

# 07-172

**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](mailto:rruedy@giss.nasa.gov)>  
**Reply-To:** [rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)  
**To:** James E. Hansen <[jhansen@giss.nasa.gov](mailto:jhansen@giss.nasa.gov)>, [gavin@giss.nasa.gov](mailto: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>  
**To:** rruedy@giss.nasa.gov  
**Cc:** 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>

**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 <[cdrrar@giss.nasa.gov](mailto:cdrrar@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/ushcn/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?

> >

> > 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 <[cdrrar@giss.nasa.gov](mailto:cdrrar@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:** Reto Ruedy <[rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)>  
**Reply-To:** [rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)  
**To:** Gavin Schmidt <[gschmidt@giss.nasa.gov](mailto:gschmidt@giss.nasa.gov)>  
**Cc:** Reto Ruedy <[cdrrar@giss.nasa.gov](mailto:cdrrar@giss.nasa.gov)>, Jim Hansen  
<[jhansen@giss.nasa.gov](mailto:jhansen@giss.nasa.gov)>  
**Subject:** Re: revisions to annual temps  
**Date:** Thu, 09 Aug 2007 16:45:37 -0400

We might add, that none of the figures in our latest (2001) paper on temperatures was affected, since it was written in 2000, and only data up to 1999 were used for the figures in that paper.

As far as further revisions are concerned, we are considering just using GHCN data (which would reduce the 1900-1999 warming over the US by .3 C and have no noticeable effect on global means).

Needless to say, the whole thing is another red herring.

Reto

On Thu, 2007-08-09 at 15:04 -0400, Gavin Schmidt wrote:

> I was going to reply thusly, but let me know if you'd rather I left it  
> to you.  
>  
> Gavin  
>  
> =====  
>  
> Andy, this hasn't got much to do with me, but briefly, the issue was as  
> follows. USHCN is a dataset just for the US which has included a number  
> of appropriate corrections to the individual stations based on known  
> site moves and changes in when the data was taken (there has been a  
> shift towards taking data in the morning rather than in the afternoon  
> over the decades). This data is not updated that frequently.  
>  
> The main source of data is GHCN which is a global product, but that does  
> not take into account the USHCN corrections.  
>  
> The error was made in assuming that recent values of the GHCN and USHCN  
> were the same. It turns out they weren't and so when the USHCN-corrected  
> stations were extended to the present day using GHCN, there were a  
> number of small jumps (of both sign) in the data. The correction that  
> was put in was then to re-align the GHCN and USHCN data using the  
> 1990-1999 data. This made approximately 0.15 deg C difference in the  
> 2000-2006 period for the US mean, but it is negligible in the global  
> mean. The data were reprocessed and the online values now incorporate  
> that fix.

>  
> Given the nature of the error, this is purely a US issue (USHCN doesn't  
> apply to the global data) , and as far as I'm aware, no further  
> revisions related to this issue are likely to be forthcoming.

>  
> Gavin

>  
> On Thu, 2007-08-09 at 14:28, Andrew Revkin wrote:

> > hi,

> >

> > you probably noticed the mcintyre et al depiction of GISS annual temp  
> > estimates for US over time.

> >

> > were the revisions published yet, or are they updated in databases  
> > alone?

> >

> > also, are you doing same for global mean temp or is this specific  
> > issue related to US?

> >

> >

> >

> >

> >

> >

> > ANDREW C. REVKIN

> > The New York Times / Environment

> > 620 Eighth Ave., NY, NY 10018-1405

> > phone: 212-556-7326 fax: 509 -357-0965

> > Arctic book: The North Pole Was Here

> > Amazon book: The Burning Season

> > Acoustic-roots band Uncle Wade

--

Reto Ruedy <rruedy@giss.nasa.gov>

**From:** James Hansen <jhansen@giss.nasa.gov>  
**To:** Andrew Revkin <anrevk@nytimes.com>  
**Cc:** gschmidt@giss.nasa.gov, cdrar@giss.nasa.gov  
**Subject:** Re: revisions to annual temps  
**Date:** Sat, 11 Aug 2007 11:04:14 -0500 (12:04 EDT)

sorry, just noticed this, my box being overfull. The warming (during the industrial era, since the 1800s) in the U.S. is similar to the global warming. Of course, as the contiguous U.S. is only 2% of the global area, the unforced variability is much greater.

Not sure what you mean though -- the "reanalysis" has not changed anything, as you can see by looking at the two graphs that I sent out. The past decade, 1998-2007, is extremely warm in the U.S., about 1.2F warmer than 1951-1980 climatology. The "reanalysis" did not change the fact that we found 1934 to be a hair warmer than 1998 and 2006, but the differences are smaller than the uncertainty. (NOAA NCDC finds 1934 a hair cooler, also insignificant difference.)

As for the future in the U.S., you can look for the warming to become more obvious during the next decade or two, as the competition between GHGs and aerosols shifts more heavily to GHGs.

Jim

On 8/10/07, **Andrew Revkin** <anrevk@nytimes.com> wrote:  
hey jim,

given that quite a few folks (gore and some enviros particularly) have often used the USA temp trends in arguments for action (string of record years) it's hard for me to ignore the reanalysis of those annual temps -- even though my own focus remains global mean temp.

essentially, should people always have paid less attention to US (48 state) trend as a meaningful signal of AGW?

(now that all those earlier warm years intrude, it certainly makes the case that regional data can be a red herring)

happy to discuss briefly by phone.  
til 6 p.m. or so

At 11:34 PM 8/9/2007, you wrote:

| Hi Andy,

This seems to be a tempest inside somebody's teapot dome. One of the changes that we made in our analysis in 2001 was to include 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 record, 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 the records at those stations, some up, some down.

The net effect averaged over the U.S. was an error of about 0.15C or less in the post-2000 years, well within the uncertainty bar that we give. The effect on the global mean was of the order of a thousandths of a degree, i.e., entirely negligible.

It is unclear why anyone would try to make something out of this, perhaps a light not on upstairs? Or perhaps this is coming from one of the old contrarians? They can't seem to get over the fact that the real world has proven them to be full of malarkey! You would think that they would be ready to crawl under a rock by now!

Jim

(Reto, please correct if there is anything in the above that is not right.)

On 8/9/07, **Andrew Revkin** <[anrevk@nytimes.com](mailto:anrevk@nytimes.com)> wrote:

hi,

you probably noticed the mcintyre et al depiction of GISS annual temp estimates for US over time.

were the revisions published yet, or are they updated in databases alone?

also, are you doing same for global mean temp or is this specific issue related to US?

ANDREW C. REVKIN

The New York Times / Environment  
620 Eighth Ave., NY, NY 10018-1405  
phone: 212-556-7326 fax: 509 -357-0965  
Arctic book: [The North Pole Was Here](#)

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**From:** Andrew Revkin <[anrevk@nytimes.com](mailto:anrevk@nytimes.com)>  
**To:** James Hansen <[jhansen@giss.nasa.gov](mailto:jhansen@giss.nasa.gov)>  
**Cc:** [gschmidt@giss.nasa.gov](mailto:gschmidt@giss.nasa.gov), Reto Ruedy <[cdrrar@giss.nasa.gov](mailto:cdrrar@giss.nasa.gov)>  
**Subject:** Re: revisions to annual temps  
**Date:** Thu, 09 Aug 2007 23:42:50 -0400

thanks.

on this front, i'm mainly intrsted in global mean temp trends in any case.,

just need to keep track.

in the meantime, more melting up north>

<http://www.nytimes.com/2007/08/09/science/10cnd-arctic.html>

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phone: 212-556-7326 fax: 509 -357-0965  
Arctic book: *The North Pole Was Here*  
Amazon book: *The Burning Season*  
Acoustic-roots band *Uncle Wade*



**From:** lesgiss@verizon.net <lesgiss@verizon.net>  
**Reply-To:** lesgiss@verizon.net  
**To:** jhansen@giss.nasa.gov, rruedy@giss.nasa.gov  
**Subject:** Question on GISS temperature data changing warmest year  
**Date:** Fri, 10 Aug 2007 11:00:44 -0400

Hi Jim:

Just left you a voice mail....you should have received an email inquiry from Charlie Lewis of the National Post newspaper in Canada asking for your comment and answer to some questions about new claims by Steve McIntyre that the GISS temperature data wrongly orders the warmest year on record...

Here's a story on the accusations:

<http://newsbusters.org/blogs/noel-sheppard/2007/08/09/did-media-or-nasa-with-hold-climate-history-data-changes-public>

<http://www.dailytech.com/Blogger+finds+Y2K+bug+in+NASA+Climate+Data/article8383.htm>

Unfortunately, McIntyre's site, [www.climateaudit.org](http://www.climateaudit.org) , does not appear to be operational.

How do you wish to address this inquiry and any others that may come in??

Thanks.

Leslie

Original Message:

-----  
**From:** Lewis, Charles (National Post) clewis@nationalpost.com  
**Date:** Fri, 10 Aug 2007 10:16:09 -0400  
**To:** lnolan@giss.nasa.gov  
**Subject:** Request

I have a media request. I was told you were the best person to get in touch with and it was best to reach you by email. The National Post is a

national

Canadian newspaper. My number is 416-383-2472. Hope to hear from you soon.

Charles Lewis

National Post

1450 Don Mills Road

Toronto, Ontario M3B 2X7

Tel (416) 383-2472 Fax (416) 510-6830

e-mail: clewis@nationalpost.com

visit us at <http://www.nationalpost.com>

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---

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

**From:** lesgiss@verizon.net <lesgiss@verizon.net>  
**Reply-To:** lesgiss@verizon.net  
**To:** [jhansen@giss.nasa.gov](mailto:jhansen@giss.nasa.gov), [rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)  
**Subject:** more on McIntyre allegations  
**Date:** Fri, 10 Aug 2007 11:07:53 -0400

Jim and Reto:

More...scroll down...on the accusations McIntyre is making about the GISS temperature data..

Leslie

Original Message:

-----  
From: Lewis, Charles (National Post) [clewis@nationalpost.com](mailto:clewis@nationalpost.com)  
Date: Fri, 10 Aug 2007 10:53:17 -0400  
To: [lnolan@giss.nasa.gov](mailto:lnolan@giss.nasa.gov)  
Subject: FW: Fyi

Charles Lewis  
National Post  
1450 Don Mills Road  
Toronto, Ontario M3B 2X7  
Tel (416) 383-2472 Fax (416) 510-6830  
e-mail: [clewis@nationalpost.com](mailto:clewis@nationalpost.com)  
visit us at <http://www.nationalpost.com>  
The News. When You Want It. Where You Want It.

----- Forwarded Message

From: "Lewis, Charles (National Post)" <[clewis@nationalpost.com](mailto:clewis@nationalpost.com)>  
Date: Fri, 10 Aug 2007 09:18:08 -0400  
To: National Post <[clewis@nationalpost.com](mailto:clewis@nationalpost.com)>  
Conversation: Fyi  
Subject: Fyi

Steve McIntyre, of Toronto operates [www.climateaudit.org](http://www.climateaudit.org) and began to investigate the data and the methods used to arrive at the results that were graphed by NASA's Goddard Institute for Space Studies (GISS).

What he discovered was truly amazing. Since NASA does not fully publish the computer source code and formulae used to calculate the trends in the graph, nor the correction used to arrive at the <sup>3</sup>corrected<sup>2</sup> data. He had to reverse engineer the process by comparing the raw data and the processed data..

Here is one of his first posts where he begins to understand what is happening. <sup>3</sup>This imparts an upward discontinuity of a deg C in wintertime and 0.8 deg C annually. I checked the monthly data and determined that the discontinuity occurred on January 2000 - and, to that extent, appears to be a Y2K problem. I presume that this is a programming error.<sup>2</sup>

He further refines his argument showing the distribution of the error, and the problems with the USHCN temperature data. He also sends an email to NASA GISS advising of the problem.

He finally publishes it here, stating that NASA made a correction not only on their own web page, attributing the discovery to McIntyre, but NASA also issued a corrected set of temperature anomaly data which you can see here:

<http://data.giss.nasa.gov/gistemp/graphs/Fig.D.txt>

Steve McIntyre posted this data from NASA's newly published data set from Goddard Institute of Space Studies (GISS) These numbers represent deviation from the mean temperature calculated from temperature measurement stations throughout the USA.

According to the new data published by NASA, 1998 is no longer the hottest year ever. 1934 is.

Four of the top 10 years of US CONUS high temperature deviations are now from the 1930s: 1934, 1931, 1938 and 1939, while only 3 of the top 10 are from the last 10 years (1998, 2006, 1999). Several years (2000, 2002, 2003, 2004) fell well down the leaderboard, behind even 1900. (World rankings of temperature are calculated separately.)

Top 10 GISS U.S. Temperature deviation (deg C) in New Order 8/7/2007

Year	Old	New
1934	1.23	1.25
1998	1.24	1.23
1921	1.12	1.15
2006	1.23	1.13
1931	1.08	1.08
1999	0.94	0.93
1953	0.91	0.90
1990	0.88	0.87
1938	0.85	0.86
1939	0.84	0.85

Here's the old order of top 10 yearly temperatures.

Year	Old	New
1998	1.24	1.23
1934	1.23	1.25
2006	1.23	1.13
1921	1.12	1.15
1931	1.08	1.08
1999	0.94	0.93
1953	0.91	0.90
2001	0.90	0.76
1990	0.88	0.87
1938	0.85	0.86

I salute the work of Steven McIntyre, he has now made two major contributions to climate science.

- 1) Proving how the Mann <sup>3</sup>hockey stick<sup>2</sup> used in all Gore's movie, An Inconvenient Truth, was based on unsupportable data and methods.
- 2) Proving how yearly temperature anomalies for the USA are based on data that had been processed incorrectly.

Dr. Roger Pielke of the University of Colorado also deserves credit because

he was the one who encouraged me to pursue the [www.surfacestations.org](http://www.surfacestations.org) project due to his broad work on land use change and it's affect on regional and local climate.

Posted by Anthony Watts at 04:08 PM | [Permalink](#) |

Charles Lewis  
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----- End of Forwarded Message

-----  
mail2web LIVE – Free email based on Microsoft® Exchange technology -  
<http://link.mail2web.com/LIVE>

**From:** Reto Ruedy <[rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)>  
**Reply-To:** [rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)  
**To:** Keith Winstein <[@MIT.EDU](mailto:@MIT.EDU)>  
**Subject:** Re: yr 2000 corr.  
**Date:** Fri, 10 Aug 2007 18:54:19 -0400

In our 2001 paper (JGeophysRes vol 106), which we wrote in 2000 without having access to the full year 2000 data, (bottom of pg 23,958)

The annual US mean temperature is slightly warmer in 1934 than in 1998 in the GISS analysis. This contrasts with the USHCN-adjusted data which has 1998 as the warmest year of the century ...

I talked to the person who does the US calculation every year and she still had the old map series saved. With her program I recomputed the means and indeed: 1934: 1.23 1998: 1.24

And the bloggers might have had a download from before January 2007.

Lots of noise about noise.

Reto

On Fri, 2007-08-10 at 18:24 -0400, Keith Winstein wrote:  
> Yes, if that's the case, it does seem like this kerfluffle is totally  
> unrelated to the year-2000 correction. (Or at least, even if you had  
> never  
> fixed the bug, the new files posted in February 2008 would have caused  
> a  
> kerfluffle.)  
>  
> Thank you so much for all your time.  
>  
> Regards,  
> Keith  
>  
> On Fri, 10 Aug 2007, Reto Ruedy wrote:  
>  
> > Hi Keith,  
> >  
> > We compute these means every month, but since these are annual means,  
> > they are copied to the web site only once a year (on February).  
> >  
> > So the change that caused all the havoc must have happened after one  
> of  
> > the previous routine updates.  
> >

> > Thanks for noticing that,  
> >  
> > Reto  
> >  
> > On Fri, 2007-08-10 at 17:52 -0400, Keith Winstein wrote:  
> >> Thanks, this is very interesting -- even playing this "which is  
> >> numerically higher" game (if you will indulge that for a bit more),  
the  
> >> correction did not affect the relative ordering of the years. 1934  
was at  
> >> 1.25 before and after the correction, and 1998 was at 1.23 before and  
> >> after the correction.  
> >>  
> >> Do you have any idea why the "before\_correction" data doesn't match  
the  
> >> version that Google downloaded on July 23, 2007 from  
> >> <http://data.giss.nasa.gov/gistemp/graphs/Fig.D.txt> ?  
> >>  
> >>  
[http://64.233.169.104/search?q=cache:vskwzroreeQJ:data.giss.nasa.gov/gistemp](http://64.233.169.104/search?q=cache:vskwzroreeQJ:data.giss.nasa.gov/gistemp/graphs/Fig.D.txt)  
> >> [/graphs/Fig.D.txt](http://data.giss.nasa.gov/gistemp/graphs/Fig.D.txt)  
> >> [+http://data.giss.nasa.gov/gistemp/graphs/Fig.D.txt&hl=en&c](http://data.giss.nasa.gov/gistemp/graphs/Fig.D.txt&hl=en&ct=clnk&cd=1&gl=us&client=firefox-a)  
> >> [t=clnk&cd=1&gl=us&client=firefox-a](http://data.giss.nasa.gov/gistemp/graphs/Fig.D.txt&hl=en&ct=clnk&cd=1&gl=us&client=firefox-a)  
> >>  
> >> In that version, 1934 was at 1.23 and 1998 was at 1.24.  
> >>  
> >> Perhaps the July 23 2007 version had not yet incorporated the June  
2007  
> >> data? Any insights would be much appreciated.  
> >>  
> >> Thanks, and best regards,  
> >> Keith Winstein  
> >> 617-654-6864  
> >> The Wall Street Journal  
> >>  
> >> On Fri, 10 Aug 2007, Reto Ruedy wrote:  
> >>  
> >>> Hi Keith,  
> >>>  
> >>> Hope you got my data; by the way, the standard deviation of the US  
> >>> series is about .47 C . So the .5C is about 1 standard deviation.  
> >>>  
> >>> We got part of our estimate based on comparing means of model data  
with  
> >>> applying our method to the same data after removing some of these  
data  
> >>> similar to what we had available in observations.



> >>>  
> >>> Reto  
> >>>  
> > --  
> > Reto Ruedy <rruedy@giss.nasa.gov>  
> >  
--  
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:** Fwd: Request  
**Date:** Fri, 10 Aug 2007 10:23:20 -0500 (11:23 EDT)

Reto,

I am being besieged by e-mails and calls about this, so we need to do something promptly, as there will be stories written today for publication tomorrow. Let me know what the chances are that you will be able to have the comparative global temperature curves that we discussed yesterday.

By the way, Makiko, do you remember if we ever make any statement about how different years ranked for the United States temperatures? There are several demands that we issue a press release correcting our wrong results and declaring that 1934 is now the warmest year on record in the U.S., also that 4 of the 10 warmest years were in the 1930s and only 3 in the last 10 years.

