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GLOBAL WARMING

**Climate Orthodoxy
perpetuates a Hoax**

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1.

Thank you for inviting us.

The title of my talk: “Global Warming: Climate Orthodoxy perpetuates a Hoax” comes from an Oregonian headline writer. It was the title of my first Op-Ed in that newspaper.

What was originally envisioned as a low-key scientific meeting to discuss an important topic of wide interest has now become an event that will be watched around the world. The Establishment in the promotion of Global Warming decreed in November that this meeting would not occur, because we three senior scientists did not meet **their** standards. That was a compliment. **Thank you.**

Cancellation of meetings has become a standard tactic of Warmers who not only find themselves pressed to explain a cooling climate when their computer codes have repeatedly predicted a warming one but also completely unable to present any observed climate signature from the gradually increasing carbon dioxide in our atmosphere.

Instead of admitting this, Warmers promote carbon dioxide as an all-purpose explanation. A Greenpeace activist explained it so succinctly: “*Global Warming can mean colder. It can mean wetter. It can mean drier. That's what we are talking about.*” You would think that Warmers would disavow such nonsense. But they do not. There was a recent article in Physics Today titled “Global Warming could cause colder winters,” written by a PhD meteorologist.

2.

Science like climate is ever changing. That is why scientific meetings like we are having today are important. A few years ago most people including virtually all physicians believed that peptic ulcers were caused by stress. Today, thanks to the work of two dedicated Australian researchers, we know for sure that a bacterium is involved. When Barry Marshall and Robin Warren were awarded the Nobel Prize in Medicine, the Nobel Committee noted the battle they had waged against the bad behavior of their colleagues who vigorously defended “prevailing dogmas.”

In climate science we have a similar problem amplified many times, not only by those in authority at institutions like the National Academy of Sciences but by those ordinary scientists defending their research grants, by university administrators eager that the vast Federal gravy train continue to stop at their campus, by politicians who have built their reputations and agendas around the absolute correctness of Anthropogenic Global Warming, by a host of crony capitalists who have been lured into supporting “cures” for our imagined climate ills by a vast array of subsidies, and of course by a large number of ordinary citizens who are easily dazzled by those in authority, because they lack education in science and because they see this as a new secular religion of “Environmentalism.”

Somewhere in the middle is our large and powerful institution, the Oregon Museum of Science and Industry. All it took to send them into a panic were a few phone calls from prominent professors at Oregon universities to remind them that we three musketeers might present heretical thoughts on Global Warming that might challenge their majority view.

What sort of catastrophe are Warmers promoting? Are we to be burning in hell by the end of the century as if condemned to the nether world in Dante's Inferno or are they just worried about a milder winter with less valley snow? Are they worried about a return of another Columbus Day storm or another hurricane Katrina, the melting of the Greenland icecap and Arctic sea ice or just the remaining glaciers on Mt. Hood. **OR** are they worried that you might come to your senses and no longer support their insatiable appetite for research grants?

The answer is “all of these and anything more that they think seems scary.” For them it is Halloween all year long.

This topic has become a catch all for hysteria, largely because we have let it become so, not because there is really much to worry about.

Now let's turn to the science where we need to be very clear as to what the scientific topic is tonight;

We are addressing the supposition that human emissions of carbon dioxide are warming the earth's climate in a significant way. This is so called 'Global Warming.'

3.

The argument against Global Warming is so extraordinarily simple and so powerful that we often forget to state it:

There is no satisfactory logic and evidence linking human emissions of carbon dioxide with a

significant warming of our climate. NONE! NONE!

There is plenty of evidence that our climate is changing, and that it always has and always will change. Climate simulations are not proof, any more than George Lucas's wonderful simulations in 'Star Wars' are accurate predictions of what life will be like in the future. They are just exercises in imagination.

Real science is more than a good story, more than a Tall Tale, and more than a Hollywood movie. It requires rigorous logic and evidence. Absent that logic and evidence, theories remain just that, theories. After spending more than 100 billion dollars looking for that evidence, it would be prudent to assume that the actual carbon dioxide effect is small and divert our taxpayer money to more pressing priorities.

