I would now like to show you how the IPCC produces its reports. The reports say "scientists say," but they don't. Scientists send in their data, but they don't speak in the reports, which are written by economists, together with representatives of environmental ministries. For example, scientists were asked to send all the data measured with rain gauges over the past 30 years. What was the result? Out of more than 5,000 rain gauge stations [around the world], 4,146 report no significant change in rainfall. So it says on page 1,560 of [the IPCC's] AR-6. This is not said by Alberto Prestininzi, but by the IPCC. A small number [of the rain gauges] show excesses of rainfall and a small number show a deficit [of rainfall]. What did they write in the final report? That in the last 30 years there is a clear signal of increasing rainfall intensity [in some regions] and a clear decrease in rainfall intensity [in other regions].

The reports are constructed by not listening to the scientists. When you read in the newspapers that "the scientists say so," they are telling a mere lie. Economists write it, because the IPCC is an intergovernmental panel, headed by its member governments and run by economists. It is no coincidence that the chairmen of the IPCC have all been economists, from [Rajendra] Pachauri onward.

Droughts. Worldwide research shows that drought areas are drastically *decreasing*; after all, this is in line with the increase in vegetation. This is official data.

Since 2020, Italy has stopped building dams, when Italy would need dams, like bread, to eliminate floods, produce hydroelectric power, and have plenty of water all year round, because of the 282 billion cubic meters of water we have from rainfall.

The last thing I want to discuss is the report that the World Bank writes every year to list the risks of all the countries in the world. Out of curiosity I went to see what the risks are for Italy. It turns out that Italy has the most deaths from landslides, floods and earthquakes. The latest World Bank report says that the Risk No. 1 Italy faces is "failure of climate action." In second place is public debt, and then extreme weather events (which are not there), geopoliticization of strategic resources, and digital inequality.

I consulted the chapter on Türkiye, which had 50,000 earthquake deaths. Türkiye has the same risks as Italy.

These are the real risks of Italy: from 1900 to 2020: 250,000 deaths from landslides, floods, and earthquakes, and €6.4 billion a year in damages!

These are the signals that we gave to the President of the Republic: that you can somehow fight [so-called "natural disasters"] with [man-made] preventions, because in Italy we have a very good law on soil defense, but it was put in the drawer and never used.

This is what I think we have to tell everyone if we want to change things.

Thank you.

Prof. Carl-Otto Weiss

How Solar Cycles Determine Earth's Climate

This is the edited transcript of the presentation of Carl-Otto Weiss to Panel V, "Scientific Ecology and Assessing the Climate Challenge; Eradicating Poverty and Hunger in the World is the Priority," of the Schiller Institute's July 8–9 conference, "On the Verge of a New World War—European Nations Must Cooperate with the Global South!" Prof. Weiss is an advisor to the European Climate and Energy Institute (EIKE) and is Professor and Director of the German Federal Institute of Metrology, Braunschweig, Germany. Subheads have been added.

Schiller Institute

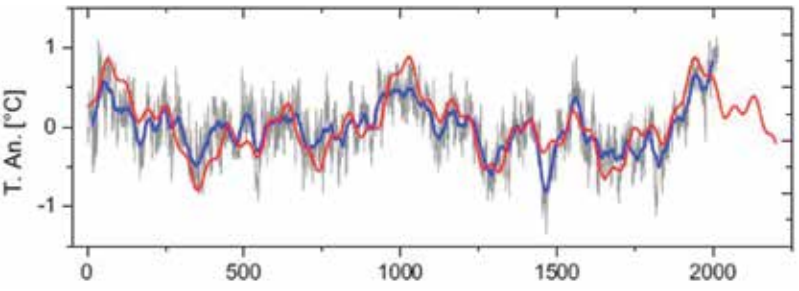
Prof. Carl-Otto Weiss

Hello! I have to make the usual remarks about thanking for inviting me to give this lecture to a large audience. The larger the audience, the better for the talk. I want to talk about something which is in my field; it's physics. Basically, I want to elucidate what makes the climate change over thousands of years, and even now. I have to apologize. I have to stick a little bit to my manuscript because my adviser, Andrea Andromidas, told me that the interpreters need a manuscript which is most close to what I'm talking about. This is unusual for me because normally I just speak freely without a manu-

script. So, I apologize for being a little bit, let's say, formal or something like that. Okay. So, this is the introduction, so to say.

