No. 26 **Sustainable Blewbury** September 2018

www.sustainable-blewbury.org.uk

For the latest news and more information, please see our website

'The future of transport and transportation', by Scott Witchalls

A talk at Blewbury Manor barn, Monday 24 September, 8.00pm

Scott is a Partner of development and infrastructure consultancy Peter Brett Associates, with over 30 years' experience of transport planning and engineering. He will describe our travel behaviour and trends, transport benefits and impacts on society, emerging technologies, and what the future may hold.

Will the technologists' dream of flying around in personal pods transpire, or *will the quality of environment win over*?

Tickets £6 (including a glass of wine and nibbles) at the Post Office, or on the door (if not sold out). Profits will be donated to WaterAid

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Sustainable Blewbury 25th anniversary celebration

Sunday 30 September, Blewbury School, noon to 4pm

Our 25th year – the BVS Environment Group began in August 1993. We'll be celebrating with an exhibition of 25 of our successes in 25 years, and also an exhibition of work done by the Blewbury school children on the theme of sustainability. But it will be more than an exhibition. There will be a **barbecue** and **bar** run by Blewbury school. The Blewbury Wagon will be there, plus demonstrations of apple juicing, pond dipping and other activities for children.

The Cob Wall committee will be celebrating the work to restore the Curtoys Lane Cob Wall. This restoration is the latest project Sustainable Blewbury has supported, so is a look into the future.

We appreciate your support and the interest that led you to subscribe to this newsletter, and hope you can join us at Blewbury School. We will be cutting a celebration cake at about 2.30.

Glen Meadows, Chair, Sustainable Blewbury

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Apple juice from your own apples

A***pple juicing sessions at Blewbury Manor stable*** are scheduled for the Sundays listed below.

23 Sept.: 2–4 pm	***7 Oct.: 2–4 pm***
21 Oct.: 2–4 pm *(Apple Day!)*	**4 Nov.: *11am–1 pm*** *(if needed)*

- If you wish to pasteurise your juice (so it will last for a year) it takes quite a long time, so ***please arrive early in the session***.
- If you have a lot of apples, you can ***hire*** our equipment at low cost. Contact us at: info@sustainable-blewbury.org.uk.

'Adventures at the top & bottom of the world – some personal perspectives' by Mark Blythe

A talk at Blewbury Manor barn, Monday 15 October, 8.00 pm

Mark has ski-toured in both the Arctic and Antarctica. He will cover what it's like to visit, live in and explore in high latitudes, the history of humans in these areas, and environmental points.

Tickets £6 (including a glass of wine and nibbles) at the Post Office, or on the door (if not sold out)

