

# SEMIPARAMETRIC SMOOTHING FOR DISEASE MAP SURVEILLANCE

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Methods for the production of individual (address) level disease maps are often retrospective; they estimate a map of the average relative risk of disease over a study period. However, recently epidemiology has started to look at weekly or monthly reports of disease and assessing them for any change in the distribution of relative risk. For example, in the United States of America the Centre for Disease Control and Prevention now routinely collect information on over 50 notifiable diseases every week. In this paper we present a method for the detection of a sudden change in the geographical distribution of disease in a prospective study. The method is based on a tapering window of smoothed history estimates with a nonparametric spatial smoothing model. A Bayesian framework is assumed and the model is sampled via particle filtration to speed up computation.