Aletsch Glacier, the largest glacier of the Alps, in Switzerland.

Climate Change Since the Little Ice Age

by Dr. Horst Malberg

Prof. Horst Malberg, a retired professor of meteorology and climatology, gave this presentation at the industrial policy conference held by the German political party BüSo (Civil Rights Solidarity Movement) on March 20, 2010, in Bad Salzuflen. It was translated from German by Vyron Lymberopoulos, and subheads have been added.

Dear ladies and gentlemen: I'm happy to speak to you today, and I promise you I will not speak on questions of faith. I leave that to others. You know, climate change has become a substitute religion, and I am only going to speak about my own results, those which I can also prove.

About myself: For decades I was a professor of meteorology and climatology, and director of the well-known Meteorological Institute at the Free University of Berlin. I have been retired for some years and am no lon-

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German Chancellor Angela Merkel visiting the Eqi glacier in Greenland in 2007.

ger accountable to anyone. I always say that the only two things standing over me are the love of God, and my spouse. And because neither objects to my theses, I will tell you something about my research.

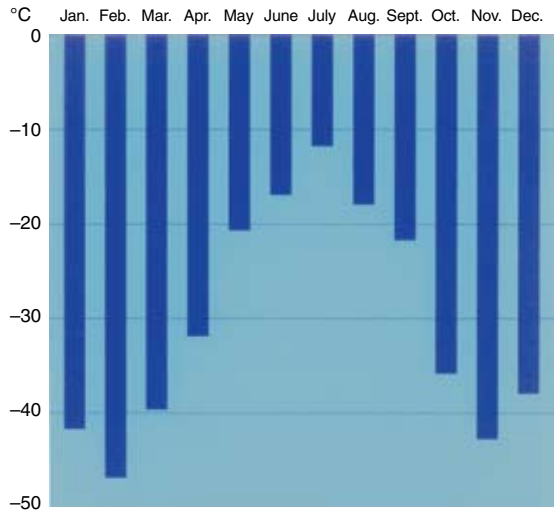
Basically, you are all climate experts. The media, newspapers, television, radio, blast the climate theme at your ears, and along with it many things that are simply false.

Retreat of Glaciers?

The first topic, I would like to talk about is the thesis of glacial retreat. The hoopla on the Himalayan Glacier—you heard about this—is that by the year 2035, all the ice would have melted. But then it was found to have been a "misprint" by a rogue source; it was supposed to be 2350, not in 30 years but in three centuries. You remember that Madame Chancellor Angela Merkel and Environment Minister Sigmar Gabriel proudly had a photo taken of them on the Greenland glacier. For now we have a temperature rise, as we will see shortly, of nearly 1

Photograph of Ötzi the Iceman, shortly after the discovery of the body in September 1991, when it was still frozen in the glacier and had not yet been removed. Five thousand years ago, when this Iceman lived, the glacier ice front was farther up than it is now.

Figure 1
MEAN MONTHLY TEMPERATURES OVER GREENLAND ICE



degree. And as a consequence, the ablation of glaciers should start now.

What you see in Figure 1 are temperatures of the Greenland ice—not below at the coastline, where the sea current plays a role, but higher up on the ice, and also when it is hard to see. When you look at the scale, it starts at zero, and over Greenland it naturally goes farther still in the minus range. We can determine that in Winter we have temperatures between –40°C and –45°C, and in Summer about –15°C. And now we have global warming of +2°C. In other words, in the Greenland wintertime, we have temperatures of –38°C and in Summer –12°C.

You see, you have answered the first question with your laughter. Which glacier is melting? Death by laughter! I have always asked my students before graduation: What happens if the temperature rises by 1 degree celsius? The right answer was: "There will be a shift in the snow line—that is, the transition from rain to snowfall—by 1 degree, 150 meters upwards on the map, no more."

Now, when you look at the glaciers of the Alps, the snow line rises gradually: 150 meters in the vertical. In other words, when the temperature rises, the glacier ice front withdraws at the bottom, not at the top. It withdraws at the ice front.

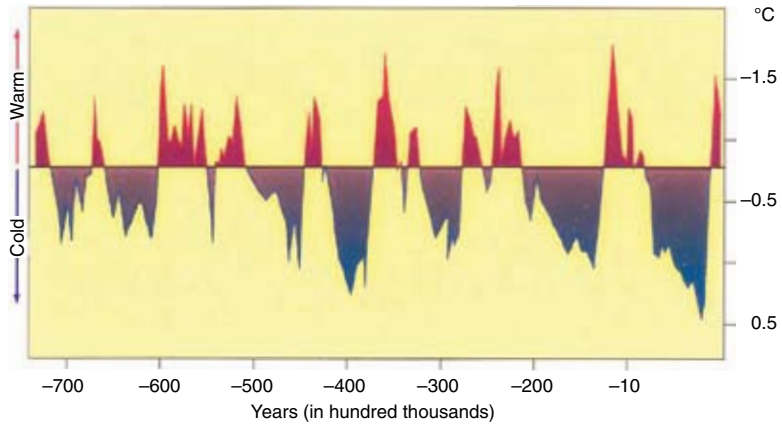
And what is revealed, after the glacier has withdrawn its glacier ice over the last 100 years? Suddenly, tree trunks appear, Ötzi the 5,000-year old iceman appeared again. In other words, at one time the ice front was withdrawn farther then the present day.

