

Vegetation change and its causal analyses since 2000 in Inner Mongolia

BUHE, BAOYIN^{1*}

¹Buhebaoyin, ²Hokutoh Morino, ³Akihiko Kondoh

1.Introduction

Recently, MODIS and GIMMS NDVI data sets were created and published, which enable to capture vegetation changes with high accuracy than previous NDVI data set such as PAL(Rasmus,2007), and analysis of vegetation changes until recently. Especially in arid and semi-arid China, it is thought that there was a big change of land-use by the policies concerning anti-desertification activities since 2000. Also, a response of vegetation by the climate change such as global warming and land-use change resulted from the policies, are different in the region(Erideni,2009), so it is important to evaluate the "land vulnerability" in a region with the latest data set in making the future land-use plans.

The purpose of this study is to analyze vegetation change and its factor with MODIS and GIMMS data sets in the Inner Mongolia, China, where the desertification is the most serious concern.

2. Results and discussion

A spatial distribution pattern of vegetation change according to NDVImax (Holben,1982) from 2002 to 2010 is obtained showing a clear spatial differentiation. Especially in the mostly steppe region in Inner Mongolia, a decreasing vegetation trend including significant decrease is extracted, but in some regions in steppe, such as Horchin, an increasing vegetation trend including significant increase is extracted.

We also explored the relationship between vegetation change trends and climatic and anthropogenic factors. The relation between vegetation and climate factors such as precipitation and Warms Index(Kira,1945) in the Inner Mongolia showed link with the ecosystem. But in the Horchin, there is no link between vegetation and climate factor. So it is suggested that anthropogenic factor influence vegetation change in Horchin. Next, we explored the anthropogenic factor of the vegetation change in Horchin to use statistics data with GIS. As a result of the analysis, the area of vegetation increase in Horchin is linked with developed cultivated areas. And the vegetation decrease in steppe of Horchin is linked with grazing intensity especially in Horchin sand area. This study indicated that the vegetation change from 2002 to 2010 in mostly Horchin of Inner Mongolia is affected by human activity.

Keywords: Inner Monglia, since 2000, vegetation change, causal analyses, MODIS, GIS