



## **Groundwater recharge from point to catchment scale**

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Accurate estimation of groundwater recharge is a challenging task as only a few devices (if any) can measure it directly. In this study, we discuss how groundwater recharge can be calculated at different temporal and spatial scales in the Kleine Nete catchment (Belgium). A small monitoring network is being installed, that is aimed to monitor the changes in dominant processes and to address data availability as one goes from the point to the catchment scale. At the point scale, groundwater recharge is estimated using inversion of soil moisture and/or water potential data and stable isotope concentrations (Koeniger et al. 2015). At the plot scale, it is proposed to monitor the discharge of a small drainage ditch in order to calculate the field groundwater recharge. Electrical conductivity measurements are necessary to separate shallow from deeper groundwater contribution to the ditch discharge (see Di Ciacca et al. poster in session HS8.3.4). At this scale, two or three-dimensional process-based vadose zone models will be used to model subsurface flow. At the catchment scale though, using a mechanistic, process-based model to estimate groundwater recharge is debatable (because of, e.g., the presence of numerous drainage ditches, mixed land use pixels, etc.). We therefore investigate to which extent various types of surrogate models can be used to make the necessary upscaling from the plot scale to the scale of the whole Kleine Nete catchment.

Ref. Koeniger P, Gaj M, Beyer M, Himmelsbach T (2015) Review on soil water isotope based groundwater recharge estimations. *Hydrological Processes*, DOI: 10.1002/hyp.10775