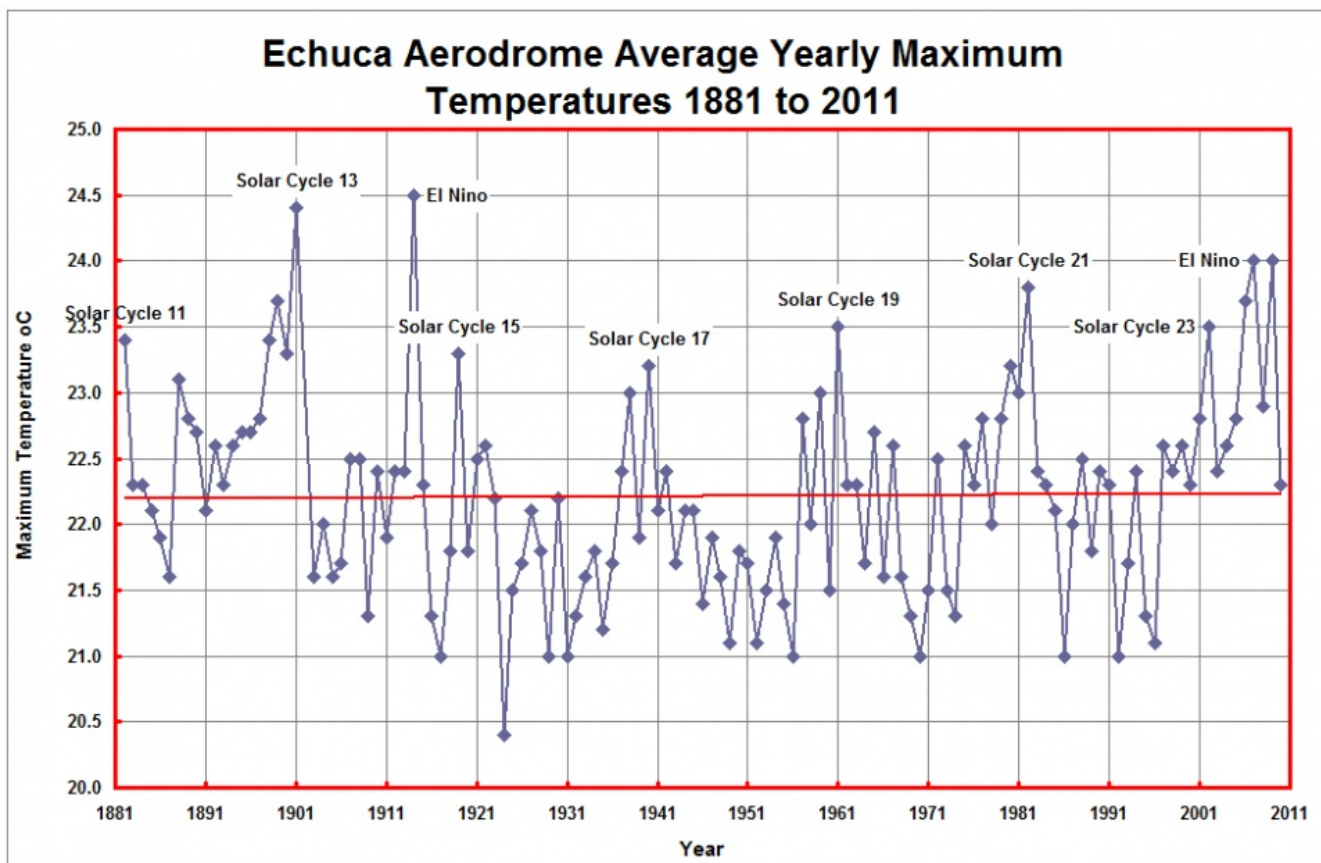




Ian H. Bryce 120625 “An interesting graph showing solar cycle, El Niño, and surface temperature correlation in Australia”

<http://wattsupwiththat.com/2012/06/25/an-interesting-graph-showing-solar-cycle-el-nino-and-surface-temperature-correlation-in-australia/>

Posted on [June 25, 2012](#) by [Anthony Watts](#)



Ian H. Bryce writes at [Jo Nova's website](#):

The thing that intrigued me about the maximum temperatures is the high peaks, which

occur at the peak of the odd solar cycles, and four other times, when we had strong El Nino events. (Most recently, three in four years) It is interesting to note that we did not have the Super EL Nino in 1998!

One wonders when our climate scientists graph global mean temperatures for tens of thousands of stations worldwide, that they “miss the wood for the trees.” I contacted the BOM some time ago about this phenomenon, but I have not had a reply yet. (Surprising?)

Read the entire fascinating article at [Jo Nova's website](#).

UPDATE: Willis finds some serious problems and posts in comments:

Willis Eschenbach says:

[June 25, 2012 at 12:49 pm](#)

Not sure why I usually end up being the one to rain on the parade, but I've accepted my lot in life. Here is the Echuca data plotted against the peaks of the solar cycles, as measured by sunspot counts.

A couple things of note. First, he has misidentified the Cycle 11 peak, it happens earlier. Second, he is very vague about the timing of the cycles. Yes, the high years occurred during those cycles, but if we look at the actual peak year of each cycle, some happen two years before the peak temperatures, some three years before, some four years before, and some show no relation at all to the peak temperatures.

Sorry ... but that's the real data, and the sunspot/temperature correlation doesn't hold up in the slightest.

SOURCES:

[Sunspots](#)

[Temperature](#)

This entry was posted in [climate data](#), [ENSO](#), [solar](#), [weather stations](#) and tagged [climate change](#), [temperature](#), [global warming](#), [La Nina](#), [El Niño-Southern Oscillation](#), [Intergovernmental Panel on Climate Change](#), [Pacific Ocean](#), [National Oceanic & Atmospheric Administration](#). Bookmark the [permalink](#).

[← Throwing down the gauntlet on reproducibility in Climate Science – Forest et al. \(2006\)](#)

[Tisdale: “Mercury rising”? “Greater L.A. to heat up an average 4 to 5 degrees by mid-century”???? →](#)

106 Responses to An interesting graph showing solar cycle, El Niño, and surface temperature correlation in Australia

1. [Todd](#) says:

[June 25, 2012 at 11:33 am](#)

Clearly something is wrong with that graph. It doesn't trend upward with a violent uptick post 1980.

2. [Luther Wu](#) says:

[June 25, 2012 at 11:47 am](#)

I heard them on TV- several times, different stations- the scientists were all saying that the sun doesn't have anything to do with our Climate Change problems, that it's all because of the CO2 from the industrialized free world. and that we have to shut down our industry and do it now,

while there's still a chance.

I'm supposed to believe some lady with a blog over MSNBC and CNN?

3. *Pamela Gray* says:

[June 25, 2012 at 11:50 am](#)

This may be an artifact related to spurious correlation expected to occur when there are thousands of stations to look at. It can also be expected to occur when two disconnected oscillations occasionally coincide, much like the windshield wipers do on the bus when controlled by separate motors. These coincidental correlations can stay together for many decades, depending on the oscillation of each, but may not at all be connected to the same motor.

4. *Vincent* says:

[June 25, 2012 at 11:58 am](#)

Seems that there is a correlation of peaks to odd number cycles.

That is not surprising. The sunspot cycles flip polarity of the magnetic fields alternately, so it looks to me as though the underlying cycle is actually around 22 years.

What we observe as the 11 year cycle is an artifact of the existence, or not, of sunspots. There is no way of expressing a "negative" sunspot number, so they all become positive. The cycle clearly has a positive and a negative half and the temperature peaks correlate to one side.

I wonder what the underlying mechanism is.

5. *Randall Harris* says:

[June 25, 2012 at 12:14 pm](#)

Does the Northern Hemisphere respond to the even numbered sunspot cycles? ;-)

6. *AnonyMoose* says:

[June 25, 2012 at 12:18 pm](#)

I think I've seen previous work about possible linkage between the Earth's and Sun's magnetic fields, and there are ways in which the even/odd cycles may be relevant. The two magnetic fields are in similar alignments during every other cycle — but the Sun's magnetic fields are rather peculiar.

7. *aaron* says:

[June 25, 2012 at 12:41 pm](#)

I'm curious to see the atmospheric temperature before, during, and after each.

Did the global temp increase similar to 1998? How much of the heat stuck?

8. *ntesdorf* says:

[June 25, 2012 at 12:44 pm](#)

Echuca is a good example of a continuous temperature record from 1881 until the present, in a town which has experienced absolutely no UHI effect. In 1881 Echuca was probably about the same size and density as it is today. This strongly suggests that the typical industrial era increase in average temperature seen in most cities temperature record is an artefact of increasing size, density and energy use of the city.

9. *aaron* says:

[June 25, 2012 at 12:46 pm](#)

I've expected for a long time that both solar polarity and intensity may be a factor in warming. Of course, correlation doesn't mean causation. Perhaps changes in high energy cosmic rays affect some of the dynamics in the sun too.

10. *Willis Eschenbach* says:

[June 25, 2012 at 12:49 pm](#)

Not sure why I usually end up being the one to rain on the parade, but I've accepted my lot in life. Here is the Echuca data plotted against the peaks of the solar cycles, as measured by sunspot counts.



