

Radcliffe Meteorological Station

Oxford University Centre for the Environment

The Weather at Oxford in 2012

2012 proved to be an exceptionally wet year at the Radcliffe Meteorological Station. With total accumulated rainfall almost 1.5 times the long-term mean (646.1 mm), 2012 was the second wettest year on record (after 1852 which saw 1034.7 mm). Following 2011, which was the joint second warmest year on record here (which now means that 6 of the top 10 warmest years on record here have been since 2000), 2012 again saw above average air temperatures. These were by no means as extreme however, with all temperature values falling within one standard deviation of their long-term mean values, making 2012 only around the 30th warmest year on record.

January 2012 was much warmer than to be expected with almost all temperature measures exceeding an anomaly of 1 standard deviation (1sd) above the long-term mean value (the only exception being grass temperature). In particular, the mean maximum temperature was the 4th highest on record - this now means that 3 of the top 4 highest mean maximum January temperatures have occurred since 2007. The mean minimum temperature was also inside the top 10 highest recorded. January was drier than usual, but within 1sd of the long-term mean so not exceptional. All this taken into account, it is unsurprising that bright sunshine hours were well in excess of 1sd above the long-term mean. By contrast, **February** was slightly cooler than to be expected across all temperature measurements, and was also drier than usual although again not exceptionally so. Thus **Winter** 2012 at the RMS (taking into account December 2011 also) was characterised by much drier (total rainfall = 121.9 mm, -27.1mm) and warmer (mean air temperature = 5.5° C, +1.3° C) conditions than to be expected, though both values just fall within 1sd of the long-term mean values for winter since records began.

The unusually warm temperatures of winter continued into **March**, with mean air temperatures and maximum temperature indices all around or in excess of 2sd's above their respective long-term mean values and within the top 6 on record (mean maximum temperature 2nd highest on record, after 1938). Other temperature measurements were generally also well above normal (with the exception of concrete), but not to the same extent. Like the winter months, March was also much sunnier and drier than usual. The drought was however ended in **April**, which was the wettest on record by over 6 mm (taking over from 2000), with total accumulated rainfall in excess of 3 times more than the long-term mean. Temperatures were generally more in line with climatological values, differing only by a couple of tenths of a degree. Unusually warm conditions resumed in **May**, with the highest mean minimum temperature on record being recorded (replacing 1999). Other temperature indices were generally higher than to be expected, but not quite so extremely, although the mean air temperature was still in the top 15 on record. The rainfall total was much more ordinary than April. **Spring** 2012 at the RMS then, in contrast to the winter, was the 10th wettest on record (total rainfall = 228.8 mm, +92.4 mm) in spite of a very dry March, and the wettest since 2008. Like winter it was much warmer than usual (mean air temperature = 10.1° C, +1.5° C), on the fringe of the top 10 or so warmest springs on record (4 of which have occurred since 2000).

Unfortunately for Oxford-residents looking to enjoy their summer, the wet conditions of spring 2012 continued into **June** which saw almost 3 times as much rainfall than was to be expected based on the long-term mean value. This made it the second wettest June on record (after the torrid June of 1852 in which 193 mm of rainfall fell – some 42 mm more than 2012!). Interestingly, there were far fewer rain days than normal, suggesting that when it rained it probably poured. Temperature measurements were generally not unusual, all falling comfortably within 1sd of their long-term mean values, but it is interesting to note that minimum temperatures were higher and maximum temperatures were lower than usual, indicating a narrowing of the diurnal temperature range. This was also true of **July**, the other temperatures of which were also generally not unusual, falling slightly above average but not by much. Perhaps of most interest here was the absolute minimum temperature, which was over 2° C above the long-term mean and the 6th highest on record (warmest since 2005). Rainfall continued to be well above normal, with total accumulated rainfall in excess of 1sd above the long-term mean for July. Summer came to an end with a wetter-than-usual **August**, although rainfall totals were by no means exceptional for this month, falling comfortably within 1sd of the long-term mean. Temperatures were above-average, being most pronounced in mean air and mean minimum temperature, both of which were in excess of 1sd above the long-term mean values (top 25, warmest since 2004 and joint 5th with 2008 respectively). To summarise, **Summer** 2012 was the 3rd wettest on record (total rainfall = 332.1 mm, +159.8 mm), receiving almost twice the expected amount of rainfall based on the long-term mean value. It was also warmer than usual (mean air temperature = 16.7° C, +0.8° C), though not unusually so.

September 2012 saw a break in the rainfall, with slightly less than usual falling (only a couple of mm, however). It would seem to have been a reasonably cold month, although it is important to note that the temperature values for September should be viewed cautiously due to problems with the maximum and minimum temperature thermometers in the earlier half of the month. **October** temperatures we can view more confidently though, and these were generally unremarkable, falling well within 1sd of their long-term mean values. As was observed in previous months, it is interesting to note a lower-than-usual mean maximum temperature and above average mean minimum temperature. In line with the rest of the year, October 2012 was very wet, with a rainfall total well over 1sd above the long-term mean making it the 16th wettest on record (and second wettest this century – after 2004). Above-average rainfall would also fall in **November**, although this was a modest anomaly compared to some of the earlier months of 2012, falling within 1sd of the long-term mean. Temperatures were also comfortably within 1sd of their respective climatological values, generally on the warm side although that is not true of grass or concrete temperatures, nor the absolute maximum temperature. Overall, **Autumn** 2012 was slightly cooler than usual (mean air temperature = 9.6° C, -0.5° C), although this is comfortably within 1sd of the long-term mean and also potentially artificially low due to the instrumentation issues at the start of the season (although it is not expected that this would change the sign of the anomaly). Rainfall was in excess of 1sd above that expected climatologically (total rainfall = 264.9 mm, +77.1 mm), placing it in the top 25 wettest Autumns on record (although 3 have been wetter so far this century – 2000, 2006 and 2002).

Like many months in 2012, **December** was very wet, with total accumulated rainfall exceeding the long-term mean by almost 2sd's. and placing it in the top 20 wettest Decembers on record. Temperature trends were well within one standard deviation of the mean, with air temperatures generally slightly above average (with the exception of the absolute maximum) and grass and concrete temperatures slightly below.

As noted in the introduction, 2012 was a standout year in terms of rainfall. It is interesting that this is in spite of a very dry first quarter (January – March were all below average and you will probably recall much talk of drought). April and June were the biggest wet anomalies, with both receiving around 3 times more rainfall than expected, based on their long-term mean values. A further 7 of the 9 months from April saw above average rainfall, exceptionally so in some cases. This makes the April – December period by far the wettest on record, some 41mm ahead of 1852.

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