Changing Tropospheric Temperature Trends over Two Tropical Urban Stations in India

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Long-term trends in air temperature have been examined for two stations viz. Delhi and Kolkata in the Indo- Gangetic plain using radiosonde ascents data for the period of 1973 to 2008 at various pressure levels up to 150 hPa in the troposphere. These results show increasing temperature trends up to about 500 hPa at both the stations except at 925 hPa at Kolkata, where it is negative. A comparison with a previous work brings out an important feature that the trends at these stations in India have been changing from negative to less negative and to positive as the period of study changes from 1958-85 to 1970-85 and to the present. The present positive trends are also higher than the average trends found for the tropical region (30^oN to 30^oS) but nearer to the model values up to about 500 hPa.

We have also tried to find linkages of these temperature trends with solar flux, changes in the rainfall, trace gases like ozone and aerosol content. Most of these parameters do not show any strong correlations but some linkages are observed. Comparison of dust and sulfate (GOCART Model Calculation Experiment) shows higher dust content over Delhi compared to Kolkata while sulfate values are higher over Kolkata. These results will be discussed in detail during the presentation.

Keywords: temperature trends; lower troposphere; tropics; warming; urban.

References

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