Liao, J Pollut Eff Cont 2018, 6:1
DOI: 10.4172/2375-4397.1000e116

Journal of Pollution Effects & Control
ISSN: 2375-4397

Editorial Open Access

Research Methodologies when Verifying Pollution Transportation in Estuary

Liao SW*

Department of Tourism Management, Tajen University, Pingtung, Taiwan

Contamination generated from upstream development and human activity introduces a significant amount of pollutants into rivers and estuaries and thus, accelerates the hypoxia or eutrophication process, spoils the public water resources and environments, and thus requires huge costly remediation [1]. The difference between tidal river and seawater or the upper reaches of river lies in that the distribution of salt causes clay and organic matter in the water to settle due to flocculation into large particles, and then pollutants are dragged to the bottom of the riverbed. When the source of river water decreases, it is possible to release the adsorbed pollutants [2].

About the issue of pollution of water and sediment quality which neighbouring estuaries and bay areas, besides using pollution transfer models to analyze, we can also use multivariate analyses: factor analysis, cluster analysis, canonical discriminant analysis and canonical correlation analysis to verify [3-8]. However, verification of multivariate analysis methods may be affected by factors such as the river between distances, the ocean current or typhoon. At the same time to pursue significant differences the most important things are that number of samples suggested more than 10 times than the number of variables is appropriate. Other factors, including seasonal factors, hydrological and climatic factors such as rainfall, should also be given special attention which in describing the results of comparisons. These methods can also be used to study the habitat types and sediment properties for different biological species [9].

Multivariate approaches have been used successfully to support the interpretation of complex field measurements to verify value of pollution transportation, and to extract meaningful information from such databases [10,11]. Canonical discriminant analysis (CDA) determines how a set of quantitative variables may differentiate among many known classes. Finally, which group the unclassified values (samples in the lagoon) are classified into can be predicted correctly by using CDFs [5]. The approach also allows for relationships among the groups to be graphically represented by plotting the canonical scores of sample observations and have been popular to find sources of pollution. The results might yield useful information concerning estuary recovery and water resources management and might be applicable to other basins with similar characteristics that are experiencing similar coastal environmental issues.

Make a conclusion that,

1. Factor analysis (FA) is an approach that explains the observed relationships among many variables in terms of simpler relationships to offer insight into the structure that underlies the variables.

2. Cluster analysis (CA) seeks to determine groups such that each group is as homogeneous as possible with respect to characteristics of interest, and such that all the groups differ from each other as much as possible.

3. Canonical discriminant analysis (CDA) determines how a set of quantitative variables may differentiate among many known classes.

4. Canonical correlation analysis (CCA) was first proposed by Hotelling (1935) to explore the relationship between two sets of variables, with each set having at least two variables (control variables and target variables).

5. These calculations were performed using the STATISTICA package from Stat Soft or other packages from SAS and SPSS … etc.

References

1. Liu WC (2011) Water Quality Simulation and Prediction of Pollutant Abatement in Stream and Estuary-Pozi Creek as a Study Case. J Taiwan Water Conser 59: 43-62.

2. Liu KF (1996) Transport of contaminant and bottom mud in coastal area. Proc. 18th Conf. on ocean engineering in Republic of China.

3. Liao SW, Gau HS, Lai WL, Chen JJ, Lee CG (2008) Identification of pollution of Tapeng Lagoon from neighbouring rivers using multivariate statistical method. J Environ Manage 88: 286-292.

4. Lai WL, Chen JJ, Chung CY, Lee CG, Liao SW (2010) The Influence of lagoon on neighboring rivers by water and sediment quality. Water Sci Technol 61: 2477-2489.

5. Chung CY, Chen JJ, Lee CG, Chiu CY, Lai WL, et al. (2011) integrated estuary management for diffused sediment pollution in dapeng bay and neighboring rivers (Taiwan). Environ Monit Assess 173: 499-517.

6. Chung CY, Lai WLS, Gau HS, Liao SW (2013) Interpretation and apportionment source of PAHs from neighboring rivers in Dapeng Bay (Taiwan). Water Environ Res 85: 308-317.

7. Tsai YC, Chung CY, Chung CC, Gau HS, Lai WL, et al. (2016) The impact of typhoon Morakot on heavy metals of Dapeng Bay and pollution from neighboring rivers. Environ Model Assess 21: 479-487.

8. Chen SC, Chung CC, Lai WL, Chung CY, Gau HS, et al. (2014) Correlation analysis between primary productivity factors and water environment factors. Appl Mech Mater 448: 902-907.

9. Liao SW, Chang WL, Lin SW (2008) Status and habitat preferences for endemic inhabitants of fiddler crab *Uca formosensis* in Hsiang-Shan wetland, Taiwan. Environ Monit Assess 143: 203-214.

10. Simeonov V, Stratis JA, Samara C, Zachariadis G, Voutsa D, et al. (2003) Assessment of the surface water quality in northern Greece. Water Res 37: 4119-4124.

11. Singh KP, Malik A, Mohan D, Sinha S (2004) Multivariate statistical techniques for the evaluation of spatial and temporal variations in water quality of Gomti River (India)-a case study. Water Res 38: 3980-3992.

***Corresponding author:** Shao-Wei Liao, Department of Tourism Management, Tajen University, Pingtung, Taiwan, Tel: +886 87624002; E-mail: swliao@tajen.edu.tw

Received February 12, 2018; **Accepted** February 19, 2018; **Published** February 23, 2018

Citation: Liao SW (2018) Research Methodologies when Verifying Pollution Transportation in Estuary. J Pollut Eff Cont 6: e116. doi: 10.4172/2375-4397.1000e116