

1 **Supplementary figure captions**

2 **Figure S1. Water table data at different distances from short- and long-term**
3 **drainage ditches in recent three growing seasons (2016-2018).** (a) The fluctuation of
4 water table depth (WTD); (b) Average water table depths. S: Short-term drainage
5 peatlands, L: Long-term drainage peatlands, S2 and L2: low water table treatment
6 (LWT), S10 and L10: intermediate water table treatment (IWT), S50 and L50: high
7 water table treatment (HWT).

8 **Figure S2. Variation of GHG emission rate of soil from three different water table**
9 **treatments in short- and long-term drainage peatlands under two temperatures**
10 **(8 °C and 18 °C).** (a) CO₂ emission rate at 8°C; (b) CH₄ emission rate at 8°C; (c) N₂O
11 emission rate at 8°C; (d) CO₂ emission rate at 18°C; (e) CH₄ emission rate at 18°C; (f)
12 N₂O emission rate at 18°C.

13 **Figure S3. Temperature sensitivity (Q₁₀) value variations from three different**
14 **water table treatments in short- and long-term drainage peatlands.** (a) CO₂; (b)
15 CH₄; (c) N₂O. Asterisks (*) represent significance level: * $p < 0.05$, ** $p < 0.01$, or *** p
16 < 0.001 . S: Short-term drainage site, L: Long-term drainage site, S2 and L2: low water
17 table treatment (LWT), S10 and L10: intermediate water table treatment (IWT), S50
18 and L50: high water table treatment (HWT).

19 **Figure S4. Spearman's correlation analysis between GHG emissions and soil**
20 **properties, soil prokaryotic and fungal communities.** Asterisks (*) represent
21 significance level: * $p < 0.05$, ** $p < 0.01$, or *** $p < 0.001$.
22

