Solar Minimum, Atlantic Basin Named-Storm Forecast

An Historical View of Sunspot Activity Effects on USA Temperatures and Atlantic Basin Named Storms and a Forecast of Each During a Solar Minimum with Florida Supplement

By C. Paul Pierett
Lt. Colonel, Retired
U.S. Army

Revised
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For Notes, Open View Click Notes Page

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Keep in mind:

- There is evidence of hurricane activity during the Mini-Ice Age
- My work is solely based on Sunspot Activity
- I believe all evidence of global warming points to the Milankovitch Cycles
- I tend to stay on an historical viewpoint
- Projections and Forecasts are based on history.

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The purpose of this briefing is to show relationship between Sunspot Activity and:

Lake Levels
Accumulated Cyclone Energy
Glacier Activity
USA Average Temperatures
Hurricane numbers

To do so, Sunspot Activity needs to be described in simple detail
Show that the Sun has entered some type of sunspot minimum

Finally, a forecast of temperatures and hurricane activity during this solar minimum

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Nearly 80 years ago, Sir Richard Gregory proved correlation between sunspot activity and the lake levels of Lake Victoria. The work appears In a book by Sir James Jeans, titled, *Through Space and Time.*

This is where the research for this project was given birth.

Sir Gregory's work is shown in the next slide

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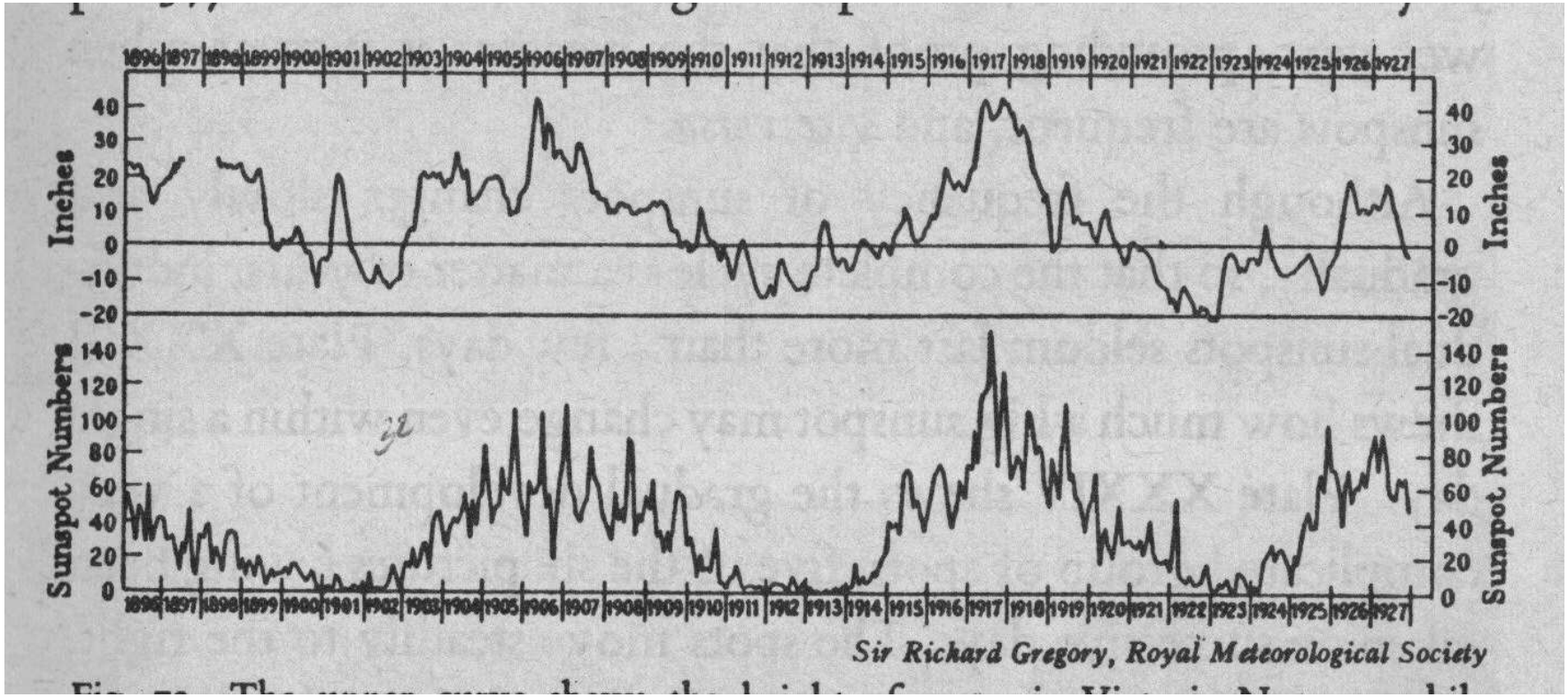

Figure P-1 "The upper curve skews the height of water in Victoria Nyanza [(Lake Victoria, Uganda} (Feeds the Nile)], while the lower skews the frequency of sunspots a the same time. We see that the curves keep almost perfectly in step with one another demonstrating that sunspots have an influence on terrestrial weather." from page 159 of "Through Space and Time" by Sir James Jean, John Wiley and Sons, INC, New York, 1963. Permission granted for reproduction from Cambridge University Press, Mr. Adam Hirschberg, June 19, 2008.

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Melting Glaciers:

Based on his work, there should be other areas of our climate that are changed by sunspot activity. Using his base, a search was started for those climate changes.

The first area noted was the lost of the fjord glacier in Glacier Bay National Park

The glacier was first discovered by explorers around 1750.

Correlation: The glacier began to melt with the return of sunspot activity in 1700 after the Maunder Minimum or also known as the Mini-Ice Age.

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Shortly after the Mini-Ice Age, the fjord glacier extended into the inter-coastal seaway until 1750 when the glacier was first discovered by Vitus Bering.

The extent of the glacier was at the area shown in **red.** It was 4000 feet thick, 100 miles long and 20 miles wide.

By 1879, the glacier had receded 30 Miles. Rapid Recession in 1899 stopped tours due to the danger of the falling ice.

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Annual temperatures for the cooler cycles 1902 to 1933 range from 54 to 54.43.

The cycles that had a sharp peak at the start of the cycle and had a total average for the cycle above 600, are considered by the author to be “Global Warming” cycles and reflected an USA average temperature above 55.49.

During cooler cycles , the Glacier Bay fjord glacier only melted ½ mile during the 300 or 400 sunspot cycle.

During warmer 600 to 900 sunspot cycles, the glacier melted 1 mile during a cycle.

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Correlation of Sunspot Activity to Accumulated Cyclone Energy (ACE).

Following Sir Richard Gregory's lead, the following was based on his work.

The object, find similar climate activity that correlates to sunspot activity. Named-storms were hard to correlate to sunspot activity.

However, ACE showed a strong correlation

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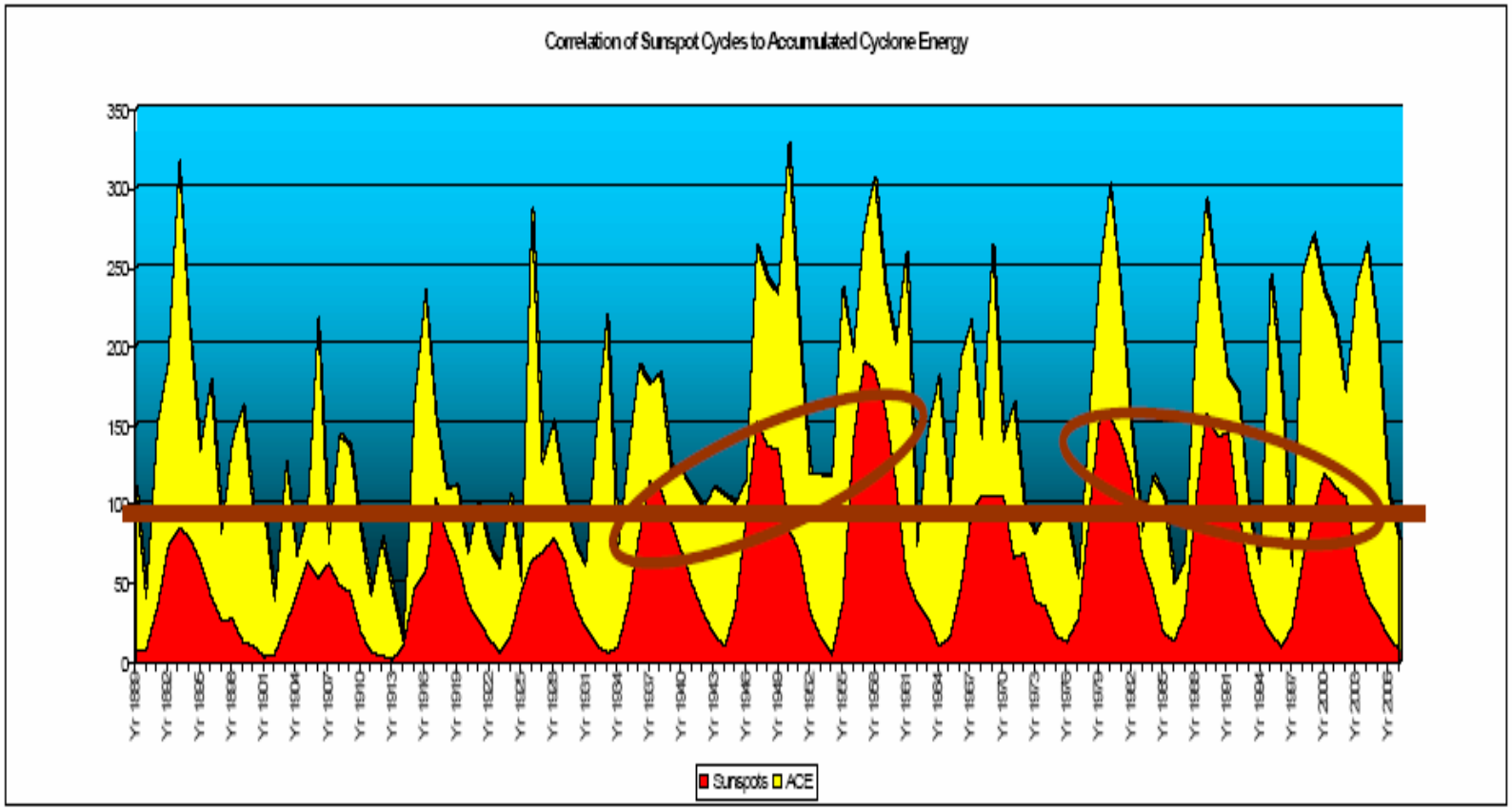

One of the Author's first pieces of work in correlation studies of sunspot activity to Accumulated Cyclone Energy.

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Of the available data, it is known that sunspot cycles last about 11 years.

USA data for ACE goes back about 120 years.

Good sunspot data goes back 311 years.

If we take the total average sunspot activity for each first year, then the second year and so on, we would have a basic model of a sunspot cycle over the last 120 years.

If we did the same for each matching year of ACE, we would have a correlation of sunspot activity and ACE as seen in the next two slides. The first is raw data and the second is for small community audiences.

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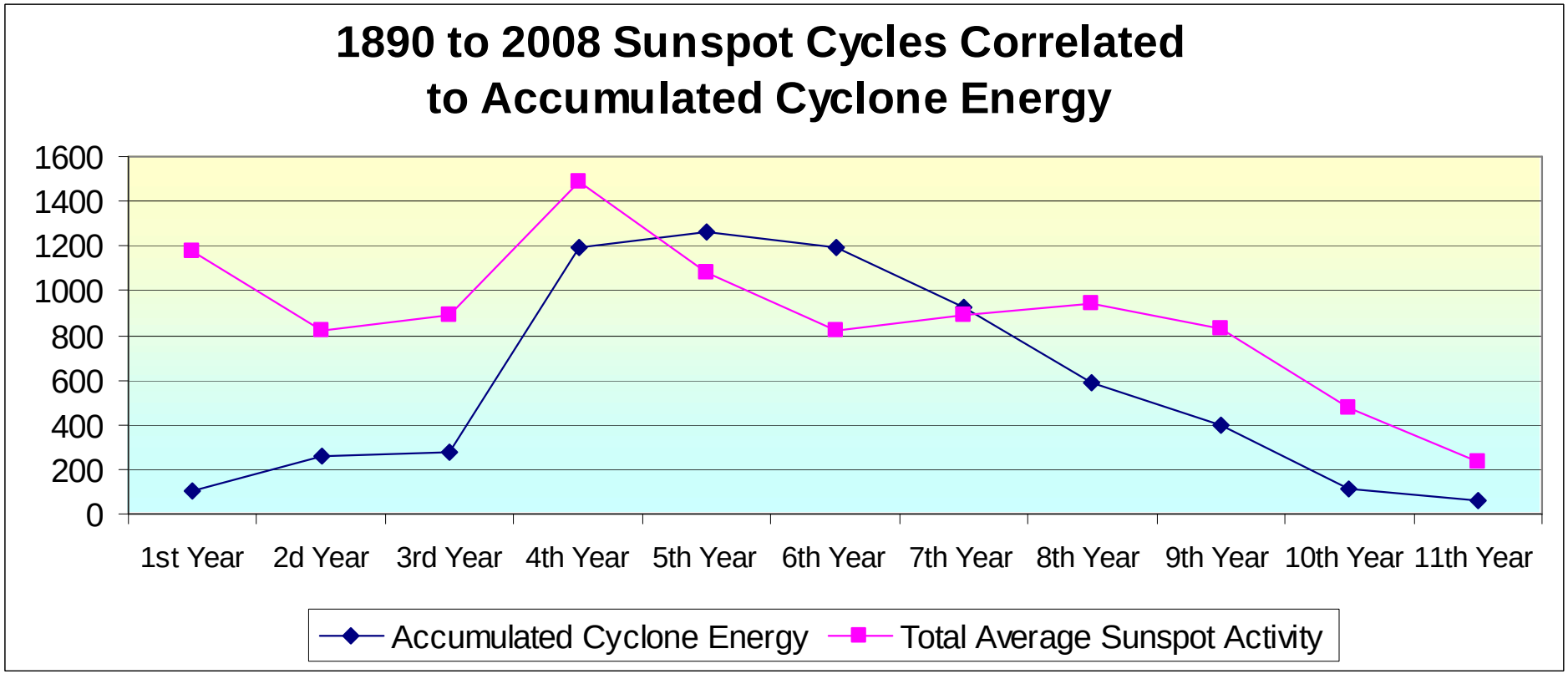

As stated in the previous slide, this is a raw data view of the correlation.

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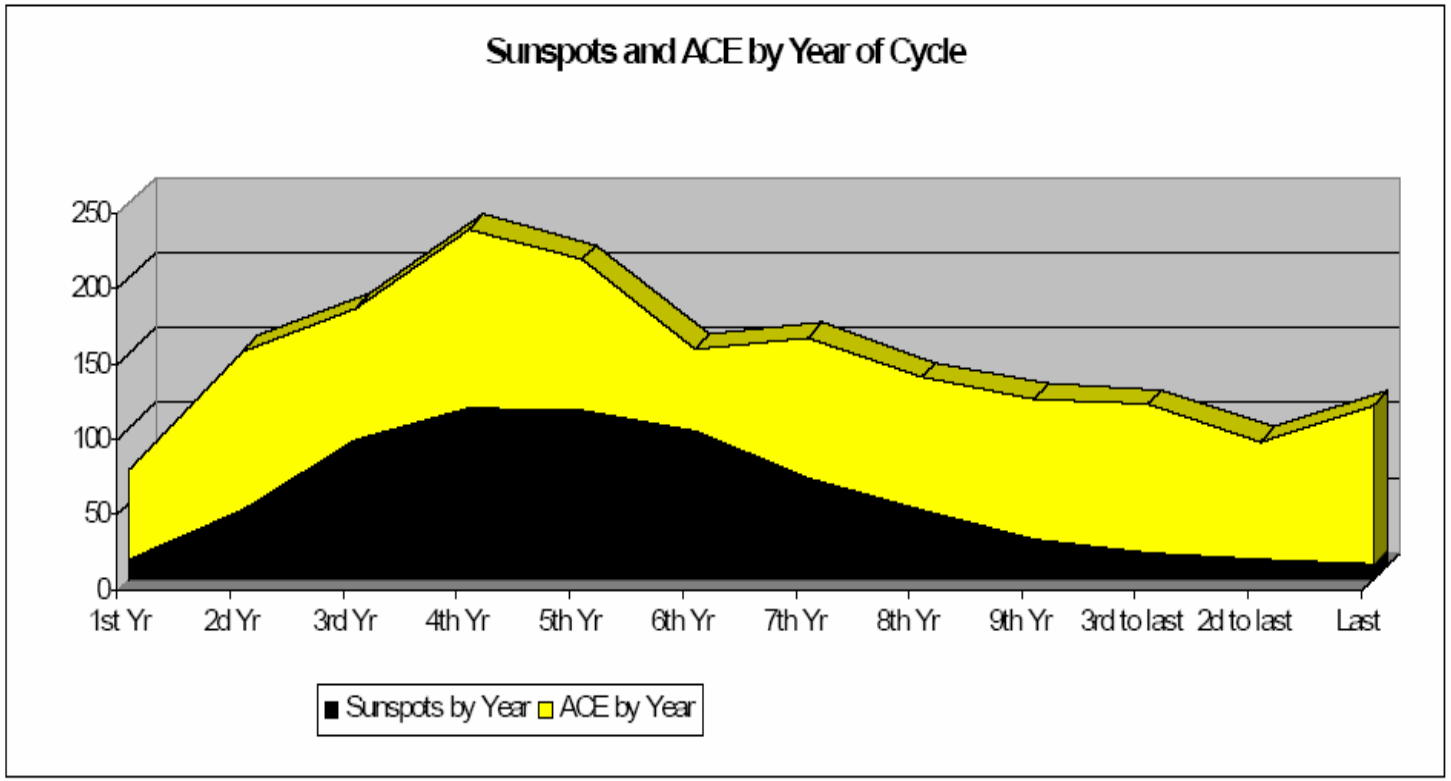

This slide is used for some small community audiences. The reason the slide shows 3rd to last and so on, is some of the Authors work found correlation of sunspot activity to droughts.

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This next section begins a review of some observations of USA temperature data based on sunspot cycles.

The key point in the next slide is that when the average winter USA temperature rises above 33ºF, which happened in the last decade, the hurricane activity and ACE hits its highest known and numbers.

