

VEGETATION CLASSIFICATION USING REMOTE SENSING DATA IN MONGOLIAN GRASSLANDS FOR LIVESTOCK GRAZING MANAGEMENT

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Abstract: Key industry is livestock husbandry by nomad in Mongolia. However, in recent decades, global climate change and overgrazing causes grassland degradation in this country, therefore livestock mortality has occurred by pasture shortage due to grassland degradation particularly in urban areas. Thus, the appropriate management of livestock grazing is needed for preserving from degradation grassland and sustainable use of grassland. As previous study of natural environmental such as vegetation evaluation, there are many studies of biomass estimation and vegetation changes using remote sensing technology. On the other hand, some studies have discussed the grassland degradation using statistical data or research report with livestock as study of social environmental. However, few studies have reported that grassland degradation is comprehensively discussed regarding natural and social environment. In this study, it is attempted that mapping of the vegetation classification from ALOS/avnir-2 as high resolution imagery and MODIS imagery considering the number and composition ratio of livestock from 2000 to 2012. Firstly grassland degradation area is extracted using ALOS/avnir-2 based on result of plant identification and spectral characteristics of in-situ measurement in Mongolian grasslands. Secondly, it is generated that grassland degradation map of across Mongolia from MODIS imagery using spectral characteristics of grassland degradation area which is obtained from result of the first step. Then, the index for degradation state is amount of biomass in the area which imagery is not taken from ALOS/avnir-2. Regarding the amount of biomass, it is used that biomass distribution map by MODIS LAI from 2000 to 2012 using biomass estimation equation is derived from in-situ measurement of biomass with geo-located match up database. Thirdly, in the map through above steps, degradation intensity is weighted by overgrazing area which has many livestock exceeded grazing capacity or many goats as high grazing intensity. As result of above, it can be investigated interannual changes of degradation areas and shown that impossible area of livestock grazing.

Key words: biomass, grassland degradation, livestock composition ratio, palatability, overgrazing