Predictive flood models for a changing climate

Tom Telford, Landmark Information Group

Since the turn of the current century, the UK has seen more and more unpredictable weather conditions create havoc up and down the country.

With unprecedented rainfall taking place 'out of season', we are seeing many more reports of incidences of flooding in established urban areas, creating thousands of pounds of damage and disruption.

On top of this, new developments are often cited as creating further pressure on existing drainage systems, or creating surface water issues, all of which are closely inspected when new development applications are presented for approval.

One of the scenarios suggested by UK Climate Projections (UKCP09) indicates that the nation is likely to receive increases in rainfall frequency and intensity in the future through climate change. Based on these predictions it's expected that the risk posed by flooding will increase with more severe flooding occurring at a greater frequency.

The changing climate creates a problem for those firms looking to understand a site's exposure to flood risk because traditional flood maps have always been built using a deterministic approach whereby probability is determined through historic records.

As we see it here at Landmark, climate adaptation and boosting resilience based on future predictions will be key to the running of critical infrastructure as well as to protecting existing property and livelihoods, as well as new property developments in the years ahead.

With this as the key driver, we have been working on developing a national dataset that incorporates UKCP09 to enable utility companies, asset managers, local government, property developers, and construction engineers to identify the potential impacts of climate change from a flooding perspective, therefore ensuring they can become more resilient and adapt accordingly to future predictions.

In collaboration with **Wales & West Utilities** and flood risk experts **Ambiental**, we have developed a pilot solution which uses probabilistic climate predictions to generate flood models, provided as a range of climate change datasets.

These **FloodFutures**™ datasets include a suite of products that have baseline and future scenario flood maps, erosion risk potential and risk to transport layers.

The aim of this work is to provide the tools that will enable all stakeholders to correctly plan for long term flood risks with a far greater understanding of how the risk profile will change with time than ever before. This includes fluvial and pluvial, sea level rise inundation and future changes to high and low tide levels.

This future-facing data not only supports climate change risk assessments and adaptation reporting requirements now, but ultimately will also future-proof the asset and property investments of all involved.

Dr. Justin Butler, CEO of Ambiental commented,

"Given recent flood events and increases in the severity and frequency of flooding across the UK and elsewhere, accurate prediction of flood risk is becoming increasingly important. However, accounting for future climate scenarios has not, until now, been incorporated explicitly into our detailed flood maps and models so this innovation represents a step change in the way that we view the risk. The potential for improved planning, risk mitigation and adaptation is considerable".

To find out more about predictive flood modelling and how this data can be used to support planning designs and applications, contact Tom Telford at Landmark Information Group via www.landmark.co.uk

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