

## The Real Deal: Usufruct & the Gorilla

Fox, Washington Times, and their like have gone bananas over a flaw discovered in the computer program that produces global temperatures at GISS each month. They have even managed to get Congress and NASA Headquarters involved. Now we know what mom meant when she said “don’t make a federal case out of it.” Hey, what is really going on here?

The said computer program is rerun every month as new meteorological station data and new satellite sea surface temperature data are reported. The program produces a global surface temperature field using an analysis scheme documented by Hansen et al. (2001)

[http://pubs.giss.nasa.gov/docs/2001/2001\\_Hansen\\_etal.pdf](http://pubs.giss.nasa.gov/docs/2001/2001_Hansen_etal.pdf) The flaw affected temperatures only in the United States (by about 0.15°C) and only in 2000 and later. We corrected the flaw in the program, thanked the fellow who pointed it out, and thought that was the end of it.

[The correction: As explained in the e-mail sent last week, [http://www.columbia.edu/~jeh1/distro\\_LightUpstairs\\_70810.pdf](http://www.columbia.edu/~jeh1/distro_LightUpstairs_70810.pdf) one improvement made in our 2001 analysis was to use USHCN (U.S. Historical Climatology Network) station records in the U.S. as adjusted by Tom Karl and NOAA colleagues, who used available descriptive data to correct for effects of station moves, changes in time-of-day of temperature measurements, etc. Our computer program presumed that this (adjusted) USHCN data would also be used in future years. Unfortunately, adjusted USHCN data have not been available in near-real-time, and our program instead picked up the data for these same stations reported in the WMO GHCN (Global Historical Climatology Network) data stream. Because the GHCN data do not include the NOAA adjustments, this introduced a discontinuity in temperature anomalies in 2000. This discontinuity can be removed by comparing USHCN and GHCN records just before 2000, and this correction was made to the GISS computer program on 7 August 2007 with a note to that effect made on the GISTEMP web page.]

How big an error did this flaw cause? That is shown by the before and after results in Figure 1. The effect on the global temperature record is invisible. The effect on U.S. average temperature is about 0.15°C beginning in 2000. Does this change have any affect whatsoever on the global warming issue? Certainly not, as discussed below.

What we have here is a case of dogged contrarians who present results in ways intended to deceive the public into believing that the changes have greater significance than reality. They aim to make a mountain out of a mole hill. I believe that these people are not stupid, instead they

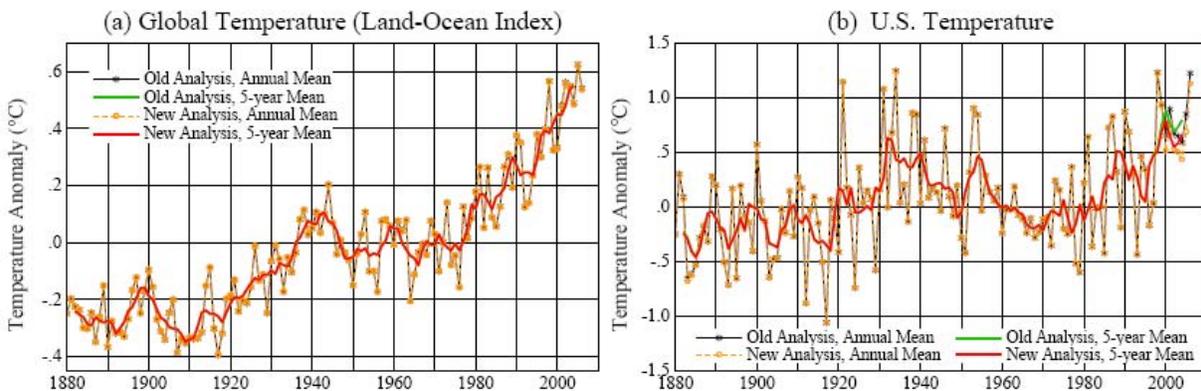


Figure 1. Global (a) and U.S. (b) before and after correction of flaw in computer program.

seek to create a brouhaha and muddy the waters in the climate change story. They seem to know exactly what they are doing and believe they can get away with it, because the public does not have the time, inclination, and training to discern what is a significant change with regard to the global warming issue.

The proclamations of the contrarians are a deceit, but their story raises a more important matter, usufruct. It is the most important issue in the entire global warming story, in my opinion. The players in the present U.S. temperature story, we scientists included, are just bit players. The characters in the main drama are big fish, really big fish. But before we get to that matter, I need to expose how the deceit works.

