



Relationship of soil CO₂ efflux and water table in the wetland

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Wetlands are an important reserve of carbon due to slow decomposition caused by a high water table. Possible climate changes (such as temperature or rainfall distribution) can significantly affect wetland ecosystems and their carbon balance.

Continuous measurements of soil CO₂ efflux, soil temperature in the depth of 1.5 cm and water table were carried out during six days in September 2010 on wetland Mokre louky in the South Bohemia. The wetland is situated in the inundation area of a large human-made lake Rozmberk. The measurements of soil CO₂ efflux were carried out using automated chamber. That was placed between hummocks of *Carex* tussocks. For five days of measurements the water table slowly decreased from 0.4 cm above the soil surface up to 8.0 cm below the soil surface. Simultaneously soil CO₂ efflux and R₁₀ (soil CO₂ efflux normalized for temperature of 10 °C) gradually increased. Then the heavy rain caused an increase in water table over 4 cm above the soil surface. This was followed by a fast decrease in soil CO₂ efflux up to nearly zero. On the base of measured soil CO₂ efflux, soil temperature and water table a model of soil CO₂ efflux was created to predict changes of soil CO₂ efflux in dependence on external factors. The difference in cumulative CO₂ production got from measured and modeled data was only 1.2 %.

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