

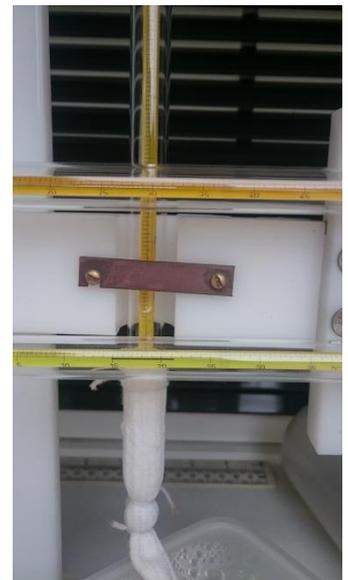
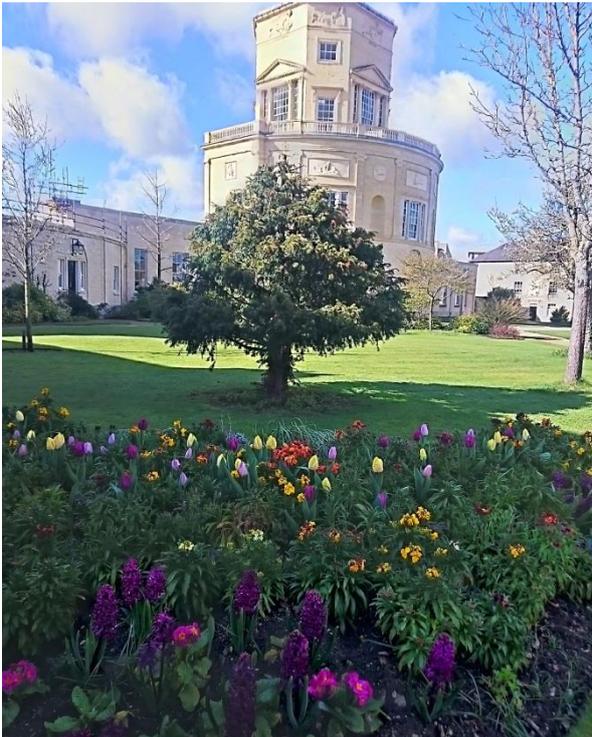
# Radcliffe Meteorological Station

## Oxford University Centre for the Environment

### The Weather at Oxford in 2016

The effects of climate change are becoming increasingly evident at the global scale. Last week NASA announced that 2016 was the warmest year on record, with record melting of arctic sea ice and evidence of increasing frequency of extreme weather events.

Oxford has not escaped these increasing temperatures. Temperatures here were 1.2°C above average, and we recorded above average temperatures in all but 2 months (March and November). This places 2016 in the top 16 warmest years in our 201-yr temperature record. Significantly, 14 of those hottest 16 years occurred since 1990.



**January** started the year as it intended to carry on, with the mean temperature 2.2 °C above average. Most of the warm mean temperature was a consequence of exceptionally high maximum temperatures: on the 24<sup>th</sup> January we recorded our **highest ever January temperature of 15.9°C!** It was also a rainy month and we recorded over 80 mm of rain, 30 mm above average. **February** was good month for those who like unseasonably warm and sunny weather. The mean air temperature was 1.4°C above average, and we basked in over 113 hours of sunshine, over 42.5 hours more than normal for the time of year.



A frosty Stevenson screen in January



28.5mm of rain fell on the 8<sup>th</sup> of March, contributing to a wetter than average month

In **March**, mean air temperatures were very close, if slightly below,

the long term average of 5.8°C.

Rainfall was nearly 33mm above average for the time of year; largely

a consequence of a couple of very wet days of the 8<sup>th</sup> and 27<sup>th</sup> of the month. On the 8<sup>th</sup>, we recorded 28.5 mm of rainfall: the **fifth wettest March day in our record**. **April** also featured average temperatures for this time of year; the mean temperature of 8.3°C is the same as the long term mean value for this month. We experienced a higher number of rainy days than normal, with 21 out of 30 days featuring 0.2mm or more rainfall, compared to an average of 13.6 days. However, despite a higher frequency of April showers, rainfall amount tended to be small, resulting in total rainfall only slightly higher than the long term mean.

