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Major crops classification using time series MODIS EVI with adjacent years of ground reference data in the US state of Kansas

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Most methods used large quantity of field data of the same reference year for crops classification which is labor-intensive and time-consuming. In this study, we explored the optical application of time series MODIS EVI with adjacent years of ground reference data for classifying major crops on a regional level in US state of Kansas. Time series MODIS EVI data have been obtained between 2008 and 2013. Ground reference data (2008–2013) of the major crops (winter wheat, corn, soybeans, sorghum and alfalfa) in Kansas were acquired from the United States Department of Agriculture (USDA). A machine learning algorithm namely Antibody Network (ABNet) classifier was used to classify the major crops. The ABNet was trained using five years of ground reference data and verified by ground reference data of the other year. For instance, to classify major crops in 2008, ground reference data of (2009–2013) were used as training samples and the data of that year (i.e. 2008) were used as validation. The results evince the classification accuracy in a range from 74.4 to 81.9% and kappa coefficient of 0.6–0.8 respectively. This method can improve remote sensing imagery in the process of classification and can help to alleviate the heavy load of field data in areas where ground data are unavailable.

Biography

Muhammad Shakir has completed his PhD from University of Chinese Academy of Sciences. He is working as Professor in University of Peshawar. He has published more than 13 papers in reputed journals and has been serving as an Editorial Board Member of some of the reputed journals.

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