Jim

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

**From:** Lewis, Charles (National Post) <[clewis@nationalpost.com](mailto:clewis@nationalpost.com)>  
**Date:** Aug 10, 2007 9:40 AM  
**Subject:** Request  
**To:** [jhansen@giss.nasa.gov](mailto:jhansen@giss.nasa.gov)

Leslie McCarthy suggested I call you. A researcher in Toronto (Steve McIntyre) says he sent information to NASA to correct annual U.S. Temperature data. His point is that 1934 now becomes the warmest year. I'd like to talk to you for a few minutes about this and what significance, if any, it has. I can be reached at 416-383-2472. Thanks

**Charles Lewis**  
National Post  
1450 Don Mills Road  
Toronto, Ontario M3B 2X7  
Tel (416) 383-2472 Fax (416) 510-6830  
e-mail: [clewis@nationalpost.com](mailto:clewis@nationalpost.com)  
visit us at <http://www.nationalpost.com>  
The News. When You Want It. Where You Want It.

**From:** Makiko Sato <[makis@giss.nasa.gov](mailto:makis@giss.nasa.gov)>  
**To:** James Hansen <[jhansen@giss.nasa.gov](mailto:jhansen@giss.nasa.gov)>, [rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)  
**Subject:** Re: Fwd: Request  
**Date:** Fri, 10 Aug 2007 15:54:35 -0400

At 11:23 2007/08/10, you wrote:

>Reto,

>

>I am being besieged by e-mails and calls about this, so we need to  
>do something promptly, as there will be stories written today for  
>publication tomorrow. Let me know what the chances are that you will  
>be able to have the comparative global temperature curves that we  
>discussed yesterday.

>

>By the way, Makiko, do you remember if we ever make any statement  
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>release correcting our wrong results and declaring that 1934 is now  
>the warmest year on record in the U.S., also that 4 of the 10  
>warmest years were in the 1930s and only 3 in the last 10 years.

>

Let's try to remember what statements we made about US temperature

(1) In our 2001 paper

GISS 1934 warmest, USHCN 1998 warmest, difference being a few hundredths of a degree

(2) Summation

2001-2003, only global T  
2004 US for 1950-2003 (no 1934)  
2005-2006, global and low latitudes

(3) In January 2007, I showed on my "Some Extra" page which most people don't look

1934 1.23, 1998 1.24 and 2006 1.23

We made rankings to the public only for the global mean. NOAA usually does for the US.

Makiko

**From:** lesgiss@verizon.net <lesgiss@verizon.net>  
**Reply-To:** lesgiss@verizon.net  
**To:** rruedy@giss.nasa.gov  
**Cc:** jhansen@giss.nasa.gov  
**Subject:** RE: [Fwd: Re: revisions to annual temps]  
**Date:** Fri, 10 Aug 2007 12:21:16 -0400

Thanks, Reto...I'll leave it to Jim to reply to these inquiries...do you know if he's around today? I left him a voice mail earlier on his cellphone...thanks!

Leslie

Original Message:

-----

**From:** Reto Ruedy rruedy@giss.nasa.gov  
**Date:** Fri, 10 Aug 2007 11:49:35 -0400  
**To:** lesgiss@verizon.net, jhansen@giss.nasa.gov  
**Subject:** [Fwd: Re: revisions to annual temps]

Hi Leslie,

Andy Revkin asked the same question and Jim's answer below says it all in the clearest and most beautiful way.

The blog you attached is a prime example of what gives bloggers a really bad name; somebody with no idea what he is talking about is spouting absolute nonsense, making no distinctions between what is essential (the facts he conveniently omits) and what is pure noise (which he is concentrating on exclusively).

He omits that the global mean time series (which is generally considered the standard measure for global warming) is unaffected

He concentrates on US time series which (US covering less than 2% of the world) is so noisy and has such a large margin of error that no conclusions can be drawn from it at this point; showing the plot of annual means before and after the correction would have made the whole article a joke since the differences are barely visible.

He had to use the device of ranking the years rather than showing the plots to make any point at all. The problem with rankings is that there are large clumps of years which are equal within the margin of error and rankings within these clumps are purely accidental.

He finds it astounding that years 1934 and 1998 reversed ranks, not remembering that the corrections only affected years 2000-2006, hence that there is no possible connection there.

By speaking of warmest year (rather than warmest year in the US time record) he successfully deceived people like Mark Taylor.

Reto

----- Forwarded Message -----

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

To: Andrew Revkin <anrevk@nytimes.com>

Cc: gschmidt@giss.nasa.gov, Reto Ruedy <cdrar@giss.nasa.gov>

Subject: Re: revisions to annual temps

Date: Thu, 9 Aug 2007 22:34:43 -0500

Hi Andy,

This seems to be a tempest inside somebody's teapot dome. One of the changes that we made in our analysis in 2001 was to include 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 record, 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 the records at those stations, some up, some down.

The net effect averaged over the U.S. was an error of about 0.15C or less in the post-2000 years, well within the uncertainty bar that we give. The effect on the global mean was of the order of a thousandths of a degree, i.e., entirely negligible.

It is unclear why anyone would try to make something out of this, perhaps a light not on upstairs? Or perhaps this is coming from one of the old contrarians? They can't seem to get over the fact that the real world has proven them to be full of malarkey! You would think that they would be ready to crawl under a rock by now!

Jim

(Reto, please correct if there is anything in the above that is not right.)

On 8/9/07, Andrew Revkin <anrevk@nytimes.com> wrote:

hi,

you probably noticed the mcintyre et al depiction of GISS annual temp estimates for US over time.

were the revisions published yet, or are they updated in databases alone?

also, are you doing same for global mean temp or is this specific issue related to US?

ANDREW C. REVKIN

The New York Times / Environment

620 Eighth Ave., NY, NY 10018-1405

phone: 212-556-7326 fax: 509 -357-0965

Arctic book: The North Pole Was Here

Amazon book: The Burning Season

Acoustic-roots band Uncle Wade

--

Reto Ruedy <rruedy@giss.nasa.gov>

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

**From:** [KrFrench@ngs.org](mailto:KrFrench@ngs.org)  
**To:** [rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)  
**Subject:** Re: Y2K correction  
**Date:** Fri, 10 Aug 2007 14:45:58 -0400

Hi Reto,

Thanks for the heads up on this and glad we don't have to change anything because it's printed and done. Looks very nice and I'll be sending complimentary copies your way once it is published. We'll keep your email in the file in case we receive letters about this.

Best,  
Kris

Kris French  
National Geographic Maps  
Senior Research Cartographer  
1145 17th Street NW  
Washington, D.C. 20036  
Tel. 202-775-6173 Fax 202-429-5704  
email: [krfrench@ngs.org](mailto:krfrench@ngs.org)

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

08/10/2007 02:42 PM  
Please respond to  
[rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)

To [KrFrench@ngs.org](mailto:KrFrench@ngs.org)  
cc  
Subject Y2K correction

Hi Kris,

Steve McIntyre, a former mining executive, now a blogger and global warming denier, is blowing a small correction in our procedure of handling US data way out of proportion. The correction has absolutely no impact on the global mean temperature time series, over the US it made a difference of .15 C.

I checked what this correction does to your map and it does change the colors somewhat over parts of the US; the rest of the world is unaffected. Even the change over the US is way within the margin of error (0.5 C). So there is little need to make any changes.

The timing is a bit awkward, though. Sorry for that,

Reto

**From:** James Hansen <jhansen@giss.nasa.gov>  
**To:** Makiko Sato <makis@giss.nasa.gov>, Reto Ruedy <cdrar@giss.nasa.gov>  
**Subject:** Fwd: Fwd: FW: <no subject>  
**Date:** Tue, 14 Aug 2007 13:01:14 -0400

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

**From:** James Hansen <jhansen@giss.nasa.gov>  
**Date:** Aug 14, 2007 1:00 PM  
**Subject:** Re: Fwd: FW: <no subject>  
**To:** "DEMIAN MCLEAN, BLOOMBERG/ NEWSROOM:" <dmclean8@bloomberg.net>

Demian,

No, we have not changed ranking of warmest year in the U.S. As you will see in our 2001 paper we found 1934 slightly warmer, by an insignificant hair over, 1998. We still find that result. The flaw affected temperatures only after 2000, not 1998 and 1934.

Yes, our analysis algorithm is available, described fully in publication, and other researchers have taken that description, applied it to the raw data and come up with the same results that we get.

Jim

On 8/14/07, **DEMIAN MCLEAN, BLOOMBERG/ NEWSROOM:**

<dmclean8@bloomberg.net> wrote:

james, pardon me: i see the records volz was referring to are \*global\*. the u.s. figures showed 1998 as the warmest year. nevertheless, nasa has indeed newly ranked 1934 as the warmest year. also, i'd be grateful if you could respond to the second question, regarding your algorithm and making it public.

best,  
demian

----- Original Message -----

**From:** James Hansen <jhansen@giss.nasa.gov>  
**At:** 8/14 12:15:10

Demian, I am running to a meeting and may not get back in time for your deadline -- following may help answer your question -- presumably you saw my "Upstairs" note? Jim Hansen

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**From:** James Hansen <jhansen@giss.nasa.gov>  
**Date:** Aug 14, 2007 2:52 AM  
**Subject:** Re: FW: <no subject>



To: Donald Anderson <[donald.anderson-1@nasa.gov](mailto:donald.anderson-1@nasa.gov)>, Jack Kaye <[jack.a.kaye@nasa.gov](mailto:jack.a.kaye@nasa.gov)>  
Cc: Leslie McCarthy <[lnolan@giss.nasa.gov](mailto:lnolan@giss.nasa.gov)>

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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  
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> also senior contributing editor for Hollinger Inc. Publications, senior  
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> editor for the Spectator, writes, " Something rather odd happened the other  
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- > 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
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- > the scientists responsible, and received an acknowledgment that the mistake
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- > reply was almost as cool as the revised chart listings.
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- > Who is this man who understands American climate data so much better than
- > the National Aeronautics and Space Administration? Well, he's not even
- > America: 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
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- > \*
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- >
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- > Does anyone know what this guy is talking about? I checked the NASA
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- >
- > 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  
>

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Date: Aug 14, 2007 2:52 AM  
Subject: Re: FW: <no subject>  
To: Donald Anderson <donald.anderson-1@nasa.gov>, Jack Kaye <jack.a.kaye@nasa.gov>  
Cc: Leslie McCarthy <lnolan@giss.nasa.gov>

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---

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)

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**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)>  
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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:** Makiko Sato <makis@giss.nasa.gov>

**To:** James Hansen <jhansen@giss.nasa.gov>, Reto Ruedy  
<rruedy@giss.nasa.gov>

**Subject:** Re: Fwd: FW: <no subject>

**Date:** Tue, 14 Aug 2007 14:09:34 -0400

I am sure I had 1998 warmer than 1934 at least once because on my own temperature web page (which most people never look at), I have

US annual

(Last Modified: 2007-01-12)

and since it was made in January when I updated all the graphs, I had my US mean table which is consistent with this until last Monday.

I didn't keep all the data, but some of them are

	1934	1998
1999 July	1.459	0.918
2000 Nov.	1.273	1.151
2001 Jan.	1.235	1.199

changes in early years may be due to different analysis

2006 Jan.	1.235	0.930	<= This
-----------	-------	-------	---------

is questionable, I may have kept some data which I was checking.

2007 Jan.	1.227	1.242	<= This
-----------	-------	-------	---------

is only time we had 1998 warmer than 1934, but one web for 7 months.

2007 Mar.	1.247	1.234	<= Somehow
-----------	-------	-------	------------

I recomputed in March, but didn't make changes to the web page.

2007 Aug.	1.249	1.226	<= Most
-----------	-------	-------	---------

recent with corrections, and with July data

I am sorry, I should have kept more data, but I was not interested in US data after 2001 paper.

Makiko

At 13:27 2007/08/14, James Hansen wrote:  
>Makiko, Reto, could you please clear this  
>up. Other people keep saying the same thing  
>that Demian does, i.e., that we previously  
>claimed that 1998 was warmer than 1934. Is that  
>right? I am quite sure that our 2001 paper



>shows 1934 slightly warmer, as we still  
>find. Of course, scientifically this is all  
>nonsense, as the difference of 0.02 is much less  
>than the accuracy, so practically it should be  
>stated as a tie. I know that whenever new  
>stations are added to the record it can change  
>things by small amounts. Did we once find 1998  
>as warmer??? Jim ( I will be away from e-mail for a few hours).  
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>On 8/14/07, DEMIAN MCLEAN, BLOOMBERG/ NEWSROOM:  
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>  
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>  
>now show 1934 as the hottest year, where 1998 used to hold that position?  
>  
>thanks,  
>demian  
>----- Original Message -----  
>From: James Hansen <<mailto:jhansen@giss.nasa.gov>  
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> > Subject: Re: FW: <no subject>  
> > To: Donald Anderson  
> <<mailto:donald.anderson-1@nasa.gov>donald.anderson-1@nasa.gov>, Jack  
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> > > 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: <mailto:Donald.Anderson-1@nasa.gov>Donald.Anderson-1@nasa.gov  
> > >  
> > >  
> > > ----- Forwarded Message  
> > > \*From: \*"Volz, Stephen M. (HQ-DK000)" <  
> <mailto:svolz@nasa.gov>svolz@nasa.gov>  
> > > \*Date: \*Mon, 13 Aug 2007 12:01:06 -0400  
> > > \*To: \*"Anderson, Donald (HQ-DK000)" <  
> <mailto:donald.anderson-1@nasa.gov>donald.anderson-1@nasa.gov>,  
> > > "Maring, Hal (HQ-DK000)" <  
> <mailto:hal.maring@nasa.gov>hal.maring@nasa.gov >  
> > > \*Cc: \*"Kaye, Jack A. (HQ-DK000)" <  
> <mailto:jack.a.kaye@nasa.gov>jack.a.kaye@nasa.gov>, "Brown, Dwayne  
> > > C.  
> > > (HQ-NB060)" <  
> <mailto:dwayne.c.brown@nasa.gov>dwayne.c.brown@nasa.gov>  
> > > \*Conversation: \*<no subject>  
> > > \*Subject: \*<no subject>

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> > > Stephen Volz, Ph.D.  
> > > Program Executive, Science Mission Directorate

> > > Suite 3B74

> > > NASA Headquarters

> > >

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> >

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

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

> > Date: Aug 14, 2007 2:52 AM

> > Subject: Re: FW: <no subject>

> > To: Donald Anderson

> <<mailto:donald.anderson-1@nasa.gov> donald.anderson-1@nasa.gov>, Jack  
Kaye <

> > <mailto:jack.a.kaye@nasa.gov>jack.a.kaye@nasa.gov>

> > Cc: Leslie McCarthy <

<mailto:lnolan@giss.nasa.gov>lnolan@giss.nasa.gov>

> >

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> > These are some desperate characters trying to make a mountain out of a  
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> > perhaps a few of additional comments are warranted.

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> > In summary: There was indeed a flaw\* in our program that automatically  
> > updates our global temperature analysis each month. The flaw affected  
only

> > 2000 and later, and only the United States.

> >

> > The flaw, even when present (in 2000-2006, 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  
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> > warmest in our record then, and it is now, with and without the  
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> > >

> > >

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> > >

> >  
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>

>Demian,

>  
>No, we have not changed ranking of warmest year  
>in the U.S. As you will see in our 2001 paper we  
>found 1934 slightly warmer, by an insignificant  
>hair over, 1998. We still find that  
>result. The flaw affected temperatures only after 2000, not 1998 and  
>1934.

>  
>Yes, our analysis algorithm is available,  
>described fully in publication, and other  
>researchers have taken that description, applied  
>it to the raw data and come up with the same results that we get.

>  
>Jim

>  
>On 8/14/07, DEMIAN MCLEAN, BLOOMBERG/ NEWSROOM:  
><<mailto:dmclean8@bloomberg.net> dmclean8@bloomberg.net> wrote:  
>james, pardon me: i see the records volz was  
>referring to are \*global\*. the u.s.  
> figures showed 1998 as the warmest year. nevertheless, nasa has indeed  
>newly  
>ranked 1934 as the warmest year. also, i'd be  
>grateful if you could respond to  
>the second question, regarding your algorithm and making it public.

>  
>best,  
>demian

>----- Original Message -----

>From: James Hansen <<mailto:jhansen@giss.nasa.gov>  
jhansen@giss.nasa.gov>  
>At: 8/14 12:15:10

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>Demian, I am running to a meeting and may not get back in time for your  
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warranted.

>  
>In summary: There was indeed a flaw\* in our  
>program that automatically updates our global  
>temperature analysis each month. The flaw  
>affected only 2000 and later, and only the United States.

>  
>The flaw, even when present (in 2000-2006, 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 intend 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, and it has been corrected.

>  
>On 8/13/07, Donald Anderson  
><<mailto:donald.anderson-1@nasa.gov>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: <mailto:Donald.Anderson-1@nasa.gov>Donald.Anderson-1@nasa.gov

>  
>  
>----- Forwarded Message  
>From: "Volz, Stephen M. (HQ-DK000)" <<mailto:svolz@nasa.gov>  
svolz@nasa.gov>  
>Date: Mon, 13 Aug 2007 12:01:06 -0400  
>To: "Anderson, Donald (HQ-DK000)"  
><<mailto:donald.anderson-1@nasa.gov>  
donald.anderson-1@nasa.gov>, "Maring, Hal  
>(HQ-DK000)" <<mailto:hal.maring@nasa.gov> hal.maring@nasa.gov >  
>Cc: "Kaye, Jack A. (HQ-DK000)"  
><<mailto:jack.a.kaye@nasa.gov>jack.a.kaye@nasa.gov>,  
>"Brown, Dwayne C. (HQ-NB060)" <  
><mailto:dwayne.c.brown@nasa.gov>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  
><<http://climateaudit.com/>>climateaudit.com  
>labeled 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),>http

>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

>

>

>

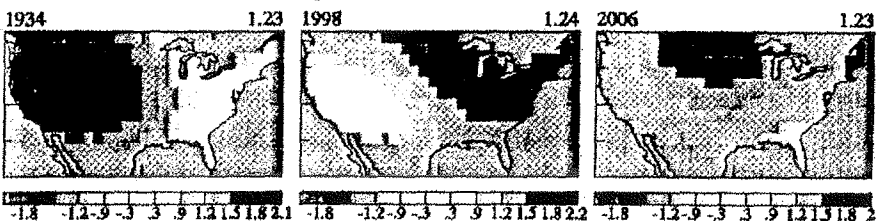
>

>

>

|| PEG image attachment (a00fb5.jpg)

US Annual Mean Temperature Anomalies (°C), Base Period = 1951-1980



**From:** Letícia Francisco Sorg - Redação Época - Editora Globo  
<[lsorg@edglobo.com.br](mailto:lsorg@edglobo.com.br)>

**To:** [rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)

**Subject:** RES: RES: U.S. warmest years

**Date:** Wed, 15 Aug 2007 16:21:28 -0300 (15:21 EDT)

Mr. Ruedy,

I would like to thank you once more the personal attention you have given to my magazine.

