

The Development and Change of Settlement in Tainan County (1904-2015) Using Historical Geographic Information System

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Abstract : In the early time, most of the arable land is dry farming and using rainfall as water sources for irrigation in Tainan county. After the Chia-nan Irrigation System (CIS) was completed in 1930, Chia-nan Plain was more efficient allocation of limited water sources or irrigation, because of the benefit from irrigation systems, drainage systems, and land improvement projects. The problem of long-term drought, flood and salt damage in the past were also improved by CIS. The canal greatly improved the paddy field area and agricultural output, Tainan county has become one of the important agricultural producing areas in Taiwan. With the development of water conservancy facilities, affected by national policies and other factors, many agricultural communities and settlements are formed indirectly, also promoted the change of settlement patterns and internal structures. With the development of historical geographic information system (HGIS), Academia Sinica developed the WebGIS theme with the century old maps of Taiwan which is the most complete historical map of database in Taiwan. It can be used to overlay historical figures of different periods, present the timeline of the settlement change, also grasp the changes in the natural environment or social sciences and humanities, and the changes in the settlements presented by the visualized areas. This study will explore the historical development and spatial characteristics of the settlements in various areas of Tainan County. Using of large-scale areas to explore the settlement changes and spatial patterns of the entire county, through the dynamic time and space evolution from Japanese rule to the present day. Then, digitizing the settlement of different periods to perform overlay analysis by using Taiwan historical topographic maps in 1904, 1921, 1956 and 1989. Moreover, using document analysis to analyze the temporal and spatial changes of regional environment and settlement structure. In addition, the comparison analysis method is used to classify the spatial characteristics and differences between the settlements. Exploring the influence of external environments in different time and space backgrounds, such as government policies, major construction, and industrial development. This paper helps to understand the evolution of the settlement space and the internal structural changes in Tainan County.

Keywords : historical geographic information system, overlay analysis, settlement change, Tainan County

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