



Future climate risks from compound events

Why this is important: There is a strong need for better and more usable translation of hazard information into risks. This requires combining weather/climate hazard information with vulnerability and exposure information to produce risk estimates and converting the hazard from weather/climate metrics into more relevant impact metrics. This will provide policy makers and other stakeholders with more useable information for adaptation planning in different sectors to support increased resilience of the UK to future climate variability and change.

Historically, weather and climate hazards and risks and their impacts are often considered individually, but here we consider events that include multiple climate hazards, which may occur at the same, or close to each other in time, creating impacts which might be more severe than when they occur alone. Compound events may also cascade across different sectors of UK society.



What the UKCR programme is doing: The project is building methodologies for studying the risk of compound events that may affect UK sectors over the 21st century. These general methodologies will eventually be publicly available in a code base. To develop the methodologies, the project has used a case study approach to assess the current and future likelihood of several different hazard events of interest to the UK agricultural sector occurring simultaneously or in close succession (compound events), and projections of risk associated with them. These include the risk from thermal heat stress in dairy cattle during warm and humid weather, and potato blight, a fungal disease that affects potatoes in warm humid weather. Future 12km UK climate projections were used to consider if these examples of compound events are likely to be more frequent in the future climate (50 years' time) compared to the present day. Hazard frequency information has been combined with regional dairy cattle/potato numbers to present risk maps across the UK to aid decision makers in future agricultural planning. The study also considered adjacent UK seasonal changes, such as a cold spring followed by a warm/dry summer which can result in negative impacts such as reduced crop yields and cattle feed shortages. These results have been written up and submitted for publication in the Special Issue on "UK Climate Risk Assessment and Management" in the journal *Climate Risk Management*.

If you would like to hear more about the research on compound events, you can watch the webinar that Dr Freya Garry gave in June 2020: <https://www.ukclimateresilience.org/news-events/webinar-how-will-multiple-climate-hazards-impact-uk-food-over-the-21st-century/>

Reference: Garry, F., Bernie, D., Pope, E., Future climate risks to UK agriculture from compound events, (Submitted; *Climate Risk Management* for inclusion in Special Issue on "UK Climate Risk Assessment and Management")

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