When the winter temperatures drop below 33ºF, the hurricane seasons begin to die down and snow packs and glacier activity resumes at higher elevations and higher latitudes.

If someone were to study tree-line activity, there should be over a few decades a change in latitude and elevation of a tree-line during global warming and global cooling sunspot cycles.

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The first four slides summarize the effects on the Earth by sunspot activity.

Historical Overview

Hurricanes and Glaciers

Topography Shift

Green House Gases

Life Cycles

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Historical Overview

950 Sunspot Cycle Average	Precipitation hits all time high in the USA Highest hurricane activity in last 100 years, 1996 to 2007
600 Sunspot Cycle Average	Global Warming Sunspot Cycles, 600 and above sunspot cycle average

33°F in average USA Winter Temperatures appears to be the *Balance Point* Between Global Warming and Global Cooling!

400 Sunspot Cycle Average	Niagara Falls Freezes, 1911 Great Dust Bowl, 1934
200 Sunspot Cycle Average	Much Drought, Kentucky 1816 Famine, Thinning of the Herd begins!
Little to Zero (0)Sunpot Activity	Maunder Minimum Glacier Bay fjord glacier reaches inter-costal seaway

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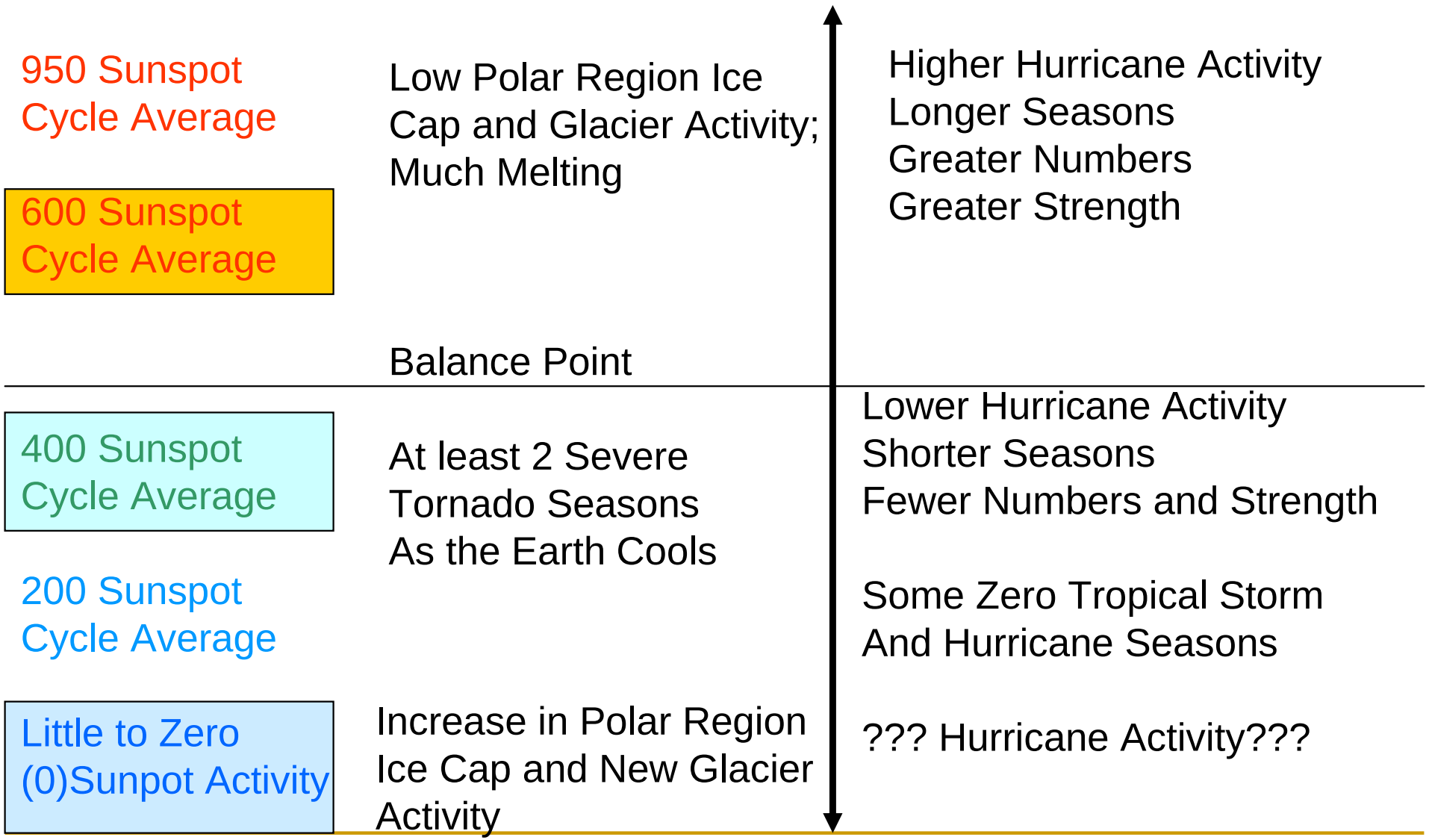

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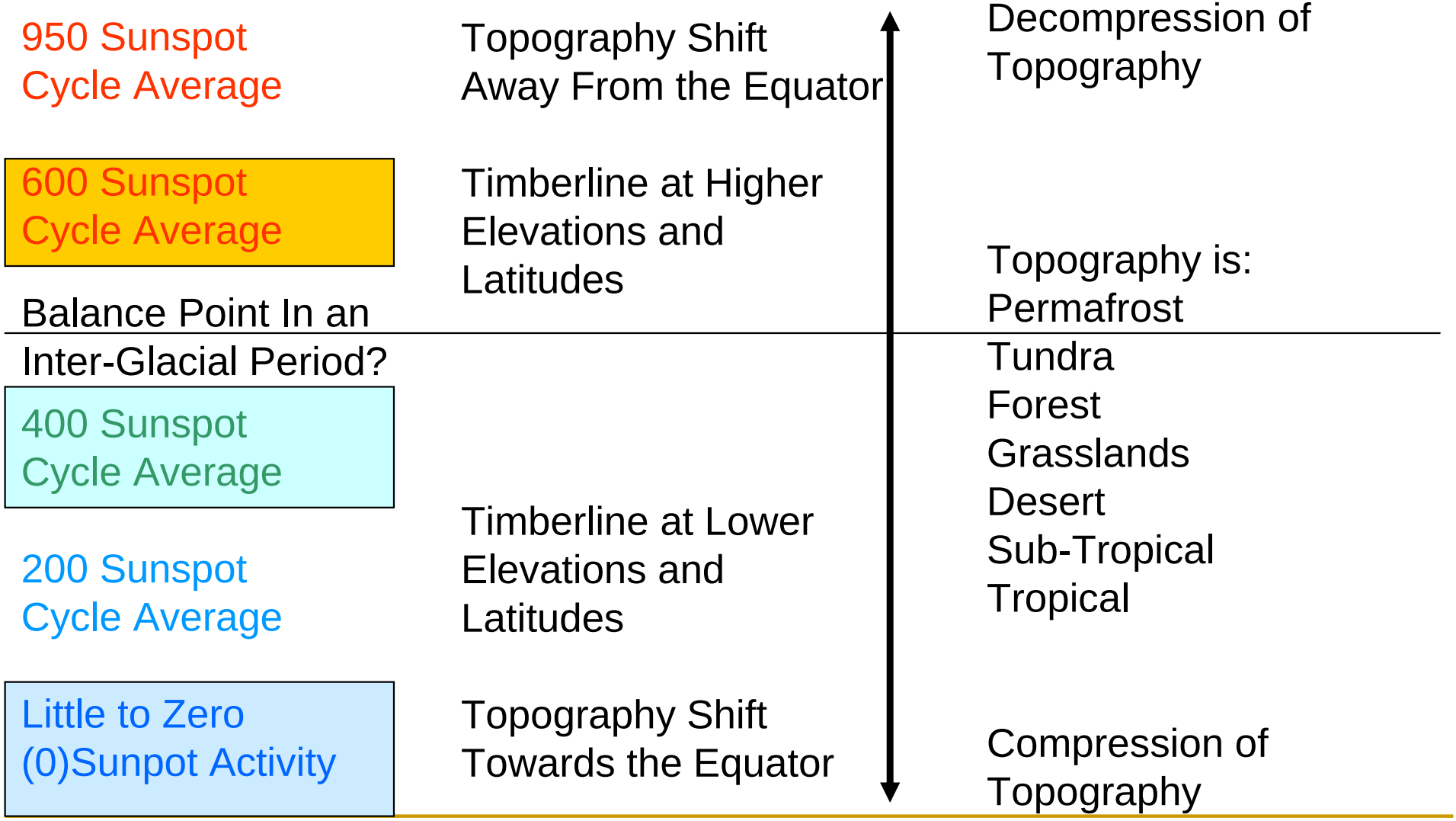

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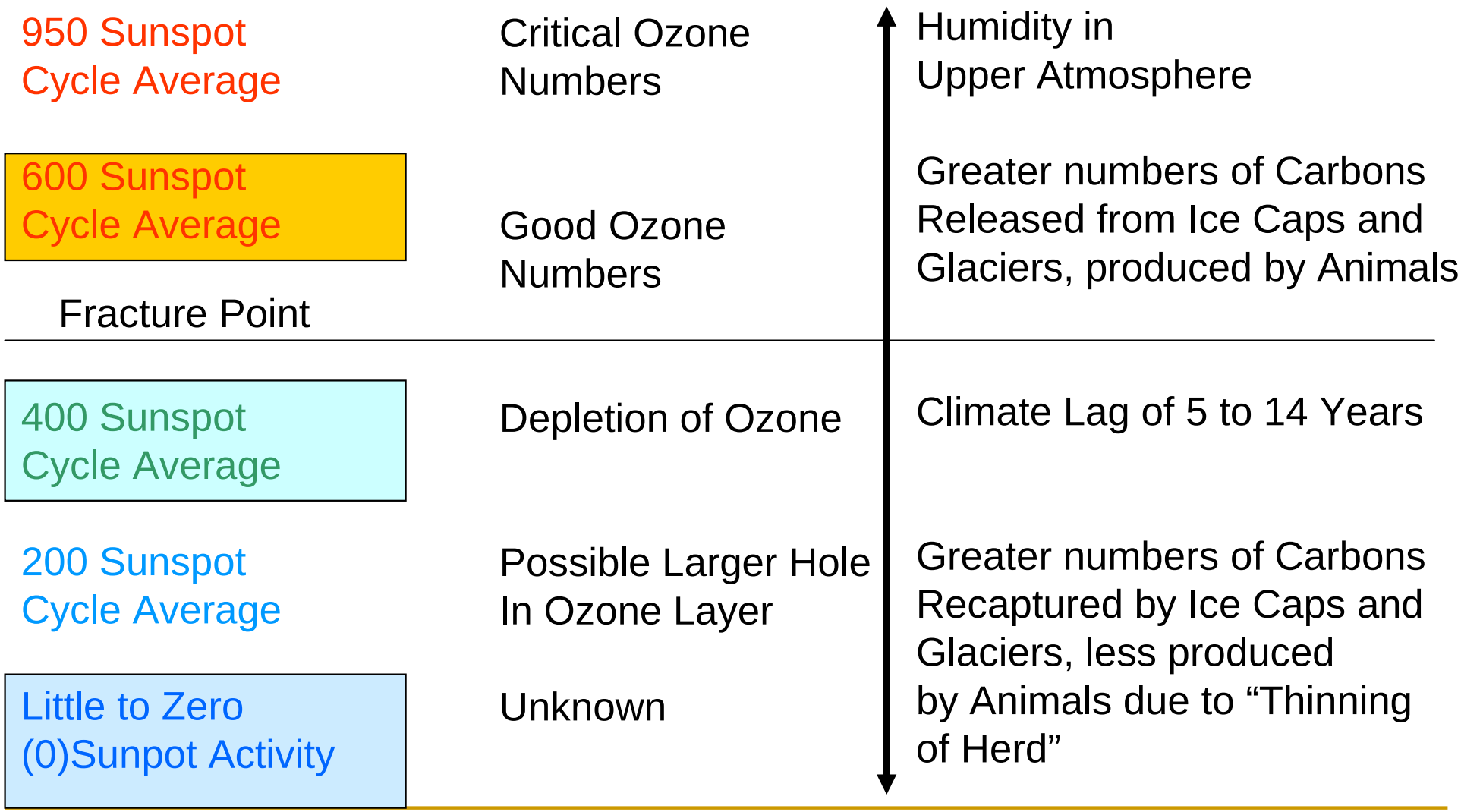

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		Life Cycles
950 Sunspot Cycle Average	Warm Winters Long Growing Seasons Good Precipitation	The Herd Grows Greener Earth Some Ecology "out of Balance".
600 Sunspot Cycle Average		
400 Sunspot Cycle Average	Severe Winters Shorter Growing Seasons Precipitation less by one Inch a year	Major Animal Death Crops Die Herds are thinned out by Ranchers and Farmers
200 Sunspot Cycle Average		
Little to Zero (0)Sunpot Activity		1/3d of France Population dies. Disease rampant! Farmers sleep with cattle

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- In the following slides, the sunspot history of the correlation studies are presented. The last 300 years of sunspot averages are used.
- The purpose is to show during our place in Space and Time, the effects of sunspot activity on the climate.
- The slides will show the difference in each 100 years of sunspot cycles and how they effect our temperatures, numeric numbers of hurricanes and finally a projection of temperatures and hurricane activity.

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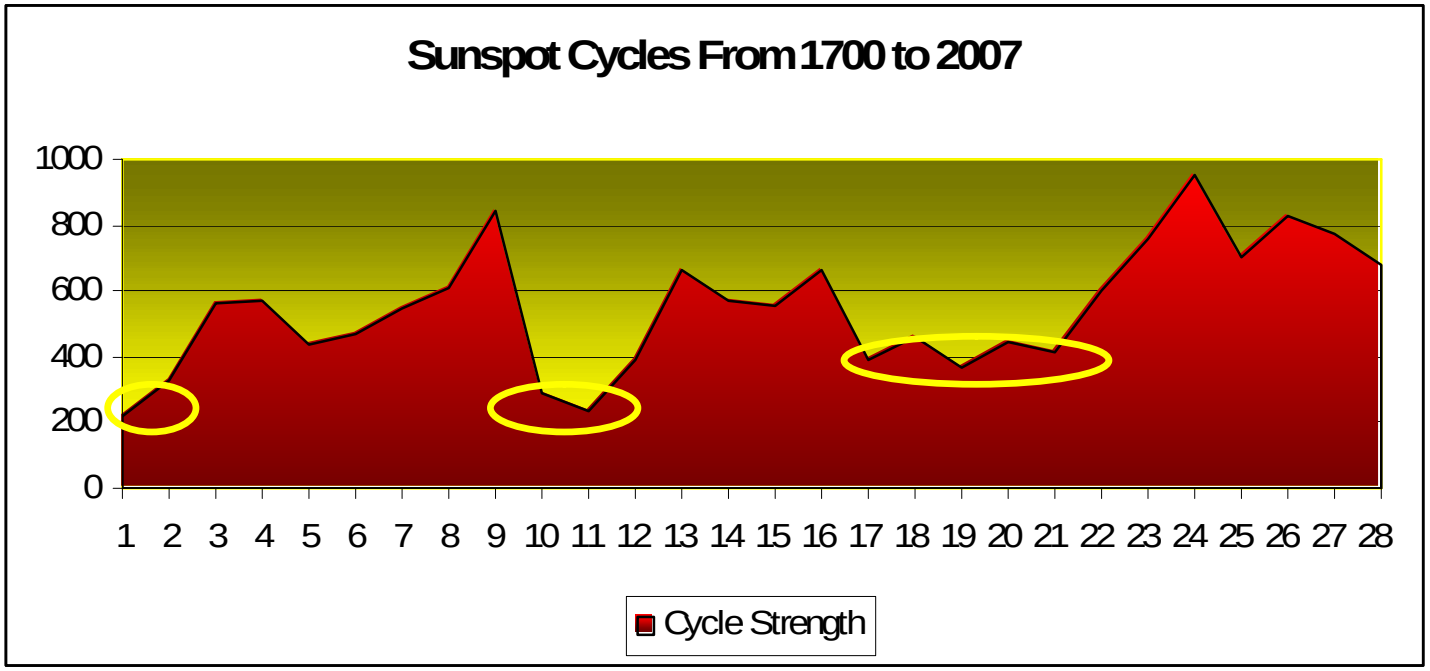

In this figure the total average sunspot activity of each year of a sunspot cycle is added together for a total. Each cycle was totaled up and stood on end. Minimums shown in yellow circles. 1700s appear to be stronger than the 1800s and 1900s appear to be stronger than the 1700s and 1800s. The next slide shows the overall strength of each century.

