

# The Sun Also Warms

Willie Soon<sup>1</sup>  
Independent Scientist

April 10, 2019

Friends of Science Society 16th Annual Meeting/Event  
Calgary, Canada

<sup>1</sup>All Views Expressed Are Strictly My Own and Should Be Yours Too

**Flashback 1972 – David Suzuki: Humans are just “maggots” that “defecate all over the environment”**

1972 clip of David Suzuki compar...



Watch later



# David Suzuki's own private "Greenhouse Effect"

**THE SUN'S ENERGY  
PASSES THROUGH THE  
CAR'S WINDSHIELD**

**ENERGY RE-RADIATED FROM THE  
CAR'S INTERIOR CANNOT PASS BACK  
THROUGH THE WINDSHIELD, AND  
THE CAR WARMS UP.**



# Demonizing the Carbon Atom

"We are familiar with this effect in a car that has sat in the sun. The interior becomes hot because the carbon in the glass keeps the heat in."

## ENVIRONMENT

# Balance the books on global warming

When scientists estimate the dangers of the greenhouse effect, they could take a lesson from accountants.

**S**CIENCE is a powerful way of knowing.

It is based on the replacement of subjective, emotional experience with objective observation free of distortions of personality and replicable anywhere and any time.

The environmental crisis has put scientists in a quandary because degradation of the planet and its consequences cannot be accurately anticipated or even verified.

Take the issue of global warming.

It has been known since the last century that carbon-bearing compounds are transparent to sunlight but opaque to infrared. In other words, sunlight passes through carbon-containing air, whereas infrared heat rays tend to be reflected by the carbon.

We are familiar with this effect in a car that has sat in the sun. The interior becomes hot because the carbon in the glass keeps the heat in. This is the basis for predicting "greenhouse" effects of atmospheric compounds like carbon dioxide and methane.

Since the industrial revolution, human activity has been putting more carbon-based compounds into the atmosphere than can be removed naturally. As well, novel chemicals such as chlorofluorocar-

bon Most atmospheric scientists agree that warming will occur and accelerate and that if it continues, the planetary consequences will be catastrophic.

But now, a small group of scientists claims their computer models show the warming will stop and may even be followed by a cooling.

The prediction is based on greater evaporation to form clouds that will spread laterally and shield the planet from sunlight. But it is just as possible clouds will be swept up into vertical columns instead of lateral sheets and thus accelerate the warming process.

Nevertheless, because some models predict there is no threat of global warming, U.S. President George

Bush has been convinced that there should not be any international targets set for reducing carbon emissions until scientists have a better idea of what is going to happen.

But that could take decades, if ever, and those countries that are anxious to cut emissions are not willing to do so unilaterally because the added costs will increase the price of their goods.

We don't know enough about the properties of the planet and its atmosphere to predict weather from day to day, so it's no

surprise that models of global climate yield such disparate results.

What we do know is that we are adding unprecedented amounts of greenhouse gases to the upper atmosphere and there will be effects even though we can't accurately predict what they will be.

We should follow the example of accountants. In making financial

## OPINION



DAVID SUZUKI

  
**Domino**  
*"We'll Always Be Your Sugar!"*

**SUGAR**

PREMIUM  
**PURE CANE**  
GRANULATED

**NOW!**



— [Carbonfund.org](http://Carbonfund.org) —

See side panel for details.

NET WT **5** LB (2.26kg)



**WE CAN TAX THE AIR..**

**AND TELL THEM WE'RE  
SAVING THE PLANET, HA  
HA HA.**

**JUSTIN TRUDEAU POT**



Protest in DC June 15, 2015 (E&E news; Gayathri Vaidymathan)



# A REPUBLICAN SCIENCE DENIER ARGUING WITH A REAL SCIENTIST

Will hang himself with his own words.



# The residential palace of Willie Soon (in a secret location)



# Willie Soon's home toilet



# What truly matters in science: Seeking Truth



Soon also has fans among scientists who tend to share his views.

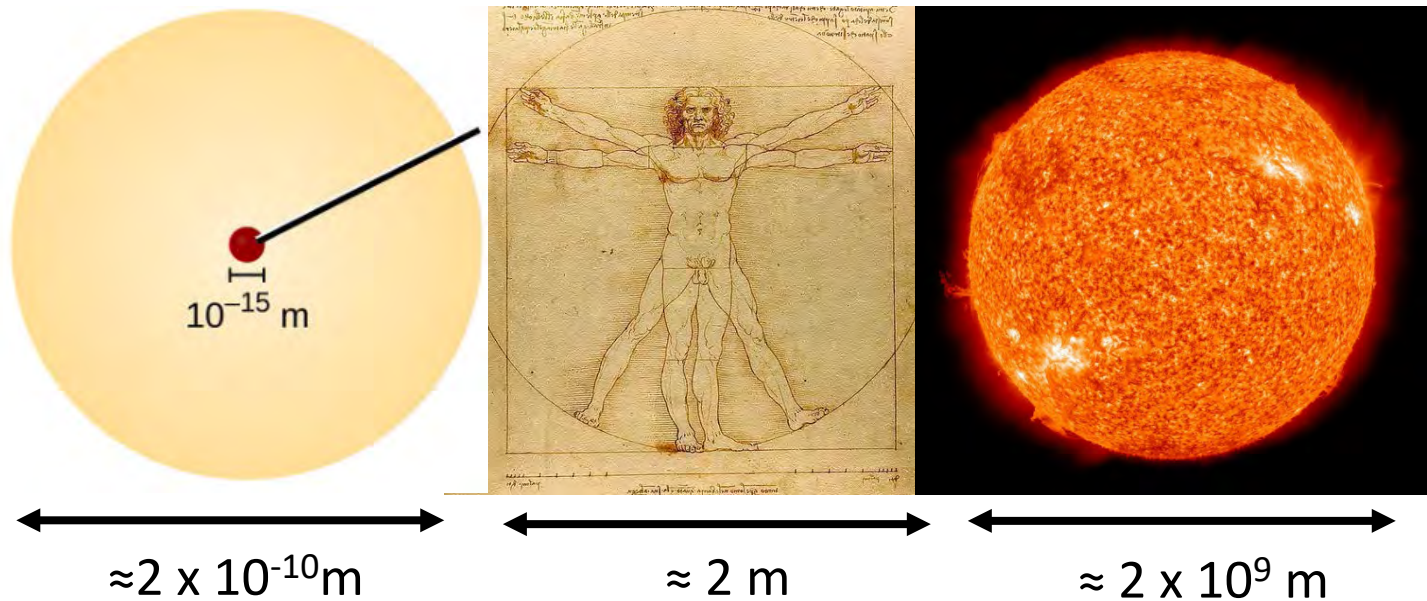
Freeman Dyson, a respected figure at the Institute for Advanced Study, in Princeton, whose turn in recent years toward climate skepticism stunned many of his peers, defended Soon's work.

**“The whole point of science is to question accepted dogmas,”** Dyson said in an e-mail to the Globe. **“For that reason, I respect Willie Soon as a good scientist and a courageous citizen.”**

**(Boston Globe, November 5, 2013)**



# “WHAT IS MAN THAT THOU ART MINDFUL OF HIM”



Source: Arthur Eddington's Stars and Atoms (1927)



I am no poet, but if you think for yourselves, as I proceed, the facts will form a poem in your minds.

~ Michael Faraday



*“The people who are supposed to be the experts and who claim to understand the science are precisely the people who are blind to the evidence...I hope that a few of them will make the effort to examine the evidence in detail and see how it contradicts the prevailing dogma, but I know that the majority will remain blind. That to me is the central mystery of climate science. **It is not a scientific mystery but a human mystery. How does it happen that the whole generation of scientific experts is blind to obvious facts?**”*

**– Freeman Dyson, foreword in a GWPF report on “Carbon Dioxide: The Good News” by Indur Goklany (2015)**



99% confident that the warming was caused by CO<sub>2</sub>

"All the News  
That's Fit to Print"

# The New York Times

Late Edition

New York Today, sunny, cool. High 74-79. Tonight, increasing clouds. Low 57-65. Tomorrow, clearing clouds, then windy and warmer. High 79-88. Yesterday: High 87, low 67. Details, page A18.

VOL. CXXXVII ... No. 47,546

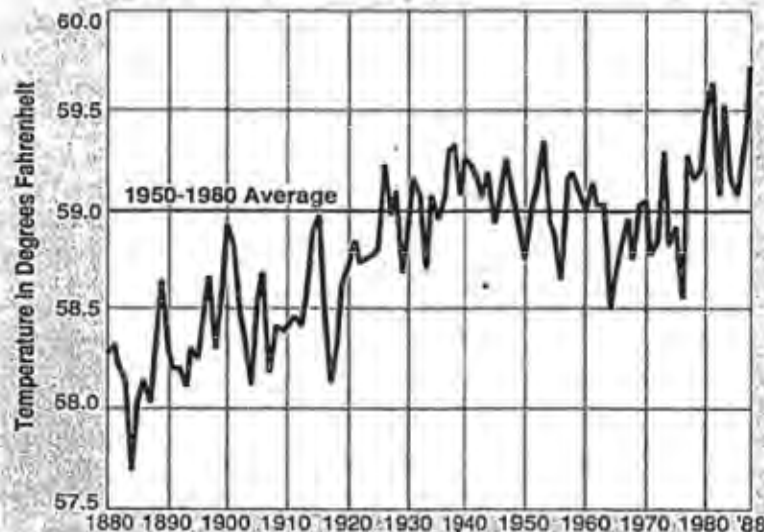
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NEW YORK, FRIDAY, JUNE 24, 1988

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30 CENTS

## Global Warming Has Begun, Expert Tells Senate



### Global Warming: Greenhouse Effect?

Average global temperatures through the first five months of 1988. As a baseline, scientists use the global average from 1950 to 1980.

Source: James E. Hansen and Sergej Lebedeff

The New York Times/June 24, 1988

### Sharp Cut in Burning of Fossil Fuels Is Urged to Battle Shift in Climate

By PHILIP SHABECOFF

Special to The New York Times

WASHINGTON, June 23 — The earth has been warmer in the first five months of this year than in any comparable period since measurements began 130 years ago, and the higher temperatures can now be attributed to a long-expected global warming trend linked to pollution, a space agency scientist reported today.

Until now, scientists have been cautious about attributing rising global temperatures of recent years to the predicted global warming caused by pollutants in the atmosphere, known as the "greenhouse effect." But today Dr. James E. Hansen of the National Aeronautics and Space Administration told a Congressional committee that it was 99 percent certain that the warming trend was not a natural variation but was caused by a buildup of carbon dioxide and other artificial gases in the atmosphere.

### An Impact Lasting Centuries

Dr. Hansen, a leading expert on climate change, said in an interview that there was no "magic number" that showed when the greenhouse effect was actually starting to cause changes in climate and weather. But he added, "It is time to stop waffling so much and say that the evidence is pretty strong that the greenhouse effect is here."

If Dr. Hansen and other scientists are correct, then humans, by burning of fossil fuels and other activities, have altered the global climate in a manner that will affect life on earth for centuries to come.

Dr. Hansen, director of NASA's Institute for Space Studies in Manhattan, testified before the Senate Energy and Natural Resources Committee.

### Some Dispute Link

He and other scientists testifying before the Senate panel today said that projections of the climate change that is now apparently occurring mean that the Southeastern and Midwestern sections of the United States will be subject to frequent episodes of very high temperatures and drought in the next decade and beyond. But they cautioned that it was not possible to attribute a specific heat wave to the greenhouse effect, given the still limited state of

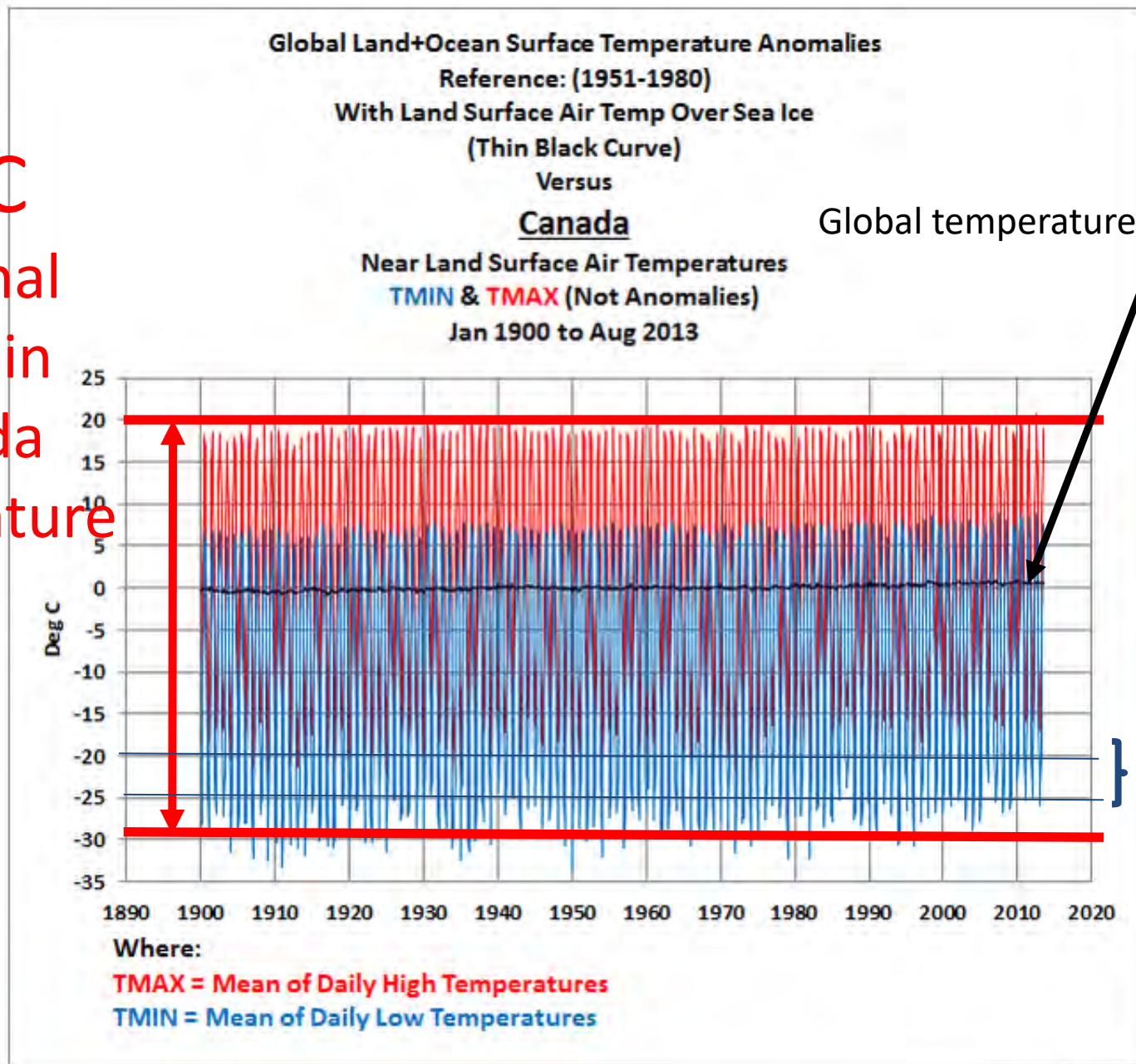
Continued on Page A14, Column 3

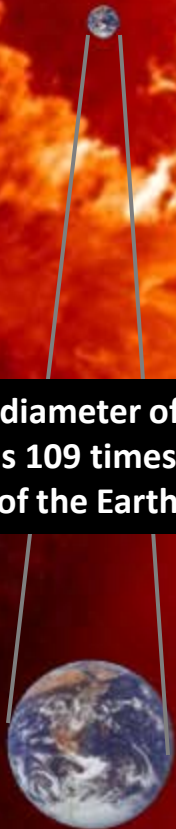
By 1988, climate change was a well-established scientific fact, and widely acknowledged in the public sphere, as exemplified by this front-page story in The New York Times reporting on Dr. James Hansen's testimony before Congress.



# 100% confident that it is impossible to find CO<sub>2</sub> in Canadian Records

50°C  
seasonal  
range in  
Canada  
Temperature





**The diameter of the  
Sun is 109 times that  
of the Earth**

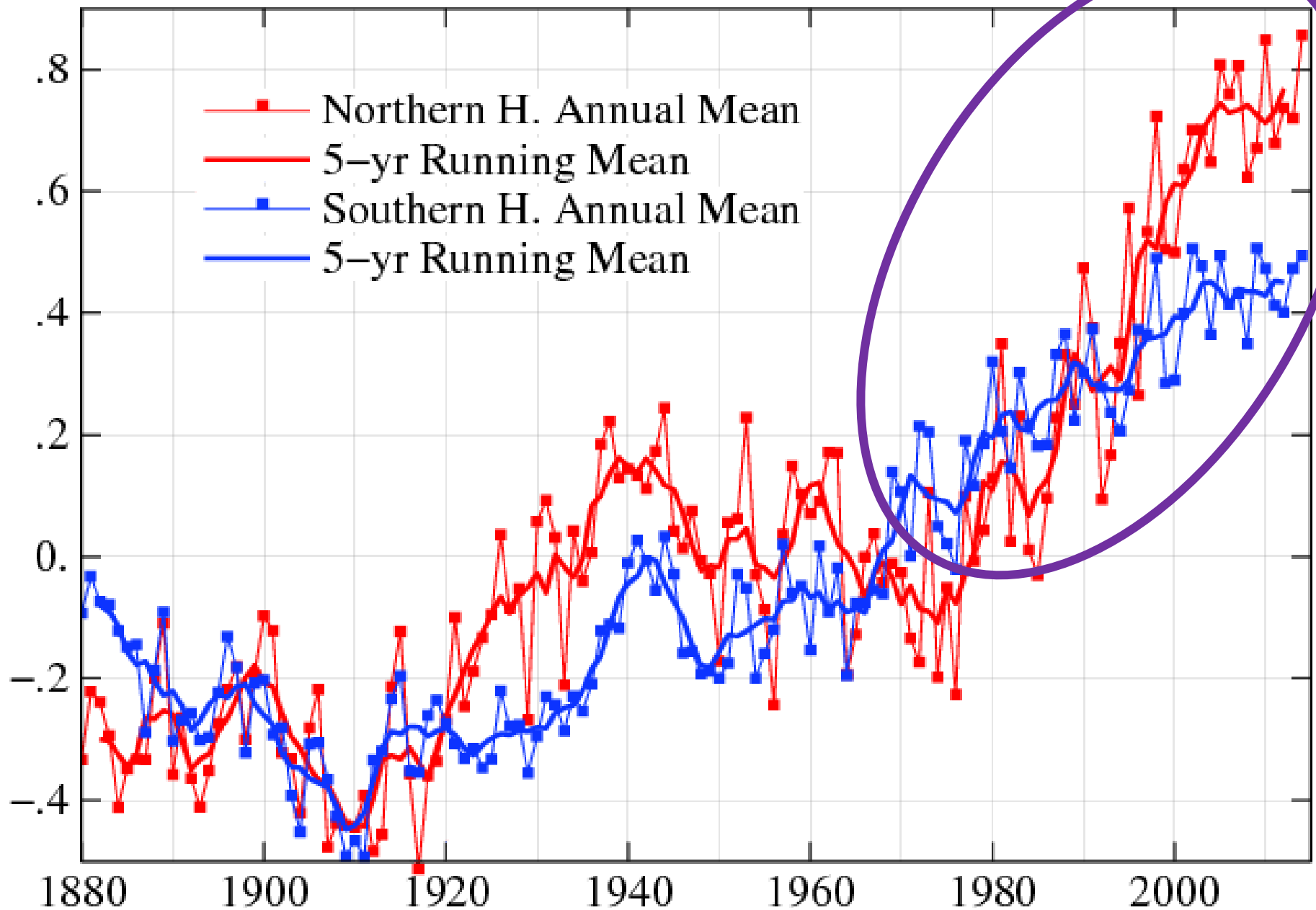




# New and exciting results from Ronan and Michael Connolly

[Soon, Connolly, Connolly 2015, ESR]