I want to talk about what makes the climate change, and I take the final result already now here. It comes out that all the change we see and have seen in the past is driven by solar cycles, and CO_2 has, in fact, hardly any influence. So I take this result before, and after that I can show you how we come to that conclusion and how we analyze this mathematically.

FIGURE 1
2,000 Years of Global Climate from Proxies



Before I go into the physics, let me mention how I became interested in this subject. Even in the 1990s, let's say, every educated, scientifically-educated person could see that the official statements about what climate change was due to could not be true, because there were many, many internal inconsistencies and contradictions. So even then we discussed over coffee, as is usual for scientists, the different things. We laughed at the primitiveness of the official lies. We really were amused about how primitive the lies were. I did not have much time to look into this, because I had my regular 40 employees, 10 of whom I had to feed my projects, which means about $1 million a year that I had to find. And so that left me little time for things apart from physics.

Well, at some point I decided to retire. And after having found a good person to replace me, I looked into this subject more deeply because now I had time. I did, of course, what most people did. I looked at the models, model calculations, which were officially published and also published in the literature. And well, pretty soon it comes out that in the models there were numbers which were not correct. And so it became clear that in the models there's a lot of cheating.

Okay. I left this field of models, because basically I'm an experimental physicist. I like to work in the lab and I like to work with measurements instead of theoretical assumptions. And so I joined together with colleagues, among them, Horst Lüdecke. We decided to do something very usual in any kind of technology or physics, and that is called Fourier transform. If you have an irregular series of numbers and you want to know is there any regularity hidden in it, the instrument to do that is called a transform, which is basically nothing else than looking for periodic functions within these data sets which you have. So basically, you're looking for what is called cycles or periodic time-evolution, and that's called Fourier transform. [Lüdecke, H.-J. and Weiss, C.-O., *Open Atmospheric Sci. J.*, 11 (2017), 44-53]

So how did we proceed? We first looked up the literature of course, and found to our big surprise that among the about half-million publications there was not a single one which did this Fourier transform on measurement data; even though this is the most common way of analyzing irregular data in science and technology. So we were surprised, but anyway, we said, "Well, if nobody has done that, we will do that."

We took data from published literature for about 2,000 years' worth of climate. It has all been published and reviewed and is all correctly treated and accurately sourced. We had the distribution roughly around the globe. Missing, for some reason, was the famous Vostok ice core in Antarctica. But that is very important data, and so they were included. We showed the proxies—tree rings, sediments, stalagmites, things of that sort, in different colors.

And so we took all the data we could have. And it's a little bit complicated process, but in the end, we got a temperature record for 2,000 years, as shown in **Figure 1**. The gray values are the yearly values which we got from the data. The data were about half a million measurements. And since we need annual values, we could just average a lot. So that reduces the noise. But you can see in the gray values, which are the final yearly values, that there's still a noise. Okay. But well, that's always so in physics, you never have any noiseless things. Okay, so those are the data, the gray values which we use for the analysis.

What Is Climate?

The first thing is to go to the definition of climate. Climate is scientifically defined as the average of temperatures over 30 years. The blue curve is ex-

actly this 30-year average. The historically known things come out very nicely. You see, for instance, a maximum around the Roman time, you see the Medieval maximum, and of course also our present maximum. You also see the Little Ice age around 1500 AD. And it really shows, interestingly, how detailed this reconstruction is. If you look around 1500 AD precisely 1451 AD, there is this deep blue minimum. And that is very well known, even though hardly studied, but it's very well known from the biography of Louis XI, the French king [ruled 1461–1483]. And that was a time when even in southern France, all the grapes were destroyed by the cool climate. Even those little maximums and minimums are represented. Around 1850 the temperature rises. And that is exactly what is officially ascribed to CO_2 warming.

So, this is just the reconstruction. We now had data which we can analyze. The next thing we did was take our original values, which are the gray values in this graph, and do the Fourier analysis on it. Shown in **Figure 2** is what is called the spectrum, which shows the magnitude as a function of, let's say, periods of frequencies. What you see there is three main periods. The longest one is a 1,000-year period. The next one is a 460-year period and the last one is a 190-year period.

