



Flow and sediment dynamics under changing land use, Ingbirchworth, River Don Catchment

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Diffuse sources of sediment and sediment-associated pollutants are increasingly of concern due to the potential negative effects on soils and receiving waters. It is therefore important to better understand the quantity, sources, and pathways involved in sediment transfer processes across the landscape. Land use is a significant factor affecting this transfer of water and sediments across the landscape and into water bodies. Thus, the effects that land use changes have on connectivity are assessed using the study and understanding of flow and sediment dynamics while increasing the knowledge of the role of spatial and temporal factors.

This task is undertaken as part of CatSci, a multidisciplinary project aimed to produce an integrated study of the pressures on the ecological status of water bodies in the River Don Catchment, and to provide a deeper understanding for integrated catchment management. The Ingbirchworth sub-catchment is being used as a natural laboratory to monitor processes at different levels. A historical land use change assessment from the mid XVIII century, when widespread construction of reservoirs started in the uplands of the Don Catchment, has been carried out. Sediment cores have been recovered from two reservoirs in the catchment to measure variations in sediment loads, sources and chemical characteristics over time, which are compared against the changes identified by the land use change assessment. Present day processes along surface and subsurface pathways are monitored using a nested approach in which the spatial distribution across the catchment, the variability in land use and past land use history and physical and environmental conditions are considered.