And how could the vegetation have developed below the ice? When the glacier withdraws, it is also a very good indication of the climate. On top, primarily nothing happens, at least with normal climate relationships. Why is it that the glacier also melts higher up? Somewhere on television, I saw a mountain guide make this point. He said: The glacier is sweating in the Sun and melts. The parts situated in the shade don't melt.

In other words, solar radiation is the core of the problem, not the puny temperature rise of 1 degree C. And what has hap-

pened? By industrialization, over the last 100-150 years, the glaciers have become "dirty." A dust layer has formed, little by little. And we all know that a darker body absorbs solar radiation much better than a lighter one. The glacier has lost its natural potential of reflection, and now it sweats and melts, also higher up. This has nothing to do with global climate change.

Figure 2
CLIMATE CHANGE DURING THE LAST 750,000 YEARS:



More Extreme Extra tropical Storms?

The second fairy tale thrown at you, after we had the windstorm Kyrill in January 2007, is that, in the future, we have to become used to such extreme storms. I have asked my students, please explain why wind storms never occur during Summer. Surely we have small storm fronts, but no wind storms of many hundred kilometers; they only occur during Winter. Students who have somewhat mastered cyclone theory knew the answer right away: Wind storms arise only when the polar region is very cold. That means, when the temperature difference between the subtropics, the Azores High, and the polar region should be large. During Winter, the difference in temperature is 45° to 50° C; during Summer, it is approximately 20° to 25° C. In other words, conditions for the genesis of wind storms are worse when the meridianal temperature difference decreases.

According to global warming theory, the greenhouse theory, the polar region warming should be two times stronger compared to the subtropics. Consequently, few Kyrills will appear, not more. More is both physically and meteorologically impossible. You have been told old wives' tales.

Switch between Interglacial and Ice Ages

What you see in Figure 2 are the Ice Ages, for the last 700,000 years of climatic development. Everything below the horizontal line, pointing down, are the cold periods that led to the Ice Ages, and everything pointing up, above the line, are the interglacial periods. What do we see? First, there is a regular pattern of a switch between Interglacial and Ice Ages. Furthermore, we see, that in general, from the Interglacial to the next Ice Age took really a long time, but from the Ice Age to the next Interglacial there are just some thousands of years. So this change is very fast.

The last Ice Age is approximately 10,000 to 15,000 years behind us; in other words, the climate has recovered really quickly. Above all, we see that permanent climate change is entirely usual. It is absurd to believe that a stable climate is the usual. Natural climate change is normal.

When you look at the figure, you can note that between two Ice Ages, or analogously between two interglacials, there are on average about 100,000 years. Now we are, let's say, 20,000 years after the last Ice Age. Therewith, my first prediction: In about 80,000 years, we will have the coldest part of the next Ice Age, if we live to see it.

Also note that after the Ice Age, our climate has changed permanently. You see, here (Figure 3) is our region, Germany, after

The Kyrill windstorm in January 2007 felled power pylons and caused massive electricity outages in Europe. It is a myth that "global warming" will cause more such storms.

Figure 3
CLIMATE CHANGE IN MIDDLE EUROPE AFTER THE LAST ICE AGE
(15,000 years before the present)

