Hydrological connectivity and sediment connectivity in physically-based, distributed modelling of flow and transport processes in Finnish forested catchments

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Forests cover over 80% of the area of Finland. Understanding on water, solute and sediment connectivity in forested areas is thereby crucial for estimating nutrient and pollutant transport as well as soil erosion and sediment transport through forested catchments to receiving water bodies. In combination with experimental measurements, physically-based distributed modelling provides means to better understand processes and connectivities present in the studied systems. Our poster presents examples of studies in two typical Finnish forest environments, a mineral soil forested hillslope, and an open ditch drained peatland forest, both located in Eastern Finland. The study on forested hillslope focuses on using tracer experiments in three-dimensional two pore domain modelling of subsurface flow and solute transport, whereas the study on drained peatland comprises integrated modeling of overland, subsurface and ditch network flow, as well as simulating erosion and sediment transport in the ditch network.