

## 建立台灣含水層儲蓄回抽場址優選

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### 摘要

地下水作為地下水文循環重要的一環，用於滿足人類生活的各種需求，但是隨著人類文明的發展使用大量的水資源，臺灣年平均降雨量約 2,429mm，大約是全球降雨量 1155mm 的兩倍多，但是臺灣河流有河身短、坡度大以及水流急的特徵，使得台灣人每年平均獲得的水量只有  $3752\text{m}^3/\text{year}$ ，台灣平均每人獲得水量只有世界平均的 1/6，是屬於缺水的地區。本研究收集政府各部會所提供之資料，透過 excel 與 Arcgis 的時間，將資料分成水質資料、土地利用、地質組成、污染源、其他，共五大類，建立台灣水井資料庫為政府或相關單位提供參考依據，由於資料難免會有缺失無紀錄的部分，因此使用人工神經網路，設計調整程式後，使其有最好預測其缺失的數值能力，進而得到完整的資料庫，最後將處理好後的資料使其與環保署及農委會公布之水質項目和標準比較，找出含水層儲蓄回抽場址優選。

關鍵字：含水層儲存與恢復 (ASR)、人工神經網路 (ANNs)、台灣

## **Establishment of Taiwan aquifer storage and recovery site selection**

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### **abstract**

Groundwater as an important part of the subsurface hydrological cycle, is used to meet various needs of human life. However, with the development of human civilization and the use of a large amount of water resources, the annual average rainfall in Taiwan is about 2,429mm, which is about twice the global rainfall of 1,155mm. But the rivers in Taiwan have the characteristics of short river bodies, large slopes and rapid currents, so that the average amount of water obtained by Taiwanese per year is only 3752m<sup>3</sup>/year, and the average amount of water per person in Taiwan is only 1/6 of the world average, show that Taiwan is a water shortage area. This study collects the data provided by various government ministries and associations, and divides the data into five categories: water quality data, land use, geological composition, pollution sources, and others through the time of excel and ArcGIS, and establishes a database of wells in Taiwan. For the part of the records, artificial neural network is used to design and adjust the program so that it has the best ability to predict the missing values, and obtain a complete database to provide the government or related units with a reference basis. Finally, the processed data is used to communicate with the Environmental Protection Agency and the Agricultural Committee. Comparing water quality projects and standards announced by the conference to find out the best sites for aquifer storage and recovery.

Keywords: Aquifer Storage and Recovery (ASR), Artificial Neural Networks (ANNs),Taiwan