

研究短论

## 21世纪黄河流域上中游地区气候变化趋势分析

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**摘要** 气候变化预估常用的全球气候模式(GCM)难以提供区域或更小尺度上可靠的逐日气候要素序列,针对这一问题,应用统计降尺度模型(statistical downscaling model, SDSM)将HadCM3的模拟数据(包括A2、B2两种情景)处理为具有较高可信度的逐日站点序列。以1961-1990年为基准期,分析了21世纪黄河流域上中游地区未来最高气温、最低气温与年降水量的变化。在A2、B2两种气候变化情景下,日最高气温、日最低气温均呈升高趋势;但A2的变化较显著,日最高气温的升高趋势在景泰站最明显,日最低气温的升高趋势在河曲站最显著。流域平均的年降水量变化范围为-18.2%~13.3%。A2情景下降水量增加和减少的面积基本相等,宝鸡站降水量增加最多;B2情景下大部分区域降水减少,西峰镇降水量减少最显著。

**关键词** [黄河流域](#) [统计降尺度](#) [最高气温](#) [最低气温](#) [降水量](#)

分类号

## Trends of Climate Change for the Upper-Middle Reaches of the Yellow River in the 21st Century

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**Abstract** Considering the lack of spatial and temporal accuracy, poor reliability of global climate models (GCM) at regional or local scale, a statistical downscaling model (SDSM) is used to generate daily weather data. With SDSM, the daily series of HadCM3 outputs under the A2 and B2 scenarios were downscaled to the stations. The future trends of annual precipitation, daily maximum (TMAX) and minimum temperatures (TMIN) in the upper-middle reaches of the Yellow River were analyzed on the basis of the reference period of 1961-1990. Daily TMAX and TMIN both show increasing trends under the A2 and B2 scenarios, but the increment is more distinct under the A2 scenario. The increasing trends of TMAX at Jingtai station and TMIN at Hequ station are the most remarkable. The increment in annual precipitation in the basin ranges from -18.2% to 13.3%. Under the A2 scenario, the areas with an increasing trend and a decreasing trend are almost equal, and the largest increment occurs at Baoji station. Under the B2 scenario, the annual precipitation shows a decreasing trend in most parts of the basin, and the largest reduction appears at Xifengzhen station.

**Key words** [the Yellow River basin](#) [statistical downscaling](#) [maximum temperature](#) [minimum temperature](#) [precipitation](#)

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