GIS-Based Spatial Allocation Analysis of Population Growth in Regional Water Resource Planning

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Abstract

Adequate water resource management has become increasingly important in Central Texas because of the rapid population growth and the limited water resources in the region. The Lower Colorado River Authority (LCRA) is involved in water resource management in the region. One task in water resource planning at LCRA is to spatially allocate estimated countywide population growth for a given period in the future to sub-county areas and determine the subsequent water demand change in sub-county areas. Currently LCRA uses a spreadsheet model that cannot take into account major factors affecting the spatial distribution of population growth in a county. The author extended existing models to facilitate the spatial allocation of population growth in regional water resource planning based on current practices at LCRA. This paper presents a GIS-based system consisting of a set of mathematical models and analysis procedures that can be used in spatial allocation analysis of population growth in the context of regional water resource management.