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# Climate Change Since the Little Ice Age

*by Dr. Horst Malberg*

Part 2 of 2

*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.*

## 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.

Figure 6
SCHEMATIC OF THE GREENHOUSE EFFECT

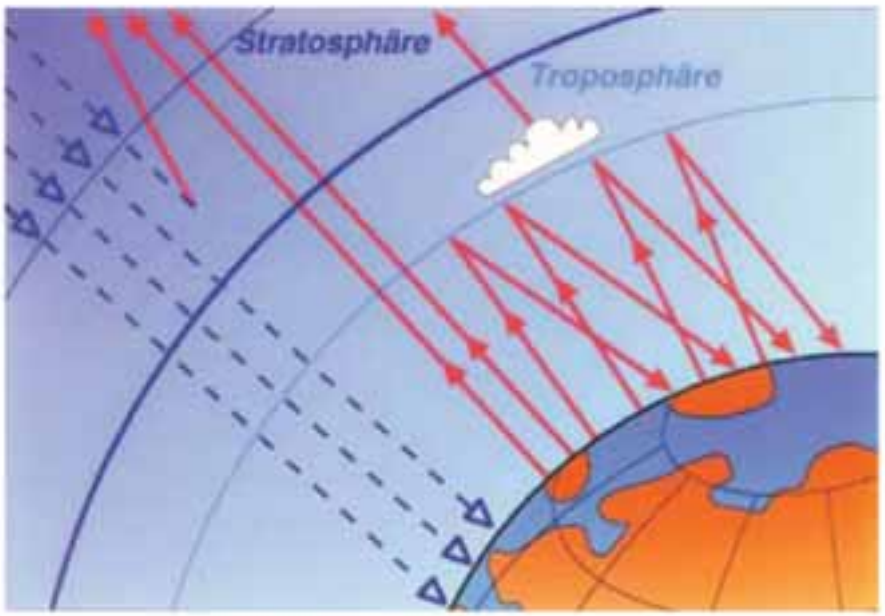
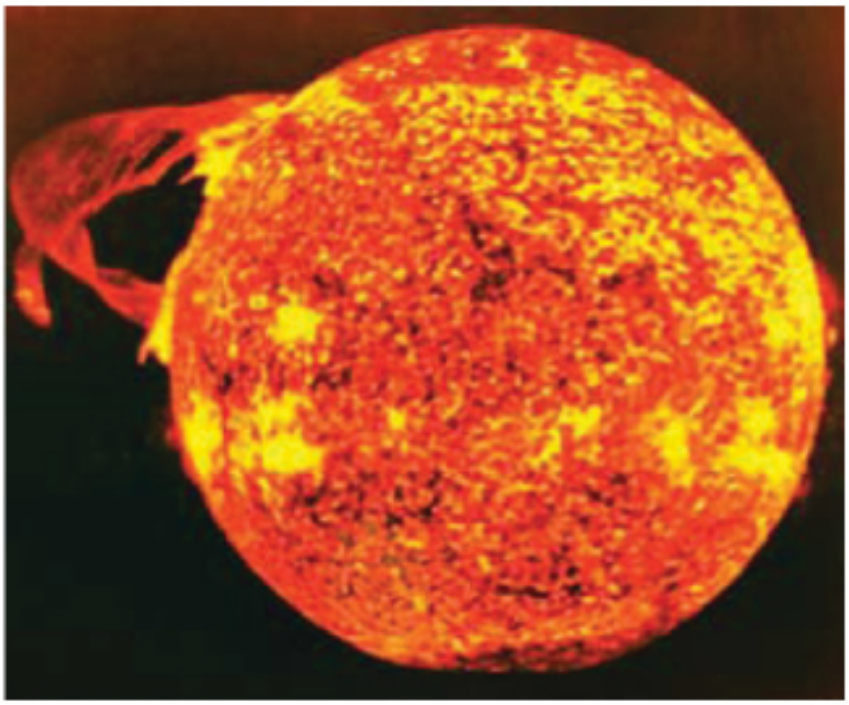



Figure 7
THE SUN AND SUNSPOTS



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 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.