After two months of average temperatures, **May** was 1.7°C above the normal temperature for this time of year. This was mostly accounted for by warm nights: May experienced significantly higher- than-average minimum air temperatures, the mean value of which was 1.6°C above the long term mean. Soil temperature at 30cm was very high for this time of year (15.0°C), ranking at the top of our record. We also experienced significantly more rain than is usual for this time of year, with 81.4mm falling in May, compared to an average of 51.5mm.

The most prominent feature of **June** was that it was exceptionally dull! It was the least sunny June in our 135-year record, with only 104.4 hours recorded for the whole month. The previous record-holder was 1909, with 104.9 hours. In comparison, June 2015 saw 243.7 hours of sunshine, and the sunniest June on record (1975) saw almost 3 times as much sun – 301 hours. The high cloud cover that inhibited sunshine in June also contributed to much warmer-than-average nights. The absolute minimum warm temperature of 8.8°C was the warmest June minimum in the 201-year record.



There were at least 10 hours of sunshine on this bright July day

**July** was much warmer than average in 2016. The mean air temperature of 18.3°C was 1.7°C above the long term mean, boosted by a string of very warm days in the middle of the month. On the 19<sup>th</sup> of July the maximum temperature was 32.3°C, which falls in the top 10

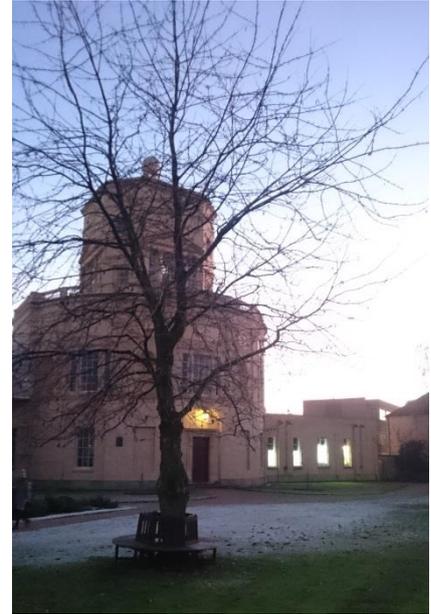
warmest July temperatures in our record. On the 10<sup>th</sup> July, we experienced **the warmest minimum temperature since 1961**; overnight temperatures did not dip below 21.2°C. July was also exceptionally dry, with only 3.6mm of rainfall recorded in the whole month, compared to an average of 59.5mm. This ranked as the 4<sup>th</sup> driest July since 1767. In addition, July was very sunny, with 223.5 hours of bright sunshine, and an average of 7.2 hours per day.

Temperatures continued to be higher than average in **August**, with mean, maximum and minimum temperatures all more than one standard deviation above the long term mean. The dry spell in July was broken on the 1<sup>st</sup> of August, when 11.5mm of rainfall was recorded, but the month as a whole was slightly drier than normal. **September** was notable for significantly higher-than-average temperatures. The mean air temperature of 16.5°C ranks joint-third in our record, below 2006 (17.4°C) and 1949 (16.8°C). On the 13<sup>th</sup> of the month temperatures

reached 29.2°C, unusually high for September. Mean soil temperature at 30cm was the warmest in our record, tied with 2006.

**In October** all temperature metrics were normal for this time of year, and no extremes of temperature were recorded. Rainfall was less than half of what is expected for this time of year, and the number of rainy days was below average. **In November** despite experiencing some technical difficulties, we are quite confident that temperatures were close to average for this time of year. Ground temperatures were all lower than normal for this month, with the mean grass and concrete minimum temperatures both 2.0°C below average. November was also sunnier than usual, with 88.3 hours of bright sunshine recorded.

The year ended, as it always does, with **December**. December 2016 was the 16<sup>th</sup> warmest December on record, with temperature 1.6°C above average. Most of the warm mean temperature can be explained by the unusually high daytime maximum temperatures which were over 2°C above average. Over half of the rainfall in December fell on one day (16.4mm on the 10<sup>th</sup>).



On November 30<sup>th</sup>, it remained so cold that the frost still hadn't melted by sunset

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The annual report was written by RMS observers; Amy Creese and Callum Munday. We would like to thank Roger Brugge for quality checking our recordings each month and Ian Curtis for taking some of the photos which feature in this report.



RMS observer, Amy Creese, inspiring the next generation of weather observers