Modelling nitrate dynamics in the well catchment Baltenswil (Zurich, Switzerland)

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Abstract Nitrate dynamics are investigated for the catchment of the drinking water pumping well Baltenswil (Zurich, Switzerland). Land use in the well catchment is mainly agriculture and forestry. Nitrate input into the subsurface is estimated based on yearly maps of crop rotation on the agricultural plots within the catchment, and on the results from lysimeter studies on nitrate mobilization for similar soils and climatic conditions and crop rotation. Calibration of the saturated part of the flow model is performed using long-term series of head data in wells and piezometers. Transient flow and transport modelling was performed using the software MIKE SHE for the period between 1994 and 2009 and compared with measured head and nitrate data. The results point to the importance of nitrate input and groundwater recharge rate for the complex nitrate transport system.

Key words groundwater; nitrate; drinking water well; solute transport; modelling