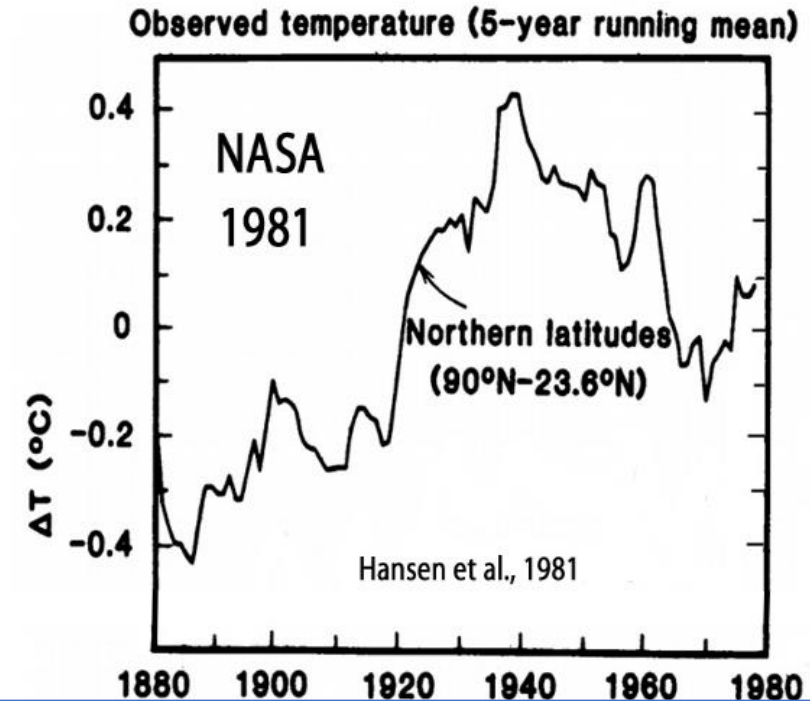
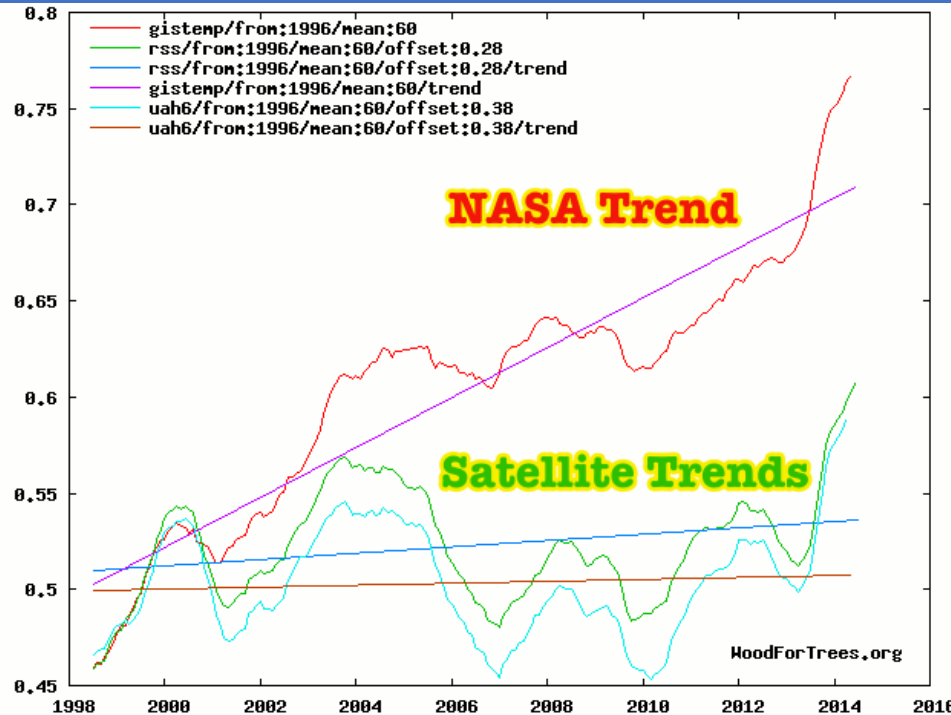


The Scientific Grounds for Reconsidering EPA's Endangerment Finding



Bob Endlich

bendlich@msn.com


Weather Climate and Climate Change—What the Data Tell Us

1 Oct 2019

ATTRIBUTION ANALYSIS using the Three Lines of Evidence published in the Code of Federal Regulations

ATTRIBUTION IN THE ENDANGERMENT FINDING THREE LINES OF EVIDENCE

1. Physical or Theoretical Understanding of Climate
2. Temperature Records
3. Computer Models



74 C.F.R. at 66518

“74 C.F.R. at 66518”

Means Volume 74 of the Federal Register,
page 66518



Federal Register

**Tuesday,
December 15, 2009**

Part V

**Environmental
Protection Agency**

**40 CFR Chapter I
Endangerment and Cause or Contribute
Findings for Greenhouse Gases Under
Section 202(a) of the Clean Air Act; Final
Rule**

Here is page 66518,
the Attribution
Paragraph is highlighted.

Hadley Center record, slowed. However, the NOAA and NASA trends do not show the same marked slowdown for the 1999–2008 period. Year-to-year fluctuations in natural weather and climate patterns can produce a period that does not follow the long-term trend. Thus, each year may not necessarily be warmer than every year before it, though the long-term warming trend continues.²¹

The scientific evidence is compelling that elevated concentrations of heat-trapping greenhouse gases are the root cause of recently observed climate change. The IPCC conclusion from 2007 has been re-confirmed by the June 2009 USGCRP assessment that most of the observed increase in global average temperatures since the mid-20th century is very likely²² due to the observed increase in anthropogenic greenhouse gas concentrations. Climate model simulations suggest natural forcing alone (e.g., changes in solar irradiance) cannot explain the observed warming.

The attribution of observed climate change to anthropogenic activities is based on multiple lines of evidence. The first line of evidence arises from our basic physical understanding of the effects of changing concentrations of greenhouse gases, natural factors, and other human impacts on the climate system. The second line of evidence arises from indirect, historical estimates of past climate changes that suggest that the changes in global surface temperature over the last several decades are unusual.²³ The third line of evidence arises from the use of computer-based climate models to simulate the likely patterns of response of the climate system to different forcing mechanisms (both natural and anthropogenic).

The claim that natural internal variability or known natural external

forcings can explain most (more than half) of the observed global warming of the past 50 years is inconsistent with the vast majority of the scientific literature, which has been synthesized in several assessment reports. Based on analyses of widespread temperature increases throughout the climate system and changes in other climate variables, the IPCC has reached the following conclusions about external climate forcing: “It is extremely unlikely (<5 percent) that the global pattern of warming during the past half century can be explained without external forcing, and very unlikely that it is due to known natural external causes alone” (Hegerl *et al.*, 2007). With respect to internal variability, the IPCC reports the following: “The simultaneous increase in energy content of all the major components of the climate system as well as the magnitude and pattern of warming within and across the different components supports the conclusion that the cause of the [20th century] warming is extremely unlikely (<5 percent) to be the result of internal processes” (Hegerl *et al.*, 2007). As noted in the TSD, the observed warming can only be reproduced with models that contain both natural and anthropogenic forcings, and the warming of the past half century has taken place at a time when known natural forcing factors alone (solar activity and volcanoes) would likely have produced cooling, not warming.

United States temperatures also warmed during the 20th and into the 21st century; temperatures are now approximately 0.7 °C (1.3 °F) warmer than at the start of the 20th century, with an increased rate of warming over the past 30 years. Both the IPCC and CCSP reports attributed recent North American warming to elevated greenhouse gas concentrations. The CCSP (2008g) report finds that for North America, “more than half of this warming [for the period 1951–2006] is likely the result of human-caused greenhouse gas forcing of climate change.”

Observations show that changes are occurring in the amount, intensity, frequency, and type of precipitation. Over the contiguous United States, total

increased rate. It is very likely that the response to anthropogenic forcing contributed to sea level rise during the latter half of the 20th century. It is not clear whether the increasing rate of sea level rise is a reflection of short-term variability or an increase in the longer-term trend. Nearly all of the Atlantic Ocean shows sea level rise during the last 50 years with the rate of rise reaching a maximum (over 2 mm per year) in a band along the U.S. east coast running east-northeast.

Satellite data since 1979 show that annual average Arctic sea ice extent has shrunk by 4.1 percent per decade. The size and speed of recent Arctic summer sea ice loss is highly anomalous relative to the previous few thousands of years.

Widespread changes in extreme temperatures have been observed in the last 50 years across all world regions including the United States. Cold days, cold nights, and frost have become less frequent, while hot days, hot nights, and heat waves have become more frequent.

Observational evidence from all continents and most oceans shows that many natural systems are being affected by regional climate changes, particularly temperature increases. However, directly attributing specific regional changes in climate to emissions of greenhouse gases from human activities is difficult, especially for precipitation.

Ocean carbon dioxide uptake has lowered the average ocean pH (increased the acidity) level by approximately 0.1 since 1750. Consequences for marine ecosystems may include reduced calcification by shell-forming organisms, and in the longer term, the dissolution of carbonate sediments.

Observations show that climate change is currently affecting U.S. physical and biological systems in significant ways. The consistency of these observed changes in physical and biological systems and the observed significant warming likely cannot be explained entirely due to natural variability or other confounding non-climate factors.

b. Key Projections Based Primarily on Future Scenarios of the Six Greenhouse Gases

²¹ Karl T. *et al.*, (2009).

²² The IPCC Fourth Assessment Report uses specific terminology to convey likelihood and confidence. Likelihood refers to a probability that the statement is correct or that something will occur. “Virtually certain” conveys greater than 99 percent probability of occurrence; “very likely” 90 to 99 percent; “likely” 66 to 90 percent. IPCC assigns confidence levels as to the correctness of a statement. “Very high confidence” conveys at least

“The **attribution** of observed climate change to anthropogenic activities **is based on multiple lines of evidence**.

The **first line of evidence** arises from our basic physical **understanding** of the effects of changing concentrations of greenhouse gases, natural factors, and other human impacts on **the climate system**.

The **second line of evidence** arises from indirect, historical estimates of past climate changes that suggest that the **changes in global surface temperature over the last several decades are unusual**.

The **third line of evidence** arises from the use of computer-based **climate models** to simulate the likely patterns of response of the climate system to different forcing mechanisms (both natural and anthropogenic).”

<Paragraphing, bolding, added>

1. Physical or Theoretical Understanding of Climate

ATTRIBUTION IN THE ENDANGERMENT FINDING THREE LINES OF EVIDENCE

1. Physical or Theoretical Understanding of Climate

No Tropical Hotspot in millions of balloon measurements going back to 1959 or in Satellite measurements going back to 1979.

2. Temperature Records

2. Temperature Records

- Uncorrupted temperature records are explained by natural factors. No basis for thinking temperatures are outside natural variability.

3. Computer Models

3. Computer Models

All Models show the Hot Spot, which does not exist in nature.

Models fail the explicit criteria for their use in detection & attribution. Not fit for making \$\$ Trillion policy decisions.

Could not satisfy HISA Requirements

ATTRIBUTION IN THE ENDANGERMENT FINDING THREE LINES OF EVIDENCE

- All three lines of evidence are invalid and cannot be used to support attribution of observed warming to GHG emissions.

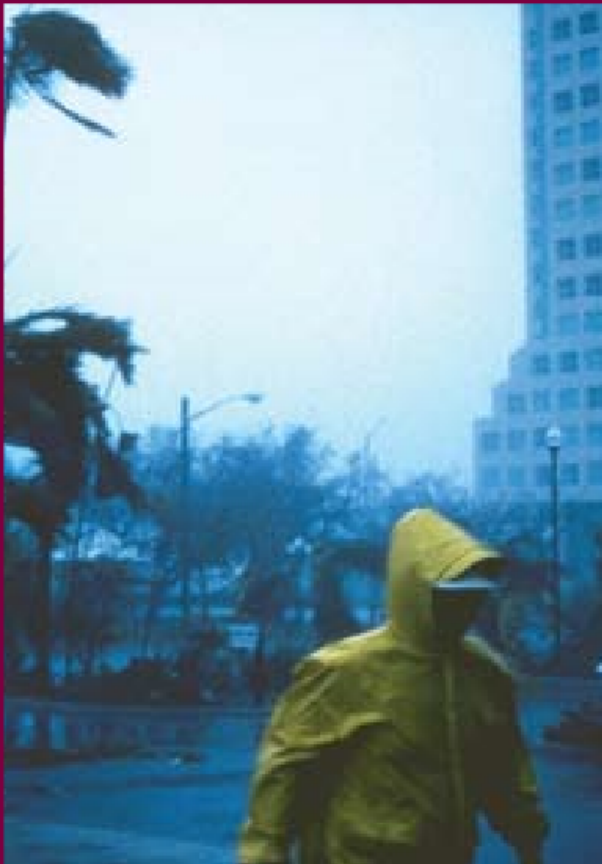
1. Physical or Theoretical Understanding of Climate

ATTRIBUTION IN THE ENDANGERMENT FINDING THREE LINES OF EVIDENCE

1. Physical or Theoretical Understanding of Climate

No Tropical Hotspot in millions of balloon measurements going back to 1959 or in Satellite measurements going back to 1979.

CHAPTER 1



Temperature Trends in the Lower Atmosphere - *Understanding and Reconciling Differences*

Why do temperatures vary vertically (from the surface to the stratosphere) and what do we understand about why they might vary and change over time?

Convening Lead Author: V. Ramaswamy, NOAA

Lead Authors: J.W. Hurrell, NSF NCAR; G.A. Meehl, NSF NCAR

Contributing Authors: A. Phillips, NCAR, Boulder;
B.D. Santer, DOE LLNL; M.D. Schwarzkopf, NOAA;
D.J. Seidel, NOAA; S.C. Sherwood, Yale Univ.;
P.W. Thorne, U.K. Met. Office

from NOAA's Geophysical Fluid Dynamics Laboratory in Princeton, N.J.

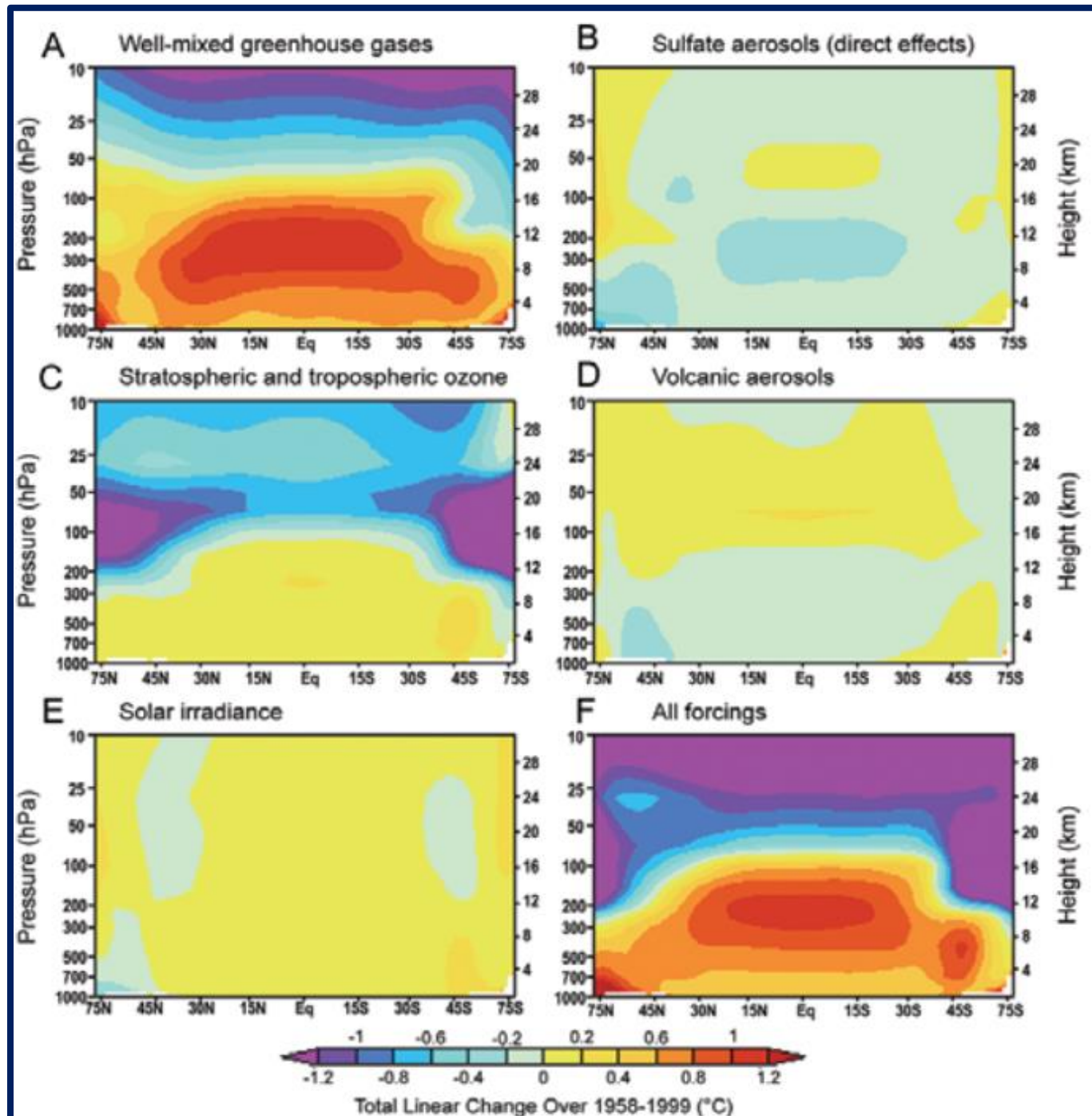


The U.S. Climate Change Science Program

https://www.gfdl.noaa.gov/bibliography/related_files/vr0603.pdf

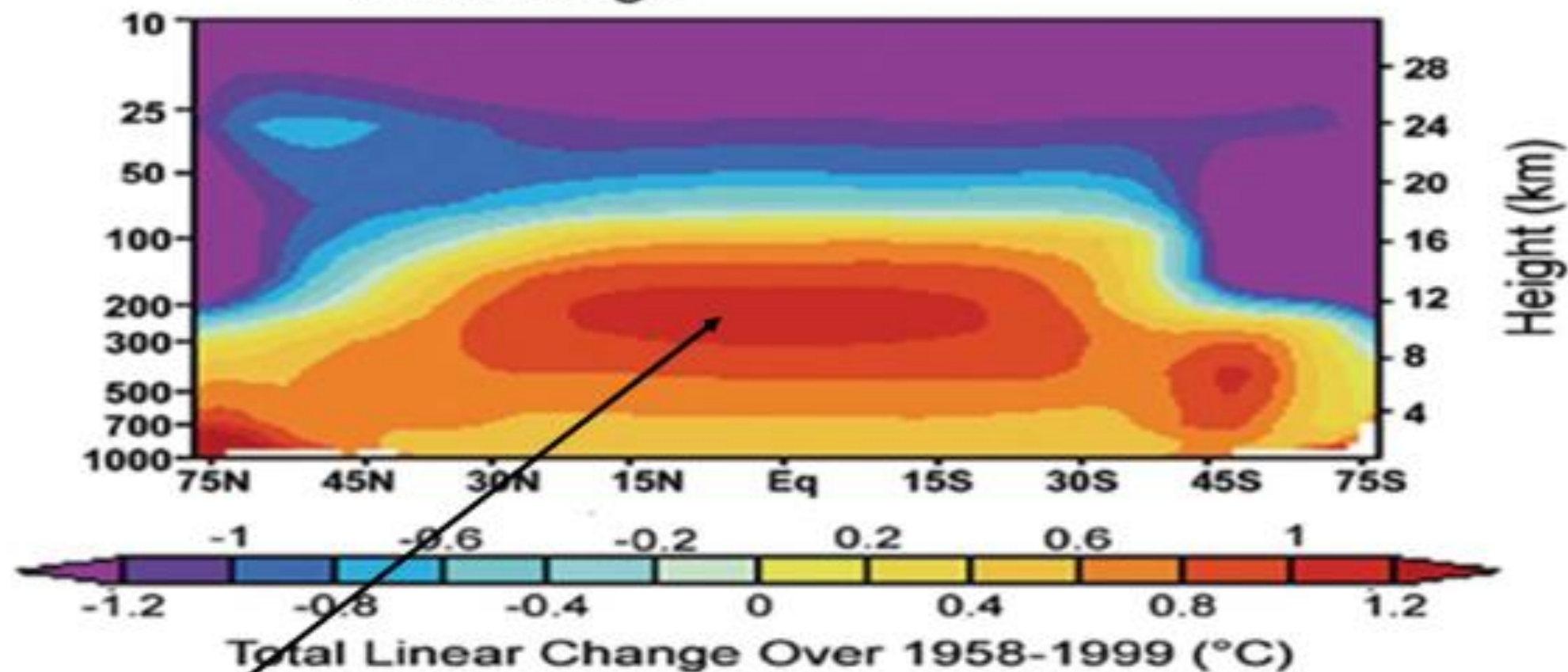
Published by the
Geophysical Fluid Dynamics Laboratory

Figure 1.3.
Simulations of the vertical profile of
temperature change due to various forcings,
and the effect due to all forcings taken together
(after Santer et al., 2000)