4.

As an example of how good science really works, consider the efforts of Danish physicist Henrik Svensmark to solve both 'The Cloud Mystery'. His hypothesis is that the variable flux of galactic cosmic rays hitting the upper atmosphere causes a variable cloud cover. Extremely energetic cosmic rays cause water vapor to condense in the saturated air. Although each cosmic ray (typically a single proton that has come across the galaxy) leaves only a tiny wake of water droplets, the cumulative effect of many cosmic rays results in clouds that change the albedo (or reflectivity) of the earth and hence its temperature.

While this is an interesting and plausible theory, it could have exactly the same problem as the man-made carbon dioxide theory: a minor net effect on our climate. But unlike carbon dioxide, this climate driver has not been studied in significant detail so far.

Many years ago I worked on the explanation for the varying flux of galactic cosmic rays. The theory goes like this. The Sun's outer atmosphere is boiled off in a supersonic solar wind that blows past the earth at 400 km/second. That is a million miles/hour. This wind is a super-conducting plasma that has frozen within it the magnetic fields that we can measure on the surface of the Sun. Because the Sun rotates as the solar wind moves radially outward, the magnetic field becomes a giant spiral field. It continues to spread out until its magnetic pressure matches that of the interstellar magnetic field, the laminar flow of the solar wind becomes turbulent, and the solar magnetic field merges with the interstellar field. Incoming galactic cosmic rays are deflected by the spiral solar magnetic field and become coupled to it. Once coupled to it, they spiral inward, sometimes hitting irregularities that can alter their forward progression or even reverse it. Of course as this is going on, the solar wind is convecting the magnetic field and the cosmic rays attached to it out of the solar system. Whether or not they ever reach the inner solar system and the earth depends on the detailed balance of inward diffusion against outward convection.

5.

Because of the complexity of this process, I was careful to step back to a very basic argument linking the Sun to the variable flux of galactic cosmic rays in my research published in the Journal of Geophysical Research. This plot shows the substantial anti-correlation between a galactic cosmic ray measurement (in this case from the Climax, Colorado Neutron Monitor) and a solar index (Smoothed Zurich Sunspot Numbers). "Anti-correlation" means that one goes down when the other goes up. That establishes that they are closely linked, with one likely causing the other.

This plot contains one of the very important secrets of the solar system, almost as plain as day. The cosmic ray index lags the solar index by about two thirds of a year. Realizing that this must be the time it takes the Sun to communicate the solar cycle to the solar system and knowing the measured speed of the solar wind, I calculated a radius for the heliosphere of 50 AU. That was vastly larger than others believed at the time, and I was advised not to anger those who thought that the heliosphere was small. What I did was what all good scientists do. I acknowledged the arguments of others and presented my differing logic.

What do you suppose settled this issue? It was certainly not the peer-review process that allowed both arguments to be published, but by **actual measurements**. Twenty years later an American spacecraft radioed over eight billion miles home in the longest long distance call in the history of man that it had finally reached the boundary of the solar system at 80 AU.

This is how disputes are settled in real science - by real evidence!

6.

While we are considering astrophysical effects on climate, let's not ignore a huge one.

You typically will not see photos of Jupiter in a discussion of climate, but there is little doubt that Jupiter has a profound effect on the earth's climate.

Jupiter is the largest planet in our solar system, weighing in at more than twice as much as all of the other planets combined. The earth would easily fit in the famous 'Red Spot' you see. In fact, about seven earths would fit in the Red Spot. The Red Spot is a giant hurricane that has lasted for at least four centuries.

The banding of Jupiter's clouds is an indication that different latitudes rotate at different angular speeds, something not possible if the planet were a solid.

Jupiter is also about twice as warm as it should be for the amount of solar radiation that it gets. This is attributed to its constant slow shrinkage.