It will be great to have your opinions on the article.

I would like just to check with you how I can present you at the article.

Nasa's scientist responsible for software?

Thank you very much

Best regards

Letícia

-----Mensagem original-----

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

Enviada em: quarta-feira, 15 de agosto de 2007 15:56

Para: Letícia Francisco Sorg - Redação Época - Editora Globo

Assunto: Re: RES: U.S. warmest years

Dear Leticia,

This is even more speculative, some people still try to deny in spite of the data that it is warming at all. To observe that the warming accelerates would take even longer observation times, another 50-100 years.

It would be bad enough if it keeps increasing at the current rate of .2C/decade as it has since 1980. It briefly increased at almost that rate in the 1915-1945 period but then it stayed even or even decreased a little til about 1980. The period from 1880-1920 was a period of basically constant global temperatures.

Again, the frightening thing about today's temperature rise is that it was predicted 25 years ago based on solid physics. So chances are it will not stop until we deal with the cause of it ! The good thing is that we know the cause, and we could use that knowledge if people just paid attention to the experts rather than to the bloggers.

Reto

On Wed, 2007-08-15 at 15:15 -0300, Letícia Francisco Sorg - Redação Época - Editora Globo wrote:

> Dear Dr. Ruedy,

>  
> Thank you very much for your explanation. But could we say that the temperature increasing rate is getting bigger in the last decades? It's being publicized that the the global temperatures are increasing at a rate of 0,2°C per decade in the last to decades, compared to a rate of less than 0,1 °C per decade in the beginning of the 20th Century.

> Is this correct?

> Thank you,

> Sincerely

>

> -----Mensagem original-----

> De: Reto Ruedy [mailto:rruedy@giss.nasa.gov]

> Enviada em: quarta-feira, 15 de agosto de 2007 15:08

> Para: Letícia Francisco Sorg - Redação Época - Editora Globo

> Assunto: Re: U.S. warmest years

>

>

> Dear Leticia,

>

> I agree with your revised table; I don't know where your previous table comes from (I'll look into that).

>

> To answer your question, given the existing sampling error (.1-.2C):

>

> No - we cannot draw any conclusions about our planet from the US data (much less from the rankings you show below):

>

> The US has been warming in the period 1980-2006 similarly to the period from 1920-1934; that earlier 15-year period then was followed by a cooling period and the same might be true for the current 25-year period. The annual US-mean changes are still large compared to any CO2 effect.

>

> However, the global means show a totally different picture (global mean year-to-year changes being much smaller than US-mean year-to-year changes); and whereas no scientist, as far as I know, could make a convincing argument for an extended warming period in the US in 1920-1934, our 1982 model runs showed that the effect of CO2 should become noticeable in the global means within the next 2-4 decades. And sadly, the global (not the US) data now available showed that model was, if anything, underestimating the effect.

>

> Sincerely,

>

> Reto

>

>

>  
>  
> On Wed, 2007-08-15 at 14:03 -0300, Letícia Francisco Sorg - Redação  
> Época - Editora Globo wrote:  
> > Dear Dr. Ruedy,  
> >  
> > I would like to thank you very much for you attention and precise  
> > information.  
> > The last point I would like to ask you is concerning the ranking of  
> > the warmest years in U.S.  
> > I have organized the data from the previous and the correct table of  
> > temperatures and I got to this ranking:  
> >  
> > Previous table  
> > 1º  
> > 1934  
> > 1º  
> > 1998  
> > 2º  
> > 1921  
> > 3º  
> > 1931  
> > 4º  
> > 2005  
> > 5º  
> > 1999  
> > 6º  
> > 2001  
> > 7º  
> > 1953  
> > 8º  
> > 1990  
> > 9º  
> > 1987  
> >  
> > Revised table  
> > 1º  
> > 1934  
> > 2º  
> > 1998  
> > 3º  
> > 1921  
> > 4º  
> > 2006  
> > 5º  
> > 1931  
> > 6º



> > 1999  
> > 7º  
> > 1953  
> > 8º  
> > 1990  
> > 9º  
> > 1938  
> > 10º  
> > 1939

> >

> > As I've pointed in red, two years from 30's entered in the ranking of  
> > 10 warmest years in U.S.. Considering this change, would it be  
> > possible to say that the planet is becoming hotter and hotter?

> >

> > Thank you once more,  
> > Best regards,  
> > Letícia

> >

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> >

--

Reto Ruedy <rruedy@giss.nasa.gov>

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**From:** Leticia Francisco Sorg - Redação Época - Editora Globo

<[lsorg@edglobo.com.br](mailto:lsorg@edglobo.com.br)>

**To:** [rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)

**Subject:** Previous table

**Date:** Wed, 15 Aug 2007 15:10:35 -0300 (14:10 EDT)

Deard Dr. Ruedy, here it's the previous table I used for the comparison. If you could check if I'm using a correct base, it would be great.

Thank you

Leticia

### Contiguous 48 U.S. Surface Air Temperature Anomaly (C)

-----  
year Annual\_Mean 5-year\_Mean  
DADOS ORIGINAIS

-----  
1880 -.41 .13  
1881 .15 -.14  
1882 -.04 -.34  
1883 -.70 -.36  
1884 -.73 -.44  
1885 -.50 -.48  
1886 -.25 -.39  
1887 -.21 -.19  
1888 -.28 -.05  
1889 .28 -.04  
1890 .23 -.10  
1891 -.24 -.17  
1892 -.47 -.21  
1893 -.66 -.39  
1894 .11 -.31  
1895 -.69 -.24  
1896 .17 -.14  
1897 -.12 -.25  
1898 -.17 .00  
1899 -.43 -.02  
1900 .54 -.01  
1901 .07 -.11  
1902 -.09 -.11  
1903 -.65 -.31  
1904 -.41 -.34  
1905 -.47 -.37  
1906 -.06 -.21  
1907 -.22 -.18  
1908 .11 -.02  
1909 -.25 .01  
1910 .31 -.12  
1911 .11 -.17

1912	-.89	-.11
1913	-.13	-.21
1914	.03	-.33
1915	-.16	-.36
1916	-.51	-.32
1917	-1.00	-.36
1918	.02	-.42
1919	-.15	-.10
1920	-.45	.12
1921	1.08	.10
1922	.11	-.01
1923	-.09	.15
1924	-.70	-.05
1925	.38	-.04
1926	.04	-.01
1927	.16	.02
1928	.05	-.03
1929	-.54	.16
1930	.11	.12
1931	1.00	.24
1932	-.01	.60
1933	.66	.58
1934	1.24	.42
1935	.05	.40
1936	.18	.43
1937	-.12	.34
1938	.78	.34
1939	.80	.41
1940	.04	.45
1941	.54	.32
1942	.07	.18
1943	.16	.17
1944	.09	.20
1945	-.01	.20
1946	.67	.15
1947	.09	.17
1948	-.08	.13
1949	.18	-.08
1950	-.23	-.04
1951	-.38	.15
1952	.30	.28
1953	.88	.31
1954	.82	.44
1955	-.05	.41
1956	.28	.25
1957	.14	.12
1958	.07	.09

1959	.16	.03
1960	-.22	.00
1961	.00	.02
1962	-.02	-.03
1963	.19	.00
1964	-.08	-.05
1965	-.12	-.07
1966	-.24	-.16
1967	-.10	-.19
1968	-.27	-.19
1969	-.23	-.16
1970	-.12	-.22
1971	-.10	-.11
1972	-.36	-.04
1973	.25	-.05
1974	.15	-.08
1975	-.20	.07
1976	-.23	-.09
1977	.36	-.23
1978	-.51	-.15
1979	-.58	.03
1980	.22	-.12
1981	.65	-.01
1982	-.36	.10
1983	.01	-.02
1984	.01	-.01
1985	-.41	.23
1986	.73	.30
1987	.84	.26
1988	.33	.52
1989	-.17	.51
1990	.88	.41
1991	.69	.26
1992	.31	.38
1993	-.43	.28
1994	.47	.10
1995	.35	.05
1996	-.18	.38
1997	.05	.48
1998	1.24	.54
1999	.94	.55
2000	.65	.88
2001	.89	.76
2002	.67	.68
2003	.65	.75
2004	.54	*
2005	.99	*

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**From:** Letícia Francisco Sorg - Redação Época - Editora Globo  
<[lsorg@edglobo.com.br](mailto:lsorg@edglobo.com.br)>  
**To:** [rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)  
**Subject:** RES: RES: RES: U.S. warmest years  
**Date:** Wed, 15 Aug 2007 16:58:13 -0300 (15:58 EDT)

Thank you again and, believe me, it's not being an easy task at all to write this story.

Regards,  
Letícia

-----Mensagem original-----

De: Reto Ruedy [<mailto:rruedy@giss.nasa.gov>]  
Enviada em: quarta-feira, 15 de agosto de 2007 16:39  
Para: Letícia Francisco Sorg - Redação Época - Editora Globo  
Assunto: Re: RES: RES: U.S. warmest years

I am a mathematician responsible for the software used for the NASA/GISS climate modeling effort and data analysis. You may abbreviate this any way you want.

I don't envy your task of making an interesting story out of mostly "hot air".

Thanks for your patience and understanding,

Reto

On Wed, 2007-08-15 at 16:21 -0300, Letícia Francisco Sorg - Redação Época - Editora Globo wrote:

> Mr. Ruedy,  
> I would like to thank you once more the personal attention you have given to my magazine.  
> It will be great to have your opinions on the article.  
> I would like just to check with you how I can present you at the article. Nasa's scientist responsible for software?  
> Thank you very much  
> Best regards  
> Letícia  
>  
> -----Mensagem original-----  
> De: Reto Ruedy [<mailto:rruedy@giss.nasa.gov>]  
> Enviada em: quarta-feira, 15 de agosto de 2007 15:56  
> Para: Letícia Francisco Sorg - Redação Época - Editora Globo  
> Assunto: Re: RES: U.S. warmest years

>  
>  
> Dear Leticia,  
>  
> This is even more speculative, some people still try to deny in spite of  
> the data that it is warming at all. To observe that the warming  
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> little til about 1980. The period from 1880-1920 was a period of  
> basically constant global temperatures.  
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> Again, the frightening thing about today's temperature rise is that it  
> was predicted 25 years ago based on solid physics. So chances are it  
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> Época - Editora Globo wrote:  
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> than 0,1 °C per decade in the beginning of the 20th Century.  
> > Is this correct?  
> > Thank you,  
> > Sincerely  
> >  
> > -----Mensagem original-----  
> > De: Reto Ruedy [mailto:rruedy@giss.nasa.gov]  
> > Enviada em: quarta-feira, 15 de agosto de 2007 15:08  
> > Para: Leticia Francisco Sorg - Redação Época - Editora Globo  
> > Assunto: Re: U.S. warmest years  
> >  
> >  
> > Dear Leticia,  
> >  
> > I agree with your revised table; I don't know where your previous  
table

> > comes from (I'll look into that).  
> >  
> > To answer your question, given the existing sampling error (.1-.2C):  
> >  
> > No - we cannot draw any conclusions about our planet from the US data  
> > (much less from the rankings you show below):  
> >  
> > The US has been warming in the period 1980-2006 similarly to the  
period  
> > from 1920-1934; that earlier 15-year period then was followed by a  
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> > sadly, the global (not the US) data now available showed that model  
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> > Reto  
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> > > I have organized the data from the previous and the correct table of  
> > > temperatures and I got to this ranking:  
> > >  
> > > Previous table  
> > > 1º  
> > > 1934  
> > > 1º



> > > 1998  
> > > 2<sup>o</sup>  
> > > 1921  
> > > 3<sup>o</sup>  
> > > 1931  
> > > 4<sup>o</sup>  
> > > 2005  
> > > 5<sup>o</sup>  
> > > 1999  
> > > 6<sup>o</sup>  
> > > 2001  
> > > 7<sup>o</sup>  
> > > 1953  
> > > 8<sup>o</sup>  
> > > 1990  
> > > 9<sup>o</sup>  
> > > 1987  
> > >

> > > Revised table

> > > 1<sup>o</sup>  
> > > 1934  
> > > 2<sup>o</sup>  
> > > 1998  
> > > 3<sup>o</sup>  
> > > 1921  
> > > 4<sup>o</sup>  
> > > 2006  
> > > 5<sup>o</sup>  
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> > > As I've pointed in red, two years from 30's entered in the ranking of

> > > 10 warmest years in U.S.. Considering this change, would it be  
> > > possible to say that the planet is becoming hotter and hotter?  
> > >

> > > Thank you once more,  
> > > Best regards,

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

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**From:** Gavin Schmidt <[gschmidt@giss.nasa.gov](mailto:gschmidt@giss.nasa.gov)>  
**Reply-To:** [gschmidt@giss.nasa.gov](mailto:gschmidt@giss.nasa.gov)  
**To:** [lesgiss@verizon.net](mailto:lesgiss@verizon.net) <[lesgiss@verizon.net](mailto:lesgiss@verizon.net)>  
**Cc:** [rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov), [rschmunk@giss.nasa.gov](mailto:rschmunk@giss.nasa.gov), [jhansen@giss.nasa.gov](mailto:jhansen@giss.nasa.gov)  
**Subject:** Re: FW: McIntyre Interview  
**Date:** Thu, 16 Aug 2007 11:45:47 -0400 (EDT)

Reto and Rob Schmunk have the details. He was using a robot to automatically download pages that robots weren't allowed to (because of the server demands of interactive scripts) and Rob blocked the IP. After a couple of emails back and forth, he was allowed to continue on weekends/evenings. The idea that this was anything personally directed at McIntyre or to prevent examination of the data is simply bogus.

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 Thu, 16 Aug 2007, [lesgiss@verizon.net](mailto:lesgiss@verizon.net) wrote:

> Hi to all:  
>  
> Dr. McIntyre gave an interview to an organization called TownHall.com in  
> which he alleges that NASA blocked his IP address and that because of  
> 1.5  
> million hits/month on his website, NASA retreated from its position.  
She  
> wants to know if this is an accurate retelling of what occurred?  
>  
> The attachment is her ENTIRE 4 page interview which details in greater  
> length the timeline and interactions with GISS....  
>  
> Thanks.  
>  
> Leslie  
>  
> Original Message:  
> -----  
> From: Amanda Carpenter [amanda.carpenter@townhall.com](mailto:amanda.carpenter@townhall.com)

> Date: Thu, 16 Aug 2007 11:11:31 -0400  
> To: Leslie.M.McCarthy@nasa.gov  
> Subject: McIntyre Interview

>  
>  
>  
>

> Hi, Leslie.

> I've attached the complete version of the interview, but this is the part I

> was looking for comment on. Basically, I'd just like to know if this is true and explanation of what really went on here.

>  
> Thanks!!!

>  
> Here it is:

>  
> McIntyre:I wrote to NASA in May and asked them for the source code for the

> adjustment software that they used to fix these stations and they refused

> to provide it. So I got interested in sort of looking at comparing the version of the temperature history of individual stations that NASA had against original data. I noticed that in some cases there was a very sharp

> jump in the differences between these two versions. The NASA version took a

> step in January 2000 relative to the original data. So, I then collected the data for both the NASA versions and the original data for all 1200 stages in the US historical network.

>  
> This led to a bit of fight with NASA in May because as I started downloading the data in sequence they cut off my access to the data.

>  
> Q. Meaning, your computer?  
> They blocked my IP address.

>  
> Q. Why were they so opposed?

>  
> Well, first of all they probably werent used to, they dont have a very efficient distribution of the data so I ended up scraping the data off various web pages and I had written a computer program to do that. So, I was repetitively downloading data. Anyway, even after I was blocked and I explained myself they still didnt want to let me have access to the data.

> They just said go look at the original data. And I said no, I want to

see  
> the data you used. I know what the original data looks like. I want to  
see  
> the data that you used. But one of the nice things about having a blog  
that  
> gets a million and half hits a month is that I then was able to  
publicize  
> this block in real-time and they very quickly withdrew their position  
and  
> allowed me to have access.  
>  
>  
>  
> Amanda Carpenter  
> National Political Reporter  
> Townhall.com  
> amanda.carpenter@townhall.com  
>  
> 703-247-1226 x226 desk  
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> mail2web - Check your email from the web at  
> <http://link.mail2web.com/mail2web>  
>  
>

**From:** lesgiss@verizon.net <lesgiss@verizon.net>  
**Reply-To:** lesgiss@verizon.net  
**To:** rruedy@giss.nasa.gov  
**Subject:** draft McIntyre statement  
**Date:** Thu, 16 Aug 2007 12:20:00 -0400

Hi Reto:

I have not heard from Jim about the McIntyre allegations of cutting off his IP address...but drafted this short response...what do you think???

-----  
On May 16, 2007, an IP address attached to a cable.rogers.com network made 16,000 attempts in several hours to scrape GISTEMP station data. The webmaster had noted that this large volume was dramatically slowing access to the site and data by other users. That address was blocked by the GISS webmaster as it violated rules from using web robots to access off-limits directories. The webmaster had no idea of the identity of the user until Dr. McIntyre emailed the webmaster. He was then advised of the reason for his service denial and advised to contact the GISTEMP research group to explain data needs. On the 17th, Dr. McIntyre again inquired about his access and was again advised to contact the GISTEMP group. Dr. Reto Ruedy of the GISTEMP group contacted Dr. McIntyre to discuss his requests.

(need to add in details about his requests to provide data and/or in a format that we don't have--Reto??)

Shortly after that email exchange, Dr. McIntyre was advised that he could again begin downloading provided that he accepted generally accepted protocols, i.e. doing so at times so as to not adversely affect other users (late nights, weekends, etc.).

-----  
Leslie

-----  
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<http://link.mail2web.com/Business/Exchange>

**Ftpo** : Reto Ruedy <[rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)>  
**Rj r n- Tp**: [rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)  
 **Tp**: [lesgiss@verizon.net](mailto:lesgiss@verizon.net)  
**Sy blj eu** Re: draft McIntyre statement  
 **Daj** : Thu, 16 Aug 2007 13:47:22 -0400

Leslie,

It might be good to note, that Steve got the time line wrong; the first time he contacted us was AFTER and BECAUSE his massive downloads got blocked by our webmaster; he never contacted us before that event.

So the claim that he downloaded our data because we refused to honor any of his requests is pure invention.

Blocking that IP address was a routine action any webmaster would take if he sees that one particular user monopolizes access to his web site. He had no idea about the identity of the owner of the IP address.

After he contacted us, his name did not ring any bells; we assumed it was a researcher interested in all station data. Since our data are organized for users to view individual stations rather than for massive downloads, we thought we could help him by directing him to GHCN where we got the data from and where they are organized for easy download.

Some data providers insist that we don't pass on their data; we are asked to refer requests to them, since they want to keep control of the distribution of their data. That is why we have to clear any data requests with Dr. Hansen. We were able to do that the very same day.