A couple things of note. First, he has misidentified the Cycle 11 peak, it happens earlier. Second, he is very vague about the timing of the cycles. Yes, the high years occurred during those cycles, but if we look at the actual peak year of each cycle, some happen two years before the peak temperatures, some three years before, some four years before, one is four years after, and some show no relation at all to the peak temperatures.

Sorry ... but that's the real data, and the sunspot/temperature correlation doesn't hold up in the slightest.

SOURCES:

[Sunspots](#)

[Temperature](#)

11. *Jim Cripwell* says:

[June 25, 2012 at 12:50 pm](#)

What could be interesting is what will happen with SC 25. L&P have forecast a maximum Wolf number of 7.

12. *Billy Liar* says:

[June 25, 2012 at 1:04 pm](#)

I'm with Willis:

The sunspot cycle peaks do not match up. The first two cycles 11/13 are >7 years out, the later ones 2-3 years.

Someone is making stuff up.

13. *braddles* says:

[June 25, 2012 at 1:13 pm](#)

I'm impressed that Echuca had an aerodrome in 1881, more than 20 years before the first aeroplane was invented. Now that's forward thinking for you. Perhaps the attitude was "Build it and they will come"

14. *wayne* says:

[June 25, 2012 at 1:16 pm](#)

What we observe as the 11 year cycle is an artifact of the existence, or not, of sunspots. There is no way of expressing a "negative" sunspot number, so they all become positive. The cycle clearly has a positive and a negative half and the temperature peaks correlate to one side.

That would be an interesting plot, reversing to negative the even cycle counts. Shouldn't be too

hard either, the hardest part being to decide what is the proper date when each cycle begins and ends.

15. *Anthony Watts* says:

[June 25, 2012 at 1:18 pm](#)

@braddles, prior to that the station was in town. Moving weather stations to airports at the dawn of aviation was a fairly common practice. The name then gets changed for the station.

16. *hillrj* says:

[June 25, 2012 at 1:19 pm](#)

(repeating a comment made at Jo Nova's) Using the KNMI temperature data, looking at Irkutsk in Siberia, you get a marked 11 year cycle through the 1800's. Doesn't show in most of the 1900's. William Connelly made same comment as Willis Eschenbach. Might be a coincidence. Irkutsk is remarkable in its nearness to a giant freshwater lake (Baikal) Not so for Echuca.

17. *vukcevic* says:

[June 25, 2012 at 1:48 pm](#)

I have also noticed some passing resemblance between the ENSO and changes in the geomagnetic field, possibly just coincidence:

<http://www.vukcevic.talktalk.net/ENSO-dB.htm>

18. *Lucy Skywalker* says:

[June 25, 2012 at 1:50 pm](#)

Willis I appreciate your sharp eye. Now please would you make it even sharper, just a little bit, and answer my honest question:

Is there a *smaller* but still statistically plausible correlation between the odd-numbered solar maxima and the temp. highs? It looks to me as if there might be... with a time offset... I'm wondering if there could be a solar effect mediated by ocean shifts like El Nino which are only semi-predictable and likely to be lagging solar changes (like seasons lag solstice/equinox).

19. *cba* says:

[June 25, 2012 at 2:14 pm](#)

”

Luther Wu says:

June 25, 2012 at 11:47 am

I heard them on TV- several times, different stations- the scientists were all saying that the sun doesn't have anything to do with our Climate Change problems, that it's all because of the CO2 from the industrialized free world. and that we have to shut down our industry and do it now, while there's still a chance.

I'm supposed to believe some lady with a blog over MSNBC and CNN?

”

Luther,

you think on average that there's a significant difference in the quality of information from some lady with a blog versus msnbc or cnn? Selecting some blogger gives you around a 50/50 chance that the data is better than or the same (or worse) than msnbc or cnn. I wouldn't advise putting any strong amount of faith in either, but at least with the 'lady with the blog' there is a chance of something with some accuracy. I doubt you'd have a similar chance with either msnbc or cnn. Unfortunately, they're not consistent enough in their errors to just take what they

say and invert it to get the correct information. However, if you could bet odds on it, betting against anything that msnbc or cnn says will likely make more money for you.

Ignorance and total lack of competence seems to outweigh the serious political bias one finds there.

Reagan almost said it right. "trust but verify". If it's important, it should simply be "don't trust, verify!"

20. *Luther Wu* says:

[June 25, 2012 at 2:21 pm](#)

cba says:

June 25, 2012 at 2:14 pm

"..."

Dang!

Forgot my sarc tag.

21. *Willis Eschenbach* says:

[June 25, 2012 at 2:31 pm](#)

Lucy Skywalker says:

June 25, 2012 at 1:50 pm

Willis I appreciate your sharp eye. Now please would you make it even sharper, just a little bit, and answer my honest question:

Is there a smaller but still statistically plausible correlation between the odd-numbered solar maxima and the temp. highs? It looks to me as if there might be... with a time offset... I'm wondering if there could be a solar effect mediated by ocean shifts like El Nino which are only semi-predictable and likely to be lagging solar changes (like seasons lag solstice/equinox).

First, I haven't a clue what you mean by "mediated by" in your post above.

Second, we're already fairly deep into data mining. We start with one picked temperature dataset and no idea how many other datasets were discarded to find that one.

Next, we have a vague association with some solar cycle peaks but not with others.

On top of that we have a claimed association with some but not all of the El Ninos, including a total miss on the big 1998 El Nino.

Now, you want to add in a lag based on "a solar effect mediated by ocean shifts", whatever you might mean by that.

The problem is, you have asked for a "statistically plausible correlation". If we look at one dataset and find 95% statistical significance (p-value less than 0.5), that actually means something.

But if we look at as few as a dozen datasets, the odds are almost a 50/50 that we will find a result with what looks exactly like 95% statistical significance **purely by chance**.

This is a recurring problem in climate science, where people dig through reams and reams of data, find one dataset where some relationship or trend has a p-value less than 0.05, and declare it is statistically significant ... NOT.

w.

22. *Graeme W* says:

[June 25, 2012 at 2:48 pm](#)

Willis, I appreciate your attention to detail, as I do with Leif when it comes to anything to do with solar cycles.

One thing that struck me was that the idea of a solar peak as a point in time is a very artificial concept. In reality, solar activity is spread out, with periods of higher activity and periods of lower activity.

I don't have the tools to do it myself at the moment, but I would be interested in seeing what the graph you did looked like if, rather than a single point for each solar cycle peak, it was plotted with a bar indicating the range of peak activity for that solar cycle. eg. The period of time when solar activity was within X of the peak (using whatever value for X – fixed amount or percentage – that seemed appropriate). After all, some solar cycles have broader peaks than others.

I suspect it still won't show a reliable relationship, but it would be "fairer" than picking a single date as the "peak" for each solar cycle and looking for a relationship with just that single date.

23. *Kasuha* says:

[June 25, 2012 at 3:36 pm](#)

Peaks in single years are unimportant. Average maximum temperature is highly correlated to the number of sunny days throughout the year which is random variable, no wonder the record goes up and down by large amount. Still, there is pretty nice pattern at least between 1920 and 2000 where the record appears to somewhat follow the sun activity. I guess Svensmark would like it.

24. *David Archibald* says:

[June 25, 2012 at 3:43 pm](#)

Every generation is rediscovering things that had been done before. Echuca is a good example of the Hale Cycle. There are plenty of references to the 22 year cycle in rainfall. Here's a few:

From: <http://ccb.colorado.edu/lanina/report/oh.html>

Before 1974, the 2-3 year cycle was dominant in precipitation variations. However, this cycle diminished when the transition occurred and then switched to a longer 3-5 year cycle. It is also interesting that the 22-year cycle becomes dominant when the signal of 2-3 year cycle diminishes as a result of the climate shift.

<http://www.geo.umass.edu/climate/theses/waple-thesis.pdf>

The Hale (22-year) cycle has for some time been invoked as a possible reason for a bidecadal drought rhythm in the Southwest USA and Great Plains. It is possible that this apparent cycle of drought could be due to internal variability of the ocean-atmosphere system, but as Cook et al. (1997) indicated, it is also not easy to eliminate the sun (and moon in this case) from the causal hypotheses. It appears from Cook et al.'s findings, that since at least 1800, the lunar cycle (18.6 years) and the Hale cycle interact to modulate the drought cycle.

From: <http://www.springerlink.com/content/a2geaywxlu5dan8w/>

The investigation results of the monthly precipitation and Palmer's drought severity index (PDSI) data in three of the midwestern states – Illinois, Indiana and Ohio – show that two periodic components, the 20 to 22-year Hale cycle signal and the other component with periods between 16.9 and 13.5 years, are identified.

Also see the chapter "The Twenty-Two-Year Drought Cycle in the Western United States" in "The Role of the Sun in Climate Change" by Hoyt and Schatten. It starts on page 138.

25. *Willis Eschenbach* says:
[June 25, 2012 at 3:44 pm](#)

Graeme W says:
June 25, 2012 at 2:48 pm

Willis, I appreciate your attention to detail, as I do with Leif when it comes to anything to do with solar cycles.

One thing that struck me was that the idea of a solar peak as a point in time is a very artificial concept. In reality, solar activity is spread out, with periods of higher activity and periods of lower activity.

I don't have the tools to do it myself at the moment, but I would be interested in seeing what the graph you did looked like if, rather than a single point for each solar cycle peak, it was plotted with a bar indicating the range of peak activity for that solar cycle. eg. The period of time when solar activity was within X of the peak (using whatever value for X – fixed amount or percentage – that seemed appropriate). After all, some solar cycles have broader peaks than others.