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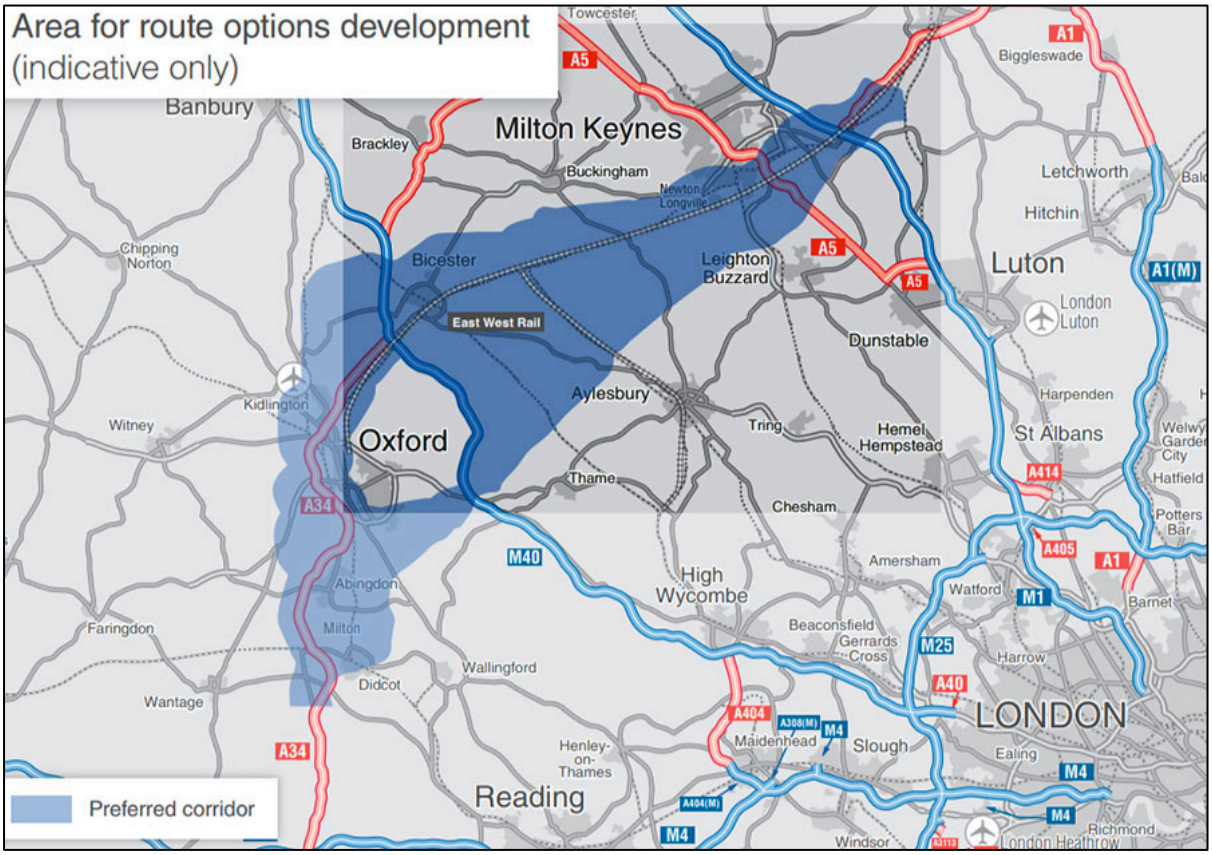
Oxford – Cambridge Expressway

The Expressway would connect Oxford and Cambridge with a combination of new and existing roads. A delayed decision on which of three 'corridors' the route would run through was announced on 12 September, and next a consultation on the detailed route through the corridor will take place.

The choice of corridor is being very widely criticised. BBOWT says that all proposed routes would be very damaging to the environment but this corridor is the worst of the three. It also leaves open whether the expressway would pass to the north or south of Oxford. Nor is it clear how close the new road would be to Blewbury.



But many people argue that the choice of route is the wrong point for starting open discussion as there has been no real debate about *whether it should be built at all*. This appearance of choice without real democracy was discussed in an interesting article by George Monbiot, at bit.ly/2BLXJ7H.

A group of letters commenting and expanding on George Monbiot's article is here: bit.ly/2NFp4xm. Among them is one by Prof. Richard Harding and Dr. Sue Roberts on 23 August, which said:

"The expressway is a stalking horse for 1 million new homes between Oxford and Cambridge; equivalent to more than four cities the size of Sheffield in the rural south-east. In Oxfordshire, we are struggling to build 100,000 homes by 2031. This is already three times more than can be filled according to population projections from the Office for National Statistics. If we were, magically, to build 300,000 of the homes for the expressway in Oxfordshire, by 2050 we would have more than twice as many homes as households. Put another way, half of the homes in our county would lie empty. Are we gearing up for a massive housing crash?

"The Campaign for the Protection of Rural England is calling for a public inquiry into the need for an expressway and the associated growth agenda."

Prof Richard Harding *Campaign for the Protection of Rural England, Oxfordshire*,
Dr Sue Roberts *South Oxfordshire Sustainability*

The Expressway Action Group website is at www.expresswayactiongroup.com.

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Talking about the summer's heat

*By **Maranda St John Nicolle***

We are grateful to Maranda for allowing us to adapt this article, which was written for the Christian Concern for One World (CCOW) website.

