Geophysical Research Abstracts,
Vol. 10, EGU2008-A-07591, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-07591
EGU General Assembly 2008

3D Electrical Resistivity Tomography (ERT) as a tool for monitoring small scale soil moisture dynamics to assess the impact of earthworm activity on water repellency.

O. Mohnke (1), K. Prokoph (2), S. Pieper (3), T. Günther (4) and U. Yaramanci (2)

(1) Institute of Applied Geophysics and Geothermal Energy, RWTH Aachen, (2) Institute of Applied Geosciences, TU Berlin, (3) Institute of Ecology, Soil Protection Depart., TU Berlin, (4) Leibniz Institute for Applied Geosciences

Hydrophobic areas have a major impact for the transport of water and matter through preferential flow in soils. Soil animals, e.g. earthworms, modulate the composition of soil solutions in time and have a species-specific impact on the release pattern of nutrients and pollutants from organic matter and soil. The ERT method allows a non-invasive in-situ imaging of 2D and 3D electrical resistivity distribution that is linked to the moisture distribution in soils. To assess the possibilities and limitations of 3D ERT in the cm-dm range to monitor the long and short term dynamics of water repellent zones in the presence of soil fauna activity ERT measurements were carried out using soil filled mesocosms (MC) inoculated with earthworms. Results indicate a sufficiently high spatial resolution and sensitivity to reliably monitor in-situ changes of soil moisture on the relevant scales.