The 2008-2009 Atlantic Basin Named Storm Report and Correlation of Sunspot Cycle Activity to Accumulated Cyclone Energy (ACE)

By Paul Pierett
Lt Col. Retired, Army Historian
M.Ed. Boston University

January 20, 2009
Auburndale, Florida 33823
Corrected Reference Pages Per “The Chicago Manual of Style, July 13, 2009

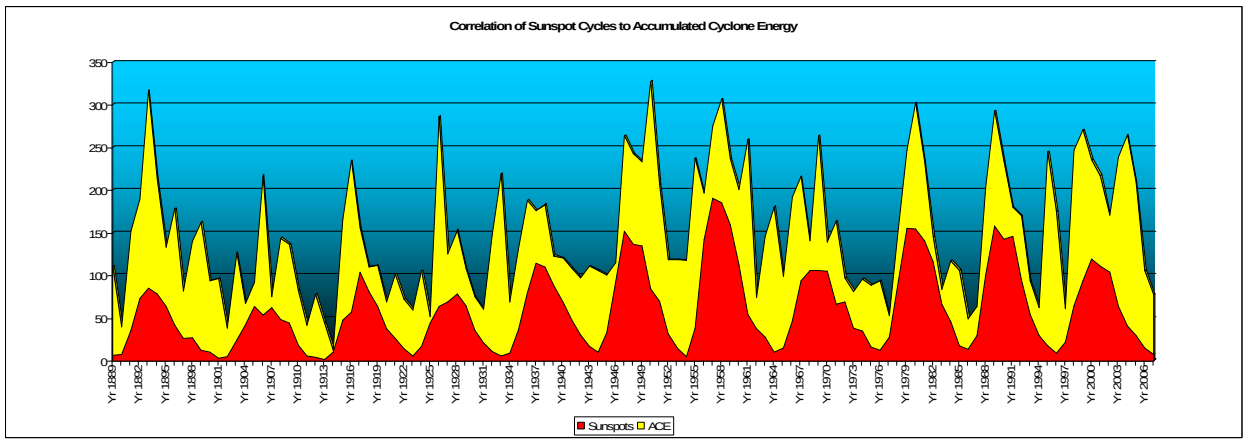


Figure by Paul Pierett

The 2008-2009 Atlantic Basin Named Storm Report and Correlation of Sunspot Cycle Activity to Accumulated Cyclone Energy, January 20, 2009
By Paul Pierett, Lt Col. Retired, Army Historian, M.Ed. Boston University

Author's Note: To my knowledge, this is an original correlation study, findings, and observations of sunspot cycles to Accumulated Cyclone Energy (ACE). To my knowledge, no one else has work exactly like this. With great gratitude, this report would not be possible without the assistance of NOAA, National Geophysical Data Center, U.S. National Parks, SIDC, and Weather Terrapin.

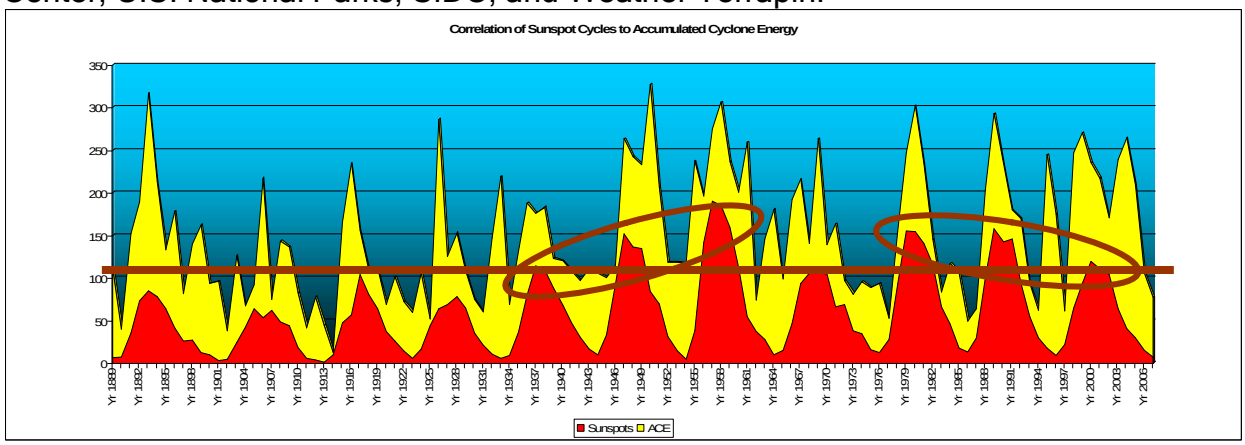


Fig. 1. by Paul Pierett. Shown here is the sunspot cycles from 1889 to 2007 and the ACE for that period. The sunspot cycles on or above the horizontal line, identify the given years that scientists identify as major global warming period.[123] Author's note: The resources for this data and charts are the same for each chart unless stated otherwise.

I. Bottom Line for 2009 Atlantic Hurricane Season

- 2008 Sunspot mean was 2.8, one of the three lowest in two hundred years
- Thus, 2009 should have a sunspot mean of a range from six to 15
- Previous year sunspot activity with residual solar heat affects following winter temperatures and hurricane season
- 2008 hurricane season benefited from 2007 end of cycle 7.5 mean
- 2008 had 16 named storms, 8 tropical storms, 8 hurricanes and 5 major hurricanes
- Per chart above and the 2.8 mean, we appear to be leaving a global warming period
- Because 2008 has 2.8 sunspot mean
- Because the US winter temperature average is dropping to 33°F
- Because average US annual temperature is below 55°F
- Thus, 2009 hurricane season should be weaker by roughly four storms less than 2008
- And ACE should be 70 to 120

---

1 *Sunspot Cycle Worksheet*, National Geophysical Data Center, http://www.windows.ucar.edu/tour/link=teacher_resources/suncycle_sheet.html.

2 *Monthly Ri Report* http://sidc.oma.be/products/ri

3 *Monthly Ri_hemispheric Report* http://sidc.oma.be/products/ri_hemispheric

Author's note: 1. What is "the punch"? The difference between being strong, having endurance, and drifting around versus delivering a blow unforgotten in history.
2. When sunspots are mentioned, that term normally is the sunspot mean as stated in Http://www:SIDC.be/sunspotdata/ which is the SIDC team, World Center for Sunspot Index, Royal Observatory, Belgium and the other source is NOAA references.

2008 Hurricane Season Estimates

Organization	Named Storms	Tropical Storms	Hurricanes	Major Hurricanes	ACE
Hurricane Tracking Center	14 to 18	7-8	7-10	3-6	High
Colorado State University	17	Not stated in Article, but "8" is inferred	9	3	N/A
North Carolina U	13-15	7	6-8	N/A	N/A
The Author "1st Time at bat"	8 -12	50% of Named Storms	50% of Named Storms	1	40
Actual	16	8	8	5	142

Fig. 2. by Paul Pierett [4][5][6] The figures for this page are from printed news articles and internet NCU web pages.