Heatwaves and extreme high temperatures in particular places aren't just a new phenomenon.

This is true. The central US experienced extended heatwaves and set longstanding temperature records in the 1930s. And many people who remember the UK's heatwave in 1976 bring that up, as the media frequently do (the BBC has a comparison of the 1976 and 2018 heatwaves for example).

There are several factors involved in this heatwave. But human-induced climate change is likely a key driver.

Weather is complex and generally involves the interaction of multiple factors. For this heatwave, scientists have generally discussed four factors:

- higher background temperatures resulting from climate change,
- North Atlantic sea temperatures,
- the location of the jet stream, a band of high winds in the upper atmosphere, and
- annual weather patterns

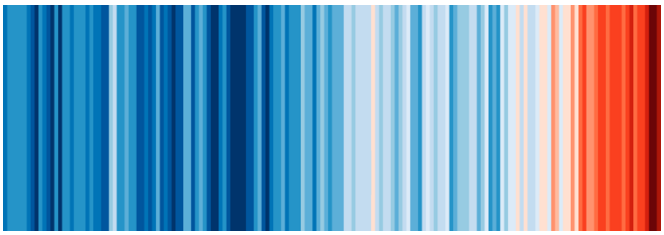
So climate change would definitely be cited as a key driver, if only because of the importance of the rising temperatures.

But in actuality, some of the other factors are also affected by climate change. For example, the jet stream derives its strength from the difference between cold air coming from the Arctic and warm air from the tropics. Rapid warming in the Arctic means that there are smaller differences between the Arctic and the tropics. This can weaken the jet stream. A weak jet stream can 'stall', leading to long periods of persistent high or low pressure in a given area … like the persistent high behind our heatwave this summer. Indeed, a recent study which looked at various ways climate change was affecting atmospheric circulation concluded it was quite likely to create more 'extreme extremes'

This means that we may well be (to borrow language from cooking programmes) getting 'climate change two ways' – seeing its direct influence in the higher temperatures and its more complex influence as one of several factors in the way the atmosphere circulates.

Let's start with the increase in global temperature. It's a simple matter of observation that in recent years, the earth is getting hotter than it used to be.

How much hotter overall? The trend towards higher temperatures goes back a few decades. Here's one way of looking at things – Ed Hawkins's 'warming stripes', which show the changes in global temperatures from 1850 to 2017. Dark blue represents the coolest temperatures; dark red (at the far right) the warmest.



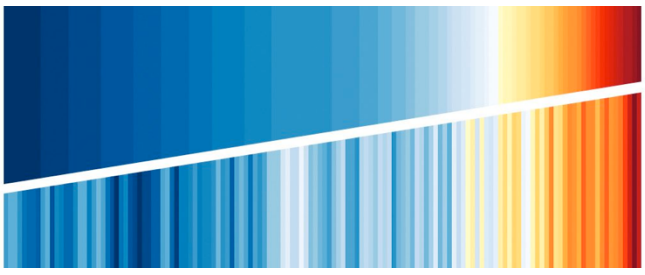
If the Earth wasn't getting warmer, we'd expect a fairly random distribution of blues and reds. But as the stripes suggest, we have now had more than 400 consecutive months of global temperatures above the 20th century average. Moreover "seventeen of the 18 warmest years on record have all been during this century, and the degree of warming during the past three years has been exceptional." (Head of the World Meteorological Organization). The global average surface temperatures in 2015, 2016 and 2017 were all more than 1 degree Celsius above the pre-industrial era. In fact, 2016 was the warmest year on record and the third record year in a row. 2017 was the the second warmest year on record, particularly striking because it had no El Niño event, unlike 2015 and 2016 which were El Niño years.

What about this year? From January to June 2018, global surface temperatures were the fourth hottest on record according to National Oceanic and Atmospheric Administration data, and right now the Global Warming Index is 1.03 degrees Celsius (despite 2018 not having thus far an El Niño event).

This increase in global mean temperatures isn't just a continuation of 'normal' natural processes, as some people argue. Human activity is the dominant cause.

