## P187 Links between soil $CH_4$ cycling and tree-derived $CH_4$ emissions on a forestry-drained peatland

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Recent studies have revealed the contribution of trees to the global methane ($CH_4$) emissions and thus questioned the nature of boreal forests solely as $CH_4$ sinks. However, the related mechanisms are still uncertain. We examined the potential role of soil $CH_4$ production and subsequent transport through the trees as a source of these emissions. Methane consumption in the soil profile and in the field layer mosses was also assessed. Measurements were conducted on two adjacent forested peatland subsites located in southern Finland (60°38' N, 23°57' E). Subsites differed in their water table level due to a partial tree removal, which decreased the evapotranspiration of the harvested subsite (HRV). In accordance with the higher water level, potential $CH_4$ production was higher in the HRV soil than at the control subsite. Similarly, the tree-derived $CH_4$ flux was significantly higher at the HRV subsite. Preliminary microbial analyses showed higher methanogen (*mcrA* gene) abundance in the HRV soil but no signs of methanogens in the trees. These results, and the decreasing $CH_4$ flux upward the tree trunk, were a strong indication of the transport of soil-derived $CH_4$ through the trees. Based on the fluxes, soils of both subsites were generally small $CH_4$ sinks, but there were differences in their potential for high- vs. low-affinity $CH_4$ oxidation. Mosses showed low $CH_4$ oxidation activity. Methanotrophic community structures are expected to reflect the above mentioned oxidation patterns. Combined, this study will give a detailed view on the role of different ecosystem components in the forest $CH_4$ cycling.

## P188 Selection of high performance strains of edible mycorrhizal fungi for improved abiotic stress resistance

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Ectomycorrhizal Fungi (EcM) may play an important role in improving tree vigor and enhancing ecosystem services delivered by trees. It is important to develop resilient EcM-inocula to improve tree health, including urban trees. The use of native strains with strong adaptive skills to different abiotic and biotic challenges could be determinant for the success of tree establishment. The present work focus on screening high performance strains of edible ectomycorrhizal specie *Lactarius deliciosus* and assess its performance and ability to grow and adapt to stresses scenarios to ensure a more sustainable choice of isolates. The ability of *L. del* to grow and acclimate to abiotic stresses was studied by analyzing the effects of exposure on growth and biochemical traits. Fungal plugs were placed in fresh medium, on top of a cellophane sheet and grown for four weeks at 3 levels of temperature, (15°C, 22°C, 29°C), water stress (0%, 15% and 30% of PEG 6000) and pH (5, 6, 7). They were also subjected to temperature shifts. Box-PCR technique was used as a molecular tool for fingerprinting to differentiate *L. del* strains. Among the different treatments the highest growth was obtained at 25°C, and 35°C was lethal to the mycelium after 15 days of exposure. Temperatures of 15°C and 30°C were clearly stress temperatures to be considered in subsequent studies. These points will represent innovative contributions to the understanding of what triggers mycelium development for sustaining healthy ecosystems.