# Hemispheric Temperature Change



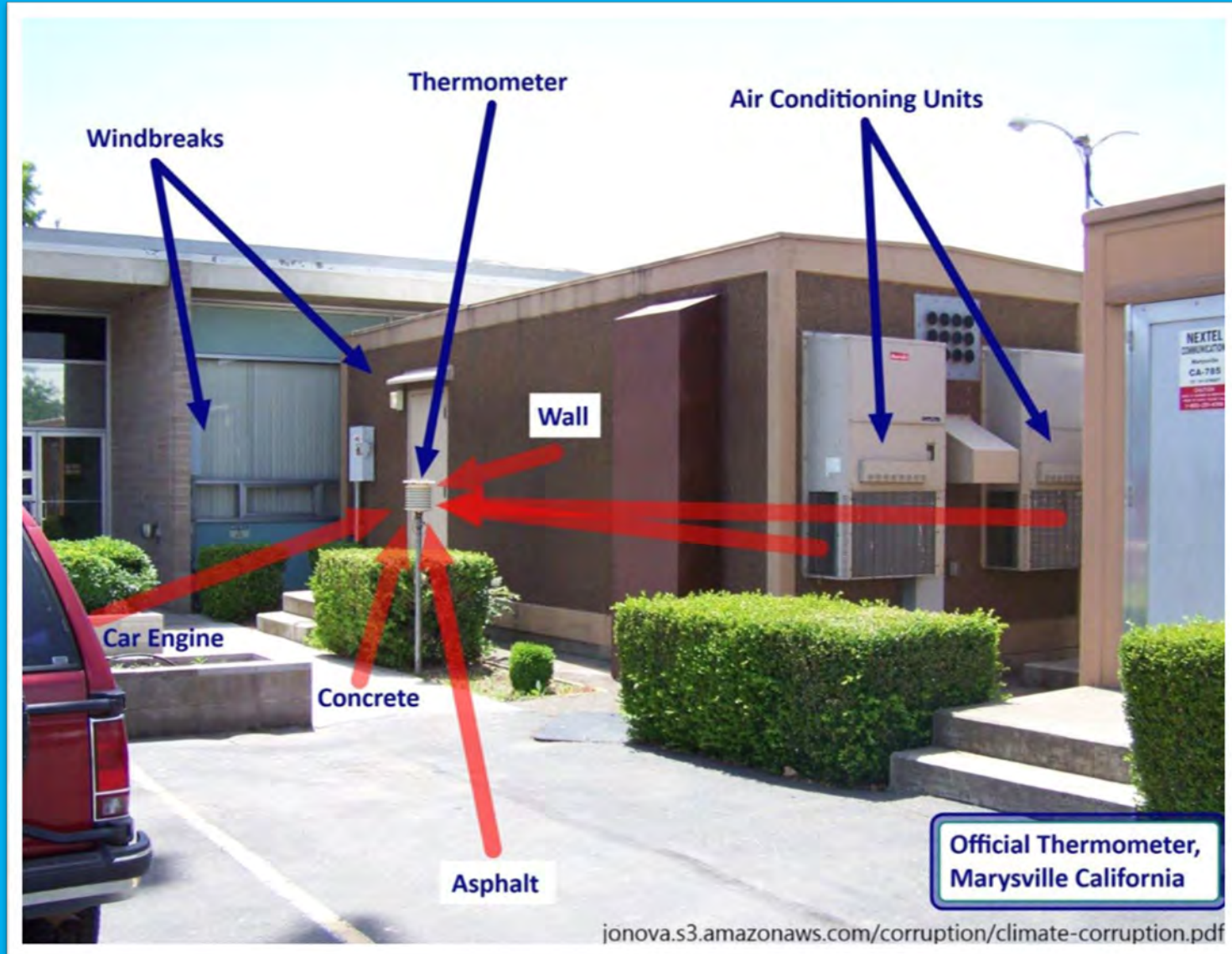
**Is this the**



**Mother of all Scares?**



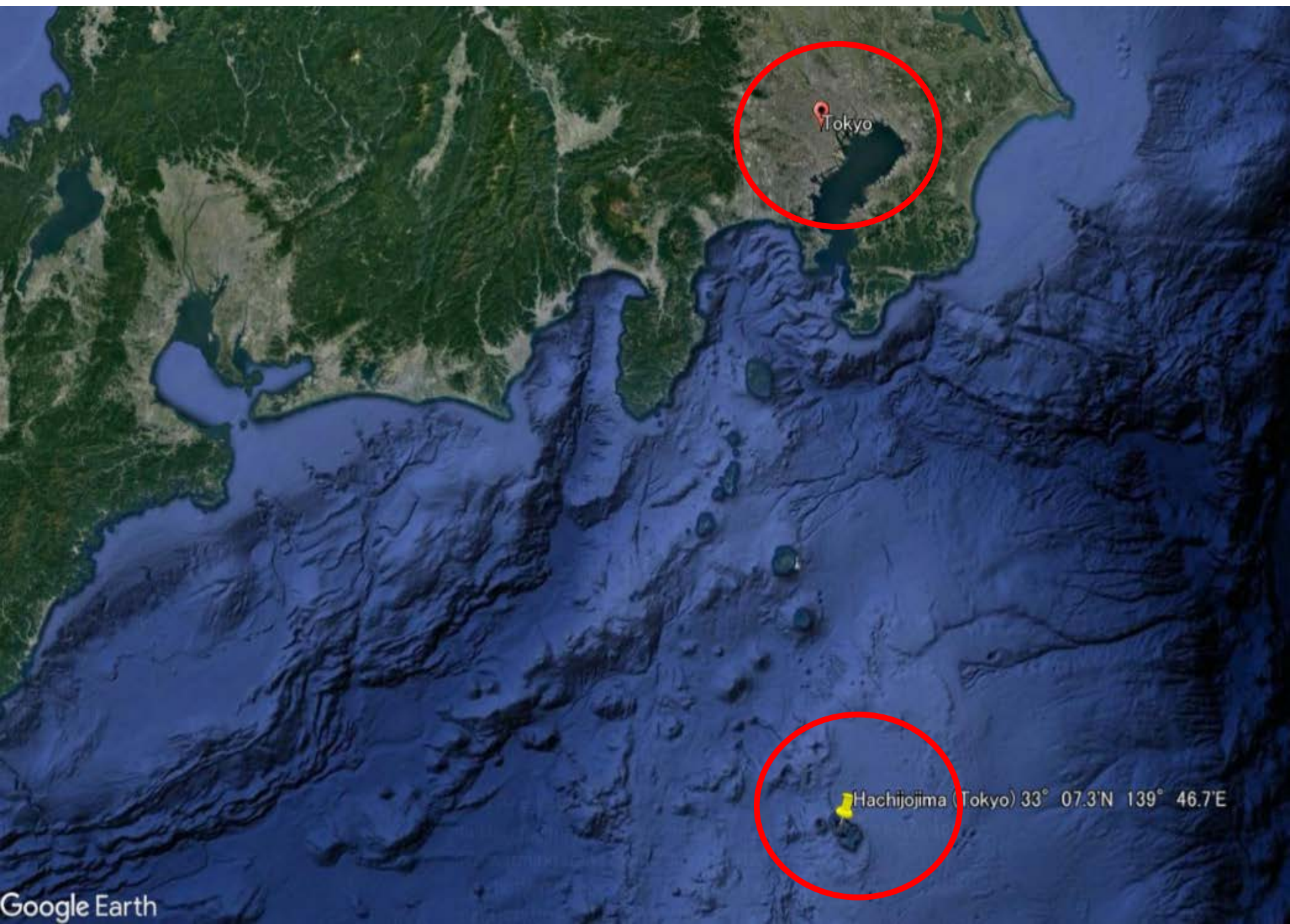
# Marysville California



Now dropped, but data back to 1897 still in official record

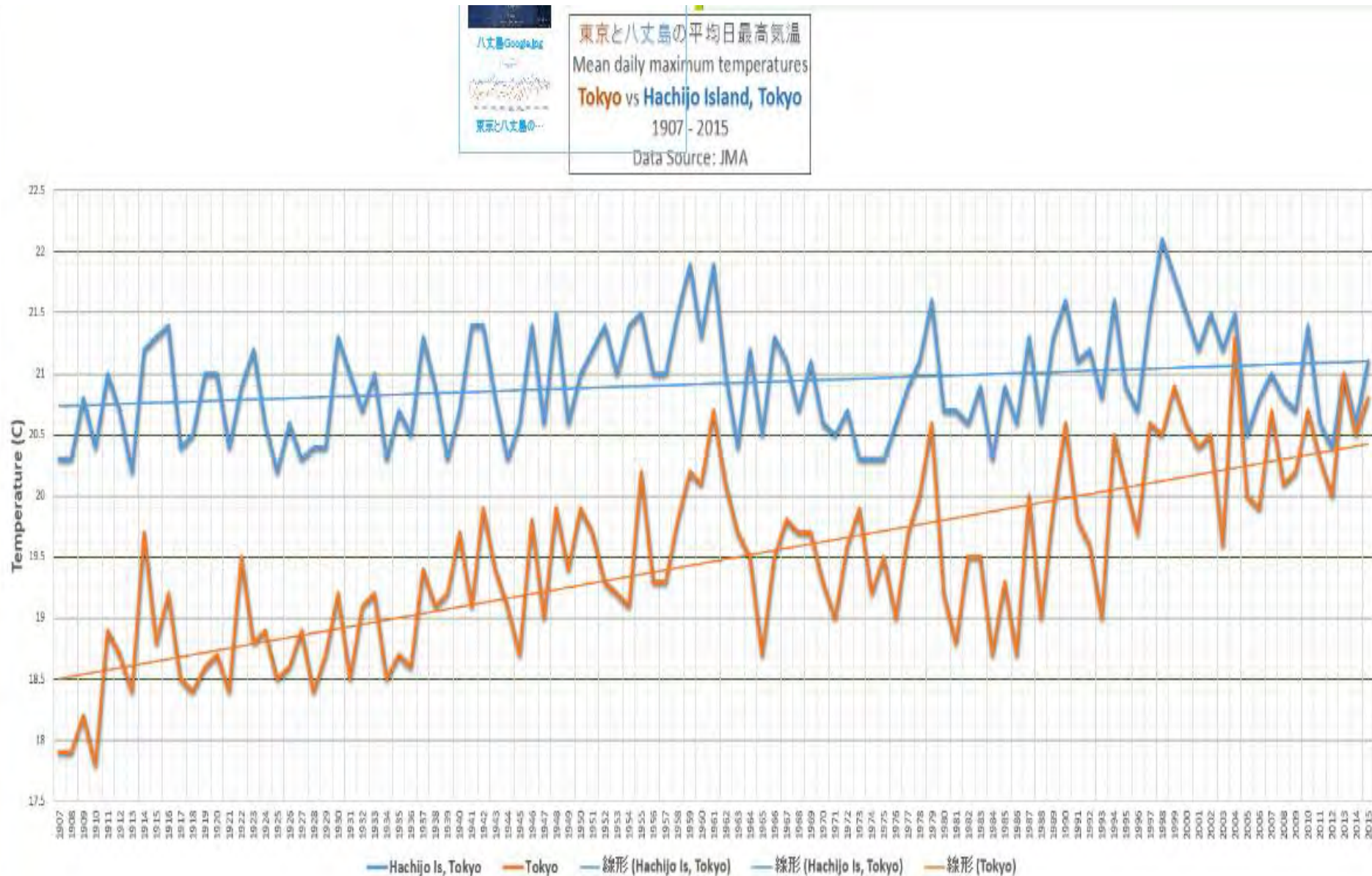
Photo courtesy of Anthony Watts and [www.surfacestations.org](http://www.surfacestations.org)

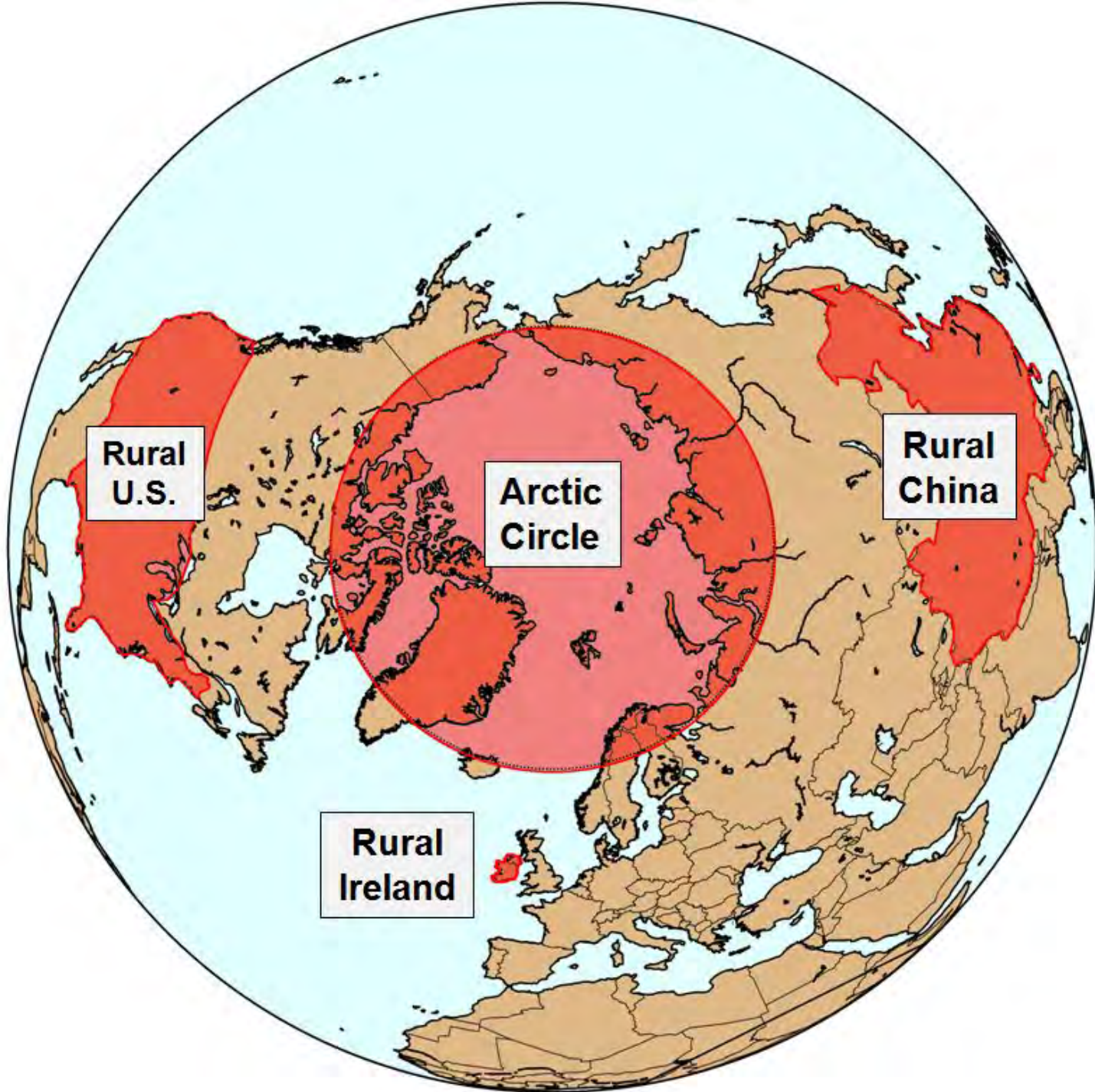
# A clear evidence for Urban Heat Island effects: Tokyo and Hachijojima Island



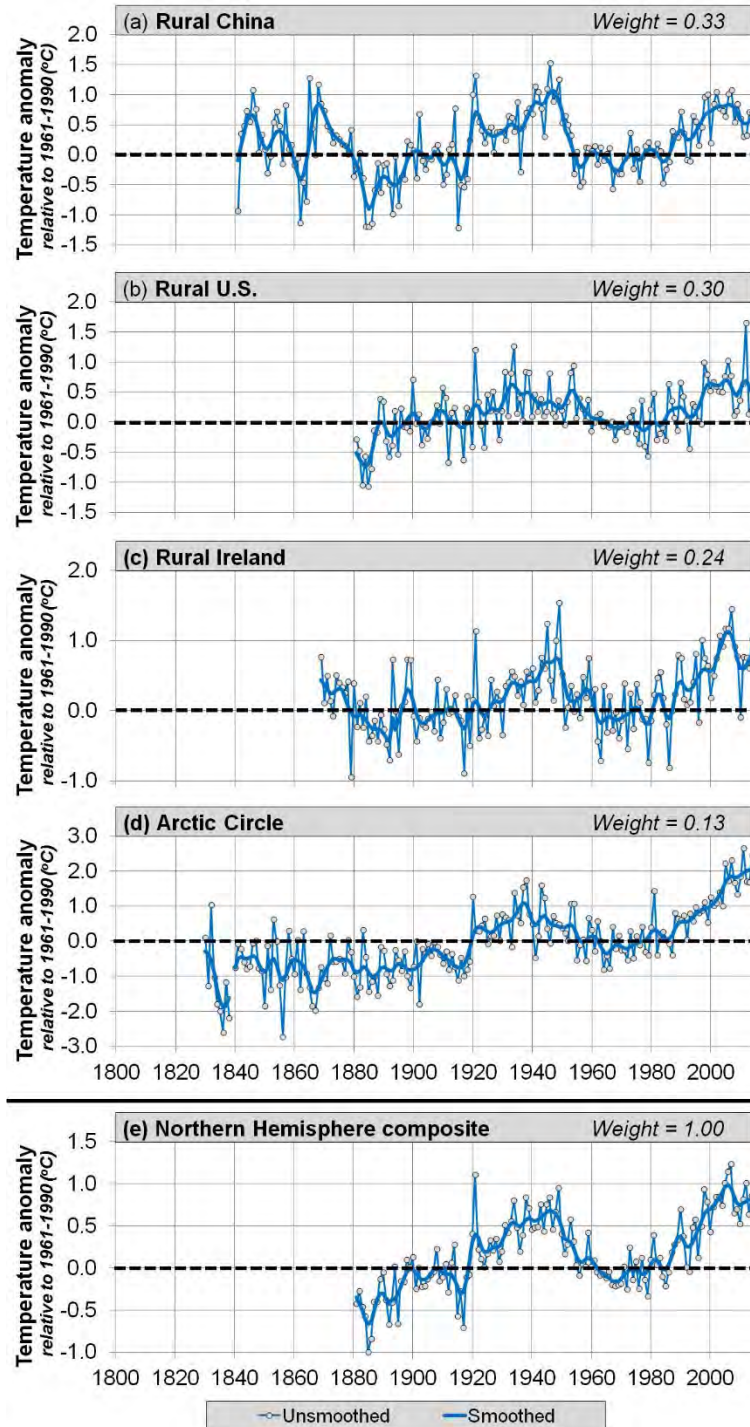


# A clear evidence for Urban Heat Island effects: Tokyo and Hachijojima Island









Temperature anomaly  
relative to 1961-1990 (°C)

(e) Northern Hemisphere composite

Weight = 1.00

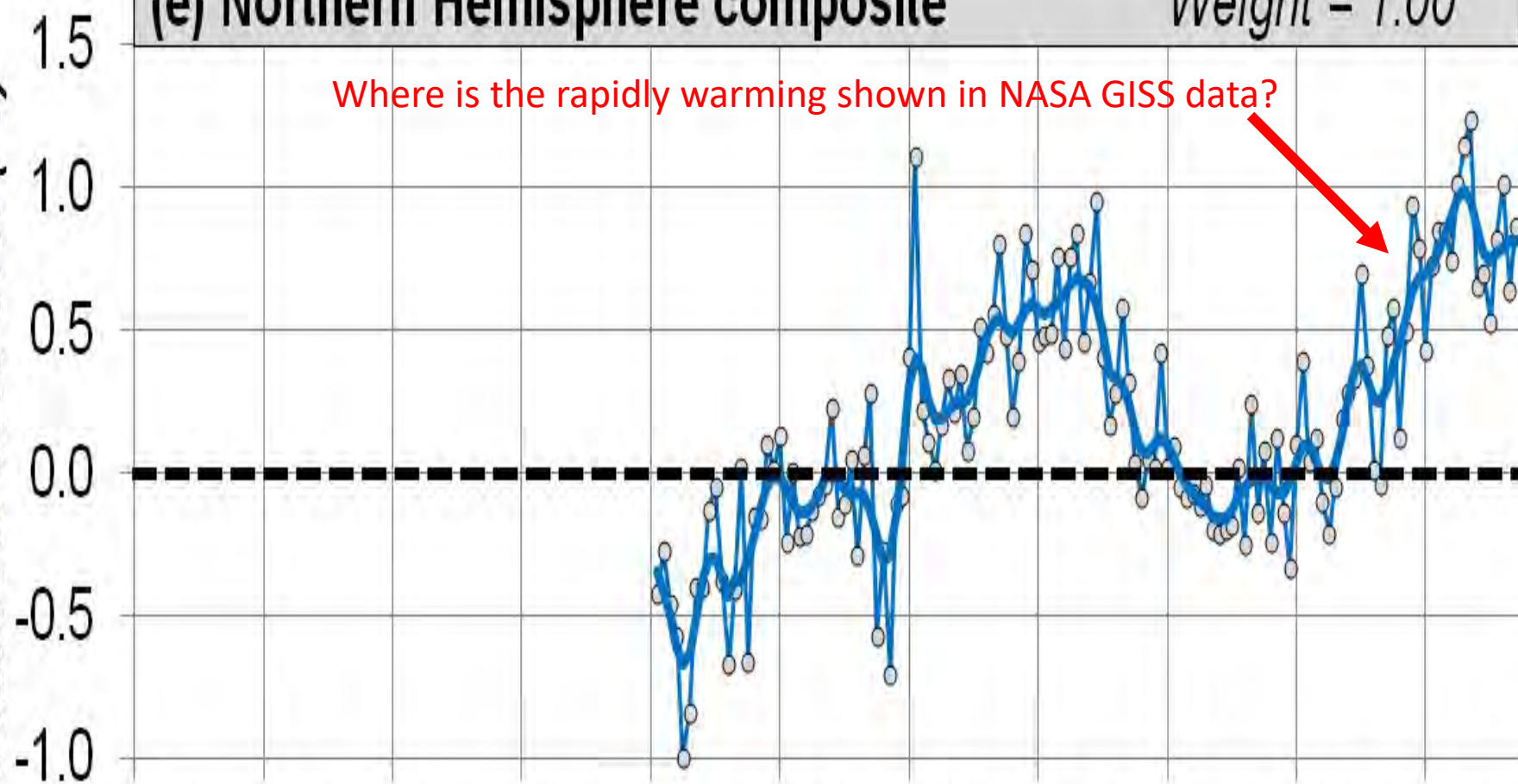
Where is the rapidly warming shown in NASA GISS data?



1800 1820 1840 1860 1880 1900 1920 1940 1960 1980 2000

○ Unsmoothed

— Smoothed



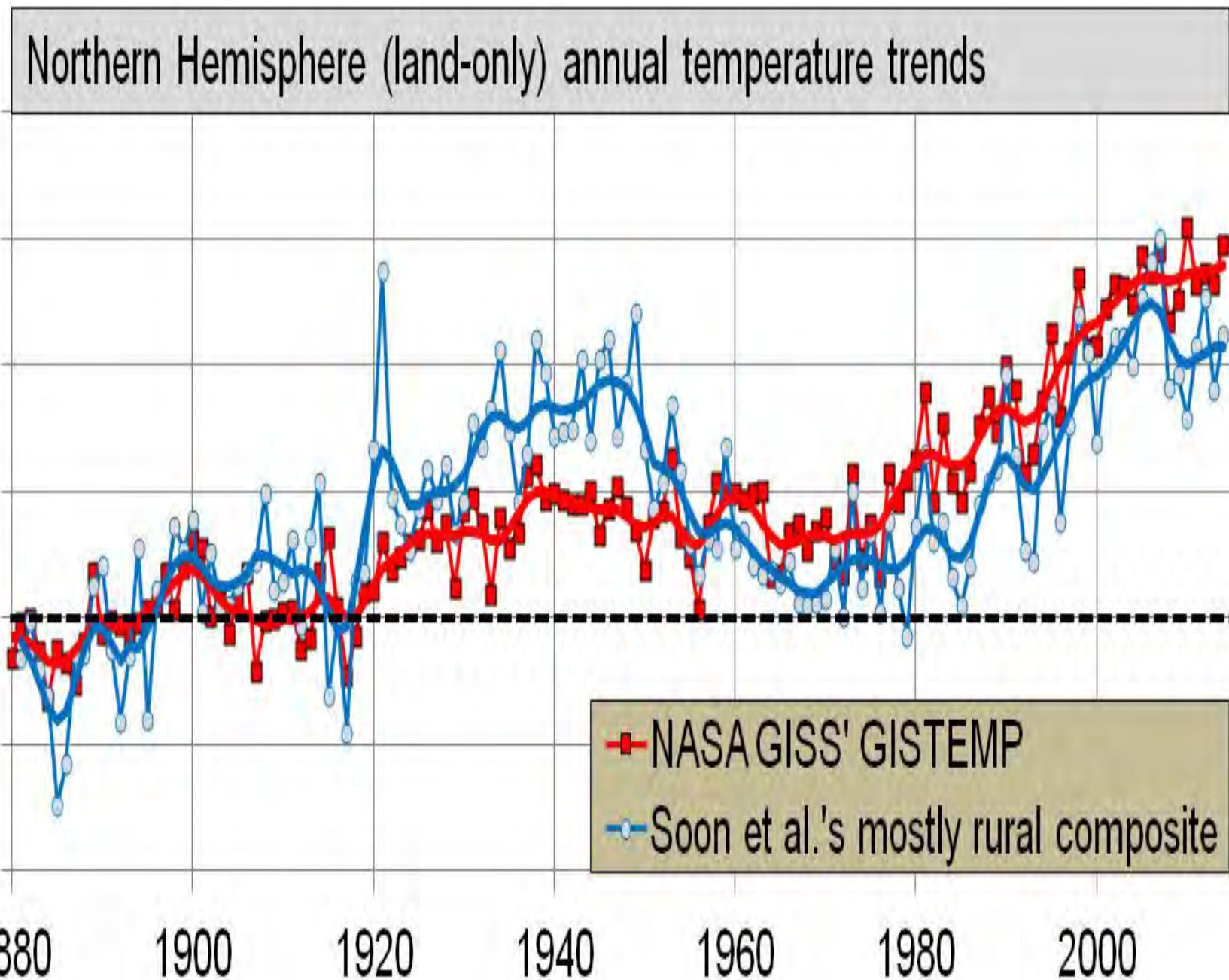
# Northern Hemisphere (land-only) annual temperature trends

Temperature anomaly  
relative to 1881-1910 (°C)

2.0  
1.5  
1.0  
0.5  
0.0  
-0.5  
-1.0

1880 1900 1920 1940 1960 1980 2000

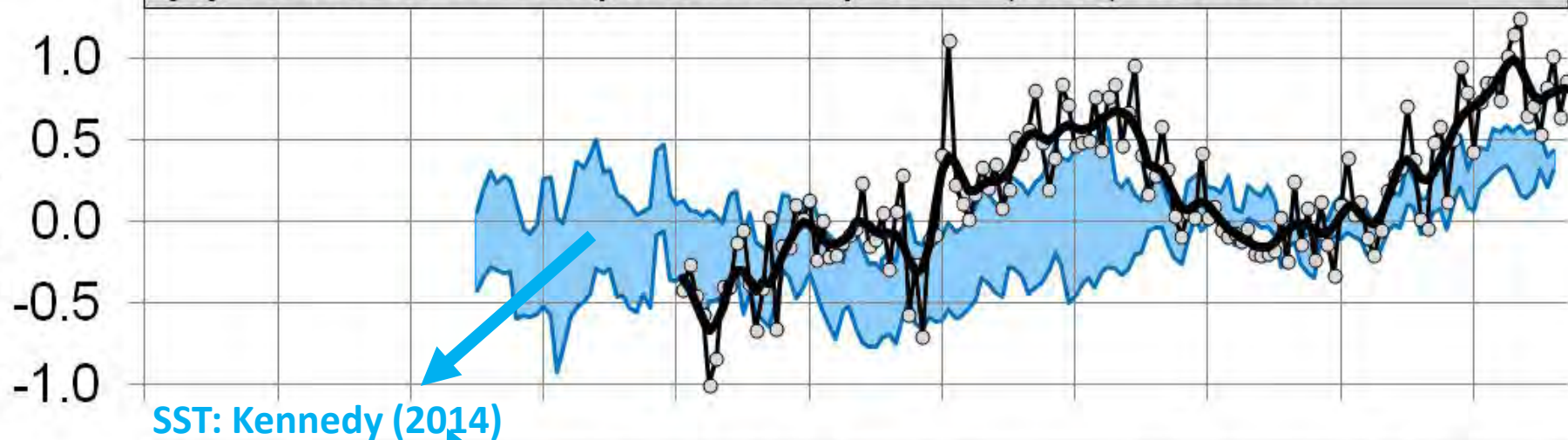
- NASA GISS' GISTEMP
- Soon et al.'s mostly rural composite



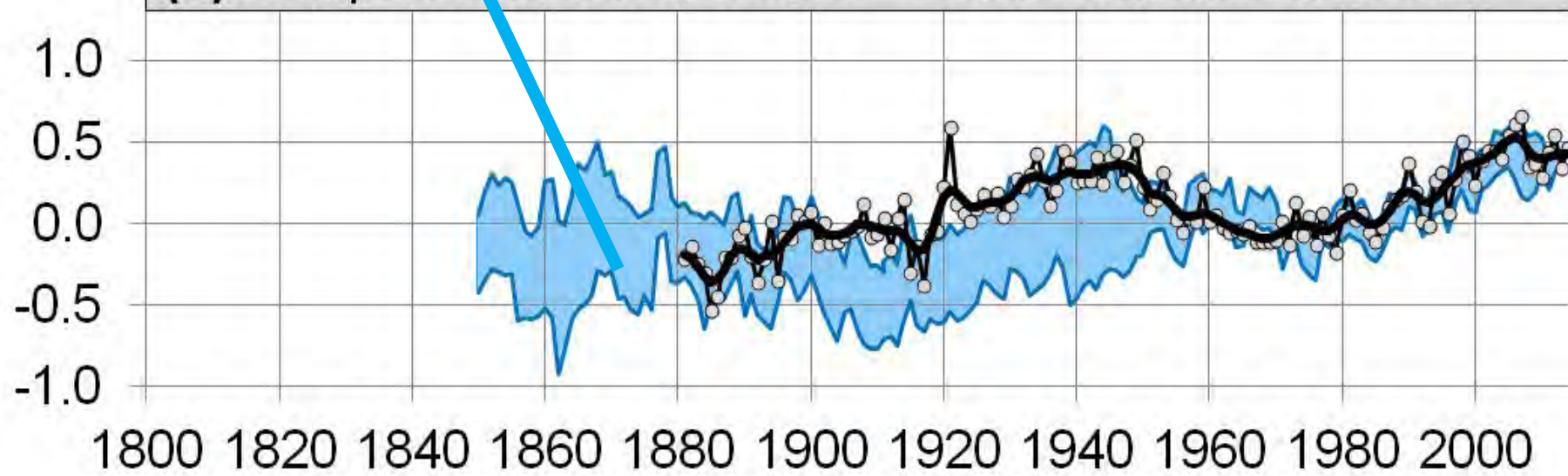


Which record  
is correct:  
our new NH composite  
or NASA GISS?

