Armagh Observatory Temperature Series I
Spot temperatures

Series I atmospheric temperature readings were taken several times a day from 1795, usually including readings near midday, in the morning and in the evening. A single standard thermometer by Troughton, reading degrees Fahrenheit, is believed to have been employed for the whole of the early part of the series 1795-1825 and again from 1833 until 1859 during the second part of the series. From 1859 until Series I ended in 1882 a second standard thermometer from Kew was employed. Both thermometers were found to be accurate to within 0.2 degs F. In view of this no adjustments for instrumental error have been applied to readings from these two thermometers.

Over the period during which observations have been recorded, the time of reading is believed to have changed from local (Armagh) time to Dublin (Irish) time and eventually to Greenwich Mean time. Initially, time was given according to astronomical practice (00 hours at midday, not midnight), subsequently according to Civil Time. In the standardisation of temperature series to ascertain mean daily temperature, such shifts in the time of reading are important.

Fortunately, for Armagh Observatory, diurnal temperature curves are available from the period 1868-1883 from the Self-Recording Thermograph operated there by the Board of Trade. A similar set of automatic continuous recording instruments was operated at Valentia Observatory, County Kerry until well past the mid-20th century. A set of mean diurnal temperature curves for Armagh have been established for each day of the year from the hourly readings of the SRT over the ten year period 1874-1883. By adjusting the diurnal curve for a particular day of the year according to the twice daily readings for that day, we can then read off the maximum and minimum temperatures and establish a mean temperature for the day. See the following publications for further details.

References

Air Temperatures at Armagh Observatory, Northern Ireland, from 1796 to 2002; Butler, C.J. et al. Int. J. Climatology 25, 1055-1079 (2005)

Meteorological Data recorded at Armagh Observatory: Vol 6 - Daily, Monthly, Seasonal and Annual Air Temperatures from Series I (1796-1882) including the Dunsink Patch (1825-1833) and Series III (1844-1964), Butler, C.J. et al. Metorological Data from Armagh Observatory, Volume 6. (2005)

Standardisation of Sporadic Temperature Data from the late 18th and 19th Century, Morrell, C. S., Report for University of Surrey, Dept Physics, on work carried out at Armagh Observatory, September 2002-January 2003.

Files

/temperature/spot/daily/raw-verif-degsF-ampm The readings compiled in the daily manuscript records in degs Fahrenheit, morning and evening

/temperature/spot/daily/tsp-tm-diff gives for each day of the year, the following values from the 15-day mean diurnal temperature curves: day no, max, min, mean, DTR, 24hr mean, corrections to be applied to mean of two 12hr separated temperature (spot) readings to match the mean of maximum and minimum for each hour of the day.

/temperature/spot/daily/calibrated-degsC-timecor/sp-eqc1796-1824 The daily mean temperature computed from the mean diurnal temperature curves and twice daily spot readings, corrected for time of reading and exposure (NWS/SS).

/dmeqc1796-1824, dmeqc1834-1882 mean daily temperatures in annual blocks (x-month, y-date)
/sp-eqc1796-1824, sp-eqc1834-1882 mean daily temperatures with day number

/temperature/spot/monthly/mean-mon-sp-c1796-1824, mean-mon-sp-c1834-1882 Monthly mean temperature corrected for time of reading and exposure

/temperature/spot/monthly/mean-mon-sp-c1796-1824 Mean monthly equivalent mean of max and min corrected for time of reading and exposure to what would have been expected in a Stevenson Screen, rather than a North Wall Screen.

/temperature/spot/seas-ann/mean-san-spc1796-1824, mean-san-spc1834-1882
Mean seasonal (Win, Spr, Sum, Aut) and annual mean temperatures from the Spot Temperature Series I.

Archive References

ARM/MET/001064, ARM/MET/001065, ARM/MET/001066, ARM/MET/001072, ARM/MET/001073, ARM/MET/001077