
Visualization and geospatial analysis on rural areas using sub-regional statistics

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Abstract:

Visualization and geospatial analyses of rural areas at a sub-regional scale is important for examining rural areas and analyzing their spatial characteristics and their relationships between geographical conditions in detail. However, those types of researches have been scarce. The most important reason for this is a low correspondence between the territories of sub-regional statistical units in the population census, the agriculture census, and other numerical data of geographical conditions. One way to solve this problem is to use grid cell data, but the grid cell statistics of the agricultural census had not been made after 1980 agricultural census. After 35 years of blanks, the kind of statistics was finally created based on the 2015 agricultural census and published in 2018. This grid cell statistics of 2015 agricultural census covers only human aspects of agricultural management.

In this research, the author examined the availability of grid cell data of the agricultural census for visualization and geospatial analyses of rural areas. Firstly, the author composed grid cell data by allocating agricultural settlement data to grid cells based on grid cell data of land use information. Regional variations of agricultural land use and their changes were visualized better than the case based on agricultural settlement data. Then quantitative analyses on their regional distribution and relationships between geographical and social factors were conducted. Influences of elevation, slope and population density on land use were clarified. Secondly, the author used the 2015 grid cell data for mapping, spatial analyses and examining the relationship between geographical and social factors. It was confirmed that the distribution of human aspects of agricultural management was potentially related to urban expansion.

These findings show a significant potential of grid cell statistics for visualization and geospatial analyses of rural areas.