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Water quality dynamics and potential pollution load analysis in terms of physical parameters affects in simine-roud River due to the spatiotemporal changes

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Abstract

River quality monitoring in developing arid/semi-arid countries would be necessary, much expensive and time consumer especially on the verge of upcoming world drought and water scarcity. Simine-roud River is one of the main rivers which will be discharged to Uremia Lake in the north-west of the Iran. This study has investigated the water quality of Simine-roud River focusing on the physicochemical and hydro morphological parameters and land use characteristics relations to find out some easy going water quality index. The aim of this study is to develop an immediate factors (IF) which effects on the water quality. The mentioned IF should be accessible and effortless to reduce the first river quality out-looks obviously. Field studies were carried out in 4 seasons, 15 stations for 12 variations. Multivariate statistical and discriminated cluster analysis was employed to finding the effective factors. Results discovered that hydraulic parameter and some physical variations with land characteristics can give the monitoring systems a liable overview on the river quality. Hydraulic regime (Reynolds/Froude) and bed load size shall be representative of water energy, velocity, DO according to river morphology. Other IF parameters and variation expected to generate an Immediate Preliminary River Quality outlook without much time, costs, tests etc. The aim of the study was to analyse the results of surface water quality tests carried out in the Bystrzyca river basin. The study was conducted over four years in four seasons. The following chemo metric techniques were used for the purposes of statistical analyses: the principal component analysis with factor analysis (PCA/FA), the hierarchical cluster analysis (HCA), and the discriminant analysis (DA). The analyses allowed for determining the temporal variability in water quality between the seasons. The best water quality was recorded in summer and the worst in autumn. The analyses did not provide a clear assessment of the spatial variability of water quality in the river basin. Pollution from wastewater treatment plants and soil tillage had a similar effect on water quality. The tested samples were characterized by very high electrolytic conductivity, suspended solids and P-

PO4 concentrations and the water quality did not meet the standards of good ecological status. Channel changes in meandering rivers naturally exhibit complex behavior, and understanding the river dynamics can be challenging in environments also subject to cumulative human impacts. Plan form changes were analysed on four reaches of the lower course of the Pixie River, Brazil, at decadal scales over the period 1962–2008 from aerial photographs and satellite imagery, complemented by a historical map from 1907. Analysis of the spatial and temporal patterns of channel change mechanisms and morphometric of bends and of the sinuosity and morph dynamic variations of the reaches demonstrates major changes in platform characteristics. Sinuosity in all reaches decreased from ~ 2.6 to ~ 1.7, average wavelength of bends has increased from ~ 200 to ~ 500 m, and the platform has become much simpler. Changes have been progressive from downstream to upstream, with higher intensities of processes, particularly cut-offs first in downstream reaches then more recently in upstream reaches. It is suggested that channel changes represent a morphological adjustment to human interventions, such as reservoir construction and land use. However, evidence of the autogenic behaviour of meanders is highlighted in which the existence of compound meanders reveals control over the spatial variation in the reaches. The results suggest that geomorphic thresholds associated with the compound meander formation and the bend evolution should be considered, even in impacted meandering rivers, because they exert primary controls on the spatial-temporal adjustment of channels.