

Re: OT Gas Prices and the Blame Game

Source: <http://sci.tech-archive.net/Archive/sci.electronics.design/2008-05/msg02187.html>

- *From:* Jeff Liebermann <jeffl@xxxxxxxxxxx>
 - *Date:* Sat, 17 May 2008 23:21:50 -0700
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On Sun, 18 May 2008 03:56:21 +0000 (UTC), don@xxxxxxxxxxxxxxxx (Don Klipstein) wrote:

In article <ch5v24ltlv81mejk2d9v22gq5hr7ckjf2@xxxxxxx>, Jeff Liebermann wrote:

On Sat, 17 May 2008 19:34:00 -0700 (PDT), mpm <mpmillard@xxxxxxx> wrote:

I personally think the damage will get here long before the water does.

Agreed. More damage will probably be done by the various "solutions" to global warming than the effects of global warming.

For example: If 5 or 10 years from now the global climate models prove to be even remotely accurate, then people will panic. I don't think it will make any difference if the models say 10 feet in 20 years, and we only get 3 feet. The trend will be clear, and our economic (and other) systems will collapse. (And in all likelihood, the models will get even better by then..)

You might find this interesting:

"Sea level rise calculator"

<http://www.junkscience.com/Greenhouse/sea_level_calc.html>

I couldn't find anything wrong with the logic or the calculator, but I may have missed something.

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The calculator appears to me to only melt ice with a stated percentage of the amount of heat added to that stored in the atmosphere by raising the atmosphere's temperature by a stated amount.

No. Read the explanation carefully. It's not very well written and could use a re-write. I'll try my luck.

Disclaimer: I am not a physicist.

1. If you raise the temperature of the entire planet 1C, then only a small percentage of the heat used will be available to melt the ice. The rest is absorbed by the ocean and land. The proportion of the energy available to melt the ice pack is roughly the ratio of ice area (Arctic, Antarctic, and Greenland) to the total earth surface area. It's the surface area, not the mass because atmospheric heating only acts on the surface of the ice, water, and land.

The author uses a figure of 3.45% which seems odd.

"The Greenland, East and West Antarctic Ice Shields total 3.45% of Earth's surface with a combined surface area of about 1.524×10^7 km²."

Wikipedia has the earth's surface area at 5.1×10^8 km². Doing the math, I get 2.9% of the surface area is ice. It's probably more like 5–10% because I think the author apparently forgot about Alaska, northern Canada, Scandinavia, and Siberia. Google found a few references that claimed 10% ice coverage in winter. Also, subtract out any floating ice because its weight has already raised the sea level by the volume of the displaced water.

2. The average temperature of the most sensitive areas (Greenland and Antarctica) that are covered with ice always remain below 0C and will therefore never melt. For example, if you drag an ice block into a freezer, and lower the temperature by 10C from –20C to –10C, how much ice will melt? The answer is none. Until the temperature gets to 0C, none of the ice will melt. Therefore, in the rather large areas where the air temperature never goes above freezing, even drastic variations in temperature will not produce any melting. Only those areas that are near 0C or near liquid water are susceptible to melting.

I consider this faulty logic. One way to explain that: Suppose the atmosphere's temperature took a sudden big jump to a level sufficient to melt the icecaps and then quickly levels off. The icecaps will melt over the following decades/centuries/whatever with the amount of heat stored in the atmosphere being constant – the melting will be done from solar absorption exceeding the planet's radiation into space until the surface gets warm enough to have radiation to space equal solar absorption.

That calculator said a 66 degree C rise in the atmosphere's temperature will only raise sea level by .1 meter. I would think that a 66 degree C

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warming would totally melt the icecaps, which would raise sea level a heck of a lot more than .1 meter.

Nope. Not when perhaps 95% of that temperature rise goes into heating up the water and land, while only perhaps 5% goes into melting the ice. That's also ignoring what gets reflected back into space.

To be perfectly honest (this time only), I'm also having a difficult time believing the numbers. However, I can't seem to find anything wrong with the explanation. I kinda wish the Javascript calculations were visible, so I can see what's going on behind the web page, but the main problems seem to be with the basic assumptions, not the calculations.

– Don Klipstein (don@xxxxxxxxxx)

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