

Changes in diurnal temperature range in Bangladesh during the time period 1961-2008

Abstract

Diurnal temperature range (DTR) is a meteorological indicator independent of internal climate variation and therefore, considered as a signature of observed climate change. It has been observed that global averaged DTR has decreased significantly in the last fifty years. However, the change in DTR has regional and seasonal characteristics. A study has been carried out in this paper to analyze the spatial and seasonal patterns in the trends of DTR in Bangladesh. Daily temperature data from 18 stations for the time period 1961-2008 has been used for the study. The result shows that both mean minimum and mean maximum temperatures of Bangladesh have increased significantly at a rate of 0.15. °C/decade and 0.11. °C/decade, respectively. However, the increase of minimum temperature compared to maximum temperature is not high enough to cause a significant change in average diurnal temperature range in Bangladesh. Seasonal DTR trends show a decrease in winter and pre-monsoon DTR, and an increase in monsoon DTR. Spatial distribution of DTR trends shows an increase of annual DTR in the southeastern coastal stations and decrease in the northern stations of Bangladesh. Significant negative relation between rainfall and DTR is observed in Bangladesh. Regression analysis shows that an annual increase of 1% of rainfall is correlated with a decrease of DTR by 0.1. °C.