

基于MODIS遥感数据计算无定河流域日蒸散

Estimating daily evapotranspiration in Wuding River Basin based on MODIS remote sensing data

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中文摘要:

为研究无定河流域日蒸散分布规律, 应用遥感数据、农业气象站测量数据及Nishida模型等对该流域日蒸散进行了模拟。首先用2001~2002年晴天中国科学院禹城生态试验站Lysimeter测量日蒸散验证模型, 模拟与测量的日蒸散相关系数达到0.61。随后, 用该模型计算了无定河流域日蒸散, 发现无定河流域日蒸散存在较为明显的空间分布规律: 2001~2003年连续3年的8月份日蒸散都表现为东北部蒸散明显小于西南部, 这是因为东北部基本是荒漠而东南部多是农田, 且8月份日蒸散基本在2~5 mm之间变化; 从2001年8月份第222 d日蒸散空间分布看, 无定河主干道两边蒸散显著高于其他位置, 这是由于8月份无定河流域为多雨季节, 河谷土壤水分较高的缘故; 从2002年内变化来看, 不同的土地利用/覆被类型日平均蒸散差别不显著。

英文摘要:

The daily evapotranspiration in Wuding River Basin was simulated based on the Nishida's model with the remote sensing data. First, this model was used at Yucheng Ecological Experiment Station, Chinese Academy of Sciences on sunshine days from 2001 to 2002 to calculate the single point daily evapotranspiration, and the simulated results were compared with the observations from lysimeter. It is shown that the correlation coefficient between the simulated data and the observations is 0.61. The model was used to simulate the daily evapotranspiration in Wuding River Basin and the result shows that there exists obvious spatial variation of evapotranspiration where the daily evapotranspiration values in the northeast are less than that in the southwest evidently in August of three years from 2001 to 2003. As is well known, there are a lot of desert in the northeast and plenty of farmlands in the southwest. From the spatial distribution on the 222nd day of 2001, it can be found that the evapotranspiration along the valley of the Wuding River is higher than other parts, due to the relative abundance of soil moisture. In addition, the differences of the average daily evapotranspiration of different land use/coverage types are not significant.

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