



Towards improved water quality assessment: comparison of surface water sampling strategies

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In research and governmental water quality monitoring studies, clear guidelines for experimental design of monitoring campaigns are often unavailable, leading to flawed or ambiguous data sets. Not only are the data difficult to interpret, but incorrect conclusions and resulting policy recommendations can have far-reaching implications. Inadequate sampling devices or strategies are often responsible for sampling artifacts. These artifacts can obscure real variations in the environment. This is especially critical when considering nutrients, pollutants or environmental tracers, which are highly dependent on flow dynamics, and vary with discharge fluctuations. In this presentation we give an overview of sampling strategies, methods, and new devices using case studies from research catchments in Switzerland and Germany and an international watershed (Lake Constance). We compared various 'active' samplers (event-triggered sampling, time-proportional composite sampling, volume-proportional composite sampling) with two different types of passive samplers for several events in different catchments. Passive samplers have particular strength in remote catchments (especially for isotope sampling in higher altitudes), while their results are limited when applied in larger peri-alpine streams. We summarize our main findings and recommend a sampling guideline for surface water bodies concerning sampling device, method and strategy.