

Wokingham Meteorological Data

Wokingham Climatological Station, Emmbrook, Berkshire.

Annual Report and Introduction, 2013

1. A copy of this report will be placed on the Wokingham Weather web site at www.woksat.info/wwp4.html.
2. Details of the site, instrumentation and publications can be found in the appendix to this annual report. There have been no major changes in instrumentation or routine during the past year.
3. During 2013, a full and complete program of daily climatological observations has been carried out, completing the 38th year of continuous climatological record for Wokingham. In addition to the daily climatological observations taken at 0900 GMT each day, full synoptic observations have been made each day at 0900 and 1500 GMT throughout the year.
4. The records are tabulated and archived by the Hon. Met. Officer, who also makes the observations. During absences data from the Automatic Weather Station (AWS) have been used. All the observations are quality controlled and a high standard of accuracy is achieved. Checks are periodically made against spare and calibrated instruments at the station, as well as comparisons with the data for other stations in the area. In addition to a hand-written log, the data is processed and stored on a home PC.
5. The Town Council have, each month during 2013, been provided with a report entitled Monthly Means and Totals. (For details see appendix). A copy of this report, together with computer generated graphs of temperature, rainfall, sunshine, pressure and wind, were provided to the Town Hall Information Office for dissemination and display. Copies of these, together with, in some cases, a printout of the full daily climatological log, were also provided to interested parties as required. All the publications are also placed in the reference section of the Wokingham Public Library. The data is also placed on the Wokingham Weather web site at: www.woksat.info/wwp1.html
6. The Wokingham data continues to be published in the Climatological Observers Link, where it appears together with data from numerous other U.K. stations. The Wokingham station is also listed in the Register of Weather Stations published by the Royal Meteorological Society and the University of Stirling. Throughout 2013 monthly returns have been submitted to the Environment Agency for onward transmission to the Met. Office. The weather station site at the Emmbrook Junior School was last inspected by the Met Office and Environment Agency inspectors on the 21st April 2010, and was deemed to be in excellent condition.
7. This is the seventh full year of operation at Emmbrook Junior School site. The change in station location from Emmbrook Senior School in 2006 has had negligible effect on the readings.
8. A small bare ground plot has been established at the weather station to obtain 'state of ground' readings. These are taken on a daily basis and are logged together with the other climatological variables for the station. A new 1 metre earth probe, installed in 2012 in order to check the existing 1 metre probe suspected of having drifted off calibration has confirmed the suspicion, the new probe reading about 0.5° lower than the old one on average. Readings from the new probe have now become the station's official 1 metre values. 28th February : the spare 5 inch rain gauge, deployed since the station opened in 2006 outside the enclosure fence, with the intention of it being available for use by the school pupils, was removed at the request of the school. 4th June : the GEM precision calibrated temperature logger was returned to the manufacturer for re-calibration. 16th June to 4th July: temperature calibration check of the AWS HMP45 probe. No change in calibration has occurred over the past two years. 12th July: the grass minimum sheathed glass thermometer #34242 was accidentally broken by a football. Spare minimum #12938 deployed in its stead. 31st October: sudden communication failure with the AWS, caused by an unannounced withdrawal of GSM data service by Vodafone. In the interim, a laptop borrowed from Mr S Burt, was used to retrieve the AWS data on a daily basis. After a new battery was received for my wife's laptop, Mr Burt's one was returned, and this one was used for the daily retrieval. A new COM110 modem was purchased on the advice of Campbell Scientific, the supplier of the AWS, and after setting up by them was installed and became operational on 1st December. This is a GPRS modem with a fixed IP address, and is contacted through a link supplied by a Cellubi airtime plan. During the first month's operation, connection was good on about 80% of occasions, but can be delayed by up to an hour, I suspect due to high useage of the mobile phone mast, on the other 20%, but no data has been lost as a result as the AWS can store over 2 days worth.
9. A lease for the weather station site was renewed by the Wokingham Borough Council at the request of the Town Clerk during 2013, giving us security of tenure for at least another fourteen years.
10. As in the past, the Hon. Met. Officer would like to thank all those who have made possible the continuation of this project. Special thanks go to the Mayor of Wokingham and other members of the Town Council for there solid support, and especially to the Town Clerk, Mrs J Nowecki, and other members of her team. Special thanks must go to the head teacher of Emmbrook Junior School, in whose grounds the climatological station is situated, and thanks too to the other staff and the caretaker, who have given wholehearted support during the year. Thanks also to Mr A Matthias, the headmaster of Emmbrook School, who has expressed his support for the continued presence of the anemometer and anemograph at his school.
11. Finally, it is planned to continue the Met Project in its present form throughout 2014, adding the 39th year to the Wokingham Climatological Record.