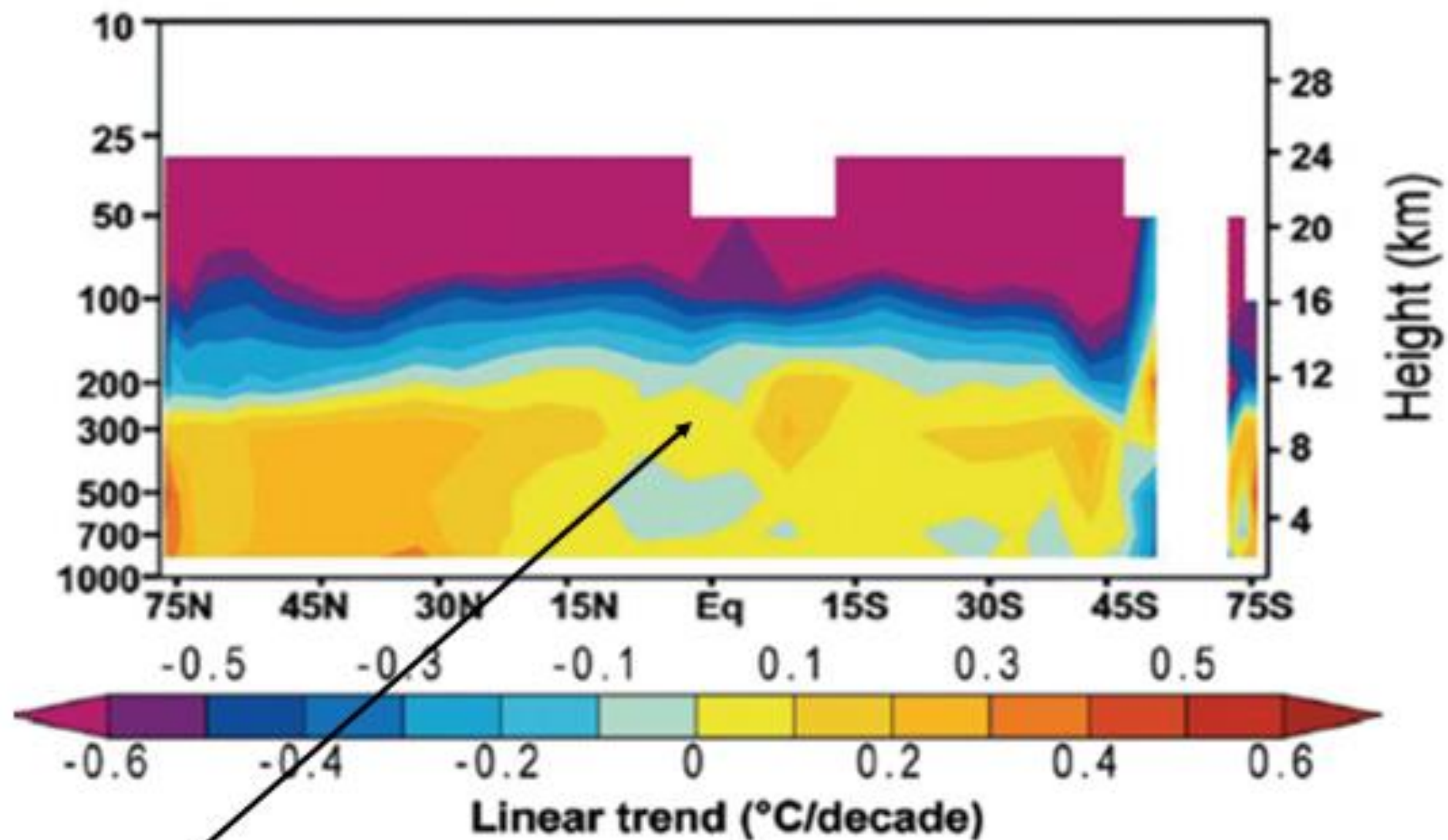


Atmospheric Temperature Change

All forcings



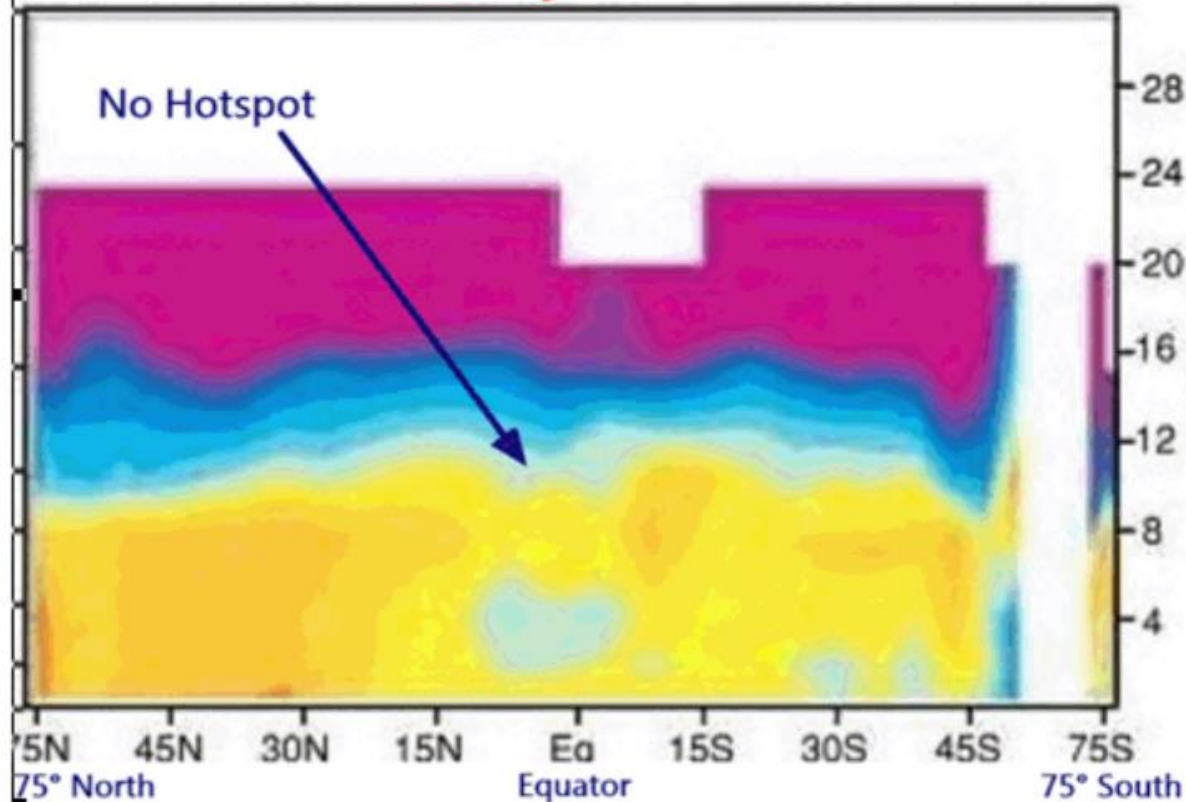
Note the Hot Spot in the Model



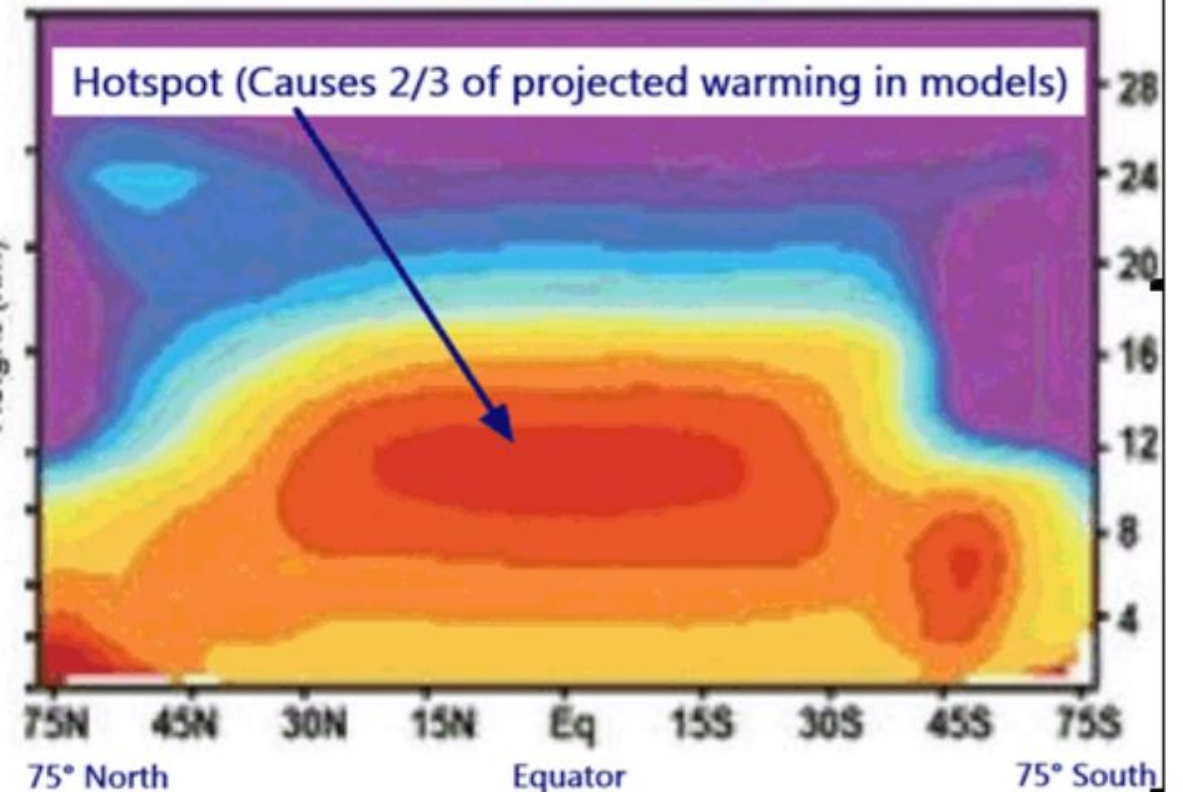
No Hot Spot in the Observed Data

Atmospheric Warming 1979 - 1999

Reality



Climate Models



2. Temperature Records

2. Temperature Records

- Uncorrupted temperature records are explained by natural factors. No basis for thinking temperatures are outside natural variability.

Five references for this section.

On the validity of NASA, NOAA, and Hadley CRU Global Average Surface Temperature Data & the Validity of EPA's CO2 Endangerment Finding"
<https://thsresearch.files.wordpress.com/2017/05/ef-gast-data-research-report-062817.pdf>

Humlum, Ole, <http://www.climate4you.com> http://www.climate4you.com/Text/Climate4you_April_2017.pdf

Graphics from Tony Heller's blog, <https://realclimatescience.com/>

"A Critical Look at Surface Temperature Records," Joe D'Aleo,
<https://thsresearch.files.wordpress.com/2017/05/chap3-published-in-elsevier.pdf>

"Surface Temperature Records: Policy-based Deception?", Joe D'Aleo and Anthony Watts, http://scienceandpublicpolicy.org/images/stories/papers/originals/surface_temp.pdf

On the Validity of NOAA, NASA and Hadley CRU Global Average Surface Temperature Data & The Validity of EPA's CO₂ Endangerment Finding

Abridged Research Report

Report shows that the surface temperature records have been adjusted so much, the records are not valid.

Therefore, the Endangerment Finding which uses these data is not valid.

Notes:

The acronym “GAST” is shorthand for “Global Average Surface Temperature.”

Unadjusted Northern Hemisphere surface temperatures contain natural cycles.

<likely artifacts of the 60-year cycles we often mention>

The adjustments destroyed this cyclicity, invalidating the adjusted surface temperature records.

Quotes are edited for display clarity

<https://thsresearch.files.wordpress.com/2017/05/ef-gast-data-research-report-062817.pdf>

“...important surface data adjustment issues are identified and past changes in the previously reported historical data are quantified.

...each new version of GAST has nearly always exhibited a steeper warming linear trend over its entire history.

.. accomplished by systematically removing the previously existing cyclical temperature pattern.

...true for all three entities providing GAST data measurement:
NOAA, NASA and Hadley CRU.”

Temperature Record
containing natural
cycles

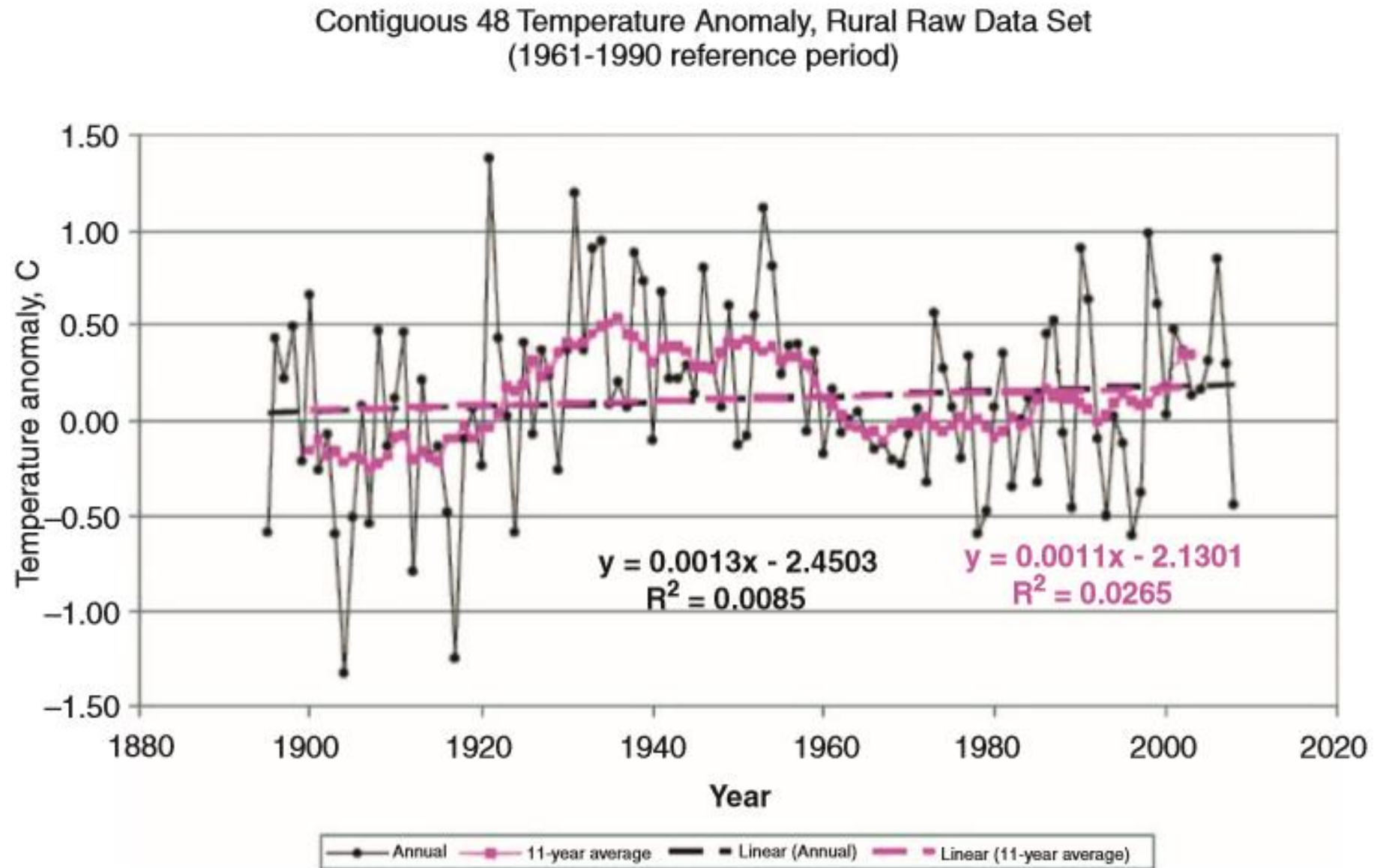


FIGURE 28 Edward long analysis of rural raw stations for the lower 48 states, USHCN version 2. Note the very small trend 0.12 °C/century in this data set and at the significant peak in the 1930s.

In this report, the focus is on the changes that the three entities actually made to their previously reported historical data.

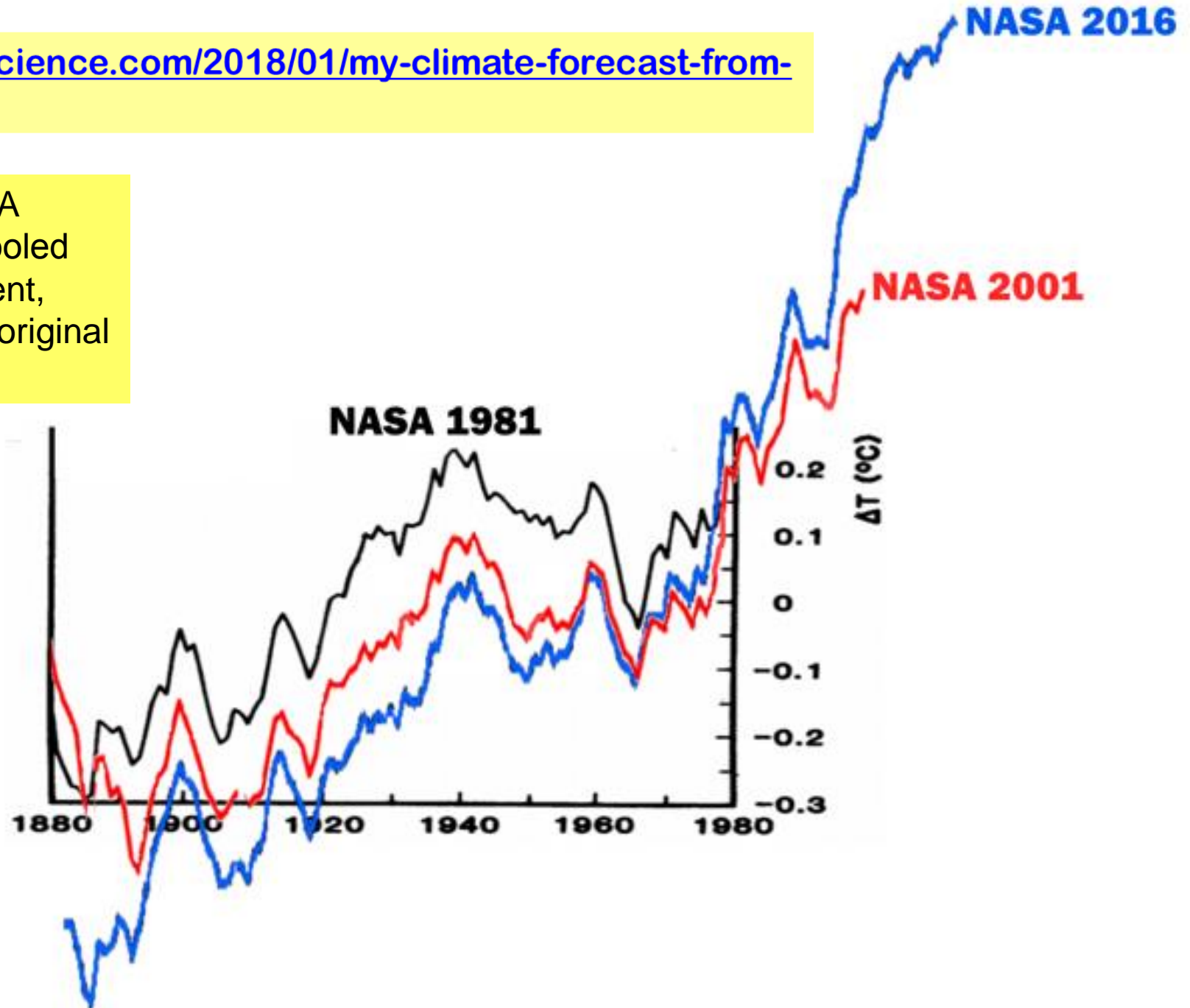
The notion that some adjustments to historical data may have been needed is not challenged here.

The basic question addressed is whether or not the current depictions of the trend cycle patterns of GAST data by NOAA, NASA and Hadley CRU are valid in light of other highly credible counter indications.

<https://realclimatescience.com/2018/01/my-climate-forecast-from-three-years-ago/>

Over thirty-five years, NASA GISS' adjustments have cooled the past, warmed the present, and destroyed most of the original cyclicity.

Adjustments “always” cool the past warm the present



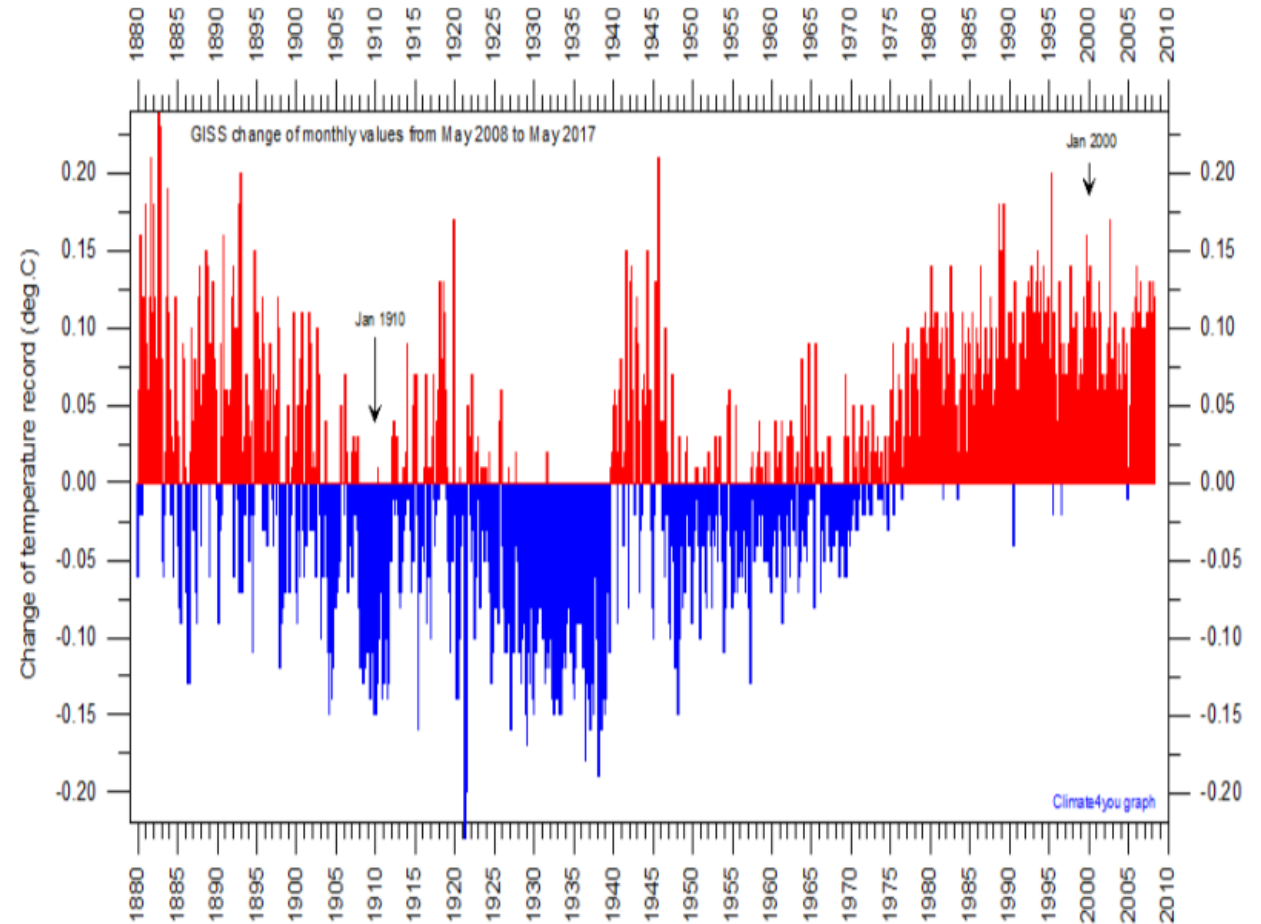
Changes made to historical data between 17 May 2008 and 15 May 2017.

Changes made by NASA clearly removed the bulk of cyclical pattern from 1900 to 1980 in the original 1980 depiction of GAST (shown in blue) in figure previous.

Figure IV-2

NASA GISS adjustments
17 May 2008 to
15 May 2017

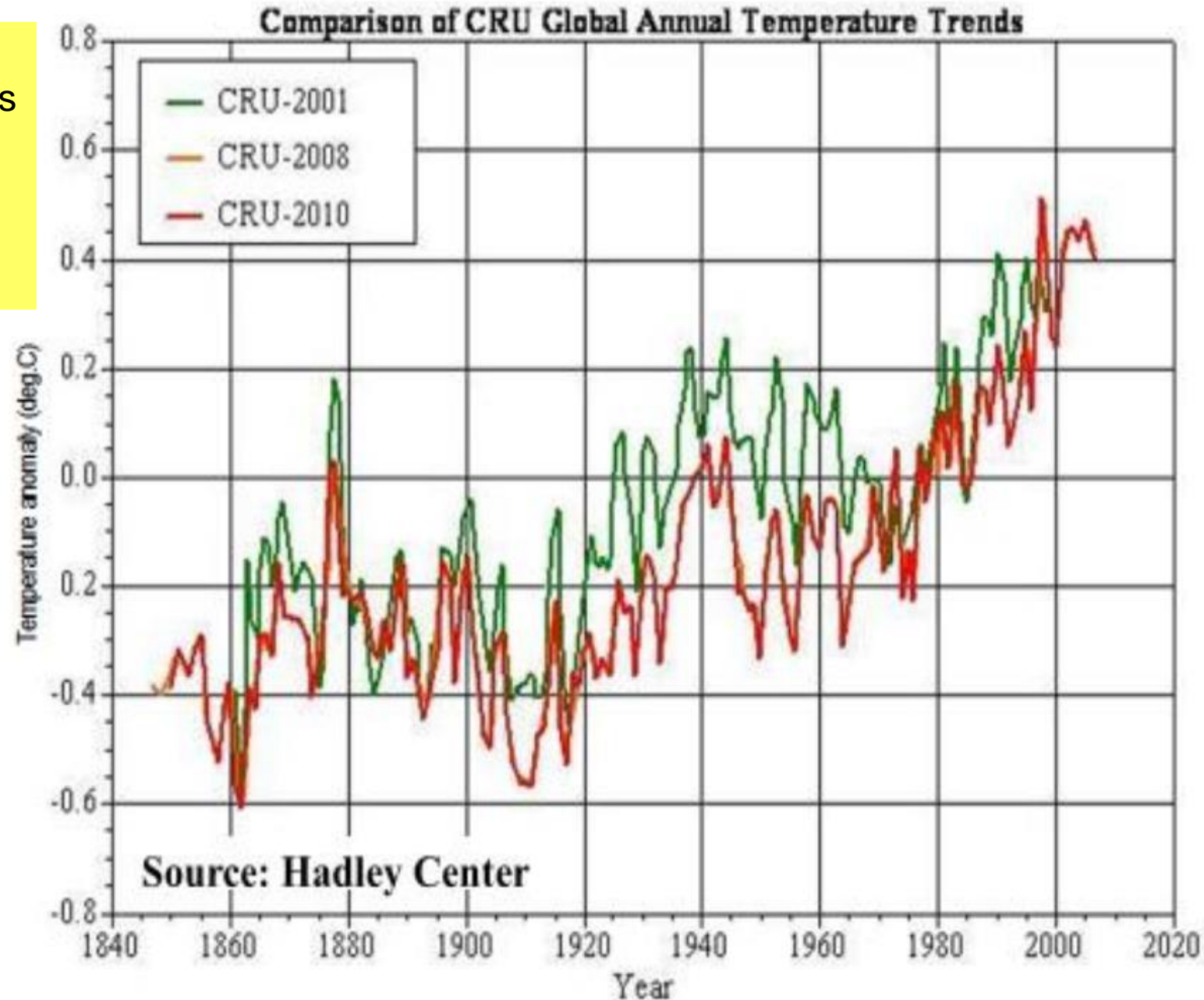
Adjustments “always”
cool the past
warm the present



Maturity diagram showing net change since 17 May 2008 in the global monthly surface air temperature record prepared by the Goddard Institute for Space Studies (GISS), at Columbia University, New York City. This temperature estimate extends back to January 1880. Last diagram update 15 May 2017.

