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Combining concentration–discharge relationships with mixing models

Gaëlle Tallec¹, **José Manuel Tunqui Neira**^{1,2}, Andréassian Vazken¹, and Jean-Marie Mouchel²

¹University Paris Saclay, INRAE, UR HYCAR, France (gaelle.taltec@inrae.fr)

²Sorbonne Université, CNRS, EPHE, UMR METIS 7619, Paris, France

Discharge is one of the major factors influencing the evolution of solute concentration in river water. Different modeling approaches exist to characterize the dependency of concentration on discharge: the simplest require calibration, they are based on measurable quantities (stream discharge and stream water concentration) but do not allow for an explicit, physical, flow-path interpretation; the more complex are based on mixing assumptions with different end-member sources, but require knowledge of the (unmeasurable) flow components. Here, we present a combination between the simple concentration–discharge (C-Q) approach with the mass balance (MB) mixing approach, which we apply to a new high-frequency series on the Oracle-Orgeval Observatory (France) (Tunqui et al., submitted). This new methodology shows a better performance than the two approaches applied separately, allowing us to better describe the concentrations measured in the stream.

Reference : Tunqui et al. Combining concentration-discharge relationships with mixing models. Submitted to Journal of Hydrology