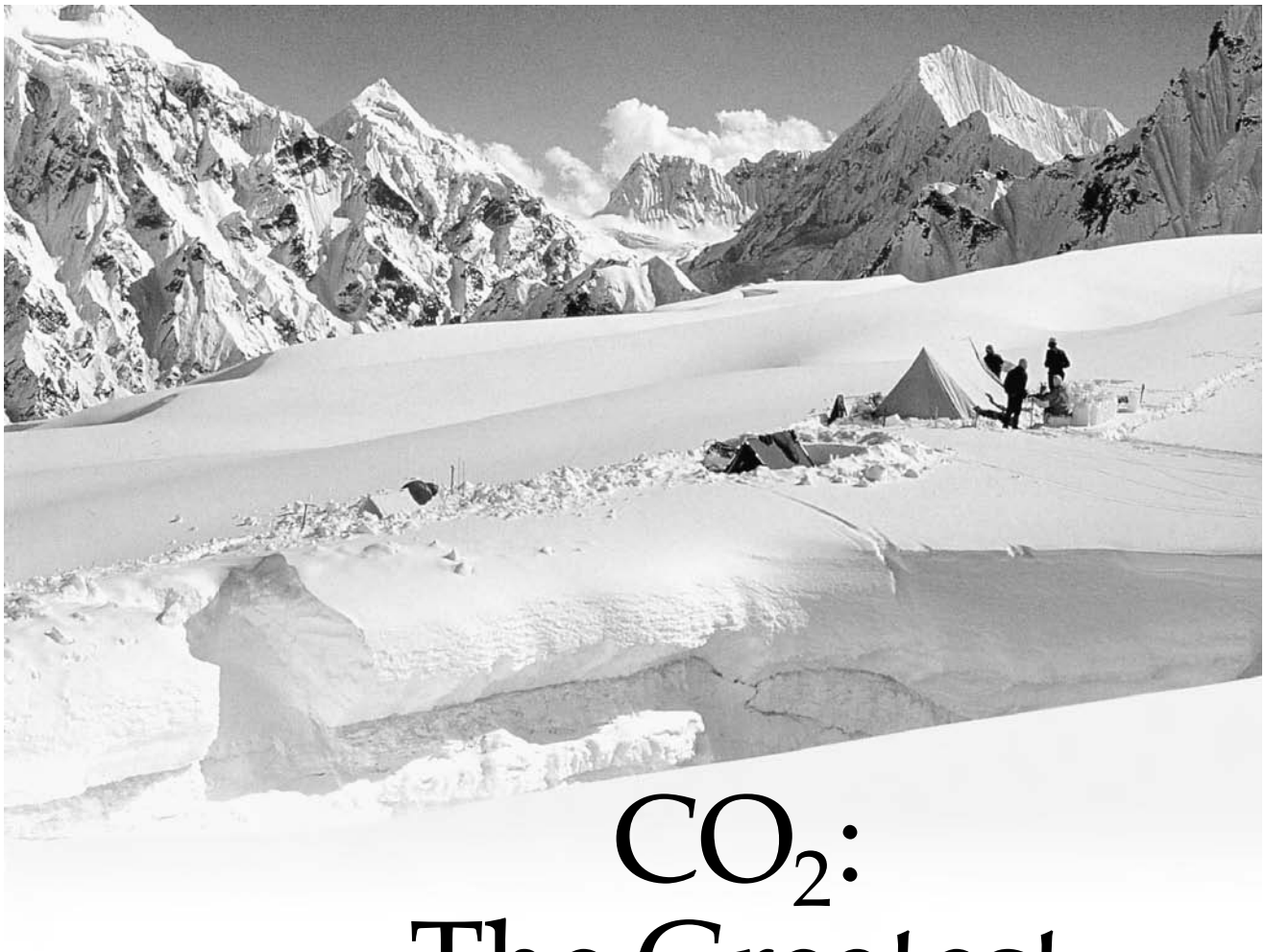


Courtesy of Zbigniew Jaworowski

# $CO_2$: The Greatest Scientific Scandal Of Our Time

by Zbigniew Jaworowski, M.D., Ph.D., D.Sc.

*The campsite near the giant Langtang Glacier, north of Katmandu, Nepal, on one of the author's expeditions to excavate ice samples.*

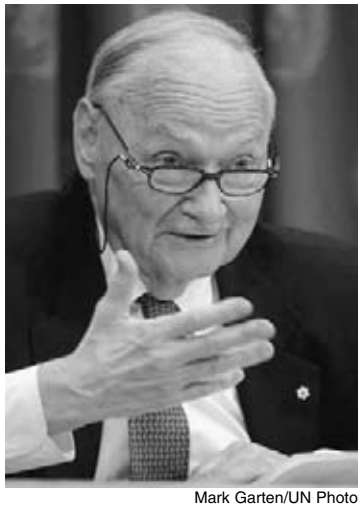
**Introduction**

On Feb. 2, 2007, the Intergovernmental Panel on Climate Change (IPCC) again uttered its mantra of catastrophe about man-made global warming. After weeks of noisy propaganda, a 21-page "Summary for Policymakers" of the IPCC Fourth Assessment Report, 2007, was presented in grandiose style in Paris to a crowd of politicians and media, accompanied by a blackout of the Eiffel Tower to show that electric energy is bad. The event induced a tsunami of hysteria that ran around the world. This was probably the main aim of this clearly political paper, prepared by governmental and United Nations bureaucrats, and published more than three months before the IPCC's 1,600-page scientific report, which is to be released in May. In the words of the IPCC, this delay is needed for adjustment of the main text, *so that "Changes . . . [could be] made to ensure consistency with the 'Summary*

*for Policymakers.'"* Not a single word in these 1,600 pages is to be in conflict with what politicians said beforehand in the summary!

This is a strange and unusual method of operation for a scientific report, and even stranger is the frankness of the IPCC's words about the delay, disclosing its lack of scientific integrity and independence. It is exactly the same modus operandi demonstrated in the three former IPCC reports of 1990, 1995, and 2001: First the politics, then the science.

The IPCC style was strongly criticized some years ago, in two editorials in *Nature* magazine (Anonymous 1994, Maddox 1991). In each of these criticisms, *Nature* used the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) as an ideal example of how an independent and objective scientific report should be prepared, in this case a report on the global risks from all sources of radiation, including nuclear weapons and Chernobyl. The UNSCEAR assessments presented each year to the U.N. General Assembly are regarded as a bible of the science of ionizing radiation. Yes, UNSCEAR mostly fits *Nature*'s description—but for a price. Because UNSCEAR's scientific reports often widely differed from the catastrophic views of the United Nations Environmental Programme or of the former U.N. Secretary-General, the U.N. bureaucracy has squeezed the finances of UNSCEAR, down to a level that caused almost a complete halt of its activity (Jaworowski 2002).



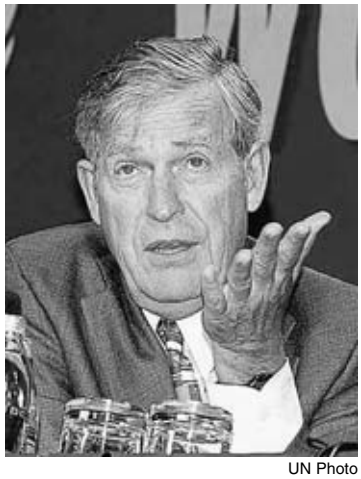
Mark Garten/UN Photo

*Maurice Strong*

This obviously is not the case with the IPCC, which is stuffed with money, and in agreement with the U.N. politics, which are dominated by greens and misanthropic fanaticism. During the past six years, the President of the United States devoted nearly $29 billion to climate research, leading the world with its unparalleled financial commitment (The White House 2007). This was about $5 billion per year, more than twice the amount spent on the Apollo Program ($2.3 billion per year), which in 1969 put man on the Moon. A side-effect of this situation, and of politicizing the climate issue, was described by meteorologist Piers Corbyn in the *Weather Action Bulletin,* December 2000: *"The problem we are faced with is that the meteorological establishment and the global warming lobby research bodies which receive large funding are now apparently so corrupted by the largesse they receive that the scientists in them have sold their integrity."*

The question arises: Were the decisions concerning this enormous funding for global warming research taken out of genuine concern that the climate is allegedly changing as a result of $CO_2$ industrial emissions, or do some other undisclosed ideas stand behind this money, IPCC activity, Kyoto, and all the gruesome catastrophic propaganda the world is now exposed to? If this concern is genuine, then why do we not see a storm of enthusiastic environmentalists and United Nations officials demanding to replace all fossil-fuel plants with nuclear plants, which have zero emission of greenhouse gases, are environmentally friendly, more economical, and safe for plant workers and much safer for general population than other sources of energy (Jaworowski 2006)?