II. Background

A. Since first discovering the correlation in the summer of 2007, one of the first characteristics noticed in the data of this correlation is that a respective year's sunspot activity tends to affect the coming year's winter and the hurricane season in the following spring more so than the present season. Thus, the 2008 hurricane season appears to be based more on residual heat and 2007-sunspot activity. This year, we may be feeling the affects of a colder winter due to lack of sunspot activity. The 2009 hurricane season should be based more with residual heat and 2008 sunspots, with a mean of 2.8. This is very low in the total history since 1701.[7] In 1810 and 1913, the mean dropped below 2.0.

---

[4] Kay, Jennifer, *Forecasters Increase Hurricane Outlook*, Lakeland Ledger, August 8, 2008, A3
[5].Medlin, Derek, "Researchers Release Summer Hurricane Perditions, http://media.www.technianonline.com/media/storage/paper848/news/2008/news/2008/04/17/News/Researchers.Release.summer.hurricane.Predictions-3330893.shtml
[6] Scott, Anna, *Experts: Threat of Hurricanes is Greater*, Lakeland Ledger, August 6, 2008, B3
[7] *Sunspot Cycle Worksheet*, National Geophysical Data Center, http://www.windows.ucar.edu/tour/link=teacher_resources/suncycle_sheet.html.

B. The following correlations are based on comparison of sunspot activity to ACE, which is the measurement of a storms duration and strength. One thing peculiar about the 2008 hurricane season is the storms appeared to lack "direction". They wondered and that wondering drove the ACE numbers up. For example, Hurricane Bertha simply roamed the Atlantic for a couple of weeks. Other tropical storms formed and hit shore causing property damage. Bertha racked up ACE numbers while tropical storms increased numbers of death and destruction.

C. Bottom Line Items

1. Since 2008 finished with 2.8 mean sunspot strength, if past patterns hold true, 2009 could have about a 10-sunspot mean. This could lead to a much weaker sunspot cycle and the trend would be extended drought conditions and less supporting ACE in the coming decade. The following is the only historical data somewhat matching what is going on in terms of sunspots.[8] First, the low-end estimate in sunspots.

Year	Yr. 1806	Yr. 1807	Yr. 1808	Yr. 1809	Yr. 1810	Yr. 1811	Yr. 1812	Yr. 1813
Sunspots	28.1	10.1	8.1	2.5	0	1.4	5	12.2

2. The high end is a sunspot mean of around 20. That would lead to a stronger hurricane season in 2010. That is almost impossible. The next chart is more reasonable.

Year	Yr 1908	Yr1909	Yr 1910	Yr 1911	Yr 1912	Yr 1913	Yr 1914	Yr 1915
Sunspots	48.5	43.9	18.6	5.7	3.6	1.4	9.6	47.4

3. The above factors, place in light of a warm earth, the possible forecast for 2009 may shape up like one of the following years. More detailed templates are provided below.

Year 2 of a Sunspot Cycle Data with Named Storms and ACE

2d Year	Named Storms	Tropical Storms	Hurricanes	Major Hurricanes	ACE	Sunspots	
Yr 1934	11	5	6	0	60	8.7	**Probable, Pre-Warmer Cycles**
Yr 1965	6	2	4	1	84	15.1	**Probable, Post-Warmer Cycles**

[8] Jeans, Sir James, *Through Space and Time*, John Wiley & Sons, Inc. New York, p.159

5. Average Winter and Annual Temperatures tend to favor a hurricane season somewhat comparable to 2008, but with approximately four less storms and 20 less ACE points. There may be regrouping of named storms from June to October timeframe.

6. Historically, there is no data match for the present conditions. Three of the best-detailed templates for this coming year are provided below. A fourth is provided to dispel any thoughts that a global cooling period is happening overnight.

III. Looking Ahead At this time, the present sunspot cycle will be less than the 1996 to 2007 sunspot cycle, which had 670 sunspot mean total. The 2008 cycle may need around 800 sunspot mean total to regenerate the 1996 to 2007 ACE numbers.

A. In 2008, there were 16 Named Storms of equal distribution of tropical storms and hurricanes. The balance is another common characteristic in the first year of a sunspot cycle. This balance tends to point to a weaker season. The 2008 season was not dominated by a majority of hurricanes.

1. The 16 storms was the second highest number of storms in the first year of a sunspot cycle data. The most storms seen in the first year is 21 in 1933. There is not a clear trend in what will happen after the first year of a cycle.

2. The data reflects an evenly warmer earth because the 2008 hurricanes and tropical storms were evenly spread from April to November. In review of data, during colder cycles the hurricanes and tropical storms are bunched up from August to October. To generate storms, colder cycles required more direct sun overhead as the sun moves back across the Equator. From August to October, the sun follows the Atlantic Ocean currents southward along the coast of west Europe and Africa to the Equator. At the Equator, the ocean currents turn westward while the sun continues south to the Antarctica Circle. Thus, more named storms are generated from August to October.

Continued on the next page.

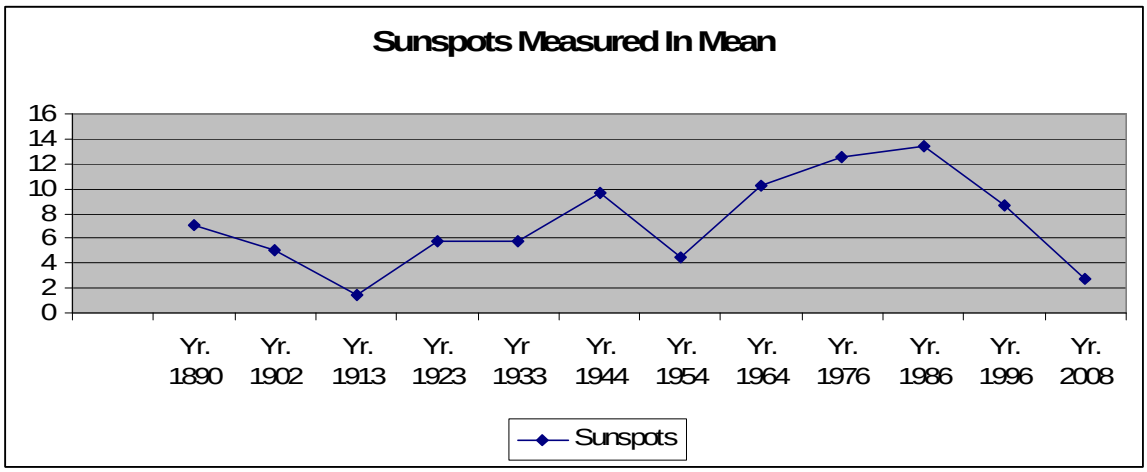


Fig. 3. by Paul Pierett. The slide above shows the mean of sunspots in the ***first year*** of sunspot cycles since 1890. This new cycle that began in January of 2008 (full 12 month calendar) had a sunspot mean of 2.8. The first year appears to set the dynamics of the cycle. If the low 2.8 sets the dynamics of this cycle, there should be weaker hurricane seasons in the next decade.

