.28	0.97	ND	ND	0.86	0.033	3.72	12.5	45 (2)
SPb		14.3	7.09	6.13	0.89	0.04	27.0	0.90	0.028	3.36	12.1	45 (2)
STa		14.0	7.09	6.92	2.06	0.04	33.4	0.65	0.086	4.17	12.0	45 (2)
STb		14.3	7.14	6.66	1.72	0.03	46.2	0.70	0.064	3.94	12.1	45 (2)
STc		14.2	7.11	6.58	2.01	0.02	68.7	1.07	0.070	3.56	11.0	45 (2)
STw		14.6	7.17	6.34	2.42	0.10	24.2	1.25	0.082	3.44	10.8	46 (6)

WT, simple average of water temperature. pH was calculated based on the weight-average proton concentration. Data are shown as the weight-average for bulk rains (Rv, Rr, and Rd), TF, SF, O leachate, and soil-percolating waters (So10, So30, and So70); they are shown as the simple average for seepage waters (SPa and SPb) and stream waters (STa, STb, STc, and STw). N indicates the number of samples except for DON, DOC/DON, and T-N; numbers in brackets indicate the number of samples for DON, DOC/DON, and T-N. The values for DON and DOC/DON of SPa are not shown because the DON values were negative. N, the number of measured samples. See Figure 1 for the meaning of the abbreviations.

**Table S4.** Average ion concentration in all sample types at the YMS from July 2002 to March 2004.

Sample type	H <sup>+</sup> μmol L <sup>-1</sup>	Ca <sup>2+</sup> μmol L <sup>-1</sup>	Mg <sup>2+</sup> μmol L <sup>-1</sup>	Na <sup>+</sup> μmol L <sup>-1</sup>	K <sup>+</sup> μmol L <sup>-1</sup>	NH <sub>4</sub> <sup>+</sup> μmol L <sup>-1</sup>	Cl <sup>-</sup> μmol L <sup>-1</sup>	NO <sub>3</sub> <sup>-</sup> μmol L <sup>-1</sup>	NO <sub>2</sub> <sup>-</sup> μmol L <sup>-1</sup>	PO <sub>4</sub> <sup>3-</sup> μmol L <sup>-1</sup>	SO <sub>4</sub> <sup>2-</sup> μmol L <sup>-1</sup>	HCO <sub>3</sub> <sup>-</sup> μmol L <sup>-1</sup>	Cations μeq L <sup>-1</sup>	Anions μeq L <sup>-1</sup>	C/A
Rv	13.8	6.9	2.1	12.4	6.4	10.4	17.1	12.9	0.6	0.1	12.7		60.9	56.5	1.08
Rr	18.3	7.8	2.2	16.1	2.9	12.8	18.1	20.6	0.5	0.0	15.8		70.1	71.2	0.99
Rd	14.9	9.8	1.8	12.0	2.7	10.3	15.9	14.6	0.6	0.0	12.8		63.1	57.0	1.11
TF	3.9	19.5	10.3	15.5	69.1	21.3	36.7	24.4	1.0	0.1	21.3		169.3	105.8	1.60
SF	1.7	32.1	19.2	19.7	69.7	10.7	33.2	17.4	0.7	0.0	24.8		204.4	102.1	2.00
O leachate	31.1	183.9	76.3	41.8	127.1	32.7	119.9	307.9	2.0	1.0	48.9		764.0	530.6	1.44
So10	23.5	84.1	13.8	53.4	23.8	18.3	57.5	117.9	1.1	0.1	38.8		314.3	246.8	1.27
So30	11.6	84.9	17.1	75.4	26.3	16.0	56.9	129.7	0.8	0.7	35.1		328.2	259.1	1.27
So70	5.8	147.7	29.2	161.6	11.3	7.9	134.7	139.9	0.8	5.3	50.5		540.3	392.5	1.38
SPa	0.2	61.6	27.0	466.2	20.5	8.8	157.3	84.7	0.5	0.0	90.9	245.1	584.4	578.6	1.01
SPb	0.1	57.0	24.4	348.5	17.7	7.6	128.1	73.8	0.5	0.0	79.9	178.0	455.3	460.3	0.99
STa	0.1	70.7	32.3	379.6	25.4	8.3	153.2	66.6	0.5	0.0	83.8	225.1	516.5	529.2	0.98
STb	0.1	63.9	27.8	390.6	23.3	8.0	152.6	80.7	0.5	0.0	85.2	195.3	502.0	514.4	0.98
STc	0.1	76.1	36.4	328.9	27.2	7.2	143.3	71.5	2.6	0.0	81.2	201.5	475.9	500.1	0.95
STw	0.1	79.1	38.5	322.5	29.8	6.9	142.3	66.4	0.6	0.0	79.8	209.8	476.8	494.6	0.97

