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An investigation of ambient air temperature trends at Hambanthota-Angunukolapelassa and Nuwara-Eliya–Thalawakelle

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The primary objective of this study was to compare the rate of changes of the mean minimum and mean maximum temperatures at Hambanthota -Angunakolapelassa and Nuwara-Eliya –Thalawakelle and investigate whether these variations were due to enhanced greenhouse effect or urbanization effect or any other local effect. Since this study was aimed to compare the temperatures at two nearest stations, Hambanthota – Angunakolapelassa and Nuwara-Eliya - Thalawekelle were selected. The other reason is that Angunakolapelassa and Thalawakelle are semi-urbanized rural areas compared to Hambanthota and Nuwara-Eliya, which are highly urbanized cities over past few decades with rapid growth of population. The data for Hambantota and Nuwara-Eliya were taken from the Department of Meteorology and the data for Angunukolapelassa was obtained from agro-meteorological station which belongs to the Department of Agriculture. The data for Thalawakelle was obtained from the agro-meteorological station at Tea Research Institute, Thalawakelle.

Trend analyses were performed by filtering the time series with a low-pass Gaussian filter and linear regression analyses were also carried out to quantify the changes. Data were analyzed in monthly basis and annual basis within the time periods of 1976 to 2000 for Hambanthota - Angunakolapelassa and 1944 to 2000 for Nuwara-Eliya – Thalawekelle. The analyses were indicated that the mean minimum and mean maximum temperatures have been increasing in most of the- selected stations by varying rates in most of the months, except for the mean monthly minimum air temperatures at Thalawakelle. Minimum temperatures at Nuwara-Eliya have rapidly been increasing over the past few decades. These trends were statistically significant. This could probably be due to the fact that the rapid urbanization over the past few decades in Nuwara-Eliya in addition to the enhanced greenhouse effect. It was noted that the Angunakolapelassa maximum temperatures were little higher than the Hambantota maximum temperatures. This could probably be due to the exposure to the sea of Hambantota station. The rate of increase of minimum temperatures at Angunukolapelessa is higher than that at Hambantota. This also indicates the influence of microclimate effect at Hambantota station.

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