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目次

盘锦芦苇湿地水热通量计算方法的比较研究

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摘要 利用2005年7月盘锦芦苇湿地生长旺季的小气候梯度系统30 min观测资料和开放式涡动相关系统10Hz原始观测资料,比较并分析了廓线法、波文比能量平衡法与涡动相关法计算的芦苇湿地生态系统水热通量。结果表明:
廓线法与波文比能量平衡法计算的芦苇湿地生态系统水热通量与涡动相关法得到的芦苇湿地生态系统水热通量具有较好的相关性,但是涡动相关法存在能量不平衡。分析盘锦芦苇湿地生态系统水热通量的日变化发现,能量平衡各分量基本上以正午为中心,呈倒“U”型分布。用波文比法计算得到的芦苇湿地生态系统日感热通量最大值为164.25 W.m-2,日潜热通量最大值为294.18 W.m-2。降雨之后,芦苇湿地生态系统水热通量都有所增加,尤其是潜热通量增加显著,且峰值出现时间提前。

关键词 芦苇 湿地 微气象 水热通量 廓线法 波文比能量平衡法 涡动相关法

分类号

Model comparisons for estimating water and heat fluxes of reed wetland ecosystem in Panjin

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Abstract Model comparisons for estimating water and heat fluxes of reed wetland ecosystem in Panjin were done among Profile gradient method,Bowen ratio energy balance method(BREB) and Eddy covariance method (EC),based on the data from July 1 to July 31,2005 by open-path eddy covariance system(Li-7500,Li-cor Inc,USA) and the micro-climate gradient observation system.The results showed that there was a consistency of the sensible and latent heat fluxes estimating by Profile gradient method,Bowen ratio energy balance method and Eddy covariance method,whereas the Eddy covariance method had an energy imbalance.In July,latent heat fluxes played an important role in reed wetland ecosystem.The daily maximal sensible and latent heat fluxes calculating by BREB were 164.25 W·m~(-2) and 294.18 W·m~(-2),respectively.Energy balance components took on invers"U"shapes according to their diurnal changes.After rain,the value of water and heat fluxes in reed wetland ecosystem increased and the peak value appeared ahead of time.

Key words Reed wetland Microclimate Water and heat fluxes Profile gradient method Bowen ratio energy balance method Eddy covariance method

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