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Short Comminucation

Temperature trends over Vaigai basin, Tamil Nadu

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The global increase in temperature during the past century is probably the most widely discussed issues of climatic change in the recent decade. Statistics from India suggest a rapid piling up of warming in the last century, and there are significant differences at the regional level (Rupa Kumar *et al*. 2003). India has several reasons to be concerned about climate change. Being a developing country and primarily dependent on climate sensitive factors like agriculture and forestry, which account for a major portion of its GDP and also has the low financial adaptive capacity (Patnaik and Narayanan 2009). The number of rainy days has been decreased up to 32 per cent and the amount of rainfall has reduced by 9.8 per cent from their respective means in Tamilnadu (Jainand Kumar,2012). Ashok Kumar *et al*. (2013) have reported increasing trend in maximum temperature and rainy day in Nagapattinam district of Tamil Nadu. Madurai is one among the rapidly urbanising city of Vaigai basin, which is slowly turning to an industrial hub and a chief economic growth centres.

Monthly maximum and minimum temperature data for 112 years (1901–2012) for the three stations (Dindigul, Madurai and Ramanathapuram) collected from the India Water Portalwere used to find out the potential changes in temperature of Vaigai basin. The mean annual temperature for 12 years (1901 – 2012) along with the 5-year running meanis plotted to identify the trend in temperature (Fig.1).

The mean annual temperature of Dindigul, Madurai and Ramanathapuram has increased by 1.4°C, 1.3°C, 1.3°C respectively since the last century. These values are about1.8 times greater than the global rise in mean temperature (0.74 °C).The mean annual temperature for the second time period (1981-2012) has increased by about 0.6 °C which is more than 50 per cent of the total change in the last century. The

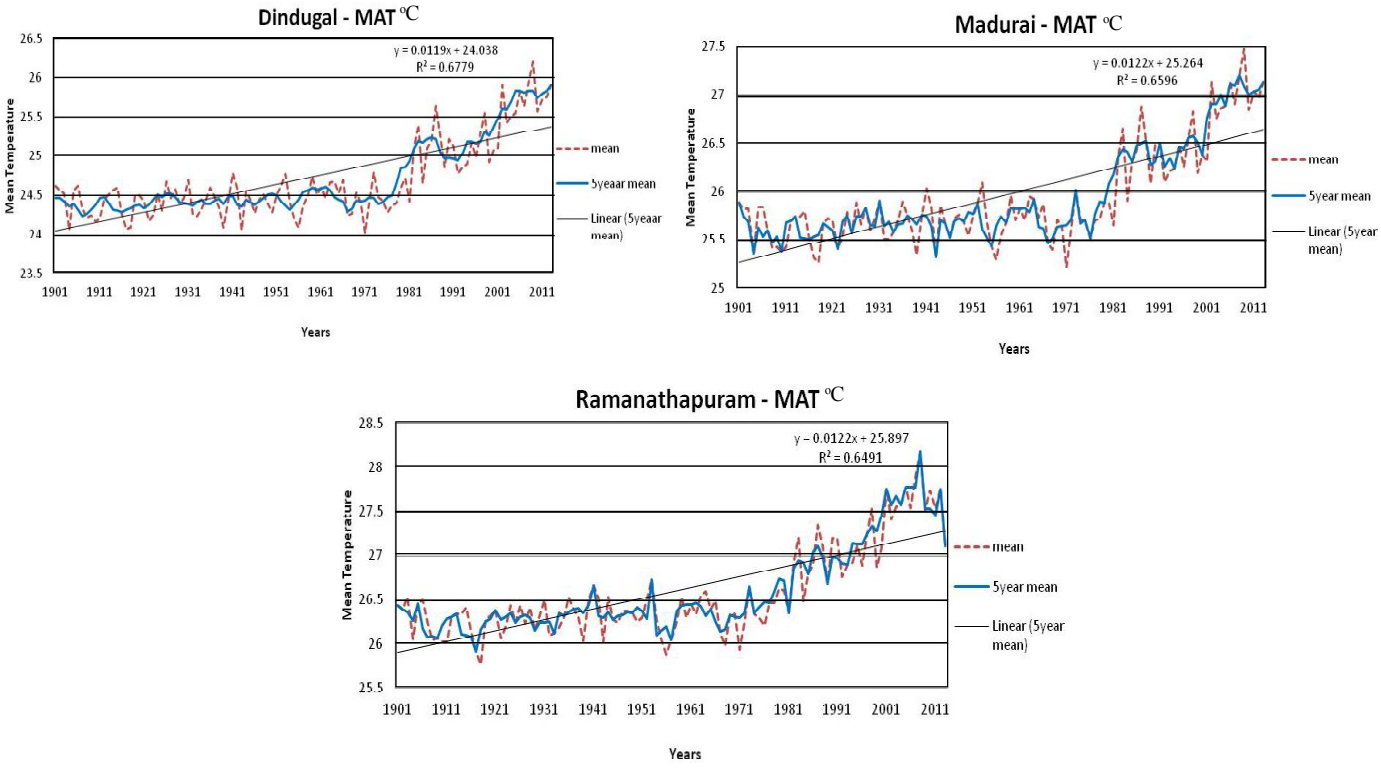

Fig. 1: Linear trends and 5-year moving average of mean annual temperature of three stations of Vaigai basin

period during 1981 to 2012 has higher intensities of escalating temperatures than the period 1951–1980.

There is a sudden shift in temperature between the years 1975-1980 and thereby a rapid rise in temperature in all the districts of the basin (Fig. 1). These results are consistent with the previous studies, the increasing trend tendencies are consistent in asian countries like India and China (Yue and Hashino, 2003). This shift and the rapid increase of temperature during the last three decades along with the decrease in the rainy days is a strong evidence to the changing climate. There are many local factors contributing to the change such as, rapid industrialisation, reluctance to practice agriculture, introduction of chemical fertilizers and many related global factors.

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