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Measuring the effect of valley bottom wetlands as buffer zones in large catchments.

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Taking into account landscape structures for improving water quality is one way for a sustainable catchment management. Riparian wetlands are such landscape structures that can act as buffer zones. They allow the decrease of nitrogen in water as it was clearly demonstrated at a local scale, and mechanisms involved as either denitrification, consumption or dilution are well identified. Nevertheless the impact of wetlands - specifically valley bottom wetlands - at the scale of large basin is not so obvious.

In this study, the comparison of chemical data in tributaries and topography, geomorphology, land use and land cover in the corresponding sub-catchments of a 370 km^2 basin allow us to pin up 3 factors controlling the spatial variations of nitrogen at the scale of this large catchment. The first one is the dilution due to the geographical gradient from the south to the North of rainfall amount (that increases) and evapotranspiration (that decreases), the second one is the excess of nitrogen in the agronomic budget calculated at the farm scale. The third one is the relative area of existing valley bottom wetlands in each catchment.

The study was done by 2 converging approaches: a step by step regression and a multifactorial analyse. From a methodological point of view the study shows also the interest of chloride as a tracer for dilution process.