

**From:** [gs210@columbia.edu](mailto:gs210@columbia.edu)  
**To:** [rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)  
**Cc:** [jhansen@giss.nasa.gov](mailto:jhansen@giss.nasa.gov)  
**Subject:** Re: more mcintyre  
**Date:** Fri, 03 Aug 2007 18:37:17 -0400

Thanks. That becomes clearer. I think that the suggestion you have for fixing it is a better idea than what is being done now, though possibly it might make more sense to correct the later GHCN data rather than the earlier USHCN numbers (that doesn't make a difference to the trend of course).

Gavin

Quoting Reto Ruedy <[rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)>:

- > Gavin,
- >
- > In 2000, USHCN provided us with a product in which the US data
- > were
- > adjusted for changes in procedure/instrumentation to get a
- > consistent
- > time record. According to the description on their current
- > website, 1999
- > was their last comprehensive update of those data. Unlike the
- > GHCN data,
- > the USHCN data are not routinely kept up-to-date (at this point
- > they seem
- > to end in 2002).
- >
- > Under the assumption that the adjustments made the older data
- > consistent
- > with future data, we are replacing the US part of the GHCN data
- > up to
- > 1999 by the USHCN data that we got in 2000, thereby eliminating
- > some
- > known systematic biases in the early part of the US records.
- >
- > However, that assumption may not have been correct. I compared
- > the 1999
- > data in GHCN and USHCN. Indeed, in 490 of the 1057 stations the
- > USHCN
- > data were up to 1C colder than the corresponding GHCN data, in 77
- > stations the data were the same, and in the remaining 490
- > stations the
- > USHCN data were warmer than the GHCN data. The differences
- > averaged out

> to 0.1 C, i.e. we may have introduced a +0.1C jump in 2000 over  
> the US  
> by our procedure.  
>  
> A more careful method would have been to compare the last few  
> years of  
> the USHCN data and the corresponding years of the GHCN data and  
> adjust  
> the USHCN data to fit the GHCN data. I'll add this procedure as  
> an  
> alternate to see what effect it would have.  
>  
> Reto  
>  
> On Fri, 2007-08-03 at 13:21 -0400, gs210@columbia.edu wrote:  
> > if you didn't see it:  
> >  
> > <http://www.climateaudit.org/?p=1854>  
> >  
> >  
> > There is something curious here though, why does 'GISS raw' go  
> > back  
> > to 'USHCN unadjusted' in 2000. Shouldn't it have stayed with  
> > USHCN+TOBS?  
> >  
> > Gavin  
> >  
> > PS. if this is all as it should be, we need to make clear the  
> > reasons why very quickly. Otherwise, the myth of the 'Hansen  
> > Y2k  
> > error' will be all around the place and once it's out, it won't  
> > go  
> > away.  
>

**From:** Gavin Schmidt <[gschmidt@giss.nasa.gov](mailto:gschmidt@giss.nasa.gov)>  
**Reply-To:** [gschmidt@giss.nasa.gov](mailto:gschmidt@giss.nasa.gov)  
**To:** Reto Ruedy <[rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)>  
**Subject:** Re: GISS Raw Data  
**Date:** Mon, 6 Aug 2007 11:47:27 -0400 (EDT)

I would suggest being more specific about what was assumed and what you will do now. The stats you had for the number of stations which had positive and negative offsets would be appropriate. You also might want to thank him for bringing this to our attention. The first because he'll ask you anyway or work it out himself, the second since it doesn't hurt to be gracious.

Gavin

```
*-----*
| Gavin Schmidt           NASA/Goddard Institute for Space Studies |
|                         2880 Broadway                    |
| Tel: (212) 678 5627     New York, NY 10025                |
| gschmidt@giss.nasa.gov  http://www.giss.nasa.gov/~gavin   |
*-----*
```

On Mon, 6 Aug 2007, Reto Ruedy wrote:

- > Jim,
- >
- > I've started to prepare a response to the email below. Steve is the
- > person who appointed himself the auditor of all web sites and
- > organizations that have to do with global warming in order to debunk
- > this "hoax". He is maintaining a blog - a website called
- > [climate.audit.org](http://climate.audit.org), a site containing among justified concerns (caveats
- > that we stress in all our papers) obvious fabrications and vicious
- > attacks.
- >
- > I'll send you my suggestion for a response before mailing anything to
- > Steve.
- >
- > Our simple combination of GHCN and USHCN data was based on the
- > assumption that the correction made the older data consistent with the
- > then current data. Unfortunately, that is not the case and an attempt to
- > compute an offset based on the common years within say the 1990-1999
- > period would have been more appropriate.
- >
- > I am re-processing our current data with that modification and wait with

> finishing my response until we can look at the changes caused by it. I  
> expect only a minor effect since the offsets average out to almost 0  
> over all USHCN stations.

>  
> Reto

>  
> On Sat, 2007-08-04 at 17:28 -0400, Steve McIntyre wrote:

>> Dear Sirs,

>>  
>> In your calculation of the GISS "raw" version of USHCN series, it  
>> appears to me that, for series after January 2000, you use the USHCN  
>> raw version whereas in the immediately prior period you used USHCN  
>> time-of-observation or adjusted version. In some cases, this  
>> introduces a seemingly unjustified step in January 2000.

>>  
>> I am unaware of any mention of this change in procedure in any  
>> published methodological descriptions and am puzzled as to its  
>> rationale. Can you clarify this for me?

>>  
>> In addition, could you provide me with any documentation (additional  
>> to already published material) providing information on the  
>> calculation of GISS raw and adjusted series from USHCN versions,  
>> including relevant source code. Thank you for your attention, Stephen  
>> McIntyre

>>  
>

**From:** Reto Ruedy <rruedy@giss.nasa.gov>  
**Reply-To:** rruedy@giss.nasa.gov  
**To:** James E. Hansen <jhansen@giss.nasa.gov>, gavin@giss.nasa.gov  
**Subject:** Re: GISS Raw Data  
**Date:** Tue, 07 Aug 2007 10:04:44 -0400

On Sat, 2007-08-04 at 17:28 -0400, Steve McIntyre wrote:

> Dear Sirs,

>

> In your calculation of the GISS "raw" version of USHCN series, it  
> appears to me that, for series after January 2000, you use the USHCN  
> raw version whereas in the immediately prior period you used USHCN  
> time-of-observation or adjusted version. In some cases, this  
> introduces a seemingly unjustified step in January 2000.

>

> I am unaware of any mention of this change in procedure in any  
> published methodological descriptions and am puzzled as to its  
> rationale. Can you clarify this for me?

The basic "GISS Surface Temperature Analysis" page starts with a "Background" section whose first paragraph contains the sentence: "Input data for the analysis ,..., is the unadjusted data of GHCN, except that the USHCN station records were replaced by a later corrected version". A similar statement appears in the "Abstract" and the "Introduction" section of our 2001 paper (JGR Vol 106, pg 23,947-23,948). The Introduction explains the above statement in more detail.

When we got the USHCN data, they ended in 1999 and as far as I know, no major corrections were implemented after that time. Unlike the GHCN data, the USHCN data is not a product that is kept current on a regular basis. Hence we used (as you noticed) the GHCN data to extend the USHCN data.

I agree with you that this simple procedure creates an artificial step in those cases where the correction was applied to the newest data, rather than bringing the older data in sync with the latest measurements - which would seem the natural way to go. Comparing the 1999 data in both data sets showed that in about half the cases where the 1999 data were changed, the GHCN data were higher than the USHCN data and in the other half it was the other way round.

So although an attempt to eliminate those artificial steps should have little impact even on the US temperature trend (much less the global trend - the so-called "Global Warming"), it seems a good idea to do so and I'd like to thank you for bringing this to our attention.

Starting with our next update (sometime later this week) an offset based on the last 10 years of overlap in the two data sets will be applied and our on-line documentation will be augmented correspondingly.

I tested the modification with the data now on display: The table data (section 3 on the basic temperature site) differed occasionally by a 1 in the last digit (0.01 C). In the display most sensitive to that change - the US-graph of annual means - the warming decreased by about 0.15 C in the years 2000-2006, well within the margin of error.

> In addition, could you provide me with any documentation (additional  
> to already published material) providing information on the  
> calculation of GISS raw and adjusted series from USHCN versions,  
> including relevant source code.

I had no idea what code you are referring to until I learned from your article "Hansen's Y2K error" (which should really be "Reto's Y2K error") that GISS is in possession of some magical software that is able to "fix" the defects in surface data. No wonder you would like to get your hands on that - so would I !

Unfortunately, your source totally misled you in that respect. I'm a little amazed that you uncritically present it as a fact given that a large part of your web site is devoted to convincingly prove that such software cannot possibly exist.

All we do is try to make the best of imperfect data by converting absolute temperatures to anomalies and averaging over large regions (using circles of a diameter of 2400 km, the 500 km option was added for debugging purposes only), the only responsible way to use those data.

The software we spend close to 100% of our time in developing and which is the real basis of our work (in addition to general physics and chemistry), is openly available ([giss.nasa.gov/tools/modelE](http://giss.nasa.gov/tools/modelE)) to anybody.

> Thank you for your attention, Stephen McIntyre

>

--

Reto Ruedy <[rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)>

**From:** Makiko Sato <[makis@giss.nasa.gov](mailto:makis@giss.nasa.gov)>  
**To:** [rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)  
**Cc:** [jhansen@giss.nasa.gov](mailto:jhansen@giss.nasa.gov)  
**Subject:** Re: USHCN, GHCN matching  
**Date:** Tue, 07 Aug 2007 13:22:54 -0400

Yes, I will redo all graphs and tables on GISTEMP Graphs page.

Makiko

At 12:51 2007/08/07, you wrote:

>Makiko,

>

>Thanks - I assume, you will also replace all affected graphs on the  
>GISTEMP website.

>

>Reto

>

>On Tue, 2007-08-07 at 12:48 -0400, Makiko Sato wrote:

> > Jim, Reto, Ken,

> >

> > I put a graph which shows the US and global mean temperature change  
> > due to matching 1990-1999 mean USHCN and GHCN on  
> > [http://www.giss.nasa.gov/~makis/GISS\\_Temp/](http://www.giss.nasa.gov/~makis/GISS_Temp/)  
> > User ID = guest, Password = 1744.

> >

> > Makiko

> - -

>Reto Ruedy <[rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)>

**From:** Reto Ruedy <rruedy@giss.nasa.gov>  
**Reply-To:** rruedy@giss.nasa.gov  
**To:** James Hansen <jhansen@giss.nasa.gov>  
**Cc:** Gavin Schmidt <gschmidt@giss.nasa.gov>  
**Subject:** Re: GISS Raw Data  
**Date:** Tue, 07 Aug 2007 13:39:41 -0400

Jim,

Thanks - with your suggested change we totally ignore his blogs and only respond to relevant part of his email, as I should have done in the first place.

I'll show you my current version when you come in.

Reto

On Tue, 2007-08-07 at 13:11 -0400, James Hansen wrote:

> Reto, This is very good, but eliminate the last paragraph re  
> Hansen-error, Reto error, as it looks like I am passing the buck  
> - don't send the e-mail until I come in. Jim

> On 8/7/07, Reto Ruedy <rruedy@giss.nasa.gov> wrote:

> Gavin,

> Thanks for setting me straight - I completely agree with you:  
> any  
> attempts to teach or outsmart Steve are counterproductive and  
> a total  
> waste of time.

> As soon as I hear from Jim, I'll send it off - in the mean  
> time, Ken  
> updated the site including July 07 with the new modification.  
> So I'll  
> change the end correspondingly.

