

Warming to shift heavy rainfall patterns in the UK

November 20 2012



(Phys.org)—It appears that it's not just us Brits who are fascinated with the UK weather. A group of researchers from Germany has taken to investigating the potential changes in extreme rainfall patterns across the UK as a result of future global warming and has found that in some regions, the time of year when we see the heaviest rainfall is set to shift.

The study, published today, 21 November, in IOP Publishing's journal *Environmental Research Letters*, finds that between 2061 and 2100, the south-east of the country will likely experience its most [extreme rainfall](#) later in the year whereas the north-east will likely experience it earlier in the year.

The peak time of intense precipitation will shift from late summer to autumn in south-eastern regions and in north-western regions it will shift

from December to November. There were no projected changes for other regions of the UK.

These shifts will coincide with times of the year when river catchments in those regions are at their maximum [water capacity](#), meaning there would be an increased risk of flooding.

Lead author of the study, Anne Schindler, said: "In late autumn, the river catchments in the north-west reach their maximum capacity of water, as do the eastern catchments in winter. This is the time of the year when on average the most floods occur. Therefore, you can conclude that risk increases when the timing of the near field capacity and the probability for most extreme rainfall coincides."

The researchers, from the University of Giessen and GEOMAR Helmholtz Centre for [Ocean Research](#) Kiel, investigated the future changes using 12 [climate model simulations](#) for the periods 2021-2060 and 2061-2100, each forced with the [Intergovernmental Panel on Climate Change's](#) (IPCC) A1B scenario.

They also investigated whether the range of extreme rainfall throughout the year was set to get even greater with warming and did observe a projected increase in western regions of the UK; however, they make it clear that this finding is not robust and would need closer examination.

Schindler continued: "There are different mechanisms that influence extreme precipitation in the two regions we've highlighted. Extreme precipitation in the north-west is strongly influenced by westerly airflow and in the south-east the highest precipitation events are influenced by easterly flows from the North Sea.

"The shifts we have projected could be caused among other factors by changes in these large-scale circulation systems; however, this needs

further investigation. For instance, we know there are deficits in the representation of rainfall in climate models and we do not know how the peak times vary from year to year without any man-made climate change."

The UK has a long history of monitoring rainfall and has a large number of rain gauges scattered across the country, providing a wealth of information and making it an ideal place to study.

More information: Changes in the annual cycle of heavy precipitation across the British Isles within the 21st century, Anne Schindler et al 2012 *Environ. Res. Lett.* 7 044029.

iopscience.iop.org/1748-9326/7/4/044029/article

Provided by Institute of Physics

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