Above: The Sun sets behind the hedgerows near Ash, Kent as October 31, 2014 draws to a close.

Prime Meridian

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A newsletter following global environmental issues alongside the cycle of the seasons in Southern England

23.6ºC - the UK's warmest Halloween on record.

As the Sun sank below the horizon on Halloween 2014, some of us found ourselves thinking not so much about the seasonal festival of ghosts and ghouls, but about how strangely warm it seemed for the time of year.

The Met Office had predicted that October 31, 2014 would set a new temperature record, beating the high of 20ºC observed at Dartford, Kent in 1968 and in areas of Greater London in 1989.

This prediction was fulfilled before noon, when 20.5ºC was recorded at Filton in Bristol.

The Met Office had anticipated: "*We could see highs of 21ºC in the SE today*".

A tweet from the Met Office at 12:20 GMT announced that "*Charlwood has beaten Filton, recording 22.5 °C.*" However, it was Gravesend along the Thames Estuary that set an all-time record of 23.6ºC. High temperatures here were helped along by pollution from London, the urban heat island effect and wind directions. Meanwhile, temperatures exceeded 20ºC at various locations in southern England and Wales.

So far, every month except August has been warmer than normal, and there is a real possibility that 2014 will be the warmest year in the UK record. Of course, it would be poor science to seize upon local or regional weather extremes, cold or hot, as debating points for or against climate change; they must not be taken in isolation. They have to be understood as part of their broader context of global events and the complexities of changing climate. The global picture is one of mean temperatures rising (with ups and downs from year to year and decade to decade) since 1880. 21st C mean monthly and annual temperatures all cluster at the top of the curve, amongst the very warmest on record. Annual temperatures have yet to leapfrog 1998, but are expected to do so.

Globally, September 2014 was the warmest on record - see page 6

Above: Traditional Jack-o-Lantern outside a home in South London, the night before Halloween, 2014.

A jump into the darkness.

Those living in the UK receive an abrupt reminder of the passing of the seasons and the arrival of the darker months, when, in the early hours of the last Sunday in October, the clocks are put back an hour to Greenwich Mean Time from the daylight saving British Summer Time. The Sun, which the day before had set at around 17:40, set gloomily at around 16:40. In terms of daylight, it means jumping the equivalent of weeks towards mid-winter in just one day. The time change is the subject of controversy and opponents hold that by keeping BST all-year-round there would be more hours of daylight, improving safety and also avoiding the release of an estimated half a million tonnes of C into the atmosphere as CO_2 from burning fossil fuels.

After the warm Halloween, the weather returned to its chilly seasonal norm for the UK's traditional November 5 bonfire night. The temperature was around 6°C in London, but lower in nearby Kent, where it was decidedly finger-numbing.

Halloween merges with a long-standing season of bonfires and celebrations. Its multiple roots are hard to disentangle. At the Christian festival of All Hallows Eve, the forces of death and darkness are derided. There may also be Christianised input from ancient traditions such as the Gaelic harvest festival of Samain. From 1605, the practice of burning an effigy, or guy, on November 5th Bonfire Night (or Fireworks Night today) was introduced to celebrate the arrest of Guy Fawkes, a conspirator guarding barrels of gunpowder beneath the House of Lords, where King James I was about to open Parliament. In some places, there a tradition of practical jokes on Mischief Night, November 4th.

In what has become a local custom at New Ash Green, Kent, Halloween lanterns, made by children from a local school, mark out a walk through a restored orchard beside Nine Horse Wood to a fireworks display.

Seasons in South East England

September, 2014

Above: In the late afternoon of September 19, 2014, hedgerow trees cast long shadows across a field near Ash, Kent,

A warm and notably dry September.

The UK Met Office reported that: "*September was dominated by high pressure, bringing plenty of fine and settled early-autumn weather, with only a few short interruptions. This meant that rainfall was limited in most regions, and temperatures were generally above average, though with no exceptional warmth on any particular days.*"

The mean temperature of 13.9ºC was 1.3ºC above the 1981-2010 average, which made it the 4th warmest September in a record which began in 1910. 2006 was the warmest year. It was "*only the fifth time that the UK mean temperature for September has equalled or exceeded that for August.*" Sunshine was near normal. However, September 2014 narrowly scraped ahead of 1959 as the driest September on the record. The mean UK rainfall was 23% of the September norm, but in many areas, it was below 20%.

The pattern for England was similar. September's mean temperature was 1.2ºC higher than the average for the period 1981-2010. Sunshine was slightly lower than average and rainfall was 22% its usual value. This added up to England's second driest September since 1910 after 1959.

September opened with areas in central and southern England seeing rain, although, in the South East, rains ceased during the afternoon, with high pressure conditions from September 2 to 4. Southern and eastern areas saw showers on September 6 and September 7 saw "*only a very isolated shower*" in the SE. The UK's lowest temperature was recorded at Katesbridge in County Down, N. Ireland on September 8 (-0.1ºC). High pressure conditions occurred again between September 9 and 14. The Met Office reported that "*temperatures reached the low to mid 20s in most areas.*" South-easterly winds followed on September 15, with showers and low cloud in central and E areas, whilst W England was dry and bright.