I suspect it still won't show a reliable relationship, but it would be "fairer" than picking a single date as the "peak" for each solar cycle and looking for a relationship with just that single date.

Thanks, Graeme. Actually, the peak of the sunspot cycle is generally pretty pronounced. But that's not why I'm going to pass on your request. The problem is that your request takes us into what I call the "kinda sorta" territory.

If you plot the entire solar cycle, then you can say "Well, the temperature kinda sorta has a relationship to a carefully selected band which includes times when the solar activity is within X of the peak" ... that way lies madness. The relationship shown in my graph varies from three years before the temperature peak to four years after the peak, and includes both temperature peaks with no corresponding solar activity, as well as solar peaks with no corresponding temperature activity ... in other words, no relationship.

I used to drill water wells for my daily bread, and one thing I learned was, a wise man knows when he's digging a dry hole ... and this one here is dry as a bone.

w.

26. *Willis Eschenbach* says:
[June 25, 2012 at 3:52 pm](#)

Kasuha says:
June 25, 2012 at 3:36 pm

... Still, there is pretty nice pattern at least between 1920 and 2000 where the record appears to somewhat follow the sun activity.

Thanks, Kasuha. You clearly illustrate the problem with the human eye, which is trained and honed to detect patterns ... so much so that it easily and regularly detects patterns that aren't even there.

To repeat myself, the relationship shown in my graph varies from the solar cycle maximum

being three years **before** the temperature peak to four years **after** the temperature peak, and includes both temperature peaks with **no** corresponding solar activity, as well as solar peaks with **no** corresponding temperature activity ... in other words, not a “pretty nice pattern”, but in fact, no pattern at all.

All the best,

w.

PS—Our eyes are trained to detect patterns so that we can a) detect food, and b) detect predators. In both cases, the penalty for false positives (thinking you see a tiger or a mango when you don't) is much, much smaller than the penalty for false negatives (not noticing the tiger or the mango that is there).

As a result, we see lots of stuff that, when we look carefully, turns out to be an illusion ... but that's way, way better than not seeing the tiger. On the flip side, however, it is a constant problem when looking for patterns in scientific data, which inter alia is why we have statistics.

27. [Dennis Nikols P. Geo.](#) says:

[June 25, 2012 at 4:03 pm](#)

I made a similar plot comparison along with several other comparisons for a client some years ago (04 I think). I could not find any real correlations between sun cycle (max or min) and ENSO. I did find a number of correlations between ENSO and natural gas prices, and monsoon activity but not the sun. It did appear that if the max occurred at the same time as El Niño we thought some enhancement was probably present. Were it so simple... it is anything but.

28. [Scottish Sceptic](#) says:

[June 25, 2012 at 4:32 pm](#)

Willis Eschenbach

Thanks, Kasuha. You clearly illustrate the problem with the human eye, which is trained and honed to detect patterns ... so much so that it easily and regularly detects patterns that aren't even there.

So why not do a simple autocorrelation? Take the sunspots numbers, and subtract the average. Take the temperature, subtract the average. Then multiply the two together and average. Then offset the two by -5 to +5 years and graph the average of the correlation.

If the two are correlated, there will be a peak, if they are not it'll be a flatish graph. This will show the point of maximum correlation ... any delay between the two, and given the right scale, it'll show how big the correlation is compared to the size of the signal.

29. [Philip Bradley](#) says:

[June 25, 2012 at 4:38 pm](#)

Cloud cover controls the maximum temperature in interior Australia. With ENSO is where you will find a good correlation with maximum temperature.

30. [Willis Eschenbach](#) says:

[June 25, 2012 at 5:20 pm](#)

Scottish Sceptic says:

June 25, 2012 at 4:32 pm

Willis Eschenbach

Thanks, Kasuha. You clearly illustrate the problem with the human eye, which is trained and honed to detect patterns ... so much so that it easily and regularly detects patterns that aren't even there.

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If the two are correlated, there will be a peak, if they are not it'll be a flatish graph. This will show the point of maximum correlation ... any delay between the two, and given the right scale, it'll show how big the correlation is compared to the size of the signal.

Hey, go for it, Scotty. I've provided the sources for the two datasets. Me, I don't dig in dry holes ...

w.

31. *Willis Eschenbach* says:

[June 25, 2012 at 5:24 pm](#)

David Archibald says:

June 25, 2012 at 3:43 pm

Every generation is rediscovering things that had been done before. Echuca is a good example of the Hale Cycle.

No, it is not a good example of the Hale cycle. It is a lousy example of any kind of cycle. Take another look at the graph I posted [above](#). Several of the Hale cycle maxima are not associated with any temperature maximum. Several of the temperature maxima are not associated with any Hale cycle maximum. When they are near each other, the timing ranges from solar max three years before temperature max to four years after temperature max. That is a very, very poor example.

There are some climate datasets that are claimed to show a good correlation with the Hale cycle, from memory the rainfall in southern Africa, although I haven't checked them. But the correlation in Echuca is non-existent.

w.

32. *Ian Bryce* says:

[June 25, 2012 at 5:25 pm](#)

Willis,

Thanks for your comments. I must say that I enjoy reading your blogs. I am no expert in atmospheric physics, but was only trying to show temperature patterns in an area where we go tomatoes, and what effect temperatures may have had on their growth. By plotting max and min temperatures, I was able to find two different patterns.

I was interested in the following:

1. Why was the max trend not rising?
2. Why was the min trend going down? (Thinking about your work on clouds)
3. There does appear to be a solar pattern, but maybe I was remiss in saying it appears at the

peak of the odd cycles instead of “around” the peak. There always seems to be some sort of lag in these systems.

4. I was trying to point out that when we look at global average temperatures sometimes we miss out on the detail.

5. Finally, I was pointing out that here was a station that was not close to the oceans, shielded by a mountain range, and the temperatures should not be affected by the UHI.

Regards,

Ian

P.S. it is important to look at patterns e.g. Ice cores because from there we can construct formulae that we can check to see if it fits the data as you do. One day someone may come up with a unified theory on climate.

33. *jorgekafkazar* says:

[June 25, 2012 at 5:26 pm](#)

vukcevic says: “*I have also noticed some passing resemblance between the ENSO and changes in the geomagnetic field, possibly just coincidence:”?*

<http://www.vukcevic.talktalk.net/ENSO-dB.htm>

I seem to see a pattern. It...it...looks like...a mango. NO! It's a tiger! Run away. Run away! Oh, wait, it may be just coincidental wiggle matching, as you suspected in the first place. ENSO is most likely independent of the geomagnetic field. I sure can't posit a mechanism, and ENSO is well explained except for what triggers the El Nino phase. Any ideas on the latter, Vuk?

34. *cmarrou* says:

[June 25, 2012 at 6:10 pm](#)

If it isn't possible to make a correlation between sunspots and temperature, is it any more possible to make a correlation between CO2 levels and temperature?

35. *Pamela Gray* says:

[June 25, 2012 at 6:12 pm](#)

David, have you ever watched “The Life Of Bryan”? There is a scene in that movie that reminds me of your comment. Anyone who is married to their hypothesis should watch that movie before they write an article.

36. *David L. Hagen* says:

[June 25, 2012 at 8:46 pm](#)

Willis

On correlation with the 22 year Hale cycle (~ odd Schwab solar cycle) see the analysis by WJR Alexander who found correlations and predictions based on the 22 year Hale solar cycles on precipitation/runoff based on his exhaustive compilation of Southern African records.

[Linkages between solar activity, climate predictability and water resource development*](#)

W J R Alexander, F Bailey, D B Bredenkamp, A van der Merwe and N Willemse

Journal of the South African Institution of Civil Engineering • Volume 49 Number 2 June 2007 pp 32-44

[https://www.up.ac.za/dspace/bitstream/2263/5326/1/Alexander_Linkages\(2007\).pdf](https://www.up.ac.za/dspace/bitstream/2263/5326/1/Alexander_Linkages(2007).pdf)

While there are chaotic fluctuations, Alexander shows statistical evidence for a strong change on the Hale cycle. He put all > 100 year Southern African hydrological data on a CD to give to anyone wanting to evaluate it.

Alexander's findings could in turn infer clouds varying with the Hale Cycle.

Note your finding an opposite trend between temperate vs tropical regions in terms of increased rainfall vs increasing temperature. ie there could be correspondingly opposite trends in temperature vs tropical albedo with the Hale cycle.
Happy hunting.

37. *WLF15Y* says:

[June 25, 2012 at 8:49 pm](#)

Willis...Curious as to a relation in temperature (more so at the poles?) not necessarily to the peak sunspot counts, but how active the sunspots were, ie...CME's and solar winds (CHSS) actually impacting Earth. From what I've seen, there seem to be periods when Cme's impact us more often, even though we're seeing fewer spots, and vice versa.

38. *Leif Svalgaard* says:

[June 25, 2012 at 8:57 pm](#)

Willis Eschenbach says:

June 25, 2012 at 12:49 pm

Sorry ... but that's the real data, and the sunspot/temperature correlation doesn't hold up in the slightest.

This does not deter the true believers the slightest.

39. *gymnosperm* says:

[June 25, 2012 at 8:59 pm](#)

@Willis

Pretty much the relationship between Milankovitch and glacial/interglacial periodicity.

