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Extreme Weather

Stephen Scoffham

In this article Stephen explores how extreme weather impacts on people's lives and how finding out about it can fire children's imaginations. The examples he has selected are all drawn from Britain but this cross curricular topic could easily be given an international flavour as extreme weather affects every part of the globe.

A short distance from where I live there is a hamlet called Knowlton. It's a tiny place and consists of little more than an old manor house, a church and a small group of houses. But although there's not much to see in the way of buildings, Knowlton has a claim to a place in English history. Inside the church there is a memorial to Sir Cloudsley Shovell who has the unenviable reputation of being in charge of the English fleet when it ran aground in a storm off the Isles of Sicily in 1707. It is believed that the reason for this terrible naval disaster, which cost 2000 lives, is that Sir Cloudsley was unable to ascertain his longitude. It would be many decades before the invention of an accurate maritime clock would enable sailors to establish the difference between Greenwich meantime and local solar time thereby solving the problem. But the 1707 disaster certainly spurred the quest for a solution and is a fascinating example of how geography, meteorology and science interlink (see figure 1).

(maybe set this panel alongside the opening paragraph)

Britain has always been affected by extreme weather events. Finding out about them and the different way that people have responded makes a fascinating story. You may not live near a village like Knowlton, but wherever you live there are likely to be old people who will share their memories. There may be some who can remember the terrible winter of 1947 when there were snowdrifts five metres deep in the Pennines and three months of frost and ice across the country. Then there was the smog of 1952 when the air in London was so thick with fumes that pedestrians lost their way and people in some places were unable to see their feet. A year later, in 1953, over three hundred people drowned in the floods that engulfed the east coast of England from Lincolnshire to Kent. The photographs taken at the time show the scale of the devastation (see figure 2).

(insert figure 2 near here)

These are historical events but there are also more modern ones. For example, some teachers will be able to give first-hand accounts of the great storm (sometimes wrongly called a hurricane) which brought winds of over 100 miles an hour to south east England in 1987, uprooting 15 millions of trees in the process. In the present century, the summer of 2003 brought the highest temperatures ever recorded to many parts of Britain and led to thousands of premature deaths. Meanwhile a prolonged period of very low rainfall from 2010-2012 caused rivers to run low, did extensive damage to crops and resulted in hosepipe bans.

In recent years floods and strong winds have been a particular concern. For example, the winter of 2013-14 brought a sequence of storms which flooded some areas such as the Somerset Levels for several months. It also led to cliff falls in south Devon which destroyed the railway line at Dawlish and cut off rail services to Cornwall for many months. Meanwhile, prolonged rainfall in northern England in the winter of 2015- 2016 caused the rivers Tees and Eden to burst their banks, flooding Carlisle and sweeping away bridges. Advance warnings can help people take precautions against severe weather so the Met. Office has now started to give names to damaging storms to help alert the general public to the danger.

Children love finding out extreme weather events and the havoc that they have caused in the past. There is plenty of information on the internet and old photographs and newspaper reports do much to capture the urgency which people felt at the time (see weblinks panel). You can explore these different responses through role play and drama. The opportunities for writing in different modes and registers is immediately apparent. Such studies are an engaging and motivating way to introduce a topic on extreme weather but they are only a starting point. Here are some suggestions which will help you to go further.

Heat waves, droughts and storms. Get the children to select a single past weather event to study in detail. As part of their investigation they should draw or download maps to show the areas affected. They should also include statistics about the temperature, wind and precipitation and so forth. Challenge them to explain what caused the event they are studying. This will lead naturally into a discussion about possible prevention measures.

Recording local weather events Keeping local weather records usually appeals to children but extreme weather certainly adds to their interest. Get pupils to measure exactly how hot, cold or wet it has been as a result of specific event. Get them to talk about how they feel about the weather they have just experienced. Have other areas of the country been equally affected? Thunderstorms are liable to fire their imagination but remember not all weather phenomena are violent or damaging. Rainbows, dramatic sunsets and unusual cloud formations also attract our attention and are ideally celebrated in art and music.

Weather Memories Arrange for the children to talk to local residents about their memories of extreme weather events and how it affected them. You may have contacts with a nearby Old People's Home or the Warden in charge of sheltered housing. As well as contributing to an oral history project, the accounts which the children collect could be compiled as a short video presentation to share with those who have participated.

Worst weather Divide the children into groups and ask them to research different types of extreme weather eg droughts, heavy snow, thunderstorms, floods, gales, tornados, heatwaves. Their task is to convince the rest of the class that their particular type of weather is the 'worst'. You could give this study an international flavour by including worldwide events such as bush fires in California and Australia, dust storms in Beijing or the 'haze' which engulfed Singapore in 2015.

Freak storms and floods Some extreme weather events are either highly unusual or only affect a very small area. The tornado which swept through Birmingham in 2005, for example, carved a kilometre long path through the city but left other areas unscathed. Similarly, the 2004 floods in Boscastle, Cornwall were the result of a localised storm and other village along the coast were spared. Get the children to investigate different freak events. Gales, lightening and hail are good starting points.

Individual events tell us very little about long term trends but one of the questions which keeps cropping up concerns the impact and frequency of extreme weather events. Are storms more violent now than in the past? Are winters getting warmer? Is flooding getting worse? There can be no precise answers but we know for certain that global temperatures have risen by around one degree centigrade from pre-industrial levels and that this means there is more energy in the global climate system. Increasingly violent and unpredictable weather seems likely. Rather strangely, if ocean currents are disrupted, we could get lower rather than higher temperatures in Britain for a while. Whatever happens we need to fasten our seat belts for the uncertain future that lies ahead.

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How can time be used to measure longitude?

As the Earth spins on its axis it completes a full revolution every 24 hours, which means it turns through 360 degrees. It follows that the Earth turns through 15 degrees every hour. Places where local solar time is one hour different from Greenwich meantime will therefore be 15 degrees away. The longitude of other places can be calculated in exactly the same way.

Surprising Facts

- Britain was struck by over 100 000 lightning strikes as storms swept across the country on the night of 19th July 2017.
- The largest hailstones ever recorded in Britain fell on Horsham in 1958 and weighed around 150 grams.
- More than 30 tornados are reported in the UK each year.

Weather data for 300 UK climate stations

<https://www.metoffice.gov.uk/public/weather/climate/u10unds1y>

(this seems to take me Manston from which all other climate stations can be accessed. Is there a better address?)

Past weather events

<https://www.metoffice.gov.uk/climate/uk/interesting#y2017>

Ten Worst Weather events

<http://www.bbc.co.uk/timelines/zcwj2hv>

(Paula you probably know other, better, sites. These are just ones I have come across recently.)