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Source, composition, and environmental implication of neutral carbohydrates in sediment cores of subtropical reservoirs, South China

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Supplemental data

Table S1 lists Rock-Eval parameters, original and corrected $\delta^{13}C$, Cu and Zn concentrations, C/N ratios, and MAS. And Table S2, S3, and S4 list concentrations of neutral carbohydrates, correlations among neutral sugars and heavy metals, and correlations among T_5, Rock-Eval parameters, monosaccharides, original and corrected $\delta^{13}C$, and diagenetic parameters in the sediment cores, respectively.

Figure S1 illustrates physicochemical properties in water column. Figure S2 shows the vertical profiles of glucose contents. Figure S3, S4, S5, and S6 show sources of neutral sugars, vertical profiles of diagnostic parameters of neutral sugars, PCA analyses and annual daylight during 60 years, respectively.

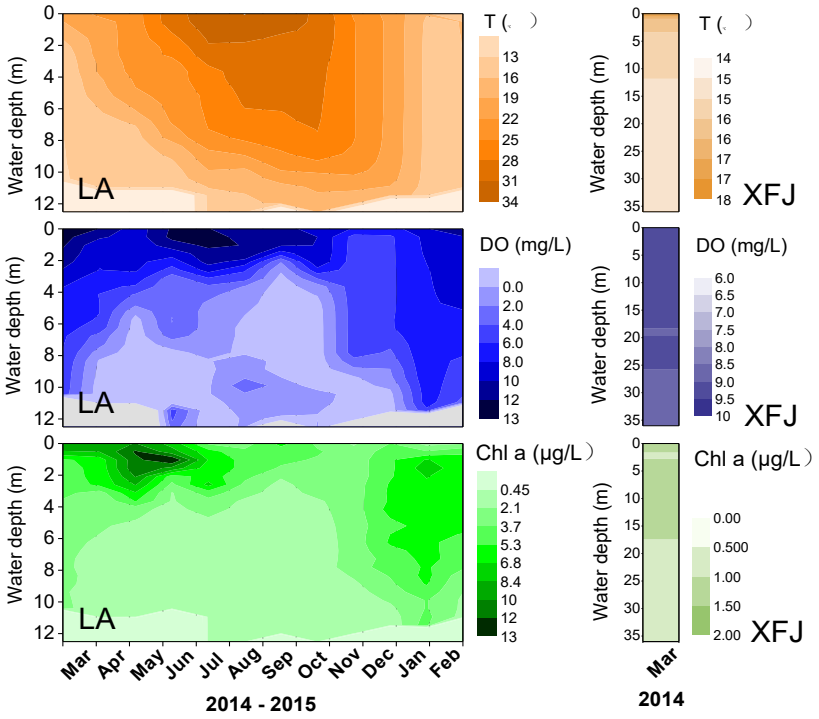

Figure S1. Physiochemical properties of water in LA and XFJ reservoirs

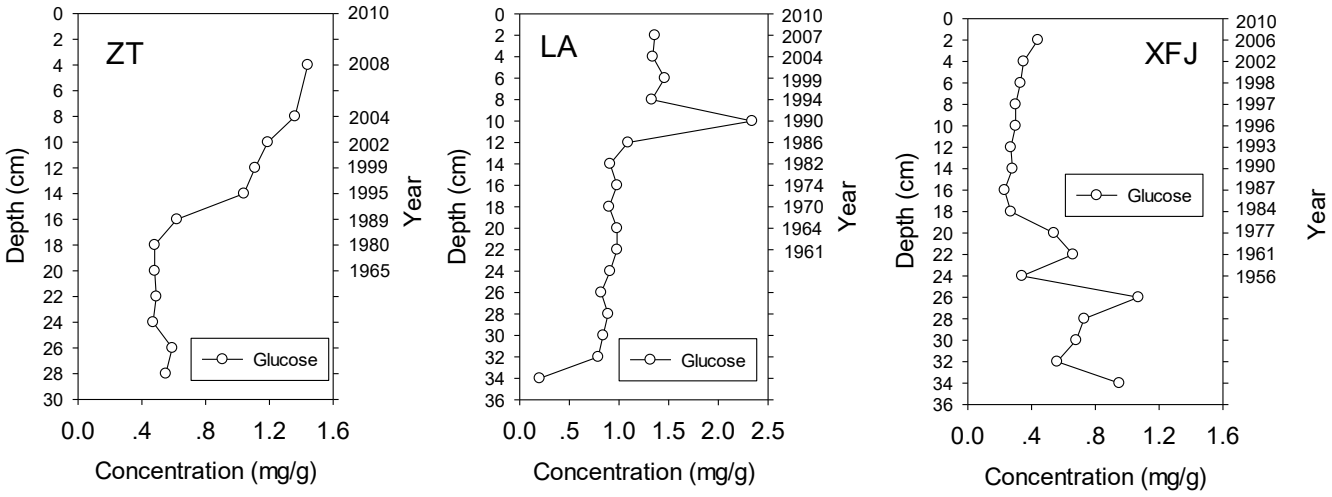

Figure S2. Vertical variations of glucose contents in the sediment cores of three reservoirs

