

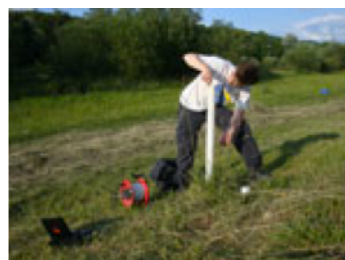
Riverbank filtration under climate change scenarios

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Almost one third of the groundwater is replenished by river water. River water, sometimes contaminated by waste water, is cleansed through riverbank filtration. The consequences of the changing climate on riverbank filtration are not yet known. Can drinking water quality be enhanced by means of improved wastewater treatment?

Background

Switzerland's drinking water is mainly derived from groundwater. Approximately 25–30% of the groundwater comes from river water that has filtered through the riverbanks. Frequently, this is the only barrier that divides wastewater-bearing rivers from drinking water systems. Clean drinking water is therefore directly connected with the chemical, physical and biological purification processes occurring in this zone. Do temperature changes and occasional increases in wastewater effluents interfere with the processes within this infiltration zone? River water often contains significant amounts of wastewater effluents from sewage plants. How does river water composition change when wastewater is better treated before it is discharged into rivers?

Aims and methods

This project examines climate-induced changes of the infiltration processes of river water into the groundwater. This study will include laboratory experiments as well as field investigations in existing research sites, in order to differentiate between "normal" and climate-induced changes. The results will build a basis for a numerical model, which can then be applied to calculate the processes in typical summer and winter situations, as well as in extreme scenarios.

Significance

The project will provide results on the behaviour of riverbank filtration under various climatic conditions. On this basis, the existing water supply through riverbank filtrates can then be assessed. Possible upgrades of water supplies or wastewater treatment will be proposed.