Danish Microbiological Society

MicroTalks

Time of the event: Friday, 13th June 2025, 2:00 PM - 3:00 PM
Location of event: Building 1532-122, Auditorium G2, Department of Mathematics, Ny Munkegade 118, 8000 Aarhus C
Please indicate the following that is applicable: Both in presence and virtual attendance available.

Can peat beat the heat? The impacts of climate change on plant-microbe interactions and implications for carbon storage in northern peatlands

Professor Joel E. Kostka
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Peatlands represent climate critical regions that cover only 3% of the Earth's land surface but store approximately 1/3 of all soil carbon (C). The future role of peatlands in C sequestration remains uncertain and depends on the impact of global change-related perturbations on their C balance. Our research on belowground soil C processes leverages the resources of a largescale climate manipulation experiment (SPRUCE) to determine if the response of decomposition to climate change is driven by higher C-inputs to the soil from plants or rather by the mobilization of stored older C through increased microbial activity, or both, thereby shedding light onto a potentially critical positive feedback loop. Our team has compiled a 10-year time series of physical, biogeochemical, and multi-omics data in the experimentally-warmed SPRUCE peatland. We have observed profound changes in plant and microbial communities with warming treatment. Mosses have largely been replaced by shrubs in the warmer enclosures. Microbial physiology/activity is stimulated in response to temperature, whereas a change in abundance or biomass is more muted and difficult to detect beyond natural heterogeneity. Warming stimulates microorganisms to respire ancient peat C, deposited under prior climate (cooler) conditions.

All welcome

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Elevated rates of methanogenesis are fueled by plant metabolites. Thus, as peatland vegetation trends towards increasing vascular plant cover with warming, we can expect a concomitant shift towards increasingly methanogenic conditions, which are likely to persist resulting in amplified climate-peatland feedbacks.

DMS Host: Professor Andreas Schramm, Aarhus University,
Department of Biology, Section for Microbiology

All welcome

DMS MicroTalks are scientific talks in all areas of microbiology organised locally but available to all members of the Danish Microbiological Society. www.dms.dk/microtalks