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Combined effect of different temperature and moisture on northern peatland soils CO_2 efflux rate in the field transplantation experiments: what is stronger?

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Peatlands are expected to play a critical role in nearest predictable climate changes due to storing approximately 1/3 of the total terrestrial carbon pool. However, we still know little about environmental variables effect on peatland soils carbon mineralization - especially in northern areas in case of possible permafrost thawing. Regarding the soil temperature and soil moisture as key environmental variables, we performed our study to estimate the initial response of northern peatland soils to abrupt changes in temperature and moisture conditions.
In august 2018, we set two transplant experiments in a palsa peatland ecosystem in forest-tundra (65°18′55′′N, 72°52′34′′E). The 1st experiment was done to simulate fast temperature changes and the 2d to model different moisture levels. Both experiments were performed at the same site and the CO_2 efflux was measured.
In temperature experiment we established two experimental plots with contrasting soils summer daily average temperatures (0-10 cm) ("cold site", 2.0 °C, and "warm site", 9.4 °C) with relatively stable moisture levels (45.6 and 40.9 %). One part of undisturbed soil samples were cored from cold site and transplanted to the warm site in PVC tubes (CW soils). On the contrary, the second part was transplanted from warm to the cold site (WS soils). After 7 days of measurements, we found the CW soils CO_2 efflux rate to be 2 times higher than "cold" control (216±53 and 119±32 mg CO_2 m2 h-1). No remarkable effect showed the WS soils rate comparatively to "warm" control (157±30 and 127±33 mg CO_2 m2 h-1).
During moisture experiment we also established two experimental plots but with different soil moisture levels (0-20 cm) ("dry site", 24.1%, and "wet site", 56.6%) with relatively close soils daily average temperatures at 0-10 cm (9.7 and 10.8 °C). One part of undisturbed soil samples were cored from dry site and transplanted to the wet site in PVC tubes (DW soils). Inversely the second part was transplanted form wet to the dry site (WD soils). After 7 days of measurements, we didn't find any significant differences between DW soils and "dry" control CO_2 efflux rates (161±68 and 156±34 mg CO_2 m2 h-1). The same result was noted if compare WD soils and "wet" control (156±53 and 152±45 mg CO_2 m2 h-1).
To sum up our preliminary results demonstrated the intensive response of northern peatland soils CO_2 efflux rate to short-term field warming. At the same time, changes in moisture conditions didn't cause any shifts of CO_2 efflux rate. These preliminary findings should be considered if predicting northern peatland soils initial response to climate changes in a short period.