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Chinese 2,485 year tree ring study shows natural cycles control climate, temps may cool til 2068

A blockbuster Chinese study of Tibetan tree rings by Liu et al 2011 shows, with detail, that the modern era is a dog-standard normal climate when compared to the last 2,500 years. The temperature, the rate of change — it's all been seen before. Nothing about the current period is "abnormal", indeed the current warming period in Tibet can be produced through calculation of cycles. Liu et al do a Fourier analysis on the underlying cycles and do brave predictions as well.

In Tibet, it was about the same temperature on at least four occasions — back in late Roman times (those chariots!), then again in the dark ages (blame the collapse of industry), then in the middle ages (the Vikings?), then in modern times (blame the rise of industry).

Clearly, these climate cycles have nothing to with human civilization. Their team finds natural cycles of many different lengths are at work: 2-3 years, 100 years, 199 years, 800 years, and 1,324 years. The cold periods are associated with sunspot cycles. What we are not used to seeing are brave scientists willing to publish exact predictions of future temperatures for 100 years that include rises *and falls*. Apparently, it will cool til 2068, then warm again, though not to the same warmth as 2006 levels.

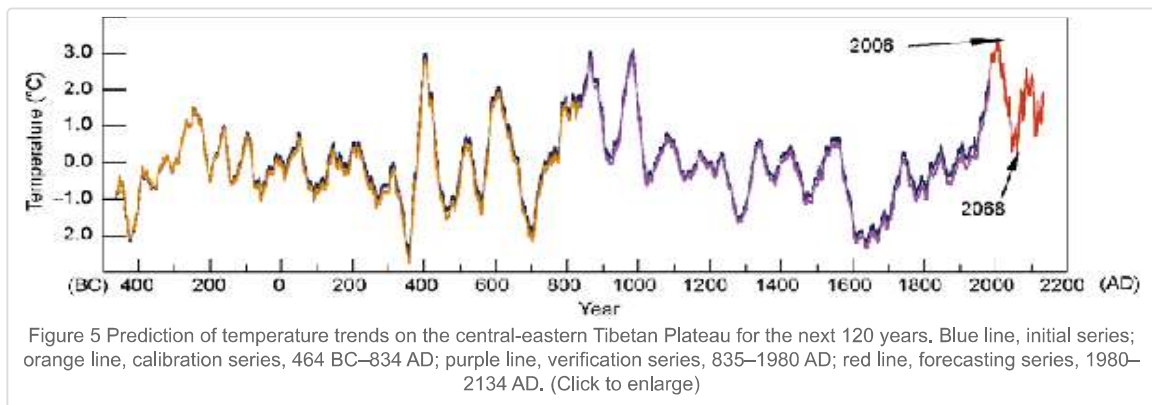
On "tree-rings"

Now some will argue that skeptics scoff at tree rings, and we do — sometimes — especially ones based on the wrong kind of tree (like the bristlecone) or ones based on small samples (like Yamal), ones with aberrant statistical tricks that produce the same curve regardless of the data (Mann's hockey-stick), and especially ones that truncate data because it doesn't agree with thermometers placed near air-conditioner outlets and in carparks (Mann again). Only time will tell if this analysis has nailed it, but, yes, it is worthy of our attention.

Some will also, rightly, point out this is just Tibet, not a global average. True. But the results agree reasonably well with [hundreds of other studies](#) from all around the world (from [Medieval times](#), [Roman times](#), the [Greenland cores](#)). Why can't we do solid tree-ring analysis like this from many locations?

Jo

Amplitudes, rates, periodicities and causes of temperature variations in the past 2,485 years and future trends over the central-eastern Tibetan Plateau [[Chinese Sci Bull.](#)]