> Reto

> On Tue, 2007-08-07 at 11:44 -0400, Gavin Schmidt wrote:

> > I would not engage further than simply dealing with the  
> points at hand -  
> > it's just going to further the issue. Thus I would suggest  
> the following  
> > text alone (a couple of minor edits and one new line):

> >  
> > =====

>  
>  
> The basic "GISS Surface Temperature Analysis" page starts  
> with a  
> "Background" section whose first paragraph contains the  
> sentence:  
> "Input data for the analysis ,..., is the unadjusted data of  
> GHCN,  
> except that the USHCN station records were replaced by a  
> later corrected  
> version". A similar statement appears in the "Abstract" and  
> the  
> "Introduction" section of our 2001 paper (JGR Vol 106, pg  
> 23,947-23,948). The Introduction explains the above  
> statement in more  
> detail.  
>  
>  
> When we originally got the USHCN data, they ended in 1999  
> and as far as I know,  
> no major corrections were implemented after that time.  
> Unlike the GHCN  
> data, the USHCN data is not a product that is kept current  
> on a regular  
> basis. Hence we used (as you noticed) the GHCN data to  
> extend the USHCN  
> data.  
>  
>  
> I agree with you that this simple procedure creates an  
> artificial step  
> in those cases where the correction was applied to the  
> newest data,  
> rather than bringing the older data in sync with the latest  
> measurements  
> - which would seem the natural way to go. Comparing the 1999  
> data in  
> both data sets showed that in about half the cases where the  
> 1999 data  
> were changed, the GHCN data were higher than the USHCN data  
> and in the  
> other half it was the other way round.  
>  
>  
> Eliminating those artificial steps should have little  
> impact even  
> on the US temperature trend (much less the global trend),  
> but it is a good  
> idea to do so and I'd like to thank you for bringing this to  
> our attention.  
>

> Starting with our next update (sometime later this week)  
> an offset  
> based on the last 10 years of overlap in the two data sets  
> will be  
> applied and our on-line documentation will be augmented  
> correspondingly.  
>  
> I tested the modification with the data now on display:  
> The table data (section 3 on the basic temperature site)  
> differed  
> occasionally by a 1 in the last digit ( 0.01 C). In the  
> display most  
> sensitive to that change - the US-graph of annual means -  
> the warming  
> decreased by about 0.15 C in the years 2000-2006.  
>  
> You should perhaps note that your post 'Hansen's Y2K  
> error' should  
> really be titled Reto's Y2K error.  
>  
> Respectfully,  
>  
> etc...  
>  
> =====  
>  
> Gavin  
> --  
> Reto Ruedy <rruedy@giss.nasa.gov>  
>  
..

Reto Ruedy <rruedy@giss.nasa.gov>

**From:** James Hansen <jhansen@giss.nasa.gov>  
**To:** rruedy@giss.nasa.gov  
**Cc:** Makiko Sato <makis@giss.nasa.gov>  
**Subject:** Re: your vacation  
**Date:** Tue, 7 Aug 2007 14:54:59 -0400

BTW, your note to McIntyre perhaps should include a statement such as. This change and its effect will be noted in our next paper on temperature analysis submitted for publication and in our end-of-year temperature summary. Jim

On 8/7/07, **Reto Ruedy** <rruedy@giss.nasa.gov> wrote:

Makiko.

Reto

On Tue, 2007-08-07 at 13:29 -0400, Makiko Sato wrote:

> Reto,  
>  
>  
>  
> Makiko

**From:** Reto Ruedy <[rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)>  
**Reply-To:** [rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)  
**To:** James Hansen <[jhansen@giss.nasa.gov](mailto:jhansen@giss.nasa.gov)>  
**Cc:** Reto Ruedy <[cdrar@giss.nasa.gov](mailto:cdrar@giss.nasa.gov)>, Makiko Sato <[makis@giss.nasa.gov](mailto:makis@giss.nasa.gov)>, [klo@giss.nasa.gov](mailto:klo@giss.nasa.gov)  
**Subject:** Re: Fwd: GISS Raw Data  
**Date:** Thu, 09 Aug 2007 11:03:11 -0400

Jim,

For our 2001 paper, which includes a discussion of the various USHCN adjustments, we obtained from USHCN their various stages after each adjustment. The first set we obtained in Feb 2000, a slightly corrected version in Dec 2000. Since we did not adapt their filling in scheme and their urban adjustment scheme, we have been using the "SHAP" version obtained in Dec 2000.

>From the USHCN site, anybody can download the TOBS and the FILNET stages, i.e. the one immediately before and the one after "SHAP"; a special request is needed to get SHAP. It seems that these data were extended to 2002 in the mean time.

Is it ok to put our copy of the 12/2000 version of SHAP on our web site or do we need to consult with NOAA before doing so ?

Alternatively, of course, we could go back to using GHCN data only. The effect of that change is described in our 2001 paper as well as on USHCN's website (on <http://cdiac.ornl.gov/epubs/ndp/usnc/ndp019.html#tempdata>); it would decrease the 1900-99 US temperature change by .3 C and have negligible effect on any global trends.

Steve will keep asking me for our "software" and I'm tempted to ignore those requests, since our description of what we do with the data completely describes our procedures.

Reto

On Thu, 2007-08-09 at 05:51 -0400, James Hansen wrote:

> Reto, what is the source of data for the present analysis? Is it  
> practical to provide that? Jim  
>  
> ----- Forwarded message -----  
> From: Steve McIntyre <[stephen.mcintyre@utoronto.ca](mailto:stephen.mcintyre@utoronto.ca)>  
> Date: Aug 8, 2007 10:46 AM

> Subject: RE: GISS Raw Data  
> To: rruedy@giss.nasa.gov  
> Cc: "James E. Hansen" <jhansen@giss.nasa.gov>  
>  
> Dear Dr Ruedy,  
>  
> Thank you for this information and for the courteous acknowledgement  
> at  
> your website. I can now see where your post-2000 data comes from, but  
> I  
> remain unable to identify a digital source for your data prior to 2000  
> from available information. I have compared GISS raw to all the  
> archived  
> USHCN versions and have been unable to find a match for US data. In  
> some  
> cases, the differences are substantial.  
>  
> Can you provide me with (1) a URL from which the U.S. data prior to  
> 2000  
> (in the version that you used) can be downloaded. (2) If this is no  
> longer possible due to the passage of time, could you please provide  
> me  
> with a copy of the data that you used (or upload it to an area of your  
> FTP site) and also provide its provenance and date of acquisition?  
> Obviously mere print citations are inadequate for this purpose.  
>  
> I would like to assess the impact of these modifications on the US  
> and  
> global averages for myself. I would appreciate a copy of the source  
> code  
> used for these calculations.  
>  
> Regards, Steve McIntyre  
>  
>  
>  
>  
> -----Original Message-----  
> From: Reto Ruedy [mailto:rruedy@giss.nasa.gov]  
> Sent: Tuesday, August 07, 2007 5:33 PM  
> To: Steve McIntyre  
> Cc: James E. Hansen; gavin@giss.nasa.gov  
> Subject: Re: GISS Raw Data  
>  
>  
> Dear Sir,  
>

- > As to the question about documentation, the basic "GISS Surface
- > Temperature Analysis" page starts with a "Background" section whose
- > first paragraph contains the sentence: "Input data for the
- > analysis , . . . ,
- > is the unadjusted data of GHCN, except that the USHCN station records
- > were replaced by a later corrected version". A similar statement
- > appears
- > in the "Abstract" and the "Introduction" section of our 2001 paper
- > (JGR
- > Vol 106, pg 23,947-23,948). The Introduction explains the above
- > statement in more detail.
- >
- > In 2000, USHCN provided us with a file with corrections not contained
- > in the GHCN data. Unlike the GHCN data, that product is not kept
- > current
- > on a regular basis. Hence we used (as you noticed) the GHCN data to
- > extend those data in our further updates (2000-present).
- >
- > I agree with you that this simple procedure creates an artificial step
- > if some new corrections were applied to the newest data, rather than
- > bringing the older data in sync with the latest measurements - as I
- > naively assumed. Comparing the 1999 data in both data sets showed that
- > in about half the cases where the 1999 data were changed, the GHCN
- > data
- > were higher than the USHCN data and in the other half it was the other
- > way round with the plus-corrections slightly outweighing the
- > minus-corrections.
- >
- > Although trying to eliminate those steps should have little impact
- > on the US temperature trend (much less the global trend), it seems a
- > good idea to do so and I'd like to thank you for bringing this
- > oversight
- > to our attention.
- >
- > When we did our monthly update this morning, an offset based on the
- > last 10 years of overlap in the two data sets was applied and our
- > on-line documentation was changed correspondingly with an
- > acknowledgment
- > of your contribution. This change and its effect will be noted in our
- > next paper on temperature analysis and in our end-of-year temperature
- > summary.
- >
- > The effect on global means and all our tables was less than 0.01 C. In
- > the display most sensitive to that change - the US-graph of annual
- > means
- > - the anomalies decreased by about 0.15 C in the years 2000-2006.
- >

> Respectfully,  
>  
> Reto A Ruedy  
>  
> On Sat, 2007-08-04 at 17:28 -0400, Steve McIntyre wrote:  
> > Dear Sirs,  
> >  
> > In your calculation of the GISS "raw" version of USHCN series, it  
> > appears to me that, for series after January 2000, you use the USHCN  
> > raw version whereas in the immediately prior period you used USHCN  
> > time-of-observation or adjusted version. In some cases, this  
> > introduces a seemingly unjustified step in January 2000.  
> >  
> > I am unaware of any mention of this change in procedure in any  
> > published methodological descriptions and am puzzled as to its  
> > rationale. Can you clarify this for me?  
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> > In addition, could you provide me with any documentation (additional  
> > to already published material) providing information on the  
> > calculation of GISS raw and adjusted series from USHCN versions,  
> > including relevant source code. Thank you for your attention,  
> Stephen  
> > McIntyre  
> >  
>  
>  
>  
..  
Reto Ruedy <rruedy@giss.nasa.gov>

---

**From:** James Hansen <[jhansen@giss.nasa.gov](mailto:jhansen@giss.nasa.gov)>  
**To:** Reto Ruedy <[cdrar@giss.nasa.gov](mailto:cdrar@giss.nasa.gov)>, Makiko Sato <[makis@giss.nasa.gov](mailto:makis@giss.nasa.gov)>  
**Subject:** temperature data  
**Date:** Thu, 9 Aug 2007 10:01:02 -0400

As an alternative to attempting to reconstruct the origins of all station records in the present analysis, is it easier to use current GHCN data per se and show that the difference that causes in global result is negligible? Jim

**From:** Robert B. Schmunk <[Robert.B.Schmunk@nasa.gov](mailto:Robert.B.Schmunk@nasa.gov)>  
**To:** James Hansen <[jhansen@giss.nasa.gov](mailto:jhansen@giss.nasa.gov)>  
**Cc:** Makiko Sato <[makis@giss.nasa.gov](mailto:makis@giss.nasa.gov)>, Reto Ruedy <[cdrrar@giss.nasa.gov](mailto:cdrrar@giss.nasa.gov)>, Darnell Cain <[dcain@giss.nasa.gov](mailto:dcain@giss.nasa.gov)>  
**Subject:** Re: New Email  
**Date:** Fri, 10 Aug 2007 16:04:20 -0400

Not sure which 2001 paper you are referring to:

Hansen, J.E., et al. 2001: A closer look at United States and global surface temperature change. J. Geophys. Res.  
is at [http://pubs.giss.nasa.gov/abstracts/2001/Hansen\\_etal.html](http://pubs.giss.nasa.gov/abstracts/2001/Hansen_etal.html)

Hansen, J.E., and Mki. Sato, 2001: Trends of measured climate forcing agents. Proc. Natl. Acad. Sci.  
is at [http://pubs.giss.nasa.gov/abstracts/2001/Hansen\\_Sato.html](http://pubs.giss.nasa.gov/abstracts/2001/Hansen_Sato.html)

I assume the 1981 paper is Hansen et al. rather than Lacis et al.

