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研究方法

改进的灰关联分析法在上海市闵行区北横泾水质评价中的应用

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Application of Improved Grey Correlation Analysis Method to Water Quality Assessment of Beihengjing River in Shanghai

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摘要 传统的灰关联分析法在水质评价应用中易出现关联序乱序、逆序的现象，故对传统方法进行改进，采用受极值影响较小的标准化方法对原始数据进行无量纲处理，将绝对差计算式改写为点到区间的形式以增加计算精度，选择基于线性运算的关联系数计算式，以避免采用传统方法运算导致的序数效应，并根据上海市闵行区北横泾氨氮、总氮污染严重的水质特点，调整指标权重，得到的评价结果与传统灰关联分析法以及其他常用方法相比更符合实际。

关键词： 灰关联分析法　灰色关联序　水质评价　北横泾

Abstract： The application of the traditional gray correlation analysis method to water quality assessment is prone to cause appearance of "disorder" and "reverse order" in grey correlation analysis. To overcome these problems, the traditional method was modified by nondimensionalizing the original data with the standardization method that was less affected by polar value and rewriting the formula of absolute difference into a new one based on the distance from point to area to improve accuracy of the calculation. Meanwhile, in light of the properties of the the the Beihengjing River which was seriously polluted by NH_3-N and TN, weights of the indices were adjusted. The application of the modified grey relational analysis method to evaluation of the water quality of the Beihengjing River in Shanghai shows that its results match the reality better than the traditional one and any other conventional methods.

Keywords： grey relational analysis　grey correlation order　water quality assessment　Beihengjing River

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