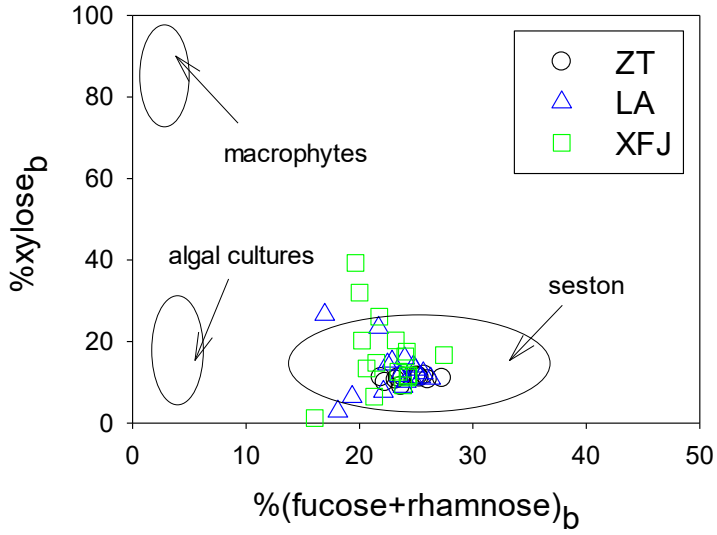

Figure S3. Plot of weight %xylose$_b$ against %(fucose + rhamnose)$_b$ in the sediments of three reservoirs

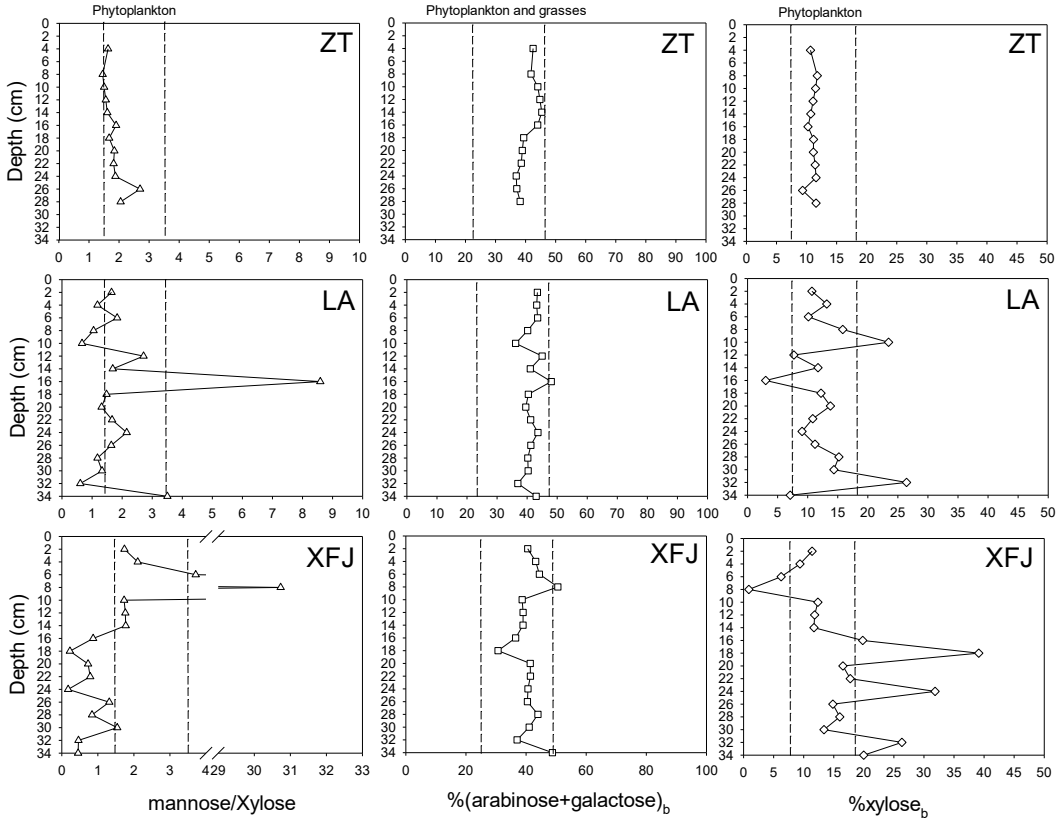

Figure S4. Vertical profiles of ratios and parameters of carbohydrates in sediment cores from three reservoirs

