

Applied hydrogeology projects in the context groundwater protection

Context and objectives

In Switzerland about 80 percent of drinking water is withdrawn from groundwater. Until recently it was taken for granted that there would always be enough drinking water in the best quality. But groundwater resources are under pressure: Increasing land use for construction, industry or agriculture pose numerous threats to groundwater quality and quantity. About 25 years after its last major revision, the Swiss legal framework for groundwater protection is currently being revised. The new legal provisions will oblige the Cantons to delineate the capture zone (aire d'alimentation Z_U) of thousands of wells and sources and generally reinforce the legal provisions regarding the groundwater protection zones. New tools need to be developed and tested to support groundwater protection.

Methodology

A broad range of applied projects related to groundwater protection can be developed based on the student's interest. There are plenty of opportunities to apply a wide range of field work (geophysics, hydrochemistry, tracer tests, isotope datation, ...), the establishment of a numerical model, testing approaches to analyze existing numerical models or developing approaches for conceptual models. Based on the student's interest, projects in different hydrogeological settings (e.g. Alpine, Swiss Plateau) are possible. This may offer an opportunity to gain practical experience for students planning to work in a consulting company or cantonal environmental agency. Feel free to come and ask.

Supervision and collaboration

The project will be carried out in close collaboration with the Groundwater Protection Platform at the University of Neuchâtel. The Groundwater Protection Platform is a joint institution of the CHYN and the Federal Office for the Environment. Depending on the type of project that is developed the student may interact with a cantonal environmental agency in charge of groundwater protection, consulting companies supporting the field work, drilling companies or others. The project will be supervised by Roman Lindegger and Daniel Hunkeler at the CHYN and depending on the project an additional supervisor could be included.

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