

MARTIN-LUTHER-UNIVERSITÄT HALLE-WITTENBERG





Soil Science Colloquium - Halle

Prof. Dr. Holger Pagel

Forschungszentrum Jülich

27. February 2025 - 4pm Julius-Kühn-Hörsaal, Theodor-Lieser-Straße 9, Halle

Modeling microbial energy and matter cycling in soil systems

Abstract:

Modeling and predicting essential soil functions such as carbon storage, nutrient cycling, water purification and plant productivity is fundamental for understanding agroecosystems and their response to global change, but requires to represent the relevant underlying microbial processes in sufficient detail. How to adequately model microbial energy and matter flows of organic compounds, nutrients and pesticides in soil and soil-plant systems and how to link models and measurements is an open challenge. My talk will present microbially explicit modeling approaches and shed light into integrating functional microbial traits, omics data and thermodynamics with process-based models. I will also present an integrated functional-structural modeling framework that combines plant, rhizosphere, and soil systems (including microbial communities) and can facilitate the upscaling from the microhabitat to the pedon scale.