Supporting Information for

Temperature modulates sediment priming triggered by simulated algal blooms: Insights from sediment microbial fuel cells

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Supporting Information includes two tables and four figures.

A. Supporting Tables

Table S1. ANOVA results assessing the effects of temperature and algal amendments on biogeochemical parameters in overlying water and sediments.

Parameters	df	F value	*p*	Parameters	df	F value	*p*
Current density				***TN***			
Temperature	**2**	**5.817**	*	**Temperature**	**2**	**16.481**	***
Algae	**1**	**31.902**	***	Algae	1	0.014	ns
Temperature × Algae	**2**	**3.752**	*	Temperature × Algae	2	0.500	ns
POC				***$\delta^{15}N$***			
Temperature	2	2.430	ns	**Temperature**	**2**	**3.818**	*
Algae	1	0.219	ns	**Algae**	**1**	**15.107**	**
Temperature × Algae	2	0.141	ns	Temperature × Algae	2	0.118	ns
DOC				***C/N***			
Temperature	**2**	**7.142**	**	Temperature	2	1.828	ns
Algae	1	3.957	ns	Algae	1	0.148	ns
Temperature × Algae	2	1.286	ns	Temperature × Algae	2	0.136	ns
DIC				***DHA***			
Temperature	2	2.988	ns	Temperature	2	0.109	ns
Algae	1	0.151	ns	Algae	1	0.575	ns
Temperature × Algae	2	0.128	ns	Temperature × Algae	2	0.024	ns
$\delta^{13}C$-DIC				***A_8***			
Temperature	2	0.526	ns	Temperature	2	1.478	ns
Algae	**1**	**108.735**	***	Algae	1	3.145	ns
Temperature × Algae	2	0.525	ns	Temperature × Algae	2	0.530	ns
TOC				***(Ad/Al)v***			
Temperature	**2**	**6.318**	*	**Temperature**	**2**	**17.245**	***
Algae	1	0.165	ns	Algae	1	4.797	ns
Temperature × Algae	2	0.162	ns	Temperature × Algae	2	1.724	ns
$\delta^{13}C$				***(Ad/Al)s***			
Temperature	2	1.254	ns	**Temperature**	**2**	**11.532**	***
Algae	**1**	**105.553**	***	**Algae**	**1**	**6.435**	*
Temperature × Algae	2	1.228	ns	Temperature × Algae	2	1.532	ns

Note: ns, not statistically significant ($P \geq 0.05$); * $p<0.05$; **$p<0.01$; ***$p<0.001$.

Table S2. ANOVA results assessing the effects of temperature and algal amendments on the relative abundance of dominant taxa in sediments.

Taxa	df	*F value*	*p*	Taxa	df	*F value*	*p*
Chloroflexi				***Proteobacteria***			
Temperature	**2**	**7.800**	**	Temperature	2	2.129	ns
Algae	1	0.700	ns	Algae	1	0.030	ns
Temperature × Algae	2	0.899	ns	Temperature × Algae	2	1.078	ns
Firmicutes				***Actinobacteriota***			
Temperature	2	1.056	ns	Temperature	2	3.201	ns
Algae	1	0.039	ns	Algae	1	1.661	ns
Temperature × Algae	2	0.121	ns	Temperature × Algae	2	1.404	ns
Desulfobacterota				***Bacteroidota***			
Temperature	**2**	**8.607**	**	Temperature	2	3.361	ns
Algae	1	1.235	ns	**Algae**	**1**	**6.970**	*
Temperature × Algae	2	0.296	ns	Temperature × Algae	2	0.315	ns
Acidobacteriota				***Planctomycetota***			
Temperature	**2**	**11.540**	***	Temperature	2	0.284	ns
Algae	1	0.142	ns	Algae	1	1.472	ns
Temperature × Algae	2	0.120	ns	Temperature × Algae	2	1.792	ns
Campylobacterota				***Gemmatimonadota***			
Temperature	**2**	**19.699**	***	Temperature	2	2.141	ns
Algae	1	0.676	ns	Algae	1	0.457	ns
Temperature × Algae	2	1.233	ns	Temperature × Algae	2	1.580	ns
Others							
Temperature	**2**	**28.741**	***				
Algae	1	1.911	ns				
Temperature × Algae	2	3.349	ns				

Note: ns, not statistically significant ($P \geq 0.05$); * $p<0.05$; ** $p<0.01$; *** $p<0.001$.