Hansen, J., et al. 1981: Climate impact of increasing atmospheric carbon dioxide. Science

is at [http://pubs.giss.nasa.gov/abstracts/1981/Hansen\\_etal.html](http://pubs.giss.nasa.gov/abstracts/1981/Hansen_etal.html)

rbs

On Aug 10, 2007, at 15:54, James Hansen wrote:

> o.k., here is the draft e-mail, which needs the figures and links  
> -- I am so it is hard to read  
> right now. Jim<[LightUpstairs.10Aug2007.doc](mailto:LightUpstairs.10Aug2007.doc)>

--  
Robert B. Schmunk, [Robert.B.Schmunk@nasa.gov](mailto:Robert.B.Schmunk@nasa.gov)  
NASA Goddard Institute for Space Studies, 2880 Broadway, New York, NY  
10025



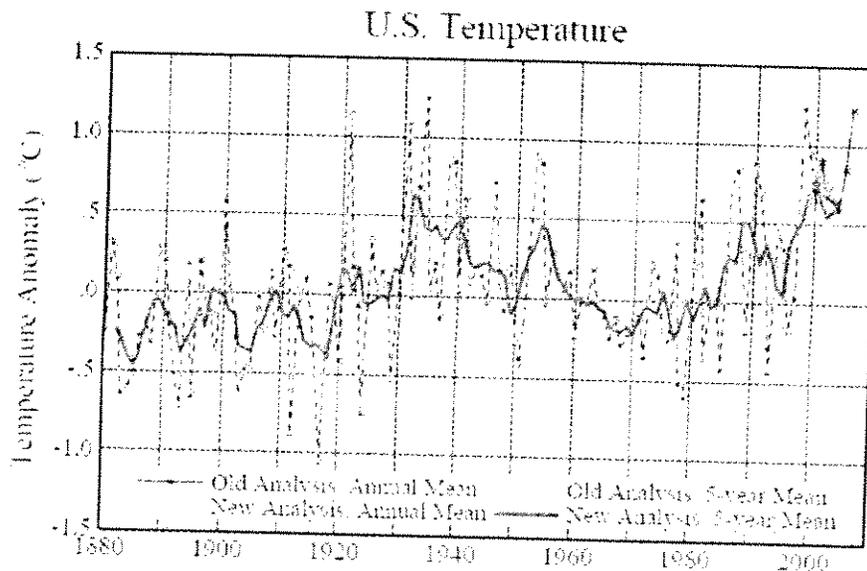
## A Light On Upstairs?

Sorry to send another e-mail so soon. No need to read further unless you are interested in temperature changes to a tenth of a degree over the U.S. and a thousandth of a degree over the world.

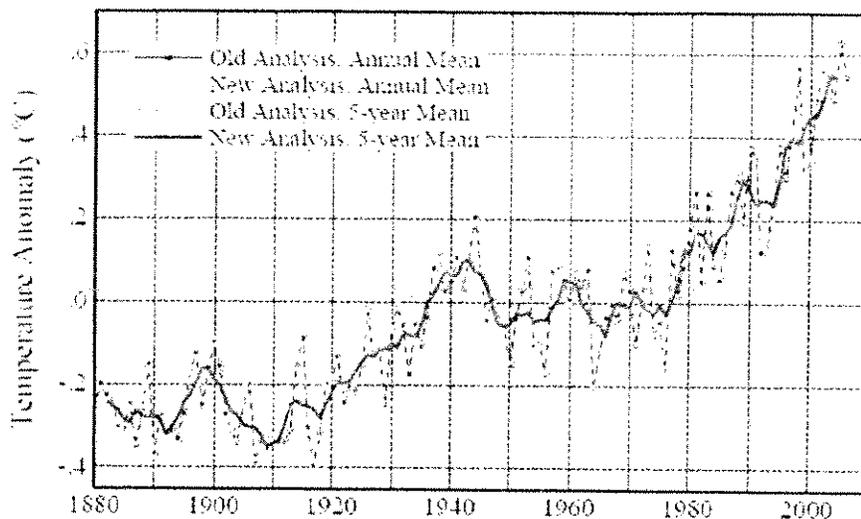
Recently it was realized that the monthly more-or-less-automatic updates of our global temperature analysis ([http://pubs.giss.nasa.gov/abstracts/2001/Hansen\\_et\\_al.html](http://pubs.giss.nasa.gov/abstracts/2001/Hansen_et_al.html)) had a flaw in the U.S. data. In that (2001) update of the analysis method (originally published in our 1981 Science paper – [http://pubs.giss.nasa.gov/abstracts/1981/Hansen\\_et\\_al.html](http://pubs.giss.nasa.gov/abstracts/1981/Hansen_et_al.html)) we included improvements that NOAA had made in station records in the U.S., their corrections being based mainly on station-by-station information about station movement, change of time-of-day at which max-min are recorded, etc.

Unfortunately, we didn't realize that these corrections would not continue to be readily available in the near-real-time data streams. The same stations are in the GHCN (Global Historical Climatology Network) data stream, however, and thus what our analysis picked up in subsequent years was station data without the NOAA correction. Obviously, combining the uncorrected GHCN with the NOAA-corrected records for earlier years caused jumps in 2001 in the records at those stations, some up, some down (over U.S. only). This problem is easy to fix, by matching the 1990s decadal-mean temperatures for the NOAA-corrected and GHCN records, and we have made that correction.

The flaw did have a noticeable effect on mean U.S. temperature anomalies, as much as  $0.15^{\circ}\text{C}$ , as shown in Figure 1 below (for years 2001 and later, and 5 year mean for 1999 and later). The effect on global temperature (Figure 2) was of order one-thousandth of a degree, so the corrected and uncorrected curves are indistinguishable.



### Global Temperature (Land-Ocean Index)



Contrary to some of the statements flying around the internet, there is no effect on the rankings of global temperature. Also our prior analysis had 1934 as the warmest year in the U.S. (see the 2001 paper above), and it continues to be the warmest year, both before and after the correction to post 2000 temperatures. However, as we note in that paper, the 1934 and 1998 temperature are practically the same, the difference being much smaller than the uncertainty.

Somehow the flaw in 2001-2007 U.S. data was advertised on the internet and for two days I have been besieged by rants that I have wronged the President, that I must "step down", or that I must "vanish". Hmm, I am not very good at magic tricks.

My apologies if the quick response that I sent to Andy Revkin and several other journalists, including the suggestion that it was a tempest inside somebody's teapot dome, and that perhaps a light was not on upstairs, was immoderate. It was not ad hominem, though.

Jim



> >  
> > rbs  
> >  
> >  
> > <LightUpstairs.10Aug2007-x.doc>  
> >  
> > <LightUpstairs.10Aug2007-x.pdf>  
> >  
> >  
> >  
> > On Aug 10, 2007, at 17:43, James Hansen wrote:  
> >  
> >> On 8/10/07, James Hansen  
> >><mailto:jhansen@giss.nasa.gov>jhansen@giss.nasa.gov> wrote:  
> >>>  
> >>> Here is a version including two more clarifications. Makiko said  
> >>> that she  
> >>> could not open the last one?? Jim  
> >>>  
> >>> On 8/10/07, Makiko Sato  
> >>><mailto:makis@giss.nasa.gov>makis@giss.nasa.gov> wrote:  
> >>>>  
> >>>> I made all changes Robert pointed out (I think) and converted to a  
> >>>> PDF and put it on  
>  
><<http://www.giss.nasa.gov/~jhansen/preprints/>><http://www.giss.nasa.gov/~jhan>:  
> .  
> >>>>  
> >>>> Jim, Please check if everything is fine.  
> >>>> Robert, Please move to CU site and hide this after Jim checks it.  
> >>>> Darnell, Please send it out to Jim's e-mail list. Jim said if I  
> >>>> don't want to, you should do, but it is not a matter of I WANT  
> >>>> To or  
> >>>> NOT WANT TO. I don't know how to.  
> >>>>  
> >>>> Makiko  
> >>>>  
> >>>>  
> >>>> At 17:09 2007/08/10, James Hansen wrote:  
> >>>>> I made two additional changes: adding "in 2001" after jump, and  
> >>>>> moving the paragraph just before Figure 2 to just after Figure  
> >>>>> 2. Note that I removed the line  
> >>>>> To be removed from Jim Hansen's e-mail list respond to sender with  
> >>>>> REMOVE as subject  
> >>>>> but this line should be included in the e-mail.  
> >>>>>

> >>>> On 8/10/07, James Hansen  
> >>>>  
>  
<<mailto:jhansen@giss.nasa.gov><mailto:jhansen@giss.nasa.gov>jhansen@giss.na:  
> > wrote:  
> >>>> These changes are fine, but they need to be made to the attached  
> >>>> version. We need to send it to the media list soon. Jim  
> >>>>  
> >>>>  
> >>>> On 8/10/07, Makiko Sato  
> >>>> <<mailto:makis@giss.nasa.gov>  
> <mailto:makis@giss.nasa.gov>makis@giss.nasa.gov > wrote:  
> >>>> Robert,  
> >>>>  
> >>>> At 16:43 2007/08/10, Robert B. Schmunk wrote:  
> >>>>  
> >>>>> Makiko,  
> >>>>>  
> >>>>> I generally prefer that when people link to docs on the website  
> >>>>> that you use the HTML page which has the "Download PDF" link  
> >>>>> rather than point directly at the PDF file itself.  
> >>>>>  
> >>>>> I don't understand this part. This is a Word file not HTML.  
> >>>>>  
> >>>>>> The word "are" all caps in the third paragraph out to be changes  
> >>>>>> to lower case and put in bold. Being in all caps right now and  
> >>>>>> close to the abbreviation GHCN, it almost looks like it too is an  
> >>>>>> abbrevaation.  
> >>>>>>  
> >>>>>> Jim,  
> >>>>>>  
> >>>>>> Please read this remark of Robert's and make the change unless you  
> >>>>>> really want it to be ARE.  
> >>>>>>  
> >>>>>>  
> >>>>>>> When I view the Word DOC there is no degree sign in 0.15 deg-C.  
> >>>>>>> Is that intentional?  
> >>>>>>>  
> >>>>>>> I think SI unit doesn't have degree symbol, so just 0.15C, but I  
> >>>>>>> think it is clearer to have the usual small circle high up or  
> >>>>>>> write  
> >>>>>>> down deg. Jim made it 0.15C, so maybe he is using the SI unit.  
> >>>>>>>  
> >>>>>>>  
> >>>>>>>> The phrase "order one-thousands" should be "order one-  
> >>>>>>>> thousandth".  
> >>>>>>>>

> >>>> Yes, you are right. I will make the change. (By the way, now in  
> >>>> Japan a song called "I am a thousand winds" is very popular.)  
> >>>>  
> >>>>> rbs  
> >>>>>  
> >>>>>  
> >>>>>  
> >>>>>  
> >>>>> On Aug 10, 2007, at 16:35, Reto Ruedy wrote:  
> >>>>>  
> >>>>>> Makiko,  
> >>>>>>  
> >>>>>> In the second to the last paragraph a "w" seems to be missing;  
> >>>> 'global  
> >>>>>> arming' is bad also, but I think it meant to be global warming.  
> >>>>>>  
> >>>>>> Reto  
> >>>>>>  
> >>>>>> On Fri, 2007-08-10 at 16:26 -0400, Makiko Sato wrote:  
> >>>>>>> Robert,  
> >>>>>>>  
> >>>>>>> I sent this to Jim and he said he would read it once more.  
> >>>>>>> Do you  
> >>>>>>> want to change the links? If I hear from him, I will  
> >>>>>>> convert to a  
> >>>>>>> pdf and give it to you.  
> >>>>>>>  
> >>>>>>> Makiko  
> >>>>>>>  
> >>>>>>>  
> >>>>>>>> Date: Fri, 10 Aug 2007 16:18:16 -0400  
> >>>>>>>> To: "James Hansen" <<mailto:jhansen@giss.nasa.gov>  
> >>>>> <mailto:jhansen@giss.nasa.gov>jhansen@giss.nasa.gov >  
> >>>>>>>> From: Makiko Sato  
> >>>>>>>>  
>  
<<mailto:makis@giss.nasa.gov><mailto:makis@giss.nasa.gov>makis@giss.nasa.gov  
> >>>>>  
> >>>>>>>> Subject: Re: New Email  
> >>>>>>>>>  
> >>>>>>>>> Are the figures too large or too small? If I make them  
> >>>>>>>>> slightly  
> >>>>>>>>> larger, the US one gets onto the 2nd page.  
> >>>>>>>>>  
> >>>>>>>>> Makiko  
> >>>>>>>>>  
> >>>>>>>>>