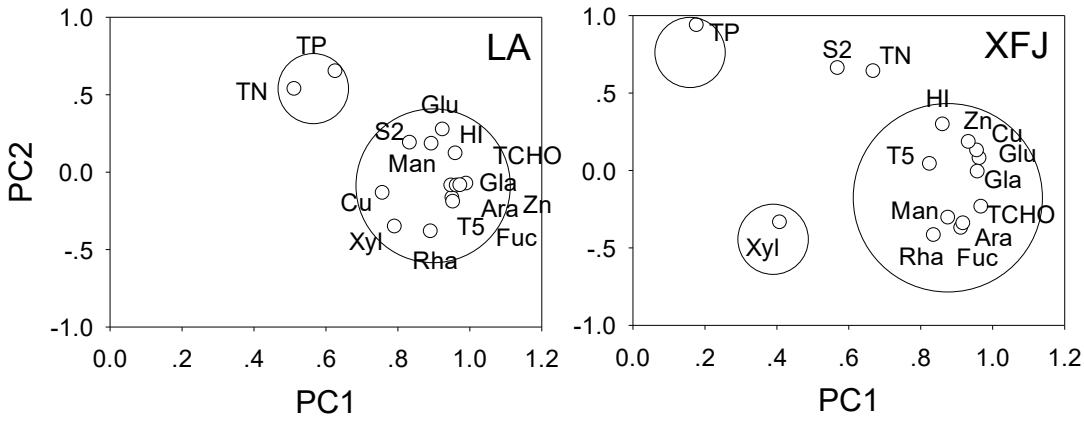

Figure S5. Principal component analysis of parameters in LA reservoirs. (Glu=glucose; Man=mannose; Gla=glactose; Ara=arabinose; Fuc=fucose; Rha=rhamnose; Xyl=xylose; TN= total nitrogen; TP= total phosphorus; HI=hydrogen index; T5= five-moving average temperature

Note: Only one principal component was extracted by the PCA analyses in ZT samples

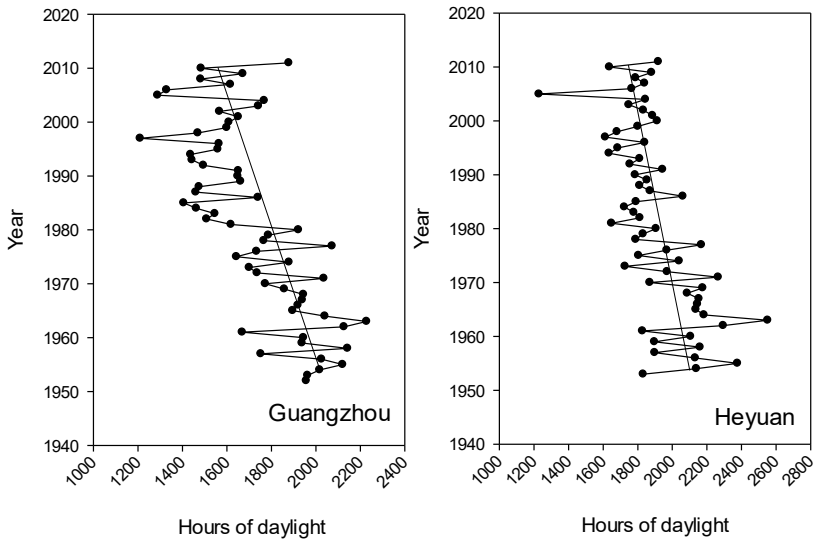

Figure S6. Annual hours of daylight at Guangzhou and Heyuan areas

Table S1. Summary of OM parameters, heavy metal concentrations, carbon isotopic values, and mass accumulation rates.

Depth (cm)	S1 (mg HC/g TOC)	S2 (mg HC/g TOC)	S3 (mg HC/g TOC)	RC (%)	S2/RC	TOC (%)	HI	OI	Cu (mg/kg)	Zn (mg/kg)	$\delta^{13}C$ (‰)	c$\delta^{13}C$ (‰)	C/N	MAR g/cm^2 /a,
ZT														
4	1.03	6.94	6.85	2.05	3.36	2.98	233	230	36.85	132	-21.8	-19.94	7.21	0.18
8	0.75	5.62	6.25	1.86	3.01	2.64	213	237	35.82	112	-21.9	-20.27	9.34	0.18
10	0.58	4.29	5.95	1.68	2.55	2.32	185	256	35.59	114	-21.8	-20.27	8.28	0.28
12	0.47	3.69	5.60	1.36	2.71	1.92	192	292	33.55	107	-21.9	-20.51	6.79	0.25
14	0.40	3.05	5.46	1.40	2.18	1.89	161	289	30.45	94.82	-22.0	-20.80	5.73	0.20
16	0.24	1.47	3.87	0.76	1.93	1.05	140	369	25.34	93.48	-21.9	-20.94	3.82	0.20
18	0.16	1.31	3.73	0.52	2.52	0.78	168	478	27.75	93.34	-21.7	-21.08	3.51	0.12
20	0.16	1.11	5.08	0.68	1.63	0.97	114	524	23.37	82.96	-21.6	-21.47	4.25	0.06
22	0.16	1.23	4.51	0.69	1.78	0.97	127	465	25.58	92.29	-21.7	-21.73	4.35	0.04
24	0.13	1.14	3.67	0.64	1.78	0.88	130	417	25.27	99.99	-22.1		4.14	0.03
26	0.15	1.10	3.07	0.60	1.83	0.82	134	374	22.71	93.90	-22.2		4.69	
28	0.15	1.13	2.93	0.59	1.92	0.81	140	362	24.56	97.36	-22.2		4.63	
LA														
2	1.18	7.77	9.52	2.27	3.42	3.40	229	280	49.79	148.63	-26.4	-24.58	11.03	0.12
4	0.85	5.61	9.05	1.87	3	2.78	202	326	43.62	142.65	-26.3	-24.55	9.15	0.10
6	1.00	6.77	9.45	2.17	3.12	3.20	212	295	41.94	139.89	-26.2	-24.72	9.92	0.09
8	1.32	9.45	11.71	2.94	3.21	4.31	219	272	44.33	139.48	-26.4	-25.03	14.68	0.11
10	0.69	5.10	9.98	2.06	2.48	2.94	173	339	43.02	124.43	-26.3	-25.06	8.28	0.11
12	0.62	4.50	9.76	1.87	2.41	2.68	168	364	44.69	120.66	-26.0	-24.86	9.06	0.12
14	0.51	3.51	8.77	1.53	2.29	2.21	159	397	39.90	118.70	-25.8	-24.79	6.57	0.11
16	0.46	3.17	8.20	1.48	2.14	2.10	151	390	39.99	112.07	-25.3	-24.53	7.84	0.10
18	0.56	3.91	8.43	1.67	2.34	2.38	164	354	42.04	117.89	-25.6	-24.87	10.01	0.12
20	0.50	3.65	7.80	1.59	2.30	2.26	162	345	40.63	121.79	-25.0	-24.35	7.87	0.17
22	0.44	3.23	7.11	1.49	2.17	2.08	155	342	40.21	126.66	-24.5	-23.95	8.41	0.19
24	0.31	2.17	3.70	1.04	2.09	1.41	154	262	25.02	83.65	-24.8	-24.40	5.76	0.11
26	0.26	1.87	2.82	0.78	2.40	1.08	173	261	18.22	76.58	-24.1	-23.88	4.62	0.07

