Statistical Characterization of Water Quality in Lake Monroe, Florida, USA

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The management of nutrient and sediment loadings to a water body often causes contentious and acrimonious debate among the stakeholders. The quality of water is identified in terms of its physical, chemical and biological parameters. One significant difficulty in the case of water quality monitoring in lakes is the complexity associated with analyzing the large number of measured variables. In general, water quality data are collected for many parameters, at many times and places, and with limited resources. A well-designed water-quality monitoring plan should preserve scarce resources by minimizing the redundancy of nearby monitoring stations and the plethora of possible variables monitored, while at the same time maximizing the information content of the collected data. The current study analyzes the water quality data collected from 15 sites at Lake Monroe, Florida, to improve the utility of collected data by identifying key parameters and monitoring locations. This study evaluates the possibility that an optimized group of water quality parameters and locations might provide sufficient information for water quality assessment. This study also presents a strategy that reduces measured water quality parameters, locations, and frequency without compromising the quality of the monitoring program.

This study closely addresses the following-
Challenge: Population growth and land use change impacts to water resource sustainability
Issue: Nutrient enrichment of surface, ground and coastal waters