a. In review of data, due to this last sunspot cycle being less than the two previous cycles, the present cycle may need to generate 100 or more in sunspot mean totals for the cycle to maintain the hurricane season conditions found in 1996 to 2007 cycle. If the sunspot cycle stays around 670 total sunspot mean for the cycle, this coming decade of hurricanes and tropical storms should be less than the 1996 to 2007 cycle. See Fig. 4.a. and 4.b.

b. If the 2008 to 20XX cycle is less than or equal to 670 total sunspot mean, still front-loaded, then we should have moderate hurricane seasons for the decade. We should see a decline in average USA winter temperatures and growth in the Polar Region Ice Caps and glaciers. The best figure for this is the 1997 to 2007 cycle, but with less ACE. ACE could drop as much as 300 points in total, though the 2008 year has already caulked up a high ACE subtotal. Currently, there are no historical templates for this projection. The 1944 to 1953 cycle is provided for review, which shows more sunspots than 1996 to 2007-cycle, but with less ACE. See Fig. 5.a and 5.b.

c. If the cycle is less than 670 sunspot mean total, not front loaded but flat, then the hurricane seasons for the decade will be reduced in strength in terms of total ACE and number of named storms. Polar Region Ice Caps will have significant increase in size towards the end of the cycle and in the beginning of the next cycle. We should see a significant drop in average USA temperatures. See Fig. 6.a. and 6.b., the October 1964 to June 1976 Sunspot Cycle.

d. For those who believe the earth is cooling, sunspot and ACE data are provided from the 1902 to 1923 period. In 1914, there was one tropical storm, which was preceded by cooler sunspot cycles. See Fig. 7.a. and 7.b. The previous year had a 1.4 sunspot total mean.

B. May 1996 - December 2007 Cycle Graphs and Data

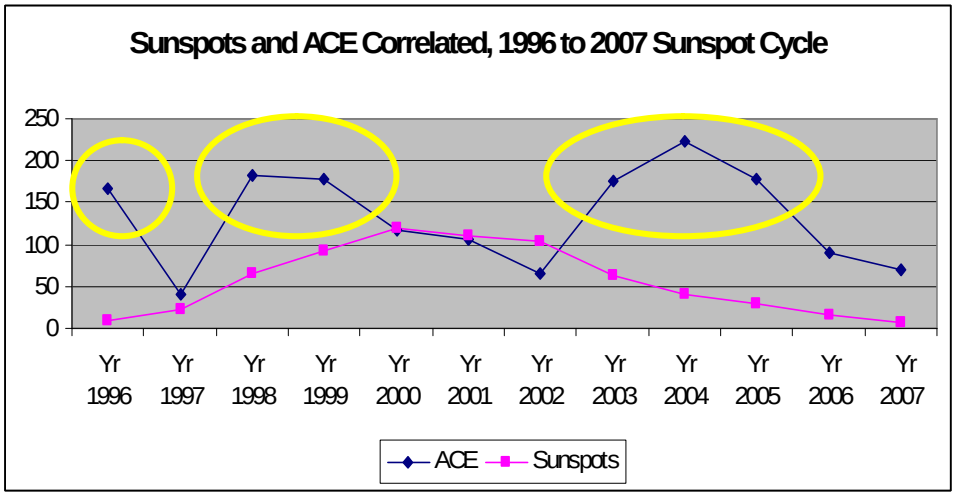


Fig. 4.a. by Paul Pierett. Double peaks are common in about 50% of the cycles. This one had three. This cycle's ACE benefited from nearly 20 years of preparatory sunspot activity.

What is not clearly shown in this cycle is the sunspot valley of 2001. In that valley, two significant things happened. Droughts were recorded in Florida, Hungary and Africa, based on interviews of two fellow students and a briefing by South Florida Water Management District at a Auburndale, Florida Rotary meeting.

a. The other event was re-growth of glacier activity in Glacier Bay National Park during 2002. This is where USA average winter temperatures shown below has some verification. Though the temperature mark may move north and south, if the USA average winter temperature falls below 33°F, the chances of glacier and Polar Region ice increases and hurricanes decrease. The 33°F is the mark, much like the human 98.6°F. The human body needs this temperature to keep balance in the human systems. The earth appears to balance on 33°F in USA average winter temperature so as to maintain balance in its ice, La Niña, El Niño and named storms systems.

b. The other significant data that can be pulled from this in comparison of the 1964 to 1976 sunspot cycle to the 1996 to 2007 is though the two cycles were of equal strength, the 1996 to 2007 had more ACE. This may be due to the hot cycles from 1976 to 1996. The 1996 to 2007 cycle had 20-years of global warming behind it.

Data Support for 1996 to 2007 Graphs
2008 is not included in the totals or averages

Year	Total Named Storms	All Tropical Storms	All Hurricanes	Major Hurricanes	ACE	Sunspots
Yr 1996	13	4	9	6	166	8.6
Yr 1997	8	5	3	1	40	21.5
Yr 1998	14	4	10	3	182	64.3
Yr 1999	12	4	8	5	177	93.3
Yr 2000	15	7	8	3	116	119.0
Yr 2001	15	6	9	4	106	110.9
Yr 2002	12	8	4	2	66	104.09
Yr 2003	16	9	7	3	175	63.56
Yr 2004	15	6	9	6	224	40.52
Yr 2005	28	13	15	4	179	29.83
Yr 2006	10	5	5	2	90	15.18
Yr 2007	14	12	2	2	70	7.5
Total	172.00	83.00	89.00	41	1591	678.28
Average	14.33	6.92	7.42	3.42	132.58	56.52
Yr 2008	**16**	**8**	**8**	**5**	**142**	**2.8**

Fig. 4.b. by Paul Pierett. Records show eight-El Niño and six-La Niña for this cycle.