> >>>>>>> At 15:54 2007/08/10, you wrote:  
> >>>>>>> o.k., here is the draft e-mail, which needs the figures and  
> >>>> links  
> >>>>>>> -- I am so it is hard  
> >>>>>>> to read  
> >>>>  
> >>>>>>> right now. Jim  
> >>>>>>> Content-Type: application/msword; name="LightUpstairs.  
> >>>> 10Aug2007.doc"  
> >>>>>>> Content-Disposition: attachment; filename="LightUpstairs.  
> >>>> 10Aug2007.doc"  
> >>>>>>> X-Attachment-Id: f\_f573l7lw  
> >>>>>>> --  
> >>>>>>> Reto Ruedy  
> <<mailto:rruedy@giss.nasa.gov>  
> <mailto:rruedy@giss.nasa.gov>rruedy@giss.nasa.gov >  
> >>>>>>>  
> >>>>>>> --  
> >>>>>>> Robert B. Schmunk,  
> >>>>>>> <mailto:Robert.B.Schmunk@nasa.gov>  
> <mailto:Robert.B.Schmunk@nasa.gov>Robert.B.Schmunk@nasa.gov  
> >>>>>>> NASA Goddard Institute for Space Studies, 2880 Broadway, New  
> >>>>>>> York, NY  
> >>>>>>> 10025  
> >>>>>>>  
> >>>>>>>  
> >>>>>>>  
> >>>>>>>  
> >>>>>>>  
> >>>>>>>  
> >>>>>>>  
> >>>>>>>  
> >>>>>>> <LightUpstairs.10Aug2007.doc>  
> >  
> > --  
> > Robert B. Schmunk,  
> <mailto:Robert.B.Schmunk@nasa.gov>Robert.B.Schmunk@nasa.gov  
> > NASA Goddard Institute for Space Studies, 2880 Broadway, New York,  
> > NY 10025  
> >  
> >  
> >--  
>Robert B. Schmunk,  
<mailto:Robert.B.Schmunk@nasa.gov>Robert.B.Schmunk@nasa.gov  
>NASA Goddard Institute for Space Studies, 2880 Broadway, New York, NY  
>10025  
>



**From:** James Hansen <jhansen@giss.nasa.gov>

**To:** Robert B. Schmunk <rschmunk@giss.nasa.gov>, Reto Ruedy  
<cdrar@giss.nasa.gov>, Makiko Sato <makis@giss.nasa.gov>, Darnell Cain  
<dcain@giss.nasa.gov>

**Subject:** Final Version?

**Date:** Fri, 10 Aug 2007 16:29:26 -0500 (17:29 EDT)

This should have all corrections and hyperlinks -- but if you see anything  
questionable, let me know Jim

Word document attachment (LightUpstairs.10Aug2007.doc)

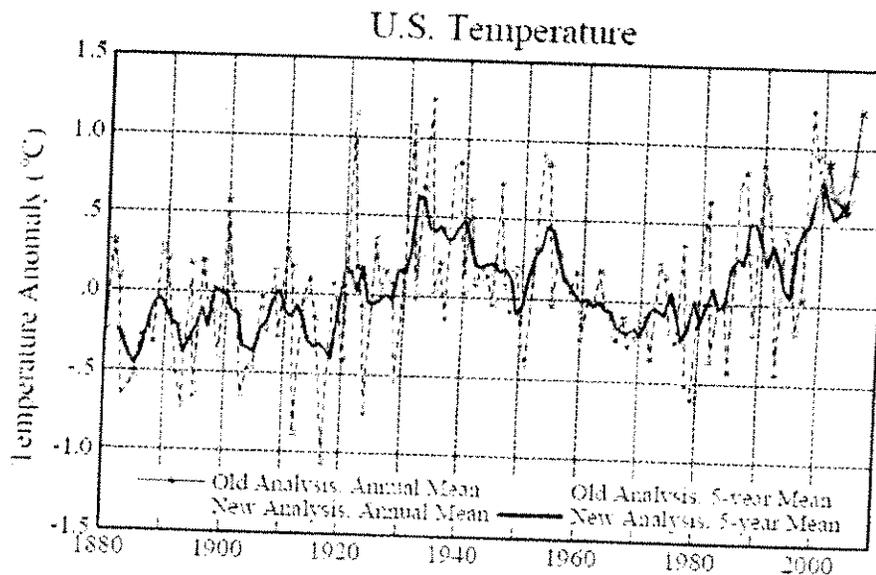
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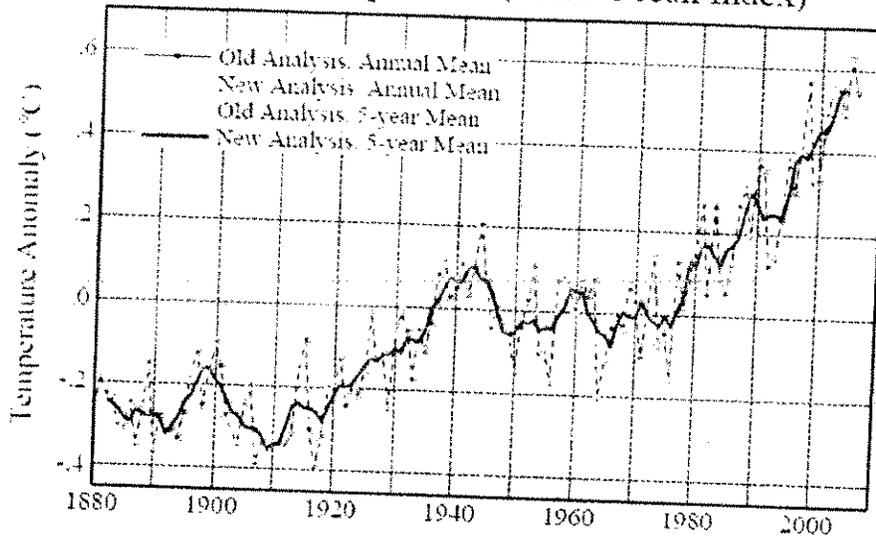
Recently it was realized that the monthly more-or-less-automatic updates of our global temperature analysis ([http://pubs.giss.nasa.gov/abstracts/2001\\_Hansen\\_etal.html](http://pubs.giss.nasa.gov/abstracts/2001_Hansen_etal.html)) had a flaw in the U.S. data. In that (2001) update of the analysis method (originally published in our 1981 Science paper – [http://pubs.giss.nasa.gov/abstracts/1981\\_Hansen\\_etal.html](http://pubs.giss.nasa.gov/abstracts/1981_Hansen_etal.html)) we included improvements that NOAA had made in station records in the U.S., their corrections being based mainly on station-by-station information about station movement, change of time-of-day at which max-min are recorded, etc.

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Jim

**From:** James Hansen <jhansen@giss.nasa.gov>  
**To:** jhansen@giss.nasa.gov  
**Cc:** jhansen@giss.nasa.gov  
**Subject:** A Light On Upstairs?  
**Date:** Fri, 10 Aug 2007 18:27:31 -0400

To be removed from Jim Hansen's e-mail list respond to sender with REMOVE  
as subject but this line should be included in the e-mail.

Word document attachment (LightUpstairs.10Aug2007-x.doc)

PDF document attachment (LightUpstairs.10Aug2007-x.pdf)

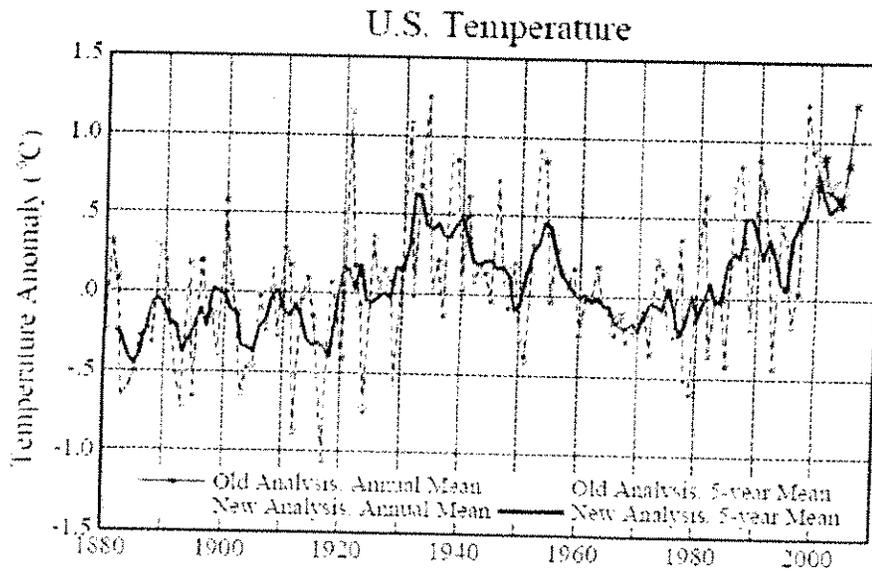
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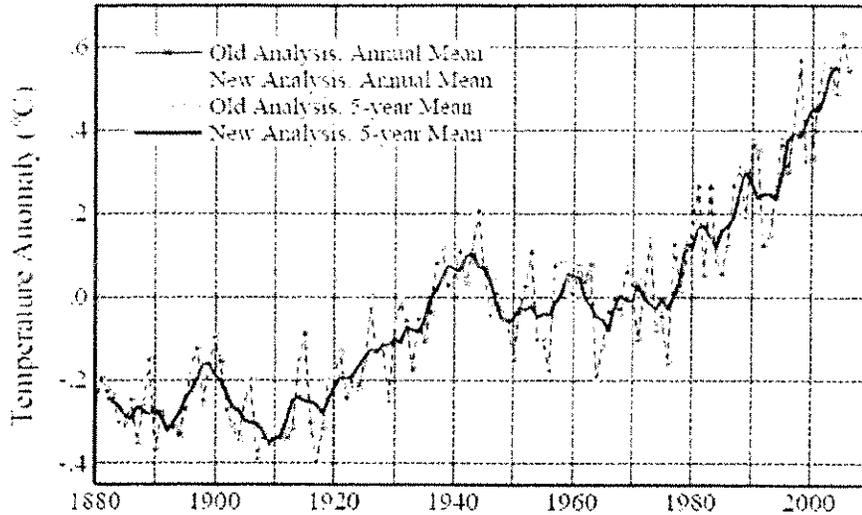
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**From:** Makiko Sato <[makis@giss.nasa.gov](mailto:makis@giss.nasa.gov)>  
**To:** [jhansen@giss.nasa.gov](mailto:jhansen@giss.nasa.gov), [rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov), [makis@giss.nasa.gov](mailto:makis@giss.nasa.gov)  
**Subject:** Fwd: Re: Usufruct and the Gorilla  
**Date:** Wed, 15 Aug 2007 18:06:36 -0400

The font for Fig. 1 and Fig 2&3 are not matched. What should I do?

Makiko

>>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 a global  
>> temperature map 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). The flaw affected temperatures only  
>> in the United States (by just over a tenth of  
>> a degree) and only after 2000. We made the  
>> adjustment to 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, one improvement  
>> made in the 2001 analysis was to use the 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 was written with the assumption 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 XX July 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 whatever on the global warming  
>> issue? Certainly not, as discussed below.  
>>

>>Emacs!

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

>> 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 are seeking 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 much 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 crucial matter, I need  
>> to make clear how the deceit of the little fish works, to expose their  
sham.

>>  
>> 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 choose to discuss  
>> the ranking of temperature in different  
>> years. 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.

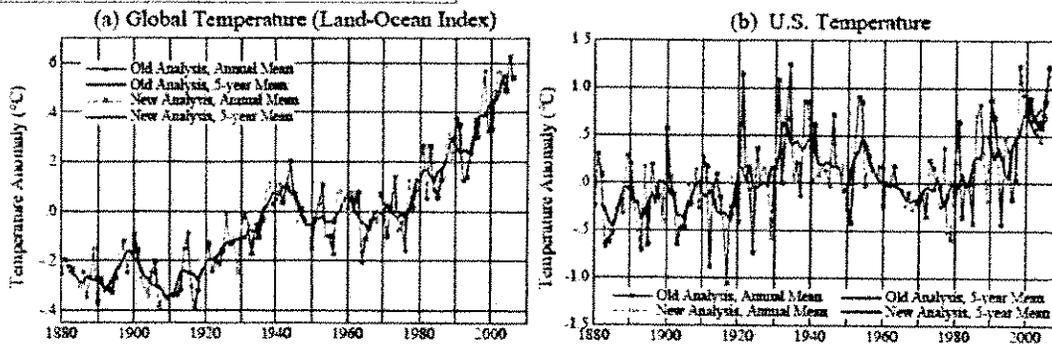
>> Indeed, when we receive new data  
>> each month, which often adds in new stations,

>> 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 is commonly  
 >> different than that obtained in 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.