Both natural processes and human activity are involved in temperature changes. But, as Prof. Myles Allen shows in a brilliant video presentation covering the basic science of global warming, if you look at the warming that would be expected if only natural processes (primarily solar variability and volcanic activity) were involved, it's nowhere near as much as the warming we've seen in recent years. Indeed, estimates based on these processes alone would suggest that temperatures should have gone down from 1970 – just when the current warming trend started. If you put together what we'd expect from natural processes with what we'd expect from increased emissions relating to human activity, however, you get something that corresponds quite closely to observed temperatures. This indicates that for the warming since the 1970s, human activity is the dominant factor.

Here's another great illustration, this one by Emanuele Bevacqua, inspired by the warming stripes of Ed Hawkins (used with permission – with thanks to both!). It shows how the mean global temperature increases (bottom panel) as a result of rising carbon dioxide concentration (top panel). (Data: 1880–2017, @NASA, #UCSD)



So we're starting from a hotter baseline overall. And as average temperatures get hotter, extreme heat events are also increasing in intensity, duration and frequency.

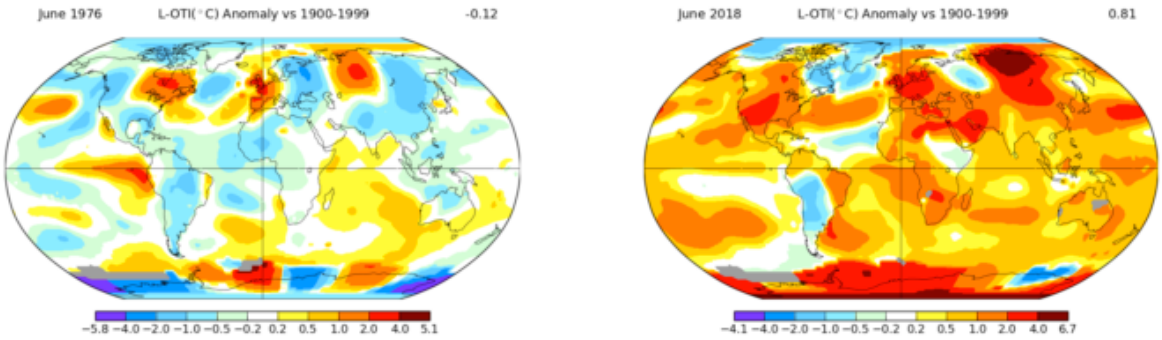
As we increase greenhouse gas levels in the air and the overall temperature rises, this makes it more likely that extreme heat events will occur. If you're mathematically inclined, one way to think about this is that if temperatures are normally within a range of probability, then as the average shifts towards higher temperatures the likelihood of extreme lows diminishes, and the likelihood of extreme highs increases. Another analogy is an athlete on steroids. If a baseball player, for example, is made stronger by steroids, not every swing at a ball will be a home run – there are too many different factors involved. But more will be, just because he has more power. In the same way, the average temperature rises don't mean there will never be extreme lows – but extreme heat will be far more frequent.

And we're seeing just that. If you look at 2018, a map of national temperature records (both monthly and all-time) through 11 September indicates only four record lows but 77 record highs.

Some of those record highs are extraordinary:

- Our temperatures have been high for us: in the UK, on 28 June, Glasgow set an all-time record of 31.9°C and Belfast of 29.5°C.
- But look at some of the other temperatures globally. On 30 April, Nawabsha in Pakistan set a record for the hottest temperature for the month of April ever measured: 50.2°C.
- in early July, Ouargla, Algeria registered the highest temperature ever reliably recorded in Africa of 51.3°C.
- On 25 June, Qarayyat in Oman set a world record for the highest *minimum* temperature in a 24-hour period: 42.6°C.
- And you certainly wouldn't have wanted to be taking children to visit Disneyland in California on the 6 July; the maximum temperature nearby was 46.7°C.
- Perhaps most surprising are some of the highs from the far North: July saw 32.2°C in the capital of the Finnish province of Lapland on the 17th and 29.5°C in Sweden's northernmost weather station on the 18th. And the Western Siberian Hydromet Center of Russia issued a storm warning due to temperatures of more than 30°C for more than five days. (The large heat anomaly in northern Russia is particularly concerning from a climate perspective. This is why.)

