

Spatial aspect of surface water quality using chemometric analysis.

ABSTRACT

Chemometric or multivariate techniques were applied to identify the spatial variation and pollution sources of Jakara River Kano-Nigeria. Thirty water samples were collected: twenty three along River Getsi and seven surface water samples along the main channel River Jakara. Twenty three water quality parameters namely: pH, temperature, turbidity, electrical conductivity, dissolved oxygen, biochemical oxygen demand, Fecal Coliform, total solids, nitrates, phosphates, cobalt, iron, nickel, manganese, copper, sodium, potassium, mercury, chromium, cadmium, lead, magnesium, and calcium were analyzed. Hierarchical cluster analysis (CA) grouped the sampling points into three clusters based on the similarities of river water quality characteristics into industrial, domestic and agricultural water pollution sources. Forward and backward Discriminant analysis (DA) effectively discriminate five and fifteen water quality variables respectively with 100% each correct assigning from the original twenty three variables. PCA/FA were used to investigate the origin of each water quality parameter due to various land use activities, seven principal components were obtained with 77.5% total variance, in addition PCA identify three latent pollution sources convinces to support CA.

Keyword: Water quality; Water; Statistics.