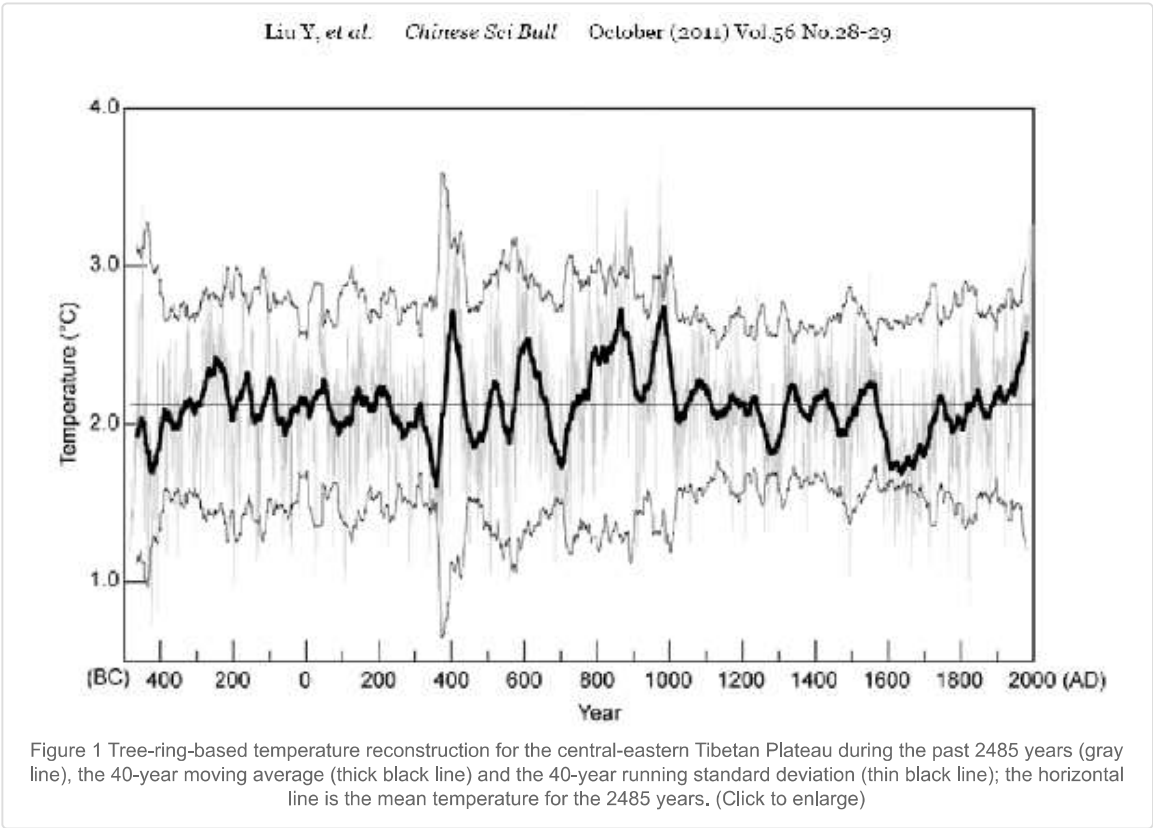


There are beautiful graphs. Have a look at the power spectrum analysis and the cycles below...