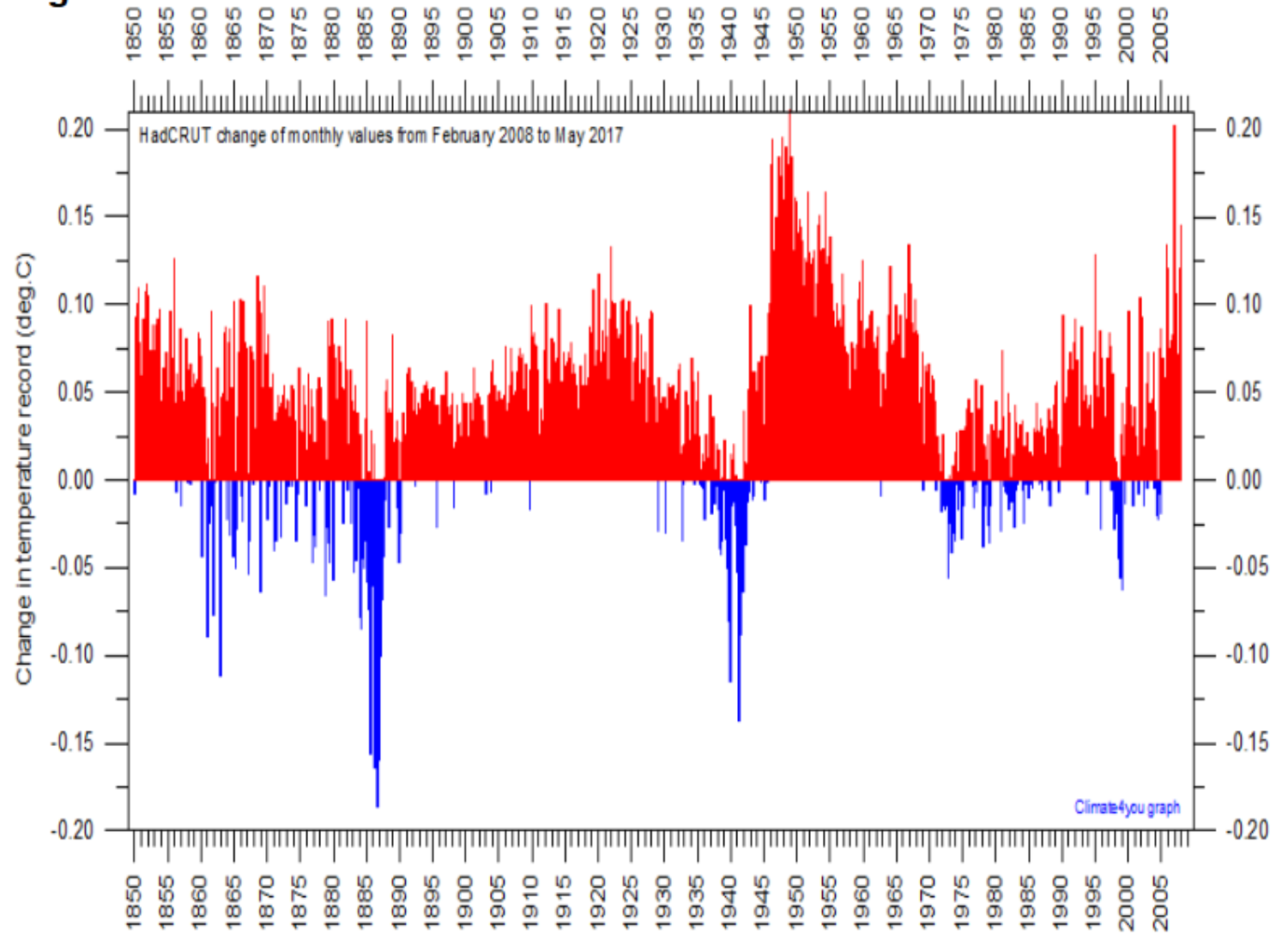
Figure IV-3 IV. ADJUSTMENTS TO HISTORICAL GAST DATA

Temperature Adjustments
made by the Climate
Research Unit,
University of East Anglia



University of East Anglia
adjustments
from
Feb 2008 to May 2017

Figure IV-4

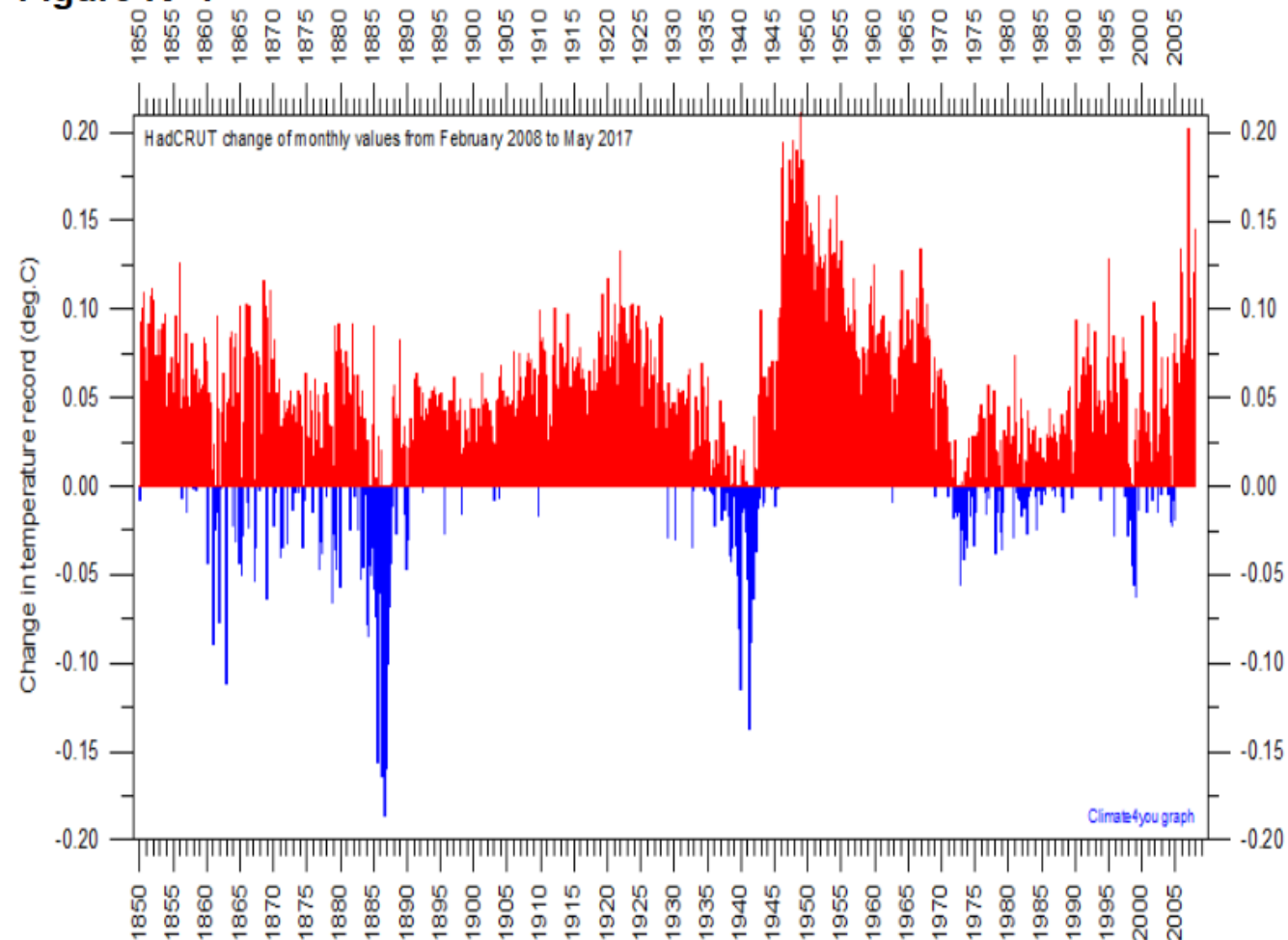


Maturity diagram showing net change since 25 February 2008 in the global monthly surface air temperature record prepared by the [Hadley Centre for Climate Prediction and Research](#) and the [University of East Anglia's Climatic Research Unit \(CRU\)](#), UK. This temperature estimate extends back to January 1850. Last diagram update: 3 May 2017.

Vast bulk of the changes raise temperatures, emphasizing the 1950s and 60s, as compared to the February 2008 reported Hadley GAST data

University of East Anglia
adjustments
from
Feb 2008 to May 2017

Figure IV-4



Maturity diagram showing net change since 25 February 2008 in the global monthly surface air temperature record prepared by the Hadley Centre for Climate Prediction and Research and the University of East Anglia's Climatic Research Unit (CRU), UK. This temperature estimate extends back to January 1850. Last diagram update: 3 May 2017.

V. GAST DATA VALIDATION

Clearly the historical GAST data adjustments that have been made have been dramatic and invariably have been favorable to Climate Alarmists' views regarding Global Warming. The question now is whether the latest versions of GAST data by NOAA, NASA and Hadley are credible for policy analysis, or even climate modeling, purposes.

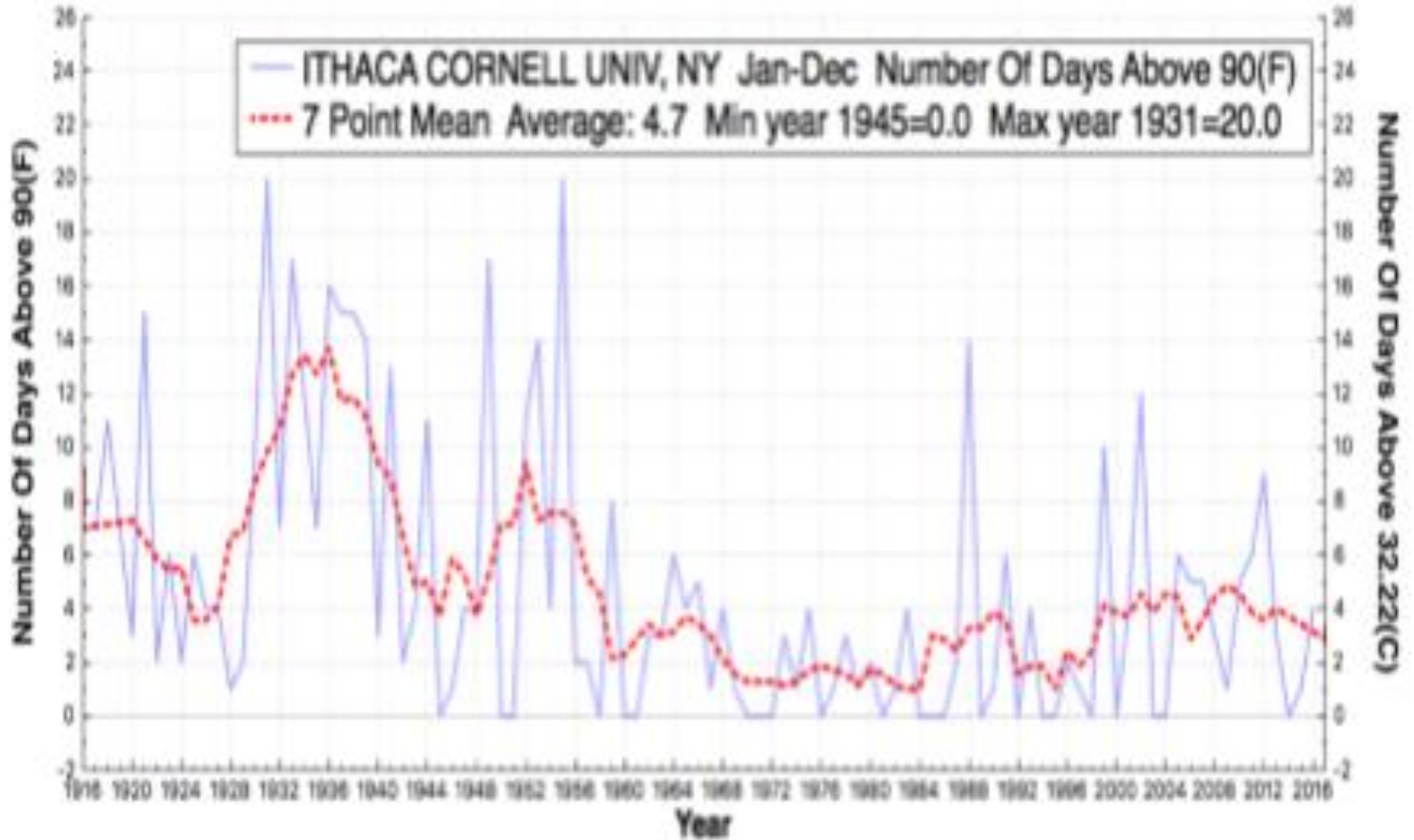
As has been clearly shown in Section IV above, the consequences of the changes made to previously reported historical versions of GAST data have been to virtually eliminate the previously existing cyclical nature of their previously reported trend cycle patterns. The notion that there was a 1930 and 40s warm period followed by a mid-1970 cool period now gets lost in the noise so to speak. In this section, particularly credible country-specific data will be used to test the validity of the now almost nonexistence of this cyclical pattern in the current versions of GAST².

Clearly, if the historical data adjustments that were made to the GAST data inappropriately removed this cyclical pattern, then all three of the current versions of GAST must be considered invalid.

Beginning with the U.S., a number of charts showing the aforementioned cyclical pattern in available U.S. city data is immediately informative. See Figures V-1 to V-4 and note the 1930s and 40s warming and 1970s cooling cyclical pattern in literally all of them.

Natural cycles at Cornell

Figures V -1



Source: NERCC

Figure V-2

Natural cycles at Chicago

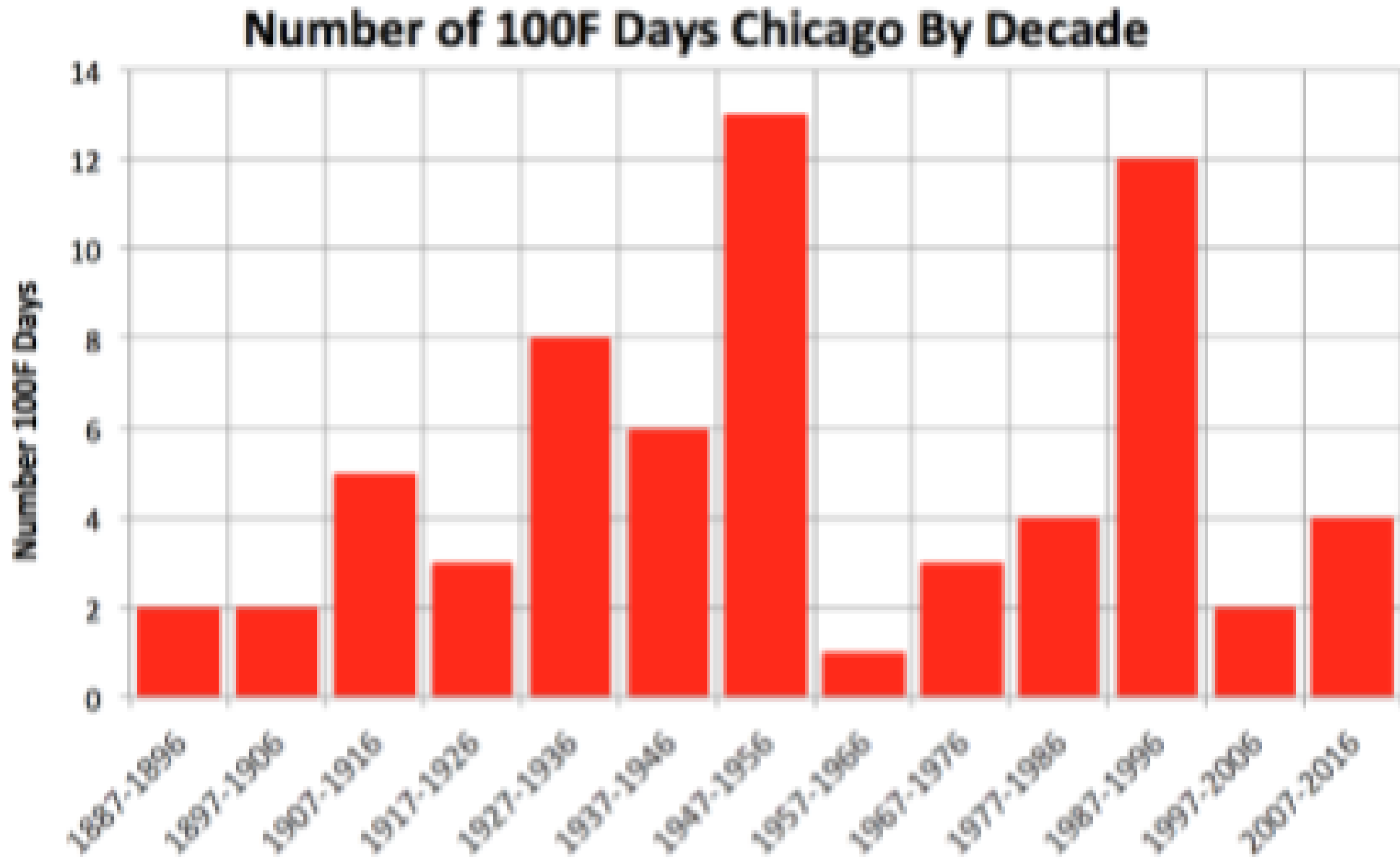
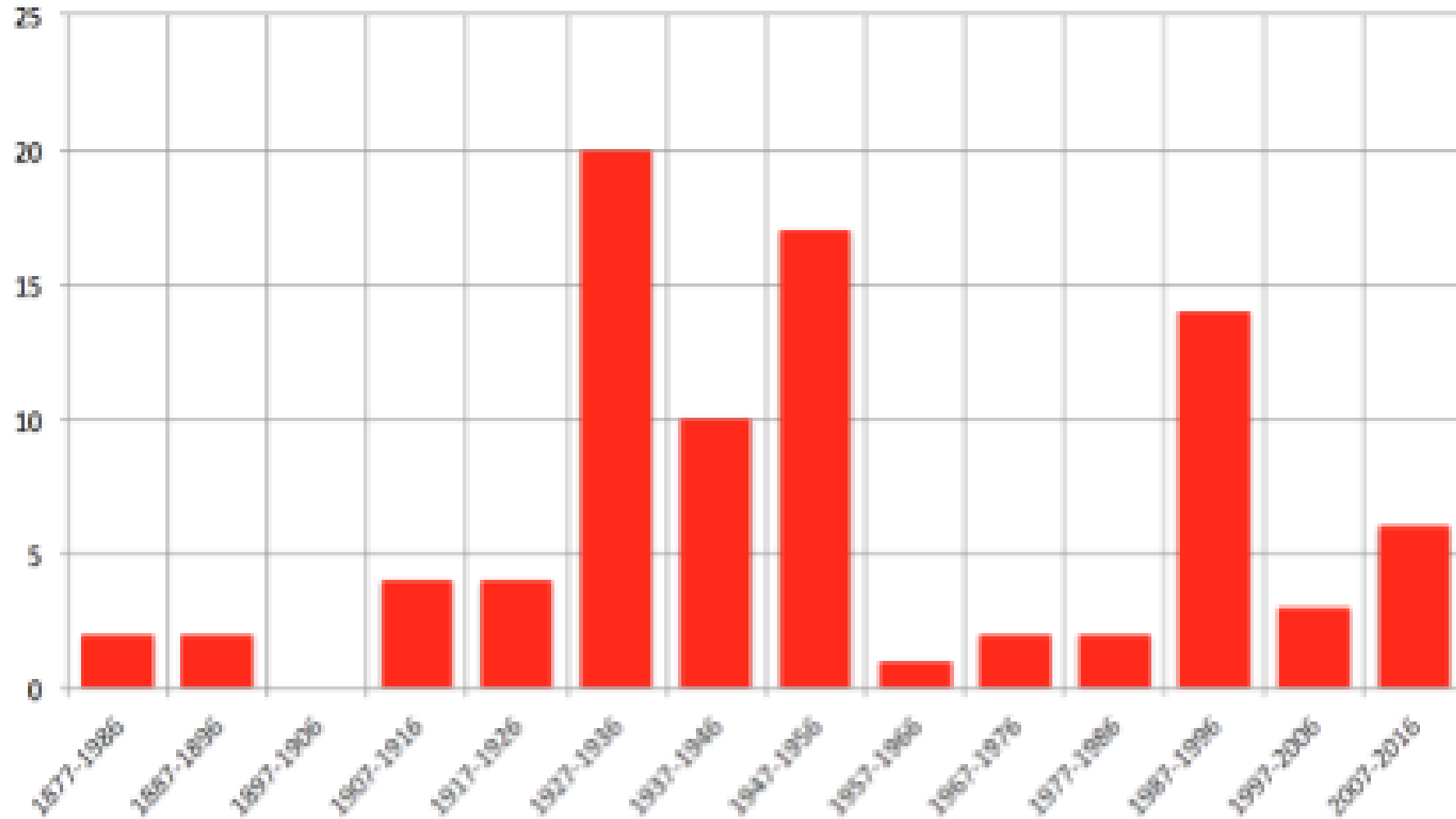


