Spatio-Temporal Analysis for Monitoring Water Quality of Skudai River, Malaysia

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SUMMARY

Spatio-temporal analysis for monitoring water quality is a study conducted to spatially and temporally assess the trend of water quality at Skudai River, Malaysia. For this study, the data of Water Quality Index (WQI) which involves a total of several monitoring stations from 2012 to 2016 are used. The six components of WQI are Dissolved Oxygen (DO), Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Suspended Sediment (SS), pH value, and Ammonia Nitrogen (AN). This study aims to analyse the spatio-temporal trend of water quality by spatially and temporally examining specific locations along the river. Initially, the procedure of spatial autocorrelation through Moran's I technique is employed to determine the specific number of monitoring stations to be used for the spatio-temporal analysis. At the end of this procedure, the specific dataset which consists of a total of 11 monitoring stations are accepted. Later on, using this dataset, the temporal trend of water pollution is studied to identify the annual and seasonal pattern of water quality using spatial autocorrelation method. The seasonal pattern represents the entire East coast monsoon, Transition months and West coast monsoon. The finding shows that water pollution consistently occurs at the river downstream for each year and the WQI found higher during the West coast monsoon which is from May to September.   Finally, the cross-match between the objectives and the findings of this study are able to identify the spatio-temporal trend of water quality as one of the indicators to evaluate water pollution status at Skudai River.

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