**Study of Landscape Indices Analysis in Establishment Principles of Taiwan Administrative Zones**

Yung-Chung Chuang Re-Yang Lee Yu-Chi Kao

**Abstract**

Administrative zones are the result of structure in different levels of national lands divided by government institutes consideration of administration management. Principles of administrative zone separation involve complicated factors. Effective quantitative discussions are difficult. Thus, we attempt to introduce ideas of spatial overlays and landscape indices analysis in GIS platform. First, we compared overlaying level of boundary of catchments area and administrative zone boundary to present levels of impacts of terrains on administrative zone separation. From village distribution digitization results in Taiwan Map in 1904 and topographic map in 2001, we explored influences of village locations, distribution density, and concentration level on administrative zone separation in the two periods.

The findings showed that the average administrative zone area in Taiwan western plains has been reduced more than eastern mountainous area in the past century. Spatial distribution characteristics of villages in all administrative zones tend to be homogenous due to the prosperous settlements and traffic network development, but the expansion rate of village and the addition rate of administrative zones in western plains are significantly higher than those in eastern mountain areas because of the less terrain restriction. For this reason, administrative zones have been rarely adjusted in eastern Taiwan. The areas are mostly overlapped with catchments boundary. In other words, changing thresholds of administrative zones in eastern mountain areas are higher than those in western plains.

From the results of the research, one can find that GIS spatial overlays landscape indices analysis effectively present village distribution differences in different areas and the trend of administrative zone changes. It is also proves good application of catchments separation method in places with obvious rise and fall. The quantitative results will help future administrative zone separation adjustment.

**Keywords:** Administrative zones, GIS, Landscape Indices Analysis

Author name: Yung-Chung Chuang

Affiliation: Department of Urban Planning and Spatial Information, Feng-Chia University

Address: No. 100, Wenhwa Rd., Seatwen, Taichung, 40724 Taiwan (R.O.C.)

Phone: +886-4-24517250#3371

Email: yungcchuang@fcu.edu.tw

Author name: Re-Yang Lee
Affiliation: Department of Land Management, Feng Chia University
Address: No. 100, Wenhwa Rd., Seatwen, Taichung, 40724 Taiwan (R.O.C.)
Phone: +886-4-24517250#4714
Email: rylee@fcu.edu.tw

Author name: Yu-Chi Kao
Affiliation: Department of Urban Planning and Spatial Information, Feng-Chia University
Address: No. 100, Wenhwa Rd., Seatwen, Taichung, 40724 Taiwan (R.O.C.)
Phone:+886-4-24517250#3359
Email: kaoyc@fcu.edu.tw