B J Burton. FRMetS. Hon. Met. Officer to Wokingham Town Council.
February 2014

Appendix 1.

The Old Climatological Site closed in September 2006. Details of that site may be found in past Annual Introductions.

The Current Wokingham Climatological Site: is located about 350 m Northwest of the old site, in the grounds of The Emmbrook Junior School, Emmbrook Road, Wokingham. The National Grid Reference is (SU) 4,7985 1,7013. The Latitude is 51.4245 degrees North, Longitude 0.8530 degrees West. The altitude of the station raingauge is 44 metres above mean sea level. The site is positioned on a grassed area sloping gently towards the east, where a normally shallow stream, the Emm, flows. The Emm drains northwards through a shallow valley, with the land rising by about 40 metres within 1 km to both the east and west. The site is enclosed by an open chain link fence. The soil at the site is basically a mixed topsoil, probably put there at the time the school was built, with black clay at about 80 cm depth. During wet periods the water table rises to the surface and the ground becomes squelchy with water standing on the surface. During prolonged dry periods the ground contracts markedly, and the soil becomes quite dusty. The general character of the site is semi-urban, although it is on the outskirts of the town. Residential housing borders the site in most directions, at a distance varying from 60 m at the closest, and generally more than 150m. The school buildings, mostly single storey, lay from Southeast around to Southwest, and are 14 m from the enclosure at the closest. The maximum local urban fetch is to the Southeast, where the centre of Wokingham lies, and is about 3.5 km. The urban conurbation of Reading is centred 9 km to the Northwest. The exposure of the site is estimated to be slightly more open than the old site. There is obvious shelter to the east where a number of tall poplar trees act as a wind break. The site conforms to the requirements laid down for climatological stations by the Meteorological Office (Observer's Handbook, Met O 805, HMSO). The site has been inspected and accepted by the Met Office and Environment Agency. From a limited overlap of readings between the old and new site through July to September 2006, there were no pronounced differences in temperature and rainfall.

Instrumentation and Equipment. An inventory for the Wokingham Climatological Station is given below:

Thermometer screen, louvered, ordinary pattern; One	Thermometer screen, louvered, large pattern: One
Thermometer, minimum, alcohol in glass, index, sheathed; Three	Thermometer, maximum, mercury in glass, restriction, sheathed; Two
Thermometer, ordinary, mercury in glass, sheathed; Three	<i>Thermometer, electronic, with data logger (TinyTag); Five</i>
Raingauge, 5 in, Met O Mk2 pattern; Two	<i>Thermometer precision calibrated, electronic; One</i>
Glass rain measure, millimetre graduation: Two	Raingauge, autographic, tilting siphon, MO Mk2; One
Campbell Scientific automatic weather station, comprising CR10X data logger, HMP45 Temperature and humidity probe, Gill aspirated radiation shield, T107 thermistor probe, Heated tipping bucket raingauge, CS100 Setra barometric pressure sensor, Cs-GSM dual band transceiver, Cables and transformers, Associated software. Electronic anemograph, (2 sets), comprising: Anemometer cup generator Mk4, (2), Wind vane, Mk 4g (2); Power supply unit, 240V input, 110V and 55V output; Power supply unit, 240V input, 240V and 50V output; 7 core armoured cable, 100 metres; 8 metre mast, fittings and fixtures; Anemograph. Recorder, (2), plus assorted spares. *Thermograph, bi-metallic, weekly clock; One	
Other instruments, deployed at Cantley Crescent: Barometer, mercury, Kew pattern; One. <i>Microbarograph, weekly clock, Casella; One. Hail Pad, aluminium foil; One. Electronic sunshine recorder, R&D, with Pico AD converter and software; One. Associated PC; One. WindSonic anemometer; One. Associated PC; One. Thies precipitation sensor, one. * Instruments marked thus were taken out of use during 2005. The earth thermometers used at the old station have been replaced by electronic probes at the new one.</i>	