Why do we not see a global-scale effort to replace the internal combustion automobile engine with a zero-pollution compressed-air engine? An improved version of such an engine, invented in 1870 by Ludwik Mekarski, drove the trams in Nantes and Paris for 34 years after 1879, transporting millions of passengers. Pneumatic locomotives were working in the mines the world over until the end of the 1930s. A pneumatic car is not pie in the sky, but a real thing, now under construction, which in its French version drives some 300 km before the air tank must be refilled, at a cost of about $2 per 100 km. Can you imagine the beneficial, stabilizing consequences for global politics and economy, and for urban hygiene, of such a replacement, combined with a switch from oil, gas, and coal into nuclear energy? But at the November 2006 mass meeting in Nairobi of 6,000 followers of Kyoto (including U.N. Secretary-General Kofi Annan, the Presidents of Kenya and Switzerland, and a cortège of ministers from some 180 countries), the participants were pressed to not even mention nuclear energy.[1]



UN Photo

*Tim Wirth*

*A sample trio of the Malthusians behind the global warming hysteria.*

*Richard Benedick*

The concern at the top about "climate change" is not genuine, and there are hidden motives behind the global warming hysteria. Although there is not the space in this paper to discuss these motives fully, they may be illustrated by the following citations (for full references, see Jaworowski 1999).

• Maurice Strong, who dropped out of school at age 14, established an esoteric global headquarters for the New Age

movement in San Luis Valley, Colorado, and helped produce the 1987 Brundtland Report, which ignited today's Green movement. He later become senior advisor to Kofi Annan, U.N. Secretary-General, and chaired the gigantic (40,000 participants) "U.N. Conference on Environment and Development" in Rio de Janeiro in 1992. Strong, who was responsible for putting together the Kyoto Protocol with thousands of bureaucrats, diplomats, and politicians, stated: *"We may get to the point where the only way of saving the world will be for industrial civilization to collapse."*

Strong elaborated on the idea of sustainable development, which, he said, can be implemented by deliberate *"quest of poverty . . . reduced resource consumption . . . and set levels of mortality control."*


*The co-chairmen of the IPCC Working Group I, in Paris, Feb. 2, after the "Summary for Policymakers" was approved by the group: Susan Solomon (center) and Dahe Qin (right). At left is Martin Manning, head of the Technical Support Unit.*

• Timothy Wirth, U.S. Undersecretary of State for Global Issues, seconded Strong's statement: *"We have got to ride the global warming issue. Even if the theory of global warming is wrong, we will be doing the right thing in terms of economic policy and environmental policy."*

• Richard Benedick, a deputy assistant secretary of state who headed policy divisions of the U.S. State Department, stated: *"A global warming treaty must be implemented even if there is no scientific evidence to back the [enhanced] greenhouse effect."*

### The Four Basic IPCC Lies

But let us switch back to the IPCC 2007 report. The four basic statements in the "Summary for Policymakers" are:

(1) Carbon dioxide, the most important anthropogenic greenhouse gas, increased markedly as a result of human activities, and its atmospheric concentration of 379 ppmv (parts per million, by volume) in 2005 by far exceeded the natural range of 180 to 300 ppmv over the last 650,000 years.

(2) Since 1750, human activities warmed the climate.

(3) The warmth of the last half-century is unusual, is the highest in at least the past 1,300 years, and is *"very likely"* caused by increases in anthropogenic greenhouse gas concentrations;

(4) Predictions are made that anthropogenic warming will continue for centuries, and between 2090 and 2099 the global average surface temperature will increase 1.1°C to 6.4°C. Various scare stories of global catastrophes are prophesied to occur if man-made $CO_2$ emissions are not curbed by drastic political decisions. The obvious beneficial effects of warming for man and all the biosphere are downplayed.

Except for $CO_2$, all these points are garlanded with qualifications such as "likely," "very likely," "extremely likely," "with very high confidence," and "unequivocal."

*In fact, to the contrary, all these points are incorrect.*

The first "Summary for Policymakers" statement on the man-made increase of $CO_2$, is a cornerstone of the IPCC report, and of the global warming edifice. This statement is a manipulation and a half-truth. It is true that $CO_2$ is "the most important anthropogenic [trace] greenhouse gas," but a much more important greenhouse factor is the water naturally present in the atmosphere, which contributes some 95 percent to the total greenhouse effect. This basic fact is not mentioned at all in the "Summary for Policymakers." Also not mentioned is the fact that 97 percent of the total annual emission of $CO_2$ into the atmosphere comes from natural emissions of the land and sea; human beings add a mere 3 percent. This man-made 3 percent of $CO_2$ emissions is responsible for a tiny fraction of the total greenhouse effect, probably close to 0.12 percent. Propositions of changing, or rather destroying, the global energy system because of this tiny human contribution, in face of the large short-term and long-term natural fluctuations of atmospheric $CO_2$, are utterly irresponsible.

### The Truth About Ice Cores

Because carbon dioxide ice core records are regarded as a foundation of the man-made global warming hypothesis, let us dwell on them for a while.

The basic assumption behind the $CO_2$ glaciology is a tacit view that air inclusions in ice are a closed system, which permanently preserves the original chemical and isotopic composition of gas, and thus that the inclusions are a suitable matrix for reliable reconstruction of the pre-industrial and ancient atmosphere. This assumption is in conflict with ample

evidence from numerous earlier $CO_2$ studies, indicating the opposite (see review in Jaworowski et al. 1992b).

Proxy determinations of the atmospheric $CO_2$ level by analysis of ice cores, reported *since 1985,* have been generally lower than the levels measured recently in the atmosphere. But, *before 1985,* the ice cores were showing values much *higher* than the current atmospheric concentrations (Jaworowski et al. 1992b). These recent proxy ice core values remained low during the entire past 650,000 years (Siegenthaler et al. 2005)—even during the six former interglacial warm periods, when the global temperature was as much as 5°C warmer than in our current interglacial!

This means that either atmospheric $CO_2$ levels have no discernible influence on climate (which is true), or that the proxy ice core reconstructions of the chemical composition of the ancient atmosphere are false (which is also true, as shown below).

It was never experimentally demonstrated that ice core records reliably represent the original atmospheric composition. Other proxies demonstrated that many millions of years ago, $CO_2$ levels in the atmosphere reached, at various times, 377 ppmv, 450 ppmv, and even 3,000 ppmv (Kurschner et al. 1996, Royer et al. 2001), and that during the past 10,000 years these levels were, as a rule, higher than 300 ppmv, fluctuating up to 348 ppmv (Kurschner et al. 1996, Royer et al. 2001, Wagner et al. 1999, Wagner et al. 2002). The results of these last studies prove false the assertion of stabilized Holocene $CO_2$ concentrations of 270 ppmv to 280 ppmv until the industrial revolution.

The results of the cited pre-1985 studies are strongly supported by direct $CO_2$ measurements, carried out in the pre-industrial and 20th Century atmosphere (see below). About 2 billion years ago, the $CO_2$ atmospheric level was 100 or perhaps even 1,000 times higher than today. According to today's climate models, the Earth would have been too hot for life at that time (Ohmoto et al. 2004). However, geologic evidence suggests there was not a Venus-style, "runaway warming." Instead, life flourished then in the oceans and land, with such enormously high levels of this "gas of life," from which our bodies and all living creatures are built (Godlewski 1873). Yet, Greens now call this gas a dangerous "pollutant."

Courtesy of Zbigniew Jaworowski

*The author (right) working with ion exchange columns in a laboratory tent at Kahiltna Glacier, Alaska, 1977.*

There are four other arbitrary assumptions behind the $CO_2$ glaciology. which were used to support the first assumption above:

(1) No liquid phase occurs in the ice at a mean annual temperature of –24°C or less (Berner et al. 1977, Friedli et al. 1986, Raynaud and Barnola 1985).

(2) The entrapment of air in ice is a mechanical process with no differentiation of gas components (Oeschger et al. 1985).

(3) The original atmospheric air composition in the gas inclusions is preserved indefinitely (Oeschger et al. 1985).

(4) The age of gases in the air bubbles is much younger than the age of the ice in which they are entrapped (Oeschger et al. 1985), the age difference ranging from several tens to several ten-thousands of years.

