Kolloquium
Boden, Wasser, Luft

19. Januar 2023, 16:15 – 18 Uhr
Hörsaal Fahnenbergplatz, Friedrichstr. 39

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Forest Disturbance and Soil Organic Matter: Definition, Deadwood and Future Directions

In forest ecosystems, disturbances include events such as fire, hurricans, droughts, frost, landslides, volcanic eruptions, bark beetle outbreaks, etc. Theoretically they are defined as events that disrupt community structures, change resource availability, or alter the physical environment. Practically they are often defined as the loss of biomass, which would affect soil organic matter (SOM) through pulses and patches of litter, but evidence thereof is often unclear and contradictory.

Deadwood is a model litter to tease out disturbance effects on SOM. Scale matters: At the profile scale, deadwood increases SOM when input, transformation and translocation into soil are higher than CO_2 losses to the atmosphere. Even then, SOM stocks under deadwood often converge with surroundings within decades. At the ecosystem scale, the deadwood-profile relationship can be a pedogenic patch that alters soil—and SOM—formation for a given amount of time. Resulting patches of SOM persist unless orgnaisms adapt or another disturbance occurs.

When disturbances move within ecosystems, patches of SOM may overlap and homogeneize the original patchiness. Future studies could look for persistent markers of disturbance in SOM as evidence of patch dynamics and as means to elucidate SOM and forest evolution.

Veranstaltet von den Professuren für Bodenökologie, Hydrologie, Umwelthydrosysteme und Umweltmeteorologie der Universität Freiburg