28	0.24	1.80	2.62	0.75	2.40	1.03	175	254	18.21	74.21	-24.4	-24.38	4.14	0.03
30	0.23	1.63	2.55	0.71	2.30	0.98	166	260	18.03	75.17	-24.2		4.12	0.02
32	0.22	1.64	2.44	0.67	2.45	0.93	176	262	18.84	90.02	-24.4		6.40	0.03
34	0.21	1.47	2.36	0.64	2.30	0.88	167	268	25.88	107.49	-25.4		10.64	
XFJ														
2	0.17	1.24	4.24	0.36	3.44	0.64	194	662	33.85	129.74	-27.2	-25.46	2.60	0.19
4	0.14	1.04	3.77	0.29	3.59	0.53	196	711	28.73	116.89	-27.1	-25.46	2.30	0.17
6	0.13	0.95	4.03	0.29	3.28	0.53	179	760	20.50	91.88	-26.7	-25.25	2.54	0.33
8	0.11	0.87	3.96	0.26	3.35	0.50	174	792	22.44	97.93	-25.7	-24.20	2.53	1.07
10	0.10	0.80	4.05	0.24	3.33	0.49	164	827	22.48	98.08	-24.4	-22.95	2.79	0.46
12	0.10	0.73	4.15	0.23	3.17	0.47	155	883	19.62	88.10	-25.0	-23.69	2.62	0.35
14	0.11	0.86	4.62	0.31	2.77	0.57	151	811	19.99	97.34	-24.8	-23.53	2.94	0.32
16	0.13	0.97	4.82	0.35	2.77	0.62	156	777	18.04	89.81	-25.3	-24.14	3.14	0.23
18	0.15	1.11	5.45	0.43	2.58	0.75	148	727	17.60	82.97	-25.3	-24.22	3.41	0.14
20	0.19	1.42	6.67	0.61	2.33	0.99	143	674	19.04	88.02	-25.1	-24.20	4.46	0.09
22	0.28	2.18	8.56	0.99	2.20	1.50	145	571	21.77	95.35	-25.1	-24.58	6.40	0.08
24	0.31	2.49	11.36	1.13	2.20	1.76	141	645	20.40	92.27	-24.4	-23.97	6.96	0.09
26	0.33	2.66	7.39	1.22	2.18	1.76	151	420	15.99	93.11	-23.4	-22.95	10.11	0.05
28	0.29	2.45	5.93	1.07	2.29	1.54	159	385	16.18	100.11	-23.1	-23.04	8.66	0.07
30	0.29	2.47	5.74	1.07	2.31	1.53	161	375	15.09	95.72	-23.5	-23.49	9.57	0.13
32	0.28	2.37	6.13	1.06	2.24	1.52	156	403	14.60	73.40	-23.5		8.06	0.08
34	0.32	2.78	6.35	1.14	2.44	1.64	170	387	16.96	84.21	-23.9		8.25	

NOTE: cδ^{13}C is the corrected results for Suess effect.