Emacs!

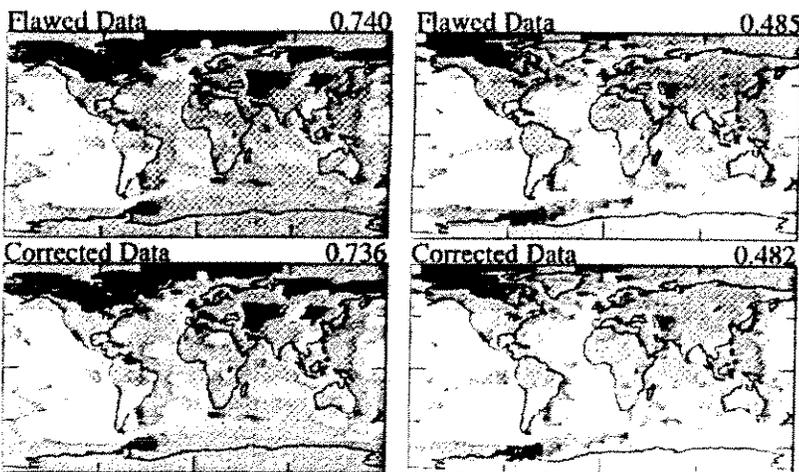
Emacs!

[[JPEG image attachment (18a5d75.jpg)]]



[[JPEG image attachment (18a5d85.jpg)]]

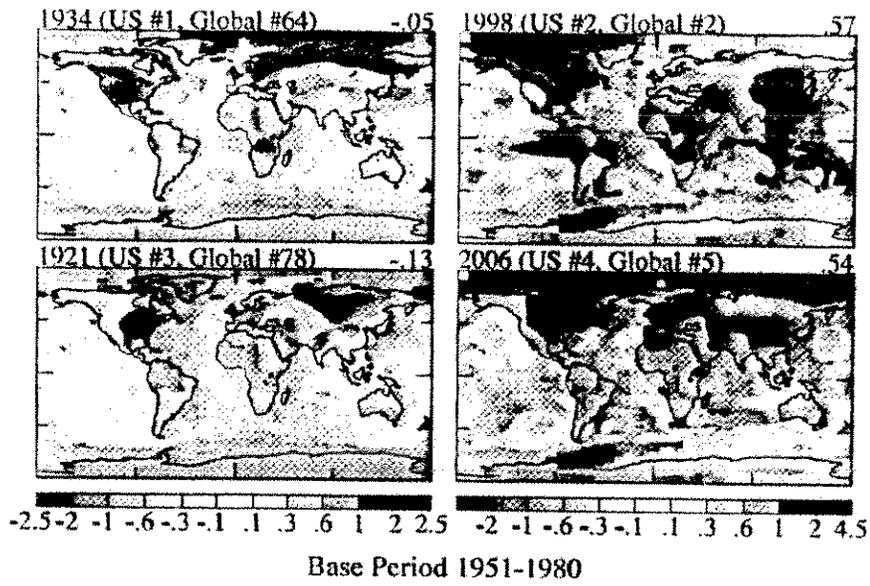
1997-2006 relative to 1880-1920      1997-2006 relative to 1951-1980



-3 -2 -1.5 -1 -0.5 -0.2 .2 .5 1 1.5 2 4.4      -2 -1.5 -1 -0.5 -0.2 .2 .5 1 1.5 2 3

[[JPEG image attachment (18a5db3.jpg)]]

Annual Mean Surface Temperature Anomalies (°C)



**From:** James Hansen <jhansen@giss.nasa.gov>  
**To:** Donald Anderson <donald.anderson-1@nasa.gov>, Jack Kaye  
<jack.a.kaye@nasa.gov>  
**Cc:** Leslie McCarthy <lnolan@giss.nasa.gov>  
**Subject:** Re: FW: <no subject>  
**Date:** Tue, 14 Aug 2007 02:52:28 -0400

Don,

These are some desperate characters trying to make a mountain out of a mole hill. I presume that my note "A Light on Upstairs?" should have clarified things for scientists (Leslie, you can send it to anybody), but perhaps a few of additional comments are warranted.

In summary: There was indeed a flaw\* in our program that automatically updates our global temperature analysis each month. The flaw affected only 2001 and later, and only the United States.

The flaw, even when present (in 2001-2006, in the U.S.) was minor, at most a few thousandths of a degree on global mean and about 0.15C in the U.S. Contrary to some press reports, this did not change the rankings of global temperatures. Nor did it change our rankings of the top few years in the U.S., with 1934 the warmest in our record and 1998 practically tied with it. The claim in the news reports that suddenly 1934 has become the warmest U.S. year is nonsense. As you can see in our 2001 paper, 1934 was the warmest in our record then, and it is now, with and without the programming flaw. We also point out in that paper that the differences among these different years are negligible, less than the uncertainty.

Finally, if one wished to be scientific, instead of trying to confuse the public, as is the obvious intent of these critics/contrarians, one should note that single year temperatures for an area as small as the U.S. (2% of the globe) are extremely noisy. If one instead looks at the temperature averaged over several years, it is apparent that the U.S. as well as the world has been quite warm in the past decade. Indeed, averaged over several years, the U.S. is at its warmest point in the period of record, about 0.8C warmer than at the beginning of the 20th century, similar to the global mean warming.

Jim

\*The flaw was caused by the fact that in our 2001 update of our analysis we included Tom Karl's adjustments to USHCN station records, which they based on metadata available station by station for station moves, time-of-observation bias, etc. However, the only available data stream that included these stations after 2000 was the GHCN (WMO), which did not include the Karl adjustments, a fact not recognized by our program, thus causing a discontinuity in these station records. Because the effect was small, we did not notice it. This programming flaw is easily corrected by adding the NOAA/NCDC adjustment near the end of the record to the

2001-2007 data, and it has been so corrected.

On 8/13/07, **Donald Anderson** <[donald.anderson-1@nasa.gov](mailto:donald.anderson-1@nasa.gov)> wrote:

Jim:

FYI

Any comment?

Don

---

Don Anderson

3G84

Modeling, Analysis and Prediction (MAP)

Earth Science Division

Science Mission Directorate

NASA HQ

Washington, DC, 20546-0001

202-358-1432 Fax: x2770

email: [Donald.Anderson-1@nasa.gov](mailto:Donald.Anderson-1@nasa.gov)

----- Forwarded Message

**From:** "Volz, Stephen M. (HQ-DK000)" <[svolz@nasa.gov](mailto:svolz@nasa.gov)>

**Date:** Mon, 13 Aug 2007 12:01:06 -0400

**To:** "Anderson, Donald (HQ-DK000)" <[donald.anderson-1@nasa.gov](mailto:donald.anderson-1@nasa.gov)>, "Maring, Hal (HQ-DK000)" <[hal.maring@nasa.gov](mailto:hal.maring@nasa.gov)>

**Cc:** "Kaye, Jack A. (HQ-DK000)" <[jack.a.kaye@nasa.gov](mailto:jack.a.kaye@nasa.gov)>, "Brown, Dwayne C. (HQ-NB060)" <[dwayne.c.brown@nasa.gov](mailto:dwayne.c.brown@nasa.gov)>

**Conversation:** <no subject>

**Subject:** <no subject>

Don et al.,

I saw this on the NASA news summary today.

**Columnist Notes Changes In NASA's Temperature Data.** In an op-ed for the *Washington Times* (8/13, 87K) Mark Steyn, a syndicated columnist who is also senior contributing editor for Hollinger Inc. Publications, senior North American columnist for Britain's Telegraph Group, North American editor for the *Spectator*, writes, "Something rather odd happened the other day. If you go to NASA's Web site and look at the "U.S. surface air temperature" rankings for the Lower 48 states, you might notice something has changed.

Then again, you might not. They're not issuing any press releases about it. But they have quietly revised their All-Time Hit Parade for U.S. temperatures.

The "hottest year on record" is no longer 1998, but 1934. Another alleged swelterer, the year 2001, has now dropped out of the Top 10 altogether, and most of the rest of the 21st century — 2000, 2002, 2003, 2004 — plummeted even lower down the Hot 100. In fact, every supposedly hot year from the '90s and Oughts has had its temperature rating reduced. Four of America's Top 10 hottest years turn out to be from the 1930s, that notorious decade when we all drove around in huge SUVs with the air-conditioning on full-blast. If climate change is, as Al Gore says, the most important issue anyone's ever faced in the history of anything ever, then Franklin Roosevelt didn't have a word to say about it. And yet we survived.

So why is 1998 no longer America's record-breaker? Because a very diligent fellow called Steve McIntyre of [climateaudit.com](http://climateaudit.com) labored long and hard to prove there was a bug in NASA's handling of the raw data. He then notified the scientists responsible, and received an acknowledgment that the mistake was an "oversight" that would be corrected in the next "data refresh." The reply was almost as cool as the revised chart listings.

Who is this man who understands American climate data so much better than the National Aeronautics and Space Administration? Well, he's not even American: He's Canadian. Just another immigrant doing the jobs Americans won't do, even when they're federal public servants with unlimited budgets? No. Mr. McIntyre lives in Toronto. But the data smelled wrong to him, he found the error, and NASA has now corrected its findings — albeit without the fanfare that accompanied the hottest-year-on-record hysteria of almost a decade ago. Sunlight may be the best disinfectant, but, when it comes to global warming, the experts prefer to stick the thermometer where the sun don't shine."

And he goes on and on....

Does anyone know what this guy is talking about? I checked the NASA website [http://www.nasa.gov/centers/goddard/news/topstory/2006/2006\\_warm.html](http://www.nasa.gov/centers/goddard/news/topstory/2006/2006_warm.html), dated Feb 8, 2007 and it shows the top five years as: 2005 (1st), 1998, 2002, 2003, and 2006.

Stephen Volz, Ph.D.  
Program Executive, Science Mission Directorate  
Suite 3B74  
NASA Headquarters

"Try not. Do, or do not. There is no try."  
- Yoda, Jedi Master

----- End of Forwarded Message



**From:** James Hansen <jhansen@giss.nasa.gov>

**To:** [lesgiss@verizon.net](mailto:lesgiss@verizon.net)

**Cc:** [rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov), [ltravis@giss.nasa.gov](mailto:ltravis@giss.nasa.gov), [robert.j.gutro@nasa.gov](mailto:robert.j.gutro@nasa.gov),  
[makis@giss.nasa.gov](mailto:makis@giss.nasa.gov)

**Subject:** Re: FW: Per our Discussion - Note for Web Site

**Date:** Wed, 15 Aug 2007 16:42:32 -0400

there must be something wrong with the second sentence -- please reread it Reto.  
Jim

On 8/15/07, [lesgiss@verizon.net](mailto:lesgiss@verizon.net) <[lesgiss@verizon.net](mailto:lesgiss@verizon.net)> wrote:

Thanks, Reto.

I spoke with Tabatha again..she said Jack Kaye suggested adding the details that the changes were to US stations only, and only post-2000...

Jim--if Reto's revisions, and Jack's are okay, please let me know.

Leslie

Original Message:

-----  
**From:** Reto Ruedy [rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)

**Date:** Wed, 15 Aug 2007 15:24:29 -0400

**To:** [jhansen@giss.nasa.gov](mailto:jhansen@giss.nasa.gov), [lesgiss@verizon.net](mailto:lesgiss@verizon.net), [ltravis@giss.nasa.gov](mailto:ltravis@giss.nasa.gov),  
[robert.j.gutro@nasa.gov](mailto:robert.j.gutro@nasa.gov), [makis@giss.nasa.gov](mailto:makis@giss.nasa.gov)

**Subject:** Re: FW: Per our Discussion - Note for Web Site

Here is my suggested revision:

Researchers at NASA's Goddard Institute for Space Studies in New York recently revised information on their global temperature record based on corrected data. The program that replaced for some US stations the 1880-1999 record by records that were adjusted for instrumentation and procedural changes, used the original source for the later years without modifying them to fit the adjusted data. The result was a discontinuity in year 2000 for the US stations involved. Since the necessary adjustment was positive for about half the stations and negative for the other half, the effect on US means was a discontinuity of +.15C, and of .003C for the global mean series. The researchers ...

