



Response of Grassland Ecosystem to Climate Variations in Northern Tibet Plateau

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The grassland in Northern-Tibet Plateau (NTP) of China is sensitive to climate changes compared with other parts of the world. In this study, a ten-day interval of satellite data (NOAA/AVHRR) between 1981 and 2001 were used to investigate grassland variations in the NTP. The relationship between Normalized Difference Vegetation Index (NDVI) and climatic parameters (i.e., T_{max} , T_{min} , precipitation, evapotranspiration, relative variability of annual precipitation during grass growth, wind velocity, sunshine duration etc.) were analyzed in six Counties of NTP. Human factors such as population were also tested in this study. The results showed that the areas of high increase, slight increase, no-change, slight decrease and high decrease in the NTP account for 0.27%, 8.71%, 77.27%, 13.06% and 0.69% respectively. The remarkable increase and decrease in NDVI occurred in middle eastern and eastern NTP with low altitude. Correspondingly, the linear trends of VP-NDVI were weak and no change in western part of the NTP with high altitude. Strong negative relationships between NDVI and evapotranspiration occurred in sub-frigid, semi-arid and frigid arid regions, i.e., Nakchu, Shantsa, Palgon and Amdo Counties, which indicated that the evapotranspiration was the main factor influencing vegetation degradation in these areas. But in temperate-humid and sub-frigid semi-humid regions, the correlations between NDVI and population were significantly negative, implying that human activities had primary influence on vegetation degradation as in Chali and Soksa Counties. This study concludes that the large-scale degradation of grassland in NTP is caused by natural

and human factors.

Keywords: Grassland variations, Satellite data, Northern-Tibet Plateau, Climate change, Human activities