



Characterising Cold Weather for the UK mainland

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Excess Winter Mortality is a peak in the population's mortality rate during winter months and is correlated with low outdoor temperatures. Excess Winter Mortality has adverse impacts, including increased demand on health services. The management of resources for such increased demands maybe improved through incorporation of weather forecasting information to advanced warnings. For the UK, prolonged cold periods are associated with easterly advection, and high pressure systems. Characterisation of the synoptic conditions associated with cold periods is important to understand forecast performance. Principal Component Analysis has been used with mean sea level pressure from 35 years of ERA interim reanalysis to capture synoptic variability on a continuous scale. Cold events in the North and South of the UK mainland have been identified as having different synoptic variability using this method. Furthermore extending the Principal Component Analysis to investigate the skill of forecasts has identified systematic under prediction of some cold weather synoptic conditions. Ensemble forecasts are used to quantify the uncertainty associated with these cold weather synoptic conditions. This information maybe be used to improve the value of existing weather warnings.