Reto

On Wed, 2007-08-15 at 14:42 -0400, James Hansen wrote:

> This seems fine to me. Reto or Makiko may want to comment. Jim

>

> On 8/15/07, [lesgiss@verizon.net](mailto:lesgiss@verizon.net) <[lesgiss@verizon.net](mailto:lesgiss@verizon.net)> wrote:



> was a  
> > discontinuity in temperature variance in 2000. The  
> researchers have  
> > corrected the computer program and posted their revised  
> data. More  
> > information is available here: (LINK TO GISS SITE).  
> >  
> >  
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>

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> mail2web - Check your email from the web at  
> <http://link.mail2web.com/mail2web>  
>  
>  
>  
>  
>

-  
Reto Ruedy <[rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)>

---

[mail2web.com](http://link.mail2web.com/Business/SharePoint) - What can On Demand Business Solutions do for you?  
<http://link.mail2web.com/Business/SharePoint>

**From:** James Hansen <jhansen@giss.nasa.gov>  
**To:** Robert Cahalan <Robert.F.Cahalan@nasa.gov>  
**Cc:** Gavin Schmidt <gschmidt@giss.nasa.gov>, Franco Einaudi <franco.einaudi@nasa.gov>, David Herring <dherring@climate.gsfc.nasa.gov>, rruedy@giss.nasa.gov, makis@giss.nasa.gov

**Subject:** Re: Possible story about the temp record

**Date:** Tue, 14 Aug 2007 14:16:12 -0400

Thanks, Bob, I am writing something -- perhaps it can be used there, or modified to be used there. Jim

At 01:52 PM 8/14/2007, Robert Cahalan wrote:

Jim,

Earlier I sent the following to Gavin -- and I realize that these are points you've been repeating for many years, just want to add that EarthObservatory could be helpful to get the word out:

Yes, I agree that this could be an educational opening for mainstream media.

My feeling is we need to lead with some of the faulty claims, and then illustrate that:

- (1) the data is all freely available and widely used for scientific study;
- (2) scientists use extensive statistical testing to determine whether observed differences can be ignored as being within the observational uncertainty or natural year-to-year variations;
- (3) changes of a given magnitude at a station or in a limited area average like the lower 48 contiguous United States, which covers about 2% Earth's surface, are less likely to be significant than a change of similar magnitude in averages over the full surface area of the Earth, which is less affected by many local influences (mention corrections to minimize urban effects too); and
- (4) changes in individual years, even ones that change the ranking of years, are less likely to be associated with sustained climate change than changes averaged over several successive years. On this last point we might quote the CCSP temperature synthesis and assessment product 1.1, which emphasized this point.

Of course these are all basic points that any of us climatologists know, but the public needs reminding, and this brouhaha could give a good opportunity to educate any "fence-sitters" who might be listening...

.Bob.



I just left you voicemail, but also wanted to write to explore your availability to speak with me about the GISS temperature record. Bob Cahalan feels, and I agree, that given the recent turn of events it might be a good idea to educate the public about how these data are gathered, and why it's actually harder to calculate average temperature for, say, the continental U.S. than it is for the whole globe.

Anyway, I can see the rightwing blogosphere is revving up into high gear now and so perhaps a report on NASA's Earth Observatory and seizing this opportunity to inform the public will steal most of the hot air out of their collective balloon, eh?

Please advise me on your availability to bring me up to speed. I think Bob C. would like to join us in that conversation as well.

best regards,

--

David Herring

--

David Herring  
Project Manager for Education & Outreach  
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ph: 301-614-6219  
fax: 301-614-6307  
cell:

Bob Cahalan, Head | Climate and Radiation Branch  
NASA/Goddard Space Flight Center, Greenbelt, MD 20771  
robert.f.cahalan@nasa.gov | office: 301-614-5390 - FAX: 301-614-6307  
- cell:

**From:** Robert Cahalan <[Robert.F.Cahalan@nasa.gov](mailto:Robert.F.Cahalan@nasa.gov)>  
**To:** James Hansen <[jhansen@giss.nasa.gov](mailto:jhansen@giss.nasa.gov)>  
**Cc:** Gavin Schmidt <[gschmidt@giss.nasa.gov](mailto:gschmidt@giss.nasa.gov)>, Franco Einaudi <[franco.einaudi@nasa.gov](mailto:franco.einaudi@nasa.gov)>, David Herring <[dherring@climate.gsfc.nasa.gov](mailto:dherring@climate.gsfc.nasa.gov)>, rruedy@giss.nasa.gov, makis@giss.nasa.gov

**Subject:** Re: Possible story about the temp record

**Date:** Fri, 24 Aug 2007 08:45:38 -0400

Jim,

Please give an estimated completion date for your writeup on the temperature data adjustment, so Earth Observatory can make plans to support it.

.Bob.

On Aug 14, 2007, at 2:16 PM, James Hansen wrote:

Thanks, Bob, I am writing something -- perhaps it can be used there, or modified to be used there. Jim

At 01:52 PM 8/14/2007, Robert Cahalan wrote:

Jim,

Earlier I sent the following to Gavin -- and I realize that these are points you've been repeating for many years, just want to add that EarthObservatory could be helpful to get the word out:

Yes, I agree that this could be an educational opening for mainstream media.

My feeling is we need to lead with some of the faulty claims, and then illustrate that:

- (1) the data is all freely available and widely used for scientific study;
- (2) scientists use extensive statistical testing to determine whether observed differences can be ignored as being within the observational uncertainty or natural year-to-year variations;
- (3) changes of a given magnitude at a station or in a limited area average like the lower 48 contiguous United States, which covers about 2% Earth's surface, are less likely to be significant than a change of similar magnitude in averages over the full surface area of the Earth, which is less affected by many local influences (mention corrections to minimize urban effects too); and
- (4) changes in individual years, even ones that change the ranking of years, are less likely to be associated with sustained climate change than changes averaged over several successive years. On this last point we might quote the CCSP temperature synthesis and assessment product 1.1, which emphasized this point.

Of course these are all basic points that any of us climatologists know, but the public needs reminding, and this brouhaha could give a good opportunity to educate any "fence-sitters" who might be listening...

.Bob.

On Aug 14, 2007, at 12:09 PM, David Herring wrote:

Thank you for clarifying, Gavin.

Dear Jim,

I know you're extremely busy, but I'm writing to request a little of your time in the near future to interview you for a short feature article on NASA's Earth Observatory that we would like to do about this issue. I'd like a little help in understanding more clearly how you conduct your analyses, what the nature of the "bug" was, and the fix that you put into place.

I have time late today (after 4 p.m.); any time after 11 a.m. tomorrow; any time before 3 p.m. on Thursday; and all day Friday. What could work for you? Also, any background reading material you care to send me / direct me to will help me to come better prepared with questions.

Best regards,

David Herring

At 11:56 AM -0400 8/14/07, Gavin Schmidt wrote:

If you like, but you need to discuss this with Jim - This is his analysis, and he is the lead author. It actually doesn't have much to do with me at all - I'm just commenting....

gavin

\*-----\*

| Gavin Schmidt                    NASA/Goddard Institute for Space  
| Studies |  
|                                    2880  
| Broadway                                    |  
| Tel: (212) 678 5627                    New York, NY  
| 10025                                    |  
| |

| [gschmidt@giss.nasa.gov](mailto:gschmidt@giss.nasa.gov) <http://www.giss.nasa.gov/> ~gavin |

\*-----\*  
On Tue, 14 Aug 2007, David Herring wrote:

Hey Gavin,

I just left you voicemail, but also wanted to write to explore your availability to speak with me about the GISS temperature record. Bob Cahalan feels, and I agree, that given the recent turn of events it might be a good idea to educate the public about how these data are gathered, and why it's actually harder to calculate average temperature for, say, the continental U.S. than it is for the whole globe.

Anyway, I can see the rightwing blogosphere is revving up into high gear now and so perhaps a report on NASA's Earth Observatory and seizing this opportunity to inform the public will steal most of the hot air out of their collective balloon, eh?

Please advise me on your availability to bring me up to speed. I think Bob C. would like to join us in that conversation as well.

best regards,

--

David Herring

--  
David Herring  
Project Manager for Education & Outreach  
Earth Sciences Division, Code 610.3  
NASA's Goddard Space Flight Center  
Greenbelt, MD 20771  
ph: 301-614-6219  
fax: 301-614-6307  
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Bob Cahalan, Head | Climate and Radiation Branch  
NASA/Goddard Space Flight Center, Greenbelt, MD 20771  
[robert.f.cahalan@nasa.gov](mailto:robert.f.cahalan@nasa.gov) | office: 301-614-5390 - FAX: 301-614-6307  
- cell:

**Bob Cahalan, Head | Climate and Radiation Branch**

NASA/Goddard Space Flight Center, Greenbelt, MD 20771

[robert.f.cahalan@nasa.gov](mailto:robert.f.cahalan@nasa.gov) | office: 301-614-5390 - FAX: 301-614-6307 - cell:



**From:** James Hansen <jhansen@giss.nasa.gov>  
**To:** rruedy@giss.nasa.gov, makis@giss.nasa.gov  
**Subject:** Fwd: US temperatures  
**Date:** Tue, 14 Aug 2007 14:11:21 -0400

Date: Tue, 14 Aug 2007 14:04:42 -0400  
From: "Thomas.R.Karl" <Thomas.R.Karl@noaa.gov>  
Subject: US temperatures  
To: James Hansen <jhansen@giss.nasa.gov>  
User-Agent: Thunderbird 1.5.0.10 (Windows/20070221)

Hi Jim,

I heard that GISS revised the US average temperatures based on the email below:

**Columnist Notes Changes In NASA's Temperature Data.** In an op-ed for the Washington Times <<http://www.washingtontimes.com/article/20070813/COMMENTARY08/108130024/1012/8/13,87K>> Mark Steyn, a syndicated columnist who is also senior contributing editor for Hollinger Inc. Publications, senior North American columnist for Britain's Telegraph Group, North American editor for the Spectator, writes, "Something rather odd happened the other day. If you go to NASA's Web site and look at the 'U.S. surface air temperature' rankings for the Lower 48 states, you might notice something has changed. Then again, you might not. They're not issuing any press releases about it. But they have quietly revised their All-Time Hit Parade for U.S. temperatures. The 'hottest year on record' is no longer 1998, but 1934. Another alleged swelterer, the year 2001, has now dropped out of the Top 10 altogether, and most of the rest of the 21st century - 2000, 2002, 2003, 2004 - plummeted even lower down the Hot 100. In fact, every supposedly hot year from the '90s and Oughts has had its temperature rating reduced. Four of America's Top 10 hottest years turn out to be from the 1930s, that notorious decade when we all drove around in huge SUVs with the air-conditioning on full-blast. If climate change is, as Al Gore says, the most important issue anyone's ever faced in the history of anything ever, then Franklin Roosevelt didn't have a word to say about it. And yet we survived."

I have attached a short write-up related to NOAA's revised stats for contiguous US temperatures. We would be curious to know what the basis is for your revisions.

Cheers, Tom

--

**Dr. Thomas R. Karl, L.H.D.**

**Director**

NOAA's National Climatic Data Center  
Veach-Baley Federal Building  
151 Patton Avenue

Asheville, NC 28801-5001  
Tel: (828) 271-4476  
Fax: (828) 271-4246  
[Thomas.R.Karl@noaa.gov](mailto:Thomas.R.Karl@noaa.gov)

--

**Dr. Thomas R. Karl, L.H.D.**  
**Director**  
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Tel: (828) 271-4476  
Fax: (828) 271-4246  
[Thomas.R.Karl@noaa.gov](mailto:Thomas.R.Karl@noaa.gov)

Word document attachment (USHCN-trends-2-Pager.doc)

## National temperature trends: The science behind the calculations

On January 9, 2007 NOAA provided a press release stating that preliminary temperatures for the United States indicated 2006 was warmest year on record. Included in the press release was reference to a new method for correcting biases in observations (Version 2) that had a preliminary rank for 2006 as the 2<sup>nd</sup> warmest on record. After receipt of additional observations for 2006 temperature statistics were updated on May 1, 2007. The late data changed the rank for 2006 to the 3<sup>rd</sup> warmest on record for the old method (Version 1) and the rank remained as 2<sup>nd</sup> warmest for the new data correction method (Version 2).

