

长白山阔叶红松林能量平衡和蒸散

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Energy balance and evapotranspiration in broad-leaved Korean pine forest in Changbai Mountains.

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全文: PDF (802 KB) HTML (1 KB) 输出: BibTeX | EndNote (RIS) 背景资料

摘要

利用开路涡动相关系统的连续观测结果,分析了长白山阔叶红松林2008年能量平衡各分量和蒸散量的特征,并对生长季和非生长季能量各分量和蒸散量的差异进行了比较.结果表明:该观测系统能量闭合度为72%,处于国际同类观测的中等水平;能量各分量日、季差异显著,生长季森林生态系统最主要的能量支出项为潜热通量,约占可用能量的66%,非生长季最主要的能量支出项为感热通量,约占可用能量的63%.长白山阔叶红松林2008年蒸散量为484.7 mm,占同期降水量(558.9 mm)的87%,证实森林蒸散耗水是我国北方温带森林最主要的水分支出项.

关键词: 涡动相关 能量平衡 蒸散 阔叶红松林

Abstract:

Based on the continuous measurements of an open-path eddy covariance system, this paper analyzed the characteristics of energy balance components and evapotranspiration in a broad-leaved Korean pine forest in Changbai Mountains in 2008, as well as the differences of energy balance components and evapotranspiration between growth season and dormant season. For the test forest, the year-round energy balance closure was 72%, being at a medium level, compared to the other studies in the Fluxnet community. The energy balance components had significant differences in their diurnal and seasonal variations. In growth season, turbulent energy exchange was dominated by upward latent heat flux, accounting for 66% of available energy; while in dormant season, the turbulent energy exchange was dominated by upward sensible heat flux, accounting for 63% of available energy. The accumulated annual evapotranspiration in the study site in 2008 was 484.7 mm, occupying 87% of the precipitation at the same time period (558.9 mm), which demonstrated that evapotranspiration was the main water loss item in temperate forests of Northern China.

Key words: eddy covariance energy balance evapotranspiration broad-leaved Korean pine forest

引用本文:

. 长白山阔叶红松林能量平衡和蒸散[J]. 应用生态学报, 2011, 22(03): 607-613.

. Energy balance and evapotranspiration in broad-leaved Korean pine forest in Changbai Mountains.[J]. Chinese Journal of Applied Ecology, 2011, 22 (03): 607-613.

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