His first request for "our code" came in the same email in which he thanked us for giving him full access to our data.

That request was so general, that we had no idea what code he was talking about. Only after consulting his blog site did we learn that he is under the false impression that we have secret software that can "fix" faulty data. Since we don't have any such software, we were unable to honor this particular request.

The truth is that all our programs are fully documented in the literature and on our web site. Their task is to combine the station data into a gridded data set of anomalies. No fixes are applied except a simple well-documented urban adjustment (that happens to reduce the warming trend more than other groups' adjustment schemes). No "magic fix" programs are used. Instead we estimate and take into consideration the resulting margin of error before we draw any conclusions, a habit that distinguishes serious researchers from pranksters.

Reto

On Thu, 2007-08-16 at 12:20 -0400, lesgiss@verizon.net wrote:

> Hi Reto:

>  
> I have not heard from Jim about the McIntyre allegations of cutting off  
his  
> IP address...but drafted this short response...what do you think???

>  
> -----  
>  
> On May 16, 2007, an IP address attached to a cable.rogers.com network  
made  
> 16,000 attempts in several hours to scrape GISTEMP station data. The  
> webmaster had noted that this large volume was dramatically slowing  
access  
> to the site and data by other users. That address was blocked by the  
GISS  
> webmaster as it violated rules from using web robots to access  
off-limits  
> directories. The webmaster had no idea of the identity of the user  
until  
> Dr. McIntyre emailed the webmaster. He was then advised of the reason  
for  
> his service denial and advised to contact the GISTEMP research group to  
> explain data needs. On the 17th, Dr. McIntyre again inquired about his  
> access and was again advised to contact the GISTEMP group. Dr. Reto  
Ruedy  
> of the GISTEMP group contacted Dr. McIntyre to discuss his requests.

here we might add: ... requests in an effort to help him to get what he  
needed.

>  
>  
> (need to add in details about his requests to provide data and/or in a  
> format that we don't have-Reto??)

>  
> Shortly after that email exchange, Dr. McIntyre was advised that he  
could  
> again begin downloading provided that he accepted generally accepted  
> protocols, i.e. doing so at times so as to not adversely affect other  
users  
> (late nights, weekends, etc.).

> -----  
>



> Leslie

>

> -----

> mail2web.com - Microsoft® Exchange solutions from a leading provider -

> <http://link.mail2web.com/Business/Exchange>

>

>

>

--

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

**From:** @gmail.com>  
**To:** [lesgiss@verizon.net](mailto:lesgiss@verizon.net)  
**Cc:** [rschmunk@giss.nasa.gov](mailto:rschmunk@giss.nasa.gov), [rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov), [jhansen@giss.nasa.gov](mailto:jhansen@giss.nasa.gov),  
[lmccarthy@giss.nasa.gov](mailto:lmccarthy@giss.nasa.gov), [gschmidt@giss.nasa.gov](mailto:gschmidt@giss.nasa.gov)  
**Subject:** Re: FW: McIntyre Interview  
**Date:** Thu, 16 Aug 2007 16:09:45 -0400

Hi all,

I am so hence the GMail address as I respond to the e-mail.

Gavin has the essentials correct in responding to Les's question.

On about May 16, around 10:30 or 11:00 p.m. as I was getting ready to leave GISS for the night, I belatedly checked the error logs on the two web servers and discovered that there were several thousand errors in the log on Web2. On a normal day there would be about 500.

The errors in question were all for addresses which didn't exist in either CGI area or in the "work space" area for the GISTEMP station data script. Further investigation revealed that someone had been firing off requests to Web2 since about 2:00 that afternoon for the station data and by the time I looked into the situation, there had been at least 16,000 requests. Perhaps half of these had gone to addresses in the CGI directory, which means that activating CGI scripts to extract data, etc.

The identity of the computer making the requests was consistent, and as best I recall was something in the domain of Rogers Communications, a Canadian phone company and ISP.

Plainly this activity was from an "automated" agent, which in rough parlance is usually called a "robot". Many robots have legitimate purposes, e.g. search engines such as Google or Yahoo, but others do not (spambots), and others one just doesn't know.

As the robot on May 16 came from a generic ISP address rather than, say, an academic address and further because it's "user-agent" tag provided no further information about who was running it, and also because the GISS websites have "robots.txt" files which instruct all well-behaved web robots to stay out of the CGI directories, I cut off access to the ISP in question to the websites on Web2.

The next day I received e-mail from McIntyre asking what was up. He did not identify himself or on whose behalf he was acting.

At some point Reto got involved in the communications, and he must have mentioned to Jim what was up. Later on Reto indicated to me that Jim had said to go ahead and re-grant McIntyre access to the material.

I do not know if at any point McIntyre actually asked Jim or Reto if it was possible to obtain the GISS copy of the station data in a single or small number of files. All I know is that my first contact with him came because he was blasting umpteen thousand requests at the web servers.

I have no idea how much traffic McIntyre's website gets, and I don't know that I have ever even looked at it. His tone in his e-mail was on the arrogant side, so I had no desire to prolong communication with him any longer than was necessary.

@panix.com

**From:** lesgiss@verizon.net <lesgiss@verizon.net>  
**Reply-To:** lesgiss@verizon.net  
■ **To:** jhansen@giss.nasa.gov, lesgiss@verizon.net, .....@gmail.com,  
dcain@giss.nasa.gov, rruedy@giss.nasa.gov, ...  
**Subject:** Re: response on McIntyre IP claims??  
**Date:** Thu, 16 Aug 2007 17:11:29 -0400

I agree...but in this case we are in the right. I think we should just make the point clear that McIntyre's story is a fabrication in a very generic way.

Take a look at it...I'm also sending it to Reto and Gavin as well.

Leslie

Original Message:

-----  
From: James Hansen jhansen@giss.nasa.gov  
Date: Thu, 16 Aug 2007 16:33:28 -0400  
To: lesgiss@verizon.net, .....@gmail.com, dcain@giss.nasa.gov  
Subject: Re: response on McIntyre IP claims??

Do we want to lower ourselves to debating with a court jester? Of course, that is what he wants.

I don't have a strong preference as long as it is not taking a significant amount of my time.

I have not read the stuff that you are referring to, but as I recall, as soon as I was told about the matter, I said that he was welcome to the data.

Jim

On 8/16/07, lesgiss@verizon.net <lesgiss@verizon.net> wrote:

>  
> Hi Jim:  
>  
> Amanda Carpenter of Townhall.com has inquired if we will have a response  
> to  
> McIntyre's claims in their interview yesterday that NASA blocked his IP  
> address? I've heard from both Reto and Robert and can draft something  
> if  
> you want...please let me know.  
>

> Thanks.

>

> Leslie

>

> -----

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> <http://link.mail2web.com/Business/SharePoint>

>

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>

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mail2web.com – Enhanced email for the mobile individual based on  
Microsoft®

Exchange - <http://link.mail2web.com/Personal/EnhancedEmail>

Word document attachment (mcintyre isp 08-15-07.doc), "mcintyre isp 08-15-07.doc"

On May 16, 2007, an IP address attached to an address in the domain of Rogers Communications, a Canadian phone company and ISP made 16,000 attempts in several hours to scrape GISTEMP station data. The webmaster had noted that this large volume was dramatically slowing access to the site and data by other users. He identified that this activity was from an "automated" agent which, in rough parlance, is usually called a "robot". That address was blocked by the GISS webmaster as it violated rules from using web robots to access off-limits directories. The webmaster had no idea of the identity of the user until Dr. McIntyre emailed the webmaster seeking clarification on why he was unable to log in. It should be noted that this was routine; denials of service have been made in the past under similar circumstances to other users as well.

Dr. McIntyre was then advised of the reason for his service denial and advised to contact the GISTEMP research group to explain data needs. On the 17<sup>th</sup>, Dr. McIntyre again inquired about his access and was again advised to contact the GISTEMP group. Dr. Reto Ruedy of the GISTEMP group contacted Dr. McIntyre to discuss his requests. Data on the GISS site is organized for users to view individual stations rather than for massive downloads and in an attempt to assist him, he was directed to NOAA's Global Historical Climatology Network (GHCN).

Some data providers insist that NASA GISS does not pass on their data and, as such, we are asked to refer requests to them, since they want to keep control of their own data. Dr. McIntyre's first request for "our code" came in the same email in which he thanked GISS for giving him full access to data. His request was so general that GISS had no idea what code he was talking about. Only after consulting his blog site was it learned that he was under the false impression that GISS has secret software that can "fix" faulty data. As NASA GISS does not have any such software, we were unable to honor his particular request.

Shortly after that email exchange, Dr. McIntyre was advised that he could again begin downloading provided that he accepted generally accepted protocols, i.e. doing so at times so as to not adversely affect other users (late nights, weekends, etc.). He replied "thank you for this. I will observe this condition."

Steve McIntyre interview on August 15, 2007  
Over the phone 4:30 pm

Q. Can you explain to me in layman's terms how you found this error?

Yeah. Quickly, a fellow in California named Anthony Watts noticed that some of the weather stations used to make historical U.S. statistics were located in places they weren't supposed to be. One of them was in a parking lot and the trend for the station in a parking lot was way up and a nearby station that was in a proper location in a rural area was relatively flat. So, this led to some controversy and he started a volunteer effort where people started surveying these weather stations and seeing what they looked like.

Now, defenders of the weather station system argued that NASA had software that could fix that data. And, so it really didn't matter if the station was in a parking lot in Tuscan or something like that. NASA software could fix it. So, that type of adjustment is a statistical issue that interests me. And, so I wrote to NASA in May and asked them for the source code for the adjustment software that they used to fix these stations and they refused to provide it. So I got interested in sort of looking at comparing the version of the temperature history of individual stations that NASA had against original data. I noticed that in some cases there was a very sharp jump in the differences between these two versions. The NASA version took a step in January 2000 relative to the original data. So, I then collected the data for both the NASA versions and the original data for all 1200 stations in the US historical network.

This led to a bit of fight with NASA in May because as I started downloading the data in sequence they cut off my access to the data.

Q. Meaning, your computer?  
They blocked my IP address.

Q. Why were they so opposed?  
Well, first of all they probably weren't used to they don't have a very efficient distribution of the data so I ended up scraping the data off various web pages and I had written a computer program to do that. So, I was repetitively downloading data. Anyway, even after I was blocked and I explained myself they still didn't want to let me have access to the data. They just said go look at the original data. And I said no, I want to see the data you used. I know what the original data looks like. I want to see the data that you used. But one of the nice things about having a blog that gets a million and half hits a month is that I then was able to publicize this block in real-time and they very quickly withdrew their position and allowed me to have access.

Once they did that, I downloaded all 1200 stations and calculated the value of this step in the year 2000. In some cases it was a negative step and in some cases it was a positive step, but it became clear that what they had done they had, for some reason, changed the version of data that they were using in 2000. Before 2000 they were using an adjusted version of data and after 2000 they were using an unadjusted version.

After the controversy broke out NASSA has said that the reason they did that was because the adjusted version was never available after 2000. That's actually untrue. The adjusted version is sitting in exactly the same data directory. It just seems to be an error of some kind on their part.

The amount on individual stations and this is where we started, trying to explain problems with individual stations, had jumps of up to one degree centigrade. I calculated a distribution of these jumps for all 1200 stations. Many of the jumps were negative but the number of small jumps was itself only a fraction. Probably 75 percent of the stations had jumps of at least a quarter degree in the year 2000. But the average, because there both positive and negative ended up being somewhat over .15 degrees. That doesn't necessarily seem that much, but when the entire increase in temperature in the United States had been previously reported to be about half a degree, this .15 degree is not a small number when you are measuring half degree numbers.

So, I sent them an email notifying them of this error on Saturday August 4<sup>th</sup> and I pointed out that I thought they had changed data sources and on Tuesday August 7<sup>th</sup> they sent me a note agreeing that there was an error and they had, when I looked at their website, they had replaced the data for all 1200 U.S. historical weather stations and they'd also replaced their U.S. temperature history. While they added a mention of me on their webpage describing their methodology, but didn't provide any notice to readers that they had replaced all this data. So, for example, if you had been doing a study which required that you knew what the temperature was in Reno there was no notice that the data you'd had downloaded prior to August 2007 had contained an error. And in some cases a very large error.

When I looked at what their restated U.S. temperature history was, I noticed there as a change in the leading years. So, I wrote a light-hearted post on my blog that said there's a change in the leader board at the U.S. Open and that even though people thought that the years 1934 and the years 1998 had been in the clubhouse and had a shower, in fact they were still on the course and that 1934 had a late birdie and 1998 had a late bogie and 2006 had a late-triple bogie and when the dust settled 1934 was now the leader of the U.S. Open

Q. It seems at the heart of this was that NASA was unwilling to give you the methodology?

There are a couple of layers of issues. One issue was that they had an error. After I had identified this particular error to them and asked them for their source code so I could see how the rest of their adjustments actually worked, and this was really kind of an incidental point in checking their adjustment process. One of the things I started from was trying to evaluate whether their adjustment process was equal in adjusting bad data. One of the things I think you can conclude from this exercise is that their adjustment software was obviously incapable of picking up fictional jumps even as big as one degree centigrade in the year 2000 and the proof was in the pudding because they hadn't picked it up. In fact, they hadn't only failed to fix it, they created it. So, the claim that their adjustment methodology was capable of fixing bad data, I mean, that's the point I want people to take home from this. What they've done now is inserted a patch into an error



that I identified for them but they haven't established that the rest of their adjustment methodology is any good. The adjustments are not small. The adjustments that they make are fully equal to the total amount of warming in the United States the past century. So, you're dealing with adjustments that are the same size as the effect that you are trying to measure. So, it's worth spending a minute or two trying to understand exactly what they did. Now, my interest in these things is understanding exactly what they did. Now, they're point of view is well, Gavin Schmidt of NASA says well "I don't get this audit mean." What he calls the audit mean. Well you know, everyone in the world, if you aren't an academic and you're doing business offerings or you work in a company, you get audited. And you can't say to an auditor, here are the invoices, you do your own financial statements if you don't like ours. Then, the auditor says my only interest how you did yours. So, when Gavin Schmidt says well you don't think we've done an adjustment methodology, why don't you do your own calculation and you can publish it, try to publish it in peer-reviewed literature and we can start from there. My take is well, I've had other experiences with folks like that before and then they think if you mis-implemented their methodology they scream to high heaven. So, I said "No" and they said "You are asking to be spoon-fed" and I said "No, I'm not asking to be spoon-fed." I'll deal with raw code, it's just that the verbal descriptions in academic articles do not meet the kind of engineering, quality level that I expect from things or that I am looking for and that represents one point of dispute between me and them. They don't seem to accept the idea. This is an important issue and therefore academics have to stop being precious and arguing that these codes are their private property.

Q. If NASA were to handle this all better, or to your liking, what are some recommendations you'd give them?

One of the main recommendations I've consistently made both to NASA and to journals is that when people publish articles they should have to archive the data as they used it. The exact provenance of their data if they downloaded it from an internet archive they should have to post the URL of the place where they got the data and the date they downloaded it so you can know the exact version they got in case the versions change. And, they should archive the code in which they obtained the calculations. This is not by any means an impossible or far-fetched set of protocols. In econometrics right now, if you want to get an article published in the American Economic Review, a leading journal, that's exactly what you have to do. That policy was instituted by the then-editor who is now chairman of the federal reserve system. It's a policy that is easy to implement and there is a lot more riding right now on climate policy than there is on labor market studies or studies of inflation. So, I think there's every reason to require NASA and other contributors to climate science to improve their game in terms of how they provide disclosure to other readers and other researchers of their methodology and data.

In some cases there are some real problems. You know Lonnie Thompson the ice guy has published sort of summaries of his data which are mutually inconsistent and I've tried to get original sample data to try and reconcile these and he's refused and he's published articles in journals and the journals have refused to require him to do it and the National Science Foundation which has funded it has refused to require it so it's not just NASA it's a very widespread problem in climate science right now.

**From:** Gavin Schmidt <[gschmidt@giss.nasa.gov](mailto:gschmidt@giss.nasa.gov)>  
**To:** [lesgiss@verizon.net](mailto:lesgiss@verizon.net)  
**Cc:** Jim Hansen <[jhansen@giss.nasa.gov](mailto:jhansen@giss.nasa.gov)>, [@gmail.com](mailto:@gmail.com),  
[dcain@giss.nasa.gov](mailto:dcain@giss.nasa.gov), [rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)  
**Subject:** Re: response on McIntyre IP claims??  
**Date:** 16 Aug 2007 17:31:31 -0400

a few suggested edits. I don't advise getting rhetorical so I deleted the third paragraph.

gavin

On Thu, 2007-08-16 at 17:11, [lesgiss@verizon.net](mailto:lesgiss@verizon.net) wrote:

> I agree...but in this case we are in the right. I think we should just  
> make the point clear that McIntyre's story is a fabrication in a very  
> generic way.  
>  
> Take a look at it...I'm also sending it to Reto and Gavin as well.  
>  
> Leslie  
>  
>  
> Original Message:  
> -----  
> From: James Hansen [jhansen@giss.nasa.gov](mailto:jhansen@giss.nasa.gov)  
> Date: Thu, 16 Aug 2007 16:33:28 -0400  
> To: [lesgiss@verizon.net](mailto:lesgiss@verizon.net), [@gmail.com](mailto:@gmail.com), [dcain@giss.nasa.gov](mailto:dcain@giss.nasa.gov)  
> Subject: Re: response on McIntyre IP claims??  
>  
>  
> Do we want to lower ourselves to debating with a court jester? Of  
> course,  
> that is what he wants.  
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> I don't have a strong preference as long as it is not taking a  
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> > address? I've heard from both Reto and Robert and can draft something  
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> > you want...please let me know.  
> >  
> > Thanks.  
> >  
> > Leslie  
> >  
> > -----  
> > mail2web.com What can On Demand Business Solutions do for you?  
> > <http://link.mail2web.com/Business/SharePoint>  
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> >  
> > -----  
> > mail2web.com Enhanced email for the mobile individual based on  
Microsoft®  
> > Exchange - <http://link.mail2web.com/Personal/EnhancedEmail>  
> >

Word document attachment (mcintyre\_ism\_08-15-07.doc)

On May 16, 2007, an IP address attached to an address in the domain of Rogers Communications, a Canadian phone company and ISP made 16,000 attempts in several hours to scrape GISTEMP station data. The webmaster had noted that this large volume was dramatically slowing access to the site and data by other users. He identified that this activity was from an "automated" agent which, in rough parlance, is usually called a "robot". That address was blocked by the GISS webmaster as it violated rules from using web robots to access off-limits directories. The webmaster had no idea of the identity of the user until Dr. McIntyre emailed the webmaster seeking clarification on why he was unable to log in. It should be noted that this was routine; denials of service have been made in the past under similar circumstances to other users as well.

