progress

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Hi Brett and Steve.

This is the progress I have made so far with estimating parameters using metropolis hastings. I have coded both a standard metropolis hastings into Matlab and c. I have then coded a simulated Annealing algorithm into Matlab. The simulated annealing algorithm as far as I can tell is much more successful than the standard metropolis hastings. I have had to play around a bit with how to test the closeness of fit for the likelihood functions in the algorithms. I will hopeful explain my reasoning alright for each one. The next step I think is to take the Simulated annealing algorithm to an MPI code and then to GPU.

The MPI code will simply allow a comparison between a serial algorithm on a CPU to a multi-threaded implementation. To do this I don't think will be too difficult. Just for each temperature we send out multiple seed values and only take the best one for the next temperature iteration. I also want to take the standard metropolis to multithread for comparison. Since the two algorithms are extremely similar it would just be nice for comparison.

A concern for me is the estimation for the noise in the system. When I attempt to add noise to the output and try to fit a noise parameter to the output of the model filter I get a small value with the other parameters seemingly averaging out the noisy output. I'll include an image for what I mean here.

1 Standard Metropolis Hastings

Testing 1 2 3 how this is changing this is changing quickly $\alpha = \frac{\theta}{\chi}$

2 Simulated Annealing

testing 2