**(a)** Northern Hemisphere composite (land) vs. SST



**(b)** Composite rescaled  $\times 0.53 \rightarrow$  same variance as SST



— Sea Surface Temperatures    —○— Unsmoothed    — Smoothed

Look what happened when you consider the ocean heat content

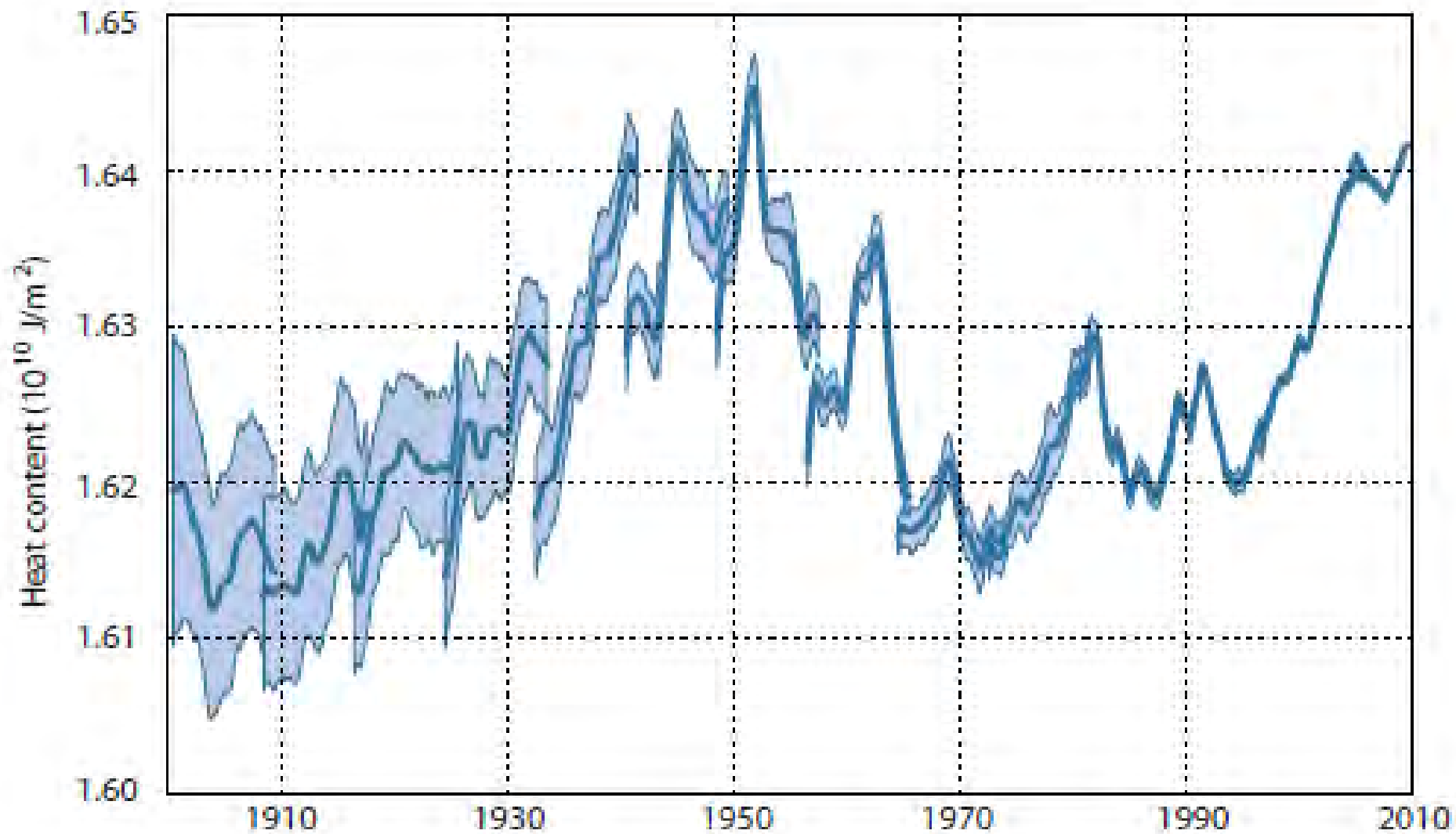
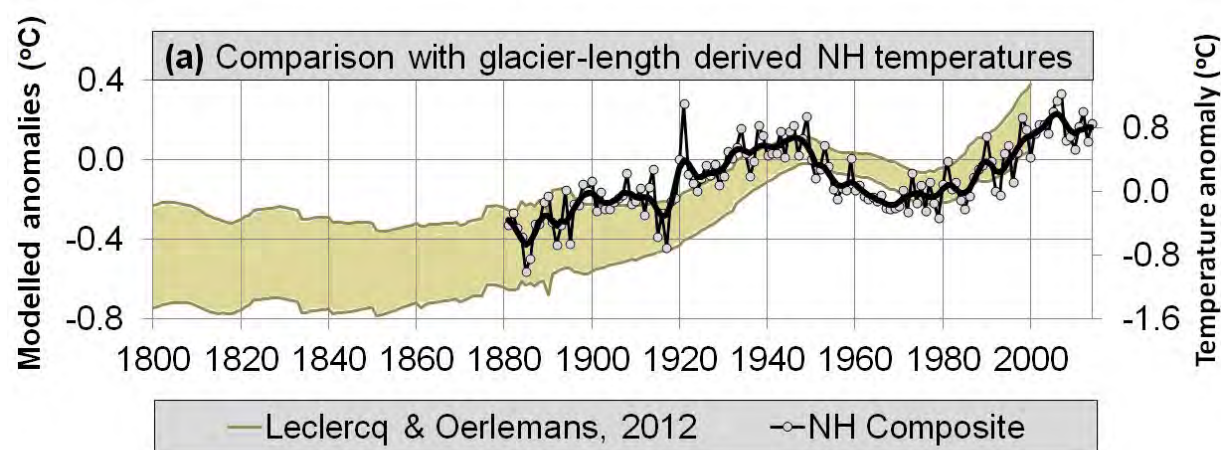
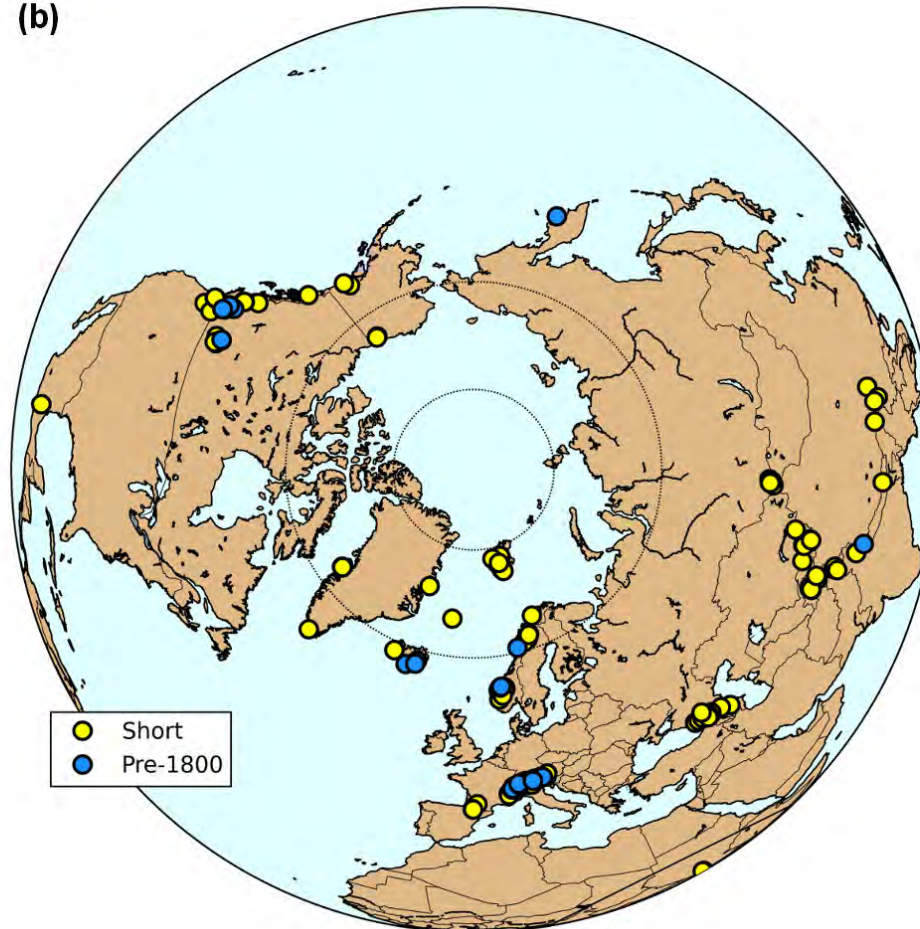


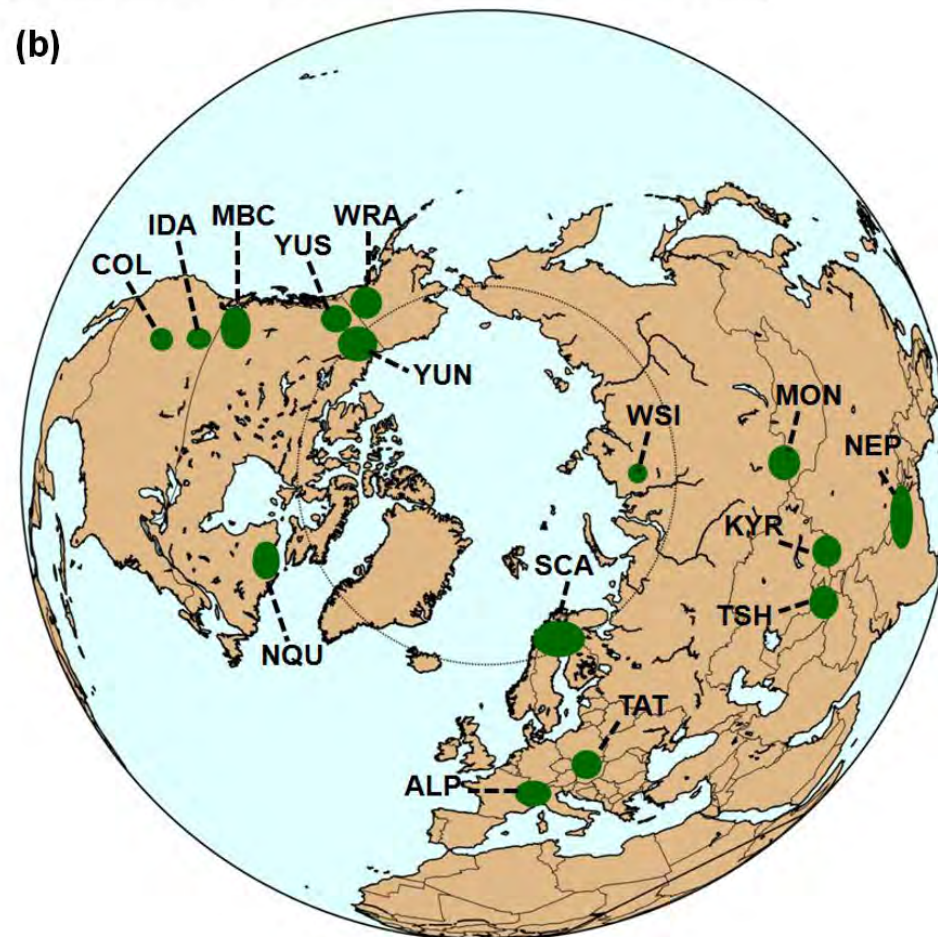
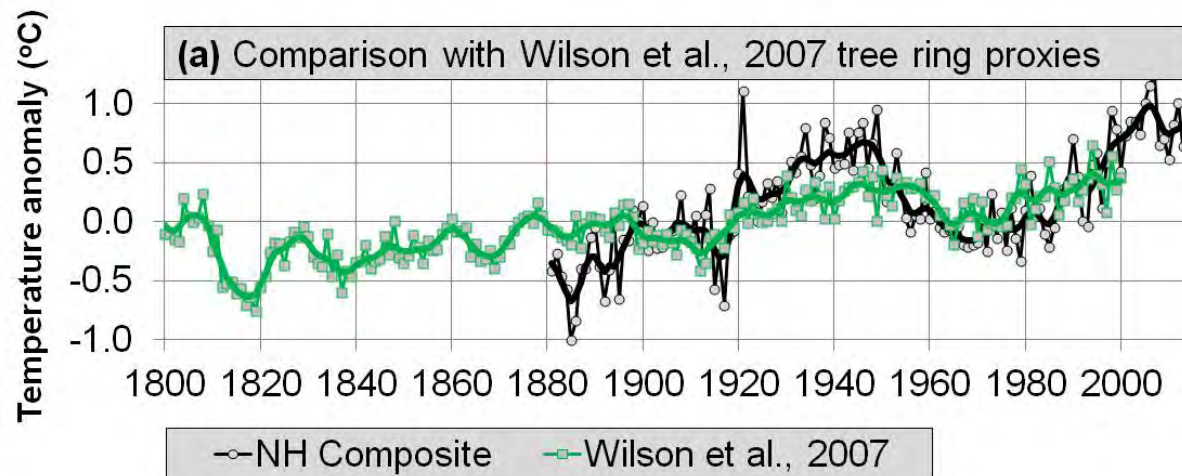
Figure 6: Global average ocean heat content for the upper 300 m.  
From the ECMWF CERA-20C reanalysis ensemble, and redrawn from Laloyaux *et al.* Figure 10.





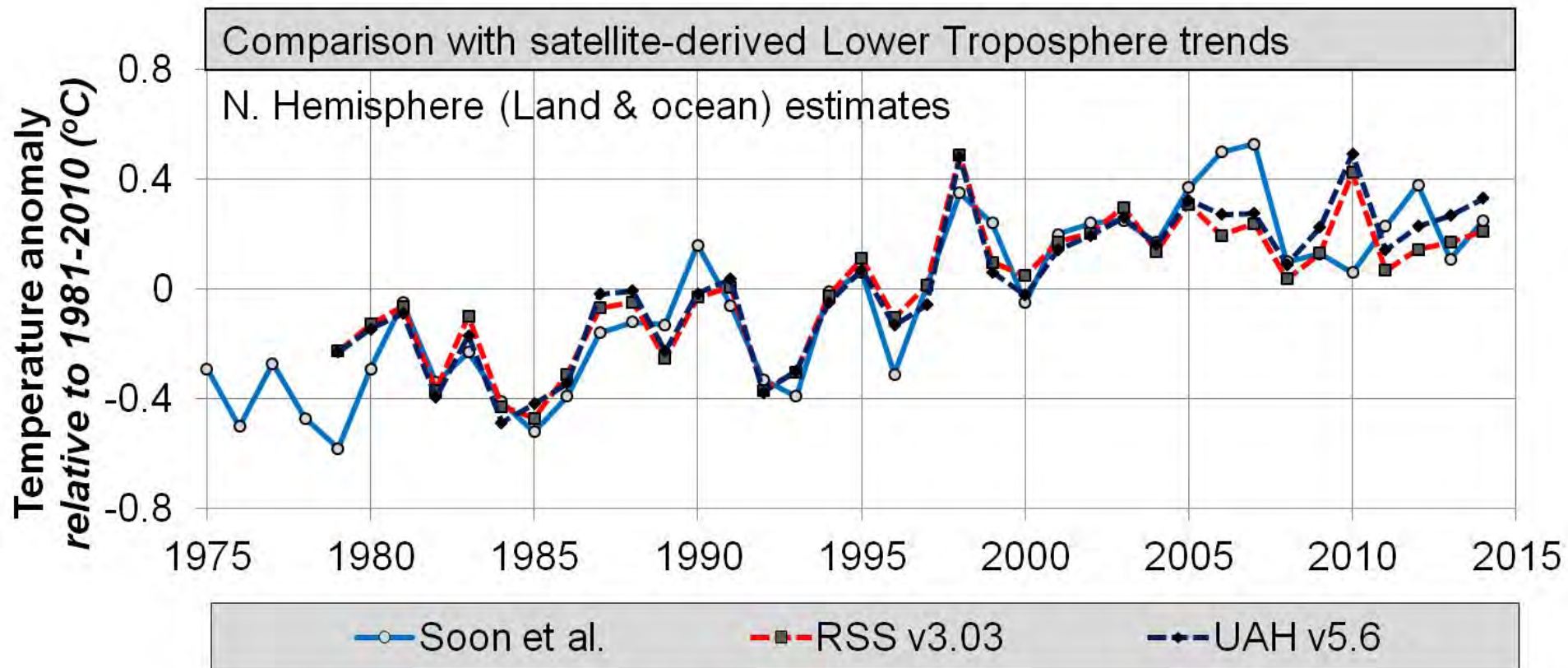
**(b)**





What about  
the satellite data?

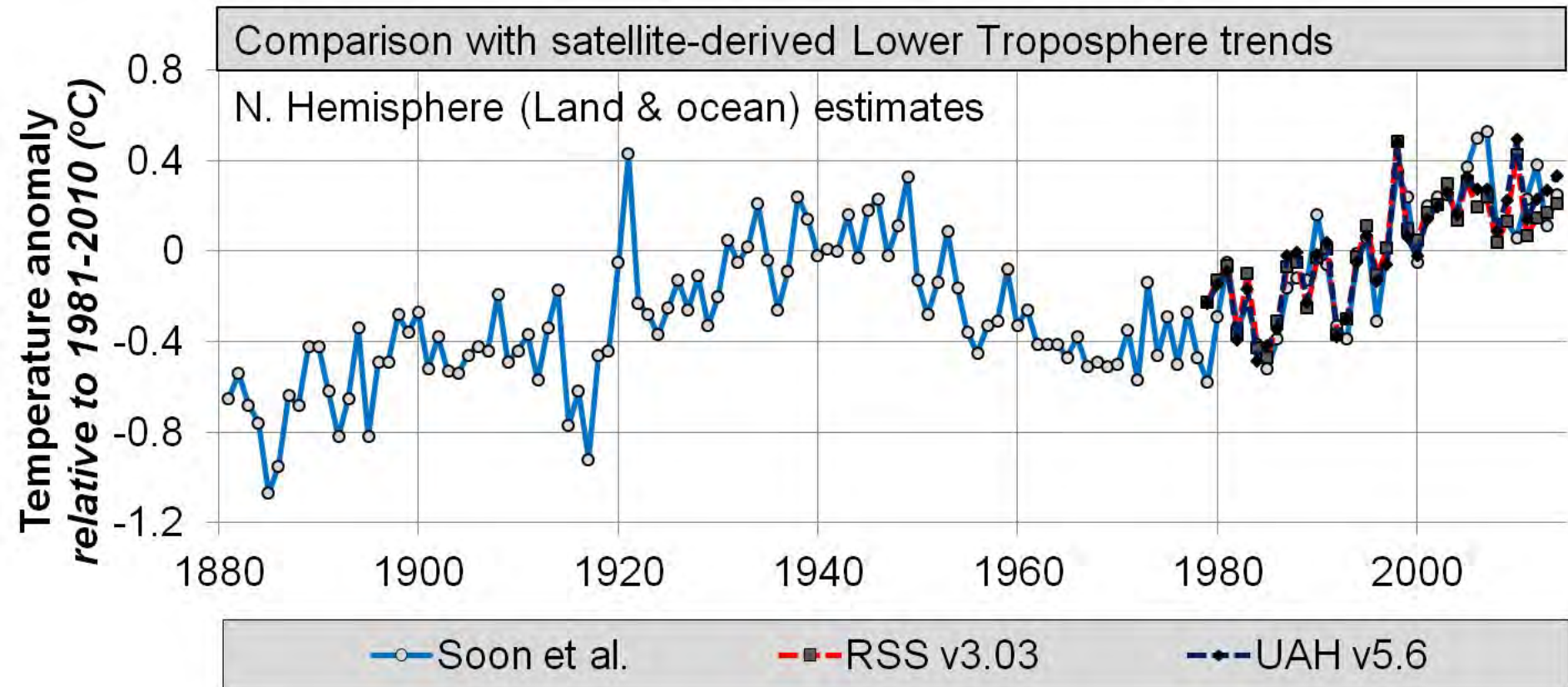




**Sources** (Accessed September 2015)

RSS: [http://data.remss.com/msu/monthly\\_time\\_series/](http://data.remss.com/msu/monthly_time_series/)

UAH: <http://nsstc.uah.edu/climate/>



**Sources** (Accessed September 2015)

RSS: [http://data.remss.com/msu/monthly\\_time\\_series/](http://data.remss.com/msu/monthly_time_series/)

UAH: <http://nsstc.uah.edu/climate/>

# The weather-climate system is powered by solar energy



Power:  $4 \times 10^{26} \text{ W}$

$2 \times 10^{17} \text{ W}$

(world most powerful laser:  $5\text{-}10 \times 10^{15} \text{ W}$ ; 100 petawatts pulse coming\*)

Adapted from Jurg Beer 2007's presentation

\*Ruxin Li, Shanghai Superintense Ultrafast Laser Facility (January 24, 2018 Science Magazine News)



# **12-Day Journey of Sunspot 2339 (May 5-17, 2015)**

**Solar Dynamics Observatory (SDO) using the Helioseismic and Magnetic Imager (HMI) instrument**

Total Solar Irradiance  
( $W/m^2$ )

# Total Solar Irradiance (TSI) vs. N. Hemisphere composite

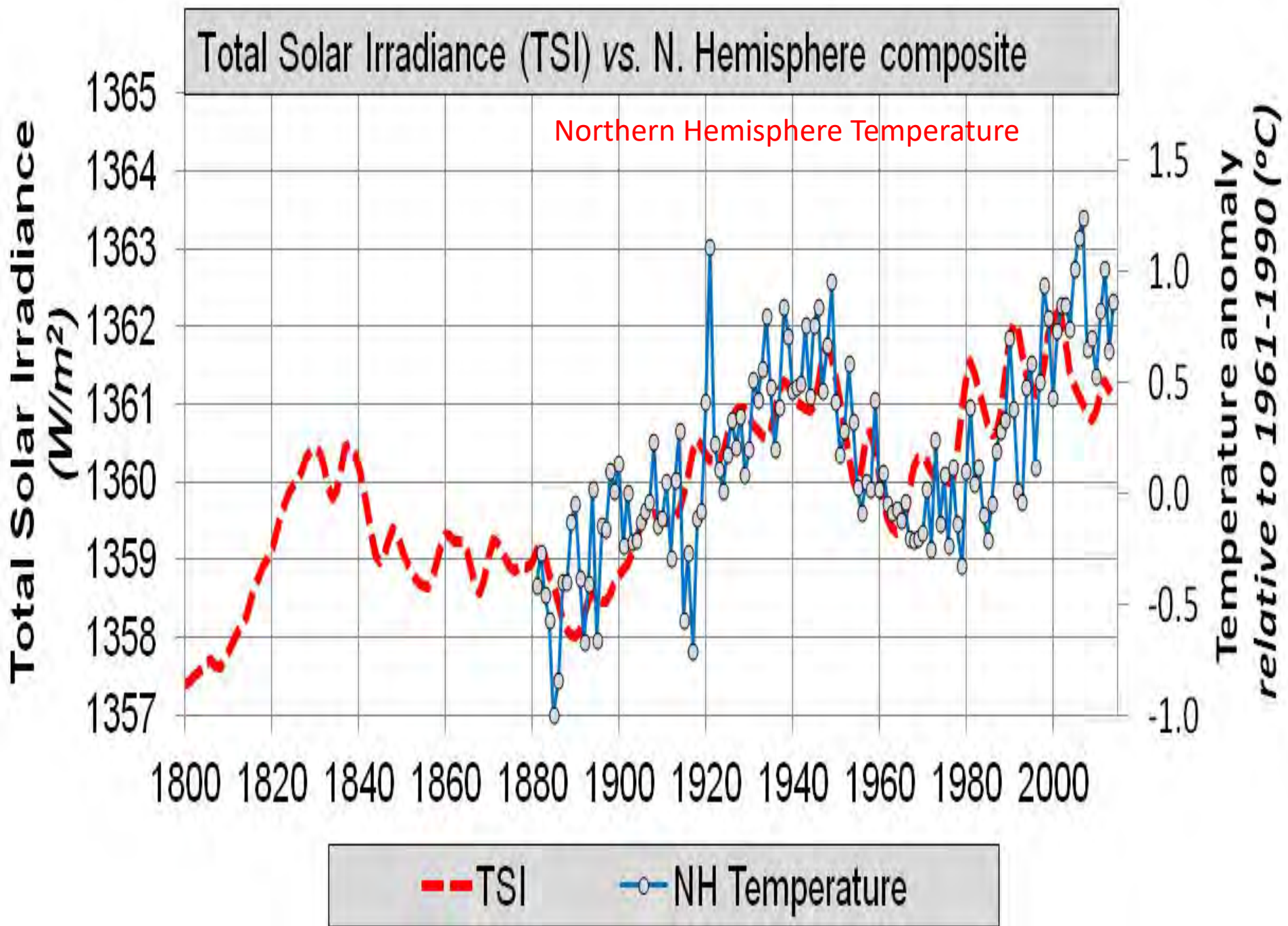
Northern Hemisphere Temperature

Temperature anomaly  
relative to 1961-1990 ( $^{\circ}C$ )

