



Use of High Frequency measurements to better determine the concentration-flow relationship (C-Q) of the Avenelles watershed (ORGEVAL Critical Zone Observatory)

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The Water Framework Directive (DCE 2000/) shows an ambition to regain the good ecological status of water bodies. In France, two types of water quality indicators are currently evaluated: annual concentrations (arithmetic mean, median, upper quantile, flow-weighted averages) that are reported in a quality grid (SEQ -Water) and the annual flows generally brought back to the surface of the producing catchment area. However, it is now known that point measurements do not make it possible to apprehend the phenomena of dilution and leaching, and considerably bias the evaluation of the chemical quality of the environment.

With the application of high frequency measurements, these shortcomings can be solved, since taking measures continuously, we can better understand the relationship of the interactions of chemical concentrations with water (flow), in order to help us to obtain valuable information for the assessment of the state of water bodies, the quantitative and qualitative preservation of water resources and superficial aquatic environments in the Critical Zone. Also it could provide useful guidance for the continuation of programs for the restoration of aquatic environments and the identification of vulnerable areas.

This sub-hourly high-frequency measurements (30 min) were taken from the River Lab station [1] set up in the outlet of the Avenelles River (ORGEVAL CZO, 70 km Est of Paris). The series of data carried out from June 2015 to August 2016 (i.e. 22,000 measurements over 14 months), being more than one hydrological year in which we find the different rainy events from the low to the flood season. It should be noted that these series also contain recordings made during the exceptional flood of May-June 2016.

KEYWORDS:

High-frequency monitoring, concentration-flow relationship, water bodies, preservation of water resources

REFERENCES:

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