Prof. Nicola Scafetta

Why the Climate Models Don't Work

Prof. Nicola Scafetta, PhD, is a research scientist in the Department of Earth, Environmental and Resources Sciences at the Università degli Studi di Napoli Federico II. This is an edited transcript of remarks he delivered to the second panel, "The Real Science Behind Climate Change: Why the World Needs Many More Terawatts of Energy" of the June 26-27, 2021 Schiller Institute conference, "For the Common Good of All People, Not Rules Benefiting the Few!" Subheads have been added.

Schiller Institute

Prof. Nicola Scafetta

Good afternoon! Today, I would like to talk about climate change and what we face now.

The first thing we need to understand is that the climate is not constant. Climate has always changed in time. In **Figure 1** you can see the historical data regarding the temperature of the Earth during the last 500 million years. During this period, the temperature of the Earth went up and down many times. So there were periods that were much hotter than now, by about 8° Centigrade, and then there were periods colder than now. And so, it is evident that the climate is not constant.

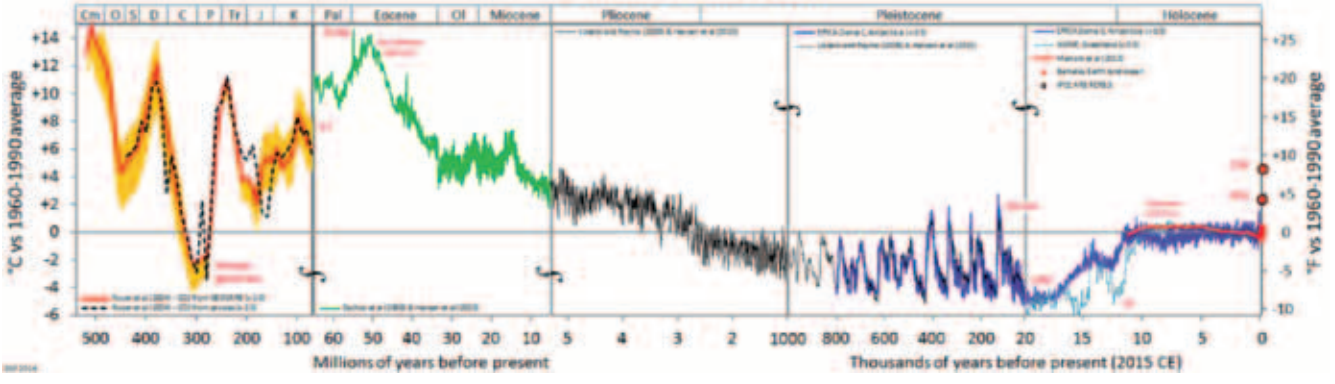
Climate Cycles and Oscillations

But the important thing is, if we analyze this long sequence of data, we see a number of cycles, natural cycles that determine climate. We observe cycles with about a 150 million-year period, others with about a 30 million-year period, and a set of cycles, known as the Milankovitch cycles, with periods of 500,000 years, 100,000 years, 41,000 years, and 21,000 years. And then we have a number of millennial cycles; a number of secular cycles, 210 years, 115 years; cycles at the multidecadal scale, like 60 years and 20 years; and then short cycles at a few years of time.

Since the climate tends to be regulated by a number of natural oscillations, it is necessary to reconstruct these oscillations to properly interpret climate change. And this is exactly what we would like to do. The black sequence, the black curve, that you see in **Figure 2**, is the global surface temperature of Earth since 1850. We would like to determine whether the climate models are able to properly represent these sequences of data. The climate models are shown in the colored plots; I simply shifted them down to make them easier to see. The data

