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Comparison of prediction model using spatial discriminant analysis for marine water quality index in mangrove estuarine zones (Article)

Samsudin, M.S.[a,c], Azid, A.[a] ✉, Khalit, S.I.[a], Sani, M.S.A.[b], Lananan, F.[a]   👤

[a]Faculty Bioresources and Food Industry, Universiti Sultan Zainal Abidin (UniSZA), Besut Campus, Besut, Terengganu 22200, Malaysia
[b]International Institute for Halal Research and Training, International Islamic University Malaysia, Selangor, Malaysia
[c]Dr. F.A.S. Technologies, Block D1, 2nd Floor UniSZA Digital Hub, UniSZA Besut Campus, Besut, Terengganu 222000, Malaysia

Abstract   ⌄ View references (64)

The prediction models of MWQI in mangrove and estuarine zones were constructed. The 2011–2015 data employed in this study entailed 13 parameters from six monitoring stations in West Malaysia. Spatial discriminant analysis (SDA) had recommended seven significant parameters to develop the MWQI which were DO, TSS, O&G, PO_4 , Cd, Cr and Zn. These selected parameters were then used to develop prediction models for the MWQI using artificial neural network (ANN) and multiple linear regressions (MLR). The SDA-ANN model had higher R^2 value for training (0.9044) and validation (0.7113) results than SDA-MLR model and was chosen as the best model in mangrove estuarine zone. The SDA-ANN model had also demonstrated lower RMSE (5.224) than the SDA-MLR (12.7755). In summary, this work suggested that ANN was an effective tool to compute the MWQ in mangrove estuarine zone and a powerful alternative prediction model as compared to the other modelling methods. © 2019 Elsevier Ltd

Author keywords

(Artificial neural networks) (Discriminant analysis) (Mangrove estuarine zone) (Marine water quality)
(Multiple linear regression)

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