Examining The Hypothesis:
"With all the carbon dioxide in the air today, Surface Temperatures in New Mexico are hotter than ever before in the Instrumental Record."

Bob Endlich

bendlich@msn.com

24 Sep 2019

Weather, Climate, and Climate Change—What the Data Tell Us

Examining The Hypothesis: "With all the carbon dioxide in the air today, Surface Temperatures in New Mexico are hotter than ever before in the Instrumental Record."

We test this hypothesis using long-term surface temperature records from rural New Mexico stations from the Western Regional Climate Center.

http://www.wrcc.dri.edu/summary/Climsmnm.html

We use *rural sites* because urban sites are affected by the Urban Heat Island.

We use *long-term surface temperature records* because the ~60 year Atlantic Multidecadal Oscillation affects temperatures in North America and Europe.

Discussion- Urban Heat Island

We use rural sites because urban sites are affected by the Urban Heat Island.

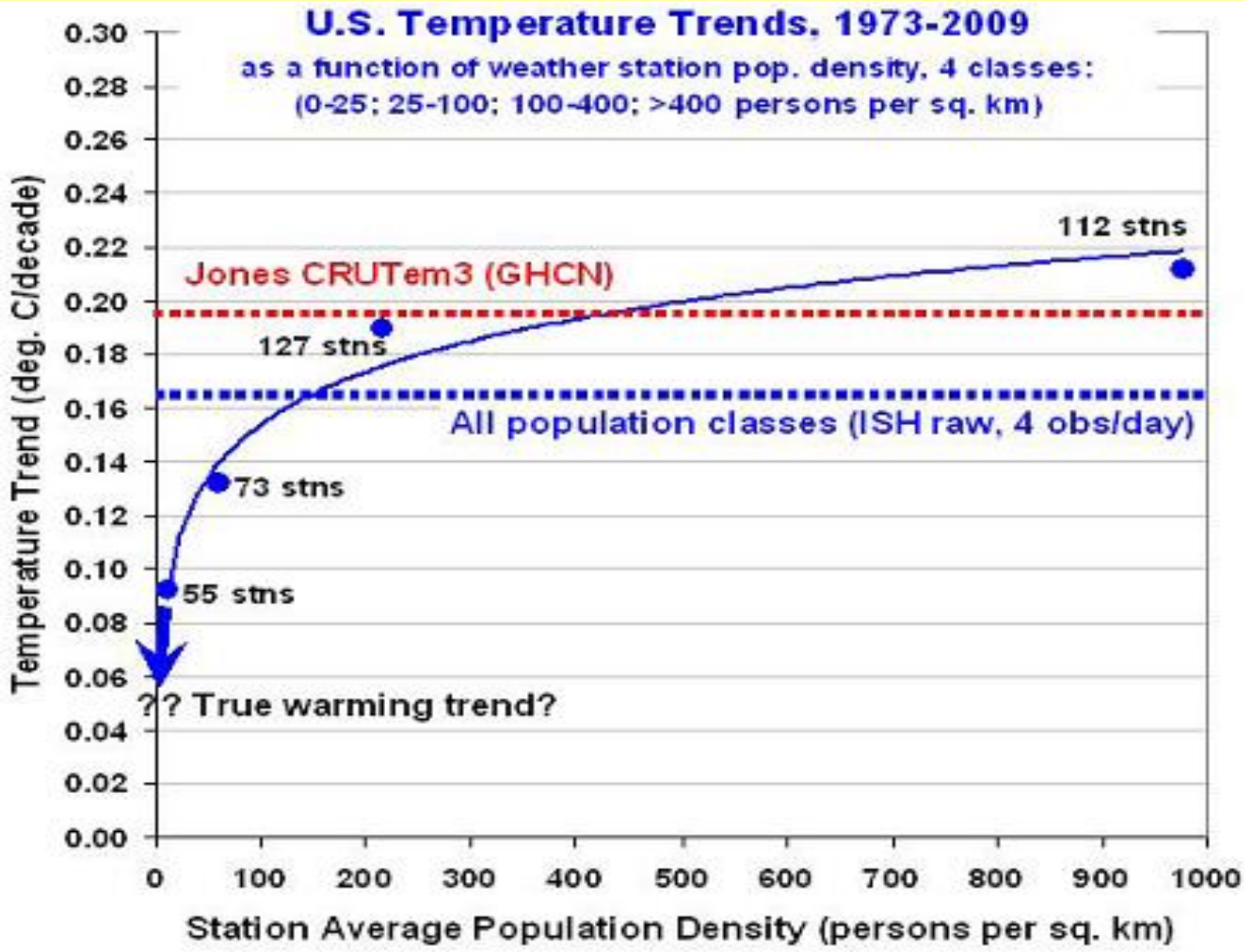
Dr Roy Spencer shows this in Case Study 16, in the SPPI report, which can be downloaded here: http://scienceandpublicpolicy.org/images/stories/papers/originals/surface_temp.pdf

Dr. Spencer's analysis is also shown in the following graphic

The temperature change since 1973 on the Y-Axis.

The population density of the stations is on the X-axis.

