

READING ATMOSPHERIC OBSERVATORY

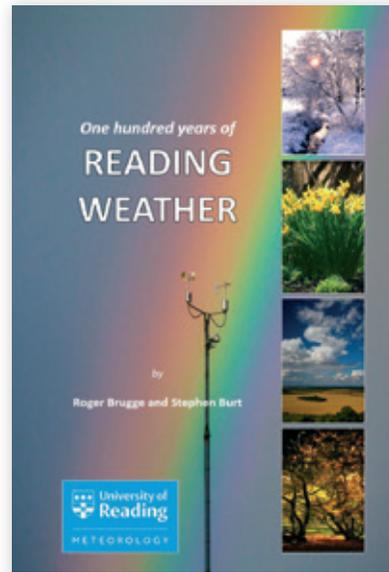
Daily weather observations were first made at the University of Reading over one hundred years ago. Today we have an almost continuous daily record of air temperature, barometric pressure, wind speed and direction and rainfall since 1908, and of sunshine since 1956.

Observations were made at the London Road campus until 1967, and have been made at Whiteknights since 1968. The Atmospheric Observatory on the Whiteknights campus is a centre for atmospheric measurements, micro-meteorological research and meteorological observations: the records are widely used for teaching and research purposes, as well as continuing our long climatological record as a node within the Met Office UK climate network.

Once-daily manual meteorological observations, at 0900 UTC, continue to be made, together with continuous measurements made automatically using sophisticated computer-based logging equipment; most elements are sampled and logged at 1 second intervals. Current observations from the observatory, and more details on the instruments themselves, are available online at www.met.reading.ac.uk/weatherdata; there is also the option to sign up for an automated daily e-mail summary of the previous 24 hours records of temperature, rainfall, sunshine etc.



Image credit: © Stephen Burt



Much more information on Reading's long climatological record is given in our recent departmental publication *One hundred years of Reading weather* by Roger Brugge and Stephen Burt, published in June 2015 as part of the commemorations of the fiftieth anniversary of the Department of Meteorology. More details of the book, and how to order a copy, can be found at www.met.reading.ac.uk/ReadingWeather.html

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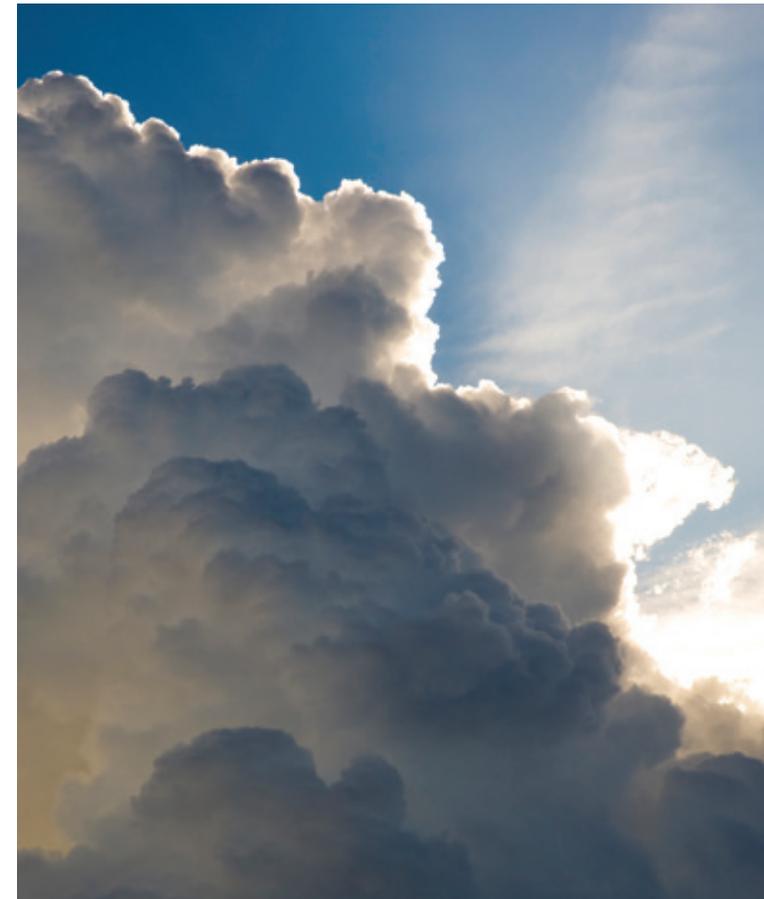
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Department
of Meteorology



READING ATMOSPHERIC OBSERVATORY

A teaching and research facility, with over 100 years of weather records



TEMPERATURE AND HUMIDITY

Air temperature and humidity measurements are made in a standard Stevenson screen (right of centre in the photograph below), using a mixture of conventional liquid-in-glass thermometers and electronic sensors. Records are also made of grass and soil temperatures at various depths up to 1 m below ground.

PRECIPITATION

Once-daily rainfall totals are made using a standard 'five-inch' copper raingauge, with its rim at 30 cm above ground level; we also monitor precipitation at ground level and at 1 m above ground. Two automatic gauges provide a continuous 24 hour record of precipitation intensity.

BAROMETRIC PRESSURE

A continuous record of barometric pressure is maintained using two high-precision pressure sensors, checked once daily by a manual reading of a Kew-pattern mercury barometer at 0900 UTC.

SUNSHINE AND SOLAR RADIATION

Manual records of daily sunshine duration are made using a Campbell-Stokes sunshine recorder mounted on the roof of the Meteorology building, while automatic observations of sunshine duration are obtained from an electronic sunshine sensor located within the observatory enclosure. Three measurements of solar radiation – global, direct and diffuse – and one of net radiation are made within the observatory enclosure, using high-precision sensors logged at 1 second intervals.



WIND SPEED AND DIRECTION

Wind speed measurements are made at several heights, from 0.7 m to 10 m above ground, using cup anemometers; for research purposes, high-frequency (up to 20 Hz) measurements can be made using a sonic anemometer. Standard 'meteorological' output consists of both 'mean' speeds (normally 10 minute averages) and 'gusts', where a gust is defined as the highest running 3 second mean speed, in accordance with World Meteorological Organization (WMO) and International Civil Aviation Organization specifications. Wind direction is obtained from a continuously-logged wind vane, which is mounted within the observatory at 10 m above ground level.

OTHER ELEMENTS

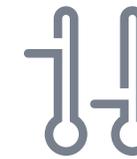
The observatory also includes detailed measurements of atmospheric electricity, soil heat flux and cloud height.

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AVERAGES AND EXTREMES

Over the standard WMO 30 year averaging period 1981-2010, records from the observatory show:



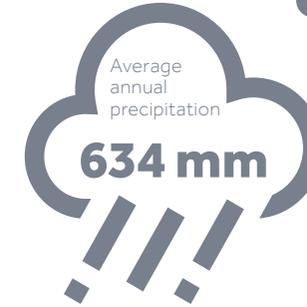
Average annual temperature

10.6°C



Average annual sunshine duration

1522 hours



Average annual precipitation

634 mm

Since records commenced in 1901 (1908 for temperature and 1956 for sunshine), Reading's extremes have been:



Hottest day
10 August 2003
36.4°C



Coldest night
14 January 1982
-14.5°C



Wettest day
22 September 1992

76.3 mm



Sunniest day
30 June 1976

16.0 hours