

## Characterization of the variability of heavy metals in a mixed land use catchment in NW Spain

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Water pollution by trace elements is an important factor in both the geochemical cycling of these elements and the environmental health. Heavy metals are found in water as a consequence of the washing of the drained land or of human activities, mainly industrial processes and mining. These pollutants can also reach waterways originating from agricultural lands, where they may end due to, for example, fertilization practices involving the use of manures. The application of slurries in agricultural lands is a common practice in Galicia (NW Spain) which may increase total and bio-available metal contents in soils and, subsequently, it could result in an increase of the metal concentrations in both surface and subsurface water resources above background levels. Therefore, the agricultural practices can alter the natural biogeochemical cycles of metals and the function of ecosystems, often with far-reaching consequences. In Galicia, until recently, the background content of trace elements in surface waters and the effects of agricultural practices in metal water contents were poorly documented. Most trace element investigations are based on only a few measurements, which do not take into account neither

seasonal variations nor runoff events. This study will present the results of a detailed and extensive study of trace metals in a small stream draining an agroforestry catchment located in the vicinity of A Coruña (NW Spain), where surface waters are influenced by non-point pollutant sources as a result of agricultural practices conducted in the catchment. For this work Fe, Mn, Al, Cu and Zn will be chosen because, in addition to their industrial and biological importance, these are elements that appear in varying amounts in some fertilizers, such as manure, and can therefore represent a threat to water quality.

The results are expected to provide insights on the seasonal behaviour of metal exportation in the catchment, the role of geochemical features of the soil and parent material and agricultural practices in this seasonality, and the mechanisms controlling the mobilization and delivery dynamic of heavy metals to the stream. These insights will help improve the quantification of the metal loads in stream and could prove useful for future management decisions regarding heavy metal control.

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