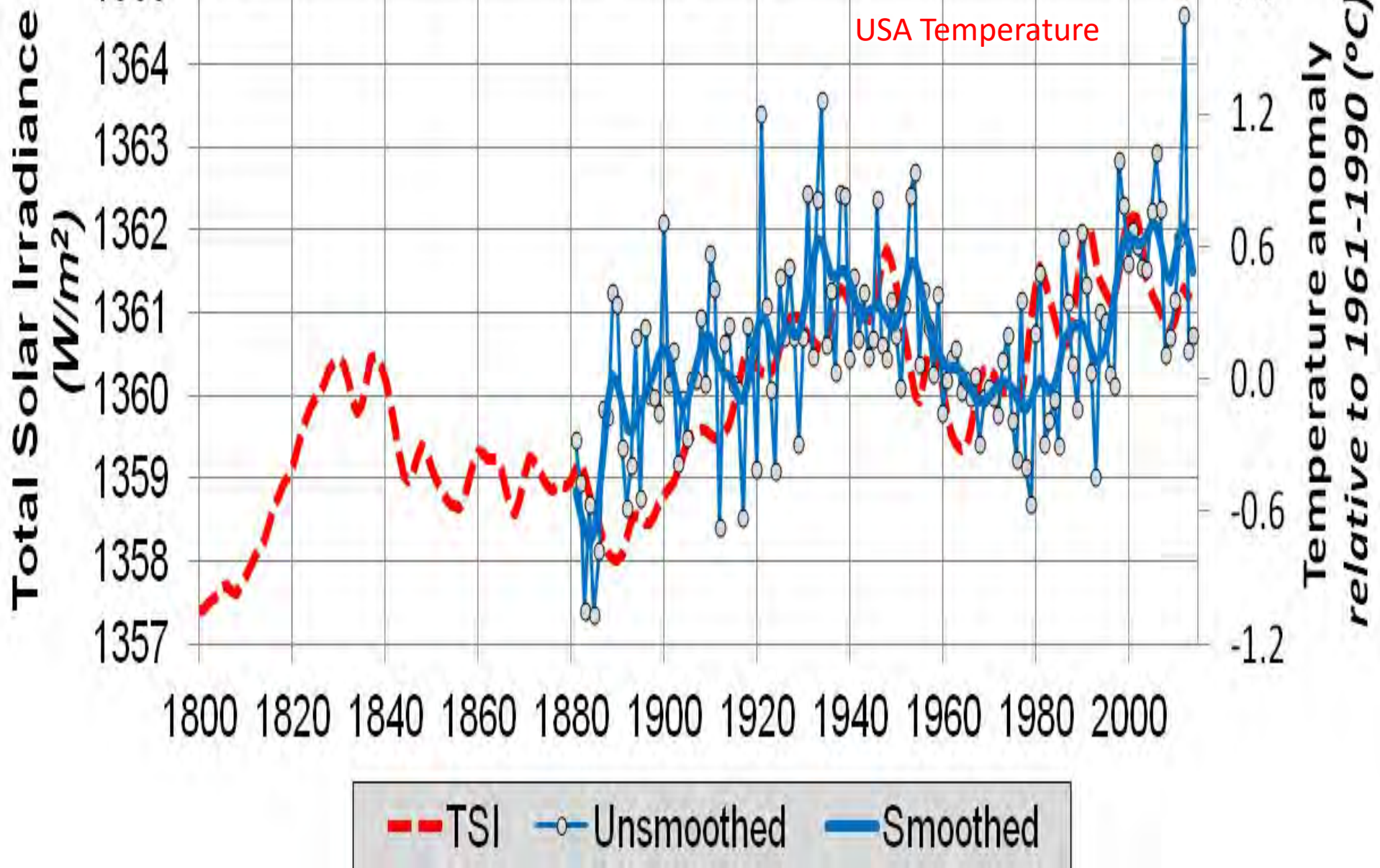
1800 1820 1840 1860 1880 1900 1920 1940 1960 1980 2000

-- TSI

○ NH Temperature

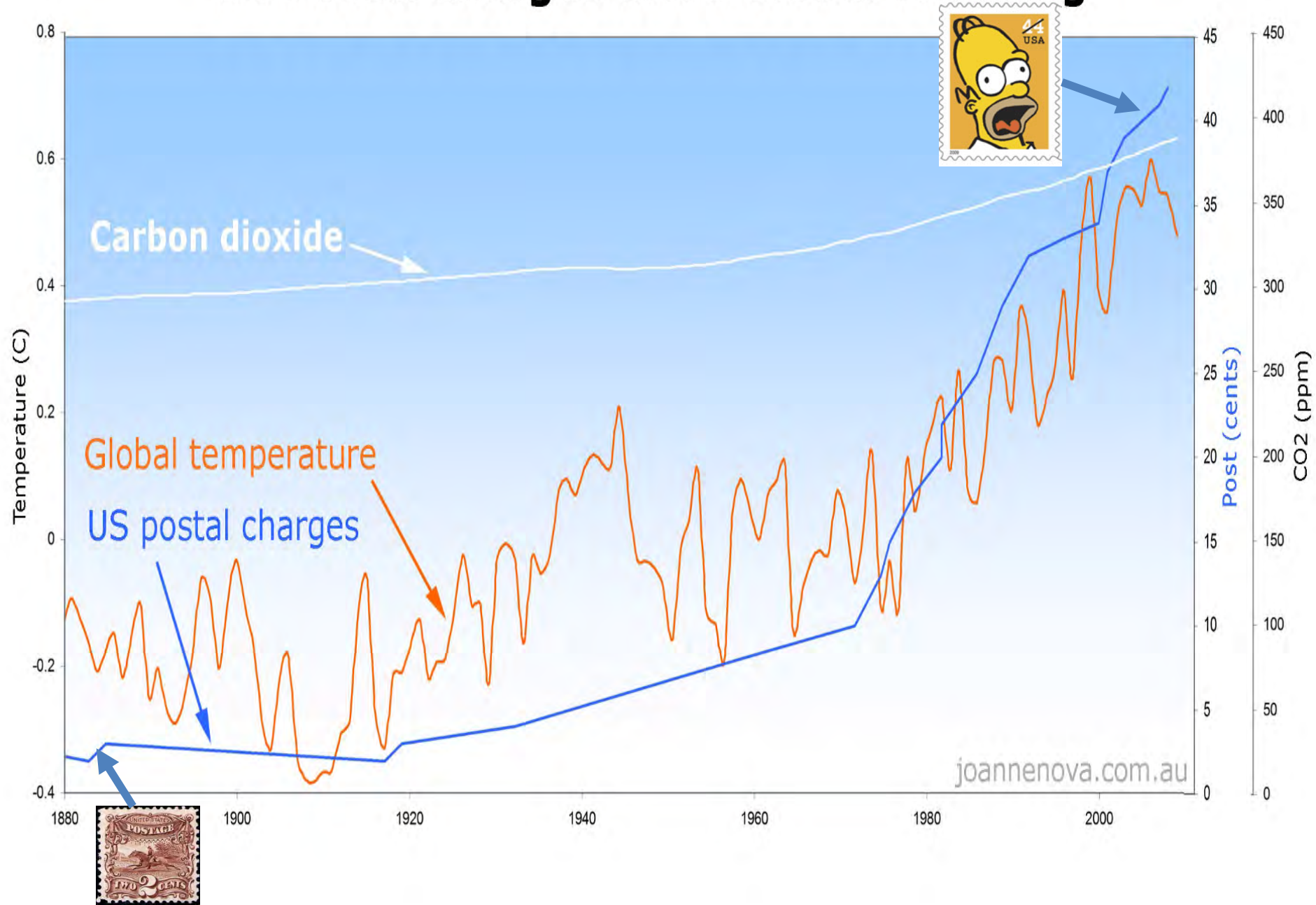


(b) Total Solar Irradiance (TSI) vs. Rural U.S.



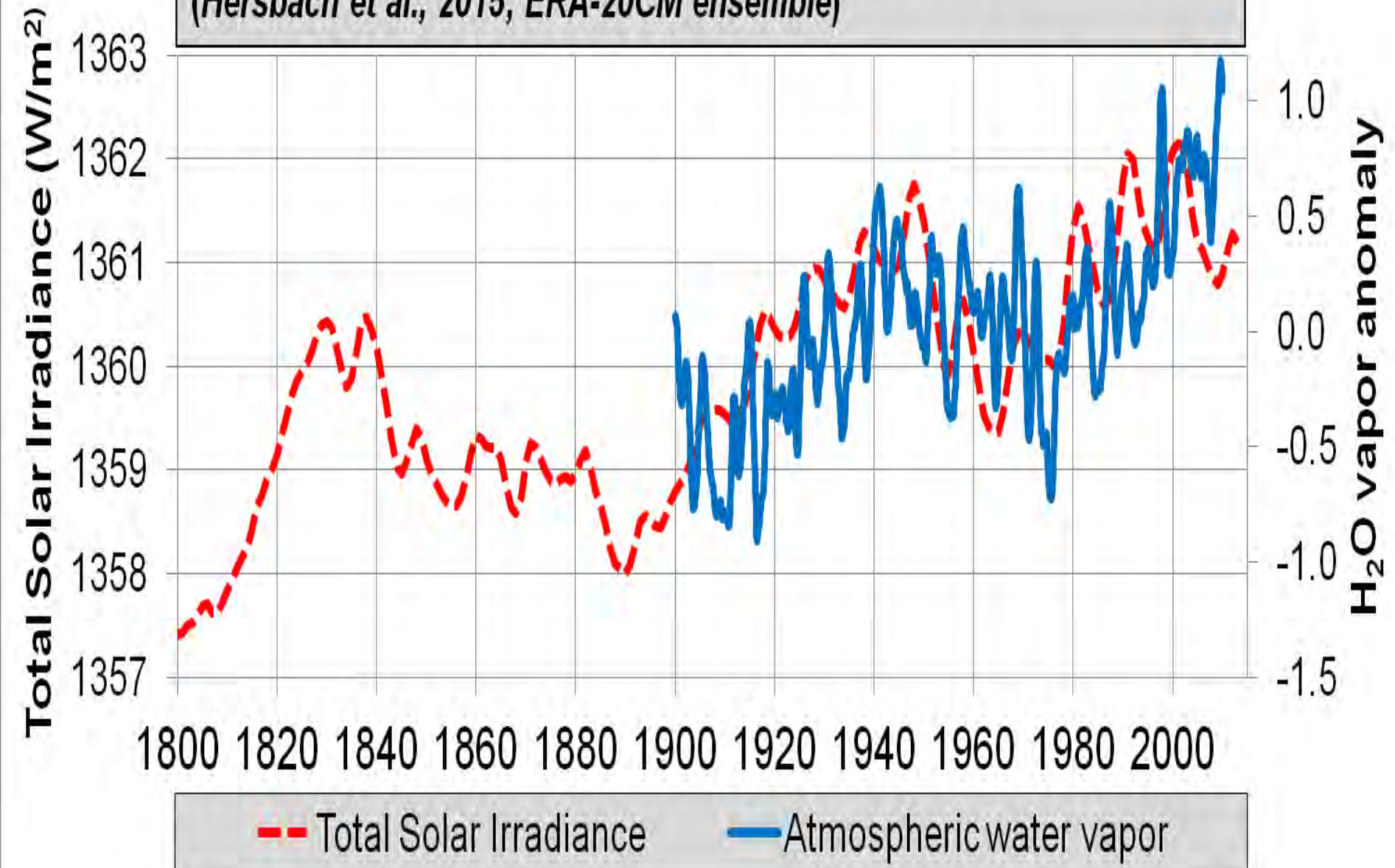


# US Postal charges drive Global Warming



**What is the real reason for the close correlation between Solar Radiation and the composite NH temperature?**

**Total column H<sub>2</sub>O vapor (over ocean) vs. Total Solar Irradiance**  
(Hersbach et al., 2015; ERA-20CM ensemble)





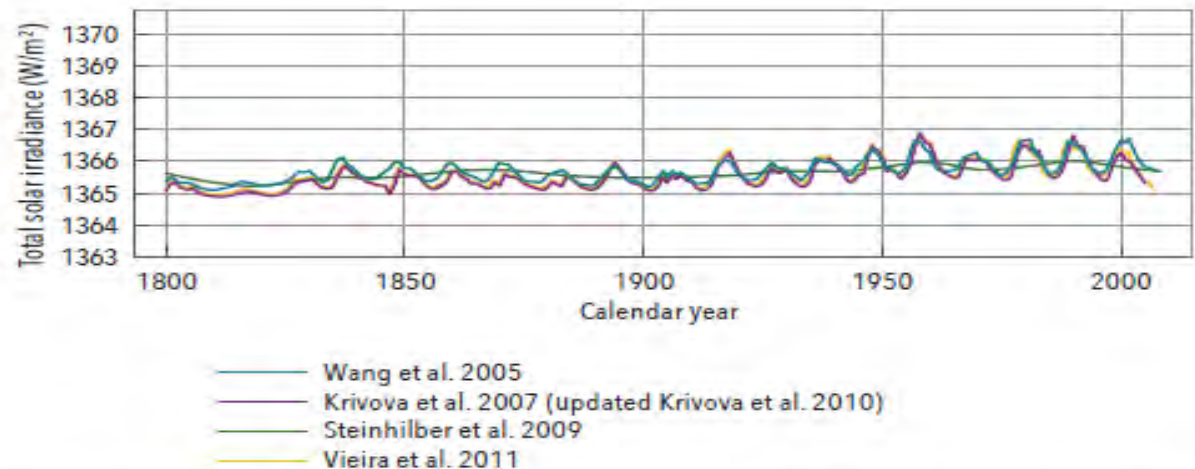
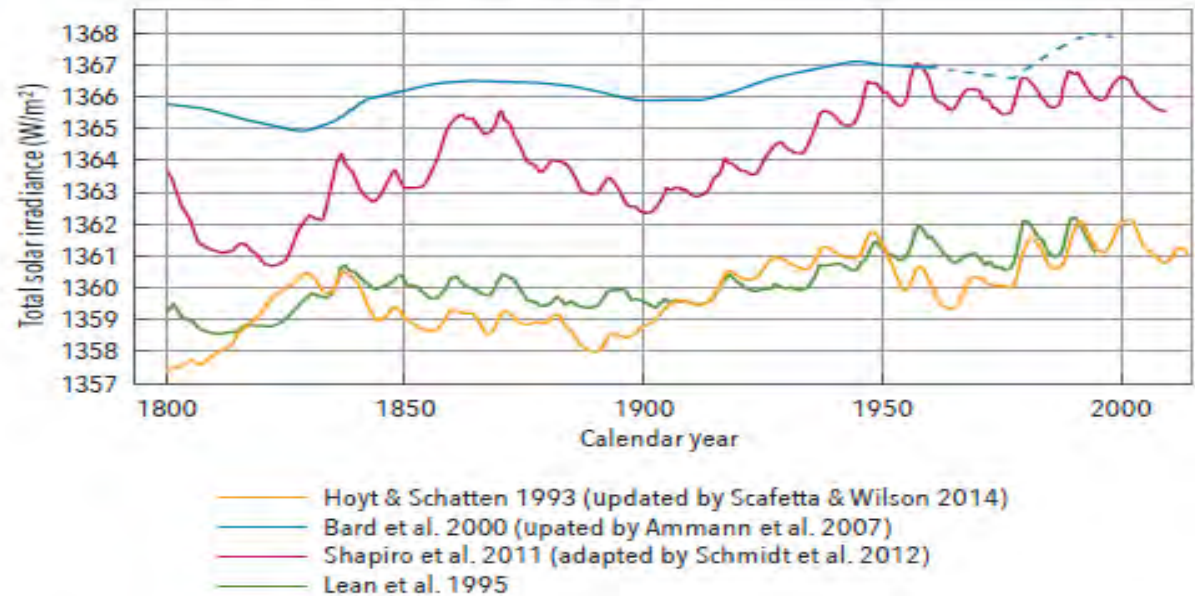
# A great HOAX or gross incompetence by Willie Soon ?



Image courtesy of the Onion (June 8, 2018)

# Many different estimates of solar variability

Figure 11.1 Different measures of total solar irradiance



The top chart shows the results from four studies suggesting relatively high solar variability since 1800. (The dashed blue line represents the work of Ammann et al. 2007, which was used to update Bard et al. 2000.) This contrasts with the bottom chart showing the results from low solar variability studies used as 'natural forcings' for the CMIP5 Global Climate hindcasts in the IPCC's Fifth Assessment Report (5AR).

“High variability”  
estimates ignored by IPCC  
AR5 climate models!

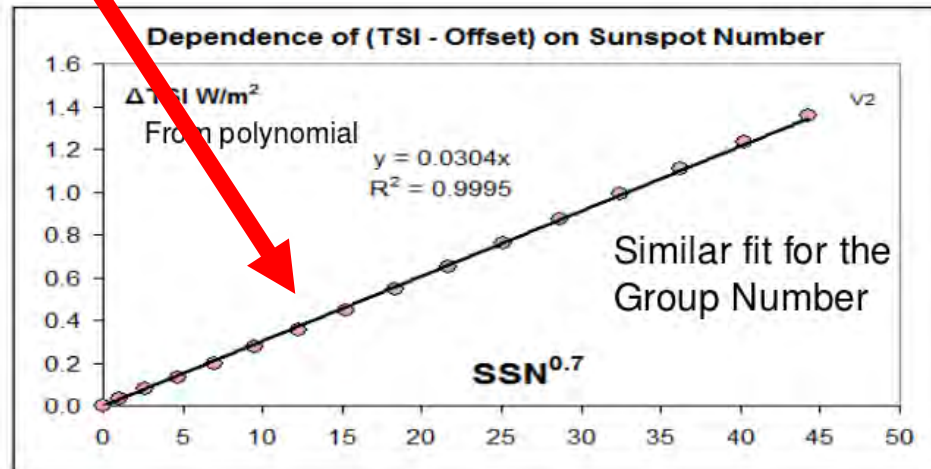
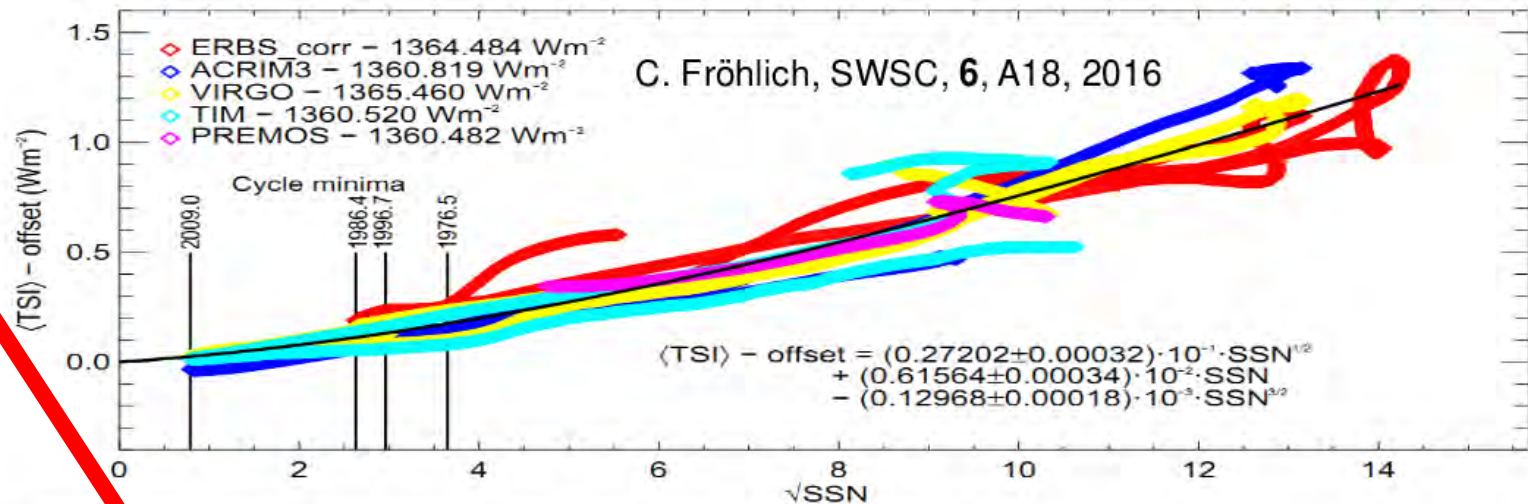
IPCC AR5 climate models  
**only** used “low variability”  
estimates! **But this is**  
**based on the dogmatic**  
**assumption that TSI must**  
**only depends on sunspot**  
**numbers alone**

# TSI is simply scaled as $SN^{0.7}$

If TRUE: stop measuring TSI because counting SN is enough!

(NOTE: low or zero SN number has NO physical meaning nor precision for TSI)

## Claus Fröhlich Lined up TSIs as a Function of the Square Root of the Sunspot Number



The relationship is not quite linear in  $SSN^{0.5}$ , but rather in  $SSN^{0.7}$  which is a very close [and much simpler] fit to Fröhlich's polynomial



The 1920s-1940s climate  
shift cannot (and must not)  
be related to  
the Sun's activity?

## A Curious History of Sunspot Penumbrae

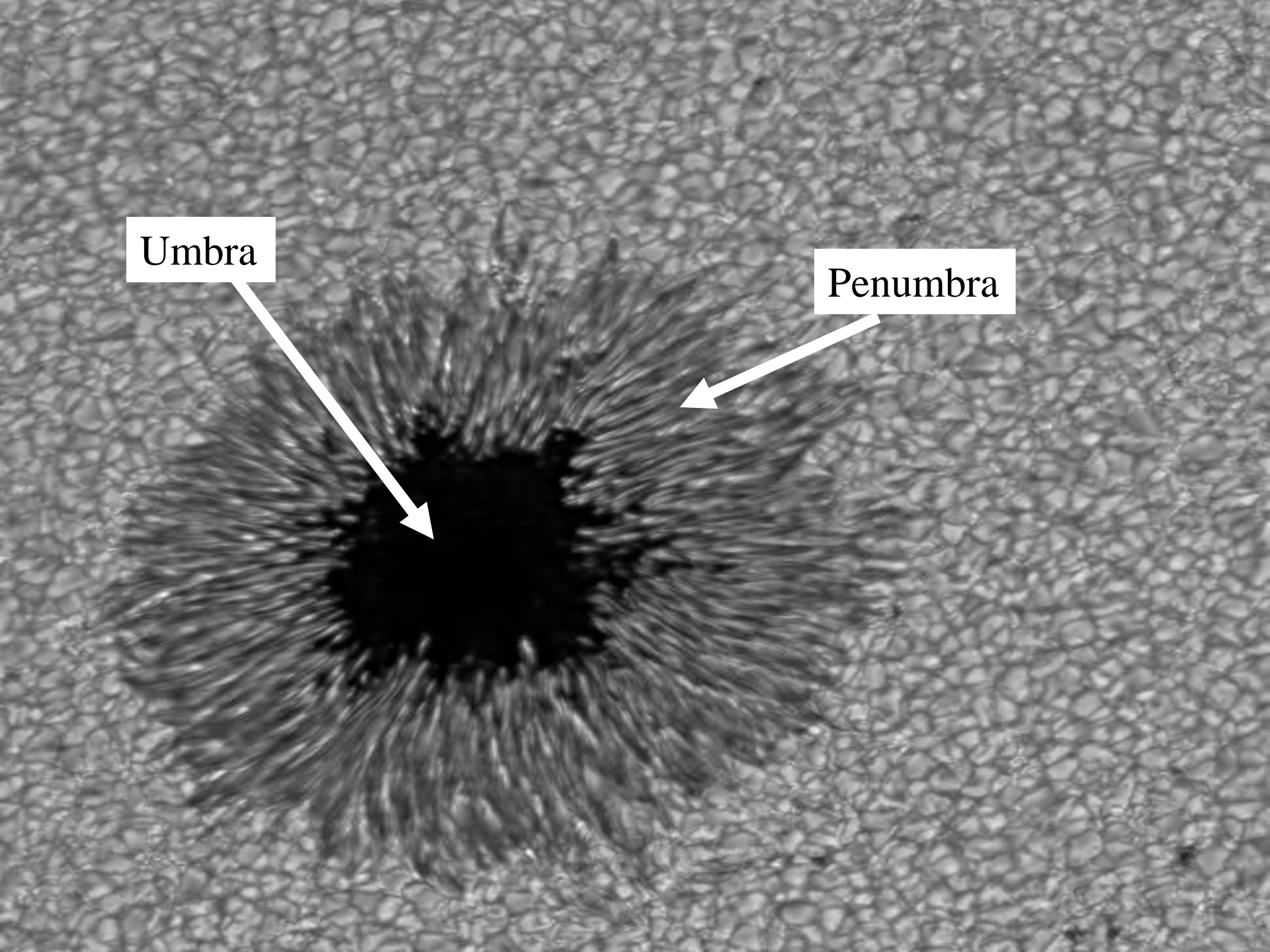
D.H. Hathaway

If the penumbrae of these small sunspots vary in area by a factor of more than two over long (multi-decadal) time-scales, then estimates of the Sun's total irradiance based on sunspot number or sunspot area could be substantially in error.

