Geophysical Research Abstracts
Vol. 21, EGU2019-15617, 2019
EGU General Assembly 2019

Leaf Area Index(LAI) estimation by unmanned arerial vehical and sentinel 2 imagery

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Leaf area index (LAI), defined as the foliar area per unit of soil surface, is a key variable for characterizing plant canopies because it is related to light and energy capture. Here we estimated LAI from reflectance values from an unmanned aerial vehicle (drone mounted with multi spectral camera) and satellite (Sentinel-2). The ground measured data for LAI measured by LAI-2000 was used to validate the data. The fraction of intercepted photosynthetic radiation (Fipar) was calculated based on the reflectance information from drone and satellite and subsequently the Fipar values were used to calculate LAI. The results showed that LAI estimated from drone data and satellite 2 had significant relationship with the ground measurement LAI data (R2 equal to 0.4 and 0.3, P<0.001, respectively). Better calculation algorithms and analysis of more dataset should enable higher correlation coefficients in future work.