Table S2. Concentrations (nmol/TOCmg and mg/g) of neutral carbohydrates in sediment cores from reservoirs

Depth (cm)	Monosaccharide concentrations														Total TCHO	
	glucose		galactose		mannose		arabinose		rhamnose		fucose		xylose			
	nmol/TOC mg	(mg/g)	nmol/TOC mg	(mg/g)	nmol/TOC mg	(mg/g)	nmol/TOC mg	(mg/g)	nmol/TOC mg	(mg/g)	nmol/TOC mg	(mg/g)	nmol/TOC mg	(mg/g)	nmol/TOC mg	(mg/g)
ZT																
2	269	1.44	165	0.89	152	0.82	173	0.77	119	0.65	75	0.37	93	0.42	1046	5.36
4	285	1.36	157	0.75	150	0.71	177	0.70	123	0.59	69.9	0.30	103	0.41	1065	4.82
10	283	1.19	160	0.67	145	0.60	176	0.61	114	0.48	53.9	0.21	96	0.33	1029	4.09
12	294	1.11	175	0.66	152	0.58	186	0.58	120	0.46	56.2	0.19	97.8	0.31	1081	3.89
14	304	1.04	189	0.64	160	0.55	195	0.55	125	0.43	58.5	0.18	99.6	0.28	1133	3.67
16	327	0.62	262	0.50	235	0.44	217	0.34	162	0.31	66.7	0.11	123	0.19	1392	2.51
18	341	0.48	275	0.39	245	0.34	185	0.22	195	0.28	108	0.14	146	0.17	1497	2.02
20	274	0.48	243	0.42	239	0.42	161	0.24	164	0.29	87.2	0.14	130	0.19	1299	2.18
22	282	0.49	229	0.40	234	0.41	159	0.23	158	0.28	81.4	0.13	129	0.19	1274	2.13
24	293	0.47	216	0.34	244	0.39	154	0.20	165	0.26	77.3	0.11	130	0.17	1280	1.94
26	400	0.59	272	0.40	337	0.50	169	0.21	184	0.28	80.2	0.11	125	0.15	1569	2.24
28	377	0.55	259	0.38	312	0.46	190	0.23	190	0.28	49.0	0.07	152	0.18	1530	2.15
LA																
2	222	1.36	196	1.20	151	0.92	137	0.70	108	0.67	73.5	0.41	91.6	0.47	979	5.73
4	268	1.34	227	1.14	164	0.82	184	0.77	133	0.67	93.5	0.43	139.1	0.58	1209	5.75
6	253	1.46	171	0.99	144	0.83	131	0.63	91.9	0.54	68.1	0.36	78.3	0.38	937	5.19
8	171	1.33	106	0.82	89	0.69	88	0.57	67.3	0.53	43.1	0.30	84.9	0.55	649	4.79
10	441	2.34	163	0.87	144	0.76	137	0.60	104	0.56	66.1	0.32	215.8	0.95	1271	6.4
12	225	1.09	164	0.79	148	0.72	123	0.49	80.3	0.39	55.0	0.24	54.6	0.22	850	3.94
14	227	0.91	164	0.65	160	0.64	135	0.45	98.5	0.40	64.0	0.23	94.7	0.31	943	3.59
16	260	0.98	168	0.64	172	0.65	117	0.37	59.5	0.23	42.1	0.15	20.0	0.06	838	3.08
18	209	0.90	159	0.68	141	0.60	124	0.44	107	0.46	63.8	0.25	95.0	0.34	898	3.67
20	240	0.98	174	0.71	158	0.64	136	0.46	117	0.48	68.5	0.25	119.9	0.41	1012	3.93

