Seasonal variation in chemical exchanges between a river and a meander floodplain

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Understanding the extent and the nature of groundwater-surface water connectivity is crucial for sustainable management of water resources. This connectivity implies a mixing zone between waters located above and below ground that corresponds to the hyporheic zone. The direction and magnitude of water exchanges within the hyporheic zone are mainly controlled by the fluctuating river flow stages and the changing hydraulic gradient of the water table in response to seasonal hydrological conditions. However, the **impact of these hydrological seasons on chemical exchanges is still not well known.**

Here, we propose to explore this impact at local scale in a 7ha highly instrumented floodplain localized in a meander of the Matane River (Canada). We will use a long-term hydrogeological database documenting water table levels in the plain (2011-2018) combined with discrete water samples collected in 24 piezometers in spring and summer from 2013 to 2017. The spatial and temporal distributions of radon isotope (^{222}Rn), stable isotopes of water ($\delta^{18}O$, $\delta^{2}H$), and physico-chemical parameters (T, pH, Conductivity, dissolved oxygen saturation) are used as tracers for exchanges between aquifer and surface water. Our preliminary results show a difference in exchanges between spring and summer in term both of spatial heterogeneities of discharge zones, and of water composition that arrive to the river. This multi-tracer approach allows to better understand chemical connectivity between aquifers and rivers.