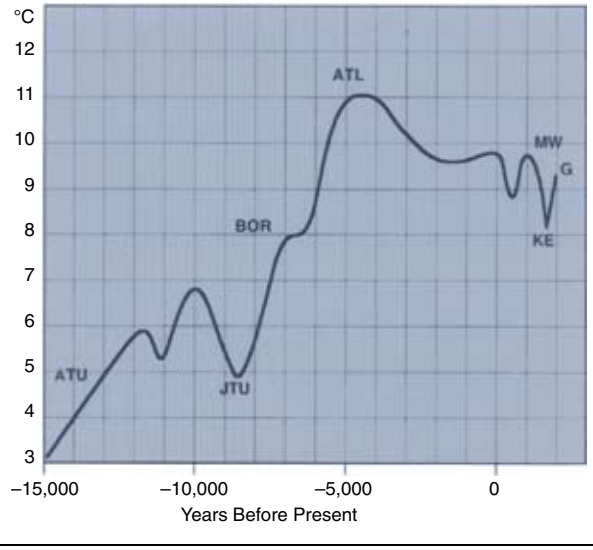


Figure 4 (a)
YEARLY MEAN TEMPERATURE DEVIATIONS SINCE 1850: GLOBAL

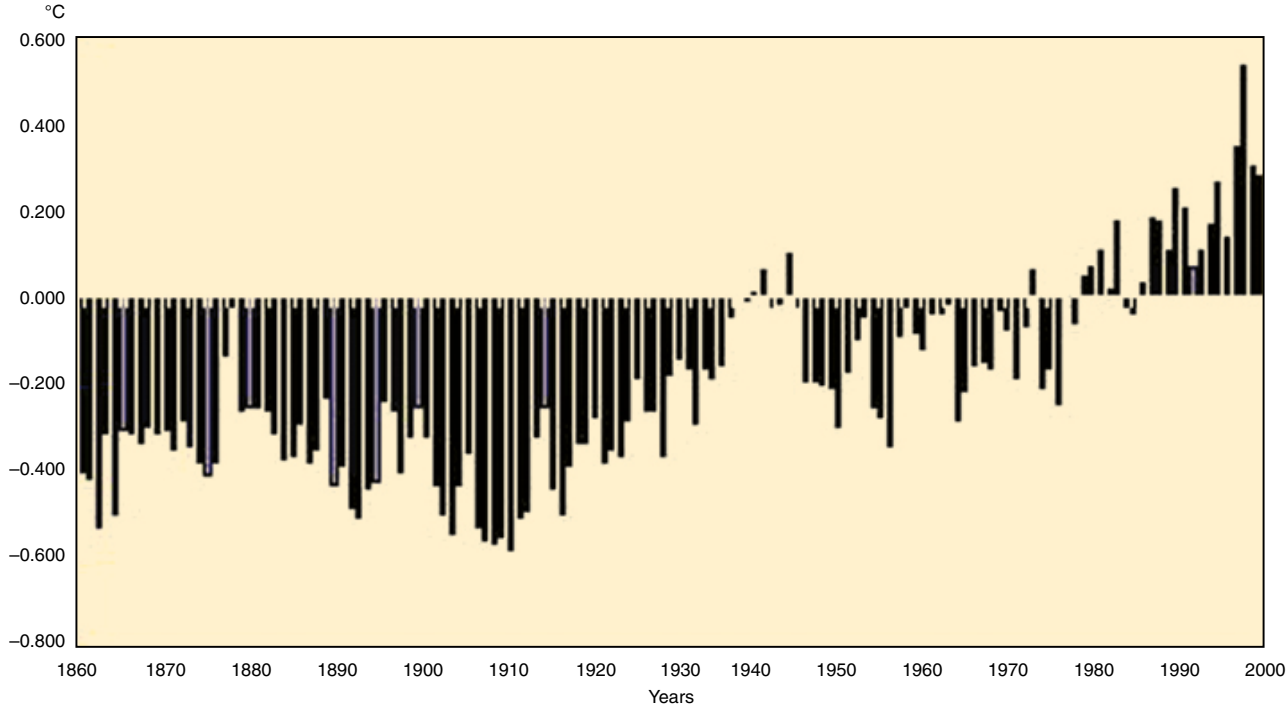


Figure 4 (b)
YEARLY MEAN TEMPERATURE DEVIATIONS SINCE 1850: NORTHERN HEMISPHERE

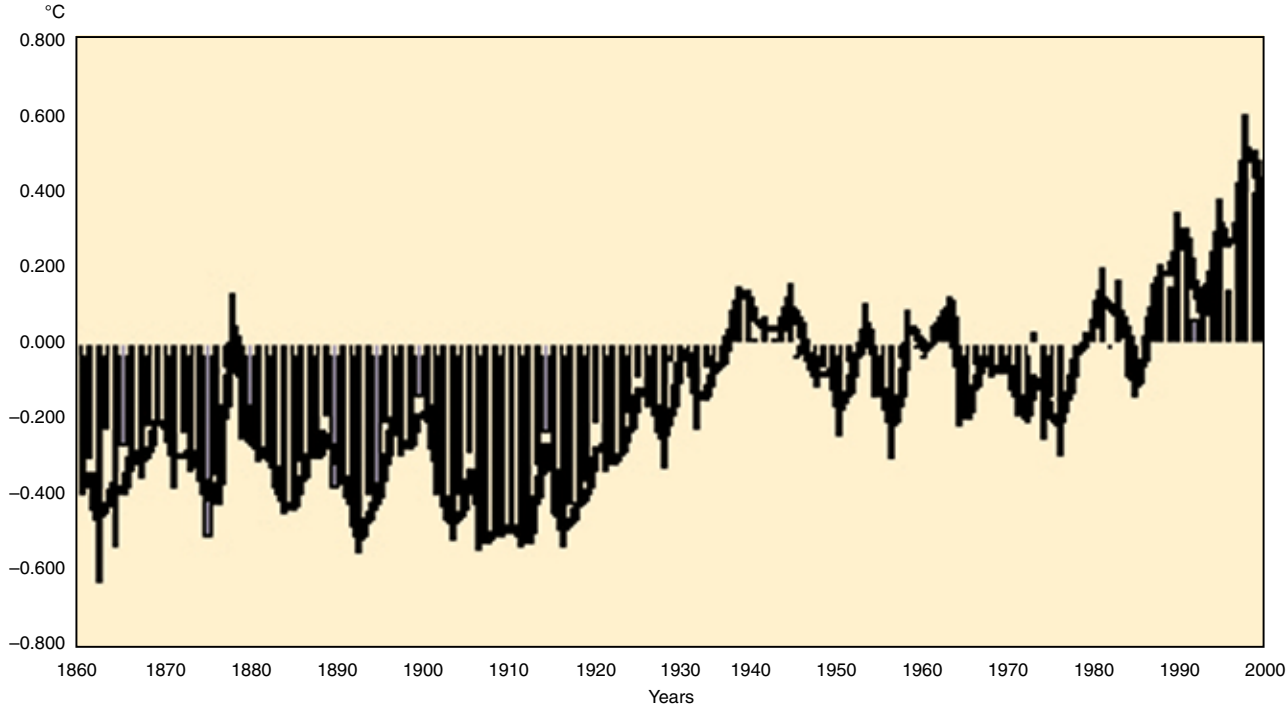
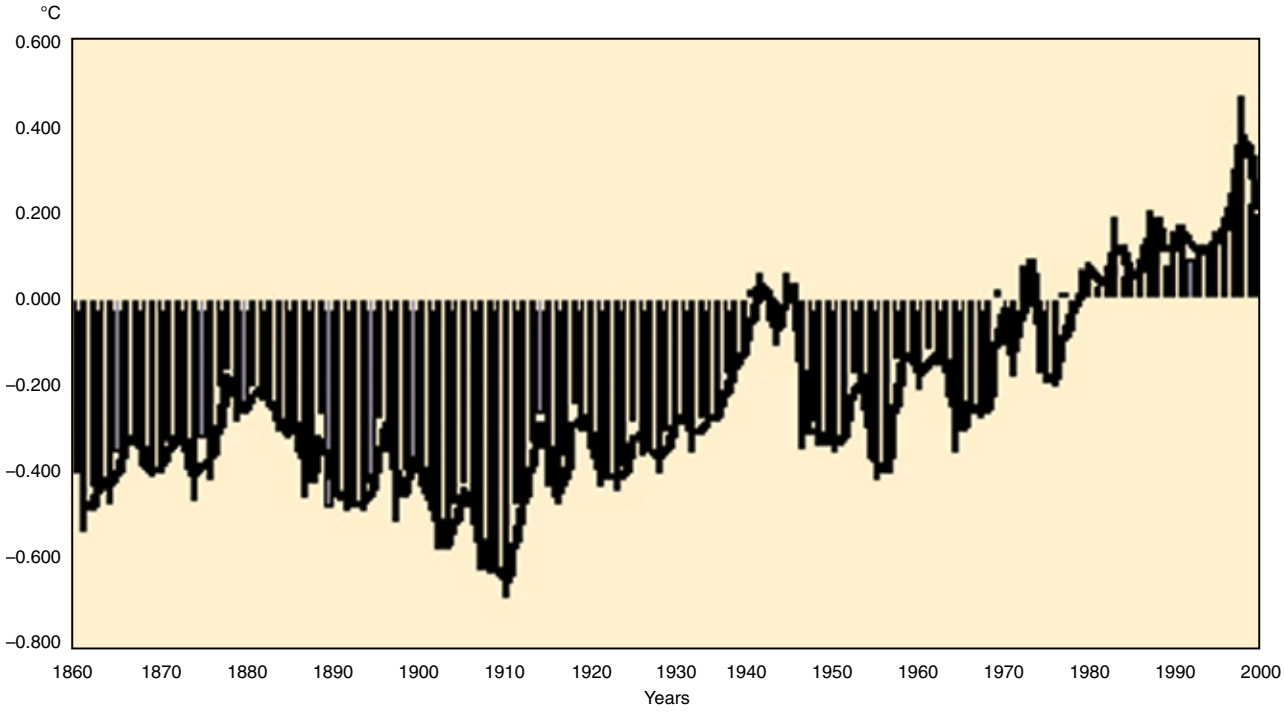


