Validation of the global evapotranspiration algorithm (MOD16) in two contrasting tropical land cover types

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Abstract

This article presents results from NASA’s EOS MOD16 Project, which aims to estimate global evapotranspiration (ET) using remote sensing and meteorological data. Our specific objective in this study was to evaluate the accuracy of the newly improved MOD16 algorithm at the Rio Grande basin, southern Brazil, using (i) ET observations at two eddy covariance (EC) flux tower sites in different land covers (savanna and sugar cane plantations) and (ii) ET estimations from hydrological model during 2001. Our results show that MOD16 8 d average, monthly ET and annual ET values are consistent with observations of the two EC sites and the hydrological model. The RMSE and bias analyses indicate that the model overestimates ET values for savannas and underestimates these values for the sugar cane and the whole basin average. Estimates are very consistent in the dry season, while the larger prediction errors occur in the wet season.

Key words: eddy covariance; evapotranspiration; hydrological model; LBA; MGB; MOD16; MODIS; remote sensing