

Abstract:

In spite of the significant utility of water quality monitoring, it has long been established that it is relatively expensive with a risk to be “data rich, but information poor”. Multivariate statistical analysis can help in producing valuable information to reach an optimal sampling frequency and in the best suited locations. This research presents the methodology and results of a re-assessment procedure of the water quality monitoring locations of one of the main drainage catchments in Eastern Delta of Egypt, namely Bahr-Baqar Drain. Monthly records of more than 30 water quality variables were available for the period 1997 – 2002. Two multivariate statistical techniques were used to assess the sampling network: Principle Components Analysis, and Cluster Analysis. It was found that first principal components, mainly salinity, Oxygen budget, and Nitrogen cycle components, explain about more than 70% of the variability of the water quality data in all Bahr-Baqar Drain locations. On the other hand, cluster analysis resulted in a grouping that is totally explained by the sampling location, and helped determine which locations to retain in future sampling campaigns, without losing information of water quality data.