More than a decade ago, it was demonstrated that these four basic assumptions are invalid, that the ice cores cannot be regarded as a closed system, and that low pre-industrial concentrations of $CO_2$, and of other trace greenhouse gases, are an

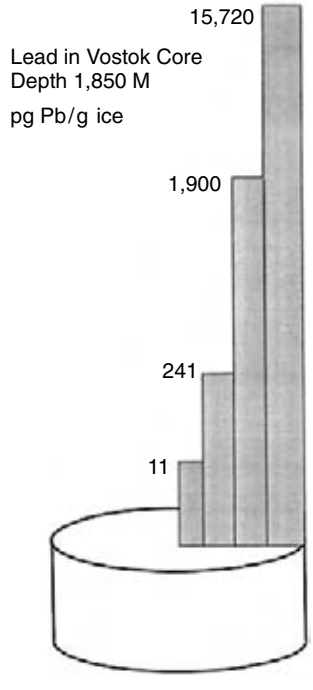



**Figure 1**
**HIGH POLLUTION OF THE VOSTOK ICE CORE WITH LEAD AND ZINC**

*Extremely high pollution of the Vostok (Antarctica) ice core with lead and zinc, which penetrated from the drilling fluid into the innermost parts of the core, via the horizontal cracks in ice formed as a result of drastic pressure changes. Similar pollution was reported from other Antarctic and Greenland ice cores, demonstrating that these cores are not fulfilling the absolutely essential closed system criteria, and therefore should not be used for proxy reconstruction of greenhouse gas levels in the atmosphere of the past.*

Source: After Jaworowski 1994a and Boutron et al. 1990

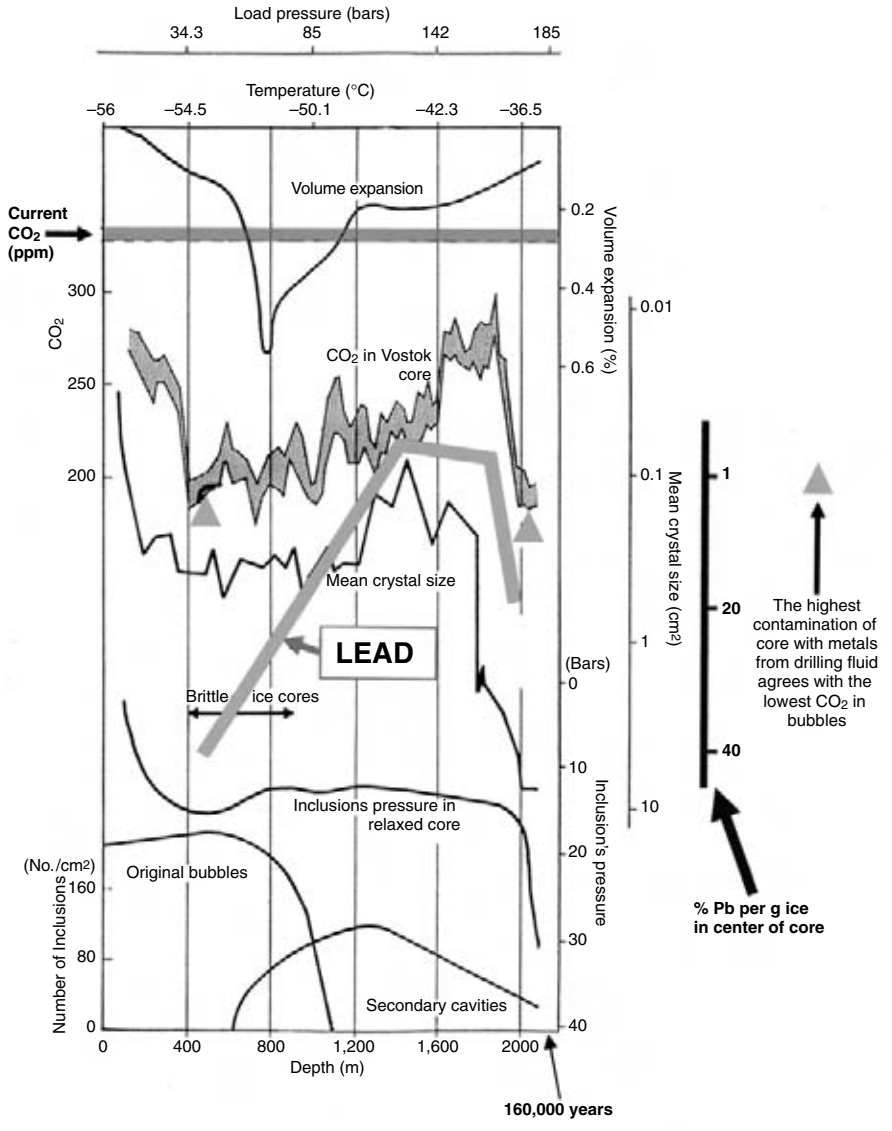



**Figure 2**
**CHANGES IN $CO_2$ CONCENTRATIONS IN VOSTOK ICE CORE SIMILAR TO CHANGES OF EXTREME POLLUTION**

*The changes in $CO_2$ concentrations along the Vostok ice core are similar to changes of extreme pollution of the core with lead, and to changes of several factors influencing the chemical composition of the gas content in the core: core volume expansion, ice crystal size, pressure of gas inclusions, disappearance of air bubbles with increasing pressure resulting from the formation of gas clathrates, formation of secondary gas cavities resulting from the dissociation of clathtrates at lower pressures.*

Source: After Jaworowski et al., 1992b and Boutron et al. 1987

artifact, caused by more than 20 physical-chemical processes operating *in situ* in the polar snow and ice, and in the ice cores. Drilling the cores is a brutal and polluting procedure, drastically disturbing the ice samples—Figures 1 and 2 (Jaworowski 1994a, Jaworowski et al. 1990, Jaworowski et al. 1992a, and Jaworowski et al. 1992b).

Some of these processes, which all cause fractionation of air components, are related to the solubility of gases: In cold water, $CO_2$ is more than 70 times more soluble than nitrogen ($N_2$) and more than 30 times more soluble than oxygen ($O_2$). Liquid water is commonly present in the polar snow and ice, even at the eutectic temperature of –73°C (see review in Jaworowski et al. 1992b).

Therefore, the conclusions on low pre-industrial atmospheric levels of greenhouse gases cannot be regarded as valid, before experimental studies exclude the existence of these fractionation processes. Such studies were proposed by this author (Jaworowski 1994a, Jaworowski et al. 1992b), but for years they were not performed. In response to criticism of the reliability of ice records, $CO_2$ glaciologists could only state that the ice core record itself proves that the changes in greenhouse gases are not caused by post-deposition processes, but accurately reflect atmospheric changes (Raynaud et al. 1993).

Only recently, many years after the ice-based edifice of anthropogenic warming had reached a skyscraper height, did glaciologists start to study the fractionation of gases in snow and ice (for example, Killawee et al. 1998), and the structure of snow and firn which might play a first-order role in changing gas chemistry and isotopic profiles in the ice sheets (Albert 2004, Leeman and Albert 2002, and Severinghaus et al. 2001). Recently, Brooks Hurd, a high-purity-gas analyst, confirmed the previous criticism of ice core $CO_2$ studies. He noted that the Knudsen diffusion effect, combined with inward diffusion, is depleting $CO_2$ in ice cores exposed to drastic pressure changes (up to 320 bars—more than 300 times normal atmospheric pressure), and that it minimizes variations and reduces the maximums (Hurd 2006).

This is illustrated by comparing for the same time period, about 7,000 to 8,000 years before the present, two types of proxy estimates of $CO_2$. The ice core data from the Taylor Dome, Antarctica, which are used to reconstruct the IPCC's official historical record, feature an almost completely flat

time trend and range, 260 to 264 ppmv (Indermuhle et al. 1999). On the other hand, fossil leaf stomata indices[2] show $CO_2$ concentrations ranging widely by more than 50 ppmv, between 270 and 326 ppmv (Wagner et al. 2002). This difference strongly suggests that ice cores are not a proper matrix for reconstruction of the chemical composition of the ancient atmosphere.

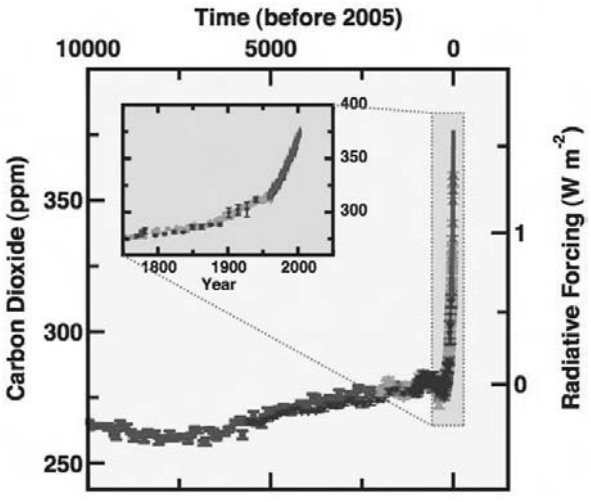
The $CO_2$ ice core data are artifacts caused by processes in the ice sheets and in the ice cores, and have concentration values about 30 to 50 percent lower than in the original atmosphere. Ice is an improper matrix for such chemical studies, and even the most excellent analytical methods cannot be of help when the matrix and samples are wrong.

