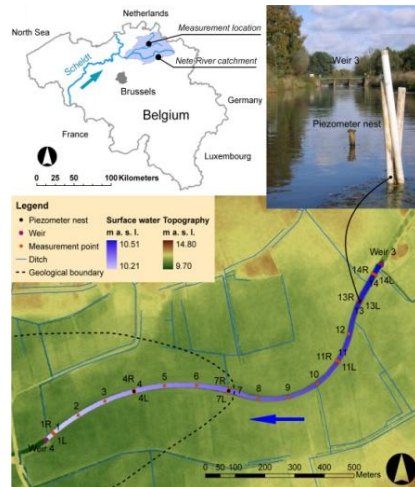


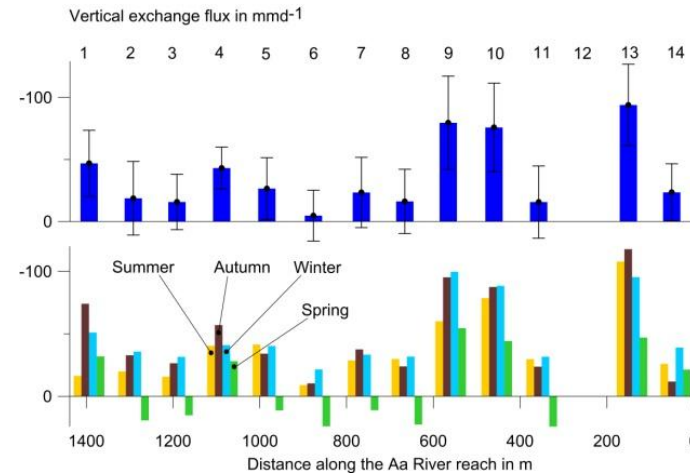
Delineation of spatial-temporal patterns of groundwater-surface water interaction along a river reach with transient thermal modelling

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The quantification of groundwater-surface water interaction is an important challenge for hydrologists and ecologists

Heat tracing methods are applied to improve the knowledge of the 1D vertical groundwater-surface water exchange on the Belgian lowland Aa River

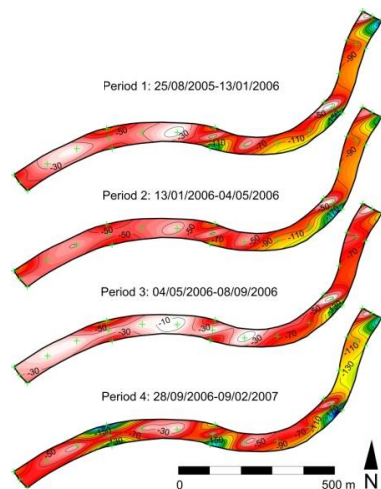


Owing to different hydrogeological conditions, stronger fluxes are observed in the upstream part of the river (8-14)

The variation of fluxes in time (see whiskers) is independent of the average flux (bars)

While most of the year exfiltration prevails, in spring a change in flow direction occurs

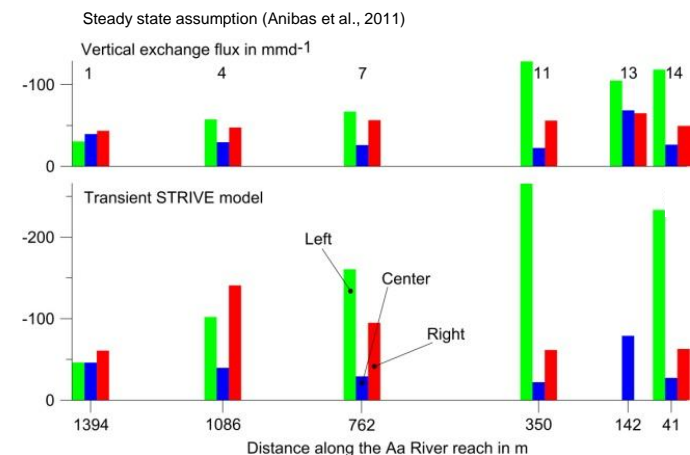
This change in flow direction may have ecological implications



The spatial distribution of the measurement points allows for the investigation of groundwater-surface water exchange in space and time

The banks are more actively participating in the groundwater-surface water exchange

The bank fluxes are higher and also more variable in time



The banks are influenced by shallower, spatially and temporally stronger fluctuating local groundwater flows

The exchange fluxes in the center of the river emerge from deeper more regional groundwater flow