Hourly Atmospheric Temperature Readings by the Dry and Wet Bulbs of the Self-Recording Thermograph of the Automatic Weather Station at Armagh

The Board of Trade and the Meteorological Committee of the Royal Society set up seven Automatic Weather Stations in Great Britain and Ireland in 1868. The data were recorded continuously using photography. The Armagh station operated from 1868 until 1883 when it was withdrawn following T.R. Robinson's death. The data was initially published quarterly in diagrammatic form but later, from 1874, it was published monthly in tabular form. The latter is convenient for compilation on computer file.

Here we give the data files for the dry-bulb and wet-bulb thermographs for the ten years 1874-1883. Diurnal temperature and relative humidity curves for each day of the year for the ten years were calculated. As the shapes of these curves were highly variable from day to day and month to month, we formed mean daily curves by averaging different intervals centred on the day in question. In this way, mean diurnal curves were determined for each day of the year, averaged over the ten years covered by these data.

Files:

/temperature/hourly-values/dry/1874, 1875, etc Hourly temperatures for each day in monthly blocks for each year degs F from SRT

/temperature/hourly-values/dry/Drytemp_1874, etc similar separated by spaces

/temperature/hourly-values/dry/mean-t Mean temperature for each hour in 24-hour day averaged over the ten years 1874-1883, in order of day number (1-365), degs F

/temperature/hourly-values/dry/mean-tc Same in degs C

/temperature/hourly-values/dry/mean-7d Same averaged over the seven days centred on each day in the year. Three days before, the day itself and the three days after.

/temperature/hourly-values/dry/mean-9d same for nine days.

/temperature/hourly-values/dry/mean-15d same for fifteen days This was the set of diurnal curves used to correct the twice-daily Spot and Dry-bulb mean temperatures (Series I and III) for changes in the time of observation.

/temperature/hourly-values/dry/tsp-tm-diff From the mean (15 day) diurnal temperature curves, the following parameters have been determined for each day of the year: Maximum temperature, Minimum temperature, Mean of Maximum and Minimum, Daily Temperature Range, mean of 24 hourly temperatures, plus the difference (Max+Min)/2 – (tam+tpm)/2 for each hour (1-12 hours) of the day. These differences are the corrections to be applied to the mean of twice-daily spot and dry-bulb temperatures to convert to the equivalent of the mean of maximum and minimum temperature. Degs C. (see ARM/MET/001066, section5).

/temperature/hourly-values/wet/Wet-1874, Wet-1875 etc Hourly Wet-bulb readings from the SRT for 1874 to 1883. Degs F. These are required to form the mean diurnal relative humidity curves used for the correction of the twice daily wet and dry values for the time of observation. See /humidity.

References:

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Report of the Meteorological Committee of the Royal Society. (1867) A description of the self-recording instruments recently erected by the Meteorological Committee of the Royal Society in various parts of the United Kingdom.

Scott, R.H. 1874-1883, Hourly Readings from the Self-Recording Instruments at the Seven Observatories in connection with the Meteorological Office. Published monthly 1874-1880 and quarterly 1881-1883.

ARM/MET/001064, ARM/MET/001065, ARM/MET/001066, ARM/MET/001070