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Solar Minimum to Solar Minimum

Century	Total No. of Yrs & Cycles	Total of Yearly Sunspot Avg.	Average Per Year
1700-1798	98 years 9 cycles	4577.4	46.71
1799-1901	103 years 9 cycles	4168.5	40.08
1902-2007	106 years 10 cycles	6533.78	61.64

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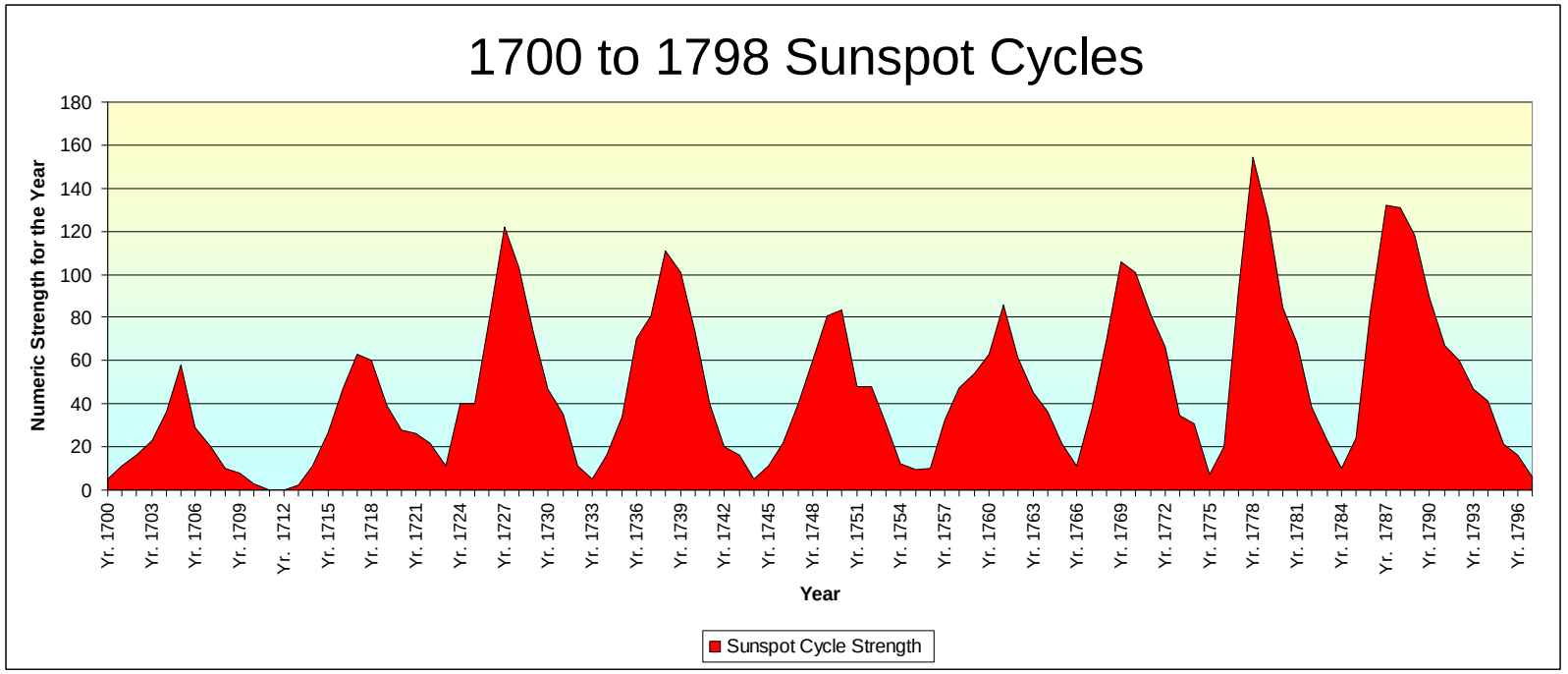

The 1700s was the first century after the last mini-ice age with regular sunspot activity. The century began with cycles that had peaks of 60 average sunspot activity. An observation, the peaks tend to play in the strength of a cycles warming potential. Without the peaks the sunspot cycle tends to be cooler. A cooler minimum causes a cooler century.

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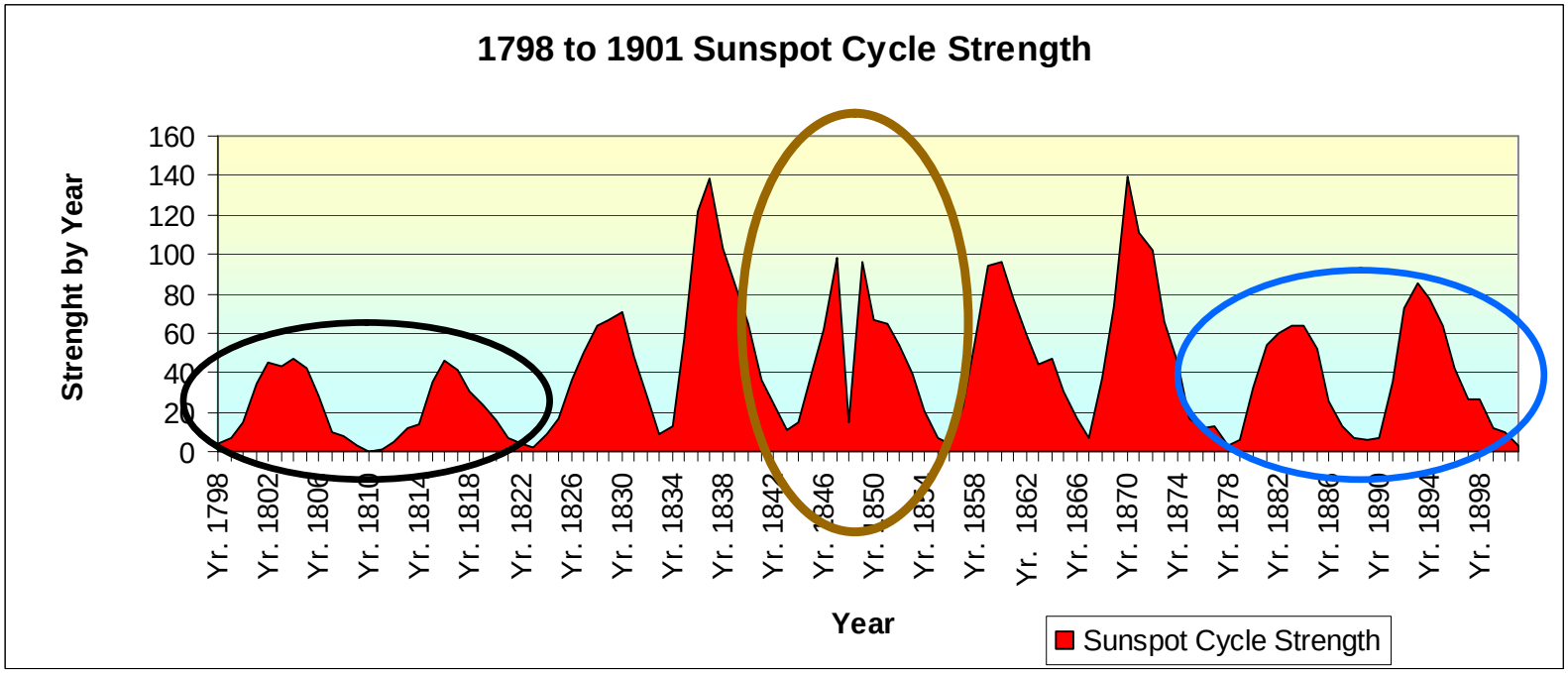

The 1800s began with a smaller two cycles; had four global warming sunspot cycles; and declined into less than global warming sunspot cycles at the end of the century. (Brown Circle) Note the mid-point collapse in the 1843 to 1854 cycle. The cycle dropped from 98.5 to 14.7 and then back up to 96.3. It had to be a cooler century than the 1900s.

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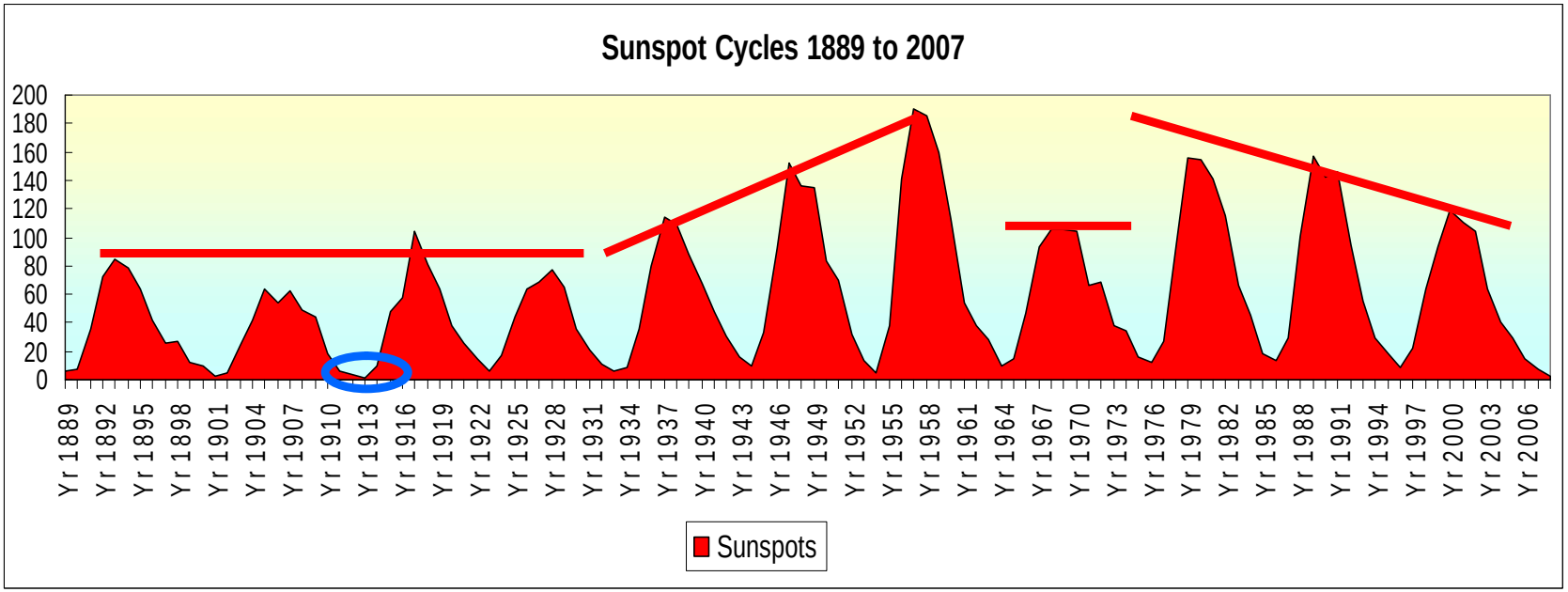

The 1900s began with four short smaller cycles that led to the Niagara Falls freeze of 1911 and one tropical storm in 1914 (See blue circle). The six of the last seven cycles gave us our "Global Warming" scare. Hurricane numbers and strength should be growing and glaciers should be melting at lower latitudes and lower elevations. We should see that reverse somewhat in the next 20 years.

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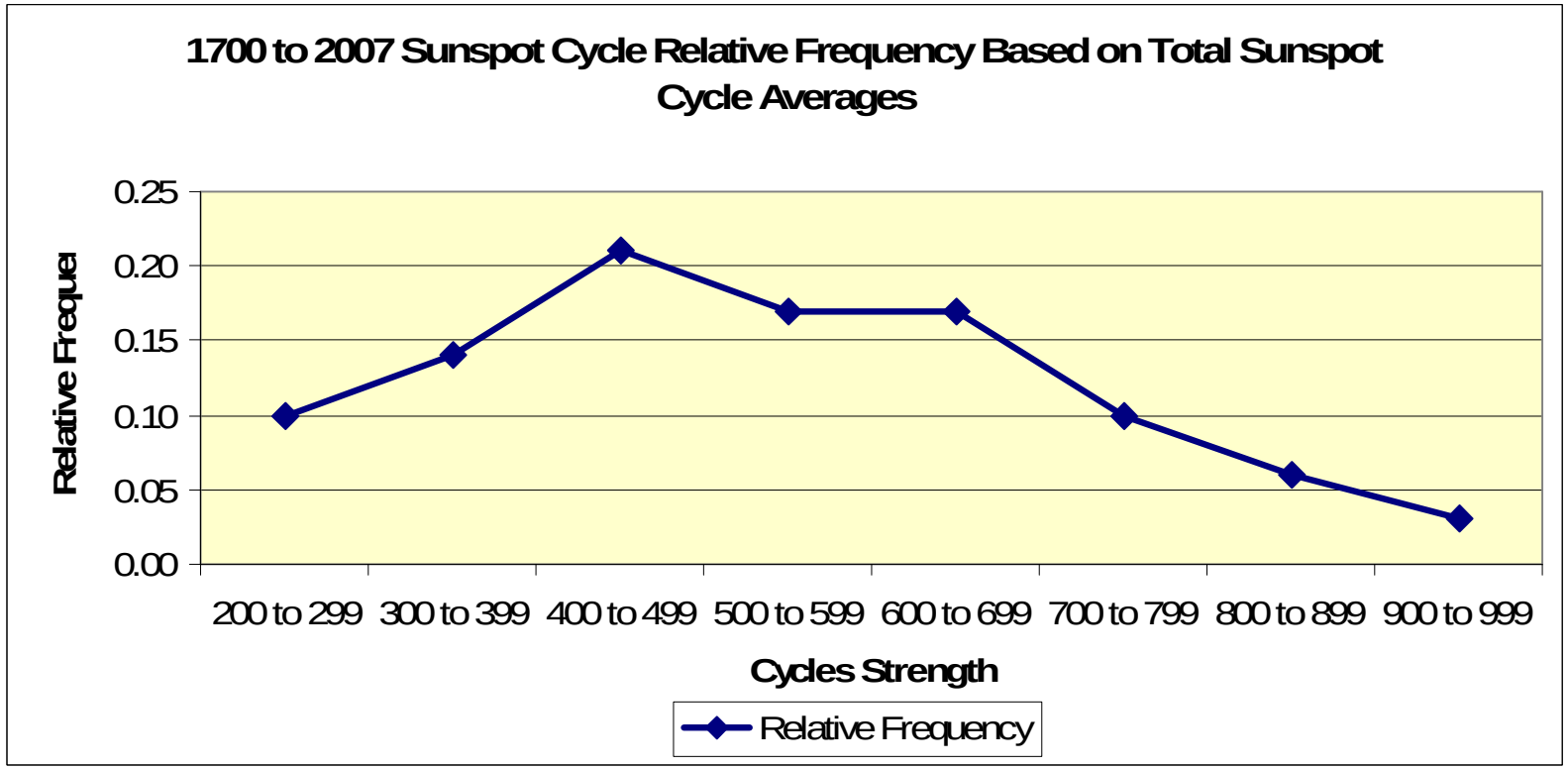

This is the frequency distribution for the last 300 years. There tends to be more of the 400 to 500 strength sunspot cycles than the others. An historical observation, when there are Smaller cycles at the start of the century, the overall cycles tend to be smaller. This points to a cooler century as well.

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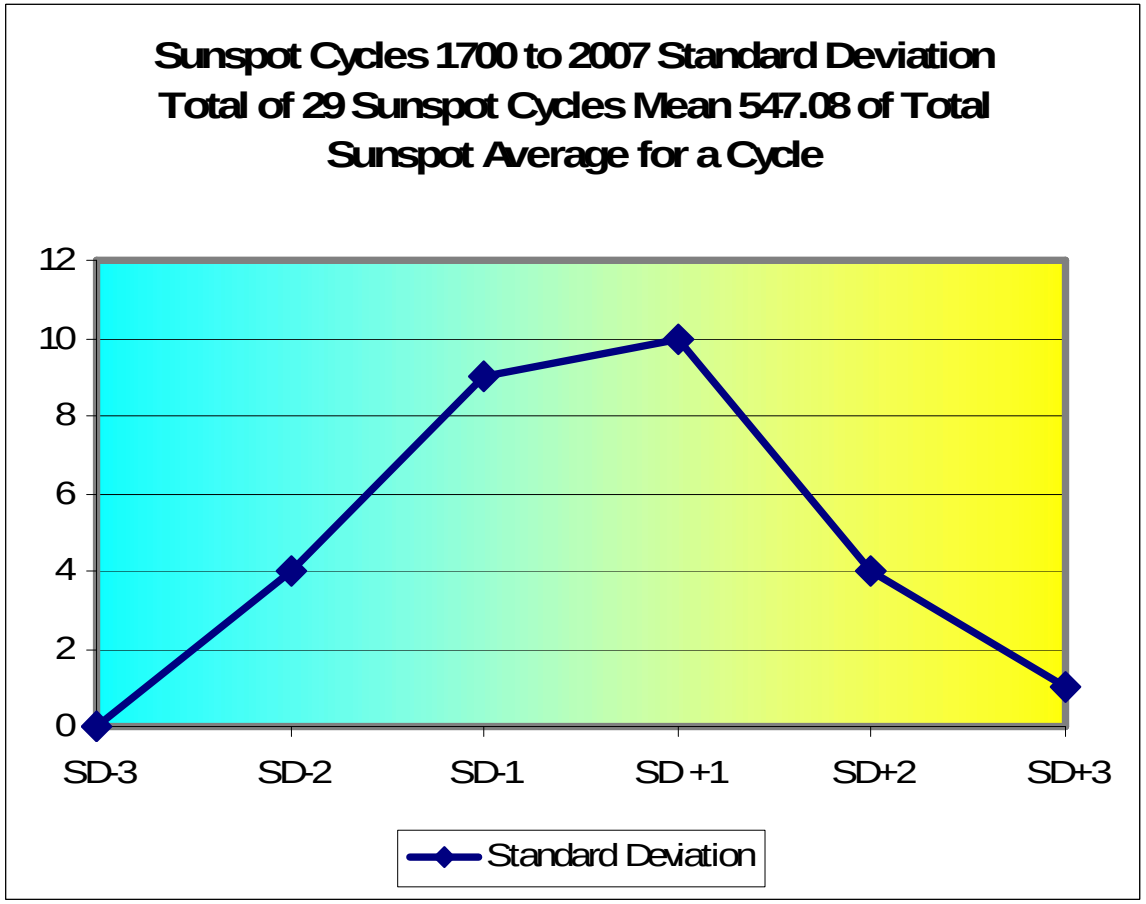

SD broken out
Total Average Sunspot Cycle (TASC) is Given

29 Cycles
Mean is 547.08
SD is 182.82

SD+3 - 949.8
SD+2 - 756.7 to 846.3
SD+1 - 552.2 to 705
SD-1 - 539.4 to 371
SD-2 - 325 to 219
SD-3 - 0

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Joseph D' Aleo Observed:

1. There is a solar minimum each century
2. The century tends to start with a solar minimum
3. The first cycle has fraternal twin
4. Thus, we began some type of minimum in 2008
5. The start of the minimum is now between the 1700 and 1800 minimum

