Re: OT Gas Prices and the Blame Game

Source: http://sci.tech−archive.net/Archive/sci.electronics.design/2008−05/msg02188.html

- *From*: don@xxxxxxxxxxxxx (Don Klipstein)
- *Date*: Sun, 18 May 2008 07:28:00 +0000 (UTC)

In <r7hv249f9nkcm5op6g0km6oacmc0vj19s1@xxxxxxx>, Jeff Liebermann wrote:

> On 18 May 2008 03:56:21 +0 UTC, don@xxxxxxxxxxxxx (Don Klipstein) wrote:
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> > In <ch5v24ltltv81mejk2d9v22gq5hr7ckjf2@xxxxxxx>, Jeff Liebermann wrote:
>
> <SNIP quotation farther back as part of editing only for space>
>
> > > 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.
>
> > 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 are not a fizixist.
>
> 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 x 10E7 km2."

> Wikipedia has the earth's surface area at 5.1 x 10E8 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.

The calculator still assumes a specific amount of heat (a specific energy quantity), while such an amount of heat gained into availability for some task (such as icecap melting) as a result of an environment temperature rise is unlimited unless the temperature rise has an expiration date. This truth remains even when only a fraction of the heat gain actually goes into melting ice.

> 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.

A) The Greenland and Antarctic icecaps have critical areas already limited by barely lacking net melting in the recent−past. Most of the ice is on top of low elevation ice that can be melted away by a modest temperature rise.

B) Keep in mind that the "Milankovitch Cycles" cited for big natural periodic variations in global temperature (at surface and in surface−level atmosphere) have most−common citation to solar radiation impinging upon a latitude close to the Arctic Circle (65 degrees north). The annual solar radiation changes there quite little over these cycles but global temperature accordingly changes big − and this is evidence of a positive feedback mechanism with a significant part localized to such latitude zone. The positive feedback being somewhat localized there is evidenced by recent−decades warming of the globe having an impressive concentration there. Past forecast models of global warming taking this mechanism into account successfully predicted this positive feedback mechanism both regionally and globally.
Greenland's icecap appears to me to be in harm's way as a result!

> 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 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.

Quantity of ice melted is from a specific quantity of energy. A fraction of heating gain from an environmental temperature rise is in power as opposed to energy terms if being either of these, and energy gain to any target (at temperature below "new ambient") from a temperature rise is infinite unless the temperature rise has an expiration date or the target's temperature fully reaches the new ambient temperature.

The last above item can be ruled out completely for ice in Earth's icecaps if global warming progresses to the extent that this "calculator" finds necessary to achieve a .1 meter sea level rise.

That's also ignoring what gets reflected back into space.

This is actually reduced by global warming − we have a positive feedback mechanism, as in a major reason why the Milankovitch Cycles achieve big global temperature changes from minor changes in sunlight upon the latitude zone that is "ground zero" for such effects.

> 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.

The problem I saw is that, as I saw the explanation, is that the amount of ice melting is from a reasonably−explained fraction of an unreasonably−assumed amount of gain of heat stored into the atmosphere by a global temperature rise. If the temperature rise lacks an expiration date, then the calculations should be independent of specific quantities of energy or energy change which are transient effects. However, the

explanation by "junkscience" here has terms of specific quantities of energy with lack of any translating to power terms.
If the proposed effects are dependent on an expiration date of a temperature rise (as opposed to the temperature rise being permanent), then the expiration date of the temperature rise needs to be specified and the calculation methodology stated for justification needs to have such an "expiration date" being a factor.

The calculator assumes transient specific amount of heat transfer to ice being a specific fraction of the gain in heat energy stored in the atmosphere.
This is analogous to a resistor in an electronic circuit whose AC power supply voltage is increased supposedly having: heating gain only in energy terms by a fraction of the amount of stored energy gained by the rectifier filter capacitor as a result of the voltage increase.

Meanwhile, your referenced calculator continues to say that sea level would rise only .1 meter if global temperature rises by 66 degrees C − which would easily totally melt both the Greenland and Antarctica icecaps.

− Don Klipstein (don@xxxxxxxxx)
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