Revealing hidden peat structures along the stream network of a boreal forest catchment

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Peat stored in large wetlands plays an important role in the carbon cycle and strongly influences water quality of terrestrial surface water bodies. At the same time, peat is also stored in the direct vicinity of many boreal forest streams. From this strategic position, peat can receive and chemically reset hillslope water before it reaches the stream network. Yet, in contrast to large wetlands, only little spatial information is available on the lateral extent of near-stream peat and even less about its vertical variation. Here, we present field data on peat depth and lateral extent collected from approximately 200 transects (with 12 soil profiles taken per transect) distributed across the entire stream network of the Krycklan boreal catchment in Northern Sweden. This soil profile data revealed a considerable heterogeneity of peat and organic horizon thicknesses. By combining the field data with morphological and geological maps, we show how parent material, stream order and local topography influence near stream peat structures. Furthermore, we discuss potential consequences on surface water quality by linking the detailed peat data set to estimates of lateral, shallow groundwater inflows derived from hydrometric measurements and digital terrain analysis.