Direct evidence that most US Warming since 1973 could be spurious,
Dr Roy Spencer, Case Study 16, SPPI Original Report, "Surface Based Temperature Records… "

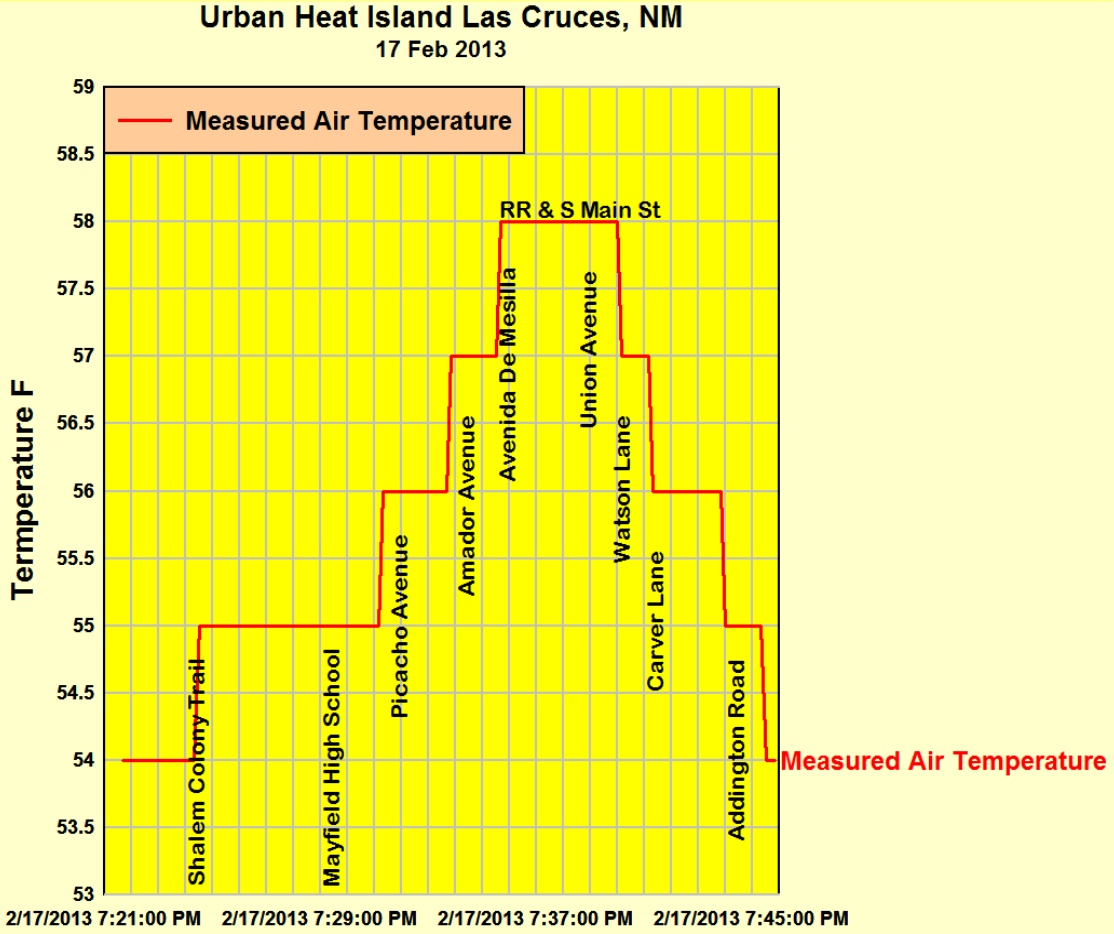


Discussion - Urban Heat Island

Las Cruces, New Mexico, has 100,000 residents.

In 2013 Jon Kahler and I directly measured Las Cruces' Urban Heat Island; over many transects, we found it was 3-4F, and very repeatable. Our measurements, here:
https://casf.me/wp-content/uploads/2017/03/PDF_Measuring-the-Las-Cruces-Urban-Heat-Island_1_Apr_2013.pdf

The graphic to the right shows the UHI at 4F.



Discussion - Long Term Stations

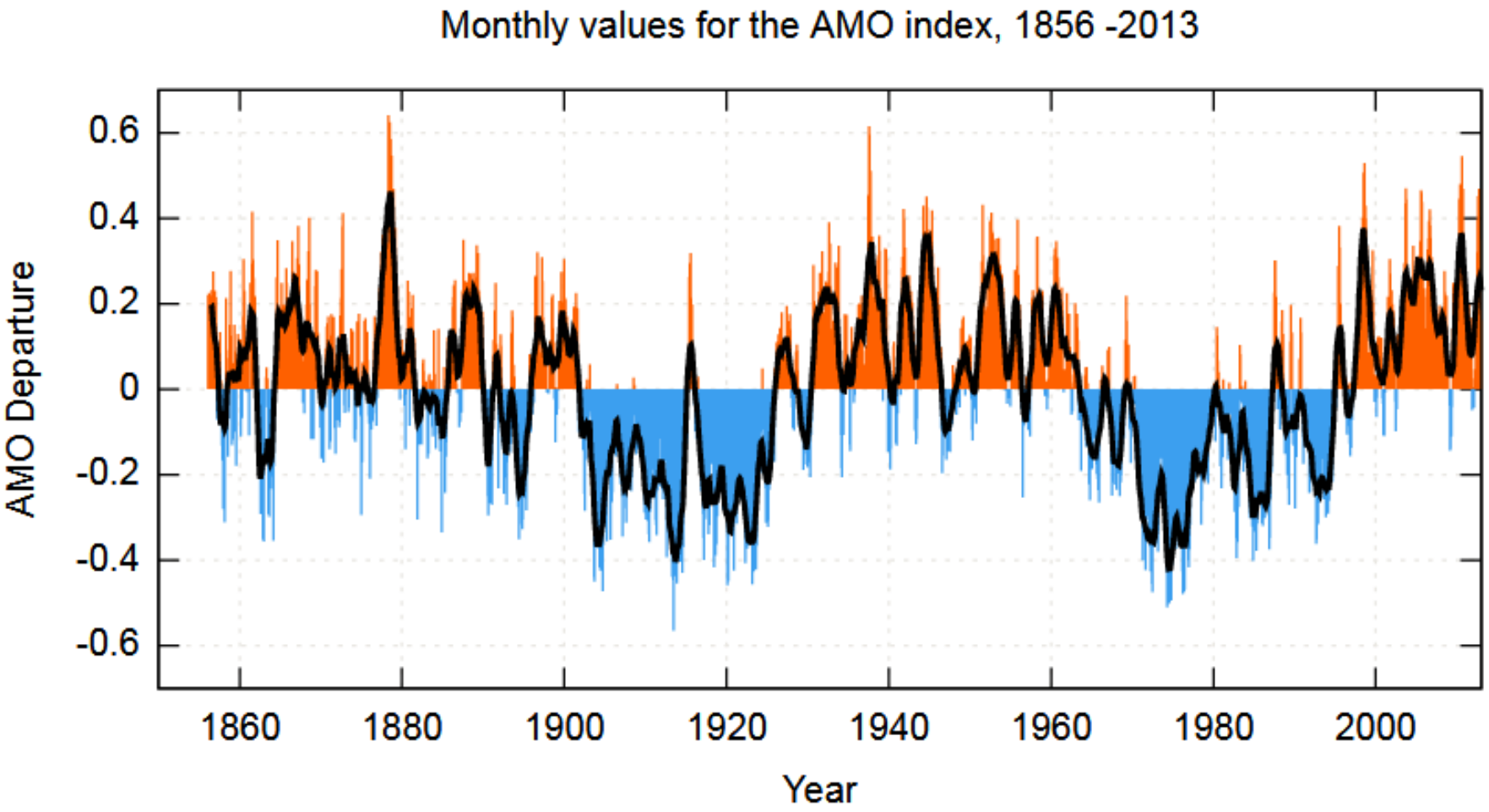
The Atlantic Multidecadal Oscillation, the AMO, https://en.wikipedia.org/wiki/Atlantic_multidecadal_oscillation has about a 60-year period, and,

