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论文

漳卫河流域水文循环过程对气候变化的响应

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摘要:

气候变化对我国各地区水资源影响的时空格局变化,是气候变化影响评估的重要内容。论文以漳卫河为研究流域,采用线性回归法、Mann-Kendall非参数检验等方法,分析了1957—2001年的水文气象要素变化特征;基于数字高程模型、土地利用和土壤类型等资料,建立了SWAT分布式水文模型,验证了SWAT模型在该流域的适用性;根据IPCC第四次评估报告多模式结果,分析了IPCC SRES-A2、A1B、B1情景下21世纪降水、气温、径流、蒸发的响应过程。结果表明漳卫河流域未来2011—2099年降水量变化较基准期呈现出增加趋势,年平均气温较基准期也呈现出显著的上升趋势,各年代径流量较基准期将出现先减少后增大的态势。

关键词: 漳卫河流域 气候变化 水文循环 SWAT模型

Simulated Hydrologic Responses to Climate Change of the Zhangweihe River Basin

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Abstract:

The climate change impact on water resources of the temporal and spatial pattern in China’s various regions is an important aspect of climate change impact assessment. In this paper, for the Zhangweihe River Basin,the linear regression and Mann-Kendall non-parametric test methods were used to analyze the change characteristics of the hydrological and meteorological elements. Then the distributed hydrological model SWAT was established based on the digital elevation model, land use and soil type data,and the applicability of SWAT model in the basin was verified. Finally the precipitation, temperature, runoff and evaporation response process was analyzed based on the IPCC AR4 multi-mode climate models under different GHG emission scenarios(SRES-A2,A1B and B1) in the 21st century. The results will provide scientific basis for Zhangweihe River Basin and important reference value for the socio-economic sustainable development of North China.

Keywords: Zhangweihe River Basin climate change water cycle SWAT Model

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