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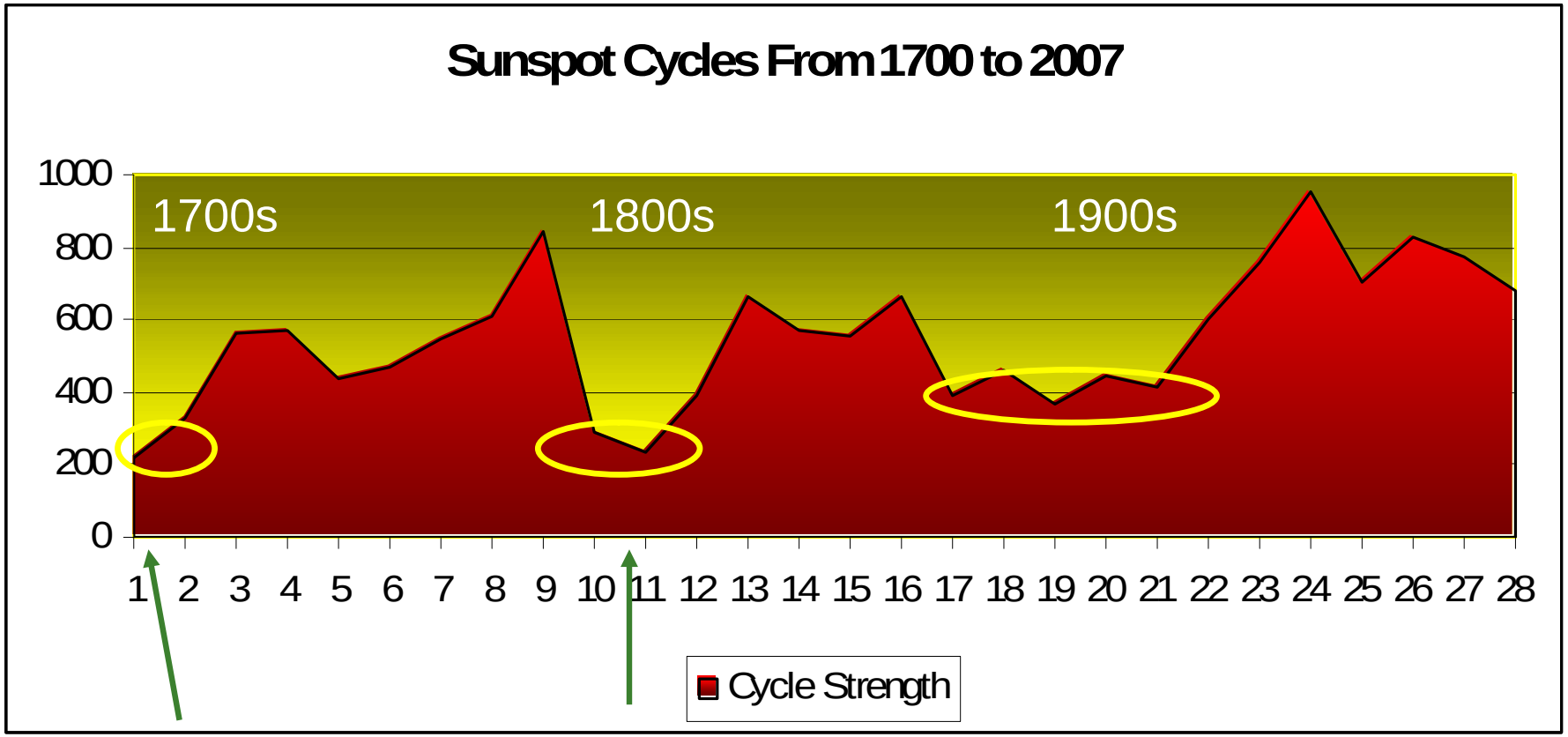

We are looking at the two minimums as the present models. Per review of present SIDC count, we appear to be in a minimum because the numbers are too low for the fourth year of a sunspot cycle.

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Year	Sunspot Average		219 Total Avg. Sunspot Cycle			441 Total Avg. Sunspot Cycle			613 Total Avg. Sunspot Cycle	
2008	2.9		1700	5		1913	1.4		1775	7
2009	3.10		1701	11		1914	9.6		1776	19.8
2010	16.5		1702	16		1915	47.4		1777	92.5
2011			1703	23		1916	57.1		1778	154.4
2012			1704	36		1917	103.9		1779	125.9
2013			1705	58		1918	80.6		1780	84.8
2014			1706	29		1919	63.6		1781	68.1
2015			1707	20		1920	37.6		1782	38.1

2008 Sunspot Cycle compared to other startups in different sizes of sunspot cycles. The present sunspot cycle appears to be a solar minimum cycle of approximately 200 total average sunspot cycle.

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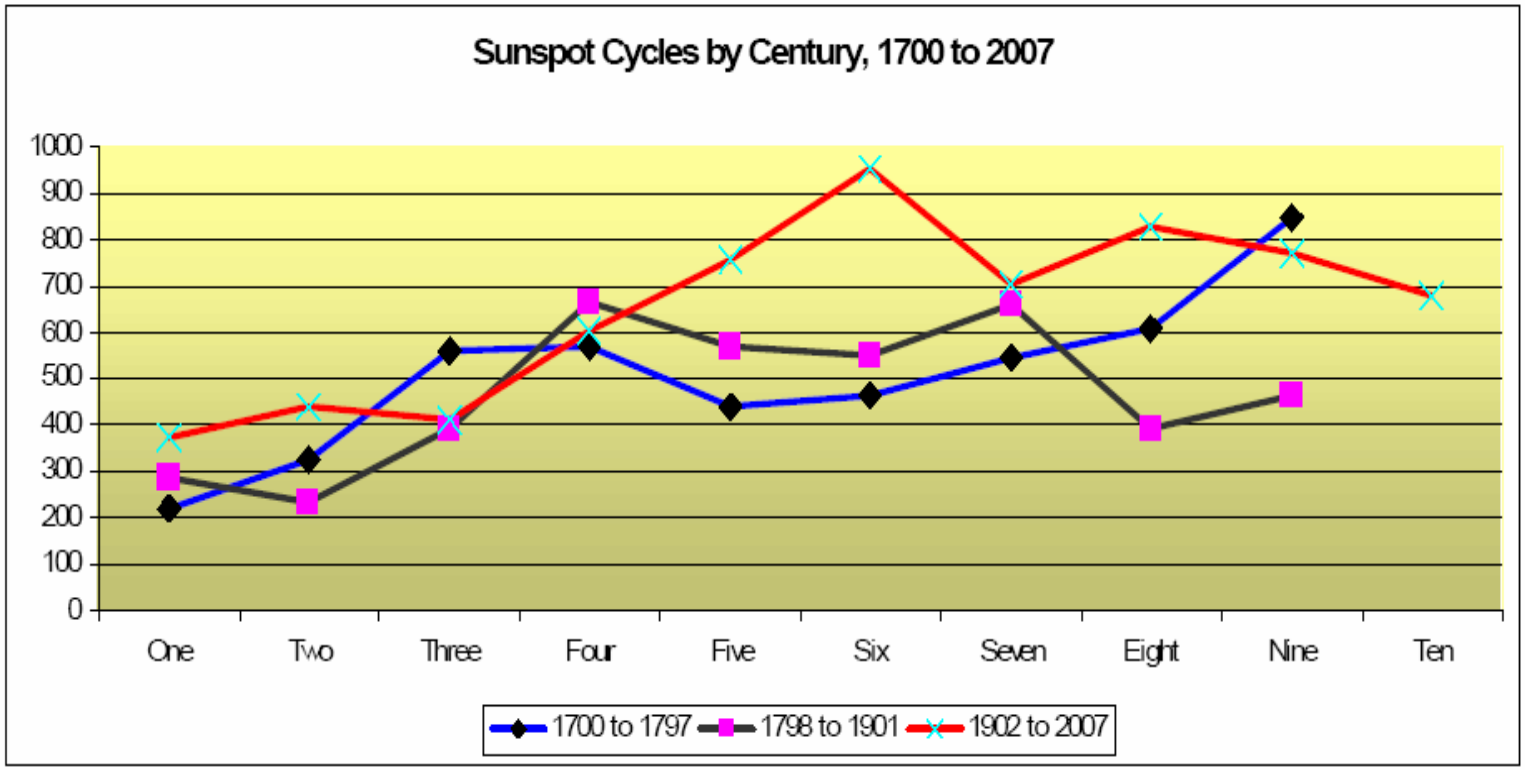

The 1700s started out slow, went into a valley and then, peaked.
The 1800s began low, peaked, went into a valley and dropped.
The 1900s kept some momentum and had strong cycles throughout. The 1900s lowest valley was stronger than any of the 1800s and Glacier Bay fjord glacier kept melting

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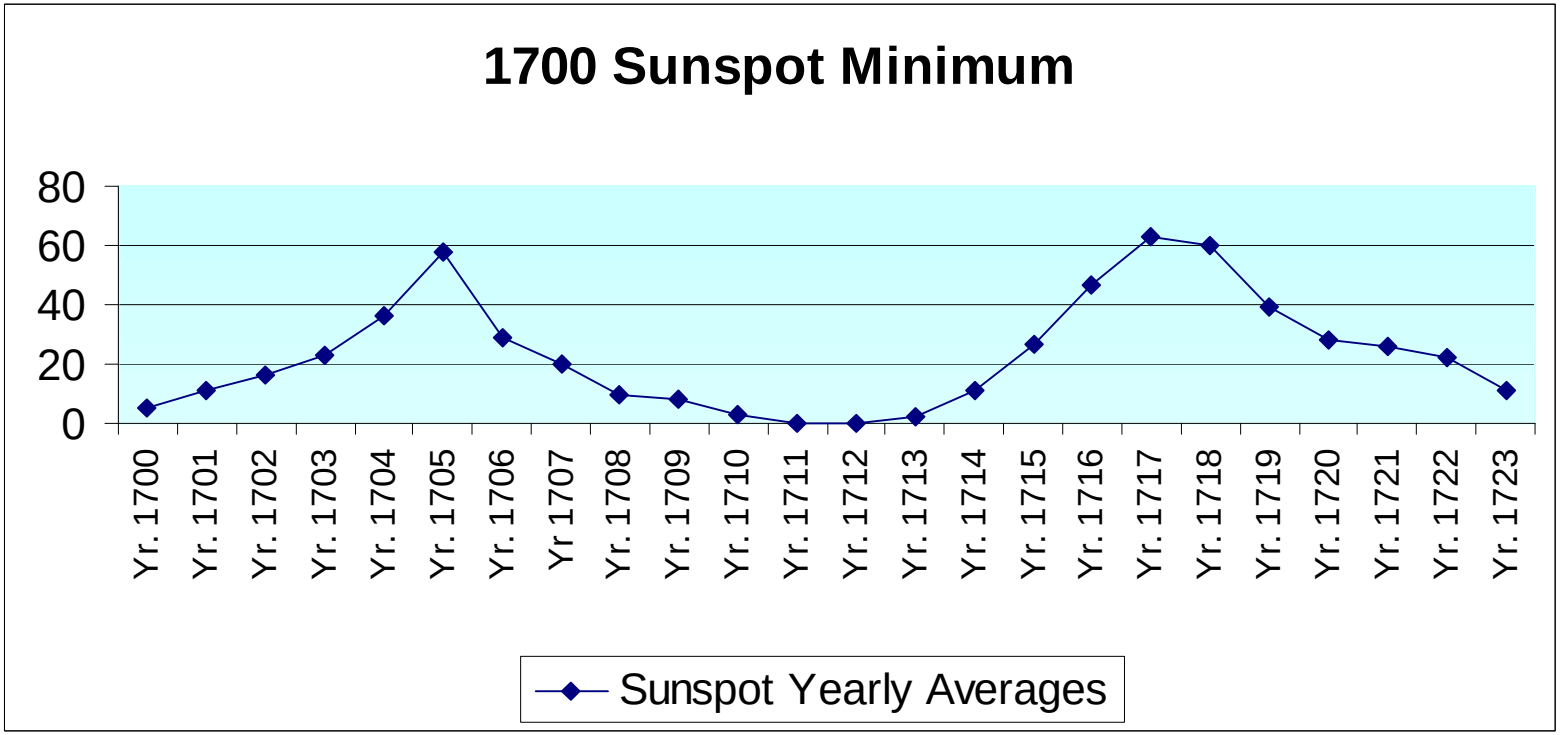

As of January 2011, the present cycle has numbers starting between the 1700 and 1800 minimums. NASA is predicting a 60+ sunspot year. The minimum cycles may end up looking something like this or the next slide of the early 1800 minimum.

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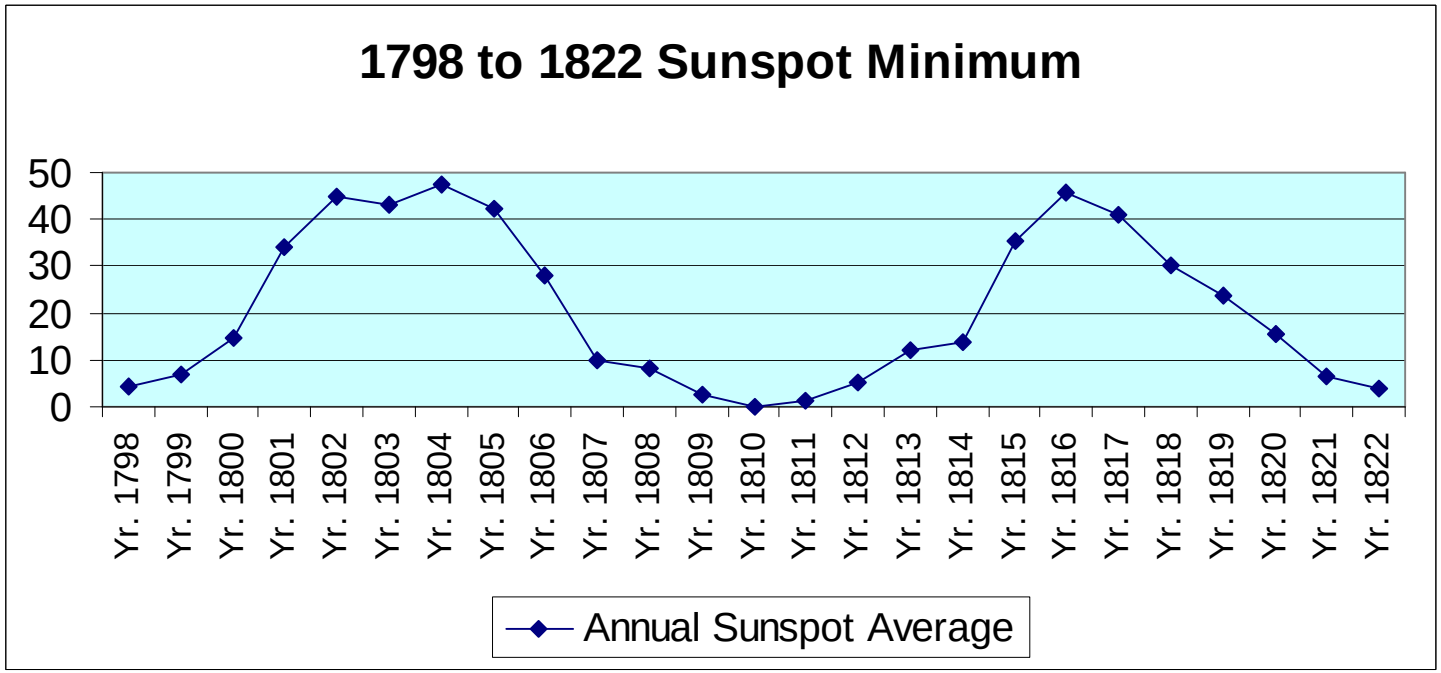

Some of the things that happened during a minimum:

- Napoleon lost his Army in Russia to severe cold winter
- The Turks lost a division 100 years later in another cooler sunspot cycle
- Niagara Falls froze over in 1911
- One Tropical Storm occurred in the 1914 hurricane season

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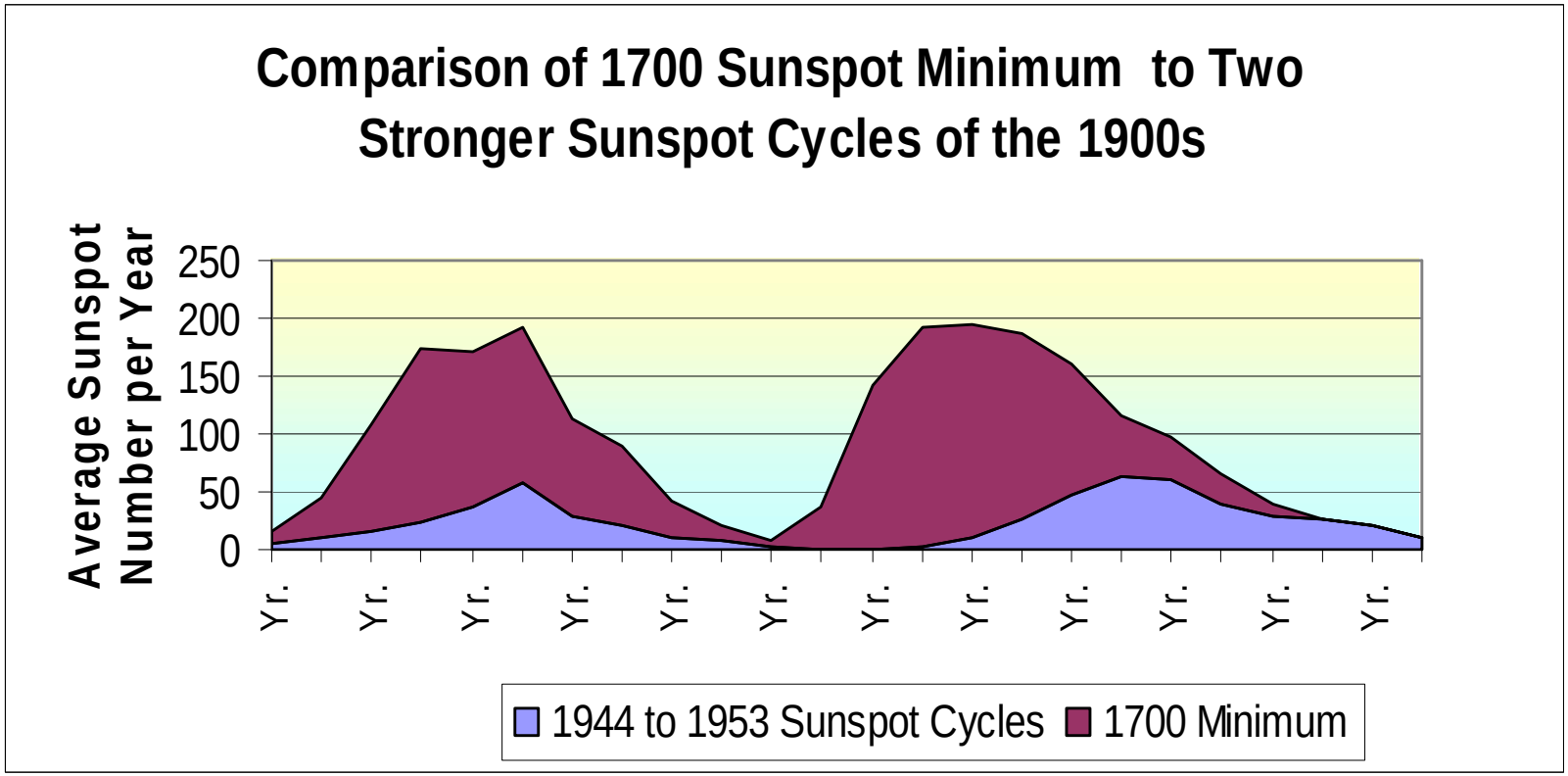

A minimum can be one-fourth the size of a “global warming” sunspot cycle.