Note: spot groups smaller than 10 msh (or about 30 million km<sup>2</sup> or diameter of about 6 thousand km)

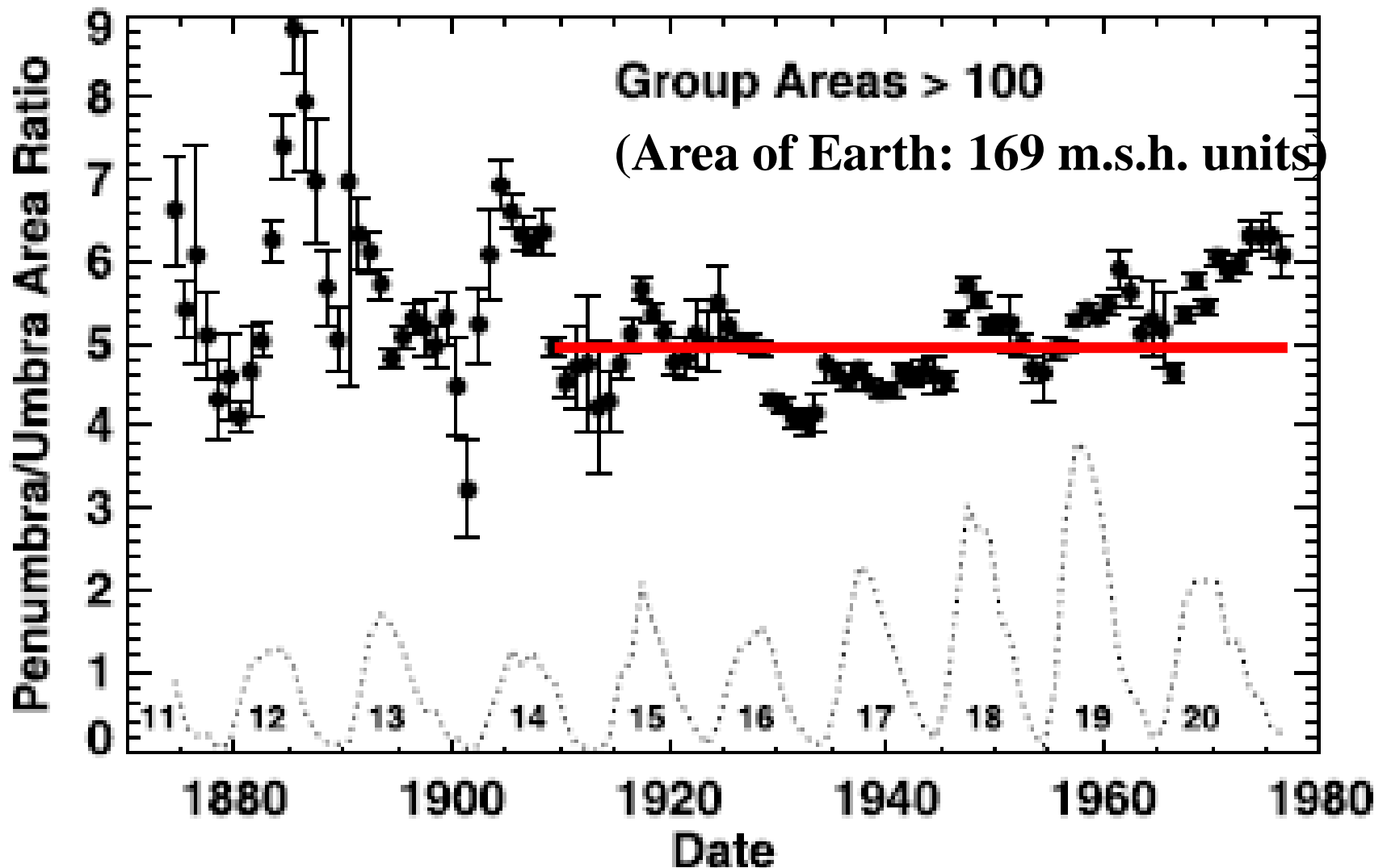
Umbra

Penumbra





# The size of sunspots matters: Larger versus smaller spots



# THE CLASSIFICATION OF SUNSPOT GROUPS

PATRICK S. McINTOSH

*NOAA Space Environment Lab, Boulder, CO 80303-3328, U.S.A.*

MODIFIED  
ZURICH CLASS

## McIntosh Sunspot Group Classification

PENUMBRA: LARGEST SPOT

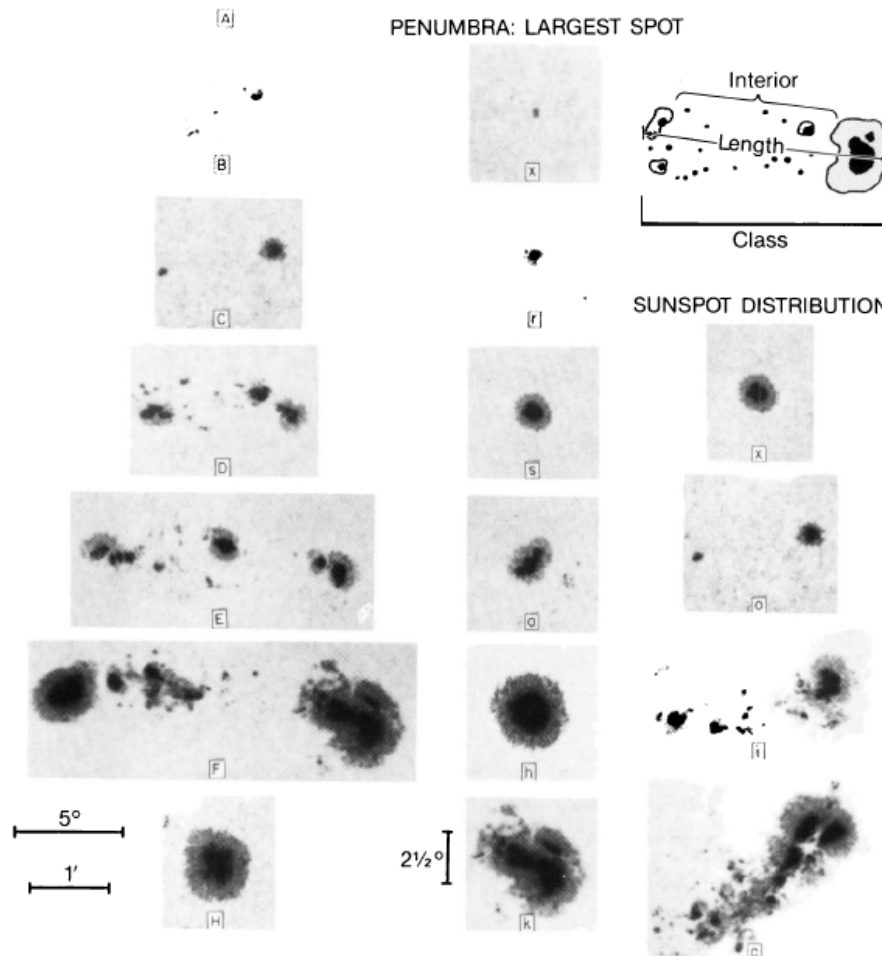
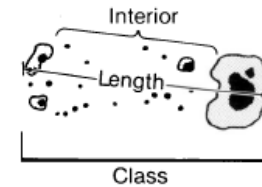
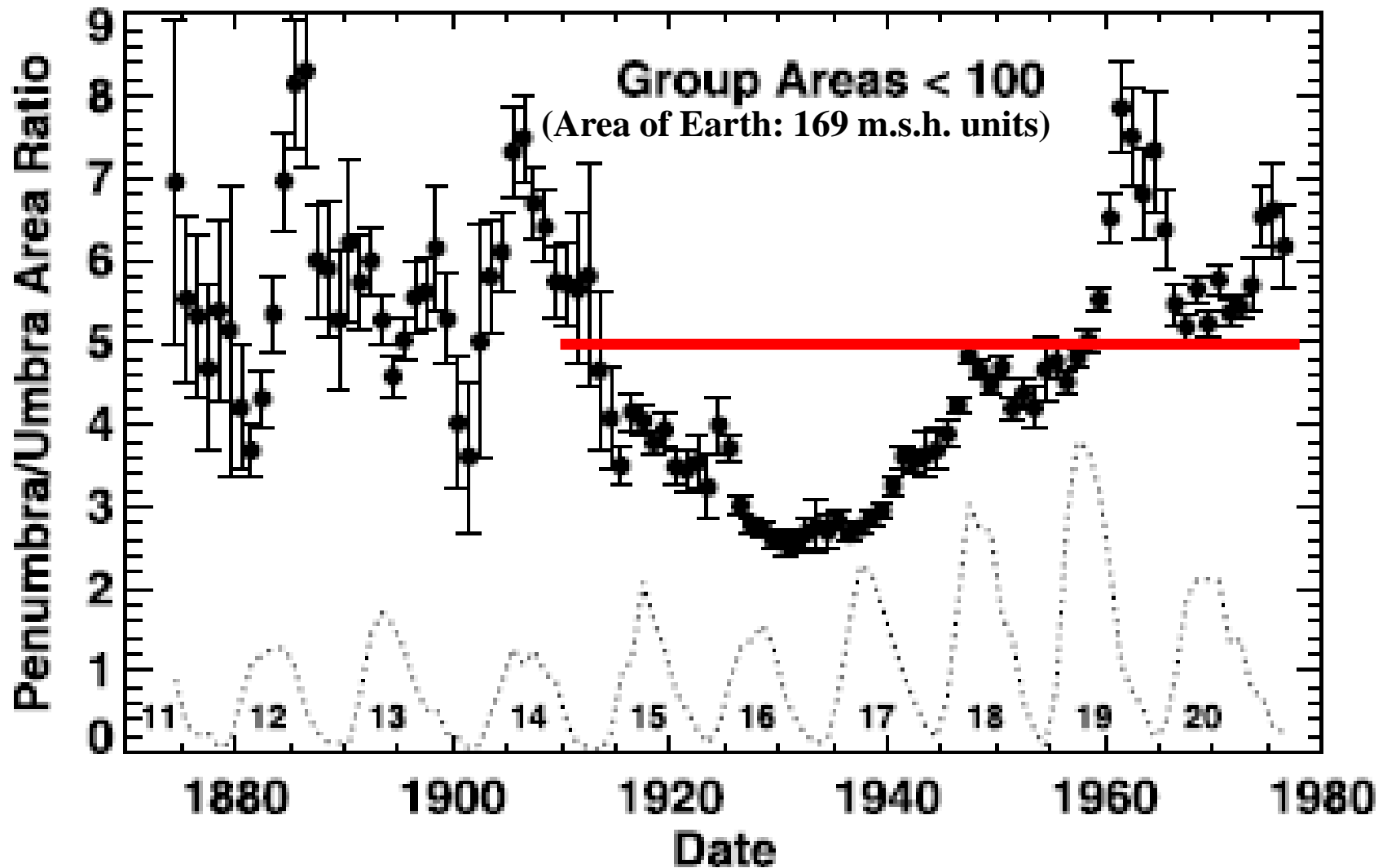


Fig. 1. The 3-component McIntosh classification, with examples of each category.

There are 60  
different distinct  
types of sunspot  
groups one can  
classify

When sunspot groups are dominated by smaller spots with only umbrae (no penumbrae), the Sun is brighter?





## A Curious History of Sunspot Penumbrae

D.H. Hathaway

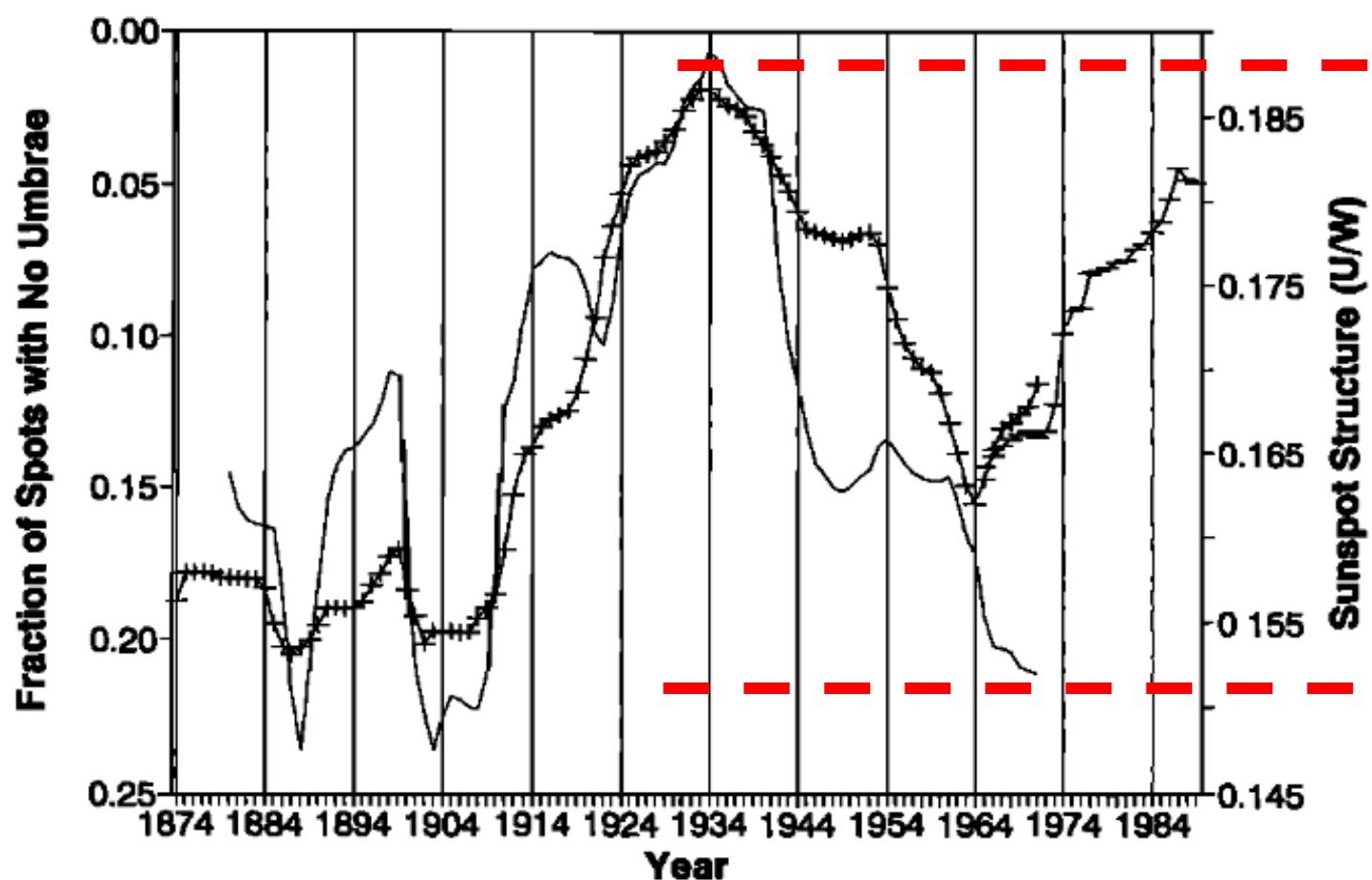
The IPCC-promoted solar irradiance record has the obvious assumption of constant unchanged ratio of penumbra to umbra ratio is OBVIOUSLY and proven to be WRONG: When will they correct their own known errors?



Reconstructions of past irradiance variations (Foukal and Lean, 1990) use total sunspot areas and assume that the ratio of penumbra to umbra area is unchanged. If there are significant changes to the sunspot population, conclusions drawn from these reconstructions are compromised.

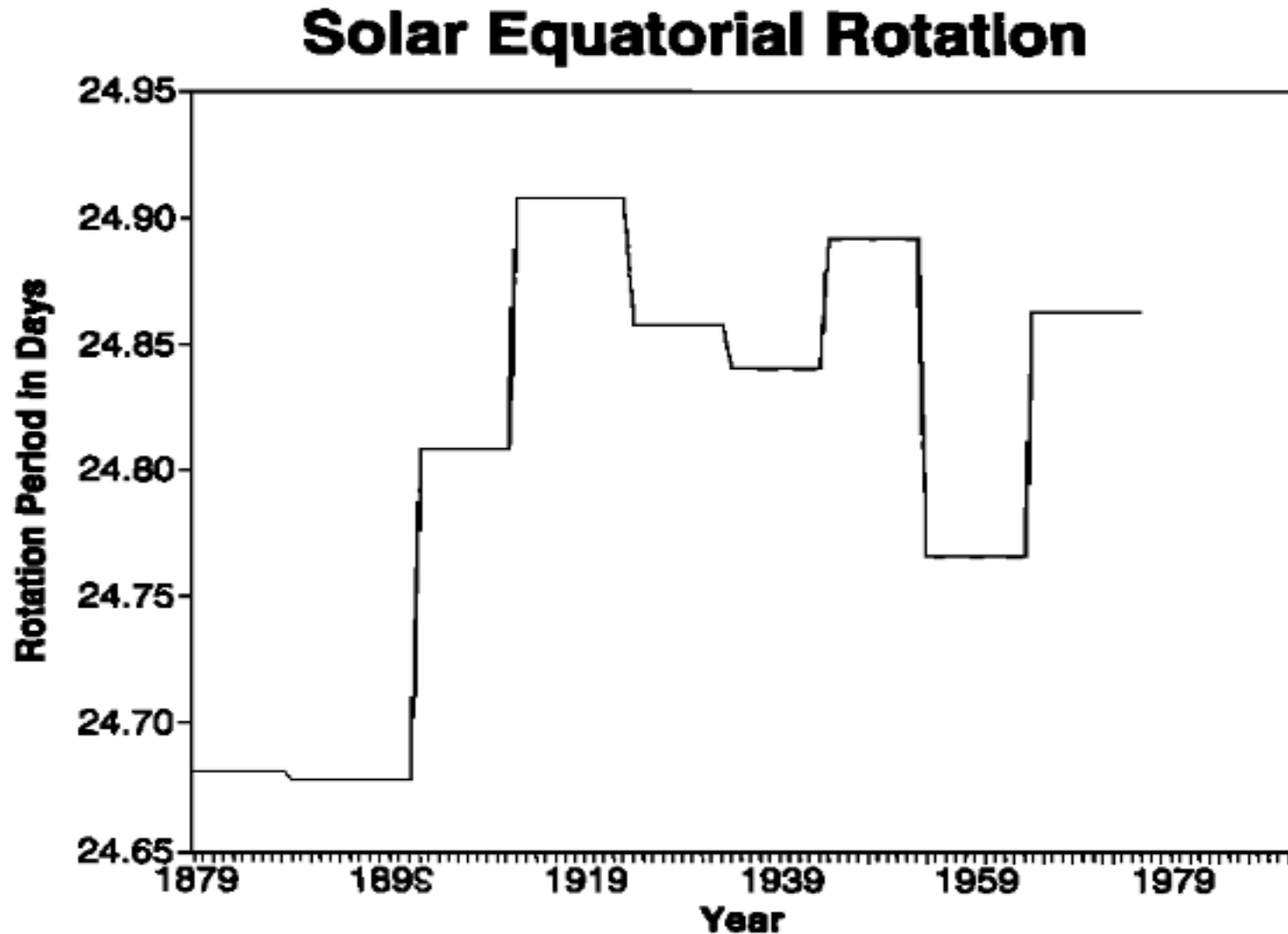
# Evidence for secular component on the modulation of solar TSI: Changes in solar convection activity

## Fraction of Penumbral Spots and Sunspot Structure



Hoyt (1979) estimated the 0.8% changes in convective velocity is about 0.38% changes in TSI

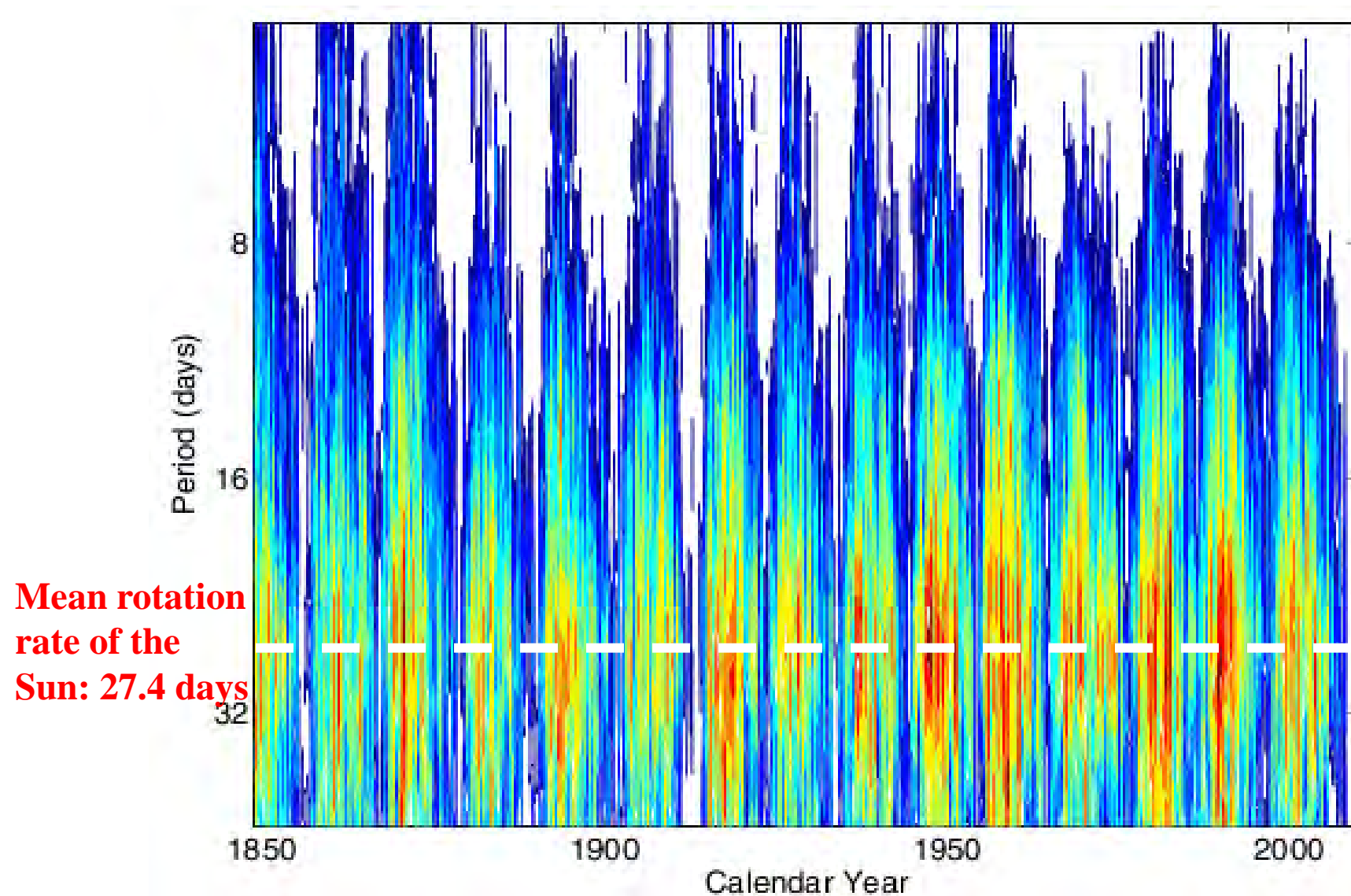
# Evidence for secular component on the modulation of solar TSI: Changes in solar equatorial rotation rate



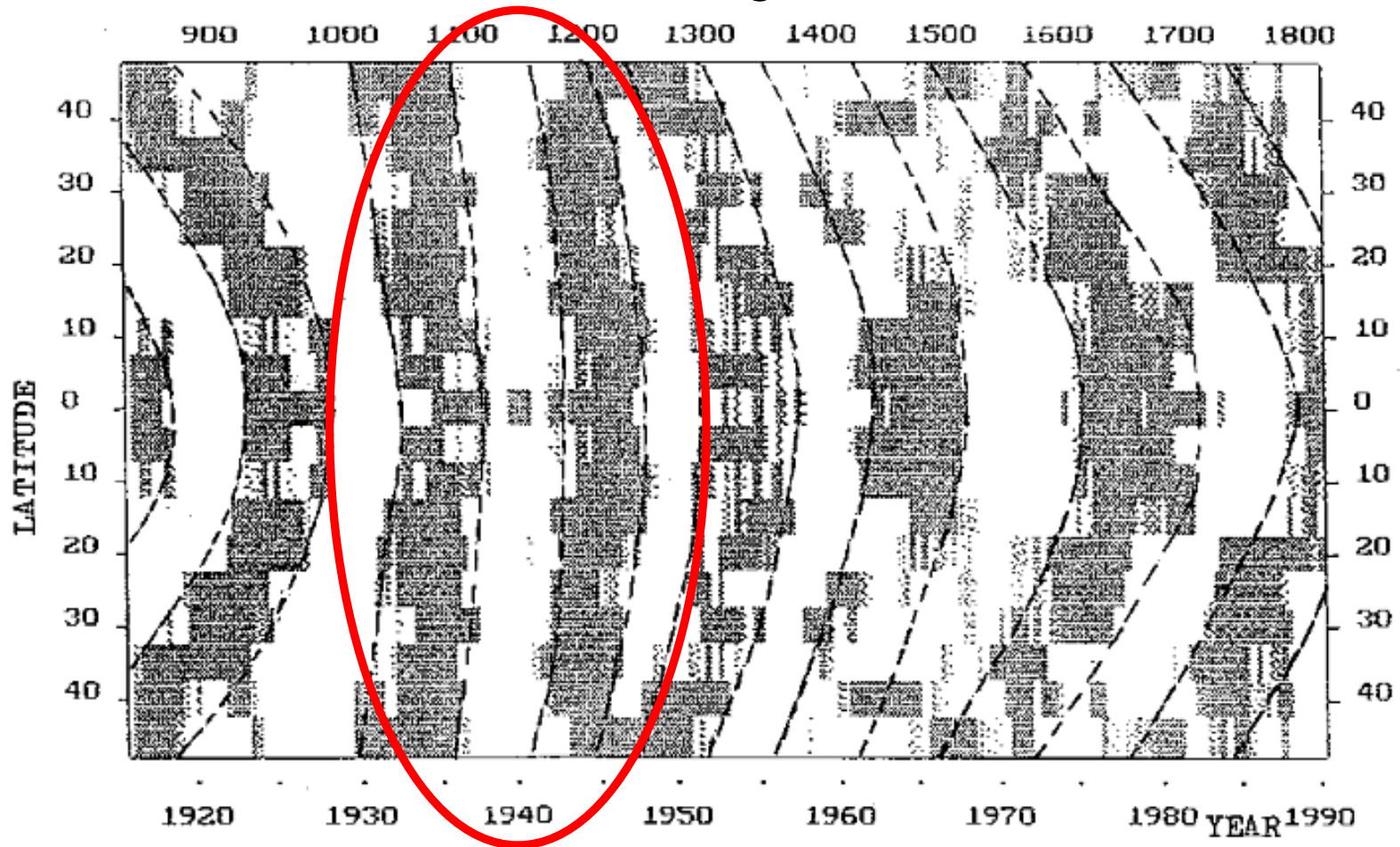
Source: Hoyt and Schatten (1993)



# Evidence for secular component on the modulation of solar TSI: Multidecadal changes in rotation rate of the Sun



Another evidence on why the envelope of sunspot maxima may not be the correct proxy for secular or multidecadal-to-centennial changes in solar irradiance or TSI



*Figure 5.* Latitude-time distribution of faster- (light) and slower-than-average rotation (dark) bands in reference to the average rate. The boundaries between the bands correspond to the average rotation rate.