FIGURE 1

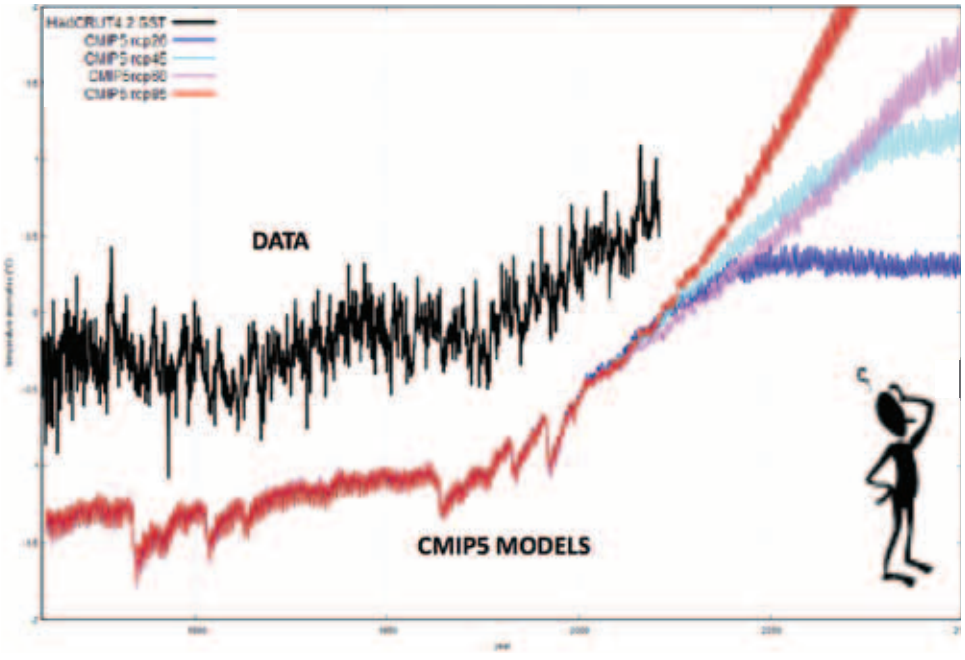
Temperature History of Planet Earth



Wikimedia Commons/Glen Fergus

FIGURE 2

Global Surface Temperature since 1850: the Data and the Models



The model results have been shifted downward to make them easier to see. They are unable to show the undulations in the actual data (in black), the real-world result of many interacting cycles.

show very complex dynamics—we have a period when the temperature went up, then down, then up, then down, then a period when the temperature goes up.

The Paris Agreement's 1.5° Limit

In these data [Figure 2, black sequence], we have a clear warming of about 0.9°C. This is what is known as the "global warming since the pre-industrial age." But we don't see only a warming. We see periods of warming and cooling, warming and cooling, warming and cooling. And the way we talk about economic policy, we need to talk about many things, such as the Paris Agreement—the agreement among the countries to keep the temperature increase since the pre-industrial era below 1.5°C.

Why? Because if the temperature increases above this 1.5°C level, there is increasing risk of increasing environmental hazards such that, for example, water insecurity would cause wars, and so on. Today we are now at about 1°C above the pre-industrial era. But, according to the Paris Agreement, we need to keep the temperature below this 1.5°C level, or else we would face huge problems.

But when will we reach this 1.5°C? To be sure about this, we need to check the climate models—are they correct?

Now, the argument made by the IPCC (Intergovernmental Panel on Climate Change) that would confirm the validity of the climate models is about carbon dioxide (CO_2). The IPCC contends essentially that "cumulative emissions of CO_2 and future non-CO_2 radiative forcing determine the probability of limiting warming to 1.5°C." This argument is found in its "Special Report: Global Warming of 1.5°C" (2018).

Essentially the IPCC runs models using two kinds of "forcing." "Natural forcing" considers only the effects of the Sun and volcanoes on climate. The climate models, when applied to the past, "predict" that natural forcing produced no warming from the pre-industrial period until today. To account for the warming, according to the climate models, the IPCC adds "human forcing," anthropogenic forcing, forcing due to CO_2. And what those models show is that there is agreement between the data and the models. You can see it here in the two graphs in Figure 3.SM.3, one showing natural forcing alone, and one that combines natural and human forcing.

IPCC Models Ignore Scientific Method

But there is a problem here. These pictures actually do not prove what the IPCC would like to prove. This picture suggests that 100% of the warming since the pre-industrial era is due to humans. However, the scientific method requires us to compare the simulations with the actual data relevant to the hypothesis of the simulation.

