ATS 421 / 521 Homework 1 due Monday, April 8th

1. Implement the 0-D EBM in a fortran program. (2)
2. Use a time step Δt=10 days to integrate the model forward. Use different initial conditions and plot the temperature as a time series. Compare the numerical solutions to the analytical solution. (2)
3. Increase the time step. What happens? (1)
4. Calculate the hysteresis curve (plot T as a function of S) for the model analytically and numerically. For the analytical calculation use equation (2.7). For the numerical calculation increase / decrease solar constant slowly in a transient model simulation. (4)