



An early warning system for incursions of Bluetongue disease to the UK

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Since 2006 northern Europe has been in the midst of an extensive epidemic of the animal disease, Bluetongue, which has cost the European economy hundreds of millions of euros due to death, sickness and movement restrictions of livestock. Bluetongue is spread by biting midges which can be carried for hundreds of kilometers on the wind.

A scheme within the UK Met Office's dispersion model, the Numerical Atmospheric-dispersion Modelling Environment (NAME), has been developed to reflect the effects of meteorology on the long-distance transport of these midge vectors. The scheme is based on data from field and laboratory experiments carried out at the Institute for Animal Health, Pirbright. From these experiments, certain threshold values which define when midges do not become airborne have been obtained for several meteorological variables. Within NAME, particles representing midges are removed from the model atmosphere if these thresholds are exceeded.

Following outbreaks of the disease in Belgium and the Netherlands in 2006, an early-warning website was developed based on the model, to provide the UK Department for Environment, Food and Rural Affairs (Defra) advance knowledge of potential disease incursions by infected midges carried on the wind across the English Channel. The service has been in daily operation since April 2007 and correctly warned of the high risk of an incursion of infected midges causing the first UK outbreak in Suffolk on 4 August 2007. The website has since been expanded to predict potential incursions of disease into the Channel Islands and Northern Ireland and was used to inform on vaccination policy decisions by Defra and the Scottish government.