Dr. McIntyre was then advised of the reason for his service denial and advised to contact the GISTEMP research group to explain data needs. On the 17<sup>th</sup>, Dr. McIntyre again inquired about his access and was again advised to contact the GISTEMP group. Dr. Reto Ruedy of the GISTEMP group contacted Dr. McIntyre to discuss his requests. Data on the GISS site is organized for users to view individual stations rather than for massive downloads and in an attempt to assist him, he was directed to NOAA's Global Historical Climatology Network (GHCN).

Some data providers insist that NASA GISS does not pass on their data and, as such, we are asked to refer requests to them, since they want to keep control of their own data. Dr. McIntyre's first request for "our code" came in the same email in which he thanked GISS for giving him full access to data. His request was so general that GISS had no idea what code he was talking about. Only after consulting his blog site was it learned that he was under the false impression that GISS has secret software that can "fix" faulty data. As NASA GISS does not have any such software, we were unable to honor his particular request.

Shortly after that email exchange, Dr. McIntyre was advised that he could again begin downloading provided that he accepted generally accepted protocols, i.e. doing so at times so as to not adversely affect other users (late nights, weekends, etc.). He replied "thank you for this. I will observe this condition."

**From:** Reto Ruedy <[rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)>  
**Reply-To:** [rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)  
**To:** Gavin Schmidt <[gschmidt@giss.nasa.gov](mailto:gschmidt@giss.nasa.gov)>  
**Subject:** Re: response on McIntyre IP claims??  
**Date:** Thu, 16 Aug 2007 18:08:31 -0400

Gavin,

So you don't think it is worth to point out that the whole first part of the interview section below is a total fabrication, and his first request for source code came with the "thank you" note mentioned at the end of the response, still May 17. Also, his reasons for our "reluctance" is wild speculation that is light years away from reality.

On second thought, it's not worth going into these details, especially in a case where the interviewer is more likely to believe Steve than us.

So, I'm fine with the edits.

Reto

On Thu, 2007-08-16 at 17:31 -0400, Gavin Schmidt wrote:

> a few suggested edits. I don't advise getting rhetorical so I deleted  
> the third paragraph.

> -  
> gavin

>  
>

> On Thu, 2007-08-16 at 17:11, [lesgiss@verizon.net](mailto:lesgiss@verizon.net) wrote:

> > I agree...but in this case we are in the right. I think we should  
just

> > make the point clear that McIntyre's story is a fabrication in a very  
> > generic way.

> >  
> > Take a look at it...I'm also sending it to Reto and Gavin as well.

> >  
> > Leslie

> >  
> >

> > Original Message:

> > -----

> > From: James Hansen [jhansen@giss.nasa.gov](mailto:jhansen@giss.nasa.gov)

> > Date: Thu, 16 Aug 2007 16:33:28 -0400

> > To: [lesgiss@verizon.net](mailto:lesgiss@verizon.net), [dcain@giss.nasa.gov](mailto:dcain@giss.nasa.gov), [dcain@gmail.com](mailto:dcain@gmail.com)

> > Subject: Re: response on McIntyre IP claims??

> >  
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> > > Thanks.  
> > >  
> > > Leslie  
> > >  
> > > -----  
> > > mail2web.com What can On Demand Business Solutions do for you?  
> > > <http://link.mail2web.com/Business/SharePoint>  
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> > >  
> > > -----  
> > mail2web.com Enhanced email for the mobile individual based on Microsoft®  
> > Exchange - <http://link.mail2web.com/Personal/EnhancedEmail>  
> >  
> >

Reto Ruedy <rruedy@giss.nasa.gov>

**From:** Gavin Schmidt <[gschmidt@giss.nasa.gov](mailto:gschmidt@giss.nasa.gov)>  
**To:** [rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)  
**Subject:** Re: response on McIntyre IP claims??  
**Date:** 16 Aug 2007 18:16:22 -0400

the issue is here that you are dealing with a hostile interviewer. In such circumstances, it is much better simply to point out clear errors. If you open up another front they will dive on that instead and abandon all the previous positions (since they are not sincere in any case).

It does however highlight the rhetorical power of saying that the code is secret and things are being kept from the public. It may still be worth putting up a clean version of the adjustment program on the website in order to have something to point to in such cases.

gavin

On Thu, 2007-08-16 at 18:08, Reto Ruedy wrote:

> Gavin,

>

> So you don't think it is worth to point out that the whole first part of  
> the interview section below is a total fabrication, and his first  
> request for source code came with the "thank you" note mentioned at the  
> end of the response, still May 17. Also, his reasons for our  
> "reluctance" is wild speculation that is light years away from reality.

>

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> in a case where the interviewer is more likely to believe Steve than us.

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> > > > Thanks.  
> > > >  
> > > > Leslie

> > > >  
> > > >

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

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

**From:** James Hansen <jhansen@giss.nasa.gov>  
**To:** Gavin Schmidt <gschmidt@giss.nasa.gov>  
**Cc:** lesgiss@verizon.net, @gmail.com, dcain@giss.nasa.gov,  
rruedy@giss.nasa.gov  
**Subject:** Re: response on McIntyre IP claims??  
**Date:** Fri, 17 Aug 2007 10:59:56 -0400

I agree that the shortened version is better. What are you going to do with this?

On 16 Aug 2007 17:31:31 -0400, **Gavin Schmidt** <gschmidt@giss.nasa.gov> wrote:  
a few suggested edits. I don't advise getting rhetorical so I deleted  
the third paragraph.

gavin

On Thu, 2007-08-16 at 17:11, lesgiss@verizon.net wrote:

- > I agree...but in this case we are in the right. I think we should just
- > make the point clear that McIntyre's story is a fabrication in a very
- > generic way.
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- > Take a look at it...I'm also sending it to Reto and Gavin as well.
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- > Leslie
- >
- >
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- > From: James Hansen jhansen@giss.nasa.gov
- > Date: Thu, 16 Aug 2007 16:33:28 -0400
- > To: lesgiss@verizon.net, @gmail.com, dcain@giss.nasa.gov
- > Subject: Re: response on McIntyre IP claims??
- >
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- > Do we want to lower ourselves to debating with a court jester? Of course,
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> > Thanks.  
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> > Leslie  
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> > -----  
> > [mail2web.com](http://mail2web.com) What can On Demand Business Solutions do for you?  
> > <http://link.mail2web.com/Business/SharePoint>  
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> > [mail2web.com](http://mail2web.com) Enhanced email for the mobile individual based on Microsoft®  
> > Exchange - <http://link.mail2web.com/Personal/EnhancedEmail>  
> >

**From:** lesgiss@verizon.net <lesgiss@verizon.net>  
**Reply-To:** lesgiss@verizon.net  
**To:** [jhansen@giss.nasa.gov](mailto:jhansen@giss.nasa.gov), [gschmidt@giss.nasa.gov](mailto:gschmidt@giss.nasa.gov), [dshindell@giss.nasa.gov](mailto:dshindell@giss.nasa.gov),  
[rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)  
**Cc:** [dcain@giss.nasa.gov](mailto:dcain@giss.nasa.gov), [robert.j.gutro@nasa.gov](mailto:robert.j.gutro@nasa.gov)  
**Subject:** FW: BBC TV series  
**Date:** Wed, 22 Aug 2007 16:40:10 -0400

Good afternoon, gentlemen:

See the below invitation to participate in TV programming by the BBC  
"looking at the effects of artificial chemicals (all things toxic!) on our  
environment on a global scale."

Please let me know if you have an interest in speaking/emailing with Mr.  
Morgan, and possibly participating in the project.

Thanks.

Leslie

Original Message:

-----  
From: James Morgan-GW [James.Morgan3@bbc.co.uk](mailto:James.Morgan3@bbc.co.uk)  
Date: Wed, 22 Aug 2007 21:00:21 +0100  
To: [Leslie.M.McCarthy@nasa.gov](mailto:Leslie.M.McCarthy@nasa.gov)  
Subject: BBC TV series

Dear Lesley,

> I am a researcher from the BBC, in the UK. I am developing a landmark  
> television series, looking at the effects of artificial chemicals (all  
> things toxic!) on our environment on a global scale.  
> It will be the ultimate global health check - an update on where we  
> stand now, 45 years since Rachel Carson wrote her influential and  
> controversial book Silent Spring. Using similar headings as Carson  
> for the chapters in her book, the six episodes will be as follows:

- >
- > Planet
- > Oceans (and Rivers)
- > Humans
- > Insects, Soils and Funghi
- > Animals, Birds & Fish
- > Our Green Mantle (trees, plants etc)
- >

Regarding the first episode, "Planet", I am keen to speak to NASA

scientists who are using satellites to measure atmospheric pollution from space. Your colleague Rob, in the Goddard media relations office, has recommended four scientists, who you may be able to put me in touch with:

James Hansen  
Drew Schindel  
Gavin Schmidt  
Reto Reudy

> I am keen to get a clear and informed idea of how the Earth has  
> changed in the past four decades, how NASA is measuring these changes,  
> and how we could illustrate these changes in a TV programme in the  
> future. Also, I would like to know about any new and positive  
> developments where chemicals which have been a problem in the  
> atmosphere have been remedied by new and advanced methods?  
>  
> I look forward to hearing from you.  
> Kind regards,  
James

James Morgan  
> BBC - Area 2.27 - Pacific Quay - Glasgow - G51 1DA  
> T: +44 (0) 7812 198238 - E: james.morgan3@bbc.co.uk  
>  
>

<http://www.bbc.co.uk/>

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<http://link.mail2web.com/Business/SharePoint>

**From:** James Hansen <[jhansen@giss.nasa.gov](mailto:jhansen@giss.nasa.gov)>

**To:** Andrew Revkin <[anrevk@nytimes.com](mailto:anrevk@nytimes.com)>

**Cc:** [gschmidt@giss.nasa.gov](mailto:gschmidt@giss.nasa.gov), Reto Ruedy <[cdrrar@giss.nasa.gov](mailto:cdrrar@giss.nasa.gov)>, Makiko Sato <[makis@giss.nasa.gov](mailto:makis@giss.nasa.gov)>

**Subject:** Re: just to be sure..

**Date:** Thu, 23 Aug 2007 20:51:59 +0200 (14:51 EDT)

We can add an uncertainty, indeed we already include a bar at several points on our temperature curve, but we note that it only includes the largest source of uncertainty in the temperature change (incomplete spatial coverage).

As far as I know we do not make such a list. We don't like such lists, because the results are not significant and are certain to differ from one group to another. It is generally the media that makes a list. We look for a new record high, but note that it is a virtual tie if the difference is small.

Just look at our published paper. It has 1934 as the warmest year, by an insignificant amount, with 1998 second. The same result that we have now. This ranking was not affected by the flaw in post 2000 data.

Of course it is good to improve the station data. Temperature is an absolute measurement, however, so errors over time are not cumulative. When there are several thousand stations it is easy to find what seem like a huge number of stations with problems.

Jim

On 8/23/07, **Andrew Revkin** <[anrevk@nytimes.com](mailto:anrevk@nytimes.com)> wrote:

noaa folks are saying they're working on adding a description of uncertainty levels to year-to-year temp time series.

and lawrimore says they could do better in press outreach to stress this.

do you agree that this should be more clearly communicated... should GISS or NOAA or others even try to make a list of individual years as sharp data points?

separately, i'm still a bit confused about whether GISS ever had 1934 as hottest 48-state year or not.

can you help clarify?

finally, do you agree that generally we (globally) should be doing a lot more to improve surface temperature tracking?

i never, til today, visited [www.surfacestations.org](http://www.surfacestations.org) and found it quite amazing. if our stations are that shoddy, what's it like in Mongolia?

**ANDREW C. REVKIN**

The New York Times / Environment

620 Eighth Ave., NY, NY 10018-1405

phone: 212-556-7326 fax: 509 -357-0965

Arctic book: *The North Pole Was Here*

Amazon book: *The Burning Season*

Acoustic-roots band Uncle Wade



**From:** Makiko Sato <[makis@giss.nasa.gov](mailto:makis@giss.nasa.gov)>  
**To:** James Hansen <[jhansen@giss.nasa.gov](mailto:jhansen@giss.nasa.gov)>  
**Cc:** [rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)  
**Subject:** Re: just to be sure..  
**Date:** Fri, 24 Aug 2007 06:41:33 -0400

Jim,

Of course Reto thinks the ranking that shows which year was warmer by 0.01 deg is stupid. But as long as I give the table of US mean temperature on our web site, people can make rankings themselves. What Reto wanted to tell you was from Jan. 7 - Aug. 7, 2007, we had 1998 warmer than 1934 by 0.01 deg in the table I show on our web page. (The reason was those numbers keep changing by such a small amount by adding station data, and probably as Reto pointed out, we processed data in January before a lot of data came in. These recent data can change numbers in old time by small amounts.) From next time I will update the US mean table every month. I was doing it only once a year because I didn't think people would make such a mess out of 0.01 deg difference in US. 0.01 deg is negligible globally but even 2% of that for the US!!

Makiko

On 8/24/07, James Hansen <[jhansen@giss.nasa.gov](mailto:jhansen@giss.nasa.gov)> wrote:

> Not sure that I understand this. It mentions 1934 and 1998 were tied for  
> several months in our monthly updates, but later you say that 1998 was  
> warmest (presumably by a meaningless 0.01, although I do not remember  
that -  
> and why would we have cared or why would we have checked that)? In  
general  
> I think that we want to avoid going into more and more detail about  
ranking  
> of individual years. As far as I remember, we have always discouraged  
that  
> as being somewhat nonsensical, other than the question of what is the  
> warmest year, with uncertainty. Also I don't think that people, such as  
> Gore, are being unreasonable when they make statements such as (about) 9  
of  
> 10 warmest years were in the past two decades, or however they say that  
--  
> but this of course refers to global temperature, which is much less  
noisy  
> and more relevant to the question of human-made climate change. The  
> contrarians are cleverly mixing up these two matters, global and U.S.,  
thus  
> completely confusing the public discussion, and again winning more time

in  
> their attempt to keep things confused, not without aid from their  
unwitting  
> ally, the media. As I tried to make clear in 'Usufruct', that is the  
real  
> battle, as we are running out of time. They will live in infamy, but  
they  
> either do not understand or they don't give a damn. Jim  
>  
>  
> On 8/23/07, Reto Ruedy <rruedy@giss.nasa.gov> wrote:  
> > Jim,  
> >  
> > I don't know whether Andrew Revkin is interested in the details below:  
> >  
> > The US temperature graph in our 1999 paper, based on GHCN data, shows  
> > 1934 0.5C warmer than 1998; 1998 was in 5th place behind 1921, 1931,  
> > 1938, 1953.  
> >  
> > In the corresponding graph in our 2001 paper, now based on the  
carefully  
> > corrected USHCN data, 1934 and 1998 are in first, 1921 in third place  
> > (NOAA who provided the USHCN data had 1998 slightly ahead of 1934).  
> >  
> > The US table we had posted during all of 2006 showed 1998 and 1934  
even  
> > at 1.24C. (I got a copy from a journalist in Brazil, we don't save  
these  
> > data).  
> >  
> > As far as I know, the US table on our site from Jan to Aug 2007 was  
the  
> > first and only one with 1998 ahead of 1934 - some US stations must  
have  
> > still been missing in the GHCN file we downloaded on January 8, 2007.  
> > (Each month, GHCN regenerates the whole file over a period of a few  
> > days; in previous years we had to wait til mid January for the US  
> > stations to be added in again).  
> >  
> > Reto  
> >  
> > On Thu, 2007-08-23 at 20:51 +0200, James Hansen wrote:  
> > > We can add an uncertainty, indeed we already include a bar at  
several  
> > > points on our temperature curve, but we note that it only includes  
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> > > spatial coverage).

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> > > differ from one group to another. It is generally the media that  
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by  
> > > an insignificant amount, with 1998 second. The same result that we  
> > > have now. This ranking was not affected by the flaw in post 2000  
> > > data.

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> > > absolute measurement, however, so errors over time are not  
cumulative.

> > > When there are several thousand stations it is easy to find what  
seem  
> > > like a huge number of stations with problems.

> > >

> > > Jim

> > >

> > >

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> > > noaa folks are saying they're working on adding a  
description  
> > > of uncertainty levels to year-to-year temp time series.  
> > > and lawrimore says they could do better in press outreach to  
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> > >

> > > do you agree that this should be more clearly  
communicated...

> > > should GISS or NOAA or others even try to make a list of  
> > > individual years as sharp data points?

> > >

> > > separately, i'm still a bit confused about whether GISS ever  
> > > had 1934 as hottest 48-state year or not.  
> > > can you help clarify?

> > >

> > > finally, do you agree that generally we (globally) should be  
> > > doing a lot more to improve surface temperature tracking?  
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found  
> > > it quite amazing. if our stations are that shoddy, what's it  
> > > like in Mongolia?

> > >



**From:** Makiko Sato <[makis@giss.nasa.gov](mailto:makis@giss.nasa.gov)>  
**To:** James Hansen <[jhansen@giss.nasa.gov](mailto:jhansen@giss.nasa.gov)>  
**Cc:** Andrew Revkin <[anrevk@nytimes.com](mailto:anrevk@nytimes.com)>, Reto Ruedy  
<[cdrrar@giss.nasa.gov](mailto:cdrrar@giss.nasa.gov)>, [gschmidt@giss.nasa.gov](mailto:gschmidt@giss.nasa.gov)  
**Subject:** Re: one last request (data for the graph below)  
**Date:** Fri, 24 Aug 2007 06:24:57 -0400

I can give you the data easily when I come in to work later today. The base period is 1951-1980.

Makiko Sato

On 8/24/07, **James Hansen** <[jhansen@giss.nasa.gov](mailto:jhansen@giss.nasa.gov)> wrote:

Andy, I am but Makiko or Reto should have the data -- it is Makiko's plot. Jim

On 8/23/07, **Andrew Revkin** <[anrevk@nytimes.com](mailto:anrevk@nytimes.com)> wrote:

one last query.