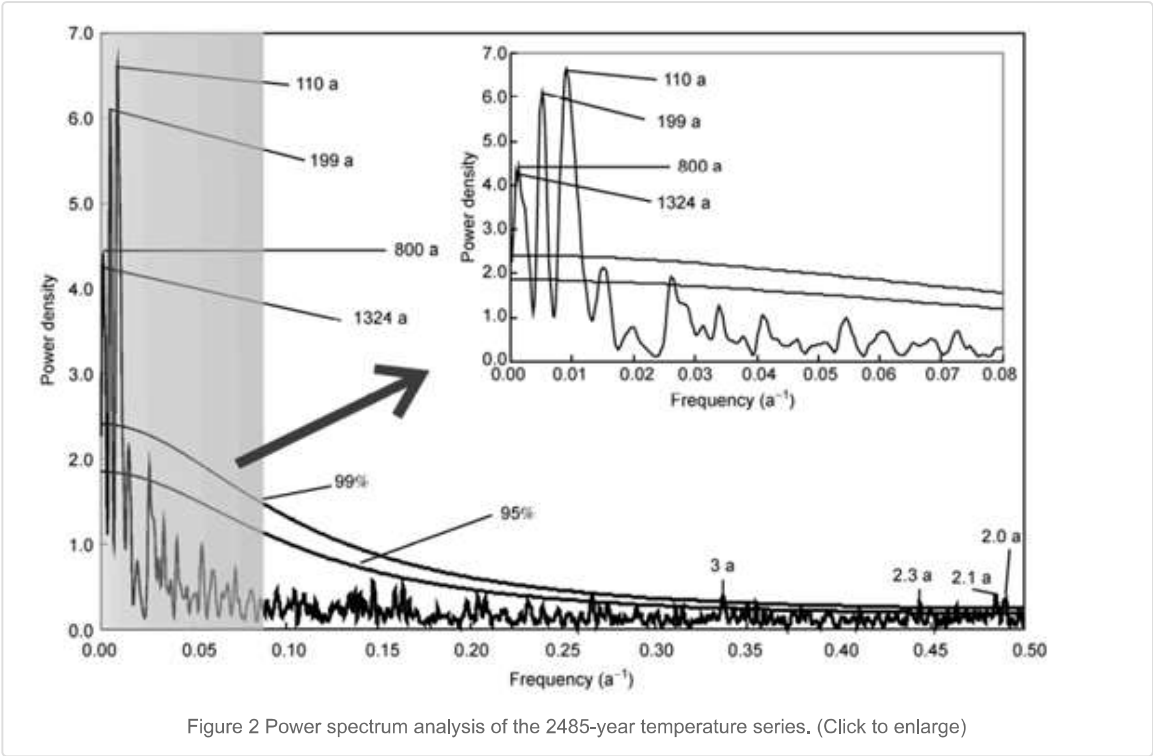
ABSTRACT:

Amplitudes, rates, periodicities, causes and future trends of temperature variations based on tree rings for the past 2485 years on the central-eastern Tibetan Plateau were analyzed. The results showed that extreme climatic events on the Plateau, such as the Medieval Warm Period, Little Ice Age and 20th Century Warming appeared synchronously with those in other places worldwide. The largest amplitude and rate of temperature change occurred during the Eastern Jin Event (343–425 AD), and not in the late 20th century. There were significant cycles of 1324 a, 800 a, 199 a, 110 a and 2–3 a in the 2485-year temperature series. The 1324 a, 800 a, 199 a and 110 a cycles are associated with solar activity, which greatly affects the Earth surface temperature. The long-term trends (>1000 a) of temperature were controlled by the millennium-scale cycle, and amplitudes were dominated by multi-century cycles. Moreover, cold intervals corresponded to sunspot minimums. The prediction indicated that the temperature will decrease in the future until to 2068 AD and then increase again.