C. <u>February 1944 - April 1954 Sunspot Cycle,</u>

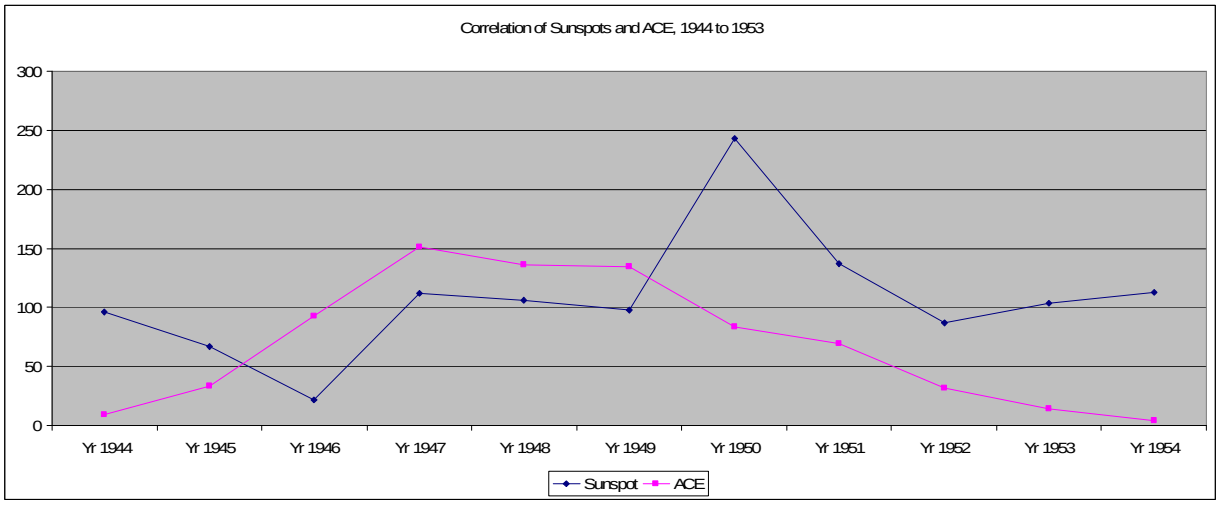


Fig. 5.a. by Paul Pierett. This cycle is noted by many scientists as one of the strongest cycles of the 1900s. The cycle produced some of the strongest ACE known to us; most noted is the 1950 hurricane season.

February 1944 - April 1954 Sunspot Cycle Support Data,

Year	Total Named Storms	All Tropical Storms	All Hurricanes	Major Hurricanes	ACE	Sunspots	El Niño	La Niña
Yr 1944	11	4	7	3	96	9.6		
Yr 1945	11	6	5	3	67	33.2		
Yr 1946	6	3	3	1	22	92.6	1	1
Yr 1947	9	4	5	2	112	151.6	1	1
Yr 1948	9	3	6	4	106	136.3		
Yr 1949	13	6	7	3	98	134.7		
Yr 1950	13	2	11	8	243	83.9		
Yr 1951	10	2	8	5	137	69.4	1	2
Yr 1952	7	1	6	3	87	31.5	1	
Yr 1953	14	8	6	4	104	13.9	1	
Sum	103	39	64	36	1072	756.7	5	
Average	10.3	3.9	6.4	3.6	107.2	75.67		

Fig. 5.b. by Paul Pierett. Support data for Fig. 5.a. above. Per Fig. 1., left oval, the 1944 to 1953 cycle appears to be pulling out of the colder cycles of 1902 to 1922 shown below in Fig. 7.a and 7.b where sunspots and ACE nearly collapsed. This 1944 to 1953 cycle was assisted by the 1933 to 1943 cycle. The earth began moving toward a warm climate from here to 2007. There were very few La Niña in this warm cycle.

Continued on the next page.

D. The October 1964 to June 1976 Cycle

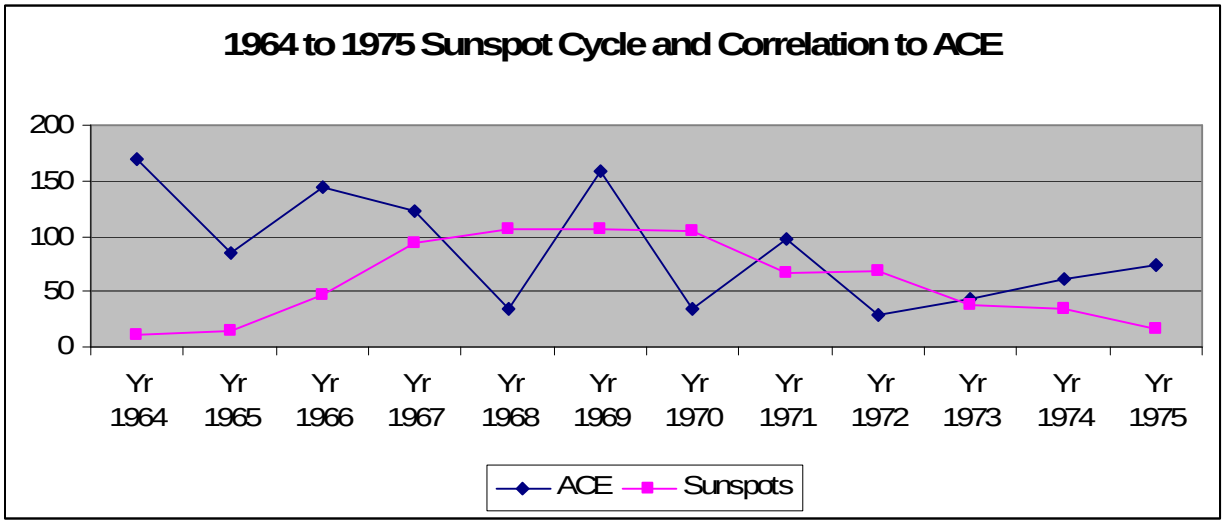


Fig. 6.a. by Paul Pierett. This 11-year cycle followed the first generation of "hot" cycles per historical records. Prior to the cycles of 1934 to 1964, the cycles were cooler. This cycle had a higher mean of sunspots than the1996 to 2007 sunspot cycle, but was flatter. The cycle was not "front loaded" like the 1996 to 2007 cycle.

The October 1964 to June 1976 Cycle Support Data

Year	Total Named Storms	All Tropical Storms	All Hurricanes	Major Hurricanes	ACE	Sunspots	El Niño	La Niña
Yr 1965	6	2	4	1	84	15.1	1	1
Yr 1966	11	4	7	3	145	47	1	
Yr 1967	8	2	6	1	122	93.8		
Yr 1968	8	4	4	0	35	105.9		
Yr 1969	18	6	12	5	158	105.5	1	
Yr 1970	10	5	5	2	34	104.5	1	1
Yr 1971	13	7	6	1	97	66.6		1
Yr 1972	7	4	3	0	28	68.9	1	
Yr 1973	8	4	4	1	43	38	1	1
Yr 1974	11	7	4	2	61	34.5		1
Yr 1975	9	3	6	3	73	15.5		1
Yr 1976	10	4	6	2	81	12.6	1	1
Total	119	52	67	21	961	707.9	7	7
Average	9.92	4.33	5.58	1.75	80.08	58.99		

Fig. 6.b. by Paul Pierett. Supporting data for Fig.6.a. Notice that seven-La Niña occurred in this cycle and towards the end of the cycle, they were back to back. La Niña

requires cooler waters of 40 to 60 degrees and cooler waters negatively affect a hurricane season. For hurricanes to be active, water must be 82 degrees 100 feet deep, per Meteorologist Steve Jerve, WFLA, TV Channel 8, Tampa, Florida. The majority of USA average winter temperatures for 1956 to 1979 were under 33°F. This cool period may have stunted the hurricane activity for the next two decades.