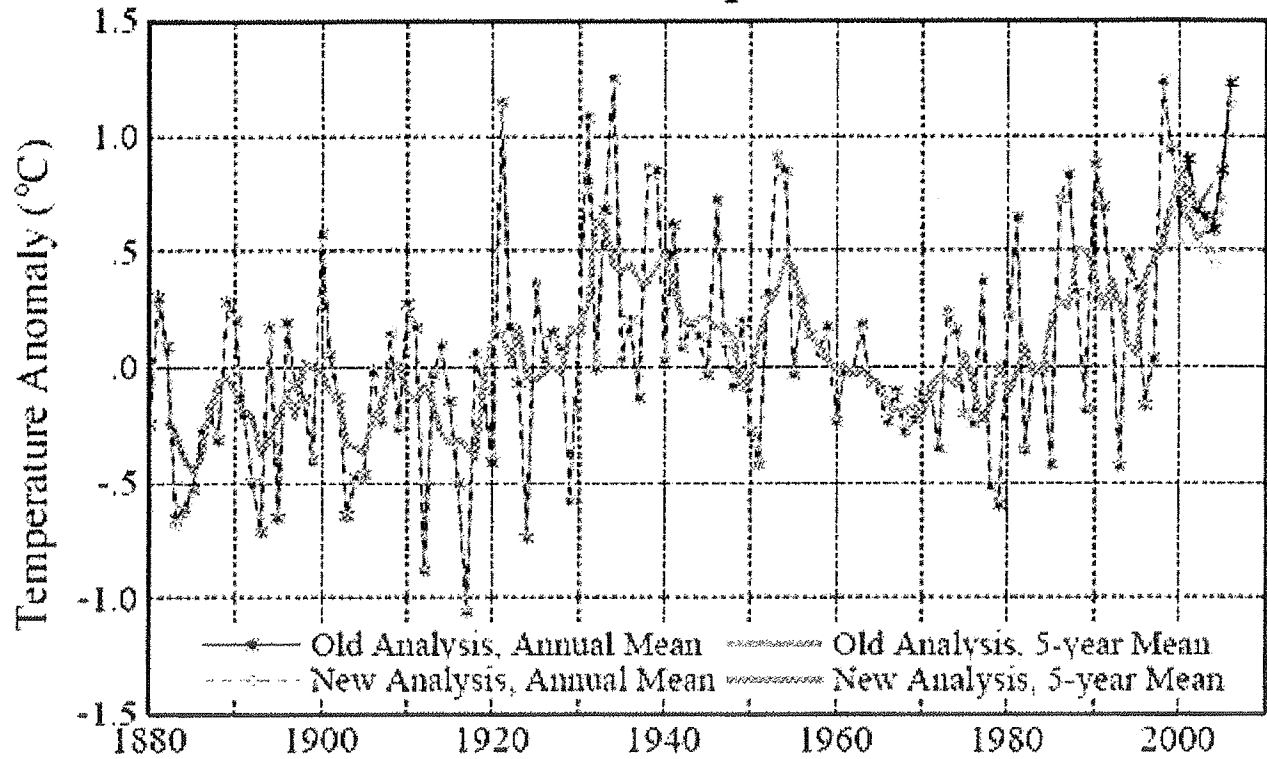
do you have the data easily available for this graph?  
(our graphix folks would need to redraw to our style.. and that is anomaly compared to what baseline?)



**ANDREW C. REVKIN**

The New York Times / Environment  
620 Eighth Ave., NY, NY 10018-1405  
phone: 212-556-7326 fax: 509 -357-0965  
Arctic book: *The North Pole Was Here*  
Amazon book: *The Burning Season*  
Acoustic-roots band *Uncle Wade*

## U.S. Temperature



ANDREW C. REVKIN

<http://www.nytimes.com/revkin> The New York Times / Environment

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Arctic book: *The North Pole Was Here*

<http://nytimes.com/learning/globalwarming> Amazon book: *The Burning Season*

<http://www.islandpress.org/burning> Acoustic-roots band Uncle Wade <http://www.myspace.com/unclewade>



**From:** Reto Ruedy <[rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)>  
**Reply-To:** [rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)  
**To:** [lesgiss@verizon.net](mailto:lesgiss@verizon.net)  
**Subject:** [Fwd: Re: response on McIntyre IP claims??]  
**Date:** Thu, 16 Aug 2007 18:36:55 -0400

Leslie,

Sorry that my response by mistake only was sent to Gavin. So below is what I wrote and above it Gavin's response. I don't think Jim is interested in hearing any more about it.

Reto

----- Forwarded Message -----

**From:** Gavin Schmidt <[gschmidt@giss.nasa.gov](mailto:gschmidt@giss.nasa.gov)>  
**To:** [rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)  
**Subject:** Re: response on McIntyre IP claims??  
**Date:** 16 Aug 2007 18:16:22 -0400

the issue is here that you are dealing with a hostile interviewer. In such circumstances, it is much better simply to point out clear errors. If you open up another front they will dive on that instead and abandon all the previous positions (since they are not sincere in any case).

It does however highlight the rhetorical power of saying that the code is secret and things are being kept from the public. It may still be worth putting up a clean version of the adjustment program on the website in order to have something to point to in such cases.

gavin

On Thu, 2007-08-16 at 18:08, Reto Ruedy wrote:

> Gavin,  
>  
> So you don't think it is worth to point out that the whole first part of  
> the interview section below is a total fabrication, and his first  
> request for source code came with the "thank you" note mentioned at the  
> end of the response, still May 17. Also, his reasons for our  
> "reluctance" is wild speculation that is light years away from reality.  
>  
> On second thought, it's not worth going into these details, especially  
> in a case where the interviewer is more likely to believe Steve than us.  
>  
> So, I'm fine with the edits.



>  
> Reto  
>  
> On Thu, 2007-08-16 at 17:31 -0400, Gavin Schmidt wrote:  
> > a few suggested edits. I don't advise getting rhetorical so I deleted  
> > the third paragraph.  
> >  
> > gavin  
> >  
> >  
> > On Thu, 2007-08-16 at 17:11, lesgiss@verizon.net wrote:  
> > > I agree...but in this case we are in the right. I think we should  
just  
> > > make the point clear that McIntyre's story is a fabrication in a  
very  
> > > generic way.  
> > >  
> > > Take a look at it...I'm also sending it to Reto and Gavin as well.  
> > >  
> > > Leslie  
> > >  
> > >  
> > > Original Message:  
> > > -----  
> > > From: James Hansen jhansen@giss.nasa.gov  
> > > Date: Thu, 16 Aug 2007 16:33:28 -0400  
> > > To: lesgiss@verizon.net, @gmail.com,  
dcain@giss.nasa.gov  
> > > Subject: Re: response on McIntyre IP claims??  
> > >  
> > >  
> > > Do we want to lower ourselves to debating with a court jester? Of  
course,  
> > > that is what he wants.  
> > >  
> > > I don't have a strong preference as long as it is not taking a  
significant  
> > > amount of my time.  
> > >  
> > > I have not read the stuff that you are referring to, but as I  
recall, as  
> > > soon as I was told about the matter, I said that he was welcome to  
the data.  
> > >  
> > > Jim  
> > >  
> > > On 8/16/07, lesgiss@verizon.net <lesgiss@verizon.net> wrote:

> > > >  
> > > > Hi Jim:  
> > > >  
> > > > Amanda Carpenter of Townhall.com has inquired if we will have a  
response  
> > > > to  
> > > > McIntyre's claims in their interview yesterday that NASA blocked  
his IP  
> > > > address? I've heard from both Reto and Robert and can draft  
something if  
> > > > you want...please let me know.  
> > > >  
> > > > Thanks.  
> > > >  
> > > > Leslie  
> > > >  
> > > >

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

> > > >  
> > > >  
> > > >  
> > > >  
> > > >  
> > >  
> > >

-----  
> > > mail2web.com Enhanced email for the mobile individual based on  
Microsoft®

> > > Exchange - <http://link.mail2web.com/Personal/EnhancedEmail>  
> > >

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

**From:** lesgiss@verizon.net <lesgiss@verizon.net>  
**Reply-To:** lesgiss@verizon.net  
**To:** [jhansen@giss.nasa.gov](mailto:jhansen@giss.nasa.gov), [\\_\\_\\_\\_\\_@gmail.com](mailto:_____@gmail.com),  
[gschmidt@giss.nasa.gov](mailto:gschmidt@giss.nasa.gov), [rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)  
**Cc:** [dcain@giss.nasa.gov](mailto:dcain@giss.nasa.gov), [ltravis@giss.nasa.gov](mailto:ltravis@giss.nasa.gov), [robert.j.gutro@nasa.gov](mailto:robert.j.gutro@nasa.gov)  
**Subject:** Town Hall Story on NASA blocking McIntyre access  
**Date:** Fri, 17 Aug 2007 07:37:44 -0400

Good morning:

Here is the Town Hall story entitled "NASA Blocked Climate Change Blogger from Data"...

[http://www.townhall.com/Columnists/AmandaCarpenter/2007/08/17/nasa\\_blocked\\_climate\\_change\\_blogger\\_from\\_data?page=full&comments=true](http://www.townhall.com/Columnists/AmandaCarpenter/2007/08/17/nasa_blocked_climate_change_blogger_from_data?page=full&comments=true)

Leslie

---

mail2web.com - Microsoft® Exchange solutions from a leading provider -  
<http://link.mail2web.com/Business/Exchange>

**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:** Gavin Schmidt <[gschmidt@giss.nasa.gov](mailto:gschmidt@giss.nasa.gov)>, Reto Ruedy <[cdrrar@giss.nasa.gov](mailto:cdrrar@giss.nasa.gov)>, Makiko Sato <[makis@giss.nasa.gov](mailto:makis@giss.nasa.gov)>  
**Subject:** Re: Town Hall Story on NASA blocking McIntyre access  
**Date:** Fri, 17 Aug 2007 19:28:05 -0400

I understand, that was just meant as a suggestion to bring up on Gavin's RealClimate site, if he needs to counter requests for our "fixing" code.

Reto

On Fri, 2007-08-17 at 19:06 -0400, James Hansen wrote:

> Technical arguments with a jackass or a jester, which most observers  
> not wanting to understand the details, can appear to lower one to a  
> comparable level. Better not argue with him about whether we fix  
> data; we do an urban adjustment, for example. Jim

>  
> On 8/17/07, Reto Ruedy <[rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)> wrote:  
> TOBS does not have the station history adjustment (SHAP) -  
> FILIN has it  
> and is the last stage before their urban adjustment. I can run  
> with or  
> without the filled-in data (filling in added .05C/century to  
> the US mean  
> trend in our analysis).

>  
> Once the new USHCN data are reformatted, it's just a question  
> of what to  
> do with years 2006 and 2007. Otherwise it's simply switching  
> an input  
> file.

>  
> I still think, Steve (in the Town Hall interview below and  
> when he talks  
> to anybody but us) mixes us up with Tom Karl's group - they  
> "fix"  
> station data, we don't. If we get this misunderstanding out in  
> the open,  
> it might die down as well.

>  
> Reto

>  
> On Fri, 2007-08-17 at 16:23 -0400, Gavin Schmidt wrote:  
> > I didn't suggest using their urban adjustment, but that the  
> most

> > up-to-date USHCN data may have more in the way of documented  
> station  
> > adjustments and more data earlier on. The FILIN data do not  
> include  
> > their urban adjustment as far as I can tell. I get the  
> impression from  
> > the USHCN web site that you should be able to extract just  
> the TOBS  
> > corrected data without the FILIN.  
>  
> > The point is to make sure that the difference between the  
> earlier USHCN  
> > data set we were using and the latest version does not make  
> a  
> > significant difference to the results. Since any independent  
> replication  
> > of the GISS procedure will use the currently available data  
> set (not the  
> > one we are using), we should probably be ahead of the game  
> in  
> > understanding what impact it has.  
>  
> > As is usual in these cases, the smarter of the court jesters  
> have  
> > already stopped talking about 1934 and are now pushing the  
> transparency  
> > 'meme'. That has a lot more resonance....  
>  
> > Gavin  
>  
> > On Fri, 2007-08-17 at 16:10, James Hansen wrote:  
> > > What is the matter with the way that we do it? Among  
> other things, we  
> > > have a more realistic urban adjustment. Changing has  
> various  
> > > drawbacks. Jim  
> >  
> > > On 8/17/07, Reto Ruedy <rruedy@giss.nasa.gov> wrote:  
> > > Jim,  
> >  
> > > Gavin suggested some time ago that we should do  
> the analysis  
> > > with the  
> > > current USHCN.  
> >  
> > > I downloaded the "FILIN" USHCN data; the filled-in  
> numbers are

> > marked.  
 > > So I can use or ignore them. I have to write a  
 > program anyway  
 > > to  
 > > reformat this file to the format used by GHCN.  
 > This includes  
 > > the easy  
 > > conversion from F to C, but they also use a  
 > different set of  
 > > ID-numbers  
 > > to characterize the station. So first, I'll have  
 > to construct  
 > > and check  
 > > a conversion table to identify the stations  
 > properly.  
 > >  
 > > Reto  
 > >  
 > > On Fri, 2007-08-17 at 11:44 -0400, Reto Ruedy  
 > wrote:  
 > > > What I wrote was true last week - today it says  
 > that monthly  
 > > data are  
 > > > available from 1900-2005. They must have updated  
 > it in the  
 > > last few  
 > > > days.  
 > > >  
 > > > Reto  
 > > >  
 > > > On Fri, 2007-08-17 at 11:35 -0400, Reto Ruedy  
 > wrote:  
 > > > > Jim,  
 > > > >  
 > > > > On the USHCN site it says that the data  
 > available from  
 > > their web site go  
 > > > > to 2002. I never downloaded them since the  
 > stage we use is  
 > > not stored at  
 > > > > that site - we would have to make a special  
 > request.  
 > > > >  
 > > > > Reto  
 > > > >  
 > > > > On Fri, 2007-08-17 at 11:18 -0400, James  
 > Hansen wrote:



>

--

Reto Ruedy <rruedy@giss.nasa.gov>



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

**To:** Andrew Revkin <anrevk@nytimes.com>

**Cc:** Reto Ruedy <cdrar@giss.nasa.gov>, Makiko Sato <makis@giss.nasa.gov>

**Subject:** Re: can we talk briefly?

**Date:** Thu, 23 Aug 2007 21:01:57 +0200 (15:01 EDT)

I believe that we have clearly stated several times that the ranking does not make much sense. Although we have discouraged it, anyone can see the results, so they can do the ranking themselves.

The uncertainty due to incomplete spatial coverage is objective, based on sampling a complete data set with realistic temporal-spatial variability with the actual station locations. Incomplete spatial coverage is probably the largest source of error. It is the reason that other groups did not find 2005 to be the warmest year, because they did not include the complete Arctic, which had a huge positive anomaly. We included it via our interpolations, and we verified from satellite measurements that the Arctic anomaly was, if anything, actually larger than we obtained with our interpolations.

Other components of the complete error bar must, indeed, involve some subjectivity, and they are a function of time, i.e., the uncertainty in comparing two near by years is much less than in comparing recent results to those many decades earlier..

Jim

On 8/23/07, **Andrew Revkin** <anrevk@nytimes.com> wrote:  
howdy,

hoping we can chat briefly about the temperature-record revision.

much of this seems simply to reflect the importance of anyone (noaa, nasa, etc) clearly stating when uncertainties preclude designating years (particularly regionally) as a string of firm points, one of which can be deemed a 'record.'

noaa says it's working on an error-bar approach to its time series (but also said there are subjectivity issues that come in when doing so..?).

212 556 7326 if you get 5-10 mins.  
(except for 1-2 p.m .)

thanks jim.

andy

**ANDREW C. REVKIN**

The New York Times / Environment  
620 Eighth Ave., NY, NY 10018-1405  
phone: 212-556-7326 fax: 509 -357-0965  
Arctic book: *The North Pole Was Here*  
Amazon book: *The Burning Season*  
Acoustic-roots band Uncle Wade

**From:** Andrew Revkin <[anrevk@nytimes.com](mailto:anrevk@nytimes.com)>  
**To:** [rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)  
**Cc:** [@mailhub1.nytimes.com](mailto:@mailhub1.nytimes.com)  
**Subject:** Re: US data  
**Date:** Fri, 24 Aug 2007 16:02:44 -0400

Reto,

is there a simple way to determine which shifts are NOT statistically significant?

in graphic we're doing, i'd love to be able to indicate that (by shading or label or the like)

At 12:53 PM 8/24/2007, Reto Ruedy wrote:

Dear Mr.Revkin,

Below are the data you requested. We really should round (as some other groups do) to the nearest tenth of a degree rather than showing 2 digits.

I tried to answer your question whether GISS ever showed a US table with 1934 warmer in the US than 1998 in an email to Jim. He found it confusing, so here is another attempt to answer it:

the answer is "yes", all our publications and all previous tables had it that way, the table we put on our web on Jan 8, 2007 seems to have been the lone exception.

Hope that is clearer.

Sincerely,

Reto

Annual mean US temperature (degrees C)  
(anomalies with respect to 1951-1980)

Year	uncorrected	corrected
1880	-0.25	-0.26
1881	0.31	0.29
1882	0.09	0.07
1883	-0.65	-0.68
1884	-0.61	-0.63
1885	-0.53	-0.54
1886	-0.28	-0.28
1887	-0.17	-0.17
1888	-0.31	-0.32
1889	0.28	0.28

1890	0.20	0.20
1891	-0.21	-0.20
1892	-0.50	-0.51
1893	-0.71	-0.72
1894	0.17	0.17
1895	-0.65	-0.66
1896	0.20	0.19
1897	-0.08	-0.08
1898	-0.14	-0.15
1899	-0.40	-0.41
1900	0.57	0.57
1901	0.06	0.05
1902	-0.13	-0.13
1903	-0.64	-0.65
1904	-0.48	-0.48
1905	-0.47	-0.47
1906	-0.02	-0.02
1907	-0.23	-0.24
1908	0.15	0.14
1909	-0.27	-0.27
1910	0.28	0.28
1911	0.17	0.17
1912	-0.88	-0.88
1913	-0.03	-0.03
1914	0.09	0.09
1915	-0.15	-0.15
1916	-0.50	-0.50
1917	-1.06	-1.06
1918	0.06	0.06
1919	-0.10	-0.10
1920	-0.41	-0.41
1921	1.14	1.15
1922	0.18	0.18
1923	-0.07	-0.07
1924	-0.74	-0.74
1925	0.36	0.36
1926	0.04	0.04
1927	0.15	0.15
1928	0.07	0.07
1929	-0.58	-0.58
1930	0.16	0.16
1931	1.08	1.08
1932	0.00	0.00
1933	0.68	0.68
1934	1.25	1.25
1935	0.04	0.04
1936	0.21	0.21

1937	-0.13	-0.13
1938	0.86	0.86
1939	0.85	0.85
1940	0.03	0.03
1941	0.61	0.61
1942	0.09	0.09
1943	0.17	0.17
1944	0.13	0.14
1945	-0.04	-0.03
1946	0.72	0.72
1947	0.09	0.10
1948	-0.08	-0.08
1949	0.20	0.20
1950	-0.28	-0.28
1951	-0.42	-0.42
1952	0.32	0.32
1953	0.90	0.90
1954	0.85	0.85
1955	-0.03	-0.03
1956	0.29	0.29
1957	0.14	0.14
1958	0.06	0.06
1959	0.17	0.17
1960	-0.24	-0.24
1961	-0.02	-0.02
1962	-0.02	-0.02
1963	0.19	0.19
1964	-0.07	-0.07
1965	-0.11	-0.11
1966	-0.24	-0.24
1967	-0.10	-0.10
1968	-0.28	-0.28
1969	-0.23	-0.23
1970	-0.11	-0.11
1971	-0.09	-0.10
1972	-0.35	-0.35
1973	0.24	0.24
1974	0.16	0.15
1975	-0.20	-0.20
1976	-0.25	-0.25
1977	0.37	0.37
1978	-0.52	-0.52
1979	-0.60	-0.60
1980	0.22	0.22
1981	0.64	0.64
1982	-0.36	-0.36
1983	-0.01	-0.01

1984	0.00	0.00
1985	-0.42	-0.42
1986	0.73	0.73
1987	0.83	0.83
1988	0.32	0.32
1989	-0.19	-0.19
1990	0.87	0.87
1991	0.69	0.69
1992	0.30	0.30
1993	-0.43	-0.44
1994	0.47	0.46
1995	0.35	0.34
1996	-0.17	-0.17
1997	0.04	0.03
1998	1.23	1.23
1999	0.94	0.93
2000	0.65	0.52
2001	0.90	0.76
2002	0.68	0.53
2003	0.65	0.50
2004	0.59	0.44
2005	0.85	0.69
2006	1.23	1.13

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

**ANDREW C. REVKIN**

The New York Times / Environment  
620 Eighth Ave., NY, NY 10018-1405  
phone: 212-556-7326 fax: 509 -357-0965  
Arctic book: *The North Pole Was Here*  
Amazon book: *The Burning Season*  
Acoustic-roots band Uncle Wade

**From:** Andrew Revkin <[anrevk@nytimes.com](mailto:anrevk@nytimes.com)>  
**To:** [rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)  
**Subject:** Re: US data  
**Date:** Sat, 25 Aug 2007 17:21:24 -0400

thanks reto.  
this is helpful.  
the story (running tonite/sunday) stresses the importance of trend over year-to-year.

