



## **Inferring spatial and temporal flow path variations in the riparian zone of a Swedish boreal catchment from combining topographic with hydrometric data**

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The near stream riparian zone forms an important interface between terrestrial and lotic ecosystems. At the catchment scale, the riparian zone has been shown to strongly influence streamflow generation as it is an area where saturation excess overland flow is likely to occur and to directly discharge into adjacent streams. Here, we propose an inverse approach in which measured streamflow is used to back-calculate temporal variations of groundwater levels and flow paths in the riparian zone, while topographic attributes are used to infer their spatial variation. We tested this approach for the Swedish boreal Krycklan catchment using groundwater table and streamflow measurements together with a high resolution digital elevation model. Our results indicate that the method (i) is suitable for inferring the overall spatio-temporal variability of riparian zone groundwater levels and flow paths in a catchment, but (ii) tends to become less accurate when applied at higher temporal or spatial resolutions.