Now, those periods were very well known already from local measurements before we did this. Similar measurements somewhere in China or in the U.S. always you found these. And so the only new thing we showed is that these periods, were in fact important for the whole global temperature. These frequencies have names, according to who discovered them. So, the longest, the 1000-year period is the so-called Eddy cycle. The middle one was discovered by a Russian scientist and is called the Babich cycle. And the shortest one, the most studied one, is called the De Vries cycle. Okay, now we have a reconstruction. And the fact that we get known frequencies for the periods again shows that these are not mathematical artifacts or something, but that they are realistic things; because they were already known before and we found them again, so it must be realistic.

For people not familiar with Fourier transform, periodic things show up as big maxima and non-periodic things—like it would be if you had warming due to industrial development. That's non-periodic, it's just going straight up and not periodic. Those things show up in the spectrum as broad background.

Now, we didn't see any broad background, but there is the danger, if you are familiar with Fourier transform, is that the broad backgrounds, which are low, can be masked by noise. And so in order to avoid the possibility that an existing non-periodic component would be covered by noise in the spectrum, we just transformed everything back. In **Figure 3** are charted the three maxima again. The longest one, black, is the

FIGURE 2
The 3 Natural Cycles: Eddy Cycle 1033 Years, Babich Cycle 463 Years, De Vries Cycle 190 Years

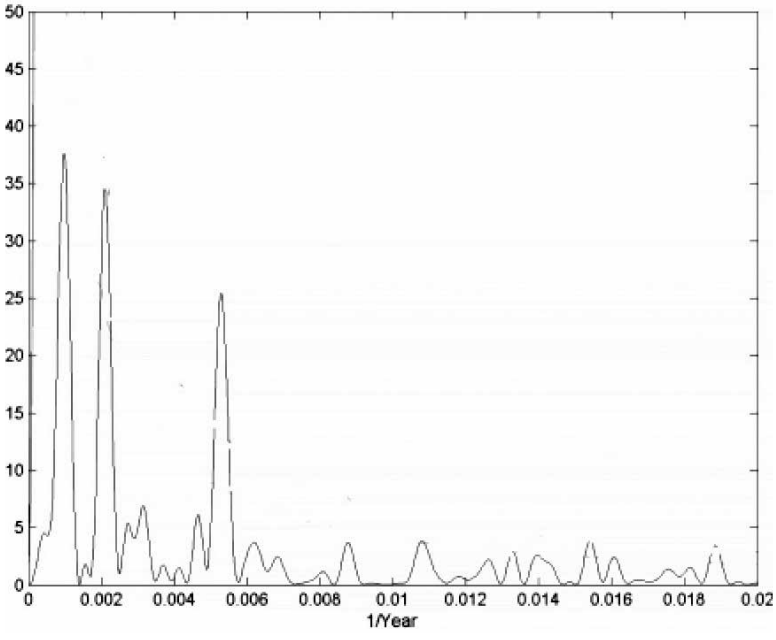
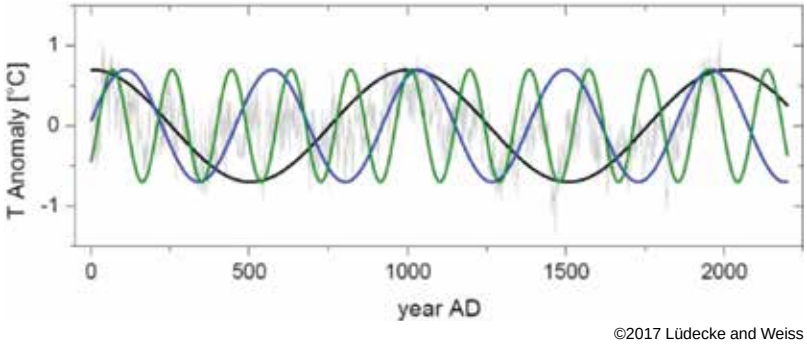


