HydroEco 2017

Ecohydrology on the Edge:
ecology-hydrology-human interactions in a changing world

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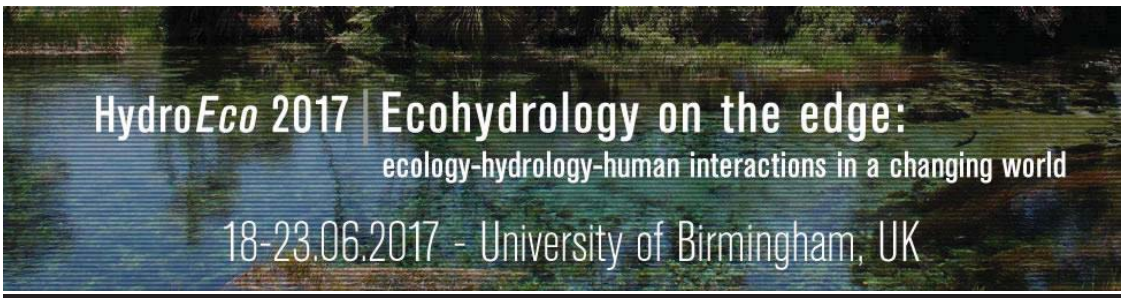

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relatively higher at the industrial areas than the other areas. The groundwater sources are generally characterized by weak acidity to almost neutral pH (5.8-7.8) values, Cl- (120-720 mgl-) for, Ca2+ (0.1-59.2 mgl-) and E.C values (48-1034μScm-1). Most of the investigated results (especially conductivity, CO3-, NO3-, Cl-, SO42-) occurred in significantly higher concentration in the hand dug wells than the borehole wells. The quality assessment indicated that the concentration of Cl- in the hand dug wells and boreholes as well as Mn in the rainwater exceeded the acceptable limit guidelines of the Nigeria Water Quality Standards, World Health Organisation and European standards and are therefore considered unfit for consumption and market gardening. The study showed significant relationship between landuse and water quality in the area

Are ecological and hydrological dynamics important in modelling ecohydrological processes?

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Abstract
Traditionally, hydrological models have included the effect of the interception and evapotranspiration without considering plant dynamics. On the other hand, it is not common to include all the main hydrological processes when modelling plant behaviour. Fortunately, nowadays many authors have recognized the importance of linking the hydrological and ecological dynamics. In fact, there is a trend of including the pivotal role of the vegetation for a better understanding of how plants affect the hydrological systems, as well as how the water balance and the hydraulic impacts control plants behaviour in water dependent ecosystems. This contribution aims to demonstrate that better results are possible when modelling ecological and hydrological processes by dynamic and interconnected approaches, independently of the modelling objective (hydrological or ecological results). Through several modelling approaches, implemented in different case studies we prove this affirmation. The implementation of a hydrological model in an experimental plot allows the comparison of the results including and neglecting the role of plants. In addition, we tested two riparian vegetation models in a river reach where both models have demonstrated to provide good results. The river reach presents riparian and terrestrial bands of vegetation. The main difference between models is precisely the consideration of hydrological dynamics in the system and the use of the different water sources by the vegetation. Both the experimental plot and the river reach are under similar semi-arid conditions in order to assure that water is the limiting factor for plants development. Results demonstrate that prediction capabilities increase when the modelling of the soil water balance takes into account main ecological processes.