

EVIDENCE FOR CLIMATE WARMING IN SOME NATURAL RUBBER GROWING REGIONS OF SOUTH INDIA

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Long-term temporal changes were analyzed with respect to important climatic factors influencing rubber cultivation in the traditional rubber growing regions of India. Rainfall, temperature and sunshine hours, being the major climatic factors influencing rubber growth and yield, were analyzed at four rubber research stations in the traditional rubber growing regions of Tamil Nadu, Kerala and Karnataka having daily datasets ranging from 11 to 53 years. No significant trend was noted in the annual rainfall amount and total number of rainy days over 53 years at Kottayam. Annual maximum and minimum temperature trends were not significant for stations other than Kottayam. Increase in maximum temperature was observed in Kottayam while minimum temperature decreased in Parliar and Nettana. The daily bright sunshine hours showed a decreasing trend in Kottayam. Extreme rainfall events increased in Padiyoor. Long-term decadal means in maximum temperature showed an increase of 2°C over 53 years in Kottayam while it was 0.5 °C in Parliar. Increase in temperature, decrease in bright sunshine hours and skewed rainfall were observed at some of the traditional rubber growing locations.

Keywords: Climate, Mann-Kendall, Natural rubber, Seasons, Sunshine hours, Trends.

INTRODUCTION

Information on long-term trends in climatic factors influencing rubber cultivation is important in the context of climate change. This can help in improving management strategies in order to cater to such long-term changes. Kerala, Tamil Nadu and Karnataka, the southern states of the Indian peninsula, comprising 95% of the total rubber production in India, were chosen for the study. It mainly focuses on the variability in climatic parameters over temporal scales.

Earlier it was found that local changes were different from the large spatial scale

averages in Kerala (Indrani and Abir, 2009). In 2004, a rise in maximum temperature by 0.4 °C affected black pepper, cocoa and cardamom in the absence of soil moisture (Rao, 2007). Monsoon rainfall showed a decreasing trend over East Madhya Pradesh and adjoining areas, Northeast India and parts of Gujarat and Kerala (Kumar *et al.*, 2002). Krishnakumar *et al.* (2008) noted that rainfall and number of rainy days showed declining trends during southwest monsoon (June-September) at four different locations in Kerala with a maximum declining rate of 22.0 mm/year. Rise in maximum and minimum temperature was noticed for the