B. Supporting Figures

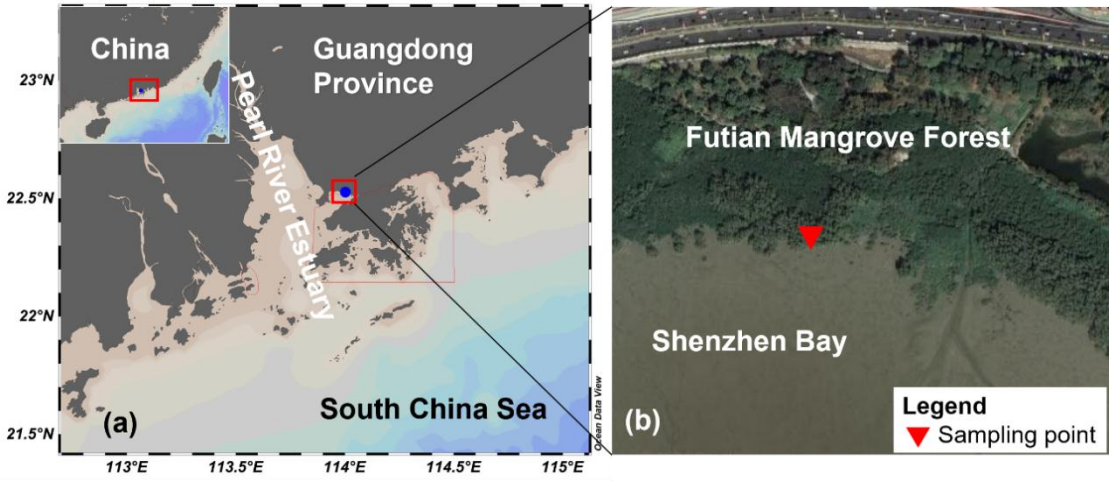


Fig S1. (a) Geographic location of the study area, **(b)** Specific locations of surface sediment sampling points.