	22	261	0.98	186	0.70	158	0.59	138	0.43	123	0.47	73.8	0.25	95.0	0.30	1035	3.72
	24	360	0.91	256	0.65	218	0.55	179	0.38	141	0.36	88.0	0.20	101.3	0.21	1344	3.26
	26	423	0.82	311	0.61	270	0.53	232	0.38	202	0.40	118.2	0.21	164.8	0.27	1721	3.22
	28	477	0.89	340	0.63	300	0.56	265	0.41	209	0.39	120.4	0.20	254.2	0.39	1965	3.47
	30	477	0.84	319	0.56	307	0.54	265	0.39	202	0.36	104.1	0.17	230.7	0.34	1905	3.2
	32	472	0.79	153	0.26	142	0.24	141	0.20	87.6	0.15	42.3	0.06	232.9	0.33	1271	2.03
	34	123.4	0.20	55.1	0.09	58.8	0.09	35.5	0.05	26.9	0.04	13.4	0.02	16.8	0.02	330	0.51
XFJ																	
	2	380	0.44	370	0.43	334	0.38	240	0.23	199	0.23	153	0.16	192	0.18	1868	2.05
	4	363	0.35	379	0.36	324	0.31	253	0.20	186	0.18	148	0.13	154	0.12	1806	1.65
	6	350	0.33	321	0.31	317	0.30	220	0.17	136	0.13	116	0.10	85	0.07	1544	1.41
	8	334	0.30	299	0.27	291	0.26	182	0.14	76.8	0.07	70.9	0.06	9.5	0.01	1263	1.11
	10	341	0.30	283	0.25	320	0.28	241	0.18	179	0.16	122	0.10	185	0.14	1672	1.41
	12	320	0.27	308	0.26	330	0.28	248	0.17	191	0.16	138	0.11	187	0.13	1721	1.38
	14	271	0.28	228	0.23	249	0.26	194	0.17	146	0.15	106	0.10	141	0.12	1335	1.31
	16	208	0.23	136	0.15	128	0.14	109	0.10	86.0	0.10	61.2	0.06	148	0.14	876	0.92
	18	202	0.27	80.9	0.11	43.6	0.06	54.9	0.06	49.8	0.07	33.8	0.04	194	0.22	658	0.83
	20	301.3	0.54	144.5	0.26	81.4	0.15	106.8	0.16	101.5	0.18	58.7	0.10	111.9	0.17	906	1.56
	22	243.5	0.66	116.0	0.32	74.3	0.20	81.0	0.18	66.0	0.18	43.5	0.11	94.3	0.21	719	1.86
	24	107.9	0.34	43.2	0.14	10.7	0.03	25.8	0.07	22.3	0.07	11.7	0.03	60.9	0.16	283	0.84
	26	338.0	1.07	113.5	0.36	110.3	0.35	92.1	0.24	68.2	0.22	34.0	0.10	83.8	0.22	840	2.56
	28	264.3	0.73	105.9	0.29	60.4	0.17	70.7	0.16	64.4	0.18	27.1	0.07	72.0	0.17	665	1.77
	30	247.0	0.68	88.9	0.24	88.5	0.24	70.0	0.16	51.8	0.14	24.7	0.06	57.6	0.13	629	1.65
	32	204.5	0.56	82.6	0.23	49.1	0.13	50.5	0.12	53.6	0.15	22.0	0.05	106.4	0.24	569	1.48
	34	320.5	0.95	95.6	0.28	34.7	0.10	72.9	0.18	47.1	0.14	19.6	0.05	76.9	0.19	667	1.89

Table S3. Correlation among neutral sugars and heavy metals in sediment cores of three reservoirs

Pearson Correlations

	glucose	galactose	mannose	arabinose	rhamnose	fucose	xylose	Cu	Zn
ZT									
glucose	1	0.978**	0.948**	0.992**	0.983**	0.897**	0.976**	0.949**	0.861**
galactose		1	0.943**	0.989**	0.984**	0.927**	0.968**	0.921**	0.843**
mannose			1	0.925**	0.960**	0.905**	0.933**	0.837**	0.885**
arabinose				1	0.981**	0.900**	0.979**	0.952**	0.838**
rhamnose					1	0.957**	0.991**	0.943**	0.885**
fucose						1	0.942**	0.883**	0.857**
xylose							1	0.957**	0.867**
Cu								1	0.868**
Zn									1
LA									
glucose	1	0.718**	0.737**	0.765**	0.717**	0.723**	0.868**	0.554*	0.504*
galactose		1	0.969**	0.982**	0.943**	0.977**	0.573*	0.695**	0.655**
mannose			1	0.952**	0.897**	0.924**	0.535*	0.709**	0.606**
arabinose				1	0.959**	0.983**	0.673**	0.676**	0.652**
rhamnose					1	0.978**	0.710**	0.622**	0.602*
fucose						1	0.651**	0.692**	0.690**
xylose							1	0.350	0.372
Cu								1	0.937**
Zn									1
	glucose	galactose	mannose	arabinose	rhamnose	fucose	xylose	Cu	Zn
XFJ									
glucose	1	0.404	0.022	0.466	0.493*	-0.055	0.503*	-0.379	-0.126
galactose		1	0.787**	0.923**	0.816**	0.800**	-0.046	0.552*	0.656**
mannose			1	0.830**	0.631**	0.821**	-0.346	0.525*	0.642**
arabinose				1	0.866**	0.795**	-0.022	0.396	0.552*
rhamnose					1	0.779**	0.358	0.305	0.465

fucose						1	-0.086	0.722**	0.715**
xylose							1	-0.260	-0.262
Cu								1	0.863**
Zn									1
XFJ (0-16 cm)									
glucose	1	0.967**	0.898**	0.868**	0.719*	0.826*	0.254	0.934**	0.895**
galactose		1	0.938**	0.894**	0.710*	0.846**	0.173	0.904**	0.845**
mannose			1	0.954**	0.740*	0.855**	0.173	0.783*	0.712*
arabinose				1	0.886**	0.947**	0.408	0.815*	0.776*
rhamnose					1	0.970**	0.777*	0.732*	0.724*
fucose						1	0.615	0.804*	0.778*
xylose							1	0.361	0.401
Cu								1	0.983**
Zn									1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table S4. Correlation among neutral sugars (TCHO), hydrogen index (HI), S2 fraction (S2), five-moving average temperature (T_5), total nitrogen (TN), total phosphorus (TP), Cu, Zn, $\delta^{13}C$, %(fucose+rhamnose), deoxy S/C5, C6/C5, yield (%), and %glucose in sediment cores of the three reservoirs