Instead of showing the impact of the flaw in our analysis program via a graph such as Figure 1, as a scientist would do (and as would immediately reveal how significant the flaw was), they instead discuss ranking of temperature in different years, including many false statements. We have thus been besieged by journalists saying “they say that correcting your error caused the warmest year to become 1934 rather than a recent year, is that right!?”

Hardly. First of all, many journalists had the impression that they were talking about global temperature. As you can see from Figure 1a, global warming is unaffected by the flaw. This realization should be enough to make most journalists lose interest, as global warming refers to global temperature.

But what if you are a chauvinist and only care about temperature in the United States? Did correcting the flaw in the program change the time of calculated maximum temperature to 1934? No. If you look at our 2001 paper, and get out your micrometer, you will see that we found 1934 to be the warmest year in the United States, by a hair, of the order of  $0.01^{\circ}\text{C}$  warmer than 1998, the same as the result that we find now. Of course the difference in the 1934 and 1998 temperatures is not significant, and we made clear in our paper that such years have to be declared as being practically a dead-heat.

Indeed, when we receive new data each month, which often adds in new stations, or modifies the results at a small number of stations, the results for a given year can fluctuate as much as a few hundredths of a degree. Also the GISS ranking of years is commonly different than that obtained from the NOAA or British analyses. This is expected, as there are significant differences in the methods. For example, the urban warming that we estimate (and remove) is larger than that used by the other groups (as discussed in 2001 Hansen et al. reference above).

Let's look (Figure 2) at the temperature anomalies in the four years that yield the warmest U.S. in our analysis. The U.S. mean temperature anomalies that we obtain range from  $1.25^{\circ}\text{C}$  in 1934 to  $1.13^{\circ}\text{C}$  in 2006. Thus the total range among these four years is just over a tenth of a degree. The uncertainty in the U.S. temperature is at least that large (see our published papers), so we can only say that these four years were comparably warm and the warmest year was probably either 1934 or 1998.

Note, however, that the 1998 and 2006 temperature anomaly maps differ fundamentally from the 1934 and 1921 temperature maps. In 1998 and 2006 the world as a whole has become warmer, 1998 being aided by a very strong El Nino, but 2006 by only a very weak El Nino. In 1921 and 1934 the United States happened to be a relatively hot spot compared to the world as a whole. The next time that the U.S. temperature happens to be unusually high relative to the globe, it may be quite a barn burner.

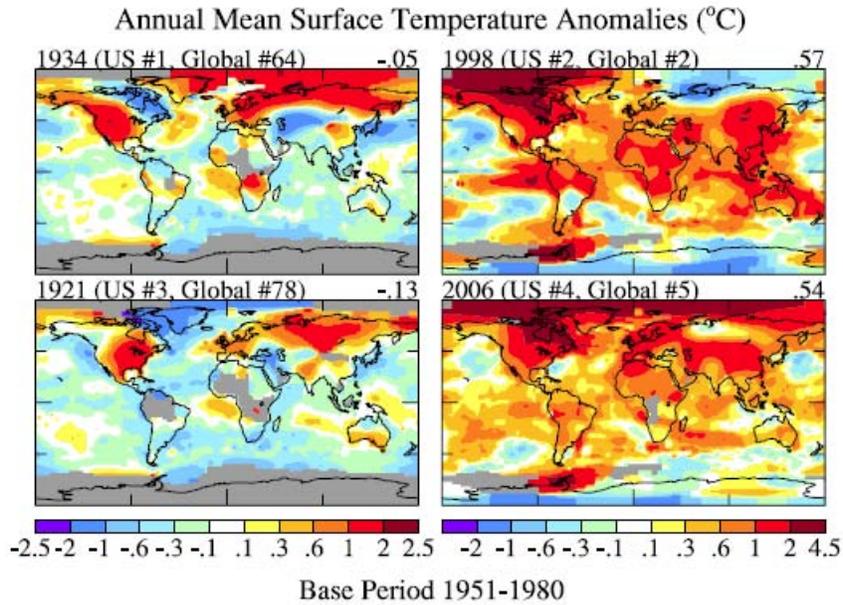


Figure 2. Temperature anomalies, relative to 1951-1980 base period, in the four years that are the warmest in the contiguous U.S. in the GISS analysis.

