Water resources and global change, case study of the Volvic catchment area.

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Résumé

Understanding the spatio-temporal evolution of water resources is crucial in order to anticipate their future availability in the face of climate change. This will enable resource managers to set sustainable flow/withdrawal values in a context where water is used for several purposes (drinking water, bottling industries, environment). In this study, we propose hydrological modelling of the Volvic aquifer system using GARDENIA®. This model is based on the use of more than 30 years of input data (precipitation, flow rates, ETP, abstractions) which make it possible to establish the water budget of the Volvic catchment and to constrain its evolution over time. We have shown that climate variability and/or withdrawals are the main factors conditioning the water budgets and flows within the aquifer, and that they are interdependent. For instance, the increase in the frequency and duration of extreme heats and droughts has led to an increase in water withdrawals (for drinking water, bottling, agriculture), which in turn reduces the quantity available for the environment. DRIAS climate forecast datas (MeteoFrance) allows us to simulate changes in the water budget and the resources available for each usage over the coming decades. This will enable water resource managers to anticipate future availability problems in the Volvic basin.

Mots-Clés: hydrological modelling, water budget, resource management, anthropic pressure, climate change, forecast

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