Input=CO2, Output=Climate

A fairly common reaction to climate science is to wonder how changes in the concentration of a trace gas can have a substantial effect on the world’s climate. As it turns out, this is exactly the right question to ask. There’s a great post at RealClimate working through the logic.

The *direct* effect of increased CO2 is small. But we know that the earth’s climate has changed substantially over its history. Neither the changes of CO2 or of solar radiation are nearly that big. This shows that there are major feedback processes that amplify these effects. If you hear loud music coming out of your neighbor’s house, and you know that the amount of power that comes out of radio waves or CDs is tiny, you can infer that your neighbor’s amp is turned up high. Similarly, the fact that we’ve had ice ages and also very hot periods shows that the earth’s amp is strong. This is confirmed by more detailed modeling of the various feedbacks. CO2 doesn’t have a loud voice, but you don’t need to shout when the amp is cranked up.