Department of life lessons from actual work: one apprehends physics prying a rock out of a ditch in a way that can never be imparted in a classroom.

40. *Paul Vaughan* says:

[June 25, 2012 at 9:13 pm](#)

@Willis Eschenbach (June 25, 2012 at 12:49 pm)

Dickey, J.O.; & Keppenne, C.L. (1997). Interannual length-of-day variations and the ENSO phenomenon: insights via singular spectral analysis.

<http://trs-new.jpl.nasa.gov/dspace/bitstream/2014/22759/1/97-1286.pdf>

There's a lot in this paper you have not understood.

41. *sophocles* says:

[June 25, 2012 at 9:25 pm](#)

I read here on WUWT recently about a correlation between something (weather? temperature? .clouds? sunshine hours? ...) and the peak of the *previous* cycle. Cycles average 11 years but are not exact. What would it look like if this possible delay were to be factored in?

Just curious.

42. *Paul Vaughan* says:

[June 25, 2012 at 9:33 pm](#)

@David Archibald (June 25, 2012 at 3:43 pm)

Solar magnetic ~22 year is phase-confounded with something else that has not been

reported/discussed (so far as I'm aware).

43. *Paul Vaughan* says:

[June 25, 2012 at 9:37 pm](#)

@Lucy Skywalker (June 25, 2012 at 1:50 pm)

See the Dickey & Keppenne (1997) paper to which I linked.

44. *Paul Vaughan* says:

[June 25, 2012 at 9:39 pm](#)

There are comments in this thread from Willis, Leif, & Pamela that are inconsistent with earth rotation observations.

45. *Leif Svalgaard* says:

[June 25, 2012 at 9:46 pm](#)

Paul Vaughan says:

June 25, 2012 at 9:13 pm

Dickey, J.O.; & Keppenne, C.L. (1997). Interannual length-of-day variations and the ENSO phenomenon: insights via singular spectral analysis. ...

There's a lot in this paper you have not understood.

since the paper has nothing to do with solar variations it is hardly relevant what Willis understands.

46. *Jo Nova* says:

[June 25, 2012 at 9:58 pm](#)

Jo replies: Thanks for the extra detail Willis. I've posted your graph on my site too.

You are not pouring cold water on the parade at all. I posted it as a "curiosity", wondered if it was a one off fluke, didn't draw any major conclusions. What parade?. Clearly it is worthy of discussion. No big conclusions can be drawn from one graph, and we didn't do that. Instead it's done just what I hoped, generated an interesting thread — in no small part thanks to you. :-)

It's clear in your graph that temperatures rise soon after the solar max in 5 out of 6 cases – as if the solar max effect may have a two year delay. The years circa 1901, 1916 and late 2000's break the pattern (and the first two of those occur in a discontinuous early part of the series), but for 80 years from 1920 – 2002 we see a strong cycle that tightly fits with each second solar cycle delayed by 2 years. My original point remains, that this may be random, unless we see it at other sites (thanks to commentators who report they may have seen this elsewhere.)

Obviously other factors are also affecting the climate producing some noise? (Do I need to say this — seems obvious?)

There is plenty of fodder for more investigation. I hope someone can follow it up properly.

Thanks to David Archibald for the Hale cycle information — I'll add those notes to the post too. Ta.

47. *Richard111* says:

[June 25, 2012 at 10:31 pm](#)

All this attention to temperature maximums. The minimums from some desert regions might show something.

48. *Leif Svalgaard* says:

[June 25, 2012 at 10:36 pm](#)

Paul Vaughan says:

June 25, 2012 at 9:39 pm

There are comments in this thread from Willis, Leif, & Pamela that are inconsistent with earth rotation observations.

Not with the observations, but perhaps with your unsubstantiated interpretation. And as long as you remain cryptic and don't spell out clearly what bugs you, you are not bringing anything to the table.

49. [vukcevic](#) says:

[June 25, 2012 at 10:55 pm](#)

jorgekafkazar says: June 25, 2012 at 5:26 pm

.....

Hi Jorge

Your post is reminiscent of the long forgotten comic strips I use to read; on the less serious note though (this is climate science after all), without meaning to step on anyone's toes, the ENSO appears to be the simpler equatorial version of the AMO, kind of the 'AMO-lite'.

50. [Kasuha](#) says:

[June 25, 2012 at 11:23 pm](#)

Willis Eschenbach says:

June 25, 2012 at 3:52 pm

Thanks, Kasuha. You clearly illustrate the problem with the human eye, which is trained and honed to detect patterns ... so much so that it easily and regularly detects patterns that aren't even there.

You completely ignored the first part of my post which was supposed to mean that there is a lot of noise. Now if you want to do real analysis, please remove the noise first. I'm not saying there is correlation, I only say I see that there may be some if you take care of the noise. And your way of analysis is no proof there isn't any because what you are looking at is just the noise and nothing else.

51. [Willis Eschenbach](#) says:

[June 25, 2012 at 11:25 pm](#)

Paul Vaughan says:

June 25, 2012 at 9:13 pm

@Willis Eschenbach (June 25, 2012 at 12:49 pm)

Dickey, J.O.; & Keppenne, C.L. (1997). Interannual length-of-day variations and the ENSO phenomenon: insights via singular spectral analysis.

<http://trs-new.jpl.nasa.gov/dspace/bitstream/2014/22759/1/97-1286.pdf>

There's a lot in this paper you have not understood.

Paul, the mere fact that you have recommended the paper in such an unpleasant and paternalistic manner greatly reduces my chances of reading it. You desperately need to adjust your attitude if you want people to follow your lead, and do try not to be so unbearably supercilious, you don't wear it well. You have no clue what I do and don't understand, either about LOD or El Niño, so don't pretend you do, you just look foolish.

If you have a point to make, Paul, then **make it** ... but absent any clue about what your point is, I can hardly see what length of day and ENSO have to do with the subject under discussion. You sure you read the head post? I'm commenting on **the Hale cycle and its lack of correlation with the Echuca temperature** ... how on earth does LOD or El Nino fit into that?

w.

52. [yukcevic](#) says:

[June 26, 2012 at 12:06 am](#)

David Archibald says:

June 25, 2012 at 3:43 pm

.....

Absolutely, effect of the magnetic cycle is under-rated.

Paul Vaughan says: June 25, 2012 at 9:13 pm

.....

Hi Paul

Dickey and his colleagues did lot more research since 1997, by 2006 he may have found out that his calculations are good but conclusions could be wrong, and by 2009 that a revision may be necessary.

53. [yukcevic](#) says:

[June 26, 2012 at 12:37 am](#)

Great thing about WUWT is that you can post about the solar magnetic cycle, get ridiculed, and then there are host of people who have observed some kind of link. I have a bit more data recently; will be putting it all together. Hopefully with some 'help' from our resident experts it may become apparent if there is anything to it or not.

54. [tonyb](#) says:

[June 26, 2012 at 1:30 am](#)

Vuk

More to the point is an ability to project your graph (posted a few minutes ago) into the future and tell us all what the climate will be doing over the next five years.

Will it continue downwards as in the UK to its current level which is the same as the 1730's?

<http://www.metoffice.gov.uk/hadobs/hadcet/>

Or will the temperature trend up again so I can grow my tomatoes outside-something that has been impossible over the last five years. We need to know
tonyb

55. [techheaded](#) says:

[June 26, 2012 at 1:50 am](#)

It looks to me like the sun spot maxima plotted in Willis' graph partition it into a series of noisy impulse responses (the low frequency response is pretty obvious and definitely not a linear trend). Is there a possible forcing function that looks like an impulse? Spike in incoming solar energy? Abrupt change in spectrum of incoming energy? Magnetic field shift?

56. [DirkH](#) says:

[June 26, 2012 at 2:52 am](#)

Willis, I like your graph better. Remove the 100 year cycle and you see that each odd cycle peak

plucks the temperatures like a string, with an exponential decay afterwards.

57. *Paul Vaughan* says:

[June 26, 2012 at 3:20 am](#)

@Willis Eschenbach (June 25, 2012 at 11:25 pm)

Another fine display of ignorance.

58. *vukcevic* says:

[June 26, 2012 at 4:47 am](#)

On my wiggle and spectrum test I tend to disagree with Mr. Eschenbach's conclusion.

Solar magnetic (Hale) cycle looks like a good winner with score 4:2

<http://www.vukcevic.talktalk.net/Echuca.htm>

If all circumstances were known the score could be even higher.

59. *Tom in Florida* says:

[June 26, 2012 at 5:43 am](#)

Just a reminder to new readers that the "11 year solar cycle" is just an average. These are the actual cycle lengths. There are 9 cycles shorter than 10.5 years, 9 cycles longer than 11.5 years and only 5 cycles within the 10.5 – 11.5 year range.

No L SSN

1 11.0 87

2 9.0 106

3 9.2 154

4 13.6 131

5 12.1 47

6 12.9 46

7 10.6 71

8 9.6 138

9 12.5 125

10 11.2 96

11 11.7 139

12 10.7 64

13 12.1 85

14 11.9 66

15 10.0 104

16 10.2 78

17 10.4 110

18 10.1 152

19 10.6 190

20 11.6 105

21 10.3 155

22 9.8 158

23 12.1 120

60. *Steve Richards* says:

[June 26, 2012 at 6:37 am](#)

After a bit of excel manipulation I can 'see' a correlation!

in http://www.marinesim.eu/echuca_from_1882.jpg the chart shows the temp and sun spot

count plotted from 1882.

