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Challenges in Verifying Hazard Impact Models

Rebecca Hemingway
United Kingdom (rebecca.hemingway@metoffice.gov.uk)

Impact-based forecasts have attracted much attention in recent years as they may provide more relevant information to decision-makers and the public than forecasts and warnings of meteorological hazards alone. This means there is a need for impact models that highlight the areas or communities which are at highest risk during an extreme weather event. These areas can then prepare for, and mitigate the impact ahead of the event. However, in order for these impact models to become trusted their output needs to be verified against actual observed impacts. Unlike routine weather observations, impact reports are difficult to acquire and often subjective, not standardised and lacking detail. This means that traditional verification techniques cannot easily be adopted.

This presentation will demonstrate the methods currently used to verify impact models using the Vehicle OverTurning (VOT) Model as an example. This model has been developed as part of a Hazard Impact Model (HIM) under the auspices of the Natural Hazards Partnership in the UK. The aim of the HIM is to produce early warnings for severe events that allow us to generate an overall picture of the risk to society based on probability and impact. The VOT model aims to predict the risk of disruption to the road network due to high winds. In order to verify the model impact data on actual disruption events are required, but finding reports on vehicle overturning events has proved laborious with inconsistent and limited results. Despite this, a number of potentially useful data sources have been identified including news reports, social media reports including twitter, police data and the Met Office Weather Observations Website (WOW, http://wow.metoffice.gov.uk/). The methodology for impact model verification that was used here could be applied to any impact model focusing on any hazard; however the challenges are likely to be the same. Further research is required to develop a more time-effective method of verification using impact data from multiple sources.