universität freiburg

Kolloquium - Boden, Wasser, Luft

07. Dezember 2023, 16 ct - 18 Uhr
Hörsaal Fahnenbergplatz, Friedrichstr. 39

Dr. Carolin Winter

Universität Freiburg, Professur für Umwelthydrosysteme

From trend to event – disentangling the dynamics of nitrate export from heterogeneous catchments across temporal scales

Human interference with the nitrogen cycle has caused a massive release of reactive nitrogen to our landscapes with severe impacts on drinking water quality and aquatic ecosystems. Catchments, the main unit for water quality management, encompass numerous hydrological and biogeochemical processes that shape nitrogen retention in and nitrate export from catchments. Thus, to develop more effective management strategies, it is crucial to unravel the intricate interplay of catchment processes across spatiotemporal scales.

The hydro-meteorological conditions, such as runoff events or dry spells, additionally shape nitrogen retention in a catchment and its hydrological transport to the stream network. Consequently, the temporal variability of hydro-meteorological conditions and its amplification with climate change adds another layer of complexity to the dynamics of nitrogen retention and export at the catchment scale.

Last but not least, nitrogen is not the only nutrient that is heavily impacted by human activities and retained and transported within catchments. Thus, broadening our understanding beyond nitrate to encompass other nutrients like carbon and phosphorus is essential for a comprehensive understanding and targeted protection of catchment water quality.

Veranstaltet von den Professuren für
Hydrologie, Umweltmeteorologie, Bodenökologie und Umwelthydrosysteme,
Fakultät für Umwelt und natürliche Ressourcen der Universität Freiburg