Figure V-3

Natural cycles at Detroit

Number of Summer Daily Record Highs By Decade in Detroit

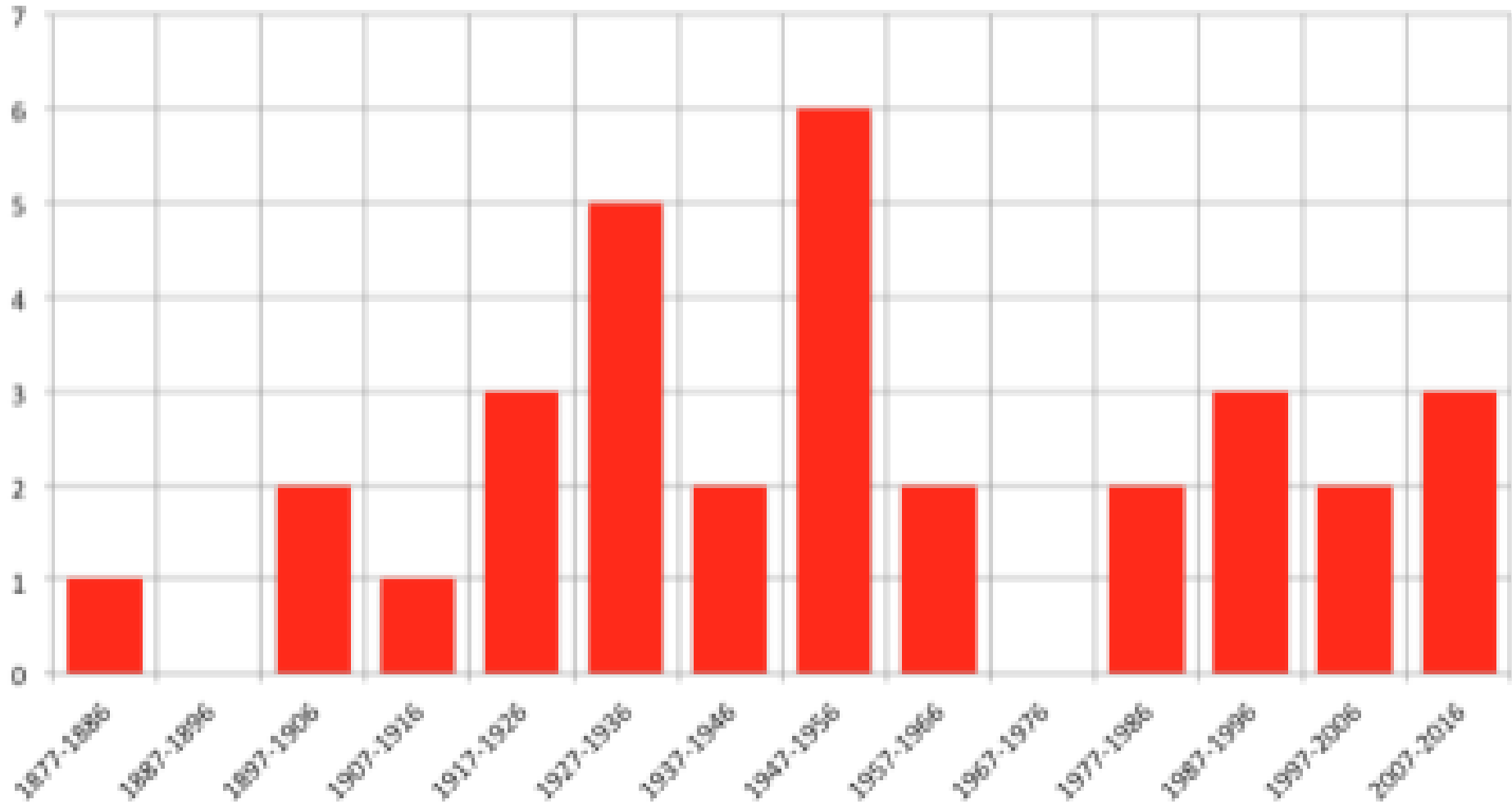


Source: NOAA NWS

Figure V-4

Natural cycles at Central Park, Manhattan, NYC

Number of 100F Days By Decade in NYC Central Park

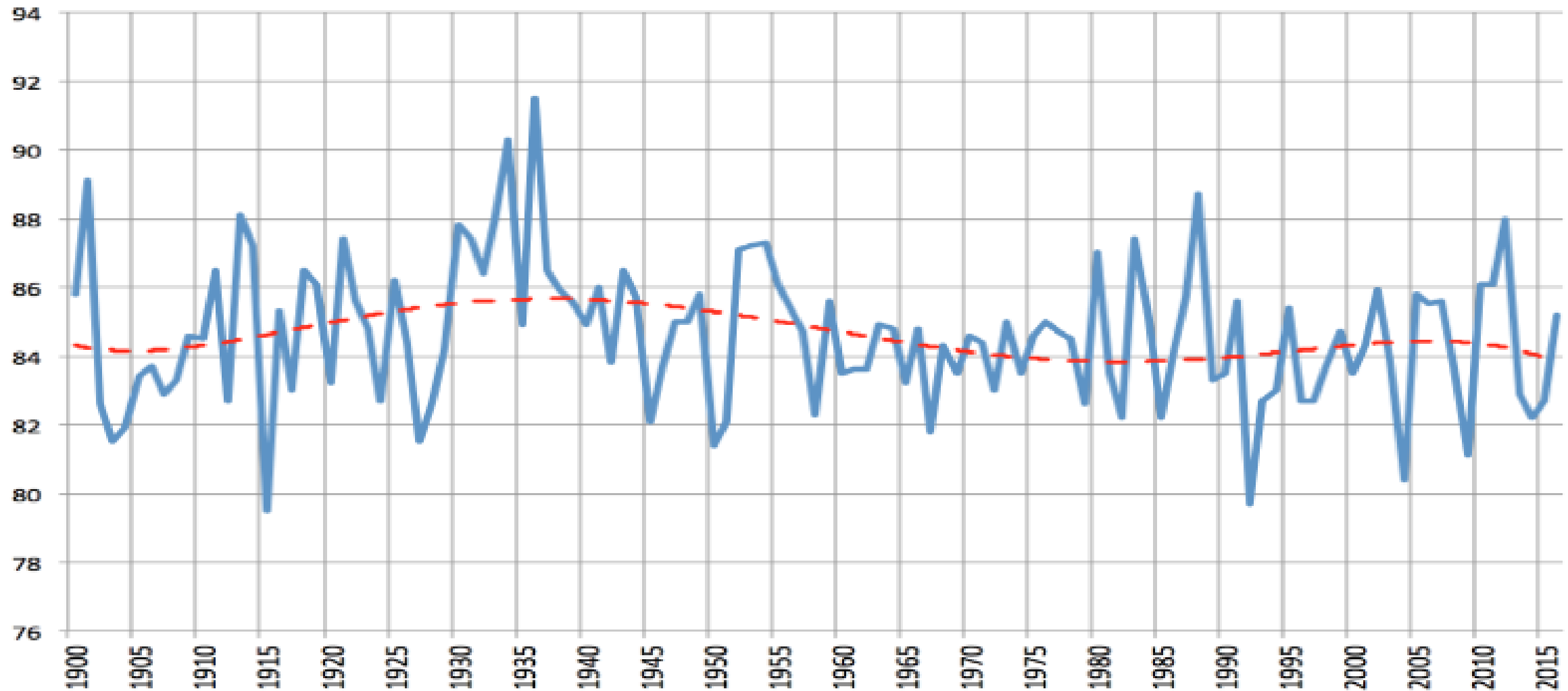


Source: NOAA NWS

Natural cycles in the USA's Corn and Bean Belt

Figure V-7

Corn and Bean Belt Average Summer Max Temperature (F)



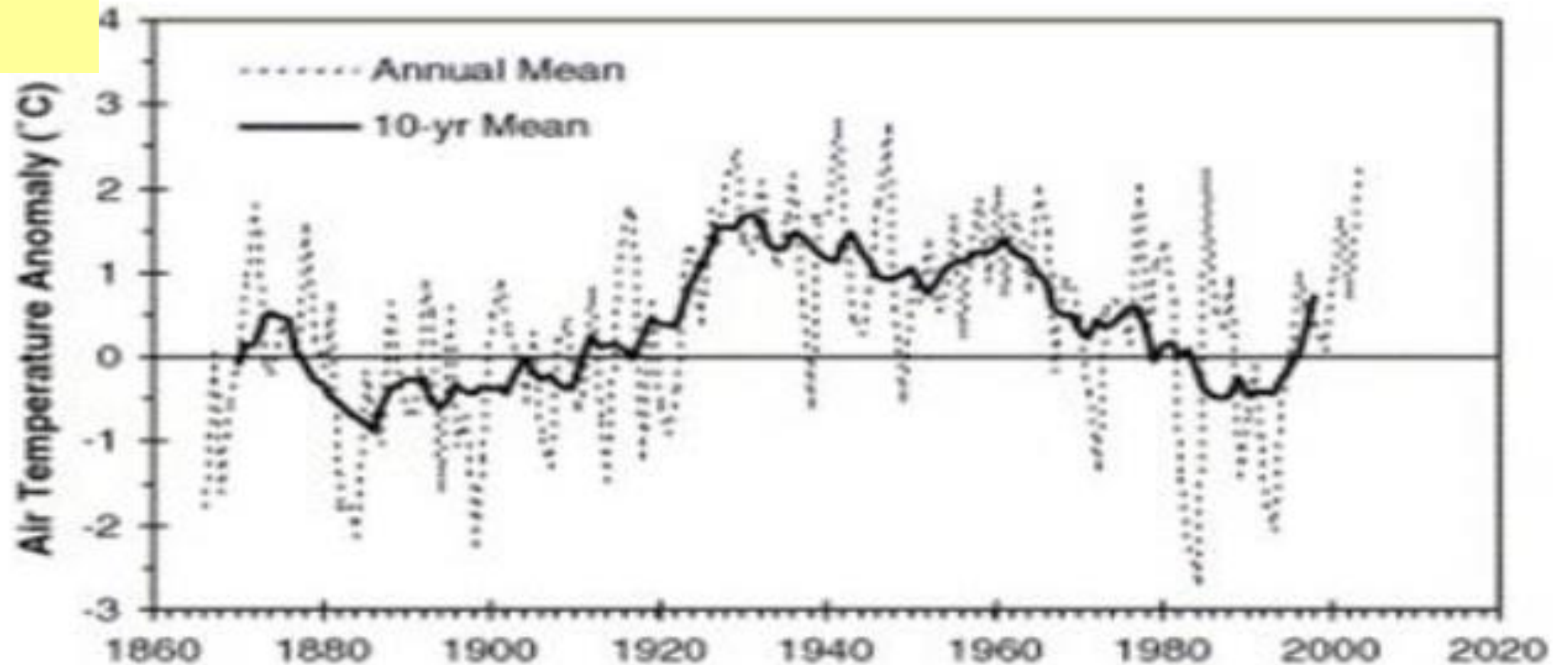
Source: NOAA Climate at a Glance

Figures V-12

Natural cycles at Nuuk, Greenland

The annual and 10-year running mean of the air temperatures at Nuuk in West Greenland.

Temperature Record
containing natural
cycles

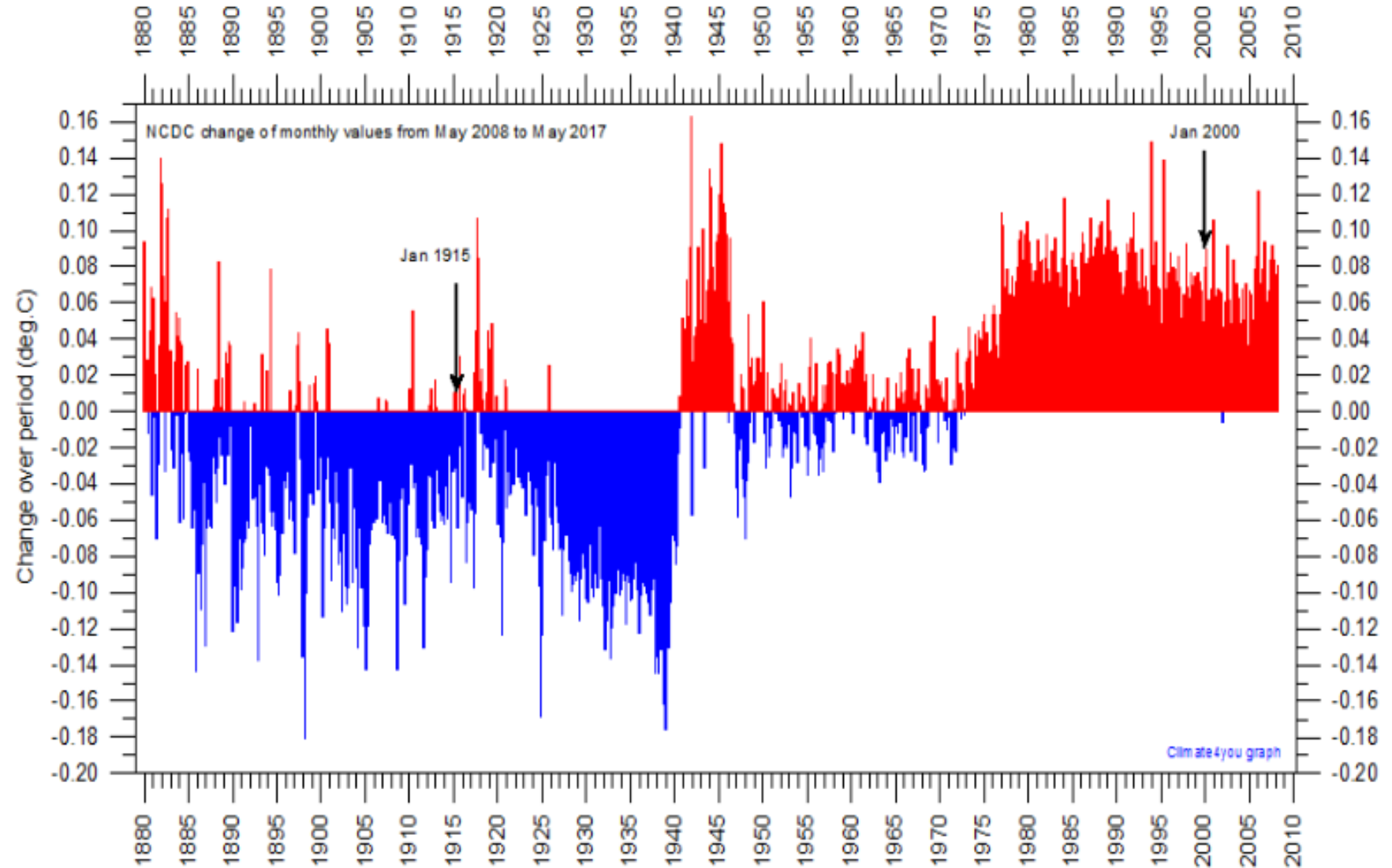


In Figure IV-6 below, it can be seen that NOAA's historical data changes made between May 17, 2008 and May 18, 2017 served to rotate the GAST trend so as to be more steeply upward sloped. In fact, to quote from the Climate4you author of the graph: ***"The net result of the adjustments made are becoming substantial, and adjustments since May 2006 occasionally exceeds 0.1°C. Before 1945 global temperatures are generally changed toward lower values, and toward higher values after 1945, resulting in a more pronounced 20th century warming (about 0.15°C) compared to the NCDC temperature record published in May 2008. Last diagram update: 18 May 2017."***

NOAA's National
Climatic Data Center
adjustments

Adjustments “always”
cool the past
warm the present

Figure IV-6

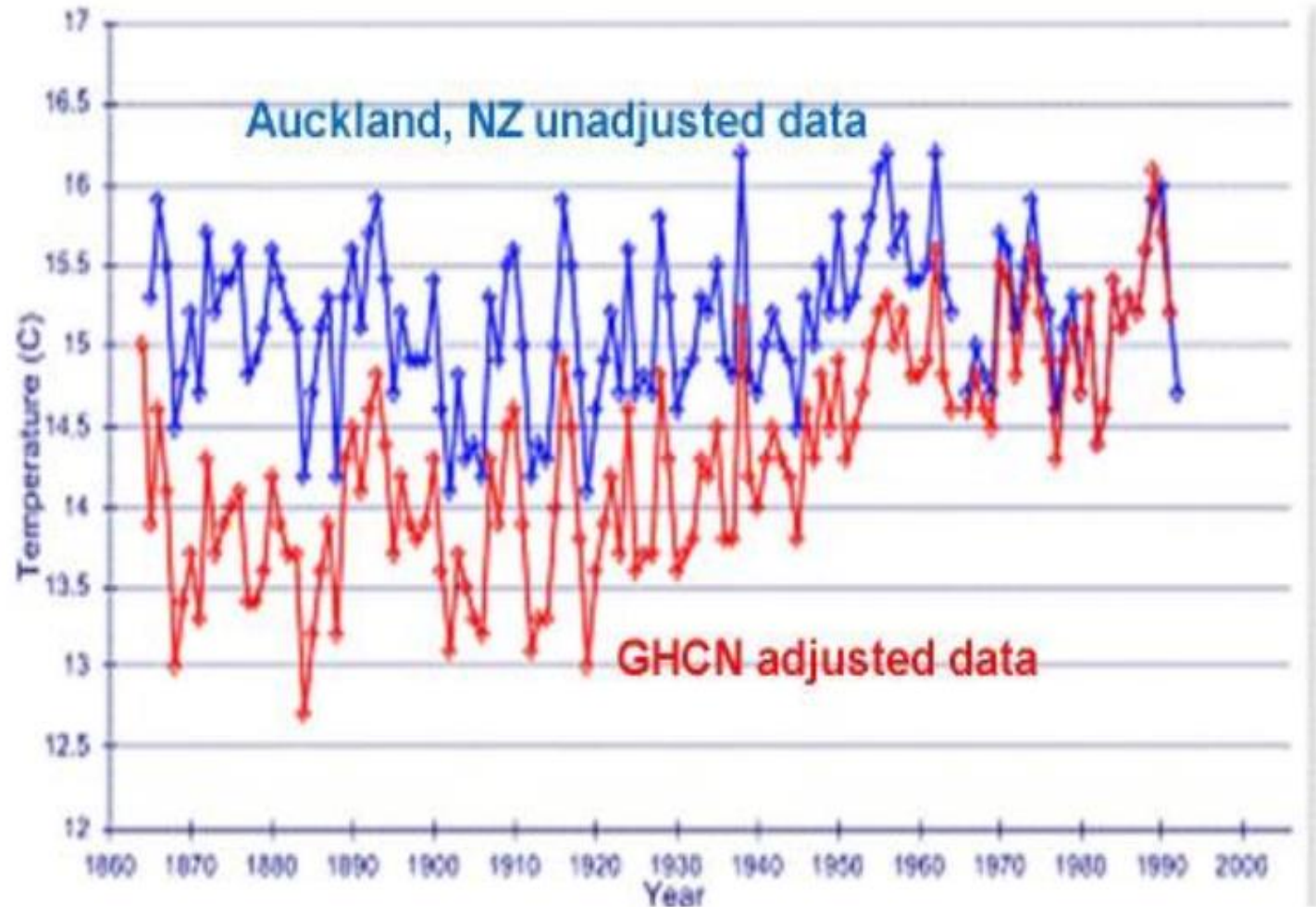


Maturity diagram showing net change since 17 May 2008 in the global monthly surface air temperature record prepared by the [National Climatic Data Center](#) (NCDC), USA.

Adjustments done at the
Global Historical Climatic
Network, GHCN

Figure V-19

Auckland, New Zealand



<http://www.climate4you.com/>

Climate4you

Home

Air Temperatures

Global Temperature

Oceans

Polar Temperature

Polar Precipitation

Air Pressure

Greenhouse Gasses

Climate in Europe

Climate + Clouds

Climate + Volcanoes

Climate + Landscape

Climate + History

Urban Heat Island

Sea Ice

Snow Cover

Permafrost

Sun

Data smoothing

Key updates:

Temp UAH MSU

Temp RSS MSU

Temp HadCRUT

Temp NCDC

Temp GISS

ALLinONE

Equator Temperature

Arctic Temperature

Antarctic Temperature

Oceanic heat content

CO₂ and Temperature

Temperature and CO₂

[Cyclic temperature variation](#)

[Monthly new sletters](#)

[The BIG picture](#)

Getting things into perspective: [The BIG picture](#)

Surface temperatures ([GISS](#)) for the YEAR 2017 compared to last 10 years: [72N-60S](#) [Arctic](#) [Antarctic](#)

Surface temperatures ([GISS](#)) for FEBRUARY 2018 compared to last 10 years: [72N-60S](#) [Arctic](#) [Antarctic](#)

Latest global monthly temperature estimate: [UAH](#) [RSS](#) [HadCRUT](#) [NCDC](#) [GISS](#)

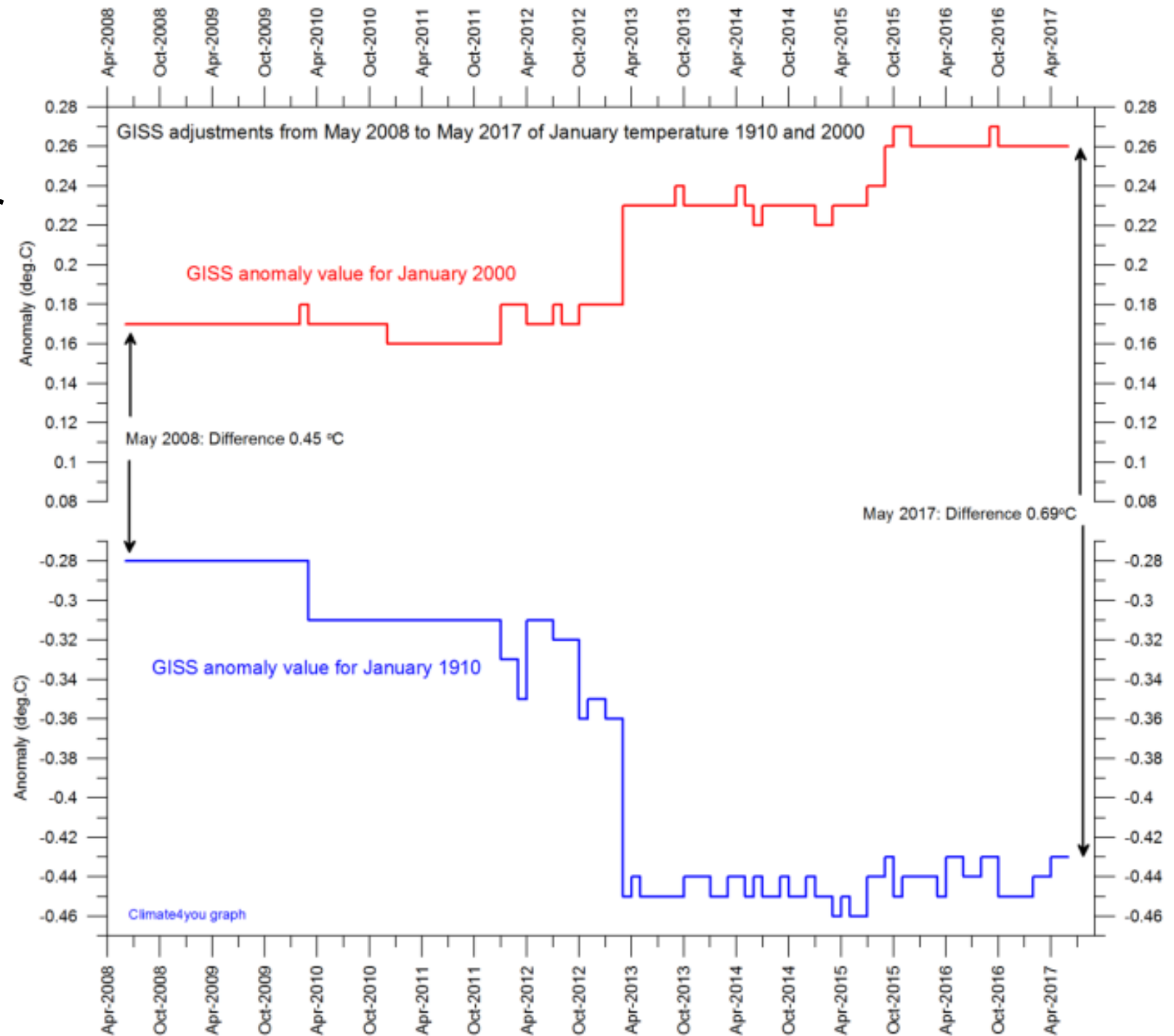
Change over time of global monthly temperature estimates: [UAH](#) [RSS](#) [HadCRUT](#) [NCDC](#) [GISS](#)

2000 got warmer

Adjustments made
over time by

NASA GISS

1910 got colder



2000 got warmer

Adjustments made over time by
NASA GISS

1910 got colder — 8

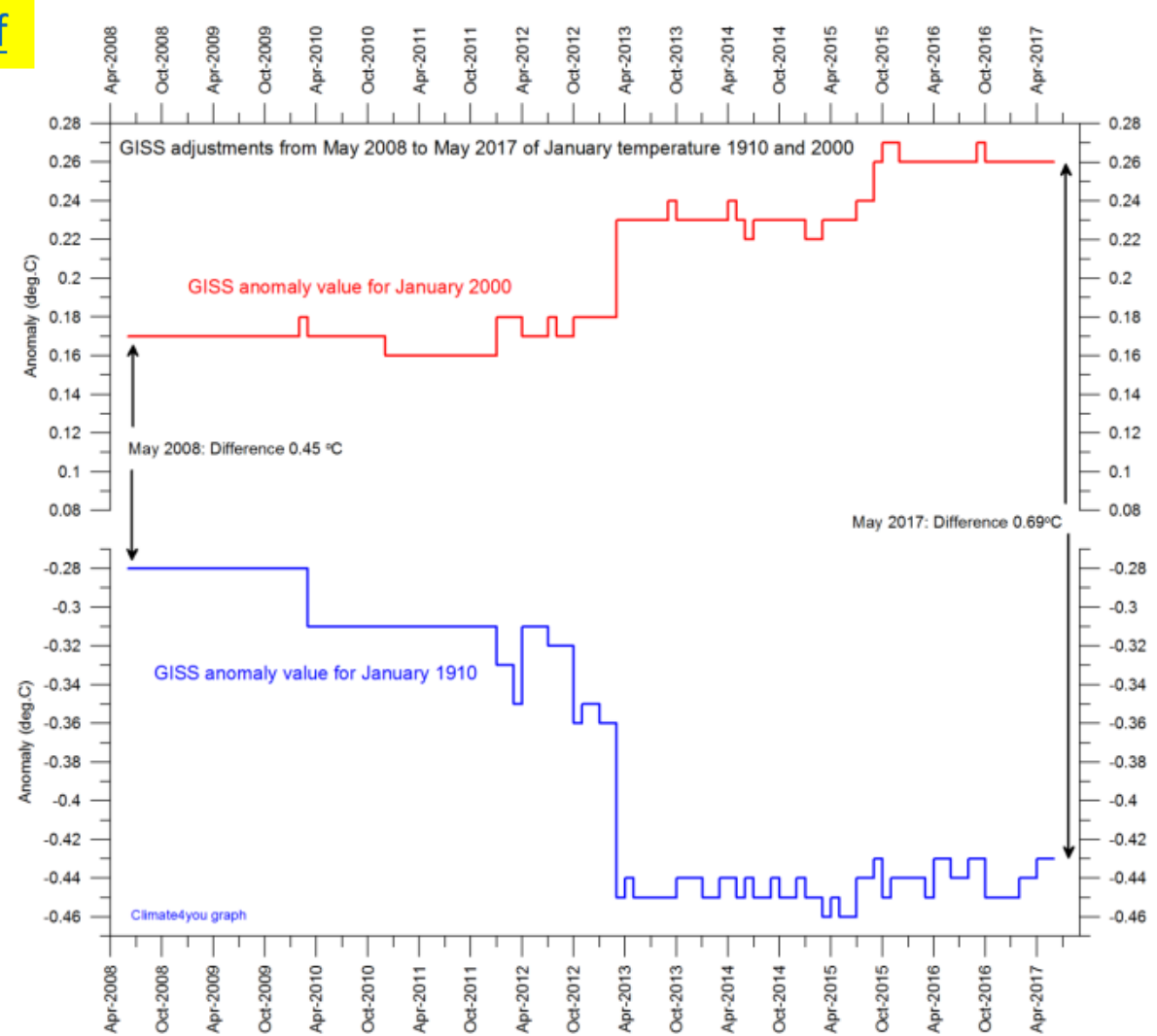


Diagram showing the adjustment made since May 2008 by the [Goddard Institute for Space Studies](#) (GISS), USA, in anomaly values for the months January 1910 and January 2000.