Although the media is always very interested in the ranking of individual years, the precise ranking is not only difficult to define accurately, it is also less important than the climate change averaged over several years. Figure 3 shows surface temperature anomalies of the past 10 years relative to both a 1880-1920 base period and the usual 1951-1980 base period. The figure also shows these results both with and without the flaw in our temperature analysis.

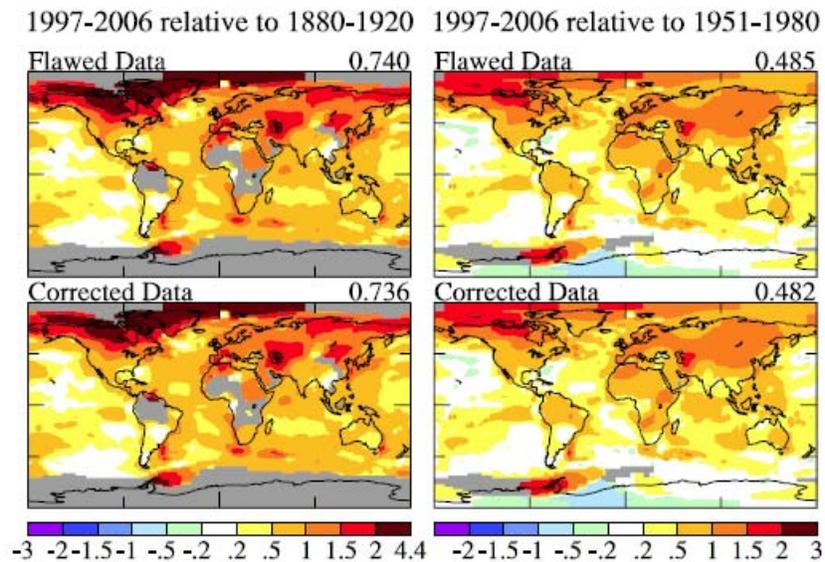


Figure 3. Surface temperature anomalies in the past 10 years (1997-2006) relative to two alternative base periods, 1880-1920 on the left and 1951-1980 on the right. The top row versus the bottom row shows the effect of the data flaw.

Over the past 30 years temperature isotherms have been moving poleward in the Northern Hemisphere land areas at a rate of about 50 km per decade. If the movements were fluctuations, their impacts would be limited. However, continual change of the same sense has a cumulative effect on the ability of species to survive in the presence of other stresses. Moreover, under business-as-usual growth of greenhouse gas emissions the rate of movement of isotherms could double this century, as discussed in several papers available on our web site, including “Dangerous” [http://pubs.giss.nasa.gov/docs/2007/2007\\_Hansen\\_etal\\_1.pdf](http://pubs.giss.nasa.gov/docs/2007/2007_Hansen_etal_1.pdf) “Trace Gases” [http://pubs.giss.nasa.gov/docs/2007/2007\\_Hansen\\_etal\\_2.pdf](http://pubs.giss.nasa.gov/docs/2007/2007_Hansen_etal_2.pdf)

Implications of this rapid and growing global climate change are discussed in “The 800 Pound Gorilla: The Threat and Taming of Global Climate Change,”

“Gorilla” <http://www.giss.nasa.gov/~jhansen/preprints/>

“Gorilla” is adapted from “The Threat to the Planet” (13 July 2006 New York Rev. Books) with assistance of Walter Simpson. “Gorilla” includes sidebars on ‘Likely Consequences of Global Climate Change’ and ‘Three Policies Needed to Defuse the Global Warming Time Bomb’.

**Usufruct.** The deceit behind the attempts to discredit evidence of climate change reveals matters of importance. This deceit has a clear purpose: to confuse the public about the status of knowledge of global climate change, thus delaying effective action to mitigate climate change. The danger is that delay will cause tipping points to be passed, such that large climate impacts become inevitable, including the loss of all Arctic sea ice, destabilization of the West Antarctic ice sheet with disastrous sea level rise later this century, and extermination of a large fraction of animal and plant species (see “Dangerous”, “Trace Gases”, and “Gorilla” papers).

Make no doubt, however, if tipping points are passed, if we, in effect, destroy Creation, passing on to our children, grandchildren, and the unborn a situation out of their control, the contrarians who work to deny and confuse will not be the principal culprits. The contrarians will be remembered as court jesters. There is no point to joust with court jesters. They will always be present. They will continue to entertain even if the Titanic begins to take on water. Their role and consequence is only as a diversion from what is important.