"The AMO index is correlated to air temperatures and rainfall over much of the Northern Hemisphere, in particular in the summer climate in North America…"

The National Climate Data Center uses a 30-year standard for many climate study purposes, but that standard seems wholly unsuitable for most NCDC purposes, and certainly ours, here.

Therefore, we use stations' records having more than a 60-year period of record for this study.

https://en.wikipedia.org/wiki/Atlantic_multidecadal_oscillation#/media/File:Amo_timeseries_1856-present.svg



"Atlantic Multidecadal Oscillation index computed as the linearly detrended North Atlantic sea surface temperature anomalies 1856-2013."

Note the 60-year periodicity.

Main elements of the study:

The stations

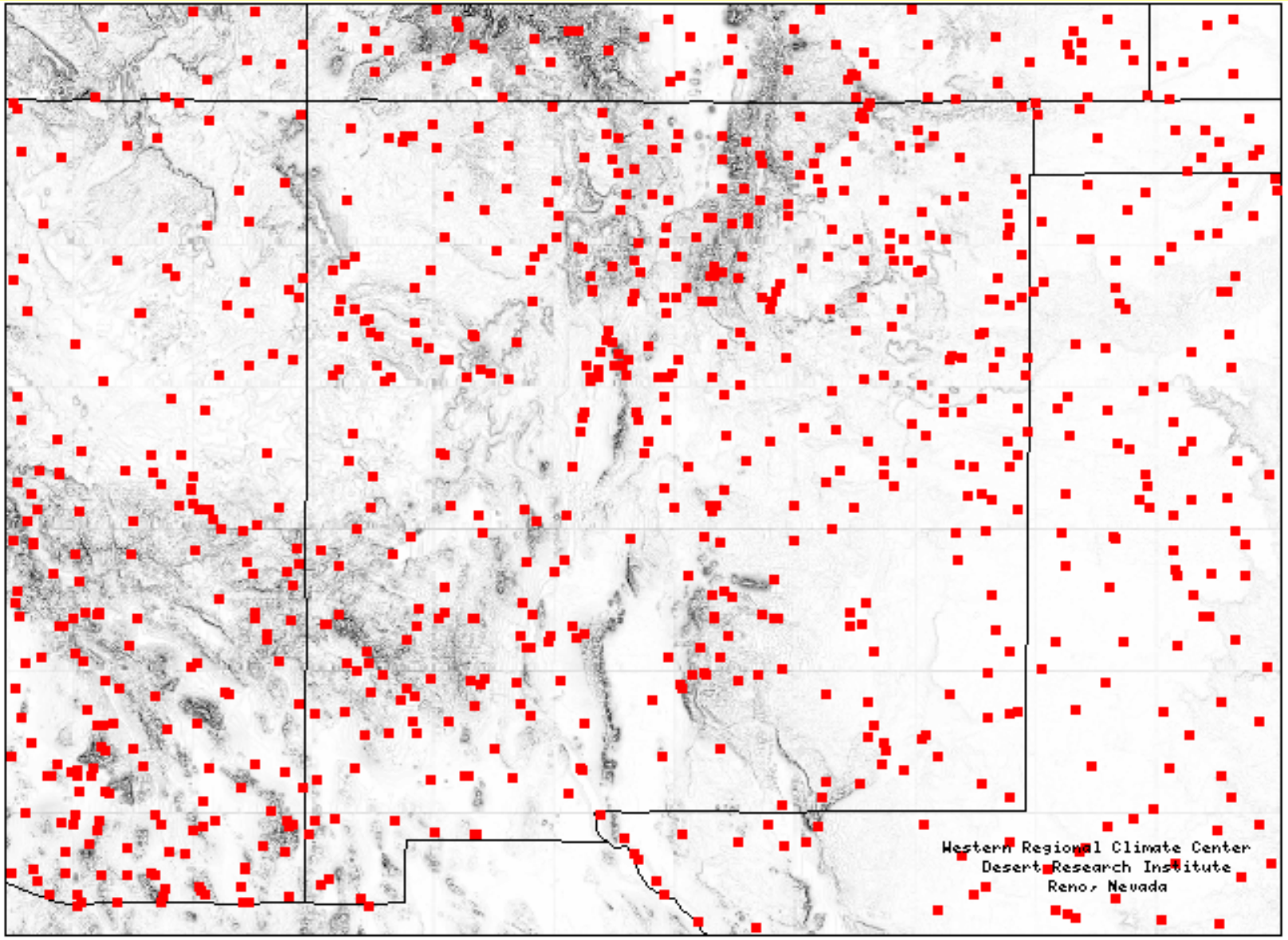
Temperature Data

CO2 Data

Resulting plotted data

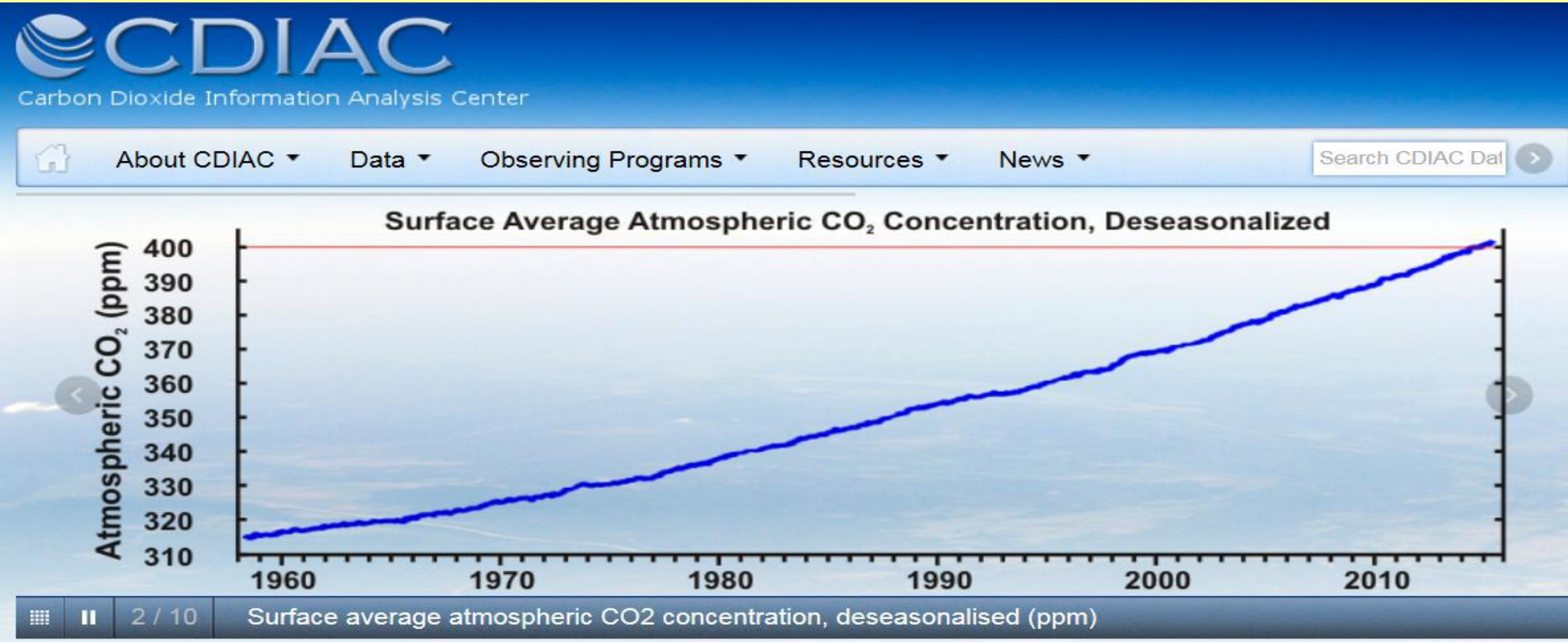
Results are unambiguous

Western Regional Climate Center Map of New Mexico showing locations of stations for New Mexico and nearby locations



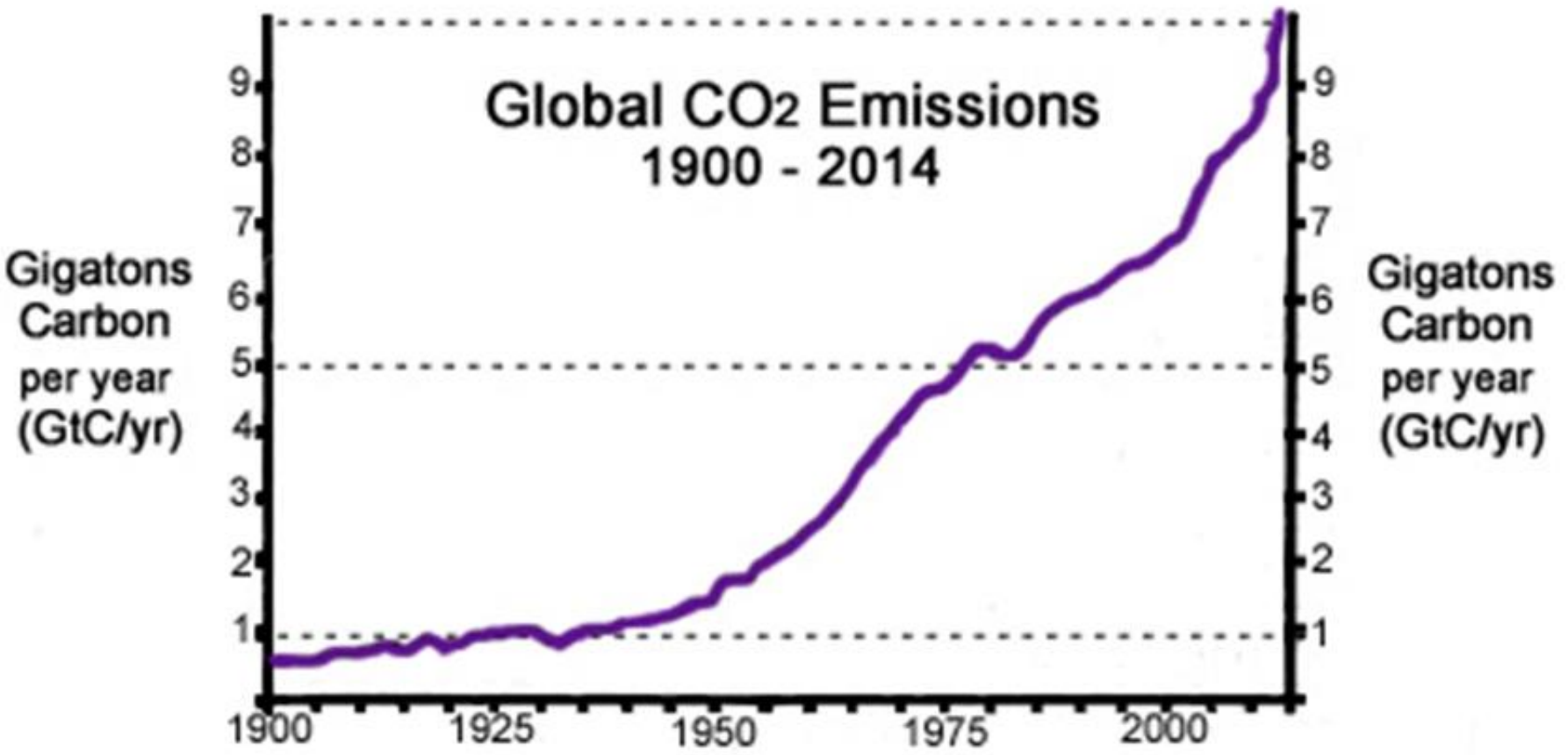
Western Regional Climate Center, wrcc@dri.edu