Before basic research on gas differentiation was even started, a plethora of glacier studies on temporal trends of greenhouse gases had been published during past decades, aiming to demonstrate that: (1) these gases are responsible for climatic changes, and (2) that their level in the atmosphere was increased by human activity. These studies are beset with a unilateral interpretation and manipulation of data, and with an arbitrary rejection of both the high greenhouse gas readings from the pre-industrial ice, and the low readings from the contemporary samples (Jaworowski 1994a, Jaworowski et al. 1992b).

Were the $CO_2$ ice core data and their interpretation correct, then they should be treated as evidence that during the past 650,000 years, $CO_2$ had no discernible effect on the global temperature. This for two reasons: first, the temperature increase appears *before* the claimed increase in $CO_2$; and second, there are monotonically low proxy $CO_2$ levels in the ice cores during the periods of warm climate, both in ancient and modern times.

In the ice cores, the isotopically determined temperature signal and the signal of $CO_2$ air concentrations are out of phase by hundreds to several thousands of years (Jaworowski et al. 1992b), with the temperature increases always *preceding* the rising $CO_2$ levels, not the reverse (Caillon et al. 2003, Fischer et al. 1999, Idso 1988, Indermuhle et al. 2000, Monnin et al. 2001, and Mudelsee 2001). This suggests that the increasing temperature of the atmosphere is the causative factor for $CO_2$ increases, probably via higher erosion of the land and gas exhalation from the warmer ocean.

We have observed this in modern times. Solubility of $CO_2$ in warm water is lower than it is in cold. When climate warms, less $CO_2$ can be retained in the upper 3,000-meter layer of oceans, and it is exhaled into the atmosphere, where the $CO_2$ content is more than 50 times lower than it is in the ocean. This is the reason that between 1880 and 1940, when the global average temperature warmed up by about 0.5°C, the direct measurements in the atmosphere registered a very large increase of $CO_2$, from about 290 ppmv in 1885 up to 440 ppmv in 1940—about 60 ppmv higher than now (Beck 2007). In this period, the man-made emissions of $CO_2$ increased only by a factor of 5. Then, between 1949 and 1970, the global temperature decreased by about 0.3°C, and the atmospheric $CO_2$ level dropped to about 330 ppmv (Boden et al. 1990). Now, when man-made $CO_2$ emissions are 30 times higher than in 1880 (Marland et al. 2006), the $CO_2$ atmospheric level is similar to that recorded before the 1940s climatic warm event.




Source: After IPCC 2007.

**Figure 3**
**THE $CO_2$ 'HOCKEY STICK' CURVE**
*A false representation of the $CO_2$ atmospheric concentration trend over the past 10,000 years. Values before 1958 do not represent the atmospheric concentrations, but the artifacts caused by depletion of $CO_2$ from ice, and by arbitrarily changing the age of samples.*

The $CO_2$ concentrations in the air inclusions in ice, which are assumed to be pre-industrial or ancient, are always about 100 ppmv below the current atmospheric level (Indermuhle et al. 1999, Pearman et al. 1986, Petit et al. 1999; see also the review in Jaworowski et al. 1992b). Yet, during the past 420,000 years, the climate was often much warmer than the present, (Andersen et al. 2004, Chumakov 2004, Ruddiman 1985, Shackleton and Opdyke 1973, Zubakov and Borzenkova 1990, and Robin 1985). Even about 120,000 years ago, when the global surface temperature was as much as 5°C higher than now (Andersen et al. 2004), the atmospheric $CO_2$ concentration derived from glacier data was only 240 ppmv (Petit et al. 1999)—that is, below the current level by some 130 ppmv.

More recently, during the Holocene (8,000 to 10,000 years before the present) when the temperature of the Arctic was 5°C warmer than now (Brinner and al. 2006), ice core records show a $CO_2$ level of about 260 ppmv (IPCC 2007).

### The Hockey Stick Curves

On the basis of assumption piled upon assumption, several versions of $CO_2$ "hockey stick curves" were compiled, by combining the distorted proxy ice core data and the recent direct atmospheric $CO_2$ measurements. The authors of such studies claimed that their curves represent the atmospheric $CO_2$ levels during the past 300 years (Neftel et al. 1985, Pearman et al. 1986, Siegenthaler and Oeschger 1987), or the past 10,000 years (in the "Summary for Policymakers"), Figure 3, or even the past 400,000 years (Wolff 2003). They all show low pre-

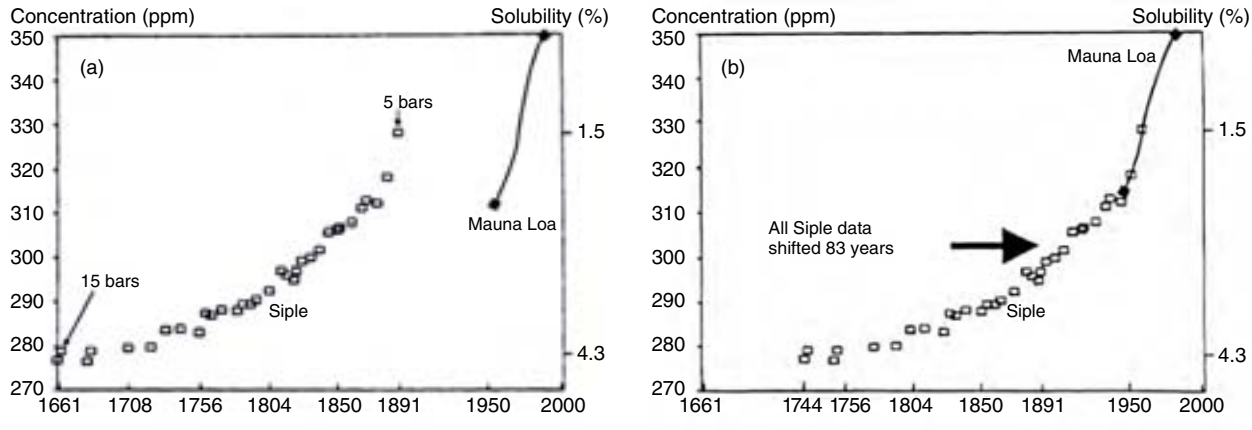



**Figure 4**
**MOTHER OF ALL $CO_2$ HOCKEY CURVES**

*Concentration of $CO_2$ in air bubbles from the pre-industrial ice from Siple, Antarctica (open squares), and in the 1958-1986 atmosphere at Mauna Loa, Hawaii (solid line). In (a), the original Siple data are given without assuming an 83-year-younger age of air than the age of the enclosing ice. In (b), the same data are shown after an arbitrary correction of the age of air.*

Source: Adapted from Friedli et al. 1986 and Neftel et al. 1985

industrial $CO_2$ concentrations, ranging from about 180 to 280 ppmv during the past 400,000 years, and soaring up to about 370 ppmv at the end of the 20th Century. These so-called hockey stick curves were published countless times as a proof of the anthropogenic increase of $CO_2$ in the atmosphere. They were created by illegitimately mixing the false proxy ice core data with direct measurements in the atmosphere.

However, the worst manipulation was the arbitrary changing of the age of the gas trapped in the upper part of the core, where the pressure changes were less drastic than in the deeper parts. In this part of the core, taken from Siple, Antarctica, the ice was deposited in the year 1890, and the $CO_2$ concentration in it was 328 ppmv (Friedli et al. 1986, Neftel et al. 1985), and not the 290 ppmv needed to prove the man-made warming hypothesis. The same $CO_2$ concentration of 328 ppmv was measured in the air collected directly from the atmosphere at the Mauna Loa volcano, Hawaii, 83 years later in 1973 (Boden et al. 1990). So, it was shockingly clear that the pre-industrial level of $CO_2$ was the same as in the second half of the 20th Century.

To solve this "problem," these researchers simply made an *ad hoc* assumption: The age of the gas recovered from 1 to 10 grams of ice was arbitrarily decreed to be exactly 83 years younger than the ice in which it was trapped! This was not supported by any experimental evidence, but only by assumptions which were in conflict with the facts (Jaworowski 1994a, Jaworowski et al. 1992b). The "corrected" proxy ice data were then smoothly aligned with the direct atmospheric measurements from Mauna Loa (Figures 4a and 4b).

Thus, falsified $CO_2$ "hockey stick curves" were presented in all the IPCC reports, including Figure 3 in the "Summary for Policymakers" in 2007. These hockey sticks were credulously accepted by almost everyone, together with other information on greenhouse gases determined in the ice cores, which were plagued by improper manipulation of data, an arbitrary rejection of high readings from old ice, and an arbitrary rejection of the low readings from the young ice, simply because they did not fit the preconceived idea of man-made global warming. It is a habit that become all too common in greenhouse gas and other environmental studies (Jaworowski 1994a, Jaworowski 1994b, and Jaworowski et al. 1992b).