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The following work is provided to show relationship between sunspot activity and Earth's temperatures. USA average annual, winter and summer temperatures are used as a gauge for comparison. Official available temperature data begins in the last years of the 1800s

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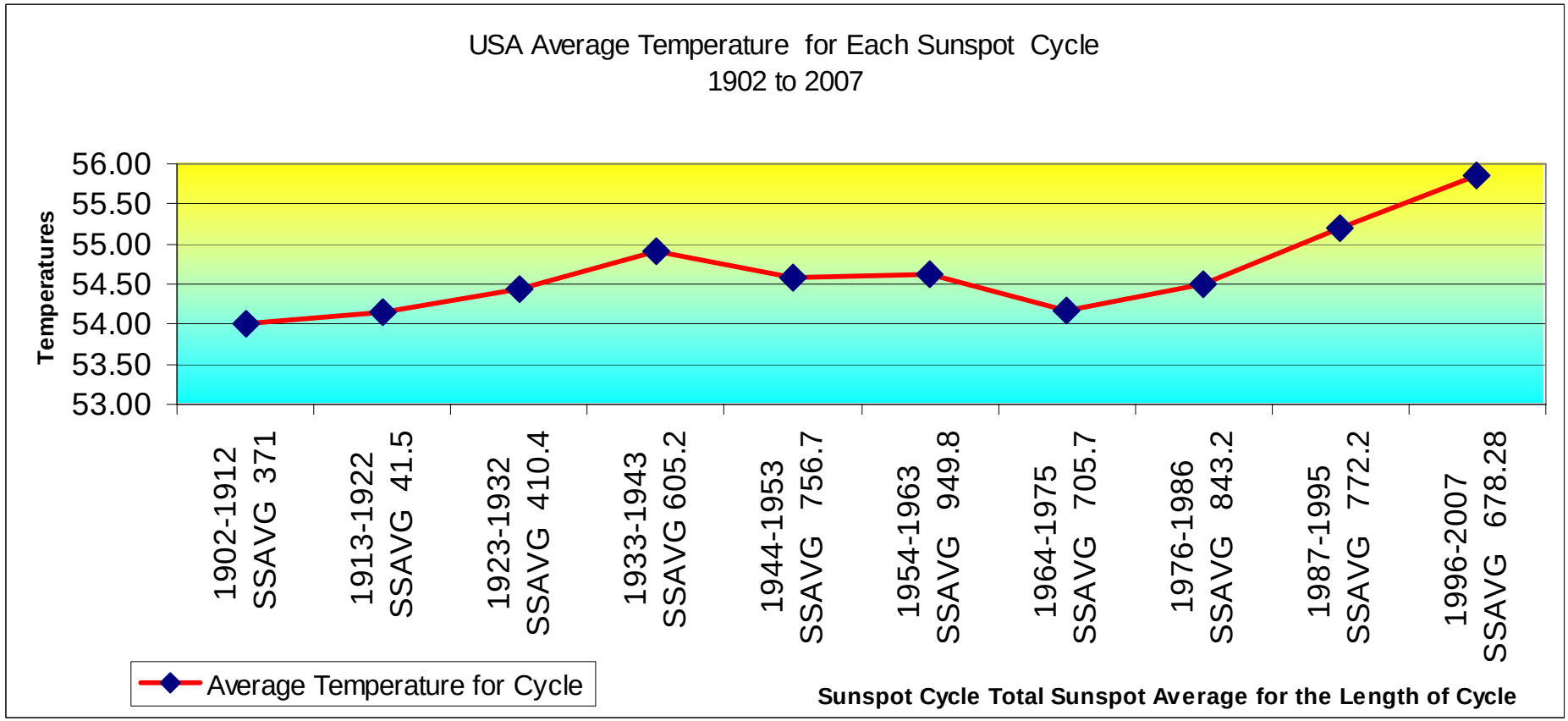

In this first slide, the average annual USA temperature is shown for each sunspot cycle listed underneath. The years of the cycle are given and the total sunspot average for the sunspot cycle is given. The annual temperature rose nearly 2ºF.

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11 June 2011

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USA Average Annual Temperatures, 1902 to 2007				
Sunspot Cycles	USA Annual Temperatures	Sunspot Mean	Ranked by Temperature/Sunspots	
1902-1912	54.00	371.00	10	1
1913-1922	54.16	441.50	9	3
1964-1975	54.18	705.70	8	6
1923-1932	54.43	410.40	7	2
1976-1986	54.49	843.20	6	9
1944-1953	54.59	756.70	5	7
1954-1963	54.62	949.8	4	10
1933-1943	54.92	605.20	3	4
1987-1995	55.20	772.20	2	8
1996-2007	55.86	678.28	1	5

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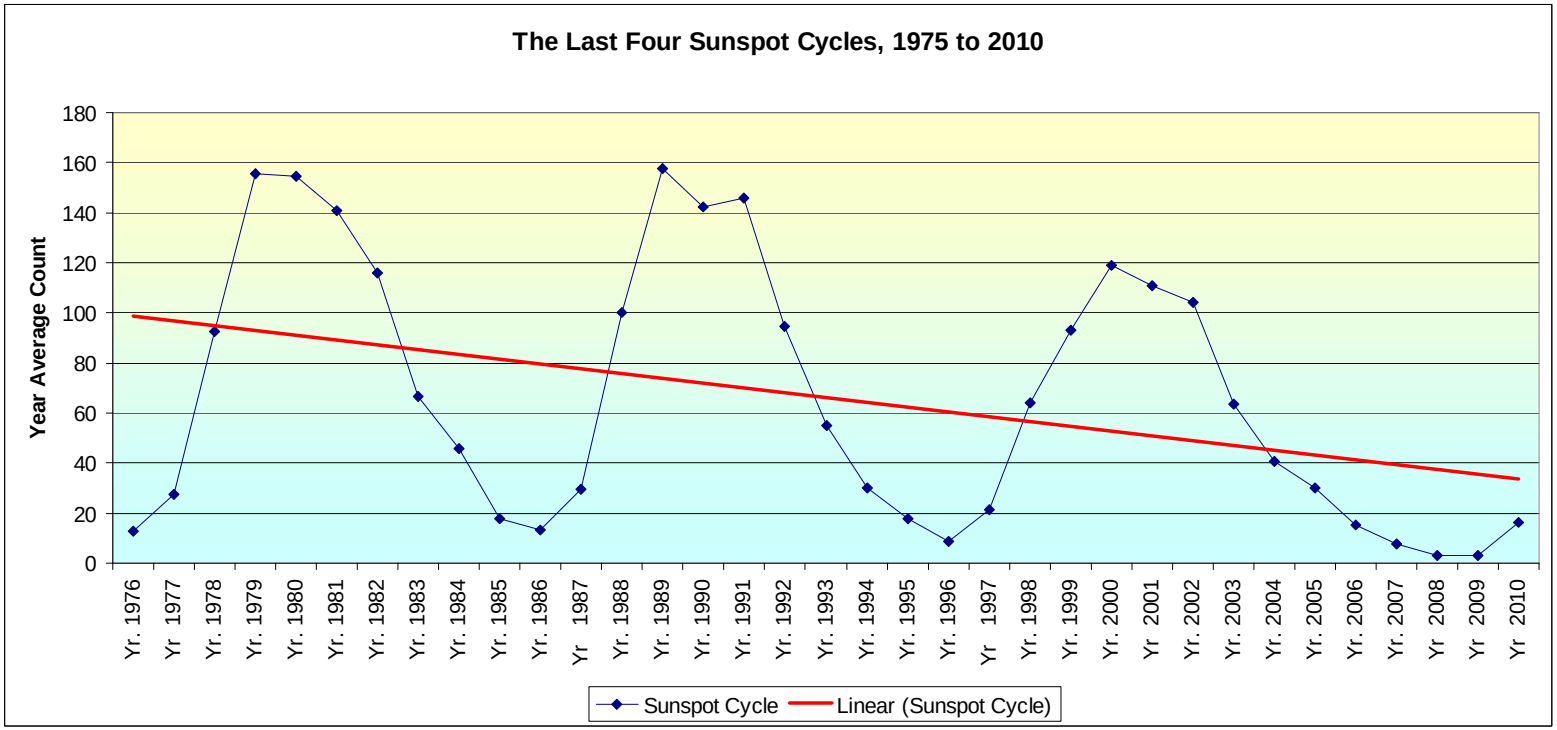

Things to note in this slide: The last three cycle have been in decline. *The last cycle shown was stronger than nearly all the cycles of the 1700s and 1800s.* The overall average USA winter temperatures began to decline in 2000. The USA annual and summer average temperatures began to decline in 2006.

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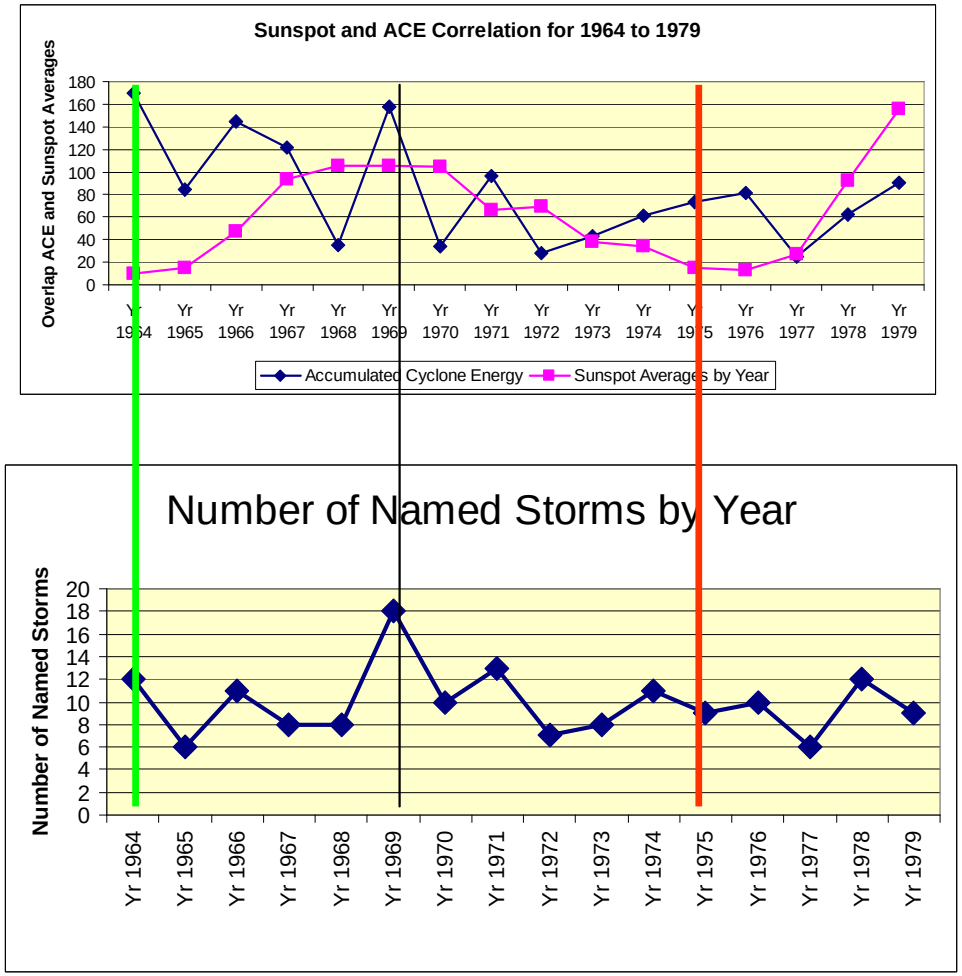

The Coolest Cycle Amongst Giants

The characteristics of the 1964 to 1975 sunspot cycle over the others of the same size was the lack of a peak. Observation: The peak is needed for warming of the Earth.

The present cycle should end around 2019. The next cycle should end around 2030. Climate lag should carry to 2036 before the next cycle has an impact.

The Arctic met maximum known extent in 1979 since NASA began measuring its mass.

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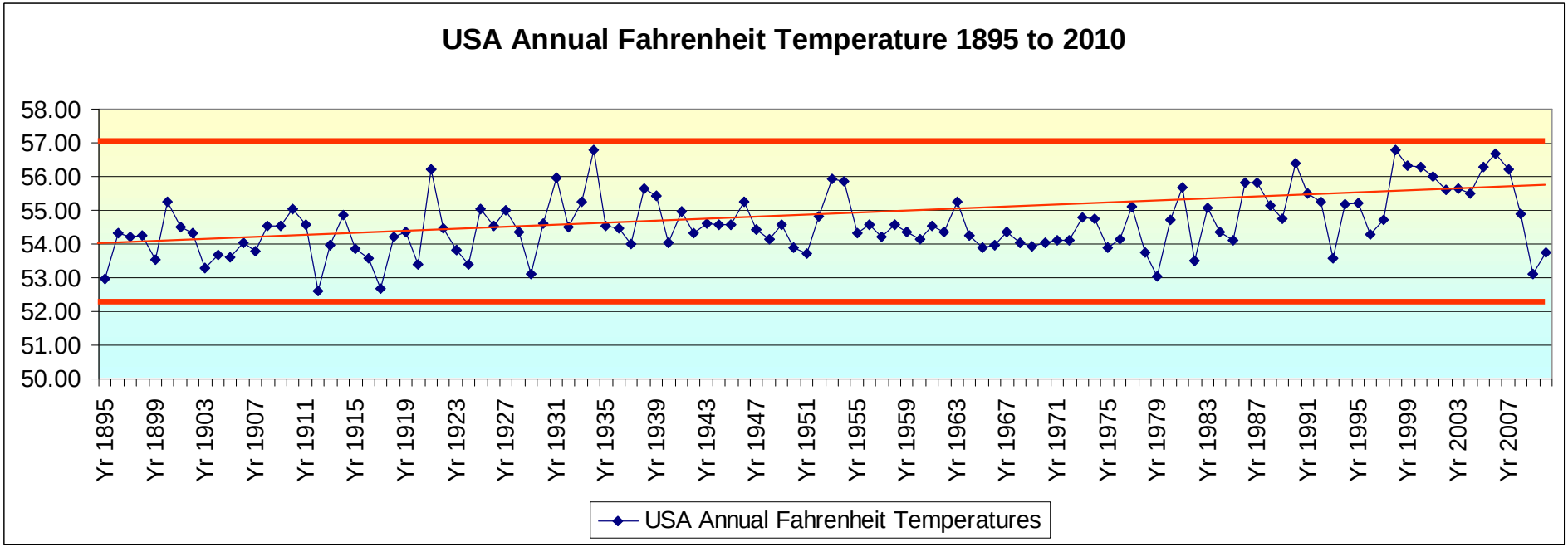

All things said and done, the USA temperatures rose about 2ºF.

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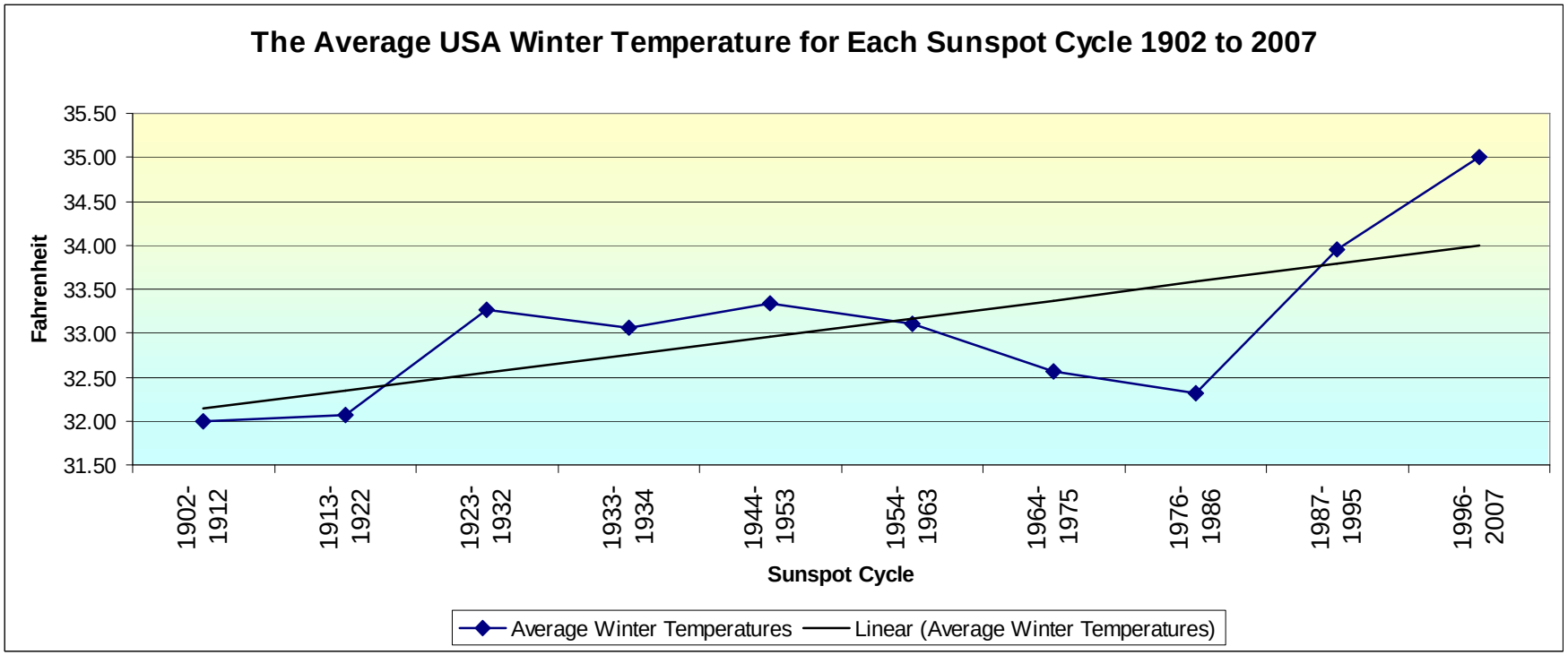

Average temperature change in USA Annual Winter Temperatures was 3ºF. The last three cycles in this 100 year cycle were stronger than nearly all of the sunspot cycles of the two previous centuries. Though one the 1964 to 1975 sunspot cycle was colder, there was a significant rebound in the latter part of the 100-year cycle.

