Homework Set 2

For each problem please turn in a complete answer. In particular you should include any narrative required to understand your method and comment on your results where appropriate, label and place captions on any figures you include, and in general think of your homework as a short report. The intent is not to have you do a lot of writing for the sake of writing, and you can certainly assume that we know what the problem statement was, but your homework should be professionally done and we should not have to guess at how to interpret what you hand in.

The homework contains some challenges. If things are too challenging, you need to figure that out and ask about it ahead of time. So what we all know is the standard undergraduate approach of waiting until the night before to start the homework may be even more dangerous here than in most undergraduate classes. Start early and leave the procrastinating to us professionals.

Problem 1: Multi–Layer Models

Download the MCML program, and simulate the fog problem you solved in Problem 2 of the first homework. Also solve the problem using diffusion theory (DC). To compare the three computations, it may be easiest to look at the total power absorbed per unit depth, as a function of z.

Experiment with the scattering and absorption coefficients to find ones which agree with the equations of Homework 1, and ones which agree with photon diffusion theory.