Figure 4 (c)
YEARLY MEAN TEMPERATURE DEVIATIONS SINCE 1850: SOUTHERN HEMISPHERE



the last Ice Age, when the ice has withdrawn. We used to have climatic conditions like the tundra of Lapland, northern Siberia, or northern Canada, with the accompanying vegetation relationships. Then temperatures curved upwards. Here, at 5,000 to 6,000 B.C., for example, it was warmer in Europe than today. It goes on, up and down, and finally we arrive here at the end, in the present.

This shows that climate change is something very natural and, very important, that there have to be many factors, some main factors at least, that govern our climate and that permanently change the climate.

Global Warming Since 1850

The very wild climate discussion we have today, began when some of my British colleagues started out primarily to collect data from climate observations, and then developed climate graphs for the Northern and Southern hemispheres (Figure 4). You see, for the global, the Northern and Southern hemispheres, identical trends. And notwithstanding these many, many data points, we have to discern between long-term climatic development, and that which happens from year to year, or from decade to decade.

The year-to-year variations are weather anomalies, which have nothing to do with climate. One year does not play a significant role, and also, it has nothing to do with CO_2 but everything to do with the warming of El Niño or the cooling of La Niña in the tropical Pacific between South America and Australia.

What we see in Figure 4 is that in general, there is a trend upwards. And that is unchallenged; it's the warming that has taken place since the year 1850. The important question when one sees such warming trends, is "What is the cause?" And

Figure 5
INCREASE OF CO_2 (1850-2000)

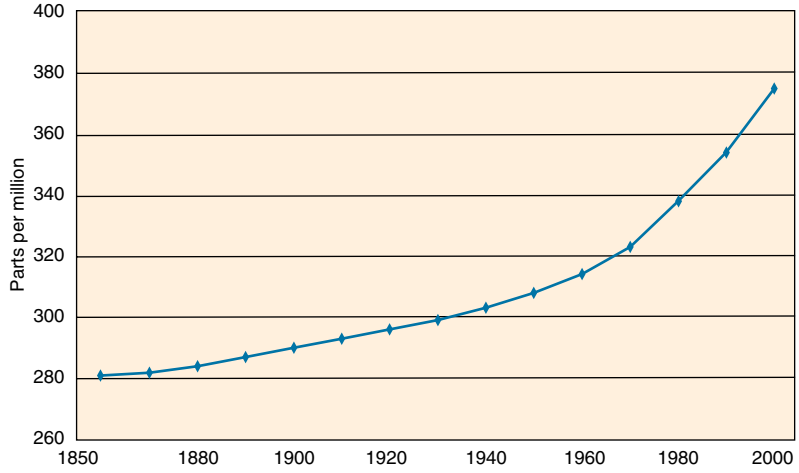
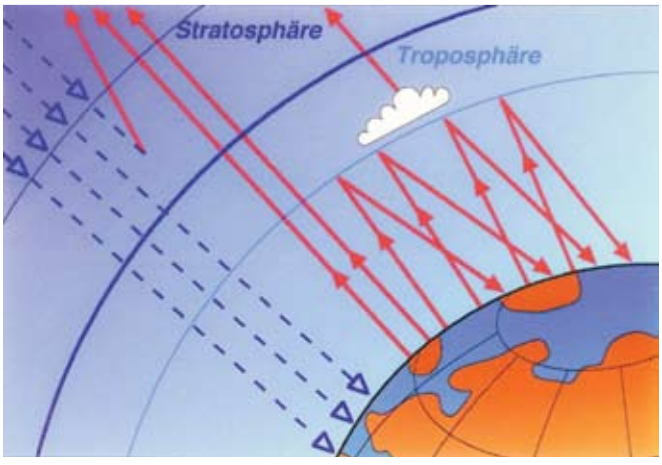


