

ANALYSIS OF SPATIOTEMPORAL VARIATION OF NDVI IN AN ARID COAL MINING REGION USING REMOTE SENSING

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ABSTRACT:

Different resolution of remote sensing images will give rise to different perspectives and spatial characteristics. The objective of this study is to compare the spatiotemporal difference of the vegetation index extracted from TM and MODIS images by time series analysis and spatial statistics, and find the relationship among between the vegetation, climate factors, coal mining etc..The study area is located at an arid mine area, where the mining activities and ecology reconstruction is ongoing. It is found that the MODIS-NDVI (monthly or 16 days) products can provide results close to the NDVI derived from atmosphere corrected TM images. Time series analysis found that the monthly NDVI, rainfall and temperature are consistently subject to annual periodical rhythm under the impacts of coal mining. And there is a significant correlation between NDVI and rainfall & temperature in the arid mine area. However, MODIS-NDVI (1 km) is not suitable for spatial statistics for the study area of 3200 km², because of the coarse spatial resolution. NDVI-TM (30 m) or NDVI-MODIS (250 m) are feasible for spatial statistics at this study area. Higher value of NDVI is accompanied by higher spatial variation of NDVI with a squared correlation coefficient ($R^2=0.6983$). It is probably because the natural arid landform was damaged by human activities, e.g. vegetation construction and industry.

TOPIC: Remote sensing applications

ALTERNATIVE TOPIC: Remote sensing applications