I amplified the temperature to force any cyclic variation to be more easily visible by using:
=C2*20-350 ie multiplying the temperature by 20 and subtracting 350. This increased the temperature range and kept it on the graph with the sun spots.

Asking Excel for a trend line (2nd order polynomial) for both temperature and sun spot count gave the two black curves.

They appear to be the inverse of each other separated by approximately 21 years.

I accept my failings and that this is not a stats exercise, but a fishing expedition to see if there was even a hint of a relationship between these two plots.

The excel sheet is here: http://www.marinesim.eu/echuca_with_polynomial.xlsx

61. [Leif Svalgaard](#) says:

[June 26, 2012 at 7:22 am](#)

vukcevic says:

June 26, 2012 at 4:47 am

On my wiggle and spectrum test I tend to disagree with Mr. Eschenbach's conclusion.

Solar magnetic (Hale) cycle looks like a good winner

It is not correct to use a 'signed' sunspot number where every other cycle is plotted upside-down. That sleight of hand produces a 22-year peak in the spectrum even if there is none in the data

62. [Ninderthana](#) says:

[June 26, 2012 at 7:36 am](#)

Before anyone dismisses the Eucha result, please read the following post at my blog:

<http://astroclimateconnection.blogspot.com.au/2012/06/singular-spectral-analysis-of-summer.html>

63. [Ninderthana](#) says:

[June 26, 2012 at 7:55 am](#)

That was Echuca of course (damn typos)!

You might want to look at Thresher (2002) as well:

INTERNATIONAL JOURNAL OF CLIMATOLOGY

Int. J. Climatol. 22: 901–915 (2002)

Royal Meteorological Society.

<http://onlinelibrary.wiley.com/doi/10.1002/joc.768/pdf>

SOLAR CORRELATES OF SOUTHERN HEMISPHERE

MID-LATITUDE CLIMATE VARIABILITY

RONALD E. THRESHER

64. [vukcevic](#) says:

[June 26, 2012 at 8:37 am](#)

Leif Svalgaard says:

It is not correct to use a 'signed' sunspot number where every other cycle is plotted upside-down.

It produces damn good results which line up perfectly with climate and Earth's field spectra, so in such cases it is correct, even if dictum is 'sun doesn't do it'.

<http://www.vukcevic.talktalk.net/NH-SH.htm>

<http://www.vukcevic.talktalk.net/Echuca.htm>

65. [Leif Svalgaard](#) says:

[June 26, 2012 at 8:43 am](#)

vukcevic says:

June 26, 2012 at 8:37 am

It produces damn good results which line up perfectly with climate and Earth's

Any claim of 'perfect' correlation is suspect.

66. [Gail Combs](#) says:

[June 26, 2012 at 9:08 am](#)

techheadted says:

June 26, 2012 at 1:50 am

It looks to me like the sun spot maxima plotted in Willis' graph partition it into a series of noisy impulse responses (the low frequency response is pretty obvious and definitely not a linear trend). Is there a possible forcing function that looks like an impulse? Spike in incoming solar energy? Abrupt change in spectrum of incoming energy? Magnetic field shift?

This might help.

[NASA: Solar Variability](#)

.....**Variations in TSI are due to a balance between decreases caused by sunspots and increases caused by bright areas called faculae which surround sunspots.** Sunspots are dark blotches on the Sun in which magnetic forces are very strong, and these forces block the hot solar plasma, and as a result sunspots are cooler and darker than their surroundings. Faculae, which appear as bright blotches on the surface of the Sun, put out more radiation than normal and increase the solar irradiance. They too are the result of magnetic storms, and their numbers increase and decrease in concert with sunspots. On the whole, the effects of the faculae tend to beat out those of the sunspots. So that, although solar energy reaching the Earth decreases when the portion of the Sun's surface that faces the Earth happens to be rife with spots and faculae, the total energy averaged over a full 30-day solar rotation actually increases. Therefore the TSI is larger during the portion of the 11 year cycle when there are more sunspots, even though the individual spots themselves cause a decrease in TSI when facing Earth....

So we are using sunspots as a proxy for the faculae which are the phenomenon that actually increase the solar irradiance.

The graph included in the article shows the TSI can vary from about 1364.5 to 1367.5 w/m² on a daily basis and about 1 to 2 w/m² average over the year shown. NASA then go on to say ". **However, such short-term variation has little effect on climate.**

If you follow the link below the graph where they say "(Graph by Robert Simmon, based on data from ACRIM III)" you come to this very interesting [graph: Total Solar Irradiance Monitoring Results: 1978 to Present \(2012\)](#) be sure to read the discussion of the error below the graph. The article at that link goes on to say

[ACRIM3: Active Cavity Radiometer Irradiance Monitor Experiments](#)

...The Earth's weather and climate regime is determined by the total solar irradiance (TSI) and its interactions with the Earth's atmosphere, oceans and landmasses. Evidence from both 33 years of direct satellite monitoring and historical proxy data leaves no doubt that solar luminosity in general, and TSI in particular, are intrinsically variable phenomena. Subtle variations of TSI resulting from periodic changes in the Earth's orbit (Milankovich cycles: ~20, 40 and 100 Kyr) cause climate change ranging from major ice ages to the present inter-glacial, clearly demonstrating the dominance of TSI in climate change on long timescales. TSI monitoring, cosmogenic isotope analyses and correlative climate data indicate that variations of the TSI have been a significant climate forcing during the current inter-glacial period (the last ~ 10 Kyr.). **Phenomenological analyses of satellite TSI monitoring results, TSI proxies during the past 400 years and the records of surface temperature show that TSI variation has been the dominant forcing for climate change during the industrial era. The periodic character of the TSI record indicates that solar forcing of climate change will likely be the dominant variable contributor to climate change in the future.....**

Interesting how NASA's take on the same data is different than ACRIM3's take....

67. [vukcevic](#) says:

[June 26, 2012 at 9:10 am](#)

tonyb says: June 26, 2012 at 1:30 am

.....

Hi Tony

To make no mistakes is not in the power of man; but from the errors and mistakes the wise and good learn wisdom for the future. P.

i.e. get a greenhouse and a gas burner just in case.

68. [lgl](#) says:

[June 26, 2012 at 11:45 am](#)

Willis, Leif

You're pathetic

<http://virakkraft.com/Echuca-max-temp-sSSN.png>

69. [vukcevic](#) says:

[June 26, 2012 at 12:01 pm](#)

After further analysis I consider this temperature data set is of special scientific value.

My congratulation to the author Mr. Ian Bryce for the find and the joannenova.com blog for bringing it to our attention.

I shall write short article with my findings and post links at both joannenova.com and WUWT

70. [Willis Eschenbach](#) says:

[June 26, 2012 at 12:23 pm](#)

lgl says:

June 26, 2012 at 11:45 am

Willis, Leif

You're pathetic

<http://virakkraft.com/Echuca-max-temp-sSSN.png>

So your claim, according to your graph, is that sometimes the solar cycle leads the Echuca temperature, meaning that the sun drives the Echuca temperature.

And sometimes the Echuca temperature leads the solar cycle, meaning that the Echuca temperature drives the solar cycle.

And that sometimes, like say in 2000, neither one has anything to do with the other.

Impressive ...

w.

PS—Perhaps you could post your data, so that folks could see just what it is that you have done. To take just one example, is the “11 year average” a standard average, a Gaussian average, centered, trailing, what?

PPS—What is “pathetic” is posting a graph without any clue as to how it was calculated or the source of the data.

71. *Russ R.* says:

[June 26, 2012 at 12:27 pm](#)

The daily peak temperature does not occur at noon, it occurs later in the day, sometimes many hours after the peak of the sun's most direct rays. Does that mean there is no correlation between daytime temps and the daily solar cycle?

You have one “el-nino” peak, at around 1915, that creates a peak before the solar peak. Other than that is is very much like “daytime temp peaks” that tend to occur in the afternoon.

72. *Willis Eschenbach* says:

[June 26, 2012 at 1:12 pm](#)

Russ R. says:

June 26, 2012 at 12:27 pm (Edit)

The daily peak temperature does not occur at noon, it occurs later in the day, sometimes many hours after the peak of the sun's most direct rays. Does that mean there is no correlation between daytime temps and the daily solar cycle?

You have one “el-nino” peak, at around 1915, that creates a peak before the solar peak. Other than that is is very much like “daytime temp peaks” that tend to occur in the afternoon.

Russ, if the daily peak in temperatures occurred **before** the peak in daily solar insolation, as it does for a couple of the solar cycles in Echuca, it would definitely mean that there was no correlation between daytime temps and the solar cycle. On a daily basis, of course, that never happens ... but in Echuca it does.

In addition, the peak daily temperature always occurs about the same time of day, that is to say, the lag of temperature with respect to solar is stable. But when the solar cycle leads the Echuca temps, the lead is all over the map, from one to four years. Not encouraging.

w.

73. *Willis Eschenbach* says:

[June 26, 2012 at 1:41 pm](#)

To further illustrate why I think we're looking at a coincidence, I went to find the nearest temperature station to Echuca with records going back to the 1800s. It turns out to be a town called Delinquin, which is 70 km (40 miles) from Echuca. Here's that record:



[DATA SOURCE](#)

Solar data as above

As you can see, there's no correlation at all with the solar cycle. You can repeat this process as often as you like. Sure, every once in a while you'll find what looks like a correlation ... but as I pointed out above, if you look at a dozen sites, your odds of finding a statistically "significant" correlation at the 95% level are about 50/50 by random chance alone ... color me unimpressed.

w.

