Research on Estimation Wheat Leaf Area Index Based on Data Assimilation using Ensemble Kalman Filter

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Accurate estimation of leaf area index is highly desirable in the research and comprehension of crop growth process , and it can help to make yield prediction. However, more accurate LAI can't be obtained through either model simulation or remote sensing observation .In this investigation, we use Ensemble Kalman Filter algorithm ,an atmospheric data assimilation, and coupled crop growth model CERES-Wheat and radiation transfer model PROSAIL to build up a single point assimilation scheme. Spectral and agronomy data of wheat in the year 2004 at XiaoTangshan experimental area are used to assimilate. The results indicate that the estimating accuracy of wheat leaf area index can be effectively improved after using Ensemble Kalman Filter assimilation . Ensemble Kalman Filter can not only gives the estimation of the inversion value but also provides a priori knowledge of the posterior distribution, showing good real-time performance and reliability.
Keywords: Data Assimilation; Ensemble Kalman Filter; Leaf Area Index； Estimation

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