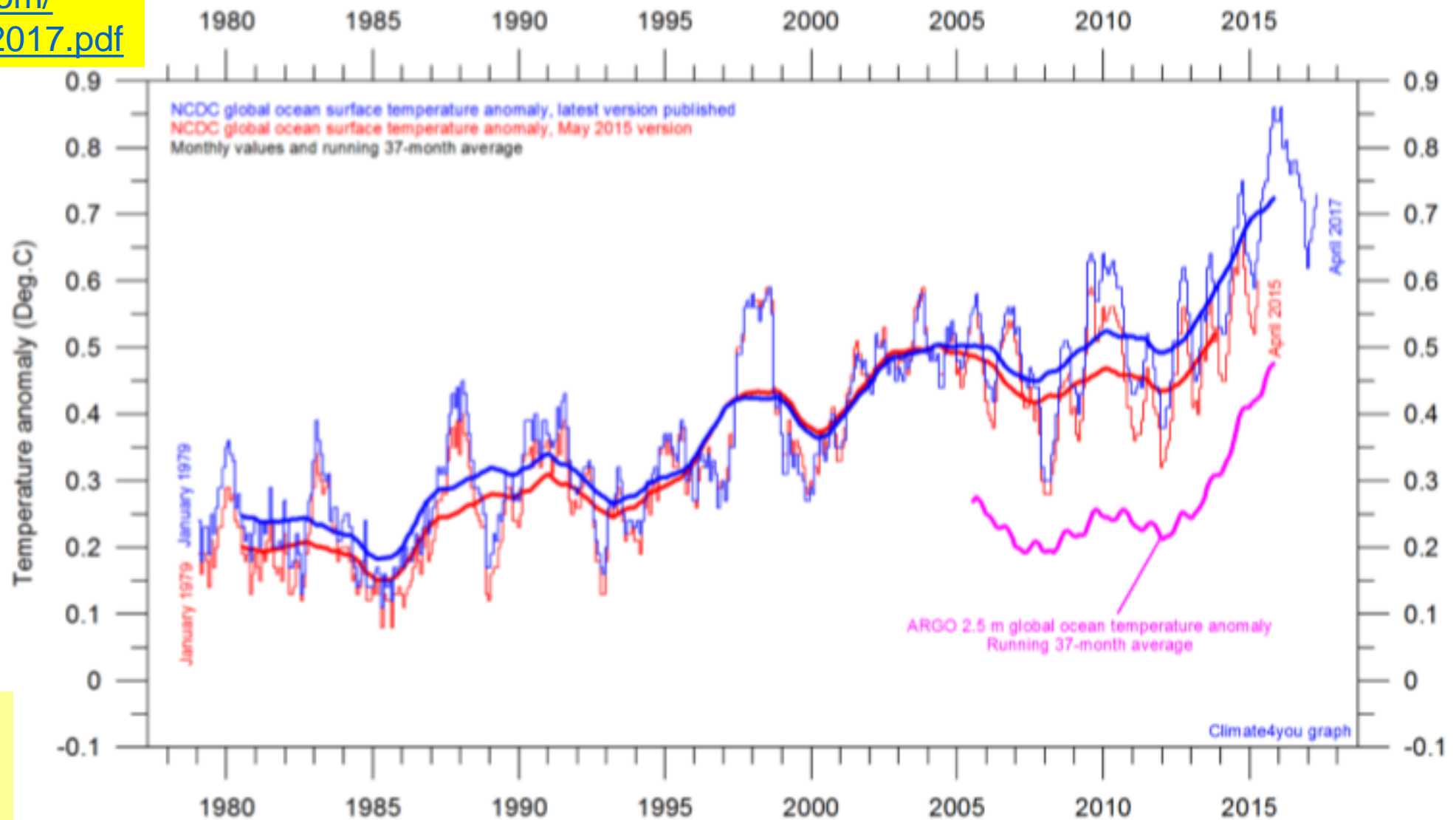
Note: The administrative upsurge of the temperature increase from January 1915 to January 2000 has grown from 0.45 (reported May 2008) to 0.69C (reported May 2017). This represents an about 53% administrative temperature increase over this period, meaning that more than half of the reported (by GISS) global temperature increase from January 1910 to January 2000 is due to administrative changes of the original data since May 2008.

NOAA's National Climatic Data Center Adjustments.

NCDC SSTs were adjusted to ignore buoys and floats and use data from ships contaminated by engine heat.

Tom Karl's data can never be replicated.

Computer died.
Software was not "RCS-compliant."



June 18, 2015: NCDC has introduced many large administrative changes to their sea surface temperature record. Result produces a record giving the impression of a continuous temperature increase into the 21st century. Oceans cover 71% of the entire surface of planet Earth, effect of this administrative change is clearly seen in NCDC's record for global surface air temperature.

Next section contains elements from two reports

“A Critical Look at Surface Temperature Records,” by Joe D’Aleo

<https://thsresearch.files.wordpress.com/2017/05/chap3-published-in-elsevier.pdf>

and

“Surface Temperature Records: Policy-Driven Deception,” by Joe D’Aleo and Anthony Watts

http://scienceandpublicpolicy.org/images/stories/papers/originals/surface_temp.pdf

Chapter 3

A Critical Look at Surface Temperature Records

Joseph D'Aleo

CCM, AMS Fellow, 18 Glen Drive, Hudson, NH 03051, USA

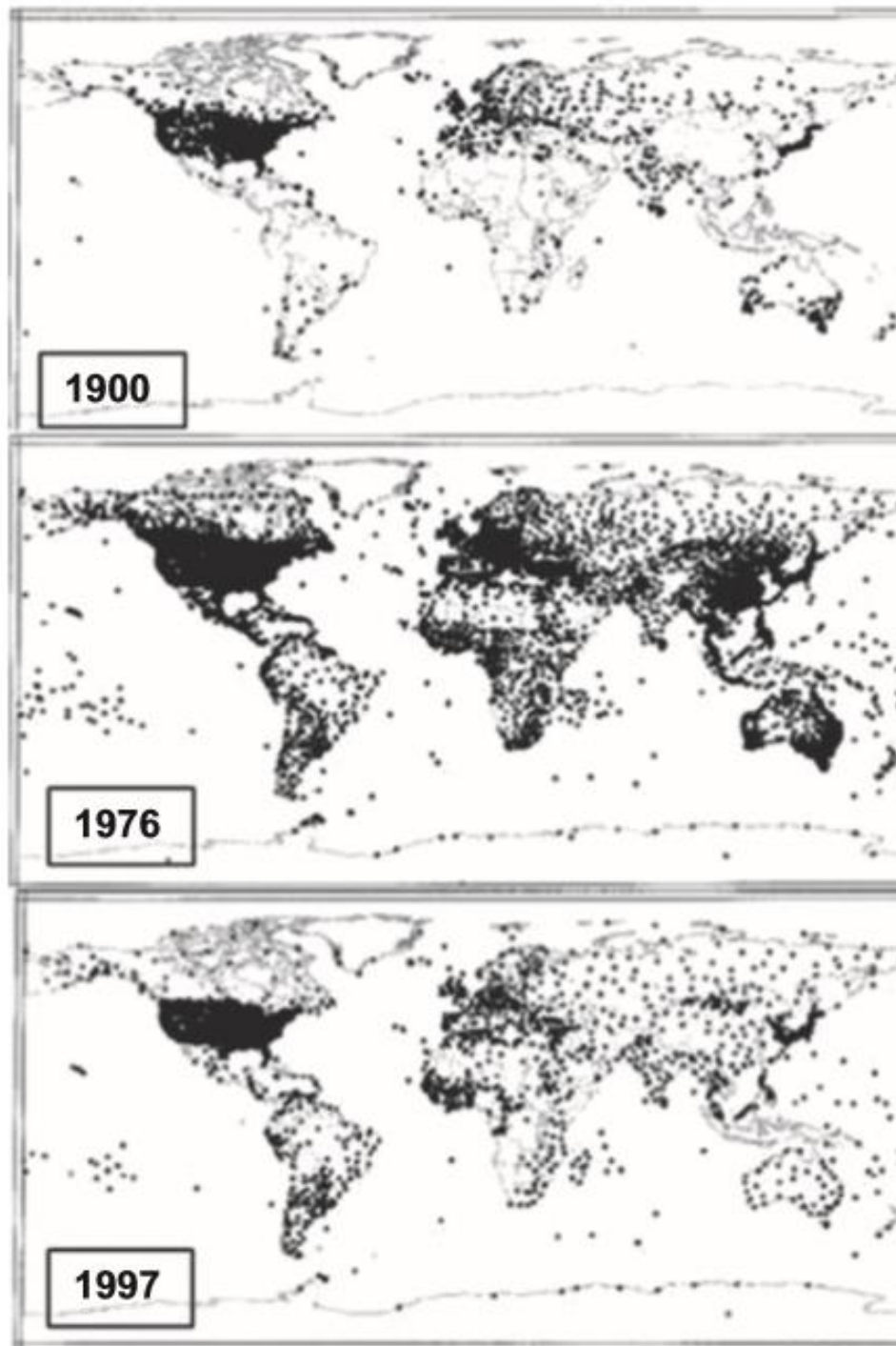
SURFACE TEMPERATURE RECORDS: POLICY-DRIVEN DECEPTION?

by Joseph D'Aleo and Anthony Watts



<https://thsresearch.files.wordpress.com/2017/05/chap3-published-in-elsevier.pdf>

FIGURE 4 Stations in 1900, 1976, and 1997 used in the global GHCN database (sources: Peterson and Vose NCDC, 1997).



Global Climate
Stations GHCN

*(Peterson and
Vose, NCDC)*

<https://thsresearch.files.wordpress.com/2017/05/chap3-published-in-elsevier.pdf>

What happens to Global surface temperature when the Soviet Union collapses and closes hundreds of research Stations in Siberia?

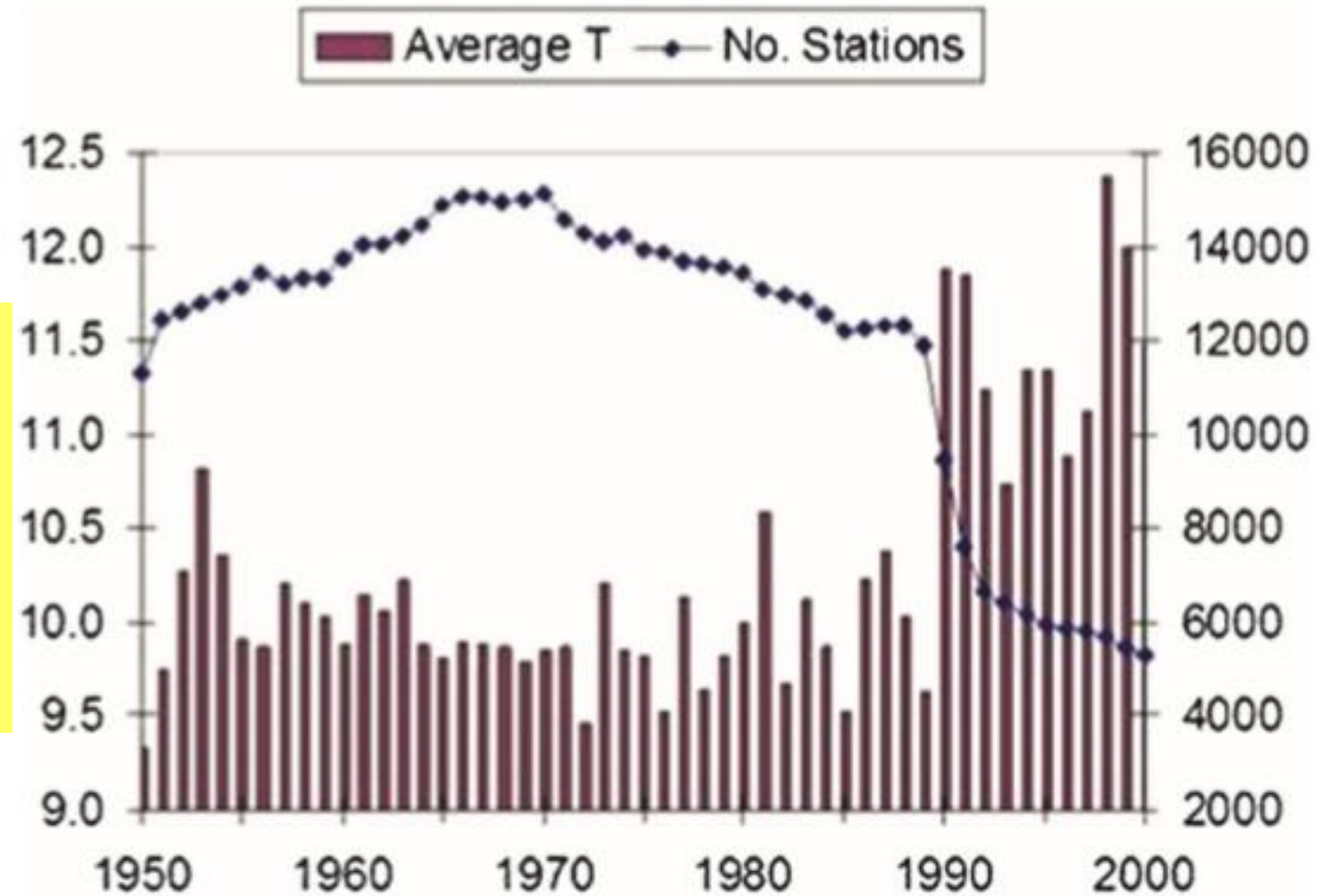
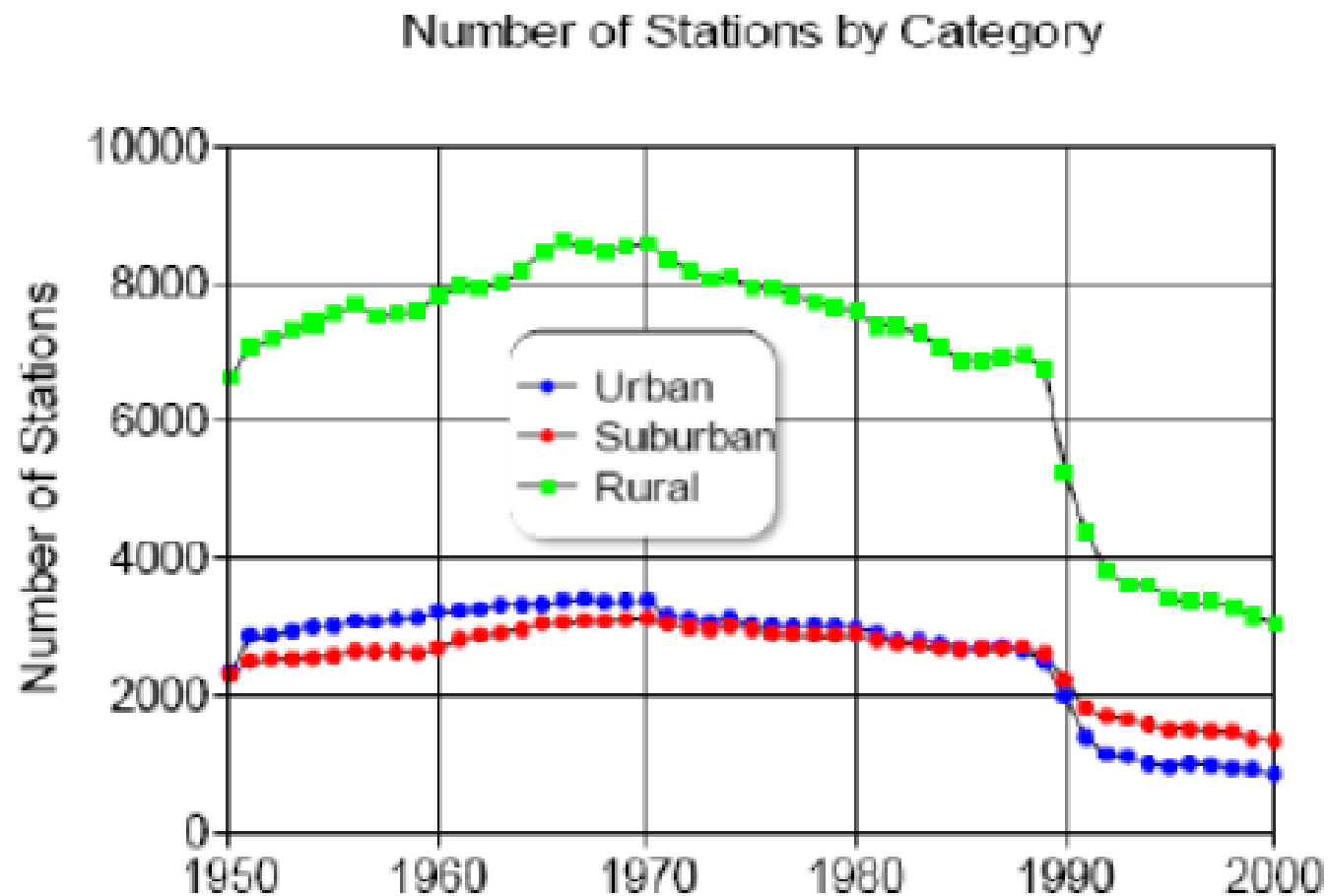


FIGURE 5 Plot of the number of total station ID's in each year since 1950 and the average temperatures of the stations in the given year.

The number of stations that dropped out tended to be disproportionately rural –



(Station count represent every station reported by GHCN - analyses above from Jonathan Drake.)

In Canada, the highlighted stations <Black outlines> were used in the temperature analysis.

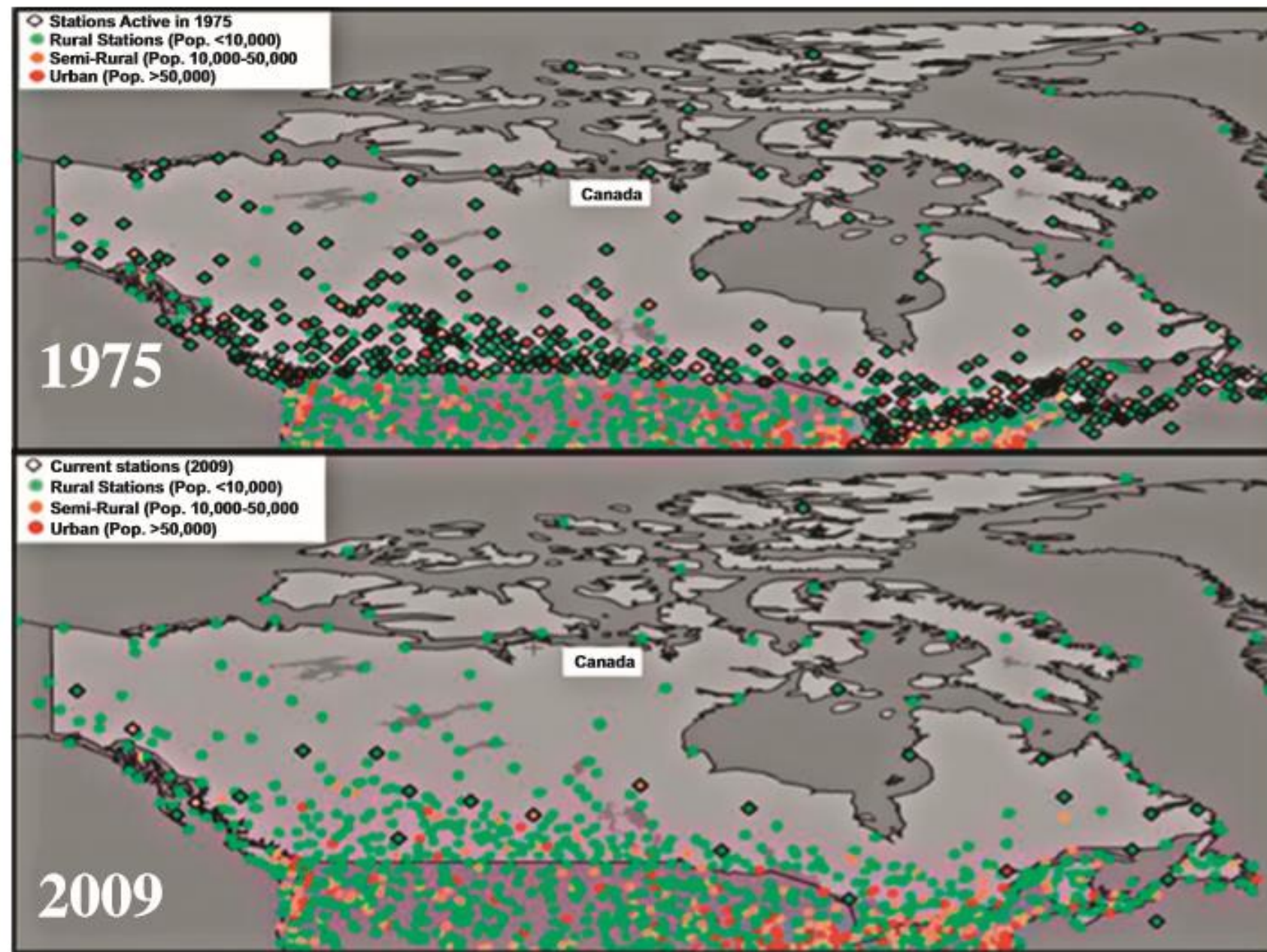


FIGURE 9 Canadian stations used in annual analyses in 1975 and 2009 (*source: Verity Jones from GHCN*).

CANADA

In Canada, number of stations dropped from 600 to fewer than 50.