1. At the beginning of the cycle, lake levels of Crooked Lake, Florida dropped each year. Strip mining and irrigation also had a negative impact on Florida lake levels. After the end of this cycle, in 1979, the greatest growth in Polar Region ice occurred. The average winter temperature for 1979 was 27.29°F.[9]

2. This demonstrates that the earth's climate-change takes roughly 14 years to change from cold to warm and warm to cold. In the Wall Street Journal, January 9, 2009, page A6, there is a photo of Dutch Ice Skating Championship Marathon racers on natural ice for the first time in 13 years. This takes us back to 1996. That year was warmer than 2008 by .24°F. 1996 had an average temperature of 33.55°F and 2008 had an average of 33.31°F

E. The 1902 to 1912 and the 1913 to 1922 Sunspot Cycles

1. The next series of graphs and data shows one time in our recorded history of hurricanes and temperatures when the earth was almost too cold to produce a tropical storm. The year 1810 had zero sunspot mean. However, with the start of the next season, enough sunspot activity kicked in to produce a high ACE year. The data below supports the statements made earlier that the prior year sunspot activity affects the following year hurricane season.

Continued on the next page.

[9] D'Oro, Rachel, Melting Artic Ocean, Opens Shipping Frontier, The Ledger, Lakeland, Fla. Aug. 22, 2008, p A2

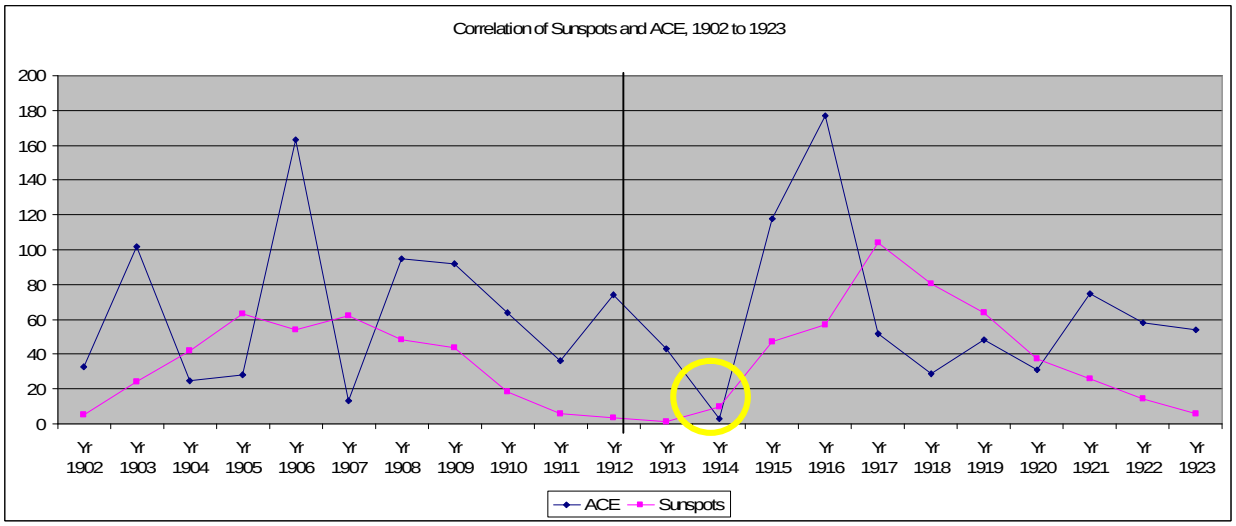


Fig. 7.a. by Paul Pierett This slide shows collapsing to 1.4 mean sunspot activity. The year, 2008, had a 2.8 mean. The strength of the cycles' years was fewer than 100 sunspot mean with the exception of 1917.

2. There is a slight bit of evidence pointing to a colder cycle with the 2008 sunspot mean of 2.8. The average temperature for 2008 is barely below the average and is above 33°F. As seen in the average winter temperature section below, 33°F is the line between robust hurricanes and glacier ice. For the earth to cool to below 33°F, two consecutive, colder sunspot cycles would be needed. Each would need to stay equal to or less than 500 sunspot total mean.

Continued on the next page.

February 1902 - August 1913 and August 1913 - August 1923 Cycles
Support Data

Year	Total Named Storms	All Tropical Storms	All Hurricanes	Major Hurricanes	ACE	Sunspots	El Nino	La Nina
Yr 1902	5	2	3	0	33	5	1	
Yr. 1903	10	3	7	1	102	24.4	1	1
Yr 1904	5	2	3	0	25	42		1
Yr 1905	5	4	1	0	28	63.5	1	
Yr 1906	10	4	6	3	163	53.8	1	1
Yr 1907	5	5	0	0	13	62		1
Yr 1908	10	4	6	1	95	48.5		1
Yr 1909	11	5	6	4	92	43.9		1
Yr 1910	5	2	3	1	64	18.6		
Yr 1911	6	3	3	0	36	5.7	1	
Yr 1912	7	3	4	1	74	3.6	1	
Yr 1913	6	2	4	0	43	1.4		
Yr 1914	1	1	0	0	3	9.6	1	
Yr 1915	6	1	5	3	118	47.4	1	
Yr 1916	15	5	10	6	177	57.1		1
Yr 1917	4	2	2	2	52	103.9		1
Yr 1918	5	2	3	0	29	80.6	1	
Yr 1919	5	3	2	1	48	63.6	1	
Yr 1920	5	1	4	0	31	37.6		1
Yr 1921	6	2	4	2	75	26.1		1
Yr 1922	4	2	2	1	58	14.2		
Total	136	58	78	26	1359	812.5		
Average	6.48	2.76	3.71	1.24	64.71	38.69		

Fig. 7.b. by Paul Pierett. The yellow highlighted year is one year that ACE dropped to 3 points. This was most likely due to a drop in sunspot activity to a mean of 1.4 in the previous year.

F. Consolidation of data.

1. Starting month of a sunspot cycle is anywhere in a given year. That is the start year for this data. Thus, the weak point in the data is the start and stop of the data. A cycle that finishes in the middle of a year, well, that's the way it is given and that is the way it is presented. The total of that data appears as such. The data in this paper is based on this method.

