* Probit geospatial model for malaria infection status

We adopt a fairly standard geospatial model for malaria infection status. Let be a binary variable denoting malaria infection status for individual i in village j. Using a probit regression framework, we assume that if and otherwise. The latent variable is modeled as:

where is the design vector, containing individual level covariates, contains the corresponding regression coefficients, and is the village-survey level random-effect. We assume that:

where is the design matrix and is a vector of the corresponding coefficients. Furthermore, is the spatial correlation matrix where the correlation between villages k and l is given by , where is the distance between these villages.

Finally, our priors are given by:

whereis a diagonal matrix with diagonal elements equal to [10,1,…,1].