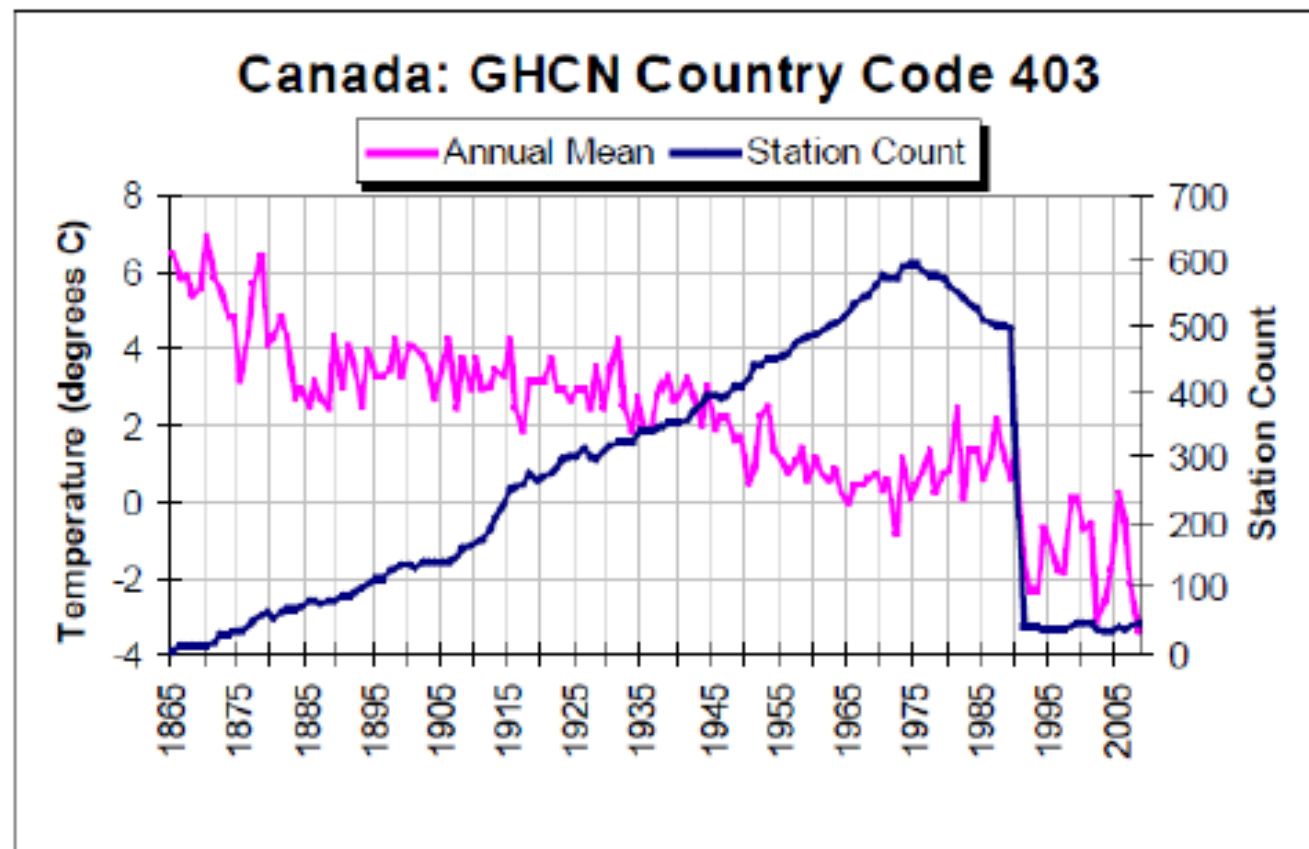
Percentage of stations below 300 feet tripled.

Percentage of Stations above 3000 feet reduced by half.

Canada's depicted warmth, from interpolating from more southerly locations to fill northerly vacant grid boxes.

Simple average of available stations shows cooling.

Just one thermometer remains for everything north of the 65th parallel.



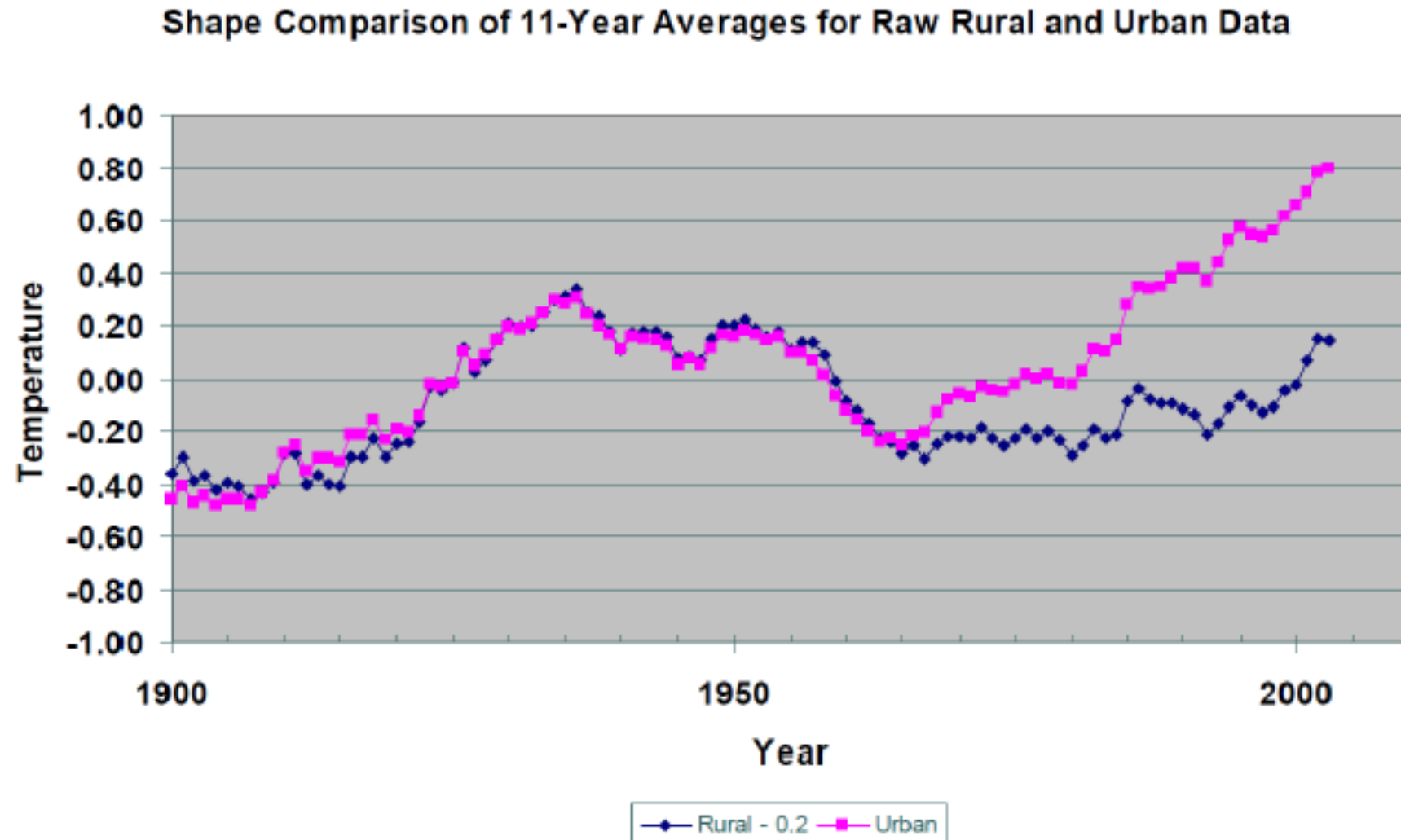


Figure 6 – Comparison of 11- yr averages of raw rural and urban temperatures. Rural data are offset by a factor of '-0.2', due to the smaller value of the average, compared to the urban, for the 1961-1990 period.

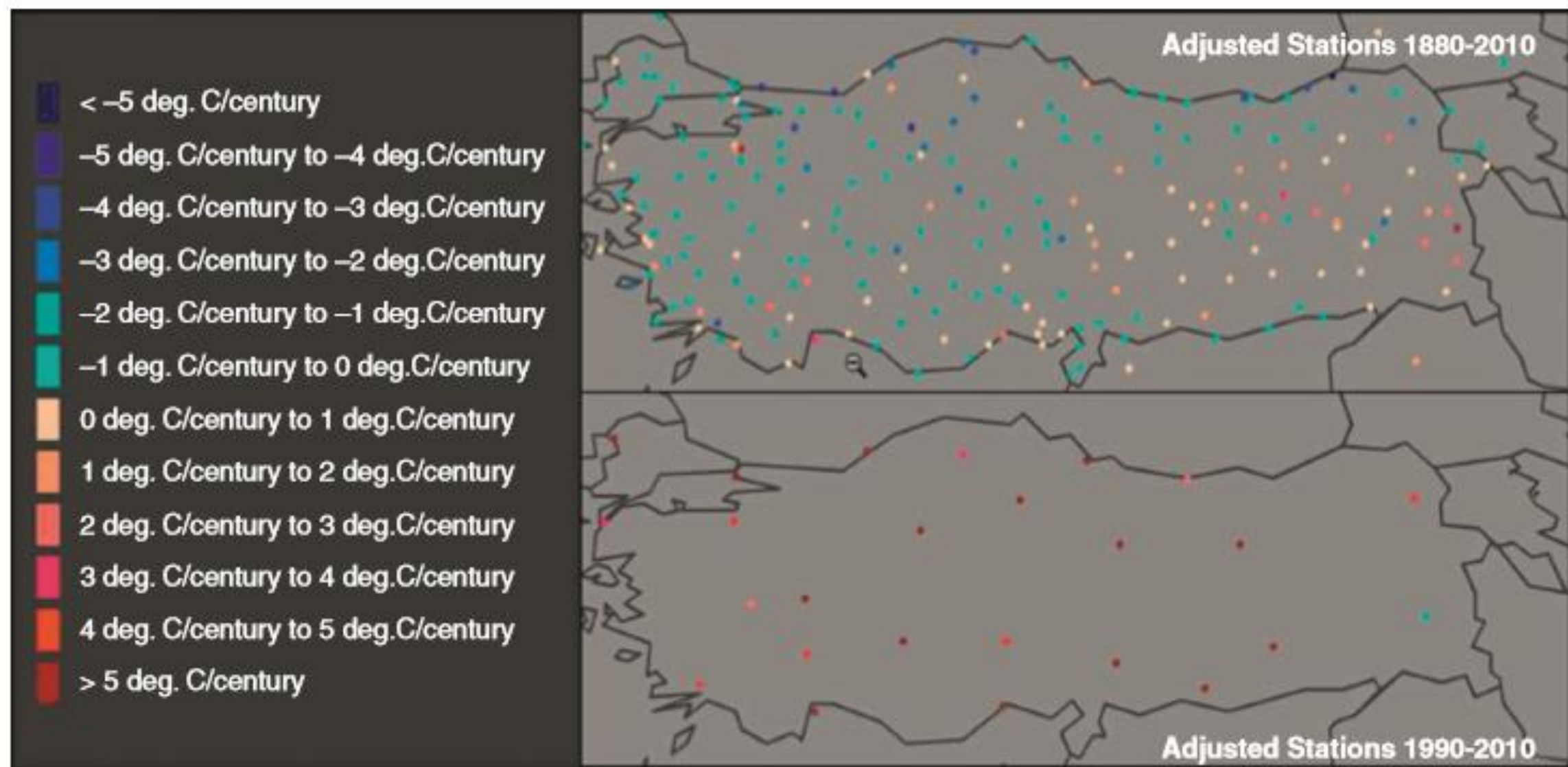


FIGURE 11 Verity Jones maps showing station temperature trends for (top) all stations active during 1880–2010 and (bottom) for stations active after 1990. The result is that Turkey is shown to be warming when the data shows cooling.

36-year old paper in SCIENCE blurts out truth: **Cooling from 40s to 70s.**

28 August 1981, Volume 213, Number 4511

SCIENCE

Climate Impact of Increasing Atmospheric Carbon Dioxide

J. Hansen, D. Johnson, A. Lacis, S. Lebedeff
P. Lee, D. Rind, G. Russell

Atmospheric CO₂ increased from 280 to 300 parts per million in 1880 to 335 to 340 ppm in 1980 (1, 2), mainly due to burning of fossil fuels. Deforestation and changes in biosphere growth may also

The major difficulty in accepting this theory has been the absence of observed warming coincident with the historic CO₂ increase. In fact, the temperature in the Northern Hemisphere decreased by

Greenhouse Effect

The effective radiating temperature of the earth, T_e , is determined by the need for infrared emission from the planet to balance absorbed solar radiation:

$$\pi R^2(1 - A)S_0 = 4\pi R^2\sigma T_e \quad (1)$$

or

$$T_e = [S_0(1 - A)/4\sigma]^{1/4} \quad (2)$$

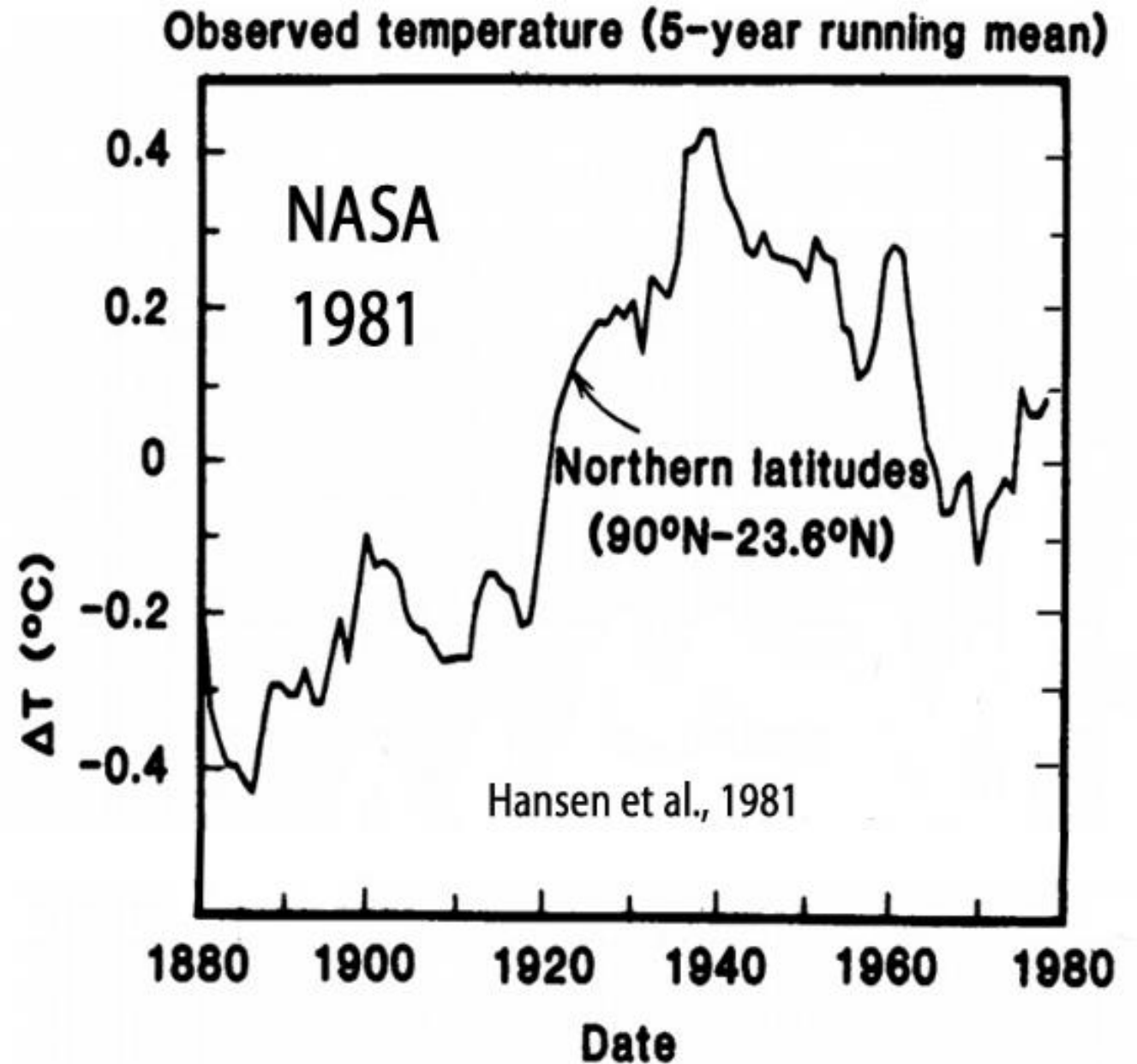
where R is the radius of the earth, A the albedo of the earth, S_0 the flux of solar radiation, and σ the Stefan-Boltzmann constant. For $A \sim 0.3$ and $S_0 = 1367$ watts per square meter, this yields $T_e \sim 255$ K.

The mean surface temperature is $T_s \sim 288$ K. The excess, $T_s - T_e$, is the greenhouse effect of gases and clouds, which cause the mean radiating level to be above the surface. An estimate of the

Hansen's report is no longer on the NASA web site, getting hard to find

We have a copy:

https://casf.me/wp-content/uploads/2019/01/PDF_Climate-Impact-of-Increasing-Atmospheric-Carbon-Dioxide_Science_28_August_1981_Hansen81_CO2_Impact.pdf

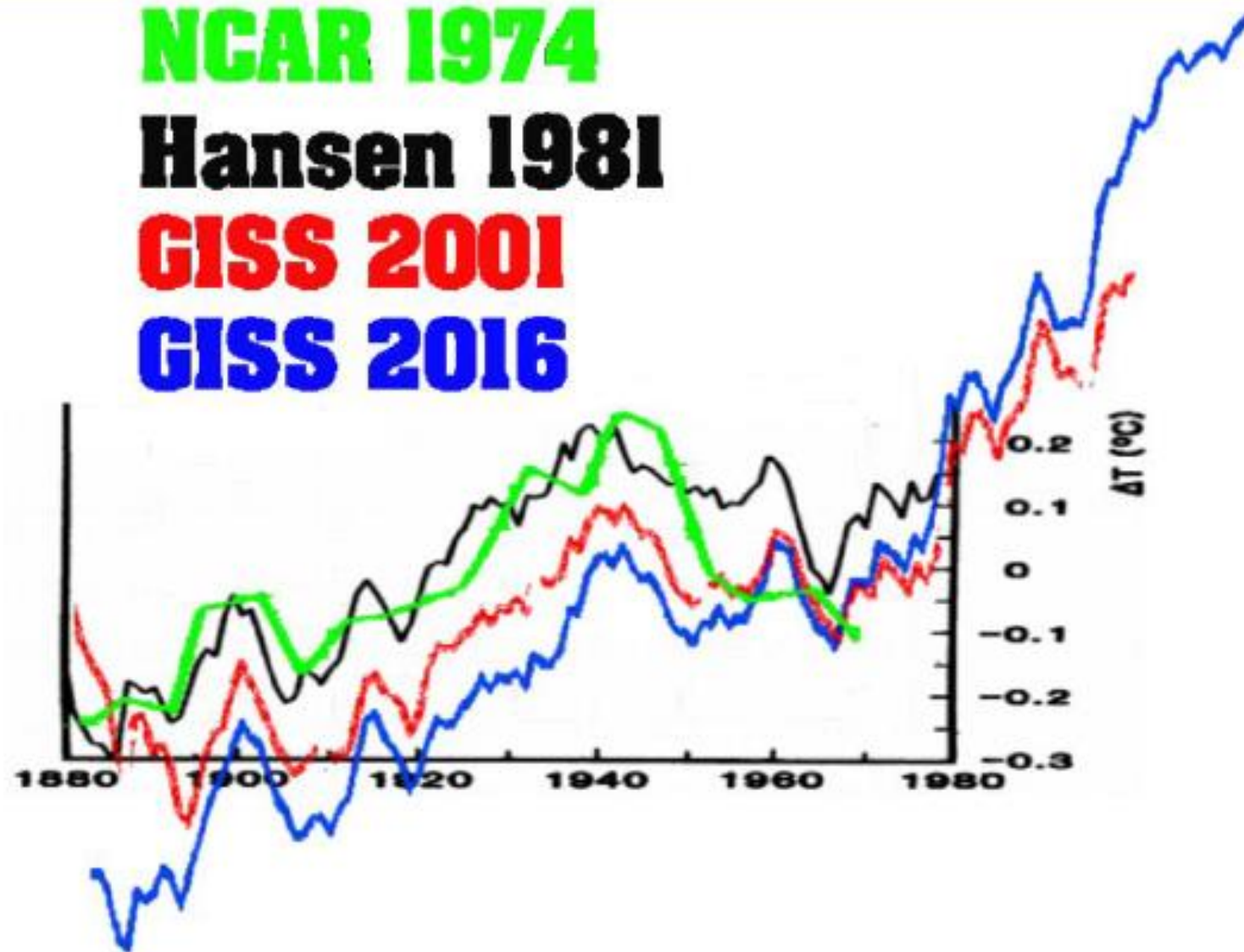


NCAR 1974

Hansen 1981

GISS 2001

GISS 2016



Next week we will spend more time on the problems with surface temperature measurements.

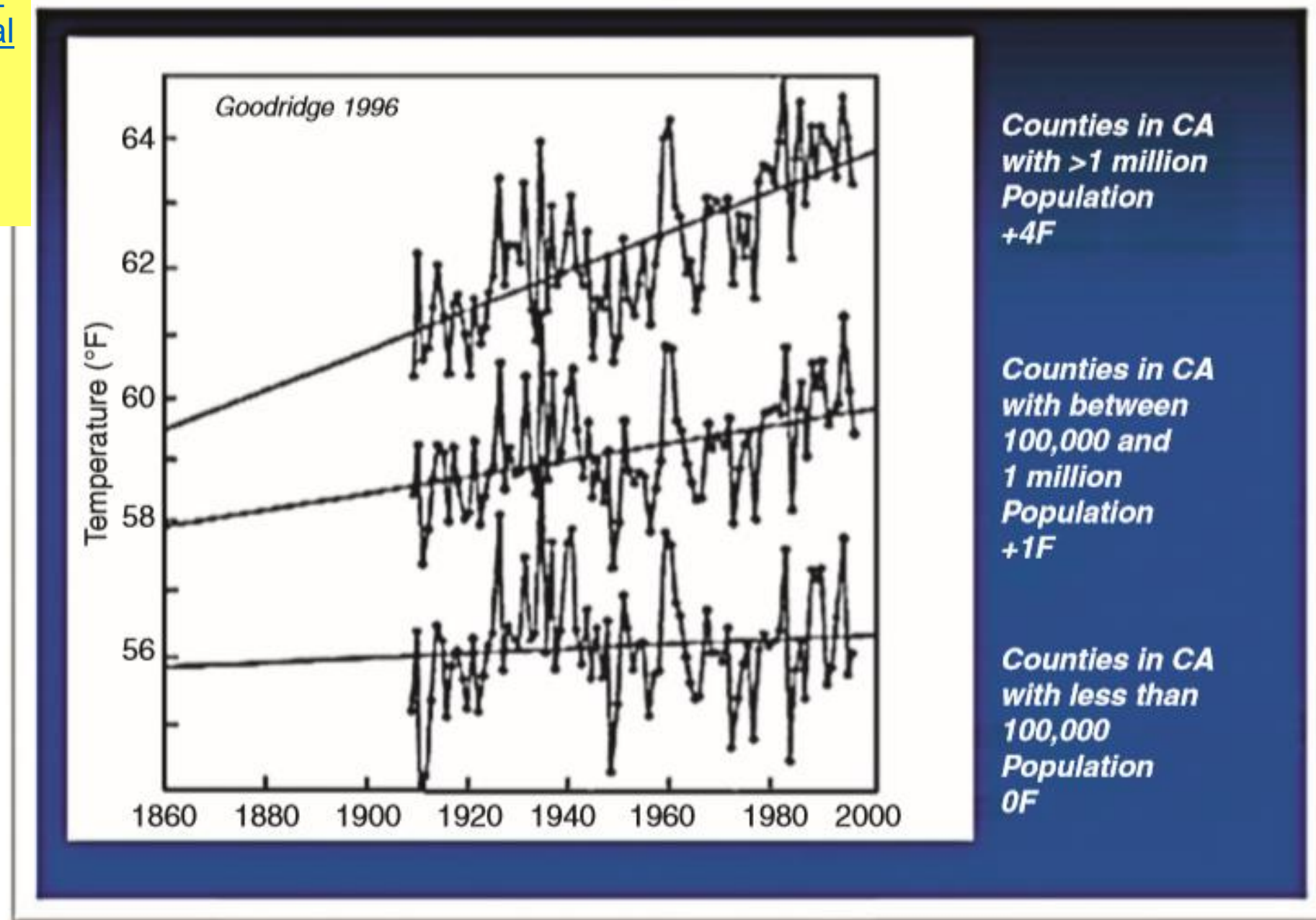



FIGURE 16 Jim Goodrich analysis of warming in California counties by population 1910–1995.



NOAA's National Weather Service

Cooperative Observer Program

OS Home News Organization

Standards

Recent Observations

Training, Reference, Documents

Local Data

Forms

OCWWS Home

Proper Siting

The COOP network has provided climate and weather data for over 100 years. Consistency of the measurements is an attribute of the network, and it has been maintained by rare and/or gradual change, and established standards for exposure, of instruments over the life of the network. In order to preserve the integrity of the network, NWS has [established standards for equipment, siting, and exposure](#).

Temperature sensor siting: The sensor should be mounted 5 feet +/- 1 foot above the **ground**. The ground over which the shelter [radiation] is located should be typical of the surrounding area. A level, open clearing is desirable so the thermometers are freely ventilated by air flow. Do not install the sensor on a steep slope or in a sheltered hollow unless it is typical of the area or unless data from that type of site are desired. When possible, the shelter should be no closer than four times the height of any obstruction (tree, fence, building, etc.). The sensor should be at least 100 feet from any paved or concrete surface.

