Climatological weather observations

Rainfall records at the University date back to 1901, with comprehensive climatological observations beginning in 1908 which were subsequently made at 0900 GMT every day of the year. In 1970 the weather station moved to its present Observatory site at Whiteknights, and in 2012 the Met Office installed an automatic weather station.

Some of our climatological instruments

Maintaining a consistent measurement series is a key requirement for climate measurements and the thermometer screen is based on the 120 year old design of Thomas Stevenson (Robert Louis Stevenson's father).

(Right) A large thermometer screen shields instruments, including the thermometers from direct sunshine and rainfall.

(Left) The anemometer and wind vane measure wind speed and direction at a height of 10 metres above the ground.

Some notable weather events

Winter 1962-63 – a long cold spell; snow lay continuously for 50 days from 27 December. Snow was over 30 cm deep for a time.

11 June 1974 – a small whirlwind was sighted at Earley Gate – there was a 'roaring' sound but no damage was seen.

Hot summer of 1976 – the last week of June and the first week of July brought temperatures of 30 °C every day for a fortnight.

16 October 1987 – the 'Great Storm' gave a gust of 77 mph.

Annual averages and totals for 1981-2010

Mean temperature 10.6 °C, annual rainfall 635 mm, sunshine 1522 hours. 11 days with snowfall, 41 with air frost and 123 with ground frost.

The Reading University Atmospheric Observatory

University of Reading

The University Observatory

The Observatory is used as a laboratory for teaching and research, particularly concerned with study of the energy and momentum exchange between the surface and the lower atmosphere, the surface energy balance, measurements and instruments. It gives students experience of using equipment under real conditions, and prepares them for more advanced field work.

The Observatory buildings were recently rebuilt and refurbished by the University to maintain a world class facility within the world class Department of Meteorology that the University of Reading is proud to host.

Radiosonde balloon launch from the Observatory.

For further details about the Observatory, or to arrange a visit, please email infosec@met.reading.ac.uk

http://www.met.reading.ac.uk

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Teaching and Learning

The Observatory is used for student projects that involve meteorological surface measurements and instrumentation. The best undergraduate project prize in 2012 was won for atmospheric point discharge current measurements, while an MSc project developed wind speed measurement techniques using the tension in a kite tether as shown here.

Our new Environment Physics degree course will have advanced instrumentation modules, underpinned by students developing equipment for immediate testing and deployment.

Outreach

The Observatory is also used extensively in outreach activities, enabling schools and other local groups to get a taste of meteorological measurements.

External collaborations

The Observatory also enables industrial and external collaborations by providing a controlled environment for routine monitoring, e.g., collaboration with the University of Manchester on ozone monitoring for Defra, use of a Biral thunderstorm detector which led to the discovery of charge sheets above thunderstorms, and the new deployment of a infrasound microbarometer in collaboration with AWE Blacknest for the detection of acoustic waves that propagate through the stratosphere.

Research

Research equipment can be tested in the safe environment the Observatory provides before deployment elsewhere, e.g. in Africa, on board US navy ships or in urban environments.

A new upward looking LIDAR was recently acquired for the Observatory. This will be used for research into cloud properties and cloud base heights.

Atmospheric electricity instruments provide one of the few sets of measurements globally, including that of the conduction current density – the instruments were originally funded through a Centre for Excellence in Teaching and Learning award.

The Observatory houses a weather balloon (radiosonde) launch site operated with the permission of the Civil Aviation Authority. This has led to the development of new balloon-carried sensors for turbulence, volcanic ash cloud microphysics and electrification, radioactivity and space weather monitoring.

The image is one of Saharan dust – showing the dust sampled by a meteorological balloon during a field campaign on Cape Verde. (http://www.reading.ac.uk/news-and-events/releases/PR342777.aspx)

Automated continuous meteorological measurements for use in research were begun around 1990, and were implemented continuously from 1997 onwards. These are used by staff and students studying local weather events and in the Department's weekly weather and climate discussions.

Measurements made during the total solar eclipse on 11 August 1999. As light from the Sun is blocked by the Moon, the incoming solar radiation (blue line) drops, along with the air temperature (green line), both reaching a minimum just after 1100 BST.