

Water regimes affected methane emissions in peatland and gley marsh

Introduction

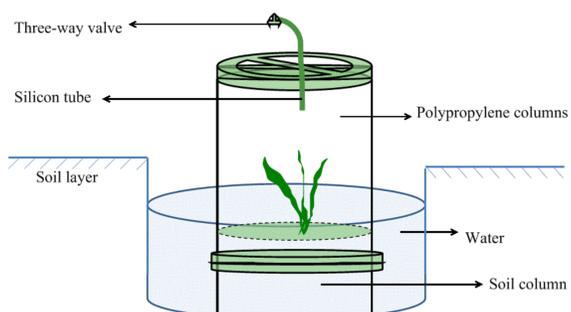
- The increasing frequency of extreme drought and intense precipitation events with global warming may affect methane emissions from different types of wetlands by regulating drying-wetting cycles.
- The objective was to investigate the effects of different water regimes on CH₄ emissions.

Methods

Location: Sanjiang Plain Northeast China.

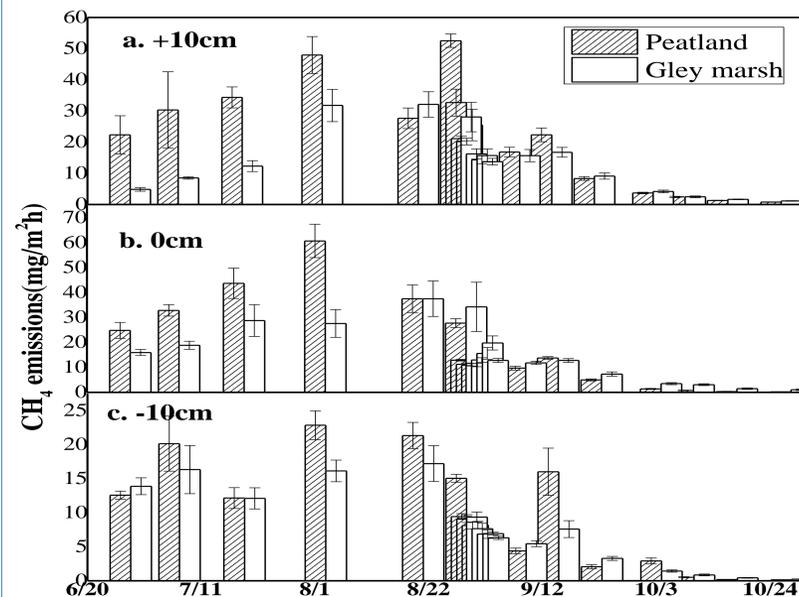
Treatments: Two drying-wetting cycles (7 and 15 days) and three constant water tables (+10, 0, -10cm).

Measurements: A cylindrical sampling container.



Results

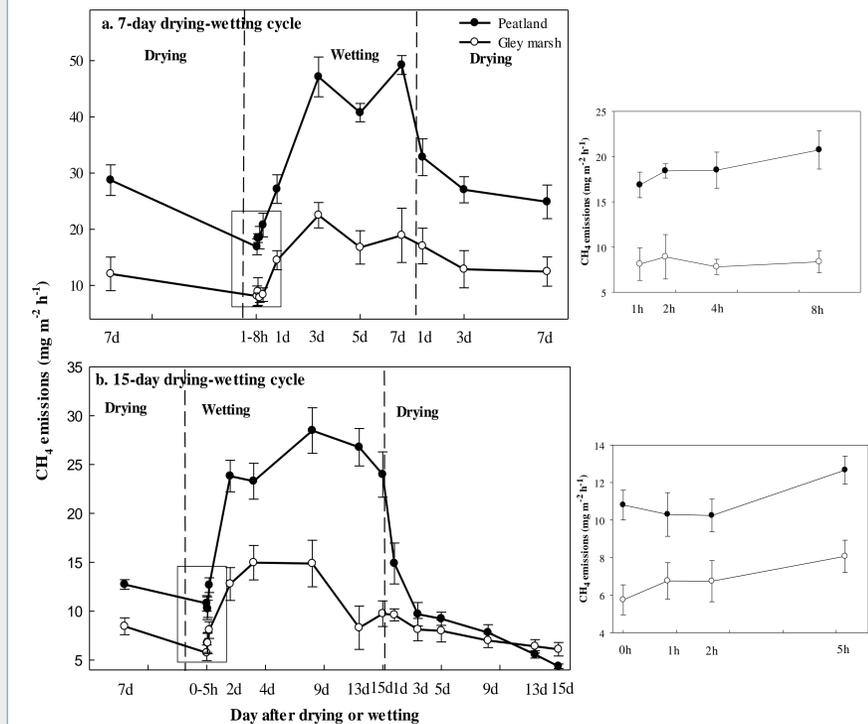
1) Constant water tables



Error bars represent SE. n=8

Site	10cm	0cm	-10cm
Gley marsh	15.0 ± 2.3 ^c	17.4 ± 3.0 ^c	9.1 ± 1.2 ^d
Peatland	23.0 ± 3.4 ^a	23.8 ± 2.7 ^a	11.3 ± 1.3 ^b

2) Drying-wetting cycles



a. Methane emissions in the 7 days' cycle; b. In the 15 days' cycle. Error bars represent SE. n=8

Emission pulses were observed on the first or third day after water table increased.

Conclusions

- The large pulses of CH₄ were emitted during short duration drying-wetting cycles.
- Accurate estimates of CH₄ budgets should incorporate weather events that cause rapid changes in the soil moisture regime.