### Direct $CO_2$ Measurements in the Atmosphere

We thus find ourselves in the situation that the entire theory of man-made global warming—with its repercussions in science, and its important consequences for politics and the global economy—is based on ice core studies that provided a false picture of the atmospheric $CO_2$ levels. Meanwhile, more than 90,000 *direct* measurements of $CO_2$ in the atmosphere, carried out in America, Asia, and Europe between 1812 and 1961, with excellent chemical methods (accuracy better than 3 percent), were arbitrarily rejected. These measurements had been published in 175 technical papers. For the past three decades, these well-known direct $CO_2$ measurements, recently compiled and analyzed by Ernst-Georg Beck (Beck 2006a, Beck 2006b, Beck 2007), were completely ignored by climatologists—and not because they were wrong. Indeed, these measurements were made by top scientists, including two Nobel Prize winners, using the techniques that are standard textbook procedures in chemistry, biochemistry, botany, hygiene, medicine, nutrition, and ecology. The only reason for rejection was that these measurements did not fit the hypothesis of anthropogenic climatic warming. I regard this as perhaps the greatest scientific scandal of our time.

From among this treasure of excellent data (ranging up to

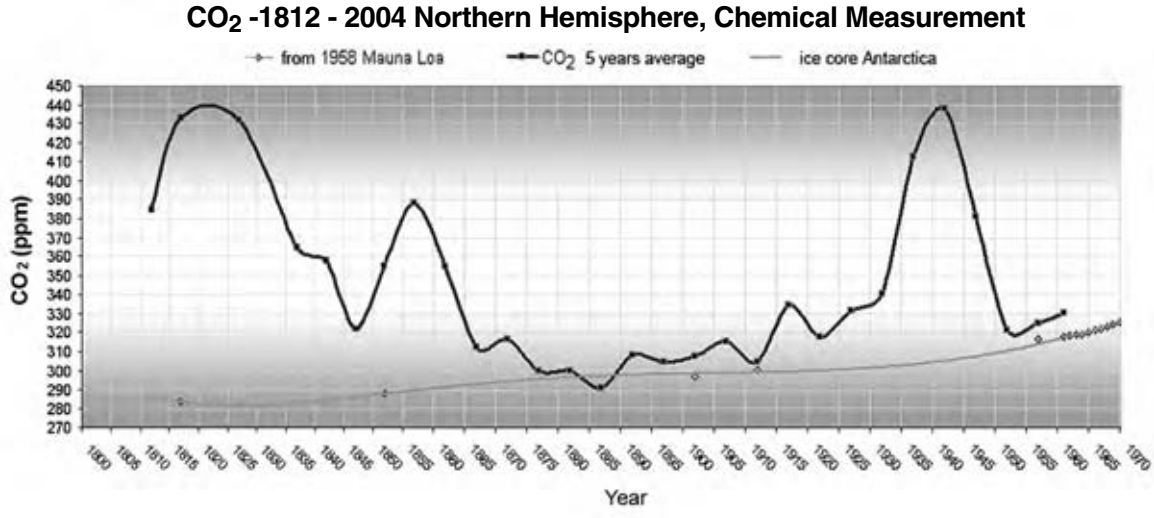



**Figure 5**
**FIRST RECONSTRUCTION OF TRENDS IN $CO_2$ ATMOSPHERIC CONCENTRATION BASED ON ACTUAL MEASUREMENT**

*This first reconstruction of trends in $CO_2$ concentration in the Northern Hemisphere is based on more than 90,000 direct chemical measurements in the atmosphere at 43 stations, between 1812 and 2004. The lower line are the values from Antarctic ice core artifacts. The diamonds on the lower line (after 1958) are infrared $CO_2$ measurements in air from Mauna Loa, Hawaii.*

Source: Adapted from Beck 2007

550 ppmv of measured $CO_2$ levels), the founders of the anthropogenic global warming hypothesis (Callendar 1949, Callendar 1958, and From and Keeling 1986) selected only a tiny fraction of the data and doctored it, to select out the low concentrations and reject the high values—all in order to set a falsely low pre-industrial average $CO_2$ concentration of 280 ppmv as the basis for all further climatic speculations. This manipulation has been discussed several times since the 1950s (Fonselius et al. 1956, Jaworowski et al. 1992b, and Slocum 1955), and more recently and in-depth by Beck 2007.

The results of Ernst-Georg Beck's monumental study of a large body of direct atmospheric $CO_2$ measurements from the 19th and 20th Century, smoothed as five-year averages, are presented in Figure 5. The measurements show that the most important political message of the IPCC in 2007 is wrong: It is not true that the $CO_2$ atmospheric level during the pre-industrial era was about 25 percent lower than it is now, and it is not true that anthropogenic emissions of $CO_2$ have caused what is actually our beneficially warm climate today.

Direct atmospheric measurements indicate that between 1812 and 1961, the concentrations of $CO_2$ fluctuated by about 150 ppmv, up to values much higher than those of today. Except for the year 1885, these direct measurements were always higher than the ice core data, which are devoid of any variations. During the 149 years from 1812 to 1961, there were three periods when the average $CO_2$ concentration was much higher than it was in 2004, 379 ppmv (IPCC 2007): Around the year 1820, it was about 440 ppmv; around 1855, it was 390 ppmv; and around 1940, it was 440 ppmv. Data compiled by Beck (Beck 2007) suggest also that changes of the $CO_2$ atmospheric concentration *followed,* rather than preceded, the temperature changes. These findings make the man-made global warming hypothesis invalid.

### Anthropogenic Warming That Isn't

The second most important message of the "Summary for Policymakers" of 2007 is that *"Most of the observed increase in globally averaged temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse concentrations."* However, neither the "Summary for Policymakers" document, nor the three former IPCC reports, supported this statement with any convincing scientific evidence.

The infamous temperature hockey stick curve, the leading symbol of the IPCC report in 2001, was created to show that the global average temperature in the 1990s was unusual and the highest in the past 1,000 years. The Medieval Warming (the years 950 to 1300), well documented in the former IPCC reports, disappeared from this hockey stick curve, as did the earlier Roman Warm Period (200 B.C. to 600 A.D.), the Holocene Warm Period (8,000 to 5,000 years before the present), and the deep cooling of the Little Ice Age (the years 1350 to 1850)—Figure 6.

The fraudulence of this hockey stick curve was documented by Legates 2002, Legates 2003, McIntyre and McKitrick 2003, Soon 2003, Soon and Baliunas 2003, and Soon et al. 2003. But criticism of the IPCC 2001 hockey stick curve of temperature appeared to be a mine field: The six editors of the journal

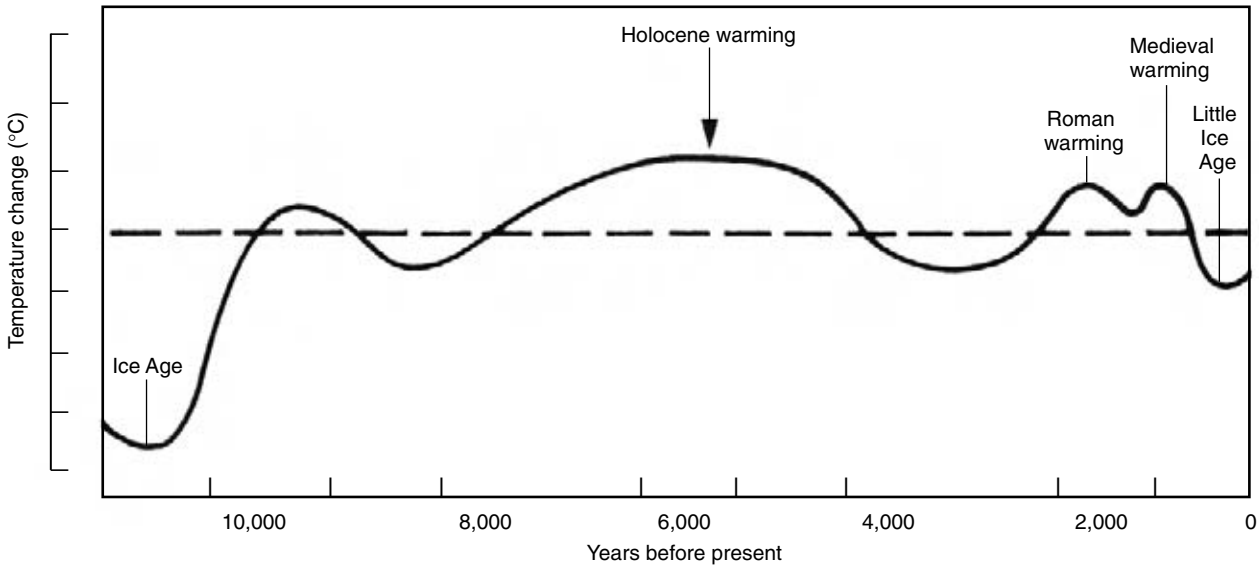



**Figure 6**
**GLOBAL TEMPERATURE VARIATIONS FOR LAST 10,000 YEARS**
*The dotted line represents temperature near the beginning of the 20th Century. In its 2001 and 2007 reports, the IPCC ignored the earlier parts of this curve, presenting only the modern warming.*
Source: IPCC 1990

*Climate Research* who dared to publish the Soon and Baliunas 2003 paper were fired by the publisher. In the "Summary for Policymakers" 2007 report, the IPCC truncated its original 1,000-year-long hockey stick temperature curve by a factor of 10, starting it at 1850, exactly at the time when the Earth's climate began to recover by natural forces from the Little Ice Age, when the emissions of $CO_2$ had been 135 times lower than they are now (Marland et al. 2006).

