

Supplementary Material

Sulfur development in the water-sediment system of the algae accumulation embay area in Lake Taihu

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Table 1. Introduction of the analysis of covariance (ANCOVA) during the statistical analysis^a.

Analysis order	Dependent variables	Fixed factors	Covariates	N	Sig.
A1	TN/TP/LOI	Sediment depth	Season (month)	20	> 0.05
A2	OPD	Season (month)	Sites	20	> 0.05
A3	AVS	Season (month)	Sites	20	> 0.05
A4	VSCs	Season (month)	Sites	20	> 0.05

^a TP: total phosphorus in the sediment; LOI: loss on ignition in the sediment; TN: total nitrogen in the sediment; AVS: acid volatile sulfide in the sediment; VSCs: volatile sulfur compounds, including hydrogen sulfide (H₂S), methanethiol (MTL), dimethyl sulfide (DMS), dimethyl disulfide (DMDS), and dimethyl trisulfide (DMTS); OPD: oxygen penetration depth.

Table 2. Sediment properties and variations during the field investigation^a.

Sampling site	Depth (cm)	January			April			July			October		
		LOI (%)	TN (mg kg ⁻¹)	TP (mg kg ⁻¹)	LOI (%)	TN (mg kg ⁻¹)	TP (mg kg ⁻¹)	LOI (%)	TN (mg kg ⁻¹)	TP (mg kg ⁻¹)	LOI (%)	TN (mg kg ⁻¹)	TP (mg kg ⁻¹)

S1	1	4.13	1513.5	475.2	4.67	1479.6	435.9	6.93	3573.2	603.1	5.88	2044.8	654.9
	2	4.11	1287.0	391.2	4.29	1347.0	384.6	4.58	1435.3	471.1	5.88	1964.6	560.3
	5	4.75	1383.9	350.4	4.13	1355.3	462.2	4.69	1362.9	420.5	4.85	1371.6	503.5
	10	4.66	1251.4	295.1	4.45	1335.7	400.3	4.13	976.1	286.3	2.74	793.7	333.7
	15	5.11	1413.3	331.5	3.44	845.3	278.1	4.31	912.1	274.1	4.28	1122.2	335.2
S2	1	3.55	1121.6	356.8	3.52	985.9	346.3	3.74	1336.7	383.3	4.01	1440.3	401.5
	2	3.41	1118.7	390.7	3.6	950.6	363.9	3.36	860.9	314.6	3.81	1070.0	438.7
	5	3.68	1344.3	423.0	3.41	1072.3	413.2	3.24	841.3	283.3	3.57	1091.8	354.1
	10	2.55	703.0	342.9	3.73	1141.8	392.1	3.13	570.9	226.4	3.4	1012.5	372.7
	15	2.95	777.4	286.2	3.44	890.7	285.2	3.88	908.7	252.6	3.58	920.0	268.9
S3	1	4.73	1411.6	450.4	3.57	1125.7	398.2	4.11	1735.0	365.8	3.94	1341.5	402.2
	2	4.33	1363.6	407.4	3.81	950.4	396.5	4.15	1026.8	353.3	3.88	1293.6	415.4
	5	4.63	1313.4	378.5	4.05	1237.6	389.9	3.78	1081.8	363.4	3.34	1125.9	349.0
	10	3.64	1215.1	344.3	4.04	1237.2	364.0	3.37	903.6	393.7	3.86	1292.2	483.8
	15	3.39	983.8	306.6	4.02	1198.6	385.8	3.71	956.7	328.6	3.56	1244.9	319.5
S4	1	3.67	1098.3	386.5	3.94	1266.2	403.1	4.2	1039.0	351.7	3.95	1373.1	390.3
	2	3.7	1118.3	394.6	4.05	1312.1	400.3	4.01	844.0	322.0	3.31	970.9	350.0
	5	3.01	819.7	288.9	4.19	1244.2	434.1	3.96	1125.4	337.4	3.16	782.5	290.3
	10	2.82	583.6	249.3	3.75	928.8	330.6	4.12	886.0	287.5	3.19	1055.8	340.9
	15	2.54	523.3	230.6	4	1104.7	360.6	3.45	893.9	298.4	3.22	687.7	287.2
S5	1	4.9	1193.3	339.9	4.27	1192.7	401.8	4.47	1404.7	317.8	4.55	1239.3	406.7
	2	3.98	1115.6	337.2	4.19	1292.8	387.3	4.28	1136.8	294.2	4.2	1167.2	377.7
	5	4.05	1122.3	323.4	6.85	1317.8	357.3	4.15	1147.7	264.0	4.39	1185.7	359.4
	10	3.86	900.2	289.7	3.88	1027.7	318.0	4.13	939.4	263.8	3.94	1185.9	425.5
	15	5.06	1095.1	357.8	4.07	936.2	261.2	4.25	976.1	229.8	4.08	1090.9	337.4

^a Data are shown as mean values (n = 3). Standard errors are less than 5%. LOI, loss on ignition of the sediment; TN, total nitrogen concentrations in the sediment; TP, total phosphorus concentrations in the sediment.

Table 3. Pearson's correlation matrix of various characteristics^a.

	MTL	DMS	DMDS	DMTS	H ₂ S	OPD	AVS	LOI	TN	TP
MTL	1.000	0.978**	0.905**	0.925**	0.753**	-0.400	0.601**	0.623**	0.857**	0.475*
DMS		1.000	0.952**	0.956**	0.756**	-0.480*	0.583**	0.576**	0.811**	0.420
DMDS			1.000	0.995**	0.678**	-0.551*	0.655**	0.450*	0.719**	0.307
DMTS				1.000	0.669**	-0.545*	0.675**	0.487*	0.764**	0.341
H ₂ S					1.000	-0.510*	0.440	0.472*	0.647**	0.547*
OPD						1.000	-0.399	-0.455*	-0.527*	-0.390
AVS							1.000	0.239	0.489*	0.283
LOI								1.000	0.858**	0.767**
TN									1.000	0.751**
TP										1.000

^a MTL: methanethiol in the water; DMS: dimethyl sulfide in the water; DMDS: dimethyl disulfide in the water; DMTS: dimethyl trisulfide in the water; H₂S: hydrogen sulfide in the water; OPD: oxygen penetration depth; TP: total phosphorus in the sediment; LOI: loss on ignition in the sediment; TN: total nitrogen in the sediment; AVS: acid volatile sulfide in the sediment.



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