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Contemporary mire net ecosystem green-house gas balance: controls and susceptibility to change

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In this presentation I will address three main issues: 1 – What is the contemporary carbon sequestration function of high latitude mire ecosystems relative to Holocene average? 2 - The relative importance of the component carbon (C) fluxes for the annual mire Net Ecosystem Carbon Balance (NECB); 3 – The importance of gross primary production (GPP) versus ecosystem respiration (Reco) for the annual Net Ecosystem Exchange (NEE); The annual boreal mire NECB is made up principally by the biosphere-atmosphere exchange of CO_2 (NEE) and CH4 and the runoff C-export. One important research issue is to further understand what controls the relative contribution from the component fluxes to the annual mire NECB. A second important major research issue is to reveal the relative importance of gross photosynthesis (GPP) and ecosystem respiration (Reco) respectively for the annual mire NEE. The relative importance of GPP and Reco respectively for the NECB also encounters the effect of changes in the lengths of the growing season and non-growing season respectively. In this presentation we use ten years of data on annual fluxes of NEE, methane and water discharge C export at a nutrient poor minerogenic boreal mire, Degerö Stormyr, in northern Sweden to address the above questions. Winter time NEE together with methane emission and water discharge C export reduces the growing season NEE with approximately 60%, thus substantially controlling the annual boreal mire NEE.