Another proposal to probe  
sun-climate relations:

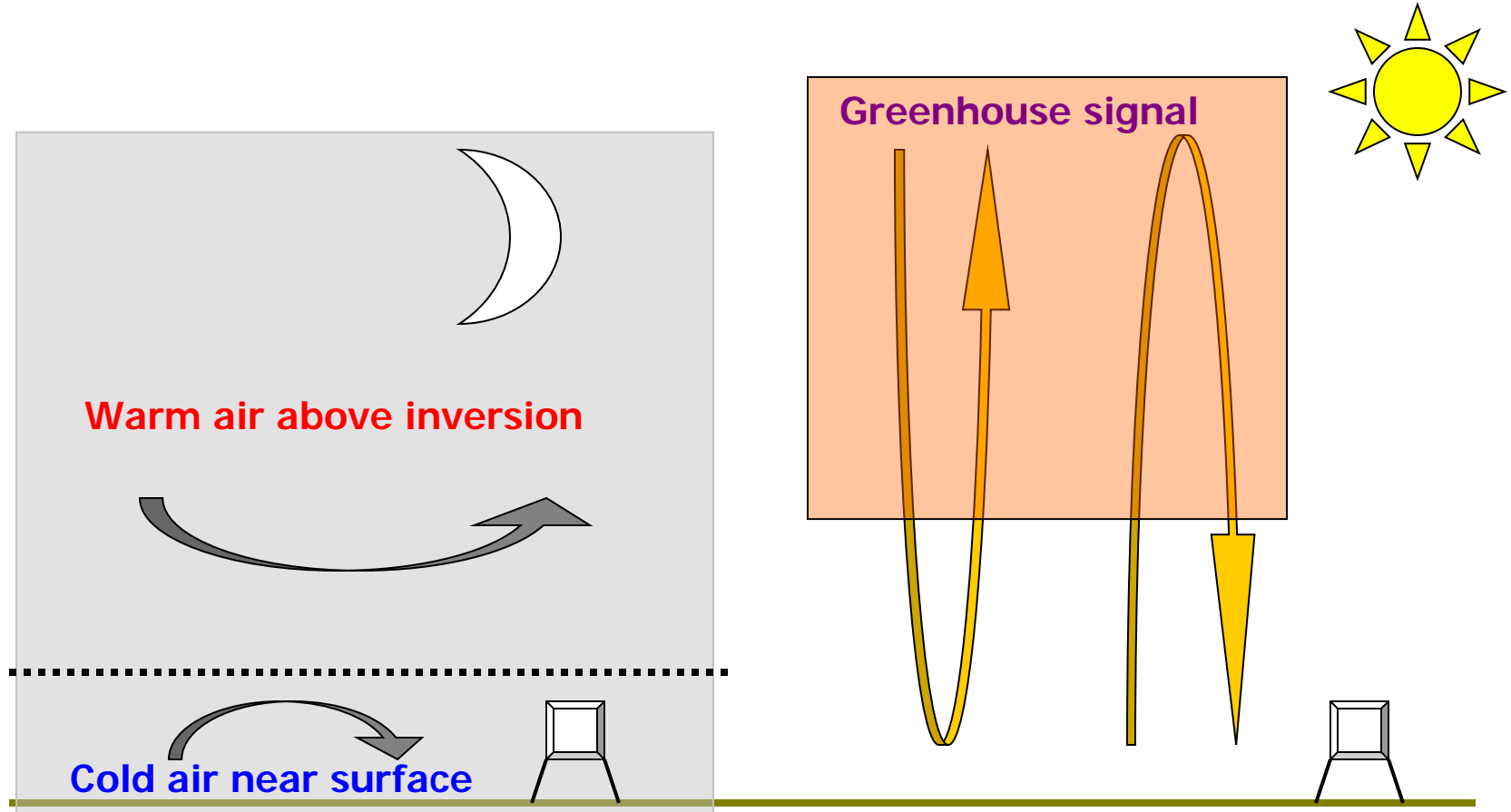
Searching for the Sun in Canada?



It may be easy to modify  
temperature minima  
but it is harder to argue for  
a change in any observed  
temperature maximum

# Night vs. Day Surface Temp

Slide Courtesy of Professor John Christy (March 27, 2019)



**Nighttime - disconnected shallow layer/inversion. Temperature affected by land-use changes, buildings, farming, etc.**

**Daytime - deep layer mixing, connected with levels impacted by enhanced greenhouse effect**

# SEASONAL MIXING HEIGHTS AND INVERSIONS AT EDMONTON, ALBERTA

R. H. MYRICK, S. K. SAKIYAMA,\* R. P. ANGLE and H. S. SANDHU

Alberta Department of Environmental Protection, 9820-106 Street, Edmonton, Alberta, T5K 2J6, Canada

*(First received 23 February 1993 and in final form 24 August 1993)*

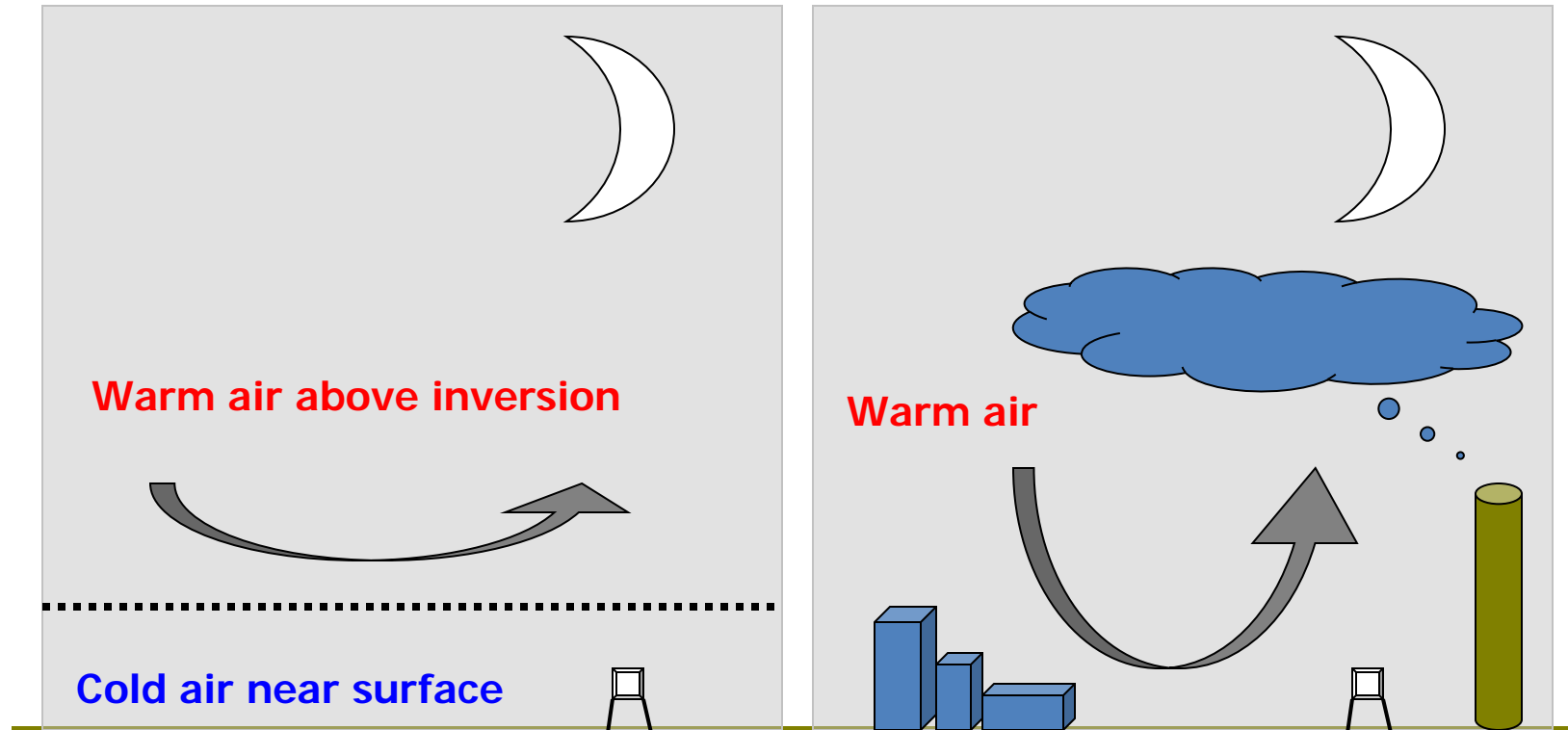
**Abstract**—High-resolution temperature profile data collected by balloon-borne ascents from 1977 to 1983 were analysed to determine mixing heights and ground-based inversion depths. Early morning ground-based inversions occurred with a frequency ranging from 44% in spring to 88% in fall. Median depths of early morning ground-based inversions were found to range from 315 m in the spring to 414 m in the summer, fall and winter seasons, with median potential temperature gradients of 0.016, 0.021, 0.026 and 0.030°C m<sup>-1</sup>, respectively. Quartile deviations of ground-based inversion depths and strengths were about 30% of median values. Median mixing heights at solar noon in the spring, summer, fall and winter were 683, 659, 381 and 162 m, respectively. The kink method gives consistently lower values of mixing heights than the Holzworth and capping methods for all seasons and times of day. Mixing heights determined from these data were generally lower than those estimated from rawinsonde data in earlier studies.





# Night Surface Temp

Slide Courtesy of Professor John Christy (March 27, 2019)



Nighttime - disconnected shallow layer/inversion. But this situation can be sensitive to small changes such as roughness or heat sources.

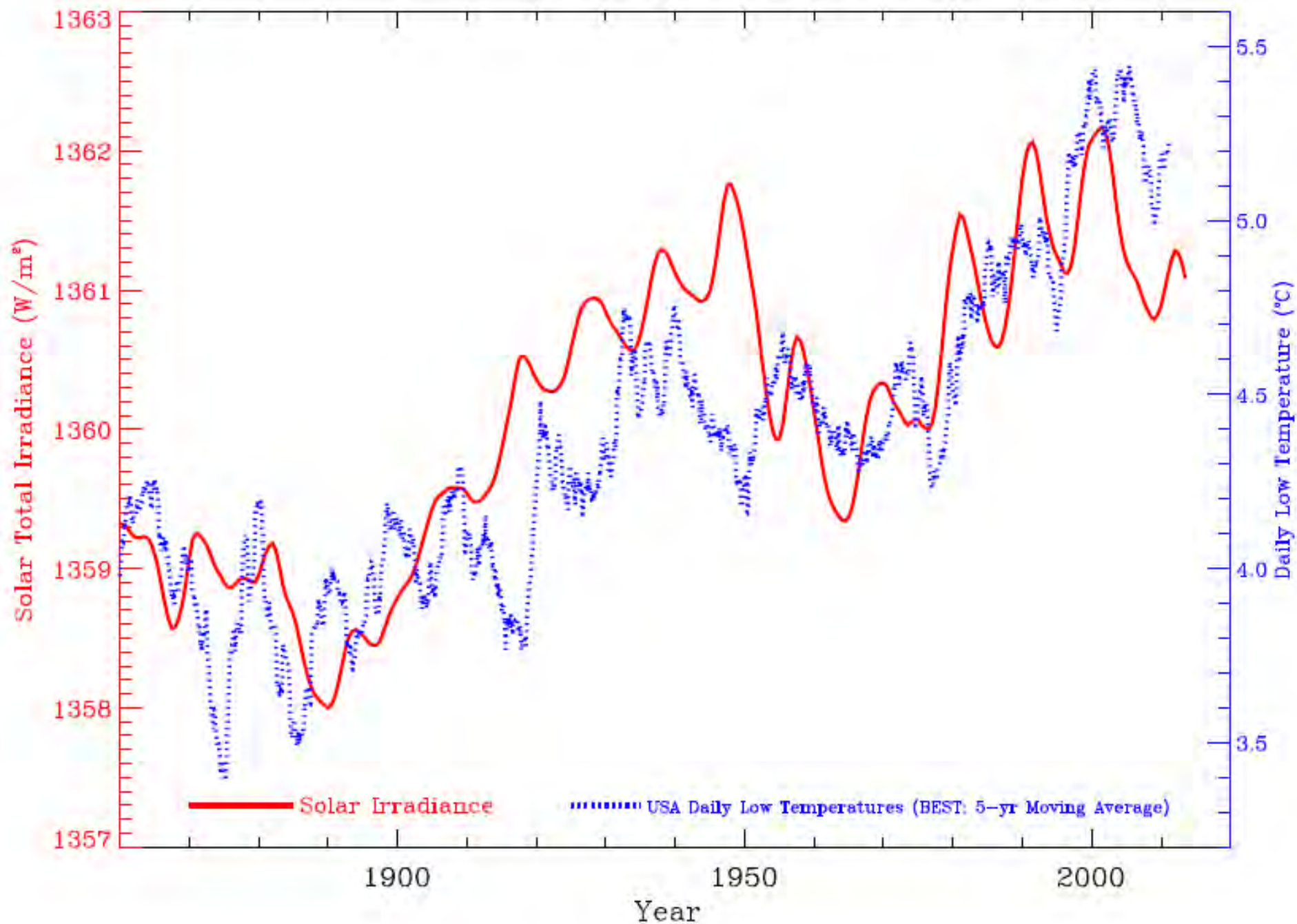
Buildings, heat releasing surfaces, aerosols, greenhouse gases, etc. can disrupt the delicate inversion, mixing warm air downward - affecting TMin.

This is why we need to select  
only daily high temperature  
or  $T_{\max}$  for studying  
Solar+CO<sub>2</sub> relations  
to climate

# The Sun loves USA+Canada?

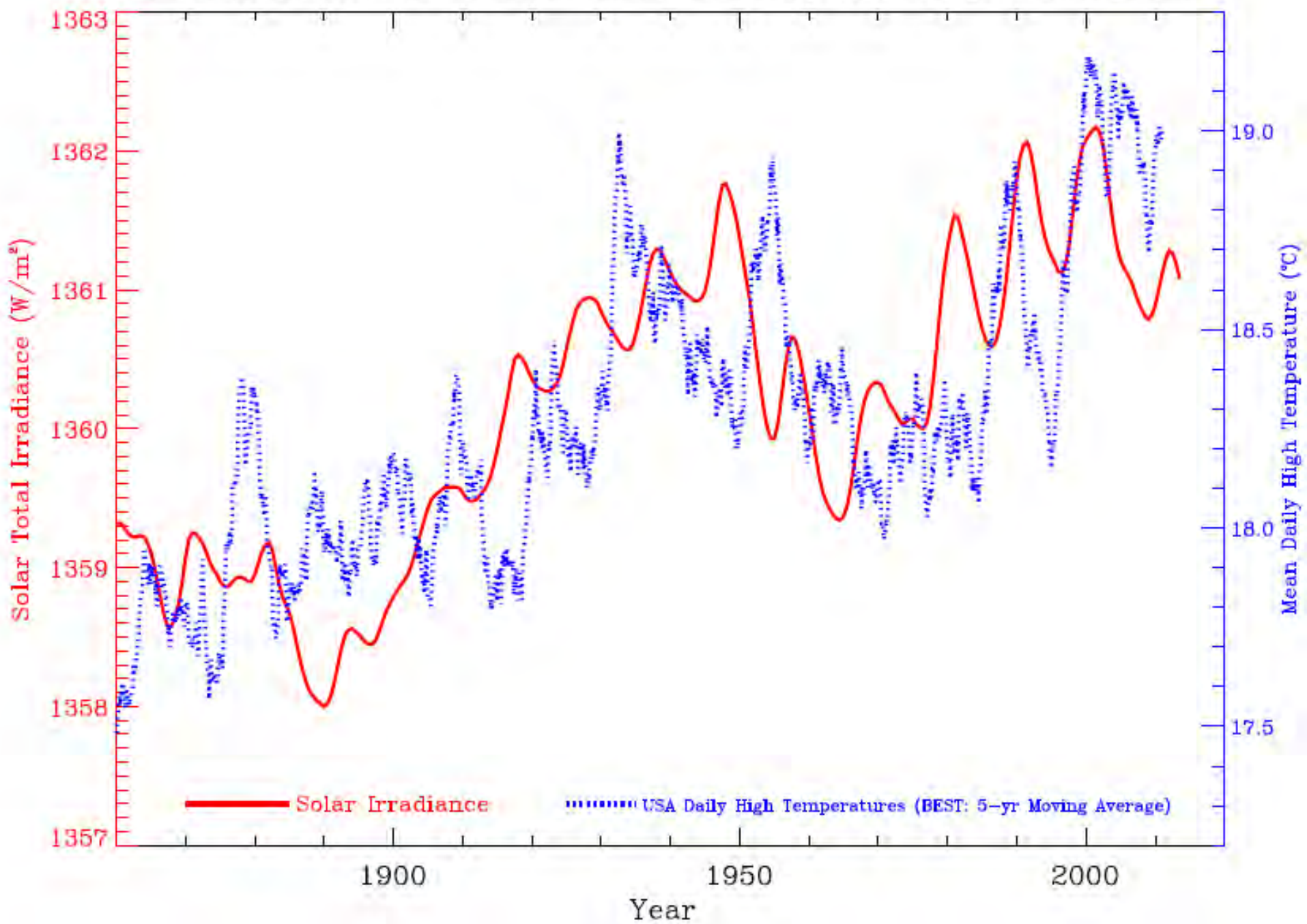
(update of BEST database since 2011)

# *No Sun—USA Daily Low Temperature Link?*





# *A Connection Between Solar Irradiance and Daily High Temperature of USA ?*





What about the Sun in Canada?

A quiz: What is the average  
temperature of Canada?

Answer: The average temperature of Canada is

$$T_{\text{mean}} = -4.92 \pm 0.18^{\circ}\text{C}$$

$$T_{\text{max}} = 0.21 \pm 0.15^{\circ}\text{C}$$

$$T_{\text{min}} = -9.85 \pm 0.34^{\circ}\text{C}$$

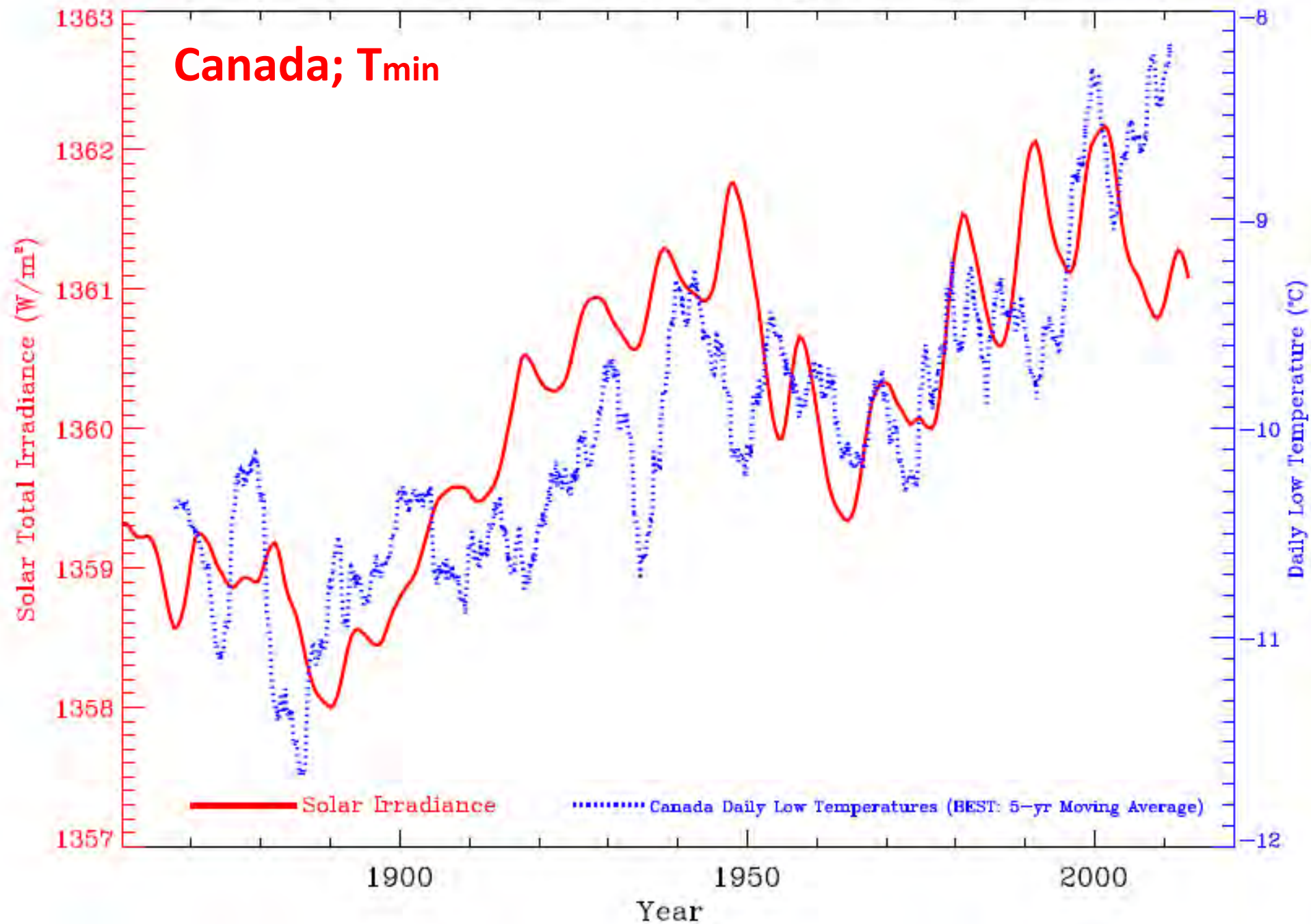
(1951-1980 climatological average)

