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Fractional Vegetation Cover Estimation Algorithm for FY-3B Reflectance Data Based on Random Forest Regression Method

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摘要 As an important land surface vegetation parameter, fractional vegetation cover (FVC) has been widely used in many Earth system ecological and climate models. In particular, high-quality and reliable FVC products on the global scale are important for the Earth surface process simulation and global change studies. Recently, the FengYun-3 (FY-3) series satellites, which are the second generation of Chinese meteorological satellites, launched with the polar orbit and provide continuous land surface observations on a global scale. However, there is rare studying on the FVC estimation using FY-3 reflectance data. Therefore, the FY-3B reflectance data were selected as the representative data to develop a FVC estimation algorithm in this study, which would investigate the capability of the FY-3 reflectance data on the global FVC estimation. The spatial-temporal validation over the regional area indicated that the FVC estimations generated by the proposed algorithm had reliable continuities. Furthermore, a satisfactory accuracy performance ($R^2 = 0.7336$, $RMSE = 0.1288$) was achieved for the proposed algorithm based on the Earth Observation Laboratory (EOLAB) reference FVC data, which provided further evidence on the reliability and robustness of the proposed algorithm. All these results indicated that the FY-3 reflectance data were capable of generating a FVC estimation with reliable spatial-temporal continuities and accuracy.

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