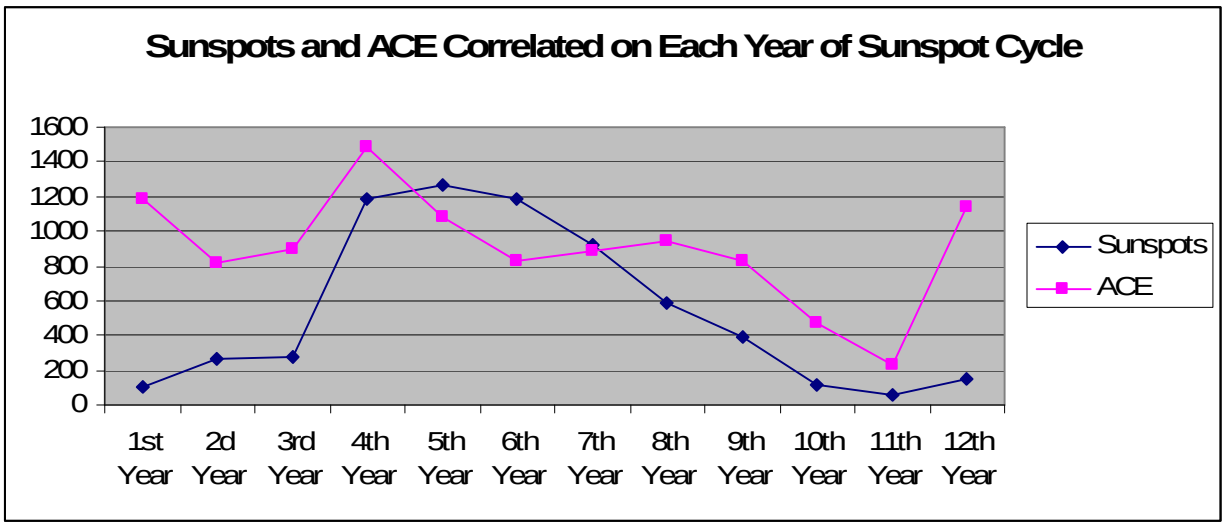


Fig. 8.a. by Paul Pierett. The line graph above shows the average total of each year of sunspot means and average total ACE for the same year. Supporting data is listed below.

Year of Cycle	Sunspot Total Mean-Averaged	ACE
1st Year	101.8	1180
2d Year	259.7	819
3rd Year	278.1	894
4th Year	1191.2	1487
5th Year	1261.9	1083
6th Year	1190.8	825
7th Year	922.79	891
8th Year	585.96	939
9th Year	394.42	830
10th Year	116.23	474
11th Year	59.18	235
12th Year	148.5	1135

Fig. 8.b. by Paul Pierett. Support data for figures 8-a.

2. Explanation of the above slides and data. In the above figures, the data is shown within the given year of sunspot cycle which varies from 10 to 12 years since 1889. Thus, the first year still has residual heat from the previous sunspot cycle. Roughly, the cycle peaks around the 4th to 6th year and then tapers to the end of the cycle. The end of the graph has some difficulties in depicting the end of the cycle. Cycles end in the 10th, 11th or 12th year. The slide above is an actual depiction of the data. See next paragraph for an explanation of higher ACE at the end of a cycle. ACE measurement lacks one feature, "the punch" equation.

3. Dr. James Elsner and Thomas Jagger's of Florida State University, Tallahassee, Florida are mentioned in recent internet news articles. The article inferred that as sunspots taper off, ACE increases.[10] What is happening to cause this? My opinion is as follows:

a. ACE is based on strength and endurance; not "the punch". Hurricanes and glaciers have five things in common, but not at the same time. They both need constant temperature to exist, precipitation, an area to mass and an area to flow. The fifth element which is not always present is the extreme temperatures for a glacier or a hurricane to deliver "the punch". When sunspot activity drops, the average USA winter temperature lowers, the North Pole Region needs 27°F to start recovery. Hurricanes benefit when the average USA winter temperatures are 34°F or higher.

b. During the Mini-Ice Age, the glaciers on the mountains above the fjord of Glacier Bay, raced down the valleys, filled the fjord and the wall of ice standing higher than modern cruise liner, pushed into the seaway crushing fishing villages in its path. Today, "the punch" is gone and remaining glaciers trickle down the mountain valleys and collapse into the bay.

c. Likewise, hurricanes have their "punch" during the peaks of sunspot activity. During the 1996 to 2007 cycle, this was most evident. Three major hurricanes crossed Central Florida in 2004. Hurricane Katrina swamped New Orleans in 2005. In 2007, the last year of the cycle, Phil Klotzbach of Colorado State University forecasting team stated, "We had two Category 5 hurricanes and 12 really kind of pathetic storms. They were short-lived and didn't do very much."[11] In 2008, hurricanes wondered the ocean. Tropical Storm Faye spun around Florida like a dying, spinning top. Faye picked up more steam from the lands of Florida than she did from the oceans. With a residual-global warmed planet and high sunspot activity, the conditions were primed for a hurricane season "punches" in 1996, 1998 to 2000 and 2003 to 2005.

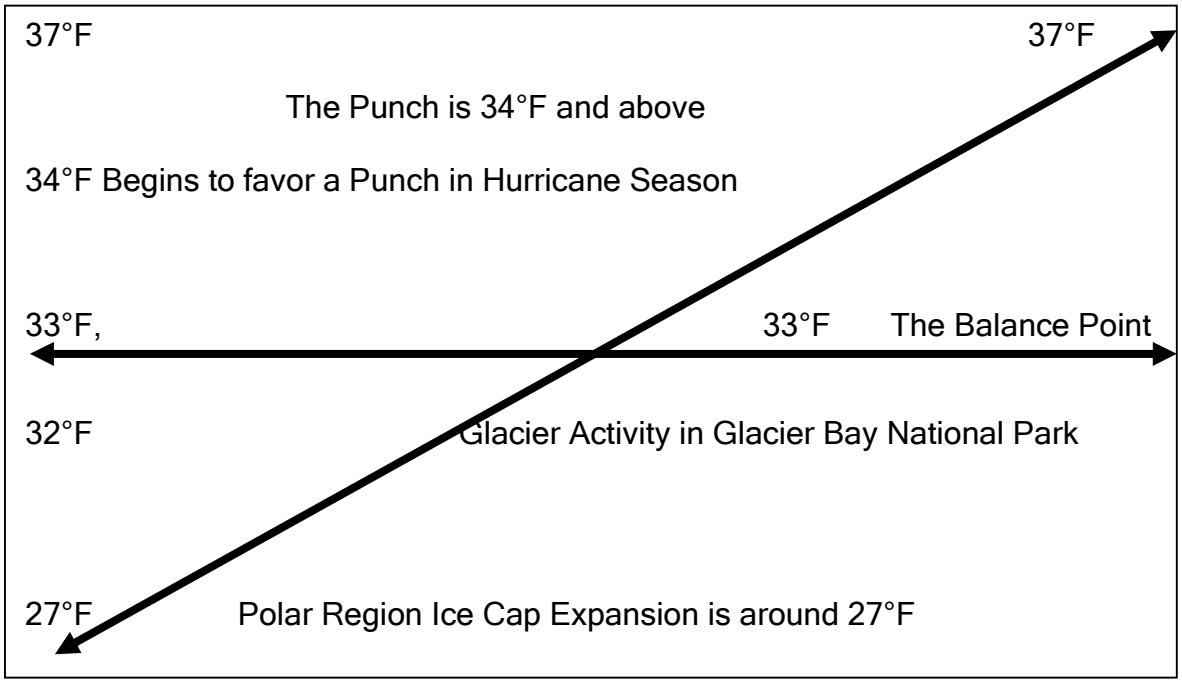
[10] htt://en.wikinews.org/wiki/Hurricanes_may_be_associated_with_sunspots
[11] Scott, Anna, Storm Forecasters Ponder Climate Puzzle", Lakeland Ledger, November 29, 2007, p. B3.

d. As sunspot cycles close out, like glaciers trickling down to the waterline of Glacier Bay, hurricanes and tropical storms lose "the punch". As a weatherman said in my youth, "Hurricanes break up weather-fronts that would hang over our crops and burn them up." Instead of punching into weather fronts this past year, weather fronts seem to turn hurricanes and tropical storms on their heels. They wondered the oceans and lands running up the ACE count. This may be the main reason the ACE count tends to be higher at the end and at the beginning of a sunspot cycle.

e. ACE is still a good measuring tool. Like all data, ACE requires more than just being a total. ACE needs interpretation and opinion.

