

## Landscape change with river system and traffic facility in a watershed, north Kanto district, Japan

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### Objective and study area

The regional landscape of Japan has been formed by the interaction of human activity and natural environment. The purpose of this study is to clarify the change of regional landscape from Meiji era to present. First of all, I will discuss the relationship between the land use change and accessibility from river and traffic facility such as road and railroad station. Then, I would like to analyze the change of regional landscape which is composed of landform, geology, soil, altitude and land use.

The site chosen for this study is Nakagawa watershed, Kinugawa watershed, Kokaigawa watershed and Kasumigaura watershed in north Kanto district, providing a total area of 8200 km<sup>2</sup>.

### Data sources

As land use data in the Meiji era, 250m grid cell data was created from old edition topographic maps in 1903 to 1912 at a scale of 1:50000 provided by the Geographic Survey Institute. Digital maps for ready use on the computer, issued by the Ministry of Land, Infrastructure and Transportation of Japan, provided data on the recent land use in 1997, landform type, geology type, soil type, elevation, river system and traffic facility.

### Methods

Geographic Information Systems (GIS), ArcView9.1, was utilized in the analysis of this study. First, the study area was classified into 6 groups by the altitude. Next, to clarify the influence of the accessibility from river and traffic facility on the land use, multiple distance buffers of 500m distance ranges were created around a river, road and railroad station. I analyzed the land use change by comparing the difference in land use ratio measured at all buffers between Meiji era and present. Besides the land use change was classified by multivariate analysis, to clarify the characteristics of landscape structure.

### Results

Paddy field was situated mainly on the lowland below an altitude of 20m, and increase rate was high in an area of 150m to 300m. In addition, paddy field ratio tended to decrease with the increase in the distance from the river. Increase of the field and urban area, decrease in the forest, are remarkable on the plateau. Especially urban area ratio tended to decrease with the increase in the distance from the traffic facility, and was situated in a high ratio around a railroad station. Finally classified each landscape group showed its unique characteristics concerning with landform, geology, soil, and accessibility from river and traffic facility.