What do we need to do? To validate the climate model we need look at the past. We need to see whether or not the models are able to reproduce the climate of the past. This is the main issue. What do we see if we look at the past? We need to understand what happened.

In 2001, the IPCC alarmed the world. What happened? It published a graph of the global surface temperature of the Northern Hemisphere, and in this graph, it suggested the temperature was nearly constant for 900 years from 1000 to 1900; and then, beginning in 1900, temperatures started to increase very, very fast. So there was this unprecedented warming. The IPCC graph (see **Figure 3**) was presented in Figure 1 of *Climate Change 2001: The Scientific Basis,* written by an IPCC working group.

The IPCC's Figure 2 in the same report, "Indicators of the Human Influence on the Atmosphere During the Industrial Era," showed the curves of carbon dioxide and two other greenhouse gases in the atmosphere—methane and nitrous oxide—in parts per million over the preceding 1,000 years. [A greenhouse gas is one that, in the atmosphere, prevents radiated heat from escaping into space to some extent. —ed.]

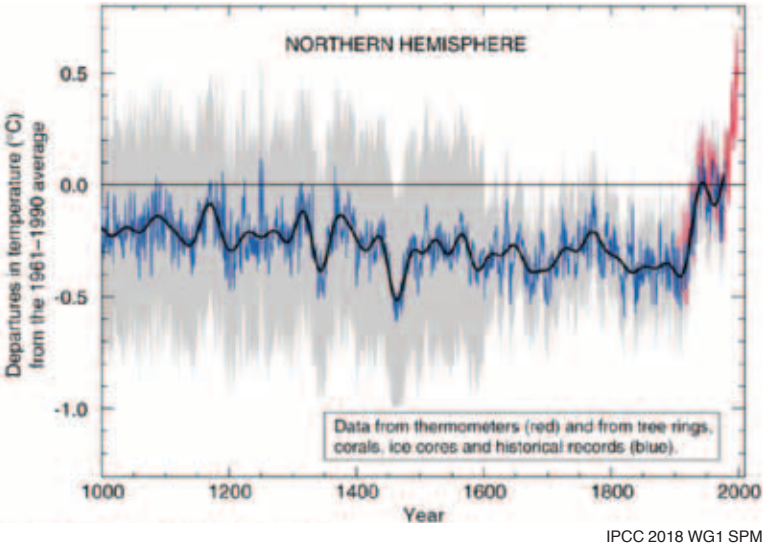
The same kind of pattern was observed as in the IPCC Figure 1—a very similar "hockey stick" in all cases. The argument made by the IPCC was that CO_2 was the main cause of the rise in global temperature, because there was this clear correlation between the temperature records and the records of gas concentrations produced by human activity. And for this, the IPCC alarmed the world.

It is not widely known that the IPCC continued to advocate the "hockey stick" temperature graph, in 2007.

But in 2013, something happened: The IPCC abandoned the hockey stick. In **Figure 4** you see the book, *The Hockey Stick Illusion,* which had been published in 2010. The hockey stick was condemned because it was considered essentially an illusion. Instead of the hockey stick, the IPCC published a reconstruction of northern hemisphere temperatures over the last 2,000 years shown in **Figure 5**, showing a large climate variability in the past—a very strong Medieval Warm Period [about 950-1200], and a very strong Little Ice Age [roughly 1480-1850]—that was not present in the earlier IPCC publications. So the earlier reconstruction essentially disappeared from the IPCC's picture, because it was found to be wrong.

FIGURE 3

IPCC's 2001 Shock: Steep Rise in Temperature Since 1900

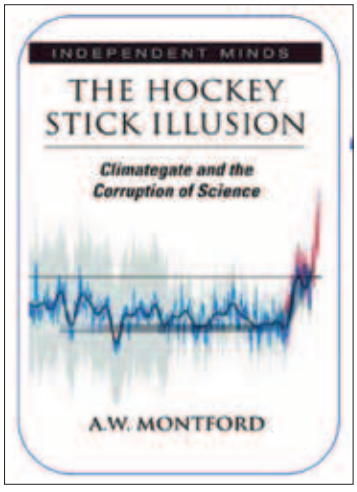


IPCC 2018 WG1 SPM

The IPCC's 2001 claim of sharply rising temperatures since 1900 (the "hockey stick") is still in circulation.