What does Jupiter have to do with the earth's climate? There is little doubt that it has a MAJOR influence over millennia and perhaps even over centuries.

7.

The easiest way to understand the importance of Jupiter is to look at temperature reconstructions from ice core proxies. This sequence of charts places the global temperature increase over the last two centuries in perspective and helps us to understand what the future holds for planet earth. Needless to say, these charts suggest a future that is far different from what alarmists claim.

This first chart shows that our world did indeed begin to warm up from the Little Ice Age in about 1830.

8.

Extending the chart back to 800 AD shows the Medieval Warm Period. Although ice core data does not cover the 20th century, we show with an arrow where the peak of the Modern Warm Period will likely fall when the new ice consolidates. It will be **lower** than the Medieval peak.

9.

Going back still further, we see a succession of warm periods spaced at roughly 1,200 year intervals, each less warm than the one that preceded it. During the Roman Warm Period, the great Carthaginian General Hannibal was able to march war elephants across the Alps to attack the Romans. Such a feat is not possible in our latest warm period because of year-around snow in the mountain passes.

10.

Going back 11,000 years through the entire history of this interglacial period known as the Holocene Climate Optimum, the present climate change is utterly negligible. Note that human civilization developed during this warm period.

11.

Now going back 13,000 years, we see a much different era. What is that much colder period?

12.

It is the last **Ice Age**, which lasted for about 90,000 years. Note that ice ages have much more dramatic swings in temperature than the benign interglacials. Our recent temperature swing is utterly negligible in this context. Note also that the temperature during the Holocene has trended downward as we progress through the Milankovitch Cycle that causes the earth's closest approach to the Sun to move from July to January.

13.

Here is the entire ice core temperature record for the last 450,000 years from Vostok, Antarctica. The very regular pattern of ice ages lasting about 90,000 years followed by an interglacial lasting about 10,000 years were explained by the Serbian physicist Milutin Milankovitch.

Question: What causes the small variations in the earth's orbit about the Sun? That's right, the huge planet Jupiter and tidal forces caused by the Sun and Moon change the earth's orbit just enough to bring about dramatic climate variations.

Before I hear objections from OMSI supporters, let me point out that my fellow astrophysicist James Hansen and I agree about Milankovitch cycles, as do most other scientists. That does not assure that this explanation will never be challenged, but it does indicate that it has broad support across the spectrum of Global Warming opinion. **Why is this?** Milankovitch was able to **prove** his assertions with rigorous calculations of the various gravitational effects involved.

14.

Because this topic touches on so many issues, can we narrow them down?

From the standpoint of climate alarmists, the critical issue is none other than a catastrophe of great proportions ultimately involving the survival of man and the planet. This is complete nonsense.

What we find, in contrast, is a profound ignorance of science and even how science works. In one study, half of the graduates of Harvard University could not correctly say why the seasons change. That is not a matter of memorization but a matter of basic curiosity about a fundamental scientific process, important to everyone.

For the Oregonian Editorial Board and physicist Richard Muller, the central issue was the warming over the 20th century. But that is a bogus issue also, because most scientists agree that it has warmed about eight tenths of one degree Centigrade.

Similarly there is no dispute that carbon dioxide is a greenhouse gas, which is much less important than the main greenhouse and climate gas, water vapor.

It may also surprise you to know that there is little dispute as to the warming possible from a doubling of the concentration of carbon dioxide in the atmosphere. The dispute arises when we consider the consequences or feedbacks from that warming. Alarmists point to a strong positive water vapor feedback while skeptics maintain that our climate system is inherently stable against such perturbations because of negative feedbacks. Chuck will have more to say about this.

Most scientists who are aware of the global temperature data agree that we saw an increase after the 'Great Pacific Climate Shift of 1977' moderated by several huge volcanic eruptions until they ceased in the late 1990s. Thereafter, the global temperature has fluctuated with essentially no trend.

When climate alarmists cannot talk about the logic and data, they often try to question our scientific credentials or imply that we are in the employ of the oil companies. These are bogus issues.