This natural recovery from the Little Ice Age is interpreted by the IPCC as a man-made calamity; the IPCC regards the last 50 years as the warmest in the past 1,300 years because of fossil fuel burning. This monothematic line of thinking does not take into account the astronomical evidence that these last 50 years have had the highest solar activity of the past several thousand years. There has not been an equally high activity of the Sun since more than 8,000 years ago (Figure 7), and the Sun has been the dominant cause of the strong warming during the past three decades (Solanki et al. 2004).

### Cosmoclimatology: Cosmic Rays and the Sun Rule the Climate

For about the past 15 years, we have had a rapid development of a new scientific field: cosmoclimatology. It was started by a seminal paper by Friis-Christensen and Lassen in 1991, in which they documented a close relationship between solar activity and the surface temperature of the Earth. (This development was reviewed by Svensmark in 2007.) Later studies demonstrated that the main mechanism by which cosmic factors regulate our weather are cosmic rays penetrating the Earth's atmosphere. Their flux is determined by fluctuations of magnetic fields of the Sun and by the Solar System migration over the varying environments of the Milky Way, with different concentration of dust and activity of novas.

The variations of cosmic-ray flux are an order of magnitude greater than those caused by the Sun. Cosmic rays rule the climate by producing an ionization of air molecules at the rate required to have a measurable impact on climate. Ionization helps to create condensation nuclei in the troposphere, needed for cloud formation. At low solar activity (or in some parts of Milky Way), more cosmic radiation penetrates into the troposphere, and more clouds are formed, which act as an umbrella to protect the Earth against irradiance by the Sun.

Recently, experimental evidence was provided for a mechanism by which cosmic rays can affect the cloud cover (Svensmark 2007). This cover exerts a strong cooling effect, which offers a mechanism for solar-driven climate change that is much more powerful than the small 0.1 percent variations in the solar irradiance.

According to Khilyuk and Chilingar (2006), the total anthropogenic $CO_2$ emission throughout human history constitutes less than 0.00022 percent of the total $CO_2$ amount naturally degassed from the mantle of the Earth during geological history. Anthropogenic $CO_2$ emission is negligible in any energy-matter transformation processes changing the Earth's climate. The forces of nature that are driving the climate (solar irradiation, fluctuating along with solar activity and orbital deviations, outgassing, and microbial activities) are 4 to 5 orders of magnitude greater than the corresponding anthropogenic impacts on the Earth's climate (such as heating and emission of greenhouse gases), even without accounting for the cosmic ray influences.

Human beings may be responsible for less than 0.01°C of

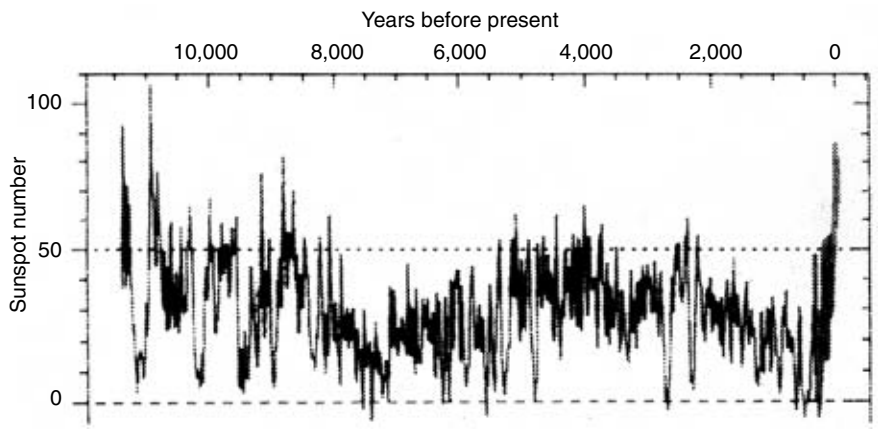



**Figure 7**
**SOLAR ACTIVITY REPRESENTED BY SUNSPOT NUMBER DURING THE PAST 11,400 YEARS**

*The solar activity represented by sunspot number reconstructed from carbon-14 data for the years 11,000 before the present, and from telescopic observations since the year 1610. The level of solar activity during the past 70 years is exceptionally high. The previous high activity occurred more than 8,000 years ago.*

*Fluctuations of solar activity are followed by cosmic ray flux, the lower energy fraction of which is presently 40 percent lower than in 1900. There is a general similarity between the Sunspot number and temperature fluctuations: Both show a slowly decreasing trend just prior to 1900, followed by a steep rise that is unprecedented during the last millennium. See, for example, Usoskin et al. 2003.*

Source: Sunspot data from Solanki et al. 2004.

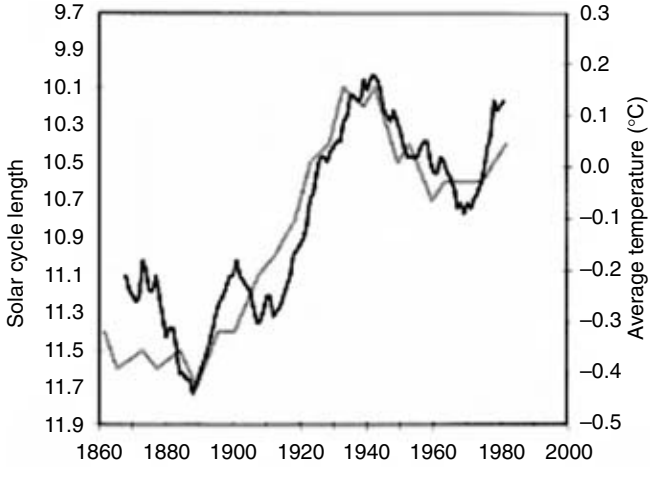



**Figure 8**
**AVERAGE NORTHERN HEMISPHERE TEMPERATURE**

*The average Northern Hemisphere temperature (gray line) follows almost exactly the solar activity reflected by the length of the sunspot cycle (black line).*

Source: After Friis-Christensen and Lassen 1991

warming during the last century; the hypothesis that the currently observed "Modern Warming" is a result of anthropogenic $CO_2$, and of other greenhouse gas emissions, is a myth.

The cosmoclimatic factors account for climate fluctuations on the decadal, centennial, and millennial timescales. During the Little Ice Age (1350 to 1850) the exceptionally weak solar magnetic field of the Sun, reflected by an extremely low sunspot number during the Maunder Minimum (1645 to 1715), coincided with its coldest phase. Another sunspot minimum, the Dalton Minimum of the early 19th Century, was associated with another cold phase.

On the other hand, the Medieval Warm and the Modern Warm periods showed excellent matches with the low cosmic ray intensities, governed by solar cycles. During the past several 10,000s to 6,000 years, temperature events corresponded well to solar perturbations, suggesting that the driving force of the Holocene temperature fluctuations was caused by solar activity, and related to this, by cosmic ray flux (Bashkirtsev and Mashnich 2003, Dergachev and Rasporov 2000, Friis-Christensen and Lassen 1991, Marsh and Svensmark 2000, Svensmark and Friis-Christensen 1997, Xu et al. 2005, Xu et al. 2006, Bago and Buttler 2000, and Soon et al. 2000), rather than by $CO_2$ changes, which lag behind the temperature changes, and appear to be an effect, not the cause of temperature variations (Figure 8).

Over the past 750,000 years, the rate of change of global ice volume was fluctuating in exact agreement with the summertime insolation at the northern high latitudes, in agreement with the Milankovitch theory (Roe 2006). In this study it was also found that variations in melting precede variations in atmospheric $CO_2$, suggesting that $CO_2$ variations play a relatively weak role in driving changes in global ice volume, compared to solar influence.