74. *Russ R.* says:

[June 26, 2012 at 2:58 pm](#)

I have seen the high for the day, occur at midnight, or any other hour of the day. The weather patterns on any individual day, can make it seem like the sun plays a minor role, if fronts and cloud cover are mixed in with the "good data". Just like el-nino, and other "circulation patterns", can obscure the pattern we are interested in, when the observation period is too short.

re: Delinquin – shows the same problem with rampant Co2 generation prior to 1900. The roof's must have been tearing up the outback, in monster SUVs. ;-)

I would think there is a measurement problem prior to 1910, or some other reason for the high temps. After that, every 20 years or so another peak, at or just past the odd solar maximum. Still it is too short of observation period to draw firm conclusions. It is much like trying to forecast today's weather based on the weather for the last week, and the average for this day of the year. It is better than nothing, but not by much.

75. *techheadted* says:

[June 26, 2012 at 5:30 pm](#)

Gail Combs says:

June 26, 2012 at 9:08 am

Thanks Gail, Very helpful. Looks like there are a couple places to look for an "impulse" signal, changes in irradiance due to formation of sunspots and faculae (changes in magnitude and/or spectrum), changes in charged particle density in the atmosphere (due to changes in solar wind and/or changes in earth's magnetic field density).

76. *Leif Svalgaard* says:

[June 26, 2012 at 5:56 pm](#)

techheadted says:

June 26, 2012 at 5:30 pm

Looks like there are a couple places to look for an "impulse" signal, changes in irradiance due to formation of sunspots and faculae (changes in magnitude and/or spectrum), changes in charged particle density in the atmosphere (due to changes in solar wind and/or changes in earth's magnetic field density).

None of these show a clear 22-year cycle.

77. *Ninderthana* says:

[June 26, 2012 at 5:58 pm](#)

Willis,

You are using one weather station to make your point that Ian Bryce is relying on one weather station to make his point. Wow!

Why not look at another record for Adelaide:

<http://astroclimateconnection.blogspot.com.au/2012/06/singular-spectral-analysis-of-summer.html>

<ftp://ftp.bom.gov.au/anon/home/ncc/www/change/HQdailyT>

78. [Leif Svalgaard](#) says:

[June 26, 2012 at 6:27 pm](#)

Ninderthana says:

June 26, 2012 at 5:58 pm

Willis, You are using one weather station to make your point that Ian Bryce is relying on one weather station to make his point. Wow!

It should hardly be necessary to even discuss this, as none of the solar activity indices have a clear 22-year cycle, so any rough 20-year correlation clearly has other causes.

79. [uknowispeaksense](#) says:

[June 26, 2012 at 6:48 pm](#)

It seems the cherry's are ripe this time of year yet again. What is interesting to note is that the solar cycles haven't actually gotten any stronger yet when you look at the long term 30 year average maximum temperature data for Echuca you find that the average for the last 30 years is higher for every month, except November, than the total average for the length of time the station has been there. This is consistent with warming across the rest of the country.

<http://reg.bom.gov.au/jsp/ncc/cdio/cvg/av>

So if your assertion is that sunspots are responsible for long term warming then it is incorrect because that would require solar cycles to be increasingly stronger, which they aren't. If your assertion is that there has been no warming, well there's no hope for you.

80. [techheadted](#) says:

[June 26, 2012 at 7:42 pm](#)

Leif Svalgaard says:

June 26, 2012 at 5:56 pm

Thanks Leif. I'm actually not looking for a "cycle" but rather to see if there is a consistent, short lived, observable, set of stimulus (the impulse) to which the system then responds. What intrigued me about Willis' original Echuca plot and the latest for Delinquin is the the sunspot maxima seem to partition the plots in such a way that from 1920 through 2000 each cycle represents a complete system response to some unique stimulus event at the beginning of the cycle. The question is what was the stimulus? Can it be identified? Can the system response be derived?

The result would be an empirically derived "pathway" for a highly complex system. This technique of analysis/modeling is similar to the way folks studying proteomics use experimentally measured metabolic pathways to partially understand complex cellular behavior.

Unlike the wet lab where biologists can carefully set up experiments and measure results, we don't have that luxury with our climate system. This post stimulated the idea that maybe there

were “natural” experiments occurring that could be identified and analyzed to provide empirically based climate system “pathways” that could be used to validate the veracity of current climate models.

81. [Leif Svalgaard](#) says:

[June 26, 2012 at 7:58 pm](#)

techheadted says:

June 26, 2012 at 7:42 pm

I’m actually not looking for a “cycle” but rather to see if there is a consistent, short lived, observable, set of stimulus (the impulse) to which the system then responds.

The only short-lived ‘impulse’ that I know about is the polar field reversal near solar maximum, but it is not reasonable to think that that has any influence of any kind. This will, of course, not deter people from believing otherwise with their usual almost religious fervor.

82. [Leif Svalgaard](#) says:

[June 26, 2012 at 8:18 pm](#)

Leif Svalgaard says:

June 26, 2012 at 7:58 pm

techheadted says:

June 26, 2012 at 7:42 pm

I’m actually not looking for a “cycle” but rather to see if there is a consistent, short lived, observable, set of stimulus (the impulse) to which the system then responds.

The only short-lived ‘impulse’ that I know about is the polar field reversal near solar maximum, and that happens every 11 years, not every 20.

83. [Philip Bradley](#) says:

[June 26, 2012 at 9:17 pm](#)

In addition, the peak daily temperature always occurs about the same time of day, that is to say, the lag of temperature with respect to solar is stable.

There are 2 main factors affecting the time of the daily maximum temperature.

One is season, which determines the average angle of incidence of the suns rays, and hence the amount of insolation. The lower the angle of incidence the earlier in the day the maximum temperature occurs.

The other is cloud cover. Generally, clouds decrease solar insolation more than they decrease OLWR, and hence result in an earlier maximum temperature.

The peak in the Deliniquin graph just before 1900, shows the effect of the Federation Drought in Victoria. Long periods of hot dry weather. Melbourne set a record daily average temperature in 1898 that still stands.

84. [techheadted](#) says:

[June 26, 2012 at 9:46 pm](#)

Leif Svalgaard says:

June 26, 2012 at 8:18 pm

The only short-lived ‘impulse’ that I know about is the polar field reversal...

I see. I think the key is to look for a “set” of stimulus that trigger a new “steady state” in the system (assuming that the Climate system has many equivalent energy states that can be reached by a small, relatively speaking, perturbation).

Time to crunch some numbers!

85. [vukcevic](#) says:

[June 27, 2012 at 12:24 am](#)

(from JoNova webpage)

Joanne Nova June 27, 2012 at 2:31 am •

Vukcevic, can I post that graph as well? It's worth sharing.

Yes, please do, I have tried to post reply at your blog, but for some reason isn't getting through.

This corner of Australia from Adelaide to Melbourne has some interesting features. The 100 year record 1900-2000 is long enough to observe natural changes, while this temperature record is important, if correct (it is not the absolute values but decadal rate of change) which has highlighted and also confirms that natural events (of temperature is only a hazy proxy) change direction only for exceptionally good reasons.

86. [vukcevic](#) says:

[June 27, 2012 at 12:58 am](#)

correction:

also confirms that natural events (temperature is only a hazy proxy) change direction only for exceptionally good reasons.

87. [Paul Vaughan](#) says:

[June 27, 2012 at 8:31 pm](#)

At cross-ENSO Schwabe-timescale, the solar cycle spatiotemporally modulates zonal westerly winds — i.e. it cyclically (<http://i46.tinypic.com/2yw7711.png>) drives variations in this pattern:

200hPa Wind:

<http://i52.tinypic.com/zoamog.png>

200hPa Wind — Polar View:

<http://i52.tinypic.com/cuqyt.png>

Zonal Wind Vertical Profile:

<http://i51.tinypic.com/34xouhx.png>

It's dead simple.

Solar-Terrestrial-Climate Weave

<http://i49.tinypic.com/2jg5tvr.png>

CAUTION: Obscurantism on this subject by climate discussion “leaders” has reached *absolutely intolerable* levels.

88. [Kasuha](#) says:

[June 28, 2012 at 6:19 am](#)

Processing the data Mr. Eschenbach has linked to gives me a completely different result than ‘dry as a bone’. For those who decide to look at it, the blue line is smoothed maximum temperature record and red line is smoothed sun sunspot number with each even cycle flipped to negative. The record starts at 1882 and ends 2010. And I hope you’ll excuse me for my lack of Excel graphing skills.

<http://imageshack.us/photo/my-images/401/tempsun.png/>

Of course, using Mr. Eschenbach's approach all of that is 'lost in spaghetti'.

89. *Paul Vaughan* says:

[June 28, 2012 at 7:15 am](#)

@Kasuha (June 28, 2012 at 6:19 am)

<http://i41.tinypic.com/29zxus7.jpg> — from:

Tisdale, Bob. (2009). A closer look at the ERSST.v3b Southern Ocean data.