Pearson Correlations

	T_5	HI	S2	TP	TN	TCHO	glucose	glactose	mannose	arabonose	rhamnose	fucose	xylose	Cu	Zn	$\delta^{13}C$	c$\delta^{13}C$	%(fucose+rhamnose)$_b$	deoxy S/C5	C6/C5	yield (%)	% glulose
ZT (0-20 cm)																						
T_5	1	0.835*	0.950*	0.950*	0.843*	0.970**	0.962**	0.966**	0.954**	0.967**	0.963**	0.890**	0.953**	0.883**	0.849**	-0.542	0.909**	-0.004	-0.590	-0.892**	-0.657	0.962**
HI		1	.922**	0.846*	0.586	0.886**	0.883**	0.862**	0.840**	0.866**	0.900**	0.872**	0.886**	0.960**	0.933**	-0.343	0.951**	0.277	-0.357	-0.774*	-0.781*	0.883**
S2			1	0.925*	0.735*	0.986**	0.964**	0.974**	0.981**	0.960**	0.995**	0.965**	0.985**	0.936**	0.945**	-0.339	0.949**	0.170	-0.452	-0.849**	-0.814*	0.964**
TP				1	0.749*	0.966**	0.990**	0.939**	0.918**	0.983**	0.944**	0.814*	0.960**	0.943**	0.813*	-0.568	0.917**	-0.090	-0.703	-0.981**	-0.769*	0.990**
TN					1	0.792*	0.781*	0.851**	0.793*	0.815*	0.756*	.662	0.710*	0.629	0.683	-0.649	0.716*	-0.283	-0.648	-0.722*	-0.325	0.781*
TCHO						1	0.992**	0.991**	0.986**	0.992**	0.994**	0.921**	0.991**	0.934**	0.903**	-0.457	0.942**	0.028	-0.582	-0.917**	-0.785*	0.992**
glucose							1	0.975**	0.958**	0.997**	0.976**	0.873**	0.981**	0.953**	0.875**	-0.518	0.945**	-0.034	-0.650	-0.957**	-0.788*	1.000**
glactose								1	0.988**	0.985**	0.982**	0.910**	0.966**	0.899**	0.912**	-0.480	0.937**	-0.027	-0.597	-0.890**	-0.724*	0.975**
mannose									1	0.965**	0.988**	0.943**	0.977**	0.874**	0.902**	-0.378	0.907**	0.051	-0.521	-0.856**	-0.760*	0.958**
arabinose										1	0.974**	0.867**	0.975**	0.934**	0.875**	-0.543	0.942**	-0.078	-0.674	-0.954**	-0.755*	0.997**
rhamnose											1	0.955**	0.994**	0.928**	0.913**	-0.393	0.934**	0.122	-0.499	-0.879**	-0.797*	0.976**
fucose												1	0.934**	0.846**	0.904**	-0.164	0.854**	0.375	-0.227	-0.703	-0.779*	0.873**
xylose													1	0.936**	0.883**	-0.391	0.922**	0.106	-0.526	-0.906**	-0.832*	0.981**
Cu														1	0.900**	-0.408	0.962**	0.127	-0.525	-0.896**	-0.854**	0.953**
Zn															1	-0.236	0.960**	0.183	-0.372	-0.725*	-0.769*	0.875**
$\delta^{13}C$																1	-.449	0.608	0.821*	0.656	-0.040	-0.518
c$\delta^{13}C$																	1	0.026	-0.565	-0.865**	-0.758*	0.945**
%(fucose+rhamnose)$_b$																		1	0.765*	0.243	-0.310	-0.034
deoxy S/C5																			1	0.808*	0.273	-0.650
C6/C5																				1	0.713*	-0.957**
yield (%)																					1	-0.788*
% glucose																						1
LA (0-22 cm, the sample of 8-10 cm is excluded)																						
T_5	1	0.907*	0.778*	0.420	0.461	0.944**	0.820**	0.910**	0.827**	0.923**	0.885**	0.915**	0.808**	0.724*	0.948**	-0.620	0.184	0.378	0.256	-0.493	0.244	0.820**