Why such changes occur is rooted both in the way the observations are processed for quality and the delay in receipt of data on paper records from many stations. The observations come from the U.S. Historical Climatology Network (USHCN), a network of 1221 climate observing stations in the continental United States (<http://www.ncdc.noaa.gov/oa/climate/research/ushcn/>). These data are extensively quality controlled for errors and for small biases that may have occurred through time due to artificial changes at each observing station. These artificial changes include station relocations, different instrumentation, and changes in the landscape surrounding the station (e.g. urbanization, removal or planting of vegetation, etc.). Some of these changes may result in "random" changes to the data. For example, even small station relocations can result in temperature readings that are either slightly cooler or slightly warmer than what would have occurred at the former site. Other changes, such as changes in urbanization in the vicinity of the station or changes in observing times can systematically affect temperatures, e.g., add an urban warming bias to the temperature trends. Research has shown that the data from these kinds of changes can be corrected to a large degree based on physical and statistical methods (e.g., see Peterson 2006).

Methods that have been used to correct temperature data is described in more than a dozen peer-reviewed scientific papers by NOAA's National Climatic Data Center (NCDC). A series of data corrections were developed to specifically address potential problems in trend estimation of the rates of warming or cooling in the USHCN. They include:

- 1â, Station moves and instrumentation changes (Karl and Williams 1987, Quayle et al. 1991),
- 2â, changes in observing practices, such as observing time changes (Karl et al. 1986), and
- 3â, urbanization (Karl et al. 1988).

These data correction schemes have been applied to the USHCN to determine temperature trends across the United States up until the end of 2006. Beginning in 2007 improved correction schemes for items 1 and 3 above have been applied to the USHCN observations (Menne and Williams 2005, Menne and Williams 2007). They have been shown to improve our ability to monitor climate change and variations. Because different algorithms were used in making corrections to the station data in 2007 there are small differences in annual average temperatures between the older corrections (Version 1) and newer Version 2 corrections. These small differences in average temperatures result in

minor differences in annual rankings for some years. The new correction scheme has virtually no impact on the long-term temperature trend as annual temperature trends in Version 1 from 1895-2006 were 0.112°F/decade and in Version 2 the trends were 0.110°F/decade.

NOAA continues to work to improve the quality and representativeness of climate data provided to the public and scientific communities. In addition to advanced quality control procedures, these efforts include modernization of the USHCN by installing new, more accurate instrumentation and ensuring proper station siting in the process. In addition by the end of next year NOAA should have in place a U.S. Climate Reference Network, a set of 114 very high quality stations optimized for monitoring climate (<http://www.ncdc.noaa.gov/oa/climate/uscrn/>). The operation of the US Climate Reference Network will eventually virtually eliminate the need for the types of corrections that have to be applied to data available today. The ongoing modernization of the US Historical Climate Reference Network will enable trends of regional temperature to be estimated with far fewer data corrections.

#### References

- 1â, Karl, T.R., H.F. Diaz, and G. Kukla, 1988: Urbanization: its detection and effect in the United States climate record, *J. Climate*, 1, 1099-1123.
- 2â, Karl, T.R., C.N. Williams, Jr., P.J. Young and W.M. Wendland, 1986: A model to estimate the time of observation bias associated with monthly mean maximum, minimum, and mean temperature for the United States, *J. Climate Appl. Meteor.*, 25, 145-160.
- 3â, Karl, T.R., and C.N. Williams Jr., 1987: An approach to adjusting climatological time series for discontinuous inhomogeneities. *J. Climate Appl. Meteor.*, 26, 1744-1763.
- 4â, Menne, M.I., and C.N. Williams, Jr., 2005: Detection of undocumented changepoints using multiple test statistics and composite reference series. *J. Climate*, 18, 4271-4286.
- 5â, Menne, M.I., and C.N. Williams, Jr., 2007: Homogenization of temperature series via pairwise comparisons. *J. Climate*, in review
- 6â, Peterson, T.C., 2006: Examination of potential biases in air temperature caused by poor station locations, *Bull. Amer. Meteor. Soc.*, 87, 1073-1080, DOI:10.1175/BAMS-87-8-1073
- 7â, Quayle, R.G., D.R. Easterling, T.R. Karl, and P.Y. Hughes, 1991: Effects of recent thermometer changes in the cooperative station network, *Bull. Amer. Meteor. Soc.*, 72, 1718-1724.

**From:** Gavin Schmidt <[gschmidt@giss.nasa.gov](mailto:gschmidt@giss.nasa.gov)>  
**To:** [rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)  
**Subject:** Re: [Fwd: Fwd: Question]  
**Date:** 09 Aug 2007 19:24:22 -0400

agreed.

On Thu, 2007-08-09 at 19:12, Reto Ruedy wrote:

> Gavin,  
>  
> Jim gets many of these kinds of responses - a change whose effect we  
> described as well within the margin of error has become an "astonishing  
> change".  
>  
> I guess the best thing is to ignore it and - if at all - set matters  
> straight in a place like RealClimate .

> Reto

> ----- Forwarded Message -----

> From: James Hansen <[jhansen@giss.nasa.gov](mailto:jhansen@giss.nasa.gov)>  
> To: [rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov), [makis@giss.nasa.gov](mailto:makis@giss.nasa.gov)  
> Subject: Fwd: Question  
> Date: Thu, 09 Aug 2007 18:13:23 -0400

> > DomainKey-Signature: a=rsa-sha1; q=dns; c=noFWS; s=s1024;  
> > d=yahoo.com;

h=Received:X-YMail-OSG:From:To:Subject:Date:Message-ID:MIME-Version:Content-  
b=ffkH2tg2tl5Z4nC6MwTIbe8N2agSXy0S+Mr4wPMswbQJdfchkU+640U3se8vtx  
+Di6KFgNc1dgwzzbp5PDkota00bRYkc  
+Usnl/0ugGm7gw8KnFEjITxLy9cc1DAIhnq4sSMIZy0jf00049iG0jZu0tSbURRzhQuwz8CBkoGi1  
> > X-YMail-OSG:

kEot1KsVM1l1f1VC3lqkqzwt1okpR3HYVAPxQCuUAnoXdfzY1j2A3q7Zk.gU1cYAwj5E.mbIWXbc!  
> > From: [James.E.Hansen@nasa.gov](mailto:James.E.Hansen@nasa.gov) @yahoo.com  
> > To: <[James.E.Hansen@nasa.gov](mailto:James.E.Hansen@nasa.gov)>  
> > Subject: Question  
> > Date: Thu, 9 Aug 2007 18:55:53 -0300  
> > X-Mailer: Microsoft Office Outlook 11  
> > Thread-Index: Acfaz/NMEFUhL8wLT7+Q05t4TLtH8Q==

> > Dr. Hansen,

> > Below is a link to a posting today that I was hoping you could comment  
> > on.

> >  
> > It is dispiriting that questions regarding climate change have been  
> > politicized, but I was hoping you could shed some light on this  
> > posting.  
> >  
> > [http://www.dailytech.com/Blogger+finds+Y2K+bug+in+NASA+Climate  
> > +Data/article8383.htm](http://www.dailytech.com/Blogger+finds+Y2K+bug+in+NASA+Climate+Data/article8383.htm)  
> >  
> > Thank you very much for any clarification you can provide.  
> >  
> >

**From:** lesgiss@verizon.net <lesgiss@verizon.net>  
**Reply-To:** lesgiss@verizon.net  
**To:** jhansen@giss.nasa.gov, rruedy@giss.nasa.gov  
**Subject:** FW: top ten hottest years on record  
**Date:** Fri, 10 Aug 2007 11:08:57 -0400

Jim and Reto:

How do you want to reply to this?

Thanks.

Leslie

Original Message:

-----  
**From:** @stlcc.edu  
**Date:** Thu, 09 Aug 2007 18:45:48 -0500  
**To:** Leslie.M.McCarthy@nasa.gov  
**Subject:** top ten hottest years on record

Mr. McCarthy,

I read today that previous reports of the hottest years on record were not accurately reported and that

four of the top ten hottest years on record are from the 30s with 1934 as the hottest. Is this correct information and if so why isn't that noted on the web site?

Thanks for your help.

Email: @stlcc.edu <mailto: @stlcc.edu>  
Phone: \* Fax

mail2web.com – Enhanced email for the mobile individual based on  
Microsoft®  
Exchange - <http://link.mail2web.com/Personal/EnhancedEmail>

**From:** Reto Ruedy <[rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)>  
**Reply-To:** [rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)  
**To:** James Hansen <[jhansen@giss.nasa.gov](mailto:jhansen@giss.nasa.gov)>  
**Cc:** Makiko Sato <[makis@giss.nasa.gov](mailto:makis@giss.nasa.gov)>, Reto Ruedy <[cdrrar@giss.nasa.gov](mailto:cdrrar@giss.nasa.gov)>  
**Subject:** Re: Fwd: FW: GISS - Truth driven vs agenda driven  
**Date:** Fri, 10 Aug 2007 13:09:56 -0400

Jim,

Nothing was thrown out - I made the corresponding graphs.

Reto

On Fri, 2007-08-10 at 11:59 -0500, James Hansen wrote:

> Makiko, Reto,  
> I am being beseiged by these (see below). The appropriate response is  
> to show the curves for U.S. and global temperatures before and after  
> (before and after McIntyre's correction). Makiko doubts that this is  
> possible because the earlier result has been "thrown away". We will  
> never live this down if we give such a statement. It must be possible  
> to reconstruct the "before" result. Unfortunately, this needs to be  
> done soon, as there are various writers with deadlines this afternoon.  
> I hope that is possible -- this should have a higher priority than the  
> calculation that we mentioned yesterday.

> Jim

>  
> By the way, I think that we should save the results of the analyses at  
> least once per year, so we will have a record of how they change.

>  
>

> ----- Forwarded message -----

> From: [lesgiss@verizon.net](mailto:lesgiss@verizon.net) <[lesgiss@verizon.net](mailto:lesgiss@verizon.net)>  
> Date: Aug 10, 2007 11:44 AM  
> Subject: FW: GISS - Truth driven vs agenda driven  
> To: [jhansen@giss.nasa.gov](mailto:jhansen@giss.nasa.gov), [rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov),  
> [gschmidt@giss.nasa.gov](mailto:gschmidt@giss.nasa.gov)

>  
>  
>

> Original Message:

> -----

> From: @shaw.ca  
> Date: Fri, 10 Aug 2007 09:34:53 -0700  
> To: [Leslie.M.McCarthy@nasa.gov](mailto:Leslie.M.McCarthy@nasa.gov)  
> Subject: GISS - Truth driven vs agenda driven

>  
>

> Dear Leslie,  
>  
> My fellow Canadians have unveiled another Global warming scam -  
> yours!  
>  
> Now that we know Mr. Hansen used incorrect data or procedures in  
> determining the "hottest years", concluding that the top 5 warmest  
> yeats  
> since the 1890s are : 2005, 1998, 2002, 2003, 2006.  
>  
> Yet, there on your website  
> (<http://www.giss.nasa.gov/research/news/20070208/>) is the information  
> still  
> making what is now known to be a bogus claim.  
>  
> Yes we are at a tipping point all right. And the truth is spilling all  
> over  
> your pro-AGW agenda.  
>  
> Just like Mr. Manns infamous Hockey Stick graph, which was proven  
> fraudulent by the same people who found your glaring errors, another  
> lie  
> bites the dust. Funny thing is, when they determined Mr. Mann was  
> fudging  
> things, they found that Mr. Mann's "peer reviewed" work was reviewed  
> but  
> not put through a rigourous, truth seeking, audit. That led to them  
> forming  
> climateaudit.org, to apply the audits that are so obviously missing  
> from  
> the process. And BINGO - Mr. Hansen is unmasked as a zealot.  
>  
> Now, are you honestly a scientific driven institution, or will you  
> admit to  
> being an agenda driven one? I await the press conference to announce  
> that  
> you have had to revise the hottest years list. I await the update to  
> your  
> website to reflect the new, peer-audited, results. I await the  
> confession  
> that you made a huge mistake. I await the firing of those who created  
> and  
> flogged this lie.  
>  
> Will you do the right thing?  
>  
> Sincerely

>  
>  
>  
> -----  
> mail2web - Check your email from the web at  
> <http://link.mail2web.com/mail2web>

>  
>  
>  
>  
--

Reto Ruedy <[rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)>

**From:** Makiko Sato <[makis@giss.nasa.gov](mailto:makis@giss.nasa.gov)>  
**To:** [jhansen@giss.nasa.gov](mailto:jhansen@giss.nasa.gov), [rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)  
**Subject:** US and global temperature graphs  
**Date:** Fri, 10 Aug 2007 15:00:27 -0400

Jim, Reto

I made the graphs and put them on  
[http://www.giss.nasa.gov/~makis/GISS\\_Temp/](http://www.giss.nasa.gov/~makis/GISS_Temp/). If you have corrections  
or suggestions, please let me know.

