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KlimaCampus Kolloquium

Christian Beer

Importance of temporal and spatial variability of environmental conditions for land-atmosphere interactions in permafrost landscapes

Northern permafrost soils are a huge reservoir of carbon that has been accumulated during the Pleistocene and Holocene. Climate-change induced permafrost thawing will make this carbon available for decomposition, initiating a positive feedback mechanism. However, future projections of high-latitude greenhouse gas balances remain highly uncertain. This talk will review recent advancements of our understanding of vegetation and soil carbon turnover processes with a special focus on the production of methane versus carbon dioxide. In addition, the impact of temporal variability of meteorological variables on soil insulating layers and hence permafrost temperature will be discussed. However, the high lateral and vertical heterogeneity of state variables in permafrost ecosystems influence their interactions with the atmosphere. This challenges current concepts in Earth system modelling.

Christian Beer, from the Bolin Centre for Climate Research, Stockholm University is guest of Victor Brovkin (MPI-M).

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