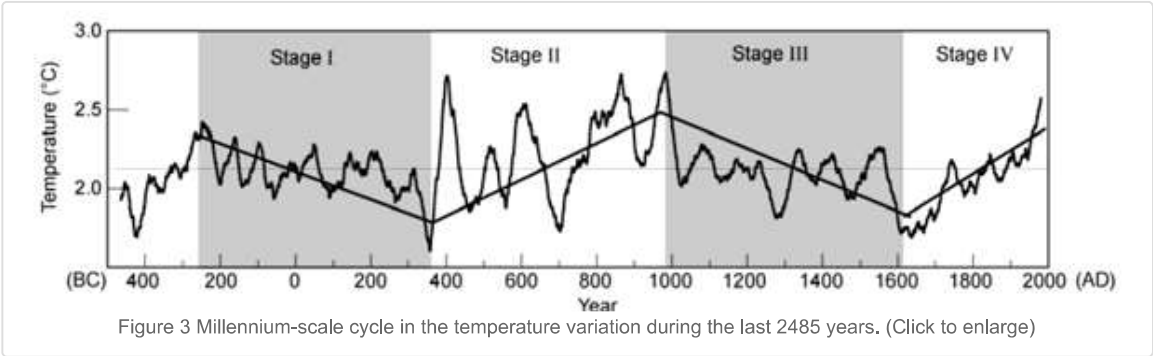
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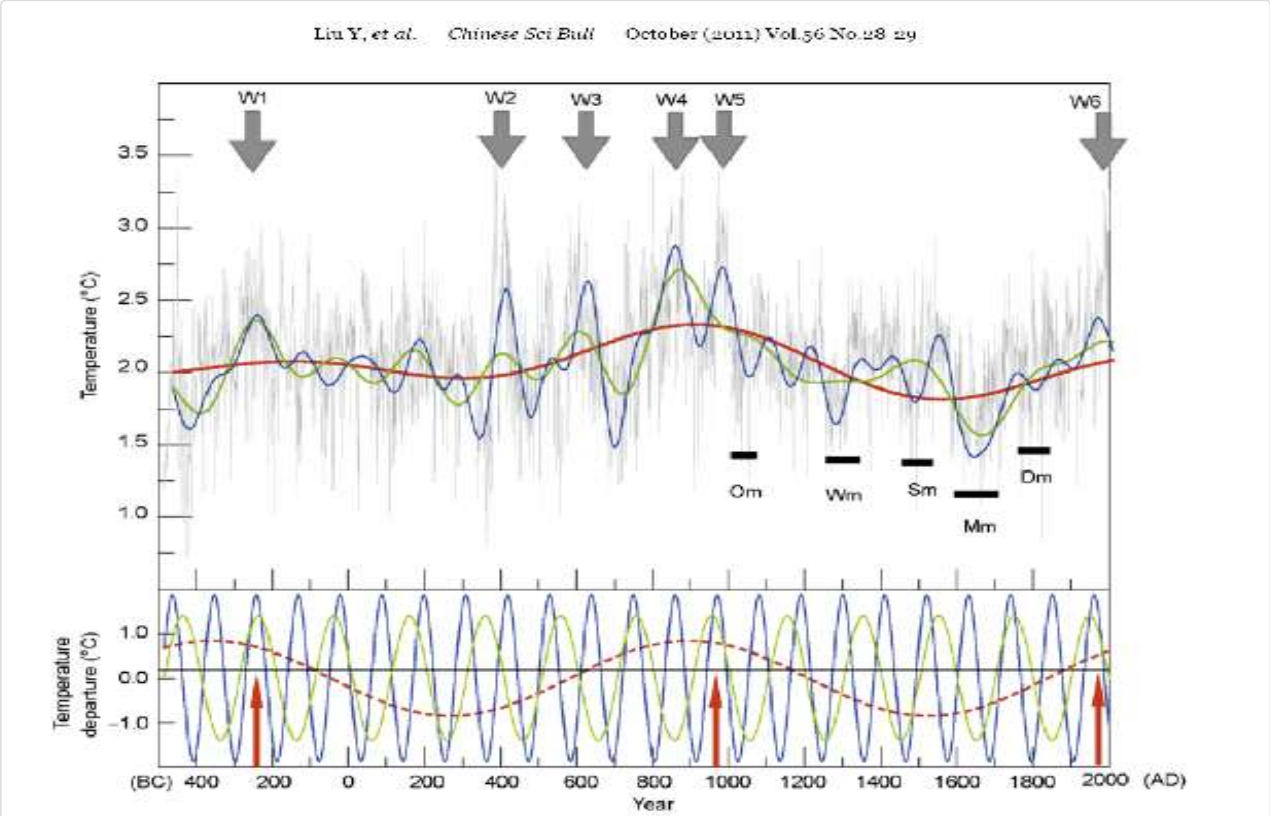


Figure 4 Decomposition of the main cycles of the 2485-year temperature series on the Tibetan Plateau and periodic function simulation. Top: Gray line,original series; red line, 1324 a cycle; green line, 199 a cycle; blue line, 110 a cycle. Bottom: Three sine functions for different timescales. 1324 a, red dashed line ($y = 0.848 \sin(0.005 t + 0.23)$); 199 a, green line ($y = 1.40 \sin(0.032 t - 0.369)$); 110 a, blue line ($y = 1.875 \sin(0.057 t + 2.846)$); time t is the year from 484 BC to 2000 AD. (Click to enlarge)