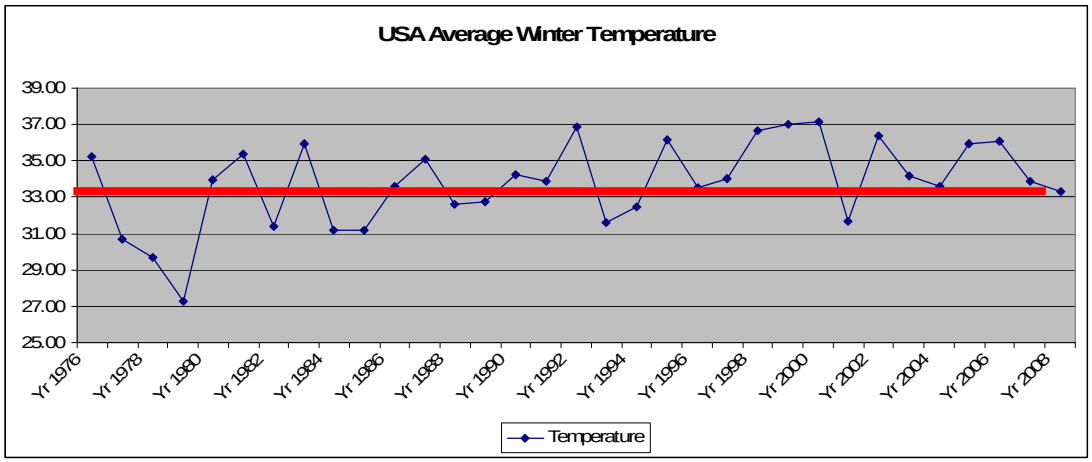
f. In the last 40 years we have measured as much as 10 degrees variance in USA average winter temperatures. We can see what a slight change in average temperature can do. We've gone from major Polar Region ice growth in 1979 to major hurricane growth from 1996 to 2005. Which way are we going now?

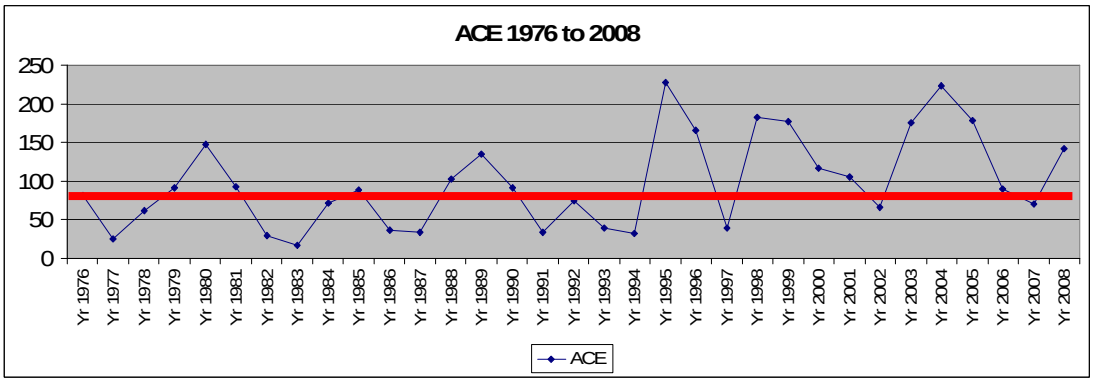
The Balance Point in Our Climate

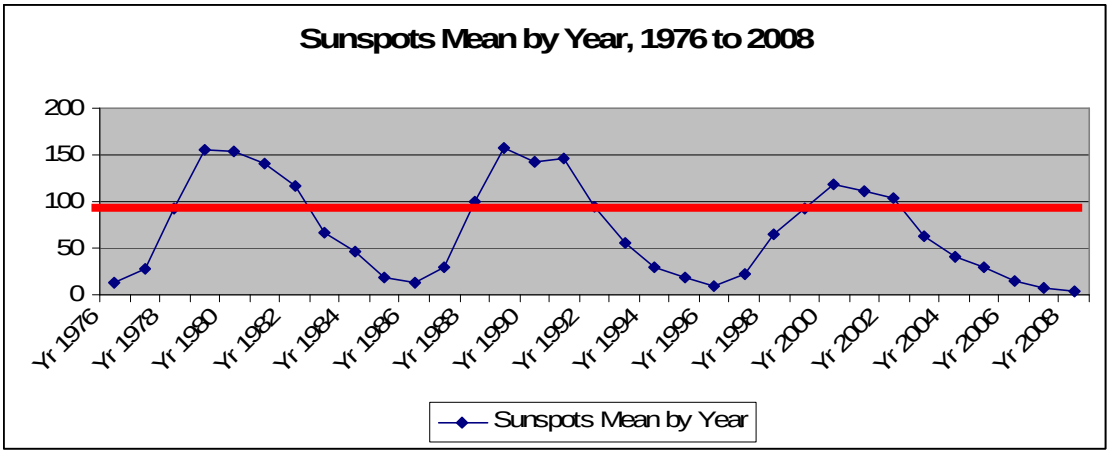


Author's Note: Sitting at one's desk on the first day of the year, one can open up a few key web pages, look at average USA average winter temperatures and annual sunspot mean and somewhat determine where we stand in terms of global warming or global cooling. For example, if the average temperature is around 33°F, then we are in a break even winter and non-strong hurricane seasons. If the average USA temperature is above 34°F, we can expect a strong hurricane season. If the average USA temperatures drop below 33°F, we should look for glacier and Polar Ice Cap recovery.

G. Temperature Break Point for Glacier/Polar Region Ice and Hurricane Activity







Figs. 9.a.,b., and c. by Paul Pierett.

1. Below the horizontal bar is roughly the temperature point in which glacier activity in Glacier Bay National Park resumes and Polar Region ice grows. ACE tends to follow the coldness of our winters. The area above the bar is temperature range in which tropical storms and hurricanes flourish. Though there appears to be a slight

correlation, the data does not reflect that clearly. What study led to this? This question came up in the overall development of the correlation of sunspots to ACE. At what point will the earth create named storms? With colder cycles, the 1.4 sunspot mean in 1913 gave us one storm in 1914. The 33°F is possibly the balance point.

2. The numbers show that if sunspots reach 100 mean, ACE tends to be ≥100 and average winter temperatures for the USA are ≥33°F. This may correspond with some of Dr. Eshner's and Thomas Jagger's work.