Makiko

**From:** James Hansen <jhansen@giss.nasa.gov>  
**To:** @fairmontstate.edu>  
**Subject:** Fwd: A Light On Upstairs?  
**Date:** Sat, 11 Aug 2007 04:25:00 -0500 (05:25 EDT)

Your e-mail should be framed, as a counterweight to the all the viscous ad hominem e-mails that have descended through the ethernet.

The answer to your first question is in the attachment. You will see that the flaw in the analysis was of a sort that might occasionally happen, without being detected for a while because the effect is so small. (The large effect claimed in some of the hate-mails was apparently due to some people confusing conclusions about which year was warmest in the United States and which year was warmest on the global average.)

The answer to your second question is that this matter has no effect whatever on climate models or the interpretation of results from climate models, as you can infer yourself once you have looked at the response to your first question.

Jim Hansen

----- Forwarded message -----

**From:** James Hansen <jhansen@giss.nasa.gov>  
**Date:** Aug 10, 2007 5:16 PM  
**Subject:** A Light On Upstairs?  
**To:** jhansen@giss.nasa.gov  
**Cc:** jhansen@giss.nasa.gov

| | To be removed from Jim Hansen's e-mail list respond to sender with REMOVE as  
| | subject but this line should be included in the e-mail.

Word document attachment (LightUpstairs.10Aug2007-x.doc)  
PDF document attachment (LightUpstairs.10Aug2007-x.pdf)

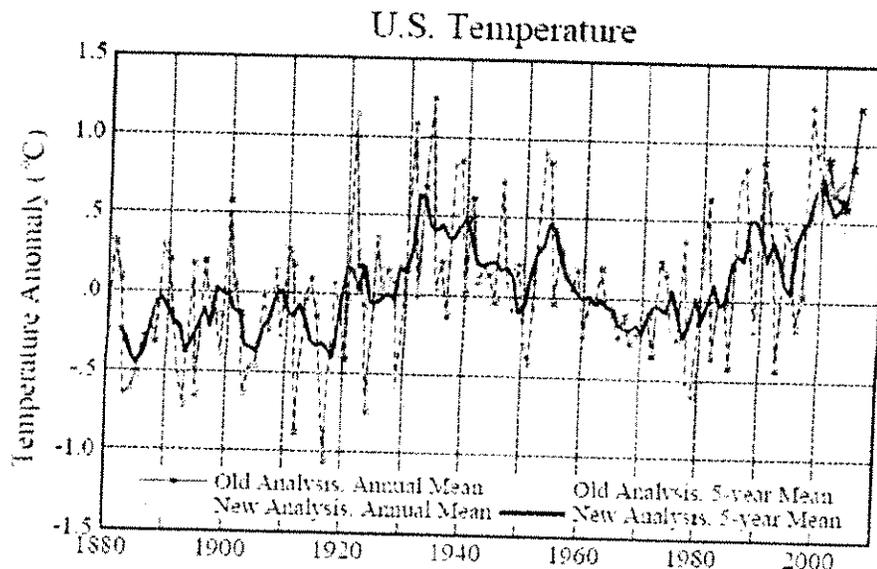
## A Light On Upstairs?

Sorry to send another e-mail so soon. No need to read further unless you are interested in temperature changes to a tenth of a degree over the U.S. and a thousandth of a degree over the world.

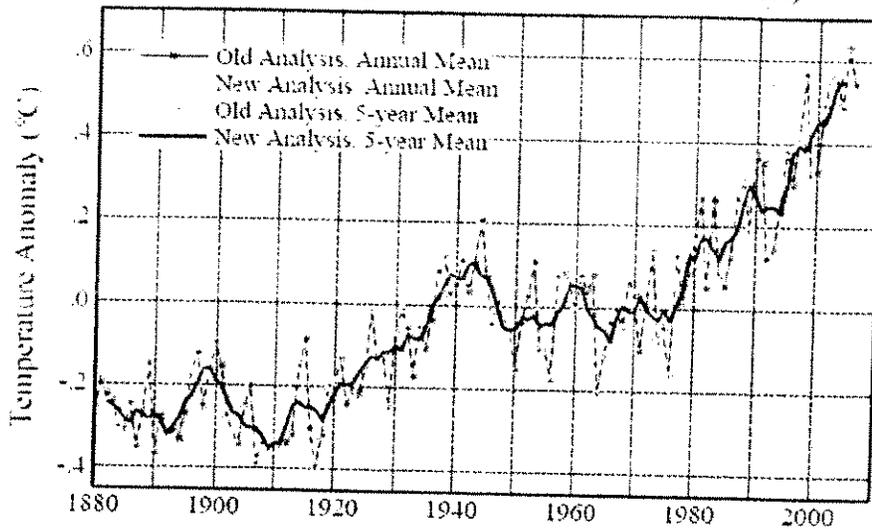
Recently it was realized that the monthly more-or-less-automatic updates of our global temperature analysis ([http://pubs.giss.nasa.gov/abstracts/2001\\_Hansen\\_etal.html](http://pubs.giss.nasa.gov/abstracts/2001_Hansen_etal.html)) had a flaw in the U.S. data. In that (2001) update of the analysis method (originally published in our 1981 Science paper – [http://pubs.giss.nasa.gov/abstracts/1981\\_Hansen\\_etal.html](http://pubs.giss.nasa.gov/abstracts/1981_Hansen_etal.html)) we included improvements that NOAA had made in station records in the U.S., their corrections being based mainly on station-by-station information about station movement, change of time-of-day at which max-min are recorded, etc.

Unfortunately, we didn't realize that these corrections would not continue to be readily available in the near-real-time data streams. The same stations are in the GHCN (Global Historical Climatology Network) data stream, however, and thus what our analysis picked up in subsequent years was station data without the NOAA correction. Obviously, combining the uncorrected GHCN with the NOAA-corrected records for earlier years caused jumps in 2001 in the records at those stations, some up, some down (over U.S. only). This problem is easy to fix, by matching the 1990s decadal-mean temperatures for the NOAA-corrected and GHCN records, and we have made that correction.

The flaw did have a noticeable effect on mean U.S. temperature anomalies, as much as  $0.15^{\circ}\text{C}$ , as shown in Figure 1 below (for years 2001 and later, and 5 year mean for 1999 and later). The effect on global temperature (Figure 2) was of order one-thousandth of a degree, so the corrected and uncorrected curves are indistinguishable.



## Global Temperature (Land-Ocean Index)



Contrary to some of the statements flying around the internet, there is no effect on the rankings of global temperature. Also our prior analysis had 1934 as the warmest year in the U.S. (see the 2001 paper above), and it continues to be the warmest year, both before and after the correction to post 2000 temperatures. However, as we note in that paper, the 1934 and 1998 temperature are practically the same, the difference being much smaller than the uncertainty.

Somehow the flaw in 2001-2007 U.S. data was advertised on the internet and for two days I have been besieged by rants that I have wronged the President, that I must "step down", or that I must "vanish". Hmm, I am not very good at magic tricks.

My apologies if the quick response that I sent to Andy Revkin and several other journalists, including the suggestion that it was a tempest inside somebody's teapot dome, and that perhaps a light was not on upstairs, was immoderate. It was not ad hominem, though.

Jim

From: @fairmontstate.edu>  
Date: Aug 10, 2007 11:45 PM  
Subject: Changes to SAT measurements tracking down the truth for a change  
To: James.E.Hansen@nasa.gov

Dr. Hansen,

I am a student at Fairmont State University. Today FOX news reported that a change in temperature modeling by GISS seriously undermines global warming claims. Rather than duke it out in the streets with people who watch FOX religiously, I decided my best course of action was to contact you directly.

Could you please answer two questions for me. First, in layman-dummy talk, what were the recent changes, and second, what does it mean for global climate modeling, especially global warming modeling?

Thank you in advance for your kind patience and reasoned response.

--  
Reto Ruedy <rruedy@giss.nasa.gov>

**From:** James Hansen <jhansen@giss.nasa.gov>  
**To:** rruedy@giss.nasa.gov, Makiko Sato <makis@giss.nasa.gov>  
**Subject:** Re: Fwd: US temperature correction graphic and file  
**Date:** Sun, 12 Aug 2007 12:02:10 -0500 (13:02 EDT)

Yes, the brouhaha is surely not over. So it is important to do the calculation that we discussed the last time we met. Jim

On 8/12/07, **Reto Ruedy** <rruedy@giss.nasa.gov> wrote:

It's probably not worth mentioning that some of the differences are due to the fact that the original map was created on January 12, 2007, when some December 2006 and earlier data may not have been reported yet.

Your display shows the effect of the correction only, hence may differ a little from Robert's. I'm bracing myself against accusations of white wash attempts.

Reto

On Sun, 2007-08-12 at 09:54 -0500, James Hansen wrote:

>  
>  
> ----- Forwarded message -----  
> From: @berkeley.edu>  
> Date: Aug 12, 2007 6:56 AM  
> Subject: US temperature correction graphic and file  
> To: Gavin Schmidt <gschmidt@giss.nasa.gov>, Stephen McIntyre  
> < @vahoo.ca>, @itworks.com>,  
> @gmail.com>, James Hansen <jhansen@giss.nasa.gov>

> In light of the recent fuss over the significance of the correction to  
> the United States temperature record, I tracked down a copy of the  
> data as it existed on August 1 st (from MSN's search engine cache) and  
> made a direct comparison (something that was largely lacking in much  
> of the coverage of this issue).

>  
>  
>  
> I am distributing the comparison numbers and a graphic made from them  
> to many of the principle commentators on this issue. Feel free to use  
> and redistribute this at will, though I would appreciate an  
> acknowledgment if you do so.

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> <http://www.globalwarmingart.com/>

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**From:** James Hansen <jhansen@giss.nasa.gov>  
**To:** .@aol.com>, Makiko Sato  
<makis@giss.nasa.gov>, Reto Ruedy <cdrar@giss.nasa.gov>  
**Cc:** James.E.Hansen@nasa.gov  
**Subject:** Re: The 1934 flap  
**Date:** Sun, 26 Aug 2007 19:06:34 -0400

Makiko or Reto, I presume that the numbers is referring to are from our global temperature analysis, is that right?

the exaggerated flap refers to the estimated mean temperature for the area covered by the 48 contiguous states, covering 2% of the globe. 1934 and 1998 (for the U.S.) have long been indistinguishable in our analysis, differing by an insignificant few hundredths of a degree. There was a flaw in our computer program that affected temperatures over the U.S. after 2000 (which affected global temperatures by an imperceptible amount, in the third decimal); the global temperature was of course much higher in 1998 than in 1934. We described 1934 and 1998 over the U.S. as a statistical dead-heat, but it has flipped from one to the other when additional stations are added or corrections are provided for existing stations, analogous to election results changing with recounts or addition of late ballots. Unlike an election, though the flip really doesn't matter as you should just say they are practically the same. It does give fodder to bloggers and Rush, though.

Note also, although the year to year fluctuations are large for an area the size of the contiguous states, the long-term (century scale) warming has been as large for the U.S. as for the global mean (actually a bit larger).

Jim Hansen

On 8/25/07, .@aol.com> wrote:

I remember reading that the correction to the US temperature record had 1934 as hotter than 1998. But when I look at the GISTEMP annual data table, it gives a figure of 0.05 K for the 1934 anomaly and 0.76 K for the 1998. Does the table not reflect the revision? Please let me know. I'm on a blog arguing with some crackpot who insists NASA is for some reason covering up the fact that 1934 was a hot year.