Yes Canada is a very cold country



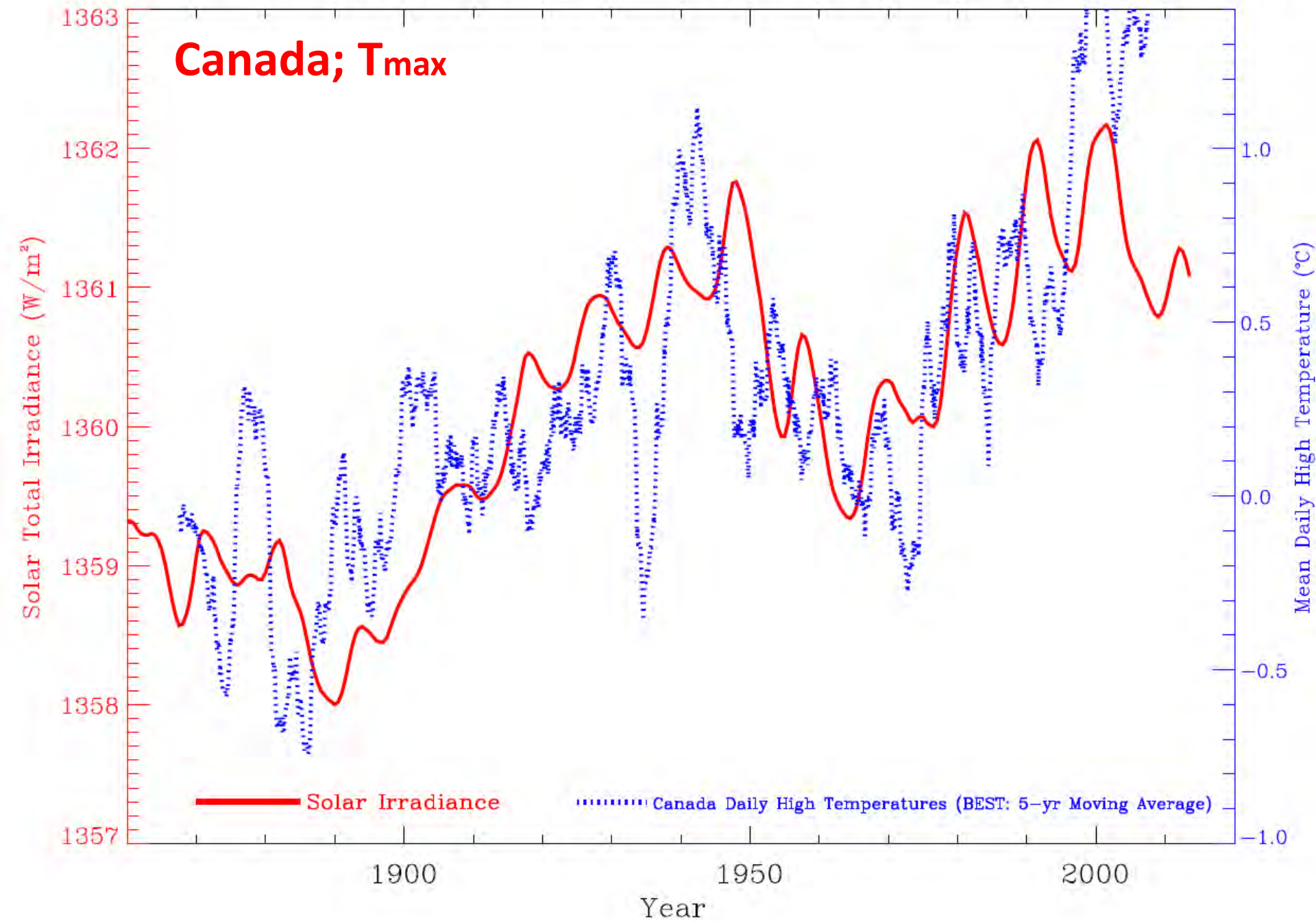
# *No Sun-Canada Daily Low Temperature Link?*

**Canada; T<sub>min</sub>**

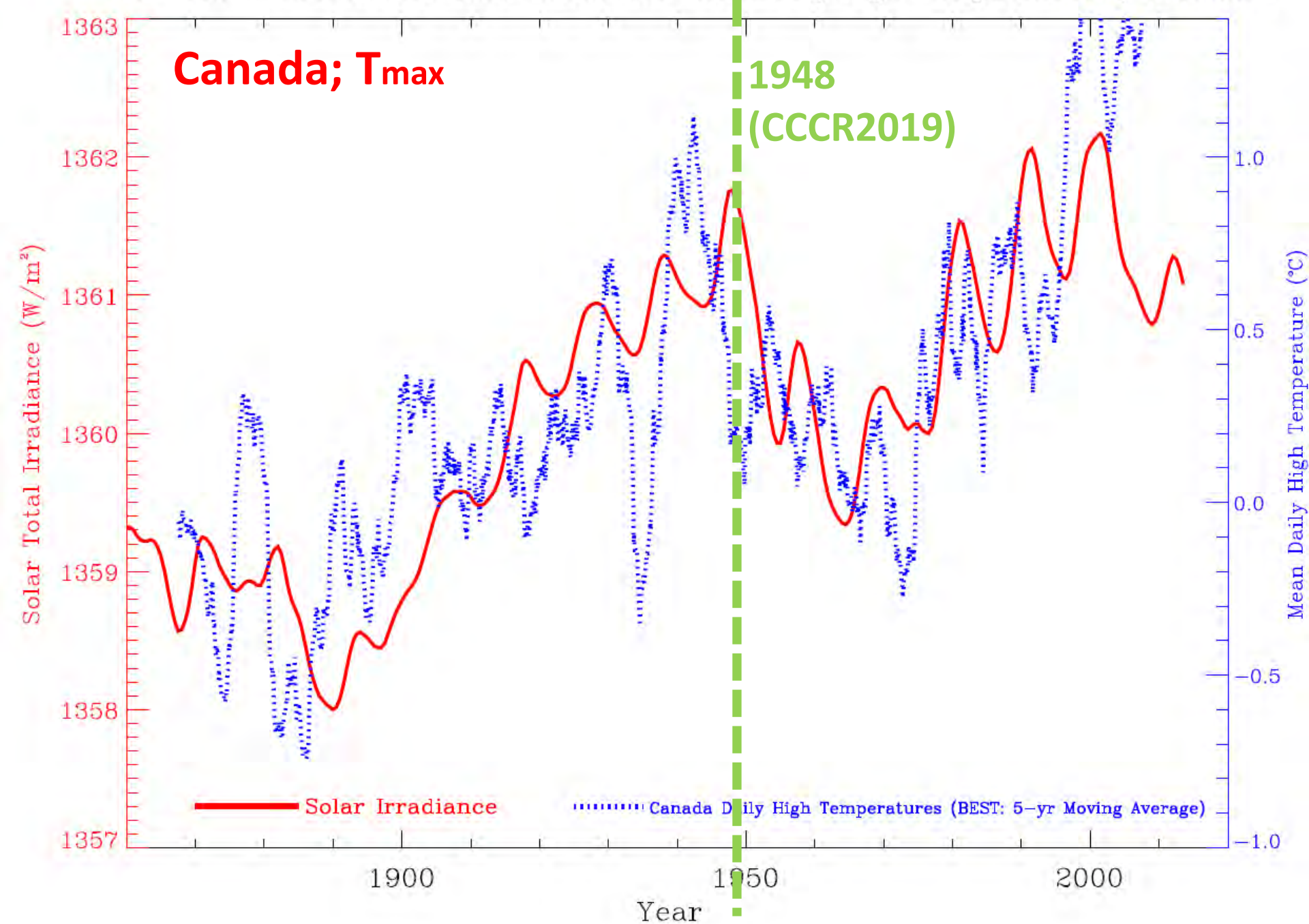


# *A Connection Between Solar Irradiance and Daily High Temperature of Canada ?*

**Canada; T<sub>max</sub>**



# *A Connection Between Solar Irradiance and Daily High Temperature of Canada ?*







DeepDream Artificial Neural Network Van Gogh's Starry Night Style (courtesy of E. Camporeale, July 13, 2018)

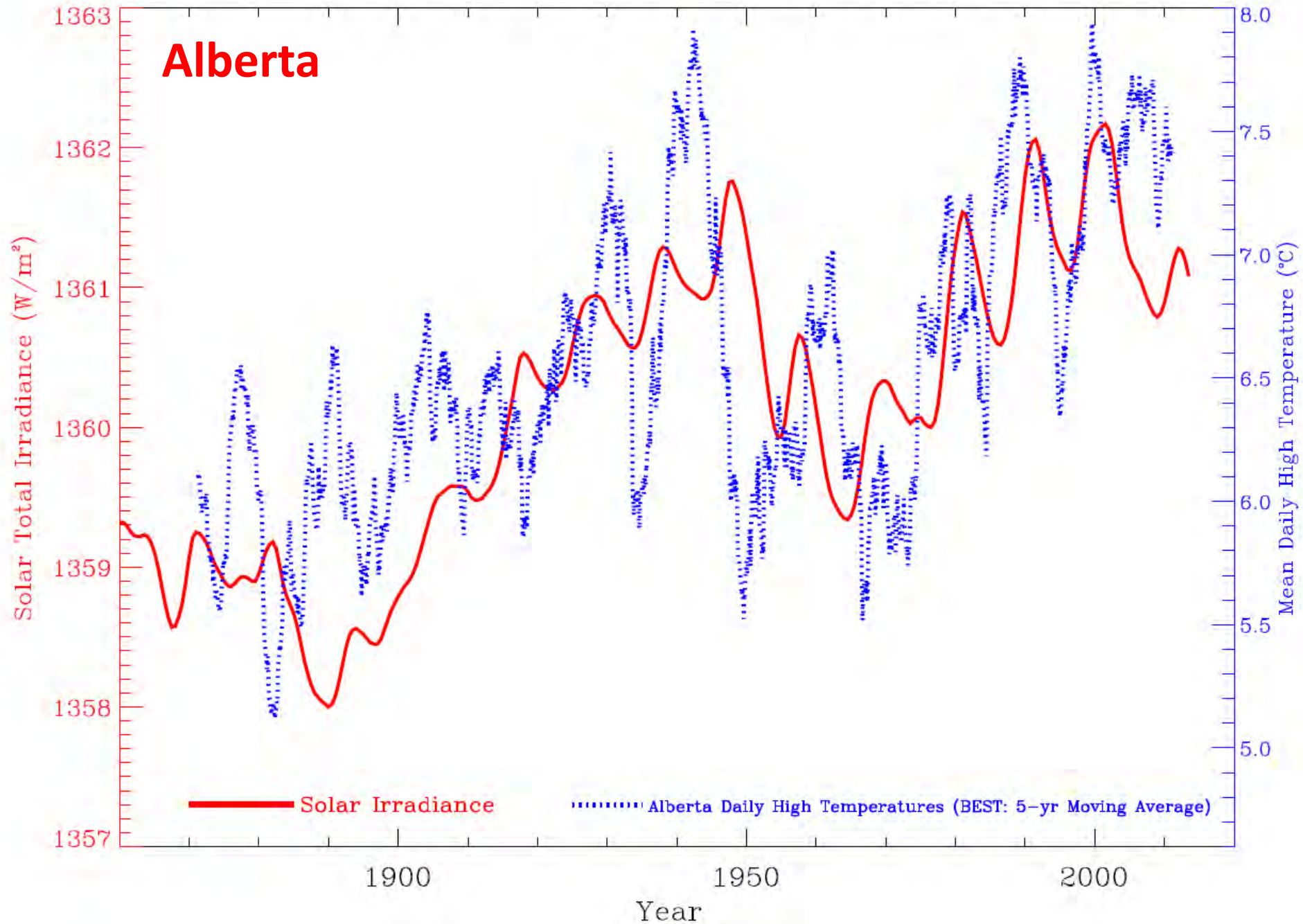


What about regional details in Canada?

Stick to Daily High Temperature  
as the metric for Sun's role?

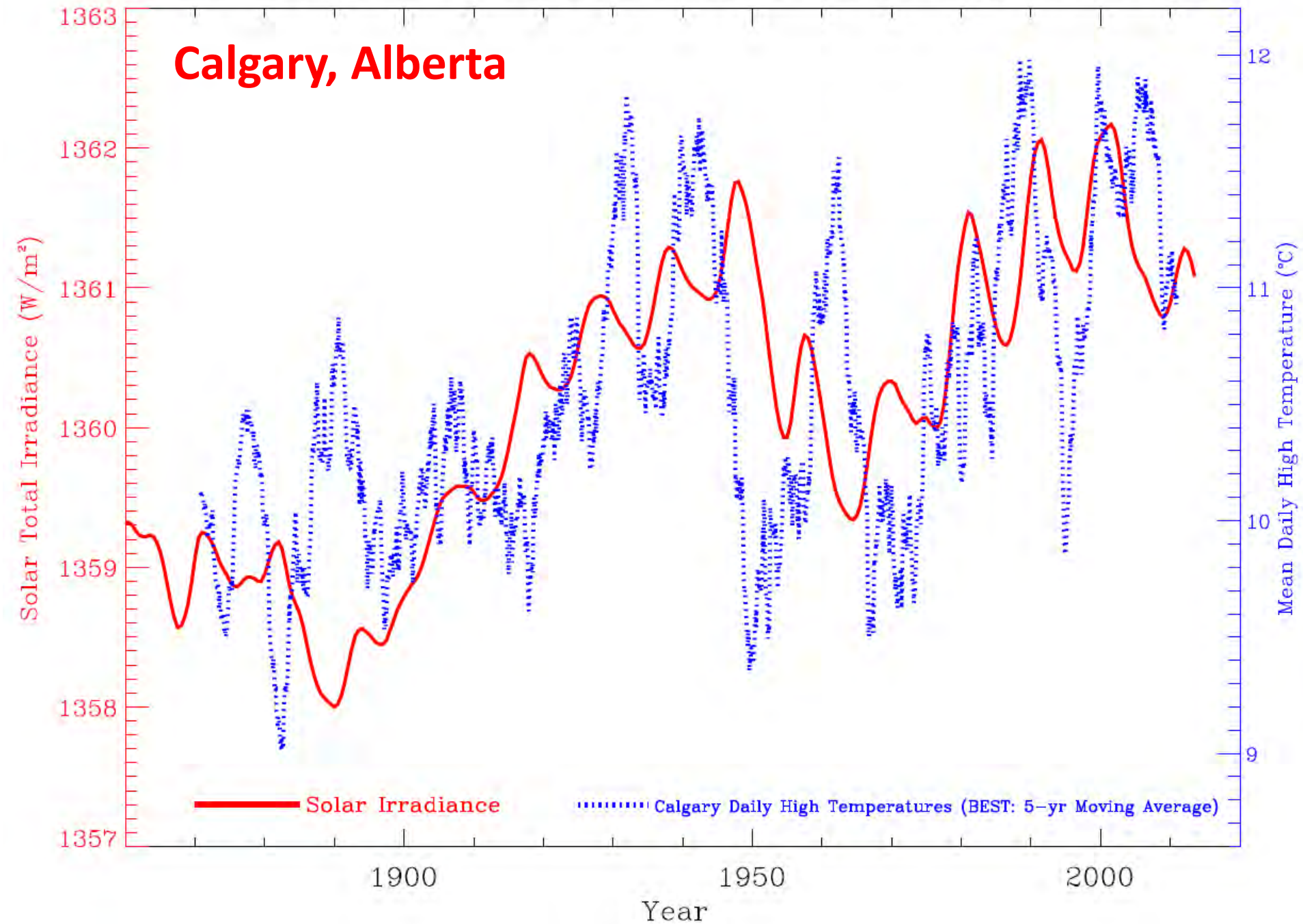
# *A Connection Between Solar Irradiance and Daily High Temperature of Alberta ?*

**Alberta**



# *A Connection Between Solar Irradiance and Daily High Temperature Calgary ?*

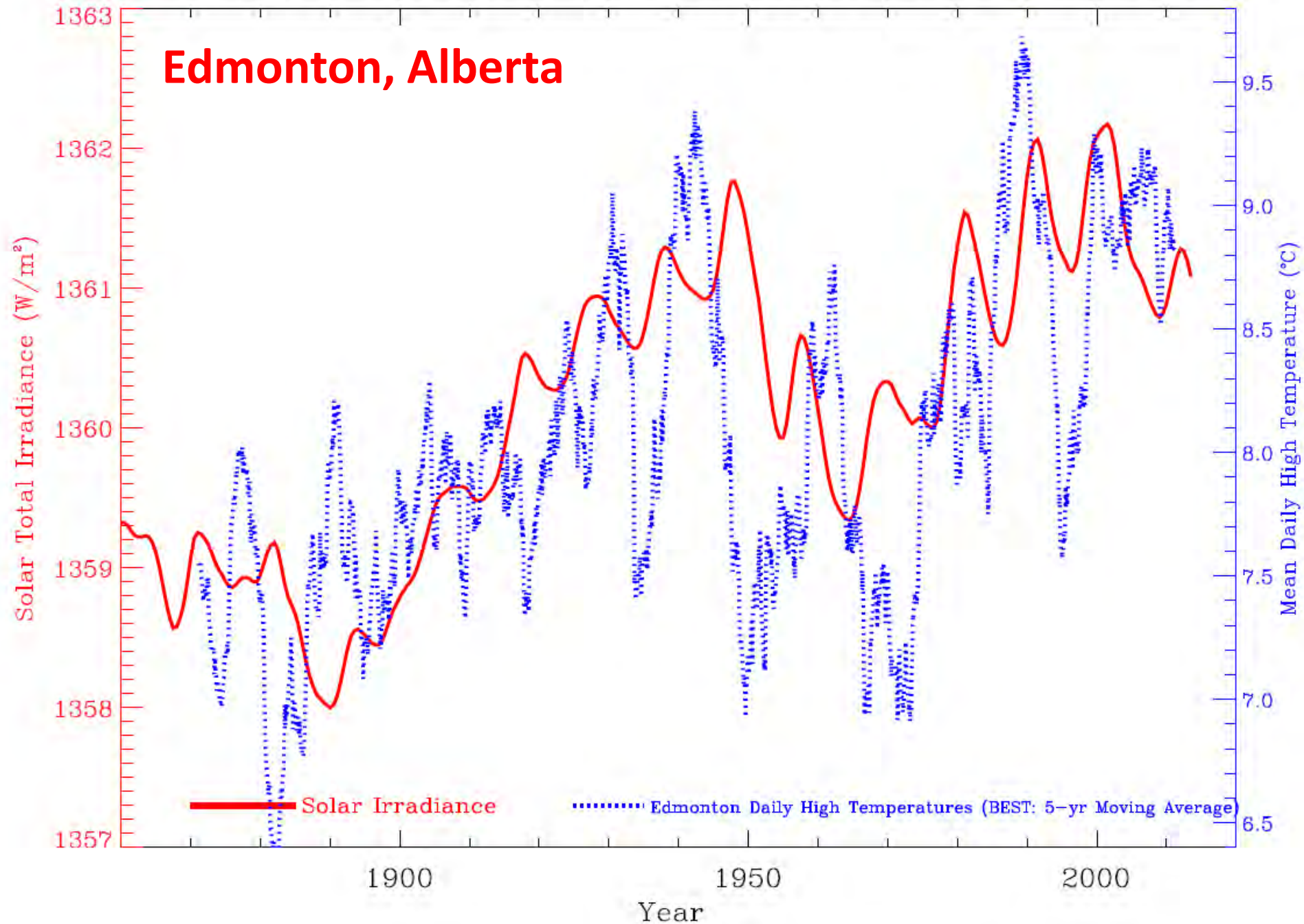
**Calgary, Alberta**





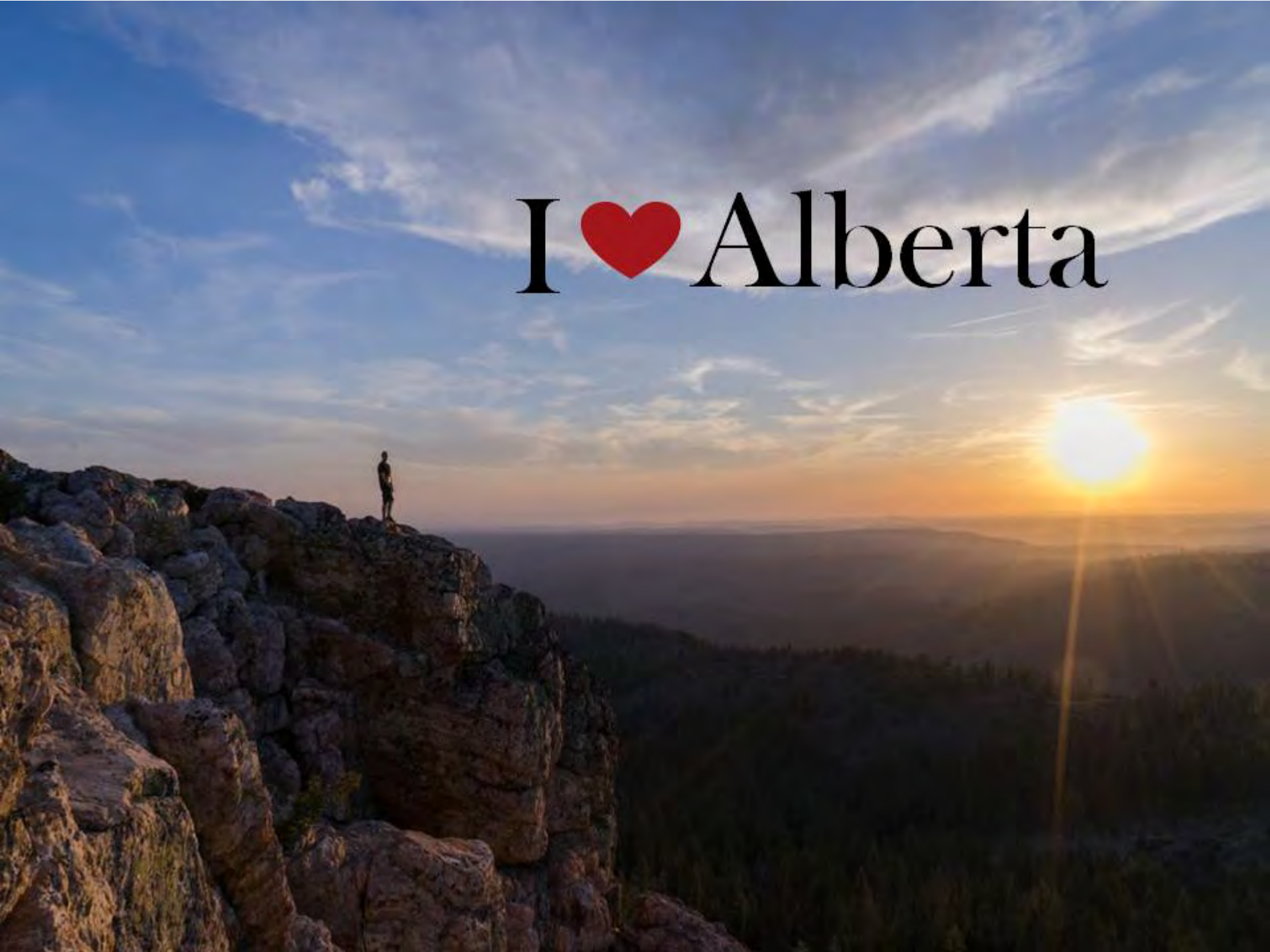
# *A Connection Between Solar Irradiance and Daily High Temperature Edmonton ?*

**Edmonton, Alberta**





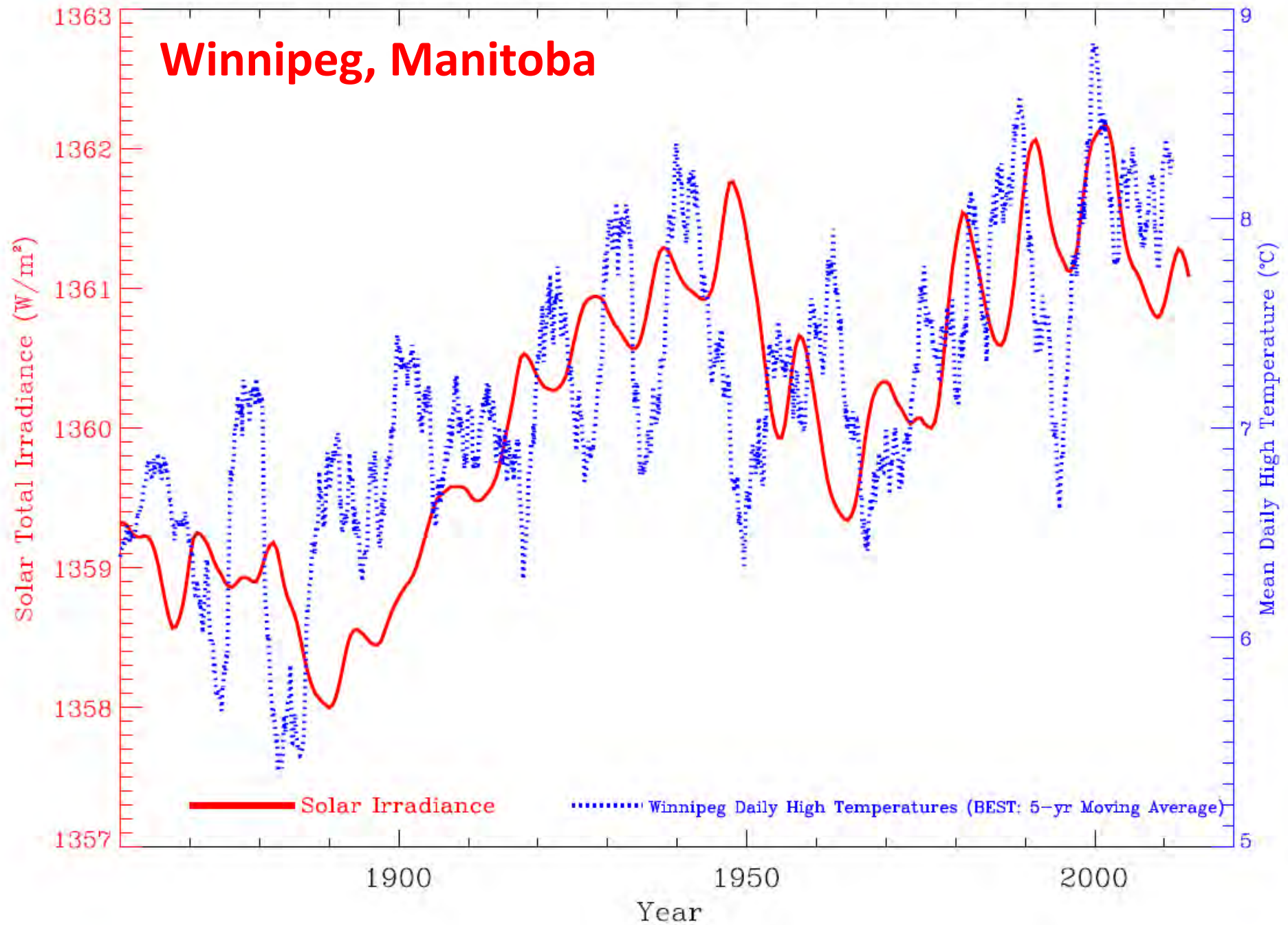
I ♥ Alberta



More sun-climate relations  
in Canada?

