

UK Winter 2015/2016 floods: One of the century's most extreme and severe flood episodes

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The winter floods of 2015/2016 in the UK - a review

by Terry Marsh, Celia Kirby, Katie Muchan, Lucy Barker, Ed Henderson & Jamie Hannaford

2015/2016 Winter Floods report - Front Cover. Credit: Centre for Ecology & Hydrology (NERC)

A new scientific review of the winter floods of 2015/2016 confirms that the event was one of the most extreme and severe hydrological events of the last century.

The new hydrological appraisal - 'The Winter Floods of 2015/2016 in the UK', published on the first anniversary of Storm Desmond (December 5th), brings together both river flow and meteorological data in an analysis of the events that led to extensive river flooding in northern England, Scotland, Northern Ireland and parts of Wales over a three month period.

The study, carried out by scientists from the Centre for Ecology & Hydrology in collaboration with the British Hydrological Society recognises that the Winter 2015/2016 episode ranks alongside the floods of 1947 as one of the two largest flood events of the last 100 years at least.

Storm Desmond alone caused an estimated insurance bill of more than £1.3 billion when it struck on the 5th and 6th December last year.

The review also highlights that 16,000 properties in England were flooded during the three months of 'remarkably persistent and exceptionally mild cyclonic' activity which, along with Storm Desmond, included the major storms of Abigail, Frank and Gertrude.

Lead author Terry Marsh, from the Centre for Ecology & Hydrology,

said, "At a national scale the winter floods of 2015/16 were the most extreme on record.

"The November to January period was the wettest three-month sequence in the UK rainfall series - which begins in 1910. Correspondingly, river flows across much of the country exceeded bankfull for extended periods.

"The associated flooding was both extensive and repetitive, and total river outflows from Great Britain following the passage of Storm Desmond in December exceeded the previous maximum by a substantial margin."

Cumbrian resident Dr Ed Henderson, a co-author of the review from the British Hydrological Society, said, "The effects of the floods are personal. Thousands of Cumbrians, like people in other flood-affected parts of the country, have seen their lives upturned. Many have experienced life-changing financial losses and incredible stress.

"Speaking with flood victims, the words that come out are despair, fear and anxiety - fear of flooding again and the anxiety of an approaching winter. Floods don't just take your home, the place where you should feel safe, they often take your future as well."

The review highlights:

- That December was the wettest and, on average, the warmest on record in the UK, in records going back to 1910.
- The highest ever recorded rainfall in the UK was measured when 341.4mm of rain fell at Honister Pass in the Lake District in the 24 hours leading up to 6pm on the 5th December 2015.
- Record peak flows occurred at the rivers Eden, Tyne and Lune in England of around 1,700 cumecs (cubic metres per second). This

volume of water is enough to fill London's Royal Albert Hall in under a minute.

- Other record peak flows also took place at the rivers Nith, Tweed, Clyde, Forth and Tay in Scotland and the Mourne in Northern Ireland.

Co-author Jamie Hannaford, from the Centre for Ecology & Hydrology, said, "Last winter's devastating floods follow the winter 2013/2014 flooding in southern England and other severe events of recent years including the 2005 and 2009 floods in Cumbria.

"Understandably, this leads to speculation that flood risk is increasing due to climate change.

"There are trends towards higher river flows over the last five decades, especially in western Britain. But records are short and there is much natural year-to-year variability, which makes it hard to attribute observed trends to climate change. Nevertheless, recent modelling studies do point towards human-induced warming having a role to play in these and other recent floods."

Dr Nick Reynard, the Centre for Ecology & Hydrology's Science Area Lead for Natural Hazards research, said, "Our new review clearly outlines the events of the last winter, as one of the most severe episodes of flooding to hit the UK in the last 100 years. Communities across the country were devastated.

"In response we are working hard with central government to improve flood estimation, and examine how potential mitigation measures, such as natural [flood](#) management, can help us reduce the impact of flooding in future."

Provided by Centre for Ecology & Hydrology

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