At 01:14 PM 8/25/2007, you wrote:

Andrew,

I'd like to add a few notes to yesterday's response:

The estimate  $\pm 0.1C$  ( $\pm 0.2F$ ) tries to account for gaps in spatial coverage and missing or erroneous reports as well as, for longer time periods, changes in instrumentation or even station location and reporting procedures (how to compute the reported daily mean).

Given that the purpose of our effort is to compute long term trends, a simpler and more meaningful measure for the statistical significance is the interannual variability of the US means; its standard deviation is  $0.8F$  (after subtracting the small linear trend). The corresponding number for the global means is  $0.3F$ .

To be remarkable, an observed change has to be a multiple of that standard deviation; compared to that, the errors caused by "bad" stations, urban heat island effect, etc. are of little importance.

Reto

On Fri, 2007-08-24 at 16:02 -0400, Andrew Revkin wrote:

> Reto,

>

> is there a simple way to determine which shifts are NOT statistically  
> significant?

>

> in graphic we're doing, i'd love to be able to indicate that (by  
> shading or label or the like)

>

> At 12:53 PM 8/24/2007, Reto Ruedy wrote:

> > Dear Mr.Revkin,

> >

> > Below are the data you requested. We really should round (as some

> > other

> > groups do) to the nearest tenth of a degree rather than showing 2  
> > digits.

> >  
> > I tried to answer your question whether GISS ever showed a US table  
> > with  
> > 1934 warmer in the US than 1998 in an email to Jim. He found it  
> > confusing, so here is another attempt to answer it:

> >  
> > the answer is "yes", all our publications and all previous tables  
> > had it  
> > that way, the table we put on our web on Jan 8, 2007 seems to have  
> > been  
> > the lone exception.

> >  
> > Hope that is clearer.

> >  
> > Sincerely,

> >  
> > Reto

> >  
> > Annual mean US temperature (degrees C)  
> > (anomalies with respect to 1951-1980)

> >  
> > Year uncorrected    corrected

> > 1880	-0.25	-0.26
> > 1881	0.31	0.29
> > 1882	0.09	0.07
> > 1883	-0.65	-0.68
> > 1884	-0.61	-0.63
> > 1885	-0.53	-0.54
> > 1886	-0.28	-0.28
> > 1887	-0.17	-0.17
> > 1888	-0.31	-0.32
> > 1889	0.28	0.28
> > 1890	0.20	0.20
> > 1891	-0.21	-0.20
> > 1892	-0.50	-0.51
> > 1893	-0.71	-0.72
> > 1894	0.17	0.17
> > 1895	-0.65	-0.66
> > 1896	0.20	0.19
> > 1897	-0.08	-0.08
> > 1898	-0.14	-0.15
> > 1899	-0.40	-0.41
> > 1900	0.57	0.57
> > 1901	0.06	0.05
> > 1902	-0.13	-0.13



> > 1903	-0.64	-0.65
> > 1904	-0.48	-0.48
> > 1905	-0.47	-0.47
> > 1906	-0.02	-0.02
> > 1907	-0.23	-0.24
> > 1908	0.15	0.14
> > 1909	-0.27	-0.27
> > 1910	0.28	0.28
> > 1911	0.17	0.17
> > 1912	-0.88	-0.88
> > 1913	-0.03	-0.03
> > 1914	0.09	0.09
> > 1915	-0.15	-0.15
> > 1916	-0.50	-0.50
> > 1917	-1.06	-1.06
> > 1918	0.06	0.06
> > 1919	-0.10	-0.10
> > 1920	-0.41	-0.41
> > 1921	1.14	1.15
> > 1922	0.18	0.18
> > 1923	-0.07	-0.07
> > 1924	-0.74	-0.74
> > 1925	0.36	0.36
> > 1926	0.04	0.04
> > 1927	0.15	0.15
> > 1928	0.07	0.07
> > 1929	-0.58	-0.58
> > 1930	0.16	0.16
> > 1931	1.08	1.08
> > 1932	0.00	0.00
> > 1933	0.68	0.68
> > 1934	1.25	1.25
> > 1935	0.04	0.04
> > 1936	0.21	0.21
> > 1937	-0.13	-0.13
> > 1938	0.86	0.86
> > 1939	0.85	0.85
> > 1940	0.03	0.03
> > 1941	0.61	0.61
> > 1942	0.09	0.09
> > 1943	0.17	0.17
> > 1944	0.13	0.14
> > 1945	-0.04	-0.03
> > 1946	0.72	0.72
> > 1947	0.09	0.10
> > 1948	-0.08	-0.08
> > 1949	0.20	0.20

>	>	1950	-0.28	-0.28
>	>	1951	-0.42	-0.42
>	>	1952	0.32	0.32
>	>	1953	0.90	0.90
>	>	1954	0.85	0.85
>	>	1955	-0.03	-0.03
>	>	1956	0.29	0.29
>	>	1957	0.14	0.14
>	>	1958	0.06	0.06
>	>	1959	0.17	0.17
>	>	1960	-0.24	-0.24
>	>	1961	-0.02	-0.02
>	>	1962	-0.02	-0.02
>	>	1963	0.19	0.19
>	>	1964	-0.07	-0.07
>	>	1965	-0.11	-0.11
>	>	1966	-0.24	-0.24
>	>	1967	-0.10	-0.10
>	>	1968	-0.28	-0.28
>	>	1969	-0.23	-0.23
>	>	1970	-0.11	-0.11
>	>	1971	-0.09	-0.10
>	>	1972	-0.35	-0.35
>	>	1973	0.24	0.24
>	>	1974	0.16	0.15
>	>	1975	-0.20	-0.20
>	>	1976	-0.25	-0.25
>	>	1977	0.37	0.37
>	>	1978	-0.52	-0.52
>	>	1979	-0.60	-0.60
>	>	1980	0.22	0.22
>	>	1981	0.64	0.64
>	>	1982	-0.36	-0.36
>	>	1983	-0.01	-0.01
>	>	1984	0.00	0.00
>	>	1985	-0.42	-0.42
>	>	1986	0.73	0.73
>	>	1987	0.83	0.83
>	>	1988	0.32	0.32
>	>	1989	-0.19	-0.19
>	>	1990	0.87	0.87
>	>	1991	0.69	0.69
>	>	1992	0.30	0.30
>	>	1993	-0.43	-0.44
>	>	1994	0.47	0.46
>	>	1995	0.35	0.34
>	>	1996	-0.17	-0.17

> > 1997        0.04        0.03  
> > 1998        1.23        1.23  
> > 1999        0.94        0.93  
> > 2000        0.65        0.52  
> > 2001        0.90        0.76  
> > 2002        0.68        0.53  
> > 2003        0.65        0.50  
> > 2004        0.59        0.44  
> > 2005        0.85        0.69  
> > 2006        1.23        1.13  
> >  
> > --  
> > Reto Ruedy <rruedy@giss.nasa.gov>  
>  
>  
> ANDREW C. REVKIN  
> The New York Times / Environment  
> 620 Eighth Ave., NY, NY 10018-1405  
> phone: 212-556-7326 fax: 509 -357-0965  
> Arctic book: The North Pole Was Here  
> Amazon book: The Burning Season  
> Acoustic-roots band Uncle Wade  
>  
>  
-  
Reto Ruedy <rruedy@giss.nasa.gov>

**ANDREW C. REVKIN**

The New York Times / Environment  
620 Eighth Ave., NY, NY 10018-1405  
phone: 212-556-7326 fax: 509 -357-0965  
Arctic book: The North Pole Was Here  
Amazon book: The Burning Season  
Acoustic-roots band Uncle Wade

**From:** Andrew Revkin <[anrevk@nytimes.com](mailto:anrevk@nytimes.com)>

**To:** [thomas.r.karl@noaa.gov](mailto:thomas.r.karl@noaa.gov), [jay.lawrimore@noaa.gov](mailto:jay.lawrimore@noaa.gov), [jhansen@giss.nasa.gov](mailto:jhansen@giss.nasa.gov),  
[gschmidt@giss.nasa.gov](mailto:gschmidt@giss.nasa.gov)

**Cc:** [rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)

**Subject:** scrunched, but done

**Date:** Sat, 25 Aug 2007 21:27:44 -0400

well, in my highly imperfect universe of limited space, tried to cut thru the caricatures and focus on what is \*not\* in dispute.  
not something i could ignore -- even after a week on a boat off central america (wish i was still out there).

<http://www.nytimes.com/2007/08/26/us/26climate.html>

thanks for your input.

on to more interesting issues.

tom, i didn't hear back on budget for the climate reference network.. is that on track?

**ANDREW C. REVKIN**

The New York Times / Environment

620 Eighth Ave., NY, NY 10018-1405

phone: 212-556-7326 fax: 509 -357-0965

Arctic book: *The North Pole Was Here*

Amazon book: *The Burning Season*

Acoustic-roots band Uncle Wade

**From:** Andrew Revkin <[anrevk@nytimes.com](mailto:anrevk@nytimes.com)>  
**To:** [rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)  
**Subject:** Re: scrunched, but done  
**Date:** Sun, 26 Aug 2007 10:18:41 -0400

i love that.  
'an intrsting article about a non issue.'  
great review .

it's almost a law of physics how situations like this end up demanding coverage (and distracting).

At 10:01 AM 8/26/2007, you wrote:

Thanks for your balanced and well-written article. Journalists I spoke to noted the difficulty writing an interesting article about a non-issue. Great job.

Reto

On Sat, 2007-08-25 at 21:27 -0400, Andrew Revkin wrote:

- > well, in my highly imperfect universe of limited space, tried to cut
- > thru the caricatures and focus on what is \*not\* in dispute.
- > not something i could ignore -- even after a week on a boat off
- > central america (wish i was still out there).
- > <http://www.nytimes.com/2007/08/26/us/26climate.html>
- > thanks for your input.
- > on to more interesting issues.
- >
- > tom, i didn't hear back on budget for the climate reference network..
- > is that on track?

- >
- >
- >
- > ANDREW C. REVKIN
- > The New York Times / Environment
- > 620 Eighth Ave., NY, NY 10018-1405
- > phone: 212-556-7326 fax: 509 -357-0965
- > Arctic book: The North Pole Was Here
- > Amazon book: The Burning Season
- > Acoustic-roots band Uncle Wade

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

**ANDREW C. REVKIN**

The New York Times / Environment  
620 Eighth Ave., NY, NY 10018-1405  
phone: 212-556-7326 fax: 509 -357-0965  
Arctic book: *The North Pole Was Here*  
Amazon book: *The Burning Season*  
Acoustic-roots band *Uncle Wade*

**From:** James Hansen <jhansen@giss.nasa.gov>  
**To:** lesgiss@verizon.net, @gmail.com, ltravis@giss.nasa.gov,  
gschmidt@giss.nasa.gov, rruedy@giss.nasa.gov  
**Subject:** Re: FW: Washington Times--from HQ PAO  
**Date:** Mon, 13 Aug 2007 20:50:56 -0400

send them "A Light on Upstairs?"

At 03:42 PM 8/13/2007, lesgiss@verizon.net wrote:

Hi Jim, Reto and Gavin:

Tabatha Thompson is an SMD PAO at HQ and is inquiring about the GISTEMP changes....do you want to respond to her directly?? Reto did send me Jim's response to Andy Revkin, as well as a bit more clarification, but I don't know if you want that sent, so I'll wait until instructed.

Please let me know ASAP.

Thanks.

Leslie

Original Message:

-----  
**From:** Thompson, Tabatha (HQ-NB000) Tabatha.Thompson-1@nasa.gov  
**Date:** Mon, 13 Aug 2007 13:28:05 -0400  
**To:** leslie.m.mccarthy@nasa.gov, lesgiss@verizon.net,  
scole@pop600.gsfc.nasa.gov, dherring@climate.gsfc.nasa.gov,  
edward.s.campion@nasa.gov, alan.d.buis@nasa.gov  
**Subject:** Washington Times

All --

Can any of you help me find the place on the NASA site to which he's referring? I need to get back to a reporter, so I'd love any help I can get. Our HQ scientists aren't familiar with any change. Thanks!

Tabatha

---

**From:** Dunbar, Brian (HQ-NB050)  
**Sent:** Monday, August 13, 2007 10:43 AM  
**To:** Brown, Dwayne C. (HQ-NB060); Thompson, Tabatha (HQ-NB000)  
**Subject:**

<http://www.washingtontimes.com/article/20070813/COMMENTARY08/108130024/1012/commentary>

Not sure what web site he's referring to.

bd

---

mail2web.com - Microsoft® Exchange solutions from a leading provider -  
<http://link.mail2web.com/Business/Exchange>



<http://www.washingtontimes.com/article/20070813/COMMENTARY08/108130024/1012/commentary>

Not sure what web site he's referring to.

bd

---

mail2web.com - Microsoft® Exchange solutions from a leading provider -  
<http://link.mail2web.com/Business/Exchange>

#07 - 175

**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](mailto:rruedy@giss.nasa.gov)>  
**Reply-To:** [rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)  
**To:** James E. Hansen <[jhansen@giss.nasa.gov](mailto:jhansen@giss.nasa.gov)>, [gavin@giss.nasa.gov](mailto: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](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:** Gavin Schmidt <[gschmidt@giss.nasa.gov](mailto: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](mailto: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/ushcn/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?

> >

> > 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>

**To:** Reto Ruedy <cdrar@giss.nasa.gov>, Makiko Sato <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



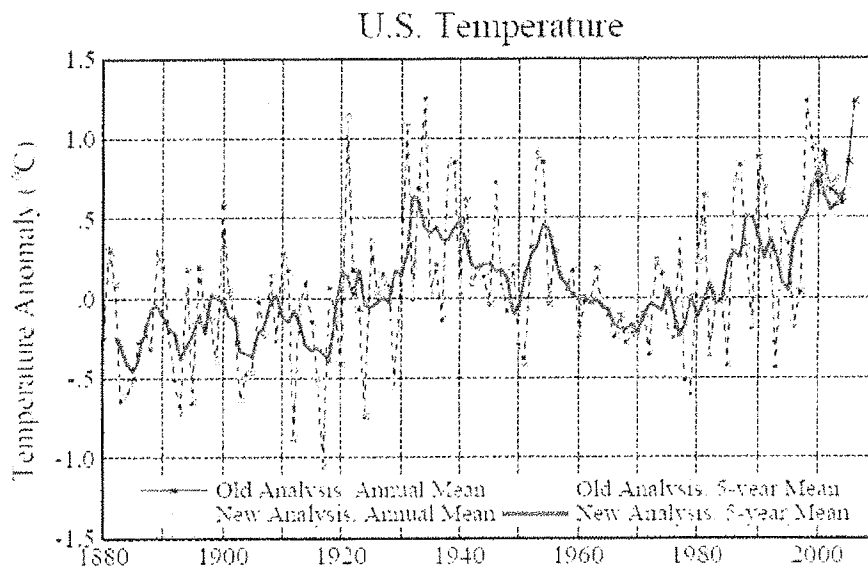
## A Light On Upstairs?

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.

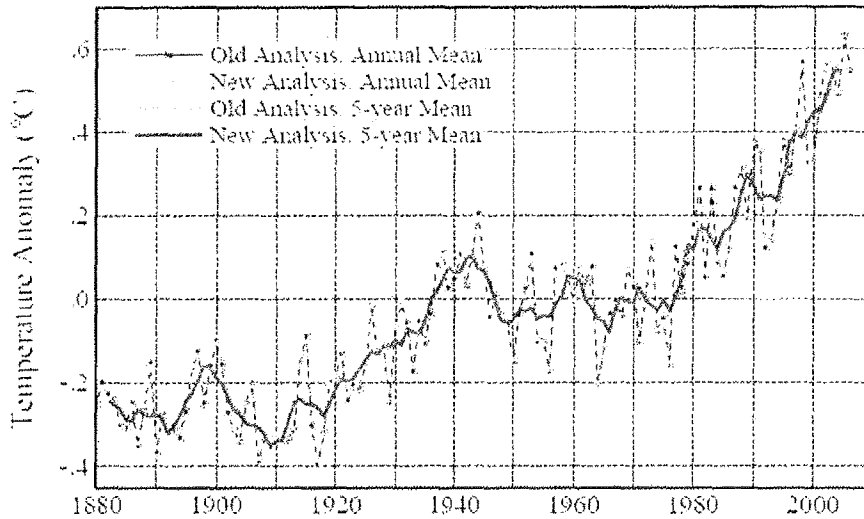
Recently it was realized that the monthly more-or-less-automatic updates of our global temperature analysis ([http://pubs.giss.nasa.gov/abstracts/2001/Hansen\\_etal.html](http://pubs.giss.nasa.gov/abstracts/2001/Hansen_etal.html)) had a flaw in the U.S. data. In that (2001) update of the analysis method (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:** Makiko Sato <[makis@giss.nasa.gov](mailto:makis@giss.nasa.gov)>  
**To:** James Hansen <[jhansen@giss.nasa.gov](mailto:jhansen@giss.nasa.gov)>, Robert B. Schmunk  
<[Robert.B.Schmunk@nasa.gov](mailto:Robert.B.Schmunk@nasa.gov)>  
**Cc:** Darnell Cain <[dcain@giss.nasa.gov](mailto:dcain@giss.nasa.gov)>, Reto Ruedy <[rruedy@giss.nasa.gov](mailto:rruedy@giss.nasa.gov)>  
**Subject:** Re: New Email  
**Date:** Fri, 10 Aug 2007 18:36:58 -0400

It's not us. NOAA has T(2006) > T(1998) >  
T(1934) for the US, of course very  
slightly.