Figure 6
SCHEMATIC OF THE GREENHOUSE EFFECT



here we have a factional split.

One group of scientists say that the influence of the Sun cannot explain the global warming since 1850, and that there has to be another magnitude which has changed the climate. These people came up with CO_2 emissions as the cause for the global warming since 1850. In Figure 5, you can see how the CO_2 content in the air has increased from roughly 280 parts per million to 380 units. And you see further that the CO_2 content in the air rises steadily; there are no variations up or down; it just increases.

Then the first climate models were made, and in these models, nature no longer played an important role. The rise in CO_2 content, what humans are doing, became the primary climate forcing. Everything that has been thrown at you, all the calculations, come from that assumption. The result: There is warming of 2 degrees C, or there is warming by 6 degrees in the next 100 years.

Scenarios But No Predictions

You are not told that these are not predictions. It just appears as though they are. With predictions, I know exactly all the conditions that have an impact, and I know all the atmospheric reactions. But can you know how many Chinese will drive to the mall with which car 30 years from now? Nobody knows. Or do we know how global cloudiness will increase and cool the Earth, when it gets warmer? That implies that a great many assumptions are inserted into these global calculations, and how the assumptions are inserted will influence the outcome.

And that is the problem. What we get are scenario calculations. They are not predictions, although they are presented as if they were predictions. Scenarios mean that the results will depend on the assumptions. They are computer games.

The Greenhouse Effect

All these climate scenarios are based on the greenhouse effect. And now, just briefly, what is that ominous greenhouse effect that everybody talks about? What you see in Figure 6, the dashed line, is incoming solar radiation. The solar radiation reaches Earth and heats the surface. We know that between day and night, there is a warming of approximately 10-15 degrees C, depending on the amount of clouds, and on whether it is Summer or Winter. The Earth's surface is warm now, and gives off warmth to the air layers above.

This heat radiation—infrared radiation—arrives in the atmosphere and is partly absorbed by the droplets and ice crystals of the clouds. These clouds radiate this absorbed heat partly back to Earth. You are all familiar with the fact that a clear night, without clouds, is colder than a cloudy night. So, when we have clouds, emitted warmth partly returns to Earth. The same process basically occurs with the molecules of greenhouse gases.

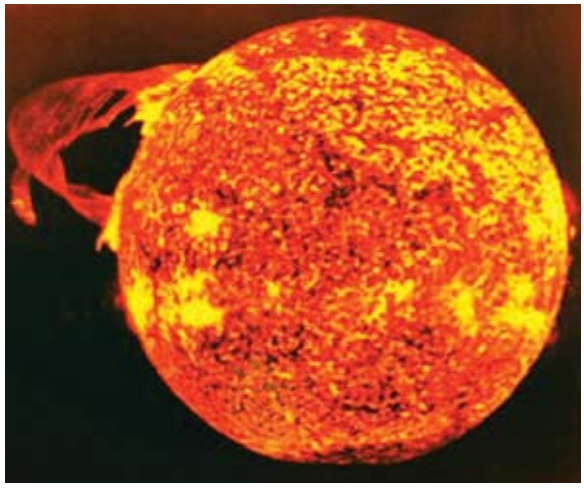
The fundamental question is, which portion of the warmth can be absorbed by atmospheric gases—particularly the damned CO_2, but also methane, nitric oxide—and partly returned to Earth. In the climate models it is assumed that the anthropogenic greenhouse effect is so strong that natural climate factors play no essential role in the recent global warming. This is the theory, which is extremely controversial.

Significance of Sunspots

Next, let's look at the Sun. Here, in Figure 7, you see the Sun and many dark spots on the Sun, and enormous eruptions of plasma on the surface, where the Sun hurls large amounts of energy into space. The dark "freckles" on the Sun are called sunspots. Ever since Galileo and Kepler discovered telescopes, since about 1600, sunspots have been observed, and by now man knows, or has known for a long time, that the core area of these sunspots is approximately 1,000° C cooler then the surrounding area.

The dimensions of these sunspots would stretch from roughly

Figure 7
THE SUN AND SUNSPOTS



1,000 to 10,000 kilometers; in other words, these are huge areas. During my university studies, it was said that it is colder at the Sun when many sunspots occur, and when it is colder at the Sun, it should have less energy and has to be colder. But that belief was a fallacy. Since observations by satellite became possible, we learned that whenever many sunspots occur, the Sun is highly active. When few sunspots occur, then the Sun is quiet, and we call it a quiet Sun. In summary, sunspots are an indicator of the activity of the Sun.

