



The Vegetation Nitrogen Content and its Latitudinal Patterns in China

Hang Zhao (1,2), Nianpeng He (1), Guirui Yu (1), and Qiufeng Wang (1)

(1) Institute of Geographic Sciences and Natural Resources Research, CAS, Beijing, China, (2) University of Chinese Academy of Sciences, Beijing, China

Nitrogen is an essential nutrient element in biological life activities, and plays an important role in plant production and growth. Vegetation nitrogen content can be used as an important component in estimating ecosystem nitrogen storage. In the present study, we used a large amount of data from the database of north-south transects of eastern China and published literatures. We explored the nitrogen content of different components of China terrestrial ecosystems and its latitude pattern at the scales of the plots and of 8 eco-regions. The average nitrogen content of the forest ecosystem was 1.797% in the tree leaves, 0.663% in the tree branch, 0.586% in the tree stem, 0.755% in the tree root. In the shrub layer, the average leaf nitrogen content is 1.845%, the average branch content is 0.968% and the average root nitrogen content is 0.995%. In the herb layer, the average nitrogen content of aboveground is 2.463% and 1.279% for underground. The average nitrogen content of aboveground in grassland ecosystem is 2.006% and 0.994% for underground. The average aboveground nitrogen content in desert ecosystem is 1.911%. The average nitrogen contents of the leaves, stems and roots in wetland ecosystem were 1.669%, 0.741% and 0.659%. There were significant differences in nitrogen content among different organs, and it showed that the nitrogen content of leaves > roots > branches > trunks and aboveground component > underground component. The nitrogen content of different components in China terrestrial ecosystems increased with increasing latitude, especially in leaf. These results demonstrated latitudinal patterns of nitrogen content in Chinese terrestrial ecosystems, based on field-measured data, and provided a reference or standard for regional vegetation nitrogen allocation and storage estimations.