



A Machine Learned approach to the Likelihood of UK Impact Based Severe Weather Warnings from Coarse Resolution Synoptic Weather Regimes

Steven Ramsdale

Met Office, Exeter, United Kingdom of Great Britain – England, Scotland, Wales (steven.ramsdale@metoffice.gov.uk)

The impact and mitigation of the impact of weather on the public and prosperity of the UK is a core focus of the Met Office. At the heart of this is the National Severe Weather Warnings Service (NSWWS), the UK wide impact-based warnings service used in planning and preparation by responders as well as the wider public. Traditionally this process requires significant human effort from expert meteorologists and consultation with stakeholders to understand potential impacts from severe weather. With increasing volumes and performance of numerical weather prediction (NWP) data available to operational meteorologists a new approach is required to mitigate the cognitive load increasingly put on their shoulder. With an impact based warnings system this allows us to move from weather parameter forecasting to recognition of when whether may be impactful as a starting point. This identification can then be used to direct further analysis, limiting the requirement for an operational meteorologist to look at all data to make their initial assessment and instead direct them to relevant hazard analysis. To explore this new paradigm this work looks at creating a prediction of whether NSWWS warnings are likely to be issued from coarse resolution NWP parameters alone, mimicking the starting point of human processes, limiting the data volumes necessary for this initial assessment but allowing increased exploitation of ensemble information. The models developed show skill in identifying the potential of NSWWS warnings on a regional scale though performance by region and parameter does vary. This suggests that this approach has merit but this is a supporting model for directing human exploration, supporting the value of the operational meteorologist in years to come.