My thesis tonight is simple: virtually ALL of what climate alarmists put forth as science **is not**. Some is half correct, some is incorrect, and too much is just plain nonsense or worse.

One of the central problems with Anthropogenic Global Warming is the integrity of the data. This was certainly brought to our attention by the East Anglia e-mails of Climategate fame, but goes well beyond the very bad behavior discovered there.

15.

Here is one of the latest examples, purporting to show a steady rise in the global temperature since 1973. Climate alarmists have been stunned by the leveling off of the temperature trend over the last 13 years because it goes so strongly against their climate models. Although what you see here is touted as representative of the global temperature, it is merely a compilation and correction of surface temperature data of dubious quality. Note their misuse of labels like *skeptic* and *realist*.

16.

In contrast, here is the Gold Standard for global temperature measurements. These come from Microwave Sounding Units on NASA satellites and show amazing detail that is easily correlated with significant climate events like El Ninos, La Ninas, and volcanic eruptions. In contrast to the surface data used by Warmers that covers mostly land areas, the NASA satellite data covers a large portion of the globe.

It is amazing that the latest global temperature is only about a tenth of a degree centigrade above the thirty year average and has been falling because of La Nina conditions in the Eastern Pacific. Preliminary data this month suggest another precipitous drop to below the 30 year average.

17.

Why do most warmers insist on using inferior measurements to compile a global temperature? Here is one reason. Urban areas are known to be warmer than the surrounding countryside because of all the concrete and steel and because of the limited vegetation. This study shows that the temperature has indeed been rising sharply in the most heavily urbanized counties in California but hardly at all in the rural counties. Hence, any inclusion of temperature data from areas that have seen rapid development will be biased toward warmer temperatures. Such temperature rises are a measurement of development not global warming.

18.

Even the US Historical Climatological Network has enormous biases toward higher temperatures because some sensors have been located too close to heat producing or trapping structures.

19.

These known problems have become a reason for processing raw temperature data to supposedly address the problems. But it has just been another excuse to turn cooling into warming as the records for this California station indicate.

20.

The most famous example of what I consider outright cheating was Michael Mann's famous 'Hockey Stick' graph.

The central theme of all Warmers is that everything started to come apart in the 20th century, due to man's burning of fossil fuels. The central piece of evidence presented is Michael Mann's 'Hockey Stick' graph. This graph has had an amazing existence, rising from the ashes each time someone points out a fatal flaw. WHY? Because the UN IPCC desperately needs this graph and feels that it can withstand all criticism. The Wegman report to the National Academy of Sciences did not accuse Mann of fraud but pointed out that his results were not supportable because of serious analytical errors.

The East Anglia e-mails revealed that Michael Mann had used what was termed "Michael's Nature trick" of removing tree ring data that did not support continued warming in the mid 20th century and

substituting conventional thermometer records that did. The mismatched data should have told Mann that his data were not reliable. But instead, they provided him exactly the result he wanted AND worldwide acclaim. That has become an all too consistent pattern with those intent on proving Global Warming.

21.

Here is a corrected version of the infamous 'Hockey Stick' graph that eliminates “Mike's Nature Trick” and correctly shows the Medieval Warm Period. Mann was intent on hiding the Medieval Warm Period to bolster his claim that we are warmer today than at anytime in the past thousand years. That's simply not true.

22.

Other examples of bad science are much closer to home. Professor Phil Mote, now of Oregon State University but then of the University of Washington, shows his signature contribution to the global warming debate: an alleged shrinking of low elevation northwest snow pack. Indeed the data support his contention from the high reached in the early 1950's to the low in the late 1990's. But what about before 1950 and after 1997? Well, he did not think it was relevant to report the entire data set that shows cyclical behavior but no net trend!

23.

You will never see this table of the worldwide record high temperatures from alarmists, because it shows that all record highs for the continents were set long ago. That may seem inconsistent with the fact that we are slightly warmer today than we were in the early 20th century, but it may have to do with less effective mixing of cold arctic air with warm tropical air when the Sun is less active. The Sun was generally less active in the early 20th century and also recently.

