

Supplementary Materials

The Influence of Seasonal Variability of Eutrophication Indicators on Carbon Dioxide and Methane Diffusive Emissions in the Largest Shallow Urban Lake in China

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Table S1. Water quality parameters of sampling sites in Lake Tangxun.

Points	Wind Speed (m/s)	T _w (°C)	pH	EC (μ S)	DO (mg/L)	DOC (mg/L)	Chla (μg/L)	NH ₄ ⁺ (mg/L)	NO ₃ ⁻ (mg/L)	TN (mg/L)	TP (mg/L)	pCO ₂ (μatm)	F CO ₂ (mmol m ⁻² d ⁻¹)	dCH ₄ (μmol L ⁻¹)	F CH ₄ (mmol m ⁻² d ⁻¹)
1	2.41	20.36	7.78	385.66	7.57	5.10	109.45	1.51	0.61	4.43	0.15	1409.45	21.51	0.65	0.39
2	2.17	21.00	7.84	396.73	7.24	5.53	113.32	3.94	0.42	6.13	0.26	1046.44	9.18	1.37	2.27
3	0.80	20.93	7.58	485.44	5.99	5.83	162.34	9.45	0.26	12.21	0.68	2520.58	2.30	13.85	0.79
4	1.55	20.55	8.05	375.74	7.65	4.64	54.30	0.47	0.63	2.10	0.08	933.66	1.20	0.62	0.10
5	1.61	20.21	8.21	377.03	7.51	4.41	68.89	0.43	0.66	2.16	0.09	538.86	0.22	0.21	0.05
6	0.45	21.95	8.17	378.93	7.34	4.89	61.53	0.61	0.56	2.17	0.10	634.98	0.10	0.41	0.02
7	1.21	22.58	8.28	379.44	8.37	4.45	124.02	0.58	0.57	2.37	0.13	499.40	1.10	0.48	0.12
8	1.84	20.31	7.94	377.76	7.69	4.64	50.49	0.54	0.62	2.11	0.09	810.44	3.84	0.48	0.17
9	1.44	21.90	8.46	467.49	9.53	4.38	55.05	0.04	0.18	1.12	0.12	527.66	1.28	0.27	0.02
10	0.64	21.71	7.89	461.36	7.88	4.85	95.62	1.96	0.37	3.75	0.25	1996.57	4.69	4.27	0.52
11	1.59	22.21	8.07	565.01	8.13	4.47	79.74	0.65	0.62	2.52	0.17	948.36	3.80	1.55	0.93
12	2.07	21.03	8.19	594.48	8.17	4.09	56.07	0.59	0.98	2.83	0.17	931.72	7.65	0.87	0.39
13	0.45	21.20	8.19	466.91	8.80	4.77	55.88	0.09	0.22	1.34	0.12	783.31	1.46	0.43	0.06
14	0.59	22.55	8.24	463.54	9.62	4.81	66.68	0.13	0.22	1.52	0.13	961.84	0.43	0.90	0.08
15	0.81	22.23	8.29	474.03	8.75	4.10	33.43	0.07	0.20	1.12	0.14	703.35	1.35	0.56	0.08
16	1.56	23.64	8.53	475.70	9.69	4.80	127.97	0.11	0.24	1.99	0.20	497.12	0.89	0.32	0.15
17	0.74	22.99	7.84	639.59	7.94	4.64	55.81	1.49	1.88	4.26	0.19	1475.80	11.43	6.58	2.97
18	1.73	20.63	7.59	383.35	6.44	4.53	48.43	1.54	0.72	3.58	0.60	1501.50	8.38	0.99	0.33
19	0.98	20.04	7.50	370.94	4.84	4.42	12.67	0.41	0.71	1.61	0.07	2705.05	9.38	0.96	0.29
20	0.46	21.99	7.38	616.27	4.04	6.67	18.43	12.39	0.36	13.81	1.25	5001.78	20.23	50.01	6.84
Average	1.25	21.50	8.00	456.77	7.66	4.80	72.51	1.85	0.55	3.66	0.25	1321.39	5.52	4.29	0.83

Table S2. Relationships between dissolved partial pressure of CO₂ ($p\text{CO}_2$), diffusive fluxes (FCO_2), dissolved CH₄ ($d\text{CH}_4$), diffusive fluxes (FCH_4) and water environmental parameters. All the data used Spearman correlation analysis. * $p < 0.05$, * $p < 0.01$.

