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Title:

IITM Indian Regional Monthly Surface Air Temperature data set

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Raw Data Source:

India Meteorological Department

Data Period:

1901 - 2007

Accompanying Data Files:

NEW-TXREGION.TXT
NEW-TNREGION.TXT

Data Format:

Data are arranged regionwise, with a header record for each region followed by 107 data records each record containing data for one year (12 monthly values). The following FORTRAN code extract leads to monthly mean maximum/minimum temperature in degrees Celsius (data have a resolution of up to 0.1C).

```
do is=i,nsets
  read(5,1)nyears,details
1 format(i3,a)
  do iy=1,nyears
    read(5,2)index,iyear,code,(rf(is,iy,m),m=1,12)
2 format(a5,i4,a1,12f6.1)
  enddo
enddo
```

The character variable 'details' contains the following:

Identification code for the region (index);
Name of the region;

Data Description:

Monthly temperature data used in the present All-India and homogeneous regions, viz., Western Himalaya (WH), Northwest (NW), North Central (NC), Northeast (NE), West Coast (WC), East Coast (EC) and Interior Peninsula (IP) temperature series, over a network of 121 stations, are the same as those used by Pant and Rupa Kumar (1997) for the period 1901-1990, which were originally sourced from the monthly weather records of the India Meteorological Department (IMD). The data have then been updated for the period 1991-2007 from the Indian Daily Weather Reports (IDWRs) published by the IMD.

In order to project a more realistic temperature climatology onto the limited data used, climatological normals of monthly mean maximum and minimum temperatures for the period 1951-80 for 388 well-spread stations have been taken from IMD (1999). To prepare spatially well-representative means of temperatures for the above-mentioned homogeneous regions, the following procedure has been adopted. The available station temperature data have been converted to monthly anomaly time series for the period 1901-2007, with reference to the respective station normal values. The stationwise monthly temperature anomaly time series are first objectively interpolated onto a $0.5^\circ \times 0.5^\circ$ grid for the entire period of 1901-2003. Then, the climatological normals (1951-80) of temperature at 388 stations have been interpolated onto the same grid, resulting in high-resolution grid point temperature climatology for the country. The gridded monthly anomaly values are then added to the gridded climatology based on 388 stations, finally producing a long-term gridded data set of actual temperatures for India for the period 1901-2007. All-India and regional monthly temperature series are computed by simple averages of the constituent grid point data of the respective regions. For more details see Kothawale and Rupakumar (2005). The regions have been delineated based on their distinct climatic and geographical settings.

Key References

- 1) Rupa Kumar K., Krishna Kumar K., Pant G.B., 1994. Diurnal asymmetry of surface temperature trends over India. *Geophysical Research Letters*, 21, 677-680 pp.
- 2) Pant, G.B. and Rupa Kumar, K., 1997. *Climates of South Asia*. John Wiley & Sons, Chichester, 320 pp.
- 3) IMD, 1999. Tables of Climatological Normals : 1951-80, India Meteorological Department (IMD), Pune, 350 pp.
- 4) Kothawale, D.R. and Rupa Kumar, K., 2005. On the recent changes in surface temperature trends over India, *Geophys. Res. Lett.*, Vol. 32, L18714
- 5) Kothawale D.R., Revadekar J.V., Rupa Kumar K. (2010) Recent trends in pre-monsoon daily temperature extremes over India, *Journal of Earth System Science*, 119, February 2010, 51-65
- 6) Kothawale D.R., Munot A.A., Krishna Kumar K. (2010): Surface air temperature variability over India during 1901-2007, and its association with ENSO *Climate Research*, 42, June 2010, 89-104, doi: 10.3354/cr00857
- 7) Kothawale D.R., Krishna Kumar K. and Srinivasan. G. (2012) Spatial asymmetry of temperature trends over India and possible role of aerosols. *Theor. Appl. Climatol* (Published online) DOI10.1007/s00704-012-0628-8

Feedback:

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