24.

Some temperature records say that we need to be careful about generalities that may not apply to every location. The temperature data for Paris shows the city warmer in the 1750's and 1830's than today. But also note the temperature dip around the time of the French Revolution when Frenchmen were starving due to the refusal of the ruling class to adapt to climate change by switching from growing wheat to growing potatoes. This brings me to my political advise for the evening. Politicians should not lose their heads over climate change!

25.

Because our oceans contain the vast majority of the mobile heat on this planet, much of the climate drama plays out there. Climate models consistently predict a steadily rising ocean heat content, but data from the extensive ARGO array of deep-sea diving buoys tells a different story.

26.

Al Gore loves to tout a rising sea level as one of the dire consequences of Global Warming. This

satellite data would seem to confirm his thoughts at least as to a modest rise until 2006. But what is wrong?

27.

The Swedish scientist Nils Axel Morner points out the scam here. Satellite altimetry shows no sea level rise until unexplained “Personal Calibrations” are applied to bring the data in line with climate models.

28.

Here is the sea level trend based on simple tide gauges that show no appreciable changes in half a century (in blue). Note how different this is from the steady rise claimed by alarmists.

29.

Carbon dioxide appears to be another swindle. Here are the famous infrared measurements of CO₂ from Hawaii. So far so good.

30.

Here is the way the UN IPCC marries the ice core derived atmospheric carbon dioxide levels to the modern instrument record. What they do not tell you is that they have arbitrarily moved the ice core proxy records to the right by 80 years in another arbitrary adjustment to make the plot you see pleasantly continuous. What is the scientific justification for that? Essential none!

While the ice cores provide an excellent temperature proxy, they are a far more problematical proxy for ancient atmospheres. The assumption that they trap a pristine sample of the ancient atmosphere is likely not true, especially for a gas that dissolves in water. The other assumption that the ice cores continue to trap the ancient gasses as they are removed from the glacier is also now questioned.

31.

What is notably missing from the UN IPCC plot of atmospheric carbon dioxide over the last two hundred years? **ALL** of the measurements made by **chemical** techniques. Here is a compilation of those from the late German scientist Ernst Georg Beck. Note that his compilation meshes well with the modern IR measurements but shows more structure to the measurements prior to 1960. The peak near 1940 follows the warmer period we called the Dust Bowl in the United States. This peak was higher than the levels that Alarmists complain about today. Note that Beck lists the researchers involved and references “hundert mehr” (hundreds more). Several were Nobel Laureates in Chemistry.

If the chemical measurements are correct and we have little reason to doubt them, they indicate that the dynamics of atmospheric carbon dioxide are more complex than most believe today and that levels were notably higher in the recent past. How is this possible given our greater burning of fossil fuels today than in the 1940's? The oceans also contain the vast majority of mobile carbon dioxide on this planet. Human emissions, while not completely insignificant, are small compared with the amounts naturally in play.

32.

Global sea ice, frequently claimed to be disappearing by alarmists, continues to follow a regular seasonal pattern, just as it has for the past 30 years of detailed satellite observations. At the present, it is a little below average for this time of the year in the Arctic and a little above normal in the Antarctic. The Arctic low reached in 2007 appeared to be due to slightly warmer water drawn into the Arctic Ocean from the North Atlantic by a reversal in the circulation of the Arctic Ocean.

33.

The Arctic Ocean is largely frozen today, and we have an extensive snow cover in the Northern Hemisphere. Such an extensive snow cover has been a feature of recent winters.

34.

The IPCC's understanding of climate was better years ago. This is not something they will admit today: “the long term prediction of future climate states is not possible.” Today, they believe that their climate models can do anything.

35.