HI	1	0.944*	0.703*	0.467	0.917**	0.931**	0.853**	0.834**	0.862**	0.789**	0.845**	0.736*	0.766**	0.940**	-0.720*	-0.031	0.198	0.076	-0.418	-0.079	0.931**
S2		1	0.680*	0.386	0.762*	0.848**	0.653*	0.647*	0.690*	0.631	0.656*	0.683*	0.702*	0.827**	-0.707*	-0.226	0.132	-0.083	-0.382	-0.369	0.848**
TP			1	0.494	0.582	0.795**	0.494	0.590	0.536	0.363	0.507	0.341	0.288	0.564	-0.589	-0.227	0.000	-0.039	-0.142	-0.241	0.795**
TN				1	0.475	0.500	0.439	0.587	0.503	0.297	0.419	0.306	0.244	0.417	-0.763*	-0.442	-0.023	0.031	-0.200	0.068	.500
TCHO					1	0.904**	0.964**	0.884**	0.985**	0.920**	0.980**	0.805**	0.716*	0.965**	-0.643*	0.161	0.191	0.119	-0.520	0.306	0.904**
glucose						1	0.859**	0.860**	0.867**	0.700*	0.821**	.613	.620	0.906**	-0.726*	-0.036	0.121	-0.034	-0.254	0.024	1.000**
glactose							1	0.948**	0.963**	0.853**	0.947**	0.650*	0.771**	0.910**	-0.634*	0.231	0.116	0.111	-0.344	0.390	0.859**
mannose								1	0.877**	0.685*	0.831**	.465	0.771**	0.820**	-0.758*	0.039	0.013	0.073	-0.144	0.246	0.860**
arabinose									1	0.894**	0.975**	0.783**	0.677*	0.919**	-0.667*	0.158	0.151	0.075	-0.499	0.381	0.867**
rhamnose										1	0.959**	0.906**	0.639*	0.905**	-0.369	0.344	0.283	0.255	-0.761*	0.426	0.700*
fucose											1	0.822**	0.661*	0.935**	-0.521	0.301	0.223	0.196	-0.602	0.440	0.821**
xylose												1	.471	0.802**	-0.384	0.107	0.348	0.188	-0.871**	0.218	.613
Cu													1	0.707*	-0.629	-0.035	-0.206	-0.153	-0.251	-0.061	.620
Zn														1	-0.572	0.200	0.276	0.146	-0.518	0.197	0.906**
$\delta^{13}C$															1	0.550	0.228	0.316	0.080	0.201	-0.726*
$c\delta^{13}C$																1	0.481	0.542	-0.142	0.637*	-.036
% (fucose+rhamnose)/fucose																	1	0.850**	-0.213	0.228	.121
deoxy S/C5																		1	-0.194	0.380	-.034
C6/C5																			1	-0.252	-.254
yield (%)																				1	.024
% glucose																					1
XFJ (0-16 cm)																					
T_5	1	0.852*	0.308	0.179	0.532	0.751*	0.751*	0.859**	0.769*	0.770*	.570	0.726*	0.024	0.752*	0.736*	-0.773*	-0.720*	0.107	0.876**	0.256	0.721*	0.751*
HI		1	0.509	0.463	0.652	0.753*	0.880**	0.915**	0.766*	0.709*	0.482	0.639	-0.023	0.858**	0.804*	-0.879**	-0.810*	-0.114	0.750*	0.401	0.670	0.880**
S2			1	0.678	0.960*	0.416	0.561	0.435	0.159	0.213	0.353	0.370	0.392	0.625	0.681	-0.713*	-0.726*	0.163	0.024	-0.116	-0.015	0.561
TP				1	0.658	-0.040	0.263	0.158	-0.101	-0.147	-0.242	-0.164	-0.269	0.268	0.321	-0.570	-0.589	-0.401	-0.060	0.354	-0.305	0.263
TN					1	0.500	0.639	0.573	0.285	0.319	0.390	0.460	0.290	0.699	0.744*	-0.853**	-.863**	0.127	0.242	0.005	0.118	0.639
TCHO						1	0.927**	0.928**	0.924**	0.970**	0.915**	0.973**	0.496	0.886**	0.848**	-0.620	-0.538	0.417	0.743*	-0.088	0.876**	0.927**

glucose	1	0.967**	0.898**	0.868**	0.719*	0.826*	.254	0.933**	0.895**	-0.766*	-0.685	0.101	0.728*	0.202	0.735*	1.000**
glactose		1	0.938**	0.894**	0.710*	0.846**	0.173	0.904**	0.845**	-0.795*	-0.716*	0.090	0.853**	0.258	0.829*	0.967**
mannose			1	0.954**	0.740*	0.855**	0.173	0.783*	0.712*	-0.562	-0.468	0.142	0.888**	0.216	0.915**	0.898**
arabinose				1	0.886**	0.947**	0.408	0.815*	0.776*	-0.500	-0.407	0.392	0.802*	-0.046	0.930**	0.868**
rhamnose					1	0.970**	0.777*	0.732*	0.724*	-0.385	-0.321	0.739*	0.524	-0.472	0.793*	0.719*
fucose						1	0.615	0.804*	0.778*	-0.550	-0.484	0.596	0.703	-0.270	0.865**	0.826*
xylose							1	0.362	0.401	-0.007	0.006	0.907**	-0.109	-0.874**	0.304	0.254
Cu								1	0.983**	-0.717*	-0.631	0.165	0.582	0.098	0.681	0.933**
Zn									1	-0.690	-0.612	0.213	0.510	0.032	0.589	0.895**
$\delta^{13}C$										1	0.991**	0.052	-0.642	-0.307	-0.420	-0.766*
$c\delta^{13}C$											1	0.043	-0.584	-0.276	-0.326	-0.685
% $(fucose+rhamnose)_6$												1	0.017	-0.920**	0.334	0.101
deoxy S/C5													1	0.370	0.824*	0.728*
C6/C5														1	0.001	0.202
yield (%)															1	0.735*
% glucose																1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).