<http://bobtisdale.wordpress.com/2009/04/17/a-closer-look-at-the-ersst-v3b-southern-ocean-data/>

90. *Paul Vaughan* says:

[June 28, 2012 at 7:50 am](#)

@Scottish Sceptic (June 25, 2012 at 4:32 pm)

Schwabe-nonstationarity implies cross-correlation can't yield an optimal estimate in this context, so I recommend careful diagnostics and cross-comparisons with other approaches that deal more gracefully with nonstationarity.

91. *Willis Eschenbach* says:

[June 28, 2012 at 10:57 am](#)

Kasuha says:

June 28, 2012 at 6:19 am

Processing the data Mr. Eschenbach has linked to gives me a completely different result than 'dry as a bone'. For those who decide to look at it, the blue line is smoothed maximum temperature record and red line is smoothed sun sunspot number with each even cycle flipped to negative. The record starts at 1882 and ends 2010. And I hope you'll excuse me for my lack of Excel graphing skills.

<http://imageshack.us/photo/my-images/401/tempsun.png/>

Of course, using Mr. Eschenbach's approach all of that is 'lost in spaghetti'.

Thanks, Kasuha. As you can see in both your graph and mine, sometimes the solar leads the temperature, with a lag of one to four years. That alone would make a theory that the sunspot cycle is a cause of the temperature changes in Echuca quite suspect—why would the lag vary so much? And why would it be so long?

But the real problem is that sometimes the temperature leads the sunspot cycle, again by up to four years. How do you explain that? Does a rising temperature in Echuca cause the sun to have more spots?

Next, you have ignored a huge issue. You need to be very careful when you smooth data, because it leads to spurious correlations. See my post [here](#) for more insight into the problem, which it appears you don't even know exists.

Finally, when data is smoothed, the autocorrelation of the resulting curves greatly reduces the significance of the results. You can use the method of Quenouille to calculate an "effective N" to remove the effect of autocorrelation ...



Let us know how significant the correlation of the two lines is after applying the method. Because when I do what you did, and I calculate the significance, I find a p-value of around 0.10 to 0.14 depending on the amount of smoothing, meaning that the relationship between the two (temperature and sunspots) is NOT STATISTICALLY SIGNIFICANT.

I say again, you simply can't just throw up a couple of lines, eyeball them from across the room, and declare that their relationship is significant. That's why statistics was invented, and you neglect it at your peril.

For all of these reasons, along with the fact that (as I showed above) the nearest long-term temperature record to Echuca shows no signs of the Hale sunspot cycle, I say that you are looking at spurious correlation.

w.

92. *Ninderthana* says:

[June 28, 2012 at 5:43 pm](#)

Willis,

You have completely ignored my Singular Spectral Analysis result for the median maximum temperature for Adelaide at:

<http://astroclimateconnection.blogspot.com.au/2012/06/singular-spectral-analysis-of-summer.html>

You can recreate these results for yourself by downloading the data for Adelaide at:

<ftp://ftp.bom.gov.au/anon/home/ncc/www/change/HQdailyT>

and do the SSA.required.

You have also not addressed the paper by Thresher (2002) which completely disproves your contention that the Echuca result is somehow spurious.or unique.

It's amazing what you can not see when your wearing blinders! Just because you don't want a result, it doesn't mean that it will go away.

93. *Willis Eschenbach* says:

[June 28, 2012 at 7:17 pm](#)

Ninderthana says:

June 28, 2012 at 5:43 pm

Willis,

You have completely ignored my Singular Spectral Analysis result for the median maximum temperature for Adelaide at:

<http://astroclimateconnection.blogspot.com.au/2012/06/singular-spectral-analysis-of-summer.html>

You are not that important in my universe, Ninderthana. I didn't "completely ignore" your graph. In fact I've never seen it, and have no clue about it. Perhaps you mentioned it on one of my threads. If so, I never got to it. In your imagination I'm shying away from or ignoring the truth you are bravely and loudly declaiming.

But in reality, you and your little graphs and citations haven't been important enough to even

appear on my radar.

And now, having seen your graph, I find it singularly uninteresting and unimpressive. Does the moon have an effect on the weather? Sure, every sailor knows that. Does that have anything to do with the Hale cycle? Well, by gosh, the new moon occurring at the moon's perigee repeats every 20.3 years, and that's kinda sorta near the length of the Hale cycle, that's amazing, so I guess that must prove that the Hale cycle rules the weather ...

Are you serious?

You have also not addressed the paper by Thresher (2002) which completely disproves your contention that the Echuca result is somehow spurious or unique.

Again, this is the first I've heard of the Thresher paper, so of course I have not "addressed" it, how could I? And I'm sure that there are volumes of other stuff by both scientists and cyclomaniacs out there that I haven't addressed. If that upsets you, well, sorry, that's your business.

It's amazing what you can not see when you're wearing blinders! Just because you don't want a result, it doesn't mean that it will go away.

Oh, piss off with your nasty insinuations that because I haven't read what your Majesty thinks is important that I'm wearing blinders. You are a most unpleasant person, Neanderthal, you should truly step back, take a deep breath, and start over. You're not getting any points with me by your ugly lack of common politeness.

And by the way, it's "when you're wearing blinders", not "when your wearing blinders".

w.

PS—OK, now I've looked at Thresher, and I'm still unimpressed. He even says:

For the period preceding this decline (through to 1987), the correlation between the sunspot cycle and the ZWW is **suggestive, but not significant** ($r = 0.46$, $n^* = 15$, $p < 0.1$). Visual inspection of the data suggests two factors contribute to the non-correlation: the **period length** for variability of the ZWW is **slightly longer** than that of the sunspot cycle, and **differences between peak heights in the sunspot time series are not matched by differences in peak heights in the ZWW**.

Yeah, both the periods and the amplitudes are different, that sure establishes his claims beyond doubt, that's the kind of solid results that count in science.

Finally, does the Hale sunspot cycle affect the weather? I'd say there are datasets for which that is true, although the signal is weak, it seems like a second order effect ... but I'd also say that Echuca is not one of those datasets, unless you think **that the effect can somehow precede the cause**, and that **the lag from cause to effect can vary by up to \pm four years** between cause and effect.

And if you think that, then I can't help you. If you think that the cause can either precede or follow the effect by a lag that can vary anywhere between one and four years, then you need to think hard about what you are calling causation, because you are not using the common scientific meaning.

94. Paul Vaughan says:

[June 28, 2012 at 11:21 pm](#)

Willis, your “understanding” of statistics in the context of climate is hopeless.

95. *Ninderthana* says:

[June 29, 2012 at 3:08 am](#)

Thank you Willis for looking at my graph and for looking at Thresher (2002). I apologize for the last statement that I made in my previous post. It was rude and it implied that you were not open to new ideas on this topic. Clearly this is not true. I hope you will accept my apology.

You are correct in pointing out that Thresher did his best to point out the uncertainties of his results.

You are also correct in pointing out that there is ambiguity between the Lunar 20.3 year Perigean/Perihelion tidal cycle and the 22 +/- 1 year Hale cycle.

The problem lies in the fact that the climate system is complex and surface temperatures are a poor diagnostic of the system. Many factors contribute to long term temperature records including the Sun and the Moon [amongst others].

The truth is that I was searching for a Lunar tidal signal in the long term median maximum summer (DJF) temperature record for Adelaide. I was surprised that I found a strong ~ 22 year signal.

What really convinced me that a 22 year signal was present was the fact that I found sub-harmonics [with confidence > 99.0 %] at 22.3 years/3, 22.3 years/6, 22.3 years/9, and 22.3 years/10 [and other sub-harmonics with confidence > 95.0 %].

This result led me to Thresher (2002) paper which I believe does have something to say about the presence of a bi-decadal cycle in the Southern Hemisphere mid-latitude wind speeds.

96. *oldfossil* says:

[June 29, 2012 at 4:28 am](#)

Willis Eschenbach you are a very nasty man. For years John Gribbin has been my favourite pop science writer and his “The Strangest Star” a book I loved to read again and again. Now you’re telling me it’s all BS and Gribbin was R.O.N.G. spells Wrong. It’s a harsh transition from delusion to disillusion. Sob I’m heartbroken.

97. *Paul Vaughan* says:

[June 29, 2012 at 7:54 am](#)

@Ninderthana

The next thing to do is window your analyses.

Embrace the power of Central Limit Theorem.

Where a hair-splitter sees a raised floor of noise, CLT sees pure signal.

Regards.

98. *Paul Vaughan* says:

[June 29, 2012 at 8:44 am](#)

Ninderthana (June 29, 2012 at 3:08 am) suggested:

“The problem lies in the fact that the climate system is complex and surface temperatures are a poor diagnostic of the system.”

No “problem” in *well-constrained aggregate*.

Sun talks to Earth through fan:

<http://i48.tinypic.com/2yydr92.png>

Integral's coherent with climate:

<http://i45.tinypic.com/2nbc3dw.png>

Consistent with Tsonis framework.

99. *Paul Vaughan* says:

[June 29, 2012 at 10:13 am](#)

vukcevic (June 26, 2012 at 12:06 am) wrote:

"Hi Paul

Dickey and his colleagues did lot more research since 1997, by 2006 he may have found out that his calculations are good but conclusions could be wrong, and by 2009 that a revision may be necessary."

She (not he).

I have already alerted the WUWT community on at least 2 occasions that Dickey's recent suggestions (2011) are inconsistent with observation.

I have written to Dr. Dickey requesting information that is not publicly available. She has not replied.

I have also written to Dr. Jackson at ETH Zurich requesting information that is not publicly available. He has not replied.

