



TERENO-SoilCan - Soil-Atmosphere Interactions Induced by Land Use Changes as a Result of Global Change

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Based on the TERENO infrastructure, SoilCan (Soil can make a difference in climate policy) is designed as a long-term large scale experiment to study the effects of land use changes of terrestrial systems caused by Global Change. The soil and ground water, in particular the water and matter fluxes in soil, are the main focuses of SoilCan. Primary objectives of SoilCan are:

- Further development of the instrumentation of the TERENO-observatories to study the effects of land use changes on soils
- Collection of comprehensive long-term data to monitor Global Change on the regional scale
- Provision of high-quality data to develop and improve the prognosis of regional climate models with the aim to develop and implement options for management strategies.

In the frame of SoilCan, fully automated lysimeter systems will be installed on several highly equipped experimental field sites of the TERENO-observatories and the relevant status variables of each ecosystem will be monitored (e.g. climate, hydrology, biosphere-atmosphere exchange, biodiversity, etc.). The TERENO-observatories are placed in four different regions of Germany:

- “Rur“ observatory – moderate atlantic climate
- “Ammer“ observatory - alpine climate
- “Bode“ observatory - continental climate
- “Müritz“ observatory - baltic climate

The field sites will have a radio-based technology for automatic monitoring and data communication. In total, 90 lysimeters (1.5 m depth, 1m² surface) will be filled with soil monoliths at the four TERENO-observatories. The lysimeters will be partly transplanted along the existing natural temperature and rainfall gradients. The transplantation of lysimeters inside an observatory as well as between the four different observatories is of utmost importance for SoilCan. In case of the “Rur” observatory, three intensively instrumented field sites (“Wüstebach”, “Rollesbroich” und “Selhausen”) will be equipped with lysimeter stations. Along with a temperature and rainfall gradient of these three field sites, the “Rur” observatory includes different land uses: “Wüstebach” is a forest site, “Rollesbroich” is a pasture land and “Selhausen” is an arable site. The other observatories also include field sites with similar temperature and rainfall gradients.