内蒙古呼和浩特市承压地下水水位监测网优化

引用本文：屈泽伟,张翼龙,王贵玲,余楚,何雨江.2013.内蒙古呼和浩特市承压地下水水位监测网优化[J].地球学报,34(2):223-228.

DOI：10.3975/cagsb.2013.02.09

作者	单位	**E-mail**
屈泽伟	中国地质大学(武汉)环境学院	qzw_cug@126.com
张翼龙	中国地质科学院水文地质环境地质研究所	
王贵玲	中国地质科学院水文地质环境地质研究所	guilingw@163.com
余楚	中国地质科学院水文地质环境地质研究所	
何雨江	中国地质科学院水文地质环境地质研究所	

基金项目:由国家973项目“华北平原地下水演变机制与调控”(编号: 2010CB428802);中国地质调查局地质大调查项目“全国地下水资源及其环境问题调查评价”子项目“河套平下水资源及其环境问题调查评价”(编号: 1212010913010)

中文摘要:定量评价地下水监测网的合理性对于准确、经济地获取高质量的监测数据尤为重要。本文针对呼和浩特市平原区现行承压水监测网，以估计误差标准差作为衡量监测网合否的特征参数，借助ArcGIS地学统计模块，利用普通Kriging插值模型，对待测点进行插值，获取估计误差标准差等值线图。结果表明: 监测水位估计误差标准差范围由优化前的0.47~4变为优化后的0.5~0.8(除研究区西南边界附近外)，研究区整体估计误差标准差显著减小，且全区范围内变幅较小。优化后的监测网在满足监测精度需要的同时，能够较大程度节省监测的运行费用。研究成果为呼和浩特市平原区承压水水位监测提供一个较优化的监测网布设方案，进而为研究区承压地下水的合理开发利用以及相关环境地质问题提供真实可靠的数据撑，具有重要的应用价值。

中文关键词:承压水 地下水监测网 Kriging插值模型 估计误差标准差

The Optimization of Monitoring Networks for Confined Water in Hohhot, Inner Mongolia

Abstract:The quantitative evaluation of the rationality of the groundwater monitoring network is particularly important for the precise acquisition of high quality monitoring data this paper, the existing monitoring networks for confined water in Hohhot plain area was chosen as the research target and the standard deviation of estimation error was adopted as the parameter for evaluating the rationality of the monitoring networks. With the aid of ArcGIS geological statistical module, the interpolation was performed on the study points by dint of Kriging interpolation model to acquire the contour line of the standard deviation of the estimation error. The results show that the standard deviation of estimation error of the monitoring water level changed from 0.47~4.44 (before optimization) to 0.5~0.8 (after optimization, except for the area near the southwest boundary of study area). The overall standard deviation of the estimation error significantly decreased. The optimized monitoring network can satisfy the monitoring accuracy and, at the s time, the operation cost of the monitoring network can be reduced to a large extent. The research results can preliminarily provide a better optimizing monitoring well layout scheme for the confined water-level monitoring of the Hohhot plain, and can provide reliable scientific data for future research on the rational development and utilization of confined water and the related environmental-geological problems, which will be of high practical importance.