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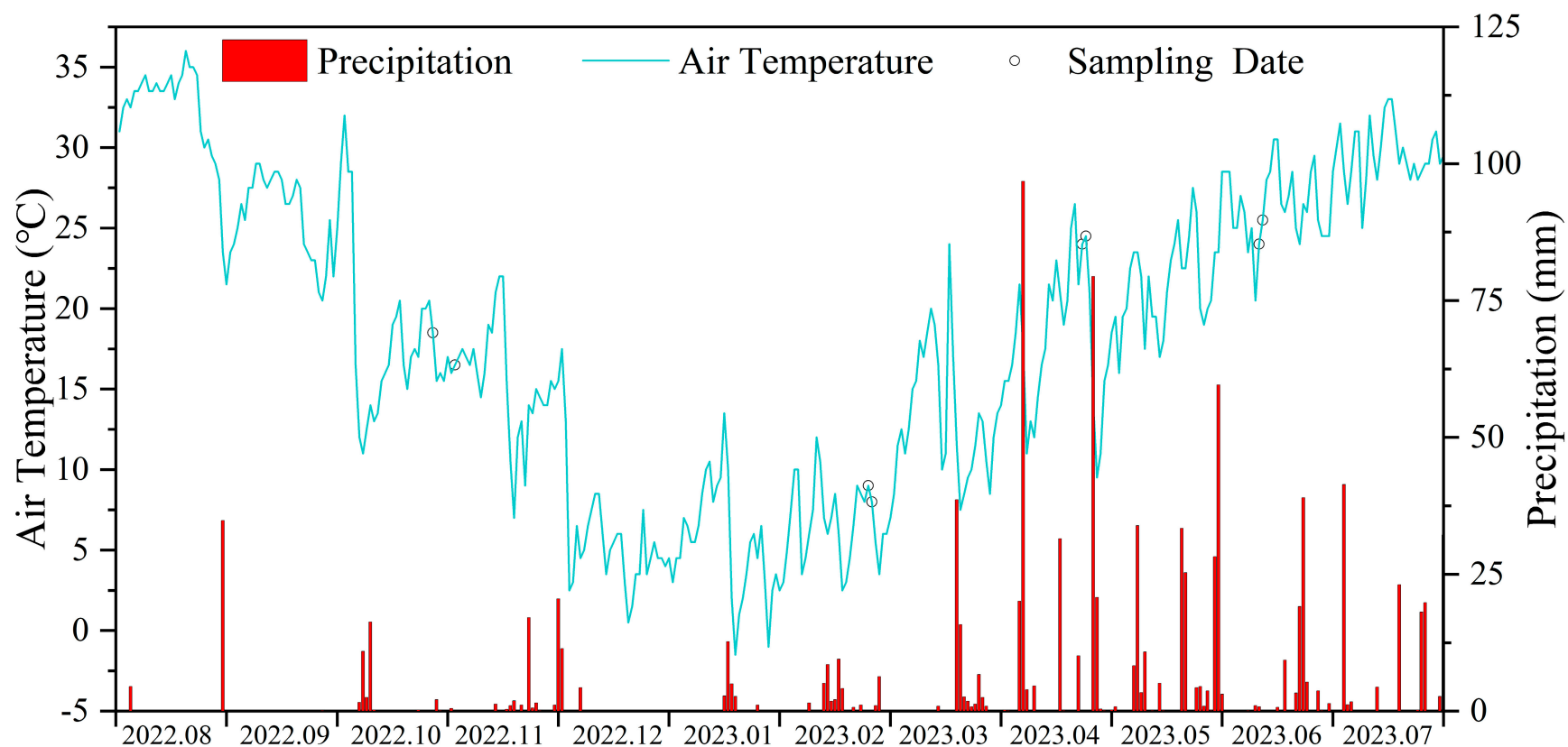


Figure S1. Air Temperature (°C) and precipitation (mm) from August 2022 to July 2023 (average daily temperature and precipitation: 18.34 °C and 2.81 mm, respectively). The hollow circles represent sampling data. The data in the above figures have been authorized by the National Meteorological Center of China (<http://www.nmc.cn/>).