# *A Connection Between Solar Irradiance and Daily High Temperature Winnipeg ?*

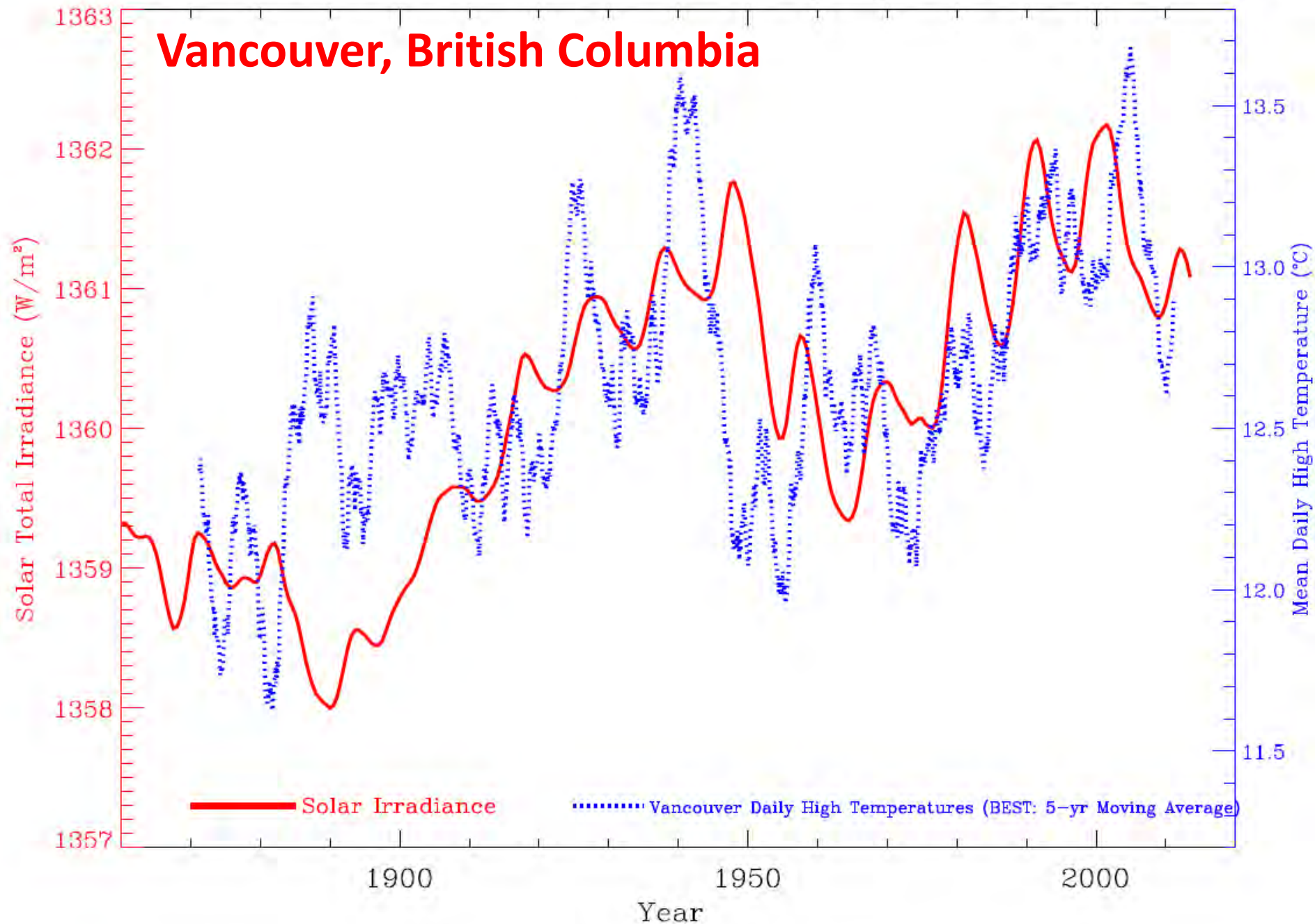
**Winnipeg, Manitoba**





# *A Connection Between Solar Irradiance and Daily High Temperature Vancouver ?*

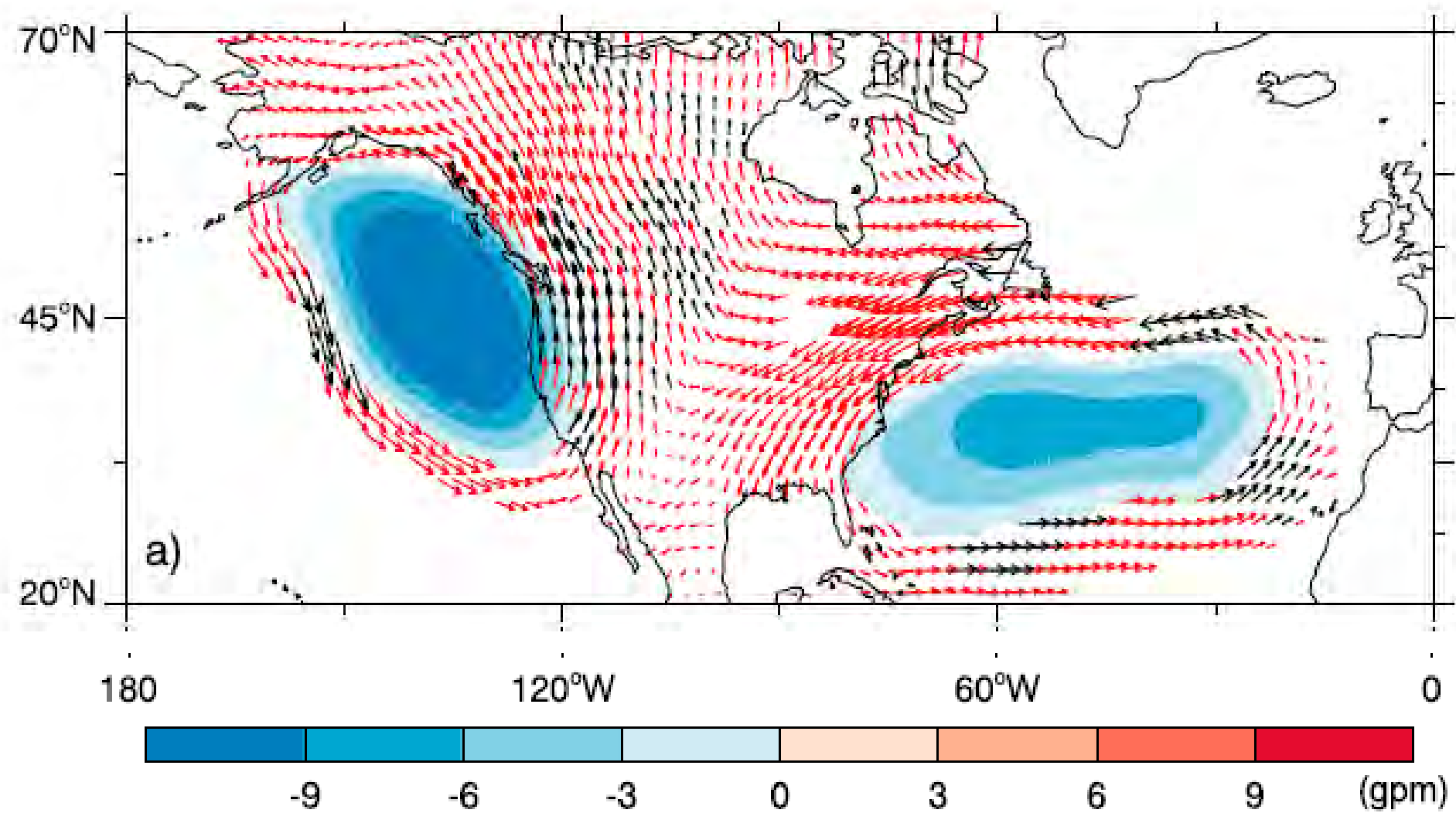
## **Vancouver, British Columbia**



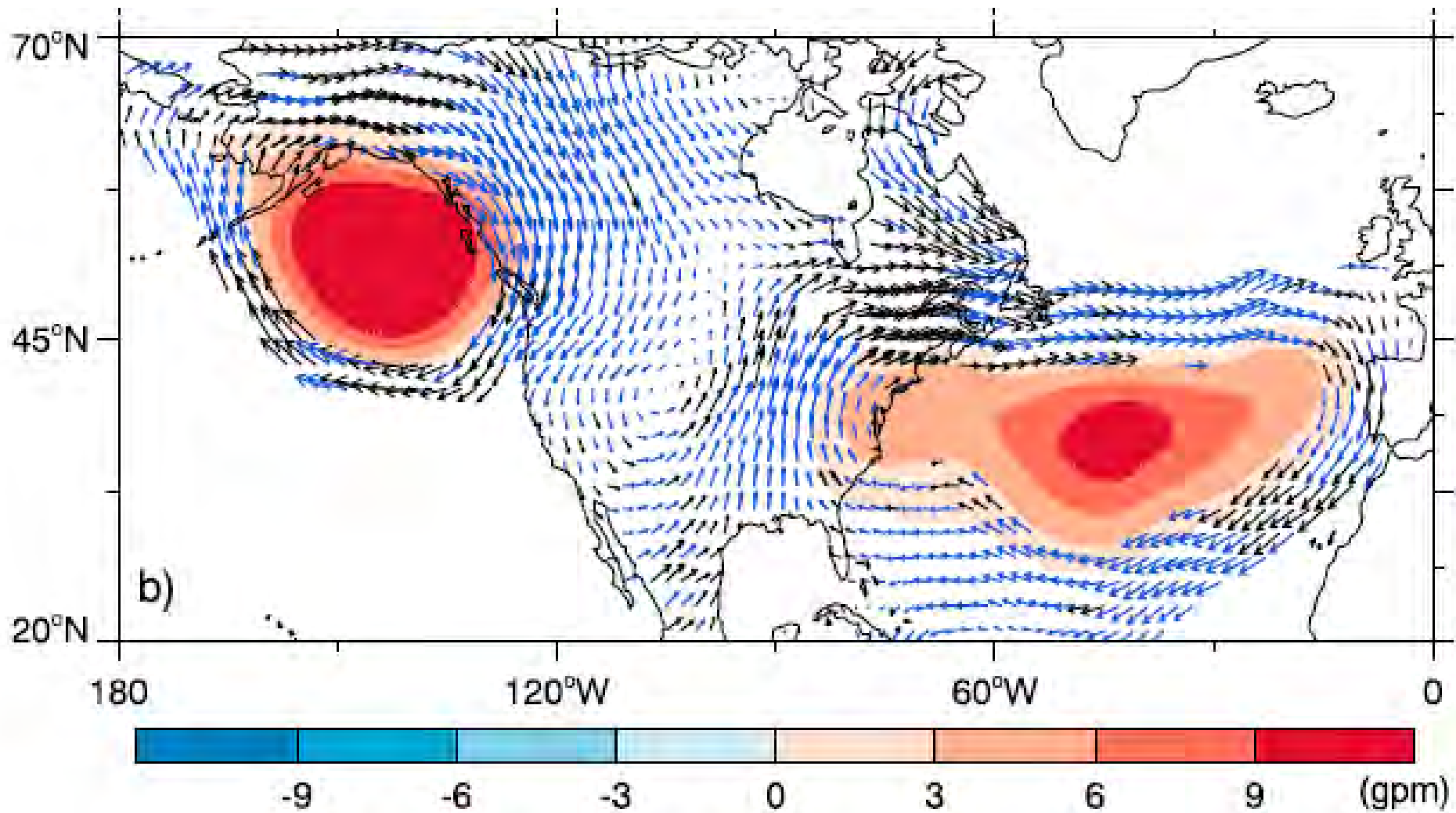


The meteorological  
perspective/explanation?

# Solar Multidecadal Warm-Cold Modulation: Warm Phase



# Solar Multidecadal Warm-Cold Modulation: Cold Phase




# **“no way to tax the Sun”**

“After many studies and an in-depth research project by ‘top minds’ in climate catastrophe studies, it was determined there is no way to tax the Sun. So the Sun is completely ruled out as a cause of climate change.”

—Russ R. December 2, 2018 (WUWT)



A cartoon illustration set against a starry orange and yellow background. On the left, a large, bright yellow Sun with several dark sunspots is shown. A wavy line of orange and yellow flames or heat waves extends from the Sun towards the right. In the bottom left corner, a man in a red shirt and green pants points his right index finger towards the Sun. In the middle right, a small globe of the Earth is shown with a man in a blue suit standing on top of it, pointing his right index finger towards the Sun. Two speech bubbles originate from the man on Earth. The background is a gradient of orange and yellow with small white stars.

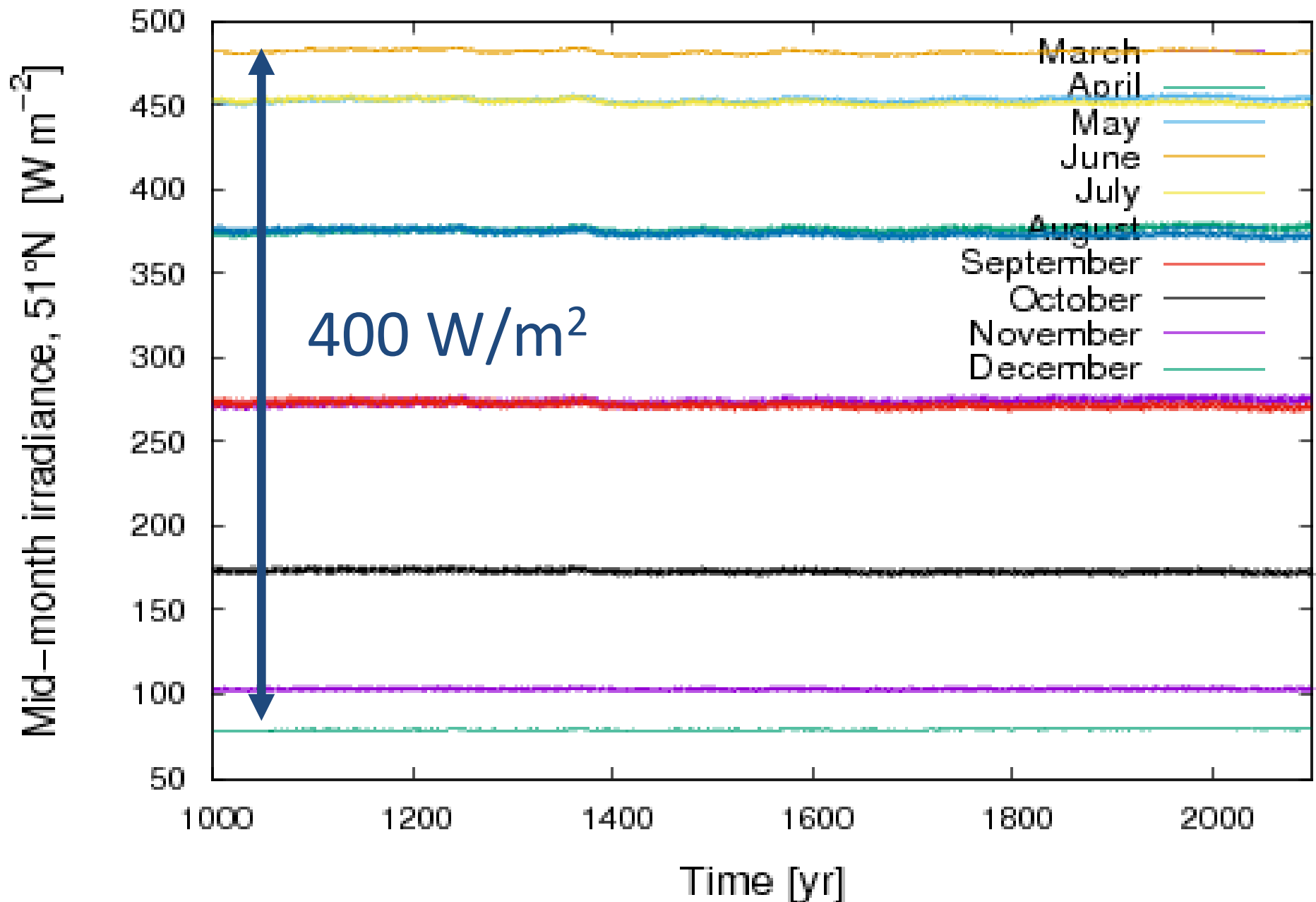
*It's that tiny trace  
of invisible gas  
that heats the Earth!*

*We must tax  
Carbon Dioxide!!*

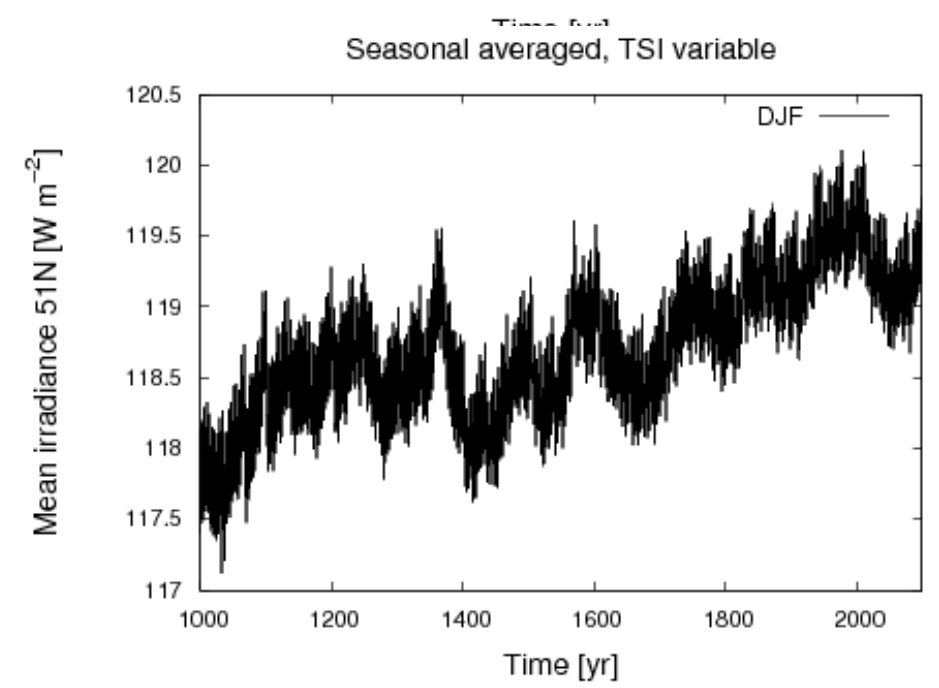
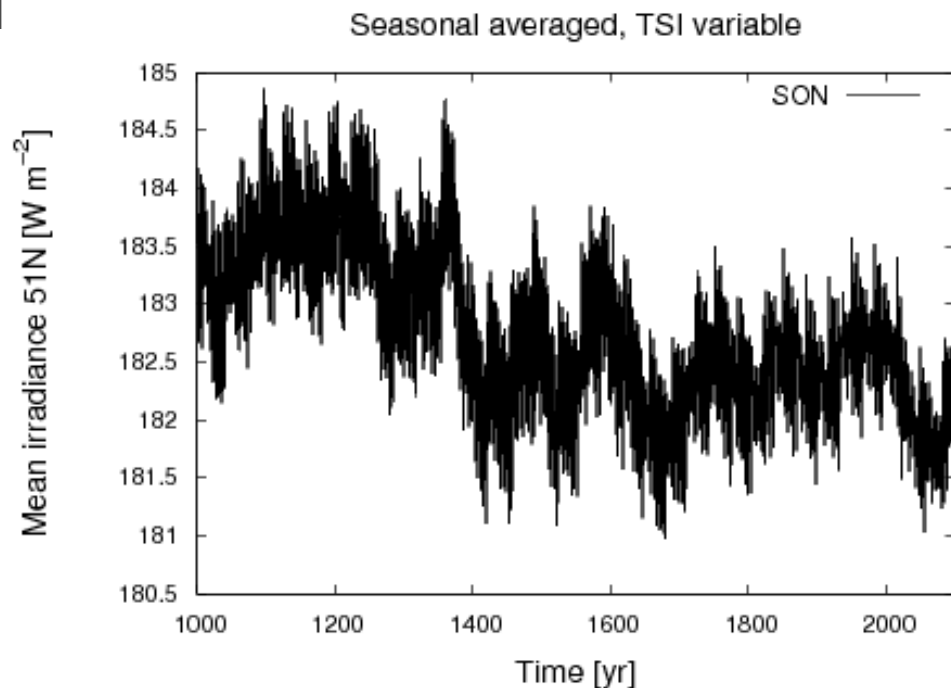
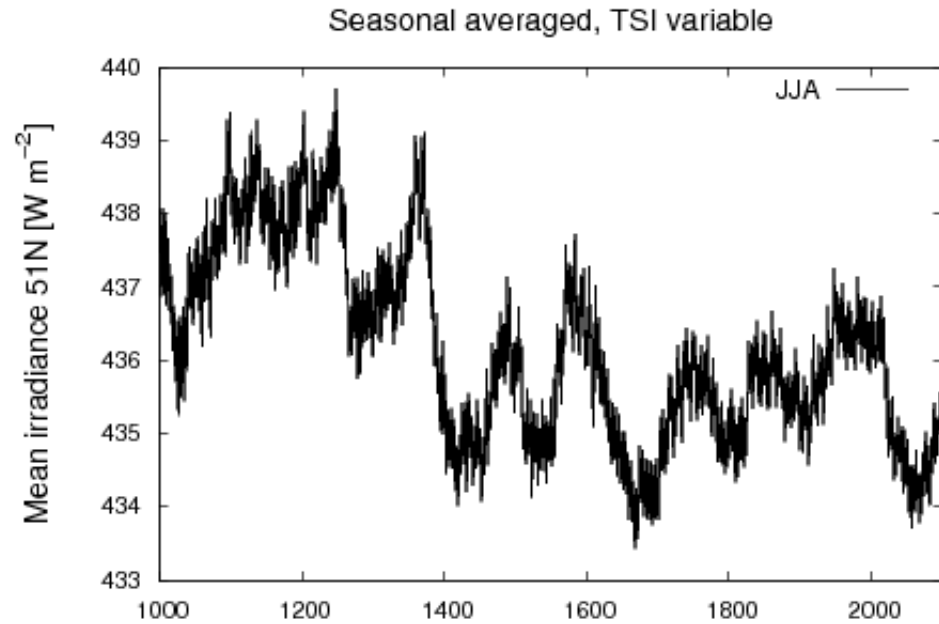
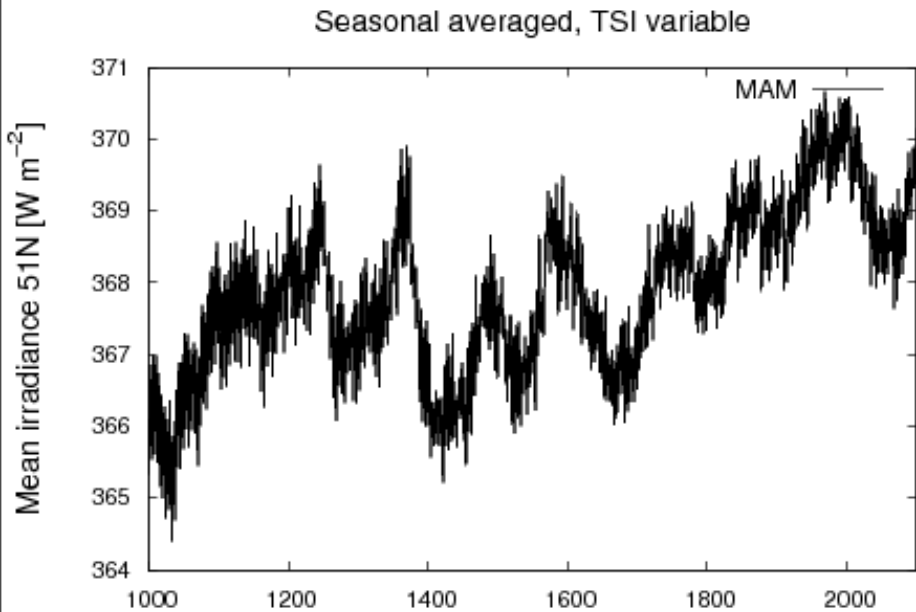
**It's the Sun stupid!!**

*Steve  
Hunter*

# The Sun never sleep (even during the night)



# The Sun never sleep (even during the night)



# The Sun never sleep: The next 100 years for Calgary?

