Small Scale Sim

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Small-scale simulation results

Data setting: 1

This data setting uses 2 hotspots. When observations are within radius 0.12 of the hotspot, $P(Y = 1) = 0.75$ Outside of the radius, $P(Y = 1) = 0.0001$. These settings were chosen so that $Y = 1$ approximately 5% of the time.

We generate $n = 1000$ observations. We fit the model using a training set of 750 observations, and then validate the predictions at 250 testing sites. The MCMC ran for 50000 iterations with 40000 burnin.

Methods

There were 3 methods used to fit the datasets.

> 1: Fit α, ρ, *beta*, and random effect in the MCMC. The mean of ρ in the MCMC is set to be the estimates from the pairwise composite likelihood. The α term is given a beta prior with mean equal to the estimate from the pairwise composite likelihood, and standard deviation of 0.05.
>
> 2: Logit
>
> 3: Probit

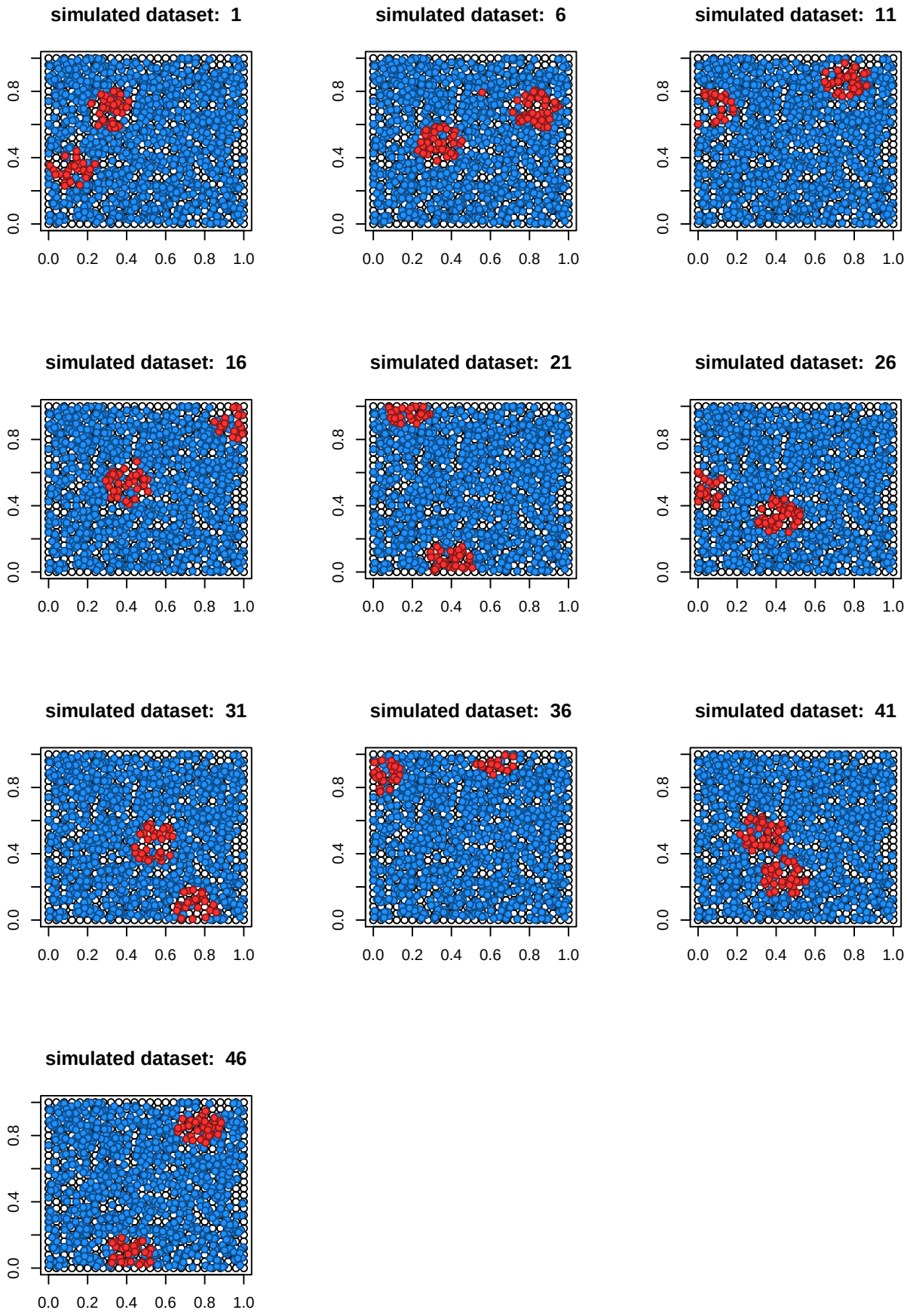
In model 1, to help speed up the computational aspect of the MCMC, we only include sites for a knot that are within a certain distance of the knot location. This is set at an initial value based upon the knot spacing, and is adjusted during the MCMC to ensure that all of the random effects are moving from their initial values.

Results

Here are the results for 10 datasets:

Table 1: Simulation results (x 100) for 10 datasets

	1	2	3
1	2.464	3.227	2.527
6	1.499	1.419	1.47
11	2.704	2.849	2.285
16	2.404	2.225	2.302
21	1.558	1.563	1.548
26	1.298	1.131	1
31	1.436	3.088	1.279
36	1.669	1.418	1.377
41	3.759	4.032	3.626
46	4.623	3.977	3.561
Mean	2.341	2.493	2.098


simulated dataset: 1
simulated dataset: 6
simulated dataset: 11
simulated dataset: 16
simulated dataset: 21
simulated dataset: 26
simulated dataset: 31
simulated dataset: 36
simulated dataset: 41
simulated dataset: 46
0.0 0.2 0.4 0.6 0.8 1.0
0.0 0.4 0.8