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Spatial and temporal variations of river water quality using multivariate statistical techniques

[Desalination and Water Treatment](#) • Article • [Open Access](#) • 2022 • DOI: 10.5004/dwt.2022.28677

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Abstract

The assessment of temporal/spatial variability and the interpretation of large and complex data-sets of water quality were performed using multivariate statistical techniques such as cluster analysis (CA) and factor analysis (FA). Water quality of the Nerus River for 27 parameters was monitored at eight sampling stations. Three different similarity groups between sampling sites that reflected different water quality parameters were identified by the CA, while the FA/principal component analysis has determined nine factors responsible for the data structure that account for 82.24% of the total variance of the dataset. 14 parameters are needed to explain 82.24% of water quality changes for both temporal and spatial, hence the significant data reduction was not achieved. The findings suggested the compulsion and effectiveness of environmental techniques for interpretation of large datasets are targeting to gain information about water quality using temporal and spatial characterizations at the designated water monitoring stations in the river. © 2022 Elsevier Inc.

Author keywords

Multivariate analysis; Nerus River basin; River water; Spatial and temporal assessment; Water quality

Indexed keywords

GEOBASE Subject Index

data set; geostatistics; multivariate analysis; pollution monitoring; principal component analysis; river water; sampling; spatiotemporal analysis; water quality

Funding details

Details about financial support for research, including funding sources and grant numbers as provided in academic publications.

Funding sponsor	Funding number	Acronym
Department of Irrigation and Drainage Malaysia		
Universiti Sultan Zainal Abidin See opportunities by UniSZA ↗		UniSZA
ESERI		
East Coast Environmental Research Institute		
KPM	UniSZA/2017/SRGS/17) – R0019-R017	
FRGS	FRGS/1/2017/WAB05/UNISZA/01/1) – RR22	

Funding text

The author would like to thank UniSZA and KPM for providing financial support for this research on the SRGS: (UniSZA/2017/SRGS/17) \u2013 R0019-R017, FRGS 2017 (FRGS/1/2017/WAB05/UNISZA/01/1) \u2013 RR22 and Department of Irrigation and Drainage Malaysia for the secondary data and East Coast Environmental Research Institute (ESERI), Universiti Sultan Zainal Abidin (UNISZA) for giving permission to use research facilities and supporting in this research.

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