Left: Fruits of brambles (top) and hawthorn (middle) ripen along a hedgerow near West Kingsdown, Kent on September 6. Apples (bottom) on a nearby woodland margin, September 13.

Above: The Sun shines down through the leaves of a hornbeam (*Carpinus betulus*) in Dulwich Wood, South London, on September 13, 2014. Left-hand: Weather over Britain and adjacent parts of Europe on September 1 at 12:39 GMT as imaged by the NOAA-19 satellite. Courtesy Geoff Hamilton. Teazels (*Dipsacus fullonum*) have finished flowering along a field margin near west Kingsdown, Kent. September 13. Bottom: Harvest festival season. The Sun shines through a church window at Ash, Kent on September 19. The vegetables were grown by and exhibited at All Saints Church, West Dulwich, South London. September 20.

September 16 saw widespread sunshine and a temperature of 25ºC was recorded in West Sussex. Wiggonholt, in the same area, experienced the UK's highest temperature of 26.3ºC on September 18. Meanwhile, the period September 18, 0900 GMT to September 19, 0900 GMT saw 47.8 mm of rain was recorded at Linkenholt in Hampshire. September 20 saw patchy rain the SE.

Another period of high pressure began on September 21 and dry and bright conditions persisted until heavy showers broke out in the SE on the morning of September 24. High pressure, dry and warm conditions arrived again on September 27. September 28 saw 25ºC at Heathrow and Kew Gardens in Greater London, which saw minor rain on September 29.

SE and central S England, mean max. temp.: 20.7ºC (2.4ºC); mean min. temp.: 10.9ºC (1.3ºC). Hours of sunshine: 143.6 (97%). Rain: 14.4 mm (22%). Anomalies re. 1981-2010 norm in brackets. Source for weather summaries: Met Office online reports.

Losses and gains for harvest time.

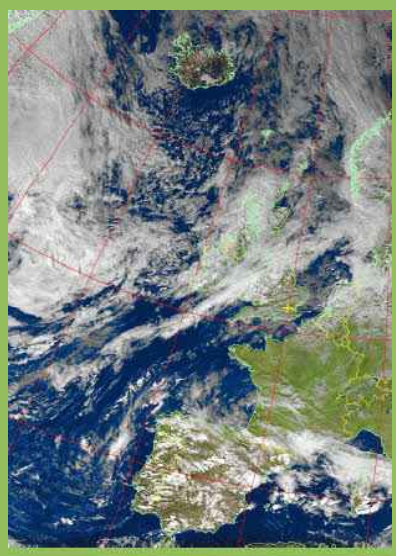
Farmers Weekly **(Philip Case, Sept. 20, 2014) reported that the first half of September had been the UK's driest across the UK since 1960.** ***"Overall, it's the driest start to September for Wales, Scotland and Northern Ireland, but not for England – 1997 and 2003 were drier."***

Above: Rosehips and *Clematis* in a hedgerow near West Kingsdown, Kent, England (Sept. 28, 2014). Left-hand margin: Seeds of great hairy willowherb (*Epilobium hirsutum*). Ecology area, Belair Park, S. London (Sept. 6). Common wasp (*Vespula vulgaris*) colonies are at full capacity by the end of September. West Dulwich, S. London. (Sept. 9). Common knapweed (*Centaurea nigra*). Field edge, near West Kingsdown (Sept. 13) and beech nut (*Fagus sylvatica*) on woodland floor, near Ash, Kent (Sept. 19). Right-hand margin: Weather over the UK on Sept. 23, the day of the autumnal equinox. Courtesy Geoff Hamilton. The image was obtained from the NOOA-19 satellite at 1338 GMT. *Arum maculatum* and ripening holly berries (*Ilex aquifolium*) Belair Park, S. London (Sept. 28, 2014).