The fact that these high temperatures and extended heatwaves are so widespread is a clear marker of the changing climate. To go back to the comparison between 1976 and 2018, in June 1976 the UK's exceptionally warm summer was a fairly isolated occurrence – as the map on the left below (mean June temperatures relative to a 20th century baseline) shows. But in June 2018, in a hotter world, not only is the UK facing much hotter temperatures than usual, but so are much of the Northern hemisphere and Antarctica, and some of the most intense anomalies (especially those in northern Russia) are far more extreme than anything seen in June 1976.



data.giss.nasa.gov/gistemp/maps

Temperature extremes and heatwaves can be deadly:

- In Québec's recent heatwave, almost ninety people have died; in Japan, the recent extreme heat has killed more than 80 people and sent 23,000 to the hospital.
- In Australia between 2000 and 2009, heatwaves killed 532 people.
- In the heatwaves that hit India and Pakistan in 2015, at least 2,500 people were killed in India and at least 700 in Karachi (Pakistan) alone.
- Estimates of the number of people killed in the European heatwave of 2003 range from about 20,000 to about 35,000 to even higher figures, with about 1050 heat-related deaths in Greater London and Central Paris alone.
- And the extreme heat can contribute to further disasters, like this summer's wildfires in Greece that killed dozens and destroyed whole towns.

But they shouldn't be taking us by surprise. Such events have long been predicted by climate models. Take a look at the Intergovernmental Panel on Climate Change's reports over the years.

"Models described in the IPCC First Assessment Report (Mitchell et al., 1990) showed that a warmer mean temperature increases the probability of extreme warm days and decreases the probability of extreme cold days. This result has appeared consistently in a number of more recent different climate model configurations…" Climate Change 2001: The Physical Science Basis (IPCC- AR3)

"It is virtually certain that there will be more frequent hot and fewer cold temperature extremes over most land areas on daily and seasonal timescales as global mean temperatures increase. It is very likely that heat waves will occur with a higher frequency and duration." Climate Change 2013: The Physical Science Basis – Summary for Policymakers (IPCC-AR5)

"In most land regions the frequency of warm days and warm nights will likely increase in the next decades, while that of cold days and cold nights will decrease. Models project near-term increases in the duration, intensity and spatial extent of heat waves and warm spells. These changes may proceed at a different rate than the mean warming. For example, several studies project that European high-percentile summer temperatures warm faster than mean temperatures." Climate Change 2013: The Physical Science Basis – Near-term Climate Change: Projections and Predictability (IPCC-AR5)

Until recently, though, it was hard to tell whether particular events were made more likely or more severe because of climate change. But it's now become possible to do "attribution studies" for extreme heat events and some other climate-related phenomena. In most, though not all, cases, when scientists did such studies of extreme heat events, they found that climate change has indeed made the events more likely or more severe.

In 2017, Climate Brief stated that "of the 48 attribution studies that have looked at extreme heat around the world, 85% found that climate change had made an event of that kind more likely or more severe."

To give examples, World Weather Attribution (WWA) studies of individual events have shown that:

- The 2017 summer heat in Spain/Portugal was made at least ten times more likely by human-induced climate change.
- The June 2017 heat in central England was made four times more likely.
- Average summer temperatures like those found in New South Wales in 2017 are fifty times more likely than they were compared to early in the 20th century.

But not all heatwaves are related to climate change. For example, the WWA study of the 2016 Indian heatwave suggests it was not. It's important to recognise this, as people who are uncertain about climate science often express the view that people concerned about the climate attribute too much to climate change.

The World Weather Attribution group has released preliminary findings for this year's heatwave in northern Europe and concluded that climate change made it roughly twice as likely.

