Climate Physics

PHYS 428 Spring 2018

Problem Assignment #1

due 1/29/2018

1. Salby problem 1.
2. Salby problem 2.
3. Salby problem 3.
4. Salby problem 4.
5. Salby problem 6.
6. Salby problem 11.
7. **Simple climate modeling**

   Go to http://climatemodels.uchicago.edu/modtran/ Modtran is a model that simulates emission and absorption of IR radiation in the atmosphere.

   (a) Print out the output for the default parameters (the emission spectra for the model input parameters).

   (b) Change the input parameters (CO 2 , CH 4 , etc) and observe what happens to the modeled emission spectra. On the sheet that you printed out, indicate what changed (changes are subtle) and explain the observed changes given what parameter you varied. For example, changing the atmospheric CO 2 slightly changes the absorption spectra near the appropriate wavelength.

   (c) Repeat part b. by changing locality and cloud cover (it is easier to understand if you vary one parameter at a time).