

Analysis and Validation of the MODIS LAI Product for the Agricultural Application in North China

Peng Yang, Qingbo Zhou, Ryosuke Shibasaki, Yan Zha, Zhongxin Chen
THE UNIVERSITY OF TOKYO, JAPAN
YANGPENG@IIS.U-TOKYO.AC.JP

Leaf Area Index (LAI) is one of the key biophysical variables influencing crop photosynthesis, transpiration, and is often used as an important driver of most crop productivity models. Moderate Resolution Imaging Spectroradiometer (MODIS) LAI product was produced by the MODIS land science team as one of standard products, which is available to the public through EROS data centre. Validation of MODIS LAI product is crucial, both to establish the accuracy of the product for the scientific research and to provide feedback so that the data processing algorithms can be improved. Here we present a study for analysis and validation of MODIS LAI product with emphasis on the agricultural cropland of North China. The objective was to: (1) retrieve LAI map in regional level to analyze the mean and variability of LAI value; (2) conduct MODIS LAI validation to assess the quality of product; (3) analyze the potential problem of MODIS LAI product in agricultural application. The regression model is firstly developed between field measurement LAI and TM images. The TM based LAI data were used as the reference to analyze MODIS LAI product (collection 4) then. The results indicate that the MODIS LAI algorithm has underestimated LAI values obviously in the agricultural cropland of North China. The MODIS LAI product fails to be integrated with crop growth model in order to estimate crop productivity in regional level over this study area.