



Diagnosing fog in the Met Office's Unified Model

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Forecasts of visibility, especially poor visibility, are important to a range of stakeholders. An important example is aviation, both civil and military, which relies on visibility forecasts to plan aircraft movements. Fog also impacts on the general public by presenting a hazard to road transport. The reliable and accurate prediction of visibility is an essential element of the Met Office's weather forecasting capability.

The Met Office's Unified Model uses a diagnostic parametrization to forecast visibility. This visibility scheme covers the entire visual range from excellent visibility, through haze and down to fog. The inputs to this scheme are prognostic model fields of pressure, temperature, specific humidity and aerosol mass mixing ratio, the output being the visual range. This talk will describe how detailed observations at the Met Office's surface-based observations research unit at Cardington have been used to validate this visibility parametrization, indicating that the scheme has been under-forecasting the incidence of fog. This presentation will detail specific problems with the scheme, e.g. the limitations of the aerosol input and the difficulty of developing fog droplets from the input atmospheric water. Using observations to identify these problems is essential to developing improvements to the forecast visibility.