Figure 8 shows the mean yearly number of sunspots. Imagine, if one has freckles, and from year to year, they become more numerous or become less numerous. It is similar with sunspots. In each 11-year sunspot cycle, for about 5 or 6 years, the number of sunspots increases to a maximum, and in the following 5-6 years, it decreases to the minimum. Here you see in Figure 8 how the variations in the number of sunspots form bell curve cycles. But you can also see that the Sun produced less or more sunspots in one cycle compared to others. This means that the Sun has varied its activity from cycle to cycle. When you place a curve over all cycles (Figure 9), you discern that the number of sunspots, calculated for the average number of every solar cycle, has increased since 1850, and so has solar activity.

One of the many cold winters of the Little Ice Age is depicted here by the Flemish painter Pieter Bruegel the Elder (1525-1569).

And now we arrive, after these previews, to the question of climate change. Here in Figure 10, you see the global temperature. In 1850, the temperature was relatively low, and since then it has risen gradually. There is an unmistakable in-

Figure 8
YEARLY MEAN NUMBERS OF SUNSPOTS AND SUNSPOT CYCLES (1900-2009)

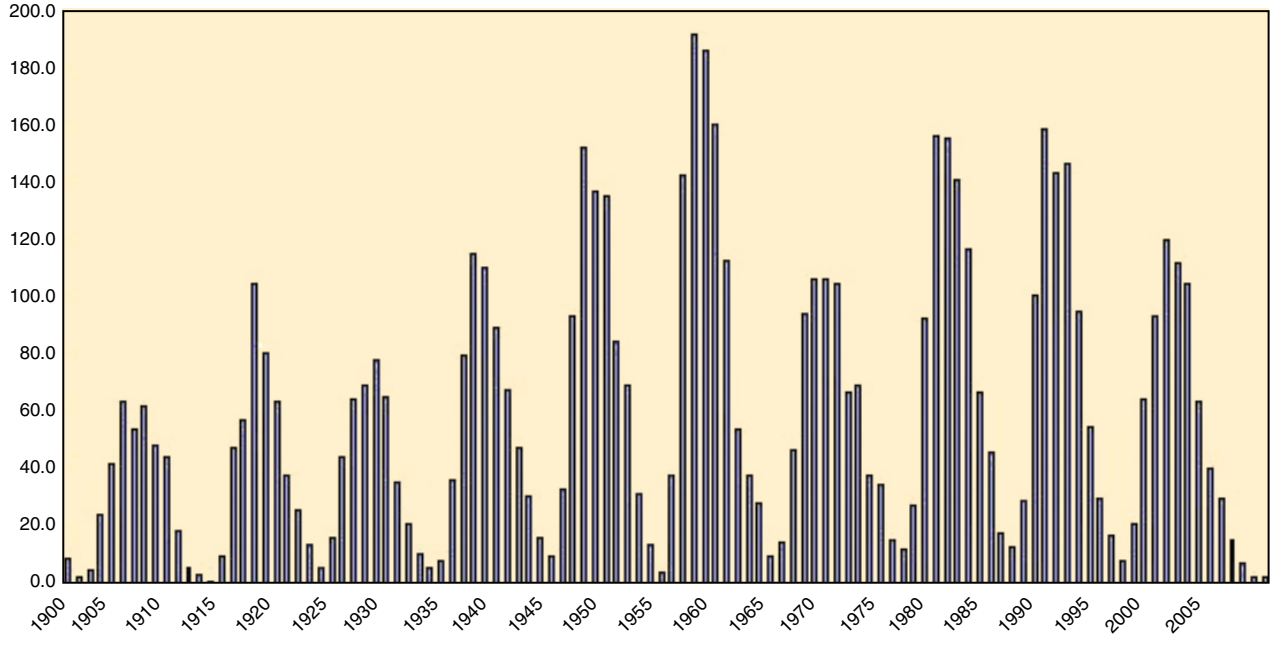


Figure 9
MEAN NUMBER OF SUNSPOTS OF EACH SOLAR CYCLE (1850-1999)

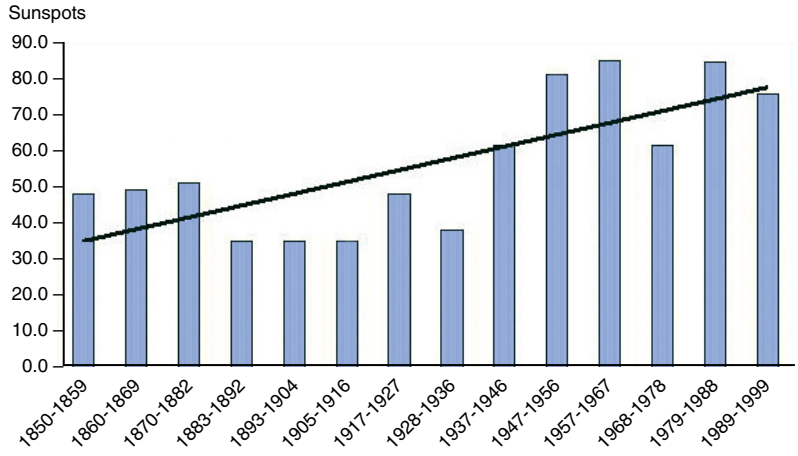


Figure 10
INCREASE OF MEAN GLOBAL TEMPERATURES (1850-1999)