What does this mean for our future? If we keep on with current patterns of emissions, scientists are predicting that extreme heat events will continue to increase so that heat events we think of as extreme will become the norm, or even cooler than the norm.

For example, Dr Andrew King, one of the WWA scientists who studied the European heat wave of 2017, stated that "Under a business as usual scenario, where we continue to increase our greenhouse gas emissions, we find that, in Europe, extreme heat events like June 2017 would be close to average by the end of this century."

A Met Office study suggested that under the IPCC's various scenarios, summers like 2003 could be as frequent as every other year by the 2040s … and under its two higher emissions scenarios, summers like 2003 could be on the cool side of the norm by the 2050s.

And that could have devastating effects.

The House of Common Environmental Audit Committee has released a report noting that "heatwaves threaten health, wellbeing and productivity" and that "The average number of heat-related deaths in the UK is expected to more than triple to 7,000 a year by the 2050s."

But if we reduce our emissions dramatically in line with the Paris ambitions of keeping warming to 1.5 degrees, extreme heat events, while they'll still increase, won't increase as much.

Going back to the articles mentioned above, Dr King noted that if we meet the Paris ambition of keeping global warming to 1.5°C, he "would expect very hot June temperatures in Portugal like this year's to occur [in Europe] in about one in every four years." If we get 2°C of global warming, however, "such heat would occur in about one in every three years on average."

And the Met Office study cited above says that while almost all scenarios will mean that currently exceptional heat will become common in the UK by the 2040s, rapid action to stabilise emissions could significantly lessen the intensity of future heat extremes.

So the key variable in determining what happens in the future isn't some uncertain force or scientific principle. It's people. Including us. And people's, i.e. our, choices.

The need to act is urgent. Really urgent. So what can we do?

People may say that nothing we can do matters because China and India won't change, and Donald Trump says that climate change isn't real. But China and India *are* changing, and many state and city governments in the US are taking radical action regardless of Donald Trump.

We can find out our carbon footprint and take an individual pledge to reduce it. Some of the most effective ways to do this are:

- Switching to a **green energy supplier** for our electricity and gas – it's easy and has a significant impact. An average UK household switching to renewable energy for its electricity would reduce its emissions by about **1.4 tonnes a year**. You can also work on making your home more energy efficient, a double win since you will save on both emissions and money.
- **Not flying** unless it's absolutely necessary. The difference it can make in your footprint is truly astonishing. A return flight to New York adds about 1.7 tonnes to your footprint, Orlando 2.1 tonnes, Rio de Janeiro 2.8 tonnes, and Sydney a whopping 5 tonnes. By contrast, Eurostar to Paris comes in at just 4.1 kg.
- Using **public transport**, taking advantage of some of the amazing new technologies in **electric vehicles** (see this article on electric cars and information from the Energy Saving Trust). Or getting exercise on our bikes or on foot for shorter journeys.
- **Eating less meat**, or **switching to a vegetarian or vegan diet.**

All of this becomes even more significant if we encourage others.

We can encourage our Government to increase its ambitions on carbon reduction, help Britain adapt to a changing climate, and work to ensure that other people have what they need to develop sustainably and to adapt.

Hope for the Future is a leading advocacy charity that helps people **develop positive relationships with their MPs around climate issues**. They have great advice on how to approach and hold good conversations with MPs as well as issue briefings covering topics from health and climate change to decarbonisation of heating and the encouragement of renewable energy.

And we can encourage businesses to act responsibly on climate issues.

The Oxford Martin Principles for Climate-Conscious Investment **"**provide a framework for engagement between climate-conscious investors and companies across the global economy." It focuses on planning for net zero emissions – which is something that both governments and businesses need to have at the heart of their strategies.

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The Sustainable Blewbury Newsletter is edited by Jo Lakeland and Eric Eisenhandler

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We have a substantial programme of activities in and around the village. Getting involved is fun and can make a very positive contribution to village life and local environment. If you'd like to get involved in what we do, or to receive our free Newsletter, email us at info@sustainable-blewbury.org.uk or phone Eric Eisenhandler at 01235 850558.