The real deal is this: the ‘royalty’ controlling the court, the ones with the power, the ones with the ability to make a difference, with the ability to change our course, the ones who will live in infamy if we pass the tipping points, are the captains of industry, CEOs in fossil fuel companies such as EXXON/Mobil, automobile manufacturers, utilities, all of the leaders who have placed short-term profit above the fate of the planet and the well-being of our children. The court jesters are their jesters, occasionally paid for services, and more substantively supported by the captains’ disinformation campaigns.

Court jesters serve as a distraction, a distraction from usufruct. Usufruct is the matter that the captains wish to deny, the matter that they do not want their children to know about. They realize that if there is no ‘gorilla’, then usufruct is not an important issue for them. So, with the help of jesters, they deny the existence of the gorilla. There is no danger of melting the Arctic, of destabilizing the West Antarctic ice sheet, of increasing hydrologic extremes, more droughts and stronger forest fires on one hand and heavier downpours and floods on the other, threats to the fresh water supplies of huge numbers of people in different parts of the globe. “Whew! It is lucky that, as our jesters show, these are just imaginary concerns. We captains of industry can continue with business-as-usual, we do not need to face the tough problem of how to maintain profits without destroying our legacy in our children’s eyes.”

Usufruct is as American as the Declaration of Independence, implicit in the Preamble “...to ourselves and our Posterity...”. It is explicitly discussed in a famous letter of 6 September

1789 from Thomas Jefferson to James Madison, discussing the proposed Bill of Rights to be added to the Constitution: "The question whether one generation of men has a right to bind another. . . is a question of such consequences as not only to merit decision, but place also among the fundamental principles of every government. . . . I set out on this ground, which I suppose to be self-evident, 'that the Earth belongs in usufruct to the living' . . ."

Jefferson's philosophy regarding generational relations was based on this "self-evident" principle. That we have an obligation to preserve Creation for today's and future generations is a widely held belief. Native American Oren Lyons, a Faithkeeper in the Onondaga Nation, discusses the belief of Native Americans in their obligations to the "seventh generation". It is also a biblical paradigm that the Earth, Creation, is an intergenerational commons, the fruits and benefits of which should be accessible to every member of every generation.

Is the principle that the Earth belongs to us only in usufruct indeed self-evident and accepted by the public? In "Gorilla" I note the observation of Larry King that "nobody cares about 50 years from now." We can't take both positions. We need to make up our mind. Do we care?

I am puzzled by views expressed by some conservatives, views usually expressed in vehement unpleasant ways in e-mails that I have been bombarded by in the past several days. It is a bit disconcerting as I come from a moderately conservative state, and I consider myself a moderate conservative in most ways. It is puzzling, because it seems to me that conservatives should be the first ones standing up for preserving Creation, and for the rights of the young and the unborn. That is the basic intergenerational issue in global warming and the headlong use of fossil fuels: the present generation is, in effect, ripping off future generations.

Is it possible that conservatives have been too quick to support the captains of industry? If we allow industry to continue on a path of denial, to focus on their short-term profits, to deny the rights of our children, grandchildren and the unborn, if the planet passes climate tipping points, will we not share in the infamy, the infamy of the captains of industry?

It seems to me that the present situation, with only minimalist actions to mitigate global climate change, reflects, at least in part, the "success" of the disinformation campaign that the captains of industry have at least tolerated, and, in some cases, encouraged and supported. Of course Nature will, eventually, reveal the truth, but there is potentially great harm in the disinformation, because it increases the likelihood that we will pass climate tipping points.

The captains of industry are smarter than their jesters. They cannot pretend that they are unaware of climate change dangers and consequences for future generations. It is time for the captains of industry to rethink their positions. I do not mean, time to polish their image with marginal investments, 'green' advertisements, and other public relations gimmicks. I mean, time to consider how they will function as we move toward a cleaner world 'beyond petroleum', to invest in approaches that will help take us from here to there, and to begin to move smartly in that direction. There is still time to avert the most dramatic climate effects, if we promptly begin to address both CO<sub>2</sub> and non-CO<sub>2</sub> climate forcings. But just barely.

I am indebted to Jim Wine for schooling me in 'usufruct'.

Criticisms, as always, are welcome.