Over the longer intervals, the changing galactic environment of the Solar System had dramatic consequences in the past, including "Snowball Earth" episodes (2,300 million and 700 million years ago), when all the Earth was frozen. The climate fluctuated rather regularly throughout the past 3 billion years of the Earth's history, evolving gradually towards cooling and the increased frequency, duration, and scale of

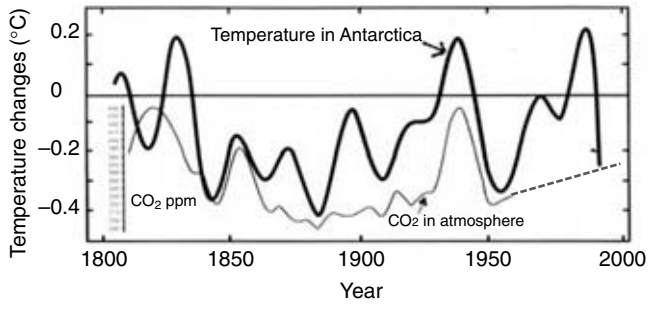



**Figure 9**
**AVERAGE SURFACE TEMPERATURE IN ANTARCTICA (1800-1999)**
*The upper line represents the average surface temperatures at five locations in Antarctica between 1800 and 1999, as reconstructed from stable isotope measurements of ice. The lower line represents direct $CO_2$ measurements in the atmosphere in the Northern Hemisphere. The dashed line are data from Mauna Loa, Hawaii.*
Source: Upper line, from Schneider et al. 2006; lower line from Beck 2007 and NOAA 2006

glaciation (Chumakov 2004). Periodic climatic changes, recognizable by geological methods, can be divided into five categories: (1) super-long fluctuations (approximately 150 million years); (2) long fluctuations (a few to 15 million years); (3) middle fluctuations (1 million to about 10 million years); (4) short fluctuations (few tens to hundreds of thousands of years); and (5) ultra-short fluctuations (millennial, centennial, and shorter).

During the Phanerozoic Era (the past 545 million years) the Earth passed through four super-long climate cycles, probably related to the cosmic ray flux changes, caused by passages of the Solar System through various environments of the spiral arms of the Milky Way (Shaviv and Veizer 2003).

The temperature fluctuations during the Phanerozoic varied in accordance with the cosmic ray flux, but revealed no relationship to $CO_2$ content in the atmosphere. Two long and extensive glaciations occurred in this period, at the time of $CO_2$ minima, at about 300 million years before the present, and were interpreted as an indication that the $CO_2$ atmospheric greenhouse effect was a principal control of climate over geologic time (Berner 1998).

However, long and extensive glaciations also existed twice, between 353 and 444 million years ago, when the $CO_2$ level in the atmosphere was up to 7 and 17 times higher than today (Chumakov 2004). The paleogeographic studies provided proxy data on global climatic gradients in the Phanerozoic (Berner 1997), which show no relationship with the $CO_2$ atmospheric concentration estimated by Boucot et al. in 2004. Assigning a long-term principal control of climate to trace concentrations of a single agent, the $CO_2$ gas, which currently contributes about 2 percent to the total greenhouse effect (Lindzen 1991), and neglecting the 98 percent contribution of water, and the contribution from the other factors listed below, conflicts with the cosmoclimatic data.

The temperature fluctuations in five Antarctic regions, reconstructed from the ice core stable isotope records between 1800 and 1999, are similar to the $CO_2$ fluctuations measured directly in the atmosphere since 1812 (Figure 9). According to the IPCC, the highest rise of temperature caused by the emission of anthropogenic greenhouse gases, should occur in Antarctica and the Arctic. These predictions do not fit the temperature data in Figure 9, which, according to Schneider et al. 2006, are also representative for the whole Southern Hemisphere. In Antarctica, the temperature in the 1990s was lower than during many decades in the past two centuries, and much lower than the mean for 1961 to 1990, represented by the zero line.

In the northern part of the Earth, direct temperature measurements in the boreholes at the Summit and Dye sites in Greenland (Figure 10) demonstrated that during the last 8,000 years, the temperature in the Arctic fluctuated similarly as the proxy global temperature reconstructed in the IPCC 1990 report (Figure 6), and that at the end of 20th Century, the temperature in the Arctic was lower than during the Medieval and Holocene Warmings. The proxy temperature reconstruction spanning nearly 2,500 years at Taimyr Peninsula in Russia (poleward of 70° N) revealed also the Holocene, Medieval, and Modern Warmings, with the first two warmer than the 20th Century one, in which the temperature peak appeared around 1940 (Naurzbayev et al. 2002).

Instrumental measurements of surface air temperature in the Arctic were started in 1874 in Greenland, followed by stations at Spitsbergen, Canada, and Russia. Since that year, until about 2000, the highest temperature at 37 Arctic and 6 sub-Arctic stations was observed in the 1930s, and was higher by about 2 to 5°C than those occurring prior to the 1920s. Even in the 1950s, the temperature in the Arctic was higher than in the 1990s. In Greenland, the level of temperature in the 1980s and in the 1990s was similar to that observed in the 19th Century (Przybylak 2000).

Other instrumental records covering the last 100 years demonstrate similar temperature fluctuations in the Arctic. According to Chylek et al. (2004), instrumental temperature measurements in Greenland show that the highest temperature there occurred in the 1920s, when in less than 10 years it increased by 2 to 4°C, and at some stations even by 6°C. At that time, the anthropogenic emissions of $CO_2$ were nine times lower than now (Marland et al. 2006).

Since 1940, however, the Greenland coastal data have predominantly undergone cooling. At the summit of the Greenland ice sheet, the summer average temperature has decreased at a rate of 2.2°C per decade, since the beginning of measurements in 1987. Similar results are reported for Arctic temperature measurements carried out between 1875 and 2000 (Polyakov et al. 2003). This is against all the predictions of climate models.

The disparity between the tropospheric and surface temperature trends measured by balloons and satellites, and the greenhouse models' predictions, was recently discussed by S. Fred Singer in a letter rejected by *Nature,* and published on Feb. 13, 2007 on http://blogs.nature.com/news/blog/2007/02/climate report.html. As stated by Singer, "Greenhouse models indicate that the

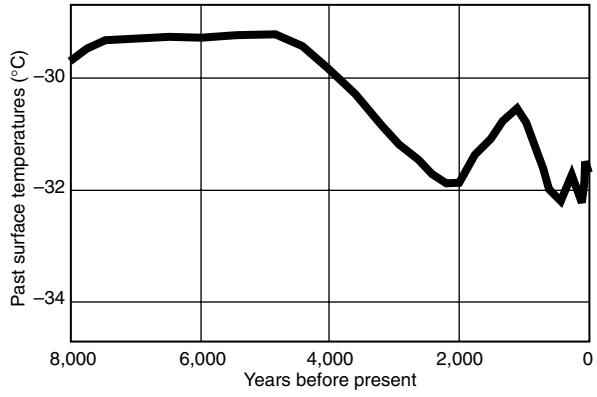



**Figure 10**
**DIRECT TEMPERATURES IN GREENLAND BORE HOLE FOR LAST 10,000 YEARS**

*These are direct temperatures measured in a bore hole in the Greenland ice sheet, over the last 8,000 years. Ice conducts heat very badly, and its original temperature is retained for thousands of years. Visible are the Holocene warming (3,500-7,000 years ago), and in our epoch, the Middle Ages warming (900-1,100 years ago), and the Little Ice Age (1350 to 1880). The temperature 1,000 years ago was higher there than today by 1 degree C.*

Source: After Dahl-Jensen et al. 1998

tropics provide the most sensitive location for their validation: trends there [should] increase strongly with altitude, peaking at around 10 kilometers. Actual observations, however, show the opposite: flat or even decreasing tropospheric trend." This comparison of models with balloon and satellite data, contradicts the most important conclusion of IPCC that the current warming is "very likely" the result of human activities.

### The Specter of Floods

The most trendy adverse effect of climate warming is the melting of the polar ice sheets, which, it is claimed, will cause catastrophic flooding of vast areas. From among a host of recent papers presenting evidence against these gloomy prophesies, I will refer only to a paper by my friend H. Jay Zwally, from NASA Goddard Space Flight Center, who for decades has used satellite techniques to measure the mass of the polar ice sheets. In his paper (Zwally et al. 2005), he presents the study of changes in ice mass derived from 10.5 years (Greenland) and 9 years (Antarctica) of satellite radar altimetry data.

Zwally et al. show that the Greenland ice sheet is thinning at the margins (–42 Gt per year) and growing inland (+53 Gt per year). This corresponds to a sea level *decrease* of –0.03 mm per year. In West Antarctica, the ice sheet is losing mass (at –47 Gt per year), and in East Antarctica, it is gaining mass (+16 Gt per year). The combined net change of –31 Gt, corresponds to +0.08 mm per year of sea level rise. Hence, they report, "the contribution of the three ice sheets to sea level is +0.05 mm per year."

During the period studied, the Antarctic Western Ice Shelf changed its mass by –95 Gt per year, and the Eastern one changed by +142 Gt per year (together their mass increased by 47 Gt per year). The contribution of polar ice of 0.05 mm per year to sea level rise is small, in comparison to the real sea level rise observed from satellite altimetry of 2.8 mm per year. The ice sheets' contribution would take 1,000 years to raise global sea level by just 5 cm, and it would take 20,000 years to raise it 1 meter.