Data are shown as the weight-average for bulk rains (Rv, Rr, and Rd), TF, SF, O leachate, and soil-percolating waters (So10, So30, and So70); they are shown as the simple average for seepage waters (SPa and SPb) and stream waters (STa, STb, STc, and STw). C/A, ratio of cations to anions. See Figure 1 for the meaning of the abbreviations.

**Table S5.** Annual flux of water and elements for all sample types at the YMS.

Sample type	Precipitation mm	DOC g m <sup>-2</sup>	DON g m <sup>-2</sup>	Si g m <sup>-2</sup>	H <sup>+</sup> mmolc m <sup>-2</sup>	Ca <sup>2+</sup> mmolc m <sup>-2</sup>	Mg <sup>2+</sup> mmolc m <sup>-2</sup>	Na <sup>+</sup> mmolc m <sup>-2</sup>	K <sup>+</sup> mmolc m <sup>-2</sup>	NH <sub>4</sub> <sup>+</sup> mmolc m <sup>-2</sup>	Cl <sup>-</sup> mmolc m <sup>-2</sup>	NO <sub>3</sub> <sup>-</sup> mmolc m <sup>-2</sup>	NO <sub>2</sub> <sup>-</sup> mmolc m <sup>-2</sup>	PO <sub>4</sub> <sup>3-</sup> mmolc m <sup>-2</sup>	SO <sub>4</sub> <sup>2-</sup> mmolc m <sup>-2</sup>	HCO <sub>3</sub> <sup>-</sup> mmolc m <sup>-2</sup>
Rv	1455	1.69	0.15	ND	20.0	10.1	3.0	18.1	9.3	15.1	24.9	18.8	0.9	0.1	18.5	ND
Rr	1302	1.85	0.13	ND	25.8	11.0	3.1	22.7	4.1	18.0	25.6	29.1	0.7	0.0	22.2	ND
Rd	1346	2.58	0.12	ND	21.1	13.9	2.5	16.9	3.8	14.5	22.4	20.6	0.9	0.0	18.1	ND
TF	976	5.56	0.20	ND	3.7	19.0	10.1	15.1	67.4	20.8	35.8	23.8	1.0	0.1	20.8	ND
SF	13	0.17	0.01	ND	0.0	0.4	0.2	0.2	0.9	0.1	0.4	0.2	0.0	0.0	0.3	ND
O leachate	879	27.24	1.22	1.99	27.3	161.6	67.1	36.8	111.7	28.7	105.4	270.6	1.8	0.9	42.9	ND
So10	670	12.96	0.47	(2.08)	18.1	65.1	10.7	41.4	18.5	14.0	44.7	90.9	0.8	0.1	27.2	ND
So30	670	11.04	0.36	(0.95)	9.2	65.7	13.2	59.8	20.8	12.7	43.7	100.4	0.6	0.5	27.2	ND
So70	670	17.71	0.76	(4.19)	4.5	114.3	22.6	125.1	8.8	6.1	104.3	108.4	0.6	4.1	39.1	ND
SPa	670	0.65	ND	7.25	0.1	41.3	18.1	312.5	13.8	5.9	105.4	56.8	0.3	0.0	60.9	164.3
SPb	670	0.59	(0.02)	7.02	0.1	38.2	16.4	233.6	11.9	5.1	85.9	49.5	0.3	0.0	53.6	119.3
STa	670	1.38	(0.03)	6.98	0.1	47.4	21.6	254.5	17.1	5.6	102.7	44.6	0.3	0.0	56.2	150.9
STb	670	1.15	(0.02)	7.04	0.1	42.8	18.6	261.9	15.6	5.4	102.3	54.1	0.4	0.0	57.1	130.9
STc	670	1.35	(0.02)	6.38	0.1	51.0	24.4	220.5	18.2	4.8	96.0	47.9	1.8	0.0	54.4	135.0
STw	670	1.62	(0.07)	6.29	0.0	53.0	25.8	216.2	20.0	4.6	95.4	44.5	0.4	0.0	53.5	140.6

Data in parenthesis indicate that the number of samples was small (<4). ND, no data. See Figure 1 for the meaning of the abbreviations.