Dynamic change monitoring of forest resource by using Remote Sensing and Markov Process in Loess Plateau of China

Qiao Yuliang, Zhao Shangmin

Surveying Department, Taiyuan University of Technology, Taiyyuan, China
(proqiao@126.com /Tel: +86 351- 6014718)

Abstract Forest resource is the main body of ecosystem on the earth land, which is indispensable regenerated resource in improving the entironment and boosting the quality of habatation. At present, with rapid development of society and economy, the grim challenge has to be faced with because of decrease of forest resource and gradually aggravation of entironment. Application of earth observation technology to monitoring the dynamic change of forest resource in Loess Plateau with quite fragile zoology and badly erosive soil, therefore, has increasingly important significance in developing Chinese national economy, reserving zoology and forecasting the change of world environment. This study applies remote sensing technology combined with Markov process to monitor and forecast the dynamic change of forest resource in Chinese Loess Plateau. At first, according to the dynamic change maps of the forest resource from remote sensing data in three different periods–1978ąć1987 and 2000, the transitions among the forest resource types in the Daning County — a key pilot area of " the Three North Protection Forest Project " in Chinese Loess Plateau are acquired by combining the different remote sensing information sources during those different periods. Then, the transition probability matrices at two primary states (1978 and 1987) are established easily. Based on the transition probability matrices, we can simulate and forecast the forest dynamic transformation pattern and the forest-transforming tendency in the future periods. The results of the research prove that, this method is worth widely popularized, by which the conditions of the forest resources can be monitored and the dynamic change tendency of the forest resources can be forecasted simply and quickly so as to explore a scientific, rational and effective road to rectify the territory of China, improve the ecological environment and promote the development of national economy.

Keywords Remote Sensing Markov process forest resources dynamic monitoring