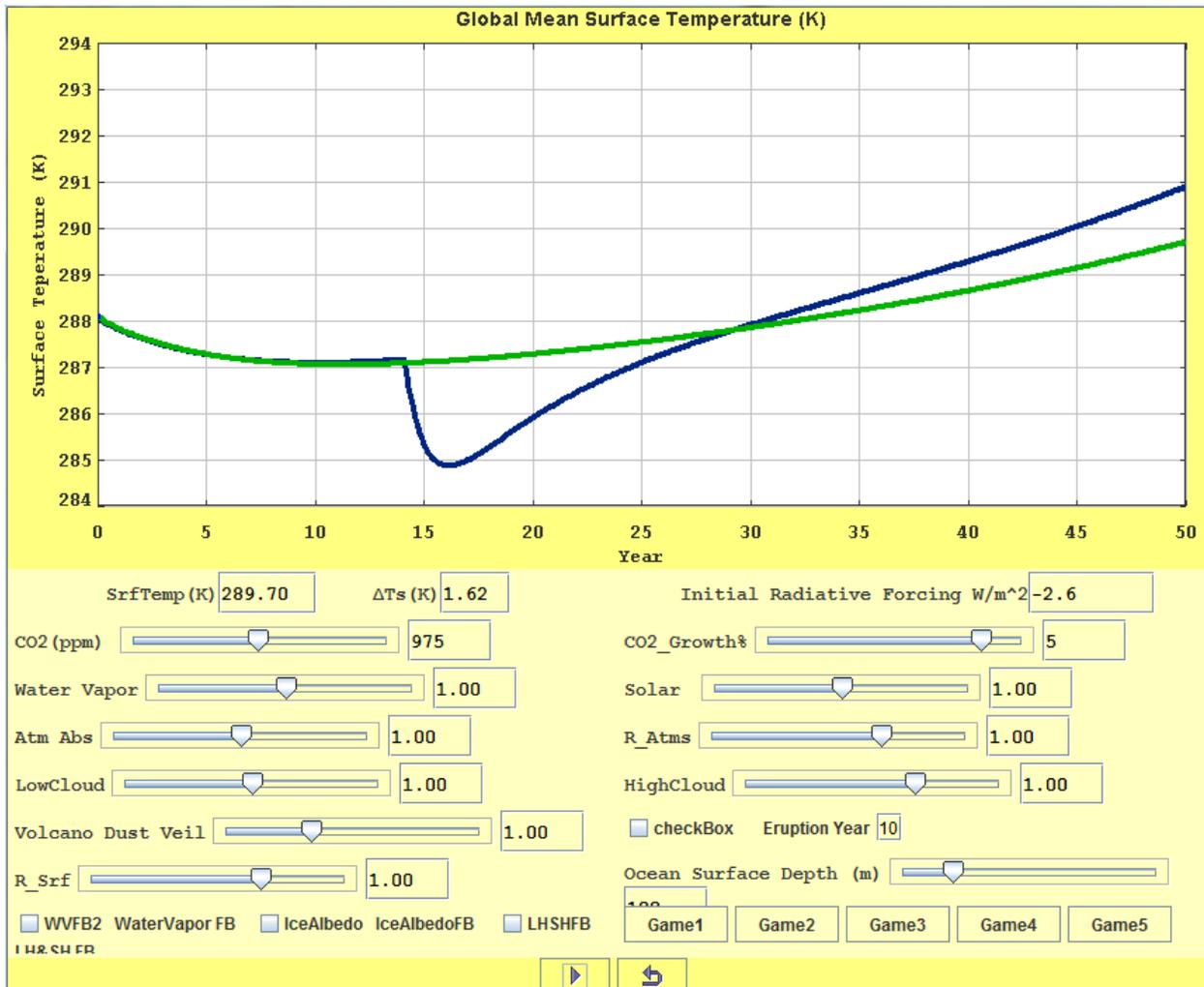# Energy Balance Game:

Learning objectives: 1) learn how changes in different components of Earth's climate system can alter Earth's energy balance and its global mean surface temperature. 2) Use a simple climate model to identify possible casues (attribution) of a past temperature record.

