

## 北京永定河流域地下水氢氧同位素研究及环境意义

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中文摘要:利用氢氧同位素方法对北京地区永定河流域地下水状况及补给运移规律进行了研究。在系统采集了不同地点、不同深度的地下水样品的基础上,分析测试样品的 $\delta D$ 、 $\delta^{18}O$ 、 $T$ 。通过分析研究成果资料,初步判断出本区地下水的状况及补给运移规律:浅层地下水主要以近10a左右的“新水”为主,而且其主要补给方式是地表大气降水的垂直入渗补给;中深层地下水普遍混有“新水”,且新水比例有增大趋势;深层地下水基本以50a以上“老水”为主,但局部已混有“新水”。本区地下水的状况反映出浅层水补给深层水的越流现象普遍,这会引发深层地下水水质下降。由此可见,本区地下水水资源由于人工不合理的开采利用,状况不容乐观。

中文关键词:[氢氧同位素](#) [地下水](#) [水质](#) [永定河](#)

## A Hydrogen and Oxygen Isotope Study of Groundwater in the Yongding River Drainage of Beijing and Its Environmental Significance

**Abstract:**On the basis of isotopic geochemistry, the authors studied the status and the supply characteristics of groundwater in the Yongding River drainage of Beijing. Some samples of groundwater were systematically collected from different areas and different depths and then analyzed for their contents of deuterium, oxygen and tritium. Based on a study of the analytical results, the authors have reached the conclusion that the groundwater in the superficial aquifer is mainly made up of young groundwater. In the past ten years, groundwater has been supplied by vertically filtering atmospheric precipitation, and groundwater from the middle to the deep aquifer is generally combined with the upper groundwater, and the proportion of the young groundwater is steadily increasing. In addition, there exists the mixture of some young groundwater in some places, though the groundwater in the deep aquifer remains mainly made up of groundwater older than 50 years. The groundwater condition in this area suggests that there exists the phenomenon that the superficial groundwater has penetrated into the deep aquifer. This could result in the deterioration of the quality of the groundwater in the deep aquifer. It can thus be concluded that the status of the groundwater resource in this area is not satisfactory due to the human unreasonable exploitation.


**keywords:**[isotopic geochemistry](#) [groundwater](#) [water quality](#) [Yongding River](#)

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