IPCC's description: The year by year (blue curve) and 50 year average (black curve) variations of the average surface temperature of the Northern Hemisphere for the past 1000 years have been reconstructed from "proxy" data calibrated against thermometer data (see list of the main proxy data in the diagram). The 95% confidence range in the annual data is represented by the grey region. These uncertainties increase in more distant times and are always much larger than in the instrumental record due to the use of relatively sparse proxy data. Nevertheless the rate and duration of warming of the 20th century has been much greater than in any of the previous nine centuries. Similarly, it is likely that the 1990s have been the warmest decade and 1998 the warmest year of the millennium. [Based upon Chapter 2, Figure 2.20]

FIGURE 4



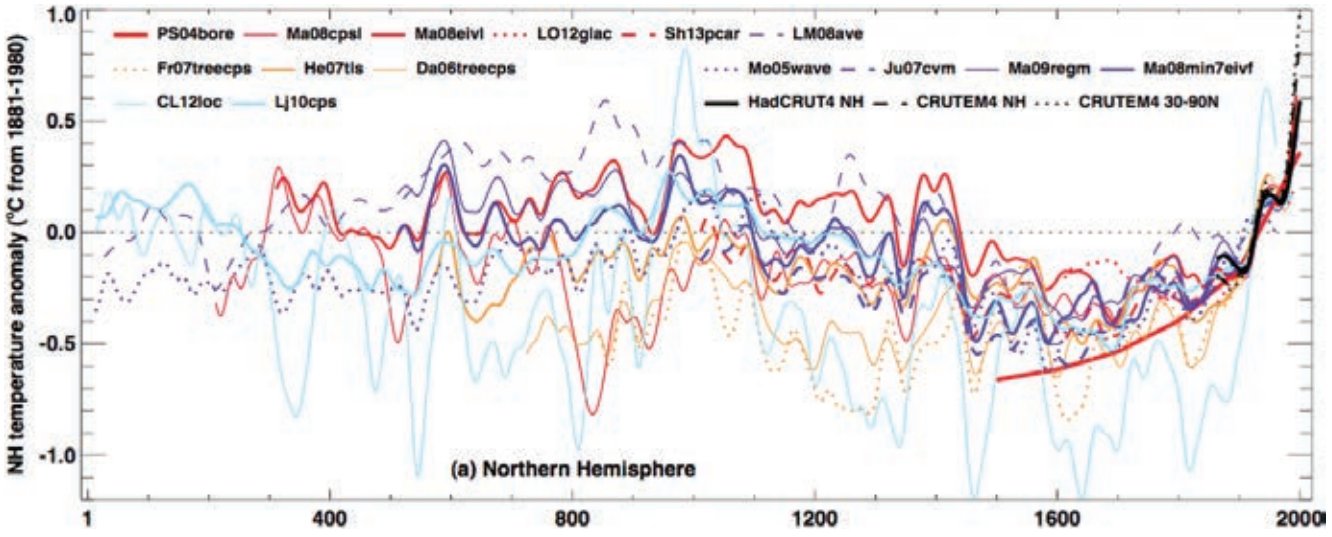
Why is this important? [Here Dr. Scafetta showed a graph, with a long title added, that answers his question: "Nearly every century experiences global warming or cooling: temperature reconstruction for the northern hemisphere, 1-2000 AD, shows modern warm period not exceptional." (The graph is Figure 3 from a 2010 paper by F.C. Ljungqvist.)]

This is one of the new reconstructions that have been published. You see here the hockey stick has disappeared, and there is a very strong millennial cycle in this graph, where [working backwards from the present] there is a warm period, a Little Ice Age, a Medieval Warm Period, a Dark Age Cold Period, and a Roman Warm Period. So, we have clearly a 1,000-year cycle in the climate.

