

HYDROGEOLOGY OF WETLANDS: A MODELLING APPROACH FOR LA BURTIGNIÈRE (VD)

Context and objectives

Wetlands are hotspots of biodiversity with unique hydrological and hydrogeological features. Their protection involves the establishment of water balances in order to establish the wetlands hydrological catchment. Establishing such balances is challenging, as they require the estimation of evapotranspiration, are subject to transient groundwater or river contributions and typically feature a highly dynamic interaction between the wetland and the adjacent hydrogeological systems. The goal of this thesis is to better understand the surface and subsurface dynamics in a wetland in order to provide a quantitative indication on the wetlands catchment area. The field site for this master project is La Burtignière, a wetland of national importance, located at the Orb river.

Research approach and methodology

The goal is to elaborate a numerical model that reproduces the hydraulic (surface and subsurface) dynamics of the wetland. Numerical modelling will integrate the available groundwater and surface water data. The wetland has been equipped with piezometers and a meteo station with an evaporation pan, but additional fieldwork (including the installation of some new piezometers, discharge measurements, Guelph permeameter measurements ect.) and an in-depth analysis of the previous data will be required. One important aspect of the project and an essential constraint to the model is the estimation of evapotranspiration rates based on the daily fluctuations in piezometers.

Partners and collaboration

The project will be supervised Prof. P. Brunner. Field work will be supported by Roberto Costa.

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