Universität Münster

ILÖK Institut für Landschaftsökologie

Kolloquium des Institutes für Landschaftsökologie
WiSe 23/24

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18 Uhr c.t.

Hörsaal Geo1, Universität Münster

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Universität Tübingen

Perspectives and methodological challenges of imaging soil hotspots

The rapid development of non-destructive methods allows obtaining images of the spatial distribution of various properties and processes in the soil. Soil imaging visualizes and quantifies processes in soil hotspots across space and time involving microorganisms, roots and carbon and nutrient sources, thereby helping to elucidate mechanisms. A wide range of individual approaches exists to determine spatial distributions of enzyme activity (soil zymography), soil pH (optodes), root exudation and pesticides (14C phosphor imaging), nutrient fluxes (diffusive gradients in thin films (DGT)), etc. Since processes and mechanisms are multi-factorial, combining individual approaches is key for any real understanding of soil processes.

Imaging methods were initially developed for laboratory-controlled conditions, and only several were already adapted for field conditions. The challenges for application soil imaging techniques in the field and problems related to sequential application of several method will be presented. I will introduce a workflow for multi-imaging, which includes suggestions on coupling individual methods to study defined soil process, the sequence of the methods application, image alignment, hotspot thresholding and analysis, co-localization of images and quantitative image analysis. The perspectives, advantages and challenges of multi-imaging approaches will be comprehensively discussed.

Die Vorträge sind öffentlich. Um rege Teilnahme, insbesondere auch durch Studierende, wird gebeten. Die Veranstaltungen sind im Studiengang MSc Lök, Modul M1 anrechenbar.

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