Climate Alarmists tell us that the addition of Carbon Dioxide to the atmosphere by human activities is a main driver of climate change today.
Therefore, to show this effect graphically, we use <CO2> data from the Carbon Dioxide Information and Analysis Center, part of Oak Ridge National Laboratory.



Data Files	Period of Record
http://cdiac.ornl.gov/ftp/trends/co2/siple2.013	<1744-1953>
http://cdiac.ornl.gov/ftp/trends/co2/maunaloa.co2	<1959-2007>
ftp://aftp.cmdl.noaa.gov/products/trends/co2/co2_annmean_mlo.txt	< 2008-2014>

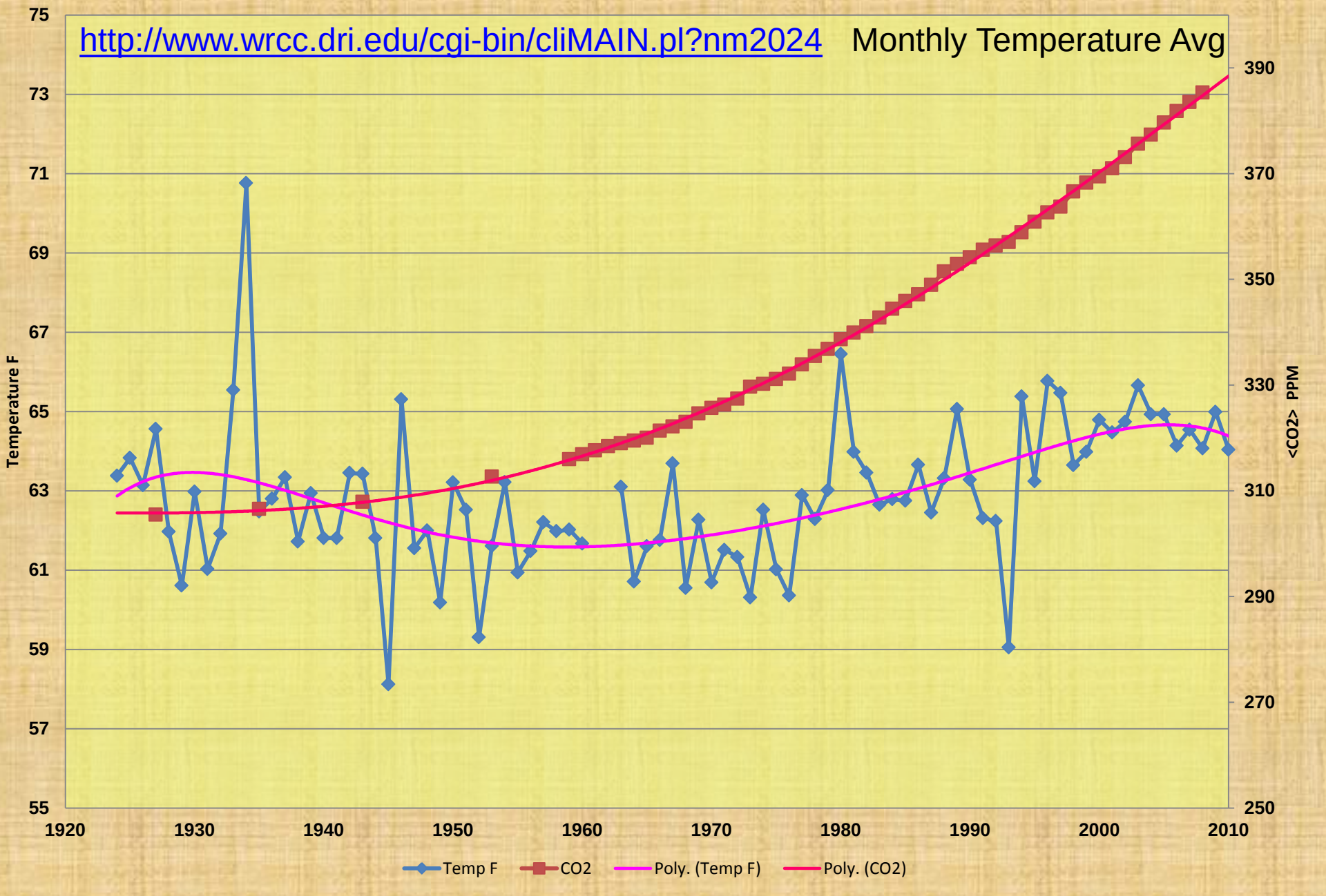
Discussion - Global CO2 Emissions



Anthropogenic CO2 emissions were steady about 1 GtC/year (gigatons of carbon per year) during the 1900 to 1945 period. After 1945, human emissions exploded. They reached 4 GtC/year by the 1970s, and 10 GtC/year by 2014.