If Dr. Jackson can find time to supply the info I've requested, I'll be empowered to show the community how you're getting some of your graphs. I've already figured out what you're doing.

I sincerely hope Dr. Dickey will find time &/or permission to respond to my request. I deeply appreciate her research and I respect that she is not free to reveal all that she knows. Vukcevic, you may find the following of interest:

Dickey, J.O.; Marcus, S.L.; & de Viron, O. (2003). Coherent interannual & decadal variations in the atmosphere-ocean system. *Geophysical Research Letters* 30(11), 1573.

<http://trs-new.jpl.nasa.gov/dspace/bitstream/2014/11255/1/02-3203.pdf>

As you read her articles, be aware that the pictures say things that have NOT been summarized in words. I wish you enjoyable, careful "reading".

Best Regards.

100. *Willis Eschenbach* says:

[June 29, 2012 at 12:57 pm](#)

Paul Vaughan says:

June 28, 2012 at 11:21 pm

Willis, your "understanding" of statistics in the context of climate is hopeless.

Here's a surprise, its another content-free, idea-free, and citation-free attack from Paul ... truly, Paul, such meaningless outbursts do your reputation no good. You may be 100% right, but saying what you said just makes folks point and laugh.

If you have a scientific objection to what I said about statistics, you really should spell it out and back it up, because as it is, you just look like a sore loser ...

w.

101. *Willis Eschenbach* says:
[June 29, 2012 at 1:08 pm](#)

Ninderthana says:
June 29, 2012 at 3:08 am

Thank you Willis for looking at my graph and for looking at Thresher (2002). I apologize for the last statement that I made in my previous post. It was rude and it implied that you were not open to new ideas on this topic. Clearly this is not true. I hope you will accept my apology.

You are a gentleman, sir, and your apology is most gracious.

You are correct in pointing out that Thresher did his best to point out the uncertainties of his results.

You are also correct in pointing out that there is ambiguity between the Lunar 20.3 year Perigean/Perihelion tidal cycle and the 22 +/- 1 year Hale cycle.

The problem lies in the fact that the climate system is complex and surface temperatures are a poor diagnostic of the system. Many factors contribute to long term temperature records including the Sun and the Moon [amongst others].

Indeed. Look, I'm not opposed to the idea that the cycles of the sun, moon, and planets affect the climate. I'm just allergic to overblown claims of causation based on cycle-mining. Yes, the lunar Perigean/Perihelion cycle is close to the Hale cycle, but in my world that means nothing.

So I'd like nothing more than to find incontrovertible evidence that say the orbits of Jupiter and Saturn affect the rain in Spain ... it's just that such evidence seems to be sketchy, incomplete, and subject to fading into and out of existence as the time passes. For a while a clear signal is there, as in the Echuca temperatures ... and then it goes off the rails and the solar changes start trailing the temperature changes instead of leading them.

That's the problem I have, not with the underlying idea that the heavenly bodies might affect the climate, but that the data for it doing so is sooooo poor and occasional ... I mean, if it were a strong effect, we'd see it everywhere, but we don't. That means either it's a very weak effect or that there is no effect at all. I suspect the former, but we just don't have the data to decide that.

So my argument against Echuca above is not an argument that the Hale cycle is not visible in some weather somewhere sometime. Instead, it is an argument that the Echuca temperature data (smoothed or not) **do not show a statistically significant correlation** with the Hale cycle, and in fact sometimes precede and sometimes trail it, which makes it a very poor example for making the argument that the Hale cycle affects the weather.

My best to you,

w.

102. *Paul Vaughan* says:
[June 29, 2012 at 4:00 pm](#)

@Willis E

How we look has zero impact on natural climate variations, so it's irrelevant. I don't share your devotion to political cosmetics.

Meaningless p-values &/or lack of local stat significance is due to fundamentally ignorant &/or deceptive hypothesis tests based on unphysical assumptions.

Move on to well-constrained variables & summaries. I've pointed the way.

103. *Paul Vaughan* says:

[June 29, 2012 at 4:49 pm](#)

@Scottish Sceptic (June 25, 2012 at 4:32 pm)

Addendum to Paul Vaughan (June 28, 2012 at 7:50 am)

You *could* use tuned *local* (windowed) cross-correlation.

For example, Ninderthana could use such an approach to investigate the *nonstationarity* of the anharmonicity to which he has directed our attention.

False assumption of stationarity smears centrally limited modulation out into a low temporally-global raised "noise" floor, making it difficult (impossible for a hair-splitting synthesizer) to detect acoustic resonance against the background of higher-amplitude ENSO.

The paradigmatic key is to recognize that we are dealing not with a single stationary oscillator, but rather an infinite population of tightly-coupled quasi-stationary oscillators.

A variety of approaches are discussed here:

Ghil+ (2002). Advanced spectral methods for climatic time series. Reviews of Geophysics 40, 1. http://www.atmos.umd.edu/~ide/data/research/publication/ssa_revgeophys02.pdf

Caution: The authors fundamentally underestimate the flexibility of wavelet methods.

104. *Paul Vaughan* says:

[June 30, 2012 at 11:27 am](#)

Apologies to all.

Above I posted a graph with a cryptic legend. I now offer clarification...

There are easy ways to verify some of Piers Corbyn's claims.

Solar Coronal Holes & Earth Rotation:

<http://i46.tinypic.com/2yw7711.png>

CH = Coronal Holes

nCRm = neutron Count Rate (moscow)

M.5 & P.5 = Schwabe-extent (11 year) Morlet & Paul wavelet power of semi-annual Length of Day (LOD)

These observations are well-constrained by:

A. Law of Conservation of Angular Momentum (LCAM).

B. Central Limit Theorem (CLT).

B empowers us to "see through & beyond" interannual (ENSO-timescale) variations with grace & ease. The paradigmatic key is to recognize that we are dealing not with a single stationary oscillator, but rather an infinite population of tightly-coupled quasi-stationary oscillators. (By the way, I've now determined from the literature trail that this result was actually known to some as far back as at least 1980. This raises a lot of questions...)

Best Regards to All.

105. Willis Eschenbach says:
[June 30, 2012 at 10:57 pm](#)

Paul Vaughan says:
June 29, 2012 at 4:00 pm

@Willis E

How we look has zero impact on natural climate variations, so it's irrelevant. I don't share your devotion to political cosmetics.

Not a clue what you are referring to here, Paul, it's way too cryptic.

Meaningless p-values &/or lack of local stat significance is due to fundamentally ignorant &/or deceptive hypothesis tests based on unphysical assumptions.

Move on to well-constrained variables & summaries. I've pointed the way.

Thanks, Paul. Unfortunately, you haven't pointed the way to anything. Instead you've come in and made a host of claims that I don't understand things, but you haven't said what it is I don't understand. More importantly, you have not provided any backup, support, or citations for your claims. All you've done is engage in paternalistic, unpleasant personal attacks that do not point the way to anything except your overweening arrogance.

Paul, you may indeed be as smart as you clearly think you are. You may know much, much, much more than anyone here, as you obviously believe.

But as long as you continue to limit yourself to your specious ad hominem attacks, how will we ever find out if you are that smart? How about you come up with some specific objections to my SCIENCE, rather than attacking what you see as my abysmal ignorance? You see, it doesn't matter if I'm a blithering idiot, Paul, the only real question is whether my scientific claims are true or false.

So if you disagree with something I said, here's how to get some traction.

1. QUOTE WHAT IT IS THAT I SAID THAT YOU ARE OBJECTING TO. Saying I'm "ignorant" is meaningless, Paul, it is nothing but an ad hominem attack that merely exposes your own ignorance of how to discuss science. It says nothing about the location or nature of any mistakes I might have made. It is critical that you quote the exact words that you disagree with, so we both know what it is you are disputing.

2. Once you have quoted what you are objecting to, then point out exactly where and why it is wrong. Don't bother with attacking my morals by doing something like claiming that I'm being "deceptive" as you do above. That doesn't count in science. Either you can **point to my scientific claims that you say are wrong**, and **explain why they are wrong**, or you can't. So far, you have provided no evidence that you can do either one.

3. Once you have pointed to *where* you think I've made an error, and pointed out *why* you think it's wrong, you need to provide citations, logical arguments, references, data, computer programs, and anything else you can think of that will support your claims. Because I can assure you that your unsupported word is meaningless in this forum. You need to do things like line up the big guns on your side, provide irrefutable evidence, come up with unassailable logic, and/or link to clear expositions of your thoughts.

I hope you do that. For a man who claims to be so knowledgeable about science, you sure don't seem to know how it works and how to win the game ... because I can assure you, calling your opponent "ignorant" won't win you anything in science, quite the opposite, it just loses you points and leads people to cancel your vote before you've even begun.

All the best,

w.

w.

106. *Paul Vaughan* says:

[July 1, 2012 at 1:30 am](#)

There's no time for all that Willis.

Exploration demands the lion's share of attention at this stage.

For example, see the top panel ("*Synchronization (increasing down)*") of p.11 here:

<http://curry.eas.gatech.edu/santafe/papers/Climateshifts.pdf>

Note the perfect match with lgl's Hale graph:

<http://virakkraft.com/Echuca-max-temp-sSSN.png>

And do you realize ENSO LF power has a 22 year cycle?

(Tune to 4.5 year grain & 22 year extent.)

Cheers.

107.

Comments are closed.

enddoc

