

## GC31B-0472 Regional Vegetation Dynamics and Its Response to Climate Change—A Case Study in the Tao River Basin in Northwestern China

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Stretching across the eastern Tibetan Plateau and the southwestern Loess Plateau, the Tao River Basin (TRB) is an ideal ecosystem to study eco-hydrological processes in a contiguous landscape but climatically different schemes. In this study, we used the normalized-difference vegetation index (NDVI) data, derived from AVHRR/MODIS satellite sensors, to quantify the regional vegetation dynamic changes in the TRB and determine the key climatic factors driving these changes in the past 30 years through principal component and correlation analyses. We then developed regression models to predict NDVI changes as a function of the climatic factors. Using Sen's slope trend analysis of the climatic data and the regression models we examined how terrestrial vegetation has responded to regional climate change in the TRB. The regression results showed the average winter base NDVI values of 0.14 and 0.04 in the eastern Tibetan Plateau and the southwestern Loess Plateau, respectively. Primarily driven by increasing temperature, the vegetation growth has generally been enhanced since 1981; the spring NDVI increased by 0.03 every 10 years in the eastern Tibetan Plateau, and 0.02/10 years in the southwestern Loess Plateau. The Sen's slope trend analyses showed that the vegetation growing season in the eastern Tibetan Plateau shifted to an earlier start and earlier end, but in contrast the southwestern Loess Plateau experienced an earlier start but later end. The precipitation threshold for vegetation germination is a cumulative spring rainfall of 44 mm; less than this precipitation indicates a spring drought and less vegetation growth.

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