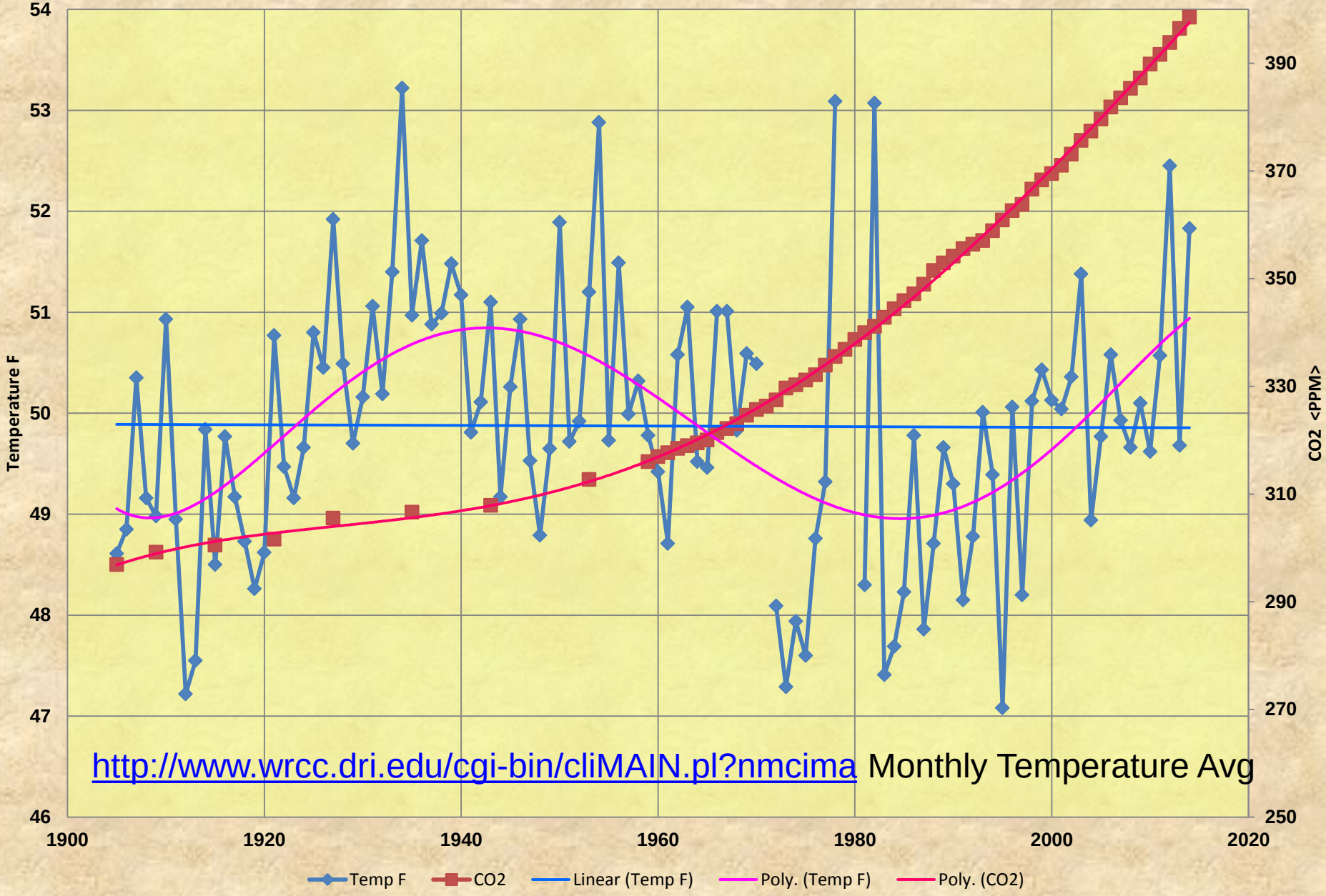
http://notrickszone.com/wp-content/uploads/2016/11/CO2-Emissions-1900-2014-GtC