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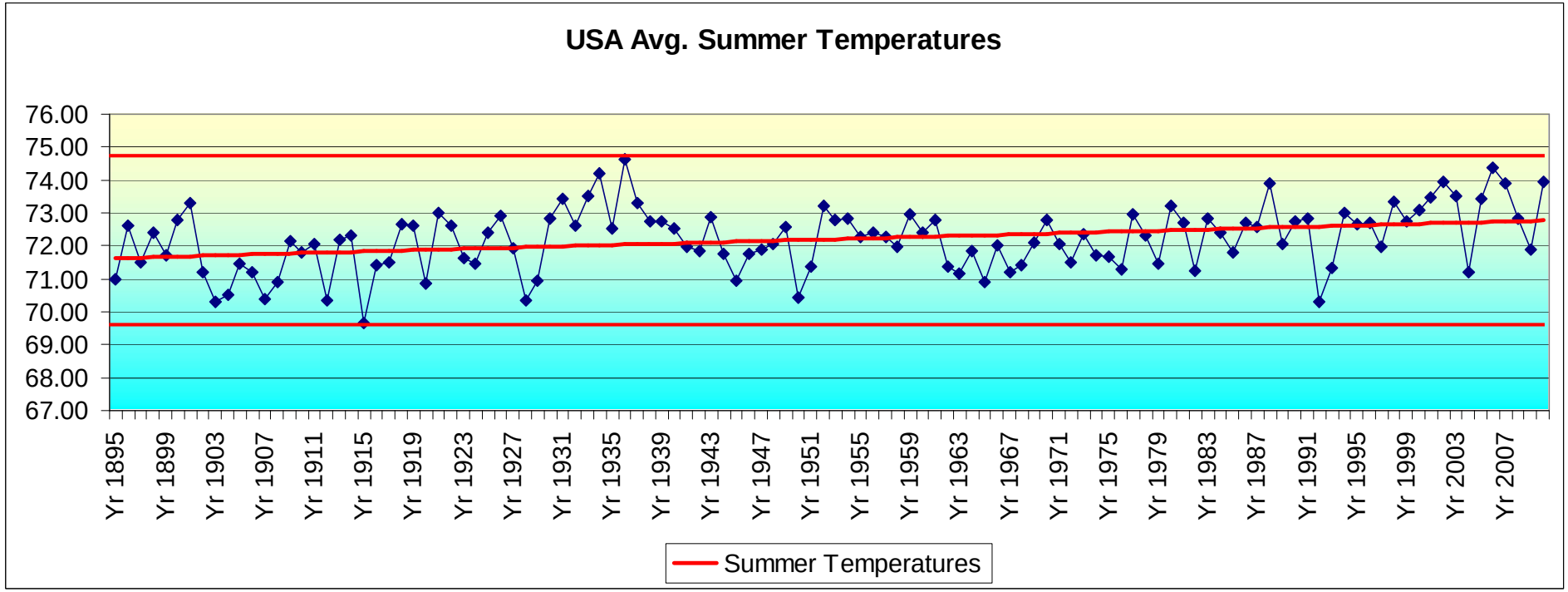

USA annual summer temperatures rose about 1ºF.

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Temperature Forecast for the USA

Assumption: Accumulated global warming effect since the 1700

Using average USA Annual Temperatures

600 to 900 Total Average Sunspot Cycles produce 54.5ºF to 55.86ºF

300 to 400 Cycles produce 54ºF to 54.43ºF

Overall annual average temperatures rose nearly 2ºF in 100 years

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Temperature Forecast for the USA

Thus:

600 to 900 Total Sunspot Average Cycles - 54.5ºF to 55.86ºF
300 to 400 Total Sunspot Average Cycles - 54.00ºF to 54.43ºF
The Difference Range - .50ºF - -1.86ºF

Should not a 200 total sunspot average cycle, being half of a 400 total sunspot average cycle and the 400 total sunspot average being roughly half of the stronger cycles and the temperature only varied .5ºF to 1.86ºF, then the average USA annual temperatures should drop at least 2°F to early 1900s temperatures.

Best estimate for this minimum at this time is USA annual temperatures should drop to about 50°F - 52°F. The USA will lose the 2°F it gained over the last century and 2°F drop due to the size of the minimum sunspot cycles, being half of a 300 to 400 sunspot cycle.

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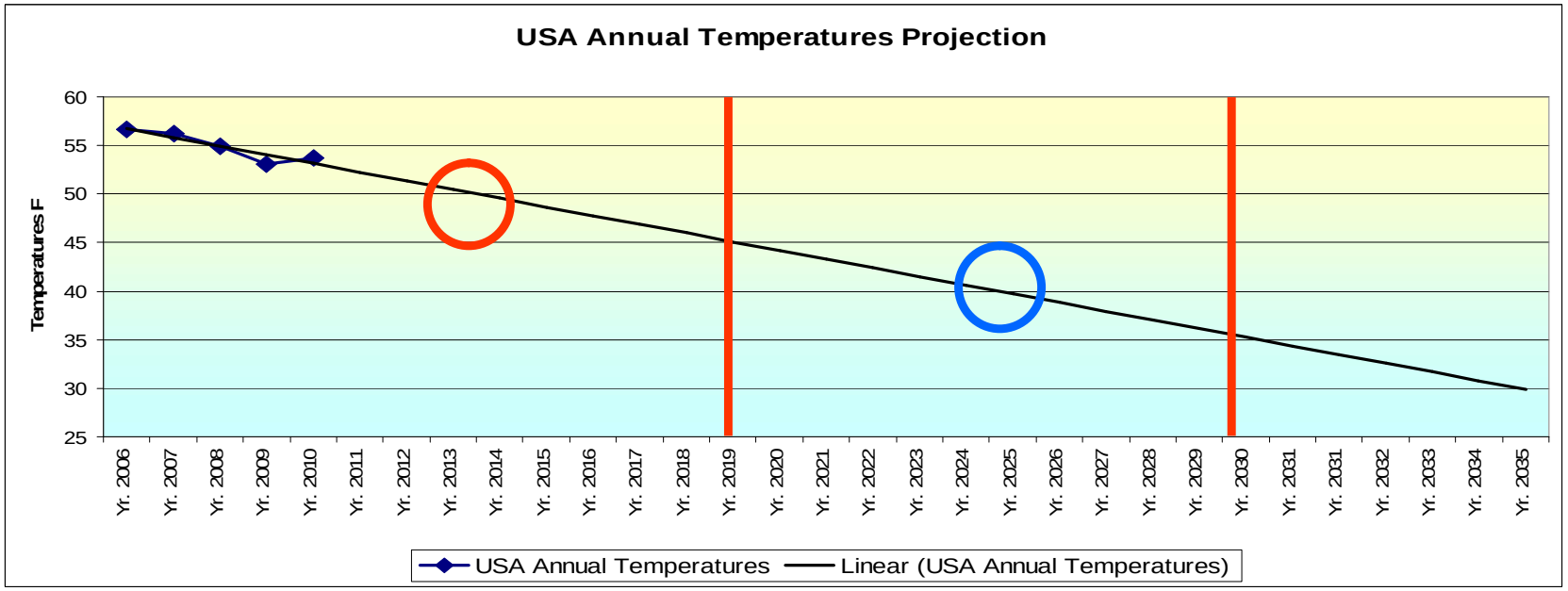
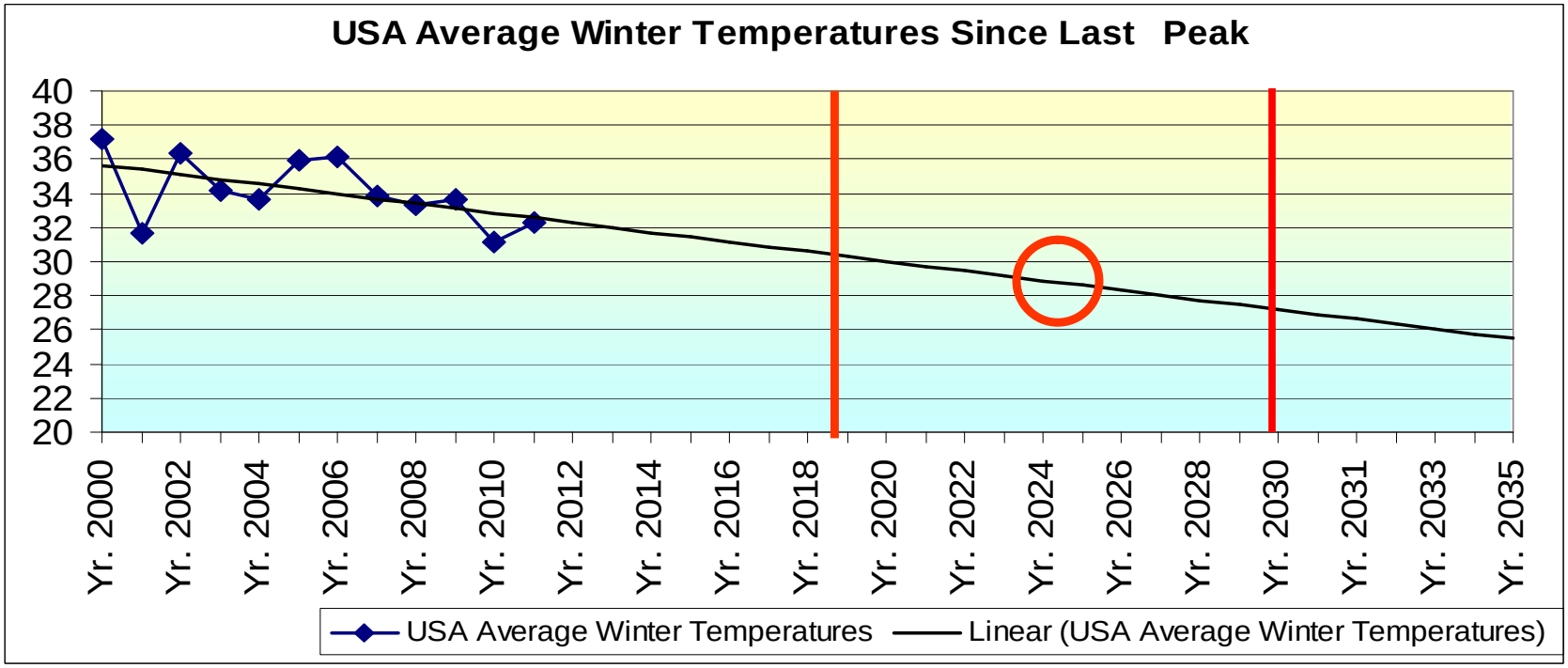


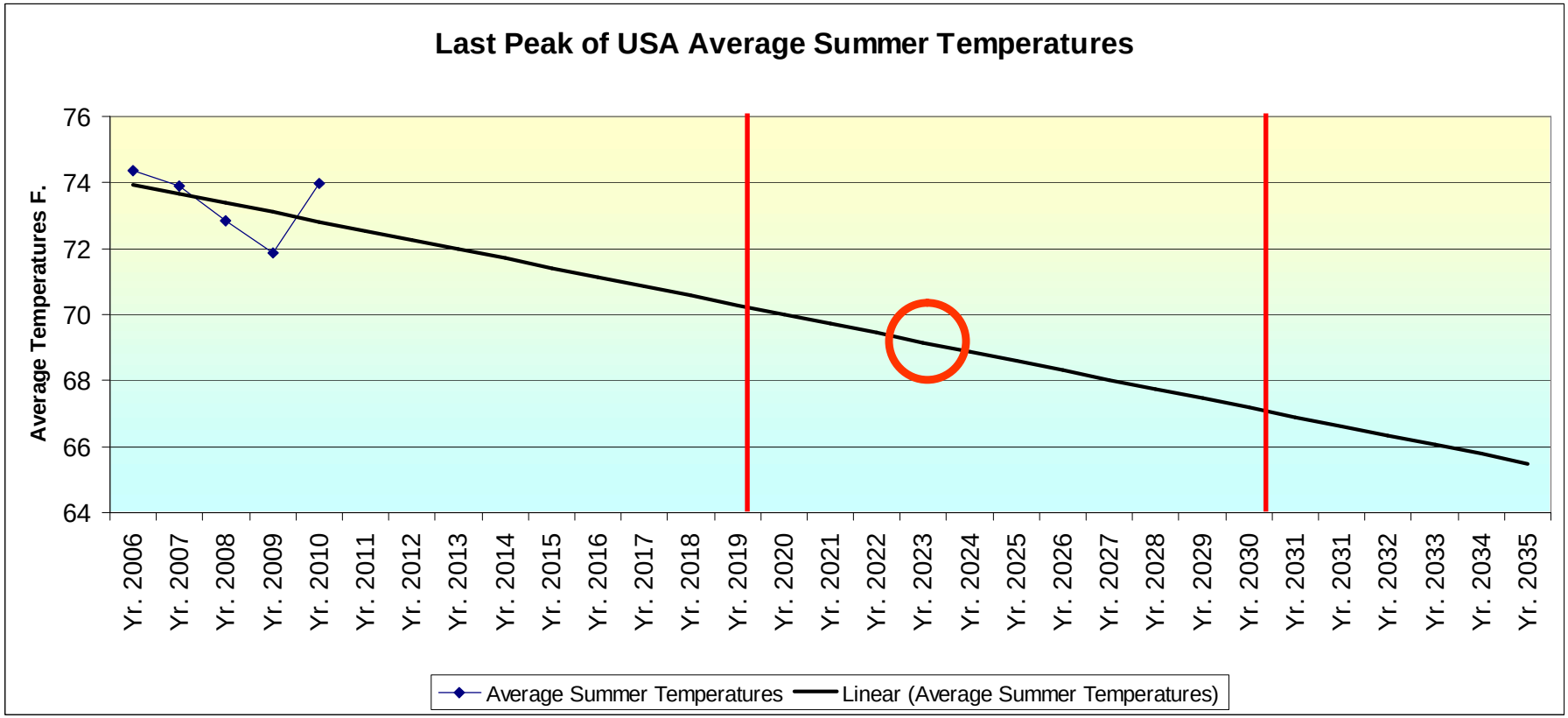
If a sunspot cycle minimums produces a certain amount of energy, then the average temperature may stay around 50ºF. See Red Circle. Why would it not be around 40ºF in 2024? See Blue Circle. The fall and spring annual temperatures almost match the annual temperatures. This keeps the annual temperature at near 50ºF.

Solar Minimum, Atlantic Basin Named-Storm Forecast



300 to 400 Cycles produced 32 to 33.27ºF Winters
600 to 900+ Cycles produced 33 to 35ºF
200 Cycles may only drop to 29ºF for the next cycle
A New Zealand Farmer said, “4ºC Change in temperature is significant
4ºC = 5.4ºF

Solar Minimum, Atlantic Basin Named-Storm Forecast



300 to 400 Sunspot Cycles produce 71ºF to 72ºF
600 to 900 Sunspot Cycles produce 72ºF to 73ºF
200 Sunspot Cycles should drop to 69ºF to 70ºF around 2023. See Red Circle.

Author: C. Paul Pierett, Revised
11 June 2011

Solar Minimum, Atlantic Basin Named-Storm Forecast

If:

The 300 to 400 Sunspot Cycles Produce 5.7 to 8.33 average Named Storms for a sunspot cycle

The 600 to 900 Sunspot Cycles Produce 9.2 to 14.42 average named storms for a sunspot cycle

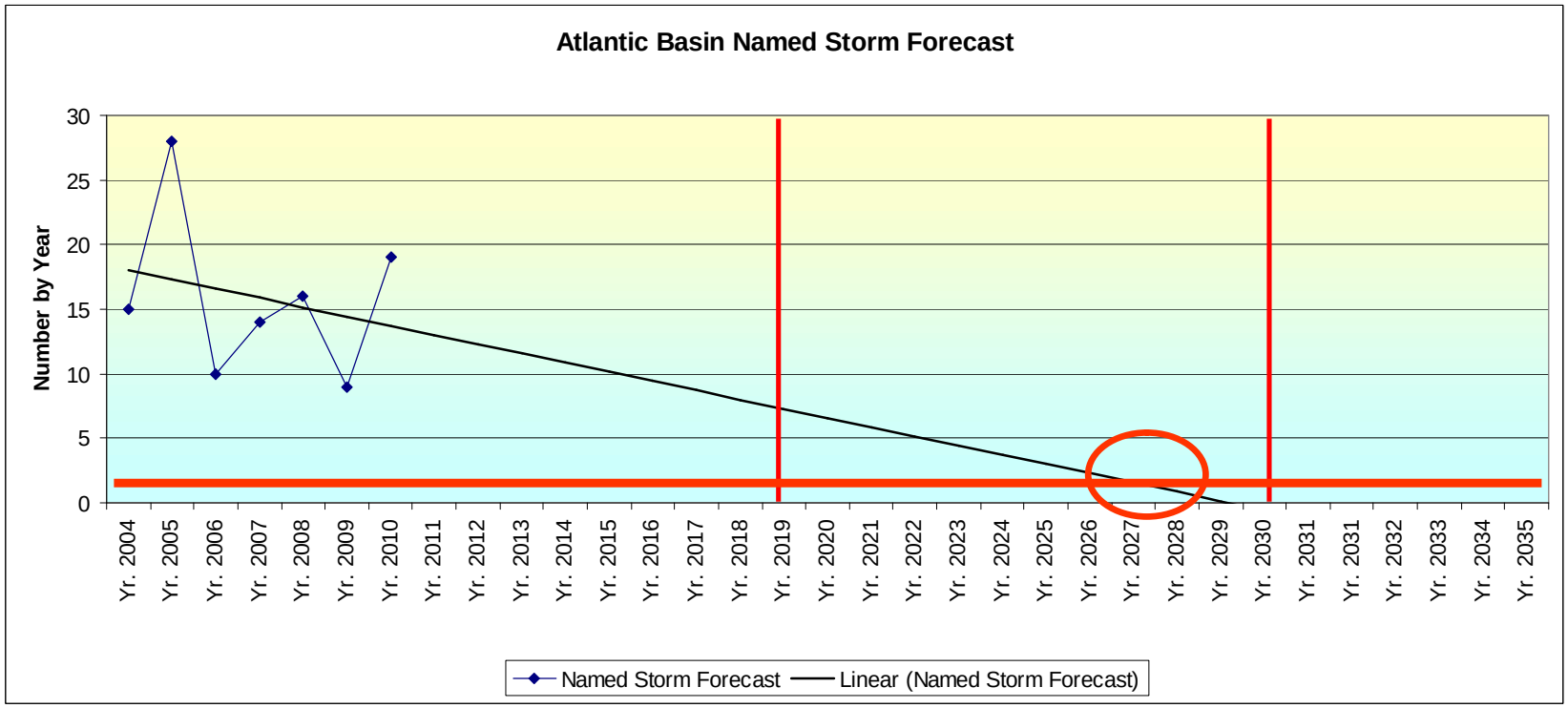
Then, 200 Sunspot Cycles should at least produce the product of the subtracted difference.

