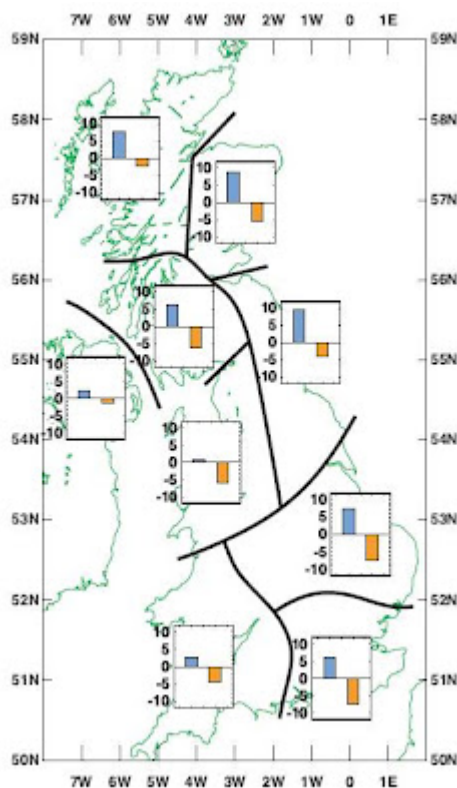


Is the UK flooding down to climate change?



As an employee of the Environment Agency, I am increasingly asked “what an earth is going on with all this flooding?”.

Is climate change to blame?

Maybe, but only maybe - and maybe not. There has been highest rainfall in parts of England since records began in 1766 ([Met Office stats](#)), but many have leapt in with rather more certainty than is justified to attributing this to climate change - citing the usual formula (to paraphrase) that “no single event can be attributed to climate change, but this is consistent with the predictions”.

Actually the picture is far less clear than even this.

Whilst the global picture on climate change is ever clearer, characterising climate change impacts at small geographical scale (ie. English regions or cities) is very difficult. This is done by the [UK Climate Change Impacts Programme](#) (UKCIP). In the most recent (2002) UKCIP assessment, [Climate Change Scenarios for the United Kingdom](#), the modelling finds more intense rain in the winter, but that:

Intense rainfall events become rather less frequent in summer just about *everywhere*. ([p. 55](#))

And this is consistent with the trend over the last few decades. The chart above (fig 12 in the UKCIP report) shows the trend (1961 to 2000) in the fraction of the total seasonal precipitation contributed by the “most intense” precipitation events in winter (lefthand bars) and in summer (right-hand bars) for a number of UK regions. The negative (orange) numbers for summer indicate an decreasing trend in the proportion of the total precipitation that comes from the “most intense” events.

Not only is this the trend, it’s also the forecast. The models also predict lower intensity summer downpours as the climate warms to 2080 - see this [graphic - with my emphasis added](#) from the report.

Enter the jet stream...

But I think this says more about modelling than it does about climate change. The proximate explanation for the current rainfall is a southwards shift in the Atlantic [jet stream](#) - see [Change in jet stream brings woe](#) report in the FT, and [BBC article and graphics](#). The Met office is unsure whether this is as a result of climate change:

It is not possible to say whether this is a result of climate change or not. The position of the jet stream, which steers frontal systems, can vary naturally in response to changing patterns of ocean surface temperatures. But climate change can also cause the position of atmospheric circulations such as the jet stream to shift. We do not yet know why it is further south this year but we do know that, in general, warmer climates experience more intense rainfall.
[\[Letter to Financial Times, 27 July\]](#)

The modelling problem

This gets to the point I think... climate change destabilises atmospheric systems in ways that will not always be foreseen or easily modelled. The modelling itself will tend to understate these risks because climate scientists are playing ‘catch-up’ with real world phenomena, and the modellers are playing catch up with the climate scientists. Perhaps the most obvious example of this are poorly understood feedbacks [see [alarming paper](#)] and new mechanisms for the collapse of ice sheets (see [discussion on David Suzuki foundation site](#)). I think there is growing awareness that ‘known unknowns’ and ‘unknown unknowns’ will be what eventually do us in (see [my posting on IPCC fourth assessment](#)).

On the other hand, it could be just a natural variation. And that's the point: understanding will lag events, prediction will lag understanding, and response will tend to lag prediction unless we adopt a more robust approach to resilience to the known unknowns and unknown unknowns.