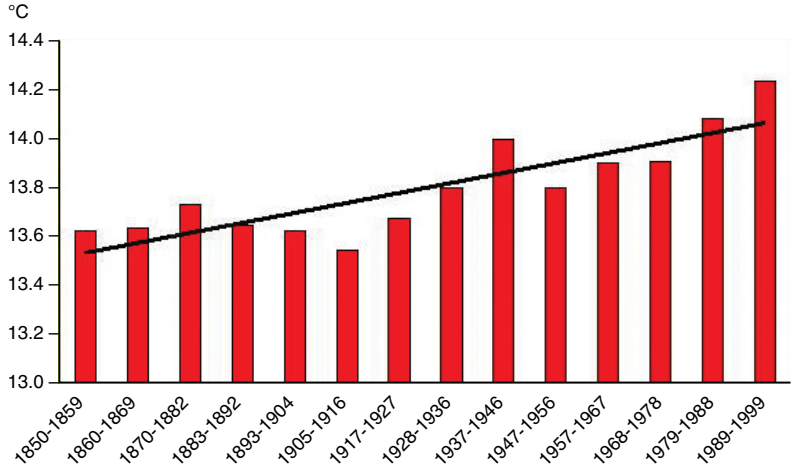
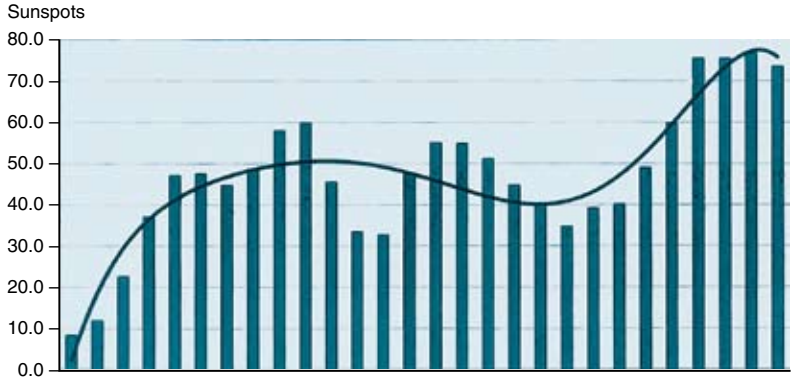


Figure 11
MEAN NUMBERS OF SUNSPOTS FROM 1672-1999



crease in temperature over the last 150 years. No argument there. This is the so-called global warming, approximately 0.6° C.

Now, when we put the two figures (Figures 9 and 10) on top of each other—the global temperature and the sunspots—there is no doubt that both curves run in parallel. So here we clearly have a relationship between the increased solar activity of the last 150 years and global temperature. The global data set is 150 years long. In contrast, there were very good observation posts in Europe, both in Middle Europe (Germany, Austria, Switzerland, and Czechia) and in Western Europe (centered on Great Britain). The European climate data sets give us information about climate changes for more than 300 years.

In Figure 11, you can see the development of temperature for Middle Europe, after the Little Ice Age of the 17th Century. The temperature rose during the 18th Century. Then there is a new break in the 19th Century, and then warming in the 20th Century. The global scale shows us the temperature relationships from 1850, starting in the most hostile period after the Little Ice Age. The global scale is characterized only by temperature rise. It tells us nothing about the climate before 1850. But around that time, in Germany and in Middle Europe, there were dramatic crop failures as a result of the climate relationships. People starved, really starved, which began the large-scale emigration waves to the USA.

In other words, since global warming started, we have been having good fortune, not a climate catastrophe.

Temperature Rise and Sunspots

Figure 12 shows, for the same time scale as Figure 11, the development of the sunspot numbers since 1672. During the Little Ice Age, the sunspot activity was very limited; it decreased in the 19th Century, and increased again in the 20th Century. That means that temperature, as well as solar activity, represents a wave-like, almost sinusoidal function.

When we look at the time elapsed between the minima and maxima of solar activity, it is roughly 200 years. This long solar activity cycle is called the De Vries cycle by astrophysicists. And now a hint: Again with temperature, we see a 200-year oscillation. This means that

since the last Little Ice Age, during which time we have observational data, our climate has always been coupled to solar activity.

To stress the relationship between solar activity and climate, we will consider their anomalies. We are accustomed to say a month or a year is warmer or colder than normal. That means, in our case, we calculate average values for sunspot numbers and temperature for the period 1672-1999. In Figure 13, we see the deviations of sunspot numbers from the average; in Figure 14, the deviations of temperature from the average.

Now let's discuss the graphs. We can see in Figure 14 that it was cooler (below average) during the Little Ice Age, and that the 18th Century was warmer then usual. Again, the temperatures were below average during the 19th Century, and then again became warmer than usual. What you can simply recognize here is that it is the same 200-year oscillation as mentioned before. In Figure 13, we see that the anomalies (deviations from average) of solar activity have exactly the same rhythm as temperature anomalies.

During the Little Ice Age, solar activity is below average. Then it goes up and down, and up again: the same sinusoidal wave. And when we place one curve on top of the others, we can state as a matter of principle: Every time the Sun's activity is below normal, we have a cold period. When the solar activity is above average, we have a warm age.

Now we arrive at my logic in reasoning that it is the solar effect, and not the CO_2 effect, which determines climate change. Qualitatively, the consonance of the temperature and sunspot curves, their synchronous conduct over the last 300 years, is an indisputable fact. For those interested in statistics, quantitatively the result of correlating solar activity (the number of sunspots), and temperature shows a very high relationship. Changes in solar activity explain 70 to 80 percent of the long-term climate behavior of the past centuries. The results indicate a statistical probability of 99.0 to 99.9 percent.