<http://www.noaanews.noaa.gov/stories2007/images/usa-temps-1895-2006b.jpg>  
Why do people want to make ranking among 1934, 1998 and 2006 US temp?

Makiko

At 18:22 2007/08/10, James Hansen wrote:

>Thanks to all of you for the rush job! -- I think that it is very clear.  
Jim

>  
>On 8/10/07, Robert B. Schmunk  
><<<mailto:Robert.B.Schmunk@nasa.gov>>Robert.B.Schmunk@nasa.gov> wrote:

>  
>Darnell,

>  
>I am putting the PDF on the CU website at

>  
><[http://www.columbia.edu/~jeh1/distro\\_LightUpstairs\\_70810.pdf](http://www.columbia.edu/~jeh1/distro_LightUpstairs_70810.pdf)><http://www.co>

>  
>rbs

>  
>  
>  
>  
>  
>  
>

>On Aug 10, 2007, at 17:55, Robert B. Schmunk wrote:

>  
> >  
> > Attached is the Word DOC and PDF with a few corrections  
> > that Makiko had made to her copy but which were not in  
> > Jim's copy:

> >  
> > 1) replaced the URLs with pointers to HTML pages  
> > 2) put the degree symbol in 0.15°C  
> > 3) changed one-thousandths to one-thousandth

> >

> >  
> > 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".  
> >>>>>>>>









**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)

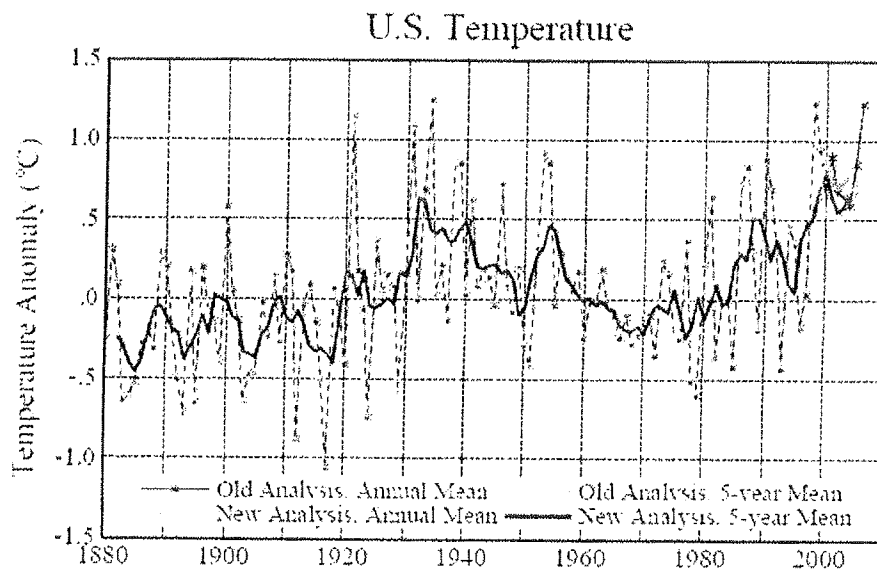
## A Light On Upstairs?

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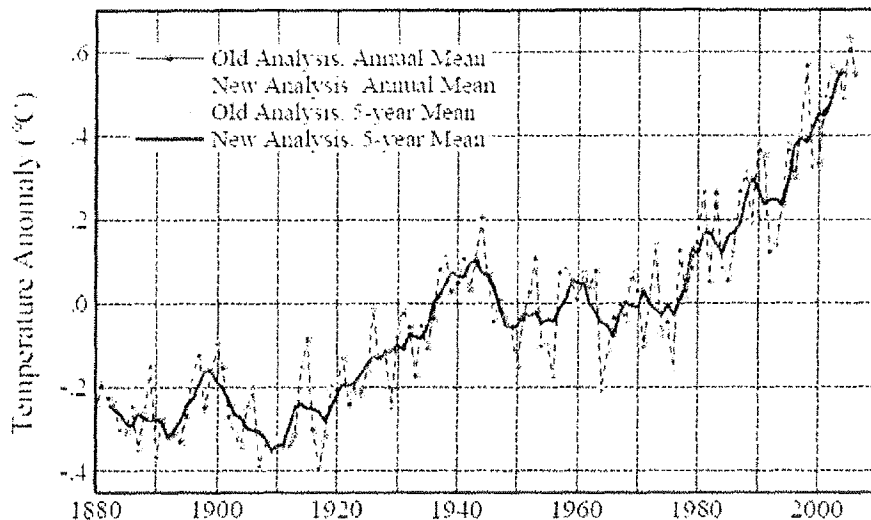
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Unfortunately, we didn't realize that these corrections would not continue to be readily available in the near-real-time data streams. The same stations are in the GHCN (Global Historical Climatology Network) data stream, however, and thus what our 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.

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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)

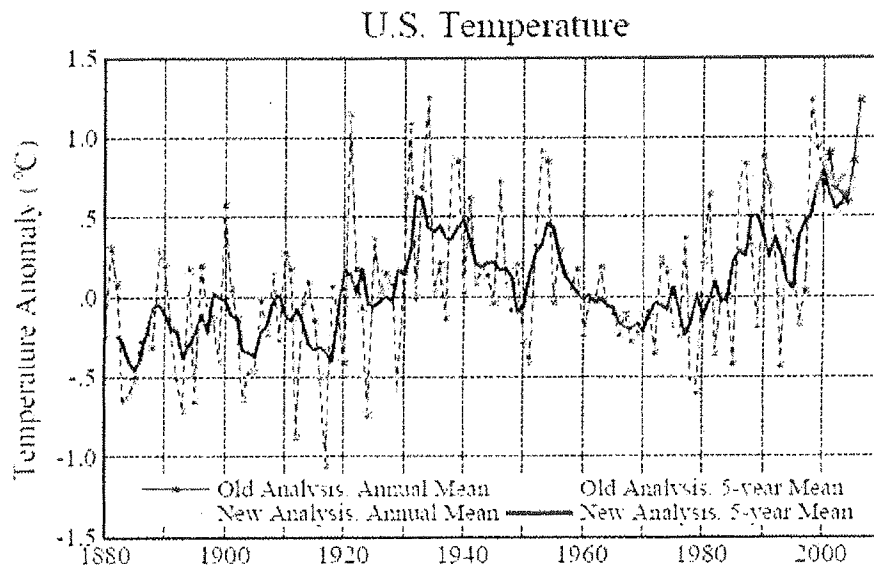
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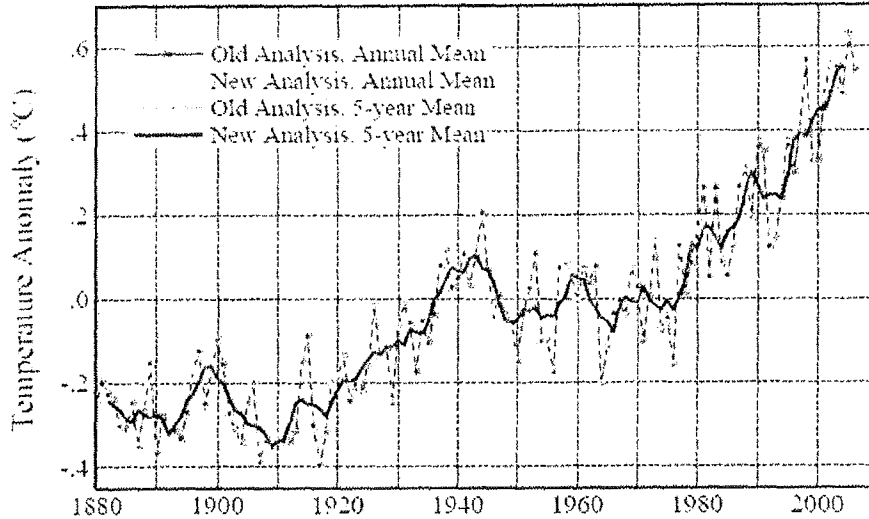
Unfortunately, we didn't realize that these corrections would not continue to be readily available in the near-real-time data streams. The same stations are in the GHCN (Global Historical Climatology Network) data stream, however, and thus what our analysis picked up in subsequent years was station data 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°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:** 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 USHCH 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.

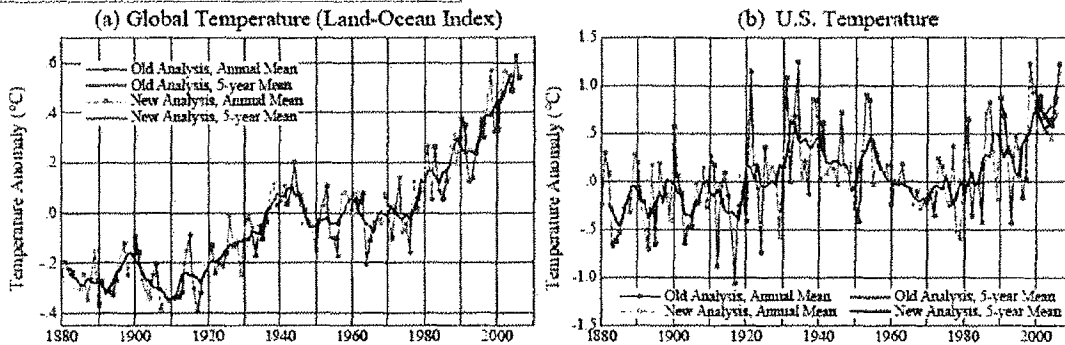
>> Indeed, when we receive new data  
>> each month, which often adds in new stations,

>> 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!

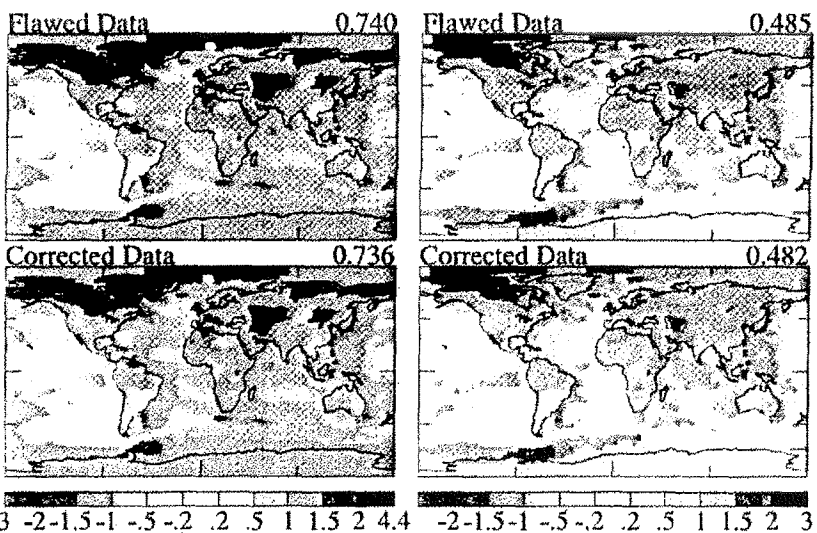
Emacs!

JPEG image attachment (18a5d75.jpg)



JPEG image attachment (18a5d85.jpg)

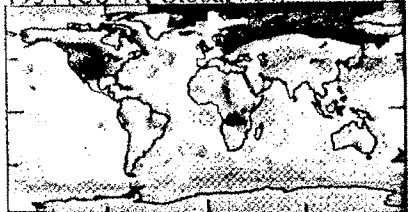
1997-2006 relative to 1880-1920    1997-2006 relative to 1951-1980



JPEG image attachment (18a5db3.jpg)

Annual Mean Surface Temperature Anomalies (°C)

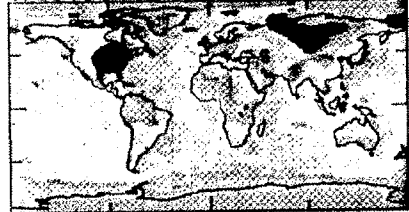
1934 (US #1, Global #64) -05



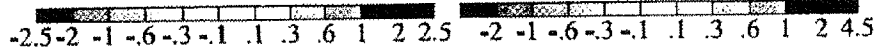
1998 (US #2, Global #2) 57



1921 (US #3, Global #78) -13



2006 (US #4, Global #5) 54



Base Period 1951-1980

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

**To:** Donald Anderson <donaald.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:

> Hi Jim:

>

> This is the draft statement prepared by Tabatha Thompson, of  
> HQ PAO, and  
> submitted to Jack Kaye....is this okay with you?

>

> Thanks.

>

> Leslie

>

>

> Original Message:

>

> -----  
> From: Thompson, Tabatha (HQ-NB000) [Tabatha.Thompson-1@nasa.gov](mailto:Tabatha.Thompson-1@nasa.gov)  
> Date: Wed, 15 Aug 2007 14:24:47 -0400  
> To: [leslie.m.mccarthy@nasa.gov](mailto:leslie.m.mccarthy@nasa.gov)  
> Subject: FW: Per our Discussion - Note for Web Site

>

>

> How does this look to you?

>

>

> >  
> > -----  
> > From: Thompson, Tabatha (HQ-NB000)  
> > Sent: Wednesday, August 15, 2007 11:57 AM  
> > To: Kaye, Jack A. (HQ-DK000)  
> > Subject: Per our Discussion - Note for Web Site

>

> > Jack,  
> > Per our discussion, please review the following statement.

> > Once I hear

> > from you, I'll send it to our web people.

> > ttt

> > > 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 computer modeling program that  
> > generated the

> > > temperature record was produced with the assumption that  
> > data from

> > > monitoring stations would be adjusted to account for changes  
> > such as

> > > the time of day at which measurements were made. However,  
> > the adjusted

> > > data were not always readily available and the program used  
> > data from

> > > monitoring stations that had not been adjusted. The result

> 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).  
> >  
> >  
>  
>  
>

---

> 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) - 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.

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    <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  
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](mailto:rruedy@giss.nasa.gov), [makis@giss.nasa.gov](mailto: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,

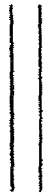
--

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 | 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

--

**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

Word document attachment (USHCN-trends-2-Page.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=noaws; s=s1024;  
> > d=yahoo.com;

> > h=Received:X-YMail-OSG:From:To:Subject:Date:Message-ID:MIME-Version:Content-  
> > b=ffkH2tg2tl5Z4nC6MwTIbe8N2agSXy0S+Mr4wPMswbQJdfchkU+640U3se8vtx  
> > +Di6KFgNcldgwzzbp5PDkota00bRYkc

> > +Usnl/0ugGm7gw8KnFEjITxLy9cc1DAIhnq4sSMIZy0jf00049iG0jZu0tSbURRzhQuwz8CBkoGi!  
> > X-YMail-OSG:

> >  
> > kEot1KsVM1l1f1VC3lqkqzwt1okpR3HYVAPxQCuUAnoXdfzY1j2A3q7Zk.gU1cYAwj5E.mbIWXbc!  
> > From: @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 <[cdrar@giss.nasa.gov](mailto:cdrar@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



**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)

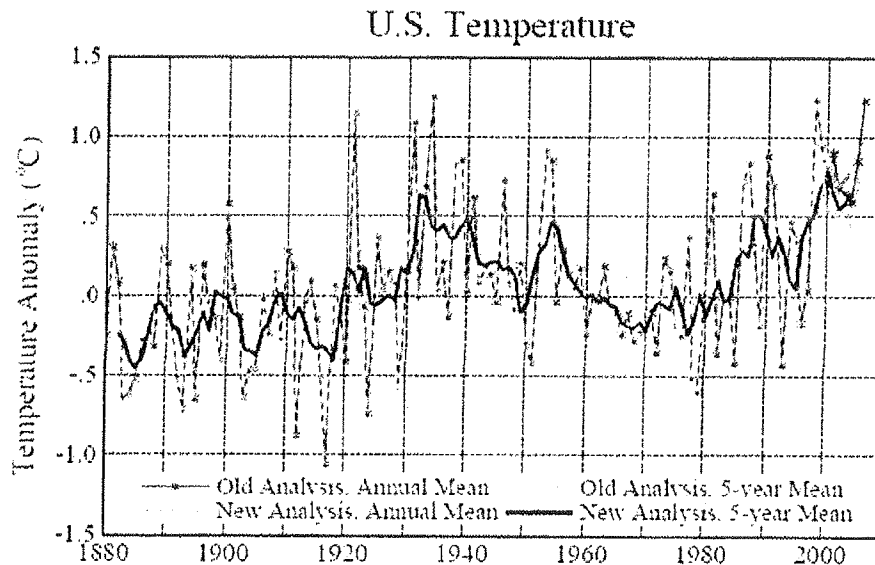
## A Light On Upstairs?

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.

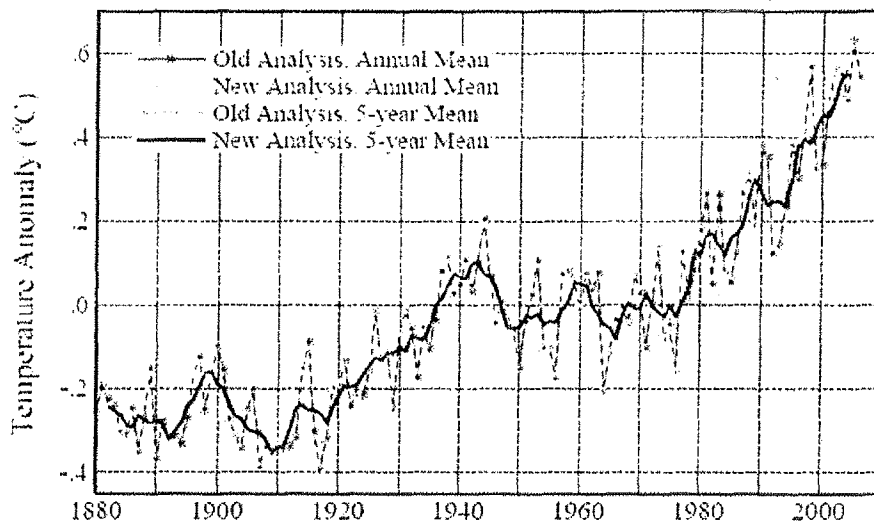
Recently it was realized that the monthly more-or-less-automatic updates of our global temperature analysis ([http://pubs.giss.nasa.gov/abstracts/2001/Hansen\\_etal.html](http://pubs.giss.nasa.gov/abstracts/2001/Hansen_etal.html)) had a flaw in the U.S. data. In that (2001) update of the analysis method (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°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).  
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>  
> 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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**From:** James Hansen <[jhansen@giss.nasa.gov](mailto:jhansen@giss.nasa.gov)>  
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**Cc:** [James.E.Hansen@nasa.gov](mailto: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](mailto:>@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.