Better information needed to understand extreme weather

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Scientists need more credible and relevant information to help communities become more resilient to extreme weather events such as floods, a University of Exeter expert has said.

Researchers need improved techniques to be able to understand why the climate is changing, and the part humans play in this process, according to Professor Peter Stott, who also leads the Climate Monitoring and Attribution team at the Met Office.

In an article in the journal *Science* Professor Stott, who is part of the Mathematics Department at the University of Exeter, says reliable information is vital for policymakers as they decide how to safeguard people from extreme weather. Knowing what causes natural disasters can help inform decisions about how to rebuild or price insurance.

"Placing recent extreme events in the context of past and future climate variability and change would enhance the ability of societies to manage weather and climate-related risks," Professor Stott says in the article.

Climate change caused by humans has led to an overall increase in the frequency and intensity of daily temperature extremes and has led to more extreme rain over the world as a whole. But the risks of unusual weather events such as floods, droughts, and heat waves have changed differently in different parts of the world. More research is needed to understand exactly how communities are being affected by climate change.

Professor Stott co-edits an annual report explaining how the climate has affected extreme events of the previous year. The report has grown from considering only six events in 2011 to covering 28 different events in 2014. These reports help to explain if climate change has influenced either the magnitude or the probability of specific types of weather events.

Most researchers use mathematical modelling to help assess the extent of climate change. It is easier for them to find evidence that human-induced climate change causes extreme temperatures because there is a wealth of data on extreme hot and cold events and they can be well captured in climate models. Heatwaves occur over a wide area.

It is more difficult to examine extreme rainfall because there is a lack of accurate data, climate models can fail to represent them adequately, and their relationship with climate variability and change is often not well understood. Flooding is often extremely localised. Scientists are trying to rectify this through projects, including the European project EUCLEIA (European Climate and Weather Events: Interpretation and Attribution) which is led by Professor Stott and a team from the Met Office.

Professor Stott believes better ways of modelling and analysing climate change will be available very soon. He said: "I believe there is the potential for improvement in our ability to attribute extreme weather events within the next year or two. It is both possible to do this and important that we do. With this information societies will be in a better position to manage the risks of weather and climate-related disasters."

Provided by University of Exeter