See Youtube Intro **YouTube intro and hints to game**

See **pdf slide show for an overview of the simulation environment**.

Here's a link to the SimulationEnvironment
www.atmosedu.com/meteor/ejs/ejs_EBMA.jar

@ Robert MacKay, Clark College Physics & Meteorology

Introduction: Scientists often use climate models to help them better understand Earth's climate system. Comparing model generated simulations with recorded past global temperature fluctuations can help scientists better understand what may have actually caused these climate fluctuations. Once climate scientists gain confidence in the ability of a model to simulate real variations in global temperature, they can then use the model to make predictions about the future climates. In this challenge you will use a relatively simple climate model to match a "recorded" graph of temperature over a 50 year period. There are a total of 5 games. In each game (click on game1 through game 5 buttons to access a particular game) a graph of temperature over a 50 year span is show. You have to vary the input values of the model and run the model using any of the Run buttons to get the model simulation to match the "recorded" temperature graph for each game.

When you get a good match (or pretty good match) record all your game results in a single MS word document (or pdf):

Include a screen capture of each game's graphical output with your best fit. Right click on graph and use the" snap shot tool" under "capture the screen".

Also include the specifics of what you had to change in the input controls to "win".
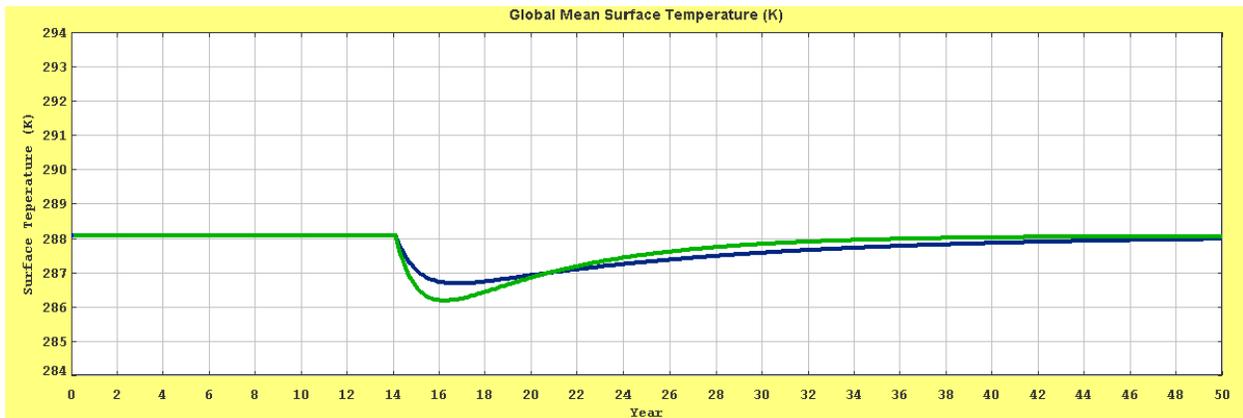
This is not a very good fit but it is getting close.

When you have a good fit each final graph should have only two lines on it 1) the game challenge and 2) your best fit.

Play all five games and record your results in one single document for full credit on the assignment.

The URL of the game program is www.atmosedu.com/meteor/ejs/ejs_EBMA.jar . This is a stand-alone Java Program, save it to your computer, and then open it. Most computers have the Java run-time environment installed, if you don't, you can get it from http://www.java.com/en/download/index.jsp .

Scoring:
Game 1 0-2 pts   Game 2   0-3 pts   Game 3   0-3 pts   Game 4   0-3 pts   Game 5   0-6 pts

Further reading: The simulation environment is based on the **simple energy balance model descried here.**