With the exception of those in italics, the instruments conform to the standards laid down by the Meteorological Office. Most of the thermometers have a British Standards Institution certificate, or a Met Office test lab certificate. The TinyTag probes and the HMP45 have been calibrated against the precision probe. The anemometer and wind vane are mounted on the 8 metre mast sited on top of the flat roof of the 2 storey school building at the old site. The exposure is at a height of 15 metres above ground, and the effective height is 10 metres, the international standard height for surface wind measurement. The Sonic anemometer is mounted 5 m above a pitched roof, and 9 m above ground.

The Readings: are taken each day of the year at 0900 GMT. From the thermometers in the louvered screen, exposed at a height of 1.2 metres above ground, values of dry bulb and wet bulb temperature, and maximum and minimum temperature since 0900 GMT the previous day, are obtained. Also read is the overnight minimum temperature at grass tip level and the total precipitation since 0900 GMT the previous day. The electronic thermometers, anemograph, microbarograph, autographic raingauge, psychrometer, sunshine recorder and instruments attached to the AWS maintain a continuous record of air, grass, and earth temperature, wind, pressure, precipitation duration and intensity, humidity and sunshine amount. Readings are entered in a written log as well as on the home PC. Data from the AWS is transferred by GSM link to the home PC. WEF August 2007, hourly mean values of both wind direction and speed have been taken from the sonic anemometer. Wind gusts from the Munro are compared with the sonic, and are used if they are more than 2 knots greater. Monthly, seasonal and annual archives of the data is kept on the main PC, with backup on a second hard drive and recorded on CD.

The Reports. Each month a report entitled Monthly Means and Totals is produced for the Wokingham Town Council. This report forms the basis of the town's official meteorological record. The report consists of the means and extremes for the past month of temperature, air, grass minimum, 30 cm earth and 100 cm earth, and of rainfall, wind, pressure and sunshine. Totals of rainfall are given, along with duration of measurable rain, and of frost. The number of days with air frost, ground frost, snow falling, snow lying at 0900 GMT, thunder, hail and fog is also listed. Comparisons with the 30 year climatological mean and with longer term values for the area are also given. In a section headed 'Notes' brief details are given of aspects of the past month's weather. A second monthly publication listing all the daily readings, is also produced and is made available to anyone interested. On a seasonal basis, four publications per year entitled Seasonal Means and Totals has a similar format to its monthly counterpart. An annual report, giving a detailed breakdown of the past year's readings, is also published in early January. All these reports as well as daily data from the AWS can also be accessed from the Wokingham Weather web site, <http://woksat.info/www.html>.

The Archive. Readings at Emmbrook commenced in January 1976, and then consisted of daily rainfall and maximum and minimum air temperature. Grass minimum and 30 cm earth temperatures were added in November 1979. Continuous wind data commenced in December 1987. Earth temperature at 1 metre was added in July 1989. Daily sunshine was added in 1980, but at first consisted of estimated values based on readings taken at Reading University, at Arborfield and at Easthampstead. This was supplemented by data from an experimental electric sunshine recorder from February 1993. Another electronic recorder, R&D, was installed in Jan 1999, and sunshine data is taken solely from this instrument after that date. Rainfall has been measured in the Wokingham area since 1882, and a complete record of monthly totals since that date is held. Meteorological records have been researched, and a comprehensive set of data for the Wokingham area has been assembled. In addition to rainfall, the series lists monthly means of maximum and minimum temperature back to 1882. Extremes of rainfall and temperature from 1904 onwards are listed. Monthly mean sunshine is from 1908. This data set, called the Wokingham Weather Series, has been processed so that the figures may be compared directly with the readings from the Climatological station at Emmbrook.