



## **Towards a probabilistic approach for hazard area assessment in dispersion modelling**

A Jones

Ensemble Prediction Systems (EPS) have become an important tool in operational weather forecasting for assessing uncertainty in meteorological predictions. They provide useful guidance, in terms of the general level of confidence in the forecast evolution (e.g. in support of deterministic products), in the identification of possible alternative outcomes (including high-impact weather events) and in facilitating a probabilistic approach to weather prediction. In recent years, direct model output from EPS forecasting systems has begun to be deployed in downstream models and decision-making tools (e.g. for flood forecasting applications, or in energy-demand models).

The Met Office has been exploring the use of real-time EPS forecasts in its Lagrangian atmospheric dispersion model, NAME. The capability has been developed to run NAME using the ECMWF EPS for applications at medium-range timescales (3 to 15 days ahead) and the Met Office MOGREPS forecasting system at shorter range (0 to 2 days). These capabilities are presently being evaluated, with a specific focus on emergency-response type dispersion applications.

This presentation will review our current deterministic volcanic ash modelling approach as a Volcanic Ash Advisory Centre, and then present some example development products, based on ensemble techniques, that were produced for the Eyjafjallajökull eruption in 2010. The emphasis here is on representing uncertainty in the meteorological forecast as propagated through the EPS input to the dispersion model. Various uncertainty products will be presented and their strengths and weaknesses at providing effective guidance to decision makers will be discussed.