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Validation of the UK Met Office (London VAAC) dispersion model (NAME) for the Eyjafjallajokull eruption

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The UK Met Office run, staff and support the London VAAC. The London VAAC uses the Met Office Lagrangian dispersion model NAME (Numerical Atmospheric-dispersion Modeling Environment) as a fundamental part of its operational forecasting process. During the eruption of Eyjafjallajokull in April and May 2010 the aviation industry and regulators required the Met Office to supplement the VAAC standard ICAO binary volcanic ash forecast of hazard/no hazard with a forecast of varying ash concentration. Validation and verification of actual concentrations predictions presents many challenges for dispersion modelers but the numerous research observations that were gathered during this eruption also present an almost unique opportunity to enable the Met Office to further validate and develop NAME.

Comparisons with observations gathered by research aircraft, LIDAR and satellites during the eruption show promising prediction skill from NAME while also illustrating some of the limitations of NAME and other similar atmospheric transport models. These comparisons also highlight the vital importance of accurate observations of the eruptive source term as a dominant controlling factor in the prediction accuracy.

This presentation will briefly introduce the London VAAC and the NAME model before exploring and comparing a range of NAME predictions and observational data for the Eyjafjallajokull eruption. We will close by considering some of the issues of long range transport predictability, future modeling development plans.