

## **Tagungsnummer**

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## **Thema**

Kommission III: Bodenbiologie und Bodenökologie  
Biotische und abiotische Steuerung von Bodengasflüssen

## **Autoren**

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## **Titel**

Time resolved spatially-averaged set up for in situ CO<sub>2</sub> monitoring in soil

## **Abstract**

Most studies in the past focus on the measurement of CO<sub>2</sub> release from the soil surface, which is the parameter of interest for balancing carbon fluxes. However, for advancing our mechanistic understanding measurement of CO<sub>2</sub> concentration within the soil are required. Soil CO<sub>2</sub> concentrations do not only relate directly to local production of CO<sub>2</sub> by plants and soil biota, but are also a key for understanding soil solution chemistry (in particular pH dynamics). The relationship between soil CO<sub>2</sub> concentration and CO<sub>2</sub> 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. CO<sub>2</sub> 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 CO