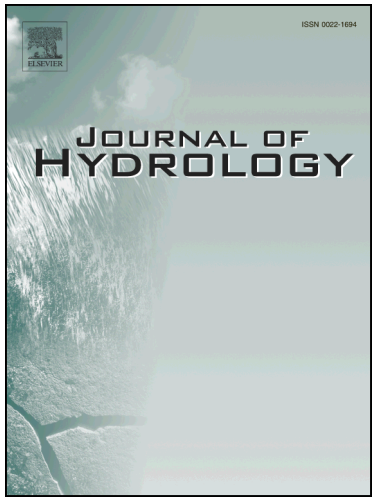

Research papers

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An improved bias correction method of daily rainfall data using a sliding window technique for climate change impact assessment

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Abstract

Regional climate models (RCMs) are used to downscale the coarse resolution General Circulation Model (GCM) outputs to a finer resolution for hydrological impact studies. However, RCM outputs often deviate from the observed climatological data, and therefore need bias correction before they are used for hydrological simulations. While there are a number of methods for bias correction, most of them use monthly statistics to derive correction factors, which may cause errors in the rainfall magnitude when applied on a daily scale. This study proposes a sliding window based daily correction factor derivations that help build reliable daily rainfall data from climate models. The procedure is applied to five existing bias correction methods, and is tested on six watersheds in different climatic zones of India for assessing the effectiveness of the corrected rainfall and the consequent hydrological simulations. The bias correction was performed on rainfall data downscaled using Conformal Cubic Atmospheric Model (CCAM) to 0.5° × 0.5° from two different CMIP5 models (CNRM-CM5.0, GFDL-CM3.0). The India Meteorological Department (IMD) gridded (0.25° × 0.25°) observed rainfall data was considered to test the effectiveness of the proposed bias correction method. The