Detection of land cover in northeast Mongolia using pattern decomposition method

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1. Introduction

Evapotranspiration is one of water circulation elements which the amount depends on the presence of vegetation and water. Because vegetation and water area change throughout of the year, we think that evapotranspiration has a seasonal variation. Our purpose is to obtain useful data sets to estimate evapotranspiration. We used MODIS visible and near-infrared radiation data to detect a seasonal variation of land cover in northeast Mongolia.

2. Analysis

The resolution of MODIS data is 500X500m (it is possible that one pixel is made up of several surface conditions). We applied pattern decomposition method (Muramatsu, et al, 2000) to solve this mixed pixel problem. By this method, spectral reflectance patterns for each pixel are represented by linear addition of basic spectral reflectance patterns, so that the ratio of each surface condition can be estimated. In this study, we assumed that land cover in Mongolia is made up of water area, vegetation and bare soil.

3. Results

It is compared to satellite photo, vegetation variation can be identified. But it has not been estimated quantitatively yet. And water area ratio was overestimated obviously in some pixels.

4. Conclusion and Problem

We are sure that the pattern decomposition method functions well in many places. The causes of water area overestimation require a further investigation.