# Impact of aquaculture farming on water quality in the lower Saône

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Within the Rhône-Mediterranean Basin, the lower Saône is characterized by some of the poorest water quality due to upstream contaminants that are often associated with industry and agriculture. To assess the additional potential impact of France's largest inland fisheries (la Dombes) on the lower Saône, water samples were collected bi-weekly (April 2023 to July 2024) upstream (Chalon-sur-Saône and Mâcon) and downstream (Lyon) of the two main tributaries (Veyle and Chalaronne) that are connecting la Dombes to the river. Samples were analyzed for dissolved C, N and P as well as particulate C and N concentrations and stable isotopes. With up to 10-fold higher concentrations, the tributaries were significant sources of dissolved nutrients and organic matter. Yet, due the relatively low discharge of the tributaries no clear effects were identified on downstream water quality. Nevertheless, the impact could be more visible during times of low discharge of the Saône, in combination with artificially high discharge and nutrient concentrations of the tributaries when ponds are drained during the fish harvest in fall and winter. Stable isotope analyses will be employed to quantify the relative impact of aquaculture on water quality in the lower Saône. Ultimately, this project will help to 1) identify environmental controls of current water quality in the lower Saône (e.g., nutrient sources / tributaries, hydrology, temperature) and 2) forecast future impacts based on climate change scenarios (temperature, precipitation, hydrology, land use).

***Mots-Clés :*** **Saône, water quality, monitoring, stable isotopes, particulate organic matter**