Temperature sensor siting: 5 Ft Above ground...level open clearing...freely ventilated by air flow.

**Do not install on a steep slope or in a sheltered hollow.
Sensor should be at least 100 ft from any paved or concrete surface.**

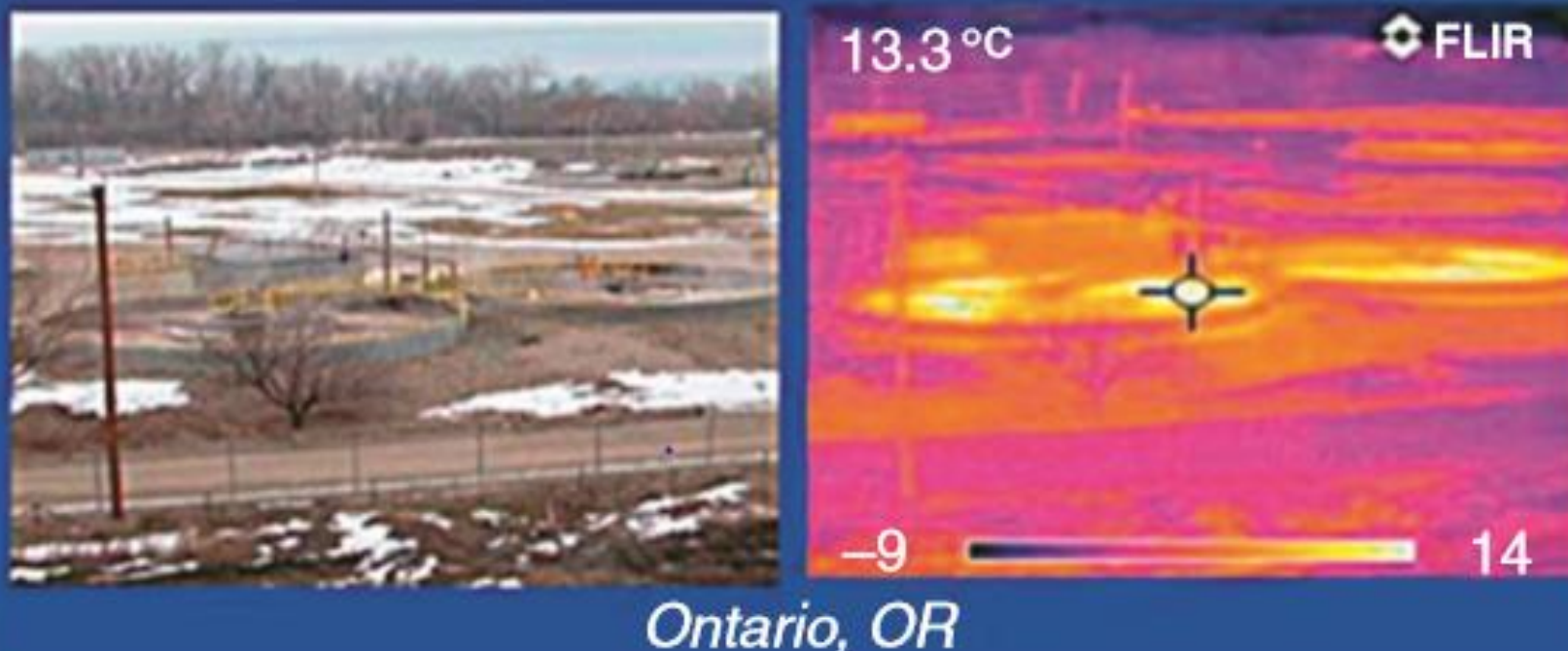


USHCN weather station at Hopkinsville, KY (Pielke et al., 2006). The station is sited too close to a building, too close to a large area of tarmac, and directly above a barbecue.



USHCN station at Tucson, AZ, in a parking lot on pavement. (Photo by Warren Meyer, courtesy of surfacestations.org.)

Waste Treatment Plants



Numerous sensors are located at waste treatment plants. An infrared image of the scene shows the output of heat from the waste treatment beds right next to the sensor.

(Photos by Anthony Watts, surfacestations.org.)

FIGURE 14 One of many waste treatment plants serving as stations in USHCN.

USHCN - Station Site Quality by Rating

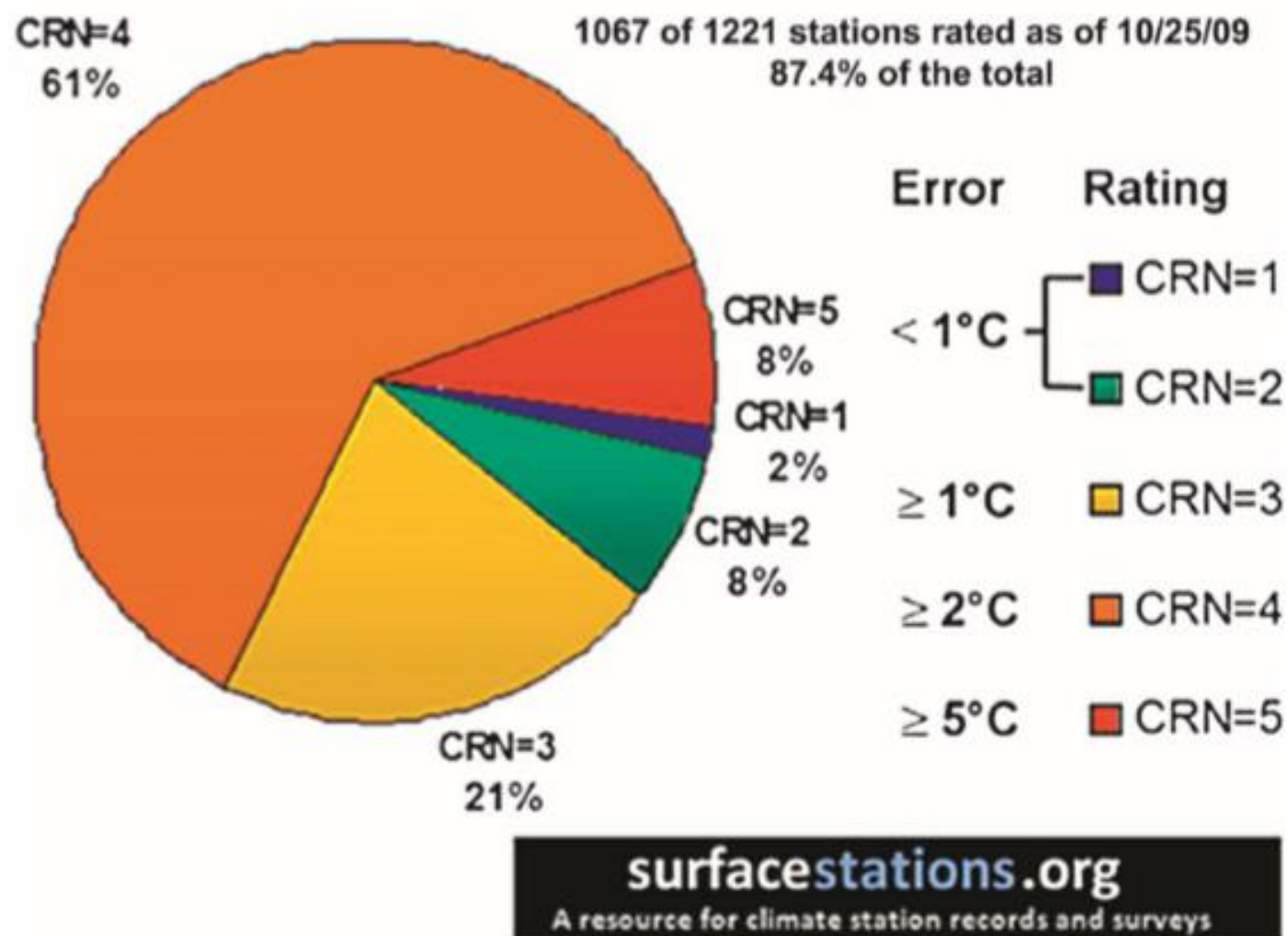


FIGURE 15 Surfacestations.org quality rating by stations for 1,067 U.S. climate stations as of 10/25/2009. Only 10% meet minimal CRN ranking (CRN 1 or 2).

U.S. State Maximum and Minimum Monthly Records by Decade

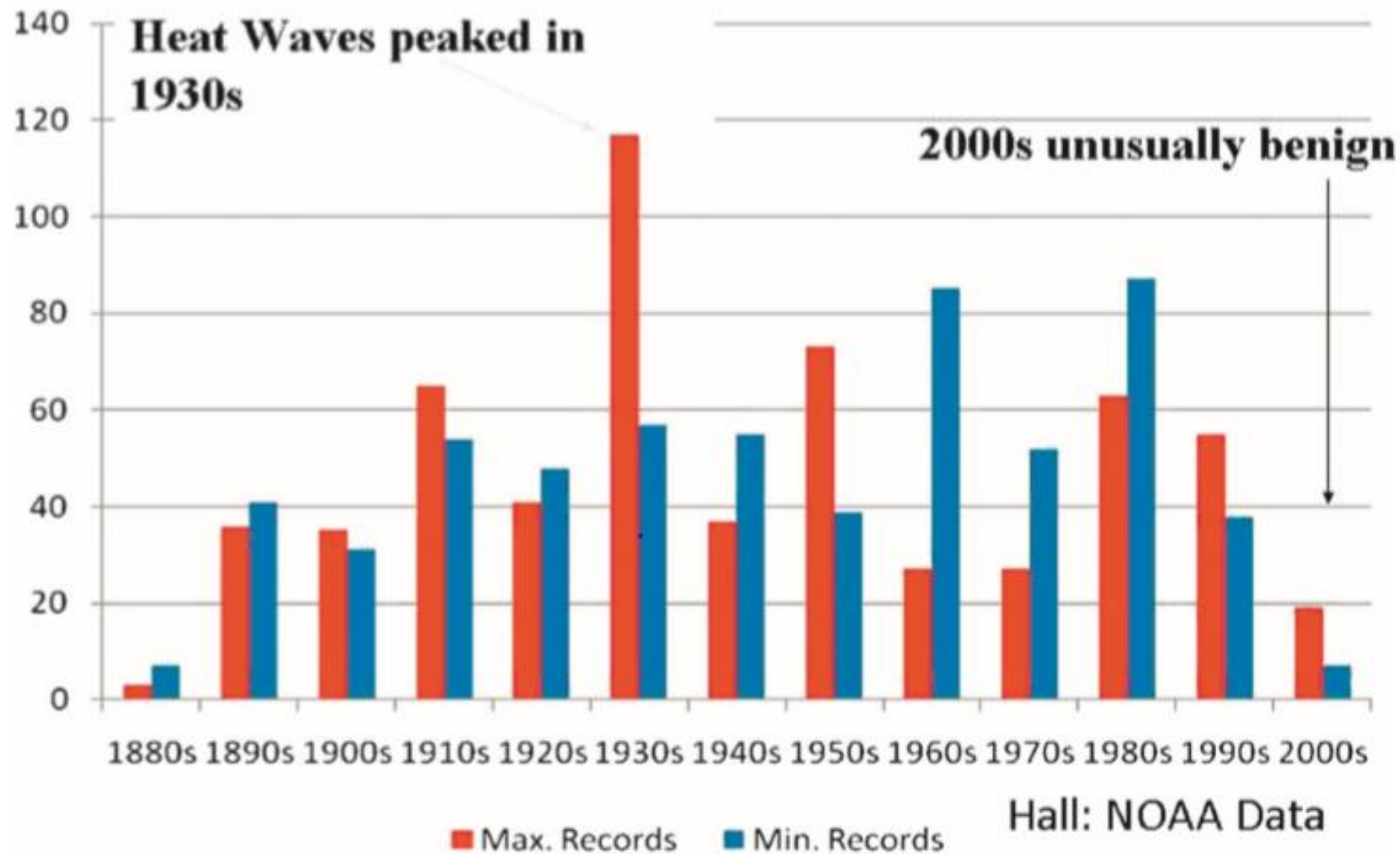


FIGURE 19 United States all-time monthly record lows and highs by decade. Compiled by Hall from NOAA NCDC data.

USHCN v1 Versus v2

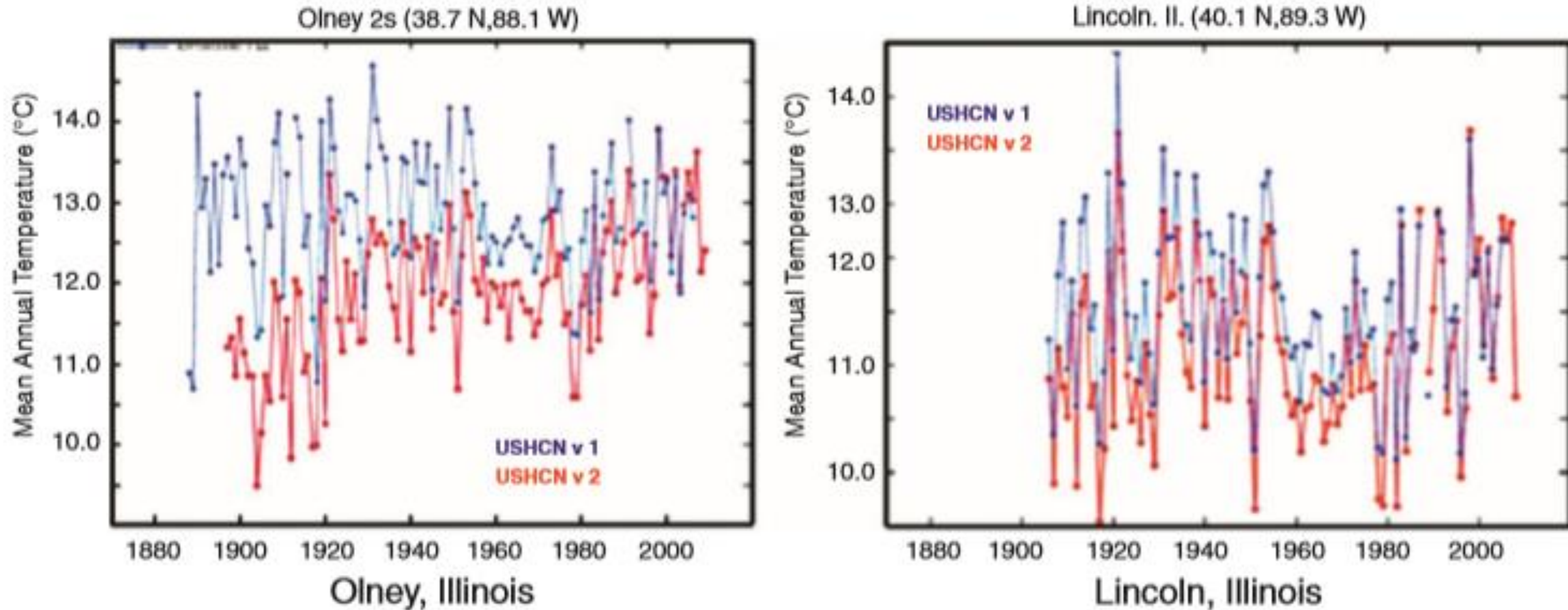
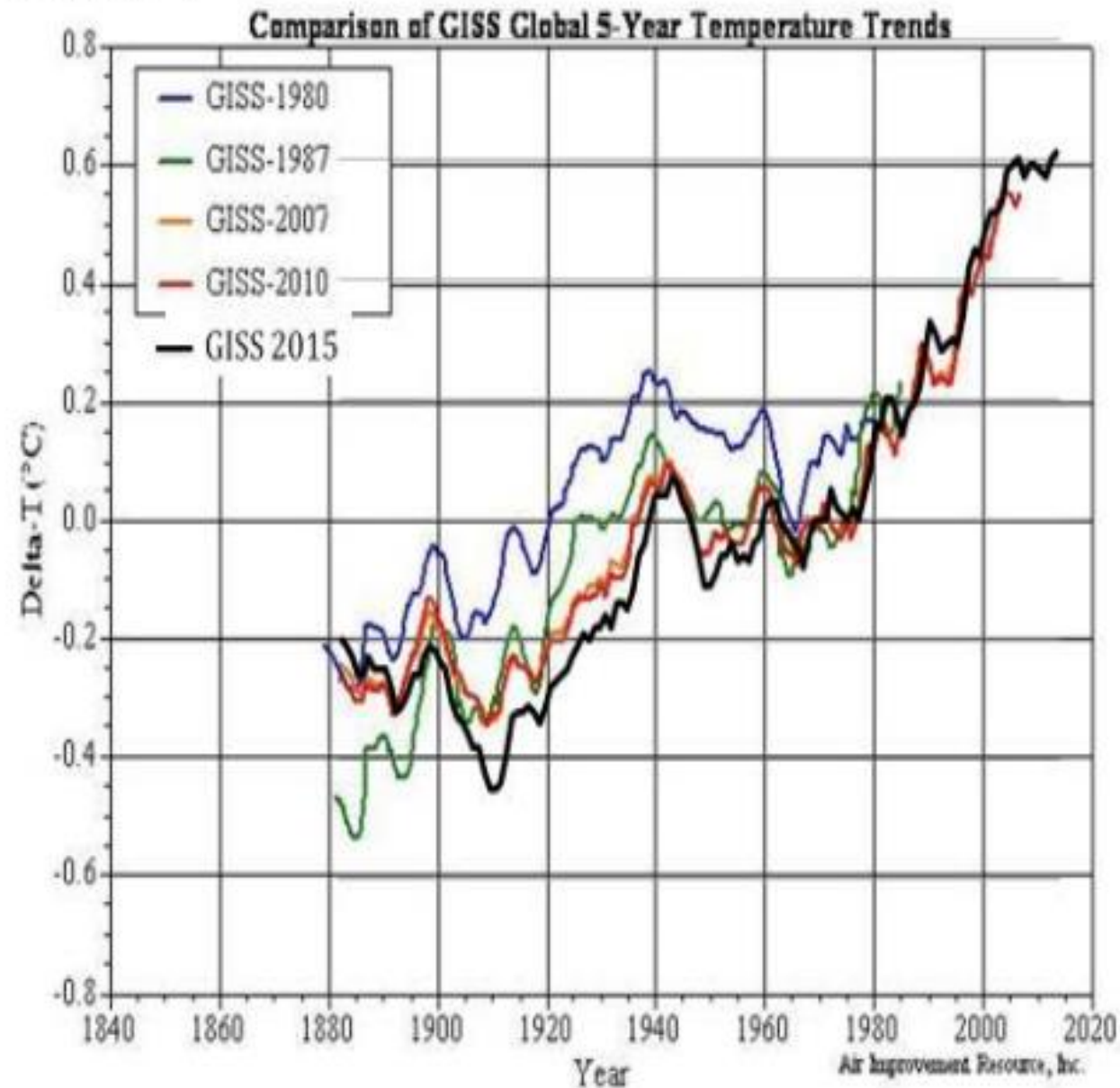


FIGURE 22 NOAA USJCN version 1 vs. version 2 for Olney and Lincoln Illinois.

1 and version 2 superimposed (thanks to Mike McMillan). Notice the clear tendency to cool off the early record and leave the current levels near recently reported levels or increase them. The net result is either reduced cooling or enhanced warming not found in the raw data (Fig. 22).

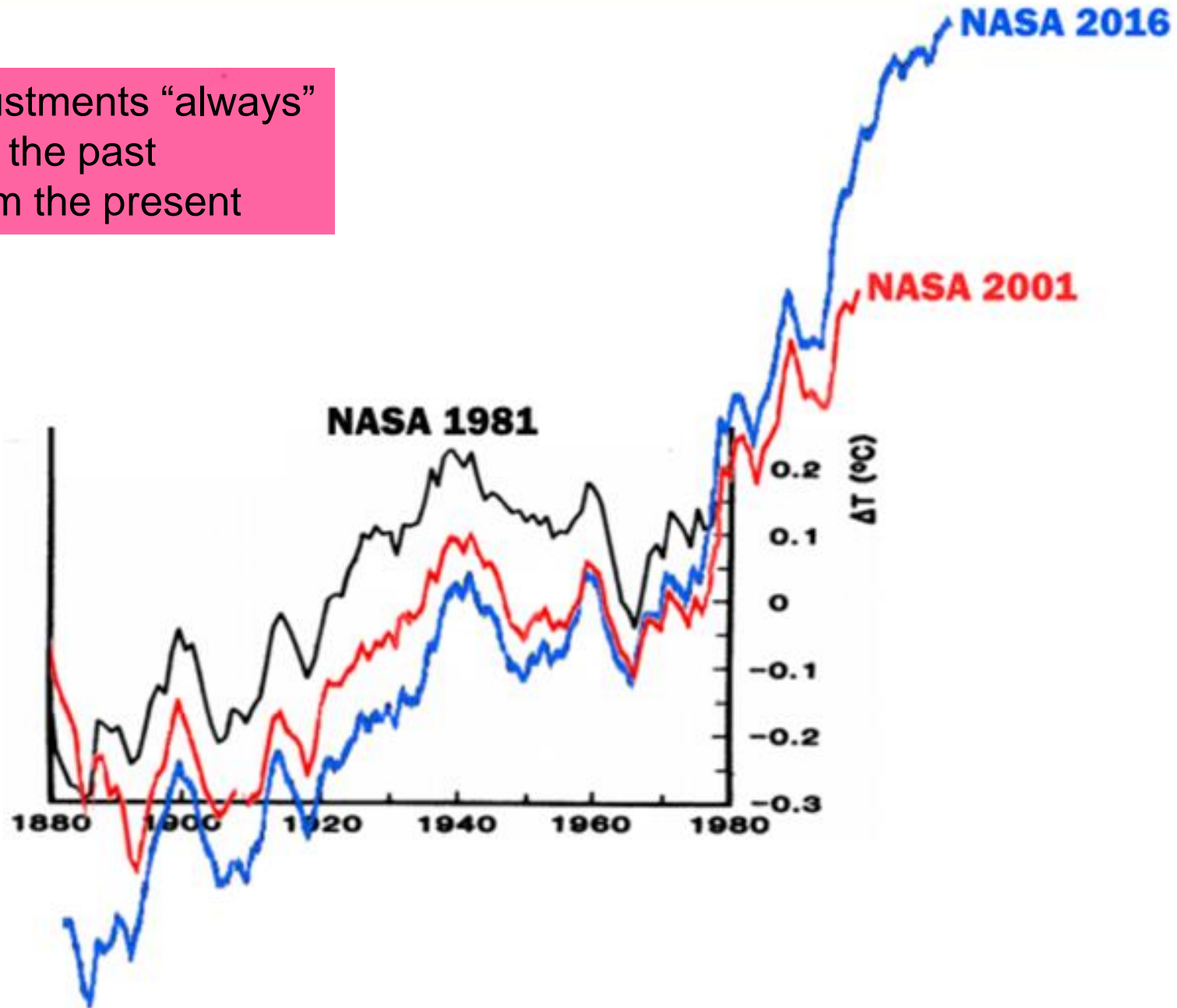
Adjustments “always”
cool the past
warm the present

Figure IV-1



Source: GISS, and Air Improvement Resource, Inc.

