MODELLING THE UK 2001 FOOT-AND-MOUTH EPIDEMIC

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Foot-and-Mouth disease (FMD) entered the UK in the beginning of February 2001. By the time it had been eradicated it had exerted terrible effects upon both the farming and tourism industries of the UK. The control policies that were put in place by the UK government have been the subject of much controversy, both at the time and since. Vital to ensuring that any future outbreak is controlled efficiently is that we have as a full an understanding of the spatio-temporal dynamics of the disease as possible.

To this end, we present work undertaken to model these dynamics using a Bayesian MCMC approach to parameterisation. Two areas of importance arise. One is the form of the model itself. Here we use as our starting point the model of [1] which has been extended to better capture the characteristics of the epidemic. The second area of importance is how the model and MCMC updates can be formulated in such a way that the computation time is not prohibitive.

References

[1] Keeling, M. J., Woolhouse, M. E. J., Shaw, D. J., Matthews, L., Chase-Topping, M., Haydon, D. T., Cornell, S. J., Kappey, J., Wilesmith, J., and Grenfell, B. T. Dynamics of the 2001 UK foot and mouth epidemic - dispersal in a heterogeneous landscape. In *Science*, 294:813–817, 2001