

神经网络与地下水流动数值模型在干旱内陆区地下水位变化分析中的应用

Application of ANN and FEFLOW model to simulate groundwater level variation in arid inland area

中文关键词: [神经网络](#) [FEFLOW](#) [地下水动态](#) [干旱内陆区](#)

英文关键词: [artificial neural network \(CNN\)](#) [FEFLOW](#) [groundwater level](#) [dynamic variation](#) [simulation](#) [arid inland area](#)

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中文摘要:

建立了基于神经网络(ANN)和地下水流动数值模拟(FEFLOW)的考虑动态边界的干旱内陆区地下水位动态模型(ANN_FEFLOW),并对模型进行了评价。模型中将地下水位动态边界运用ANN表征为自然条件、人类活动等多个因子非线性影响作用的结果。运用ANN_FEFLOW模型对我国典型干旱内陆区石羊河流域民勤绿洲地下水位模拟结果表明,模型具有较高的精度,ANN_FEFLOW模型在临近动态边界区域地下水位模拟精度明显高于FEFLOW模型。相对静态边界条件区域地下水模型,ANN_FEFLOW模型能较为真实的反应边界地下水动态对区域地下水的影

英文摘要:

The ANN was introduced into the FEFLOW to establish the ANN_FEFLOW model which can be used to simulate the regional dynamic variation of groundwater with the variation of groundwater level at the boundary taken into account. In the model the dynamic boundary of groundwater is characterized as the nonlinear result of the impact of multiple factors including the conditions of nature and human activities. The model is applied to simulate the groundwater variation in the Minqin Oasis located at the arid inland area of China. The result shows that the model has satisfactory precision. The further contrast analysis indicates that the precision of ANN_FEFLOW is distinctly higher than that of FEFLOW especially at the vicinity of the boundary of the region since the dynamic variation of groundwater level is taken into consideration.

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