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Instrumenting the Seitengraben Hydrology Open Air Laboratory (HOAL), Lower Austria

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The purpose of this project is to advance the understanding of water related flow and transport processes in catchments which is important in the context of environmental technology, planning and management for estimating floods, assessing nutrients and analysing hygienic risks. A Hydrology Open Air Laboratory (HOAL) will be established which consists of a well instrumented research catchment in Lower Austria. There are four main innovative steps in this project that are aimed at addressing some of the limitations of previous studies. (a) Longitudinal profiles of stream temperatures will be measured using the novel technique of Distributed Temperature Sensing (DTS) from which the patterns of lateral recharge along a stream can be inferred. (b) New genetic markers for faecal hazard analysis will be developed and applied to trace microbial transport in surface and ground waters at the catchment scale. (c) Surface flow patterns within the catchment will be inferred by video camera systems. (d) The above innovative measurement techniques will be complemented by an array of observational methods to allow a holistic assessment of water related processes at the catchment scale including water quantity, water quality and solids. The instruments are connected by a high speed Local Area Network. The data will be combined by modelling the catchment dynamics of the relevant processes. The project will take advantage of a Doctoral Programme (DK) on "Water Resource Systems" that has recently been funded by the Austrian Science Foundation. Experience - including pitfalls - with instrumenting the catchment will be reported in this presentation.