

GEOCHEMICAL IDENTIFICATION OF RELATIONSHIP BETWEEN GROUNDWATER NITROGEN AND ORGANIC CARBON ORIGINATED FROM SURFACE WATER WITHIN A RIPARIAN WETLAND.

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The goal of our study is to quantify the nitrogen transformations within the saturated zone of the riparian wetland of a large gravel bed river. For that we used geochemical tracer to highlight the origin of nitrogen and of organic carbon involved in denitrification processes. The studied site was a riparian zone of 50 ha located within a meander of the river.

A 2-end-member mixing model based on measured chloride concentrations showed a pathway within the aquifer where dilution processes can be quantified and therefore biogeochemical transformation of nitrogen and organic carbon can be highlighted. From the upstream part of the meander to the downstream one, organic carbon concentrations are decreasing in the same way than the nitrate one's. These results are strongly in favour of denitrification as the main process of these nutrient reduction. This hypothesis is supported by anomalies of cerium (Ce) which were measured at the same places within the riparian wetland where parallel decrease of nitrate and organic carbon have been registered. This combination of 2-end-mixing model and used of geochemical tracer (i.e. Ce) demonstrate that in this kind of riparian wetland, nitrates coming from alluvial groundwater influenced by agriculture is fuel by organic carbon originated from surface water of the river.