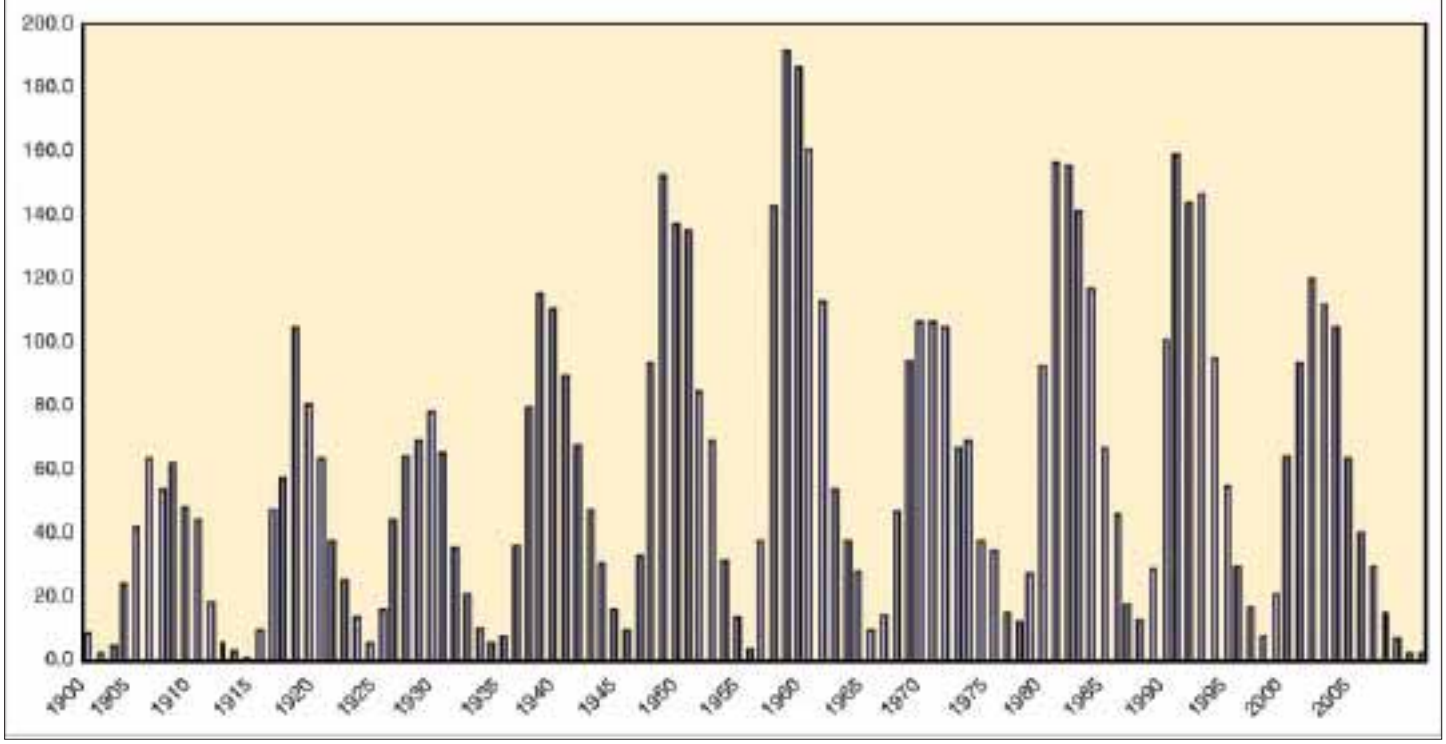
One of the many cold winters of the Little Ice Age is depicted here by the Flemish painter Pieter Bruegel the Elder (1525-1569).

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 crease in temperature over the last 150 years. No argument there. This is the socalled 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

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

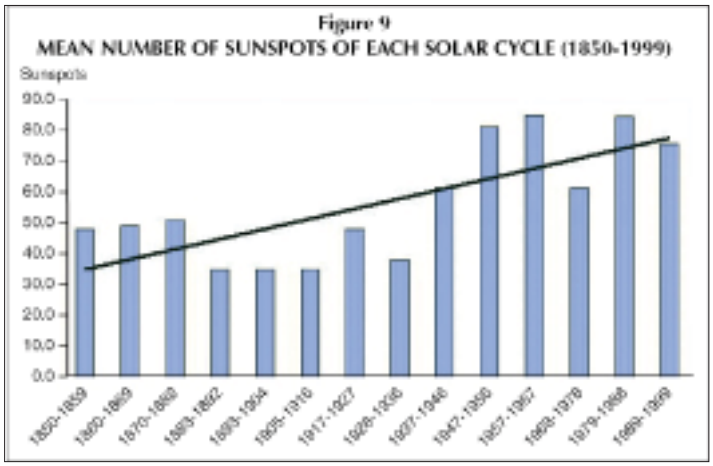


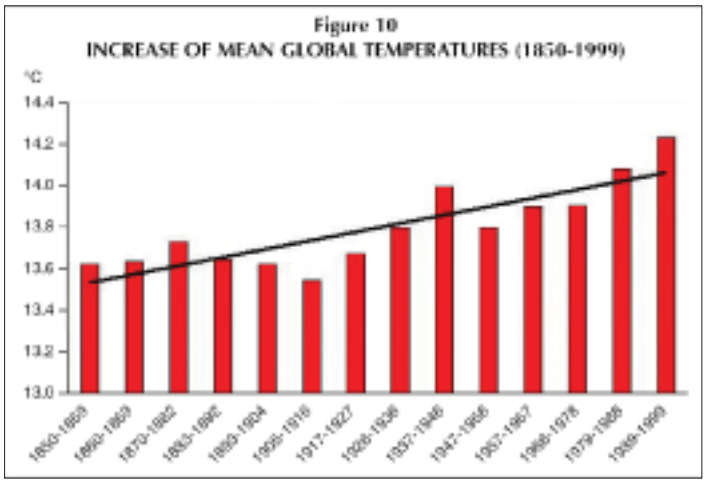
warming in the 20th Century. The global scale shows us the temperature relationships from 1850, starting in the most hostile period after the Little Ice Age. The global scale is characterized only by temperature rise. It tells us nothing about the climate before 1850. But around that time, in Germany 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.

