

# Dynamic Changes in Vegetation Index in China Based on GIMMS AVHRR

## Data Source during the Period from 1982 to 2006

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In this paper, GIMMS-AVHRR Normalized Difference Vegetation Index(NDVI) data set, a global data set with 8-km spatial resolution developed by the Global Inventory Monitoring and Modeling Studies(GIMMS) group, was selected as the data source. The dynamic changes in vegetation index in China and the seven regions of China (i.e., East China, South China, North China, Central China, Southwest China, Northwest China and Northeast China) during the period from 1982 to 2006 were studied by using maximum value method, average method and linear regression trend analysis method. Results show that: (1)Over the past 25 years, the change of China Annual maximum NDVI was insignificant. The fluctuation range was from 0.412(1982) to 0.446(1998). There were two change stages: the first stage which was from 1982 to 1998 and the second stage which was from 1998 to 2006. In the first stage there was a modest increase trend. Then a obvious decrease appeared in 1998 and the second stage followed in which the NDVI hovered around 0.425. (2)The variation of mean NDVI of different regions was obvious. The vegetation NDVI in Northwest China was the highest (0.7228), and the vegetation NDVI in Southwest China was the lowest (only 0.245). (3)Trend analysis shows that  $\theta_{\text{slope}}(\text{China}) < 0$ (which is -0.000041). It means that NDVI vegetation in China had a decreasing trend from 1982 to 2006. The change degrees of the seven regions' vegetation coverage were different.  $\theta_{\text{slope}}$  of every region except Northwest China and North China  $< 0$ , and NDVI vegetation in South China decreased most obviously. The regions of which NDVI vegetation decreased from much to little were respectively South China, Northwest China, Central China, East China and Southwest China. (4)Based on the  $\theta_{\text{slope}}$  of every pixel of the whole study area, NDVI changes can be divided into 5 accessibility grades: significantly increasing, slightly increasing, almost unchanging, slightly decreasing and significantly decreasing. Almost unchanging pixels accounted for the highest percentage which was about 64.28%, and the followings were slightly decreasing pixels (accounting for 17.22%), slightly increasing pixels(accounting for 11.88%), significantly increasing pixels(accounting for 4.44%) and significantly decreasing pixels(accounting for 2.17%) in turn. Most of the

significantly increasing pixels distributed in Three-North Shelter Forest Program Region of China, and most of the significantly decreasing pixels distributed in South China and Southwest China.