Why is the millennial cycle so important? Because it shows that the observed warming from the 1700s to

FIGURE 5

IPCC in 2013: No Hockey Stick in 2,000-Year Temperature Record



IPCC WG1 AR5

In the Northern Hemisphere climate model runs superimposed here, notice the pronounced Medieval Warm Period, ca. 950-1200, and the very strong Little Ice Age, ca. 1480-1850.

IPCC's description: Reconstructed Northern Hemisphere annual temperatures during the last 2000 years. Individual reconstructions are shown as indicated in the legend, grouped by colour according to their spatial representation (red: land-only all latitudes; orange: land-only extratropical latitudes; light blue: land and sea extra-tropical latitudes; dark blue: land and sea all latitudes) and instrumental temperatures shown in black (Hadley Centre/ Climatic Research Unit (CRU) gridded surface temperature-4 data set (HadCRUT4) land and sea, and CRU Gridded Dataset of Global Historical Near-Surface Air TEMperature Anomalies Over Land version 4 (CRUTEM4) land-only; Morice et al., 2012). All series represent anomalies (°C) from the 1881–1980 mean (horizontal dashed line) and have been smoothed with a filter that reduces variations on time scales less than about 50 years.

the present was mainly induced by natural causes, like the other ones [of similar amplitude —ed.] induced by this 1,000-year cycle.

Now, the big problem is that the models do not reproduce these cycles, do not produce any one period of the past.

And therefore we cannot say that the models are able to correctly interpret the global warming observed from 1900 to today, because that warming could be due to natural causes that the models are unable to simulate. As I said earlier, one needs to demonstrate that the models are able to reproduce the past, and if they fail to reproduce the past, they cannot be trusted for the future.

The situation is very simple, from a scientific point of view. The models are all wrong, and do not use the right climate forcing. [In 2008-2009 Prof. Scafetta developed his own forecast of global surface temperature through 2024; it was published in 2013. In one of its graphs, he brought together the IPCC's 2013 forecast with his own. Here he showed the graph and commented on this comparison between the green model (IPCC) and the yellow (Scafetta):] As you can see, the yellow model appears to agree better with the data than the green model. Because the green model runs too hot, that is an indication that they are more or less overestimating the system.

Science of Climate Not Settled

With this problem in the models, why are people told that the climate science is "settled"? In reality, that is not true. [He showed slides from the scientific literature to further illustrate the point.]

I would like now to discuss the credibility of the policy of reducing CO_2 emissions. People particularly in Europe would like to reduce CO_2 emissions to zero—or reduce it by a lot—by 2030. But the problem is that most countries are still increasing their emissions according to the European Union. From the emissions that are the basis for world atmospheric research in Europe, it is clear that while in the world there is an increase of emissions, in Europe there is a decrease; but that is happening in Europe. In the rest of the world, CO_2 emissions are increasing.

I would like to end with a world map of new coal-fired power plants under construction or planned. (See **Figure 6**.) This picture is very telling to me: The coal-fired plants are the ones that emit most of the CO_2. So

FIGURE 6

Where Are New Coal-Fired Power Plants under Construction or Planned?

Creative Commons

what we find is that in Western Europe, there are no new coal-fired power plants; in the United States, in Canada, there are none. But if we look at the Asian side of the world—in China, India, Malaysia, but also Japan, South Korea, and so on—they are building a lot of coal-fired power plants!

Europe and the United States are decreasing greatly their CO_2 emissions, while the Asian countries are increasing so much their coal-fired power plants, it is obvious that there is no way to reduce CO_2 in the world. CO_2 will increase, and the only effect of this policy would be the impoverishment of Europe and the United States.

Conclusion

The models on which is based the anthropogenic theory of global warming observed from 1850-1900—these models are not scientifically validated; they contradict each other, and therefore cannot be considered reliable for future climate predictions according to the various emission scenarios proposed by the IPCC.