	Low	High
600 to 900 Sunspot Cycles:	9.2	14.42
300 to 400 Sunspot Cycles	- 5.7	-8.33
The Difference	- 3.5 = ½	-6.39 = 1/2
200 Sunspot Cycles	=2.2 = ½	=1.94 = ½

About 2 Named Storms a Year is the best answer.

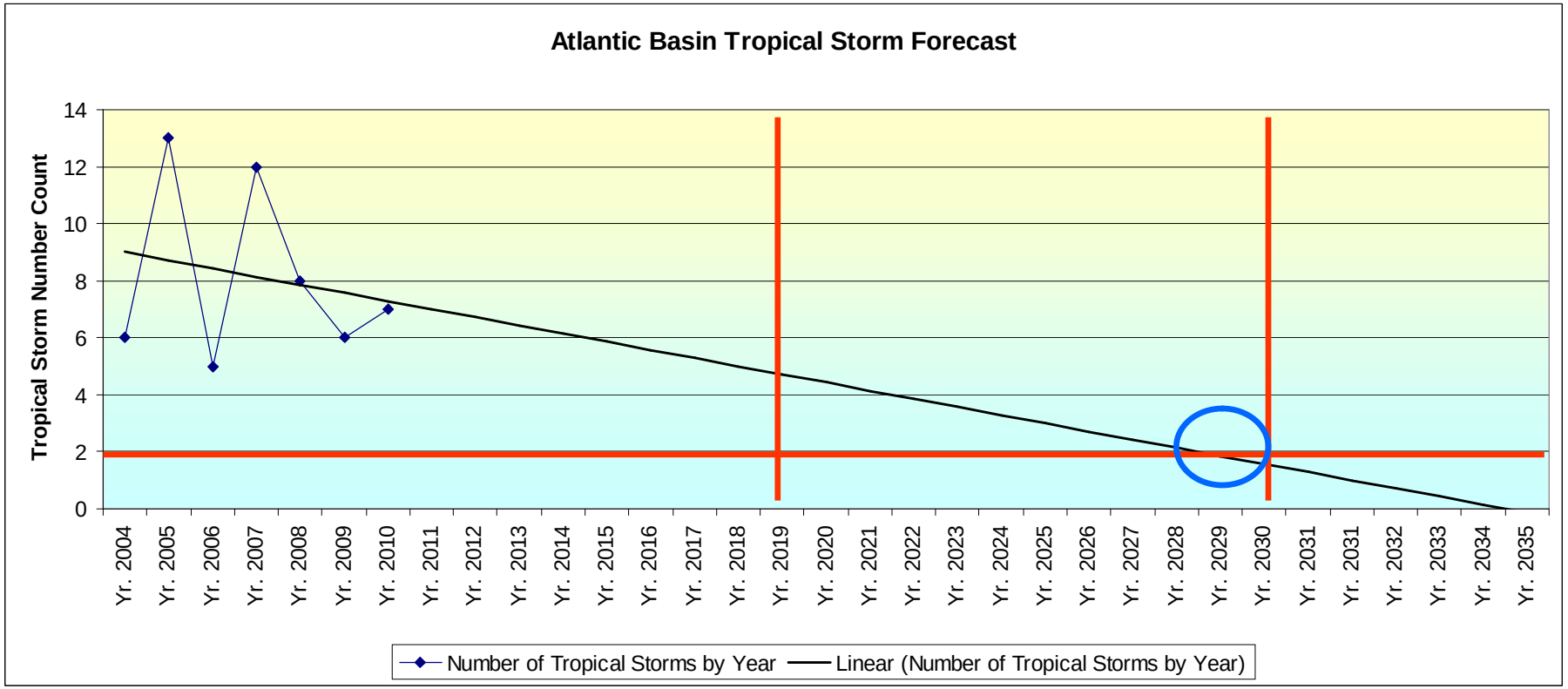
Since this is an average. Somewhere in the future is a zero hurricane season.

Solar Minimum, Atlantic Basin Named-Storm Forecast



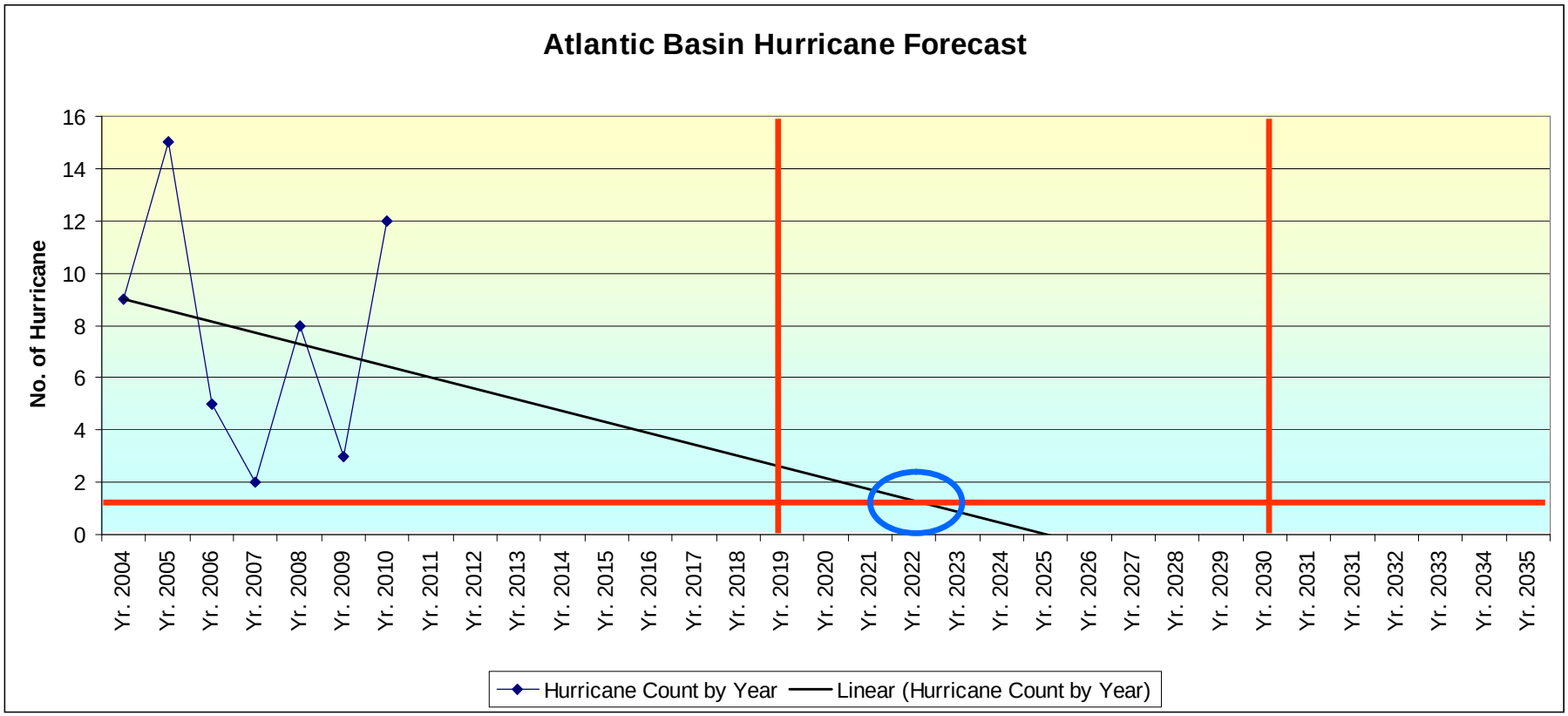
The Forecast at this time:
Using the Previous Slide Estimate of 2, then we are looking for a cutoff with Zero Hurricanes Seasons in the mix.
By 2027, The hurricane season average will be around 2 Named Storms-a-Year with a possible split of one Tropical Storm and One Hurricane

Solar Minimum, Atlantic Basin Named-Storm Forecast



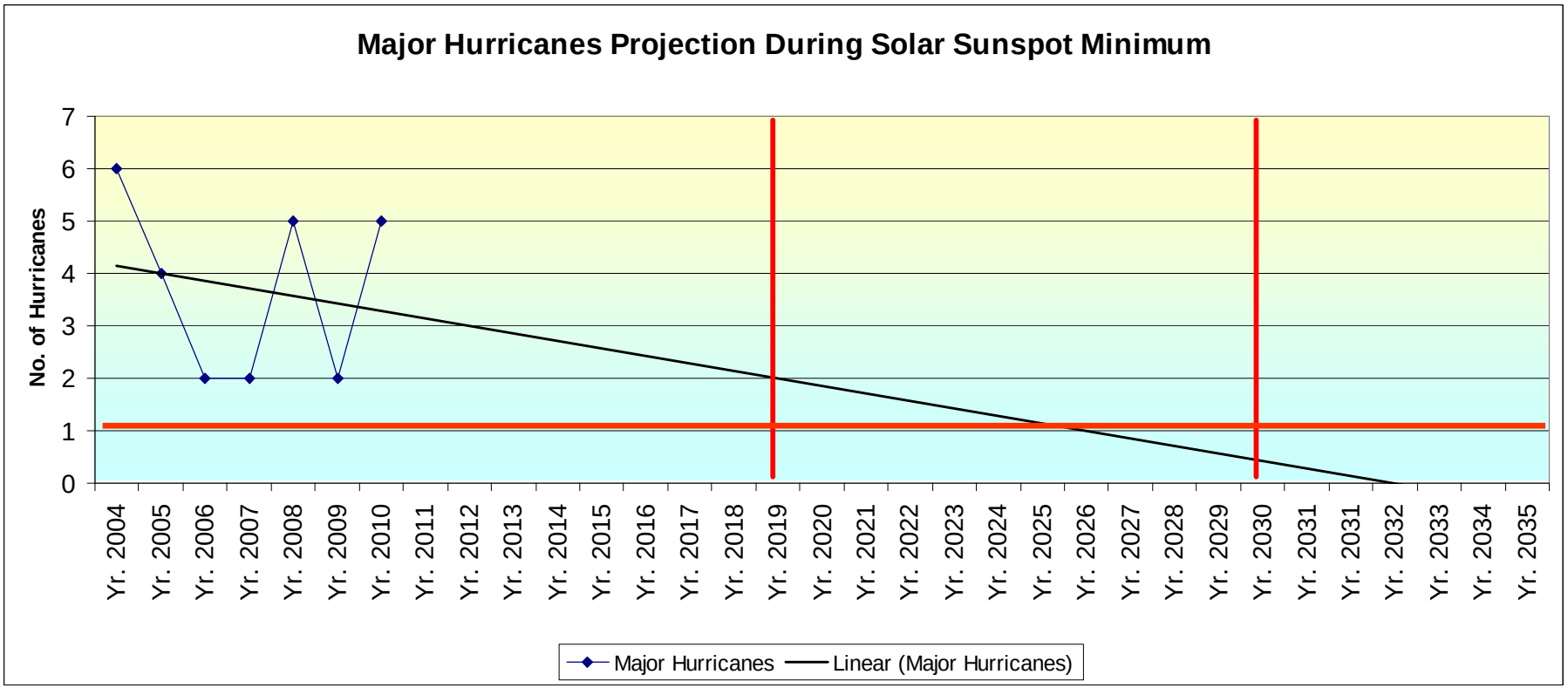
The math is about right. By the end of the next cycle, tropical storms should be the last to show up in an hurricane season.

Solar Minimum, Atlantic Basin Named-Storm Forecast



At this time:
By 2019, Hurricanes will drop to 3
By 2025, Hurricanes will drop to zero, except,
There were hurricane type storms recorded during the Mini-Ice Age

Solar Minimum, Atlantic Basin Named-Storm Forecast



There may still be a major hurricane now and then.
Around 2035, this will all turn around.

Solar Minimum, Atlantic Basin Named-Storm Forecast

The Range of Named Storms in Sunspot Cycle Sizes:

300 to 400 Sunspot Cycles: 1 Tropical Storm *to* 15 Named Storms; 5 Tropical Storms, 10 Hurricanes and 6 Major hurricanes within 2 years of each other

600 to 900 Sunspot Cycles: 5 Named Storms of 2 Tropical Storms, 3 Hurricanes and 1 Major Hurricane *to* 28 Named Storms of 13 Tropical Storms, 15 Hurricanes and 4 Major Hurricanes

200 Sunspot Cycles: As the earth cools, there should be zero seasons.

Solar Minimum, Atlantic Basin Named-Storm Forecast

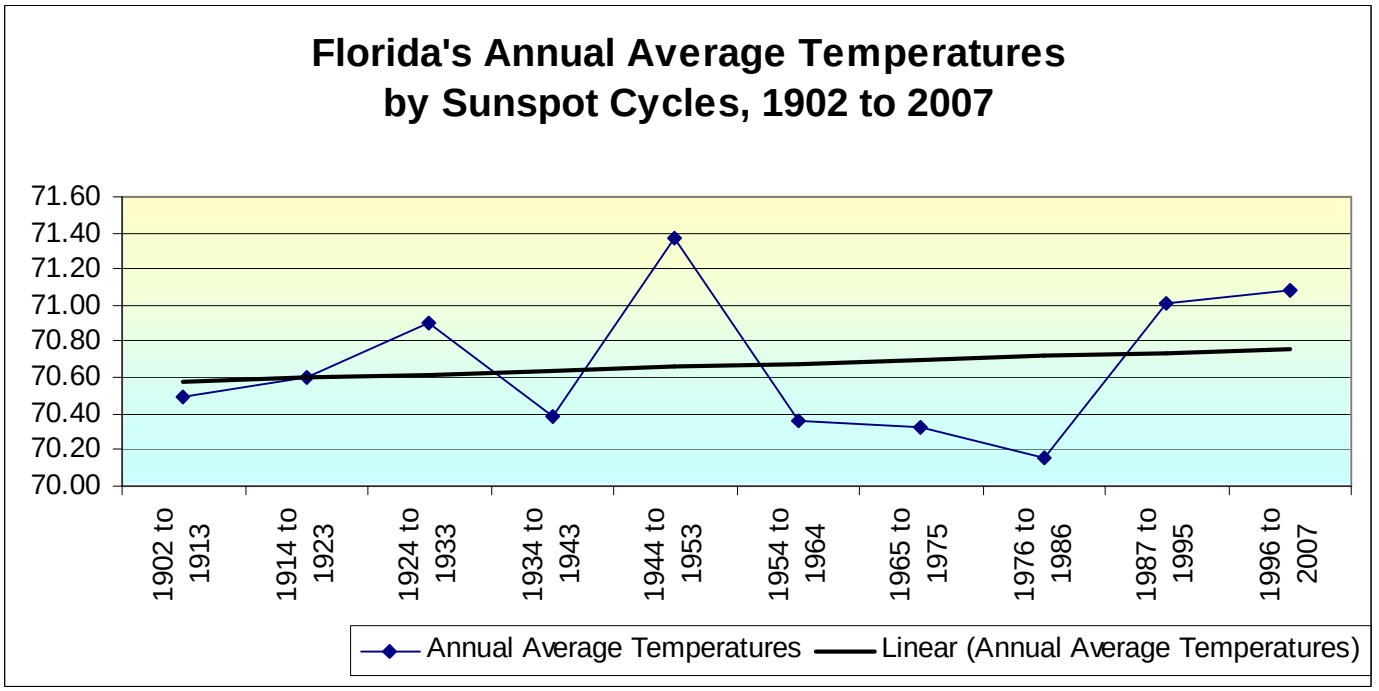
Appendix: Florida Review
Sunspot Activity:
Florida's Annual, Winter and Summer Average Temperatures
Florida's Precipitation

What we are leaving is a century of warmer cycles and not much of minimum cycles at the start.

The century started stronger than the 1700s and 1800s.
As a reference point for the following slides, Florida, being a Subtropical Typography and its location that allows it to capture the winds and water from the Gulf, the Caribbean and Africa, as well as the Northern States cold and warm weather, the charts reflect those exchanges.

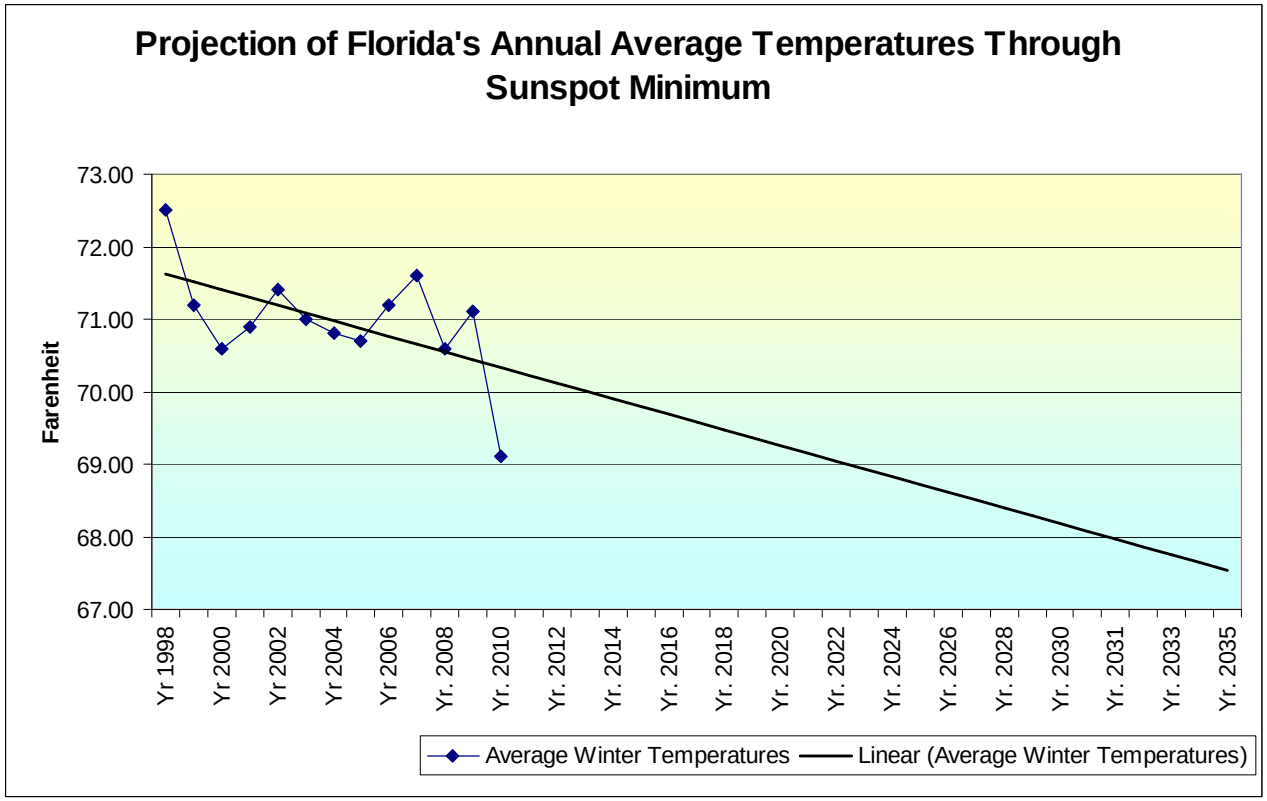
Around 2035, temperatures and hurricane activity should begin to rise.

