

WILL CLIMATE CHANGE LEAD TO MORE FLOODING?



Climate change may affect the jet stream more than scientists previously expected, making floods in the UK more likely. Photograph: Tim Ockenden/PA

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Because warmer air can hold more water, climate change will give the potential for stronger rainfall events. What this means for the risk of flooding, however, will vary widely from location to location depending on local climatic changes that at present are difficult to predict with confidence.

Floods can be caused either by an excess of rainfall leading to greater surface runoff or by storm surges raising the sea level. (The UK Environment Agency provides a map showing the local risk from both river and coastal flooding.) Human activity can increase the risks, for example by paving over areas which were previously covered by vegetation, reducing the capacity of the land to absorb rainfall and causing it to run off more quickly. Planning decisions – such whether to build houses in flood plains or position caravans next to the sea – can also affect society's vulnerability to floods.

Extreme weather events are usually associated with unusual ("anomalous") atmospheric circulation patterns. In normal conditions, circulation patterns vary over time and bring with them different kinds of weather. For example, the jet stream in the North Atlantic brings storms and wet weather to the UK; when it is pointing away from the country the result is more settled and drier conditions. Excess rainfall is caused when the atmosphere becomes "stuck" in one pattern of circulation, giving wet weather for an extended period in some regions. In this situation, soils and groundwater reservoirs can become saturated, which can lead to flooding as additional rain runs off the land surface. Floods in Pakistan in 2010, for example, were caused by an unusual pattern of atmospheric circulation which also contributed to the heatwave and fires in Russia in the same year.

How will climate change affect these factors? There will be the potential for the atmosphere to hold more water, but climate change may also result in changes to large-scale atmospheric circulation patterns like the jet stream, which are harder for climate simulations to predict. Recent results with state-of-the-art climate models have raised the possibility that climate change may affect the jet stream more than scientists previously expected, making floods in the UK more likely. However, the uncertainty in these projections remains large. Flash flooding could also become more frequent as extreme rainfall events are consistently predicted to become more severe.

The risk of coastal flooding is influenced by the frequency and intensity of storms, and by the local sea level. Although in most areas it is not possible to predict the effect of climate change on storms with certainty, we can say with confidence that the sea level is rising and this will increase the risk of coastal flooding in many areas. However, the rate of sea level rise is dependent on location, and the absolute amount is, again, highly uncertain.

Source : <http://www.theguardian.com/environment/2012/oct/08/climate-change-more-floods>