IV. Summary

A. In conclusion, there is a working correlation between sunspot activity and ACE. Based on historical data, there should be enough residual heat and sunspot activity to have at least 10 named storms and at least an ACE of 70 in 2009. Last year, I projected that if there is a strong sunspot cycle beginning in 2008, the 2009 hurricane season would be strong. However, the present sunspot activity no longer supports that projection.

B. Reviewing the data shows there is both global warming and improved data collection. Unfortunately, much of the data here is probably pre-satellite days. One would assume that in the last few decades, the data has increased in accuracy.

C. There is enough data now to determine the approximate ACE back into unrecorded history. The question is, "How much affect did the melting Polar Regions and glaciers have on keeping the oceans cool? How much did CO_2 affect the warmth and cold of the Equator and the Polar Ice Caps? How much did the Mediterranean Sea affect the heat and cold of the waters off Africa? These are questions left to be answered.

References:

Books

Jeans, Sir James. *Through Space and Time*. New York: John Wiley & Sons, Inc., 1963 (p.156 to 172)

Abstracts:

Hasling, Jill F. and John C. Freeman, December 1993 *The Prediction of Tropical Cyclones or No Tropical Cyclones by Means of the Solar Cyclone Strike Index*. Abstract. Weather Research Centre-Houston, Texas.

Winguth, Arne, Patrick Wetzel, and Earnst Maier-Reimer. *Simulated Sea-To-Air CO_2Flux From 1948 to 2003 Using NCEP Reanalysis Surface Fluxes*, Abstract. Department of Atmospheric and Oceanic Science, University of Wisconsin-Madison.

Internet

National Geophysical Data Center

National Geophysical Data Center, Sunspot Cycle Worksheet, http://www.windows.ucar.edu/tour/link=teacher_resources/suncycle_sheet.html. (assessed date unknown)

Glacier Bay National Park Map Showing Glacier Melt by Year, Glacier Bay National Park and Preserve, www.nps.gov/glba (accessed July 15, 2008).

NOAA

Climate At A Glance, Various data requests, Annual and Winter Temperatures .http://climvis.ncdc.noaa.gov/cgi-bin/cag3/hr-display3.pl (accessed February 9 to 13, 2009.

Cold & Warm Episodes by Season, http:www.cpc.ncep.noaa.gov/products/analysis monitoring/ensostuff/ensoyears.shtml (accessed, date unknown)

Daily Sunspots Numbers 2008 ftp://fftp.ngdc.noaa.gov/STP/SOLAR_DATA/SUNSPOT_NUMBERS/2008, (accessed January 2, 2009)

El Niño/La Niña Information, http://www.wrh.noaa.gov/wrh/EL-LA/el-la_main.php (accessed unknown)

Named Storms Listed by Totals for Each Year, Atlantic Basin, Individual years With The Numbers In Each Category. http:/www.aoml.noaa.gov/hrd/tcfaq/E11.html (accessed February 9 to 13, 2009).

Null, Jan, El Niño & La Niña Years: A Consensus List, http://ggweather.com/enso/years.htm (accessed unknown)

Predicted Sunspot Numbers and Radio Flux: Predict.txt http://www.swpc.noaa.gov/ftpdir/latest/Predict.txt (accessed monthly)

Sunspot Data http://www.swpc.noaa.gov/ftpdir/weekly/RecentIndices.txt (accessed monthly)

2008 Tropical Cyclone Advisory Archive .http://www.nhc.noaa.gov/archive/2008/index.shtml (accessed unknown)

Yearly Mean American Sunspot Numbers ftp://ftp.ngdc.noaa.gov/STP/SOLAR_DATA/SUNSPOT_NUMBERS/AMERICAN_NUM (accessed annually)

SIDC

Monthly Ri Report http://sidc.oma.be/products/ri (accessed monthly).

http://sidc.oma.be/products and, then, http://sidc.oma.be/html/wolfjmms.html (accessed monthly).

Monthly Ri_hemispheric Report http://sidc.oma.be/products/ri_hemispheric (accessed monthly).

No Title: “How to Read SIDC Reports “ http: sidc.oma.be/html/readme.txt (accessed November 19, 2008)

Space Today Online
The Sun, http://www.spacetoday.org/SolSys/Sun/Sunsots.html (accessed date unknown).

Wikipedia.org

2008 Atlantic Hurricane Season, Hurricane Research Division. "HURDAT Meta-Data". NOAA. http://www.aoml.noaa.gov/hrd/hurdat/metadata_19151920_new.html. Retrieved on 2008-02-15. http://en.wikipedia.org/wiki/2008_Atlantic_hurricane_season (accessed February 9 to 13, 2009).

Hurricanes May Be Associated with Sunspots
http:en.wikinews.org/wiki/Hurricanes_may_be_associated with_sunspots (assessed on or about October 9, 2008).

Television or Radio

Steve Jerve, WFLA, TV Channel 8, Tampa. *Requirements for a Hurricane*. (stated during evening newscast, summer of 2008).

Named Storm Data http://weather.terrapin.com/hurricane/display_storms.jsp (may no longer be available).

Newsreleases

Joseph D'Aleo "2008 in Top Five Years for Sun-Spotless Days Last Century, Could End up #3 or Even 2", http://anhoenstclimatedebate.wordpress.com/2008/12/01/2008-in-top-five-years-for-sunspot (accessed date unknown).

Rachel D'Oro, "Melting Artic Ocean, Opens Shipping Frontier," The Ledger (Lakeland, FL.), Aug. 22, 2008, p A2.

Jennifer Kay, "Forecasters Increase Hurricane Outlook," The Ledger (Lakeland, FL.), August 8, 2008, p. A3.

Elenor Keith, N.C. State Department of Marine, Earth, and Atmospheric Sciences, NCU Web Site.

Derek Medlin, "Researchers Release Summer Hurricane Predictions," http://media.www.technianonline.com/media/storage/paper848/news/2008/news/2008/04/17/News/Researchers.Release.summer.hurricane.Predictions-3330893.shtml

Randolph E. Schmid, "Report Links Warming, Increase in Storms," The Ledger (Lakeland, FL.), July 30, 2007, p A2.

Anna Scott, "Experts: Threat of Hurricanes is Greater," The Ledger (Lakeland, FL.), August 6, 2008, p. B3.

Anna Scott, “Storm Forecasters Ponder Climate Puzzle”, The Ledger (Lakeland, FL.), November 29, 2007, p. B3.

Other Related References:

Internet News Articles:

Dr. David Whitehouse, “Sunspots Reaching 1,000 Year High,” Dr. Sami Slanki work described by of the BBC, July 6, 2004. news.bbe.co.uk/2/hi/science/ (accessed approximately two years ago and re-accessed for reference reasons July 10, 2009).

Than Ker, “Sun Blamed for Warming of Earth and Other Worlds,” Live Science, March 12, 2007. www.space.com//solarsystem (accessed date unknown, re-accessed July 10, 2009 for reference reasons)