Solar Minimum, Atlantic Basin Named-Storm Forecast



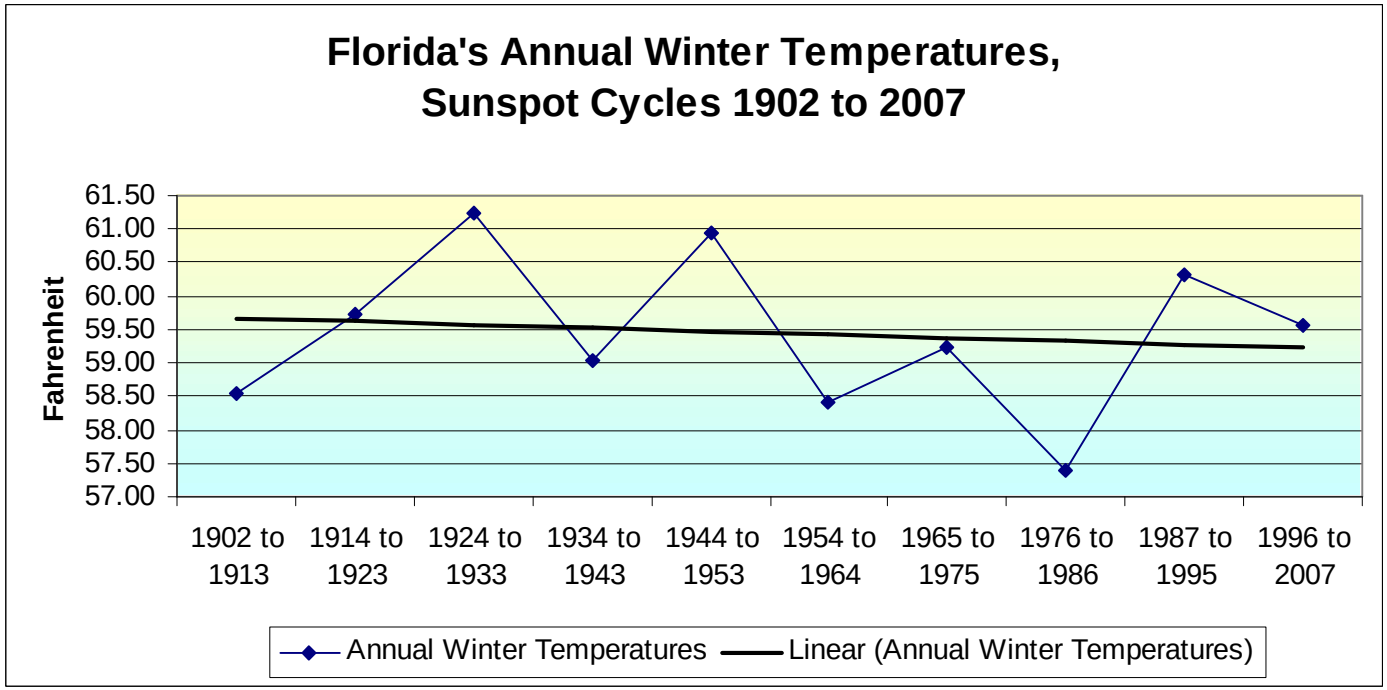
In this lead chart, the overall average temperature for Florida stayed within 2ºF even during the coldest of sunspot cycles since 1902. During a minimum sunspot cycle of 200 Total Sunspot Mean for an average Sunspot Cycle, one should look for at least another 1ºF to 2ºF average temperature drop to 68ºF

Solar Minimum, Atlantic Basin Named-Storm Forecast



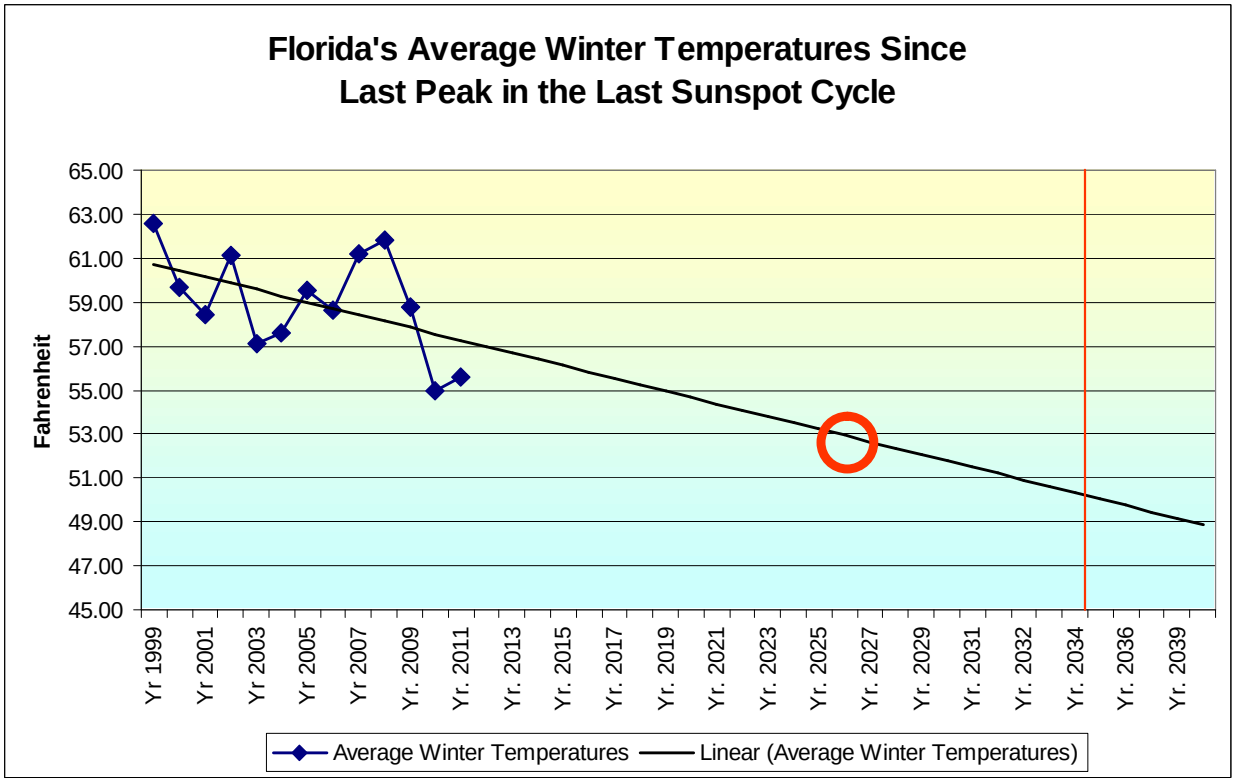
This Projection begins with the last sunspot cycle's peak temperature. Florida's average temperature will hit bottom around 2035. The present trend line projects 67.5ºF, which ties in closely to the first slide projection of 68ºF.

Solar Minimum, Atlantic Basin Named-Storm Forecast



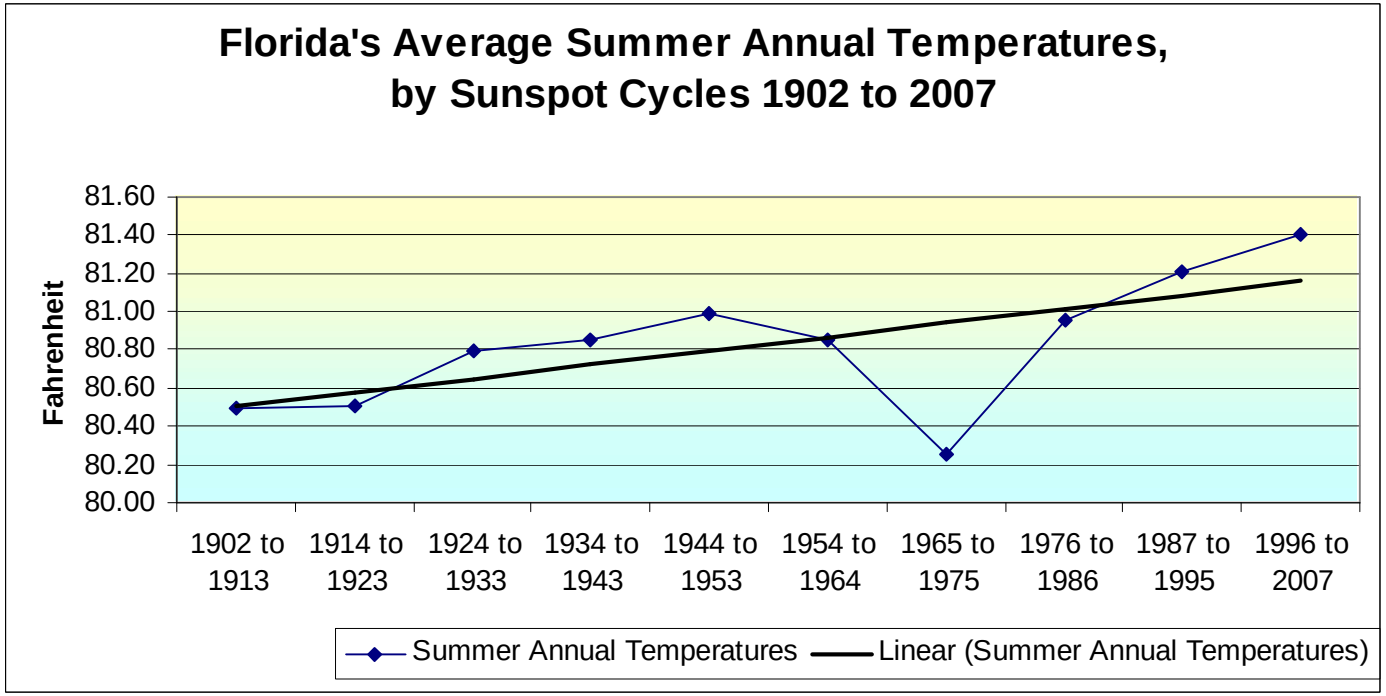
Florida's average winter temperatures reflect directly and indirectly the various sunspot cycles over the last 100 years. It appears that Florida's winters are greatly influenced by northern weather and jet streams.

Solar Minimum, Atlantic Basin Named-Storm Forecast



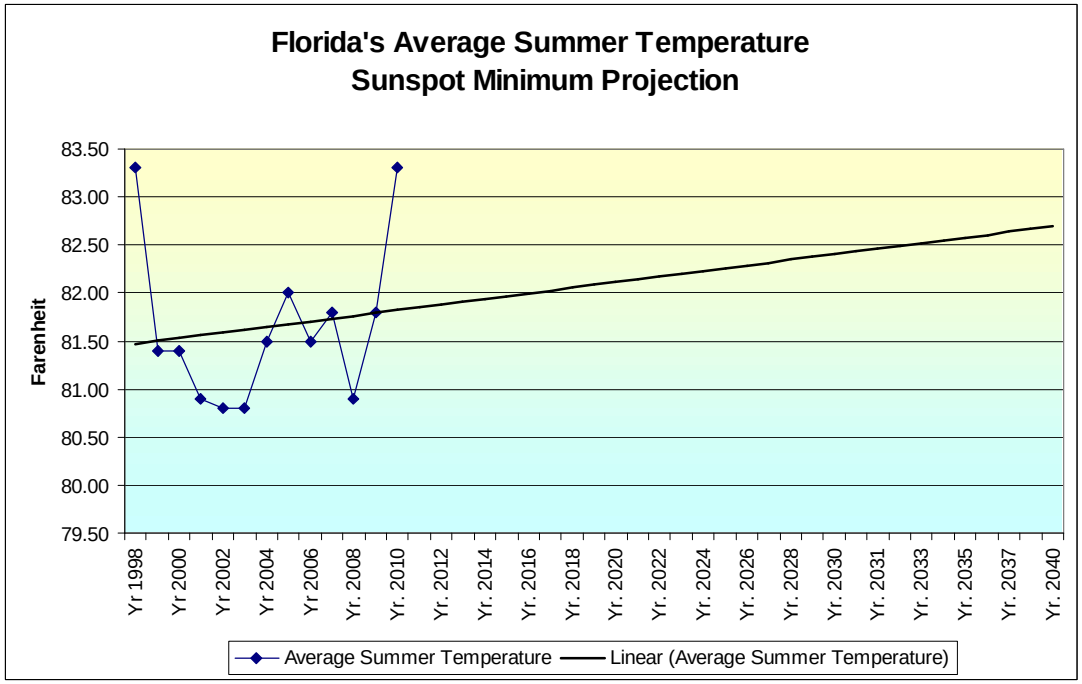
Per the previous chart, there is a 4ºF difference in the overall high average of 61.25ºF and the overall low average of 57.41ºF. If we take another 4ºF off the bottom, to match the projected sunspot cycle strength, then the projection should bottom out at approximate 53ºF. Worst case, about 49.5ºF.

Solar Minimum, Atlantic Basin Named-Storm Forecast



Florida's summers reflect the overall global warming from sunspot activity. Note the drop again. That period also had the 3rd coolest sunspot cycle of the 1900s and 1979 marked one of the greatest growth marks in the Arctic's Polar Region ice field.

Solar Minimum, Atlantic Basin Named-Storm Forecast

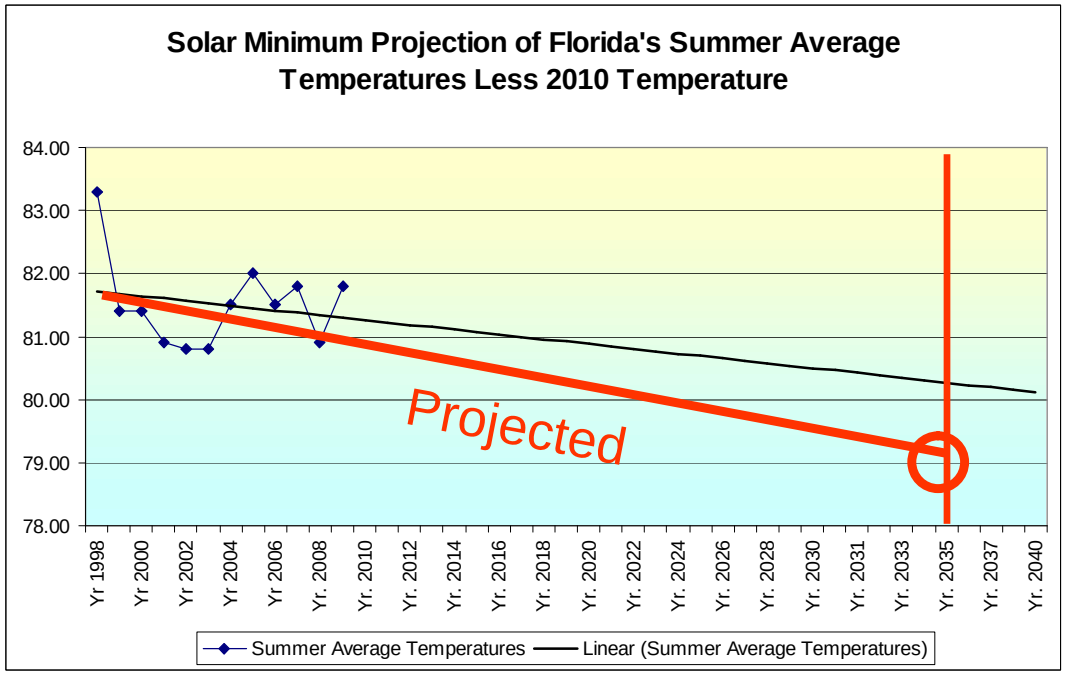


- **Anomaly?**
- **Oscillation**?
- *Green House Gases Lingering Over Florida?*
- *Lost of Humidity*
- *Lost of Cloud Cover?*

What should we label this chart? The data breaks the rule or theory. In the next chart, there will **not** be a large significant change in the overall average temperatures of Florida's Summers. Again, as stated above, Florida's Summers are influenced by at least five geographic areas. As the Earth cools, there should be variances in temperatures and this is one.

Solar Minimum, Atlantic Basin Named-Storm Forecast

Florida's Summer Projected Average Temperature by the End of the Solar Minimum



In this slide, the 2010 Summer temperature has been removed so as to capture the overall trend in the coming summers under the influence of a solar minimum. The overall projection of temperature drop is about right. The Summers in the Florida's Subtropical Topography should see an overall drop on about 1.16ºF. The projected average Summer Temperature is 79ºF. Historically, this will be valuable in the future studies of a solar minimum on Subtropical Topography.

Solar Minimum, Atlantic Basin Named-Storm Forecast

Summary:

Climate Change Possibilities:

1. New climate-change history to be written
2. Future hurricane seasons will be low mix of tropical storms, hurricanes and few major hurricanes.
3. Reduced Hurricane Activity through the next 25 years
4. May see some significant glacier growth
5. 21st Century to be cooler

Questions

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