



Universität
Basel

Research Project

Characterizing managed aquifer recharge systems with state-of-the-art tritium and noble gas measurement techniques and integrated surface-subsurface hydrological modelling

Project funded by own resources

Project title Characterizing managed aquifer recharge systems with state-of-the-art tritium and noble gas measurement techniques and integrated surface-subsurface hydrological modelling

Principal Investigator(s) [Schilling, Oliver](#) ;

Project Members [Tomonaga, Yama](#) ;

Organisation / Research unit

Departement Umweltwissenschaften / Hydrogeologie (Schilling)

Project start 01.01.2023

Probable end 31.12.2025

Status Active

The focus of this research project is the improvement of the conceptual and quantitative understanding of surface water-groundwater interactions via state-of-the-art tritium measurement techniques and integrated surface-subsurface hydrological modelling. The successful candidate will be tasked with the measurement and analysis of the spatial and temporal distribution of tritium in the river Rhine and in a large near-river groundwater wellfield, which is characterized by complex geology and where Rhine river water is used for managed aquifer recharge. The goal is to develop a combined tritium measurement and modelling method that allows the quantification of the flow and mixing of different groundwater sources at near river groundwater water wellfields. Tritium measurements will be based on an improved and state-of-the-art ultra-low-level measurement technique that was developed at Eawag and which employs electrolytic enrichment of tritium in water samples followed by liquid scintillation counting. In addition to the methodological advances in the analyses of tritium, its decay product ^3He and other noble gases, the successful candidate will conduct numerical flow and reactive transport simulations of the study site with an integrated surface-subsurface hydrological model and calibrate the models against hydraulic and tracer data.

Keywords tracers, noble gases, tritium, groundwater, surface water-groundwater interactions, modelling, managed aquifer recharge

Financed by

University funds

Other funds

Add publication

Add documents

Specify cooperation partners

ID	Kreditinhaber	Kooperationspartner	Institution	Laufzeit - von	Laufzeit - bis
4658673	Schilling, Oliver	Van Rooyen, Jared, Dr.	Eawag	01.01.2023	31.12.2025
4658674	Schilling, Oliver	Kipfer, Rolf, Prof.	Eawag	01.01.2023	31.12.2025
4658675	Schilling, Oliver	Brennwald, Matthias, Dr.	Eawag	01.01.2023	31.12.2025