GEO 5500 Numerical Methods in the Geosciences
Computer Assignment #8
Eigen problems

Assigned: March 3, 2005
Due: March 24, 2005

Relevant reading: Lindfield and Penny, Chapter 2:15 – 2:17

1. Use Matlab's "eig" function to solve the two-box carbon problem discussed in class. Assume that 50 x 10^{15} gC is instantaneously transferred from the biosphere to the atmosphere (possibly representing global warming) and plot the time it will take for the system to return to steady state.

2. Construct a three-box carbon model as shown below where the third box represents the marine biosphere. Again assume that 50 x 10^{15} gC is instantaneously transferred from the terrestrial biosphere to the atmosphere and plot the behavior of the three carbon reservoirs with time.