



SESSIONS EUCOP6_ 2023

Session title: Carbon stocks, soil properties, greenhouse gas fluxes and atmospheric feedbacks of permafrost regions

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Summary: This session brings together research that aims to better quantify the role of permafrost regions in the global carbon cycle and other atmospheric feedbacks. Studies have shown that soils, peatlands, Yedoma and deltaic deposits in the circumpolar permafrost region store around half the global soil organic carbon (SOC). Much of this carbon has accumulated since Pleistocene times and is protected from decomposition and erosion by waterlogging and low temperatures close to or below the freezing point. Increasing atmospheric temperatures and changes in hydrologic conditions risk to remobilize this carbon and generate emissions of carbon dioxide (CO₂) and methane (CH₄). Also other greenhouse gases such as nitrous oxide (N₂O) are increasingly recognized in their importance. The magnitude of potential feedback effects with the atmosphere are still under debate, including the effect of increased greenhouse gas fluxes from permafrost landscapes on the global radiation balance and changes in source and sink budgets of landscapes through vegetation growth and other mechanisms. We invite all contributions that broadly address these topics. This may include studies that (1) quantify stocks of carbon and nutrients related to greenhouse gas fluxes and vegetation productivity such as nitrogen (N) and phosphorus (P) in soils, peatlands and sediments of the permafrost region. (2) Contributions that aim to better understand source and sinks of greenhouse gases in permafrost landscapes or (3) provide long-term assessments of greenhouse gas flux dynamics. As well as (4) simulations of past, present and future feedbacks of permafrost regions with the atmosphere. Contributions may provide a microbial to global perspective and use a wide range of methods including field observations, laboratory analyses, manipulation experiments, remote sensing data or numerical modeling.