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论文

地下水位预报中的组合时间序列分析法

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摘要：

将系统分析方法中的传统GM(1,1)模型与时间序列分析方法相结合建立地下水位的预报模型. 为更好地反映地下水位的统计规律随时间而缓慢变化的现象，采用衰减记忆最小二乘法率定GM(1,1)模型参数. 用方差分析法进行地下水位时间序列的周期分析时，对初相进行优选；在选定的置信度水平下，当有多个周期都通过检验，此时该如何优先选择哪个周期，文中提出按拟选周期的F分布检验统计量与检验区间界限值的比值最大原则来选择周期成分. 最后，采用本文所述方法进行福建省龙岩市的年最高地下水位的预报.

关键词： 地下水位预报   GM(1 1)模型   方差分析   初相优选   时间序列分析

Combinative time series analysis method for the prediction of the groundwater level

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Abstract:

Traditional GM(1,1) and time series analysis method were integrated together to establish the groundwater level forecast model. The fading memory least square methods was applied in the process of confirming the parameters of GM(1,1) in order to more factually reflect the phenomena of the groundwater level's statistic rule varying with the time. The periods components were analyzed with the variance analysis method and the starting phases were optimized. Under the condition that more than one F-statistic values of periods were over the critical values of the selected confidence degree, what rules can be adopted to decide which period should be first selected. The rule was put forward that the ratio of F-statistic value of selected period's being divided by the critical value of the examination interval should be the greatest. Finally, the yearly highest groundwater levels in Longyan Basin in the west of Fujian Province were forecast with this method.

Keywords: groundwater level forecast   GM(1 1)   variance analysis   starting phase optimization   time series analysis

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