Water in the Ayeyarwady Delta: An Assessment based on Geostatistical Approaches

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Abstract

The main purpose of this study is to discover the water quality based on geostatistical approaches relationship among measured hydrochemical parameter in order to detect and regionalize major factors which impact groundwater and surface water quality of the Ayeyarwady Delta. Three methods are thus applied: cluster analysis, principal component analysis and finally analysis of spatial variability referenced on Geographic Information System. Both cluster and principal component analyses/factor analysis are performed based on the following parameters: The log transformed concentrations of all measured major ions and NO_2, NO_3, NH_4, PO_4, i.e.33 variables. The results of this study show that the shallow groundwater in the southern part of the study near coastline is strongly influenced by saline water, while freshwater is dominating the quality in the other area. Adversely, saline water intrusion mainly originates from surface water bodies (river, drainages) in the deeper Holocene aquifer rather than from seawater intrusion.

Keywards: Spatial analysis, cluster analysis, principal component analysis, factor analysis, GIS

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