# ANALYSIS OF TEMPORAL AND SPATIAL CHANGE AND CORRIDOR EFFECT OF IN YELLOW RIVER HEADWATERS REGION

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Recent developments of multi-temporal and multi-resolution remote sensing technologies have provided ability to analyze the spatial-temporal change of landscape pattern. Landscapes need to be quantified and analyzed, to improve the understanding of the relationships between landscape elements change and human activities. Knowing the landscape structure and how it affects landscape processes will help people making informed decisions in planning and management of forested areas. An understanding of landscape dynamics has tremendous implications for landscape management and resource planning. Although several studies pertaining to changes in landscape conditions have been conducted, very little has been done to quantitatively analysis spatial-temporal change of landscapes structural in famous River Headwaters Region, an international natural and culture heritage protected zone, was selected as the test site for this project. The analysis of landscape pattern change, especially when using spatial-temporal information, is an important concern and significant experiment in this study area. The objective of this study was to develop appropriate methods and assessment techniques to quantify the nature and magnitude of Yellow River Headwaters Region including several Tibetan Autonomous Prefectures landscape structural changes. The main water supply of Yellow River Headwaters region which is rainfall and snow melt. The main ethnic group of Headwaters Region is Tibetan, with other 14 ethnic groups of Han, Hui, Soil, Sarah,

Mongolia, etc, and the Tibetan population accounts for 90 percent of the total population. The total study area is 76442 km2, about 448km long and 334km wide. The mean elevation of the prefecture is over 4200m, 80% of which is 4000-5000m.

Based on two Landsat-ETM images 1986 and 2006 of Yellow River Headwaters region, Through the fuzzy object-oriented Classification landscape types were classified in the study area. According to the types of vegetation and soil resources, the landscape types were divided into 10 categories: spares grass, meadow, desert, lake, shrubs, woodland, bare land, permanent snow, glacier, mobile sand area. The spatial characteristics of landscape pattern were analyzed by use of ARCGIS software.

The results showed the significant decrease in meadow areas mainly due to conversion to bare land and sand area. Grass vegetation corridors have become more fragmented, isolated and of much smaller patches. It showed that grass vegetation and shrub is the main resource landscape in Yellow River Headwaters Region. The patches of meadow have high connectivity.

By spatial sampling, taking the Yellow Water as the corridor, selecting three strip censuses of 0-5km, 5km-10km and 10km-15km along the Yellow Water to be researched, analyzed corridor effect of landscape pattern and study the spatial distribution features of landscape types and structures of the strip censuses on different scales. The results showed that corridor effect of the Yellow River and the effect of human activity for land-use were indicated. The change of different scale of landscape corridor was study. It is obvious when in 10 kilometers and has a scale restriction. Landscape change was found to be significantly associated with the human impact, although the strength of association was different in total study zone. The study provided a strong theoretical and technical basis for the region's ecological protection policy formulation and scientific environmental management.

## References


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