

Remote Sensing Estimates of vegetation Biomass and Carbon storage in Hulunbuir grassland, Inner Mongolia

*Yu Hong¹

1.College of Life science and Technology Inner Mongolia Normal University

The grassland, as one of the most widespread terrestrial ecosystems in the world, plays an important role in regulating regional climate changes and reducing the emission of carbon dioxide. So it is important to do an accurate evaluation of grassland vegetation biomass and carbon storage, and analysis on spatial distribution patterns and environmental factors in the regional scale. Hulun Buir grassland is the study area in this paper. This study constructs grassland biomass model by integrating MODIS EVI data, climatic variables and topographic variables using RBF artificial neural network model. And aboveground biomass, carbon storage during 2000-2013 is simulated further by means of accuracy of the estimation. And with this source, the study estimates the underground biomass, total biomass and carbon storage of the study area by underground / aboveground biomass ratio in different types of grassland. The results are as follows: The ability of RBF neural network model to estimate grassland biomass is better than multiple linear regression model. The spatial distribution of average aboveground biomass has gradually increasing trend from southwest to northeast in Hulun Buir grassland during 2000-2013. Besides the spatial distribution of average aboveground biomass has gradually increasing trend, and increased from 142.857 g/m² to 161.436 g/m² in the rate of 1.034 / a. The total aboveground biomass, total aboveground carbon storage of study area were 8.26 Tg, 4.14 Tg·C. The total underground biomass, total underground carbon storage were 36.1 Tg, 18.06 Tg·C. The total biomass and total carbon storage were 44.4 Tg, 22.2 Tg·C. Typical steppe has the highest carbon storage, totaling 13.38 Tg·C.

Keywords: Hulun Buir Grassland, RBF artificial neural network, Biomass, Carbon storage