

研究论文

重庆山地月平均气温分布式模拟研究

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摘要:

利用月平均气温物理经验统计模型,结合重庆市及周边51个气象站1961—2000年常规气象观测资料和重庆市1:25万DEM数据,充分考虑地形(海拔、坡度、坡向和地形遮蔽)、太阳辐射、长波有效辐射等因素对气温的影响,完成了复杂地形下重庆市山地100 m×100 m分辨率月平均气温空间分布的模拟。模拟结果能较好地反映气温的宏观分布趋势和局地分布特征,月气温模拟平均绝对误差最大为0.40℃,全年平均为0.21℃。采用交叉验证、个例年验证和野外考察资料验证对模拟结果和模型性能进行了多方面的考察,结果表明:交叉验证误差全年平均为0.26℃;个例年验证误差全年平均为0.30℃;8个野外考察点验证各月误差总体小于1.0℃。

关键词: 重庆市;月平均气温;DEM;空间分布

Distributed Modeling of monthly mean air temperature of Rugged Terrain of Chongqing

Abstract:

Based on DEM data of 1: 250 000 scale and routine meteorological data of 51 stations in and around Chongqing municipality from 1961-2000, a physically based empirical model for monthly mean air temperature simulation is set up. The model give an all-sided consideration on terrain (altitude, slope, aspect, terrain-shielding), solar radiation and effective radiation effects on temperature. Spatial distribution map with resolution of 100 m × 100 m of monthly mean air temperature of rugged terrain of Chongqing municipality are generated. The results can well reflect the macro and local temperature distribution characteristics and the maximum mean absolute bias error is 0.40℃ for monthly temperature simulation and the annual average error is 0.21℃. Tests carried by cross-validation, case year data and field investigation data give that the annual average error of cross-validation is 0.26℃, case year test is 0.30℃ and the overall monthly average error of field investigation is less than 1.0℃, which shows that the model has good performance in spatial and temporal monthly temperature simulation.

Keywords: Chongqing Monthly mean air temperature distributed modeling

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