People are frustrated by the prospect of flooding the Pacific and Indian Ocean islands by our sinful activity. A good example of the futility of such fears is the beautiful archipelago of the Maldives in the central Indian Ocean, which consists of some 1,200 individual islands, grouped in about 20 larger atolls. They rise from a depth of about 2,500 meters, and consist of coral reefs, coral reef debris, and coral sand. Their elevation is only 1 to 2 meters. Hence, they have been condemned to disappear in the sea in the near future (IPCC 2001).

Multiple geomorphological and sedimentological investigations, and satellite altimetry measurements by Morner et al. (2004) contradict this dire hypothesis. The islands existed prior to the last glaciation maximum, and have been inhabited for at least 1,500 years before the present. During this period, at around 1,000 to 800 years before the present, that is, during the Medieval Warming, the inhabitants survived a sea level that was some 50 to 60 cm higher than it is now (Figure 11).

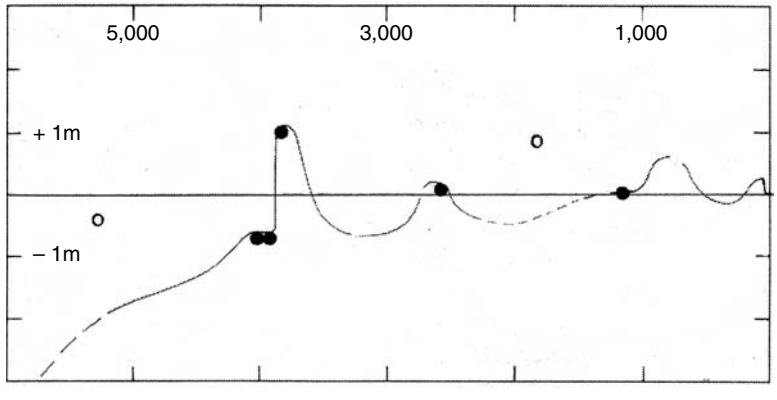



**Figure 11**
**SEA LEVEL CHANGES IN MALDIVES**

*Shown are the sea level changes in the Maldive Islands during the past 5,000 years. The sea level was above the present one at 3,900 years before the present (about 1 meter), at 2,700 years before the present (about 0.1 to 0.2 meter), at 1,000 (about 0.5 meter), and most recently between the years 1900 and 1970 (about 0.2 to 0.3 meter). During the last 30 years, the sea level fell by about 30 cm.*

Source: After Morner et al. 2004

During the past decades, both the satellite altimetry and gauge records do not record any significant rise in sea level at the Maldives. Some 100 to 30 years ago, the sea level was 20 to 30 cm higher than it is today. There is firm evidence that the sea level fell there by 20 to 30 cm in the last 30 years, contrary to IPCC expectations.

### The Near Future

During the past 1 million years, there have been some 10 Ice Ages, each lasting about 100,000 years, interspersed with warm interglacials, the duration of which was only about 10,000 years. The last Ice Age came to its end about 10,500 years ago; thus, our present interglacial seems to be a bit longer than average. The new Ice Age looms in waiting, and whether it comes in decades, centuries, or even a millennium, is a matter of speculation. It seems that its inescapable advent will be induced by natural cosmic factors rather than by terrestrial ones. The hypothesis, in vogue in the 1970s, stating that emissions of industrial dust will soon induce the new Ice Age, seem now to be a conceited anthropocentric exaggeration, bringing into discredit the science of that time. The same fate awaits the present $CO_2$ folly.

Using a novel multi-timescale analysis method to diagnose the variation of the annual mean global Northern Hemisphere and Chinese temperature data from 1881 to 2002, Zhen-Shan and Xian (2007) found four different quasi-periodic oscillations, among which the 60-year timescale oscillation of temperature was the most prominent. Despite the increasing trend in the atmospheric $CO_2$ concentration, the pattern of the 60-year temperature oscillation is in a descent. The authors concluded that the atmospheric $CO_2$ concentration is not the key determinant of periodic variation of the global temperature, that the $CO_2$ greenhouse effect has been excessively exaggerated, and that it is high time to reconsider the trend of global climate changes. Their analysis suggests that the global climate will be cooling in the next 20 years.

This conclusion is in agreement with the projections of Russian astronomers from the Institute of Solar-Terrestrial Physics in Irkutsk, who, from an analysis of the sunspot cycles for the period 1882-2000, deduced that the minimum of the secular cycle of solar activity will fall in the next cycle, in 2021-2026, which will result in the minimum global temperature of the surface air (Bashkirtsev and Mashnich 2003). They found also that the temperature response of the air lags behind the sunspot cycles by about three years in Irkutsk, and by two years over the entire globe.

A similar projection, based on observations of the cyclic activity of the Sun, was announced from the Pulkovo Observatory, near St. Petersburg, Russia. The head of the Space Research Laboratory of the Observatory, Prof. Habibullo I. Abdussamatov, stated that instead of professed global warming, the Earth will be facing a slow decrease in temperatures in 2012-2015. The gradual cooling will reach its maximum by 2040, and lead to a deep freeze around 2050 to 2060. This period of global freeze will last some 50 years, and will be comparable to the cooling that took place during the Little Ice Age in 1645-1715, when the temperature decreased by 1 to 2°C (Abdussamatov 2004, Abdussamatov 2005, and Abdussamatov 2006).

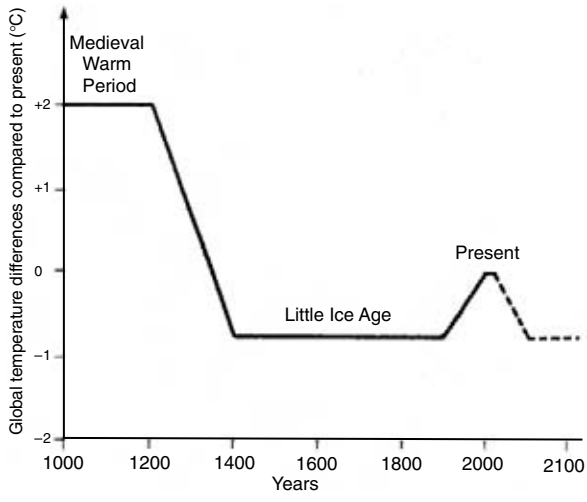



**Figure 12**
**ATMOSPHERIC TEMPERATURE CHANGE OVER LAST 1,000 YEARS**
*This is a simplified graph of global atmospheric temperature change over the last 1,000 years, using data from Khilyuk and Chilingar 2006. The temperature projection until 2100, dotted lined line, is based on data in this author's paper.*

A similar impending cooling, with two new Little Ice Ages around 2100 and 2200, was envisaged by the late Prof. Theodor Landsheidt, founder of the Schroeter Institute for Research in Cycles of Solar Activity in Germany (Landscheidt 1995 and Landscheidt 2003).

During the past 3,000 years, one can observe a clear cooling trend in the Earth's climate (Keigwin et al. 1994, and Khilyuk and Chilingar 2006). During this period, the global temperature deviations were 3°C, with a trend of decreasing global temperature of about 2°C. As Khilyuk and Chilingar stated: "This cooling tendency will probably last in the future. We live in the cooling geologic period and the global warming observed during the last approximately 150 years is just a short episode in the geologic history." This is reflected in Figure 12.

Not man, but nature rules the climate. The Kyoto Protocol and the IPCC reports, tuned by Malthusian ideas, may surely make a lot of noise and cause enormous harm for the global economy and for the well-being of billions of people. But they can do nothing for the climate. This we shall learn in the near future.

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*Zbigniew Jaworowski is a multidisciplinary scientist, now a senior advisor at the Central Laboratory for Radiological Protection in Warsaw. In the winter of 1957-1958, he measured the concentration of $CO_2$ in the atmospheric air at Spitsbergen. From 1972 to 1991, he investigated the history of the pollution of the global atmosphere, measuring the dust*

*preserved in 17 glaciers: in the Tatra Mountains in Poland, in the Arctic, Antarctic, Alaska, Norway, the Alps, the Himalayas, the Ruwenzori Mountains in Uganda, and the Peruvian Andes. He has published many papers on climate, most of them concerning the $CO_2$ measurements in ice cores. Two of his papers on climate appear on the website of* 21st Century Science & Technology *magazine, www.21stcenturysciencetech.com.*

*This is an expanded version of his article first published in* EIR, *March 16, 2007.*

**Notes**

1. Private communication by Prof. Maciej Sadowski, Dec. 7, 2006.
2. Leaf surfaces have stomata, or small pores, which allow carbon dioxide to enter the leaf and oxygen to escape in the process of photosynthesis.

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