



Stable water isotopes as tracers in studies of lacustrine groundwater discharge

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Different tracers are used in ecohydrology to study transport processes across groundwater-surface water interfaces. The stable water isotopes oxygen-18 and deuterium as parts of the water molecule are close to perfect tracers since their behavior in aquifers is quite conservative. Isotopic signatures of groundwater and surface water differ due to the impact of evaporation on lake water. Stable isotope measurements are nowadays orders of magnitude cheaper, faster, and easier due to the recent development of cavity ring-down spectroscopy. Based on that analytical progress, we suggest a much broader use and highlight a number of promising ecohydrological applications in studies of lacustrine groundwater discharge. For example, they might be used to clearly distinguish between in- and exfiltration zones of lakes, to identify temporal fluctuations of in- and exfiltration, but also to identify sampling artifacts due to short circuits during sampling with lakebed piezometers.