Figure 12
COURSE OF MEAN MIDDLE EUROPE TEMPERATURES FROM 1672-1999

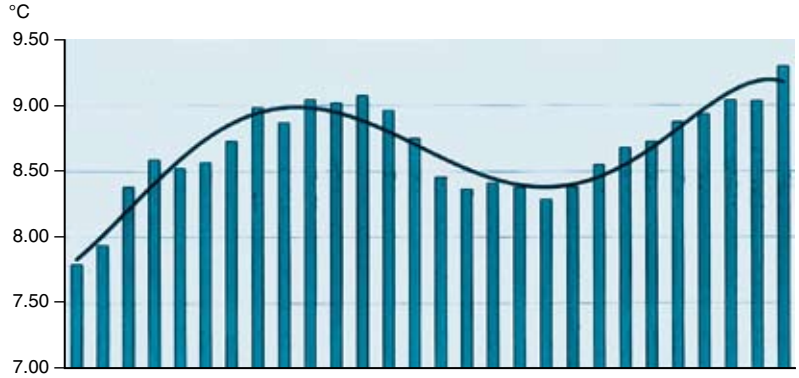


Figure 13
ANOMALIES (DEVIATIONS FROM AVERAGE) OF SUNSPOT NUMBERS 1672-1999

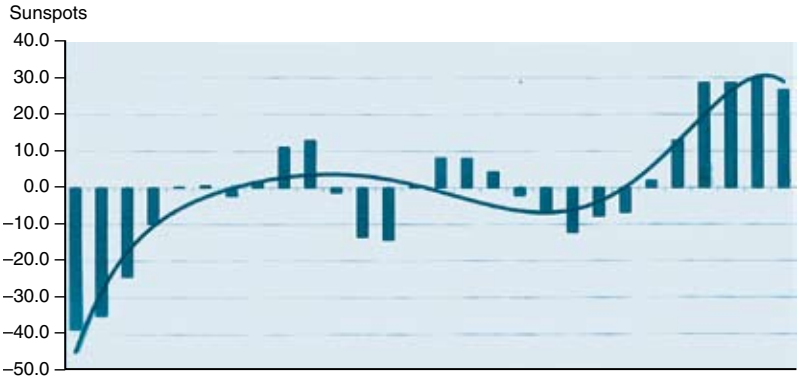
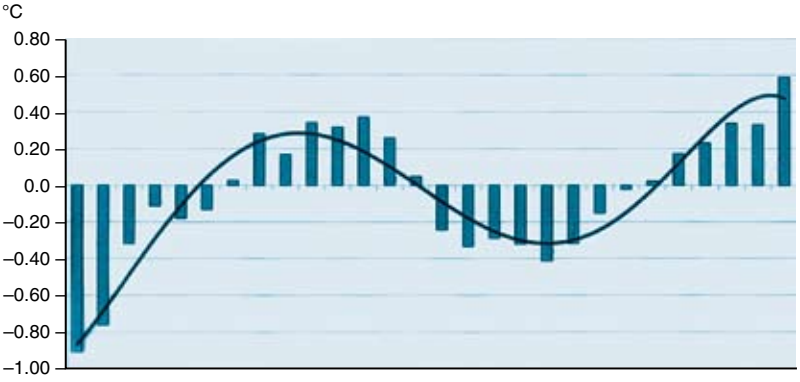


Figure 14
ANOMALIES (DEVIATIONS FROM AVERAGE) OF MIDDLE EUROPEAN MEAN TEMPERATURE 1672-1999



The Future of Climate in The 21st Century

When we look once more at climate development from this standpoint, we see that in the 17th Century it was cold, and in the 19th Century it was cold. In the 18th and 20th centuries it was warm. The change of solar activity was analogous. Based on these near 200-year cycles, we should expect that soon there will be the beginning of a decrease of solar activity, and

the start of global cooling. The forecast based on progressive $C0_2$ warming is therefore most unlikely.

I am not the only one who has arrived at this conclusion. Both the main observatory at St. Petersburg and a research institute in Orlando, Florida, have arrived at these results. They expect a temperature drop soon to reach a low point around 2050, before rising slowly in the 200-year cycle.

From this it follows that measures like the storage of CO_2 and trade in carbon certificates are not proven scientifically, based on actual climate as well as the anthropogenic influence on the climate. Such measures are not proven scientifically and merely represent a squandering of money.

CO_2 is no toxic gas, as claimed by the media. I don't know if you remember your chemistry class. If you do, you will recall that CO_2 is the precursor of oxygen, and we need oxygen to live. But what is producing the oxygen? Plants! A plant takes CO_2 from the air, and H_2O from water, and thereby produces oxygen. In other words, the most important substances for life are CO_2 and H_2O, from which plants produce oxygen.

To talk about CO_2 as a toxic gas that is harmful to the climate is total idiocy.

Finally, a concluding remark: As I see it, every human being has the fundamental right to clean air, clean water in the lakes, rivers, and oceans, and to clean soil. In other words, worldwide there is a fundamental right to optimum environmental protection. There is no fundamental right for a stable climate, and there never was. The stabilization of CO_2 in order to limit the temperature rise to 2 degrees C is scientifically groundless.

EIRNS

"Climate change has become a substitute religion": Prof. Malberg addressing the March 20, 2010 industrial policy conference of the Civil Rights Solidarity Movement in Bad Salzuflen, Germany.

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