

ESTIMATION OF VEGETATION NET PRIMARY PRODUCTIVITY OF BEIJING YEYAHU WETLAND BASED ON REMOTE SENSING

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1. INTRODUCTION

Wetlands play more important role in people daily lives and are specifically valuable to people as places for educational activities and recreational. It also can provide wetland functions like storage of water, transformation of nutrients, and growth of living matter for its surrounding ecosystems. Given their great ecological and conservation values of the wetland system the work of wetlands protection becomes increasingly important. Beijing, capital of China, used to be a richly endowed region with abundant wetlands. But with the highly development of social-economy, these fragile ecosystems had become imperiled due to rapid urbanization and industrialization.

2. MATERIALS AND METHODS

YeYahu wetland is an artificial weland which located in the upriver of the GuanTing Lake, northwest of Beijing city. The geography extent is E115°47'~115°54', N40°25'~40°30'. The structure is combined with swamps, channels, grass shoal, sands. The wetland plants (mainly the reeds and cattail) provide habitat for field animals. Carbon fixation and oxygen release of living plants may also impact on local microclimate. In this research, Landset TM Image acquire on August 2, 2008 was geometrically corrected and other geo-data like DEM and climate data of Beijing area were also collected. As wetland plants in study area are fully grown by August, the field surveys were conducted a few weeks later. Six plant percentage cover sampled in 1×1m quadrats evenly located in the study area. In order to meet the special resolution of 30×30m, the surrounding area of every sampling quadrats should grow the same plant. Plant material above ground surface was cut and collected within the quadrats and finally drying in the lab to get dry weight of samples. The coordinates for each sampling location were recorded using GPS with ±2m accuracy. We assumed that the dry weight of the fully growth plant in August can highly represent the highest net primary productivity (NPP) in 2008 which plants photosynthetically fixed energy from the sun, in the form of net primary production, ultimately supports the majority of lives in this wetland system. In order to measure the net primary production of the wetland plants, the estimation model of vegetation net primary production based on remote sensing data and climatic data was build to estimate the NPP in 2008 of Yeyahu wetland. And distribution of Yeyahu wetland vegetation NPP was studied.

3. CONCLUSIONS

The result show that the remote sensing based estimated model is fit for the NPP estimation. And multispectral Landset TM sensor data were also found to be useful for regional vegetation NPP calculation in small scale region. Based on the calculated NPP of wetland system and its distribution, wetland protection strategies were proposed.