India - Development of a high resolution daily gridded temperature data set for the Indian region, 1969-2005

National Climate Centre - India Meteorological Department

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Overview

Identification

ID NUMBER
ind-cghr-imd-1969-2005-v01

Version

VERSION DESCRIPTION

PRODUCTION DATE
2005

Overview

ABSTRACT
To meet the requirements of the research community, a high resolution daily gridded temperature data set for the Indian region was developed. For this purpose, daily temperature (maximum, minimum and mean) data of 395 quality controlled stations for the period 1969-2005 were considered. We have used a modified version of the Shepard's angular distance weighting algorithm for interpolating the station temperature data into 10 Lat X 10 Long grids.

We evaluated the temperature data set using the cross validation to estimate errors associated with the interpolation technique used and found the root mean square errors are less than 0.50C. The present data set was also compared with another high resolution monthly data set. Correlations between the two data sets are more than 0.8 over most parts of the country. An analysis was also made on the data set, demonstrating its possible applications. Using the data set, mean frequency of cold and heat waves, temperature anomalies associated with the monsoon breaks have been presented. The present daily temperature data set will be made available to the research community.

IMD High resolution 1By1 degree gridded daily temperature data (1969-2005)

This data is arranged in 32x35 grid points.

Lat 6.5N, 7.5N ... 36.5, 37.5 (32 Values)

Long 66.5E, 67.5E ... 99.5, 100.5 (35 Values)

Maximum Temperature, Minimum Temperature and Mean Tempareture gridded data are in the directories viz. MaxT ,MinT and MeanT.

Each directory contains 37 binary data files and 37 ascii (text) data files one each for 37 years (1969-2005). The data file is named as MAXT1969.grd, MAXT1969.txt etc. The relevant Grads control file, are also included.

For leap years, data for 366 days are included. The unit of temperature is in Celsius. Sample Fortran and C programs to read the binary data are given below.

Coverage

GEOGRAPHIC COVERAGE
National

Producers and Sponsors

PRIMARY INVESTIGATOR(S)

Name	Affiliation
National Climate Centre	India Meteorological Department

Metadata Production

METADATA PRODUCED BY

Name	Abbreviation	Affiliation	Role
Centre for Global Health Research	CGHR	St. Michael's Hospital; University of Toronto	Metadata Producer

DDI DOCUMENT VERSION

Version 1.0. This is the very first version of this DDI document.

DDI DOCUMENT ID

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Sampling

No content available

Questionnaires

No content available

Data Collection

Data Collection Dates

Start	End	Cycle
1969	2005	N/A

Data Collection Mode

Face-to-face [f2f]

DATA COLLECTION NOTES

India Meteorological Department (IMD) at present maintains around 550 surface observatories in the country, where daily surface air temperature observations (maximum and minimum) are taken. These data are compiled, digitized, quality controlled and archived at the National Data Centre (NDC) of IMD. However, in the archival, digitized data from only 1969 are available. The data prior to 1969 are still in manuscript form. We have considered the data for the period 1969-2005 for developing the regional gridded temperature data set.

Data Processing

Data Editing

From the list of stations for which daily data are available, only those stations which have minimum 10 years of data, at least for 300 days in a year during the period 1971 to 2000, were selected for further analysis. The data were subjected to basic quality checks like rejecting values, greater than exceeding known extreme values, minimum temperature greater than maximum temperature, same temperature values for many consecutive days etc. (Gleason, 2002). Unusual high values were flagged by putting a filter which allowed values only in the range mean (1.76+ 0.8N) standard deviation, (Sellers and Liu (1988)), for further data analysis. The flagged values after the above checks were further examined for spatial continuity before rejection. After putting these quality checks, 395 stations were selected for the development of the gridded data set. The network of stations considered for the analysis is shown in Fig.1. The stations are well distributed over the country.

Data Appraisal

No content available