Trend analysis of annual temperature of Colombo - A case study to assess climate change in the commercial capital of Sri Lanka.

M.K.N.P. Moragoda and D.S.N. Munasinghe

Department of Zoology and Environmental Management, University of Kelaniya, Kelaniya.

The impact of climate change on Mean Annual Air Temperature has received a great deal of attention by scholars worldwide. Many studies have shown that changes in annual temperature are becoming evident on a global scale. Present study focused on detecting trends in average maximum values of annual and monthly temperature for the city of Colombo in Sri Lanka. In order to detect and to estimate trends of temperature change in Colombo, trend analyses applying the non-parametric Mann–Kendall test for trends were carried out for the Colombo Meteorological Station. The null hypothesis was tested at 95% confidence level on the time series data, for the period 1960–2014 (54 years) using Addinsoft's XLSTAT 2013 software package. The resultant Mann- Kendall test statistic (S) indicated how strong the trend in temperature is and whether it is increasing or decreasing.

According to the results, for the period 1960–2014, statistically significant ($p<0.05$) increasing trends were observed over time. The mean annual temperature of the city of Colombo showed an average upward increment of 0.0009756^{0}C/Yr. Linear trend line plotting for Mean monthly temperature suggested that all the months indicated statistically significant ($p<0.05$) increasing trends, except for April. Months of October, November, December and January showed the highest increments of mean maximum monthly temperature ranging from 0.016 to 0.017^{0}C/Yr.

This study revealed that Colombo has an increasing trend of mean annual maximum temperature and supports findings from elsewhere around the globe that the average temperature of cold extremes i.e. Months of October, November, December and January are increasing.

Key words: Colombo - Sri Lanka, Temperature Trend Analysis, Mann-Kendall, non-parametric statistical test, climate change