

Energy Balance Game:

Input Controls [To Graph & Output Table](#) Here's the [Game sheet in PDF format](#)

Initial Surface Temperature, T_0 (K)= 288.08 ; Final Srf Temp, T_F (K)= 288.08 ; Temp Change ΔT (K)= 0

CO₂(ppm)= 320 CO₂ growth rate (% per year)= 0 Final CO₂ (ppm)=

H₂O^{**}= 1

Solar Constant^{**} 1 Surface Albedo (0 to 1) 1

Solar Atmos Absorption^{**} 1 Solar Atmos Reflectivity from air molecules^{**} 1

Low Cloud Amount^{**} 1 High Cloud Amount ^{**}1

Volcanic eruption strength (0 to 1) 1 (not active until checkbox checked)

Ocean Mixed Layer Depth (m) 100 ^{**}fraction of base value (1.0 is default)

Ice Albedo Feedback Water Vapor Feedback Surface heat flux feedback Volcanic Eruption at year 10

[To Graph & Output Table](#) **Note: This game works best with the Internet Explorer Browser.**

Run1 Run2 Run3 Clear Reset Game1 Game2 Game3 Game4 Game5

You can make several runs with different colors on the same graph for comparison. [To Model Input & control](#)

Global Climate Change

Srf Tmp (K)

293

288

283

0 25 50

t(yrs)

See Youtube Intro [YouTube intro and hints to game](#)

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) save your results as follows.

1. Press the Alt and Print-Screen buttons on your computer simultaneously
2. Open MS word and write you team name at the top and then press enter a few times
3. press the Ctrl-V keys simultaneously (or use the Paste command) to paste the screen into word. See this video on how to manage MS Word Document size
<http://www.youtube.com/watch?v=SU0y7-TOHel>
4. Write a short statement as to what you had to change in the model to get your fit.
5. Leave Word open so you can easily paste the results of your next game into the document and write a short statement as to what you had to change in the model to get your fit.
6. Do as many games as you can before the time is up.

The URL of the game is :

<http://www.atmosedu.com/Geol390/physlets/GEBM/EBMGame.htm>

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

As a backup, record what you changed in each game to get your best match in the space below. Turn-in your results when due.

Game 1

Game 2

Game 3

Game 4

Game5