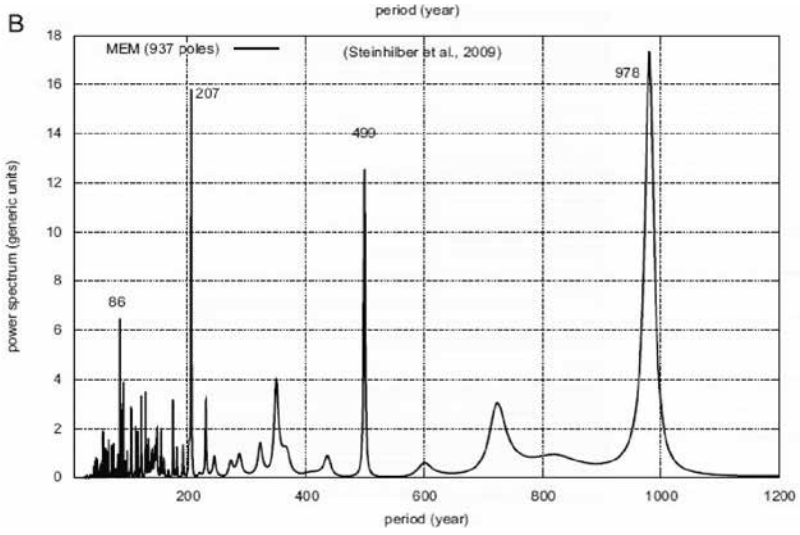
FIGURE 3
Proxy Temperatures (Grey) and Principal Cycles
Eddy Cycle: Black, Babich Cycle: Blue, De Vries Cycle: Green



Eddy cycle; very well known. The blue one is the Babich cycle, and the green one is the 190-year De Vries cycle. Okay. I shouldn't talk more about that. You can see these three maxima solar cycles converge at Roman times, Medieval times, and today.

Okay. The sum of the three cycles very well represents the whole history of 2,000 years. That means that in the spectrum where there are only three strong resonances, you have a complete domination of the time, the history of temperature. The most remarkable thing is that around the year 2000, both the Babich cycle value and the Eddy cycle value were rising, and the sum of the three cycles is rising just as much as the measurements .

FIGURE 4
Solar activity from 8,000 years of ^{10}Be and ^{14}C abundances



Source: Scafetta, N., J. Atmos. Sol. Terr. Phys. 80 (2012), 296-311.

CO_2 Does Not Cause Global Warming

So what does that mean? It means that the increase in temperature from 1870 to the present is, in fact, due to the three solar cycles, and not to CO_2. The natural evolution of the cycles itself gives the full increase in temperature. That is the main first result. So keep that in mind. Three solar cycles have determined completely the history of the temperature over 2,000 years, and in particular, they determine completely the rising of temperature from 1850–1870 to now, which is officially ascribed to CO_2. So that means all this talk about CO_2 warming is just not correct. It's just wrong.

Okay, now we can ask more. Where do these three cycles come from?

Figure 4 is a recording of solar activity for 8,000 years. This is by a Swiss author. And you see, the three biggest maxima are exactly what we find in the Earth's climate. So what that means is the climate of the Earth is governed by solar activity. Solar activity causes the climate in Germany and in the world to change.

We have a further insight where these cycles in the solar activity come from. According to the latest publications of this year, and a couple of years before, these cycles are due to planetary motion.

So what it really means is the climate on Earth is determined by the planetary motion. I mean, it's a little bit like you would say that it's like astrology. The planets determine our climate, but the mechanism by which the planets and their tidal forces control the Sun on the one hand [Scafetta, N. and Bianchini, A., Front. Astron. Space, 9 (2022), 1-33.], and the way in which the solar activity controls the climate [Svensmark, H., Europhysics News, 46/2 (2015), 26-29.] is in the meantime very well understood. I mean, the tidal forces on the Sun from the planets was understood only a year ago. But anyway, it's a clear thing; the very interesting paper had a lot of resonance in the scientific literature.

So what we have is the first result, which is politically important, is CO_2 has only a very minor role in determining the climate. The climate is determined by the solar activity, which in turn seems to be governed by the planetary motion. We have a full picture, and I think it's very clear what's going on, especially with the latest publications in the last two years.

Okay. That's basically what I wanted to say.

I wanted to describe how the climate of the Earth is determined first by cycles, which are identified as solar cycles; where the solar cycles come from, and finally, it's up to the planetary motion. That gives a complete picture. And if you ask me, I mean, you could say that's an interesting result. And in fact, there are people who have said there are tens of thousands of climate scientists, and they don't get a clear picture of science.

Then you come to old and retired professors who solve the whole problem with a little bit of homework. And they said, well, that would merit a Nobel Prize. I don't think we will get a Nobel Prize, because it's not politically correct, but we find things out. Well, there are people who suggest we should be nominated at least.

Thanks for your attention.