Columbus, NM, Temperature and CO2
Hottest Temperature: 1934 Dust Bowl year



Cimarron, New Mexico, 4SW

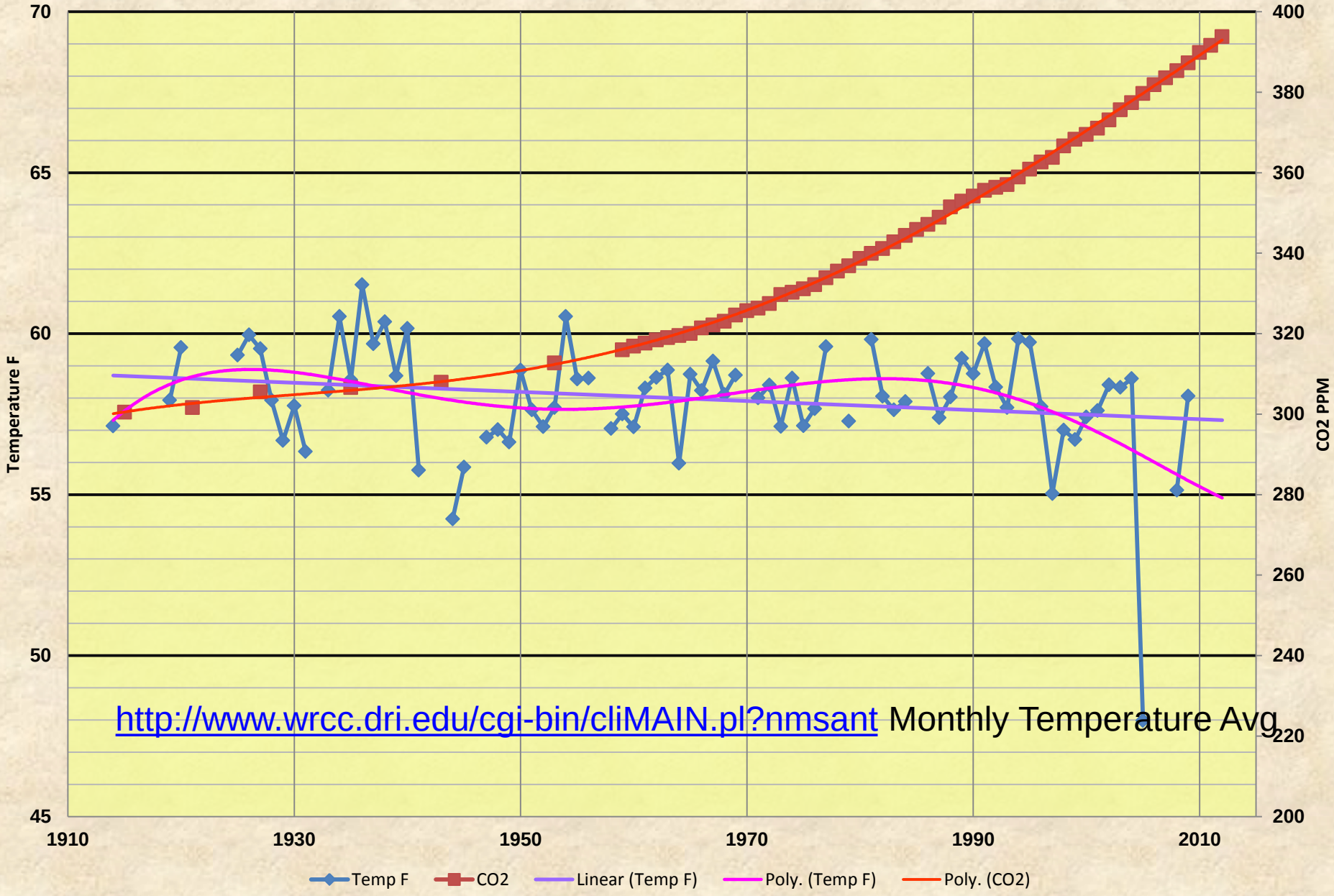
Temperatures decreased in 110-year period of record
Hottest temperature: 1934 Dust Bowl year



Santa Rosa, NM Temperature and CO2

Average Temperature fell 1.6F in 98 years

Highest temperatures were in the Dust Bowl years

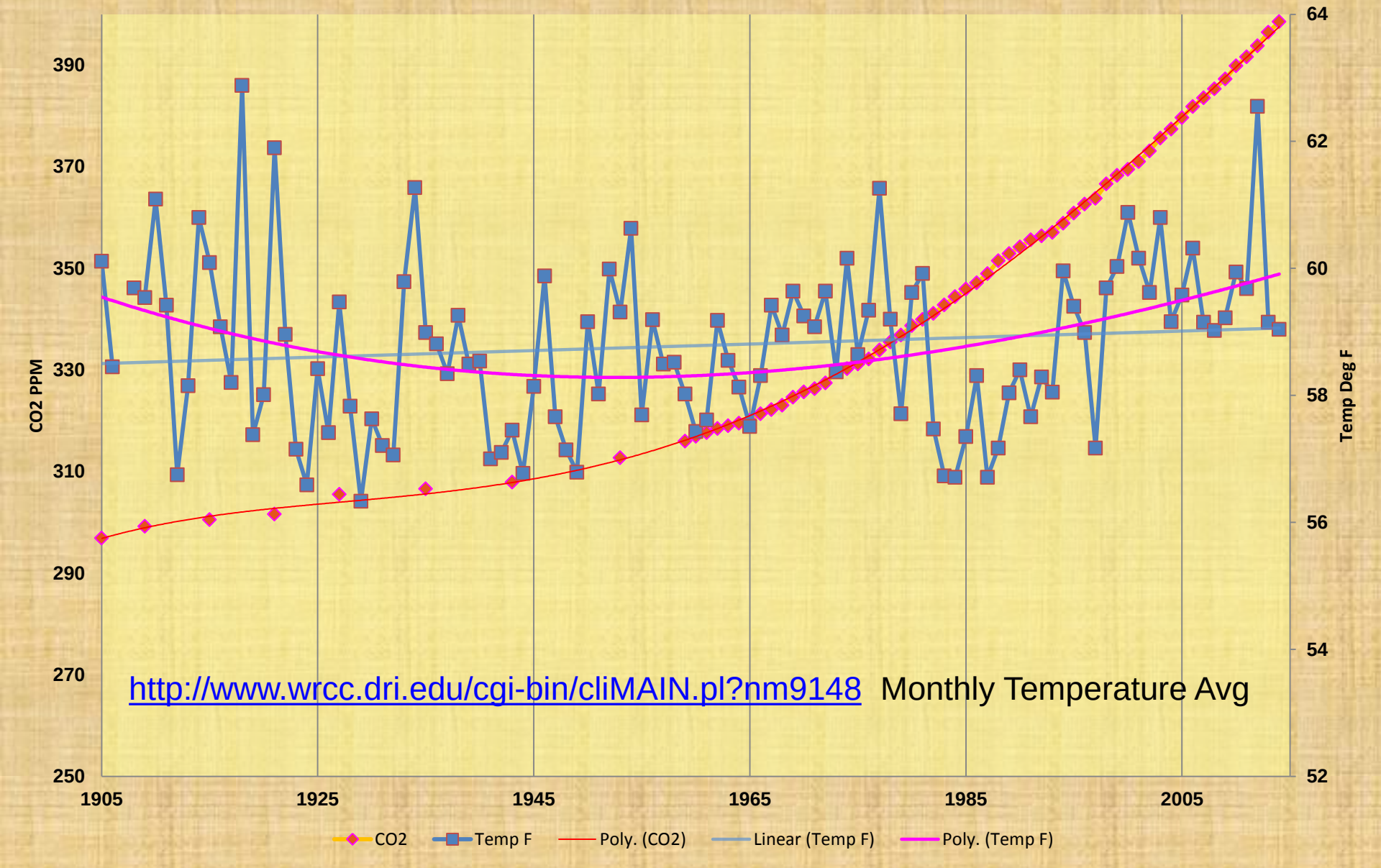


http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?nmsant Monthly Temperature Avg