The evidence from the data is that there are large cycles. These cycles can actually be fit to astronomical forcing, such as solar forcing. But these factors are not present in the models, so the modeling needs to be greatly improved. They are not really credible. The inclusion, however, of natural climatic cycles and forms of non-climatic-cycle warming, and also the effect of the cities, can reduce the effect of the anthropogenic component by 50% to 60%. I did not discuss the effect of the cities. [Here Prof. Scafetta is referring to the skewing of temperature measurements from the measuring stations being disproportionately concentrated near cities. —ed.] So there will be a huge reduction of the impact humans can have on the climate.

The observed warming from the time of the pre-industrial era could be due 50% to the Sun, 30% to man, and 20% is spurious because of urbanization and urban heat that is not corrected yet in the climate data.

And so, I would like to thank you for the time. Thank you!

Jason Ross: Thank you, Professor Scafetta. It's interesting that one of the components that Professor Scafetta, also Professor Lüdecke—and actually a number of our speakers—have brought up, is the impact of the Sun on the Earth's climate. You shouldn't be surprised that the Sun has a major effect on the Earth's climate. It's pretty important.

One of the ways that I've seen videos try to debunk this claim is to reduce it entirely to the amount of heat coming from the Sun, or total solar irradiance. But this

leaves out the work of people like Hans Svensmark from Denmark and Amir Shaviv in Israel, who have looked at the relationship between galactic cosmic rays striking the Earth, which form cloud condensation nuclei and help to form the level of cloudiness in our atmosphere. Of course, clouds reflect sunlight. A lot of clouds mean a cooler Earth.

The amount of cosmic radiation reaching the Earth is modulated by the magnetic field of the Sun. We measure this activity in such things as the amount of sunspots. It's amazing how many different processes interact on this level. In this sense the Sun is modulating it, it has an effect on the Earth, but the mechanism that the Sun is actually modulating, is cosmic radiation coming from somewhere in our galaxy. It's pretty phenomenal to look at the Earth in its broad context and to think that these huge processes actually do impact us, in a significant way.

John Shanahan

Greetings to the Schiller Institute Conference

John Shanahan is a civil engineer, and an editor at All About Energy (allaboutenergy.net). This is an edited transcript of remarks he delivered to the second panel, "The Real Science Behind Climate Change: Why the World Needs Many More Terawatts of Energy" of the June 26-27, 2021 Schiller Institute conference, "For the Common Good of All People, Not Rules Benefiting the Few!"

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John Shanahan

Hello! My name is John Shanahan. I'm a civil engineer living in Denver, Colorado. I would like to thank Mrs. Helga Zepp-LaRouche for organizing the Schiller Institute conference on avoiding World War III, and inviting me to participate.

I started my professional life as a civil engineer in commercial nuclear power in 1970, and then became interested in public education for broader topics of energy in general, nuclear science, the environment, and the human factor.

It is clear to most engineers that solar and wind power are too diffuse and incapable of providing energy for the modern global economy. So, to counter the disinformation in the media, some friends, associates, and I began a website, allaboutenergy.net.

I am determined that our knowledge will not be lost. I am helping students in Latin America, Africa, Europe, North America, and Asia learn about the importance of reliable, affordable, high-energy-density energy sources—fossil fuels and nuclear power. I have lived a total of ten-plus years in Germany and Switzerland in the 1960s and 1980s, working directly with Europeans, in German, and visited Friedrich Schiller's burial place in Weimar.

Since 2007, my wife, friends, and I have bicycled in Europe for two weeks each year. We are familiar with the strengths and weaknesses of governments in Europe and North America, and, by extension, governments around the world. Since the 1980s, I have travelled to Latin America for back-packing and visits with friends in Bolivia. I am familiar with literature of that interesting part of the world.

The website, allaboutenergy.net, is a holistic, educational effort about energy, environment, energy biproducts, nuclear science, and their importance for the modern world. A greatly revised and updated version of the website will be released in a couple of months. We have an international board of advisors—forty-four people, from eighteen countries. The website has about 2,200 articles, reports, power-point presentations, e-books, and videos for public education. The volume of content is constantly growing. We have a newsletter that is sent to people in 124 countries.

Our mission is similar to the Schiller Institute's. We focus on the next 200 years. The Schiller Institute focusses on however long humanity will play an important role in the Universe.

We look forward to working together, and thank you very much.