



## **A baseflow separation algorithm based on the linearized Boussinesq equation for complex hillslopes**

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A baseflow filter is constructed based on an analytical solution to the linearized Boussinesq equation for realistic aquifer shapes and temporally variable recharge rates. The analytical solution is rewritten recursively, expressing the baseflow at the current time step as a function of the recharge to the water table and the baseflow at the previous time step. Using this solution, and a mass balance at the land surface, a baseflow filter is developed. The parameters for the resulting filter algorithm can all be estimated using observed precipitation and discharge records. The method to estimate the hydraulic parameters is founded on the linearized Boussinesq equation. Comparison of the results of the filter for the Zwalm catchment in Belgium to the results from other filters demonstrates the need for a physical basis for baseflow filters. The results of this paper suggest that groundwater theory can be used for the separation of baseflow from discharge records.