Tucumcari, New Mexico Temperature and CO2

Highest temperatures in 1918

Average Tumcumcari Temp increased 0.4F in 110 years

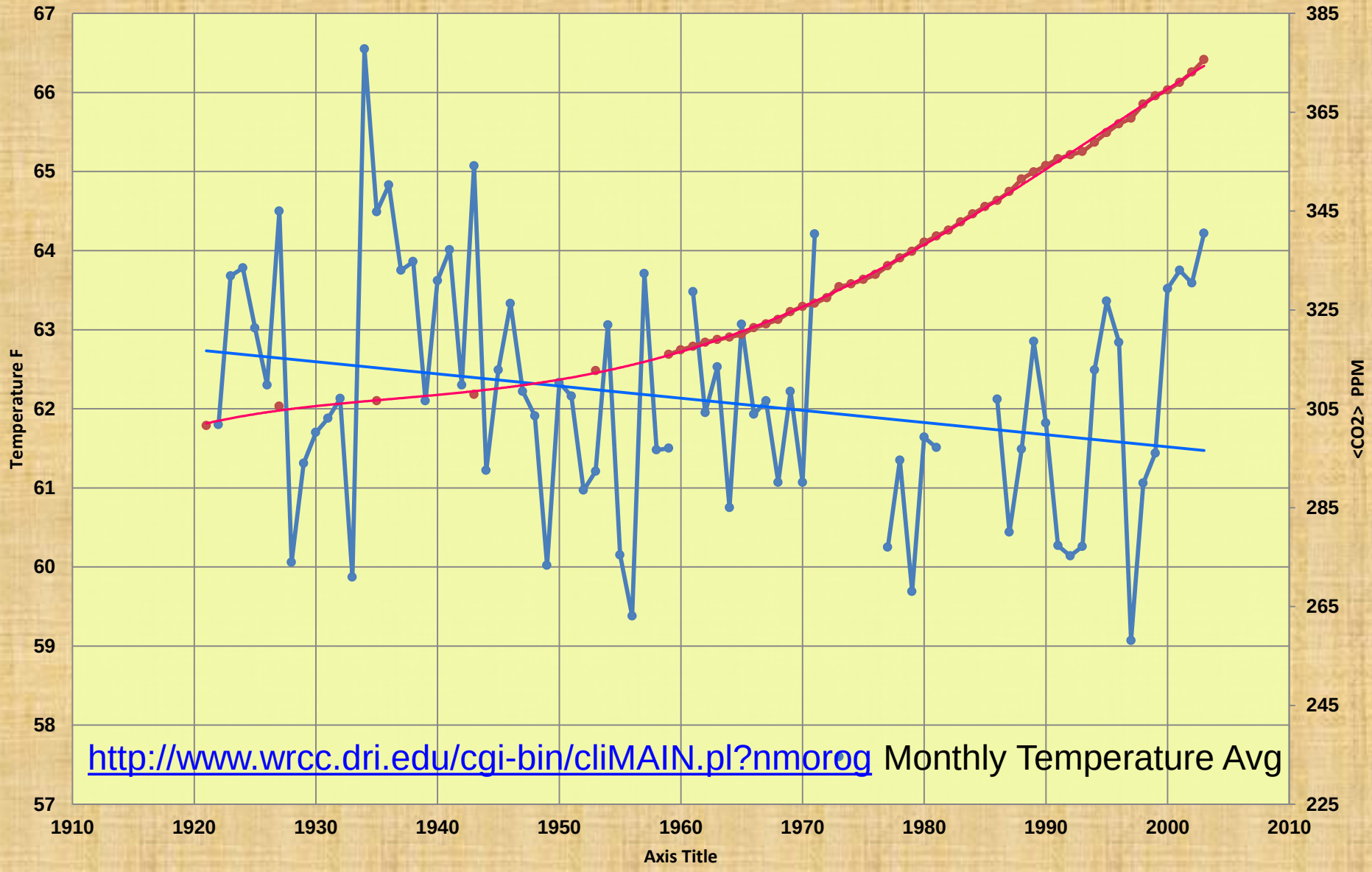


http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?nm9148 Monthly Temperature Avg

Orogrande, NM, Temperature and CO2

Hottest Temperature 1934, Dust Bowl

Average Temperatures fell in the 80 year period of record



http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?nmorog Monthly Temperature Avg

Examining The Hypothesis:

“With all the carbon dioxide in the air today, Surface Temperatures in New Mexico are hotter than ever before in the Instrumental Record.”

We tested this hypothesis with several long-term rural stations having at least 83 years period of record, because we know that the Atlantic Multidecadal Oscillation has about a 60-year period.

The hypothesis fails.

We examined five stations. In four of the five, Columbus, Cimarron, Santa Rosa and Orogrande, the hottest years were the Dust Bowl years of the 1930s. In the fifth, Tucumcari, hottest was in 1918.

There was no indication that CO2 emissions or concentrations had any effect on surface temperatures of long-term rural stations in New Mexico.

A final sidebar on the Urban Heat Island:

Peter and his Dad study NASA Temperature Records to see if the Urban Heat Island is real.

They compare rural and urban temperatures from 28 pairs of stations close to each other, one urban, one rural.

http://wattsupwiththat.com/2009/12/09/picking-out-the-uhi-in-global-temperature-records

Watch Peter's excellent video below:

<Click the link below>

https://www.youtube.com/watch?feature=player_embedded&v=F_G_-SdAN04