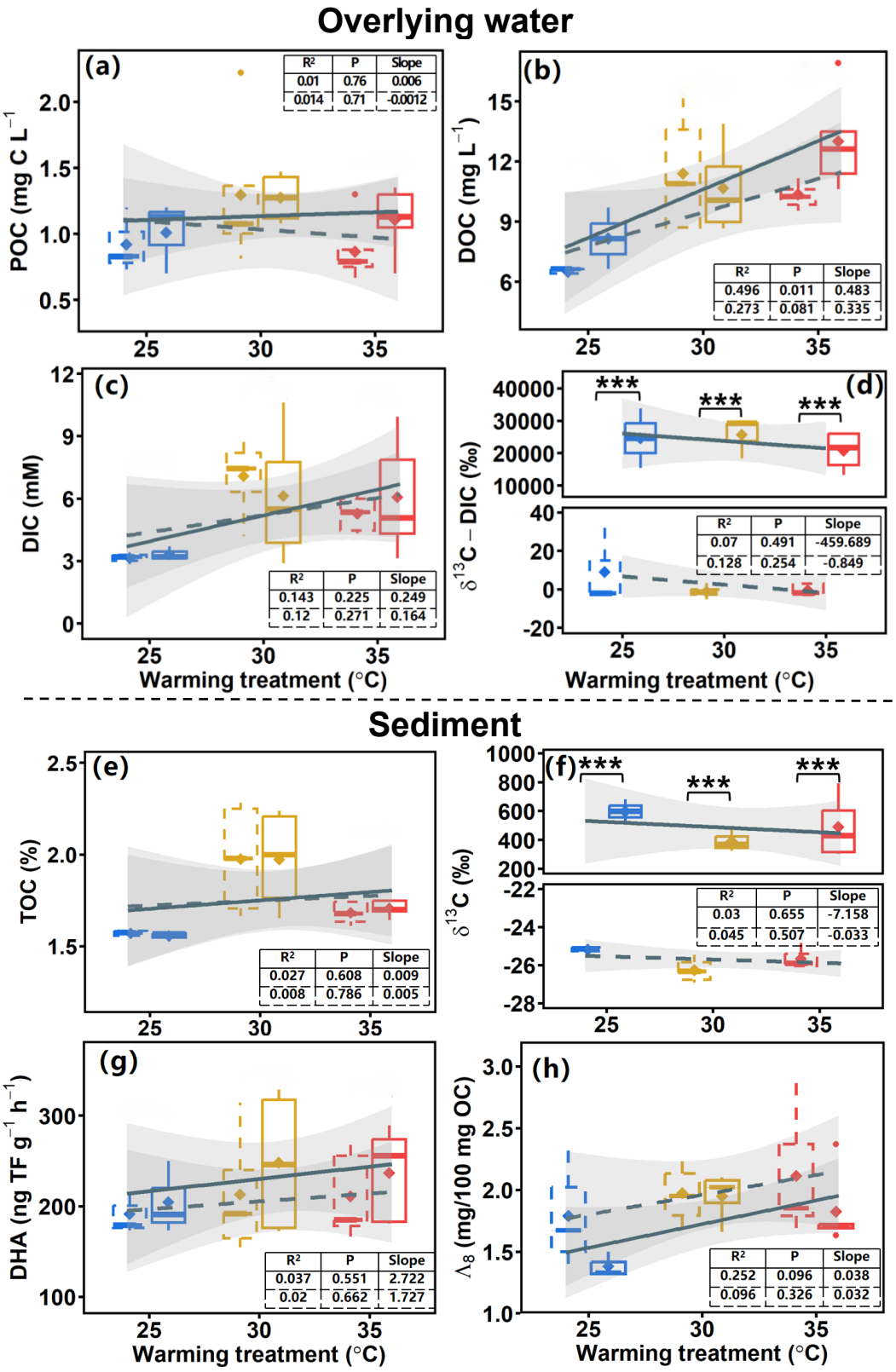


Fig S2. Effects of temperatures and algal amendments on the biogeochemical properties of overlying water and sediment. (a) POC; (b) DOC; (c) DIC; (d) δ^{13}C-DIC; (e) TOC; (f) δ^{13}C; (g) DHA; (h)Λ_8. Dashed lines (boxes, regression lines, and inset tables) represent the control group

(no algae addition), while solid lines represent the treatment group (with ^{13}C-labeled algae addition). Shaded areas indicate the 95% confidence intervals for the linear regressions. Asterisks (***) indicate significant differences between groups at $p < 0.001$; "ns" denotes no significant difference.

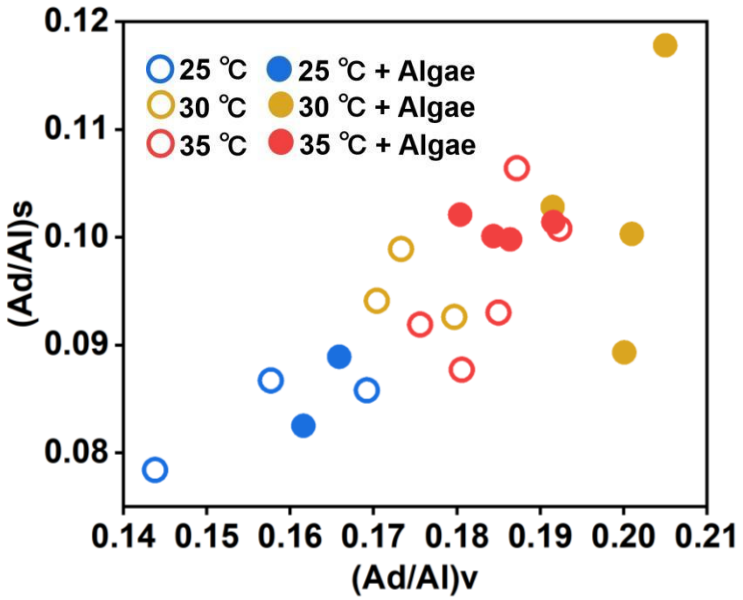


Fig S3. Lignin degradation parameters vary with temperature and algal amendments. (Ad/Al)s denotes the acid-to-aldehyde ratio of S-series lignin monomers, while (Ad/Al)v represents the acid-to-aldehyde ratio of V-series lignin monomers.

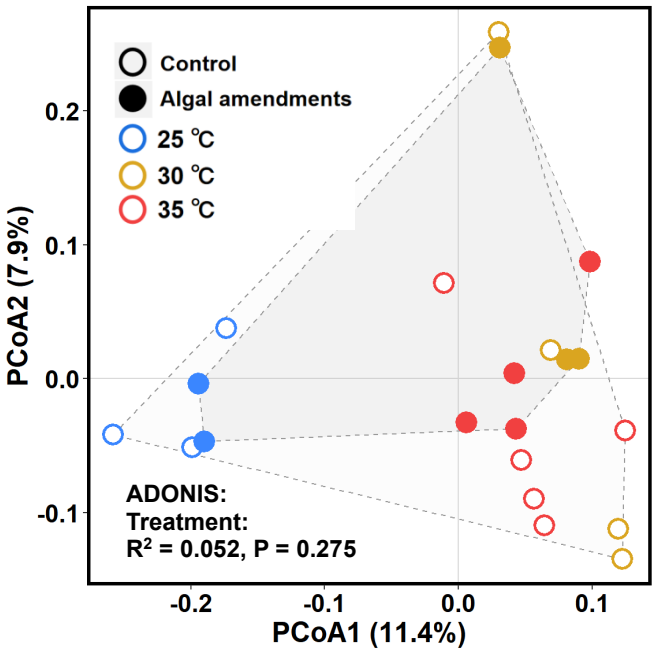


Fig S4. Principal coordinate analysis (PCoA) of the microbial communities composition based on Bray–Curtis dissimilarity. Significant effects of algal amendments were tested using ADONIS analysis. P-values show the level of significance, R^2 statistic values display the degree of discrimination. The ellipses indicate the 95% confidence interval.