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Vegetation and flow rate impact on in-stream longitudinal dispersion and retention processes

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ABSTRACT

This paper is an attempt to explain influence of vegetation and flow rate in natural stream (Epre, Germany) on mixing and transport processes. For this purpose, we conducted two tracer tests in Germany using rhodamine WT (RWT) as a fluorescence dye. Both tests were performed under different vegetation and flow rate conditions. The STIR (Solute Transport In Rivers) code was used for calibration of dispersion coefficients, exchange rates and residence times. We used the STIR model to separate short - and long - time retention. Our tracer test results confirm previous findings and also reveal a correlation between storage zone exchanges rate and reach lengths, strong influence of vegetation and flow rate on transport and mixing parameters, and the significance of the equipment on storage domain characterisation.