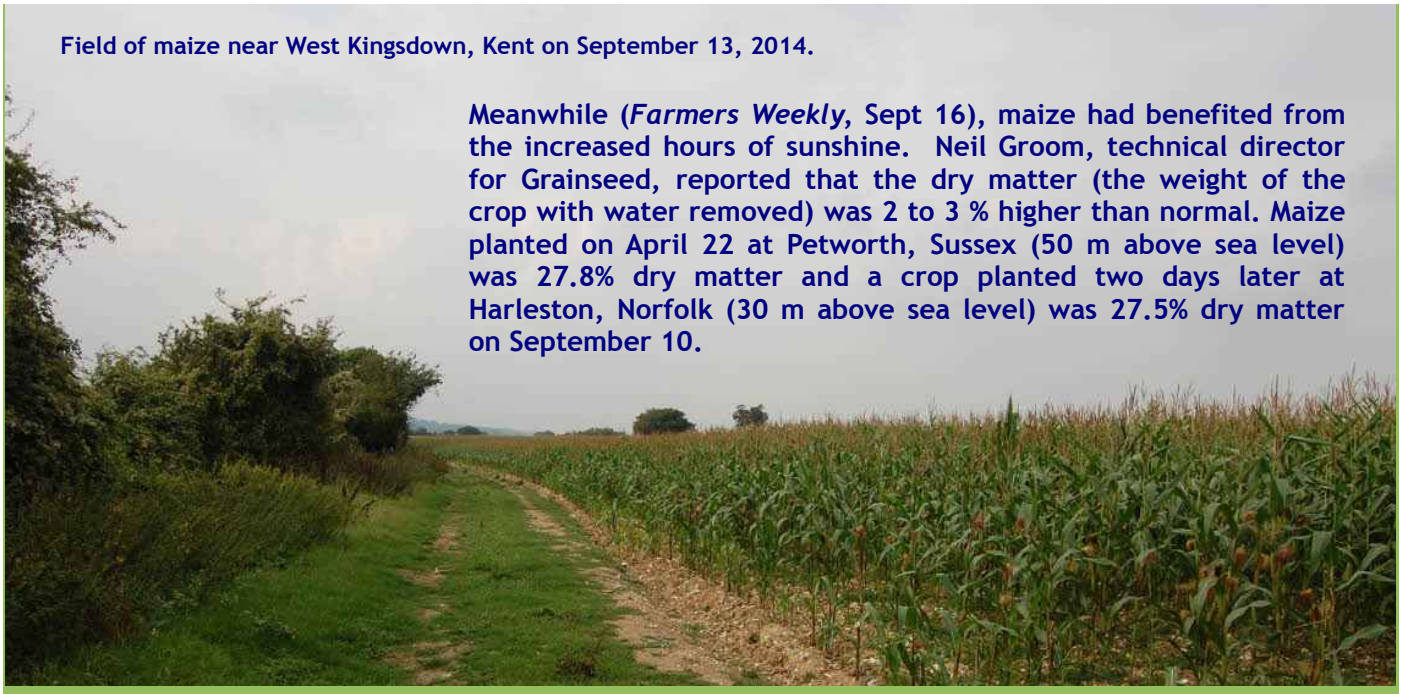
Up to September 15, there had been a mere 6.7 mm of rain (averaged over the UK), 7% of the usual 96 mm. This was "*proving a headache for growers who are trying to establish winter crops.*" It had also been warm and the UK mean temperature for the first half of September had been 13.9°C, which was 1.3°C above the average for the whole month.

Mixed farmer James Read (Louth, Lincolnshire) explained to readers that dry weather had made it difficult to establish oilseed rape and wheat crops. Yorkshire agronomist Julian Thirsk was quoted as saying "*We have had people who have ploughed over fields and it has baked like bricks*".

Dry weather had not been problematic for Berwickshire farmer Colin McGregor, who had experienced unusually low winds rather than high temperatures. He reported: "*Of late, there has been some hardy, foggy days which is just delaying us combining the final 100 acres of spring beans*".



Field of maize near West Kingsdown, Kent on September 13, 2014.



Meanwhile (*Farmers Weekly*, Sept 16), maize had benefited from the increased hours of sunshine. Neil Groom, technical director for Grainseed, reported that the dry matter (the weight of the crop with water removed) was 2 to 3 % higher than normal. Maize planted on April 22 at Petworth, Sussex (50 m above sea level) was 27.8% dry matter and a crop planted two days later at Harleston, Norfolk (30 m above sea level) was 27.5% dry matter on September 10.

Left: Hedgerow beside St Peter's and St. Paul's Church, Ash, Kent. September 13, 2014.

Global climate: Hottest September in a record stretching back to 1880.

According to the USA's National Oceanic and Atmospheric Administration, taking land and sea together, the mean temperature for September 2014 was 0.72 ± 0.12ºC higher than the 20th Century mean of 15.0ºC.

For ocean surfaces around the world, the mean temperature was 0.66 ± 0.04ºC above average (warmest on record), whilst for all land surfaces, the temperature was 0.89 ± 0.24ºC warmer than the average (6th warmest September behind 2009). In the Northern Hemisphere, the temperature for the land and ocean together were 0.82 ± 0.16ºC above the mean (2nd warmest after 2005). Land areas experienced their 9th warmest September at 0.79 ± 0.25ºC above the mean (2005 was warmest), but the oceans (0.83 ± 0.14ºC above the mean), did establish a new record. In the Southern Hemisphere, the combined land and ocean temperature was 0.63 ± 0.08ºC above the norm, whilst the ocean was 0.53 ± 0.06ºC above the norm, in both cases, the 2nd warmest September after 1997. The land, at 1.16 ± 0.18ºC above the mean was the 2nd warmest after 2013. [Source: NOAA National Climatic Data Center, State of the Climate: Global Analysis for August, 2014, published online. Data provisional.]

Prime Meridian **is published as part the outreach programme of the Ecospheres Project's Earth Campaign.**

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Right: Moon and traditional Nov. 5th fireworks at New Ash Green, Kent.