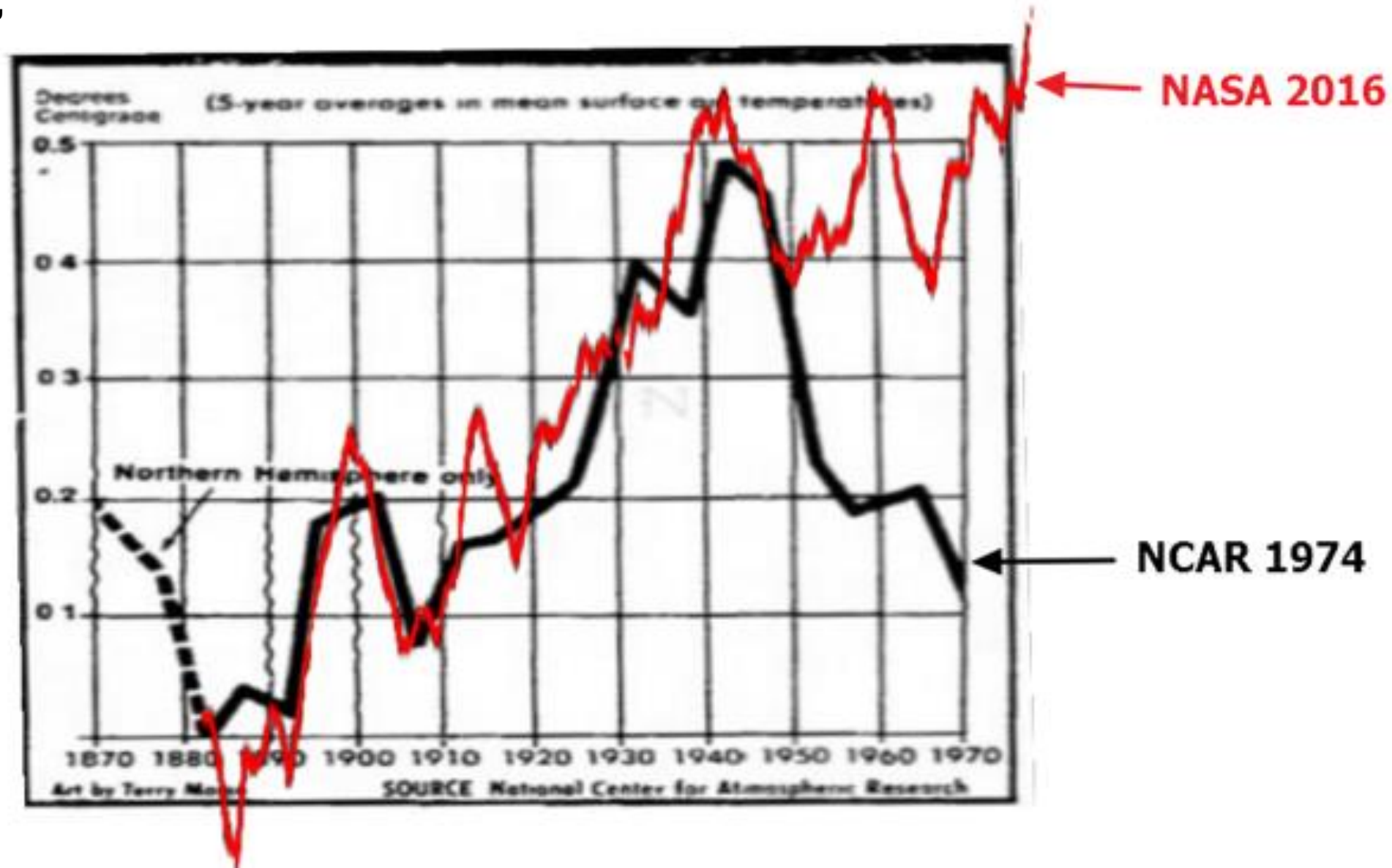
Adjustments “always”
cool the past
warm the present



BLACK trace shows the “tooth-shaped” temperatures published by NCAR in 1974, during the “Global Cooling” scare of the 1970s

RED trace shows a recent NASA GISS temperature History.

Adjustments “always” cool the past warm the present



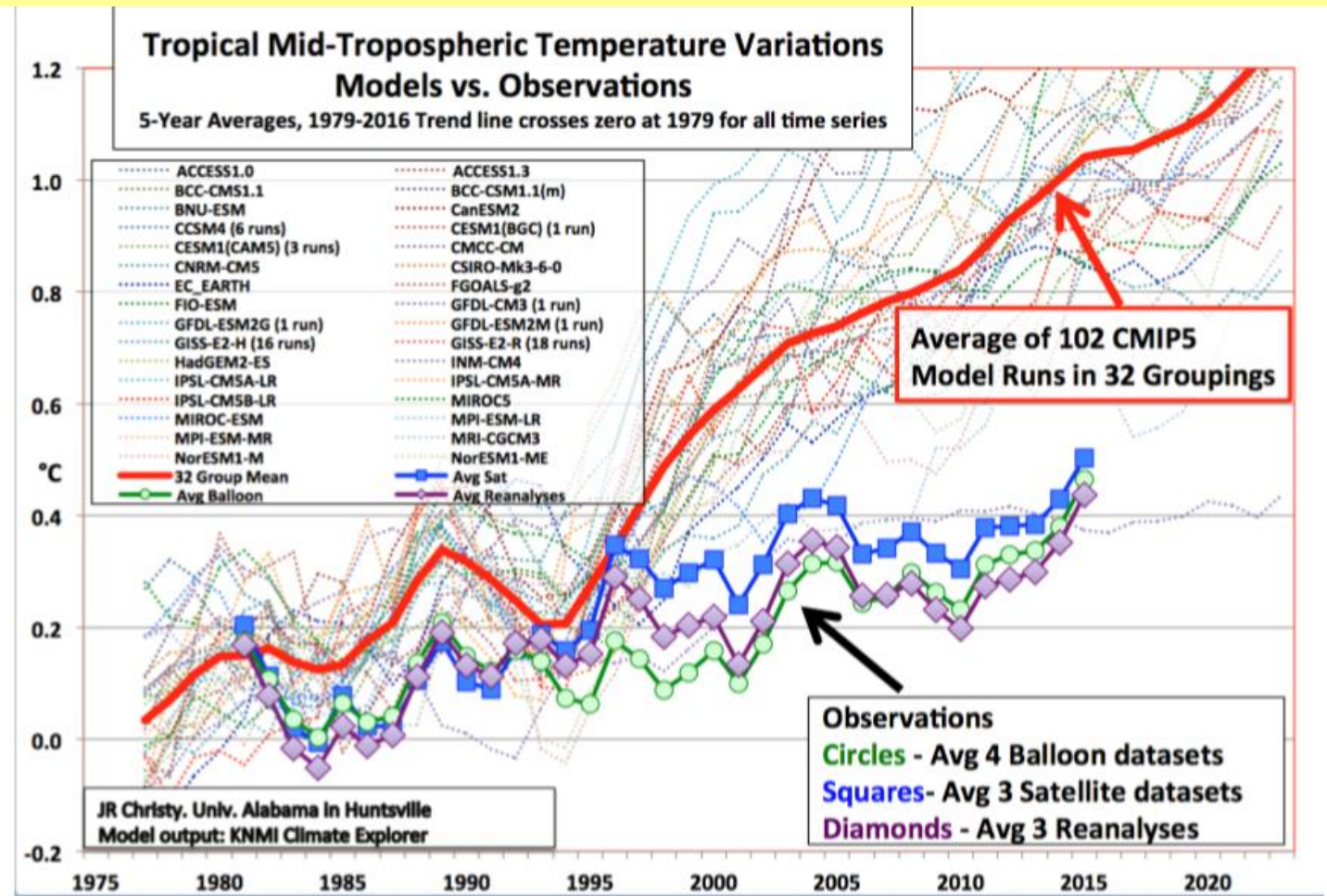
3. Computer Models

3. Computer Models

All Models show the Hot Spot, which does not exist in nature.

Models fail the explicit criteria for their use in detection & attribution. Not fit for making \$\$ Trillion policy decisions.

Could not satisfy HISA Requirements



Five-year averaged values of annual mean (1979-2016) tropical bulk TMT as depicted by the average of 102 IPCC CMIP5 climate models (red) in 32 institutional groups (dotted lines). The 1979-2016 linear trend of all time series intersects at zero in 1979. Observations are displayed with symbols: Green circles - average of 4 balloon datasets, blue squares - 3 satellite datasets and purple diamonds - 3 reanalyses. The last observational point at 2015 is average of 2013-2016 only, while all other points are centered, 5-year averages.

As an IPCC Reviewer, John Christy of UAH suggested that this diagram be simplified.

These Reviewer Comments were ignored.

Next graphic shows why IPCC did not want Christy's changes posted to the report.

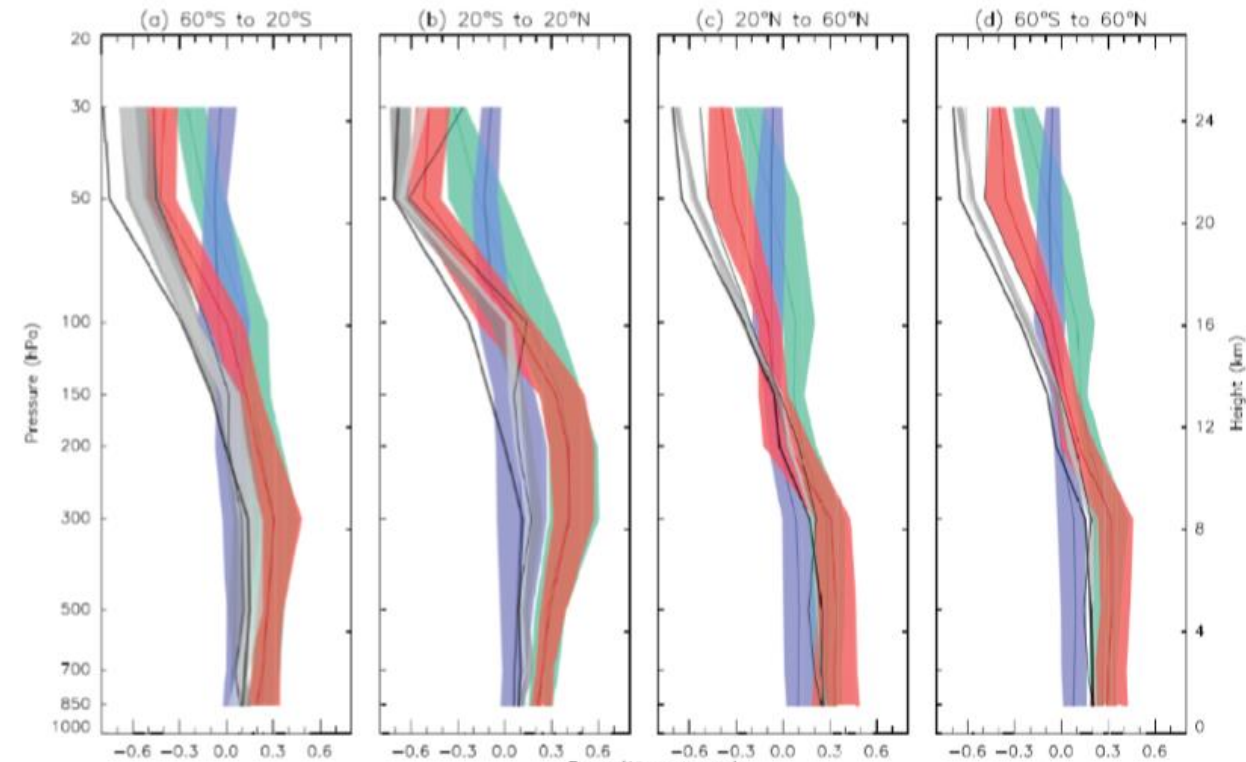


Figure 10.SM.1 | Observed and simulated zonal mean temperatures trends from 1979 to 2010 for CMIP5 simulations containing both anthropogenic and natural forcings (red), natural forcings only (blue) and greenhouse gas forcing only (green) where the 5th to 95th percentile ranges of the ensembles are shown. Three radiosonde observations are shown (thick black line: Hadley Centre Atmospheric Temperature data set 2 (HadAT2), thin black line: RADiosone Observation CORrection using REanalyses (RAOBCORE) 1.5, dark grey band: Radiosonde Innovation Composite Homogenization (RICH)-obs 1.5 ensemble and light grey: RICH- τ 1.5 ensemble. (Adapted from Lott et al. (2013) but for the more recent period from 1979 to 2010.)

Figure 4. This is Fig. 10.SM.1 of the IPCC AR5 Supplementary Material for Chapter 10. These are trends (1979-2010) for various vertical levels of the atmosphere from (a) observations (gray band – difficult to see), from (b) models without extra GHGs (blue band) and (c) models with extra GHGs and other forcings (red band). The lower portion of the tropical chart (second panel from left) is simplified in Fig. 5 and used for the following discussion

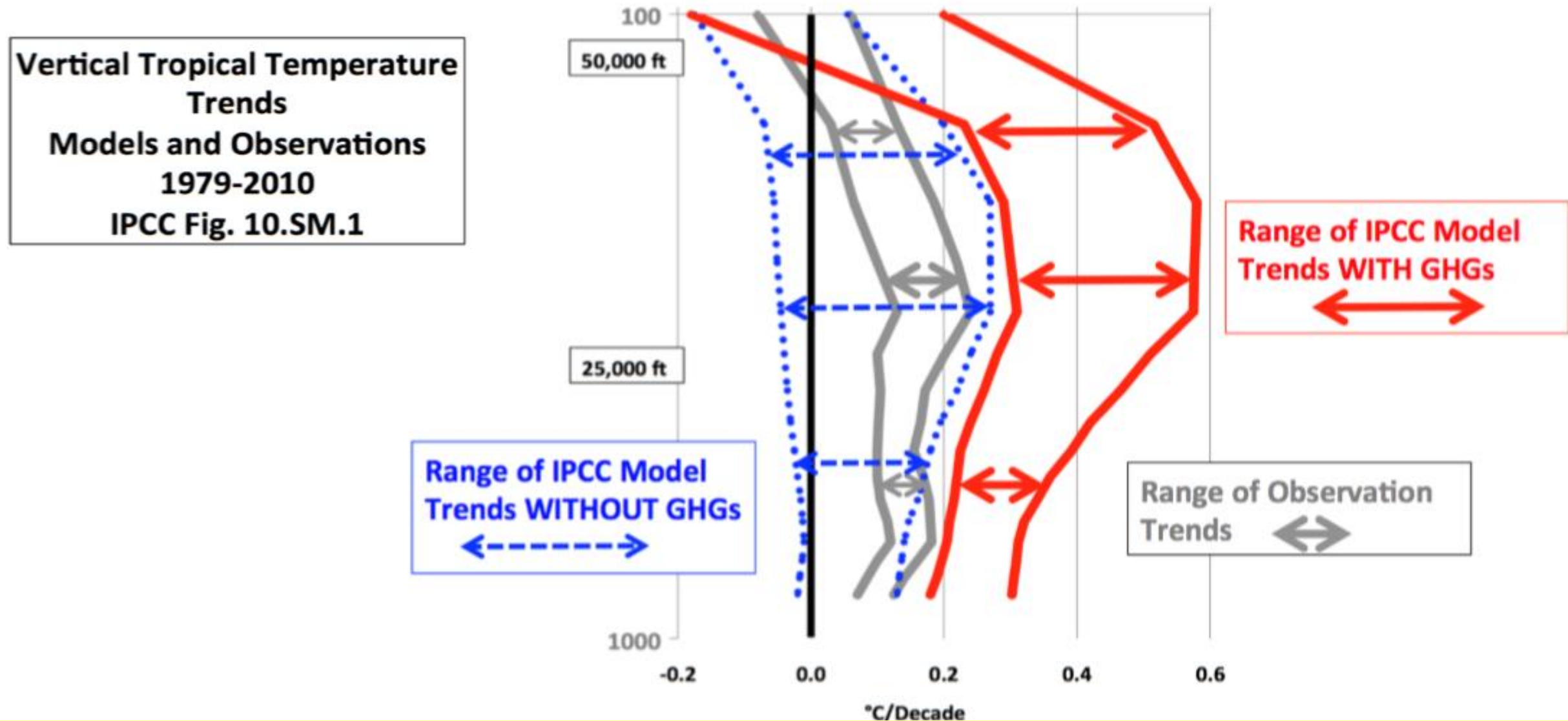
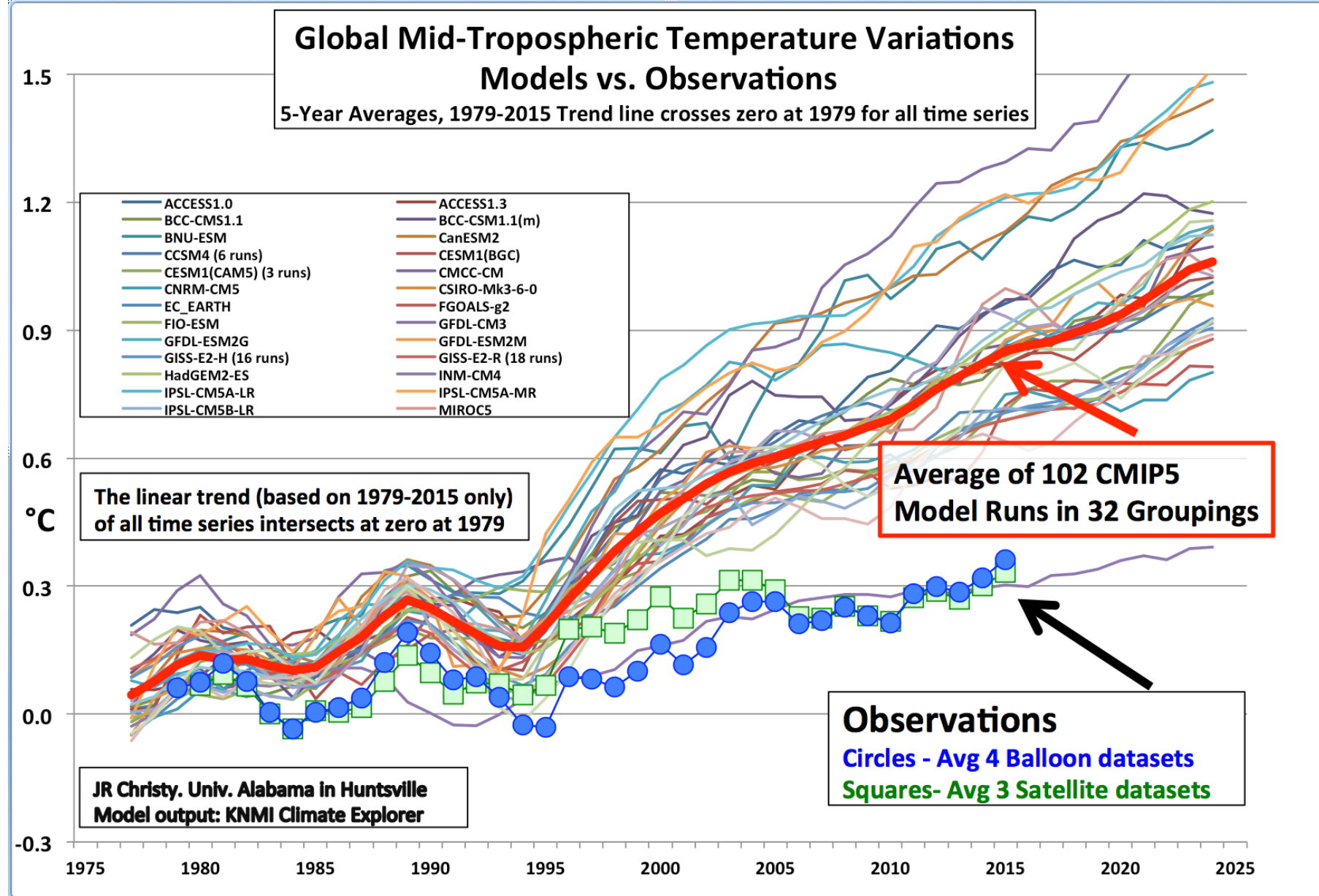


Figure 5. Simplification of IPCC AR5 shown above in Fig. 4. The colored lines represent the range of results for the models and observations. See the lack of overlap between the GHG model results (red) and the observations (gray). The non-GHG model runs (blue) overlap the observations almost completely.



Global average mid-tropospheric temperature variations (5-year averages) for 32 models (lines) representing 102 individual simulations. Circles (balloons) and squares (satellites) depict the observations. The Russian model (INM-CM4) was the only model close to the observations.

<http://www.cfact.org/2016/01/26/measuring-global-temperatures-satellites-or-thermometers/>

How Much Warming?

Since 1979, it is generally accepted that the satellites and radiosondes measure 50% less of a warming trend than the surface thermometer data do, rather than 30-50% greater warming trend that theory predicts for warming aloft versus at the surface.

“NASA Trend” shows
“adjusted” Surface
thermometer data in red from
NASA GISS.

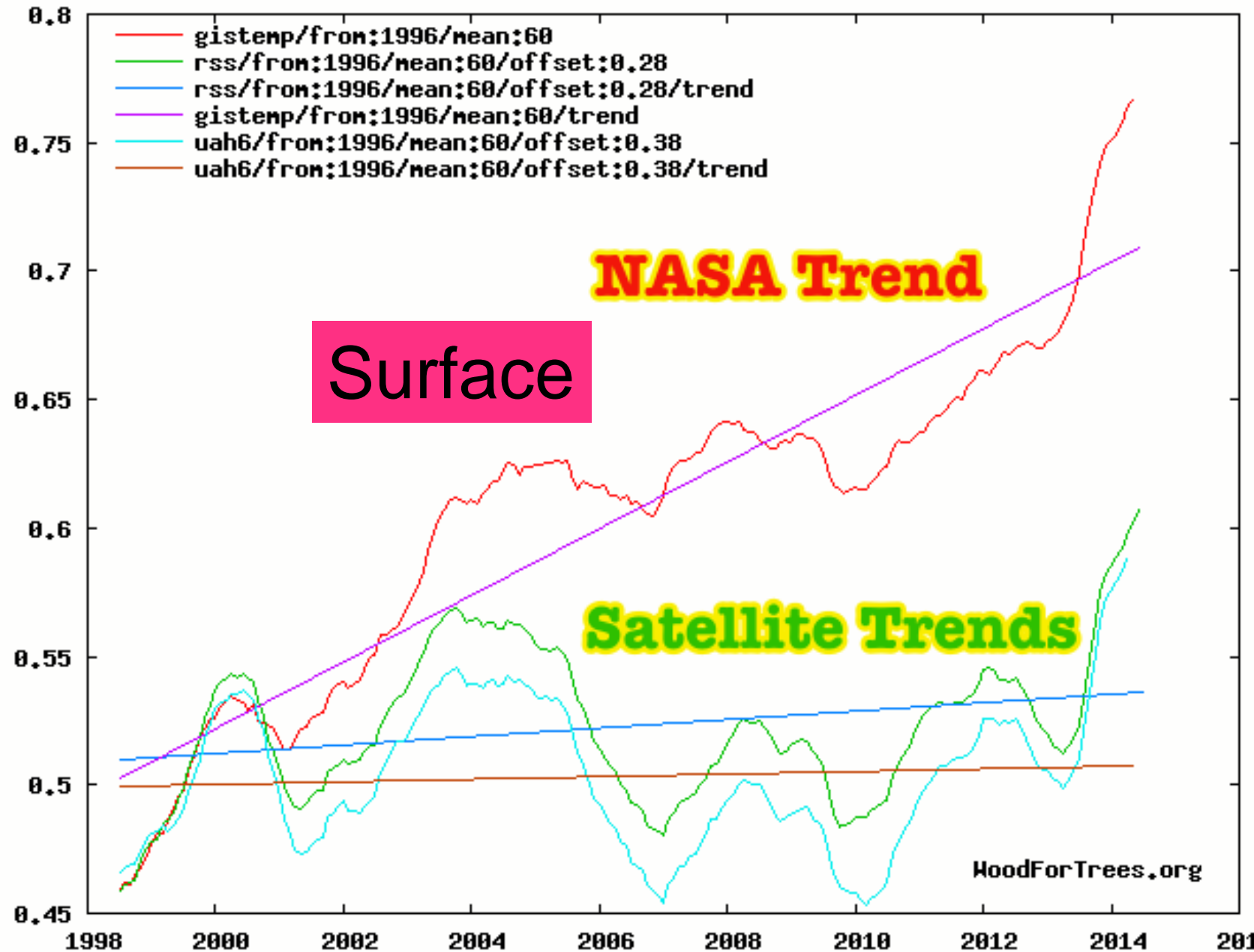
“Satellite Trends” show
RSS satellite-derived
temperatures in green, UAH
satellite-derived Temperatures
in aqua.

Why are surface and satellite
Temperatures showing fundamentally
Different rates of temperature change?

Why does NASA GISS analyze
Surface
Thermometers, leaving RSS and UAH
to analyze data from NASA's own
Satellites?

Alarmists say that greenhouse gases
Cause warming, why don't the
Satellite Temperatures of the
Greenhouse itself show this warming?

<https://realclimatescience.com/2018/01/my-climate-forecast-from-three-years-ago/>



Comparing the surface temperature record with the satellite temperature record, another issue with the notion of “Greenhouse Gas Warming” appears.

The satellite-based temperature is a direct measure of the temperature in the greenhouse itself from emission of the oxygen in the atmosphere, sensed with Microwave Sensing Units, MSUs, and which sense the Temperature of the Lower Troposphere. The satellite record shows very modest warming: peaks driven by El Nino events, cool troughs driven by La Nina events.

NASA’s surface trend, a lot higher, is typically from Liquid-in-Glass thermometers in Stevenson Screens. This means that NASA is not measuring greenhouse gas warming, but another phenomenon.

