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Interactive comment on "Investigation of airborne foot-and-mouth disease virus transmission during low-wind conditions in the early phase of the UK 2001 epidemic" *by* T. Mikkelsen et al.

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I would like to comment on the epidemiological context of this paper. Spread models for highly contagious animal diseases are – not surprisingly after the recent outbreaks of classical swine fever, food and mouth disease, Newcastle disease and Avian Influenza in Europe and elsewhere – currently of great interest. It is important to make a distinction between models established to explain the behaviour of an actual outbreak (the paper of Dr. Mikkelsen et al. falls in this category) and those that are meant as simulation tools for optimising disease control strategies during "peace-time". A hybrid of both types would be a simulation model that can be adapted to the current epidemiological situation (virus strain characteristics, control responses, etc) during an

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outbreak and that would provide short-term predictions of the spread. As veterinary epidemiologist I am not in the position to comment on the technical aspect involved in modelling airborne transmission and that were elaborated in the paper. However, I think that the value of integrating airborne spread explicitly into short-term prediction models is immense. Models developed in veterinary epidemiology (e.g. InterSpread, epicentre.massey.ac.nz/) make only limited use of meteorological data.

There is certainly need for interdisciplinary co-operation to cope with the complexity of spread phenomena. Methods developed for spread of particles may lack the notion of reproduction (here: virus material reproduces in susceptible animals, leading to a population-density dependent concentration) and contagiousness (here: reduction to airborne spread is only plausible under complete stand-still policy, otherwise transmission occurs by animal movement, etc). From the application point of view, a model would be desirable that (a) considers all relevant factors in the transmission of the infection, (b) is automatically linked to the relevant data sources and (c) can be managed in a crisis situation.

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