But all of the extremely expensive computer models fail miserably, not only in predicting the response of the global temperature to increases in carbon dioxide but also where the warming should be observed. If greenhouse gases were responsible for the small warming we have observed, then there has to be a “hotspot” developing in the tropical troposphere. Without that hotspot, something else has to be driving the warming. The reality is clear: there is no hotspot and therefore no significant greenhouse warming. The computer models fail again.

36.

How can the computer models that so many believe are correct fail so miserably? After all, they include a lot of the basic physics that we agree upon.

The problem is that they are simulations of reality, and very far different from exact calculations of the basic physics. Exact solutions of the fundamental equations are well beyond our computer capabilities as Professor of Theoretical Physics Gerhard Gerlich explains here. Gerlich likens the simulations to computer games, another exercise in virtual reality.

In practice, programmers develop subroutines that mimic some real behavior like large scale fluid dynamics but substantially fail to accurately simulate many other crucial phenomena like clouds. To make up for all the shortcomings, programmers use simplifications to make the models appear to fit historical climate data. With hundreds of arbitrary parameters available to them, fitting existing data is relatively easy but it also renders the codes completely unable to predict the future. The process has become hardly more than a child's game of connecting the dots. Where does the child go when he reaches the last dot? The codes have been trained to project the global temperature relentlessly upward. But that is just what their 'Directors' choose and certainly not what the actual climate is doing.

The well-known physicist Freeman Dyson from the Institute for Advanced Study at Princeton University once recalled a conversation with the great University of Chicago physicist Enrico Fermi:

“In desperation I asked [Fermi](#) whether he was not impressed by the agreement between our calculated numbers and his measured numbers. He replied, "How many arbitrary parameters did you use for your calculations?" I thought for a moment about our cut-off procedures and said, "Four." He said, "**I remember my friend [Johnny von Neumann](#) used to say, with four parameters I can fit an elephant, and with five I can make him wiggle his trunk." With that, the conversation was over.**”

Another fundamental mathematical problem that most scientists fail to understand involves the concept of a “global temperature.” Such an artificial construct has severe limitations because there are an infinite number of temperature distributions possible for each measured global average temperature. Some that involve warm tropical air bottled up near the equator are inherently cooling patterns, because cooling mechanisms are very non-linear.

These mathematical arguments may seem opaque to those without mathematical training, but they are very powerful arguments that easily take down the pseudo science of Global Warming.

37.

Changes in solar activity have long been known to be correlated with our climate. Here you see a picture of sunspots on the surface of the Sun. These indications of intense magnetic activity have fascinated man for many centuries and records of them go back further than any other scientific measurements. They were begun by Galileo in 1611.

38.

Here is the entire sunspot record with a prediction out to 2080. The Maunder and Dalton Minimums in sunspot number correspond with especially cold periods over the centuries shown. With strong evidence that the Sun is now headed for another slumber, we have yet another indication of global cooling in our future.

39.

Because our oceans contain most of the mobile heat on this planet, ocean cycles are yet another strong driver of climate change. Here are Russian records for the Arctic above 70 degrees north with their prediction for that region out to 2080.

What does all of this tell us?

40.

The real long term threat is **global cooling**. With this Holocene Climate Optimum winding down toward another Ice Age, with the Sun entering another quiet period, and with the various ocean cycles heading toward their cold phases, we likely face a cooler future over the next decades to centuries with a plunge into another Ice Age toward the end of this millennium.

41.

The question in my mind is : Will we be able to overcome the present hysteria and replace it with a rational assessment of where we are headed? To do that, we must reclaim science from those who are using it for political and religious purposes.

As Michael Crichton said:

“The greatest challenge facing mankind is the challenge of distinguishing reality from fantasy, truth from propaganda. Perceiving the truth has always been a challenge to mankind, but in the information age (or as I think of it, the disinformation age) it takes on a special urgency and importance”

42.

Professor Richard Lindzen is more direct:

“The need to courageously resist hysteria is clear.”

43.

Finally, I will give Albert Einstein the last word.

Thank you for listening. If you have any easy questions, I will be happy to answer them after Chuck and George speak.