Figure S1

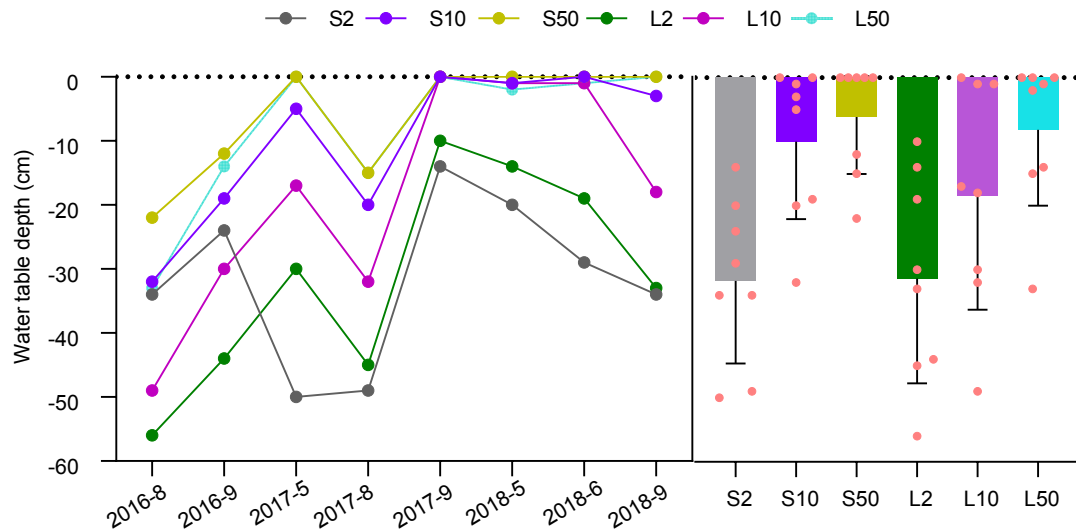


Figure S2

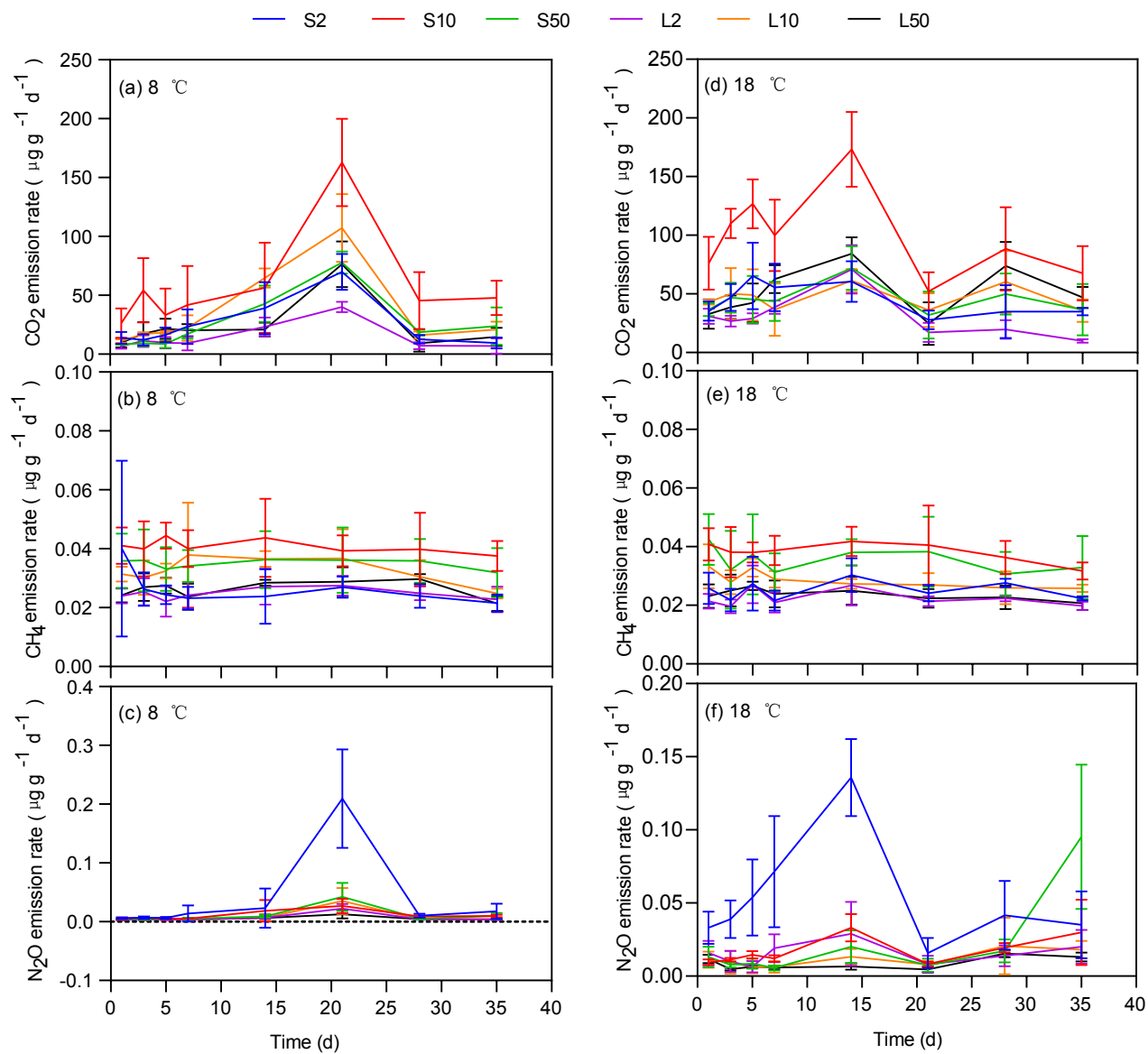


Figure S3

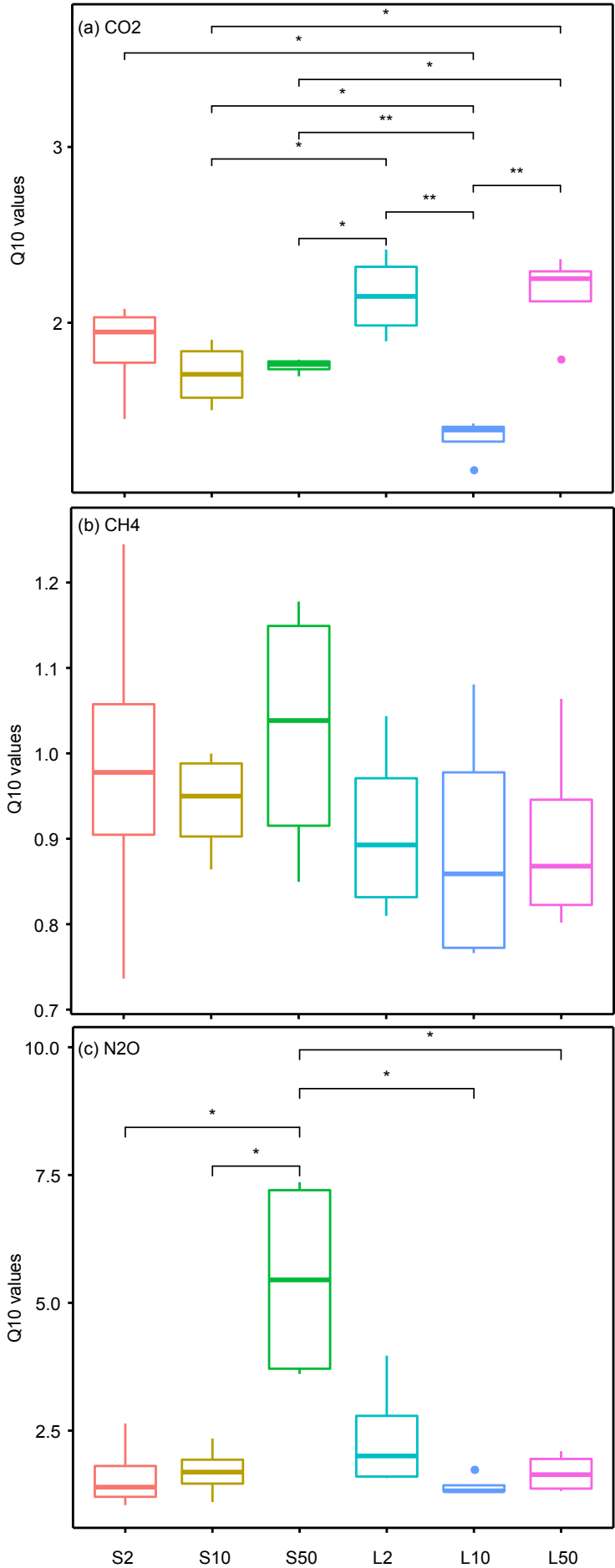


Figure S4

