

# 论文类成果

## Evapotranspiration estimation based on scaling up from leaf stomatal conductance to canopy conductance

### 【创新性】

本文突破了作物叶片之间生理生态存在较大差异的表征难点，重点考虑了阴叶截获散射辐射的分布特点，以及叶片气孔导度对辐射的非线性响应规律，通过引入微积分理论，发展形成了权重积分法。该方法对玉米冠层导度的模拟精度可达95%，估算农田ET的误差由传统的9.4%减小为2.3%，为蒸散发从叶片向农田尺度的空间提升提供了有效方法。

### 【影响力】

本文发表在农林科学类Top期刊《Agricultural and Forest Meteorology》，国际灌溉委员会前主席 Luis S. Pereira 给予高度评价。

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# EVAPOTRANSPIRATION ESTIMATION BASED ON SCALING UP FROM LEAF STOMATAL CONDUCTANCE TO CANOPY CONDUCTANCE

### 【Innovation】

In this thesis, the difficulty of great difference in physiological ecology between leaves of crops is surmounted, major consideration is given to the distribution characteristics of scattered radiation intercepted on shade leaves and the law of non-linear response of leaf stomatal conductance to radiation, and the weighted integral method is developed through introducing the calculus theory. This method registers an accuracy of 95% in simulation of maize canopy conductance, and reduces the error in farmland ET estimation from 9.4% to 2.3%. It provides an effective approach of evapotranspiration estimation from leaf to farmland.

### 【Influence】

This thesis is published on Agricultural and Forest Meteorology, among the top journals of agriculture and forestry sciences, and receives a good appraisal from ICID Former President Luis S. Pereira.

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