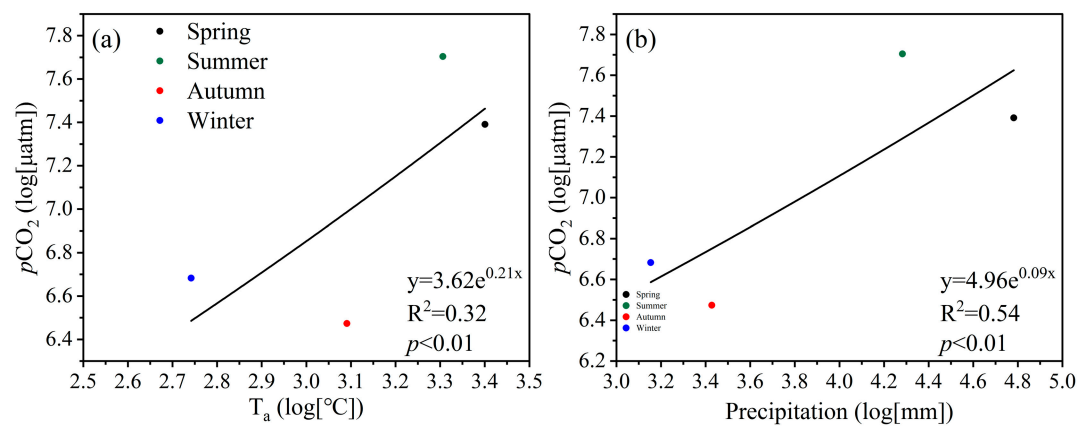


Figure S2. The relationship between the $p\text{CO}_2$ and (a) T_a ; (b) precipitation.

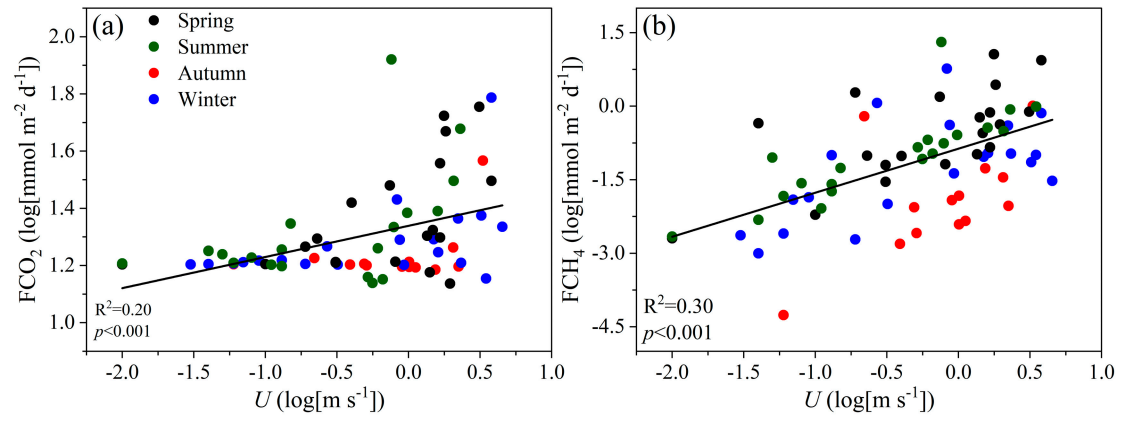


Figure S3. The relationship between the GHG emission and U : (a) CO₂ emission; (b) CH₄ emission.