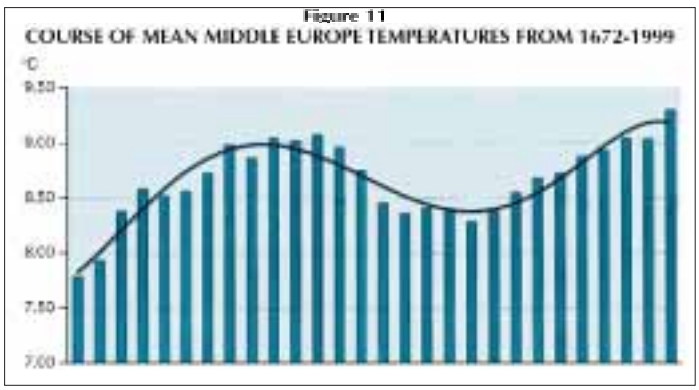
In other words, since global warming started, we have been having good fortune, not a climate catastrophe.

### 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 wavelike, almost sinusoidal function.





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

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.

## 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 $CO_2$ 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 stabilisation of $CO_2$ in order to limit the temperature rise to 2 degrees C is scientifically groundless.

Figure 12
MEAN NUMBERS OF SUNSPOTS FROM 1672-1999

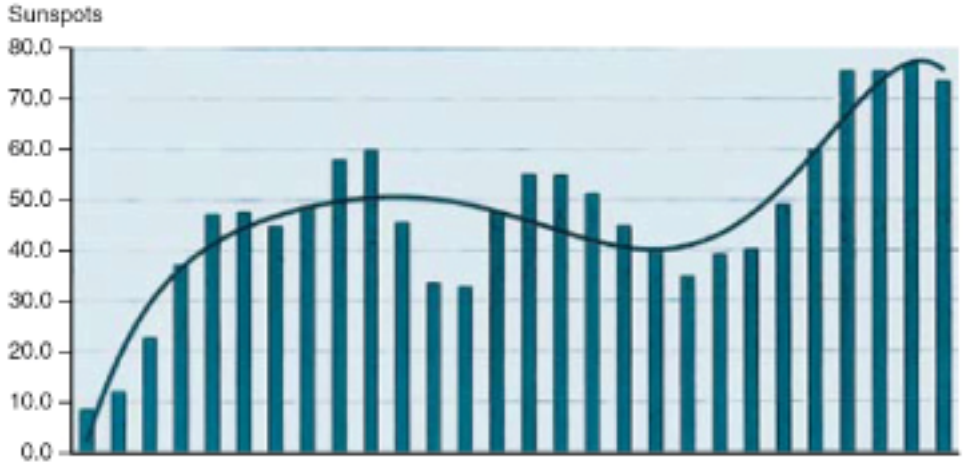



Figure 13
ANOMALIES (DEVIATIONS FROM AVERAGE) OF SUNSPOT NUMBERS 1672-1999

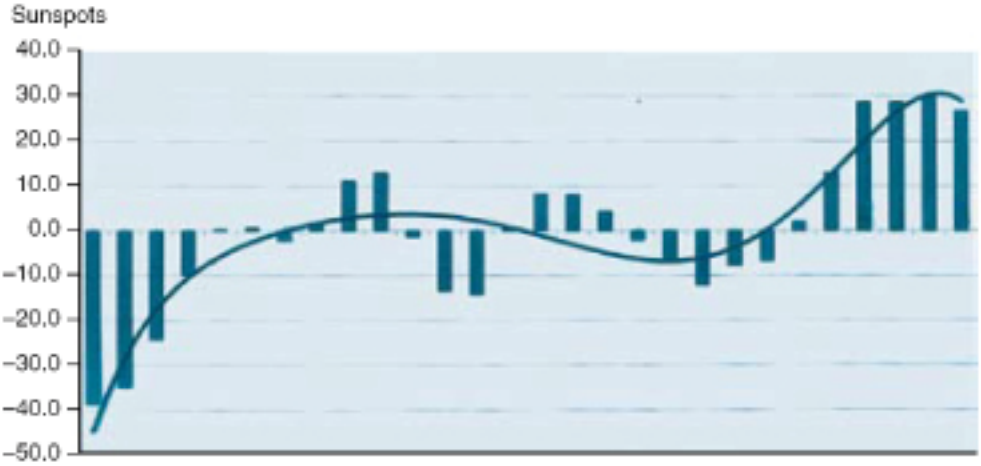



Figure 14
ANOMALIES (DEVIATIONS FROM AVERAGE) OF MIDDLE EUROPEAN MEAN TEMPERATURE 1672-1999