

Table A1. Correlation analysis among the *n*-alkane ratios and water chemistry in the batch samples collected from Zoigê peatland.

	CPI	ACL	P_{aq}	pH	Cond	ORP
ACL	0.07					
P_{aq}	0.25	-0.89**				
pH	0.06	0.28	-0.25			
Cond	-0.01	-0.18	0.23	-0.72**		
ORP	-0.20	0.25	-0.28	0.76**	-0.64**	
DWT-p [#]	0.45*	0.13	0.23	-0.05	0.07	-0.10

[#]: the depth from the water level to the peat surface.

$$ACL = \frac{\sum(n \times C_n)}{\sum C_n} \quad (21 \leq n \leq 33);$$

$$CPI = \frac{(\sum \text{odd } C_{21} - C_{31} + \sum \text{odd } C_{23} - C_{33})/2}{\sum \text{even } C_{22} - C_{32}};$$

$$P_{aq} = \frac{(C_{23} + C_{25})}{(C_{23} + C_{25} + C_{29} + C_{31})}.$$

Table A2. Correlation analysis among the *n*-alkane ratios and water chemistry in the batch samples collected from Hani peatland.

	CPI	ACL	P_{aq}	pH	Cond	ORP
ACL	0.07					
P_{aq}	0.15	-0.87**				
pH	0.55	-0.28	0.20			
Cond	0.47	-0.35	0.31	0.79**		
ORP	-0.69*	0.13	-0.18	-0.81**	-0.60*	
DWT-s [#]	0.22	-0.22	0.14	0.56	0.54	-0.22

[#]: the depth from the water level to the moss top.

Table A3. Correlation analysis among the *n*-alkane ratios and water chemistry in the batch samples collected from Dajiuhu peatland.

	CPI	ACL	P_{aq}	pH	Cond	ORP
ACL	0.59**					
P_{aq}	-0.24	-0.78**				
pH	-0.01	-0.17	0.16			
Cond	-0.10	-0.11	0.02	0.49*		
ORP	0.08	0.12	-0.07	-0.48*	-0.59**	
DWT-s	-0.03	-0.19	-0.01	0.04	0.18	0.05

Table A4. Correlation analysis among the *n*-alkane ratios and water chemistry in the batch samples collected from Shiwangutian peatland.

	CPI	ACL	P_{aq}	pH	Cond	ORP
ACL	-0.67**					
P_{aq}	0.80**	-0.92**				
pH	0.51	-0.76**	0.79**			
Cond	-0.04	-0.43	0.37	0.39		
ORP	0.24	0.15	-0.09	0.13	-0.31	
DWT	-0.56*	0.72**	-0.63*	-0.68**	-0.20	-0.39