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Conclusions

Climate events worldwide, such as the MWP and LIA, were seen in a 2,485-year temperature series. The largest Figure 6 Temperature comparison between the forecast and observation data taken from seven stations on the central-eastern Tibetan Plateau (seven stations: Delingha, Dulan, Golmud, Lhasa, Nagqu, Dachaidan and Bange). amplitude and rate of temperature both occurred during the EJE, but not in the late 20th century. The millennium-scale cycle of solar activity determined the long-term temperature variation trends, while century-scale cycles controlled the amplitudes of temperature. Sunspot minimum events were associated with cold periods. The prediction results obtained using caterpillar-SSA showed that the temperature would increase until 2006 AD on the central-eastern Plateau, and then decrease until 2068 AD, and then increase again. The regularity of 600-year temperature increases and 600-year decreases (Figure 3) suggest that the temperature will continue to increase for another 200 years, since it has only been about 400 years since the LIA. However, a decrease in temperature for a short period controlled by century- scale cycles cannot be excluded. Obviously, solar activity has greatly affected temperature on the central-eastern Plateau. However, there are still uncertainties in our understanding of climate change, and the concentration of CO2 affects the climate. Further investigations are thus needed. –

REFERENCES

Liu Y, Cai Q F, Song H M, et al. Amplitudes, rates, periodicities and causes of temperature variations in the past 2485 years and future trends over the central-eastern Tibetan Plateau. *Chinese Sci Bull*, 2011, 56: 2986–2994, doi: 10.1007/s11434-011-4713-7 [Climate Change over the Past Millennium in China.] ... Hat Tip: Geoffrey Gold.

8.6 out of 10 based on 144 ratings

Post

The short killer summary: The Skeptics Handbook. The most deadly point: The Missing Hot Spot.



December 8th, 2011 | Tags: China, Evidence, Little Ice Age, Medieval Warm Period, Tree rings | Category: Global Warming | Print This Post ||

226 comments to Chinese 2,485 year tree ring study shows natural cycles control climate, temps may cool til 2068



warcroft

December 8, 2011 at 4:41 pm

The article title says “study shows shows sun”.

#1

REPLY: Fair point. I was in a hurry when I wrote that title. I’ve changed it to “natural cycles” which is much more accurate. Thanks Jo

1 0

Steve Schapel

December 8, 2011 at 7:09 pm

#1.



Jo, I believe "warcroft" was more commenting in the duplication of the word "shows".

1 0



Joanne Nova

December 9, 2011 at 3:03 am

#1.1.

Gad. I must sack that proof reader ;-)! Thanks.

1 0



rogerL

December 9, 2011 at 10:04 pm

#1.1.1.

Jo,

The study shows that current temperature is as high as it has been in the last 2000 years and predicts that it will get cooler in the next 100. Based on what evidence??? Absolutely none.

According to this study the MWP occurred between 800 and 1000 AdD which is totally inconsistent with claims that the MWP occurred in Europe between 1000 and 1400 ad.

How about you define when the MWP occurred before attributing ever study that shows a variation in temperature between 500 and 1500 AD as evidence for global warming.

PS I notice you are still censoring posts that demonstrate the unscientific nature of your blog. That in itself demonstrates your lack of credibility.

REPLY: 1/ Try to read the post above before you rush to blind conclusions: "what evidence" would be 2485 years of tree rings and a fourier analysis of the cycles in the data. That doesn't mean it's right, but it's reasonable to discuss it.

2/ I don't define the MWP – I'm quoting the experts. Read the post: "The results showed that extreme climatic events on the Plateau, such as the Medieval Warm Period, Little Ice Age and 20th Century Warming appeared synchronously with those in other places worldwide. "

3/ I'm not censoring anything: you paid nothing for the right to issue baseless insults, and we (the mods and I) are all volunteers and not at your beck and call. All first time posters are moderated until they show they are here for a polite, informed conversation. If you apologize, post more carefully, and agree to be polite, we will welcome your future comments. If not, you can ask for a refund. We'll give you 200%. — Jo

2 0



Joanne Nova

December 10, 2011 at 12:13 am

#1.1.1.1.

Roger, if you bothered to check the link for "medieval" that I posted in the article you'd see the graph (Loehle et al). Using 18 non-tree ring proxies the MWP globally appears to be centred circa 800 – 1200 AD roughly. I expect Liu et al concluded it was "consistent" for similar reasons.

Jo

4 0



Eve

December 8, 2011 at 4:45 pm

#2

Wonderful. I wonder if I will still be around to see the "Co2 causes global cooling scare" I was around in the 60's and 70's, "world is going into another ice age scare".

1 0

Robert

December 8, 2011 at 4:55 pm

#2.