Challenges for implementing water quality monitoring and analysis on a small Costa Rican catchment

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The Costa Rican water regulatory framework (WRF) (2007), expresses the national concern about the degradation of surface water quality observed in the country since several years. Given the urgency of preserving and restoring the surface water bodies, and facing the need of defining a monitoring tool to classify surface water pollution, the Costa-Rican WRF relies on two water quality indexes: the so-called "Dutch Index" (D.I) and the Biological Monitoring Working Party adapted to Costa Rica (BMWP'CR), allowing an "easy" physicochemical and biological appraisal of the water quality and the ecological integrity of water bodies. Herein, we intend to evaluate whether the compound of water quality indexes imposed by Costa Rican legislation, is suitable to assess rivers local and global anthropogenic pressure and environmental conditions. We monitor water quality for 7 points of Liberia River (northern pacific region - Costa Rica) from March 2013 to July 2015. Anthropogenic pressures are characterized by catchment land use and riparian conditions. Environmental conditions are built from rainfall daily series. Our results show (i) the difficulties to monitor new sites following the recent implementation of the WRF; (ii) the statistical characteristics of each index; and (iii) a modelling tentative of relationships between water quality indexes and explanatory factors (land-use, riparian characteristics and climate conditions).