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Biotische und abiotische Steuerung von Bodengasflüssen

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Titel
Time resolved spatially-averaged set up for in situ CO2 monitoring in soil

Abstract
Most studies in the past focus on the measurement of CO2 release from the soil surface, which is the parameter of interest for balancing carbon fluxes. However, for advancing our mechanistic understanding measurement of CO2 concentration within the soil are required. Soil CO2 concentrations do not only relate directly to local production of CO2 by plants and soil biota, but are also a key for understanding soil solution chemistry (in particular pH dynamics). The relationship between soil CO2 concentration and CO2 flux at the soil surface will depend on the chemical gradients, the size and connectivity of air filled pore space (related to soil structure and actual water content), and temperature gradients in the system. CO2 production as well as soil water content and temperature show temporal variation directly or indirectly related to day night cycle and related plant growth. It was the aim of the present study to test a recently developed linear membrane-based gas sensor (line sensor) for in situ measurement of soil respiration at high temporal resolution. Data from two soil depths were related to measurement of CO2.